STANFORD UNIVERSITY

STANFORD BULLETIN
2020-21

ACCREDITATION

Stanford University is accredited by the Accrediting Commission for Senior Colleges and Universities of the Western Association of Schools and Colleges (WASC), 985 Atlantic Avenue, Suite 100, Alameda, CA 94501; (510) 748-9001. In addition, certain programs of the University have specialized accreditation. For information, contact the Office of the University Registrar.

STATEMENT OF NONDISCRIMINATORY POLICY

Stanford University admits qualified students of any race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity, veteran status, or marital status to all the rights, privileges, programs, and activities generally accorded or made available to students at the University. Consistent with its obligations under the law, in the administration of the University's programs and activities, Stanford prohibits unlawful discrimination on the basis of race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity or expression, veteran status, marital status or any other characteristic protected by applicable law; Stanford also prohibits unlawful harassment including sexual harassment and sexual violence. This policy applies to Stanford programs and activities both on and off-campus, including overseas programs.

The following person has been designated to handle inquiries regarding this nondiscrimination policy: Stanford's Director of the Diversity and Access Office, Rosa Gonzalez, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (email). Stanford's Title IX Coordinator, Catherine Glaze, has been designated to handle inquiries regarding sexual harassment and sexual violence: Kingscote Gardens (2nd floor), 419 Lagunita Drive, Stanford, CA 94305, (650) 497-4955 (voice), (650) 497-9257 (fax), titleix@stanford.edu (email). Individuals may also file complaints directly with the Office for Civil Rights, within the United States Department of Education, by following the information on this website: https://www2.ed.gov/about/offices/list/ocr/complaintintro.html.

GOVERNING DOCUMENT/RESERVATION OF RIGHTS

Every effort is made to ensure that the degree requirement and course information, applicable policies, and other materials contained in the Stanford Bulletin are accurate and current. The University reserves the right to make changes at any time without prior notice. The Bulletin in the form as it exists online at Stanford Bulletin web site and ExploreCourses web site is therefore the governing document, and contains the then currently applicable policies and information. The University does not publish an official printed copy version of the Bulletin.

ADDITIONAL INFORMATION

Additional information on Stanford University can be obtained through Stanford's web site at http://www.stanford.edu.

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COVID-19 AND ACADEMIC CONTINUITY

Changes in Academic Policies and Practices Due to the COVID-19 Pandemic

This page is being continuously updated as additional information is received. Effective dates noted in the following reflect the date upon which a decision was taken. However, many of these decisions have been retroactively applied.

Most recent update September 3, 2020.

Stanford University responded to the COVID-19 pandemic crisis by addressing a broad array of policy and procedure issues in order to maintain academic continuity, to ensure the continuing success of Stanford students, to support faculty in teaching and research, and to assist academic staff in fulfilling their duties to students and faculty.

These pages represent a compendium of the academic continuity changes made. Relevant sections of this bulletin have been updated to reflect these changes, and such changes are notated as pertaining to the COVID-19 pandemic crisis.

Additional notations concerning academic continuity changes have been noted on any degree program requirements page where such changes impact students.

As this page is published, Registrar Office staff continue to update this bulletin to reflect all academic continuity changes. Any member of the Stanford community may contact the bulletin (https://stanford.service-now.com/student_services/?id=sc_cat_item&sys_id=a623e6d4131b53c08a9175c36144b082) with additional information; please provide complete and detailed information in your request.

Additional Information

Students and faculty with COVID-19 questions or concerns should contact the Student Services Center (https://stanford.service-now.com/student_services/?id=sc_cat_item&sys_id=c791e84edba38050404aa4cb0b9619ce). Faculty and staff with policy questions are advised to consult their Dean's Office; they may also contact the Stanford Bulletin (https://stanford.service-now.com/student_services/?id=sc_cat_item&sys_id=a623e6d4131b53c08a9175c36144b082) and Registrar's Office staff will forward their questions to appropriate authorities

During the pandemic, the University is publishing extensive information for the Stanford Community on its HealthAlerts (https://healthalerts.stanford.edu/) and TeachAnywhere (https://teachanywhere.stanford.edu/) sites.

On July 30, 2020, the Academic Senate adopted the following policies regarding grading:

- All University courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade, with the exception of courses offered by the Graduate School of Business, the School of Law, and the School of Medicine M.D. Program, unless opted in by those schools.
- Units of credit taken for a "credit" or "satisfactory" grade will not count toward the 36-unit maximum of credits (27 credits for transfer students) not taken for a letter grade that may be applied toward the 180 units required for the bachelor's degree.
- The senate urges deans, departments, and programs to consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree program requirements and/or alter program requirements as appropriate.
- Courses taken as "credit" or "no credit" may be eligible to fulfill general education requirements pending review by the Breadth Governance Board (for Ways of Thinking/Ways of Doing); the Thinking Matters Governance Board (for Thinking Matters); the Program in Writing and Rhetoric (for PRW1 and PRW2 classes); and the Writing and Rhetoric Review Board for Writing in the Major.

Final Examinations

The Faculty Senate has decided that there will be no three-hour final examination for undergraduates or graduate students in academic year 2020-21.

Coursework Deadline, Academic Year 2020-21

The academic year 2020-21 calendar (https://registrar.stanford.edu/academic-calendar/) is based upon 10-week academic quarters that do not include a dedicated end of quarter period. There will also be no final exam week.

All coursework is due by the last day of the last week of instruction in each quarter. No coursework deadlines or assessments should be assigned or scheduled after the last day of a quarter. Traditional 3-hour final exams are not allowable; however final assessments may be scheduled during the last class period.

Per standard practice and allowable by policy, instructors may grant individual and class-wide extensions of time on assignments. When an extended deadline falls after the grading deadline for a quarter and a student has completed satisfactorily a substantial part of the coursework, the student should request an Incomplete and arrange an alternative submission deadline with the instructor.

For students: if an instructor is not following this guidance, first raise the concern with the instructor. If the concern is not resolved, it should be escalated to the department chair or program director. The student should go to the relevant Dean's Office only if they are unable to resolve the issue within the department or program offering the course.

Rationale: The AY 2020-21 academic calendar includes different lengths of time between quarters to accommodate on-campus students who must pack and move out of their residences before the start of the next quarter. Making coursework due by the last day of the classes in a quarter is equitable for all students.

Questions may be directed to academic-continuity@stanford.edu.

Flex Term

Stanford will operate four full, 10-week academic terms in academic year 2020-21, Autumn Winter, Spring, and Summer. Undergraduates are expected to enroll in three of the four quarters during the 2020-21 academic year. The term in which an undergraduate is not required to enroll is called the Flex Term; students, however, may enroll in 5 free units during their Flex Term. Students declare their Flex Term via the Quarter Check-in in Axess. International undergraduates, however, are expected to enroll in three consecutive quarters during the 2020-21 academic year.

COVID-19 Policies on Undergraduate Leaves of Absence for Academic Year 2020-21

For academic year 2020-21, new leaves of absence taken during Autumn, Winter, Spring, or Summer quarters do not count towards the eight quarters maximum.

Undergraduates and coterms in the undergraduate tuition group are expected to enroll in three of four quarters during the 2020-21 academic year, with one quarter considered the student's Flex Term. If students are unable to or elect not to enroll in three quarters, they must apply for a leave of absence for those quarter(s). Leaves of absence information for International undergraduates can be found below in this bulletin section.

Undergraduates may take one quarter away from Stanford without having to file for a leave of absence (LOA), this term being considered the student's Flex Term. If a student takes more than one quarter away from Stanford, a Leave of Absence form is required. A student would be discontinued for no enrollment in any term in which they do not enroll after use of the Flex Term. See the Discontinuation and Reinstatement (p.) section below for further information.

COVID-19 Policy on Leaves of Absence for International Undergraduates

International undergraduates are expected to enroll in three consecutive quarters during the 2020-21 academic year. If undergraduates are unable to or elect to not enroll in three consecutive quarters, they must apply for a Leave of Absence for those quarter(s). International undergraduates are required to consult with a Bechtel International Center immigration advisor well before requesting a Leave of Absence. The Leave of Absence may complicate an international student's legal status and ability to remain and work in the U.S.

COVID-19 Policies on Discontinuation and Reinstatement for Academic Year 2020-21

In academic year 2020-21, a student's active status in their academic degree program may be discontinued if the student:

- fails to be enrolled by the study list deadline of their second term away from Stanford; or
- fails to be approved for a leave of absence by the start of the term of their second term away from Stanford; or
- fails to enroll by the study list deadline, or fails to file and be approved for a leave of absence in a subsequent quarter, after use of the Flex Term; or
- voluntarily terminates undergraduate studies; or
- is dismissed for academic reasons; or
- is expelled from the University.

Students who fail to be either enrolled by the final study list deadline of their second term away from Stanford, or who fail to submit a Leave of Absence petition by the published deadline in their second term away from Stanford, must apply for reinstatement through the Request to Return and Register in Undergraduate Study (https://undergrad.stanford.edu/planning/academic-policies/returning-students/).

This policy is applicable to the four quarters in academic year 2020-21 only; additional policy will be published prior to academic year 2021-22.

For complete policies, see the "Transfer Work (p. 82)" section of this bulletin.

COVID-19 Policies on Undergraduate Transfer Work for Academic Year 2020-21

- The 15-quarter unit cap on online work has been eliminated, students may apply for transfer credit for work that was or will be completed via an online/hybrid/correspondence instruction mode.The coursework must still meet all other conditions for transfer credit.
- Students may reach out to their departments for review/approval of transfer credit without having to first secure a review/approval from the Registrar's Office. Please note: students will want to confirm with departments what their transfer credit process is, if seeking a review of transfer credit for application towards major/minor requirements.
- Credit earned in U.S. military training and service may be eligible for transfer to Stanford if the work was completed at an accredited U.S. college or University or if the work appears on an official Joint Services Transcript (JST) and meets all other conditions for transfer credit. Joint Services Transcripts can be requested via the JST website (https://jst.doded.mil/official.html).

COVID-19 Policies on Graduate Transfer Work for Academic Year 2020-21

Students may apply for graduate residency transfer credit from work completed via an online/hybrid/correspondence instruction mode. The coursework must still meet all other conditions for graduate residency transfer credit.

For complete policies, see the "Undergraduate Special Registration Statuses (p. 41)" section of this bulletin

COVID-19 Policies on Undergraduate Special Registration Statuses for Academic Year 2020-21

- *Permit to Attend for Services Only (PSO):* Students approved for the PSO status will be assessed a $150 fee instead of the standard PSO fee.
- *13th Quarter:* this status will be available in the Summer Quarter, as Summer will not necessarily be the standard optional quarter for the Academic Year 2020-21.

ACADEMIC CALENDAR

Stanford Academic Calendar, 2020-21

Due to the ongoing COVID-19 pandemic, academic dates and deadlines published here may differ from the practices of previous year and they are subject to change. The Academic Senate has decided that there will be no final exams in 2020-21.

Autumn Quarter (p. 8) • Winter Quarter (p. 9) • Spring Quarter (p. 10) • Summer Quarter (p. 11)

Issued July 20, 2020. All dates are subject to change at the discretion of the University.

AUTUMN QUARTER 2020-21

August 17 (Mon) Stanford Bulletin (http://bulletin.stanford.edu/) publishes academic year 2020-21 degree requirements; ExploreCourses (https://explorecourses.stanford.edu/) opens with Autumn class offerings
August 17 (Mon) Axess opens for course enrollment for M.D. and M.S.P.A. students.
August 17 (Mon) Axess opens for course enrollment for J.D., J.S.M., L.L.M. and J.S.D. students.
August 24 (Mon) M.D. and MSPA first and second-year students, first day of instruction. See the School of Medicine academic calendar (https://med.stanford.edu/school/academic-calendar.html) website.
August 31 (Mon) Law School instruction begins for 1st-year J.D. students, J.S.M. and L.L.M. students. See the Law School academic calendar (https://law.stanford.edu/education/courses/calendar-deadlines/) website.
September 1 (Tues) Axess opens for course enrollment.
September 4 (Fri, 5:00 p.m.) At-status enrollment deadline in order to receive stipend or financial aid refund within the first week of term.
September 4 (Fri) M.B.A. 1st-year instruction begins.
September TBD New undergraduates arrive. Convocation (https://undergrad.stanford.edu/advising/freshman/new-student-orientation-nso/nso-volunteers/opening-convocation-student-speaker/). Undergraduate housing opens for new students; see Residential & Dining Enterprises Calendar (http://studenthousing.stanford.edu/calendar/).
September TBD Undergraduate housing opens for returning students; see Residential & Dining Enterprises Calendar (http://studenthousing.stanford.edu/calendar/).
September 14 (Mon) First day of quarter; instruction begins.
September 14 (Mon, 5:00 p.m.) Preliminary Study List deadline (http://exploredegrees.stanford.edu/students/enrolling-courses/preliminary-study-list-deadline-courses-or-units/). Students must be "at status"; i.e., students must have a study list with sufficient units to meet requirements for their status, whether full-time, 8-9-10 units (graduate students only), or approved Undergraduate Special Registration Status (https://sregistrar.stanford.edu/students/special-registration-and-leaves/special-registration-statuses-undergraduates/) or Graduate Special Registration Status (http://exploredegrees.stanford.edu/students/special-registration-and-leaves/special-registration-statuses-graduate-professional/).
September 14 (Mon, 5:00 p.m.) Deadline to submit Leave of Absence for full refund (see undergraduate leaves of absence (http://exploredegrees.stanford.edu/undergraduatedegreesandprograms/#leavesandreinstatementtext) and graduate leaves of absence (http://exploredegrees.stanford.edu/graduatedegrees/#leavereinstatementtext)). See Tuition and Refund Schedule (http://exploredegrees.stanford.edu/students/tuition-and-fees/tuition-refund-schedule/) for a full refund schedule.
September 14 (Mon) Law School instruction begins for 2nd/3rd-year J.D. and advanced degree students. See the Law School academic calendar (https://law.stanford.edu/education/courses/calendar-deadlines/) website.
September 15 (Tue) Autumn Quarter Cardinal Care Waiver Deadline; see the Cardinal Care (https://vaden.stanford.edu/insurance/) website.
September 21 (Mon) M.B.A. 2nd-year instruction begins.
September 21 (Mon) Stanford Teacher Education Program (STEP) instruction begins.
September 24 (Thu) Conferral of degrees, Summer Quarter 2019-20.
October 2 (Fri, 5:00 p.m.) Final Study List deadline (http://exploredegrees.stanford.edu/students/enrolling-courses/final-study-list-deadline-add-drop-swap-or-adjust-courses-or-units/), except GSB. Last day to add or drop a class; last day to adjust units on a variable-unit course. Last day for tuition reassessment for dropped courses or units. Students may withdraw from a course until the Course Withdrawal deadline and a 'W' notation will appear on the transcript.
October 23 (Fri, 5:00 p.m.) Term withdrawal deadline; last day to submit Leave of Absence to withdraw from the University with a partial refund.
November 6 (Fri, 5:00 p.m.) Change of grading basis deadline, except GSB.
November 6 (Fri, 5:00 p.m.) Course withdrawal deadline, except GSB, Law, and M.D.
November 6 (Fri, 5:00 p.m.) Application deadline for Autumn Quarter degree conferral (http://exploredegrees.stanford.edu/students/graduation/).
November 13 (Fri) Last day of Law classes for 2nd-year, 3rd-year J.D.,and advanced degree students.
November 14-17 (Sat-Tue) Law School 2nd-year, 3rd-year J.D., and advanced degree students Reading Period.
November 18-24 (Wed-Tue) Law School 2nd-year, 3rd-year J.D., and advanced degree students Law School examinations. See the Law School academic calendar (https://law.stanford.edu/education/courses/calendar-deadlines/) website.
November 20 (Fri) Last day of Law classes for 1st-year J.D. students. See the Law School academic calendar (https://law.stanford.edu/education/courses/calendar-deadlines/) website.
November 20 (Fri) Last day of classes (unless class meets on Sat.), except Law.
November 20 (Fri) Last opportunity to arrange Incomplete in a course, at last class.
November TBD Undergraduate housing closes for Winter Break; see Residential & Dining Enterprises Calendar (http://studenthousing.stanford.edu/calendar/).
November 23-27 (Mon-Fri) Thanksgiving Recess (no classes).
November 28 - December 3 (Sat-Thu) Law School 1st-year J.D. students Reading Period. See the Law School academic calendar (https://law.stanford.edu/education/courses/calendar-deadlines/) website.
November 30 - December 4 (Mon-Fri) End-Quarter Period for M.D. and MSPA students. See the School of Medicine academic calendar (http://med.stanford.edu/school/academic-calendar.html) website.
November 30 - December 4 (Mon-Fri) GSB End-Quarter examinations.
December 4 (Fri, noon) University thesis, D.M.A. final project, or Ph.D. dissertation, last day to submit.
December 4 (Fri, 5:00 p.m.) Late application deadline for Autumn Quarter degree conferral (http://exploredegrees.stanford.edu/students/graduation/) ($50 fee).
December 4-11 (Fri-Fri) Law School 1st-year J.D. students examinations. See the Law School academic calendar (https://law.stanford.edu/education/courses/calendar-deadlines/) website.
December 7-11 (Mon-Fri) End-Quarter examinations for M.D. and MSPA students. See the School of Medicine academic calendar (http://med.stanford.edu/school/academic-calendar.html) website.
December 7-11 (Mon-Fri) Programming for M.B.A. students.
December 8 (Tues, 11:59 p.m.) Grades due.
December TBD Undergraduate housing closes for Winter Break; see Residential & Dining Enterprises Calendar (http://studenthousing.stanford.edu/calendar/).
December 10 (Thu, 5:00 p.m.) Final Recommending Lists due. (Date changed due to the University's decision to close from December 14.)
December 14-January 1 (Mon-Fri) Winter Closure; the University is closed.
January 7 (Thu) Conferral of degrees, Autumn Quarter.
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WINTER QUARTER 2020-21

December 6 (Sun) Axess opens for course enrollment.
December 15 (Tues) Winter Quarter Cardinal Care Waiver Deadline; see the Cardinal Care (https://vaden.stanford.edu/insurance/) website.
January 1 (Fri) At-status enrollment deadline in order to receive stipend or financial aid refund within the first week of term.
January 4 (Mon) Law School instruction begins. See the Law School academic calendar (https://law.stanford.edu/education/courses/calendar-deadlines/) website.
January 4 (Mon) M.D. and MSPA instruction begins. See the School of Medicine academic calendar (http://med.stanford.edu/school/academic-calendar.html) website.
January 4 (Mon) M.B.A. instruction begins. See the full Graduate School of Business academic calendar. (https://www.gsb.stanford.edu/programs/mba/academic-experience/academic-calendar/)
January TBD Undergraduate housing opens for Winter Quarter; see Residential & Dining Enterprises Calendar (http://studenthousing.stanford.edu/calendar/).
January 8 (Fri) GSB course add/drop deadline. See the full Graduate School of Business academic calendar.
January 11 (Mon) First day of quarter; instruction begins for all students.
January 11 (Mon, 5:00 p.m.) Preliminary Study List deadline (http://exploredegrees.stanford.edu/students/enrolling-courses/preliminary-study-list-deadline-courses-or-units/). Students must be "at status"; i.e., students must have a study list with sufficient units to meet requirements for their status, whether full-time, 8-9-10 units (graduate students only), or approved Undergraduate Special Registration Status (http://exploredegrees.stanford.edu/students/special-registration-and-leaves/special-registration-statuses-undergraduates/) or Graduate Special Registration Status (http://exploredegrees.stanford.edu/students/special-registration-and-leaves/special-registration-statuses-graduate-professional/). The late study list fee is $200.
January 11 (Mon, 5:00 p.m.) Deadline to submit Leave of Absence for full refund (see undergraduate leaves of absence (http://exploredegrees.stanford.edu/undergraduatedegreesandprograms/#leavesandreinstatementtext) and graduate leaves of absence (http://exploredegrees.stanford.edu/graduatedegrees/#leavereinstatementtext)). See Tuition and Refund Schedule (http://exploredegrees.stanford.edu/students/tuition-and-fees/tuition-refund-schedule/) for a full refund schedule.
January 18 (Mon) Martin Luther King, Jr., Day (holiday, no classes).
January 29 (Fri, 5:00 p.m.) Final Study List deadline (http://exploredegrees.stanford.edu/students/enrolling-courses/final-study-list-deadline-add-drop-swap-or-adjust-courses-or-units/), except GSB. Final day to add or drop a class; last day to adjust units on a variable-unit course. Last day for tuition reassessment for dropped courses or units. Students may withdraw from a course until the Course Withdrawal deadline and a 'W' notation will appear on the transcript.
February 15 (Mon) Presidents' Day (holiday, no classes; Law does hold classes).
February 19 (Fri, 5:00 p.m.) Term withdrawal deadline; last day to submit Leave of Absence to withdraw from the University with a partial refund.
Februry 26 (Fri, 5:00 p.m.) Application deadline for Winter Quarter degree conferral (https://registrar.stanford.edu/students/graduation/).
March 5 (Fri, 5:00 p.m.) Change of grading basis deadline, except GSB.
March 5 (Fri, 5:00 p.m.) Course withdrawal deadline, except GSB, Law, and M.D.
March 8 (Mon) Last day of Law classes. See the Law School academic calendar web site.
March 8 (Mon) Last day of M.D. and M.S.P.A. classes. See the School of Medicine academic calendar (https://med.stanford.edu/school/academic-calendar.html) website.
March 8-12 (Mon-Fri) End-Quarter Period for M.D. and M.S.P.A. students. See the School of Medicine academic calendar (https://med.stanford.edu/school/academic-calendar.html) website.
March 9-11 (Tue-Thu) Law School Reading Period. See the Law School academic calendar web site.
March 12 (Fri, 5:00 p.m.) Late application deadline for Winter Quarter degree conferral (https://registrar.stanford.edu/students/graduation/) ($50 fee).
March 12-19 (Fri-Fri) Law School examinations. See the Law School academic calendar (https://law.stanford.edu/education/courses/calendar-deadlines/) website.
March 15-19 (Mon-Fri) End-Quarter examinations for M.D. and M.S.P.A. students. See the School of Medicine academic calendar (https://med.stanford.edu/school/academic-calendar.html) website.
March 19 (Fri) Last day of classes (unless class meets on Sat.)
March 19 (Fri) Last opportunity to arrange Incomplete in a course, at last class.
March 19 (Fri, noon) University thesis, D.M.A. final project, Ph.D. dissertation, last day to submit.
March TBD Undergraduate housing move-out; see Residential & Dining Enterprises Calendar (http://studenthousing.stanford.edu/calendar/).
March 23 (Tues, 11:59 p.m.) Grades due for graduating students
March 26 (Fri, 5:00 p.m.) Final Recommending Lists due
March 29 (Mon, 11:59 p.m.) Grades for non-graduating students due
April 1 (Thu) Conferral of degrees, Winter Quarter.
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SPRING QUARTER 2020-21

February 28 (Sun) Axess opens for course enrollment.
March 15 (Mon) Spring Quarter Cardinal Care Waiver Deadline; see the Cardinal Care (https://vaden.stanford.edu/insurance/) website.
March 19 (Fri) At-status enrollment deadline in order to receive stipend or financial aid refund within the first week of term.
March TBD Undergraduate housing move-in date for Spring Quarter; see Residential & Dining Enterprises Calendar (http://studenthousing.stanford.edu/calendar/).
March 29 (Mon) First day of quarter; instruction begins for all students.
March 29 (Mon, 5:00 p.m.) Preliminary Study List deadline (http://exploredegrees.stanford.edu/students/enrolling-courses/preliminary-study-list-deadline-courses-or-units/).Students must be "at status"; i.e., students must have a study list with sufficient units to meet requirements for their status, whether full-time, 8-9-10 units (graduate students only), or approved Undergraduate Special Registration Status (http://exploredegrees.stanford.edu/students/special-registration-and-leaves/special-registration-statuses-undergraduates/) or Graduate Special Registration Status (http://exploredegrees.stanford.edu/students/special-registration-and-leaves/special-registration-statuses-graduate-professional/). The late study list fee is $200.
March 29 (Mon, 5:00 p.m.) Deadline to submit Leave of Absence for full refund (see undergraduate leaves of absence (http://exploredegrees.stanford.edu/undergraduatedegreesandprograms/#leavesandreinstatementtext) and graduate leaves of absence (http://exploredegrees.stanford.edu/graduatedegrees/#leavereinstatementtext)). See See Tuition and Refund Schedule (http://exploredegrees.stanford.edu/students/tuition-and-fees/tuition-refund-schedule/) for a full refund schedule.
April 1 (Thu) GSB instruction begins (MBA and MSx courses only). See the full Graduate School of Business academic calendar (https://www.gsb.stanford.edu/nongsbreg/calendar-deadlines/).
April 6 (Tue) GSB course add/drop deadline. See the full Graduate School of Business academic calendar (https://www.gsb.stanford.edu/nongsbreg/calendar-deadlines/).
April 9 (Fri, 5:00 p.m.) Application deadline for Spring Quarter degree conferral (http://exploredegrees.stanford.edu/students/graduation/).
April 16 (Fri, 5:00 p.m.) Final Study List deadline, except GSB (http://exploredegrees.stanford.edu/students/enrolling-courses/final-study-list-deadline-add-drop-swap-or-adjust-courses-or-units/). Last day to add or drop a class; last day to adjust units on a variable-unit course. Last day for tuition reassessment for dropped courses or units. Students may withdraw from a course until the Course Withdrawal deadline and a "W" notation will appear on the transcript.
May 7 (Fri, 5:00 p.m.) Term withdrawal deadline; last day to submit Leave of Absence to withdraw from the University with a partial refund.
May 21 (Fri, 5:00 p.m.) Change of grading basis deadline, except GSB.
May 21 (Fri, 5:00 p.m.) Course withdrawal deadline, except GSB, Law, and M.D.
May 27 (Thu) Last day of Law classes. See the Law School academic calendar (https://law.stanford.edu/education/courses/calendar-deadlines/) website.
May 27 (Thu) Last day of M.D. and M.S.P.A. classes. See the School of Medicine academic calendar (https://med.stanford.edu/school/academic-calendar.html) website.
May 28 (Fri, 5:00 p.m.) Late application deadline for Spring Quarter degree conferral (https://registrar.stanford.edu/students/graduation/) ($50 fee).
May 28-31 (Fri-Mon) Law School reading Period. See the Law School academic calendar web site.
May 28-June 3 (Fri-Thu) End-Quarter Period for M.D. and MSPA students. See the School of Medicine academic calendar (https://med.stanford.edu/school/academic-calendar.html) website.
May 31 (Mon) Memorial Day (holiday, no classes).
June 1-5 (Tues-Sat) Law School examinations. See the Law School academic calendar web site.
June 4-9 (Fri-Wed) End-Quarter examinations for M.D. and MSPA students. See the School of Medicine academic calendar (https://med.stanford.edu/school/academic-calendar.html) website.
June 4 (Fri) Last day of classes.
June 4 (Fri) Last opportunity to arrange Incomplete in a course, at last class.
June 4 (Fri, noon) University thesis, D.M.A. final project, or Ph.D. dissertation, last day to submit.
June 7 (Monday, 11:59 p.m.) Grades for graduating students due.
June 9 (Wed, noon) Final Recommending Lists due.
June 12 (Sat) Senior Class Day.
June 12 (Sat) Baccalaureate Saturday.
June 12 (Sat) Law School Diploma Ceremony. See the Law School academic calendar (https://law.stanford.edu/education/courses/calendar-deadlines/) website.
June 12 (Sat) GSB Diploma Ceremony.
June 12 (Sat) Medical School Commencement Ceremony.
June 13 (Sun) Commencement.
June TBD Undergraduate Housing move-out date (for graduates and others involved in Commencement with permission); see Residential & Dining Enterprises Calendar (http://studenthousing.stanford.edu/calendar/).
June 15 (Tue, 11:59 p.m.) Grades for non-graduating students due.
June TBD Posting of degrees; degrees will be awarded with a confer date of Commencement.
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SUMMER QUARTER 2020-21

May 23 (Sun) Axess opens for course enrollment.
June 11 (Mon) At-status enrollment deadline in order to receive stipend or financial aid refund within the first week of term.
June 15 (Mon) Summer Quarter Cardinal Care Waiver Deadline; see the Cardinal Care (https://vaden.stanford.edu/insurance/) website.
June 21 (Mon) First day of quarter; instruction begins.
June 21 (Mon, 5:00 p.m.) Preliminary Study List deadline (http://exploredegrees.stanford.edu/students/enrolling-courses/preliminary-study-list-deadline-courses-or-units/). Undergraduates enrolling in this quarter must be "at status"; i.e., have a study list with sufficient units to meet requirements for their status, whether full-time or approved Undergraduate Special Registration Status. The late study list fee is $200
June 21 (Mon) Deadline to submit Leave of Absence for full refund (see undergraduate leaves of absence (http://exploredegrees.stanford.edu/undergraduatedegreesandprograms/#leavesandreinstatementtext) and graduate leaves of absence (http://exploredegrees.stanford.edu/graduatedegrees/#leavereinstatementtext)). See Tuition and Refund Schedule (http://exploredegrees.stanford.edu/students/tuition-and-fees/tuition-refund-schedule/) for a full refund schedule.
July 2 (Fri) or July 5 (Mon) Independence Day celebrated (holiday, no classes).
July 9 (Fri, 5:00 p.m.) Final Study List deadline (http://exploredegrees.stanford.edu/students/enrolling-courses/final-study-list-deadline-add-drop-swap-or-adjust-courses-or-units/).Final day to add or drop a class; last day to adjust units on a variable-unit course. Last day for tuition reassessment for dropped courses or units. Students may withdraw from a course until the Course Withdrawal deadline and a 'W' notation will appear on the transcript.
July 30 (Fri, 5:00 p.m.) Term withdrawal deadline; last day to submit Leave of Absence to withdraw from the University with a partial refund.
August 13 (Fri, 5:00 p.m.) Change of grading basis deadline.
August 13 (Fri, 5:00 p.m.) Course withdrawal deadline.
August 13 (Fri, 5:00 p.m.) Application deadline for Summer Quarter degree conferral (http://exploredegrees.stanford.edu/students/graduation/).
August 27 (Fri) Last day of classes.
August 27 (Fri) Last opportunity to arrange Incomplete in a course, at last class.
August 27 (Fri, noon) University thesis, D.M.A. final project, or Ph.D. dissertation, last day to submit.
August 27 (Fri, 5:00 p.m.) Late application deadline for Summer Quarter degree conferral (http://exploredegrees.stanford.edu/students/graduation/) ($50 fee).
September 7 (Tue, 11:59 p.m.) Grades due.
September 10 (Fri, 5:00 p.m.) Final Recommending Lists due
September 23 (Thu) Conferral of degrees, Summer Quarter.
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2021-22 First Day of Classes and End of Term

These dates are subject to change at the discretion of the University.

- Autumn 2021-22: September 20 and December 11
- Winter 2021-22: January 3 and March 18
- Spring 2021-22: March 28 and June 8 (Commencement June 12)
- Summer 2021-22: June 20 and August 13

STANFORD'S MISSION

The Stanford University Founding Grant (https://purl.stanford.edu/bz978md4965/) (pdf), dated November 11, 1885, outlines the founding principles of the University. The Founding Grant describes the "Nature, Object, and Purposes of the Institution" founded by Leland Stanford and Jane Lathrop Stanford in these terms:

> Its nature, that of a university with such seminaries of learning as shall make it of the highest grade, including mechanical institutes, museums, galleries of art, laboratories, and conservatories, together with all things necessary for the study of agriculture in all its branches, and for mechanical training, and the studies and exercises directed to the cultivation and enlargement of the mind;
>
> Its object, to qualify its students for personal success, and direct usefulness in life;
>
> And its purposes, to promote the public welfare by exercising an influence in behalf of humanity and civilization, teaching the blessings of liberty regulated by law, and inculcating love and reverence for the great principles of government as derived from the inalienable rights of man to life, liberty, and the pursuit of happiness.

Information about Stanford's seven schools and their academic programs and mission can be found by following the links below:

- School of Earth, Energy and Environmental Sciences (http://pangea.stanford.edu/about/)
- Graduate School of Business (http://www.gsb.stanford.edu/about/mission.html)
- School of Humanities and Sciences (https://humsci.stanford.edu/about/)
- School of Engineering (https://engineering.stanford.edu/about/)
- School of Medicine (http://med.stanford.edu/about/vision.html)
- Graduate School of Education (http://ed.stanford.edu/suse/aboutsuse/mission.html)
- Stanford Law School (https://law.stanford.edu/about/#slsnav-sls-distinctions)

A Brief History of Stanford

On October 1, 1891, more than 400 enthusiastic young men and women were on hand for opening day ceremonies at Leland Stanford Junior University. They came from all over: many from California, some who followed professors hired from other colleges and universities, and some simply seeking adventure in the West. They came to seize a special opportunity, to be part of the pioneer class in a brand new university. They stayed to help turn an ambitious dream into a thriving reality. As a pioneer faculty member recalled, "Hope was in every heart, and the presiding spirit of freedom prompted us to dare greatly."

For Leland and Jane Stanford on that day, the University was the realization of a dream and a fitting tribute to the memory of their only son, who died of typhoid fever weeks before his 16th birthday, at an age when many young men and women were planning their college education.

From the beginning, it was clear that Stanford would be different. It was coeducational at a time when single-sex colleges were the norm. It was non-sectarian when most private colleges were still affiliated with a church. And it offered a broad, flexible program of study while most schools insisted on a rigid curriculum of classical studies. Though there were many difficulties during the first months (housing was inadequate, microscopes and books were late in arriving from the East), the first year foretold greatness. As Jane Stanford wrote in the summer of 1892, "Even our fondest hopes have been realized."

What manner of people were this man and this woman who had the intelligence, the means, the faith, and the daring to plan a major university in Pacific soil, far from the nation's center of culture?

Leland and Jane Stanford

Although he was trained as a lawyer, Leland Stanford came to California in 1852 to join his five brothers in their mercantile business in the gold fields; Jane Stanford followed in 1855. They established large-scale operations in Sacramento, where Mr. Stanford became a leading figure in California business and politics. One of the "Big Four" who built the western link of the first transcontinental railroad, he was elected Governor of California and later United States Senator. One of the founders of the Republican Party in California, he was an ardent follower of Abraham Lincoln and is credited with keeping California in the Union during the Civil War.

The Case for a Liberal Education

Despite the enormous success they achieved in their lives, Governor and Mrs. Stanford had come from families of modest means and rose to prominence and wealth through a life of hard work. So it was natural that their first thoughts were to establish an institution where young men and women could "grapple successfully with the practicalities of life." As their thoughts matured, however, these ideas of "practical education" enlarged to the concept of producing cultured and useful citizens who were well prepared for professional success. In a statement of the case for liberal education that was remarkable for its time, Leland Stanford wrote, "I attach great importance to general literature for the enlargement of the mind and for giving business capacity. I think I have noticed that technically educated boys do not make the most successful businessmen. The imagination needs to be cultivated and developed to assure success in life. A man will never construct anything he cannot conceive."

Stanford Lands and Architecture

The campus occupies what was once Leland Stanford's Palo Alto Stock Farm and the favorite residence of the Stanford family. The Stanfords purchased an existing estate in 1876 and later acquired much of the land in the local watershed for their stock farm, orchards, and vineyards.

The name of the farm came from the tree El Palo Alto, a coast redwood (Sequoia sempervirens), that still stands near the northwest corner of the property on the edge of San Francisquito Creek. Many years ago, one of the winter floods that periodically rushed down the arroyo tore off one of its twin trunks, but half of the venerable old tree lives on, a gaunt and time-scarred monument. Named in 1769 by Spanish explorers, El Palo Alto has been the University's symbol and the centerpiece of its official seal.

The Stanfords gave their farm to the University in the Founding Grant of 1885. They personally financed the entire cost of the construction and operation of the University until 1903, when surviving founder Jane Stanford, who performed heroically in keeping the University functioning during difficult times following Leland Senior's death in 1893, turned over control to the Board of Trustees. The founding gift has been estimated at $25 million, not including the land and buildings.

The general concept for the University grounds and buildings was conceived by Frederick Law Olmsted, the designer of Central Park in New York. A brilliant young Boston architect, Charles Allerton Coolidge, further developed the concept in the style of his late mentor, Henry Hobson Richardson. The style, called Richardsonian Romanesque, is a blend of Romanesque and Mission Revival architecture. It is characterized by rectilinear sandstone buildings joined by covered arcades formed of

successive half-circle arches, the latter supported by short columns with decorated capitals.

More than one hundred years later, the University still enjoys 8,180 acres (almost 13 square miles) of grassy fields, eucalyptus groves, and rolling hills that were the Stanfords' generous legacy, as well as the Quadrangle of "long corridors with their stately pillars" at the center of campus. It is still true, as the philosopher William James said, during his stint as a visiting professor, that the climate is "so friendly . . . that every morning wakes one fresh for new amounts of work."

Current Perspectives

In other ways, the University has changed tremendously on its way to recognition as one of the world's great universities. At the hub of a vital and diverse Bay Area, Stanford is less than an hour's drive or Caltrain trip south of San Francisco and just a few miles north of Silicon Valley, an area dotted with computer and high technology firms largely spawned by the University's faculty and graduates. On campus, students and faculty enjoy new libraries, modern laboratories, sports facilities, and comfortable residences. Contemporary sculpture, as well as pieces from the Iris and B. Gerald Cantor Center for Visual Arts (http://museum.stanford.edu/) at Stanford University's extensive collection of sculpture by Auguste Rodin, can be found throughout the campus, providing unexpected pleasures at many turns.

The Cantor Center opened in January 1999. The center includes the historic Leland Stanford Junior Museum building and the Rodin Sculpture Garden. Next door is the Anderson Collection at Stanford University (https://anderson.stanford.edu/), which houses one of the nation's finest assemblies of modern American art. At the Stanford University Medical Center (http://stanfordmedicine.org/), world-renowned for its research, teaching, and patient care, scientists and physicians are searching for answers to fundamental questions about health and disease. Ninety miles down the coast, at Stanford's Hopkins Marine Station (https://hopkinsmarinestation.stanford.edu/) on the Monterey Bay, scientists are working to better understand the mechanisms of evolution and ecological systems.

The University is organized into seven schools: Earth, Energy and Environmental Sciences; Education; Engineering; the Graduate School of Business; Humanities and Sciences; Law; and Medicine. In addition, there are more than 30 interdisciplinary centers, programs, and research laboratories (p. 2505) including: the Hoover Institution on War, Revolution and Peace (http://www.hoover.org/); the Freeman Spogli Institute for International Studies (http://fsi.stanford.edu/); the Woods Institute for the Environment (http://woods.stanford.edu/); the SLAC National Accelerator Laboratory (http://www.slac.stanford.edu/); and the Stanford Program for Bioengineering, Biomedicine, and Biosciences (Bio-X) (http://biox.stanford.edu/), where faculty from many fields bring different perspectives to bear on issues and problems. Stanford's Bing Overseas Studies Program (http://bosp.stanford.edu/) offers undergraduates in all fields remarkable opportunities for study abroad, with campuses in Australia, Beijing, Berlin, Cape Town, Florence, Kyoto, Madrid, Oxford, Paris, and Santiago.

Stanford People

By any measure, Stanford's faculty, which numbers more than 2,100, is one of the most distinguished in the world. It includes 19 living Nobel laureates, 4 Pulitzer Prize winners, 19 National Medal of Science winners, 171 members of the National Academy of Sciences, 288 members of the American Academy of Arts and Sciences, 112 members of the National Academy of Engineering, and 27 members of the National Academy of Education. Yet beyond their array of honors, what truly distinguishes Stanford faculty is their commitment to sharing knowledge with their students. The great majority of professors teach undergraduates both in introductory lecture classes and in small freshman, sophomore, and advanced seminars.

Enrollment in Autumn Quarter 2019 totaled 16,385 of whom 6,994 were undergraduates and 9,310 were graduate students. Like the faculty, the Stanford student body is distinguished: 116 Stanford students have been named Rhodes Scholars and 90 have been named Marshall Scholars. The six-year graduation rate for freshmen who entered Stanford University full-time in 2010 was 94 percent. In 2018-19, Stanford awarded 1,893 bachelor's degrees, 2,393 master's degrees, and 1,040 doctoral degrees.

Stanford students also shine in an array of activities outside the classroom, from student government to music, theater, and journalism. Through the Haas Center for Public Service, students participate in dozens of community service activities, such as tutoring programs for children in nearby East Palo Alto, the Hunger Project, and the Arbor Free Clinic.

In the athletic arena, Stanford students have enjoyed tremendous success as well. Stanford fields teams in 36 Division I varsity sports. The Cardinal has won at least one national team championship 41 consecutive years, which leads the NCAA. Stanford has won the Director's Cup, which honors the most successful program in NCAA Division I sports, the last 24 years. Stanford scholar-athletes have earned 161 NCAA Postgraduate Scholarships—a national best.

Stanford graduates can be found in an extraordinary variety of places: in space (the late Sally Ride, '73, Ph.D. '78, was the first American woman in space); on the news (Ted Koppel, M.A. '62, created the successful program Nightline); Broadway (David Henry Hwang, '79, received a Tony Award for his celebrated work, M. Butterfly); in San Francisco live theater (Carey Perloff, '80, former artistic director of the American Conservatory Theater); at the helm of major corporations (Scott McNealy, '80, founded Sun Microsystems, Sergey Brin, M.S. '95, and Larry Page, M.S. '98, founded Google, and Chih-yuan (Jerry) Yang, '94, and David Filo, '90, founded Yahoo); and on the U.S. Supreme Court (two Stanford graduates, Anthony Kennedy, '58, and Stephen Breyer, '59, currently sit on the high court).

Looking Ahead

In her address to the Board of Trustees in July 1904, Jane Stanford said, "Let us not be afraid to outgrow old thoughts and ways, and dare to think on new lines as to the future of the work under our care."

Stanford's 11th president, Marc Tessier-Lavigne, echoed these thoughts in his inaugural address in 2016: "When I reflect on Stanford's 125-year history, I see a University that has pressed forward through thick and thin, gaining in stature as a leader in education and scholarship, to make increasingly important contributions to society and to human well-being. Thanks to over a century of inspired leadership, including by the distinguished presidents emeriti here today, Stanford has become the "University of high degree" its founders envisioned. Stanford's preeminence derives from its bedrock dedication to fostering education, research, and creativity for the benefit of humanity. But I believe it also stems from its optimism, its resilience, and its courage to evolve."

UNIVERSITY GOVERNANCE AND ORGANIZATION

Web Sites: http://www.stanford.edu/about/administration/ and http://facts.stanford.edu/administration/

Stanford University is a trust with corporate powers under the laws of the State of California. The University is a tax-exempt entity under section 501(c)3 of the Internal Revenue Code. Under the provisions of the Founding Grant, the Board of Trustees (with a maximum membership of 38) is custodian of the endowment and all the properties of Stanford University. The board administers the invested funds, sets the annual budget and determines policies for operation and control of the university. Among the powers given to the trustees by the Founding Grant is the power to appoint a president. The board delegates broad authority to the president to operate the university and to the faculty on certain academic matters. The formal legal name is "The Board of Trustees of the Leland Stanford Junior University."

Accreditation

Stanford University is accredited by the Accrediting Commission of Senior Colleges and Universities of the Western Association of Schools and Colleges. (https://www.wscuc.org/institutions/stanford-university/)

Stanford Administration

- Marc Tessier-Lavigne, President
- Persis Drell, Provost
- Susie Brubaker-Cole, Vice Provost for Student Affairs
- Sarah Church, Vice Provost for Faculty Development, Teaching and Learning and Vice Provost for Undergraduate Education
- Jon Denney, Vice President for Development
- Stephanie Kalfayan, Vice Provost for Academic Affairs
- Michael Keller, Vice Provost for Technology and Learning
- Farnaz Khadem, Vice President for University Communications
- Randall S. Livingston, Vice President for Business Affairs and Chief Financial Officer
- Megan Pierson, Chief of Staff to the President and Secretary of the Board of Trustees
- Robert Reidy, Vice President for Land, Buildings and Real Estate
- Martin Shell, Vice President and Chief External Relations Officer
- Matthew Snipp, Vice Provost for Faculty Diversity and Engagement
- Robert Wallace, Chief Executive Officer, Stanford Management Company
- Timothy Warner, Vice Provost for Budget and Auxiliaries
- Howard Wolf, Vice President for Alumni Affairs and President, Stanford Alumni Association
- Elizabeth Zacharias, Vice President for Human Resources
- Debra Zumwalt, Vice President and General Counsel

Executive Cabinet

- Marc Tessier-Lavigne, President
- Persis Drell, Provost
- Stacey Bent, Vice Provost for Graduate Education and Postdoctoral Affairs
- Condoleezza Rice, Director, Hoover Institution on War, Revolution and Peace (effective September 1, 2020)
- Stephan Graham, Dean, School of Earth, Energy & Environmental Sciences
- Chi-Chang Kao, Director, SLAC National Accelerator Laboratory
- Jonathan Levin, Dean, Graduate School of Business
- Jenny S. Martinez, Dean, School of Law
- Lloyd Minor, Dean, School of Medicine
- Kathryn Ann "Kam" Moler, Vice Provost and Dean of Research
- Debra Satz, Dean, School of Humanities & Sciences
- Dan Schwartz, Dean, Graduate School of Education
- Jennifer Widom, Dean, School of Engineering

The Board of Trustees

Powers and Duties

The Board of Trustees is custodian of the endowment and all properties of the University. The Board administers the invested funds, sets the annual budget, and determines policies for the operation and control of the University. The powers and duties of the Board of Trustees derive from the Founding Grant, amendments, legislation, and court decrees. In addition, the Board operates under its own bylaws and a series of resolutions on major policy.

Membership

Board membership is set at 38, including the President of the University who serves ex officio and with vote. Trustees serve a five-year term and are eligible for appointment to one additional five-year term. At the conclusion of that term, a Trustee is not eligible for reelection until after a lapse of one year. Eight of the Trustees are elected or appointed in accordance with the Rules Governing the Election or Appointment of Alumni Nominated Trustees. They serve a five-year term.

Officers of the Board

The officers of the board are a chair, one or more vice chairs, a secretary, and an associate secretary. Officers are elected to one-year terms at the annual meeting in June, with the exception of the chair, who serves a two-year term. Their terms of office begin July 1.

Committees

Standing committees of the Board are Audit, Compliance and Risk; Development; Finance; Land and Buildings; Student, Alumni and External Affairs; and Trusteeship. Special committees include Athletics, Compensation, and Investment Responsibility.

Meetings

The Board generally meets five times each year.

Members of the Board of Trustees as of June 1, 2020

- Felix J. Baker, Co-Founder and Managing Partner, Baker Brothers Investments, New York, NY
- Mary T. Barra, Chief Executive Officer, General Motors, Detroit, MI
- Aneel Bhusri, Co-Founder & CEO, Workday, San Francisco, CA
- Michael C. Camuñez, President & CEO, Monarch Global Strategies LLC, Los Angeles, CA
- Michelle R. Clayman, Managing Partner & Chief Investment Officer, New Amsterdam Partners LLC, New York, NY
- RoAnn Costin, President, Wilderness Point Investments, Cambridge, MA
- Dipanjan Deb, CEO & Co-Founder, Francisco Partners, San Francisco, CA
- Katherine B. Duhamel, San Francisco, CA
- Henry A. Fernandez, Chairman and CEO, MSCI Inc., New York, NY
- Angela S. Filo, Co-Founder, Yellow Chair Foundation, Palo Alto, CA
- Sakurako D. Fisher, San Francisco, CA
- Bradley A. Geier, Co-Managing Partner, Merlone Geier Partners, San Diego, CA

- James D. Halper, Senior Advisor, Leonard Green & Partners, Los Angeles, CA
- Ronald B. Johnson, Founder & CEO, Enjoy, Menlo Park, CA
- Marc E. Jones, Chairman & CEO, Aeris, San Jose, CA
- Tonia G. Karr, San Francisco, CA
- Sarah H. Ketterer, CEO, Causeway Capital, Los Angeles, CA
- Carol C. Lam, Attorney, La Jolla, CA
- Christy MacLear, CEO, Pace Experiential/NewCo, New York, NY
- Kenneth E. Olivier, Chairman Emeritus, Dodge and Cox, San Francisco, CA
- Carrie W. Penner, Chair of the Board, Walton Family Foundation, Aspen, CO
- Ruth M. Porat, Chief Financial Officer, Alphabet Inc. and Google Inc., Mountain View, CA
- Laurene Powell Jobs, Founder/President, Emerson Collective, Palo Alto, CA
- Jeffrey S. Raikes, Co-Founder, The Raikes Foundation, Seattle, WA
- Mindy B. Rogers, Atherton, CA
- Victoria B. Rogers, President, Rose Hills Foundation, Pasadena, CA
- Srinija Srinivasan, Palo Alto, CA
- Jeffrey E. Stone, Chairman Emeritus and Senior Partner, McDermott Will & Emery LLP, Chicago IL
- Gene T Sykes, Global Co-Head of M&A & Chairman, Goldman Sachs Group, Inc., Los Angeles, CA
- Marc Tessier-Lavigne, President, Stanford University, Stanford, CA
- Jerry Yang, AME Cloud Ventures, Palo Alto, CA
- Charles D. Young, Chief Operating Officer, Invitation Homes, Dallas, TX

The President

The Founding Grant prescribes that the Board of Trustees shall appoint the President of the University and that the Board shall give to the President the following powers:

- To prescribe the duties of the professors and teachers.
- To prescribe and enforce the course of study and the mode and manner of teaching.
- Such other powers as will enable the President to control the educational part of the University to such an extent that the President may justly be held responsible for the course of study therein and for the good conduct and capacity of the professors and teachers.

The President is also responsible for the management of financial and business affairs of the University, including operation of the physical plant.

The President is responsible for the safety of the campus and may take reasonable steps to protect the University including, but not limited to, barring people from campus who disrupt the normal business operations of the University or who present a threat to the safety of the University community. As an example, in extraordinary circumstances, the President may temporarily or permanently discontinue students who present a threat to the health and safety of the University community.

The President appoints the following, subject to confirmation by the Board: Provost, Vice President for Business Affairs and Chief Financial Officer, Chief Executive Officer of Stanford Management Company, Vice President for Alumni Affairs and President of Stanford Alumni Association, Vice President for Development, Vice President for Public Affairs, Vice President and General Counsel, Vice President for the SLAC National Accelerator Laboratory, and Vice President for Land, Buildings, and Real Estate.

For additional information, see the Office of the President web (http://www.stanford.edu/dept/president/) site.

Committees and Panels Appointed by the President

University Committees are appointed by and are primarily responsible to the President. Such committees deal with matters on which the responsibility for recommendation or action is clearly diffused among different constituencies of the University. In accordance with the Report on the Committee Structure of the University, Academic Council members are appointed to University Committees on nomination of the Senate Committee on Committees and student members on nomination of the Associated Students of Stanford University (ASSU) Committee on Nominations. The President takes the initiative in the appointment of staff members to such committees. Although immediately responsible to the President, University Committees may be called upon to report to the Senate of the Academic Council or the ASSU. Charges to such committees are set by the President on recommendation of the Committee on Committees and others. There are four University Committees, as follows:

- Committee on Athletics, Physical Education, and Recreation (C-APER)
- Committee on Environmental Health and Safety (C-EH&S)
- Committee on Faculty Staff Human Resources (C-FSHR)
- Public Art Committee (PAC)

Additionally there are eleven standing administrative panels which are appointed by the Vice Provost and Dean of Research, and which report through him/her to the President:

- Administrative Panel on Biosafety
- Administrative Panel on Human Subjects in Medical Research-01
- Administrative Panel on Human Subjects in Medical Research-03
- Administrative Panel on Human Subjects in Medical Research-04
- Administrative Panel on Human Subjects in Medical Research-05
- Administrative Panel on Human Subjects in Medical Research-06
- Administrative Panel on Human Subjects in Medical Research-07
- Administrative Panel on Human Subjects in Medical Research-08
- Administrative Panel on Human Subjects in Non-Medical Research-02
- Administrative Panel on Laboratory Animal Care
- Administrative Panel on Radiological Safety

The Provost

The Provost, as the chief academic and budget officer, administers the academic program (instruction and research in schools and other academic units) and University services in support of the academic program (including budgeting and planning, land and buildings, libraries and information resources, and student affairs). In the absence or inability of the President to act, the Provost becomes the Acting President of the University. The Provost shares with the President conduct of the University's relations with other educational institutions, groups, and associations.

Schools of the University

The program of instruction in the University is organized into seven schools:

- Graduate School of Business
- School of Earth, Energy and Environmental Sciences
- Graduate School of Education
- School of Engineering
- School of Humanities and Sciences

- Stanford Law School
- School of Medicine

The deans of the schools report to the Provost.

The Academic Council

Stanford Academic Council (http://academiccouncil.stanford.edu/) web site.

According to the Articles of Organization of the Faculty, originally adopted by the Board of Trustees in 1904 and revised in 1977, the powers and authority of the faculty are vested in the Academic Council consisting of:

1. the President of the University
2. tenure-line faculty: Assistant, Associate, and Full Professor
3. nontenure-line faculty: Associate and Full Professor followed by the parenthetical notation (Teaching), (Performance), (Applied Research), or (Clinical)
4. nontenure-line research faculty: Assistant Professor (Research), Associate Professor (Research), Professor (Research)
5. Senior Fellows in specified policy centers and institutes
6. certain specified officers of academic administration.

In the Spring of 1968, the Academic Council approved the charter for a Senate to be composed of 55 representatives elected by the Hare System of Proportional Representation and, as ex officio nonvoting members, deans of the academic schools and certain major officers of academic administration.

In the allocation of representation, each school constitutes a major constituency. The Senate may create from time to time other major constituencies as conditions warrant. Approximately one-half of the representatives are allocated to constituencies on the basis of the number of students in those constituencies and the remainder on the basis of the number of members of the Academic Council from each constituency.

Committees of the Academic Council

Committees of the Academic Council are created by and responsible to the Senate of the Academic Council and are appointed by the Committee on Committees of the Senate. Such committees deal with academic policy matters on which the primary responsibility for action and decision lies with the Academic Council or, by delegation, the Senate. Pursuant to the Senate's acceptance on September 25, 1969 of the Report from the Committee on Committees on the Committee Structure of the University and subsequent Senate action, the Senate has established seven standing Committees of the Academic Council, as follows:

- Committee on Academic Computing and Information Systems (C-ACIS)
- Committee on Graduate Studies (C-GS)
- Committee on Libraries (C-Lib)
- Committee on Research (C-Res)
- Committee on Review of Undergraduate Majors (C-RUM)
- Committee on Undergraduate Admissions and Financial Aid (C-UAFA)
- Committee on Undergraduate Standards and Policy (C-USP)

The Senate has also created a Planning and Policy Board of the Senate to consider long-range strategic issues of concern to the faculty. Information regarding charges to these committees is available from the Office of the Academic Secretary to the University.

Associated Students of Stanford University (ASSU)

Web Site: http://assu.stanford.edu

All registered undergraduates and graduate students are members of the ASSU. They are governed by the ASSU Constitution and Bylaws, which was last revised and approved by student vote in April 2013.

Executive

The President and Vice President serve as the chief executives and representatives for the Association. The Financial Manager acts as business manager of the ASSU, CEO of Stanford Student Enterprises (SSE), and controller of the Students' Organizations Fund in which ASSU and student organization funds are deposited.

Legislative

There are two legislative bodies, an Undergraduate Senate and a Graduate Student Council, that work together to determine the Association's budgetary, financial, investment, business, and operating policies. In addition, each entity provides funding for student organizations, participates in recommending student appointments to University Committees and advocates on behalf of its constituents. Each body has 15 elected representatives and an elected chair. Both meet regularly to conduct Association business and discuss and act on issues pertinent to student life at Stanford.

UNIVERSITY REQUIREMENTS

Nondiscrimination Policy

Stanford University admits qualified students of any race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity, veteran status, or marital status to all the rights, privileges, programs, and activities generally accorded or made available to students at the University. Consistent with its obligations under the law, in the administration of the University's programs and activities, Stanford prohibits unlawful discrimination on the basis of race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity or expression, veteran status, marital status or any other characteristic protected by applicable law; Stanford also prohibits unlawful harassment including sexual harassment and sexual violence.

This policy applies to Stanford programs and activities both on and off-campus, including overseas programs.

The following person has been designated to handle inquiries regarding this nondiscrimination policy: Stanford's Director of the Diversity and Access Office, Rosa Gonzalez, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (email). Stanford's Title IX Coordinator, Catherine Glaze, has been designated to handle inquiries regarding sexual harassment and sexual violence: Kingscote Gardens (2nd floor), 419 Lagunita Drive, Stanford, CA 94305, (650) 497-4955 (voice), (650) 497-9257 (fax), titleix@stanford.edu (email).

Individuals may also file complaints directly with the Office for Civil Rights, within the United States Department of Education, by following the information on this website: https://www2.ed.gov/about/offices/list/ocr/complaintintro.html.

University Communication with Students

Stanford University uses electronic means (such as email, texts, and the Internet) as a method of communication and of providing billing, payment, and enrollment services. For many University communications, email to a student's Stanford email account is the official form of notification to the student, and emails sent by University officials to such email addresses will be presumed to have been received and read by the student. Signatures or acknowledgements provided by a student electronically to the University via Stanford systems and/or @stanford.edu email are valid and legally binding.

Notification/Obligation to Read Email

For many University communications, email to a student's Stanford email account is the official form of notification to the student, and emails sent by University officials to such email addresses will be presumed to have been received and read by the student. Emails and forms delivered through a SUNet account by a student to the University may likewise constitute a formal communication, with the use of this password-protected account constituting the student's electronic signature.

ADMISSION AND FINANCIAL AID

Nondiscrimination Policy

Stanford University admits qualified students of any race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity, veteran status, or marital status to all the rights, privileges, programs, and activities generally accorded or made available to students at the University. Consistent with its obligations under the law, in the administration of the University's programs and activities, Stanford prohibits unlawful discrimination on the basis of race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity or expression, veteran status, marital status or any other characteristic protected by applicable law; Stanford also prohibits unlawful harassment including sexual harassment and sexual violence.

This policy applies to Stanford programs and activities both on and off-campus, including overseas programs.

The following person has been designated to handle inquiries regarding this nondiscrimination policy: Stanford's Director of the Diversity and Access Office, Rosa Gonzalez, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (email). Stanford's Title IX Coordinator, Catherine Glaze, has been designated to handle inquiries regarding sexual harassment and sexual violence: Kingscote Gardens (2nd floor), 419 Lagunita Drive, Stanford, CA 94305, (650) 497-4955 (voice), (650) 497-9257 (fax), titleix@stanford.edu (email).

Individuals may also file complaints directly with the Office for Civil Rights, within the United States Department of Education, by following the information on this website: https://www2.ed.gov/about/offices/list/ocr/complaintintro.html.

Visas

In order to register as students, Stanford University requires that all those who are not U.S. citizens or U.S. permanent residents obtain and maintain an appropriate visa status for their stay in the United States. The types of student visas sponsored by Stanford include the following:

1. Student Visa (F-1): The F-1 visa is obtained with an I-20 Certificate of Eligibility issued by Stanford University. The graduate student on an F-1 visa must enroll in a full course of study. The accompanying spouse or child enters on an F-2 visa. F-2 visa holders may not hold employment or engage in business under any circumstances. The F-2 spouse of an F-1 student may not engage in full-time study, and the F-2 child may only engage if the study is in an elementary or secondary school (kindergarten through twelfth grade). The F-2 spouse and child may, however, engage in study that is avocational or recreational in nature.
2. Exchange Visitor Visa (J-1): The J-1 visa is obtained with a DS-2019 Certificate of Eligibility issued by Stanford University or a sponsoring agency. This visa is often required for graduate students sponsored by certain agencies, foundations, and governments. In some cases, exchange visitors must leave the United States at the conclusion of their programs, and may not change to non-student visa status, and/or may not apply for permanent residency in the United States until they have returned to their home countries for at least two years. The accompanying spouse or child of an exchange visitor may obtain a J-2 visa and may, in some cases, obtain authorization to work by applying for an Employment Authorization Document from U.S. Citizenship and Immigration Services in order to be employed in the U.S. There is no regulatory restriction on study for J-2 dependents.

The Certificates of Eligibility (I-20 or DS-2019) are issued to admitted students after receipt of certifications of adequate financial support.

An F-1 student transferring from another U.S. school must obtain a new I-20 from Stanford and complete a transfer process at the Bechtel International Center no later than 15 days after the effective date of the transfer. A J-1 student or scholar transferring from another U.S. school must obtain a new DS-2019 from Stanford and complete a transfer process at the Bechtel International Center no later than 15 days after the effective date of the transfer.

Rescission

By applying for admission to Stanford University academic programs, applicants certify that the information they provide in their applications is complete, accurate, and their own work. As also noted in the application materials, Stanford reserves the right to withdraw an offer of admission under certain circumstances, including (but not limited to):

1. if there is a significant drop in academic performance, a failure to graduate (in the applicant's current program), or a failure to satisfy a prerequisite or condition of admission;
2. if there has been a misrepresentation in the application process or a breach of any of the terms of the application process; or
3. if the University learns that an individual has engaged in behavior prior to the first day of enrolled Stanford attendance that indicates a serious lack of judgment or integrity.

Indeed (and for example), Stanford may rescind an individual's admission at any time, including after attendance and after degree conferral, if it determines, for example, that an individual has been admitted to Stanford on the basis of having provided false information; has withheld requested information; or has engaged in behavior prior to the first day of enrolled Stanford attendance that indicates a serious lack of judgment or integrity.

The University reserves the right to require individuals to provide additional information (and/or authorization for the release of information) about any such matter, and to place a hold on registration and/or the conferral of a degree during the investigation into any such matter. Stanford also reserves the right in perpetuity to investigate the authenticity, accuracy, and authorship of materials submitted, information provided, and assertions made in connection with the application.

Similarly, Stanford University awards degrees on the basis of successful completion of all program requirements in accordance with Stanford's policies and procedures. The University reserves the right to rescind any degree or honors designation (even after conferral) if the program requirements have not been so completed, and to place a hold on issuing a degree during the investigation into any such matter.

For academic programs that require work authorization in the United States (such as to serve as a teaching assistant or research assistant), Stanford University reserves the right to rescind the admission and terminate the student status of any student who fails to timely obtain and maintain that work authorization status.

Holds

A hold can be placed on the registration of any student with unmet financial or other University obligations; in addition to being unable to register for and take classes, among other limitations, such a student cannot receive a transcript, statement of completion, degree certificate, or diploma until the hold is released. As a condition of attending Stanford, students accept this provision.

Undergraduate Admission

Stanford's undergraduate community is drawn from throughout the United States and the world. It includes students whose abilities, intellectual interests, and personal qualities allow them to benefit from and contribute to the University's wide range of teaching and research programs in the humanities, natural sciences, social sciences, and

engineering. The University admits students who love learning for its own sake; who exhibit energy, creativity, and curiosity; and who have distinguished themselves in and out of the classroom.

Stanford welcomes a diverse community that cuts across many dimensions. The University does not use quotas of any kind in its admission process: it does not favor particular schools or types of schools, nor any geographic region, nor does it have any racial, religious, ethnic, or gender-related quotas. The University believes that a student body that is both highly qualified and diverse in terms of factors including (but not limited to) culture, socioeconomic status, race, ethnicity, gender, work and life experiences, skills, and interests is essential to the educational process. Having a student body that is diverse in many ways (specifically including race and ethnicity) furthers Stanford's educational mission in that it promotes understanding among those from different backgrounds, contributes to the destruction of stereotypes, prepares students to be positive members of a diverse workforce and national and international communities, and shapes the next generation's leaders. Applications are encouraged from those take initiative and responsibility for their education and who would provide additional dimensions to the University and its programs.

Citizenship and immigration status are not a condition of admission to Stanford. The University welcomes applications from all students who are ready to make the most of the extraordinary academic opportunities available at Stanford. Undocumented undergraduate applicants with questions about admission or financial aid should visit the University's Undocumented at Stanford (https://undocumented.stanford.edu/) website.

In order to preserve the residential character of the University and to maintain a favorable student-faculty ratio, Stanford has a limited undergraduate enrollment. The anticipated size of the entering class is approximately 1,700+ students who are admitted for Autumn Quarter enrollment. Approximately 20-40 transfer students, entering either the sophomore or junior class, are also typically admitted for Autumn enrollment if space allows. Each year, the University receives many more applications from qualified students than there are places available.

Stanford is committed to meeting the University-computed financial need of each admitted student, and admission decisions are made without regard to the applicant's financial status, except in the case of international students who are neither U.S. citizens nor U.S. registered permanent residents.

Application procedures, requirements, and deadlines vary from year to year. See the Undergraduate Admission (http://admission.stanford.edu) website for the most recent information; or call the Office of Undergraduate Admission at (650) 723-2091.

Nonmatriculated Study (Undergraduate)

Permission to enroll at Stanford as a nonmatriculated student during Autumn, Winter, and Spring quarters is not routinely approved except under extenuating circumstances. Nonmatriculated students authorized to enroll at Stanford University are not admitted to any Stanford degree program and are permitted to register for a specific period, usually one, two, or three quarters. Financial assistance from Stanford University is not available. Permission to enroll as a nonmatriculated student does not imply subsequent admission as a matriculated student.

Nonmatriculated status is a privilege and not a right. The University reserves the right, at its discretion, to withhold registration from, or require withdrawal for the program by, any student or applicant. In addition, nonmatriculated status may be revoked at the University's discretion (and after consideration of such factors as the University considers relevant in the particular case) at the end of any quarter of enrollment.

Students interested in nonmatriculated status during the Autumn, Winter, and Spring quarters should contact the Office of the University Registrar, not the Office of Undergraduate Admission. Note: newly admitted Stanford students (that is, those admitted to a Stanford degree program) are not eligible to enroll for nonmatriculated study for any quarter, except with the permission of the Vice Provost for Undergraduate Education (or his or her designee) under extenuating circumstances.

High School Nonmatriculated Students

Local high school students are eligible to be considered to attend Stanford as nonmatriculated students on a limited basis when they have exhausted all of the courses in a given discipline offered by their high school. Nonmatriculated high school students are permitted to enroll in one course per quarter and are required to pay the applicable tuition. Permission from the academic department and the University Registrar is required. The Language Center does not allow high school students to enroll in language courses during the academic year. High school students who are accepted to participate in High School Summer College may enroll in language courses as part of Summer Session, space permitting.

Summer Session

Students wishing to enroll as nonmatriculated students during Summer Quarter should contact the Summer Session Office (http://summer.stanford.edu/) for more information about the Summer Visitor Program (https://summer.stanford.edu/program/undergraduate-domestic-and-international-students/). Admission to the Summer Visitor Program does not imply regular admission to Stanford for subsequent quarters or to one of Stanford's regular degree programs.

Graduate Admission

Matriculated Study (Graduate Students)

Applicants from colleges and universities of recognized standing who hold a U.S. bachelor's degree or its equivalent are eligible to be considered for admission for graduate study. Details regarding degrees offered in specific departments are given on the Graduate Admissions (http://gradadmissions.stanford.edu) web site. The number of applicants who can be admitted for work in a particular field of study at any time is limited by the facilities and programs of the school or department and by the number of matriculated students who continue their work in that field.

As with its undergraduate program (see the Undergraduate Admissions (p. 18) tab in this section of this bulletin), Stanford believes that a graduate student body that is both highly qualified and diverse in terms of factors such as culture, socioeconomic status, race, ethnicity, gender, work and life experience, skills, and interests is essential to the graduate educational process. It particularly welcomes applications from African Americans, Latinos, and Native Americans, as well as from others whose backgrounds and experiences would add additional dimensions to the University's educational programs.

Graduate admissions at Stanford are managed by individual schools; different graduate programs have different work and training requirements. Undocumented students should visit the University's Undocumented at Stanford (https://undocumented.stanford.edu/) web site and refer to the web site of the school they are interested in for admission information.

Honors Cooperative Program

The Honors Cooperative Program (HCP) is a part-time graduate program offered by Stanford University. It allows working professionals, who may be eligible for tuition support through their employer, an opportunity to earn a graduate degree in any of the engineering programs, applied physics, statistics, or biomedical informatics, on a part-time basis.

Prospective HCP students apply to the department in which they would like to pursue a graduate degree through the normal graduate admissions

process, and compete with all other applicants for admission to the program. Once admitted, HCP students arrange their part-time status and tuition payment options through the Stanford Center for Professional Development (SCPD). Courses are delivered online and broadcast locally. HCP students are also welcome to attend certain classes on campus, and some on-campus attendance may be required depending on the degree track.

To participate, HCP students must have the support of their employer as a participating company of the Stanford Center for Professional Development. For more information, see the Stanford Center for Professional Development (SCPD) (http://scpd.stanford.edu) web site, or phone (650) 725-3000.

The Coterminal Degree Program

This program permits matriculated Stanford undergraduates to study for a Master of Arts (M.A.) or Master of Science (M.S.) degree while completing their bachelor's degree(s) in the same or a different department. Application policies and procedures are established by each master's department or program. Interested Stanford undergraduates should directly contact the department or program in which they wish to pursue a master's degree and must adhere to the application deadlines. Stanford undergraduates may also choose to apply to Stanford graduate degree programs through the standard graduate admissions process. Such applicants are not coterminal students and coterminal policies do not apply. For more information, see the Coterminal Degrees (p. 56) section of this bulletin.

Application Process

Specific information regarding test requirements, other application procedures and requirements, and closing dates for filing applications and supporting credentials for admission and financial aid are listed on the Graduate Admissions (http://gradadmissions.stanford.edu) web site.

Graduate fellowship funds and assistantships are generally committed in March for the entire period comprising Autumn, Winter, and Spring quarters of the next academic year. Awards are seldom made to students who enter the University in Winter, Spring, and Summer quarters; such applicants must meet the same financial aid application requirements as those entering in Autumn Quarter.

Applications are to be submitted electronically for graduate programs in the schools of Business, Earth Sciences, Education, Engineering, Humanities and Sciences, and the Biosciences (non-M.D. programs in Medicine). Application instructions may be found at the Graduate Admissions (http://gradadmissions.stanford.edu) web site.

For admission to the following programs, apply directly via the web sites below.

Business

Admission information is available for the M.B.A., MSx Program, and Ph.D. programs at the Stanford Graduate School of Business Admissions (https://www.gsb.stanford.edu/programs/) web site. All applications must be submitted electronically.

Law

Applicants for the J.D. degree should see the Law School J.D. Admissions (https://law.stanford.edu/education/degrees/jd-program/) web site. Applicants for LLM, JSM, JSD, and MLS degrees can find instructions at the Advanced Degree Programs (https://law.stanford.edu/education/degrees/advanced-degree-programs/) web site. These applications are submitted to the Director of Admissions, School of Law, Stanford University, Stanford, CA 94305-8610. The Law School Admissions Test is required.

M.D. Program

Applicants should see the M.D. admissions (http://med.stanford.edu/md-admissions.html) web site or, for additional information about the M.D. program, write to Stanford University School of Medicine, Office of M.D. Admissions, 251 Campus Drive, MSOB X3C01, Stanford, CA 94305-5404. The American Medical College Application Service (AMCAS) application (https://students-residents.aamc.org/applying-medical-school/applying-medical-school-process/applying-medical-school-amcas/) is available at the AMCAS (http://aamc.org) web site. Deadlines for receipt of applications and transcripts are available there.. The Medical College Admissions Test (MCAT) is required.

Rescission

By applying for admission to Stanford University academic programs, applicants certify that the information they provide in their applications is complete, accurate, and their own work. As also noted in the application materials, Stanford reserves the right to withdraw an offer of admission under certain circumstances, including (but not limited to):

1. if there is a significant drop in academic performance, a failure to graduate (in the applicant's current program), or a failure to satisfy a prerequisite or condition of admission;
2. if there has been a misrepresentation in the application process or a breach of any of the terms of the application process; or
3. if the University learns that an individual has engaged in behavior prior to the first day of enrolled Stanford attendance that indicates a serious lack of judgment or integrity.

Indeed (and for example), Stanford may rescind an individual's admission at any time, including after attendance and after degree conferral, if it determines, for example, that an individual has been admitted to Stanford on the basis of having provided false information; has withheld requested information; or has engaged in behavior prior to the first day of enrolled Stanford attendance that indicates a serious lack of judgment or integrity.

The University reserves the right to require individuals to provide additional information (and/or authorization for the release of information) about any such matter, and to place a hold on registration and/or the conferral of a degree during the investigation into any such matter. Stanford also reserves the right in perpetuity to investigate the authenticity, accuracy, and authorship of materials submitted, information provided, and assertions made in connection with the application.

Similarly, Stanford University awards degrees on the basis of successful completion of all program requirements in accordance with Stanford's policies and procedures. The University reserves the right to rescind any degree or honors designation (even after conferral) if the program requirements have not been so completed, and to place a hold on issuing a degree during the investigation into any such matter.

For academic programs that require work authorization in the United States (such as to serve as a teaching assistant or research assistant), Stanford University reserves the right to rescind the admission and terminate the student status of any student who fails to timely obtain and maintain that work authorization status.

Holds

A hold can be placed on the registration of any student with unmet financial or other University obligations; in addition to being unable to register for and take classes, among other limitations, such a student cannot receive a transcript, statement of completion, degree certificate, or diploma until the hold is released. As a condition of attending Stanford, students accept this provision.

Nonmatriculated Study (Graduate Students)

Eligibility for consideration for nonmatriculated enrollment is restricted to two groups of applicants:

1. Stanford alumni who wish to return to Stanford to take courses that are prerequisites for Medical School admission, such as undergraduate Biology or Chemistry courses, are eligible to apply for nonmatriculated status. An application form, application fee, statement of purpose, and three letters of recommendation are required. The decision to admit or deny is made by the Director of Graduate Admissions on the basis of relevant factors, including at least a 3.0 GPA and positive letters of recommendation.
   a. Applicants who graduated from other universities are not eligible to take the prerequisites for Medical School at Stanford.
2. Individuals who hold a bachelor's degree or equivalent and wish to take courses in a specific department that allows non-degree students are eligible to apply for nonmatriculated status. An application form, application fee, statement of purpose, original transcripts, and three letters of recommendation are required. The decision to admit or deny is made by the chair of the department in which they wish to take courses and conveyed in writing to the Graduate Admissions Office. Applicants are notified of the decision by Graduate Admissions in the Office of the University Registrar.

Students who are granted nonmatriculated status are charged the 8-10 unit rate for each quarter in which they are enrolled, and may enroll for a maximum of a total of one academic year. Nonmatriculated status is a privilege and not a right; the nonmatriculated status may be revoked at the University's discretion (and after consideration of such factors as the University considers relevant in the particular case) at the end of any quarter of enrollment.

Nonmatriculated students are not permitted to enroll in certain courses, such as those in the following departments or programs: film and broadcasting courses in Art; introductory courses in Mathematics (i.e., numbered below 100); all courses in Computer Science, Electrical Engineering, International Policy Studies, and the School of Medicine. Nonmatriculated students in the School of Medicine may enroll in courses only with written approval by either the Senior Associate Dean of Graduate Education and Postdoctoral Affairs or the Senior Associate Dean for Medical Education. Nonmatriculated students must limit their enrollment to classes in the department in which they have been admitted. Nonmatriculated students receive academic credit for courses satisfactorily completed and may obtain an official transcript. As a general proposition, they may use University facilities and services. In classes of limited enrollment, students in degree programs have priority. Nonmatriculated students may apply for housing but have a low priority for assignment and are not guaranteed housing. No fellowships, assistantships, or Stanford loans are available for nonmatriculated students. Nonmatriculated students are not eligible for a leave of absence.

Nonmatriculated students who later apply for admission to a degree program must meet the standard admission requirements and should not anticipate special priority because of work completed as a nonmatriculated student. Students who are admitted to a degree program may apply a maximum of 15 units of nonmatriculated study toward the residency requirement for a master's degree and 30 units for the Engineer or Ph.D. degree, subject to the approval of the degree granting department.

Application forms for nonmatriculated status during the regular academic year are available from Graduate Admissions (https://gradadmissions.stanford.edu/about/), Office of the University Registrar. Deadlines for applying are included with the forms and are generally required two months before the start of the quarter.

Applicants interested in nonmatriculated student status for the Summer Quarter only should explore the Summer Session web site (http://summer.stanford.edu/).

Non-Degree-Granting Programs

Stanford University has established a limited number of formal non-degree-granting programs within individual departments. These include the Knight Fellowship Program for mid-career journalists (Communication Department), and the Stegner Fellows Program for selected authors (Creative Writing Program, within the English Department).

Individuals may apply to these programs directly. Application requirements, admissions decisions, tuition requirements and financial support are all handled by the specific program. Individuals who are admitted to these programs will be registered at Stanford as nonmatriculated graduate students in the appropriate program. Upon completion of their program, they will receive a transcript and certificate of program completion.

Individuals who commit violations of University policy, the Honor Code, or the Fundamental Standard are subject to termination. Individuals in non-degree granting programs are subject to removal or discipline according to the program's policies or practices, not through the Office of Community Standards.

Stanford Center for Professional Development

Qualified individuals may pursue graduate and professional certificates or take individual graduate and professional courses through the Stanford Center for Professional Development. Nonmatriculated students taking individual graduate courses for credit, or towards earning a graduate certificate, are charged tuition on a per-unit basis. For more information on available courses, applications, and deadlines visit http://scpd.stanford.edu or phone (650) 725-3000.

Postdoctoral Scholars

Postdoctoral scholars are trainees in residence at Stanford University pursuing advanced studies beyond the doctoral level in preparation for an independent career. Postdoctoral scholars are appointed for a limited period of time and may participate in Stanford research projects and/or may be supported by external awards or fellowships. In all cases, their appointment at Stanford is for the purpose of advanced studies and training under the sponsorship of a Stanford faculty member.

Postdoctoral appointments require initial full-time engagement in the designated research or study and are generally restricted to those who have earned a terminal degree such as Ph.D. or J.D. within the last three years or a medical degree such as M.D., M.B.B.S., or D.D.S. within the last six years. Requests for exceptions for individuals who are beyond these limits, or have not been actively engaged in research as their primary effort, must include a written statement from the sponsoring faculty member indicating what additional training outside the primary area of effort the individual plans to receive, and the reasons for which the exception is requested. Postdoctoral scholars are appointed at Stanford for fixed terms, typically one year but that may eventually total up to four years, and are subject to a strict five-year rule (that is, that the total postdoctoral appointment period is not to exceed a total of five years of postdoctoral research experience at all institutions combined). In cases of combined training, only the years of active research at the postdoctoral level are counted for salary and other purposes. Postdoctoral scholars who begin a second postdoctoral appointment in a new field may have training extended to a maximum total of up to six years. Postdoctoral scholars may request temporary reductions in effort and pay due to temporary family or other conditions.

All postdoctoral scholars appointed at Stanford must be supported by Stanford grants and contracts, training grants, departmental or school fellowship funds, or external fellowships, or by a combination of these sources. Scholars may not be self-supporting. In addition, all postdoctoral scholars are eligible for a benefits package including medical, dental, life, and disability insurance. Postdoctoral scholars are normally appointed for 100% time.

Postdoctoral scholars must be registered at Stanford during every academic quarter of their appointment. Registration entails payment of a quarterly postdoctoral fee by the academic department or school appointing the scholar.

Prospective postdoctoral scholars should write directly to the department in which they wish to study or check for postdoctoral openings at http://postdocs.stanford.edu/prospects/index.html (http://postdocs.stanford.edu/prospects/). For more information, see http://postdocs.stanford.edu.

Visiting Student Researchers

There are a limited number of instances when it would be to the benefit of Stanford faculty to permit graduate students currently enrolled at other universities to engage in research at Stanford using Stanford research facilities. These might include students at other universities who are engaged in research in a field of interest to a Stanford faculty member or a student who is doing a laboratory rotation as part of a larger research study or grant. Such students are known as Visiting Student Researchers (VSRs) and are appointed as nonmatriculated graduate students.

When agreeing to sponsor a VSR, faculty must be mindful of the need to place primary emphasis on providing research opportunities to regularly matriculated Stanford students. In addition, students sponsored as VSRs must be qualified to conduct research at a level comparable to that of other Stanford graduate students and the research must be of benefit to Stanford as well as the visitor.

Any Stanford faculty member in any department at Stanford may sponsor a VSR. The sponsoring faculty member and the department chair must sign the letter of invitation and thus assume responsibility for the VSR. The faculty director of an interdisciplinary program or research center or institute that is sponsoring a VSR may sign instead of a department chair. In most instances, faculty members in a department who also have an appointment in a research center or institute should sponsor a VSR within their department, since department staff have experience with student enrollments and financial policies.

The full Visiting Student Researcher policy is in the Research Policy Guide (RPH 10.7 Visiting Student Researchers (http://exploredegrees.stanford.edu/admissionandfinancialaid/handbook/non-faculty-research-appointments/visiting-student-researchers/)). The Registrar Office's website outlines the procedures for sponsoring and appointing a VSR (https://registrar.stanford.edu/staff/visiting-student-researchers/).

Undergraduate Visiting Researcher Interns (Nonmatriculated Study)

During the summer term, students from other universities who have not yet obtained a bachelor's degree (or its foreign equivalent) may be invited by Stanford faculty to conduct research on the Stanford campus. Participants must be a degree-seeking student for at least two years at the bachelor's level in a U.S. college or university accredited by a regional accrediting association or international college or university of recognized standing. Participation is contingent upon the approval of Graduate Admissions, Office of the University Registrar.

These students are registered as Undergraduate Visiting Research Interns. Appointments are limited to the Summer term. Invited persons must be qualified to conduct research at a level comparable to that of other Stanford undergraduates, and the research must be of benefit to Stanford as well as to the visitor. Forms for the appointment of Undergraduate Visiting Research Interns are submitted to Graduate Admissions, Office of the University Registrar by the department issuing the invitation.

Undergraduate Visiting Researcher Interns are charged a quarterly fee. They may waive the University's student medical insurance plan only if they have comparable coverage with another carrier and submit proof of the comparable coverage prior to the term start date. Visiting Research Interns are not entitled to any financial support from Stanford University. Funds intended for the support of matriculated Stanford students may not be used to support Visiting Researcher Interns. Stanford cannot certify visiting researchers for deferment of U.S. educational loans.

Students of New Faculty

Faculty who are being hired by Stanford University, and who are currently advising doctoral students in advanced stages of degree completion at their home university, may appoint one or more of these students as Students of New Faculty, a nonmatriculated graduate status, for the purpose of facilitating the completion of the student's doctoral research with their faculty adviser. To be eligible for this status, the student must:

- have completed at their home institution all degree requirements equivalent to those required for Stanford's TGR status (i.e., completed all curricular requirements, candidacy, and residency), and
- be in good academic standing at their home institution, and remain so while at Stanford, and
- demonstrate agreement to the terms and conditions for this appointment by signing the Students of New Faculty Representations.

Appointment of these students into nonmatriculated Stanford graduate status requires the approval of the incoming faculty member, that faculty member's Stanford department chair and school dean, and Stanford's office of the Vice Provost for Graduate Education, as well as of the appropriate office at the student's home institution.

Approval for these appointments is documented by means of an Affiliation Agreement between Stanford and the student's home institution, identifying the student(s) and describing the arrangements for their appointment at Stanford. Attachments to this agreement specify the timing of the appointment and the sources of financial support, if any, for each student.

Students are appointed into this status for one year at a time, up to a limit of three years. The Stanford department may request extensions beyond the third year. Approval for extensions requires the concurrence of the Stanford school dean's office and the Vice Provost for Graduate Education, along with the appropriate office(s) at the student's home institution.

Students of New Faculty must enroll in the appropriate TGR course during each quarter of the academic year while they are at Stanford, and will be charged TGR tuition during each enrolled quarter. Summer enrollment is optional subject to the relevant policies of Stanford and of the home institution. Students of New Faculty may be appointed and paid as Research Assistants. For more information, see GAP 2.4.1 (https://gap.stanford.edu/handbooks/gap-handbook/chapter-2/subchapter-4/page-2-4-1/).

Undergraduate Financial Aid

The University has a comprehensive need-based financial aid program for its undergraduates. Stanford is committed to meeting the University-computed financial need of each admitted student, and admission decisions are made without regard to the applicant's financial status,

except in the case of international students who are neither U.S. citizens nor U.S. registered permanent residents.

Before awarding institutional funds, the University assumes that students and their parents accept the first and primary responsibility for meeting educational costs. Stanford's policy generally is to exclude undergraduates from being considered financially independent of their parents for University-administered scholarship aid unless a student is an orphan, a ward of the court, or at least 25 years of age. Spouses of married undergraduate students share in the responsibility to meet educational costs.

Stanford expects financial aid applicants to apply for and use resources from state, federal, and private funding sources, contribute from their earnings during nonenrollment periods (for example, summer), and use earnings from part-time employment during the academic year to meet educational expenses. If Stanford determines that an applicant and his or her family cannot meet standard educational expenses remaining after these resources are applied, the University offers scholarship funds to help meet remaining costs.

The amount of scholarship or grant funds offered to students is determined by the difference between the comprehensive cost of attendance (including tuition, fees, room, board and allowances for books, supplies, personal expenses, and travel) and the amount the student and parents can reasonably be expected to contribute toward educational costs based on family financial circumstances. Scholarships from outside sources may change the University's financial aid award. When a student receives outside scholarships, these funds reduce or eliminate the student's responsibility to contribute from job earnings. If the total in outside scholarships exceeds the student's responsibility, the University then reduces institutional scholarship, dollar for dollar, by any additional amount.

Students are considered for University scholarship eligibility during their first four years of undergraduate enrollment. The Financial Aid Office (FAO) considers applicants for University scholarship eligibility beyond the twelfth quarter only if enrollment is essential in order to complete the minimum requirements for the first baccalaureate degree or major. Students who enroll for a fifth year in pursuit of a coterminal program, a minor, a second major, a second degree, or the B.A.S. degree are not eligible for University scholarship consideration but may apply for student loans and federal grants. Eligibility for federal student aid is limited to the equivalent of 18 quarters of full-time undergraduate enrollment, including course work taken at other colleges and universities. Students must also maintain satisfactory academic progress to retain financial aid eligibility.

For additional detailed information, refer to the FAO (http://financialaid.stanford.edu) web site.

Graduate Financial Aid

Graduate students at Stanford receive funding from a variety of sources. University fellowships, research assistantships, and teaching assistantships are offered primarily to doctoral students. In some cases, master's students also may receive fellowships and assistantships. In addition, outside agencies provide fellowships to many graduate students at Stanford. Students without fellowships or assistantships, and those whose funding does not cover all of their costs, may need to use student loans, savings, other personal assets, a spouse's earnings, or parental support to meet their educational expenses.

Veterans Education Benefits

The Office of the University Registrar serves as the liaison between the University, its students, and the various federal, state, and local agencies concerned with Veterans education benefits. Stanford certifies enrollment for students in degree seeking programs and VA approved certificate programs offered through the Stanford Center for Professional Development and Graduate School of Business. Other non-matriculated and certificate programs are not eligible. All students eligible to receive Veterans education benefits while attending the University are urged to complete arrangements with the appropriate agency in advance of enrollment.

Stanford University is required to certify only those courses that meet minimum graduation requirements. Courses not directly related to a student's degree program or courses beyond those required for a specific degree program are not certified. Undergraduates should meet with an advisor to develop a course enrollment plan. Graduate students should have their departments approve their study lists as meeting graduation requirements on a quarterly basis.

To comply with federal regulations concerning credit for previous training (38 CFR 21.4253), Stanford University is required to evaluate all previous education and training completed elsewhere to determine what credit, if any, should be granted to students eligible to receive Veterans educational benefits. Stanford is required to complete an evaluation; credit is granted when appropriate. Credit is evaluated toward the degree program registered with Veterans Affairs as determined by the Office of the University Registrar in conjunction with the relevant academic department(s) or program(s). All relevant policies regarding transfer credit apply. In addition, this evaluation occurs each time a student's degree program is changed.

Subject to current federal and University guidelines, students eligible for receipt of VA educational benefits have their prior education and training evaluated up to the credit limits outlined in the "Residency Policy for Graduate Students (p. 72)" section of this bulletin. As an exception to that policy, students in master's programs in the schools of Earth Sciences, Education, Engineering, Humanities and Sciences, Law, Medicine, and Graduate Business are allowed a maximum of 6 transfer (quarter) units. Students should consult with the VA Certifying Officer for consideration of optimal use of VA education benefits.

Stanford participates in the Yellow Ribbon provision of the Post 9/11 GI Bill (Ch. 33). If a matriculated student qualifies for Chapter 33 benefits at the 100% level, the student may be eligible to receive additional funding through the Yellow Ribbon Program. Under this program, Stanford provides an institutional award to supplement the Chapter 33 base tuition benefit. The VA also matches Stanford's Yellow Ribbon contribution. The amount of institutional contribution varies by school and program. See the U.S. Department of Veteran's Affairs Yellow Ribbon web site (https://www.benefits.va.gov/gibill/yellow_ribbon/yellow_ribbon_info_schools.asp) for additional information.

See the Office for Military Affiliated Communities (OMAC) website (https://military.stanford.edu/students/activate-va-education-benefits-stanford/) for additional information about Veterans education benefits.

TUITION, FEES, AND HOUSING

University Communication with Students

Stanford University uses electronic means (such as email, texts, and the Internet) as a method of communication and of providing billing, payment, and enrollment services. For many University communications, email to a student's Stanford email account is the official form of notification to the student, and emails sent by University officials to such email addresses will be presumed to have been received and read by the student. Signatures or acknowledgements provided by a student electronically to the University via Stanford systems and/or @stanford.edu email are valid and legally binding.

Notification/Obligation to Read Email

For many University communications, email to a student's Stanford email account is the official form of notification to the student, and emails sent by University officials to such email addresses will be presumed to have been received and read by the student. Emails and forms delivered through a SUNet account by a student to the University may likewise constitute a formal communication, with the use of this password-protected account constituting the student's electronic signature.

Obligation to Pay Charges

By accepting Stanford's offer of admission and enrolling in classes, each student accepts responsibility for paying all debts to the University, including tuition and fees, for which he or she is liable. An individual's registration as a Stanford student constitutes his or her agreement to make timely payment of all amounts due. Stanford students have access to financial literacy resources through the Mind Over Money program (https://mindovermoney.stanford.edu) including the Haven Money (https://sfs.stanford.edu/haven-money-management-tool/) tool and 1:1 financial coaching for personal finance education.

For complete tuition information, see the Registrar's tuition (https://registrar.stanford.edu/students/tuition-and-fees/) web site.

Quarterly tuition for the academic year 2020-21, payable Autumn, Winter, Spring, and Summer quarters.*

**In academic year 2020-21, tuition and fees are the same throughout each quarter. To review changes to instruction this year, visit the Re-Approaching Stanford website.*

Tuition Category	Tuition
Undergraduate	$18,491
Graduate 11-18 units	$18,105
Graduate 8,9,10-unit rate	$11,770
Each graduate unit above 18	$1,207
Graduate Engineering 11-18 units	$19,287
Graduate Engineering 8,9,10-unit rate	$12,540
Each graduate Engineering unit above 18	$1,286
Graduate School of Business (M.B.A. program—first year)*	$24,902
Graduate School of Business (M.B.A. program—second year)*	$24,354
School of Medicine (M.D. Program)*	$20,731
Law School	$21,450
GSB & Law Joint Program**	$22,444
Permit for Services Only (PSO)	$5,476
Permit to Attend (PTA)***	$5,476
TGR (Terminal Graduate Registration)	$3,531
Medical School Research Rate	$3,531

*Ph.D. students in the Biomedical Sciences and in the Graduate School of Business are assessed the standard graduate tuition rate.
**Law/GSB joint program tuition rate
***Policies concerning auditing are available in the Stanford Bulletin (p. 98).

- MSx: M.S. in Management for Experienced Leaders (GSB): TBD (annual, 4 quarters, Summer 2020 through Spring 2021)
- TGR students who carry 1, 2, or 3 units are assessed the TGR rate of $3,531.
- PostDoc Fee: $125
- Graduation Quarter: $150
- Campus Health Services Fee: $232
- VSR monthly fee: $1,177

Regular tuition fees apply to the undergraduate Overseas Studies and Stanford in Washington programs.

Eligibility for registration at reduced tuition rates is described below. Tuition exceptions may also be made for illness, disability, pregnancy, new-parent relief, or other instances at the discretion of the University. No reduction in tuition charges is made after the first two weeks of the quarter.

All students are advised, before registering at less than the regular full-tuition rate, to consider the effects of that registration on their degree progress and on their eligibility for financial aid and awards, visas, deferment of student loans, and residency requirements.

The University reserves the right to change at any time, without prior notice, tuition, room fees, board fees, or other charges.

Document Fee

A Document Fee of $250 is assessed once upon the first admission to Stanford as an undergraduate or graduate student, including Law, GSB, and Medicine students. Non-degree option (NDO) students, such as summer session and non-degree seeking SCPD students, are assessed a $125 Document Fee.

Tuition and Fees for 2020-21

Some or all instruction for all or part of the academic year 2020-21 may be delivered remotely. Tuition and mandatory fees have been set regardless of the method of instruction and will not be refunded in the event instruction occur remotely for any part of the academic year.

Undergraduate Student Tuition

During Autumn, Winter, and Spring quarters, undergraduates are expected to register at the regular full-tuition rate.

During Summer Quarter, Stanford undergraduates may register on a unit-basis. For Summer Quarter tuition rates and policies, see the Registrar's Summer tuition (https://registrar.stanford.edu/summer-tuition/) web site.

The following reduced-tuition categories can be requested by matriculated undergraduate students in the final stages of their degree program:

1. Permit to Attend for Services Only (PSO)

Undergraduates completing honors theses, clearing incompletes, or requiring a registration status, and who meet the PSO conditions listed in the "Special Registration Statuses (Undergraduate) (p. 41)" section of this Bulletin, may petition for PSO status one time only in their terminal quarter.

2. 13th Quarter

Undergraduates who meet the 13th Quarter conditions listed in the "Special Registration Statuses (Undergraduate) (p. 41)" section of this Bulletin may petition one time only to register for a minimum of eight units. For per-unit tuition rates, see the Registrar's tuition web site.

3. Graduation Quarter

Undergraduates may petition to register for Graduation Quarter registration status in the quarter in which they are receiving a degree if they are not using any University resources (including housing), have completed all University requirements, and meet the Graduation Quarter conditions listed in the "Special Registration Statuses (Undergraduate) (p. 41)" section of this bulletin. Graduation Quarter may be permitted one time only. The tuition for the Graduation Quarter is $150.

Coterminal students are only eligible for the Graduation Quarter special registration status if they are applying to confer both the undergraduate and graduate degree in the same quarter.

Coterminal Student Tuition

Coterminal students are assigned to either the undergraduate coterminal tuition group or the graduate coterminal tuition group, which dictates whether the student is charged undergraduate or graduate tuition. A coterminal student is subject to graduate tuition assessment and adjustment policies once placed in the coterminal graduate tuition group. Coterminal students are not eligible for undergraduate special registration statuses (with the exception of Graduation Quarter if the student is applying to confer both their undergraduate and graduate degrees in the same quarter). Coterminal students may only be eligible to apply for graduate special registration statuses once their undergraduate degrees have been conferred. Coterminal students should see the student policies and procedures for tuition assessment, as described in the "Coterminal Degrees (p. 57)" section of this bulletin.

Graduate Student Tuition

Matriculated graduate students are expected to enroll for at least eight units during the Autumn, Winter, and Spring quarters. Schools and departments may set a higher minimum. During the Autumn, Winter, and Spring quarters, matriculated graduate students in most departments may register at the reduced 8-, 9-, or 10-unit tuition rate if their enrollment plans are accepted by their departments. Students in the Stanford Law School, the MBA program in the Graduate School of Business, or the M.D. program in the School of Medicine, should consult appropriate school officers about tuition reduction eligibility.

Graduate students who are enrolled in more than one graduate degree at Stanford, where each program charges different tuition, are charged:

1. the tuition associated with a degree in the doctoral/professional category, if the other degree is in the master's category. Those degrees in the doctoral or professional category for tuition purposes are the Ph.D., D.M.A., J.S.D., M.D., and J.D. degrees. Those degrees in the master's category for tuition purposes are the Engineer, M.A., M.S., M.P.P., M.B.A., M.F.A., L.L.M., M.L.S., and J.S.M. degrees.
2. the higher tuition rate, if both degrees are in the same category.
3. a University-approved tuition rate if the student is in a special program for which specific tuition agreements have been approved by the Faculty Senate (e.g., all joint degree programs (JDPs) or the Master of Science in Medicine program).

As a general proposition, during the Summer Quarter registration is not required by Stanford University and does not substitute for registration during the academic year. Students are required to be enrolled Summer Quarter if, during that quarter, they will meet any of the criteria listed in the "Enrollment Requirements (p.)" section of the "Graduate Degrees" section of this bulletin. Graduate students who do enroll Summer Quarter may reduce their enrollment to a minimum of one unit (charged on a per-unit basis) unless the terms of a fellowship or other financial support, or of their particular degree program, require a higher level of enrollment. TGR students who enroll in summer pay the TGR rate and must enroll in the required zero-unit course. Students in the schools of Law, Business, or the M.D. program should consult appropriate school officers regarding summer enrollment requirements. Students possessing an F1 or J1 student visa may be subject to additional course enrollment requirements in order to retain their student visas.

Honors Cooperative students register at the per-unit rate. Graduate students who are faculty spouses, regular Stanford employees, or full-time educators in the Bay Area may also register at the per-unit rate.

Non-matriculated graduate students pay the same tuition rates as matriculated students but must register for at least 8 units. Visiting Student Researchers pay a monthly fee; they may not enroll in or audit courses. Within certain restrictions, postdoctoral scholars may enroll in courses if the appropriate unit rate for tuition is paid.

The following reduced-tuition categories can be requested by matriculated graduate students in the final stages of their degree programs:

1. Terminal Graduate Registration (TGR)

Doctoral students, master's students, and students pursuing Engineer degrees who have completed all degree requirements other than the University oral exam and dissertation (doctoral students) or a required project or thesis (Engineer or master's students) and meet the conditions listed in the "TGR (p. 79)" section of this bulletin may request Terminal Graduate Registration tuition status.

Each quarter, TGR students must enroll in the 801 (for master's and Engineer students) or 802 (for doctoral students) course in their department for zero units, in the appropriate section for their adviser. TGR students register at a special tuition rate as outlined above. TGR students may enroll in up to 3 units of course work per quarter at this tuition rate. Within certain restrictions, TGR students may enroll in additional courses at the applicable unit rate. The additional courses cannot be applied toward degree requirements since all degree requirements must be complete in order to earn TGR status.

2. Graduate Petition for Part-time Enrollment (formerly Graduate Tuition Adjustment)

Graduate students who need only 3 to 7 remaining units to complete degree requirements or to qualify for TGR status may apply to register for one quarter only on a unit basis (3 to 7 units) to cover the deficiency. Students with disabilities covered under the Americans with Disabilities Act that have an approved reduced course load recommended by the Office of Accessible Education (OAE) (https://oae.stanford.edu/) may also request a tuition adjustment for *each* quarter in which they take a reduced course load. For per-unit tuition rates, see the Registrar's tuition (https://registrar.stanford.edu/students/tuition-and-fees/) web site.

3. Graduation Quarter

Registration is required for the term in which a student submits a dissertation or has a degree conferred. Students who meet the conditions listed in the "Graduation Quarter (p. 79)" section of this bulletin are eligible to be assessed a special tuition rate of $150 for the quarter in which they are receiving a degree.

International Students

F-1 or J-1 visas are required by the U.S. Department of Homeland Security. International students must be registered as full-time students during the academic year. Summer Quarter registration is not required unless the I-20/DS-2019 notes the Summer Quarter as the start date. International graduate students comply with immigration regulations while enrolled for partial tuition if their Stanford fellowships or assistantships require part-time enrollment, if they are in TGR status, or if they are in the final quarter of a degree program. Nonmatriculated graduate students who are international students must register for at least 8 units.

Fees noted with an asterisk(*) have been updated for the 2020-21 Academic Year.

Application Fee

Contact the Undergraduate Admission Office (http://admission.stanford.edu/) for information about the undergraduate application fee and the Graduate Admission (http://gradadmissions.stanford.edu/) section of the Office of the University Registrar for the current graduate application fee. Application fees for the School of Law, the School of Medicine, and the Graduate School of Business vary by program. Fees are payable at the time of application and are not refundable.

ASSU Fees*

The Associated Students of Stanford University (ASSU) fees are established by student vote in Spring Quarter. Fees directly fund activities of student organizations and not operations of ASSU. The 2020-21 fees are:

- Undergraduates—$100 Autumn Quarter. Winter, Spring, Summer rate is TBD.
- Graduate Students—$35 Autumn Quarter. Winter, Spring, Summer rate is TBD.

ASSU fees are assessed in Autumn, Winter, and Spring quarters and can be waived subject to certain conditions*. Waivers can be requested during the first three weeks of each quarter. The window for requesting waivers begins on the first Monday of each quarter and remains open for three calendar weeks. Contact the ASSU (http://assu.stanford.edu/) for details. Waivers granted result in a credit to the student's University bill.

**This fee will be assessed for each quarter (Autumn, Winter, Spring, and Summer) during the 2020-21 Academic Year.*

Document Fee

Stanford charges a one-time Document Fee to all students admitted to a new degree or non-degree program. The fee is paid once only, regardless of the number of degrees a student may ultimately pursue. It covers the cost of a variety of University administrative services such as enrollment and degree certification, course drops, and adds done in Axess before published deadlines, diplomas, and official transcripts and their production.

The document fee for students admitted to a new degree or non-degree programs in 2019-20 is $250.

Campus Health Service Fee*

All students enrolled on the main Stanford campus are required to pay the Campus Health Service Fee. The Campus Health Service Fee covers most of the services provided by Vaden Health Center, including primary care medical visits, psychological evaluation and short-term therapy at Counseling and Psychological Services (CAPS), and health and wellness programs. The services provided by Vaden Health Center are not covered by Cardinal Care or a student's private health insurance. More information and answers to questions about the fee can be found at the Campus Health Service Fee (https://vaden.stanford.edu/about/fees/campus-health-service-fee-health-fee/) web site. The fee for 2020-21 is $232 per quarter.

**This fee will be assessed for each quarter (Autumn, Winter, Spring, and Summer) during the 2020-21 Academic Year.*

Health Insurance*

The University requires all registered students to carry medical insurance to provide coverage for services not provided by Vaden Health Center. Those who carry medical insurance through an alternate carrier are generally eligible for a waiver of the Stanford Cardinal Care health insurance plan. Students are automatically enrolled in and charged for the Stanford student health insurance plan, Cardinal Care, unless they have completed waiver procedures by the waiver deadline.

For complete information on health insurance, see the Vaden Health Center Insurance (http://vaden.stanford.edu/insurance/) web site.

**This fee will be assessed for each quarter (Autumn, Winter, Spring, and Summer) during the 2020-21 Academic Year.*

Special Fees

New Student Orientation Fee

A fee is charged to all entering undergraduates for the costs of orientation, including room and board, and for the cost of class dues to provide funds for later activities of the class.

Law Student Services Fee

A fee is charged each quarter to School of Law students for supplementary course materials.

Graduate School of Business M.B.A. Course Reader Fee

A fee is charged each quarter to M.B.A. students in the Graduate School of Business to cover the cost of in-class handouts and licensing fees.

Late Study List Fees

Charges are imposed for late submission of study lists. The amount is $200.

Laboratory Fee

Students in chemistry laboratory courses are charged a nonrefundable fee.

Course Fees

Courses for which special fees are charged, such as in Music Practice; Athletics, Physical Education, Recreation; and Dance, are indicated in the notes of the scheduled class on Axess (http://axess.stanford.edu) or ExploreCourses (http://explorecourses.stanford.edu).

Dissertation Fee

Each Ph.D. and D.M.A. candidate has the option to either submit electronically or on paper. Electronic submission is free. Students who choose to submit on paper are charged a fee to cover the cost of microfilming and binding the dissertation and the cost of publishing the abstract.

International Scholar Service Fee

A one-time fee for visa authorization documents is charged to international postdoctoral and visiting scholars.

Housing

University housing is available to enrolled Stanford degree-seeking undergraduates and graduate students and non-matriculated graduate students as space permits and according to policies described on the R&DE Student Housing (http://studenthousing.stanford.edu/) web site. Residential and Dining Enterprises (R&DE) Student Housing is responsible for managing and maintaining student residences, assigning students to housing, and operating the regional housing front desks. Information on university housing assignments, options, policies, application procedures, and deadlines may be obtained on the R&DE Student Housing (http://studenthousing.stanford.edu) web site, by telephone at (650) 725-2810, or by email at studenthousing@stanford.edu (housingassignments@lists.stanford.edu). Current and prospective students may also contact R&DE Student Housing by filing a ServiceNow (http://stanford.service-now.com/student_services/?id=sc_cat_item&sys_id=2e1c15ef13e8a74019813598d144b0f7) request. Information regarding off-campus housing may be obtained from the Community Housing (http://offcampus.stanford.edu) section of the R&DE Student Housing web site, by telephone at (650) 723-3906, or by email at communityhousing@stanford.edu. Due to COVID-19 our office at 408 Panama Mall, Suite 101, Stanford University, Stanford, CA 94305 is closed to in-person assistance.

Residential Education (http://resed.stanford.edu) (650-725-2800) and the Graduate Life Office (http://glo.stanford.edu) (650-736-7078) are responsible for residential education staff, educational programs, counseling, and crisis intervention in undergraduate and graduate housing respectively.

Housing Rates

Complete information on housing (https://rde.stanford.edu/studenthousing/housing-options/) is available on the R&DE Student Housing web site. Campus housing rates are generally below local area market rents.

- See Assignments and Contracts (https://rde.stanford.edu/studenthousing/assignments-contracts/) to learn how to apply for upperclass undergraduate, single graduate, couple without children, or student with children housing.
  - Undergraduate Housing: The R&DE Autumn Housing Allocation Website (https://rde.stanford.edu/studenthousing/2020-21TheAutumnHousingAllocation/) includes information about undergraduate housing and the 2020-21 Autumn Housing Allocation process, including rates.
  - Graduate Housing: Application information, descriptions of the graduate housing options, including rates are available at thelottery.stanford.edu (http://exploredegrees.stanford.edu/tuitionfeesandhousing/thelottery.stanford.edu).
- Rates for 2020-21 are posted online:
  - Undergraduate residence rates chart (https://rde.stanford.edu/studenthousing/undergraduate-residences-rates-chart-2018-19/)
  - Graduate residence rates chart (https://rde-stanford-edu.s3.amazonaws.com/Housing/PDF/2020-21_Grad_ResChart.pdf) (pdf)

All on-campus rates are per student and include utilities and coinless laundry. Off-campus, subsidized housing rates include utilities, but not laundry. Room rates are charged quarterly on the university bill. Information on payment options and procedures is discussed in assignment information sent out by R&DE Student Housing and in the "Payments" section of the Stanford Bulletin.

House Dues

A quarterly house dues fee for students is generally determined by the local residence staff and/or residents of each house and may be included with room and board charges on the university bill.

Technology Fee

Students who live in housing are automatically assessed a technology fee on their university bill that covers in-room network connections and a landline phone with telephone service (service provided on campus only).

Undergraduate Residences

Approximately 97 percent of undergraduates live in university housing, excepting students studying abroad during the academic year. All freshmen are required to live in on campus residences their first year and are automatically assigned housing following admission. Information on the housing assignment process is included in the R&DE Student Housing (https://undergrad.stanford.edu/advising/approaching-stanford/approaching-stanford-forms/first-year-housing-preferences/) section of Approaching Stanford (http://approaching.stanford.edu). Because freshmen must live in campus housing, losing eligibility for University housing also leads to a loss of student status until the student has returned to university housing unless an extraordinary exemption is granted from the Office of the Vice Provost for Undergraduate Education.

Residence assignments for continuing undergraduates are made on the basis of an annual lottery, called the Draw, and quarterly assignment rounds. Undergraduates are guaranteed four years of University housing (three years for transfer students) if:

1. they are in compliance with the university housing agreement and university policies,
2. they apply by the appropriate deadlines, and
3. they are willing to live anywhere on campus.

Undergraduate residences include traditional residence halls, language and culture theme houses, cross-cultural theme houses, student-managed and cooperative houses, apartments, suites, fraternities, and sororities.

Graduate Residences

Approximately 66 percent of matriculated graduate students live in housing provided by R&DE Student Housing, both on campus and off campus. Residence assignments are made on the basis of an annual lottery and quarterly assignment rounds. New matriculated students are guaranteed university housing for their first year of study if:

1. they are in compliance with the university housing agreement and university policies,

2. they apply by the first round application deadline for the autumn term, and
3. they are willing to live in any residence for which they are eligible

At Stanford University, new matriculated students are students who are in a graduate program for the first time. Students starting a second graduate degree are not considered new students and therefore are not guaranteed housing.

Coterminal students who opt to live on campus are required to live in undergraduate housing for the duration of their four years of guaranteed undergraduate housing regardless of their student status. Once these four years have been used, students can apply in the annual spring Lottery for graduate housing, where they apply with a low priority. Coterminal students are not guaranteed housing and are assigned after new first-year graduate students who are guaranteed housing and continuing students with remaining priority years.

Academic-year assignment priorities for graduate students are detailed on the Assignment Guarantee and Priorities (https://rde.stanford.edu/studenthousing/assignment-guarantee-and-priorities/) page of the R&DE Student Housing web site. Priorities are dependent upon degree level and number of years each student has already lived in housing.

Single graduate students may request assignment to furnished graduate apartments in a variety of configurations.

- Studios (private living/bedroom area, bath and kitchen)
- Shared premium two- and four-bedroom apartments (private bedroom and bath, shared kitchen and living/dining room)
- Shared standard two-, three- and four-bedroom apartments (private bedroom, shared bath, kitchen and living/dining room)
- Shared junior two-bedroom, two bath apartments (private bedroom and bath, shared eat-in kitchen, no living room)
- Shared junior two-bedroom, one bath apartments (private bedroom, shared bath, eat-in kitchen, no living room)

Couples housing is available to students who are married and to students who have a same-sex or opposite-sex domestic partner who is living with them at least 50% of each week. At Stanford University, a domestic partnership is defined as an established, long-term romantic partnership with an exclusive mutual commitment in which the partners share the necessities of life and ongoing responsibility for their common welfare. Couples without children may request assignment to a variety of furnished configurations.

- One-bedroom apartments (private bedroom, small den, kitchen and living/dining room)
- One-bedroom apartments with den (private bedroom and bath, small den, kitchen and living/dining room) - only a limited number available for two-student couples
- Two-bedroom apartments (private bedroom and bath, study room, kitchen and living /dining room) - only a limited number available for two-student couples
- Premium two bedroom, two bath apartments (private bedroom, two-baths, study room, kitchen and living /dining room)
- Premium studios (private living/bedroom area, bath and kitchen)
- Standard studios (smaller private living/bedroom area, bath and kitchen)

Housing for students with children is available to married couples, domestic partners, and single parents who have dependent children living with them at least 50% of each week. Housing is not provided for extended families. Parents/siblings of students and live-in day care staff are not permitted to live in university housing. Furnished apartments are available for students with children, based on the number of dependents.

- Two-bedroom apartments (two bedrooms, one bath, kitchen and living /dining room)
- Three-bedroom apartments (three bedrooms, one bath, kitchen and living /dining room)
- Four-bedroom apartments (four bedrooms, one bath, kitchen and living /dining room)

Community Housing

Community Housing provides resources to assist students in locating private rooms, houses, and apartments available for rent in surrounding communities. Students must make rental arrangements directly with landlords. An online listing service (https://rde.stanford.edu/studenthousing/housing-listings/) facilitates the process of making connections. Information on community housing may be obtained from the Community Housing (http://offcampus.stanford.edu) web site, by telephone at (650) 723-3906, or by email at communityhousing@stanford.edu. Due to COVID-19 our office at 408 Panama Mall, Suite 101, Stanford University, Stanford, CA 94305 is closed to in-person assistance.

Note that Stanford University does not investigate, endorse, or guarantee the accuracy of the information provided by any listing, or the condition of the accommodation. Furthermore, the University assumes no responsibility for housing arrangements made by persons using any of these services.

Meal Plans

For information on meal plans, see the meal plan rate page (https://rde.stanford.edu/dining/mealplans/) on the R&DE Stanford Dining website (http://dining.stanford.edu/).

Stanford University's Residential Education program promotes the philosophy that living and learning are integrated and that formal teaching, informal learning, and personal support in residences are integral to a Stanford education. Meals play a key role in this mission of community building, leading, and learning. Therefore, residents of designated university residence halls (Branner, Crothers/Crothers Memorial, Florence Moore, Gerhard Casper, Lakeside, Ricker, Stern, Toyon, Wilbur, Yost, Murray, and EAST) are required to participate in an R&DE Stanford Dining Meal Plan. R&DE Stanford Dining is "Committed to Excellence" by providing meal plans that offer significant value, the highest quality, and most flexibility of dining across campus, along with a daily variety of delicious, nutritious options including vegetarian (https://rde.stanford.edu/dining/vegetarian-vegan-dining/), vegan (https://rde.stanford.edu/dining/vegetarian-vegan-dining/), nut-free (https://rde.stanford.edu/dining/ricker-dining/), kosher (https://rde.stanford.edu/dining/kosher-dining-program-florence-moore/), and halal (https://rde.stanford.edu/dining/halal-options/). The Food Allergies @Stanford (https://rde.stanford.edu/dining/food-allergies/) program offers support and dining accommodations to students with food allergies or other dietary concerns. During Spring Break, to accommodate those staying on campus, Arrillaga Family Dining Commons is open for student meals.

All freshmen and upperclass students living in the above houses can choose an R&DE voluntary meal plan which offers expanded flexibility and numerous options for on campus use. Residents of Yost, Murray, and EAST have a dedicated row meal plan. Students assigned to the Governor's Corner Suites and the remaining row houses are required to purchase either a Dining Societies meal plan (Suites), or a house meal plan (managed through their self-operated or co-op row house staff).

Students are allowed to switch meal plans up until the last two weeks of the quarter. Meal plans are billed on a quarterly basis, and the cost is determined by the number of service days in each quarter. Cardinal Dollars do not expire and carry over from year to year as long as you are enrolled as a student. The remaining Meal Plan Dollar balance carries over at the end of each quarter and can be used throughout the academic

year as long as the student is enrolled in a meal plan. All Meal Plan Dollars expire at the end of Summer Quarter. Meal Plan Dollars provided per quarter as part of the Ultimate Flex, Premier Flex, Cardinal Select and Cardinal Light plans vary depending on the number of days in each quarter.

Meal Plans

Undergraduate students living in Branner, Crothers/Crothers Memorial, Florence Moore, Gerhard Casper, Lakeside, Ricker, Stern, Toyon, and Wilbur are required to be at a minimum on one of the Cardinal mandatory meal plans (Classic, Select and Light), but can choose to switch meal plans at any time, until the last two weeks of each quarter.

Cardinal Classic

- 19 meals per week served only in the dining halls
- 5 guest meals per quarter
- During home football games, a meal swipe can be used at the Stanford Stadium

Cardinal Select

- 14 meals per week plus 420 Meal Plan Dollars and 5 guest meals per quarter
- All 14 meals are served in the dining halls
- Meal Plan Dollars can be used in the dining halls, most R&DE cafés, Munger Market and late night venues
- During home football games, a meal swipe can be used at the Stanford Stadium
- The default meal plan for freshmen and upperclass students not living in Yost, Murray or EAST

Cardinal Light

- 10 meals per week plus 750 Meal Plan Dollars and 5 guest meals per quarter
- All 10 meals are served in the dining halls and the Meal Plan Dollars can be used in the dining halls, most R&DE cafés and late night venues
- During home football games, a meal swipe can be used at the Stanford Stadium
- This meal plan is only available for upperclass students.

Row House

Students living in Yost, Murray, or EAST are required to be on the Row House mandatory undergrad meal plan: 12 meals per week plus 345 meal plan and open kitchen dollars.

- 10 meals are served at the row house
- 2 meals can be eaten at any dining hall
- Meal Plan Dollars can be used in the dining halls, most R&DE cafés and late night venues
- Open kitchen funds are available for additional meals in the row house when meals are not being served
- During home football games, a meal swipe can be used at the Stanford Stadium

Payments

By accepting Stanford's offer of admission and enrolling in classes, each student accepts responsibility for paying all debts to the University, including tuition and fees, for which he or she is liable. An individual's registration as a Stanford student constitutes his or her agreement to make timely payment of all amounts due.

University Bill

Charges and credits from offices within the University are aggregated in a student's individual account and presented on the University bill (https://sfs.stanford.edu/student-accounts/pay-your-bill/understanding-your-student-account/). Student Financial Services publishes the University bill electronically to students monthly via Stanford ePay.

Authorized Payers

Students may designate 'Authorized Payers' via Stanford ePay to allow others to view the student account and make payment. Students and Authorized Payers may view the student account online 24 hours a day, seven days a week, via Stanford ePay (https://sfs.stanford.edu/student-accounts/pay-your-bill/). Payments should be made online through Stanford ePay. If necessary, the student or Authorized Payer may print a bill or receipt from Stanford ePay.

Due Dates and Unit Adjustments

A list of payment due dates throughout the academic year is available on the Student Financial Services website (https://sfs.stanford.edu/student-accounts/pay-your-bill/dates-and-deadlines/). To avoid late payment penalties, online payments via Stanford ePay can be made up to midnight PST on the 15th of the month; mailed payments must be received by 5:00 p.m. on the 15th of the month.

After the start of the term, adding units may result in additional tuition charges. Other fees, such as room damage repair charges, petition fees, late fees, lab fees, library fees, and other miscellaneous fees or charges are due on the 15th of the month after which they are billed.

Forms of Payment

Stanford's standard method of payment is the online service, Stanford ePay, which includes electronic check (eCheck) and foreign currency payment options. Stanford ePay foreign currency payment options offer students favorable exchange rates and eliminate bank fees typically charged for wire transfer. No fee is associated with ePay payments.

Alternatively, payers may use their personal online banking portal with any U.S. bank to pay the University bill. Stanford does not accept cash, credit cards or postdated checks for payments to the University bill.

Stanford offers an installment payment plan for undergraduates.

See Prepayment Installment Plan (https://sfs.stanford.edu/student-accounts/pay-your-bill/installment-payment-plan/) for information.

See University Bill Payment Methods (https://sfs.stanford.edu/student-accounts/pay-your-bill/methods-payment/) for information.

Credit Balances

Stanford uses Direct Deposit to refund credit balances to students. See the Direct Deposit enrollment instructions (https://sfs.stanford.edu/student-accounts/refunds/direct-deposit/) web site. Students are expected to enroll in Direct Deposit at the beginning of their Stanford career or as soon as possible thereafter. Direct Deposits reach the bank within 24-48 hours of processing. Receipt of funds will not be delayed by mail time, lost checks, or the need to go to the bank as is the case with paper checks.

Generally credit balances resulting from financial aid are refunded multiple times weekly. Credit balances resulting from an overpayment of cash (e.g. ePayment, check) remain on the student account to be applied to future charges. A refund of a cash overpayment may be provided at any time upon student request. Annually, in August, Student Financial Services will refund any remaining overpayment of cash to students who have graduated or otherwise discontinued their career at Stanford.

Account Fees and Actions

Late Payment Fees

The University must receive the full amount due on or before the due date indicated on the bill. If full payment is not received by the due date, a late fee of 1% of the amount past due may be assessed. Anticipated aid (aid

that has been accepted but not disbursed and is shown on the student account) reduces the total amount due prior to late fees being applied.

Holds

Accounts that become past due more than 30 days are subject to financial holds. Among other things, a financial hold blocks transcripts, diplomas, and enrollment eligibility.

Insufficient Funds

A non-refundable $25.00 administrative fee may be assessed for checks or eCheck payments returned due to insufficient funds. In addition, student accounts are subject to holds, and late payment penalties may apply.

Delinquent Accounts

Delinquent accounts may be reported to one or more of the national credit reporting agencies. Severely delinquent accounts may be referred to a collection agency and/or placed in litigation in accordance with state and federal laws. Students with delinquent accounts may be held responsible for collection costs, attorney fees, and court costs. Stanford may consider past delinquent accounts in determining whether to provide Stanford loans.

Refunds

Students who withdraw from the University before the end of a term may be eligible to receive refunds of portions of their tuition under certain limited circumstances.

See the Registrar's Tuition Refunds page for a schedule of refunds (https://registrar.stanford.edu/tuition-refund-schedule/).

Annulled Registration

Students who take a leave of absence or summer annulment from the University voluntarily before the first day of instruction may have their registrations annulled. Tuition is refunded in full if the student never attended. Such students are not included in University records as having registered for the term and new students do not secure any privileges for admission for any subsequent quarter as returning students. A leave of absence or summer annulment does not automatically cancel health coverage (both Cardinal Care and the Campus Health Services Fee) unless the leave of absence or summer annulment is granted before the first day of instruction. Financial aid recipients should be aware that a proportion of any refund is returned to the various sources of aid.

Cancellation of Registration or Suspension

Students who have their registrations canceled or are suspended from the University generally receive refunds on the same basis as those receiving leaves of absence unless otherwise specified. A student whose registration is canceled less than one week after the first day of instruction for an offense committed during a preceding quarter receives a full refund of tuition fees.

Institutional Interruption of Instruction

It is the University's intention to avoid the necessity of taking the actions described in this paragraph. However, should the University determine that continuation of some or all academic and other campus activities is illegal, impracticable, and/or in the reasonable judgment of the University, their continuation involves a significant threat of harm to persons or property, activities may be curtailed and students and others requested or required to leave the campus. In such an event, arrangements are made as soon as practical to offer students the opportunity to complete their courses, or substantially equivalent work, so that appropriate credit may be given. Alternatively, the University in its discretion may determine that students receive refunds on the same basis as those receiving leaves of absence, or on some other appropriate basis.

Leaves of Absence

A student in good standing who desires or is required to take a leave of absence from the University after the first day of instruction, but before the end of the first 60 percent of the quarter (term withdrawal deadline), may file a petition for a leave of absence and tuition refund. Graduate students submit the completed leave of absence form to the Student Services Center (http://studentservicescenter.stanford.edu/). Undergraduates who wish to withdraw from the current quarter, or from a quarter for which they have registered in advance and do not wish to attend, must file a Leave of Absence Petition (https://stanford.box.com/v/leaveofabsence/) with and receive approval from the office of the Vice Provost for Undergraduate Education, via the office of Undergraduate Advising and Research (UAR), Sweet Hall. A voluntary leave of absence after the first 60 percent of the quarter (term withdrawal deadline) is only granted for approved health and emergency reasons. For more information on leaves of absence, undergraduates should see the "Leaves of Absence and Reinstatement (Undergraduate) (p. 42)" section of this bulletin, and graduate students should see the "Leaves of Absence (Graduate) (p. 74)" section of this bulletin.

Room and Meal Plan Refunds

Students assigned to a University residence are subject to the terms of the University Residence Agreement, and are required to live in University Housing for the full duration of their signed contract. The text of the University Residence Agreement is available at the Residence Agreement (http://www.stanford.edu/dept/rde/shs/res_agree.htm) web site.

Room refunds are made only when students move out of the residence system and graduate from or cease to be enrolled at the University. Eligibility for refunds is listed in the Residence Agreement. Termination of Occupancy is filed in Axess. Filing a termination of occupancy form and moving out of Student Housing does not necessarily entitle a student to a refund. Students in greek letter houses are billed directly by the fraternity or sorority, and refunds are arranged between the student and the fraternity or sorority.

A meal plan refund is based on the date when a student moves out of University residence and is approved under conditions as specified in the Residence Agreement. If a student uses the meal plan after that date, an additional daily charge incurs.

Any decision to refund prepaid room and meal plan charges or to waive liability for deferred charges is made at the sole discretion of the University. Students with questions about refunds should contact Housing Assignments for room refunds or the central office of Stanford Dining for residential meal plan refunds.

UNDERGRADUATE DEGREES AND PROGRAMS

Degree Requirements

A Liberal Education

As do all major universities, Stanford provides the means for its undergraduates to acquire a liberal education, an education that broadens the student's knowledge and awareness in each of the major areas of human knowledge, that significantly deepens understanding of one or two of these areas, and that prepares him or her for a lifetime of continual learning and application of knowledge to career and personal life.

The undergraduate curriculum at Stanford allows considerable flexibility. It permits each student to plan an individual program of study that takes into account personal educational goals consistent with particular interests, prior experience, and future aims. All programs of study should achieve some balance between depth of knowledge acquired in specialization and breadth of knowledge acquired through exploration. Guidance as to the limits within which that balance ought to be struck is provided by the University's General Education Requirements and by the requirements set for major fields of study.

These educational goals are achieved through study in individual courses that bring together groups of students examining a topic or subject under the supervision of scholars. Courses are assigned credit units. To earn a bachelor's degree, the student must complete at least 180 allowable units and, in so doing, also complete the Writing Requirement, the Ways of Thinking, Ways of Doing (Ways) Requirement, the Language Requirement, and the requirements of a major.

The purpose of the Writing Requirement is to promote effective communication by ensuring that every undergraduate can write clear and effective English prose. Words are the vehicles for thought, and clear thinking requires facility in writing and speech.

The Language Requirement ensures that every student gains a basic familiarity with a foreign language. Foreign language study extends the student's range of knowledge and expression in significant ways, providing access to materials and cultures that otherwise would be out of reach.

The Ways Requirement provides guidance toward the attainment of breadth and stipulates that a significant share of a student's work must lie outside an area of specialization. These requirements ensure that every student is exposed to different ideas and different ways of thinking. They enable the student to approach and to understand the important ways of knowing how to assess their strengths and limitations, their uniqueness, and, no less important, what they have in common with others.

Depth, the intensive study of one subject or area, is provided through specialization in a major field. The major relates more specifically to a student's personal goals and interests than do the general requirements outlined above. Stanford's curriculum provides a wide range of standard majors through its discipline-oriented departments, a number of interdisciplinary majors in addition to department offerings, and the opportunity for students to design their own major programs.

Elective courses, which are not taken to satisfy requirements, play a special role in tailoring the student's program to individual needs. For most students, such courses form a large portion of the work offered for a degree. Within the limitations of requirements, students may freely choose any course for which previous studies have prepared them.

This section provides more detailed descriptions of these various requirements and the rationales upon which they are based.

Bachelor of Arts (B.A.), Bachelor of Science (B.S.)

Stanford University confers the degree of Bachelor of Arts (B.A.) or the degree of Bachelor of Science (B.S.) on those candidates who have been recommended by the Committee on Undergraduate Standards and Policy (C-USP), who have applied in advance for conferral of the degree, and who have fulfilled the following requirements:

1. A minimum of 180 units of allowable University work. (Units above the allowable limits for activity courses and for courses taken on a satisfactory/no credit and credit/no credit basis cannot be counted towards the 180-unit minimum.)
2. The Writing, General Education, and Language Requirements.
3. Curricular requirements of at least one major department or program and the recommendation of the department(s). (Descriptions of curricular and special degree requirements are included in each department's section of this bulletin.)
4. Students admitted as freshmen—A minimum of 135 units (including the last quarter in residence) at Stanford. In special cases, students who have earned at least 135 units in resident work may petition for a waiver of the last quarter-in-residence requirement for up to 15 units through the Last Units Out of Residence (https://stanford.app.box.com/v/last-units-out-of-residence/) petition.
5. Students admitted as transfers—A minimum of 90 units (including the last quarter in residence) at Stanford. In special cases, students who have earned at least 90 units in resident work may petition for a waiver of the last quarter-in-residence requirement for up to 15 units through the Last Units Out of Residence (https://stanford.app.box.com/v/last-units-out-of-residence/) petition.

Stanford confers the Bachelor of Science degree on candidates who fulfill these requirements in the School of Earth, Energy & Environmental Sciences, in the School of Engineering, or in the departments of Applied Physics, Biology, Chemistry, Human Biology, Mathematics, or Physics in the School of Humanities and Sciences. The University also awards B.S. degrees to candidates in the Program in Science, Technology, and Society; in the Program in Mathematical and Computational Science; in the Program in Symbolic Systems; and, when appropriate, in the Program for Individually Designed Majors. Candidates who fulfill these requirements in other schools or departments receive the Bachelor of Arts degree. For degree programs that offer both the B.A. and B.S. degrees in the same discipline, students cannot pursue both degree options and must select either the B.A. or B.S. degree.

Students who complete the requirements for two or more majors, which ordinarily would lead to the same degree (B.A. or B.S.), should review "The Major" section of this bulletin to ensure that they have an understanding of the requirements for multiple or secondary majors.

Bachelor of Arts and Science (B.A.S.)

The University confers the degree of Bachelor of Arts and Science (B.A.S.) on candidates who have completed the following:

1. with no overlapping courses, the curricular requirements of two majors which ordinarily would lead to different bachelor's degrees (that is, a Bachelor of Arts degree and a Bachelor of Science).
2. These students must have applied in advance for graduation with the B.A.S. degree instead of the B.A. or B.S. degree, as recommended by the Committee on Undergraduate Standards and Policy (C-USP),
3. Fulfilled a minimum of 180 units of University work described in point 1 of the "Bachelor of Arts (B.A.), Bachelor of Science (B.S.)" section.

4. The requirements of each major without applying any course towards the requirements of more than one major, according to "Multiple Majors" section of this bulletin. The Major-Minor and Multiple Major Course Approval Form (https://stanford.app.box.com/v/majmin-multmaj/) is required for graduation for students with the B.A.S degree.
5. The Writing, General Education, and Language requirements.
6. Students admitted as freshmen—A minimum of 180 units (including the last quarter in residence) at Stanford. In special cases, students who have earned at least 180 units in resident work may petition for a waiver of the last quarter-in-residence requirement for up to 15 units.
7. Students admitted as transfers—A minimum of 135 units (including the last quarter in residence) at Stanford. In special cases, students who have earned at least 135 units in resident work may petition for a waiver of the last quarter-in-residence requirement.

Students who cannot meet the requirements for both majors without overlapping courses are not eligible for the B.A.S., but may apply to have a secondary major recorded on their transcripts. (See "The Major" in the "Undergraduate Degrees and Programs" section of this bulletin.)

Dual Bachelor's Degrees (Concurrent B.A. and B.S.)

A Stanford undergraduate may work concurrently toward both a B.A. and a B.S. degree. To qualify for both degrees, a student must complete:

1. A minimum of 225 units of University work. Units above the allowable limits for activity courses and for courses taken on a satisfactory/no credit and credit/no credit basis cannot be counted towards the 225 unit minimum.
2. The requirements of each major without applying any course towards the requirements of more than one major, according to "Multiple Majors" section of this bulletin. The Major-Minor and Multiple Major Course Approval Form (https://stanford.app.box.com/v/majmin-multmaj/) is required for graduation for students with dual degrees.
3. The Writing, General Education, and Language requirements.
4. The curricular requirements of two majors (one of which leads to a Bachelor of Arts degree and the other to a Bachelor of Science degree).
5. Students admitted as freshmen—A minimum of 180 units (including the last quarter in residence) at Stanford. In special cases, students who have earned at least 180 units in resident work may petition for a waiver of the last quarter-in-residence requirement for up to 15 units.
6. Students admitted as transfers—A minimum of 135 units (including the last quarter in residence) at Stanford. In special cases, students who have earned at least 135 units in resident work may petition for a waiver of the last quarter-in-residence requirement.

A student interested in dual bachelor's degrees should declare them in Axess no later than two quarters in advance of completing the program.

Students who do not meet the higher unit and residence requirements of the dual degree option may be eligible instead for the B.A.S. degree as described above.

Second Bachelor's Degree

Stanford does not award a second Bachelor of Arts (B.A.) degree to an individual who already holds a Bachelor of Arts, nor a Bachelor of Science (B.S.) degree to an individual who already holds a Bachelor of Science degree. Nor does Stanford award a Bachelor of Arts and Sciences degree to the holder of either a B.A. or B.S.

However, the holder of a Bachelor of Arts degree from Stanford may apply to the C-USP Subcommittee on Academic Progress for admission to candidacy for a Bachelor of Science degree, and the holder of a Bachelor of Science degree from Stanford may apply for candidacy for a Bachelor of Arts degree. A recommendation of the major department for the second bachelor's degree must accompany the application. Generally, a holder of a B.A. or B.S. degree from Stanford may not apply for the Bachelor of Arts and Sciences degree, although a student may submit a petition for exception. The C-USP Subcommittee on Academic Progress determines whether the application for a second degree may be approved and/or the conditions a student must meet in order to be allowed to earn a second degree. The office of the Vice Provost for Undergraduate Education, via the office of Academic Advising, Sweet Hall, reviews these petitions. A student approved for this program may register as an undergraduate and is subject to the current rules and regulations affecting undergraduates. Requirements for a second Stanford bachelor's degree are the same as those described above for dual bachelor's degrees.

Approvals or denials of applications under this section are in the discretion of the University.

Finally, Second Bachelor's Degree pertains only to students who earned their bachelor's degree from Stanford, and does not apply to those who have earned their bachelor's degree elsewhere. Requests by such individuals for a second bachelor's degree at Stanford are not accepted.

Coterminal Bachelor's and Master's Degrees

See the "Coterminal Degrees (p. 56)" section of this Bulletin.

The Major

The primary purpose of the major is to encourage each student to explore a subject area in considerable depth. This in-depth study complements the breadth of study promoted by the General Education Requirements and, in many cases, by a student's choice of electives. Work in depth permits practice in critical analysis and the solving of problems. Because of its depth, such study also provides a sense of how knowledge grows and is shaped by time and circumstances.

The structure of a major should be a coherent reflection of the logic of the discipline it represents. Ideally, the student should be introduced to the subject area through a course providing a general overview, and upper-division courses should build upon lower-division courses. The course of study should, if feasible, give the student the opportunity and responsibility of doing original, creative work in the major subject. Benefits of the major program are greatest when it includes a culminating and synthesizing experience such as a senior seminar, an undergraduate thesis, or a senior project.

Degree Requirements

Undergraduates must select a major by the end of their sophomore year. All undergraduate major programs listed in this bulletin, except for certain honors degree programs that require application and admission in advance, are open to all students. Students may use Axess to declare, drop, or change a major. In some departments or programs, though, a late change could easily result in extending the period of undergraduate study. Students who have applied to graduate or who wish to declare an individually designed major must use the Declaration or Change of Undergraduate Major, Minor, Honors, or Degree Program (https://stanford.app.box.com/v/change-ug-program/) to select or change a major. Students requiring assistance should contact the Student Services Center (https://studentservicescenter.stanford.edu/). For academic advising regarding majors, students should consult Academic Advising (http://undergrad.stanford.edu/).

Check individual department or program listings in this bulletin for the undergraduate degrees offered and for specific major requirements. If an

area of study has no baccalaureate degree, that discipline is not available as a regular undergraduate major.

Faculty set the minimum requirements for the major in each department. These requirements usually allow latitude for tailoring a major program to a student's specific educational goals. The responsibility for developing a major program within department or program requirements lies ultimately with the individual student working in consultation with the major adviser.

Limits of the Major

In order to achieve the values of study in depth, a well-structured major should constitute at least one-third of a student's program (55-65 units). To ensure the values of breadth, a major should comprise no more than two-thirds of a student's program (115-125 units); and, to avoid intellectual parochialism, a major program should not require a student to take more than about one-third of his or her courses from within a single department.

Major requirements in cognate subjects essential to the structure of a given major should be counted as part of the major program in applying these guidelines. Department or school requirements designed to provide extra disciplinary breadth should not be counted.

For a limited number of qualified students, many departments and programs offer special programs leading to degrees with honors. A student may apply to the major department or program for acceptance into the honors program. Demands on the student may vary, but all honors programs encourage creative, independent work at an advanced level in addition to the major requirements.

The guidelines set forth here are deliberately general; implementation must take into account the specific needs of a student's program and the nature of the discipline or disciplines involved. The exercise of responsibility in achieving the desired educational balance belongs first with the student, who, after all, has the strongest interest in the value of his or her education. It belongs secondarily to departments and major programs, which must set the requirements of competence in the many majors offered.

Multiple Majors

Although most students declare only one major, a student may formally declare more than one major within a single bachelor's degree (B.A., B.S., or B.A.S.) program. The student may do that either at the time of initial major declaration or, as may be more advisable given the planning required to complete more than one major, by amending the original declaration. The student's major departments or programs have access routinely to all information pertinent to that student's academic record (for example, course and grade information), and each is expected to provide advising and other assistance. To be awarded a bachelor's degree with multiple majors, the student must fulfill the following requirements:

1. Formally declare all majors through Axess to the Office of the University Registrar.
2. Satisfy the requirements of each major without applying any course towards the requirements of more than one major or any minor unless:
   a. overlapping courses constitute introductory skill requirements (for example, introductory math or a foreign language);
   b. overlapping courses enable the student to meet school requirements (for example, for two majors within the School of Engineering). Currently, only the School of Engineering has school requirements for its undergraduate majors.
3. Submit the Major-Minor and Multiple Major Course Approval Form (https://stanford.box.com/MajMin-MultMaj/) by the Final Study List deadline of the quarter of intended graduation. The form is required for graduation for students with multiple majors or a minor and should be submitted to the Student Services Center (https://studentservicescenter.stanford.edu/).

Students pursuing multiple majors must complete a multiple major program form indicating which courses they plan to apply toward each major and any minor(s). Departments must certify that the plan of study meets all requirements for the majors and any minor(s) without unallowable overlaps in course work; the School of Engineering Dean's office certifies this information in any case involving an Engineering major or minor. To facilitate advance planning, multiple major program forms are available at any time from the Registrar's forms web site (https://registrar.stanford.edu/resources-and-help/forms/).

If the pursuit of multiple majors (or joint majors or secondary majors, or minors) unduly delays an undergraduate's progress through Stanford, the University reserves the right to limit a student to a single major, and/or to confer a degree on a student who has completed all of the requirements for a degree even though the student has not applied to graduate; such an individual would then be subject to the University's usual rules and restrictions regarding future enrollment or registration.

When students cannot meet the requirements of multiple majors without overlaps, the secondary major (http://exploredegrees.stanford.edu/undergraduatedegreesandprograms/#themajortext), may be relevant.

Secondary Major

In some cases, students may complete course requirements for more than one major, but they may not meet the requirements outlined for the multiple major option. For example, the student may develop a course plan in which courses requisite for one major overlap with requirements for another. In these cases, the student may declare a secondary major which results in the transcript bearing an annotation that the course requirements for that major have also been met. Secondary majors are not listed on the diploma. Students declare secondary majors through the Declaration or Change of Undergraduate Major, Minor, Honors, or Degree Program . (https://stanford.box.com/change-UG-program/)

Joint Major Program

A joint major differs from a multiple major in that 1-2 fewer optional courses are required for each major, while an integrative senior capstone experience is required for all students in the program. Fourteen joint major programs were approved for a six-year pilot beginning in Autumn Quarter, 2014-15. See the "Joint Major (p. 33)" section of this bulletin for details.

Foreign Language Proficiency

The notation "proficiency in (language)" appears on the official transcripts of those students whose levels of achievement are found by procedures established by the Language Center to be roughly equivalent to knowledge an excellent student can be expected to demonstrate late in the third quarter of the third year of study in that language.

The Joint Major Program (JMP)

The University has offered a joint major program (JMP) aimed at integrating the Humanities and Computer Science while providing students with unique educational experiences. This experimental program was approved by the Academic Senate for a six-year pilot, which began in Autumn Quarter 2014-15. Based upon continuing assessment, including feedback from students and faculty, the pilot was discontinued at the end of the academic year 2018-19.

All students with declared joint majors will be permitted to complete their degree; faculty and departments are committed to providing the necessary advising support. Students wishing to declare a joint major may do so until June 18, 2019. After that date, no new joint major declarations will be approved.

Joint major programs leads to conferral of a B.A.S. (Bachelor of Arts and Sciences), and are distinct from multiple degrees in which a student may formally declare more than one major within a single bachelor's degree (B.A., B.S., or B.A.S.) program.

The following 14 programs were approved (each major is linked to the department's bulletin site with specific information for that major):

- Computer Science (p. 714) and Art Practice (p.)
- Computer Science (p. 714) and Classics (p.)
- Computer Science (p. 714) and Comparative Literature (p. 1203)
- Computer Science (p. 714) and English (p.)
- Computer Science (p. 714) and French (p.)
- Computer Science (p. 714) and German Studies (p.)
- Computer Science (p. 714) and History (p. 1558)
- Computer Science (p. 714) and Iberian and Latin American Cultures (p. 1650)
- Computer Science (p. 714) and Italian (p.)
- Computer Science (p. 714) and Linguistics (p. 1773)
- Computer Science (p. 714) and Music (p. 1826)
- Computer Science (p. 714) and Philosophy (p. 1867)
- Computer Science (p. 714) and Slavic Languages and Literatures (p.)
- Computer Science (p. 714) and Spanish (p. 1650)

Only a limited number of joint majors were approved by the Academic Senate. Assessment of the joint major program continued throughout the duration of the six-year pilot; based upon that assessment, the decision was made to terminate the program at the end of 2018-19. As above, students in the program will be permitted to complete the program, and students may still declare the program through June 18, 2019. The School of Humanities and Sciences limited participation in the pilot to Humanities departments that wished to propose a joint major with Computer Science. Only approved joint majors as listed in this bulletin are available. Other combinations of majors may be taken as a multiple major, but are not part of the joint major program with its special rules and requirements.

Requirements for Joint Majors

Typically a student in a joint major program will have an adviser in each major.

Graduation with a joint major requires the completion of a minimum of 180 units, of which at least 135 must be completed at Stanford. The specific number of units required for each major is specific to that major. It is not possible to give a single absolute number of units that a student might require in order to graduate with a joint major.

A student who declares a joint major completes the degree requirements for each of the majors. However, each of the majors in a joint major program typically requires 1-2 fewer optional courses; see the "Joint Major" sections of the respective departments for details. This course reduction in the joint major program differs from a multiple major in which all courses in both majors must be completed.

Because the joint major programs are designed to allow a student to pursue a course of study leading to mastery in two fields by blending the intellectual traditions of two Stanford departments, students in a joint major program take a senior capstone experience such as a course or project that is integrative in nature. Although the integrative capstone experience may fulfill the requirement for a capstone experience for both majors, the units may only be counted toward the required total units in one of the majors.

It is possible, with approval of both departments, to use one course to fulfill a requirement for each major in a joint major program. University policy prohibits double counting of courses in multiple programs except in specific cases such as introductory skill requirements or overlapping courses that enable a student to meet University requirements such as GERs. Therefore, when a single course fulfills requirements in both majors, a student may apply the units associated with the course to the total units requirement of only one of the majors and then must work with the other major to identify another course that would benefit the academic plan and whose associated units may be applied to that major's total units requirement.

Dropping a Joint Major Program

To drop the joint major, students must submit the Declaration or Change of Undergraduate Major, Minor, Honors, or Degree Program (https://stanford.box.com/change-UG-program/). Students may also consult the Student Services Center (http://studentservicescenter.stanford.edu/) with questions concerning dropping the joint major.

Transcript and Diploma

Students completing a joint major graduate with a B.A.S. degree. The two majors are identified on one diploma separated by a hyphen. There will be a notation indicating that the student has completed a "Joint Major." The two majors are identified on the transcript with a notation indicating that the student has completed a "Joint Major."

Undergraduate Minor

Students completing a bachelor's degree may elect to complete one or more minors in addition to the major. Minors must be officially declared by students no later than the deadline for their application(s) to graduate, according to declaration procedures developed and monitored by the Registrar. Earlier deadlines for declaration of the minor may be set by the offering school or department. Satisfactory completion of declared minors is noted on the student's transcript after degree conferral.

A minor is a coherent program of study defined by the department or degree program. It may be a limited version of a major concentration or a specialized subset of a field. A minor consists of no fewer than six courses of 3 or more units to a maximum of 36 units of letter-graded work, except where letter grades are not offered. Departments and degree programs establish the structure and requirements of each minor in accordance with the policy above and within specific guidelines developed by the deans of schools. Programs which do not offer undergraduate degrees may also make proposals to their cognizant deans to establish a minor. Requirements for each minor are described in the individual department or program listings in this bulletin.

Students may not overlap (double-count) courses for completing major and minor requirements, unless:

1. Overlapping courses constitute introductory skill requirements (for example, introductory math or a foreign language), such that the introductory course acts a prerequisite for further mastery in the subject, the introductory course is broadly accessible and does not require a prerequisite for enrollment; or
2. Overlapping courses enable the student to meet school requirements. However, courses used for the major and/or the minor depth/core must not be duplicated within any other of the student's degree programs (for example, for a major within the School of Engineering and a minor within or outside of the School of Engineering). Currently, only the School of Engineering has school requirements for its undergraduate majors.

Undergraduates use Axess to declare or drop a minor. The Major-Minor and Multiple Major Course Approval eForm (available in the eForms portal in the Student tab in Axess) is required for graduation for students with a minor. The form should be submitted electronically to the Student

Services Center (https://studentservicescenter.stanford.edu/) by the final study list deadline of the quarter of intended graduation.

Students with questions about declaring minors or double-counting courses towards combinations of majors and/or minors should consult with the departments or programs involved or the Student Services Center. For academic advising regarding minors, students should consult undergraduate Academic Advising (https://undergrad.stanford.edu/)).

Baccalaureate Honors

With Distinction

In recognition of high scholastic attainment, the University, upon recommendation of a major department or program, awards the Bachelor's Degree with Distinction. Distinction is awarded to 15% of the graduating class based on cumulative grade point averages. GPA for Distinction purposes is calculated through Winter Quarter for each graduating class. Distinction is awarded at the end of the Spring Quarter for graduates of the Spring Quarter and prior Summer, Autumn, Winter quarters. Students are notified of Distinction on their diploma. Students who are granted Distinction, and have already received their diploma in a prior quarter, will be mailed an updated diploma. The Distinction notation will show on official transcripts after Spring Commencement.

Students are also urged to consider the departmental honors programs that may give depth to their major study and to consider, as well, how the interdisciplinary honors programs might contribute to the quality of their undergraduate education.

Departmental Honors Programs

In recognition of successful completion of special advanced work, departments may recommend their students for honors in the major. Departmental honors programs demand independent creative work at an advanced level in addition to major requirements. If approved for departmental honors, the student should declare the Honors degree through Axess.

Interdisciplinary Honors Programs

In recognition of successful completion of honors program requirements, the following interdisciplinary programs can recommend students majoring in any field for honors in their program:

- Arts (https://arts.stanford.edu/for-students/academics/capstone-in-the-arts/)
- Comparative Studies in Race and Ethnicity (http://csre.stanford.edu/honors.php)
- Democracy, Development, and the Rule of Law (http://cddrl.stanford.edu/fellowships/cddrl_undergraduate_honors_program/) (CDDRL)
- Education (https://ed.stanford.edu/academics/undergraduate/honors/)
- Ethics in Society (https://ethicsinsociety.stanford.edu/undergraduate-ethics/undergraduate-honors-program/)
- Feminist, Gender, and Sexuality Studies (https://feminist.stanford.edu/undergraduates/honors-program/)
- International Security Studies (https://cisac.fsi.stanford.edu/education/honors-program/) (CISAC)
- Latin American Studies (http://las.stanford.edu/programs/undergraduate-honors/)
- Science, Technology, and Society (https://sts.stanford.edu/major-sts/honors-program/)

The interdisciplinary honors programs are designed to complement study in a department major. The requirements for these honors programs are described in the department sections of this bulletin. If approved for interdisciplinary honors, the student should then declare the Interdisciplinary Honors Program in Axess.

COVID-19 Policies

Ways Requirement

Ways courses completed during all four quarters of academic year 2020-21 with units earned for courses taken for a letter grade, CR/NC (CR grade), or S/NC (S grade) will satisfy the Ways requirement. For Ways transfer credit, the same grading policy exception will apply. Also, online courses and post-course evaluation requests will be allowed.

General Education Requirements

In order to graduate, undergraduates must complete the following General Education Requirements:

- Thinking Matters Requirement
- Ways of Thinking/Ways of Doing (Ways) Requirement
- Writing and Rhetoric Requirement
  - Program in Writing and Rhetoric (2 courses required, PWR 1 and PWR 2)
  - Writing in the Major
- Language Requirement

Purpose

The General Education Requirements are an integral part of undergraduate education at Stanford. Their purpose is to introduce students to the intellectual life of the University, to foreground important questions, and to illustrate how they may be approached from multiple perspectives. They are intended to develop a broad set of essential intellectual and social competencies of enduring value no matter what field a student eventually pursues. Students have flexibility to select topics that appeal to them while building critical skills, exploring interests, forming relationships with faculty and peers, and forging connections between educational experiences in many spheres. Together with the major, the requirements serve as the nucleus around which students build their four years at Stanford.

General Education Requirement courses must be taken for a letter grade and a minimum of 3 units of credit, with the exception of courses taken to fulfill the Language requirement, which may be taken for credit/no credit. Additionally, a course taken to satisfy the Creative Expression Way (Way-CE) may be taken for a minimum of 2 units and must be taken for a letter grade (unless a letter grade is not offered, and the course is only offered for a Satisfactory/No Credit grade).

Thinking Matters

Students are required to take one Thinking Matters (THINK) course during their freshman year. Most students take one stand-alone course selected from approximately eight courses offered each quarter.

- THINK courses

Alternatively, students may take one of two residence-based, year-long programs:

- Immersion in the Arts: Living in Culture (ITALIC (http://explorecourses.stanford.edu/search/?q=ITALIC&view=catalog&page=0&academicYear=20162017&collapse=&filter-coursestatus-Active=on&filter-departmentcode-ITALIC=on))
- Structured Liberal Education (SLE (http://explorecourses.stanford.edu/search/?filter-departmentcode-SLE=on&q=SLE&filter-coursestatus-Active=on&filter-catalognumber-SLE=on&academicYear=20162017))

- Each of these also satisfies at least part of the Writing and Rhetoric Requirement as well as several Ways requirements.

Another option, in Autumn Quarter only, allows students to enroll in Education as Self-Fashioning (ESF (http://explorecourses.stanford.edu/search/?q=ESF&filter-coursestatus-Active=on&filter-departmentcode-ESF=on&academicYear=20162017)) that satisfies the Thinking Matters requirement as well as PWR 1.

Ways of Thinking/Ways of Doing (Ways)

Students must fulfill the Ways general education requirement (http://exploredegrees.stanford.edu/undergraduatedegreesandprograms/ways.stanford.edu) which is a skills capacity-based approach to fostering breadth rather than a traditional discipline-based approach.

These courses provide students with educational breadth by giving instruction in essential skills and capacities in the areas of:

- Way-A-II: Aesthetic and Interpretive Inquiry (https://explorecourses.stanford.edu/search/?q=%25&view=catalog&page=0&catalog=&filter-ger-WAYAII=on&collapse=,5,&filter-coursestatus-Active=on) (2 courses)
- Way-AQR: Applied Quantitative Reasoning (https://explorecourses.stanford.edu/search/?q=%25&view=catalog&page=0&catalog=&filter-ger-WAYAQR=on&collapse=,5,&filter-coursestatus-Active=on)
- Way-CE: Creative Expression (https://explorecourses.stanford.edu/search/?q=%25&view=catalog&page=0&catalog=&filter-ger-WAYCE=on&collapse=,5,&filter-coursestatus-Active=on) (2 units)
- Way-ED: Engaging Diversity (https://explorecourses.stanford.edu/search/?q=%25&view=catalog&page=0&catalog=&filter-ger-WAYED=on&collapse=,5,&filter-coursestatus-Active=on)
- Way-ER: Ethical Reasoning (https://explorecourses.stanford.edu/search/?q=%25&view=catalog&page=0&catalog=&filter-ger-WAYER=on&collapse=,5,&filter-coursestatus-Active=on)
- Way-FR: Formal Reasoning (https://explorecourses.stanford.edu/search/?q=%25&view=catalog&page=0&catalog=&filter-ger-WAYFR=on&collapse=,5,&filter-coursestatus-Active=on)
- Way-SI: Social Inquiry (https://explorecourses.stanford.edu/search/?q=%25&view=catalog&page=0&catalog=&filter-ger-WAYSI=on&collapse=,5,&filter-coursestatus-Active=on) (2 courses)
- Way-SMA: Scientific Method and Analysis (https://explorecourses.stanford.edu/search/?q=%25&view=catalog&page=0&catalog=&filter-ger-WAYSMA=on&collapse=,5,&filter-coursestatus-Active=on) (2 courses)

Students are required to take eleven certified Ways courses, with two courses in Way-AII, Way-SI, and Way-SMA, and one course in each of the remaining five Ways. Transfer students fulfill the Ways requirement as outlined in the "Transfer Credit for Ways" section below.

Although courses may be certified to fulfill two Ways, a student may only count a course toward one Way in a program of study. Thinking Matters courses typically fulfill a Way. Courses may also count for both major and Ways requirements.

Courses taken prior to matriculation, independent study courses, graduate courses, and online transfer courses are not eligible for Ways credit. Courses must be a minimum of 3 units and taken for a letter grade except Way-CE which may be taken for fewer units.

Transfer Credit for Ways

Incoming transfer students who matriculate with the following number of transfer units must complete the defined number of Stanford Ways courses as part of their undergraduate education.

Number of Transfer Units	Ways Course Requirement
90	5 courses certified in 5 different Ways
75-89	6 courses certified in 6 different Ways
60-74	7 courses certified in 7 different Ways
45-59	8 courses certified in 8 different Ways
44 or fewer	10 courses certified in 8 different Ways

- Excludes Advanced Placement (AP) or other external test units, independent study, online courses, or additional transfer courses from other institutions.
- A minimum of 2 units is required to complete the Creative Expression (CE) Ways requirement. This may be fulfilled by taking one 2-unit minimum CE course, taking a 1-unit CE course twice, or taking two 1-unit CE courses in the same program such as Dance, Music, or TAPS.

Matriculated students may fulfill a maximum of five Ways courses out of the 11 course requirement from another accredited college or university; these courses may be certified in any of the eight Ways categories but no more than one course in any one Way (i.e., up to one course in Way-A-II, Way-SI, Way-SMA, which have a two-course requirement; one course in Way-AQR, Way-ED, Way-ER, Way-FR; and 2 units in Way-CE). No more than 45 units in total transfer credit may count toward the undergraduate degree. The five course transfer limit is cumulative over a student's undergraduate career at Stanford.

Pre-Approval of Courses for Transfer Credit for Ways

Courses taken at another accredited college or university must be pre-approved for Ways certification prior to enrollment in the course. Courses that have not been pre-approved prior to enrollment at another accredited college or university are not eligible for Ways credit. Matriculated students must submit their Ways pre-approval request(s) by the quarterly deadline as defined on the Ways web site (https://undergrad.stanford.edu/programs/ways/getting-credit/ways-credit-classes-taken-other-us-universities/). The student is subject to a three-course limit for Ways pre-approval evaluation requests per term.

To request a Ways requirement through transfer work, the pre-approved course must be taken for a minimum of 3 quarter units, except for Creative Expression which is a minimum of 2 units, and be taken for a letter grade.

Once Ways transfer credit has been posted to the student's record by the Office of the University Registrar, it is final and may not be changed.

Students seeking transfer credit should consult the Ways Transfer Credit (https://undergrad.stanford.edu/programs/ways/transfer-credit/) page and the Transfer Credit Procedures (https://registrar.stanford.edu/transfer-credit-procedures/) page on the Office of the Registrar web site.

Language Requirement

To fulfill the Language Requirement, undergraduates are required to complete one year of college-level study or the equivalent in a foreign language. Students may fulfill the requirement in any one of the following ways:

1. Complete three quarters of a first-year, 4-5 units language course at Stanford or the equivalent at another recognized post-secondary institution subject to current University transfer credit policies. Language courses at Stanford may be taken with the Credit/No Credit grading basis, if so offered, to fulfill the requirement.
2. Score 4 or 5 on the Language Advanced Placement (AP) test in one of the following languages: Chinese, French, German, Japanese, Latin, or

Spanish. Advanced Placement (AP) tests in foreign literature do not fulfill the requirement.

3. Achieve a satisfactory score on the SAT II Subject Tests in the following languages taken prior to college matriculation:

Test Subject	Score
Chinese	630
French	640
German	630
Latin	630
Spanish	630
Italian	630
Japanese	620
Korean	630
Hebrew	540

4. Take a diagnostic test in a particular language which either:
   a. Places them out of the requirement, or
   b. Diagnoses them as needing one, two, or three additional quarters of college-level study. In this case, the requirement can then be fulfilled either by passing the required number of quarters of college-level language study at Stanford or the equivalent elsewhere, or by retaking the diagnostic test at a later date and placing out of the requirement.

Written placements are offered online throughout the summer in Chinese, French, German, Italian, Japanese, Russian, Spanish, and Spanish for home background speakers.

For a full description of Language Center offerings, see the "Language Center (p. 1722)" section of this bulletin under the school of Humanities and Sciences.

Writing and Rhetoric Requirement

COVID-19-Related Grading Changes

PWR courses completed during academic year 2020-21, including Summer 2021, and taken for CR/NC grading with a Credit (CR) grade satisfy the WR-1 and WR-2 requirement. This grading policy exception, as well as online courses, will also be allowed for WR-1 and WR-2 transfer credit evaluations, provided those courses fulfill the other criteria for equivalency approval.

All instructors at Stanford University expect students to express themselves effectively in writing and speech. The Writing and Rhetoric requirement helps students meet those high expectations.

All candidates for the bachelor's degree, regardless of the date of matriculation, must satisfy the Writing and Rhetoric requirement. Transfer students are individually reviewed at the time of matriculation by the Office of the University Registrar's Degree Progress section and, if necessary, the Program in Writing and Rhetoric (PWR) as to their status with regard to the requirement.

The Writing and Rhetoric requirement includes courses at three levels. The first two levels are described in more detail below. Writing-intensive courses that fulfill the third level, the Writing in the Major (WIM) requirement, are designated under individual department listings.

All undergraduates must satisfy the first-level Writing and Rhetoric requirement (WR 1) in one of five ways:

1. PWR 1: a course emphasizing writing and research-based argument.
2. SLE: writing instruction in connection with the Structured Liberal Education program.
3. ESF: writing instruction in connection with the Education as Self-Fashioning Thinking Matters course.
4. ITALIC: writing instruction in connection with the ITALIC Integrated Learning Environment.
5. Transfer credit approved by the Office of the University Registrar for this purpose.

All undergraduates must satisfy the second-level Writing and Rhetoric Requirement (WR 2) in one of four ways:

1. PWR 2, a course emphasizing writing, research, and oral presentation of research.
2. SLE: writing and oral presentation instruction in connection with the Structured Liberal Education program.
3. A course offered through a department or program certified as meeting the WR 2 requirement by the Writing and Rhetoric Governance Board. These courses are designated as WRITE 2.
4. Transfer credit approved by the Office of the University Registrar for this purpose.

A complete listing of PWR 1 courses is available each quarter on the PWR (https://undergrad.stanford.edu/programs/pwr/) web site and in the PWR office in Sweet Hall, Third Floor. Complete listings of PWR 2 and WRITE 2 courses are available to students on the PWR (https://undergrad.stanford.edu/programs/pwr/) web site the quarter before they are scheduled to complete the WR 2 requirement.

For a full description of the Program in Writing and Rhetoric (PWR), see the "Writing and Rhetoric (p. 184)" section of this bulletin under the Vice Provost of Undergraduate Education.

Unit Credit

Activity Courses

For undergraduates, a maximum of 8 units of credit earned in activity courses, regardless of the offering department or if accepted as transfer units, count towards the 180 units (225 if dual degrees are being pursued) required for the bachelor's degree. All activity courses are offered on a satisfactory/no credit basis.

Courses Taken on Satisfactory/No Credit or Credit/No Credit Basis

A maximum of 36 units of credit (including activity courses) taken at Stanford or its overseas campuses for a "CR" or "S" grade may be applied towards the 180 units (225 if dual degrees are being pursued) required for the bachelor's degree. The maximum for transfer students is 27 units.

Departments may also limit the number of satisfactory or credit courses accepted towards the requirements for a major. Satisfactory/Credit courses applied towards a minor may be similarly limited. Courses not letter-graded are not accepted in fulfillment of the General Education Requirements, except for Ways-CE (see the "General Education Requirements/Ways (p. 35)" section of this bulletin for further information). Writing in the Major courses are usually offered letter grade only. In those instances where the course is offered for a letter grade or CR/NC, the course must be taken for a letter grade to fulfill Ways of Thinking/Ways of Doing requirement and Writing in the Major requirement.

Internship Credit Guidelines

Undergraduate internships should not by themselves carry any credit. However, an individual student may arrange with a faculty member for a research or other academic project to be based on the internship. Arrangements between students and faculty regarding credit are expected to be made well in advance of the internship. Credit should be arranged within departmental rules for directed reading or independent

study and should meet the usual department standards. No transfer credit is awarded for internships.

Concurrent Enrollment (Undergraduate)

Undergraduates may enroll concurrently at Stanford and at another college or university. The following policies apply to concurrent enrollment:

1. Students may not exceed 20 quarter units between both schools. This is the same unit maximum for undergraduates at Stanford. (One semester credit or hour generally equals 1.5 quarter units.)
2. Satisfactory academic progress is determined only by Stanford courses and units. Transfer work completed at other institutions is not considered in this calculation.
3. Students are expected to submit a Request for Transfer Credit Evaluation eForm (available in the eForms portal in the Student tab in Axess) for pre-approval of transfer credit prior to enrolling in the transfer institution.

Advanced Placement

Stanford University allows up to 45 units of external credit (90 units for transfer students) toward graduation including work completed in high school as part of the College Board Advanced Placement curriculum. The awarding of such credit is based on Advanced Placement test scores and is subject to University and department approval.

The faculty of a given department determine whether any credit toward the 180-unit requirement can be based on achievement in the College Board Advanced Placement Program in their discipline. Stanford departments electing to accept the Advanced Placement (AP) credit are bound by these University policies:

1. Credit is usually granted for an AP score of 4 or 5. Usually, 10 quarter units are awarded (but occasionally fewer than 10). No more than 10 quarter units may be given for performance in a single examination.
2. Whether credit is to be given for an AP score of 3 is a matter for departmental discretion; up to 10 units may be awarded.
3. No credit may be authorized for an AP score lower than 3.

Performance on an AP exam can indicate the appropriate placement for continuing course work in that subject at Stanford. If students enroll in courses at Stanford for which they received equivalent AP credit, the duplicating AP credit will be removed. The chart below shows the current AP credit and placement policies.

A maximum of 45 quarter units of Advanced Placement (AP), transfer credit, and/or other external credit (such as International Baccalaureate) may be applied toward the undergraduate degree. More than 45 units of AP, transfer, and other external credit may appear on the Stanford University transcript; however, only 45 units can be applied to the minimum units required for the undergraduate degree. Once credit has been posted it cannot be removed from the student record. However, if Stanford courses are taken below the level of the placement course, the duplicating AP units are removed. Students may not receive duplicate unit credit for AP and IB exams in the same discipline, and the duplicating unit credit may be removed from the student's record. Stanford University policies on AP and other external credit are subject to review and change on an annual basis. Subjects not listed on this chart are not eligible for AP credit at Stanford University. Students may only receive AP credit for the AP policies that were effective during their matriculation year at Stanford.

Further information is available from the Student Services Center (https://studentservicescenter.stanford.edu/) or on the Registrar's (https://registrar.stanford.edu/students/transfer-credit/advanced-placement/) website.

AP Scores and Placement

Test Subject	Score	Placement	Quarter Units
Calculus AB (or AB subscore) (See note 1)	5	Take placement diagnostic, see the Math Placement website: https://mathematics.stanford.edu/academics/undergraduate/math-placement (https://mathematics.stanford.edu/academics/undergraduate/math-placement/)/	8
Calculus BC (See note 1)	5	Take placement diagnostic, see the Math Placement website: https://mathematics.stanforc academics/undergraduate/math-placement (https://mathematics.stanforc academics/undergraduate/math-placement/)/	10
Calculus BC (See note 1)	4	Take placement diagnostic, see the Math Placement website: https://mathematics.stanford.edu/academics/undergraduate/math-placement (https://mathematics.stanford.edu/academics/undergraduate/math-placement/)/	8
Chemistry	4	CHEM 31M; see https://chemistry.stanford.ed academics/undergraduate-program/how-choose-your-first-class (https://chemistry.stanford.ed academics/undergraduate-program/how-choose-your-first-class/)	5
Chemistry (See note 2)	5	CHEM 33; see https://chemistry.stanford.edu/academics/undergraduate-program/how-choose-your-first-class (https://chemistry.stanford.edu/academics/undergraduate-program/how-choose-your-first-class/)	10

Chinese (Language and Culture) (See note 3)	5	Take placement exam if continuing in this language	10
Computer Science A	4,5	CS 106B or CS 106X	5
Computer Science Principles	4,5	CS 106A	5
French (Language) (See note 3)	5	Take placement exam if continuing in this language	10
German (Language) (See note 3)	5	Take placement exam if continuing in this language	10
Italian (Language) (See note 3)	5	Take placement exam if continuing in this language	10
Japanese (Language and Culture) (See note 3)	5	Take placement exam if continuing in this language	10
Latin (Literature or Virgil) (See note 3)	4,5	Take placement exam if continuing in this language	10
Physics C - Mechanics (See note 4)	5	Take placement diagnostic; see https://physics.stanford.edu/academics/undergraduate-students/placement-diagnostic (https://physics.stanford.edu/academics/undergraduate-students/placement-diagnostic/)	4
Physics C - Mechanics (See note 4)	4	Take placement diagnostic; see https://physics.stanford.edu/academics/undergraduate-students/placement-diagnostic (https://physics.stanford.edu/academics/undergraduate-students/placement-diagnostic/)	4
Physics C - Electricity and Magnetism (See note 4)	5	Take placement diagnostic; see https://physics.stanford.edu/academics/undergraduate-students/placement-diagnostic (https://physics.stanford.edu/academics/undergraduate-students/placement-diagnostic/)	4
Physics C - Electricity and Magnetism (See note 4)	4	Take placement diagnostic; see https://physics.stanford.edu/academics/undergraduate-students/placement-diagnostic (https://physics.stanford.edu/academics/undergraduate-students/placement-diagnostic/)	4
Physics 1 & 2 - Both (See notes 4,5)	9, 10	Take placement diagnostic; see https://physics.stanford.edu/academics/undergraduate-students/placement-diagnostic (https://physics.stanford.edu/academics/undergraduate-students/placement-diagnostic/)	8
Physics 1 & 2 - Both (See notes 4,5)	8	Take placement diagnostic; see https://physics.stanford.edu/academics/undergraduate-students/placement-diagnostic (https://physics.stanford.edu/academics/undergraduate-students/placement-diagnostic/)	4
Spanish (Language) (See note 3)	5	Take placement exam if continuing in this language	10

1 Students are eligible for Calculus AB, BC, or subscore AB, however not a combination of the three. Students can only earn credit for one of the listed math exams.

2 Some students may prefer CHEM 31M Chemical Principles: From Molecules to Solids and will be awarded only 5 units.

3 A score of 4 or 5 on this test fulfills the Language Requirement. A score of 5 is required to receive 10 units of credit.

4 Students are eligible for Physics B, Physics C (both), or Physics 1 & 2, however not a combination of the three. For more information on these exams, see the Physics Department's Advanced Placement (https://physics.stanford.edu/undergraduate-program/advanced-placement/) website.

5 Students must have taken both Physics 1 & 2 to receive credit along with scoring a minimum of 4 on each exam. The standard rules apply such that students cannot receive credit for multiple exams taken within the same subject. The best score and or unit rate is applied to the transcript for Physics. If a student wants to have a certain Physics exam reflected on the transcript, the student should contact the Student Services Center (https://stanford.service-now.com/student_services/?id=sc_cat_item&sys_id=07d14315136a130019813598d144b095).

International Baccalaureate (IB) Transfer Credit

Stanford University awards advanced placement credit for certain International Baccalaureate (IB) and international advanced placement subject examinations. The international test subjects must match the content of the College Board Advanced Placement test subjects that receive advanced placement credit. See the Registrar's website for detailed information (https://registrar.stanford.edu/students/transfer-credit-and-advanced-placement/advanced-placement/ib-credit-chart/).

A maximum of 45 quarter units of transfer and test credit may be applied toward the undergraduate degree. Only higher level IB exams with scores of 5 or higher, in the subjects listed below, are eligible for credit. Subjects not listed on this chart are not eligible for IB credit. Scores of 5 or higher on language IB exams fulfill the language requirement. If Stanford courses are taken below the level of the placement course, the duplicating IB units will be removed. Students may not receive duplicate unit credit for AP and IB exams in the same discipline, and the duplicating unit credit may be removed from the student's record.

Test Subject	Score	Placement	Quarter Units
Chemistry	5	CHEM 121	10
Chinese A or B*	5	Take placement exam if continuing in this language	10
Computer Science	5	CS 106B or 106X	5
French A or B*	5	Take placement exam if continuing in this language	10
German A or B*	5	Take placement exam if continuing in this language	10
Japanese A or B*	5	Take placement exam if continuing in this language	10
Korean A or B*	5	Take placement exam if continuing in this language	10
Mathematics**	6 or higher	Take placement diagnostic, see the Math Placement website; https://mathematics.stanforc academics/undergraduate/math-placement (https://mathematics.stanforc academics/undergraduate/math-placement/)/	10
Physics	6 or higher	PHYSICS 25	8
Physics	5	PHYSICS 23, PHYSICS 25	4
Portuguese A or B*	5	Take placement exam if continuing in this language	10
Russian A or B*	5	Take placement exam if continuing in this language	10
Spanish A or B*	5	Take placement exam if continuing in this language	10

* A score of 5 on this test fulfills the Language Requirement. A score of 5 is required to receive 10 units of credit.

** Enrollment may require taking the Math Placement Diagnostic. See the Math Placement (http://mathematics.stanford.edu/academics/undergraduate/math-placement/) web site for more information and a link to take the diagnostic.

* A score of 5 on this test fulfills the Language Requirement. A score of 5 is required to receive 10 units of credit.

** Enrollment may require taking the Math Placement Diagnostic. See the Math Placement (http://mathematics.stanford.edu/academics/undergraduate/math-placement/) web site for more information and a link to take the diagnostic.

Chemistry Advanced Placement for Incoming Frosh

Chemistry Advanced Placement Scores	CHEM 31A	CHEM 31M	CHEM 33	CHEM 121 with CHEM 100
Chem AP 5	permission of instructor only	YES	YES	NO
Chem AP 4	permission of instructor only	YES	NO	NO
Chem AP 3 or lower	take placement exam to determine appropriate placement	take placement exam to determine appropriate placement	After passing grade in 31M or 31A/B	NO
No AP or IB background	YES	Okay with passing placement exam score	After passing grade in 31M or 31A/B	NO
IB, A-level, French Baccalaureate, German Arbitur	permission of instructor only	YES	YES	YES

Undergraduate Transfer Work

COVID-19 Policies on Undergraduate Transfer Work for Academic Year 2020-21

- The 15-quarter unit cap on online work has been eliminated, students may apply for transfer credit for work that was or will be completed via an online/hybrid/correspondence instruction mode.The coursework must still meet all other conditions for transfer credit.
- Students may reach out to their departments for review/approval of transfer credit without having to first secure a review/approval from the Registrar's Office. Please note: students will want to confirm with departments what their transfer credit process is, if seeking a review of transfer credit for application towards major/minor requirements.
- Credit earned in U.S. military training and service may be eligible for transfer to Stanford if the work was completed at an accredited U.S. college or University or if the work appears on an official Joint Services Transcript (JST) and meets all other conditions for transfer credit. Joint Services Transcripts can be requested via the JST website (https://jst.doded.mil/official.html).

Academic credit for work done elsewhere may be allowed toward a Stanford bachelor's degree under the following rules and conditions:

1. Credit may be granted for work completed at institutions in the U.S. only if the institutions are regionally accredited.
2. Study in institutions outside the U.S., when validated by examination results, tutorial reports, or other official evidence of satisfactory work, may be credited toward a Stanford bachelor's degree, subject to the approval of the credit evaluator and the appropriate departments.

See the Registrar's web site (https://registrar.stanford.edu/students/transfer-credit-and-advanced-placement/international-course-work/) for additional information regarding transfer credit requests for course work completed abroad.

3. Credit is officially allowed only after the student has been unconditionally admitted to Stanford.
4. Credit is allowed for work completed at institutions in the U.S. only on the basis of an official transcript received by the Registrar at Stanford directly from the institution where the credit was earned. In order for transfer credit to be awarded, students must submit an official transcript that clearly indicates all of the below information for each course:
   - Course codes/numbers
   - Course titles or descriptions
   - Final grades earned
   - Course credits earned
5. Credit from another institution may be transferred for courses which are substantially equivalent to those offered at Stanford University on the undergraduate level, subject to the approval of the credit evaluator. A maximum of 20 quarter units may represent courses which do not parallel specific undergraduate courses at Stanford, again, subject to the approval of the credit evaluator as to quality and suitability.
6. Course work cannot duplicate, overlap, or regress previous work.
7. Transfer course work cannot count towards secondary school diploma and/or graduation requirements.
8. For students interested in fulfilling a Ways of Thinking/Doing (Ways) breadth requirement through transfer work, a transfer course evaluation must be submitted to confirm if the course will meet the Ways criteria. Requests for fulfilling Ways requirements in transfer require pre-approval prior to course enrollment and the pre-approval requests must be submitted prior to the term in which students intend to enroll in the transfer course and as defined on the Ways (https://undergrad.stanford.edu/programs/ways/getting-credit/ways-credit-classes-taken-other-us-universities/) web site. Courses must be taken for a minimum of 3 quarter units (2 units in the case of Creative Expression only) and must be taken for a letter grade.
   For incoming transfer students, a proportion of their Ways requirement must be fulfilled at Stanford based on the number of qualified transfer units awarded at matriculation. Students must complete a number of Ways courses to fulfill the Ways requirement as outlined in the “Transfer Credit for Ways (p. 35)” section of this bulletin.
9. Transfer work can be used to satisfy a department major or minor requirement. The transfer work must first be officially accepted into the University through the Office of the University Registrar. After the transfer credit has been approved and posted by the Office of the University Registrar, the departments determine if the approved transfer work can be used to satisfy a department major or minor requirement. Students should consult with their departments about a program's transfer credit policies/procedures.
10. The credit allowed at Stanford for one quarter's work may not exceed the number of units that would have been permissible for one quarter if the work had been done at Stanford; for work done under a system other than the quarter system, the permissible maximum units are calculated at an appropriate ratio of equivalence (i.e. is converted into quarter units).
11. Credit is allowed at Stanford for work graded 'C-' (or better) or 'Pass' (where 'Pass' is equivalent to a letter grade of 'C-' or above), but not for work graded 'D' or below.
12. No more than 45 (90 for transfer students) quarter units of credit for work done elsewhere (including external test credit) may be counted toward a bachelor's degree at Stanford.
13. Credit earned in extension, correspondence, and online courses is transferable only if the university offering the courses allows that credit toward its own bachelor's degree. Such credit is limited to a maximum of 45 quarter units for extension courses, a maximum of 15 quarter units for correspondence and online study, and a maximum of 45 quarter units for the combination of extension, correspondence, and online courses. Online and independent study courses are not eligible for Ways credit.
14. Credit earned in military training and service is not transferable to Stanford, unless offered by an accredited college or university in the U.S. and evaluated as above by the credit evaluator.

See the Registrar's web site (https://registrar.stanford.edu/students/transfer-credit-and-advanced-placement/transfer-credit-policies/) for additional information regarding transfer credit policies and procedures.

Special Registration Statuses (Undergraduate)

COVID-19 Policies on Undergraduate Special Registration Statuses for Academic Year 2020-21

- *Permit to Attend for Services Only (PSO):* Students approved for the PSO status will be assessed a $150 fee instead of the standard PSO fee.
- *13th Quarter:* this status will be available in the Summer Quarter, as Summer will not necessarily be the standard optional quarter for the Academic Year 2020-21.

The following reduced-tuition categories can be requested by undergraduates in the final stages of their degree program:

Permit to Attend for Services Only (PSO)

Undergraduates in their terminal quarter who are completing honors theses, clearing incomplete grades, or have completed all requirements and are requiring a registration status to utilize university resources, may petition one time only for PSO status. PSO does not permit any course enrollment. Students must apply to graduate through Axess if applying for the PSO special registration status. The deadline for the completed PSO petition (https://stanford.box.com/PSO/) is the Preliminary Study List (https://registrar.stanford.edu/students/enrolling-courses/preliminary-study-list-deadline-courses-or-units/) deadline of the applicable quarter.

13th Quarter

Undergraduates who have completed at least twelve full-time quarters may petition to register for 13th Quarter registration status at a reduced tuition rate for their final quarter, but must register for at least eight units. Undergraduate dual degree students must complete at least fifteen full-time quarters before petitioning for reduced tuition in their final quarter. Students receiving financial aid should check with the Financial Aid Office for eligibility if they are seeking aid beyond 12 quarters of enrollment. Undergraduates must apply to graduate through Axess if applying for the 13th-quarter special registration status.

Last Units out of Residence

Students may petition to complete their final 15 units out of residence to complete their degree requirements. The final 15 units of transfer credit must meet the criteria in the undergraduate "Transfer Work (p. 40)" section of this bulletin. Students must submit the Request for Last Units Out of Residence Petition (https://stanford.box.com/last-units-out-of-residence/) to determine eligibility and to request pre-approval of the transfer work. A registration status is required to graduate. Students should select either the Graduation Quarter or the Permit for Services Only special registration status on the Last Units Out of Residence petition. Refer to the Special Registration Status section of the bulletin

for a description of theses statuses. An application to graduate should be submitted through Axess.

Graduation Quarter

Undergraduates may petition one time only for Graduation Quarter in their terminal quarter only if:

1. filing a Request for Last Units Out of Residence (https://stanford.box.com/last-units-out-of-residence/) in order to complete up to 15 final units at another institution; or
2. returning from a discontinued status and filing a Request to Return and Register in Undergraduate Study (https://undergrad.stanford.edu/planning/academic-policies/returning-students/) in order to confer their degree; or
3. if all degree requirements, including honors theses, have been completed and student requires a registration status to graduate, but will not be using University resources or housing.

Coterminal students are only eligible for the Graduation Quarter special registration status if they are applying to confer both the undergraduate and graduate degree in the same quarter. Undergraduates may be eligible for Graduation Quarter status in these three situations only if the student has completed all graduation requirements and will not be utilizing University resources, including housing. The deadline for the completed Graduation Quarter petition (https://stanford.box.com/grad-qtr-ug/) is the Preliminary Study List (https://registrar.stanford.edu/students/enrolling-courses/preliminary-study-list-deadline-courses-or-units/) deadline of the applicable quarter. Undergraduates must apply to graduate through Axess if applying for the Graduation Quarter special registration status.

Minimum Progress for Undergraduates

Undergraduates are expected to finish their degree requirements in a timely fashion. In addition to maintaining academic progress obligations, students are expected to take courses to progress towards a Bachelor of Arts or a Bachelor of Science degree. If after 12 quarters, an undergraduate is not on track to complete degree requirements and graduate within the next two quarters, the University may impose requirements with deadlines on a student's course of study. Further, if a student fails to meet those imposed requirements and/or has not after 18 quarters completed all degree requirements, the University may discontinue the student for failure to progress.

Leaves of Absence and Reinstatement (Undergraduate)

A Leave of Absence allows a student to take a break from enrollment either before or after a quarter begins. There may also be conditions associated with a Leave, which are outlined in greater detail below. Undergraduates are admitted to Stanford University with the expectation that they complete their degree programs in a reasonable amount of time, usually within four years.

Leaves of absence for undergraduates may not exceed a cumulative total of two years (eight quarters including Summer Quarters).

COVID-19 Policies on Undergraduate Leaves of Absence for Academic Year 2020-21

For academic year 2020-21, new leaves of absence taken during Autumn, Winter, Spring, or Summer quarters do not count towards the eight quarters maximum.

Undergraduates and coterms in the undergraduate tuition group are expected to enroll in three of four quarters during the 2020-21 academic year, with one quarter considered the student's Flex Term. If students are unable to or elect not to enroll in three quarters, they must apply for a leave of absence for those quarter(s). Leaves of absence information for International undergraduates can be found below in this bulletin section.

Undergraduates may take one quarter away from Stanford without having to file for a leave of absence (LOA), this term being considered the student's Flex Term. If a student takes more than one quarter away from Stanford, a Leave of Absence form is required. A student would be discontinued for no enrollment in any term in which they do not enroll after use of the Flex Term. See the Discontinuation and Reinstatement (p. 43) section below for further information.

Students on leave of absence are not registered at Stanford and, therefore, do not have the rights and privileges of registered students. They cannot fulfill any official department or University requirements during the leave period. Students on leave may complete course work for which an 'Incomplete' grade was awarded in a prior term (unless doing so places an undue burden on the part of an instructor, department, staff, or other university resource) and are expected to comply with the maximum one-year time limit for resolving incompletes; a leave of absence does not stop the clock on the time limit for resolving incompletes.

New freshmen and transfers are required to register in Autumn Quarter and may not take a leave of absence prior to their first quarter. However, new undergraduate students may request a deferment from the Office of Undergraduate Admission before the first day of Autumn Quarter. Under rare and exceptional circumstances, new freshmen and transfers may take a leave of absence during their first quarter with the permission of the Vice Provost for Undergraduate Education (or his or her designee). When circumstances arise which make it advisable or necessary for freshmen to take a leave of absence during any of their first three quarters, the student is required to wait until Autumn Quarter of the following academic year to return.

When a student is granted or placed on a leave of absence after the beginning of the term, courses in which the student was enrolled after the final study list deadline appear on the student's transcript and show the symbol 'W' (withdraw). For additional information regarding satisfactory academic progress, refer to the "Academic Progress (p. 94)" section of this bulletin. Information on tuition refunds is available in the "Refunds (p. 30)" section of this bulletin.

International Undergraduates

A Leave of Absence allows a student to take a break from enrollment either before or after a quarter begins. There may also be conditions associated with a Leave, which are outlined in greater detail below. Undergraduates are admitted to Stanford University with the expectation that they complete their degree programs in a reasonable amount of time, usually within four years.

Leaves of absence for undergraduates may not exceed a cumulative total of two years (eight quarters including Summer Quarters). For academic year 2020-21, leaves of absence taken during Autumn, Winter, Spring or Summer quarters will not count towards the eight quarters maximum.

COVID-19 Policy on Leaves of Absence for International Undergraduates

International undergraduates are expected to enroll in three consecutive quarters during the 2020-21 academic year. If undergraduates are unable to or elect to not enroll in three consecutive quarters, they must apply for a Leave of Absence for those quarter(s). International undergraduates are required to consult with a Bechtel International Center immigration advisor well before requesting a Leave of Absence. The Leave of

Absence may complicate an international student's legal status and ability to remain and work in the U.S.

Students on leave of absence are not registered at Stanford and, therefore, do not have the rights and privileges of registered students. They cannot fulfill any official department or University requirements during the leave period. Students on leave may complete course work for which an 'Incomplete' grade was awarded in a prior term (unless doing so places an undue burden on the part of an instructor, department, staff, or other university resource) and are expected to comply with the maximum one-year time limit for resolving incompletes; a leave of absence does not stop the clock on the time limit for resolving incompletes.

New freshmen and transfers are required to register in Autumn Quarter and may not take a leave of absence prior to their first quarter. However, new undergraduate students may request a deferment from the Office of Undergraduate Admission before the first day of Autumn Quarter. Under rare and exceptional circumstances, new freshmen and transfers may take a leave of absence during their first quarter with the permission of the Vice Provost for Undergraduate Education (or his or her designee). When circumstances arise which make it advisable or necessary for freshmen to take a leave of absence during any of their first three quarters, the student is required to wait until Autumn Quarter of the following academic year to return.

When a student is granted or placed on a leave of absence after the beginning of the term, courses in which the student was enrolled after the final study list deadline appear on the student's transcript and show the symbol 'W' (withdraw). For additional information regarding satisfactory academic progress, refer to the "Academic Progress (p. 94)" section of this bulletin. Information on tuition refunds is available in the "Refunds (p. 30)" section of this bulletin.

Voluntary Leave of Absence

Students have the option of taking a voluntary leave of absence for up to one year, or four quarters, upon filing a Leave of Absence form with the Office of the University Registrar and receiving approval. Students may revoke their request to take a voluntary leave of absence via Axess, within two business days of submitting a Leave of Absence eForm. Except where unexpected circumstances necessitate an immediate leave, students are expected to file for a voluntary leave of absence 30 days prior to the quarter in which the leave will begin. The leave may be extended for up to one additional year, or four quarters, provided the student files (before the end of the initial one-year leave) a Leave of Absence form (https://stanford.box.com/leaveofabsence/) for the leave extension with the Office of the University Registrar and receives approval. Leaves requested for a longer period than one year, or four quarters, are approved only in exceptional circumstances (for example, mandatory military service). Leaves of absence for undergraduate students may not exceed a cumulative total of two years (eight quarters including summer quarters).

Undergraduates who take an approved leave of absence while in good standing from a quarter for which they have registered in advance and do not wish to attend may enroll in the University for the subsequent quarter with the privileges of a continuing student. For undergraduates who wish to withdraw from the current quarter after the beginning of the term, courses in which the student was enrolled after the final study list deadline appear on the student's transcript and show the symbol 'W' (withdraw). For additional information regarding satisfactory academic progress, refer to the "Academic Progress" section of this bulletin. In either situation, the University may condition its approval of a petition for leave of absence on the student's meeting such requirements as the University deems appropriate in the individual case for the student to be eligible to return (such as, in the case of a leave for medical reasons, proof of treatment and/or an interview with a provider at Vaden Health Center (http://vaden.stanford.edu/) or Counseling and Psychological Services (https://vaden.stanford.edu/caps-and-wellness/counseling-and-psychological-services-caps/) or its designee). Undergraduates who wish to withdraw from the current quarter, or from a quarter for which they have registered in advance and do not wish to attend, must file a Leave of Absence form (https://stanford.box.com/leaveofabsence/) with and receive approval from the office of the Vice Provost for Undergraduate Education, via Academic Advising (https://advising.stanford.edu), Sweet Hall.

Information on tuition refunds is available in the "Refunds (p. 30)" section of this bulletin. For a full refund, petitions must be received by the Office of the University Registrar no later than the first day of classes for the quarter.

Discontinuation and Reinstatement

COVID-19 Policies on Discontinuation and Reinstatement for Academic Year 2020-21

In academic year 2020-21, a student's active status in their academic degree program may be discontinued if the student:

- fails to be enrolled by the study list deadline of their second term away from Stanford; or
- fails to be approved for a leave of absence by the start of the term of their second term away from Stanford; or
- fails to enroll by the study list deadline, or fails to file and be approved for a leave of absence in a subsequent quarter, after use of the Flex Term; or
- voluntarily terminates undergraduate studies; or
- is dismissed for academic reasons; or
- is expelled from the University.

Students who fail to be either enrolled by the final study list deadline of their second term away from Stanford, or who fail to submit a Leave of Absence petition by the published deadline in their second term away from Stanford, must apply for reinstatement through the Request to Return and Register in Undergraduate Study (https://undergrad.stanford.edu/planning/academic-policies/returning-students/).

This policy is applicable to the four quarters in academic year 2020-21 only; additional policy will be published prior to academic year 2021-22.

The University is not obliged to approve reinstatements of students. Applications for reinstatement are reviewed by the Vice Provost for Undergraduate Education and are subject to the approval of the Faculty Senate Committee on Undergraduate Standards and Policy or its designees. The Committee or its designees may determine whether the application for reinstatement will be approved or not, and/or the conditions a student must meet in order to be reinstated. Reinstatement decisions are in the discretion of the University and may be based on the applicant's status when last enrolled, activities while away from campus, the length of the absence, the perceived potential for successful completion of the program, as well as any other factors or considerations regarded as relevant to the Vice Provost for Undergraduate Education, the Committee, or their designees.

Applications for reinstatement through the Request to Return and Register in Undergraduate Study (https://undergrad.stanford.edu/planning/academic-policies/returning-students/), must be submitted eight weeks prior to the start of the term in which the student seeks to enroll in classes. Information and instructions may be obtained by contacting the office of the Vice Provost for Undergraduate Education, via Academic Advising (https://advising.stanford.edu), Sweet Hall.

Students who have been expelled from Stanford University are not permitted to apply for reinstatement.

Students who wish to terminate their study as undergraduates (e.g., for transfer to another institution) should submit a properly endorsed Request to Permanently Withdraw from Degree Program form (https://stanford.box.com/permanent-withdraw/) to the office of the Vice Provost for Undergraduate Education, via Academic Advising (https://advising.stanford.edu), Sweet Hall. In this instance, applications for reinstatement through the Request to Return and Register in Undergraduate Study are not appropriate. Any student wishing then to return to undergraduate study at Stanford is required to apply as a transfer student through the Office of Undergraduate Admission, and such re-admission is not guaranteed.

Leaves of absence and reinstatement of graduate students are addressed in the "Graduate Degrees (p. 65)" section of this bulletin.

Involuntary Leave of Absence and Return Policy

In effect as of January 4, 2020

Stanford University is committed to the safety, health and well-being of the campus community. The University recognizes that students may experience situations that significantly limit their ability to function successfully or safely in their role as students. In such circumstances, students should consider requesting a leave of absence. A leave of absence permits students to take a break from the University and their studies, so that they may address the issues that led to the need for the leave and later return to the University with an enhanced opportunity to achieve their educational goals. Students will be given the option to take a voluntary leave of absence before a decision is made with respect to an involuntary leave.

1. **Involuntary Leave of Absence**

   Requiring a student to take a leave of absence is rare and, subject to Section III, only happens when current medical knowledge and/or the best available objective evidence indicates to the Senior Associate Vice Provost and Dean of Students or their designee (hereinafter, Dean of Students) that there is a significant risk to the student's health or safety or the health or safety of others, or the student's behavior severely disrupts the University environment, and no reasonable accommodations can adequately reduce that risk or disruption.

   Consistent with Stanford's Nondiscrimination Policy (p. 123), Stanford prohibits unlawful discrimination on the basis of any type of disability or any other characteristic protected by applicable law in the administration of the University's programs and activities. Stanford offers a range of resources, support services and accommodations to address the physical and mental health needs of students. However, on rare occasion, a student's needs may require a level of care that exceeds the care the University can appropriately provide. Where current knowledge about the individual's medical condition and/or the best available objective evidence indicates that a student poses a significant risk to the health or safety of a member of the University community, where a student is unable or unwilling to carry out substantial self-care obligations and poses a significant risk to their own safety not based on mere speculation, stereotypes, or generalizations, or where a student's behavior severely disrupts the University environment and the student does not want to take a voluntary leave, the Dean of Students has the authority to place a student on an involuntary leave of absence. Before placing any student on an involuntary leave of absence, Stanford will conduct an individualized assessment, consulting with the Office of Accessible Education (OAE) to determine if there are reasonable accommodations that would permit the student to continue to participate in the University community without taking a leave of absence.

   The Dean of Students may be notified about a student who may meet the criteria of an involuntary leave of absence from a variety of sources including, but not limited to, the student, the student's academic advisor, Residential Education staff, Graduate Life Office staff, an academic department, or a member of the University's threat assessment team. If the Dean of Students deems it appropriate, these procedures will be initiated.

   a. **Procedures for Placing a Student on an Involuntary Leave of Absence**

      i. The Dean of Students will consult with the Office of Accessible Education (OAE) prior to making a decision to impose an involuntary leave of absence.

      ii. The Dean of Students will issue a notice to the student in writing that an involuntary leave of absence is under consideration. The written notice will include the reason(s) why the student is being considered for an involuntary leave, contact information for OAE, which can provide information about accommodations, and a copy of this policy. In addition, the notice will provide contact information for the Process Resource, an administrator outside of the decision-making process with knowledge of Stanford's involuntary leave of absence process who will serve as a neutral process resource to answer any student questions about the process from referral through return to Stanford. In the written notice, the student will be encouraged to respond before a decision regarding a leave of absence is made and will be given a specified time period within which to do so.

      iii. The Dean of Students will consider potential accommodations and/or modifications that could obviate the need for an involuntary leave of absence, such as the option to take a voluntary leave of absence, academic accommodations, housing and dining accommodations, and modifications to University policies, rules, and regulations. Examples of academic, administrative, and housing accommodations that may be facilitated through the Office of Accessible Education (OAE) can be found on the OAE (https://oae.stanford.edu/) website.

      iv. The student may be asked to execute an Exchange of Confidential Information Consent Form providing Stanford personnel temporary authority to get information from the student's healthcare provider(s) regarding issues relevant and appropriate to the consideration of an involuntary leave of absence when there is a need for the University to have access to that information as part of the interactive process and individualized assessment. If a student refuses to execute an Exchange of Confidential Information Consent Form or to respond within the timeframe set by the Dean of Students, the Dean may proceed with the assessment based on information in the Dean's possession at the time.

      v. The Dean of Students will also confer, as feasible and when appropriate in a particular matter, with individuals regarding the need for an involuntary leave of absence. Although each case will vary, conferring individuals could include:

         1. Residence Deans, or Graduate Life Office Deans;
         2. Faculty members;
         3. Academic advisors;

4. With appropriate authorization, representatives from Stanford's Vaden Health Center (Vaden);

5. With appropriate authorization, the student's treatment provider(s) or other health care professionals;

6. Member(s) of the University's threat assessment team; and/or

7. Such other individuals as may be appropriate in an individual matter.

   In each case, the Dean of Students will confer with a representative from the Office of Accessible Education (OAE) with expertise in mental health disabilities.

vi. Particular attention will be paid to the criteria for imposing an involuntary leave of absence, specifically:

   1. whether current knowledge about the individual's medical condition and/or the best available objective evidence indicates that a student poses a significant risk to the health or safety of a member of the University community;

   2. whether a student is unable or unwilling to carry out substantial self-care obligations and poses a significant risk to their own safety not based on mere speculation, stereotypes, or generalizations; and/or

   3. whether a student's behavior severely disrupts the University environment.

      The individualized assessment as to each factor, based on reasonable judgment that relies on current medical knowledge or on the best available objective evidence, should ascertain: the nature, duration, and severity of the risk or disruption; the probability that the risk or disruption will actually occur; and whether reasonable modifications of policies, practices, or procedures will adequately mitigate the risk or disruption so as to eliminate the need for an involuntary leave of absence.

vii. The Dean of Students will give significant weight to the opinion of the student's treatment provider(s), including those identified by the student, regarding the student's ability to function academically and safely at the University with or without reasonable accommodations. If the Dean of Students determines that the information provided by the treatment provider(s) is incomplete, requires further explanation or clarification, or is inconsistent with other information in the student's record, the Dean of Students, with proper authorization, will contact the treatment provider(s) to obtain additional information. In certain circumstances, the University may require the student to undergo an additional evaluation by an independent and objective professional designated by Stanford, if the Dean of Students believes it will facilitate a more informed decision.

viii. Following these consultations and based on a review of the relevant documentation and information available, the Dean of Students will make a decision as to whether the student should be placed on an involuntary leave of absence, and will provide written notice of this decision to the student. The written notice of decision will include information about the student's right to appeal and to reasonable accommodations during the appeal process. The review and notice of decision under this policy should be done in a reasonably timely manner. Where students have been asked to remain away from the University while the review is underway, every effort will be made by the Dean of Students to reach a decision within one week, provided the student responds in a timely manner to requests for information and, if appropriate, evaluation.

   1. If an involuntary leave of absence is imposed. The written notice of decision to the student will set forth the basis for the decision and a time-frame for when the student must leave the University and when they may be eligible to return to the University and the conditions and/or requirements the student will need to satisfy to be eligible for return. The written notice will also inform the student of their right to reasonable accommodations in the return process and will provide contact information for OAE and the Process Resource. The length of the leave will be determined on an individual basis.

   2. If an involuntary leave of absence is not imposed. The Dean of Students may impose conditions and/or requirements under which the student is allowed to remain at the University.

ix. Within one week of receiving the decision of the Dean of Students, the student may submit an appeal of the decision in writing to the Vice Provost for Student Affairs or the Vice Provost's designee, who may not be the Dean of Students. The written request for appeal must specify the particular substantive and/or procedural basis for the appeal, and must be made on grounds other than general dissatisfaction with the decision of the Dean of Students. The review by the Vice Provost for Student Affairs or the Vice Provost's designee will be limited to the following considerations:

   1. Were the proper facts and criteria brought to bear on the decision?

   2. Is there any new information not previously available to the student that may change the outcome of the decision-making process?

   3. Were there any procedural irregularities that materially affected the outcome of the matter to the detriment of the appellant?

   4. Given the proper facts, criteria, and procedures, was the decision a reasonable one?

After reviewing the matter fully, the Vice Provost for Student Affairs or the Vice Provost's designee will issue a written decision affirming, modifying, or reversing the decision to place the student on an involuntary leave of absence. The Vice Provost's decision shall be final, and no other appeals or grievance procedures are available.

b. Implications of an Involuntary Leave of Absence

i. Student status. Students on a leave of absence generally retain their admitted student status; however, they are not registered and therefore do not have the rights and privileges of registered students.

ii. Housing. Consistent with Stanford's policies and procedures, students assigned to a University residence are subject to the terms of the University Residence Agreement. However, as set forth on the Registrar's Office Leave of Absence website, students with medical disabilities (including mental health disabilities) that require University medical services may petition to remain in campus housing for one term while on leave. Students who leave the University before the end of a term may be eligible to receive refunds of portions of their housing charges. Eligibility criteria for refunds are set

forth in the Residence Agreement which is found on the Residence Agreement website (https://rde.stanford.edu/studenthousing/apply/residence-agreement/). (https://rde.stanford.edu/studenthousing/apply/residence-agreement/)

iii. Effective date(s) of leave. A student must leave the University within the timeframe set forth by the Dean of Students. The leave will remain in effect until (1) it is determined after an individualized assessment that the student is able to return to the University with or without reasonable accommodations and (2) the student has complied with any University requirements applicable to all students returning from a leave and all of the conditions mandated by the Dean of Students and/or the Vice Provost.

iv. Notification. At any time during the leave process, the Dean of Students may notify a

student's parent, guardian, emergency contact, or other individual, consistent with the law, if notification is deemed appropriate.

v. Association with the University while on leave. Unless expressly permitted by the Dean of Students in writing, students on an involuntary leave of absence are not permitted to be present at the University and are not permitted to engage in any University-related activities, including on-campus employment.

vi. Coursework taken while on leave. Consistent with Stanford's policies and procedures, academic credit for work done elsewhere may be allowed towards a Stanford degree. Students should refer to the "Transfer Work (p. 82)" section of the Stanford Bulletin and consult with the Registrar's Office and their department prior to taking any coursework while on an involuntary leave of absence.

vii. SUnet ID privileges. Unless expressly prohibited by the Dean of Students in writing, students on leave generally may retain their SUnet ID privileges, including their Stanford email account.

viii. Transcript notation. Students on a leave of absence will have a notation on their transcript that reads "Leave of Absence."

ix. Tuition and fees. Consistent with Stanford's policies and procedures, students who leave the University before the end of a term may be eligible to receive refunds of portions of their tuition. See the (https://registrar.stanford.edu/students/tuition-and-fees/tuition-refund-schedule/) Registrar's Tuition Refunds (https://registrar.stanford.edu/students/tuition-and-fees/tuition-refund-schedule/) page for a schedule of refunds.

x. Meal Plan. Consistent with Stanford's policies and procedures, a meal plan refund is based on the date when a student moves out of University residence and is approved under conditions as specified in the Residence Agreement. Students with questions about residential meal plan refunds should contact the central office of Stanford Dining.

xi. Visa Status. International students (F-1 and J-1 Visa holders) placed on an involuntary leave of absence must speak with a Bechtel International Center advisor regarding their visa status.

2. Request for Return

a. For general requirements applicable to all students returning to Stanford after a leave of absence, undergraduate students should refer to the Returning to Stanford (https://undergrad.stanford.edu/planning/academic-policies/returning-students/) website. Graduate students should consult with their academic department and a Graduate Life Office Dean. In addition to the general requirements all students must meet when returning to Stanford after a leave of absence, as well as any conditions mandated by the Dean of Students and/or the Vice Provost for return from an involuntary leave of absence as outlined below in section II.C, students seeking to return from an involuntary leave of absence for reasons of personal or community health and safety may be required to submit additional documentation related to the factors set forth in section I.A.6 as part of an individualized assessment. OAE will work with the students to provide reasonable accommodations in the return process as necessary.

b. A student must make a written request to the Dean of Students to return to the University. Generally, a student will not be allowed to return until one full quarter has elapsed or until the leave period in the involuntary leave of absence notification has elapsed, and all conditions and/or requirements are met.

c. The Dean of Students may require the student to provide evidence that the student, with or without reasonable accommodations, has sufficiently addressed the issues that previously established the criteria for imposing an involuntary leave of absence as set forth in section I.A.6, above. The Dean of Students may also ask, confer with, or seek information from others to assist in making the determination. The information sought may include:

   i. At the student's discretion, documentation of efforts by the student to address the issues that led to the leave

   ii. With appropriate authorization, release of academic records to inform treating clinicians

   iii. With appropriate authorization, release of treatment information to the extent necessary to determine if the student has sufficiently reduced the risk or disruption that led to the need for the involuntary leave

   iv. With appropriate authorization, consultation with Vaden to the extent necessary to determine if the student has sufficiently reduced the risk or disruption that led to the need for the involuntary leave

   v. Consultation with OAE

d. All returning students must meet the essential eligibility requirements and any technical standards of the University and, if applicable, the relevant school or department, with or without reasonable accommodations. If the Dean of Students is not satisfied that the student is ready to return to the University, the student will be notified in writing of the decision, including the reason for the decision, within a reasonable time after the student has submitted a request for return and required documentation.

e. A student not permitted to return may appeal the decision to the Vice Provost for Student Affairs following the procedure in section I.A.9.

3. Scope of the Policy and Relationship to Other University Policies

A leave of absence is an administrative process; it is not a disciplinary process. This policy and these procedures are not intended to be punitive and do not take the place of disciplinary actions that are in response to violations of Stanford's Fundamental Standard or other policies or directives, nor do they preclude the

removal or dismissal of students from the University or University-related programs as a result of violations of other University policies or school or departmental protocols. This policy does not limit the University's ability to place enrollment holds on students for reasons beyond the scope of this policy and nothing in this policy relieves a student of any financial obligations to the University that were in place at the time the involuntary leave of absence was imposed.

Nothing in this policy limits the power of the University to take administrative action to ensure the safety of the Stanford community. In exceptional circumstances, where the health or well-being of any person may be seriously affected, or where physical safety is seriously threatened, or where the ability of the University to carry out its essential operations is seriously threatened or impaired, the President or the President's designee, may summarily suspend, dismiss, or bar any person from the University or University-related programs. In all such cases, actions taken will be reviewed promptly, typically within one week, by the appropriate University authority.

In situations involving an imminent or ongoing threat of harm to the student or any other member of the University community, the Dean of Students, in the exercise of his or her reasonable judgment, may require a student to be immediately prohibited from entering Stanford's campus or facilities utilized for University programs or activities while the individualized assessment and review described in section I.A. are taking place. Such students will receive the written notice described in section I.A.2 as quickly as possible.

4. Requests for Reasonable Accommodation

Stanford is committed to providing equal access to all participants in University processes, including students with disabilities. Students with disabilities should contact the Office of Accessible Education (OAE) to request accommodations. Information about the support services OAE provides, types of accommodations offered, and appropriate documentation for accommodations, can be found on the OAE website: https://oae.stanford.edu/.

5. Related Resources

As noted herein, students placed on an involuntary leave of absence may have additional conditions and/or requirements they must meet prior to returning to the University, in addition to any University requirements applicable to all students returning from a leave.

- Undergraduate Students should consult the Returning to Stanford (https://undergrad.stanford.edu/planning/academic-policies/returning-students/) web page for generally applicable deadlines, information and resources.
- Graduate Students should consult with a Graduate Life Office (https://glo.stanford.edu/) Dean and their department for generally applicable deadlines, information and resources.

Students who are placed on an involuntary leave of absence may want to consult with the following offices, where appropriate:

- Office of Accessible Education (https://oae.stanford.edu/) (OAE) (https://oae.stanford.edu/)
- Financial (http://web.stanford.edu/dept/finaid/) Aid (http://web.stanford.edu/dept/finaid/)
- Student Financial (http://web.stanford.edu/group/fms/fingate/students/) Services (http://web.stanford.edu/group/fms/fingate/students/)
- University Housing (http://web.stanford.edu/dept/rde/cgi-bin/drupal/housing/)
- Vaden Health Center (http://vaden.stanford.edu/) (Vaden)
- Academic Advising (https://undergrad.stanford.edu/academic-advising-stanford/)
- Graduate Life (https://glo.stanford.edu/) Office (https://glo.stanford.edu/)
- Bechtel International (https://bechtel.stanford.edu/immigration/visa-types/f-1j-1-student-visas/leave-absence/) Center (https://bechtel.stanford.edu/immigration/visa-types/f-1j-1-student-visas/leave-absence/)

The Process Resource will be available to assist all students who are placed on an involuntary leave of absence with their questions about the process to return and resume their studies and life at Stanford.

Conferral of Degrees

Upon recommendation to the Senate of the Academic Council by the faculty of the relevant departments or schools and the Committee on Undergraduate Standards and Policy, degrees are awarded four times each year, at the conclusion of Autumn, Winter, Spring, and Summer quarters. All diplomas, however, are prepared and distributed after degree conferral in accordance to the distribution dates listed on the Registrar's Office (https://registrar.stanford.edu/students/diplomas/) web site.

Students must apply for conferral of an undergraduate or graduate degree by filing an Application to Graduate through Axess by the deadline for each term. The deadlines are published in the Academic Calendar (https://registrar.stanford.edu/resources-and-help/stanford-academic-calendar/). A separate application must be filed for each degree program and for each conferral term.

Requests for conferral are reviewed by the Office of the University Registrar and the student's department, to verify completion of degree requirements. Registration is required in the conferral term. Students with unmet financial or other University obligations resulting in the placement of a hold on their registration cannot receive a transcript, statement of completion, degree certificate, or diploma until the hold is released. An academic record where no other degree objective is being pursued is permanently frozen after the final degree conferral, and all subsequent grade change requests or changes to the student record are not permitted.

Students are typically expected to apply to graduate when they have completed their degree requirements. The University, however, reserves the right to confer a degree on a student who has completed all of the requirements for a degree even though the student has not applied to graduate; such an individual would then be subject to the University's usual rules and restrictions regarding future enrollment or registration.

Students who wish to withdraw a request for conferral or make changes to their Application(s) to Graduate can do electronically in Axess by the late application to graduate deadline on the academic calendar. Students who withdraw their graduation applications or fail to meet degree requirements must reapply to graduate in a subsequent term.

Stanford University awards no honorary degrees.

UNDERGRADUATE MAJOR UNIT REQUIREMENTS AND WIMS

School of Earth, Energy and Environmental Sciences

Major Department	Units required outside the dept./ program	Units required within the dept./ program	Total # of units	Notes/ Special Requirements
Earth Systems	62-111	21	83-132	internship, senior capstone and project
Energy Resources Engineering	min. 76	min. 18	min. 112	Senior Project and Seminar (ENERGY 199)
Geological Sciences	6-8	52-66	58-74	Geoscience research, field training/ capstone experience
Engineering Geology & Hydrogeology	55-81	19-31	85-101	-
Geophysics	27-45	24-42	69	Senior Seminar (GEOPHYS 199)

School of Engineering

Major Department	Units required outside the dept./ program	Units required within the dept./ program	Total # of units	Notes/ Special Requirements
Aeronautics and Astronautics	50	65	112	
Architectural Design	40	58	97	-
Atmosphere/ Energy	48-50	49-51	97-101	-
Bioengineering	68	39	107	-
Biomechanical Engineering	48-50	40	90-94	
Biomedical Computation	51-65	47-56	109-114	Two quarters guided research
Chemical Engineering	57-67	51	108-118	
Civil Engineering	52-75	41-64	116	Capstone project
Computer Science	min. 30	min. 43	96-106	senior project
Electrical Engineering	40	60	100	EE191W only applies for Honors Thesis. EE191W may satisfy WIM only if it is a follow-up to an REU or independent study project, where a faculty agrees to provide supervision of writing a technical paper and with suitable support from the Writing Center.
Engineering Physics	min. 48	min. 45	min. 93	at least 45 units in Engineering Fundamentals, Depth and elective courses must be engineering units
Environmental Systems Engineering	44-78	52-20	96	Capstone course
Individually Designed Major	41	40	90-107	See advisor
Management Science and Engineering	57	53	110	Senior Project
Materials Science and Engineering	min. 43	min. 60	min 103	-
Mechanical Engineering	48-50	68	116	-
Product Design (Mechnical Engineering)	40	61	101	

School of Humanities and Sciences

Major Department	Units required outside the dept./ program	Units required within the dept./ program	Total # of units	Notes/ Special Requirements
African and African American Studies	50	10	60	AAAS thesis seminar
American Studies			60	

Anthropology	-	65	65	ANTHRO 193. Senior Capstone ANTHRO 91. Method and Evidence Foreign Language requirement
Archaeology	45	20	65	foreign language 1st qtr. at 2nd-year level
Art History	-	65	65	library orientation, junior seminar
Art Practice (Studio)	-	65	65	Interdisciplinary art survey, advanced undergraduate seminar, library orientation
Asian American Studies	40	20	60	Comparative and Major-Core Curriculum, Methodology/ Research, Interdisciplinary Breadth Requirement
Biology	33-47	55	88-102	
Chemistry	20-39	47-68	82-101	The Biological Chemistry Concentration requires more units.
Chicana/o Studies	40	20	60	Comparative and Major-Core Curriculum, Methodology/ Research Course, Senior Research, Interdisciplinary Breadth Requirement
Classics	-	-	60-65	majors seminar (CLASSICS 150)
Communicatio	5	60	65	-
Comparative Literature	-	40	65	Core COMPLIT 101,121,122,123, 199; and 15 units of electives in COMPLIT
Comparative Studies in Race & Ethnicity	45	15	60	Comparative-Core Curriculum, Methodology/ Research Course, Senior Research, Subplan Requirements, Interdisciplinary Breadth Requirement
East Asian Studies	~ 70 units minimum	~ 8 units minimum	78 units minimum	Capstone Course (EALC 198); overseas studies in an East Asian country for 1 qtr; Senior Essay or Honors Thesis
East Asian Studies, China Subplan	~ 45 units minimum	~ 25 units minimum	70 units mininum	3rd-yr language proficiency; capstone/ honors
East Asian Studies, Japan Subplan	~ 45 units minimum	~ 20 units minimum	65 units minimum	3rd-yr language proficiency; capstone/ honors
East Asian Studies, Korea Subplan	~ 33 units minimum	~ 26 units minimum	59 units minimum	3rd-yr language proficiency; capstone/ honors
Economics	-	80	80	-
English	-	64	68-70	-
English w/ Creative Writing	-	73-75	73-75	dept. approval
English w/ Interdisciplinar Emphasis	15	58-60	73-75	dept. approval and interdisciplinary paper
English w/ Interdepartmental Emphasis	16-20	53-55	69-75	16-20 units in foreign lang. lit.; dept. approval
English w/ Philosophy	20-25	57-59	77-84	-
Feminist, Gender, and Sexuality Studies	45	18 core	63	Practicum
Film and Media Studies	-	60	60	library orientation, senior seminar

French	-	32	56	Capstone: any FRENCH 200 level. Oral Proficiency Interview OPI.
French and Philosophy	21-25	40-44	65	
German		30-60	60	Gateway course: GERMAN 88; capstone; Oral Proficiency Interview (OPI)
German and Philosophy	21-25	40-44	65	16 courses minimum; gateway course; capstone; Oral Proficiency Interview (OPI)
History	-	63	63 units minimum for the major; 11-15 additional units for Honors.	2 from HISTORY 201-298 plus 1 from HISTORY 200-series
Human Biology (B.A.)	min. 6	min. 40	min. 81	Capstone
Human Biology (B.S.)	min. 6	min. 40	min. 81	Capstone
Iberian and Latin American Cultures	0	40	60	Gateway course (2 of 3): ILAC 130, ILAC 131, ILAC 132. Senior Seminar: ILAC 278A. Oral Proficiency Interview (OPI)
International Relations	55-70	0-15	70	2 yr. foreign lang; Overseas studies 1 qtr.
Italian		32	56	Gateway course; ITALLANG 22A or equiv.; Oral Proficiency Interview (OPI)
Italian and Philosophy	21-25	32	72	Gateway course; Capstone: ITALIAN 236E; ITALLANG 22A or equiv.; Oral Proficiency Interview (OPI)
Jewish Studies (Individually Designed)	45	15	60	Comparative and Major-Core Curriculum, Methodology/ Research Course, Senior Research, Interdisciplinary Breadth Requirement, Language Requirement
Linguistics	-	28	55	Additional courses counting toward the 55 unit requirement should form a coherent program of study, and specific courses must be approved by the Undergraduate Adviser.
Mathematical & Computational Science	-	-	76-89	Capstone course STATS 200
Mathematics	up to 15	49	min. 64	
Math, CS Theory/ Discrete Math Subplan	min. 18	min. 33	min. 64	
Music	-	62	62	Core curriculum plus 20-unit concentration
Native American Studies	40	20	60	Comparative and Major-Core Curriculum, Methodology/ Research Course, Senior Research, Interdisciplinary Breadth Requirement

Philosophy	-	55	55	course in 194 series
Philosophy, History and Philosophy of Science subplan	12	49	61	Gateway course; 194
Philosophy and Literature	min. 15	min. 47	65	Gateway course; 194
Philosophy and Religious Studies	-	60	60	3 seminars; 20 units in each dept. + 20 advanced units from both depts.
Physics	21-24	56-60	77-84	-
Political Science	0-25	45-70	70	Introductory course POLISCI 1, and advanced seminar (200 or 300 level)
Psychology	-	60	70	-
Public Policy	25-54	25-68	min. 77	
Religious Studies	-	60	60	introductory course, majors' seminar, senior essay or honors thesis, senior colloquium
Russian Language & Literature	0-10	46-56	56	1st- and 2nd-year Russian; Gateway course; capstone; language assessment
Russian Language, Culture, & History	12-20	36-39	56	1st- and 2nd-year Russian; Gateway course; capstone; language assessment
Russian Literature & Philosophy	21-25	40-44	67	1st- and 2nd-year Russian; Gateway course; capstone; language assessment
Science, Technology, & Society (B.A.)	68	8	min. 76	Gateway course; capstone
Science, Technology, & Society (B.S.)	68	8	min. 76	Gateway course: capstone
Slavic Languages and Literatures	-	-	56	Capstone: any SLAVIC 300-level course
Sociology	5-15	45-55	60	
Spanish	0	35	60	Gateway course: ILAC 130, ILAC 131; Senior Seminar: ILAC 277; Oral Proficiency Interview (OPI)
Studio Art: See Art Practice (Studio)				
Symbolic Systems	66-81	4	70-85	-
Theater and Performance Studies	-	60	60	Gateway course(s); capstone
Urban Studies	33	37	70	20 units in concentration; capstone courses

Writing in the Major (WIM) Courses

Consult the applicable department section of the Bulletin, VPUE's WIM courses (https://undergrad.stanford.edu/programs/pwr/courses/writing-major/wim-courses/) website, or ExploreCourses (http://explorecourses.stanford.edu) for additional information regarding WIM courses.

School	Major	2018-19 WIM Courses	2019-20 WIM Courses	2020-21 WIM Courses
Earth Sciences	Earth Systems (http://exploredegrees.stanford.edu/schoolofearthsciences/earthsystems/)	BIOHOPK 172H, EARTHSYS 136, EARTHSYS 149, EARTHSYS 177C (COMM 177C), EARTHSYS 191	EARTHSYS 149, EARTHSYS 177C (COMM 177C), EARTHSYS 191, ENVRES 245	EARTHSYS 149, EARTHSYS 177C, COMM 177C, EARTHSYS 191, ENVRES 245
Earth Sciences	Energy Resources Engineering (http://exploredegrees.stanford.edu/schoolofearthsciences/energyresourcesengineering/)	ENERGY 199	ENERGY 199	ENERGY199
Earth Sciences	Geological and Environmental Sciences (http://exploredegrees.stanford.edu/schoolofearthsciences/geologicalandenvironmentalsciences/)	GS 150 (GEOPHYS 199)	GEOLSCI 150	GEOPHYS 199, GEOLSCI 150
Earth Sciences	Geophysics (http://exploredegrees.stanford.edu/schoolofearthsciences/geophysics/)	GEOPHYS 199 (GS 150)	--	GEOPHYS 199 GEOLSCI 150

Engineering	Aeronautics and Astronautics (http://exploredegrees.stanford.edu/schoolofengineering/aeronauticsandastronautics/)	AA 190	AA 190	AA 190
Engineering	Architectural Design (http://exploredegrees.stanford.edu/schoolofengineering/)	CEE 32B, CEE32D or CEE 100	CEE 32B, CEE 32D, CEE 100, CEE 102W, CEE 136	CEE 100, CEE 32B, CEE 102W, CEE 136
Engineering	Atmosphere/Energy (http://exploredegrees.stanford.edu/schoolofengineering/)	BIOE 131, COMM 120W, CEE 100, or Earth Sys 260	HUMBIO 3B, BIOE 131, COMM 120W, CEE 100, CEE 102W	CEE 100, CEE 32B, CEE 102W, CEE 136
Engineering	Bioengineering (http://exploredegrees.stanford.edu/schoolofengineering/bioengineering/)	BIOE 131, ETHICSOC 131X	BIOE 131, ETHICSOC 131X	BIOE 212, BIOMEDIN 212, CS 272, GENE 212, BIOE 131
Engineering	Biomechanical Engineering (http://exploredegrees.stanford.edu/schoolofengineering/)	ENGR 199W, ME 112	ENGR 199W, ME 112	BIOE 131, ENGR 199W
Engineering	Biomedical Computation (http://exploredegrees.stanford.edu/schoolofengineering/)		BIOE 212, BIOMEDIN 212, CS 272, GENE 212 BIOE 131, ENGR 199W	BIOE 212, BIOMEDIN 212, CS 272, GENE 212 BIOE 131, ENGR 199W
Engineering	Chemical Engineering (http://exploredegrees.stanford.edu/schoolofengineering/chemicalengineering/)	CHEMENG 185A	CHEMENG 185A	CHEMENG 185A
Engineering	Civil Engineering (http://exploredegrees.stanford.edu/schoolofengineering/)	CEE 100	CEE 100, CEE 136 (CEE 236, PUBLPOL 130, PUBLPOL 230, URBANST 130)	CEE 100, CEE 32B, CEE 102W, CEE 136
Engineering	Computer Science (http://exploredegrees.stanford.edu/schoolofengineering/computerscience/)	CS 181W, CS 191W, CS 194W, CS 210B, CS 294W	CS 181W, CS 182W, CS 191W, CS 194W, CS 210B, CS 294W	CS 181W, CS 182W, CS 191W, CS 194W, CS 210B, CS 294W
Engineering	Electrical Engineering (http://exploredegrees.stanford.edu/schoolofengineering/electricalengineering/)	CS 194W, EE 109, EE 133, EE134, EE155, EE 168, EE 191W, EE 264W, EE 267W	EE 109, EE 133, EE 153, EE 168, EE 191W, EE 264W, EE 267W, CS 194W	EE 109, EE 134, EE153, EE 168, EE191W, EE264W, EE267W, CS 194W
Engineering	Engineering Physics (http://exploredegrees.stanford.edu/schoolofengineering/)	AA 190, BIOE 131 (ETHICSOC 131X), CS 181W, EE 134, EE155, ENGR 199W, MATSCI 161, MATSCI 164, ME 112, ME 140, PHYSICS 107	AA 190, BIOE 131 (ETHICSOC 131X), CS 181W, CS 182W, EE 134, EE 155, ENGR 199W, MATSCI 161, MATSCI 164, PHYSICS 107	AA 190, BIO 131 (ETHICSOC 131X), CS 181W, CS 182W, EE 134, EE 155, ENGR 199W, MATSCI 161, MATSCI 164, PHYSICS 191, ENGR 102W (CEE 102W)
Engineering	Environmental Systems Engineering (http://exploredegrees.stanford.edu/schoolofengineering/)	CEE 100	CEE 100, CEE 136 (CEE 236, PUBLPOL 130, PUBLPOL 230, URBANST 130)	CEE 100, CEE 32B, CEE 102W, CEE 136
Engineering	Management Science and Engineering (http://exploredegrees.stanford.edu/schoolofengineering/managementscienceandengineering/)	MS&E 108	MS&E 108	MS&E 108
Engineering	Material Science and Engineering (http://exploredegrees.stanford.edu/schoolofengineering/materialsscienceandengineering/)	MATSCI 161, MATSCI 164	MATSCI 161, MATSCI 164	MATSCI 161, MATSCI 164
Engineering	Mechanical Engineering (http://exploredegrees.stanford.edu/schoolofengineering/mechanicalengineering/)	ME 112, 140	ME 170A, ME 170B	ME 170A, ME 170B
Engineering	Product Design (http://exploredegrees.stanford.edu/schoolofengineering/)	ME 112	ME 216B ME 216C	ME 115C, ME 216B, ME 216C
Humanities & Sciences	African and African American Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/africanandafricanamericanstudies/)	AFRICAAM 200X	AFRICAAM 200X	AAAS 153P, AFRICAAM 200X
Humanities & Sciences	American Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/americanstudies/)	AMSTUD 160	AMSTUD 160	AMSTUD 160
Humanities & Sciences	Anthropology (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/anthropology/)	ANTHRO 90B	ANTHRO 90B	ANTHRO 90B

Humanities & Sciences	Archaeology (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/archaeology/)	ARCHLGY 103	ARCHLGY 103	ARCHLGY 103
Humanities & Sciences	Art History (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/artandarthistory/)	ARTHIST 294	ARTHIST 294	ARTHIST 294, FILMSTUDI 101/302
Humanities & Sciences	Art Practice (Studio) (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/artandarthistory/)	ARTHIST 294	ARTHIST 294	ARTHIST 294, FILMSTUDI 101/302
Humanities & Sciences	Asian American Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/comparativestudiesinraceandethnicitycsre/)	CSRE 200X, CSRE 201X	CSRE 200X, CSRE 201X	CSRE 200X
Humanities & Sciences	Biology (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/biology/)	BIO 46, BIO 47, BIO 107 (HUMBIO 136), BIO 168, BIO 196A, BIO 197WA, BIO 199W, BIOHOPK 47, BIOHOPK 172H	BIO 46, BIO 47, BIO 107 (HUMBIO 136), BIO 168, BIO 196A, BIO 197WA, BIO 199W, BIOHOPK 172H	BIO46, BIO199W, BIO197WA, BIO168, BIO47, BIOHOPK 175H
Humanities & Sciences	Chemistry (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/chemistry/)	CHEM 134	CHEM 134	CHEM 131
Humanities & Sciences	Chicana/o-Latina/o Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/comparativestudiesinraceandethnicitycsre/)	CSRE 200X, CSRE 201X	CSRE 200X, CSRE 201X	CSRE 200X
Humanities & Sciences	Chinese (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/eastasianlanguagesandcultures/)	CHINA 111	CHINA 111	CHINA 111
Humanities & Sciences	Classics (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/classics/)	CLASSICS 150	CLASSICS 150 (Formerly CLASSGEN 136)	CLASSICS 150, ARCHLGY 103
Humanities & Sciences	Communication (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/communication/)	COMM 104W, COMM 120W, COMM 137W (AMSTUD 137)	COMM 104W, COMM 120W (COMM 220, AMSTUD 120), COMM 177SW (COMM 277S), COMM 186W	COMM 104W, COMM 120W, COMM 137W, COMM 177SW, COMM 186W
Humanities & Sciences	Comparative Literature (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/comparativeliterature/)	COMPLIT 101	COMPLIT 101	COMPLIT 101
Humanities & Sciences	Comparative Studies in Race and Ethnicity (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/comparativestudiesinraceandethnicitycsre/)	CSRE 200X, CSRE 201X, EDUC 199A	CSRE 200X, CSRE 201X, EDUC 199A	CSRE 200X
Humanities & Sciences	East Asian Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/eastasianstudies/)	CHINA 111, JAPAN 138 (COMPLIT 138A), KOREN 120	CHINA 111, JAPAN 138, KOREA 120	CHINA 111, JAPAN 138, KOREA 121
Humanities & Sciences	Economics (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/economics/)	ECON 101	ECON 101	ECON 101
Humanities & Sciences	English (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/english/)	ENGLISH 162W	ENGLISH 162W	ENG 5A, ENG 5B, ENG 5C, ENG 5D, ENG 5E, ENG 5F, ENG 5G, ENG 5H
Humanities & Sciences	Feminist, Gender, and Sexuality Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/feministstudies/)	ANTHRO 90B, FEMGEN 105	FEMGEN 157, AMSTUD 160, ANTHRO 90B	FEMGEN 151, AMSTUD 160, ANTHRO 90B
Humanities & Sciences	Film and Media Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/artandarthistory/)	FILMSTUD 102, FILMSTUD 302	FILMSTUD 101	FILMSTUD 101, FILMSTUD 302
Humanities & Sciences	French (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/frenchanditalian/)	FRENCH 133	FRENCH 129, FRENCH 130, FRENCH 133	FRENCH 129, FRENCH 131, FRENCH 133
Humanities & Sciences	German Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/germanstudies/)	GERMAN 116	GERMAN 116	GERMAN 116
Humanities & Sciences	History (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/history/)	HISTORY 209S	HISTORY 209S	HISTORY 209S

Humanities & Sciences	Human Biology (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/humanbiology/)	HUMBIO 2B, HUMBIO 3B, HUMBIO 4B	HUMBIO 2B, HUMBIO 3B, HUMBIO 4B	HUMBIO 2B, HUMBIO 3B, HUMBIO 4B
Humanities & Sciences	Iberian and Latin American Cultures (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/iberianandlatinamericancultures/)	ILAC 277, ILAC 278A	ILAC 277, ILAC 278A	ILAC 136, ILAC 157, ILAC 161
Humanities & Sciences	International Relations (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/internationalrelations/)	INTNLREL 140A, INTNLREL 140C (HISTORY 201C), INTNLREL 174, INTNLREL 200B, INTNLREL 103F	INTNLREL 110C*, INTNLREL 110D* (Note: POLISCI 110X and POLISCI 110Y do not satisfy the WIM Requirement), INTNLREL 140A, INTNLREL 140C* (Note: INTNLREL 140C must be taken for 5 units) INTNLREL 174, INTNLREL 200B, INTNLREL 103F	INTNLREL 103F, INTNLREL 110C, INTNLREL 110D, INTNLREL 140C, INTNLREL 168W, INTNLREL 174, INTNLREL 200B, HIST 103F, HIST 201C, POLISCI 110C, POLISCI 110D
Humanities & Sciences	Italian (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/frenchanditalian/)	NONE	ITALIAN 128	ITALIAN 128
Humanities & Sciences	Japanese (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/eastasianlanguagesandcultures/)	JAPAN 138 (COMPLIT 138A)	JAPAN 138	JAPAN 138
Humanities & Sciences	Jewish Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/jewishstudies/)	CSRE 200X, CSRE 201X	CSRE 200X, CSRE 201X	CSRE 200X
Humanities & Sciences	Linguistics (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/linguistics/)	LINGUIST 121A, LINGUIST 130A	LINGUIST 121B, LINGUIST 130A	LINGUIST 121B, LINGUIST 130A
Humanities & Sciences	Mathematical and Computational Science (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/mathematicalandcomputationalscience/)	CS 181W, MATH 109, MATH 110, MATH 120, MATH 171, STATS 155	CS 181W, MATH 109, MATH 110, MATH 120, MATH 171, STATS 155	MATH 109, MATH 110, MATH 120, MATH 171, CS 181W, CS 182W, STATS 155
Humanities & Sciences	Mathematics (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/mathematics/)	MATH 101, MATH 109, MATH 110, MATH 120, MATH 171	MATH 101, MATH 109, MATH 110, MATH 120, MATH 171	MATH 109, MATH 110, MATH 120, MATH 171, MATH 101
Humanities & Sciences	Music (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/music/)	MUSIC 142K, MUSIC 145K, MUSIC 147K, MUSIC 149J, MUSIC 251	3 from the following: MUSIC 144M, MUSIC 146N (MUSIC 246N, FRENCH 260A), MUSIC 147J, MUSIC 251	MUSIC 251, MUSIC 147J, MUSIC 146N, MUSIC 143J
Humanities & Sciences	Native American Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/comparativestudiesinraceandethnicitycsre/)	CSRE 200X, CSRE 201X	CSRE 200X, CSRE 201X	CSRE 200X
Humanities & Sciences	Philosophy (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/philosophy/)	PHIL 80	PHIL 80	PHIL 80
Humanities & Sciences	Philosophy and Religious Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/philosophy/)	PHIL 80, RELIGST 290	PHIL 80 or RELIGST 290	PHIL 80 or RELIGST 290
Humanities & Sciences	Physics (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/physics/)	PHYSICS 107	PHYSICS 107	PHYSICS 191
Humanities & Sciences	Political Science (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/politicalscience/)	POLISCI 103, POLISCI 110C, POLISCI 110D, POLISCI 120C, POLISCI 121 , POLISCI 236, POLISCI 299A	POLISCI 103, POLISCI 120C, POLISCI 121, POLISCI 236S, POLISCI 299A	POLISCI 103, POLISCI 110C, POLISCI 110D, POLISCI 120C, POLISCI 121, POLISCI 148, POLISCI 236S, POLISCI 299A
Humanities & Sciences	Psychology (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/psychology/)	PSYCH 138, PSYCH 164	PSYCH 164, PSYCH 175, PSYCH 180	PSYCH 150, PSYCH 164, PSYCH 175, PSYCH 180

Humanities & Sciences	Public Policy (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/publicpolicy/)	PUBLPOL 106 (ECON 154), PUBLPOL 154, PUBLPOL 156, PUBLPOL 200H	PUBLPOL 106 (ECON 154), CEE 136 (CEE 236, PUBLPOL 130, PUBLPOL 230, URBANST 130), PUBLPOL 154, PUBLPOL 156, PUBLPOL 200H	PUBLPOL 106, ECON 154, PUBLPOL 154, PUBLPOL 156
Humanities & Sciences	Religious Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/religiousstudies/)	RELIGST 290	RELIGST 290	RELIGST 290
Humanities & Sciences	Science, Technology, and Society (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/sciencetechnologyandsociety/)	CS 181W, STS 191	STS 191W, COMM 104W, COMM 120W, HISTORY 140A, EARTHSYS 177C	STS 191W, BIOE 131, COMM 120W, COMM 137W, COMM 177SW, COMM 186W, CS 181W, CS 182W, EARTHSYS 177C, HISTORY 140A
Humanities & Sciences	Slavic Languages and Literatures (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/slaviclanguagesandliteratures/)	SLAVIC 146	SLAVIC 146	SLAVIC 145
Humanities & Sciences	Sociology (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/sociology/)	SOC 202 (URBANST 202), SOC 204	SOC 202, SOC 204	SOC 202, SOC 204
Humanities & Sciences	Spanish (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/iberianandlatinamericancultures/)	ILAC 277	ILAC 277	ILAC 277
Humanities & Sciences	Symbolic Systems (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/symbolicsystems/)	PHIL 80	PHIL 80	PHIL 80
Humanities & Sciences	Theater and Performance Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/taps/)	TAPS 151T, TAPS 153H	TAPS 11, TAPS 154G	DANCE 11, TAPS 153P, TAPS 264S
Humanities & Sciences	Urban Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/urbanstudies/)	URBANST 202 (SOC 202), URBANST 203	URBANST 202A, URBA	URBANST 202A, URBANST 203

COTERMINAL DEGREES

The coterminal degree program allows undergraduates to study for a Master of Arts (M.A.) or Master of Science (M.S.) degree while completing their bachelor's degree(s) in the same or a different department. To qualify for both degrees, a student must complete requirements for both the bachelor's degree (p. 31) and the master's degree (p. 65) as described under their respective sections of this bulletin.

Application and Admission to a Coterminal Master's Program

Undergraduates with strong academic records may apply for admission to a Stanford Master of Arts (M.A.) or Master of Science (M.S.) program (p. 65) that offers coterminal admission via the process outlined below. Any master's degree granting program may elect not to offer coterminal admission.

Eligibility Requirements

An undergraduate is eligible to apply for admission to a coterminal program once all of the following conditions have been met:

- An admitted coterminal student must have a minimum of one quarter overlap between the undergraduate and graduate degree programs. If this is not possible, students should consider applying as an external candidate via the Graduate Admissions (http://exploredegrees.stanford.edu/admissionandfinancialaid/#graduatetext) process. Such applicants are not coterminal students and coterminal policies do not apply.
- Completion of 120 units towards graduation as shown on the undergraduate transcript, including credit earned from transfer credit, Advanced Placement exams, and other external test credit.
- Completion of six non-Summer quarters at Stanford; or two non-Summer quarters at Stanford for transfer students.
- Declaration of an undergraduate major.
- Students may apply to one coterm program per quarter, and may not apply to another coterm master's program until the admissions process for the initial application has been completed, including the student's response to the offer of admission (if admitted).

Undergraduates interested in applying to a coterm program should contact the coordinator of coterminal advising in Academic Advising (https://advising.stanford.edu). Note that departments may have additional eligibility requirements, so students are encouraged to check with the department prior to applying for the coterm program.

Application Deadlines

There are two application deadlines in the coterm process: the application deadline that students must submit their completed applications to their departments by, and the quarterly deadline that all admitted coterm applications must be sent to the Registrar's office for program activation. Coterm applicants are responsible for meeting all eligibility requirements and submitting their completed coterm application to the department by the department's coterm application deadline. Coterm applicants should contact their prospective coterm department for more information about the coterm application deadline. Departments are responsible for routing approved coterm applications to the Registrar's office for processing. Approved coterm applications are processed by the Registrar's office every quarter, and coterm department administrators are required to submit approved coterm applications to the Registrar's Office no later than the last day of classes of the quarter prior to the coterm matriculation quarter.

Application Fee

Students who accept an offer of admission and are matriculated into the graduate degree program are assessed a $125 coterm application fee.

Eligibility for a coterm graduate application fee waiver is based on the Financial Aid Office's evaluation of your need-based aid application. Those from families with income below $125,000 and typical assets for that income range will qualify. The waiver is automatically applied and no special request is necessary.

Application Process

To apply for admission to a coterm master's program, students must submit all of the following to the prospective graduate department:

- Coterm Application (https://www.applyweb.com/stanterm/) (online). Please visit the Coterm Application Information page (https://registrar.stanford.edu/students/coterminal-degree-programs/applying-coterm/coterm-application-information/) for links to department web sites for additional application requirements
- Statement of purpose
- Preliminary program proposal (https://stanford.app.box.com/v/progpropma/)
- Undergraduate Coterm Application Approval form (https://stanford.app.box.com/v/ug-coterm-application-approval/) (submitted with online coterm application)
- Two letters of recommendation from Stanford professors
- Current Stanford transcript

Note: Graduate Record Examination (GRE) scores and additional requirements may be specified by the prospective program, and may be found in the bulletin and on department websites (links to department websites found on the Registrar's web site (https://registrar.stanford.edu/students/coterminal-degree-programs/applying-coterm/coterm-application-information/)).

Admission Process

Each department is responsible for its admissions/acceptance decisions for coterm applicants. Once a coterm application is approved, the departments create the coterm application record in Axess (department staff should refer to the Coterm Resources for Staff (https://registrar.stanford.edu/staff/coterminal-resources-staff/) page). Additionally, the department must route the completed and approved coterm application to the Office of the Registrar by the quarterly deadline.

If the coterm program permits deferral, students may defer admission to the coterm program and the first graduate quarter to a later quarter as long as their graduate career has not yet been activated and if the later matriculation will still meet all University and departmental requirements for coterm admission. Deferring a coterm matriculation may require that students postpone the conferral of their undergraduate degree. If the graduate coterm career has been activated, then deferring to a later term is not an option. Deferral is coordinated with the master's degree program, prior to the program submitting the completed application to the Office of the University Registrar.

First Graduate Quarter

The first graduate quarter is the quarter in which the coterm student first matriculates into their master's degree program. The first graduate quarter does not necessarily correspond to the first quarter in which a student enrolls in a course in the graduate career, nor is it affected by course transfer (please see Coterm Course Transfer (https://

registrar.stanford.edu/students/procedures-coterminal-students/coterm-course-transfer/) for additional information).

Admitted students must have at least one quarter of overlap in the undergraduate and graduate career prior to conferring their undergraduate degree. For example, if the first graduate quarter for the coterm degree is Spring Quarter, then the earliest that the undergraduate degree can be conferred is the Spring Quarter. Once matriculated, students may enroll in graduate courses, however, enrollment in graduate courses is not required by the University in the overlap quarter. Students should work with their department to complete a Program Proposal (https://stanford.app.box.com/v/progpropma/) that outlines the graduation/program completion plan by the end of the first graduate quarter.

Adding or Changing Master's Degree Programs

Students wishing to add a second graduate program to their academic plans may only do so after the conferral of the undergraduate degree. Adding or changing a graduate program after the conferral of the undergraduate degree can be done via the Graduate Program Authorization petition. For additional information, see the "Changes of Degree Programs (http://exploredegrees.stanford.edu/graduatedegrees/#degreeprogresstext)" section of this bulletin, the Graduate Program Authorization section (https://gap.stanford.edu/handbooks/gap-handbook/chapter-5/subchapter-1/page-5-1-1/) of the Graduate Academic Policies and Procedures site, and the Graduate Program Authorization (https://registrar.stanford.edu/students/graduate-degree-progress/graduate-program-authorization-petition/) page on the Registrar's web site.

Coterm students who wish to change from one master's degree to another before conferral of the bachelor's degree must submit an approved request to withdraw from the original degree program using the Request to Permanently Withdraw from Degree Program (https://stanford.box.com/permanent-withdraw/) form, in addition to a completed and approved application for admission to the new program in the same quarter. In this case, all courses, including any prior course transfer from the undergraduate career, remain in the graduate career. The new degree program may choose not to approve all courses towards the new master's degree program requirements. The student may elect to transfer courses back to the undergraduate career if the bachelor's degree has not yet been conferred. Coterms interested in doing a coterm program switch should contact the coordinator of coterminal advising in Academic Advising (https://advising.stanford.edu). *Note*: The discontinued program is listed on the transcript in a 'Discontinued' status, though it is not considered an academic demerit.

Residency Requirement

Each type of degree offered at Stanford (for example, Bachelor of Arts, Master of Science) has a requirement, called residency for graduate degrees, based on the minimum number of academic units required for the degree. Requirements are described in the Bachelor of Arts (B.A.), Bachelor of Science (B.S.) (p. 31) and Residency Policy for Graduate Students (p. 72) sections of this bulletin. It is Stanford University's general policy that units are applicable toward only one degree, that is, units may not normally be duplicated or double-counted toward the residency requirement for more than one degree. Courses counted towards the undergraduate degree(s) and graduate degree(s) are separately recorded on the undergraduate and graduate transcripts, respectively.

Students pursuing coterminal bachelor's and master's degrees are expected to meet the minimum requirements for each of the degrees, as follows:

Undergraduate Degrees

- *Bachelor's degree:* 180 units for the bachelor's degree
- *Dual undergraduate degree:* 225 units for the bachelor's degree

Master's Degrees

- 45 units (or higher unit-requirement, as determined by the graduate program)
- All 45 units must be from course work completed at Stanford and must be courses at or above the 100-level. Additionally, at least 50 percent of those must be courses designated primarily for graduate students. Department specifications for the level of course work accepted for a particular master's degree program may be higher than the University's specifications. Students may not petition to change the career for a completed course from the undergraduate to the graduate level.

To a limited extent, coterminal students are permitted to move courses between the undergraduate and graduate careers as described in the "Coterminal Course Transfer (p. 58)" section in the Enrollment and Degree Progress tab of this section of the bulletin.

Tuition and Tuition Groups

Coterm students are assigned to either the undergraduate coterm tuition group or the graduate coterm tuition group. The tuition group dictates a student's tuition rates, enrollment policies, access to some University services and benefits, and degree progress standards. A coterm student is subject to graduate tuition assessment and adjustment policies once placed in the coterm graduate tuition group (see below for information about when coterm students are moved into the graduate coterm tuition group).

Coterm students are not eligible for undergraduate special registration statuses (with the exception of Graduation Quarter, if the student is applying to confer both their undergraduate and graduate degrees in the same quarter). Coterm students may only be eligible to apply for graduate special registration statuses once their undergraduate degrees have been conferred.

Tuition and fee information is available on the Office of the University Registrar tuition website (https://registrar.stanford.edu/students/tuition-and-fees/).

Undergraduate Coterm Tuition Group

Coterm students are normally placed in and remain in the undergraduate coterm tuition group until the completion of 12 undergraduate full-tuition quarters, or until conferral of the undergraduate degree(s), if that happens earlier. For students with transfer credit (not AP or other test credit), 15 transfer units equals one Stanford quarter. For students with Stanford Summer Quarter units, 15 units equals one Stanford quarter; units earned in multiple Summer Quarters are not added together in this calculation.

Students in the undergraduate coterm tuition group are assessed the undergraduate tuition rate, and may enroll in as few as 12 units and up to 20 units each quarter (regardless of which career courses are assigned to). Students enrolled in over 20 units across both careers are subject to an enrollment hold effective the following quarter.

Graduate Coterm Tuition Group

Coterminal students in the graduate tuition group are assessed either the regular graduate tuition rate or the graduate Engineering tuition rate. Students in the graduate coterm student group are assessed additional graduate or Engineering tuition on a per-unit basis beginning with the 19th unit. Tuition and fee information is available on the Office of the University Registrar tuition website (https://registrar.stanford.edu/students/tuition-and-fees/). Once a student is

placed in the graduate coterm tuition group, they may not move back to the undergraduate coterm tuition group.

Transitions to the graduate billing group

Coterminal students in the undergraduate tuition group are moved to the graduate tuition group if any one of the following occurs:

Conferral of Undergraduate Degree

Once coterm students have conferred their undergraduate degree(s), they are automatically moved to the graduate tuition group.
Once coterm students have been moved to the graduate tuition group, they may not move back to the undergraduate tuition group.

Student-initiated Request (if eligible)

Coterm students in the undergraduate tuition group who have fewer than 12 quarters at Stanford but who want to transition to the graduate tuition rate may request to be moved to the graduate tuition group if they meet all of the below eligibility requirements. If the student meets these conditions, then the student may request to be moved to the graduate billing group by submitting a SU Services and Support Request (https://stanford.service-now.com/student_services/?id=sc_cat_item&sys_id=5e24047c13df93c08a9175c36144b011) ticket by the deadline.

Eligibility for coterm billing switch request

- Student must have an active graduate career. Students with a pending coterm application can request to move to the graduate tuition group only after they receive email confirmation that their coterm program has matriculated.
- Student must have met minimum number of units to be eligible (see the chart below). All undergraduate units, including transfer and test credit, are used in calculating unit completion.
  - BA, BS, BAH, BSH (including double majors); BAS; BASH: 180 units
  - BA + BS or BAH + BSH (official dual degrees): 225 units
- Must submit a SU Services and Support Request (https://stanford.service-now.com/student_services/?id=sc_cat_item&sys_id=5e24047c13df93c08a9175c36144b011) ticket to initiate the switch from undergraduate to graduate billing.

When Students Reach their Permissible Limit in Undergraduate Billing

Students are automatically moved from the undergraduate billing group to the graduate billing group once they have completed a certain number of undergraduate quarters.

Undergraduate quarters are calculated in all three of the below ways:

- Any non-Summer Quarter (full- or part-time) in which a student is enrolled.
- 15 transfer units (excluding AP or other test credit) are equal to one Stanford quarter. Example: a coterm student has completed 10 non-Summer Quarters at Stanford, but also has 30 units of external transfer credit posted to their record; that would mean the student has (for the purpose of coterm billing) 12 quarters completed, and the student would thus be moved to the graduate billing group.
- 15 units of Stanford Summer Quarter enrollment (in a single quarter) are equal to one Stanford quarter.

Once a student has completed 12 quarters (or 15 quarters, if pursuing a dual/concurrent bachelor's degree; see below), they are automatically switched to graduate billing and notified via email. Once students have been moved to the graduate billing group, they may not be moved back to the undergraduate billing group. Students should be advised that external transfer credit and Summer Quarter units can impact how soon they are moved to the graduate billing group, and should plan accordingly.

- BA (including double majors, honors), BS (including double majors, honors), and BAS (including honors) may remain in the undergraduate billing group up to 12 quarters, and are automatically moved to the graduate billing group in their 13th quarter.
- BA + BS (dual/concurrent bachelor's degree) may remain in the undergraduate billing group up to 15 quarters, and are automatically moved to the graduate billing group in their 16th quarter.

Coterm students are traditionally not eligible for reduced graduate tuition rates below 8 units during Autumn, Winter, and Spring quarters prior to conferral of the undergraduate degree. However, coterm graduate students with disabilities covered under the Americans with Disabilities Act may enroll in an approved reduced course load as recommended by the Office of Accessible Education (OAE) (https://oae.stanford.edu/).

Coterm Students with Research or Teaching Assistantships

Coterm students who are eligible for a teaching (CA/TA) or research (RA) assistantship appointment must be in the graduate billing group in order to receive funding from their department. If a student is not already in the graduate billing group then the student must initiate the request to be moved to the graduate coterm tuition group (see the "Student-initiated Request" section above). Students holding a 20 hour (50%) teaching or research assistantship may not enroll in more than 10 total units. Additionally, once students have moved to the graduate coterm tuition group, they may not be moved back to the undergraduate coterm tuition group even if they no longer hold an assistantship appointment.

See Administrative Guide Memo 10.2.1 Graduate Student Assistantships (https://adminguide.stanford.edu/chapter-10/subchapter-2/policy-10-2-1/), and GAP 7.3 Assistantships (http://gap.stanford.edu/7-3.html), for detailed discussion of assistantship policy.

Enrollment and Degree Progress

Starting with the first graduate quarter, students have an active graduate career and an active undergraduate career. Students are responsible for enrolling in courses each quarter, and assigning them to the appropriate career. Courses assigned to the graduate career count towards the master's degree and courses assigned to the undergraduate career count towards the bachelor's degree. Students in the undergraduate coterm tuition group may not enroll in more than a total of 20 units for the quarter across both careers. Students in the graduate coterm tuition group may not enroll in more than a total of 24 units for the quarter across both careers. Students appointed to a 20-hour (50%) teaching and/or research assistantship may not enroll in more than 10 units.

Academic Progress

Prior to the conferral of the undergraduate degree(s), a coterm student's academic progress is monitored by the coordinator of coterminal advising in Academic Advising (https://undergrad.stanford.edu/advising/coterm/) (a unit of the office of the Vice Provost for Undergraduate Education) in conjunction with the student's advisers and the graduate program. After conferral of the undergraduate degree(s), the student's degree progress is monitored by the graduate adviser and graduate program.

All courses taken during a quarter, whether enrolled in the undergraduate or graduate career, are used to assess whether minimum academic progress standards, including number of units enrolled and number of units earned, have been met. Students in the undergraduate coterm tuition group are evaluated according to the undergraduate degree progress standards. These standards are described in the "Academic Progress (p. 94)" section of this bulletin. Students in the graduate coterm tuition group are evaluated according to the graduate degree progress standards. These standards are described in the "Minimum Progress Requirements for Graduate Students (p. 70)" section of this bulletin.

Student are expected to maintain an undergraduate grade point average (GPA) which meets the University's undergraduate standards, and a graduate GPA which meets University and program requirements for graduate progress. Courses which have been transferred from the undergraduate to the graduate career are calculated as part of the graduate GPA, and vice versa.

Coterm Course Transfer

After accepting admission to a master's degree program, coterm students may request transfer of Stanford courses from the undergraduate to the graduate career to satisfy requirements for the master's degree and/or from the graduate career to the undergraduate career to satisfy requirements for the bachelor's degree(s). Transfer of courses between the undergraduate and graduate careers requires review and approval by both the undergraduate and graduate departments.

Unless a master's degree program specifies otherwise in this bulletin, courses taken three quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to the graduate career. Neither Summer Quarter nor quarters spent on approved full term leave of absence are included in the quarter-back count. In exceptional circumstances, a student may petition the exceptions committee of the Committee on Graduate Studies to transfer courses taken more than three quarters back. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.Individual programs have the discretion to set their own policy regarding course transfer for their coterm master's students, provided that no student counts a course taken earlier than the first quarter of sophomore year. The program's policy is stated in the relevant department or program section of this bulletin. Students should visit the Coterm Course Transfer web page (https://registrar.stanford.edu/students/coterminal-degree-programs/coterm-course-transfer/) on the Registrar's Office website for information about how to request course transfers.

All course transfer requests must be submitted to the Student Services Center no later than the Late Application to Graduate deadline of the intended bachelor's degree conferral quarter. Course transfers between careers are not possible after the bachelor's degree has been conferred. Undergraduate credit from transfer courses or tests may not be transferred to the graduate career.

Advising, Program Proposal, and Time Limit

In the first graduate quarter, a coterm student must be assigned an adviser in the master's program for assistance in planning a program of study to meet the requirements for the master's degree. The plan is outlined on the Program Proposal for a Master's Degree (https://stanford.box.com/v/progpropma/), which is approved by the master's program by the end of the first graduate quarter. The preliminary program proposal from the coterm application may inform the Program Proposal, but does not satisfy this master's degree requirement. The course of study for each student's master's degree should be outlined on the student's Program Proposal form. The decision as to which courses a program approves in the student's master's program proposal, including changes from the typical curriculum, is within the purview of the department or program. The conversation between the student and the student's graduate adviser is important in this regard.

The master's program proposal must meet University minimum requirements for the master's degree, including at least 45 units taken at Stanford, all courses at 100-level or above, 50% of units designated primarily for graduate students (typically 200-level or above). All courses must be in the graduate career.

All requirements for a master's degree must be completed within three years after the first graduate quarter. An extension requires review of academic performance by the department or program, and is within the discretion of the program. See policies in the "Master's Degrees (p. 65)" section of this bulletin.

Leaves of Absence and Reinstatement

Coterm students who wish to take a leave of absence are subject to the Leave of Absence policies for undergraduate and graduate students, as described in the "Leaves of Absence and Reinstatement (Undergraduate) (p. 42)" and "Leaves of Absence (Graduate) (p. 74)" sections of this bulletin. Graduate students, including coterm students, must obtain permission from the master's degree program. A coterm student whose undergraduate degree has not been conferred must also obtain permission from Academic Advising (https://undergrad.stanford.edu/advising/coterm/), and may not take a leave of absence unless approved for both the graduate and undergraduate leave. Coterm students are permitted to request a leave of absence for their first graduate quarter. Leaves of absence are granted for a maximum of one calendar year, or four quarters. An extension of leave, for a maximum of one year or four quarters, is approved only in unusual circumstances. Leaves of absences may not exceed a cumulative total of two years (8 quarters including summer quarters), including both undergraduate and graduate programs.

Coterm students who are seeking to reinstate into both their undergraduate and graduate degree programs must follow both sets of policies as described in the "Leaves of Absence and Reinstatement (Undergraduate) (p. 42)" and "Leaves of Absence (Graduate) (p. 74)" sections of this bulletin.

Degree Conferral

Students must apply for conferral of each degree separately by filing an Application to Graduate in Axess by the deadline for the expected graduation term(s). The deadlines are available in the Academic Calendar (https://registrar.stanford.edu/academic-calendar/). The master's degree must be conferred simultaneously with, or after, the bachelor's degree. Coterm students may not confer the master's degree prior to the conferral of the undergraduate degree. Coterm students should refer to the Coterm Student Graduation Checklist web page (https://registrar.stanford.edu/students/graduation/coterm-student-graduation-checklist/) on the Registrar's Office website for important information about items needed for degree conferral.

Leaves of Absence and Reinstatement (Coterm)

A Leave of Absence allows a student to take a break from enrollment either before or after a quarter begins. There may also be conditions associated with a leave, which are outlined below. Undergraduates are admitted to Stanford University with the expectation that they complete their degree programs in a reasonable amount of time, usually within four years. Additionally, students pursuing a coterminal master's degree are expected to complete their master's degrees within three years after the first graduate quarter as outlined in the "Time Limit for the Completion of the Master's Degree (p. 65)" section of this bulletin.

Leaves of absences for coterms may not exceed a cumulative total (across both careers) of two years or eight quarters.

COVID-19 Policies for Coterm Leave of Absence in Academic Year 2020-21

Coterms in the undergraduate tuition group are considered undergraduates with respect to academic policies. Coterms in the graduate tuition group are considered graduate students for the purpose of academic policies. For more information about tuition groups, when tuition groups can switch from undergraduate to graduate, and instructions for how to check which tuition group a student is in, see the

Registrar's Coterm Tuition Assessment (https://registrar.stanford.edu/coterm-tuition-assessment/) website.

All coterm students wishing to file for a leave of absence must submit a Coterm Leave of Absence eForm (available in the eForms portal in the Student tab in Axess). Coterms should discuss any plans for a leave with an undergraduate or coterm advisor (https://undergrad.stanford.edu/advising/about-your-advisors/meet-specialized-advising-team-sweet-hall/) and also their coterm master's department. International coterms should also discuss leave of absence plans with the Bechtel International Center (https://bechtel.stanford.edu/immigration/visa-types/f-1j-1-student-visas/leave-absence/).

Coterm Students in the Undergraduate Tuition Group

- Any approved leave of absence taken during academic year 2020-21 is not counted against a student's maximum allowable eight quarters of leave.
- Coterms in the undergraduate tuition group are expected to enroll in three of four quarters during the 2020-21 academic year, with one quarter considered the student's Flex Term. If students are unable or elect not to enroll in three quarters, then they must apply for a leave of absence for those quarter(s). Leaves of absence information for International undergraduates can be found below.
- Coterms in the undergraduate tuition group may take one quarter away from Stanford with no enrollment without having to file for a leave of absence (LOA), this term being considered the student's Flex Term. If students take more than one quarter away from Stanford, then a Leave of Absence eForm (available in the eForms portal in the Student tab in Axess) is required, or the student would be discontinued for no enrollment in their second quarter with no enrollment. See the Discontinuation and Reinstatement section below for more information.

Coterm Students in the Graduate Tuition Group

- Coterm students in the graduate tuition group re expected to enroll based on the guidelines for graduate students for academic year 2020-21.
- Any leave of absence taken during academic year 2020-21 is counted against a student's allowable eight quarters of leave.
- Students should be aware that a leave of absence, other than for pregnancy or parental leave, does not automatically extend the candidacy period (please refer to the GAP (https://gap.stanford.edu/handbooks/gap-handbook/chapter-5/subchapter-3/page-5-3-1/)).

Students on leave of absence are not registered at Stanford and, therefore, do not have the rights and privileges of registered students. Students on leave may complete course work for which an 'Incomplete' grade was awarded in a prior term (unless doing so places an undue burden on the part of an instructor, department, staff, or other university resource) and are expected to comply with the maximum one-year time limit for resolving incompletes; a leave of absence does not stop the clock on the time limit for resolving incompletes.

When a student is granted or placed on a leave of absence after the beginning of the term, courses in which the student was enrolled after the final study list deadline appear on the student's transcript and show the symbol 'W' (withdraw). For additional information regarding satisfactory academic progress, refer to the "Academic Progress (https://exploredegrees.stanford.edu/academicpoliciesandstatements/#academicstandingtext)" section of this bulletin. Information on tuition refunds is available in the "Refunds (https://exploredegrees.stanford.edu/tuitionfeesandhousing/#refundstext)" section of this bulletin.

COVID-19 Policy on Leaves of Absence for International Undergraduates

International undergraduates are expected to enroll in three consecutive quarters during the 2020-21 academic year. If undergraduates are unable to or elect to not enroll in three consecutive quarters, they must apply for a Leave of Absence for those quarter(s). International undergraduates are required to consult with a Bechtel International Center immigration advisor well before requesting a Leave of Absence. The Leave of Absence may complicate an international student's legal status and ability to remain and work in the U.S.

Voluntary Leave of Absence

Students have the option of taking a voluntary leave of absence for up to one year, or four quarters, upon filing a Leave of Absence form with the Office of the University Registrar and receiving approval. Students taking a voluntary leave pursuant to the involuntary leave of absence and return policy (https://deanofstudents.stanford.edu/involuntary-leave-absence-and-return-policy-effective-jan-4-2020/) have a two business day revocation period after submitting an LOA eForm, and may revoke their request to take a voluntary leave by returning to their submitted eForm in Axess and clicking "Cancel." Additionally, students may have additional conditions imposed by the Dean of Students and/or the Vice Provost for Student Affairs.

Except where unexpected circumstances necessitate an immediate leave, students are expected to file for a voluntary leave of absence 30 days prior to the quarter in which the leave will begin. The leave may be extended for up to one additional year, or four quarters, provided the student files a Leave of Absence Extension eForm (available in the eForms portal in the Student tab in Axess) before the end of the initial one-year leave. Leaves requested for a longer period than one year, or four quarters, are approved only in exceptional circumstances (for example, mandatory military service). Leaves of absence for coterm students may not exceed a cumulative total of two years (eight quarters including Summer Quarters) across both the undergraduate and graduate academic careers.

Coterm students who take an approved leave of absence while in good standing from a quarter for which they have registered in advance and do not wish to attend may enroll in the University for the subsequent quarter with the privileges of a continuing student. For coterm students who wish to withdraw from the current quarter after the beginning of the term, courses in which the student was enrolled after the final study list deadline appear on the student's transcript and show the symbol 'W' (withdraw). For additional information regarding satisfactory academic progress, refer to the "Academic Progress (p. 94)" section of this bulletin. In either situation, the University may condition its approval of a petition for leave of absence on the student's meeting such requirements as the University deems appropriate in the individual case for the student to be eligible to return (such as, in the case of a leave for medical reasons, proof of treatment and/or an interview with a provider at Vaden Health Center (http://vaden.stanford.edu/) or Counseling and Psychological Services (https://vaden.stanford.edu/caps-and-wellness/counseling-and-psychological-services-caps/) or its designee). Coterms who wish to withdraw from the current quarter, or from a quarter for which they have registered in advance and do not wish to attend, must file a Leave of Absence e-form (in Axess).

Information on tuition refunds is available in the "Refunds (https://exploredegrees.stanford.edu/tuitionfeesandhousing/#loa-refunds)" section of this bulletin. For a full refund, petitions must be received by the Office of the University Registrar no later than the first day of classes for the quarter.

Discontinuation and Reinstatement

COVID-19 Policies for Coterm Discontinuiation in Academic Year 2020-21

In academic year 2020-21, a coterm in the undergraduate billing group may be discontinued from active status in their academic degree program if the student:

- fails to be enrolled by the study list deadline of their second term away from Stanford; or
- fails to be approved for a leave of absence by the start of the term of their second term away from Stanford; or
- voluntarily terminates undergraduate studies; or
- is dismissed for academic reasons; or
- is expelled from the University.

Students who fail to be either enrolled by the final study list deadline of their second term away from Stanford, or who fail to submit a Leave of Absence eForm by the published deadline in their second term away from Stanford, must apply for reinstatement; more information about the coterm reinstatement process can be found in the Coterm Reinstatement (https://registrar.stanford.edu/students/coterminal-degree-programs/coterm-reinstatement/) section of the Registrar's website.

This policy is applicable to the four quarters in academic year 2020-21 only; additional policy will be published prior to academic year 2021-22.

Reinstatement

The University is not obligated to approve reinstatement requests from students. Coterm applications for reinstatement are reviewed by both the Vice Provost for Undergraduate Education and the coterm master's department, and are further subject to the approval of the Faculty Senate Committee on Undergraduate Standards and Policy or its designees. The Committee or its designees may determine whether the application for reinstatement will be approved or not, and/or the conditions a student must meet in order to be reinstated. Reinstatement decisions are within the discretion of the University and may be based on the applicant's status when last enrolled, activities while away from campus, the length of the absence, the perceived potential for successful completion of the program, as well as any other factors or considerations regarded as relevant to the Vice Provost for Undergraduate Education, the Committee, or their designees.

Students who have been expelled from Stanford University are not permitted to apply for reinstatement.

Coterm students who wish to terminate study (e.g., for transfer to another institution) should submit a properly endorsed Request to Permanently Withdraw from Degree Program eForm (available in the eForms portal in the Student tab in Axess).

Coterm students with an active undergraduate program may request to withdraw from both of their active degrees (bachelor's and master's) or only from their graduate program. Coterm students with an active undergraduate program may not withdraw from only the undergraduate program and keep the graduate program active.

Involuntary Leave of Absence and Return Policy

In effect as of January 4, 2020

Stanford University is committed to the safety, health and well-being of the campus community. The University recognizes that students may experience situations that significantly limit their ability to function successfully or safely in their role as students. In such circumstances, students should consider requesting a leave of absence. A leave of absence permits students to take a break from the University and their studies, so that they may address the issues that led to the need for the leave and later return to the University with an enhanced opportunity to achieve their educational goals. Students will be given the option to take a voluntary leave of absence before a decision is made with respect to an involuntary leave.

1. ## Involuntary Leave of Absence

   Requiring a student to take a leave of absence is rare and, subject to Section III, only happens when current medical knowledge and/or the best available objective evidence indicates to the Senior Associate Vice Provost and Dean of Students or their designee (hereinafter, Dean of Students) that there is a significant risk to the student's health or safety or the health or safety of others, or the student's behavior severely disrupts the University environment, and no reasonable accommodations can adequately reduce that risk or disruption.

   Consistent with Stanford's Nondiscrimination Policy (p. 123), Stanford prohibits unlawful discrimination on the basis of any type of disability or any other characteristic protected by applicable law in the administration of the University's programs and activities. Stanford offers a range of resources, support services and accommodations to address the physical and mental health needs of students. However, on rare occasion, a student's needs may require a level of care that exceeds the care the University can appropriately provide. Where current knowledge about the individual's medical condition and/or the best available objective evidence indicates that a student poses a significant risk to the health or safety of a member of the University community, where a student is unable or unwilling to carry out substantial self-care obligations and poses a significant risk to their own safety not based on mere speculation, stereotypes, or generalizations, or where a student's behavior severely disrupts the University environment and the student does not want to take a voluntary leave, the Dean of Students has the authority to place a student on an involuntary leave of absence. Before placing any student on an involuntary leave of absence, Stanford will conduct an individualized assessment, consulting with the Office of Accessible Education (OAE) to determine if there are reasonable accommodations that would permit the student to continue to participate in the University community without taking a leave of absence.

   The Dean of Students may be notified about a student who may meet the criteria of an involuntary leave of absence from a variety of sources including, but not limited to, the student, the student's academic advisor, Residential Education staff, Graduate Life Office staff, an academic department, or a member of the University's threat assessment team. If the Dean of Students deems it appropriate, these procedures will be initiated.

   a. **Procedures for Placing a Student on an Involuntary Leave of Absence**

      i. The Dean of Students will consult with the Office of Accessible Education (OAE) prior to making a decision to impose an involuntary leave of absence.

      ii. The Dean of Students will issue a notice to the student in writing that an involuntary leave of absence is under consideration. The written notice will include the reason(s) why the student is being considered for an involuntary leave, contact information for OAE, which can provide information about accommodations, and a copy of this policy. In addition,

the notice will provide contact information for the Process Resource, an administrator outside of the decision-making process with knowledge of Stanford's involuntary leave of absence process who will serve as a neutral process resource to answer any student questions about the process from referral through return to Stanford. In the written notice, the student will be encouraged to respond before a decision regarding a leave of absence is made and will be given a specified time period within which to do so.

iii. The Dean of Students will consider potential accommodations and/or modifications that could obviate the need for an involuntary leave of absence, such as the option to take a voluntary leave of absence, academic accommodations, housing and dining accommodations, and modifications to University policies, rules, and regulations. Examples of academic, administrative, and housing accommodations that may be facilitated through the Office of Accessible Education (OAE) can be found on the OAE (https://oae.stanford.edu/) website.

iv. The student may be asked to execute an Exchange of Confidential Information Consent Form providing Stanford personnel temporary authority to get information from the student's healthcare provider(s) regarding issues relevant and appropriate to the consideration of an involuntary leave of absence when there is a need for the University to have access to that information as part of the interactive process and individualized assessment. If a student refuses to execute an Exchange of Confidential Information Consent Form or to respond within the timeframe set by the Dean of Students, the Dean may proceed with the assessment based on information in the Dean's possession at the time.

v. The Dean of Students will also confer, as feasible and when appropriate in a particular matter, with individuals regarding the need for an involuntary leave of absence. Although each case will vary, conferring individuals could include:

    1. Residence Deans, or Graduate Life Office Deans;
    2. Faculty members;
    3. Academic advisors;
    4. With appropriate authorization, representatives from Stanford's Vaden Health Center (Vaden);
    5. With appropriate authorization, the student's treatment provider(s) or other health care professionals;
    6. Member(s) of the University's threat assessment team; and/or
    7. Such other individuals as may be appropriate in an individual matter.

    In each case, the Dean of Students will confer with a representative from the Office of Accessible Education (OAE) with expertise in mental health disabilities.

vi. Particular attention will be paid to the criteria for imposing an involuntary leave of absence, specifically:

    1. whether current knowledge about the individual's medical condition and/or the best available objective evidence indicates that a student poses a significant risk to the health or safety of a member of the University community;
    2. whether a student is unable or unwilling to carry out substantial self-care obligations and poses a significant risk to their own safety not based on mere speculation, stereotypes, or generalizations; and/or
    3. whether a student's behavior severely disrupts the University environment.

    The individualized assessment as to each factor, based on reasonable judgment that relies on current medical knowledge or on the best available objective evidence, should ascertain: the nature, duration, and severity of the risk or disruption; the probability that the risk or disruption will actually occur; and whether reasonable modifications of policies, practices, or procedures will adequately mitigate the risk or disruption so as to eliminate the need for an involuntary leave of absence.

vii. The Dean of Students will give significant weight to the opinion of the student's treatment provider(s), including those identified by the student, regarding the student's ability to function academically and safely at the University with or without reasonable accommodations. If the Dean of Students determines that the information provided by the treatment provider(s) is incomplete, requires further explanation or clarification, or is inconsistent with other information in the student's record, the Dean of Students, with proper authorization, will contact the treatment provider(s) to obtain additional information. In certain circumstances, the University may require the student to undergo an additional evaluation by an independent and objective professional designated by Stanford, if the Dean of Students believes it will facilitate a more informed decision.

viii. Following these consultations and based on a review of the relevant documentation and information available, the Dean of Students will make a decision as to whether the student should be placed on an involuntary leave of absence, and will provide written notice of this decision to the student. The written notice of decision will include information about the student's right to appeal and to reasonable accommodations during the appeal process. The review and notice of decision under this policy should be done in a reasonably timely manner. Where students have been asked to remain away from the University while the review is underway, every effort will be made by the Dean of Students to reach a decision within one week, provided the student responds in a timely manner to requests for information and, if appropriate, evaluation.

    1. If an involuntary leave of absence is imposed. The written notice of decision to the student will set forth the basis for the decision and a time-frame for when the student must leave the University and when they may be eligible to return to the University and the conditions and/or requirements the student will need to satisfy to be eligible for return. The written notice will also inform the student of their right to reasonable accommodations in the return process and will provide contact information for OAE and the Process Resource. The length of the leave will be determined on an individual basis.
    2. If an involuntary leave of absence is not imposed. The Dean of Students may impose conditions and/or requirements under which the student is allowed to remain at the University.

ix. Within one week of receiving the decision of the Dean of Students, the student may submit an appeal of the decision

in writing to the Vice Provost for Student Affairs or the Vice Provost's designee, who may not be the Dean of Students. The written request for appeal must specify the particular substantive and/or procedural basis for the appeal, and must be made on grounds other than general dissatisfaction with the decision of the Dean of Students. The review by the Vice Provost for Student Affairs or the Vice Provost's designee will be limited to the following considerations:

1. Were the proper facts and criteria brought to bear on the decision?
2. Is there any new information not previously available to the student that may change the outcome of the decision-making process?
3. Were there any procedural irregularities that materially affected the outcome of the matter to the detriment of the appellant?
4. Given the proper facts, criteria, and procedures, was the decision a reasonable one?

After reviewing the matter fully, the Vice Provost for Student Affairs or the Vice Provost's designee will issue a written decision affirming, modifying, or reversing the decision to place the student on an involuntary leave of absence. The Vice Provost's decision shall be final, and no other appeals or grievance procedures are available.

b. **Implications of an Involuntary Leave of Absence**

i. Student status. Students on a leave of absence generally retain their admitted student status; however, they are not registered and therefore do not have the rights and privileges of registered students.

ii. Housing. Consistent with Stanford's policies and procedures, students assigned to a University residence are subject to the terms of the University Residence Agreement. However, as set forth on the Registrar's Office Leave of Absence website, students with medical disabilities (including mental health disabilities) that require University medical services may petition to remain in campus housing for one term while on leave. Students who leave the University before the end of a term may be eligible to receive refunds of portions of their housing charges. Eligibility criteria for refunds are set forth in the Residence Agreement which is found on the Residence Agreement website (https://rde.stanford.edu/studenthousing/apply/residence-agreement/). (https://rde.stanford.edu/studenthousing/apply/residence-agreement/)

iii. Effective date(s) of leave. A student must leave the University within the timeframe set forth by the Dean of Students. The leave will remain in effect until (1) it is determined after an individualized assessment that the student is able to return to the University with or without reasonable accommodations and (2) the student has complied with any University requirements applicable to all students returning from a leave and all of the conditions mandated by the Dean of Students and/or the Vice Provost.

iv. Notification. At any time during the leave process, the Dean of Students may notify a

student's parent, guardian, emergency contact, or other individual, consistent with the law, if notification is deemed appropriate.

v. Association with the University while on leave. Unless expressly permitted by the Dean of Students in writing, students on an involuntary leave of absence are not permitted to be present at the University and are not permitted to engage in any University-related activities, including on-campus employment.

vi. Coursework taken while on leave. Consistent with Stanford's policies and procedures, academic credit for work done elsewhere may be allowed towards a Stanford degree. Students should refer to the "Transfer Work (p. 82)" section of the Stanford Bulletin and consult with the Registrar's Office and their department prior to taking any coursework while on an involuntary leave of absence.

vii. SUnet ID privileges. Unless expressly prohibited by the Dean of Students in writing, students on leave generally may retain their SUnet ID privileges, including their Stanford email account.

viii. Transcript notation. Students on a leave of absence will have a notation on their transcript that reads "Leave of Absence."

ix. Tuition and fees. Consistent with Stanford's policies and procedures, students who leave the University before the end of a term may be eligible to receive refunds of portions of their tuition. See the (https://registrar.stanford.edu/students/tuition-and-fees/tuition-refund-schedule/) Registrar's Tuition Refunds (https://registrar.stanford.edu/students/tuition-and-fees/tuition-refund-schedule/) page for a schedule of refunds.

x. Meal Plan. Consistent with Stanford's policies and procedures, a meal plan refund is based on the date when a student moves out of University residence and is approved under conditions as specified in the Residence Agreement. Students with questions about residential meal plan refunds should contact the central office of Stanford Dining.

xi. Visa Status. International students (F-1 and J-1 Visa holders) placed on an involuntary leave of absence must speak with a Bechtel International Center advisor regarding their visa status.

2. Request for Return

a. For general requirements applicable to all students returning to Stanford after a leave of absence, undergraduate students should refer to the Returning to Stanford (https://undergrad.stanford.edu/planning/academic-policies/returning-students/) website. Graduate students should consult with their academic department and a Graduate Life Office Dean. In addition to the general requirements all students must meet when returning to Stanford after a leave of absence, as well as any conditions mandated by the Dean of Students and/or the Vice Provost for return from an involuntary leave of absence as outlined below in section II.C, students seeking to return from an involuntary leave of absence for reasons of personal or community health and safety may be required to submit additional documentation related to the factors set forth in section I.A.6 as part of an individualized assessment. OAE will work with the students to provide reasonable accommodations in the return process as necessary.

b. A student must make a written request to the Dean of Students to return to the University. Generally, a student will not be allowed to return until one full quarter has elapsed or until the leave period in the involuntary leave of absence notification has elapsed, and all conditions and/or requirements are met.

c. The Dean of Students may require the student to provide evidence that the student, with or without reasonable accommodations, has sufficiently addressed the issues that previously established the criteria for imposing an involuntary leave of absence as set forth in section I.A.6, above. The Dean of Students may also ask, confer with, or seek information from others to assist in making the determination. The information sought may include:

   i. At the student's discretion, documentation of efforts by the student to address the issues that led to the leave

   ii. With appropriate authorization, release of academic records to inform treating clinicians

   iii. With appropriate authorization, release of treatment information to the extent necessary to determine if the student has sufficiently reduced the risk or disruption that led to the need for the involuntary leave

   iv. With appropriate authorization, consultation with Vaden to the extent necessary to determine if the student has sufficiently reduced the risk or disruption that led to the need for the involuntary leave

   v. Consultation with OAE

d. All returning students must meet the essential eligibility requirements and any technical standards of the University and, if applicable, the relevant school or department, with or without reasonable accommodations. If the Dean of Students is not satisfied that the student is ready to return to the University, the student will be notified in writing of the decision, including the reason for the decision, within a reasonable time after the student has submitted a request for return and required documentation.

e. A student not permitted to return may appeal the decision to the Vice Provost for Student Affairs following the procedure in section I.A.9.

3. Scope of the Policy and Relationship to Other University Policies

A leave of absence is an administrative process; it is not a disciplinary process. This policy and these procedures are not intended to be punitive and do not take the place of disciplinary actions that are in response to violations of Stanford's Fundamental Standard or other policies or directives, nor do they preclude the removal or dismissal of students from the University or University-related programs as a result of violations of other University policies or school or departmental protocols. This policy does not limit the University's ability to place enrollment holds on students for reasons beyond the scope of this policy and nothing in this policy relieves a student of any financial obligations to the University that were in place at the time the involuntary leave of absence was imposed.

Nothing in this policy limits the power of the University to take administrative action to ensure the safety of the Stanford community. In exceptional circumstances, where the health or well-being of any person may be seriously affected, or where physical safety is seriously threatened, or where the ability of the University to carry out its essential operations is seriously threatened or impaired, the President or the President's designee, may summarily suspend, dismiss, or bar any person from the University or University-related programs. In all such cases, actions taken will be reviewed promptly, typically within one week, by the appropriate University authority.

In situations involving an imminent or ongoing threat of harm to the student or any other member of the University community, the Dean of Students, in the exercise of his or her reasonable judgment, may require a student to be immediately prohibited from entering Stanford's campus or facilities utilized for University programs or activities while the individualized assessment and review described in section I.A. are taking place. Such students will receive the written notice described in section I.A.2 as quickly as possible.

4. Requests for Reasonable Accommodation

Stanford is committed to providing equal access to all participants in University processes, including students with disabilities. Students with disabilities should contact the Office of Accessible Education (OAE) to request accommodations. Information about the support services OAE provides, types of accommodations offered, and appropriate documentation for accommodations, can be found on the OAE website: https://oae.stanford.edu/.

5. Related Resources

As noted herein, students placed on an involuntary leave of absence may have additional conditions and/or requirements they must meet prior to returning to the University, in addition to any University requirements applicable to all students returning from a leave.

- Undergraduate Students should consult the Returning to Stanford (https://undergrad.stanford.edu/planning/academic-policies/returning-students/) web page for generally applicable deadlines, information and resources.
- Graduate Students should consult with a Graduate Life Office (https://glo.stanford.edu/) Dean and their department for generally applicable deadlines, information and resources.

Students who are placed on an involuntary leave of absence may want to consult with the following offices, where appropriate:

- Office of Accessible Education (https://oae.stanford.edu/) (OAE) (https://oae.stanford.edu/)
- Financial (http://web.stanford.edu/dept/finaid/) Aid (http://web.stanford.edu/dept/finaid/)
- Student Financial (http://web.stanford.edu/group/fms/fingate/students/) Services (http://web.stanford.edu/group/fms/fingate/students/)
- University Housing (http://web.stanford.edu/dept/rde/cgi-bin/drupal/housing/)
- Vaden Health Center (http://vaden.stanford.edu/) (Vaden)
- Academic Advising (https://undergrad.stanford.edu/academic-advising-stanford/)
- Graduate Life (https://glo.stanford.edu/) Office (https://glo.stanford.edu/)
- Bechtel International (https://bechtel.stanford.edu/immigration/visa-types/f-1j-1-student-visas/leave-absence/) Center (https://bechtel.stanford.edu/immigration/visa-types/f-1j-1-student-visas/leave-absence/)

The Process Resource will be available to assist all students who are placed on an involuntary leave of absence with their questions about the process to return and resume their studies and life at Stanford.

Coterminal students whose first graduate quarter occurred prior to Autumn 2015 are subject to coterminal policies as indicated in the previous version of this bulletin. See the Stanford Bulletin 2014-15 (http://exploredegrees.stanford.edu/archive/2014-15/cotermdegrees/).

GRADUATE DEGREES

General Requirements

For each Stanford advanced degree, there is an approved course of study that meets University and department requirements. The University's general requirements, applicable to all graduate degrees at Stanford, are described below. University requirements pertaining to only a subset of advanced degrees are described in the "Master's" tab and "Doctoral" tab in this section of this bulletin.

See the "Graduate Programs" section of each department's listing for specific department degree requirements. Additional information on professional school programs other than Ph.D. and master's degree programs is available in the bulletins of the Graduate School of Business, the School of Law, and the School of Medicine.

Enrollment Requirements

Graduate education at Stanford is a full-time commitment requiring full-time enrollment, typically at least 8 units during Autumn, Winter, and Spring quarters. For a complete definition of full-time enrollment, see the "Definition of Full-time Enrollment (p. 93)" section of this bulletin. Unless permission is granted by the department (for example for field work) enrolled graduate students must maintain a significant physical presence on campus throughout each quarter a student is enrolled.

Requests to enroll for fewer than 8 units during the academic year are approved only in specific circumstances. Students enrolled in the Honors Cooperative or the Master of Liberal Arts programs are permitted part-time enrollment on a regular basis. Graduate students who need only a few remaining units to complete degree requirements or to qualify for TGR status, may register for one quarter on a unit basis (3 to 7 units) to cover the deficiency (see the "Graduate Petition for Part-time Enrollment (p. 79)" section of this bulletin). Matriculated and enrolled pregnant graduate students may request up to two quarters of part-time enrollment for an approved Childbirth Academic Accommodation; see the "Childbirth Accommodation Policy (p. 70)" section of this bulletin and the GAP 5.9 Pregnancy, Childbirth, Adoption and Lactation (https://gap.stanford.edu/handbooks/gap-handbook/chapter-5/subchapter-9/). (https://gap.stanford.edu/handbooks/gap-handbook/chapter-5/subchapter-9/) Students with disabilities covered under the Americans with Disabilities Act may enroll in a reduced course load as recommended by the Office of Accessible Education (https://oae.stanford.edu/) (OAE) and must submit a "Graduate Petition for Part-Time Enrollment -OAE Accommodation" eForm.

Graduate students must enroll in courses for all terms of each academic year (Autumn, Winter, and Spring Quarters) from the admission term until conferral of the degree. The only exception to this requirement occurs when the student is granted an official leave of absence. Failure to enroll in courses for a term during the academic year without taking a leave of absence (p. 74) results in denial of further enrollment privileges unless and until reinstatement to the degree program is granted and the reinstatement fee paid.

Depending on the program, registration in Summer Quarter may or may not be required; Summer Quarter registration does not substitute for registration during the academic year. Students possessing an F-1 or J-1 student visa may be subject to additional course enrollment requirements in order to retain their student visas.

In addition to the above requirement for continuous registration during the academic year, graduate students are required by the University to be registered:

1. In each term during which any official department or University requirement is fulfilled, including qualifying exams or the University oral exam. The period between the last day of final exams of one term and the day prior to the first day of the following term is considered an extension of the earlier term, with the option of considering the two weeks preceding the start of Autumn Quarter as part of Autumn Quarter (rather than as part of Summer Quarter). See details below.
2. In any term in which a University dissertation/thesis is submitted or at the end of which a graduate degree is conferred.
3. Normally, in any term in which the student receives financial support from the University.
4. In any term for which the student needs to use University facilities.
5. For international students, in any term of the academic year (summer may be excluded) for which they have non-immigrant status (i.e., an F-I or J-1 visa).

Individual students may also find themselves subject to the registration requirements of other agencies (for example, external funding sources such as federal financial aid). Course work and research are expected to be done on campus unless the department gives prior approval.

Degree programs have the option to include the two weeks before the start of Autumn Quarter as part of Autumn Quarter for the purposes of completing milestones and departmental requirements. The following considerations apply to this exception:

1. The student must enroll in the subsequent Autumn Quarter in the applicable standard enrollment category prior to the completion of the milestone; a leave of absence is not permitted for that Autumn Quarter.
2. A student exercising this option will not be eligible for Graduation Quarter status until the following Winter Quarter at the earliest.
3. This exception is permitted only for milestones administered by the department, such as qualifying examinations or University oral examinations.
4. This exception does not apply to deadlines administered through Stanford University, such as filing the Application to Graduate, or Dissertation/Thesis submission.
5. Degree programs are not obligated to exercise this option solely because a student requests it.

Degree-Specific Requirements (Master's Degrees)

Master's Program Proposal

Students pursuing an M.A., M.F.A., M.S., or M.P.P. degree are required to submit an acceptable program proposal to their department during the first quarter of enrollment using the Program Proposal for a Master's Degree (https://stanford.app.box.com/v/progpropma/) form. Coterminal students must submit the proposal during the first quarter after admission to the coterminal program. The program proposal establishes a student's individual program of study to meet University and department degree requirements. Students must amend the proposal formally if their plans for meeting degree requirements change.

In reviewing the program proposal or any subsequent amendment to it, the department confirms that the course of study proposed by the student fulfills all department course requirements (for example, requirements specifying total number of units, course levels, particular courses, sequences, or substitutes). The department confirms that all other department requirements (for example, required projects, foreign language proficiency, or qualifying exams) are listed on the form and that all general University requirements (minimum units, residency, and so on) for the master's degree will be met through the proposed program of study. Students who fail to submit an acceptable proposal may be dismissed.

Time Limit for Completion of the Master's Degree

All requirements for a master's degree must be completed within three years after the student's first term of enrollment in the master's program (five years for Honors Cooperative students). Students pursuing a coterminal master's degree must complete their requirements within three years of the first graduate quarter.

The time limit is not automatically extended by a student's leave of absence. All requests for extension, whether prompted by a leave or some other circumstance, must be filed by the student before the conclusion of the program's time limit. Departments are not obliged to grant an extension. The maximum extension is one additional year. Extensions require review of academic progress and any other factors regarded as relevant by the department, and approval by the department; such approval is at the department's discretion.

Master of Arts and Master of Science

In addition to completing the general requirements for advanced degrees and the specified program requirements, candidates for the degree of Master of Arts (M.A.) or Master of Science (M.S.) must outline an acceptable program of study on the Master's Degree Program Proposal and complete their degrees within the time limit for completion of the master's degree.

Master of Public Policy

The degree of Master of Public Policy (M.P.P.) is a two-year program leading to a professional degree. Enrollment in the M.P.P. program is limited to candidates who have earlier been accepted to another Stanford graduate degree program and to recent (within three years) Stanford graduates. In addition to completing the general requirements for advanced degrees and the program requirements specified in the "Public Policy (p. 2007)" section of this bulletin, candidates for the degree of Master of Public Policy (M.P.P.) must outline an acceptable program of study on the Program Proposal for a Master's Degree (https://stanford.app.box.com/v/progpropma/) form and complete their degrees within the time limit for completion of the master's degree.

Master of Business Administration

The degree of Master of Business Administration (M.B.A.) is conferred on candidates who have satisfied the requirements established by the faculty of the Graduate School of Business and the general requirements for advanced degrees. Full particulars concerning the school requirements are found on the M.B.A. program web site of the Graduate School of Business (http://www.gsb.stanford.edu/programs/mba/). The M.B.A. must be completed within the time limit for completion of the master's degree.

Master of Fine Arts

In addition to completing the general requirements for advanced degrees and the program requirements specified in the "Art and Art History (p. 1004)" section of this bulletin, candidates for the degree of Master of Fine Arts (M.F.A.) must outline an acceptable program of study on the Master's Degree Program Proposal and complete their degrees within the time limit for completion of the master's degree.

Master of Liberal Arts

The Master of Liberal Arts (M.L.A.) program is a part-time interdisciplinary master's program in the liberal arts for returning adult students. In addition to completing the general requirements for advanced degrees, candidates for the degree of Master of Liberal Arts (https://mla.stanford.edu) (M.L.A.) must complete their degrees within five years, an exception to the rule specified above.

Engineer

In addition to completing the general requirements for advanced degrees and the requirements specified by their department, candidates for the degree of Engineer must be admitted to candidacy and must complete a thesis per the specifications below.

Candidacy

The Application for Candidacy for Degree of Engineer is an agreement between the student and the department on a specific program of study to fulfill degree requirements. Students must apply for candidacy by the end of the second quarter of the program. Honors Cooperative students must apply by the end of the fourth quarter of the program. Candidacy is valid for five calendar years.

Thesis

A University thesis is required for the Engineer degree. Students have the option of submitting the thesis electronically or via the paper process. Standards for professional presentation of the thesis have been established by the Committee on Graduate Studies. Directions for preparation of the thesis for electronic or paper submission are available at the Office of the University Registrar dissertation/thesis (https://registrar.stanford.edu/students/dissertation-and-thesis-submission/) web site.

The deadline for submission of theses for degree conferral in each term is specified by the University academic calendar (https://registrar.stanford.edu/academic-calendar/). If submitting via the paper process, three copies of the thesis, bearing the approval of the adviser under whose supervision it was prepared, must be submitted to the Office of the University Registrar before the quarterly deadline listed on the University academic calendar (https://registrar.stanford.edu/academic-calendar/). A fee is charged for binding copies of the paper thesis. If submitting via the electronic process the signed thesis signature page and title page must be submitted to the Student Services Center (https://studentservicescenter.stanford.edu/) and one final copy of the thesis must be uploaded, and approved by the Final Reader, on or before the quarterly deadline indicated in the University's academic calendar (https://registrar.stanford.edu/academic-calendar/). There is no fee charged for the electronic submission process.

Students must be registered or on Graduation Quarter in the term in which they submit the thesis; see "Graduation Quarter (p. 79)" section of this bulletin for additional information. At the time the thesis is submitted, an Application to Graduate must be on file, all department requirements must be complete, and candidacy must be valid through the term of degree conferral.

Master of Legal Studies

The Master of Legal Studies degree (M.L.S.), a nonprofessional degree, is conferred upon candidates who satisfactorily complete courses in law totaling the number of units required under the current Faculty Regulations of the Stanford Law School over no less than one academic year and who otherwise have satisfied the requirements of the University and the Stanford Law School. The Stanford Law School Advanced Degree Programs (https://law.stanford.edu/education/degrees/advanced-degree-programs/) provides detailed information on degree requirements.

Master of Laws

The degree of Master of Laws (L.L.M.) is conferred upon candidates who satisfactorily complete courses in law totaling the number of units required under the current Faculty Regulations of the Stanford Law School over no less than one academic year and who otherwise have satisfied the requirements of the University and the Stanford Law School.

The degree is designed for international graduate students trained in law and is available only to students with a primary law degree earned outside the United States. The L.L.M. program offers students a choice of three areas of specialization: Corporate Governance and Practice; Law, Science, and Technology; or International Economic Law, Business; and Policy. The Stanford Law School Advanced Degree

Programs (https://law.stanford.edu/education/degrees/advanced-degree-programs/) provides detailed information on degree requirements.

Master of the Science of Law

The degree of Master of the Science of Law (J.S.M.) is conferred upon candidates who satisfactorily complete courses in law totaling the number of units required under the current Faculty Regulations of the Stanford Law School over no less than one academic year and who otherwise have satisfied the requirements of the University and the Stanford Law School.

The degree is primarily designed for those qualified students who hold a J.D. or its equivalent and who are at the Stanford Law School for independent reasons (for example, as teaching fellows) and who wish to combine work toward the degree with their primary academic activities. Specially qualified lawyers, public officials, academics, and other professionals who have worked outside the United States may apply for the degree through the Stanford Program in International Legal Studies (SPILS). The Stanford Law School Advanced Degree Programs (https://law.stanford.edu/education/degrees/advanced-degree-programs/) provides detailed information on degree requirements.

Degree-Specific Requirements (Doctoral Degrees)

Doctor of Jurisprudence

The degree of Doctor of Jurisprudence (J.D.) is conferred on candidates who satisfactorily complete courses in law totaling the number of units required under the current Faculty Regulations of the Stanford Law School over no less than three academic years and who otherwise have satisfied the requirements of the University and the Stanford Law School. The Stanford Law School J.D. Program (https://law.stanford.edu/education/degrees/jd-program/) web site provides detailed information on degree requirements.

Doctor of the Science of Law

The degree of the Doctor of the Science of Law (J.S.D.) is conferred upon candidates who hold a J.D. or its equivalent, who complete one academic year in residence, and who, as a result of independent legal research, present a dissertation that is, in the opinion of the faculty of the Stanford Law School a contribution to knowledge. Such work and dissertation must conform to the rules of the Stanford Law School and the University for the dissertation and the University Oral Examination, as described below in the "Doctor of Philosophy" section of this bulletin.

Candidacy is limited to students of exceptional distinction and promise. The Stanford Law School Advanced Degree Programs (https://law.stanford.edu/education/degrees/advanced-degree-programs/) web site provides detailed information on degree requirements.

Doctor of Musical Arts

The degree of Doctor of Musical Arts (D.M.A.) is conferred on candidates who have satisfied the general requirements for advanced degrees, the program requirements specified in the "Music (p. 1831)" section of this bulletin, and the candidacy requirement as described below in the "Doctor of Philosophy" section.

Doctor of Medicine

Candidates for the degree of Doctor of Medicine (M.D.) must satisfactorily complete the required curriculum in medicine. The requirements for the M.D. degree are detailed on the School of Medicine's web site (http://med.stanford.edu/md/).

Doctor of Philosophy

The degree of Doctor of Philosophy (Ph.D.) is conferred on candidates who have demonstrated to the satisfaction of their department or school substantial scholarship, high attainment in a particular field of knowledge, and the ability to do independent investigation and present the results of such research. They must satisfy the general requirements for advanced degrees, the program requirements specified by their departments, and the doctoral requirements described below. The option for a Ph.D. minor is also described below, though it is not a Ph.D. requirement.

Candidacy

Admission to a doctoral degree program is preliminary to, and distinct from, admission to candidacy. Admission to candidacy for the doctoral degree is a judgment by the faculty in the department or school of the student's potential to successfully complete the requirements of the degree program. Students are expected to complete department qualifying procedures and apply for candidacy by the end of their second year in the Ph.D. program. Honors Cooperative students must apply by the end of their fourth year. A Pregnancy or Parental Leave of Absence automatically extends the pre-candidacy period by one year for a birth parent and three months (one quarter) for a non-birth parent (see GAP 5.9 Pregnancy, Childbirth, Adoption and Lactation (https://gap.stanford.edu/handbooks/gap-handbook/chapter-5/subchapter-9/)).

Admission to candidacy for the doctoral degree is granted by the major department following a student's successful completion of qualifying procedures as determined by the department. Departmental policy determines procedures for subsequent attempts to become advanced to candidacy in the event that the student does not successfully complete the procedures. Failure to advance to candidacy results in the dismissal of the student from the doctoral program; see "Guidelines for Dismissal of Graduate Students for Academic Reasons (p. 70)" section of this bulletin.

The Application for Candidacy for a Doctoral Degree (https://stanford.app.box.com/v/appcanddoct/) form specifies a departmentally approved program of study to fulfill degree requirements, including required course work, language requirements, teaching requirements, dissertation (final project and public lecture-demonstration for D.M.A.), and University oral examination (for Ph.D.). Prior to candidacy, at least 3 units of work must be taken with each of four Stanford faculty members. To reiterate, however, a student will only be admitted to candidacy if, in addition to the student's fulfilling departmental prerequisites, the faculty makes the judgment that the student has the potential to successfully complete the requirements of the degree program.

If the Ph.D. student is pursuing a minor, approval by the department awarding the minor is also required on the Application for Candidacy.

Time Limit for Completion of a Degree with Candidacy

Students are required to maintain active candidacy through conferral of the doctoral degree. All requirements for the degree must be completed before candidacy expires. Candidacy is valid for five years unless terminated by the department (for example, for unsatisfactory progress). The time limit is not automatically extended by a student's leave of absence. However, a Pregnancy or Parental Leave of Absence automatically extends the candidacy period by one year for a birth parent and three months (one quarter) for a non-birth parent (see GAP 5.9 Pregnancy, Childbirth, Adoption and Lactation (https://gap.stanford.edu/handbooks/gap-handbook/chapter-5/subchapter-9/)).

Failure to make minimum progress or complete University, department, and program requirements in a timely or satisfactory manner may lead to dismissal; see the guidelines for "Dismissal of Graduate Students for Academic Reasons (p. 70)" section of this bulletin and GAP 5.6 Dismissal for Academic and Professional Reasons (https://gap.stanford.edu/handbooks/gap-handbook/chapter-5/subchapter-6/page-5-6-1/).

All requests for extension, whether prompted by a leave or some other circumstance, must be filed by the student before the conclusion of the program's time limit. Departments are not obligated to grant an extension. Students may receive a maximum of one additional year of candidacy per extension. Extensions require review by the department of a dissertation progress report, a timetable for completion of the dissertation, any other factors regarded as relevant by the department, and approval by the department; such approval is at the department's discretion.

Teaching and Research Requirements

A number of departments require their students to teach (serving as a teaching assistant) or assist a faculty member in research (serving as a research assistant) for one or more quarters as part of their doctoral programs. Detailed information is included in the department sections of this bulletin.

Foreign Language Requirement

Some departments require a reading knowledge of one or more foreign languages as indicated in department sections of this bulletin. Fulfillment of language requirements must be endorsed by the chair of the major department.

University Oral Examination

Passing a University oral examination is a requirement of the Ph.D. and J.S.D. degrees. The purpose of the examination is to test the candidate's command of the field of study and to confirm fitness for scholarly pursuits. Departments determine when, after admission to candidacy, the oral examination is taken and whether the exam is a test of knowledge of the field, a review of a dissertation proposal, or a defense of the dissertation; see GAP 4.7 Doctoral Degrees: University Oral Examinations and Committees (https://gap.stanford.edu/handbooks/gap-handbook/chapter-4/subchapter-7/page-4-7-1/) for additional explanation.

Timing and Process

Students must be registered in the term in which the University oral examination is taken. The period between the last day of final exams of one term and the day prior to the first day of the following term is considered an extension of the earlier term. Candidacy must also be valid.

The University Oral Examination (https://stanford.app.box.com/v/doc-orals/) form must be submitted to the department graduate studies administrator at least two weeks prior to the proposed examination date. The examination is conducted according to the major department's adopted practice, but it should not exceed three hours in length, and it must include a period of private questioning by the examining committee.

Committee Membership

The University oral examination committee consists of at least five Stanford faculty members: four examiners and the committee chair from another department. All committee members are normally members of the Stanford University Academic Council, and the chair must be a member of the Stanford University Academic Council. Emeritus faculty are also eligible to serve as examiners or as chair of the committee. Emeritus Stanford faculty, though no longer current members of the Academic Council, count as Academic Council members on dissertation oral committees.

Out-of-Department Chair

The chair of a Stanford oral examination is appointed for this examination only, to represent the interests of the University for a fair and rigorous process. The chair of the examining committee may not have a full or joint appointment in the principal dissertation adviser's, co-advisers or student's department, but may have a courtesy appointment in the department. The chair can be from the same department as any other member(s) of the examination committee and can be from the student's minor department provided that the student's adviser does not have a full or joint appointment in the minor department.

The department of Electrical Engineering has been granted an exception to this policy, whereby "out-of-department" may include a faculty member from another division of the department. The Graduate School of Education has been granted an exception to this policy, whereby "out-of-department" may include a faculty member from another program area of the school.

For Interdisciplinary Degree Programs (IDPs), the chair of the examining committee may not have a full or joint appointment in the primary adviser's major department and must have independence from the student and adviser. The faculty director of the IDP is not allowed to chair an examining committee for students in that IDP.

Responsibility for monitoring appointment of the oral examination chair rests with the candidate's major department. The department cannot require the candidate to approach faculty members to serve as chair; many departments, however, invite students and their advisers to participate in the process of selecting and contacting potential chairs.

Exceptions

A Petition for Non-Academic Council Doctoral Commitment Members (https://stanford.app.box.com/v/doc-ctte-non-acad-council/) to appoint an examining committee member who is neither a current or emeritus member of the Academic Council may be approved by the chair of the department or faculty director of graduate studies, according to local policy, if that person contributes an area of expertise that is not readily available from the faculty and holds a Ph.D. or equivalent foreign degree.

Exceptions for individuals whose terminal degree is not the Ph.D. or equivalent foreign degree may be granted by the Office of the Vice Provost for Graduate Education, upon the request of the student's department chair or faculty director of graduate studies. The prospective committee member's curriculum vitae and a brief description of their contributions to the student's research should be submitted via email (https://vpge.stanford.edu/about-vpge/contact-us/) to the Office of the Vice Provost for Graduate Education.

The majority of the examiners must be current or emeritus Academic Council members; more specifically, one of four or five examiners or two of six or seven examiners who are not current or emeritus members of the Academic Council may be appointed to the oral examination committee by means of this petition and approval by the Office of the Vice Provost for Graduate Education, as required for members who do not have a PhD degree.

Reporting

The candidate passes the examination if the examining committee casts four favorable votes out of five or six, five favorable votes out of seven, or six favorable votes out of eight. Five members present and voting constitute a quorum. If the committee votes to fail a student, the committee chair sends within five days a written evaluation of the candidate's performance to the major department and the student. Within 30 days and after review of the examining committee's evaluation and recommendation, the chair of the student's major department must send the student a written statement indicating the final action of the department.

Dissertation

An approved doctoral dissertation is required for the Ph.D. and J.S.D. degrees. The doctoral dissertation must be an original contribution to scholarship or scientific knowledge and must exemplify the highest standards of the discipline. If it is judged to meet this standard, the dissertation is approved for the school or department by the

doctoral dissertation reading committee (see GAP 4.8 Doctoral Degrees: Dissertations and Dissertation Reading Committees (https://gap.stanford.edu/handbooks/gap-handbook/chapter-4/subchapter-8/page-4-8-1/) for more explanation).

Approval

Each member of the reading committee signs the signature page of the dissertation to certify that the work is of acceptable scope and quality. These signatures must be in ink; proxy or electronic signatures are not permitted. One reading committee member, who must be a current member of the Academic Council, reads the dissertation in its final form and certifies on the Certificate of Final Reading that department and University specifications have been met. The final certification is usually completed by the student's principal dissertation advisor. The final certification must be completed by a current member of the Academic Council.

Dissertations must be in English. Approval for writing the dissertation in another language is normally granted only in cases where the other language or literature in that language is also the subject of the discipline. Such approval is routinely granted for dissertations in the Division of Literatures, Cultures, and Languages, in accordance with the policy of the individual department. Approval is granted by the school dean upon a written request from the chair of the student's major department. Dissertations written in another language must include an extended summary in English.

Submission

Students have the option of submitting the dissertation electronically or via the paper process. Directions for preparation of the dissertation for electronic or paper submission are available at the Office of the University Registrar dissertation (https://registrar.stanford.edu/students/dissertation-and-thesis-submission/) web site. If submitting via the paper process, the signed dissertation copies and accompanying documents must be submitted to the Office of the University Registrar on or before the quarterly deadline indicated in the University's academic calendar (https://registrar.stanford.edu/academic-calendar/). A fee is charged for the microfilming and binding of the paper dissertation copies. If submitting via the electronic process the signed dissertation signature page and title page must be submitted to the Student Services Center (https://studentservicescenter.stanford.edu/) and one final copy of the dissertation must be uploaded, and approved by the Final Reader, on or before the quarterly deadline indicated in the University's academic calendar (https://registrar.stanford.edu/academic-calendar/). There is no fee charged for the electronic submission process.

Enrollment

Students must either be registered or on graduation quarter in the term they submit the dissertation; see "Graduation Quarter" in the "Graduate Degrees (http://exploredegrees.stanford.edu/graduatedegrees/#specialregistrationstatusestext)" section of this Bulletin for additional information. At the time the dissertation is submitted, an Application to Graduate must be on file, all department requirements must be complete, and candidacy must be valid through the term of degree conferral.

Doctoral Dissertation Reading Committee

The doctoral dissertation reading committee consists of the principal dissertation adviser and, typically, two other readers. The doctoral dissertation reading committee must have at least three members and may not have more than five members. All members of the reading committee approve the dissertation. At least one member must be from the student's major department. Normally, all committee members are members of the Stanford University Academic Council or are emeritus Academic Council members.

The student's department chair or faculty director of graduate studies, according to local policy, may, in some cases, approve the appointment of a reader who is not a current or emeritus member of the Academic Council, if that person is particularly well qualified to consult on the dissertation topic and holds a Ph.D. or equivalent foreign degree, via the Petition for Non-Academic Council Doctoral Committee Members (https://stanford.app.box.com/v/doc-ctte-non-acad-council/). Former Stanford Academic Council members and non-Academic Council members may thus, on occasion, serve on a reading committee. A non-Academic Council member (including former Academic Council members) may replace only one of three required members of dissertation reading committees. If the reading committee has four or five members, at least three members (comprising the majority) must be current or emeritus members of the Academic Council. Emeritus Stanford faculty, though no longer current members of the Academic Council, count as Academic Council members on dissertation reading committees.

Exceptions for individuals whose terminal degree is not the Ph.D. or equivalent foreign degree may be granted by the Office of the Vice Provost for Graduate Education, upon the request of the student's department chair or faculty director of graduate studies. The prospective committee member's curriculum vitae and a brief description of their contributions to the student's research should be submitted via email (https://vpge.stanford.edu/about-vpge/contact-us/) to the Office of the Vice Provost for Graduate Education.

Any member of the Academic Council may serve as the principal dissertation adviser. A former Academic Council member, emeritus Academic Council member or non-Academic Council member may serve as co-adviser with the appointment of a principal dissertation adviser who is currently on the Academic Council. This is to ensure representation for the student in the department by someone playing a major adviser role in completion of the dissertation. Professors who have recently become emeritus and have been recalled to active duty may serve as principal dissertation advisers, though they are no longer members of the Academic Council. Requests for further exceptions to the requirement that the principal dissertation adviser be a current member of the Academic Council, for example for recently retired emeritus professors who are still actively engaged on campus but not recalled to active duty, will be reviewed by the Office of the Vice Provost for Graduate Education.

The reading committee, as proposed by the student and agreed to by the prospective members, is endorsed by the chair of the major department on the Doctoral Dissertation Reading Committee (https://stanford.app.box.com/v/docdiss-reading-committee-form/) form. This form must be submitted before approval of Terminal Graduate Registration (TGR) status or before scheduling a University oral examination that is a defense of the dissertation. The reading committee may be appointed earlier, according to the department timetable for doctoral programs. All subsequent changes to the reading committee must be approved by the chair or faculty director of graduate studies of the major department. The reading committee must conform to University regulations at the time of degree conferral.

Ph.D. Minor

Students pursuing a Ph.D. may pursue a minor in another department or program to complement their Ph.D. program. This option is not available to students pursuing other graduate degrees. Ph.D. candidates cannot pursue a minor in their own major department or program. In rare cases, a Ph.D. student may complete the requirements for more than one minor. In that case, 20 unduplicated units must be completed for each minor.

Only departments that offer a Ph.D. may offer a minor, and those departments are not required to do so. Interdisciplinary Ph.D. minors, administered by a designated academic department, may be approved by the Faculty Senate. The minor should represent a program of graduate quality and depth, including core requirements and electives or examinations. The department offering the minor establishes the

core and examination requirements. Elective courses are planned by the students in conjunction with their minor and Ph.D. departments.

The minimum University requirement for a Ph.D. minor is 20 units of course work at the graduate level (typically courses numbered 200 and above). If a minor department chooses to require those pursuing the minor to pass the Ph.D. qualifying or field examinations, the 20-unit minimum can be reduced. All of the course work for a minor must be done at Stanford and must be completed prior to a student moving to TGR status.

Units taken for the minor can be counted as part of the overall requirement for the Ph.D. of 135 units of graduate course work done at Stanford. Courses used for a minor may not be used also to meet the requirements for a master's degree or for the completion of a different Ph.D. minor.

An Application for Ph.D. Minor outlining a program of study must be approved by the major and minor departments; to submit the application, go to Axess (https://axess.sahr.stanford.edu/) and select Student eForms from the student mega menu. This form is submitted at the time of admission to candidacy and specifies whether representation from the minor department on the University oral examination committee is required.

Joint Degree Programs

A joint degree program (JDP) is a specified combination of degree programs or degree types in which a student is enrolled in two graduate degree programs concurrently. JDPs are developed and proposed by the relevant academic units with agreement of the deans of the schools affected.

An approved JDP includes a set of agreements between the participating programs and schools about matters such as admissions, advising, curricula, and tuition. In a JDP, a specified number of units may be double-counted toward the minimum University residency requirements for both degrees, reducing the total number of residency units required to complete both degrees. Students pursuing a joint degree that includes a Ph.D. may not also count a Stanford master's degree or transfer units towards residency for the Ph.D. degree. Application deadlines for each program or degree apply. Students must be admitted to the JDP no later than the study list deadline of the term prior to the term of expected degree conferral. In a JDP, both degrees are conferred concurrently since the units required for each degree are linked to the completion of both degrees. The sole exception is the J.D. degree which may be awarded prior to the second degree.

The following joint degree programs, permitting students to complete requirements for two degrees with a reduced number of total residency units, are offered:

- Juris Doctor with a Master of Arts in Economics, Education, History, Public Policy, or the Division of International Comparative and Area Studies: African Studies, East Asian Studies, International Policy, Latin American Studies, and Russian, East European and Eurasian Studies (J.D./M.A.)
- Juris Doctor with a Master of Science in Bioengineering, Computer Science, Electrical Engineering, Environment and Resources, Health Research and Policy, or Management Science and Engineering (J.D./M.S.)
- Juris Doctor with a Master of Public Policy (J.D./M.P.P)
- Juris Doctor with a Doctor of Philosophy in Bioengineering, Communication, Computer Science, Economics, English, Environment and Resources, History, Management Science and Engineering, Neuroscience, Philosophy, Political Science, Psychology, or Sociology and with the Graduate School of Business Ph.D. program (J.D./Ph.D.)
- Juris Doctor with a Master of Business Administration (J.D./M.B.A.)
- Master of Business Administration with a Master of Arts in Education (M.B.A./M.A.)
- Master of Business Administration with a Master of Science in Computer Science, Electrical Engineering, and Environment and Resources (M.B.A./M.S.)
- Master of Business Administration with a Master of Public Policy (M.B.A./M.P.P.)
- Master of Arts in Education or International Policy with a Master of Public Policy (M.A./M.P.P.)
- Master of Science in Management Science and Engineering with a Master of Public Policy (M.S./M.P.P.)
- Doctor of Philosophy in Economics, Education, Psychology, Sociology, or Structural Biology with a Master of Public Policy (Ph.D./M.P.P.)
- Juris Doctor with a Doctor of Medicine (J.D./M.D.)
- Master of Public Policy with a Doctor of Medicine (M.P.P./M.D.)

Specific requirements for the joint degree programs are available from the participating departments and schools and at Registrar's (https://registrar.stanford.edu/students/graduate-degree-progress/joint-degree-program-information/) web site.

Creation of additional joint degree programs that are combinations of J.D./M.A., J.D./M.S., and Ph.D./M.P.P. degrees have been authorized by the Faculty Senate. New JDPs from among these combinations may double-count up to 45 units towards residency requirements. JDPs from these combinations are proposed by the coordinating programs and schools. Once approvals from the chairs of the programs and deans of the relevant schools are obtained, approval on behalf of the Committee on Graduate Studies is granted by the Office of the Vice Provost for Graduate Education, and final approval is granted by the Office of the University Registrar.

JDPs combining the J.D. and Ph.D. degrees that allow up to the 54-unit reduction of the residency requirement for both degrees separately, following the model of previously approved joint J.D./Ph.D.s listed above, can be approved by the Office of the Vice Provost for Graduate Education and final approval is granted by the Office of the University Registrar.

JDPs combining other degree types or programs may be proposed, but require review by the Faculty Senate Committee on Graduate Studies and must be approved by the Faculty Senate.

Minimum Progress Requirements for Graduate Students

The academic requirements for graduate students include completion of University, department, and program requirements, such as admission to candidacy, successful completion of qualifying exams, and so on in a timely and satisfactory manner. Graduate students must also meet the following standards of minimum progress as indicated by units and grades. (These standards apply to all advanced degree programs except the Graduate School of Business Ph.D., and the M.B.A., J.D., L.L.M., J.S.M., J.S.D., M.D., and M.L.A., which follow guidelines issued by the respective schools and are described in their respective school bulletins.)

Graduate students enrolled for 11 or more units must pass at least 8 units per term by the end of each term. Those registered for fewer than 11 units must pass at least 6 units per term by the end of each term, unless other requirements are specified in a particular case or for a particular program.

In addition, graduate students must maintain a 3.0 (B) grade point average overall in courses applicable to the degree.

Department requirements for minimum progress that set a higher standard for units to be completed, or a higher or lower standard

for grade point average to be maintained, take precedence over the University policy; any such different standards must be published in the Stanford Bulletin.

Students identified as not meeting the requirements for minimum progress and timely and satisfactory completion of requirements are reviewed by their departments to determine whether the problem lies with administrative matters such as reporting of grades or with academic performance. Students have the opportunity to explain any special circumstances. Approval for continuation in the degree program is contingent on agreement by the student and department to a suitable plan to maintain appropriate progress in subsequent quarters. Dismissal of graduate students is addressed in separate guidelines.

During the academic year, graduate students who have been granted Terminal Graduate Registration (TGR) status must enroll for zero units in the TGR course in their department in the section appropriate for the adviser (801 for master's and Engineer degree students or 802 for doctoral students). An 'N' grade signifies satisfactory progress, whereas an 'N-' grade indicates unsatisfactory academic progress. The first 'N-' grade constitutes a warning; additional 'N-' grades normally call for departmental review, which can result in a denial of enrollment or dismissal from the degree program.

Students receiving federal student aid funds, including student loans, must maintain satisfactory academic progress standards that may be stricter than departmental standards. See the Financial Aid Office (https://financialaid.stanford.edu/grad/policy/progress.html) web site for details.

Graduate Unit Requirements

The University's expectation is that the units counted towards all graduate degrees are primarily in graduate courses. The University has set specific requirements for units applied to the minimum requirement for the M.A., M.S., and M.F.A. degrees: All units must be in courses at or above the 100 level and at least 50 percent of those must be courses designated primarily for graduate students (typically at least the 200 level). Units earned in courses below the 100 level may not be counted towards the minimum unit requirement for the master's degree. Department specifications for the level of course work accepted for a particular master's degree program may be higher than the University's specifications.

Changes of Degree Programs

Graduate students are admitted to Stanford for a specific degree program. Students who have attended Stanford for at least one term and who are currently enrolled may submit a Graduate Program Authorization Petition in Axess to make one of the following changes:

1. change to a new degree program in the same department;
2. change to a new degree program in a different department;
3. add a new degree program in the same or a different department to be pursued with the existing program. Students cannot add or pursue the same degree program for which they are already enrolled. Coterminal students must have the bachelor's degree conferred before adding a second advanced degree program. Summer term enrollment is optional for students beginning a new degree program in the Autumn term provided that they have been enrolled the prior Spring term.

It is important that the attempt to add or change degree programs be made while enrolled. Otherwise, a new Application for Graduate Admission must be submitted and an application fee paid. The Graduate Program Authorization Petition is submitted electronically through Axess to the department in which admission is requested. If applying for a higher degree program, students may also be required to submit other application materials such as GRE General or Subject Test scores, a statement of purpose, or new letters of recommendation. Decisions on the petitions are made by the programs or departments to which they are directed, and are at the discretion of those programs or departments.

International students changing departments or degree programs must also obtain the approval of the International Student Adviser at the Bechtel International Center (https://bechtel.stanford.edu). If the requested change lengthens their stay, they also are required to submit verification of sufficient funding to complete the new degree program.

Students who wish to terminate study in a graduate program should submit a properly endorsed Request to Permanently Withdraw from Degree Program form (https://stanford.app.box.com/v/permanent-withdraw/). To return to graduate study thereafter, the student is required to apply for reinstatement (if returning to the same degree program) or admission (if applying to a different program). Both applications require payment of a fee. Reinstatement is contingent upon departmental approval.

Guidelines for Dismissal of Graduate Students for Academic or Professional Reasons

Admission to graduate programs at Stanford is highly selective. It is anticipated that every admitted student will be able to fulfill the requirements for the advanced degree. This document provides guidelines to be used in the unusual circumstance that a department must consider dismissal of a graduate student for academic reasons. These guidelines apply to all advanced degree programs except those in the schools of Law and Business, the STEP program in the Graduate School of Education, and the M.D. program in the School of Medicine, which follow guidelines issued by the respective schools.

The principal conditions for continued registration of a graduate student are the timely and satisfactory completion of the University, department, and program requirements for the degree, fulfillment of minimum progress requirements, and meeting standards of professional behavior. The guidelines that follow specify procedures for dismissal of graduate students who are not meeting these conditions. In such cases, a departmental committee (hereafter "the committee"), whether the department's committee of the faculty or other committee authorized to act on the department's behalf such as the departmental graduate studies committee, will:

1. Where possible and as early as possible, warn the student, in writing, of the situation and deficiency. A detailed explanation of the reason for the warning should be provided.
2. Consider extenuating circumstances communicated by the student.
3. Decide the question of dismissal by majority vote of the committee (with at least three faculty members participating in the committee's deliberation) and communicate the decision to the student in writing.
4. Place a summary of department discussions, votes, and decisions in the student's file.
5. Provide students the opportunity to examine their department files, if requested.
6. Provide students with information on their rights to appeal under the Student Academic Grievance Procedure. See the "Student Academic Grievance Procedure (p. 96)" section of this bulletin.

Careful records of department decisions safeguard the rights of both students and faculty.

Guidelines for Addressing Graduate Student Professional Conduct

The success of any academic institution depends on a shared willingness to discharge the ethical obligations that bind students, staff and

faculty together in a system of mutually supporting professional roles. Stanford University is no exception (see Administrative Guide, 1.1.1 Code of Conduct (https://adminguide.stanford.edu/chapter-1/subchapter-1/)). The relevant ethical obligations are clearly defined for faculty in the Faculty Handbook: "In order to maintain the integrity of its teaching and research and to preserve academic freedom, Stanford University demands high standards of professional conduct from its faculty" (see Faculty Handbook 4.3.A (https://facultyhandbook.stanford.edu/4-core-policy-statements/#43)). The purpose of this policy is to similarly define the professionalism expectations for graduate students as they prepare to be responsible members of professional communities.

Graduate students are expected to meet standards of professional behavior, including: being present on campus to meet the academic and research expectations of the school or department; communicating in a timely, respectful and professional manner; complying with institutional policies and procedures; and participating appropriately in the program's community. Graduate students are expected to familiarize themselves with applicable University policy and degree program requirements. Failure to meet these standards may be grounds for dismissal.

Information about degree program requirements, including department and program academic advising expectations, is available from departments and in the Explore Degrees section of this bulletin. Students are encouraged to consult with faculty and staff in those programs should they have questions about local requirements.

When the University has professionalism concerns about a graduate student, the University manages the concern utilizing the Guidelines for Dismissal of Graduate Students for Academic or Professional Reasons (above).

Additional Specifics for Degrees with Candidacy

Before the Review for Candidacy

The committee, before review for admission to candidacy, may vote to dismiss a student who is not making minimum progress or completing requirements in a timely and satisfactory way or meeting standards of professional behavior. Before considering dismissal, the committee should meet with the student to discuss their academic or professional performance and identify steps to correct deficiencies, where such deficiencies are deemed correctable. Following the meeting, the student should receive a written summary of the discussion. Should it not be possible to meet, a written communication detailing academic and professional performance and steps required to correct any deficiencies should be provided to the student.

At the Review for Candidacy

In a review for admission to candidacy, if the committee votes not to recommend the student for admission to candidacy, the vote results in the dismissal of the student from the program. The department chair, or Director of Graduate Studies, or the student's adviser shall communicate the department's decision to the student in writing and whenever possible, in person. The student may submit a written request for reconsideration. The committee shall respond in writing to the request for reconsideration; it may decline to reconsider its decision.

During Candidacy

When a student admitted to candidacy is not making minimum progress, or not meeting standards of professional performance, or not completing University, department, or program requirements in a timely and satisfactory manner, the student's adviser, the Director of Graduate Studies, or department chair, and other relevant faculty should meet with the student, whenever possible. A written summary of these discussions shall be sent to the student and the adviser and added to the student's department file. The summary should specify the student's academic or professional deficiencies, the steps necessary to correct them (if deemed correctable), and the period of time that is allowed for their correction (normally one academic quarter). At the end of the warning period, the committee should review the student's progress and notify the student of its proposed actions. If the student has corrected the deficiencies, he or she should be notified in writing that the warning has been lifted.

If the deficiencies are not deemed correctable by the committee (for example, the failure of a required course or examination, or a pattern of unsatisfactory behavior or performance) or if, at the end of the warning period, the student has not in the view of the committee corrected the deficiencies, the committee may initiate proceedings for dismissal. The student shall be notified in writing and whenever possible, in person, that the case of dismissal will be considered at an impending committee meeting. The student has the right to be invited to attend a portion of the scheduled meeting to present his or her own case; a student may also make this case to the committee in writing.

After full discussion at the committee meeting, the committee, without the student present, shall review the case and vote on the issue of dismissal. The student shall be notified of the decision in writing and, whenever possible, in person. The student should receive a written summary of the discussion, including the committee's decision and the reasons for it. The student may submit a written request for reconsideration. The committee's response to the request for reconsideration shall be made in writing; it may decline to reconsider its decision.

Pregnancy, Childbirth, Adoption and Lactation Policy

Stanford prohibits discrimination on the basis of any characteristic protected by law including discrimination on the basis of pregnancy. Stanford complies with requirements of California Education Code section 66281.7. Stanford's policy provides that pregnant graduate students be supported either by staying enrolled or taking a pregnancy leave of absence (see GAP 5.9 Pregnancy, Childbirth, Adoption and Lactation (https://gap.stanford.edu/handbooks/gap-handbook/chapter-5/subchapter-9/)). The policy also provides childbirth accommodations for graduate students giving birth as well as support for non-birth parents who have recently experienced the birth of a child. Questions about the policy can be directed to the Office of the Vice Provost for Graduate Education (https://vpge.stanford.edu/about-vpge/contact-us/).

Residency Policy for Graduate Students

Each type of graduate degree offered at Stanford (for example, Master of Science, Doctor of Philosophy) has a residency requirement based on the number of academic units required for the degree. These residency requirements and the maximum allowable transfer units for each degree type are listed below. Unless permission is granted by the department (for example, for field work) enrolled graduate students must maintain a significant physical presence on campus throughout each quarter a student is enrolled.

The unit requirements for degrees can represent solely course work required for the degree or a combination of course work, research, and a thesis or dissertation. Academic departments and schools offering degrees may establish unit requirements that are higher than the minimum University residency requirement, but they may not have a residency requirement that is lower than the University standard. In addition to the University's residency requirement based on a minimum number of units for each degree, the School of Medicine and the Graduate School of Business may establish residency requirements based on the number of quarters of full-time registration in which students are enrolled to earn a degree. However, in no case may a student earn fewer units than the University minimum for each degree. All residency requirements are published in the Stanford Bulletin. Students should consult the Stanford Bulletin or their academic department to

determine if their degree program has residency requirements that exceed the minimum.

Students eligible for Veterans Affairs educational benefits should refer to the "Veterans' Educational Benefits (p. 84)" section of this bulletin.

It is Stanford University's general policy that units are applicable toward only one degree. Units may not normally be duplicated or double-counted toward the residency requirement for more than one degree, with the exception that up to 45 units of a Stanford M.A. or M.S. degree may be applied to the residency requirement for the Ph.D., D.M.A., or Engineer degrees. Other exceptions to this general policy for specified combinations of degree types, known as Joint Degree Programs, may be approved by agreement of the Faculty Senate and the deans of the schools affected, with review by the Committee on Graduate Studies. Students pursuing a Joint Degree that includes a Ph.D. may not also count a Stanford master's degree or transfer units towards residency for the Ph.D. degree. See the "Joint Degree Programs (http://exploredegrees.stanford.edu/graduatedegrees/#jointdegreestext)" tab of this section of this bulletin for additional information.

Only completed course units are counted toward the residency requirement. Courses with missing, incomplete, in progress, or failing grades do not count toward the residency requirement. Courses from which a student has formally withdrawn do not count toward the residency requirement.

Terminal Graduate Registration (TGR) is available to graduate students who have met all of the conditions listed in the "TGR (p. 79)" section of this bulletin.

University Minimum Residency Requirements for Graduate Degrees [1]

Degree Type	Minimum # of Units	Maximum Allowable External Transfer Units
M.A., M.S., M.F.A., M.L.A.	45	0 (see note 4)
Engineer (see note 2)	90	45
M.B.A., M.P.P. (see note 3)	90	0 (see note 4)
Ph.D., D.M.A. (see note 5)	135	45
M.D.	235	90
M.S. in Physician Assistant Studies	186 (see note 6)	0 (see note 4)
J.D.	109	45
M.L.S., L.L.M., J.S.M.	35	0 (see note 4)
J.S.D.	44	0 (see note 4,7)

1 The University has authorized the granting of the M.A.T., Ed.S. and Ed.D. degrees, but they are not being offered.

2 Up to 45 units completed at Stanford toward a M.A. or M.S. degree or accepted as transfer credit, but not both, in an Engineering discipline may be used toward the 90 unit residency requirement for the Engineer degree. At least 45 units of work at Stanford are necessary to complete the 90 residency units for the Engineer degree.

3 Enrollment in the M.P.P. degree program is limited to candidates who have earlier been accepted to another Stanford graduate degree program and to recent (within three years) Stanford graduates.

4 Students eligible for Veterans Affairs educational benefits should refer to the Veterans Benefits section of "Admissions and Financial Aid (p. 22)" in this bulletin.

5 Up to 45 units completed at Stanford toward a M.A. or M.S. degree or accepted as transfer credit, but not both, may be used toward the 135 unit residency requirement for the Ph.D. or D.M.A. degree. At least 90 units of work at Stanford are necessary to complete the 135 residency units for the Ph.D. or D.M.A. degree.

6 6 units of the total are in an area of scholarly concentration.

7 Up to 35 units completed at Stanford toward a J.S.M degree may be used toward the 44-unit residency requirement for the J.S.D degree.

University Minimum Residency Requirements for Graduate Degree Combinations

Students with multiple degree programs must complete the residency requirements for all their degree types. Students enrolled in a joint degree program should see the "Joint Degree Program (p. 70)" section of this Bulletin.

A table of these residency requirements is also available on the Registrar's web site (https://registrar.stanford.edu/students/graduate-degree-progress/minimum-residency-requirements-graduate-degrees/).

Degree/Degree Combination	Minimum # of Stanford Units Required	Maximum Allowable External Transfer Units	Minimum # of Residency Units Required
MA/MS/MSM	45	0*	45
MA/MS/MSM + MA/MS	90	0*	90
Engineer	45	45	90
Engineer + MA/MS	90	0*	90
Ph.D.	90	45	135
Ph.D. + MA/MS	135	0*	135
Ph.D. + 2 MA/MS	180	0*	180
Ph.D. + Engineer	180	45	225
Ph.D. + Engineer + MA/MS	225**	0*	225**
Ph.D. + Ph.D.	180	90***	270

* Students eligible for Veterans Affairs educational benefits should refer to the "Veterans Benefits" (p. 84) section of this bulletin.

** Civil and Environmental Engineering (CEE) students should refer to the CEE program page (p. 663) in the Stanford Bulletin for additional information regarding residency.

*** Up to 45 quarter units of work completed outside of Stanford may be applied towards a PhD via the Graduate Residency Credit petition (https://registrar.stanford.edu/students/graduate-degree-progress/graduate-residency-credit/) process. Students may apply up to 45 unduplicated units towards each Ph.D. (i.e., students may not use the same external course work towards both Ph.Ds).

Graduate Residency Transfer Credit

COVID-19 Policies on Graduate Transfer Work for Academic Year 2020-21

Students may apply for graduate residency transfer credit from work completed via an online/hybrid/correspondence instruction mode. The coursework must still meet all other conditions for graduate residency transfer credit.

After at least one quarter of enrollment, students pursuing an Engineer, D.M.A., or Ph.D. may apply for transfer credit for graduate work done at another institution. Engineer candidates who also earned their master's at Stanford are not eligible for transfer residency credit, nor are any master's degree students. Ph.D. or D.M.A. students may only apply a total of 45 units of transfer credit and credit earned for a Stanford master's degree toward the PhD residency total. Ph.D. or D.M.A. students who are awarded graduate residency credit, who then add another graduate degree to their academic plan, may be required to earn a higher number of units in order to confer their degrees. Students should visit the Minimum Residency Requirements for Graduate Degrees page (https://registrar.stanford.edu/students/graduate-degree-progress/minimum-residency-requirements-graduate-degrees/) for more information. Students who are going to study elsewhere during their degree program at Stanford should obtain prior approval of any transfer credit sought before their departure.

The following criteria are used by the department in determining whether, in its discretion, it awards transfer credit for graduate-level work done at another institution:

1. Courses should have comparable Stanford counterparts that are approved by the student's department. A maximum of 12 units of courses with no Stanford counterparts and/or research units may be granted transfer credit.
2. The student must have been enrolled at the other institution in a student category which yields graduate credit. The maximum amount of credit given for extension and non-matriculated (non-degree) courses is 12 units. No transfer credit is given for online or correspondence work.
3. Courses must have been taken after the conferral of the bachelor's degree. The only exception is for work taken through programs structured like the Stanford coterminal bachelor's/master's program. Any work taken through such programs must be at the graduate level and applied toward the completion of a graduate degree.
4. Courses must have been completed with a grade point average (GPA) of 3.0 (B) or better. Pass grades are accepted only for courses for which letter grades were not an option and for which the standard of passing is 'B' quality work. The only exception to this is for thesis/research/dissertation coursework, for which Pass/Satisfactory/Credit grades can be accepted.
5. Courses must have been taken at a regionally accredited institution in the U.S. or at an officially recognized institution in a foreign country. Courses taken at foreign universities must be at the level of study comparable to a U.S. graduate program. Students should visit the Graduate Residency Transfer Credit page (https://registrar.stanford.edu/students/graduate-degree-progress/graduate-residency-credit/) on the Registrar's web page for more information about what information is needed for international transfer work.

The Application for Graduate Residency Credit is reviewed by the department and the Office of the University Registrar. For transfer credit done under a system other than the quarter system, the permissible maximum units are calculated at an appropriate ratio of equivalence (i.e. credit is converted into quarter units). One semester unit or hour usually equals 1.5 quarter units.

Leaves of Absence (Graduate)

Students on leave of absence are not registered at Stanford and, therefore, do not have the rights and privileges of registered students. They cannot fulfill any official department or University requirements during the leave period.

Leaves do not delay candidacy or master's program expiration dates, except for pregnancy or parental leaves of absence, which do extend these degree milestones.

Students on leave may complete course work for which an 'Incomplete' grade was awarded in a prior term and are expected to comply with the maximum one-year time limit for resolving incompletes; a leave of absence does not stop the clock on the time limit for resolving incompletes. Students with extenuating circumstances that may warrant an exception to academic policy should discuss the need for an extension to the time limit with their adviser and the course instructor. Students may request an extension of the deadline for resolving an incomplete by submitting the Petition to Change Course Enrollment (Graduate Students) (https://stanford.box.com/change-crse-enroll/).

When a student is granted (or placed on) a leave of absence after the beginning of the term, courses in which the student was enrolled after the drop deadline appear on the student's transcript and show the symbol 'W' (Withdraw).

Voluntary Leaves of Absence

Graduate students who do not meet the requirement for continuous registration during the academic year (Autumn, Winter, and Spring quarters) must obtain an approved leave of absence, in advance, for the term(s) they will not be registered. (For a complete definition of full-time enrollment, see the "Definition of Full-time Enrollment (p. 93)" section of this bulletin.) The leave of absence must be reviewed for approval by the chair or director of graduate studies of the student's major department and, if the student is in the United States on a foreign student visa, by the Bechtel International Center (http://icenter.stanford.edu/). Except in the case of pregnancy or parental leaves, the granting of a leave of absence is at the discretion of the department and subject to review by the Office of the University Registrar. The University may condition its approval of a petition for leave of absence on the student's meeting such requirements as the University deems appropriate in the individual case for the student to be eligible to return (such as, in the case of a leave for medical reasons, proof of treatment and/or an interview with a health care professional at Vaden Health Center (http://vaden.stanford.edu/) or Counseling and Psychological Services (https://vaden.stanford.edu/caps-and-wellness/) or its designee).

New graduate students may not take a leave of absence during their first quarter. However, new Stanford students may request a deferment from the department.

Coterminal students who wish to take a leave of absence are subject to the Leave of Absence policies for both undergraduate and graduate students, as described here and in the undergraduate Leaves of Absence and Reinstatement (p. 42) section of this Bulletin. A coterminal student whose undergraduate degree has not been conferred must obtain permission from the master's degree program and the office of Undergraduate Advising and Research, and may not take a leave of absence unless approved for both the graduate and undergraduate leave. Coterminal students are permitted to request a leave of absence for the first quarter of the graduate program.

Leaves of absence are granted for a maximum of one calendar year, or four quarters. Leaves requested for a longer period are approved only in exceptional circumstances (for example, mandatory military service). An extension of leave, for a maximum of one year or four quarters, is approved only in unusual circumstances. Extension requests must be made before the expiration of the original leave of absence. Leaves of absence for graduate students may not exceed a cumulative total of two years (eight quarters including summer quarters).

Any pregnant graduate student may request a Pregnancy Leave of Absence to suspend enrollment around the time of the birth. Alternatively, a pregnant student may choose to remain enrolled and to request a Childbirth Accommodation. Non-birth parents may request a Parental Leave of Absence. Non-birth parents include: parents anticipating or

recently experiencing the birth of a child; parents who adopt a child; and parents by means of surrogacy.

In the case of Pregnancy and Parental Leaves of Absence, all provisions of the policy for Voluntary Leaves of Absence, defined above, will apply, except:

- Any matriculated pregnant student requesting a Pregnancy Leave of Absence will automatically be approved for a leave period of four quarters (12 months).
- Non-birth parents who request a Parental Leave of Absence will automatically be approved for a leave period of one academic quarter.
- Any student on a Pregnancy Leave of Absence in a degree program requiring candidacy, who has not yet been admitted to candidacy, will have the period of time in which to achieve candidacy automatically extended by 12 months (four quarters). If the student has been admitted to candidacy, the candidacy period will be automatically extended by 12 months (four quarters). The 12-month extension of pre-candidacy or candidacy will be applicable whether the student takes a full year of leave or returns in less than one year.
- Any student on a Parental Leave of Absence in a degree program requiring candidacy, who has not yet been admitted to candidacy, will have the period of time in which to achieve candidacy automatically extended by three months (one quarter). If the student has been admitted to candidacy, the candidacy period will be automatically extended by three months (one quarter).
- In the case where a Pregnancy or Parental Leave of Absence would extend the student's cumulative total beyond 8 quarters, that extension will be permitted so that the student may return to their program. The student will then be considered to have reached their maximum cumulative leave.

Discontinuation and Reinstatement

A student's academic degree program may be discontinued if the student:

- fails to be enrolled by the study list deadline; or
- fails to be approved for a leave of absence by the start of the term; or
- voluntarily terminates graduate studies; or
- is dismissed from graduate studies for academic reasons; or
- is expelled from the University.

Students who fail to be either enrolled by the final study list deadline or approved for a leave of absence by the start of a term or after a voluntary withdrawal are required to apply for reinstatement (https://stanford.box.com/appgradreinstate/) through the Graduate Admissions office before they can return to the same degree program. Students whose master's program or doctoral candidacy has expired must petition to have extensions of their programs or candidacy approved by their departments before reinstatement may be approved.

The decision to approve or deny reinstatement is made by the student's department or program. Departments are not obliged to approve reinstatements of students. Reinstatement decisions are made at the discretion of the department or the program and may be based on the applicant's academic status when last enrolled, activities while away from campus, the length of the absence, the perceived potential for successful completion of the program, and the ability of the department to support the student both academically and financially, as well as any other factors or considerations regarded as relevant by the department or program.

If the student is eligible to be reinstated and is seeking reinstatement to a degree program that is no longer offered by Stanford University, the student should contact the department or program that offers the most similar degree to inquire about admission into the new degree program. The decision to grant admission into this new degree program rests with the department or program.

Reinstatement information is available from the Graduate Admissions office (https://gradadmissions.stanford.edu/). Successful applicants are billed. Department-approved reinstatement applications must be submitted prior to the first day of the term for which re-enrollment is requested if the student is registering for courses. International students must submit reinstatement applications early enough to allow time for I-20 or DS-2019 production, visa interview, etc.

In the rare circumstance where a student who had been dismissed for academic reasons wishes to return to the same degree program, and where reinstatement was not precluded at the time of the dismissal, the student should request reinstatement as described above. In this circumstance, the degree program may review such relevant information as course work completed elsewhere or any other factors deemed to be appropriate for consideration.

Conditions for reinstatement may be established at the discretion of the program. The decision to approve or deny reinstatement is made by the department or program to which the student is seeking reinstatement, and is in its discretion. In addition, the department or program retains the right to condition reinstatement on such academic or other conditions as it deems appropriate.

Students who have been expelled from Stanford University are not permitted to apply for reinstatement.

Involuntary Leave of Absence and Return Policy

In effect as of January 4, 2020

Stanford University is committed to the safety, health and well-being of the campus community. The University recognizes that students may experience situations that significantly limit their ability to function successfully or safely in their role as students. In such circumstances, students should consider requesting a leave of absence. A leave of absence permits students to take a break from the University and their studies, so that they may address the issues that led to the need for the leave and later return to the University with an enhanced opportunity to achieve their educational goals. Students will be given the option to take a voluntary leave of absence before a decision is made with respect to an involuntary leave.

1. Involuntary Leave of Absence

Requiring a student to take a leave of absence is rare and, subject to Section III, only happens when current medical knowledge and/or the best available objective evidence indicates to the Senior Associate Vice Provost and Dean of Students or their designee (hereinafter, Dean of Students) that there is a significant risk to the student's health or safety or the health or safety of others, or the student's behavior severely disrupts the University environment, and no reasonable accommodations can adequately reduce that risk or disruption.

Consistent with Stanford's Nondiscrimination Policy (p. 123), Stanford prohibits unlawful discrimination on the basis of any type of disability or any other characteristic protected by applicable law in the administration of the University's programs and activities. Stanford offers a range of resources, support services and accommodations to address the physical and mental health needs of students. However, on rare occasion, a student's needs may require a level of care that exceeds the care the University can appropriately provide. Where current knowledge about the individual's medical condition and/or the best available objective evidence indicates that a student poses a significant risk to the health or safety of a

member of the University community, where a student is unable or unwilling to carry out substantial self-care obligations and poses a significant risk to their own safety not based on mere speculation, stereotypes, or generalizations, or where a student's behavior severely disrupts the University environment and the student does not want to take a voluntary leave, the Dean of Students has the authority to place a student on an involuntary leave of absence. Before placing any student on an involuntary leave of absence, Stanford will conduct an individualized assessment, consulting with the Office of Accessible Education (OAE) to determine if there are reasonable accommodations that would permit the student to continue to participate in the University community without taking a leave of absence.

The Dean of Students may be notified about a student who may meet the criteria of an involuntary leave of absence from a variety of sources including, but not limited to, the student, the student's academic advisor, Residential Education staff, Graduate Life Office staff, an academic department, or a member of the University's threat assessment team. If the Dean of Students deems it appropriate, these procedures will be initiated.

a. **Procedures for Placing a Student on an Involuntary Leave of Absence**

i. The Dean of Students will consult with the Office of Accessible Education (OAE) prior to making a decision to impose an involuntary leave of absence.

ii. The Dean of Students will issue a notice to the student in writing that an involuntary leave of absence is under consideration. The written notice will include the reason(s) why the student is being considered for an involuntary leave, contact information for OAE, which can provide information about accommodations, and a copy of this policy. In addition, the notice will provide contact information for the Process Resource, an administrator outside of the decision-making process with knowledge of Stanford's involuntary leave of absence process who will serve as a neutral process resource to answer any student questions about the process from referral through return to Stanford. In the written notice, the student will be encouraged to respond before a decision regarding a leave of absence is made and will be given a specified time period within which to do so.

iii. The Dean of Students will consider potential accommodations and/or modifications that could obviate the need for an involuntary leave of absence, such as the option to take a voluntary leave of absence, academic accommodations, housing and dining accommodations, and modifications to University policies, rules, and regulations. Examples of academic, administrative, and housing accommodations that may be facilitated through the Office of Accessible Education (OAE) can be found on the OAE (https://oae.stanford.edu/) website.

iv. The student may be asked to execute an Exchange of Confidential Information Consent Form providing Stanford personnel temporary authority to get information from the student's healthcare provider(s) regarding issues relevant and appropriate to the consideration of an involuntary leave of absence when there is a need for the University to have access to that information as part of the interactive process and individualized assessment. If a student refuses to execute an Exchange of Confidential Information Consent Form or to respond within the timeframe set by the Dean of Students, the Dean may proceed with the assessment based on information in the Dean's possession at the time.

v. The Dean of Students will also confer, as feasible and when appropriate in a particular matter, with individuals regarding the need for an involuntary leave of absence. Although each case will vary, conferring individuals could include:

1. Residence Deans, or Graduate Life Office Deans;
2. Faculty members;
3. Academic advisors;
4. With appropriate authorization, representatives from Stanford's Vaden Health Center (Vaden);
5. With appropriate authorization, the student's treatment provider(s) or other health care professionals;
6. Member(s) of the University's threat assessment team; and/or
7. Such other individuals as may be appropriate in an individual matter.

In each case, the Dean of Students will confer with a representative from the Office of Accessible Education (OAE) with expertise in mental health disabilities.

vi. Particular attention will be paid to the criteria for imposing an involuntary leave of absence, specifically:

1. whether current knowledge about the individual's medical condition and/or the best available objective evidence indicates that a student poses a significant risk to the health or safety of a member of the University community;
2. whether a student is unable or unwilling to carry out substantial self-care obligations and poses a significant risk to their own safety not based on mere speculation, stereotypes, or generalizations; and/or
3. whether a student's behavior severely disrupts the University environment.

The individualized assessment as to each factor, based on reasonable judgment that relies on current medical knowledge or on the best available objective evidence, should ascertain: the nature, duration, and severity of the risk or disruption; the probability that the risk or disruption will actually occur; and whether reasonable modifications of policies, practices, or procedures will adequately mitigate the risk or disruption so as to eliminate the need for an involuntary leave of absence.

vii. The Dean of Students will give significant weight to the opinion of the student's treatment provider(s), including those identified by the student, regarding the student's ability to function academically and safely at the University with or without reasonable accommodations. If the Dean of Students determines that the information provided by the treatment provider(s) is incomplete, requires further explanation or clarification, or is inconsistent with other information in the student's record, the Dean of Students, with proper authorization, will contact the treatment provider(s) to obtain additional information. In certain circumstances, the University may require the student to undergo an additional evaluation by an independent and objective professional designated by Stanford, if the Dean of Students believes it will facilitate a more informed decision.

viii. Following these consultations and based on a review of the relevant documentation and information available, the Dean of Students will make a decision as to whether the student should be placed on an involuntary leave of absence, and will provide written notice of this decision to the student. The written notice of decision will include information about the student's right to appeal and to reasonable accommodations during the appeal process. The review and notice of decision under this policy should be done in a reasonably timely manner. Where students have been asked to remain away from the University while the review is underway, every effort will be made by the Dean of Students to reach a decision within one week, provided the student responds in a timely manner to requests for information and, if appropriate, evaluation.

1. If an involuntary leave of absence is imposed. The written notice of decision to the student will set forth the basis for the decision and a time-frame for when the student must leave the University and when they may be eligible to return to the University and the conditions and/or requirements the student will need to satisfy to be eligible for return. The written notice will also inform the student of their right to reasonable accommodations in the return process and will provide contact information for OAE and the Process Resource. The length of the leave will be determined on an individual basis.

2. If an involuntary leave of absence is not imposed. The Dean of Students may impose conditions and/or requirements under which the student is allowed to remain at the University.

ix. Within one week of receiving the decision of the Dean of Students, the student may submit an appeal of the decision in writing to the Vice Provost for Student Affairs or the Vice Provost's designee, who may not be the Dean of Students. The written request for appeal must specify the particular substantive and/or procedural basis for the appeal, and must be made on grounds other than general dissatisfaction with the decision of the Dean of Students. The review by the Vice Provost for Student Affairs or the Vice Provost's designee will be limited to the following considerations:

1. Were the proper facts and criteria brought to bear on the decision?

2. Is there any new information not previously available to the student that may change the outcome of the decision-making process?

3. Were there any procedural irregularities that materially affected the outcome of the matter to the detriment of the appellant?

4. Given the proper facts, criteria, and procedures, was the decision a reasonable one?

After reviewing the matter fully, the Vice Provost for Student Affairs or the Vice Provost's designee will issue a written decision affirming, modifying, or reversing the decision to place the student on an involuntary leave of absence. The Vice Provost's decision shall be final, and no other appeals or grievance procedures are available.

b. **Implications of an Involuntary Leave of Absence**

i. Student status. Students on a leave of absence generally retain their admitted student status; however, they are not registered and therefore do not have the rights and privileges of registered students.

ii. Housing. Consistent with Stanford's policies and procedures, students assigned to a University residence are subject to the terms of the University Residence Agreement. However, as set forth on the Registrar's Office Leave of Absence website, students with medical disabilities (including mental health disabilities) that require University medical services may petition to remain in campus housing for one term while on leave. Students who leave the University before the end of a term may be eligible to receive refunds of portions of their housing charges. Eligibility criteria for refunds are set forth in the Residence Agreement which is found on the Residence Agreement website (https://rde.stanford.edu/studenthousing/apply/residence-agreement/). (https://rde.stanford.edu/studenthousing/apply/residence-agreement/)

iii. Effective date(s) of leave. A student must leave the University within the timeframe set forth by the Dean of Students. The leave will remain in effect until (1) it is determined after an individualized assessment that the student is able to return to the University with or without reasonable accommodations and (2) the student has complied with any University requirements applicable to all students returning from a leave and all of the conditions mandated by the Dean of Students and/or the Vice Provost.

iv. Notification. At any time during the leave process, the Dean of Students may notify a

student's parent, guardian, emergency contact, or other individual, consistent with the law, if notification is deemed appropriate.

v. Association with the University while on leave. Unless expressly permitted by the Dean of Students in writing, students on an involuntary leave of absence are not permitted to be present at the University and are not permitted to engage in any University-related activities, including on-campus employment.

vi. Coursework taken while on leave. Consistent with Stanford's policies and procedures, academic credit for work done elsewhere may be allowed towards a Stanford degree. Students should refer to the "Transfer Work (p. 82)" section of the Stanford Bulletin and consult with the Registrar's Office and their department prior to taking any coursework while on an involuntary leave of absence.

vii. SUnet ID privileges. Unless expressly prohibited by the Dean of Students in writing, students on leave generally may retain their SUnet ID privileges, including their Stanford email account.

viii. Transcript notation. Students on a leave of absence will have a notation on their transcript that reads "Leave of Absence."

ix. Tuition and fees. Consistent with Stanford's policies and procedures, students who leave the University before the end of a term may be eligible to receive refunds of portions of their tuition. See the (https://registrar.stanford.edu/students/tuition-and-fees/tuition-refund-schedule/) Registrar's Tuition Refunds (https://registrar.stanford.edu/students/tuition-and-fees/tuition-refund-schedule/) page for a schedule of refunds.

x. Meal Plan. Consistent with Stanford's policies and procedures, a meal plan refund is based on the date when a student moves out of University residence and is approved

under conditions as specified in the Residence Agreement. Students with questions about residential meal plan refunds should contact the central office of Stanford Dining.

xi. Visa Status. International students (F-1 and J-1 Visa holders) placed on an involuntary leave of absence must speak with a Bechtel International Center advisor regarding their visa status.

2. Request for Return

a. For general requirements applicable to all students returning to Stanford after a leave of absence, undergraduate students should refer to the Returning to Stanford (https://undergrad.stanford.edu/planning/academic-policies/returning-students/) website. Graduate students should consult with their academic department and a Graduate Life Office Dean. In addition to the general requirements all students must meet when returning to Stanford after a leave of absence, as well as any conditions mandated by the Dean of Students and/or the Vice Provost for return from an involuntary leave of absence as outlined below in section II.C, students seeking to return from an involuntary leave of absence for reasons of personal or community health and safety may be required to submit additional documentation related to the factors set forth in section I.A.6 as part of an individualized assessment. OAE will work with the students to provide reasonable accommodations in the return process as necessary.

b. A student must make a written request to the Dean of Students to return to the University. Generally, a student will not be allowed to return until one full quarter has elapsed or until the leave period in the involuntary leave of absence notification has elapsed, and all conditions and/or requirements are met.

c. The Dean of Students may require the student to provide evidence that the student, with or without reasonable accommodations, has sufficiently addressed the issues that previously established the criteria for imposing an involuntary leave of absence as set forth in section I.A.6, above. The Dean of Students may also ask, confer with, or seek information from others to assist in making the determination. The information sought may include:

   i. At the student's discretion, documentation of efforts by the student to address the issues that led to the leave

   ii. With appropriate authorization, release of academic records to inform treating clinicians

   iii. With appropriate authorization, release of treatment information to the extent necessary to determine if the student has sufficiently reduced the risk or disruption that led to the need for the involuntary leave

   iv. With appropriate authorization, consultation with Vaden to the extent necessary to determine if the student has sufficiently reduced the risk or disruption that led to the need for the involuntary leave

   v. Consultation with OAE

d. All returning students must meet the essential eligibility requirements and any technical standards of the University and, if applicable, the relevant school or department, with or without reasonable accommodations. If the Dean of Students is not satisfied that the student is ready to return to the University, the student will be notified in writing of the decision, including the reason for the decision, within a reasonable time after the student has submitted a request for return and required documentation.

e. A student not permitted to return may appeal the decision to the Vice Provost for Student Affairs following the procedure in section I.A.9.

3. Scope of the Policy and Relationship to Other University Policies

A leave of absence is an administrative process; it is not a disciplinary process. This policy and these procedures are not intended to be punitive and do not take the place of disciplinary actions that are in response to violations of Stanford's Fundamental Standard or other policies or directives, nor do they preclude the removal or dismissal of students from the University or University-related programs as a result of violations of other University policies or school or departmental protocols. This policy does not limit the University's ability to place enrollment holds on students for reasons beyond the scope of this policy and nothing in this policy relieves a student of any financial obligations to the University that were in place at the time the involuntary leave of absence was imposed.

Nothing in this policy limits the power of the University to take administrative action to ensure the safety of the Stanford community. In exceptional circumstances, where the health or well-being of any person may be seriously affected, or where physical safety is seriously threatened, or where the ability of the University to carry out its essential operations is seriously threatened or impaired, the President or the President's designee, may summarily suspend, dismiss, or bar any person from the University or University-related programs. In all such cases, actions taken will be reviewed promptly, typically within one week, by the appropriate University authority.

In situations involving an imminent or ongoing threat of harm to the student or any other member of the University community, the Dean of Students, in the exercise of his or her reasonable judgment, may require a student to be immediately prohibited from entering Stanford's campus or facilities utilized for University programs or activities while the individualized assessment and review described in section I.A. are taking place. Such students will receive the written notice described in section I.A.2 as quickly as possible.

4. Requests for Reasonable Accommodation

Stanford is committed to providing equal access to all participants in University processes, including students with disabilities. Students with disabilities should contact the Office of Accessible Education (OAE) to request accommodations. Information about the support services OAE provides, types of accommodations offered, and appropriate documentation for accommodations, can be found on the OAE website: https://oae.stanford.edu/.

5. Related Resources

As noted herein, students placed on an involuntary leave of absence may have additional conditions and/or requirements they must meet prior to returning to the University, in addition to any University requirements applicable to all students returning from a leave.

- Undergraduate Students should consult the Returning to Stanford (https://undergrad.stanford.edu/planning/academic-policies/returning-students/) web page for generally applicable deadlines, information and resources.
- Graduate Students should consult with a Graduate Life Office (https://glo.stanford.edu/) Dean and their department for generally applicable deadlines, information and resources.

Students who are placed on an involuntary leave of absence may want to consult with the following offices, where appropriate:

- Office of Accessible Education (https://oae.stanford.edu/) (OAE) (https://oae.stanford.edu/)
- Financial (http://web.stanford.edu/dept/finaid/) Aid (http://web.stanford.edu/dept/finaid/)
- Student Financial (http://web.stanford.edu/group/fms/fingate/students/) Services (http://web.stanford.edu/group/fms/fingate/students/)
- University Housing (http://web.stanford.edu/dept/rde/cgi-bin/drupal/housing/)
- Vaden Health Center (http://vaden.stanford.edu/) (Vaden)
- Academic Advising (https://undergrad.stanford.edu/academic-advising-stanford/)
- Graduate Life (https://glo.stanford.edu/) Office (https://glo.stanford.edu/)
- Bechtel International (https://bechtel.stanford.edu/immigration/visa-types/f-1j-1-student-visas/leave-absence/) Center (https://bechtel.stanford.edu/immigration/visa-types/f-1j-1-student-visas/leave-absence/)

The Process Resource will be available to assist all students who are placed on an involuntary leave of absence with their questions about the process to return and resume their studies and life at Stanford.

Terminal Graduate Registration (TGR)

Doctoral students who have been admitted to candidacy, completed all required courses and degree requirements other than the University oral exam and dissertation, completed 135 units or 10.5 quarters of residency (if under the old residency policy), and submitted a Doctoral Dissertation Reading Committee form, may request Terminal Graduate Registration status to complete their dissertations. Students pursuing Engineer degrees may apply for TGR status after admission to candidacy, completion of all required courses, and completion of 90 units or six quarters of residency (if under the old residency policy). Students enrolled in master's programs with a required project or thesis may apply for TGR status upon completion of all required courses and completion of 45 units. Students with more than one active graduate degree program must be TGR-eligible in all programs in order to apply for TGR status.

The TGR Final Registration status may also be granted for one quarter only to a graduate student who is working on 'Incomplete' grades in his or her final quarter or registering for one final term after all requirements are completed when Graduation Quarter is not applicable. TGR requirements above apply. Doctoral students under the term-based residency policy need nine quarters of residency to qualify for TGR Final Registration Status. Students on TGR Final Registration status may only enroll in their TGR course.

During the academic year TGR students must enroll for zero units in their department's TGR course in the appropriate section for their adviser (801 for master's and Engineer degree students or 802 for doctoral students). Students in TGR status are charged a special tuition rate and are certified as enrolled full time. TGR students may enroll in up to 3 units of course work per quarter at the TGR tuition rate without incurring additional tuition charges. TGR students may enroll in more than 3 units, in such cases tuition will be charged at the applicable unit rate. Courses completed while in TGR status cannot be applied towards requirements for any degree program. See the "Minimum Progress Requirements for Graduate Students (https://exploredegrees.stanford.edu/graduatedegrees/#degreeprogresstext)" of this bulletin for information about satisfactory progress requirements for TGR students.

While enrollment in Summer Quarter is typically optional, degree programs, advisors, or funding sources may require students in TGR status to enroll. The minimum enrollment requirement in Summer Quarter is one unit or the appropriate TGR rate.

Graduate Petition for Part-time Enrollment

(Formerly Graduate Tuition Adjustment)

Requests to enroll for fewer than 8 units during the academic year are approved only in specific circumstances. Graduate students who need fewer than 8 remaining units to complete degree requirements or to qualify for TGR status, may register for one quarter on a unit basis (3 to 7 units) to cover the deficiency. This status may be used only once during a degree program. Coterminal students are not eligible for this status when their undergraduate career remains open.

Matriculated and enrolled pregnant graduate students may request up to two quarters of part-time enrollment for an approved Childbirth Academic Accommodation; see the "Pregnancy, Childbirth, Adoption and Lactation (https://exploredegrees.stanford.edu/graduatedegrees/#degreeprogresstext) Policy (p. 70)" section of this bulletin and the GAP 5.9 Pregnancy, Childbirth, Adoption and Lactation. (https://gap.stanford.edu/handbooks/gap-handbook/chapter-5/subchapter-9/)

International students should consult with Bechtel International Center (https://bechtel.stanford.edu/) prior to requesting part-time enrollment to ensure compliance with visa regulations.

All students requesting part-time enrollment should submit the Graduate Petition for Part-time Enrollment (https://stanford.box.com/tuitadjreq/) eForm.

Graduate Petition for Part-time Enrollment - OAE Accommodation

Graduate students with disabilities covered under the Americans with Disabilities Act may enroll in an approved reduced course load as recommended by the Office of Accessible Education (OAE) (https://oae.stanford.edu/). Students who have been approved by OAE may request this status for multiple quarters. Coterminal students who are approved to go on this status by OAE will also be approved by the Office of the University Registrar.

International students should consult with Bechtel International Center (https://bechtel.stanford.edu/) prior to requesting part-time enrollment to ensure compliance with visa regulations.

All students requesting part-time enrollment on the basis of an OAE Accommodation should submit the Graduate Petition for Part-Time Enrollment -OAE Accommodation eForm to ensure proper routing and processing of their request.

Graduation Quarter Status

Registration is required for the term in which a student defends and/or submits a dissertation, or has a degree conferred. Students who meet all the following conditions are eligible to be assessed a special tuition rate for the quarter in which they are receiving a degree:

1. All course work, degree requirements, and residency requirements for all graduate degree programs, including joint degree programs, have been completed prior to the start of the requested Graduation Quarter.
2. The student has formally applied to graduate in Axess.
3. The student has only to defend and/or submit the dissertation, project, or master's thesis by the deadline for submission in the term designated as the graduation quarter.

4. The student has filed all necessary forms regarding graduation quarter before the first day of the term chosen as graduation quarter.

A student who is returning after reinstatement in which all degree requirements are complete, with the exception of the dissertation defense and/or submission, is eligible to reinstate into a Graduation Quarter status.

Students on graduation quarter are registered at Stanford and, therefore, have the rights and privileges of registered students. Graduation Quarter status may be used only once during a degree program. There is a tuition rate of $150 for the graduation quarter. Students in Graduation Quarter status and enrolled in a course numbered 801 or 802 are certified as enrolled full time. Students may not enroll in any additional units.

Conferral of Degrees

Upon recommendation to the Senate of the Academic Council by the faculty of the relevant departments or schools and the Committee on Graduate Studies, degrees are awarded four times each year, at the conclusion of Autumn, Winter, Spring, and Summer terms. All diplomas, however, are prepared and distributed after degree conferral in accordance to the distribution dates listed on the Registrar's Office (https://registrar.stanford.edu/students/diplomas/) web site.

Students must apply for conferral of a graduate degree by filing an Application to Graduate in Axess by the deadline for each term. The deadlines are available in the Academic Calendar (https://registrar.stanford.edu/academic-calendar/). A separate application must be filed for each degree program and for each conferral term.

Requests for conferral are reviewed by the Office of the University Registrar and the student's department to verify completion of degree requirements. Students must be registered in the term of degree conferral. Students with unmet financial obligations resulting in the placement of a hold on their registration cannot receive a transcript, statement of completion, degree certificate, or diploma until the hold is released by the Office of Student Financial Services. An academic record where no other degree objective is being pursued is permanently frozen after the final degree conferral.

Students are typically expected to apply to graduate when they have completed their degree requirements. The University, however, reserves the right to confer a degree on a student who has completed all of the requirements for a degree even though the student has not applied to graduate; such an individual would then be subject to the University's usual rules and restrictions regarding future enrollment or registration.

Students who wish to withdraw a request for conferral or make changes to the Application to Graduate can do so in Axess by the late application to graduate deadline. Students who withdraw their graduation applications or fail to meet degree requirements must reapply to graduate in a subsequent term.

Stanford University awards no honorary degrees.

Graduate Advising

Academic advising by Stanford faculty is a critical component of all graduate students' education. By the start of their first term, all graduate students should identify or be paired by the department with a faculty adviser who assists them in planning a program of study to meet degree requirements. The process by which students are matched with faculty advisers varies by department or program.

The University requires that within each department or program minimum advising expectations be set for both adviser and advisee. Such minimum expectations must differentiate between master's and doctoral programs, and between different types of advisers (academic/program vs. research). These department or program expectations must be distributed to faculty and graduate students on an annual basis at the start of each academic year and must be easily accessible on the web. Advising expectations are also listed under the "Graduate Advising" tab under the description of each graduate program in this bulletin. Faculty are expected to affirm that they have received the advising expectations. Each faculty member has the prerogative to augment the departmental advising expectations with their specific additional expectations, while remaining consistent with the departmental advising policies.

Faculty advisers are to:

- serve as intellectual and professional mentors to their graduate students
- provide knowledgeable support concerning the academic and non-academic policies that pertain to graduate students
- help to prepare students to be competitive for employment
- maintain a high level of professionalism in the relationship
- establish and collaboratively maintain expectations of the adviser/advisee relationship, consistent with departmental standards.

Students are obliged to follow university and department procedures for identifying advisers and committee members for their dissertation reading and university oral examinations. The principal dissertation adviser for doctoral students must be a member of the Academic Council. Students may identify a co-adviser in addition to the principal dissertation adviser; normally both principal adviser and co-adviser are members of the Academic Council. A former Stanford Academic Council member, emeritus professor, or non-Academic Council member may serve as co-adviser with the appointment of a principal dissertation adviser who is currently on the Academic Council.

Occasionally, a student's research may diverge from the area of competence of the adviser, or irreconcilable differences may occur between the student and the faculty adviser. In such cases, the student or the faculty adviser may request a change in assignment. If the department decides to grant the request, every reasonable effort must be made to pair the student with another suitable adviser. This may entail some modification of the student's research project.

In the rare case where a student's dissertation research on an approved project is in an advanced stage and the dissertation adviser is no longer available, every reasonable effort must be made to appoint a new adviser, usually from the student's reading committee. This may also require that a new member be added to the reading committee before the draft dissertation is evaluated, to keep the reconstituted committee in compliance with the University requirements for its composition.

Departments should make every effort to assist doctoral students who are not yet admitted to candidacy in finding an appropriate principal dissertation adviser. The department should also inform doctoral students in a timely fashion about procedures for selecting a dissertation adviser, reading committee members, and orals committee members.

In addition to this bulletin and the GAP 3.3. Academic Advising (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/), several University policies apply to all faculty-student advising relationships. The University's Research Policy Handbook 1. Conduct of Research (https://doresearch.stanford.edu/policies/research-policy-handbook/conduct-research/) outlines policies and practices related to the conduct of research, including obligations to students, staff, and sponsors. The Administrative Guide 1.1.1. University Code of Conduct (https://adminguide.stanford.edu/chapter-1/subchapter-1/policy-1-1-1/) articulates the policy that all members of the Stanford community are responsible for sustaining the highest ethical standards and values of the university and of the broader community.

Additional information and resources about advising can be found on the Office of the Vice Provost for Graduate Education's Advising & Mentoring

web pages (https://vpge.stanford.edu/academic-guidance/advising-mentoring/).

Teaching Credentials

Stanford University is accredited by the California Commission on Teacher Credentialing and is authorized to recommend candidates for credentials. The University offers a complete training program for both Single (Secondary) and Multiple (Elementary) Subject teaching credentials. Upon completion of a Stanford approved program, the credentials allow teachers to serve in California public schools.

Current Stanford undergraduates wishing to complete the requirements for a teaching credential should apply to the coterminal program at the Graduate School of Education (https://ed.stanford.edu/admissions/coterminal/). All other applicants should apply directly to the Stanford Teacher Education Program (https://ed.stanford.edu/step/) (STEP) at the Graduate School of Education.

TRANSFER WORK

Stanford accepts a small number of undergraduate transfer students each year. Requirements for admission (http://www.stanford.edu/dept/uga/application/transfer/) are described as part of the undergraduate application process and are listed on the Undergraduate Admission (http://admission.stanford.edu/) web site. Stanford University has a designated adviser who coordinates support for transfer students.

In conjunction with appropriate review bodies, the Office of the University Registrar evaluates and records the amount of transfer credit and advanced placement test credit an undergraduate can apply toward graduation requirements. Stanford awards credit based on course work completed at U.S. colleges or universities accredited by a regional accrediting association; or course work completed at international colleges or universities of recognized standing. Credit may also be awarded for certain Advanced Placement programs, International Baccalaureate Program, GCE, French Baccalaureate, and the German Abitur examinations.

See the "Advanced Placement (p. 38)" section of this Bulletin for information concerning Stanford's policy on credit for Advanced Placement work. Details on how to request credit for advanced placement examinations are available at the Registrar's Advanced Placement site (http://studentaffairs.stanford.edu/registrar/students/ap/).

Undergraduate Transfer Work

COVID-19 Policies on Undergraduate Transfer Work for Academic Year 2020-21

- The 15-quarter unit cap on online work has been eliminated, students may apply for transfer credit for work that was or will be completed via an online/hybrid/correspondence instruction mode.The coursework must still meet all other conditions for transfer credit.
- Students may reach out to their departments for review/approval of transfer credit without having to first secure a review/approval from the Registrar's Office. Please note: students will want to confirm with departments what their transfer credit process is, if seeking a review of transfer credit for application towards major/minor requirements.
- Credit earned in U.S. military training and service may be eligible for transfer to Stanford if the work was completed at an accredited U.S. college or University or if the work appears on an official Joint Services Transcript (JST) and meets all other conditions for transfer credit. Joint Services Transcripts can be requested via the JST website (https://jst.doded.mil/official.html).

Academic credit for work done elsewhere may be allowed toward a Stanford bachelor's degree under the following rules and conditions:

1. Credit may be granted for work completed at institutions in the U.S. only if the institutions are regionally accredited.
2. Study in institutions outside the U.S., when validated by examination results, tutorial reports, or other official evidence of satisfactory work, may be credited toward a Stanford bachelor's degree, subject to the approval of the credit evaluator and the appropriate departments. See the Registrar's web site (https://registrar.stanford.edu/students/transfer-credit-and-advanced-placement/international-course-work/) for additional information regarding transfer credit requests for course work completed abroad.
3. Credit is officially allowed only after the student has been unconditionally admitted to Stanford.
4. Credit is allowed for work completed at institutions in the U.S. only on the basis of an official transcript received by the Registrar at Stanford directly from the institution where the credit was earned. In order for transfer credit to be awarded, students must submit an official transcript that clearly indicates all of the below information for each course:
   - Course codes/numbers
   - Course titles or descriptions
   - Final grades earned
   - Course credits earned
5. Credit from another institution may be transferred for courses which are substantially equivalent to those offered at Stanford University on the undergraduate level, subject to the approval of the credit evaluator. A maximum of 20 quarter units may represent courses which do not parallel specific undergraduate courses at Stanford, again, subject to the approval of the credit evaluator as to quality and suitability.
6. Course work cannot duplicate, overlap, or regress previous work.
7. Transfer course work cannot count towards secondary school diploma and/or graduation requirements.
8. For students interested in fulfilling a Ways of Thinking/Doing (Ways) breadth requirement through transfer work, a transfer course evaluation must be submitted to confirm if the course will meet the Ways criteria. Requests for fulfilling Ways requirements in transfer require pre-approval prior to course enrollment and the pre-approval requests must be submitted prior to the term in which students intend to enroll in the transfer course and as defined on the Ways (https://undergrad.stanford.edu/programs/ways/getting-credit/ways-credit-classes-taken-other-us-universities/) web site. Courses must be taken for a minimum of 3 quarter units (2 units in the case of Creative Expression only) and must be taken for a letter grade.
   For incoming transfer students, a proportion of their Ways requirement must be fulfilled at Stanford based on the number of qualified transfer units awarded at matriculation. Students must complete a number of Ways courses to fulfill the Ways requirement as outlined in the “Transfer Credit for Ways (p. 35)” section of this bulletin.
9. Transfer work can be used to satisfy a department major or minor requirement. The transfer work must first be officially accepted into the University through the Office of the University Registrar. After the transfer credit has been approved and posted by the Office of the University Registrar, the departments determine if the approved transfer work can be used to satisfy a department major or minor requirement. Students should consult with their departments about a program's transfer credit policies/procedures.
10. The credit allowed at Stanford for one quarter's work may not exceed the number of units that would have been permissible for one quarter if the work had been done at Stanford; for work done under a system other than the quarter system, the permissible maximum units are calculated at an appropriate ratio of equivalence (i.e. is converted into quarter units).
11. Credit is allowed at Stanford for work graded 'C-' (or better) or 'Pass' (where 'Pass' is equivalent to a letter grade of 'C-' or above), but not for work graded 'D' or below.
12. No more than 45 (90 for transfer students) quarter units of credit for work done elsewhere (including external test credit) may be counted toward a bachelor's degree at Stanford.
13. Credit earned in extension, correspondence, and online courses is transferable only if the university offering the courses allows that credit toward its own bachelor's degree. Such credit is limited to a maximum of 45 quarter units for extension courses, a maximum of 15 quarter units for correspondence and online study, and a maximum of 45 quarter units for the combination of extension, correspondence, and online courses. Online and independent study courses are not eligible for Ways credit.

14. Credit earned in military training and service is not transferable to Stanford, unless offered by an accredited college or university in the U.S. and evaluated as above by the credit evaluator.

See the Registrar's web site (https://registrar.stanford.edu/students/transfer-credit-and-advanced-placement/transfer-credit-policies/) for additional information regarding transfer credit policies and procedures.

Graduate Residency Transfer Credit

COVID-19 Policies on Graduate Transfer Work for Academic Year 2020-21

Students may apply for graduate residency transfer credit from work completed via an online/hybrid/correspondence instruction mode. The coursework must still meet all other conditions for graduate residency transfer credit.

After at least one quarter of enrollment, students pursuing an Engineer, D.M.A., or Ph.D. may apply for transfer credit for graduate work done at another institution. Engineer candidates who also earned their master's at Stanford are not eligible for transfer residency credit, nor are any master's degree students. Ph.D. or D.M.A. students may only apply a total of 45 units of transfer credit and credit earned for a Stanford master's degree toward the PhD residency total. Ph.D. or D.M.A. students who are awarded graduate residency credit, who then add another graduate degree to their academic plan, may be required to earn a higher number of units in order to confer their degrees. Students should visit the Minimum Residency Requirements for Graduate Degrees page (https://registrar.stanford.edu/students/graduate-degree-progress/minimum-residency-requirements-graduate-degrees/) for more information. Students who are going to study elsewhere during their degree program at Stanford should obtain prior approval of any transfer credit sought before their departure.

The following criteria are used by the department in determining whether, in its discretion, it awards transfer credit for graduate-level work done at another institution:

1. Courses should have comparable Stanford counterparts that are approved by the student's department. A maximum of 12 units of courses with no Stanford counterparts and/or research units may be granted transfer credit.
2. The student must have been enrolled at the other institution in a student category which yields graduate credit. The maximum amount of credit given for extension and non-matriculated (non-degree) courses is 12 units. No transfer credit is given for online or correspondence work.
3. Courses must have been taken after the conferral of the bachelor's degree. The only exception is for work taken through programs structured like the Stanford coterminal bachelor's/master's program. Any work taken through such programs must be at the graduate level and applied toward the completion of a graduate degree.
4. Courses must have been completed with a grade point average (GPA) of 3.0 (B) or better. Pass grades are accepted only for courses for which letter grades were not an option and for which the standard of passing is 'B' quality work. The only exception to this is for thesis/research/dissertation coursework, for which Pass/Satisfactory/Credit grades can be accepted.
5. Courses must have been taken at a regionally accredited institution in the U.S. or at an officially recognized institution in a foreign country. Courses taken at foreign universities must be at the level of study comparable to a U.S. graduate program. Students should visit the Graduate Residency Transfer Credit page (https://registrar.stanford.edu/students/graduate-degree-progress/graduate-residency-credit/) on the Registrar's web page for more information about what information is needed for international transfer work.

The Application for Graduate Residency Credit is reviewed by the department and the Office of the University Registrar. For transfer credit done under a system other than the quarter system, the permissible maximum units are calculated at an appropriate ratio of equivalence (i.e. credit is converted into quarter units). One semester unit or hour usually equals 1.5 quarter units.

VETERANS AND MILITARY BENEFITS

The Office of the University Registrar serves as the liaison between the University, its students, and the various federal, state, and local agencies concerned with Veterans Affairs (VA) education benefits and Department of Defense (DoD) tuition assistance.

Stanford University has made a good faith effort to comply with the Principles of Excellence established by Executive Order 13607. Stanford University participates in the Department of Defense Voluntary Education Partnership program so that eligible active duty service members are able to obtain Tuition Assistance from their military branch as administered by the Department of Defense. The VA Certifying Officer (https://go.oncehub.com/VACertifyingOfficialAppointment/) in the Student Services Center serves as the first point of contact for Veterans education benefits assistance and DoD tuition assistance.

Stanford certifies enrollment for Veterans education benefits for students in degree seeking programs, and students in one of 36 VA approved certificate programs offered through the Stanford Center for Professional Development and the Graduate School of Business. Other non-matriculated and certificate programs are not eligible. All students eligible to receive Veterans education benefits or DoD tuition assistance while attending the University are urged to complete arrangements with the appropriate agency in advance of enrollment.

Stanford University is required to certify only those courses that meet minimum graduation requirements. Courses not directly related to a student's degree program or courses beyond those required for a specific degree program are not certified. Undergraduates should meet with an adviser to develop a course enrollment plan. Graduate students should have their departments approve their study lists as meeting graduation requirements on a quarterly basis.

To comply with federal regulations concerning credit for previous training (38 CFR 21.4253), Stanford University is required to evaluate all previous education and training completed elsewhere to determine what credit, if any, should be granted to students eligible to receive Veterans education benefits or DoD tuition assistance. Stanford is required to complete an evaluation; credit is granted when appropriate. Credit is evaluated toward the degree program registered with Veterans Affairs or DoD as determined by the Office of the University Registrar in conjunction with the relevant academic department(s) or program(s). All relevant policies regarding transfer credit apply. In addition, this evaluation occurs each time a student's degree program is changed. Subject to current federal and University guidelines, students eligible for receipt of Veterans education benefits or DoD tuition assistance have their prior education and training evaluated up to the credit limits outlined in the "Residency Policy for Graduate Students (p. 65)" and "Undergraduate Degrees and Programs (p. 31)" sections of this bulletin. As an exception to that policy, students in master's programs in the schools of Earth Sciences, Education, Engineering, Humanities and Sciences, Law, Medicine, and Graduate Business are allowed a maximum of 6 transfer (quarter) units.

VA Status

In order to activate students' VA education benefits at Stanford the Office of the University Registrar requires that students submit the following forms:

- A copy of the Certificate of Eligibility distributed by the VA
- DD-214 (if applicable)
- Any official transcripts from other institutions

It is the students' responsibility to ensure that all forms are submitted to the Office of University Registrar in order to activate the student as a VA education benefits receiving student.

In order to comply with VA regulations, students are responsible for the following:

- Obtain official transcripts from all postsecondary institutions attended, whether VA education benefits were received or not.
- Report any changes in enrollment status to the Office of the University Registrar.
- Report any changes that are made to a degree plan. Undergraduates declaring or making changes to their major(s), minor(s), honor(s), or degree program(s) in Axess and Graduates adding or removing degree programs through the Graduate Program Authorization Petition in Axess should email the VA Certifying Officer at vabenefits@stanford.edu to report a degree plan change.
- General overpayments of VA education benefits are the responsibility of the student, even if the payment was submitted directly to the school on the student's behalf.
- Stanford University is required to certify only those courses that meet minimum graduation requirements. Courses not directly related to a student's degree program or courses beyond those required for a specific degree program are not certified. Undergraduates should meet with their adviser to develop a course enrollment plan. Graduate students should have their departments approve their study lists as meeting graduation requirements on a quarterly basis.
- If concurrently enrolled with another college/university, notify both Stanford and the host institution.
- *Undergraduates only:* VA regulations require undergraduates to declare their major by the end of their sophomore year. Stanford cannot certify enrollment to the VA beyond sophomore year unless a major has been declared. Note that a student can change their major at any time.

Certification

The Office of the University Registrar certifies enrollment to the Department of Veterans Affairs (VA) quarterly, using a two-step certification process. Up to 30 days prior to the start of the quarter, students enrolled full-time per their degree program will be certified for the Monthly Housing Allowance (MHA). See the Stanford Academic Calendar for exact dates in each quarter.

After the Final Study list deadline, the Office of the University Registrar confirms student enrollment and completes the certification for tuition and fees. Students are certified based on the terms indicated in the VA Education Benefits Enrollment Application (https://military.stanford.edu/students/activate-va-education-benefits-stanford/) that must be submitted annually. Should an adjustment need to be made, it is the student's responsibility to contact the VA Certifying Officer at vabenefits@stanford.edu as soon as possible to correct the terms of use.

General overpayments of VA education benefits are the responsibility of the student. If the enrollment change has resulted in tuition overpayment, the student is responsible for paying the tuition and fees back to the VA. If the student is a Ch. 33 recipient and the enrollment change has resulted in tuition overpayment, a debt letter will be sent to the University to return said overpayment. The student will also be issued a debt letter to return any Monthly Housing Allowance overpayments. It remains the student's responsibility to provide tuition and fees back to the VA. If the enrollment change has resulted in underpayment, the VA sends the difference in tuition and fees to the student, excluding Ch. 33 recipients. If you are a Ch. 33 recipient, tuition and fees will be paid directly to the institution in a separate payment.

Programs Subject to Restriction

Note that the following programs cannot be certified due to VA and federal regulations:

- *Certificate programs for non-matriculated students:* The VA defines "matriculated" as having been formally admitted to a college or university. Per the VA, educational benefits cannot be paid to "non-matriculated" college or university students. Hence, any certificate program that does not officially admit its students into Stanford University cannot be certified. All Stanford approved certificate programs are listed via the Web Enable Approval Management System (https://inquiry.vba.va.gov/weamspub/buildSearchInstitutionCriteria.do) (WEAMS).
- *Visiting Students Programs:* Stanford cannot certify visiting students unless they meet one of the following conditions:

1. The student has an approved parent letter from the home institution which guarantees that the courses can be transferred back to original program.
2. The student is pending admission to a Stanford degree program and is required to take a prerequisite course(s). In that case the student can be certified for two terms.

- *Medical Residencies/Fellowship programs that are not certified by the ACGME:* these residencies are not allowed to be certified as on the job training. This is according to VA guidelines and the Federal Code of Regulations. See the School of Medicine for a full list of the fellowship/residency programs.

All students eligible to receive Veterans education benefits while attending the University are urged to complete arrangements with the appropriate agency in advance of enrollment.

Financial Aid

The Post-9/11 GI Bill, also known as Chapter 33, is the most commonly used VA education benefits program at Stanford. This program provides funding for tuition, required fees, books and housing. The level of an individual student's Chapter 33 benefits is determined by the qualifying veteran's length of military service since 9/11/2001. Eligible students may also receive funds through the Yellow Ribbon Provision.

Most of the VA education benefit programs pay benefits directly to students on a monthly basis. However, under the Post-9/11 GI Bill (Chapter 33), the VA sends tuition and fees benefits to Stanford, where the Financial Aid Office is responsible for applying the funds to the student account (university bill). Chapter 33 books and housing benefits are sent directly to students monthly. Students may need to apply the housing benefits to the university bill to pay for on-campus room and board.

Yellow Ribbon Provision

Stanford elects on a yearly basis to participate in the Yellow Ribbon Program. Under this provision Stanford provides an annual contribution to supplement the Chapter 33 base tuition benefit. The VA matches Stanford's Yellow Ribbon contribution. For graduate and professional students, the amount of Stanford's Yellow Ribbon contribution varies by school and program; see the Yellow Ribbon information on the University Registrar's website. Also, see the U.S. Department of Veteran's Affairs Yellow Ribbon web site (https://www.benefits.va.gov/gibill/yellow_ribbon/yellow_ribbon_info_schools.asp) for additional information.

Undergraduates

Undergraduates may apply for need-based financial aid from Stanford to supplement VA education benefits. If the financial aid application demonstrates financial need beyond the amount of expected VA education benefits, the student will be awarded institutional aid to meet the additional need.

If the student will be receiving VA education benefits transferred from a parent, the student will be treated as a dependent student for financial aid purposes. The student's parents' income and asset information will be considered in determining eligibility for need-based aid from Stanford. If the student is a Veteran, the student will most likely be treated as an independent student and will not need to provide parent information. Receipt of VA education benefits does not impact your eligibility for federal student loan programs.

VA education benefits are treated like other outside awards in that they can reduce or replace the Student Responsibility portion of the aid package. VA education benefits do not reduce or replace the Parent Contribution in the determination of eligibility for need-based Stanford aid.

Graduate Students

Schools and departments are responsible for providing the Yellow Ribbon contribution for eligible graduate students. The Financial Aid Office will coordinate receipt of funds with responsible individuals in each school. Receipt of VA education benefits does not impact your eligibility for federal student loan programs.

Veterans Education Benefits

The Office of the University Registrar serves as the liaison between the University, its students, and the various federal, state, and local agencies concerned with Veterans education benefits. Stanford certifies enrollment for students in degree seeking programs and VA approved certificate programs offered through the Stanford Center for Professional Development and Graduate School of Business. Other non-matriculated and certificate programs are not eligible. All students eligible to receive Veterans education benefits while attending the University are urged to complete arrangements with the appropriate agency in advance of enrollment.

Stanford University is required to certify only those courses that meet minimum graduation requirements. Courses not directly related to a student's degree program or courses beyond those required for a specific degree program are not certified. Undergraduates should meet with an advisor to develop a course enrollment plan. Graduate students should have their departments approve their study lists as meeting graduation requirements on a quarterly basis.

To comply with federal regulations concerning credit for previous training (38 CFR 21.4253), Stanford University is required to evaluate all previous education and training completed elsewhere to determine what credit, if any, should be granted to students eligible to receive Veterans educational benefits. Stanford is required to complete an evaluation; credit is granted when appropriate. Credit is evaluated toward the degree program registered with Veterans Affairs as determined by the Office of the University Registrar in conjunction with the relevant academic department(s) or program(s). All relevant policies regarding transfer credit apply. In addition, this evaluation occurs each time a student's degree program is changed.

Subject to current federal and University guidelines, students eligible for receipt of VA educational benefits have their prior education and training evaluated up to the credit limits outlined in the "Residency Policy for Graduate Students (p. 72)" section of this bulletin. As an exception to that policy, students in master's programs in the schools of Earth Sciences, Education, Engineering, Humanities and Sciences, Law, Medicine, and Graduate Business are allowed a maximum of 6 transfer (quarter) units.

Students should consult with the VA Certifying Officer for consideration of optimal use of VA education benefits.

Stanford participates in the Yellow Ribbon provision of the Post 9/11 GI Bill (Ch. 33). If a matriculated student qualifies for Chapter 33 benefits at the 100% level, the student may be eligible to receive additional funding through the Yellow Ribbon Program. Under this program, Stanford provides an institutional award to supplement the Chapter 33 base tuition benefit. The VA also matches Stanford's Yellow Ribbon contribution. The amount of institutional contribution varies by school and program. See the U.S. Department of Veteran's Affairs Yellow Ribbon web site (https://www.benefits.va.gov/gibill/yellow_ribbon/yellow_ribbon_info_schools.asp) for additional information.

See the Office for Military Affiliated Communities (OMAC) website (https://military.stanford.edu/students/activate-va-education-benefits-stanford/) for additional information about Veterans education benefits.

Veterans Benefits and Transition Act of 2018 (Section 103)

Stanford University is a participant in the Veterans Benefits and Transition Act of 2018 signed into law on December 31, 2018, by the President of the United States. This provision was effective August 1, 2019 for any students who are considered "a covered individual" using "Chapter 33: Post 9/11 GI Bill" benefits or any participants in "Chapter 31: Vocational Rehabilitation and Employment Program" benefits at a public, private for-profit, or not-for-profit institution regarding unpaid tuition and fees.

The policy states that the University will not:

1. Assess late penalty fees/charges due to delayed disbursements from the Department of Veterans Affairs under Chapter 31 or Chapter 33.
2. Prevent students from enrolling in classes.
3. Require the student to secure alternative or additional funding to cover the applicable tuition and fee expenses.
4. Deny the student access to any school resources to include (access to classes, libraries, or other institutional facilities) that are available to other paid students.

The school will require that each student provide the following:

1. An official Department of Veterans Affairs Certificate of Eligibility" or "Statement of Benefits" from the VA website or (eBenefits, VAF 28-1905) on or before the first day of class for the quarter.
2. Complete a written certification request to be certified for benefits.
3. Provide additional information required to ensure proper certification of benefits.

If there is a difference in the amount of the student's financial obligation to the University and the amount that the student is eligible to receive from the Department of Veterans Affairs, the student may incur an additional fee or payment may be required to make an additional payment to make up the difference.

With all contingencies met, the Department of Veterans Affairs will provide the University with payment ending on the earlier of the dates following:

- the date on which the payment from the VA is made to the institution.
- 90 days after the date that the institution has certified tuition and fees following the receipt of the "Certificate of Eligibility".

Who is a "Covered Individual?"

Any individual who is entitled to receive educational assistance under either "Chapter 33: Post 9/11 GI Bill" or a participant under "Chapter 31: Vocational Rehabilitation and Employment Program".

UNIVERSITY POLICIES AND STATEMENTS

Compliance with University Policies/ Registration Holds

Registration as a student constitutes a commitment by the student to abide by and accept University policies, rules, requirements, and regulations, even when such policies, rules, requirements, and regulations appear to conflict with ASSU policies or procedures. The policies, rules, requirements, and regulations that students must abide by include (but are not limited to) those concerning registration, academic performance, student conduct, Title IX, health and safety, housing, use of the libraries and computing resources, intellectual property (including completing and signing the SU-18), operation of vehicles on campus, University facilities, and the payment of fees and assessments. Some of these are set forth in this bulletin while others are available in relevant University offices.

Students should take responsibility for informing themselves of applicable University policies, rules, requirements, and regulations. A collection is available on the Stanford University policy (https://www.stanford.edu/about/administration/policies/) web site. Many are also set forth in the Research Policy Handbook (http://doresearch.stanford.edu/) and the Graduate Academic Policies and Procedures Handbook (the GAP handbook) (http://gap.stanford.edu/).

The University reserves the right to withhold registration privileges or to cancel the registration of any student: who is not in compliance with its policies, rules, requirements, or regulations; or for reasons pertaining to academic performance, health and wellness, qualification to be a student, behavioral conduct, or the safety of the University community. In extraordinary circumstances, the President may temporarily or permanently discontinue students who present a threat to the health and safety of the University community.

University Communication with Students

Stanford University uses electronic means (such as email, texts, and the Internet) as a method of communication and of providing billing, payment, and enrollment services. For many University communications, email to a student's Stanford email account is the official form of notification to the student, and emails sent by University officials to such email addresses will be presumed to have been received and read by the student. Signatures or acknowledgements provided by a student electronically to the University via Stanford systems and/or @stanford.edu email are valid and legally binding.

Notification/Obligation to Read Email

For many University communications, email to a student's Stanford email account is the official form of notification to the student, and emails sent by University officials to such email addresses will be presumed to have been received and read by the student. Emails and forms delivered through a SUNet account by a student to the University may likewise constitute a formal communication, with the use of this password-protected account constituting the student's electronic signature.

The University offers a broad array of courses and forms of instruction including lectures, laboratories, seminars, practical exercises, directed research, clinics, and online instruction utilizing Canvas and other technology tools. The University reserves the right to determine the form of instruction offered and to modify the form at any time without notice.

Registration and Study Lists

The preliminary study list deadline is the first day of classes of each quarter during the academic year. As early as possible, but no later than this deadline, students (including those with TGR status) must submit to the Office of the University Registrar via Axess, a study list to enroll officially in classes for the quarter. Students are expected to be enrolled "at status" by the preliminary study list deadline; meaning that students must be enrolled in sufficient units to meet requirements for their status, whether full-time, or on approved special registration status. Students who enroll in more units than their anticipated tuition charge covers will be charged the additional tuition. They may not enroll in courses for zero units unless those courses, like TGR, are defined as zero-unit courses. Zero-unit courses, excluding TGR courses, require concurrent enrollment with unit-bearing courses in all quarters. Undergraduates are subject to academic load limits described in the "Amount of Work (p. 87)" section of this bulletin. Students will be charged a $200 late study list fee for submitting their study lists after the quarterly deadline.

The University reserves the right to withhold registration from, and to cancel the advance registration or registration of, any student having unmet obligations to the University.

Study List Changes

Students may add courses or units to their study lists through the end of the third week of classes. (Individual faculty may choose to close their classes to new enrollments at an earlier date.) Courses or units may be added only if the revised program remains within the normal load limits.

Courses or units may be dropped by students through the end of the third week of classes, without any record of the course remaining on the student's transcript. No drops are permitted after this point. The Final Study List deadline is the last day for tuition reassessment for dropped courses or units.

A student may withdraw from a course after the final study list deadline through the end of the eighth week of each quarter. In this case, a grade notation of 'W' (withdraw) is automatically recorded on the student's transcript for that course. There are no tuition reassessments for withdrawing from individual courses. Students who do not officially withdraw from a class by the end of the eighth week are assigned the appropriate grade or notation by the instructor to reflect the work completed.

Through the end of the eighth week of classes, students may choose the grading option of their choice in courses where an option is offered.

If the instructor allows a student to take an 'I' (incomplete) in the course, the student must make the appropriate arrangements for that with the instructor by the last day of classes.

The deadlines described above follow the same pattern each quarter but, due to the varying lengths of Stanford's quarters, they may not always fall in exactly the week specified. Students should consult the University's academic calendar (http://studentaffairs.stanford.edu/registrar/academic-calendar/) for the deadline dates each term. Other deadlines may apply in Law, Graduate School of Business, Medicine, and Summer Session.

Repeated Courses

Students may not enroll in courses for credit for which they received either Advanced Placement (AP) or transfer credit. If students enroll in courses at Stanford for which they received equivalent AP unit credit, the duplicating AP unit credit will be removed.

Some Stanford courses may be repeated for credit; they are specially noted in this bulletin. Most courses may not be repeated for credit. Under the general University grading system, when a course which may not be repeated for credit is retaken by a student, the following special rules apply:

1. A student may retake any course on his or her transcript, regardless of grade earned, and have the original grade, for completed courses

only, replaced by the notation 'RP' (repeated course). When retaking a course, the student must enroll in it for the same number of units originally taken. When the grade for the second enrollment in the course has been reported, the units and grade points for the second course count in the cumulative grade point average in place of the grade and units for the first enrollment in the course. Because the notation 'RP' can only replace grades for completed courses, the notation 'W' cannot be replaced by the notation 'RP' in any case.

2. A student may not retake the same course for a third time unless he or she received a 'NC' (no credit) or 'NP' (not passed) when it was taken and completed the second time. Undergraduate students must file a petition for approval to take the course for a third time with the office of the Vice Provost for Undergraduate Education, via the office of Academic Advising (https://advising.stanford.edu), Sweet Hall. When a student completes a course for the third time, grades and units for both the second and third completions count in the cumulative grade point average. The notation 'W' is not counted toward the three-retake maximum.

Amount of Work

The usual amount of work for undergraduate students is 15 units per quarter; 180 units (225 for dual degree students) are required for graduation. Registration for fewer than 12 units is rarely permitted and may cause the undergraduate to be ineligible for certification as a full-time student. The maximum is 20 units (21 if the program includes a 1-unit activity course). Requests for exception to the maximum may be considered for compelling reasons, the approval of which may include conditions or restrictions. A past superior academic performance is not considered to be sufficient justification for exceeding the maximum. Petitions for programs of fewer than 12 or more than 20 units must be submitted to the office of the Vice Provost for Undergraduate Education, via the office of Undergraduate Advising and Research, Sweet Hall, first floor. For additional information regarding satisfactory academic progress, refer to the "Academic Progress (p. 94)" section of this bulletin.

Matriculated graduate students are expected to enroll for at least eight units during the academic year; schools and departments may set a higher minimum. Petitions for programs of fewer than 8 must be signed by the student's department and submitted for consideration to the Office of the University Registrar. Graduate students are normally expected to enroll in no more than 24 units; registration for more than 24 units must be approved by the department. Under certain circumstances, graduate students may register on a part-time basis. See the "Tuition, Fees, and Housing (p. 24)" section of this bulletin.

Enrollment for coterminal students is determined by their tuition group. See Tuition (p. 57) in the "Coterminal Master's Degrees" section of this bulletin.

Undergraduates and graduate students with disabilities who may seek a reduced course load should contact the Office of Accessible Education (http://studentaffairs.stanford.edu/oae/).

Unit of Credit

Guidance for faculty and instructors on how to comply with this policy is available on the Registrar's web site.

Every unit for which credit is given is understood to represent approximately three hours of actual work per week for the average student. Thus, in lecture or discussion work, for 1 unit of credit, one hour per week may be allotted to the lecture or discussion and two hours for preparation or subsequent reading and study. Where the time is wholly occupied with studio, field, or laboratory work, or in the classroom work of conversation classes, three full hours per week through one quarter are expected of the student for each unit of credit; but, where such work is supplemented by systematic outside reading or experiment under the direction of the instructor, a reduction may be made in the actual studio, field, laboratory, or classroom time as seems just to the department.

Religious Holidays

Students planning not to attend class or take an exam because of a religious observance are expected to convey this information to instructors in advance. The Office for Religious Life makes available to faculty, staff, and students a list of significant religious observances at the beginning of each academic year. For further information, contact the Deans for Religious Life at (650) 723-1762 or see the Religious Life (https://religiouslife.stanford.edu/religious-observances/) web site.

Privacy of Students Records

Notification of Rights Under FERPA

The Family Educational Rights and Privacy Act of 1974 (FERPA) affords students certain rights with respect to their education records. They are:

1. The right to inspect and review the student's education records within 45 days of the date the University receives a request for access. Current and former students who wish to make a FERPA-related request to view records should submit an online request to the Office of the University Registrar that identifies the record(s) the student wishes to inspect. Under FERPA, a student is an individual who is or has been in attendance at an educational institution. Applicants do not have FERPA rights unless and until they are admitted and are in attendance at the University. Students are advised to provide complete information in order to assist the University in following up on the request. Federal law requires that the University provide access to requested extant records within 45 days. A Registrar's Office official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records requested are not under the control of the Registrar's Office, the Registrar's Office will make arrangements for the relevant office to provide the records within the time frame established under the law.
2. The right to request the amendment of the student's education records that the student believes are inaccurate, misleading, or otherwise in violation of the student's privacy rights under FERPA.
   a. A student may ask the University to amend the record that he or she believes is inaccurate or misleading. The student should write the University official responsible for the record (with a copy to the University Registrar), clearly identify the part of the records he or she wants changed, and specify why it should be changed.
   b. If the University decides not to amend the record as requested by the student, the University will notify the student of the decision and advise the student of his or her right to a hearing regarding the request for amendment.
   c. Additional information regarding the hearing procedures is provided to the student when notified of the right to a hearing.
3. The right to consent to disclosures of personally identifiable information contained in the student's education records, except to the extent that FERPA authorizes disclosure without consent. FERPA contains various exceptions to the general rule that the University should not disclose education records without seeking the prior written consent of the student. The following circumstances are representative of those in which education records (and information drawn from education records) may be disclosed without the student's prior written consent:
   a. Upon request, the University may release Directory Information (see the "Directory Information" section of this bulletin below).
   b. School officials who have a legitimate educational interest in a student's education record may be permitted to review it. A school official is: a person employed by the University in an administrative, supervisory, academic or research, or support staff position (including law enforcement unit personnel and health staff); a person or company with whom the University has

contracted (such as an attorney, auditor, or collection agent); a person serving on the Board of Trustees; or a student or volunteer serving on an official committee (or representing a recognized student group), such as a disciplinary or grievance committee, or assisting another school official in performing his or her tasks. A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her responsibility to Stanford or to the student.

c. The University discloses education records without consent to officials of another school, in which a student seeks or intends to enroll, upon request of officials at that other school.
d. The University may choose to disclose education records (and information drawn from education records) to either supporting parent(s) or guardian(s) where the student is claimed as a dependent under the Internal Revenue Code.
e. The University may inform persons including either parent(s) or guardian(s) when disclosure of the information is necessary to protect the health or safety of the student or other persons.
f. For students under the age of 21, the University may notify either parent(s) or guardian(s) of a violation of any law or policy relating to the use of alcohol or controlled substances.
g. The University must provide records in response to lawfully issued subpoenas, or as otherwise compelled by legal process.

4. The right to file a complaint with the U.S. Department of Education concerning alleged failures by the University to comply with the requirements of FERPA.

The name and address of the office that administers FERPA is: Family Policy Compliance Office, U.S. Department of Education, 400 Maryland Avenue, SW, Washington, DC 20202-4605.

Sharing Information with Parents

Students are encouraged to maintain an ongoing, open dialogue with parents throughout their careers at Stanford about academic progress and personal development. Most student difficulties are resolved at Stanford without involving parents. The University does recognize, however, that there are some exceptional situations where parental involvement may be appropriate to assist a student through a difficult circumstance. Under those circumstances, Stanford may (but is not required to) choose to disclose information to parents if permitted by law.

Under the Family Educational Rights and Privacy Act (FERPA), Stanford is permitted to disclose information drawn from education records to parents if one or more parent claims the student as a dependent for federal tax purposes. Some laws, especially those relating to medical and mental health care, prohibit the disclosure of information without the student's consent, even where the student is a tax dependent.

Directory Information

The University regards the following items of information as "directory information," that is, information that the University may make available to any person upon specific request (and without student consent):

- Name*
- Email addresses
- Specific quarters or semesters of registration at Stanford
- Stanford degree(s) awarded and date(s)
- Major(s), minor(s), and field(s)
- University degree honors
- Student theses and dissertations
- Participation in officially recognized sports or activities*
- Weight and height of members of athletic teams*
- Institution attended immediately prior to Stanford
- ID card photographs

For more information, see Stanford's FERPA (https://registrar.stanford.edu/students/student-record-privacy/) web page.

Students may prohibit the release of any of the items listed above (except those with an '*') by designating which items should not be released on the Privacy function of Axess. Students may prohibit the release of all directory information listed above after an appointment with the Office of the University Registrar to discuss the ramifications of this action. Student theses and dissertations can be restricted through the publishing options and embargo settings students select during submission.

Students, faculty, and others with questions regarding student records should contact the Office of the University Registrar.

Consent to Use of Photographic Images

Registration as a student and attendance at or participation in classes and other campus and University activities constitutes an agreement by the student to the University's use and distribution (both now and in the future) of the student's image or voice in photographs, video or audio capture, or electronic reproductions of such classes and other campus and University activities.

If any student in a class where such photographing or recording is to take place does not wish to have his or her image or voice so used, the student should raise the matter in advance with the instructor.

COVID-19 Policies

The Faculty Senate has decided that there will be no three-hour final examination for undergraduates or graduate students in academic year 2020-21.

Coursework Deadline, Academic Year 2020-21

The academic year 2020-21 calendar (https://registrar.stanford.edu/academic-calendar/) is based upon 10-week academic quarters that do not include a dedicated end of quarter period. There will also be no final exam week.

All coursework is due by the last day of the last week of instruction in each quarter. No coursework deadlines or assessments should be assigned or scheduled after the last day of a quarter. Traditional 3-hour final exams are not allowable; however final assessments may be scheduled during the last class period.

Per standard practice and allowable by policy, instructors may grant individual and class-wide extensions of time on assignments. When an extended deadline falls after the grading deadline for a quarter and a student has completed satisfactorily a substantial part of the coursework, the student should request an Incomplete and arrange an alternative submission deadline with the instructor.

For students: if an instructor is not following this guidance, first raise the concern with the instructor. If the concern is not resolved, it should be escalated to the department chair or program director. The student should go to the relevant Dean's Office only if they are unable to resolve the issue within the department or program offering the course.

Rationale: The AY 2020-21 academic calendar includes different lengths of time between quarters to accommodate on-campus students who must pack and move out of their residences before the start of the next quarter. Making coursework due by the last day of the classes in a quarter is equitable for all students.

Questions may be directed to academic-continuity@stanford.edu.

Examinations

Midterms

Classes that give midterm examinations outside of regular class hours must:

1. announce the date and time during the first week of the academic quarter, and
2. provide reasonable alternative times to those students who have another class or other University commitment at that time.

According to Honor Code interpretations and applications, different examinations may be given at these alternative times.

End-Quarter Policy Statement

The End-Quarter Period is a time of reduced social and extracurricular activity preceding final examinations. Its purpose is to permit students to concentrate on academic work and to prepare for final examinations.

In Autumn, Winter, and Spring quarters, End-Quarter starts seven full days (to begin at 12:01 a.m.) prior to the first day of final exams. In Spring Quarter, final examinations begin on Friday; no classes are held on Thursday, the day before. In Summer Quarter, this consists of the weekend and the four class days preceding the final examinations, which take place on Friday and Saturday of the eighth week. (See the Time Schedule for dates.)

During the End-Quarter Period, classes are regularly scheduled and assignments made; this regular class time is used by instructors in whatever way seems best suited to the completion and summation of course material. Instructors should neither make extraordinary assignments nor announce additional course meetings in order to "catch up" in course presentations that have fallen behind. They are free, however, and even encouraged to conduct optional review sessions and to suggest other activities that might seem appropriate for students preparing for final examinations.

No graded homework assignments, mandatory quizzes, or examinations should be given during the End-Quarter Period except:

1. In classes where graded homework assignments or quizzes are routine parts of the instruction process.
2. In classes with laboratories where the final examination will not test the laboratory component. In such a case, the laboratory session(s) during the End-Quarter Period may be used to examine students on that aspect of the course.

Major papers or projects about which the student has had reasonable notice may be called due in the End-Quarter Period.

Take-home final examinations, given in place of the officially scheduled in-class examination, may be distributed in the End-Quarter Period. Although the instructor may ask students to return take-home examinations early in the final examination period, the instructor may not call them due until the end of the regularly scheduled examination time for that course. Such a policy respects the principle that students' final examinations are to be scheduled over a period of several days.

End-quarter examinations may not be held during this period. This policy preserves the instruction time for courses and protects the students' opportunities for extensive review and synthesis of their courses.

During the End-Quarter Period, no musical, dramatic, or athletic events involving student participation may be scheduled, unless approved as exceptions by the Committee on Undergraduate Standards and Policy (C-USP), nor may routine committee meetings be scheduled (such as those of the ASSU, the Senate of the Academic Council, or the committees of the President of the University) when such meetings normally would involve student participation.

Note—Students who believe that there are faculty who are violating End-Quarter policy should contact the Office of the University Registrar (https://remedyweb.stanford.edu/helpsu/2.0/helpsu-form/?pcat=Registrar).

End-Quarter Examinations

Examinations are part of the process of education at the same time that they are a means to measure the student's performance in course work. Their structure, content, frequency, and length are to be determined in accordance with the nature of the course and the material presented in it, subject only to the limitations contained herein.

Great flexibility is available regarding the types of examinations that an instructor may choose to employ. Examinations, including final examinations, may be, for example, in-class essay examinations, take-home essay examinations, objective examinations, oral examinations, or appropriate substitutes such as papers or projects. Instructors may use any type of examination, paper, or project, or any combination thereof, guided only by the appropriateness of the types of examinations, papers, or projects for the material upon which the student is being examined.

When the final examination is an in-class examination, the following regulations apply:

1. A three-hour period is reserved during examination week for the final examination in each course of more than 2 units. This examination period must be available for students, but not necessarily in its entirety, if an in-class examination is given. In courses with extraordinary meeting times, such that ambiguity might exist as regards the period reserved for the final examination, the schedule should be clarified and students informed no later than the end of the second week of the quarter.
2. Examinations in 1- or 2-unit courses must be completed by the end of the last class meeting before the End-Quarter Period, except in Summer Quarter when examinations must be completed during the last regularly scheduled class session.

When the final examination or its appropriate substitute is not an in-class examination (for example, when an instructor chooses to employ a take-home examination, paper, or project in lieu of an in-class examination), the following regulations apply:

1. The schedule and format of the final examination or its appropriate substitute are made known not later than the end of the second week of the quarter and, if changed subsequently, may be only an option of the plan originally announced by the instructor.
2. Although the instructor may ask students to return take-home examinations early in the final examination period, the instructor may not call them due until the end of the regularly scheduled examination time for that course.

In submitting official Study Lists, students commit to all course requirements, including the examination procedures chosen and announced by the course instructor. In choosing courses, students should take cognizance of the official schedule of final examinations announced on the Registrar's (http://studentaffairs.stanford.edu/registrar/final-exams/) web site. Students anticipating conflicts in final examination schedules should seek to resolve these with the instructors involved before the Preliminary Study List deadline at the beginning of the quarter. If accommodation cannot be made at that time, the student should revise his or her Study List before the Final Study List deadline at the end of the third week of the quarter in order to be able to meet the required final examination.

If unforeseen circumstances prevent the student from sitting for the regularly scheduled examination, instructors should make alternative arrangements on an individual basis. Such unforeseen circumstances include illness, personal emergency, or the student's required participation in special events (for example, athletic championships) approved as exceptions by the Committee on Undergraduate Standards and Policy (C-USP). Inquiries regarding these circumstances may be directed to the office of the Vice Provost for Undergraduate Education, via the office of Academic Advising (https://advising.stanford.edu), Sweet Hall.

Statement Concerning Early Examinations

Students are reminded that taking final examinations earlier than the scheduled time is a privilege, not a right. They should request this privilege only in the event of extraordinary circumstances.

Since the final examination schedule for each quarter (http://studentaffairs.stanford.edu/registrar/final-exams/) is published annually on the Registrar's web site at the time of course selection and enrollment, students are expected to make their academic plans in light of known personal circumstances that may make certain examination times difficult for them.

In general, faculty members are discouraged from giving final examinations earlier than the published and announced times. If faculty nevertheless decide to administer early examinations, either the questions should be completely different from those on the regularly scheduled examination or the early examination should be administered in a highly controlled setting. An example of such a setting would be a campus seminar room where the examination questions would be collected along with students' work and students would be reminded of their Honor Code (http://www.stanford.edu/dept/registrar/bulletin/79155.htm) obligations not to share information about the examination contents. Giving students easy opportunities to abuse the integrity of an examination is unfair to honest students and inconsistent with the spirit of the Honor Code (http://www.stanford.edu/dept/registrar/bulletin/79155.htm).

Academic fields differ in the degree to which early examination requests present dilemmas for faculty. If, for example, an examination format consists of a small number of essay questions, where students would be greatly advantaged by knowing the question topics, faculty should be especially reluctant to allow early examinations unless they are willing to offer totally different examinations or a different kind of academic task, for example, a final paper in lieu of an examination.

Grading Systems

General University Grading Systems

The general University grading system is applicable to all of Stanford University except the Graduate School of Business, the School of Law, and M.D. students in the School of Medicine.

Effective Spring Quarter 2015-16, the GPA is computed under the general University grading system and published on the official undergraduate transcript. Transcripts for students with coterminal degree programs publish only the undergraduate career GPA based upon the courses assigned to the undergraduate degree program. For undergraduates who graduated before 1986, the GPA is not included on the transcript. For further information about how the internal General University GPA is determined, see How the General University GPA is Determined (https://registrar.stanford.edu/students/definition-grades/grade-point-average-gpa-and-class-rank-policy/how-general-university-gpa/).

The GPA does not appear on the official graduate transcript.

Stanford University does not calculate a rank in class.

Most courses are graded according to the general University grading system. However, courses offered through Law, Business, and Medicine are graded according to those schools' grading systems, even in cases where students in other programs are enrolled in their classes. Note also that, as to graduate students, there may be departmental requirements as to grades that must be maintained for purposes of minimum academic progress.

Definition and Explanation of Grading Systems

All grades/notations for courses taken in 1995-96 or later are to be visible on student transcripts. Effective Summer Quarter 2008-09, the notation * was changed to GNR (Grade Not Reported).

Grade	Description
A (+,-)	Excellent
B (+,-)	Good
C (+,-)	Satisfactory
D (+,-)	Minimal pass
NP	Not Passed
NC	No Credit (unsatisfactory performance, 'D+' or below equivalent, in a class taken on a satisfactory/no credit basis)
CR	Credit (student-elected satisfactory; A, B, or C equivalent)
S	No-option Satisfactory; A, B, or C equivalent
L	Pass, letter grade to be reported
W	Withdraw
N (-)	Continuing course
I	Incomplete
RP	Repeated Course
*	No grade reported (effective through Spring 2008-09).
GNR	Grade not reported (effective beginning Autumn Quarter 2009-10).

Explanation

Grade	Description
NC	The notation 'NC' represents unsatisfactory performance in courses taken on a satisfactory/no credit basis. Performance is equivalent to letter grade 'D+' or below.
NP	The notation 'NP' is used by instructors in courses taken for a letter grade that are not passed.
CR	In a course for which some students receive letter grades, the 'CR' represents performance that is satisfactory or better when the student has elected the 'CR' grading option.
S	For an activity course or a course in which the instructor elects to grade students only on a satisfactory/no credit basis, the 'S' represents performance that is satisfactory or better. For such a course, no letter grades may be assigned for satisfactorily completed work. It should be noted that the Registrar is unable to record course grades submitted when the instructor has not observed the required distinction between 'S' and 'CR.' The 'satisfactory' options are intended to relieve the pressure on students for achievement in grades. The 'satisfactory' options in no way imply fewer or different course work requirements than those required of students who elect evaluation with a letter grade. A department may limit the number of 'satisfactory' courses to count for a major program. No more than 36 units of Stanford course work (including activity courses) in which a 'CR' or 'S' was awarded can be applied toward the 180 (225 if dual degrees are being pursued) units required for a bachelor's degree. Transfer students are limited to 27 'CR' or 'S' units applied to the 180/225 minimum.

L	The 'L' is a temporary notation that represents creditable completion of a course for which the student will receive a permanent letter grade before the start of the next quarter. The 'L' is given when the instructor needs additional time to determine the specific grade to be recorded, but it is not appropriate if additional work is expected to be submitted by the student. A student receives unit credit for work graded 'L.'
N	The 'N' indicates satisfactory progress in a course that has not yet reached completion. Continuation courses need not continue at the same number of units, but the grade for all quarters of such a course must be the same.
N-	The 'N-' grade indicates unsatisfactory progress in a continuing course. The first 'N-' grade constitutes a warning. The adviser, department chair, and student should discuss the deficiencies and agree on the steps necessary to correct them. A second consecutive 'N-' will normally cause the department to deny the student further registration until a written plan for the completion of the degree requirements has been submitted by the student and accepted by the department. Subsequent 'N-' grades are grounds for dismissal from the program.
I	The 'I' is restricted to cases in which the student has satisfactorily completed a substantial part of the course work. No credit is given until the course is completed and a passing grade received. When a final grade is received, all reference to the initial 'I' is removed. 'I' grades must be changed to a permanent notation or grade within a maximum of one year. If an incomplete grade is not cleared at the end of one year, it is changed automatically by the Office of the University Registrar to an 'NP' (not passed) or 'NC' (no credit) as appropriate for the grading method of the course. Students must request an incomplete grade by the last class meeting. Faculty may determine whether to grant the request or not. Faculty are free to determine the conditions under which the incomplete is made up, including setting a deadline of less than one year (but not more than one year). A leave of absence does not stop the clock on the time limit for resolving incompletes. Graduate students with extenuating circumstances, that may warrant an exception to academic policy, should discuss the need for an extension to the time limit with their advisor and the course instructor. Students may request an extension of the deadline for resolving an incomplete by submitting the Petition to Change Course Enrollment (Graduate Students).
RP	The notation 'RP' (meaning Repeated Course) replaces the original grade recorded for a course when a student retakes a course. (See the "Repeated Courses" section of this bulletin.)
W	The notation 'W' (meaning Withdraw) is recorded when a student withdraws from a course.
*	The '*' symbol appears when no grade has been reported to the Registrar for courses taken prior to 2001-02. The '*' symbol remains on the transcript until a grade has been reported (effective through Spring 2008-09).
GNR	The notation 'GNR' appears when no grade has been reported to the Registrar. The 'GNR' notation remains on the transcript until a grade has been reported. (Effective beginning Autumn Quarter 2009-10.)

Reporting of Grades

All grades should be reported within 96 hours after the time and day reserved for the final examination, and in no case later than noon of the fourth day (including weekends) after the last day of the final examination period.

In the case of degree candidates in Spring Quarter, final grades should be reported by noon of the day following the end of the final examination period.

Revision of End-Quarter Grades

When duly filed with the Office of the University Registrar, end-quarter grades are final and not subject to change by reason of a revision of judgment on the instructor's part; nor are grades to be revised on the basis of a second trial (for example, a new examination or additional work undertaken or completed after the end of the quarter). Changes may be made at any time to correct an actual error in computation or transcription, or where some part of the student's work has been unintentionally overlooked; that is, if the new grade is the one that would have been entered on the original report had there been no mistake in computing and had all the pertinent data been before the instructor, the change is a proper one.

If a student questions an end-quarter grade based on the grading of part of a specific piece of work (for example, part of a test) on the basis of one of the allowable factors mentioned in the preceding paragraph (for example, an error in computation or transcription, or work unintentionally overlooked, but not matters of judgment as mentioned below), the instructor may review the entire piece of work in question (for example, the entire test) for the purpose of determining whether the end-quarter grade was a proper one. In general, changing an end-quarter grade is permitted on the basis of the allowable factors already mentioned whether an error is discovered by the student or the instructor; however, changing a grade is not permitted by reason of revision of judgment on the part of the instructor.

In the event that a student disputes an end-quarter grade, the established grievance procedure should be followed (see the "Student Academic Grievance Procedure (http://www.stanford.edu/dept/registrar/bulletin/4988.htm)" section of this bulletin).

Freezing of Grades Upon Graduation

All grades, with the exception of 'I' (Incomplete), 'GNR' (Grade Not Reported), 'L' (Pass, grade to follow), and 'N' (Continuation) grades, are frozen at the time of graduation. Grades of Incomplete become frozen 12 months after the quarter in which they were awarded, either as 'NP' (Not Passed) if the course work has not been successfully completed, or another grade if it has. Grades of 'GNR', 'L', or 'N' also have one year to be updated after which they are frozen as they stand. The Office of the University Registrar evaluates prior to graduation whether the GPA on a transcript bearing grades of Incomplete would meet University requirements for graduation even if all 'I' grades were replaced by 'NP'.

Graduate School of Business Grades

All courses offered by the Graduate School of Business are graded according to the following five-level scheme:

Grade	Description
H	Honors. Work that is of truly superior quality.
HP	High Pass. A passing performance, and one that falls approximately in the upper quarter of passing grades.
P	Pass. A passing performance that falls in the center of the distribution of all passing grades.
LP	Low Pass. A passing performance that falls approximately in the lower quarter of passing grades.
U	Unsatisfactory. A failing performance. Work that does not satisfy the basic requirements of the course and is deficient in significant ways.

GNR	The notation 'GNR' appears when no grade has been reported to the Registrar. The 'GNR' notation remains on the transcript until a grade has been reported (effective Autumn Quarter 2009-10).

GSB courses may receive grades of "+" (Pass) for courses taken on a Pass-Fail basis, with "U" denoting a failing grade, "I" for Incomplete, and "N" for a continuing grade. The grade of N is recorded in a course that spans more than a single quarter, where the grade in an earlier quarter will be determined only later, after the entire course sequence is complete..

Prior to 2009-10, an asterisk (*) notation was placed when no grade was reported.

For more information, see the GSB Grades web site (p. 91).

Stanford Law School Grades

Effective Autumn Quarter 2009-10, units earned in the Stanford Law School are quarter units. Units earned in the Stanford Law School prior to 2009-10 were semester units. The following grading system became effective in Autumn Semester 2008-09. J.D. students who graduated in 2009 remained on the prior grading system but all other students shifted to the new grading system. For more information, see the Stanford Law School Handbook (http://www.law.stanford.edu/experience/studentlife/SLS_Student_Handbook.pdf).

Grade	Description
H	Honors (exceptional work, significantly superior to the average performance at the school)
P	Pass (representing successful mastery of the course material)
R	Restricted credit (representing work that is unsatisfactory)
F	Fail (representing work that does not show minimally adequate mastery of the material)
MP	Mandatory pass (representing P or better work)
N	Continuing course
I	Incomplete
*	No grade reported
GNR	Grade not reported (effective Autumn Quarter 2009-10).

The grading systems employed at the Stanford Law School September 2001 through Spring 2009 were as follows. Under the numerical system (with letter equivalents), the range of satisfactory grades ran from 4.3 to 2.5 as outlined in the following distribution. Below the grade of 2.5 was one level of restricted credit (2.2) and one level of failure (2.1). The number grades with letter equivalents were as follows:

Numbering	Grade
4.3-4.2	A+
4.1-3.9	A
3.8-3.5	A-
3.4-3.2	B+
3.1-2.9	B
2.8-2.5	B-
2.2	Restricted Credit
2.1	Failure

On this old system, students could elect to take a limited number of courses on a credit/restricted credit/no credit system (K/RK/NK). 'K' was awarded for work that was comparable to numerical grades 4.3 to 2.5, 'RK' for Restricted Credit-level work (2.2), and 'NK' for Failure-level work (2.1). A limited number of courses were offered on a mandatory credit (KM)/no credit (NK) basis.

'N' is a temporary notation used in a continuing course; it is replaced with a final grade upon completion of the course series.

School of Medicine Grades

In general, the following grades are used in reporting on the performance of students in the M.D. program and in the M.S. in Physician Assistant Studies program:

Grade	Description
Pass (+)	Indicates that the student has demonstrated to the satisfaction of the department or teaching group responsible for the course that the student has mastered the material taught in the course.
Fail (-)	Indicates that the student has not demonstrated to the satisfaction of the department or teaching group responsible for the course that the student has mastered the material taught in the course.
Incomplete (I)	Indicates that extenuating medical or personal circumstances have prevented the student from completing the course requirements. This grade is given when requested by the student with the prior approval of an Advising Dean in the School of Medicine.
Continuing (N)	Indicates that the course has not concluded and the student is continuing the course.
Exempt (Ex)	Indicates a course that is exempted by examination. No units are awarded.
GNR	The notation 'GNR' appears when no grade has been reported to the Registrar. The 'GNR' notation remains on the transcript until a grade has been reported (effective Autumn Quarter 2009-10).

In general, a 'Fail' grade can be cleared by repeating and passing the particular course or by other arrangement prescribed by the department or teaching group. An 'Incomplete' grade can be made up in a manner specified by the department or teaching group within a reasonable time; if the deficiency is not made up within the specified time, the 'Incomplete' grade becomes a 'Fail' grade. The opportunity to clear a 'Fail' grade or an 'Incomplete' grade cannot be extended to individuals who are not registered or eligible to register as students in the M.D. program. For more specific information, see the Assessment of Student Academic Performance (http://med.stanford.edu/md/curriculum/assessment-grading.html) web site.

Records

As a general proposition, only information classified by the University as directory information (see the "Directory Information (p.)" section of this bulletin) can be confirmed to inquirers other than the student.

Transcripts

Transcripts of Stanford records are issued by the Office of the University Registrar upon the student's request when submitted in writing or via the online Axess system. There is no charge for official transcripts. The courses taken in one quarter do not appear on any student's transcript until after the final study list deadline. The University reserves the right to withhold transcripts or records of students with unmet obligations to the University.

Certification of Enrollment or Degrees

The Office of the University Registrar can provide written confirmation of registration, enrollment, or degree status upon request by the student. The printed certification can be used whenever enrollment or degree verification is required for car insurance, loan deferments, medical

coverage, scholarship purposes, and so on. Using Axess, students are able to print an official certification at no charge. Certification of full- or part-time enrollment cannot be provided until after the study list is filed for the quarter in question.

Degrees are conferred quarterly, but diplomas are issued in accordance to the distribution dates listed on the Registrar's Office (http://studentaffairs.stanford.edu/registrar/students/diplomas/) web site. After conferral, the degree awarded to a student can be verified by contacting the Office of the University Registrar for an official transcript, or official degree certification form. Requests for transcripts or degree certifications must be made by the student in writing or through Axess.

Stanford University has authorized the National Student Clearinghouse (NSC) to act as its agent for purposes of third party enrollment and degree verification. The NSC will be able to verify degrees and enrollment for only those students who have not placed a privacy block on their academic record. The student's name when enrolled, Social Security Number or Student ID, and date of birth will be required for identification purposes and enrollment or degree verification. All third parties should contact the National Student Clearinghouse by phone or visit their web site for current enrollment and degree verification information, instructions, and fees.

Definition of Full-time Enrollment

Undergraduate

As a general proposition, full-time enrollment for undergraduates is considered to be enrollment in a minimum of 12 units of course work per quarter at Stanford. Work necessary to complete units from previous quarters does not count toward the 12 units necessary for full-time status in the current quarter. Enrollment in 8 to 11 units is considered half-time enrollment. Enrollment in 1 to 7 units is considered less-than-half-time, or part-time enrollment.

For students with disabilities taking a reduced course load, contact the Office of Accessible Education (http://studentaffairs.stanford.edu/oae/) for additional information.

All undergraduates validly registered at Stanford are considered to be in good standing for the purposes of enrollment certification.

Graduate and Professional Students

Stanford uses the following definitions (in units) to certify the enrollment status of graduate and professional students each quarter.

Status	Graduate	Business (M.B.A./ Sloan)	Law	Medicine (M.D.)
Full time:	8 or more	11 or more	9 or more	9 or more
Half time:	6 or 7	6-10	6-8	6-8
Part time:	5 or fewer	5 or fewer	5 or fewer	5 or fewer

TGR students enrolled in a course numbered 801 or 802 are certified as full time. Graduate students on an approved Graduation Quarter status are certified as full time. During Summer Quarter, all graduate students who hold appointments as research or teaching assistants are considered to be enrolled on at least a half-time basis.

H-1B Degree Certification

As the H-1B application deadline is April 1 and Winter Quarter degree conferral does not occur until after this date (or just before), the Office of the University Registrar provides an H-1B Degree Certification Letter for eligible students graduating Winter Quarter who are applying for the H-1B visa and have completed all school/department and University degree requirements.

Students conferring degrees in all terms except Winter Quarter should request an official transcript in their student Axess account after the degree conferral date of their graduation term. The official transcript indicates the results of all work completed and degrees awarded. Students can also request an official degree certification via Axess, or by completing a Degree Certification Request form. See Certifications and Verifications (http://studentaffairs.stanford.edu/registrar/students/certifications/) for details on requesting degree verification.

An Enrollment Verification is included with the H-1B Degree Certification Letter. The Enrollment Certification states a student's enrollment history, current program of study, major, expected degree, and expected degree conferral date. This document bears the University seal and signature of the University Registrar. For more information see the Office of the University Registrar H-1B Certification Letter (http://exploredegrees.stanford.edu/academicpoliciesandstatements/x-webdoc://D3A5CCDC-66E3-45EE-8E78-2D47E9234AF2/studentaffairs.stanford.edu/registrar/students/h-1b/) web site.

Bechtel International Center organizes H-1B workshops which students are encouraged to attend if they have any questions regarding H-1B issues.

Posthumous Degrees

Stanford will consider granting a posthumous degree in instances in which a student was in good standing and had completed at least 90% of all graduation requirements at the time of death. Requests must be approved by the chair of the major department or the dean of a professional school and the University Registrar. Requests should be addressed to the University Registrar and generally should take place within 12 months of the student's death.

Academic Progress

Undergraduates must maintain a minimum 2.0 cumulative GPA and a quantitative unit requirement for satisfactory academic progress. In addition, a minimum 2.0 cumulative GPA is required for conferral of a baccalaureate degree.

Undergraduates normally are expected to plan their academic programs so that they can complete 180 units in four years (twelve quarters), including the requirements for a major and the General Education (p. 35) (Ways/GERs), Writing and Rhetoric (p.), and Language (p.) Requirements. Satisfactory academic progress is, on average, 45 units per academic year for four years leading to at least 180 units, a cumulative grade point average of at least 2.0, and a baccalaureate degree.

While undergraduates are expected to register for a minimum of 12 units, they are required to earn at least 9 units each quarter (by the end of the final exam period) and at least 36 units in their most recent three quarters of Stanford enrollment (by the end of the third final exam period). In addition, students are expected to maintain a cumulative grade point average of at least 2.0. Transfer work completed at other institutions is not considered in this calculation.

A student earning fewer than 9 units per quarter or fewer than 36 units in three quarters, or earning less than a 2.0 cumulative grade point average, is placed on academic probation. (For students with disabilities taking a reduced course load, contact the Office of Accessible Education (http://studentaffairs.stanford.edu/oae/) for additional information.) Additionally, a student may be placed directly on provisional registration or academic suspension (both further defined in this section) without first being placed on academic probation if the student had a prior probation status. Students on academic probation (p.) or provisional registration (p.) status are required to earn a minimum of 12 units of new course work per quarter (by the end of the final quarter examination period for each quarter) in each quarter for three quarters of consecutive enrollment (excluding Summer; see below for AY 2020-21 (p. 95)), and achieve and maintain a cumulative grade point average of at least 2.0 to attain a satisfactory academic progress status. The C-USP

Subcommittee on Academic Progress may stipulate otherwise by acting upon a request for fewer units (i.e. reduced course load).

COVID-19 Policy

Typically, a Stanford Summer Session Quarter is considered non-standard and therefore is excluded from standard academic review, but may count (upon request) toward the three quarter consecutive enrollment requirement if 11 or more units are earned. However, in accordance with the academic calendar and temporary policies adopted for AY 2020-21 (in response to COVID-19), which include the adoption of Summer Quarter as a fourth standard quarter, Summer Quarter 2020-21 is considered a standard quarter and, as such, holds all of the conditions and expectations for academic progress outlined in the preceding paragraphs and remainder of this section below, including a standard review of academic progress to be conducted upon the completion of that quarter for students who enroll. Additionally, so as to align with the standard policy for Summer Quarter, units earned during Flex Term (p. 5) shall not apply to academic review. Finally, in line with the standard policy related to academic review, students who receive an academic suspension are ineligible to enroll for four quarters, including Flex Term (p. 5).

Full-time enrollment is considered to be enrollment in a minimum of 12 units of course work per quarter at Stanford. Under extenuating circumstances, students may submit a request to the C-USP Subcommittee on Academic Progress to take fewer units. As a general proposition, work necessary to complete units from previous quarters does not count toward the 12 units necessary for full-time enrollment in the current quarter. All students registering for fewer than 12 units should consider the effects of that registration on their degree progress, visas, residency requirements, varsity athlete status, and their eligibility for financial aid and awards as well as eligibility for or deferment of student loans.

All undergraduates validly registered at Stanford are considered to be in good standing for the purposes of enrollment certification and athletic participation.

Units are granted for courses completed with grades 'A,' 'B,' 'C,' 'D,' 'Satisfactory' ('CR' or 'S'), and 'L.' Courses graded 'N' are counted provisionally as units earned, provided the student enrolls in the continuing segment of that course the following quarter. When the course is completed satisfactorily, the student receives the units for which he or she enrolled. No units are granted for a course in which the student receives an 'I' or a 'GNR' ('GNR' replaced the '*' effective Autumn Quarter 2009-10) until the course is completed satisfactorily and the final grade reported. No units are granted for a course in which the student receives a 'W'. (See the "Grading Systems (p. 91)" section of this bulletin).

Students who receive all 'W's as the result of a Leave of Absence (either voluntary or involuntary) are subject to Academic Progress policies.

The C-USP Subcommittee on Academic Progress, in its discretion, is empowered to place conditions on students with an academic progress status (e.g., academic probation, provisional registration, etc.) with regard to enrollment and participation in programs and activities. In addition, students on academic probation require approval in advance from Academic Advising (https://undergrad.stanford.edu/advising/make-appointment/), Residential Education (http://studentaffairs.stanford.edu/resed/), and the Overseas Studies Program (http://bosp.stanford.edu/) office or Stanford in Washington Program (http://siw.stanford.edu/) office or Stanford in New York (http://exploredegrees.stanford.edu/undergraduateeducation/stanford_in_new_york/) or Stanford at Sea (http://stanford.sea.edu/) in order to participate in Stanford's Overseas Studies Program or Stanford in Washington Program or Stanford in New York or Stanford at Sea; while students on other statuses (e.g., provisional registration, etc.) are ineligible to participate in these programs.

Degree Progress standards for coterminal students are described in the coterminal bachelor's and master's degrees section of the Bulletin.

Students receiving federal student aid funds must maintain satisfactory academic progress standards that may be more strict than those outlined here. See the Financial Aid Office web site (http://financialaid.stanford.edu) for details.

Academic Probation

A student who fails to earn at least 36 units of work (by the end of the third final exam period) in his or her most recent three quarters of enrollment at the University (excluding Summer), or who fails to earn by the end of the final examination period at least 9 quarter units of work in his or her most recent quarter of enrollment at the University (excluding Summer), or who has a cumulative grade point average of less than 2.0, may be placed on academic probation.

A student shall be removed from academic probation if, in each of three subsequent quarters of consecutive enrollment at the University (excluding Summer*, see above), he or she earns a minimum of 12 units of new course work by the end of the final examination period and achieves and maintains a cumulative grade point average of at least 2.0. A student may also be removed from academic probation at the discretion of the C-USP Subcommittee on Academic Progress or its designees as a result of a review of individual records.

Provisional Registration

A student who, while on academic probation, fails in any quarter of registration (excluding Summer*, see above) to earn a minimum of 12 units of new course work by the end of the final examination period or fails to achieve and maintain a cumulative grade point average of at least 2.0, may be placed on provisional registration status. In addition, and on occasion, a student may also be placed directly on provisional registration without first being placed on academic probation if the student has had a prior probation status.

A student shall be removed from provisional registration if, in each of three subsequent quarters of enrollment at the University (excluding Summer*, see above), he or she earns a minimum of 12 units of new course work by the end of the final examination period and achieves and maintains a cumulative grade point average of at least 2.0. A student may also be removed from provisional registration at the discretion of the C-USP Subcommittee on Academic Progress or its designees as a result of a review of individual records.

Academic Suspension

A student who, while on provisional registration, fails in any quarter of registration (excluding Summer*, see above) to earn a minimum of 12 units of new course work by the end of the final examination period or fails to achieve and maintain a cumulative grade point average of at least 2.0, may be placed on academic suspension. In addition, and on occasion, a student may also be placed on academic suspension directly from academic probation; or may be placed on academic suspension without first being placed on academic probation or provisional registration if the student has had a prior probation status.

While students placed on academic suspension for the first time are suspended for one year, students placed on academic suspension a subsequent time may be suspended for up to three years.

Students suspended for one year are not eligible to enroll for four quarters (including Summer Quarter) following the quarter in which the academic suspension was issued. Students suspended for up to three years are not eligible to enroll for up to twelve quarters (including

Summer Quarter) following the quarter in which the academic suspension was issued.

As well, until re-enrollment, students who are suspended are ineligible for the privileges associated with registration, privileges that include living in University housing, participating in voluntary student organizations, and involvement in any activity for which enrollment is a requirement.

The C-USP Subcommittee on Academic Progress or its designees, in its discretion, may impose conditions of the academic suspension, and/or to a return from the academic suspension.

Reconsideration of Academic Suspension

Students who receive an academic suspension and believe they have information that presents relevant and compelling material previously unknown to the subcommittee or its designees, such that reconsideration for immediate continuation of their studies without a break in enrollment is suitable, should meet with an adviser from the office of Academic Advising (https://advising.stanford.edu) in VPUE to discuss their circumstances. Students with such relevant circumstances may submit a Request for Reconsideration of Academic Suspension. Granting such requests is at the discretion of the subcommittee or its designees, and may be based on factors or considerations regarded as relevant including the demonstrated or perceived likelihood for immediate academic success. Requests for reconsideration submitted after the deadline are not accepted. A student may also grieve an academic suspension under the Student Academic Grievance Procedure (p. 96).

Students are expected to complete their academic suspension in full. An academic suspension may not be substituted, in part or in whole, by a Leave of Absence.

Returning from Suspension

Students are required to submit a properly endorsed application for reinstatement to request re-enrollment after the suspension period has been completed. Instructions, including deadlines for requesting to return, should be obtained from the Office of the Vice Provost for Undergraduate Education, via the office of Academic Advising (https://advising.stanford.edu), Sweet Hall. The C-USP Subcommittee on Academic Progress, or those designated by the subcommittee, acts upon all requests concerning academic progress and its statuses, including a Request to Return and Register after completion of the academic suspension. The subcommittee or its designees may determine whether the application for reinstatement to return will be approved or not, and/or the conditions a student must meet in order to return. Request to Return and Register decisions are at the discretion of the University and may be based on activities while away from campus, the perceived potential for successful completion of the program, as well as any other factors or considerations regarded as relevant to the Vice Provost for Undergraduate Education or the subcommittee or its designees.

Students who return from an academic suspension are given the academic progress status "provisional registration", and must adhere to and comply with the policies above and elsewhere related to that status upon their return. Questions concerning academic progress or requests to return should be directed to the office of Academic Advising (https://advising.stanford.edu), Sweet Hall.

Students returning from academic suspension should also contact appropriate campus offices, such as Housing and Financial Aid, regarding those offices' deadlines and procedures.

Notification (Academic Progress)

Written notification that a student is on academic probation, provisional registration, or academic suspension is sent to the student, to the student's academic adviser(s), and to other relevant university offices and individuals as soon as possible after the close of the quarter. Students also receive written notification of the outcome of their Request for Reconsideration of Academic Suspension, or their Request to Return and Register after completion of their academic suspension. Current student status, such as whether a student is enrolled or not, is considered Directory Information for the purposes of FERPA at Stanford, and Stanford may provide either parent(s) or guardian(s) written notification of a change in student status. Provided that a student consents, or the student is a dependent for income tax purposes, Stanford may also provide either parent(s) or guardian(s) written notification that the student is on academic probation, provisional registration, academic suspension, or Leave of Absence (either voluntary or involuntary). Other FERPA exceptions may also apply.

Student Academic Grievance Procedure

The following policy is subject to periodic review and modification.

1. Coverage
   a. Any Stanford undergraduate or graduate student who believes that he or she has been subjected to an improper decision on an academic matter is entitled to file a grievance to obtain an independent review of the allegedly improper decision, followed by corrective action if appropriate. A grievance is a complaint in writing made to an administrative officer of the University concerning an academic decision, made by a person or group of persons acting in an official University capacity, that directly and adversely affects the student as an individual in his or her academic capacity.
   b. This grievance procedure applies only in those cases involving a perceived academic impropriety arising from a decision taken by: (1) an individual instructor or researcher; (2) a school, department, or program; (3) a committee charged to administer academic policies of a particular school, department, or program; or (4) the University Registrar, the Vice Provost for Undergraduate Education, the C-USP Subcommittee on Academic Progress, or a Senate committee or subcommittee charged to administer academic policies of the Senate of the Academic Council. This procedure does not apply to: (1) complaints expressing dissatisfaction with a University policy of general application challenged on the grounds that the policy is unfair or inadvisable; (2) individual school, department, or program academic policies, as long as those policies are not inconsistent with general University policy; (3) matters proceeding or addressed through the Office of Community Standards; or (4) involuntary leave decisions.
   c. Individuals should be aware that the University Ombuds Office is available to all Stanford students, faculty, and staff to discuss and advise on any matter of University concern and frequently helps expedite resolution of such matters. Although it has no decision-making authority, the University Ombuds Office has wide powers of inquiry, including into student complaints against instructors.
2. Grievance and Appeal Procedures
   a. Informal Attempts at Resolution: the student first should discuss the matter, orally or in writing, with the individual(s) most directly responsible. If no resolution results, the student should then consult with the individual at the next administrative level, for example, the chair or director of the relevant department or program, or, for those cases in which there is none, with the school dean. At this stage, the department chair or program director, if any, may inform the dean that the consultation is taking place and may solicit his or her advice on how to ensure that adequate steps are taken to achieve a fair result. Efforts should be made to resolve the issues at an informal level without the complaint escalating to the status of a formal grievance.
   b. The Filing of the Grievance:
      i. If informal means of resolution prove unsatisfactory, the student should set forth in writing a statement of the decision that constitutes the subject matter of the dispute, the grounds on which it is being challenged, and the reasons

why the grievant believes that the decision was improperly taken. The statement should also include a description of the remedy sought and the informal efforts taken to date to resolve the matter. It is at this point that the complaint becomes a formal grievance. The written grievance should specifically address the matters set forth in the Standards for Review, as stated in Section 4 below. The grievance should include an allegation of any adverse effects on the grievant, known to the grievant at the time of filing.

ii. The grievance document should be submitted to the dean of the school in which the grievance arose; for a grievance concerning a decision of the University Registrar, the Vice Provost for Undergraduate Education, or of a Senate committee or subcommittee, the procedures set forth herein for grievances and appeals shall be modified as stated in Section 3 below. A grievance must be filed in a timely fashion, that is, no later than 30 days after the end of the academic quarter in which the adverse decision occurred or should reasonably have been discovered. Except in extraordinary circumstances, delay in filing a grievance will constitute grounds for rejection of the grievance.

c. The Response to the Grievance:

i. The relevant dean will consider the grievance. The dean may attempt to resolve the matter informally or make whatever disposition of the grievance that he or she deems appropriate. The dean may, in appropriate cases, remand the grievance to a lower administrative level (including to the level at which the grievance arose) for further consideration.

ii. The dean may also refer the grievance, or any issue therein, to any person (the "grievance officer") who will consider the matter and report to the dean as the latter directs. The dean will inform the grievant (and the party against whose decision the grievance has been filed) in writing of any referral of the matter and will specify the matters referred, the directions to the person or persons to whom the referral is made (including the time frame within which the person is to report back to the dean), and the name of that person.

iii. In undertaking the review, the dean or the grievance officer may request a response to the issues raised in the grievance from any individuals believed to have information considered relevant, including faculty, staff, and students.

iv. Should attempts to resolve the matter informally not be successful, the dean will decide the grievance, and will notify the grievant (and the party against whose decision the grievance has been filed) in writing of the disposition made of the grievance and the grounds for the disposition at the earliest practicable date after his or her receipt of the grievance.

v. Normally, no more than 60 days should elapse between the filing of a grievance and the disposition by the dean. If, because of absence of key persons from the campus or other circumstances or exigencies (including those due to breaks in the academic calendar), the dean decides that disposition on that schedule is not possible, he or she shall inform the grievant (and the party against whose decision the grievance has been filed) of that in writing, giving the grounds therefore and an estimate of when a disposition can be expected. During summers and the winter closure, this time frame will nearly always be extended.

d. The Filing of an Appeal:

i. If the grievant is dissatisfied with the disposition of the grievance at the decanal level, either on substantive or on procedural grounds, he or she may appeal in writing to the Provost.

ii. The appeal must specify the particular substantive or procedural bases of the appeal (that is, the appeal must be made on grounds other than general dissatisfaction with the disposition) and must be directed only to issues raised in the grievance as filed or to procedural errors in the grievance process itself, and not to new issues. The appeal must contain the following:

1. A copy of the original grievance and any other documents submitted by the grievant in connection therewith.
2. A copy of the determination made by the dean on that grievance.
3. A statement of why the reasons for the determination of the dean are not satisfactory to the grievant. This statement should specifically address the matters set forth in the Standards for Review in Section 4 below.

iii. The grievant will file his or her appeal at the earliest practicable date after the grievant's receipt of the determination by the dean. Normally, no more than 30 days should elapse between the transmittal of the dean's decision on the grievance and the filing of the appeal. Except in extraordinary circumstances, delay in filing an appeal will constitute grounds for rejection of the appeal.

e. The Response to the Appeal:

i. The Provost may attempt to resolve the matter informally, or refer the appeal, or any issue thereof, to any person (the "grievance appeal officer") who shall consider the matter and report to the Provost as the latter directs. The Provost may also, in appropriate cases, remand the matter to a lower administrative level (including to the level at which the grievance arose) for further consideration.

ii. The Provost will inform the grievant (and the party against whose decision the grievance has been filed) in writing of any referral of the matter and will specify the matters referred, the directions to the person to whom the referral is made (including the time frame within which the person is to report back to the Provost), and the name of that person.

iii. Should attempts be made to resolve the matter informally not be successful, the Provost will decide the appeal, and will notify the grievant (and the party against whose decision the grievance has been filed) in writing of the disposition made of the grievance and the grounds for the disposition at the earliest practicable date after his or her receipt of the appeal. The decision of the Provost is final.

iv. Normally no more than 45 days should elapse between the filing of the appeal and the disposition by the Provost. If, because of absence of key persons from the campus or other circumstances or exigencies (including those due to breaks in the academic calendar), the Provost judges that disposition on that schedule is not possible, he or she will inform the grievant (and the party against whose decision the grievance has been filed) of the fact in writing, giving the grounds therefore and an estimate of when a disposition can be expected. During summers and the winter closure, this time frame will nearly always be extended.

3. Grievances Concerning Decisions of the University Registrar, the Vice Provost for Undergraduate Education, or of a Senate Committee or Subcommittee

a. For a grievance concerning a decision of the University Registrar, the Vice Provost for Undergraduate Education, the C-USP Subcommittee on Academic Progress, or of a Senate committee or subcommittee, the grievant will file his or her grievance with the Provost, rather than with the dean, and the Provost will handle that grievance in accordance with the procedures set forth in Section 2c above.

b. There is no appeal of the Provost's disposition of that grievance.

4. Standards for Review and Procedural Matters

a. The review of grievances or appeals will usually be limited to the following considerations:

i. Were the proper facts and criteria brought to bear on the decision? Were improper or extraneous facts or criteria brought to bear that substantially affected the decision to the detriment of the grievant?
ii. Were there any procedural irregularities that substantially affected the outcome of the matter to the detriment of the grievant?
iii. Given the proper facts, criteria, and procedures, was the decision one which a person in the position of the decision maker might reasonably have made?

b. The time frames set forth herein are guidelines. They may be extended by the relevant administrative officer in his or her discretion for good cause.
c. Questions concerning the filing and appeal of grievances should be directed to the Office of the Provost.

Stanford University ID Number

The Stanford University ID Number is assigned to each student's academic record for unique identification. It is printed on the Stanford University ID card and on documents distributed by the Office of the University Registrar and other administrative offices. It is a violation of University policy to use another's Stanford University ID Number to misrepresent yourself in any way; such use can result in loss of student privileges or other disciplinary action.

SUNet ID

The SUNet ID provides access to the Stanford University Network (SUNet) and its services, and identifies authorized users of these services. Each member of the Stanford electronic community creates a unique SUNet ID and SUNet ID password for him/herself. SUNet IDs provide:

- Axess services
- Email service
- Storage space within Stanford's distributed file system
- Usenet newsgroups
- World wide web services, including serving of personal web pages on the Leland system and access to Stanford Web Resources

The SUNet ID together with SUNet ID password may serve in place of a signature on electronic forms. The SUNet ID password must remain confidential; it is a violation of University policy to permit another person to use your SUNet ID or password. It is a violation of University policy to use another's SUNet ID or SUNet ID password to misrepresent yourself in any way; such use can result in loss of student privileges or other disciplinary action.

Identification Cards

The ID card serves as an identification card, an electronic key, and a debit card, allowing cardholders to use services for which they have privileges, to enter certain facilities, and to make purchases.

ID cards are available to registered students, faculty, academic staff, and regular staff. Students obtain their ID cards at the Student Services Center, Tresidder Union, 459 Lagunita Drive, 2nd Floor (650) 498-CARD). Faculty and staff obtain ID cards at George Forsythe Hall, 275 Panama Street, Room 190 (650-498-CARD).

Courtesy ID cards are available for spouses and domestic partners of the Stanford professoriate, academic staff, regular staff, and students. These cards may be obtained from the Stanford Card ID Office at Forsythe Hall. The spouse/partner courtesy ID card enables use of some campus services during terms for which the student is registered.

Visiting Scholars who are on campus for a minimum of one quarter and contribute to Stanford's mission by teaching or collaborating on Stanford research also receive ID cards and campus privileges during their stay on campus. These cards may be obtained from the Stanford Card ID Office at Forsythe Hall.

Library access and borrowing privileges are reserved for the Stanford professoriate, academic staff, regular staff, students, and others associated with the University with a need for such access.

ID cards bear a photograph of the cardholder. This photograph is maintained in an online database and, as stated in the "Directory Information (p.)" section of this bulletin, is available for classroom, student residence, and other use upon specific request and without student consent unless the student has designated that the photograph not be released. Photographs can be designated as private using the Privacy function of Axess.

Misuse of the ID card may result in discipline or administrative action.

For more information, see the Campus Card Service (http://campuscard.stanford.edu) web site. For the complete policy on Stanford Identification Cards, see the Administrative Guide, 28-4 (http://adminguide.stanford.edu/28_4.pdf) (pdf).

COVID-19 Policy

Due to current health guidelines, no auditors are permitted to attend in-person classes. Remote auditing is available only to Stanford affiliates, who must complete and submit an Audit form (https://registrar.stanford.edu/resources-and-help/student-forms-petitions-and-requests/auditor-and-nonmatriculated-forms/#auditor).

Auditing

No person shall attend any class unless he or she is a fully registered student enrolled in the course or meets the criteria for auditors. Auditors are not permitted in courses that involve direct participation such as language or laboratory science courses, field work, art courses with studio work, or other types of individualized instruction (i.e., labs, seminars, case study, language, and activity courses are not permitted). Auditors are expected to be observers rather than active participants in the courses they attend, unless the instructors request attendance on a different basis. Stanford does not confer credit for auditing, nor is a permanent record kept of courses audited. Students who have been suspended are not permitted to audit.

Auditors may not join classes for the first time after the University's final study list deadline. Auditors are not eligible for other University services or privileges including housing, health insurance (Cardinal Care), Vaden clinical services, and the University health plan. The University Registrar reviews for approval any other services or privileges that may be sought.

The Auditor status is available to Stanford faculty or staff members for no fee. Otherwise, the Permit to Attend fee is assessed. The Application for Auditor or Permit to Attend (PTA) Status is required. In all cases of auditing, the instructor, department administrator, and the Office of the University Registrar's prior approvals are required. Further information is available from the Student Services Center (http://studentservicescenter.stanford.edu/).

The University assumes no responsibility or liability for any delay or failure to provide some or all academic or other campus activities or for any modification to instruction or institutional offerings due to any force majeure. For these purposes, the term “force majeure” shall mean fire, earthquake, flood, act of God, strikes, work stoppages or other labor disturbances, riots or civil commotions, crimes, litigation, war or other act of any foreign nation, plague, epidemic, pandemic, power of government or governmental agency or authority, or any other cause like or unlike any cause mentioned above, which is beyond the control or authority of Stanford and either makes performance of the policies and protocols

set forth herein illegal, impractical, and/or in the reasonable judgment of Stanford, threatens the safety and wellness of its students, employees and/or community members.

NONACADEMIC REGULATIONS

The Bulletin publishes the following nonacademic policies which are applicable to all Stanford students. Each policy is published on its own page, viewable in the left-hand menu or linked in the list below. All the policies published in the Bulletin are also collected on this page and available for download (http://exploredegrees.stanford.edu/nonacademicregulations/nonacademicregulations.pdf) (pdf).

The University reserves the right to make changes at any time without prior notice. Nonacademic policies as published on this site are the currently applicable policies.

For other policy information applicable to members of the Stanford community, see Student Activities and Leadership (https://sal.stanford.edu/policies/) (student organizations, programs, and events), the "GAP (https://gap.stanford.edu/)" (Graduate Academic Policies and Procedures), the Office of Special Events and Protocols (https://web.stanford.edu/dept/Events/policies/) (University Event Policies), and the Administrative Guide (https://adminguide.stanford.edu/) ("guidelines for non-research University activities that govern workplace interactions, approaches, procedures, and processes").

Students with questions about nonacademic policies should submit a SU Services & Support Request (https://stanford.service-now.com/student_services/?id=sc_cat_item&sys_id=a623e6d4131b53c08a9175c36144b082).

- Nondiscrimination Policy (p. 123)
- Age Discrimination Act of 1975 (p. 126)
- Americans with Disabilities Act (ADA) (p. 127)
- Campus Disruptions (p. 129)
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- Main Quadrangle • Memorial Court • Oval • White Plaza (p. 140)
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- Stanford Name and Trademarks (p. 157)
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- Title VI of the Civil Rights Act of 1964 (p. 160)
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- Visitor Policy • University Statement on Privacy (p. 162)

Nondiscrimination Policy

Stanford University admits qualified students of any race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity, veteran status, or marital status to all the rights, privileges, programs, and activities generally accorded or made available to students at the University. Consistent with its obligations under the law, in the administration of the University's programs and activities, Stanford prohibits unlawful discrimination on the basis of race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity or expression, veteran status, marital status or any other characteristic protected by applicable law; Stanford also prohibits unlawful harassment including sexual harassment and sexual violence.

This policy applies to Stanford programs and activities both on and off-campus, including overseas programs.

The following person has been designated to handle inquiries regarding this nondiscrimination policy: Stanford's Director of the Diversity and Access Office, Rosa Gonzalez, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (email). Stanford's Title IX Coordinator, Catherine Glaze, has been designated to handle inquiries regarding sexual harassment and sexual violence: Kingscote Gardens (2nd floor), 419 Lagunita Drive, Stanford, CA 94305, (650) 497-4955 (voice), (650) 497-9257 (fax), titleix@stanford.edu (email).

Individuals may also file complaints directly with the Office for Civil Rights, within the United States Department of Education, by following the information on this website: https://www2.ed.gov/about/offices/list/ocr/complaintintro.html.

Age Discrimination Act of 1975

The following is the policy:

1. Policy

   It is the policy of Stanford University to comply with the Age Discrimination Act of 1975 and its regulations, which prohibit unlawful discrimination on the basis of age. The Age Discrimination Act Compliance Officer is the Director of the Diversity and Access Office ("the Director"), who has been appointed to coordinate the University's efforts to comply with the law. Anyone who believes that Stanford is not in compliance with the Age Discrimination Act and its regulations ("the Act") should contact the Director at the Diversity and Access Office, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (http://relative.pagelegend.com/mailto:equal.opportunity@stanford.edu) (email).

2. Grievance Procedure

   a. An individual who believes that Stanford is not acting in compliance with the Act and who wishes to file a grievance should set forth in writing the substance of his or her complaint, the grounds for it and the evidence on which it is based, and the efforts (if any) taken to date to resolve the matter. It is at this stage that the complaint becomes a formal grievance.

   b. The grievance document should be submitted to the Director. A grievance should be filed in a timely fashion, i.e., normally no later than thirty days after the end of the academic quarter in which the action that is the subject of the grievance occurred. Except in extraordinary circumstances, delay in filing a grievance will be grounds for rejection of that grievance.

   c. The Director will promptly initiate a review, which should normally be completed within sixty days. The Director may attempt to resolve the matter informally, and may refer the matter (or any part of it) to a grievance officer or other designee, who will look into and/or address the matter as the Director directs. The Director may also, in appropriate cases, remand the matter to the

appropriate administrator (including to the administrative level at which the grievance arose) for further consideration.

d. In undertaking this review, either the Director, his or her designee, or the grievance officer may request a response to the issues raised in the grievance from any individuals believed to have information the reviewer considers relevant, including faculty, staff and students.

e. The Director (or his or her designee) will issue his or her decision in writing, and take steps to initiate such corrective action as is called for (if any).

3. Appeal

a. If the grievant is dissatisfied with the disposition by the Director (or his or her designee), he or she may appeal to the Provost (Office of the President and Provost, Building 10, Stanford, CA 94305-2061; phone 650-725-4075; fax 650-725-1347). The appeal should be filed in writing with the Provost within ten days of the issuance of the decision by the Director (or his or her designee); a delay in filing the appeal may be grounds for rejection of that appeal.

b. The Provost may attempt to resolve the matter informally, and may refer the matter (or any part of it) to a grievance appeal officer, who will review the matter at the Provost's direction. The Provost may also, in appropriate cases, remand the matter to the appropriate administrator (including to the administrative level at which the grievance arose) for further consideration.

c. The Provost should normally complete his or her review of the appeal and issue his or her decision in writing within forty-five days. That decision is final.

4. General Provisions

a. Time Guidelines—The time frames set forth herein are guidelines. They may be extended by the Director or Provost, as applicable, in his or her discretion for good cause (including for reasons relating to breaks in the academic calendar), and will nearly always be extended during summers and the winter closure.

b. No Retaliation—Stanford University prohibits retaliation or reprisals against individuals based on their pursuit in good faith of a grievance under this procedure, or their participation in good faith in the grievance process.

c. Standards for Review—If the grievance involves a decision that is being challenged, the review by the Director, as well as the review by the Provost on appeal, usually will be limited to the following considerations:

i. Were the proper facts and criteria brought to bear on the decision? Were improper or extraneous facts or criteria brought to bear that substantially affected the decision to the detriment of the grievant?

ii. Were there any procedural irregularities that substantially affected the outcome of the matter to the detriment of the grievant?

iii. Given the proper facts, criteria, and procedures, was the decision one which a person in the position of the decision maker might reasonably have made?

ADA (Americans with Disabilities Act)/ Section 504 Grievance Procedure (Student)

For information more generally concerning policies and procedures for students with disabilities, see the Diversity & Access Office (http://www.stanford.edu/dept/diversityaccess/) web site, or the ADA/Section 504 Compliance Officer, Diversity and Access Office, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (http://relative.pagelegend.com/mailto:equal.opportunity@stanford.edu) (email); see also the Office for Accessible Education (OAE) (http://studentaffairs.stanford.edu/oae/) web site.

Policy

The following is the policy:

I. Policy

Stanford University, in compliance with state and federal laws and regulations, including the Americans with Disabilities Act of 1990 (ADA; as amended 2008) and Section 504 of the Rehabilitation Act of 1973 (Section 504), does not discriminate on the basis of disability in administration of its education-related programs and activities, and has an institutional commitment to provide equal educational opportunities for disabled students who are otherwise qualified.

Students who believe they have been subjected to unlawful discrimination on the basis of disability, or have been denied access to services or accommodations required by law, have the right to use this grievance procedure.

II. Applicability

As a general proposition, the grievance procedure set forth below is applicable to undergraduate and graduate students of the University. In general, it is designed to address disputes concerning the following:

1. Disagreements regarding a requested service, accommodation, or modification of a University practice or requirement;
2. Inaccessibility of a program or activity;
3. Harassment or discrimination on the basis of disability;
4. Violation of privacy in the context of disability.

As a general proposition, this grievance procedure supplants the Student Academic Grievance Procedure (p. 96) and the Student Non-Academic Grievance Procedure (p.) (both of which are set forth in this bulletin) for disability-related grievances. Questions of applicability will be decided by the Director of the Diversity and Access Office.

III. Compliance Officers

Stanford University's Compliance Officers are responsible for administering this grievance procedure as well as ensuring compliance with applicable laws. The Director of the Diversity and Access Office is the designated ADA / Section 504 Compliance Officer. That office is located in Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (http://relative.pagelegend.com/mailto:equal.opportunity@stanford.edu) (email).

Additional Compliance Officers may be designated from time to time by the Provost from those faculty and staff members knowledgeable concerning disability issues and the legal mandates of state and federal disability statutes.

IV. Informal Resolution

Prior to initiating the formal complaint procedure set forth below, the student should, in general, first discuss the matter orally or in writing with the individual(s) most directly responsible. If no resolution results,

or if direct contact is inappropriate under the circumstances, the student should then consult with the Compliance Officer at the Diversity and Access Office who will attempt to facilitate a resolution. (The informal resolution process may involve consultation with the Associate Vice Provost for Student and Academic Services and University Registrar.)

If the Compliance Officer is not successful in quickly achieving a satisfactory resolution (that is, generally within seven calendar days), the Compliance Officer will inform the student of his or her efforts and the student's right to file a formal complaint.

V. Formal Complaint

If the procedure set forth above for informal resolution does not yield a successful resolution, then the student may file a formal complaint in the following manner:

1. When to File Complaint: Complaints must be filed as soon as possible, but in no event later than 10 days after the end of the quarter in which the concern arose.
2. What to File: A complaint must be in writing and include the following:
   a. The grievant's name, address, email address and phone number;
   b. A full description of the problem;
   c. A description of what efforts have been made to resolve the issue informally;
   d. A statement of the remedy requested.
3. Where to File Complaint: the complaint is to be filed with the Compliance Officer at the Diversity and Access Office, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (http://relative.pagelegend.com/mailto:equal.opportunity@stanford.edu) (email).
4. Notice of Receipt: upon receipt of the complaint, the Compliance Officer reviews the complaint for timeliness and appropriateness for this grievance procedure, and provides the grievant with written notice acknowledging its receipt.
5. Investigation: the Compliance Officer will promptly initiate an investigation and may refer the matter (or any part of it) to a grievance officer or other designee, who will look into and/or address the matter as the Compliance Officer directs. In undertaking the investigation, the Compliance Officer or grievance officer may interview, consult with, and/or request a written response to the issues raised in the grievance from any individual the grievance officer believes to have relevant information, including faculty, staff, and students.
6. Representation: the grievant and the party against whom the grievance is directed each have the right to have a representative. The party shall indicate whether he or she is to be assisted by a representative and, if so, the name of that representative. For purposes of this procedure, an attorney is not an appropriate representative.
7. Findings and Notification: upon completion of the investigation, the grievance officer will prepare and transmit to the student, and to the party against whom the grievance is directed, a final report containing a summary of the investigation, written findings, and a proposed disposition. This transmission will be expected within 60 calendar days of the filing of the formal complaint. The deadline may be extended by the Compliance Officer for good cause (including for reasons relating to breaks in the academic calendar), and will nearly always be extended during summers and the winter closure. The final report may also be provided, where appropriate, to any University officer whose authority will be needed to carry out the proposed disposition or to determine whether any personnel action is appropriate.
8. Final Disposition: the disposition proposed by the Compliance Officer will be put into effect promptly. The grievant or any party against whom the grievance or the proposed disposition is directed may appeal. The appeal to the Provost (as set forth below) will not suspend the implementation of the disposition proposed by the grievance officer, except in those circumstances where the Provost decides that good cause exists making the suspension of implementation appropriate.

VI. Urgent Matters

Whenever the application of any of the time deadlines or procedures set forth in this grievance procedure creates a problem due to the nature of the complaint, the urgency of the matter, or the proximity of the upcoming event, the Compliance Officer will, at the request of the grievant, determine whether an appropriate expedited procedure can be fashioned.

VII. Remedies

Possible remedies under this grievance procedure include corrective steps, actions to reverse the effects of discrimination or to end harassment, and measures to provide a reasonable accommodation or proper ongoing treatment. As stated above, a copy of the Compliance Officer's report may, where appropriate, be sent to University officer(s) to determine whether any personnel action should be pursued.

VIII. Appeal

Within ten calendar days of the issuance of the final report, the grievant or the party against whom the grievance is directed may appeal to the Provost the grievance officer's determination.

An appeal is taken by filing a written request for review with the Compliance Officer at the Diversity and Access Office, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (http://relative.pagelegend.com/mailto:equal.opportunity@stanford.edu) (email).

The written request for review must specify the particular substantive and/or procedural basis for the appeal, and must be made on grounds other than general dissatisfaction with the proposed disposition. Furthermore, the appeal must be directed only to issues raised in the formal complaint as filed or to procedural errors in the conduct of the grievance procedure itself, and not to new issues.

The Compliance Officer will forward the appeal to the Provost, and also provide copies to the other party or parties. If the grievance involves a decision that is being challenged, the review by the Provost or his or her designee usually will be limited to the following considerations:

1. Were the proper facts and criteria brought to bear on the decision? Were improper or extraneous facts or criteria brought to bear that substantially affected the decision to the detriment of the grievant?
2. Were there any procedural irregularities that substantially affected the outcome of the matter to the detriment of the grievant?
3. Given the proper facts, criteria, and procedures, was the decision a reasonable one?

A copy of the Provost's written decision will be expected within 30 calendar days of the filing of the appeal and will be sent to the parties, the Compliance Officer and, if appropriate, to the University officer whose authority will be needed to carry out the disposition. The deadline may be extended by the Provost for good cause (including for reasons relating to breaks in the academic calendar), and will nearly always be extended during summers and the winter closure. The decision of the Provost on the appeal is final.

Policy on Campus Disruptions

The Policy on Campus Disruptions was promulgated in 1967, and states that:

Policy

Because the rights of free speech and peaceable assembly are fundamental to the democratic process, Stanford firmly supports the rights of all members of the University community to express their views or to protest against actions and opinions with which they disagree.

All members of the University also share a concurrent obligation to maintain on the campus an atmosphere conducive to scholarly pursuits, to preserve the dignity and seriousness of University ceremonies and public exercises, and to respect the rights of all individuals.

The following regulations are intended to reconcile these objectives.

It is a violation of University policy for a member of the faculty, staff, or student body to:

1. Prevent or disrupt the effective carrying out of a University function or approved activity, such as lectures, meetings, interviews, ceremonies, the conduct of University business in a University office, and public events.
2. Obstruct the legitimate movement of any person about the campus or in any University building or facility.

Members of the faculty, staff, and student body have an obligation to leave a University building or facility when asked to do so in the furtherance of the above regulations by a member of the University community acting in an official role and identifying himself or herself as such; members of the faculty, staff, and student body also have an obligation to identify themselves when requested to do so by such a member of the University community who has reasonable grounds to believe that the person(s) has violated section (1) or (2) of this policy and who has so informed the person(s).

The policy has been applied to the following actions: refusal to leave a building which has been declared closed; obstructing the passage into or out of buildings by sitting in front of doorways; preventing University employees from entering their workplace; preventing members of a class from hearing a lecture or taking an examination, or preventing the instructor from giving a lecture, by means of shouts, interruptions, or chants; refusing to leave a closed meeting when unauthorized to attend; and intruding upon or refusing to leave a private interview.

It should be understood that while the above are examples of extraordinarily disruptive behavior, the application of the Policy also takes situational factors into consideration. Thus, for example, conduct appropriate at a political rally might constitute a violation of the Policy on Campus Disruptions if it occurred within a classroom.

There is no "ordinary" penalty which attaches to violations of the Policy on Campus Disruptions. In the past, infractions have led to penalties ranging from censure to expulsion. In each case, the gravity of the offense and prior conduct of the student are considered; however, the more serious the offense, the less it matters that a student has otherwise not done wrong.

Campus Safety and Criminal Statistics

Stanford University complies with the Jeanne Clery Disclosure of Campus Security Policy and Crime Statistics Act. A copy of Stanford's policies and statistics under this act are posted on the Department of Public Safety (https://police.stanford.edu/security-report.html) web site. A paper copy can be obtained by calling the Stanford Department of Public Safety at (650) 723-9633.

Computer and Network Usage

For a complete text of the currently applicable version of this policy, see Administrative Guide Memo 6.2.1 Computer and Network Usage Policy (https://adminguide.stanford.edu/chapter-6/subchapter-2/policy-6-2-1/).

Policy

The following is quoted from the policy:

Users of Stanford network and computer resources have a responsibility not to abuse the network and resources. This policy provides guidelines for the appropriate and inappropriate use of information technologies.

Summary

The following summarizes the policy on Computer and Network Usage:

In particular, the policy provides that users of University information resources must respect software copyrights and licenses, respect the integrity of computer-based information resources, refrain from seeking to gain or permitting others to gain unauthorized access, including by sharing passwords, and respect the rights of other computer users.

This policy covers appropriate use of computers, networks, and information contained therein. As to political, personal and commercial use, the University is a non-profit, tax-exempt organization and, as such, is subject to specific federal, state, and local laws regarding sources of income, political activities, use of property, and similar matters. It also is a contractor with government and other entities, and thus must assure proper use of property under its control and allocation of overhead and similar costs. For these reasons, University information resources must not be used for partisan political activities where prohibited by federal, state, or other applicable laws, and may be used for other political activities only when in compliance with federal, state, and other laws, and in compliance with applicable University policies. Similarly, University information resources should not be used for personal activities not related to appropriate University functions, except in a purely incidental manner. In addition, University information resources should not be used for commercial purposes, except in a purely incidental manner or except as permitted under other written policies of the University or with the written approval of a University officer having the authority to give such approval. Any such commercial use should be properly related to University activities, take into account proper cost allocations for government and other overhead determinations, and provide for appropriate reimbursement to the University for taxes and other costs the University may incur by reason of the commercial use. Users also are reminded that the .edu domain on the Internet has rules restricting or prohibiting commercial use, and thus activities not appropriately within the .edu domain and which otherwise are permissible within the University computing resources should use one or more other domains, as appropriate.

The University's Information Security Officer is authorized in appropriate circumstances to inspect or monitor private data (including email), such as when there is a reasonable cause to suspect improper use of computer or network resources.

For further information on the topic of peer-to-peer file sharing, see the section above on Copyright.

Copyright

Copyright laws protect original works of authorship and give the owners of copyrights the exclusive right to do and to authorize others to do certain things in regard to a copyrighted work, including: make copies, distribute the work, display or perform the work publicly, and create derivative works. Copyright laws apply to nearly all forms of captured content, including traditional works like books, photographs, music, drama and sculpture. The laws also adapt to changes in technologies, and include in their scope modern forms of works like motion pictures,

web sites, electronic media, software, multimedia works and some databases. Registration is not required to obtain a copyright, so if in doubt, assume a copyright applies.

Unless an exception to the copyright owner's exclusive rights applies, you must obtain permission from the copyright owner to copy, distribute, display or perform a copyrighted work in any medium for any purpose. Be especially mindful of copyright principles when using the Internet. Just because a work is posted on the Internet does not mean that the owner of the copyright has given you permission to use it. In general, do not post material onto the Internet without copyright clearance.

Stanford University Libraries have licenses with many publishers, which permit copying of materials in accordance with the educational, research or administrative functions of the University. In addition, there are four major exceptions to the copyright owner's exclusive rights, which (if applicable) permit limited use without permission. These are: the fair use exception, the library exception, the face-to-face teaching exception, and the distance-learning exception. For a more detailed explanation of these exceptions, the copyright laws and Stanford's copyright policies, please review the University's Copyright Reminder (http://www-sul.stanford.edu/libraries_collections/copyright_reminders/) web site. It is each person's responsibility to be aware of and abide by copyright law; violation may result in civil or criminal liability, and constitutes grounds for University discipline, up to and including discharge, dismissal and expulsion.

Prohibition of the Possession of Dangerous Weapons on Campus

The University's policy prohibiting weapons on campus (https://police.stanford.edu/pdf/stanford_university_prohibited_weapons_policy.pdf) (pdf) is available on the Resources tab of the Department of Public Safety (https://police.stanford.edu/#resources) web site.

Policy

Stanford University prohibits the possession of any of the following weapons on the Stanford campus: firearm, dirk, dagger, ice pick, knife having a blade longer than 2 1/2 inches (except for lawful use in food preparation or consumption), folding knife with a blade that locks into place, razor with an unguarded blade, taser, stun gun, instrument that expels a metallic projectile (such as a BB or a pellet), spot marker gun, or any other weapons prohibited by California Penal Code Sections 626.10 and 626.9.

For purposes of this policy, the term “Stanford campus” shall include all the lands, buildings, and facilities of Leland Stanford Junior University, whether owned, leased, and controlled, and whether located in the United States or abroad (excluding the privately owned, managed, or leased residences of faculty or staff that are located on the main Stanford campus in unincorporated Santa Clara County). In addition to the prohibited weapons, ammunition is not allowed to be stored or possessed in university owned, leased, and controlled buildings (excluding the privately owned, managed, or leased residences of faculty or staff that are located on the main Stanford campus in unincorporated Santa Clara County). In the event a federal or state law or a county ordinance is more restrictive than this policy, federal or state law or the county ordinance shall apply.

Requests for an exemption from this policy for academic purposes may be requested in writing to the Director of the Stanford University Department of Public Safety. Each request will be considered on a case-by-case basis and be evaluated by the Office of Risk Management and the Department of Public Safety. A written letter will be provided by the Director of the Department of Public Safety in the event an exemption is granted.

The Stanford University Department of Public Safety does not provide facilities for the storage of firearms.

Grievances

A Stanford undergraduate or graduate student who believes that he or she has been subject to an improper decision on an academic matter may file a grievance pursuant to the Student Academic Grievance Procedure (p. 96). For other types of grievances, students should review the section that follows on the Student Non-Academic Grievance Procedure (p.), and consult concerning applicable procedures with the Director of the Diversity and Access Office, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (http://relative.pagelegend.com/mailto:equal.opportunity@stanford.edu) (email).

An individual whose matter has been substantially addressed through one of Stanford’s grievance procedures (including but not limited to the Student Academic Grievance Procedure, the Student ADA/Section 504 Grievance Procedure, the Grievance Resolution Procedure for Postdoctoral Scholars, the Student-Athlete Grievance Procedure, or the Student Non-Academic Grievance Procedure) may not raise and seek redress of the same matter under a different Stanford grievance procedure. The University retains discretion to determine when a matter has been substantially addressed.

California Dept of Consumer Affairs Complaint Procedure

An individual may contact the Bureau for Private Postsecondary Education for review of a complaint. The bureau may be contacted online (http://www.bppe.ca.gov) or at 2535 Capitol Oaks Drive, Suite 400, Sacramento, CA 95833; phone: (916) 431-6959; fax: (916) 263-1897.

Hazing Policy

Hazing is not permitted at Stanford University. No individual, recognized student organization, club, team, or any other Stanford-affiliated student group is permitted to plan, engage in, or condone hazing, on or off the Stanford campus.

Definition of Hazing at Stanford University

Hazing includes any activity done in connection with a student organization, regardless of whether the organization is officially recognized at Stanford, that causes or is reasonably likely to cause another student to suffer bodily danger, physical harm, or significant personal degradation or humiliation, even if no bodily danger, physical harm, or significant degradation or humiliation in fact results. Hazing might occur during initiation or pre-initiation into a student organization, but is not limited to these time frames. Any individual who plans or intentionally assists in hazing activity has engaged in hazing, regardless of whether that individual is present when the hazing activity occurs.

Consequences of a Violation

Stanford University expects its students to conduct themselves in socially responsible and respectful ways. Thus, participation in hazing, either as an individual or as part of any student group, may result in serious individual and organizational consequences including, but not limited to: disciplinary action up to and including expulsion; permanent loss of organizational recognition; and loss of eligibility to remain a member of any club, team, or other Stanford-affiliated student group. Consent, implied or expressed, is not a defense to any complaint or charge alleging a hazing violation.

A number of University offices may take institutional action, including: the Organizational Conduct Board; Office of Community Standards; or other University offices, such as the Vice Provost for Student Affairs or the Department of Athletics.

Applications

Stanford's hazing policy is distinct from and broader than California Penal Code section 245.6, which prohibits: "any method of initiation or pre-initiation into a student organization or student body, whether or not the organization or body is officially recognized by an educational institution, which is likely to cause serious bodily injury to any former, current, or prospective student of any school, community college, college, university or other educational institution in this state." A violation of Penal Code Section 245.6 that does not result in serious bodily injury is punishable as a misdemeanor, while a violation that results in death or injury is punishable as a felony or a misdemeanor.

Nothing in this hazing policy prevents Stanford from taking institutional action against hazing activity that falls outside the narrower definition of Penal Code section 245.6.

Stanford's hazing policy is not intended to prohibit student recruitment or new or continuing member activities that are positive and educational in nature, designed to instill a group ethos or unity. Its intent is to deter those behaviors that cause or are likely to cause danger, harm or humiliation to another student.

Stanford's hazing policy is not intended to apply to customary athletic events or other similar institutionally-approved contests or competitions.

Questions regarding hazing policies related to fraternities and sororities should be directed to the Office of Fraternity and Sorority Life at (650) 723-0778. For all other student groups, contact Student Activities and Leadership at(650) 723-2445.

Involuntary Leave of Absence and Return Policy

In effect as of January 4, 2020

Stanford University is committed to the safety, health and well-being of the campus community. The University recognizes that students may experience situations that significantly limit their ability to function successfully or safely in their role as students. In such circumstances, students should consider requesting a leave of absence. A leave of absence permits students to take a break from the University and their studies, so that they may address the issues that led to the need for the leave and later return to the University with an enhanced opportunity to achieve their educational goals. Students will be given the option to take a voluntary leave of absence before a decision is made with respect to an involuntary leave.

1. ## Involuntary Leave of Absence

   Requiring a student to take a leave of absence is rare and, subject to Section III, only happens when current medical knowledge and/or the best available objective evidence indicates to the Senior Associate Vice Provost and Dean of Students or their designee (hereinafter, Dean of Students) that there is a significant risk to the student's health or safety or the health or safety of others, or the student's behavior severely disrupts the University environment, and no reasonable accommodations can adequately reduce that risk or disruption.

   Consistent with Stanford's Nondiscrimination Policy (p. 123), Stanford prohibits unlawful discrimination on the basis of any type of disability or any other characteristic protected by applicable law in the administration of the University's programs and activities. Stanford offers a range of resources, support services and accommodations to address the physical and mental health needs of students. However, on rare occasion, a student's needs may require a level of care that exceeds the care the University can appropriately provide. Where current knowledge about the individual's medical condition and/or the best available objective evidence indicates that a student poses a significant risk to the health or safety of a member of the University community, where a student is unable or unwilling to carry out substantial self-care obligations and poses a significant risk to their own safety not based on mere speculation, stereotypes, or generalizations, or where a student's behavior severely disrupts the University environment and the student does not want to take a voluntary leave, the Dean of Students has the authority to place a student on an involuntary leave of absence. Before placing any student on an involuntary leave of absence, Stanford will conduct an individualized assessment, consulting with the Office of Accessible Education (OAE) to determine if there are reasonable accommodations that would permit the student to continue to participate in the University community without taking a leave of absence.

   The Dean of Students may be notified about a student who may meet the criteria of an involuntary leave of absence from a variety of sources including, but not limited to, the student, the student's academic advisor, Residential Education staff, Graduate Life Office staff, an academic department, or a member of the University's threat assessment team. If the Dean of Students deems it appropriate, these procedures will be initiated.

   a. **Procedures for Placing a Student on an Involuntary Leave of Absence**

      i. The Dean of Students will consult with the Office of Accessible Education (OAE) prior to making a decision to impose an involuntary leave of absence.

      ii. The Dean of Students will issue a notice to the student in writing that an involuntary leave of absence is under consideration. The written notice will include the reason(s) why the student is being considered for an involuntary leave, contact information for OAE, which can provide information about accommodations, and a copy of this policy. In addition, the notice will provide contact information for the Process Resource, an administrator outside of the decision-making process with knowledge of Stanford's involuntary leave of absence process who will serve as a neutral process resource to answer any student questions about the process from referral through return to Stanford. In the written notice, the student will be encouraged to respond before a decision regarding a leave of absence is made and will be given a specified time period within which to do so.

      iii. The Dean of Students will consider potential accommodations and/or modifications that could obviate the need for an involuntary leave of absence, such as the option to take a voluntary leave of absence, academic accommodations, housing and dining accommodations, and modifications to University policies, rules, and regulations. Examples of academic, administrative, and housing accommodations that may be facilitated through the Office of Accessible Education (OAE) can be found on the OAE (https://oae.stanford.edu/) website.

      iv. The student may be asked to execute an Exchange of Confidential Information Consent Form providing Stanford personnel temporary authority to get information from the student's healthcare provider(s) regarding issues relevant and appropriate to the consideration of an involuntary leave of absence when there is a need for the University to have access to that information as part of the interactive process and individualized assessment. If a student refuses to execute an Exchange of Confidential Information Consent Form or to respond within the timeframe set by the Dean of Students, the Dean may proceed with the assessment based on information in the Dean's possession at the time.

v. The Dean of Students will also confer, as feasible and when appropriate in a particular matter, with individuals regarding the need for an involuntary leave of absence. Although each case will vary, conferring individuals could include:

1. Residence Deans, or Graduate Life Office Deans;
2. Faculty members;
3. Academic advisors;
4. With appropriate authorization, representatives from Stanford's Vaden Health Center (Vaden);
5. With appropriate authorization, the student's treatment provider(s) or other health care professionals;
6. Member(s) of the University's threat assessment team; and/or
7. Such other individuals as may be appropriate in an individual matter.

In each case, the Dean of Students will confer with a representative from the Office of Accessible Education (OAE) with expertise in mental health disabilities.

vi. Particular attention will be paid to the criteria for imposing an involuntary leave of absence, specifically:

1. whether current knowledge about the individual's medical condition and/or the best available objective evidence indicates that a student poses a significant risk to the health or safety of a member of the University community;
2. whether a student is unable or unwilling to carry out substantial self-care obligations and poses a significant risk to their own safety not based on mere speculation, stereotypes, or generalizations; and/or
3. whether a student's behavior severely disrupts the University environment.

The individualized assessment as to each factor, based on reasonable judgment that relies on current medical knowledge or on the best available objective evidence, should ascertain: the nature, duration, and severity of the risk or disruption; the probability that the risk or disruption will actually occur; and whether reasonable modifications of policies, practices, or procedures will adequately mitigate the risk or disruption so as to eliminate the need for an involuntary leave of absence.

vii. The Dean of Students will give significant weight to the opinion of the student's treatment provider(s), including those identified by the student, regarding the student's ability to function academically and safely at the University with or without reasonable accommodations. If the Dean of Students determines that the information provided by the treatment provider(s) is incomplete, requires further explanation or clarification, or is inconsistent with other information in the student's record, the Dean of Students, with proper authorization, will contact the treatment provider(s) to obtain additional information. In certain circumstances, the University may require the student to undergo an additional evaluation by an independent and objective professional designated by Stanford, if the Dean of Students believes it will facilitate a more informed decision.

viii. Following these consultations and based on a review of the relevant documentation and information available, the Dean of Students will make a decision as to whether the student should be placed on an involuntary leave of absence, and will provide written notice of this decision to the student. The written notice of decision will include information about the student's right to appeal and to reasonable accommodations during the appeal process. The review and notice of decision under this policy should be done in a reasonably timely manner. Where students have been asked to remain away from the University while the review is underway, every effort will be made by the Dean of Students to reach a decision within one week, provided the student responds in a timely manner to requests for information and, if appropriate, evaluation.

1. If an involuntary leave of absence is imposed. The written notice of decision to the student will set forth the basis for the decision and a time-frame for when the student must leave the University and when they may be eligible to return to the University and the conditions and/or requirements the student will need to satisfy to be eligible for return. The written notice will also inform the student of their right to reasonable accommodations in the return process and will provide contact information for OAE and the Process Resource. The length of the leave will be determined on an individual basis.
2. If an involuntary leave of absence is not imposed. The Dean of Students may impose conditions and/or requirements under which the student is allowed to remain at the University.

ix. Within one week of receiving the decision of the Dean of Students, the student may submit an appeal of the decision in writing to the Vice Provost for Student Affairs or the Vice Provost's designee, who may not be the Dean of Students. The written request for appeal must specify the particular substantive and/or procedural basis for the appeal, and must be made on grounds other than general dissatisfaction with the decision of the Dean of Students. The review by the Vice Provost for Student Affairs or the Vice Provost's designee will be limited to the following considerations:

1. Were the proper facts and criteria brought to bear on the decision?
2. Is there any new information not previously available to the student that may change the outcome of the decision-making process?
3. Were there any procedural irregularities that materially affected the outcome of the matter to the detriment of the appellant?
4. Given the proper facts, criteria, and procedures, was the decision a reasonable one?

After reviewing the matter fully, the Vice Provost for Student Affairs or the Vice Provost's designee will issue a written decision affirming, modifying, or reversing the decision to place the student on an involuntary leave of absence. The Vice Provost's decision shall be final, and no other appeals or grievance procedures are available.

b. **Implications of an Involuntary Leave of Absence**

i. Student status. Students on a leave of absence generally retain their admitted student status; however, they are not

registered and therefore do not have the rights and privileges of registered students.

ii. Housing. Consistent with Stanford's policies and procedures, students assigned to a University residence are subject to the terms of the University Residence Agreement. However, as set forth on the Registrar's Office Leave of Absence website, students with medical disabilities (including mental health disabilities) that require University medical services may petition to remain in campus housing for one term while on leave. Students who leave the University before the end of a term may be eligible to receive refunds of portions of their housing charges. Eligibility criteria for refunds are set forth in the Residence Agreement which is found on the Residence Agreement website (https://rde.stanford.edu/studenthousing/apply/residence-agreement/). (https://rde.stanford.edu/studenthousing/apply/residence-agreement/)

iii. Effective date(s) of leave. A student must leave the University within the timeframe set forth by the Dean of Students. The leave will remain in effect until (1) it is determined after an individualized assessment that the student is able to return to the University with or without reasonable accommodations and (2) the student has complied with any University requirements applicable to all students returning from a leave and all of the conditions mandated by the Dean of Students and/or the Vice Provost.

iv. Notification. At any time during the leave process, the Dean of Students may notify a

student's parent, guardian, emergency contact, or other individual, consistent with the law, if notification is deemed appropriate.

v. Association with the University while on leave. Unless expressly permitted by the Dean of Students in writing, students on an involuntary leave of absence are not permitted to be present at the University and are not permitted to engage in any University-related activities, including on-campus employment.

vi. Coursework taken while on leave. Consistent with Stanford's policies and procedures, academic credit for work done elsewhere may be allowed towards a Stanford degree. Students should refer to the "Transfer Work (p. 82)" section of the Stanford Bulletin and consult with the Registrar's Office and their department prior to taking any coursework while on an involuntary leave of absence.

vii. SUnet ID privileges. Unless expressly prohibited by the Dean of Students in writing, students on leave generally may retain their SUnet ID privileges, including their Stanford email account.

viii. Transcript notation. Students on a leave of absence will have a notation on their transcript that reads "Leave of Absence."

ix. Tuition and fees. Consistent with Stanford's policies and procedures, students who leave the University before the end of a term may be eligible to receive refunds of portions of their tuition. See the (https://registrar.stanford.edu/students/tuition-and-fees/tuition-refund-schedule/) Registrar's Tuition Refunds (https://registrar.stanford.edu/students/tuition-and-fees/tuition-refund-schedule/) page for a schedule of refunds.

x. Meal Plan. Consistent with Stanford's policies and procedures, a meal plan refund is based on the date when a student moves out of University residence and is approved under conditions as specified in the Residence Agreement. Students with questions about residential meal plan refunds should contact the central office of Stanford Dining.

xi. Visa Status. International students (F-1 and J-1 Visa holders) placed on an involuntary leave of absence must speak with a Bechtel International Center advisor regarding their visa status.

2. **Request for Return**

a. For general requirements applicable to all students returning to Stanford after a leave of absence, undergraduate students should refer to the Returning to Stanford (https://undergrad.stanford.edu/planning/academic-policies/returning-students/) website. Graduate students should consult with their academic department and a Graduate Life Office Dean. In addition to the general requirements all students must meet when returning to Stanford after a leave of absence, as well as any conditions mandated by the Dean of Students and/or the Vice Provost for return from an involuntary leave of absence as outlined below in section II.C, students seeking to return from an involuntary leave of absence for reasons of personal or community health and safety may be required to submit additional documentation related to the factors set forth in section I.A.6 as part of an individualized assessment. OAE will work with the students to provide reasonable accommodations in the return process as necessary.

b. A student must make a written request to the Dean of Students to return to the University. Generally, a student will not be allowed to return until one full quarter has elapsed or until the leave period in the involuntary leave of absence notification has elapsed, and all conditions and/or requirements are met.

c. The Dean of Students may require the student to provide evidence that the student, with or without reasonable accommodations, has sufficiently addressed the issues that previously established the criteria for imposing an involuntary leave of absence as set forth in section I.A.6, above. The Dean of Students may also ask, confer with, or seek information from others to assist in making the determination. The information sought may include:

i. At the student's discretion, documentation of efforts by the student to address the issues that led to the leave

ii. With appropriate authorization, release of academic records to inform treating clinicians

iii. With appropriate authorization, release of treatment information to the extent necessary to determine if the student has sufficiently reduced the risk or disruption that led to the need for the involuntary leave

iv. With appropriate authorization, consultation with Vaden to the extent necessary to determine if the student has sufficiently reduced the risk or disruption that led to the need for the involuntary leave

v. Consultation with OAE

d. All returning students must meet the essential eligibility requirements and any technical standards of the University and, if applicable, the relevant school or department, with or without reasonable accommodations. If the Dean of Students is not satisfied that the student is ready to return to the University, the student will be notified in writing of the decision, including the

reason for the decision, within a reasonable time after the student has submitted a request for return and required documentation.

e. A student not permitted to return may appeal the decision to the Vice Provost for Student Affairs following the procedure in section I.A.9.

3. Scope of the Policy and Relationship to Other University Policies

A leave of absence is an administrative process; it is not a disciplinary process. This policy and these procedures are not intended to be punitive and do not take the place of disciplinary actions that are in response to violations of Stanford's Fundamental Standard or other policies or directives, nor do they preclude the removal or dismissal of students from the University or University-related programs as a result of violations of other University policies or school or departmental protocols. This policy does not limit the University's ability to place enrollment holds on students for reasons beyond the scope of this policy and nothing in this policy relieves a student of any financial obligations to the University that were in place at the time the involuntary leave of absence was imposed.

Nothing in this policy limits the power of the University to take administrative action to ensure the safety of the Stanford community. In exceptional circumstances, where the health or well-being of any person may be seriously affected, or where physical safety is seriously threatened, or where the ability of the University to carry out its essential operations is seriously threatened or impaired, the President or the President's designee, may summarily suspend, dismiss, or bar any person from the University or University-related programs. In all such cases, actions taken will be reviewed promptly, typically within one week, by the appropriate University authority.

In situations involving an imminent or ongoing threat of harm to the student or any other member of the University community, the Dean of Students, in the exercise of his or her reasonable judgment, may require a student to be immediately prohibited from entering Stanford's campus or facilities utilized for University programs or activities while the individualized assessment and review described in section I.A. are taking place. Such students will receive the written notice described in section I.A.2 as quickly as possible.

4. Requests for Reasonable Accommodation

Stanford is committed to providing equal access to all participants in University processes, including students with disabilities. Students with disabilities should contact the Office of Accessible Education (OAE) to request accommodations. Information about the support services OAE provides, types of accommodations offered, and appropriate documentation for accommodations, can be found on the OAE website: https://oae.stanford.edu/.

5. Related Resources

As noted herein, students placed on an involuntary leave of absence may have additional conditions and/or requirements they must meet prior to returning to the University, in addition to any University requirements applicable to all students returning from a leave.

- Undergraduate Students should consult the Returning to Stanford (https://undergrad.stanford.edu/planning/academic-policies/returning-students/) web page for generally applicable deadlines, information and resources.
- Graduate Students should consult with a Graduate Life Office (https://glo.stanford.edu/) Dean and their department for generally applicable deadlines, information and resources.

Students who are placed on an involuntary leave of absence may want to consult with the following offices, where appropriate:

- Office of Accessible Education (https://oae.stanford.edu/) (OAE) (https://oae.stanford.edu/)
- Financial (http://web.stanford.edu/dept/finaid/) Aid (http://web.stanford.edu/dept/finaid/)
- Student Financial (http://web.stanford.edu/group/fms/fingate/students/) Services (http://web.stanford.edu/group/fms/fingate/students/)
- University Housing (http://web.stanford.edu/dept/rde/cgi-bin/drupal/housing/)
- Vaden Health Center (http://vaden.stanford.edu/) (Vaden)
- Academic Advising (https://undergrad.stanford.edu/academic-advising-stanford/)
- Graduate Life (https://glo.stanford.edu/) Office (https://glo.stanford.edu/)
- Bechtel International (https://bechtel.stanford.edu/immigration/visa-types/f-1j-1-student-visas/leave-absence/) Center (https://bechtel.stanford.edu/immigration/visa-types/f-1j-1-student-visas/leave-absence/)

The Process Resource will be available to assist all students who are placed on an involuntary leave of absence with their questions about the process to return and resume their studies and life at Stanford.

Use of the Main Quadrangle and Memorial Court

Policy

The following is quoted from the policy:

The Main Quadrangle and Memorial Court are part of Stanford University's academic preserve due to their locations at the heart of the campus. To protect and enhance their historic status, University policy limits activities primarily to established or traditional ceremonies and events.

To schedule an event, approval must be obtained in advance from the Office of Stanford Events (see below). Unscheduled events, protests, or activities are prohibited.

Requests for waivers to this policy must be submitted in advance and in writing to the Office of Stanford Events. Exceptions may be granted only in extraordinary cases.

Resources

The following is a summary of resources available:

For instructions on use of the Main Quadrangle/Memorial Court, contact the Office of Special Events and Protocol (OSEP) at (650) 724-1387, or at the OSEP (https://osep.stanford.edu/) web site.

Note: White Plaza is made available to Stanford students, faculty, and staff for events other than scheduled "established or traditional ceremonies and events" including those that may involve amplified sound. For further information on the use of such other venues, students should contact Student Activities and Leadership (SAL) at (650) 723-2733, or at the SAL (http://studentaffairs.stanford.edu/sal/) web site. Faculty and staff should contact the Office of Special Events and Protocol (OSEP) (https://osep.stanford.edu/).

Use of the Oval Policy

The Oval is considered to be the initial and official visual entrance to the Stanford University campus. Given this historic and aesthetic status, it is in the best interests of the University community and visiting members

of the public to maintain its open and pristine space, to help preserve its natural beauty and environmental integrity. The Oval also presents the formal academic image of the University, leading directly to departments, classrooms and other academic space, and faculty and graduate student offices, and thus is subject to the University's Noise Policy.

The University prohibits formal or informal events of any kind to take place in the Oval. Gatherings of Stanford students, faculty, and staff such as demonstrations, rallies, or dances may take place in White Plaza, which can be reserved through the Office of Student Activities. Weddings also are not allowed in the Oval but are in certain circumstances allowed in Memorial Church (refer to Memorial Church wedding ceremony guidelines (http://www.stanford.edu/group/religiouslife/servicesWeddings.html)).

The Oval is considered a pedestrian zone and appropriate use of its space includes walking, running, reading, relaxing, and other limited recreational use of the lawn area (such as quiet, very small picnics and Frisbee), unless or until such use damages or otherwise harms the property.

Cooking food or use of any grill/barbecue or open flame is strictly prohibited. Fireworks or the use of other incendiary devices represent a safety hazard to the area and are therefore prohibited. Amplified sound from items such as boom boxes, musical instruments, or the use of bullhorns or amplified speakers is also prohibited. Only authorized Stanford service vehicles are permitted inside the Oval areas.

As the official entrance to the University, the Oval offers public access to general parking spaces in the marked areas surrounding the outer perimeter of the Oval; drivers are expected to obey all traffic signs and limitations. Buses are subject to additional restrictions.

For further information regarding this policy, contact the Executive Director of Special Events and Protocol, (650) 724-1387 or see the Office of Special Events & Protocol (http://osep.stanford.edu/policies/oval.html) web site.

Use of White Memorial Plaza

White Plaza is a Stanford University space available for programs, speeches, rallies, information tables, banners and posters. It is considered a “free speech area” on campus. Students should follow the policy outlined on the Student Activities and Leadership (https://sal.stanford.edu/plan-event/venues/outdoor-spaces/white-memorial-plaza/) web site to engage in student programmatic activity. Due to Stanford's non-profit status, for-profit commercial activity or corporate promotion of any kind is strictly regulated.

White Plaza is in the center of campus, so event planners should take particular care to avoid disruptive impact on classes, business, or events in the surrounding buildings. Events in White Plaza must be organized by University entities (student groups, departments, and programs) and require prior approval from Student Activities and Leadership (SAL) (https://sal.stanford.edu/).

No Camping

Camping (that is, staying outside overnight on University property) is not permitted without University permission. Permission is granted through the Office of the Provost or the Provost’s designee.

Noise and Amplified Sound

Policy

The following is quoted from the policy:

Stanford is not only an academic institution but a residential community as well. It is the responsibility of all faculty, students, and staff to moderate noise especially during an event or activity held on campus. Supporting the mission of the University and respecting those who are studying, researching, or otherwise carrying out academic-related activities is a Stanford priority. The campus must require a conducive atmosphere to ensure these endeavors are accomplished and supported. Disturbing noise in or around a residence or other campus buildings which infringe on the rights of other residents or members of the University community is considered a violation of this policy. As part of the event planning process, the event sponsor must obtain all appropriate approvals regarding the use of amplified sound during an event or activity.

In addition to University policy on noise and amplified sound, the County of Santa Clara also has a county ordinance on sound and all members of the Stanford community and visitors to campus are subject to and must comply with this order. For more information, see the Santa Clara Ordinance Code, Control of Noise and Vibration (https://www.municode.com/library/ca/santa_clara_county/codes/code_of_ordinances/?nodeId=TITBRE_DIVB11ENHE_CHVIIICONOVI) web site.

Resources

Information regarding whether and how the use of amplified sound is permitted is available from the following sources, which must be consulted for prior approval:

1. The Office of Student Activities: phone: 723-2733, or see http://studentaffairs.stanford.edu/sal/policies/noise (http://studentaffairs.stanford.edu/sal/policies/noise/)
2. Registrar's Scheduling Office: email reg-events@stanford.edu, or see http://studentaffairs.stanford.edu/registrar/faculty/events (http://studentaffairs.stanford.edu/registrar/faculty/events/).
3. Office of Special Events and Protocol (OSEP) at (650) 724-1387, or see http://stanfordevents.stanford.edu (http://stanfordevents.stanford.edu/).

Stanford University Online Accessibility Policy

Policy

Stanford University will make Stanford Websites and web-based applications accessible to its students, faculty, staff and participants in the University’s programs and activities who have disabilities. All personnel who are involved in the procurement, preparation and maintenance of University Websites and web-based applications should adopt this goal, with the assistance of campus resources dedicated to supporting web accessibility. Stanford Websites and web-based applications must either conform to WCAG 2.0 Level AA (http://www.w3.org/TR/WCAG20/) or their content and functionality be made available to Users on request (such as by a student request to the Office of Accessible Education) in an equally effective and accessible alternative manner.

Applicability

Stanford's online accessibility policy applies to all Stanford academic and administrative units that create and maintain web sites and web-based applications used in the programs and activities of the University. See the Stanford University Online Accessibility Policy (http://ucomm.stanford.edu/policies/accessibility-policy/) web site for the full policy.

Definitions

Stanford Website

Any website or web-based application within the Stanford University (stanford.edu) domain used in the programs or activities of the University.

Users
Stanford Website users are defined as current Stanford students and applicants for admission, Stanford staff and faculty, and participants in the University's programs and activities.

Accessible
Refers to the concept that people with disabilities are able to independently and timely access and use a product or system, including with the benefit of assistive technologies. Assistive technologies include adaptive hardware and/or software and other devices that are used to increase, maintain, or improve the functional capabilities of individuals with disabilities.

Stanford Online Accessibility Program ("SOAP") Office
The SOAP Office (http://soap.stanford.edu) provides resources and services for Stanford web designers, developers and content creators to assist them in producing accessible materials. Services include Website accessibility testing and guidance regarding universal design and web standards compliance. The SOAP Office is also the campus resource designated to facilitate online accessibility for Users. To report and seek assistance on web accessibility issues, Users may contact the SOAP Office by email at web-accessibility@stanford.edu or submit a HelpSU ticket through the SOAP Office website.

Office of Accessible Education ("OAE")
The Office of Accessible Education (http://oae.stanford.edu) is the campus office designated to work with Stanford students with disabilities. OAE provides support services, accommodations, and programs to remove barriers to full participation of students with disabilities in the programs or activities of the University.

Diversity and Access Office ("D&A")
The Diversity and Access Office (http://diversityandaccess.stanford.edu) oversees compliance with state and federal anti-discrimination laws including the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. D&A provides disability-related access information, and assists faculty, staff and other non-student participants in University programs and activities with disabilities who may need accommodations and/or auxiliary aids to obtain equal access to Stanford facilities, programs and activities. D&A also oversees the ADA/Section 504 Grievance Procedure for students who believe they have been subjected to unlawful discrimination based on a disability or denied access to services or accommodations which the ADA and/or Section 504 require Stanford to provide. Read more about the ADA/Section 504 Grievance Procedure (http://exploredegrees.stanford.edu/nonacademicregulations/nonacademicregulations/ada/).

Accessibility Standard
Stanford University has adopted the Worldwide Web Consortium Web Content Accessibility Guidelines (http://www.w3.org/TR/WCAG20/) version 2.0, Level AA Conformance (WCAG 2.0 Level AA) as its goal for accessible Stanford Websites. The guidelines and success criteria of WCAG 2.0 Level AA are organized around the following four principles which lay the foundation for users with disabilities to access and use web content. For a Stanford Website to be accessible under these principles, its content must be:

1. Perceivable – Information and user interface components must be presentable to users in ways they can perceive.
2. Operable – User interface components and navigation must be operable.
3. Understandable – Information and the operation of user interface must be understandable.
4. Robust – Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.

Implementation Guidelines
1. All personnel responsible for existing Stanford Websites must use good faith efforts, subject to the requirements and exceptions of the applicable laws, to bring those Websites into conformance with WCAG 2.0 Level AA.
2. New Stanford Website development and purchases, including development and purchases for major revisions and updates of existing Stanford Websites, should conform to WCAG 2.0 Level AA.
3. Vendors seeking to develop or provide Websites or web-based applications for Stanford are to demonstrate that their products satisfy WCAG 2.0 Level AA Success Criteria, unless undue burden or fundamental alteration can be demonstrated (see below). Preferred standards for demonstrating satisfaction of WCAG 2.0 Level AA Success Criteria, and accessibility language for Stanford Website vendor contracts, as well as for other types of Electronic Information Technology vendor contracts, may be obtained from University Procurement (Purchasing and Payment Services) (http://web.stanford.edu/group/fms/fingate/contact/#procure) or from the SOAP Office (https://soap.stanford.edu).
4. Each Stanford Website should contain "Accessibility" contact information for the site's webmaster and/or the SOAP Office. The contact information may take a variety of forms, such as an email address, a link to a HelpSU page, or a contact form on the site. The recommended location for this information is the Website's "Contact" or "About Us" page.
5. The SOAP Office will continue to test Stanford Websites for accessibility and report accessibility issues to the webmaster for that website.
6. OAE will continue to seek input from Stanford students regarding accessibility issues.
7. Conformance to WCAG 2.0 Level AA guidelines may be an undue burden due to the nature of the content, the purpose of the resource, the lack of accessible solutions, or an unreasonably high administrative or financial cost necessary to make the resource meet that goal. However, these difficulties do not relieve University programs or activities from meeting applicable legal obligations to provide reasonable accommodations to Users in regard to access to the content and services provided on Stanford Websites. Managers of University programs and activities must be prepared to provide content and/or services in a suitable alternative format (e.g., electronic text file or audio description) or manner upon request (such as by a student to the OAE).

Implementation Assistance
Guidelines and best practices are available from the SOAP Office (http://soap.stanford.edu). In addition, on-campus assistance is available for designing and implementing websites that meet accessibility guidelines and for evaluating the accessibility of existing sites and those under development. If such assistance is needed, visit the SOAP web site (http://soap.stanford.edu) or email the SOAP Office at web-accessibility@stanford.edu.

Responding to Accessibility Issues
Recognizing the ongoing evolution of current web content and technologies, the designated webmaster for a particular site, upon being made aware of an accessibility issue on that site, should proceed as follows:

- Acknowledge receipt of the issue in writing (via email) to the User raising the issue, with a copy to the SOAP Office.
- Open an accessibility case for recording the issue and resulting action taken.
- Verify that the issue is an authentic accessibility issue.
- Treat all issues as important. Address any time-sensitive need of the User promptly (generally within a period of no greater than two

business days), unless technology or work involved requires more effort, in which case the User will be promptly notified in writing of expected delivery.

Upon receiving a report of an accessibility issue, the SOAP Office shall notify the site's webmaster, as well as OAE (for reports from students) or D&A (for reports from non-students.) If the SOAP Office, in consultation with the site's webmaster, determines that the information or service provided on the Stanford Website cannot be made accessible, or that doing so would constitute an undue burden or fundamental alteration, OAE or D&A will engage in an interactive process with the User about alternative methods for providing the information or service and will provide an equally effective alternative format or service. In the event that an alternative format or service cannot be provided or the user is not satisfied with the results, he or she may contact the ADA/Section 504 Compliance Officer at D&A by telephone at (650) 723-0755 or by email at equalopportunity@stanford.edu for assistance in resolving the issue.

For questions about the policy, please contact the SOAP Office (https://soap.stanford.edu/about/contact/).

Peer-to-Peer File Sharing

The use of file-sharing networks and software to download and share copyrighted works like software, music, movies, television programs, and books can violate copyright laws. Both the person who makes an illegal copy of a copyrighted work available and the person who receives or downloads an illegal copy have violated the law and Stanford policies. Many file-sharing programs have default settings that share copyrighted files, such as music and movies, through the Internet. Before enabling any of these programs students, faculty, or staff must read the fine print, make sure to understand the program itself, and only use such programs lawfully. Under the Digital Millennium Copyright Act (DMCA), copyright owners are entitled to notify Internet service providers, such as Stanford, that IP addresses linked to the Stanford network are sharing copies of music, movies, or other content without authorization. The law requires the University to respond to such complaints by eliminating access to the infringing materials. Stanford will disconnect students who fail to respond to a DMCA complaint promptly. Furthermore, the University also will suspend or terminate computer access to the Stanford network, including termination of the SUNet ID, to members of the community who continue to violate copyright laws. Finally, the University will take action through the student, employee, or faculty disciplinary processes if necessary. Beyond University consequences, copyright holders may file civil lawsuits against copyright infringers seeking extensive monetary damages. If compelled by a lawful subpoena, Stanford may be required to identify students, faculty, staff, or others who have violated copyright law. For more information about file-sharing, refer to Residential Computing's online resource, File-Sharing and Copyright Law (http://rescomp.stanford.edu/info/dmca/) web site.

Political, Campaign, and Lobbying Activities

For the complete text of the currently applicable version of this policy, see Administrative Guide Memo 1.5.1 Political, Campaign, and Lobbying Activities (https://adminguide.stanford.edu/chapter-1/subchapter-5/policy-1-5-1/).

Summary

The following summarizes the policy on Political, Campaign, and Lobbying Activities:

Stanford University, as a charitable entity, is subject to federal, state, and local laws and regulations regarding political activities: campaign activities, lobbying, and the giving of gifts to public officials.

While all members of the University community are naturally free to express their political opinions and engage in political activities to whatever extent they wish, it is very important that they do so only in their individual capacities and avoid even the appearance that they are speaking or acting for the University in political matters.

In the limited circumstances where individuals must speak or act on behalf of the University in the political arena, they must do so in accordance with the provisions of Administrative Guide Memo 1.5.1 (https://adminguide.stanford.edu/chapter-1/subchapter-5/policy-1-5-1/).

Policy

The following is quoted from the policy:

1. Summary of Legal Requirements and Restrictions

    a. Campaign Activities: Contributions of money, goods, or services to candidates for political office and in support of or opposition to ballot measure campaigns are subject to a wide variety of political laws. Depending on the jurisdiction and the campaign, political contributions may be prohibited or limited and, in nearly all cases, are subject to a complicated series of disclosure rules. Because of the University's tax-exempt status, the University is legally prohibited from endorsing or opposing candidates for political office or making any contribution of money, goods, or services to candidates. It is important, therefore, that no person inadvertently cause the University to make such a contribution.

    b. Lobbying: Lobbying can generally be described as any attempt to influence the action of any legislative body (e.g., Congress, state legislatures, county boards, city councils and their staffs) or any federal, state, or local government agency. Laws regulating lobbying exist at the federal, state, and local levels and can differ widely in scope, depending on the jurisdiction. Some laws, for example, only regulate lobbying of the legislative branch. Others, however, also cover lobbying of administrative agencies and officers in the executive branch (e.g., lobbying for federally-funded grants). To one degree or another, however, most lobbying laws require registration and reporting by individuals engaged in attempts to influence governmental action.

        Tax-exempt organizations are permitted to lobby, and the University engages in lobbying on a limited number of issues, mostly those affecting education, research, and related activities. There is usually some threshold of time or money spent on lobbying that triggers registration and reporting requirements. Regardless of thresholds, however, no University employee —other than the following individuals, on matters under their jurisdiction—may lobby on behalf of the University without specific authorization:

        - President
        - Provost
        - Deans of the Seven Schools
        - Vice Provost and Dean of Research
        - Vice Provost for Graduate Education
        - Vice President for Business Affairs and Chief Financial Officer
        - Vice President of Human Resources
        - Vice President for Land, Buildings and Real Estate
        - Director of the SLAC National Accelerator Laboratory
        - Director of the Hoover Institution
        - General Counsel
        - Vice President for Public Affairs
        - The Vice Provost and Dean of Research may grant permission to faculty members to lobby on behalf of the University for specific purposes. The Vice President for Public Affairs may

grant permission to staff members to lobby on behalf of the University for specific purposes. All lobbying on behalf of the University should be coordinated with the Vice President for Public Affairs. Please see the Federal Lobbying Guidelines for Stanford Faculty and Staff (http://doresearch.stanford.edu/research-scholarship/federal-lobbying-guidelines-stanford-faculty-and-staff/) in the Research Policy Handbook.

c. Giving of Gifts to Public Officials and Staff: Almost all jurisdictions have strict rules on the extent to which gifts and honoraria may be given to public officials (both elected and non-elected officials and, often, staff). In some cases gifts and honoraria are prohibited; in others they are limited; and in most cases they are subject to detailed disclosure. In addition, in some jurisdictions, such as California, gifts to both state and local public officials can result in a public official's disqualification from participation in any governmental action affecting the interests of the donor. Meals, travel, and entertainment are the most common types of gifts, but gift rules can also apply in cases where public officials attend a reception or receive tickets to sporting or other events.

   As a non-profit organization, the University generally does not give gifts to public officials and, in those limited cases where it does give such gifts, it must do so in accordance with all applicable laws and regulations. Therefore, any University employee who, on behalf of the University, wishes to make a gift to a public official must receive prior approval from the Vice President for Public Affairs before making such a gift.

d. Reporting of Political Activities: The University must report most of its political activities above certain thresholds. Therefore, any University employee engaging in such activities on behalf of the University should carefully review the remainder of this Guide Memo and should discuss the relevant activities in advance with the Vice President for Public Affairs.

2. Prohibited and Restricted Political Activities

   a. In General:

      i. No person may, on behalf of the University, engage in any political activity in support of or opposition to any candidate for elective public office (including giving or receiving funds or endorsements), nor shall any University resources be used for such purpose.

      ii. No person may, on behalf of the University, lobby (or use University resources to lobby) any federal, state, or local legislative or administrative official or staff member unless specifically authorized to do so. Any lobbying activity, even when authorized, must be conducted in compliance with this Guide Memo, other applicable University policies, and applicable law.

      iii. No person may, on behalf of the University, give a gift (or use any University resources to give a gift) to any federal, state, or local official or staff member, except in compliance with this Guide Memo, other applicable University policies, and applicable law.

      iv. No person supporting candidates for public office or engaging in other political activities may use University space or facilities or receive University support, except in the limited ways described in section 3.a.

      v. No person may use for lobbying activities federally-funded contract or grant money received by the University..

      Even the foregoing activities that are only restricted, rather than prohibited, may be subject to limitations imposed by law. Therefore, any person engaging in the activity, or contemplating doing so, should consult with the Vice President for Public Affairs.

   b. Guidelines for Avoiding Prohibited Partisan Political Activities: The following guidelines should assist in preventing the involvement or apparent involvement of the University in political activities in support of or opposition to any candidate for elective public office, including both partisan and non-partisan elections. Except in the limited circumstances set forth in section 3.b., below:

      i. Use of Name and Seal: Neither the name nor seal of the University or of any of its schools, departments, or institutions should be used on letters or other materials intended to influence such political elections.

      ii. Use of Address and Telephones: No University office should be used as a return mailing address for such political mailings, and telephone service that is paid by the University, likewise, should not be used for such political purposes. (Obviously, a student's dormitory room and telephone service that are personal to the student may be used for these purposes.)

      iii. Use of Title: The University title of a faculty or staff member or other person should be used only for identification and should be accompanied by a statement that the person is speaking as an individual and not as a representative of the University.

      iv. Use of Services and Equipment: University services, such as Interdepartmental Mail; equipment, such as copy machines, computers, and telephones; and supplies should not be used for such political purposes.

      v. Use of Personnel: No University employee may, as part of his or her job, be asked to perform tasks in any way related to prohibited political purposes.

3. Permissible Political Activities

   a. In General: As noted above, the federal, state, and local laws which limit the partisan political activities that can take place in University facilities and with University support in no way inhibit the expression of personal political views by any individual in the University community. Nor do they forbid faculty, students, or staff from joining with others in support of candidates for office or in furtherance of political causes. There is no restriction on discussion of political issues or teaching of political techniques. Academic endeavors which address public policy issues are in no way prohibited or constrained.

      Because the University encourages freedom of expression, political activities which do not reasonably imply University involvement or identification may be undertaken so long as regular University procedures are followed for use of facilities. Examples of permissible activities are:

      i. Use of areas, such as White Plaza, for tables, speeches, and similar activities.

      ii. Use of auditoriums for speeches by political candidates, but subject to rules of the Internal Revenue Service, the Federal Election Commission, and the California Fair Political Practices Commission, and other applicable laws. Arrangements must be made with University Events & Services. (See also Guide Memo 8.2.1 (https://

adminguide.stanford.edu/8-2-1/): University Events, for more information.)

To reiterate, because tax and political compliance laws impose restrictions, and even prohibitions, on certain political activities and on the use of buildings and equipment at a non-profit institution such as the University, any such activities must be in compliance with these legal requirements.

Individuals taking political positions for themselves or groups with which they are associated, but not as representatives of the University, should clearly indicate, by words and actions, that their positions are not those of the University and are not being taken in an official capacity on behalf of the University.

b. Limited University Political Activities: Limited activities relating to specific federal, state, or local legislation or ballot initiatives are permissible where (1) the subject matter is directly related to core interests of the University's activities; (2) the President has determined that the University should take a position; and (3) the individuals who speak or write on the University's behalf are specifically authorized to do so.

4. Research Involving Political Campaigns: Any Stanford researcher considering doing research involving political campaigns should consult with the General Counsel's Office for any legal restrictions, and should submit the research proposal in advance to Stanford's Institutional Review Board as appropriate under its policies and procedures.

5. Responsibility for Interpretation: The Vice President for Public Affairs, in consultation with the General Counsel, is the administrative officer responsible for interpretation and application of the above guidelines. Questions on whether planned student activities are consistent with the University's obligations should be directed to the Dean of Student Life, who will consult with the Vice President for Public Affairs and/or the General Counsel. All other questions on whether planned activities are consistent with the University's obligations should be addressed directly to the Vice President for Public Affairs or the General Counsel.

Recording Lectures

Except with permission from the Office of Accessible Education (http://studentaffairs.stanford.edu/oae/) or the instructor in question, students may not audio- or video-record lectures. Even with permission, students may only use such recordings for personal use; no posting or further distribution or use is permitted.

Sexual Harassment and Consensual Sexual or Romantic Relationships

For the complete text of the currently applicable version of this policy, see Administrative Guide Memo 2.2.4 Sexual Harassment and Consensual Sexual or Romantic Relationships (https://adminguide.stanford.edu/chapter-2/subchapter-2/policy-2-2-4/). It is also available from the Sexual Harassment Policy Office (http://harass.stanford.edu) homepage.

Summary

Stanford University strives to provide a place of work and study free of sexual harassment, intimidation or exploitation. Where sexual harassment is found to have occurred, the University will act to stop the harassment, prevent its recurrence, and discipline and/or take other appropriate action against those responsible.

Policy

The following is quoted from the policy:

1. In General

   a. Applicability and Sanctions for Policy Violations—This policy applies to all students, faculty and staff of Stanford University, as well as to others who participate in Stanford programs and activities. Its application includes Stanford programs and activities both on and off-campus, including overseas programs. Individuals who violate this policy are subject to discipline up to and including discharge, expulsion, and/or other appropriate sanction or action.

   b. Respect for Each Other—Stanford University strives to provide a place of work and study free of sexual harassment, intimidation or exploitation. It is expected that students, faculty, staff and other individuals covered by this policy will treat one another with respect.

   c. Prompt Attention—Reports of sexual harassment are taken seriously and will be dealt with promptly. The specific action taken in any particular case depends on the nature and gravity of the conduct reported, and may include intervention, mediation, investigation and the initiation of grievance and disciplinary processes as discussed more fully below. Where sexual harassment is found to have occurred, the University will act to stop the harassment, prevent its recurrence, and discipline and/or take other appropriate action against those responsible.

   d. Confidentiality—The University recognizes that confidentiality is important. Sexual harassment advisers and others responsible to implement this policy will respect the confidentiality and privacy of individuals reporting or accused of sexual harassment to the extent reasonably possible. Examples of situations where confidentiality cannot be maintained include circumstances when the University is required by law to disclose information (such as in response to legal process) and when disclosure is required by the University's outweighing interest in protecting the rights of others.

   e. Protection Against Retaliation—Retaliation and/or reprisals against an individual who in good faith reports or provides information in an investigation about behavior that may violate this policy are against the law and will not be tolerated. Intentionally making a false report or providing false information, however, is grounds for discipline.

   f. Relationship to Freedom of Expression—Stanford is committed to the principles of free inquiry and free expression. Vigorous discussion and debate are fundamental to the University, and this policy is not intended to stifle teaching methods or freedom of expression generally, nor will it be permitted to do so. Sexual harassment, however, is neither legally protected expression nor the proper exercise of academic freedom; it compromises the integrity of the University, its tradition of intellectual freedom and the trust placed in its members.

2. What Is Sexual Harassment?

   Unwelcome sexual advances, requests for sexual favors, and other visual, verbal or physical conduct of a sexual nature constitute sexual harassment when:

   a. It is implicitly or explicitly suggested that submission to or rejection of the conduct will be a factor in academic or employment decisions or evaluations, or permission to participate in a University activity; or

b. The conduct has the purpose or effect of unreasonably interfering with an individual's academic or work performance or creating an intimidating or hostile academic, work or student living environment.

   Determining what constitutes sexual harassment depends upon the specific facts and the context in which the conduct occurs. Sexual harassment may take many forms—subtle and indirect, or blatant and overt. For example,

   i. It may be conduct toward an individual of the opposite sex or the same sex.

   ii. It may occur between peers or between individuals in a hierarchical relationship.

   iii. It may be aimed at coercing an individual to participate in an unwanted sexual relationship or it may have the effect of causing an individual to change behavior or work performance.

   iv. It may consist of repeated actions or may even arise from a single incident if sufficiently egregious.

c. The University's Policy on Sexual Assault (see Guide Memo 23.3, Sexual Assault (http://adminguide.stanford.edu/23_3.pdf)) may also apply when sexual harassment involves physical contact.

3. What To Do About Sexual Harassment

Individuals seeking further information are directed to the following resources:

- The Sexual Harassment Policy Office (Mariposa House, 585 Capistrano Way, Room 208-209, Stanford University, Stanford, CA, 94305-8230; (650) 723-1583; email: harass@stanford.edu for information, consultation, advice, or to lodge a complaint. Note that anonymous inquiries can be made to the SHPO by phone during business hours.
- The Sexual Harassment Policy Office web page at http://harass.stanford.edu (http://harass.stanford.edu/).
- Any designated Sexual Harassment Adviser or resource person listed in 3.a or 5.a.

The following are the primary methods for dealing with sexual harassment at Stanford. They are not required to be followed in any specific order. However, early informal methods are often effective in correcting questionable behavior.

a. Consultation—Consultation about sexual harassment is available from the Sexual Harassment Policy Office, Sexual Harassment Advisers (including residence deans), human resources officers, employee relations specialists, counselors at Counseling and Psychological Services (CAPS) or the Help Center, chaplains at Memorial Church, ombudspersons and others. A current list of Sexual Harassment Advisers is available from the Sexual Harassment Policy Office and at http://harass.stanford.edu/SHadvisers.html. Consultation is available for anyone who wants to discuss issues related to sexual harassment, whether or not "harassment" actually has occurred, and whether the person seeking information is a complainant, a person who believes his or her own actions may be the subject of criticism (even if unwarranted), or a third party.

   Often there is a desire that a consultation be confidential or "off the record." This can usually be achieved when individuals discuss concerns about sexual harassment without identifying the other persons involved, and sometimes even without identifying themselves. Confidential consultations about sexual harassment also may be available from persons who, by law, have special professional status, such as:

   i. Counselors at Counseling and Psychological Services (CAPS), http://caps.stanford.edu (http://caps.stanford.edu/)

   ii. Counselors at the Help Center, http://www.stanford.edu/dept/helpcenter (http://www.stanford.edu/dept/helpcenter/)

   iii. Chaplains at Memorial Church

   iv. The University Ombudsperson, https://ombuds.stanford.edu/

   In these latter cases, the level of confidentiality depends on what legal protections are held by the specific persons receiving the information and should be addressed with them before specific facts are disclosed. For more information see http://harass.stanford.edu/confidential.html.

   For further information on confidentiality, see Section 1(d) above.

b. Direct Communication—An individual may act on concerns about sexual harassment directly, by addressing the other party in person or writing a letter describing the unwelcome behavior and its effect and stating that the behavior must stop. A Sexual Harassment Adviser can help the individual plan what to say or write, and likewise can counsel persons who receive such communications. Reprisals against an individual who in good faith initiates such a communication violate this policy.

c. Third Party Intervention—Depending on the circumstances, third party intervention in the workplace, student residence or academic setting may be attempted. Third party intervenors may be the Sexual Harassment Advisers, human resources professionals, the ombudspersons, other faculty or staff, or sometimes mediators unrelated to the University.

   When third party intervention is used, typically the third party (or third parties) will meet privately with each of the persons involved, try to clarify their perceptions and attempt to develop a mutually acceptable understanding that can insure that the parties are comfortable with their future interactions. Other processes, such as a mediated discussion among the parties or with a supervisor, may also be explored in appropriate cases.

   Possible outcomes of third party intervention include explicit agreements about future conduct, changes in workplace assignments, substitution of one class for another, or other relief, where appropriate.

d. Formal Grievance, Appeal, and Disciplinary Processes—Grievance, appeal, or disciplinary processes may be pursued as applicable.

   i. Grievances and Appeals—The applicable procedure depends on the circumstances and the status of the person bringing the charge and the person against whom the charge is brought. Generally, the process consists of the individual's submission of a written statement, a process of fact-finding or investigation by a University representative, followed by a decision and, in some cases, the possibility of one or more appeals, usually to Stanford administrative officers at higher levels. The relevant procedure (see below) should be read carefully, since the procedures vary considerably.

   If the identified University fact-finder or grievance officer has a conflict of interest, an alternate will be arranged, and the Director of the Sexual Harassment Policy Office or the

Director of Employee and Labor Relations can help assure that this occurs.

In most cases, grievances and appeals must be brought within a specified time after the action complained of. While informal resolution efforts will not automatically extend the time limits for filing a grievance or appeal, in appropriate circumstances the complainant and the other relevant parties may mutually agree in writing to extend the time for filing a grievance or appeal.

A list of the established grievance and appeal procedures is located at http://hrweb.stanford.edu/elr/policies/list_grievance_procedures.html. Copies may also be obtained from the Sexual Harassment Policy Office, http://www.stanford.edu/group/SexHarass (http://studentaffairs.stanford.edu/sara/).

Copies of the following may be obtained from Employee and Labor Relations, 505 Broadway, Redwood City, CA 94063-8443 (Cardinal Hall, 5th floor):

1. "Solving Workplace Problems at Stanford: Understanding the Staff Dispute Resolution Policy".
2. "Solving Workplace Problems at Stanford: Information for Academic Staff – Librarians and Academic Staff – Research Associates".
3. "The Dispute Resolution Process (A User's Guide)".

ii. Disciplinary Procedures—In appropriate cases, disciplinary procedures may be initiated. The applicable disciplinary procedure depends on the status of the individual whose conduct is in question. For example, faculty are subject to the Statement on Faculty Discipline (http://www.stanford.edu/dept/provost/faculty/policies/handbook/ch4.html#statementonfacultydiscipline), and students to the Fundamental Standard. For additional information related to student disciplinary procedures, see the Office of Community Standards (http://studentaffairs.stanford.edu/communitystandards/).

The individuals referenced in this section are available to discuss these options and differing methods for dealing with sexual harassment.

4. Procedural Matters

a. Investigations—If significant facts are contested, an investigation may be undertaken. The investigation will be conducted in a way that respects, to the extent possible, the privacy of all of the persons involved. In appropriate cases, professional investigators may be asked to assist in the investigation. The results of the investigation may be used in the third party intervention process or in a grievance or disciplinary action.

b. Recordkeeping—The Sexual Harassment Policy Office will track reports of sexual harassment for statistical purposes and report at least annually to the University President concerning their number, nature and disposition.

The Sexual Harassment Policy Office may keep confidential records of reports of sexual harassment and the actions taken in response to those reports, and use them for purposes such as to identify individuals or departments likely to benefit from training so that training priorities can be established. No identifying information will be retained in cases where the individual accused was not informed that there was a complaint.

c. Indemnification and Costs—The question sometimes arises as to whether the University will defend and indemnify a Stanford employee accused of sexual harassment. California law provides, in part, "An employer shall indemnify [its] employee for all that the employee necessarily expends or loses in direct consequence of the discharge of his [or her] duties as such." The issue of indemnification depends on the facts and circumstances of each situation. Individuals who violate this policy, however, should be aware that they and/or their schools, institutes, or other units may be required to pay or contribute to any judgments, costs and expenses incurred as a result of behavior that is wrongful and/or contrary to the discharge of the employee's duties. In general, see Administrative Guide Memo 2.4.6 Indemnification (https://adminguide.stanford.edu/chapter-2/subchapter-4/policy-2-4-6/).

5. Resources for Dealing with Sexual Harassment

a. Advice—Persons who have concerns about sexual harassment should contact the Sexual Harassment Policy Office, any Sexual Harassment Adviser at http://harass.stanford.edu/SHadvisers.html or one of the other individuals listed below. Reports should be made as soon as possible: the earlier the report, the easier it is to investigate and take appropriate remedial action. When reports are long delayed, the University will try to act to the extent it is reasonable to do so, but it may be impossible to achieve a satisfactory result after much time has passed.

Likewise, anyone who receives a report or a grievance involving sexual harassment should promptly consult with the Sexual Harassment Policy Office or with a Sexual Harassment Adviser.

There are a number of individuals specially trained and charged with specific responsibilities in the area of sexual harassment. In brief, they are:

i. Sexual Harassment Advisers (http://harass.stanford.edu/SHadvisers.html) serve as resources to individuals who wish to discuss issues of sexual harassment, either because they have been harassed or because they want information about the University's policy and procedures. There is usually at least one Adviser assigned to each of the schools at the University and to each large work unit; most of the residence deans also have been appointed as Sexual Harassment Advisers. Advisers are also authorized to receive complaints.

ii. The Director of the Sexual Harassment Policy Office is responsible for the implementation of this policy. The Director's Office also provides advice and consultation to individuals when requested; receives complaints and coordinates their handling; supervises the other Advisers; encourages and assists prevention education for students, faculty and staff; keeps records showing the disposition of complaints; and generally coordinates matters arising under this policy. Because education and awareness are the best ways to prevent sexual harassment; developing awareness, education and training programs and publishing informational material are among the most important functions of the Sexual Harassment Policy Office (http://harass.stanford.edu (http://harass.stanford.edu/)).

iii. As stated above, individuals with concerns about sexual harassment may also discuss their concerns informally with psychological counselors (for example through CAPS or the HELP Center), chaplains (through the Memorial Chapel), or the University ombudsperson. For more information, see http://harass.stanford.edu/resources.html.

b. External Reporting—Sexual harassment is prohibited by state and federal law. In addition to the internal resources described above,

individuals may pursue complaints directly with the government agencies that deal with unlawful harassment and discrimination claims, e.g., the U.S. Equal Employment Opportunity Commission (EEOC), the Office for Civil Rights (OCR) of the U.S. Department of Education, and the State of California Department of Fair Employment and Housing (DFEH). These agencies are listed in the Government section of the telephone book. A violation of this policy may exist even where the conduct in question does not violate the law.

6. Consensual Sexual or Romantic Relationships

   a. In General—There are special risks in any sexual or romantic relationship between individuals in inherently unequal positions, and parties in such a relationship assume those risks. In the University context, such positions include (but are not limited to) teacher and student, supervisor and employee, senior faculty and junior faculty, mentor and trainee, adviser and advisee, teaching assistant and student, coach and athlete, and the individuals who supervise the day-to-day student living environment and student residents. Because of the potential for conflict of interest, exploitation, favoritism, and bias, such relationships may undermine the real or perceived integrity of the supervision and evaluation provided, and the trust inherent particularly in the teacher-student context. They may, moreover, be less consensual than the individual whose position confers power or authority believes. The relationship is likely to be perceived in different ways by each of the parties to it, especially in retrospect.

      Moreover, such relationships may harm or injure others in the academic or work environment. Relationships in which one party is in a position to review the work or influence the career of the other may provide grounds for complaint by third parties when that relationship gives undue access or advantage, restricts opportunities, or creates a perception of these problems. Furthermore, circumstances may change, and conduct that was previously welcome may become unwelcome. Even when both parties have consented at the outset to a romantic involvement, this past consent does not remove grounds for a charge based upon subsequent unwelcome conduct.

      Where such a relationship exists, the person in the position of greater authority or power will bear the primary burden of accountability, and must ensure that he or she—and this is particularly important for teachers—does not exercise any supervisory or evaluative function over the other person in the relationship. Where such recusal is required, the recusing party must also notify his or her supervisor, department chair or dean, so that such chair, dean or supervisor can exercise his or her responsibility to evaluate the adequacy of the alternative supervisory or evaluative arrangements to be put in place. Staff members may notify their local human resources officers. To reiterate, the responsibility for recusal and notification rests with the person in the position of greater authority or power. Failure to comply with these recusal and notification requirements is a violation of this policy, and therefore grounds for discipline. The University has the option to take any action necessary to insure compliance with the spirit of this recusal policy, including transferring either or both employees in order to minimize disruption of the work group. In those extraordinarily rare situations where it is programmatically infeasible to provide alternative supervision or evaluation, the cognizant Dean or Director must approve all evaluative and compensation actions.

   b. With Students—At a university, the role of the teacher is multi-faceted, including serving as intellectual guide, counselor, mentor and adviser; the teacher's influence and authority extend far beyond the classroom. Consequently and as a general proposition, the University believes that a sexual or romantic relationship between a teacher and a student, even where consensual and whether or not the student would otherwise be subject to supervision or evaluation by the teacher, is inconsistent with the proper role of the teacher, and should be avoided. The University therefore very strongly discourages such relationships.

7. Policy Review and Evaluation—This policy went into effect on October 6, 1993, and was amended on November 30, 1995, and on May 30, 2002. It is subject to periodic review, and any comments or suggestions should be forwarded to the Director of the Sexual Harassment Policy Office.

Resources

The following is a summary of resources concerning sexual harassment available to members of the Stanford Community:

A brochure containing the policy, a list of current sexual harassment advisers, confidential resources, and other helpful information is available online at the Sexual Harassment Policy Office (http://harass.stanford.edu) web site, and in printed form from the Sexual Harassment Policy Office at Mariposa House, 585 Capistrano Way, Room 208-209, Stanford University, Stanford, CA, 94305-8230; (650) 723-1583; email: harass@stanford.edu. Copies of the University policy on sexual assault, which complements this sexual harassment policy, as well as all other documents mentioned in this section, are also available at the Sexual Harassment Policy Office.

All faculty, staff, and students who have questions regarding this policy and its enforcement can consult with a Sexual Harassment Adviser or can be directed to the local Personnel Officer or Regional Human Resources Manager. Faculty members should contact their dean or department chair, and students should contact the Director of the Sexual Harassment Policy Office or the Dean of Student Affairs.

Sexual Harassment Policy Office—telephone: (650) 723-1583; email: harass@stanford.edu.

Director: Laraine Zappert (Clinical Professor, Psychiatry and Behavioral Sciences)

Sexual Misconduct and Sexual Assault

The University's Policy on Sexual Misconduct and Sexual Assault is published in complete form in the Administrative Guide Memo 2.2.4 Sexual Harassment and Consensual Sexual or Romantic Relationships (https://adminguide.stanford.edu/chapter-2/subchapter-2/policy-2-2-4/).

Summary

The following summarizes the policy on Sexual Assault and provides information on resources available to members of the Stanford community.

Policy

Under Title IX, sexual violence (sexual misconduct and sexual assault) is a severe form of sexual harassment. Sexual misconduct and sexual assault are unacceptable and is not tolerated at Stanford University. All University employees (including student residence staff employees) have a duty to report claims of sexual misconduct or sexual assault to Cathy Glaze., Title IX Coordinator at (650) 497-4955 (voice), titleix@stanford.edu (http://relative.pagelegend.com/mailto:titleix@stanford.edu), https://titleix.stanford.edu/. For students, report claims to the Title IX Coordinator or the Office of Sexual Assault and Relationship Abuse (SARA) at (650) 725-1056 or saraoffice@stanford.edu.

The University urges an individual who has been subjected to sexual misconduct or sexual assault to make an official report. A report of the

matter will be dealt with promptly. Confidentiality will be maintained to the extent possible.

The University is committed to providing information regarding on- and off-campus services and resources to all parties involved.

Students, faculty and staff found to be in violation of this policy will be subject to discipline up to and including termination, expulsion or other appropriate institutional sanctions; affiliates and program participants may be removed from University programs and/or prevented from returning to campus.

A comprehensive web site dedicated to sexual violence awareness, prevention and support can be found at Office of Sexual Assault & Relationship Abuse Education & Response (SARA) (http://studentaffairs.stanford.edu/sara/). The site contains a list of resources and describes reporting options.

Definitions

What is Sexual Misconduct?

Sexual misconduct is the commission of an unwanted sexual act, whether by an acquaintance or by a stranger, that occurs without indication of consent.

What is Sexual Assault?

Sexual assault is the actual, attempted or threatened unwanted sexual act, whether by an acquaintance or by a stranger, accomplished (1) against a person's will by means of force (express or implied), violence, duress, menace, fear or fraud, or (2) when a person is incapacitated or unaware of the nature of the act, due to unconsciousness, sleep and/or intoxicating substances.

What is Consent?

Consent is informed, freely given, and mutually understood. Consent requires an affirmative act or statement by each participant. If coercion, intimidation, threats and/or physical force are used, there is no consent. If a person is mentally or physically incapacitated or impaired so that the person cannot understand the fact, nature or extent of the sexual situation, there is no consent; this includes conditions due to alcohol or drug consumption or being asleep or unconscious. Whether one has taken advantage of a position of influence over another may be a factor in determining consent.

Notification

With the consent of the victim, allegations of sexual assault received by University offices or personnel shall be communicated promptly to the Department of Public Safety, 711 Serra Street, telephone 9-911 for emergency response or (650) 723-9633 during normal business hours.

Emergency Services Available to Victims

Victims of sexual assault are urged to seek immediate attention from emergency police, medical, and counseling services. On the Stanford campus and in the immediate vicinity, the following provide 24-hour response and will arrange for police assistance, medical assistance, emotional support services, and advocacy and support:

- "911" Emergency Network: dial 9-911 from University phones or 911 from outside phones
- Santa Clara Valley Medical Center, 751 South Bascom Avenue, San Jose, telephone (408) 885-5000
- YWCA Stanford Hotline, for students, telephone (650) 725-9955
- Stanford Hospital and Clinics, 300 Pasteur Drive, Stanford, telephone (650) 723-5111
- Residence and Graduate Life Deans, page through 723-8222, extension 25085

Non-Emergency Resources

Office of Sexual Assault & Relationship Abuse Education & Response (SARA) (725-1056) provides comprehensive and consistent response to incidents of sexual and relationship violence to the campus community. SARA provides case consultation to students and staff, case management for reported assaults and information and referrals to services on and off campus. The office also assists with educational outreach and training to increase awareness, sensitivity, and community accountability in the prevention of these acts. Online information is available at the Sexual Assault & Relationship Abuse Education & Response (SARA) (http://studentaffairs.stanford.edu/sara.html) web site.

Additional resources for students are available at Vaden Health Service at (650) 723-3785, including short-term counseling, referral to long-term therapy, follow-up pregnancy testing, and testing and treatment for sexually transmitted diseases. Additional services for faculty and staff are available at the University's HELP Center, Galvez House (723-4577), including general counseling, information, support, and referral. The University ombuds (723-3682) is available to all in the Stanford community for general counseling, advice, and advocacy. Cathy Glaze, Title IX Coordinator, Kingscote Gardens (2nd floor), 419 Lagunita Drive, Stanford, CA 94305, (650) 497-4955 (voice), (650) 497-9257 (fax), titleix@stanford.edu (http://relative.pagelegend.com/mailto:titleix@stanford.edu), https://titleix.stanford.edu/, is available to assist students to address the effects of sexual harassment and sexual violence

Confidentiality of Information

The University will make reasonable and appropriate efforts to preserve an individual's privacy and protect the confidentiality of information. However, because of laws relating to reporting and other state and federal laws, the University cannot guarantee confidentiality to those who report incidents of sexual violence except where those reports are privileged communications with those in legally protected roles (set forth below). The professional being consulted should, if possible, make these limits clear before any disclosure of facts.

An individual can speak confidentially with certain individuals in legally protected roles. They include sexual assault counselors such as those at the YWCA Sexual Assault Center at Stanford, the Help Center, Counseling and Psychological Services (CAPS) and clergy. Exceptions to maintaining confidentiality are set by law; for example, physicians and nurses who treat any physical injury sustained during a sexual assault are required to report it to law enforcement. In addition, physicians, nurses, psychologists, psychiatrists, teachers and social workers must report a sexual assault committed against a person under age 18.

Information shared with other individuals is not legally protected from being disclosed. Considerations with respect to a complainant's request for confidentiality include factors such as the University's ability to respond effectively, to prevent further harassment or to ensure the safety of the University community. For example, an advisor, the Dean of Student Life, a Residence Dean or a Resident Assistant may need to inform other individuals to protect their safety or rights, in fairness to the persons involved, or in response to legal requirements. As required by law, all disclosures to any University employee of an on-campus sexual assault must be reported for statistical purposes only (without personal identifiers) to the Stanford University Department of Public Safety, which has the responsibility for tabulating and annually publishing sexual assault and other crime statistics. Such reports are for statistical purposes and do not include individual identities.

State law permits law enforcement authorities to keep confidential the identity of a person officially reporting a sexual assault. The Stanford University Department of Public Safety policy is to maintain such

confidentiality. However, if the District Attorney files a criminal charge, confidentiality might not be maintained.

If a complaint is filed with the Office of Judicial Affairs then the accused student must be provided with the name of the alleged victim and witnesses, if applicable. However, accommodations can be made to protect the victim's privacy, as described on the website for the Office of Judicial Affairs.

Information about Options

The University offices responding to allegations of sexual misconduct or sexual assault will inform affected individuals, at a minimum, of the options of: criminal prosecution, civil prosecution, the disciplinary process, the appropriate Title IX grievance procedure, alternative housing assignments, and academic assistance alternatives.

Smoke-Free Environment

The University's policy on a smoke-free environment is published in its complete form in the Administrative Guide Memo 2.2.6 Smoke-Free Environment (https://adminguide.stanford.edu/chapter-2/subchapter-2/policy-2-2-6/).

Applicability

Applies to all academic and administrative units of Stanford University, including SLAC and all campus student housing. This policy does not supersede more restrictive policies that may be in force to comply with federal, state, or local laws or ordinances. The President must approve more restrictive policies not required by law.

1. Policy

It is the policy of Stanford University that all smoking, including but not limited to tobacco products and the use of electronic smoking devices, is prohibited in enclosed buildings and facilities and during indoor or outdoor events on the campus.

2. Definition

"Smoke-free" refers to an environment that is free of smoke from, among other things, tobacco products and/or vapors from electronic smoking devices.

3. Guidelines

a. Smoking-Prohibited Areas

Specifically, smoking is prohibited in classrooms and offices, all enclosed buildings and facilities, in covered walkways, in University vehicles, during indoor or outdoor athletic events, during other University sponsored or designated indoor or outdoor events and in outdoor areas designated by signage as "smoking prohibited" areas.

- Ashtrays will not be provided in any enclosed University building or facility.
- "Smoking Prohibited" signs will be posted.

b. Outdoor Smoking Areas

Except where otherwise posted as a "smoking prohibited area," smoking is generally permitted in outdoor areas, except during organized events. Outdoor smoking in non-prohibited areas must be at least 30 feet away from doorways, open windows, covered walkways, and ventilation systems to prevent smoke from entering enclosed buildings and facilities. To accommodate faculty, staff, and students who smoke, Vice Presidents, Vice Provosts, and Deans may designate certain areas of existing courtyards and patios as smoking areas, and must provide ashtrays. The specific academic or administrative unit(s) will be responsible for absorbing all costs associated with providing designated smoking areas and ashtrays.

4. Enforcement

This policy relies on the consideration and cooperation of smokers and non-smokers. It is the responsibility of all members of the University community to observe and follow this policy and its guidelines.

a. Smoking Cessation Information

Smoking cessation programs are available for faculty and staff through the Center for Research in Disease Prevention, Health Improvement Program (HIP). Students may contact the Health Promotion Program (HPP) through the Student Health Center for smoking cessation information or programs.

b. Repeated Violations

Faculty, staff and, students repeatedly violating this policy may be subject to appropriate action to correct any violation(s) and prevent future occurrences.

5. Implementation and Distribution

This policy will be disseminated to all faculty, staff and students and to all new members of the University Community.

Ownership and Use of Stanford Name and Trademarks

Stanford registered marks, as well as other names, seals, logos, and other symbols and marks that are representative of Stanford, may be used solely with permission of Stanford. Merchandise bearing Stanford's names and marks, such as t-shirts, glassware, and notebooks, must be licensed. For complete text of the currently applicable policy, including the University officers authorized to grant permission to use the Stanford name and marks, see Administrative Guide Memo 1.5.4 Ownership and Use of Stanford Name and Trademarks (https://adminguide.stanford.edu/chapter-1/subchapter-5/policy-1-5-4/).

Student Alcohol Policy

This document clarifies the University's expectations and approach related to the use of alcohol by students. The University's Controlled Substances and Alcohol Policy is also applicable. The full text is contained in the Controlled Substance and Alcohol (http://adminguide.stanford.edu/23_6.pdf) policy.

Preamble

The Fundamental Standard (https://communitystandards.stanford.edu/student-conduct-process/honor-code-and-fundamental-standard/#fundamental-standard) has set the standard of conduct for students at Stanford since 1896. It states: "Students at Stanford are expected to show both within and without the University such respect for order, morality, personal honor and the rights of others as is demanded of good citizens." Implicit in the Standard is the understanding that students are responsible for making their own decisions and accepting the consequences of those decisions.

The University is committed to the health, safety and well-being of each member of the Stanford community. In order to further student learning, development and success and to promote the University's academic mission, Stanford fosters an environment of personal and collective responsibility and respectful citizenship. This means that all members of the university community—students, faculty and staff—have a role in safeguarding a healthy learning environment free of the consequences of alcohol misuse. The University also strives to create a culture that supports students who do not use alcohol and students who use alcohol in a safe, legal and responsible fashion.

Legal Background

Members of the Stanford community are expected to abide by all federal, state and local laws, including those governing alcohol consumption and distribution. Under California law, it is illegal for anyone under the age of 21 to purchase alcohol or to possess alcohol in a public space. It is also illegal for anyone to furnish alcohol to an individual under the age of 21. Other state laws governing the use of alcohol are listed below.

While it is not the responsibility of most Stanford officials to enforce state law, it is the responsibility of the University's Department of Public Safety (http://police.stanford.edu/), and accordingly they enforce all state alcohol laws when they encounter violations. All community members should understand the law and, as individuals, ensure that they themselves do not violate it.

In addition, it is the responsibility of all community members to ensure that the University does not, through their actions, violate the law. Accordingly, official University functions, including events held by registered student groups, are not allowed to provide alcohol to those under 21, and no University funds may be used to purchase alcohol for that purpose. Violations of this requirement can result in both criminal prosecution and University administrative action, including dismissal from the University.

Responsible Alcohol Use

Stanford students are expected to behave responsibly, both in the classroom and outside, both on campus and off. In particular, the University does not tolerate reckless drinking—lawful or unlawful—and its consequent harmful behaviors. The University is especially concerned about the misuse of distilled alcohol products ("hard alcohol"), and the dangers that arise from that misuse.

All students should understand the physical and behavioral effects of alcohol misuse, and should avoid such misuse themselves. In addition, they are expected to do their part to ensure the safety of fellow students whom they perceive to be engaged in reckless drinking behavior or to be suffering from its consequences.

The University provides educational resources to assure that students understand the effects of alcohol misuse and know how to respond when they perceive others to be engaged in dangerous behavior.

Reckless drinking and encouraging reckless drinking are violations of University policy, and may be subject to disciplinary action. Extreme or repeated violations may result in dismissal from the University.

More generally, students are expected to make healthy, responsible choices concerning their personal use of alcohol and the University supports them in this endeavor through education and other resources. The University sponsors activities and programs focused on students who choose not to drink or to drink lightly, as well as resources and services to assist students who need help for themselves or others related to alcohol use.

Authority, Application, and Enforcement

Responsibility for application of the Student Alcohol Policy resides with the Vice Provost for Student Affairs (https://studentaffairs.stanford.edu/). The Office of Alcohol Policy and Education reports to the Vice Provost for Student Affairs and is expected to coordinate and implement alcohol programs.(The University's Controlled Substances and Alcohol Policy is also applicable. The full text is contained at the Controlled Substances and Alcohol web site (https://adminguide.stanford.edu/chapter-2/subchapter-2/policy-2-2-8/).

The Stanford University Department of Public Safety enforces federal, state and local laws among students, other community members, guests, and visitors.

Alcohol Policy Violations

The Office of Alcohol Policy and Education will work with the following offices to address violations of the University's alcohol policy as determined by the specifics of each situation.

- The Office of Residential Education (http://studentaffairs.stanford.edu/resed/) for undergraduate students, residential groups, fraternities and sororities
- Graduate Life Office (GLO) (http://glo.stanford.edu/) for graduate students
- Student Activities and Leadership (SAL) (http://studentaffairs.stanford.edu/sal/) for voluntary student organizations
- Department of Athletics, Physical Education and Recreation (DAPER) (http://www.gostanford.com/school-bio/stan-administration.html) for student athletes and athletic groups
- Such other offices as are appropriate under particular circumstances

Violations may be referred to the Office of Community Standards (https://communitystandards.stanford.edu/) (for individual students) and the Organization Conduct Board (https://studentaffairs.stanford.edu/policies/organization-conduct-board-ocb/) (for student groups). The Dean of Students (https://studentaffairs.stanford.edu/who-we-are/dean-students/) may take action as well in certain circumstances.

Getting Help: Resources Available to Students

Students have access to a variety of University resources (http://alcohol.stanford.edu/resources.html).

Additional University Regulations

- Students living in University residences sign a residence agreement (https://rde.stanford.edu/studenthousing/apply/residence-agreement/)that outlines housing policies and expectations for conduct. Violations of the residence agreement can lead to loss of housing (https://resed.stanford.edu/residence-deans/residence-dean-resources/interim-policy-housing-hold-review-process/).
- *Hard alcohol and parties*—All parties must be registered with the University, and availability of alcohol is regulated by party planning guidelines (https://alcohol.stanford.edu/party-planning/party-planning/) coordinated by the Office of Alcohol Policy and Education. Distilled liquor/spirits/hard alcohol (alcohol by volume 20 percent and above; 40 proof) is prohibited at all categories of undergraduate student parties. Beer, wine and packaged pre-mixed alcoholic beverages (e.g. wine coolers, pre-mixed cocktail drinks under 20% alcohol by volume, etc.) are the only alcoholic beverages that can be present at all on-campus undergraduate student parties. Any group or residence that includes undergraduate members is subject to this policy restriction. Groups and residences that are 100 percent graduate student in membership are exempt and may have hard alcohol in the form of mixed drinks at registered "Members" parties. Shots of hard alcohol are prohibited at all parties.
- *Distilled/hard alcohol container policy*—The following restriction goes beyond state law requirements and for the avoidance of doubt this policy applies to all coterminal and undergraduate students living in undergraduate housing: Distilled liquor/spirits/hard alcohol (alcohol by volume 20 percent and above; 40 proof) bottles, containers, etc. 750 mL and above are prohibited in undergraduate student residences (rooms, common spaces, etc.) and in the possession of undergraduate students in university public spaces. Failure to comply will result in referral to a Residence Dean and the Office of Alcohol Policy & Education for administrative actions. Continued or concerning behavior may result in removal from university housing or referral to the Office of Community Standards. Distilled liquor/spirits/hard alcohol in bottles, containers, etc. smaller than 750 mL that are

allowed under this policy for people 21 years of age or older, must be contained and stored in the original bottle, container, etc. in which it was purchased from a licensed establishment.

- *Frosh Housing*—Alcoholic beverages are prohibited at all-frosh house events in common area spaces.
- *University Funds and the Purchase of Alcohol*—No University funds or funds collected by the University may be used in a way that violates the alcohol policy. In undergraduate residences, house funds (funds collected by Student Financial Services or other University offices) may not be used to buy alcohol. Any decision to use student-collected funds to buy alcohol must be made lawfully, thoughtfully, fairly and in a way that respects the views of all students. Students must not be required to contribute to the purchase of alcohol.
- *Dining Halls*—Students may not possess or consume alcoholic beverages in Stanford Dining Halls during meal times and food service. University Dining staff can deny admission, access or meal service to anyone who is believed to be intoxicated by the Dining Management staff.
- White Plaza *(*https://sal.stanford.edu/plan-event/venues/outdoor-spaces/white-memorial-plaza/*)*—Alcoholic beverages in White Plaza are prohibited.
- *End of Quarter Period and Finals Week* - No registered parties (with or without alcohol) can occur during the End of the Quarter Period (dead week) or Finals Week.
- *Athletic Facilities* —No alcohol is permitted inside Stanford athletic facilities public spaces during athletic events.
- Stanford Conferences and University Facilities *(*https://rde.stanford.edu/studenthousing/common-space-use-policies/*)*—The University requires that event sponsors and student groups wishing to offer alcoholic beverages at their programs and events operate within state and local laws as provided by the Department of Alcohol and Beverage Control (ABC). Alcohol service is not allowed in classrooms.
- *Admit Weekend*—Stanford students are prohibited from providing, serving or in anyway making alcohol available to any prospective frosh (ProFro). All student groups/organizations and residences may host only alcohol-free parties or events during Admit Weekend. This specifically means that no alcohol is to be present, served or consumed at any student group/organization and/or dorm function during Admit Weekend.
- *New Student Orientation (NSO) Period*—At no time should any Stanford student provide, serve, or in any way make alcohol available to any new, incoming undergraduate student (frosh or transfer). All undergraduate student groups/organizations and residences may host only alcohol-free parties or events during Orientation. This specifically means that no alcohol is to be present, served, or consumed at any student group/organization and/or dorm function for the duration of NSO programming.

California State Laws

Students should be familiar with California laws governing the consumption of alcohol. The following summarizes those laws most relevant to individuals.

- It is illegal for persons under the age of 21 to possess an alcoholic beverage in any public place or any place open to the public (CA Business and Professions Code 25662).
- Any person who furnishes gives or sells any alcoholic beverage to someone under the age of 21 is guilty of a misdemeanor (CA Business and Professions Code 25658(a)).
- Any person under the age of 21 who attempts to purchase an alcoholic beverage is guilty of an infraction (CA Business and Professions Code 25658.5).
- Any person under the influence of alcohol in a public place and unable to exercise care for one's own safety or that of others is guilty of a misdemeanor (CA Penal Code 647(f)).
- It is illegal for persons to operate a motor vehicle while under the influence of alcohol or other intoxicants or with a blood alcohol level of .08% or higher (CA Vehicle Code Section 23152). Note: A golf cart is a motor vehicle.
- It is unlawful for a person under the age of 21 years who has 0.05 percent or more, by weight, of alcohol in his or her blood to drive a vehicle (CA Vehicle Code Section 23140(a)).
- It is illegal for a person under the age of 21 to drive a vehicle when he or she has a blood alcohol concentration (BAC) of .01% or higher (CA Vehicle Code Section 23136).
- It is a misdemeanor to ride a bicycle under the influence of alcohol, drugs, or both (CA Vehicle Code Section 21200.5).
- It is an infraction to possess an open container of an alcoholic beverage while in a motor vehicle (CA Vehicle Code Section 23223).
- It is an infraction for an owner or driver of a motor vehicle to allow an open container of alcohol in the passenger area (CA Vehicle Code Section 23225).

Student Non-Academic Grievance Procedure

Policy

The following is the policy:

1. Applicability

   a. It is perhaps inevitable in any university that some students may at times feel improperly treated, and that concerns about unfairness (including potential discrimination and harassment) may also at times arise.

      In this regard (and although this grievance procedure is not limited to concerns of discrimination), Stanford University's Nondiscrimination Policy provides in part: "Stanford University admits qualified students of any race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity, veteran status, or marital status to all the rights, privileges, programs, and activities generally accorded or made available to students at the University. Consistent with its obligations under the law, in the administration of the University's programs and activities, Stanford prohibits unlawful discrimination on the basis of race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity or expression, veteran status, marital status or any other characteristic protected by applicable law; Stanford also prohibits unlawful harassment including sexual harassment and sexual violence."

   b. At Stanford, there are a number of grievance procedures through which students can raise and seek redress for what they believe to be unfair, improper or discriminatory decisions, actions, or treatment. For example:

      i. If the matter involves an academic decision, the Student Academic Grievance Procedure may be the applicable procedure.
      ii. If the matter involves a disability-related concern, the Student ADA/Section 504 Grievance Procedure may be applicable.
      iii. If the matter involves a student-athlete and his or her sport, the Student-Athlete Grievance Procedure may be applicable.

   c. The purpose of the Student Non-Academic Grievance Procedure is to provide a process for students to seek resolution of disputes and grievances that may not fall within the scope of one of the

other grievance processes, including those which may arise in a student's capacity as a student-employee.

d. As a general proposition, this procedure is available to undergraduates and graduate students at Stanford University. It is designed to address individual decisions or individual actions that affect the grievant personally in his or her capacity as a student, but it does not apply to matters proceeding or addressed through the Office of Community Standards or through the Dean's leave policy. This is likewise not a grievance procedure to address the concerns of student groups. Similarly and as a general proposition, dissatisfaction with a departmental, school, or University policy or practice of broad or general application is not grounds for a grievance under this procedure; the Director of the Diversity and Access Office (hereafter "the Director") may, in his or her discretion, entertain such a grievance in exceptional circumstances, such as where (for example) the policy or practice is alleged to be contrary to law. In the same way, the Director may entertain a grievance under this procedure brought by an individual who is not an undergraduate or graduate student, in an appropriate case or as required by law.

e. The Director is responsible for administering this Student Non-Academic Grievance Procedure.

   i. The Director may be contacted at: Director of the Diversity and Access Office, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (http://relative.pagelegend.com/mailto:equal.opportunity@stanford.edu) (email), http://www.stanford.edu/dept/ocr (http://www.stanford.edu/dept/ocr/).

   ii. The Director in his or her sole discretion can decide whether to refer a grievance brought under this procedure to another grievance process. In cases involving allegations of sexual harassment in particular, the Director may wish to consult with the Director of the Sexual Harassment Policy Office as to the most appropriate way to proceed; see Section 5.d below. In cases involving student employment, the Director may wish to consult with the University's Department of Human Resources.

2. Informal Resolution

   a. As a general proposition (and although particular circumstances may warrant an exception), the student should first discuss the problem and seek a solution with the individual(s) most directly involved.

   b. If no resolution results (or if circumstances make discussion inappropriate with the person most directly involved), the student should then consult with the individual at the next (higher) administrative level in the department, school, residence or University administrative unit. Serious efforts should be made to resolve the issue locally at an informal level without resort to a formal grievance; such efforts may continue even after the formal process is underway.

3. Formal Grievance

   a. If informal means of resolution prove inadequate, the student should set forth in writing the substance of the complaint, the grounds for it and the evidence on which it is based, and the efforts taken to date to resolve the matter. It is at this stage that the complaint becomes a formal grievance.

   b. The grievance document should be submitted to the Director. A grievance should be filed in a timely fashion, i.e., normally no later than thirty days after of the end of the academic quarter in which the action that is the subject of the grievance occurred. Except in extraordinary circumstances, delay in filing a grievance will be grounds for rejection of that grievance.

   c. The Director will promptly initiate a review, which should normally be completed within sixty days. The Director may attempt to resolve the matter informally, and may refer the matter (or any part of it) to a grievance officer or other designee, who will look into and/or address the matter as the Director directs. The Director may also, in appropriate cases, remand the matter to the appropriate administrator (including to the administrative level at which the grievance arose) for further consideration.

   d. In undertaking this review, either the Director, his or her designee, or the grievance officer may request a response to the issues raised in the grievance from any individuals believed to have information the reviewer considers relevant, including faculty, staff and students.

   e. The Director (or his or her designee) will issue his or her decision in writing, and take steps to initiate such corrective action as is called for (if any). Conduct meriting discipline will be brought to the attention of the appropriate disciplinary process.

4. Appeal

   a. If the student is dissatisfied with the disposition by the Director (or his or her designee), he or she may appeal to the Provost (Office of the President and Provost, Building 10, Stanford, CA 94305-2061; phone 650-725-4075; fax 650-725-1347). The appeal should be filed in writing with the Provost within ten days of the issuance of the decision by the Director (or his or her designee); a delay in filing the appeal may be grounds for rejection of that appeal.

   b. The Provost may attempt to resolve the matter informally, and may refer the matter (or any part of it) to a grievance appeal officer, who will review the matter at the Provost's direction. The Provost may also, in appropriate cases, remand the matter to the appropriate administrator (including to the administrative level at which the grievance arose) for further consideration.

   c. The Provost should normally complete his or her review of the appeal and issue his or her decision in writing within forty-five days. That decision is final.

5. General Provisions

   a. Time Guidelines—The time frames set forth herein are guidelines. They may be extended by the Director or Provost, as applicable, in his or her discretion for good cause (including for reasons relating to breaks in the academic calendar), and will nearly always be extended during summers and the winter closure.

   b. Advisers—A student initiating or participating in a grievance under this procedure may be accompanied by an adviser in any discussion with the Director, the Provost or their designees, or a grievance or grievance appeal officer under this procedure; any adviser must be a current Stanford faculty, staff member or student.

   c. Ombuds—Students should be aware that the University Ombuds (http://www.stanford.edu/dept/ocr/ombuds (http://www.stanford.edu/dept/ocr/ombuds/)) is available to discuss and advise on any matters of University concern and frequently help expedite resolution of such matters. Although it has no decision making authority, the Ombuds' Office has wide powers of inquiry.

d. Sexual Harassment and Sexual Misconduct and Sexual Assault—For information and resources concerning sexual harassment, students should refer to the web page of the Sexual Harassment Policy Office at http://harass.stanford.edu (http://harass.stanford.edu/). For information and resources concerning sexual assault and relationship abuse, students should refer to the web page of the Sexual Violence Advisory Board at http://www.stanford.edu/group/svab/help.shtml (http://www.stanford.edu/group/svab/help.shtml/).

e. No retaliation—Stanford University prohibits retaliation or reprisals against individuals based on their pursuit in good faith of a grievance under this procedure, or their participation in good faith in the grievance process.

f. Standards for Review—If the grievance involves a decision that is being challenged, the review by the Director, as well as the review by the Provost on appeal, usually will be limited to the following considerations:

   i. Were the proper facts and criteria brought to bear on the decision? Were improper or extraneous facts or criteria brought to bear that substantially affected the decision to the detriment of the grievant?
   ii. Were there any procedural irregularities that substantially affected the outcome of the matter to the detriment of the grievant?
   iii. Given the proper facts, criteria, and procedures, was the decision one which a person in the position of the decision maker might reasonably have made?

Title VI of the Civil Rights Act of 1964

It is the policy of Stanford University to comply with Title VI of the Civil Rights Act of 1964 and its regulations, which prohibit unlawful discrimination on the basis of race, color, and national origin. The Title VI Compliance Officer is the Director of the Diversity and Access Office, who has been appointed to coordinate the University's efforts to comply with the law. Anyone who believes that Stanford is not in compliance with Title VI and its regulations should contact the Director of the Diversity and Access Office, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (http://relative.pagelegend.com/mailto:equal.opportunity@stanford.edu) (email). Grievance procedures to address complaints of discrimination on the basis of race, color, and national origin are set forth in the "Student Non-Academic Grievance Procedure (p.)." See also Administrative Guide Memo 2.2.1 General Personnel Policies (https://adminguide.stanford.edu/chapter-2/subchapter-2/policy-2-2-1/).

Title IX of the Education Amendments of 1972

It is the policy of Stanford University to comply with Title IX of the Education Amendment of 1972 and its regulations, which prohibit unlawful discrimination on the basis of sex. The Title IX Compliance Officer is Catherine Glaze, who has been appointed to coordinate the University's efforts to comply with the law. Anyone who believes that Stanford is not in compliance with Title IX and its regulations should contact the Title IX Coordinator, Kingscote Gardens (2nd floor), 419 Lagunita Drive, Stanford, CA 94305, (650) 497-4955 (voice), (650) 497-9257 (fax), titleix@stanford.edu (email). (See also the following section for addressing Title IX Concerns relating to sexual harassment.)

Title IX Concerns Relating to Sexual Harassment and the Violence Against Women Reauthorization Act of 2013

Catherine Glaze has been appointed Stanford's Title IX Coordinator to respond to matters of sexual assault, relationship (dating) violence and stalking (prohibited conduct). The Title IX Coordinator serves as a resource to review allegations of prohibited conduct and may provide interim accommodations relating to housing, academics, or no-contact letters while a matter is being reviewed. When prohibited conduct has been confirmed by a preponderance of the evidence, the Title IX Coordinator will provide long term accommodations and services to students to address the effects of sexual harassment and sexual violence. The Title IX Student Policy (https://titleix.stanford.edu/sites/default/files/title_ix_student_policy_ay_2013-14_faculty_staff_may_2014_final_0.pdf) provides the grievance procedure and appeal mechanism to review the University's actions relating to a Title IX concern involving Prohibited Conduct; see the Title IX web site (https://titleix.stanford.edu/) for additional information. Additional resources are available the Sexual Assault Support and Resources (https://notalone.stanford.edu/) web site. Ms. Glaze's contact information is titleix@stanford.edu; (650) 497-4955. An individual may contact the U.S. Department of Education, Office for Civil Rights (OCR). See also Administrative Guide Memos 2.1.2 Recruiting and Hiring of Regular Staff (https://adminguide.stanford.edu/chapter-2/subchapter-1/policy-2-1-2/), 1.7.1 Sexual Harassment (https://adminguide.stanford.edu/chapter-1/subchapter-7/policy-1-7-1/), 1.7.2, Consensual Sexual or Romantic Relationships (https://adminguide.stanford.edu/chapter-1/subchapter-7/policy-1-7-2/), and 1.7.3, Sexual Misconduct and Sexual Assault (https://adminguide.stanford.edu/chapter-1/subchapter-7/policy-1-7-3/).

Visitor Policy/University Statement on Privacy

Stanford University has an interest in ensuring that the privacy of its students, faculty, and staff is respected, and that no activities interfere with education, research, or residential life.

The University is private property; however, some areas of the campus typically are open to visitors. These areas include White Plaza, public eating areas (such as those at Tresidder Union), outdoor touring areas, and locations to which the public has been invited by advertised notice (such as for public educational, cultural, or athletic events). Even in these locations, visitors must not interfere with the privacy of students, faculty, and staff, or with educational, research, and residential activities. The University may revoke at any time permission to be present in these, or any other areas. Visitors should not be in academic or residential areas unless they have been invited for appropriate business or social purposes by the responsible faculty member, student, or staff member.

No commercial activity, including taking photos or similar audio or visual recordings that are sold to others or otherwise used for commercial purposes, may occur on the campus or in University programs without the University's permission. Requests for permission should be submitted to the Director of University Communications or, as appropriate, the Dean of Students, the Department of Athletics, or the Office of Public Events. Recognized student groups and official units of the University will be granted such permission so long as they do not violate privacy or property interests of others; so long as any sale of their products is predominantly on campus to students, faculty, and staff; and so long as they comply with applicable University policies and procedures.

Violators of this policy may be subject to criminal and/or civil liability, as well as University disciplinary action.

NONDISCIMINATION POLICY

Nondiscrimination Policy

Stanford University admits qualified students of any race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity, veteran status, or marital status to all the rights, privileges, programs, and activities generally accorded or made available to students at the University. Consistent with its obligations under the law, in the administration of the University's programs and activities, Stanford prohibits unlawful discrimination on the basis of race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity or expression, veteran status, marital status or any other characteristic protected by applicable law; Stanford also prohibits unlawful harassment including sexual harassment and sexual violence.

This policy applies to Stanford programs and activities both on and off-campus, including overseas programs.

The following person has been designated to handle inquiries regarding this nondiscrimination policy: Stanford's Director of the Diversity and Access Office, Rosa Gonzalez, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (email). Stanford's Title IX Coordinator, Catherine Glaze, has been designated to handle inquiries regarding sexual harassment and sexual violence: Kingscote Gardens (2nd floor), 419 Lagunita Drive, Stanford, CA 94305, (650) 497-4955 (voice), (650) 497-9257 (fax), titleix@stanford.edu (email).

Individuals may also file complaints directly with the Office for Civil Rights, within the United States Department of Education, by following the information on this website: https://www2.ed.gov/about/offices/list/ocr/complaintintro.html.

ALCOHOL POLICY

Student Alcohol Policy

This document clarifies the University's expectations and approach related to the use of alcohol by students. The University's Controlled Substances and Alcohol Policy is also applicable. The full text is contained in the Controlled Substance and Alcohol (http://adminguide.stanford.edu/23_6.pdf) policy.

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The Fundamental Standard (https://communitystandards.stanford.edu/student-conduct-process/honor-code-and-fundamental-standard/#fundamental-standard) has set the standard of conduct for students at Stanford since 1896. It states: "Students at Stanford are expected to show both within and without the University such respect for order, morality, personal honor and the rights of others as is demanded of good citizens." Implicit in the Standard is the understanding that students are responsible for making their own decisions and accepting the consequences of those decisions.

The University is committed to the health, safety and well-being of each member of the Stanford community. In order to further student learning, development and success and to promote the University's academic mission, Stanford fosters an environment of personal and collective responsibility and respectful citizenship. This means that all members of the university community—students, faculty and staff—have a role in safeguarding a healthy learning environment free of the consequences of alcohol misuse. The University also strives to create a culture that supports students who do not use alcohol and students who use alcohol in a safe, legal and responsible fashion.

Legal Background

Members of the Stanford community are expected to abide by all federal, state and local laws, including those governing alcohol consumption and distribution. Under California law, it is illegal for anyone under the age of 21 to purchase alcohol or to possess alcohol in a public space. It is also illegal for anyone to furnish alcohol to an individual under the age of 21. Other state laws governing the use of alcohol are listed below.

While it is not the responsibility of most Stanford officials to enforce state law, it is the responsibility of the University's Department of Public Safety (http://police.stanford.edu/), and accordingly they enforce all state alcohol laws when they encounter violations. All community members should understand the law and, as individuals, ensure that they themselves do not violate it.

In addition, it is the responsibility of all community members to ensure that the University does not, through their actions, violate the law. Accordingly, official University functions, including events held by registered student groups, are not allowed to provide alcohol to those under 21, and no University funds may be used to purchase alcohol for that purpose. Violations of this requirement can result in both criminal prosecution and University administrative action, including dismissal from the University.

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Stanford students are expected to behave responsibly, both in the classroom and outside, both on campus and off. In particular, the University does not tolerate reckless drinking—lawful or unlawful—and its consequent harmful behaviors. The University is especially concerned about the misuse of distilled alcohol products ("hard alcohol"), and the dangers that arise from that misuse.

All students should understand the physical and behavioral effects of alcohol misuse, and should avoid such misuse themselves. In addition, they are expected to do their part to ensure the safety of fellow students whom they perceive to be engaged in reckless drinking behavior or to be suffering from its consequences.

The University provides educational resources to assure that students understand the effects of alcohol misuse and know how to respond when they perceive others to be engaged in dangerous behavior.

Reckless drinking and encouraging reckless drinking are violations of University policy, and may be subject to disciplinary action. Extreme or repeated violations may result in dismissal from the University.

More generally, students are expected to make healthy, responsible choices concerning their personal use of alcohol and the University supports them in this endeavor through education and other resources. The University sponsors activities and programs focused on students who choose not to drink or to drink lightly, as well as resources and services to assist students who need help for themselves or others related to alcohol use.

Authority, Application, and Enforcement

Responsibility for application of the Student Alcohol Policy resides with the Vice Provost for Student Affairs (https://studentaffairs.stanford.edu/). The Office of Alcohol Policy and Education reports to the Vice Provost for Student Affairs and is expected to coordinate and implement alcohol programs.(The University's Controlled Substances and Alcohol Policy is also applicable. The full text is contained at the Controlled Substances and Alcohol web site (https://adminguide.stanford.edu/chapter-2/subchapter-2/policy-2-2-8/).

The Stanford University Department of Public Safety enforces federal, state and local laws among students, other community members, guests, and visitors.

Alcohol Policy Violations

The Office of Alcohol Policy and Education will work with the following offices to address violations of the University's alcohol policy as determined by the specifics of each situation.

- The Office of Residential Education (http://studentaffairs.stanford.edu/resed/) for undergraduate students, residential groups, fraternities and sororities
- Graduate Life Office (GLO) (http://glo.stanford.edu/) for graduate students
- Student Activities and Leadership (SAL) (http://studentaffairs.stanford.edu/sal/) for voluntary student organizations
- Department of Athletics, Physical Education and Recreation (DAPER) (http://www.gostanford.com/school-bio/stan-administration.html) for student athletes and athletic groups
- Such other offices as are appropriate under particular circumstances

Violations may be referred to the Office of Community Standards (https://communitystandards.stanford.edu/) (for individual students) and the Organization Conduct Board (https://studentaffairs.stanford.edu/policies/organization-conduct-board-ocb/) (for student groups). The Dean of Students (https://studentaffairs.stanford.edu/who-we-are/dean-students/) may take action as well in certain circumstances.

Getting Help: Resources Available to Students

Students have access to a variety of University resources (http://alcohol.stanford.edu/resources.html).

Additional University Regulations

- Students living in University residences sign a residence agreement (https://rde.stanford.edu/studenthousing/apply/residence-

agreement/)that outlines housing policies and expectations for conduct. Violations of the residence agreement can lead to loss of housing (https://resed.stanford.edu/residence-deans/residence-dean-resources/interim-policy-housing-hold-review-process/).

- *Hard alcohol and parties*—All parties must be registered with the University, and availability of alcohol is regulated by party planning guidelines (https://alcohol.stanford.edu/party-planning/party-planning/) coordinated by the Office of Alcohol Policy and Education. Distilled liquor/spirits/hard alcohol (alcohol by volume 20 percent and above; 40 proof) is prohibited at all categories of undergraduate student parties. Beer, wine and packaged pre-mixed alcoholic beverages (e.g. wine coolers, pre-mixed cocktail drinks under 20% alcohol by volume, etc.) are the only alcoholic beverages that can be present at all on-campus undergraduate student parties. Any group or residence that includes undergraduate members is subject to this policy restriction. Groups and residences that are 100 percent graduate student in membership are exempt and may have hard alcohol in the form of mixed drinks at registered "Members" parties. Shots of hard alcohol are prohibited at all parties.
- *Distilled/hard alcohol container policy*—The following restriction goes beyond state law requirements and for the avoidance of doubt this policy applies to all coterminal and undergraduate students living in undergraduate housing: Distilled liquor/spirits/hard alcohol (alcohol by volume 20 percent and above; 40 proof) bottles, containers, etc. 750 mL and above are prohibited in undergraduate student residences (rooms, common spaces, etc.) and in the possession of undergraduate students in university public spaces. Failure to comply will result in referral to a Residence Dean and the Office of Alcohol Policy & Education for administrative actions. Continued or concerning behavior may result in removal from university housing or referral to the Office of Community Standards. Distilled liquor/spirits/hard alcohol in bottles, containers, etc. smaller than 750 mL that are allowed under this policy for people 21 years of age or older, must be contained and stored in the original bottle, container, etc. in which it was purchased from a licensed establishment.
- *Frosh Housing*—Alcoholic beverages are prohibited at all-frosh house events in common area spaces.
- *University Funds and the Purchase of Alcohol*—No University funds or funds collected by the University may be used in a way that violates the alcohol policy. In undergraduate residences, house funds (funds collected by Student Financial Services or other University offices) may not be used to buy alcohol. Any decision to use student-collected funds to buy alcohol must be made lawfully, thoughtfully, fairly and in a way that respects the views of all students. Students must not be required to contribute to the purchase of alcohol.
- *Dining Halls*—Students may not possess or consume alcoholic beverages in Stanford Dining Halls during meal times and food service. University Dining staff can deny admission, access or meal service to anyone who is believed to be intoxicated by the Dining Management staff.
- White Plaza *(*https://sal.stanford.edu/plan-event/venues/outdoor-spaces/white-memorial-plaza/*)*—Alcoholic beverages in White Plaza are prohibited.
- *End of Quarter Period and Finals Week* - No registered parties (with or without alcohol) can occur during the End of the Quarter Period (dead week) or Finals Week.
- *Athletic Facilities* —No alcohol is permitted inside Stanford athletic facilities public spaces during athletic events.
- Stanford Conferences and University Facilities *(*https://rde.stanford.edu/studenthousing/common-space-use-policies/*)*—The University requires that event sponsors and student groups wishing to offer alcoholic beverages at their programs and events operate within state and local laws as provided by the Department of Alcohol and Beverage Control (ABC). Alcohol service is not allowed in classrooms.
- *Admit Weekend*—Stanford students are prohibited from providing, serving or in anyway making alcohol available to any prospective frosh (ProFro). All student groups/organizations and residences may host only alcohol-free parties or events during Admit Weekend. This specifically means that no alcohol is to be present, served or consumed at any student group/organization and/or dorm function during Admit Weekend.
- *New Student Orientation (NSO) Period*—At no time should any Stanford student provide, serve, or in any way make alcohol available to any new, incoming undergraduate student (frosh or transfer). All undergraduate student groups/organizations and residences may host only alcohol-free parties or events during Orientation. This specifically means that no alcohol is to be present, served, or consumed at any student group/organization and/or dorm function for the duration of NSO programming.

California State Laws

Students should be familiar with California laws governing the consumption of alcohol. The following summarizes those laws most relevant to individuals.

- It is illegal for persons under the age of 21 to possess an alcoholic beverage in any public place or any place open to the public (CA Business and Professions Code 25662).
- Any person who furnishes gives or sells any alcoholic beverage to someone under the age of 21 is guilty of a misdemeanor (CA Business and Professions Code 25658(a)).
- Any person under the age of 21 who attempts to purchase an alcoholic beverage is guilty of an infraction (CA Business and Professions Code 25658.5).
- Any person under the influence of alcohol in a public place and unable to exercise care for one's own safety or that of others is guilty of a misdemeanor (CA Penal Code 647(f)).
- It is illegal for persons to operate a motor vehicle while under the influence of alcohol or other intoxicants or with a blood alcohol level of .08% or higher (CA Vehicle Code Section 23152). Note: A golf cart is a motor vehicle.
- It is unlawful for a person under the age of 21 years who has 0.05 percent or more, by weight, of alcohol in his or her blood to drive a vehicle (CA Vehicle Code Section 23140(a)).
- It is illegal for a person under the age of 21 to drive a vehicle when he or she has a blood alcohol concentration (BAC) of .01% or higher (CA Vehicle Code Section 23136).
- It is a misdemeanor to ride a bicycle under the influence of alcohol, drugs, or both (CA Vehicle Code Section 21200.5).
- It is an infraction to possess an open container of an alcoholic beverage while in a motor vehicle (CA Vehicle Code Section 23223).
- It is an infraction for an owner or driver of a motor vehicle to allow an open container of alcohol in the passenger area (CA Vehicle Code Section 23225).

AGE DISCRIMINATION ACT OF 1975

Age Discrimination Act of 1975

The following is the policy:

1. Policy

   It is the policy of Stanford University to comply with the Age Discrimination Act of 1975 and its regulations, which prohibit unlawful discrimination on the basis of age. The Age Discrimination Act Compliance Officer is the Director of the Diversity and Access Office ("the Director"), who has been appointed to coordinate the University's efforts to comply with the law. Anyone who believes that Stanford is not in compliance with the Age Discrimination Act and its regulations ("the Act") should contact the Director at the Diversity and Access Office, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (http://relative.pagelegend.com/mailto:equal.opportunity@stanford.edu) (email).

2. Grievance Procedure

   a. An individual who believes that Stanford is not acting in compliance with the Act and who wishes to file a grievance should set forth in writing the substance of his or her complaint, the grounds for it and the evidence on which it is based, and the efforts (if any) taken to date to resolve the matter. It is at this stage that the complaint becomes a formal grievance.

   b. The grievance document should be submitted to the Director. A grievance should be filed in a timely fashion, i.e., normally no later than thirty days after the end of the academic quarter in which the action that is the subject of the grievance occurred. Except in extraordinary circumstances, delay in filing a grievance will be grounds for rejection of that grievance.

   c. The Director will promptly initiate a review, which should normally be completed within sixty days. The Director may attempt to resolve the matter informally, and may refer the matter (or any part of it) to a grievance officer or other designee, who will look into and/or address the matter as the Director directs. The Director may also, in appropriate cases, remand the matter to the appropriate administrator (including to the administrative level at which the grievance arose) for further consideration.

   d. In undertaking this review, either the Director, his or her designee, or the grievance officer may request a response to the issues raised in the grievance from any individuals believed to have information the reviewer considers relevant, including faculty, staff and students.

   e. The Director (or his or her designee) will issue his or her decision in writing, and take steps to initiate such corrective action as is called for (if any).

3. Appeal

   a. If the grievant is dissatisfied with the disposition by the Director (or his or her designee), he or she may appeal to the Provost (Office of the President and Provost, Building 10, Stanford, CA 94305-2061; phone 650-725-4075; fax 650-725-1347). The appeal should be filed in writing with the Provost within ten days of the issuance of the decision by the Director (or his or her designee); a delay in filing the appeal may be grounds for rejection of that appeal.

   b. The Provost may attempt to resolve the matter informally, and may refer the matter (or any part of it) to a grievance appeal officer, who will review the matter at the Provost's direction. The Provost may also, in appropriate cases, remand the matter to the appropriate administrator (including to the administrative level at which the grievance arose) for further consideration.

   c. The Provost should normally complete his or her review of the appeal and issue his or her decision in writing within forty-five days. That decision is final.

4. General Provisions

   a. Time Guidelines—The time frames set forth herein are guidelines. They may be extended by the Director or Provost, as applicable, in his or her discretion for good cause (including for reasons relating to breaks in the academic calendar), and will nearly always be extended during summers and the winter closure.

   b. No Retaliation—Stanford University prohibits retaliation or reprisals against individuals based on their pursuit in good faith of a grievance under this procedure, or their participation in good faith in the grievance process.

   c. Standards for Review—If the grievance involves a decision that is being challenged, the review by the Director, as well as the review by the Provost on appeal, usually will be limited to the following considerations:

      i. Were the proper facts and criteria brought to bear on the decision? Were improper or extraneous facts or criteria brought to bear that substantially affected the decision to the detriment of the grievant?

      ii. Were there any procedural irregularities that substantially affected the outcome of the matter to the detriment of the grievant?

      iii. Given the proper facts, criteria, and procedures, was the decision one which a person in the position of the decision maker might reasonably have made?

AMERICANS WITH DISABILITIES ACT (ADA)

ADA (Americans with Disabilities Act)/ Section 504 Grievance Procedure (Student)

For information more generally concerning policies and procedures for students with disabilities, see the Diversity & Access Office (http://www.stanford.edu/dept/diversityaccess/) web site, or the ADA/Section 504 Compliance Officer, Diversity and Access Office, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (http://relative.pagelegend.com/mailto:equal.opportunity@stanford.edu) (email); see also the Office for Accessible Education (OAE) (http://studentaffairs.stanford.edu/oae/) web site.

Policy

The following is the policy:

I. Policy

Stanford University, in compliance with state and federal laws and regulations, including the Americans with Disabilities Act of 1990 (ADA; as amended 2008) and Section 504 of the Rehabilitation Act of 1973 (Section 504), does not discriminate on the basis of disability in administration of its education-related programs and activities, and has an institutional commitment to provide equal educational opportunities for disabled students who are otherwise qualified.

Students who believe they have been subjected to unlawful discrimination on the basis of disability, or have been denied access to services or accommodations required by law, have the right to use this grievance procedure.

II. Applicability

As a general proposition, the grievance procedure set forth below is applicable to undergraduate and graduate students of the University. In general, it is designed to address disputes concerning the following:

1. Disagreements regarding a requested service, accommodation, or modification of a University practice or requirement;
2. Inaccessibility of a program or activity;
3. Harassment or discrimination on the basis of disability;
4. Violation of privacy in the context of disability.

As a general proposition, this grievance procedure supplants the Student Academic Grievance Procedure (p. 96) and the Student Non-Academic Grievance Procedure (p.) (both of which are set forth in this bulletin) for disability-related grievances. Questions of applicability will be decided by the Director of the Diversity and Access Office.

III. Compliance Officers

Stanford University's Compliance Officers are responsible for administering this grievance procedure as well as ensuring compliance with applicable laws. The Director of the Diversity and Access Office is the designated ADA / Section 504 Compliance Officer. That office is located in Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (http://relative.pagelegend.com/mailto:equal.opportunity@stanford.edu) (email).

Additional Compliance Officers may be designated from time to time by the Provost from those faculty and staff members knowledgeable concerning disability issues and the legal mandates of state and federal disability statutes.

IV. Informal Resolution

Prior to initiating the formal complaint procedure set forth below, the student should, in general, first discuss the matter orally or in writing with the individual(s) most directly responsible. If no resolution results, or if direct contact is inappropriate under the circumstances, the student should then consult with the Compliance Officer at the Diversity and Access Office who will attempt to facilitate a resolution. (The informal resolution process may involve consultation with the Associate Vice Provost for Student and Academic Services and University Registrar.)

If the Compliance Officer is not successful in quickly achieving a satisfactory resolution (that is, generally within seven calendar days), the Compliance Officer will inform the student of his or her efforts and the student's right to file a formal complaint.

V. Formal Complaint

If the procedure set forth above for informal resolution does not yield a successful resolution, then the student may file a formal complaint in the following manner:

1. When to File Complaint: Complaints must be filed as soon as possible, but in no event later than 10 days after the end of the quarter in which the concern arose.
2. What to File: A complaint must be in writing and include the following:
   a. The grievant's name, address, email address and phone number;
   b. A full description of the problem;
   c. A description of what efforts have been made to resolve the issue informally;
   d. A statement of the remedy requested.
3. Where to File Complaint: the complaint is to be filed with the Compliance Officer at the Diversity and Access Office, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (http://relative.pagelegend.com/mailto:equal.opportunity@stanford.edu) (email).
4. Notice of Receipt: upon receipt of the complaint, the Compliance Officer reviews the complaint for timeliness and appropriateness for this grievance procedure, and provides the grievant with written notice acknowledging its receipt.
5. Investigation: the Compliance Officer will promptly initiate an investigation and may refer the matter (or any part of it) to a grievance officer or other designee, who will look into and/or address the matter as the Compliance Officer directs. In undertaking the investigation, the Compliance Officer or grievance officer may interview, consult with, and/or request a written response to the issues raised in the grievance from any individual the grievance officer believes to have relevant information, including faculty, staff, and students.
6. Representation: the grievant and the party against whom the grievance is directed each have the right to have a representative. The party shall indicate whether he or she is to be assisted by a representative and, if so, the name of that representative. For purposes of this procedure, an attorney is not an appropriate representative.
7. Findings and Notification: upon completion of the investigation, the grievance officer will prepare and transmit to the student, and to the party against whom the grievance is directed, a final report containing a summary of the investigation, written findings, and a proposed disposition. This transmission will be expected within 60 calendar days of the filing of the formal complaint. The deadline may be extended by the Compliance Officer for good cause (including for reasons relating to breaks in the academic calendar), and will nearly always be extended during summers and the winter closure. The final report may also be provided, where appropriate, to any

University officer whose authority will be needed to carry out the proposed disposition or to determine whether any personnel action is appropriate.

8. Final Disposition: the disposition proposed by the Compliance Officer will be put into effect promptly. The grievant or any party against whom the grievance or the proposed disposition is directed may appeal. The appeal to the Provost (as set forth below) will not suspend the implementation of the disposition proposed by the grievance officer, except in those circumstances where the Provost decides that good cause exists making the suspension of implementation appropriate.

VI. Urgent Matters

Whenever the application of any of the time deadlines or procedures set forth in this grievance procedure creates a problem due to the nature of the complaint, the urgency of the matter, or the proximity of the upcoming event, the Compliance Officer will, at the request of the grievant, determine whether an appropriate expedited procedure can be fashioned.

VII. Remedies

Possible remedies under this grievance procedure include corrective steps, actions to reverse the effects of discrimination or to end harassment, and measures to provide a reasonable accommodation or proper ongoing treatment. As stated above, a copy of the Compliance Officer's report may, where appropriate, be sent to University officer(s) to determine whether any personnel action should be pursued.

VIII. Appeal

Within ten calendar days of the issuance of the final report, the grievant or the party against whom the grievance is directed may appeal to the Provost the grievance officer's determination.

An appeal is taken by filing a written request for review with the Compliance Officer at the Diversity and Access Office, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (http://relative.pagelegend.com/mailto:equal.opportunity@stanford.edu) (email).

The written request for review must specify the particular substantive and/or procedural basis for the appeal, and must be made on grounds other than general dissatisfaction with the proposed disposition. Furthermore, the appeal must be directed only to issues raised in the formal complaint as filed or to procedural errors in the conduct of the grievance procedure itself, and not to new issues.

The Compliance Officer will forward the appeal to the Provost, and also provide copies to the other party or parties. If the grievance involves a decision that is being challenged, the review by the Provost or his or her designee usually will be limited to the following considerations:

1. Were the proper facts and criteria brought to bear on the decision? Were improper or extraneous facts or criteria brought to bear that substantially affected the decision to the detriment of the grievant?
2. Were there any procedural irregularities that substantially affected the outcome of the matter to the detriment of the grievant?
3. Given the proper facts, criteria, and procedures, was the decision a reasonable one?

A copy of the Provost's written decision will be expected within 30 calendar days of the filing of the appeal and will be sent to the parties, the Compliance Officer and, if appropriate, to the University officer whose authority will be needed to carry out the disposition. The deadline may be extended by the Provost for good cause (including for reasons relating to breaks in the academic calendar), and will nearly always be extended during summers and the winter closure. The decision of the Provost on the appeal is final.

CAMPUS DISRUPTIONS

Policy on Campus Disruptions

The Policy on Campus Disruptions was promulgated in 1967, and states that:

Policy

Because the rights of free speech and peaceable assembly are fundamental to the democratic process, Stanford firmly supports the rights of all members of the University community to express their views or to protest against actions and opinions with which they disagree.

All members of the University also share a concurrent obligation to maintain on the campus an atmosphere conducive to scholarly pursuits, to preserve the dignity and seriousness of University ceremonies and public exercises, and to respect the rights of all individuals.

The following regulations are intended to reconcile these objectives.

It is a violation of University policy for a member of the faculty, staff, or student body to:

1. Prevent or disrupt the effective carrying out of a University function or approved activity, such as lectures, meetings, interviews, ceremonies, the conduct of University business in a University office, and public events.

2. Obstruct the legitimate movement of any person about the campus or in any University building or facility.

Members of the faculty, staff, and student body have an obligation to leave a University building or facility when asked to do so in the furtherance of the above regulations by a member of the University community acting in an official role and identifying himself or herself as such; members of the faculty, staff, and student body also have an obligation to identify themselves when requested to do so by such a member of the University community who has reasonable grounds to believe that the person(s) has violated section (1) or (2) of this policy and who has so informed the person(s).

The policy has been applied to the following actions: refusal to leave a building which has been declared closed; obstructing the passage into or out of buildings by sitting in front of doorways; preventing University employees from entering their workplace; preventing members of a class from hearing a lecture or taking an examination, or preventing the instructor from giving a lecture, by means of shouts, interruptions, or chants; refusing to leave a closed meeting when unauthorized to attend; and intruding upon or refusing to leave a private interview.

It should be understood that while the above are examples of extraordinarily disruptive behavior, the application of the Policy also takes situational factors into consideration. Thus, for example, conduct appropriate at a political rally might constitute a violation of the Policy on Campus Disruptions if it occurred within a classroom.

There is no "ordinary" penalty which attaches to violations of the Policy on Campus Disruptions. In the past, infractions have led to penalties ranging from censure to expulsion. In each case, the gravity of the offense and prior conduct of the student are considered; however, the more serious the offense, the less it matters that a student has otherwise not done wrong.

CAMPUS SAFETY AND CRIMINAL STATISTICS

Campus Safety and Criminal Statistics

Stanford University complies with the Jeanne Clery Disclosure of Campus Security Policy and Crime Statistics Act. A copy of Stanford's policies and statistics under this act are posted on the Department of Public Safety (https://police.stanford.edu/security-report.html) web site. A paper copy can be obtained by calling the Stanford Department of Public Safety at (650) 723-9633.

COMPUTER AND NETWORK POLICY

Computer and Network Usage

For a complete text of the currently applicable version of this policy, see Administrative Guide Memo 6.2.1 Computer and Network Usage Policy (https://adminguide.stanford.edu/chapter-6/subchapter-2/policy-6-2-1/).

Policy

The following is quoted from the policy:

Users of Stanford network and computer resources have a responsibility not to abuse the network and resources. This policy provides guidelines for the appropriate and inappropriate use of information technologies.

Summary

The following summarizes the policy on Computer and Network Usage:

In particular, the policy provides that users of University information resources must respect software copyrights and licenses, respect the integrity of computer-based information resources, refrain from seeking to gain or permitting others to gain unauthorized access, including by sharing passwords, and respect the rights of other computer users.

This policy covers appropriate use of computers, networks, and information contained therein. As to political, personal and commercial use, the University is a non-profit, tax-exempt organization and, as such, is subject to specific federal, state, and local laws regarding sources of income, political activities, use of property, and similar matters. It also is a contractor with government and other entities, and thus must assure proper use of property under its control and allocation of overhead and similar costs. For these reasons, University information resources must not be used for partisan political activities where prohibited by federal, state, or other applicable laws, and may be used for other political activities only when in compliance with federal, state, and other laws, and in compliance with applicable University policies. Similarly, University information resources should not be used for personal activities not related to appropriate University functions, except in a purely incidental manner. In addition, University information resources should not be used for commercial purposes, except in a purely incidental manner or except as permitted under other written policies of the University or with the written approval of a University officer having the authority to give such approval. Any such commercial use should be properly related to University activities, take into account proper cost allocations for government and other overhead determinations, and provide for appropriate reimbursement to the University for taxes and other costs the University may incur by reason of the commercial use. Users also are reminded that the .edu domain on the Internet has rules restricting or prohibiting commercial use, and thus activities not appropriately within the .edu domain and which otherwise are permissible within the University computing resources should use one or more other domains, as appropriate.

The University's Information Security Officer is authorized in appropriate circumstances to inspect or monitor private data (including email), such as when there is a reasonable cause to suspect improper use of computer or network resources.

For further information on the topic of peer-to-peer file sharing, see the section above on Copyright.

COPYRIGHT

Copyright

Copyright laws protect original works of authorship and give the owners of copyrights the exclusive right to do and to authorize others to do certain things in regard to a copyrighted work, including: make copies, distribute the work, display or perform the work publicly, and create derivative works. Copyright laws apply to nearly all forms of captured content, including traditional works like books, photographs, music, drama and sculpture. The laws also adapt to changes in technologies, and include in their scope modern forms of works like motion pictures, web sites, electronic media, software, multimedia works and some databases. Registration is not required to obtain a copyright, so if in doubt, assume a copyright applies.

Unless an exception to the copyright owner's exclusive rights applies, you must obtain permission from the copyright owner to copy, distribute, display or perform a copyrighted work in any medium for any purpose. Be especially mindful of copyright principles when using the Internet. Just because a work is posted on the Internet does not mean that the owner of the copyright has given you permission to use it. In general, do not post material onto the Internet without copyright clearance.

Stanford University Libraries have licenses with many publishers, which permit copying of materials in accordance with the educational, research or administrative functions of the University. In addition, there are four major exceptions to the copyright owner's exclusive rights, which (if applicable) permit limited use without permission. These are: the fair use exception, the library exception, the face-to-face teaching exception, and the distance-learning exception. For a more detailed explanation of these exceptions, the copyright laws and Stanford's copyright policies, please review the University's Copyright Reminder (http://www-sul.stanford.edu/libraries_collections/copyright_reminders/) web site. It is each person's responsibility to be aware of and abide by copyright law; violation may result in civil or criminal liability, and constitutes grounds for University discipline, up to and including discharge, dismissal and expulsion.

DANGEROUS WEAPONS ON CAMPUS

Prohibition of the Possession of Dangerous Weapons on Campus

The University's policy prohibiting weapons on campus (https://police.stanford.edu/pdf/stanford_university_prohibited_weapons_policy.pdf) (pdf) is available on the Resources tab of the Department of Public Safety (https://police.stanford.edu/#resources) web site.

Policy

Stanford University prohibits the possession of any of the following weapons on the Stanford campus: firearm, dirk, dagger, ice pick, knife having a blade longer than 2 1/2 inches (except for lawful use in food preparation or consumption), folding knife with a blade that locks into place, razor with an unguarded blade, taser, stun gun, instrument that expels a metallic projectile (such as a BB or a pellet), spot marker gun, or any other weapons prohibited by California Penal Code Sections 626.10 and 626.9.

For purposes of this policy, the term “Stanford campus” shall include all the lands, buildings, and facilities of Leland Stanford Junior University, whether owned, leased, and controlled, and whether located in the United States or abroad (excluding the privately owned, managed, or leased residences of faculty or staff that are located on the main Stanford campus in unincorporated Santa Clara County). In addition to the prohibited weapons, ammunition is not allowed to be stored or possessed in university owned, leased, and controlled buildings (excluding the privately owned, managed, or leased residences of faculty or staff that are located on the main Stanford campus in unincorporated Santa Clara County). In the event a federal or state law or a county ordinance is more restrictive than this policy, federal or state law or the county ordinance shall apply.

Requests for an exemption from this policy for academic purposes may be requested in writing to the Director of the Stanford University Department of Public Safety. Each request will be considered on a case-by-case basis and be evaluated by the Office of Risk Management and the Department of Public Safety. A written letter will be provided by the Director of the Department of Public Safety in the event an exemption is granted.

The Stanford University Department of Public Safety does not provide facilities for the storage of firearms.

GRIEVANCES

Grievances

A Stanford undergraduate or graduate student who believes that he or she has been subject to an improper decision on an academic matter may file a grievance pursuant to the Student Academic Grievance Procedure (p. 96). For other types of grievances, students should review the section that follows on the Student Non-Academic Grievance Procedure (p.), and consult concerning applicable procedures with the Director of the Diversity and Access Office, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (http://relative.pagelegend.com/mailto:equal.opportunity@stanford.edu) (email).

An individual whose matter has been substantially addressed through one of Stanford's grievance procedures (including but not limited to the Student Academic Grievance Procedure, the Student ADA/Section 504 Grievance Procedure, the Grievance Resolution Procedure for Postdoctoral Scholars, the Student-Athlete Grievance Procedure, or the Student Non-Academic Grievance Procedure) may not raise and seek redress of the same matter under a different Stanford grievance procedure. The University retains discretion to determine when a matter has been substantially addressed.

California Dept of Consumer Affairs Complaint Procedure

An individual may contact the Bureau for Private Postsecondary Education for review of a complaint. The bureau may be contacted online (http://www.bppe.ca.gov) or at 2535 Capitol Oaks Drive, Suite 400, Sacramento, CA 95833; phone: (916) 431-6959; fax: (916) 263-1897.

HAZING POLICY

Hazing Policy

Hazing is not permitted at Stanford University. No individual, recognized student organization, club, team, or any other Stanford-affiliated student group is permitted to plan, engage in, or condone hazing, on or off the Stanford campus.

Definition of Hazing at Stanford University

Hazing includes any activity done in connection with a student organization, regardless of whether the organization is officially recognized at Stanford, that causes or is reasonably likely to cause another student to suffer bodily danger, physical harm, or significant personal degradation or humiliation, even if no bodily danger, physical harm, or significant degradation or humiliation in fact results. Hazing might occur during initiation or pre-initiation into a student organization, but is not limited to these time frames. Any individual who plans or intentionally assists in hazing activity has engaged in hazing, regardless of whether that individual is present when the hazing activity occurs.

Consequences of a Violation

Stanford University expects its students to conduct themselves in socially responsible and respectful ways. Thus, participation in hazing, either as an individual or as part of any student group, may result in serious individual and organizational consequences including, but not limited to: disciplinary action up to and including expulsion; permanent loss of organizational recognition; and loss of eligibility to remain a member of any club, team, or other Stanford-affiliated student group. Consent, implied or expressed, is not a defense to any complaint or charge alleging a hazing violation.

A number of University offices may take institutional action, including: the Organizational Conduct Board; Office of Community Standards; or other University offices, such as the Vice Provost for Student Affairs or the Department of Athletics.

Applications

Stanford's hazing policy is distinct from and broader than California Penal Code section 245.6, which prohibits: "any method of initiation or pre-initiation into a student organization or student body, whether or not the organization or body is officially recognized by an educational institution, which is likely to cause serious bodily injury to any former, current, or prospective student of any school, community college, college, university or other educational institution in this state." A violation of Penal Code Section 245.6 that does not result in serious bodily injury is punishable as a misdemeanor, while a violation that results in death or injury is punishable as a felony or a misdemeanor.

Nothing in this hazing policy prevents Stanford from taking institutional action against hazing activity that falls outside the narrower definition of Penal Code section 245.6.

Stanford's hazing policy is not intended to prohibit student recruitment or new or continuing member activities that are positive and educational in nature, designed to instill a group ethos or unity. Its intent is to deter those behaviors that cause or are likely to cause danger, harm or humiliation to another student.

Stanford's hazing policy is not intended to apply to customary athletic events or other similar institutionally-approved contests or competitions.

Questions regarding hazing policies related to fraternities and sororities should be directed to the Office of Fraternity and Sorority Life at (650) 723-0778. For all other student groups, contact Student Activities and Leadership at(650) 723-2445.

INVOLUNTARY LEAVE OF ABSENCE AND RETURN POLICY

Involuntary Leave of Absence and Return Policy

In effect as of January 4, 2020

Stanford University is committed to the safety, health and well-being of the campus community. The University recognizes that students may experience situations that significantly limit their ability to function successfully or safely in their role as students. In such circumstances, students should consider requesting a leave of absence. A leave of absence permits students to take a break from the University and their studies, so that they may address the issues that led to the need for the leave and later return to the University with an enhanced opportunity to achieve their educational goals. Students will be given the option to take a voluntary leave of absence before a decision is made with respect to an involuntary leave.

1. Involuntary Leave of Absence

Requiring a student to take a leave of absence is rare and, subject to Section III, only happens when current medical knowledge and/or the best available objective evidence indicates to the Senior Associate Vice Provost and Dean of Students or their designee (hereinafter, Dean of Students) that there is a significant risk to the student's health or safety or the health or safety of others, or the student's behavior severely disrupts the University environment, and no reasonable accommodations can adequately reduce that risk or disruption.

Consistent with Stanford's Nondiscrimination Policy (p. 123), Stanford prohibits unlawful discrimination on the basis of any type of disability or any other characteristic protected by applicable law in the administration of the University's programs and activities. Stanford offers a range of resources, support services and accommodations to address the physical and mental health needs of students. However, on rare occasion, a student's needs may require a level of care that exceeds the care the University can appropriately provide. Where current knowledge about the individual's medical condition and/or the best available objective evidence indicates that a student poses a significant risk to the health or safety of a member of the University community, where a student is unable or unwilling to carry out substantial self-care obligations and poses a significant risk to their own safety not based on mere speculation, stereotypes, or generalizations, or where a student's behavior severely disrupts the University environment and the student does not want to take a voluntary leave, the Dean of Students has the authority to place a student on an involuntary leave of absence. Before placing any student on an involuntary leave of absence, Stanford will conduct an individualized assessment, consulting with the Office of Accessible Education (OAE) to determine if there are reasonable accommodations that would permit the student to continue to participate in the University community without taking a leave of absence.

The Dean of Students may be notified about a student who may meet the criteria of an involuntary leave of absence from a variety of sources including, but not limited to, the student, the student's academic advisor, Residential Education staff, Graduate Life Office staff, an academic department, or a member of the University's threat assessment team. If the Dean of Students deems it appropriate, these procedures will be initiated.

a. **Procedures for Placing a Student on an Involuntary Leave of Absence**

   i. The Dean of Students will consult with the Office of Accessible Education (OAE) prior to making a decision to impose an involuntary leave of absence.

   ii. The Dean of Students will issue a notice to the student in writing that an involuntary leave of absence is under consideration. The written notice will include the reason(s) why the student is being considered for an involuntary leave, contact information for OAE, which can provide information about accommodations, and a copy of this policy. In addition, the notice will provide contact information for the Process Resource, an administrator outside of the decision-making process with knowledge of Stanford's involuntary leave of absence process who will serve as a neutral process resource to answer any student questions about the process from referral through return to Stanford. In the written notice, the student will be encouraged to respond before a decision regarding a leave of absence is made and will be given a specified time period within which to do so.

   iii. The Dean of Students will consider potential accommodations and/or modifications that could obviate the need for an involuntary leave of absence, such as the option to take a voluntary leave of absence, academic accommodations, housing and dining accommodations, and modifications to University policies, rules, and regulations. Examples of academic, administrative, and housing accommodations that may be facilitated through the Office of Accessible Education (OAE) can be found on the OAE (https://oae.stanford.edu/) website.

   iv. The student may be asked to execute an Exchange of Confidential Information Consent Form providing Stanford personnel temporary authority to get information from the student's healthcare provider(s) regarding issues relevant and appropriate to the consideration of an involuntary leave of absence when there is a need for the University to have access to that information as part of the interactive process and individualized assessment. If a student refuses to execute an Exchange of Confidential Information Consent Form or to respond within the timeframe set by the Dean of Students, the Dean may proceed with the assessment based on information in the Dean's possession at the time.

   v. The Dean of Students will also confer, as feasible and when appropriate in a particular matter, with individuals regarding the need for an involuntary leave of absence. Although each case will vary, conferring individuals could include:

      1. Residence Deans, or Graduate Life Office Deans;
      2. Faculty members;
      3. Academic advisors;
      4. With appropriate authorization, representatives from Stanford's Vaden Health Center (Vaden);
      5. With appropriate authorization, the student's treatment provider(s) or other health care professionals;
      6. Member(s) of the University's threat assessment team; and/or

7. Such other individuals as may be appropriate in an individual matter.

   In each case, the Dean of Students will confer with a representative from the Office of Accessible Education (OAE) with expertise in mental health disabilities.

vi. Particular attention will be paid to the criteria for imposing an involuntary leave of absence, specifically:

   1. whether current knowledge about the individual's medical condition and/or the best available objective evidence indicates that a student poses a significant risk to the health or safety of a member of the University community;

   2. whether a student is unable or unwilling to carry out substantial self-care obligations and poses a significant risk to their own safety not based on mere speculation, stereotypes, or generalizations; and/or

   3. whether a student's behavior severely disrupts the University environment.

      The individualized assessment as to each factor, based on reasonable judgment that relies on current medical knowledge or on the best available objective evidence, should ascertain: the nature, duration, and severity of the risk or disruption; the probability that the risk or disruption will actually occur; and whether reasonable modifications of policies, practices, or procedures will adequately mitigate the risk or disruption so as to eliminate the need for an involuntary leave of absence.

vii. The Dean of Students will give significant weight to the opinion of the student's treatment provider(s), including those identified by the student, regarding the student's ability to function academically and safely at the University with or without reasonable accommodations. If the Dean of Students determines that the information provided by the treatment provider(s) is incomplete, requires further explanation or clarification, or is inconsistent with other information in the student's record, the Dean of Students, with proper authorization, will contact the treatment provider(s) to obtain additional information. In certain circumstances, the University may require the student to undergo an additional evaluation by an independent and objective professional designated by Stanford, if the Dean of Students believes it will facilitate a more informed decision.

viii. Following these consultations and based on a review of the relevant documentation and information available, the Dean of Students will make a decision as to whether the student should be placed on an involuntary leave of absence, and will provide written notice of this decision to the student. The written notice of decision will include information about the student's right to appeal and to reasonable accommodations during the appeal process. The review and notice of decision under this policy should be done in a reasonably timely manner. Where students have been asked to remain away from the University while the review is underway, every effort will be made by the Dean of Students to reach a decision within one week, provided the student responds in a timely manner to requests for information and, if appropriate, evaluation.

   1. If an involuntary leave of absence is imposed. The written notice of decision to the student will set forth the basis for the decision and a time-frame for when the student must leave the University and when they may be eligible to return to the University and the conditions and/or requirements the student will need to satisfy to be eligible for return. The written notice will also inform the student of their right to reasonable accommodations in the return process and will provide contact information for OAE and the Process Resource. The length of the leave will be determined on an individual basis.

   2. If an involuntary leave of absence is not imposed. The Dean of Students may impose conditions and/or requirements under which the student is allowed to remain at the University.

ix. Within one week of receiving the decision of the Dean of Students, the student may submit an appeal of the decision in writing to the Vice Provost for Student Affairs or the Vice Provost's designee, who may not be the Dean of Students. The written request for appeal must specify the particular substantive and/or procedural basis for the appeal, and must be made on grounds other than general dissatisfaction with the decision of the Dean of Students. The review by the Vice Provost for Student Affairs or the Vice Provost's designee will be limited to the following considerations:

   1. Were the proper facts and criteria brought to bear on the decision?

   2. Is there any new information not previously available to the student that may change the outcome of the decision-making process?

   3. Were there any procedural irregularities that materially affected the outcome of the matter to the detriment of the appellant?

   4. Given the proper facts, criteria, and procedures, was the decision a reasonable one?

After reviewing the matter fully, the Vice Provost for Student Affairs or the Vice Provost's designee will issue a written decision affirming, modifying, or reversing the decision to place the student on an involuntary leave of absence. The Vice Provost's decision shall be final, and no other appeals or grievance procedures are available.

b. **Implications of an Involuntary Leave of Absence**

i. Student status. Students on a leave of absence generally retain their admitted student status; however, they are not registered and therefore do not have the rights and privileges of registered students.

ii. Housing. Consistent with Stanford's policies and procedures, students assigned to a University residence are subject to the terms of the University Residence Agreement. However, as set forth on the Registrar's Office Leave of Absence website, students with medical disabilities (including mental health disabilities) that require University medical services may petition to remain in campus housing for one term while on leave. Students who leave the University before the end of a term may be eligible to receive refunds of portions of their housing charges. Eligibility criteria for refunds are set forth in the Residence Agreement which is found on the Residence Agreement website (https://rde.stanford.edu/studenthousing/apply/residence-agreement/). (https://rde.stanford.edu/studenthousing/apply/residence-agreement/)

iii. Effective date(s) of leave. A student must leave the University within the timeframe set forth by the Dean of Students. The

leave will remain in effect until (1) it is determined after an individualized assessment that the student is able to return to the University with or without reasonable accommodations and (2) the student has complied with any University requirements applicable to all students returning from a leave and all of the conditions mandated by the Dean of Students and/or the Vice Provost.

iv. Notification. At any time during the leave process, the Dean of Students may notify a

student's parent, guardian, emergency contact, or other individual, consistent with the law, if notification is deemed appropriate.

v. Association with the University while on leave. Unless expressly permitted by the Dean of Students in writing, students on an involuntary leave of absence are not permitted to be present at the University and are not permitted to engage in any University-related activities, including on-campus employment.

vi. Coursework taken while on leave. Consistent with Stanford's policies and procedures, academic credit for work done elsewhere may be allowed towards a Stanford degree. Students should refer to the "Transfer Work (p. 82)" section of the Stanford Bulletin and consult with the Registrar's Office and their department prior to taking any coursework while on an involuntary leave of absence.

vii. SUnet ID privileges. Unless expressly prohibited by the Dean of Students in writing, students on leave generally may retain their SUnet ID privileges, including their Stanford email account.

viii. Transcript notation. Students on a leave of absence will have a notation on their transcript that reads "Leave of Absence."

ix. Tuition and fees. Consistent with Stanford's policies and procedures, students who leave the University before the end of a term may be eligible to receive refunds of portions of their tuition. See the (https://registrar.stanford.edu/students/tuition-and-fees/tuition-refund-schedule/) Registrar's Tuition Refunds (https://registrar.stanford.edu/students/tuition-and-fees/tuition-refund-schedule/) page for a schedule of refunds.

x. Meal Plan. Consistent with Stanford's policies and procedures, a meal plan refund is based on the date when a student moves out of University residence and is approved under conditions as specified in the Residence Agreement. Students with questions about residential meal plan refunds should contact the central office of Stanford Dining.

xi. Visa Status. International students (F-1 and J-1 Visa holders) placed on an involuntary leave of absence must speak with a Bechtel International Center advisor regarding their visa status.

2. Request for Return

a. For general requirements applicable to all students returning to Stanford after a leave of absence, undergraduate students should refer to the Returning to Stanford (https://undergrad.stanford.edu/planning/academic-policies/returning-students/) website. Graduate students should consult with their academic department and a Graduate Life Office Dean. In addition to the general requirements all students must meet when returning to Stanford after a leave of absence, as well as any conditions mandated by the Dean of Students and/or the Vice Provost for return from an involuntary leave of absence as outlined below in section II.C, students seeking to return from an involuntary leave of absence for reasons of personal or community health and safety may be required to submit additional documentation related to the factors set forth in section I.A.6 as part of an individualized assessment. OAE will work with the students to provide reasonable accommodations in the return process as necessary.

b. A student must make a written request to the Dean of Students to return to the University. Generally, a student will not be allowed to return until one full quarter has elapsed or until the leave period in the involuntary leave of absence notification has elapsed, and all conditions and/or requirements are met.

c. The Dean of Students may require the student to provide evidence that the student, with or without reasonable accommodations, has sufficiently addressed the issues that previously established the criteria for imposing an involuntary leave of absence as set forth in section I.A.6, above. The Dean of Students may also ask, confer with, or seek information from others to assist in making the determination. The information sought may include:

i. At the student's discretion, documentation of efforts by the student to address the issues that led to the leave

ii. With appropriate authorization, release of academic records to inform treating clinicians

iii. With appropriate authorization, release of treatment information to the extent necessary to determine if the student has sufficiently reduced the risk or disruption that led to the need for the involuntary leave

iv. With appropriate authorization, consultation with Vaden to the extent necessary to determine if the student has sufficiently reduced the risk or disruption that led to the need for the involuntary leave

v. Consultation with OAE

d. All returning students must meet the essential eligibility requirements and any technical standards of the University and, if applicable, the relevant school or department, with or without reasonable accommodations. If the Dean of Students is not satisfied that the student is ready to return to the University, the student will be notified in writing of the decision, including the reason for the decision, within a reasonable time after the student has submitted a request for return and required documentation.

e. A student not permitted to return may appeal the decision to the Vice Provost for Student Affairs following the procedure in section I.A.9.

3. Scope of the Policy and Relationship to Other University Policies

A leave of absence is an administrative process; it is not a disciplinary process. This policy and these procedures are not intended to be punitive and do not take the place of disciplinary actions that are in response to violations of Stanford's Fundamental Standard or other policies or directives, nor do they preclude the removal or dismissal of students from the University or University-related programs as a result of violations of other University policies or school or departmental protocols. This policy does not limit the University's ability to place enrollment holds on students for reasons beyond the scope of this policy and nothing in this policy relieves a student of any financial obligations to the University that were in place at the time the involuntary leave of absence was imposed.

Nothing in this policy limits the power of the University to take administrative action to ensure the safety of the Stanford community. In exceptional circumstances, where the health or well-being of any person may be seriously affected, or where physical safety is seriously threatened, or where the ability of the University to carry out its essential operations is seriously threatened or impaired, the President or the President's designee, may summarily suspend, dismiss, or bar any person from the University or University-related programs. In all such cases, actions taken will be reviewed promptly, typically within one week, by the appropriate University authority.

In situations involving an imminent or ongoing threat of harm to the student or any other member of the University community, the Dean of Students, in the exercise of his or her reasonable judgment, may require a student to be immediately prohibited from entering Stanford's campus or facilities utilized for University programs or activities while the individualized assessment and review described in section I.A. are taking place. Such students will receive the written notice described in section I.A.2 as quickly as possible.

4. Requests for Reasonable Accommodation

Stanford is committed to providing equal access to all participants in University processes, including students with disabilities. Students with disabilities should contact the Office of Accessible Education (OAE) to request accommodations. Information about the support services OAE provides, types of accommodations offered, and appropriate documentation for accommodations, can be found on the OAE website: https://oae.stanford.edu/.

5. Related Resources

As noted herein, students placed on an involuntary leave of absence may have additional conditions and/or requirements they must meet prior to returning to the University, in addition to any University requirements applicable to all students returning from a leave.

- Undergraduate Students should consult the Returning to Stanford (https://undergrad.stanford.edu/planning/academic-policies/returning-students/) web page for generally applicable deadlines, information and resources.
- Graduate Students should consult with a Graduate Life Office (https://glo.stanford.edu/) Dean and their department for generally applicable deadlines, information and resources.

Students who are placed on an involuntary leave of absence may want to consult with the following offices, where appropriate:

- Office of Accessible Education (https://oae.stanford.edu/) (OAE) (https://oae.stanford.edu/)
- Financial (http://web.stanford.edu/dept/finaid/) Aid (http://web.stanford.edu/dept/finaid/)
- Student Financial (http://web.stanford.edu/group/fms/fingate/students/) Services (http://web.stanford.edu/group/fms/fingate/students/)
- University Housing (http://web.stanford.edu/dept/rde/cgi-bin/drupal/housing/)
- Vaden Health Center (http://vaden.stanford.edu/) (Vaden)
- Academic Advising (https://undergrad.stanford.edu/academic-advising-stanford/)
- Graduate Life (https://glo.stanford.edu/) Office (https://glo.stanford.edu/)
- Bechtel International (https://bechtel.stanford.edu/immigration/visa-types/f-1j-1-student-visas/leave-absence/) Center (https://bechtel.stanford.edu/immigration/visa-types/f-1j-1-student-visas/leave-absence/)

The Process Resource will be available to assist all students who are placed on an involuntary leave of absence with their questions about the process to return and resume their studies and life at Stanford.

MAIN QUADRANGLE • MEMORIAL COURT • OVAL • WHITE PLAZA

Use of the Main Quadrangle and Memorial Court

Policy

The following is quoted from the policy:

The Main Quadrangle and Memorial Court are part of Stanford University's academic preserve due to their locations at the heart of the campus. To protect and enhance their historic status, University policy limits activities primarily to established or traditional ceremonies and events.

To schedule an event, approval must be obtained in advance from the Office of Stanford Events (see below). Unscheduled events, protests, or activities are prohibited.

Requests for waivers to this policy must be submitted in advance and in writing to the Office of Stanford Events. Exceptions may be granted only in extraordinary cases.

Resources

The following is a summary of resources available:

For instructions on use of the Main Quadrangle/Memorial Court, contact the Office of Special Events and Protocol (OSEP) at (650) 724-1387, or at the OSEP (https://osep.stanford.edu/) web site.

Note: White Plaza is made available to Stanford students, faculty, and staff for events other than scheduled "established or traditional ceremonies and events" including those that may involve amplified sound. For further information on the use of such other venues, students should contact Student Activities and Leadership (SAL) at (650) 723-2733, or at the SAL (http://studentaffairs.stanford.edu/sal/) web site. Faculty and staff should contact the Office of Special Events and Protocol (OSEP) (https://osep.stanford.edu/).

Use of the Oval Policy

The Oval is considered to be the initial and official visual entrance to the Stanford University campus. Given this historic and aesthetic status, it is in the best interests of the University community and visiting members of the public to maintain its open and pristine space, to help preserve its natural beauty and environmental integrity. The Oval also presents the formal academic image of the University, leading directly to departments, classrooms and other academic space, and faculty and graduate student offices, and thus is subject to the University's Noise Policy.

The University prohibits formal or informal events of any kind to take place in the Oval. Gatherings of Stanford students, faculty, and staff such as demonstrations, rallies, or dances may take place in White Plaza, which can be reserved through the Office of Student Activities. Weddings also are not allowed in the Oval but are in certain circumstances allowed in Memorial Church (refer to Memorial Church wedding ceremony guidelines (http://www.stanford.edu/group/religiouslife/servicesWeddings.html)).

The Oval is considered a pedestrian zone and appropriate use of its space includes walking, running, reading, relaxing, and other limited recreational use of the lawn area (such as quiet, very small picnics and Frisbee), unless or until such use damages or otherwise harms the property.

Cooking food or use of any grill/barbecue or open flame is strictly prohibited. Fireworks or the use of other incendiary devices represent a safety hazard to the area and are therefore prohibited. Amplified sound from items such as boom boxes, musical instruments, or the use of bullhorns or amplified speakers is also prohibited. Only authorized Stanford service vehicles are permitted inside the Oval areas.

As the official entrance to the University, the Oval offers public access to general parking spaces in the marked areas surrounding the outer perimeter of the Oval; drivers are expected to obey all traffic signs and limitations. Buses are subject to additional restrictions.

For further information regarding this policy, contact the Executive Director of Special Events and Protocol, (650) 724-1387 or see the Office of Special Events & Protocol (http://osep.stanford.edu/policies/oval.html) web site.

Use of White Memorial Plaza

White Plaza is a Stanford University space available for programs, speeches, rallies, information tables, banners and posters. It is considered a “free speech area” on campus. Students should follow the policy outlined on the Student Activities and Leadership (https://sal.stanford.edu/plan-event/venues/outdoor-spaces/white-memorial-plaza/) web site to engage in student programmatic activity. Due to Stanford's non-profit status, for-profit commercial activity or corporate promotion of any kind is strictly regulated.

White Plaza is in the center of campus, so event planners should take particular care to avoid disruptive impact on classes, business, or events in the surrounding buildings. Events in White Plaza must be organized by University entities (student groups, departments, and programs) and require prior approval from Student Activities and Leadership (SAL) (https://sal.stanford.edu/).

NO CAMPING

No Camping

Camping (that is, staying outside overnight on University property) is not permitted without University permission. Permission is granted through the Office of the Provost or the Provost's designee.

NOISE AND AMPLIFIED SOUND

Noise and Amplified Sound

Policy

The following is quoted from the policy:

Stanford is not only an academic institution but a residential community as well. It is the responsibility of all faculty, students, and staff to moderate noise especially during an event or activity held on campus. Supporting the mission of the University and respecting those who are studying, researching, or otherwise carrying out academic-related activities is a Stanford priority. The campus must require a conducive atmosphere to ensure these endeavors are accomplished and supported. Disturbing noise in or around a residence or other campus buildings which infringe on the rights of other residents or members of the University community is considered a violation of this policy. As part of the event planning process, the event sponsor must obtain all appropriate approvals regarding the use of amplified sound during an event or activity.

In addition to University policy on noise and amplified sound, the County of Santa Clara also has a county ordinance on sound and all members of the Stanford community and visitors to campus are subject to and must comply with this order. For more information, see the Santa Clara Ordinance Code, Control of Noise and Vibration (https://www.municode.com/library/ca/santa_clara_county/codes/code_of_ordinances/?nodeId=TITBRE_DIVB11ENHE_CHVIIICONOVI) web site.

Resources

Information regarding whether and how the use of amplified sound is permitted is available from the following sources, which must be consulted for prior approval:

1. The Office of Student Activities: phone: 723-2733, or see http://studentaffairs.stanford.edu/sal/policies/noise (http://studentaffairs.stanford.edu/sal/policies/noise/)
2. Registrar's Scheduling Office: email reg-events@stanford.edu, or see http://studentaffairs.stanford.edu/registrar/faculty/events (http://studentaffairs.stanford.edu/registrar/faculty/events/).
3. Office of Special Events and Protocol (OSEP) at (650) 724-1387, or see http://stanfordevents.stanford.edu (http://stanfordevents.stanford.edu/).

ONLINE ACCESSIBILITY POLICY

Stanford University Online Accessibility Policy

Policy

Stanford University will make Stanford Websites and web-based applications accessible to its students, faculty, staff and participants in the University's programs and activities who have disabilities. All personnel who are involved in the procurement, preparation and maintenance of University Websites and web-based applications should adopt this goal, with the assistance of campus resources dedicated to supporting web accessibility. Stanford Websites and web-based applications must either conform to WCAG 2.0 Level AA (http://www.w3.org/TR/WCAG20/) or their content and functionality be made available to Users on request (such as by a student request to the Office of Accessible Education) in an equally effective and accessible alternative manner.

Applicability

Stanford's online accessibility policy applies to all Stanford academic and administrative units that create and maintain web sites and web-based applications used in the programs and activities of the University. See the Stanford University Online Accessibility Policy (http://ucomm.stanford.edu/policies/accessibility-policy/) web site for the full policy.

Definitions

Stanford Website

Any website or web-based application within the Stanford University (stanford.edu) domain used in the programs or activities of the University.

Users

Stanford Website users are defined as current Stanford students and applicants for admission, Stanford staff and faculty, and participants in the University's programs and activities.

Accessible

Refers to the concept that people with disabilities are able to independently and timely access and use a product or system, including with the benefit of assistive technologies. Assistive technologies include adaptive hardware and/or software and other devices that are used to increase, maintain, or improve the functional capabilities of individuals with disabilities.

Stanford Online Accessibility Program ("SOAP") Office

The SOAP Office (http://soap.stanford.edu) provides resources and services for Stanford web designers, developers and content creators to assist them in producing accessible materials. Services include Website accessibility testing and guidance regarding universal design and web standards compliance. The SOAP Office is also the campus resource designated to facilitate online accessibility for Users. To report and seek assistance on web accessibility issues, Users may contact the SOAP Office by email at web-accessibility@stanford.edu or submit a HelpSU ticket through the SOAP Office website.

Office of Accessible Education ("OAE")

The Office of Accessible Education (http://oae.stanford.edu) is the campus office designated to work with Stanford students with disabilities. OAE provides support services, accommodations, and programs to remove barriers to full participation of students with disabilities in the programs or activities of the University.

Diversity and Access Office ("D&A")

The Diversity and Access Office (http://diversityandaccess.stanford.edu) oversees compliance with state and federal anti-discrimination laws including the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. D&A provides disability-related access information, and assists faculty, staff and other non-student participants in University programs and activities with disabilities who may need accommodations and/or auxiliary aids to obtain equal access to Stanford facilities, programs and activities. D&A also oversees the ADA/Section 504 Grievance Procedure for students who believe they have been subjected to unlawful discrimination based on a disability or denied access to services or accommodations which the ADA and/or Section 504 require Stanford to provide. Read more about the ADA/Section 504 Grievance Procedure (http://exploredegrees.stanford.edu/nonacademicregulations/online-accessibility-policy/nonacademicregulations/ada/).

Accessibility Standard

Stanford University has adopted the Worldwide Web Consortium Web Content Accessibility Guidelines (http://www.w3.org/TR/WCAG20/) version 2.0, Level AA Conformance (WCAG 2.0 Level AA) as its goal for accessible Stanford Websites. The guidelines and success criteria of WCAG 2.0 Level AA are organized around the following four principles which lay the foundation for users with disabilities to access and use web content. For a Stanford Website to be accessible under these principles, its content must be:

1. Perceivable – Information and user interface components must be presentable to users in ways they can perceive.
2. Operable – User interface components and navigation must be operable.
3. Understandable – Information and the operation of user interface must be understandable.
4. Robust – Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.

Implementation Guidelines

1. All personnel responsible for existing Stanford Websites must use good faith efforts, subject to the requirements and exceptions of the applicable laws, to bring those Websites into conformance with WCAG 2.0 Level AA.
2. New Stanford Website development and purchases, including development and purchases for major revisions and updates of existing Stanford Websites, should conform to WCAG 2.0 Level AA.
3. Vendors seeking to develop or provide Websites or web-based applications for Stanford are to demonstrate that their products satisfy WCAG 2.0 Level AA Success Criteria, unless undue burden or fundamental alteration can be demonstrated (see below). Preferred standards for demonstrating satisfaction of WCAG 2.0 Level AA Success Criteria, and accessibility language for Stanford Website vendor contracts, as well as for other types of Electronic Information Technology vendor contracts, may be obtained from University Procurement (Purchasing and Payment Services) (http://web.stanford.edu/group/fms/fingate/contact/#procure) or from the SOAP Office (https://soap.stanford.edu).
4. Each Stanford Website should contain "Accessibility" contact information for the site's webmaster and/or the SOAP Office. The contact information may take a variety of forms, such as an email address, a link to a HelpSU page, or a contact form on the site. The recommended location for this information is the Website's "Contact" or "About Us" page.
5. The SOAP Office will continue to test Stanford Websites for accessibility and report accessibility issues to the webmaster for that website.
6. OAE will continue to seek input from Stanford students regarding accessibility issues.

7. Conformance to WCAG 2.0 Level AA guidelines may be an undue burden due to the nature of the content, the purpose of the resource, the lack of accessible solutions, or an unreasonably high administrative or financial cost necessary to make the resource meet that goal. However, these difficulties do not relieve University programs or activities from meeting applicable legal obligations to provide reasonable accommodations to Users in regard to access to the content and services provided on Stanford Websites. Managers of University programs and activities must be prepared to provide content and/or services in a suitable alternative format (e.g., electronic text file or audio description) or manner upon request (such as by a student to the OAE).

Implementation Assistance

Guidelines and best practices are available from the SOAP Office (http://soap.stanford.edu). In addition, on-campus assistance is available for designing and implementing websites that meet accessibility guidelines and for evaluating the accessibility of existing sites and those under development. If such assistance is needed, visit the SOAP web site (http://soap.stanford.edu) or email the SOAP Office at web-accessibility@stanford.edu.

Responding to Accessibility Issues

Recognizing the ongoing evolution of current web content and technologies, the designated webmaster for a particular site, upon being made aware of an accessibility issue on that site, should proceed as follows:

- Acknowledge receipt of the issue in writing (via email) to the User raising the issue, with a copy to the SOAP Office.
- Open an accessibility case for recording the issue and resulting action taken.
- Verify that the issue is an authentic accessibility issue.
- Treat all issues as important. Address any time-sensitive need of the User promptly (generally within a period of no greater than two business days), unless technology or work involved requires more effort, in which case the User will be promptly notified in writing of expected delivery.

Upon receiving a report of an accessibility issue, the SOAP Office shall notify the site's webmaster, as well as OAE (for reports from students) or D&A (for reports from non-students.) If the SOAP Office, in consultation with the site's webmaster, determines that the information or service provided on the Stanford Website cannot be made accessible, or that doing so would constitute an undue burden or fundamental alteration, OAE or D&A will engage in an interactive process with the User about alternative methods for providing the information or service and will provide an equally effective alternative format or service. In the event that an alternative format or service cannot be provided or the user is not satisfied with the results, he or she may contact the ADA/Section 504 Compliance Officer at D&A by telephone at (650) 723-0755 or by email at equalopportunity@stanford.edu for assistance in resolving the issue.

For questions about the policy, please contact the SOAP Office (https://soap.stanford.edu/about/contact/).

PEER-TO-PEER FILE SHARING

Peer-to-Peer File Sharing

The use of file-sharing networks and software to download and share copyrighted works like software, music, movies, television programs, and books can violate copyright laws. Both the person who makes an illegal copy of a copyrighted work available and the person who receives or downloads an illegal copy have violated the law and Stanford policies. Many file-sharing programs have default settings that share copyrighted files, such as music and movies, through the Internet. Before enabling any of these programs students, faculty, or staff must read the fine print, make sure to understand the program itself, and only use such programs lawfully. Under the Digital Millennium Copyright Act (DMCA), copyright owners are entitled to notify Internet service providers, such as Stanford, that IP addresses linked to the Stanford network are sharing copies of music, movies, or other content without authorization. The law requires the University to respond to such complaints by eliminating access to the infringing materials. Stanford will disconnect students who fail to respond to a DMCA complaint promptly. Furthermore, the University also will suspend or terminate computer access to the Stanford network, including termination of the SUNet ID, to members of the community who continue to violate copyright laws. Finally, the University will take action through the student, employee, or faculty disciplinary processes if necessary. Beyond University consequences, copyright holders may file civil lawsuits against copyright infringers seeking extensive monetary damages. If compelled by a lawful subpoena, Stanford may be required to identify students, faculty, staff, or others who have violated copyright law. For more information about file-sharing, refer to Residential Computing's online resource, File-Sharing and Copyright Law (http://rescomp.stanford.edu/info/dmca/) web site.

PROTECTION OF SENSITIVE DATA

Protection of Sensitive Data

Stanford University maintains sensitive non-public data protected by laws and agreements, including Social Security numbers, financial information, health information, and student records. It is incumbent on every member of the Stanford community with access to such data to be familiar with and abide by Stanford's data classifications requirements provided at the Data Classification, Access, Transmittal and Storage (http://www.stanford.edu/group/security/securecomputing/dataclass_chart.html) web site. Members of the Stanford community should also familiarize themselves with applicable laws and University policies on privacy as provided by the University, including Administrative Guide Memos 6.3.1 Information Security (https://adminguide.stanford.edu/chapter-6/subchapter-3/policy-6-3-1/), 6.4.1 Identification and Authentication Systems (https://adminguide.stanford.edu/chapter-6/subchapter-4/policy-6-4-1/), 6.6.1 Information Security Incident Response (https://adminguide.stanford.edu/chapter-6/subchapter-6/policy-6-6-1/), and 3.4.2 Card and Payment Account Acceptance and Processing (https://adminguide.stanford.edu/chapter-3/subchapter-4/policy-3-4-2/). For information on best practices for securing mobile computing devices, see the Guidelines for Securing Mobile Computing Devices (http://www.stanford.edu/group/security/securecomputing/mobile_devices.html) web site.

POLITICAL ACTIVITIES

Political, Campaign, and Lobbying Activities

For the complete text of the currently applicable version of this policy, see Administrative Guide Memo 1.5.1 Political, Campaign, and Lobbying Activities (https://adminguide.stanford.edu/chapter-1/subchapter-5/policy-1-5-1/).

Summary

The following summarizes the policy on Political, Campaign, and Lobbying Activities:

Stanford University, as a charitable entity, is subject to federal, state, and local laws and regulations regarding political activities: campaign activities, lobbying, and the giving of gifts to public officials.

While all members of the University community are naturally free to express their political opinions and engage in political activities to whatever extent they wish, it is very important that they do so only in their individual capacities and avoid even the appearance that they are speaking or acting for the University in political matters.

In the limited circumstances where individuals must speak or act on behalf of the University in the political arena, they must do so in accordance with the provisions of Administrative Guide Memo 1.5.1 (https://adminguide.stanford.edu/chapter-1/subchapter-5/policy-1-5-1/).

Policy

The following is quoted from the policy:

1. Summary of Legal Requirements and Restrictions

    a. Campaign Activities: Contributions of money, goods, or services to candidates for political office and in support of or opposition to ballot measure campaigns are subject to a wide variety of political laws. Depending on the jurisdiction and the campaign, political contributions may be prohibited or limited and, in nearly all cases, are subject to a complicated series of disclosure rules. Because of the University's tax-exempt status, the University is legally prohibited from endorsing or opposing candidates for political office or making any contribution of money, goods, or services to candidates. It is important, therefore, that no person inadvertently cause the University to make such a contribution.

    b. Lobbying: Lobbying can generally be described as any attempt to influence the action of any legislative body (e.g., Congress, state legislatures, county boards, city councils and their staffs) or any federal, state, or local government agency. Laws regulating lobbying exist at the federal, state, and local levels and can differ widely in scope, depending on the jurisdiction. Some laws, for example, only regulate lobbying of the legislative branch. Others, however, also cover lobbying of administrative agencies and officers in the executive branch (e.g., lobbying for federally-funded grants). To one degree or another, however, most lobbying laws require registration and reporting by individuals engaged in attempts to influence governmental action.

        Tax-exempt organizations are permitted to lobby, and the University engages in lobbying on a limited number of issues, mostly those affecting education, research, and related activities. There is usually some threshold of time or money spent on lobbying that triggers registration and reporting requirements. Regardless of thresholds, however, no University employee —other than the following individuals, on matters under their jurisdiction—may lobby on behalf of the University without specific authorization:

        - President
        - Provost
        - Deans of the Seven Schools
        - Vice Provost and Dean of Research
        - Vice Provost for Graduate Education
        - Vice President for Business Affairs and Chief Financial Officer
        - Vice President of Human Resources
        - Vice President for Land, Buildings and Real Estate
        - Director of the SLAC National Accelerator Laboratory
        - Director of the Hoover Institution
        - General Counsel
        - Vice President for Public Affairs
        - The Vice Provost and Dean of Research may grant permission to faculty members to lobby on behalf of the University for specific purposes. The Vice President for Public Affairs may grant permission to staff members to lobby on behalf of the University for specific purposes. All lobbying on behalf of the University should be coordinated with the Vice President for Public Affairs. Please see the Federal Lobbying Guidelines for Stanford Faculty and Staff (http://doresearch.stanford.edu/research-scholarship/federal-lobbying-guidelines-stanford-faculty-and-staff/) in the Research Policy Handbook.

    c. Giving of Gifts to Public Officials and Staff: Almost all jurisdictions have strict rules on the extent to which gifts and honoraria may be given to public officials (both elected and non-elected officials and, often, staff). In some cases gifts and honoraria are prohibited; in others they are limited; and in most cases they are subject to detailed disclosure. In addition, in some jurisdictions, such as California, gifts to both state and local public officials can result in a public official's disqualification from participation in any governmental action affecting the interests of the donor. Meals, travel, and entertainment are the most common types of gifts, but gift rules can also apply in cases where public officials attend a reception or receive tickets to sporting or other events.

        As a non-profit organization, the University generally does not give gifts to public officials and, in those limited cases where it does give such gifts, it must do so in accordance with all applicable laws and regulations. Therefore, any University employee who, on behalf of the University, wishes to make a gift to a public official must receive prior approval from the Vice President for Public Affairs before making such a gift.

    d. Reporting of Political Activities: The University must report most of its political activities above certain thresholds. Therefore, any University employee engaging in such activities on behalf of the University should carefully review the remainder of this Guide Memo and should discuss the relevant activities in advance with the Vice President for Public Affairs.

2. Prohibited and Restricted Political Activities

    a. In General:

        i. No person may, on behalf of the University, engage in any political activity in support of or opposition to any candidate for elective public office (including giving or receiving funds or endorsements), nor shall any University resources be used for such purpose.

        ii. No person may, on behalf of the University, lobby (or use University resources to lobby) any federal, state, or local

legislative or administrative official or staff member unless specifically authorized to do so. Any lobbying activity, even when authorized, must be conducted in compliance with this Guide Memo, other applicable University policies, and applicable law.

iii. No person may, on behalf of the University, give a gift (or use any University resources to give a gift) to any federal, state, or local official or staff member, except in compliance with this Guide Memo, other applicable University policies, and applicable law.

iv. No person supporting candidates for public office or engaging in other political activities may use University space or facilities or receive University support, except in the limited ways described in section 3.a.

v. No person may use for lobbying activities federally-funded contract or grant money received by the University..

Even the foregoing activities that are only restricted, rather than prohibited, may be subject to limitations imposed by law. Therefore, any person engaging in the activity, or contemplating doing so, should consult with the Vice President for Public Affairs.

b. Guidelines for Avoiding Prohibited Partisan Political Activities: The following guidelines should assist in preventing the involvement or apparent involvement of the University in political activities in support of or opposition to any candidate for elective public office, including both partisan and non-partisan elections. Except in the limited circumstances set forth in section 3.b., below:

i. Use of Name and Seal: Neither the name nor seal of the University or of any of its schools, departments, or institutions should be used on letters or other materials intended to influence such political elections.

ii. Use of Address and Telephones: No University office should be used as a return mailing address for such political mailings, and telephone service that is paid by the University, likewise, should not be used for such political purposes. (Obviously, a student's dormitory room and telephone service that are personal to the student may be used for these purposes.)

iii. Use of Title: The University title of a faculty or staff member or other person should be used only for identification and should be accompanied by a statement that the person is speaking as an individual and not as a representative of the University.

iv. Use of Services and Equipment: University services, such as Interdepartmental Mail; equipment, such as copy machines, computers, and telephones; and supplies should not be used for such political purposes.

v. Use of Personnel: No University employee may, as part of his or her job, be asked to perform tasks in any way related to prohibited political purposes.

3. Permissible Political Activities

a. In General: As noted above, the federal, state, and local laws which limit the partisan political activities that can take place in University facilities and with University support in no way inhibit the expression of personal political views by any individual in the University community. Nor do they forbid faculty, students, or staff from joining with others in support of candidates for office or in furtherance of political causes. There is no restriction on discussion of political issues or teaching of political techniques. Academic endeavors which address public policy issues are in no way prohibited or constrained.

Because the University encourages freedom of expression, political activities which do not reasonably imply University involvement or identification may be undertaken so long as regular University procedures are followed for use of facilities. Examples of permissible activities are:

i. Use of areas, such as White Plaza, for tables, speeches, and similar activities.

ii. Use of auditoriums for speeches by political candidates, but subject to rules of the Internal Revenue Service, the Federal Election Commission, and the California Fair Political Practices Commission, and other applicable laws. Arrangements must be made with University Events & Services. (See also Guide Memo 8.2.1 (https://adminguide.stanford.edu/8-2-1/): University Events, for more information.)

To reiterate, because tax and political compliance laws impose restrictions, and even prohibitions, on certain political activities and on the use of buildings and equipment at a non-profit institution such as the University, any such activities must be in compliance with these legal requirements.

Individuals taking political positions for themselves or groups with which they are associated, but not as representatives of the University, should clearly indicate, by words and actions, that their positions are not those of the University and are not being taken in an official capacity on behalf of the University.

b. Limited University Political Activities: Limited activities relating to specific federal, state, or local legislation or ballot initiatives are permissible where (1) the subject matter is directly related to core interests of the University's activities; (2) the President has determined that the University should take a position; and (3) the individuals who speak or write on the University's behalf are specifically authorized to do so.

4. Research Involving Political Campaigns: Any Stanford researcher considering doing research involving political campaigns should consult with the General Counsel's Office for any legal restrictions, and should submit the research proposal in advance to Stanford's Institutional Review Board as appropriate under its policies and procedures.

5. Responsibility for Interpretation: The Vice President for Public Affairs, in consultation with the General Counsel, is the administrative officer responsible for interpretation and application of the above guidelines. Questions on whether planned student activities are consistent with the University's obligations should be directed to the Dean of Student Life, who will consult with the Vice President for Public Affairs and/or the General Counsel. All other questions on whether planned activities are consistent with the University's obligations should be addressed directly to the Vice President for Public Affairs or the General Counsel.

RECORDING LECTURES

Recording Lectures

Except with permission from the Office of Accessible Education (http://studentaffairs.stanford.edu/oae/) or the instructor in question, students may not audio- or video-record lectures. Even with permission, students may only use such recordings for personal use; no posting or further distribution or use is permitted.

SEXUAL HARASSMENT AND CONSENSUAL SEXUAL OR ROMANTIC RELATIONSHIPS

Sexual Harassment and Consensual Sexual or Romantic Relationships

For the complete text of the currently applicable version of this policy, see Administrative Guide Memo 2.2.4 Sexual Harassment and Consensual Sexual or Romantic Relationships (https://adminguide.stanford.edu/chapter-2/subchapter-2/policy-2-2-4/). It is also available from the Sexual Harassment Policy Office (http://harass.stanford.edu) homepage.

Summary

Stanford University strives to provide a place of work and study free of sexual harassment, intimidation or exploitation. Where sexual harassment is found to have occurred, the University will act to stop the harassment, prevent its recurrence, and discipline and/or take other appropriate action against those responsible.

Policy

The following is quoted from the policy:

1. In General

    a. Applicability and Sanctions for Policy Violations—This policy applies to all students, faculty and staff of Stanford University, as well as to others who participate in Stanford programs and activities. Its application includes Stanford programs and activities both on and off-campus, including overseas programs. Individuals who violate this policy are subject to discipline up to and including discharge, expulsion, and/or other appropriate sanction or action.

    b. Respect for Each Other—Stanford University strives to provide a place of work and study free of sexual harassment, intimidation or exploitation. It is expected that students, faculty, staff and other individuals covered by this policy will treat one another with respect.

    c. Prompt Attention—Reports of sexual harassment are taken seriously and will be dealt with promptly. The specific action taken in any particular case depends on the nature and gravity of the conduct reported, and may include intervention, mediation, investigation and the initiation of grievance and disciplinary processes as discussed more fully below. Where sexual harassment is found to have occurred, the University will act to stop the harassment, prevent its recurrence, and discipline and/or take other appropriate action against those responsible.

    d. Confidentiality—The University recognizes that confidentiality is important. Sexual harassment advisers and others responsible to implement this policy will respect the confidentiality and privacy of individuals reporting or accused of sexual harassment to the extent reasonably possible. Examples of situations where confidentiality cannot be maintained include circumstances when the University is required by law to disclose information (such as in response to legal process) and when disclosure is required by the University's outweighing interest in protecting the rights of others.

    e. Protection Against Retaliation—Retaliation and/or reprisals against an individual who in good faith reports or provides information in an investigation about behavior that may violate this policy are against the law and will not be tolerated. Intentionally making a false report or providing false information, however, is grounds for discipline.

    f. Relationship to Freedom of Expression—Stanford is committed to the principles of free inquiry and free expression. Vigorous discussion and debate are fundamental to the University, and this policy is not intended to stifle teaching methods or freedom of expression generally, nor will it be permitted to do so. Sexual harassment, however, is neither legally protected expression nor the proper exercise of academic freedom; it compromises the integrity of the University, its tradition of intellectual freedom and the trust placed in its members.

2. What Is Sexual Harassment?

    Unwelcome sexual advances, requests for sexual favors, and other visual, verbal or physical conduct of a sexual nature constitute sexual harassment when:

    a. It is implicitly or explicitly suggested that submission to or rejection of the conduct will be a factor in academic or employment decisions or evaluations, or permission to participate in a University activity; or

    b. The conduct has the purpose or effect of unreasonably interfering with an individual's academic or work performance or creating an intimidating or hostile academic, work or student living environment.

        Determining what constitutes sexual harassment depends upon the specific facts and the context in which the conduct occurs. Sexual harassment may take many forms—subtle and indirect, or blatant and overt. For example,

        i. It may be conduct toward an individual of the opposite sex or the same sex.

        ii. It may occur between peers or between individuals in a hierarchical relationship.

        iii. It may be aimed at coercing an individual to participate in an unwanted sexual relationship or it may have the effect of causing an individual to change behavior or work performance.

        iv. It may consist of repeated actions or may even arise from a single incident if sufficiently egregious.

    c. The University's Policy on Sexual Assault (see Guide Memo 23.3, Sexual Assault (http://adminguide.stanford.edu/23_3.pdf)) may also apply when sexual harassment involves physical contact.

3. What To Do About Sexual Harassment

    Individuals seeking further information are directed to the following resources:

    - The Sexual Harassment Policy Office (Mariposa House, 585 Capistrano Way, Room 208-209, Stanford University, Stanford, CA, 94305-8230; (650) 723-1583; email: harass@stanford.edu for information, consultation, advice, or to lodge a complaint. Note that anonymous inquiries can be made to the SHPO by phone during business hours.
    - The Sexual Harassment Policy Office web page at http://harass.stanford.edu (http://harass.stanford.edu/).
    - Any designated Sexual Harassment Adviser or resource person listed in 3.a or 5.a.

The following are the primary methods for dealing with sexual harassment at Stanford. They are not required to be followed in any specific order. However, early informal methods are often effective in correcting questionable behavior.

a. Consultation—Consultation about sexual harassment is available from the Sexual Harassment Policy Office, Sexual Harassment Advisers (including residence deans), human resources officers, employee relations specialists, counselors at Counseling and Psychological Services (CAPS) or the Help Center, chaplains at Memorial Church, ombudspersons and others. A current list of Sexual Harassment Advisers is available from the Sexual Harassment Policy Office and at http://harass.stanford.edu/SHadvisers.html. Consultation is available for anyone who wants to discuss issues related to sexual harassment, whether or not "harassment" actually has occurred, and whether the person seeking information is a complainant, a person who believes his or her own actions may be the subject of criticism (even if unwarranted), or a third party.

   Often there is a desire that a consultation be confidential or "off the record." This can usually be achieved when individuals discuss concerns about sexual harassment without identifying the other persons involved, and sometimes even without identifying themselves. Confidential consultations about sexual harassment also may be available from persons who, by law, have special professional status, such as:

   i. Counselors at Counseling and Psychological Services (CAPS), http://caps.stanford.edu (http://caps.stanford.edu/)

   ii. Counselors at the Help Center, http://www.stanford.edu/dept/helpcenter (http://www.stanford.edu/dept/helpcenter/)

   iii. Chaplains at Memorial Church

   iv. The University Ombudsperson, https://ombuds.stanford.edu/

   In these latter cases, the level of confidentiality depends on what legal protections are held by the specific persons receiving the information and should be addressed with them before specific facts are disclosed. For more information see http://harass.stanford.edu/confidential.html.

   For further information on confidentiality, see Section 1(d) above.

b. Direct Communication—An individual may act on concerns about sexual harassment directly, by addressing the other party in person or writing a letter describing the unwelcome behavior and its effect and stating that the behavior must stop. A Sexual Harassment Adviser can help the individual plan what to say or write, and likewise can counsel persons who receive such communications. Reprisals against an individual who in good faith initiates such a communication violate this policy.

c. Third Party Intervention—Depending on the circumstances, third party intervention in the workplace, student residence or academic setting may be attempted. Third party intervenors may be the Sexual Harassment Advisers, human resources professionals, the ombudspersons, other faculty or staff, or sometimes mediators unrelated to the University.

   When third party intervention is used, typically the third party (or third parties) will meet privately with each of the persons involved, try to clarify their perceptions and attempt to develop a mutually acceptable understanding that can insure that the parties are comfortable with their future interactions. Other processes, such as a mediated discussion among the parties or with a supervisor, may also be explored in appropriate cases.

   Possible outcomes of third party intervention include explicit agreements about future conduct, changes in workplace assignments, substitution of one class for another, or other relief, where appropriate.

d. Formal Grievance, Appeal, and Disciplinary Processes—Grievance, appeal, or disciplinary processes may be pursued as applicable.

   i. Grievances and Appeals—The applicable procedure depends on the circumstances and the status of the person bringing the charge and the person against whom the charge is brought. Generally, the process consists of the individual's submission of a written statement, a process of fact-finding or investigation by a University representative, followed by a decision and, in some cases, the possibility of one or more appeals, usually to Stanford administrative officers at higher levels. The relevant procedure (see below) should be read carefully, since the procedures vary considerably.

   If the identified University fact-finder or grievance officer has a conflict of interest, an alternate will be arranged, and the Director of the Sexual Harassment Policy Office or the Director of Employee and Labor Relations can help assure that this occurs.

   In most cases, grievances and appeals must be brought within a specified time after the action complained of. While informal resolution efforts will not automatically extend the time limits for filing a grievance or appeal, in appropriate circumstances the complainant and the other relevant parties may mutually agree in writing to extend the time for filing a grievance or appeal.

   A list of the established grievance and appeal procedures is located at http://hrweb.stanford.edu/elr/policies/list_grievance_procedures.html. Copies may also be obtained from the Sexual Harassment Policy Office, http://www.stanford.edu/group/SexHarass (http://studentaffairs.stanford.edu/sara/).

   Copies of the following may be obtained from Employee and Labor Relations, 505 Broadway, Redwood City, CA 94063-8443 (Cardinal Hall, 5th floor):

   1. "Solving Workplace Problems at Stanford: Understanding the Staff Dispute Resolution Policy".

   2. "Solving Workplace Problems at Stanford: Information for Academic Staff – Librarians and Academic Staff – Research Associates".

   3. "The Dispute Resolution Process (A User's Guide)".

   ii. Disciplinary Procedures—In appropriate cases, disciplinary procedures may be initiated. The applicable disciplinary procedure depends on the status of the individual whose conduct is in question. For example, faculty are subject to the Statement on Faculty Discipline (http://www.stanford.edu/dept/provost/faculty/policies/handbook/ch4.html#statementonfacultydiscipline), and students to the Fundamental Standard. For additional information related to student disciplinary procedures, see the Office of Community Standards (http://studentaffairs.stanford.edu/communitystandards/).

The individuals referenced in this section are available to discuss these options and differing methods for dealing with sexual harassment.

4. Procedural Matters

   a. Investigations—If significant facts are contested, an investigation may be undertaken. The investigation will be conducted in a way that respects, to the extent possible, the privacy of all of the persons involved. In appropriate cases, professional investigators may be asked to assist in the investigation. The results of the investigation may be used in the third party intervention process or in a grievance or disciplinary action.

   b. Recordkeeping—The Sexual Harassment Policy Office will track reports of sexual harassment for statistical purposes and report at least annually to the University President concerning their number, nature and disposition.

      The Sexual Harassment Policy Office may keep confidential records of reports of sexual harassment and the actions taken in response to those reports, and use them for purposes such as to identify individuals or departments likely to benefit from training so that training priorities can be established. No identifying information will be retained in cases where the individual accused was not informed that there was a complaint.

   c. Indemnification and Costs—The question sometimes arises as to whether the University will defend and indemnify a Stanford employee accused of sexual harassment. California law provides, in part, "An employer shall indemnify [its] employee for all that the employee necessarily expends or loses in direct consequence of the discharge of his [or her] duties as such." The issue of indemnification depends on the facts and circumstances of each situation. Individuals who violate this policy, however, should be aware that they and/or their schools, institutes, or other units may be required to pay or contribute to any judgments, costs and expenses incurred as a result of behavior that is wrongful and/or contrary to the discharge of the employee's duties. In general, see Administrative Guide Memo 2.4.6 Indemnification (https://adminguide.stanford.edu/chapter-2/subchapter-4/policy-2-4-6/).

5. Resources for Dealing with Sexual Harassment

   a. Advice—Persons who have concerns about sexual harassment should contact the Sexual Harassment Policy Office, any Sexual Harassment Adviser at http://harass.stanford.edu/SHadvisers.html or one of the other individuals listed below. Reports should be made as soon as possible: the earlier the report, the easier it is to investigate and take appropriate remedial action. When reports are long delayed, the University will try to act to the extent it is reasonable to do so, but it may be impossible to achieve a satisfactory result after much time has passed.

      Likewise, anyone who receives a report or a grievance involving sexual harassment should promptly consult with the Sexual Harassment Policy Office or with a Sexual Harassment Adviser.

      There are a number of individuals specially trained and charged with specific responsibilities in the area of sexual harassment. In brief, they are:

      i. Sexual Harassment Advisers (http://harass.stanford.edu/SHadvisers.html) serve as resources to individuals who wish to discuss issues of sexual harassment, either because they have been harassed or because they want information about the University's policy and procedures. There is usually at least one Adviser assigned to each of the schools at the University and to each large work unit; most of the residence deans also have been appointed as Sexual Harassment Advisers. Advisers are also authorized to receive complaints.

      ii. The Director of the Sexual Harassment Policy Office is responsible for the implementation of this policy. The Director's Office also provides advice and consultation to individuals when requested; receives complaints and coordinates their handling; supervises the other Advisers; encourages and assists prevention education for students, faculty and staff; keeps records showing the disposition of complaints; and generally coordinates matters arising under this policy. Because education and awareness are the best ways to prevent sexual harassment; developing awareness, education and training programs and publishing informational material are among the most important functions of the Sexual Harassment Policy Office (http://harass.stanford.edu (http://harass.stanford.edu/)).

      iii. As stated above, individuals with concerns about sexual harassment may also discuss their concerns informally with psychological counselors (for example through CAPS or the HELP Center), chaplains (through the Memorial Chapel), or the University ombudsperson. For more information, see http://harass.stanford.edu/resources.html.

   b. External Reporting—Sexual harassment is prohibited by state and federal law. In addition to the internal resources described above, individuals may pursue complaints directly with the government agencies that deal with unlawful harassment and discrimination claims, e.g., the U.S. Equal Employment Opportunity Commission (EEOC), the Office for Civil Rights (OCR) of the U.S. Department of Education, and the State of California Department of Fair Employment and Housing (DFEH). These agencies are listed in the Government section of the telephone book. A violation of this policy may exist even where the conduct in question does not violate the law.

6. Consensual Sexual or Romantic Relationships

   a. In General—There are special risks in any sexual or romantic relationship between individuals in inherently unequal positions, and parties in such a relationship assume those risks. In the University context, such positions include (but are not limited to) teacher and student, supervisor and employee, senior faculty and junior faculty, mentor and trainee, adviser and advisee, teaching assistant and student, coach and athlete, and the individuals who supervise the day-to-day student living environment and student residents. Because of the potential for conflict of interest, exploitation, favoritism, and bias, such relationships may undermine the real or perceived integrity of the supervision and evaluation provided, and the trust inherent particularly in the teacher-student context. They may, moreover, be less consensual than the individual whose position confers power or authority believes. The relationship is likely to be perceived in different ways by each of the parties to it, especially in retrospect.

      Moreover, such relationships may harm or injure others in the academic or work environment. Relationships in which one party is in a position to review the work or influence the career of the other may provide grounds for complaint by third parties when that relationship gives undue access or advantage, restricts opportunities, or creates a perception of these problems. Furthermore, circumstances may change, and conduct that was previously welcome may become unwelcome. Even when both parties have consented at the outset to a romantic involvement, this past consent does not remove grounds for a charge based upon subsequent unwelcome conduct.

Where such a relationship exists, the person in the position of greater authority or power will bear the primary burden of accountability, and must ensure that he or she—and this is particularly important for teachers—does not exercise any supervisory or evaluative function over the other person in the relationship. Where such recusal is required, the recusing party must also notify his or her supervisor, department chair or dean, so that such chair, dean or supervisor can exercise his or her responsibility to evaluate the adequacy of the alternative supervisory or evaluative arrangements to be put in place. Staff members may notify their local human resources officers. To reiterate, the responsibility for recusal and notification rests with the person in the position of greater authority or power. Failure to comply with these recusal and notification requirements is a violation of this policy, and therefore grounds for discipline. The University has the option to take any action necessary to insure compliance with the spirit of this recusal policy, including transferring either or both employees in order to minimize disruption of the work group. In those extraordinarily rare situations where it is programmatically infeasible to provide alternative supervision or evaluation, the cognizant Dean or Director must approve all evaluative and compensation actions.

b. With Students—At a university, the role of the teacher is multi-faceted, including serving as intellectual guide, counselor, mentor and adviser; the teacher's influence and authority extend far beyond the classroom. Consequently and as a general proposition, the University believes that a sexual or romantic relationship between a teacher and a student, even where consensual and whether or not the student would otherwise be subject to supervision or evaluation by the teacher, is inconsistent with the proper role of the teacher, and should be avoided. The University therefore very strongly discourages such relationships.

7. Policy Review and Evaluation—This policy went into effect on October 6, 1993, and was amended on November 30, 1995, and on May 30, 2002. It is subject to periodic review, and any comments or suggestions should be forwarded to the Director of the Sexual Harassment Policy Office.

Resources

The following is a summary of resources concerning sexual harassment available to members of the Stanford Community:

A brochure containing the policy, a list of current sexual harassment advisers, confidential resources, and other helpful information is available online at the Sexual Harassment Policy Office (http://harass.stanford.edu) web site, and in printed form from the Sexual Harassment Policy Office at Mariposa House, 585 Capistrano Way, Room 208-209, Stanford University, Stanford, CA, 94305-8230; (650) 723-1583; email: harass@stanford.edu. Copies of the University policy on sexual assault, which complements this sexual harassment policy, as well as all other documents mentioned in this section, are also available at the Sexual Harassment Policy Office.

All faculty, staff, and students who have questions regarding this policy and its enforcement can consult with a Sexual Harassment Adviser or can be directed to the local Personnel Officer or Regional Human Resources Manager. Faculty members should contact their dean or department chair, and students should contact the Director of the Sexual Harassment Policy Office or the Dean of Student Affairs.

Sexual Harassment Policy Office—telephone: (650) 723-1583; email: harass@stanford.edu.

Director: Laraine Zappert (Clinical Professor, Psychiatry and Behavioral Sciences)

SEXUAL MISCONDUCT AND SEXUAL ASSAULT

Sexual Misconduct and Sexual Assault

The University's Policy on Sexual Misconduct and Sexual Assault is published in complete form in the Administrative Guide Memo 2.2.4 Sexual Harassment and Consensual Sexual or Romantic Relationships (https://adminguide.stanford.edu/chapter-2/subchapter-2/policy-2-2-4/).

Summary

The following summarizes the policy on Sexual Assault and provides information on resources available to members of the Stanford community.

Policy

Under Title IX, sexual violence (sexual misconduct and sexual assault) is a severe form of sexual harassment. Sexual misconduct and sexual assault are unacceptable and is not tolerated at Stanford University. All University employees (including student residence staff employees) have a duty to report claims of sexual misconduct or sexual assault to Cathy Glaze., Title IX Coordinator at (650) 497-4955 (voice), titleix@stanford.edu (http://relative.pagelegend.com/mailto:titleix@stanford.edu), https://titleix.stanford.edu/. For students, report claims to the Title IX Coordinator or the Office of Sexual Assault and Relationship Abuse (SARA) at (650) 725-1056 or saraoffice@stanford.edu.

The University urges an individual who has been subjected to sexual misconduct or sexual assault to make an official report. A report of the matter will be dealt with promptly. Confidentiality will be maintained to the extent possible.

The University is committed to providing information regarding on- and off-campus services and resources to all parties involved.

Students, faculty and staff found to be in violation of this policy will be subject to discipline up to and including termination, expulsion or other appropriate institutional sanctions; affiliates and program participants may be removed from University programs and/or prevented from returning to campus.

A comprehensive web site dedicated to sexual violence awareness, prevention and support can be found at Office of Sexual Assault & Relationship Abuse Education & Response (SARA) (http://studentaffairs.stanford.edu/sara/). The site contains a list of resources and describes reporting options.

Definitions

What is Sexual Misconduct?

Sexual misconduct is the commission of an unwanted sexual act, whether by an acquaintance or by a stranger, that occurs without indication of consent.

What is Sexual Assault?

Sexual assault is the actual, attempted or threatened unwanted sexual act, whether by an acquaintance or by a stranger, accomplished (1) against a person's will by means of force (express or implied), violence, duress, menace, fear or fraud, or (2) when a person is incapacitated or unaware of the nature of the act, due to unconsciousness, sleep and/or intoxicating substances.

What is Consent?

Consent is informed, freely given, and mutually understood. Consent requires an affirmative act or statement by each participant. If coercion, intimidation, threats and/or physical force are used, there is no consent. If a person is mentally or physically incapacitated or impaired so that the person cannot understand the fact, nature or extent of the sexual situation, there is no consent; this includes conditions due to alcohol or drug consumption or being asleep or unconscious. Whether one has taken advantage of a position of influence over another may be a factor in determining consent.

Notification

With the consent of the victim, allegations of sexual assault received by University offices or personnel shall be communicated promptly to the Department of Public Safety, 711 Serra Street, telephone 9-911 for emergency response or (650) 723-9633 during normal business hours.

Emergency Services Available to Victims

Victims of sexual assault are urged to seek immediate attention from emergency police, medical, and counseling services. On the Stanford campus and in the immediate vicinity, the following provide 24-hour response and will arrange for police assistance, medical assistance, emotional support services, and advocacy and support:

- "911" Emergency Network: dial 9-911 from University phones or 911 from outside phones
- Santa Clara Valley Medical Center, 751 South Bascom Avenue, San Jose, telephone (408) 885-5000
- YWCA Stanford Hotline, for students, telephone (650) 725-9955
- Stanford Hospital and Clinics, 300 Pasteur Drive, Stanford, telephone (650) 723-5111
- Residence and Graduate Life Deans, page through 723-8222, extension 25085

Non-Emergency Resources

Office of Sexual Assault & Relationship Abuse Education & Response (SARA) (725-1056) provides comprehensive and consistent response to incidents of sexual and relationship violence to the campus community. SARA provides case consultation to students and staff, case management for reported assaults and information and referrals to services on and off campus. The office also assists with educational outreach and training to increase awareness, sensitivity, and community accountability in the prevention of these acts. Online information is available at the Sexual Assault & Relationship Abuse Education & Response (SARA) (http://studentaffairs.stanford.edu/sara.html) web site.

Additional resources for students are available at Vaden Health Service at (650) 723-3785, including short-term counseling, referral to long-term therapy, follow-up pregnancy testing, and testing and treatment for sexually transmitted diseases. Additional services for faculty and staff are available at the University's HELP Center, Galvez House (723-4577), including general counseling, information, support, and referral. The University ombuds (723-3682) is available to all in the Stanford community for general counseling, advice, and advocacy. Cathy Glaze, Title IX Coordinator, Kingscote Gardens (2nd floor), 419 Lagunita Drive, Stanford, CA 94305, (650) 497-4955 (voice), (650) 497-9257 (fax), titleix@stanford.edu (http://relative.pagelegend.com/mailto:titleix@stanford.edu), https://titleix.stanford.edu/, is available to assist students to address the effects of sexual harassment and sexual violence

Confidentiality of Information

The University will make reasonable and appropriate efforts to preserve an individual's privacy and protect the confidentiality of information. However, because of laws relating to reporting and other state and federal laws, the University cannot guarantee confidentiality to those who report incidents of sexual violence except where those reports are privileged communications with those in legally protected roles (set forth below).

The professional being consulted should, if possible, make these limits clear before any disclosure of facts.

An individual can speak confidentially with certain individuals in legally protected roles. They include sexual assault counselors such as those at the YWCA Sexual Assault Center at Stanford, the Help Center, Counseling and Psychological Services (CAPS) and clergy. Exceptions to maintaining confidentiality are set by law; for example, physicians and nurses who treat any physical injury sustained during a sexual assault are required to report it to law enforcement. In addition, physicians, nurses, psychologists, psychiatrists, teachers and social workers must report a sexual assault committed against a person under age 18.

Information shared with other individuals is not legally protected from being disclosed. Considerations with respect to a complainant's request for confidentiality include factors such as the University's ability to respond effectively, to prevent further harassment or to ensure the safety of the University community. For example, an advisor, the Dean of Student Life, a Residence Dean or a Resident Assistant may need to inform other individuals to protect their safety or rights, in fairness to the persons involved, or in response to legal requirements. As required by law, all disclosures to any University employee of an on-campus sexual assault must be reported for statistical purposes only (without personal identifiers) to the Stanford University Department of Public Safety, which has the responsibility for tabulating and annually publishing sexual assault and other crime statistics. Such reports are for statistical purposes and do not include individual identities.

State law permits law enforcement authorities to keep confidential the identity of a person officially reporting a sexual assault. The Stanford University Department of Public Safety policy is to maintain such confidentiality. However, if the District Attorney files a criminal charge, confidentiality might not be maintained.

If a complaint is filed with the Office of Judicial Affairs then the accused student must be provided with the name of the alleged victim and witnesses, if applicable. However, accommodations can be made to protect the victim's privacy, as described on the website for the Office of Judicial Affairs.

Information about Options

The University offices responding to allegations of sexual misconduct or sexual assault will inform affected individuals, at a minimum, of the options of: criminal prosecution, civil prosecution, the disciplinary process, the appropriate Title IX grievance procedure, alternative housing assignments, and academic assistance alternatives.

SMOKE-FREE ENVIRONMENT

Smoke-Free Environment

The University's policy on a smoke-free environment is published in its complete form in the Administrative Guide Memo 2.2.6 Smoke-Free Environment (https://adminguide.stanford.edu/chapter-2/subchapter-2/policy-2-2-6/).

Applicability

Applies to all academic and administrative units of Stanford University, including SLAC and all campus student housing. This policy does not supersede more restrictive policies that may be in force to comply with federal, state, or local laws or ordinances. The President must approve more restrictive policies not required by law.

1. Policy

It is the policy of Stanford University that all smoking, including but not limited to tobacco products and the use of electronic smoking devices, is prohibited in enclosed buildings and facilities and during indoor or outdoor events on the campus.

2. Definition

“Smoke-free” refers to an environment that is free of smoke from, among other things, tobacco products and/or vapors from electronic smoking devices.

3. Guidelines

a. Smoking-Prohibited Areas

Specifically, smoking is prohibited in classrooms and offices, all enclosed buildings and facilities, in covered walkways, in University vehicles, during indoor or outdoor athletic events, during other University sponsored or designated indoor or outdoor events and in outdoor areas designated by signage as "smoking prohibited" areas.

- Ashtrays will not be provided in any enclosed University building or facility.
- "Smoking Prohibited" signs will be posted.

b. Outdoor Smoking Areas

Except where otherwise posted as a "smoking prohibited area," smoking is generally permitted in outdoor areas, except during organized events. Outdoor smoking in non-prohibited areas must be at least 30 feet away from doorways, open windows, covered walkways, and ventilation systems to prevent smoke from entering enclosed buildings and facilities. To accommodate faculty, staff, and students who smoke, Vice Presidents, Vice Provosts, and Deans may designate certain areas of existing courtyards and patios as smoking areas, and must provide ashtrays. The specific academic or administrative unit(s) will be responsible for absorbing all costs associated with providing designated smoking areas and ashtrays.

4. Enforcement

This policy relies on the consideration and cooperation of smokers and non-smokers. It is the responsibility of all members of the University community to observe and follow this policy and its guidelines.

a. Smoking Cessation Information

Smoking cessation programs are available for faculty and staff through the Center for Research in Disease Prevention, Health Improvement Program (HIP). Students may contact the Health Promotion Program (HPP) through the Student Health Center for smoking cessation information or programs.

b. Repeated Violations

Faculty, staff and, students repeatedly violating this policy may be subject to appropriate action to correct any violation(s) and prevent future occurrences.

5. Implementation and Distribution

This policy will be disseminated to all faculty, staff and students and to all new members of the University Community.

STANFORD NAME AND TRADEMARKS

Ownership and Use of Stanford Name and Trademarks

Stanford registered marks, as well as other names, seals, logos, and other symbols and marks that are representative of Stanford, may be used solely with permission of Stanford. Merchandise bearing Stanford's names and marks, such as t-shirts, glassware, and notebooks, must be licensed. For complete text of the currently applicable policy, including the University officers authorized to grant permission to use the Stanford name and marks, see Administrative Guide Memo 1.5.4 Ownership and Use of Stanford Name and Trademarks (https://adminguide.stanford.edu/chapter-1/subchapter-5/policy-1-5-4/).

STUDENT NON-ACADEMIC GRIEVANCE PROCEDURE

Student Non-Academic Grievance Procedure

Policy

The following is the policy:

1. Applicability

   a. It is perhaps inevitable in any university that some students may at times feel improperly treated, and that concerns about unfairness (including potential discrimination and harassment) may also at times arise.

      In this regard (and although this grievance procedure is not limited to concerns of discrimination), Stanford University's Nondiscrimination Policy provides in part: "Stanford University admits qualified students of any race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity, veteran status, or marital status to all the rights, privileges, programs, and activities generally accorded or made available to students at the University. Consistent with its obligations under the law, in the administration of the University's programs and activities, Stanford prohibits unlawful discrimination on the basis of race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity or expression, veteran status, marital status or any other characteristic protected by applicable law; Stanford also prohibits unlawful harassment including sexual harassment and sexual violence."

   b. At Stanford, there are a number of grievance procedures through which students can raise and seek redress for what they believe to be unfair, improper or discriminatory decisions, actions, or treatment. For example:

      i. If the matter involves an academic decision, the Student Academic Grievance Procedure may be the applicable procedure.
      ii. If the matter involves a disability-related concern, the Student ADA/Section 504 Grievance Procedure may be applicable.
      iii. If the matter involves a student-athlete and his or her sport, the Student-Athlete Grievance Procedure may be applicable.

   c. The purpose of the Student Non-Academic Grievance Procedure is to provide a process for students to seek resolution of disputes and grievances that may not fall within the scope of one of the other grievance processes, including those which may arise in a student's capacity as a student-employee.

   d. As a general proposition, this procedure is available to undergraduates and graduate students at Stanford University. It is designed to address individual decisions or individual actions that affect the grievant personally in his or her capacity as a student, but it does not apply to matters proceeding or addressed through the Office of Community Standards or through the Dean's leave policy. This is likewise not a grievance procedure to address the concerns of student groups. Similarly and as a general proposition, dissatisfaction with a departmental, school, or University policy or practice of broad or general application is not grounds for a grievance under this procedure; the Director of the Diversity and Access Office (hereafter "the Director") may, in his or her discretion, entertain such a grievance in exceptional circumstances, such as where (for example) the policy or practice is alleged to be contrary to law. In the same way, the Director may entertain a grievance under this procedure brought by an individual who is not an undergraduate or graduate student, in an appropriate case or as required by law.

   e. The Director is responsible for administering this Student Non-Academic Grievance Procedure.

      i. The Director may be contacted at: Director of the Diversity and Access Office, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (http://relative.pagelegend.com/mailto:equal.opportunity@stanford.edu) (email), http://www.stanford.edu/dept/ocr (http://www.stanford.edu/dept/ocr/).
      ii. The Director in his or her sole discretion can decide whether to refer a grievance brought under this procedure to another grievance process. In cases involving allegations of sexual harassment in particular, the Director may wish to consult with the Director of the Sexual Harassment Policy Office as to the most appropriate way to proceed; see Section 5.d below. In cases involving student employment, the Director may wish to consult with the University's Department of Human Resources.

2. Informal Resolution

   a. As a general proposition (and although particular circumstances may warrant an exception), the student should first discuss the problem and seek a solution with the individual(s) most directly involved.

   b. If no resolution results (or if circumstances make discussion inappropriate with the person most directly involved), the student should then consult with the individual at the next (higher) administrative level in the department, school, residence or University administrative unit. Serious efforts should be made to resolve the issue locally at an informal level without resort to a formal grievance; such efforts may continue even after the formal process is underway.

3. Formal Grievance

   a. If informal means of resolution prove inadequate, the student should set forth in writing the substance of the complaint, the grounds for it and the evidence on which it is based, and the efforts taken to date to resolve the matter. It is at this stage that the complaint becomes a formal grievance.

   b. The grievance document should be submitted to the Director. A grievance should be filed in a timely fashion, i.e., normally no later than thirty days after of the end of the academic quarter in which the action that is the subject of the grievance occurred. Except in extraordinary circumstances, delay in filing a grievance will be grounds for rejection of that grievance.

   c. The Director will promptly initiate a review, which should normally be completed within sixty days. The Director may attempt to resolve the matter informally, and may refer the matter (or any part of it) to a grievance officer or other designee, who will look into and/or address the matter as the Director directs. The Director may also, in appropriate cases, remand the matter to the appropriate administrator (including to the administrative level at which the grievance arose) for further consideration.

   d. In undertaking this review, either the Director, his or her designee, or the grievance officer may request a response to the issues raised in the grievance from any individuals believed to have

information the reviewer considers relevant, including faculty, staff and students.

e. The Director (or his or her designee) will issue his or her decision in writing, and take steps to initiate such corrective action as is called for (if any). Conduct meriting discipline will be brought to the attention of the appropriate disciplinary process.

4. Appeal

a. If the student is dissatisfied with the disposition by the Director (or his or her designee), he or she may appeal to the Provost (Office of the President and Provost, Building 10, Stanford, CA 94305-2061; phone 650-725-4075; fax 650-725-1347). The appeal should be filed in writing with the Provost within ten days of the issuance of the decision by the Director (or his or her designee); a delay in filing the appeal may be grounds for rejection of that appeal.

b. The Provost may attempt to resolve the matter informally, and may refer the matter (or any part of it) to a grievance appeal officer, who will review the matter at the Provost's direction. The Provost may also, in appropriate cases, remand the matter to the appropriate administrator (including to the administrative level at which the grievance arose) for further consideration.

c. The Provost should normally complete his or her review of the appeal and issue his or her decision in writing within forty-five days. That decision is final.

5. General Provisions

a. Time Guidelines—The time frames set forth herein are guidelines. They may be extended by the Director or Provost, as applicable, in his or her discretion for good cause (including for reasons relating to breaks in the academic calendar), and will nearly always be extended during summers and the winter closure.

b. Advisers—A student initiating or participating in a grievance under this procedure may be accompanied by an adviser in any discussion with the Director, the Provost or their designees, or a grievance or grievance appeal officer under this procedure; any adviser must be a current Stanford faculty, staff member or student.

c. Ombuds—Students should be aware that the University Ombuds (http://www.stanford.edu/dept/ocr/ombuds (http://www.stanford.edu/dept/ocr/ombuds/)) is available to discuss and advise on any matters of University concern and frequently help expedite resolution of such matters. Although it has no decision making authority, the Ombuds' Office has wide powers of inquiry.

d. Sexual Harassment and Sexual Misconduct and Sexual Assault—For information and resources concerning sexual harassment, students should refer to the web page of the Sexual Harassment Policy Office at http://harass.stanford.edu (http://harass.stanford.edu/). For information and resources concerning sexual assault and relationship abuse, students should refer to the web page of the Sexual Violence Advisory Board at http://www.stanford.edu/group/svab/help.shtml (http://www.stanford.edu/group/svab/help.shtml/).

e. No retaliation—Stanford University prohibits retaliation or reprisals against individuals based on their pursuit in good faith of a grievance under this procedure, or their participation in good faith in the grievance process.

f. Standards for Review—If the grievance involves a decision that is being challenged, the review by the Director, as well as the review by the Provost on appeal, usually will be limited to the following considerations:

i. Were the proper facts and criteria brought to bear on the decision? Were improper or extraneous facts or criteria brought to bear that substantially affected the decision to the detriment of the grievant?

ii. Were there any procedural irregularities that substantially affected the outcome of the matter to the detriment of the grievant?

iii. Given the proper facts, criteria, and procedures, was the decision one which a person in the position of the decision maker might reasonably have made?

TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

Title VI of the Civil Rights Act of 1964

It is the policy of Stanford University to comply with Title VI of the Civil Rights Act of 1964 and its regulations, which prohibit unlawful discrimination on the basis of race, color, and national origin. The Title VI Compliance Officer is the Director of the Diversity and Access Office, who has been appointed to coordinate the University's efforts to comply with the law. Anyone who believes that Stanford is not in compliance with Title VI and its regulations should contact the Director of the Diversity and Access Office, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (http://relative.pagelegend.com/mailto:equal.opportunity@stanford.edu) (email). Grievance procedures to address complaints of discrimination on the basis of race, color, and national origin are set forth in the "Student Non-Academic Grievance Procedure (p.)." See also Administrative Guide Memo 2.2.1 General Personnel Policies (https://adminguide.stanford.edu/chapter-2/subchapter-2/policy-2-2-1/).

TITLE IX OF THE EDUCATION AMENDMENTS OF 1972

Title IX of the Education Amendments of 1972

It is the policy of Stanford University to comply with Title IX of the Education Amendment of 1972 and its regulations, which prohibit unlawful discrimination on the basis of sex. The Title IX Compliance Officer is Catherine Glaze, who has been appointed to coordinate the University's efforts to comply with the law. Anyone who believes that Stanford is not in compliance with Title IX and its regulations should contact the Title IX Coordinator, Kingscote Gardens (2nd floor), 419 Lagunita Drive, Stanford, CA 94305, (650) 497-4955 (voice), (650) 497-9257 (fax), titleix@stanford.edu (email). (See also the following section for addressing Title IX Concerns relating to sexual harassment.)

Title IX Concerns Relating to Sexual Harassment and the Violence Against Women Reauthorization Act of 2013

Catherine Glaze has been appointed Stanford's Title IX Coordinator to respond to matters of sexual assault, relationship (dating) violence and stalking (prohibited conduct). The Title IX Coordinator serves as a resource to review allegations of prohibited conduct and may provide interim accommodations relating to housing, academics, or no-contact letters while a matter is being reviewed. When prohibited conduct has been confirmed by a preponderance of the evidence, the Title IX Coordinator will provide long term accommodations and services to students to address the effects of sexual harassment and sexual violence. The Title IX Student Policy (https://titleix.stanford.edu/sites/default/files/title_ix_student_policy_ay_2013-14_faculty_staff_may_2014_final_0.pdf) provides the grievance procedure and appeal mechanism to review the University's actions relating to a Title IX concern involving Prohibited Conduct; see the Title IX web site (https://titleix.stanford.edu/) for additional information. Additional resources are available the Sexual Assault Support and Resources (https://notalone.stanford.edu/) web site. Ms. Glaze's contact information is titleix@stanford.edu; (650) 497-4955. An individual may contact the U.S. Department of Education, Office for Civil Rights (OCR). See also Administrative Guide Memos 2.1.2 Recruiting and Hiring of Regular Staff (https://adminguide.stanford.edu/chapter-2/subchapter-1/policy-2-1-2/), 1.7.1 Sexual Harassment (https://adminguide.stanford.edu/chapter-1/subchapter-7/policy-1-7-1/), 1.7.2, Consensual Sexual or Romantic Relationships (https://adminguide.stanford.edu/chapter-1/subchapter-7/policy-1-7-2/), and 1.7.3, Sexual Misconduct and Sexual Assault (https://adminguide.stanford.edu/chapter-1/subchapter-7/policy-1-7-3/).

VISITOR POLICY • UNIVERSITY STATEMENT ON PRIVACY

Visitor Policy/University Statement on Privacy

Stanford University has an interest in ensuring that the privacy of its students, faculty, and staff is respected, and that no activities interfere with education, research, or residential life.

The University is private property; however, some areas of the campus typically are open to visitors. These areas include White Plaza, public eating areas (such as those at Tresidder Union), outdoor touring areas, and locations to which the public has been invited by advertised notice (such as for public educational, cultural, or athletic events). Even in these locations, visitors must not interfere with the privacy of students, faculty, and staff, or with educational, research, and residential activities. The University may revoke at any time permission to be present in these, or any other areas. Visitors should not be in academic or residential areas unless they have been invited for appropriate business or social purposes by the responsible faculty member, student, or staff member.

No commercial activity, including taking photos or similar audio or visual recordings that are sold to others or otherwise used for commercial purposes, may occur on the campus or in University programs without the University's permission. Requests for permission should be submitted to the Director of University Communications or, as appropriate, the Dean of Students, the Department of Athletics, or the Office of Public Events. Recognized student groups and official units of the University will be granted such permission so long as they do not violate privacy or property interests of others; so long as any sale of their products is predominantly on campus to students, faculty, and staff; and so long as they comply with applicable University policies and procedures.

Violators of this policy may be subject to criminal and/or civil liability, as well as University disciplinary action.

UNDERGRADUATE EDUCATION (VPUE)

Established in 1995, the Office of the Vice Provost for Undergraduate Education (VPUE) comprises the Bing Overseas Studies Program, Program in Writing & Rhetoric, Stanford Introductory Studies, and Academic Advising. VPUE fosters innovation, integration, and pedagogical advancement of the Stanford undergraduate journey. Working with our partners, we prepare Stanford students to be engaged citizens with the creative confidence to tackle the world's most complex challenges.

VPUE programs for first- and second-year students include New Student Orientation/Approaching Stanford, the Leland Scholars Program, Frosh 101, Thinking Matters, Program in Writing and Rhetoric, Integrated Learning Environments, Education as Self Fashioning, Introductory Seminars, and Sophomore College. Programs for more advanced students include the Bing Overseas Studies Program, Stanford in New York, Writing in the Major, Undergraduate Research, Arts Intensive, and Bing Honors College. Academic Advising and the Hume Center for Writing and Speaking serve undergraduates throughout their time at Stanford. The office of the VPUE works closely with the office of the Vice Provost for Student Affairs and the Admissions Office, as well as with all seven Schools. The Vice Provost for Undergraduate Education reports to the Provost.

Policies governing undergraduate education are formulated by Faculty Senate committees and voted into legislation by the Faculty Senate. The Committee on Undergraduate Standards and Policy (C-USP) addresses such topics as general education requirements, grading, awards, advising, and teaching evaluation. The Committee on Review of Undergraduate Majors (C-RUM) oversees the initiation and review of undergraduate degree programs. Committee members include the Vice Provost for Undergraduate Education or his delegated staff (ex-officio) and representatives from the faculty at large, administration (such as the Office of the University Registrar), and students. The Associated Students of Stanford University (ASSU) nominations committee selects student members. The VPUE also maintains, by rule of the Faculty Senate, the Thinking Matters Governance Board, the Writing and Rhetoric Governance Board, and the Breadth Governance Board to oversee these university degree requirements, as well as the Committee on Residential Learning to oversee residential learning programs. Finally, the Undergraduate Advisory Council (UGAC) was established by the provost in 1996 to serve as the main faculty advisory body for the Vice Provost for Undergraduate Education.

Vice Provost for Undergraduate Education: Sarah Church

Senior Associate Vice Provost for Undergraduate Education: Gordon Chang, Professor of History

Senior Associate Vice Provost for Undergraduate Education: Sharon Palmer

Senior Associate Vice Provost for Finance and Administration: Jeanne Berent

ACADEMIC ADVISING

Academic Advising

Central Office: Sweet Hall, First Floor
Phone: (650) 723-2426
Website: http://advising.stanford.edu
Email: advising@stanford.edu
Appointments: Visit http://advising.stanford.edu or call (650) 723-2426

Academic Advising upholds the mission, standards, and requirements of the University, introduces students to the full intellectual richness of undergraduate study at Stanford, supports students in their academic and intellectual pursuits, and instills within them a sense of identity within and belonging to our community of scholars at Stanford. Academic Advising is responsible for facilitating new students' transition to Stanford, academic advising, and academic policy and progress.

Transitioning New Students

Academic Advising is responsible for the Approaching Stanford program, which guides new students through the process of coming to Stanford, from their admission to the University until the first day of class. This process culminates with New Student Orientation, which is required for all new first-year and transfer students. See the Approaching Stanford (https://approaching.stanford.edu/) website for additional information.

First-Year and Transfer Student Policies

Stanford values the transition process as the foundation for thriving both academically and personally in our community. The following policies support this principle and apply to first-year and new transfer students:

- All first-year and new transfer students are required to attend New Student Orientation (NSO) and must be checked in by the first day of NSO in early September.
- First-year and new transfer students are required to live on campus in University housing for three consecutive quarters in their first year. Should behavior warrant a first-year student's removal from the residences, that student cannot enroll in classes until they have returned to the residential community. This requirement will be waived in Academic Year 2020-2021 due to COVID-19 and remote learning.
- When circumstances arise which make it advisable for a first-year to take a leave absence at any time during the first year, they are required to wait until Autumn Quarter of the following year to return to Stanford.
- First-year and new transfer students cannot enroll in the Summer Quarter prior to their first year unless they are participating in a VPUE-sponsored program. Exceptions are very rarely granted.

Advising

Academic Advising pairs each first-year student with a professional academic advisor - usually an Academic Advising Director. Academic Advising Directors advise students broadly on their courses of study and long-term goals and can answer questions about academic policy. The Academic Advising staff also includes professional advisors in Sweet Hall who are both general and specialized academic advisors in the areas of pre-professional advising, returning student and transfer student advising, or coterminal advising, as well as advisors in the Athletic Academic Resource Center (https://aarc.stanford.edu) (AARC) who are general and specialized academic advisors assigned to all varsity student-athletes based on their sport.

Together with advisors at the Overseas Resource Center and the Haas Center for Public Service (http://haas.stanford.edu/), academic advisors help prepare students to compete for nationally competitive fellowships.

Academic Advising also administers the campus nomination process for several U.S.-based fellowships. See the Fellowships (https://undergrad.stanford.edu/opportunities-research/fellowships/) website for more information on fellowship opportunities.

Academic Advising also offers workshops and individual consultations on planning for graduate or professional studies (e.g., business, education, law, and medicine) and on general application procedures, including how to write personal statements, how to solicit letters of recommendation, and how to prepare for interviews. See the Planning for Graduate and Professional School (https://undergrad.stanford.edu/advising/graduate-and-professional-school-general-considerations/) website for more information.

See the Academic Advising website (http://advising.stanford.edu) for more information about academic advising, programming, and support for undergraduates.

Academic Policy

Academic Advising oversees the implementation of University academic policies pertaining to undergraduates, including requests for exceptions to academic policy and monitoring academic progress. All academic advisors support students with an academic status (e.g., academic probation, provisional registration, or academic suspension). For more information about academic policies that academic advisors help students navigate, see the Academic Policies (https://undergrad.stanford.edu/planning/academic-policies/) section of the Academic Advising website.

Leland Scholars Program

Offices: Sweet Hall, Garden Level
Mail code: 94305-3092
Email: thelspteam@stanford.edu (lelandscholars@stanford.edu)
Website: http://lelandscholars.stanford.edu (http://lelandscholars.stanford.edu/)

In recognizing the need to prepare first-year students for the academic, intellectual, social, and personal challenges they will face at Stanford, the Leland Scholars Program (LSP) facilitates the transition to college for incoming frosh who may be the first in their family to attend college or attended under-resourced schools or communities. Scholars participate in a four-week residential program in the summer prior to arrival on campus. This fully-funded program has a carefully crafted schedule of activities, coursework, discussions, and trips designed to support the transition to Stanford. During the academic year, Leland Scholars have access to additional advising and frosh seminars that sustain the community and reinforce the skills and strategies acquired during the program.

Frosh 101

Offices: Sweet Hall, Garden Level
Mail code: 94305-3092
Email: frosh101program@stanford.edu
Website: http://frosh101.stanford.edu

Frosh 101 and Transfer 101 (UAR 201) are discussion style courses designed to support first-year students transition to Stanford's dynamic campus. In Frosh 101 and Transfer 101, two upper-class students build community with first-year students as they lead weekly activities and conversations designed to help students:

- Establish meaningful friendships
- Gain advice from mentors
- Develop stress management tools
- Learn skills that enhance inclusion and belonging
- Grow empathy and perspective taking skills

- Make space for reflection and value setting
- Share your story and learn more about your peers through spotlights
- Co-create healthy, inclusive, communities of belonging and support with other Stanford students

Courses

UAR 20. Third Book Seminar. 1 Unit.
The third of the frosh Three Books program is Between the World and Me, by Ta-Nehisi Coates. This weekly discussion seminar will read and discuss Coates in depth, connecting it to other short writings on topics including the history of race in the United States, the Black Lives Matter protests, how race shapes education, reparations, the role of HBCUs, raising children in the midst of racial tensions. Open enrollment but preference to frosh.

UAR 41. OXC: Residential Exploration, Advocacy, Leadership. 1 Unit.
Explore concepts in leadership. Examine academic and personal issues affecting students and develop skills and approaches necessary to tackle the political, educational, and socioeconomic issues towards future change. An OpenXChange program.
Same as: REAL

UAR 42A. LSP First Year Seminar. 1 Unit.
For freshmen who participated in the Leland Scholars Program and other students who identify as First Generation and/or Low Income (FLI). This seminar supports students in the first year in the areas of institutional engagement, academic empowerment, their sense of belonging to Stanford, and builds their cohort identity.

UAR 42B. LSP First Year Seminar B. 1 Unit.
For freshmen who participated in the Leland Scholars Program and other students who identify as First Generation and/or Low Income (FLI). This seminar supports students in the first year in the areas of institutional engagement, academic empowerment, their sense of belonging to Stanford, and builds their cohort identity.

UAR 43. Leland Scholars Program. 1 Unit.
This course is offered in August prior to start of fall quarter for participants of the Leland Scholars Program. This course focuses on supporting participants transition to Stanford by providing workshops and opportunities to help students enhance academic skills, develop insight into self, connect to Stanford's resources, and build relationship with their peers.

UAR 44. Preparation for Success in University-Level Mathematics. 1 Unit.
In this course, we will explore fundamental mathematical concepts necessary for success in Calculus and higher level mathematics courses at Stanford University, with a focus on how such concepts are used in particular problem-solving contexts in Calculus and beyond. We will engage deeply with the mathematical concepts that form the foundation for problem-solving tools and techniques, so that students fully understand the how and why behind the methods, and are empowered to solve a broad range of problems in mathematics. Note: course offered in August prior to start of fall quarter, and only Leland Scholar Program participants will register.

UAR 56. Building a Successful Academic Career. 1-2 Unit.
For frosh in expanded advising programs. Techniques for honing academic skills for college, and applying those skills to better define intellectual identity in academic pursuits. May be repeated for credit.

UAR 71. Returning from Study Abroad. 1 Unit.
In this course, students will find the space to define their study abroad experience as well as articulate the ways in which their worldview perspectives may have shifted. Therefore, students will engage in deep mutual exchanges and personal introspection about their experiences abroad. Throughout the course, we will define their experience abroad while continually making-meaning as their new perspectives are supported and challenge amongst members of the Stanford community. Students will end the course by crafting action steps for moving forward with the ability to tell their study abroad story in compelling ways that can be applied to personal, social, academic, and professional realms of their lives.

UAR 81. OXC: Casa Zapata Pre-Assignee Seminar. 1 Unit.
This residence-based seminar is focused on skills building, practical workshops, and theme presentations promoting the breadth of diversity of our Zapata community. Through the seminar, the pre-assignee group will connect to the Zapata community, develop as resources for the community, and engage in topics that are meaningful to them and their community. This is an OpenXChange offering.

UAR 91. OXC: Ujamaa House Pre-Assignee Seminar. 1 Unit.
This one-unit seminar will expose students to various topics about the AfricannDiaspora. Upperclassmen Pre-Assignees will work closely with Ethnic ThemenAssociates/Resident Fellow to add breadth and depth to their presentations. To receive credit you must attend 7 Theme Programs (not including your own) and fill out Pre-Assignee Evaluations provided by Ethnic Theme Associates. Through the seminar, the pre-assignee group will connect to the Zapata community, develop as resources for the community, and engage in topics that are meaningful to them and their community. This is an OpenXChange offering.

UAR 101A. Frosh 101: In-Person. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer. Please enroll in the time slot that works best for your schedule - students will be grouped in sections with others based on the time they sign up for.

UAR 101B. Frosh 101: Remote. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer. Please enroll in the time slot that works best for your schedule - students will be grouped in sections with others based on the time they sign up for.

UAR 101C. Frosh 101 in Florence Moore. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer. Students who are assigned to the Florence Moore neighborhood complex should enroll in this course.

UAR 101D. Frosh 101 in Lagunita. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer. Students who are assigned to the Lagunita neighborhood complex should enroll in this course.

UAR 101E. Frosh 101 in Roble. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer. Students who are assigned to the Roble neighborhood complex should enroll in this course.

UAR 101F. Frosh 101 in Stern. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer. Students who are assigned to the Stern neighborhood complex should enroll in this course.

UAR 101G. Frosh 101 in Toyon. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer. Students who are assigned to the Toyon neighborhood complex should enroll in this course.

UAR 101H. Frosh 101 in Wilbur. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer. Students who are assigned to the Wilbur neighborhood complex should enroll in this course.

UAR 101I. Frosh 101 in Ethnic Theme Dorms. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer. Students who are assigned to the one of the Ethnic Theme Dorms (Casa Zapata, Muwekma-tah-ruk, Okada, Ujamaa) should enroll in this course.
Same as: ETD

UAR 101J. Frosh 101 in Branner. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer. Students who are assigned to the Branner neighborhood complex should enroll in this course.

UAR 101K. Frosh 101 in Gerhard Caspar Quad. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer. Students who are assigned to the Gerhard Caspar Quad neighborhood complex should enroll in this course.

UAR 101L. Frosh 101 in Governor's Corner. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer. Students who are assigned to the Governor's Corner neighborhood complex should enroll in this course.

UAR 101M. Frosh 101 in Okada. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer.

UAR 101N. Frosh 101 in Otero. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer.

UAR 101O. Frosh 101 in Potter. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer.

UAR 101P. Frosh 101 in Rinconada. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer.

UAR 101Q. Frosh 101 in Robinson. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer.

UAR 101R. Frosh 101 in Roble. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer.

UAR 101S. Frosh 101 in Toyon. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer.

UAR 101T. Frosh 101 in Ujamaa. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer.

UAR 101U. Frosh 101 in West FloMo. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer.
Same as: Gavilan

UAR 101V. Frosh 101 in West Lag. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer.
Same as: Eucalipto | Granada

UAR 101W. Frosh 101 in Lantana. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer.

UAR 101X. Frosh 101. 2 Units.
Frosh 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Frosh 101, approximately 10 frosh will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer. This course is intended for first year students who will not be physically on-campus in the Fall, but still wish to enroll in virtual sections. Same as: Misc

UAR 194A. Frosh 101: Leader Training. 2 Units.
This course will prepare students to lead Frosh 101, a discussion style course designed to help first-year students with their transition to Stanford's dynamic campus. This course will expose students to inclusive teaching practices and research on the impact mental health, diversity and inclusion and sense of belonging have on the experiences of undergraduates. This course is the first of two courses that Frosh 101 leaders will take. Prerequisite: only students who have applied and accepted to be Frosh 101 section leaders can enroll.

UAR 194B. Frosh 101: Curriculum Leader Training. 2 Units.
This course will provide Frosh 101 leaders with the content and facilitator training needed to lead a discussion style course designed to support first-year students in their transition to Stanford's dynamic campus. Prerequisite: EDUC 194A.

UAR 201. Transfer 101. 2 Units.
Transfer 101 is a discussion style course designed to help first-year students transition to Stanford's dynamic campus. In Transfer 101, transfer students will come together each week to learn more about your peers, yourself, and who you will be in this new environment. Upperclass students will lead you through activities and discussions that will serve to build the foundation for a strong community that is inclusive of diversity and promotes emotional and social wellbeing. This course will also create space for you to reflect on your values and goals as you make important decisions about how you will navigate all that Stanford has to offer.

UAR 301. Reflecting on Your Education: Making Sense of Your Time at Stanford. 2 Units.
In this seminar, designed for seniors graduating in the spring, you will reflect on your Stanford education. By delving deeply into Stanford's academic mission, the liberal arts model, and your own transcript, we will address a variety of questions through a personal and intellectual lens. Every transcript tells a story, both by what's there and what isn't - what story does yours tell? How do you take control of that narrative and articulate to others what your education has done for you? What are you getting from completing your Ways and 180+ units, and how did those academic experiences shape who you have become today? What do you share with other Stanford graduates and alumni? We'll tackle these questions, and together, we'll take a look at the bigger picture - what does it mean to get 'A Stanford Education'?.

STANFORD INTRODUCTORY STUDIES

Stanford Introductory Studies

Stanford Introductory Studies (SIS) is a unit in the office of the Vice Provost for Undergraduate Education that manages required and elective academic programs for first- and second-year students:

- Thinking Matters
- Introductory Seminars
- Education as Self-Fashioning (ESF)
- Immersion in the Arts: Living in Culture (ITALIC)
- Structured Liberal Education (SLE)
- Sophomore College
- Arts Intensive

More than 300 tenure-track faculty from all seven schools of the University teach in one or more of these SIS programs, sharing their enthusiasm for learning while encouraging students to discover their intellectual interests. SIS classes promote active learning in an inclusive and supportive classroom environment where individual students receive individual attention and support for their exploration of the full range of expansive and diverse academic opportunities offered at Stanford.

SIS Programs

The Thinking Matters (p. 169) program oversees a curriculum of team-taught required courses and provides entering students with a gateway to liberal education and a guided transition to the intellectual life of the University.

The Introductory Seminars (p. 169) program connects frosh and sophomores with the research faculty of the University through more than 200 small, departmentally based classes drawn from the full range of scholarship and discovery at Stanford.

Education as Self-Fashioning (p. 171) classes focus on the meaning and purpose of a liberal education in seminars that integrate writing instruction with discussion.

SLE (p. 170) and ITALIC (p. 170) offer a comprehensive approach to liberal education throughout the entire year, by integrating academic and residential experiences.

The Sophomore College (p. 171) and Arts Intensive (p. 171) programs immerse students in an academically focused, living/learning residential community during the month of September.

Thinking Matters

Faculty Director: Dan Edelstein, French and (by courtesy) History

Deputy Faculty Director: Lisa Surwillo, Iberian and Latin American Cultures

Associate Vice Provost for Undergraduate Education and Program Director, Stanford Introductory Studies: Parna Sengupta

Senior Associate Director: Dayo Mitchell

Affiliated Faculty: Lanier Anderson (Philosophy), Julie Baker (Genetics), Chris Bobonich (Philosophy), Emilee Chapman (Political Science), Cari Costanzo (Anthropology), Brian Coyne (Political Science), Adrian Daub (Comparative Literature and German Studies), Gordon Chang (History), Gilbert Chu (Medicine), Larry Diamond (FSI and Hoover), Dan Edelstein (French and History), Paul Edwards (FSI), James Fishkin (Communications), Kathryn Gin Lum (Religion) Heather Hadlock (Music), Stephen Hinton (Music), Adam Johnson (English), Pam Karlan (School of Law), Ari Kelman (School of Education), Joseph Lipsick (School of Medicine), S. Lochlann Jain (Anthropology), Stephen Luby (Medicine), David Magnus (School of Medicine), Ian Morris (Classics), Scott Sagan (Political Science), Gabriella Safran (Slavic), Wendy Salkin (Philosophy), Debra Satz (Philosophy), Lisa Surwillo (Iberian and Latin American Cultures), Blakey Vermeule (English), Ban Wang (East Asian Languages and Cultures), Ge Wang (Music and Computer Science), Allen Weiner (School of Law), Kritika Yegenashankaran (CTL and Philosophy).

Lecturers: Artemis Brod, Jonathan Chu, Collin Closek, Chloe Edmondson, Cynthia Flores, Jennifer Greenburg, Alison Laurence, Ameer Loggins, Nicole Martin, Sara Mrsny, Lexi Neame, Kirsten Paige, Adwait Parker, Emily Rials, Evan Sandlin, Tim Sorg, Justin Tackett, Jonathan Tang, Racheli Wercberger, Shizuka Yamada.

Offices: Sweet Hall, Second Floor
Mail code: 94305-3068
Phone: (650) 723-0944
Email: thinkingmatters@stanford.edu
Web Site: https://undergrad.stanford.edu/programs/thinking-matters (https://undergrad.stanford.edu/programs/thinking-matters/)

Thinking Matters courses are listed under the subject code THINK (https://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=20172018&q=THINK&collapse=) on the Stanford Bulletin's ExploreCourses web site.

Thinking Matters offers courses that satisfy the one quarter first-year requirement. Taught by faculty from a wide range of disciplines and fields, the Thinking Matters (THINK) requirement helps students develop the ability to ask rigorous and genuine questions that can lead to scientific experimentation or literary interpretation or social policy analysis. Through the study of these questions and problems, students develop critical skills in interpretation, reasoning, and analysis as well as enhance capacities for writing and discussion.

Thinking Matters Courses Offered in 2020-21

- All Thinking Matters Courses (https://undergrad.stanford.edu/programs/thinking-matters/courses/thinking-matters-course-listings/) Offered in 2020-21 on the Thinking Matters web site
- Autumn Quarter on ExploreCourses (https://explorecourses.stanford.edu/search/?q=THINK&view=catalog&page=0&academicYear=20202021&filter-term-Autumn=on&filter-coursestatus-Active=on&collapse=&filter-catalognumber-THINK=on)
- Winter Quarter on ExploreCourses (https://explorecourses.stanford.edu/search/?q=THINK&view=catalog&page=0&academicYear=20202021&filter-term-Winter=on&filter-coursestatus-Active=on&collapse=&filter-catalognumber-THINK=on&filter-catalognumber-THINK=on)
- Spring Quarter on ExploreCourses (https://explorecourses.stanford.edu/search/?q=THINK&view=catalog&page=0&academicYear=20202021&filter-term-Spring=on&filter-coursestatus-Active=on&collapse=&filter-catalognumber-THINK=on&filter-catalognumber-THINK=on)

Introductory Seminars

Faculty Director: Lisa Surwillo, Iberian and Latin American Cultures

Associate Vice Provost for Undergraduate Education and Program Director, Stanford Introductory Studies: Parna Sengupta

Associate Director of Introductory Seminars and Faculty Development: Lauri Dietz

Faculty: More than 200 faculty from the Schools of Humanities & Sciences; Engineering; Law; Medicine; Earth, Energy & Environmental Sciences; and, the Graduate Schools of Business and Education

Offices: Sweet Hall, Second Floor
Mail Code: 94305-3068
Phone: (650) 724-2405
Email: introsems@stanford.edu
Web Site: http://introsems.stanford.edu

The Introductory Seminars program offers more than 200 small classes for first- and second-year students taught by faculty from across the seven Schools of the University. Professors teach subjects drawn from their research and scholarship and engage students in deep investigation of important questions and issues. Seminars require little or no formal background, and welcome first-year students and sophomores to Stanford's intellectual community. A complete listing of the IntroSems can be found at ExploreIntroSems.stanford.edu (https://exploreintrosems.stanford.edu/).

Many seminars satisfy the Ways Breadth Requirements, and several meet the second-level Writing and Rhetoric Requirement (Writing 2). There is no limit on the total number of seminars a student may take. Most seminars are filled through an online selection and pre-enrollment process. Seminars that have space available are open for self-enrollment in Axess, with preference to first- and second-year students. For information about online sign-up and enrollment, see ExploreIntroSems.stanford.edu (https://exploreintrosems.stanford.edu/).

Sign-up deadlines for each quarter are on Fridays by 8 a.m. (Pacific Time) on:

- Autumn Quarter: August 28, 2020
- Winter Quarter: November 13, 2020
- Spring Quarter: February 12, 2021
- Summer Quarter: May 7, 2021

Introductory Seminars Courses Offered in 2020-21

- Frosh Introductory Seminars
  - Autumn Quarter
  - Winter Quarter
  - Spring Quarter
  - Summer Quarter
- Sophomore Introductory Seminars
  - Autumn Quarter
  - Winter Quarter
  - Spring Quarter
  - Summer Quarter

Structured Liberal Education

Director: Marisa Galvez, French and Comparative Literature

Associate Director: Jeremy Sabol

Lecturers: Mary Garcia, Nura Hossainzadeh, Miles Osgood, Greg Watkins

Offices: Sweet Hall, Second Floor, and Florence Moore Hall
Mail Code: 94305-8581
Phone: (650) 725-4790
Email: sle-program@stanford.edu
Web Site: http://sle.stanford.edu (http://sle.stanford.edu/)

The Program in Structured Liberal Education (SLE) is a year-long residence-based great works course that satisfies several requirements at once: Thinking Matters, Writing and Rhetoric (both PWR1 and PWR2), and four of the Ways requirements. The curriculum includes works of philosophy, literature, art, and music from the ancient world to the present. The program is interdisciplinary in approach; it emphasizes intellectual rigor and individualized contact between faculty and students.

SLE has two fundamental purposes: to develop a student's ability to ask effective questions of texts, teachers, the culture, and themselves; and to develop intellectual skills in critical reading, expository writing, logical reasoning, and group discussion. SLE encourages students to live a life of ideas in an atmosphere that stresses critical thinking and a tolerance for ambiguity. Neither the instructors nor the curriculum provides ready-made answers to the questions being dealt with; rather, SLE encourages a sense of intellectual challenge, student initiative, and originality.

The residence hall is the setting for lectures and small group discussions. SLE enhances the classroom experience with other educational activities, including a weekly film series, writing tutorials, occasional special events and field trips, and a student-produced play each quarter.

First-year students interested in enrolling in SLE should indicate this preference for their Thinking Matters assignment. SLE is designed as a three quarter sequence, and students are expected to make a commitment for the entire year (8 units each quarter).

SLE Courses Offered in 2020-21

		Units
SLE 91	Structured Liberal Education	8
SLE 92	Structured Liberal Education	8
SLE 93	Structured Liberal Education	8
SLE 299	Structured Liberal Education Capstone Seminar	1
SLE 81	Public Service Program	1
SLE 99	Directed Reading	1
SLE 199	Teaching SLE	1

Immersion in the Arts: Living in Culture

Faculty Director: Karla Oeler, Art and Art History

Associate Director: Kim Beil

Faculty: Samer Al-Saber, Theater and Performance Studies

Program in Writing and Rhetoric Lecturer: Alexander Greenhough

Offices: Sweet Hall, Second Floor, and Stern Hall
Mail Code: 94305-7000
Phone: (650) 724-3163
Email: italic_ile@stanford.edu
Web Site: https://undergrad.stanford.edu/programs/residential-programs/italic/overview (https://undergrad.stanford.edu/programs/residential-programs/italic/overview/)

ITALIC is an arts-minded, residence-based academic program for first-year students. Using art as the frame for discussing big ideas, frosh who participate in this yearlong academic program are part of a tight-knit community, living together, attending classes, and making art in Stern Hall's Burbank House residence.

ITALIC is built around a series of big questions about the historical, critical, and practical purposes of art. The yearlong experience also fosters close exchanges between students and faculty, guest artists and scholars outside of class over meals, in hands-on arts-making workshops, and on excursions to arts events.

In ITALIC, students look closely at the integration of arts across the University and in the world outside, examining how art can illuminate or challenge existing categories of knowledge, including history, politics, and culture, particularly since the 19th century. Immersed in the arts, they

analyze major works of the visual, performing, and filmic arts, sharpen perceptual skills, and tap into their own channels of creative expression. Turning an aesthetic lens on life's ordinary and exceptional features, ITALIC asks: How do the arts provide new ways of thinking about our world and ourselves?

ITALIC Courses Offered in 2020-21

		Units
ITALIC 91	Immersion in the Arts: Living in Culture, Creating	4
ITALIC 92	Immersion in the Arts: Living in Culture, Art Worlds: Conversations between Artists and Scholars	2
ITALIC 93	Immersion in the Arts: Living in Culture, Challenging	3
ITALIC 95W	Immersion in the Arts: Living in Culture, Writing Section	4
ITALIC 99	Immersion in the Arts	1

Education as Self-Fashioning

Director: Paula Findlen (History)

Faculty: Russell Berman (Comparative Literature), Margot Gerritsen (Energy Resources Engineering), Paula Findlen (History), Andrea Nightingale (Classics), Sarah Prodan (French and Italian), Rush Rehm (Classics), Kathryn Starkey (German Studies), J'Nese Williams (History).

Writing Instructor: Shay Brawn, Artemis Brod, Megan Formato, Shannon Hervey, Valerie Kinsey, Sangeeta Mediratta, Sarah Pittock, Rebecca Richardson, Ruth Starkman, Jennifer Stonaker.

Offices: Sweet Hall, Second Floor
Mail Code: 94305-3068
Phone: (650) 723-0944
Email: thinkingmatters@stanford.edu
Web Site: https://undergrad.stanford.edu/programs/education-self-fashioning-esf

Education as Self-Fashioning (ESF) is a unique opportunity offered only in the autumn quarter, since its aim is to introduce entering students to a liberal education. ESF courses provide you with an opportunity to work closely with a faculty member in a seminar-style setting while simultaneously completing your first-year writing requirement. In ESF, we consider writings about education by intellectuals working in various fields, with the aim of articulating different ways that education can be used to structure one's thinking, one's self, and ultimately one's life as a whole. You will grapple with this issue in dialogue with fellow students and faculty from across a wide range of disciplines — from the humanities and social sciences through the natural sciences and mathematics.

ESF satisfies the Thinking Matters, the WR1 requirement, and one Way. ESF is a set of linked seminars related to the general theme expressed in the course title. The seminars, each with a different focus, meet separately as discussion classes led by the faculty; all ESF students also come together for a plenum session or large lecture each week. Each seminar coordinates writing instruction with the course theme in specially designated writing sections.

The three components of ESF are described below. ESF counts as a 7-unit course.

1. A seminar with a faculty member that meets once per week for at least 75 minutes.
2. A section with a writing instructor that meets for sessions of 110 minutes twice per week.
3. A lecture series that will meet once-a-week. These are required for students enrolled in ESF.

ESF Courses Offered in Autumn 2020-21

- ESF Courses Offered in 2020-21 (https://explorecourses.stanford.edu/search/?q=ESF&view=catalog&page=0&academicYear=20202021&filter-term-Autumn=on&filter-coursestatus-Active=on&collapse=&filter-catalognumber-ESF=on)

Sophomore College

Faculty Director: Dan Edelstein, French and (by courtesy) History

Deputy Faculty Director: Lisa Surwillo, Iberian and Latin American Cultures

Associate Vice Provost for Undergraduate Education and Program Director, Stanford Introductory Studies: Parna Sengupta

Associate Director of Sophomore College: Dayo Mitchell

Offices: Sweet Hall, Second Floor
Mail code: 94305-3068
Phone: (650) 724-4667
Email: sophcollege@stanford.edu
Web Site: http://soco.stanford.edu (http://soco.stanford.edu/)

Sophomore College (SoCo) offers rising sophomores who share a passion for an area of study an opportunity to meet daily in seminar-size classes with Stanford faculty for lecture and discussion; students may also work in labs, participate in community-based learning, go on field trips, and engage in a range of other activities that facilitate in-depth mentoring relationships. Held before the start of students' sophomore year, this residential program encourages academic and social connections and transforms classes into intellectual communities, helping participants establish rich relationships with peers and faculty that extend beyond graduation. Seminars are for 2 units; the Sophomore College all-inclusive program fee covers tuition, room, board, books, and class-required travel arranged by the program. Financial assistance is available. The online catalog and additional information about SoCo is available at the Sophomore College (https://undergrad.stanford.edu/programs/sophomore-college/) web site.

Arts Intensive

Faculty Director: Dan Edelstein, French and (by courtesy) History

Deputy Faculty Director: Lisa Surwillo, Iberian and Latin American Cultures

Associate Vice Provost for Undergraduate Education and Program Director, Stanford Introductory Studies: Parna Sengupta

Director of the Arts in Undergraduate Education: Gina Hernandez-Clarke

Offices: Sweet Hall, Second Floor
Mail code: 94305-3068
Phone: (650) 724-4667
Email: artsintensive@stanford.edu
Web Site: http://artsintensive.stanford.edu (http://artsintensive.stanford.edu/)

The Arts Intensive (AI) Program offers rising sophomores, juniors, and seniors the opportunity to study intensively with Stanford arts faculty and small groups of other Stanford students. The Arts Intensive program takes place over three weeks in September before the start of Autumn Quarter.

Arts Intensive courses engage students in the theory and practice of a particular artistic discipline. Courses often include field trips, workshops, film screenings, studio sessions, or other arts events in the afternoons,

evenings, and on weekends. Courses are taught by Stanford arts faculty and often include contributions from professional visiting artists. Arts Intensive students live together in a Stanford residence during the program, making for a rich immersion into a creative community. This unique opportunity allows students to focus on their art practice without the constraints of other coursework. Enrollment is by application and takes place in Spring Quarter for the upcoming September program. Each Arts Intensive course enrolls 10 to 20 students and offers 2 units of academic credit. For more information or to apply, see the Arts Intensive (http://artsintensive.stanford.edu) web site.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

In addition to courses taken for a letter grade, ESF/ITALIC/SLE/THINK courses completed during academic year 2020-21 taken for CR/NC (CR grade) or S/NC (S grade) will satisfy the Thinking Matters requirement.

Faculty Director: Dan Edelstein, French and (by courtesy) History

Deputy Faculty Director: Lisa Surwillo, Iberian and Latin American Cultures

Associate Vice Provost for Undergraduate Education and Program Director, Stanford Introductory Studies: Parna Sengupta

Education as Self-Fashioning Courses

ESF 1. Education as Self-Fashioning: The Active, Inquiring, Beautiful Life. 7 Units.
Moving through history from the Rome of the Emperor Hadrian, to the city-states of Renaissance Italy, to the 18th century republic of the United States, we will examine how self-made men fashioned themselves and their surroundings by educating themselves broadly. We will ask how a liberal education made their active careers richer and more transformational. We will also take up the great debate on whether a liberal education or vocational training is the surest path to advancement. We will engage this debate through the works of W.E.B. Du Bois and Booker T. Washington but consider today's struggle over the same issues, a struggle that engrosses both highly industrialized and developing societies.

ESF 1A. Education as Self-Fashioning: The Active, Inquiring, Beautiful Life. 7 Units.
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ESF 2. Education as Self-Fashioning: How to Become a Global Citizen?. 7 Units.
The concept of a liberal arts education was first developed in eighteenth-century Prussia by Wilhelm von Humboldt (1767-1835) and soon adopted by other countries, including the United States. Humboldt considered a liberal arts education to be both a foundational and transformative process in the development of the self, and he was convinced that it was essential in creating moral and ethical citizens in an increasingly global world. From his point of view, the cultivation of oneself leads to the freedom of thought, freedom to act, freedom to assert oneself as an individual, freedom to access knowledge, and freedom to determine one¿s own role in society. In this course we will explore Humboldt¿s concept of education and examine the ways in which it is reflected and refracted in debates about university education still today. This course satisfies the Aesthetic and Interpretive Inquiry WAY (AII).

ESF 2A. Education as Self-Fashioning: How to Become a Global Citizen or the German Tradition of Bildung.. 7 Units.
This course considers education not as training in external knowledge or skills but as a lifelong process of development and growth in which an individual cultivates her or his spiritual, cultural and social sensibilities. This concept of education - education as a formative and transformative process in the development of the self - is called Bildung in German and has a long tradition reaching back to the Middle Ages. The term first appears in the writings of the mystic Meister Eckhart who defines it as self-composure which he regards as a crucial stage in our spiritual development. The concept of Bildung takes on a secular meaning in the Reformation, when Ulrich von Hutten first coined the phrase that has become Stanford's motto: "Die Luft der Freiheit weht". (The wind of freedom is blowing). What he meant is that the cultivation of oneself leads to the freedom of thought, freedom to act, freedom to assert oneself as an individual, freedom to access knowledge, and freedom to determine one's own role in society. This idea of education as an internal and transformative process is central to debates in the nineteenth century (both in Germany and the United States) in which self-reflection is seen as key to the cultivation of an individual's identity and to her or his role as a member of society. In this course we will read reflections on education as self-fashioning by some of the greatest German thinkers spanning from the Middle Ages to the present. We will also enjoy some contemporary parodies of such reflections. These readings and our discussions will help us to understand Stanford undergraduate education as a transformative process of self-realization in our global society.

ESF 3. Education as Self-Fashioning: How to be a Public Intellectual. 7 Units.
Can education impart more than bookish learning? This is the question that critics have posed since the European Renaissance. Through their reflections, these critics posited an alternative ideal of education that prepared the student for life outside the academy. Over the centuries, this ideal would evolve into what we would today call an ¿intellectual¿ ¿ but this modern concept only captures a part of what earlier writers thought learning could achieve. In this course, we will focus on how education can prepare students to engage in public debates and the role that the university can play in public learning.

ESF 3A. Education as Self-Fashioning: How to be a Public Intellectual. 7 Units.
Can education impart more than bookish learning? This is the question that critics have posed since the European Renaissance. Through their reflections, these critics posited an alternative ideal of education that prepared the student for life outside the academy. Over the centuries, this ideal would evolve into what we would today call an ¿intellectual¿ ¿ but this modern concept only captures a part of what earlier writers thought learning could achieve. In this course, we will focus on how education can prepare students to engage in public debates and the role that the university can play in public learning.

ESF 4. Education as Self-Fashioning: Learning to Change. 7 Units.
Does education entail changing the self? How much? Why should I change my life? How do I discover that I need to change? Who can rightly tell me how to change? What difference does it make? These and related questions have been around for a long time, yet that makes them no easier to answer today than 2500 years ago. In the 5th century BCE, Socrates found that his answers--based on his own will to change--proved troublesome, and ultimately fatal. His follower, the philosopher Plato, transformed the Socratic exploration into idiosyncratic utopian visions that sought to change the conditions of life--and so make Socrates' fate unrepeatable. Plato's own followers, from Aristotle onward, found new ways to explain, enact, or evade change. Not until the end of antiquity, however, do we find, in Augustine of Hippo (354-430 CE), someone as explicitly and passionately committed to personal change as the early Greek thinker. Bookended by the major figures of the Athenian seeker and the North African, this course will lead students to analyze and compare their own tentative answers with the ideas on self-fashioning that can be found in a range of ancient texts. Students will demonstrate their grasp of the material through a variety of exercises, including a research paper, discourse analyses, and responses in persona.

ESF 4A. Education as Self-Fashioning: Learning to Change. 7 Units.
Does education entail changing the self? How much? Why should I change my life? How do I discover that I need to change? Who can rightly tell me how to change? What difference does it make? These and related questions have been around for a long time, yet that makes them no easier to answer today than 2500 years ago. In the 5th century BCE, Socrates found that his answers--based on his own will to change--proved troublesome, and ultimately fatal. His follower, the philosopher Plato, transformed the Socratic exploration into idiosyncratic utopian visions that sought to change the conditions of life--and so make Socrates' fate unrepeatable. Plato's own followers, from Aristotle onward, found new ways to explain, enact, or evade change. Not until the end of antiquity, however, do we find, in Augustine of Hippo (354-430 CE), someone as explicitly and passionately committed to personal change as the early Greek thinker. Bookended by the major figures of the Athenian seeker and the North African, this course will lead students to analyze and compare their own tentative answers with the ideas on self-fashioning that can be found in a range of ancient texts. Students will demonstrate their grasp of the material through a variety of exercises, including a research paper, discourse analyses, and responses in persona.

ESF 5. Education as Self-Fashioning: Thinking Like a Philosopher. 7 Units.
The Ancient Greek aphorism ¿Know thyself¿ is a centerpiece of wisdom. But knowing one¿s own mind is not easy, in part because it is not a matter of simply looking inward to find one¿s proclivities and beliefs; it seems one must look outward to the issues and questions the world presents, and know what one thinks about them. Knowing oneself is in part a matter of knowing one¿s way around as a thinker, where that is a matter of knowing how to think about issues, when to trust one¿s judgment and when to withhold it. Fashioning or making oneself into a better (more acute, more sensitive, more judicious) reasoner is something philosophy as a discipline holds out as a promise. In this course, we will take up the first task of becoming better reasoners about a select handful of persistent problems; we will at the same time reflect on what it is that philosophical thinking is, and how it might shape us as thinkers.

ESF 5A. Education as Self-Fashioning: Thinking Like a Philosopher. 7 Units.
The Ancient Greek aphorism "Know thyself" is a centerpiece of wisdom. But knowing one's own mind is not easy, in part because it is not a matter of simply looking inward to find one's proclivities and beliefs; it seems one must look outward to the issues and questions the world presents, and know what one thinks about them. Knowing oneself is in part a matter of knowing one¿s way around as a thinker, where that is a matter of knowing how to think about issues, when to trust one's judgment and when to withhold it. Fashioning or making oneself into a better (more acute, more sensitive, more judicious) reasoner is something philosophy as a discipline holds out as a promise. In this course, we will take up the first task of becoming better reasoners about a select handful of persistent problems; we will at the same time reflect on what it is that philosophical thinking is, and how it might shape us as thinkers.

ESF 6. Education as Self-Fashioning: The Wind of Freedom. 7 Units.
Stanford's unofficial motto, "the wind of freedom blows," engraved in German on the university seal, invites us the ponder freedom in the context of education. What is the relation between freedom and the "liberal" arts? Does studying free your mind? Does free will even exist? If so, how does education help you develop its potential? This course will look at various authors -- from antiquity through the 20th century -- who have thought about the blessings, burdens, and obligations of human freedom. Beginning with Eve in the Garden of Eden, we will explore how exercising freedom in your personal choices and conduct not only determines your fate as an individual but carries with it a measure of responsibility for the world. We will place special emphasis on the implications of such responsibility in our own time.nFriday lectures will be held 9:30am-10:50am in Bishop Auditorium.

ESF 6A. Education as Self-Fashioning: The Wind of Freedom. 7 Units.
Stanford's unofficial motto, "the wind of freedom blows," engraved in German on the university seal, invites us the ponder freedom in the context of education. What is the relation between freedom and the "liberal" arts? Does studying free your mind? Does free will even exist? If so, how does education help you develop its potential? This course will look at various authors -- from antiquity through the 20th century -- who have thought about the blessings, burdens, and obligations of human freedom. Beginning with Eve in the Garden of Eden, we will explore how exercising freedom in your personal choices and conduct not only determines your fate as an individual but carries with it a measure of responsibility for the world. We will place special emphasis on the implications of such responsibility in our own time.

ESF 7. Education as Self-Fashioning: The Transformation of the Self. 7 Units.
Socrates famously claimed that the unexamined life is not worth living. Socrates and other ancient thinkers examined themselves and found that they did not match up to their own ideals. They thus set out to transform themselves to achieve a good and happy life. What is the good life? How do we change ourselves to live a good and happy life? How do literature and philosophy help us to understand ourselves and to achieve our social, ethical, and personal ideals? In this class, we examine Socrates and Augustine's lives and ideas. Each struggled to live a good and happy life. In each case, they urge us to transform ourselves into better human beings. The first half of the course focuses on the Athenian Socrates, who was put to death because he rejected traditional Greek ideals and and proclaimed a new kind of ethical goodness. The second half focuses on the North African Augustine, an unhappy soul who became a new man by converting to Christianity. These thinkers addressed questions and problems that we still confront today: What do we consider to be a happy life? Do we need to be good and ethical people to live happily? Is there one correct set of values? How do we accommodate other people's beliefs? Is it possible to experience a transformation of the self? How exactly do we change ourselves to achieve our higher ideals?nFriday lectures will be held 9:30am-10:50am in Bishop Auditorium.

ESF 7A. Education as Self-Fashioning: The Transformation of the Self. 7 Units.
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ESF 8. Education as Self-Fashioning: Recognizing the Self and Its Possibilities. 7 Units.
Some philosophers have argued that we have privileged and direct access to our inner selves. If this were true, it would make self-knowledge perhaps the easiest sort of knowledge to obtain. But there are many considerations that mitigate against this view of self-knowledge. Consider, for example, the slave who is so oppressed that he fully accepts his slavery and cannot even imagine the possibility of freedom for himself. Such a slave fails to recognize his own capacity for freedom and autonomous self-governance. Though the slave is perhaps the extreme case, many people, it seems, fail to recognize the full range of possibilities open to them. In this course, we shall examine both some of the ways in which one¿s capacity for self-recognition may be distorted and undermined and the role of education in enabling a person to fully recognize the self and its possibilities. What constrains the range of possibilities we see as really open to us? Contrary to the Cartesian, we shall argue that full self-recognition is an often a hard-won achievement. And we shall ask how education might function to give us a less constricted and more liberating sense of the self and its possibilities. We will consider such questions through the lens of philosophy, literature and psychology.nFriday lectures will be held 9:30am-10:50am in Bishop Auditorium.

ESF 8A. Education as Self-Fashioning: Recognizing the Self and Its Possibilities. 7 Units.
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ESF 9. Education as Self-Fashioning: Chinese Traditions of the Self. 7 Units.
In this class we explore thinking about the self and its cultivation that took root and flourished in China. Chinese civilization was centrally concerned with issues of the self, but it developed methods and ideals of cultivation that have no obvious parallel in the European tradition. We will be concerned primarily with two clusters of Chinese thought and expression. First, we will look at major philosophical traditions (Confucianism, Daoism, Buddhism) to see how they structured thinking about education and self-cultivation. The three ¿schools¿ of thought staked out different ideals for the self that provided China with range and flexibility in concepts of personhood. Second, we will examine Chinese aesthetic traditions, especially those of qin music, calligraphy and painting, to understand how the arts were used as a platform for self-cultivation and to communicate the artist¿s essential nature to others. The course also gives attention to the gendering of concepts of the self and to the tradition of martial arts as self-discipline and self-strengthening. Students should emerge from the course with an understanding of how a major civilization located outside Western traditions developed its own answers to these questions of universal human concern.

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ESF 10. Education as Self-Fashioning: Unintended Consequences. 7 Units.
Unintended consequences are outcomes that are not the ones foreseen and/or intended by a new product, action or decision. Some unintended outcomes are very surprising, and would have been hard to predict. Others seem completely logical in hindsight and leaves people wondering why they were not anticipated. For instance, when the first biofuel mandates were imposed in the EU, little did policy makers realize it would lead to a strong rise in palm oil production, which in turn led to tropical deforestation, undoing any of the possible positive impacts of increased biofuels use. In hindsight it is easy to see this potential negative impact, yet at the time the decision was made the EU leadership was blind to it. Not all unintended consequences are negative. Aspirin, for example, was developed to relieve pain, but was found to also be an anticoagulant that can lower the risk of heart attacks. As another example, the setting up of large hunting reserves for nobility in the medieval period preserved green areas, which later could be converted to large parks.

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ESF 11. Education as Self-Fashioning: The Democratic Citizen. 7 Units.
A democracy seeks to aggregate the diverse and conflicting views of individuals into collective policy. How does this work, in theory and in practice? How have individuals thought about this process and their own roles within it, and how has that reflection shaped their lives as democratic citizens? In this course, we will study the history of democracy and democratic thought, from Ancient Greece and Rome to the modern world. We will consider how thinkers ancient and modern sought to fashion themselves into democratic citizens, and we will compare these ideals to the realities of democratic government in practice. Through a variety of philosophical and empirical readings, we will explore the fundamental challenges of democracy and discuss how we see them playing out today.

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A democracy seeks to aggregate the diverse and conflicting views of individuals into collective policy. How does this work, in theory and in practice? How have individuals thought about this process and their own roles within it, and how has that reflection shaped their lives as democratic citizens? In this course, we will study the history of democracy and democratic thought, from Ancient Greece and Rome to the modern world. We will consider how thinkers ancient and modern sought to fashion themselves into democratic citizens, and we will compare these ideals to the realities of democratic government in practice. Through a variety of philosophical and empirical readings, we will explore the fundamental challenges of democracy and discuss how we see them playing out today.

ESF 12. Education as Self-Fashioning: The Greeks on Suffering, Beauty, and Wisdom. 7 Units.
In Greek tragedies, a horrific catastrophe falls upon a person and brings on extreme suffering. For the Greeks, tragic plays offered the truth about life's calamities and horrors. The Greeks enjoyed these plays because the dramatic artistry made beauty out of horror and suffering. The Greeks did not believe that they controlled their fates. The Greeks had a "tragic wisdom" that enabled them to confront the hardships of life and the inevitability of death. This helped them to develop courage and resilience. Plato attacked this view and introduced a new kind of hero, the philosopher Socrates. As Plato claimed, we can control our fates by practicing philosophy: this enables us to become wise and ethically good. The philosopher strives for this goodness, which is beautiful in the highest possible way--it is our soul's true desire. Our inner goodness is under our control, so the good and wise person will stay happy even when calamities strike. Plato's optimistic philosophy flew in the face of Greek tragic wisdom. Plato offered a new way of living, one based on higher education, the development of knowledge, and the pursuit of true beauty and goodness. Do we believe that liberal education improves us ethically? Do we feel optimistic or pessimistic about life? To what extent can we control our lives and fates? How do tragic plays, movies, or TV shows represent the horrors that happen in the real world? Does the art that makes them beautiful and pleasurable help us to confront these horrors? Who are our heroes? What actions or qualities make them heroic? We read six tragedies by Sophocles and Euripides, and three Platonic dialogues (Apology, Symposium, Republic). We also read Nietzsche's Birth of Tragedy, which sets forth the opposition between Greek "tragic wisdom" and Plato's "philosophic knowledge.".

ESF 12A. Education as Self-Fashioning: The Greeks on Suffering, Beauty, and Wisdom. 7 Units.
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ESF 13. Education as Self-Fashioning: Rebellious Minds. 7 Units.
The struggle to know began long before you entered the university. The university as an institution has its origins in the late Middle Ages; it has been reinvented repeatedly as our ideas about education have changed. People have been rebelling against how institutions define learning (and for whom) ever since. This course introduces you to some of the most thoughtful and interesting reflections on the nature and purpose of an education, on knowledge and ignorance, at the birth of the modern world. Understanding the quest to discover the mind and to embrace learning as a lifelong endeavor is a starting point to reflect on the goals of your own education, as an engaged intellectual citizen of the world.nFriday lectures will be held 9:30am-10:50am in Bishop Auditorium.

ESF 13A. Education as Self-Fashioning: Rebellious Minds. 7 Units.
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ESF 14. Education as Self-Fashioning: The Challenge of Choice. 7 Units.
The Challenge of Choice addresses these questions by engaging key texts from the liberal arts tradition that explore decisions and their consequences, exposing the multi-faceted nature of choice. By representing characters with whom we sympathize, as well as those whose experience seems worlds away from our own, artists (novelists, playwrights, filmmakers) ask us to consider the web of circumstance that influences a character to choose one course over another. Distance from our own subjectivity the stories are not ours, but they could be allows these works to shed light on the dilemmas that face us as we go about `choosing the life we think we would like to live. Confronting these works, we find that the kinds of choices we make grow in depth, magnitude, and significance.nFriday lectures will be held 9:30am-10:50am in Bishop Auditorium.

ESF 14A. Education as Self-Fashioning: The Challenge of Choice. 7 Units.
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ESF 15. Education as Self-Fashioning: College and the Good Life. 7 Units.
Academic study was once concerned with one overriding question: what is the best way to live our lives? What are the ultimate goals and values we should privilege over others? Today we often assume that value choices are personal. But many teachers in Antiquity (and beyond) thought that these choices needed to be debated, and that education demanded that we debate and think them through. In this class, we ask questions about the good life, but we also consider whether college is still designed to raise such questions. We will read thought-provoking, influential texts from Antiquity and modern times, by such writers as Plato, Marcus Aurelius, Montaigne, Voltaire, DuBois, and Martha Nussbaum.nFriday lectures will be held 9:30am-10:50am in Bishop Auditorium.

ESF 15A. Education as Self-Fashioning: College and The Good Life. 7 Units.
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ESF 16. Education as Self-Fashioning: Curiosity. 7 Units.
Curiosity is a personal interest about something that often has no specific application in the real world or is not part of an overarching goal. Curiosity is often dismissed as irrelevant, useless, and even unethical, but it is just as often touted as the foundation to an intellectually rich life. Albert Einstein once remarked, "I have no special talents. I am only passionately curious," and he insisted that only curiosity makes life worth living. Thomas Fuller, by contrast, warned: "Curiosity is a kernel of the forbidden fruit, which still sticks in the throat of a natural man, sometimes to the danger of his choking." Is it possible to reconcile these opposing views on curiosity? What role does curiosity play in a liberal education? What is the role of curiosity in technology and "progress?" What is the relationship between curiosity and individualism? How does curiosity help us develop as critical thinkers? How does curiosity coexist with (or enable) intellectualism? In this course we¿ll examine cabinets of curiosities, and read a wide variety of texts spanning from Antiquity to today, including the legend of Faust, and texts by Goethe, Kafka, Hoffmann, Aristotle, Plato, and Augustine, that explore the nature of curiosity, its pitfalls and possibilities, as well as its importance for living a fulfilled and interesting life.

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ESF 17. What Can You Do for Your Country?. 7 Units.
What does it mean to serve your country? All ethical systems train the individual to relinquish self-interest in favor of a larger communal good. When you applied to Stanford, you answered many application questions designed to elicit evidence of your ability to serve others, which is considered a sign of good character, leadership, and ability to thrive beyond the confines of your family and private world. Knowing you¿ve wrestled with this question at length, showing sacrifice, endurance, empathy, and understanding of higher goods, this course asks you to examine the nation¿s view. How can the nation present itself as worthy of your personal sacrifice? Do you need to believe in the greatness of your nation to serve? What kind of cause demands your devotion? Nations have differently articulated such a commitment. Some make modest demands and promise you your own sovereignty. Others request only that you dream of national greatness as your own and that you lend a hand. But all nations require at some point, everything from you. What and when are you prepared to give?nnThis course begins with the shortest and most powerful demand for the last full measure your devotion. President Abraham Lincoln¿s ¿Gettysburg Address,¿ which presents the ideals of the American nation as worthy of returning to war. Following this question of devotion to your nation, the course moves to President JF Kennedy¿s ¿What can you do for your nation¿ speech, and then to diverse periods and perspectives around the globe.

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ESF 18. Between Gods and Beasts: The Struggle for Humanity. 7 Units.
Centuries ago, Plotinus famously wrote that humanity was "poised midway between gods and beasts" (Enneads 3.2.8). Some individuals 'grow like to the divine", he asserted, and "others to the brute". Since antiquity, many different societies, east and west, have understood education as a fundamental factor in determining whether individuals became fully realized as human beings, or something less. Considered a civilizing force for individuals and societies, education aimed not only at the acquisition of knowledge and skills, but also at the cultivation of goodness, the attainment of wisdom, and the achievement of happiness. In short, the goal of learning was to live well. nnWhat does it mean to live well? How does one cultivate one's nature or become one's best possible self? What kind of personal and intellectual development does this presuppose? Are there limits to the human capacity for self-development and change? In this course we will ponder such questions as we reflect critically on human nature and on historical and contemporary ideas regarding education, self-development, and living well.

ESF 18A. Between Gods and Beasts: The Struggle for Humanity. 7 Units.
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ESF 19. Education as Self-Fashioning: Memoirs from the Margins. 7 Units.
This course is an exploration of a genre of writing crafted by exceptional figures from marginalized communities in modern India to articulate their pain, protest, anger and analyses: the memoir or the autobiography. nInstead of reading conventional historical accounts, in this course we will chart an alternative narrative of modern India, one that emerges in the memoirs of those victimized by the oppressive structures of caste, capitalism and heteronormative patriarchy. We will read life-histories of Dalit women and men negotiating caste atrocities in India¿s cities and villages. We will read the very first autobiographical accounts of a domestic worker, a transgender woman, and a sex worker to emerge from India. And through these life stories, we will bring alive a distinct picture of modern India, one that will reveal the structure of its social contradictions, one that will document the struggles of the marginalized against the violence of both tradition and modernity.nMore broadly, this course aims at developing our sensitivity towards differences in life trajectories ¿ not only in another part of the world, but also in the lives that constitute our community at the university. It is, then, not only a critical exploration of the past, but also an invitation for a critical interrogation of our present.

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ESF 50. Education as Self-Fashioning: Lecture Series. 1 Unit.
One-unit lecture series featuring prominent intellectuals lecturing on the nature and meaning of liberal education (associated with Education as Self-Fashioning.) NOTE: students enrolled in the 7-unit ESF course should NOT add this course to their study list; this 1-unit course is only for non-ESF students who wish to enroll in the lecture series only. Lectures will constitute an ongoing, campus-wide conversation about the aims of liberal education that extends the "First Lecture" featured in New Student Orientation.

Immersion in the Arts Courses

ITALIC 91. Immersion in the Arts: Living in Culture, Creating. 4 Units.
Creating is the first part of a year-long course that explores the ways people make and encounter a wide range of artworks, including examples from music and performance, the visual arts, literature, film and other media. In ITALIC 91 we ask: How do artists innovate? What roles can earlier artworks play in new creations? How do audiences create? How do medium and material shape the creation of an artwork? What are the aims of art? What does art aim to create in the world?.

ITALIC 92. Immersion in the Arts: Living in Culture, Art Worlds: Conversations between Artists and Scholars. 2 Units.
ITALIC 92, Art Worlds: Conversations between Artists and Scholars. This course is built around a series of conversations between nine scholar/critic and artist pairs. We will be entering the conversation in media res, as it were, since all of these pairs have histories together; they've had studio visits, late-night phone calls, email and text conversations. Usually the scholar has written about the artist and maybe the artist has suggested reading and viewing lists to the scholar. They've helped each other feel seen, and often be seen in a more literal way.The conversations will concentrate on these questions: How do artists and scholars work across the divide between practice and theory? How should you build your art world and who will be in it? The pairs will discuss their respective practices (art-making, writing, researching, community-building) and engage in conversation about the artist's work. In advance of each conversation, students will read about something written by the scholar/critic about the artist. Each artist will also design a short art-making prompt for enrolled students to complete and share through the course website. Students will share their artworks weekly in small critique groups.

ITALIC 93. Immersion in the Arts: Living in Culture, Challenging. 3 Units.
ITALIC 93, Challenging. This quarter focuses on art that challenges audiences' expectations and values. We consider what is at stake in the encounter with difficult art. How does difficult art contest cultural, political, and social assumptions and values or challenge expectations about the form and content of art? How can art challenge existing power structures in society? How does art challenge its viewers, by troubling disciplinary boundaries or the rules of genre? What are the ethical responsibilities of artists? Over the course of the quarter, students will meet with a master artist 6 times during section, honing work in their chosen medium and developing a project that will be presented in an end-quarter exhibition and published in an online magazine.

ITALIC 95W. Immersion in the Arts: Living in Culture, Writing Section. 4 Units.
As a PWR 1 course, ITALIC's art-focused writing section develops your writing and research abilities by engaging with the theory and practice of rhetoric. The theme for ITALIC 91 was "creating," and in this writing course you'll be creating arguments through research, rhetoric, and writing. You can explore a topic of your choice for your research-based writing assignments, learning more about the critical, intellectual, and academic discourses around a specific artist, artwork, medium, genre, or art movement.

ITALIC 99. Immersion in the Arts. 1 Unit.
Student-led courses in the arts. Topics change quarterly. Open to ALL students but current ITALIC students and alumni will be given priority.

ITALIC 100. ITALIC Seminar: Notes to a Young Artist. 4 Units.
Working with the Haas Center, students in this seminar will create a mini-magazine/online course about art to share with students at a Bay Area high school. You will assemble a list of suggested readings and brief essays on key artistic texts and concepts, as well as images and links to the artistic examples you find most inspiring. You will create a variety of media about these ideas and artists, from illustrated slideshows to video essays or podcasts to short explanatory texts and longer personal essays. The guiding question of the course is: What does a young artist need to know?.

Structured Liberal Education Courses

SLE 60. Reading Aristotle's Ethics: Happiness and the Virtues of Character. 1 Unit.
How should I live? What should I do to live a happy life? And what does happiness have to do with ethics? What might the best human life look like? What kind of friendships contribute to happiness--and to justice? In the Nicomachean Ethics Aristotle offers us a vision of human flourishing that has nurtured thinkers, secular and religious, for thousands of years and continues to shape political and ethical thinking. In this study group we read and reflect upon the first few books of the Ethics, on happiness and the virtues of character, slowly and carefully. Each week you will be expected to read a short, but dense, section of the Ethics, and to share responsibility for asking questions.
Same as: CLASSICS 60

SLE 61. Reading Aristotle's Ethics, Part 2. 1 Unit.
In this course we continue our reading of Aristotle's Nicomachean Ethics, moving from the individual moral virtues to his formative discussion of justice and equity. We then move on to Aristotle's development of the intellectual virtues and their relation to ethics. Much of our attention will be focused on friendship, without which, as Aristotle says, no one would wish to live, and which is central to virtue and happiness. At the same time we strive to develop our capacity for friendship in ourselves, using Aristotle's discussion to help us reflect on our own lives.
Same as: CLASSICS 61

SLE 81. Public Service Program. 1 Unit.
This one-unit course is for participation in quarter-long service programs set up by the SLE program and conducted in consultation with the Haas Public Service Center. Available programs will vary by quarter. May be repeat for credit.

SLE 91. Structured Liberal Education. 8 Units.
Focusing on great works of philosophy, religion, literature, painting, and film drawn largely from the Western tradition, the SLE curriculum places particular emphasis on artists and intellectuals who brought new ways of thinking and new ways of creating into the world, often overthrowing prior traditions in the process. These are the works that redefined beauty, challenged the authority of conventional wisdom, raised questions of continuing importance to us today, and¿for good or ill¿created the world we still live in. Texts may include: Homer, Sappho, Greek tragedy, Plato, Aristotle, Zhuangzi, Confucius, the Heart Sutra, Hebrew Bible, New Testament, and the Aeneid.

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SLE 98. Directed Reading. 1 Unit.
Directed reading for undergraduate students. Consult faculty in area of interest for appropriate topics involving one of the research groups or other special projects. May be repeated for credit. Prerequisite: consent of instructor.

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SLE 199. Teaching SLE. 1 Unit.
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SLE 299. Structured Liberal Education Capstone Seminar. 1 Unit.
Senior capstone project for students who were enrolled in SLE their freshman year.

Thinking Matters Courses

THINK 11. Bioethical Challenges of New Technology. 4 Units.
How might we apply ideas from ethical theory to contemporary issues and debates in biotechnology? This course will provide critical encounters with some of the central topics in the field of bioethics, with an emphasis on new technologies. Controversies over genetic engineering, stem cell research, reproductive technologies, and genetic testing will provide an opportunity for you to critically assess arguments and evidence. We will begin with an overview of the field and the theoretical approaches to bioethics that have been derived from philosophy. You will then have the opportunity to engage in debate and learn how to identify underlying values and how to apply ideas from ethical theory to contemporary problems.

THINK 12. Century of Violence. 4 Units.
What is modern about modern mass violence? This course explores the evolution, varieties, and logic of mass violence from the early 20th century to the present day. You will engage with and analyze primary accounts of such violence by victims, observers, perpetrators, and courts. We will then consider the effectiveness of various efforts to confront genocides and crimes against humanity in international courts and institutions, past and present. We start with the emergence of genocide as a modern, international issue; proceed with colonial massacres in early 20th century Africa; move to the Armenian genocide in the Ottoman Empire and WWI; Nazi and Nazi-inspired racial murder; communist-induced mass violence in the Soviet Union and Asia; ethnic cleansing in former Yugoslavia; and end with an examination of the recent genocides in Rwanda, Sudan, and the Middle East.

THINK 15. How Does Your Brain Work?. 4 Units.
How do the biology and chemistry of the brain create the mind that lets us talk, walk, laugh, love, learn, remember, and forget? What can neuroscience say about what makes us human? How can we ask questions about the brain that are observable, testable, and answerable? The human brain is the most complex organ we know. To understand the biology of brain function, this course will use highly interactive lectures and discussions to examine the validity of common beliefs about the brain, discuss how the brain and the nervous system are organized, how individual elements of the brain function, and how together these units produce action. The brain, like all other biological structures, has evolved over time in response to natural selection by adapting to diverse behavioral and environmental constraints. We use evolutionary comparisons to illuminate important questions about brain function, including what the origins and consequences of brain damage are, how and where drugs act, and how you collect, interpret, and understand information about the world. You will learn both how the science of the brain has emerged through understanding important experiments and observations and how you can formulate and test your own experimental questions about the brain.

THINK 19. Rules of War. 4 Units.
When, if ever, is war justified? How are ethical norms translated into rules that govern armed conflict? Are these rules still relevant in light of the changing nature of warfare? We will examine seminal readings on just war theory, investigate the legal rules that govern the resort to and conduct of war, and study whether these rules affect the conduct of states and individuals. We will examine alternative ethical frameworks, competing disciplinary approaches to war, and tensions between the outcomes suggested by ethical norms, on the one hand, and legal rules, on the other. Students will engage actively with these questions by participating in an interactive role-playing simulation, in which they will be assigned roles as government officials, advisors, or other actors. The class will confront various ethical, legal, and strategic problems as they make decisions about military intervention and policies regarding the threat and use of force in an international crisis.

THINK 23. The Cancer Problem: Causes, Treatments, and Prevention. 4 Units.
How has our approach to cancer been affected by clinical observations, scientific discoveries, social norms, politics, and economic interests? Approximately one in three Americans will develop invasive cancer during their lifetime; one in five Americans will die as a result of this disease. This course will expose you to multiple ways of approaching the cancer problem, including laboratory research, clinical trials, population studies, public health interventions, and health care economics. We will start with the 18th century discovery of the relationship between coal tar and cancer, and trace the role of scientific research in revealing the genetic basis of cancer. We will then discuss the development of new treatments for cancer as well as measures to screen for and prevent cancer, including the ongoing debate over tobacco control. Using cancer as a case study, you will learn important aspects of the scientific method including experimental design, data analysis, and the difference between correlation and causation. You will learn how science can be used and misused with regard to the public good. You will also learn about ways in which social, political, and economic forces shape our knowledge about and response to disease.

THINK 24. Evil. 4 Units.
What is evil? Are we naturally good or evil? How should we respond to evil? There are many books and courses that focus on the good life or the virtues. Yet despite their obvious apparent presence in our life and world, evil and the vices are rarely taken as explicit topics. We will read philosophical and literary texts that deal with the question of evil at a theoretical level, but will also focus on some practical implications of these issues. By exploring evil, we will confront larger questions about the nature of human beings, the appropriate aims of the good society, the function of punishment, and the place of morality in art.

THINK 31. Race in American Memory. 4 Units.
How have Americans remembered the Civil War - what it meant, what it accomplished, and what it failed to accomplish? How did Americans reimagine the United States as a nation after the war? Who belonged in the national community and who would be excluded? In 1865, the peace treaty was signed at Appomattox and the Thirteenth Amendment outlawed slavery, but the battle over memory and national identity had just begun. The questions that the Civil War addressed - and failed to address - continue to affect our lives today. We will focus on how Americans negotiated issues of cultural memory and national identity through a close analysis of historical texts, novels, poems, films, paintings, cartoons, photographs, and music. Our interpretations will foreground the particular themes of race and nationhood, freedom and citizenship, and changing notions of individual and collective identity. Our assumption in this course is that history is not available to us as a set of events - fixed, past, and unchanging. Rather, history is known through each generation's interpretations of those events, and these interpretations are shaped by each generation's lived experience. What stories get told? Whose stories? And in what ways? The stories we choose to tell about the past can shape not only our understanding of the present, but also the kind of future we imagine and strive to realize.

THINK 42. Thinking Through Africa: Perspectives on Health, Wealth, and Well-Being. 4 Units.
What is human well-being? How do we define it? How do we measure it? What do we mean when we talk about certain parts of the world as "developed" and others as "underdeveloped" or "developing"? How do improvements in human well-being come about? What happens when some people become much better off and others do not? In this course, we will use African experiences, past and present, to think critically and reflectively about concepts whose meaning we all too often take for granted: not only well-being and development, but also wealth and health, equality and inequality. Using the tools and techniques of four different disciplines -- history, anthropology, public health, and engineering -- we will tackle essential questions about the meaning of well-being and the indices by which we measure it, the role of politics in the development process, the importance of historical and cultural contexts, and the sometimes unanticipated challenges that individuals, institutions, and societies face when they seek to promote development and improve human well-being.

THINK 43. What is Love?. 4 Units.
Is love a spiritual or a bodily phenomenon? Is the concept of love timeless or ever changing? How does thinking about love lead us to ask other important philosophical and social questions? In this course we will examine the classical roots, medieval developments, and contemporary permutations of Western ideas of romantic love. With an eye to thinking about representations of love in our own culture, we consider some of the foundational love books of the Western tradition. From Plato's Symposium to Chester Brown's graphic novel Paying For It, we ask the fundamental question of whether and how we might distinguish between spiritual and physical desire. We consider how medieval and contemporary writers dealt with the relation of love to sex, power, money, marriage, and gender. We discuss these works of the past, for example the illicit love in the courtly romance Tristan, in tandem with representations of clandestine love from the present day, such as the portrayal of same-sex love in Brokeback Mountain.

THINK 44. Belief. 4 Units.
Why do people believe in God? What does it mean for people to experience the supernatural? How do we understand belief in God? How do people convey experiences that are by definition extra-ordinary to others? In this course we ask the big (and unanswerable) question why people believe in God. Some scholars argue that belief results from direct experience, such as visions or moments of transcendence, that testify to God's existence. Others suggest that belief in the supernatural is better explained by the way the human mind has evolved or people's experience of the social world. In this class, we will pair medieval literature on Christian mysticism and magic with readings from modern psychology and anthropology. We will look at the dominant answers provided by each discipline. For example, belief might result from our sensory experience of the world, or it might have developed as part of our cognitive apparatus in response to fear. Our aim is to show how different disciplines can work together to cast light on a basic question of human existence.

THINK 45. Thinking About the Universe: What do we know? How do we know it?. 4 Units.
What is the origin and ultimate fate of the universe? Can we know what came before the universe? Are there ultimate limits to human knowledge about the universe and are we reaching them? Cosmology (the study of the universe) raises profound questions about us, our place in the universe, and about the limits of our knowledge. It was only in the 20th century that cosmology developed from metaphysical and theological speculation to become an observational science and a recognized part of physics. In this course, students will explore questions about the Universe, its beginnings, its structure, its extent, its fate, from several perspectives - philosophical, experimental, and theoretical. We will discuss current research and the ongoing debates about the laws of nature on subatomic scales and the perplexing questions they raise regarding the universe and the limits of scientific inquiry.

THINK 46. Why So Few? Gender Diversity and Leadership. 4 Units.
Why there are so few women leaders and what is the cost to society for women's underrepresentation in positions of power? How can organizations and individuals increase women's leadership and be more inclusive of the diverse people that make up our society? Women make up half the population and have earned more than half of all the undergraduate degrees in the U.S. since the early 1980s; yet women comprise only 17% of US Congress, 4% of Fortune 500 CEOs, 16% of the board of directors of major corporations, 22% of tenured faculty at Stanford, and less than a fifth of law firm partners. For women of color, these numbers are considerably lower. Yet, research shows that gender diversity increases the creativity and innovation of groups. In this course, we will directly address the questions of why there are so few women leaders and what can be done, at an organizational and individual level, to increase their representation. Using the lens of sociology, we will think critically about leadership, influence, power, status, gender stereotypes, mentorship, and negotiation. Once we understand the mechanisms underpinning the lack of women leaders, we will discuss and critique potential interventions. A unique aspect of this course will be to apply some of the scholarly research on gender and leadership to our lives outside the classroom. We will be using modules based on those used in businesses schools and corporate executive training. Students will develop practical, real-world skills to increase their own leadership capacities by working on projects and taking part in interactive sessions on negotiation and team dynamics.

THINK 47. Inventing Government: Ancient and Modern. 4 Units.
How might the study of the successes and failures of democratic and republican government in ancient Greece and Rome help us to fix what is broken in our own political systems? Democracy and republic are ancient names for revolutionary approaches to government of, by, and for citizens. Today, almost every state proclaims itself to be a democracy, a republic -- or both. Democratic and republican revolutions transformed ancient Greece and Rome - and later transformed the modern world. We explore how political thinkers, from Machiavelli to Madison and Mill, used the lessons of ancient politics to design bold new systems of government. Ancient politics may still hold lessons for us. We analyze what is broken in modern government (corruption, polarization, gridlock), how it broke, and how the tool kit of ancient political history might help us to analyze and repair the damage.

THINK 48. Reading the Body: How Medicine and Culture Define the Self. 4 Units.
How have our perceptions of what is considered normal/abnormal; beautiful/ugly; infected/uninfected changed over time? How do these changing medical and cultural representations of the body reflect larger societal shifts? How does illness change our perceptions of our bodies and our identities? Viewed through the lens of medicine, the body is a text that offers clues to health and illness, yet clinical readings are never entirely objective. Culture informs and distorts how we discern, accept, reject, and analyze our bodies. Looking at literary, medical, ethical, and anthropological texts, we ask how representations of the body affects the way we experience illness, embody gender and racial identities, and understand our rights (or lack of rights) to control our own bodies. We will critically examine our perceptions about the body and debate some of the most complex and sensitive issues surrounding the body, from the ethics of medical research trials to end of life decisions.

THINK 49. Stories Everywhere. 4 Units.
Do we perceive the world through stories? Are we made of stories? Can we make sense of the world without narrative? The telling of stories is not just a form of entertainment but an essential human activity that moves and persuades us, compelling us to action and reflection. In this course, we will probe how moral, cognitive and historical forces give stories their power. You will be introduced to the basic theory and art of storytelling, enabling you to understand and master the fundamentals of narrative structure, plot, and character. This will allow you to practice producing your own stories through both interpretative and creative writing assignments. The class will also give students the chance to participate in various story-making activities and work with the Stanford Storytelling Project, San Francisco StoryCorps, School of the Arts and the Stanford Innocence Project to create assignments that would be useful to both private and nonprofit organizations.

THINK 50. Empathy. 4 Units.
This course will introduce freshmen to a range of ways of thinking about empathy. How do we know and understand the other? How does knowledge of another's experience and circumstances enable us to make moral decisions and take moral actions? It will take students on an intellectual investigation of the topic of empathy from the Buddhist emphasis on compassion in the fifth century BCE to Jesus' teaching of parables in the first century CE to Enlightenment philosophy to Silicon Valley¿s adoption of empathy in the twenty-first century. The main focus will be on the modern period (from the 18th to 20th century) and students will be asked to approach different genres of text through the lens of empathy. The course will culminate with a one-week creative workshop on the question of empathy.

THINK 51. The Spirit of Democracy. 4 Units.
This course provides an overview of the challenges and aspirations facing ideals of democracy. It deals both with competing visions of what democracy might be, and their actual realization not only in the US but around the world. It will begin with the debate over the American founding and move eventually to the "third wave" of democratization around the world in the late 20th century as well as its more recent retrenchment. The problems of democratic reform are continuing and recurrent around the world. Democratic institutions are subject to a living dialogue and we intend to engage the students in these debates, at the level of democratic theory and at the level of specific institutional designs.

THINK 53. Food Talks: The Language of Food. 4 Units.
In this course, we examine how the ways we talk about food offers us a window into history, psychology, culture and economics. We ask students to think critically about language and taste as well as explore the hidden meanings and influence of the language that surrounds us. Students will analyze the language of food through menus, recipes, Yelp reviews, TV food shows, as well as the history and etymology of food words. Some of our examples will be drawn from East Asian food and culture in addition to, and as a point of contrast with, foods and cultures that may be more familiar to students.

THINK 54. 100,000 Years of War. 4 Units.
If you had been born 10,000 years ago, the chance that someone would kill you was more than 1 in 10, but if you were born in the twentieth century AD it was more like 1 in 100, despite that century¿s world wars, genocides, and nuclear weapons. In the 2010s, it is just 1 in 150. This course tries to explain this astonishing shift away from violence. We will look at the history of war from the Stone Age to the robot age, including the conflicts of the 2010s; and we will draw on everything from anthropology and archaeology to biology and psychology, as we try to answer one of the biggest questions of all: will there ever be a world without war? Students learn how to approach a big, complex, and often very politicized question in an analytical manner.

THINK 55. Understanding China through Film. 4 Units.
How did China move from an imperial and colonized country to an independent modern nation? How did the Chinese people transform its tradition, create new ways of life and values, and move toward modernity? What can the films tell us about the most significant events in modern Chinese culture and history?nWe will learn about major social and cultural transformations in modern Chinese through film. We will analyze films as a window on the ongoing narrative of a people making history and responding to a changing circumstances of revolution, reform, political movements, and modernization. Students will study film images as an art that is intertwined with ordinary people, their lived experiences, cultural habit, moral values, and political consciousness. The course will highlight four major periods: the May Fourth New Culture (1919-1930), the socialist era, the Cultural Revolution, and the reform era of globalization since the 1980s. We will learn to be sensitive to film as a visual and dramatic medium that brings to life Chinese history and culture.

THINK 56. Health Care, Ethics, and Justice. 4 Units.
Is there a right to a basic level of health care? Are there limits to how much should be spent on health care? How should resources, like human organs, be allocated?nWhat obligations does the U.S. have regarding health care in resource-poor environments, such as underdeveloped nations?nWe live in a world of constrained resources. Nowhere are these constraints more controversial and significant than in health care where lives literally hang in the balance of the decisions we make. This course will provide students with the tools to address these questions through the theoretical framework of justice and ethics. We will address the question of allocation at the level of health policy and health economics before applying the concepts to the institutional and bedside level. Using real world examples, you will be asked to actively engage in debating controversial topics such as organ transplants and how to assign scarce ICU beds. Using both empirical data and the framework of ethics, you will be asked to consider how a health care committee, or a hospital, or an individual doctor might make decisions.

THINK 57. Progress: Pro and Contra. 4 Units.
Where and when did we start believing in human progress? Does progress imply that history has a particular direction or end-goal?nMuch of our everyday thinking about politics, society, and history depends on some implicit or explicit concept of progress. Have we reached a point where we need to replace the idea of progress with that of sustainability? These are some of the questions this course will raise as it looks at how ideas of progress inform western thinking about science, history, evolution, and politics. It will engage with thinkers who argued in favor of the idea of progress as well as thinkers who attacked its presumptions. Reading and critically evaluating philosophical, scientific, and literary texts, we will investigate the different consequences of our residual belief in progress, as well as the consequences of our possible abandonment of that belief.

THINK 59. Worlds of Sound: Learning to Listen. 4 Units.
We live in a world of sound. Even deafening silence has a profound sonic quality. In ways that we do not always recognize, our social practices lead us to understand certain sounds as desired signals and filter out others as unwanted noise. How are we hearing the world right now? How have the Coronavirus pandemic, the Black Lives Matter movement, and the other developments of 2020 changed the world of sound in which we live? How have they changed the ways we listen? This class challenges freshmen to become aware of their own listening practices and how those practices affect their perception of the world. We think about how our bodies, our technology, the state, and the market affect what and how we hear. We explore what makes us remember some sounds more than others. Students in this class will write about their own experiences of listening as they develop their own archive of the sounds of Fall 2020; they will produce autoethnographic writing that they can use later to remember this unique historical moment.

THINK 60. American Enemies. 4 Units.
It would seem that an enemy should be easy to identify, but this course proposes that this involves deliberation, choice, and an assessment of consequences. We will explore modern American experiences in defining enemies, here defined as mortal threats to the state and the national collective. We will focus on ideas, thinking and assumptions rather than historical chronology. Who are enemies? How are they defined and by whom? How are enemies characterized and perceived? The narrative content of the course would be a historical study of the American engagement with enemies from 1942 to 1990. We will begin with the war or terror, return to consider the experience of the Japanese enemy of World War II, and then come up through the years of the Cold War and beyond.

THINK 61. Living with Viruses. 4 Units.
By examining this interplay of viruses and culture, this course challenges students to think beyond conventional disciplinary distinctions through questions about the impact of biology on human behavior as well as the potential of humans to shape biology through genetic engineering. The specific goals of this course are to engage students to examine the microbial world and how they interact with it. We will examine three overreaching questions: How do viruses effect our lives? How have they shaped our culture? How will they shape our future? Topics covered will include the question of whether a virus is alive, the importance of immunity, and the role of viruses in not only human culture but what makes us distinctly human.

THINK 62. The Cause is Uncertain. 4 Units.
While virtually every death certificate lists a cause of death, what actually caused that death to occur is an unexpectedly more complex question. This course will focus specifically on causality claims about health and interrogate the methods used to support such claims. At the same time, by focusing on causality claims about health issues, from cholera to breast cancer and AIDS--the course asks how we might come to useful causal knowledge in the absence of being able to perform those manipulations that have been the hallmark of experimental science.

THINK 63. Justice and the University. 4 Units.
How do the fundamental purpose of the university, the pursuit of knowledge, and the pursuit of justice coincide? Or do they conflict and pull us in different directions? Our goal in this class will be to focus on the intersection of justice and knowledge by examining how issues of liberty, equality, and security arise on college campuses. University campuses have a long history as sites of activism across a wide variety of domains and this course will cover a number of them including trigger warnings and safe spaces; free speech; ethics in research; Dreamer Act and college access for undocumented persons. Our goal in this course is to get students to think critically about tradeoffs among society's most treasured goals. When these goals come into tension, how should decisions be made about which goal must give way? We aim to teach students how to identify and think about these conflicts and how to craft arguments, both written and oral, in support of their positions, using a variety of source materials.

THINK 64. Healing, Illness, Stories. 4 Units.
This course focuses on multiple genres of narratives about illness and recovery: memoirs, graphic novels, poetry, fiction, essay, and documentary film. It asks what the power, if any, of narrative is in healing. Drawing upon the fields of literature and the practice of medicine, students will begin to grapple with the power of stories in illuminating the experience of illness and disability and in offering the possibilities for (self) transformation.

THINK 65. Preventing Human Extinction. 4 Units.
Is human extinction inevitable? Is it necessarily bad for the planet? What might we do to avert human extinction? n99.9% of all species that have inhabited the planet are extinct, suggesting our extinction is also a distinct probability. Yet, the subject of human extinction is one that poses deeply disturbing implications for the thinkers themselves, namely us humans. This course will explore a series of plausible scenarios that could produce human extinction within the next 100 years and simultaneously consider the psychological, social, and epistemological barriers that keep us from seriously considering (and potentially averting) these risks. Students will . . .

THINK 66. Design that Understands Us. 4 Units.
We find ourselves in an age of rapidly evolving technology, where the world we inhabit, increasingly, is the world we make. At Stanford, you will find many courses that ask you to make things¿everything from algorithms, products, policies, to artworks. What is rarer is to be given the space to stop and really think about why¿for what and for whom¿we design these things, and whether we should continue to design in ways demanded by commercial and political actors. This critical thinking course examines the nature, purpose, and meaning of design in human life, and asks the fundamental questions of ¿what is design?¿, ¿why do we do it?¿, and ¿how do design, technology, and society shape one another?¿. We will explore design as a series of choices and the ways in which we make these choices. This course will consider different models of design in our world today: from need-based design (as we are often taught) to the fashioning of tools that help us flourish as human beings. You will learn about various aesthetic and ethical frameworks and a fundamental language of design, so that you can begin to critically analyze everyday examples of media, tools, toys, and games¿and apply such lenses to designing conscientiously. You will learn to think about the design of social networks, artificial intelligence, musical instruments, games, virtual reality, and other examples¿in terms of needs and values, ethics and aesthetics. In short, through this course, you will learn to more clearly and critically view our technology-drenched human world¿and to exercise your ethical and artful imagination to reimagine better worlds.

THINK 67. What Makes Music Classical?. 4 Units.
This course asks a question that can elicit a variety of responses. Classical music means different things to different people. For some it connotes Western art music of a particular historical era. According to this understanding, classical music follows baroque music and is superseded by romantic music; it develops a style, the classical style, as perfected by Haydn and Mozart. For others classical music has broader significance, referring to a cultural practice that predates the eighteenth century, going as far back as Gregorian chant and extending through the present. There are a variety of factors that define that practice, some more enduring than others: transmission through musical notation, theories of tonal systems, techniques of composition. Formal analysis, though often considered a sub-discipline of music theory and hence purely descriptive and objective, is hardly value free. Aesthetic interests and prejudices come into play, whether implicitly or explicitly.

THINK 68. Our Genome. 4 Units.
Genomes reveal a wealth of information with implications far beyond the linear sequence of the DNA. We will consider two questions related to the genome, coupled with examples from real-life consequences. Firstly, what does the genome say about our past: where we came from and how we might fit into the tapestry of the human race? We will look at examples from history and anonymized patients to highlight the consequences of these question for people. Next we will consider what the genome tells us about the future: how might it foretell our individual future and how might this be translated into patient treatment? We will examine the promises, pitfalls, and implications for the advances in medicine and healthcare promised by genomic research.

THINK 69. Emotion. 4 Units.
In this course, we address basic issues about emotions and their place in human life from the perspectives of philosophy and psychology. We ask four fundamental questions: What is emotion? What is the appropriate place for emotions in our lives? How should we manage our emotions? Do emotions threaten the integrity of the agent? For instance, in asking how we manage our emotions, students will consider the Stoic view that emotions must be extirpated alongside psychological perspectives on the theoretical and empirical frameworks on emotion regulation.

THINK 70. Why College? Your Education and the Good Life. 4 Units.
You¿re about to embark on an amazing journey: a college education. But what is the purpose of this journey? Why go to college? nSome argue that the purpose of college is to train you for a career. Others claim that college is no longer necessary ¿ that you can launch the next big startup and change the world without a degree. Peter Thiel offers students like you $100,000 to ¿skip or stop out of college¿ because ¿knowledge that is acquired under compulsion obtains no hold on the mind.¿* Why read Plato if you¿re a STEM major, after all? Why think about primate health if you¿re in the arts? nIn the face of such critiques, this class makes a case for an expansive education that trains your mind to engage with a variety of subjects and skills. The philosophy behind this model has traditionally been called ¿liberal education¿ (from the Latin word for freedom, libertas). Together we will explore the history, practice, and rationales for a liberal education by putting canonical texts in conversation with more recent works. We will consider the relevance of liberal education to all areas of study, from STEM to the arts, and its relations to future careers. And we will examine the central place that the idea of ¿the good life¿ has historically enjoyed in theories of liberal education. You will be prompted to examine your own life, to question how and why you make decisions, and to argue for your views while respecting those of others. Maybe you will conclude that a liberal education is no longer relevant in the twenty-first century, but we hope that you will do so armed with a thorough understanding of what it has been and what it can be.nIn the end, college is less about what you will do in life, than about what kind of person you will be. So: what kind of person do you want to be? What kind of life will you live? Join us as we explore what others have said about these questions and prepare to answer them for yourself.

THINK 71. Citizenship in the 21st Century. 4 Units.
Citizenship is not just what passport you hold or where you were born. Citizenship also means equal membership in a self-governing political community. We will explore some of the many debates about this ideal: Who is (or ought to be) included in citizenship? Who gets to decide? What responsibilities come with citizenship? Is citizenship analogous to being a friend, a family member, a business partner? How have people excluded from citizenship fought for, and sometimes won, inclusion? These debates have a long history, featuring in some of the earliest recorded philosophy and literature but also animating current political debates in the United States and elsewhere.

THINK 72. Capitals. How Cities Shape Cultures, States, and People. 4 Units.
To what extent does the culture of a city define its citizens and their place in the world? By what process do some cities become capitals of various sorts at different historical moments? And how are they dependent upon those who they exclude? nnOur class will make a grand tour of Beijing, Florence, Madrid, Tenochtitlán/Mexico City, Paris, St Petersburg, Vienna, Berlin, Dakar, Buenos Aires, and Atlantis. While exploring these twelve cities in particular historical moments, we will also consider the relations between culture, power, and social life. How does the cultural life of a country intersect with the political activity of a capital? What is the tension between the local and the global? How do large cities shape our everyday experience, our aesthetic preferences, and our sense of history?nnAs we study specific cities as sites of culture, paying special attention to the literature, history, and arts, we will also investigate the many meanings of the word ¿capital.¿ Culture often functions as a type of capital that can be exchanged for economic capital or social capital, with capital cities as the site of this marketplace. Along the way, we'll ask you to reflect on your own location in the world and ultimately to consider how university study, including this course, garners social capital and when, where, and how you might transform it into another type of capital in the future.

PROGRAM IN WRITING AND RHETORIC

Program in Writing and Rhetoric (PWR)

Courses offered by the Program in Writing and Rhetoric are listed under the subject code PWR on the Stanford Bulletin's ExploreCourses web site (https://explorecourses.stanford.edu/search/?q=PWR&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-catalognumber-PWR=on&filter-coursestatus-Active=on&filter-departmentcode-PWR=on&filter-catalognumber-PWR=on). Courses offered by the Oral Communication Program within PWR are listed under the subject code ORALCOMM (https://explorecourses.stanford.edu/search/?q=ORALCOMM&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-departmentcode-ORALCOMM=on&filter-coursestatus-Active=on&filter-catalognumber-ORALCOMM=on&filter-catalognumber-ORALCOMM=on). See the Oral Communication Program (p. 185) tab for for more information about the program.

The Program in Writing and Rhetoric (PWR) designs and teaches courses that meet the Writing and Rhetoric requirement for undergraduates at Stanford as well as intermediate and advanced writing and rhetoric classes. For more information on the requirement, see the "Writing and Rhetoric Requirement (https://undergrad.stanford.edu/programs/pwr/courses/understanding-writing-and-rhetoric-requirements/)" page on the PWR website.

PWR courses engage students in rhetorical analysis of texts and research-based argument. Students in PWR courses learn and practice time-tested rhetorical principles to gain increasing control over the intellectual and stylistic elements of their writing; they learn to analyze the persuasive strategies of others and to apply those insights to their own writing.

Toward these ends, PWR 1 focuses on elements of academic argument: understanding a writer's stance; developing an argumentative thesis; discovering, developing, and deploying cogent proofs; making appropriate organizational and stylistic choices; and understanding the expectations of varied audiences. The course emphasizes research-based writing, including the effective use of primary and secondary sources and data based on fieldwork. Students enrolled in PWR 1 carry out significant research and use it as the basis for a persuasive research-based argument.

PWR 2 further develops students' skills in writing and the oral presentation of research, emphasizing the ongoing development of content, organization, and style. The course addresses the dynamic interdependence of writing and speaking, as well as the importance of visual and multimedia elements in the effective presentation of research. Students enrolled in PWR 2 have opportunities to draft and revise written assignments and oral presentations as well as opportunities to present the results of scholarly inquiry, with an emphasis on how to work purposefully and well with a variety of presentation media.

As a general rule, students complete a minimum of three major assignments in both PWR 1 and 2. Written assignments vary from 5 to 15 pages in length, and students work intensively on revising each piece of writing. Oral presentation assignments vary from 3 to 10 minutes in duration, and students have an opportunity to rehearse and revise major presentations. All assignments involve analyzing a range of texts as well as identifying, evaluating, and using multiple sources in support of research-based arguments. In-class work focuses on how to read with an increasingly critical eye, how to utilize a range of generative writing and revision activities, and how to identify, evaluate, integrate, and cite sources effectively.

Writing and Rhetoric classes enroll no more than 15 students; consistent participation is crucial. In-class activities include close reading and analysis of texts, drafting and revising parts of assignments, and responding to the writing of peers; in-class workshops are augmented by a minimum of three individual or small group conferences with the PWR instructor during the quarter.

For Academic Year 2020-2021 all PWR 1 and PWR 2 courses will meet virtually. (Online.)

Courses

The Writing and Rhetoric requirement includes courses at three levels.

1. The first-level course, taken in the first year, can be completed in PWR or Integrated Learning Environments, including Structural Liberal Education (SLE) and Immersion in the Arts: Living in Culture (ITALIC), or by completion of the Education as Self-Fashioning (ESF) course; the curriculum emphasizes analysis and research-based argument.
2. The second-level course, to be completed by the end of the sophomore year, is a writing and oral/multimedia presentation course taught by the Program in Writing and Rhetoric. Completion of Structured Liberal Education also fulfills this requirement. Introductory Seminars certified by the Writing and Rhetoric Governance Board satisfy the second-level Writing and Rhetoric Requirement (WRITE 2). Courses offered as Introductory Seminars require an additional application form; see the Introductory Seminars web site (https://undergrad.stanford.edu/programs/introsems/).
3. The third-level course is a Writing in the Major (WIM) course taught in each major, providing students with systematic opportunities to develop skills for writing in their chosen fields. A list of certified WIM courses may be found in the table of "Undergraduate Major Unit Requirements (p. 48)" of this bulletin. WIM course descriptions may be found under individual department and program sections.

The sequence of required courses provides a coordinated approach responsive to how students mature as writers, researchers, and presenters during their undergraduate years. At each level, students develop greater sophistication in conducting inquiry and producing scholarly work in progressively more specific disciplinary contexts.

Before the term in which students enroll in the first two levels of the requirement, they review course descriptions on the PWR Courses (https://undergrad.stanford.edu/programs/pwr/courses/) webpage. After reviewing the offerings, students submit a list of top choices, and the PWR office assigns students to courses based on these preferences.

Students wishing to pursue advanced work in Writing and Rhetoric may enroll in electives offered by PWR. Topics vary; further information may be found in the PWR section of the Stanford Bulletin's ExploreCourses web site (https://explorecourses.stanford.edu/search/?q=PWR+*&filter-ger-Writing2=on&view=catalog&filter-term-Winter=on&filter-term-Autumn=on&filter-ger-Writing1=on&filter-term-Spring=on&page=0&filter-coursestatus-Active=on&collapse=%2c5%2c&academicYear=20162017) or on the PWR advanced courses web page (https://undergrad.stanford.edu/programs/pwr/courses/advanced-pwr-courses/). PWR also offers courses culminating in a Notation in Science Communication and a Notation in Cultural Rhetorics. For more information, visit the webpage (https://undergrad.stanford.edu/programs/pwr/initiatives/notation-science-communication/).

PWR Courses Offered in 2020-21

- PWR 1 Courses (https://explorecourses.stanford.edu/search/?q=pwr*&view=catalog&filter-term-Winter=on&filter-component-SEM=on&filter-term-Autumn=on&filter-ger-Writing1=on&filter-

term-Spring=on&page=0&filter-coursestatus-Active=on&collapse=%2c5%2c6%2c&academicYear=20202021)
  - Autumn Quarter (https://explorecourses.stanford.edu/search/?q=pwr*&view=catalog&filter-component-SEM=on&filter-term-Autumn=on&filter-ger-Writing1=on&page=0&filter-coursestatus-Active=on&collapse=%2c5%2c6%2c&academicYear=20202021)
  - Winter Quarter (https://explorecourses.stanford.edu/search/?q=pwr*&view=catalog&filter-term-Winter=on&filter-component-SEM=on&filter-ger-Writing1=on&page=0&filter-coursestatus-Active=on&collapse=%2c5%2c6%2c&academicYear=20202021)
  - Spring Quarter (https://explorecourses.stanford.edu/search/?q=pwr*&view=catalog&filter-component-SEM=on&filter-ger-Writing1=on&filter-term-Spring=on&page=0&filter-coursestatus-Active=on&collapse=%2c5%2c6%2c&academicYear=20202021)
  - Summer Quarter (https://explorecourses.stanford.edu/search/?q=pwr*&view=catalog&filter-component-SEM=on&filter-term-Summer=on&filter-ger-Writing1=on&page=0&filter-coursestatus-Active=on&collapse=%2c5%2c6%2c&academicYear=20202021)
- PWR 2 Courses (https://explorecourses.stanford.edu/search/?q=pwr*&filter-ger-Writing2=on&view=catalog&filter-term-Winter=on&filter-component-SEM=on&filter-term-Autumn=on&filter-term-Spring=on&page=0&filter-coursestatus-Active=on&collapse=%2c5%2c6%2c&academicYear=20202021)
  - Autumn Quarter (https://explorecourses.stanford.edu/search/?q=pwr*&filter-ger-Writing2=on&view=catalog&filter-component-SEM=on&filter-term-Autumn=on&page=0&filter-coursestatus-Active=on&collapse=%2c5%2c6%2c&academicYear=20202021)
  - Winter Quarter (https://explorecourses.stanford.edu/search/?q=pwr*&filter-ger-Writing2=on&view=catalog&filter-term-Winter=on&filter-component-SEM=on&page=0&filter-coursestatus-Active=on&collapse=%2c5%2c6%2c&academicYear=20202021)
  - Spring Quarter (https://explorecourses.stanford.edu/search/?q=pwr*&filter-ger-Writing2=on&view=catalog&filter-component-SEM=on&filter-term-Spring=on&page=0&filter-coursestatus-Active=on&collapse=%2c5%2c6%2c&academicYear=20202021)
  - Summer Quarter (https://explorecourses.stanford.edu/search/?q=pwr*&filter-ger-Writing2=on&view=catalog&filter-component-SEM=on&filter-term-Summer=on&page=0&filter-coursestatus-Active=on&collapse=%2c5%2c6%2c&academicYear=20202021)

Oral Communication Courses Offered in 2020-21

- Oral Communication Courses (https://explorecourses.stanford.edu/search/?q=oralcomm*&view=catalog&filter-term-Winter=on&filter-term-Autumn=on&filter-term-Spring=on&page=0&filter-coursestatus-Active=on&collapse=%2c5%2c6%2c&academicYear=20202021)
  - Autumn Quarter (https://explorecourses.stanford.edu/search/?q=oralcomm*&view=catalog&filter-term-Autumn=on&page=0&filter-coursestatus-Active=on&collapse=%2c5%2c6%2c&academicYear=20202021)
  - Winter Quarter (https://explorecourses.stanford.edu/search/?q=oralcomm*&view=catalog&filter-term-Winter=on&page=0&filter-coursestatus-Active=on&collapse=%2c5%2c6%2c&academicYear=20202021)
  - Spring Quarter (https://explorecourses.stanford.edu/search/?q=oralcomm*&view=catalog&filter-term-Spring=on&page=0&filter-coursestatus-Active=on&collapse=%2c5%2c6%2c&academicYear=20202021)
  - Summer Quarter (https://explorecourses.stanford.edu/search/?q=oralcomm&view=catalog&filter-term-Summer=on&page=0&filter-coursestatus-Active=on&collapse=&academicYear=20202021)

Advanced PWR Courses

Prerequisites: PWR 1 and PWR 2.

		Units
Courses in the Cultural Rhetorics track		
PWR 194NCR	Topics in Writing & Rhetoric: Introduction to Cultural Rhetorics	4
PWR 194AV	Topics in Writing & Rhetoric: Drawn from Life: The Power of True Stories in Autobio Comics	3-4
PWR 99A	Portfolio Preparation I	1
PWR 99B	Portfolio Preparation II	2
Courses in the Science Communication track		
PWR 91NSC	Intermediate Writing: Introduction to Science Communication	4
PWR 99A	Portfolio Preparation I	1
PWR 99B	Portfolio Preparation II	2
PWR 194EP	Topics in Writing & Rhetoric: Introduction to Environmental Justice: Race, Class, Gender and Place	4
PWR 91CW	Intermediate Writing: Seeing is Believing: The Power of Persuasive Data Stories	4
PWR 91KSA	Intermediate Writing: Storytelling and Science	4
Courses in the Digital Media and Visual Communications track		
PWR 91OID	Creating Your Digital Presence: The What, How, and Why of Building an Online Presence	3

Hume Center for Writing and Speaking

Location: Building 250
Mail Code: 2085
Phone: (650) 723-0045
Email: humecenter@stanford.edu
Web Site: http://hume.stanford.edu

The Hume Center for Writing and Speaking (Hume Center) works with all Stanford writers to help them develop rich and varied abilities in every aspect of writing and oral communication. In one-to-one sessions, Hume writing consultants help students get started on assignments; address and overcome writer's block or performance anxiety; learn strategies for revising and editing; and understand academic conventions in their fields. Hume emphasizes support for students' writing, oral presentations, and multimedia compositions for PWR, Thinking Matters, and Introductory Seminars while also serving all Stanford undergraduates through individual and group tutorials, workshops, and seminars. The Hume Center also works with students in Writing in the Major (WIM) courses and students writing Honors theses. Other events hosted by the Center include performances for Parents Weekend and Admit Weekend. For further details, see the Hume Center for Writing and Speaking (https://undergrad.stanford.edu/tutoring-support/hume-center/) web site.

Oral Communication Program

Email: speakinghelp@stanford.edu
Web Site: http://speakinghelp.stanford.edu (http://speakinghelp.stanford.edu/)

The Oral Communication Program provides opportunities for undergraduates and graduate students to develop or improve their oral communication skills. Courses and workshops offer a comprehensive approach to speech communication, including training in the fundamental principles of public speaking and the effective delivery of oral presentations. The goal is to enhance students' general facility and confidence in oral expression. The program also provides innovative discipline-based instruction to help students refine their personal speaking styles in small groups and classroom settings.

Student Writing and Oral Communication Tutors

Students with a passion for writing and/or public speaking are encouraged to apply to become writing or oral communication tutors (OCTs); the application process takes place each January, and for those students chosen to serve as writing tutors or OCTs, we offer a required training practicum in Spring Quarter.

Oral Communication Courses Offered in 2020-21

- Oral Communication Courses (https://explorecourses.stanford.edu/search/?q=oralcomm&view=catalog&filter-term-Winter=on&filter-term-Autumn=on&filter-term-Spring=on&page=0&filter-coursestatus-Active=on&collapse=%2c5%2c6%2c&academicYear=20202021)
  - Autumn Quarter (https://explorecourses.stanford.edu/search/?q=oralcomm&view=catalog&filter-term-Autumn=on&page=0&filter-coursestatus-Active=on&collapse=%2c5%2c6%2c&academicYear=20202021)
  - Winter Quarter (https://explorecourses.stanford.edu/search/?q=oralcomm&view=catalog&filter-term-Winter=on&page=0&filter-coursestatus-Active=on&collapse=%2c5%2c6%2c&academicYear=20202021)
  - Spring Quarter (https://explorecourses.stanford.edu/search/?q=oralcomm&view=catalog&filter-term-Spring=on&page=0&filter-coursestatus-Active=on&collapse=%2c5%2c6%2c&academicYear=20202021)
  - Summer Quarter (https://explorecourses.stanford.edu/search/?q=oralcomm&view=catalog&filter-term-Summer=on&page=0&filter-coursestatus-Active=on&collapse=&academicYear=20202021)

Office: Sweet Hall, Third Floor
Web Site: https://storytelling.stanford.edu/

The Stanford Storytelling Project helps students explore how to use and craft stories to engage the stories that surround us. The project's courses, grants, live events, and weekly workshops give students opportunities to study how they can use stories to grow, communicate, and create social change. The project's award-winning podcasts also give students an unprecedented opportunity to create professional-level audio stories and share their research and personal stories with a large audience. Find out more about the programs (*Writer's Studio, StoryLab, Braden Grants*) and podcasts (*State of the Human, Off the Page*) on the project's website (https://storytelling.stanford.edu/). The project is housed within the Program in Writing and Rhetoric in VPUE.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate University Requirements

Grading

PWR courses completed during academic year 2020-21, including Summer 2021, and taken for CR/NC grading with a Credit (CR) grade satisfy the WR-1 and WR-2 requirement. This grading policy exception, as well as online courses, will also be allowed for WR-1 and WR-2 transfer credit evaluations, provided those courses fulfill the other criteria for equivalency approval.

Faculty Director: Adam Banks

Director: Marvin Diogenes

Associate Director: Christine Alfano

Director, Hume Center for Writing & Speaking: Zandra Jordan

Associate Director, Hume Center for Writing & Speaking: Norah Fahim

Director, Oral Communication Program: Doree Allen

Director, Stanford Storytelling Project: Jonah Willihnganz

Lecturers: Christine Alfano, Paul Bator, Angela Becerra Vidergar, Shay Brawn, Tessa Brown, Russ Carpenter, Kevin DiPirro, Erik Ellis, Norah Fahim, Lindsey Felt, Thomas Freeland (Oral Comm), Mark Gardiner, Alex Greenhough (ITALIC), Megan Formato, Wendy Goldberg, Arturo Heredia, Shannon Hervey, Sarah Hillenbrand, Donna Hunter, Jennifer Johnson, Chris Kamrath, Valerie Kinsey, Clara Lewis, Helen Lie (Oral Comm), Gabrielle Moyer, Ashley Newby, Sarah Perkins, John Peterson, Sarah Pittock, Emily Polk, Becky Richardson, Kim Savelson, Tesla Schaeffer, Selby Schwartz, Ruth Starkman, Jenne Stonaker, Lisa Swan, Kathleen Tarr, Jake Warga (Storytelling), Ann Watters, Cassie Wright

Fellows: Samah Elbelazi, Isla Flores-Bayer, Amanda Frye Leinhos, Andy Hammann, Hayden Kantor, Lily Lamboy, Raechel Lee, Gigi Otalvaro, Eldon Pei, Irena Yamboliev, Renren Yang, Yanshuo Zhang.

Courses

PWR 1A. Introduction to Writing at Stanford: Rhetorics of Consumer Culture. 3 Units.
What does consumer culture say about the larger culture? PWR 1A uses questions about consumer culture -- music, movies, sports-- for writing and researching. How do video games teach engineering and physics? How do detective and courtroom dramas lead to discussions about DNA analysis? We look at consumer culture as cultural critics, using ideas about technology, society, and economics to analyze human behavior. We'll study theories about media to research how everyday artifacts are signs of our culture. We¿ll write an analytical essay about cultural commentary or a commercial space, learn about library research to explore topics of your choice, and share our research. We¿ll work together as a group to practice collaboration and project-based learning. Enrollment exclusive to incoming Stanford freshman student athletes. PWR1A classes are small, workshop-style meetings that encourage extensive interaction between students and instructors. PWR1A does not meet the Stanford first-year writing requirement.

PWR 1AB. Writing & Rhetoric 1: Podcasts to Broadcasts: The Rhetoric of Radio. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1ABA. Writing & Rhetoric 1: Beyond! The Rhetoric of Space Exploration. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1AH. Writing & Rhetoric 1: The Rhetoric of American Multicultural Experience. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Exploration of multicultural experience and cultural assimilation, focusing on the theme of social acceptance. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1AK. Writing & Rhetoric 1: The Rhetoric of Humor. 4 Units.
In this class we will explore the how and why of humor through readings, classroom discussion, rhetorical analysis, and, most importantly, through writing, and examine the ways that humor, as a rhetorical tool, is deployed in written and oral texts. As we consider theories of humor, we will begin to understand how humor works and why it is so powerful. For full course descriptions, see https://vcapwr-catalog.stanford.edu. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. Enrollment is handled by the PWR office.

PWR 1AL. Writing & Rhetoric 1: Schooling in the American Mind: Rhetorics of Teaching and Learning. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1AM. Writing & Rhetoric 1: King Tut's Tomb, Penicillin, and Lilliputians: The Rhetoric of Discovery. 4 Units.
In this course, as we investigate the power of the archetype of discovery, we also critically consider what these stories hide or gloss over. How revolutionary are most discoveries after all? What perspectives are left out? What is a truthful way to portray new insights? How do we capture popular attention but include the broader context of experiment and expeditions? You will gain a complex understanding of how writing and rhetoric both structure and hide knowledge from the audience, and how you can use this in your writing in both persuasive and responsible ways. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1AN. Writing & Rhetoric 1: The Rhetoric of Identity Cultivated Through a Hip-Hop World. 4 Units.
This course seeks to explore the ways that we read and write ourselves into a world that is engrossed in Hip-Hop culture by asking: What does it mean to live in a world where Hip-Hop permeates every aspect of society? How can Hip-Hop culture be used to understand the rhetoric that is used in broader society in reference to both this moment in history and the culture itself? By engaging both Hip-Hop artists such as Kendrick Lamar and Nicki Manij, and artists that operate in a Hip-Hop world like Beyoncé, this course investigates the ways that we write ourselves into a world engrossed in Hip-Hop culture that denies the humanity and value of its members. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1BH. Writing & Rhetoric 1: A Seat at the Table-Rhetorics of Belonging. 4 Units.
PWR 1 courses focus on developing writing and revision strategies for rhetorical analysis and research-based arguments that draw on multiple sources. This class takes as its theme the symbolism of pulling up a chair to a table to represent a sense of belonging and inclusion. What happens when you get ¿a seat¿ that you've pursued for a long time? This course asks you to engage with feelings of inclusion/exclusion by drawing from your own experiences of negotiating and fighting for your seat. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1BK. Writing & Rhetoric 1: Writing What You Eat: The Rhetoric of Food. 4 Units.
In this course, we will focus on the rhetoric of food in order to explore how our relationship to what we eat is reflected in writing about ourselves, our society, and our world. Essays, recipes, blog posts, and newspaper articles are some of the genres we will examine in order to explore how issues of identity, community, ethics, and wellness can be expressed in food writing. How does what we choose to eat reflect on how we see ourselves and the world around us? What responsibilities do we have, if any, as consumers of food in one of the world's richest nations? For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1BRA. Writing & Rhetoric 1: Growing Up Millennial: The Rhetoric of Coming of Age. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1BRB. Writing & Rhetoric 1: In Another's Shoes: The Rhetoric of Empathy. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1BW. Writing & Rhetoric 1: The Loyal Opposition: The Rhetoric of Dissent. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1CA. Writing & Rhetoric 1: The Rhetoric of Gaming. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For videos and full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1CK. Writing & Rhetoric 1: Investigating the News: Journalism, Technology & the Future. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1CL. Writing & Rhetoric 1: The Politics of Difference, Identity, and Harm: The Rhetoric of Hate Crimes. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1CLA. Writing & Rhetoric 1: Hate Crime: Writing on Law and Politics. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1CLB. Writing & Rhetoric 1: Writing on Campus Life. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1CW. Writing & Rhetoric 1: Sporting Rhetoric: Power, Performance, Profit and Politics. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1CWA. Writing & Rhetoric 1: Rhetoric of Body/Bodily Rhetorics. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1D. Writing Academic Arguments: The Art of the Essay. 3 Units.
Offered only to participants in the Summer College for High School Students. How can you write college-level essays that hook readers and sustain their interest over the course of a well-researched argument? In this course you'll learn how to craft good research questions, conduct ethical scholarly research, engage counterarguments, and write and revise academic essays. You¿ll write a rhetorical analysis of a work that interests you¿an essay, film, song, painting, etc. and develop a persuasive, research-based essay exploring a topic you feel passionate about. Does not meet the Stanford first-year writing requirement.

PWR 1DH. Writing & Rhetoric 1: The Virtue of Vice and the Vice of Virtue: The Rhetoric of Criminality. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Students investigate language and images that construct criminals, analyzing how these representations shape personal and cultural beliefs. Analysis of the costs and benefits of retributive, restorative, and transformative justice systems. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1ECA. Writing & Rhetoric 1: Where I'm From: The Rhetorics of Mapping and Human Geography. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1EE. Writing & Rhetoric 1: Prowling Toward Certainty: Exploration as Argument. 4 Units.
In a culture that rewards people who write and speak with conviction, ambivalence often seems like a personal shortcoming that must be remedied with certainty. but what if, instead of sweeping your ambivalence under the rug, you tried to embrace it in your research and foreground it in your writing? What advantages can be found in the deep, risky waters of uncertainty? Can ambivalent texts move and persuade us? In this course, we'll explore such questions in an attempt to understand the relationship between ambivalence and persuasion. We'll analyze and discuss the ways that writers such as Annie Dillard, Stephen Jay Gould, and Michael Pollan not only engage their ambivalence but weave it into their prose. Most importantly, we'll explore how you can develop rhetorical strategies and habits of mind to achieve results in your own analytical and persuasive writing. We'll study how to craft compelling arguments that do fuller justice to complex emotions and ideas.For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1EI. Writing & Rhetoric 1: Another Scene: Writing About Why Movies Matter. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1EP. Writing & Rhetoric 1: The Rhetoric of Global Development and Social Change. 4 Units.
PWR 1 courses focus on developing writing and revision strategies for rhetorical analysis and research-based arguments that draw on multiple sources. This class takes as its theme international development projects which have marked every sector of global society. We will unpack and interrogate the numerous discourses around international "development" as a strategy for achieving social change and look at how culture, history, politics, and economics have informed development's connections to capitalism, modernity, and most recently, globalization. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1EV. Writing & Rhetoric 1: The Rhetoric of Globalization. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1FL. Writing & Rhetoric 1: Rhetoric of F Lee. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1GBJ. Writing & Rhetoric 1: The Rhetoric of Cultural Memories of Violence. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GBR. Writing & Rhetoric 1: Spill: The Rhetoric of Confessions and Self-Revelations. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GBW. Writing & Rhetoric 1: Deathbeds: Art and the Rhetoric of Disease. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GCA. Writing & Rhetoric 1: AH! Real Monsters: The Rhetoric of Monstrosity in Popular Culture. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GCD. Writing & Rhetoric 1: Doomsdays: The Rhetoric of Apocalypse. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1GCJ. Writing & Rhetoric 1: El Otro Lado / The Other Side: The rhetoric of real and imagined borders. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. The physical border between the United States and Mexico is the focus of the examination of the artistic, scholarly, and political rhetoric of real and imagined borders. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GCL. Writing & Rhetoric 1: Rhetoric of Ledbetter. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GCO. Writing & Rhetoric 1: To Boldly Go: The Rhetoric of Travel. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GCX. Writing & Rhetoric 1: "I Do": The Rhetoric of Consent. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Examination of the idea of consent and the underlying principles of free will and autonomy in the fields of law, intellectual property, marriage contracts, political philosophy, medical ethics, and sex. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GCZ. Writing & Rhetoric 1: "It Never Got Weird Enough For Me": The Rhetoric of Intoxication. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GDA. Writing & Rhetoric 1: Rhetoric of Murray. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Critical analysis of the ways in which online life intersects with real life around issues including privacy, authorship, and morality. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GDM. Writing & Rhetoric 1: Revolution and Revolt: Political Writing for Political Action. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GDS. Writing & Rhetoric 1: From Trash Talk to Toxic Discourse: Rhetorics of Waste. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1GEM. Writing & Rhetoric 1: The Rhetoric of Foodie Culture. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1GER. Writing & Rhetoric 1: The Rhetoric of Social Media. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Exploration of the multifaceted and hypertextual rhetoric of social media, the intersection between rhetoric and social media, and how new types of online media have heightened participation, openness, and a sense of community. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GEV. Writing & Rhetoric 1: All the World's a Stage: The Rhetoric of Theater. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Students investigate the role theater plays in the rhetorical strategies of various literary and non-literary texts as well as visual materials such as films and cartoons. See http://ual.stanford.edu/AP/univ_req/PWR/Req.html.

PWR 1GFL. Writing & Rhetoric 1: From Con Artists to Catfish: The Rhetoric of Trickery. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1GGH. Writing & Rhetoric 1: Understanding American Political Speeches of the 20th and 21st Centuries. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Rhetorical analyses of speeches by a range of 20th-century American political figures and the political rhetoric of the present day. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GGK. Writing & Rhetoric 1: Ladies, Tramps, and Other Furry Friends: The Rhetoric of Pets. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1GGZ. Writing & Rhetoric 1: The Rhetoric of Race in American Cinema. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1GIF. Writing & Rhetoric 1: Dark Humor: A Rhetoric of Social Taboos. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Study of dark humor as it deals with the most delicate subject matter, topics we designate as sacred and beyond criticism: violence and bodily damage, illness, aging and death, race and ethnicity, and gender and sexuality. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GIY. Writing & Rhetoric 1: Jekylls and Hydes: The Rhetoric of the Scientist. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1GJE. Writing & Rhetoric 1: Gay Ghettoes, Queer Hoods: The Rhetoric of Race and Urban Sexual Subcultures. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Study of the rhetoric of urban sexual subcultures, and how the rhetoric in medical science, journalism, and popular entertainment defines queers of color in intellectual thought and pop culture. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GJH. Writing & Rhetoric 1: Invention and Imagination in the Nineteenth Century. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GJM. Writing & Rhetoric 1: The Rhetoric of California. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. ¿ See http://ual.stanford.edu/AP/univ_req/PWR/Courses.html.

PWR 1GJN. Writing & Rhetoric 1: Speaking of Dreams. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GJS. Writing & Rhetoric 1: Our Warded World: The Rhetoric of Conservation. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GJU. Writing & Rhetoric 1: 'Surface of Past Time': The Rhetoric of Nostalgia. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GJW. Writing & Rhetoric 1: I Know It When I Hear It: The Rhetoric of the Unspeakable. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GKL. Writing & Rhetoric 1: The Use and Abuse of Civil Debate: The Rhetoric of Collective Thinking. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GLA. Writing & Rhetoric 1: Code Orange: Post-9/11 America and the Rhetoric of Alarm. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GLB. Writing & Rhetoric 1: In Poor Taste: The Rhetoric of Catastrophe Comedy. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1GLD. Writing & Rhetoric 1: The Cyborg Body: The Rhetoric of Disability. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Analysis of ¿disability,¿ using the analogy of the cyborg, in an era when the human body has become plastic, digitized and surgically manipulated. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GLL. Writing & Rhetoric 1: Wow, that's so postcard: The Rhetoric of Tourism. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Analysis of tourism as a way of seeing and representing the rest of the world and oneself, touching on some of the most pressing political, economic, and cultural questions facing an increasingly globalized world. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GLR. Writing & Rhetoric 1: Are you Fuzzy and Techie?: The Rhetoric of Art and Science. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GM. Writing & Rhetoric 1: Writing for the Wild and the Tame. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Exploration of the tension between reverence and science, language and feeling, natural and unnatural in the interrelationship of rhetoric and nature. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GMC. Writing & Rhetoric 1: Dancing about Architecture: Or Finding Words for the Wordless. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1GMD. Writing & Rhetoric 1: Violent Innocents: Writing Our Way Out of American History. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1GMG. Writing & Rhetoric 1: Love to Hate: The Rhetoric of Misanthropy. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GMH. Writing & Rhetoric 1: Transformative Turns: The Rhetoric of Revolution. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1GMK. Writing & Rhetoric 1: Pure and Unadulterated: The Rhetoric of Contamination. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GML. Writing & Rhetoric 1: The Rhetoric of Migrant Protest. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1GMR. Writing & Rhetoric 1: Fearful Symmetry: The Rhetoric of the Double. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Exploration of the fictions of the double and the philosophies of personal identity, and how both anticipate and condition contemporary responses to the twin issues of human cloning and intellectual property. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GMT. Writing & Rhetoric 1: The Shape of Things: The Rhetoric of Design. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GMV. Writing & Rhetoric 1: Don't Take it Personally!: The Rhetoric of The Insult. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Analysis of how insults function rhetorically in specific situations and how they have catalyzed prolonged confrontations around race, education, politics, sexual orientation, and national standing. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GMX. Writing & Rhetoric 1: 'Too Much Information?': The Rhetoric of Social Networking & Online Privacy. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Critical analysis of the ways in which online life intersects with real life around issues including privacy, authorship, and morality. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GMZ. Writing & Rhetoric 1: The Rhetoric of Institutional Power. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GNA. Writing & Rhetoric 1: Talking Baseball. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GNL. Writing & Rhetoric 1: Punk Rock and Rhetoric of Protest Music. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GNV. Writing & Rhetoric 1: Rhetoric of Bioethics and Biopolitics. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1GO. Writing & Rhetoric 1: Art, Writing, and Performance: The Rhetoric of Visual Analysis. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1GPS. Writing & Rhetoric 1: The Rhetoric of English. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GRA. Writing & Rhetoric 1: Millions Like Us: The Rhetoric of Crowds. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Topics include symbolic meaning of rock, sports, and political events; virtual crowds online; and use of crowds to shape ideology. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GRH. Writing & Rhetoric 1: 2012 & the Rhetoric of Apocalypse. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Analysis of the rhetoric of apocalypse as a cultural phenomenon. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GRK. Writing & Rhetoric 1: Plugged In: The Rhetoric of Networks. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1GRL. Writing & Rhetoric 1: Queer Rhetoric: The Language of Sex, Gender, and Identity. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1GRN. Writing & Rhetoric 1: Lasting Only One Day: The Rhetoric of Ephemera and Other Discarded Things. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Exploration of ephemera and how they argue for their meaning as they collect and preserve the past while reflecting humantransience. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GRY. Writing & Rhetoric 1: Fashionable Fables: The Rhetoric of Modern Mythology. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GRZ. Writing & Rhetoric 1: Decisions, Rhetoric, and the Art of Choosing. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GSD. Writing & Rhetoric 1: Masters of Style - The Rhetoric of Sophistication. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Examination of how style is mastered and deployed in a range of genres. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GSG. Writing & Rhetoric 1: From Cowboys to Computers: Rhetoric of the American West. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1GSO. Writing & Rhetoric 1: The Varieties of Conservative Experience. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GTA. Writing & Rhetoric 1: What Lies Beneath: The Rhetoric of the Underworld. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GTJ. Writing & Rhetoric 1: Rhetoric of the Unruly: Iconoclasts and Their Controversies. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GTL. Writing & Rhetoric 1: Love at First Sight and Forever: The Rhetoric of Romance. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1GTM. Writing & Rhetoric 1: The Rhetoric of Taste. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Examination of the rhetoric of taste as the luxurious product of a sophisticated society and as tedious, stultifying, snobby, or outright offensive. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GTX. Writing & Rhetoric 1: 'Making My Way Downtown': The Rhetoric of the City. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Through historic, literary, journalistic, and film portrayals of city life, we will analyze the idea of 'the city' as constructed through media and in the imaginations of its residents, and the way life in cities is really lived. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GVC. Writing & Rhetoric 1: The Rhetoric of Circus. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GVG. Writing & Rhetoric 1: The Way of the Dodo: Rhetoric of Extinction. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1GVN. Writing & Rhetoric 1: Noise Machines: The Rhetoric of Sound and Technology. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Critical analysis of the ways in which online life intersects with real life around issues including privacy, authorship, and morality. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GWI. Writing & Rhetoric 1: Rhetoric of Winkler. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GWS. Writing & Rhetoric 1: Body Politics: The Rhetoric of Transhumanism. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1GWT. Writing & Rhetoric 1: Money for 'Nothing' : The Rhetoric of Silicon Valley. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1HF. Writing & Rhetoric 1: From Ghost Bikes to the Googleplex: Digital Rhetoric and Social Action. 4 Units.
PWR 1 courses focus on developing writing and revision strategies for rhetorical analysis and research-based arguments that draw on multiple sources. This class takes as its theme what makes social change 'work' in networked environments (that is, pretty much everywhere). For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1HJ. Writing & Rhetoric 1: Not Just Art: The Rhetoric of Museums. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1HJA. Writing & Rhetoric 1: What None Can Avoid: The Rhetoric of Death. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1HK. Writing & Rhetoric 1: Food Values: The Rhetoric of What and How We Eat. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1HT. Writing & Rhetoric 1: What Are You, Anyway? The Rhetorics of Ethnic and Racial Identity. 4 Units.
PWR 1 courses focus on developing writing and revision strategies for rhetorical analysis and research-based arguments that draw on multiple sources. This class takes as its theme ideas about identity and how that centers to a great degree on ethnicity and race. These concepts, often considered equal, are tied to social narratives that influence all our lives. Now more than ever, they serve as cultural arenas in which struggles over equality and equity take place. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1HZ. Introduction to College Writing. 3 Units.
What are the strategies and practices that can help you become a successful writer, no matter what your area of study? In this class, students will develop critical reading, writing, and research skills, with a special attention to college application practices, strong argumentation, rhetorical awareness, and introductory research skills. The sections are small, encouraging extensive interaction between students and instructors. Class activities will primarily be in the form of discussions, peer work, and small group activities; in addition, students will have periodic one-to-one meetings with instructors for individualized learning. This class does not meet the Stanford first-year writing requirement.

PWR 1IF. Writing & Rhetoric 1: The Rhetoric of Language and Social Identity in America. 4 Units.
Language and social identity are closely intertwined. Have you ever noticed that you change the way you speak to present a particular social identity? For example, have you ever switched between dialects or languages to show alignment with certain social groups or mark your 'in-group' status? Because language is flexible (and somewhat controllable), it can be used as a resource to create and index identity. However, given its flexible nature, criticizing someone's language often becomes a more socially acceptable way of attacking someone than something that seems like bald-faced racism/sexism/homophobia, etc. In this course we'll explore this complex link between identity and language.nnThis course explores the way language and social identity are defined, discussed, and debated in America, and the assumptions this rhetoric presents about race, class, education and other social identities more broadly. Together, we¿ll consider: What's it like to grow up monolingual versus bilingual or multilingual? What role do our ethnicity and/or race play in how our language skills are perceived? What role do language attitudes and stereotypes play in influencing our daily lives? What role does the media play? How is language discussed in politics? Students will be able to work on a research project related to social identity and language on a topic of their choice.

PWR 1IY. Writing & Rhetoric 1: Rhetorics of Travel and Tourism. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1IYA. Writing & Rhetoric 1: The Art and Science of Gender and its Bending. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1JA. Writing & Rhetoric 1: The Rhetoric of Number One. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1JC. Writing & Rhetoric 1: Modern Family: The Rhetoric of Sex and Reproduction. 4 Units.
The issue of reproduction provides a powerful rhetorical lens for looking critically and incisively into our own assumptions about race, gender, class, sexuality, power, rights, justice, "nature," technology, and modernity. With an intention to challenge assumptions, we will explore issues through a variety of perspectives. For example, we will explore theoretical debates over the "family" and its viability as a vehicle for securing recognition and rights, place liberal feminist ideas like "bodily autonomy" in conversation with complicatedly contradictory concepts like natal endangerment or father's rights in abortion and family planning, investigate legal and medical histories of eugenics, sterilization abuse, and practices of coercive and disciplinary contraception, and analyze rhetoric associated with different forms of commodified reproduction, from black women's forced "manufacture" of slave labor to practices of transnational gestational surrogacy. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1JD. Writing & Rhetoric 1: Frog Princes and Ugly Ducklings: The Rhetoric of Self-Transformation. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1JJ. Writing & Rhetoric 1: The Rhetoric of Language and Thought. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1JJA. Writing & Rhetoric 1: Languages We Speak: Discourses of Linguistic Diversity and Language Change. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1JO. Writing & Rhetoric 1: Join the #LoveArmy: The Rhetoric of Radical Compassion. 4 Units.
In this writing class, we will examine the power and possibility of radical compassion. We will briefly explore love's myriad forms before turning almost exclusively to *love of humanity* a deep social concern for all people and the willingness to act on that concern as an important foundation for justice. Our inquiry will take us through the fields of neuroscience, evolutionary biology, psychology, sociology, history, philosophy as well as cultural, feminist and religious studies. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1JP. Writing & Rhetoric 1: The Rhetoric of Consumer Culture. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Students explore what consumerism says about the larger culture and the segmented groups within it, analyzing popular and scholarly texts as well as current trends in pop culture, to research how the activities of consumerism shape culture. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1JPA. Writing & Rhetoric 1: The Rhetoric of Liberal Arts Education. 4 Units.
Is higher education primarily a pathway to a career, or is it designed for students to learn about themselves and the human experience? Is it possible for higher education to achieve both of these goals? In this course we will consider the concept of liberal arts education and address how college should prepare its students for adult life. By working with education theorists as wide-ranging as Diane Ravitch, Ken Robinson, William Deresiewicz, and Stanley Fish, we will frame the debate and set the stage for your own investigation. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1JS. Writing & Rhetoric 1: Beyond DNA: The Omics Revolution. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1JSA. Writing & Rhetoric 1: The Rhetoric of Plants. 4 Units.
PWR 1 courses focus on developing writing and revision strategies for rhetorical analysis and research-based arguments that draw on multiple sources. In this class we will refocus our attention on plants, using them as a lens to explore, research, and write about different aspects of our world. For example, we will study how new scientific ideas are communicated and accepted by studying the work of maize geneticist and Nobel laureate Barbara McClintock. We will explore Lysenkoism, the politicization of agricultural science in the Soviet Union, drawing parallels to modern day climate change science, and we will dive into the research on urban tree coverage to see how plants can be a marker for social inequality For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1JSB. Writing & Rhetoric 1: Ignorance. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1JT. PWR 1: RHETORIC HEALTH CARE. 4 Units.
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PWR 1KA. Writing & Rhetoric 1: The Rhetoric of Innovation: Transformations and Missed Opportunities. 4 Units.
PWR 1 courses focus on developing writing and revision strategies for rhetorical analysis and research-based arguments that draw on multiple sources. This class takes as its theme the rhetoric and writing that contributed to invention transformations and missed opportunities through the lens of social, financial, and political pressures. Who has the capability to bring a new idea to the public? Who has been silenced? For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1KD. Writing & Rhetoric 1: The Feature Article: Writing and Change. 4 Units.
PWR 1 courses focus on developing writing and revision strategies for rhetorical analysis and research-based arguments that draw on multiple sources. This class takes as its theme how various feature article writers argue the issues of soaring energy and food prices, serious market volatility, climate change, an ongoing war in the Middle East, and how terms like ¿crisis¿ or ¿change¿ impact the discussion. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1KG. Writing & Rhetoric 1: Rhetoric of McDonough. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1KJ. Writing & Rhetoric 1: The Rhetoric of Film. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1KMB. Writing & Rhetoric 1: Cradle to Cradle: the Rhetoric of Sustainability. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1KMC. Writing & Rhetoric 1: Staying Cool on a Hot Planet: Environmental Rhetoric for a Changing World. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1KR. Writing & Rhetoric 1: Trust, Rhetoric, and Writing. 4 Units.
PWR 1 courses focus on developing writing and revision strategies for rhetorical analysis and research-based arguments that draw on multiple sources. This class takes as its theme trust as an ancient and persistent rhetorical problem, which impacts how we experience, interpret, and compose information. In our own age of instantaneous global communication and an internet that never forgets, these concerns proliferate. Trust becomes an essential consideration for writers and researchers working to build knowledge at the university and beyond, not to mention a valuable commodity. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1KS. Writing & Rhetoric 1: Imagining Others: 21st Century Cosmopolitanism. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Exploration of cosmopolitanism, questions related to globalization, nationalism, citizenship, cultural values, aesthetics, and identity. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1KSA. Writing & Rhetoric 1: Constructing Childhood. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1KSB. Writing & Rhetoric 1: Health Matters: Health Innovation and Communication. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1KT. Writing & Rhetoric 1: The Emperor's New Clothes: The Rhetoric of Modern Mythology. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1KTA. Writing & Rhetoric 1: "That's Entertainment!" The Rhetoric of Hollywood's Inequities. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1LC. Writing & Rhetoric 1: Truth, Lies, and Contestation: Rhetorics of Sexual Victimization and Survival. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1LF. Writing & Rhetoric 1: #NoBodyIsDisposable: The Rhetoric of Disability. 4 Units.
In this class we will move beyond definitions of disability as "abnormality" or "deviance" to explore how advances in science, technology, medicine, and culture have transformed our understanding of what constitutes a "normal' human body. We will ask how arguments about disability incorporate concepts such as neurodiversity, chronic illness, and other invisible conditions. At the same time, we will study how contemporary perspectives on disability interact with issues such as technology, metaphors of the prosthesis, cultural constructions of the body, and even what it means to be human. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1LFA. Writing & Rhetoric 1: Back to the Future: The Rhetoric of Futurity. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1LL. Writing & Rhetoric 1: The Rhetoric of Meritocracy. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1LM. Writing & Rhetoric 1: Two Truths and a Lie: The Rhetoric of Authenticity. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1LMA. Writing & Rhetoric 1: From Page to Stage: The Rhetoric of American Drama. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1LO. Writing & Rhetoric 1: What Are We Trying to Sustain? Rhetoric of Nature's Values and Services. 4 Units.
With increasing rates of environmental impacts from human activity, communities across the planet face challenges for sustainability. Given the many benefits we derive from nature - from cultural and spiritual benefits, to basic goods like food and water, to economic benefits from the use of natural resources - defining what we value and what we wish to sustain is a top priority. This class will examine diverse perspectives on the value and services we derive from nature and consider challenges for balancing multiple uses of nature in the context of sustainable resource management and conservation. For full course descriptions, see https://vcapwr-catalog.stanford.edu. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. Enrollment is handled by the PWR office.

PWR 1LP. Writing & Rhetoric 1: Crafting Credibility: Rhetoric and Authority. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1LPG. Writing & Rhetoric 1: Power Lines and Water Pipes: Writing The Global City Through Infrastructure. 4 Units.
What can power lines, water pipes, and fibre optic cables tell us about how different groups of people navigate life in global cities? While such infrastructures are often considered to be the mere "background" of socio-cultural life in cities, this course will center on them and their rhetorical contexts in order to explore how opportunity and inequality are imagined and discussed in urban spaces. We will contemplate how knowledge, relations of power, and practices of governance work within the framework of deep rhetorical analysis of urban infrastructures. For full course descriptions, see https://vcapwr-catalog.stanford.edu. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. Enrollment is handled by the PWR office.

PWR 1LS. Writing & Rhetoric 1: Beyond the Achievement Gap: Writing about Education. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1MA. Writing & Rhetoric 1: The Power of Words: Rhetoric of Social and Technological Changes. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1MC. Writing & Rhetoric 1: Oppositional Rhetoric: Resistance and Public Protest. 4 Units.
In 2010, the University of Michigan hosted an international conference entitled "Against Health," which questioned how health has become a moralizing system dictating how people should behave and make decisions. In 2014, the Whitney Biennial selected Jackie Wang's anti-racist essay "Against Innocence" to be sold as part of their elite art exhibition. But how can one be "against health" or "against innocence"? These titles pose riddles for their readers. They use a strategy of oppositional rhetoric to challenge foundational assumptions in provocative ways. How can we as writers contend with the challenges at the heart of such rhetoric? For a full course description, see https://vcapwr-catalog.stanford.edu. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. Enrollment is handled by the PWR office.

PWR 1MG. Writing & Rhetoric 1: The Rhetoric of the American West. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1MGD. Writing & Rhetoric 1: Who Speaks for Nature? Rhetorics of Environmentalism and Justice. 4 Units.
The last hundred years have seen organized environmentalism become a major force on the world stage. But the environment is still essentially contested. Who is at risk from environmental problems? What environmental problems should be prioritized? And who should be able to speak out as authentic protectors of the earth? In this course, we examine the ways that environmental and conservation writers from classic environmental writers to contemporary activists talk about nature to see how close readings of their work highlight fundamental disagreements about justice and politics in societies across the globe. For full course descriptions, see https://vcapwr-catalog.stanford.edu. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. Enrollment is handled by the PWR office.

PWR 1MGE. Writing & Rhetoric 1: Numbers, Metrics, and Counting: The Rhetoric of Quantitative Thinking. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1MO. Writing & Rhetoric 1: Imagining Technology: The Rhetoric of Humans and Machines. 4 Units.
This course explores the ways that technology has been imagined on the page and on the screen. We look at how a diverse group of sources from Cold War comics to Elon Musk's twitter account contribute to an ever-changing definition of 'technology.' And we consider how our hopes and anxieties about technology are represented in creative genres and media. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1MR. Writing & Rhetoric 1: "Did You Hear That?": The Rhetoric of Ghost Story. 4 Units.
This class will explore varied aspects of the rhetoric of haunting, considering the supernatural, the psychoanalytical, the traumatic, and the simply hard to believe. nWe will examine how ghosts represent cultural values and fears, investigating the rhetorical elements of the ghost story: How are supernatural accounts constructed? How are they debunked? What strategies do writers use to prove the impossible, to convince the world that ghosts can exist? We will use our explorations of the supernatural to shape our ability to make nuanced arguments, to draw effectively from research materials, and to think critically about what we see and hear. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1MS. Writing & Rhetoric 1: Seeing Nature: The Power of Environmental Visual Rhetoric. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1NA. Writing & Rhetoric 1: The Rhetoric of Childhood. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1NC. Writing & Rhetoric 1: The Passport, The Profile, The Portrait: Rhetorics of Identification. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1NF. Writing & Rhetoric 1: Language 2.0: Investigating the Rhetoric of Digital Language. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1PB. Writing & Rhetoric 1: Supreme Court Rhetoric. 4 Units.
Applying a rhetorical framework, we will discuss and analyze historical cases such as Barron v Baltimore (1833), in which the Court found that federal Bill of Rights guarantees were not binding upon states, as well as contemporary Supreme Court issues such as the debate surrounding the status of Roe v. Wade under the recently re-configured Roberts Court. We'll also discuss and examine the rhetoric of "amicus curiae" briefs, editorials about Court opinions, and pertinent lower court decisions. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1PF. Writing & Rhetoric 1: Body Rhetoric East and West: Gender, Sport, Art, and Medicine. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1PHA. Writing & Rhetoric 1: Sisterhood, Brotherhood, Solidarity: The Rhetoric of Greek Life. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1RHA. Writing & Rhetoric 1: The Rhetoric of Writing. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1RHB. Writing & Rhetoric 1: The Rhetoric of Research. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1RHC. Writing & Rhetoric 1: The Rhetoric of Composition. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1RHD. Writing & Rhetoric 1: The Rhetoric of Communication. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1RL. Writing & Rhetoric 1: The Rhetoric of Happiness. 4 Units.
In this course, we will examine the notion of happiness — and some of its adjacent or "opposing" feelings, such as contentment, or depression and anger — and the rhetoric around it by studying an array of examples from various sources, such as books, websites, or films. Students will explore the contexts, motives, and ramifications of the representational strategies, while developing critical skills to analyze and articulate their research findings and arguments regarding topics of their choice. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1RLA. Writing & Rhetoric 1: Stuff of Nightmares: The Rhetoric of Fear. 4 Units.
PWR 1 courses focus on developing writing and revision strategies for rhetorical analysis and research-based arguments that draw on multiple sources. This class takes as its theme fear. While fear is undeniably physiological and psychological, it is also shaped through discourse. We will make legible some of those discursive dynamics and analyze how different fears manifest. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1RP. Writing & Rhetoric 1: The Rhetoric of Archaeology. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1RW. Writing & Rhetoric 1: Writing for Liberation: The Rhetoric of Antiracism. 4 Units.
PWR 1 courses focus on developing writing and revision strategies for rhetorical analysis and research-based arguments that draw on multiple sources. In this class we will explore the enduring power of writing to change the world, paying particular attention to the role of narrative in movements for racial justice throughout U.S. history. We will consider how national discussions about racism are rhetorically constructed, exploring how language can be leveraged to support or challenge oppressive racial frameworks. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1RY. Writing & Rhetoric 1: From Hero to Celebrity: The Rhetoric of Fame. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1SB. Writing & Rhetoric 1: The Rhetoric of Technology. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1SBB. Writing & Rhetoric 1: The Rhetoric of Robots, Cyborgs, Mutants and Other Posthumans. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1SC. Writing & Rhetoric 1: Radical Acts of Art in Public: Rhetoric and Artivism. 4 Units.
PWR 1 courses focus on developing writing and revision strategies for rhetorical analysis and research-based arguments that draw on multiple sources. This class takes up the theme of public art as political action. Exploring the work of contemporary artist-activists from zines to monuments, hip-hop, photo-portraits, and street art, we will investigate what solidarity looks like. How does public art challenge us to reconsider public space, 'the public good' and who 'the public' might be? For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office. Cardinal Course certified¿by the Haas Center.

PWR 1SHA. Writing & Rhetoric 1: Bench to Byline: The Life of Scientific Facts. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1SI. Writing & Rhetoric 1: Super-Storms, Polar Bears, and Droughts: The Rhetoric of Climate Change. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1SK. Writing & Rhetoric 1: The Rhetoric of California. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1SM. Writing & Rhetoric 1: The Elephant, the Tiger, and the Cellphone: Rhetoric of India and Indian Film. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Study of the rhetoric of the India of the new millennium, including issues of gender, caste, class, religion, sexuality, nationalism, diaspora, outsourcing, and globalization. Service Learning Course (certified by Haas Center). See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1SMA. Writing & Rhetoric 1: Humans and Things: The Rhetoric of Commodities and Commodification. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1SMB. Writing & Rhetoric 1: The Jewel in the Crown: The Rhetoric of (Post)Colonialism. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1SMC. Writing & Rhetoric 1: Beyond the Boundary: The Rhetoric of Maps, Borders, and Networks. 4 Units.
PWR 1 courses focus on developing writing and revision strategies for rhetorical analysis and research-based arguments that draw on multiple sources. This class takes as its theme the rhetorical frameworks of geographical frontiers and the maps that represent them, but also more figurative borders (gender, sexuality, race, class,and so on). For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1SN. Writing & Rhetoric 1: The Rhetoric of Containment: Cold War Ideology Post 9/11. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1SNA. Writing & Rhetoric 1: The Rhetoric of Call Out Culture: Public Shaming in Digital Spaces. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1SP. Writing & Rhetoric 1: Growing Up Global: The Rhetoric of Children's Culture Today. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1SR. Writing & Rhetoric 1: The Rhetoric of California. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1ST. Writing & Rhetoric 1: The Rhetoric of Biomedical Ethics. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 1TB. Writing & Rhetoric 1: Hashtag Activism. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1TBA. Writing & Rhetoric 1: Appropriation or Plagiarism? Intersectional Feminist Citation Practices. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1TD. Writing & Rhetoric 1: Anatomy of a Discipline: Rhetorics of Health, Illness, and Medicine. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1TS. Writing & Rhetoric 1: White Mice and White Coats: The Rhetoric of Biomedical Science. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1TSA. Writing & Rhetoric 1: 10,000 Ways That Didn't Work: The Rhetoric of Innovation. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-1.

PWR 1TSC. Writing & Rhetoric 1: Academia Unleashed: Contemporary Rhetorics of Higher Education. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1TSD. Writing & Rhetoric 1: Seismic Shifts: The Rhetoric of Disruption. 4 Units.
PWR 1 courses focus on developing writing and revision strategies for rhetorical analysis and research-based arguments that draw on multiple sources. This class will explore what it means to witness deep social, cultural, political and environmental upheaval: how do we orient ourselves in relation to such radical change? For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1VK. Writing & Rhetoric 1: Rhetorics of Trauma. 4 Units.
Spurred, in part, by the events of September 11th and the plight of American service members returning from combat experiences in the Middle East, the public's gaze has been drawn toward the concept of trauma. This course considers the rhetorics of trauma, that is, how survivors of traumatic incidents, witnesses, psychologists, doctors, civil and military leaders, politicians, and the general public interpret trauma. These different understandings of trauma compete for social awareness and limited resources. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1VL. Writing & Rhetoric 1: It's All Relative: The Rhetoric of the Modern American Family. 4 Units.
The September 2017 issue of Interview Magazine features Kim Kardashian West dressed as Jackie Kennedy on the cover, along with her daughter, North. In the article, the magazine calls Kardashian West's popular reality show, a rooted-in-real life mirror to what the American family looks like today, bringing up topics such as race, gender, and more recently, trans identity. As early as 50 years ago, it would have been nearly impossible for a magazine to feature a white woman, especially one as notorious as Kim Kardashian, on its cover with her biracial, black daughter. So how did the mirror of the American Family change from the Mad Men ideal of a white, wealthy, suburban, nuclear family to a sprawling mega-family who document every moment of their lives for television screens? And is it even accurate to call the Kardashians the mirror? Who is left out of this reflection? nnIn this class, we will explore how representations of American families reflect shifting trends on the national level, including increasingly nuanced understandings of race, gender, sexuality, and citizenship. Through engagements with various texts (television, films, articles, advertisements) we will practice making nuanced written arguments about the rhetoric of families as we work toward the final assignment, a research-based argument. We will analyze several topics in class to develop and improve analytic and argumentative writing skills, from debates over LGBTQ+ parenting to mixed race families and generational conflicts while asking, what makes a family? Which aspects of families are represented as ideal? And what do those ideals say about issues beyond the family?.

PWR 1WG. Writing & Rhetoric 1: Reading Minds: The Rhetoric of Consciousness. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1WGA. Writing & Rhetoric 1: Rhetoric of Wendy G. 4 Units.
Rhetorical analysis of readings, research, and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1WI. Writing & Rhetoric 1: By Any Means Necessary: The Rhetoric of Black Radical Movements. 4 Units.
In this class, students in this course will explore the many ways communities of color have effectively used writing and rhetoric to persuade, to educate, to inspire, to awaken, to motivate. Some potential examples of materials include persuasive pieces written by formerly enslaved Black people to abolish slavery; letters written from Japanese internment camps, trial statements from Native American political prisoners; videos of Black Panthers' speeches; and comedy sketches by undocumented queer youth organizers. For more information about PWR 1, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-1. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 1WS. PWR 1 Studio. 1 Unit.
The PWR 1 Studio is designed for multilingual and/or international student writers and is taken concurrently with PWR 1. The Writing Studio provides students an opportunity to work with other multilingual students and an instructor with a background in second language writing to develop writing habits and strategies to support their work in PWR 1 and other communication contexts. Please see https://undergrad.stanford.edu/programs/pwr/courses/pwr-studio for more information. Prerequisite: Application. Co-requisite: PWR 1.

PWR 1WW. PWR 1 Workshop. 1 Unit.
The PWR 1 Workshop is taken concurrently with PWR 1. The Workshop provides students an opportunity to work with other students and an instructor to further develop effective writing practices and strategies to support their work in PWR 1 and other communication contexts. Please see https://undergrad.stanford.edu/programs/pwr/courses/pwr-studio for more information. Prerequisite: Application. Co-requisite: PWR 1.

PWR 2AB. Writing & Rhetoric 2: Makers, Crafters, Hackers: The Rhetoric of DIY. 4 Units.
In this course we will delve into the fascinating world of DIY (do it yourself) movements. You will examine the values, politics and ethics of DIY, such as what making has to do with empowerment and resistance, or whether our ideas of making and makers are gendered or attached to assumptions about class, ethnicity and ideology. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office. Prerequisite: PWR 1.

PWR 2AG. Writing & Rhetoric 2: The Rhetoric of Film Criticism. 4 Units.
In this course we¿ll analyze, write, and speak about specific films; we¿ll touch on a range of important frameworks, including genre studies, feminist film theory, and documentary ethics. Through an in-depth analysis of one film for your research-based argument, you¿ll develop your skills in writing, research, and oral presentation. In addition, you will adapt your research-based argument essay into a short videographic essay, that¿ll include material from the film you¿re analyzing. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office. Prerequisite: PWR 1.

PWR 2AH. Writing & Rhetoric 2: Ethnic Narratives and the Rhetoric of American Identity. 4 Units.
Prerequisite: PWR 1. In this class we will explore how race and ethnicity in America have become subjects of personal negotiations and public perception. The readings will address various topics such as biracial and bicultural identity, acculturation, stereotyping and self-image. In addition, we will approach each of the writings in this class as an opportunity to practice in-class rhetorical analysis and oral presentation skills and to practice discovering specific research questions. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2AK. Writing & Rhetoric 2: The Rhetoric of Kortenhoven. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2AM. Writing & Rhetoric 2: From Fossils to Fables: The PWR of Prehistory. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2AN. Writing & Rhetoric 2: Hear Me Out: The Rhetoric of Hip-Hop in Social Uprisings. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2ANA. Writing & Rhetoric 2: The Message in the Music. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2AO. Writing & Rhetoric 2: Rhetoric and Global Leadership. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. Analysis of styles of leadership across the globe and communication strategies used to bring about change. Exploration of how global leaders learn cross-cultural rhetoric skills to adapt to dynamic and unfamiliar situations. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2AW. Writing & Rhetoric 2: Psychology and Persuasion. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2BK. Writing & Rhetoric 2: To Thine Own Self Be True: The Rhetoric of Authenticity. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2BR. Writing & Rhetoric 2: "I Feel Your Pain": The Rhetoric of Sympathy. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2BRB. Writing & Rhetoric 2: Eurekas and Epiphanies: The Rhetoric of Inspiration. 4 Units.
Prerequisite: PWR 1. In this course, we will inquire into how, exactly, inspiration works. Where do good ideas come from? What fosters creativity? And how do we inspire ourselves and others to follow through on those ideas? We¿ll address these questions from many disciplinary angles, including the history of theories of genius and creativity, the uses of spiritual and literary ¿epiphany,¿ and recent psychology research into growth mindsets. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2BRC. Writing & Rhetoric 2: Re-Make It Anew: The Rhetoric of Adapting, Rebooting, and Remaking. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2CA. Writing & Rhetoric 2: Networked Rhetoric: Communities, Collaboration, and Communication. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2CAB. Writing & Rhetoric 2: The Rhetoric of Gender and Technology. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-2.

PWR 2CK. Writing & Rhetoric 2: Speaking Out: Claiming Citizenship, Demanding Rights. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2CKA. Writing & Rhetoric 2: Rhetoric of Distraction. 4 Units.
Prerequisite: PWR 1. In this class we will explore how race and ethnicity in America have become subjects of personal negotiations and public perception. The readings will address various topics such as biracial and bicultural identity, acculturation, stereotyping and self-image. In addition, we will approach each of the writings in this class as an opportunity to practice in-class rhetorical analysis and oral presentation skills and to practice discovering specific research questions. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2CL. Writing & Rhetoric 2: Crime, Media & Law: Critical Approaches to Violence. 4 Units.
Prerequisite: PWR 1. Despite our fascination with extreme acts of violence, those who study the nature of illegality know the opposite to be true: Far from a problem of murder, crime is instead predominantly composed of everyday acts of offense that never garner police attention, such as tax evasion, the violation of environmental regulations, computer hacking, and recreational drug use. Critical criminologists term this kind of unprosecuted crime "crime's dark figure" because it flies below the radar of public awareness and judicial action. This course will take the divergence between cultural representations of crime and crime's "dark figure" as a point of departure. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2CR. Writing & Rhetoric 2: Communicating Science to the Public. 4 Units.
As scientific knowledge and technology grow increasingly complex, the ability to explain science clearly and articulate science-based arguments to public audiences becomes more crucial, and more in demand. In this class, we will explore what makes written, spoken, and visual communication of science effective, compare the conventions of scholarly writing in the sciences to rhetorical strategies employed by popular science writers, and analyze problems with coverage of scientifically based issues in popular media and the promise and pitfalls of data visualization in conveying scientific information. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2CRA. Writing & Rhetoric 2: The State of California: Rhetoric of a Dream. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. Service Learning Course (certified by Haas Center). See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2CW. Writing & Rhetoric 2: Rhetorical Games: Sport (for) Development Policy in the 21st Century. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-2.

PWR 2CWA. Writing & Rhetoric 2: Global Games: Rhetoric of Sport for Development. 4 Units.
Prerequisite: PWR 1. Sport has become "the" international relations and development concept of the new millennium. As a result, sport development is a source of much praise and criticism as scholars, activists, philanthropists, and journalists struggle to understand the rhetorical games at play in the global sport development policy landscape. As students deepen their awareness of rhetorical praxis and explore new modes as writers and communicators, they will survey seminal scholarship, case studies, and grassroots activist campaigns surrounding sport development in preparation for a sustained research project that addresses the sociopolitical implications of tying sport to development in the 21st century. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2CWB. Writing & Rhetoric 2: Hear/Say: The Art of Rhetorical Listening. 4 Units.
Why do we listen? How do we listen to learn, to understand? And to whom do we listen? And how does listening impact how we orient ourselves in the world? Rhetorical listening has been central to feminist rhetorical praxis, which has traditionally focused on the rescue, recovery, and (re)inscription of non-majority cultures and communities into the rhetorical tradition. In short, rhetorical listening asks us to reconsider the role listening plays, and the values which we ascribe to listening, in processes of knowledge construction inside and outside the academy. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office. Prerequisite: PWR 1.

PWR 2CWC. Writing & Rhetoric 2: The Rhetoric of Photography. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2DH. Writing & Rhetoric 2: I ____ Therefore I Am? The Rhetoric of 21st Century Identity. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2DHA. Writing & Rhetoric 2: Action Research: Making Time for Social Justice. 4 Units.
In this course, we'll be focusing on different ways of seeking social justice, and explore whether it is possible or even desirable for students, lecturers and professors to focus their work on "fixing" the social ills of the world. We'll investigate ways your education and research can help effect social justice. The research, writing and presenting you do in this course can lay the groundwork for/contribute to social justice¿on campus and/or off. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office. Prerequisite: PWR 1.

PWR 2DHB. Writing & Rhetoric 2: Feel Me? The Rhetoric of Empathy, Its Limitations and Alternatives. 4 Units.
Prerequisite: PWR 1. In this course, we'll be examining what empathy is—both affective and cognitive—and what role it might, or might not, play in our everyday lives and in promoting ethical action. To do so, we'll study the psychological, biological, and neurological bases of empathy, its significance in philosophy, contemplative/religious practices and ethics, and its possibilities as a rhetorical strategy and a political tool. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2EC. Writing & Rhetoric 2: 'Like' this Class: The Rhetoric of Public Relations. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2EE. Writing & Rhetoric 2: Once Upon a Cause: Producing Picture Books for Local Children. 4 Units.
Prerequisite: PWR 1. Whether our favorite picture books as kids were timeless classics or new arrivals, whether they scared us or amused us, consoled us or challenged us, they moved and shaped us in profound ways. How could a few dozen pages and a few hundred words affect us so powerfully? Why did we want to hear and see and read our favorite picture books again and again? What was the secret to their magic? In this course you'll not only analyze that "magic" but will also collaborate closely with a group of classmates to create an original, compelling, and educationally appropriate picture book for second-graders. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2EI. Writing & Rhetoric 2: Copying, Memeing, Modding, and Pirating: Rhetorics of (Un)Originality. 4 Units.
What¿s wrong with plagiarism and counterfeiting? Our regimes of private property and ideologies of individualism inculcate us with such a regard for ¿originality¿ that we rarely stop to ask whose privileges they safeguard, whose capabilities they favor, and whose creative labor they discount and render unseen. In this course you will write and present on traditions, practices, and artifacts that call the premises of originality into question and that playfully unsettle the state and corporate narratives of cultural ownership that sustain them. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office. Prerequisite: PWR 1.

PWR 2EL. Writing & Rhetoric 2: Rhetoric of Silence. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-2.

PWR 2ELA. Writing & Rhetoric 2: The Remix, the Original, and the Voice. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2EP. Writing & Rhetoric 2: Global Protest and Civil Unrest: The Rhetoric of Resistance. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-2.

PWR 2EPA. Writing & Rhetoric 2: Slacktivism to Hacktivism: The Rhetoric of Technology and Social Change. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-2.

PWR 2EPB. Writing & Rhetoric 2: Communicating Climate Justice in the Current Era. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2EPC. Writing & Rhetoric 2: Building Resilience: Writing Science, Policy and Community For a Better World. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2EV. Writing & Rhetoric 2: The Global Politics of Protest and Change. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2GAW. Writing & Rhetoric 2: 'Don't Stand so Close to Me' : Cross-cultural Communication. 4 Units.
Prerequisite: PWR 1. Despite universal attributes such as facial expressions and emotions, humans also have culturally based assumptions, values, and beliefs - from the shared assumptions and collectivist views of high-context cultures to the explicit and highly articulated rhetoric of more individualistic and low-context groups. Our course will explore rhetorical challenges in verbal and nonverbal communication across cultures. We'll consider not only language and argument but also proxemics - determined spatial distance between people - as well as eye contact and gestures. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2GM. Writing & Rhetoric 2: Unpredictable Dialogue: Art of the Interview, Art of the Essay. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. Study of the rhetorical craft of the interview, exploring structure, language, timing, and development in a range of forums, including documentaries, radio, transcription, campus conversations, and television. Research of a Stanford professor¿s work, including interview. Presentation of findings from research and interview to the class. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2GMA. Writing & Rhetoric 2: Breaking News, Making News 1.0. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2GMC. Writing & Rhetoric 2: A Thousand Words: When Art is Not Enough. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2GMD. Writing & Rhetoric 2: Archi-texts: Building Rhetorically. 4 Units.
Prerequisite: PWR 1. Architecture is always the solution to a problem: Where am I going to sleep? What am I going to do with my dead? Where can I speak to my gods? In this sense, the structure, siting, materials and lighting that inhere in a work of architecture are direct responses to a lived problem. In this way, our class will draw on the rhetoric of architecture to illuminate the rhetoric of communication; we will do this under the premise that understanding the one can lead to a better understanding and practice of the other. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2GME. Writing & Rhetoric 2: Our America: Conviction, Passion, Paranoia. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2GMF. Writing & Rhetoric 2: Immigration Nation: Rhetoric Up Against the Wall. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2GMG. Writing & Rhetoric 2: If Words Were Enough: Poetics and Rhetoric. 4 Units.
What does it mean to be rhetorically ¿right¿? How do we know if we¿ve found the ¿right¿ words, images, examples? In this course, we will study the writings and reflections of poets as they wrestle with this question of craft and what we can achieve through dedication, inspiration, imitation. Our goal will be to become more skilled rhetoricians ourselves by asking: What is possible with language, image, sound¿what can poetics teach us about rhetoric? How much can communication achieve, whether greatness or agreement, social change or political justice. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office. Prerequisite: PWR 1.

PWR 2GO. Writing & Rhetoric 2: The Rhetoric of Performance, Intersectionality, and Identity. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2HF. Writing & Rhetoric 2: Whose Home? Rhetorics of Belonging and Place. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. This course takes as its theme place, space and belonging. Why places operate the way they do and for whom. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2HK. Writing & Rhetoric 2: Think Global: The Rhetoric of Global Citizenship. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2HL. Writing & Rhetoric 2: Developing and Communicating Your Expertise: The Rhetoric of Excellence. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2HLA. Writing & Rhetoric 2: Communicating Your Research: Meaningful Academic Writing and Speaking. 4 Units.
Prerequisite: PWR 1. How do you present complex research or specialized knowledge in a way that makes sense and moves audiences to see the value of your work? In this class, we will examine the ways effective communicators engage audiences and illuminate their ideas in a variety of contexts, including academic journals, popular publications, and multimedia presentations. We'll pay attention to the texts' argumentative structure, and the use of narrative, metaphor, and visualization to explain the unfamiliar. We will also identify the ways in which the speaker's voice and body are sources of persuasion and meaning. As you pursue a research project on meaningful communication, you will develop your own toolkit for presenting your expertise in engaging ways.

PWR 2HT. Writing & Rhetoric 2: Speaking Ironic Truth to Power: The Rhetoric of Satirical Protest. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. This course takes as its theme satire and how and when people seek social justice by "talking back." For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2IY. Writing & Rhetoric 2: Many Faces of Sherlock: Race, Gender, Power, and the Rhetoric of the Detective. 4 Units.
In this class we'll look at the ways detective fiction has expanded—with empowering results—to genders, ethnicities, and social backgrounds that mainstream representations of Holmes haven't traditionally represented. We'll consider, for example, the Botswanan women sleuths of *The No. 1 Ladies' Detective Agency*, the hoodie-wearing, super strong *Luke Cage*, and Japanese manga's Detective Conan. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office. Prequisite: PWR 1.

PWR 2JA. Writing & Rhetoric 2: Rhetoric of Archer. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. Exploration of how rhetoric functions in various cultures, considering body language, symbols, visual media, and the Internet. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2JC. Writing & Rhetoric 2: Walk(s) of Shame: The Rhetoric of Respectability. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2JD. Writing & Rhetoric 2: Straight A's and Sports Cars: The Rhetoric of Success. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2JDC. Writing & Rhetoric 2: And the Crowd Goes Wild: The Rhetoric of Fans, Stans, and Enthusiasts. 4 Units.
In this class, we will research the importance of fandoms and fan communities in contemporary society. We will consider what motivates people to put their time, energy, and selves into the stories or people that they care about, and consider the implications of this devotion. We will look at the risks and rewards of participating in a fandom, from its ability to empower individuals to the danger and risk of exclusion therein. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office. Prerequisite: PWR 1.

PWR 2JJ. Writing & Rhetoric 2: The Rhetoric of Language, Identity and Power. 4 Units.
In this writing and speaking course, you'll consider the construction and negotiation of power and difference through language as it intersects with gender, sexuality, race, ability, and class. We'll explore how this happens across spheres such as politics, education, science, sports and the media, intertwined with forces like globalization, immigration, and technology. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For video and full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.Prerequisite: PWR 1.

PWR 2JJA. Writing & Rhetoric 2: The Rhetoric of J. Johnson. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2JO. Writing & Rhetoric 2: Rhetoric of J. O.. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2JP. Writing & Rhetoric 2: The Rhetoric of Art and Commerce. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. Examination of unspoken rules regarding the separation of creativity and commerce and arguments about how consumer culture influences the work of the artist. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2JPA. Writing & Rhetoric 2: How We Got Schooled: The Rhetoric of Literacy and Education. 4 Units.
Prerequisite: PWR 1. In this course, we will look closely these learning processes. Students will invent individual research projects and craft oral presentations to critically analyze conventional forms of learning and explore ways of learning that are not always obvious. We will research together the work of cultural critic Henry Giroux on global media as a force of education, poet and scholar bell hooks on classrooms as potential sites of both oppression and liberation, and education scholar Ken Robinson on creativity and schools. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2JPB. Writing & Rhetoric 2: Curated Reality: How Media Shape What We Know. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2JS. Writing & Rhetoric 2: In Science We Trust. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2JW. Writing and Rhetoric 2: What We Talk About When We Talk About Love. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2KC. Writing & Rhetoric 2: Technology and the Rhetoric of Embodiment. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-2.

PWR 2KD. Writing & Rhetoric 2: Un-Performing Ourselves: The Design and Craft of Presentations. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. Exploration of how the application of performance techniques makes academic or professional presentations more compelling. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2KDA. Writing & Rhetoric 2: Remix Culture. 4 Units.
Prerequisite: PWR 1. What does a musical about founding fathers (*Hamilton*) have to say about current political upheaval? What do plastic surgery resorts have to say about identify politics? What does Steph Curry's game have to say about Hamlet - and about Prince - with alternative forms of masculinity? In this course we will examine contemporary mashups and remixers and you will build a research project to ground our work across the quarter creating interesting, meaningful, and dynamic presentations and papers. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2KDB. Writing & Rhetoric 2: This is America: Virals, Videos and Values. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2KDC. Writing & Rhetoric 2: Myth and the Contemporary: Talking Across Two Worlds. 4 Units.
What do ancient myths have to tell us about our current world? What do stories say about AI, Genetic Engineering, Climate Change, and Social Justice? How does the difference of old perspectives offer us fresh takes on the new? In this course, we will consider world myths that have been retold by such writers as Clarissa Pinkola Estes, Neil Gaiman, JK Rowling, and Margaret Atwood, and in such dramas as Game of Thrones, Us, Her, Embrace of the Serpent, and The Revenant. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office. Prerequisite: PWR 1.

PWR 2KM. Writing & Rhetoric 2: A Planet on the Edge: The Rhetoric of Sustainable Energy. 4 Units.
Prerequisite: PWR 1. Sea-level rise, the halting of major ocean circulatory currents, outbreaks of superstorms leading to floods and droughts - can an energy revolution still save a planet on the edge? This class explores the intricacies of sustainable energy, focusing on the myths, slogans, and rhetorical narratives that surround these debates. For example, is environmentalism inherently at odds with economic prosperity? Does living an environmentally conscious lifestyle require personal sacrifice and suffering? How does rhetorical framing affect the research, implementation, and public perception of new technologies in the field of sustainable energy? For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2KMA. Writing & Rhetoric 2: Natural Enemies: The Rhetoric of Invasion Biology. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. Study of the use of metaphors and argument in the context of invasion biology and species conservation, especially the effects those metaphors and claims have on practice and policy outcomes. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2KR. Writing & Rhetoric 2: Propaganda and Rhetoric. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. This course takes as it theme the tool of propaganda and its relationship to truth. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2KS. Writing & Rhetoric 2: Happy Now? The Anatomy of Happiness. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. How the emerging field of happiness studies involves psychologists, economists and policy-makers in defining what happiness is and determining how society might create the conditions in which it can flourish. Exploration of how happiness studies can uncover happiness at the heart of arguments about democracy, religion, and personal lifestyles, exploring what makes people happy across cultural, social, and national contexts. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2KSA. Writing & Rhetoric 2: The Rhetoric of Childhood and Children's Culture. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2KSB. Writing & Rhetoric 2: Design Thinking: Bringing d.thinking to Research, Writing & Presentation. 4 Units.
There is no area of contemporary life where design is not a significant factor in shaping human experience. In this class, you will have the opportunity to learn more about design thinking and design studies. We will read works about play and creativity, the process of design thinking, and the ethics of design. You will choose a project idea and pursue research that will ultimately culminate in a print-based argument as well as a live oral presentation. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office. Prerequisite: PWR 1.

PWR 2KT. Writing & Rhetoric 2: The Great and Powerful Oz: The Rhetoric of Spokespersons. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2KTA. Writing & Rhetoric 2: A Rebel With A Cause: The Rhetoric of Giving a Damn. 4 Units.
Prerequisite: PWR 1. In this course, we will explore a variety of movements from marriage equality and civil rights to climate change. We will also examine individuals and the manner in which they advance the causes that matter to them most, including astrophysicist Neil deGrasse Tyson, anti-racism activist Tim Wise, and equal education activist Malala Yousafzai. Ultimately, students will use knowledge gained to assist delivery of research, both in written and oral form, in cultural contexts and from the disciplinary perspective of students' choosing. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2LF. Writing & Rhetoric 2: The Rhetoric of Hacking. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2LFA. Writing & Rhetoric 2: Unruly Bodies: Gesturing Toward a New Rhetorics of Body Language. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2LL. Writing & Rhetoric 2: Rhetoric of L Lamboy. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2LM. Writing & Rhetoric 2: The Rhetoric and Aesthetic of War. 4 Units.
Rhetorical and contextual analysis of readings; research; and argument. Focus is on development of a substantive research-based argument using multiple sources. Individual conferences with instructor. See https://undergrad.stanford.edu/programs/pwr/courses/pwr-2.

PWR 2LO. Writing & Rhetoric 2: Facing the Future: Climate Change Science, Impacts, and Solutions. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2LS. Writing & Rhetoric 2: The Rhetoric of Comics. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2MA. Writing & Rhetoric 2: What's Your Major? The Rhetoric of Interdisciplinarity. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. This course takes as it theme the collaboration and exchange of ideas among people from very different disciplines. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2MBR. Writing & Rhetoric 2: Buying a Better You: The Rhetoric of Self Improvement and the American Ideal. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2MC. Writing & Rhetoric 2: Cultural Icons: The Rhetoric of Branding and Celebrity. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2MFC. Writing & Rhetoric 2: March for Science? Social Justice and the Rhetoric of Science. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2MGD. Writing & Rhetoric 2: Silicon Valley and the Future of Work: Rhetoric of Labor Utopias and Dystopias. 4 Units.
We live in the heart of Silicon Valley, an engine that promises¿or threatens¿to disrupt the way that national and global economies are organized. In this writing and speaking course, you¿ll explore how a range of critics and analysts imagine the future of work. Does all this point to a coming utopia? To a dystopia? Works from technologists, sociologists, economists, anthropologists, historians, activists and more will help answer these questions. We¿ll read those who embrace these changes and those who don¿t; we will analyze the predictions of various bright-eyed techno-optimists and steely-eyed doomsayers, from Silicon Valley insiders like Elon Musk and Bill Gates to radical academics and activists. We¿ll pick through what¿s really new about Silicon Valley¿s effects on the future of labor¿and discuss in what ways we¿re seeing the continuation of longstanding trends. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office. Prerequisite: PWR 1.

PWR 2MGE. Writing & Rhetoric 2: Rationality and Culture: Rhetorics of Reason, Madness, and Science. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2MO. Writing & Rhetoric 2: Rhetoric of Scientific Controversies. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2MS. Writing & Rhetoric 2: Seriously Funny: The Rhetoric of Humor. 4 Units.
Prerequisite: PWR 1. As a rhetorical technique, humor holds unique persuasive power on a variety of political and cultural stages, evident in popular parody, satire, roasts, alternative news sources, public relations campaigns, and advertisements. Given this importance, we might ask, "what makes humor persuasive?" In this course, we will study humor through a variety of critical lenses, including those that examine humor as a unique appeal to pathos and those that argue it is entirely reliant upon logic. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2NF. Writing & Rhetoric 2: Language Gone Viral: Investigating the Rhet. of Social Media and Digital Comm.. 4 Units.
Prerequisite: PWR 1. In this course, we will reinforce our understanding of the research writing process and develop oral communication skills to investigate changes in digital language use. This course also examines the extent to which our daily lives have become deeply dependent on our usage of personal electronic devices for online communication. Is our attachment to technology truly limiting the quality of our conversations? Or could such interactions provide a means for introverts to better interact with others? For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2NFA. Writing & Rhetoric 2: The Rhetoric of Norah Fahim. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2PB. Writing & Rhetoric 2: The Power of Political Photography. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. Topics include the role of photographers and photo-journalists in helping viewers see the world differently and the political implications of fashion photography, environmental photography, music photography, and fashion photography. Traditional readings as well as archival and field research. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2PBA. Writing & Rhetoric 2: Calling All Astronauts: Researching, Writing, and Talking about Tomorrow. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2PBB. Writing & Rhetoric 2: Mindful Rhetoric. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2PBC. Writing & Rhetoric 2: Why Do Geniuses Come in all Sizes, Shapes, and Colors?. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2RC. Writing & Rhetoric 2: Red Pill or Blue Pill? : The Rhetoric of Drugs. 4 Units.
Prerequisite: PWR 1. The theme of this course is the relationship between humans and drugs, particularly how the human brain interacts with and is altered by ingested substances. Simultaneously we will explore how drug use is promoted, regulated, sensationalized, and commercialized. We will examine a wide range of perspectives: indigenous discovery, cultural and medical applications, biological mechanisms, sociological implications, artistic and poetic interpretation, and constitutional law. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2RHA. Writing & Rhetoric 2: The Rhetoric of Composition. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2RHB. Writing & Rhetoric 2: The Rhetoric of Presentation. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2RHC. Writing & Rhetoric 1: The Rhetoric of Speaking. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2RHD. Writing & Rhetoric 2: The Rhetoric of Argument. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2RL. Writing & Rhetoric 2: The Rhetoric of the Natural and Beyond. 4 Units.
This class will consider, through a rhetorical lens, how "natural" is understood and/or modified: how it interfaces with social norms and other notions like safety and authenticity, and how the varying rhetorical strategies and situations at hand animate different negotiations of power. Topics may range from literary (e.g. magic realism and the fantastic) to social (our growing proximity and intimacy with tech devices) to medical (homeopathy or bionic implants and prosthesis). For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office. Prerequisite: PWR 1.

PWR 2RP. Writing & Rhetoric 2: The Power of Sports: Rhetoric and Athletics in Contemporary Society. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2RY. Writing and Rhetoric 2: Rhetoric of Yang. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2SB. Writing & Rhetoric 2: Writing 'Science': Fact, Fiction, and Everything Between. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. Analysis of science fiction and popular writing about science and technology as arguments about where we are headed, where we are, who we are, and what we value. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2SBA. Writing & Rhetoric 2: The Rhetoric of Human Enhancement. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. Analysis of science fiction and popular writing about science and technology as arguments about where we are headed, where we are, who we are, and what we value. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2SBB. Writing & Rhetoric 2: The Rhetoric of Robots, Cyborgs, Mutants and Other Posthumans. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2SBC. Writing & Rhetoric 2: Science and Advocacy. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2SC. Writing & Rhetoric 2: Are We There Yet?: The Rhetoric of Mobility. 4 Units.
What is the difference between "refugee" and "migrant" or, for that matter, between "traveler," "immigrant," "tourist," and "alien"? When we begin to think about the politics of these categories, we start to see how rhetorical situations shape our understandings of our places in the world, and what constrains or enables us as we move around in it. In this class, we will explore questions about mobility through writing, research, and oral presentation. We will practice strategies for persuasive, engaging writing and speaking and watch speeches by activists and artists, read up on the history of ¿mobs,¿ and discuss whether a sit-in is actually a form of movement. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office. Prerequisite: PWR 1.

PWR 2SCB. Writing & Rhetoric 2: Bodies in the 21st Century: Gender and Rhetoric. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2SI. Writing & Rhetoric 2: The Rhetoric of Privilege. 4 Units.
Prerequisite: PWR 1. Drawing from academic articles, newspaper and magazine stories, social media, television, and film, we will examine rhetoric in moments like the Rio Olympics to bring to the forefront the privilege that lies beneath. We will analyze various forms of privilege and their intersections, from race and gender to socioeconomic class, sexual orientation, citizenship, physical ability, and so on. We will also scrutinize our own privilege as part of the Stanford community. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2SM. Writing & Rhetoric 2: Dirty Pretty Things: The Rhetoric of Objects and Objectification. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2SMA. Writing & Rhetoric 2: Love and Longing in Bombay: Romance and Rebellion in Indian Film. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2SN. Writing & Rhetoric 2: Rhetoric of Activism. 4 Units.
This course examines the role of rhetoric in discussions surrounding political inactivity as well as the burgeoning activism of today. Students will be given the opportunity to research a topic pertaining to rhetoric and activism. Some possible research topics include: an investigation into why a particular movement (like Occupy Wall Street) fades away without substantive impact, how/why activist efforts are sometimes cyclical across time (civil rights or Women¿s rights), differing theoretical approaches to activism or perhaps the relationship between activism, policy, and the implementation of new laws. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office. Prerequisite: PWR 1.

PWR 2SP. Writing & Rhetoric 2: Literacy: Reading, Writing, Power. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2SPA. Writing & Rhetoric 2: Other Selves: The Art & Science of Friendship. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2SPB. Writing & Rhetoric 2: Hope, Health, and Healing: The Rhetoric of Medicine. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2SR. Writing & Rhetoric 2: The Rhetoric of Voice. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2SS. Writing & Rhetoric 2: Mass Audiences and Modern Communication. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. Exploration of how the ability to reproduce a work for increasingly large audiences has fundamentally changed the nature of art and its effect on culture. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2SSA. Writing & Rhetoric 2: Rhetoric of Reality Culture. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2SSB. Writing & Rhetoric 2: Superfans and Scholars: Writing Fan Culture. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2ST. Writing & Rhetoric 2: Science, Democracy and Social Media. 4 Units.
Prerequisite: PWR 1. Social media have greatly enlivened and democratized science communication so that it now moves between scientists and various audiences. Scientific content is no longer static, nor is it merely for advanced researchers. Scientists using social media are learning to assess content collaboratively to help provide better science in public communication. One of the particular obligations of university science students is to join the conversation, help review and revise content in the public sphere. Students in this course will actively engage in the evolving world of science communication and practice their scientific writing, research and oral presentation skills. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2STA. Writing & Rhetoric 2: Ethics and AI. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2STB. The Rhetorics of Science, Culture, and Research. 4 Units.
PWR 2 courses focus on developing strategies for presenting research-based arguments in both written and oral/multimedia genres. Focusing on themes of science and culture, you'll take an interdisciplinary approach to examine an issue that matters to you. You will have the opportunity to consider a wide range of genres and translate your argument and findings into a live presentation. We'll focus on presenting, organization, body language, and slide design. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office. Prerequisite: PWR 1.

PWR 2TB. Writing & Rhetoric 2: Hip Hop, Orality, and Language Diversity. 4 Units.
In this course, students will use hiphop language and culture as an entry point into learning about the diversity of the ways that languages are used and transformed in speech, writing, and multimedia, particularly in the U.S. context. . Looking at hiphop texts and beyond, we¿ll consider what songs, spoken word performances, literary, and scholarly texts have to teach us about the wide variety of language practices and the strategies those in power use to standardize and limit these variegated expressive forms. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office. Prerequisite: PWR 1.

PWR 2TBA. Writing and Rhetoric 2: Rhetoric of Brown A. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2TD. Writing and Rhetoric 2: The Rhetoric of Diener. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2TN. Writing & Rhetoric 2: Sound and Vision: The Rhetoric of Music Documentaries. 4 Units.
PWR 2 courses focus on developing strategies for presenting research-based arguments in both written and oral/multimedia genres. This class takes as its theme the rhetoric, history, and aesthetics of music documentaries. Students will examine how elements such as, cinematography, editing, scripting, archival research, and sound work together to create meaning, argue for greatness, or historical importance. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office. Prerequisite: PWR 1.

PWR 2TS. Writing & Rhetoric 2: The Rhetoric of the Experiment. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. See http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_ual/AP_univ_req_PWR_Courses.html.

PWR 2TSC. Writing & Rhetoric 2: All the Feels: The Rhetoric of Emotion. 4 Units.
How can emotions be motivating, and what can invoke them? How do the systems and structures that we navigate daily create conditions for anxiety or panic, and how do such systems respond to it? How do we understand anger in relation to ideals and social action? How is suffering and pain understood and treated? What is happiness, and should it be the ultimate goal? To what extent can emotions be understood as social or inherently human phenomena? We will approach these questions from a variety of disciplinary perspectives, from cognitive science and social psychology to philosophy, communication and sociology. For course videos and full descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office. Prerequisite: PWR 1.

PWR 2VK. Writing & Rhetoric 2: Framing Reality: The Rhetoric of Documentaries. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2VKA. Writing & Rhetoric 2: Rhetoric of Public Monuments and Memorials. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2WG. Writing & Rhetoric 2: All That Jazz: The Rhetoric of American Musical Theater. 4 Units.
Prerequisite: PWR 1. Building on a series of written assignments and oral presentations that culminate in a major research project, we'll explore the conventions and strategies that define the genre of American musical theater, analyzing how contemporary musicals mirror, revise, and even subvert these traditional rules. Watching musicals on film, reading reviews by theater critics, and attending a local production, we'll examine a range of cultural arguments made by American musicals. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2WI. Writing & Rhetoric 2: The Rhetoric of Imarisha. 4 Units.
Prerequisite: PWR 1. Further work in developing skills in argument and research-based writing, with emphasis on both written and oral/multimedia presentation of research. For more information about PWR 2, see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2. For full course descriptions, see https://vcapwr-catalog.stanford.edu. Enrollment is handled by the PWR office.

PWR 2WS. PWR 2 Studio. 1 Unit.
The PWR 2 Studio is designed for multilingual and/or international student writers and is taken concurrently with PWR 2. The Studio provides students an opportunity to work with other multilingual students and an instructor with a background in second language writing and speaking to develop writing habits and oral presentation strategies to support their work in PWR 1 and other communication contexts. Please see https://undergrad.stanford.edu/programs/pwr/courses/pwr-2/pwr-writing-studio for more information. Prerequisite: Application. Co-requisite: PWR 2.

PWR 4. Directed Writing. 3-4 Units.
Further work on developing writing. Analysis and research-based argument, writing for a range of audiences and in varied disciplinary contexts. Workshops and individual conferences. May be repeated for credit. Prerequisite: first two levels of the writing requirement or equivalent transfer credit.

PWR 5. Independent Writing. 1-5 Unit.
Individual writing project under the guidance of a PWR instructor. May be repeated for credit. Prerequisite: first two levels of the writing requirement or equivalent transfer credit.

PWR 6. Writing Workshop. 1-3 Unit.
Writing workshop for collaborative, group, and individual projects guided by a specific theme or genre.

PWR 6ASB. ASB 2016-17: Redefining Stem. 1 Unit.
Redefining STEM is an Alternative Spring Breaks course and trip organized through the Haas Center. This class aims to examine STEM as a social issue through four main intersections: culture/history of STEM, STEM education, science communication, and corporate science & service. See http://asb.stanford.edu for more information.

PWR 6LSP. PWR 6 Leland Scholars Program: Exploring Research, Writing and Argument at Stanford. 1 Unit.
Our work together in this online course is focused on providing an introduction to critical reading, rhetorical thinking, academic writing, college-level research, crafting well-reasoned arguments and designing an ePortfolio. Through class discussions, readings, writing assignments, a collaborative research project, we will consider: What does it mean to write effectively? How can we best persuade others in the different situations that we encounter each day? How can we argue convincingly about ideas that truly matter to us, whether in the classroom, with friends, or in broader social contexts?.

PWR 6VT. Writing in the University: Debates about the Politics and Technologies of Journalism. 4 Units.
Lately, journalism has been in the news: every day we see or hear a new story about problems with journalism and the news media¿from charges of biased coverage to fake news circulating on Facebook. Yet, push alerts from news apps and social media also shape our daily conversations. In this class, we will investigate the news industry, examining the challenges faced by journalists today and emerging new forms of digital journalism. We will focus on the political, economic and technological forces that have shaped the writing and rhetoric of journalists. Students might explore debates such as fake news, bias and objectivity; partisanship and polarization; or polling and political coverage. We start by writing an analytical essay about multimedia reporting, move into writing about research regarding a topic of your choice, and close by sharing research in oral presentations. At each step, we work together as a group, doing workshops, engaging in discussion, and collaborating in peer review. Our research projects will provide the opportunity to engage with recent scholarship and stake out your own positions on the future of journalism.

PWR 91. Intermediate Writing. 3 Units.
For students who have completed the first two levels of the writing requirement and want further work in developing writing abilities, especially within discipline-specific contexts and nonfiction genres. Individual conferences with instructor and peer workshops. Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For topics, see http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_pwr/advanced_pwr.

PWR 91B. Intermediate Writing: Digital Rhetoric, New Media, and Transformations in Writing. 3 Units.
Writing operates in multiple modes (word, image, sound) in the new media environment. Examples of texts - invention, drafting, revision, and communication - governed by the evolving conditions of a new, digital rhetoric.nnnFor students who have completed the first two levels of the writing requirement and want further work in developing writing abilities, especially within discipline-specific contexts and nonfiction genres. Individual conferences with instructor and peer workshops. Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For more information, see http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_pwr/advanced_pwr.

PWR 91C. Intermediate Writing: The Stanford Daily Show. 3 Units.
Class will study fake news programs such as the Daily Show, the Colbert Report and the Onion,and will produce The Stanford Daily Show, our own version of a fake news program.nnnFor students who have completed the first two levels of the writing requirement and want further work in developing writing abilities, especially within discipline-specific contexts and nonfiction genres. Individual conferences with instructor and peer workshops. Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For more information, see http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_pwr/advanced_pwr.

PWR 91CG. Intermediate Writing: Science and Technology Writing for Popular Audiences. 3 Units.
Whether you're a fuzzy or a techie, chances are you've had to explain the content of the classes you've taken to outside audiences. You've had to explain to your parents how your/their tuition dollars are at work, or you've advocated for your well-rounded background during a job interview. Your access to Stanford has granted you a certain expert label, even if it doesn't always feel that way. This course leverages your growing expertise by introducing you to writing styles and genres that will allow you to communicate your technical interests to a non-expert, or popular, audience. We'll talk about stylistic points including story ledes and anecdotes, metaphor, and organizing familiar and non-familiar language in our writing. We'll also experiment with different genres that accomplish these translation goals by experimenting with writing abstracts, journalism pieces, provocative podcasts, first-person narratives, visual essays, and creative non-fiction essays. Our ultimate goal will be to not only better understand these styles and genres in order to communicate more effectively with a wide variety of audiences, but to also seek publication in local newspapers, blogs, and sources such as *Salon, Slate, The Huffington Post, The Atlantic,* and even *Wired* or *Radiolab*.

PWR 91CL. Self & Science. 3 Units.
"Self & Science" mines the intersection of memoir and science writing. In this advanced experimental writing course, students will read a selection of essays by writers including Lewis Thomas, Oliver Sacks, Annie Dillard, and Mark Doty, which illustrate the shared intellectual foundation in observation of scientific and poetic inquiry. Building on these readings, students will be challenged to produce an experimental essay that transgresses genre boundaries in the service of considering how personal reflection can narrate researched discoveries. Over the course of the quarter, students are invited to bolster their overall communication acumen, enhance their ability to share valuable discoveries beyond the confines of their major discipline, and practice the difficult bliss of engaging a discerning public audience. Click here for course video and full description: https://undergrad.stanford.edu/programs/pwr/courses/advanced-courses/self-science.
Same as: LIFE 91CL

PWR 91CW. Intermediate Writing: Seeing is Believing: The Power of Persuasive Data Stories. 4 Units.
In this course, students will study and practice techniques and rhetorics of data visualization based on principles of rhetorical history, visual rhetorics and graphic design as well as cognitive science, design thinking, and other disciplines that inform critical conversations around information display and data visualization. For more information visit https://undergrad.stanford.edu/programs/pwr/courses/additional-elective-courses/seeing-isand-believing-rhetoric-big-data-visualization.

PWR 91D. Intermediate Writing: Your American Life. 3 Units.
In this course, you¿ll read and listen to some of the most moving and insightful pieces of the last decade, explore the important differences between print and oral storytelling, and then script and record your own full-length audio piece. Along the way, we will explore many craft elements that apply equally to print and audio pieces. You will learn, for example, how to organize your material, choose an effective structure, blend dramatization and reflection, ground insights in concrete scenes, create a strong narrative arc, and manage elements such as characterization, description, and dialogue. We will also, of course, explore craft elements unique to the audio form and you will learn how to use your voice and other sonic elements to craft the kind of piece you might hear on This American Life.nnThrough a special arrangement with the Stanford Storytelling Project, in the spring of 2012 this course will feature special sessions with prominent contributors to This American Life. n Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For more information, see http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_pwr/advanced_pwr.

PWR 91E. Intermediate Writing: The Oral Tradition: Myth, Folklore, and Fairy Tale. 3 Units.
Contemporary storytelling covers a variety of media - from movies to novels, theatre and beyond. What this course offers is an in depth study of the roots of that practice - the oral tradition.nnnOver the course we will explore many different motifs and structures that arise in the oral tradition, myth, folklore and fairy tale. What universal themes do we detect, and what separates the progression of a pacific north west Trickster story from an Arthurian romance? Why is it that in the early twenty first century many of our most acclaimed art forms carry narrative forms that are thousands of years old? Star Wars, Lord of the Rings and the recent broadway show Jerusalem, all follow scenic progressions informed by myth.nnnThe first encounter with the story will be an oral narrative - the myth told unscripted in the classroom. The stories, which range from the Arthurian romance Parzival to Trickster folk tales, will be told in several sections - with a running exegesis and student response alongside. Many of these stories are now transcripts and have become works of literature. We will explore both the complementary aspects of this development, and areas of tension.nnnDuring the course each student will embark on a project that demonstrates a thorough understanding of the topics covered, and utilizes those elements in their wider practice of writing and rhetoric. nnnThe project will be to research a story handed down within the family - an adventure of some distant relative, or a family migration from one country to another. Factoring in elements from the taught class, the student will mythologize the story: by writing an in depth commentary on its implications - factoring in contemporary, psychological and metaphorical associations. The second element will be to tell the story to the class. In these way we experience myth as a living principle, not something just from `a long time ago.¿.

PWR 91EC. Intermediate Writing: Farmers, Scientists, & Activists: Public Discourse of Food Economies. 4 Units.
What are the possibilities in rethinking our food, the way we talk about it, the way we grow it, and the way we eat it? In this course, you will be paired with local organizations concerned with food economies, such as food activists, food banks, farmers, and farm collectives, to collaboratively draft and produce writing specific to the client. You will analyze and respond to a variety of professional writing situations, and practice project management, focusing on benchmarking and deliverables. The end result will be a multimodal, collaboratively-produced document or set of documents you can add to your public-facing portfolios. Students taking this courses as part of the Notation in Science Communication can include their final project in their NSC e-portfolio. This course fulfills the advanced PWR requirement for the Notation in Science Communication (NSC). Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For video course description, see https://undergrad.stanford.edu/programs/pwr/courses/advanced-courses/farmers-scientists-activists-public-discourse-food-economies. (Cardinal Course certified by the Haas Center).

PWR 91EE. Intermediate Writing: Saving Lives with Picture Books. 4 Units.
Want to help improve the health of mothers and young children in Bangladesh by creating picture books? This is your chance. (No artistic skills required.) You and your classmates will collaboratively create at least one original picture book designed to communicate information about child stimulation, nutrition, water sanitation, hygiene, the dangers of lead, and healthy ways of thinking. You¿ll study the genre of the picture book, explore the culture of Bangladesh, and consult with a team of Stanford-led researchers to create at least one picture book. You¿ll pitch story ideas, create storyboards and dummies, and revise and edit in light of feedback from the team in Bangladesh, as well as some of the mothers participating in the study.

PWR 91EP. Intermediate Writing: Communicating Climate Change: Navigating the Stories from the Frontlines. 4 Units.
In the next two decades floods, droughts and famine caused by climate change will displace more than 250 million people around the world. In this course students will develop an increased understanding of how different stakeholders including scientists, aid organizations, locals, policy makers, activists, and media professionals communicate the climate change crisis. They will select a site experiencing the devastating effects and research the voices telling the stories of those sites and the audiences who are (or are not) listening. Students might want to investigate drought-ridden areas such as the Central Valley of California or Darfur, Sudan; Alpine glaciers melting in the Alps or in Alaska; the increasingly flooded Pacific islands; the hurricane ravaged Gulf Coast, among many others. Data from various stakeholders will be analyzed and synthesized for a magazine length article designed to bring attention to a region and/or issue that has previously been neglected. Students will write and submit their article for publication.nnFor students who have completed the first two levels of the writing requirement and want further work in developing writing abilities, especially within discipline-specific contexts and nonfiction genres. Individual conferences with instructor and peer workshops. Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For more information, see https://undergrad.stanford.edu/programs/pwr/explore/notation-science-writing.
Same as: EARTHSYS 154

PWR 91F. Finding Your Story. 3 Units.
Life challenges us to become aware of the stories that shape us--family stories, cultural mythologies, even popular movies, television shows, and songs--and then create and live our own story. We face this challenge throughout our lives but perhaps most acutely as we move into adulthood; this is the period when we most need to become conscious of stories and their power, to gather wisdom, practices, and resources for finding our own story. This class, designed with seniors in mind, will illuminate and explore these resources and give you the opportunity to reflect deeply, in discussion and writing, on what truly calls to you in this life. We will engage with some of the world's great stories--myths, parables, teaching tales, modern fiction, even aphorisms, koans, and riddles. In them we can find both elements that resonate with our own story and provocations that help us unearth and cultivate our native gifts--the genius in each of us. We will look at short excerpts from masterworks and myths from around the world, all voices in the largest conversation we have as humans, the one that asks: who am I? why am I here? what truly matters? how can I be happy? Together we will investigate how these stories, and stories like them, can be used to help us find our own story. Students in this course will have a special opportunity to meet personally with poet Billy Collins and singer Aimee Mann when they visit campus in April. Does not fulfill NSC requirement. For students who have completed the first level of the writing requirement and want further work in developing writing abilities, especially within discipline-specific contexts and nonfiction genres. Individual conferences with instructor and peer workshops. Prerequisite: first level of the writing requirement or equivalent transfer credit. For more information, see http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_pwr/advanced_pwr.

PWR 91JS. Stanford Science Podcast. 3 Units.
In this course, students will explore how podcasts can be used as a tool for effective science communication. Through a series of workshops and guest speakers, students in this course will learn the necessary journalistic and technical skills to produce high quality podcast episodes, from interviewing and storytelling to audio editing and digital publishing. Podcast episodes will highlight the cutting edge research being done at Stanford, and students will choose specific stories based on their own interests, from earth sciences to public health to big data. Final podcast episodes will be published on iTunes.
Same as: EARTHSYS 157

PWR 91KD. Intermediate Writing: Scripting Entertainments. 4 Units.
In its short time on the planet, youtube videos have created their very own viral (and lucrative) culture. But what if the power of internet distribution could be paired with the power of good substantial storytelling? What if the content could be more socially stirring and powerful than "this is me doing crazy adventures" or "this is me pranking someone"¿or "this is me eating $14 avocado toast in PA"? In this seminar, we first break down the various codes and generic features of currently popular vlogs, then apprentice to current scripting techniques being used by playwrights (Anna Deavere Smith, Suzan-Lori Parks) and scriptwriters on shows from Hulu (East Los High), and Prime (Frankenstein Chronicles), then finally turn our hand to the scripting, rehearsing, shooting, and production of our very own 1-3 minute videos. Our goal is to develop the critical, creative, and digital tools to make effective and engaging scripted short videos for the telling of our current stories, for the destabilization of dominant cultural stories, and for the re-stabilization of the two in potent remix.
Same as: for a Better YouTube

PWR 91KS. Intermediate Writing: Design Thinking and Science Communication. 4 Units.
Effective communication of expert knowledge in the sciences to non-specialist audiences. Project-based work on a range and variety of communication challenges, contexts, and media. For students who have completed the first two levels of the writing requirement and want further work in developing writing abilities, especially within discipline-specific contexts and nonfiction genres. Individual conferences with instructor and peer workshops. Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For more information, see https://undergrad.stanford.edu/programs/pwr/explore/notation-science-writing.

PWR 91KSA. Intermediate Writing: Storytelling and Science. 4 Units.
What is story? What is storytelling? And why would storytelling be crucial for science communication? In this class we will develop your Story IQ: we will learn how humans evolved to be the storytelling animal, how stories shape our lives, and why and how science communication needs storytelling in order to be relevant to public audiences. We'll move from looking at story architecture, to critiquing story structures (and stories) in science communications, and then to creating compelling stories of our own that communicate and/or correct science research or discovery. For course video and full description, visit https://undergrad.stanford.edu/programs/pwr/courses/additional-elective-courses/science-and-storytelling.

PWR 91KT. Intermediate Writing: Game Set Match: Shaping Publics to Shape Movements. 4 Units.
The success of a movement is never the work of one individual. In this course, students will investigate the specific case of Los Alamos scientist Wen Ho Lee and the media advocacy that aided in his release from solitary confinement after being accused of spying for China. Students will then analyze the role the public and news media frequently must play in the success of a cause, ultimately developing a website that publishes resources and interventions including students own digital media that moves a civil rights issue of their choice. For course video and full description, visit https://undergrad.stanford.edu/courses/additional-elective-courses/game-set-match-shaping-publics-shape-movements.

PWR 91MC. Intermediate Writing : Activist Rhetoric. 4 Units.
How do activists effectively strategize for social change? In this hands-on approach to studying activism and social justice issues, students will encounter new methods for mass communication, collaboration, and self-inquiry. First, we will consider how activists address practical problems in a variety of contexts, from protest movements to direct action, political lobbying to philanthrocapitalism, from Black Lives Matter to immigration activists. We will visit Stanford Special Collections to find inspiration in the Huey P. Newton Collection--the archive of the Black Panther Party. To inform these experiences, we will read and analyze texts by the Combahee River Collective, Angela Davis, Judith Butler, Fred Moten, and Jackie Wang, as well as inviting several activists to visit our classroom. Through collaborative and creative coursework, students will gain experience in intersectional thinking, community organizing, and collective action by conducting teach-ins, writing their own social justice manifesto, and planning a final campus-wide action.nnThis course is part of the PWR advanced elective track in Social and Racial Justice (SRJ). Prerequisite: first two levels of the writing requirement or equivalent transfer credit. See https://undergrad.stanford.edu/programs/pwr/courses/advanced-courses/activist-rhetoric for full course description.

PWR 91NSC. Intermediate Writing: Introduction to Science Communication. 4 Units.
With the growing impact of science and technology on our society, the need for communicating that science well has never been greater. But what is effective science communication? Is it ever ok to use jargon? Is it ok to say "I" in my research report? How do I communicate complex topics in simple, but accurate, ways? In this course, we will explore the variety of formats that science communication can take--from technical research papers on particle physics to children's books about genetics. We will explore how different audiences shape the way science is communicated, and we will develop a set of best practices for effective science communication. Students will then apply these strategies in their own science communication projects. Prerequisite: PWR 2 or its equivalent. For more information, see https://undergrad.stanford.edu/programs/pwr/explore/nsc. Required of students admitted into the Notation for Science Communication after January 2015.

PWR 91OID. Creating Your Digital Presence: The What, How, and Why of Building an Online Presence. 3 Units.
Have you ever Googled yourself? If so, what information about you rises to the top? A picture of you in your band uniform from your high school? A poem you wrote and published on your Tumblr? Maybe your scores from a 5K you ran last year? nnIt might seem like you do not have much control over what you see about yourself in a Google search, but the fact is, you do. The more of your own content you create, the more that your self-created information will rise to the top. In this class, you will select content most significant to you, which could include research posters, photo essays, short stories, interviews, prototypes, and beyond. To curate and polish these pieces, we will ask ¿how can you craft an online identity that shares not only your accomplishments, but also your motivations?¿, ¿what makes your best work meaningful?¿, and ¿what platform will best allow you to showcase your identity?¿ Through learning the theories, tools, and techniques behind digital content management, this class will help you get better connected with the individuals and/or organizations that interest you. nnWe will practice several pragmatic techniques for building our own personal ePortfolio (i.e. a website). Through participating in hands-on activities, storytelling exercises, and in-class discussions, you will have the opportunity to enact what we¿re learning and to experiment with different forms of expressing yourself online.

PWR 91RS. Intermediate Writing: Communicating Bioinformation. 3 Units.
Effective communication of expert knowledge in the sciences to non-specialist audiences. Project-based work on a range and variety of communication challenges, contexts, and media. For students who have completed the first two levels of the writing requirement and want further work in developing writing abilities, especially within discipline-specific contexts and nonfiction genres. Individual conferences with instructor and peer workshops. Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For more information, see https://undergrad.stanford.edu/programs/pwr/explore/notation-science-writing.

PWR 91S. Intermediate Writing: Communicating Science. 3 Units.
Effective communication of expert knowledge in the sciences to non-specialist audiences. Project-based work on a range and variety of communication challenges, contexts, and media. For students who have completed the first two levels of the writing requirement and want further work in developing writing abilities, especially within discipline-specific contexts and nonfiction genres. Individual conferences with instructor and peer workshops. Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For more information, see http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_pwr/advanced_pwr.

PWR 91SP. Intermediate Writing: Doctors' Stories: The Rhetoric of Illness and Healing. 4 Units.
While medicine is a science that relies on meticulous research and professional protocols, it is also full of characters, conflicts, scenes, dialogues, and resolutions; in other words, stories. This course explores why we must value communication in medicine and how narratives mediate that communication. During the quarter, you will pursue independent research on a topic of your choice in the health sciences and practice interviewing experts as well as writing accurate and engaging science journalism in a number of genres: the story pitch, the news story, and the profile. Your final project will be a research-based digital magazine story coached by the Stanford Storytelling Project.

PWR 91TB. Intermediate Writing: Being ____ at Stanford. 4 Units.
In this course, we will use two central methods autoethnography, which studies ourselves as participants in cultures; and institutional research, into the archives of Stanford to theorize ourselves as part of Stanford's past, present, and future. Paying special attention to our reading and writing practices, we will use autoethnographic writing prompts to better understand our own identities and experiences, and archival and ethnographic research to investigate specific institutions, events, or practices at Stanford. Ultimately, students will produce a major final project (20-25 pages, 6-10 audiovisual minutes, an installation) that integrates their autoethnographic findings (about you) with their institutional findings (about Stanford). This course is an opportunity to better understand yourself, your university, and the politics of language.

PWR 99A. Portfolio Preparation I. 1 Unit.
A 1-unit course introducing ePortfolios and folio thinking for students in the Notation in Science Communication (NSC). The course will assist students in designing a rhetorical ePortfolio and in selecting and reflecting on writing samples that represent student learning in science communication. This is the first of a two-part ePortfolio requirement for the NSC. For more information, see https://undergrad.stanford.edu/programs/pwr/explore/notation-science-writing.

PWR 99B. Portfolio Preparation II. 2 Units.
A 2-unit culminating course on ePortfolios for students in the Notation in Science Communication (NSC). In this course, students will continue building, revising, and editing a portfolio of documents, slides, and videos that will demonstrate development as a science communicator. This is the second of a two-part ePortfolio requirement for the NSC. For more information, see https://undergrad.stanford.edu/programs/pwr/explore/notation-science-writing.Pre-requisite: PWR 91NCS.

PWR 191. Advanced Writing. 3 Units.
Open to undergraduates and graduate students. Crafting nonfiction prose in a range of genres. Focus is on the relationship of genre and form; attention to developing stylistic versatility. Individual conferences with instructor. Prerequisite: first two levels of the writing requirement or equivalent transfer credit.

PWR 192. Projects in Research, Writing, and Rhetoric. 1-5 Unit.
Advanced work on research projects, early drafts of theses, proposals. Shared work, discussions, and examination of methods, rhetorics, and styles in all disciplines. May be repeated for credit. Prerequisite: first two levels of the writing requirement or equivalent transfer credit.

PWR 193. Writing the Honors Thesis. 1-5 Unit.
For students from all majors in the process of writing an honors thesis. Review of key elements of thesis process, including literature reviews, structure, argumentation, style, and documentation. Group and individual workshops. Prerequisite: first two levels of the writing requirement or equivalent transfer credit.

PWR 194. Topics in Writing and Rhetoric. 4 Units.
Understanding rhetoric as readers and interpreters of texts and to develop skills as writers and speakers. Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For topics, see http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_pwr/advanced_pwr.

PWR 194AB. Topics in Writing & Rhetoric: Freedom's Mixtape: DJing Contemporary African American Rhetorics. 4 Units.
Black music in all its genres, styles and eras has always been about freedom and transformation. About both Black people and the whole society. About the US Black experience, the African continent and the diaspora. These musical forms and the social movements they reflect and help shape are therefore central to the study of African American rhetoric. From overtly translating the ideas of social movements for mass audiences, to capturing the mood of a moment or move, to reflecting and influencing the aesthetics and styles that attend public discourse, to simply being a space where debates get worked out in community, music in Black traditions are as important a space of engagement as political speeches, sermons, websites, or even #BlackTwitter. This course will use Black music and its relationship to both social movements and everyday dialogue and debate to introduce study in African American Rhetoric as a field of study.
Same as: AFRICAAM 194A

PWR 194ABA. Topics in Writing & Rhetoric: Contemporary Black Rhetorics: Prince. 2-3 Units.
This course will examine Prince's music, life and impact and their relationship to both social movements and everyday dialogue and debate to introduce African American Rhetoric as a field of study. Students in the course will trace specific themes in Prince's music throughout his career, write an album review, and create a blog on some aspect of Prince.

PWR 194AJ. Topics in Writing & Rhetoric: Contemporary Black Rhetorics: Black Twitter and Black Digital Cultures. 4 Units.
Does not fulfill NSC requirement. This course will examine Black engagements with digital culture as sites for community building, social action and individual and collective identity formation. By studying phenomena like #BlackTwitter, memes, Vine, selfie culture, blogging, "social watching," and more, we will explore how Black technology use addresses questions like identity performance and expression, hyper visibility and invisibility of Black lives, Black feminisms, misogynoir and Black women/femme leadership in social movements, the roles and influence of Black Queer cultures online, and social activism and movements in online spaces. nnFrom #YouOKSis, #BlackLivesMatter and #AfroLatinidad to the Clapback, roasts and "reads," we will work from the serious to the silly, from individuals to collectives, from activism to everyday life, and from distinct Black cultures to diasporic connections and exchange. Participants in the course will create a social media autobiography, a "read/ing" of a Black cultural practice or phenomenon online, host an online discussion, and prepare a pitch for a longer research project they might pursue as a thesis or an ongoing study. Bring your GIFs, memes, and emoji, and a willingness to be in community both online and off for this new course! Prerequisite: first level of the writing requirement or equivalent transfer credit. For topics, see https://undergrad.stanford.edu/programs/pwr/courses/advanced-pwr-courses.
Same as: AFRICAAM 194

PWR 194AV. Topics in Writing & Rhetoric: Drawn from Life: The Power of True Stories in Autobio Comics. 3-4 Units.
The most impactful, fantastical stories often come not from fiction but from our own richly diverse lives. In this course you will explore autobiographical comics as a form of personal narrative ideally suited for communicating purposeful messages about culture, identity, and experience. We will embark on an immersive journey through comics in which authors tell their own true stories with rhetorical purpose, such as revealing the nuances of cultural identity, illuminating the experiences of marginalized communities or perspectives, and/or promoting advocacy or change. You will engage in deep analysis of how these comics reveal and help create the rhetorical practices of particular cultural communities. No drawing experience or expertise is required. For more information see https://undergrad.stanford.edu/programs/pwr/courses/additional-elective-courses-writing-and-rhetoric.

PWR 194B. Advanced Writing. 4 Units.
Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For details, see http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_pwr/advanced_pwr.

PWR 194BR. Topics in Writing & Rhetoric: The Rhetoric of Health and Medicine. 4 Units.
This course will aim to give students a foundation in the rhetoric of health and medicine across major stakeholders researchers, government, institutions, doctors, patients, journalists, and a general public obsessed with health and wellness. For example, we will analyze key theories about the relation of institutions, doctors, and patients, from Foucault's Birth of the Clinic to Rita Charon's Narrative Medicine: Honoring the Stories of Illness. We will also investigate how patients make sense of their illnesses through art and memoirs, how doctors are trained in an empathetic bedside manner, and the rhetoric of medical breakthroughs. From this foundation, students will choose an issue to tackle in their own research projects, from the politicization of Planned Parenthood and women's healthcare, to the experience of trans patients seeking care, to the rhetoric of access vs. coverage in current debates about health insurance. Prerequisite: completion of WR-1 & WR-2 req or permission of instructor. For full description, see https://undergrad.stanford.edu/programs/pwr/courses/additional-elective-courses/rhetoric-health-and-medicine.

PWR 194C. Make Them Laugh: Comedy as Persuasion and Argument. 4 Units.
Exploration of major theories of comedy and application of these theories to historical and contemporary comedic practice, with particular attention to comedy as a form of argument in a range of contexts. For more information, see http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_pwr/advanced_pwr. Prerequisite: first two levels of the undergraduate writing requirement or equivalent transfer credit. Not repeatable for credit.

PWR 194CW. Brave New Worlds: An Introduction to (De)colonial Rhetorics. 4 Units.
Since the time of Columbus, colonial agendas and policies have engendered their own rhetorics of justification and explanation. After all, European modernism began with the encounter of the New World, and Europe¿s own identity was forged in the process of ¿Latinization¿ of the Western Hemisphere. In response, decoloniality arose as a rich intellectual critique in the late 1990s in South America and the Caribbean. Decolonial rhetorical traditions stand in a unique position vis-à-vis the development of modernity, colonialism, racialized identities, the crisis of European reason, and the dawn of globalization. In an era of Trumpism, in which European modernity once again justifies restricting the mobility and freedom of Latinx immigrants, among other ethnic groups, perhaps no other form of intellectual critique seems quite so urgent. This course introduces students to primary decolonial rhetorical texts and asks students to apply these insights to pressing contemporary challenges by practicing deep reading of primary and secondary texts, preparing group presentations, and exploring creative acts of composition with an eye toward imagining brave new worlds and the decolonial rhetorical practices valued therein.

PWR 194DH. Topics in Writing and Rhetoric: Empathy, Ethics, and Compassion Meditation. 4 Units.
Does not fulfill NSC requirement. In this course, we'll extend this discussion by expanding our thinking about rhetoric as a means of persuasion to consider its relation to empathy-as a mode of listening to and understanding audiences and communities we identify with as well as those whose beliefs and actions can be lethal. We'll also practice compassion medication and empathetic rhetoric to see how these ethical stances affect us individually and investigate the ways they may and may not be scaled to address social justice more broadly. Finally, with the course readings and discussions in mind, you will explore a social justice issue and create an essay, a workshop, campaign or movement strategy, podcast, vlog, infographic, Facebook group, syllabus, etc. to help move us closer to positive change. Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For topics, see https://undergrad.stanford.edu/programs/pwr/courses/advanced-pwr-courses.
Same as: CSRE 94

PWR 194EP. Topics in Writing & Rhetoric: Introduction to Environmental Justice: Race, Class, Gender and Place. 4 Units.
This course examines the rhetoric, history and key case studies of environmental justice while encouraging critical and collaborative thinking, reading and researching about diversity in environmental movements within the global community and at Stanford, including the ways race, class and gender have shaped environmental battles still being fought today. We center diverse voices by bringing leaders, particularly from marginalized communities on the frontlines to our classroom to communicate experiences, insights and best practices. Together we will develop and present original research projects which may serve a particular organizational or community need, such as racialized dispossession, toxic pollution and human health, or indigenous land and water rights, among many others. Prerequisite: PWR 2.
Same as: EARTHSYS 194, ENVRES 223

PWR 194KD. Topics in Writing and Rhetoric: Technology and Human Values. 4 Units.
Pining for a job in Google X but a little afraid of what disrupting the next social system will do to humans when all is said and done? Unsure where the real conversation is happening at Stanford about how to think more carefully and thoughtfully about the tech we are being trained to make? Curious to know what underlying common ground might link fuzzies with techies, humanists with engineers, scientists with philosophers? These are some of the issues we¿ll address in this seminar. You will be able to choose your own current topic¿drones, tech and medicine, Big Data, Cloud applications, AI and consciousness, cybersecurity, tech and the law¿for which you will choose readings and write a seminar paper and then co-lead discussion. The class goals are to know better the ethical value of one¿s tech work and research and to be able to express to scientists and non-scientists alike the ways in which this work contributes to the greater human good (beyond strict convenience or short-term profit). Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For topics, see https://undergrad.stanford.edu/programs/pwr/courses/advanced-pwr-courses.

PWR 194KT. Topics in Writing & Rhetoric: The Last Hopi On Earth: The Rhetoric of Entertainment Inequity. 4 Units.
While #OscarsSoWhite brought attention to the Academy's overwhelmingly White, male membership, the underbelly of the entertainment industry itself is rife with inequitable hiring of not only on-camera and on-stage performers but also directors, writers, and others behind the scenes. While there are several organizations from Racebending.com to the Geena Davis Institute on Gender in Media that seek to usher in more equitable representation, push back against the Industry's disparate employment practices has been documented for more than fifty years with what many argue is not proportionally positive movement. White males still garner almost half of all theatrical and television roles and represent more than 80% of episodic directors while entertainment hubs Los Angeles and New York City are more than 50% people of color and female. What will it take to attain equity in the entertainment industry? Why does it matter? nnIn this course, students will examine rhetorical issues in promoting, defending, and opposing entertainment industry practices - writing and speaking across genres in persuasive response - and ultimately develop a collaborative 5-year strategic plan to usher in equity.n nThis course is part of the PWR advanced elective track in Social and Racial Justice (SRJ). Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For video course description, see https://undergrad.stanford.edu/programs/pwr/courses/advanced-courses/last-hopi-earth-rhetoric-entertainment-inequity.
Same as: CSRE 194KT

PWR 194MF. Topics in Writing & Rhetoric: In the Margins: Race, Gender and the Rhetoric of Science. 4 Units.
Every day a new headline alerts us to the lack of race and gender diversity in the tech sector in Silicon Valley. At the same time, science and technology are often lauded as objective systems capable of producing color- and gender-blind truths and social good for all of us. This course pushes beyond the headlines and the hashtags to think about the complex relationship between gender, race and science. Together we will research chronically understudied voices and contributions in the history of science and technology and have the opportunity to read and participate in some of the efforts to highlight their stories through a Wikipedia edit-a-thon and final research project. We will also rigorously think through why the historical and current under-representation of women and people of color matters for the questions that are asked, methodologies that are used, and science and technology that is eventually produced. This course fulfills the advanced PWR requirement for the Notation in Science Communication (NSC). Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For topics, see https://undergrad.stanford.edu/programs/pwr/courses/advanced-pwr-courses.

PWR 194NCR. Topics in Writing & Rhetoric: Introduction to Cultural Rhetorics. 4 Units.
All cultures have their own ways of communicating and making meaning through a range of situated rhetorical practices. In this gateway course to the Notation in Cultural Rhetorics, you'll explore the diverse contexts in which these practices are made and continue to be made;learn methodologies for examining their rhetorical production across media and modality; and study situated cultural practices and their historical and current developments.
Same as: CSRE 194NCR

PWR 194SB. Topics in Writing and Rhetoric: Rhetoric of Science. 4 Units.
Understanding rhetoric as readers and interpreters of texts and to develop skills as writers and speakers. Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For topics, see https://undergrad.stanford.edu/programs/pwr/courses/advanced-pwr-courses.

PWR 194SS. Topics in Writing & Rhetoric: Making Rhetoric Matter: Human Rights at Home. 4 Units.
'Human rights' often sounds like it needs defending in far-off places: in distant public squares where soldiers menace gatherings of citizens, in dark jails where prisoners are tortured for their politics, in unknown streets where gender inequality has brutal consequences. But Bryan Stevenson, a lawyer fighting for social and racial justice in the jails of Alabama, proposes that we try 'proximity': that we get close to the injustices that are already close to us. This class thus takes human rights as a local issue, focusing on how terms like 'human' and 'rights' are interpreted on our campus and in our neighborhoods, cities, and region. Instead of a traditional human rights policy framework, we'll use the lens of intersectional ethics to explore specific rhetorical issues in gender politics, citizenship, higher education, police brutality, and mass incarceration. We will write, speak, and move across genres, responding to the work of incarcerated artists, creating embodied workshops, 'translating' ideas into new media (does someone you know need an animated video about gender pronouns? Or maybe it's time for a podcast about #PrisonRenaissance?), doing collaborative research, and 'writing back' to our audiences. For course video and full description see: https://undergrad.stanford.edu/programs/pwr/courses/advanced-courses/making-rhetoric-matter-human-rights-home.nnThis course is part of the PWR advanced elective track in Social and Racial Justice (SRJ). Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For topics, see https://undergrad.stanford.edu/programs/pwr/courses/advanced-pwr-courses.
Same as: CSRE 194SS

PWR 195. Writing Center Peer Tutor Seminar. 2-3 Units.
For students selected to serve as peer writing tutors in the Hume Center for Writing and Speaking and/or at other campus sites. Readings on and reflection about writing processes, the dynamics of writing and tutoring situations, tutoring techniques, learning styles, diversity, and ethics. Observation of tutoring sessions, written responses to readings, and other written work. Instructor permission required. WR 1 pre-/co-requisite.
Same as: PWR 295

PWR 295. Writing Center Peer Tutor Seminar. 2-3 Units.
For students selected to serve as peer writing tutors in the Hume Center for Writing and Speaking and/or at other campus sites. Readings on and reflection about writing processes, the dynamics of writing and tutoring situations, tutoring techniques, learning styles, diversity, and ethics. Observation of tutoring sessions, written responses to readings, and other written work. Instructor permission required. WR 1 pre-/co-requisite.
Same as: PWR 195

OVERSEAS STUDIES

Bing Overseas Studies Program

Located on the ground floor of Sweet Hall, BOSP has full-time staff members and student ambassadors to assist in advising and planning for study away. Course and program information, while accurate at the time of publication, is subject to change. Consult the BOSP (http://bosp.stanford.edu/) website for updated information.

The Bing Overseas Studies Program (BOSP) provides opportunities for Stanford students to broaden their undergraduate education through study away and exposure to other cultures. Regular quarter-length programs in Australia, Berlin, Cape Town, Florence, Hong Kong, Istanbul, Kyoto, Madrid, New York, Oxford, Paris, and Santiago offer courses in social and natural sciences, humanities, engineering, and earth sciences with full Stanford credit. Many courses also count toward major requirements and/or fulfill University breadth requirements.

Students may enroll for one or more quarters at most locations. Academic or paid internships are available at certain program locations. Research opportunities are available in various formats at different centers. Minimum academic and language prerequisites are specific to each program.

See the BOSP (http://bosp.stanford.edu/) website for information on these prerequisites. As of September 1, 2019, the Stanford in New York program became part of BOSP.

Overseas Studies also offers three-week faculty-led, short-term programs in various locations during Summer Quarter, including Oaxaca, Mexico focused on community health and biocultural diversity, and occasionally other programs in various locations. In addition to the programs offered through BOSP for enrolled Stanford students, the University is a member of the Kyoto Consortium for Japanese Studies (KCJS), where students may enroll while remaining registered at Stanford.

While studying away through BOSP, students remain enrolled at Stanford and pay regular tuition along with an overseas fee, which is based on Stanford on-campus room and board rates. Regular financial aid applies and may be adjusted to cover additional costs. At many centers, students live in a homestay or a dormitory setting with local and other students.

Locations

Courses offered by the Overseas Studies Program are listed on the Stanford Bulletin's (http://explorecourses.stanford.edu/) ExploreCourses (http://explorecourses.stanford.edu/) web site under subject codes beginning with OSP or SINY. Each BOSP location has its own subject code. Those subject codes, by location, are:

- Australia [OSPAUSTL] (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=OSPAUSTL&filter-catalognumber-OSPAUSTL=on)
- Berlin [OSPBER] (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=OSPBER&filter-catalognumber-OSPBER=on)
- Cape Town [OSPCPTWN] (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=OSPCPTWN&filter-catalognumber-OSPCPTWN=on)
- Florence [OSPFLOR] (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=OSPFLOR&filter-catalognumber-OSPFLOR=on)
- Istanbul [OSPISTAN] (https://explorecourses.stanford.edu/search/?view=catalog&catalog=&page=0&q=OSPISTAN&filter-catalognumber-OSPISTAN=on)
- Hong Kong [OSPHONGK] (https://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=&q=OSPHONGK&collapse=)
- Kyoto [OSPKYOTO] (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=OSPKYOTO&filter-catalognumber-OSPKYOTO=on)
- Kyoto Consortium for Japanese Studies [OSPKYOCT] (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=OSPKYOCT&filter-catalognumber-OSPKYOCT=on)
- Madrid [OSPMADRD] (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=OSPMADRD&filter-catalognumber-OSPMADRD=on)
- New York [SINY] (https://explorecourses.stanford.edu/search/?view=catalog&academicYear=&q=SINY&filter-departmentcode-SINY=on&filter-coursestatus-Active=on&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&page=0)
- Oxford [OSPOXFRD] (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=OSPOXFRD&filter-catalognumber-OSPOXFRD=on)
- Paris [OSPPARIS] (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=OSPPARIS&filter-catalognumber-OSPPARIS=on)
- Santiago [OSPSANTG] (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=OSPSANTG&filter-catalognumber-OSPSANTG=on)

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

Program Director

Program Director: Aron Rodrigue

Stanford Program in Australia

Program suspended for Autumn 2020-21 academic year.

Stanford Program in Berlin

Program suspended for Autumn 2020-21 academic year.

Director: Karen Kramer

Faculty-in-Residence: Arunava Majumdar, Ed Carryer, Sherri Shepard

Program Faculty: : Diana Böbe, Ulrich Brückner, Timur Flissikowski, Wolf-Fabian Hungerland, Martin Jander, Wolf-Dietrich Junghanns, Sylvia Klötzer, Friederike Knüpling, Ralf Müller, Leah Muir, Matthias Pabsch, Matthew Stephen, Jochen Wohlfeil, Tomasz Wozniakowski

Stanford Program in Cape Town

Director: Adelene Africa

Faculty-in-Residence: Rush Rehm, Marie-Louise Catsalis, Grant Parker

Program Faculty: Mohamed Adhikari, June Bam, Nomusa Makhubu, John Parkington, Ulrike Rivett, Helen Scanlon, Laura Wenz

Stanford Program in Florence

Program suspended for Autumn 2020-21 academic year.

Director: Ermelinda Campani

Faculty-in-Residence: David Sklansky, Tiziana Vanorio

Program Faculty: Francesca Banchi, Elena Baracani, Paola Bonizzoni, Laura Calvelli, Giulia Calvi, Veronica De Romanis, Gustavo Gozzi, John Hooper, Sebastiano Maffettone, Fiorenza Quercioli, Matteo Renzi, Maria Stella Rognoni,Filippo Rossi, Alberto Tonini, Timothy Verdon

Stanford Program in Hong Kong

Program suspended for Autumn 2020-21 academic year.

Stanford Program in Istanbul

Program suspended for 2020-21 academic year.

Stanford Program in Kyoto

Program suspended for Autumn 2020-21 academic year.

Director: Mike Hugh

Faculty-in-Residence: Tadashi Fukami

Program Faculty: Yuka Kanno, Yuko Kawahara, Sachiko Kubuki, Catherine Ludvik, Daiko Matsuyama, Yasue Numaguchi, Naoyuki Ogino, Naoko Shiotani, Kiyoko Tanaka, Rie Tsujino

Kyoto Consortium for Japanese Studies

Director: Matthew Stavros

Stanford Program in Madrid

Program suspended for Autumn 2020-21 academic year.

Director: Pedro Perez-Leal

Faculty-in-Residence: C. Kevin Boyce, Paola Moya, Ramón Saldívar

Program Faculty: María Almudena Ariza Armada, Alberto Bosco, Aída Esther Bueno Sarduy, Miguel Buñuel, María Teresa Camblor Portilla, Pablo Campos Calvo Sotelo, Jean Castejón Gilabert, Raúl de la Fuente Marcos, Julia Doménech López, Sylvia Hilton, Sheila Klaiber, Miguel Larrañaga Zulueta, Laura Luceño Casals, Irene Martín Cortés, Antonio Muñoz Carrión, Laura Murcia Cánovas, Alicia Pérez Blanco, Beatriz Pérez Galán, Roshan Samtani, Oscar Sánchez Fuster

Stanford in New York

Program suspended for Autumn 2020-21 academic year

Program Director: Rosina Miller

Faculty-in-Residence: Jeffrey Hancock, Patricia Allessandrini

*Program Faculty:*Ben Allanson, Mohammed Badi, Jonathan Bronson, Arthur Cohen, Richard Gowan, Danielle Jackson, Chiseche Mibenge, Mark Oldman, Julie Orringer,

Stanford Program in Oxford

Program suspended for Autumn 2020-21 academic year.

Director: Stephanie Solywoda

Faculty-in-Residence: Mykel Kochenderfer, Alex Woloch

Program Faculty: Olivia Reilly, Sebastian Petzolt, Alison Kahn, Scot Peterson, Emma Plaskitt, Jack Nasher, Matthew Landrus, Samuel Ritholtz, Alberto Baena-Lopez

Stanford Program in Paris

Program suspended for Autumn 2020-21 academic year.

Director: Estelle Halévi

Faculty-in-Residence: Eric Lambin

Program Faculty: Jean-Francois Allemand, Nicolas Baudouin, Nicolas Desprat, Benedicte Gady, Louise Lartigot-Hervier, Eloi Laurent, Florence Leca, Elizabeth Molkou, Gregoire Quenault, Pauline Reychman, Marie-Christine Ricci, Klaus-Peter Sick, Fabrice Vir

Stanford Program in Santiago

Program suspended for Autumn 2020-21 academic year.

Director: Iván Jaksic

Faculty-in-Residence: Xueguang Zhou

Program Faculty: Mabel Abad, César Albornoz, Germán Correa, Claudia Dides, Rolf Lüders, Sergio Missana, Hernan Pons, Sharon Reid

Overseas Studies General Courses

OSPGEN 25. The Khmer Rouge Legacy and Transitional Justice in Cambodia. 2 Units.
The ongoing trials at the Extraordinary Chambers in the Courts of Cambodia (ECCC) began a transitional justice process that ushered in an era in which Cambodians began to examine their experience of the Khmer Rouge regime (1975-1979). This seminar will focus on Cambodia's experience of civil war, trials, reparations, reconciliation, and coming to terms with the past. We will engage with ECCC, UN, and human rights NGO representatives, as well as young Cambodian artists, human rights lawyers, and academics. In Phnom Penh, we will visit the ECCC, the Tuol Sleng Genocide Museum, the Choeng Ek Killing Fields, human rights NGOs, etc. We will go on to visit Siem Reap and the temple complex of Angkor Wat.

OSPGEN 26. Interdisciplinary Introduction to African Urban Studies. 2 Units.
The main idea for this course will beto use Accra as a way to illuminate cities of the students'own choice.This meansthat the course will be inherently comparative andfeatures of Accra will be usedto ignite students¿understanding of details of the urbanin general.Features of other African cities such as Cairo,Lagos, Kinshasa, and Johannesburg will beintroduced primarily through literary, anthropological,and other humanistic texts. And spatial concepts such asspatial morphology, spatial traversal and the means of locomotion, space-time anamorphism (for science fiction), topoanalysis (from phenomenology), and chronotopes(from Bakhtin)will be progressively introduced and applied to different urban features. The course will be a combination of classroom discussions and various fieldwork walking and bus tours of Accra. These will help to further ground the spatial concepts they will have been introduced to in class.There willalsobetrips to the Elmina and Cape Coast Castles, old seats of the European trading presence on the Gold Coast/ Ghanaand sites of the slave trade.

OSPGEN 27. Creative City: Culture and Resistance in Global Bangalore. 2 Units.
Formerly described as "pensioner's paradise," and "garden city," Bangalore is a city in southern India that once evoked images of rest and retreat. From an earlier somnolent rhythm of life, Bangalore has transformed into the high technology capital of the Global South and grows at a pace so rapid that it eludes our conceptual grasp of it. This course explores a central question: How did the southern Indian city, Bangalore, transform from ¿pensioner's paradise¿ to India's high tech capital? We will study the urban transformations of Bangalore through three vectors of analysis: the city'sn2vibrant arts scene, civic and legal activism, and environmental and social justice movements.

OSPGEN 28. Can a Start-Up Culture and Technology Heal the World?. 2 Units.
Israel's health system is one of the most admired in the world. Despite its small size, Israel is home to a disproportionate number of start-ups.Through this immersive seminar, students will gain an understanding of how socio-cultural conditions, including political, regulatory, military, and academic institutions; geographical, historical, and environmental conditions; and human cultures and activities have shaped the health innovation ecosystem in Israel into one of the world's most productive centers; and an appreciation of the advantages and disadvantages faced by entrepreneurs in Israel, how they have evolved, and how they compare to the experience of entrepreneurs elsewhere.

OSPGEN 29. A cultural, ethical, medical and legal exploration of Japanese and American Societies. 2 Units.
How can someone be dead in America but alive in Japan? Why does Japan have amongthe lowest rates of life-saving organ transplantation in the world despite being a highly developed society? While death is broadly considered an absolute biological event, the space between life and death may be blurry and influenced by often-competing forces. This course will explore historical, anthropological, ethical, and medical constructs around death and dying, brain death and organ transplantation. Through in-classroom and experiential learning, we will compare the US and Japanese perspectivesand will includeunique cultural, ethical, and medical experiences in Osaka and Kyoto, Japan.

OSPGEN 58. Stoking an ancient flame: Ceramics intensive in Tamba. 2 Units.
The Tamba region near Kyoto, Japan, has been a center of pottery production for over eight centuries. In many ways, medieval stoneware pottery of Tamba and Japan¿s other ¿six ancient kilns¿ can be seen as forebears of what we now know as the wabi-sabi aesthetic of Japanese tea culture. Today, surviving heirloom pieces such as jars (tsubo) and flower vessels (hanaire) serve as inspirational archetypes for surging international interest in the revival of styles and methods of traditional Japanese wood-fired ceramics (yakishime). In this Bing Overseas Seminar, Stanford students will travel to Tamba to undertake an intensive introduction to forming and firing clay. Lectures, discussions and studio demos will build a broad view of traditional aesthetic elements of yakishime, but at the same time, students will be encouraged to explore a modern individualistic approach to creative process to help them develop their own expressive forms. The seminar culminates in a traditional wood firing reaching kiln temperatures in excess of 2300F, which is a process that one must experience first-hand to viscerally comprehend. A final critique of student work will probe the complex interplay of natural materials, creative vision, manual skills and serendipity in this most ancient yet vital paragon of the arts of fire.

OSPGEN 60. Earth's 3rd Pole: Coupled Human-Natural Systems in the Khumbu Valley, Nepal. 2 Units.
Through place-based exploration of the Khumbu Valley, Nepal, this field seminar focuses on the complex relationships between mountain and glacial geomorphology, culture and religion, land use in extreme environments, climate change, and sustainable resource development and management. An analysis of the coupled human-natural systems of the Khumbu Valley provides a unique lens for students to interpret broader resource management and conservation issues. The curriculum balances field explorations, classroom lectures, and meetings with government officials, NGO staff, national park managers, Sherpa leaders, and several Buddhist Lamas.

OSPGEN 61. SETS: Sustainable Water and Sanitation in Southeast Asia. 2 Units.
This course investigates sustainable water and sanitation management through connections with water, energy, and food scarcity in Southeast Asia. Upon completion of the course, students will demonstrate improved understanding of: (1)The linkages between food, energy, water, and sanitation provision(2)Key challenges and opportunities facing each sector, and cross-cutting solutions(3)Ways in which industries, governments, and research institutions envision resource efficiency in the 21st century.

OSPGEN 74. St. Petersburg: Imagining a City, Building a City. 2 Units.
St. Petersburg, the world's most beautiful city, was designed to display an 18th-century autocrat's power and to foster ties between Russia and the West on the tsar's terms. It went through devastating floods and a deadly siege; it birthed the Petersburg myth, poems and prose that explore the force of the state and the individual's ability to resist. This class addresses the struggle between the authorities and the inhabitants; the treacherous natural environment; the city as a node in national and international networks of communication; the development of urban transportation networks; and the supply of goods.

OSPGEN 79. Preserving Biodiversity: Conservation Photography in South Africa. 2 Units.
Conservation photographers photograph the natural world, animals and plants, and people that threaten, protect or study wildlife and ecosystems, with the goal of advocating for specific conservation outcomes. We will actively practice conservation photography to address biodiversity and environmental issues in national, regional and private reserves in South Africa. Explore the fundamentals of creative cooperation in small teams, with the goal of producing effective photoessays. Workshops and guest speakers will address issues of biodiversity, wildlife management, poaching, ecotourism, and community engagement with conservation. Daily field trips culminate in group and individual projects. Location: Kruger National Park and surrounds, South Africa.

OSPGEN 259. Community Health in Oaxaca. 2 Units.
Close observation of clinicians at work in community health settings in Oaxaca and service with local community health organizations. Combination of classroom study and discussion with cultural immersion, language training, clinical shadowing, and community service. Topics include: Mexican healthcare system; cultural, socioeconomic and educational factors impacting health of Mexicans and Mexican immigrants to U.S.; Mexican cultural and health beliefs; Mexican migration as a multi-ethnic process.

Overseas Studies in Australia Courses

OSPAUSTL 10. Coral Reef Ecosystems. 3 Units.
Key organisms and processes, and the complexity of coral reef ecosystems. Students explore the Great Barrier Reef from the southern end which demonstrates the physical factors that limit coral reefs, to the northern reef systems which demonstrate key aspects of these high biodiversity ecosystems. Human-related changes. Emphasis is on research experiences and development of analytical skills. Two units only counted for the Biology major.

OSPAUSTL 28. Terrestrial Ecology and Conservation. 3 Units.
Examination of the rain forest and sclerophyll ecosystems in far north Queensland. Methodology for classification of key terrestrial ecosystems in lectures and then use of multiple field-based techniques to put theory to the test in the field. Ecosystem health is assessed using bioindicators under differing fire regimes and disturbance levels. Globally, terrestrial ecosystems and their associated fauna are affected by many of the same anthropogenic impacts and these are explored using Australian case studies and hands-on field activities. How both the plants and animals of Australian ecosystems came to be so utterly unique, in the context of the long evolution of 'the island continent' from the prehistoric rain forests that once covered the ancient super-continent of Gondwana.

OSPAUSTL 32. Coastal Ecosystems. 3 Units.
Field course that takes place on North Stradbroke Island, located in Moreton Bay. Physical and biological factors that influence ecosystems of the coastal zone. Lectures, field activities and discussions to increase knowledge of coastal ecosystems, their structure, including knowledge of the communities of flora and fauna, their importance to human communities, their management and the threats that negatively affect them. Coastal ecosystems of Moreton Bay used as an example, considering how both natural and human factors influence coastal ecosystems. Multiple field activities on the island observing various marine animals and plant communities, and exploring the range of coastal ecosystems of North Stradbroke Island.

OSPAUSTL 40. Australian Studies: History, Society and Culture Down Under. 3 Units.
Introduction to Australian society, history, culture, politics, and identity. Social and cultural framework and working understanding of Australia in relationship to the focus on coastal environment in other program courses. Field trips.

OSPAUSTL 50. Individual Research Project. 4 Units.
Prior to arriving in Australia, students establish a link with University of Queensland faculty to develop project ideas that combine personal interests and career goals with opportunities presented by the Australian Coastal Studies program, such as how mangrove roots find sediment rich zones of the shore, or the dynamics of ecotourism in southern and northern coastal Queensland. Project report and presentation in Australia.

Overseas Studies in Barcelona (CASB) Courses

Overseas Studies in Beijing Courses

Overseas Studies in Berlin Courses

OSPBER 1Z. Accelerated German: First and Second Quarters. 8 Units.
A jump start to the German language, enabling students with no prior German to study at the Berlin Center. Covers GERLANG 1 and 2 in one quarter.

OSPBER 2Z. Accelerated German, Second and Third Quarters. 8 Units.
Covers GERLANG 2 and 3 in one quarter. Qualifies students for participation in an internship following the study quarter. Emphasis is on communicative patterns in everyday life and in the German work environment, including preparation for interviews.

OSPBER 3B. German Language and Culture. 7 Units.
Completion and refinement of First-Year grammar, vocabulary building, reading literature and news, writing skills, esp. journal. Extensive use of current materials, such as local Berlin and national news, and emphasis on building speaking skills for everyday situations and discussions.

OSPBER 17. Split Images: A Century of Cinema. 3-4 Units.
20th-century German culture through film. The silent era, Weimar, and the instrumentalization of film in the Third Reich. The postwar era: ideological and aesthetic codes of DEFA, new German cinema, and post-Wende filmmaking including *Run Lola Run* and *Goodbye Lenin.* Aesthetic aspects of the films including image composition, camera and editing techniques, and relation between sound and image.

OSPBER 19. Expressing Ideas: Academic German for 2nd year learners. 2 Units.
This class is designed for students enrolled in a 3-5 unit theme course taught in German in Berlin who have not previously taken German 21. The class focuses on vocabulary enrichment and how to articulate observations and formulate arguments, including learning figures of speech.

OSPBER 21B. Intermediate German. 4 Units.
German language skills for Intermediate students. Refinement of German grammar; vocabulary building, writing practice via journal and essays; German culture, including current news and issues, literature and films. Special emphasis on comprehension and speaking skills for discussions, everyday situations, and in-class presentations. Prerequisite: completion of first-year German.

OSPBER 24B. Advanced German Grammar. 2 Units.
Syntax and organizational patters (connectors, structuring and cohesive devices) for various types of texts and arguments, contrastive vocabulary practice, and reading strategies. Skills for writing well-structured critical essays, giving effective presentations, and reading extensively as well as intensively.

OSPBER 28. German Opera. 4 Units.
This course is designed to provide an introduction to opera in general and German opera in particular. The syllabus is linked specifically to productions of German operas currently being presented at Berlin's opera houses. During class we will prepare ourselves for the various performances by discussing each work in detail, looking at the libretto, analyzing the relationship between music and text, listening to recordings, and reading secondary literature. We will also share our post-performance impressions. The principal aim of the course is informed appreciation of the genre of opera.

OSPBER 29. Topics in German Music and Culture. 3-5 Units.
Weimar Culture The recommended textbook for this independent study is Weimar Republic Sourcebook, ed. Anton Kaes (Berkeley: U of California P, 1994), an excellent collection of contemporaneous texts that is still in print and available as a reasonably priced paperback. Topics for particular study could include "expressionism," "phenomenology," "Neue Sachlichkeit," the Bauhaus, "epic theater," proletarian art, and early German cinema, more or less following the organization of the Sourcebook. The syllabus will be tailored to any relevant cultural events in Berlin and neighboring cities planned for the quarter in question. Students will be encouraged to base their written projects on these events and on research at local archives, such as the Deutsche Kinemathek and the Bauhaus-Museum. Trips to institutions in other cities (Dessau, Weimar, etc.) could also be considered. Primarily in English, but some topics might require German. n nThe Symphony Material covered in this independent study could be adjusted to the student's interest and knowledge, depending on his/her level of musical literacy. He/she could focus on cultural history or on more technical, analytical issues. The aim will be to trace the history of the genre from its roots in the early 18th century to the present day using mainly works from the established repertory as examples. Visits to live performances in Berlin may also be included. n nBeethoven in German Culture Following last year's elections in Germany, the draft coalition contract included the following statement: "The 250th birthday of Ludwig van Beethoven in 2020 offers excellent opportunities for profiling German culture at home and abroad. Preparing for this important anniversary is thus of national concern." How and why did Beethoven become so crucially important in German culture? In trying to answer this question, the course will begin with a survey of Beethoven's life and works, and then focus on his legacy via key moments in reception history. Primarily in English, but some topics might require German.

OSPBER 30. Berlin vor Ort: A Field Trip Module. 1 Unit.
The cultures of Berlin as preserved in museums, monuments, and architecture. Berlin's cityscape as a narrative of its history from baroque palaces to vestiges of E. German communism, from 19th-century industrialism to grim edifices of the Sachsenhausen concentration camp.

OSPBER 31. Ways of Hearing: Exploring Berlin Through its Music. 1 Unit.
Introduction to the diverse Berlin music scene and its interwoven roots, exploring the intimate connections between music and German identity. Why music of all kinds is of such profound importance in Germany and how the German musical tradition has influenced the entire world and has, in turn, integrated impulses from many different cultures. Enrollment limited.

OSPBER 40M. An Intro to Making: What is EE. 5 Units.
Is a hands-on class where students learn to make stuff. Through the process of building, you are introduced to the basic areas of EE. Students build a "useless box" and learn about circuits, feedback, and programming hardware, a light display for your desk and bike and learn about coding, transforms, and LEDs, a solar charger and an EKG machine and learn about power, noise, feedback, more circuits, and safety. And you get to keep the toys you build. Prerequisite: CS 106A.

OSPBER 50M. Introductory Science of Materials. 4 Units.
Topics include: the relationship between atomic structure and macroscopic properties of man-made and natural materials; mechanical and thermodynamic behavior of surgical implants including alloys, ceramics, and polymers; and materials selection for biotechnology applications such as contact lenses, artificial joints, and cardiovascular stents. No prerequisite.

OSPBER 60. Cityscape as History: Architecture and Urban Design in Berlin. 5 Units.
Diversity of Berlin's architecture and urban design resulting from its historical background. Architect Ludwig Mies van der Rohe and his artistic ancestors. Role of the cultural exchange between Germany and the U.S. Changing nature of the city from the 19th century to the present.

OSPBER 64. Film and Writing. 3 Units.
German culture through film. Sensitivity for film structure through creative writing tutorials and screening workshops. Composition and narrative structure (storyline, suspense, character development). Screen-writing exercises.

OSPBER 66. Theory from the Bleachers: Reading German Sports and Culture. 3 Units.
German culture past and present through the lens of sports. Intellectual, societal, and historical-political contexts. Comparisons to Britain, France, and the U.S. The concepts of *Körperkultur, Leistung, Show, Verein,* and *Haltung*. Fair play, the relation of team and individual, production and deconstruction of sports heroes and heroines, and sports nationalism. Sources include sports narrations and images, attendance at sports events, and English and German texts. Will be taught in German if there are enough students with sufficient knowledge of German.

OSPBER 70. The Long Way to the West: German History from the 18th Century to the Present. 4-5 Units.
Battles still current within Germany's collective memory. Sources include the narrative resources of museums, and experts on the German history in Berlin and Potsdam. Field trips.

OSPBER 71. EU in Crisis. 4-5 Units.
Challenges confronting Europe as a whole and the EU in particular: impact of the sovereign debt crisis of the Eurozone, mass migration, external and internal security challenges, as well as political and social needs for reform. How the EU and its members respond and if the opportunities of these crises are constructively used for reform - or wasted (Crisis = Danger + Opportunity). Analyse institutions, interests and competing narratives to explain the current situation in Europe. Excursion to other European capital to get a non-German perspective on the crises.

OSPBER 74. Politics and Organization of Sport in Germany and the US. 4 Units.
Sport as an entry point for thinking about social dynamics and about broad debates about morality and ethics that are raised by ongoing social change. Issues related to sport as a national-level pursuit. How do nations use sport to promote their agendas, both among their own citizens and elsewhere? How do nations intervene to promote the performance of individual athletes? How else do they seek to exert their influence on sport outcomes? With Berlin as our backdrop, pursue these questions by considering three cases in detail: the 1936 Berlin Olympics, East German sport in the 1970s and 1980s, and German soccer today.

OSPBER 77. "Ich bin ein Berliner" Lessons of Berlin for International Politics. 4-5 Units.
History and theoretical concepts of International Relations, taking advantage of Berlin's unique history. Topics include: balance of power system, the era of total war, the East-West conflict, and the age of globalization, connecting these international political phenomena to sites and features of historical and contemporary Berlin. Core issues and theories of International Relations positioned in relation to the social and political history of Berlin, offering both a knowledge of Berlin as a global city of the twentieth century, and an understanding of International Relations through concrete examples.

OSPBER 79. Political Economy of Germany in Europe: an Historical-Comparative Perspective. 4-5 Units.
Political economy of Germany with special emphasis on contemporary issues. German political economy in the broader context of European integration, with some comparison with the U.S. model of economic and monetary integration. Assess, in comparative perspective, the specifics of the German economy embedded in Europe. How did Germany manage to become third export economy in the world? What is the role of government in its economic success?.

OSPBER 82. Globalization and Germany. 4-5 Units.
Main channels of globalization¿movement of capital, goods, people and ideas¿and their history. Arguments in favor and against economic integration and relationship between globalization and domestic political processes. Key industries of the German export economy; how globalization relates to current debates on migration and social policy. Germany's position in the European Union, as well as the world economy; Germany and its role in future globalization.

OSPBER 83. Refugees and Germany. 3-4 Units.
History and lived experience of refugees, both those who have fled from and to Germany, in the twentieth and twenty-first century. Visits to relevant sites in Berlin, meetings with refugees and experts on this topic, and readings to provide context. Participants write a journal; option for creative writing, either fiction or creative non-fiction.

OSPBER 84. Berlin and the Sociological Imagination: Special Topics. 1-2 Unit.
Independent study on social science and history topics giving students the opportunity to pursue a specific, sustained inquiry during their time in Berlin. This can include topics related to Berlin today, during the Cold War, in Nazi Germany, during the Weimar Republic, or other times, and can look specifically at aspects of German science, business, culture, or politics.

OSPBER 85. Topics in Social Psychology. 1-2 Unit.
Students may choose from the following topics: social psychology of stigma, diversity, and intergroup relationships. Regular meetings to review progress.

OSPBER 86. The Integration of Refugees in Europe: German Education Settings. 3 Units.
Experiences of refugees as they enter German secondary and post-secondary education settings. Using a social-psychological lens, learn how refugees understand their experiences in German schools and interactions with native students and teachers; how they are seen and treated; barriers to better relationships and outcomes; and how these can be overcome. Learn from popular commentary reports; scholarly writings from social-psychology and related fields on diversity, bias, belonging, and psychologically "wise" interventions. Experiential learning opportunities, including conversations with refugee students and educators working with refugees.

OSPBER 88. RELIGION & THE THIRD REICH. 4 Units.
This course investigates the role of established religion and new religious ideologies in Nazi Germany. Students learn about religious ideologies employed by the Nazis in service of fascism (paganism, occultism, and "Positive Christianity") and the policies they implemented to promote their nationalistic vision and absolutist politics, ranging from Gleichschaltung, to the Reich Concordat Treaty with the Vatican, to the Final Solution. Students also study the impact of these policies on German Protestants, Catholics, Jews, and other religious minorities, and about the range of responses that Nazi religious propaganda and programs evoked, from accommodation to cooperation to resistance. The course facilitates this investigation in three ways: (1) discussion of common readings and video content in a weekly seminar setting; (2) regular local site visits for experience learning; (3) frequent, short written reflection in the form of responses to readings, video content, and site visits (Academic Journal).

OSPBER 93. Empowering Women in STEM Fields. 1-3 Unit.
Empowering Women in STEM Fields, Origins of Modern Science, or Impact of Migrants and Refugees on German Society.

OSPBER 99. German Language Specials. 1-10 Unit.
May be repeat for credit.

OSPBER 101A. Contemporary Theater. 5 Units.
Texts of plays supplemented by theoretical texts or reviews. Weekly theater visits and discussions with actors, directors, or other theater professionals. In German. Prerequisite: completion of GERLANG 3 or equivalent.

OSPBER 104. Berlin University Lecture Series 1. 1 Unit.
May be repeat for credit.

OSPBER 105. Berlin University Lecture Series 2. 1 Unit.
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OSPBER 126X. A People's Union? Money, Markets, and Identity in the EU. 4-5 Units.
The institutional architecture of the EU and its current agenda. Weaknesses, strengths, and relations with partners and neighbors. Discussions with European students. Field trips; guest speakers.

OSPBER 174. Sports, Culture, and Gender in Comparative Perspective. 3-5 Units.
Theory and history of mass spectator sports and their role in modern societies. Comparisons with U.S., Britain, and France; the peculiarities of sports in German culture. Body and competition cultures, with emphasis on the entry of women into sports, the modification of body ideals, and the formation and negotiation of gender identities in and through sports. The relationship between sports and politics, including the 1936 Berlin Olympic Games. In German. Prerequisite: completion of GERLANG 3 or equivalent.

OSPBER 198D. Humboldt Universitat: Humanities 2. 2-3 Units.
Course may be repeated for credit.

OSPBER 198F. Humboldt Universitat: Social Sciences 2. 2-3 Units.
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OSPBER 198H. Freie Universitat: Humanities 3. 2-3 Units.
Course may be repeated for credit.

OSPBER 199A. Directed Reading A. 2-4 Units.
Course may be repeated for credit.

OSPBER 199B. Directed Reading B. 2-3 Units.
Course may be repeated for credit.

OSPBER 199C. Directed Reading C. 1-3 Unit.
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OSPBER 199D. Humboldt Universitat: Humanities. 2-3 Units.
Course may be repeated for credit.

OSPBER 199F. Humboldt Universitat: Social Sciences. 2-3 Units.
Course may be repeated for credit.

OSPBER 199G. Freie Universitat: Social Sciences 1. 2-3 Units.
Course may be repeated for credit.

OSPBER 199H. Freie Universitat: Humanities 1. 2-3 Units.
Course may be repeated for credit.

OSPBER 199J. Freie Universitat: Natural Sciences 1. 2-3 Units.
Course may be repeated for credit.

OSPBER 199K. Freie Universitat: Social Sciences 2. 2-3 Units.
Course may be repeated for credit.

OSPBER 199L. Freie Universitat: Humanities 2. 2-3 Units.
Course may be repeated for credit.

OSPBER 199M. Freie Universitat: Natural Sciences 2. 2-3 Units.
Course may be repeated for credit.

Overseas Studies in Cape Town Courses

OSPCPTWN 10. Climate Change and Political Violence. 4 Units.
Policymakers and scholars are increasingly interested in whether climate change could increase the risk of political instability, including violent conflicts within and between countries. In this seminar, we explore such questions as: How could the expected effects of climate change make civil or international conflicts more likely? What evidence is there that environmental factors contribute to political violence, both historically and today? What regions or countries are most at risk from these challenges, and why? In addition to addressing the human and social impacts of climate change, topics include what causes political violence within and between countries and how we can assess the contribution of different risk factors. In addition, methods and data that scholars use to explore the link between climate and conflict.

OSPCPTWN 11. Public Health Service in Diverse Communities. 2-4 Units.
Guidance in becoming an effective health educator while making a contribution to a local community through teaching. Work in a community on a weekly basis to learn about the community, develop culturally appropriate educational material and then help deliver health education on a topic of choice in one of the following areas of focus: Culturally sensitive motivational interviewing for health behavior change; Sexually transmitted diseases and prevention; Teaching nutrition appropriate to various patient populations; Cardiovascular disease and risk reduction.

OSPCPTWN 14. Academic Internship. 4 Units.
Opportunity for students to pursue their specialization in an institutional setting such as a school, research institute, university, NGO, ICT4D organizations, or museums/art galleries. Engage with selection of readings relevant to the context of internship, meet weekly with the Engaged Learning Coordinator in small groups, attend group seminars, and complete assignments set by the instructors. Program culminates with a symposium, where students present their internship projects. Units determined by the number of hours per week at the internship. Prerequisite: consultation with BOSP Cape Town Engaged Learning Coordinator to develop internship that links field of study to practical experience and reflection.

OSPCPTWN 19. Understanding Liberation Struggles: The US Civil Rights & South African Anti-Apartheid Movements. 4 Units.
Two of the most consequential social movements of the 20thcentury are the African-American Freedom Struggle in the U.S. and the Anti-Apartheid Movement in South Africa. There are extensive literatures on both movements, but rarely have these two movements been studied comparatively. What are the similarities and differences between thetwo struggles? And how well do current theories of social movement origins account for the two movements? In this course, we will review the history of the two movements and then compare their emergence, subsequent development, and ultimate impact through the lens of social movement theory. We will then bring the course to a close with a sobering look at the legacies of both movements as well as the state of contemporary racial politics in the U.S. and South Africa.

OSPCPTWN 26. Topics in Organizations and Management. 1-3 Unit.
Students my choose from the following topics: Culture and Cultural Differences; Global Work; Navigating Diverse Teams; Organizations and Management; The Future of Work. Weekly meetings to review progress.

OSPCPTWN 30. Introduction to Contemporary Issues in South Africa. 2 Units.
This compulsory course provides a brief introduction to social issues in contemporary South Africa. It explores the impact of historical legacies in a post-Apartheid context. Drawing from a range of disciplines, this course provides insights into the form and content of South Africa's socio-political-historic and economic landscapes.

OSPCPTWN 35. In and Out of the Margins: The Plays of Athol Fugard. 4 Units.
This seminarfocuseson the plays of Athol Fugard, the most well-known, influential, and accomplished of South African playwrights. His innovative dramatic style (drawing orignally on improvisation, Brecht, and Greek tragedy,before shifting into realistic situations and dialogue);his apartheid-challenging collaborations with black South African theater artists (especially Zekes Mokei, John Kani, and Winston N'Tshona);and his extraordinarily long career (over the past sevendecades) makehis work of particular interest to students of history, theater, and politics. Through Fugard's plays, students confront signifcant issues in apartheid and post-apartheid South Africa. Set in the confines of the theater, these confrontations paradoxically generate a fuller engagement with the issues than we often get from accounts in the disciplines of history orpolitcal science. As Picasso once said, "Art is the lie that tells the truth," and Fugard's theater tries to do that. In studying his plays, students will learn a different kind of truth about social and historical realities that have faced South Africans over the past six decades.

OSPCPTWN 36. The Archaeology of Southern African Hunter Gatherers. 4 Units.
Archaeology, history and ethnography of the aboriginal hunter gatherers of southern Africa, the San people. Formative development of early modern humans and prehistory of hunters in southern Africa before the advent of herding societies; rock paintings and engravings of the subcontinent as situated in this history. Spread of pastoralism throughout Africa. Problems facing the descendants of recent hunter gatherers and herders in southern Africa, the Khoisan people.

OSPCPTWN 38. Genocide: African Experiences in Comparative Perspective. 3-5 Units.
Genocide as a major social and historical phenomenon, contextualized within African history. Time frame ranging from the extermination of indigenous Canary Islanders in the fourteenth and fifteenth centuries to more recent mass killings in Rwanda and Darfur. Emphasis on southern African case studies such Cape San communities and the Herero people in Namibia. Themes include: roles of racism, colonialism and nationalism in the making of African genocides. Relevance of other social phenomena such as modernity, Social Darwinism, ethnicity, warfare and revolution. Comparative perspective to elucidate global dimensions.

OSPCPTWN 42. White South-African Writers. 1-3 Unit.
I would be thrilled to work with students on an independent study that addressed the work of white South-African writers whose fiction (and in some cases their political activism) challenged the South African apartheid government. I would imagine a directed reading of white South-African novelists ¿Alan Paton, Nadinne Gordimer, and J.M. Coetzee¿whose work (and in some cases whose lives) constituted resistance to apartheid. The many possibilities include Alan Paton's Cry, The Beloved Country(a new film adaptation, starring Mark Rylance and Johnny Depp, is set to be released this year) and Ah, but Your Land is Beautiful; Nadinee Gordimer's The Conservationist, Occasion for Loving, The Burgher's Daughter, Get a Life, and The Pickup(2001); J.M. Coetzee Waiting for the Barbarians,Disgrace, The Life & Times of Michael K, and essays from White Writing. Interested students could undertake reading and discussing works by a single author, or a combination of the titles listed above by different writers.

OSPCPTWN 45. Transitional Justice and Transformation Debates in South Africa. 4 Units.
Exploration of transitional justice through critical discussion of contemporary South Africa. Conflicting perspectives of the South African transition through an exploration of the creation of the "rainbow nation" as well as discussions over whether a denial of justice for apartheid-era crimes prevails. Decisions made post-apartheid over how best to confront the large-scale human rights abuses of the past, including South Africa's recent past through the lens of the "pillars" of transitional justice: truth seeking, criminal justice, reparations and institutional reform. Issues of structural violence and the legacies of apartheid in order to question to what extent we can consider South Africa to have realised the promises of its transition.

OSPCPTWN 55. Arts of Change. 3 Units.
How might we understand the creative arts in South Africa in terms of their variety and impact? What social issues do they reflect? What impact might they yet have? Students will have the opportunity for a related practicum. Course must be taken for a minimum of 3 units to satisfy a Ways requirement.

OSPCPTWN 65. Preparation for Senior Capstone Project. 4 Units.
The course allows any student to design an independent research or synthesis project that will serve as the basis for some form of senior capstone project. These have included honors theses, senior projects, senior synthesis projects and honors in the arts. This goal will be accomplished through a cumulative, series of assignments. Each student will choose a research topic, narrow it to a specific research question, review the existing literature related to their question, develop a research plan to answer their question, and write a detailed proposal suitable for submission to either the UAR Major or Small Grants competitions.

OSPCPTWN 67. ICT4D: An Introduction to the Use of ICTs for Development. 3 Units.
Overview of selected ICT4D initiatives in Africa and South Africa. Engage critically with the optimism that follows technology invention to evaluate context and the digital knowledge gap. Themes such as the notion of technological colonization, co-design, SDG ICT agenda, policy and frameworks and other fundamentals in the field. Three-day block course with 4 mini-seminars and discussion groups each day.

OSPCPTWN 78. Postcolonial Modernist Art Movements in Africa. 3 Units.
Introduction to the complexities and contradictions of 'modernity' and 'modernism(s)' in postcolonial Africa. With a focus on ideology-driven interdisciplinary artistic movements in Senegal, Nigeria, Sudan, Congo, Egypt, Ethiopia and South Africa, examine various schools of thought that were part of modern consciousness that characterised the independence decades. Role that art centres, workshops, collectives and mission schools played in histories of European expansion and colonialism. Debates regarding notions of 'appropriation,' 'natural synthesis' and 'assimilation' interpreted in the context of postcolonial theory. Different modes of production and methodological approaches.

OSPCPTWN 83. From Cape to California: Settler Colonialism and the Genocide of Indigenous Peopes. 3-5 Units.
Two major social and historical phenomena: genocide and settler colonialism, contextualized within the broad contours of world history as well as the making of European colonialism and Western global domination from the start of European colonial expansion in the fifteenth century to the twentieth century. Emphasis on developing global comparative perspectives focusing on southern African, North and Latin American, as well as Australian case studies. Histories of the place from which students come, California, as well as the place they currently find themselves, the Cape, and the links both have to settler colonialism and the genocidal destruction of indigenous peoples.

OSPCPTWN 85. Diversity, Inclusion and Social Justice in Cape Town. 4 Units.
Implicit bias and the value of diversity and inclusion in our society; understanding of bias (explicit vs implicit) and the power that bias has in our every-day lives given implicit bias has such a profound effect on our attitudes, behaviors, and decision making. Students learn of some of their own biases, how they can mitigate them, and through study and visiting local communities and historical sites, appreciate the value of social justice. Power that diversity has in the composition of teams and in society and the importance for all of us to restore and maintain social justice so there can be peace both within and among nations.

Overseas Studies in Florence Courses

OSPFLOR 1A. Accelerated First-Year Italian, Part 1. 5 Units.
Accelerated sequence that completes first-year Italian in two rather than three quarters. For students with previous knowledge of Italian or with a strong background in another Romance language. Prerequisite: advanced-level proficiency in another Romance language Prerequisite: Placement .

OSPFLOR 1F. First-Year Italian, First Quarter. 5 Units.
All-in-Italian communicative and interactive approach. Emphasis is on the development of appropriate discourse in contemporary cultural contexts. Interpretation of authentic materials, written and oral presentations, and plenty of conversational practice. Language lab, multimedia, and online activities.

OSPFLOR 2A. Accelerated First-Year Italian, Part 2. 5 Units.
Continuation of ITALLANG 1A. Accelerated sequence that completes first-year Italian in two rather than three quarters. For students with previous knowledge of Italian or with a strong background in another Romance language. Prerequisite: Placement Test, ITALLANG 1A or consent of instructor. Fulfills the University language requirement.

OSPFLOR 2F. First-Year Italian, Second Quarter. 5 Units.
Continuation of ITALLANG 1. All-in-Italian communicative and interactive approach. Emphasis is on the development of appropriate discourse in contemporary cultural contexts. Interpretation of authentic materials, written and oral presentations, and plenty of conversational practice. Language lab, multimedia, and online activities. Prerequisite: Placement Test, ITALLANG 2.

OSPFLOR 3F. First-Year Italian, Third Quarter. 5 Units.
Continuation of ITALLANG 2. All-in-Italian communicative and interactive approach. Emphasis is on the development of appropriate discourse in contemporary cultural contexts. Interpretation of authentic materials, written and oral presentations, and plenty of conversational practice. Language lab, multimedia, and online activities. Prerequisite: Placement Test, ITALLANG 2 or consent of instructor. Fulfills the University language requirement.

OSPFLOR 11. Film, Food and the Italian Identity. 4 Units.
Food in Italian cinema staged as an allegory of Italy¿s social, political and cultural milieu. Intersections between food, history and culture as they are reflected in and shaped by Italian cinema from the early 1900s until today. Topics include: farmer's tradition during Fascism; lack of food during WWII and its aftermath; the Economic Miracle; food and the Americanization of Italy; La Dolce Vita; the Italian family; ethnicity, globalization and the re-discovery of regional culinary identity in contemporary Italy. Impact of cinema in both reflecting and defining the relationship between food and culture.

OSPFLOR 13. Galileo, Leonardo da Vinci, and the Scientific Revolution in Italy. 3 Units.
Italy was central to the Scientific Revolution during the Renaissance. The work of Galileo Galilei, Leonardo da Vinci, and others in Italy and across Europe, catalyzed the emergence of modern science, with profound changes in our worldview. The work of these Italians contributed to the rise of the scientific method, the development of modern sciences (especially astronomy, biology, physics, and mathematics), and the study of human anatomy and medicine. Technologic innovations, such as the telescope, microscope, accurate timepieces, and the printing press, were also pivotal for the Scientific Revolution. In this course we will explore the emergence of science and technology during the Renaissance and their connections to modern day scientific practice and principles, with a focus on key Italian pioneers. We will take advantage of Florence's location to visit museums and sites, and better appreciate their contributions to scientific methods and thinking.

OSPFLOR 15. The Italy Around You: Society, Politics, the Arts and the Economy. 3 Units.
Today's Italy through a series of thematic lectures covering a wide range of subjects, from politics to contemporary art and from sexual mores to the Mafia. Nature of contemporary Italian society, insights into the economic challenges facing Italy, as well as keys to deciphering Italian politics, and the elements required to make sense of what can be read, seen and heard in the Italian media. Assesing modern Italian culture in terms of the society that has produced it.

OSPFLOR 15M. Accademia del Maggio Musicale Fiorentino. 3 Units.
Individual instrumental or voice lessons with a private instructor at the Accademia del Maggio Musicale Fiorentino. Repeatable for credit.

OSPFLOR 16. Silicon Valley: The Modern Day Rebirth of Renaissance Florence. 3 Units.
Over the last few decades, Silicon Valley has originated a remarkable period of innovation, wealth creation, and impact on the world. Many describe this golden age of technology as the modern day rebirth of Renaissance Florence. But how could lightning strike twice, not to mention 6000 miles away and 700 years apart? What combination of elements enabled two relatively small valleys to rise up and change the world?.

OSPFLOR 19. Florence for Foodies: Discovering the Italian Culinary Tradition. 1 Unit.
A look at modern Florentine and Italian cuisine in light of historical heritage and foreign influences. Hands-on participation in three cooking classes with professional chefs. Understanding of the past and present of Italian food culture and its most important governing principles: the Mediterranean Diet, fresh and local ingredients, the market culture, and the Slow Food philosophy.

OSPFLOR 21F. Accelerated Second-Year Italian, Part A. 5 Units.
Review of grammatical structures; grammar in its communicative context. Listening, speaking, reading, and writing skills practiced and developed through authentic material such as songs, newspaper articles, video clips, and literature. Insight into the Italian culture and crosscultural understanding. Prerequisite: one year of college Italian if completed within two quarters of arriving in Florence, or ITALLANG 21.

OSPFLOR 22F. Accelerated Second-Year Italian Part B. 5 Units.
Grammatical structures, listening, reading, writing, speaking skills, and insight into the Italian culture through authentic materials. Intermediate to advanced grammar. Content-based course, using songs, video, and literature, to provide cultural background for academic courses. Prerequisite: ITALLANG 21 within two quarters of arriving in Florence or ITALLANG 21A or OSPFLOR 21F.

OSPFLOR 25. Photographic Interventions in Contemporary Fine Art Practice. 4 Units.
This course offers a fluid approach to image making, understanding photography as an art form that encompasses multiple approaches including performative, sculptural, pictorial and cinematographic practices. While introducing students to a series of printing techniques and photographic processes along with studio lighting and digital postproduction methods, this course will encourage visual experimentation, theoretical contextualisation, and active research processes. Students will be guided through the processes of developing a critical framework for their practice through tutorials and through theory seminars mapping some of the major developments and theoretical concerns within contemporary practice. They will also be shown researching methods to reach relevant audiences: from physical installations, exhibitions and publications, to new media and the web.

OSPFLOR 26. Economics of the EU. 5 Units.
Discussion and analysis of the European Crisis, which started in Greece in 2009 and continues. Critical comprehension of the inner functioning of the European Union's economics, politics and institutions, understanding of the reasons for the crisis and the solutions undertaken. Comparative analysis with the United States to show the complexity entailed in having one monetary policy and nineteen distinct national budgets. Discussion of key challenges in Europe and next steps in the progress of European integration.

OSPFLOR 29. The People Amid the Monuments. 3 Units.
From both chronological and thematic approaches, examine the efforts of English-speaking writers (and, latterly, film-makers) to get to grips with Italy and the Italians. Beginning in the England of Queen Elizabeth and ending at the present day, cover a variety of themes such as Italy's historical role as a haven for the LGBT community and the modern interest in neglected southern Italy. Illustrative multimedia content with visits to sites of relevance in Florence.

OSPFLOR 31F. Advanced Oral Communication: Italian. 3 Units.
Refine language skills and develop insight into Italian culture using authentic materials. Group work and individual meetings with instructor. Minimum enrollment required. Prerequisite: ITALLANG 22A, 23 or placement.

OSPFLOR 34. The Virgin Mother, Goddess of Beauty, Grand Duchess, and the Lady: Women in Florentine Art. 4 Units.
Influence and position of women in the history of Florence as revealed in its art. Sculptural, pictorial, and architectural sources from a social, historical, and art historical point of view. Themes: the virgin mother (middle ages); the goddess of beauty (Botticelli to mannerism); the grand duchess (late Renaissance, Baroque); the lady, the woman (19th-20th centuries).

OSPFLOR 41. The Florentine Sketchbook: A Visual Arts Practicum. 4 Units.
The ever-changing and multifaceted scene of contemporary art through visual and sensorial stimulation. How art is thought of and produced in Italy today. Hands-on experience. Sketching and exercises on-site at museums and exhibits, plus workshops on techniques. Limited enrollment.

OSPFLOR 42. Academic Internship. 1-5 Unit.
Mentored internships in fashion, education, engineering, the fine arts, health, media, not-for-profit organizations, and publishing (among others). May be repeated for credit.

OSPFLOR 45. Europe: The State of the Union. 2 Units.
Learn about, debate, and analyze the most pressing and critical issues that Italy and the EU are facing today. As former Prime Minister, and in current capacity as head of the Democratic Party, the instructor has been dealing with these issues firsthand for a number of years. On questions such as the current migrant/refugee crises, issues of citizenship and national identity, the Euro, and Brexit (just to name a few), the approach will be informed by political and economic theories and will be presented in an objective academic context; the instructor will also share not only his take on these questions but also his experiences in addressing them as an insider.

OSPFLOR 46. Images of Evil in Criminal Justice. 5 Units.
Iconographic component of criminal law; reasons and functions of the visual representation of criminal wrongdoing. Historical roots of "evil typecasting;" consideration of its variations with respect to common law and civil law systems. Fundamental features of the two legal systems. Sources, actors, enforcement mechanisms of the criminal law compared; study of cases in the area of murder, sex offences, organized crime and terrorism. Different techniques of image typecasting highlighted and discussed. International criminal law, which takes the burden to describe, typecast and punish forms of "enormous, disproportionate evil," such as genocide and other mass atrocities.

OSPFLOR 47. Faith, Science, and the Classical Tradition in Renaissance Florence. 4 Units.
The Renaissance was a pivotal period in the history of European thought when the Christian religious worldview was challenged by the recovery of classical secular philosophy. In particular, Stephen Greenblatt's Pulitzer-prize-winning The Swerve argues that the rediscovery of Lucretius' On the Nature of Things reoriented European intellectual history toward modern scientific materialism.Readings from Renaissance philosophers and site visits to see the magnificent works of Florentine art will suggest a more complex interaction between religious experiences and secular thought. This course will aim to develop students' capacity for historical criticism, to enhance students' knowledge and appreciation of the philosophy and art of Renaissance Florence, and to illustrate how contemporary social science can be used to deepen our understanding of historical change.

OSPFLOR 48. Sharing Beauty in Florence: Collectors, Collections and the Shaping of the Western Museum Tradition. 4 Units.
The city's art and theories of how art should be presented. The history and typology of world-class collections. Social, economic, political, and aesthetic issues in museum planning and management. Collections include the Medici, English and American collectors of the Victorian era, and modern corporate and public patrons.

OSPFLOR 49. On-Screen Battles: Filmic Portrayals of Fascism and World War II. 5 Units.
Structural and ideological attributes of narrative cinema, and theories of visual and cinematic representation. How film directors have translated history into stories, and war journals into visual images. Topics: the role of fascism in the development of Italian cinema and its phenomenology in film texts; cinema as a way of producing and reproducing constructions of history; film narratives as fictive metaphors of Italian cultural identity; film image, ideology, and politics of style.

OSPFLOR 50M. Introductory Science of Materials. 4 Units.
Topics include: the relationship between atomic structure and macroscopic properties of man-made and natural materials; mechanical and thermodynamic behavior of surgical implants including alloys, ceramics, and polymers; and materials selection for biotechnology applications such as contact lenses, artificial joints, and cardiovascular stents. No prerequisite.

OSPFLOR 51. Globalization and Social Divisions. 5 Units.
The course examines how social diversity and inequality are produced, understood, and enacted in the context of growing global integration. It will explore how existing social arrangements create and maintain social differences among people ¿ social class; race and ethnicity; age, gender and sexuality; citizenship and nationality ¿ and are influenced by cultural, economic and political processes that are increasingly spanning across borders. Analyzing the implications of global forces, relations, and institutions ¿ e.g. the media and cultural industry, tourism, religion, social movements and the human rights regime ¿ will help students understand why the social construction of diversity and inequality today should overcome the "methodological nationalism" that often characterizes the study of social divisions. nnInstructor: Paola Bonizzoni.

OSPFLOR 52B. Topics in Roman History. 1-3 Unit.
This independent study can focus on any facet of the social, cultural, economic, or political history of Rome. One suggestion, related to our autumn trip, would be Romans on the Bay of Naples including Pompeii and Herculaneum.

OSPFLOR 54. High Renaissance and Mannerism: the Great Italian Masters of the 15th and 16th Centuries. 4 Units.
The development of 15th- and early 16th-century art in Florence and Rome. Epochal changes in the art of Michelangelo and Raphael in the service of Pope Julius II. The impact of Roman High Renaissance art on masters such as Fra' Bartolomeo and Andrea del Sarto. The tragic circumstances surrounding the early *maniera:* Pontormo and Rosso Fiorentino and the transformation of early Mannerism into the elegant style of the Medicean court. Contemporary developments in Venice.

OSPFLOR 55. Academy of Fine Arts: Studio Art. 1-5 Unit.
Courses through the *Academia delle Belle Arti.* Details upon arrival. Minimum Autumn and Winter Quarter enrollment required; 1-3 units in Autumn. May be repeated for credit.

OSPFLOR 56. University of Florence Courses. 1-5 Unit.
May be repeated for credit.

OSPFLOR 58. Space as History: Social Vision and Urban Change. 4 Units.
A thousand years of intentional change in Florence. Phases include programmatic enlargement of ecclesiastical structures begun in the 11th century; aggressive expansion of religious and civic space in the 13th and 14th centuries; aggrandizement of private and public buildings in the 15th century; transformation of Florence into a princely capital from the 16th through the 18th centuries; traumatic remaking of the city¿s historic core in the 19th century; and development of new residential areas on the outskirts and in neighboring towns in the 20th and 21st centuries.

OSPFLOR 64. Colonial Heritage, Euro-Mediterranean Relations, Migrations, Multiculturalism. 5 Units.
Analysis of colonialism during the 19th century, with particular reference to French colonialism, followed by discussion of the influence of the colonial heritage on current African and Euro-Mediterranean relations. Consideration from the perspective of colonial law. In addition, discussion of three aspects of Euro-Mediterranean relations: 1) the period from the establishment of the European Economic Community (EEC) up until the beginning of the "Arab Spring"; 2) the new EU policies after the uprisings of the "Arab Spring", and 3) the new EU perspectives after the failure of the "Arab Spring" with the exception of Tunisia. Review of the European Neighbourhood Policy (ENP) in 2011 and in 2015 after the end of the "Arab Spring" revolts.

OSPFLOR 65. Exclusion/Inclusion Processes of Migrants in Italian Society. 5 Units.
Analysis of the processes of exclusion/inclusion of migrants into Italian society, in a country which has recently become a place of immigration from abroad. It is divided into five parts: 1. Migration theories. 2. Migration policies. 3. Labour market and social mobility. 4. Social representations of migrants. 5. Migration and criminality. Field trips to NGO's.

OSPFLOR 67. The Celluloid Gaze: Gender, Identity and Sexuality in Cinema. 4 Units.
Film in the social construction of gender through the representation of the feminine, the female, and women. Female subjects, gaze, and identity through a historical, technical, and narrative frame. Emphasis is on gender, identity, and sexuality with references to feminist film theory from the early 70s to current methodologies based on semiotics, psychoanalysis, and cultural studies. Advantages and limitations of methods for textual analysis and the theories which inform them.

OSPFLOR 69. Abstract Art: Creativity, Self-Expression and Depicting the Unimaginable. 4 Units.
Overview of the birth and evolution of abstract art with visual background necessary to produce works of art free of a realistic representation. Movements and trends in abstract art; experimentation with different media and techniques. Enrollment limited.

OSPFLOR 70. The Value of Life: Philosophical Foundations. 4 Units.
Analysis of the value of life from a philosophical point of view, presenting lay foundations of bioethics. Three main steps. 1) The notion of life, which can be seen from different angles and with diverse intentions; comparative analysis of plural interpretations of the notion of life, economic, scientific, religious, and the limits of the notion itself. 2) Ethics as a theory of value, the metaphysical background of life, and the structure of bioethics; a vision of life as a "critical choice", which implies respect for life and individual responsibility; some non-Western ideas on the value of life. 3) Practical issues such as the meaning of death, abortion and euthanasia.

OSPFLOR 71. A Studio with a View: Drawing, Painting and Informing your Aesthetic in Florence. 4 Units.
Recent trends in art, current Italian artistic production, differences and the dialogue among visual arts. Events, schools, and movements of the 20th century. Theoretical background and practical training in various media. Work at the Stanford Center and on site at museums, exhibits, and out in the city armed with a sketchbook and camera. Emphasis is on drawing as the key to the visual arts. Workshops to master the techniques introduced. Limited enrollment.

OSPFLOR 76. Sociology of Migrations. 5 Units.
Conceptual tools to understand the social phenomena of international migrations; discussion of the most relevant theoretical approaches in the field, e.g. assimilation, transnationalism, and migration regimes, among others.Crucial topics: discussion of the causes of migration and the distinction between different types of migrants, analysis of current migration policies and the related issues of borders, asylum, irregular migration and possible paths toward legalization. Also, reaction of receiving societies towards migration, with the related increasing problems of racism, discrimination and the rise of far-right parties. Analysis of North-American, North-Western European and Southern European cases with particular attention to the Italian case.

OSPFLOR 78. The Impossible Experiment: Politics and Policies of the New European Union. 5 Units.
Institutional design of EU, forthcoming changes, and comparison of the old and new designs. Interactions between the EU, member states, organized interests, and public opinion. Major policies of the EU that affect economics such as competition or cohesion policies, market deregulation, and single currency. Consequences of the expansion eastwards. The role of institutions as a set of constraints and opportunities for the economic actors; relationships between political developments and economic change in the context of regional integration; lessons for other parts of the world.

OSPFLOR 81. Communism. 5 Units.
History of communism since 1917 as a factor in the making of the global world. Focus of the course will be on the intersections of communism with the colonial and post-colonial world, by analysing strategies, influences, and connections between the Soviet Union, Europe, and the Third World.
Same as: s

OSPFLOR 84. Entrepreneurship and the Renaissance. 4 Units.
This course is intended for sophomores, juniors, and seniors of all majors. With an emphasis on the wisdom of ethical behavior,it is a rigorousintroduction toboth the entrepreneurial process andthe role of the individual and teams within high-growthventures. Case studies, lectures, workshops and projects cover ventures involving science and technology, withspeacial attentionon both the historical significance of the Renaissance and today's opportunity in Italy. No prerequisites are necessary. This course is based upon Engineering 145(http://e145.stanford.edu), which was first offered in 1999 and now given multipletimes each year at Stanford.

OSPFLOR 96. Leonardo!. 3 Units.
In this 500th anniversary year of the death of Leonardo this class will be an immersive and interactive experience with this most remarkable and complex artist and thinker. Focus on Leonardo's insights into human perception, tapping the very sounds and sights of the city that drove his fascination and inspired his work. Leonardo's conviction that the soul was the point of convergence of all the senses, prompted him to ponder how sensory information is received and processed. His writings foreshadow gestalt psychology and psychoacoustics centuries before these were studied by scientists. Leonardo's fascination with perception and emotion are manifest in his art and in his inventions. Together we will explore the city that inspired da Vinci's work, and delve into the deep implications of some of his insights and inventions as they effect contemporary art, science and life.

OSPFLOR 99. Independent Study in Medicine and Health. 1-2 Unit.
Students will develop an independent project, meeting weekly with the instructor. Potential topics could include: a) health care systems in Italy and the United States; b) topics in the history of science or medicine; c) aspects of the epidemiology, prevention, or treatment of heart disease; d) nutrition and health; and e) evaluation of medical technology.

OSPFLOR 111Y. From Giotto to Michelangelo: The Birth and Flowering of Renaissance Art in Florence. 4 Units.
Lectures, site visits, and readings reconstruct the circumstances that favored the flowering of architecture, sculpture, and painting in Florence and Italy, late 13th to early 16th century. Emphasis is on the classical roots; the particular relationship with nature; the commitment to human expressiveness; and rootedness in the real-world experience, translated in sculpture and painting as powerful plasticity, perspective space, and interest in movement and emotion.

OSPFLOR 115Y. Building the Cathedral and the Town Hall: Constructing and Deconstructing Symbols of a Civilization. 4 Units.
The history, history of art, and symbolism of the two principal monuments of Florence: the cathedral and the town hall. Common meaning and ideological differences between the religious and civic symbols of Florence's history from the time of Giotto and the first Guelf republic to Bronzino and Giovanni da Bologna and the Grand Duchy.

OSPFLOR 199A. Directed Reading A. 1-4 Unit.
Course may be repeated for credit.

OSPFLOR 199B. Directed Reading B. 1-4 Unit.
Course may be repeated for credit.

OSPFLOR 199C. Directed Reading C. 1-5 Unit.
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Overseas Studies in Hong Kong Courses

OSPHONGK 21. China's Business Environment in Historical Perspective. 4 Units.
China's transition from a centrally planned company to a more market-oriented system has been a remarkable process of reform and opening up. Business in China has been accordingly transformed. This course discusses the evolution of business sector development in contemporary China during the recent decades. Using economic reforms as the overall framework, it combines institutional analyses with business histories and company-level case studies.

OSPHONGK 22. China's Financial Reforms - Problems and Perspectives. 4 Units.
This course examines the key aspects of China's institutional reform and political-economic development since the 1970s. It reviews the major policy controversies on China's system transition, based on leading research contributions from the academia, policy think tanks and international institutions. Students will gain a deeper understanding of why and how China has reformed; and to what extent China's experience may be generalized as a model for other developing countries.

OSPHONGK 23. China Under Mao. 4 Units.
Exploration of the history of Mao Zedong¿s years in power in the founding period of the People¿s Republic of China. Historical processes contributing to this era of turbulent elite politics, chaotic and often horrifically violent revolutionary political campaigns, and unprecedentedly vast state-directed restructuring of the economy, culture, and nearly all aspects of society and culture has been joined by an interest in the related human and natural costs, the lived experiences, and the diverse forms in which local societies at the grassroots so distant from party leaders adapted their own variations of life under Chinese socialism.

OSPHONGK 24. Urban China. 4 Units.
Socioeconomic, political, and cultural facets of urbanization with a regional focus on China. Critical observation and analysis of the process of urbanization and its lived experiences in the Chinese context. Comparative lessons from other regions for comparative understanding of the complex processes of urbanization across the globe. Critical investigation of urban issues ranging from land politics, urban planning, urban governance, to citizen rights, urban space, and urban culture. Overview of China's quest for modernity and its urban transformation since the late imperial era, followed by an interdisciplinary approach to examine China's unprecedented urban development in the post-reform era. Hands-on field trip in Hong Kong to take full advantage of Hong Kong as a global city.

OSPHONGK 25. Cultural History of China. 4 Units.
Multi-disciplinary approach to the study of Chinese cultural history conceived of as a succession of modes of rationality (philosophical, bureaucratic, and economic processes of rationalization). Focus on the moments of paradigm shift from one mode of rationality to another. For moment, examine cultural facts and artifacts¿thought, literature, ritual¿in relationship to changing social, political, and economic systems. This semester, focus on the emergence of modern China in the Song-Yuan (960-1368) and of today's China 1850 to the present. How the modern attack on religion, redefined as "superstition", led not only to religious reform movements but also to a society in which science and the nation became the primary value systems promoted by the state.

OSPHONGK 26. East Asian Film Genres in a Globalizing World. 4 Units.
Connections between different cinemas within East Asia and between East Asia and the rest of the world explored from a genre perspective. Hong Kong and Korean gangster movies, Chinese swordplay and Japanese samurai films, and horror films from Japan and Thailand as examples of the transnational circulation of genres, involving processes of both localization and globalization. Focus on three interrelated genres: the martial arts film, the Eastern Western and the film noir/crime film. Explore Hollywood-centered genre theory, trace complex webs of creative influences, and appreciate the sameness and difference that characterizes both genre films and our globalizing world. Make a short "genre film" for screening at the end of the term.

OSPHONGK 27. China and Regional Order. 4 Units.
This course looks at China's changing political, economic and security relationships in Asia through frameworks in the International Relations literature. It contextualizes China's external relationships across Asia-Pacific in the ongoing evolution and negotiation of Asian regional order and institutions in the aftermath of the Cold War, and argues that this context helps account for the objectives of and some apparent ambiguities and contradictions in Chinese foreign and security policy. Three parts: context and background; empirical view of developments involving China's international relationships in Asia; theoretical frameworks to evaluate China's relations with regional order.

OSPHONGK 28. An Introduction to the Development of Science and Technology in China. 4 Units.
Science and technology in China from antiquity to the present is surveyed through the study of selected topics in some depth. Particular emphasis is given to science and technology as a window to appreciate certain aspects of Chinese culture and history. Two important questions are explored through contrasting China with the West: the conditions for the development of modern science and the central role of science and technology in modernization.

OSPHONGK 29. The Rise of China in the Global Context I: Diplomacy, Trade, and Soft Power. 4 Units.
The "Rise of China" from the perspective of Global Governance, shedding light on its diplomatic, trade and cultural relations with others in the Global Community. Critical analysis of the transformation of Chinese foreign policies since the establishment of the People's Republic of China and the momentum behind this change of practices. Topics include: history and evolution of Chinese foreign policies; analytical framework of policy-making process in China, particularly in handling foreign and security affairs; foreign relations with both the developed and developing nations; booming economy and integration with the global economy; assessment of the rhetoric of "Peaceful Rise" and "Charm Offensive" with reference to the Confucius Institute.

OSPHONGK 30. Investigating Hong Kong Through Multidisciplinary Lens. 2 Units.
ntroduction to Hong Kong society with a particular focus on the social and cultural dynamics of contemporary Hong Kong. Some of the central questions include: What is so unique about Hong Kong? How do a Hong Kong in the past and some of the special features of the Hong Kong society contribute to a transforming China? Topics may include: (1) historical trajectory of Hong Kong; (2) identity formation: from migrants to local Hong Kong; (3) the making of Hong Kong: urban development as a case; (4) the paradise of capitalism and the Hong Kong miracle; (5) governance and politics; (6) foodways and heritage; (7) religion and folk beliefs; (8) the great transformation: Guangdong-Hong Kong-Macao Greater Bay Area initiatives.

OSPHONGK 32. Fintech and Entrepreneurship in China. 4 Units.
Introduction to the concepts essential to the entrepreneurial process and a look at the role of the individual and teams within high-impact ventures, intended for sophomores, juniors, and seniors of all majors. Case studies, lectures, workshops and mentor-guided team projects cover high-growth ventures involving technology, with special emphasis on the significance of entrepreneurship, blockchain/AI/ML related to financial innovation and opportunities in Hong Kong and China more broadly. Explore both financial innovation for high net worth as well as "bottom of the pyramid" individuals and ethical issues in startups. No prerequisites.

OSPHONGK 33. Comparative Analysis of Entrepreneurship and Innovation: Fintech in Hong Kong and Silicon Valley. 1-2 Unit.
Independent research and analysis of the historical, current, and future potential for high-growth entrepreneurship in Hong Kong, China and its surrounding region. How entrepreneurship in China compares to Silicon Valley and other similar innovation clusters today around the globe. Special emphasis on financial innovations such as bitcoin, blockchain, AI/ML applications in finance and insurance. Role of context with respect to entrepreneurship and innovation through direct contact with entrepreneurs, interviewing potential customers, professional investors, innovation education centers, policy makers, government officials, and any NGOs involved with entrepreneurship.

OSPHONGK 41. Introduction to Creative and New Media. 4 Units.
Introduction to the creative aspects of the mass media, media art, new media and popular culture. Enhance students' creative, aesthetic as well as intellectual ability to evaluate different media art forms and expression. Topics include art theory, aesthetics, theories on creativity, technical and commercial aspects of various forms of production and popular culture.

OSPHONGK 42. Gender and Sexuality in Contemporary Society. 4 Units.
Examination of gender and sexuality from a contemporary and regional perspective. Based on a cross-cultural perspective, read and analyze different meanings of gender and sexuality, and how these meanings are constructed. How gender relations and sexual politics are related with historical backgrounds, cultural heritage, market expansion, ideological shifts, and capitalist dynamics in a context of modernization campaigns and globalization processes. The topics of gender and sexuality interwoven with that of migration, work, family, popular culture, mass media, and consumerism.

OSPHONGK 43. Mainstream Chinese Philosophical Thought. 4 Units.
Introduction to the philosophical thought of Confucianism, Taoism, and Buddhism, to provide a deeper understanding of the roots of Chinese values and culture. As a cornerstone of Chinese culture, Confucianism contributes to the establishment of the human moral way by articulating a conception of humans as moral subjects. Taoism stresses the pursuit of an ideal life by understanding the changes of the universe, while Buddhism applies the concept of karma to show how the ultimate cause of human suffering lies in ignorance. Other Chinese philosophical thought such as Mohism, Legalism, and the School of Yin and Yang may be covered.

OSPHONGK 44. Medical Sociology. 4 Units.
From a sociological perspective, dissect issues such as conflicts between patients and doctors; safety of medical treatments and reliability of medical knowledge; inequality in health and longevity; and ever-increasing health care spending. Questions such as: What counts as illness? How do people understand illness? How does illness affect people's life? Who gets ill and why? What is the role of medical technology in fostering health? Why do doctors and patients have trouble communicating? How should health care systems be organized? Also examine some of these issues in the contexts of Chinese societies, such as China and Hong Kong with comparative perspectives.

OSPHONGK 45. Chinese Culture and Society. 4 Units.
An anthropological approach to China. Discussions concentrate on major cultural and social institutions of China, both traditional and contemporary, such as family, marriage, kinship, lineage and clan, economic system, religion and value orientation.

OSPHONGK 51. Beginner Putonghua/Mandarin Level 1. 8 Units.
Use of basic vocabulary and grammar; vocabulary introduced based on everyday conversations and daily usage. Focus on appropriateness in application and on fluency in communication through various kinds of speaking practice. Real life settings introduced such as shopping, introducing family members, asking directions, etc. Not equivalent to home campus courses. Also enroll in CUHK course # CLCP100G. Enrollment limited.

OSPHONGK 52. Beginning Putonghua/Mandarin Level 1 Upper. 8 Units.
Basic vocabulary and grammar through language tasks/activities and contextualized exercises. Real life settings such as shopping, introducing family members, asking directions, etc. In addition, build up abilities in presenting basic ideas in real life communication settings. Tasks like picture description, speaking topics and simple presentation adopted for training in presentation with various everyday settings. Not equivalent to home campus courses. Also enroll in CUHK course # CLCP101G. Enrollment limited.

OSPHONGK 53. Immediate Putonghua/Mandarin Level 2. 8 Units.
Intermediate course designed to familiarize students with the use of more vocabulary and grammar points. Vocabulary introduced based on everyday conversations and daily usage. Focus on appropriateness in application. Newly acquired vocabulary and grammar points developed through language tasks/activities and contextualized exercises in real life settings. Not equivalent to home campus courses. Also enroll in CUHK course # CLCP200G. Enrollment limited.

OSPHONGK 54A. Intermediate Putonghua/Mandarin Level 2 Upper: Communication in Context II. 4 Units.
An intermediate course designed to familiarize students with newly acquired vocabulary and grammar points through language tasks/activities and contextualized exercises in real life settings. Not equivalent to home campus courses. Also enroll in CUHK course# CLCP2233.

OSPHONGK 54B. Intermediate Putonghua/Mandarin Level 2 Upper: Basic Presentation Skills & Daily Situations II. 4 Units.
An intermediate course designed to help students improve their proficiency to communicate in authentic situations by integrating the newly acquired vocabulary items and grammar structures. Not equivalent to home campus courses. Also enroll in CUHK course# CLCP2253.

OSPHONGK 55A. Intermediate Putonghua/Mandarin Level 3: Application of Vocabulary and Grammar III. 4 Units.
An upper intermediate course designed to familiarize students with the use of newly acquired vocabulary and grammar points. Focus will be on appropriateness in application. Topics include various aspects on Chinese language and culture. Not equivalent to home campus courses. Also enroll in CUHK course# CLCP3313.

OSPHONGK 55B. Intermediate Putonghua/Mandarin Level 3: Oral Skills Practice III. 4 Units.
An upper intermediate course focused on students' fluency in speaking practice with newly acquired vocabulary and grammar points. Topics include various aspects on Chinese language and culture. Not equivalent to home campus courses. Also enroll in CUHK course# CLCP3323.

OSPHONGK 55C. Intermediate Putonghua/Mandarin Level 3: Communication in Context III. 4 Units.
An upper intermediate course designed to familiarize students with the use of newly acquired vocabulary and grammar points. Focus will be on appropriateness in application. Topics include various aspects on Chinese language and culture. Not equivalent to home campus courses. Also enroll in CUHK course # CLCP3333.

OSPHONGK 55D. Intermediate Putonghua/Mandarin Level 3: Basic Presentation Skills & Daily Situations III. 4 Units.
A higher intermediate course designed to help students further improve their proficiency to communicate in a variety of authentic situations by integrating the newly acquired vocabulary items and grammar structures. Not equivalent to home campus courses. Also enroll in CUHK course# CLCP3353.

Overseas Studies in Istanbul Courses

Overseas Studies in Kyoto (KCJS) Courses

OSPKYOCT 103A. Third-Year Japanese I. 12 Units.
Preparation for function beyond basic level in a Japanese-speaking environment by developing and enhancing communicative competence through: review of basic grammar; new grammar; reading short essays and articles with help of dictionary; short writing and speaking assignments using formal style to describe, explain, and discuss sociocultural topics; enhancing listening comprehension.

OSPKYOCT 103B. Third-Year Japanese II. 12 Units.
Preparation for function beyond basic level in a Japanese-speaking environment by developing and enhancing communicative competence through: review of basic grammar; new grammar; reading short essays and articles with help of dictionary; short writing and speaking assignments using formal style to describe, explain, and discuss sociocultural topics; enhancing listening comprehension.

OSPKYOCT 104A. Fourth-Year Japanese I. 12 Units.
Emphasis on applications of correct grammar and strengthening academic communication skills through: reading longer essays, articles, and novels with some dictionary work; reading and writing assignments in paragraph format using formal style to describe, explain and discuss sociocultural topics; developing listening comprehension.

OSPKYOCT 104B. Fourth-Year Japanese II. 12 Units.
Emphasis on applications of correct grammar and strengthening academic communication skills through: reading longer essays, articles, and novels with some dictionary work; reading and writing assignments in paragraph format using formal style to describe, explain and discuss sociocultural topics; developing listening comprehension.

OSPKYOCT 105A. Fifth-Year Japanese I. 12 Units.
For students with advanced proficiency. Goals include advanced command of grammar, composition, and stylistics. Emphasis is on academic Japanese preparing students to audit classes at a Japanese university.

OSPKYOCT 105B. Fifth-Year Japanese II. 12 Units.
For students with advanced proficiency. Goals include advanced command of grammar, composition, and stylistics. Emphasis is on academic Japanese preparing students to audit classes at a Japanese university.

OSPKYOCT 112. Ritual practices and daily rituals: an introduction to the anthropology of Japan. 6 Units.
The role of ritual practices in a country that has more than one festival on any given day ofnthe year cannot be denied. It is a highly significant one that has pervaded the everyday life,nwhere many gestures have acquired a ritual meaning, be it social or sacred. The presentncourse aims to offer an overview of contemporary Japanese society with a focus onnsacred rituals (related to religious practices) and profane rituals, those daily practices thatnhave gained ritual characteristics: cyclic repetition in a pre-determined space, with predetermined participants, roles, and activities.

OSPKYOCT 114. The Eight Million Divinities of Kyoto: Introduction to Japanese Religions. 6 Units.
Are there really "eight million divinities of Kyoto?" What is the difference between antemple and a shrine? What is a matsuri? Do Japanese people really believe in kaminand Buddhas? How many religions are there in Japan? How much money is there innJapanese religions? What do members of Japanese new religions believe? DonJapanese religions share features in common with other traditions you may know?nIf you take this class, we will explore the answers to these questions together in thenmost fun way possible¿by stepping out into one of the most beautiful cities onnearth to find the answers.

OSPKYOCT 127K. Gender in Japanese Culture. 6 Units.
his course introduces students to the workings of gender roles and images in Japanese culture and society from ancient times to the present day. We will begin with a general introduction to key terms: the notions of gender and the body, gender relations, power, performance, cultural re/presentation, sexuality and eroticism. Then we will address various gender issues in Japan from a historical and cultural perspective, focusing on the complexity of gender images and functions in Japanese history, exploring in particular the role of women in the cultural processes. We will also make references to similar gender topics in Western and other Asian societies.

OSPKYOCT 142. Japan in East Asia. 6 Units.
Japan in East Asia.

OSPKYOCT 156. Kyoto and the Meiji Restoration. 6 Units.
Kyoto¿s seminal role between 1850 and 1868 in triggering the Restoration, and the Restoration¿s seminal role in reinventing Kyoto as both a modern city and the cradle of Japan¿s traditional culture. The city¿s transformation from staging ground for the Restoration, to early victim of the new government¿s drive to modernize (which included relocating the imperial court from Kyoto to Tokyo), to its eventual rejuvenation as Japan¿s iconic bridge between past and present, traditional and modern. How the ¿legacy of Meiji¿ has been commemorated, debated and represented over the past 150 years.

OSPKYOCT 179. Kyoto Artisans and their Worlds. 6 Units.
Focus on materials¿bamboo, wood, clay, cloth, metal and paper¿and the processes by which they turn into objects of beauty¿splitting, smoothing, shaping, dyeing, casting, carving and printing. Study blinds and archery bows, architectural and interior accents, tea bowls and vases, kimono and obi, screens, scrolls, even artisanal foodstuffs. Classes are focused around weekly fieldtrips backed by brief lectures and readings providing historical, cultural, and technical background for each topic.

OSPKYOCT 199. The Public Space Potential of Kyoto's Urban Cemeteries. 6 Units.
With a decreasing birth rate and an aging population, increasingly dense urban areas in Japan are searching for new burial methods and spaces. Potential alternatives include vertical cemeteries, scattering ashes, decomposition, and more. If these solutions are implemented, cemeteries could be reconstructed into better public spaces.

Overseas Studies in Kyoto Courses

OSPKYOTO 2K. First-Year Japanese Language, Culture, and Communication, Second Quarter. 5 Units.
Continuation of JAPANLNG 1. First-year sequence enables students to converse, write, and read essays on topics such as personal history, experiences, familiar people. Prerequisite: JAPANLNG 1 if taken 2012-13 of later (JAPANLNG 7 if taken 2011-12 or earlier).

OSPKYOTO 3K. First-Year Japanese Language, Culture, and Communication, Third Quarter. 5 Units.
(Formerly OSPKYOTO 9K). Continuation of 2K. First-year sequence enables students to converse, write, and read essays on topics such as personal history, experiences, familiar people. Fulfills University Foreign Language Requirement. Prerequisite: JAPANLNG 2 or OSPKYOTO 2K if taken 2012-13 or later (JAPANLNG 8 if taken 2011-13 or earlier).

OSPKYOTO 5B. News Shaping Japan Today. 1 Unit.
Examine a wide range of topical themes affecting Japan and its society through selected stories from news media as these stories emerge. As such, this course is entirely reactive to national events as they unfold. Students have a significant amount of choice of topics they address, as they are able to select stories that interest them from a list of news articles, which changes each week.

OSPKYOTO 13. Contemporary Religion in Japan's Ancient Capital: Sustaining and Recasting Tradition. 3-4 Units.
Japanese attitudes to religion and popular forms of religiosity. Syncretic nature of beliefs and practices drawn on a variety of interwoven concepts, beliefs, customs and religious activities of native Japanese, Korean, Chinese, and Indian origins as background. Topics include: pursuit of worldly benefits, religion and healing, fortune-telling, ascetic practices, pilgrimage, festivals (matsuri), new religions and their image, impact of the internet, response of religion in times of crisis.

OSPKYOTO 19. Zazen: A Practicum in Zen Meditation. 1 Unit.
Zen teaching through practice and experience. Condensed practicum course where students receive zazen training and experience monastic life in Myoshinji, the largest Zen complex in Japan, under the guidance of Rev. Daiko Matsuyama, Deputy Head Priest of Taizo-in temple. Over one week, regular early morning zazen training sessions on site in Taizo-in temple plus visit to World Cultural Heritage site Ryoanji with a private viewing and workshop. Other aspects of monastic life such as temple cleaning, and learning how to rake and care for the dry gardens at Taizo-in. Course culminates in an overnight zazen training session in Myoshinji's magnificent Hatto Dharma Hall. Enrollment limited.

OSPKYOTO 21K. Second-Year Japanese Language, Culture, and Communication, First Quarter. 5 Units.
(Formerly OSPKYOTO 17K.) Goal is to further develop and enhance spoken and written Japanese in order to handle advanced concepts such as comparison and contrast of the two cultures, descriptions of incidents, and social issues. 800 kanji, 1,400 new words, and higher-level grammatical constructions. Readings include authentic materials such as newspaper articles, and essays. Prerequisite: JAPANLNG 3 if taken 2012-13 or later (JAPANLNG 7 if taken 2011-12 or earlier).

OSPKYOTO 23K. Second-Year Japanese Language, Culture, and Communication, Third Quarter. 5 Units.
Formerly OSPKYOTO 19K). Goal is to further develop and enhance spoken and written Japanese in order to handle advanced concepts such as comparison and contrast of the two cultures, descriptions of incidents, and social issues. 800 kanji, 1,400 new words, and higher-level grammatical constructions. Readings include authentic materials such as newspaper articles, and essays. Prerequisite: JAPANLNG 22 or OSPKYOTO 22K if taken 2012-13 or later (JAPANLNG 18 if taken 2011-12 or earlier).

OSPKYOTO 33. Ecology of Japanese Satoyama. 3-4 Units.
Satoyama refers to the traditional rural landscapes of Japan, and it is a term that has become widely known internationally in the ecological sustainability literature, highlighting the value of traditional land use for the sustainable management of natural resources. I would introduce to the students, and have them discuss, the scientific basis of biodiversity and ecosystem services, the cultural influence on agriculturall and use,and how the scientific and cultural factors interact to affect the way natural resources are managed.The course would emphasize student-led discussion based on reading of primary and popular literature on the history, current status, societal perception of the value of satoyama for biodiversity and human well-beingin Japan. Student discussion will also compare the satoyama concept to similar ones developed in othercountriesin Asia, Europe, and North America.

OSPKYOTO 39. Capturing Concepts: A Photographic Exploration of the Origins of Kanji. 2 Units.
Under guidance of official photographer for KYOTOGRAPHIE International Photography Festival, photograph scenes from everyday life in Kyoto to portray contemporary versions of the ancient forms and original meanings of ten different kanji. Develop observational, interpretive and creative abilities as well as improve technical skills (including picture composition and image editing). Enrollment limited.

OSPKYOTO 41. Queer Culture and Life in Japan. 4 Units.
Exploration of queer lives and cultural practices in Japan through diverse materials from film, literature, theater, art, as well as newspapers and personal testimonies. What it means to be queer in Japan and how it might signify differently from a US context. Looking at each text, examine how gender norms and sexual politics intersect and operate in Japanese society.

OSPKYOTO 42. Gardens of Kyoto: Spaces of Aesthetic and Spiritual Contemplation. 3 Units.
Chronological stroll through Japanese gardens of different types and functions, spanning from the Heian period (794¿1185), when the ancient capital of Kyoto was established, through to contemporary times. Weekly field trips to a selection of Kyoto gardens and garden-related activities, in order to gain an understanding of the historical development and functions of Japanese gardens, including their design principles, techniques, and elements.

OSPKYOTO 53. Topics in Race, Ethnicity, and Diversity. 1-3 Unit.
Through group discussions, films, field trips and independent study, students will explore the experiences of Japanese minorities: from the indigenous Ainu and Okinawans, and the outcaste Burakumin, to the seemingly "forever foreign" Zainichi Koreans and returning Japanese-Brazilians, whose conditional welcome on both sides of the Pacific raises important questions about distinctions between race and culture. Japanese ideologies about racial/ethnic difference can be compared and contrasted with historical and contemporary examples from Europe and other parts of Asia, as well as to debates about assimilation and the melting pot in the U.S. Semi-weekly meetings. Requirements vary by number of units.

OSPKYOTO 55. Exploring Japan's Media Landscape. 3-4 Units.
This course will examine Japanese media through the lenses of economics, politics, and media studies. A key goal: understand the forces that shape the creation of content across different demands that individuals in Japan have for information as consumers, producers, entertainment seekers, and voters. Broad themes include the ways that markets transform information into news, the operation of the marketplace of ideas, the economics of digital entertainment markets, and the operation of social networks. Distinctive features of Japanese media include anime, manga, national newspapers, and the NHK public broadcasting system. Media coverage of preparations for the 2020 Olympics in Tokyo will be a key focal point for discussion. (Note: no previous study of economics, politics, or media studies required).

OSPKYOTO 56. Independent Study Topics on Japanese Media. 1-3 Unit.
Independent research on topics relating to economic, political, and cultural forces driving the creation of Japanese media content. Students will conduct research on media topics and meet weekly with the instructor.

OSPKYOTO 58. A Journey into the Buddhist Visual Arts of Japan. 4 Units.
Impact of Buddhism on the arts and culture of Japan as seen in the ancient capital of Kyoto. Image production, iconography, representational strategies, as well as the ritual and visual functions of Buddhist sculpture and painting with a focus on selected historical temples and their icons. Also examination of architectural and landscape elements of temple layouts, within which iconographic programs are framed, images are enlivened, and practices centered on these devotional and ritual art.

OSPKYOTO 65. From the Cradle to the Grave: Wrestling with Demographic Destiny in Japan. 4 Units.
In this course, students will not only learn to see Japan in demographic perspective during their stay, they also will be able translate their skills and understanding of demographic data, concepts and processes back to their lives in the United States -- where similar changes (e.g., toward an aging society) and debates (e.g., about immigration restriction) are occurring.

OSPKYOTO 69. Feeling in Japan: Culture, Emotion, and Brain. 3 Units.
How does culture shape our feelings? This course will examine emotions from a cross cultural perspective and has three course objectives: (1) to increase students' awareness of how cultural ideas and practices shape their emotions by comparing their experiences in Kyoto with those in the U.S., (2) to teach students to apply a scientific understanding of culture and emotion to their experiences in Kyoto, and (3) to teach students how to formulate and test hypotheses about emotions in Japan vs. U.S. The proposed course will be comprised of three sections. The first section will focus on dominant theories of culture and emotions and the ways in which they are scientifically measured using a variety of self-report, behavioral, and physiological/neural measures. The second section will cover three patterns that emerge from the scientific literature regarding U.S.-East Asian differences in the focus of emotion, views of emotional expression, and values regarding emotional experience. Because much of the literature on culture and emotion focuses on U.S. and Japanese comparisons, the empirical findings will be directly applicable to the students studying at Kyoto. The third section will focus on the role of culture and emotion in applied settings (work, educational, and clinical) in the US and Japan. Students' structured and unstructured experiences and observations living in Kyoto will be the basis of our class discussions and will be linked to course material. For instance, students may be asked to analyze the themes and narratives of popular Japanese anime, art, and architecture based on methods introduced in class. As a comparison, students will identify products and practices in the U.S. that illustrate similarities and differences between the two cultures. Students will write short papers each week linking their experiences to the assigned material. At the end of the quarter, students will make short presentations about another aspect of emotion they hypothesize varies in the U.S. and Japan, based on their own experiences in Kyoto, and discuss how they might design a study to test their hypotheses. Readings will include sections from popular books and accessible academic chapters and empirical articles.

OSPKYOTO 101K. Third-Year Japanese Language, Culture, and Communication, First Quarter. 5 Units.
Goal is to express thoughts and opinions in paragraph length in spoken and written forms. Materials include current Japanese media and literature for native speakers of Japanese. Cultural and social topics related to Japan and its people. Prerequisite: Placement Tests, JAPANLNG 23. See http://japanese.stanford.edu/?page_id=39.

OSPKYOTO 103K. Third-Year Japanese Language, Culture, and Communication, Third Quarter. 5 Units.
(Formerly OSPKYOTO 119K). Continuation of 118K. Goal is to express thoughts and opinions in paragraph length in spoken and written forms. Materials include current Japanese media and literature for native speakers of Japanese. Cultural and social topics related to Japan and its people. Prerequisite: JAPANLNG 102 or OSPKYOTO 102K if taken 2012-13 or later (JAPANLNG 118 if taken 2011-12 or earlier).

OSPKYOTO 199. Directed Reading. 1-4 Unit.
Course may be repeated for credit.

OSPKYOTO 210K. Advanced Japanese. 5 Units.
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OSPKYOTO 221K. Artificial Intelligence: Principles and Techniques. 3-4 Units.
Artificial intelligence (AI) has had a huge impact in many areas, including medical diagnosis, speech recognition, robotics, web search, advertising, and scheduling. This course focuses on the foundational concepts that drive these applications. In short, AI is the mathematics of making good decisions given incomplete information (hence the need for probability) and limited computation (hence the need for algorithms). Specific topics include search, constraint satisfaction, game playing, Markov decision processes, graphical models, machine learning, and logic. Same as CS 221. Prerequisites: CS 103 or CS 103B/X, CS 106B or CS 106X, CS 107, and CS 109 (algorithms, probability, and programming experience).

Overseas Studies in Madrid Courses

OSPMADRD 8A. Cities and Creativity: Cultural and Architectural Interpretations of Madrid. 4 Units.
Architecture and the city, with a focus on recent currents in the progress of both, such as sustainability, environmentalism and the relationship with nature. Topics underpinned by discussion of theory, and illustrated by a study of the city of Madrid: an example of a hybrid architectural/planning experiential environment that looks to the future with an ambition for modernization.

OSPMADRD 8B. Debating Design: Spanish and International Fashion. 2 Units.
Culture and society in Spain as viewed through the lens of the fashion industry. Social changes, trends, and the evolution of life styles. Industrial, commercial and media involvement in the internationalization of the industry.

OSPMADRD 8C. Appreciating Spanish Music. 2 Units.
Unique aspects of Spanish art music. Participation in concert outings and field trips for live performances of studied repertoire. No previous knowledge of music required.

OSPMADRD 11. Directed Reading on Spanish Language. 1-5 Unit.
Expand knowledge of Spanish language by doing research on a specific linguistic topic from any perspective (e.g. grammar, phonology, history, sociolinguistics, dialectology, etc.). A Directed Reading Proposal must be submitted to the Overseas Studies Office and to the Program Director at least two months prior to the quarter of intended study. A directed reading may be taken only in addition to twelve units of regular coursework offered directly by the Center. May be repeated for credit. Prerequisite: SPANLANG 102 or equivalent placement. Approval of instructor.

OSPMADRD 12M. Accelerated Second-Year Spanish I. 5 Units.
Intensive sequence integrating language, culture, and geo/sociopolitics of Spain. Emphasis is on achieving advanced proficiency in oral and written discourse, including formal and informal situations, presentational language, and appropriate forms in academic and professional contexts. Prerequisite: one year of college Spanish or 11 or 21B more than two quarters (six months) prior to arriving in Madrid, or equivalent placement.

OSPMADRD 13M. Accelerated Second-Year Spanish II. 5 Units.
Intensive sequence integrating language, culture, and geo/sociopolitics of Spain. Emphasis is on achieving advanced proficiency in oral and written discourse, including formal and informal situations, presentational language, and appropriate forms in academic and professional contexts. Prerequisite: 11 or 21B within two quarters (six months) of arriving in Madrid or 12 or 22B, or equivalent placement.

OSPMADRD 14. Introduction to Spanish Culture. 2 Units.
Required for all Madrid students. Lectures and activities covering a wide selection of culturally and academically significant topics to understand Spain, as well as its international context. Requirements include orientation, study trip, and language pledge compliance.

OSPMADRD 15. Flamenco Dance. 1 Unit.
Practical instruction. The rhythms and styles of flamenco and the expression of feelings proper to this art form which synthesizes song, music, and dance. *Zapateado* (footwork), *braceo* (arm positions and movement technique), and choreographies, including Rumba flamenca and Sevillanas. Enrollment limited. May be repeated for credit.

OSPMADRD 17. Directed Reading on Catalan, Galizian, or Basque Languages. 1-5 Unit.
For students interested in studying one of the languages spoken in Spain other than Spanish. A Directed Reading Proposal must be submitted to the Overseas Studies Office and to the Program Director at least two months prior to the quarter of intended study. This directed reading may be taken only in addition to twelve units of regular coursework offered directly by the Center.

OSPMADRD 18. Exploring Music and Society: Understanding Flamenco. 3 Units.
Origins and history of flamenco and its place in Spanish culture, including both theory and actual dance instruction.

OSPMADRD 19. Language and Thought. 3 Units.
Languages describe the world in different ways. In some languages, you have to say when an event happened (past, present, future, etc.), while in others it is obligatory to say how you know about the event (you saw it, you heard about it), or the gender of its participants. In some languages there is one word that covers blue-and-green, while in others there are many. Do these differences in the language you speak influence the way that you perceive, understand, and think? We will survey recent work on how languages affect thought, with a special emphasis on contrasts between Spanish and English. Assignments include reading original sources, essays synthesizing science with personal reflections, and (attempts at) replication of key experiments with friends and acquaintances.

OSPMADRD 20. Independent Study in Machine Translation. 2-4 Units.
Students will explore modern deep-learning methods for machine translation. They will read, and re-implement, methods such as seq2seq, attention-windows, and weakly-supervised translation. The goal will be to build an English-Spanish translator from scratch, inspired by his or her own experience of key translation difficulties. (Programing background equivalent to a CS sophomore is required.).

OSPMADRD 24. CONNECT BETTER ACROSS CULTURES. 3 Units.
At one level, modern society is more connected than ever. At another, it places new barriers¿such as anonymity, otherness, and competition¿in the way of human connection. In this class, we will focus especially on when, how, and why people from different nations and backgrounds find it difficult to empathize with, understand, or care for each other¿and tour cutting edge research on breaking down these intercultural barriers. We will also challenge ourselves, through experiential exercises, to break down cultural barriers in our own lives.

OSPMADRD 27. Canarian Night Skies. 4 Units.
Exploration of night skies in Spain's Canary Islands as well as those seen from California. Science for non-majors. Constellations, Solar System, Galactic and Extragalactic objects. Unique characteristics of the Canary Islands as astronomical reserve studied prior to field trip to the Canary Islands. Comparison of naked-eye Canarian and Californian night skies. Study and exploration of relevant astronomical instrumentation as well as representative celestial objects. Astrophotography-related activities. Enrollment limited.

OSPMADRD 39. New Political Dynamics in Contemporary Spain. 4 Units.
Current Spanish politics, historical background followed by focus on contemporary political events, actors and institutions. Special attention to the most dynamic aspects such as the appearance of new parties and the adjustments of the old ones; the demands of social movements, with a special emphasis on feminism; current debates about how to deal with the past (historical memory policies); or the evolution of the territorial conflict, with a special focus on Catalonia. Experiential approach with opportunities to engage in dialogue on the different issues, both with Spanish citizens and with political actors.

OSPMADRD 43. The Jacobean Star Way and Europe: Society, Politics and Culture. 5 Units.
The Saint James' Way as a tool to understand historic dynamics from a global perspective. Its effect on the structures that form a political and institutional system, and its society, economy, and ideology. Enrollment limited; instructor approval required.

OSPMADRD 45. Women in Art: Case Study in the Madrid Museums. 4 Units.
Viewing the collections at the Prado Museum through study and analysis of the representations of women. Contemporary literary texts and images that situate paintings in the historical, social, and political conditions that produced the works.

OSPMADRD 46. Drawing with Four Spanish Masters: Goya, Velazquez, Picasso and Dali. 4 Units.
Approaches, techniques, and processes in drawing. Visits to Madrid museums to study paintings and drawings by Goya, Velázquez, Picasso, and Dalí and to explore the experience of drawing. Subject matter: the figure, still life, interiors, landscape, and non-representational drawing. No previous experience required. Enrollment limited.

OSPMADRD 47. Cultural Relations between Spain and the United States:Historical Perceptions and Influences, 1776-2. 4 Units.
Critical historical thinking about international cultural relations, using Spain and U.S. as case studies examples, with references to Atlantic world contexts, from 1776 to the present. Insights into the continuing social and political relevance of their contested legacies. interpretive perspectives grounded in different ideologies, interests and collective identities within both societies. Introduction to pertinent social scientific theory regarding identity formation, self-image, and perceptions of and interactions with ethnic and cultural otherness. Differences between history, historiography and memory through consideration of diverse forms of expression and vehicles of transmission of collective memory.

OSPMADRD 48. Migration and Multiculturality in Spain. 4 Units.
Dimensions of recent migratory phenomena in Spain. Changes in past decades from a country of emigration to one of immigration, and vice versa. North Africa, Latin America, and Eastern Europe on the one side and the rest of Europe on the other. Social concern and public debate resulting from these changes.

OSPMADRD 54. Contemporary Spanish Economy and the European Union. 4 Units.
Concepts and methods for analysis of a country's economy with focus on Spain and the EU. Spain's growth and structural change; evolution of Spain's production sectors, agriculture, industry, and services; institutional factors such as the labor market and public sector; Spain's economic international relations, in particular, development of the EU, institutional framework, economic and monetary union, policies related to the European economic integration process, and U.S.-EU relationship.

OSPMADRD 55. Latin Americans in Spain: Cultural Identities, Social Practices, and Migratory Experience. 4 Units.
Shift in recent decades from Spain being a country of emigration to one attractive for immigration, especially for people coming from Latin America. Transnational processes of interculturality, integration and assimilation as illustrated by the different ways that immigrant Spaniards relate to Spanish society in Spain.

OSPMADRD 57. Health Care: A Contrastive Analysis between Spain and the U.S.. 4 Units.
History of health care and evolution of the concept of universal health care based on need not wealth. Contrast with system in U.S. Is there a right to health care and if so, what does it encompass? The Spanish health care system; its major successes and shortcomings. Issues and challenges from an interdisciplinary perspective combining scientific facts with moral, political, and legal philosophy.

OSPMADRD 60. Integration into Spanish Society: Service Learning and Professional Opportunities. 4 Units.
Engagement with the real world of Madrid through public service work with NGOs and public service professions such as teaching. Depending on availability, topics relevant to present-day Spain may include: the national health plan, educational system, immigration, prostitution, refugees, youth, and fair trade. Fieldwork, lectures, and research paper. Limited enrollment. May be repeated for credit. Prerequisite: completion of SPANLANG 11 or 21B or placement.

OSPMADRD 61. Society and Cultural Change: The Case of Spain. 4 Units.
Complexity of socio-cultural change in Spain during the last three decades. Topics include: cultural diversity in Iberian world; social structure; family in Mediterranean cultures; ages and generations; political parties and ideologies; communication and consumption; religion; and leisure activities.

OSPMADRD 63. environment, health, public finance,. 2-4 Units.
environment, health, public finance,.

OSPMADRD 72. Issues in Bioethics Across Cultures. 4 Units.
Ethical dilemmas concerning the autonomy and dignity of human beings and other living creatures; principles of justice that rule different realms of private and public life. Interdisciplinary approach to assessing these challenges, combining scientific facts, health care issues, and moral philosophy. Sources include landmark bioethics papers. Prerequisite: completion of SPANLANG 11, 21B or placement, or instructor approval.

OSPMADRD 74. Islam in Spain and Europe: 1300 Years of Contact. 4 Units.
Primary problems and conflicts in the contemporary Islamic world and it relations with the West, as well as the relationship between Spain and Islam throughout history. Special attention to the history of al-Andalus, an Islamic state in the Iberian Peninsula during the Middle Ages, evaluating the importance of its legacy in Europe and in contemporary Spain. Spain¿s leading role in relations between Europe and the Mediterranean Islamic states from the Modern Era to the present day.

OSPMADRD 75. Sefarad: The Jewish Community in Spain. 4 Units.
The legacy of Sefarad, the Jewish community in Spain. Historical evolution of the Sephardic community, under both Muslim and Christian rule, including the culmination of Anti-Semitism in 1492 with the expulsion of the Jews. Cultural contribution of the Hebrew communities in their condition as a social minority, both in al-Andalus, the peninsular Islamic State, and in the peninsular Christian kingdoms.

OSPMADRD 80. Word, Image and Power. 4 Units.
Relationships and uses of oral discourse, art, and iconography in politics in different countries through history. Case studies from ancient Egypt, the Greek Paideia, Cesar Augustus, medieval Europe, Spanish modern empire, French revolutionary discourse, and proletarian national identity in Russia and China.

OSPMADRD 84. Madrid Through My Eyes: A Theoreticl/Practical Documentary Film Workshop. 4 Units.
Theoretical and practical view of Spanish language documentary cinema; potential of this type of film making as a form of personal expression. Tools for understanding and analyzing this type of cinema. Creative and analytical reflection on student 's Madrid experience; develop individual visual discourse to portray life in the city by filming a short documentary.

OSPMADRD 89. Environmental Policy. 4 Units.
This course examines policies in the U.S. and Spain, focusing on climate, energy, air and water pollution, toxics, fertility, and other policies. I would expect a sizeable portion of the class to detail Spain's renewable energy efforts, as well as its role in Europe's cap and trade system. It would be conducted in a seminar format, with guest lectures and field trips to appropriate government offices.

OSPMADRD 102M. Composition and Writing Workshop for Students in Madrid. 3-5 Units.
Advanced. Writing as craft and process, emphasizing brainstorming, planning, outlining, drafting, revising, style, diction, and editing. Students choose topics related to their studies. Prerequisite: 13, 23B, or equivalent placement.

OSPMADRD 190. Madrid University: Humanities and Arts. 2-6 Units.
Humanities or Arts course at a local Spanish university. Students enrolled in the Madrid Program will receive an email from Madrid Program Director with information about these course opportunities at local partner institutions, including the action to take for applying. Prerequisite: completion of SPANLANG 13 or 23B or equivalent placement.

OSPMADRD 191. Madrid University: Social Sciences. 2-6 Units.
Social Sciences course at a local Spanish university. Students enrolled in the Madrid Program will receive an email from Madrid Program Director with information about these course opportunities at local partner institutions, including the action to take for applying. Prerequisite: completion of SPANLANG 13 or 23B or equivalent placement.

OSPMADRD 192. Madrid University: Engineering. 2-6 Units.
Engineering course at a local Spanish university. Students enrolled in the Madrid Program will receive an email from Madrid Program Director with information about these course opportunities at local partner institutions, including the action to take for applying. Prerequisite: completion of SPANLANG 13 or 23B or equivalent placement.

OSPMADRD 193. Madrid University: Natural Sciences. 2-6 Units.
Natural Sciences course at a local Spanish university. Students enrolled in the Madrid Program will receive an email from Madrid Program Director with information about these course opportunities at local partner institutions, including the action to take for applying. Prerequisite: completion of SPANLANG 13 or 23B or equivalent placement.

OSPMADRD 194. Madrid University: Earth Energy & Environmental Science. 2-6 Units.
Earth, Energy & Environmental Science course at a local Spanish university. Students enrolled in the Madrid Program will receive an email from Madrid Program Director with information about these course opportunities at local partner institutions, including the action to take for applying. Prerequisite: completion of SPANLANG 13 or 23B or equivalent placement.

OSPMADRD 195. Madrid University: Interdisciplinary. 2-6 Units.
Interdisciplinary course at a local Spanish university. Students enrolled in the Madrid Program will receive an email from Madrid Program Director with information about these course opportunities at local partner institutions, including the action to take for applying. Prerequisite: completion of SPANLANG 13 or 23B or equivalent placement.

OSPMADRD 199A. Directed Reading. 1-5 Unit.
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Overseas Studies in Oxford Courses

OSPOXFRD 16. Creative Writing and Human Rights. 5 Units.
Human rights concepts through their emergence in literary form(s), using creative writing, including nonfiction, fiction and poetry, to explore empathy and the most effective ways of inducing it in readers.

OSPOXFRD 28. Oxford and Abroad: Travel Narratives and Historiography of an Academic City. 4-5 Units.
Rich history of Oxford, the place in which students are studying; skills to become aware of the profound influences the experience of living and studying abroad can have on self-conceptions. Appreciation of study in a town with such a marvelous tradition of scholarship through understanding of the history of learning in Oxford. How Oxford came to be the university town it is today.

OSPOXFRD 30. Archaeology, Espionage and the End of Empire: From Lawrence of Arabia to ISIS. 5 Units.
The role of archaeological sites, expeditions and archaeologists in the intrigues of war from Britain's occupation of the Middle East, two world wars, through the Suez Crisis to the current conflicts involving ISIS and its destruction of heritage sites. Focus specifically on the historic Oxford connection using university archives and collections, as well as exploring current initiatives by Oxford scholars to document and preserve heritage during recent conflict in the Middle East. How have the British empire and British interests been served by archaeology, in the past and present, and how has that mission been entangled with struggles over religion, sovereignty, territory, oil, and antiquities.

OSPOXFRD 31. Independent Study. 1-3 Unit.
Independent study topics: 1. Origins of the English Parliament, from Magna Carta and the Provisions of Oxford to the Glorious Revolution. 2. Origins of statutory law. When and how did laws change from royal decrees to parliamentary statutes? When and how did English judges become independent? 3. When and how did non-elite men and women gain the right to vote in English elections?.

OSPOXFRD 32. Philosophy of Language. 4-5 Units.
Introduction to contemporary analytic philosophy of language, examining some of its central concepts, including reference, meaning, and context. Students explore these concepts, by studying some of the major questions in the field, including: How do expressions esp. names secure their referents? What are the connections and differences between literal meaning and speaker meaning? What is the role of context in language? How philosophy of language impacts other areas in philosophy, by covering such topics as Meaning Externalism (metaphysics), Contextualism about 'know' (epistemology), and Propositional Attitudes (philosophy of mind).

OSPOXFRD 36. Creating English Democracy. 4-5 Units.
How English democracy developed historically. How did the "Mother of Parliaments" first get going? How did it survive repeated attempts by the monarch to make it subservient, ultimately turning the latter into a figurehead? How did laws, which were once royal decrees enforced by judges who served "at royal pleasure," become parliamentary statutes enforced by judges who held their offices "during good behavior." How did elections transform from affairs in which less than 10% of adult men could vote into mass elections with universal suffrage?.

OSPOXFRD 41. Western Thought: Origins of Twentieth Century Semiotics. 4-5 Units.
Story of semiotic exploration, its contributions to literary critical theory, Marxist critique and feminist critique, in development of twentieth century thought. Close look at principle authors and circumstances that engendered their writings. Questions about the relationship between thought and environment, and between ideology and action raised by looking at the way twentieth century events influenced thinkers to consider the purposes of language in society, in identity , and in authority.

OSPOXFRD 52. Shakespeare and Performance. 4-5 Units.
Examination of various aspects of the role of performance in Shakespeare. Alongside considering the aesthetics of the Elizabethan stage and how to read Shakespeare's texts for performance, the module will also look at how different types of performances and performance mediums generate different meanings for audiences. Theoretical ideas of the performance of gender and identity will also be discussed.

OSPOXFRD 62. Digital Technology in the UK. 4-5 Units.
Includes all of the sessions and requirements of the seminar Digital Technology in the UK, with an additional hour per week of meeting time focused on more technical readings from British computing pioneers. Please note that students can take this seminar or OSPOXFRD 63, but not both.
Same as: Technical Version

OSPOXFRD 63. Digital Technology in the UK. 3-4 Units.
A seminar focused on the British experience with computer and informational network technologies, and their social context and impacts. The course covers the development of computing from Charles Babbage and Ada Lovelace, to Alan Turing, to the present. The emphasis will be on broader social lessons and applications beyond the UK, including the role of gender and cultural norms in shaping the experience of technology's contributors, and uses of digital technology in democratic institutions. Please note that students can take this seminar or OSPOXFRD 62, but not both.

OSPOXFRD 69. Topics in Social Informatics. 1-3 Unit.
Directed study and independent project work in the social science of information technology, with weekly meetings to review the student's progress. Possible topics include: ¿ Online public deliberation and e-participation in the UK ¿ Voting systems in comparative perspective: theory and evidence ¿ Social informatics and the use of digital media in the US and UK elections of 2016 ¿ Social movements and digital media: General assemblies, democracy villages, and hashtags.

OSPOXFRD 72. Oxford Fantasists. 4-5 Units.
The lives and selected fantasy literature of famous Oxford alumni William Morris (Exeter College), Lewis Carroll (Christ Church), Oscar Wilde (Magdalen), C.S. Lewis (University and Magdalen), and J.R.R. Tolkien (Exeter, Pembroke, and Merton), looking at each writer's unique take on the fantasy genre. To place readings in context, this course will also explore and compare selected source materials used by these writers, including examples of classic "high" and "low" fairy tales, selections from Norse and Welsh mythology, and Arthurian romance.

OSPOXFRD 76. Access, Distinction and Material Culture through Coffee. 4-5 Units.
Each object we come in contact with over the course of any given day brings with it its own accumulation of significances and histories, and helps us to shape our identities. The study of things and their constituent materials is a means to examine exchange, power, identity, and the practices through which things become meaningful. Through the close inspection of a single good we can see the complex accumulation and contestation of themes, meanings, and global connections. Issues of access, inequality, and social capital as explored through the world of goods, beginning with a globally-traded commodity with a rich local history: coffee.

OSPOXFRD 77. Reading and Influencing People. 4-5 Units.
Understanding and managing human behavior dynamics in the negotiation process. Topics include understanding and influencing leverage, communicating effectively, differentiating interests from positions, using effective table tactics, and optimally closing the deal. Pedagogical goal: systematic understanding of the dynamics individuals typically use in negotiations. Lectures, followed by simulations to combine theory with practice. Intellectual and experiential learning integrated through combination of readings, presentations, and simulations.

OSPOXFRD 81. Displacement and Identity in 20th Century Europe. 4-5 Units.
In Europe, Twentieth Century population movements brought about by war and destruction, and enabled by unifications and peace. Using the methods of cultural history, examine the memoirs and biographies of European academics and intellectuals, with a special focus on those who relocated to Oxford University, as they reflect on the meaning of these relocations for their sense of self.

OSPOXFRD 86. From the hills to the sea. 4-5 Units.
This course would focus on the Thames River, at least since Roman times arguably the most important waterway in Britain. The basis of the class would be an exploration of the Thames from different angles both scientific and historical. The science side of the course would consider the following topics: the geology/geographic setting that gave rise to the Thames; its hydrology including a history of its floods and droughts as well as climate change trends; aspects of the hydrodynamics of tides and the estuarine environment of the Thames; the effects on the Thames of human modification such as loss of wetlands associated with building of the Docklands in the 18th and 19th centuries; sea level rise and the Thames including the design basis of the Thames Tidal Barrier. The history side of the course would consider how the Thames has played a role in the history of Britain, e.g., as an inland transportation corridor, as a barrier between states, as the site of the signing of the Magna Carta, as the heart of the global trade enterprise that built the British Empire, as a challenge to important engineering feats in Victorian London, as a subject for landscape painters like Turner, and as a spur of public policies of environmental protection and restoration.

OSPOXFRD 93. Collecting the World. 4-5 Units.
The art, science, and culture of the creation, transmission and collection of valuable, useful and informative objects and texts before the twentieth century, and the associated theories, purposes, and methods for collecting `worldly' goods and other valuables. Means by which local academic practices engaged with global developments in the arts and sciences through examination of primarily early modern material and intellectual culture in and around Oxfordshire. Assessments of quality, meaning, usage, cultural significance and the reception of material ¿treasures¿ in the storage rooms, vaults, and on display in museums, galleries, and libraries.

OSPOXFRD 97. Museum Anthropology and Digital Technologies. 4-5 Units.
Engage with material cultural theory debates of the late 20th century and examine the impact of the digital revolution on the way we exhibit culture two decades into the third millennium. Reflect upon the transformation of the politics and poetics of museum display analysing readings and exhibitions from the 1990s to the present day. Digital interfaces in our daily lives have altered the way we seek information and the way we communicate with each other. What have we learned about representing cultures in museum spaces and what have we put into practice? Examine contemporary issues and contentions relating to cultural display in relation to exhibits in Western art and anthropology museums.

OSPOXFRD 117W. Gender and Social Change in Modern Britain. 4-5 Units.
Changes in the social institutions, attitudes, and values in Britain over the past 20 years with specific reference to shifts in gender relations. Demographic, economic and social factors; review of theoretical ideas. Men's and women's shifting roles in a fast-moving society.

OSPOXFRD 195A. Tutorial in Anthropology. 6-7 Units.
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OSPOXFRD 195B. Tutorial in Biology. 6-7 Units.
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OSPOXFRD 195C. Tutorial in Classics. 6-7 Units.
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OSPOXFRD 195F. Tutorial in Economics. 6-7 Units.
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OSPOXFRD 195H. Tutorial in Engineering. 6-7 Units.
May be repeat for credit.

OSPOXFRD 195J. Tutorial in Jurisprudence. 6-7 Units.
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OSPOXFRD 195L. Tutorial in Health Care. 6-7 Units.
May be repeated for credit.

OSPOXFRD 195N. Tutorial in Human Biology. 6-7 Units.
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OSPOXFRD 195P. Tutorial: Interdisciplinary. 6-7 Units.
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OSPOXFRD 195R. Tutorial in International Relations. 6-7 Units.
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Same as: Introduction

OSPOXFRD 195S. Tutorial in Computer Studies. 6-7 Units.
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OSPOXFRD 195T. Tutorial in Literature. 6-7 Units.
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OSPOXFRD 195U. Tutorial in Music. 6-7 Units.
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OSPOXFRD 195V. Tutorial in Philosophy. 6-7 Units.
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OSPOXFRD 195W. Tutorial in Physics. 6-7 Units.
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OSPOXFRD 195Z. Tutorial in Political Science. 6-7 Units.
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OSPOXFRD 196A. Tutorial in Psychology. 6-7 Units.
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OSPOXFRD 196B. Tutorial in Theology. 6-7 Units.
Course may be repeated for credit.

OSPOXFRD 196C. Tutorial in Sociology. 6-7 Units.
Course may be repeated for credit.

OSPOXFRD 196E. Tutorial in History. 6-7 Units.
Course may be repeated for credit.

OSPOXFRD 196F. Tutorial in History of Art. 6-7 Units.
Course may be repeated for credit.

OSPOXFRD 196G. Tutorial in Chemistry. 6-7 Units.
Course may be repeated for credit.

OSPOXFRD 196J. Tutorial in Interdisciplinary Area Studies. 6-7 Units.
Course may be repeated for credit.

OSPOXFRD 196K. Tutorial in Zoology. 6-7 Units.
Course may be repeated for credit.

OSPOXFRD 196L. Tutorial in Education. 6-7 Units.
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OSPOXFRD 196M. Tutorial in Public Policy. 6-7 Units.
Course may be repeated for credit.

OSPOXFRD 196N. Tutorial in Mathematics. 6-7 Units.
Course may be repeated for credit.

OSPOXFRD 196P. Tutorial in International Development. 6-7 Units.
Course may be repeated for credit.

OSPOXFRD 196Q. Tutorial in Computer Science. 6-7 Units.
May be repeated for credit.

OSPOXFRD 196R. Tutorial in Geography. 6-7 Units.
May be repeated for credit.

OSPOXFRD 196S. Tutorial in Business. 6-7 Units.
Course may be repeated for credit.

OSPOXFRD 196V. Tutorial in Medieval and Modern Languages. 6-7 Units.
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OSPOXFRD 197A. Tutorial in Anthropology. 6-7 Units.
Course may be repeated for credit.

OSPOXFRD 197B. Tutorial in Biology. 6-7 Units.
Course may be repeated for credit.

OSPOXFRD 197C. Tutorial in Classics. 6-7 Units.
Course may be repeated for credit.

OSPOXFRD 197J. Tutorial in Law. 6-7 Units.
Course may be repeated for credit.

OSPOXFRD 197R. Tutorial in International Relations. 6-7 Units.
Course may be repeated for credit.

OSPOXFRD 197S. Tutorial in Computer Studies. 6-7 Units.
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OSPOXFRD 197T. Tutorial in Creative Writing. 6-7 Units.
Course may be repeated for credit.

OSPOXFRD 197U. Tutorial in Music. 6-7 Units.
May be repeated for credit.

OSPOXFRD 197V. Tutorial in Philosophy. 6-7 Units.
May be repeated for credit.

OSPOXFRD 197Z. Tutorial in Political Science. 6-7 Units.
May be repeated for credit.
Same as: Advanced

OSPOXFRD 198C. Tutorial in Sociology. 6-7 Units.
May be repeated for credit.

OSPOXFRD 198E. Tutorial in History. 6-7 Units.
May be repeated for credit.

OSPOXFRD 198F. Tutorial in History of Art. 6-7 Units.
May be repeated for credit.

OSPOXFRD 198N. Tutorial in Mathematics. 6-7 Units.
May be repeated for credit.

OSPOXFRD 199A. Directed Reading A. 2-4 Units.
Course may be repeated for credit.

OSPOXFRD 199B. Directed Reading B. 2-5 Units.
Course may be repeated for credit.

OSPOXFRD 199D. Directed Reading in Russian. 2-4 Units.
Course may be repeated for credit.

Overseas Studies in Paris Courses

OSPPARIS 1A. Accelerated First-Year French, Part 1. 5 Units.
Completes first-year language sequence in two rather than three quarters. All-in-French communicative and interactive approach. Emphasis on the development of French in a contemporary cultural context. Interpretation of diversified materials, written and oral presentations.

OSPPARIS 2A. Accelerated First-Year French, Part 2. 5 Units.
Continuation of FRENLANG 1A. Completes first-year language sequence in two rather than three quarters. All-in-French communicative and interactive approach. Emphasis is on the development of French in a contemporary cultural context. Interpretation of diversified materials, written and oral presentations. Prerequisite: French 1A.

OSPPARIS 10A. Engineering Research Internship. 5 Units.
For Paris Program students with academic experience in electronics, telecommunications or signal and image processing. Under direct guidance of researchers at Institut Supérieur d'Electronique de Paris (ISEP), and where applicable, in collaboration with other French and international graduate students, contribute to the ISEP's ongoing research projects. In French or English.

OSPPARIS 10B. Biology and Bio-Engineering Research Internship. 5 Units.
Biology research opportunity at the Brain & Spinal Cord Institute (ICM) located within the Hospital Pitié-Salpetrière. Team focuses on understanding the disease mechanism of Amyotrophic Lateral Sclerosis (ALS or Lou Gehrig's disease). Direct access to patient samples. Cutting-edge experimental methods. Prior research experience in biology lab work required. Students will be expected to work actively two full days a week in the lab, and provide a research report to the instructor at the end of the quarter. Language of instruction: French or English according to student's proficiency.

OSPPARIS 11. Special Internship. 1-6 Unit.
Often initiated by special contacts between students and professionals in France. Involvement may be based more on field work, and activity, rather than on fulfilling traditional academic requirements. Prerequisites: Written permission from the program director.

OSPPARIS 12. Paris Photography Workshop. 3 Units.
Exploration of Paris through camera and lab techniques. Both theoretical and practical aspects of creative photography. Extensive field work. Students must bring camera or phone with camera. Enrollment limited. Taught in English.

OSPPARIS 14. Media Internship. 3 Units.
Case studies and independent research as groundwork for comparative analysis of media on both sides of the Atlantic. Nature of media in the U.S and in France. Media as a means for understanding culture.

OSPPARIS 15. Hospital Mentoring. 3 Units.
Observation of medical services in Paris hospitals. How hospital teams work in France; how medical decisions are made; how patients are treated by nurses and doctors.

OSPPARIS 16A. French Schooling Internship. 2-3 Units.
Working with French schoolchildren in one of three settings: a neighborhood support association in the outskirts of Paris; or two after-school support association in the city. Commitment for a minimum of three hours a week on site plus meetings with internship instructor and a final paper. Number of placements depends on the needs of the sponsoring institutions. Previous work with children advised. Prerequisite: placement into French 22 or higher upon arrival in Paris.

OSPPARIS 17. Green Urban Planning Internship. 4 Units.
Intern in a local public company that oversees the city of Issy-les-Moulineaux's communication and innovation services in the immediate vicinity of Paris. Projects related to the Smart City Project (smart grid, smart mobility, smart government, etc.). Possible projects include: contributing to the city's editorial initiatives, taking active part in organizing events or conferences, doing documentary research on innovation, helping with European Union's co-funded projects. Speaking French a plus, but not a requirement.

OSPPARIS 18. Health Policy and Health Care System Design. 3 Units.
This course examines the structures of health care systems, from the perspective of the choices that those designing health care systems face. Topics include the overall goals of health care systems, health insurance programs and government programs financing care, the structure and organization of health care providers like doctor practices and hospitals, provider payment, patient cost sharing, coverage of new and emerging treatments and technology, and quality improvement. We particularly emphasize examples from the US and France.

OSPPARIS 19. Arranged Internship 1. 3-6 Units.
Two-quarter stay required unless student places into French 23P or above upon arrival. Internships can be arranged in a number of areas including the arts, architecture, politics, engineering, marketing and PR, media and journalism, health and psychological services, IT, NGO's, research, and hospitality administration.

OSPPARIS 20. A Journey Through Medieval Paris. 1 Unit.
From economic expansion in 11th century Paris and flourishing of Gothic religious architecture in the 12th century, to the establishment of Europe's principal university in Paris, making it the academic center of the region in the 13th century. Through onsite sessions, discover how Paris became a true capital in all meanings of the term, and explore the historical reasons for this phenomenal growth and expansion.

OSPPARIS 22P. Intermediate French I. 4 Units.
Prerequisite: one year of college French if completed within two quarters of arriving in Paris, or FRENLANG 21C.

OSPPARIS 23P. Intermediate French II. 4 Units.
Prerequisite: FRENLANG 21C within two quarters of arriving in Paris, or FRENLANG 22C or OSPPARIS 22P.

OSPPARIS 24. Introduction to French Society. 2 Units.
Required for Paris program participants. Exploration of meaningful aspects of French society and culture through lectures on history of France, participation in on-site cultural projects with French students, and a series of special encounters, venues and activities through the quarter. May be repeated for credit.

OSPPARIS 25. Bon Appétit, Marie Curie! The Science behind French Cooking. 3 Units.
Science and biology behind the cooking techniques and the taste buds. Each class includes a lecture, a food demonstration/experiment with student participation, and food preparation or tasting components explored together. Topics include: the five main tastes, aromatics, texture/mouthfeel, psychology, and genetics (why some people can't stand cilantro, for example); why we cook food; what heat does to meat and vegetables; the central role microbes play in cooking and eating; sauces and foams; molecular gastronomy; and of course, the science of dessert! This course meets the STEM track requirement for the Paris Program during Winter Quarter 2019-2020.

OSPPARIS 30. The Avant Garde in France through Literature, Art, and Theater. 4 Units.
Multiple artistic trends and esthetic theories from Baudelaire to the Nouveau Roman, from the Surrealists to Oulipo, from the theater of cruelty to the theater of the absurd, from the Impressionists to Yves Klein. Interdisciplinary approach to reflect on the meaning of avant garde and modernity in general, and on the question of why revolutionary artists in France remained in search of institutional recognition, nonetheless.

OSPPARIS 32. French History and Politics: Understanding the Present through the Past. 5 Units.
Key aspects of French politics including the constitutional framework, institutions, political parties and ideology, elections, political cultures, religion and politics, political elites and public policy-making, grass-root citizen participation, decentralization and local politics, and the major issues that structure and inform public debate, including attitudes and policies vis-à-vis the US.

OSPPARIS 36. French Writing Workshop. 3 Units.
Offered upon request for students who have completed an Advanced French course. Focus on French writing style, enabling students to understand and master the subtleties of French writing.

OSPPARIS 40M. An Intro to Making: What is EE. 5 Units.
Is a hands-on class where students learn to make stuff. Through the process of building, you are introduced to the basic areas of EE. Students build a "useless box" and learn about circuits, feedback, and programming hardware, a light display for your desk and bike and learn about coding, transforms, and LEDs, a solar charger and an EKG machine and learn about power, noise, feedback, more circuits, and safety. And you get to keep the toys you build. Prerequisite: CS 106A.

OSPPARIS 41. EAP: Perspective, Volume, and Design. 2 Units.
Mastering the techniques of spatial representation and developing a good visualization of volume. Offered by a major studio arts school in Paris, the "Ecole d'Arts Plastiques" (EAP). Preference for Art Practice, Art History, Product Design, Architecture or STS majors or minors with good language skills. In French. May be repeated for credit.

OSPPARIS 41E. EAP: Sculpture. 2 Units.
Control of volume through use of materials such as clay or plaster in order to master three dimensioned representations. Offered by a major studio arts school in Paris, the ¿Ecole d¿Arts Plastiques¿ (EAP).Preference for Art Practice, Art History, Product Design, Architecture or STS majors or minors with good language skills. In French. May be repeated for credit.

OSPPARIS 42. EAP: Drawing with Live Models. 2 Units.
Solid foundation in drawing; concepts of proportions, composition and analysis through observation. Perception of space, movement and forms. Techniques include: graphite, charcoal, chalk, pastel, watercolor, monotype, markers. Offered by a major studio arts school in Paris, the "Ecole d'Arts Plastiques" (EAP). Preference for Art Practice, Art History, Product Design, Architecture or STS majors or minors with good language skills. In French. May be repeated for credit.

OSPPARIS 43. EAP: Painting and Use of Color. 2 Units.
Different painting techniques for pictorial representation through various themes supporting the development of creativity. Offered by a major studio arts school in Paris, the "Ecole d'Arts Plastiques" (EAP). Preference for Art Practice, Art History, Product Design, Architecture or STS majors or minors with good language skills. In French. May be repeated for credit.

OSPPARIS 44. EAP: Analytical Drawing and Graphic Art. 2 Units.
Focus on observation of a model to be copied. Analysis of one aspect of a general structure while using various materials and techniques in a limited amount of time. Offered by a major studio arts school in Paris, the "Ecole d'Arts Plastiques" (EAP). Preference for Art Practice, Art History, Product Design, Architecture or STS majors or minors with good language skills. In French. May be repeated for credit.

OSPPARIS 44E. EAP. Computer Art. 2 Units.
Learn and develop efficient technique of modern graphic design. Offered by a major studio arts school in Paris, the "Ecole d'Arts Plastiques" (EAP).Preference for Art Practice, Art History, Product Design, Architecture or STS majors or minors with good language skills. In French. May be repeated for credit.

OSPPARIS 50M. Introductory Science of Materials. 4 Units.
Topics include: the relationship between atomic structure and macroscopic properties of man-made and natural materials; mechanical and thermodynamic behavior of surgical implants including alloys, ceramics, and polymers; and materials selection for biotechnology applications such as contact lenses, artificial joints, and cardiovascular stents. No prerequisite.

OSPPARIS 53. Electricity, Magnetism and Optics with Laboratory. 5 Units.
How are electric and magnetic fields generated by static and moving charges, and what are their applications? How is light related to electromagnetic waves? Represent and analyze electric and magnetic fields to understand electric circuits, motors, and generators. Wave nature of light to explain interference, diffraction, and polarization phenomena; geometric optics to understand how lenses and mirrors form images. Workings and limitations of optical systems such as the eye, corrective vision, cameras, telescopes, and microscopes. Discussions based on the language of algebra and trigonometry. An integrated version of Physics 23 and 24, targeted to premedical students who are studying abroad with integrated labs. Prerequisite: PHYSICS 21 or 21S. This course meets the STEM track requirement for the Paris Program during Winter Quarter 2019-2020.

OSPPARIS 54. The Artist's World: The Workshop, Patronage and Public in 19th and 20th Century France. 4 Units.
Synergy between artists, their workshops, patrons, models and the public in 19th and 20th century France. Weekly sessions in museums, artists' studios, and special venues within and around Paris, attempting to understand the world of the artist, and how, in many cases, this world became not only a place of refuge, but a metaphor of the artistic creation itself.

OSPPARIS 56. Exploring the City of Paris Through its Gastronomy: Past, Present and Future. 4 Units.
History and current dynamism of Paris through the prism of its gastronomic culture and topicality. Parisian districts currently witnessing rapid development due in part to the establishment of a growing number of quality-oriented and groundbreaking food businesses. This subtle gastronomic journey through the city of Paris will allow us both to understand the history of Paris, and how France's capital has sought to preserve its heritage and identity while becoming increasingly receptive to creativity, modernity and global influence.

OSPPARIS 63. Living Through War in France and its Empire: From 19th Century to the Present Time. 4 Units.
How have wars shaped the French Society? How have French men and women gone through these traumatic times, since the French Revolution until today? Beyond addressing a history of Wars per se, explore what French society represents within this context. What was the relationship between the "Citoyen-soldat" and "The Other": Women, the Colonized, the Enemy? Through this three-centuries panorama of French conflicts, gain a knowledge of both French society and the various methods and approaches to better understand the phenomenon of war, in all its universal complexity. In French.

OSPPARIS 66. FOOD CONSUMPTION & PRODUCTION. 4 Units.
How does Paris obtain its fresh food for the 8 millions meals that are served every day in the city? Where is this food produced and how is it brought to the city? What recent initiatives promote a more sustainable food system in France? These questions offer an opportunity to explore broader issues related to food systems in the urban era, rural-urban linkages, and sustainable food consumption, using Paris as a case study. The objective of this course is to better understand the food system of a large citysuch as Paris, with a focus on the underlying human-environment interactions. Part I of the course will focus on food production in the peri-urban areas of Paris and other regions in France. 70% of the food consumed in Paris comes from France. We will start with von Thunen's model of the central state.We will also discuss the rise of urban agriculture, with a field visit of an urban agriculture site under the municipality's "Parisculteurs"program. Part II will focus on food distribution and consumption in the city. We will discuss concepts such as agglomeration economies and supply chains. We will conduct interviews atan open-air market in Paris where «maraîchers» bring in their own production to sell. Part III will focus on recent trends to increase the sustainability of food production in France. We will discuss emerging social norms related to sustainable food and how they interact with agricultural and environmental policies in France and the European Union. This will include the rise of organic agriculture, geographical indications, various public and private eco-labeling initiatives, and attitudes toward genetically-modified crops in France.

OSPPARIS 67. INDP STDY: LAND USE IN FRANCEn. 2 Units.
The following topics areproposed for an independent study: (1)Land use history in France:After centuries of deforestation, French landscapes have been reforesting for more than a century. What are the causes, and environmental and social implications of this "forest transition"?(2) Organic agriculture in France:In 2018, the cultivated area under organic agriculture in France was 20% larger than in 2015, representing nearly 6% of the total cultivated area. What explains this trend? How is the organic agriculture standard defined in Europe? What are the health and environmental benefits of organic agriculture?(3) Outsourcing ecological footprints to other continents:The environmental impacts of France's consumption within its borders are decreasing. But does it reflect a decoupling between economic activity and environmental degradation, or is it just the result of a displacement of the most polluting activities to other countries? (4) Sustainability sourcing commitments by corporate actors: A growing number of multinational corporations are making sustainability sourcing commitments. Does the country (or continent) where these companies are based or sell their products have an influence on the likelihood of making such commitments?(5) Geographical Indications (GIs) in Europe: GIs identify a good as originating from a region where a given quality, reputation or other characteristic of the good is attributable to its geographical origin. More than 6,000 of the 10,300 products that benefit from GIs in the world are produced in the European Union. What are the benefits of GIs for producers and consumers?.
Same as: Lambin

OSPPARIS 72. The Ceilings of Paris. 4 Units.
Seventeenth century transformation of the ceilings of Paris, private and public. Itinerary of this transformation from artists' initial drawings to their finished work. Under the guidance of the curator of 17th century French Drawings in the Louvre Museum, study the original drawings as well as the venues in and around Paris. Sites vary from the most illustrious (Versailles) to the lesser known (Hotel Lauzun). Reflection on the changing social and political aspirations as represented in these new artistic forms. Language of instruction: French.

OSPPARIS 76. From Art to Medicine: The Human Body and Tissue Regeneration. 3 Units.
Review of arts on human anatomy followed by review of modern medical knowledge on human body, disease prevention, and tissue regeneration. How interdisciplinary research (biology, engineering and medicine) is critical in advancing modern medicine. Lectures alternate with case studies and paper discussions on selected papers targeting treatment of various diseases. Develop an NIH style research proposal to solve a real-life disease problem. Introduction into the field of tissue regeneration using interdisciplinary approaches, sharpening critical paper reading and scientific writing skills, and integrating with the unique local art and research resources that Paris has to offer. In English. Students applying to the STEM/Pre-med track are expected to have taken some prior STEM courses at Stanford to demonstrate their interest and preparation for applying to this track. This course meets the STEM track requirement for the Paris Program during Winter Quarter 2019-2020.

OSPPARIS 77. Literature and Philosophy of Place. 4-5 Units.
Themes of place and displacement in literature and philosophy of the larger French-speaking world, focusing on diasporic writers. Paris as a magnet for artists and thinkers seeking freedom from restrictive environments. Contrast the experiences of characters who are at "home" and those who are "away," the anxieties of exile and of colonialism, how one person's claim on home can be another's experience of being invaded,. Philosophers' analyses of the interdependence of place and identity, place and belonging, the sometimes contradictory nature of 'home,' as they pertain to the literary (fiction, essay, poetry) texts we will read.

OSPPARIS 78. Independent Studies in Human Diseases and Tissue Regeneration. 1-2 Unit.
Students who are interested to explore in on independent studies will meet with the instructor on a regular basis to develop customized studies on various potential topics on the history of biomedical research in Paris, or the role of biochemical research on driving progress in human diseases prevention, tissue repair, as well as potential impacts on future medicine.

OSPPARIS 78A. Independent Study Topics in Philosophy. 2-4 Units.
French feminist philosophy: Reading and understanding the contributions to feminist thought of Beauvoir, Wittig, Irigaray, and others.

OSPPARIS 78B. Independent Study Topics in Literary (Creative) Writing. 1-2 Unit.
Spirit of Place in Short Fiction/ Spirit of Place in Memoir. Students are invited to work with the professor developing such skills as characterization, plot, dialogue, figurative language, structure and pacing. All narratives will, of course, explore place (Paris and other parts of France) in new and interesting ways.

OSPPARIS 80. The Body, Race, and Difference in Contemporary France. 5 Units.
Using anthropological frames, students will learn to think about the body and its role in everyday life, paying particular attention to the ways that ethnicity, citizenship, race and belonging are lived and experienced in contemporary France. We will work with materials ranging from the colonial collection of human remains that were used to represent French Universalism in museum projects, to cultural artifacts acquired during the colonization of Africa (their circulation and the current debates around them), to interactive ethnographic work with current social organizations centered around the body, rights and health. Broad questions pivot on two fundamental queries: Is the differentiated body a natural fact? When and how have ethnic and multicultural discourses come into play in the cultural context of France where the political categorization of race is legally forbidden?.

OSPPARIS 82. Independent Studies Special Topics. 1-3 Unit.
All independent study topics should be arranged with the instructor and have an expectation of one meeting per week. A final 10-page paper should be the result of all independent studies. Topics include: African Health in the French Context; Culture, Medicine and the Body; Race and Universal Humanism.

OSPPARIS 91. The Future of Globalization: Economics, Politics and the Environment. 5 Units.
Economic and political impact of globalization on France and the EU and influence of France and the EU on the process of globalization. Issues of sovereignty and national identity for France; protection from versus integration into the network of globalization.

OSPPARIS 92. Building Paris: Its History, Architecture, and Urban Design. 4 Units.
The development of Parisian building and architecture from the 17th century to the present. Interaction of tradition and innovation in its transformation and its historical, political, and cultural underpinnings. Visits and case studies throughout Paris illustrate the formation of the city landscape and its culture.

OSPPARIS 103A. French Lecture Series 1. 1 Unit.
May be repeated for credit.

OSPPARIS 104A. French Lecture Series 2. 1 Unit.
May be repeated for credit.

OSPPARIS 105A. Sorbonne Lecture Series. 1 Unit.
May be repeated for credit.

OSPPARIS 122X. Europe and its Challenges Today. 4 Units.
European integration is now an economic, social, and political reality. This integration has a history of mutation and a transformation of its very foundation. Topics: the evolution of welfare states, elites, political parties, and systems in Europe; lobbies, trade unions, voluntary associations, social movements, popular protest, citizenship, democracy.

OSPPARIS 180. Paris Special Topics. 1-6 Unit.
May be repeated for credit.

OSPPARIS 186F. Contemporary African Literature in French. 4 Units.
Focus is on African writers and those of the diaspora, bound together by a common history of slave trade, bondage, colonization, and racism. Their works belong to the past, seeking to save an oral heritage of proverbs, story tales, and epics, but they are also contemporary.

OSPPARIS 195A. Paris University 1. 1-6 Unit.
May be repeated for credit.

OSPPARIS 195B. Paris University 2. 1-6 Unit.
May be repeated for credit.

OSPPARIS 195C. Paris University 3. 1-6 Unit.
May be repeated for credit.

OSPPARIS 198A. International Design and Construction Project. 4 Units.
Working as part of a French team of designers and engineers, invent a new product and present it to a jury of professors from French Institutes. While engineers insure the product functions and designers insure ease of use, Stanford students additionally help assess whether product will be used locally or globally. Language of instruction: French.

OSPPARIS 199A. Directed Reading A. 1-6 Unit.
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OSPPARIS 199B. Directed Reading B. 1-6 Unit.
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OSPPARIS 199C. Directed Reading: C. 1-6 Unit.
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Overseas Studies in Santiago Courses

OSPSANTG 12S. Accelerated Second-Year Spanish, Part I: Chilean Emphasis. 5 Units.
Intensive sequence integrating language, culture, and sociopolitics of Chile. Emphasis is on achieving advanced proficiency in oral and written discourse including formal and informal situations, presentational language, and appropriate forms in academic and professional contexts. Prerequisite: one year of college Spanish, or 11 or 21B if taken more than two quarters prior to arriving in Santiago.

OSPSANTG 13S. Accelerated Second-Year Spanish, Part II: Chilean Emphasis. 5 Units.
Intensive sequence integrating language, culture, and sociopolitics of Chile. Emphasis is on achieving advanced proficiency in oral and written discourse including formal and informal situations, presentational language, and appropriate forms in academic and professional contexts. Prerequisite: 11 or 21B within two quarters of arriving in Santiago, or 12 or 22B.

OSPSANTG 14. Women Writers of Latin America in the 20th Century. 4-5 Units.
Key figures in poetry, narrative fiction, theater, and testimonio, such as Mistral, Garro, Lispector, Poniatowska, Valenzuela, Eltit and Menchú. Close reading technique. Issues raised in literary texts that reflect the evolution of the condition of women in Latin America during the period. Topics include gender differences and relationships, tradition versus transgression, relationship between changes in the status of women and other egalitarian transformations, and women writers and the configuration of literary canons.

OSPSANTG 20. Comparative Law & Society: Conflicts in the Structuring of Democratic Polities across Latin America. 4-5 Units.
This course examines how different democratic polities with their own distinct, historically rooted traditions have used the law to promote shared goals of liberty and equality. Chile is widely seen as an exemplar in the successful deployment of law to enable the transition from an authoritarian to a democratic society. Topics include: how history has shaped inherited legal institutions and concepts across Latin America, Europe, and the United States; constitutional review; administrative regulation; criminal justice; debates over free speech, as well as ongoing struggles to promote racial, ethnic, and gender equality. Visits to a number of key sights: the Museo de la Memoria y los Derechos Humanos; the Universidad de Chile; and the Tribunal Constitucional de Chile.

OSPSANTG 23. Topics in Literature of the Americas. 1-2 Unit.
Students may choose from the following topics: Roberto Bolaño and the Legacies of 1968, Amuleto (1999) Junot Díaz's Global Dystopias. Students meet with faculty member to select a set of readings. Regular meetings to review progress. Both topic courses on Roberto Bolaño and Junot Díaz as prisms of globalization and world literature, as sources of the heteronomy of literature, and as literary archives.

OSPSANTG 29. Sustainable Cities: Comparative Transportation Systems in Latin America. 5 Units.
Energy and environmental challenges resulting from the growing size and complexity in Latin American cities. Key issues: way in which public authorities deal with the dynamics of urban growth and complexity; related environmental and energy issues, particularly related to different public transportation models. Systemic approach as seen in Curtiba, Bogota, Santiago, and Medellin. Analysis centering on different approaches used to tackle these related issues; different institutional strategies.

OSPSANTG 30. Short Latin American Fiction of the 20th Century. 4-5 Units.
Introduction to short narrative fiction produced in Latin America during the 20th Century. Key features of the short story genre, as defined by Chekhov in the 19th Century and redefined by Kafka and Borges in the 20th Century. Main literary movements of the period in Latin America, including Regionalism, Social Realism, the Avant-Garde, the Boom of the 1960s and Magical Realism, the Post-Boom, etc. Close reading course with strong emphasis on analysis and discussion of the required texts. Readings placed in the context of the main developments in Latin American history and culture in the period.

OSPSANTG 33. Spanish Language Tutorial. 2 Units.
Prerequisite: two years of college Spanish or equivalent placement.May be repeated for credit.

OSPSANTG 40. Academic Internship. 2 Units.
May be repeated for credit.

OSPSANTG 44. Introduction to Borderlands Literature of the Americas. 3-5 Units.
Comparative dialogue regarding a variety of perspectives from Chicano/a and LatinAmerican literary studies. Examine autobiographies, fiction, and cultural productions from writers such as Roberto Bolaño (2666), Yuri Herrera (Señales que precederán al fin del mundo), Gloria Anzaldúa (Borderlands/La Frontera), Sara Uribe (Antígona González), Américo Paredes (The Hammon and the Beans), Sandra Cisneros (La casa en Mango), and Helena Viramontes ("The Cariboo Café"). Also focus on the Chilean dictatorship novel Nocturna de Chile by Roberto Bolaño and the Dominican dictatorship novel The Brief Wondrous Life of Oscar Wao by Junot Díaz.

OSPSANTG 46. FORMAL ORGANIZATIONS. 3-5 Units.
Formal organizations are ubiquitous in contemporary societies, such as firms, schools, hospitals, and government agencies. They educate us, manage our financial accounts and structure our daily routines, and they distribute resources, status, and opportunities among social groups. This course introduces dimensions and aspects of formal organizations and basic concepts and theoretical logics for analyzing them. A multidisciplinary approach is adopted to understand organizational phenomena, with special attention to complementary perspectives drawn from economics, psychology, and sociology. Organization research literature and specific cases, especially those in a comparative perspective, are used to illustrate the applications of the analytic models and concepts in the real world of organizations.

OSPSANTG 56. Cultural Literacy: Chile. 2 Units.
This mandatory course (2 units) provides students with essential elements to understand the history, politics, and culture of modern Chile. In addition to readings, there will be discussions of films and literature. Field trips will include visits to the General Cemetery, the Museum of Memory, Pablo Neruda's house in Isla Negra, and street art from Barrio Yungay. Field trips to Cerro San Cristobal to explore conservation issues will also be included.

OSPSANTG 57. Sexual and Reproductive Health Rights and Public Policy in Chile. 5 Units.
This course aims to provide an overview of the relationship between public policies, sexual and reproductive health, gender and social determinants of health within the framework of people's rights in Chile, a country has only recently taken on the issues. Projects include group projects, reading controls and a final paper.nInstructor: Claudia Dides.

OSPSANTG 58. Global Change in Chile. 5 Units.
Physical, ecological, and human geography of Chile. Perceptions of the Chilean territory and technologies of study. Flora, fauna, and human adaptations to regional environments. Guest lectures; field trips; workshops.

OSPSANTG 62. Topics in Chilean History. 4-5 Units.
Independent study topics concerning any aspect of Chilean history such as independence and nation building, social and economic development, ideas and culture, dictatorship and democracy. Research paper based on primary and secondary sources.

OSPSANTG 67. Patagonia in Literature and Film. 5 Units.
The course will explore the cultures and histories of Patagonia through literature and film, including historical documents, travel literature, poetry, historical and contemporary short stories and novels, narrative and documentary films to help students become acquainted with the unique geography, heritage and contemporary life of the region. The familiarization with ¿and open discussions around¿ these materials will complement instruction in situ during an extensive visit to Patagonia.

OSPSANTG 68. The Emergence of Nations in Latin America. 4-5 Units.
Major themes of 19th-century Latin American history, including independence from Spain, the emergence of nation states, and the development of a new social, political, and economic order.

OSPSANTG 71. Santiago: Urban Planning, Public Policy, and the Built Environment. 5 Units.
Santiago's growth and development over time and in comparison to other mega cities in the world; impact of urban highways on the built environment; shopping malls and the development of new urban sub-centers. Topics: brief history of the city, from 1541 to1940; urban development since 1940; the 1960 Inter-communal Urban Plan; planning and the configuration of modern Santiago; housing policy as an instrument to combat poverty; social housing policy and Santiago's built environment.

OSPSANTG 79. Topics in European Legal History. 1-2 Unit.
This is an independent study/reading course that explores such core topics in European legal history as (1) the Roman-canon law tradition; (2) the history of constitutionalism (16th-century to present); (3) the rise of modern natural law and codification; (4) absolutism and the rise of the centralized, administrative state; and (5) Enlightenment and revolution.We will meet once per week to discuss readings. Students who wish to take the course for 2 units have the option of also writing four response papers to the readings (as detailed above).

OSPSANTG 85. Marine Ecology of Chile and the South Pacific. 5 Units.
Relationships among physical processes in the ocean, biological productivity, and the exploitation of resources by high-thropic-level predators including human beings. Characterization of ecological patterns; identification of processes operating on marine systems. Open ocean ecosystems, intertidal and benthic regions of the world's oceans, and ecological research developed along coastal regions, focusing on Chile's 4,000 km coastline.

OSPSANTG 102S. Composition and Writing Workshop for Students in Santiago. 3-5 Units.
Advanced. Writing as craft and process: brainstorming, planning, outlining, drafting, revising, style, diction, and editing. Non-Spanish majors or minors may choose topics related to their studies. Prerequisite: SPANLANG 13C, 13R, 13S, 23B, or equivalent.

OSPSANTG 116X. Modernization and its Discontents: Chilean Politics at the Turn of the Century. 5 Units.
Chile's strides towards becoming a developed country have engendered high levels of alienation and disaffection among significant sectors of the population. The roots of this apparent paradox of modernization, focusing on newly emerging actors in the Chilean political scene: Mapuche organizations, women's groups, the environmental movement, and new features of the established ones like trade unions and human rights activists.

OSPSANTG 118X. Artistic Expression in Latin America. 5 Units.
Elite, mass-media, and popular cultural changes in Chile under conditions of economic and political liberalization. The reception of cultural meanings from the center of the world social system (U.S., EU, and Japan), reformulation to respond to local conditions, and export in the shape of cultural artifacts. Innovative elements rooted in the regional and local culture.

OSPSANTG 119X. The Chilean Economy: History, International Relations, and Development Strategies. 5 Units.
The Chilean economy in five stages, taking into account: the international economic position of Chile; internal economic structures closely related to the inherited historical conditions and to the changing international economic position of the country; and the economic strategies prevalent during the period and the concrete development policies conducted by government authorities.

UNDERGRADUATE RESEARCH

Stanford encourages undergraduates to work with faculty on independent projects in research, the arts, and senior synthesis. Undergraduate Research facilitates these close relationships by providing advising and funding to undergraduates across all disciplines and at all stages of developing an idea into a research project. See the Research and Independent Projects (https://undergradresearch.stanford.edu/) web site for more information. For current deadlines, grant types, and program details, see the Student Grants (https://studentgrants.stanford.edu/) page. Faculty or departments interested in applying for funding to support undergraduates in their working groups can learn more on the For Faculty (https://undergrad.stanford.edu/opportunities/research/faculty/) page.

CENTER FOR TEACHING AND LEARNING

The Center for Teaching and Learning supports evidence-based and inclusive learning and teaching practices, educational programs and training, community building, and strong collaborations and partnerships with schools, departments, and other offices.

Resources for Students and TAs

Essential resources and learning support services to Stanford students and TAs include:

- Academic Skills Coaching
- Peer subject tutoring and foreign language conversation partners
- Workshops and courses
- Learning consultant program
- Completion Coaching
- Graduate Study Hall
- Graduate student teaching consultant program
- TA Orientation

Support for Faculty and Instructors

Support for faculty and instructors includes integrated services and programs to help advance pedagogy, engage students in active learning, and promote inclusive learning such as:

- Course Design Institute
- Teaching with technology
- Teaching assessment
- Teaching grants
- Programs and workshops

Courses

CTL 53. Working Smarter. 2 Units.
Once you get into the school of your dreams, how will you be sure you can succeed there? The level of organization and study skills necessary for college success are often very different than in high school. In Working Smarter, you will learn evidence-based, college-level strategies for time management, note taking, studying, reading, writing, discussion, and oral presentations. This class is a great fit for high school students who want to prepare for college and for college students who want to expand their set of strategies for successful learning in STEM, social science, and humanities courses.

CTL 120. Peer Tutor Training. 1 Unit.
Goal is to help students become effective peer tutors for course material already mastered by articulating aims; developing practical tutoring skills including strategies for drop-in sessions; observing experienced tutors; discussing reading assignments; role playing; and reflecting on experiences as a peer tutor intern. Prerequisite: consent of instructor.

CTL 312. Science and Engineering Course Design. 2-3 Units.
For students interested in an academic career and who anticipate designing science or engineering courses at the undergraduate or graduate level. Goal is to apply research on science and engineering learning to the design of effective course materials. Topics include syllabus design, course content and format decisions, assessment planning and grading, and strategies for teaching improvement.
Same as: ENGR 312

ROTC

Reserve Officers' Training Corps (ROTC)

Cross-Enrollment Agreements for ROTC

Stanford has cross-enrollment agreements for the Reserve Officers' Training Corps (ROTC) with the Navy and Marine Corps ROTC program at the University of California at Berkeley, the Army ROTC program at Santa Clara University, and the Air Force ROTC program at San Jose State University. These agreements allow Stanford students to engage in military training while working on their degrees from Stanford. Courses taken in ROTC programs are offered by and through UC Berkeley, Santa Clara, and San Jose State. Most courses count for academic or activity credit and count toward the 12-unit requirement for full-time registration status and satisfactory academic progress requirements for Stanford undergraduates.

Normally, students who participate in ROTC training complete a four-year course of instruction at the respective institution that consists of two years of basic courses during the freshmen and sophomore years, and an advanced course of instruction during the junior and senior years. Students who accept ROTC scholarships are generally subject to a service obligation, depending on the regulations of the particular service.

Stanford students who are enrolled in ROTC programs under the cross-enrollment agreements are eligible to compete for various scholarships that provide up to full tuition and a monthly stipend. Students normally compete for national scholarships as high school seniors, although current Stanford students may be eligible to enroll in ROTC on a non-scholarship basis. Non-scholarship ROTC students are eligible to compete for scholarships, and individual services may offer additional scholarship programs to current qualifying undergraduate and graduate students. Interested students should contact the appropriate military branch at the host institution to obtain information on these programs and to initiate application procedures.

Students who satisfactorily complete an ROTC program and are awarded a Stanford degree qualify for a commission as a Second Lieutenant in the U.S. Army, an Ensign in the U.S. Navy, a Second Lieutenant in the U.S. Marines, or a Second Lieutenant in the U.S. Air Force.

For additional questions concerning the ROTC programs, Stanford students should consult with one of the host units.

Academic Credit

All three service programs have a mandatory lab course each quarter which carries 1 unit of activity credit for satisfactory completion of work. Although there is no limitation on the number of activity classes in which a student may enroll, no more than 8 units of these activity classes (and/or other university activity classes) may be applied toward undergraduate graduation requirements (see the Undergraduate Degrees (p. 37) section of this bulletin).

Upper level ROTC academic courses carry two units of credit for satisfactory completion of work and are graded on a credit/no credit basis. No more than 36 units without a letter grade may be applied toward undergraduate graduation requirements (see the Undergraduate Degrees (p. 37) section of this bulletin).

In addition to enrolling in ROTC courses at their host institution, all ROTC students are to enroll in the corresponding ROTC course at Stanford through Axess.

Air Force ROTC

Commanding Officer: Lieutenant Colonel Walter H. Priebe

Air Force ROTC courses are offered at San Jose State University. See also the SJSU website (http://www.sjsu.edu/afrotc/).

Courses in the freshman year focus on the foundation of the United States Air Force and introduce students to the Air Force and AFROTC. Topics include the characteristics, missions, and organization of the Air Force, the qualities of an officer and professionalism, career opportunities, military customs and courtesies, and communication skills.

Courses in the sophomore year focus on the evolution of the United States air and space power. Students study air and space power through historical analysis and examine the capabilities, function, and doctrinal employment of aerospace forces. The course emphasizes oral and written communication skills.

Courses in the junior year focus on Air Force leadership studies. Topics include leadership, management fundamentals, professional knowledge, Air Force personnel system, ethics, and communications. Students apply knowledge and skills required of junior Air Force officers through case studies, practical exercises, and seminar discussion.

Senior year courses cover two subjects, national security affairs and preparation for active duty. Students learn about national security process, international and regional relations, advanced leadership ethics, Air Force doctrine with focus on the military as a profession, military justice, civilian control of the military, and current issues affecting the military. Preparation for active duty focuses on the role of the Air Force officer in contemporary society emphasizing skills to facilitate a smooth transition from civilian to military life.

The leadership laboratory is required for all students every quarter. Students participate in hands-on exercises to learn drill and ceremony; Air Force customs and courtesies; leadership and followership skills; and they hear from guest speakers on a variety of Air Force topics.

Army ROTC

Commanding Officer: Lieutenant Colonel Melan P. Salas

Some Army ROTC courses are offered at Santa Clara University and some are offered on Stanford's campus. See also the Army ROTC web site (http://www.scu.edu/rotc/).

Freshman year courses introduce students to leadership and personal development and provide foundations for leadership.Course topics include personal challenges and competencies for effective leadership, goal setting, time management, physical fitness, and stress management related to leadership and officership. Students develop a personal fitness program under the guidance of an Army master fitness trainer. In addition, they learn leadership fundamentals such as setting direction, problem solving, listening, presenting briefs, providing feedback, and effective writing skills in the context of practical and interactive exercises.

Army courses taught in the sophomore year look at leadership through a variety of lenses using case study and interactive exercises. Topics include creative and innovative leadership strategies and styles, challenges of leading in contemporary operational environments along with crosscultural challenges, and team leading procedures.

In the junior year, students learn adaptive team leadership and situational leadership.They develop skills including decision making, persuading, and motivating team members when under fire in small-unit tactical operations scenarios.

Courses for seniors provide capstone leadership instruction and experiences in a practical and current event driven context. Students plan, execute, and assess complex operations, function as a member of staff, and provide leadership performance feedback to subordinates.

They use case studies, scenarios, and exercises to prepare for their first unit assignment and the transition to commissioned officer in a modern world.

All students are also required to take a military history course focused on leadership. This course may be taken any year. The leadership laboratory is required for all students every quarter. In addition, students complete a four-day weekend field training exercise away from the University in the Autumn and Spring quarters, and a formal military dinner during an evening in the Winter Quarter.

Naval ROTC

Commanding Officer: Major Adam Craig

Naval ROTC courses are offered at the University of California at Berkeley. See also the Naval ROTC web site.

Courses in the freshman year introduce students to the Navy and Marine Corps and to the NROTC program. They also study sea power from a historical and United States centered perspective.

In the sophomore year, students take their first leadership class with a focus on management and their first navigation class with a focus on the fundamentals of nautical navigation. Courses include case studies, student presentations, and practical exercises.

Juniors study introductory naval engineering with a focus on ship systems and modern weapons systems. Example topics include gas turbine propulsion systems, nuclear reactors, and radar and sonar theory.

During their senior year, students study advanced leadership topics within an ethics framework and advanced navigation and naval operations.

Students pursuing a commission in the Marine Corps do not take the two engineering courses or the two navigation courses. Marine option students take two Marine Corps specific courses that examine the history of littoral warfare and the evolution of warfare.

All students are required to take the weekly professional development laboratory course (drill) at UC Berkeley every quarter.

ROTC - Air Force Courses

ROTCAF 1. Air Force ROTC Lab. 1 Unit.
Practical leadership exercises including physical fitness training. May be repeated for credit.

ROTCAF 11. The Foundation of the United States Air Force. 1 Unit.
Introduces students to the Air Force and AFROTC with an overview of basic characteristics, missions, and organization of the Air Force; additional topics include officership and professionalism, career opportunities, military customs and courtesies, and an introduction to communications skills. May be repeat for credit.

ROTCAF 21. The Evolution of USAF Air and Space Power. 2 Units.
Examines general aspects of air and space power through historical study and analysis and provides the student with a knowledge level understanding of the capabilities, function and doctrinal employment of aerospace forces; emphasizes development of oral and written communication skills. May be repeat for credit.

ROTCAF 131. Air Force Leadership Studies. 2 Units.
Study of leadership, management fundamentals, professional knowledge, Air Force personnel system, ethics, and communication skills; develops application level knowledge of skills required of junior Air Force officer through case studies, practical exercises, and seminar discussion. May be repeat for credit.

ROTCAF 141. National Security Affairs. 2 Units.
Examines the national security process, international and regional relations, advanced leadership ethics, and Air Force doctrine with focus on the military as a profession, officership, military justice, civilian control of the military and current issues affecting military professionalism.

ROTCAF 142. PREPARATION FOR ACTIVE DUTY. 2 Units.
An examination of the role of the Air Force officer in contemporary society with emphasis on knowledge, comprehension, and application of skills needed to facilitate a smooth transition from civilian to military life. May be repeated for credit.

ROTC - Army Courses

ROTCARMY 1. ARMY ROTC LAB. 1 Unit.
Leadership laboratories, held weekly for three hours, are required of all students. Performance during lab periods is reflected in the student's course grade. Labs include activities such as rappelling, terrain navigation, marksmanship, drill and ceremonies, and tactical field training exercises.

ROTCARMY 11. Leadership and Personal Development. 1 Unit.
Introduces students to the personal challenges and competencies that are critical for effective leadership. Students learn how the personal development of life skills such as goal setting, time management, physical fitness, and stress management relate to leadership and officership. Students develop their own personal fitness program under the guidance of an Army master fitness trainer.

ROTCARMY 12. Foundations in Leadership I. 1 Unit.
An overview of leadership fundamentals such as setting direction, problem solving, listening, presenting briefs, providing feedback and using effective writing skills. Students begin to explore leadership dimensions and values.

ROTCARMY 13. Foundations in Leadership II. 1 Unit.
An overview of the leadership framework with practical applications in fundamentals such as problem solving, listening, presenting briefs, and using effective writing skills. Students explore dimensions of leadership, values, attributes, skills, and actions in the context of practical, hands-on, and interactive exercises.

ROTCARMY 21. Innovative Leadership. 2 Units.
Explores the dimensions of creative leadership strategies and styles by studying historical cases and engaging in interactive exercises. Students practice aspects of personal motivation and team building within the context of planning, executing and assessing team exercises. Focus will be on the continued development of the knowledge of leadership values and attributes through an understanding of organizational customs and courtesies. Leadership case studies provide tangible context for learning Individual Creeds and Organizational Ethos.

ROTCARMY 22. Leadership in Changing Environments I. 2 Units.
Examines the challenges of leadership in complex contemporary operational environments. Dimensions of the cross-cultural challenges of leadership in a constantly changing world and their application to leadership tasks and situations. Case studies stressing importance of teamwork and tactics in real-world settings.

ROTCARMY 23. Leadership in Changing Environments II. 2 Units.
Examines the decision-making process and plans/orders that enable small units to complete assigned tasks. Planning techniques used to develop orders and briefing plans and decisions.

ROTCARMY 131. Adaptive Team Leadership. 2 Units.
Challenges students to study, practice, and evaluate adaptive leadership skills as they are presented with the demands of the ROTC Leader Development Assessment Course. Challenging scenarios related to small unit tactical operations are used to develop self-awareness and critical thinking skills. Students receive systematic and specific feedback on their leadership abilities.

ROTCARMY 132. Situational Leadership I. 2 Units.
Study of intense situational leadership challenges to build student awareness and skills in leading small units. Skills in decision-making, persuading, and motivating team members when "under fire" are explored, evaluated, and developed.

ROTCARMY 133. Situational Leadership II. 2 Units.
Practical applications of intense situational leadership challenges that will provide awareness and specific feedback on leadership abilities. Student skills are evaluated using practical applications in decision making, persuading, and motivating team members when under fire. Aspects of military operations are reviewed as a means of preparing for the ROTC Leader Development Assessment Course (LDAC).

ROTCARMY 141. Developing Adaptive Leaders. 2 Units.
Students develop proficiency in planning, executing, and assessing complex operations; in functioning as a member of a staff; and in providing leadership performance feedback to subordinates. Students are given situational opportunities to assess risk, make ethical decisions, and provide coaching to fellow ROTC students. Students are challenged to instruct younger students. Students identify responsibilities of key staff roles and use situational opportunities to develop subordinates.

ROTCARMY 142. Leadership in a Complex World I. 2 Units.
Explores the dynamics of leadership in the complexity of current military operations. Students examine customs and courtesies, military law, principles of war and rules of engagement in the face of international terrorism. Aspects of interacting with nongovernmental organizations, civilians on the battlefield, and host nation support are examined and evaluated.

ROTCARMY 143. Leadership in a Complex World II. 2 Units.
Significant emphasis is placed on preparing students for their first unit of assignment and transition to lieutenant. Case studies, scenarios, and exercises are used to prepare students to face the complex ethical and practical demands of leading as commissioned officers in the U.S. Army.

ROTCARMY 176. Military History. 2 Units.
A survey of the military and diplomatic aspects of American involvement in conflicts from the Anglo-Indian Wars to the present.

ROTC - Navy Courses

ROTCNAVY 1. Naval ROTC Lab. 1 Unit.
Emphasis is placed on professional training not of an academic nature. The laboratory is intended for topics such as drill and ceremonies, physical fitness and swimming testing, cruise preparation, cruise evaluation, sail training, safety awareness, preparation for commissioning, personal finances, insurance, and applied exercises in naval ship systems, navigation, naval operations, naval administration, and military justice. Other topics and special briefings will be conducted as determined by the Chief of Naval Education and Training or the Professor of Naval Science.

ROTCNAVY 11. Introduction to Naval Science. 1 Unit.
This curriculum provides guidelines for introducing students to the organization of the Department of Defense and the naval service, the long-held customs and traditions of the service, basic leadership, ethics and character development, the duties of a junior officer, and basic information concerning shipboard procedures and safety. It is the intent of this course to stimulate the students' interest for study and investigation in future courses. Three hours of lecture per week. Course is offered in the Autumn Quarter.

ROTCNAVY 12. Sea Power. 2 Units.
Traces the U.S. historical evolution of sea power, its concepts, theories and applications. Emphasizes the impact of world situation, U.S. national interest, changing technology, and naval leadership on the evolving concept of sea power. Relates historical developments to current trends. Examines briefly the U.S. Merchant Marine's and the former Soviet Navy's impact on sea power policy formulation. Two hours of lecture per week. Course is offered in the Winter/Spring Quarter.

ROTCNAVY 20. Evolution of Warfare. 2 Units.
Progressive analysis of the evolution of warfare from the ancient world to the present. Emphasis placed on causes of continuity and/or change of methods, as well as the influence of economic, moral, political, and technological factors on strategic thought. Three hours of lecture per week. Course is offered in the Winter/Spring Quarter.

ROTCNAVY 21. Leadership and Management. 2 Units.
This course will cover basic management, decision making, and moral leadership. The student will learn to establish meaningful goals, prioritize among competing demands, and plan and forecast in a task-centered organization. The course includes exposure to measures of organizational effectiveness, methods to overcome resistance to change, effective communications, and techniques to aid in counseling, team building, and resolution of disciplinary and personnel matters. Three hours of lecture/discussion/seminar per week. Course is offered in the Autumn quarter.

ROTCNAVY 22. Naval Ship Systems - Engineering. 2 Units.
Principles of design and operation of ships. Emphasis on description and analysis of major types of propulsion plants, both conventional and nuclear. Principles of thermodynamic cycles, electrical theory, power generation and distribution, auxiliary machinery systems. Ship construction, strength and stability in intact and damaged conditions. Factors and design criteria for seaworthiness, structural integrity, and operational employment. Three hours of lecture per week. Prerequisites: MATH 41. Course is offered in the Winter/Spring Quarter.

ROTCNAVY 131. Navigation. 2 Units.
Theory, principles, and procedures of terrestrial and celestial navigation and piloting techniques. A study of coordinating systems, including the celestial coordinate system, nautical charts and publications, position fixing, dead reckoning, nautical astronomy, the theory and methods of celestial navigation, and the theory and prediction of tides and current. Three hours of lecture and one hour of laboratory per week. Course is offered in the Spring Quarter.

ROTCNAVY 132. Naval Operations & Seamanship. 2 Units.
Introduction to the various aspects of ship operations at sea. Principles of terrestrial navigation including the rules of the road for prevention of collisions at sea, vector analysis of relative motion, ship behavior and characteristics in maneuvering, precise ship positioning, use of aids to navigation, meteorology, and electronic navigation. Three hours of lecture and one hour of laboratory per week. Prerequisites: ROTCNAVY 131 or consent of instructor. Course is offered in the Winter/Spring Quarter.

ROTCNAVY 141. Naval Ship Systems - Weapons. 2 Units.
An introduction to the physical theory of acoustic and electromagnetic wave generation and propagation; the design and use of electronic, electromechanical, and pneumatic systems; and the combination of these systems to perform detection and analysis of objects sharing and traversing common environments. Three hours of lecture per week. Course is offered in the Autumn Quarter.

ROTCNAVY 142. Leadership and Ethics. 2 Units.
This course is the capstone leadership course. It is intended to provide the ethical foundation and tools required for success as a leader of a diverse work force, often under circumstances of substantial stress. The course is divided between the art of leadership and the technical aspects of integrating personnel development with the management of resources, although the emphasis is on leadership. It is designed to be given as a seminar or lecture/discussion in which principles, concepts, and concrete subjects are presented, discussed, and debated. Three hours of lecture/discussion/seminar per week. Prerequisites: Consent of instructor. Course is offered in the Winter/Spring Quarter.

ROTCNAVY 154. Littoral Warfare. 2 Units.
An analysis of the theory, origins, historical evolution, and impact of man's attempts to project sea power ashore. A case study approach is used to study major developments in amphibious warfare. Three hours of lecture per week. Course is offered in the Winter/Spring Quarter.

GRADUATE EDUCATION (VPGE)

The Office of the Vice Provost for Graduate Education (VPGE) works collaboratively to ensure that every graduate student has the best possible education. VPGE's initiatives and resources enrich students' academic experiences at Stanford, advancing diversity, preparing engaged global citizens and leaders, and positioning Stanford at the forefront of innovation in graduate education.VPGE serves Stanford's doctoral, master's, and professional degree students from all seven Stanford schools. VPGE plays a leadership role in providing University-wide graduate policy interpretation and implementation, as well as developing initiatives that enhance and complement the offerings of the departments and programs that have primary responsibility for organizing and delivering graduate education.

The VPGE office has five primary areas of program activity: administering University-wide graduate fellowship programs; advancing graduate student diversity, inclusion, equity, and belonging; providing professional development programs and learning opportunities; promoting interdisciplinary and cross-school learning and collaborations; and encouraging academic innovation in graduate programs. The Vice Provost for Graduate Education and Postdoctoral Affairs reports to the Provost.

Academic Policies

The Faculty Senate Committee on Graduate Studies (https://registrar.stanford.edu/faculty/academic-senate-committees/committee-graduate-studies-c-gs/) (C-GS) formulates university policy governing the substance and process of graduate education, including advising expectations, candidacy requirements, dissertation committees, and joint degree programs. C-GS is also charged to review graduate interdisciplinary programs (IDPs) in order to recommend renewals or discontinuation of the IDPs and to receive proposals for new IDPs, or other new graduate degree programs. Committee members include the Vice Provost for Graduate Education and Postdoctoral Affairs or delegated staff (ex officio) and representatives from the faculty at large appointed by the Faculty Senate, administration such as the Office of the University Registrar (ex officio), and graduate students. The Graduate Student Council and the Nominations Committee of the Associated Students of Stanford University (ASSU) choose student members.

VPGE recommends, promulgates, and interprets University policies related to graduate education. The Graduate Academic Policies and Procedures (http://gap.stanford.edu) (GAP) handbook is the primary source for policies affecting all Stanford graduate students, including policies recommended by C-GS and approved by the Faculty Senate. Several policies referenced frequently include:

General Requirements, Progress and Milestones

Policies related to registration, enrollment, residency, academic milestones and advising; see GAP 3. General Requirements, Progress and Milestones (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/).

Degree-Specific Requirements, Progress and Milestones

Policies specifically related to master's, coterminal, professional, doctoral, and joint degrees including doctoral dissertation policies; see GAP 4. Degree-Specific Requirements, Progress and Milestones (https://gap.stanford.edu/handbooks/gap-handbook/chapter-4/).

The ExploreDegrees section of this bulletin outlines University-level policies guiding admissions, financial aid, enrollment, degree progress, and graduation. The graduate programs tabs of each department's section outlines specific department degree requirements. Additional information on professional school programs is available from the Graduate School of Business, the School of Law, and the School of Medicine.

Changes of Enrollment Status

Policies related to degree or enrollment changes, degree conferral, leaves of absence or discontinuations, exchange programs, and pregnancy, childbirth and adoption; see GAP 5. Changes of Enrollment Status (https://gap.stanford.edu/handbooks/gap-handbook/chapter-5/).

Graduate Student Funding

Policies related to graduate student funding including fellowships and research and teaching assistantships; see GAP 7. Graduate Student Funding (https://gap.stanford.edu/handbooks/gap-handbook/chapter-7/) and Administrative Guide 10.2. Graduate Student Employment on Campus (https://adminguide.stanford.edu/chapter-10/subchapter-2/).

Honor Code and Fundamental Standard

Graduate students must also follow the University's Honor Code (https://communitystandards.stanford.edu/policies-and-guidance/honor-code/) and Fundamental Standard (https://communitystandards.stanford.edu/policies-and-guidance/fundamental-standard/), which establish the conditions for academic work and set the standard of conduct for students at Stanford, respectively. The interpretations and applications of the Honor Code, the Student Judicial Charter of 1997, the Student Conduct Penalty Code, statistics, and other documents are available through the Office of Community Standards (https://communitystandards.stanford.edu/).

Academic Advising

Effective academic advising is critical to graduate education. At Stanford, all matriculated graduate students are to be advised by a member of the faculty.

The University policies on advising and the conduct of research listed below apply to all faculty and the graduate students they advise. In addition, departments and programs are required to establish specific expectations and requirements for academic advising and should inform graduate students and faculty of these policies. Additional information and resources about advising can be found on the VPGE's Advising & Mentoring web pages (https://vpge.stanford.edu/academic-guidance/advising-mentoring/).

- Policy specifying that all matriculated graduate students must be advised by a faculty member, to be designated within students' first quarter of enrollment, and that all graduate degree programs must explicitly state their minimum advising expectations, distributed annually to faculty and students; see GAP 3.3. Academic Advising (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/).
- Stanford's policies and practices related to the conduct of research, including obligations to students, staff, and sponsors; see Research Policy Handbook 1. Conduct of Research (https://doresearch.stanford.edu/policies/research-policy-handbook/conduct-research/).
- Policy articulating that all members of the Stanford community are responsible for sustaining the University's highest ethical standards and values; see Administrative Guide 1.1.1. University Code of Conduct (https://adminguide.stanford.edu/chapter-1/subchapter-1/policy-1-1-1/).
- Elaboration of the GAP Academic Advising policy, including change of adviser procedures; see the "Graduate Advising and Credentials (p. 80)" section of this bulletin.

As of September 2019, every graduate-level, degree-granting department or program at Stanford (other than the professional degree programs of JD, MBA, and MD) must have a designated faculty member who

oversees graduate studies, commonly known as "Director of Graduate Studies" (DGS); see GAP 3.4. Faculty Directors of Graduate Studies (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-4/page-3-4-1/). DGSs serve as primary liaisons between graduate students, faculty in their programs, the Chair or Director, the School, and the University.

Research Policies

Graduate education and research are interrelated enterprises. Many Stanford graduate students conduct research under the guidance and sponsorship of Stanford faculty members. The Research Policy Handbook (https://doresearch.stanford.edu/policies/) (RPH), overseen by the Office of the Vice Provost and Dean of Research, articulates policies governing research. Several policies that are most relevant to graduate education include:

Academic Authorship

Guidelines related to academic authorship, such as the allocation of responsibility and credit for scholarly publications; see Research Policy Handbook memo 1.5, On Academic Authorship (http://doresearch.stanford.edu/policies/research-policy-handbook/conduct-research/academic-authorship/).

Intellectual Property

Policies on copyrights and patents resulting from University work. Graduate students and postdoctoral scholars, as well as all faculty, staff, and visitors engaged in research, must sign the Stanford University Patent and Copyright Agreement (SU-18). For complete text of the currently applicable versions of these policies, see Research Policy Handbook chapter 9, Intellectual Property (http://doresearch.stanford.edu/policies/research-policy-handbook/intellectual-property/).

Openness in Research

Policy on openness in research, such as the principle of freedom of access by all interested persons to the underlying data, processes, and final results of research. Stanford University does not accept funding for research projects that require secrecy. For complete text of the currently applicable version of this policy, see Research Policy Handbook memo 1.4, Openness in Research (http://doresearch.stanford.edu/policies/research-policy-handbook/conduct-research/openness-research/).

Relationships between Students and Outside Organizations

Summary of policies on the establishment of relationships between students and outside entities, such as private companies or nonprofit organizations, as part of or outside the student's academic program at Stanford. This covers open versus proprietary nature of the work, ownership of intellectual property, and possible conflicts of commitment and interest. For complete text of the currently applicable versions of these policies, see Research Policy Handbook memo 10.6, Relationships Between Students (Including Postdoctoral Scholars) and Outside Entities (http://doresearch.stanford.edu/policies/research-policy-handbook/non-faculty-research-appointments/relationships-between-students/).

Research Compliance

Several administrative panels review and approve research projects to safeguard the rights and welfare of all human research subjects, ensure the humane care and use of laboratory animals, and protect the safety of personnel and the general public in the areas of biosafety and radiological safety. For more information, contact the Research Compliance Office (http://researchcompliance.stanford.edu).

Research Misconduct

Policy on allegations, investigations, and reporting of research misconduct. Each member of the University community has a responsibility to foster an environment which promotes intellectual honesty and integrity, and which does not tolerate misconduct in any aspect of research or scholarly endeavor. For complete text of the currently applicable version of this policy, see Research Policy Handbook memo 1.7, Research Misconduct: Policy on Allegations, Investigations and Reporting (http://doresearch.stanford.edu/policies/research-policy-handbook/conduct-research/research-misconduct-policy-allegations/).

Graduate Fellowships

Several University-wide graduate fellowship programs are administered by VPGE.

The Stanford Graduate Fellowship in Science and Engineering (http://sgf.stanford.edu) (SGF) program awards approximately 100 two- and three-year fellowships providing tuition support and stipend to exceptional incoming and continuing doctoral students in the natural and social sciences, education, engineering, and the basic sciences in the School of Medicine.

The Stanford Interdisciplinary Graduate Fellowship (http://sigf.stanford.edu) (SIGF) program awards fellowships on a competitive basis to doctoral students engaged in interdisciplinary research that crosses traditional disciplinary boundaries. Doctoral students in the first three years of graduate study are eligible to apply.

The EDGE (Enhancing Diversity in Graduate Education) Doctoral Fellowship (https://vpge.stanford.edu/fellowships-funding/enhancing-diversity-graduate/) program supports the recruitment and academic success of outstanding doctoral students who have the potential to enhance the diversity, broadly defined, of their academic disciplines and fields.

The DARE (Diversifying Academia, Recruiting Excellence) Doctoral Fellowship Program (https://vpge.stanford.edu/fellowships-funding/dare/) awards two-year fellowships to advanced doctoral students who want to investigate and prepare for academic careers and whose presence will help diversify the professoriate.

VPGE also administers several smaller University-wide fellowships (https://vpge.stanford.edu/fellowships-funding/all/) for new and continuing doctoral students, either by application or by nomination by faculty or deans.

Graduate Diversity

In its long-range vision (https://ourvision.stanford.edu/microsites/ideal-homepage/), Stanford strives "to ensure that a diversity of cultures, races and ethnicities, genders, political and religious beliefs, physical and learning differences, sexual orientations and identities is thriving on our campus. Such diversity will inspire new angles of inquiry, new modes of analysis, new discoveries and new solutions."

The Presidential IDEAL (Inclusion, Diversity, Equity and Access in a Learning community) Initiative (http://ourvision.stanford.edu/design-teams/microsites/ideal-homepage/) is about the future of Stanford. IDEAL's objective is to move the institution culturally to the future. The charge of the IDEAL Initiative is to create positive change in these factors in the Stanford campus community. The success of our teaching and research missions depend on doing this well. If we can create positive change in these areas, then we will make Stanford better for everyone.

The VPGE office was founded on a commitment to diversity and inclusion, and it continues its mission now as part of the IDEAL leadership team. VPGE works collaboratively within the University to broaden the participation and promote the academic success of graduate students from a variety of backgrounds, including those underrepresented within research universities. As a result, the Stanford community reaps the educational benefits of diversity, while preparing future generations of leaders for a global society.

Specifically, VPGE works to enhance the diversity (broadly defined) of the graduate student population (https://vpge.stanford.edu/diversity-

initiatives/overview/) by supporting a variety of recruitment and retention programs in collaboration with faculty and staff in each of the schools to foster inclusion and belonging within the university community. VPGE funds recruitment activities to expand the pool of qualified applicants.

The EDGE (Enhancing Diversity in Graduate Education) Doctoral Fellowship (https://vpge.stanford.edu/fellowships-funding/enhancing-diversity-graduate/) program supports the recruitment and academic success of outstanding doctoral students who have the potential to enhance the diversity, broadly defined, of their academic disciplines and fields.

VPGE also works collaboratively to develop programs that improve retention in graduate school and cultivate interest in academic careers and diversify the pipeline for future faculty.

The DARE (Diversifying Academia, Recruiting Excellence) Doctoral Fellowship Program (https://vpge.stanford.edu/fellowships-funding/dare/) awards two-year fellowships to advanced doctoral students who want to investigate and prepare for academic careers and whose presence will help diversify the professoriate.

VPGE Programs

Professional Development

Leadership, pedagogy, communication, working in teams, career development, and entrepreneurship are topics of interest to graduate students across the University. VPGE collaborates with many campus partners to raise the visibility and expand the breadth of offerings to support graduate students' professional development and academic success (https://vpge.stanford.edu/professional-development/overview/). VPGE developed the interactive Graduate Professional Development Framework (https://vpge.stanford.edu/professional-development/framework/) to help graduate students navigate graduate school and locate resources and learning opportunities for acquiring the skills and experiences they need to succeed at Stanford and in their future careers. VPGE also provides resources and information to help students prepare for faculty careers (https://vpge.stanford.edu/professional-development/career-planning/preparing/) and to guide students who are interested in careers in higher education administration pathways (https://vpge.stanford.edu/professional-development/career-planning/phd/).

Interdisciplinary Learning

VPGE fosters interdisciplinary and cross-school learning opportunities (https://vpge.stanford.edu/interdisciplinary-learning/overview/) and networking for graduate students. The Stanford Graduate Summer Institute (http://sgsi.stanford.edu) (SGSI) offers noncredit interdisciplinary immersive courses exclusively for Stanford graduate students and postdoctoral scholars. VPGE also seeks to facilitate enrollment in courses outside of students' home departments and schools by identifying courses relevant and open to students from diverse disciplines (https://vpge.stanford.edu/professional-development/courses/).

Innovation in Graduate Programs

Academic departments and programs are foundational to graduate education at Stanford. VPGE supports faculty- and student-initiated innovations within and across degree-granting programs.

SCORE (Strengthening the Core) Academic Innovation Funds (https://vpge.stanford.edu/fellowships-funding/score/) support one-year, faculty-led projects that explore and experiment with new approaches to graduate education, including course redesigns, interdisciplinary research symposia, and mentoring programs.

Student Projects for Intellectual Community Enhancement (https://vpge.stanford.edu/fellowships-funding/student-projects-intellectual/) (SPICE) funds allow graduate students to develop projects and activities that promote intellectual community in their departments and beyond.

The Diversity and Inclusion Innovation Fund (https://vpge.stanford.edu/fellowships-funding/diversity-innovation-funds/) (DIF) supports Stanford graduate students and postdoctoral scholars in the development of projects that advance diversity (broadly defined) within those populations at Stanford and in the community beyond campus.

Staff

Vice Provost for Graduate Education and Postdoctoral Affairs: Stacey F. Bent

Associate Vice Provost for Graduate Education and Postdoctoral Affairs: John Boothroyd

Associate Vice Provost for Graduate Education and Director, EDGE Doctoral Fellowship Program: Chris Gonzalez Clarke

Associate Vice Provost for Graduate Education: Helen J. Doyle

Director of Finance, Fellowships, and Operations: Rebecca Jantzen

Assistant Vice Provost and Director, DARE Doctoral Fellowship Program: Anika Green

GRADUATE SCHOOL OF BUSINESS

The mission of the Stanford Graduate School of Business is to create ideas that deepen and advance the understanding of management, and with these ideas, develop innovative, principled, and insightful leaders who change the world.

The two-year Master of Business Administration (M.B.A.) degree program prepares change agents to make a meaningful impact in the world through leadership of business, government, and social-sector organizations. The general management curriculum rests on a foundation of social science principles and management functions, tailored to each student's background and aspirations. Interdisciplinary themes of critical analytical thinking, creativity and innovation, and personal leadership development differentiate the Stanford M.B.A. experience. Each M.B.A. student undertakes a global experience to provide direct exposure to the world's opportunities. A Joint Degree Program (p. 70) allows Stanford students to combine the M.B.A. with degrees in the Graduate School of Education (M.A.), the School of Engineering (M.S. in C.S., M.S. in E.E.), the Stanford Law School (J.D.) as well as interdisciplinary degrees in Public Policy (M.P.P.) and in Environment and Resources (M.S.). Dual Degree programs are offered with the School of Medicine (M.D./M.B.A) and the program in International Policy Studies (M.A. in IPS/M.B.A).

The primary criteria for admission are intellectual vitality, demonstrated leadership potential, and personal qualities and contributions. No specific undergraduate major or courses are required for admission, but experience with analytic and quantitative concepts is important. Almost all students obtain one or more years of work experience before entering, but a few students enroll directly following undergraduate study.

The Stanford Master of Science in Management for Experienced Leaders Program (MSx) is an intensive, one-year course of study for middle-management executives leading to the degree of Master of Science in management. Participants generally have eight or more years of work experience, with at least five years of management experience. Some students are sponsored by their company, but most are self-sponsored.

The Doctor of Philosophy (Ph.D) degree program is designed to develop outstanding scholars for careers in research and teaching in various fields of study associated with business education. Students focus on one of seven discrete areas of study including accounting, economic analysis and policy, finance, marketing, operations information and technology, organizational behavior, and political economy.

For detailed information on programs, curricula, and faculty, see the School's (http://gsb.stanford.edu) web site.

Emeriti: (Professors) David P. Baron, Mary E. Barth*, William H. Beaver, Charles P. Bonini, David W. Brady, Paul Brest**, Alain C. Enthoven, Robert J. Flanagan, Michael T. Hannan, J. Michael Harrison, Chip Heath, Charles A. Holloway, Robert L. Joss*, David M. Kreps*, David F. Larcker, Joanne Martin, James R. Miller III, David B. Montgomery, Margaret Ann Neale*, George G. C. Parker*, James Patell, Jerry I. Porras, Evan L. Porteus, Michael L. Ray, Stefan Reichelstein*, D. John Roberts, Myron S. Scholes, William F. Sharpe, George P. Shultz, Kenneth J. Singleton, A. Michael Spence, Venkataraman Srinivasan, James C. VanHorne, Seungjin Whang, Robert B. Wilson*

Dean: Jonathan D. Levin

Senior Associate Deans: Brian Lowery, Maureen McNichols, Paul Oyer, Sarah A. Soule, Lawrence M. Wein

Senior Associate Dean for Finance and Administration: Rajkumar Chellaraj

Associate Deans: Derrick Bolton, Margaret Hayes, Page Hetzel, David Weinstein

Assistant Deans: Dianne Le, Grace Lyo, Kirsten Moss, Jamie Shein, Charlotte Toksvig, Julie Williamsen

Professors: Jennifer L. Aaker, Anat R. Admati, Susan Athey, William P. Barnett, Jonathan Bendor, Lanier Benkard, Jonathan B. Berk, Jeremy I. Bulow, Robert A. Burgelman, Steven Callander, Glenn R. Carroll, Peter M. DeMarzo, J. Darrell Duffie, Yossi Feinberg, Francis J. Flynn, George Foster, Steven R. Grenadier, Deborah H. Gruenfeld, Wesley Hartmann, Guido Imbens, Charles I. Jones, Ron Kasznik, Daniel P. Kessler, Roderick M. Kramer, Keith Krehbiel, Arvind Krishnamurthy, James M. Lattin, Edward P. Lazear, Charles M.C. Lee, Hau L. Lee, Jonathan Levav, Jonathan D. Levin, Brian S. Lowery, Hanno Lustig, Neil Malhotra, Maureen F. McNichols, Haim Mendelson, Dale T. Miller, Benoit Monin, Harikesh S. Nair, Charles A. O'Reilly III, Michael Ostrovsky, Paul Oyer, Jeffrey Pfeffer, Paul C. Pfleiderer, Joseph D. Piotroski, Erica L. Plambeck, Hayagreeva Rao, Joshua Rauh, Peter C. Reiss, Condoleezza Rice, Garth Saloner, Yuliy Sannikov, Amit Seru, Kathryn L. Shaw, Baba Shiv, Kenneth W. Shotts, Itamar Simonson, Andrzej Skrzypacz, Jesper Sørensen, Sarah A. Soule, Ilya Strebulaev, Zakary Tormala, Lawrence M. Wein, S. Christian Wheeler, Stefanos Zenios, Jeffrey H. Zwiebel

Associate Professors: Mohammad Akbarpour, Mohsen Bayati, Anne Beyer, Konstantinos Bimpikis, Katherine Casey, Sebastian Di Tella, Rebecca Diamond, Brandon Gipper, Amir Goldberg, Yonatan Gur, Nir Halevy, Szu-chi Huang, Dan Iancu, Saumitra Jha, Michal Kosinski, Peter Koudijs, Rebecca Lester, Matteo Maggiori, Ivan Marinovic, Sridhar Narayanan, Aruna Ranganathan, Navdeep Sahni, Paulo Somaini, Adina Sterling, Takuo Sugaya, Christopher Tonetti, Gabriel Weintraub, Kuang Xu, Ali Yurukoglu

Assistant Professors: Jonathan Atwell, Juliane Begenau, Justin Berg, Laura Blattner, Greg Buchak, Jung Ho Choi, Julien Clement, Octavia D. Foarta, Benjamin Hebert, John Kepler, Jinhwan Kim, Yewon Kim, Ashley Martin, Gregory Martin, Suzie Noh, Claudia Robles-Garcia, Daniela Saban, Kevin Smith, Jann Spiess, Stephanie Tully, Susana (Shosh) Vasserman, Stefan Wager, Chenzi Xu, Weijei Zhong

Courtesy Professors: Avidit Acharya, Eric P. Bettinger, Nicholas Bloom, John H. Cochrane, Geoffrey L. Cohen, Shelley J. Correll, Robert M. Daines, Jens Hainmueller, Carolyn M. Hoxby, Fei-Fei Li, Daniel McFarland, Paul R. Milgrom, Monika Piazzesi, Walter W. Powell, Balaji Prabhakar, Martin Schneider, Kevin Schulman, Ilya Segal, Sara Singer, Robert Sutton, Robb Willer

Lecturers: Douglas Abbey, Matthew Abrahams, Richard Abramson, Burton Alper, Coley Andrews, Federico Antoni, Adi Aron-Gilat, Laura K. Arrillaga-Andreessen, Naomi Bagdonas, Ed Batista, Sven Beiker, Kirk D. Bowman, David L. Bradford, Scott Brady, Melissa Briggs, Dikla Carmel-Hurwitz, Robert B. Chess, Leslie Chin, George Cogan, Susan Colby, Stephen Comello, Andrea Corney, Stuart Coulson, John Cronkite, Stephen Davis, David Demarest, Gary Dexter, Connor Diemand-Yauman, Collin Dobbs, David M. Dodson, Jennifer Dulski, R. James Ellis, Charles Ewald, Peter Francis, Richard P. Francisco, Ricki Frankel, Matthew Glickman, William Guttentag, Kristin Hansen, Mike Harmon, Laura Hattendorf, Keith Hennessey, Samuel Hinkie, Charles Hudson, Sarah Hunter, John Hurley, Jeff Immelt, Brian Jacobs, Sujay Jaswa, Stephen Johnson, Kim Jonker, Efrat Kasznik, David Kaval, Hugh Keelan, Peter B. Kelly, Colin Kessinger, Allison Kluger, Glenn Kramon, Scott Kupor, Gloria Lee, Mark Leslie, Peter Levine, John Lilly, Leo E. Linbeck III, Robert J. Lisbonne, Christopher Mahowald, Kevin Mak, Fern Mandelbaum, Paraag Marathe, Ana Marshall, Kelly McGonigal, William L. McLennan, Hebert McMaster, William F. Meehan III, Thomas Mertens, James Milligan, Lisa Monzon, Patricia Nakache, Raymond Nasr, Heidi Patel, Robert Pearl, Anne Raimondi, Alyssa Rapp, Barry Rhein, Gerald Risk, Dennis M. Rohan, Howard Rosen, Alison Rosenthal, Debra Schifrin, Heiner Schulz, Prasad Setty, Yifat Sharabi Levine, Robert Siegel, Russell Siegelman, Kevin Taweel, Alan Thygesen, Gregory Waldorf, Jay Watkins, John G. Watson, Graham Weaver, Donna

Carol Wells, Peter C. Wendell, Maxwell Wessel, Steven Westly, Amy Wilkinson, Donald Wood

Adjunct Professors: H. Irving Grousbeck, Joel C. Peterson

Adjunct Lecturers: Matthew Bannick, Stephen J. Ciesinski, Jaclyn Foroughi, Kathryn Kostopoulos Amarotico, Henry Most, Robert Urstein, Mark Voorsanger

Dean's Fellow: George Osborne

* Recalled to active duty. ** Emeritus Professor from another SU department recalled to active duty.

Accounting Courses

ACCT 152. Introduction to Financial Accounting. 3 Units.
Financial accounting is the measurement of economic activity for decision-making. The objective of this course is not to train you to become an accountant but rather to help you develop into an informed user of financial statement information. Through cases, homework assignments, and classroom discussion, we will focus on understanding the mapping between underlying economic events and financial statements, and on understanding how this mapping affects inferences about future profitability and liquidity. The learning objectives are 1) Understanding accounting rules and terminology and how these are applied to construct financial statements, and 2) building an awareness of the judgment involved and the discretion allowed in choosing accounting methods, making estimates, and disclosing information in financial statements.

ACCT 210. Financial Accounting. 3 Units.
Financial accounting is the measurement of economic activity for decision-making. Financial statements are a key product of this measurement process and an important component of firms' financial reporting activities. The objective of this course is not to train you to become an accountant but rather to help you develop into an informed user of financial statement information. While financial statement users face a wide variety of decisions, they are often interested in understanding the implications of financial statement information for the future cash flows and earnings potential of a firm. We will focus on understanding the mapping between underlying economic events and financial statements, and on understanding how this mapping affects inferences about future profitability and liquidity. The following learning objectives will be emphasized: (1) familiarity with the transactions businesses engage in, (2) fluency in accounting terminology, (3) understanding the structure that maps transactions into accounting numbers, (4) understanding the rationale for various accounting methods, and (5) awareness of the judgment involved and the discretion allowed in choosing accounting methods, making estimates, and disclosing information in financial statements.

ACCT 212. Managerial Accounting: Strategic Performance Management. 2 Units.
This course provides an introduction to the concepts and tools of managerial accounting. The first part of the course covers alternative costing methods and illustrates how the resulting cost information can be used to analyze the profitability of individual products and customers. The second part of the course will examine the role of internal accounting systems in evaluating the performance of individual business segments and divisions of the firm. Included in this part are topics related to the choice of internal pricing methods for transferring goods and services across divisions of the firm and the use of financial metrics for assessing the profitability of these divisions.

ACCT 213. Financial Accounting - Accelerated. 3 Units.
This course develops students' ability to read, understand and critically evaluate corporate financial statements. The course is oriented toward the user of financial accounting data (rather than the preparer) and it emphasizes the reconstruction and interpretation of economic events from published accounting reports. The course is geared toward students who already have had some exposure to basic financial accounting concepts, allowing for more depth and breadth of topic coverage and discussion in class.

ACCT 219. MSx: Accounting. 3 Units.
A characteristic of business is the extensive use of accounting data. The financial accounting course has the general objective of developing students' understanding of the nature, scope, and limitations of accounting information. To achieve this objective the course attempts to: (1) develop students' understanding of the conceptual accounting framework, including the objectives of financial reporting, and (2) develop students' ability to understand and critically evaluate the financial disclosures made by corporations. An issue of particular interest will be the managerial incentive aspects of accounting information and disclosures.

ACCT 311. Global Financial Reporting. 3 Units.
This course is designed to enhance students' understanding of current financial reporting issues through a detailed analysis and comparison of U.S. GAAP and International Financial Reporting Standards. The course will cover the development of accounting standards, implementation of these standards, and how to interpret output from these standards. The course highlights intermediate and advanced financial reporting topics including fair value accounting, asset securitization, consolidation including special purpose entities, foreign currency translation, derivatives and hedging, leases, revenue recognition, pensions, and equity compensation. The course also focuses on evaluating emerging financial reporting issues such as proposed financial reporting standards put forth by U.S. or international standard setting bodies. This course should help students better understand the environment governing global financial reporting and how firms develop financial statement information within this environment.

ACCT 313. Accounting-Based Valuation. 3 Units.
This course is designed to develop students' ability to interpret and use financial accounting information, primarily in a valuation context. The perspective taken is that of an outsider relying on publicly available financial information for investment purposes. The course relies heavily upon financial statement analysis tools and the economic profit-based valuation framework. Through lectures, in-depth case studies, and real-time exercises, the first half of the course covers traditional financial statement analysis-based tools for critically analyzing and assessing a firm's current financial performance and economic condition, including ratio analysis, accounting quality analysis and financial distress / bankruptcy prediction models. The second half of the course introduces the accounting-based valuation framework and develops the link between financial statement analysis, forecasting and firm value. The capstone to the course is the completion of a comprehensive, real-time valuation of a publicly traded firm (or registered IPO candidate). The course is structured for students to gain a deeper understanding of the economic pressures behind the valuation creation and valuation process. The course will be useful to those students who anticipate making investment or credit decisions at least partially based on historical and prospective financial statement information, and those who want to have a better understanding of how to use financial information to assess whether and how any organization is creating value through its operations and strategic actions.

ACCT 317. Managerial Accounting: Performance Measurement, Compensation, and Governance. 3 Units.
The course will examine the academic and professional controversies surrounding corporate governance and executive compensation. A basic framework will be developed to integrate the many important dimensions of corporate governance in the U.S. and international be able to (i) understand the debates about appropriate choices for corporate governance and executive compensation, (ii) critically evaluate the implications of academic and professional research studies on these controversial issues, and (iii) make practical decisions about corporate governance in a business setting.

ACCT 332. Mergers and Acquisitions. 3 Units.
This course provides a comprehensive overview of strategic, economic, and financial issues related to mergers and acquisitions. Specifically, we review the market for corporate control, discuss strategic issues related to firms' decision to acquire or be acquired, and examine the M&A regulatory environment. We analyze various valuation and deal structure considerations, identify strategies that underlay a successful negotiation, and review the financial reporting and income tax implications of M&A transactions. In covering these and other related issues, we will discuss both the theory and practice of mergers and acquisitions. To provide some specific context we will analyze several M&A deals (e.g., Google/Motorola, Disney/Fox, UpJohn/Pharmacia, Oracle/PeopleSoft, and many more). In discussing these cases, we will examine the situation faced by the company, the issues surrounding the transaction, including the financial implications, and focus on the managerial incentives and the judgment applied. We will also review some of the related literature in accounting, economic, and finance, to gain broader perspectives and insights into the financial issues associated with M&A transactions. Class time comprises mini lectures that introduce some of the more technical concepts, case discussions, and guest speakers who will offer additional perspectives on the subject matters. The course is co-taught by Ron Kasznik (GSB) and Safra Catz (Oracle Corporation). Ms. Catz is the CEO of Oracle Corporation and a member of its Board of Directors. She has led Oracle through more than 100 acquisitions in recent years (including PeopleSoft, Siebel, BEA, Sun Microsystems, and more). Prior to joining Oracle in 1999, Ms. Catz was Managing Director at Donaldson, Lufkin & Jenrette, a global investment bank (now part of CSFB). Ms. Catz currently also serves on the board of directors for Walt Disney.

ACCT 333. Taxes and Business Strategy. 3 Units.
Traditional business courses analyze an array of factors affecting business decisions but provide little systematic consideration of the role of taxes. By contrast, tax accounting courses traditionally concentrate on technical legal and administrative issues while ignoring the environment in which taxes enter an individual's or firm's decision. This case-based course intends to bridge this gap by providing a framework for recognizing how taxes affect strategic personal and business decisions and gaining experience analyzing a wide range of tax-related issues. The key themes of the framework - all parties, all taxes and all costs - are applied to decision contexts such as investments, retirement planning, cash and equity compensation, organizational form, tax planning for multiple jurisdictions, and M&A. The goal of this course is to provide an approach to thinking about taxes that will be valuable across jurisdictions even as laws change.

ACCT 340. Alphanomics: Informational Arbitrage in Equity Markets. 4 Units.
This is an advanced elective course on the economics of active investing in public equity markets. We will cover a set of foundational skills needed to select, and manage, a portfolio of public stocks. Specifically, the course material is designed to improve student skills in: (1) assessing the relative attractiveness of individual companies, (2) building stock screens to filter and rank firms based on user-specified parameters, (3) buying and shorting individual equity positions, and (4) monitoring and managing portfolio risk. This is a hands-on course with an emphasis on experiential learning. Students will make extensive use of the analytical tools. Some of the classes will be held in the "Real-time Analytics and Investment Lab" (R.A.I.L.) facility in the Bass Center. There is no final exam. However, there will be a number of individual cases and a final group project. 25% of the grade will be based on class participation, and 75% will be based on cases and projects. Because it is an advanced elective, students taking this class are expected to be well versed in core economic, accounting, and finance skills. Material covered in a second Financial Modeling course, as well as in Accounting 312 (Evaluating Financial Statement Information) and Accounting 313 (Accounting-based Valuation) will come in handy. However, none of these courses are required.

ACCT 354. Analysis and Valuation for Event-Driven Investing. 3 Units.
This Bass seminar is designed to develop students' ability to interpret and use financial accounting information in credit and equity valuation contexts. The course will focus on valuing the securities of companies undergoing significant changes as a result of litigation, restructuring, regulatory changes, mergers, spin-offs or significant industry shifts. Throughout the course, students will (1) enrich their understanding of how alternative economic, legal, political and regulatory outcomes affect the value of various components of a company's capital structure and (2) develop their ability to apply financial statement analysis to assess the likelihood and valuation implications of the events of interest. nnnEvent-driven investing follows the life cycle of companies as they revamp their corporate structures in response to economic and regulatory environments. For example, in rising economic periods companies may undertake acquisitions or spin off divisions to enhance shareholder value. During adverse environments, bankruptcy and reorganizations often reshape the capital structure by offering opportunities to create value through the restructuring process. During economic transitions, debt and equity investors may make significantly different assessments of the quality of a company's earnings, its assets, and its likelihood to meet its debt obligations. To assess the probability of corporate events, investors must make judgments about the quality of a company's earnings and assets and understand how accounting policies may influence management's representations. Investors must also interpret how accounting policies function at various points in a firm's life cycle, influencing the quality of earnings for firms differently in different economic environments. nnnIn the first half of the course, we will develop the course framework, and apply it to illustrative cases. Companies featured in past years include Tyco, AIG, CIT, Fannie Mae, Tesla, Pharmasset and Gilead and Commerzbank. Students will interpret information from companies' public financial disclosures to assess the likelihood of different events or outcomes. The course will also feature readings on current accounting standards, articles from the popular press, publicly available financial statement information, and guest speakers with in-depth knowledge of investing strategies vis a vis the case companies. nnnThe latter part of the course will be devoted to project work, with students working in teams to develop an event-driven investing strategy. The aim is to allow students to conduct independent research on a company, industry, economic context, or financial reporting environment of particular interest. Students will develop their investment idea, articulate their sense of the possible outcomes for the components of the firm's capital structure, and explain how they have assessed the likelihood and valuation consequences of those outcomes. At the conclusion of the course, students will present their strategies to the class and a panel of expert judges.

ACCT 516. Analysis and Valuation of Emerging Market Firms. 2 Units.
This course examines the unique institutional, governance and transparency issues affecting corporate valuations in emerging markets. Through lectures, case discussions and the students' real-time analysis of an emerging market firm, this condensed course is structured for students to gain a deeper understanding of the economic pressures behind the value creation, value destruction, and valuation process in emerging economies. The course focuses on critically interpreting financial and non-financial information for purposes of assessing firm fundamentals and corporate governance risk in the presence of weak legal systems, strong political forces, limited investor protections, limited market development, strong macro-economic forces, opacity and resultant business arrangements. The course is beneficial for investors, consultants, managers, and entrepreneurs operating in or considering expansion to developing markets.

ACCT 523. Board Governance. 2 Units.
This course is focused on helping students understand the role boards and board members play in corporate governance and the lives of businesses large and small. This case-driven course is designed to help students who plan to serve on boards as private-equity or venture investors, entrepreneurs who will need to assemble and manage boards, and executives who realize they will need to interact with and answer to boards.The course is designed to help students understand the issues boards face ¿ both routine and non-routine ¿ through the eyes of the board member. By understanding the roles and responsibilities of board members and the mechanisms though which they exercise these duties, students will come away with an understanding of how boards function effectively (and in too many cases fail to function effectively). The course will include examining boards in a variety of contexts with a focus on three types of situations: public for-profit companies, early-stage private companies, and not-for-profit companies of different sizes.

ACCT 524. Individual Taxes and Financial Planning. 2 Units.
The goal of this course is to provide a fundamental understanding of the principles of taxation and tax planning as they relate to personal income taxes and considering an individuals financial position. Traditional business courses analyze an array of factors affecting business decisions but provide little systematic consideration of the role of taxes in individual financial planning decisions. By contrast, tax accounting courses traditionally concentrate on technical legal and administrative issues while ignoring the environment in which taxes enter an individual's decision-making. This case-based course intends to bridge this gap by discussing how taxes affect a variety of personal financial planning decisions.

ACCT 542. Corporate Taxes and Business Strategy. 2 Units.
The goal of this course is to provide a fundamental understanding of the principles of business taxation and tax planning, which will be relevant and valuable even as tax laws change - over time, across borders, and by taxpayer type. The role that taxes may play in business decisions are presented within an "all taxes, all parties, all costs" framework, from the tax issues at start-up (e.g., the choice of organizational form for a new venture), multistate and multinational operations, financial accounting implications, and mergers and acquisitions. We will use cases to gain hands' on experience analyzing business tax strategies and refer to financial statement disclosures as appropriate so that you can learn how taxes affect the financial reporting for transactions. A recurring theme will be linking the tax strategies that we learn with concepts from corporate finance, financial accounting, business law, and economics.

ACCT 609. Financial Reporting and Management Control. 3 Units.
This course is aimed at doctoral students in accounting and neighboring fields including economics, finance, political economics and operations management. The course seeks to provide an introduction to the role of accounting information in (i) measuring firm performance, (ii) projecting profitability and firm value for external constituents, (iii) and motivating and controlling the firm's management. The main topics covered in this course include: 1. Profitability Measurement and Accrual Accounting. 2. Performance Evaluation and Managerial Incentives. 3. Accounting-based Equity Valuation. 4. The Informational Role of Accounting Numbers 5. Earnings Quality Constructs and Measures. The primary objective of the course is to introduce students to current research paradigms on these topics and to identify promising avenues for future research. The course readings include recent theoretical and empirical papers.

ACCT 610. Seminar in Empirical Accounting Research. 3 Units.
Empirical Research on Financial Reporting: This doctoral-level course covers research on the role of accounting information in capital markets. The focus is on introducing students to key themes in empirical accounting and capital markets research, and to key research designs applied to examine information-related questions. Course topics include the informational role of financial reports, accounting measurement attributes, earnings management, earnings quality, and the role of key actors in the financial reporting environment, including management, investors, auditors, analysts and regulators. n nThe course is interdisciplinary in nature. The readings focus on research design, and key theories, themes and approaches from the accounting, finance, economics and psychology literature. Our overall goal is develop your understanding of existing research and its strengths and limitations, and to identify new research opportunities.

ACCT 611. Disclosure and Financial Markets. 3 Units.
This course provides a broad overview of the economic theories of corporate disclosure, with a focus on the effects that these disclosures have on financial markets. The range of topics we will study include: voluntary disclosure, earnings management, disclosure and trade, disclosure and investor welfare, disclosure and asset prices, and cheap talk and reputation games.

ACCT 612. Financial Reporting Seminar. 3 Units.
The purpose of this PhD seminar is to facilitate your conception and execution of substantive individual research in financial reporting. It provides a vehicle for supplementing and integrating your knowledge of basic research tools and methods, as well as an exposure to the dimensions of contemporary research in the field of financial reporting. The focus of the research we will discuss in this seminar is on global financial reporting. Such research encompasses studies dealing with contemporary financial reporting issues as well as research addressing issues relating to the globalization of financial reporting. Because these issues are also of concern to financial reporting standard setters, we will discuss whether and how the research we study informs standard setting debates. Prerequisite: Consent of the instructor.

ACCT 615. Selected Topics in Empirical Accounting Research. 3 Units.
This course examines selected topics in accounting research. The course features three faculty who will each give a focused look at a given area, introduce students to important questions in that area, key papers in the related literature, and critical aspects of the research designs applied in the area. The aim is to increase student's familiarity with empirical accounting research, their ability to critically evaluate research and research designs, and to prepare students to conduct independent research.

ACCT 617. Applications of Contract Theory in Accounting Research. 3 Units.
This course develops tools from information economics to study the strategic interactions between different agents inside a firm. Common to these studies is that agents acquire private information that is valuable to other parties. The range of applications includes: centralization vs delegation, static and dynamic contracting under moral hazard, Bayesian persuasion, and the optimal design of monitoring/auditing mechanisms.

ACCT 618. Market Efficiency and Informational Arbitrage. 3 Units.
The informational efficiency of stock markets has been a central theme in financial economic research in the past 50 years. Over this period, the focus of academic research has gradually shifted from the general to the more specific. While earlier studies tend to view the matter as a yes/no debate, most recent studies acknowledge the impossibility of fully efficient markets, and focus instead on analyses of factors that materially affect the timely incorporation of information into prices. At the same time, increasing attention is being paid to regulatory and market design issues that either impede or enhance market pricing efficiency.nIn this course, we will cover recent research on the role of informational arbitrage in asset pricing. Our starting point is the observation that, with costly information, equilibrium prices will invariably reflect some mispricing. The existence of mispricing introduces a role for informational arbitrage, whereby some traders will invest resources to become informed about the mispricing, with hopes of profiting from it. We review recent academic evidence on this process, and reflect on its implications for future market-related research. We will also discuss how academic research might help lower information/arbitrage costs.nThis is a doctoral level course. Our goal is not only to review existing research, but also to stimulate new work in the area. As such, I expect it will be of primary interest to Ph.D. students majoring in accounting, finance, and economics. Given our focus on returns prediction and the role of information in arbitrage strategies, this course should be of particular interest to those interested exploring the relation between information flows and market pricing dynamics. nThe course content is interdisciplinary in nature, spanning finance, economics, and accounting. Most of the readings in the earlier readings derive from finance and economics (market efficiency, limits to arbitrage, and behavioral finance); most of the later readings derive from financial accounting (equity valuation, fundamental analysis, earnings management, and analyst behavior).

ACCT 691. PhD Directed Reading. 1-15 Unit.
This course is offered for students requiring specialized training in an area not covered by existing courses. To register, a student must obtain permission from the faculty member who is willing to supervise the reading.
Same as: FINANCE 691, GSBGEN 691, HRMGT 691, MGTECON 691, MKTG 691, OB 691, OIT 691, POLECON 691, STRAMGT 691

ACCT 692. PhD Dissertation Research. 1-15 Unit.
This course is elected as soon as a student is ready to begin research for the dissertation, usually shortly after admission to candidacy. To register, a student must obtain permission from the faculty member who is willing to supervise the research.
Same as: FINANCE 692, GSBGEN 692, HRMGT 692, MGTECON 692, MKTG 692, OB 692, OIT 692, POLECON 692, STRAMGT 692

ACCT 698. Doctoral Practicum in Teaching. 1 Unit.
Doctoral Practicum in Teaching.

ACCT 699. Doctoral Practicum in Research. 1 Unit.
Doctoral Practicum in Research.

ACCT 802. TGR Dissertation. 0 Units.
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Same as: FINANCE 802, GSBGEN 802, HRMGT 802, MGTECON 802, MKTG 802, OB 802, OIT 802, POLECON 802, STRAMGT 802

Economic Analysis and Policy Courses

MGTECON 200. Managerial Economics. 3 Units.
MGTECON 200 is a base-level course in microeconomics. It covers microeconomic concepts relevant to management, including the economics of relationships, pricing decisions, perfect competition and the "invisible hand," risk aversion and risk sharing, and moral hazard and adverse selection. This year we are piloting a "flipped classroom" where students will be expected to work through the online modules before each class and the time in class will be devoted to solving problems and discussing cases.

MGTECON 203. Managerial Economics - Accelerated. 3 Units.
MGTECON 203 is the more quantitative version of MGTECON 200. It uses basic math such as derivatives and algebra, as opposed to excel simulations and plots. Previous knowledge of economics is not necessary. The business world has become more quantitative and economics-oriented in the last 30 years, but many of the key ideas in economics, relating to topics such as pricing, monopoly, imperfect competition, game theory, moral hazard and adverse selection, public choice, externalities, risk aversion, capital market pricing and equilibrium, and auction theory can all be usefully approached with a relatively small amount of math. The goal is to develop a small number of intellectual tools that enables one to analyze a wide variety of economic problems.

MGTECON 209. MSx: Microeconomics. 3 Units.
This course is an introduction to Microeconomics, focusing on concepts and topics relevant to managerial decision making. Topics include the economics of relationships (reciprocity, reputation, credibility, and transaction-cost economics), maximization via marginal analysis, price discrimination, double-marginalization and distribution channels, perfect competition and the case (such as it is) for competitive markets, externalities, choice under uncertainty, risk sharing and spreading, adverse selection and signaling, and moral hazard and incentives. No prior Economics background is required but students who have not had courses in this area (or not had one in a very long time) may want to "review" at the level of a high-school advanced placement course. Required math background includes ability to solve linear and quadratic equations in one unknown, to solve two simultaneous linear equations, basic differential calculus, ability to work with Excel spreadsheets. It is desirable that students are familiar with the Solver add-on to Excel.

MGTECON 300. Growth and Stabilization in the Global Economy. 3 Units.
This course gives students the background they need to understand the broad movements in the global economy. Key topics include long-run economic growth, technological change, wage inequality, international trade, interest rates, inflation, exchange rates, and monetary policy. By the end of the course, students should be able to read and understand the discussions of economic issues in The Economist, the Wall Street Journal, the New York Times, or the Congressional Budget Office.

MGTECON 327. U.S. Inequality: What Can Business and Policy Do?. 3 Units.
This class will analyze the growth in inequality in the US over the last several decades and how that trend is likely to continue or change in the future. We will ask if and how public policy can affect inequality. We will also focus on business's role -- what are the responsibilities of private sector companies, how does inequality affect them, and how should the growth in inequality affect their strategies? We will look at inequality in income, some of its potential sources, and its effects in other areas. Specifically, we will look at education, housing, the social safety net, migration, and the job market. The class will be very interactive and will be based on readings drawn from academic research, case studies, news, and opinion readings. We will also have guest speakers from industry, government, and non-profits. The class will be co-taught by a GSB labor economist and an advisor to policy makers with decades of business experience.LOGISTICAL NOTE: During the week of May 13, the class will not meet during the regular time slots. Instead, there will be a mandatory, all-day class field trip to explore inequality issues in depth and in person on Wednesday, May 15. If you have an academic-related reason you cannot make the trip, we will assign alternative work. However, the trip is required unless you have a conflicting class or academic obligation.

MGTECON 328. Economics of the Media, Entertainment, and Communications Sector. 3 Units.
This course analyzes business decisions in current and historical cases from the media, entertainment, and communications sector. Topics include (1) pricing, bundling and tiering of media products, (2) horizontal and vertical integration of content, distribution, and hardware, (3) selling and buying advertising, (4) choosing between subscription-funded, advertising-funded, or mixed revenue models, (5) negotiations between content and distribution, (6) exclusive deals, (7) the effect of technology on the news media business, (8) the labor market for entertainment stars, (9) competition and regulation in communications infrastructure, (10) strategy in spectrum auctions, and more. There is an emphasis on combining concepts from economics and statistics with institutional knowledge about the sector. The course format is case discussion, guest speakers from the industry, and discussion of concepts from economics and statistics. Evaluation is based on class participation, completion of reading and written assignments, and a final paper.

MGTECON 331. Health Law: Finance and Insurance. 3 Units.
This course provides the legal, institutional, and economic background necessary to understand the financing and production of health services in the US. Potential topics include: health reform, health insurance (Medicare and Medicaid, employer-sponsored insurance, the uninsured), medical malpractice and quality regulation, pharmaceuticals, the corporate practice of medicine, regulation of fraud and abuse, and international comparisons.

MGTECON 343. The Evolution of Finance. 3 Units.
This course provides a framework to understand how uncertainty and technology affect the evolution of finance (and businesses generally), with heavy emphasis on recent developments and future trends. In recent years Myron Scholes has given about half the lectures with the other half given by prominent guests. The guest list changes year to year but 2017's list included David Booth, Katie Hall, Howard Marks, James Manyika, George Osborne, Kevin Warsh, Tom Kempner, and Larry Summers. Jeremy Bulow may replace Myron for a small number of lectures.

MGTECON 349. Smart Pricing and Market Design. 3 Units.
This course is an Advanced Applications option in the Economics menu. The focus of the course is on pricing mechanisms and the design of marketplaces. The pricing component of the course will handle both traditional topics, such as price differentiation, and more modern ones, such as bundling and dynamic pricing. In the market design component of the course, we will consider such topics as auctions (e.g., designing auctions for selling online advertising slots) and matching (e.g., designing mechanisms for matching students to schools).

MGTECON 381. Contemporary Economic Policy. 3 Units.
Economic issues permeate all that happens in government. This topics-based course will exam a variety of historic and current issues on the political agenda where economics is central to decision making. It is taught by faculty who served at the White House in either the Clinton or George W. Bush Administration.

MGTECON 383. Measuring Impact in Business and Social Enterprise. 3 Units.
This class provides students with practical skills for measuring impact in business and social enterprise. How large is the impact of raising prices on sales? Is an advertising campaign working? Does a non-profit actually improve people's lives? Students will finish the course with the ability to design, analyze, and skeptically evaluate experiments that can rigorously answer questions like these. Students will learn: how to evaluate claims of causality; how to conduct and analyze experiments and quasi-experiments; the advantages and disadvantages of experiments; how to quantify uncertainty; and what can go wrong in experiments. Students will acquire a conceptual understanding of basic experimental statistics to inform these skills. Students will also be exposed to how leading companies, researchers, and social innovators strategically deploy experiments. Finally, students will conduct their own experiments on a topic of their choosing in small groups. The class will not assume any prior experience or training with statistics, math or R. However, completing short problem sets and participation in weekly lab sessions will entail acquiring basic knowledge of R.

MGTECON 513. Platform Competition in Digital Markets. 2 Units.
This class will analyze the economics of digital platform markets. The class format will consist of lectures and guest speakers. Concepts will be presented in the context of leading examples of internet and technology platforms such as online advertising, computing technology platforms (e.g. mobile), marketplaces, social networks, cloud computing, and financial technology platforms. The course will begin with economic definitions of platform markets, and it will review the most important insights from recent research in economic theory and strategy. It will then consider the role of scale economies and network effects in determining the dynamics of platform competition and long-run industry structure. Next, the class will consider key strategic decisions for firms, including entry strategies, vertical integration and exclusive deals.

MGTECON 515. Cryptocurrency. 2 Units.
This class will provide an overview of the rapidly evolving area of distributed ledger and blockchain technologies, with a focus on economic and strategic issues. We will cover key components of the architecture that affect the products derived from cryptocurrency. We then consider tokens as a store of value and exchange, analyzing models of cryptocurrency pricing and as a vehicle for raising of capital. Next, we consider use cases including payments, micropayments, asset registries, and smart contracts. We then analyze barriers to entry in cryptocurrencies, as well as how the new products they enable affect industry structure in both the financial sector and the economy and society as a whole. For example, how might decentralized systems like the blockchain impact the sharing economy? The government? We consider the governance of these decentralized systems and how decentralization affects the potential for the management and success of platforms. We discuss the potential for national digital currencies and the end of cash. Finally, we consider consumer protection, privacy, security, regulation, and the power of governments and regulators over borderless, decentralized systems. Students will benefit from guest lectures by industry and thought leaders.

MGTECON 526. Inclusive Economic Growth and Poverty Reduction in Developing Countries. 2 Units.
Poverty rates have fallen markedly in countries around the world, as more households have joined the lower middle-class. Indeed, though U.S. income inequality has increased, inequality has fallen around the world. However, by developed country standards, poverty remains pervasive. What has caused the decline in rates of poverty and can we expect further decreases or can we act to accelerate the improvements? One answer is that countries that have experienced "inclusive growth", in which the growth of the economy (i.e., GDP) has elevated the incomes of the poor, have done better at creating jobs for the poor, especially in the private sector. Therefore, the class will consider the evidence on the factors that have contributed to inclusive economic growth in developing countries. A second answer as to why poverty has fallen, but remains at high levels, is that governments and aid agencies and foundations have targeted programs to the poor. This course discusses macroeconomic policy, targeted government policies, aid, and entrepreneurship in developing countries. Examples will be given from Latin America, South Asia, and Africa. The course is co-taught by a Stanford economist and a World Bank consultant and will build on examples from recent experiences. The class is aimed at GSB students who are either intellectually curious about the topic or anticipate doing business in developing countries.

MGTECON 527. Business and Public Policy Perspectives on U.S. Inequality. 2 Units.
This class will analyze the growth in inequality in the US over the last several decades and how that trend is likely to continue or change in the future. We will ask if and how public policy can affect inequality. We will also focus on business's role -- what are the responsibilities of private sector companies, how does inequality affect them, and how should the growth in inequality affect their strategies? We will look at inequality in income, some of its potential sources, and its effects in other areas. Specifically, we will look at education, housing, the social safety net, migration, and the job market. The class will be very interactive and will be based on readings drawn from academic research, case studies, news, and opinion readings. We will also have guest speakers from industry, government, and non-profits. The class will be co-taught by a GSB labor economist and an advisor to policy makers with decades of business experience (see http://www.ppic.org/main/bio2.asp?i=431).

MGTECON 533. Economics of Strategy and Organization. 2 Units.
The goal of this class is to combine economic theory and business practice to develop insights for business strategy and organization design. We will discuss strategies and organizations of companies, identify potential problems and explore potential solutions. Some of the topics to be covered will be why many established companies find it hard to innovate (and what strategies can mitigate those problems), business-model innovation, and what economic and practical problems arise when companies need to stop projects. The course will be based on a mixture of formal and informal cases.

MGTECON 535. Statistical Experimentation in Businesses. 2 Units.
Most statistical questions involving data ultimately are about causal effects. What is the effect of changing prices on demand? What is the effect of an advertising campaign on demand. In this course we discuss statistical methods for analyzing causal effects. We look at the analysis and design of randomized experiments. We also look at various methods that have been used to establish causal effects in observational studies. Students will develop the skills to assess causal claims and learn to ask the right questions and evaluate statistical analyses. You will carry out research projects and work with statistical software.

MGTECON 536. Data Driven Decision Making. 2 Units.
This is a short course on data driven decision making. The purpose of the course is to help students become intelligent consumers and producers of data analytics in the business context. Each class meeting will consider a different case/caselet involving data and statistical analyses. We will spend a lot of time on understanding the difference between correlation and causation, and measurement issues such as small sample problems and selection bias. By the end of the course students will have sharpened analytical skills, and will be more critical of data and statistical analyses. This is *not* a data/statistical methods course, but is rather an analysis course. The course requires only the tools learned in D&D.

MGTECON 541. Topics in International Macroeconomics and Finance. 2 Units.
This course gives students a background to understand fundamental issues in international macroeconomics and finance. Key topics include international asset pricing, hedging exchange rate risk, the relation between interest rates and exchange rates, business cycle fluctuations in emerging markets as well as in developed countries, banking and currency crises. By the end of the course, students should be able to read and understand the discussions of these topics in a publication such as The Economist. Each week we will have one lecture on fundamental concepts and one that applies these to recent events.

MGTECON 583. Measuring Impact in Business and Social Enterprise. 2 Units.
Businesses are increasingly expected to have a positive social impact, as evidenced by the rapid growth of impact investing. Yet, even as the impact investing market has taken off, impact measurement has lagged, undermining the credibility of the sector. Impact measurement is also critical to individual firms, not-for-profits and governments, as they face increased pressure to generate quantifiable results.How can we measure impact? What are some of the most effective frameworks, tools and approaches for impact measurement? How does one choose the most appropriate measurement tool based on factors such as the size, maturity and sector of an organization? Can impact be distilled down to a single monetary measure, such as a dollar? These and other questions will be explored in considerable depth, primarily through analysis and discussion of case studies.This course is a good match for students interested in impact measurement, impact investing, profit-with-purpose businesses or the role of business in society. The course will be taught by Matt Bannick, who led the impact investing firm, Omidyar Network, and served as the President of PayPal and of eBay International.

MGTECON 591. Global Management Research. 2 Units.
This course will overview a rapidly growing body of research into management practices. A large management practice project involving Accenture, Cambridge, Harvard, MIT, the London School of Economics, McKinsey, Stanford and the World Bank has been collecting data on management across firms and countries since the early 2000s (see www.worldmanagementsurvey.com). This project evaluated about 20,000 organizations in manufacturing, retail, healthcare and education across North and South America, Europe, Asia, Africa and Australasia, providing global insight into the basic management practices around monitoring, targets and talent management that firms adopt around the world. We will examine the link between management and performance, and the reasons for differences in management across firms, industries and countries. This will be supplemented with the results from more recent research with national statistical offices (see www.managementresearch.com) plus work with Accenture and the World Bank in India on change management interventions in a developing country context. The course will focus on making students familiar with: (A) modern management research and (B) a management evaluation scoring too for the rapid evaluation of large groups of firms. This would be well suited for students potentially interested in doing further research after the MBA, those that want a more academic course, and people interested in tools for evaluating management practices in large samples of companies.

MGTECON 600. Microeconomic Analysis I. 3 Units.
This course provides an introduction to the foundations of modern microeconomic theory. Topics include choice theory, with and without uncertainty, consumer and producer theory, dynamic choice and dynamic programming, social choice and efficiency, and fundamentals of general equilibrium.

MGTECON 601. Microeconomic Analysis II. 3 Units.
This course studies the roles of information, incentives and strategic behavior in markets. The rudiments of game theory are developed and applied to selected topics regarding auctions, bargaining, and firms' competitive strategies; information economics; and contracting and market design.

MGTECON 602. Auctions, Bargaining, and Pricing. 4 Units.
This course covers mostly auction theory, bargaining theory and related parts of the literature on pricing. Key classic papers covered in the course are Myerson and Satterthwaite on dynamic bargaining, Myerson on optimal auctions, and Milgrom and Weber's classic work, the Coase Conjecture results. We also cover a few more recent developments related to these topics, including dynamic signaling and screening. In some years we also cover topics in matching theory.

MGTECON 603. Econometric Methods I. 4 Units.
This is the first course in the sequence in graduate econometrics. The course covers some of the probabilistic and statistical underpinnings of econometrics, and explores the large-sample properties of maximum likelihood estimators. You are assumed to have introductory probability and statistics and matrix theory, and to have exposure to basic real analysis. Topics covered in the course include random variables, distribution functions, functions of random variables, expectations, conditional probabilities and Bayes' law, convergence and limit laws, hypothesis testing, confidence intervals, maximum likelihood estimation, and decision theory.

MGTECON 604. Econometric Methods II. 4 Units.
This course presents a comprehensive treatment of econometric methods used in economics, finance, marketing, and other management disciplines. Among the topics covered are: the classical linear regression analysis, linear simultaneous equations systems and instrumental variables techniques, panel data models, generalized method of moments, selection models, and limited dependent variable models. This course uses Matlab or similar computational software, but previous experience with such software is not a prerequisite. This course assumes working knowledge of undergraduate econometrics, basic linear algebra, basic probability theory, and statistics that are covered in MGTECON 603. Those who did not take MGTECON 603 or similar should see the instructor.

MGTECON 605. Econometric Methods III. 3 Units.
This course completes the first-year sequence in econometrics. It develops nonparametric, semiparametric and nonlinear parametric models in detail, as well as optimization methods used to estimate nonlinear models. The instructor will discuss identification issues, the statistical properties of these estimators, and how they are used in practice. Depending on student and instructor interest, we will consider advanced topics and applications, including: machine learning, simulation methods and Bayesian estimators.

MGTECON 608. Multiperson Decision Theory. 3 Units.
Students and faculty review and present recent research papers on basic theories and economic applications of decision theory, game theory and mechanism design. Applications include market design and analyses of incentives and strategic behavior in markets, and selected topics such as auctions, bargaining, contracting, signaling, and computation.

MGTECON 610. Macroeconomics. 3 Units.
This course covers various topics in macroeconomics and is designed to expose students to macroeconomic methods, classic papers in the field, and the latest research at the frontier. The current focus is on economic growth. Using theoretical and empirical tools, we consider questions like: How do we understand long-run growth in per capita income? Why are some countries so much richer than others? Other topics include misallocation as a source of TFP differences, the direction of technical change, growth and the environment, the rise in health spending, patenting, and international trade.This course satisfies the GSB PhD macro requirement.

MGTECON 612. Advanced Macroeconomics II. 4 Units.
This is an advanced class on monetary economics. We cover empirical evidence, neoclassical models, recent advances in New Keynesian models, monetary policy with heterogeneous agents and financial frictions, alternative models of price setting and other topics. Students enrolled in MGTECON612 take the class for 4 units. Students develop a research proposal and present it to the instructors as the final exam. Prerequisite: Satisfaction of the economics department's core macro requirement or consent of the instructors.

MGTECON 613. Foundations of Game Theory. 3 Units.
This course studies topics in non-cooperative game theory with an emphasis on foundations of game theory. Sample topics include: Modeling incomplete information (e.g. Mertens & Zamir and type spaces), Learning (e.g. Blackwell's approachability and separation theorems), Reasoning and solutions (e.g. Aumann, Aumann and Brandenburger epistemic conditions for solution concepts) and more. Prerequisite: An elementary course in game theory or a course with extensive economic applications of game theory.

MGTECON 615. Theory and Practice of Auction Market Design. 4 Units.
This class will focus on several topics in auction market design and related areas. It is an advanced course, intended as a sequel to the more basic market/mechanism/auction design courses offered at the Economics department and the GSB. Students are expected to be familiar with the material in those courses. We will briefly review some basics of auction theory, but the main goal of the class is to bring students closer to doing independent research and introduce them to recent contributions and currently active research areas. Specific topics may include: multi-item and combinatorial auctions; robust auction design; applied auction design with practical applications; Internet advertising; radio spectrum auctions; securities markets; commodities; complex procurements.

MGTECON 616. Topics in Microeconomic Theory. 3 Units.
This course covers foundational topics in microeconomic theory and is suitable for students who have completed the first year of their PhD studies and have taken a game theory or an advanced applied theory course. Sample topics include the notions of interactive knowledge and beliefs of economic agents, epistemics of solution concepts, strategies in continuous time and (adversarial) prediction testing. The course combines lectures with workshop sessions where students confront related research-type problems. Students are asked to present their original solutions to the class and are expected to participate in class discussions.

MGTECON 617. Financial Economics II. 3-5 Units.
This Ph.D. course will cover research topics at the boundary between macroeconomics and finance. Topics will include the study of macroeconomic models with financial frictions, the term structure of interest rates, conventional and unconventional monetary policy, sovereign debt crises, search frictions and segmentation in housing markets, (over)leveraging by households, heterogeneous expectations, excess volatility, financial bubbles and crises. Student presentations and course paper requirement. Designed for second year PhD students in economics or finance.
Same as: ECON 237

MGTECON 618. Social Insurance and Urban Economics. 3 Units.
The course covers various topics relating to social insurance and urban economics. The first half of the course covers the rationale for government interventions into private insurance markets, adverse selection, social insurance design and the intersection between social insurance and intra-family insurance. The second half of the course covers topics in urban economics, such as spatial equilibrium, placed-based policies, and housing policy.

MGTECON 624. Dynamic Political Economy Theory. 4 Units.
This course is intended to be an introduction to dynamic political economy theory. We will cover research at the frontier of this field and some useful tools. Tools will be primarily dynamic game theory - including Markov models and models of reputation. Topics covered will include dynamic legislative bargaining, dynamic coalition formation, endogenous institutions, endogenous policy formation, and policy experimentation.

MGTECON 626. Continuous-time Methods in Economics and Finance. 3 Units.
Continuous-time methods can, in many cases, lead to more powerful models to understand economic phenomena. The Black-Scholes option-pricing formula is significantly more tractable than discrete-time methods of option pricing based on binomial trees. There is an established tradition in continuous-time asset pricing, and there is increasing use of these methods in other fields, such as game theory, contract theory, market microstructure and macroeconomics.The goal of this class is to explore some of the old classic research as well as new economic models, and to discover areas of economics where continuous-time methods can help. The intention is to give graduate students a tool, which they can use to gain comparative advantage in their research, when they see appropriate.With this goal in mind, 25% of the class will focus on mathematics, but with economically relevant examples to illustrate the mathematical results. Up to one half of the class will cover established models, and the rest will focus on new papers. If students have their own work that uses continuous time, we can take a look at that as well.Coursework will include biweekly problem sets and a take-home final exam. There will also be room for short student presentations (related to homework assignments, economic papers, or definitions and results related to specific math concepts).

MGTECON 627. Empirical Applications of Dynamic Oligopoly Models in I.O.. 2 Units.
This course will provide an overview of recent advances in, and applications of, dynamic oligopoly models in I.O. We will start by introducing a simple framework for dynamic oligopoly in the context of a dynamic investment model. We will move on to other applications and extensions of the framework, including dynamic entry models and dynamic mergers, with a discussion of antitrust issues. We will cover an empirical model of dynamic network adoption and participation. We will learn alternative econometric approaches to the identification and estimation of dynamic oligopoly models, including a discussion of serially correlated unobserved shocks. Finally, we will discuss methods for computing counterfactuals and welfare, and then speculate about some unresolved issues and the potential for future work in this area.

MGTECON 628. Reading Group in Industrial Organization. 1 Unit.
This course meets weekly on Tuesdays at Noon. The primary purpose of the course is to read and discuss current working papers in Industrial Organization and related fields (e.g., Econometrics, Marketing, and Labor). Students are required to present papers a couple of times per quarter and both students and faculty may also present their own working papers.

MGTECON 629. Faculty Research Workshop. 3 Units.
Each week, a different economics faculty member will discuss his or her important and /or current research. The course is an important introduction to PhD level research topics and techniques. Attendance is mandatory.

MGTECON 630. Industrial Organization. 4 Units.
This is an introductory course in Industrial Organization. The goal is to provide broad general training in the field, introducing you to the central questions around imperfect competition, market structure, innovation and regulation, as well as the models and empirical methods commonly used to tackle these questions.

MGTECON 632. Topics in Continuous Time Dynamics. 3 Units.
This seminar-style course studies a selection of micro-economic models in dynamic settings, and explores the use of continuous-time methods to solve them. Topics to be covered include experimentation games, social learning, principal-agent problems, career concerns/market-agent models, security design and strategic trading. For every topic discussed, the class introduces gradually the set of relevant mathematical tools: dynamic programming and Hamilton-Jacobi-Bellman equations, Pontryagin's maximum principle, Euler-Lagrange equations, Brownian and Poisson processes, Bayesian inference and linear filtering, change of measure, martingale representation, Malliavin derivatives, stochastic maximum principle, expansions of filtrations. The course emphasizes high-level intuition rather than mathematical rigor. It is targeted at those who seek to become familiar with the literature on continuous-time dynamics and want to understand the functioning of these models, either by general interest or to apply these techniques.

MGTECON 634. Machine Learning and Causal Inference. 3 Units.
This course will cover statistical methods based on the machine learning literature that can be used for causal inference. In economics and the social sciences more broadly, empirical analyses typically estimate the effects of counterfactual policies, such as the effect of implementing a government policy, changing a price, showing advertisements, or introducing new products. This course will review when and how machine learning methods can be used for causal inference, and it will also review recent modifications and extensions to standard methods to adapt them to causal inference and provide statistical theory for hypothesis testing. We consider causal inference methods based on randomized experiments as well as observational studies, including methods such as instrumental variables and those based on longitudinal data. We consider the estimation of average treatment effects as well as personalized policies. Lectures will focus on theoretical developments, while classwork will consist primarily of empirical applications of the methods. Prerequisites: Prior coursework in empirical methods for causal inference in observational studies, including instrumental variables, fixed effects modeling, regression discontinuity designs, etc. Students should be comfortable reading and engaging with empirical research in economics or related fields.

MGTECON 640. Quantitative Methods for Empirical Research. 3 Units.
This is an advanced course on quantitative methods for empirical research. Students are expected to have taken a course in linear models before. In this course I will discuss modern econometric methods for nonlinear models, including maximum likelihood and generalized method of moments. The emphasis will be on how these methods are used in sophisticated empirical work in social sciences. Special topics include discrete choice models and methods for estimating treatment effects.

MGTECON 652. Personnel Economics. 3 Units.
This seminar will examine applications of labor economics to business issues and firms' practices. Material will include both theoretical and empirical work, and the syllabus will range from classics in Personnel Economics to current (unpublished) research. Some of the topics to be covered include, but are not limited to, compensation practices, assignment of decision rights, organizational structure, attracting, retaining, and displacing employees, and workplace practices (such as team-based organization, profit sharing, etc.).

MGTECON 691. PhD Directed Reading. 1-15 Unit.
This course is offered for students requiring specialized training in an area not covered by existing courses. To register, a student must obtain permission from the faculty member who is willing to supervise the reading.
Same as: ACCT 691, FINANCE 691, GSBGEN 691, HRMGT 691, MKTG 691, OB 691, OIT 691, POLECON 691, STRAMGT 691

MGTECON 692. PhD Dissertation Research. 1-15 Unit.
This course is elected as soon as a student is ready to begin research for the dissertation, usually shortly after admission to candidacy. To register, a student must obtain permission from the faculty member who is willing to supervise the research.
Same as: ACCT 692, FINANCE 692, GSBGEN 692, HRMGT 692, MKTG 692, OB 692, OIT 692, POLECON 692, STRAMGT 692

MGTECON 698. Doctoral Practicum in Teaching. 1 Unit.
Doctoral Practicum in Teaching.

MGTECON 699. Doctoral Practicum in Research. 1 Unit.
Doctoral Practicum in Research.

MGTECON 802. TGR Dissertation. 0 Units.
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Same as: ACCT 802, FINANCE 802, GSBGEN 802, HRMGT 802, MKTG 802, OB 802, OIT 802, POLECON 802, STRAMGT 802

Finance Courses

FINANCE 121. Undergraduate Finance Research and Discussion Seminar. 1 Unit.
This seminar is designed to provide some experience with research methods and topics in finance, and to assist undergraduates with career interests in financial research, whether academic or not, with preparation for those careers. The seminar meetings are weekly and discussion based, covering a range of issues and methods in financial economics. Students are expected to prepare a 30-minute research presentation once during the quarter. To be considered for enrollment in this course, students need to complete an application, found here: https://forms.gle/aLB279vF3DJUJSgAA.

FINANCE 201. Finance. 3 Units.
This course covers the foundations of finance with an emphasis on applications that are vital for corporate managers. We will discuss many of the major financial decisions made by corporate managers, both within the firm and in their interactions with investors. Essential in most of these decisions is the process of valuation, which will be an important emphasis of the course. Topics include criteria for making investment decisions, valuation of financial assets and liabilities, relationships between risk and return, capital structure choice, payout policy, the use and valuation of derivative securities, and risk management. This course is targeted to those students who are new to finance and for those with little quantitative background.

FINANCE 204. Finance - Accelerated. 3 Units.
This course covers the foundations of finance with an emphasis on applications that are vital for corporate managers. We will discuss many of the major financial decisions made by corporate managers, both within the firm and in their interactions with investors. Essential in most of these decisions is the process of valuation, which will be an important emphasis of the course. Topics include criteria for making investment decisions, valuation of financial assets and liabilities, relationships between risk and return, capital structure choice, the use and valuation of derivative securities (e.g., options and convertible securities), and risk management.No previous background in finance is required or expected, but in comparison with Finance 201, less time will be spent in class on the steps involved in solving basic problems. Therefore, students choosing this course should be relatively comfortable with basic mathematical operations (e.g., expressions involving multiplication of multiple terms, summation of multiple terms, etc.), though familiarity with the underlying finance concepts is not expected. A good diagnostic is to skim Section 4.2 "Rules for Time Travel" (pp. 98-104) in the course textbook, Corporate Finance by Berk and DeMarzo. If you are comfortable with the level of basic mathematics involved (even if the concepts are new), 204 is a good choice. If not, you should consider Finance 201.

FINANCE 205. Accelerated Managerial Finance. 3 Units.
This course covers the foundations of finance with an emphasis on applications that are vital for corporate managers. We will discuss many of the major financial decisions made by corporate managers, both within the firm and in their interactions with investors. Essential in most of these decisions is the process of valuation, which will be an important emphasis of the course. Topics include criteria for making investment decisions, valuation of financial assets and liabilities, relationships between risk and return, capital structure choice, payout policy, the use and valuation of derivative securities, and risk management. This course is targeted to those students who are new to finance and for those with little quantitative background.No previous background in finance is required or expected for this course. Content will be comparable to F201, but the majority of course lecture material will be delivered online, with in-class sessions devoted to applications of key concepts. This "flipped classroom" version of the course is intended for self-motivated students with an interest in applications. Prerequisite material for the course will be posted online in the fall.

FINANCE 207. Corporations, Finance, and Governance in the Global Economy. 3 Units.
As entrepreneurs, global leaders, and change agents tasked with developing transformative solutions of tomorrow, you will need certain skills and tools to interact with and navigate the complex and ever-changing financial landscape. This course focuses on the development of these skills and tools through the analysis of concise real-world financial situations around the globe. Topics include valuation of cash flows and control; the capital structure, payout policy and governance of both mature and entrepreneurial firms; restructuring and managing financial distress; the use of public markets to obtain liquidity and multiple share classes to retain control; financing and governance in venture capital and private equity; the rise of activism; and social responsibility and debates about the objectives of the firms of the present and future. This course is taught jointly by Professors Rauh and Seru.

FINANCE 211. Corporate Finance: Applications, Techniques, and Models. 3 Units.
This course will develop and apply the basic tools and models of corporate finance to real-world corporate decisions. This course is designed to be the second course in the standard finance sequence; that is, it is designed to be the natural follow-up to the Winter Managerial Finance course. This course will develop and extend standard tools and techniques of financial analysis, valuation, and model-building, and apply these methods to a wide range of cases. Case topics will include mergers and acquisitions, private equity, corporate governance, capital structure, agency conflicts, and corporate restructuring. For all of these applications, this course will emphasize the central importance of financial analysis, valuation, and modeling to guiding optimal decision making.

FINANCE 214. Accelerated Corporate Finance: Applications, Techniques, and Models. 3 Units.
This course will develop and apply the basic tools and models of corporate finance to real-world corporate decisions. This course is designed to be the second course in the standard finance sequence; that is, it is designed to be the natural follow-up to the Winter Managerial Finance course. This course will develop and extend standard tools and techniques of financial analysis, valuation, and model-building, and apply these methods to a wide range of cases. Case topics will include mergers and acquisitions, private equity, corporate governance, capital structure, agency conflicts, and corporate restructuring. For all of these applications, this course will emphasize the central importance of financial analysis, valuation, and modeling to guiding optimal decision making.

FINANCE 229. MSx: Finance. 3 Units.
This course covers the foundations of finance with an emphasis on applications that are vital for corporate managers. We will consider many important financial decisions made by corporate managers, both within the firm and in their interactions with investors. Essential to most of these decisions are financial valuations, which will be an important emphasis of the course. Topics include criteria for making investment decisions, valuation of financial assets and liabilities, relationships between risk and return, and capital structure choice.

FINANCE 305. Capital Markets and Institutional Investing. 3 Units.
This course teaches recent advances in asset allocation and management. We emphasize the practical implementation of asset allocation and management tools in allocating assets, selecting asset managers and managing risk. The course focuses on alternative asset classes. Students apply these tools to real-time data in the computer lab. Topics covered include Asset Allocation; Delegated Asset Management and Manager Selection applied to Mutual Funds, Hedge Funds and Private Equity Funds; Multi-factor models and Factor Investing. The class will be co-taught by Ana Marshall, the CIO of the Hewlett Foundation, and Hanno Lustig, who is on the Allocation Advisory Board of the NBIM.

FINANCE 306. International Finance and Macroeconomics. 3 Units.
An introduction to the global economy. We will cover a number of important topics for firms, banks, and policy makers: global capital flows, international financial markets, the role of the U.S. and US dollar in the international monetary system, reserve currencies history and future (stable coins?), exchange rates (floating, fixed, and monetary unions), financial crises, international financial policy (capital controls, bank regulation, FX intervention), currency wars, tax havens and global wealth dynamics, global trade, and trade wars. Emphasis will be on data driven approaches, no prior knowledge is assumed. An MBA class designed for those looking to understand today's global economic issues.

FINANCE 315. Innovating for Financial Inclusion. 3 Units.
This MBA elective explores innovative ways that start-ups are expanding the financial capacities of households and small businesses. What are the financial frictions that household/business facing impactful FinTech startups are addressing? What economic and behavioral forces are governing the successes of these startups? How is the choice of funding/business model impacting growth/scaling strategies? How is the competitive landscape evolving for traditional banks, established tech platforms, and FinTech startups? While the center of attention will be on disruption of financial services within the US legal and regulatory environments, we will frequently highlight recent innovations in Asia, Europe, and Latin America.

FINANCE 319. Private Equity Investing Seminar. 3 Units.
The Investments courses comprise an intensive overview of active fundamental investing in both the public and private equity markets. They are relevant for students who intend to pursue careers in private or public equity investing, as well as those who want to better understand investing from the perspective of an entrepreneur or individual. The vast majority of sessions will feature an outstanding investor guest lecturer. Previous guests included Andreas Halvorsen (Viking Global), Jim Coulter (TPG), Hadley Mullen (TSG Consumer Partners), Ryan Cotton (Bain Capital), Bill Oberndorf (SPO Partners) and Tim Bliss (Investment Group of Santa Barbara), and this year's lineup will be substantially similar. Established and taught for 50 years by the legendary Professor Jack McDonald, the Investments courses will be taught by John Hurley, founder of Cavalry Asset Management and Professor Steve Grenadier in Autumn 2019. Students are required to take F319 and F321 concurrently for 5 total units during the Autumn Quarter. F321 is a 2-unit compressed course that meets MWF from 2:30-5:30pm during Weeks 1 and 8 of the quarter. It addresses real-world applications of business analysis and valuation tools and teaches the skills necessary to evaluate investment opportunities. F319 is a 3-unit course that meets Tu/Th 12:40-2:00 PM throughout the quarter. Students delve into specific topics in private equity, venture capital, hedge funds, mutual funds and principal investing. Students can elect to take F319 graded or pass/fail. The Investments courses will make use of original case studies and teaching notes authored by the late Professor Jack McDonald and a team of course alumni from prior MBA classes. Case discussions and lecture discussions will be led by the teaching team and investors/principals who were involved. The Investments courses enable MBA students to learn a broad investing skillset and study the careers of outstanding investors.

FINANCE 320. Debt Markets. 3 Units.
This course is intended for those who plan careers that may involve debt financing for their businesses or other investments, or involve trading or investing in debt instruments and their derivatives, including money-market instruments, government bonds, repurchase agreements, interest-rate swaps, corporate bonds, structured credit products, and credit derivatives. We will emphasize the institutional features of the markets, including trading, pricing, and hedging. The course includes a focus on distressed debt and restructuring. Most lectures will start with a cold-called student presentation of an un-graded short homework calculation. There will also be a series of graded homework, a take-home mid-term, and about seven graded 'pop quizzes' of 10 minutes or less.

FINANCE 321. Investment Management and Entrepreneurial Finance. 2 Units.
The Investments courses comprise an intensive overview of active fundamental investing in both the public and private equity markets. They are relevant for students who intend to pursue careers in private or public equity investing, as well as those who want to better understand investing from the perspective of an entrepreneur or individual. The vast majority of sessions will feature an outstanding investor guest lecturer. Previous guests included Andreas Halvorsen (Viking Global), Jim Coulter (TPG), Hadley Mullen (TSG Consumer Partners), Ryan Cotton (Bain Capital), Bill Oberndorf (SPO Partners) and Tim Bliss (Investment Group of Santa Barbara), and this year's lineup will be substantially similar. Established and taught for 50 years by the legendary Professor Jack McDonald, the Investments courses will be taught by John Hurley, founder of Cavalry Asset Management and Professor Steve Grenadier in Autumn 2019. Students are required to take F319 and F321 concurrently for 5 total units during the Autumn Quarter. F321 is a 2-unit compressed course that meets MWF from 2:30-5:30pm during Weeks 1 and 8 of the quarter. It addresses real-world applications of business analysis and valuation tools and teaches the skills necessary to evaluate investment opportunities. F319 is a 3-unit course that meets Tu/Th 12:40-2:00 PM throughout the quarter. Students delve into specific topics in private equity, venture capital, hedge funds, mutual funds and principal investing. Students can elect to take F319 graded or pass/fail. The Investments courses will make use of original case studies and teaching notes authored by the late Professor Jack McDonald and a team of course alumni from prior MBA classes. Case discussions and lecture discussions will be led by the teaching team and investors/principals who were involved. The Investments courses enable MBA students to learn a broad investing skillset and study the careers of outstanding investors.

FINANCE 326. Derivative Securities. 4 Units.
This course is an introduction to options, futures and other derivative securities. The goal is to learn a core set of principles that underlie the pricing and use of derivatives. In particular, we will cover the valuation and use, both for risk management and for speculation, of forwards, futures, swaps, and options; the Black-Scholes option-pricing formula; delta-hedging; credit derivatives; financial risk management; and the role of derivatives in the recent financial crisis.

FINANCE 327. Financial Markets. 4 Units.
The aim of this course is to develop a thorough understanding of financial markets. We explore how investors make decisions about risk and return, how financial markets price risky assets in equilibrium, and how financial markets can sometimes malfunction. The course puts particular emphasis on the role of real-world imperfections that are absent from the standard textbook view of financial markets. For example, we explore the role of illiquidity: Why are there liquid markets for some types of assets but not for others? Why does liquidity often disappear in times of market turmoil? We will also study recent insights from behavioral finance about investor psychology and market inefficiencies. Moreover, we will look at financial innovations such as credit-default swaps, securitization, and hedge funds that play important roles in financial markets these days. We use cases to develop these topics in the context of practical decision-problems in the areas of asset allocation, risk management, and financing.

FINANCE 329. Investment Seminar. 3 Units.
See FINANCE 321 course description.

FINANCE 331. Practical Corporate Finance. 4 Units.
(Note: this course was formerly known as FIN 230) The main aim of this course is to enable students to apply the fundamental ideas of finance to problems in the area of corporate finance with all the complexities the real world entails. The course is a follow-up to the Fall Managerial Finance course where students learnt basics of valuation tecyhniques and various finance applications. We will explore both how to make all this knowledge practical as well as how to deepen our knowledge of fundamental finance ideas. nnnThe main focus of this course is on the corporate financial manager and how he/she reaches decisions as to investments, dividends and financing of all sorts. Topics include leveraged buyouts, hostile takeovers, private equity financing and venture capital, financial distress and bankruptcy, mergers and acquisitions, managing working capital. The cases will be used to motivate our discussion of how to bridge the gap between rigorous finance theory and its application to practical problems in corporate finance.nnnThe course is case-based and more advanced than FINANCE 324. "Advanced" means that we will discuss a lot of subtle qualitative issues as well as explore deeper fundamental applications of core finance ideas. The course is intensive and will require students to prepare carefully all cases, read and understand a lot of materials, and actively participate in the class discussion. The main teaching method is cold calling.
Same as: Accelerated

FINANCE 332. Finance and Society. 3 Units.
This interdisciplinary course explores the economic, political, and behavioral forces that shape the financial system and, through this system, have a major impact on the economy and society. You will gain an in-depth understanding of how the complex interactions between individuals, corporations, governments, and the media can help markets work or, in turn, generate governance failures and inefficiencies. Visitors with varied experiences will enrich our discussions of key questions about the workings of capitalism in liberal democracies.

FINANCE 333. Financial Restructuring. 3 Units.
This course provides an intensive overview of financial restructuring transactions and processes from the perspective of distressed firms and their key stakeholders. It is intended for those who plan careers in general management, private equity, credit and special situations investing, banking, turnaround management, or financial advisory services. The course examines how companies may use in-court or out-of-court tools and processes to renegotiate their key contracts with creditors and other stakeholders when they encounter challenging business situations. Students will explore the financial, strategic, and legal implications of workouts, bankruptcies, asset/363 sales, and exchange offers, as applied in the context of financially distressed companies. Topics include valuation, absolute priority, creditor committees, intercreditor conflicts, debtor-in-possession (DIP) financings, 'blocking' strategies, avoidance powers, contingent claims, tax considerations, international insolvency, and distressed investment strategy. In exploring these topics, the course focuses on the key legal and contractual rights that creditors and other counterparties possess, and how they may use these rights to optimize their negotiated outcomes in a restructuring. Students will gain the tools to identify distress before it occurs, analyze distressed companies, and design restructuring plans which create enterprise value while navigating various considerations. They will also gain an understand of how to structure financial obligations upon origination in a way to lower the probability of financial distress. Finally, the course will examine the purpose of bankruptcy design and future policy implications. The course is lecture-focused in the beginning, but will become more interactive and case-focused later in the course as students acquire the skills they need to tackle key issues. Grading will be based upon class participation (50%), and a paper due at the end of the quarter (50%). For the paper, each student will select a distressed company currently in the market and design a restructuring plan for it.

FINANCE 335. Corporate Valuation, Governance and Behavior. 4 Units.
This course will develop a detailed knowledge of corporate valuation techniques, together with an understanding of the role such valuations play in a wide range of corporate financing decisions. First, the course will carefully consider different valuation techniques, the assumptions that underlie each of these methods, how they are applied in practice, how they are related to one another, and how to decide which method of valuation is appropriate for a given application. After developing these tools, they will then be applied to a wide range of corporate finance settings. Among the applications to be considered are mergers and acquisitions, international valuation, corporate governance, financial distress, agency conflicts, asymmetric information, and overvaluation. For all of these applications, this course will emphasize the central importance of valuation to understanding observed phenomena and to guiding optimal decision making, as well as the unique challenges to valuation posed by the particular application.

FINANCE 336. The Finance of Retirement and Pensions. 4 Units.
The financial economics of how retirement is financed, particularly in the US. Topics: basic finance concepts necessary for understanding individual retirement savings. Properties of financial instruments such as bonds and stocks. Optimization of individual retirement account or 401(k) portfolios. Defined benefit pensions. Measuring defined benefit pension liabilities. Impact of defined benefit pension liabilities on corporate, state, and local budgeting. The economics of national retirement policy including Social Security and government treatment of private retirement savings.

FINANCE 341. Modeling for Investment Management. 3 Units.
This course will combine practical and up-to-date investment theory with modeling applications. Understanding beautiful theory, without the ability to apply it, is essentially useless. Conversely, creating state-of-the-art spreadsheets that apply incorrect theory is a waste of time. Here, we try to explicitly combine theory and application. The course will be divided into 6 modules, or topics. The first day of each module will be a lecture on an investment topic. Also provided is a team modeling project on the topic. The second day of each module will be a lab. The lab day will begin with modeling concepts (tips) designed to help you use Excel to implement the module's investment topic. After the tips are provided, the remainder of the lab day is devoted to teams working on their modeling project and allowing for Q&A. On the third day of each module will be presentations and wrap-up.

FINANCE 345. History of Financial Crises. 3 Units.
Financial crises are as old as financial markets themselves. There are many similarities between historical events. The crisis of 2008, for example, is far from unique. More often than not financial crises are the result of bubbles in certain asset classes or can be linked to a specific form of financial innovation. This course gives an overview of the history of financial crises, asset price bubbles, banking collapses and debt crises. We start with the Tulip mania in 1636 and end with the recent Euro crisis. The purpose of the course is to understand the causes of past crises and to develop a conceptual framework that ties common elements together. We will discuss the lessons that we can draw for financial markets today.

FINANCE 346. Institutional Money Management. 3 Units.
The object of this course is to study the money management industry from the perspective of the user --- an investor who wants to invest money. This course will study the main components of the money management industry: mutual funds, hedge funds, private equity funds and venture capital funds. It will also examine important users of the industry such as non profits, endowments and defined benefit pension funds. The emphasis of the course will not be on how fund managers make money, but rather on how the industry is organized, how managerial skill is assessed, how compensation is determined, and how economic rents are divided between managers and investors. The course will explore how competitive market forces interact with managerial skill and other market frictions to give rise to the observed organization of the industry.

FINANCE 347. Money and Banking. 3 Units.
This course is designed to help students understand the connections between money (the Federal Reserve), financial markets, and the macroeconomy. How are interest rates determined, and how does the Federal Reserve conduct monetary policy? How do Federal Reserve actions impact the US as well as other economies? What economic factors drive the yield curves in different bond markets? We will pay particular attention to the banking system, with an eye toward understanding the function, valuation, and regulation of banks. We touch on a number of topics including the role of the Federal Reserve as a lender of last resort during financial crises, unconventional monetary policy tools such as quantitative easing and forward guidance, cryptocurrency, and emerging market financial crises. We will often begin class with a discussion of current macro-financial market events in the context of our course coverage.

FINANCE 350. Corporate Financial Modeling. 4 Units.
This course will expose students to the fundamentals, best practices, and advanced techniques of corporate financial modeling. We begin with basic operating and integrated financial statement models, and ultimately develop financial models to analyze major corporate transactions, including venture capital funding, mergers and acquisitions, and leverage buyouts. We will integrate theories presented throughout the MBA core, particularly those from accounting and finance, and take a hands-on approach to understand how the theory is implemented in practice.The focus of the course will be on developing critical financial modeling skills, understanding best practices, and recognizing common pitfalls. Students will work on a series of cases and build models that can be used for earnings and pro-forma financial statement forecasts, valuation, the assessment of financing needs, merger analysis, and LBO evaluation.Students will also gain experience presenting financial models and critically assessing them. By the conclusion of the course, students will develop the skills to construct complex financial models and the logical frameworks to utilize them for various organizational applications.

FINANCE 351. Advanced Corporate Financial Modeling. 4 Units.
Students will engage in the development of corporate financial modeling cases and solutions. Students will also develop materials to aid others in building financial models, and serve as case leaders during lab workshops. Extensive background in financial modeling and experience with Excel is required.

FINANCE 361. Behavioral Finance. 4 Units.
This course provides an introduction to behavioral finance, a discipline which integrates insights from psychology into the study of financial decisions and markets. There will be a focus on understanding the psychological underpinnings of financial decision-making as well as the institutional frictions that may allow these psychological mechanisms to influence economic outcomes. Applications include the pricing of assets relative to fundamental value, trading strategies, managerial behavior, and household savings and investment decisions. Conceptual issues will be emphasized through a mix of case discussions and lectures, and quantitative exercises will serve to develop analytical tools for making financial choices.

FINANCE 362. Financial Trading Strategies. 3 Units.
The purpose of this course is to familiarize students with the different types of trading strategies employed by various money management institutions. These financial trading strategies are used to manage the risk and return profiles of specific portfolios. Throughout the sessions, students will be challenged to understand and explore the application and implementation of these different strategies. Trading simulations employed on the Rotman Interactive Trader and Rotman Portfolio Manager (using real market data and computer generated data) will be used extensively in this course as a way to learn and test different strategies. All classes will be held in the new Real-time Analytics and Investment Lab (RAIL), located on the third floor of the Bass Building (B312). Students are expected to attend all sessions. Grades are based on in-class simulation results, class participation, and two written assignments.

FINANCE 373. Entrepreneurial Finance. 3 Units.
This is a course about the financial decision-making process largely from the point of view of the CEO of an entrepreneurial venture, ranging from very early to very late stages. The course takes a two-pronged approach: First, we develop tools and concepts of corporate finance related to modeling, valuation, control, and investment decisions within an entrepreneurial context. Second, we use cases with firms at different stages of their life cycles from initial angel or venture capital investments through exit decisions, in order to see the issues that arise when these principles are applied in practice. In some cases we show the viewpoint of the entrepreneur and in others the perspective of the investor. After all, as an entrepreneur, one cannot negotiate effectively without understanding an investor's motivations. Conversely, an investor cannot evaluate a potential investment opportunity without appreciating the entrepreneur's perspective and incentives. Finally, we explore new developments in entrepreneurial finance such as crowdfunding and early liquidity provisions.

FINANCE 377. China's Financial System. 3 Units.
This course is a survey of China's financial system, including its banking industry, monetary policy structure, and financial markets (bonds, derivatives, equities, foreign exchange, alternative asset management, and related markets). The goal is an integrated view of how capital, risk, and liquidity are intermediated within China and cross-border. Current trends (including liberalization of markets and financial stability) will be emphasized. Coverage will be through lectures, reading of research, including primary source documents and secondary (journalistic and analyst) commentary. There will be a range of subject-matter-expert speakers. Using our special video-technology enabled classrooms at Stanford and at the Stanford Center at PKU, this course is able to draw live speakers in Beijing and to meet jointly with students at Beijing University. Students will participate actively in class discussion, make a 5-minute (per student in each group) research presentation, and submit a 10-page term paper.

FINANCE 381. Private Equity in Frontier Markets: Creating a New Investible Asset Class. 4 Units.
In 2001, Jim O'Neil of Goldman Sachs wrote a research note which underscored the importance of so-called Emerging Markets to a well-balanced investment portfolio. Still today, most investors have little or no investment exposure beyond North America, Europe, Japan and more recently India, China and Brazil. All of this is just beginning to change. The not yet fully formed investment category called frontier market private equity is emerging and within the next decade is likely to be an asset class of its own. Private equity investments are being made in southeast Asia, in MENA(Middle East/ North Africa), in sub-Saharan countries beyond South Africa and in Latin America. Even fund of funds are appearing across these markets. At the same time, investors face a world of diminished returns expectations in developed economies just as aging demographics and the need for continued growth, innovation and infrastructure renewal places increasing demands for payout. Suffice it to say, investors will be looking beyond traditional asset classes and geographies for sources of return. This new course is designed to expose you to the still emerging, not yet fully formed world of frontier market private equity. To set the context we will start by reviewing the fundamentals of economic growth and development globally. In addition we will discuss the fundamental concepts involved in constructing and evaluating the performance of a large scale investment portfolio. We will then review cases on the elements of the private equity cycle/process and specifically address the special demands of frontier markets in general. We will also focus on issues that are specific to various markets (e.g. Nigeria, Vietnam, etc.). Students taking the course will be given the opportunity to make important contributions to the knowledge base of this still very young field by working in small teams to research topics of personal and general interest, the results of which will be reported to the rest of the class. This course will not be offered next academic year, 2017-2018.

FINANCE 385. Angel and Venture Capital Financing for Entrepreneurs and Investors. 3 Units.
This course covers all the stages of funding for early stage high-growth companies, from seed funding to venture capital rounds to a successful exit. We will concentrate on how entrepreneurs and investors make and should make important decisions. Examples of issues that we will cover are: How can entrepreneurs raise funding successfully? What are typical mistakes entrepreneurs make in raising capital and negotiating with investors? How to choose your investor? How to pitch to an investor? How do angels and VCs generate and process their deal flow and select companies? How are VCs involved in business decisions such as recruiting talent and replacing CEOs? What are the important provisions of financial contracts between VCs and founders? How to value early-stage companies? The course is very applied and mostly case-based. We will discuss a lot of nitty-gritty details that is a must for founders and investors. Case protagonists, founders, angels, and VCs will be among guest speakers. No prior knowledge of the VC industry is needed.

FINANCE 548. The Political Economy of Banking Regulation in US and Europe. 1 Unit.
The 2007-09 financial crisis exposed the extreme fragility of the financial system and the harm financial crises can cause. Have regulatory reforms in the US and Europe been effective and, if not, how and why? Does it matter if some institutions are "too big to fail," and, if so, how and why? This course will discuss the economic and political forces that are shaping the financial system in US and Europe and evaluate recent and current events that will have important implications for the economy for many years. We will see how politics trumps economics in Washington, London and Brussels in different but broadly predictable ways.

FINANCE 555. Private Wealth Management and Personal Investing. 2 Units.
The Private Wealth Management and Personal Investing course will address issues that relate to the management of personal assets as opposed to institutional investing. Many investment courses at the GSB emphasize large institutional portfolios but this course is about portfolio decisions for individuals. It will cover the origins and growth of private wealth management as an industry, investment planning, risk management, inter-generational transfers of wealth, choice of wealth advisors and philanthropy. Special emphasis is on understanding how wealth managers may be evaluated, including potential conflicts of interest, and performance measurement. Classes will focus on case studies and various readings. Each class will include visits from professionals in the wealth management and personal investing business. Active class participation and a group project are required.

FINANCE 559. The World of Investing. 1 Unit.
This course is a speaker series, exposing students to the world of first-class investors and their philosophies. Each week will have a different visitor describing their investment strategy and experience. Attendance at all sessions is a requirement to pass the course.

FINANCE 562. Financial Trading Strategies. 2 Units.
The purpose of this course is to familiarize students with the different types of trading strategies employed by various money management institutions. These financial trading strategies are used to manage the risk and return profiles of specific portfolios. Throughout the sessions, students will be challenged to understand and explore the application and implementation of these different strategies. Trading simulations employed on the Rotman Interactive Trader and Rotman Portfolio Manager (using real market data and computer generated data) will be used extensively in this course as a way to learn and test different strategies. All classes will be held in the new Real-time Analytics and Investment Lab (RAIL), located on the third floor of the Bass Building (B312). Students are expected to attend all sessions. Graded are based on in-class simulation results, class participation, and two written assignments. This course is designed to have a fast learning curve and is a pre-requisite for FIN563, the advanced extension of this course.

FINANCE 563. Financial Trading Strategies 2. 2 Units.
This course is an extension of FIN562, Financial Trading Strategies. Students will expand on introductory topics from the Financial Trading Strategies Course and be required to build extensive live-market models and risk management models. Class discussions will closely link current market events and pricing anomalies to theoretical and simulated markets and we will closely study the deviations between them.

FINANCE 587. Private Equity - An Overview of the Industry. 2 Units.
This 2-unit elective at the GSB is an "Overview" of the private equity industry including its reason for being, its growth and the various strategies for success that private equity firms employ. The course looks at all aspects of private equity partnerships and private equity investing. The course may be of particular interest to five groups of students: (i) students who aspire to be employed in private equity as a career; (ii) students who plan to be employed by companies that are owned by private equity firms; (iii) students who may invest in private equity partnerships as a limited partner; (iv) students who find private equity to be an interesting part of the financial services industry, and (v) students who expect to participate in corporate business development or mergers and acquisitions. The course will meet for nine classes. Each class will have at least one senior partner from a private equity firm to comment on the activities of his firm. In years past, some of the true leaders of the industry have participated. One class will be a mock investment review committee presentation as a final project.

FINANCE 620. Financial Markets I. 3 Units.
This course is an introductory PhD level course in financial economics. We begin with individual choice under uncertainty, then move on to equilibrium models, the stochastic discount factor methodology, and no-arbitrage pricing. We will also address some empirical puzzles relating to asset markets, and explore the models that have been developed to try to explain them.

FINANCE 621. Financial Markets II. 3 Units.
This course continues F620 and covers a number of main concepts in market microstructure. Among the topics that are covered are (i) Rational Expectations models and their foundations (ii) strategic trading models (iii) models of market and funding liquidity. In addition to the discussion of theoretic models time will be allotted to empirical applications.

FINANCE 622. Dynamic Asset Pricing Theory. 4 Units.
This course is an introduction to multiperiod models in finance, mainly pertaining to optimal portfolio choice and asset pricing. The course begins with discrete-time models for portfolio choice and security prices, and then moves to a continuous-time setting. The topics then covered include advanced derivative pricing models, models of the term structure of interest rates, the valuation of corporate securities, portfolio choice in continuous-time settings, and finally finally market design. Students should have had some previous doctoral-level exposure to general equilibrium theory and some basic courses in investments. Strong backgrounds in calculus, linear algebra, and probability theory are recommended. Problem assignments are frequent and, for most students, demanding. Prerequisite: F620 and MGTECON600 (or equivalent), or permission of instructor.

FINANCE 624. Corporate Finance Theory. 4 Units.
This course considers a wide range of topics in theoretical corporate finance (broadly interpreted). Topics include capital structure decisions, agency conflicts in the firm, dividend policy, security design, optimal financial contracting, the theory of the firm, the market for corporate control, and banking and financial intermediation, among others. The primary focus is on how asymmetric information, agency conflicts, strategic interactions, and incomplete contracting affect corporate financial decision-making. The course aims both to familiarize students with influential papers and current research, and to promote new research ideas in the area.

FINANCE 625. Empirical Asset Pricing. 3 Units.
This course is an introduction to empirical research in asset pricing. The focus of the course is on the interplay between financial economic theory, econometric method, and that analysis of financial market data. Topics include tests of asset pricing models, return predictability in time-series and cross-section, empirical studies of asset market imperfections, and studies of individual and professional investor behavior. Class discussions will draw on textbooks/monographs and original articles and working papers.

FINANCE 626. Advanced Corporate Finance. 3 Units.
This is a course on contemporary theoretical and empirical issues in corporate finance. Building upon the first-year courses in corporate finance theory and empirical methods in finance, we will examine issues in asset pricing applications to corporate finance, dynamic capital structure (dynamic financing decisions), financial distress, financing and investment interactions, and behavioral corporate finance. Both conceptual economic frameworks and econometric methods will be developed as needed. A requirement for this course is that students complete two written projects, one theoretical and one empirical, and at least one of these projects will be presented to the class.

FINANCE 627. Venture Capital and Finance of Innovation. 3 Units.
In this course we will study the theory and empirics of venture capital (VC) and, more broadly, finance of innovation. We will start by reviewing the way the VC and related markets function and then will dive into such topics as VC contracting, valuation, and impact on innovation. We will review most important research studies published in the field over the past 20+ years and pay particular attention to recent research.

FINANCE 628. Finance Pre-Seminar Reading Course. 1 Unit.
Finance Pre-Seminar Reading.

FINANCE 630. Empirical Corporate Finance. 3 Units.
This course provides an introduction to empirical research in corporate finance, with an emphasis on the application of cross-sectional and panel data econometric techniques for causal inference. Topics include investment policy, entrepreneurship and innovation, financing decisions, firm ownership, corporate governance, managerial incentives, financial contracting, and the structure and internal organization of firms. The course assumes knowledge of econometrics at the level of MGTECON 603.

FINANCE 632. Empirical International Finance. 3 Units.
This is an advanced graduate-level course in international finance and macroeconomics. The course focuses on empirical methods, stylized facts, new advances in large-scale empirical work, and applied theory. This course is targeted to advanced second year PhD students. The course assumes familiarity with the basics of graduate-level macroeconomics and finance. Students without the necessary familiarity with these techniques are welcome to take the course, but should expect to have to fill the gaps on their own (and with the help of their classmates!). Given the target audience above, the course has three main objectives. 1) To introduce and investigate both classic and new economic issues at the frontier of current research in international finance and macroeconomics. The purely pedagogical part of the course aims to make students familiar with the questions, the current state of research, and the empirical tools currently being used. 2) To create a mental framework and intuitive understanding of important and active questions. What makes a question interesting? What makes a paper a good paper? How to develop a reasoned view of new (and perhaps yet un-studied) issues in international finance and macroeconomics? This objective is less direct and less formal, but aims to transition the students into full-time researchers. 3) To kick-start students on independent research. For those interested in applied work the course makes you familiar and tries to connect you with existing data at the frontier of the field, both public and proprietary. For those interested in theoretical work the course staff acts as a sounding board for early research ideas.

FINANCE 633. Advanced Empirical Corporate, Banking and Household Finance. 3 Units.
This course discusses empirical aspects of major topics in corporate finance, household and consumer finance, housing, banking, financial regulation as well as political economy. The course is designed for students doing their PhD in finance, economics and accounting. The class is very interactive.

FINANCE 635. Advanced Topics in Empirical Asset Pricing. 3 Units.
This course will survey current research topics in empirical asset pricing. The emphasis will be on giving students exposure to active research areas and open questions rather than well-established areas and empirical techniques. Topics may include liquidity, capital market frictions, money management, volatility, investment-based asset pricing, return predictability, bubbles, and consumption-macro asset pricing models.

FINANCE 637. Macroeconomics and Financial Markets. 3 Units.
This PhD course will cover research topics at the boundary between macroeconomics and finance. Topics will include the study of macroeconomic models with financial frictions, the term structure of interest rates, conventional and unconventional monetary policy, sovereign debt crises, search frictions and segmentation in housing markets, (over)leveraging by households, heterogeneous expectations, excess volatility, financial bubbles and crises. Student presentations and course paper requirement. Designed for second year PhD students in economics or finance.

FINANCE 691. PhD Directed Reading. 1-15 Unit.
This course is offered for students requiring specialized training in an area not covered by existing courses. To register, a student must obtain permission from the faculty member who is willing to supervise the reading.
Same as: ACCT 691, GSBGEN 691, HRMGT 691, MGTECON 691, MKTG 691, OB 691, OIT 691, POLECON 691, STRAMGT 691

FINANCE 692. PhD Dissertation Research. 1-15 Unit.
This course is elected as soon as a student is ready to begin research for the dissertation, usually shortly after admission to candidacy. To register, a student must obtain permission from the faculty member who is willing to supervise the research.
Same as: ACCT 692, GSBGEN 692, HRMGT 692, MGTECON 692, MKTG 692, OB 692, OIT 692, POLECON 692, STRAMGT 692

FINANCE 698. Doctoral Practicum in Teaching. 1 Unit.
Doctoral Practicum in Teaching.

FINANCE 699. Doctoral Practicum in Research. 1 Unit.
Doctoral Practicum in Research.

FINANCE 802. TGR Dissertation. 0 Units.
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Same as: ACCT 802, GSBGEN 802, HRMGT 802, MGTECON 802, MKTG 802, OB 802, OIT 802, POLECON 802, STRAMGT 802

GSB Gen & Interdisciplinary Courses

GSBGEN 112Q. Leading Out Loud: an Exploration of Leadership Communication through an LGBT Lens. 3 Units.
Students of all sexual orientations are invited to apply for this unique new seminar looking at the distinct challenge LGBT leaders have faced in communicating effectively. Through the years, many individuals have led the struggle for gay rights and inclusion through a variety of different communication strategies and tactics; some were successful while others were not. This seminar course will explore some of the key leaders in the LGBT community and how they chose to communicate. Together we will search through a variety of film clips, transcripts, news reports, and other historical elements to see how the message, media, and moments work together. A number of guest speakers will also share their perspective on what it means to "Lead Out Loud." Heterosexual identified students as well as LGBT students are encouraged to apply; in fact, we seek to have a true diversity of opinions in the room as we explore this topic. All students will benefit from this exploration of how to communicate about controversial, sensitive, and personal subjects with greater strength and purpose.

GSBGEN 114Q. Changing Hearts and Minds. 3 Units.
Whether you are launching a start-up, leading an organization, or inspiring social action the need to communicate effectively is crucial to your success. This seminar, grounded in the work of Nancy Duarte's book Illuminate, will look at how leaders can effectively use speeches, ceremonies, stories, and symbols to lead change.n nYou will be able to apply course concepts to a change initiative within which they are already engaged and receive feedback from professor and peers to improve. Plans include field visits to Duarte's offices and other venues where change efforts are underway. You will also benefit from seeing the evolution of MBA students' presentations in the highly successful LOWkeynotes program.

GSBGEN 208. Ethics in Management. 2 Units.
With leadership comes responsibility. This course explores the numerous ethical issues faced by managers and organizations, and provides analytical frameworks as well as the latest findings on human behavior to inform ethical decisions and strategies. Readings involve controversial case studies, insights from experimental psychology and economics, and a brief introduction to some relevant philosophy. Through class exercises, rigorous discussion, and personal reflection, you will clarify your own ethical stance, think through ethical dilemmas, practice articulating recommendations compellingly, discover the diversity of ethical viewpoints, and find out how to avoid the social and cognitive pitfalls that come in the way of ethical leadership.

GSBGEN 259. MSx: Ethics. 1 Unit.
With leadership comes responsibility. This course explores the numerous ethical issues faced by managers and organizations and provides analytical frameworks as well as the latest findings on human behavior to inform ethical decisions and strategies. Readings involve controversial case studies, insights from experimental psychology and economics, and a brief introduction to some relevant philosophy. Through class exercises, rigorous discussion, and personal reflection, you will clarify your own ethical stance, think through ethical dilemmas, practice articulating recommendations compellingly, discover the diversity of ethical viewpoints, and find out how to avoid the social and cognitive pitfalls that come in the way of ethical leadership.

GSBGEN 305. Investing for Good. 3 Units.
Investing for Good will introduce students to the entire spectrum of purposeful, values-driven, and impact investing. We examine the field from the perspective of an institutional investor (i.e. fund manager, investment advisor, endowment manager, head of a family office, etc). Our goal is to have students emerge with a practical and analytical framework for: 1. evaluating impact and mission-aligned investments across multiple asset classes and sectors; 2. constructing a portfolio using impact as a lens; 3. designing an impact investment company; and 4. understanding the many practical and theoretical challenges confronting this exciting emerging field.We start by exploring some fundamental questions: what is a purposeful or impact investment; can impact investments be defined along a spectrum between conventional investing and philanthropy; whose money is it; what are the constraints and opportunities; how do we (re)define return and/or performance. We briefly analyze impact investing in the context of modern portfolio theory. We then develop a framework for portfolio construction and evaluation across four criteria: risk, return, liquidity, and impact. Through a combination of class dialogues, role plays, and case discussions, we will explore a wide variety of asset classes, impact themes, and investment challenges. A series of team-based investment committee simulations will comprise a significant portion of the course and will provide a significant experiential learning experience.Previous experience in finance, investing, social enterprise, entrepreneurship, or philanthropy is not required, but both helpful and welcomed. While first year students are encouraged to enroll, students who have limited familiarity with the basics of investing and corporate finance are strongly encouraged to purchase David Swensen's "Pioneering Portfolio Management" and cover the recommended chapters in advance of the course. It's is also important to note that this class will require financial modeling and detailed investment analysis.Many of the issues we'll be tackling have no unambiguous answers. Lively discussion and debate will be necessary and expected.

GSBGEN 306. Real Estate Investment. 4 Units.
The major objective of this course is to provide the student with an understanding of the fundamentals of real estate investment. The course covers land economics, market analysis, finance, taxation, investment analysis, investment vehicles, real estate risk, development and urban design. Major land uses are discussed including apartments, retail, office, and industrial. The course is designed for students with limited or no background in real estate.

GSBGEN 307. Policy Time. 4 Units.
Policy Time is about the policy choices faced by senior elected officials, especially in times of crisis. Our main perspective is American and executive: decisions faced by the U.S. President, Governors, and their advisors, but the lessons can extend to certain international settings as well. We have three main goals (1) building your personal policy approach, in which you will figure out how your own values translate into real-world policy choices; (2) learning what it's like to be a senior policymaker through Q&A sessions with them; and (3) learning about crisis management and leadership in government and policy.One session per week will be either a lecture and discussion of a particular policy issue, or a conversation and Q&A with a past or current senior policymaker. The second session each week will be a small group meeting (6-8 students per group) to discuss policy choices and the lessons presented by the guests in the first session. We will use policy "worksheets" as a tool to focus your thought process, frame the small-group discussions, and drive you to make hard choices. You will write 5-10 weekly short memos to explain your choices.Each week will cover a different policy topic. Likely topics include immigration reform, climate change, debt reduction, and the role of the corporation in a capitalist economy. Our exact topic schedule is flexible based on current events and guest speaker availability.

GSBGEN 309. Politics, Regulation, and Technology in Real Estate Finance. 3 Units.
Political gamesmanship, financial crises, and financial innovation come hand-in-hand with real estate finance, which has played a central role in the rise and fall of economies, financial institutions, and the lives of ordinary Americans. This course explores these issues in depth. We examine the past, present, and future of the complex political economy surrounding real estate finance, its impact on markets, and the business challenges and opportunities arising from it, both domestically and abroad, before and after the financial crisis. We then tackle recent trends like the rise of shadow banks, fintech, and proptech. Through a mix of speakers, case studies, and hands-on exercises, we examine the problems these industries are solving and creating.Greg Buchak is an Assistant Professor in the Finance group at Stanford. He received his PhD in financial economics and JD in law from the University of Chicago. His research focuses on the industrial organization of financial intermediation and it¿s consequences in the real estate industry.Chris Mahowald is actively involved in the real estate investment business as the managing partner of RSF Partners, a series of real estate private equity funds totaling over $1 billion in equity. The firm invests across product types throughout the U.S. During his career, he has focused on value investing with deep experience in distressed mortgage debt. He also teaches real estate investment at the GSB (GSBGEN 306: Real Estate Investment).

GSBGEN 310. The Impact of AI on Productivity and Personal Performance. 3 Units.
This is a seminar of up to 35 students, with a mixture of GSB and non-GSB students. Much has been written about how jobs in firms are likely to change as a result of AI. The first objective of this course is to invite guest speakers from many sectors to address how they think their own jobs or similar jobs are likely to change as AI enters the products they produce (like Netflix products) and the jobs they do. For example, the speakers could be: an engineer in a software firm; a partner in a law firm; a headquarters employee in a big retail firm; or the founder of a new business. The second objective is to bring data to bear on the topic. We ask first, is AI a new technological revolution - like the past revolutions that introduced the steam engine or electrification - that will produce a sustained increase in GDP and productivity? We ask next, when AI or robotics have been introduced in the past twenty years, have these innovations been translated into improvements in individuals - productivity and then higher wages? Are the AI innovations in the future likely to have a similar impact? Finally, for you as a student, the goals of this course are to give you a foundation for thinking about the broad consequences of the increasing use of AI, but also to think about how your work life is likely to be different from those who are working today.

GSBGEN 312. I'm Just a Bill. 3 Units.
This is a class on how public policy gets made at the highest levels of the federal government. In the first part of the quarter, lectures and discussions lead in to classroom simulations, in which students role-play as advisors to a U.S. president. You will learn how to analyze policy problems and design solutions, taking into account the multi-dimensional aspects of making federal policy and the many constraints upon those decisions. The second part of the class is a multi-week role-playing legislative simulation. Students will role-play as Members of the House of Representatives and Senate, or as senior advisors to a president. You will participate in legislative debate, voting, offering amendments, and extensive policy and legislative negotiation, with the goal of enacting a new law. As this course requires extensive in-person interaction, students will be required to physically attend every class session that meets in-person. Zoom participation will be all-or-nothing for all students in the class, as determined by the instructor. There is no option to participate virtually when the rest of the class is meeting in person.

GSBGEN 315. Strategic Communication. 4 Units.
Business leaders have marketing strategies, expansion strategies, finance strategies, even exit strategies. Successful leaders, however, also have communication strategies. This course will explore how individuals and organizations can develop and execute effective communication strategies for a variety of business settings. This course introduces the essentials of communication strategy and persuasion: audience analysis, communicator credibility, message construction and delivery. Deliverables will include written documents and oral presentations and you will present both individually and in a team. You will receive feedback to improve your communication effectiveness. This practical course helps students develop confidence in their speaking and writing through weekly presentations and assignments, lectures and discussions, guest speakers, simulated activities, and videotaped feedback. An important feature of this course is that there are two faculty members working in concert to ensure that students get rigorous and individualized coaching and feedback. In this course you will learn to: - Create communication strategies at an individual and organizational level - Develop clearly organized and effective presentations and documents - Diagnose and expand your personal writing and oral delivery style - Adapt your delivery style to different material and audiences - Enhance oral delivery through effective visual aids Students at all levels of comfort and expertise with public speaking and business writing will benefit from this course.

GSBGEN 316. Civic Workshop. 4 Units.
Small teams of students will propose and implement projects to provide immediate volunteer civic assistance to a group or community dealing with the effects of coronavirus. We assume most or all of this assistance will be online or otherwise virtual. The first goal of this course is to channel your skills, abilities, and civic impulses to provide immediate practical assistance to communities struggling with new, unsettling, and painful coronavirus realities. The second goal is to allow you to practice leadership, management, problem-solving, and interactive skills in a small team through a project they build from scratch and implement immediately. The third goal is to build and strengthen your interest in participating in leadership roles in the civic layer of society after graduation. Students will form teams of four, either before or shortly after the course begins. A team will propose a target group to assist: a place, a group of people, or a non-governmental civic organization. Your team will interact directly with leaders of that target group to discover what value you can provide immediately and virtually. Weekly class sessions will include some guest speakers and work sessions in which the various teams will share their ongoing efforts, to cross-fertilize ideas and assist each other. Teams will also meet extensively outside of class hours to build and implement their project. This course is an active learning experience. Teams will be evaluated in part based on their ability to deliver rapid results of value to a target community. Doing so will require significant commitment and effort from the team, and a willingness to adapt to difficult, changing conditions. All projects must be targeted entirely at addressing new needs created by the coronavirus crisis, not at solving problems that existed before then. They should be easy to begin initial execution in the first 2-3 weeks of the quarter, to provide rapid assistance to the target group. Projects must be nongovernmental and apolitical: no politics, no government work or government services, no interest groups whose primary purpose is to influence public officials. Teams should instead aim to provide direct benefits to a community in the civic layer between individuals and government including businesses, volunteer groups, community organizations, non-profits, clubs, charities, religious and fraternal organizations. Many of these efforts are arising spontaneously each day; our goal is to foster and amplify this trend. Since projects must be feasible with the team dispersed and in self-isolation, most efforts will be online or virtual, and teams are encouraged to think of creative uses of tools like Zoom, Google Apps, social media, and simple database setups. Interdisciplinary teams from across Stanford graduate programs are encouraged, as long as three of the four team members are from the GSB. International students are strongly encouraged to participate, both in joining teams with an American focus and in forming teams to target communities for assistance outside the U.S. Teams are encouraged to look at opportunities to form bridging capital, aiding groups and communities that might not overlap much with the Stanford student population. We hope several teams will be geographically-focused, targeting the people who live in a specific place for assistance. In addition to the project itself, each student will be expected to keep a project journal and to write an end-of-project memo to those considering similar civic efforts in the future.

GSBGEN 317. Reputation Management: Strategies for Successful Communicators. 3 Units.
Successful leaders have to conceive, author, rebuild, pivot, differentiate, and finally maintain a personal reputation to make a lasting, recognizable and powerful identity. Reputation Management will explore how you can effectively communicate to create, adapt and maintain your personal reputation. Your reputation remains fluid as you navigate your career decisions and interact with different professionals along your journey. The course is designed along three interlocking elements: reputation management literature, relevant case studies, and curated guest speakers. Students will learn the fundamentals of strategic corporate communication and the risk of not managing reputation effectively. These frameworks will be extended with specific case studies to illustrate where individuals, groups, and firms have faced the challenge of managing reputation effectively. We will focus on both traditional and virtual components of communication including the relevancy of online reputation management. Finally we will invite well-known leaders from a range of industries who have built and sustained their reputations, through effective communication. Each leader has had to manage their reputations in the public eye, and alongside their peers, supervisors, and employees. Guests will be invited to discuss their conscious and unplanned strategies of how to successfully communicate the kind of person, leader, innovator, or public figure they strive to be. Students will benefit from a rich blend of frameworks, cases, and speakers enabling them to successfully enter the work force and create their own, personal reputations. Students will create a case study drawn from their own experience (or personal network), of a reputation dilemma. A final assignment requires students to research their own reputation history by projecting what they think their reputation is, creating their own survey for friends, colleagues and employers to take, conduct three interviews about their personal reputation with three individuals who have worked closely with them, and then synthesize all this feedback into a cohesive paper and short video that reflects their authentic work and personal reputation. Throughout the course students will post at least one blog drawn from class concepts and respond to posts by peers in the class.

GSBGEN 319. Strategic Philanthropy and Impact Investing. 3 Units.
The course will be structured around the perspective of a foundation or a high net worth individual who has decided to devote substantial resources to philanthropy and wishes to decide which philanthropic goals to pursue and how best to achieve them. Although there are no formal prerequisites for the course, we will assume that students have experience working at a foundation, nonprofit organization, impact investing fund, or similar organization, or have taken an introductory course in strategic philanthropy such as GSBGEN 381. (With the exception of several classes on strategy and evaluation, there is no substantial overlap with Paul Brest's course, Problem Solving for Social Change (GSBGEN 367), which has a different focus from this one.).

GSBGEN 323. Media Entrepreneurship. 3 Units.
The disruptive nature of the Internet has set in motion the destruction of business models that have supported traditional media organizations. This course will examine the current state and broader economic challenges facing the media industry. These include: the impact of technology, changing consumer behavior, the rise of mobile, social networks, big data, real-time metrics, innovations in digital advertising and distribution channels, and new business models. Students will analyze new digital media ventures and hear from industry experts facing innovation challenges at the intersection of content, technology and business. The course also will identify paths for entrepreneurs interested in building a media business. And experiment with prototyping new digital media ventures.

GSBGEN 324. Leading with Mindfulness and Compassion. 3 Units.
The course explores the role of mindfulness and compassion in the workplace, and the contribution of these qualities to leadership. Topics addressed will include: How can mindfulness enhance clarity in purpose and productivity? What is the connection between mindfulness and compassion? Is compassion in the business world a strength or a weakness? Are compassion and profit motives fundamentally incompatible, or can they support each other? What does compassionate leadership look like? Can mindfulness and compassion be trained at the individual level, and built into company policy? How does self-compassion support effective leadership and recovery from setbacks? Guests from the corporate or non-profit sectors will discuss the challenges of integrating mindfulness and compassion into business strategy and the work environment. Guests from the scientific field will discuss research on mindfulness and compassion as they relate to real-world challenges. Participants in the course will engage with exercises from evidence-based programs targeting the development of mindfulness and the various facets of compassion.

GSBGEN 332. Sustainable Energy: Business Opportunities and Public Policy. 3 Units.
This course examines trends and opportunities in the sustainable energy sector with a particular focus on low carbon energy. We examine these trends in the context of technological change, emerging business opportunities and the parameters set by public policy. nSpecific topics to be examined include: (i) the impact of regulatory policies and tax subsidies on the energy mix (ii) the growing competitiveness of renewable energy, in particular solar PV and wind, (iii) sustainable transportation (iv) adaptation by fossil fuel energy sources, (v) innovative financing mechanisms for energy projects, (vi) the venture capital perspective (vii) the changing role of utilities in the energy landscape.

GSBGEN 333. Technology Licensing. 3 Units.
Licensing of technology and its corresponding intellectual property is big business, and integral to the business plans and competitive strategies of start-ups and Fortune 500 companies alike. Although the annual dollar magnitude of licenses of patents and other technology-related IP is difficult to estimate due to the proprietary nature of much of the data, academic studies peg the U.S. IP licensing market at ~$66B, and the global market at ~$180B. The development and evolution of technology standards and interoperability requirements, regulatory overlays that require technologies outside a company's core competencies, the proliferation and widespread enforcement of patents, the rapid expansion of IP-based business models, and the staggering expense and uncertain benefits of internal R&D, among other things, have combined to weigh heavily on the buy side of the make/buy scale, and to amplify the importance of inbound and outbound licensing arrangements for both start-up and Fortune 500 companies. Because licenses are complex legal agreements with important legal consequences, it is tempting for business executives to delegate to lawyers the negotiation of the non-economic terms of their companies' technology license agreements. The problem with such an approach, however, is that so-called "non-economic" terms can have significant and occasionally mortal economic and business consequences. While no business person should grapple with such issues in the context of a large or complex license agreement without legal counsel, it is critical that the business person understand the consequences, negotiating levers and trade-offs themselves, for at their core, the decisions to be made on these issues are business decisions, not legal ones. This course is organized around two hypothetical companies seeking to negotiate a technology license agreement. Both parties operate under a common set of "public" facts, and each responds as well to "private" facts relevant to various business priorities and issues. Students are divided into three-person teams, each representing one or the other of the hypothetical companies, and collaborate over multiple sessions to develop a strategic business approach and then to negotiate a licensing agreement. Lectures are focused on the business, and to a lesser extent, legal issues arising in complex licensing arrangements, and are designed to give students the context and perspective they need to participate effectively in licensing strategy development and negotiation. By immersing teams of business students in a multi-session licensing negotiation, it is the objective of this course to enable them to better understand and think critically about the principal issues that arise in the conceptualization and negotiation of technology license agreements.

GSBGEN 334. Family Business. 3 Units.
Believe it or not, the "Silicon Valley model" has little or nothing to do with most businesses. Most businesses are not started by MBAs; most startups are not funded by VCs; most employees don't work for tech firms; and most businesses don't sell out to other businesses or go public. Rather, the vast majority of businesses world-wide are started, funded, and owned by families, and these firms create most of the employment in the global economy. Despite the prominence of family firms, teaching and research have traditionally focused on analyzing the widely-held or Silicon Valley model of the firm. This course explores the challenges and opportunities faced by family businesses. It is taught by Leo Linbeck III, Lecturer since 2005 at the GSB and President and CEO of Aquinas Companies, LLC. This course is an outlier in a world obsessed with tech startups and venture capital; it is a "Minority Report" from the heart of Silicon Valley. The course is intended for four main audiences: (1) Students whose family owns a business. (2) Students who are considering working for a family firm. (3) Students who are interested in acquiring or consulting with a private firm either directly (search funds, management consultants, etc) or indirectly (private equity, etc). (4) Students who are sick of only learning about cool, sexy startups and the geniuses who get rich from them. The course uses a combination of case studies, guest speakers, lectures, movies, and student presentations to explore the central ideas of the course, which are likely to appear irrelevant to everyone (save the instructor).

GSBGEN 335. Clean Energy Project Development and Finance. 3 Units.
This case study-oriented course will focus on the critical skills needed to evaluate, develop, finance (on a non-recourse basis), and complete standalone energy and infrastructure projects. The primary course materials will be documents from several representative projects - e.g. solar, wind, storage, carbon capture - covering key areas including market and feasibility studies, environmental permitting and regulatory decisions, financial disclosure from bank and bond transactions, and construction, input, and offtake contracts. Documents and economic models tend to be highly customized. By taking a forensic approach, looking at several different projects, we can learn how project developers, financiers, and lawyers work to get deals over the finish line that meet the demands of the market, the requirements of the law, and (sometimes) broader societal goals, in particular climate change, economic competitiveness, and energy security.

GSBGEN 336. Energy Markets and Policy. 3 Units.
This is a course on how energy and environmental markets work, and the regulatorymechanisms that have been and can be used to achieve desired policy goals. The courseuses a electricity market game as a central teaching tool. In the game, students play the roleof electricity generators and retailers in order to gain an understanding of how market rules(including environmental regulations and renewable energy mandates) affect the businessstrategy of market participants¿and in turn economic and environmental outcomes.The goal of the course is to provide students with both theoretical and hands-onunderstanding of important energy and environmental market concepts that are critical tomarket functioning but not always widely appreciated. Concepts covered include: 1)regulated price-setting versus price-setting through market mechanisms, 2) BTU arbitragein input energy choices, 3) uniform price vs. pay-as-bid auctions, 4) the ability andincentive to exercise unilateral market power, 5) unilateral versus cooordinated exercise ofmarket power, 6) transmission congestion, 7) forward contracts and their effect on marketfunctioning, 8) dynamic pricing of electricity and active involvement of final demand, 9)the nature of energy reserves, 10) carbon pricing mechanisms including taxes and cap-andtradesystems, 11) renewable portfolio standards and other renewable energy incentives,12) determination of levelized cost of energy (LCOE) and its impact on new capacityinvestment decisions, and 13) interactions between environmental mechanisms andregulations. We will also discuss the key features of the markets for major sources ofenergy such as oil, natural gas, coal, nuclear, solar, wind, and biomass.The course is useful background for private sector roles in energy production,research, management, trading, investment, and government and regulatory affairs;government positions in policymaking and regulation; research and policy functions inacademia, think tanks, or consultancies; and non-profit advocacy roles related to energy and the environment.

GSBGEN 337. Business Decision Making. 3 Units.
This experiential course will focus on how to make a business decision correctly. The theory will focus on common behavior biases and mistakes. Students will practice making business decisions by analyzing a business case each week.

GSBGEN 339. Negotiation Dynamics in Sports, Entertainment and Media. 3 Units.
Negotiation is a central part of business in the worlds of sports and entertainment. This course will examine negotiation dynamics and key takeaways for general management from multiple different settings where negotiations had an important role--these will include preparing for a negotiation, the negotiation process itself, contractual outcomes of negotiation and their execution and in some cases litigation. The settings will include negotiations over player and actor contracts, negotiations between leagues and players associations, negotiations between investors and movie companies, and negotiations between content providers (both in sports and entertainment) and distribution partners (such as cable stations, international media companies, and online companies such as Netflix). Each of the six sessions is planned to include at least one and in some cases two guests that have had extensive experience in negotiations.

GSBGEN 343. The Power of Stories in Business. 3 Units.
To grow and innovate, you not only need a big idea, you also need stake-holder buy in and action. However, many companies fail in this regard because stakeholders are not aligned, the real problem that the innovation seeks to solve has not been identified, and the story has not been defined. Story can fuel stakeholder buy-in by painting a clear picture of what is and what could be for everyone - from employees, to investors, to customers. In other words, an excellent story means that you can delegate tactical aspects effectively because it clarifies how to execute specific functions against the story (e.g., digital marketing, advertising, design). Further, when the stakeholder becomes part of the story, they are more likely to act, which generates momentum and create a culture of optimism.nnStory is equally important for leaders of companies, who often need to act as editors - shaping the stories told by employees and customers - to align with a shared vision. A secondary goal of the class is to demonstrate how personal stories can be used by leaders to build high performing teams and companies. By creating powerful stories, you'll see how your company can gain momentum and how you can help your employees and customers become more connected. nnBy the end of the class, you will have gained insight into:n- How to use stories as an asset in businessn- What makes for a good and bad storyn- Pitching stories.

GSBGEN 345. Disruptions in Education. 3 Units.
Never before has higher education been as severely disrupted as it has in the past year, surfacing novel needs, while at the same putting decades long trends in sharper focus. This course explores the contemporary higher education industry, focusing especially on the places where disruptions of all kinds present significant opportunities and challenges for entrepreneurs, investors, and the businesses that serve this huge global market, as well as for faculty, students, and higher education institutions and leaders. Using a variety of readings and case studies to better understand recent disruptions and the unbundling occurring across the postsecondary landscape, from outside and inside the academy, both for-profit and non-profit, the course will examine technology in teaching and learning; the future of the degree and alternatives to the traditional credential; accreditation; competency based education; affordability, student debt, and education financing models; investing in the education space; workforce, skills development, and lifelong learning; and tertiary products and platforms that serve the student services market. Guests will include higher education leaders and practitioners, as well as investors, entrepreneurs, and social entrepreneurs.

GSBGEN 346. Freedom, Democracy, and Capitalism. 4 Units.
This is an American civics course for future business leaders, intended to briefly (re-)introduce students to a few of the ideas that form the foundation of the American implementation of "the Western model" of freedom, liberal democracy, capitalism, and a rules-based international order. As time permits, we will learn to apply and combine these concepts to examine current policy topics in the news.

GSBGEN 347. Education Policy in the United States. 3 Units.
The course will provide students from different disciplines with an understanding of the broad educational policy context. The course will cover topics including a) school finance systems; b) an overview of policies defining and shaping the sectors and institutional forms of schooling, c) an overview of school governance, d) educational human-resource policy, e) school accountability policies at the federal and state levels; and f) school assignment policies and law, including intra- and inter-district choice policies, desegregation law and policy.

GSBGEN 348. The Economics of Higher Education. 4 Units.
(Same as EDUC 347) Topics: the worth of college and graduate degrees, and the utilization of highly educated graduates; faculty labor markets, careers, and workload; costs and pricing; discounting, merit aid, and access to higher education; sponsored research; academic medical centers; and technology and productivity. Emphasis is on theoretical frameworks, policy matters, and the concept of higher education as a public good. Stratification by gender, race, and social class.

GSBGEN 349. Introduction to the Politics of Education. 4 Units.
The relationships between political and economic analysis and policy formulation in education; focus is on alternative models of the political process, the nature of interest groups, political strategies, policy efficiency, the external environment of organizations, and the implementations of policy. Applications to policy analysis, implementation, and politics of reform. (APA).

GSBGEN 350. International Internship. 1-2 Unit.
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GSBGEN 352. Winning Writing. 3 Units.
This once-a-week full-quarter workshop will offer techniques and practical in-class exercises for writing better -- better memos, emails, cold-call letters, speeches, feedback for colleagues, news releases, responses to questions from the media and from interviewers, and opinion pieces. Glenn Kramon, an editor who has helped New York Times reporters win 10 Pulitzer Prizes, will teach the course along with accomplished journalists with expertise in powerful, persuasive writing for business. They will provide not only helpful tips but constructive feedback on students' work. They will also share thoughts on how best to work with the news media.

GSBGEN 356. Dynamics of the Global Wine Industry. 3 Units.
This course will examine the world of wine with a fresh and contemporary lens. It will explore the market dynamics of this fascinating global industry. The goal of the course is to provide insight into the branding, marketing, and distribution dynamics that shape what consumers can buy and consume with a focus on the strategies of some of the world's leading wine brands. Attention will also be paid to the legal, regulatory, and market dynamics that define the U.S. wine industry as well as to issues of contested authenticity in the world of wine.

GSBGEN 360. Sports Business Management. 4 Units.
This course will examine the diverse management challenges facing the sports industry. The course will cover issues at the league level, the team level, the athlete/agent level, and the college level. The diverse constituencies with interests in sports issues (athletes, fans, media companies, advertisers, and legislators to name a few) will be discussed. Sports issues at a global level (the IOC) and both U.S. and outside U.S. will be covered. There will be coverage of evolving business ventures related to the sports industry (such as venture backed sports companies and sports networks). A key focus is on how the sports industry is similar to and different from other industries. Key concepts underlying the course are: value creation/value sharing; revenue ecosystem; virtuous circles and vicious circles; disruptive technologies; growth facilitators and growth inhibitors; leveragable assets/inherited liabilities; and entrepreneurship/new product innovations. Over 80% of the sessions typically will include a guest co-lecturer from the sporting industry.

GSBGEN 363. American Economic Policy. 4 Units.
One of every five dollars in the American economy will be spent by the federal government this year. This course will examine how federal spending, taxes, deficits and debt affect the U.S. economy and global financial markets, and how the economy affects the federal budget. We will look inside the federal budget to understand entitlement spending, what causes it to grow so fast, how it could be reformed, and why that's so hard to do. We'll understand where the money goes -- how much goes to infrastructure, education, housing, health care, energy and the environment, parks, scientific research, national defense, and other needs. We'll look at the stimulus vs. austerity debate, both within the U.S. and between the U.S. and Europe. We'll look beyond partisan battle lines and explore various fiscal philosophies that sometimes split the political parties. We'll cover the federal budget process from developing the President's budget to enacting individual spending and tax bills, and discuss process reforms including spending and deficit reduction targets, a balanced budget amendment, and line item veto. We'll cover the major players in the budget debate and understand where the big and small budget decisions are made. We'll look at federal taxation, where the money comes from, how it affects the economy, and how it might be restructured. We'll examine the recommendations of the President's budget commission and see if we can predict what will become of its recommendations. And we'll see if we, as a class, can solve our nation's fiscal problems as Washington has so far been unable to do.

GSBGEN 367. Problem Solving for Social Change. 3 Units.
Stanford graduates will play important roles in solving many of today's and tomorrow's major societal problems'in areas such as education, health, energy, and domestic and global poverty"that call for actions by nonprofit, business, and hybrid organizations as well as governments. This course teaches skills and bodies of knowledge relevant to these roles, covering topics such as designing, implementing, scaling, and evaluating social strategies; systems thinking; decision making under risk; psychological biases that adversely affect people's decisions; methods for influencing behavior; and pay-for-success programs. The large majority of the course will be devoted to students' working in teams to apply these concepts and tools to an actual problem, with teams choosing whatever problem interests them.

GSBGEN 368. Managing Difficult Conversations. 3 Units.
This elective 3- unit course is offered to JD law students and other selected graduate students, and to MBA students who aspire to improve their ability to deal effectively with difficult interpersonal situations. The course will be taught by William F. Meehan III, the Lafayette Partners Lecturer in Strategic Management, Stanford Graduate School of Business and Charles G. Prober, M.D., Professor of Pediatrics, Microbiology & Immunology and Senior Associate Vice Provost for Health Education, Stanford School of Medicine. The course, which will be case-based, will involve frequent student-to-student and student-to-instructor role-playing in authentic medical interactions and difficult interpersonal situations. Topic-specific experts often will be present to participate as class guests. Relevant principles of professionalism, leadership, and psychology underlie the course pedagogy. There will be ten classes held on Wednesdays beginning January 8th and concluding on March 11th. Each class will begin promptly at 12:30 and end shortly before 3 pm. Students will be expected to attend all classes unless excused in advance. Class preparation will include reading of assigned cases; analysis of the cases and recommendations as to how to confront specific difficult conversations (consistent with assigned study questions); and reading of assigned background material. It is important that all students participate actively in classroom discussions. For GSB students, 50% of the final grade will depend on classroom performance; the remainder will be based on a final written assignment of 3-5 pages. GSB students will be graded on a Pass/Fail basis. The course will be ungraded for medical students, residents and fellows. All students will be expected to complete the written assignment. Class size will be limited to 40 students per the following: (1) a maximum of 20 MBA students and (2) a maximum of 20 non-GHB graduate students.

GSBGEN 370. Power of You: Women in Leadership. 3 Units.
All leaders face a host of challenges, but women leaders encounter an additional set of obstacles and considerations¿institutional, economic, cultural¿that their men counterparts most likely never will. These issues are often exacerbated for women from underrepresented groups. GG370 Power of You: Women and Leadership will prepare students to successfully identify and respond to these challenges, and, ideally, transform them into opportunities for growth and advancement. Students will come away from this course with a vast portfolio of strategies, tools and tactics to not only meet these workplace challenges head-on, but also create more inclusive processes, policies and cultures for the future. The course is based on the instructor's "legacy leadership" model that inspires and equips students to lead with intentional inclusivity, creating social value and empowering others, particularly those who traditionally have not had access to opportunities, networks and/or mentorship. In class, readings and in written reflections, students will deeply explore issues including, but not limited to: the likeability paradox; sexism in the workplace; diversity, inclusivity, and belonging; intersectional identities; managing voice, narrative and reputation; negotiation through a gendered lens; leadership styles and adaptivity; mentorship and sponsorship; and creating social value. Students will create a legacy leadership action plan that will define/refine professional purpose, intentions and dreams/objectives; actions and tactics necessary to achieve student¿s aspirations; risks or barriers that may impede student success; specific indicators of progress towards student's goals; and the social change students will work to create. Students will engage directly with industry leaders including Sheryl Sandberg (Facebook), Meg Whitman (Quibi), Dr. Priscilla Chan (Chan Zuckerberg Initiative), Mary Barra (General Motors), Judy Smith (Smith & Company), Sam Altman (OpenAI), Kat Manalac (Y-Combinator) and Indra Nooyi (Pepsi Co.), among others.

GSBGEN 377. Diverse Leadership as an Imperative for Impact. 3 Units.
Our society implicitly prizes a particular approach to leadership - but today's cross-sectoral, impact-oriented leader cannot afford to be restricted to a single approach. If we aspire to address challenges across social, economic, and political arenas, with highly charged moral implications and multiple stakeholders, we have an imperative to use all available tools by discovering, celebrating, and advancing diversity in leadership.In this course, we will: (1) study a range of effective leadership approaches; (2) develop broad, transportable skills and frameworks required to lead in any complex setting - business, public sector, nonprofit sector; (3) delve into leadership tradeoffs and tensions; (4) explore and understand our own values and tacit and explicit decision-making criteria; and (5) recognize barriers to diversity and tactics to address them. Guiding questions will include: How does the context shape the solution set? What does inspired and inspiring leadership look like? How do race/gender/other identities enter into the equation? How do I develop my own brand of leadership? We will examine contemporary leaders and controversies in education and elsewhere, draw upon timeless historical thinkers, enjoy the wisdom of guest speakers, and work intensively in small groups to highlight challenges, opportunities, and tradeoffs. By exploring a range of approaches and situations, we will strive for deeper understanding of ourselves and of the context to become a more capable, empathetic and effective leaders.

GSBGEN 381. Individual Philanthropy: Giving Models, Purpose & Practicum. 3 Units.
A philanthropist is anyone who gives anything- time, expertise, networks, credibility, dollars, experience- in any amount to create a better world. Philanthropy is resource, background, age, profession, and industry agnostic, and "Individual Philanthropy: Giving Models, Purpose & Practicum" will amplify your ability to make your giving, volunteering, service and leadership matter more. You have extraordinary potential to create social change, and this course will empower you with the perspective, experience and inspiration to actualize that potential both immediately and over your lifetime. You will be exposed to a diverse array of giving models and approaches, and be given structured space to weigh and appraise your individual philanthropic point of view and approach. Through deep introspection, you will define and/or refine your social change purpose and create a theory of change that maps how you will transform your values, beliefs and resources (including intellectual, human, network, experiential and financial capital) into measurable social value. Class activities will include debates and simulations such as discussing the benefits and challenges of diverse giving models, creating personal giving strategies, giving fundraising pitches and assessing actual foundation grant proposals. Each student will select and complete due diligence on a local nonprofit and create a formal grant proposal. Students will peer-review grant proposals, participate in a multi-stage grantmaking process and allocate $20,000 of grants funded by the Learning by Giving Foundation and Andreessen Philanthropies. Students will also have the unique opportunity to directly connect and engage with globally renowned philanthropic leaders, including Darren Walker (Ford Foundation), Laura Muñoz Arnold (Arnold Ventures), Justin Steele (Google.org), Crystal Hayling (Libra Foundation) and Holden Karnofsky (Open Philanthropy Project), among others.

GSBGEN 382. Social Innovation Practicum: Designing an Impact Model. 3 Units.
Social Innovation Practicum is an experiential learning course. Through the format of an interactive workshop, students will learn about the social sector by researching a problem or unmet need in society and then developing, testing, and refining a new idea or innovative approach that aims to address that problem. We will explore in-depth the elements of successful interventions in the social sector that can achieve outsized impact. This will be achieved through lectures by the instructor on the topics at hand; discussion of illustrative case studies of many of today¿s award-winning impact models, and class-time in which students will be able to develop their ideas and benefit from guidance and feedback from the instructor, their classmates, and class guests. Students will work in teams as appropriate. Those students that have a pre-conceived idea for a new intervention will be encouraged to recruit others (from the GSB and/or from other disciplines across Stanford) to join their team. Any student who does not yet have an idea should contact the instructor to be paired with a team working on an area of interest to that student. Our point of view will be that of the students as the designer of a new intervention and - presuming the intervention proves to be compelling and merits advancement - future founder(s) of a new social venture (nonprofit, for-profit or hybrid) or champion of a new intervention adopted by an existing social sector organization.

GSBGEN 383. Practical Policy and Politics. 4 Units.
This is a skills / toolbox class, designed for beginners. It is a practical course about policy-making in the U.S. federal government. It will cover three broad subject areas: (1) an assortment of current policy topics; (2) governing processes ¿ how policy gets made in an environment constrained by politics and elections; and (3) practical skills business leaders may need in interacting with government and with policymakers. This class is for beginners and assumes you have no prior experience or knowledge of policy or politics.

GSBGEN 390. Individual Research. 1-4 Unit.
Need approval from sponsoring faculty member and GSB Registrar.

GSBGEN 490. Leadership for Society: Reflections on History in the Making. 2 Units.
Reflections on History in the Making (GSBGEN 490) provides students the opportunity to reflect on, and create an account of their experience of the historic transformations societies around the world are undergoing in the wake of the COVID pandemic, related economic recession, and growing civil unrest. The world hit pause and gave us a unique opportunity to think deeply about how we, as a society, might resume life. This course provides the space for students to process their personal experience, to reflect on their place and role in society, and to envision what the world could look like when we emerge from these crises. The class will share the unique perspective of the Stanford GSB community through the creation of a class blog.

GSBGEN 495. Leadership for Society: Race and Power. 1 Unit.
This course aims to deepen our collective awareness of profound racial disparities in the United States and around the world. Through a series of conversations with a diverse array of prominent leaders, we will explore the role of race in society, how race interacts with structures of power, and how systemic racism manifests itself in day-to-day business and policy decisions. Candid and honest conversations with class guests will expose students to concrete examples of how their future decisions might lead to different outcomes for different people, based on race. Our hope is that this course supports your personal growth and helps prepare you to become the kind of leader our society needs.

GSBGEN 498. Faculty Lecture & Discussion Series. 1 Unit.
This class features GSB instructors discussing their research and its applications to the business world. Each session will present one speaker. To earn the 1 unit credit, students must commit to attend at least 6 out of the 8 talks. This is done on the honor system. If you enroll, you enter your attendance in Canvas. You can "attend" by watching the video of the lecture within two days. Attending synchronously is preferred and allows you to submit questions. The class will be graded pass/fail.

GSBGEN 499. The Last Lecture Series. 1 Unit.
This class is an opportunity to hear a Last Lecture from esteemed GSB instructors. Each session will present one speaker. To earn the 1 unit credit, students must commit to attend at least 7 out of the 9 talks. This is done on the honor system. If you enroll, you enter your attendance in Canvas. You can "attend" by watching the video of the lecture within two days. Attending synchronously is preferred and allows you to submit questions. The class will be graded PASS/FAIL.

GSBGEN 501. Principles of Effective Decision Making for Sustainability. 2 Units.
The overall goal of this short course is to develop students ability to (i) decide which issues around sustainability and the environment are worth spending time and energy on in their careers and personal lives, and (ii) effectively promote such change. Particular emphasis will be placed on issues around food choices, and on decisions within corporate organizations. Class size limited to 40.

GSBGEN 503. The Business of Healthcare. 2 Units.
Healthcare spending is now nearly 18% of the entire GDP of the U.S. economy. The S&P healthcare sector has been one of the best producing segments of the market for the last five years, and growth of healthcare expenditures continue to escalate at a rapid pace. This has triggered an abundance of opportunities for those interested in a career in healthcare management, investing, or entrepreneurialism. The Business of Healthcare-2017-18 will present the current market framework from the eyes of a clinician and with the perspective of the consumer-patient, but with the experience of a successful business builder and investor. Course will begin with the discussion of the channels of distribution of healthcare delivery, from providers, to practitioners, to consumer-facing ¿healthcare lite¿ sectors of the market. Impact of the regulatory environment, with specific focus on the Affordable Care Act and the impending plans to Repeal/Replace, will be evaluated. High-level exploration of international health care markets and how they compare to the American market will be included. Overview of venture and private equity investing will be deeply probed, with many specific market examples of how investors develop an investment thesis, identify specific targets, diligence companies, and close an investment. Discussion around building financial modeling for target acquisitions will be presented, and the course will delve into the burgeoning area of healthcare analytics and outcomes management, including Artificial Intelligence, and its future impact on positioning, reimbursement and clinical outcomes. Sectors that will be discussed include: Healthcare services, Healthcare IT, Life Sciences, Pharma and Biotechnology, and Managed Care. The topic of the emerging importance of consumerism will be probed and consumer-directed healthcare related products and services will be explored, e.g. nutraceuticals, wellness, fitness, etc. Course will include preparatory readings, presentations from successful and powerful industry leaders, and robust in-class discussion and case studies requiring student engagement. Final grade will consist of class participation, one minor in-class presentation, and a final paper developing either a new healthcare business start-up proposition or presenting an identified investment target in the healthcare industry. Course will be especially valuable for those interested in a career in starting a healthcare company, healthcare investing, healthcare administration, or other healthcare-related management and goal of class will be provide an in-depth overview of how to get started or advance a professional interest in the industry.

GSBGEN 508. Strategic Pivoting for your Next Chapter. 2 Units.
Many students come to the GSB with the intent to pivot upon leaving the institution. Some students feel they have outgrown their position or business, or they feel drawn to a new area that better suits their values and interests, where they can make a greater contribution. Some students have no idea what they want to do after graduating, they just know they want to make a purposeful change. And finally, some students want to strategically change their direction for reputation reasons. The average U.S. employee tenure is only 4-5 years and job roles often change dramatically within that timeframe. Pivoting is an intentional, methodical process for nimbly navigating career changes. A recent Gallup study revealed that almost 90% of workers are either ¿not engaged¿ or ¿actively disengaged¿ from their jobs. A pivot is a change made of your own volition when you have reached a point in your career when you are ready for increased challenge and impact.Strategic Pivoting is a course specifically developed for any student who already plans to pivot in their career and wants to figure out how to successfully build and create their next chapter. In this course we will discuss four stages for how to best pivot: 1) Planting, how to assess and set a strong foundation of values, strengths and interests. 2) Scanning, researching new and related skills, talking to others, and mapping potential opportunities. 3) Piloting, students conduct small, low-risk experiments to test their new direction, as well as gather real-time data and feedback. And 4) Launching, pulling the trigger, fully committed, to your carefully plotted pivot.The ultimate pay-off to Strategic Pivoting is acknowledging and adapting to a rapidly changing society when it comes to career paths. Because our careers are so fundamentally tied to our livelihood and sense of confidence, purpose and meaning, changes can be traumatic without a road map for traversing them. "Navigating this accelerated pace of change and this transitional career state, and learning to embrace it instead of resisting it, can become an edge and advantage." Alex Rodriguez, Major League Baseball icon, ABC/Fox Sports/ESPN commentator, entrepreneur, and CEO of A-Rod Corp will be a featured Guest Speaker in this course. Alex has also had a history of successfully pivoting his career and defying expectations. He is presently getting ready to host his own ESPN interview show called, "Pivot.".

GSBGEN 511. Making Social Ventures Happen by Attracting Financial and Human Capital. 2 Units.
Social ventures require leadership, funding, expertise, skills and networks to get off the ground, grow and scale. This course will focus on the key strategies for building and leveraging a network of champions to capitalize a social venture at early-stage, and for sustaining and growing that network as the venture grows. This class is applicable to intrapreneurs, changemakers within major institutions, (private or public), board members, impact investors, those who aspire to be senior leaders within social ventures and social entrepreneurs (founders). Co-led by a practicing venture philanthropist and a social entrepreneur, this interactive, pragmatic course will: - Discuss the critical financial and human capital needs of organizations and companies at different life stages. - Explore the concept of champions and the different types of champions including board chairs, co-founders, mentors, faculty advisors, donors, investors, community evangelists, and fellow entrepreneurs. - Learn about effective networks and how to build them, including the role of communications, relationship-building, and crisis management. - Explore the concept of a powerful vulnerability and the art of "influence without authority" in attracting financial and human capital to the mission and making social ventures happen. Special emphasis will be given to developing co-founders and founding teams, boards and funders/investors as champions. - Develop a roadmap for the ways you will support social ventures throughout your career. - Meet social entrepreneurs and their champions who promote them within various power structures (major corporations, government, the institutional funding community) to learn about the successes and failures of their partnerships. Guest speakers will be posted prior to start of class. - Invite you to join instructors, guest speakers and fellow students for casual dinner on both Wednesdays after class.- Get to know your fellow classmates who share a passion for addressing the world's intractable problems and for creating systemic change.

GSBGEN 513. Using Technology and Market Interventions to Solve Social Problems. 2 Units.
This course will focus on finding solutions to social problems enabled by technology, where market failures prevent the solutions from being provided by the private market, and where market-based interventions can be used to create the appropriate incentives for the solutions to be created and implemented. We will provide a conceptual framework that identifies strong candidates for market shaping interventions, and review a number of problem areas and categories of solutions. Students will research and evaluate potential technological solutions to social problems.

GSBGEN 514. Creating and Scaling High Potential Ventures in Developing Economies. 2 Units.
GSBGEN 514 - Creating High Potential Ventures in Developing Economies (2 Units) This course addresses the distinctive challenges and opportunities of launching high-potential new ventures in developing economies. Developing economies are attractive targets for entrepreneurs because many are just starting to move up the growth curve, and they offer low-cost operating environments that can be great development labs for potentially disruptive innovations. They increase in attractiveness when their political institutions stabilize and they become more market-friendly. At the same time, developing economies pose serious challenges. Pioneering entrepreneurs take on significant risks to gain early mover advantages. Specifically, entrepreneurs will not be able to count on the same kind of supportive operating environments that we take for granted in the developed world. They often face cumbersome permit and licensing processes, poorly developed financial and labor markets, problematic import and export procedures, unreliable local supply chains, weak infrastructure, corruption, currency risks, limited investment capital, lack of financial exits and more. This course is designed to help would-be entrepreneurs - both founders and members of entrepreneurial teams - better understand and prepare for these issues as they pursue the opportunities and address the challenges to start, grow, and harvest their ventures in these environments. GSBGEN 514 is a seminar/discussion format in which students will read about and discuss the key challenges described above and potential solutions. Guests will describe their own startup and investing experiences in developing economies and answer questions. A framework based on the World Economic Forum (WEF) report on "Entrepreneurial Ecosystems Around the Globe and Company Growth Dynamics" will be used to structure the course. Each student will prepare a short write-up as a final assignment on a case chosen from a selection provided by the instructors. Note: Groups of students who want to work as a team to investigate a specific new venture idea in addition to participating in the seminar/discussion sessions should also consider enrolling in GSB534, offered in Spring term.
Same as: Cases

GSBGEN 515. Essentials of Strategic Communication. 2 Units.
Successful leaders understand the power of authentic, memorable communication.This course uses the lens of oral communication and presentations, to introduce the essential elements of the strategic communication strategies that make authentic, memorable communication work.Focusing on oral communication and presentation, we introduce the essentials of communication strategy and persuasion: audience analysis, message construction, communicator credibility, and delivery.Deliverables include written documents, focusing on individual and team presentations, with students receiving continuous feedback to improve their communication effectiveness, and to sharpen their authentic leadership voice. This highly interactive, practical course, is focused on feedback to help students at all levels of communication mastery develop confidence in their speaking and writing. Course includes presentations, assignments, lectures, discussions, simulated activities, in-class feedback, and filmed feedback. In this course you will learn to:-Recognize strategically effective communication-Implement the principles of strategic communication across different platforms-Develop clearly organized and effective presentations and documents-Diagnose and expand, your personal authentic communication style. As you make your super round selection, keep in mind that wait lists have been long for this course.

GSBGEN 518. Dynamics of the Global Wine Industry. 2 Units.
This course is a compressed version of GSBGEN 356. We will examine the world of wine with a fresh and contemporary lens. It will explore the market dynamics of this fascinating global industry. The goal of the course is to provide insight into the branding, marketing, and distribution dynamics that shape what consumers can buy and consume with a focus on the strategies of some of the world's leading wine brands. Attention will also be paid to the legal, regulatory, and market dynamics that define the U.S. wine industry as well as to issues of contested authenticity in the world of wine.

GSBGEN 520. Designing Solutions by Leveraging the Frinky Science of the Human Mind. 2 Units.
The thrust of this course is about designing effective and innovative solutions by leveraging deep insights into the workings of the human brain, specifically the emotional brain. Designing solutions for markets so as to identify promising business ideas; for existing organizations, fostering a competitive advantage, loyalty, customer life-time-value, etc. Designing solutions for customer engagement and behavior change. Designing solutions for leaders, who need to be effective at making decisions and influencing others' decisions. Designing solutions for organizations- for example, "How do we design effective solutions that will foster innovation and risk-taking in large organizations?" The course will explore these topics by unraveling the workings of the human brain, leveraging frameworks that essentially capture the way emotional brain systems shape our decisions, experiences and behaviors. Filled with mini-case studies and in-class exercises to illustrate the various topics, the course features one individual and one group assignment (the group assignment is geared toward applying the learnings in this course to identifying a promising business idea).

GSBGEN 523. Media Entrepreneurship. 2 Units.
The disruptive nature of the Internet has set in motion the destruction of business models that have supported traditional media organizations. This course will examine the current state and broader economic challenges facing the media industry. These include: the impact of technology, changing consumer behavior, the rise of mobile, social networks, big data, real-time metrics, innovations in digital advertising and distribution channels, and new business models. Students will analyze new digital media ventures and hear from industry experts facing innovation challenges at the intersection of content, technology and business. The course also will identify paths for entrepreneurs interested in building a media business.

GSBGEN 524. Leading with Mindfulness and Compassion. 2 Units.
The course explores the role of mindfulness, self-compassion and compassion in the workplace, and the contribution of these qualities to leadership. Topics addressed will include: How can mindfulness enhance clarity in purpose and productivity? What is the connection between mindfulness and compassion? Is compassion in the business world a strength or a weakness? Are compassion and profit motives fundamentally incompatible, or can they support each other? What does compassionate leadership look like? Can mindfulness and compassion be trained at the individual level, and built into company policy? How does self-compassion support effective leadership and recovery from setbacks? Participants in the course will engage with exercises from evidence-based programs targeting the development of mindfulness and the practical application of the skills of self-awareness, self-compassion, and perspective taking in the context of work and relationships.

GSBGEN 527. Global eCommerce. 2 Units.
Global eCommerce represents a vast market, driven by advances in internet and smartphone penetration, improving supply chains, lower online prices and variety and a growing, aspirational middle class with increasing demand for branded goods. This class will deep dive into the eCommerce industry to understand its competitive dynamics, success factors, business models and strategic dimensions. The class will have a global perspective, focusing on various aspects of eCommerce in the US as well as Asia, including China and India in particular. More broadly, the class will use the industry as a microcosm for how to build and succeed in modern data and technology driven markets. This is important because success in eCommerce requires bringing together in a meaningful way several disparate aspects including efficient supply chains, well functioning product marketplaces, frictionless payment systems, meaningful content, hardware and devices, as well as facilitating advanced search, advertising and marketing technology. Additional factors such as managing vendor and supplier relationships, fraud, user reviews and private labels make the industry complex and provide learnings for several other verticals. For instruction, we will use a mix of cases and lectures, and leverage significant participation from several eCommerce industry leaders.

GSBGEN 528. Communicating for Credibility: An Introduction to Thought Leadership. 2 Units.
Many students are prepared to be leaders, but few are prepared to be thought leaders. Yet, that's precisely what many of our students will become. This communications course focuses on the risks and the rewards of stepping into a thought leadership role as a subject matter expert or change agent in a domain of the student's choice. From the very first class students will tackle different communication elements (blogs, op-ed pieces, keynote talks, video blogs, conference panels, etc.) and receive feedback from professors and peers. By the end of this course students will: -Understand the risks and rewards of thought leadership -Identify and clearly articulate their own niche and "What-If?" future -Know the communication channels available to exercise thought leadership -Codify best practices and lessons learned into a forward-thinking document or framework that they can share widely -Craft a distinct message with an authentic voice across multiple channels -Build their ripples of influence by engaging their first followers and building a tribe -Begin to activate well-respected advocates who will champion their ideas -Define how to measure the success of their efforts (ex: reach, resonance) -Create a resource list of vendors, tools, technology and communities to support their thought leadership efforts -Overcome what may hold them back from stepping into the spotlight and assuming the role of thought leader in their niche. A prequalification assignment is required for this course. See https://goo.gl/forms/mAPC5izvC5gABJ2K2 for details and submit the survey by September 18.

GSBGEN 531. Global Trip Leadership Skills A. 1 Unit.
This course is open only to leaders of the Global Study Trips. This course is experiential and designed to support the leadership learning and development of students leading Global Study Trips. Lectures, role plays, cases, and exercises will be used to demonstrate and practice the skills needed to successfully lead a group of peers as they develop into a learning community to explore an academic topic in locations around the world. Topics covered in the class include high performing teams, setting expectations, feedback and the influence process, culture, managing crises on the ground, and more. In addition to the weekly course meeting, students will be required to meet with their teammates and coaches for at least an additional 3.5 hours.

GSBGEN 532. Clean Energy Opportunities. 2 Units.
This course examines business models and opportunities related to clean energy, specifically to low-carbon energy. We examine emerging trends for this sector in the context of technological change, business opportunities and the parameters set by public policy.

GSBGEN 533. Technology Licensing. 2 Units.
Licensing of technology and its corresponding intellectual property is big business, and integral to the business plans and competitive strategies of start-ups and Fortune 500 companies alike. Although the annual dollar magnitude of licenses of patents and other technology-related IP is difficult to estimate due to the proprietary nature of much of the data, academic studies peg the U.S. IP licensing market at ~$66B, and the global market at ~$180B. The development and evolution of technology standards and interoperability requirements, regulatory overlays that require technologies outside a company¿s core competencies, the proliferation and widespread enforcement of patents, the rapid expansion of IP-based business models, and the staggering expense and uncertain benefits of internal R&D, among other things, have combined to weigh heavily on the buy side of the make/buy scale, and to amplify the importance of inbound and outbound licensing arrangements for both start-up and Fortune 500 companies.Because licenses are complex legal agreements with important legal consequences, it is tempting for business executives to delegate to lawyers the negotiation of the non-economic terms of their companies¿ technology license agreements. The problem with such an approach, however, is that so-called ¿non-economic¿ terms can have significant and occasionally mortal economic and business consequences. While no business person should grapple with such issues in the context of a large or complex license agreement without legal counsel, it is critical that the business person understand the consequences and negotiating levers and trade-offs themselves, for at their core, the decisions to be made on these issues are business decisions, not legal ones.This course is organized around two hypothetical companies seeking to negotiate a technology license agreement. Both parties operate under a common set of ¿public¿ facts, and each responds as well to ¿private¿ facts relevant to various business priorities and issues. Students are divided into three-person teams, each representing one or the other of the hypothetical companies, and collaborate over multiple sessions to develop a strategic business approach and then to negotiate a licensing agreement. Lectures are focused on the business, and to a lesser extent, legal issues arising in complex licensing arrangements, and are designed to give students the context and perspective they need to participate effectively in licensing strategy development and negotiation. By immersing teams of business students in a multi-session licensing negotiation, it is the objective of this course to enable them to better understand and think critically about the principal issues that arise in the conceptualization and negotiation of technology license agreements.

GSBGEN 534. Creating and Scaling High Potential Ventures in Developing Economies. 2 Units.
This course addresses the distinctive challenges and opportunities of launching high-potential new ventures in developing economies. Developing economies are attractive targets for entrepreneurs because many are just starting to move up the growth curve, and they offer low-cost operating environments that can be great development labs for potentially disruptive innovations. They increase in attractiveness when their political institutions stabilize and they become more market-friendly. At the same time, developing economies pose serious challenges. Pioneering entrepreneurs take on significant risks to gain early mover advantages. Specifically, entrepreneurs will not be able to count on the same kind of supportive operating environments that we take for granted in the developed world. They often face cumbersome permit and licensing processes, poorly developed financial and labor markets, problematic import and export procedures, unreliable local supply chains, weak infrastructure, corruption, currency risks, limited investment capital, lack of financial exits and more. This course is designed to help would-be entrepreneurs - both founders and members of entrepreneurial teams - better understand and prepare for these issues as they pursue the opportunities and address the challenges to start, grow, and harvest their ventures in these environments. GSB534 will utilize a framework based on the World Economic Forum (WEF) report on "Entrepreneurial Ecosystems Around the Globe and Company Growth Dynamics" with an updated Note written by the lecturers. The weekly sessions are team-based exercises for students who either have a specific idea or want to join a team of classmates to pursue more deeply an understanding of the team's country of focus and an initial investigation of the idea's viability. Students must come in willing to be team players and do the work necessary to complete this exercise over the full quarter. Each team member's contributions will be assessed by fellow teammates. Teams of AT LEAST 3 STUDENTS EACH will be formed before the start of class or on the first day of class at the latest so students can decide if they want to enroll. The team will describe, in a final presentation, the challenges and opportunities in their country using the WEF framework. The final presentation will also include the team's thoughts on the viability of their proposed venture and how it capitalizes on their country's assets and addresses its challenges. A detailed business plan is not required; however, specific recommendations and plans for next steps that would be carried out during a 3 to 6 month field and market research study in the country will be part of the final presentation. Note: Students are encouraged to enroll GSB514 to gain more detailed information through case studies, guest lecturers and further discussion.
Same as: Cases and Team Project

GSBGEN 535. Global Trip Leadership Skills. 1 Unit.
This course is open only to leaders of Global Study Trips. It is designed to support GST leaders as they design and deliver a new version of GSTs that accommodate current pandemic limitations on travel. The course will support leaders in emergent design as well as leadership team considerations over Autumn and Winter quarters. A seminar format will enable cross-fertilization of approaches among trips. Some combination of lectures, role plays, cases, and exercises will be used to demonstrate and practice skills needed.
Same as: B

GSBGEN 538. Power in Finance. 2 Units.
There is a growing sense that both capitalism and democracy are in crisis. How do power structures in the private and public sectors determine economic and political outcomes? Is the focus on financial metrics and markets to blame for the eroding trust in corporations and governments? This interdisciplinary course explores these issues by developing in-depth understanding of the interactions between individuals, corporations, and governments that shape economic and political systems and their evolution. Topics will include the power of media, culture and corporate governance, corporate and investor power, the role of watchdogs, the special power of central banks, whistle-blowers and the justice system. Visitors with extensive relevant experiences and discussions of current events will enrich each class.

GSBGEN 539. Negotiation Dynamics: Lessons from the Sports and Entertainment Industries. 2 Units.
Negotiation is a central part of business in the worlds of sports and entertainment. This course will examine negotiation dynamics and key takeaways for general management from multiple different settings where negotiations had an important role--these will include preparing for a negotiation, the negotiation process itself, contractual outcomes of negotiation and their execution and in some cases litigation. The settings will include negotiations over player and actor contracts, negotiations between leagues and players associations, negotiations between investors and movie companies, and negotiations between content providers (both in sports and entertainment) and distribution partners (such as cable stations, international media companies, and online companies such as Netflix). Each of the six sessions is planned to include at least one and in some cases two guests that have had extensive experience in negotiations.

GSBGEN 541. Innovation and Problem Solving. 2 Units.
This project-based seminar is a rare opportunity for students to focus on a significant, currently ongoing problem from their work/lives: with the help of classmates, participants spend 5 weeks exploring how various problem-solving methods and frameworks can apply to their chosen projects. Problems that students have brought to the course in the past range from business challenges (e.g., designing part of a complex project, evaluating a business opportunity, creating a marketing plan), to problems of a more personal nature (e.g., determining one's career path). Each seminar session is divided into two parts: whole-group discussion and practice of a particular problem-solving tool, followed by a practicum, where students work pairwise in partnerships and receive feedback and assistance on their progress. The course is designed to achieve two goals. First, it will give you tools that should increase the probability that you'll make (hopefully substantial) progress on your problem. Second, it will introduce you to research that explains why it's sensible to try those tools on hard problems, i.e., the point of those tools.[1] Please note that the first goal is stated rather cautiously. There are good reasons for this. I expect that most students will be working on hard problems. (Everyone in the class will be getting help from classmates on their particular problem; why bother your peers with an easy problem that you could solve yourself?) An important idea in cognitive science, Newell¿s Law, says that magic doesn't exist: if a problem-solving method is powerful (very likely to solve a certain type of problem), then it only works on a narrow class of problems. So this course will not give you tools that are both powerful and general. It can't: such tools don't exist. Happily, improving your problem-solving skills, at least in certain domains, is possible, and that's what the course aims to do. Progress on hard problems usually requires help from friends and colleagues. Virtually all researchers of creativity agree that most innovations that are both bold and useful involve multiple problem solvers. This course will implement this important pattern by requiring every student help a classmate with their problem. Another important empirical regularity in the field of innovation is that when problems are hard many (perhaps most) candidate-solutions don't work out. It's easy to accept that about other people's ideas; about my own, not so much. So a vital component of effective problem-solving is tough-minded evaluation. This implies rejecting bad ideas or bad parts of a would-be solution. Hence, at the end of the course you will be required to evaluate the progress that a classmate has made on his/her problem and to explain your assessment. (For obvious reasons you will not evaluate the same person you're helping.) In sum, every student will do three things in this course: generate new ways to make some progress on a problem of their own choosing; help somebody else work on their project; evaluate somebody¿s progress. Implementing this design effectively requires that everybody sign on to a social contract: everybody agrees to take all three roles seriously. [1] Some students taking GSBGEN 541 might expect a d.school style course. There are similarities: e.g.,GSBGEN 541 is project-based, as are many d.school courses. But there are also important differences. In particular, this course explains why some problem-solving techniques work better than others by introducing students to key research on cognition and organizational decision making.

GSBGEN 544. How Software Ate Finance. 2 Units.
Software is eating the world, with radical consequences for financial services. This course will give you a foundation for understanding the future of financial services, and guide you in creating fintech businesses in the 2020s and beyond. The course has three objectives. First, we study the transformation of financial services through software, surveying payments, deposits and credit cards, securities and derivatives, capital markets, digital assets (including cryptocurrencies and blockchain mechanisms), financing and lending, wealth and asset management, and regulation and compliance. Second, we invite leading innovators to address how software has shaped their experiences; identify fundamental drivers; and forecast trends, challenges, and opportunities. Third, we present a roadmap for the evolution of the financial system, where traditional dichotomies -- trader / engineer, buy side / sell side, regulated / non-regulated, infrastructure provider / infrastructure user, data provider / data consumer -- give way to an ecosystem organized around producers and consumers of Application Programming Interfaces (APIs), the rise of platforms and financial cloud providers, and the transformation of Wall Street economics into software economics. The lecturer is a computer scientist, entrepreneur, executive, investor, and risk manager. As a Stanford doctoral student, he worked on machine learning and probabilistic inference in the late 80s. Over the past 19 years, he has held multiple roles as a partner and senior leader of Goldman Sachs, including Chief Information Officer, Chief Financial Officer, and global co-head of the Firm's largest and most complex business, the Securities Division. He also founded and led Kiodex, an early software-as-a-service company for risk analytics. Kiodex became a part of SunGard (now FIS) in 2004.

GSBGEN 546. Freedom, Democracy, and Capitalism. 2 Units.
This is an American civics course for future business leaders, intended to briefly (re-)introduce students to a few of the ideas that form the foundation of the American implementation of "the Western model" of freedom, liberal democracy, capitalism, and a rules-based international order. As time permits, we will learn to apply and combine these concepts to examine current policy topics in the news.

GSBGEN 550. Leadership Demystified. 2 Units.
This seminar will explore the nature and role of leadership in organizations. We will examine such questions as (1) What is leadership? (2) Why is it important? (3) What is it that leaders actually do? (4) How do they do it? (5) How are leaders developed? (6) Why do leaders succeed or fail? (7) What about your potential for leadership and your strategy for developing it?Our primary objective in this seminar is to achieve a deeper understanding of the nature and role of leadership in organizations. Our approach will be to examine a small sample of the literature, together with the amazing story of Ernest Shackleton and his Endurance crew, and then to probe several key questions through lively class discussion. The discussion, informed by the readings and also by our collective experiences, will seek to develop some general principles and observations about leadership - particularly about how you might better develop yourself as a leader.

GSBGEN 551. Innovation and Management in Health Care. 2 Units.
The health care system accounts for 18% of US GDP and is one of the fastest growing segments of the economy. This two unit class focuses on the interplay and tension between the main players in the health care field - providers of health care services (individual doctors, group practices, integrated health care systems), payors (insurances companies, employers, consumers, and government), patients, and innovator companies (biopharma, medical device, diagnostics, and health care IT). The course is designed for students with a broad diversity of backgrounds and interests who want to better understand the health care business and system. No prior experience in the health care or medical field is assumed or needed. The focus of the class will be primarily on the US health care system, but there will be limited discussion of non-US systems as well. The course is divided into four modules: An overview of the US Health Care System and the interplay between payers, providers, innovators, and patients, Provider delivery models, health care information technology, and incentive structures - The relationship between quality, cost, and access - Integrated systems, value-based, and fee for service models - New IT technologies, including electronic data records - The role of information and incentives - Innovator business models and issues - Financing and managing new product development - Clinical trial management and gaining regulatory approval - Marketing, reimbursement, and sales strategies - Business models to drive innovation - Health care system reform The class will be taught primarily from the perspective of a business person operating a company rather than that of a policy maker, academic, or investor. While there will be a few lectures to provide background and frameworks for course topics, most classes will involve a case discussion and prominent guest speakers from the health care industry. Speakers will include CEOs and senior executives from Genomic Health, Blue Shield of California, Tenet Health, Venrock, Burd Health, Verily (Google Health), Myovant, and Stanford Medicine.

GSBGEN 552. Winning Writing. 2 Units.
This two-week, six-session workshop will offer techniques and practical in-class exercises for writing better -- better memos, emails, feedback for colleagues, news releases, responses to questions from the media and from interviewers, and opinion pieces. Glenn Kramon, an editor who has helped New York Times reporters win 10 Pulitzer Prizes, will teach the course along with accomplished journalists with expertise in powerful, persuasive writing for business. They will provide not only helpful tips but constructive feedback on students' work. They will also share thoughts on how best to work with the news media.

GSBGEN 559. The Politics, Policy, and Finance for Solving Global Warming. 2 Units.
There is increasing scientific consensus that global warming threatens our world. This course explores how the next generation of leaders can use a combination of forward-looking public policy, political power, and financing new technologies to solve this vexing challenge. The course will integrate public policy and politics with finance and real life cases on companies from Nest to Tesla. The instructor will bring regulatory leaders, elected officials and venture capitalists to class to explain how each of these leaders drive change and discuss what obstacles they must overcome in the process. There will be a heavy emphasis on class participation and students will be asked to apply what they've learned in every aspect of their GSB education, from finance and accounting to marketing and organizational behavior. Students will be asked to make their own case on which new technology, piece of legislation, or regulatory mandate will have the greatest impact on solving global warming and what role they see themselves playing in making change.

GSBGEN 561. Sports Investment Analysis. 2 Units.
Course examines investment and financing issues that face a diverse set of participants in the sports industry (defined very broadly). A key theme is using general financial concepts to better structure decision making in the sports industry. Specific topics illustrate the broad set of perspectives considered: Player Payroll Financial Dynamics; Asset Appreciation Opportunities; Assessing the Value of Players (& General Managers); Investment Syndicates in Sports; Investing in Startup Leagues; Financial Valuation of Sporting Clubs; Financial/Strategy Analysis for a Mixed Martial Arts (MMA) Venture; and On-Line Sports Venture Evaluation. One hand in requires feedback to the CEO's of several new sporting ventures about ways to expand their opportunity set; the CEO's come to a class and present their venture. The second hand in is a case study of a sports investment where there was sizable value creation or value destruction. Each session typically is co-taught with an industry visitor.

GSBGEN 562. Sports Marketing. 2 Units.
This Sports Marketing course combines (a) a focus on key marketing themes (such as branding, customer attraction/retention, and celebrity power) and (b) an analysis of marketing in diverse areas of the sporting industry: the league level, the team level, the player level, the network level, the advertiser level, the sponsor level, the fan level, and the media level. The nine sessions cover the following: Corporate Sponsorship; Online Marketing; Events as Brand Building Investments; Marketing to Youth; Sports/Entertainment Nexus; Club Marketing Strategies; Brand Revitalization & Strengthening; Motor Sports Marketing; Marketing in a Web 2.0/Social Networking World. Each session is typically taught with an industry visitor.

GSBGEN 564. The Entertainment Industry - An Intersection of Art and Commerce. 2 Units.
In this seminar we will explore the intersection of art and commerce in the entertainment industry. We will look at creating films and television programing that are artistically meaningful and/or have the potential for commercial success. The class will also look in depth at the rapidly changing business of entertainment. Films are increasingly used as a tool for social change, and we will examine this power. The entertainment industry is one of enormous importance - both from a business and cultural standpoint, and has influence on virtually every sphere of our society. Sometimes the industry can seem baffling, mercurial, and characterized more by madness than method. But despite its uncertainties, Hollywood does have its own rules, rhythms, methods and strategies ¿ and examining and evaluating them will be a key part of this seminar. This is a time when many existing formulas are being reconsidered, retooled, or jettisoned, and new technologies and expanding markets are having a profound impact on the industry - and tracking and analyzing this will be a key part of the course.I will also bring some of my professional experiences into the classroom (including directing, writing, and producing for film and television, etc.), and discuss these experiences through the intersection of the business and creative sides of the industry. We will discuss the entertainment industry's future, and address varied and effective paths for creating entertainment product with artistic and/or commercial merit. Students taking the course will be asked to be part of an in-class group exercise, and also complete a final group project where they will present their work in class.

GSBGEN 565. Political Communication: How Leaders Become Leaders. 2 Units.
This year -- 2020 -- will be a fascinating backdrop for the upcoming Presidential and Congressional races. Implications of the pandemic, its dramatic economic impacts, and four years of a non-traditional president are a contextual backdrop not seen in decades. Politics, perhaps like no other arena, provides a rich and dramatic laboratory for studying the art and science of influential communication. Whether it is a local school bond election or a Congressional race, a Presidential debate or a State of the Union Address, the demanding communications of politics provide insights into our own strengths and gaps as a communicator and leader. Political campaigns, by their very nature, are highly visible, oriented toward very specific objectives, and increasingly leverage a variety of new media platforms. They are often emotionally charged, and rife with conflict and drama. The principles of political communications transcend politics, and are useful guides for leaders in business, the non-profit community, as well as government. How candidates, elected officials, and leaders in all kinds of organizations communicate vision, values, and experience, as well as how they perform in very fluid environments, not the least of which may be during a crisis, has a great deal to do with their career success. In its 12th year, this highly interactive course allows students to explore both theory and practice behind effective positioning and presentation. Students will analyze and evaluate both successful and unsuccessful communications strategies of political campaigns and candidates. They will explore historic examples of US Presidential debates, from Nixon/Kennedy to the present. Further they will experience political events as they happen -- with each class drawing lessons from political developments around the nation and the world. Students will also hone their own strategic communications skills in activities requiring both written and spoken communication. This is not a course in political science, American government, or in public speaking. However, the engaged student will gain insights into those areas as well.The course is taught by David Demarest, former Vice President of Public Affairs for Stanford University. Demarest has broad communications experience across the public and private sector in financial services, education, and government. After serving as Assistant U.S. Trade Representative, and Assistant Secretary of Labor in the Reagan Administration, in 1988 he served as Communications Director for Vice President George H. W. Bush's successful presidential campaign. He then became a member of the White House senior staff as White House Communications Director. After leaving government in 1993, he spent the next decade leading communications for two Fortune 50 companies, before coming to Stanford in 2005.

GSBGEN 566. Dilemmas and Decisions. 2 Units.
GSBGEN 566 is an elective course offered to 2nd-year MBA and MSx students. The goal of this course is to improve students' judgment in confronting challenging, real business situations encountered in the normal progression of corporate activities. The course aims to sharpen moral reasoning and build judgment without favoring a particular position. The course will be taught by Mark Leslie and Peter Levine, Lecturers.The course is taught using ¿vignettes¿. At the beginning of each class students will be given a one-page reading that describes a business situation which requires a decision to be made. After in-depth discussion, a second page will be handed out, describing how the situation actually unfolded and challenges the class with new information. This new information typically changes the dynamics of the case and requires a new decision to be made. Often there is a third and fourth page that continues the dialogue. Frequent student-to-student and student-to-instructor role-playing will be employed in the development of the session. Note that for most classes there is little or no advanced preparation required, which is often the case when making real-world business decisions.Cases are drawn from a wide selection of ACTUAL BUSINESS SITUATIONS with protagonists joining the class as guests whenever available. Vignettes are based on topics such as raising venture capital, managing major industrial customers, product distribution agreements, board of director and fiduciary conflicts, developing financial instruments, palace revolt / mutiny, work/life balance, rape accusation of an executive, etc.The class is extremely engaging - it is quite usual to find continuing discussion of the day's case outside the classroom among small groups of students.This class is for two GSB credits and will be graded on a pass/fail basis. Sixty percent of the final grade will be derived from classroom performance; the remainder will be based on a final written assignment describing a personal ethical situation that the student has faced in their careers.

GSBGEN 568. Managing Difficult Conversations. 2 Units.
This elective 2-unit course is offered to all medical students, residents, and fellows, and to GSB students who aspire to improve their ability to deal effectively with difficult interpersonal situations. The course will be taught by William F. Meehan III, the Lafayette Partners Lecturer in Strategic Management, Stanford Graduate School of Business and Charles G. Prober, M.D., Professor of Pediatrics, Microbiology & Immunology and Senior Associate Vice Provost for Health Education, Stanford School of Medicine. The course, which will be case-based, will involve frequent student-to-student and student-to-instructor role-playing in authentic medical interactions and difficult interpersonal situations. Topic-specific experts often will be present to participate as class guests. Relevant principles of professionalism, leadership, and psychology underlie the course pedagogy. There will be seven classes held on Wednesdays beginning April 10th and concluding on May 22nd. Students will be expected to attend all classes unless excused in advance. Class preparation will include reading of assigned cases; analysis of the cases and recommendations as to how to confront specific difficult conversations (consistent with assigned study questions); and reading of assigned background material. It is important that all students participate actively in classroom discussions. For GSB students, 50% of the final grade will depend on classroom performance; the remainder will be based on a final written assignment of 3-5 pages. GSB students will be graded on a Pass/Fail basis. The course will be ungraded for medical students, residents and fellows. All students will be expected to complete the written assignment. Class size will be limited to 40 students per the following: (1) a maximum of 20 GSB students and (2) a maximum of 20 medical students, residents, and fellows.

GSBGEN 569. The Open Road: Innovation in Cars, Driving, and Mobility. 2 Units.
This course will look at ongoing and upcoming innovation in cars, driving, and mobility from three perspectives: (1) technology, (2) economics & business models, and (3) policy. We'll survey changes in powering vehicles (e.g. electrification and biofuels), in-vehicle connectivity and communications, and most especially changes in autonomy and self-driving vehicles. We'll examine at changes in the economics of cars, vehicles, and driving¿new business models, shared ownership, mobility as a service, as well as who some of the major players are in this nascent field and what they are doing/developing. And we'll explore the interactions of technology and economics with policy and broader societal changes¿direct effects like safety, legal liability, and who can drive; indirect effects on traffic, insurance, infrastructure needs, fuel taxes, and the environment; as well as longer-term and even bigger changes in daily life and where and how we live, work, and drive.The class is structured a bit like a large seminar. At the beginning of the quarter each student will, with the instructor, choose a topic to research. The student will interview experts on that topic and then write a memo. Most of our class sessions will be dedicated to discussing the memos written by you and your peers.

GSBGEN 574. Effective Virtual Communication: Presenting via the web, video, and teleconference. 2 Units.
Ever wonder if your online audience is paying attention to your web presentation or meeting? Have you wanted more engagement from your participants? Communicating virtually - using conference or video calls, web tools, and mobile devices is very challenging. Yet more and more communication is happening with presenter and audience connecting electronically.nInformed by scholarly research and industry best practices, this workshop will provide a hands-on, practical introduction to immediately applicable techniques that will help you prepare and deliver engaging, participative, and impactful virtual presentations.nnSpecifically, you will learn techniques for confidently delivering virtual presentations, how to create content that invites engagement, and how to facilitate speaker-audience interactions that invite collaboration without losing control. We will also cover best practices for responding to audience input and questions that will amplify your message and for handling challenging interactions and questions. With these virtual-presenting skills, you will feel more confident presenting and your audience will be more connected and engaged.

GSBGEN 576. Work and Family. 2 Units.
This course examines the strategies that highly educated women and men use to combine work and family and the strategies that managers and policy makers can use to help others strike a balance. Topics include the tradeoffs in becoming a stay-at-home parent, the economic value of unpaid labor, the consequences of balancing two high-powered careers and children, the economics of marriage, fertility, child care, and elder care, the gendered division of labor in the home, time-management , workplace innovations, and policy initiatives. Guest speakers add their own perspectives on these issues and describe the roles their organizations play.

GSBGEN 578. Is the Internet Broken?. 2 Units.
This interdisciplinary course examines the promise, peril, and possible future of the Internet and the impact of the World Wide Web on our lives. We will explore the most pressing contemporary issues facing the Internet, including debates on privacy, antitrust, freedom of speech, access, neutrality, and regulation. We will also unpack the claim that "decentralization," as it has grown with new technologies such as blockchain and crypto assets, captures the original vision of the Internet. A key question we will address is: What should be the roles of markets, governments, and different stakeholders in shaping the Internet? Students will have the opportunity to reflect on their own motivations and roles as digital consumers, potential innovators, and future leaders in this process. Guests from the tech sector and elsewhere will enrich our discussion. Co-Instructor: Jonathan Dotan.

GSBGEN 581. Philanthropy, Inclusivity and Leadership. 2 Units.
A philanthropist is anyone who gives anything-time, expertise, networks, credibility, influence, dollars, experience-in any amount to create a better world. Regardless of one's age, background or profession, everyone has the potential to lead in a way that both tackles the complex social problems our interconnected world faces and creates greater inclusivity, access and impact. This demanding two-week, compressed course will provide passionate students with a brave space to develop and refine a plan for their own social change journey and amplify their potential to give, live and lead in a way that matters more. Using design thinking, students will challenge their preconceptions and wrestle with their social change approach, their privileged position as future Stanford graduates and philanthropy's role in society. Lectures and class discussions will inspire and prepare students to create social value with greater intentionality and humility. For the first class, students will submit a proposed social impact plan for their professional, philanthropic and civic lives. Over the course¿s six sessions, students will refine their plan, creating a formal theory of change that strategically utilizes their unique leadership platform and asset portfolio to advance opportunity and justice for a target population. Potential guest speakers include Darren Walker, President of the Ford Foundation; Justin Steele, Principal at Google.org; Crystal Hayling, Executive Director of the Libra Foundation; Rob Reich of Stanford PACS and Laura Muñoz Arnold, Co-Chair of the Laura and John Arnold Foundation.

GSBGEN 585. Project You: Building and Extending your Personal Brand. 2 Units.
GSB Graduates will be entering and re-entering the workforce needing to know and understand how to build, broadcast, maintain and protect their personal brand. Project You will help each student realize: What is a personal brand and how can it be unleashed as a valuable, competitive advantage? Why do you need a personal brand? How do you differentiate yourself and create a brand identity and strategy? How do you use social and traditional media to enhance your brand effectively as well as measure the metrics of social media responses? And how do you know when to pivot and evolve your brand for sustainability? GSB Lecturer, Allison Kluger, a former Television Executive and Co-Lecturer, Tyra Banks, Supermodel/Entrepreneur/Television Executive/Business CEO, will lead this class. They will help students create their own specific image to support their brand, teach them how to navigate on-air exposure, and help them create a long-term strategy for how to promote their personal brand across several media platforms. Within a highly interactive learning environment, image transformations, live broadcasting of presentations at a television station, live streaming of portions of the class on Facebook Live, and YouTube recordings of presentations will all be part of the assignments and requirements. The class culminates with the students sharing their honed personal brand to the public via three viable platforms (Facebook Live, local television, YouTube) to jump-start their personal brand extension. A 1:30 video stating "Who you are, what your personal brand is, and what you want it to be" will be a mandatory requirement before Class #1.

GSBGEN 595. High-Stakes Decision Making. 1 Unit.
Effective decision making is a critical skill for political and business leaders. Decisions must be made under pressure and often with incomplete information. George Osborne was Chancellor of the Exchequer of the United Kingdom in the aftermath of the global economic crisis, and this class will study three of the biggest challenges global economic policy makers faced during this time. Students will gain a framework for how senior leaders approach decision making, and will be given the chance to put this into practice. Each class will include a simulation where students are put in the role of a senior policy maker facing a key decision.

GSBGEN 596. Designing AI to Cultivate Human Well-Being. 2 Units.
Artificial Intelligence (AI) has the potential to drive us towards a better future for all of humanity, but it also comes with significant risks and challenges. At its best, AI can help humans mitigate climate change, diagnose and treat diseases more effectively, enhance learning, and improve access to capital throughout the world. But it also has the potential to exacerbate human biases, destroy trust in information flow, displace entire industries, and amplify inequality throughout the world. We have arrived at a pivotal moment in the development of the technology in which we must establish a foundation for how we will design AI to capture the positive potential and mitigate the negative risks. To do this, we must be intentional about human-centered design because, ¿Only once we have thought hard about what sort of future we want, will we be able to begin steering a course toward a desirable future. If we don¿t know what we want, we¿re unlikely to get it.¿ Thus, building AI must be an inclusive, interactive, and introspective process guided by an affirmative vision of a beneficial AI-future. The goal of this interdisciplinary class is to bridge the gap between technological and societal objectives: How do we design AI to promote human well-being? The ultimate aim is to provide tools and frameworks to build a more harmonious human society based on cooperation toward a shared vision. Thus, students are trained in basic science to understand what brings about the conditions for human flourishing and will create meaningful AI technologies that aligns with the PACE framework:·has a clear and meaningful purpose ·augments human dignity and autonomy ·creates a feeling of inclusivity and collaboration·creates shared prosperity and a sense of forward movement (excellence)Toward this end, students work in interdisciplinary teams on a final project and propose a solution that tackles a significant societal challenge by leveraging technology and frameworks on human thriving.

GSBGEN 598. Stanford-Tsinghua Exchange Program. 1 Unit.
This course is open only to students participating in the Stanford-Tsinghua Exchange Program and is required of those students. Requirements include researching and reporting on companies to be visited, planning the business meetings during the Beijing and Stanford weeks, and attending lectures and discussions at Stanford and Tsinghua. Offered Pass/No Pass only. 1 unit. Autumn quarter.
Same as: A

GSBGEN 599. Stanford-Tsinghua Exchange Program. 1 Unit.
This course is open only to students participating in the Stanford-Tsinghua Exchange Program and is required of those students. Requirements include researching and reporting on companies to be visited, planning the business meetings during the Beijing and Stanford weeks, attending lectures and discussions at Stanford and Tsinghua, and completing the peer evaluations and reflection videos. Offered Pass/No Pass only. 1 units. Winter quarter.
Same as: B

GSBGEN 622. Presentation and Communication Skills for Academics. 2 Units.
Academics must effectively communicate the importance of their research to a wide range of audiences, including colleagues, students, stakeholders, and the general public, as well as in a variety of contexts, from academic conferences and job talks to one-on-one conversations, news interviews, and social media. This highly interactive course is designed to equip PhD students with the skills to confidently present their research and connect with varied audiences. Students will craft an elevator pitch for academic settings, create a 3-min TED-like talk aimed at the general public, learn how to document and tell the "story" of their research, and practice responding to Q&A and research critiques. This class combines best practices from public speaking with elements from related fields, including the art of improv and the science of communication.

GSBGEN 641. Advanced Empirical Methods. 3 Units.
This course covers various advanced quantitative methods with applications in marketing and economics. Topics include simulation-based estimation, dynamic decision processes, and other topics relating to empirical models of demand and supply. The course stresses the conceptual understanding and application of each technique. Students will learn to apply these techniques using Matlab or an equivalent language.

GSBGEN 646. Behavioral Economics and the Psychology of Decision Making. 3 Units.
This seminar examines research on the psychology of judgment and choice. Although the normative issue of how decisions should be made is relevant, the descriptive issue of how decisions are made is the main focus of the course. Topics of discussion include choice, judgment heuristics and biases, decision framing, prospect theory, mental accounting, context effects, task effects, regret, and other topics. The goal of the seminar is twofold: to foster a critical appreciation of existing knowledge in behavioral decision theory, to develop the students' skills in identifying and testing interesting research ideas, and to explore research opportunities for adding to that knowledge.

GSBGEN 675. Microeconomic Theory. 3 Units.
This course provides an introduction to microeconomic theory designed to meet the needs of students in the GSB non-Economics PhD programs. The course will cover the standard economic models of individual decision-making, models of consumer behavior and producer behavior under perfect competition, the Arrow-Debreu general equilibrium model, and some basic issues in welfare measurement. This class assumes a basic knowledge of undergraduate intermediate microeconomics, comfort with multivariable calculus and linear algebra and some exposure to real analysis.

GSBGEN 691. PhD Directed Reading. 1-15 Unit.
This course is offered for students requiring specialized training in an area not covered by existing courses. To register, a student must obtain permission from the faculty member who is willing to supervise the reading.
Same as: ACCT 691, FINANCE 691, HRMGT 691, MGTECON 691, MKTG 691, OB 691, OIT 691, POLECON 691, STRAMGT 691

GSBGEN 692. PhD Dissertation Research. 1-15 Unit.
This course is elected as soon as a student is ready to begin research for the dissertation, usually shortly after admission to candidacy. To register, a student must obtain permission from the faculty member who is willing to supervise the research.
Same as: ACCT 692, FINANCE 692, HRMGT 692, MGTECON 692, MKTG 692, OB 692, OIT 692, POLECON 692, STRAMGT 692

GSBGEN 697. Research Fellows Practicum. 1-6 Unit.
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GSBGEN 802. TGR Dissertation. 0 Units.
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Same as: ACCT 802, FINANCE 802, HRMGT 802, MGTECON 802, MKTG 802, OB 802, OIT 802, POLECON 802, STRAMGT 802

Human Resource Management Courses

HRMGT 203. People Analytics. 2 Units.
How can we use big data, machine learning and artificial intelligence to inform design, hiring, promotion and human resource management processes in organizations? We will discuss the theoretical and practical challenges that these issues present, and the ways by which data can help resolve them. In doing so, we will explore various data analytic methods and different data types, as well as the pitfalls and ethical issues their use introduces.

HRMGT 210. Org 2.0: The Analytics of Organization Design. 2 Units.
This elective will bring you to the cutting edge of how organizations are (re)-designed using analytics. You will learn about a variety of tools which enable Perception (i.e. understanding what is happening in the organization right now), Prediction (i.e. forecasting what is likely to happen in the future, based on sophisticated extrapolation of past data) and Prototyping (i.e. determining which decisions are likely to be successful based on pilot tests) in organizations. This is a hands-on class: we will rely extensively on group exercises, in which you will be able to learn enough about analytical tools and programming to be able to collaborate with analysts and evaluate their work. You will also have the chance to interact with industry speakers who have been applying these techniques in practice. The suite of new ideas that characterize ¿Org2.0¿ represents a major departure from the mainstream approach to organization design, which relies extensively on copying ¿best practices¿ from other companies, represents organizations as ¿boxes and arrows¿ organization charts, and is typically obsessed with incentive compensation and reporting as the key organizational/HR decisions. In Org2.0, you will learn how to use analytics to find out what works specifically for your company (rather than what worked in others), develop detailed models of interactions among employees (rather than among boxes) to help them collaborate successfully, and think of organization design as a combination of factors which can all be better understood through analytics. This approach has been made possible both by recent theoretical developments in organization design and by access to vast computational power and data arising from digitalization. Some of the skills you will learn include: -Thinking about complex organizations by breaking them down into a few basic building blocks or ¿micro-structures¿ -Using graph theory to map networks of interaction within organizations -Using machine learning to answer the fundamental ¿people¿ questions in organizations: whom to hire, develop and retain? - Prototyping organizational changes in silico using agent-based computational models -Using A/B testing (a.k.a. Randomized Controlled Trials) to know rather than guess which organizational designs will be effective Who should take this course? If you are likely to be involved in strategy execution, post-merger integration, re-organizations, or HR in either a direct or advisory role (regardless of how big or small your company is), this course will put you at the cutting edge of thinking and methodology in these areas. Some of the exercises will involve programming (in the Python language, specifically). However, you DO NOT need to know statistics (beyond that covered in core courses) or computer programming to take and benefit from this course. We will provide technical support and will design exercises in a way that you can focus your energies on mastering the concepts and thinking of solving business problems. The course won't turn you into data analysts, but it will help you manage them.

HRMGT 282. People Operations: From Startup to Scaleup. 4 Units.
This course focuses attention on human resource strategies for startups. It discusses recruitment, incentives, design of jobs, development of talent, leadership and empowerment challenges in startups. We will deal with questions ranging from equity splits to founding team dynamics, hiring talent to the sequencing of hires. We will use a mix of "live cases" from the field, and lectures.

HRMGT 284. People Management Strategy in Startups and Growing Firms. 2 Units.
The average CEO, C-suite manager, or funder, will say that a firm¿s success hinges on hiring and motivating the right people. Therefore, this class aims to examine the people management strategies you might choose from as you build a young firm, or as you grow a larger firm. There are three facets to this course. The first is to acknowledge that the People Management Strategy that you choose must be selected with the overall external strategy of the firm in mind. Technology-based firms will have different strategies than brick-n-mortar retail firms. The second facet is to discuss the evolution of people management strategies as the firm grows over time: a very small firm will have few formal processes; a large firm typically can¿t live without them and may need to change them over time. The third facet covered is an analysis of the detailed issues you should consider as you set up your HR practices surrounding hiring, compensation, and promotion. Classes will have guest speakers, and cases will draw from LinkedIn, Box, Royal Bank of Canada, Tesla, the Gap, and various startups.

HRMGT 286. Managing People in the Global Context. 2 Units.
The world of work has changed fundamentally - firms are now integrally linked to the global economy and many of you will manage teams of people located in different countries. What are the typical "people" challenges that arise when working across borders? We will answer this question by looking at topics such as hiring, job design, teamwork, training, pay and promotions. We will use exercises, cases from both developed and developing economies and guest lectures.

HRMGT 302. Incentives and Productivity. 4 Units.
This course is designed to teach the student how to use economics to solve practical personnel problems that affect worker productivity. Topics include: selecting the best workers to hire, training workers, turnover, setting compensation strategically, structuring salespersons' commissions, downsizing, using promotions as an incentive mechanism, and other topics. Examples and cases will be presented to demonstrate the importance of using economic techniques to structure human resources programs. The course will appeal most to the student who expects to be a general manager or who hopes to run his or her own business. Although the human resources specialist may benefit from this course, the emphasis will be on decisions that affect personnel, but are made primarily by general managers. The class format is somewhat unusual. Most classes consist of lecture with questions, but two are class workshops. The lecture will present a theoretical development of a topic. The questions discussed during the last part of the lecture period will involve practical business application of the theory presented in lecture. This course is more technical than other human resources courses, but should be accessible to anyone who has successfully completed the economics and statistics courses in the MBA core. Every student is expected to know calculus and basic probability and statistics. Although I will not emphasize the technical aspects on the final exam, the problem sets will require some knowledge of mathematics. To ease your fears, many "poets" have taken variants of this course in the past and have done well.There will be graded team problem sets and a final exam.

HRMGT 382. People Operations: From Startup to Scaleup. 4 Units.
This course focuses attention on human resource strategies for startups. It discusses recruitment, incentives, design of jobs, development of talent, leadership and empowerment challenges in startups. We will deal with questions ranging from equity splits to founding team dynamics, hiring talent to the sequencing of hires. We will use a mix of "live cases" from the field, and lectures.

HRMGT 384. Understanding the Trends Transforming the World of Work: Lab for HR Startups. 4 Units.
The purpose of the course is to review the key trends transforming the world of work in a post-covid environment, and then get students to define and sharpen their definition of entrepreneurial opportunities to improve the world of work. It will be offered as a 'lab' - in that in each session will focus on the transition from a transformative trend to an entrepreneurial opportunity.

HRMGT 503. People Analytics. 2 Units.
How can we use big data, machine learning and artificial intelligence to inform design, hiring, promotion and human resource management processes in organizations? We will discuss the theoretical and practical challenges that these issues present, and the ways by which data can help resolve them. In doing so, we will explore various data analytic methods and different data types, as well as the pitfalls and ethical issues their use introduces.

HRMGT 691. PhD Directed Reading. 1-15 Unit.
This course is offered for students requiring specialized training in an area not covered by existing courses. To register, a student must obtain permission from the faculty member who is willing to supervise the reading.
Same as: ACCT 691, FINANCE 691, GSBGEN 691, MGTECON 691, MKTG 691, OB 691, OIT 691, POLECON 691, STRAMGT 691

HRMGT 692. PhD Dissertation Research. 1-15 Unit.
This course is elected as soon as a student is ready to begin research for the dissertation, usually shortly after admission to candidacy. To register, a student must obtain permission from the faculty member who is willing to supervise the research.
Same as: ACCT 692, FINANCE 692, GSBGEN 692, MGTECON 692, MKTG 692, OB 692, OIT 692, POLECON 692, STRAMGT 692

HRMGT 802. TGR Dissertation. 0 Units.
.
Same as: ACCT 802, FINANCE 802, GSBGEN 802, MGTECON 802, MKTG 802, OB 802, OIT 802, POLECON 802, STRAMGT 802

Marketing Courses

MKTG 240. Marketing Management. 3 Units.
The objectives of this course are to introduce students to the substantive and procedural aspects of marketing management and to sharpen skills for critical analytical thinking and effective communication. Specifically, the goals are to introduce students to marketing strategy and to the elements of marketing analysis: customer analysis, competitor analysis, and company analysis; to familiarize students with the elements of the marketing mix (product strategy, pricing, advertising and promotion, and distribution), and to enhance problem solving and decision-making abilities in these operational areas of marketing; and to provide students with a forum (both written and verbal) for presenting and defending their own recommendations, and for critically examining and discussing the recommendations of others.

MKTG 243. Marketing Management, Accelerated. 3 Units.
The objective of this course is to introduce you to modern marketing practice at an accelerated level. Marketing is key to the success of an organization and requires an ability to design and execute a coherent strategy across a number of different dimensions. Specifically, we study in depth each of the tactical P's "price, promotion, product, and place (distribution)" and do so through the structural lens of the three C's "customer, competition, and company, with a particular focus on the customer." Going beyond the fundamentals, the course emphasizes two specific areas of specialization and learning throughout. First, it focuses on data-driven techniques for assessing markets and teaches you which of these techniques apply to different marketing decision problems. Second, the course takes seriously the idea that consumers often want different things. It therefore focuses on how you can generate company value by understanding and serving heterogeneous consumer wants and needs.

MKTG 249. MSx: Marketing. 3 Units.
Every business has two kinds of problems: 1) Not having customers and 2) everything else. Marketing addresses the first problem. With increased access to information and fast-changing technology the role of marketing has broadened significantly. To attract and retain profitable customers, managers must identify and measure consumers' needs and wants, assess the competitive environment, select the most appropriate customer targets, and then develop multi-faceted marketing programs that satisfy consumers' needs better than the competition. The objective of this class is to provide you with perspectives on classical and modern day marketing, and to teach you how to take both a strategic and analytical approach towards contemporary marketing challenges.

MKTG 326. Customer Acquisition for New Ventures. 3 Units.
The focus of this course is on the strategies and methods used by early-stage companies to acquire customers (through outbound or inbound marketing) and to activate and retain them (i.e., to encourage repeat behavior and/or increase the frequency of interaction). Throughout the course, we will examine topics such as search engine marketing (SEM), content marketing, affiliate marketing, social media campaigns, mobile applications, freemium strategies, and the use of web analytics for tracking customer acquisition and conversion. The focus will be mainly on digital marketing channels, and the emphasis will be more B2C than B2B. Instruction will consist of case discussion, exercises and simulations, and guest lectures, with students working in groups to apply their learning to improve the process of customer acquisition.

MKTG 335. Product Launch. 3 Units.
Our focus is on the question, "When launching a product, what are the framing issues that will help determine success?" In particular, we will provide you with tools to analyze market situations and determine whether it makes sense to launch a product or engage in a marketing-related investment. The course is not designed to cover issues such as execution of a strategy (although we will touch on this a bit), but on whether to enter a market to begin with. Thus, the course is decision oriented; we want you to think about market entry decisions and how you would make them. The tools that you will be provided won't consist of equations; instead, we'll arm you with a set of questions to ask, whose answers will help you make better decisions.nnnThis course is an advanced applications marketing course. Unlike the base core course that is designed to cover every basic topic in marketing, here we focus on a number of basic questions and explore them in depth. Although we will have some lectures for background, the bulk of this endeavor will be accomplished through case discussions. In other words, we can't and won't cover everything, as this course is not designed to be comprehensive. We are going to rely on your academic background in marketing to cover the basics; here and there, it is possible that some material will be a review of what you've done before (there's nothing wrong with a little de ja vu). Unfortunately, due to the tight schedule we will not be able to cover any of the basics that are not already included in the course material.nnThe course includes, cases, lectures, and guest lectures.

MKTG 337. Applied Behavioral Economics. 3 Units.
The field of behavioral economics couples scientific research on the psychology of decision making with economic theory to better understand what motivates economic agents, including consumers, managers, public policymakers, investors, and employees. In this course, we will examine topics such as the ¿¿"irrational"¿? patterns of how people think about products, money and investments, designing strategies and offerings to change behavior, and the drivers of happiness and the role of emotions in decision-making. This highly interdisciplinary course will be particularly relevant to students with interests in general management, entrepreneurship, Marketing, Strategy, Behavioral Finance, public policy, and nonprofit. Topics covered will include: Rationality and choice, choice complexity, intertemporal choice, emotional influences on choice, the role of behavioral economics in marketing, spending and savings behavior, social welfare, choice architecture, and defaults. The goals of this course are threefold: a) to study the basic principles of behavioral economics, b) To learn the application of the principles to various aspects of business and policy, and c) to think about a framework for developing products, programs, and tactics that are behaviorally informed. The course is composed of a mixture of lectures, exercises, academic paper reviews, and in-class case discussions. The purpose of the lectures is to present and discuss theories, concepts, analytical techniques and empirical findings. In-class exercise will be used to apply the concepts and techniques covered in the class. We will discuss a few business cases. In addition, students working in teams will prepare an analysis and recommended behavioral strategy for a company/startup of their choice.

MKTG 344. Marketing Research. 3 Units.
How large is the market for a product, what is important for the target segment? How does change in the product design affect profitability? This course aims to help students ask such business questions and find data-driven answers to them. The main objectives are to equip students with: 1) an understanding of the value of data - what intelligence it can and cannot provide, 2) exposure to state-of-the-art quantitative tools including conjoint analysis, and unsupervised machine learning techniques such as cluster analysis to analyze the data, and 3) sufficient hands-on experience with these tools for answering students' own marketing research questions from the perspective of an entrepreneur, marketer or a consultant. The course is designed to address substantive marketing problems such as: market segmentation, targeting, forecasting demand, pricing, and developing new products. We will use a mix of lectures, exercises, cases and a project to learn the material.

MKTG 346. Humor: Serious Business. 3 Units.
YOU, oh fearless leader of the future (and maybe present). Are very important.You will make critical and far-reaching economic, political, and social decisions in your quest beyond Stanford to change lives, change organizations, and change the world. That¿s serious stuff.So, why humor? The late journalist Eric Sevareid said ¿Next to power without honor, the most dangerous thing in the world is power without humor. ¿ Our goal is to pin you down and not let you leave Stanford without a healthy dose of humanity, humility, and intellectual perspective that only humor can bring.This class is about the power (and importance) of humor to make and scale positive change in the world, and also ¿ surprise! ¿ to achieve business objectives, build more effective and innovative organizations, cultivate stronger bonds, and capture more lasting memories. We will explore various aspects of levity and humor, reveal insight into what makes people laugh, and provide tools to harness humor safely and effectively in business. By the end of class, you should: Discover. (Re)discover humor in your stories and life; understand your unique style and the styles of others.Play: Apply techniques from comedians and play with incorporating humor into otherwise unfunny moments.Lead: Embed humor into your leadership style; understand the nuance of how to do this as your status shifts across roles and contexts. Activate: Amplify humor, using it to create cultures of levity in teams, organizations, and in the world.Welcome to your (re)introduction to humor.

MKTG 353. Social Brands. 4 Units.
As savvy consumers are increasingly participating in brands rather than merely receiving their messages, how do leading organizations stoke conversations, co-create experiences and stories, and build engaging relationships with consumers? Moreover, how do they harness social media to build a brand, and empower employees and consumers to share these brand stories with others?n nSocial Brands is a hands-on, project-based course that will draw brain power from the GSB, School of Engineering, and other Stanford graduate programs to collaboratively and creatively explore these questions. While we examine various inspiring examples of social brands, we will find that the rules are yet to be written. This emerging genre of social commerce and marketing is the "Wild West" and students working in mixed teams will be challenged to design and launch their own social experiments to form their own hypotheses. n nAssignments will push student teams to audit a brand, focus on a strategic goal, and design a social interaction that invites people on campus to participate in an extraordinary personal experience with that brand. Teams will then capture this experience in short videos and compile them into a story -- one that highlights the brand experience they orchestrated, its impact, and their key learnings. This course will integrate approaches from the d.school and marketing curriculum - including brand strategy, storytelling fundamentals, human-centered methods, rapid prototyping, and a bias toward action. This is a class for those that want to learn by doing and creating.nnMKTG 353 - Social Brands class website: http://www.stanford.edu/class/mktg353/.

MKTG 365. Marketing Analytics. 3 Units.
Firms operate in an increasingly challenging business environment, with greater competition, more informed customers and rapidly changing market trends. Simultaneously, they also have access to more information about their customers, the marketplace and their competitors than ever before. In this environment, knowing how to use this information to make optimal business decisions is a crucial competitive advantage. Firms often have access to data that they do not know how to use. The objectives of this course are to introduce students to state-of-the-art marketing analytics and to teach them how to practically apply these analytics to real-world business decisions.nnnThe following are examples of the types of questions that the course will address: How should a firm determine the prices for its products and services? What is the effect of television advertising on a brand's sales and how should advertising be optimized? What can a firm learn about its customers from online browsing behavior and how can this knowledge be used for targeted advertising and promotions? How should a firm allocate its sales force? How should a firm manage the allocation of its promotional budget in order to maximize its returns? How should the mailing of catalogs or direct mail be targeted to increase response rates? nnnThe course will use a mix of lectures, cases, homework assignments and a course project to learn the material. Students do not need to have an advanced statistical background to take this course. Familiarity with the material in an introductory marketing course and an introductory statistics course will be assumed, but necessary material will be reviewed during the course of the quarter as necessary.

MKTG 366. Marketing Analytics. 3 Units.
This course is focused on advanced methods and approaches to marketing analytics. Firms often operate in an increasingly challenging environment, with greater competition, more informed customers and rapidly changing market trends. They also operate in a data-rich environment, with information often at the individual customer level. Knowing how to use this information to optimize business decisions is a competitive advantage.nnnThe course will take a hands-on approach to learning advanced techniques and methods in marketing analytics. The course will set a broad set of topics including pricing, advertising, channel management and customer relationship management amongst others. Students will use a mix of approaches including statistical methods, experimental and quasi-experimental approaches. This course will use a hybrid model, with a mix of case studies, exercises and flipped classrooms, where students will read/view material in advance of the class, with the class sessions focusing on discussing the topics at a deeper level. A major component of the course will be a project that students will work on in partnership with a firm on solving a business problem using the methods and approaches learned in this course.nnnThe course will be a good fit for students who have a background in advanced statistical methods and programming, or are willing to acquire these skills on their own in advance.

MKTG 368. Consumer Search and Marketing: Business Models in the Information Economy. 3 Units.
This class will explore the role of consumer search and firms' information provision with a focus on online markets and companies. Because the amount of information available to consumers has increased dramatically, it has become paramount for companies to facilitate consumers search process. We will cover both the relevance for companies to reach consumers through their presence on third-party search platforms such as Google as well as how companies help consumers navigate through their own assortment by means of recommendation algorithms (e.g. Netflix, Spotify). Furthermore, we will discuss business models of companies that facilitate search by aggregating and presenting results from other vendors such as Kayak or eBay. Finally, we discuss new sources of information such as online reviews and consumer word-of-mouth on social media and how firms can effectively influence and manage those sources of information.

MKTG 373. Monetization. 3 Units.
This course examines the fundamental issues of creating a strategy for monetization and revenue growth within an organization. Students learn about setting an organization's business model design, aligning various functional areas within the company to implement a monetization strategy, and the tradeoffs that occur when choosing amongst profitable monetization policies for the firm. They master concepts, frameworks, and tools to assess an industry and a firm's pricing strategy and business models, and to craft alternatives. They also study the interplay between marketing and sales, advertising and data and analytics in shaping a winning monetization policy. Topics we will cover include monetizing online content and strategies in ad-driven industries, understanding freemium models and installed-base competition, monetization of consumer data, SaaS models and enterprise business, business models from the perspective of investors and venture capitalists, regulatory considerations, and linking monetization to the ability to measure and capture value. We will use a mix of cases and lectures along with extensive participation from industry leaders to bring to light the various issues in class. There is a bias towards technology-driven markets.

MKTG 375. Consumer Behavior. 4 Units.
Contemporary approaches to marketing emphasize the importance of adopting a consumer focus, from determining consumers' wants and needs to shaping their attitudes and ensuring their loyalty. This course provides insight into consumer psychology and the means by which consumer behavior can be influenced or altered. The course has both theoretical and practical objectives in that it will: (1) explore theory and research that is relevant to understanding consumer psychology and behavior, and (2) apply these theories and findings to generate ideas for developing effective marketing techniques and tactics. By shedding light on the psychological underpinnings of consumers' thoughts, attitudes, preferences, needs, and decision-making styles, this course will help students make more insightful and effective marketing decisions. Moreover, because this course takes a broad psychological perspective, it highlights novel ideas for grabbing attention, shaping behavior, and changing people's minds both within and outside of traditional marketing contexts.

MKTG 526. Customer Acquisition for New Ventures. 2 Units.
The focus of this course is on the strategies and methods used by early-stage companies to acquire customers (through outbound or inbound marketing) and to activate them (i.e., to encourage repeat behavior and/or increase the frequency of interaction). Throughout the course, we will examine topics such as search engine marketing (SEM), content marketing, affiliate marketing, social media campaigns, mobile applications, freemium strategies, and the use of web analytics for tracking customer acquisition and conversion. The focus will be mainly on digital marketing channels, and the emphasis will be more B2C than B2B. Instruction will consist of case discussion and guest lectures, with students working in groups to apply their learning to improve the process of customer acquisition.

MKTG 532. Persuasion: Principles and Practice. 2 Units.
The aim of this course is to provide insight into the psychology of persuasion. We will take an evidence-based approach and explore research and theory in this domain to identify powerful techniques for changing people's attitudes and behaviors. We will apply our insights broadly to examine the features that make for an effective persuasive appeal in a wide range of settings (e.g., an ad, a pitch to investors, etc.), and students will practice designing and implementing persuasive messages. In each session, I will share classic and cutting edge research on persuasion emanating from the fields of social and consumer psychology. These insights will be organized around a few basic principles. We will then work together to brainstorm and practice the application of the insights to real world persuasion settings.

MKTG 534. The Travel and Airline Industry. 2 Units.
This class provides an overview of the travel and airline industry focusing on strategy, business models, operations and trends. Topics we will cover include competition, service delivery, distribution, pricing, planning and the use of analytics within verticals such as airlines, hotels, online travel agencies and cruises. We will also discuss trends such as the sharing economy and the role of user generated content in facilitating travel. We will hear from several C-level executives who have started or led businesses in the Travel Industry.

MKTG 535. Product Launch. 2 Units.
Our focus is on the question, "When launching a product, what are the framing issues that will help determine success?" In particular, we will provide you with tools to analyze market situations and determine whether it makes sense to launch a product or engage in a marketing-related investment. The course is not designed to cover issues such as execution of a strategy (although we will touch on this a bit), but on whether to enter a market to begin with. Thus, the course is decision oriented; we want you to think about market entry decisions and how you would make them. The tools that you will be provided won't consist of equations; instead, we'll arm you with a set of questions to ask, whose answers will help you make better decisions.This course is an advanced applications marketing course. Unlike the base core course that is designed to cover every basic topic in marketing, here we focus on a number of basic questions and explore them in depth. Although we will have some lectures for background, the bulk of this endeavor will be accomplished through case discussions. In other words, we can't and won't cover everything, as this course is not designed to be comprehensive. We are going to rely on your academic background in marketing to cover the basics; here and there, it is possible that some material will be a review of what you've done before (there's nothing wrong with a little de ja vu). Unfortunately, due to the tight schedule we will not be able to cover any of the basics that are not already included in the course material.The course includes, cases, lectures, and guest lectures.

MKTG 539. Algorithmic and Digital Marketing. 2 Units.
Leveraging digital technologies to drive customer acquisition, engagement, and long-term value is an important factor for success of firms operating in the current environment. The ability to collect consumer-level behavioral data, rapid evolution of public cloud infrastructure, and programmatic access to platforms and marketplaces such as Google, Facebook, Twitter, Snap etc., have provided marketers the ability to take a customer-centric view and personalize marketing activities at very large scale. The uber-personalized nature of decision-making necessitates that firms take an algorithmic and data-analytic approach to marketing. nnIn this course, we will explore algorithmic and analytic tools that firms can use to making marketing decisions. Some topics the course will focus on include marketing intelligence, pricing at scale, targeted advertising, search, recommendation systems and personalization of product experience. It will adopt a mix of lectures, case studies, exercises, guest lectures, and a course project to explore these topics.

MKTG 541. Social Brands. 2 Units.
A hands-on two-week survey of Marketing's cutting edge, where bold brands are becoming ever more open, participatory, experiential & experimental. nnnInspired by a smattering of provocative real-world examples and mind-blowing guests, diverse student teams will employ design methods to conceive of and visualize their own creative proposals for how the Stanford GSB itself might engage with the world in radical new ways. Teams will ultimately pitch their final concepts to the GSB's Chief Marketing Officer for consideration, feedback and potential real-world implementation. nnn.

MKTG 547. Strategic Marketing Communication - Compressed. 2 Units.
The course is designed to sharpen students' grasp of the strategic and tactical aspects of Marketing Communications that lead to competitive advantages in the marketplace. The course will begin a focus on strategy and introduce students to frameworks that address two broad goals of any firm: (1) Establish a competitive advantage by offering a superior customer value proposition and (2) Generate sustainable organic growth. The course will then segue into marketing communication tactics that will enable the firm effectively accomplish its strategic objectives. Here, the concepts and frameworks will only be applicable to traditional approaches (such as the use of television, print, and point-of-purchase promotions) but also to emergent approaches (such as the use of the internet, mobile media, etc.). Designed from the perspective of executives who are often involved in making strategic as well as tactical marketing decisions to solve contemporary business problems, this course is intended for students whose career plans include consulting and entrepreneurial ventures, apart from those thinking of careers in marketing.

MKTG 552. Building Innovative Brands. 2 Units.
Building Innovative Brands is a hands-on two-week dive into how leading brands may leverage a Design Thinking approach to become ever more participatory, experiential and experimental. Together, we will explore how leading organizations stoke conversations, co-create experiences, spark stories and build engaging relationships with consumers. Inspired by provocative real-world examples and industry guests, diverse student teams will employ human-centered design methods to conceive of and visualize their own creative proposals for how a brand could engage in innovative, brand-enhancing new ways. Teams will ultimately pitch their experience design concepts to the program leadership for feedback, consideration and potential real-world implementation.

MKTG 554. Branding in the Digital Era. 2 Units.
A strong brand is the most valuable and irreplaceable asset for a firm. Apple, Google, Coca Cola, Nike, VISA, McDonalds, and Disney, are a few prominent examples of legendary brands. Many companies recognize that the investment they make in the creation and communication of their brand will become a strategic differentiator in the future.n nThis course is designed to provide students with theoretical as well as applied appreciation and understanding of what it takes to build and sustain strong bands. To achieve these goals, the class will be co-taught by two academic and industry experts who will not only provide basic insights into branding basics but will also discuss cutting-edge research and technological developments in the area.n nProf. Khan will lead the first half of the course. This week will focus on conceptual and strategic frameworks for understanding basic branding concepts and answering core challenges such as, how to define and establish brand meaning and personality; how to measure and leverage brand equity; how to manage brand architecture; and how to establish brand leadership.n nIn the second week, the focus will switch to digital aspects of branding. This week will be led by Mr. Gopi Kallayil, Chief Evangelist, Brand Marketing, at Google. Mr. Kallayil will explore contemporary issues in brand marketing such as, how to construct and maintain brand meaning in the high customer involvement digital space; how to seize the opportunity of your super fans actively expressing brand love on digital; and how to leverage new customer experiences created with digital in branding strategy.n nStudents are required to attend and come prepared to all classes.

MKTG 555. Designing Happiness. 2 Units.
We assume happiness is stable, an endpoint to achieve or a goal to "chase." It's not. Recent research suggests that the meaning of happiness changes every 3-4 years. Understanding happiness is crucial to building successful products, organizations and relationships. In this MBA seminar, we explore the data-driven research on happiness, revealing insights about (a) anticipating, (b) understanding, (c) visualizing, (d) spreading, (e) remembering, and (f) creating happiness. Students will work together to use an iterative design-thinking approach to understand our own current definition of happiness, uncover what really makes us happy (vs. what we think makes us happy), prototype solutions/products to increase our present happiness, and develop tools to continually understand and foster happiness as our lives change. The seminar will be data-driven, drawing on multiple methodologies including blogs (http://www.wefeelfine.org/), experiments and surveys.

MKTG 559. Designing for VR/AR. 2 Units.
Put on a headset or glasses, and you will be transported to an entirely different world. You could be moving through a business room in China, following a girl through a Syrian refugee camp, or saving the world as a superhero. As a medium, Virtual Reality (VR) has the potential to be the ultimate empathy machine, connecting humans to other humans and nature in a profound way never before seen in any other form of media. In this class, we will draw on behavioral science and immersive experiences to shed light on the potential of Virtual Reality (VR) and Augmented Reality (AR). Students will be given a foray into the applications of VR/AR in different industries, understand how the virtual world affects perceptions of self and others, and then reflect on these insights to incorporate these learnings into the real world. Students will walk away with an understanding of the potential of VR/AR, insights into designing experiences in those worlds, and reflections that will hopefully enable students to reframe their own lives and make more meaningful choices. nnNote, the focus of this compressed class is not technical. Also, although we will briefly cover AR, VR will be more of the focus.

MKTG 568. Recommendations, Ratings and Reviews: How Platforms Provide Information to Consumers. 2 Units.
This class will explore the role of consumer search and firms information provision with a specific focus on online markets and companies. Because the amount of information available to consumers has increased dramatically, it has become paramount for companies to facilitate consumers search process. We will cover both the relevance for companies to reach consumers through their presence on third-party search platforms such as Google as well as how companies help consumers navigate through their own assortment by means of recommendation algorithms (e.g. Netflix, Spotify). Furthermore, we will discuss business models of companies that facilitate search by aggregating and presenting results from other vendors such as Kayak or eBay. Finally, we discuss new sources of information such as online reviews and consumer word-of-mouth on social media and how firms can effectively influence and manage those sources of information.

MKTG 574. Rethinking Purpose. 2 Units.
We assume happiness is stable, an endpoint to achieve our goal to chase. It's not. Recent behavioral research suggests that the meaning of happiness changes every 5-10 years, raising the question: how might we build organizations and lives that cultivate happiness? Research suggests it is better to aim for meaning. In Rethinking Purpose, we explore how to rethink purpose in work and life. Students will hear from guests and take a field trip to see how Google has reconsidered purpose. Building on the principles for Solve for X (www.solveforx.com), a platform encouraging moonshot thinking to solve huge problems in the world, we'll harness design thinking principles to create personal moonshots and a path to continue to find those moonshots over the life course. Lastly, we'll map out how to use time in ways that would help build innovative teams, products, and ultimately lives that have positive, meaningful, lasting impact in the world.

MKTG 575. Consumer Behavior. 2 Units.
Contemporary approaches to marketing emphasize the importance of adopting a consumer focus, from determining consumers' wants and needs, understanding their motivation, to shaping their attitudes and ensuring their loyalty. This course provides insight into consumer psychology and the means by which consumer behavior can be influenced or altered. The course has both theoretical and practical objectives in that we will: (1) explore theory and research that is relevant to understanding consumer psychology, and (2) apply these theories and findings to generate novel ideas for effective marketing techniques. By shedding light on the psychological underpinnings of consumers' motivation, attitudes, preferences, and decision-making styles, this course will help students make more insightful and effective marketing decisions, as well as developing novel ideas for grabbing attention, shaping behavior, and changing people's minds.

MKTG 576. Digital Marketing. 2 Units.
There has been a rapid evolution of digital means of communicating with consumers and advertising to them, driven by changes in technologies and consumer behavior. Readership of traditional print media has gone down dramatically, and television is consumed very differently now than even a few years ago, with the advent of digital video recording and streaming video platforms. This has led to a dramatic growth of marketing using digital platforms. Furthermore, a variety of avenues for digital marketing has emerged, including display advertising, search advertising, advertising on online video platforms, advertising and other forms of engagement on social networks etc. A recent trend has been the rapid growth of mobile platforms, which include these different avenues also available. An integrated view of using these different media to market to consumers is important to effective digital marketing. With the rapid acceptance of numerous "Big Data" technologies by large enterprises, online marketing is also evolving to incorporate a customer-centric view rather than a campaign centric view. This course will explore these issues.

MKTG 577. Creativity in the Business Ecosystem. 2 Units.
This course explores where creativity occurs in the value chain or business ecosystem more broadly. The concepts of both creativity and the business ecosystem are independently developed, but the primary insights derive from how the ecosystem can promote creativity. Focus is placed on the make or buy decision with an exploration of examples on both sides. Value capture vs. value creation perspectives are applied to understand strategic decisions involving product development, branding, advertising and even process innovation. Applications include video distributors producing movies and shows; brands bringing creative agency work in-house; and the acquisition of new brands and products such as craft beers.

MKTG 622. Behavioral Research in Marketing III: Consumer Behavior Classics. 3 Units.
The purpose of this seminar is to provide PhD level coverage of the major research work carried out in consumer behavior. For each topic considered, a selection of articles with a specific focus on "early classics" will be distributed and discussed. For each topic, our goals will be to determine the main ideas and research questions driving work in each topic area, how these authors positioned their work and tested their ideas, what made these papers "classics," where the gaps are, and what ideas for new research those gaps imply.

MKTG 641. Behavioral Research in Marketing I. 3 Units.
This course prepares the student to do empirical behavioral research. It will cover all aspects of the research process, from hypothesis generation to experimental design to data analysis to writing up your results and submitting them for publication.

MKTG 642. Behavioral Research in Marketing II: Consumer Behavior. 3 Units.
This PhD seminar provides coverage of the major research carried out in consumer research both in marketing and psychology. A vast set of topic will be covered including conscious and non-conscious consumer goals, motivations, emotions, attention and perception and consumer decision processes. The course will help students hone their ability to conceptualize, operationalize, and develop research idea and will provide a grasp of what it takes to be a successful academic in the field of consumer behavior.

MKTG 644. Quantitative Research in Marketing. 3 Units.
The goal of this seminar is to familiarize students with the quantitative marketing literature and develop the process of generating research ideas and topics. Sessions will involve a mix of: i) a discussion of papers in a particular area in quantitative marketing; and/or ii) a discussion of students' research ideas with respect to topics.The format will mix student presentations of papers with lectures by the instructor(s). When discussing papers in the literature, the focus will be on the topic and research question and not the methodological approach. When discussing research ideas, students should be able to articulate why their question is interesting, where it fits in the literature and how they would address their question.

MKTG 645. Empirical Analysis of Dynamic Decision Contexts. 3 Units.
This course will focus on empirical tools for analyzing dynamic decision contexts, wherein current actions of firms or consumers have effects on future payoffs, profits and/or competitive conduct. The course will build the relevant material generally, but our applications will be mostly focused on empirical marketing, operations and industrial organization problems. We will have an applied focus overall, emphasizing the practical aspects of implementation, especially programming. The overall aim of the class is to help students obtain the skills to implement these methods in their research. By the end of the class, students are expected to be able to formulate a dynamic decision problem, program it in a language such as Matlab or C, and to estimate the model from data. The course starts with discrete choice markovian decision problems, and continuous markovian decision problems, and focus on building the computational toolkit for the numerical analysis of these problems. We then move on to specific applications, and discuss multi-agent dynamic equilibrium models. Finally, we discuss recently proposed advanced methods for alleviating computational burden in dynamic models.

MKTG 646. Bayesian Inference: Methods and Applications. 3 Units.
The course aims to develop a thorough understanding of Bayesian inference, with a special focus on empirical applications in marketing. The course will start with a brief theoretical foundation to Bayesian inference and will subsequently focus on empirical methods. Initial topics would include Bayesian linear regression, multivariate regression, importance sampling and its applications. Subsequently, the course will focus on Markov Chain Monte Carlo (MCMC) methods including the Gibbs Sampler and the Metropolis-Hastings algorithm and their applications. The overall focus of the course will be on applying these methods for empirical research using a programming language such as R.

MKTG 661. Attitudes and Persuasion. 3 Units.
The goal of this course - geared toward graduate students in behavioral marketing, psychology, and related disciplines - is to explore the issues and questions that currently engage researchers in the domain of attitudes and persuasion. We will cover classic topics in this domain, but in each case we will emphasize new findings or recent directions. Students who take this course will become familiar with research methods and major issues in attitudes research and will have a better understanding of how individuals form, use, change, and maintain their attitudes. Throughout the course, students will be encouraged to critique existing research and formulate new research ideas.

MKTG 691. PhD Directed Reading. 1-15 Unit.
This course is offered for students requiring specialized training in an area not covered by existing courses. To register, a student must obtain permission from the faculty member who is willing to supervise the reading.
Same as: ACCT 691, FINANCE 691, GSBGEN 691, HRMGT 691, MGTECON 691, OB 691, OIT 691, POLECON 691, STRAMGT 691

MKTG 692. PhD Dissertation Research. 1-15 Unit.
This course is elected as soon as a student is ready to begin research for the dissertation, usually shortly after admission to candidacy. To register, a student must obtain permission from the faculty member who is willing to supervise the research.
Same as: ACCT 692, FINANCE 692, GSBGEN 692, HRMGT 692, MGTECON 692, OB 692, OIT 692, POLECON 692, STRAMGT 692

MKTG 698. Doctoral Practicum in Teaching. 1 Unit.
Doctoral Practicum in Teaching.

MKTG 699. Doctoral Practicum in Research. 1 Unit.
Doctoral Practicum in Research.

MKTG 802. TGR Dissertation. 0 Units.
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Same as: ACCT 802, FINANCE 802, GSBGEN 802, HRMGT 802, MGTECON 802, OB 802, OIT 802, POLECON 802, STRAMGT 802

Operations Info & Technology Courses

OIT 245. Optimization and Simulation Modeling. 3 Units.
This course provides basic skills in quantitative modeling. The objective is to familiarize students with the main steps in an analytical approach to business decision making: constructing an abstract model for a relevant business problem, formulating it in a spreadsheet environment such as Microsoft Excel, and using the tools of optimization, Monte Carlo simulation and sensitivity analysis to generate and interpret recommendations. The class will be taught in a lab style, with short in-class exercises done in small teams, focusing on a variety of applications drawn from online advertising, healthcare, finance, supply chain management, revenue and yield optimization.

OIT 247. Optimization and Simulation Modeling - Accelerated. 3 Units.
The course is aimed at students who already have a background or demonstrated aptitude for quantitative analysis, and thus are comfortable with a more rapid coverage of the topics, in more depth and breadth, than in OIT 245.

OIT 248. Optimization And Simulation Modeling - Advanced. 3 Units.
This course constitutes an advanced option in the menu of classes satisfying the Management Perspectives requirement in Optimization and Simulation Modeling (OSM). The course is a superset of OIT 245 and OIT 247, starting with a very fast paced overview of basic concepts, and quickly diving into more advanced topics and software tools. By the end of the course, students should (1) leave with a good understanding of different types of optimization and simulation models and when they are useful; (2) be able to solve real-world models using up-to-date software; (3) when faced with a business problem, be able to identify what type of optimization model is appropriate, and how to set it up most efficiently; (4) be able to understand and discuss model outputs in a critical fashion. The class is taught in an interactive style, focusing on a variety of applications drawn from advertising, healthcare, finance, supply chain management, revenue management and pricing, scheduling, and risk management. We will be using Python as the basic software, complemented with suitable packages for formulating and solving optimization models (e.g., the Gurobi software) and for conducting Monte Carlo simulation. Students should be comfortable using these software packages by the end of the class, but no specific prior experience with these packages is necessary. Some prior coding experience is helpful, but is not a strict requirement for the course.

OIT 249. MSx: Data and Decisions. 2 Units.
Data and Decisions teaches you how to use data and quantitative reasoning to make sound decisions in complex and uncertain environments. The course draws on probability, statistics, and decision theory. Probabilities provide a foundation for understanding uncertainties, such as the risks faced by investors, insurers, and capacity planners. We will discuss the mechanics of probability (manipulating some probabilities to get others) and how to use probabilities to make decisions about uncertain events. Statistics allows managers to use small amounts of information to answer big questions. For example, statistics can help predict whether a new product will succeed or what revenue will be next quarter. The third topic, decision analysis, uses probability and statistics to plan actions, such as whether to test a new drug, buy an option, or explore for oil. In addition to improving your quantitative reasoning skills, this class seeks to prepare you for later classes that draw on this material, including finance, economics, marketing, and operations. At the end we will discuss how this material relates to machine learning and artificial intelligence.

OIT 262. Operations. 3 Units.
This course focuses on basic managerial issues arising in the operations of both manufacturing and service industries. The objectives of the course are to familiarize students with the problems and issues confronting operations managers and to introduce language, conceptual models, and analytical techniques that are broadly applicable in confronting such problems. The spectrum of different process types used to provide goods and services is developed and then examined through methods of process analysis and design.

OIT 265. Data and Decisions. 3 Units.
This is the base version of D&D. This course introduces the fundamental concepts and techniques for analyzing risk and formulating sound decisions in uncertain environments. Approximately half of the course focuses on probability and its application. The remainder of the course examines statistical methods for interpreting and analyzing data including sampling concepts, regression analysis, and hypothesis testing. Applications include inventory management, demand analysis, portfolio analysis, surveys and opinion polls, A/B testing, environmental contamination, online advertising and the role of analytics in business settings more generally. The course emphasizes analytical techniques and concepts that are broadly applicable to business problems.

OIT 267. Data and Decisions - Accelerated. 3 Units.
Data and Decisions - Accelerated is a first-year MBA course in probability and statistics for students with strong quantitative backgrounds. Probability provides the foundation for modeling uncertainties. Statistics provides techniques for interpreting data, permitting managers to use small amounts of information to answer larger questions. In statistics, we focus on the linear regression model. Regression analysis provides a method for determining the relationship between a dependent variable and predictor variables. We introduce topics from non-linear models and machine learning model selection. Students taking this course need to be comfortable with mathematical notation, algebra, some calculus, and be open to learning to write short programs in statistical software (eg R or Stata). If you are not confident with your quantitative abilities, then you should enroll in OIT 265. Accelerated D&D will cover material covered in OIT 265 plus some additional topics such as discrete dependent variable models. While OIT 267 focuses on real world applicability, we will explore the mathematical underpinnings of these topics in more depth than OIT 265 as an avenue for deeper understanding. The group regression project is a key component of the course.

OIT 269. MSx: Operations and Strategies. 3 Units.
Operations refer to the processes through which businesses produce and deliver products or services. Managing operations well is necessary in order for these processes to be completed in a timely manner, consume minimal resources and costs, and achieve their goal effectively. This course focuses on managerial issues arising in the operations of manufacturing and service industries. The objectives of the course are to introduce operational problems and challenges faced by managers, as well as language, conceptual models, analytical techniques and strategies that are broadly applicable in confronting such problems.

OIT 271. Operations - Accelerated. 3 Units.
This course, which is an accelerated version of OIT 262 (Operations), focuses on basic managerial issues arising in the operations of both manufacturing and service industries, and on strategic issues arising in global supply chains. The objectives of the course are to familiarize students with the problems and issues confronting operations managers and to introduce language, conceptual models, and analytical techniques that are broadly applicable in confronting such problems.

OIT 272. Online Marketplaces. 2 Units.
How does Uber match drivers to passengers? How does Airbnb select the set of listings to show to a guest in a search? How does eBay manage trust and reputation between buyers and sellers? How does Google optimize auctions for billions of dollars' worth of online advertising? This course focuses on the basic analytic and data science tools used to address these and other challenges encountered in the most exciting online marketplaces in the world. With hands-on exercises we will open and understand the "black-box" of online marketplaces' operations. We will cover application areas such as transportation, rentals, sharing, e-commerce, labor markets, and advertising, leveraging tools from D&D, OSM, and Micro (all base). In particular, the course will use tools from R covered in D&D. Overall, the course will provide basic business knowledge for future investors, product managers, sales and marketing managers, operation managers, and anyone interested on online marketplaces.

OIT 273. Value Chain Innovations in Developing Economies. 2 Units.
This course is about how to use entrepreneurship and innovations in the value chains to create values in developing economies. The course will cover important principles and ways in which the value chains can be re-engineered or new business models can be designed to create values. In addition to materials covering a diversity of industries and geographical regions, the course will also enable students to be exposed to some of the interventions that the Stanford Institute of Innovation in Developing Economies (SEED) is working on in West Africa. Work and exam requirements: Students are expected to develop a project report on either portfolio companies related to SEED or other enterprises to show how value chain innovations can be advanced.

OIT 274. Data and Decisions - Base. 3 Units.
Base Data and Decisions is a first-year MBA course in statistics and regression analysis. The course is taught using a flipped classroom model that combines extensive online materials with a lab-based classroom approach. Traditional lecture content will be learned through online videos, simulations, and exercises, while time spent in the classroom will be discussions, problem solving, or computer lab sessions. Content covered includes basic probability, sampling techniques, hypothesis testing, t-tests, linear regression, and prediction models. The group regression project is a key component of the course, and all students will learn the statistical software package R.
Same as: Flipped Classroom

OIT 275. Online Marketplaces, Accelerated. 2 Units.
How does Uber match drivers to passengers? How does Airbnb select the set of listings to show to a guest in a search? How does eBay manage trust and reputation between buyers and sellers? How does Google optimize auctions for billions of dollars' worth of online advertising? This course focuses on analytics and data science tools used to address these and other challenges encountered in the most exciting online marketplaces in the world. With hands-on exercises we will open and understand the "black-box" of online marketplaces' operations. We will cover application areas such as transportation, rentals, sharing, e-commerce, labor markets, and advertising, leveraging tools from D&D, OSM, and Micro. In particular, the course will use tools from R covered in D&D. Overall, the course will provide business knowledge for future investors, product managers, sales and marketing managers, operation managers, and anyone interested on online marketplaces. [This is the accelerated version of OIT 272 and knowledge from D&D and OSM is expected at the accelerated (or advanced) level.].

OIT 276. Data and Decisions - Accelerated. 3 Units.
Accelerated Data and Decisions is a first-year MBA course in statistics and regression analysis. The course is taught using a flipped classroom model that combines extensive online materials with a more lab-based classroom approach. Traditional lecture content will be learned through online videos, simulations, and exercises, while time spent in the classroom will be discussions, problem solving, or computer lab sessions. Content covered includes sampling techniques, hypothesis testing, t-tests, linear regression, and prediction models. The group regression project is a key component of the course, and all students will learn the statistical software package R. The accelerated course is designed for students with strong quantitative backgrounds. Students taking this course need to be comfortable with mathematical notation, algebra, and basic probability. Students without quantitative backgrounds should consider enrolling in the base version of the course.
Same as: Flipped Classroom

OIT 333. Design for Extreme Affordability. 4 Units.
Design for Extreme Affordability is a two-quarter project-based course hosted by Stanford's d.school and jointly offered by the Graduate School of Business and the School of Mechanical Engineering. We focus on the development of products and services to improve the lives of the our poorest citizens. This multidisciplinary project-based experience creates an enabling environment in which students learn to design products and services that will change lives. Topics include user empathy, product and service design, rapid prototype engineering and testing, social entrepreneurship, business modeling, ethics, equity, partnerships, team dynamics and project management. Since the course was first offered, we have executed 168 projects with 72 partners. Many of the projects have been implemented and are achieving significant social impact. This year we will launch for the first time, Extreme Local, where we will team up with local Bay Area partners to address some of their challenges, We will continue to publish latest information for prospective students here: https://extreme.stanford.edu/prospective-students.

OIT 334. Design for Extreme Affordability. 4 Units.
Design for Extreme Affordability is a two-quarter project-based course hosted by Stanford's d.school and jointly offered by the Graduate School of Business and the School of Mechanical Engineering. We focus on the development of products and services to improve the lives of the our poorest citizens. This multidisciplinary project-based experience creates an enabling environment in which students learn to design products and services that will change lives. Topics include user empathy, product and service design, rapid prototype engineering and testing, social entrepreneurship, business modeling, ethics, equity, partnerships, team dynamics and project management. Since the course was first offered, we have executed 168 projects with 72 partners. Many of the projects have been implemented and are achieving significant social impact. This year we will launch for the first time, Extreme Local, where we will team up with local Bay Area partners to address some of their challenges, We will continue to publish latest information for prospective students here: https://extreme.stanford.edu/prospective-students.

OIT 344. Design for Service Innovation. 4 Units.
Design for service innovation is an experiential course in which students work in multidisciplinary teams to design new services (including but not limited to web services) that will address the needs of an underserved population of users. Through a small number of lectures and guided exercises, but mostly in the context of specific team projects, students will learn to identify the key needs of the target population and to design services that address these needs. Our projects this year will focus on services for young adult survivors of severe childhood diseases. For the first time ever, children who have cystic fibrosis, rheumatoid arthritis, major cardiac repairs, organ transplants, genetic metabolic disorders, and several forms of cancer are surviving. The first wave of these survivors is reaching young adulthood (ages 18-25). Many aspects of the young adult world are not yet user-friendly for them: applying to and then entering college, adherence to required medication and diet, prospects for marriage and parenthood, participation in high school or college sports, driving, drinking, drugs, and more. Our aspiration is to develop services to improve these young adults? options for a fulfilling and satisfying life. The course is open to graduate students from all schools and departments: business (MBA1, MBA2, PhD, Sloan), Medicine (medical students, residents, fellows and postdocs), engineering (MS and PhD), humanities, sociology, psychology, education, and law. Students can find out more about this course at: http://DesignForService.stanford.edu; GSB Winter Elective BBL Jan 10th, 12 noon - 1 pm; D-School Course Exposition Feb 3rd, time TBA. Admission into the course by application only. Applications will be available at http://DesignForService.stanford.edu on Jan 13th. Applications must be submitted by Feb 4th midnight. Students will be notified about acceptance to the course by Feb 7th . Accepted students will need to reserve their slot in the course by completing an online privacy training course. Details about online training will be provide to accepted students. The training is related to the protection of our partners' privacy. Application Deadline: Noon, Feb 4th.

OIT 356. Electronic Business. 3 Units.
The course focuses on the analysis and design of business models that are enabled by Information Technology (IT). It considers the impact of IT on multiple industries and ways to take advantage of new opportunities that are enabled by new technologies. Preparation includes case studies involving both qualitative and quantitative analyses; homework assignments involving quantitative and some qualitative analyses; pre-class online quizzes and a group project involving the design of a new business model that takes advantage of modern IT. A typical class will cover an aspect of a business model which is enabled by IT in an industry which is transformed by technology. Sample topics include the transformation of retail, media, electronic commerce logistics, transportation and healthcare. Some classes will focus on the interaction of strategy and IT, building on what you learned earlier in the program. Students opting to go into technology would probably benefit the most from the course, but this will require a significant time commitment. For students rooted in technology, some of the classes will reinforce and structure things they have experienced already, and others would introduce them to new applications. MSx students are invited to petition to take the course.

OIT 364. Global Operations. 3 Units.
Globalization of businesses has resulted in companies having to manage global networks of suppliers, integrators, contract manufacturers, logistics service providers, distributors, and service support operators in geographically dispersed locations. The customer network is also globally distributed. This course will focus on (1) how global and international companies can overcome the geographical, cultural, and organizational barriers, and leverage the strengths of the network to create values, (2) how these companies should best structure their network, like in-sourcing or outsourcing, and off-shoring or on-shoring, to give the best competitive advantage, and (3) how operations can support the overall business strategies.. The course will be based on cases on innovative strategies and tactics used by global and international companies, including how they can do so in emerging economies.

OIT 367. Business Intelligence from Big Data. 3 Units.
The objective of this course is to analyze real-world situations where significant competitive advantage can be obtained through large-scale data analysis, with special attention to what can be done with the data and where the potential pitfalls lie. Students will be challenged to develop business-relevant questions and then solve for them by manipulating large data sets. Problems from advertising, eCommerce, finance, healthcare, marketing, and revenue management are presented. Students learn to apply software (such as Python and SQL) to data sets to create knowledge that will inform decisions. The course covers fundamentals of statistical modeling, machine learning, and data-driven decision making. Students are expected to layer these topics over an existing facility with mathematical notation, algebra, calculus, probability, and basic statistics.

OIT 368. Design for Disruption. 3 Units.
"Disruption" is a widely used and frequently misunderstood term. Understanding it better can help you think about your organization or team¿s strategy whether you're trying to disrupt, avoid being disrupted, or simply scanning the horizon for new trends in your industry.This course takes a unique view on disruption by combining disruption theory research, innovation strategy, and the ways that business practitioners and Silicon Valley entrepreneurs have redefined disruption over the last decade. We'll bring these perspectives together in a framework for gauging the disruptive potential of an innovation - that is, how likely the innovation is to fundamentally change the structure of an industry. You'll learn the critical roles that customers, value chains, and technologies play in driving such changes.While the popular press tends to focus on disruption in the technology sector, you'll see that it happens in every industry and sector, it can be done by mature, established companies, and it's not just for technology startups. We'll study disruption in a wide variety of industries, like nonprofits, pharmaceutical companies, food processing companies, airline manufacturers (Boeing) and chemical manufacturers. And of course, we'll talk about Uber, Airbnb, Microsoft, and Amazon too.In some cases we'll take a very futuristic view of disruption in which you will see how a very recent discovery can lead to fascinating possibilities for disruption that may be 10-20 years down the line. Distinguishing between developments that will last and drive changes vs. developments that are temporary fads is something the frameworks in this course will help you unpack.You'll also have the opportunity to investigate how established firms (we call them incumbents) can avoid the perils of being disrupted and left behind. You will identify the qualities of incumbents that have faced disruption successfully, and the missteps of those that have not.Finally, you will work on a capstone mini project in which you will apply the course frameworks to develop a disruption hypothesis for the industry of your choosing. This could be the industry you worked in the past or an industry you plan to work in the future, an industry that you may want to disrupt, or simply an industry that's compelling to you. Topics covered include:The Disruption Framework and the Three Pillars of DisruptionDisruption via new entrantsIncumbent self-disruption, and when incumbents miss the disruptionNonprofit vs. for-profit disruptionThe Five Forces FrameworkDeveloping and testing a new disruption hypothesis using design thinking and lean startupCases and examples we¿ll examine include:Impossible FoodsHIV treatment pharmaceuticalsWarby ParkerStarbucksAmazon Web ServicesFundboxBoeingDow CorningMicrosoftCalifornia Health Care FoundationKodakFastbrick RoboticsPelotonPokémon GoKodakUberAirbnb.

OIT 384. Biodesign Innovation: Needs Finding and Concept Creation. 4 Units.
In this two-quarter course series (OIT 384/5), multidisciplinary student teams from medicine, business, and engineering work together to identify real-world unmet healthcare needs, invent new health technologies to address them, and plan for their development and implementation into patient care. During the first quarter (winter 2021), students select and characterize an important unmet healthcare problem, validate it through primary interviews and secondary research, and then brainstorm and screen initial technology-based solutions. In the second quarter (spring 2021), teams screen their ideas, select a lead solution, and move it toward the market through prototyping, technical re-risking, strategies to address healthcare-specific requirements (regulation, reimbursement), and business planning. Final presentations in winter and spring are made to a panel of prominent health technology industry experts and investors. Class sessions include faculty-led instruction and case studies, coaching sessions by industry specialists, expert guest lecturers, and interactive team meetings. Enrollment is by application only, and students are expected to participate in both quarters of the course. Visit http://biodesign.stanford.edu/programs/stanford-courses/biodesign-innovation.html to access the application, examples of past projects, and student testimonials. More information about Stanford Biodesign, which has led to the creation of more than 50 venture-backed healthcare companies and has helped hundreds of students launch health technology careers, can be found at http://biodesign.stanford.edu/.

OIT 385. Biodesign Innovation: Concept Development and Implementation. 4 Units.
In this two-quarter course series (OIT 384/5), multidisciplinary student teams from medicine, business, and engineering work together to identify real-world unmet healthcare needs, invent new health technologies to address them, and plan for their development and implementation into patient care. During the first quarter (winter 2021), students select and characterize an important unmet healthcare problem, validate it through primary interviews and secondary research, and then brainstorm and screen initial technology-based solutions. In the second quarter (spring 2021), teams screen their ideas, select a lead solution, and move it toward the market through prototyping, technical re-risking, strategies to address healthcare-specific requirements (regulation, reimbursement), and business planning. Final presentations in winter and spring are made to a panel of prominent health technology industry experts and investors. Class sessions include faculty-led instruction and case studies, coaching sessions by industry specialists, expert guest lecturers, and interactive team meetings. Enrollment is by application only, and students are expected to participate in both quarters of the course. Visit http://biodesign.stanford.edu/programs/stanford-courses/biodesign-innovation.html to access the application, examples of past projects, and student testimonials. More information about Stanford Biodesign, which has led to the creation of more than 50 venture-backed healthcare companies and has helped hundreds of students launch health technology careers, can be found at http://biodesign.stanford.edu/.

OIT 521. Data Science for Platforms. 2 Units.
This is an MBA compressed course that covers analytic and data science tools that are currently being used to operate some of the most exciting online platforms and marketplaces in the world. This course will consist of guest lectures from industry leaders involved in these efforts, emphasizing practical challenges associated with implementing analytics and data science projects. Guest lecturers will be heads of data science, heads of product, founders, or investors, among others. We will cover online platforms and marketplaces in diverse application areas such as transportation, rentals, sharing, e-commerce, labor markets, media, and advertising.

OIT 536. Data for Action: From Insights to Applications. 2 Units.
Data for Action is an MBA short course dedicated to identifying value in and creating value from data. It deals with the technical, legal, regulatory and business strategic decisions that must be considered when delivering solutions to customers.

OIT 554. Seminar on IT for Business. 2 Units.
This course offers an overview of information technologies for enterprises and supply chain management. The course has two key components - a series of guest speakers and a set of readings. Students are expected to have read the assigned note on related technologies before class, and prepare to discuss technologies with the guest speaker in class. We will not discuss the technology per se in class, so students who enroll are expected to have some exposure to technologies in order to digest the materials on their own. The main topics of technologies are: DBMS (Database Management System), ERP (Enterprise Resource Planning), EAI (Enterprise Application Interface), data mining, Big Data, platform-based business model, cloud computing, RFID/NFC, mobile technologies, and mobile payment. In particular, students are encouraged to think hard about potential new businesses around the technology and discuss them in class.

OIT 587. Global Biodesign. 3 Units.
Seminar examines the development and commercialization of medical technologies in the global setting focusing primarily on Europe, India and China. Faculty and guest speakers from industry and government discuss the status of the industry, as well as opportunities in and challenges to medical technology innovation unique to each geography. Topics related to development of technologies for bottom of the pyramid markets will also be addressed.

OIT 601. Fundamentals of OIT. 3 Units.
The goal of this course is to provide first-year Ph.D. students in OIT with sufficient fundamentals to subsequently take advanced research seminars. The course covers the very basics of six topics: queueing theory, inventory theory, multi-echelon inventory theory, game theory, stochastic dynamic programming and econometrics. Lectures will be given by advanced Ph.D. students in OIT.

OIT 602. Dynamic Pricing and Revenue Management I. 2 Units.
In tandem with OIT 603, this course explores the application of stochastic modeling and optimization to two closely related problem areas: (a) dynamic price selection, and (b) dynamic allocation of limited capacity to competing demands. As background, students are assumed to know stochastic process theory at the level of Statistics 217-218, microeconomics at the level of Economics 202N, and optimization theory at the level of MS&E 211, and to have some familiarity with the basic ideas of dynamic programming. Additional dynamic programming theory will be developed as needed for the applications covered. Emphasis will be on current research topics, especially in the realm of airline revenue management.

OIT 603. Dynamic Pricing and Revenue Management II. 2 Units.
In tandem with OIT 602, this course explores the application of stochastic modeling and optimization to two closely related problem areas: (a) dynamic price selection, and (b) dynamic allocation of limited capacity to competing demands. As background, students are assumed to know stochastic process theory at the level of Statistics 217-218, microeconomics at the level of Economics 202N, and optimization theory at the level of MS&E 211, and to have some familiarity with the basic ideas of dynamic programming. Additional dynamic programming theory will be developed as needed for the applications covered. Emphasis will be on current research topics, especially involving customized pricing of financial services. OIT 602 is not a prerequisite for OIT 603 but is highly recommended.

OIT 604. Data, Learning, and Decision-Making. 3 Units.
This aim of this course is to cover modern tools for data-driven decision making. Most decision making tasks involve uncertainty that is directly impacted by the amount and complexity of data at hand. Classical decision models rely on strong distributional assumptions about the uncertain events. But in recent years, and due to growing availability of rich data, there has been a rapid adoption of models from machine learning and statistics that provide more accurate and personalized picture of uncertainty which in turn lead to better decisions. The interplay between the multiple objectives of modeling the data, personalization, and decision optimization has created a number mathematical models that the course aims to cover. Examples of topics include contextual multi-armed bandits and non-parametric decision learning.

OIT 605. Behavioral Operations Management. 2 Units.
Behavioral Operations incorporates insights from cognitive psychology, social psychology and behavioral economics to study how individuals make decisions in an operational context. Two major goals of Behavioral Operations are to provide a better understanding of (and make better predictions about) behavioral regularities in operational settings, and to provide guidance to firms on how to design mechanisms that will lead to better decisions and improved performance. This course has several aims: (1) To survey foundational research from economics and psychology on important behavioral factors such as bounded rationality and decision heuristics, folk intuitions about random processes, preference regularities such as loss aversion and reference dependent preferences, and interpersonal factors such as trust and fairness. (2) To apply behavioral insights to core operational settings such as inventory decision making, queueing systems, supply chain relationships, contracting, etc. (3) To discuss how to conduct behaviorally-inspired research using a range of methodologies including analytical modeling, laboratory and field experiments, and observational empirics. There will be a particular emphasis on laboratory experimental design, and in in many cases we will examine series of experiments to see how experiments can build on each other ¿ especially when researchers with different theoretical predispositions look at the same issue. Our goal is to help students identify behavioral issues to incorporate into their research interests, as well as opportunities to engage in experimental research as an extension of their current research agenda. This course meets the behavioral requirement for OIT PhD students.

OIT 611. The Drift Method: from Stochastic Networks to Machine Learning. 3 Units.
Overview: This course is an introduction to the drift method in sequential decision-making and stochastic systems, a family of simple, yet surprisingly powerful, meta-algorithms that in each step the greedily and incrementally minimizes some potential function. Manifested in various forms, the drift method powers some of the most popular algorithmic paradigms in stochastic networks (MaxWeight, BackPressure), oneline learning, optimization and machine learning (SGD, Langevin dynamics, TD-learning). Using the Drift Method as a unifying theme, we will survey major developments in these areas and answer questions such as: What may explain the method¿s effectiveness? How can we rigorously evaluate its performance? We will develop rigorous probabilistic and optimization methodologies for answering these questions, such as Lyapunov functions and stability theory, state-space collapse, weak convergence and Stein¿s method. In terms of application topics, the course is roughly evenly divided between stochastic queueing networks versus optimization + machine learning. Objective: For students to acquire fundamental methodologies that can be applied to tackling problems in dynamic decision-making, stochastic modeling and machine learning. Target Audience: Graduate students / advanced undergraduates with a solid grasp of probability and stochastic processes (Stat 310A / MS&E 321, or equivalent). Strong background and interests in queueing networks is highly recommend.

OIT 624. Models and Applications of Inventory Management. 3 Units.
The first part of the course reviews fundamental models in inventory management. Topics include deterministic models (EOQ, power-of-two policies, ELS, serial and assembly networks), Newsvendor, multi-period stochastic models under backlogging and lost-sales, multi-echelon and supply chain models, and infinite-horizon formulations. In the process, the course also reviews several fundamental mathematical concepts in inventory theory, including convexity, duality, finite / infinite state Markov decision processes, and comparative statics.nThe second part discusses advanced modeling concepts, and several new application areas. Topics include distribution-free and robust models, supply uncertainty and disruptions, flexibility and supply chain design, joint pricing and inventory, and problems at the interface of supply chains and finance.

OIT 643. Special Topics in Supply Chain Management. 3 Units.
To compete successfully in today's market place, companies need to manage effectively the efficiency of activities to design, manufacture, distribute, service and recycle their products or services to their customers. Supply chain management deals with the management of materials, information and financial flows in a network consisting of suppliers, manufacturers, distributors, and customers. The coordination and integration of these flows within and across companies are critical in effective supply chain management. nnnIn parallel to the development of new practices and concepts in industry, there have been emerging research that are based on (1) structuring new processes and supply chain networks with the new technologies; (2) exploring ways to do planning and make decisions consequently; (3) quantifying the benefits as a result; and (4) aligning the incentives of multiple players in a supply chain when the costs and benefits to these players are different. nnnThis course will examine evolutionary research that focuses on the above themes. We will explore how such problems can be formulated, models can be structured, and analysis can be performed to address information-based supply chain management issues. You are all challenged to think, discuss, share, and debate on the issues brought up. The end result of this course is, hopefully, that we can start defining new, interesting and exciting research paths, and maybe even beginning to pursue some of the research ideas generated.

OIT 644. Research in Operations, Information and Technology. 1 Unit.
This year-long course takes a hands-on approach to learning about conducting research in Operations, Information and Technology. It will cover a broad spectrum of cutting-edge research in OIT from conceiving an idea to formulating a research problem, deriving results, and publication. The topical content will be customized to the specific interests of the enrolled students, but generally will be concerned with questions of operational interest.

OIT 647. Empirical Methods in Operations Management / Management Science. 2 Units.
This course focuses on studying a broad set of econometric methods to conduct empirical research in Operations Management and related fields in Management Science. The course complements formal econometrics and statistics classes by focusing on the application of different econometric methods and identification strategies to research problems that are relevant in different areas within Operations Management, including Supply Chain Management, Service Operations, Healthcare and Retail. Although statistics/econometrics classes provide a rigorous revision of the methods, they put less emphasis on how to apply these methods in different settings. This course aims to fill that gap by providing a problem-oriented approach, where the focus is on identifying empirical questions relevant to Operations Management and choosing an appropriate empirical strategy to address them. The course has a seminar format combining paper presentations by students, computer assignments and a short research proposal.

OIT 648. Empirics of Online Markets. 2 Units.
In this course we cover current research on the empirics of platforms and online marketplaces. We will study diverse topics relevant to the design of these markets such as search and matching, review and reputation systems, demand estimation, and pricing. We will do so in the context of different application domains such as rentals, sharing, e-commerce, labor markets, and advertising. The course will be eclectic in terms of approaches, using reduced-form and structural econometrics, machine learning, and experimentation. The course will mostly consist of recent papers presented by the instructor, guests, and students. Some background knowledge required to understand current work will be provided as needed.

OIT 652. OIT Modeling. 3 Units.
This course is designed for OIT students of all cohorts. It will focus on alternative approaches to modeling the types of problems that arise in OIT research, based on the analysis of papers in the area.

OIT 655. Foundations of Supply Chain Management. 3 Units.
This course provides an overview of research in supply chain management (SCM). It has three parts. The first part reviews basic tools of SCM research through selected readings in economics, IT and operations research. The second part reviews the literature in SCM, covering topics such as inventory models, information sharing, information distortion, contract design, value of integration, performance measurement, risk management, and the use of markets for procurement. The last part is devoted to recent advances in SCM research.

OIT 660. Applied OIT. 4 Units.
Description is currently unavailable because of ongoing review of the OIT PhD program by OIT faculty. Description will become available when the review is completed at the end of the Summer.

OIT 661. Causal Inference. 3 Units.
This course covers mathematical and statistical underpinnings of causal inference, with a focus on scientific experimentation and data-driven decision making. Topics include randomization, potential outcomes, observational studies, double robustness, semiparametric efficiency, treatment heterogeneity, policy learning, bandit algorithms, instrumental variables, regression discontinuities and graphical models. We will also discuss the relevance of optimization and machine learning tools to causal inference.

OIT 663. Methods of Operations/Information Systems. 4 Units.
This course covers basic analytical tools and methods that can be used in research in operations and information systems. The emphasis is on foundations of stochastic inventory theory. Basic topics include convexity, duality, induced preference theory, and structured probability distributions. Much of the course is devoted to Markov decision processes, covering finite and infinite horizon models, proving the optimality of simple policies, bounds and computations, and myopic policies.

OIT 664. Asymptotics in Operations Management. 3 Units.
This course provides an overview of asymptotic models and methods used in various areas of operations management. It includes traditional heavy traffic asymptotics for queueing networks, the Halfin-Whitt regime, the supermarket model, inventory theory, revenue management, applications of measure-valued processes in queues, and applications of mean field equilibrium models in matching markets and auctions for ad exchanges. The lectures will focus on modeling and performance analysis, and not on convergence proofs. Prerequisites: Statistics 217 and 218, or consent of instructor; some prior exposure to stochastic models in general, and queueing theory in particular, is useful but not essential.

OIT 665. Seminar on Information-Based Supply Chain Management. 3 Units.
This seminar will highlight the research evolution and advances on the smart use of information in supply chain management. Advances in technologies like real-time information systems, decision support methodologies, the internet and mobile technologies such as RFID (radio-frequency identification) have also enabled visibility and structural changes that result in significant supply chain performance enhancements. In parallel to the development of new practices and concepts in industry, we will examine emerging research that are based on (1) structuring new processes and supply chain networks with the new technologies; (2) exploring ways to do planning and make decisions consequently; (3) quantifying the benefits as a result; and (4) aligning the incentives of multiple players in a supply chain when the costs and benefits to these players are different.

OIT 666. Engineering Online Markets. 3 Units.
This class will explore topics the intersection of operations, engineering, and economics relevant to modern internet marketplaces, including those for dating, labor, accommodation, services, and rides. The objective of the class is to introduce and revisit technical tools traditionally used in the operations literature that may help advance the research frontier, as well as to expose students to recent developments and state-of-the-art research in online markets. The class will not cover the important and heavily studied topics of stable marriage and auctions. List of topics (preliminary): Intro to two-sided platforms and search frictions in matching markets; Design of the "search environment" and information disclosure policies on platforms; Balancing supply and demand in a spatio-temporal environment; Pricing issues in platforms; Service platforms; Reputation systems.

OIT 668. Networks and Markets. 3 Units.
In recent years network models have been used in different application domains, ranging from social networks to supply chains and from financial networks to transportation networks. Examples of existing work in networks include exploring how to leverage available social network information to (i) develop targeted pricing/advertising strategies, and (ii) combat misinformation. Further illustrating the ubiquity of network interactions, there is a growing literature aiming to study the propagation of shocks in supply chains and financial networks, which also sheds light on different approaches for mitigating the market-wide adverse effects of such shocks. Although much progress has been made, our understanding of how network interactions affect market-wide outcomes is still very much nascent. For instance, there is a lot of promise for impactful research that may change the way we think about the design of supply chain networks or the interactions between different modes of transportation in the context of urban planning. The main objective of this course is to provide a comprehensive overview of the recent research developments in the area of networked markets. We will cover foundational work, classical models, and also various applications. In addition, we will discuss exciting directions for future research, and try to prepare you to conduct research in the area. As such, the course involves a (team) research project as well as presentations (by instructors and/or students) of select papers from the recent literature followed by a critical review of their modeling assumptions and results.

OIT 671. Operational, Economic, and Statistical Modeling in the COVID-19 Crisis. 3 Units.
The COVID-19 crisis revealed many fundamental structural, cultural, and operational challenges in the world. Many of these challenges, for example managing patient care in a limited resource environment, were well-known before COVID-19 and the crisis simply highlighted the importance of developing effective strategies to handle them. Others, such as the design and adherence to non-pharmaceutical mitigation strategies like lock-downs, quickly appeared as countries took differing approaches to handling the pandemic. This course will discuss how operational, economic, and statistical modeling can be used to better understand different COVID-19 responses and strategies. This is a PhD seminar that will cover prior research that can shed light onto the COVID-19 crisis, current/ongoing research that directly addresses COVID-19 pressing issues, and will also explore new research directions in this space.The course will consist of a combination of lectures by the instructors, guest lectures by researchers from all over the world, and of students¿ presentations of their research projects. The course will be eclectic in terms of approaches, including tools from operations research, machine learning, statistics, econometrics, and microeconomics. The course will be co-taught via live virtual sessions by Prof. Carri Chan and Prof. Gabriel Weintraub and will be available to Business, Economics, Statistics, and Engineering PhD students from Columbia and Stanford University.

OIT 672. Stochastic Control in Operations and Economics. 3 Units.
The first half of this course will cover (i) the basic theory of Brownian motion, (ii) Ito stochastic calculus, and (iii) the rudiments of continuous-time stochastic control, all undertaken at a brisk pace, aimed at students who already know the basics or else have a strong enough math background to learn them quickly. The text for this part of the course will be Brownian Models of Performance and Control, by J. Michael Harrison, Cambridge University Press, 2013, which can be ordered from Amazon: http://www.amazon.com/Brownian-Performance-Control-Michael-Harrison/dp/1107018390/ref=sr_1_1?ie=UTF8&qid=1395420072&sr=8-1&keywords=Brownian+Models+of+Performance+and+ControlnnnThe second half of the course will explore in depth some models arising in operations research, finance and economic theory, such as the McDonald-Siegel investment model (an optimal stopping problem, treated in Chapter 5 of the textbook), Brownian versions of the classic cash balance problem (a family of stochastic control problems, treated in Chapter 7 of the textbook), and Yuliy Sannikovâs continuous-time principal-agent model (Review of Economic Studies, 2008). The course will be rather informally organized, more of a collaboration between students and instructor than a top-down lecture format, with at least half of the class time devoted to presentation of problems by students and auditors.

OIT 673. Data-driven Decision Making and Applications in Healthcare. 4 Units.
This course aims to introduce students to research topics in data-driven decision making with specific attention to healthcare applications. However, most concepts are applicable in areas beyond healthcare as well. Examples of topics are: prediction and risk adjustment, computational and statistical challenges associated with large-scale data, and dynamic decision making under uncertainty.

OIT 674. Decision-making and Learning under Model Uncertainty: Theory and Applications. 3 Units.
In most real-world problems, decision-makers often face uncertainty with respect to the underlying models that drive the rewards/costs associated with potential strategies. The uncertainty in the problem can be modeled in a number of ways (e.g., a probability distribution over some parameters or an uncertainty set for some variables) and a selection of an appropriate framework depends on various considerations ranging from the availability of historical data (or lack thereof) to the robustness of resulting strategies or the tractability of the formulation. In addition, once a framework is selected, further challenges often arise when considering dynamic settings, in which the level of uncertainty may be updated from one period to another. The high-level objectives of this course are: (1) to introduce various frameworks for decision-making under model uncertainty (2) to introduce tools to solve such problems, including ones to develop optimal or near-optimal learning strategies (3) to discuss the various trade-offs that arise such as tractability vs. performance, exploration vs. exploitation, and remembering vs. forgetting (4) to explore research papers that demonstrate applications of discussed methods and models to various problems areas such as dynamic pricing, revenue management, product recommendations, and assortment selection.

OIT 691. PhD Directed Reading. 1-15 Unit.
This course is offered for students requiring specialized training in an area not covered by existing courses. To register, a student must obtain permission from the faculty member who is willing to supervise the reading.
Same as: ACCT 691, FINANCE 691, GSBGEN 691, HRMGT 691, MGTECON 691, MKTG 691, OB 691, POLECON 691, STRAMGT 691

OIT 692. PhD Dissertation Research. 1-15 Unit.
This course is elected as soon as a student is ready to begin research for the dissertation, usually shortly after admission to candidacy. To register, a student must obtain permission from the faculty member who is willing to supervise the research.
Same as: ACCT 692, FINANCE 692, GSBGEN 692, HRMGT 692, MGTECON 692, MKTG 692, OB 692, POLECON 692, STRAMGT 692

OIT 698. Doctoral Practicum in Teaching. 1 Unit.
Doctoral Practicum in Teaching.

OIT 699. Doctoral Practicum in Research. 1 Unit.
Doctoral Practicum in Research.

OIT 802. TGR Dissertation. 0 Units.
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Same as: ACCT 802, FINANCE 802, GSBGEN 802, HRMGT 802, MGTECON 802, MKTG 802, OB 802, POLECON 802, STRAMGT 802

Organizational Behavior Courses

OB 110N. Savvy: Learning How to Communicate with Purpose. 3 Units.
Our seminar is designed for students interested in improving their communication skills. Right now, you probably don't spend much time thinking about the way you communicate, nor are you likely, in the academic setting, to get much feedback on the messages you send. Yet the quality of your communication will have a large impact on your overall effectiveness in building relationships and getting things done, both in the university setting and later in your career. Each of the sessions in our seminar will help you appreciate the nature and complexity of communication and provide guidelines for both improving your communication style and recognizing the unique styles of others.In each class session, we'll consider a number of well-studied forms of interpersonal communication. And, we'll rely heavily on experiential learning to bring the concepts to life. For example, to better understand the dynamics of unstructured, spontaneous communication, we will participate in an improvisational theatre workshop, taught by one of the artists-in-residence at the Groundlings Theater in Los Angeles. To better understand persuasive communication tactics, we'll participate in role-play exercises, competitive games, and negotiation simulations. For each tactic, we'll talk about why it works, when it works best, and what its limitations might be. We'll discuss how you can put these approaches to work in order to support your goals.After taking this course, you will be better able to: (1) identify strategies for crafting effective communication in the form of everyday conversation, written work, and public presentations, (2) develop techniques for building strong, long-term relationships with your peers, and (3) become more persuasive in advancing an agenda, acquiring resources, or gaining support from others. These skills will be invaluable to you as you grow and develop here at Stanford and beyond.

OB 115N. Games, Decisions and Negotiations. 3 Units.
Human thinking is geared toward understanding and mastering social interactions. OB 115N explores cognitive, affective, behavioral, social and organizational processes that shape how we manage strategic interactions. The course builds on concepts and research findings from decision theory, behavioral game theory, negotiation research, and other relevant streams of investigation in the social sciences. By the end of this course, participants should have a better understanding of the structural and psychological factors that underlie competition and cooperation, bargaining, contracting, social influence, dispute resolution, and other types of social and organizational interactions. In addition to understanding how to analyze human thinking, feeling, and action in interactive contexts, participants will have opportunities to develop their behavioral skills through in-class exercises and simulations. Participants will play assigned roles in simulated interactions that will allow them to try out tactics that might feel uncomfortable trying in actual situations, get constructive feedback from other participants, and learn how they come across. The course readings, which are aimed to complement the in-class exercises, debriefs, and discussions, are aimed to further stimulate participants' interest in human cognition, emotion, and behavior in interactive contexts.To understand how decisions happen, we will use a combination of experiential exercises in class and in-depth discussions of theory and new and exciting research findings on cognitive and emotional aspects of decision making (e.g., what does "bounded-rationality" mean? how does power shape our negotiation behavior? how do our emotions influence our decisions?). We will play interactive games in our meetings to understand how various conditions, such as time pressure, power and uncertainty, influence our decisions. So, if you enjoy in-class exercises, you will enjoy our simulations. At the same time, if you enjoy analyzing human behavior and social interactions, you will like the readings and our discussions. After taking this course, you will be better able to identify and avoid common traps in strategic decision making and have a deeper understanding of other people's thinking and decision making processes.

OB 205. Managing Groups and Teams. 1 Unit.
This virtual course introduces you to the science of teams. Particularly, the learning in the course focuses on structures and processes that affect team performance and highlights some of the common pitfalls associated with working in teams. Topics include team composition, team process and member coordination, team decision making, intra-team conflict and creativity, and influence and team leadership. You will participate in a number of exercises to illustrate principles of teamwork and to give you practice not only diagnosing team problems but also taking action to improve total team performance.

OB 206. Organizational Behavior. 2 Units.
Building on the discipline of social psychology, this course helps you cultivate mindsets and build skills to understand the ways in which organizations and their members affect one another. You will learn frameworks for diagnosing and resolving problems in organizational settings. The course relates theory and research to organizational problems by reviewing basic concepts such as individual motivation and behavior; decision making; interpersonal communication and influence; small group behavior; and dyadic, individual, and inter-group conflict and cooperation.

OB 209. Leadership Laboratory. 2 Units.
In the Leadership Labs class we ask you to consider the question, "Why would someone follow YOU?" This is a course in which you consider what kind of leader you want to be, what kind of leader you are, and how to align your leadership behavior with your leadership goals. In this class you will have an opportunity to share in the leadership of your squad and, in doing so, to discover your strengths and challenges as a leader. You will receive feedback about your approach to leadership and have the opportunity to try out new skills and tools. Students will be placed into 5-6 person "squads" with the majority of class time spent in these squads. Your squad will complete a project and work on basic leadership challenges (e.g. individual and group dynamics and differences, assessing a team's progress). Working on the project and on weekly Labs assignments will provide you the opportunity to solicit a great deal of feedback so you can achieve a deeper understanding of the impact of your behavior on others. The squads will deliver a project, engage in role-play cases and group exercises designed to help you think more deeply about the dynamics in your workgroup and to allow you to practice and experiment with new ways of leading. In each Lab session, one or two squad members will be the Meeting Lead for the session. MBA1 squad members will rotate through the Meeting Lead position. Your squad will have a dedicated MBA2 Leadership Fellow who will also be present for these meetings in order to provide coaching to the meeting lead and to the squad as whole. A number of activities in the weekly Lab will focus on assessing and reflecting on how you and your squad are working together in the Labs. Finally, the quarter culminates with the Executive Challenge, an opportunity for you to further refine your leadership skills by engaging with alumni judges in role plays that test your ability to lead effectively. The alumni will provide you feedback and evaluate your performance.

OB 219. MSx: Organizational Design. 2 Units.
This course examines fundamental issues of general management and leadership within an organization. You will learn about setting an organization's strategic direction, aligning structure to implement strategy, and leading individuals within the firm. You will study the interplay among formal structure, routines, informal networks, and culture in shaping organizational performance and how to make changes to these facets to adapt and change to the environment in order to build more innovative companies.

OB 278. MSx: Organizational Behavior. 2 Units.
Building on the discipline of social psychology, this course helps you cultivate mindsets and build skills to understand the ways in which organizations and their members affect one another. You will learn frameworks for diagnosing and resolving problems in organizational settings. The course relates theory and research to organizational problems by reviewing basic concepts such as individual motivation and behavior; decision making; interpersonal communication and influence; small group behavior; and dyadic, individual, and inter-group conflict and cooperation.

OB 289. MSx: Negotiations. 2 Units.
Effective managers and leaders should be familiar with the strategy and psychology of conflict and negotiate effectively with other persons, departments, organizations, and stakeholders. Hence, a first aim of the course is to develop your ability to analyze conflicts. Concepts from the course will enable us to look beneath the surface rhetoric of a conflict, to isolate the important underlying interests at stake, and to determine what sort of negotiated settlement (if any) is feasible in a given conflict. In addition to understanding how to analyze a conflict, to manage conflict effectively, you must have a broad repertoire of behavioral skills that can be applied to the various conflict situations you are likely to encounter. Therefore, a second aim of the course is to allow you to experience various bargaining situations by playing a role in simulated conflict. Our exercises will allow you to try out tactics that might feel uncomfortable trying in an actual conflict, get constructive feedback from your counterparts and classmates, and learn how you come across. This course is an intense, compact version longer negotiation courses (electives OB381 and OB581); thus, students should not take either of these courses as there is considerable overlap among the three. Attendance and participation in the negotiation exercises are mandatory.

OB 317. Leading Creativity and Innovation. 3 Units.
This course helps students become more effective leaders of creativity and innovation in organizations. Successful innovations begin as creative ideas, but creative ideas can be difficult to generate and accurately evaluate. Based on the latest research, this course teaches students a set of data-driven tools for generating creative ideas, forecasting which ideas are most likely to succeed, and implementing new ideas successfully. Through experiential exercises, students learn about their own personal strengths in developing and evaluating new ideas, and how to leverage the strengths of individuals, teams, and crowds to foster creativity and innovation in their organizations.

OB 324. The Psychology of Startup Teams. 3 Units.
9 out of 10 start-up teams fail. The majority of these failures lie not in the product or in the market, but rather in the people dynamics within the start-up team. This course focuses on how start-ups can manage these problems and challenges that arise in the people-side of start-up life. We explore the psychological dynamics specific to startup teams and identify ways to effectively lead startup teams to their optimal performance. We will discuss topics such as creating the 'dream team', leadership in start-ups, the art of vision in startups, managing a startup's culture and climate, navigating virtual interactions, and solving common interpersonal problems in startup teams. To address these topics, the course will use a mix of experiential exercises, cases, and exciting guest speakers (including well-known CEOs and venture capitalists).

OB 330. Leadership Fellows I. 4 Units.
The Arbuckle Leadership Fellows Program plays an integral role in the GSB leadership curriculum by bringing together a group of talented second years to support the leadership development of the first-year class. OB330, an 8 unit two-quarter MBA2 elective course (in combination with OB331), is the academic component of this program and runs the entirety of both Autumn and Winter Quarters. Both quarters must be completed to receive any units of credit. The course is open only to those students who have applied and been accepted into the Leadership Fellows Program. Interested students apply at the start of Winter Quarter of their first year and undergo a competitive application process, after which successful applicants are invited to take part in the program. Informational meetings are held late in Autumn Quarter and during the first week of Winter Quarter and Fellows are selected from the first year class in mid- Winter Quarter. Knowing how to develop others is a crucial leadership competency. In this class, Fellows develop the advanced leadership skills of leading leaders and developing others through coaching and mentoring. Among the competencies developed in this class are: 1) Team Coaching Skills (e.g. facilitating a group, diagnosing group dynamics, debriefing, coaching without undermining the leader), 2) Individual Coaching Skills (e.g. effective inquiry, asking powerful questions, balancing support and challenge, providing effective feedback, holding others accountable, utilizing, valuing and connecting across differences and power differentials, using oneself in service of another's development) and 3) Personal Development Skills (e.g. self-reflection and self-awareness, leveraging strengths, stretching outside one's comfort zone.) In the Autumn Quarter Fellows are assigned to a squad of six MBA1s in Leadership Labs. Fellows guide their MBA1 squad through the learning process in the Labs and provide both individual and team coaching to their MBA1 squad members. In addition to the work with their MBA 1 squad, Fellows provide in-depth 1:1 coaching to three additional MBA1 students who are not members of their squad. This 1:1 coaching begins after Autumn midterms and continues through the end of Winter Quarter. Fellows classes meet twice a week for 105 minutes. There will be a reading list of conceptual material which will be supplemented during class with lectures discussions and activities. Students will apply concepts through role-playing and experiential exercises during class time as well as in their coaching and mentoring of their MBA1 coachees. Additionally, Fellows will attend weekly Leadership Labs with the first year squad to which they have been assigned and meet 1:1 with MBA1 coachees. Fellows meet regularly with five of their peers in "clinics," standing groups led by Leadership Labs Instructors who are also GSB Leadership Coaches. Fellows meet with their Leadership Coach and clinic approximately every other week during regular class time to discuss specific strategies for working with their first year students. Fellows also periodically meet with their Leadership Coach one-on-one to hone their skills and explore their areas for specific improvement. Note: OB374, Interpersonal Dynamics, is a PRE-REQUISITE for this course; students who want to be Fellows are advised to assess whether that is a class they want to take in the spring quarter of their first year. Additionally, signing up for 1:1 coaching by a Fellow as an admit strengthens a MBA1 student's application to the Arbuckle Leadership Fellows program.

OB 331. Leadership Fellows II. 4 Units.
This course is the continuation of Leadership Fellows I, an 8-unit course that begins in Autumn Quarter. During this quarter Fellows will continue to deepen their coaching and mentoring skills, and will focus exclusively on in-depth 1:1 coaching with three MBA1 coachees (who were not members of their MBA1 squad.) Classes and clinics continue as in Autumn Quarter.

OB 333. Acting with Power. 3 Units.
The ability to function effectively within a hierarchy is a crucial determinant of managerial success, yet many people struggle with "authority issues" that make certain hierarchical roles and positions difficult for them. This course draws on the craft of acting and the science of psychology to help students learn to use themselves to develop the characters that can play these roles effectively. This class is designed specifically for students who have trouble "playing" authoritative roles: those who find it difficult to act with power, status, and authority. It will also be useful for students who find it difficult to share power and authority, which involves accepting and deferring to the power and authority of others. Participants will be asked to read, think deeply about, and share some of their own feelings about power and authority, and the origins of those feelings. They will also be asked to prepare for and present a series of in-class performances that involve playing characters with and without power, in scenes that highlight the interactions and relationships between high and low power characters. These performances will take up much of our time during class. Out-of-class assignments will include reading important works on psychology, and on the theory and practice of acting, as well as writing short essays analyzing their own and others' performances.

OB 336. Insight to Outcome. 3 Units.
Getting from "strategic insight" to "desired outcome" (achieving the right result) continues to be a core challenge for many organizations and leaders. In this course, we develop a framework and approach for the "insight to outcome" sequence, study some of the key levers available to managers, and learn from some common pitfalls. The bulk of the course will be devoted to the practical application of the approach to a number of important business processes, such as merger integration, corporate and business unit transformation, and strategy development. Some class sessions will involve class visits by topical experts in these applications. nnThe course is designed for second-year MBAs. It will appeal to students interested in an exploratory course - more of a "how to think about it" course than a "toolkit" course. Grades will be based on class participation and a group project.

OB 345. Leadership Coaching. 3 Units.
The ability to coach others is an often over-looked core competency for leaders. This course will give students an opportunity to learn the fundamental skills of coaching, so they can become coaching leaders. This course is designed to be very experiential. While conceptual frameworks will be introduced through readings, lectures, demonstrations and discussions, the only real way to learn coaching skills is to both practice coaching, and to be coached. Every class session will provide opportunities to do both: coach and be coached. Because the in-class coaching practice will not be role plays but will actually be real coaching sessions between students, this course will demand a high level of engagement and participation from each student.

OB 346. Inside Life and Leadership. 3 Units.
We created this class around the premises that 1) you have great potential, 2) you have had, and will continue to have, numerous opportunities to affect the world, and 3) to maximize your potential you need a reliable framework to gain self-insight and develop yourself and those around you.nnIn this class we seek to aid you in customizing a framework for yourself, based on a model to increase your self-knowledge and guide your ongoing development. In particular, this class is designed to help you swiftly identify and resolve gaps between your current and desired state, and to help you inspire others to do the same. We will accomplish this by facilitating your active engagement and full participation in interactive exercises and assignments, case studies, and self-reflection.

OB 348. Leading and Managing Health Care Organizations: Innovation and Collaboration in High Stakes Settings. 3 Units.
Leading and managing in complex, high stakes settings, like health care, where lives and livelihoods are on the line, presents distinctive challenges and constraints. This course challenges you to apply seminal and contemporary theories in organizational behavior to evaluate managerial decisions and develop evidence-based strategies for leading and managing health care teams and organizations. Topics include leading systems that promote learning; implementing change; and interdisciplinary problem-solving, decision-making, and collaboration. Group work and exercises will simulate high pressure and risk-taking under uncertainty. While the focus of this course will be on health care situations, lessons are relevant to other settings including consulting, banking, and high tech, and prior experience in the health sector is not required.

OB 353. Cultural Imperative: The Ideal of Organizational Design. 3 Units.
Business doesn't just happen, significant amounts of time are spent creating business plans, executing them, and ultimately trying to figure out what went wrong in order to correct them. This class argues, that similarly, organizational culture shouldn't be allowed to just happen; organizational culture should be designed. In this class we suggest that there is an ideal, a cultural imperative, which organizations should strive for. nnWe believe that individuals have near infinite problem-solving ability, and, that all else equal, organizations that tap into this potential will outperform those that only see people in terms of labor hours and dollars. Thus, the class focuses on learning to see the role of organizational culture in creating an environment that engages, stimulates, and drives growth of the people in the organization, and aligns this engagement with the organization's mission.n nWe will accomplish this through class discussion, case analyses, and a group project designed to provide hands-on experience.

OB 363. Leadership Perspectives. 4 Units.
What does it mean to be a principled leader? What role do values play in an organization, and how do successful leaders apply their values in their daily business lives? This course examines the concept of principled leadership and the various ways that leaders try to institutionalize particular values within the organizations they lead. Equally important, it explores the difficult challenges that leaders sometimes face when trying to apply their principles in a tough, fast-paced business environment, where others may not share the same expectations. Through assigned readings, interactive lectures with visiting executives, and weekly small group discussions, students will learn how practicing leaders implement their principles, while reflecting the realities of different cultural expectations and meeting business demands. The course will provide a forum for students to learn directly from practicing leaders and to think introspectively about their own personal values, leadership styles, and long-term aspirations.

OB 368. How to Make Ideas Stick. 4 Units.
Having a good idea is not enough, we must also be able to convey our ideas in a way that people can understand and act on them. But often our messages don't persuade or persist. This course assumes that we can craft more effective messages by understanding the principles that make certain ideas stick in the natural social environment: Urban legends survive in the social marketplace without advertising dollars to support them or PR professionals to spin them. How could we make true or useful information survive as well as bogus rumors? We will use research in sociology, folklore, and psychology to analyze what kinds of ideas survive the selection process in the marketplace of ideas and to develop a set of strategic tools to craft ideas that are more likely to survive. Topics covered include crafting messages for complex information that don't exceed the capacity of human attention and memory, using emotional appeals that inspire people and motivate action, acquiring attention in a crowded environment, and gaining legitimacy for new ideas, approaches, and technologies.

OB 372. High-Performance Leadership. 4 Units.
This course asks the question: "What does it take to build high-performance?" The focus is on middle and upper-middle management in contemporary organizations that have complex tasks, exist in a rapidly changing environment, and have highly skilled subordinates. The premise of the course is that traditional methods of management may produce adequate levels of performance but prevent excellence from developing. New approaches to leadership will be presented that are more likely to lead to a truly high-performing system. Time will be spent discussing the components of effective leadership, what a manager can do to build a compelling vision, strong teams, and mutual influence sideways and upwards as well as with direct reports. Also, what members can do to support the leader who wants to initiate such changes. In addition to class, students will meet for 2 1/2 hours each week in a Skill Development Group to apply the course material to their own personal development. (While there is minimal overlap in content between OB 372 and OB 374 and these two classes are highly complementary, both require Journals and an evening group. We recommend against taking both classes in the same quarter for workload reasons.) Students will have a choice as to when their SDG will meet. The expectation is full attendance at all SDG meetings. Only one excused class absence. Attendance is required in EIS Simulation and the Consulting Project classes.

OB 374. Interpersonal Dynamics. 5 Units.
PRE-QUALIFICATION REQUIRED (see link at bottom of course description). NOTE FOR AY 2020-21: Given current expectations about the need for social distancing, our current plans for Autumn quarter (and potentially Winter and Spring quarters as well) include the following modifications to the course: Lectures will take place virtually on Zoom. T-group meetings during daytime class time will also be virtual. Evening T-group meetings will be in person (with social distancing and masks). Groups will be 7-8 students instead of the usual 12 in order to allow for productive discussions in the context of social distancing. Students who cannot attend evening t-group in person may participate virtually. Beyond these modifications the course remains focused on increasing one's competencies in building more effective relationships. Learning is primarily through interactions with other group members and reflection on those interactions. This course is very involving, and, at times, can be quite emotional. However, this course is not a substitute for therapy. If you are in therapy, please talk this over with your therapist and get their advice before enrolling in this course. Students are divided into t-groups of 7 or 8 students. T-groups meet during part of class-time as well as in the evening. The class has a weekend retreat toward the end of the quarter which will take place on campus. It is very important to note that when you decide to take this course, you make an explicit contract to be actively involved. ATTENDANCE: Because of the highly interactive nature of this course, it is very important that all students attend all sessions. Missing class, class T-group, evening T-group, or any portion of the weekend for an unexcused absence will negatively influence your grade and may result in your grade being dropped one grade level (for each absence). Attendance at the first class is required for all sections and failure to attend the first class will result in an automatic drop. WAITLIST: Waitlisted students must attend the first class to maintain their place on the waitlist and should check with individual instructors on whether attendance at another section can meet this requirement. It is the student's responsibility to notify respective OB 374 faculty of your attendance and wish to fulfill your waitlist requirement. SECTION SPECIFIC INFORMATION: See section schedules for details on class days, T-group evening, and weekend retreat dates; it is your responsibility to make sure you can fulfill all attendance requirements before enrolling. PRE-QUALIFICATION: Students must pre-qualify before taking the class through an assignment on Canvas (due approximately five weeks prior to the quarter). Go to https://canvas.stanford.edu/enroll/H8WJ8X, then select "Enroll in Course".

OB 377. The Paths to Power. 3 Units.
Power and influence processes are ubiquitous and important in organizations, so leaders need to be able both to understand power and to act on that knowledge. This course has three objectives: 1) increasing students' ability to diagnose and analyze power and politics in organizational situations; 2) increase students' skills in exercising power effectively; and 3) helping students come to terms with the inherent dilemmas and choices, and their own ambivalence, involved in developing and exercising influence. Topics covered include: the sources of power, including individual attributes and structural position; dealing with resistance and conflict; obtaining allies and supporters; maintaining power; how and why power is lost; living in the limelight--the price of having power; preparing oneself to obtain power; and the use of language and body language in exercising power.The class involves a reasonably large number of written, self-reflective assignments as well as two individual projects (doing a power diagnosis on an external organization that is important to the person) and a doing-power project (using the class material during the quarter to gain power in some group or organization). The class emphasis is on both learning the conceptual material and also incorporating it into one's own strategies and behaviors.

OB 381. Conflict Management and Negotiation. 3 Units.
Conflict is unavoidable in every organization. The key question is how it will be handled: will it escalate to dysfunctional levels or will it be effectively managed? Hence, a first aim of the course is to develop your ability to analyze conflicts, to look beneath the surface rhetoric of a conflict, to isolate the important underlying interests, and to determine what sort of agreement (if any) is feasible. We'll analyze which negotiation strategies are effective in different conflicts. We'll also examine psychological and structural factors that create conflict and often pose a barrier to its resolution. But understanding how to analyze a conflict is not enough. To manage conflict effectively, you need a broad repertoire of behavioral skills. Developing these is the second aim of the course. To achieve this, negotiation exercises are used in every session. When playing a role in a simulated conflict, you will be free to try out tactics that might feel uncomfortable in a real one. You will get feedback from your classmates about how you come across. In sum, you can use this course to expand your repertoire of skills, to hone your skills, and to become more adept in choosing when to apply each skill.

OB 383. Lives of Consequence: How Individuals Create Happy, Meaningful and Successful Lives. 3 Units.
This Bass Seminar and Experiential Workshop will examine what it means to live a life of consequence. Using theories and evidence from the latest and best research on happiness, meaning and success, we will collectively develop a conceptual framework for thinking about how you personally can design a happier and more meaningful life for yourself. In addition to building a solid conceptual foundation on which to think about your life, you will have substantial opportunities to work individually and in small groups on a variety of reflective and experiential exercises designed to stimulate your imagination regarding how to create greater happiness and meaning in your own life. These engaging and enjoyable exercises include personal writing and public speaking exercises, as well as out-of-class experiential exercises. The seminar will be very discussion oriented and student participation quite lively. The goal of this seminar and workshop is to change how you think about yourself and your life! THIS WORKSHOP IS AVAILABLE ONLY TO FIRST- AND SECOND- YEAR MBA STUDENTS at the GSB. NO EXCEPTIONS WILL BE PERMITTED AND AUDITING IS NOT PERMITTED.

OB 387. Redesigning Work for 21st Century Men and Women. 4 Units.
Research on the Millennial Generation (i.e., those born between 1980-2000) shows that millennials, as compared to earlier generations, have quite different values and priorities when it comes to work. For instance, millennials report that they place a high value on autonomy and creativity at work, and prefer to self-manage their personal productivity. They also report that they value being a good parent and having a good marriage over having a high-paying career. Despite this research, our organizations have been slow to respond to a new generation of workers. This has led to high levels of disengagement, and lower levels of productivity in many organizations. This class will explore the gap between how our organizations are designed, and what a new generation of workers desire in terms of work. Students will work in teams to design a new workplace that is reflective of what workers want in terms of their work. The first part of the course will focus on what the issues and problems are in how organizations are designed for an earlier generation of workers, while the second part of the course will be set aside for team-based project work and presentations.

OB 388. Leadership in the Entertainment Industry. 3 Units.
The entertainment industry is one of the largest and most important industries in the world - both from a business and cultural standpoint. It is characterized by tremendous opportunities and great uncertainties. The industry is undergoing great change as new technologies and expanding markets transform the way entertainment is produced and disseminated throughout the world. For these reasons, this dynamic industry creates opportunities for entrepreneurial students interested in leaving an artistic or creative imprint on the world. This course is designed to help prepare students for careers in the media industries, and to explore leadership within them. The industry is truly an intersection of art and commerce, and the major portion of the course will involve bringing to the class leaders who represent key areas of the entertainment industry, on both the business and creative sides. As with any business, the entertainment industry is driven by the vision of its leaders. These leaders make financial and artistic decisions daily, and manage staff and productions with the goal of producing entertainment product meant to be seen as widely as possible, and meant to make a profit. It is hoped that through interaction with these speakers, students will see the potential of strong leadership and how it works to advance entertainment companies and the films and TV programming they produce. Topics to be examined include project development, production, and marketing; emerging technologies and their impact on the industry; the roles of studio, network and gaming executives, directors, film and television producers, writers, actors, agents, and others play in the making and distribution of film and television productions; and the intersection of Silicon Valley and Hollywood. The theory behind this course is that by listening to, and questioning the class speakers, coupled with class research papers, students will emerge with a deeper understanding of the entertainment industry. The class is also intended to give students a view of first-rate leadership in general, and to present what it takes to be a successful, inspiring, and forward-thinking leader in entertainment.

OB 393. Leadership in Diverse Organizations. 4 Units.
How improve capacity to exercise leadership and work effectively with others within the context of culturally diverse groups and organizations. Premise is that diversity presents challenges and opportunities that pushestudents to develop leadership skills relevant across a variety of situations. What social and psychological obstacles limit people's ability to work effectively across identity-based differences? What can people do to build the relational and organizational capacity to enable these differences to be a resource for learning and effectiveness within teams and organizations? Focus is on dynamics of race and gender; attention to other dimensions of identity and difference in organizations, including sexual orientation, nationality, class, and religion.

OB 512. Creating, Building, and Sustaining Breakthrough Ventures. 2 Units.
This course is designed to provide students with a summary of entrepreneurial processes that have successfully created, developed, and sustained breakthrough ventures. By "breakthrough" we mean ventures that have a lasting and positive impact, touching millions of lives. Examples are based on the experiences of Norman Winarsky, formerly President of SRI Ventures, Charles O¿Reilly, and invited speakers who are leading investors and entrepreneurs. They include companies like Siri, Nuance, Intuitive Surgical, Sandisk, Facebook, and others. Think of this course as a ¿master class¿. You will work with the professors and invited speakers to create and build your venture concept. We focus on all elements of building a breakthrough company, starting with the source of breakthrough venture ideas, advancing to building a great value proposition and business plan, recruiting a team, finding investors and board members, scaling the company, deciding whether to sell or go IPO, and ending with what it takes to build a company that can sustain itself through continuous innovation. At each step, we follow examples of companies we've helped build, and provide lessons of success as well as failure. The course will be highly interactive, and engage students in elements of building their own venture concepts.

OB 513. Beyond Disruption: Entrepreneurial Leadership Within Existing Organizations. 2 Units.
Why do large, successful companies often have such difficulty in disrupting themselves (e.g., Kodak, Blockbuster, Borders)? How do you maintain an entrepreneurial edge within an existing enterprise? How do you sustain core businesses while simultaneously adapting to disruptive threats? In this course, students will build the skills to spot threats and opportunities earlier and capture them faster. The course will take a look at some of the most successful "creators within corporations" and discern why some strategies succeed when others do not. We will explore the framework that some companies have developed to simultaneously compete in their core business while exploring new ones. To do this we will interact with guests from firms like Walmart, Amazon, General Motors, Flex and IBM as well as venture capitalists and entrepreneurs. Our objective is to help students understand in some detail what it takes to help organizations stay ahead of disruptive threats and to avoid problems that often lead companies into decline.

OB 518. Leading Through Culture. 2 Units.
This course examines organization culture, how and why managers can use culture to maximize results within an organization, and how culture can undermine results. The course begins by situating cultural leadership and management within a culture-shaping framework and the opportunities, obligations and methods for leaders to impact culture. It also focuses on what is different in cultural management and why so many contemporary firms attempt to use it. We analyze the relationship between culture and strategy, seeking alignment between the two. The course also explores different kinds of cultures seen in high performing and low performing organizations, and seeks to understand how cultural content affects behavior and business results. Students will be asked to describe and define the culture of an organization needed for a given business and strategy, and to define the role of executives in shaping culture. The class identifies and analyzes the tools or levers that leaders can use to build an effective culture. We will spend a session on each of the following: culture and strategy alignment, architecture for shaping culture, selecting people for cultural alignment, aligning organizational practices, culture and society, cultural inflection points from start-up to scale, cultural aspects of high performance and cultural diagnostics. The course will end with a session on culture issues in merger and acquisition.

OB 522. Managing Social Networks in Organizations. 2 Units.
This course is designed to improve your effectiveness a manager by introducing you to both the concepts and tools that are part of the "new science of social networks" as they apply to organizations. In this course, you will develop the skills to understand social networks and recognize social capital, both offline and online, as well as be able to identify key elements of your own and others? social networks that enhance competitive capabilities. Topics to be covered include how social networks affect power and influence, leadership, innovation and the generation of novel ideas, careers, organizational change and competitive advantage. Additional topics to be covered include the increasing importance of online social networks in organizational life and the importance of social cognition and how it can be used to enhance social capital. At the conclusion of this course you will have the skills to map out social networks, diagnose features of the networks that either help or hinder the performance of individuals, groups and companies, and be able to manage important features of social networks in organizations.

OB 527. The Art of Self-Coaching. 2 Units.
In 2009 a student who was about to graduate said to me, "Being coached at the GSB helped me grow over the last two years, but after I leave school and no longer have access to these resources, how will I continue to coach myself?"This course is an attempt to help you answer that question. I define self-coaching as the process of guiding our own growth and development, particularly through periods of transition, in both the professional and personal realms. In this course you'll explore a range of practices and disciplines intended to help you build on what you've learned about yourself at the GSB and continue that process after graduation. Classes will consist of a mix of short lectures, exercises, small group discussions, and conversations in pairs.While this is a self-directed process, it's also highly social and interactive. You'll work with in pairs and small groups in every class session, so be prepared to discuss meaningful personal issues with your fellow students.Because every class session involves extensive interaction with other students, missing a class would negatively affect other students¿ learning. As a result, your are obligated to attend every class session. One unexcused absence will lower your grade a full level, and more than one unexcused absence will result in a U. For students taking the class Pass/Fail, an unexcused absence may result in a failing grade.

OB 536. Insight to Outcome. 2 Units.
Getting from "strategic insight" to "desired outcome" (achieving the right result) continues to be a core challenge for many organizations and leaders. In this course, we develop a framework and approach for the "insight to outcome" sequence, study some of the key levers available to managers, and learn from some common pitfalls. The bulk of the course will be devoted to the practical application of the approach to a number of important business processes, such as merger integration, corporate and business unit transformation, and strategy development. Some class sessions will involve class visits by topical experts in these applications. This course will appeal to students interested in an exploratory course - more of a "how to think about it" course than a "toolkit" course. Grades will be based on class participation and a group project. Class size is limited to 40.

OB 547. Hacking Entrepreneurship. 2 Units.
How do some people turn ideas into enterprises that endure? Why do some people succeed why so many others fail? Based on more than 200 interviews with leading entrepreneurs conducted over the past five years by Amy Wilkinson, this course will focus on the six skills of successful entrepreneurs. The class will include brief lectures, experiential cases, personalized skills assessment through a diagnostic tool, and class discussions with a set of the successful entrepreneurs featured in a recent book authored by the instructor, "The Creator's Code." The class is designed to help students integrate these skills into their own future ventures.

OB 555. Mastering Life's Moments: The Challenge of Optimizing your Experience. 2 Units.
Our personal and professional lives are made up of a series of moments. Some of these moments present great opportunity, with the prospect of personal change and even transformative growth. Other moments contain the seeds of setback and even derailment of our most coveted plans. Some of life's moments are planned, while others catch us completely by surprise. Whatever moments we are afforded, we must make the most of them. This new seminar will explore what we know about the psychology of "optimal experience." We will examine how and why some individuals harvest so much joy, zest and sense of attainment from their moments, while others squander their moments or dig themselves into deeper holes when trying to respond to them. We will also examine how and why some people respond brilliantly to adversity, mastering even the most tragic moments that life presents, while others flounder and fold. To inform our thinking on this vital topic, the seminar will include a series of rich and provocative readings from psychology, behavioral economics, organizational theory and philosophy. Additionally, the seminar will include a series of compelling video cases illustrating both optimal and suboptimal responses to experience. To make the seminar more personally involving and useful to you, you will also engage in a series of reflective writing and experiential exercises. Whenever I offer a new course, I make a promise to the students who take it. For this course I promise you an intellectually deep and personally meaningful exploration of what it means to "use up" your life well. Put another way, I promise you some great educational moments in your GSB life! THIS COURSE IS OPEN TO GSB MBA STUDENTS ONLY. NO EXCEPTIONS CAN BE MADE TO THIS POLICY.

OB 568. How to Make Ideas Stick. 2 Units.
This class will explore the properties shared by ideas that stick with people and change the way they think and act. The course is based on the framework in the book Made to Stick and focuses on hands-on exercises that will teach you how to transform your messages to make them stick: How do you get attention for your idea in a crowded marketplace of ideas? How can you convey complex information quickly? How do you make a broad, abstract idea concrete and tangible enough for people to understand? How do you provide credibility for your idea without resorting to dry statistics? Although the exercises in this course are fun and generally short, students in the past have said that they do require a lot of thinking time outside of class in order to apply the course principles to a specific message. This is particularly true of the final project which involves improving the message of a specific live client (e.g., a friend with a start-up business, the recruiting materials of a former employer). This course will be especially useful for entrepreneurs who must pitch their ideas to customers, investors, and potential employees and for students in the nonprofit sector where resources for spreading ideas are often thin.

OB 581. Negotiations. 2 Units.
This course is designed to improve students' skills in all phases of a negotiation: understanding prescriptive and descriptive negotiation theory as it applies to dyadic and multiparty negotiations, to buyer-seller transactions and the resolution of disputes, to the development of negotiation strategy and to the management of integrative and distributive aspects of the negotiation process. The course is based on a series of simulated negotiations in a variety of contexts including one-on-one, multi-party, and team negotiations. When playing a role in a simulated conflict, you will be free to try out tactics that might feel uncomfortable in a real one. You will get feedback from your classmates about how you come across. You will have an opportunity to reflect on your experience in your negotiation paper. In sum, you can use this course to expand your repertoire of conflict management and negotiation skills, to hone your skills, and to become more adept in choosing when to apply each skill. This course represents a shorter, more intense version of OB 381-Conflict Management and Negotiations. Students should not take both courses, as there is considerable overlap in course content. Attendance and participation in the negotiation exercises is mandatory.

OB 601. Organizational Ecology. 3 Units.
This seminar examines theoretical and methodological issues in the study of the ecology of organizations. Particular attention is given to the dynamics that characterize the interface between organizational populations and their audiences.
Same as: SOC 366A

OB 602. Diversity, Equity, and Inclusion in Academe: Confronting Bias. 2 Units.
This seminar will explore the ways in which conscious and unconscious bias impacts the careers of underrepresented minority, LGBTQ, and women academics. We will study topics such as unconscious bias, stereotype threat, ambient belonging, microaggressions, and everyday racism with a lens toward understanding how these impact academics. We will also consider ways to confront bias so that we can design a more equitable and diverse academe for the future.

OB 612. Careers and Organizations. 3 Units.
The careers of individuals are shaped by their movement within and between organizations, whether those be established employers or entrepreneurial ventures. Conversely, organizations of all sizes are shaped by the flows of individuals through them as individuals construct careers by pursuing different opportunities. This course will examine sociological and economic theory and research on this mutually constitutive relationship. Possible topics include inequality and attainment processes, internal labor markets, mobility dynamics, individual and organizational learning, ecological influences, gender and racial segregation, discrimination, and entrepreneurship as a career process.

OB 622. Topics in Social Network Analysis: Structure and Dynamics. 3 Units.
This course provides coverage of both introductory and intermediate topics in social network analysis with a primary focus on recent developments in theory, methods and substantive applications. We will begin the course with a brief overview of introductory themes and concepts from various disciplines that have contributed to social network theory, including sociology, anthropology, social psychology, and organizations. Introductory topics to be included: centrality, cliques, structural and regular equivalence and cognitive social structures. The primary topics to be covered in this course include the application of network theory to the study of careers, competition, innovation, inequality/stratification, and recent research on IT mediated networks, as well as an examination of network formation and dynamics. The course will also provide hands-on experience applying social network methods in empirical research. Students will have an opportunity to learn some modern network analysis methods and apply them to network data using the R programming language. No prior experience with social network analysis or software is required.

OB 625. Economic Development and Economic Sociology. 4 Units.
As a field, economic sociology has had little to say about economic development. Much of this quietude stems from the latter's identification with "backward," "poor" or "developing" economies, and the former's interest in many of the advanced features of the richer economies. This state of affairs not only sets up a false dichotomy but also makes it difficult by construction to theorize or research the issue of economic decline, seemingly a necessary piece of any coherent theory of development.nnnThe (admittedly ambitious) goal of this seminar is to move toward a better theory of economic development. We will review several of the more common strands of thought on development in related literatures and then consider some alternative perspectives that might bridge this research and contemporary sociology. No guarantees are made that we will have a full-fledged theory by the end of the quarter, but with luck we will have breathed some new life into an often marginalized but critically important strain of social thought and research.nnnThe class will be a seminar based around the readings. Grading will be a combination of class participation, a take-home midterm and a final paper.

OB 626. Strategy and Organizations. 3 Units.
Why are some organizations more competitive than others? This is the defining questions of the interdisciplinary research field known as "strategic management." In this PhD seminar, we will survey the field of strategic management as seen from the perspective of "macro" organizational behavior. The course takes a broad view of the field of strategic management, reflecting the diversity of perspectives that is seen in this field worldwide. Across this diversity, however, it is possible to identify four distinct theoretical approaches by noting the mechanisms that researchers think are generating outcomes. The course is structured around these four theoretical approaches, and one of the main objectives of the course is to help you identify, critique, and improve these theoretical approaches. Most work in strategic management pays less attention to particular theoretical perspectives, and is organized more by the topic - the phenomenon being studied - such as market exit, growth, performance, mergers and acquisitions, innovation, and the like. I have catalogued the research in strategic management both according to theoretical perspective and topic, and the skeleton of that structure can be seen in this syllabus. I encourage you to use a similar structure as you try to make sense out of the strategy field.

OB 630. Social Norms. 3 Units.
This course covers research and theory on the origins and function of social norms. Topics include the estimation of public opinion, the function of norms as ideals and standards of judgment, and the impact of norms on collective and individual behavior. In addition to acquainting students with the various forms and functions of social norms the course will provide students with experience in identifying and formulating tractable research questions.

OB 632. Social Movements. 3 Units.
Social movement activists frequently target organizations (e.g., corporations, universities) in order to bring about political and social change. Because most organizations are not democracies, movements must find ways to penetrate their closed boundaries if they are to have an influence inside organizations. At the same time, social movements create organizational structures that help them carry out their goals, reproduce their missions and tactics, and effectively generate collective action. The purpose of this course is to examine the complex relationship between social movements and organizations. In order to understand the empirical link between movements and organizations, we will rely on social movement and organizational theory. Like the phenomena they seek to explain, these theories are strongly intertwined. In this course, we will cover topics related to how movements use organizations to propel change, and topics related to how movements help generate social change by targeting organizations. We will also evaluate the theoretical developments at the nexus of these two literatures, identifying the major innovations as well as looking for new research opportunities.

OB 636. Economic Sociology of Markets and Organizations. 3 Units.
This PhD course provides an overview of economic sociology as it pertains to the behavior of individuals as atomistic agents and collective actors, in the context of markets and organizations. Students will study foundational texts as well as recent research in order to gain an understanding of how to further advance the field. Topics include networks, categories, labor markets, product markets, inequality, and others. Throughout the course students will be expected to generate "mental maps" to demonstrate they have gained a comprehensive understanding of the field, weekly memos, and to complete a final project.

OB 637. Modeling Culture. 3 Units.
What is culture, and how can we model it? This course will survey theoretical frameworks for studying culture from a multidisciplinary perspective, ranging from evolutionary biology through sociology to economics. We will explore various methods for measuring culture and modeling cultural processes, including ethnography and survey data. Our focus, however, will be on measurement and modeling strategies that are made possible by the internet revolution and big data, including agent-based modeling, natural language processing and machine learning. Our class discussions will transition between theoretical abstraction and hands-on data analysis.

OB 652. Statistical Methods for Behavioral and Social Sciences. 3 Units.
For students who seek experience and advanced training in empirical research methods. Analysis of experimental data with methods ranging from simple chi-square to multiple regression models, including an introduction to mixed models. Uses the free statistical computing package R. Prerequisite: An intro stats class (Same as PSYCH 252 -- Co-taught with Ewart Thomas).

OB 654. Organizational Behavior Pro Seminar. 1 Unit.
This pro-seminar is primarily for OB-macro PhD students who are developing dissertation ideas. The focus is on the theoretical argument underpinning the dissertation research. Students will regularly present and comment upon one another's ideas. Students can and are encouraged to take the pro-seminar multiple times.

OB 660. Topics in Organizational Behavior: Individual Processes. 3 Units.
This course will focus on psychological processes that occur within individuals that cannot be seen but whose existence can be inferred on the basis of people's behavior. Such processes, referred to as individual processes, include personality, emotions, perception, and learning. This course aims to introduce Ph.D. students to both theoretical and applied background on individual processes, with a special emphasis on person vs situation and nature vs nurture debates, evolutionary perspective, and free will. Additionally, we will discuss psychological assessment and its principles, and review both traditional (e.g., tests and questionnaires) and modern (e.g., digital behavioral footprints) approaches to collecting data and measuring psychological constructs. .

OB 661. Topics in Organizational Behavior: Intragroup processes. 3 Units.
This course will be run as a seminar. Each week a different form of intragroup behavior will be discussed. The type of group will vary, as will the context in which it operates (e.g., school vs. corporation). The weekly topics will include whistleblowing, bullying, charitable giving, paying it forward, workplace sabotage, emergent leadership, internal group threat, external group threat, single sex education and corporate mergers. Each week students will be required to post on the course website a short (no more than one page) reaction paper to one or more of the readings. These papers should be posted by 6pm on the Tuesday night preceding the class. Each student will serve as discussion leader for two of the 10 weeks. Discussion leaders are responsible for beginning the discussion of the papers by summarizing the comments of the other class members and offering their own thoughts and analysis of the papers as well as the issues they raise. Students are also required to write a 10-page double-spaced paper on a topic relevant to intragroup behavior.

OB 662. Topics in Organizational Behavior: Intergroup Processes. 3 Units.
The primary objective of this course is to provide an overview and organizing framework of the micro-organizational behavior literature. This entails reading many foundational pieces that will cover the classic areas of research in the field. We will also read more cutting-edge papers that reanalyze and reframe many of the classic variables of micro-OB, trying to alter the dominant perspective, bring in new theory, and integrate conflicting approaches.

OB 670. Designing Social Research. 3 Units.
This is a course in the design of social research, with a particular emphasis on research field (i.e., non-laboratory) settings. As such, the course is a forum for discussing and developing an understanding of the different strategies social theorists employ to explain social processes, develop theories, and make these theories as believable as possible. In general, these issues will be discussed in the context of sociological research on organizations, but this will not be the exclusive focus of the course. A range of topics will be covered, for example: formulating and motivating research questions; varieties of explanation; experimental and quasi-experimental methods, including natural experiments; counterfactual models; conceptualization and measurement; sampling and case selection; qualitative and quantitative approaches. This course is particularly oriented toward developing an appreciation of the tradeoffs of different approaches. It is well suited to Ph.D. students working on qualifying papers and dissertation proposals.

OB 671. Social Psychology of Organizations. 3 Units.
This seminar focuses on social psychological theories and research relevant to organizational behavior. It reviews topics in micro-organizational behavior, linking these to foundations in cognitive and social psychology and sociology. Topics include models of attribution, decision making, emotion, coordination, influence and persuasion, and culture. Prerequisites: Enrollment in a PhD program. Also listed as Sociology 361.

OB 672. Organization and Environment. 3 Units.
This seminar considers the leading sociological approaches to analyzing relations of organizations and environments, with a special emphasis on dynamics. Attention is given to theoretical formulations, research designs, and results of empirical studies. Prerequisite: Enrollment in a PhD program. Also listed as Sociology 362.

OB 673. Perspectives on the Social Psychology of Organizations. 3 Units.
This seminar focuses on topics relevant to organizational behavior, drawing primarily on social psychological and some sociological research. Topics vary from year to year. In Fall 2014 the seminar will focus on group and team dynamics. Topics will include diversity, power and status dynamics in teams, expertise and knowledge utilization, information processing, trust and respect in teams, team leadership, and multi-level perspectives on team and group dynamics, among others. Prerequisites: Enrollment in a PhD Program. Cannot be audited or taken pass/fail.

OB 674. Perspectives on Organization and Environment: Social Movement Organizations and Environments. 3 Units.
This course examines the interaction between organizations and their environments. It is given every year by a different faculty member. What follows is the description of the course for the academic year 2012-13:nnnThis research seminar explores recent theory and research on social movement organizations and their environments. We'll consider the way in which organizational theories help us to explain social movement phenomena, and the way in which social movement theories help us to explain organizational phenomena.

OB 675. Micro Research Methods. 3 Units.
This course helps students gain foundational knowledge on several different methods used in micro-OB research, including surveys, experiments (field and lab), longitudinal studies, content analysis, qualitative interviews, ethnography, cases, and archival datasets. The course will cover the benefits and limitations of each method, and how to creatively mix and match methods to address ambitious research questions.

OB 676. Social and Political Processes in Organizations. 4 Units.
Social psychological and sociological research at the meso, or intermediate between micro and macro, level of analysis. Topics vary from year to year, but usually include organizational routines and learning; mobility and attainment processes; gender and race inequality and discrimination; social networks; cultural perspectives on organizations, and related topics. Prerequisite: Ph.D. student.

OB 678. The Design and Process of Experimental Research. 1 Unit.
This year-long course takes a hands-on approach to learning about experimental research. It will cover the entire process of experimental research from idea and hypothesis generation to study design, analysis, and publication. The topical content will be customized to the specific interests of the enrolled students, but generally will be concerned with questions about behavioral phenomena in organizational contexts.

OB 680. Introduction to the Behavioral Theory of the Firm and its Contemporary Applications. 3 Units.
The course will focus on the Behavioral Theory of the Firm and the contemporary research areas it influences, especially research on organization design. The course will introduce students to an active research area whose scholars have largely been inspired by the late Jim March. We will study the basic elements of behavioral approaches to organizations and consider how new contributions can be made in this area. The course will also give students opportunities to familiarize themselves with agent-based modelling, which has been one of the preferred methods of behavioral theorists. Students will be able to discuss papers based on such models, but also develop simple models to formalize theoretical arguments.

OB 681. Creativity Research. 3 Units.
This course covers theories and methods used in research on individual and group creativity. Several different approaches to studying creativity will be discussed, ranging from small-scale experiments to large-scale datasets. The goal is for students to come away with an understanding of the scholarly literature on creativity, as well as actionable tools for conducting their own research on creativity and related concepts.

OB 684. Full-Cycle Research Design. 3 Units.
In this class, you will learn how to effectively combine qualitative research methods, including ethnographic observation and interviews, with experimental methods, including lab, natural and field experiments, to investigate questions of interest in the study of work, organizations and markets.

OB 691. PhD Directed Reading. 1-15 Unit.
This course is offered for students requiring specialized training in an area not covered by existing courses. To register, a student must obtain permission from the faculty member who is willing to supervise the reading.
Same as: ACCT 691, FINANCE 691, GSBGEN 691, HRMGT 691, MGTECON 691, MKTG 691, OIT 691, POLECON 691, STRAMGT 691

OB 692. PhD Dissertation Research. 1-15 Unit.
This course is elected as soon as a student is ready to begin research for the dissertation, usually shortly after admission to candidacy. To register, a student must obtain permission from the faculty member who is willing to supervise the research.
Same as: ACCT 692, FINANCE 692, GSBGEN 692, HRMGT 692, MGTECON 692, MKTG 692, OIT 692, POLECON 692, STRAMGT 692

OB 698. Doctoral Practicum in Teaching. 1 Unit.
Doctoral Practicum in Teaching.

OB 699. Doctoral Practicum in Research. 1 Unit.
Doctoral Practicum in Research.

OB 802. TGR Dissertation. 0 Units.
.
Same as: ACCT 802, FINANCE 802, GSBGEN 802, HRMGT 802, MGTECON 802, MKTG 802, OIT 802, POLECON 802, STRAMGT 802

Political Economics Courses

POLECON 230. Strategy Beyond Markets. 2 Units.
Politicians, regulators, and voters place limits on - and present opportunities for - nearly every business. Firms like Uber, Airbnb, and Google do not only remain cognizant of existing laws, they also look for opportunities to change the law in ways that help their business. In this class, we will learn how businesses can influence political decision-making and develop frameworks for political strategy. We will examine firms' interactions with competitive firms, market incumbents, customers, and institutions, including interest groups, legislatures, regulatory agencies, courts, international organizations, and the public. Case studies include intellectual property, health care reform, carried interest in private equity, ride-sharing, and peer-to-peer lending. Students will complete the course with a better appreciation of how politics works, of the opportunities and perils associated with alternative political goals, and of tactics likely to achieve those goals. Special emphasis is given to beyond market strategy for start-ups and how to integrate market and beyond-market strategies.

POLECON 231. Strategy Beyond Markets: Challenges and Opportunities in Developing Economies. 3 Units.
This course shares significant material with POLECON 230 and the goal of developing integrated strategies for optimal firm performance that combine elements within and beyond markets. POLECON 231 diverges from the base course to delve deeper into issues that are particularly salient for entrepreneurs in emerging and frontier markets. Using a combination of cases from developed and developing countries, we will expand the list of topics considered to include managing political risk and protecting the firm in the face of uncertain and discretionary regulatory environments. The objective is to provide a solid grounding in the techniques explored in 230, while refining skill sets and whetting appetites for investment in higher risk environments.

POLECON 239. MSx: Strategy Beyond Markets. 3 Units.
This course addresses managerial issues in the social, political and legal environments of business. Cases and readings emphasize strategies to improve the performance of companies in light of their multiple constituencies, both within the US and internationally. Most core courses focus on firms' interactions with customers, suppliers, and alliance partners in the form of mutually beneficial voluntary exchange transacted in markets. In contrast, this course considers the strategic interactions of firms with comparably important constituents, organizations, and institutions beyond markets. Issues considered include those involving activist and interest groups, the media, legislatures, regulatory and antitrust agencies, and other forms of political risk. In many of the class sessions, we will draw on theoretical and empirical research in political economy, a field that is particularly relevant for understanding relationships between firms and governments, because (unlike most of economics) political economy focuses on interactions that are neither voluntary nor transacted via money.

POLECON 342. Finding Spiritual Meaning at Work: Business Exemplars. 3 Units.
This course explores the experience of respected business leaders who have been able to integrate their spiritual and business lives successfully. It also provides an explicit opportunity for students to discuss their own intentions to find deep meaning in and through their business careers. Difficulties, struggles and barriers will be examined as well. Readings will include both biographies of specific business people and background materials on the major religious and philosophical traditions represented. A number of the exemplars whose biographical information will be examined, like Jeff Weiner of LinkedIn, will be invited to class -- initially to listen to the class discussion, and then to provide feedback to students, expand on their own biographies and the background resources read in preparation for each class, and respond to questions and answers. This course will help students elucidate how their business careers fit into what ultimately matters most to them and how to build moral courage and long-term commitment to their ideals.

POLECON 349. The Business World: Moral and Spiritual Inquiry through Literature. 3 Units.
This course uses novels and plays as a basis for examining the moral and spiritual aspects of business leadership and of the environment in which business is done. On the one hand literature is used as the basis for examining the character of business people, while on the other hand literature provides illumination of the cultural contexts of values and beliefs within which commercial activities take place in a global economy. The course is organized around the interplay of religious traditions and national identities. Classes are taught in a Socratic, discussion-based style, creating as much of a seminar atmosphere as possible. A two-text method is used, encouraging students to examine their own personal stories with as much care as the stories presented in the literature. This course will be graded on the basis of class participation, weekly reflection papers (1 page), and a final paper. There will be no exam.

POLECON 351. Global Business, Religion, and National Culture. 3 Units.
What does one need to know about Islam to do business effectively in an Arab country? How can understanding the Protestant ethic help Mexican managers deal with U.S. partners? How does Confucianism influence Chinese business ethics? What are the business advantages of knowing how different countries rate on the spectrum of individualist versus communitarian values? These are the kinds of issues discussed in this course, which seeks to help students who will be engaged in international business during their careers. It aims to examine the deeper levels of attitudes and beliefs, often unconscious, which lie beneath the way business is done in various countries. Information will be provided on major religious and philosophical traditions like Confucianism, Shinto, Buddhism, Hinduism, Islam, Judaism, and Christianity. Some cross-cultural frameworks will also be considered. Case studies and background readings are set in nations like China, Japan, India, the United Arab Emirates, Israel, Mexico and the United States. The class will be discussion-based, drawing on students¿ own life experiences as well as the cases and readings. The hope is to provide a competitive advantage, both theoretically and practically, to students through understanding certain unspoken rules of the game in global business.

POLECON 515. Energy: Innovation, Policy & Business Strategy. 2 Units.
The future of the energy industry is deeply intertwined with politics and the formation of policy. In this class we'll take a deeper dive into the market and beyond-market (policy) strategies in the energy industry. Our focus will be on new clean energy technologies as they attempt to break into the industry. Each session will address a business problem and analyze the interaction of market structure and the beyond-market environment. The business problem will either come from a written case or a guest speaker. Topics covered: 1) Mapping the regulated energy landscape: the politics and innovation of the renewable energy industry. 2) Working with State Regulators and Using the beyond-market to dislodge entrenched incumbents. 3) Beyond State Politics: The US & Australian Federal Government. 4) The Utilities from inside and outside. 5) Investing in a highly regulated industry. This course is led by Steve Callander, GSB professor of public and private management & political economy and Josh Richman, VP of global business development and policy at Bloom Energy.

POLECON 531. The Future of Cities: Entrepreneurship, Policy & Business Strategy. 2 Units.
Cities are where billions of people live and they are the engine for innovation and economic growth. They are also going through enormous change and battling with fundamental problems, like housing, transportation, urban planning, the environment, safety, transparency and more. Innovation offers the promise of exciting solutions. But for that change to happen, it must serve the interests of the people who live in a city and overcome the challenges of politics and policymaking. The class will focus on this intersection. We will analyze cities as a distinct phenomenon, look at what is possible technologically, and explore how change can be made to happen. The class will consist of a combination of case studies, guest speakers, and class discussion. It will be led by Steve Callander, GSB Professor of Political Economy, and Sarah Hunter, the director of Global Public Policy at X, the google Moonshot Factory.

POLECON 538. Disruptive Innovation. 2 Units.
Disruptive innovation is challenging to bring to market because of the power of entrenched incumbents and their political advocates. This course will discuss market and non-market strategies for effectively deploying and scaling up disruptive technologies. We will focus on developed products and initial business/company building. Pedagogical techniques include case studies, historical analysis, strategic frameworks, and interactive group presentations. The course will feature guest speakers as well as the co-instructor's experience as the first business leader (and now CFO) of Dropbox as it grew from an early stage company to a multi-billion dollar enterprise.

POLECON 584. Managing Global Political Risk. 1 Unit.
In a globalized world, managers and investors are increasingly realizing that politics matter as much as economic fundamentals. Micro-level decisions made by local politicians in Brazil or India, national-level strategies of countries like China and Russia, and multi-national regimes, policies, and norms are all affecting global businesses in significant and often surprising ways. This course examines the full array of political risks confronting businesses today, from creeping expropriations to sudden shocks like national debt defaults and coups to emerging threats like cyber exploitation. Students will learn about impediments to assessing political risk and how to tackle them; develop strategies for managing political risk in a systematic way; and craft tools for mitigating the downside effects of political risk to business. Each session will include customized case studies and mini-simulations for students to walk in the shoes of senior managers confronting these challenges.

POLECON 660. Behavioral Political Economy. 3 Units.
This course studies the cognitive scientific foundations of political economy. It builds on the explosion of research in cognitive psychology, evolutionary anthropology, and allied fields over the last few decades to provide perspectives on political beliefs and behavior that are not tweaks on theories of complete rationality; they are distinct ideas with their own premises of how humans think, plan, and decide. These premises do not posit that we are irrational. Such claims are wildly off the mark; they cannot explain how we have become the dominant species on this planet. Instead, they describe a clever but computationally constrained primate whose evolution, cultural as well as biological, has produced a characteristic configuration of mental software and external symbol systems (writing, numbers). The representational and computational capacities of this software and these symbol systems, combined with our unusual ability to cooperate with unrelated strangers, has in a remarkably short time produced massive knowledge-intensive political institutions that can deploy nuclear-powered aircraft carriers and can use epidemiology and molecular genetics to combat epidemics. Such achievements warrant explanations. In short, we are boundedly rational, but that's only half the story; we're also really really clever problem-solvers. This course explores theories that explain both halves in a unified way.

POLECON 680. Foundations of Political Economy. 4 Units.
This course provides an introduction to political economy with an emphasis on formal models of collective choice, public institutions, and political competition. Topics considered include voting theory, social choice, institutional equilibria, agenda setting, interest group politics, bureaucratic behavior, and electoral competition. Also listed as Political Science 351A.

POLECON 681. Economic Analysis of Politics. 4 Units.
This course extends the foundations developed in P680 by applying techniques of microeconomic analysis and game theory to the study of political behavior and institutions. The techniques include information economics, games of incomplete information, sequential bargaining theory, repeated games, and rational expectations. The applications considered include agenda formation in legislatures, government formation in parliamentary systems, the implications of legislative structure, elections and information aggregation, lobbying, electoral competition and interest groups, the control of bureaucracies, interest group competition, and collective choice rules.

POLECON 682. Workshop on Institutional Theories and Empirical Tests in Political Economy. 3 Units.
This course critically surveys empirical applications of formal models of collective-choice institutions. It is explicitly grounded in philosophy of science (e.g., Popperian positivism and Kuhn's notions of paradigms and normal science). Initial sessions address the meanings and roles of the concept of institutions in social-science research. Historically important works of political science and/or economics are then considered within a framework called Components of Institutional Analysis (or CIA), which provides a fully general way of evaluating research that is jointly empirical and formal theoretical. The course concludes with contemporary instances of such bridge-building. The over-arching objectives are to elevate the explicitness and salience of desirable properties of research and to illustrate the inescapable tradeoffs among the stipulated criteria.n nAlthough this is a core course in the GSB Political Economy PhD curriculum, its substantive foci may differ across years depending on the instructor. For Professor Krehbiel¿s sessions, the emphasis is on legislative behavior, organization, and lawmaking, and on inter-institutional strategic interaction (e,g, between executive, legislative, and judicial branches in various combinations).n nStudents should have taken POLECON 680. POLECON 682 is also listed as POLISCI 351C.

POLECON 683. Political Development Economics. 3 Units.
This course surveys emerging research in political economics as it applies to developing societies, emphasizing both theoretical and empirical approaches. Topics will include: corruption and "forensic" political economics, institutional reform and democratization, ethnicity, conflict and public goods provision, and the role of trade and financial innovations in political development. The aim of the course is to bring students to the frontier of the field and develop their own research. Graduate level proficiency in microeconomics and empirical methods will be required.

POLECON 691. PhD Directed Reading. 1-15 Unit.
This course is offered for students requiring specialized training in an area not covered by existing courses. To register, a student must obtain permission from the faculty member who is willing to supervise the reading.
Same as: ACCT 691, FINANCE 691, GSBGEN 691, HRMGT 691, MGTECON 691, MKTG 691, OB 691, OIT 691, STRAMGT 691

POLECON 692. PhD Dissertation Research. 1-15 Unit.
This course is elected as soon as a student is ready to begin research for the dissertation, usually shortly after admission to candidacy. To register, a student must obtain permission from the faculty member who is willing to supervise the research.
Same as: ACCT 692, FINANCE 692, GSBGEN 692, HRMGT 692, MGTECON 692, MKTG 692, OB 692, OIT 692, STRAMGT 692

POLECON 698. Doctoral Practicum in Teaching. 1 Unit.
Doctoral Practicum in Teaching.

POLECON 699. Doctoral Practicum in Research. 1 Unit.
Doctoral Practicum in Research.

POLECON 802. TGR Dissertation. 0 Units.

.

Same as: ACCT 802, FINANCE 802, GSBGEN 802, HRMGT 802, MGTECON 802, MKTG 802, OB 802, OIT 802, STRAMGT 802

Strategic Management Courses

STRAMGT 110Q. Making Sense of Strategy. 3 Units.
Get the strategy right, and the chance for success is great. Nowhere is this more evident than in today's world of major challenges. Strategy is at the heart of problem solving and achieving objectives, yet few people can define strategy, much less understand how to conceptualize, design, and execute effective strategies that yield the best outcomes.This course focuses on interesting and engaging case studies, each of which illustrates a key ingredient of strategy. Some are well-known historical events, while others are less obvious, but all have a strategic lesson to share. They are quite diverse, from the planning of a high-risk rescue in the Colorado Rockies, to a product crisis in a Fortune 50 company, to a little-known failed military mission of WWII, to a commercial airline disaster. The ability to think through challenging and varied scenarios is both instructive and mind-stretching. There will be some pre-reading on each case study and there may be a field trip for students to put their lessons into practice. The course is designed to be highly interactive; all to enable students to unravel the mystery and power of strategic thinking. Students will also have the opportunity to select and analyze a case reflecting interests of their own. This course can help students not only prepare for a career in a range of fields, but also as they meet the challenges of their current coursework. Problem-solving skills are central in every walk of life; this seminar can help students build a stronger foundation for sound decision-making.

STRAMGT 202. Strategic Leadership: Crafting and Leading Strategy. 2 Units.
This course is about the process of crafting, assessing and implementing strategies to win in the market. It is designed to help you understand, shape, and lead your organization's strategy by providing you with a framework for thinking about the issues that shape your organization's economic prosperity. In addition to an analytical framework, the course will provide you with insight into the process of formulating and assessing strategy for roles with cross-functional responsibility at all levels. The emphasis will be on how to articulate what the organization's strategy is, how to create alignment between the strategy, organizational design, and market environment, and the process of growing, managing and transforming organizations. The course is particularly well suited for students who have limited exposure to strategic analysis and/or who anticipate pursuing roles with primary responsibility for the success of products and services in both new and established organizations.

STRAMGT 205. Strategic Leadership: Creating and Sustaining Growth. 2 Units.
Many organizations are fundamentally committed to growth. This course examines how leaders and their organizations can create and sustain growth. Initially, entrepreneurial companies grow by discovering product-market fit, and then capitalize on that discovery by aligning their strategy and organization to their environment. As they mature, established companies grow by innovating anew, exploring possibilities and changing their organizations into new alignments with new opportunities. This course covers how leaders shape the process of discovery, change, and growth, and how strategy and organization combine to scale success. The course is geared toward students who seek to become entrepreneurs, students who want to join a growing firm in a strategic role, and for students who want to innovate to create new growth opportunities in an established firm.

STRAMGT 207. Strategic Leadership. 3 Units.
This course examines fundamental issues of general management and leadership within an organization. You will learn about setting an organization's strategic direction, aligning structure to implement strategy, and leading individuals within the firm. You will master concepts, frameworks, and tools to assess an industry and a firm's competitive environment, and to craft alternatives. You will study the interplay among formal structure, informal networks, and culture in shaping organizational performance. By integrating leadership theory, the lessons of practical application, and your own experience, you will develop skills and capabilities essential to leading others. And you'll gain a better understanding of your own leadership preferences, strengths, and weaknesses.

STRAMGT 210. Managerial Skills. 1 Unit.
In the Managerial Skills Labs we examine several common managerial challenges faced by executives. Together with Faculty, students explore these topics using five case examples, each asking students to evaluate a series of situations, develop alternatives for their resolution, and ultimately recommend and implement a course of action from the point of view of the company's owner/manager. We have selected small to midsized businesses as the context for these discussions in order to highlight the impact that key decisions and their implementation can have on the broader organization. Class preparation should include not only analysis and conclusions, but also specific recommendations on implementation. Students should come to class prepared to role play important conversations between management and other key individuals.

STRAMGT 258. MSx: Strategic Management. 3 Units.
This course deals with the overall general management of the business enterprise. Extensive case studies of a variety of companies of differing size, industry, and current conditions provide the basis for the comprehensive analysis and establishment of a strategic management approach for the organization. Frameworks are presented for strategy identification and evaluation; assessing industry attractiveness; evaluating the firm's capabilities, resources, and position; determining the optimal horizontal and vertical scope of the firm; entering into strategic alliances and joint ventures; and formulating and implementing strategy in multi-business organizations.

STRAMGT 259. MSx: Generative Leadership. 2 Units.
There are three major sections to this course - Design Thinking, The Improvisational Mindset, and High Performance Communication. || Design Thinking || Outcome: Participants learn to employ User Centered Design as promoted by the Stanford d.school. They become adept at Empathizing with the end user, practicing focused Need Finding, Defining the Problem, Ideating, Rapidly Prototyping and Adapting to Feedback. || Experiences: Participants learn the Design Thinking process through a hands-on, collaborative design challenge, like redesigning the Briefcase for a specific user. || The Improvisational Mindset || Outcome: The participants increase their ability to respond flexibly to novel situations and to generate innovative solutions on a collaborative, creative team. The mindset is cultivated by practicing 5 key principles. Say "Yes, and". Treat Mistakes as Gifts. Inspire your Partner. Dare to be Obvious. Notice the World. || Experiences: The key principles are taught through a series of immersive theater exercises derived from Johnstone, Spolin, and Ryan. Valuable readings include IMPROV WISDOM, by Patricia Madson and journal articles on improv and brainstorming. || High Performance Communication || Outcome: The final segment of the class is a chance to apply the principles of User Centered Design and the Improvisational Mindset to design and deliver messages that go beyond just transmitting information - they get results. Participants successfully use a version of the Design Thinking process to rapidly develop content that is tuned to the audience's needs, and that they can deliver in a way that is agile and responsive to real time feedback. || Experiences: Generative Leadership culminates in a group presentation designed to influence key stakeholders. To be successful, participants will have to draw on all sections of the course. AS WE SPEAK is our text.

STRAMGT 305. Game Theory and Competitive Strategy. 3 Units.
This course is an advanced applications economics course. The course has two main components, game theory and competitive strategy. Game theory is the field of study of interactive strategic decision making. In recent years it has become a prominent approach in both research and in practice. We will apply game theoretical models to a variety of industry, market and other relational settings. Beyond the use of game theory in competitive strategy in general, we will spend a significant part of the course studying competitive advantages in depth. In particular, we will cover the various types of competitive advantages and barriers to entry, attributes of an advantage, the creation and dynamics of advantages and more.

STRAMGT 306. Food, Health & Nutrition Entrepreneurship. 3 Units.
Americans spend nearly 7% of their income on food items and another 5% on food services annually (US Census). Food spend is at the intersection of two of the most important industries in the US: health care and agriculture. Food production today supports the food consumption causing our extraordinary burden of disease; 75 cents of every dollar of the $4.8 billion spent annually on health care is for diet-related disease. The health care system accounts for over 17% of U.S. gross domestic product (GDP). Agriculture and agriculture-related industries contributed 4.8% to the U.S. gross domestic product (GDP) in 2012. This course focuses on the shifting landscapes across these industries and subsequent market opportunities in food, health, and nutrition. The course is designed for students with a broad interest in the food or health systems and/or who are interested in careers in related fields. We will examine the food system from three points of view: the consumer, nutritional science, and policy. The class will focus on solving for consumer needs from the perspective of a health-promoting entrepreneur. The class will involve lecture, discussion, and prominent guest speakers who are entrepreneurs themselves or industry leaders.

STRAMGT 307. Innovation in Healthcare Venture Capital Investing. 3 Units.
The purpose of this course is to provide students with insights into the newest innovations in healthcare service delivery, information technology, biotech and medical devices and how venture and private equity investors evaluate and determine where to invest their money among these areas to maximize return, minimize risk, and capitalize on a highly fluid marketplace that represents nearly 20% of the U.S. GDP. Through presentations by leading entrepreneurs in the field, students will be challenged to reach conclusions regarding which healthcare sectors are the most promising for venture investing and which individual companies presented reflect the best opportunities, particularly in light of the seismic shifts currently underway within the healthcare industry driven by both public and private considerations. This is not primarily a finance class, but more substantively about the nuances of emerging healthcare businesses and venture finance as applied to this very unique sector.

STRAMGT 308. Entrepreneurship from Diverse Perspectives. 3 Units.
This seminar showcases the diversity of entrepreneurs and the range of entrepreneurial paths they pursue. Thirty-five entrepreneurs and venture capitalists, primarily woman and under-represented minorities, will share their personal and professional journeys, and how each embodies the entrepreneurial mindset. Case studies, readings and videos, will complement in-class discussions with the speakers in exploring the entire entrepreneurial process from finding an idea and forming and building a team, to being an inclusive leader, raising money, assembling a board, and overcoming setbacks and challenges. The class teaches the entrepreneurial mindset, and how everyone can be entrepreneurial in their lives. Teams will work on creating an idea for a company during the quarter.

STRAMGT 309. Strategies of Effective Product Management. 3 Units.
This is a course about exploring the methods and processes for product management, largely in technology companies, and a look at what can lead to the most effective ways to coordinate customer needs, ensure accurate product development, and how to develop and use the appropriate tools needed to successfully sell products and services to customers from the perspective of the Product Manager. The course covers ways to think about product management depending on the type of product being delivered (new product introduction vs. reinvigorating an existing product) and also the skills and tools used by product managers for effective product management.This course is an extended version of STRAMGT 509.

STRAMGT 315. From Launch to Liquidity. 3 Units.
This course considers the challenges faced by start-ups in achieving liquidity. We take the perspectives of organizational behavior, marketing, and finance, and examine forks in the road faced by firms that have already launched products. Marketing topics include how to market firms for sale and calculating the addressable market. Organizational topics include hiring and firing, and the role of founders after sales. Finance topics include how the choice between sale and IPO affects value realized, and private equity exits.

STRAMGT 316. Fundamentals of Effective Selling. 3 Units.
The primary objective of this course is to introduce students to the fundamentals of how to sell and to what selling is truly about. The course is appropriate for anyone who wants to understand and show proficiency with the skills required by different selling situations (e.g., direct sales of products and services, selling oneself in an interview, raising money for a new venture, running a company as CEO, etc.). The course looks at the entire selling process of lead generation, prospecting, qualification, discovery, understanding value, customizing presentations, objection handling, negotiation and closing. This is not a typical GSB case-study-based course. Students who have taken the class describe it as a hands-on, practical, skills-based class. Students will work by themselves and together in groups to complete individual and team-based exercises designed to introduce them to and give them practice with selling fundamentals in each stage of the selling process. Students will be practicing and utilizing newly learned skills in real life each week; the focus will be on doing stuff (e.g., using curiosity in a situation outside the classroom) rather than thinking about and talking about stuff. Students will then come together in class with the instructors to share and process the learning from these exercises.nn.

STRAMGT 319. Equity By Design: Building Diverse and Inclusive Organizations. 3 Units.
This course equips you to create and build equitable organizations. We will discuss the power of inclusion as it relates to the employee and customer experience. We will study effective strategies for building diverse and inclusive companies, and will address the barriers that can often exist. We'll look at approaches to organizational design that limit unconscious bias and produce more objective decisions across the employee experience - from engaging and hiring candidates to retaining employees and helping them thrive. Finally, we'll dive into how to create inclusive cultures and a sense of belonging. Experts in diversity and inclusion, and executives at companies that have successfully incorporated inclusion programs, will join us for the class discussions.

STRAMGT 321. Create a New Venture: From Idea to Launch I. 3 Units. S321/S322 is an integrated lab course in Entrepreneurship designed to teach students the process of creating a new viable venture - from Idea to Launch. It is a dynamic and interactive course organized around projects undertaken by teams of 3 to 4 registered students from the MSx and MBA programs, together with other graduate students from within Stanford who bring expertise of particular relevance to the idea being pursued, e.g. engineering, CS or medicine. This course is designed not only for students with immediate entrepreneurial aspirations but also for any student considering starting an entrepreneurial venture at some point in his or her career. The course is a two-quarter class, with admission to the class by team and idea. In the winter quarter, teams will research, craft, test and morph their idea into a viable business concept. In the spring quarter, they will further test, refine their concept and develop a strategy and plan to attract financial, human and other resources. At the end of the spring quarter, teams will present their plan to a panel of experts and potential investors to simulate the funding process. The course builds on important research, successes, and findings as they relate to the process of new venture creation. The teaching method is through a structured process of relevant mini-lectures, exercises and active in-depth team learning by doing (LBD). Extensive field research and prototype product development are integral to the course. Learning is further enhanced through meetings with the instructor, coaching by their assigned experienced mentors, experts, and review by peers. Informal student meetings/mixers will be held in the autumn quarter to further facilitate the formation of teams and assist in idea generation. The application process for S321/322,-Create A New Venture: from Idea to Launch- is described on the course website.

STRAMGT 322. Create a New Venture: From Idea to Launch II. 3 Units. S321/S322 is an integrated lab course in Entrepreneurship designed to teach students the process of creating a new viable venture - from Idea to Launch. It is a dynamic and interactive course organized around projects undertaken by teams of 3 to 4 registered students from the MSx and MBA programs, together with other graduate students from within Stanford who bring expertise of particular relevance to the idea being pursued, e.g. engineering, CS or medicine. This course is designed not only for students with immediate entrepreneurial aspirations but also for any student considering starting an entrepreneurial venture at some point in his or her career. The course is a two-quarter class, with admission to the class by team and idea. In the winter quarter, teams will research, craft, test and morph their idea into a viable business concept. In the spring quarter, they will further test, refine their concept and develop a strategy and plan to attract financial, human and other resources. At the end of the spring quarter, teams will present their plan to a panel of experts and potential investors to simulate the funding process. The course builds on important research, successes, and findings as they relate to the process of new venture creation. The teaching method is through a structured process of relevant mini-lectures, exercises and active in-depth team learning by doing (LBD). Extensive field research and prototype product development are integral to the course. Learning is further enhanced through meetings with the instructor, coaching by their assigned experienced mentors, experts, and review by peers. Informal student meetings/mixers will be held in the autumn quarter to further facilitate the formation of teams and assist in idea generation. The application process for S321/322,¿Create A New Venture: from Idea to Launch¿ is described on the course website.

STRAMGT 323. Organizational Psychology of Design Thinking. 3 Units. We'd like to introduce you to Samantha Palmer, a recent Stanford graduate who took several classes at the d.school. Each class further confirmed the importance of the design thinking process, methodology, and community. By the end of her Stanford career she truly believed that design thinking had the potential to change her life.n nAs graduation approached, Samantha found a position at a large tech company in Silicon Valley and was excited to bring the design thinking methodologies with her. A few weeks into her new job, she asked her team if they wanted to talk to some users before launching into their next big project. She was met with a room of blank stares and apprehensive questions. n nHow might we give Samantha the skills she needs to change the mindset of her colleagues, spark design thinking at her company, and get her first design-driven project off the ground? n nWhen you take a class at the d.school, you walk away confident in your creative skills and fluent in the design process. However, when recent graduates (re)enter the workforce, they quickly become discouraged by the stagnancy of company cultures. They see the need to trigger and sustain change, but don¿t have the understanding of organizational psychology to do so. Organizational Psychology of Design Thinking asks you to take on Samantha¿s challenges. n nOver the course of the semester, students will engage in 2 large-scale projects:n- Project 1 (Empathy - Synthesis) - Working with partner companies, students will apply organizational psychology and design frameworks to better understand company culture.n- Project 2 (Ideation - Testing) - Using their work from Project 1, students will prototype and test organizational changes in real company settings.nn**Please note** Our class will take an experimental approach Organizational Psychology of Design Thinking. The majority of classes will be conducted in the field allowing students to take a hands-on approach to design thinking. Please be aware and build travel time into your class schedule.

STRAMGT 325. Formation of Impact Ventures. 3 Units. This class is for students who want to start, invest in, or take a senior position in a social impact venture. For the purposes of this class, a social impact venture is an organization (both for profits and non-profits) whose primary mission is to provide a sustainable solution to a social problem. The class covers venture creation and development, resource acquisition, and managing growth in the context of impact ventures. The class deals with situations from the perspectives of both the entrepreneur and investor. Students will have a chance to assess opportunity and action in the context of current impact ventures. The course is integrative and will allow students to apply many facets of their business school education. We will have a mix of case discussions, lectures, student-led in-class exercises, and guest speakers. The final project involves engagement with an emerging impact venture and its management. The instructors, Laura Hattendorf and Russell Siegelman, are active, early stage impact investors.

STRAMGT 328. Social Ventures Practicum. 3 Units.
The Social Ventures Practicum is an experiential learning course for student teams actively working to launch a social venture (nonprofit or for-profit or tbd). SVP is often a useful follow-on for social venture start-up teams after product/service ideation courses such as STRAMGT 356: Startup Garage, the Design for Extreme Affordability sequence, or other startup/design thinking. In all cases, this course will focus on the additional elements of business planning needed to launch your venture successfully. Students who are beginning with a less-developed product/service idea for a social venture but are interested in taking this course are encouraged to reach out to the instructors, who will try to match them with existing teams. Other students who wish to take SVP to learn about social ventures but do not have a product/service idea similarly should reach out to instructors to see if they can be matched.In weekly sessions throughout the quarter, teams will work through topics unique to social ventures (e.g. mission, theory of change, impact measurement) as well as topics common to any venture, (e.g. product/service market fit, business/economic model, financial planning, early-stage financing, logistics, sales/distribution, and board/talent development). Each team will receive significant one-on-one coaching from the instructors, as well as opportunities to share their work with peers and learn from/present to guest speakers.

STRAMGT 330. Entrepreneurship and Venture Capital: Partnership for Growth. 3 Units.
This 3 unit course is designed for students interested in early-stage investing, venture capital, and/or entrepreneurship. The course content and projects are designed to be complementary to the dozens of great GSB courses about entrepreneurship such as Start-up Garage, Entrepreneurial Finance, Formation of New Ventures and Lean Launchpad. Our course, S330 -- Entrepreneurship & Venture Capital; Partnership for Growth, is one of a handful of GSB courses that delivers the investor's and entrepreneurs' viewpoint in a very candid format. The course takes the student on a journey divided into 3 different segments (investor strategies, current issues that affect your start-up, and best practices as you build your company). We have carefully selected 5 relevant topics for each segment. In the first segment of the course, we invite 5 different investors to illustrate the range of investor strategies as well as their differences in how they select their next big investment opportunity. These investors represent Funds who are leaders in each of their specialties, such as Floodgate, Founder's Fund and the venture debt firm, WTI. The second segment of the course highlights 5 current issues that affect entrepreneurs as they launch their idea in this rapidly changing investor environment. These topics range from how to build an effective board to why there are not more women in VC to the consequences of 'too much money' in the VC ecosystem. The third segment of the course covers 5 tactical steps that are important to entrepreneurs as they build their company. We begin with how co-founders split their founder equity and then hear Mike Maples reflect on best practices for idea formation and scaling. We conclude with trade-offs in negotiating that first term sheet. Please see the syllabus for more specifics about course content and the business idea project. nThe majority of the classes are case-based, where the guest speakers (who are often the case protagonists) discuss how the issues in each case are relevant to today's start-up. We encourage challenging and meaningful class discussion to take the guests 'off-script' and focus on sharing the 'street smarts' of the entrepreneur and investor community. The course attracts students from many different backgrounds - those who are experienced entrepreneurs to those students who are experimenting with the idea of entrepreneurship for the first time. We also see students with significant investment experience share their start-up experience as they add to the class dynamic.

STRAMGT 335. Entrepreneurial Approaches to Education Reform. 3 Units.
In this course, students will investigate opportunities and challenges of entrepreneurial ventures trying to make a positive impact in public education. The course requires a basic level of understanding of the U.S. K-12 public school system. The first session will analyze the structure of the public education as an industry, with a special emphasis on understanding the achievement gap. Subsequent sessions will explore challenges in increasing efficacy, ensuring financial sustainability, and scaling for entrepreneurs who have sought to change student outcomes, solve pain points, and innovate. The course will feature a variety of ventures (including schools, education technology, training, and supplemental services) and organizational models (for-profit, not-for-profit, and benefit corporation). This course is suitable for students aspiring to be entrepreneurs, leaders in entrepreneurial organizations, leaders in educational organizations, Board members, donors or investors. (Note: this is not a "how-to" course on starting an entrepreneurial venture.).

STRAMGT 340. POWer: Building the Entrepreneurial Mindset from the Perspective of Women. 3 Units.
This seminar will showcase women entrepreneurs and venture capitalists. We will explore the challenges and opportunities they encountered in starting and growing their ventures, and the personal and professional choices they have made. The sessions will include cases, readings, videos, panel discussions, role plays and breakout groups with the entrepreneurs and venture capitalists. The class will help you understand and build your entrepreneurial and growth mindset. You will leave the class with an individual roadmap and tools to help you be entrepreneurial throughout your career. Men are encouraged to enroll.

STRAMGT 345. Taking Social Innovation to Scale. 3 Units.
How do you get the best new social innovations to reach the hundreds of millions of people who need it the most? And how do ensure that they are developed, deployed and scaled in a way that is relevant, appropriate and sustainable?Innovators tackling the world's most difficult problems often ignore, misunderstand, and under-invest in the critical business challenges involved in crossing 'the middle of the value chain.' This is innovation's valley of death: product and system adaption and evaluation; evidence generation and design validation; business and partnership planning; formal or informal regulatory approval and registration. How do you design, introduce, and optimize the intervention's uptake before it can be taken to scale by markets, governments or other systems? The class is taught be Steve Davis, President & CEO of PATH (www.path.org), a leader in global health innovation, and former global Director of Social Innovation at McKinsey & Company.We take an inter-disciplinary approach to look at the factors that pull innovation forward, push it from behind, and (often to the world's detriment) block its successful implementation and scaling. First grounding the discussion in research on innovation and social change, we then apply business principles, real world experiences and several important case studies in global health to examine the way good ideas get stuck, and how good ideas can turn into innovation that matters. We focus on root causes for failure, success factors, and business practices and tools to enable millions of lives to be impacted by social innovation. The seminar combines lectures, case studies, visiting practitioners and team projects focused on the business case for scaling specific social innovations. The goal is to help the next generation of social innovation leaders think more about some of the mistakes of the past, lessons for the future, and new ways of approaching old problems, all from a practitioner's point of view.

STRAMGT 350. Global Value Chain Strategies. 3 Units.
This course addresses how the increasingly large number of firms that use or provide outsourcing and "offshoring" can create a sustainable competitive advantage. Students who complete the course will have a framework and a set of concepts that can be used to position a firm for strategic advantage in these supply networks. Positioning in and strategic analysis of product markets is covered in a variety of courses and books. A distinguishing feature of this course is that it addresses positioning and strategic analysis for firms operating as part of a network of providers, sellers and buyers... the factor markets. The course takes a general management perspective and provides examples through cases and discussions with visitors. The major theme of the course is that these firms must carefully consider how they position themselves in both the product and factor markets.

STRAMGT 351. Building and Managing Professional Sales Organizations. 4 Units.
The focus of this class is on the challenges and key issues associated with the creation and management of a professional sales organization. Our emphasis is developing and managing the selling effort of business-to-business and business-to-consumer capital goods and services. There will be relatively little emphasis on sales technique (i.e., students should not expect a course on "How to be a Better Salesperson"). The course is organized to follow the development of the sales function from strategic inception through to execution and implementation: choosing a go-to-market model (e.g., direct sales, no/low touch, VARs, OEMs, hybrid models); building and structuring the sales organization (e.g., sales learning curve, organizational structure, allocating territories and quotas); and managing the sales force (e.g., hiring/firing, compensation, forecasting, culture). We will address these topics in the context of both early stage ventures and later stage enterprises.

STRAMGT 353. Entrepreneurship: Formation of New Ventures. 4 Units.
This course is offered for students who at some time may want to undertake an entrepreneurial career by pursuing opportunities leading to partial or full ownership and control of a business. The course deals with case situations from the point of view of the entrepreneur/manager rather than the passive investor. Many cases involve visitors, since the premise is that opportunity and action have large idiosyncratic components. Students must assess opportunity and action in light of the perceived capabilities of the individuals and the nature of the environments they face. The course is integrative and will allow students to apply many facets of their business school education. Each section will have a specific focus, please select the instructor(s) with your interests: Ellis, Saloner - Diverse types of ventures; Foster, Brady - Diverse types of ventures; Reiss, Chess - Very early stage ventures.

STRAMGT 354. Entrepreneurship and Venture Capital. 4 Units.
Many of America's most successful entrepreneurial companies have been substantially influenced by professionally managed venture capital. This relationship is examined from both the entrepreneur's and the venture capitalist's perspective. From the point of view of the entrepreneur, the course considers how significant business opportunities are identified, planned, and built into real companies; how resources are matched with opportunity; and how, within this framework, entrepreneurs seek capital and other assistance from venture capitalists or other sources. From the point of view of the venture capitalist, the course considers how potential entrepreneurial investments are evaluated, valued, structured, and enhanced; how different venture capital strategies are deployed; and how venture capitalists raise and manage their own funds. The course includes a term-long project where students work in teams (4-5 students per team) to write a business plan (or a business model canvas) for a venture of the team's choosing.

STRAMGT 355. Managing Growing Enterprises. 3 Units.
This course is offered for students who, in the near term, aspire to the management and full or partial ownership of a new or newly-acquired business. The seminar, which is limited to 45 students, has a strong implementation focus, and deals in some depth with certain selected, generic entrepreneurial issues, viewed from the perspective of the owner/manager. Broad utilization is made of case materials, background readings, visiting experts, and role playing. Throughout the course, emphasis is placed on the application of analytical tools to administrative practice.

STRAMGT 356. The Startup Garage: Design. 4 Units.
Startup Garage is an intensive hands-on, project-based course, in which students will apply the concepts of design thinking, engineering, finance, business and organizational skills to design and test new business concepts that address real world needs . Our aspiration is to help teams identify an unmet customer need, design new products or services that meet that need, and develop business models to support the creation and launch of startup products or services. Even those teams that do not successfully launch a venture, or individuals who decide not to move forward, will learn critical, cutting-edge techniques about starting and launching a venture. Collaborative, multi-disciplinary teams will identify and work with users, domain experts, and industry participants to identify and deeply understand customer needs, then proceed to design products or services and a business model to address those needs. Each team will conceive, design, build, and field-test critical aspects of both the product or service and the business model. This course is offered by the Graduate School of Business. It integrates methods from human-centered design, lean startup, and business model planning. The course focuses on developing entrepreneurial skills (using short lectures and in-class exercises) and then applying these skills to specific problems faced by those users identified by the teams. Teams will get out of the building and interact directly with users and advisers to develop a deep understanding of the challenges they face and to field test their proposed services, products, and business models.

STRAMGT 359. Aligning Start-ups with their Market. 4 Units.
Most everyone associated with technology start-ups would agree that the most important initial characteristic of a successful endeavor is a compelling vision. The journey from vision to escape velocity is highly dependent on management's ability to translate that vision into a product or service that closely and economically addresses a customer's significant point of pain. Without a tight product market fit, the start-up's offering will not be able to break through the market's gravitational forces which strongly favor existing solutions, resulting in likely failure. With tight product/market fit, it is far more likely the company will achieve repeatable and growing sales success. Conventional wisdom dictates that a start-up launching a new product should focus its energy understanding what the market wants (problem) and then translating that knowledge into an optimal set of product features (solution). This is the ideal strategy if one is attacking a market that already exists. However if the start-up pursues an entirely new market or re-segments an existing market, customers are unlikely to be able to articulate the benefits and features they will need. The approaches required to pursue new or re-segmented markets are radically different from those applied to existing markets. As a result it is not relentless execution and exploitation of a well understood market that will lead to success, but discovery of a new market or segment that is in need of the product as envisioned. If done well, this process of finding the optimal product/market fit has a disproportionate impact on success. Our course explores the many issues associated with optimizing product/market fit. A take-home midterm, a group paper, and an in-class exercise comprise 50% of a student's grade with class participation representing the remainder. STRAMGT 353 is recommended prior to taking this course.

STRAMGT 360. Strategic Educational Research and Organizational Reform Practicum A. 4 Units.
This is a two-quarter clinical course offered in the Winter and Spring Quarters that brings together upper-level graduate students in business, law, and education from Stanford to collaborate with their peers at other universities (Columbia University, Harvard University, University of Pennsylvania, University of Michigan) and provide strategic research and consulting to public education organizations. Participants engage in a rigorous and rewarding learning experience, including:nn(i) An intensive seminar in the design, leadership and management, and transformation of public school systems, charter management organizations, start-ups, and other K-12 public- and social-sector institutions;nn(ii) Comprehensive skills training in team-based problem solving, strategic policy research, managing multidimensional (operational, policy, legal) projects to specified outcomes in complex environments, client counseling, and effective communication; andnn(iii) A high-priority consulting project for a public education sector client (e.g., school district, state education agency, charter management organization, non-profit) designing and implementing solutions to a complex problem at the core of the organization's mission to improve the educational outcomes and life chances of children. The participant's team work will allow public agencies throughout the nation to receive relevant, timely, and high-quality research and advice on institutional reforms that otherwise may not receive the attention they deserve.

STRAMGT 361. Strategic Educational Research and Organizational Reform Practicum B. 4 Units.
This is a two-quarter clinical course offered in the Winter and Spring Quarters that brings together upper-level graduate students in business, law, and education from Stanford to collaborate with their peers at other universities (Columbia University, Harvard University, University of Pennsylvania, University of Michigan) and provide strategic research and consulting to public education organizations. Participants engage in a rigorous and rewarding learning experience, including:nn(i) An intensive seminar in the design, leadership and management, and transformation of public school systems, charter management organizations, start-ups, and other K-12 public- and social-sector institutions;nn(ii) Comprehensive skills training in team-based problem solving, strategic policy research, managing multidimensional (operational, policy, legal) projects to specified outcomes in complex environments, client counseling, and effective communication; andnn(iii) A high-priority consulting project for a public education sector client (e.g., school district, state education agency, charter management organization, non-profit) designing and implementing solutions to a complex problem at the core of the organization's mission to improve the educational outcomes and life chances of children. The participant's team work will allow public agencies throughout the nation to receive relevant, timely, and high-quality research and advice on institutional reforms that otherwise may not receive the attention they deserve.

STRAMGT 364. Health Information Technology and Strategy. 4 Units.
Health Information technology was intended to help reduce cost and improve the quality of health care services. To date, this is little evidence that this goal has been achieved. This course is designed to explore economic frameworks that can help us to understand how health IT can achieve it's intended goals. These frameworks build from general business and economic models used successfully in other industries. The course will utilize both business cases and lecture to prepare students to propose potential novel applications of health information technology solutions. Each student will have a team-based final project.

STRAMGT 366. The Startup Garage: Testing and Launch. 4 Units.
Teams that concluded at the end of the fall quarter that their preliminary product or service and business model suggest a path to viability, continue with the winter quarter course. In this course, the teams develop more elaborate versions of their product/service and business model , perform a series of experiments to test the key hypotheses about their product and business model, and prepare and present an investor pitch for a seed round of financing to a panel of seasoned investors and entrepreneurs. The key premise for the course is that a robust venture creation process involves development and validation of a series of hypotheses about a new product or service, its value proposition, and how the business will acquire customers, make money, scale up to achieve profitability, and raise funds to achieve the key milestones to profitability. In Startup Garage: Testing and Launch, teams will learn how to precisely formulate these hypotheses and early stage milestones, and how to test them using one or more of the following low-cost approaches: a) online experiments with minimally viable products; b) interviews with partners, advisors, investors, and business experts; c) analogies from existing businesses that were successful in proving hypotheses that are analogous to what the new startup wants to prove. The course focuses on further developing entrepreneurial skills using the same pedagogical approach used in S356: short lectures, extensive in-class exercises focused on each team's specific projects, and 'get out of the building' assignments. Teams will have the opportunity to:- Get out of the building and interact with users, advisors, investors and partners to develop a deep understanding of the challenges they face, to field test their proposed services, products, and business models, and to gather data.- Interpret the data and make important startup decisions in the context of their own project: pivot, persevere, or perish- Develop creative go-to-market strategies and test their effectiveness- Develop and deliver in front of real investors an investor pitch, elevator pitch and executive summary- Negotiate term sheets with venture investors- Develop a hiring plan for their first year of operation and consider equity and other compensation plan.

STRAMGT 368. Strategic Leadership of Nonprofit Organizations and Social Ventures. 3 Units.
This course seeks to provide a survey of the strategic, governance, and management issues facing a wide range of nonprofit organizations and their executive and board leaders, in the era of venture philanthropy and social entrepreneurship. The students will also be introduced to core managerial issues uniquely defined by this sector such as development/fundraising, investment management, performance management and nonprofit finance. The course also provides an overview of the sector, including its history and economics. Cases involve a range of nonprofits, from smaller, social entrepreneurial to larger, more traditional organizations, including education, social service, environment, health care, religion, NGO's and performing arts. In exploring these issues, this course reinforces the frameworks and concepts of strategic management introduced in the core first year courses. In addition to case discussions, the course employs role plays, study group exercises and many outsider speakers.

STRAMGT 371. Strategic Management of Technology and Innovation. 3 Units.
This course focuses on the strategic management of technology-based innovation in the firm. The purpose is to provide students with concepts, frameworks, and experiences that are useful for taking part in the management of innovation processes in both startups and large technology-focused organizations. The course examines how leaders can manage fast-changing technological innovations effectively. Specific topics include: assessing the innovative capabilities of the firm, managing the technical function in a company, navigating the interfaces between functional groups in the development function in the firm, understanding and managing technical entrepreneurs, building technology-based distinctive competencies and competitive advantages, technological leadership versus followership in competitive strategy, institutionalizing innovation, attracting and keeping entrepreneurs.

STRAMGT 381. Leading Strategic Change in the Health Care Industry. 3 Units.
In this seminar we will study the structure and dynamics of the U.S. health care industry, especially in the face of ongoing regulatory change, and ways it intersects with the global health care industry. The seminar's aim is to develop participants' ability to create strategically informed action plans that are imaginative, inspiring and workable in this highly dynamic environment. The seminar's pedagogy involves informed debate to evaluate and hone well-researched views by the participants and instructors, as well as the writing and presentation of position papers by small groups of seminar participants on the key dynamics of the industry.In the course of the seminar discussions, we aim to deepen our understanding of strategic dynamics and transformational change at the societal, industry and organizational levels of analysis. After developing a complete picture of the structure of the health care industry and the strategic relationships among the key players ("the strategic landscape"), the seminar will focus on how health care reform and other external forces will affect the strategic opportunities and challenges of four types of players in the strategic landscape: (1) incumbents; (2) entrepreneurial startups; (3) cross-boundary disruptors; and (4) international health care providers. World-class leaders in health care will be brought in to supplement our understanding of each one of these players. Student teams will be formed to focus on one of the four types of players. Each team will prepare a research paper focused on determining how their type of player can take advantage of the regulatory, technological, social, cultural and demographic changes, and who will be the likely winners and why.

STRAMGT 502. Systems Leadership for the Digital Industrial Transformation. 2 Units.
This course explores the details of how leaders at the world's biggest companies are driving frame-breaking transformational change inside of organizations that have grown up with an industrial foundation, or who are moving into the industrial sector as a new entrant. The course will delve into the need for systems thinking at multiple levels - of products, organizations, cultures and individuals. We will draw upon both academic theories of transformational organizational change and also the real-world implementation challenges that confront leaders who are moving simultaneously with both unprecedented scale and speed. The sessions will examine a variety of firms and industries being affected by the blend of digital and physical in order to lay out the unique operational and organizational challenges in a global context. How specifically should operating rhythms be changed and adjusted during this radical transformation? How does management both train a workforce with new skillsets and also hire new employees with different talents? What are the unique internal challenges for industrial firms as they add digital products and services? What are the likely forces of resistance to these changes, and how should leaders effectively move companies whose histories have spanned over 100+ years? How should management ensure that existing revenue streams do not atrophy prematurely and how should these challenges be communicated to public markets? In addition, from the perspective of new entrants, we will study how companies can quickly grow and scale when leadership has the benefit of being unencumbered by legacy systems, but also face unexpected challenges when they do not have the deep industry and domain knowledge or institutional culture that can provide insights into the demands of customers, channels and governments.

STRAMGT 503. Spontaneous Management. 2 Units.
In this class, you will learn techniques for improving your spontaneity, creativity, presence, and collaboration skills, all of which contribute to your becoming a more effective and inspirational leader. This class combines research on social psychology and techniques from improvisational theater to help you develop your leadership skills. The interactive exercises are based on the techniques that improv actors use on stage when they make up scenes, songs, or even entire plays on the spot. Improv teaches you to do many things at once: be completely present, think on your feet, quickly get in sync with others, read the room, and be agile at using what the situation presents you. As a leader in business, you will benefit from this same skill set. Whether you are presenting to your board, brainstorming & designing with colleagues, or mentoring new talent - learning some building blocks of improv will give you valuable new tools for interacting effectively with others. The course will cover topics such as spontaneity, risk taking, authenticity, nonverbal behavior, storytelling, effective brainstorming, understanding and using status, and creative collaboration.

STRAMGT 504. Innovation and Non-founder CEOs. 2 Units.
This course examines how companies innovate after the success of their first product, and why non-founder led companies are often less successful at this than founder led companies. We focus on how non-founder CEOs can drive more innovation while managing risk and potential failure. Our emphasis will be primarily on lessons that can be applied to technology companies, although many are relevant to other industries. Our goal is to help develop successful non-founder CEOs.

STRAMGT 509. Strategies of Effective Product Management. 2 Units.
This is a course about exploring the methods and processes for product management, largely in technology companies, and a look at what can lead to the most effective ways to coordinate customer needs, ensure accurate product development, and how to develop and use the appropriate tools needed to successfully sell products and services to customers from the perspective of the Product Manager. The course covers ways to think about product management depending on the type of product being delivered (new product introduction vs. reinvigorating an existing product) and also the skills and tools used by product managers for effective product management.

STRAMGT 510. Conversations in Management. 2 Units.
This case-based course is offered for students who want to refine their ability to manage challenging professional conversations. The class, which is limited to 32 students, will focus on the preparation for and execution of role-played dialogue as well as on postmortem analysis. Most of the respondent roles will be external to one¿s company, and some will be front line or mid-level people with limited educational credentials. Broad utilization will be made of background readings plus visiting case protagonists and experts. There will be nine class sessions, each of one hour and forty-five minutes.

STRAMGT 511. Protecting Ideas. 2 Units.
Today, the assets of many businesses are largely intangible, such as brands, data, software and trade secrets. More and more we live in an economy based on intangibles and much of business involves creating, exploiting and managing those intangible assets. Intellectual property rights (patents, trade secrets, copyright, trademarks design rights and so on) and data rights are a set of legal rights and assets that establish ownership of and protect tangible and intangible assets from copying and other acts¿for example copying of software or counterfeiting of designer handbags. Equally, intellectual property in the hands of third parties may pose a risk to a business developing a new product or brand. Most businesses start with an idea. It is critical to understand when and under what circumstances ideas, creative works and technology can be protected from third party use by intellectual property, and what limits apply to that protection. It is equally critical to recognize what must be done to secure ownership. In this course you will learn about IP rights-what they are, what they do, their limitations and how they are useful from a strategic perspective-well beyond the typical idea of a patent being nothing more than an invitation to a messy and expensive lawsuit. We will also discuss the all-too-common mistakes that can frustrate these objectives. To put these issues into a business setting, we will be joined by experienced business executives and investors in markets ranging from biosciences to software to sound engineering. This course is designed for business students, not law students. It is the objective of this course to help business students to think critically about when and how to invest in intellectual property protection, to recognize its limits, and to avoid the common mistakes that can frustrate such investments and undermine the value of the company. Although we will have to introduce you to legal concepts, the focus of the course is on putting these concepts into a business setting and explaining how IP may be used strategically¿enabling you to be part of the conversation with legal and intellectual property experts and to consider how IP can support management of the assets and strategy of a business or other enterprise. No prior knowledge or experience with intellectual property is needed.The format of this course is under review for best adaption to the possibility of distance learning but will include reading before each class, live or recorded presentations by the guest speakers, and Q&A and discussion. Guest speakers will share their experiences in the areas of IP investment, management, deployment, strategy and risk.

STRAMGT 512. The Yin and Yang of Family Business Transitions. 2 Units.
This seminar provides students with practical solutions to some of the challenges faced in family business transitions.Family businesses are by far the dominant form of commerce world-wide, albeit the majority are small "mom and pop shops." Some research shows that large businesses, whatever the form of ownership, have an average lifespan of around forty years, while small businesses (at least in Japan and Europe) average around twelve years. So, if businesses in general do not survive, then it is a wonder that any family business can survive from one generation to another, let alone two, three, four or more.There are three essential requirements to succeed in a family business transition. First, it may seem obvious that the business must succeed, but it is less obvious what advantages a family business has over its non-family-owned counterparts. Second, the ownership structure must effectively maintain family cohesion and support the business. Finally, family members need to organize in thoughtful ways to work effectively with one another.The beauty of a family business is that it can be more profitable than companies with non-family ownership. Two fundamentals, at least, provide this advantage - a strong value system and a long-term economic perspective. The operative word above, however, is "can"; it is by no means a foregone conclusion that a family business will be more successful. Families must thoughtfully develop their advantages, while at the same time avoiding the pitfalls that are inherent in any family business.Accordingly, this course is offered for students whose families own a family business or who are interested in the special challenges faced by family businesses. International students are encouraged to register as different cultural perspectives to family business will enrich the experience for everyone. Particular focus will be given to the transitions from one generation to another and the lessons learned that can be applied during the entire life of the business.

STRAMGT 514. Product/Market Fit. 2 Units.
The premise of this course is the success of a startup (and even a large company launching a new product) is most dependent on finding a market that is desperate for its product. Focusing on product/market fit conflicts with the conventional view that a startup¿s limited resources should be applied to perfecting the execution of day to day activities. Interestingly almost every successful product driven technology company followed a similar path to find its product/market fit, but it was usually by accident. In this course we attempt to define the consistent process each successful company pursued, which in most cases is highly counterintuitive, and how to apply it to different situations. Our class highlights the potential conflict between pursuing a conventional approach and optimizing product/market fit. In order to really bring out this conflict, we employ a seminar format with only 25 students so every issue can be evaluated in detail. Our lessons are limited to information technology-based companies, but we have been told they may be more broadly applicable. That being said, this course has been designed for someone who is truly interested in technology-based entrepreneurship. Students who choose to take this course must be committed to read all the assigned articles and books to have the proper foundation to address the frequent counterintuitive learnings. In some cases that might require an entire (although relatively short) book be read for an individual class. A written assignment addressing at least one of the learnings from each reading will be required to be submitted at least four hours prior to each class. Failure to submit even one of the written assignments will result in a U. In addition to the daily written assignments, there will be a large individual project required at the end of the course. In other words, this course requires far more commitment than a typical GSB course, especially for one that offers only two credits. However I promise this course will be invaluable should you choose an operating or investment career in the technology business.

STRAMGT 516. Fundamentals of Effective Selling. 2 Units.
The primary objective of this course is to introduce students to the fundamentals of how to sell. The course is appropriate for anyone who wants to understand and show proficiency with the skills required in different selling situations, both traditional (i.e., direct sales of products and services) and non-traditional (e.g., selling oneself in an interview, raising money for a new venture, convincing a job candidate to join your company, etc.). The course looks at the entire selling process of prospecting, qualification, discovery, understanding value, customizing presentations, objection handling, and closing.This is not a typical GSB case-study-based course. Students who have taken previous versions of this class describe it as a practical, hands-on, skills-based class. Students will work by themselves outside of class to prepare for group exercises and role-plays that will take place in class. These exercises are designed to give students practice with selling fundamentals in each stage of the selling process, and to give them the opportunity to observe and provide feedback to others. Our goal is to provide students the time in class to focus on doing stuff (e.g., practice using curiosity) rather than just thinking about and talking about stuff. After taking this course, you should understand what is involved in all of the following steps of the selling process: - Preparing a value-based prospecting script. - Using an advanced questioning methodology and note-taking strategy for discovering a customer's most important business priorities and motivations. - Developing a curiosity-based approach to handling objections in all stages of the selling process. - Creating and delivering effective customized presentations. -Understanding the most effective ways to create engagement and interaction when selling. - Developing a strategy and building the confidence to ask the hard questions when closing a deal. - Using a value-based mutual plan to control the sales cycle and move a deal forward. - Identifying the most valuable categories for qualifying an opportunity. - Accelerating the process of relationship building.- Understanding a customer¿s entire decision making process (DMP). - Discovering limiting beliefs and seeing how they impact your ability to accomplish your objectives. - Applying these fundamentals of effective selling to your personal selling situations with confidence.

STRAMGT 518. Advertising and Monetization. 2 Units.
Advances in advertising technology, such as online publishing, digital and mobile advertising platforms, as well as new ways of consuming video content are driving a rapid evolution of the advertising market. We analyze this evolution from the perspective of three main constituents: 1) Marketers who rely on advertising to launch and sustain product sales, 2) Publishers and media owners for whom advertising often represents the largest source of monetization, and 3) Advertising agencies who design, plan and buy media for advertising campaigns. We will review challenges and opportunities from each of the three perspectives, including challenges in measurement for advertisers as well as forces that make it hard for small and medium sized publishers to monetize solely through advertising. Guest speakers provide a perspective on current trends and technologies.

STRAMGT 519. Equity By Design: Building Diverse and Inclusive Organizations. 2 Units.
This course equips you to create, build and lead equitable organizations. We will learn the power of iD&I - that is, how we can be change agents by involving key stakeholders, casting the right vision, and constructing the right interactions to unlock the true potential of diversity in teams and organizations. We will discuss the power of inclusion as itrelates to the employee and customer experience. We will study effective strategies for designing diverse and inclusive companies, and will address the barriers and myths related to meritocracy. We'll look at approaches to organizational design that limit unconscious bias and produce more objective decisions across the employee experience - from engaging and hiring candidates to retaining employees and helping them thrive. We'll dive into how to create inclusive cultures and a sense of belonging. Finally, we will learn tools and techniques to empower change for ourselves and others. Experts in diversity and inclusion, and executives at companies that have successfully incorporated inclusion programs, will join us for the class discussions.

STRAMGT 520. The Industrialist's Dilemma. 2 Units.
This course explores how digital disruptions are having tectonic shifts on large, successful and established companies, whether they have a digital foundation or not. Both new and existing high technology firms such as Google, Amazon, Stripe, Airbnb and others are reshaping industries as disparate as life sciences and transportation. The management principles, competitive strategies, partnerships, and core competencies of the 20th century are being challenged in a world of bits and the global network in which all companies are forced to compete. In this course we will explore some of the fundamental technological changes impacting these industries, such as scaling assets without owning them, partnerships with digital leaders and new distribution strategies for goods and services. We will hear from executives of both leading Fortune 500 companies and new disruptors about what it takes to survive and thrive in this new digital economy.

STRAMGT 524. Longevity: Business Implications and Opportunities. 2 Units.
People age 50 and over account for over 50% of consumer spending in the US and 83% of household wealth, with both number expected to increase significantly due to a combination of increased longevity and the aging of the baby boomer generation. It is the largest and one of the fastest growing business opportunities US and worldwide. Many business managers and entrepreneurs, however, do not consider the over 50 demographic in their plans, and those that do often do not understand how best to design products and services for this group. It is a huge missed opportunity. This class will explore how managers and entrepreneurs should consider the older population in their strategies, in product and service design, in managing their work force, and in their own careers. Class topics will include: - The over age 50 opportunity and how it will grow over the coming years - The map of life and segmenting the older population - Considerations for developing products and services that are multi-generational and appealing to older consumers - New business opportunities created by the growth in the over 50 population, social trends, and technology - Managing older workers - Career considerations in a world where individuals live longer and healthier lives. The course would be two units offered Winter quarter, and would be taught using a mix of new cases developed for the class, guest speakers (some in conjunction with cases), and lectures.

STRAMGT 529. Marketplaces for Goods and Services. 2 Units.
In this class we will analyze the economics and strategy of marketplaces and platforms for goods and services. We will consider the forces that have led to the proliferation of these marketplaces, as well as the economics behind which ones are likely to succeed and become profitable. We will analyze the economic costs and benefits of these marketplaces for society, and consider the regulatory environment and challenges. We will also study the microeconomics of managing these marketplaces: how should matching work, how can marketplace design solve problems of congestion or market thinness, and how a platform should trade off the welfare of the different sides of the market as it enters and grows. Applications include ride-sharing and transportation; room-sharing and vacation rentals; on-demand labor and services such as babysitting, massage, manual labor, and dog-sitting; dating; and organized labor markets.

STRAMGT 532. Intellectual Property: Financial and Strategic Management. 2 Units.
In today's competitive marketplace, companies -- from Fortune 500 firms to early stage start-ups -- rely on intellectual property (IP) to keep them one step ahead of the game. Yet, critical IP decisions are usually made by lawyers with very little input from management. The purpose of this class is to provide business leaders with the tools, models and institutional knowledge to actively participate in managing and growing their company's IP assets as strategic business assets (with a focus on patents). This class will explore the value of corporate IP assets by thinking strategically on how to effectively leverage the knowledge, trade secrets, patents, technologies, trademarks, structures and processes that are critical across industries. We will focus on the elements of a successful IP strategy, and how that strategy is shaped by economic, technology, legal, regulatory, and market factors. Through a combination of case studies (including a group strategy project), analysis of current events, class discussion and guest speakers, we will cover a variety of issues shaping a successful IP strategy in today's global business environment. Some of the topics covered include: * Building and managing an IP portfolio that is aligned with business objectives;* Understanding the forces shaping the IP marketplace in the US and in foreign markets;* The innovation cycle and technology transfer mechanisms;* Using big data analytics in making IP decisions;* IP portfolio monetization strategies (e.g., licensing, sale, enforcement);* IP considerations in Mergers & Acquisitions;* IP valuation and current trends in patent transactions;* Managing corporate IP litigation risk (patent trolls, incumbent litigation);* IP strategies for start-ups & entrepreneurs.Ms. Efrat Kasznik is an IP valuation and strategy expert with more than twenty years of experience advising companies of all sizes, from startups to Fortune 100s, on extracting value from their IP. She is the founder and President of Foresight Valuation Group, an IP consulting and startup advisory firm providing valuation and strategy services for a range of purposes, including M&A, financial reporting, technology commercialization decisions, tax compliance, transfer pricing, and litigation damages. Ms. Kasznik has been a co-founder, CFO and advisor to several startups and incubators in the US and Europe, including the Stanford Venture Studio at the GSB. She is listed on the IAM 300 list of World Leading IP Strategists, and is Chair of the High Tech Sector, Licensing Executives Society.

STRAMGT 537. Leading Change in Public Education. 2 Units.
Public education in America is at a crossroads. Does our education system have what it takes to produce graduates who are prepared for college, career, and citizenship in our increasingly digital and pluralistic world? Will income and ethnic achievement gaps continue to be pervasive and persistent in our nation's largest urban cities? Will family zip code determine educational destiny for the next generation of students? Which strategies and reforms are truly demonstrating results and which are merely passing fads? As in all large-scale enterprises undergoing rapid, transformative change, leadership matters greatly. Fortunately, over the last decade, the reform of American public education has been led by a number of innovative and results-oriented leaders at the state, district and charter levels. These leaders are bringing additional urgency, strategies, and ideas designed to prepare America's schools and students for the century ahead. Some ideas are proving to be critical levers for change, others are facing significant political challenges, and others have not delivered on expected results. Many of them hold lessons for how future educational leaders can contribute to transforming public education for the next generation of K-12 students. This course will focus on school system leadership for education reform. The course will provide an overview of the critical issues facing K-12 public education in America today, and what is going on across the U.S. during this transformative period of change. Once this context is set, students will study education leaders and systems change strategies from the last 10-15 years at the state, district and charter levels. We will focus on leaders across five domains: Leadership in crisis situations, strategic leadership, "china-breaking" leadership, sustaining leadership, and next generation leadership. We will also look at leadership examples from outside K-12 education to broaden our thinking about what leadership styles and strategies could be successfully applied to education. Students will debate the strategies and efficacy of how different leaders approached systems-level change and will form their own working hypotheses of what is needed to help transform the American education system. Case studies in school system leadership will form the primary basis for classroom assignments and discussion. We will examine what went right and what went wrong in each case, focusing particularly on the decisions that school system leaders faced and the implications of their decisions. Most cases will be supplemented with research publications, technical notes, news clips, and/or videos to deepen students¿ understanding of the context or issues discussed in the cases. Dan Katzir worked for Bain & Company, Teach for America, Sylvan Learning Systems and the Eli and Edythe Broad Foundation before joining Alliance College-Ready Public Schools as its CEO in 2015. He is an experienced case study teacher and the editor of The Redesign of Urban School Systems: Case Studies in District Governance.

STRAMGT 538. Financial Technologies. 2 Units.
This class will provide an overview of the rapidly evolving world of financial technologies. New market entrants are promising to change the way we borrow, save, invest, and transact. Incumbents enjoy substantial market power but are struggling to keep up technologically as they wrestle with antiquated core infrastructure. We will analyze the emerging competitive landscape and the strategic dynamics in play. The class will begin with a short review of digital platform economics in which we will cover basic concepts such as network effects and economies of scale. We will then dive into a series of case studies and industry analyses. Particular attention will be paid to the areas of payments, alternative credit, and virtual currencies.

STRAMGT 539. Leadership in the Arts and Creative Industries. 2 Units.
Leaders of arts and creative organizations face unique challenges. Taking the perspective of the CEO, Chairman of the Board and Artistic/Creative Director, and drawing on various cases and in-class exercises, students will learn about advancing artistic excellence and creative innovation while expanding audiences and achieving financial goals. We will survey a variety of settings from non-profit museums and performing arts organizations to start-ups and large players in the music, theater and film industries. Among the topics explored will be governance and management; reaching multiple audiences; managing fiscal and creative tradeoffs; maintaining relevance in the age of online consumption; standing out in real and virtual spaces; and achieving growth amidst rising costs and diminishing revenues.

STRAMGT 542. Marketplaces for Goods and Services: Trust, Branding, and Regulation. 2 Units.
This course is the second course in the sequence of marketplaces for goods and services (the first course is STRAMGT 529). The course will dig deep into issues of building trust and marketplace branding, as well as regulatory challenges of online marketplaces. The first two thirds of the class will focus on the challenges these marketplaces face in developing trust and delivering high-quality service, as well as fighting with fraudulent activities on the platform. We will discuss marketplace design ideas that can improve trust and create a safe environment, and analyze the economics of rating systems. The rest of the class is focused on the economics of regulatory issues around marketplaces. We will review the theory of monopoly power and negative externalities, and apply them to online marketplaces. We will also discuss recent labor market regulatory developments around these platforms. Applications include ride-sharing and transportation; room-sharing and vacation rentals; dating; passion economy; food deliveries; and organized labor markets.

STRAMGT 543. Entrepreneurial Acquisition. 2 Units.
For aspiring entrepreneurs who don't have a burning idea or desire to start a company from scratch, acquiring a small business can provide a direct route to running and growing a business. This class will explore entrepreneurial acquisition (EA). As the course covers topics such as what makes a good industry, raising capital, how to source deals, dealing with investors, due diligence, and negotiation, the course is also applicable to those interested in private equity, venture capital, start-ups, and general management. The class relies heavily on the case method, and each class includes guests (often the case protagonists) who bring practical and current experience to the classroom. The two group projects are intended to be highly practical, simulating real-world situations.

STRAMGT 544. Scaling Excellence. 2 Units.
The premise of the course is that managers are concerned with how to scale excellence in organizations and that scaling skills are essential for any leadership role. It will be taught with Shantanu Narayen, the CEO of Adobe. The course is designed to appeal to a wide range of audiences: students seeking to build new organizations, or turn around poorly performing organizations, or grow existing organizations to greater heights. We will focus on how to transform the footprint of a firm, and yet, not lose the mindset. Executives also need to think about to spread 'good behaviors' and make them widespread very quickly, and conversely, on how to shrink bad behaviors and make them small very quickly. This course aims to train students into becoming effective leaders of organizational change. We will use a mix of cases written specially for the course, and 'live cases' with guest speakers from the C-Suite.

STRAMGT 545. Taking Social Innovation to Scale. 2 Units.
How do you get the best new social innovations to reach the hundreds of millions of people who need it the most? And how do ensure that they are developed, deployed and scaled in a way that is relevant, appropriate and sustainable? Innovators tackling the world's most difficult problems often ignore, misunderstand, and under-invest in the critical business challenges involved in crossing "the middle of the value chain." This is innovation's valley of death: product and system adaption and evaluation; evidence generation and design validation; business and partnership planning; formal or informal regulatory approval and registration. How do you design, introduce, and optimize the intervention's uptake before it can be taken to scale by markets, governments or other systems? The class is taught be Steve Davis, President & CEO of PATH (www.path.org), a leader in global health innovation, and former global Director of Social Innovation at McKinsey & Company. We take an inter-disciplinary approach to look at the factors that pull innovation forward, push it from behind, and (often to the world's detriment) block its successful implementation and scaling. First grounding the discussion in research on innovation and social change, we then apply business principles, real world experiences and several important case studies in global health to examine the way good ideas get stuck, and how good ideas can turn into innovation that matters. We focus on root causes for failure, success factors, and business practices and tools to enable millions of lives to be impacted by social innovation. The seminar combines lectures, case studies, visiting practitioners and team projects focused on the business case for scaling specific social innovations. The goal is to help the next generation of social innovation leaders think more about some of the mistakes of the past, lessons for the future, and new ways of approaching old problems, all from a practitioner's point of view.

STRAMGT 546. Strategies for Growth. 2 Units.
This course will develop Business Strategy frameworks, some of which will be familiar from the core Strategy class and others of which will be new, and apply them to growing businesses. We will look at companies attempting to grow, as well as family businesses and some enterprises that will always be small. Each session, we will spend some time developing frameworks based on required reading. Then we will analyze individual companies using a combination of written case studies, video and audio excerpts of interviews with business owners, and guest speakers (or, if feasible, company visits). Issues we will consider include:nn- What makes a business scalable?nn- When are barriers to entry feasible and sustainable?nn- How can a firm differentiate itself? How might that limit growth?nn- What can small firms do effectively that large organizations cannot?nn- How do organizational issues such as incentives, hiring, and delegation limit growth and/or create advantages for small and growing enterprises?nnnGrades will be based on class participation, a group written assignment applying concepts from the class, and a take-home exam.

STRAMGT 547. Riding The Next Wave in Developing Economies. 2 Units.
Today, innovative ventures in developing economies are providing compelling new products and services to a growing middle-class as well as to the lower part of the economic pyramid. These offerings provide consumers ways to better their lives and companies to grow their businesses. As older industries around the world are being disrupted, and entrepreneurial ecosystems in developing economies are evolving, entrepreneurs and investors now have reference points and "basecamps" to explore unique opportunities. These newly formed networks that include universities, incubators, accelerator programs, angel investor organizations and small venture capital firms are still lacking in breadth and depth, despite their attempts to follow the lead of Silicon Valley. Consequently, investors and founders face distinct and more numerous challenges that they would not encounter in Silicon Valley, such as small local markets, lack of scale-up funding, uncertain exit opportunities, inadequate talent pools and complex legal and political environments.Yet these developing economies are growing and becoming more connected. We are witnessing new technology-based products in these locations allowing problems to be solved at a scale never seen before. AI and machine learning, blockchain, smart sensors, IoT devices, natural language interfaces and AR and VR are just a few of the technologies not only being developed in Silicon Valley, but all over the world. Of course, smartphones, with their multi-faceted sensors, are now becoming ubiquitous. These trends present opportunities such as: replicating business models proven elsewhere; leapfrogging legacy technologies; targeting the base of the pyramid; and starting venture capital firms. Despite this fertile ground for new endeavors, success not only requires an exceptional product/market fit but great execution to start and scale a venture in problematic and sometimes adverse environments.This case-driven course is designed to help students identify new opportunities in developing economies around the world and across industries and to expose them to the challenges they will face. It is targeted at students who are thinking about creating, joining or investing in new ventures in developing economies.The cases and guests will reveal entrepreneurial challenges through the eyes of founders and investors who have seized these opportunities at different stages of the venture: ideation, launch and scaling. This course is designed to showcase innovative companies in high growth industries such as consumer internet, financial services, health care and education. It will feature the latest trends and opportunities in Asia, Eastern Europe, Middle East, Africa and Latin America. By taking this course, you will be better equipped to observe, explain and participate in developing economy ecosystems and the opportunities and challenges they present.

STRAMGT 549. Search Fund Garage. 2 Units.
Search Fund Garage is an intensive hands-on, project-based course for students planning to pursue a search fund directly after or within a few years of graduation. Students will learn from the instructors, course peers, and class visitors, particularly top current search entrepreneurs, CEOs, attorneys and investors. This course is designed to assist students who are seriously pursuing a search fund, although some enrolled students will likely end up deciding not to pursue one. Those who have taken Entrepreneurial Acquisition (S543) or researched search funds extensively and engaged in meaningful conversation with the teaching team will benefit the most from this more advanced, experiential course. By the end of the course, students will be prepared to or will already have raised search capital and launched their search, if they choose to do so. Pursuing custom self-developed work plans that target the aspect of the search fund path most relevant to them at the time of the course, students will evaluate and attract investors, structure their search entity, set up their process and outreach materials, identify attractive industries and companies, begin to reach out to business owners, and develop wisdom about what makes a deal attractive or unattractive, among other things. Students will work with business owners, mentors and industry experts to deeply understand the search fund model. Each student, or team, will contact real business owners and receive feedback on how they can be a more effective search fund entrepreneur. This course is offered by the Graduate School of Business. The class will combine the processes taught in Entrepreneurial Acquisition (S543) and detailed in the Primer on Search Funds (2016) with elements from the discovery process taught in Startup Garage (in particular, running preliminary experiments to test proposed methodologies). The course provides a supportive yet challenging environment that will help students step outside of their comfort zone and accelerate learning. By the end of the course each will be better prepared to launch a search than many of the searchers who have come before.

STRAMGT 556. Venture Studio for Credit. 2 Units.
Venture Studio for Credit is a self-guided project-based course in which students apply the concepts of design thinking, engineering, finance, business and organizational skills to design and test new business concepts. Students will work one-on-one with instructors and coaches to move through a workbook(s) and attend Thursday afternoon workshops where they will have team-to-team interaction. nnThis course integrates methods from human-centered design, lean startup, and business model planning. Outside of meetings and workshops, teams will get out of the building and interact directly with users to develop a deep understanding of the challenges they face and to field test their proposed services, products, and business models.nnPrequalifications: 1. Projects must be exploring the commercialization of a technology innovation pioneered at a Stanford lab. 2. Teams must be a minimum of three people with at least one student enrolled for credit and representing a minimum of two schools. 3. All team members must be available to attend mandatory workshops on Thursdays from 3-4:20pm. Failure to meet all three prequalifications will result in an automatic drop.

STRAMGT 567. Social Entrepreneurship and Social Innovation. 2 Units.
This course examines individuals and organizations that use entrepreneurial skills and approaches to develop innovative responses to social problems. Entrepreneurship has traditionally been seen as a way of creating wealth for the entrepreneur and for those who back her/his work. Social entrepreneurs employ "entrepreneurial skills," such as finding opportunities, inventing new approaches, securing and focusing resources and managing risk, in the service of creating a social value. As the intensity and complexity of social and environmental problems has grown in recent years social entrepreneurship, defined as innovative, social value creating activity that can occur within or across the nonprofit, government or business sectors, has become increasingly prominent. While virtually all enterprises, commercial and social, generate social value, fundamental to this definition is that the primary focus of social entrepreneurship is to achieve social impact above all else. We will study some of the most promising and the best-proven innovations for improving people's lives. We will also examine mature projects that are now tackling the issue of "scale", moving from local innovations to solutions that create deep systemic changes for larger numbers of economically disadvantaged individuals and communities throughout the world. This year we will focus on what are the constraints and opportunities for creating a social enterprise at scale. The process of "scale" poses tremendous challenges. Even when organizations manage to overcome the many obstacles to growth, and achieve appreciable scale, this approach is seldom sufficient to achieve significant social impact on its own. This year our course will pay particular attention to network approaches which require the mobilization of a vast array of actors and resources, but have the potential to generate rapid and sustained social impact.

STRAMGT 573. Moore's Law and the Convergence of Computing and Communications; Strategic Thinking in Action. 2 Units.
This six-session (2-unit) Bass seminar focuses on strategic leadership and builds on core strategic leadership coursework in the MBA program. The course uses the seminar format with expectations of extensive contributions from all students to the discussion in each session. Through seminar discussions, we aim to deepen our understanding of strategic dynamics and transformational change at the industry and organizational levels of analysis in dynamic environments. The seminar's aim is to improve participants' ability to develop strategically informed action plans that are imaginative, inspiring and workable. The seminar's conceptual frameworks include traditional tools of strategic and competitive analysis from the core MBA course on strategic leadership, conceptual frameworks developed by the instructors that help understand the role of strategy-making in the evolution and transformation of organizations and industries, and theoretical frameworks that help understand the interplays between technology strategy and corporate strategy. Three of the six session will feature discussions with senior executives from key industry players. The seminar's pedagogy involves informed debate including with the guest executives to evaluate and hone well-researched views by the participants as well as the writing and presentation of position papers by small groups of seminar participants concerning the seminar's analytical topics.In this fall's seminar we will examine the evolution of the global semiconductor industry in light of the ongoing impact of Moore's Law and the convergence of computing and wireless communications industries, and how it has been and will be affected by strategic actions of entrepreneurial startups, incumbent corporations, and governments in multiple geographies.Several interrelated topics will be discussed as they impact three key industry segments of the global semiconductor industry that are the focus of the seminar.

STRAMGT 574. Strategic Thinking in Action - In Business and Beyond II. 2 Units.
This six-session Bass seminar is about strategic leadership driving the transformation of the advanced automotive industry. It will build on what students have learned in their MBA core strategic leadership course but will also provide additional conceptual frameworks developed by the instructors to help examine the major seminar topics.The seminar¿s pedagogy involves informed debate to evaluate and hone well-researched views by the participants. Consequently, there will be an expectation of extensive contributions from all students to the discussion in all of the sessions. Small groups of seminar participants will also be expected to write and present position papers concerning the seminar¿s analytical topics.The industry scope of the seminar is twofold: First, it is about autonomous, electric, and shared vehicles. And second, it is about the manufacturer and supplier incumbents as well as the tech industry and startup new-entrants. In the course of the seminar discussions, we aim to deepen our understanding of strategic dynamics and transformational change at the societal, industry and organizational levels of our analysis. Same as: Automotive Industry Disruption

STRAMGT 579. The Political Economy of China. 2 Units.
The evolving organization of the Chinese economy, with special emphasis on the following topics: the integration of the Communist Party organization with government entities and enterprises; the successive phases of market reform; the evolution of ownership and the nature of property rights; corporate restructuring and corporate governance; banking and finance; taxation and government revenue; the strengths and weaknesses of the national development model and the current domestic and international challenges to China's economic rise.

STRAMGT 582. Building Strategic Competence: Observations from Battlegrounds Overseas and in Washington, D.C.. 2 Units.
This course addresses the issues faced in assuming executive responsibility, developing clear visions and missions, understanding complex problem sets, building teams, and developing strategies to overcome obstacles and take advantage of opportunities. It is offered for students who might lead large, complex organizations or pursue opportunities leading to partial or full ownership and control of a business as well as those who want to serve in senior positions in government. The course draws on the experience of the lecturer as a general officer in the Army and as the 26th Assistant to the President for National Security Affairs to illuminate critical aspects of leadership, strategy development, and effective implementation. The course places personal experiences in historical context and in context of select leadership and management literature.

STRAMGT 583. The Challenges in/with China. 2 Units.
The general objective of the course is to develop a better understanding of the changing socio-economic and political situation in China (with its challenges both for China and for the rest of the world) in order to make less difficult to define and implement sustainable strategies for managing effectively in China and for handling the complex and sensitive interdependence between China and the US, between China and the rest of the world. From assessing, critically, the performance of China today, its achievements and challenges, students will get an insight in the current complex dynamics of China renaissance/transformation and we will discuss alternative scenarios, with their business and socio-political consequences on the medium term. From this analysis and with a prospective perspective in mind, we will discuss responsible management practices required to build, overtime, a mutually rewarding, growing interdependence.nMore specifically, the course will initially identify the multi-causality behind China's achievements and discuss some of the dysfunctions associated, today, with such performance. The conditions of management effectiveness required to enter and succeed overtime in the Chinese market will be identified while the challenges faced by competition ¿ particularly in terms of management of innovation - and by the global expansion of Chinese firms overseas will be illustrated. The course will rely upon different pedagogical methods; it will create conditions to share and leverage participants' experience and it will make use of cases and research results. Auditors will be admitted, but they will have to be present (and prepared) in all the sessions.

STRAMGT 584. Assessing High Impact Business Models in Emerging Markets. 2 Units.
In recent years, we've seen an explosion of innovative business models blazing new trails in emerging markets. Many of these models are achieving commercial success while transforming the lives of low-income populations. Using nine cases of both early-stage, entrepreneur-led ventures and later-stage, public or large-cap firms, this course will examine best practices for scaling new enterprises in emerging markets. It will do so primarily through the lens of a potential investor. It will also explore what is required to spark, nurture and scale entire sectors that serve rapidly growing, often low-income markets. What does it mean to work in markets with limited infrastructure? What common mistakes are made - whether in business model design, in supply chains, or in dealing with government - and how can we avoid them? Which are the best business models to serve markets that corporations have traditionally ignored, and in which government has failed to deliver? Who might be threatened by the success of these new businesses? The seminar is a good match for Stanford students interested in working or investing in emerging markets. It will be taught by Matt Bannick, who led Omidyar Network (a $1 billion impact investing fund) and is the former President of eBay International and of PayPal.

STRAMGT 691. PhD Directed Reading. 1-15 Unit.
This course is offered for students requiring specialized training in an area not covered by existing courses. To register, a student must obtain permission from the faculty member who is willing to supervise the reading.
Same as: ACCT 691, FINANCE 691, GSBGEN 691, HRMGT 691, MGTECON 691, MKTG 691, OB 691, OIT 691, POLECON 691

STRAMGT 692. PhD Dissertation Research. 1-15 Unit.
This course is elected as soon as a student is ready to begin research for the dissertation, usually shortly after admission to candidacy. To register, a student must obtain permission from the faculty member who is willing to supervise the research.
Same as: ACCT 692, FINANCE 692, GSBGEN 692, HRMGT 692, MGTECON 692, MKTG 692, OB 692, OIT 692, POLECON 692

STRAMGT 802. TGR Dissertation. 0 Units.

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Same as: ACCT 802, FINANCE 802, GSBGEN 802, HRMGT 802, MGTECON 802, MKTG 802, OB 802, OIT 802, POLECON 802

SCHOOL OF EARTH, ENERGY AND ENVIRONMENTAL SCIENCES

The School of Earth, Energy and Environmental Sciences (formerly the School of Earth Sciences) lists courses under the subject code EARTH on the Stanford Bulletin's ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=EARTH&filter-catalognumber-EARTH=on). Courses offered by the School's departments and inter-departmental programs are linked on their separate sections, and are available at the ExploreCourses (http://explorecourses.stanford.edu/) web site.

The School of Earth, Energy and Environmental Sciences includes the departments of Geological Sciences, Geophysics, Energy Resources Engineering, and Earth System Science; and three interdisciplinary programs: the Earth Systems undergraduate B.S. and coterminal M.A. and M.S. programs, the Emmett Interdisciplinary Program in Environment and Resources (E-IPER) with Ph.D. and joint M.S, and the Sustainability and Science Practice Program with coterminal M.A. and M.S. programs.

The aims of the school and its programs are:

1. to prepare students for careers in the fields of agricultural science and policy, biogeochemistry, climate science, energy resource engineering, environmental science and policy, environmental communications, geology, geobiology, geochemistry, geomechanics, geophysics, geostatistics, sustainability science, hydrogeology, land science, oceanography, paleontology, petroleum engineering, and petroleum geology;
2. to conduct disciplinary and interdisciplinary research on a range of questions related to Earth, its resources and its environment;
3. to provide opportunities for Stanford undergraduate and graduate students to learn about the planet's history, to understand the energy and resource bases that support humanity, to address the geological and geophysical, and human-caused hazards that affect human societies, and to understand the challenges and develop solutions related to environment and sustainability.

To accomplish these objectives, the school offers a variety of programs adaptable to the needs of the individual student:

- four-year undergraduate programs leading to the degree of Bachelor of Science (B.S.)
- five-year programs leading to the coterminal Bachelor of Science and Master of Science (M.S.)
- five-year programs leading to the coterminal Bachelor of Science and Master of Arts (M.A.)
- graduate programs offering the degrees of Master of Science, Engineer, and Doctor of Philosophy.

Details of individual degree programs are found in the section for each department or program.

Undergraduate Programs in the School of Earth, Energy and Environmental Sciences

Any undergraduate admitted to the University may declare a major in one of the school's departments or the Earth Systems Program by contacting the appropriate department or program office.

Requirements for the B.S. degree are listed in each department or program section. Departmental academic advisers work with students to define a career or academic goal and assure that the student's curricular choices are appropriate to the pursuit of that goal. Advisers can help devise a sensible and enjoyable course of study that meets degree requirements and provides the student with opportunities to experience advanced courses, seminars, and research projects. To maximize such opportunities, students are encouraged to complete basic science and mathematics courses in high school or during their freshman year.

Coterminal Master's Degrees in the School of Earth, Energy and Environmental Sciences

The Stanford coterminal degree program enables an undergraduate to embark on an integrated program of study leading to the master's degree before requirements for the bachelor's degree have been completed. This may result in more expeditious progress towards the advanced degree than would otherwise be possible, making the program especially important to Earth scientists because the master's degree provides an excellent basis for entry into the profession. The coterminal plan permits students to apply for admission to a master's program after earning 120 units, completion of six non-summer quarters, and declaration of an undergraduate major, but no later than the quarter prior to the expected completion of the undergraduate degree.

The student may meet the degree requirements in the more advantageous of the following two ways: by first completing the 180 units required for the B.S. degree and then completing the three quarters required for the M.S. or the M.A. degree; or by completing a total of 15 quarters during which the requirements for the two degrees are completed concurrently. In either case, the student has the option of receiving the B.S. degree upon meeting all the B.S. requirements or of receiving both degrees at the end of the coterminal program.

Students earn degrees in the same department or program, in two different departments, or even in different schools; for example, a B.S. in Physics and an M.S. in Geological Sciences. Students are encouraged to discuss the coterminal program with their advisers during their junior year. Additional information is available in the individual department offices.

University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

Graduate Programs in the School of Earth, Energy and Environmental Sciences

Admission to the Graduate Program

A student who wishes to enroll for graduate work in the school must be qualified for graduate standing in the University and also must be accepted by one of the school's four departments or the E-IPER program. Admission to one department of the school does not guarantee admission to other departments.

Faculty Adviser

Upon entering a graduate program, the student should report to the head of the department or program who arranges with a member of the faculty to act as the student's adviser. Alternatively, in several of the departments, advisers are established through student-faculty discussions prior to admission. The student, in consultation with the adviser(s), then arranges a course of study for the first quarter and ultimately develops a complete plan of study for the degree sought.

Financial Aid

Detailed information on scholarships, fellowships, and research grants is available from the school's individual departments and programs.

Dean: Stephan A. Graham

Senior Associate Dean, Strategic Planning and Facilities: Scott Fendorf

Senior Associate Dean, Faculty Affairs: Jonathan Payne

Senior Associate Dean, Educational Affairs: Margot Gerritsen

Associate Dean, Educational Affairs: Robyn Dunbar

Assistant Dean, Student Services: Alyssa Ferree

Lecturers: Ryan Petterson, Jennifer Saltzman, Audrey Yau

Courses

EARTH 1A. Know Your Planet: Research Frontiers. 1 Unit.
You are interested in the challenges that face our planet, but you are not sure about the career opportunities in the earth, energy, and environmental sciences. The breadth of possibilities will surprise you! In this course, you will meet faculty working on a diverse array of environmental problems, learn about the career paths of working professionals in the earth sciences, and hear from expert panels about post-graduation pathways available to you in the earth, energy, and environmental sciences. Open to all students. May be repeated for credit.

EARTH 1B. Know Your Planet: Big Earth. 1 Unit.
Interested in Big Data and how to apply it to global environmental and sustainability challenges? This course provides an introduction to Big Data and its applications in solving global challenges such as meeting global energy needs, food and water security, climate change, and natural hazards. The first half of the course will focus on foundational concepts of Big Data; the second half of the course will focus on applications of Big Data while introducing students to Stanford Earth alumni who are currently using these concepts in their work. May be repeated for credit.

EARTH 1C. Know Your Planet: Science Outside. 1 Unit.
One of the most important ways to learn about the world is to go out and explore it. Over the course of two day-long field trips during the weekend of May 11 & 12, students will learn and implement hands-on skills for conducting research outdoors in the natural environment. No previous field-work experience necessary. By focusing on the local geology, geomorphology, soils, ecology, and marine biology surrounding the Stanford campus, we will use careful observation, standard methods for data collecting, and analytical tools to answer fundamental questions about earth and ecosystem function. Along the way, we will also practice basic skills, from hiking to critical thinking, essential for conducting science outside of the controlled environment of the lab. This class is all about learning by doing, so be prepared to get your hands dirty and your feet wet while enjoying the sunshine and fresh air. In addition to the field weekend, this class also includes a mandatory pre-trip evening meeting. Enrollment is limited to 20 students; preference given to freshmen and sophomores; interested students must complete this form: https://goo.gl/forms/p3cEpvGJvjI9EaTm2.

EARTH 1D. Know Your Planet: Careers in Earth, Energy, and the Environment. 1 Unit.
Meet working professionals in the earth sciences, network with Stanford Earth alums, and learn from expert panels about a variety of career paths and post-graduation opportunities available to you in the earth, energy, and environmental sciences. Open to all students.

EARTH 2. Climate and Society. 3 Units.
How and why is the climate changing? How might a changing climate affect human society? And what can we do to alter the course of climate change and adapt to any climatic changes that do occur? This course provides an introduction to the natural science and social science of climate change. The focus is on what science tells us about the causes, consequences, and solutions to climate change, as well as on how scientific progress is made on these issues.

EARTH 5. Geokids: Earth Sciences Education. 1 Unit.
Service learning through the Geokids program. Eight weeks of supervised teaching to early elementary students about Earth sciences. Hands-on teaching strategies for science standards-based instruction.

EARTH 10. Design for a Habitable Planet. 1 Unit.
Climate change is happening. As a society, we know we need to accommodate it, design for it, and slow its progress, yet as individuals many of us struggle to take meaningful action. This class will use the iconic landscapes of California as a lens to address this challenge. How will they differ in 2025, 2050, 2100? During the course we will learn about the science of global change and the ways in which California may dramatically differ in the future as a result of changing temperatures and rainfall patterns, rising sea levels, shifts in flora and fauna, and decisions about the built environment and infrastructure. Using methodologies of human-centered design, we will explore how iconic landscapes influence perceptions of global change. We will generate ideas for communicating the impact of projected change and experiment with different ways of creating a sense of urgency. This class is for students interested in the impacts global change and in seeking new and innovative ways to communicate it. The course will be co-taught by faculty from the School of Earth, Energy and Environmental Sciences and the d.school. Apply by September 8. You can read more about the course and apply here: https://dschool.stanford.edu/classes/design-for-a-habitable-planet. Applicants will be selected to ensure a diversity of backgrounds. Course will be limited to 16 participants. Meeting times: Tue: 4:30 to 5:50 beginning 10/24, Saturday 10/28 All day field trip.

EARTH 14. Our National Parks. 2 Units.
Explore the history and natural science of three national parks proximal to Stanford. Under the guidance of instructors, students will work in teams to learn about chosen aspects of these parks, develop dynamic self-guided tours for public consumption, and implement (and publish) these tours using the XibitEd app for iPhones. Students will learn how to present their findings to a general, non-scientific audience, delineate physical locations at which storytelling will take place through the XibitEd system, and create and configure the content for the system. The course will culminate in the publishing of the experiential learning tours, as well as a weekend-long field trip to the Pinnacles National Park.
Same as: EARTH 114A, GEOLSCI 14, GEOLSCI 114A

EARTH 15. Living on the Edge. 1 Unit.
A weekend field trip along the Pacific Coast. Tour local beaches, geology, and landforms with expert guides from the School of Earth, Energy & Environmental Sciences. Enjoy a BBQ dinner and stay overnight in tents along the coast. Get to know faculty and graduate students in Stanford Earth. Transportation, meals, and camping equipment are provided at no cost to student participants. AY2020-21 offering is dependent on the COVID-19 health situation.
Same as: GEOLSCI 5

EARTH 42. Moving and Shaking in the Bay Area. 4 Units.
Active faulting and erosion in the Bay Area, and its effects upon landscapes. Earth science concepts and skills through investigation of the valley, mountain, and coastal areas around Stanford. Faulting associated with the San Andreas Fault, coastal processes along the San Mateo coast, uplift of the mountains by plate tectonic processes, and landsliding in urban and mountainous areas. Field excursions; student projects.
Same as: GEOLSCI 42

EARTH 81. Stanford EARTH Spring Break Field Trip. 2 Units.
(Previously offered as EARTH 191). Spring break field trip to various locations in Eastern California (may include Owens Valley, eastern Sierras, White Mountains, Death Valley). Exact locations will vary by term. Topics may cover natural history, geology, and ecology. Students will learn tools for self-directed learning (including problem solving, critical thinking, observation skills, giving and receiving feedback) and will have the opportunity to practice those skills through a variety of activities including field sketching, team problem solving, reading maps, and navigating in teams. Expect moderately strenuous hiking, living in a communal dorm-style environment, and group chores. Engaged participation expected, no prior knowledge or experience required, open to all majors. No course fee. Food, lodging, and necessary equipment is provided at no cost to student participants. Students interested in participating must complete this web form: https://forms.gle/4xdpuqoJMXVxyCLf9.

EARTH 83. Nature Journaling. 2 Units.
This course will introduce students to the fundamentals of nature journaling. Nature journaling is a practice of observing and recording the natural world, much as one might record their lives in a daily journal. Nature journaling provides a path for sharpening curiosity and attention as it deepens understanding and appreciation of nature. In this class, students will learn the basics of observation, inquiry, and engagement with your surroundings. You will learn basic drawing techniques to help achieve those learning outcomes. Using common resources (pens, pencils, paper) students will record observations, drawings, diagrams, descriptions and maps. This course is designed to be interactive and community based. Students will share photos of their journal pages and will give and receive constructive feedback from both instructors and peers. Content will include botany, wildlife, geology, and astronomy, while still primarily focusing on the process of observing and recording. No prior knowledge or experience is required. Assignments can be done in the wilderness, in your backyard, or even in your house. (Remote delivery in Spring 2020).

EARTH 100. Research Preparation for Undergraduates. 1 Unit.
For undergraduates planning to conduct research during the summer with faculty in the School of Earth, Energy & EnvironmentaL Sciences. Readings, oral presentations, proposal development. May be repeated for credit.

EARTH 114A. Our National Parks. 2 Units.
Explore the history and natural science of three national parks proximal to Stanford. Under the guidance of instructors, students will work in teams to learn about chosen aspects of these parks, develop dynamic self-guided tours for public consumption, and implement (and publish) these tours using the XibitEd app for iPhones. Students will learn how to present their findings to a general, non-scientific audience, delineate physical locations at which storytelling will take place through the XibitEd system, and create and configure the content for the system. The course will culminate in the publishing of the experiential learning tours, as well as a weekend-long field trip to the Pinnacles National Park.
Same as: EARTH 14, GEOLSCI 14, GEOLSCI 114A

EARTH 115. Wrigley Field Program in Hawaii Preparation. 1 Unit.
Preparatory course for the Wrigley Field Program in Hawaii. This course will introduce students to the faculty and topics that will be covered during the fall program. It will also include logistics content, readings, and an introduction to Hawaiian history and culture. Instructor approval required. Open only to students accepted to the 2020 Wrigley program.

EARTH 117. Earth Sciences of the Hawaiian Islands. 4 Units.
Progression from volcanic processes through rock weathering and soil-ecosystem development to landscape evolution. The course starts with an investigation of volcanic processes, including the volcano structure, origin of magmas, physical-chemical factors of eruptions. Factors controlling rock weathering and soil development, including depth and nutrient levels impacting plant ecosystems, are explored next. Geomorphic processes of landscape evolution including erosion rates, tectonic/volcanic activity, and hillslope stability conclude the course. Methods for monitoring and predicting eruptions, defining spatial changes in landform, landform stability, soil production rates, and measuring biogeochemical processes are covered throughout the course. This course is restricted to students accepted into the Earth Systems of Hawaii Program.
Same as: EARTHSYS 117, ESS 117

EARTH 126X. Hard Earth: Environmental Justice. 1 Unit.
Environmental policies often have disparate impacts on marginalized people. The fall 2019 Hard Earth series will feature biweekly talks by Stanford graduate students who are investigating pressing questions at the intersection of environmental justice and health, energy, and climate change. On the alternate weeks, students who have enrolled to take the full Hard Earth series as a one-unit course (CEE 126XYZ | EARTH 126XYZ) meet for a deeper discussion about the prior week¿s presentation. There will be one culminating talk by a non-student sustainability expert. Learn more about Hard Earth here: https://roblesustainability.stanford.edu/initiatives/hard-earth.
Same as: CEE 126X

EARTH 126Y. Hard Earth: Stanford Graduate-Student Talks Exploring Tough Environmental Dilemmas. 1 Unit.
Environmental disasters are striking with alarming frequency. Many, including wildfires and ecosystem collapse, are hitting California. The winter 2019 Hard Earth series will feature biweekly talks by Stanford graduate students whose research probes how people are coping with, adapting to, and changing their lives in the face of environmental catastrophe. Their talks will focus on events close to home in California. Students who choose to enroll in the entire quarterly series as a 1-unit class will, in the weeks between the talks, discuss what¿s happening in California in the context of the rest of the world.
Same as: CEE 126Y

EARTH 126Z. Hard Earth: The Interconnected Impacts of Global Climate Change. 1 Unit.
The COVID crisis makes one thing clear: society is ill-equipped to deal with disasters that do not respect borders and can cripple social and economic systems. Climate change, though radically different from a virus, similarly is a global threat. This class will feature virtual biweekly talks by four graduate students whose research probes a changing climate's already-occurring impacts on livelihoods, jobs, food, and social safety nets around the world. In the weeks in between the talks, we will hold a group discussion to explore how we can, as a global society, re-imagine our response to disaster.
Same as: CEE 126Z

EARTH 131. Pathways in Sustainability Careers. 1 Unit.
Interactive, seminar-style sessions expose students to diverse career pathways in sustainability. Professionals from a variety of careers discuss their work, their career development and decision-points in their career pathways, as well as life style aspects of their choices.
Same as: EARTHSYS 131

EARTH 165H. Big Earth Hackathon Wildland Fire Challenge. 3 Units.
Participate in Stanford's Big Earth Hackathon challenge on wildland fires by finding an innovative solution to wildland fire prediction, prevention, and/or evacuation. Students work in self-organized diverse teams of 2-4 students in weeks 1-8, with a final presentation of the work on Friday May 29. The teams will spend the first few weeks designing their specific team problem/scope/goals under one of three primary areas of focus. Guidance in the design and solution processes will be provided by faculty, industry and/or community leaders. Workshops in data analysis, programming, GIS, and fundamental issues related to wildfires will be provided at the start of the quarter to give students tools and insights to define and tackle problems.
Same as: CEE 165H, CEE 265H, EARTH 265H

EARTH 191. Stanford EARTH Field Courses. 1-2 Unit.
Four- to seven-day field trips to locations of geologic and environmental interest. Includes trips offered during Spring break. May be repeated for credit.
Same as: GEOLSCI 191

EARTH 193. Natural Perspectives: Geology, Environment, and Art. 1 Unit.
Multi-day field trip that combines exploration of regional geology, ecology, and environmental history with guided drawing exercises in the Eastern Sierra Nevada of California. We¿ll visit several sites of geologic and environmental interest, discuss their formation and significance, and use drawing as tool for close observation. Students will gain an understanding of the natural processes shaping California, acquire new skills and techniques for artistic expression, and gain an appreciation for how scientific and aesthetic perspectives complement and enhance one another in the study of nature. No previous scientific or artistic experience is required. Preference for freshmen and sophomores.
If you are interested in signing up for the course, complete this pre-registration form: https://stanforduniversity.qualtrics.com/SE/?SID=SV_9RF2rDopROzwOxf.
Same as: EARTHSYS 193

EARTH 197. Human-Centered Design Methods in Data Science. 1 Unit.
In today's society, the most pressing data science problems we face exist in a complex sociotechnical ecosystem and cannot be solved using the numbers alone. In this five-week short course, students will learn how to apply human-centered design methods to solve data science problems and how to pair traditional data with a diversity of other types of data to redefine problems and gain innovative insight. The course will focus on empathy-based frameworks to analyze data, problem definition and redefinition, and ideation. Additional skills in critique and storytelling will also be covered. Classes will be highly interactive and team-based. This course will offer skills in support of the teams working toward the Big Earth Hackathon Wildland Fire challenge (CEE 265H, EARTH 165H, EARTH 265H).
Same as: CME 197

EARTH 200A. Your Professional Development. 1 Unit.
Navigating the transition from student to professional is a daunting and often times unpredictable journey. This course is designed to help start the process of career planning and development early on. Beginning with navigating career uncertainty, through thoughtful self-assessment, to resume building, the power of negotiation, and managing up - this course builds a solid foundation on which to explore your long-term career goals.

EARTH 200B. Your Personal Development. 1 Unit.
Success in both your professional and personal life requires emotional, financial, and social intelligence. This course is designed to build on those soft skills that will better prepare you to successfully navigate your life. Develop skills in areas ranging from emotional intelligence, decision making courage, living well under pressure, managing procrastination, conflict resolution, relationship building, influencing, ethics & integrity, and financial literacy.

EARTH 200P. Your Professional Development Practicum. 1 Unit.
Developing a strong portfolio of skills and tools takes resources and partners. This practicum enables the freedom to explore and develop a specific component of your professional portfolio with instructor support. You will set a professional development goal at the start of the quarter and then build a self-directed set of experiences that engage on-campus resources, professional society opportunities, and/or external partners to explore and develop new skills. Completion will include reflection on the experience, feedback from peers and mentors, and a concrete product that expands your professional ¿toolkit.¿ This practicum is recommended for latter stage graduate students, or following completion of Earth 200A.

EARTH 202. PhD Students on the PhD. 1 Unit.
This seminar is designed for coterms and upperclassmen who are considering pursuing a PhD in earth science fields but want to know what that path really entails. Consisting of small-group discussions with current PhD students, this course will feature conversations on a range of PhD research topics and will also delve into the substance of the PhD experience itself. We will explore PhD students' programs and career paths: the milestones, processes, and issues that guide their decisions and shape their PhD experiences. Discussion themes will be determined partly in advance and partly based on the interests of participants and could include topics such as choosing a PhD program or research question, interdisciplinarity, community engagement, or work/life balance.

EARTH 203. Diversity and Inclusion in the Geosciences. 1 Unit.
This course will prepare students to address the participation and inclusion challenges uniquely faced in the geosciences. By bringing awareness to specific tools and tactics which improve learning and working environments, we hope to help others develop inclusive environments where diversity is valued and celebrated. Diverse thinking coupled with inclusive practices improves science and team performance. In the past 40 years, the geosciences have had the lowest diversity of all STEM fields within higher education. Using insights from recent literature and perspectives from guest speakers, we will evaluate current practices and identify those that hold promise in improving broader participation and inclusion in the geosciences. Discussions will focus on actions that individuals can take to promote greater inclusion within every level of higher education in the earth sciences.

EARTH 214. Software Design in Modern Fortran for Scientists and Engineers. 3 Units.
This course introduces software design and development in modern Fortran. Course covers the functional, object-oriented-, and parallel programming features introduced in the Fortran 95, 2003, and 2008 standards, respectively, in the context of numerical approximations to ordinary and partial differential equations; introduces object-oriented design and design schematics based on the Unified Modeling Language (UML) structure, behavior, and interaction diagrams; cover the basic use of several open-source tools for software building, testing, documentation generation, and revision control. Recommended: Familiarity with programming in Fortran 90, basic numerical analysis and linear algebra, or instructor approval.
Same as: CME 214

EARTH 218. Communicating Science. 3 Units.
For undergraduates and graduate students interested in teaching science in local schools. Inquiry-based science teaching methods. How to communicate scientific knowledge and improve presentations. Six weeks of supervised teaching in a local school classroom. Prerequisite: course in introductory biology, geology, chemistry, or marine sciences.

EARTH 219. OPINION WRITING IN THE SCIENCES. 1 Unit.
Part exposition, part reflection, part synthesis, research-driven opinion writing can be found everywhere from the op-ed pages of daily newspapers, to the commentary sections of journals such as Nature and Science, to the sort of wide-ranging reviews found in the New York Review of Books. In this course, advanced doctoral students will study the form, and work with the instructors to develop a publication-quality opinion essay on an aspect of their own field. Admission is limited and by application only. Contact thayden@stanford.edu.

EARTH 251. Negotiation. 3 Units.
Students learn to prepare for and conduct negotiations in a variety of arenas including getting a job, managing workplace conflict, negotiating transactions, and managing personal relationships. Interactive class. The internationally travelled instructor who has mediated cases in over 75 countries will require students to negotiate real life case studies and discuss their results in class. Application required before first day of class; students should enroll on Axess and complete the application on Canvas before March 20, 2020. Note: there is a class fee of $130 for access to case files and readings.
Same as: CEE 151, CEE 251, PUBLPOL 152

EARTH 265H. Big Earth Hackathon Wildland Fire Challenge. 3 Units.
Participate in Stanford's Big Earth Hackathon challenge on wildland fires by finding an innovative solution to wildland fire prediction, prevention, and/or evacuation. Students work in self-organized diverse teams of 2-4 students in weeks 1-8, with a final presentation of the work on Friday May 29. The teams will spend the first few weeks designing their specific team problem/scope/goals under one of three primary areas of focus. Guidance in the design and solution processes will be provided by faculty, industry and/or community leaders. Workshops in data analysis, programming, GIS, and fundamental issues related to wildfires will be provided at the start of the quarter to give students tools and insights to define and tackle problems.
Same as: CEE 165H, CEE 265H, EARTH 165H

EARTH 305A. Teaching in the field: Basic skills for working with students in the field. 1-2 Unit.
This workshop series introduces the basics of teaching, working, and living in the field with students, from first aid to university policies to pedagogy. We will discuss skills and techniques necessary to keep students safe, to maximize their learning outcomes, and to promote best practices for field teaching, particularly within the natural sciences. Open to all graduate students.

EARTH 305B. Teaching in the Field: Field Practical. 1-2 Unit.
Participate in the logistics and academic content of EARTH 191 field trip and serve as primary trip leaders. Discussions prior to, and during, the field trip that cover pedagogic, safety, risk management, and social issues that pertain to teaching field trips. Specific topics will be chosen based on the interest and abilities of enrolled students.

EARTH 310. Computational Geosciences Seminar. 1 Unit.
Weekly lectures focusing on high-performance computing in geoscientific research by experts from academia, national laboratories, industry, and doctoral students. May be repeated for credit.

EARTH 400. Directed Research. 3 Units.
Independent research for graduate student projects.

EARTH 401. Curricular Practical Training. 1 Unit.
Curricular Practical Training.

EARTH SYSTEM SCIENCE

Courses offered by the Department of Earth System Science are listed under the subject code ESS on the Stanford Bulletin's ExploreCourses web site (https://explorecourses.stanford.edu/search/?view=catalog&academicYear=&page=0&q=ESS&filter-departmentcode-ESS=on&filter-coursestatus-Active=on&filter-term-Summer=on).

On April 16, 2015, the Senate of the Academic Council approved the change of name for the department to become the Department of Earth System Science. Prior to April 16, the department was named the Department of Environmental Earth System Science.

Earth System Science studies the planet's oceans, lands, and atmosphere as an integrated system, with an emphasis on changes occurring during the current period of overwhelming human influence, the Anthropocene. Faculty and students within the department use the principles of biology, chemistry, and physics to study problems involving processes occurring at the Earth's surface, such as climate change and global nutrient cycles, providing a foundation for problem solving related to environmental sustainability and global environmental change.

Graduate Programs in Earth System Science

The University's basic requirements for the M.S. and Ph.D. degrees are discussed in the "Graduate Degrees (http://www.stanford.edu/dept/registrar/bulletin/4901.htm)" section of this bulletin. The Department of Earth System Science does not offer coterminal admission to the master's in Earth System Science.

Learning Objectives (Graduate)

The objectives of the doctoral program in Earth System Science are to enable students to develop the skills needed to conduct original investigations in environmental and earth system sciences, to interpret the results, and to present the data and conclusions in a publishable manner. Graduates should develop strong communication skills with the ability to teach and communicate effectively with the public.

The objectives of the master's program in Earth System Science is to continue a student's training in one of the earth science disciplines and to prepare students for a professional career or doctoral studies.

Master of Science in Earth System Science

The University's requirements for M.S. degrees are outlined in the "Graduate Degrees (http://www.stanford.edu/dept/registrar/bulletin/4901.htm)" section of this bulletin.

Admission

For admission to graduate work in the department, completion of the Aptitude Test (verbal, quantitative, and analytical writing assessment) of the Graduate Record Examination is optional. In keeping with University policy, applicants whose first language is not English must submit TOEFL (Test of English as a Foreign Language) scores from a test taken within the last 18 months. Individuals who have completed a B.S. or two-year M.S. program in the U.S. or other English-speaking country are not required to submit TOEFL scores.

Degree Requirements

Unit Requirements

1. A minimum of 45 units of course work at the 100 level or above.
2. Half of the courses used to satisfy the 45-unit requirement must be intended primarily for graduate students, usually at the 200 level or above.
3. No more than 15 units of thesis research may be used to satisfy the 45-unit requirement.
4. Some students may be required to make up background deficiencies in addition to these basic requirements.
5. By the end of Winter Quarter of the first year in residence, a student must complete at least three courses taught by a minimum of two different department faculty members.

Course Work

		Units
Seminar Requirements		
Each quarter during the first academic year:		
ESS 301	Topics in Earth System Science	1
Required Core Courses (Students are required to take three 2-unit courses during the first year):		
ESS 305	Climate Change: An Earth Systems Perspective	2
ESS 306	From Freshwater to Oceans to Land Systems: An Earth System Perspective to Global Challenges	2
ESS 307	Research Proposal Development and Delivery	2
Distribution Requirements (Students must take one class from each of the following three areas within the first or second year):		
Area A: Analysis of the Earth System (Select one course)		
ESS 214	Introduction to geostatistics and modeling of spatial uncertainty	3-4
GEOLSCI 240	Data science for geoscience	3
CME 106	Introduction to Probability and Statistics for Engineers	4
CEE 362A	Uncertainty Quantification	3
STATS 200	Introduction to Statistical Inference	4
STATS 206	Applied Multivariate Analysis	3
STATS 207	Introduction to Time Series Analysis	3
STATS 216	Introduction to Statistical Learning	3
STATS 366	Modern Statistics for Modern Biology	3
Area B: Measurement of the Earth System (Select one course)		
ESS 210	Techniques in Environmental Microbiology	3
ESS 212	Measurements in Earth Systems	3-4
ESS 224	Remote Sensing of Hydrology	3
ESS 241	Remote Sensing of the Oceans	3-4
ESS 243	Molecular Geomicrobiology Laboratory	4
ESS 253S	Hopkins Microbiology Course	3-12
ESS 262	Remote Sensing of Land	4
Area C: Earth System Processes, Models, and Human-Environmental Interactions (Select one course)		
ESS 206	World Food Economy	5
ESS 220	Physical Hydrogeology	4
ESS 221	Contaminant Hydrogeology and Reactive Transport	3
ESS 223	Biosphere-Atmosphere Interactions	4
ESS 227	Decision Science for Environmental Threats	3-5

ESS 230	Pursuing Sustainability: Managing Complex Social Environmental Systems	3
ESS 242	Antarctic Marine Geology and Geophysics	3
ESS 244	Marine Ecosystem Modeling	3
ESS 246A	Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation	3
ESS 246B	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation	3
ESS 247	Tropical Meteorology	3-4
ESS 258	Geomicrobiology	3
ESS 270	Analyzing land use in a globalized world	3
ESS 360	Social Structure and Social Networks	5

Teaching Assistantship

As a program requirement, advanced degree candidates in ESS complete TA-appointed (25%) quarters at a minimum of: 2 for Ph.D. students and 1 for master's students, to be completed over the course of study. In addition, additional TA quarters may be considered and/or required in consultation with the research advisor, depending on academic goals, funding availability, or the requirements of individual doctoral programs.

Advising

The department's graduate coordinator, in coordination with the departmental faculty, appoints an academic advisor prior to registration with appropriate consideration of the student's background, interests, and professional goals. In consultation with the advisor, the student plans a program of course work for the first year. The faculty advisor is charged with designing the curriculum in consultation with the student specific to the research topic.

Thesis

Each student must complete a thesis describing his or her research. Thesis research should begin during the first year of study at Stanford and should be completed before the end of the second year of residence. Early during the thesis research period, and after consultation with the student, the thesis advisor appoints a second reader for the thesis who must be approved by the graduate coordinator; the thesis advisor is the first reader. The two readers jointly determine whether the thesis is acceptable for the M.S. degree in the department.

Master of Science, Course Work Only Option for ESS Ph.D. Students

The course-work-only M.S. for ESS Ph.D. students requires 45 unduplicated units of which all 45 must be course work (non-research, non-independent study, non-thesis units). All required units must be in courses at the 100-level or above, 50 percent of those units must be in graduate-level courses (generally, at the 200-level or above). No units are awarded for course work completed elsewhere (i.e., not eligible to transfer-in units). All 45 units can be applied to the 135 unit requirement for the Ph.D. The remaining 90 units can consist of all research units

Doctor of Philosophy in Earth System Science

The University's requirements for the Ph.D. degree are outlined in the "Graduate Degrees (http://www.stanford.edu/dept/registrar/bulletin/4901.htm)" section of this bulletin.

Admission

For admission to graduate work in the department, completion of the Aptitude Test (verbal, quantitative, and analytical writing assessment) of the Graduate Record Examination is optional. In keeping with University policy, applicants whose first language is not English must submit TOEFL (Test of English as a Foreign Language) scores from a test taken within the last 18 months. Individuals who have completed a B.S. or two-year M.S. program in the U.S. or other English-speaking country are not required to submit TOEFL scores.

Degree Requirements

Unit Requirements

1. A minimum of 135 units of graduate study at Stanford must be satisfactorily completed.
2. Required courses must be taken for a letter grade, if offered.
3. Ph.D. students registered for 10 units must pass at least 6 units per quarter. Students must maintain at least a 3.0 grade point average.
4. Ph.D. students must complete a minimum of four graduate level, letter-grade courses of at least 3 units each from four different faculty members on the Academic Council in the University.
5. By the end of Spring Quarter of their first year in residence, students must complete at least three graduate level courses taught by a minimum of two different ESS faculty members.

Course Work

		Units
Seminar Requirements		
Each quarter during the first academic year:		
ESS 301	Topics in Earth System Science	1
Required Core Courses (Students are required to take three 2-unit courses during the first year):		
ESS 305	Climate Change: An Earth Systems Perspective	2
ESS 306	From Freshwater to Oceans to Land Systems: An Earth System Perspective to Global Challenges	2
ESS 307	Research Proposal Development and Delivery	2
Distribution Requirements (Students must take one class from each of the following three areas within the first or second year):		
Area A: Analysis of the Earth System (Select one course)		
ESS 214	Introduction to geostatistics and modeling of spatial uncertainty	3-4
GEOLSCI 240	Data science for geoscience	3
CME 106	Introduction to Probability and Statistics for Engineers	4
CEE 362A	Uncertainty Quantification	3
STATS 200	Introduction to Statistical Inference	4
STATS 206	Applied Multivariate Analysis	3
STATS 207	Introduction to Time Series Analysis	3
STATS 216	Introduction to Statistical Learning	3
STATS 366	Modern Statistics for Modern Biology	3
Area B: Measurement of the Earth System (Select one course)		
ESS 210	Techniques in Environmental Microbiology	3
ESS 212	Measurements in Earth Systems	3-4
ESS 224	Remote Sensing of Hydrology	3
ESS 241	Remote Sensing of the Oceans	3-4
ESS 243	Molecular Geomicrobiology Laboratory	3-4
ESS 253S	Hopkins Microbiology Course	3-12
ESS 262	Remote Sensing of Land	4
Area C: Earth System Processes, Models, and Human-Environmental Interactions (Select one course)		
ESS 206	World Food Economy	5
ESS 220	Physical Hydrogeology	4

ESS 221	Contaminant Hydrogeology and Reactive Transport	3
ESS 223	Biosphere-Atmosphere Interactions	3-4
ESS 227	Decision Science for Environmental Threats	3-5
ESS 230	Pursuing Sustainability: Managing Complex Social Environmental Systems	3
ESS 242	Antarctic Marine Geology and Geophysics	3
ESS 244	Marine Ecosystem Modeling	3
ESS 246A	Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation	3
ESS 246B	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation	3
ESS 247	Tropical Meteorology	3-4
ESS 258	Geomicrobiology	3
ESS 270	Analyzing land use in a globalized world	3
ESS 360	Social Structure and Social Networks	5

Teaching Assistantship

As a program requirement, advanced degree candidates in ESS complete TA-appointed (25%) quarters at a minimum of: 2 for Ph.D. students and 1 for master's students, to be completed over the course of study. In addition, additional TA quarters may be considered and/or required in consultation with the research advisor, depending on academic goals, funding availability, or the requirements of individual doctoral programs.

Annual Review

Each year, the department evaluates students to assess progress to degree, identify areas of strength, provide helpful resources, and note potential issues or areas of concern. This annual review includes a record of accomplishments presented by the student, written evaluations by the faculty advisor of the student's progress, and committee feedback on the academic and research progress of the student. The student should have no 'I' grades in core courses, must maintain at least a 3.0 grade-point average, and show evidence of productive and sustained research progress, with no conflict of interest or conflict of commitment.

Possible outcomes of the annual review include: (1) continuation of the student in good standing, and (2) placing the student on probation, with specific written guidelines of the period of probation and the necessary steps for reinstatement to good standing.

Annual reviews are required for all Ph.D. students, including first-year Ph.D. students. In the first year, the annual review is conducted between the student and the Ph.D. advisor(s) (prior to forming a doctoral committee). After the first year, the annual review must be conducted between the student and the student's doctoral committee. In all years, the written annual review form must be completed and signed by both the student and the advisor.

In the year in which students are undertaking their candidacy exam (research qualifying exam), that exam serves as the annual review. In addition, any student who has scheduled the dissertation defense and petitioned to graduate in Axess may elect not to hold an additional annual review meeting. Annual reviews that are not the qualifying exam or dissertation defense should take place in the Autumn or Winter Quarter (with the exception of first-year students, who may hold their annual review meeting with their advisor(s) in Spring Quarter).

Candidacy and Qualification Exam

Admission to a doctoral degree program is preliminary to, and distinct from, admission to candidacy. Admission to candidacy for the doctoral degree is a judgment by the faculty in the department or school of the student's potential to successfully complete the requirements of the degree program. Candidacy is valid for five calendar years (through the end of the quarter in which candidacy expires), unless terminated by the department (for example, for unsatisfactory progress). University policy requires completion of the department qualifying procedures and application for candidacy by the end of the second year in the Ph.D. program. Therefore, it is strongly advised that the qualifying exam be taken during the fith (non-Summer) quarter so that the student may retake the exam in the case of inadequate performance and still advance to candidacy by the end of the sixth (non-Summer) quarter.

Students must present a draft proposal to their advisor in a timely fashion, and take account of the advisor's comments and require revisions before preparing a final draft. The student submits a copy of the final draft of the research proposal to each member of the examining committee at least two weeks before the scheduled date of the examination.

The qualifying exam is an oral exam based on the candidate's written research proposal. The exam is a test of the student's ability to recognize, evaluate, and plan a significant research project and his/her mastery of fields essential to the completion of research. The research proposal must provide a concise review of the background literature, and must discuss the proposed problem, its importance, and the methods to be applied to its examination. The methods should be made clear. The proposal must contain a timetable and, if appropriate, the student should discuss such matters as funding, field logistics, laboratory scheduling, and availability of equipment. The proposal must be well thought out, carefully written and edited, and finished with appropriate references and illustrations. It must not exceed 15 double-spaced pages in length, exclusive of figures and bibliography. The qualifying exam is oral and consists of three parts:

1. A presentation of the proposed research (no more than 30 minutes duration);
2. An examination of the candidate on the merits of the proposal, touching on but not limited to the aspects listed in the proposal; and
3. An examination of any subject matter judged by committee members to be relevant to the student's ability to carry out the proposed research.

It is recognized that, in practice, parts 1# 3 may not be entirely separate and distinct. The entire examination lasts no less than 2 hours and no more than 3 hours; the examination under part 3 is at least one hour. No part of examination is public.

Doctoral Dissertation and Oral Defense

Under the supervision of the research advisory committee, the candidate must prepare a doctoral dissertation that is a contribution to knowledge and is the result of independent research; curriculum must also be developed with the supervision of the committee, which should be designed to provide a rigorous foundation for the research area. The format of the dissertation must meet University guidelines. The student is urged to prepare dissertation chapters that, in scientific content and format, are readily publishable.

The doctoral dissertation is defended in the University oral examination. The department appoints the research advisor and two other members of the research committee to be readers of the draft dissertation. The readers are charged to read the draft and to certify in writing to the department that it is adequate to serve as a basis for the University oral examination. Upon obtaining this written certification, the student is permitted to schedule the University oral examination.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies

relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

For all courses taken during the 2020-21 academic year, the Earth System Science department will allow grades of ‘CR’ (credit) (or ‘S’ (satisfactory) grades in classes retaining the S/NC basis), in addition to letter grades, to count towards fulfillment of requirements for the Ph.D and M.S. degrees.

For a statement of University policy on graduate advising, see the "Graduate Advising (https://exploredegrees.stanford.edu/graduatedegrees/#advisingandcredentialstext)" section of this bulletin.

Graduate Advising Expectations

The Department of Earth System Science is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the advisor and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity.

Purpose of Advising

Faculty advisors guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (https://exploredegrees.stanford.edu/graduatedegrees/#advisingandcredentialstext)" section of this bulletin.

Expectations

- Students are paired with a primary advisor at the time of admission to the Earth System Science graduate program. A secondary advisor may also be designated at the time of admission.
- Beginning with the first quarter, and at least annually thereafter, a shared expectations conversation occurs. This clarifies educational philosophies and individual responsibilities, and generates a written record for student, advisor, and department. As part of this process, advisors provide clear statements of their expectations, discuss those expectations with the student, and articulate which areas may be open to amendment based on student input. Broad areas in which to align expectations include:
  - Course selection and other academic development
  - Navigating policies and degree requirements
  - Financial support
  - Identifying research opportunities and level of independence
  - Research milestones, publications, co-authorship, outside collaborations, and timeline
  - Frequency of individual and group meetings, expectations for campus and departmental presence, vacations
  - Frequency of and funding for off-campus research and professional development activities (such as conferences, workshops, short courses, and field work)
  - Preparation for future employment and exploration of professional pathways
- There is an annual review of progress that generates a written record. This review is documented by the thesis committee as part of the annual review meeting. In addition, students should be meeting with their advisor frequently enough that if they are not making sufficient progress, they ideally receive such feedback sooner than at an annual meeting.
- Students can expect advisors to:
  - Exercise high professional standards in their academic work, research, and mentoring partnerships
  - Serve as intellectual and professional mentors
  - Understand University and department policies pertinent to graduate students
  - Provide timely, regular, and constructive feedback on progress
  - Provide insights into career options and pathways and/or point students toward relevant career and professional development resources
- Advisors can expect students to:
  - Exercise high professional standards in their academic work, research, and mentoring partnerships
  - Be pro-active in seeking advice and keeping the advisor informed about academic and research progress
  - Consult with the advisor, and others as necessary, to resolve problems
  - Take primary responsibility for meeting timelines, policies, and milestones that impact degree progress

Additional Resources and Pathways

- The thesis committee is convened by the student’s second year. Once convened, the thesis committee:
  - Meets annually with the student to discuss research progress, research plans, coursework, and professional/career goals, and to provide verbal and written feedback on degree progress
  - For Ph.D. students, the thesis committee conducts the qualifying exam and the oral exam (i.e., dissertation defense), and approves the written dissertation
  - In some cases, members of the thesis committee may also be research collaborators, and may also serve as mentors and/or letter writers for applications
- As part of their advising network, students are encouraged to consult departmental resources (such as department and school student services staff, the thesis committee, the department Director of Graduate Studies, and the department Chair), Stanford institutional resources (such as VPGE, the Office of Graduate Life, CAPS, and the campus Ombuds), as well as individuals and networks in the broader scientific community (such as the American Geophysical Union and the Earth Sciences Women’s Network).
- In the event that a student has a formal concern or complaint about their advising experience, they are encouraged to contact the department Director of Graduate Studies, the department Chair, the school Associate Dean for Educational Affairs, and/or the school Associate Dean for Human Resources and Faculty Affairs.

- In the event that either the student or advisor feels that the advising relationship is not effective, the school process for formally evaluating student/advisor assignments may be activated.

Chair: Kevin Arrigo

Directors of Graduate Studies: Pamela Matson, Rosamond Naylor

Professors: Kevin Arrigo, Noah Diffenbaugh[3], Robert Dunbar, Scott Fendorf, Christopher Field[1,3], Christopher Francis, Steven Gorelick, Robert Jackson[2,3], Eric Lambin[3], David Lobell[3,4], Pamela Matson, Rosamond Naylor [3,4]

Associate Professors: Marshall Burke [4], Karen Casciotti, James Holland Jones, Kate Maher, Leif Thomas, Paula Welander

Assistant Professors: Anne Dekas, Alexandra Konings, Morgan O'Neill, Aditi Sheshadri, Gabrielle Wong-Parodi

Courtesy Professors: Gregory Asner, Ken Caldeira, Anna Michalak, Peter Vitousek

Visiting Professors:

[1]Joint appointment with Biology

[2]Joint appointment with the Precourt Institute for Energy

[3] Joint appointment with the Woods Institute for the Environment

[4]Joint appointment with the Freeman Spogli Institute for International Studies

Courses

ESS 8. The Oceans: An Introduction to the Marine Environment. 4 Units.
The course will provide a basic understanding of how the ocean functions as a suite of interconnected ecosystems, both naturally and under the influence of human activities. Emphasis is on the interactions between the physical and chemical environment and the dominant organisms of each ecosystem. The types of ecosystems discussed include coral reefs, deep-sea hydrothermal vents, coastal upwelling systems, blue-water oceans, estuaries, and near-shore dead zones. Lectures, multimedia presentations, group activities, and tide-pooling day trip.
Same as: EARTHSYS 8

ESS 38N. The Worst Journey in the World: The Science, Literature, and History of Polar Exploration. 3 Units.
This course examines the motivations and experiences of polar explorers under the harshest conditions on Earth, as well as the chronicles of their explorations and hardships, dating to the 1500s for the Arctic and the 1700s for the Antarctic. Materials include The Worst Journey in the World by Aspley Cherry-Garrard who in 1911 participated in a midwinter Antarctic sledging trip to recover emperor penguin eggs. Optional field trip into the high Sierra in March.
Same as: EARTHSYS 38N, GEOLSCI 38N

ESS 40. Approaching Palau: Preparation and Research Ideation and Development. 1 Unit.
This class is a seminar designed to prepare students participating in the 2019 Palau Seminar for possible research activities. Enrollment by approval of the instructors.
Same as: CEE 40

ESS 46N. Exploring the Critical Interface between the Land and Monterey Bay: Elkhorn Slough. 3 Units.
Preference to freshmen. Field trips to sites in the Elkhorn Slough, a small agriculturally impacted estuary that opens into Monterey Bay, a model ecosystem for understanding the complexity of estuaries, and one of California's last remaining coastal wetlands. Readings include Jane Caffrey's *Changes in a California Estuary: A Profile of Elkhorn Slough*. Basics of biogeochemistry, microbiology, oceanography, ecology, pollution, and environmental management.
Same as: EARTHSYS 46N

ESS 60. Food, Water and War: Life on the Mekong. 1 Unit.
Preparatory course for Bing Overseas Studies summer course in Cambodia. Prerequisite. Requires instructor consent.

ESS 61Q. Food and security. 3 Units.
The course will provide a broad overview of key policy issues concerning agricultural development and food security, and will assess how global governance is addressing the problem of food security. At the same time the course will provide an overview of the field of international security, and examine how governments and international institutions are beginning to include food in discussions of security.
Same as: EARTHSYS 61Q, INTNLREL 61Q

ESS 86N. The Most Rational People in the World. 4 Units.
Humans, broadly construed, emerged as bipedal apes in the African mixed savanna-woodlands approximately two million years ago. From humble beginnings, humans have gone on to be become the ecologically dominant species in most biomes and grown to a global population in excess of seven billion. This dominance arises from a combination of features of the human organism including its extreme degree of behavioral flexibility and flexible social organization. The prima facie evidence of human evolutionary and ecological success raises a paradox with respect to recent work in economics and psychology which increasingly argues for pervasive irrationality in human decision-making in a wide array of behavioral contexts. How is it possible for an organism with such seemingly flawed software supporting decision-making to become the globally dominant species? We will use this contradiction as the launching point for understanding what rationality means in a broad ecological and cross-cultural context. What do we mean by `rationality¿? How do different disciplines conceive of rationality in different ways? Is there such a thing as a rationality that transcends cultural differences or is the very idea of rationality a cultural construction that is used to justify imperialism and other modes of paternalism? Are there systematic factors that promote or impede rational decision-making? The seminar will provide a gentle introduction to the formal approaches of decision theory which we will apply to an unusual array of topics centered on the subsistence and reproductive decisions of hunter-gatherers, horticulturalists, pastoralists, and agrarian peasants, in short, people living in face-to-face, subsistence societies. In addition to doing reading from a broad array of social and natural science disciplines around the topic of rationality, students will regularly engage in exercises to assess their own approaches to decision-making.

ESS 101. Environmental and Geological Field Studies in the Rocky Mountains. 3 Units.
Three-week, field-based program in the Greater Yellowstone/Teton and Wind River Mountains of Wyoming. Field-based exercises covering topics including: basics of structural geology and petrology; glacial geology; western cordillera geology; paleoclimatology; chemical weathering; aqueous geochemistry; and environmental issues such as acid mine drainage and changing land-use patterns.
Same as: EARTHSYS 100

ESS 102. Scientific Basis of Climate Change. 3-5 Units.
This course explores the scientific basis of anthropogenic climate change. We will read the original papers that established the scientific foundation for the climate change forecast. Starting with Fourier¿s description of the greenhouse effect, we trace the history of the key insights into how humanity is perturbing the climate system. The course is based on ¿The Warming Papers,¿ edited by David Archer and Raymond Pierrehumbert. Participants take turns presenting and leading a discussion of the papers and of Archer and Pierrehumbert¿s commentary.
Same as: ESS 202

ESS 103. Planetary Atmospheres: Dynamics. 3-5 Units.
This course describes the physics and general circulation of planetary atmospheres in the Solar System and among the growing zoo of exoplanets. Topics include observations, energy balance, composition, radiation and convection, with emphasis on giant/fluid planets. Prerequisites: Math 51 or CME 100 or equivalent, and ESS 246A and ESS 246B, or consent of the instructor.
Same as: ESS 203

ESS 106. World Food Economy. 5 Units.
The economics of food production, consumption, and trade. The micro- and macro- determinants of food supply and demand, including the interrelationship among food, income, population, and public-sector decision making. Emphasis on the role of agriculture in poverty alleviation, economic development, and environmental outcomes. Grades based on mid-term exam and group modeling project and presentation. Enrollment is by application only and will be capped at 25, with priority given to upper level undergraduates in Economics and Earth Systems and graduate students (graduate students enroll in 206). Application found at https://economics.stanford.edu/academics/undergraduate-program/forms.
Same as: EARTHSYS 106, EARTHSYS 206, ECON 106, ECON 206, ESS 206

ESS 107. Control of Nature. 3 Units.
Think controlling the earth's climate is science fiction? It is when you watch Snowpiercer or Dune, but scientists are already devising geoengineering schemes to slow climate change. Will we ever resurrect the woolly mammoth or even a T. Rex (think Jurassic Park)? Based on current research, that day will come in your lifetime. Who gets to decide what species to save? And more generally, what scientific and ethical principles should guide our decisions to control nature? In this course, we will examine the science behind ways that people alter and engineer the earth, critically examining the positive and negative consequences. We'll explore these issues first through popular movies and books and then, more substantively, in scientific research.
Same as: EARTHSYS 107

ESS 108. Research Preparation for Undergraduates. 1 Unit.
For undergraduates planning to conduct research during the summer with faculty through the MUIR and SUPER programs. Readings, oral presentations, proposal development. May be repeated for credit.

ESS 109. Biological and Social Networks. 3-5 Units.
This course introduces the analysis of social and biological networks with a focus on field data collected by interdisciplinary environmental and health scientists. Beginning from the premise that structure emerges from relationships between individual entities, we will concentrate in particular on the measurement of relationships, emphasizing especially practical methodology for mixed-method fieldwork suitable for interdisciplinary biosocial sciences (e.g., earth system science, epidemiology, demography, anthropology, conservation science). Topics include: social relationships in humans and other animals, ecological networks (e.g., trophic and mutualistic interactions), epidemiological networks, research design for collecting relational data, naturalistic observation, ethnographic network methods, sampling, data quality, missing data, graphs and graph theory, structural measures (e.g., density, centrality and centralization, clustering and community detection, embeddedness), network evolution, network diffusion, emergence, egocentric networks, multi-mode/multi-layer networks, inference for sampled networks. All computation and visualization will be done in R so some familiarity is assumed.
Same as: ESS 209

ESS 111. Biology and Global Change. 4 Units.
The biological causes and consequences of anthropogenic and natural changes in the atmosphere, oceans, and terrestrial and freshwater ecosystems. Topics: glacial cycles and marine circulation, greenhouse gases and climate change, tropical deforestation and species extinctions, and human population growth and resource use. Prerequisite: Biology or Human Biology core or BIO 81 or graduate standing.
Same as: BIO 117, EARTHSYS 111, EARTHSYS 217

ESS 112. Human Society and Environmental Change. 4 Units.
Interdisciplinary approaches to understanding human-environment interactions with a focus on economics, policy, culture, history, and the role of the state. Prerequisite: ECON 1.
Same as: EARTHSYS 112, EARTHSYS 212, HISTORY 103D

ESS 115. Approaching Nepal: Coupled Human-Natural Systems of the Solokhumbu. 1-2 Unit.
This class designed to prepare students participating in the 2020 BOSP Nepal Seminar. Through readings, lectures, and class discussions, students will acquire a working knowledge of coupled human-natural system theory and examine case studies of CHNS analysis in the region. We will also provide content on the history of Nepal and the Sherpa people, Buddhist and Hindu thoughts on nature and resources, agricultural systems across Himalayan ecotones, and geology, glaciology, water, and energy issues relevant to the course itinerary. The class will meet weekly through the Spring quarter. We may switch the time to accommodate the schedules of all enrolled students. The class is mandatory for students participating in BOSP Nepal 2020.
Same as: ESS 215

ESS 117. Earth Sciences of the Hawaiian Islands. 4 Units.
Progression from volcanic processes through rock weathering and soil-ecosystem development to landscape evolution. The course starts with an investigation of volcanic processes, including the volcano structure, origin of magmas, physical-chemical factors of eruptions. Factors controlling rock weathering and soil development, including depth and nutrient levels impacting plant ecosystems, are explored next. Geomorphic processes of landscape evolution including erosion rates, tectonic/volcanic activity, and hillslope stability conclude the course. Methods for monitoring and predicting eruptions, defining spatial changes in landform, landform stability, soil production rates, and measuring biogeochemical processes are covered throughout the course. This course is restricted to students accepted into the Earth Systems of Hawaii Program.
Same as: EARTH 117, EARTHSYS 117

ESS 118X. Shaping the Future of the Bay Area. 3-5 Units.
The complex urban problems affecting quality of life in the Bay Area, from housing affordability and transportation congestion to economic vitality and social justice, are already perceived by many to be intractable, and will likely be exacerbated by climate change and other emerging environmental and technological forces. Changing urban systems to improve the equity, resilience and sustainability of communities will require new collaborative methods of assessment, goal setting, and problem solving across governments, markets, and communities. It will also require academic institutions to develop new models of co-production of knowledge across research, education, and practice. This XYZ course series is designed to immerse students in co-production for social change. The course sequence covers scientific research and ethical reasoning, skillsets in data-driven and qualitative analysis, and practical experience working with local partners on urban challenges that can empower students to drive responsible systems change in their future careers. The Autumn (X) course is specifically focused on concepts and skills, and completion is a prerequisite for participation in the Winter (Y) and/or Spring (Z) practicum quarters, which engage teams in real-world projects with Bay Area local governments or community groups. X is composed of four modules: (A) participation in two weekly classes which prominently feature experts in research and practice related to urban systems; (B) reading and writing assignments designed to deepen thinking on class topics; (C) fundamental data analysis skills, particularly focused on Excel and ArcGIS, taught in lab sessions through basic exercises; (D) advanced data analysis skills, particularly focused on geocomputation in R, taught through longer and more intensive assignments. X can be taken for 3 units (ABC), 4 units (ACD), or 5 units (ABCD). Open to undergraduate and graduate students in any major. For more information, visit http://bay.stanford.edu.
Same as: CEE 118X, CEE 218X, ESS 218X, GEOLSCI 118X, GEOLSCI 218X, GEOPHYS 118X, GEOPHYS 218X, POLISCI 218X, PUBLPOL 118X, PUBLPOL 218X

ESS 118Y. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 118Y, CEE 218Y, ESS 218Y, GEOLSCI 118Y, GEOLSCI 218Y, GEOPHYS 118Y, GEOPHYS 218Y, POLISCI 218Y, PUBLPOL 118Y, PUBLPOL 218Y

ESS 118Z. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 118Z, CEE 218Z, ESS 218Z, GEOLSCI 118Z, GEOLSCI 218Z, GEOPHYS 118Z, GEOPHYS 218Z, POLISCI 218Z

ESS 123. Biosphere-Atmosphere Interactions. 3-4 Units.
How do ecosystems respond to climate, and how do ecosystems influence climate? Covers the role of the terrestrial land surface in earth's climate system, including among others photosynthesis, transpiration, greenhouse gasses, radiation, and atmospheric water vapor. For each of these topics, attention is paid to both the underlying processes and how they can be mathematically represented in earth system models. Instruments and techniques used to measure these processes are also discussed, and, where appropriate, demonstrated.
Same as: EARTHSYS 123A, EARTHSYS 223, ESS 223

ESS 125. INTRODUCTION TO PLANETARY SCIENCE. 3-4 Units.
This course provides an introduction to planetary science through the exploration of processes that formed and modified planetary bodies within the Solar System and beyond. Each lecture will be given by an expert in a specific subfield of planetary sciences, with topics ranging from planetary materials and formation, planetary dynamics, planetary structure and tectonics, planetary atmospheres, impact cratering, surface processes, and astrobiology. We will also discuss how scientists investigate planets both near and far through sample analysis, telescopic and orbital remote sensing as well as in situ through robotic instruments. Although there are no prerequisites for this course, it is primarily directed towards undergraduate students who are majoring (or plan to) in the sciences or engineering. A minimum level of mathematics equivalent to high school algebra and introductory calculus will be necessary.
Same as: GEOLSCI 124, GEOPHYS 124

ESS 132. Evolution of Earth Systems. 4 Units.
This course examines biogeochemical cycles and how they developed through the interaction between the atmosphere, hydrosphere, biosphere, and lithosphere. Emphasis is on the long-term carbon cycle and how it is connected to other biogeochemical cycles on Earth. The course consists of lectures, discussion of research papers, and quantitative modeling of biogeochemical cycles. Students produce a model on some aspect of the cycles discussed in this course. Grades based on class interaction, student presentations, and the modeling project.
Same as: EARTHSYS 132, EARTHSYS 232, ESS 232, GEOLSCI 132, GEOLSCI 232

ESS 135. Community Leadership. 1-2 Unit.
Offered through Residential Education to residents of Castano House, Manzanita Park. Topics include: emotional intelligence, leadership styles, listening, facilitating meetings, group dynamics and motivation, finding purpose, fostering resilience. Students will lead discussions on personal development, relationships, risky behaviors, race, ethnicity, spirituality, integrity.

ESS 141. Remote Sensing of the Oceans. 3-4 Units.
How to observe and interpret physical and biological changes in the oceans using satellite technologies. Topics: principles of satellite remote sensing, classes of satellite remote sensors, converting radiometric data into biological and physical quantities, sensor calibration and validation, interpreting large-scale oceanographic features.
Same as: EARTHSYS 141, EARTHSYS 241, ESS 241, GEOPHYS 141

ESS 143. Molecular Geomicrobiology Laboratory. 3-4 Units.
In this course, students will be studying the biosynthesis of cyclic lipid biomarkers, molecules that are produced by modern microbes that can be preserved in rocks that are over a billion years old and which geologist use as molecular fossils. Students will be tasked with identifying potential biomarker lipid synthesis genes in environmental genomic databases, expressing those genes in a model bacterial expression system in the lab, and then analyzing the lipid products that are produced. The overall goal is for students to experience the scientific research process including generating hypotheses, testing these hypotheses in laboratory experiments, and communicating their results through a publication style paper. Prerequisites: BIO83 and CHEM 121 or permission of the instructor.
Same as: BIO 142, EARTHSYS 143, ESS 243

ESS 148. Introduction to Physical Oceanography. 4 Units.
The dynamic basis of oceanography. Topics: physical environment; conservation equations for salt, heat, and momentum; geostrophic flows; wind-driven flows; the Gulf Stream; equatorial dynamics and ENSO; thermohaline circulation of the deep oceans; and tides. Prerequisite: PHYSICS 41.
Same as: CEE 162D, CEE 262D, EARTHSYS 164

ESS 151. Biological Oceanography. 3-4 Units.
Required for Earth Systems students in the oceans track. Interdisciplinary look at how oceanic environments control the form and function of marine life. Topics include distributions of planktonic production and abundance, nutrient cycling, the role of ocean biology in the climate system, expected effects of climate changes on ocean biology. Local weekend field trips. Designed to be taken concurrently with Marine Chemistry (ESS/EARTHSYS 152/252). Prerequisites: BIO 43 and ESS 8 or equivalent.
Same as: EARTHSYS 151, EARTHSYS 251, ESS 251

ESS 152. Marine Chemistry. 3-4 Units.
Introduction to the interdisciplinary knowledge and skills required to critically evaluate problems in marine chemistry and related disciplines. Physical, chemical, and biological processes that determine the chemical composition of seawater. Air-sea gas exchange, carbonate chemistry, and chemical equilibria, nutrient and trace element cycling, particle reactivity, sediment chemistry, and diagenesis. Examination of chemical tracers of mixing and circulation and feedbacks of ocean processes on atmospheric chemistry and climate. Designed to be taken concurrently with Biological Oceanography (ESS/EARTHSYS 151/251).
Same as: EARTHSYS 152, EARTHSYS 252, ESS 252

ESS 155. Science of Soils. 3-4 Units.
Physical, chemical, and biological processes within soil systems. Emphasis is on factors governing nutrient availability, plant growth and production, land-resource management, and pollution within soils. How to classify soils and assess nutrient cycling and contaminant fate. Recommended: introductory chemistry and biology.
Same as: EARTHSYS 155

ESS 158. Geomicrobiology. 3 Units.
How microorganisms shape the geochemistry of the Earth's crust including oceans, lakes, estuaries, subsurface environments, sediments, soils, mineral deposits, and rocks. Topics include mineral formation and dissolution; biogeochemical cycling of elements (carbon, nitrogen, sulfur, and metals); geochemical and mineralogical controls on microbial activity, diversity, and evolution; life in extreme environments; and the application of new techniques to geomicrobial systems. Recommended: introductory chemistry and microbiology such as CEE 274A.
Same as: EARTHSYS 158, EARTHSYS 258, ESS 258

ESS 162. Remote Sensing of Land. 4 Units.
The use of satellite remote sensing to monitor land use and land cover, with emphasis on terrestrial changes. Topics include pre-processing data, biophysical properties of vegetation observable by satellite, accuracy assessment of maps derived from remote sensing, and methodologies to detect changes such as urbanization, deforestation, vegetation health, and wildfires.
Same as: EARTHSYS 142, EARTHSYS 242, ESS 262

ESS 163. Demography and Life History Theory. 5 Units.
Life history theory is the branch of evolutionary biology that attempts to understand patterns of investment in growth, reproduction, and survival across the life cycle. It is the theory that explains the major transitions that mark individual organisms' life cycles from conception to death. In this class, we will focus on the central themes of life history theory and how they relate to specific problems of the human life cycle. In addition to the classic questions of life history theory (e.g., evolution of reproductive effort, size vs. quality, etc.), we will discuss some peculiar issues that relate specifically to humans. In particular, we will explore the intersection of life history theory and more classical economic approaches to decision theory and rational choice. This will include an exploration of the evolution of economic transfers and their implications for demographic transitions, ecological resilience, and the consumption of natural resources. This discussion will explore how an understanding of life history theory might help in promoting investments in future welfare or developing policies that promote sustainability.
Same as: ESS 363

ESS 164. Fundamentals of Geographic Information Science (GIS). 1-4 Unit.
"Everything is somewhere, and that somewhere matters." The rapid growth and maturity of spatial data technologies over the past decade represent a paradigm shift in the applied use of location data from high-level overviews of administrative interests, to highly personalized location-based services that place the individual at the center of the map, at all times. The use of spatial data and related technology continues to grow in fields ranging from environmental sciences to epidemiology to market prediction. This course will present an overview of current approaches to the use of spatial data and its creation, capture, management, analysis and presentation, in a research context. Topics will include modeling of geographic objects and associated data, modeling of geographic space and the conceptual foundations of "spatial thinking," field data collection, basic spatial statistical analysis, remote sensing & the use of satellite-based imagery, "Big Data" and machine learning approaches to spatial data, and cartographic design and presentation including the use of web-based "Storymap" platforms.n nThe course will consist of weekly lectures, guest speakers, computer lab assignments and an individual final project requirement. nnThis course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit. In AY 2020-21, a letter grade or `CR' grade satisfies the Ways requirement.
Same as: EARTHSYS 144

ESS 165. Advanced Geographic Information Systems. 4 Units.
Building on the Fundamentals of Geographic Information Systems course, this class delves deeper into geospatial analysis and mapping techniques. The class is heavily project-based and students are encouraged to bring their own research questions. Topics include topographic analysis, interpolation, spatial statistics, network analysis, and scripting using Python and Acrpy. All students are required to attend a weekly lab. ESS 164 or equivalent is a prerequisite.
Same as: ESS 265

ESS 170. Analyzing land use in a globalized world. 3 Units.
This course examines the dynamics of land use in relation to globalization. The objective is to understand how the expansion of global trade, and public and private regulations affect land use changes. The course will enable students to better understand how to effectively influence land use change, from different vantage points (government, NGO, corporate actor¿). The main emphasis is on tropical regions. Lectures introduce theories, practical cases, and evaluation tools to better understand contemporary land use dynamics.
Same as: ESS 270

ESS 171. Climate Models and Data. 3 Units.
Overview of key concepts necessary to develop familiarity with climate modeling and data. Topics covered will include components of the climate system, climate change and global warming, and model mechanics, their evaluation and usability, and predictability. Assessments will involve the use of datasets and model output, so some knowledge of programming is a pre-requisite.
Same as: ESS 271

ESS 179S. Seminar: Issues in Environmental Science, Technology and Sustainability. 1-2 Unit.
Invited faculty, researchers and professionals share their insights and perspectives on a broad range of environmental and sustainability issues. Students critique seminar presentations and associated readings.
Same as: CEE 179S, CEE 279S, EARTHSYS 179S

ESS 181. Urban Agroecology. 3 Units.
The United Nations estimates that up to 15% of the world's food is produced in and around cities. Urban populations are projected to continue rising and urban agriculture in its many forms has been shown to provide multiple benefits to urban communities. This class will survey urban agriculture around the world while training you in small-scale food production practices. The emphasis will be on ecological approaches to the design and stewardship of urban farms and gardens. nnnIf permitted, given the challenges of COVID-19, the course will be taught in-person, outdoors at the Stanford Educational Farm. nn nThis is a 3-unit, Earth Systems practicum course that meets on Wednesdays from noon to 3pm. Space is limited and applications are due by Friday 8/28. Students will be notified if they are admitted to the course by 9/4. For the course application go to: https://stanforduniversity.qualtrics.com/jfe/form/SV_86udp8aEuWUCnNH.
Same as: EARTHSYS 181, EARTHSYS 281, ESS 281, URBANST 181

ESS 185. Adaptation. 3 Units.
Adaptation is the process by which organisms or societies become better suited to their environments. In this class, we will explore three distinct but related notions of adaptation. Biological adaptations arise through natural selection, while cultural adaptations arise from a variety of processes, some of which closely resemble natural selection. A newer notion of adaptation has emerged in the context of climate change where adaptation takes on a highly instrumental, and often planned, quality as a response to the negative impacts of environmental change. We will discuss each of these ideas, using their commonalities and subtle differences to develop a broader understanding of the dynamic interplay between people and their environments. Topics covered will include, among others: evolution, natural selection, levels of selection, formal models of cultural evolution, replicator dynamics, resilience, rationality and its limits, complexity, adaptive management.
Same as: EARTHSYS 183

ESS 202. Scientific Basis of Climate Change. 3-5 Units.
This course explores the scientific basis of anthropogenic climate change. We will read the original papers that established the scientific foundation for the climate change forecast. Starting with Fourier¿s description of the greenhouse effect, we trace the history of the key insights into how humanity is perturbing the climate system. The course is based on ¿The Warming Papers,¿ edited by David Archer and Raymond Pierrehumbert. Participants take turns presenting and leading a discussion of the papers and of Archer and Pierrehumbert¿s commentary.
Same as: ESS 102

ESS 203. Planetary Atmospheres: Dynamics. 3-5 Units.
This course describes the physics and general circulation of planetary atmospheres in the Solar System and among the growing zoo of exoplanets. Topics include observations, energy balance, composition, radiation and convection, with emphasis on giant/fluid planets. Prerequisites: Math 51 or CME 100 or equivalent, and ESS 246A and ESS 246B, or consent of the instructor.
Same as: ESS 103

ESS 204. Virtual Scientific Presentation and Public Speaking. 2 Units.
The ability to present your research in a compelling, concise, and engaging manner will enhance your professional career. Virtual presentations make it harder to connect and interact with the audience, and to overcome this requires new skills, including video, sound, lighting, live vs. pre-recorded content, and virtual posters. These elements will be the focus of this class. But regardless of format, I will work to convince you that the best way to capture an audience and leave a lasting impression is to tell a story, do a demo, or pick a fight. The course is taught as a series of stand-and-deliver exercises with class feedback and revision on the fly, supplemented by one-on-one coaching. We will have sessions on virtual conference presentations, virtual job interviews and job talks, departmental seminars, webinars, press interviews, and funding pitches. My pledge is that everyone will come away a more skilled and confident speaker than they were before. Grades are optional: 70% in-class exercises, 30% final project, such as your upcoming AGU, GSA, or SEG presentation. It's best to take the course when you have research to present. (http://syllabus.stanford.edu).
Same as: GEOLSCI 306, GEOPHYS 205

ESS 205. Fundamentals of Geobiology. 3 Units.
Lecture and discussion covering key topics in the history of life on Earth, as well as basic principles that apply to life in the universe. Co-evolution of Earth and life; critical intervals of environmental and biological change; geomicrobiology; paleobiology; global biogeochemical cycles; scaling of geobiological processes in space and time.
Same as: EARTHSYS 205A, GEOLSCI 205

ESS 206. World Food Economy. 5 Units.
The economics of food production, consumption, and trade. The micro- and macro- determinants of food supply and demand, including the interrelationship among food, income, population, and public-sector decision making. Emphasis on the role of agriculture in poverty alleviation, economic development, and environmental outcomes. Grades based on mid-term exam and group modeling project and presentation. Enrollment is by application only and will be capped at 25, with priority given to upper level undergraduates in Economics and Earth Systems and graduate students (graduate students enroll in 206). Application found at https://economics.stanford.edu/academics/undergraduate-program/forms.
Same as: EARTHSYS 106, EARTHSYS 206, ECON 106, ECON 206, ESS 106

ESS 208. Topics in Geobiology. 1 Unit.
Reading course addressing current topics in geobiology. Topics will vary from year to year, but will generally cover areas of current debate in the primary literature, such as the origin of life, the origin and consequences of oxygenic photosynthesis, environmental controls on and consequences of metabolic innovations in microbes, the early evolution of animals and plants, and the causes and consequences of major extinction events. Participants will be expected to read and present on current papers in the primary literature.
Same as: GEOLSCI 208

ESS 209. Biological and Social Networks. 3-5 Units.
This course introduces the analysis of social and biological networks with a focus on field data collected by interdisciplinary environmental and health scientists. Beginning from the premise that structure emerges from relationships between individual entities, we will concentrate in particular on the measurement of relationships, emphasizing especially practical methodology for mixed-method fieldwork suitable for interdisciplinary biosocial sciences (e.g., earth system science, epidemiology, demography, anthropology, conservation science). Topics include: social relationships in humans and other animals, ecological networks (e.g., trophic and mutualistic interactions), epidemiological networks, research design for collecting relational data, naturalistic observation, ethnographic network methods, sampling, data quality, missing data, graphs and graph theory, structural measures (e.g., density, centrality and centralization, clustering and community detection, embeddedness), network evolution, network diffusion, emergence, egocentric networks, multi-mode/multi-layer networks, inference for sampled networks. All computation and visualization will be done in R so some familiarity is assumed.
Same as: ESS 109

ESS 210. Techniques in Environmental Microbiology. 3-4 Units.
Fundamentals and application of laboratory techniques to study the diversity and activity of microorganisms in environmental samples, including soil, sediment, and water. Emphasis is on culture-independent approaches, including epifluorescence microscopy, extraction and analysis of major biomolecules (DNA, RNA, protein, lipids), stable isotope probing, and metabolic rate measurements. Format will include lectures, laboratory exercises, and discussions. Students will learn how to collect, analyze, and understand common and cutting-edge datasets in environmental microbiology. Permission from instructor is required to enroll as C/NC or for 3 units.

ESS 211. Fundamentals of Modeling. 3-5 Units.
Simulation models are a powerful tool for environmental research, if used properly. The major concepts and techniques for building and evaluating models. Topics include model calibration, model selection, uncertainty and sensitivity analysis, and Monte Carlo and bootstrap methods. Emphasis is on gaining hands-on experience using the R programming language. Prerequisite: Basic knowledge of statistics.
Same as: EARTHSYS 211

ESS 212. Measurements in Earth Systems. 3-4 Units.
A classroom, laboratory, and field class designed to provide students familiarity with techniques and instrumentation used to track biological, chemical, and physical processes operating in earth systems, encompassing upland, aquatic, estuarine, and marine environments. Topics include gas and water flux measurement, nutrient and isotopic analysis, soil and water chemistry determination. Students will develop and test hypotheses, provide scientific evidence and analysis, culminating in a final presentation.
Same as: EARTHSYS 124

ESS 213. Global Change and Emerging Infectious Disease. 4-5 Units.
The changing epidemiological environment. How human-induced environmental changes, such as global warming, deforestation and land-use conversion, urbanization, international commerce, and human migration, are altering the ecology of infectious disease transmission, and promoting their re-emergence as a global public health threat. Case studies of malaria, cholera, hantavirus, plague, and HIV.
Same as: EARTHSYS 114, EARTHSYS 214, HUMBIO 114

ESS 214. Introduction to geostatistics and modeling of spatial uncertainty. 3-4 Units.
Introduction of fundamental geostatistical tools for modeling spatial variability and uncertainty, and mapping of environmental attributes. Additional topics include sampling design and incorporation of different types of information (continuous, categorical) in prediction. Assignments consist of small problems to familiarize students with theoretical concepts, and applications dealing with the analysis and interpretation of various data sets (soil, water pollution, atmospheric constituents, remote sensing) primarily using Matlab. No prior programming experience is required. Open to graduates. Open to undergraduates with consent from the instructor. 3-credit option includes midterm/final or student-developed project. 4-credit option requires both. Prerequisite: College-level introductory statistics.

ESS 215. Approaching Nepal: Coupled Human-Natural Systems of the Solokhumbu. 1-2 Unit.
This class designed to prepare students participating in the 2020 BOSP Nepal Seminar. Through readings, lectures, and class discussions, students will acquire a working knowledge of coupled human-natural system theory and examine case studies of CHNS analysis in the region. We will also provide content on the history of Nepal and the Sherpa people, Buddhist and Hindu thoughts on nature and resources, agricultural systems across Himalayan ecotones, and geology, glaciology, water, and energy issues relevant to the course itinerary. The class will meet weekly through the Spring quarter. We may switch the time to accommodate the schedules of all enrolled students. The class is mandatory for students participating in BOSP Nepal 2020.
Same as: ESS 115

ESS 218X. Shaping the Future of the Bay Area. 3-5 Units.
The complex urban problems affecting quality of life in the Bay Area, from housing affordability and transportation congestion to economic vitality and social justice, are already perceived by many to be intractable, and will likely be exacerbated by climate change and other emerging environmental and technological forces. Changing urban systems to improve the equity, resilience and sustainability of communities will require new collaborative methods of assessment, goal setting, and problem solving across governments, markets, and communities. It will also require academic institutions to develop new models of co-production of knowledge across research, education, and practice. This XYZ course series is designed to immerse students in co-production for social change. The course sequence covers scientific research and ethical reasoning, skillsets in data-driven and qualitative analysis, and practical experience working with local partners on urban challenges that can empower students to drive responsible systems change in their future careers. The Autumn (X) course is specifically focused on concepts and skills, and completion is a prerequisite for participation in the Winter (Y) and/or Spring (Z) practicum quarters, which engage teams in real-world projects with Bay Area local governments or community groups. X is composed of four modules: (A) participation in two weekly classes which prominently feature experts in research and practice related to urban systems; (B) reading and writing assignments designed to deepen thinking on class topics; (C) fundamental data analysis skills, particularly focused on Excel and ArcGIS, taught in lab sessions through basic exercises; (D) advanced data analysis skills, particularly focused on geocomputation in R, taught through longer and more intensive assignments. X can be taken for 3 units (ABC), 4 units (ACD), or 5 units (ABCD). Open to undergraduate and graduate students in any major. For more information, visit http://bay.stanford.edu.
Same as: CEE 118X, CEE 218X, ESS 118X, GEOLSCI 118X, GEOLSCI 218X, GEOPHYS 118X, GEOPHYS 218X, POLISCI 218X, PUBLPOL 118X, PUBLPOL 218X

ESS 218Y. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 118Y, CEE 218Y, ESS 118Y, GEOLSCI 118Y, GEOLSCI 218Y, GEOPHYS 118Y, GEOPHYS 218Y, POLISCI 218Y, PUBLPOL 118Y, PUBLPOL 218Y

ESS 218Z. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 118Z, CEE 218Z, ESS 118Z, GEOLSCI 118Z, GEOLSCI 218Z, GEOPHYS 118Z, GEOPHYS 218Z, POLISCI 218Z

ESS 220. Physical Hydrogeology. 4 Units.
(Formerly GES 230.) Theory of underground water occurrence and flow, analysis of field data and aquifer tests, geologic groundwater environments, solution of field problems, and groundwater modeling. Introduction to groundwater contaminant transport and unsaturated flow. Lab. Prerequisite: elementary calculus.
Same as: CEE 260A

ESS 221. Contaminant Hydrogeology and Reactive Transport. 3 Units.
Decades of industrial activity have released vast quantities of contaminants to groundwater, threatening water resources, ecosystems and human health. What processes control the fate and transport of contaminants in the subsurface? What remediation strategies are effective and what are the tradeoffs among them? How are these processes represented in models used for regulatory and decision-making purposes? This course will address these and related issues by focusing on the conceptual and quantitative treatment of advective-dispersive transport with reacting solutes, including modern methods of contaminant transport simulation. Some Matlab programming / program modification required. Prerequisite: Physical Hydrogeology ESS 220 / CEE 260A (Gorelick) or equivalent and college-level course work in chemistry.
Same as: CEE 260C

ESS 223. Biosphere-Atmosphere Interactions. 3-4 Units.
How do ecosystems respond to climate, and how do ecosystems influence climate? Covers the role of the terrestrial land surface in earth's climate system, including among others photosynthesis, transpiration, greenhouse gasses, radiation, and atmospheric water vapor. For each of these topics, attention is paid to both the underlying processes and how they can be mathematically represented in earth system models. Instruments and techniques used to measure these processes are also discussed, and, where appropriate, demonstrated.
Same as: EARTHSYS 123A, EARTHSYS 223, ESS 123

ESS 224. Remote Sensing of Hydrology. 3 Units.
This class discusses the methods available for remote sensing of the components of the terrestrial hydrologic cycle and how to use them. Topics include the hydrologic cycle, relevant sensor types and the electromagnetic spectrum, active/passive microwave remote sensing (snow, soil moisture, canopy water content, rainfall), thermal sensing of evapotranspiration, gravity and hyperspectral methods, as well as an introduction to data assimilation and calibration/validation approaches for hydrologic variables. Pre-requisite: programming experience.
Same as: CEE 260D

ESS 225. Rivers: The Arteries of Earth's Continents. 3 Units.
Rivers are the arteries of Earth's continents, conveying water, sediments, and solutes from the headwaters to the oceans. They provide a haven for life and have been at the heart of the world's economy by generating fertile floodplains, human habitats, as well as by facilitating international commerce. This course offers a quantitative examination of rivers, from headwaters to deltas. We will first develop a basic mechanistic understanding of fluvial processes, including flow hydraulics, erosion, sediment transport, and deposition. We will then apply our acquired knowledge through thematic discussions of relevant issues. Possible themes include deltas and climate change, rivers and human activity (damming, sand mining, deforestation), rivers and the evolution of land plants, rivers and biogeochemical cycles, submarine channels, and the alien rivers of Mars and Titan.
Same as: GEOLSCI 224, GEOPHYS 221

ESS 227. Decision Science for Environmental Threats. 3-5 Units.
Decision science is the study of how people make decisions. It aims to describe these processes in ways that will help people make better or more well-informed decisions. It is an interdisciplinary field that draws upon psychology, economics, political science, and management, among other disciplines. It is being used in a number of domain areas and for a variety of applications, including managing freshwater resources, designing decision support tools to aid in coastal adaptation to sea-level rise, and creating "nudges" to enhance energy efficiency behaviors. This course covers behavioral theories of probabilistic inference, intuitive prediction, preference, and decision making. Topics include heuristics and biases, risk perceptions and attitudes, strategies for combining different sources of information and dealing with conflicting objectives, and the roles of group and emotional processes in decision making. This course will introduce students to foundational theories of decision science, and will involve applying these theories to understand decisions about environmental threats.
Same as: EARTHSYS 227

ESS 230. Pursuing Sustainability: Managing Complex Social Environmental Systems. 3 Units.
This course provides a systems framework for understanding and managing social-environmental systems, with the ultimate goal of inclusive, equitable, intra- and intergenerational human well-being. It explores the roles of natural, human, social, technological and knowledge resources in supporting efforts toward sustainability, and examines the trade-offs, feedbacks, non-linearities and other interactions among different parts of complex systems that must be addressed to avoid unintended negative consequences for people and environment. Finally, it provides an overview of the tools, approaches, and strategies that assist with management of assets for sustainability goals. The course draws on readings from a variety of on-line sources as well as chapters and case studies provided in the required text. Priority given to SUST students. Enrollment open to seniors and graduate students only. Please contact program staff at rachelx@stanford.edu for permission code.
Same as: SUST 210

ESS 231. Coral Reefs of the Western Pacific: Interdisciplinary perspectives, emerging crises, and solutions. 3 Units.
This new graduate-level course focuses on the complex interplay of biology, physics, chemistry, and human activities that both promotes and limits the development of coral reefs. We will examine the ecology of these biodiverse systems as well as the service they provide in terms of rapid nutrient recycling, coastal protection, and maintenance of large populations of fish. New advances in our understanding of coral reefs will be highlighted, including the role of climate variability and micro- and mesoscale fluid flow in controlling reef growth and persistence, the physiology, genomics, and physics underpinning thermal resilience in corals, contributing and mitigating factors involved in the current decline of coral reefs, ocean acidification, fishing, reef-scale trophic modeling, ecological interactions and trophic cascades, and reefs as part of complex seascapes and linkages with other marine ecosystems. The course will conclude with an analysis of science to policy case studies and future opportunities. The faculty leaders collectively have over 100 years of field experience working in coral reefs of the Pacific and despite our forced online teaching and learning format will endeavor to bring the coral reef field experience to life for this class.

ESS 232. Evolution of Earth Systems. 4 Units.
This course examines biogeochemical cycles and how they developed through the interaction between the atmosphere, hydrosphere, biosphere, and lithosphere. Emphasis is on the long-term carbon cycle and how it is connected to other biogeochemical cycles on Earth. The course consists of lectures, discussion of research papers, and quantitative modeling of biogeochemical cycles. Students produce a model on some aspect of the cycles discussed in this course. Grades based on class interaction, student presentations, and the modeling project.
Same as: EARTHSYS 132, EARTHSYS 232, ESS 132, GEOLSCI 132, GEOLSCI 232

ESS 233. Mitigating Climate Change through Soil Management. 2 Units.
Climate change is one of the greatest crises facing our world. Increasing soil organic carbon storage may be a key strategy for mitigating global climate change, with the potential to offset approximately 20% of annual global fossil fuel emissions. In this course, we will learn about soil carbon cycling, its contribution to the global carbon cycle, how carbon is stored in soil, and land management practices that can increase or decrease soil carbon stocks, thereby mitigating or exacerbating climate change. Although the content is centered on soil carbon, the processes and skills learned in this course can be applied to design solutions to any environmental problem.nnPrerequisites: Some knowledge of soils, introductory chemistry, and introductory biology would be useful but not necessary. Please email the instructor if you have any concerns or questions.
Same as: EARTHSYS 233

ESS 239. Data science for geoscience. 3 Units.
This course provides an overview of the most relevant areas of data science (applied statistics, machine learning & computer vision) to address geoscience challenges, questions and problems. Using actual geoscientific research questions as background, principles and methods of data scientific analysis, modeling, and prediction are covered. Data science areas covered are: extreme value statistics, multi-variate analysis, factor analysis, compositional data analysis, spatial information aggregation models, spatial estimation, geostatistical simulation, treating data of different scales of observation, spatio-temporal modeling (geostatistics). Application areas covered are: process geology, hazards, natural resources. Students are encouraged to participate actively in this course by means of their own data science research challenge or question.
Same as: EARTHSYS 240, ENERGY 240, GEOLSCI 240

ESS 240. Advanced Oceanography. 3 Units.
For upper-division undergraduates and graduate students in the natural sciences and engineering. Topical issues in marine science/oceanography. Topics vary each year following or anticipating research trends in ocean research and issues. For 2018, the focus is on the Arctic Ocean, including Arctic Oceanography, Ecosystems, Resource Utilization and Geopolitics, and Environmental Change.

ESS 241. Remote Sensing of the Oceans. 3-4 Units.
How to observe and interpret physical and biological changes in the oceans using satellite technologies. Topics: principles of satellite remote sensing, classes of satellite remote sensors, converting radiometric data into biological and physical quantities, sensor calibration and validation, interpreting large-scale oceanographic features.
Same as: EARTHSYS 141, EARTHSYS 241, ESS 141, GEOPHYS 141

ESS 242. Antarctic Marine Geology and Geophysics. 3 Units.
For upper-division undergraduates and graduate students. Intermediate and advanced topics in marine geology and geophysics, focusing on examples from the Antarctic continental margin and adjacent Southern Ocean. Topics: glaciers, icebergs, and sea ice as geologic agents (glacial and glacial marine sedimentology, Southern Ocean current systems and deep ocean sedimentation), Antarctic biostratigraphy and chronostratigraphy (continental margin evolution). Students interpret seismic lines and sediment core/well log data. Examples from a recent scientific drilling expedition to Prydz Bay, Antarctica.
Same as: EARTHSYS 272

ESS 243. Molecular Geomicrobiology Laboratory. 3-4 Units.
In this course, students will be studying the biosynthesis of cyclic lipid biomarkers, molecules that are produced by modern microbes that can be preserved in rocks that are over a billion years old and which geologist use as molecular fossils. Students will be tasked with identifying potential biomarker lipid synthesis genes in environmental genomic databases, expressing those genes in a model bacterial expression system in the lab, and then analyzing the lipid products that are produced. The overall goal is for students to experience the scientific research process including generating hypotheses, testing these hypotheses in laboratory experiments, and communicating their results through a publication style paper. Prerequisites: BIO83 and CHEM 121 or permission of the instructor.
Same as: BIO 142, EARTHSYS 143, ESS 143

ESS 244. Marine Ecosystem Modeling. 3 Units.
This course will provide the practical background necessary to construct and implement a 2-dimensional (space and time) numerical model of a simple marine ecosystem. Instruction on computer programming, model design and parameterization, and model evaluation will be provided. Throughout the 10-week course, each student will develop and refine their own multi-component marine ecosystem model. Instructor consent required.

ESS 245. Advanced Biological Oceanography. 2-3 Units.
For upper-division undergraduates and graduate students. For upper-division undergraduate and graduate students interested in an in-depth look at biological processes in the world's oceans. Themes will vary from year to year but will include such topics as marine bio-optics, marine ecological modeling, phytoplankton primary production, and others. Hands-on laboratory and computer activities will be an integral part of the course, as will field trips into local waters. May be repeated for credit. Enrollment by instructor consent only.

ESS 246A. Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation. 3 Units.
Introduction to the physics governing the circulation of the atmosphere and ocean and their control on climate with emphasis on the atmospheric circulation. Topics include the global energy balance, the greenhouse effect, the vertical and meridional structure of the atmosphere, dry and moist convection, the equations of motion for the atmosphere and ocean, including the effects of rotation, and the poleward transport of heat by the large-scale atmospheric circulation and storm systems. Prerequisites: MATH 51 or CME100 and PHYSICS 41.
Same as: CEE 161I, CEE 261I, EARTHSYS 146A

ESS 246B. Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation. 3 Units.
Introduction to the physics governing the circulation of the atmosphere and ocean and their control on climate with emphasis on the large-scale ocean circulation. This course will give an overview of the structure and dynamics of the major ocean current systems that contribute to the meridional overturning circulation, the transport of heat, salt, and biogeochemical tracers, and the regulation of climate. Topics include the tropical ocean circulation, the wind-driven gyres and western boundary currents, the thermohaline circulation, the Antarctic Circumpolar Current, water mass formation, atmosphere-ocean coupling, and climate variability. Prerequisites: MATH 51 or CME100; and PHYSICS 41; and a course that introduces the equations of fluid motion (e.g. ESS 246A, ESS 148, or CEE 101B).
Same as: CEE 162I, CEE 262I, EARTHSYS 146B

ESS 247. Tropical Meteorology. 3-4 Units.
Introduction to tropical meteorology and climate. Topics include radiative-convective equilibrium, Hadley and Walker circulations, equatorial waves, El Nino/Southern Oscillation, the Madden-Julian Oscillation, monsoons and tropical cyclones. Prerequisites: Math 51 or CME100; and (concurrent is acceptable) ESS 246A and ESS 246B, or consent of the instructor.

ESS 249. Marine Stable Isotopes. 3 Units.
This course will provide an introduction to stable isotopes biogeochemistry with emphasis on applications in marine science. We will cover fundamental concepts of nuclear structure and origin of elements and isotopes, and stable isotopic fractionation. We will discuss mass spectrometry techniques, mass independent fractionation, clumped isotopes, mass balance and box models. Applications of these concepts to studies of ocean circulation, marine carbon and nitrogen cycles, primary productivity, and particle scavenging will also be discussed.

ESS 251. Biological Oceanography. 3-4 Units.
Required for Earth Systems students in the oceans track. Interdisciplinary look at how oceanic environments control the form and function of marine life. Topics include distributions of planktonic production and abundance, nutrient cycling, the role of ocean biology in the climate system, expected effects of climate changes on ocean biology. Local weekend field trips. Designed to be taken concurrently with Marine Chemistry (ESS/EARTHSYS 152/252). Prerequisites: BIO 43 and ESS 8 or equivalent.
Same as: EARTHSYS 151, EARTHSYS 251, ESS 151

ESS 252. Marine Chemistry. 3-4 Units.
Introduction to the interdisciplinary knowledge and skills required to critically evaluate problems in marine chemistry and related disciplines. Physical, chemical, and biological processes that determine the chemical composition of seawater. Air-sea gas exchange, carbonate chemistry, and chemical equilibria, nutrient and trace element cycling, particle reactivity, sediment chemistry, and diagenesis. Examination of chemical tracers of mixing and circulation and feedbacks of ocean processes on atmospheric chemistry and climate. Designed to be taken concurrently with Biological Oceanography (ESS/EARTHSYS 151/251).
Same as: EARTHSYS 152, EARTHSYS 252, ESS 152

ESS 253S. Hopkins Microbiology Course. 3-12 Units.
(Formerly GES 274S.) Four-week, intensive. The interplay between molecular, physiological, ecological, evolutionary, and geochemical processes that constitute, cause, and maintain microbial diversity. How to isolate key microorganisms driving marine biological and geochemical diversity, interpret culture-independent molecular characterization of microbial species, and predict causes and consequences. Laboratory component: what constitutes physiological and metabolic microbial diversity; how evolutionary and ecological processes diversify individual cells into physiologically heterogeneous populations; and the principles of interactions between individuals, their population, and other biological entities in a dynamically changing microbial ecosystem. Prerequisites: CEE 274A and CEE 274B, or equivalents.
Same as: BIO 274S, BIOHOPK 274, CEE 274S

ESS 255. Microbial Physiology. 3 Units.
Introduction to the physiology of microbes including cellular structure, transcription and translation, growth and metabolism, mechanisms for stress resistance and the formation of microbial communities. These topics will be covered in relation to the evolution of early life on Earth, ancient ecosystems, and the interpretation of the rock record. Recommended: introductory biology and chemistry.
Same as: BIO 180, EARTHSYS 255, GEOLSCI 233A

ESS 256. Soil and Water Chemistry. 3 Units.
(Graduate students register for 256.) Practical and quantitative treatment of soil processes affecting chemical reactivity, transformation, retention, and bioavailability. Principles of primary areas of soil chemistry: inorganic and organic soil components, complex equilibria in soil solutions, and adsorption phenomena at the solid-water interface. Processes and remediation of acid, saline, and wetland soils. Recommended: soil science and introductory chemistry and microbiology.
Same as: EARTHSYS 256

ESS 258. Geomicrobiology. 3 Units.
How microorganisms shape the geochemistry of the Earth's crust including oceans, lakes, estuaries, subsurface environments, sediments, soils, mineral deposits, and rocks. Topics include mineral formation and dissolution; biogeochemical cycling of elements (carbon, nitrogen, sulfur, and metals); geochemical and mineralogical controls on microbial activity, diversity, and evolution; life in extreme environments; and the application of new techniques to geomicrobial systems. Recommended: introductory chemistry and microbiology such as CEE 274A.
Same as: EARTHSYS 158, EARTHSYS 258, ESS 158

ESS 259. Environmental Microbial Genomics. 1-3 Unit.
The application of molecular and environmental genomic approaches to the study of biogeochemically-important microorganisms in the environment without the need for cultivation. Emphasis is on genomic analysis of microorganisms by direct extraction and cloning of DNA from natural microbial assemblages. Topics include microbial energy generation and nutrient cycling, genome structure, gene function, physiology, phylogenetic and functional diversity, evolution, and population dynamics of uncultured communities.

ESS 260. Advanced Statistical Methods for Earth System Analysis. 3 Units.
Introduction for graduate students to important issues in data analysis relevant to earth system studies. Emphasis on methodology, concepts and implementation (in R), rather than formal proofs. Likely topics include the bootstrap, non-parametric methods, regression in the presence of spatial and temporal correlation, extreme value analysis, time-series analysis, high-dimensional regressions and change-point models. Topics subject to change each year. Prerequisites: STATS 110 or equivalent.
Same as: STATS 360

ESS 262. Remote Sensing of Land. 4 Units.
The use of satellite remote sensing to monitor land use and land cover, with emphasis on terrestrial changes. Topics include pre-processing data, biophysical properties of vegetation observable by satellite, accuracy assessment of maps derived from remote sensing, and methodologies to detect changes such as urbanization, deforestation, vegetation health, and wildfires.
Same as: EARTHSYS 142, EARTHSYS 242, ESS 162

ESS 264. Poverty, Infrastructure and Climate. 2-3 Units.
Lack of access to physical infrastructure such as roads, water supply and electricity is a key element of how 'poverty' is often defined. At the same time, the causal pathways that link infrastructure and economic development are not well understood, and are likely being re-shaped by a changing climate. Students in this course will contribute to a new initiative on poverty, infrastructure and climate change by (1) reviewing and synthesizing literature from relevant scholarly communities, (2) co-creating a conceptual causal model of the ways in which infrastructure (particularly roads and water assets) contributes to poverty alleviation, and (3) contributing to the design of applied research effort on these topics in sub-Saharan Africa. Students who opt for the 3-unit enrollment will have an additional supervised project that could take the form of a review paper, research proposal, or analysis of secondary data. There are no formal pre-requisites for the class; students from all schools and departments are welcome. Enrollment requires permission of the instructors. Interested students are invited to submit an application at https://tiny.cc/EPIC-Stanford.
Same as: CEE 265I

ESS 265. Advanced Geographic Information Systems. 4 Units.
Building on the Fundamentals of Geographic Information Systems course, this class delves deeper into geospatial analysis and mapping techniques. The class is heavily project-based and students are encouraged to bring their own research questions. Topics include topographic analysis, interpolation, spatial statistics, network analysis, and scripting using Python and Acrpy. All students are required to attend a weekly lab. ESS 164 or equivalent is a prerequisite.
Same as: ESS 165

ESS 268. Empirical Methods in Sustainable Development. 3-5 Units.
The determinants of human well-being over the short and long-run, including the role of environmental factors in shaping development outcomes. A focus on the empirical literature across both social and natural sciences, with discussion and assignments emphasizing empirical analysis of environment-development linkages, application of methods in causal inference, and data visualization.
Same as: INTLPOL 272

ESS 270. Analyzing land use in a globalized world. 3 Units.
This course examines the dynamics of land use in relation to globalization. The objective is to understand how the expansion of global trade, and public and private regulations affect land use changes. The course will enable students to better understand how to effectively influence land use change, from different vantage points (government, NGO, corporate actor¿). The main emphasis is on tropical regions. Lectures introduce theories, practical cases, and evaluation tools to better understand contemporary land use dynamics.
Same as: ESS 170

ESS 271. Climate Models and Data. 3 Units.
Overview of key concepts necessary to develop familiarity with climate modeling and data. Topics covered will include components of the climate system, climate change and global warming, and model mechanics, their evaluation and usability, and predictability. Assessments will involve the use of datasets and model output, so some knowledge of programming is a pre-requisite.
Same as: ESS 171

ESS 275. Nitrogen in the Marine Environment. 1-2 Unit.
The goal of this seminar course is to explore current topics in marine nitrogen cycle. We will explore a variety of processes, including primary production, nitrogen fixation, nitrification, denitrification, and anaerobic ammonia oxidation, and their controls. We will use the book Nitrogen in the Marine Environment and supplement with student-led discussions of recent literature. A variety of biomes, spatial and temporal scales, and methodologies for investigation will be discussed.

ESS 280. Principles and Practices of Sustainable Agriculture. 3-4 Units.
Field-based training in ecologically sound agricultural practices at the Stanford Community Farm. Weekly lessons, field work, and group projects. Field trips to educational farms in the area. Topics include: soils, composting, irrigation techniques, IPM, basic plant anatomy and physiology, weeds, greenhouse management, and marketing. Application required. Deadline: September 10 for Autumn and March 10 for Spring. nnApplication: https://stanforduniversity.qualtrics.com/jfe/form/SV_244JnBoEP7zs8Dz.
Same as: EARTHSYS 180

ESS 281. Urban Agroecology. 3 Units.
The United Nations estimates that up to 15% of the world's food is produced in and around cities. Urban populations are projected to continue rising and urban agriculture in its many forms has been shown to provide multiple benefits to urban communities. This class will survey urban agriculture around the world while training you in small-scale food production practices. The emphasis will be on ecological approaches to the design and stewardship of urban farms and gardens. nnnIf permitted, given the challenges of COVID-19, the course will be taught in-person, outdoors at the Stanford Educational Farm. nn nThis is a 3-unit, Earth Systems practicum course that meets on Wednesdays from noon to 3pm. Space is limited and applications are due by Friday 8/28. Students will be notified if they are admitted to the course by 9/4. For the course application go to: https://stanforduniversity.qualtrics.com/jfe/form/SV_86udp8aEuWUCnNH.
Same as: EARTHSYS 181, EARTHSYS 281, ESS 181, URBANST 181

ESS 282. Designing Educational Gardens. 2 Units.
A project-based course emphasizing 'ways of doing 's sustainable agricultural systems based at the new Stanford Educational Farm. Students will work individually and in small groups on the design of a new educational garden and related programs for the Stanford Educational Farm. The class will meet on 6 Fridays over the course of winter quarter. Class meetings will include an introduction to designing learning gardens and affiliated programs, 3 field trips to exemplary educational gardens in the bay area that will include tours and discussions with garden educators, and work sessions for student projects. By application only.
Same as: EARTHSYS 182

ESS 292. Directed Individual Study in Earth System Science. 1-10 Unit.
Under supervision of an Earth System Science faculty member on a subject of mutual interest.

ESS 300. Climate studies of terrestrial environments. 3 Units.
This course will consist of a weekly seminar covering topics of interest in Cenozoic climate. The course examines the interactions between the biosphere, atmosphere and geosphere and how these interactions influence climate. The course will cover classic and seminal papers on the controls of the oxygen, hydrogen, and carbon isotopes of the hydrosphere, atmosphere and biosphere and how they are expressed in paleoclimate proxies. Seminar will consist of reading and discussion of these papers. Students will be responsible for presenting papers. Grades will be determined by class participation. (Chamberlain).

ESS 301. Topics in Earth System Science. 1 Unit.
Current topics, issues, and research related to interactions that link the oceans, atmosphere, land surfaces and freshwater systems. May be repeated for credit.

ESS 305. Climate Change: An Earth Systems Perspective. 1-2 Unit.
This is an introductory graduate-level course that is intended to provide an overview of leading-edge research topics in the area of climate change. Lectures introduce the physical, biogeochemical, ecological, and human dimensions of climate change, with emphasis on understanding climate change from an Earth System perspective (e.g., nonlinearities, feedbacks, thresholds, tipping points, resilience, vulnerability, risk). The emphasis is on providing an initial introduction to the process by which researchers pose questions and analyze and interpret results.

ESS 306. From Freshwater to Oceans to Land Systems: An Earth System Perspective to Global Challenges. 2 Units.
Within this class we will have cover Earth System processes ranging from nutrient cycles to ocean circulation. We will also address global environmental challenges of the twenty-first century that include maintaining freshwater resources, land degradation, health of our oceans, and the balance between food production and environmental degradation. Weekly readings and problem sets on specific topics will be followed by presentations of Earth System Science faculty and an in-depth class discussion. ESS first year students have priority enrollment.

ESS 307. Research Proposal Development and Delivery. 2 Units.
In this class students will learn how to write rigorous, high yield, multidisciplinary proposals targeting major funding agencies. The skills gained in this class are essential to any professional career, particularly in research science. Students will write a National Science Foundation style proposal involving testable hypotheses, pilot data or calculations, and broader impact. Restricted to ESS and GS first-year graduate students.
Same as: GEOLSCI 307

ESS 308. Carbon Dioxide and Methane Removal, Utilization, and Sequestration. 1 Unit.
This is a seminar on carbon dioxide and methane removal, utilization, and sequestration options, and their role in decarbonizing the global energy system. This course will cover topics including the global carbon balance, utilizing atmospheric carbon in engineered solutions, recycling and sequestering fossil-based carbon, and enhancing natural carbon sinks. The multidisciplinary lectures and discussions will cover elements of technology, economics, policy and social acceptance, and will be led by a series of guest lecturers. Short group project on carbon solutions.
Same as: EARTHSYS 308, ENERGY 308, ENVRES 295, ME 308

ESS 322B. Seminar in Hydrology. 1 Unit.
Current topics. May be repeated for credit. Prerequisite: consent of instructor.

ESS 323. Stanford at Sea. 16 Units.
(Graduate students register for 323H.) Five weeks of marine science including oceanography, marine physiology, policy, maritime studies, conservation, and nautical science at Hopkins Marine Station, followed by five weeks at sea aboard a sailing research vessel in the Pacific Ocean. Shore component comprised of three multidisciplinary courses meeting daily and continuing aboard ship. Students develop an independent research project plan while ashore, and carry out the research at sea. In collaboration with the Sea Education Association of Woods Hole, MA. Only 6 units may count towards the Biology major. 2020-21 academic year offering of this course is dependent on COVID-19 regulations.
Same as: BIOHOPK 182H, BIOHOPK 323H, EARTHSYS 323

ESS 325. Vortex Dynamics. 3-4 Units.
This course will be a combination of lectures and reading + discussion, covering a focused subset of fundamental topics in vortex dynamics with application to geophysical fluid dynamics. The class will begin with two-dimensional vortex behavior and move to three-dimensional vortex dynamics in stratified flow. Topics include the equations of motion, two-dimensional circulation and vorticity, potential vorticity and inversion, asymmetric vortex dynamics in stratified flow, and balanced vortex dynamics (e.g. hurricanes and tornadoes).

ESS 328. Environmental Change and Human Resiliency. 3-4 Units.
Unprecedented environmental change increasingly threatens human settlements in the U.S. and around the globe. This environmental change renders communities vulnerable to poor health outcomes, property loss, and displacement. This confluence of interrelated disaster events challenges people¿s ability to adapt, with profound impacts on health and resiliency. This course is designed to help students think broadly about the factors that promote or inhibit individual and community-level adaptation to environmental change through case studies such as the 2018 Camp Fire in Northern California to the 2017 Hurricane Maria in Puerto Rico. Through this process, the class will consider the role of social and behavioral psychology, health, information, state and non-state actors, and the larger climate community on resiliency outcomes.

ESS 330. Advanced Topics in Hydrogeology. 1-2 Unit.
Topics: questioning classic explanations of physical processes; coupled physical, chemical, and biological processes affecting heat and solute transport. May be repeated for credit.

ESS 348. Dynamics of the Atmosphere. 3-5 Units.
Overview of large-scale atmospheric dynamics. Topics include the circulation of a zonally symmetric atmosphere, internal gravity waves, Rossby waves, the instability of zonal flows, and the role of eddies in the general circulation. Class participation in terms of summarizing papers and making presentations will be required.

ESS 355. Coral Reefs of the Western Pacific: Interdisciplinary Perspectives, Emerging Crises, and Solutions. 1 Unit.
This new graduate-level course focusses on the complex interplay of biology, physics, chemistry, and human activities that both promotes and limits the development of coral reefs. We will examine the ecology of these biodiverse systems as well as the service they provide in terms of rapid nutrient recycling, coastal protection, and maintenance of large populations of fish. New advances in our understanding of coral reefs will be highlighted, including the role of climate variability and micro- and mesoscale fluid flow in controlling reef growth and persistence, the physiology, genomics, and physics underpinning thermal resilience in corals, contributing and mitigating factors involved in the current decline of coral reefs, ocean acidification, fishing, reef-scale trophic modeling, ecological interactions and trophic cascades, and reefs as part of complex seascapes and linkages with other marine ecosystems. The course will conclude with an analysis of science to policy case studies and future opportunities. The faculty leaders collectively have over 100 years of field experience working in coral reefs of the Pacific and despite our forced online teaching and learning format will endeavor to bring the coral reef field experience to life for this class.
Same as: BIO 355, BIOHOPK 355, CEE 363I

ESS 360. Social Structure and Social Networks. 5 Units.
In this course, we will explore social network analysis, a set of methods and theories used in the analysis of social structure. The fundamental conceit underlying social network analysis is that social structure emerges from relationships between individuals. We will therefore concentrate in particular on the measurement of relationships, emphasizing especially practical methodology for anthropological fieldwork. This is a somewhat unusual course because of its focus on social network research coming out of anthropological and ethological traditions. While most current practitioners of social network analysis are (probably) sociologists, many of both the methodological antecedents and theoretical justifications for the field can be found in these two traditions. A major goal of this course is to understand how the methods and perspectives of social network analysis can be usefully incorporated into contemporary approaches to ethnography and other anthropological modes of investigation. Prerequisite: graduate standing or consent of instructor.

ESS 363. Demography and Life History Theory. 5 Units.
Life history theory is the branch of evolutionary biology that attempts to understand patterns of investment in growth, reproduction, and survival across the life cycle. It is the theory that explains the major transitions that mark individual organisms' life cycles from conception to death. In this class, we will focus on the central themes of life history theory and how they relate to specific problems of the human life cycle. In addition to the classic questions of life history theory (e.g., evolution of reproductive effort, size vs. quality, etc.), we will discuss some peculiar issues that relate specifically to humans. In particular, we will explore the intersection of life history theory and more classical economic approaches to decision theory and rational choice. This will include an exploration of the evolution of economic transfers and their implications for demographic transitions, ecological resilience, and the consumption of natural resources. This discussion will explore how an understanding of life history theory might help in promoting investments in future welfare or developing policies that promote sustainability.
Same as: ESS 163

ESS 363F. Geophysical Fluid Dynamics. 3 Units.
The fundamental dynamics of rotating stratified fluids. Topics include inertia-gravity waves, geostrophic and cyclogeostrophic balance, vorticity and potential vorticity dynamics, quasi-geostrophic motions, planetary and topographic Rossby waves, inertial, symmetric, barotropic, and baroclinic instability, Ekman layers, and the frictional spin-down of geostrophic flows. Prerequisites: CEE 262A or a graduate class in fluid mechanics. Recommended math background: vector calculus, ordinary differential equations, and partial differential equations.
Same as: CEE 363F

ESS 400. Graduate Research. 1-15 Unit.
Independent study and thesis research under the supervision of a faculty member in the Earth System Science department. On registration, students designate faculty member and agreed-upon units. The course involves regular meetings with the faculty advisor both in person and remotely. May be repeated for credit. Prerequisite: consent of instructor.

ESS 401. Curricular Practical Training. 1-3 Unit.
CPT course required for international students completing degree. Prerequisite: Earth System Science Ph.D. candidate.

ESS 801. TGR Project. 0 Units.
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ESS 802. TGR Dissertation. 0 Units.
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EARTH SYSTEMS

Courses offered by the Earth Systems Program are listed under the subject code EARTHSYS (https://explorecourses.stanford.edu/search/?q=EARTHSYS&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-departmentcode-EARTHSYS=on&filter-coursestatus-Active=on&filter-catalognumber-EARTHSYS=on&filter-catalognumber-EARTHSYS=on) on the Stanford Bulletin's ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=EARTHSYS&filter-catalognumber-EARTHSYS=on).

Mission of the Undergraduate Program in Earth Systems

The Earth Systems Program is an interdisciplinary environmental science major. Students learn about and independently investigate complex environmental problems caused by human activities in conjunction with natural changes in the Earth system. Earth Systems majors become skilled in those areas of science, economics, and policy needed to tackle the world's most pressing social-environmental problems, becoming part of a generation of scientists, professionals, and citizens who approach and solve problems in a systematic, interdisciplinary way.

For students to be effective contributors to solutions for such problems, their training and understanding must be both broad and deep. To this end, Earth Systems students take fundamental courses in ecology, calculus, chemistry, geology, and physics, as well as economics, policy, and statistics. After completing breadth training, they concentrate on advanced work in one of six focus areas: biology, energy, environmental economics and policy, land systems, sustainable food and agriculture, or oceanography and climate. Tracks are designed to support focus and rigor but include flexibility for specialization. Examples of specialized foci have included but are not limited to environment and human health, sustainable agriculture, energy economics, sustainable development, business and the environment, and marine policy. Along with formal course requirements, Earth Systems students complete a 1-unit (270-hour) internship. The internship provides a hands-on academic experience working on a supervised field, laboratory, government, or private sector project.

The Earth Systems Program provides an advising network that includes faculty, staff, and student peer advisers.

The following is an outline of the sequential topics covered and skills developed in this major.

1. *Fundamentals:* The Earth Systems Program includes courses that describe the natural functioning of the physical and biological components of the Earth and human activities that interact with these components. Training in fundamentals includes introductory course work in geology, biology, chemistry, physics, and economics. Additional training in course work in single and multivariable calculus, linear algebra, and statistics provides students with skills needed for quantifying environmental problems. Training in statistics is specific to the area of focus: geostatistics, biostatistics, econometrics.
2. *System Interactions:* Focus in these courses is on the fundamental interactions among the physical, biological, and human components of the Earth system. Understanding the dynamics between natural variation in and human-imposed influences on the Earth system informs the development of effective solutions to social-environmental challenges.
   a. Earth Systems courses that introduce students to the dynamic and multiple interactions that characterize social-environmental challenges include:

		Units
EARTHSYS 10	Introduction to Earth Systems	4
EARTHSYS 111	Biology and Global Change	4
EARTHSYS 112	Human Society and Environmental Change	4

   b. Competence in understanding system-level interactions is critical to development as an Earth Systems thinker, so additional classes that meet this objective are excellent choices as electives.
3. *Track-Specific Requirements:* After completing a core designed to introduce students to different functional components of the Earth system, undergraduate students focus their studies through one of six tracks: Human Environmental Systems (formerly Anthrosphere); Biosphere; Energy, Science and Technology; Oceans and Climate (formerly Oceans); Land Systems; or Sustainable Food and Agriculture.
4. *Skills Development:* Students take skills courses that help them to recognize, quantify, describe, communicate, and help solve complex problems that face society. For example, field and laboratory methods can help students to recognize the scope and nature of environmental change. Training in satellite remote sensing and geographic information systems allows students to monitor and analyze large-scale spatial patterns of change. This training is either required or recommended for all tracks.
5. *Communication:* Success in building workable solutions to environmental problems is linked to the ability to effectively communicate ideas, data, and results. Writing intensive courses (WIM) help students to communicate complex concepts to expert and non-expert audiences. Other Earth Systems courses also focus on effective written and oral communication and are recommended. All Stanford students must complete one WIM course in their major. Earth Systems students can fulfill the WIM requirement by successfully completing one of the following courses:

		Units
EARTHSYS 191	Concepts in Environmental Communication	3
EARTHSYS 177C	Specialized Writing and Reporting: Health and Science Journalism	4-5
EARTHSYS 149	Wild Writing	3
BIOHOPK 47	Introduction to Research in Ecology and Ecological Physiology	5

6. *Finding solutions:* Effective solutions to environmental problems take into consideration natural processes as well as human needs. Earth Systems emphasizes the importance of interdisciplinary analysis and implementation of workable solutions through:

		Units
EARTHSYS 210A	Senior Capstone and Reflection	3
or EARTHSYS 210B	Senior Capstone and Reflection	
EARTHSYS 210P	Earth Systems Capstone Project (or Honors Thesis)	2
EARTHSYS 260	Internship	1

A comprehensive list of environmental courses (p. 356) is available on the "Related Courses" tab. This list as well as advice on courses that focus on problem solving are available in the program office.

Learning Outcomes (Undergraduate)

The program expects majors to be able to demonstrate the following learning outcomes. These learning outcomes serve as benchmarks for evaluating students and the program's undergraduate degree. Students are expected to:

1. demonstrate knowledge of foundational skills and concepts in order to advance the interdisciplinary study of the environment.
2. demonstrate the ability to analyze, integrate and apply relevant science and policy perspectives to social-environmental problems.
3. demonstrate the ability to communicate complex concepts and data relevant to social-environmental problems and questions to expert and non-expert audiences.

Learning Outcomes (Graduate)

The coterminal master's degree in Earth Systems provides the student with enhanced analytical tools to evaluate the disciplines most closely associated with the student's focus area. Specialization is gained through course work and independent research work supervised by the master's faculty adviser.

Bachelor of Science in Earth Systems

The B.S. in Earth Systems (EARTHSYS) requires the completion of courses divided into three categories:

1. Core
2. Foundation and Breadth
3. Track-specific Requirements.

The student must fulfill the internship requirement, participate in the Senior Capstone and Reflection course (EARTHSYS 210A or EARTHSYS 210B), complete the Earth Systems Capstone Project (EARTHSYS 210P)/(or Honors Thesis), and complete the Writing in the Major (WIM) requirement.

Core courses, track courses, and electives must be taken for a letter grade. The WIM course may not also count towards the track or electives, if counted as a WIM.

Required Core Courses

		Units
EARTHSYS 10	Introduction to Earth Systems	4
EARTHSYS 111	Biology and Global Change	4
EARTHSYS 112	Human Society and Environmental Change	4
Select one of the following:		3
EARTHSYS 210A	Senior Capstone and Reflection	3
or EARTHSYS 210B	Senior Capstone and Reflection	
EARTHSYS 210P	Earth Systems Capstone Project (or HONORS THESIS)	2
EARTHSYS 260	Internship	1
Select one of the following (WIM):		
EARTHSYS 191	Concepts in Environmental Communication	3
EARTHSYS 177C	Specialized Writing and Reporting: Health and Science Journalism	4-5
EARTHSYS 149	Wild Writing	3
BIOHOPK 47	Introduction to Research in Ecology and Ecological Physiology	5

Tracks

See each track's tab for the required Foundation and Breadth and Track-Specific Courses. All Earth Systems majors must select a track from one of the following:

Biosphere Track (p. 344)

Explores biological systems and how human activities affect biological, ecological, and biogeochemical cycles. Coursework investigates ecosystems and society, conservation biology, ecology, and biogeochemistry.

Energy, Science and Technology (p. 345)

Investigates renewable and depletable energy resources, technology options for improved efficiency, and policy solutions to energy challenges.

Environmental Geoscience (p. 346)

Understand and articulate the ways in which Earth's interior and surface operate, and how these systems are connected to one another and inextricably bound to the evolution of life and current human activities. Apply understanding of earth and human systems to develop workable, scientifically based, human-centered solutions to building resilience to natural hazards, and our planet's most pressing environmental challenges.

Human Environmental Systems (p. 347)

Focuses on human interaction with and impact on the environment. Coursework in environmental policy and economics, sustainable development, natural and human-driven change, and social entrepreneurship.

Land Systems (p. 347)

Examines terrestrial ecology, land use, and land change driven by human activities and addressed by governmental policy. Students develop expertise in a focus area of land, water, or urban planning.

Oceans, Atmosphere, and Climate (p. 349)

Builds understanding of ocean systems through a focus on ocean physics, marine biology and chemistry, and remote sensing. A required and seminal track experience is a quarter away at Hopkins Marine Station, Stanford in Australia, or Stanford@SEA.

Sustainable Food and Agriculture Track (p. 350)

Focuses on local and global food and agricultural systems. Students gain a breadth of knowledge on these issues through study in food and society, climate and agriculture, the science of soils, world food economy, and principles and practices of sustainable agriculture.

Honors Program

The Earth Systems honors program provides students with an opportunity to pursue interdisciplinary research. It consists of a year-long research project that is mentored by one or more Earth Systems-affiliated faculty members, and culminates in a written thesis.

To qualify for the honors program, students must have and maintain a minimum overall GPA of 3.4. Potential honors students should complete the EARTHSYS 111 Biology and Global Change and EARTHSYS 112 Human Society and Environmental Change sequence by the end of the junior year. Qualified students can apply in Spring Quarter of the junior year, or the fourth quarter before graduation (check with program for specific application deadlines) by submitting a detailed research proposal and a brief statement of support from a faculty research advisor. Students who elect to do an honors thesis should begin planning no later than Winter Quarter of the junior year.

A maximum of 9 units is awarded for thesis research through EARTHSYS 199 Honors Program in Earth Systems. Those 9 units may not substitute for any other required parts of the Earth Systems curriculum. All theses are evaluated for acceptance by the thesis faculty advisor, one additional faculty member (who is the second reader), and the Director of Earth Systems. Both the advisor and second reader must be members of the Academic Council. Acceptance into the Honors program is not a guarantee of graduating with the honors designation.

Honors students are required to present their research publicly, preferably through the School of Earth, Energy, and Environmental Sciences' Annual Thesis Symposium which highlights undergraduate and graduate research in the school. Faculty advisors are encouraged to sponsor

presentation of student research results at professional society meetings.

More extensive work in mathematics and physics may be valuable for those planning graduate study. Graduate study in ecology and evolutionary biology and in economics requires familiarity with differential equations, linear algebra, and stochastic processes. Graduate study in geology, oceanography, and geophysics may require more physics and chemistry. Students should consult their advisor for recommendations beyond the requirements specified above.

[1] The Geological Sciences requirement can be fulfilled by completing GEOLSCI 1, GEOLSCI 4, or EARTHSYS 117. GEOLSCI 1A, 1B, and 1C are no longer offered. If taken in previous years, these still fulfill the Earth Systems' Geological Sciences requirement.

Biosphere

Learning Objectives:

1. Articulate the interplay of ecology, evolution, and biogeochemistry and understand their connections to the functioning of ecosystems on multiple spatial and temporal scales.
2. Recognize how human activity alters ecological processes, and how ecological changes can interact with human societies at multiple scales.
3. Apply knowledge of natural sciences and human-mediated environmental change to conservation challenges, while considering implications for environmental justice.

Requirements

All students must complete the Required Core Courses (p. 343) listed under the "Bachelor's (p. 343)" tab in addition to the required courses listed below.

		Units
Additional foundation and breadth courses		
BIO 81	Introduction to Ecology	4
or BIOHOPK 81	Introduction to Ecology	
BIO 82	Genetics	4
BIOHOPK 175H	Marine Science and Conservation in a Changing World (This course alone replaces both course options above)	16
ECON 1	Principles of Economics	5
GEOLSCI 1	Introduction to Geology	4-5
or GEOLSCI 4	Coevolution of Earth and Life	
or EARTHSYS 117	Earth Sciences of the Hawaiian Islands	
or EARTHSYS 128	Evolution of Terrestrial Ecosystems	
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	10
MATH 19, 20, 21 may be fulfilled by specific AP Exam Scores. *See Math Placement website for more information.		
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	5
or CME 100	Vector Calculus for Engineers	
CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	3-10
or CHEM 31M	Chemical Principles: From Molecules to Solids	
or GEOLSCI 2	Chemistry of the Earth and Planets	
*CHEM 31A, CHEM 31B, CHEM 31M, GEOLSCI 2 may be fulfilled by CHEM AP Exam score of 5		
CHEM 33	Structure and Reactivity of Organic Molecules	5
Physics (select one of the following):		4
GEOPHYS 110	Introduction to the Foundations of Contemporary Geophysics	3
or PHYSICS 41	Mechanics	
or PHYSICS 45	Light and Heat	
BIOHOPK 174H	Experimental Design and Probability (no longer offered)	3
or ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	
or STATS 101	Data Science 101	
or STATS 110	Statistical Methods in Engineering and the Physical Sciences	
or STATS 116	Theory of Probability	
or STATS 141	Biostatistics	
or CME 106	Introduction to Probability and Statistics for Engineers	
Choose two courses from Ecology and Conservation Biology, and one course from each of the remaining sub-categories below, total six required:		
Ecology and Conservation Biology		**3-12**
BIO 115	The Hidden Kingdom - Evolution, Ecology and Diversity of Fungi	4
BIO 130	Ecosystems of California	4
BIO 144	Conservation Biology: A Latin American Perspective	3
BIOHOPK 173H	Marine Conservation Biology	4
BIOHOPK 175H	Marine Science and Conservation in a Changing World	16
BIOHOPK 177H	Dynamics and Management of Marine Populations	4
BIOHOPK 185H	Ecology and Conservation of Kelp Forest Communities	5
EARTHSYS 116	Ecology of the Hawaiian Islands	4
EARTHSYS 105A & EARTHSYS 105B	Ecology and Natural History of Jasper Ridge Biological Preserve and Ecology and Natural History of Jasper Ridge Biological Preserve	8
EARTHSYS 128	Evolution of Terrestrial Ecosystems	4
EARTHSYS 123	Asian Americans and Environmental Justice	3-5
EARTHSYS 128	Evolution of Terrestrial Ecosystems	4
EARTHSYS 147	Ecosystem Ecology and Biogeochemistry	3
ESS 223	Biosphere-Atmosphere Interactions (EARTHSYS 123A)	4
GEOLSCI 123	Evolution of Marine Ecosystems (not given this year)	3-4
OSPAUSTL 10	Coral Reef Ecosystems	3
OSPAUSTL 30	(no longer offered)	
OSPSANTG 58	Global Change in Chile	5
OSPSANTG 85	Marine Ecology of Chile and the South Pacific (OSPSANTG 85)	5
Ecosystems and Society [2]		**3-5**
ANTHRO 166	Political Ecology of Tropical Land Use: Conservation, Natural Resource Extraction, and Agribusiness	3-5
EARTHSYS 107	Control of Nature	3
EARTHSYS 114	Global Change and Emerging Infectious Disease	4-5
EARTHSYS 118	Heritage, Environment, and Sovereignty in Hawaii	4

EARTHSYS 139	Ecosystem Services: Frontiers in the Science of Valuing Nature (last offered Autumn 2019)	3
EARTHSYS 159	Economic, Legal, and Political Analysis of Climate-Change Policy	5
EARTHSYS 185	Feeding Nine Billion	4-5
SIW 144	Energy, Environment, Climate and Conservation Policy: A Washington, D.C. Perspective	5
LAW 2515	Environmental Justice	3
Biogeochemistry		
CEE 177	Aquatic Chemistry and Biology	4
CEE 274A	Environmental Microbiology I	3
EARTHSYS 132	Evolution of Earth Systems	4
EARTHSYS 143	Molecular Geomicrobiology Laboratory	3-4
EARTHSYS 151	Biological Oceanography	3-4
EARTHSYS 152	Marine Chemistry	3-4
EARTHSYS 155	Science of Soils	3-4
EARTHSYS 158	Geomicrobiology	3
ESS 256	Soil and Water Chemistry	3
Methods		
EARTHSYS 144	Fundamentals of Geographic Information Science (GIS) (REQUIRED)	3-4
EARTHSYS 124	Measurements in Earth Systems	3-4
EARTHSYS 142	Remote Sensing of Land	4
EARTHSYS 211	Fundamentals of Modeling	3-5
ESS 165	Advanced Geographic Information Systems	4
ESS 224	Remote Sensing of Hydrology	3
ESS 220	Physical Hydrogeology	4
GEOLSCI 240	Data science for geoscience	3
Elective Requirement		**6-10**

Two additional courses at the 100-level or above are required. Each must be a minimum of 3 units.

Energy, Science, and Technology

Learning Objectives:

1. Apply fundamental engineering principles to assess how transformation of systems of energy production, distribution, and consumption can contribute to achieving greater energy sustainability.
2. Use fundamental engineering principles—together with knowledge of economics, human behavior, energy infrastructure, and earth systems science—to assess and critique policy- and market-based solutions proposed to achieve greater energy sustainability.
3. Apply written, visual, and oral presentation skills to communicate scientific, technological, and policy knowledge to expert and non-expert audiences.

Requirements

All students must complete the Required Core Courses (p. 343) listed under the "Bachelor's (p. 343)" tab in addition to the required courses listed below.

		Units
Additional Foundation and Breadth Courses		
BIO 81	Introduction to Ecology	4
or BIOHOPK 81	Introduction to Ecology	
or BIO 83	Biochemistry & Molecular Biology	
or HUMBIO 2A & HUMBIO 2B	Genetics, Evolution, and Ecology and Culture, Evolution, and Society	
or EARTHSYS 116	Ecology of the Hawaiian Islands	
or BIOHOPK 175H	Marine Science and Conservation in a Changing World	
CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	5
or CHEM 31M	Chemical Principles: From Molecules to Solids	
or GEOLSCI 2	Chemistry of the Earth and Planets	
*CHEM 31A, CHEM 31B, CHEM 31M, GEOLSCI 2may be fulfilled by CHEM AP Exam score of 5		
ECON 1	Principles of Economics	5
GEOLSCI 1	Introduction to Geology	4-5
or GEOLSCI 4	Coevolution of Earth and Life	
or EARTHSYS 117	Earth Sciences of the Hawaiian Islands	
or EARTHSYS 128	Evolution of Terrestrial Ecosystems	
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	10
MATH 19, 20, 21 may be fulfilled by specific AP Exam Scores. See Math Placement website for more information.		
CME 100	Vector Calculus for Engineers (preferred)	5
or MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
PHYSICS 43	Electricity and Magnetism	4
PHYSICS 45	Light and Heat	4
BIOHOPK 174H	Experimental Design and Probability (no longer offered)	3
or ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	
or STATS 101	Data Science 101	
or STATS 110	Statistical Methods in Engineering and the Physical Sciences	
or STATS 116	Theory of Probability	
or STATS 141	Biostatistics	
or CME 106	Introduction to Probability and Statistics for Engineers	
Energy Fundamentals (required for all)		**3**
ME 30	Engineering Thermodynamics	3
CEE 272R	Modern Power Systems Engineering	3
or ENERGY 120	Fundamentals of Petroleum Engineering	
or MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution	
EARTHSYS 101	Energy and the Environment	3
EARTHSYS 102	Fundamentals of Renewable Power	3
EARTHSYS 103	Understanding Energy	4-5
Choose at least one course in each of the three sub-categories, total five required. Note that many of these have prerequisite work:		
Energy Resources & Technology		**3-5**
EARTHSYS 101	Energy and the Environment	3
EARTHSYS 103	Understanding Energy	3-5
CEE 156	Building Systems Design & Analysis	4
CEE 176A	Energy Efficient Buildings	3-4
ENERGY 120	Fundamentals of Petroleum Engineering	3
ENERGY 269	Geothermal Reservoir Engineering	3
ENERGY 293B	Fundamentals of Energy Processes	3
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution	3-4
ENERGY 293C	Energy from Wind and Water Currents	3
Sustainable Energy & Development		**3-4**

CEE 176B	100% Clean, Renewable Energy and Storage for Everything	3-4
CEE 226	Life Cycle Assessment for Complex Systems	3-4
EARTHSYS 102	Fundamentals of Renewable Power	3
EARTHSYS 146A	Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation	3
ENERGY 153	Carbon Capture and Sequestration	3-4
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution	3-4
Energy Policy, Economics & Entrepreneurship		**2-4**
ENERGY 104	Sustainable Energy for 9 Billion	3
ENERGY 110	Engineering Economics	3
ENERGY 171	Energy Infrastructure, Technology and Economics	3
ENERGY 191	Optimization of Energy Systems	3-4
GSBGEN 336	Energy Markets and Policy	3
MS&E 243	Energy and Environmental Policy Analysis	3
LAW 2503	Energy Law	3
Elective Requirement		**3-5**

One additional course at the 100-level or above is required. This course must be a minimum of 3 units. 3 units of approved energy seminars may count as one elective. See Earth Systems staff for the approved seminar list.

Environmental Geoscience

Learning Objectives:

1. Understand and articulate the ways in which Earth's interior and surface operate, and how these systems are connected to one another and inextricably bound to the evolution of life and current human activities.
2. Understand and view the current state of, and expected changes within, the earth system in the context of past changes experienced by our planet.
3. Apply understanding of earth and human systems to develop workable, scientifically based, human-centered solutions to building resilience to natural hazards, and our planet's most pressing environmental challenges.

Requirements

All students must complete the Required Core Courses (p. 343) listed under the "Bachelor's (p. 343)" tab in addition to the required courses listed below.

		Units
Additional Foundation and Breadth Courses		
BIO 81	Introduction to Ecology	4
or BIOHOPK 81	Introduction to Ecology	
or BIOHOPK 175H	Marine Science and Conservation in a Changing World	
or HUMBIO 2A & HUMBIO 2B	Genetics, Evolution, and Ecology and Culture, Evolution, and Society	
or EARTHSYS 116	Ecology of the Hawaiian Islands	
CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	3-10
or CHEM 31M	Chemical Principles: From Molecules to Solids	
or GEOLSCI 2	Chemistry of the Earth and Planets	
*CHEM 31A, CHEM 31B, CHEM 31M, GEOLSCI 2 may be fulfilled by CHEM AP Exam score of 5		
ECON 1	Principles of Economics	5
GEOLSCI 1	Introduction to Geology	4-5
or GEOLSCI 4	Coevolution of Earth and Life	
or EARTHSYS 117	Earth Sciences of the Hawaiian Islands	
or EARTHSYS 128	Evolution of Terrestrial Ecosystems	
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	10
MATH 19, 20, 21 may be fulfilled by specific AP Exam Scores. *See Math Placement website for more information.		
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	5
or CME 100	Vector Calculus for Engineers	
MATH 52	Integral Calculus of Several Variables	5
BIOHOPK 174H	Experimental Design and Probability (no longer offered)	3-5
or ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	
or STATS 101	Data Science 101	
or STATS 110	Statistical Methods in Engineering and the Physical Sciences	
or STATS 116	Theory of Probability	
or STATS 141	Biostatistics	
or CME 106	Introduction to Probability and Statistics for Engineers	
GEOPHYS 110	Introduction to the Foundations of Contemporary Geophysics	3
or PHYSICS 41 & PHYSICS 45	Mechanics and Light and Heat	
ESS 164	Fundamentals of Geographic Information Science (GIS)	3-4
A total of 6 courses are required from the Environmental Geoscience Focus Areas below. In addition, two electives are required for this track. All track courses and electives must be taken for a letter grade (nine courses total).		
The Solid Earth (must take 2):		
GEOLSCI 180	Igneous Processes	3-4
EARTHSYS 113	Earthquakes and Volcanoes	3
GEOPHYS 150	Geodynamics: Our Dynamic Earth	3-5
Earth's Surface (must take 2):		
GEOLSCI 106	Sediments: The Book of Earth's History	3
GEOLSCI 112	Geomorphology	3
EARTHSYS 104	The Water Course (not offered this year)	4
ESS 148	Introduction to Physical Oceanography	4
ESS 224	Remote Sensing of Hydrology	3
ESS 155	Science of Soils	3-4
ESS 220	Physical Hydrogeology	4
Evolution of Life on Earth (must take 1):		
GEOLSCI 128	Evolution of Terrestrial Ecosystems	4
GEOLSCI 135	Sedimentary Geochemistry and Analysis	1-4
Resilient Earth (must take 1):		
GEOLSCI 118X	Shaping the Future of the Bay Area	3-5
Two additional courses at the 100-level or above are required. Each must be a minimum of 3 units. See Earth Systems staff for a list of possible electives		

Human Environmental Systems

Learning Objectives:

1. Apply knowledge of fundamental physical and biological Earth system processes to analyze how human decisions shape environmental outcomes.
2. Apply fundamental principles and frameworks from the social sciences to analyze and understand (a) how humans make environmentally relevant decisions, and (b) how environmental changes shape human outcomes.

All students must complete the Required Core Courses (p. 343) listed under the "Bachelor's (p. 343)" Tab in addition to the required courses listed below.

		Units
Additional Foundation and Breadth Courses		
Biology		**4-10**
BIO 81	Introduction to Ecology	4
or BIOHOPK 81	Introduction to Ecology	
or BIOHOPK 175H	Marine Science and Conservation in a Changing World	
or HUMBIO 2A & HUMBIO 2B	Genetics, Evolution, and Ecology and Culture, Evolution, and Society	
or EARTHSYS 116	Ecology of the Hawaiian Islands	
Economics		**5**
ECON 1	Principles of Economics	5
ECON 50	Economic Analysis I	5
ECON 155	Environmental Economics and Policy	5
Geological Sciences [1]		**4-5**
Select one of the following:		
EARTHSYS 117	Earth Sciences of the Hawaiian Islands	4
GEOLSCI 1	Introduction to Geology	5
GEOLSCI 4	Coevolution of Earth and Life	4
EARTHSYS 128	Evolution of Terrestrial Ecosystems	4
Mathematics		**5-15**
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	10
MATH 19, 20, 21 may be fulfilled by specific AP Exam Scores. *See Math Placement website for more information.		
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	5
or CME 100	Vector Calculus for Engineers	
CS 106A	Programming Methodology	3-5
Probability and Statistics		**3-5**
Select one of the following:		
BIO 141	Biostatistics	5
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	5
STATS 101	Data Science 101	5
STATS 110	Statistical Methods in Engineering and the Physical Sciences	5
STATS 116	Theory of Probability	4
CME 106	Introduction to Probability and Statistics for Engineers	4
Select one of the following		
CS 106B	Programming Abstractions	3-5
ECON 102B	Applied Econometrics	5
BIOHOPK 174H	Experimental Design and Probability (no longer offered)	3

		Units
Choose one course in each of the three following sub-categories, with a total of six required. At least one of the six must be a skills/methods course marked with an asterisk (*):		
Economics, Policy, and Sustainable Development		**3-5**
CEE 175A	California Coast: Science, Policy, and Law	3-4
EARTH 2	Climate and Society	3
ECON 51	Economic Analysis II	5
ECON 52	Economic Analysis III	5
ECON 102B	Applied Econometrics (*)	5
ECON 106	World Food Economy (*)	5
CEE 175A	California Coast: Science, Policy, and Law	3-4
ECON 118	Development Economics	5
ECON 121	((Last offered Spring 2018))	
ECON 150	Economic Policy Analysis	4-5
ECON 159	Economic, Legal, and Political Analysis of Climate-Change Policy	5
ESS 268	Empirical Methods in Sustainable Development (*)	3-5
ECON 159	Economic, Legal, and Political Analysis of Climate-Change Policy	5
INTNLREL 135A	International Environmental Law and Policy: Oceans and Climate Change	4-5
IPS 270		3-5
LAW 2504	Environmental Law and Policy	3
MS&E 243	Energy and Environmental Policy Analysis	3
GSBGEN 336	Energy Markets and Policy	3
Human Behavior and Adaption		**2-5**
CEE 151	Negotiation	3
ANTHRO 116B	Anthropology of the Environment	5
ANTHRO 166	Political Ecology of Tropical Land Use: Conservation, Natural Resource Extraction, and Agribusiness	3-5
CEE 124	Sustainable Development Studio	1-5
CEE 226	Life Cycle Assessment for Complex Systems	3-4
EARTHSYS 114/214	Global Change and Emerging Infectious Disease	4-5
EARTHSYS 123A/223	Biosphere-Atmosphere Interactions	3-4
EARTHSYS 185	Feeding Nine Billion	4-5
ESS 360	Social Structure and Social Networks	5
ECON 106	World Food Economy (*)	5
ECON 118	Development Economics (*)	5
ESS 224	Remote Sensing of Hydrology	3
ESS 185	Adaptation	3
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America	5
POLISCI 124A	The American West	5
URBANST 164	Sustainable Cities	4-5
URBANST 183	Team Urban Design Studio	5
Data Science and Analysis		**3-5**
CS 102		3-4
CS 106B	Programming Abstractions	3-5
CS 124	From Languages to Information	3-4
ECON 102B	Applied Econometrics (*)	5

EARTHSYS 141	Remote Sensing of the Oceans (*)	3-4
EARTHSYS 142	Remote Sensing of Land (*)	4
EARTHSYS 144	Fundamentals of Geographic Information Science (GIS) (*)	3-4
EARTHSYS 162	Data for Sustainable Development	3-5
ENERGY 240	Data science for geoscience	3
ESS 165	Advanced Geographic Information Systems (*)	4
ESS 214	Introduction to geostatistics and modeling of spatial uncertainty (* last offered Spring 2017)	3-4
ESS 268	Empirical Methods in Sustainable Development (*)	3-5
MS&E 231	Introduction to Computational Social Science	3
STATS 216	Introduction to Statistical Learning	3
Elective Requirement		**6-10**

Two additional courses at the 100-level or above are required. Each must be a minimum of 3 units.

Land Systems

Learning Objectives:

1. Design strategies for using multi-source and multi-scale observations of land surface processes that integrate field, geospatial, and human survey data to describe biophysical and socio-economic impacts of land systems changes.
2. Integrate biophysical and socioeconomic data related to land use and land cover change using geospatial tools to analyze and model complex, multi-scalar human-environmental interactions that determine land use dynamics.
3. Determine remedies to address negative impacts of land changes on human-environmental systems using land-use management tools and interventions.

Requirements

All students must complete the Required Core Courses (p. 343) listed under the "Bachelor's (p. 343)" tab in addition to the required courses listed below.

		Units
Additional Foundation and Breadth Courses		
BIO 81	Introduction to Ecology	4
or BIOHOPK 81	Introduction to Ecology	
or BIOHOPK 175H	Marine Science and Conservation in a Changing World	
or HUMBIO 2A & HUMBIO 2B	Genetics, Evolution, and Ecology and Culture, Evolution, and Society	
or EARTHSYS 116	Ecology of the Hawaiian Islands	
CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	3-10
or CHEM 31M	Chemical Principles: From Molecules to Solids	
or GEOLSCI 2	Chemistry of the Earth and Planets	
*CHEM 31A, CHEM 31B, CHEM 31M , GEOLSCI 2may be fulfilled by CHEM AP Exam score of 5		
ECON 1	Principles of Economics	5
GEOLSCI 1	Introduction to Geology	4-5
or GEOLSCI 4	Coevolution of Earth and Life	
or EARTHSYS 117	Earth Sciences of the Hawaiian Islands	
or EARTHSYS 128	Evolution of Terrestrial Ecosystems	
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	10
MATH 19, 20, 21 may be fulfilled by specific AP Exam Scores. See Math Placement website for more information.		
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	5
or CME 100	Vector Calculus for Engineers	
BIOHOPK 174H	Experimental Design and Probability (no longer offered)	3-5
or BIO 202	Ecological Statistics	
or ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	
or STATS 101	Data Science 101	
or STATS 110	Statistical Methods in Engineering and the Physical Sciences	
or STATS 116	Theory of Probability	
or STATS 141	Biostatistics	
or CME 106	Introduction to Probability and Statistics for Engineers	
GEOPHYS 110	Introduction to the Foundations of Contemporary Geophysics	3
or PHYSICS 41	Mechanics	
or PHYSICS 45	Light and Heat	
A total of 7 courses are required from the 4 Land Systems Focus Areas. Concentrating courses in a single focus area below will allow students to deepen their understanding of the chosen system. For breadth considerations, students are required to take a minimum of 1 course from each focus area. In addition, two electives are required for this track. All track courses and electives must be taken for a letter grade (9 courses total).		
Land Ecosystems:		
EARTHSYS 155	Science of Soils (recommended)	3-4
EARTHSYS 180	Principles and Practices of Sustainable Agriculture (recommended)	3-4
BIO 144	Conservation Biology: A Latin American Perspective	3
EARTHSYS 105A & EARTHSYS 105B	Ecology and Natural History of Jasper Ridge Biological Preserve and Ecology and Natural History of Jasper Ridge Biological Preserve	8
EARTHSYS 116	Ecology of the Hawaiian Islands	4
EARTHSYS 128	Evolution of Terrestrial Ecosystems	4
ESS 256	Soil and Water Chemistry	3
ESS 223/ EARTHSYS 123A	Biosphere-Atmosphere Interactions	4
OSPSANTG 58	Global Change in Chile	5
Water:		
CEE 166A	Watershed Hydrologic Processes and Models (recommended)	3
CEE 101B	Mechanics of Fluids	4
CEE 162E	Rivers, Streams, and Canals	3
CEE 165C	Water Resources Management	3
CEE 166B	Water Resources and Hazards	3
CEE 177	Aquatic Chemistry and Biology	4
EARTHSYS 104	The Water Course	4
ESS 224	Remote Sensing of Hydrology	3
GEOPHYS 190	Near-Surface Geophysics: Imaging Groundwater Systems	3
OSPAUSTL 25	(not given this year)	

OSPMADRD 79	(not given this year)	
Land Use:		
ESS 270	Analyzing land use in a globalized world (recommended)	3
ANTHRO 166	Political Ecology of Tropical Land Use: Conservation, Natural Resource Extraction, and Agribusiness	3-5
CEE 124	Sustainable Development Studio	1-5
CEE 175A	California Coast: Science, Policy, and Law	3-4
CEE 176A	Energy Efficient Buildings	3
EARTHSYS 118	Heritage, Environment, and Sovereignty in Hawaii	4
EARTHSYS 185	Feeding Nine Billion	4-5
EARTHSYS 238	Land Use Law	3
ECON 106	World Food Economy	5
ENERGY 101	Energy and the Environment	3
ENERGY 102	Fundamentals of Renewable Power	3
ENERGY 104	Sustainable Energy for 9 Billion	3
ENVRES 250	Environmental Governance	3
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America	5
SIW 144	Energy, Environment, Climate and Conservation Policy: A Washington, D.C. Perspective	5
URBANST 110	Introduction to Urban Studies	4
URBANST 113	Introduction to Urban Design: Contemporary Urban Design in Theory and Practice	5
URBANST 164	Sustainable Cities	4-5
Methods:		
EARTHSYS 144	Fundamentals of Geographic Information Science (GIS) (required)	1-4
Optional		
EARTHSYS 124	Measurements in Earth Systems	3-4
EARTHSYS 142	Remote Sensing of Land	4
ESS 165	Advanced Geographic Information Systems	4
ESS 224	Remote Sensing of Hydrology	3
ESS 220	Physical Hydrogeology	4
GEOLSCI 240	Data science for geoscience	3

Two additional courses at the 100-level or above are required. Each must be a minimum of 3 units. See Earth Systems staff for a list of possible electives.

Oceans, Atmosphere, and Climate

Learning Objectives:

1. Apply fundamental physical, chemical, and biological principles toward understanding the behavior of the oceans, atmosphere, and climate and the interrelationships of these systems with human society.
2. Apply fundamental principles of ocean, atmospheric, and climate science through field, laboratory, and computer-based research experiences.

Requirements

All students must complete the Required Core Courses (p. 343) listed under the "Bachelor's (p. 343)" tab in addition to the required courses listed below.

		Units
Additional Foundation and Breadth Courses		
BIO 81	Introduction to Ecology	4-16
or BIOHOPK 81	Introduction to Ecology	
or BIOHOPK 175H	Marine Science and Conservation in a Changing World	
or HUMBIO 2A & HUMBIO 2B	Genetics, Evolution, and Ecology and Culture, Evolution, and Society	
or EARTHSYS 116	Ecology of the Hawaiian Islands	
CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	5
or CHEM 31M	Chemical Principles: From Molecules to Solids	
or GEOLSCI 2	Chemistry of the Earth and Planets	
*CHEM 31A, CHEM 31B, CHEM 31M, GEOLSCI 2 may be fulfilled by CHEM AP Exam score of 5		
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	10
MATH 19, 20, 21 may be fulfilled by specific AP Exam Scores. See Math Placement website for more information.		
MATH 51 & MATH 52	Linear Algebra, Multivariable Calculus, and Modern Applications and Integral Calculus of Several Variables (CME 100 preferred over MATH 51 and MATH 52)	5-10
or CME 100	Vector Calculus for Engineers	
BIOHOPK 174H	Experimental Design and Probability (no longer offered)	3
or ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	
or STATS 101	Data Science 101	
or STATS 110	Statistical Methods in Engineering and the Physical Sciences	
or STATS 116	Theory of Probability	
or STATS 141	Biostatistics	
or CME 106	Introduction to Probability and Statistics for Engineers	
ECON 1	Principles of Economics	5
GEOLSCI 1	Introduction to Geology	5
or GEOLSCI 4	Coevolution of Earth and Life	
or EARTHSYS 117	Earth Sciences of the Hawaiian Islands	
or EARTHSYS 128	Evolution of Terrestrial Ecosystems	
PHYSICS 41	Mechanics	4
PHYSICS 45	Light and Heat	3-4
or GEOPHYS 110	Introduction to the Foundations of Contemporary Geophysics	
The Fundamentals (all courses required):		**3**
EARTHSYS 146A	Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation	3
EARTHSYS 146B	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation	3
or EARTHSYS 164	Introduction to Physical Oceanography	
EARTHSYS 141	Remote Sensing of the Oceans	3-4
EARTHSYS 151	Biological Oceanography	3-4
EARTHSYS 152	Marine Chemistry	3-4
Human Dimensions		**3-4**
Select one of the following:		
BIOHOPK 173H	Marine Conservation Biology	4
BIOHOPK 280	Short Course on Ocean Policy	3
CEE 175A	California Coast: Science, Policy, and Law	3-4

LAW 2506	Natural Resources Law and Policy	3
Field Experience [1]		**12-20**
Select at least one of the following:		
One quarter abroad at the Stanford in Australia Program		
One quarter at Stanford @ SEA		
One quarter (or more) at the Hopkins Marine Station		
Elective Requirement		**6-10**

Two additional courses at the 100-level or above are required. Each must be a minimum of 3 units. See Earth Systems staff for a list of possible electives.

Sustainable Food and Agriculture

Learning Objectives:

1. Describe the main biophysical and socioeconomic constraints in food systems at global and local scales.
2. Apply knowledge of agricultural soils and plant growth to solve problems related to crop production, soil conservation, and natural resource management.
3. Identify the links between food systems and other aspects of the Earth system, including water, energy, and climate systems.
4. Assess and critique proposed policy or technological solutions that claim to make food systems more sustainable.

Requirements

All students must complete the Required Core Courses (p. 343) listed under the "Bachelor's (p. 343)" tab in addition to the required courses listed below.

		Units
Additional Foundation and Breadth Courses		
BIO 81	Introduction to Ecology	4
or BIOHOPK 81	Introduction to Ecology	
or BIOHOPK 175H	Marine Science and Conservation in a Changing World	
or HUMBIO 2A & HUMBIO 2B	Genetics, Evolution, and Ecology and Culture, Evolution, and Society	
or EARTHSYS 116	Ecology of the Hawaiian Islands	
CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	3-10
or CHEM 31M	Chemical Principles: From Molecules to Solids	
or GEOLSCI 2	Chemistry of the Earth and Planets	
*CHEM 31A, CHEM 31B, CHEM 31M, GEOLSCI 2 may be fulfilled by CHEM AP Exam score of 5		
ECON 1	Principles of Economics	5
GEOLSCI 1	Introduction to Geology	4-5
or GEOLSCI 4	Coevolution of Earth and Life	
or EARTHSYS 117	Earth Sciences of the Hawaiian Islands	
or EARTHSYS 128	Evolution of Terrestrial Ecosystems	
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	10
MATH 19, 20, 21 may be fulfilled by specific AP Exam Scores. See Math Placement website for more information.		
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	5
or CME 100	Vector Calculus for Engineers	
BIOHOPK 174H	Experimental Design and Probability	3
PHYSICS 41	Mechanics	4
or PHYSICS 45	Light and Heat	
or GEOPHYS 110	Introduction to the Foundations of Contemporary Geophysics	
BIOHOPK 174H	Experimental Design and Probability (no longer offered)	3-5
or BIO 202	Ecological Statistics	
or ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	
or STATS 101	Data Science 101	
or STATS 110	Statistical Methods in Engineering and the Physical Sciences	
or STATS 116	Theory of Probability	
or STATS 141	Biostatistics	
or CME 106	Introduction to Probability and Statistics for Engineers	

A total of 7 courses are required from the Food and Agriculture Focus Areas. In addition, two electives are required for this track. All track courses and electives must be taken for a letter grade (nine courses total).

Fundamentals of Agriculture Production and Economics (both required):		
ECON 106	World Food Economy	5
EARTHSYS 185	Feeding Nine Billion	4-5
Biogeophysical Dimenstions (3 required):		
EARTHSYS 155	Science of Soils	3-4
BIO 115	The Hidden Kingdom - Evolution, Ecology and Diversity of Fungi	4
EARTHSYS 142	Remote Sensing of Land	4
EARTHSYS 256	Soil and Water Chemistry	3
BIO 137	Plant Genetics (Not given this year)	3-4
HUMBIO 113	The Human-Plant Connection	3
HUMBIO 130	Human Nutrition	4
Social Dimensions (choose 1):		
ARCHLGY 124	Archaeology of Food: production, consumption and ritual	3-5
BIO 144	Conservation Biology: A Latin American Perspective	3
EARTHSYS 136	The Ethics of Stewardship	2-3
EARTHSYS 187	FEED the Change: Redesigning Food Systems	2-3
ECON 118	Development Economics	5
HUMBIO 113S	Healthy/Sustainable Food Systems: Maximum Sustainability across Health, Economics, and Environment	4
HUMBIO 166	Food and Society: Exploring Eating Behaviors in Social, Environmental, and Policy Context	4
OSPMADRD 79		
Applied Study in the Field		
EARTHSYS 180	Principles and Practices of Sustainable Agriculture	3-4
Two additional courses at the 100-level or above are required. Each must be a minimum of 3 units. See Earth Systems staff for a list of possible electives		

Minor in Earth Systems, Sustainability Subplan

The minor in Earth Systems, Sustainability subplan, provides students with foundational knowledge, skills, and frameworks needed to understand social-environmental systems and address intergenerational

sustainability challenges. Students declaring the minor in Earth Systems must also declare the Sustainability subplan.

To minor in Earth Systems, students must take the core courses listed below and approved electives for a minimum of 35 units. Courses that count toward the fulfillment of major requirements may not be counted toward the minor, and all courses must be taken for a letter grade.

Students declaring a minor in Earth Systems must do so no later than two quarters prior to their intended quarter of degree conferral; for example, a student must declare a minor before the end of Autumn Quarter to graduate the following Spring Quarter. The Sustainability subplan must also be declared in Axess when declaring the minor. In addition, students pursuing the minor must complete the Multiple Major/Minor Form (https://stanford.box.com/v/change-UG-program/) and have it reviewed by all applicable departments/programs. This form must be submitted to the Student Services Center (https://studentservicescenter.stanford.edu/%22%20%5Ct%20%22_blank/) by the application to graduate deadline for the term in which the student intends to graduate.

Required Course Work

Core

		Units
EARTHSYS 10	Introduction to Earth Systems	4
EARTHSYS 111	Biology and Global Change	4
EARTHSYS 112	Human Society and Environmental Change	4
(ECON 1 recommended as a pre- or corequisite to EARTHSYS 112)		
EARTHSYS 131	Pathways in Sustainability Careers	1
SUST 210	Pursuing Sustainability: Managing Complex Social Environmental Systems (prerequisites: EARTHSYS 111, EARTHSYS 112)	3

Electives

Students must take a minimum of 19 units of electives at the 100-level or above that address dimensions of environmental systems and social-environmental systems in theory or practice, with at least one course taken in each of the following four categories: Earth Systems Science/Engineering; Environmental Justice; Applied Problem Solving; and Skills. Students may double-count courses in these categories (i.e., if a course fulfills both the Environmental Justice and Applied Problem Solving requirements, it can be applied to both categories).

A list of approved electives is available on the Earth Systems website and in the Earth Systems Program office (Y2E2 131). Students may petition to count one relevant freshman or sophomore seminar toward the minor.

Coterminal Master's Degrees in Earth Systems

The Earth Systems Program offers current Stanford University undergraduates the opportunity to apply to a one-year coterminal master's program. Earth Systems offers a coterminal Master of Science (M.S.) degree in Earth Systems (p. 354) and a coterminal Master of Arts (M.A.) degree in Earth Systems, Environmental Communication (p. 352); the Environmental Communication subplan prints on both the transcript and the diploma.

Application and Admission

The Earth Systems Program has quarterly coterminal degree application deadlines: October 27, 2020; February 16, 2021; and May 11, 2021. Seniors must apply by Winter Quarter deadline. To apply, students should submit an online application. The application includes the following:

- The Stanford coterminal application (https://www.applyweb.com/stanterm/)
- A statement of purpose
- A resume
- A current Stanford unofficial transcript
- Two letters of recommendation, one of which must be from the master's advisor (who must be an Academic Council member; each coterminal M.A. student has two advisors: Thomas Hayden and another approved faculty advisor who is an Academic Council member). These letters are due by the coterm application deadline for the given quarter.
- Master's Program Proposal (https://earth.stanford.edu/esys/program-forms/): A list of courses that fulfill degree requirements signed by the master's advisor

Note:

1. Applications must be submitted no later than the quarter prior to the expected completion of the B.S. degree (and within quarterly application deadlines). An application fee is assessed by the Registrar's Office for coterminal applications, once students are matriculated into the program.
2. Students applying to the coterminal master's program must have completed a minimum of 120 units toward graduation with a minimum overall Stanford GPA of 3.4.
3. All applicants must devise a program of study that shows a level of specialization appropriate to the master's level, as determined in consultation with the master's advisor and the Director of Earth Systems. (See also following sections, Master of Science and Master of Arts in Earth Systems Degree Requirements).
4. Students applying from an undergraduate major other than Earth Systems should review their undergraduate course list with Deana Fabbro-Johnston, Richard Nevle, or Thomas Hayden (M.A. only).
5. Students have the option of receiving the B.S. degree after completing that degree's requirements or receiving the B.S. and M.A./M.S. degrees concurrently at the completion of the master's program.
6. If you would like to change from the M.S. to the M.A. in Earth Systems, or from the M.A. to the M.S. in Earth Systems, you must submit a new application. If accepted, the student must submit a Graduate Authorization Petition through Axess; a $125 fee applies to a successful Graduate Authorization Petition.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career

may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Coterminal Master of Arts Program

Admission

Applications in 2020-21 are due:

- October 27, 2020 to apply for Winter 2020 matriculation.
- February 16, 2021 to apply for Spring 2020 matriculation.
- May 11, 2021 to apply for Autumn 2020-21 matriculation.
- Coterminal application (https://www.applyweb.com/stanterm/)
- A statement of purpose
- A resume
- A current Stanford unofficial transcript
- Two letters of recommendation, one from the M.A. Director (Thomas Hayden) and another approved faculty advisor who is an Academic Council member.
- Master's Program Proposal (M.A.) (https://pangea.stanford.edu/sites/default/files/Earth%20Systems%20MA%20Coterm%20Course%20Proposal.xlsx): A list of courses that fulfill degree requirements signed by both the M.A. director (Thomas Hayden) and the proposed faculty co-advisor.

Applications must be submitted no later than the quarter prior to the expected completion of the undergraduate degree. The specific application deadline for each quarter is listed above, or can be obtained from the Earth Systems Program office. An application fee is assessed by the Registrar's Office for coterminal applications once students are matriculated into the program.

- Students applying to the coterminal master's program must have completed a minimum of 120 units toward graduation with a minimum overall Stanford GPA of 3.4.
- All applicants must devise a program of study that shows a level of specialization appropriate to the master's level, as determined in consultation with the M.A. director and the Director of Earth Systems.
- Students applying from an undergraduate major other than Earth Systems should also review their undergraduate course list with the M.A. director. a
- Coterminal master's students have the option of receiving their undergraduate degree after completing that degree's requirements or receiving their undergraduate and M.A. degrees concurrently at the completion of the master's program.
- Students must submit a new application to change from the M.S. to the M.A., or from the M.A. to the M.S. in Earth Systems. If accepted, the student must submit a Graduate Authorization Petition through Axess; a $125 fee applies to a successful Graduate Authorization Petition.
- Applicants will be notified of the admission decision in writing, typically 3-4 weeks after the application deadline.
- A $125 application fee will be assessed by the Registrar's office for those accepted and matriculated into the program. To apply, students should submit an online application.

Students interested in applying to the Earth Systems Master of Arts, Environmental Communication should contact the M.A. director, Thomas Hayden (thayden@stanford.edu).

Students may apply to the Earth Systems Master of Arts, Environmental Communication degree from any undergraduate major. However, all admitted students are also required to complete the Earth Systems Core, i.e., EARTHSYS 10 Introduction to Earth Systems, EARTHSYS 111 Biology and Global Change, and EARTHSYS 112 Human Society and Environmental Change. These courses may be taken concurrently with the M.A. degree but may not be counted toward the 45 units required for the M.A. degree. In consultation with the M.A. Director, these courses may be actively audited rather than taken for credit. Rarely, additional prerequisites or foundational courses may be required depending on the academic background and intended focus of each student, to be determined in consultation with the M.A. director, faculty co-advisor, and the Director of Earth Systems

Learning Outcomes (Graduate)

The coterminal master's degree in Earth Systems, Environmental Communication provides the student with enhanced theoretical frameworks, analytical tools, and applied skills in various domains of environmental communication. Specialization is gained through courses, independent project work, and a professional practicum placement, supervised by the Earth Systems M.A. director and the faculty co-advisor

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Degree Requirements

These degree requirements are the same for both the Master of Arts degree and the Master of Science degree in Earth Systems, and must be fulfilled to receive an M.A. degree in Earth Systems:

- A minimum of 45 units of course work and/or research credit (upon approval).
- At least 34 units of the student's course work for the M.A./M.S. must be at the 200-level or above.
- All remaining course work must be at the 100-level or above, with the exception of ENGLISH 91 and ENGLISH 191.
- All courses for the M.A. degree must be taken for a letter grade when that option exists; courses not taken for a letter grade must be approved by the M.A. Director and Director of Earth Systems.
- Transfer courses from other institutions are not permitted to count towards the master's degree.
- A minimum overall GPA of 3.4 must be maintained.
- All Earth Systems coterminal master's students are required to take the Master's Seminar, EARTHSYS 290 Master's Seminar. All

Earth Systems M.A. students are required to take EARTHSYS 295 Environmental Communication Seminar.

This Earth Systems Master of Arts degree provides an overview of the theory, techniques, and challenges of communicating about environmental science, policy, and ethics with diverse audiences. Students have the opportunity to gain hands-on experience with a range of communication modalities including writing and journalism, multimedia production, policy and strategic communications, and environmental and informal education.

The degree program is built on a set of seven required core courses, which include a weekly seminar, a practicum placement, and an independent capstone project. These Core requirements are enhanced with individual selections from a range of Focus and Elective courses chosen either to emphasize a particular topic or modality or to provide greater breadth and diversity of study topics within environmental communication.

Each student in the Earth Systems Master of Arts, Environmental Communication, program has two academic advisors: the Director of the M.A. program and a faculty co-advisor. The faculty co-advisor is an Academic Council member selected by the student in consultation with the M.A. director.

Earth Systems M.A. students complete a minimum of 45 units for the degree, including 22 units of required core courses, a minimum of 10 units of approved focus courses, and up to 13 units of elective courses, to be selected in close consultation with the M.A. director and the faculty co-advisor. At least 34 units of the student's coursework must be at the 200-level or above. Students may include up to 9 units total of directed research or independent study, including the required EARTHSYS 294 Environmental Communication Capstone units.

Core Courses

Core courses are intended to give students a solid foundation in environmental communication theory and practice and exposure to the broad range of research and the variety of disciplines, approaches, genres, and expressions in environmental communication.

Environmental Communication Core Courses

		Units
Autumn Quarter		
EARTHSYS 290	Master's Seminar	2
EARTHSYS 291	Concepts in Environmental Communication	3
EARTHSYS 292	Multimedia Environmental Communication	3
EARTHSYS 293	Environmental Communication Practicum	1-5
EARTHSYS 294	Environmental Communication Capstone	1-5
EARTHSYS 295	Environmental Communication Seminar (must be taken twice for credit)	1
Winter Quarter		
EARTHSYS 290	Master's Seminar	2
EARTHSYS 277C	Specialized Writing and Reporting: Health and Science Journalism	4
EARTHSYS 293	Environmental Communication Practicum	1-5
EARTHSYS 294	Environmental Communication Capstone	1-3
Spring Quarter		
EARTHSYS 293	Environmental Communication Practicum	1-5
EARTHSYS 294	Environmental Communication Capstone	1-5
EARTHSYS 295	Environmental Communication Seminar (must be taken twice for credit)	1

Focus Courses

Focus courses are communication-specific courses that contribute to students' intended focus for the M.A. degree. Each student should select 10 units or more of focus courses. The following list includes pre-approved focus courses across a number of disciplines. Many other courses will also qualify as Focus courses, depending on the individual student's goals and with the approval of the M.A. director. These include many courses offered by the Graduate School of Education (EDUC), the Department of Communication (COMM), and the Sustainability Science and Practice Program (SUST).

Environmental Communication Focus Courses

		Units
Autumn Quarter		
COMM 208	Media Processes and Effects	4-5
COMM 225	Perspectives on American Journalism	4-5
EARTHSYS 194	Topics in Writing & Rhetoric: Introduction to Environmental Justice: Race, Class, Gender and Place	4
EARTHSYS 227	Decision Science for Environmental Threats	3-5
ENVRES 240	Environmental Decision-Making and Risk Perception	1-3
GSBGEN 515	Essentials of Strategic Communication	2
Winter Quarter		
EARTHSYS 105A	Ecology and Natural History of Jasper Ridge Biological Preserve	4
COMM 264	The Psychology of Communication About Politics in America	4-5
EDUC 357	Science and Environmental Education in Informal Contexts	3-4
GSBGEN 315 or GSBGEN 515	Strategic Communication Essentials of Strategic Communication	2-4
Spring Quarter		
EARTHSYS 249	Wild Writing	3
COMM 276	Advanced Digital Media Journalism	4-5
ESS 282	Designing Educational Gardens	2
EDUC 379	Moral, Civic, and Environmental Education	3
EARTHSYS 105B	Ecology and Natural History of Jasper Ridge Biological Preserve	4
EARTH 251	Negotiation	3
GSBGEN 315 or GSBGEN 515	Strategic Communication Essentials of Strategic Communication	2-4

Elective Courses

Some Earth Systems M.A. students build a course plan exclusively out of core and focus courses. However, environmental communication is a broad and inherently interdisciplinary field and students come to the M.A. with a wide diversity of backgrounds and goals. Students may select other courses from across campus to fill out their 45-unit degree requirement. These elective courses may be chosen to deepen knowledge about specific environmental topics, for example environmental science, policy, ethics, or history courses; to increase breadth or specialization in areas of communication practice or theory; or to add diversity to the student's overall graduate experience.

Some examples of potential elective courses include the English Department's Creative Nonfiction series (ENGLISH 91 and ENGLISH 191 Intermediate Creative Nonfiction), courses in Art Practice (ARTSTUDI) or Theater and Performance Studies (TAPS), courses associated with the Stanford Storytelling Project and the d.school, and a wide variety of the courses offered by Earth Systems (EARTHSYS), the Emmett Interdisciplinary Program in Environment and Resources (ENVRES), Earth System Science (ESS), Stanford Earth (EARTH), Human Biology (HUMBIO), and other associated departments and programs.

Elective courses can be selected from virtually any Stanford department or program, pending permission to enroll and a strong case for including the course in an individual student's cohesive degree plan. All electives must be approved by the M.A. director.

Coterminal Master of Science in Earth Systems

Admission

Applications in 2020-21 are due:

- October 27, 2020 to apply for Winter 2020 matriculation.
- February 16, 2021 to apply for Spring 2020 matriculation.
- May 11, 2021 to apply for Autumn 2020-21 matriculation.
- Coterminal application (https://www.applyweb.com/stanterm/)
- A statement of purpose
- A resume
- A current Stanford unofficial transcript

Applications must be submitted no later than the quarter prior to the expected completion of the undergraduate degree. The specific application deadline for each quarter is listed above, or can be obtained from the Earth Systems Program office. An application fee is assessed by the Registrar's Office for coterminal applications once students are matriculated into the program.

- Students applying to the coterminal master's program must have completed a minimum of 120 units toward graduation with a minimum overall Stanford GPA of 3.4.
- All applicants must devise a program of study that shows a level of specialization appropriate to the master's level, as determined in consultation with the M.A. director and the Director of Earth Systems.
- Students applying from an undergraduate major other than Earth Systems should also review their undergraduate course list with the M.A. director. a
- Coterminal master's students have the option of receiving their undergraduate degree after completing that degree's requirements or receiving their undergraduate and M.A. degrees concurrently at the completion of the master's program.
- Students must submit a new application to change from the M.S. to the M.A., or from the M.A. to the M.S. in Earth Systems. If accepted, the student must submit a Graduate Authorization Petition through Axess; a $125 fee applies to a successful Graduate Authorization Petition.
- Applicants will be notified of the admission decision in writing, typically 3-4 weeks after the application deadline.
- A $125 application fee will be assessed by the Registrar's office for those accepted and matriculated into the program. To apply, students should submit an online application.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Undergraduate Preparation for the Program

For the Master of Science degree in Earth Systems, the following courses must be taken if not completed in the undergraduate degree program. These courses do not have to be completed before applying to the coterm program. These may not be counted as part of the 45-unit master's degree:

		Units
Core (both required):		8
EARTHSYS 111	Biology and Global Change	
EARTHSYS 112	Human Society and Environmental Change	
Biology: One Biology Foundations/Core course pre-approved by Master's advisor, OR select from the following:		**4-10**
HUMBIO 2A & HUMBIO 2B	Genetics, Evolution, and Ecology and Culture, Evolution, and Society	
BIOHOPK 47	Introduction to Research in Ecology and Ecological Physiology	
EARTHSYS 116	Ecology of the Hawaiian Islands	
Chemistry (select one of the following):		**5-10**
CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	
or CHEM 31M	Chemical Principles: From Molecules to Solids	
Physics (select one of the following):		**3-4**
One physics class from the PHYSICS 20 or 40 series or GEOPHYS 110		
Mathematics (select one of the following):		**5**
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
CME 100	Vector Calculus for Engineers	
Statistics (select one of the following):		**3-5**
BIOHOPK 174H	Experimental Design and Probability	
BIO 141	Biostatistics	
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	
STATS 101	Data Science 101	
STATS 110	Statistical Methods in Engineering and the Physical Sciences	
STATS 116	Theory of Probability	
CME 106	Introduction to Probability and Statistics for Engineers	

Degree Requirements

The master of science degree in Earth Systems allows specialization through graduate-level course work that may include up to 9 units of research with the master's advisor. This may culminate in the preparation of a M.S. thesis; however, a thesis is not required for the degree. The process of building mastery in the field is enriched through steady communication with a faculty advisor.

The following are required of all M.S. students:

- A minimum of 45 units of course work and/or research credit (upon approval).
- At least 34 units of the student's course work for the master's program must be at the 200-level or above.
- All remaining course work must be at the 100-level or above.
- All courses for the master's program must be taken for a letter grade; courses not taken for a letter grade must be approved by the master's advisor and Director of Earth Systems.
- A minimum overall GPA of 3.4 must be maintained.
- All coterminal master's students are required to take the capstone course, EARTHSYS 290 Master's Seminar.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

For all courses taken during the 2020-21 academic year, the Earth System Program will allow grades of 'CR' (credit) or 'S' (satisfactory) grades in classes retaining the S/NC basis, in addition to letter grades, to count towards fulfillment of requirements for the Earth Systems Undergraduate Major and Minor.

Graduate Degree Requirements

Grading

For all courses taken during the 2020-21 academic year, the Earth System Program will allow grades of 'CR' (credit) or 'S' (satisfactory) grades in classes retaining the S/NC basis, in addition to letter grades, to count towards fulfillment of requirements for the Coterminal M.S. and M.A. Degrees.

Graduate Advising Expectations

Purpose of Advising

The primary purpose of the faculty adviser in the Earth Systems coterminal M.S. and M.A. programs is to help guide the academic development of their advisees. Faculty advisers help advisees design comprehensive, rigorous, interdisciplinary curricula that enable each student to acquire mastery of their chosen field(s). A small number of coterm students may also choose to conduct research and write a master's thesis under the guidance of their adviser. Earth Systems staff members can provide additional guidance on the selection of courses, navigating policies and degree requirements, and preparation for future employment and exploration of professional pathways.

Expectations

All candidates for coterminal master's programs in Earth Systems (M.S. and M.A.) are required to secure an academic adviser prior to applying to the coterm program. Coterm advisers must be members of the Academic Council. Each student is expected to meet with their adviser at least once per quarter to discuss degree progress and new course selections. Students must obtain their adviser's signed approval on their course plan each quarter as courses taken may differ from the original course plan submitted with the coterm application. The final curriculum must stay true to the scope and rigor of the originally approved curriculum even if some of the individual courses change.

Because Earth Systems is an interdisciplinary program, and does not have its own faculty, the program relies upon faculty in related departments to advise its students. This is particularly important for coterm students who are embarking on advanced studies and need the expertise of their advisers for curriculum planning and academic development. The program greatly appreciates this advising support, and the Earth Systems staff is available for any questions and to help in whatever way we can.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Director: Karen Casciotti

Deputy Director: Richard Nevle

Associate Director: Deana Fabbro-Johnston

Director of Graduate Studies: Karen Casciotti

Director of Undergraduate Studies: Richard Nevle

Affiliated Faculty and Lecturers: Michelle Anderson (Law), Patrick Archie (Earth Systems, Earth System Science), Nicole Ardoin (School of Education, Woods Institute for the Environment), Kevin Arrigo (Earth System Science), Gregory Asner (Department of Global Ecology, Carnegie Institution), Greg Beroza (Geophysics), Barbara Block (Biology, Hopkins Marine Station, Woods Institute for the Environment), Alexandria Boehm (Civil and Environmental Engineering), Gordon Brown (Geological Sciences, emeritus), Marshall Burke (Earth System Science), Ken Caldeira (Earth System Science), Liz Carlisle (Earth Systems), Karen Casciotti (Earth System Science), Page Chamberlain (Geological Sciences), Larry Crowder (Biology, Woods Institute for the Environment), Danny Cullenward (Earth Systems), Lisa Curran (Anthropology, Woods Institute for the Environment), Gretchen Daily (Biology, Woods Institute for the Environment), Jenna Davis (Civil and Environmental Engineering, Woods Institute for the Environment), Anne Dekas (Earth System Science), Mark Denny (Biology, Hopkins Marine Station), Noah Diffenbaugh (Earth System Science, Woods Institute for the Environment), Rodolfo Dirzo (Biology, Woods Institute for the Environment), Robert Dunbar (Earth System Science, Woods Institute for the Environment), Debra Dunn (Earth Systems, Hasso Plattner Institute of Design), William Durham (Anthropology, Woods Institute for the Environment), Louis Durlofsky (Energy Resources Engineering), Stefano Ermon (Computer Science), Gary Ernst (Geological Sciences, emeritus), Walter Falcon (Freeman Spogli Institute for International Studies, emeritus, Woods Institute for the Environment), Scott Fendorf (Earth System Science, Woods Institute for the Environment, Precourt Institute for Energy), Christopher Field (Woods Institute for the Environment), Christopher Francis (Earth System Science, Woods Institute for the Environment), Zephyr Frank (History, Woods Institute for the Environment), David Freyberg (Civil and Environmental Engineering, Woods Institute for the Environment), Tad Fukami (Biology), Margot Gerritsen (Energy Resources Engineering), Elizabeth Hadly (Biology, Woods Institute for the Environment), Thomas Hayden (Earth Systems), George Hilley (Geological Sciences), Suki Hoagland (Earth Systems), Robert Jackson (Earth System Science, Woods Institute for the Environment), Michael Kahan (Urban Studies), David Kennedy (History, emeritus, Woods Institute for the Environment), Alexandra Konings (Earth System Science), Karl Knapp (Atmosphere and Energy Operations), Rosemary Knight (Geophysics, Woods Institute for the Environment), Jeffrey Koseff (Civil

and Environmental Engineering), Anthony Kovscek (Energy Resources Engineering), Eric Lambin (Earth System Science, Woods Institute for the Environment), Jim Leape (Center for Ocean Solutions), David Lobell (Earth System Science, Woods Institute for the Environment), Evan Lyons (Earth System Science), Gilbert Masters (Civil and Environmental Engineering), Pamela Matson (Earth System Science, Freeman Spogli Institute for International Studies, Woods Institute for the Environment), Anna Michalak (Earth System Science), Fiorenza Micheli (Hopkins Marine Station, Center for Ocean Solutions), Stephen Monismith (Civil and Environmental Engineering, Woods Institute for the Environment), Harold Mooney (Biology, emeritus, Woods Institute for the Environment), Rosamond Naylor (Earth System Science, Freeman Spogli Institute for International Studies, Woods Institute for the Environment), Richard Nevle (Earth Systems), Julia Novy-Hildesley (Sustainability Science and Practice), Stephen Palumbi (Biology, Hopkins Marine Station, Woods Institute for the Environment), Jonathan Payne (Geological Sciences), Kabir Peay (Biology), Emily Polk (Program in Writing and Rhetoric), Thomas Robinson (Medicine), Matt Rothe (Earth Systems, Hasso Plattner Institute of Design, Graduate School of Business), Jennifer Saltzman (Geological Sciences), Dustin Schroeder (Geophysics), Paul Segall (Geophysics), Deborah Sivas (Law), George Somero (Biology, Hopkins Marine Station), Jenny Suckale (Geophysics), James Sweeney (Management Science and Engineering, Woods Institute for the Environment), Leif Thomas (Earth System Science), Barton Thompson, Junior (Law, Woods Institute for the Environment), Tiziana Vanorio (Geophysics), Peter Vitousek (Biology, Woods Institute for the Environment), Virginia Walbot (Biology), Paula Welander (Earth System Science), Cindy Wilber (Jasper Ridge), Michael Wilcox (Anthropology), Mikael Wolfe (History), Jane Woodward (Atmosphere and Energy Operations), Mark Zoback (Geophysics)

Overseas Studies Courses in Earth Systems

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPAUSTL 10	Coral Reef Ecosystems	3
OSPAUSTL 28	Terrestrial Ecology and Conservation	3
OSPAUSTL 32	Coastal Ecosystems	3
OSPCPTWN 10	Climate Change and Political Violence	4
OSPSANTG 58	Global Change in Chile	5
OSPSANTG 85	Marine Ecology of Chile and the South Pacific	5

Environmental Courses List

		Units
AA 116Q	Electric Automobiles and Aircraft	
AA 251	Introduction to the Space Environment	
AA 260	Sustainable Aviation	
AA 280	Smart Structures	
AFRICAAM 47	History of South Africa	
AFRICAAM 50B	Nineteenth Century America	
AFRICAAM 51A	Race in Science	
AFRICAAM 58Q	American Landscapes of Segregation	
AFRICAAM 95	Liberation Through Land: Organic Gardening and Racial Justice	
AFRICAAM 100	Grassroots Community Organizing: Building Power for Collective Liberation	
AFRICAAM 111	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	
AFRICAAM 144	Living Free: Embodying Healing and Creativity in The Era of Racial Justice Movements	
AFRICAAM 147	History of South Africa	
AFRICAAM 150B	Nineteenth Century America	
AFRICAAM 189	Black Life and Death in the Neoliberal Era	
AFRICAAM 204	Race, Colonialism, and Climate Justice in the Caribbean	
AFRICAST 112	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	
AFRICAST 114N	Desert Biogeography of Namibia Prefield Seminar	
AMSTUD 1B	Media, Culture, and Society	
AMSTUD 10Q	Dystopian California: Imagining the Golden State in Disaster and Science Fiction Film	
AMSTUD 94	Topics in Food Studies	
AMSTUD 124A	The American West	
AMSTUD 136X	Indigenous Peoples and Environmental Change in the North American Wes	
AMSTUD 150X	From Gold Rush to Google Bus: History of San Francisco	
ANTHRO 18	Peopling of the Globe: Changing Patterns of Land Use and Consumption Over the Last 50,000 Years	
ANTHRO 34	Animals and Us	
ANTHRO 39	Sense of Place	
ANTHRO 42	Megacities	
ANTHRO 78A	Disruption and Diffusion: The Archaeology of Innovation	
ANTHRO 103	The Archaeology of Climate	
ANTHRO 106	Incas and their Ancestors: Peruvian Archaeology	
ANTHRO 110	Environmental Archaeology	
ANTHRO 112A	Archaeology of Human Rights	
ANTHRO 113	Culture and Epigenetics: Towards A Non-Darwinian Synthesis	
ANTHRO 116B	Anthropology of the Environment	
ANTHRO 119	Zooarchaeology: An Introduction to Faunal Remains	
ANTHRO 123B	Government of Water and Crisis: Corporations, States and the Environment	
ANTHRO 123C	"Third World Problems?" Environmental Anthropology and the Intersectionality of Justice	
ANTHRO 135B	Waste Politics: Contesting Toxicity, Value, and Power	
ANTHRO 137	The Politics of Humanitarianism	
ANTHRO 140C	Mobilizing Nature	

ANTHRO 150B	Fire: Social and Ecological Contexts of Conflagration
ANTHRO 154C	Animism, Gaia, and Alternative Approaches to the Environment
ANTHRO 159C	Ecological Humanities
ANTHRO 166	Political Ecology of Tropical Land Use: Conservation, Natural Resource Extraction, and Agribusiness
ANTHRO 184A	Vital Curse: Oil As Culture
ANTHRO 219	Zooarchaeology: An Introduction to Faunal Remains
ANTHRO 235B	Waste Politics: Contesting Toxicity, Value, and Power
ANTHRO 237	The Politics of Humanitarianism
ANTHRO 266	Political Ecology of Tropical Land Use: Conservation, Natural Resource Extraction, and Agribusiness
ANTHRO 364A	EcoGroup: Problems in Ecological and Evolutionary Anthropology
ANTHRO 372	Urban Ecologies
ANTHRO 378	Dynamics of Coupled Human-Natural Systems
ANTHRO 445	Anthropology Brown Bag Series
APPPHYS 79N	Energy Options for the 21st Century
APPPHYS 205	Introduction to Biophysics
APPPHYS 219	Solid State Physics Problems in Energy Technology
APPPHYS 294	Cellular Biophysics
ARCHLGY 12	Peopling of the Globe: Changing Patterns of Land Use and Consumption Over the Last 50,000 Years
ARCHLGY 102B	Incas and their Ancestors: Peruvian Archaeology
ARCHLGY 106	The Archaeology of Climate
ARCHLGY 111	Emergence of Chinese Civilization from Caves to Palaces
ARCHLGY 119	Zooarchaeology: An Introduction to Faunal Remains
ARCHLGY 124	Archaeology of Food: production, consumption and ritual
ARCHLGY 126	Archaeobotany
ARCHLGY 154	Animism, Gaia, and Alternative Approaches to the Environment
ARCHLGY 156	Design of Cities
ARCHLGY 224	Archaeology of Food: production, consumption and ritual
ARCHLGY 226	Archaeobotany
ARTHIST 144B	Modern Design from the Eiffel Tower to Yves Saint Laurent
ARTHIST 152	The American West
ARTHIST 156N	Art and the Power of Place: Site, Location, Environment
ARTHIST 188A	The History of Modern and Contemporary Japanese and Chinese Architecture and Urbanism
ARTHIST 190A	Indigenous Cultural Heritage: Protection, Practice, Repatriation
ARTHIST 273	Visual Culture of the Arctic
ARTHIST 450	Art in the Age of Precarity
ARTSTUDI 141S	Drawing Outdoors
ARTSTUDI 153	Ecology of Materials
ARTSTUDI 184	Art and Environmental Engagement
ASNAMST 123	Asian Americans and Environmental Justice
BIO 2N	Ecology and Evolution of Infectious Disease in a Changing World
BIO 3	Frontiers in Marine Biology
BIO 3N	Views of a Changing Sea: Literature & Science
BIO 6N	Ocean Conservation: Pathways to Solutions
BIO 7N	Conservation Photography
BIO 8N	Human Origins
BIO 12N	Sensory Ecology of Marine Animals
BIO 16	Conservation Storytelling: Pre-course for BOSP South Africa
BIO 16N	Island Ecology
BIO 30	Ecology for Everyone
BIO 35N	Climate change ecology: Is it too late?
BIO 46	Introduction to Research in Ecology and Evolutionary Biology
BIO 47	Introduction to Research in Ecology and Evolutionary Biology
BIO 53	Conservation Photography
BIO 81	Introduction to Ecology
BIO 102	Ecosystem Ecology and Biogeochemistry
BIO 105A	Ecology and Natural History of Jasper Ridge Biological Preserve
BIO 105B	Ecology and Natural History of Jasper Ridge Biological Preserve
BIO 115	The Hidden Kingdom - Evolution, Ecology and Diversity of Fungi
BIO 116	Ecology of the Hawaiian Islands
BIO 117	Biology and Global Change
BIO 121	ORNITHOLOGY
BIO 130	Ecosystems of California
BIO 136	Macroevolution
BIO 137	Plant Genetics
BIO 138	Ecosystem Services: Frontiers in the Science of Valuing Nature
BIO 140	The Science of Extreme Life of the Sea
BIO 141	Biostatistics
BIO 142	Molecular Geomicrobiology Laboratory
BIO 144	Conservation Biology: A Latin American Perspective
BIO 145	Ecology and Evolution of Animal Behavior
BIO 147	Ecosystem Ecology and Biogeochemistry
BIO 156	California Wildfires: Forest Fire Ecology, Management, and Policy
BIO 172	Ecological Dynamics: Theory and Applications
BIO 179	Integrated Valuation of Ecosystem Services and Tradeoffs
BIO 182	Modeling Cultural Evolution
BIO 196A	Biology Senior Reflection
BIO 196B	Biology Senior Reflection
BIO 196C	Biology Senior Reflection
BIO 202	Ecological Statistics
BIO 208	Spanish in Science/Science in Spanish
BIO 227	Foundations of Community Ecology

BIO 234	Conservation Biology: A Latin American Perspective
BIO 238	Ecosystem Services: Frontiers in the Science of Valuing Nature
BIO 245	Ecology and Evolution of Animal Behavior
BIO 273A	Environmental Microbiology I
BIO 274S	Hopkins Microbiology Course
BIO 279	Integrated Valuation of Ecosystem Services and Tradeoffs
BIO 302	Current Topics and Concepts in Population Biology, Ecology, and Evolution
BIO 303	Current Topics and Concepts in Population Biology, Ecology, and Evolution
BIO 304	Current Topics and Concepts in Population Biology, Ecology, and Evolution
BIO 313	Ethics in the Anthropocene
BIO 384	Theoretical Ecology
BIO 386	Conservation and Population Genomics
BIO 459	Frontiers in Interdisciplinary Biosciences
BIOC 459	Frontiers in Interdisciplinary Biosciences
BIOE 44	Fundamentals for Engineering Biology Lab
BIOE 80	Introduction to Bioengineering (Engineering Living Matter)
BIOE 191	Bioengineering Problems and Experimental Investigation
BIOE 240	The Biology Revolution
BIOE 242	LAW, TECHNOLOGY, AND LIBERTY
BIOE 271	Frugal Science
BIOE 390	Introduction to Bioengineering Research
BIOE 459	Frontiers in Interdisciplinary Biosciences
BIOHOPK 14	Bio-logging and Bio-telemetry
BIOHOPK 43	Plant Biology, Evolution, and Ecology
BIOHOPK 47	Introduction to Research in Ecology and Ecological Physiology
BIOHOPK 81	Introduction to Ecology
BIOHOPK 85	Evolution
BIOHOPK 150H	Ecological Mechanics
BIOHOPK 152H	Physiology of Global Change
BIOHOPK 153H	Current Topics and Concepts in Quantitative Fish Dynamics and Fisheries Management
BIOHOPK 155H	Developmental Biology and Evolution
BIOHOPK 157H	Creative Writing & Science: The Artful Interpreter
BIOHOPK 158H	Science Meets Literature on the Monterey Peninsula
BIOHOPK 159H	Molecular Ecology Lab
BIOHOPK 160H	Developmental Biology in the Ocean: Diverse Embryonic & Larval Strategies of marine invertebrates
BIOHOPK 161H	Invertebrate Zoology
BIOHOPK 162H	Comparative Animal Physiology
BIOHOPK 163H	Oceanic Biology
BIOHOPK 165H	The Extreme Life of the Sea
BIOHOPK 166H	Molecular Ecology
BIOHOPK 167H	Nerve, Muscle, and Synapse
BIOHOPK 168H	Disease Ecology: from parasites evolution to the socio-economic impacts of pathogens on nations
BIOHOPK 173H	Marine Conservation Biology
BIOHOPK 173HA	Marine Conservation Biology - Seminar and Discussion Only
BIOHOPK 174H	Experimental Design and Probability
BIOHOPK 175H	Marine Science and Conservation in a Changing World
BIOHOPK 177H	Dynamics and Management of Marine Populations
BIOHOPK 179H	Physiological Ecology of Marine Megafauna
BIOHOPK 181H	Physiology of Global Change
BIOHOPK 182H	Stanford at Sea
BIOHOPK 183H	Introduction to Ecology
BIOHOPK 184H	Holistic Biology
BIOHOPK 185H	Ecology and Conservation of Kelp Forest Communities
BIOHOPK 187H	Sensory Ecology
BIOHOPK 198H	Directed Instruction or Reading
BIOHOPK 199H	Undergraduate Research
BIOHOPK 242H	Historical Ecology of Marine Invertebrates
BIOHOPK 250H	Ecological Mechanics
BIOHOPK 252H	Physiology of Global Change
BIOHOPK 253H	Current Topics and Concepts in Quantitative Fish Dynamics and Fisheries Management
BIOHOPK 255H	Developmental Biology and Evolution
BIOHOPK 257H	Creative Writing & Science: The Artful Interpreter
BIOHOPK 260H	Developmental Biology in the Ocean: Diverse Embryonic & Larval Strategies of marine invertebrates
BIOHOPK 261H	Invertebrate Zoology
BIOHOPK 262H	Comparative Animal Physiology
BIOHOPK 263H	Oceanic Biology
BIOHOPK 266H	Molecular Ecology
BIOHOPK 267H	Nerve, Muscle, and Synapse
BIOHOPK 268H	Disease Ecology: from parasites evolution to the socio-economic impacts of pathogens on nations
BIOHOPK 273H	Marine Conservation Biology
BIOHOPK 273HA	Marine Conservation Biology - Seminar and Discussion Only
BIOHOPK 274	Hopkins Microbiology Course
BIOHOPK 274H	Experimental Design and Probability
BIOHOPK 275H	Marine Science and Conservation in a Changing World
BIOHOPK 276H	Estimates and Errors: The Theory of Scientific Measurement
BIOHOPK 277H	Dynamics and Management of Marine Populations
BIOHOPK 279H	Physiological Ecology of Marine Megafauna
BIOHOPK 280	Short Course on Ocean Policy
BIOHOPK 285H	Ecology and Conservation of Kelp Forest Communities
BIOHOPK 287H	Sensory Ecology
BIOHOPK 299H	Advanced Topics in Marine Conservation
BIOHOPK 300H	Research
BIOHOPK 320H	Physical Biology
BIOHOPK 323H	Stanford at Sea

BIOHOPK 330H	Scientific Writing
BIOMEDIN 156	Economics of Health and Medical Care
BIOMEDIN 256	Economics of Health and Medical Care
BIOS 221	Modern Statistics for Modern Biology
BIOS 233	Experimental Metagenomics: Nectar Microbes as a Model System
BIOS 235	Metabolism and Metabolic Ecology: Microbes, Gut and Cancer
BIOS 248	Scientific Computing for Ecologists, Biologists and Environmental Scientists
BIOS 252	Experimental strategies for understanding plant-environmental responses
BIOS 253	Discovery and Innovation in Emerging Viral Infections
BIOS 265	Introduction to Quantitative Reasoning in Biology
BIOS 270	Planetary Health: Socioeconomic & Ecological Links Between Human Health & Earth's Natural Ecosystems
BIOS 288	Quantitative Methods in Marine Conservation and Ocean Science
BIOS 292	Preparation & Practice: Science Communication & Media
CBIO 243	Principles of Cancer Systems Biology
CEE 1	Introduction to Environmental Systems Engineering
CEE 32A	Psychology of Architecture
CEE 33C	Housing Visions
CEE 63	Weather and Storms
CEE 64	Air Pollution and Global Warming: History, Science, and Solutions
CEE 70	Environmental Science and Technology
CEE 70N	Water, Public Health, and Engineering
CEE 73	Water: An Introduction
CEE 74N	Grand Challenges in Environmental Engineering
CEE 80N	Engineering the Built Environment: An Introduction to Structural Engineering
CEE 83	Seismic Design Workshop
CEE 100	Managing Sustainable Building Projects
CEE 101B	Mechanics of Fluids
CEE 101D	Computations in Civil and Environmental Engineering
CEE 107A	Understanding Energy
CEE 107H	Applied Hope: Whole-Systems Thinking on Energy Solutions
CEE 107R	E^3: Extreme Energy Efficiency
CEE 107S	Understanding Energy - Essentials
CEE 112A	Industry Applications of Virtual Design & Construction
CEE 112B	Industry Applications of Virtual Design & Construction
CEE 112C	Industry Applications of Virtual Design & Construction
CEE 113	Patterns of Sustainability
CEE 118X	Shaping the Future of the Bay Area
CEE 124	Sustainable Development Studio
CEE 124E	Ethics in Urban Systems
CEE 124S	Sustainable Urban Systems Seminar
CEE 125	Defining Smart Cities: Visions of Urbanism for the 21st Century
CEE 126	International Urbanization Seminar: Cross-Cultural Collaboration for Sustainable Urban Development
CEE 126X	Hard Earth: Environmental Justice
CEE 126Y	Hard Earth: Stanford Graduate-Student Talks Exploring Tough Environmental Dilemmas
CEE 126Z	Hard Earth: The Interconnected Impacts of Global Climate Change
CEE 130R	Racial Equity in Energy
CEE 131B	Financial Management of Sustainable Urban Systems
CEE 141A	Infrastructure Project Development
CEE 141B	Infrastructure Project Delivery
CEE 141C	Global Infrastructure Projects Seminar
CEE 144	Design and Innovation for the Circular Economy
CEE 146S	Engineering Economics and Sustainability
CEE 151	Negotiation
CEE 151A	Race in Science
CEE 155	Introduction to Sensing Networks for CEE
CEE 156	Building Systems Design & Analysis
CEE 157	Sustainable Finance and Investment Seminar
CEE 161I	Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation
CEE 162D	Introduction to Physical Oceanography
CEE 162E	Rivers, Streams, and Canals
CEE 162F	Coastal Processes
CEE 162I	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation
CEE 165C	Water Resources Management
CEE 166A	Watershed Hydrologic Processes and Models
CEE 166B	Water Resources and Hazards
CEE 171F	New Indicators of Well-Being and Sustainability
CEE 171G	Environmental & Ecological Economics
CEE 172	Air Quality Management
CEE 173	Urban Water
CEE 173S	Electricity Economics
CEE 174A	Providing Safe Water for the Developing and Developed World
CEE 174B	Wastewater Treatment: From Disposal to Resource Recovery
CEE 175A	California Coast: Science, Policy, and Law
CEE 175Q	Changing Human Behavior: Drivers and Barriers in Environmental Action
CEE 175S	Environmental Entrepreneurship and Innovation
CEE 176A	Energy Efficient Buildings
CEE 176B	100% Clean, Renewable Energy and Storage for Everything
CEE 176C	Energy Storage Integration - Vehicles, Renewables, and the Grid
CEE 176G	Sustainability Design Thinking
CEE 177	Aquatic Chemistry and Biology
CEE 177L	Smart Cities & Communities

CEE 177S	Engineering and Sustainable Development
CEE 177X	Engineering and Sustainable Development: Toolkit
CEE 178	Introduction to Human Exposure Analysis
CEE 178S	Air Pollution Science & Engineering
CEE 179A	Water Chemistry Laboratory
CEE 179C	Environmental Engineering Design
CEE 179S	Seminar: Issues in Environmental Science, Technology and Sustainability
CEE 183	Integrated Civil Engineering Design Project
CEE 199	Undergraduate Research in Civil and Environmental Engineering
CEE 199L	Independent Project in Civil and Environmental Engineering
CEE 199S	Undergraduate Summer Research in Civil and Environmental Engineering
CEE 200A	Teaching of Civil and Environmental Engineering
CEE 200B	Teaching of Civil and Environmental Engineering
CEE 200C	Teaching of Civil and Environmental Engineering
CEE 201D	Computations in Civil and Environmental Engineering
CEE 206	Decision Analysis for Civil and Environmental Engineers
CEE 207A	Understanding Energy
CEE 207H	Applied Hope: Whole-Systems Thinking on Energy Solutions
CEE 207S	Understanding Energy - Essentials
CEE 212A	Industry Applications of Virtual Design & Construction
CEE 213	Patterns of Sustainability
CEE 217	Renewable Energy Infrastructure
CEE 218X	Shaping the Future of the Bay Area
CEE 221A	Planning Tools and Methods in the Power Sector
CEE 223	Materials for Sustainable Built Environments
CEE 224A	Design and Operation of Integrated Infrastructure Systems
CEE 224X	Shaping the Future of the Bay Area
CEE 225	Defining Smart Cities: Visions of Urbanism for the 21st Century
CEE 226	Life Cycle Assessment for Complex Systems
CEE 226E	Advanced Topics in Integrated, Energy-Efficient Building Design
CEE 227	Global Project Finance
CEE 229S	Climate Change Adaptation in the Coastal Built Environment
CEE 242P	Designing Project Organizations
CEE 243	Intro to Urban Sys Engrg
CEE 246	Venture Creation for the Real Economy
CEE 251	Negotiation
CEE 252Q	Construction Engineering Fundamentals
CEE 255	Introduction to Sensing Networks for CEE
CEE 256	Building Systems Design & Analysis
CEE 257	Sustainable Finance and Investment Seminar
CEE 260A	Physical Hydrogeology
CEE 260C	Contaminant Hydrogeology and Reactive Transport
CEE 260D	Remote Sensing of Hydrology
CEE 261B	Physics of Wind Energy
CEE 261I	Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation
CEE 262A	Hydrodynamics
CEE 262B	Transport and Mixing in Surface Water Flows
CEE 262C	Coastal Ocean Modeling
CEE 262D	Introduction to Physical Oceanography
CEE 262F	Ocean Waves
CEE 262H	Observational Methods in Coastal Oceanography
CEE 262I	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation
CEE 263A	Air Pollution Modeling
CEE 263B	Numerical Weather Prediction
CEE 263C	Weather and Storms
CEE 263D	Air Pollution and Global Warming: History, Science, and Solutions
CEE 263G	Energy Policy in California and the West
CEE 263S	Atmosphere/Energy Seminar
CEE 265A	Resilience, Sustainability and Water Resources Development
CEE 265C	Water Resources Management
CEE 265D	Water and Sanitation in Developing Countries
CEE 265E	Adaptation to Sea Level Rise and Extreme Weather Events
CEE 265F	Environmental Governance and Climate Resilience
CEE 265I	Poverty, Infrastructure and Climate
CEE 266A	Watershed Hydrologic Processes and Models
CEE 266B	Water Resources and Hazards
CEE 266C	Dams, Reservoirs, and their Sustainability
CEE 266E	California's Water Policy and Management: Toward A Sustainable Future
CEE 266F	Stochastic Hydrology
CEE 266G	Water Resources Systems Analysis
CEE 267	Applied Data Analysis and Uncertainty Quantification
CEE 269A	Environmental Engineering Seminar
CEE 269B	Environmental Engineering Seminar
CEE 269C	Environmental Engineering Seminar
CEE 270	Movement and Fate of Organic Contaminants in Waters
CEE 270B	Environmental Organic Reaction Chemistry
CEE 271A	Physical and Chemical Treatment Processes
CEE 271B	Environmental Biotechnology
CEE 271D	Introduction to Wastewater Treatment Process Modeling
CEE 271G	Environmental & Ecological Economics
CEE 272	Coastal Contaminants
CEE 272R	Modern Power Systems Engineering

CEE 272T	SmartGrids and Advanced Power Systems Seminar
CEE 273A	Water Chemistry Laboratory
CEE 273B	The Business of Water
CEE 273F	Urban Water Use Efficiency and Conservation
CEE 274A	Environmental Microbiology I
CEE 274B	Microbial Bioenergy Systems
CEE 274D	Pathogens and Disinfection
CEE 274P	Environmental Health Microbiology Lab
CEE 274S	Hopkins Microbiology Course
CEE 275A	California Coast: Science, Policy, and Law
CEE 275B	Process Design for Environmental Biotechnology
CEE 275C	Water, Sanitation and Health
CEE 275D	Environmental Policy Analysis
CEE 275K	The Practice of Environmental Consulting
CEE 275P	Persuasive Communication for Environmental Scientists, Practitioners, and Entrepreneurs
CEE 275S	Environmental Entrepreneurship and Innovation
CEE 276	Introduction to Human Exposure Analysis
CEE 276B	100% Clean, Renewable Energy and Storage for Everything
CEE 276C	Energy Storage Integration - Vehicles, Renewables, and the Grid
CEE 276G	Sustainability Design Thinking
CEE 277F	Advanced Field Methods in Water, Health and Development
CEE 277L	Smart Cities & Communities
CEE 277S	Engineering and Sustainable Development
CEE 277X	Engineering and Sustainable Development: Toolkit
CEE 278A	Air Pollution Fundamentals
CEE 278C	Indoor Air Quality
CEE 278S	Air Pollution Science & Engineering
CEE 279S	Seminar: Issues in Environmental Science, Technology and Sustainability
CEE 287	Earthquake Resistant Design and Construction
CEE 288	Introduction to Performance Based Earthquake Engineering
CEE 293	Foundations and Earth Structures
CEE 297M	Managing Critical Infrastructure
CEE 299E	Graduate Summer Research in CEE
CEE 299L	Independent Project in Civil and Environmental Engineering
CEE 301	The Energy Seminar
CEE 316	Sustainable Built Environment Research
CEE 322	Data Analytics for Urban Systems
CEE 323A	Infrastructure Finance and Governance
CEE 323B	Infrastructure Finance and Governance
CEE 323C	Reinventing Disruptive Innovation for Civil Engineering
CEE 324	Industrialized Construction
CEE 325	CapaCity Design Studio
CEE 330	Racial Equity in Energy
CEE 341	Virtual Design and Construction
CEE 350	Engineering Writing, Reviewing and Presentations
CEE 361	Turbulence Modeling for Environmental Fluid Mechanics
CEE 363A	Mechanics of Stratified Flows
CEE 363F	Geophysical Fluid Dynamics
CEE 363G	Field Techniques in Coastal Oceanography
CEE 365A	Advanced Topics in Environmental Fluid Mechanics and Hydrology
CEE 365B	Advanced Topics in Environmental Fluid Mechanics and Hydrology
CEE 365C	Advanced Topics in Environmental Fluid Mechanics and Hydrology
CEE 365D	Advanced Topics in Environmental Fluid Mechanics and Hydrology
CEE 370A	Environmental Research
CEE 370B	Environmental Research
CEE 370C	Environmental Research
CEE 370D	Environmental Research
CEE 374A	Introduction to Physiology of Microbes in Biofilms
CEE 374B	Introduction to Physiology of Microbes in Biofilms
CEE 374C	Introduction to Physiology of Microbes in Biofilms
CEE 374D	Introduction to Physiology of Microbes in Biofilms
CEE 374S	Advanced Topics in Microbial Pollution
CEE 374W	Advanced Topics in Water, Health and Development
CEE 377	Research Proposal Writing in Environmental Engineering and Science
CEE 379	Introduction to PHD Studies in Civil and Environmental Engineering
CEE 385	Performance-Based Earthquake Engineering
CHEM 10	Exploring Research and Problem Solving Across the Sciences
CHEM 25N	Science in the News
CHEM 279	Chemophysical analyses of costs to lower atmospheric concentrations of greenhouse gases
CHEM 459	Frontiers in Interdisciplinary Biosciences
CHEMENG 60Q	Environmental Regulation and Policy
CHEMENG 70Q	Masters of Disaster
CHEMENG 120B	Energy and Mass Transport
CHEMENG 174	Environmental Microbiology I
CHEMENG 274	Environmental Microbiology I
CHEMENG 432	Electrochemical Energy Conversion
CHEMENG 456	Microbial Bioenergy Systems
CHEMENG 459	Frontiers in Interdisciplinary Biosciences
CHEMENG 501	Special Topics in Semiconductor Processing
CHEMENG 516	Special Topics in Energy and Catalysis
CHEMENG 521	Special Topics in Nanostructured Materials for Energy and the Environment
CHILATST 125S	Chicano/Latino Politics
CHINA 118	Humanities Core: Everybody Eats: The Language, Culture, and Ethics of Food in East Asia

CHINA 118A	Food Culture in China: Past and Present
CHINA 371	Critical Theory and Ecology: A Cross-Cultural Perspective
CHPR 113	Healthy/Sustainable Food Systems: Maximum Sustainability across Health, Economics, and Environment
CHPR 166	Food and Society: Exploring Eating Behaviors in Social, Environmental, and Policy Context
CHPR 232	Social and Structural Determinants of Health: Achieving Health Equity
CLASSICS 14N	Ecology in Philosophy and Literature
CLASSICS 358	The Archaeology of Ancient Mediterranean Environments
CME 197	Human-Centered Design Methods in Data Science
CME 211	Software Development for Scientists and Engineers
COMM 1B	Media, Culture, and Society
COMM 51A	Race in Science
COMM 51B	Race in Technology
COMM 104W	Reporting, Writing, and Understanding the News
COMM 108	Media Processes and Effects
COMM 164	The Psychology of Communication About Politics in America
COMM 172	Media Psychology
COMM 177C	Specialized Writing and Reporting: Health and Science Journalism
COMM 272	Media Psychology
COMM 277C	Specialized Writing and Reporting: Health and Science Journalism
COMPLIT 207	Why is Climate Change Un-believable? Interdisciplinary Approaches to Environmental Action
COMPLIT 348	US-Mexico Border Fictions: Writing La Frontera, Tearing Down the Wall
COMPLIT 368A	Imagining the Oceans
COMPMED 11SC	Life in the Zoo: Behavior, Welfare and Enrichment
COMPMED 80N	Animal behavior: sex, death, and sometimes food!
COMPMED 84Q	Globally Emerging Zoonotic Diseases
CS 22A	The Social & Economic Impact of Artificial Intelligence
CS 325B	Data for Sustainable Development
CS 377E	Designing Solutions to Global Grand Challenges
CSRE 30SI	Housing Justice and Stratification in the Bay Area
CSRE 31SI	Food + Race
CSRE 51A	Race in Science
CSRE 109A	Federal Indian Law
CSRE 109B	Native Nation Building
CSRE 121	Discourse of the Colonized: Native American and Indigenous Voices
CSRE 123C	"Third World Problems?" Environmental Anthropology and the Intersectionality of Justice
CSRE 125E	Shades of Green: Redesigning and Rethinking the Environmental Justice Movements
CSRE 178	Ethics and Politics of Public Service
DESINST 250	Oceans by Design
EARTH 1A	Know Your Planet: Research Frontiers
EARTH 1B	Know Your Planet: Big Earth
EARTH 1C	Know Your Planet: Science Outside
EARTH 2	Climate and Society
EARTH 5	Geokids: Earth Sciences Education
EARTH 10	Design for a Habitable Planet
EARTH 14	Our National Parks
EARTH 15	Living on the Edge
EARTH 42	Moving and Shaking in the Bay Area
EARTH 100	Research Preparation for Undergraduates
EARTH 114A	Our National Parks
EARTH 117	Earth Sciences of the Hawaiian Islands
EARTH 126X	Hard Earth: Environmental Justice
EARTH 126Y	Hard Earth: Stanford Graduate-Student Talks Exploring Tough Environmental Dilemmas
EARTH 126Z	Hard Earth: The Interconnected Impacts of Global Climate Change
EARTH 131	Pathways in Sustainability Careers
EARTH 191	Stanford EARTH Field Courses
EARTH 193	Natural Perspectives: Geology, Environment, and Art
EARTH 202	PhD Students on the PhD
EARTH 203	Diversity and Inclusion in the Geosciences
EARTH 214	Software Design in Modern Fortran for Scientists and Engineers
EARTH 218	Communicating Science
EARTH 219	OPINION WRITING IN THE SCIENCES
EARTH 251	Negotiation
EARTH 305A	Teaching in the field: Basic skills for working with students in the field
EARTH 310	Computational Geosciences Seminar
EARTH 400	Directed Research
EARTH 401	Curricular Practical Training
EARTHSYS 4	Coevolution of Earth and Life
EARTHSYS 8	The Oceans: An Introduction to the Marine Environment
EARTHSYS 9	Public Service Internship Preparation
EARTHSYS 10	Introduction to Earth Systems
EARTHSYS 11	Introduction to Geology
EARTHSYS 13SC	People, Land, and Water in the Heart of the West
EARTHSYS 16SI	Environmental Justice in the Bay Area
EARTHSYS 18	Promoting Sustainability Behavior Change at Stanford
EARTHSYS 20	The Cuisine of Change: Promoting Child Health and Combating Food Insecurity
EARTHSYS 21	Peopling of the Globe: Changing Patterns of Land Use and Consumption Over the Last 50,000 Years
EARTHSYS 22	Introduction to Landscape Architecture: Urban Ecology and Environmental Design
EARTHSYS 36N	Life at the Extremes: From the Deep Sea to Deep Space

EARTHSYS 38N	The Worst Journey in the World: The Science, Literature, and History of Polar Exploration
EARTHSYS 39Q	Talking about Earthquakes, Volcanoes, and Floods: Science Communication and Natural Hazards
EARTHSYS 41N	The Global Warming Paradox
EARTHSYS 44N	The Invisible Majority: The Microbial World That Sustains Our Planet
EARTHSYS 46N	Exploring the Critical Interface between the Land and Monterey Bay: Elkhorn Slough
EARTHSYS 46Q	Environmental Impact of Energy Systems: What are the Risks?
EARTHSYS 58Q	Understanding Our Oceans: Scientific Toys, Tools, & Trips
EARTHSYS 61Q	Food and security
EARTHSYS 91	Earth Systems Writers Collective
EARTHSYS 100	Environmental and Geological Field Studies in the Rocky Mountains
EARTHSYS 100A	Data Science for Geoscience
EARTHSYS 101	Energy and the Environment
EARTHSYS 102	Fundamentals of Renewable Power
EARTHSYS 103	Understanding Energy
EARTHSYS 104	The Water Course
EARTHSYS 105	Food and Community: Food Security, Resilience and Equity
EARTHSYS 105A	Ecology and Natural History of Jasper Ridge Biological Preserve
EARTHSYS 105B	Ecology and Natural History of Jasper Ridge Biological Preserve
EARTHSYS 106	World Food Economy
EARTHSYS 106C	Why are Scientists Engineering Our Food?
EARTHSYS 106D	New meat: The Science Behind Scalable Alternatives to Animal Products
EARTHSYS 107	Control of Nature
EARTHSYS 110	Introduction to the Foundations of Contemporary Geophysics
EARTHSYS 111	Biology and Global Change
EARTHSYS 112	Human Society and Environmental Change
EARTHSYS 113	Earthquakes and Volcanoes
EARTHSYS 114	Global Change and Emerging Infectious Disease
EARTHSYS 115	Wetlands Ecology of the Pantanal Prefield Seminar
EARTHSYS 115T	Island Biogeography of Tasmania Prefield Seminar
EARTHSYS 116	Ecology of the Hawaiian Islands
EARTHSYS 117	Earth Sciences of the Hawaiian Islands
EARTHSYS 118	Heritage, Environment, and Sovereignty in Hawaii
EARTHSYS 119	Will Work for Food
EARTHSYS 121	Building a Sustainable Society: New Approaches for Integrating Human and Environmental Priorities
EARTHSYS 122	Evolution of Marine Ecosystems
EARTHSYS 123	Asian Americans and Environmental Justice
EARTHSYS 123A	Biosphere-Atmosphere Interactions
EARTHSYS 124	Measurements in Earth Systems
EARTHSYS 125	Shades of Green: Redesigning and Rethinking the Environmental Justice Movements
EARTHSYS 126	Perspectives in International Development
EARTHSYS 128	Evolution of Terrestrial Ecosystems
EARTHSYS 130	Designing and Evaluating Community Engagement Programs for Social and Environmental Change
EARTHSYS 130A	Ecosystems of California
EARTHSYS 131	Pathways in Sustainability Careers
EARTHSYS 132	Evolution of Earth Systems
EARTHSYS 133	Social Enterprise Workshop
EARTHSYS 135B	Waste Politics: Contesting Toxicity, Value, and Power
EARTHSYS 136	The Ethics of Stewardship
EARTHSYS 137	Concepts and Analytic Skills for the Social Sector
EARTHSYS 138	International Urbanization Seminar: Cross-Cultural Collaboration for Sustainable Urban Development
EARTHSYS 139	Ecosystem Services: Frontiers in the Science of Valuing Nature
EARTHSYS 141	Remote Sensing of the Oceans
EARTHSYS 142	Remote Sensing of Land
EARTHSYS 143	Molecular Geomicrobiology Laboratory
EARTHSYS 144	Fundamentals of Geographic Information Science (GIS)
EARTHSYS 146A	Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation
EARTHSYS 146B	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation
EARTHSYS 147	Ecosystem Ecology and Biogeochemistry
EARTHSYS 148	Grow it, Cook it, Eat it. An Experiential Exploration of How and Why We Eat What We Eat
EARTHSYS 149	Wild Writing
EARTHSYS 150B	Fire: Social and Ecological Contexts of Conflagration
EARTHSYS 151	Biological Oceanography
EARTHSYS 152	Marine Chemistry
EARTHSYS 154	Intermediate Writing: Communicating Climate Change: Navigating the Stories from the Frontlines
EARTHSYS 155	Science of Soils
EARTHSYS 158	Geomicrobiology
EARTHSYS 159	Economic, Legal, and Political Analysis of Climate-Change Policy
EARTHSYS 160	Sustainable Cities
EARTHSYS 162	Data for Sustainable Development
EARTHSYS 163	Tribal Economic Development and Sustainability
EARTHSYS 164	Introduction to Physical Oceanography
EARTHSYS 176	Open Space Management Practicum
EARTHSYS 176A	Open Space Practicum Independent Study
EARTHSYS 177C	Specialized Writing and Reporting: Health and Science Journalism
EARTHSYS 179S	Seminar: Issues in Environmental Science, Technology and Sustainability
EARTHSYS 180	Principles and Practices of Sustainable Agriculture

EARTHSYS 181	Urban Agroecology
EARTHSYS 182	Designing Educational Gardens
EARTHSYS 182A	Ecological Farm Systems
EARTHSYS 185	Feeding Nine Billion
EARTHSYS 186	Farm and Garden Environmental Education Practicum
EARTHSYS 187	FEED the Change: Redesigning Food Systems
EARTHSYS 187A	The Future of Food & Farming Technology
EARTHSYS 188	Social and Environmental Tradeoffs in Climate Decision-Making
EARTHSYS 190	The Multimedia Story
EARTHSYS 191	Concepts in Environmental Communication
EARTHSYS 194	Topics in Writing & Rhetoric: Introduction to Environmental Justice: Race, Class, Gender and Place
EARTHSYS 194A	Environmental Justice Colloquium
EARTHSYS 196	Implementing Climate Solutions at Scale
EARTHSYS 196A	Environmental Justice and Human Rights Lab
EARTHSYS 197	Directed Individual Study in Earth Systems
EARTHSYS 199	Honors Program in Earth Systems
EARTHSYS 200	Environmental Communication in Action: The SAGE Project
EARTHSYS 201	Editing for Publication
EARTHSYS 205	Food and Community: Food Security, Resilience and Equity
EARTHSYS 205VP	Contested markets in the Brazilian Amazon Rainforest
EARTHSYS 206	World Food Economy
EARTHSYS 207	Spanish in Science/Science in Spanish
EARTHSYS 210A	Senior Capstone and Reflection
EARTHSYS 210B	Senior Capstone and Reflection
EARTHSYS 210P	Earth Systems Capstone Project
EARTHSYS 211	Fundamentals of Modeling
EARTHSYS 214	Global Change and Emerging Infectious Disease
EARTHSYS 217	Biology and Global Change
EARTHSYS 219	Will Work for Food
EARTHSYS 223	Biosphere-Atmosphere Interactions
EARTHSYS 225	Shades of Green: Redesigning and Rethinking the Environmental Justice Movements
EARTHSYS 227	Decision Science for Environmental Threats
EARTHSYS 232	Evolution of Earth Systems
EARTHSYS 233	Mitigating Climate Change through Soil Management
EARTHSYS 235	Podcasting the Anthropocene
EARTHSYS 236	The Ethics of Stewardship
EARTHSYS 238	Land Use Law
EARTHSYS 239	Ecosystem Services: Frontiers in the Science of Valuing Nature
EARTHSYS 241	Remote Sensing of the Oceans
EARTHSYS 242	Remote Sensing of Land
EARTHSYS 243	Environmental Advocacy and Policy Communication
EARTHSYS 247	Ecosystem Ecology and Biogeochemistry
EARTHSYS 249	Wild Writing
EARTHSYS 250	Directed Research
EARTHSYS 251	Biological Oceanography
EARTHSYS 252	Marine Chemistry
EARTHSYS 254	Environmental Governance
EARTHSYS 255	Microbial Physiology
EARTHSYS 256	Soil and Water Chemistry
EARTHSYS 258	Geomicrobiology
EARTHSYS 260	Internship
EARTHSYS 262	Data for Sustainable Development
EARTHSYS 263F	Groundwork for COP21
EARTHSYS 272	Antarctic Marine Geology and Geophysics
EARTHSYS 276	Open Space Management Practicum
EARTHSYS 276A	Open Space Practicum Independent Study
EARTHSYS 277C	Specialized Writing and Reporting: Health and Science Journalism
EARTHSYS 281	Urban Agroecology
EARTHSYS 282A	Ecological Farm Systems
EARTHSYS 286	Farm and Garden Environmental Education Practicum
EARTHSYS 288	Social and Environmental Tradeoffs in Climate Decision-Making
EARTHSYS 289	FEED Lab: Food System Design & Innovation
EARTHSYS 289A	FEED Lab: Food System Design & Innovation
EARTHSYS 289B	FEED Lab: Food System Design & Innovation
EARTHSYS 290	Master's Seminar
EARTHSYS 291	Concepts in Environmental Communication
EARTHSYS 292	Multimedia Environmental Communication
EARTHSYS 293	Environmental Communication Practicum
EARTHSYS 294	Environmental Communication Capstone
EARTHSYS 295	Environmental Communication Seminar
EARTHSYS 296	Implementing Climate Solutions at Scale
EARTHSYS 297	Directed Individual Study in Earth Systems
EARTHSYS 299	M.S. Thesis
EARTHSYS 323	Stanford at Sea
EARTHSYS 332	Theory and Practice of Environmental Education
EARTHSYS 801	TGR Project
EASTASN 94	The Rise of China in World Affairs
EASTASN 117	Health and Healthcare Systems in East Asia
EASTASN 217	Health and Healthcare Systems in East Asia
EASTASN 294	The Rise of China in World Affairs
ECON 17N	Energy, the Environment, and the Economy
ECON 106	World Food Economy
ECON 118	Development Economics
ECON 126	Economics of Health and Medical Care
ECON 127	Economics of Health Improvement in Developing Countries
ECON 146	Economics of Education
ECON 155	Environmental Economics and Policy
ECON 158	Regulatory Economics
ECON 159	Economic, Legal, and Political Analysis of Climate-Change Policy
ECON 206	World Food Economy

ECON 209	Economic, Legal, and Political Analysis of Climate-Change Policy
ECON 214	Development Economics I
ECON 216	Development Economics III
ECON 250	Environmental Economics
ECON 251	Natural Resource and Energy Economics
ECON 341	Public Economics and Environmental Economics Seminar
EDUC 100A	EAST House Seminar: Current Issues and Debates in Education
EDUC 126A	Ethics and Leadership in Public Service
EDUC 126B	Public Service Leadership Program Practicum
EDUC 170	Preparation for Independent Public Service Projects
EDUC 239	Educating Young STEM Thinkers
EDUC 267A	Curriculum and Instruction in Science
EDUC 267B	Curriculum and Instruction in Science
EDUC 267C	Curriculum and Instruction in Science
EDUC 267E	Development of Scientific Reasoning and Knowledge
EDUC 267F	Development of Scientific Reasoning and Knowledge II
EDUC 267G	Integrating the Garden into the Elementary Curriculum
EDUC 280	Learning & Teaching of Science
EDUC 302	Behavior Design
EDUC 320	Sociology of Science
EDUC 332	Theory and Practice of Environmental Education
EDUC 357	Science and Environmental Education in Informal Contexts
EDUC 359C	Science Literacy
EDUC 362	The Science Curriculum: Values and Ideology in a Contested Terrain
EE 46	Engineering For Good: Contributing to Saving the World and Having Fun Doing It
EE 60N	Man versus Nature: Coping with Disasters Using Space Technology
EE 116	Semiconductor Devices for Energy and Electronics
EE 142	Engineering Electromagnetics
EE 155	Green Electronics
EE 237	Solar Energy Conversion
EE 255	Green Electronics
EE 292H	Engineering, Entrepreneurship & Climate Change
EE 293	Energy storage and conversion: Solar Cells, Fuel Cells, Batteries and Supercapacitors
EE 293B	Fundamentals of Energy Processes
EEES 302	Challenges and Practices in Crossdisciplinary Research and Teaching
EMED 124	Wilderness First Aid
EMED 126	Wilderness First Responder
EMED 128	Wilderness Medicine: Continued practical experience for high-quality care
EMED 134	The Impact of Climate Change on Human Health
EMED 234	The Impact of Climate Change on Human Health
ENERGY 20N	Technology in the Greenhouse
ENERGY 101	Energy and the Environment
ENERGY 101A	Energizing California
ENERGY 102	Fundamentals of Renewable Power
ENERGY 104	Sustainable Energy for 9 Billion
ENERGY 110	Engineering Economics
ENERGY 112	Exploring Geosciences with MATLAB
ENERGY 118	Safety and Environmental Aspects of Oil and Gas Production
ENERGY 120	Fundamentals of Petroleum Engineering
ENERGY 121	Fundamentals of Multiphase Flow
ENERGY 123	When Technology Meets Reality; An In-depth Look at the Deepwater Horizon Blowout and Oil Spill
ENERGY 130	Well Log Analysis I
ENERGY 141	Seismic Reservoir Characterization
ENERGY 146	Reservoir Characterization and Flow Modeling with Outcrop Data
ENERGY 153	Carbon Capture and Sequestration
ENERGY 155	Undergraduate Report on Energy Industry Training
ENERGY 160	Uncertainty Quantification in Data-Centric Simulations
ENERGY 167	Engineering Valuation and Appraisal of Energy Assets and Projects
ENERGY 171	Energy Infrastructure, Technology and Economics
ENERGY 175	Well Test Analysis
ENERGY 180	Oil and Gas Production Engineering
ENERGY 191	Optimization of Energy Systems
ENERGY 192	Undergraduate Teaching Experience
ENERGY 193	Undergraduate Research Problems
ENERGY 194	Special Topics in Energy and Mineral Fluids
ENERGY 199	Senior Project and Seminar in Energy Resources
ENERGY 201	Laboratory Measurement of Reservoir Rock Properties
ENERGY 203	Stanford Climate Ventures
ENERGY 204	Achieving Universal Energy Access by 2030: Can it be done?
ENERGY 212	Environmental Aspects of Oil and Gas Production
ENERGY 214	The Global Price of Oil
ENERGY 216	Entrepreneurship in Energy
ENERGY 217	Research Seminar: Energy Development in the Emerging Economy
ENERGY 218	Safety and Environmental Aspects of Oil and Gas Production
ENERGY 221	Fundamentals of Multiphase Flow
ENERGY 222	Advanced Reservoir Engineering
ENERGY 223	Reservoir Simulation
ENERGY 224	Advanced Reservoir Simulation
ENERGY 225	Theory of Gas Injection Processes
ENERGY 226	Thermal Recovery Methods
ENERGY 227	Enhanced Oil Recovery
ENERGY 230	Advanced Topics in Well Logging
ENERGY 240	Data science for geoscience
ENERGY 241	Seismic Reservoir Characterization

ENERGY 246	Reservoir Characterization and Flow Modeling with Outcrop Data
ENERGY 251	Thermodynamics of Equilibria
ENERGY 253	Carbon Capture and Sequestration
ENERGY 255	Master's Report on Energy Industry Training
ENERGY 260	Uncertainty Quantification in Data-Centric Simulations
ENERGY 267	Engineering Valuation and Appraisal of Energy Assets and Projects
ENERGY 269	Geothermal Reservoir Engineering
ENERGY 271	Energy Infrastructure, Technology and Economics
ENERGY 273	Special Topics in Energy Resources Engineering
ENERGY 281	Applied Mathematics in Reservoir Engineering
ENERGY 282	Chemical Kinetics and Basin Modeling
ENERGY 289	Multiscale Methods for Transport in Porous Media
ENERGY 291	Optimization of Energy Systems
ENERGY 293B	Fundamentals of Energy Processes
ENERGY 293C	Energy from Wind and Water Currents
ENERGY 295	Electrochemical Energy Storage Systems: Modeling and Estimation
ENERGY 300	Graduate Directed Reading
ENERGY 301	The Energy Seminar
ENERGY 351	ERE Master's Graduate Seminar
ENERGY 352	ERE PhD Graduate Seminar
ENERGY 355	Doctoral Report on Energy Industry Training
ENERGY 359	Teaching Experience in Energy Resources Engineering
ENERGY 360	Advanced Research Work in Energy Resources Engineering
ENERGY 361	Master's Degree Research in Energy Resources Engineering
ENERGY 362	Engineer's Degree Research in Energy Resources Engineering
ENERGY 363	Doctoral Degree Research in Energy Resources Engineering
ENERGY 365	Special Research Topics in Energy Resources Engineering
ENERGY 369	Practical Energy Studies
ENERGY 801	TGR Project
ENERGY 802	TGR Dissertation
ENGLISH 9CI	Inspired By Science: A Writing Workshop
ENGLISH 91VO	Voices of the Land
ENGLISH 124	The American West
ENGLISH 150C	Reading and Writing Contemporary Environmental Poetry
ENGLISH 157H	Creative Writing & Science: The Artful Interpreter
ENGLISH 168A	Imagining the Oceans
ENGLISH 224B	Nature, Race, and Indigeneity in the U.S. Imagination
ENGLISH 368A	Imagining the Oceans
ENGR 50E	Introduction to Materials Science, Energy Emphasis
ENGR 60	Engineering Economics and Sustainability
ENGR 90	Environmental Science and Technology
ENGR 113A	Solar Decathlon 2015
ENGR 113B	Solar Decathlon 2015
ENGR 113C	Solar Decathlon 2015
ENGR 113D	SOLAR DECATHLON 2015
ENGR 120	Fundamentals of Petroleum Engineering
ENGR 145	Technology Entrepreneurship
ENGR 177A	Engineering and Sustainable Development: Toolkit
ENGR 177B	Engineering and Sustainable Development
ENGR 213	Solar Decathlon
ENGR 277A	Engineering and Sustainable Development: Toolkit
ENGR 277B	Engineering and Sustainable Development
ENVRES 199	Independent study
ENVRES 201	Designing and Evaluating Community Engagement Programs for Social and Environmental Change
ENVRES 220	The Social Ocean: Human Dimensions of Coastal and Marine Ecosystems
ENVRES 221	New Frontiers and Opportunities in Sustainability
ENVRES 222	Climate Law and Policy
ENVRES 223	Topics in Writing & Rhetoric: Introduction to Environmental Justice: Race, Class, Gender and Place
ENVRES 225	E-IPER Current Topics Seminar
ENVRES 226	Energy Law
ENVRES 228	Private Environmental Governance
ENVRES 230	Field Survey Data Collection & Analysis
ENVRES 240	Environmental Decision-Making and Risk Perception
ENVRES 245	Psychological Insights for Science Communication
ENVRES 246	Measuring Success in Environmental Messaging
ENVRES 250	Environmental Governance
ENVRES 270	Graduate Practicum in Environment and Resources
ENVRES 280	Topics in Environment and Resources
ENVRES 290	Capstone Project Seminar in Environment and Resources
ENVRES 300	Introduction to Resource, Energy and Environmental Economics
ENVRES 315	Environmental Research Design Seminar
ENVRES 320	Designing Environmental Research
ENVRES 330	Research Approaches for Environmental Problem Solving
ENVRES 340	E-IPER PhD Writing Seminar
ENVRES 341	Theoretical Underpinnings of Environmental Behavior: Exploration and reflection
ENVRES 380	Innovating Large Scale Sustainable Transformations/Collaborating for the Future
ENVRES 391	Curricular Practical Training
ENVRES 398	Directed Reading in Environment and Resources
ENVRES 399	Directed Research in Environment and Resources

ENVRES 801	TGR Project
ENVRES 802	TGR Dissertation
ENVRINST 198	Prehonors Seminar
ENVRINST 199	Interschool Honors Program in Environmental Science, Technology, and Policy
ENVRINST 260	Water in the West: Challenges and Opportunities
ESS 8	The Oceans: An Introduction to the Marine Environment
ESS 38N	The Worst Journey in the World: The Science, Literature, and History of Polar Exploration
ESS 46N	Exploring the Critical Interface between the Land and Monterey Bay: Elkhorn Slough
ESS 60	Food, Water and War: Life on the Mekong
ESS 61Q	Food and security
ESS 86N	The Most Rational People in the World
ESS 101	Environmental and Geological Field Studies in the Rocky Mountains
ESS 102	Scientific Basis of Climate Change
ESS 106	World Food Economy
ESS 107	Control of Nature
ESS 108	Research Preparation for Undergraduates
ESS 109	Biological and Social Networks
ESS 111	Biology and Global Change
ESS 112	Human Society and Environmental Change
ESS 117	Earth Sciences of the Hawaiian Islands
ESS 118X	Shaping the Future of the Bay Area
ESS 123	Biosphere-Atmosphere Interactions
ESS 125	INTRODUCTION TO PLANETARY SCIENCE
ESS 132	Evolution of Earth Systems
ESS 135	Community Leadership
ESS 141	Remote Sensing of the Oceans
ESS 143	Molecular Geomicrobiology Laboratory
ESS 148	Introduction to Physical Oceanography
ESS 151	Biological Oceanography
ESS 152	Marine Chemistry
ESS 155	Science of Soils
ESS 158	Geomicrobiology
ESS 162	Remote Sensing of Land
ESS 163	Demography and Life History Theory
ESS 164	Fundamentals of Geographic Information Science (GIS)
ESS 165	Advanced Geographic Information Systems
ESS 170	Analyzing land use in a globalized world
ESS 171	Climate Models and Data
ESS 179S	Seminar: Issues in Environmental Science, Technology and Sustainability
ESS 181	Urban Agroecology
ESS 185	Adaptation
ESS 202	Scientific Basis of Climate Change
ESS 205	Fundamentals of Geobiology
ESS 206	World Food Economy
ESS 208	Topics in Geobiology
ESS 209	Biological and Social Networks
ESS 210	Techniques in Environmental Microbiology
ESS 211	Fundamentals of Modeling
ESS 212	Measurements in Earth Systems
ESS 213	Global Change and Emerging Infectious Disease
ESS 214	Introduction to geostatistics and modeling of spatial uncertainty
ESS 218X	Shaping the Future of the Bay Area
ESS 220	Physical Hydrogeology
ESS 221	Contaminant Hydrogeology and Reactive Transport
ESS 223	Biosphere-Atmosphere Interactions
ESS 224	Remote Sensing of Hydrology
ESS 225	Rivers: The Arteries of Earth's Continents
ESS 227	Decision Science for Environmental Threats
ESS 230	Pursuing Sustainability: Managing Complex Social Environmental Systems
ESS 231	Coral Reefs of the Western Pacific: Interdisciplinary perspectives, emerging crises, and solutions
ESS 232	Evolution of Earth Systems
ESS 233	Mitigating Climate Change through Soil Management
ESS 240	Advanced Oceanography
ESS 241	Remote Sensing of the Oceans
ESS 242	Antarctic Marine Geology and Geophysics
ESS 243	Molecular Geomicrobiology Laboratory
ESS 244	Marine Ecosystem Modeling
ESS 245	Advanced Biological Oceanography
ESS 246A	Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation
ESS 246B	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation
ESS 247	Tropical Meteorology
ESS 249	Marine Stable Isotopes
ESS 251	Biological Oceanography
ESS 252	Marine Chemistry
ESS 253S	Hopkins Microbiology Course
ESS 255	Microbial Physiology
ESS 256	Soil and Water Chemistry
ESS 258	Geomicrobiology
ESS 259	Environmental Microbial Genomics
ESS 260	Advanced Statistical Methods for Earth System Analysis
ESS 262	Remote Sensing of Land
ESS 264	Poverty, Infrastructure and Climate
ESS 265	Advanced Geographic Information Systems
ESS 268	Empirical Methods in Sustainable Development
ESS 270	Analyzing land use in a globalized world
ESS 271	Climate Models and Data
ESS 275	Nitrogen in the Marine Environment
ESS 280	Principles and Practices of Sustainable Agriculture
ESS 281	Urban Agroecology
ESS 282	Designing Educational Gardens
ESS 292	Directed Individual Study in Earth System Science
ESS 300	Climate studies of terrestrial environments
ESS 301	Topics in Earth System Science

ESS 305	Climate Change: An Earth Systems Perspective
ESS 306	From Freshwater to Oceans to Land Systems: An Earth System Perspective to Global Challenges
ESS 307	Research Proposal Development and Delivery
ESS 322B	Seminar in Hydrology
ESS 323	Stanford at Sea
ESS 328	Environmental Change and Human Resiliency
ESS 330	Advanced Topics in Hydrogeology
ESS 348	Dynamics of the Atmosphere
ESS 360	Social Structure and Social Networks
ESS 363	Demography and Life History Theory
ESS 363F	Geophysical Fluid Dynamics
ESS 400	Graduate Research
ESS 401	Curricular Practical Training
ESS 801	TGR Project
ESS 802	TGR Dissertation
ETHICSOC 133	Ethics and Politics of Public Service
ETHICSOC 136R	Introduction to Global Justice
ETHICSOC 178M	Introduction to Environmental Ethics
ETHICSOC 185M	Contemporary Moral Problems
ETHICSOC 278M	Introduction to Environmental Ethics
FEMGEN 44Q	Gendered Innovations in Science, Medicine, Engineering, and Environment
FEMGEN 144	Sex, Gender, and Intersectional Analysis in Science, Medicine, Engineering, and Environment
FEMGEN 241	Sex and Gender in Human Physiology and Disease
FILMSTUD 273	Visual Culture of the Arctic
GEOLSCI 1	Introduction to Geology
GEOLSCI 2	Chemistry of the Earth and Planets
GEOLSCI 5	Living on the Edge
GEOLSCI 6	Data Science for Geoscience
GEOLSCI 42	Moving and Shaking in the Bay Area
GEOLSCI 45	Developing and maintaining a habitable Earth: A global challenge?
GEOLSCI 46Q	Environmental Impact of Energy Systems: What are the Risks?
GEOLSCI 59N	Earthquake 9.0: The Heritage of Fukushima Daiichi 6 Years Later
GEOLSCI 106	Sediments: The Book of Earth's History
GEOLSCI 112	Geomorphology
GEOLSCI 118X	Shaping the Future of the Bay Area
GEOLSCI 120	Planetary Surface Processes: Shaping the Landscape of the Solar System
GEOLSCI 122	Planetary Systems: Dynamics and Origins
GEOLSCI 123	Evolution of Marine Ecosystems
GEOLSCI 124	INTRODUCTION TO PLANETARY SCIENCE
GEOLSCI 132	Evolution of Earth Systems
GEOLSCI 135	Sedimentary Geochemistry and Analysis
GEOLSCI 135A	Sedimentary Geochemistry Field Trip
GEOLSCI 213	Topics in Sedimentary Geology
GEOLSCI 215	Topics in Geobiodiversity and Stable Isotopes
GEOLSCI 218X	Shaping the Future of the Bay Area
GEOLSCI 220	Planetary Surface Processes: Shaping the Landscape of the Solar System
GEOLSCI 224	Rivers: The Arteries of Earth's Continents
GEOLSCI 232	Evolution of Earth Systems
GEOLSCI 251	Sedimentary Basins
GEOLSCI 254	Sedimentology and Rock Physics of Carbonates
GEOLSCI 258	Introduction to Depositional Systems
GEOLSCI 260	Quantifying Uncertainty in Subsurface Systems
GEOLSCI 266	Managing Nuclear Waste: Technical, Political and Organizational Challenges
GEOLSCI 283	Thermochronology and Crustal Evolution
GEOLSCI 293A	Geology of Oman Field Trip
GEOLSCI 311	Interpretation of Tectonically Active Landscapes
GEOLSCI 313	Modeling of Landforms
GEOPHYS 20N	Predicting Volcanic Eruptions
GEOPHYS 50N	Planetary Habitability, World View, and Sustainability
GEOPHYS 60N	Man versus Nature: Coping with Disasters Using Space Technology
GEOPHYS 90	Earthquakes and Volcanoes
GEOPHYS 104	The Water Course
GEOPHYS 108	Tectonics Field Trip
GEOPHYS 110	Introduction to the Foundations of Contemporary Geophysics
GEOPHYS 112	Exploring Geosciences with MATLAB
GEOPHYS 118X	Shaping the Future of the Bay Area
GEOPHYS 119	Planetary Surface Processes: Shaping the Landscape of the Solar System
GEOPHYS 120	Ice, Water, Fire
GEOPHYS 124	INTRODUCTION TO PLANETARY SCIENCE
GEOPHYS 128	MODELING EARTH
GEOPHYS 130	Introductory Seismology
GEOPHYS 141	Remote Sensing of the Oceans
GEOPHYS 150	Geodynamics: Our Dynamic Earth
GEOPHYS 181	Fluids and Flow in the Earth: Computational Methods
GEOPHYS 182	Reflection Seismology
GEOPHYS 183	Reflection Seismology Interpretation
GEOPHYS 184	Journey to the Center of the Earth
GEOPHYS 185	Rock Physics for Reservoir Characterization
GEOPHYS 186	Tectonophysics
GEOPHYS 190	Near-Surface Geophysics: Imaging Groundwater Systems
GEOPHYS 191	Observing Freshwater
GEOPHYS 196	Undergraduate Research in Geophysics
GEOPHYS 201	Frontiers of Geophysical Research at Stanford
GEOPHYS 202	Reservoir Geomechanics
GEOPHYS 203	Fluids and Flow in the Earth: Computational Methods
GEOPHYS 205	Virtual Scientific Presentation and Public Speaking
GEOPHYS 208	Unconventional Reservoir Geomechanics
GEOPHYS 210	Basic Earth Imaging

GEOPHYS 211	Environmental Soundings Image Estimation
GEOPHYS 212	Topics in Climate Change
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GEOPHYS 219	Planetary Surface Processes: Shaping the Landscape of the Solar System
GEOPHYS 220	Ice, Water, Fire
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GEOPHYS 222	Reflection Seismology
GEOPHYS 223	Reflection Seismology Interpretation
GEOPHYS 224	Seismic Reflection Processing
GEOPHYS 228	MODELING EARTH
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GEOPHYS 235	Waves and Fields in Geophysics
GEOPHYS 237	Evolution of Terrestrial Planets
GEOPHYS 240	Borehole Seismic Modeling and Imaging
GEOPHYS 241A	Seismic Reservoir Characterization
GEOPHYS 254	Sedimentology and Rock Physics of Carbonates
GEOPHYS 255	Report on Energy Industry Training
GEOPHYS 257	Introduction to Computational Earth Sciences
GEOPHYS 259	Laboratory Characterization of Properties of Rocks and Geomaterials
GEOPHYS 260	Rock Physics for Reservoir Characterization
GEOPHYS 262	Rock Physics
GEOPHYS 265	Imaging Radar and Applications
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GEOPHYS 275	Near-Surface Geophysics: Imaging Groundwater Systems
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GEOPHYS 284	Hydrogeophysics
GEOPHYS 287	Earthquake Seismology
GEOPHYS 288A	Crustal Deformation
GEOPHYS 288B	Crustal Deformation
GEOPHYS 289	Global Positioning System in Earth Sciences
GEOPHYS 290	Tectonophysics
GEOPHYS 304	Effects of Global Change and Agriculture on Hydrology
GEOPHYS 385A	Reflection Seismology
GEOPHYS 385B	Environmental Geophysics
GEOPHYS 385D	Theoretical Geophysics
GEOPHYS 385E	Tectonics
GEOPHYS 385K	Crustal Mechanics
GEOPHYS 385L	Earthquake Seismology, Deformation, and Stress
GEOPHYS 385N	Experimental Rock Physics
GEOPHYS 385S	Wave Physics
GEOPHYS 385V	Poroelasticity
GEOPHYS 385W	GEOPHYSICAL MULTI-PHASE FLOWS
GEOPHYS 385Z	Radio Remote Sensing
GERMAN 111	The End of the Western World (as we know it): German Responses to Global Challenges
GES 50Q	
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GLOBAL 150N	Climate Change and Mental Health
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GSBGEN 332	Sustainable Energy: Business Opportunities and Public Policy
GSBGEN 335	Clean Energy Project Development and Finance
GSBGEN 336	Energy Markets and Policy
GSBGEN 532	Clean Energy Opportunities
GSBGEN 559	The Politics, Policy, and Finance for Solving Global Warming
GSBGEN 569	The Open Road: Innovation in Cars, Driving, and Mobility
HISTORY 1B	Global History: The Early Modern World, 1300 to 1800
HISTORY 40	World History of Science
HISTORY 40A	The Scientific Revolution
HISTORY 42S	The Circle of Life: Visions of Nature in Modern Science, Religion, Politics and Culture
HISTORY 44	Sex, Gender, and Intersectional Analysis in Science, Medicine, Engineering, and Environment
HISTORY 44Q	Gendered Innovations in Science, Medicine, Engineering, and Environment
HISTORY 47	History of South Africa
HISTORY 74	Mexico Since 1876: The Road to Ayotzinapa
HISTORY 79C	The Ethical Challenges of the Climate Catastrophe
HISTORY 102	History of the International System since 1914
HISTORY 103D	Human Society and Environmental Change
HISTORY 106A	Global Human Geography: Asia and Africa
HISTORY 106B	Global Human Geography: Europe and Americas
HISTORY 107	Introduction to Urban Studies
HISTORY 140	World History of Science
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HISTORY 174	Mexico Since 1876: The Road to Ayotzinapa
HISTORY 200B	Doing Environmental History: Climate Change... the podcast

HISTORY 202B	Coffee, Sugar, and Chocolate: Commodities and Consumption in World History, 1200-1800
HISTORY 202J	Climate Politics: Science and Global Governance
HISTORY 203C	History of Ignorance
HISTORY 207B	Environment, Technology and Revolution in World History
HISTORY 223E	Cities of Empire: An Urban Journey through Eastern Europe and the Mediterranean
HISTORY 226E	Famine in the Modern World
HISTORY 232G	Early Modern Cities
HISTORY 243C	People, Plants, and Medicine: Colonial Science and Medicine
HISTORY 243G	Tobacco and Health in World History
HISTORY 254	Popular Culture and American Nature
HISTORY 263C	Nature's Bounty: Natural Resources and U.S. Political Economy
HISTORY 302B	Coffee, Sugar, and Chocolate: Commodities and Consumption in World History, 1200-1800
HISTORY 303C	History of Ignorance
HISTORY 326E	Famine in the Modern World
HISTORY 343C	People, Plants, and Medicine: Colonial Science and Medicine
HISTORY 343G	Tobacco and Health in World History
HISTORY 374	Mexico Since 1876: History of a "Failed State"?
HISTORY 378	The Historical Ecology of Latin America
HISTORY 391C	Early Imperial China
HISTORY 471A	Environmental History of Latin America
HISTORY 471B	Environmental History of Latin America
HRP 224	Social Entrepreneurship and Innovation Lab (SE Lab) - Human & Planetary Health
HRP 256	Economics of Health and Medical Care
HRP 285	Global Leaders and Innovators in Human and Planetary Health
HRP 299	Directed Reading in Health Research and Policy
HUMBIO 2A	Genetics, Evolution, and Ecology
HUMBIO 2B	Culture, Evolution, and Society
HUMBIO 3B	Environmental and Health Policy Analysis
HUMBIO 5E	Science Education in Human Biology
HUMBIO 71A	Race in Science
HUMBIO 112	Conservation Biology: A Latin American Perspective
HUMBIO 113	The Human-Plant Connection
HUMBIO 113S	Healthy/Sustainable Food Systems: Maximum Sustainability across Health, Economics, and Environment
HUMBIO 114	Global Change and Emerging Infectious Disease
HUMBIO 116	Climate Perspectives: Climate Science, Impacts, Policy, Negotiations, and Advocacy
HUMBIO 121E	Ethnicity and Medicine
HUMBIO 122M	Challenges of Human Migration: Health and Health Care of Migrants and Autochthonous Populations
HUMBIO 125	Current Topics and Controversies in Women's Health
HUMBIO 126	Promoting Health Over the Life Course: the Science of Healthy Living
HUMBIO 130	Human Nutrition
HUMBIO 135	Exercise Physiology
HUMBIO 151R	Biology, Health and Big Data
HUMBIO 153	Parasites and Pestilence: Infectious Public Health Challenges
HUMBIO 154B	Principles of Epidemiology
HUMBIO 159	Genes and Environment in Disease Causation: Implications for Medicine and Public Health
HUMBIO 166	Food and Society: Exploring Eating Behaviors in Social, Environmental, and Policy Context
HUMRTS 194A	Environmental Justice Colloquium
HUMRTS 196	Environmental Justice and Human Rights Lab
ILAC 255	Climate Change and Latin American Naturecultures
ILAC 256A	Landscapes in Latin American Cinema
ILAC 263	Visions of the Andes
INTLPOL 200	The Social & Economic Impact of Artificial Intelligence
INTLPOL 204A	Microeconomics for Policy
INTLPOL 224	Economic Development and Challenges of East Asia
INTLPOL 240	Contemporary Issues in International Security
INTLPOL 241S	International Security in a Changing World
INTLPOL 244	U.S. Policy toward Northeast Asia
INTLPOL 256	Technology and National Security: Past, Present, and Future
INTLPOL 271	Climate Politics: Science and Global Governance
INTLPOL 272	Empirical Methods in Sustainable Development
INTLPOL 274	International Urbanization Seminar: Cross-Cultural Collaboration for Sustainable Urban Development
INTLPOL 302	The Global Economy
INTLPOL 306	International Relations Theory and the American Experience
INTLPOL 321	Fundamentals of Cyber Policy and Security
INTLPOL 371	Policy Practicum: Assessing the Impact of China's Global Infrastructure Spending on Climate Change
INTNLREL 61Q	Food and security
INTNLREL 102	History of the International System since 1914
INTNLREL 135A	International Environmental Law and Policy: Oceans and Climate Change
INTNLREL 136R	Introduction to Global Justice
INTNLREL 146A	Energy and Climate Cooperation in the Western Hemisphere
JAPANGEN 160	
JEWISHST 39S	The Other Side: Ethnography and Travel Writing through Jewish, Christian and Muslim Eyes

JEWISHST 129A	Milk and Honey, Wine and Blood: Food, Justice, and Ethnic Identity in Jewish Culture
LATINAM 207	Spanish in Science/Science in Spanish
LATINAM 248	Racial and Gender Inequalities in Latin America
LAW 807B	Policy Practicum: What we can do to Mitigate Climate Warming
LAW 807K	Policy Practicum: The Outlaw Ocean
LAW 807O	Policy Practicum: Assessing the Impact of China's Global Infrastructure Spending on Climate Change
LAW 807W	Policy Practicum: Developing Best Practices for Clean Water Act Enforcement
LAW 908	Advanced Environmental Law Clinic
LAW 908A	Environmental Law Clinic: Clinical Practice
LAW 908B	Environmental Law Clinic: Clinical Methods
LAW 908C	Environmental Law Clinic: Clinical Coursework
LAW 1015	Corporate Social Responsibility
LAW 1047	Business, Social Responsibility, and Human Rights
LAW 2503	Energy Law
LAW 2504	Environmental Law and Policy
LAW 2505	Land Use Law
LAW 2506	Natural Resources Law and Policy
LAW 2508	The Business of Water
LAW 2509	Clean Energy Project Development and Finance
LAW 2510	California Coast: Science, Policy and Law
LAW 2512	Cities and Sustainability: Current Issues, Policy, and Law
LAW 2513	Climate: Politics, Finance, and Infrastructure
LAW 2515	Environmental Justice
LAW 2516	Natural Resources Law and Policy - South Africa: Field Study
LAW 2517	Modern Crosscurrents in Energy and Environmental Law
LAW 2518	U.S. Environmental Law in Transition
LAW 2519	Water Law
LAW 2521	California's Water Policy and Management: Toward a Sustainable Future
LAW 2522	Private Environmental Governance
LAW 2523	Climate, Energy, and Democracy
LAW 2524	Climate and Energy Workshop
LAW 4014	Law, Technology, and Liberty
LAW 4043	The Social & Economic Impact of Artificial Intelligence
LAW 5015	International Dealmaking: Vienna Field Negotiation
LAW 7024	Food Law and Policy
LAW 7030	Federal Indian Law
LAW 7051	Local Government Law
LAW 7824	Advanced Negotiation: Environmental Policy
LAW 8002	Environmental Law and Policy Colloquium
MATSCI 144	Thermodynamic Evaluation of Green Energy Technologies
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution
MATSCI 161	Energy Materials Laboratory
MATSCI 256	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution
MATSCI 301	Engineering Energy Policy Change
MATSCI 302	Solar Cells
MATSCI 303	Principles, Materials and Devices of Batteries
ME 30	Engineering Thermodynamics
ME 70	Introductory Fluids Engineering
ME 141	Alternative Energy Systems
ME 170A	Mechanical Engineering Design- Integrating Context with Engineering
ME 170B	Mechanical Engineering Design: Integrating Context with Engineering
ME 182	Electric Transportation
ME 206A	Design for Extreme Affordability
ME 206B	Design for Extreme Affordability
ME 250	Internal Combustion Engines
ME 257	Gas-Turbine Design Analysis
ME 262	Physics of Wind Energy
ME 267	Ethics and Equity in Transportation Systems
ME 352B	Fundamentals of Heat Conduction
ME 357	Gas-Turbine Design Analysis
ME 370A	Energy Systems I: Thermodynamics
ME 370B	Energy Systems II: Modeling and Advanced Concepts
ME 370C	Energy Systems III: Projects
ME 371	Combustion Fundamentals
MED 50Q	Respiration
MED 131	Exploring Israel's Ecosystem in Human and Planetary Health
MED 224	Social Entrepreneurship and Innovation Lab (SE Lab) - Human & Planetary Health
MED 228	Physicians and Social Responsibility
MED 237	Health Law: Improving Public Health
MED 285	Global Leaders and Innovators in Human and Planetary Health
MI 70Q	Photographing Nature
MLA 322	Coffee, Sugar, and Chocolate: Commodities and Consumption in World History. 120--1800
MS&E 52	Introduction to Decision Making
MS&E 92Q	International Environmental Policy
MS&E 152	Introduction to Decision Analysis
MS&E 185	Global Work
MS&E 201	Dynamic Systems
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MS&E 243	Energy and Environmental Policy Analysis
MS&E 250A	Engineering Risk Analysis
MS&E 250B	Project Course in Engineering Risk Analysis
MS&E 252	Decision Analysis I: Foundations of Decision Analysis
MS&E 254	The Ethical Analyst
MS&E 292	Health Policy Modeling
MS&E 352	Decision Analysis II: Professional Decision Analysis

MS&E 391	Doctoral Research Seminar in Energy-Environmental Systems Modeling and Analysis
MS&E 394	Advanced Methods in Modeling for Climate and Energy Policy
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MUSIC 16Q	Listening to Climate Change
NATIVEAM 109A	Federal Indian Law
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NENS 230	Analysis Techniques for the Biosciences Using MATLAB
OB 601	Organizational Ecology
OB 672	Organization and Environment
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OIT 333	Design for Extreme Affordability
OIT 334	Design for Extreme Affordability
OSPAUSTL 10	Coral Reef Ecosystems
OSPAUSTL 28	Terrestrial Ecology and Conservation
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OSPAUSTL 40	Australian Studies: History, Society and Culture Down Under
OSPGEN 60	Earth's 3rd Pole: Coupled Human-Natural Systems in the Khumbu Valley, Nepal
OSPGEN 74	St. Petersburg: Imagining a City, Building a City
OSPGEN 79	Preserving Biodiversity: Conservation Photography in South Africa
OSPKYOTO 33	Ecology of Japanese Satoyama
OSPMADRD 8A	Cities and Creativity: Cultural and Architectural Interpretations of Madrid
OSPMADRD 89	Environmental Policy
OSPMADRD 194	Madrid University: Earth Energy & Environmental Science
OSPOXFRD 86	From the hills to the sea
OSPPARIS 17	Green Urban Planning Internship
OSPPARIS 66	FOOD CONSUMPTION & PRODUCTION
OSPPARIS 67	INDP STDY: LAND USE IN FRANCEn
OSPPARIS 91	The Future of Globalization: Economics, Politics and the Environment
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America
OSPSANTG 58	Global Change in Chile
OSPSANTG 71	Santiago: Urban Planning, Public Policy, and the Built Environment
OSPSANTG 85	Marine Ecology of Chile and the South Pacific
OUTDOOR 15	Rock Climbing: Intermediate Anchors
OUTDOOR 60	Introduction to Flyfishing
OUTDOOR 70	SCUBA Diving Open Water: Beginner
OUTDOOR 71	SCUBA Diving Open Water: Advanced
OUTDOOR 72	SCUBA Diving Open Water: Rescue
OUTDOOR 101	Introduction to Outdoor Education
OUTDOOR 103	Foundations of Outdoor Education
OUTDOOR 105	Outdoor Living Skills
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PEDS 150	Social and Environmental Determinants of Health
PEDS 250	Social and Environmental Determinants of Health
PHIL 72	Contemporary Moral Problems
PHIL 76	Introduction to Global Justice
PHIL 164	Central Topics in the Philosophy of Science: Theory and Evidence
PHIL 167B	Philosophy, Biology, and Behavior
PHIL 175A	Ethics and Politics of Public Service
PHIL 177C	Ethics of Climate Change
PHIL 178M	Introduction to Environmental Ethics
PHIL 264	Central Topics in the Philosophy of Science: Theory and Evidence
PHIL 267B	Philosophy, Biology, and Behavior
PHIL 275A	Ethics and Politics of Public Service
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PHIL 278M	Introduction to Environmental Ethics
PHIL 378W	Owning the Earth
PHYSICS 199	The Physics of Energy and Climate Change
PHYSICS 201	The Physics of Energy and Climate Change
PHYSICS 240	Introduction to the Physics of Energy
PHYSICS 241	Introduction to Nuclear Energy
POLECON 230	Strategy Beyond Markets
POLECON 231	Strategy Beyond Markets: Challenges and Opportunities in Developing Economies
POLECON 515	Energy: Innovation, Policy & Business Strategy
POLISCI 73	Energy Policy in California and the West
POLISCI 124A	The American West
POLISCI 133	Ethics and Politics of Public Service
POLISCI 134L	Introduction to Environmental Ethics
POLISCI 136R	Introduction to Global Justice
POLISCI 218X	Shaping the Future of the Bay Area
POLISCI 227B	Environmental Governance and Climate Resilience
POLISCI 241S	Spatial Approaches to Social Science
PSYC 136A	Valuescience: Shedding Illusion to Live and Die Well
PSYC 136B	Valuescience: Shedding Illusion to Live and Die Well
PSYC 150N	Climate Change and Mental Health
PSYCH 298	Advanced Studies in Health Psychology
PSYCH 459	Frontiers in Interdisciplinary Biosciences
PUBLPOL 85	Environmentalism in California
PUBLPOL 101	Introduction to American Politics and Policy: The Good, The Bad, and The Ugly
PUBLPOL 103D	Ethics and Politics of Public Service
PUBLPOL 104	Economic Policy Analysis
PUBLPOL 116	Climate Perspectives: Climate Science, Impacts, Policy, Negotiations, and Advocacy
PUBLPOL 118X	Shaping the Future of the Bay Area
PUBLPOL 135	Regional Politics and Decision Making in Silicon Valley and the Greater Bay Area
PUBLPOL 159	Economic, Legal, and Political Analysis of Climate-Change Policy
PUBLPOL 174	The Urban Economy

PUBLPOL 209	What is Public about Public Lands - Who and How to Manage.
PUBLPOL 218X	Shaping the Future of the Bay Area
PUBLPOL 224	Social Entrepreneurship and Innovation Lab (SE Lab) - Human & Planetary Health
PUBLPOL 265F	Environmental Governance and Climate Resilience
PWR 1GJS	Writing & Rhetoric 1: Our Warded World: The Rhetoric of Conservation
PWR 1JSA	Writing & Rhetoric 1: The Rhetoric of Plants
PWR 1KMB	Writing & Rhetoric 1: Cradle to Cradle: the Rhetoric of Sustainability
PWR 1KMC	Writing & Rhetoric 1: Staying Cool on a Hot Planet: Environmental Rhetoric for a Changing World
PWR 1LO	Writing & Rhetoric 1: What Are We Trying to Sustain? Rhetoric of Nature's Values and Services
PWR 1MGD	Writing & Rhetoric 1: Who Speaks for Nature? Rhetorics of Environmentalism and Justice
PWR 1MS	Writing & Rhetoric 1: Seeing Nature: The Power of Environmental Visual Rhetoric
PWR 1SI	Writing & Rhetoric 1: Super-Storms, Polar Bears, and Droughts: The Rhetoric of Climate Change
PWR 2CR	Writing & Rhetoric 2: Communicating Science to the Public
PWR 2JS	Writing & Rhetoric 2: In Science We Trust
PWR 2KM	Writing & Rhetoric 2: A Planet on the Edge: The Rhetoric of Sustainable Energy
PWR 2LO	Writing & Rhetoric 2: Facing the Future: Climate Change Science, Impacts, and Solutions
PWR 2RL	Writing & Rhetoric 2: The Rhetoric of the Natural and Beyond
PWR 2SB	Writing & Rhetoric 2: Writing 'Science': Fact, Fiction, and Everything Between
PWR 91CL	Self & Science
PWR 91EC	Intermediate Writing: Farmers, Scientists, & Activists: Public Discourse of Food Economies
PWR 91EP	Intermediate Writing: Communicating Climate Change: Navigating the Stories from the Frontlines
PWR 91JS	Stanford Science Podcast
PWR 91KS	Intermediate Writing: Design Thinking and Science Communication
PWR 91NSC	Intermediate Writing: Introduction to Science Communication
PWR 91RS	Intermediate Writing: Communicating Bioinformation
PWR 91S	Intermediate Writing: Communicating Science
PWR 194EP	Topics in Writing & Rhetoric: Introduction to Environmental Justice: Race, Class, Gender and Place
RELIGST 7N	Religion, Ecology, and Environmental Ethics
SINY 122	The Agile City
SINY 148	Grappling with the Global: Gentrification, Immigration, and Sustainability in New York City
SINY 150	Biology, Technology, and Society: The City as a Human Life Support System
SINY 162	Sustainable and Resilient Urban Systems in NYC
SIS 103Q	
SIS 125Q	
SIS 137Q	
SIS 149Q	
SIS 204N	
SIS 235N	
SIS 236N	
SIS 327Q	
SIS 342Q	
SIS 377Q	
SIW 137	Energy and Environment: Technology, Economics and Policy
SIW 140	Health and Environmental Policy Speaker Series
SIW 144	Energy, Environment, Climate and Conservation Policy: A Washington, D.C. Perspective
SLAVIC 116	Literature and the Dream of Agriculture in Russia and Beyond
SLAVIC 155	St. Petersburg: Imagining a City, Building a City
SOC 22N	The Roots of Social Protest
SOC 105VP	Contested markets in the Brazilian Amazon Rainforest
SOC 118	Social Movements and Collective Action
SOC 152	The Social Determinants of Health
SOC 159	Social and Cultural Dimensions of Global Indigeneity
SOC 160	Formal Organizations
SOC 218	Social Movements and Collective Action
SOC 260	Formal Organizations
SOC 349	Race, Space, and Stratification
SOC 362	Organization and Environment
SOMGEN 260	Preparing for Community, Health and Learning through Service in Sri Lanka
STATS 60	Introduction to Statistical Methods: Precalculus
STATS 110	Statistical Methods in Engineering and the Physical Sciences
STATS 141	Biostatistics
STATS 160	Introduction to Statistical Methods: Precalculus
STATS 245	Data, Models and Applications to Healthcare Analytics
STRAMGT 574	Strategic Thinking in Action - In Business and Beyond II
STS 123	Making of a Nuclear World: History, Politics, and Culture
STS 177	The Cultural Politics of Food and Eating: Technology, History, and Justice
STS 181	Techno-metabolism: Technology, Society, and the Anthropocene
STS 190	Environment and Society
STS 200A	Food and Society: Politics, Culture and Technology

SUST 210	Pursuing Sustainability: Managing Complex Social Environmental Systems
SUST 220	Case Studies in Leading Change for Sustainability
SUST 232	Design for Sustainable Impact
SUST 240	Sustainability Leadership Practicum
SUST 261	Art and Science of Decision Making
SUST 297	Introduction to Systems Transformation
UAR 43	Leland Scholars Program
URBANST 110	Introduction to Urban Studies
URBANST 113	Introduction to Urban Design: Contemporary Urban Design in Theory and Practice
URBANST 114	Urban Culture in Global Perspective
URBANST 122	Ethics and Politics of Public Service
URBANST 124	Spatial Approaches to Social Science
URBANST 125	Shades of Green: Redesigning and Rethinking the Environmental Justice Movements
URBANST 132	Concepts and Analytic Skills for the Social Sector
URBANST 138	Smart Cities & Communities
URBANST 146	Retaking the Commons: Public Space and Heritage for Sustainable Cities
URBANST 147	Archaeology of Human Rights
URBANST 155A	Environmental Justice Colloquium
URBANST 164	Sustainable Cities
URBANST 172A	Introduction to Urban and Regional Planning
URBANST 173	The Urban Economy
URBANST 174	Defining Smart Cities: Visions of Urbanism for the 21st Century
URBANST 181	Urban Agroecology
URBANST 183	Team Urban Design Studio

Courses

EARTHSYS 4. Coevolution of Earth and Life. 4 Units.
Earth is the only planet in the universe currently known to harbor life. When and how did Earth become inhabited? How have biological activities altered the planet? How have environmental changes affected the evolution of life? Are we living in a sixth mass extinction? In this course, we will develop and use the tools of geology, paleontology, geochemistry, and modeling that allow us to reconstruct Earth's 4.5 billion year history and to reconstruct the interactions between life and its host planet over the past 4 billion years. We will also ask what this long history can tell us about life's likely future on Earth. We will also use One half-day field trip.
Same as: GEOLSCI 4

EARTHSYS 8. The Oceans: An Introduction to the Marine Environment. 4 Units.
The course will provide a basic understanding of how the ocean functions as a suite of interconnected ecosystems, both naturally and under the influence of human activities. Emphasis is on the interactions between the physical and chemical environment and the dominant organisms of each ecosystem. The types of ecosystems discussed include coral reefs, deep-sea hydrothermal vents, coastal upwelling systems, blue-water oceans, estuaries, and near-shore dead zones. Lectures, multimedia presentations, group activities, and tide-pooling day trip.
Same as: ESS 8

EARTHSYS 9. Public Service Internship Preparation. 1 Unit.
Are you prepared for your internship this summer? This workshop series will help you make the most of your internship experience by setting learning goals in advance; negotiating and communicating clear roles and expectations; preparing for a professional role in a non-profit, government, or community setting; and reflecting with successful interns and community partners on how to prepare sufficiently ahead of time. You will read, discuss, and hear from guest speakers, as well as develop a learning plan specific to your summer or academic year internship placement. This course is primarily designed for students who have already identified an internship for summer or a later quarter. You are welcome to attend any and all workshops, but must attend the entire series and do the assignments for 1 unit of credit.
Same as: EDUC 9, HUMBIO 9, PUBLPOL 74, URBANST 101

EARTHSYS 10. Introduction to Earth Systems. 4 Units.
For non-majors and prospective Earth Systems majors. Multidisciplinary approach using the principles of geology, biology, engineering, and economics to describe how the Earth operates as an interconnected, integrated system. Goal is to understand global change on all time scales. Focus is on sciences, technological principles, and sociopolitical approaches applied to solid earth, oceans, water, energy, and food and population. Case studies: environmental degradation, loss of biodiversity, and resource sustainability.

EARTHSYS 11. Introduction to Geology. 5 Units.
Why are earthquakes, volcanoes, and natural resources located at specific spots on the Earth surface? Why are there rolling hills to the west behind Stanford, and soaring granite walls to the east in Yosemite? What was the Earth like in the past, and what will it be like in the future? Lectures, hands-on laboratories, in-class activities, and one field trip will help you see the Earth through the eyes of a geologist. Topics include plate tectonics, the cycling and formation of different types of rocks, and how geologists use rocks to understand Earth's history.
Same as: GEOLSCI 1

EARTHSYS 13SC. People, Land, and Water in the Heart of the West. 2 Units.
Salmon River. Sun Valley. Pioneer Mountains. The names speak of powerful forces and ideas in the American West. Central Idaho - a landscape embracing snow-capped mountains, raging rivers, sagebrush deserts, farms, ranches, and resort communities - is our classroom for this field-based seminar led by David Freyberg, professor of Civil and Environmental Engineering, and David Kennedy, professor emeritus of History. nnThis course focuses on the history and future of a broad range of natural resource management issues in the western United States. We will spend a week on campus preparing for a two-week field course in Idaho exploring working landscapes, private and public lands, water and fisheries, conservation, and the history and literature of the relationship between people and the land in the American West. After the first week spent on campus, we will drive to Idaho to begin the field portion of our seminar. In Idaho, we will spend time near Twin Falls, at Lava Lake Ranch near Craters of the Moon National Monument, in Custer County at the Upper Salmon River, and near Stanley in the Sawtooth National Forest. No prior camping experience is required, but students should be comfortable living outdoors in mobile base camps for periods of several days. Students will investigate specific issues in-depth and present their findings at the end of the course.

EARTHSYS 16SI. Environmental Justice in the Bay Area. 2 Units.
Hands-on, discussion-based class that seeks to expose students to the intersectionality of social justice and environmental well being. Through student-led talks and field trips around the Bay, the course pushes participants to think about connections between issues of privilege, race, health, gender equality, and class in environmental issues. Students from all experiences and fields of study are encouraged to join to gain a sense of place, engage critically with complex challenges, and learn about environmental justice in and out of the classroom.
Same as: URBANST 16SI

EARTHSYS 18. Promoting Sustainability Behavior Change at Stanford. 2 Units.
Stanford Green Living Council training course. Strategies for designing and implementing effective behavior change programs for environmental sustainability on campus. Includes methods from community-based social marketing, psychology, behavioral economics, education, public health, social movements, and design. Students design a behavior change intervention project targeting a specific environmental sustainability-related behavior. Lectures online and weekly sections/ workshops.

EARTHSYS 20. The Cuisine of Change: Promoting Child Health and Combating Food Insecurity. 1 Unit.
ASB Course. The course on nutrition, health and food insecurity is split into four projects: 1) Workshop a Story, in which students craft a personal narrative with input from the class, 2) Pose a Question, in which students in pairs attempt to educate the class on many sides of the same issue, 3) Create a Dish, in which students develop original dishes in support of local organizations, and 4) Teach a Class, in which students, in teams, develop a curriculum to be implemented in over the spring break trip. Furthermore, each section will expand the scope of the issue from the individual to the community and all the way up to national policies. The course will be a mix of some of the best lecturers and professors that we¿ve encountered in our time at Stanford as well as a smattering of community challenges. Come with a willingness to push your comfort zone, as some of the activities include creative presentations, taking a no added sugar challenge, get vulnerable, and developing an intelligent attitude toward healthy eating.

EARTHSYS 21. Peopling of the Globe: Changing Patterns of Land Use and Consumption Over the Last 50,000 Years. 3-5 Units.
Fossil, genetic and archaeological evidence suggest that modern humans began to disperse out of Africa about 50,000 years ago. Subsequently, humans have colonized every major landmass on earth. This class introduces students to the data and issues regarding human dispersal, migration and colonization of continents and islands around the world. We explore problems related to the timing and cause of colonizing events, and investigate questions about changing patterns of land use, demography and consumption. Students are introduced to critical relationships between prehistoric population changes and our contemporary environmental crisis.
Same as: ANTHRO 18, ARCHLGY 12

EARTHSYS 22. Introduction to Landscape Architecture: Urban Ecology and Environmental Design. 1 Unit.
This 1 unit, nine-week course provides an introduction to landscape architecture, covering a brief history of the field, making connections between science and sustainable and resilient urban ecosystems, and exploring a range of projects and topics that landscape architects touch. From public spaces and streetscapes to shorelines and trails, landscape architecture projects combine art and science in the pursuit of connecting and engaging humans with built and natural environments. The practice can be used to contribute to and achieve complex goals such as climate resilience, environmental restoration, habitat creation, green infrastructure planning, and aesthetic appeal. Through targeted readings, lectures, thoughtful discussions, and foundational assignments encouraging students to get outside and observe their surrounding landscapes, students will receive an introduction to landscape architecture and engage with a creative application of earth systems science. This course begins during Week 2 of fall quarter and will invite practicing landscape architects and urban designers to give biweekly guest lectures. Students of all class years and majors are encouraged to enroll. Guest lectures will be open to the Stanford community.

EARTHSYS 36N. Life at the Extremes: From the Deep Sea to Deep Space. 3 Units.
Preference to freshmen. Microbial life is diverse and resilient on Earth; could it survive elsewhere in our solar system? This seminar will investigate the diversity of microbial life on earth, with an emphasis on extremophiles, and consider the potential for microbial life to exist and persist in extraterrestrial locales. Topics include microbial phylogenetic and physiological diversity, biochemical adaptations of extremophiles, ecology of extreme habitats, and apparent requirements and limits of life. Format includes lectures, discussions, lab-based activities and local field trips. Basics of microbiology, biochemistry, and astrobiology.

EARTHSYS 38N. The Worst Journey in the World: The Science, Literature, and History of Polar Exploration. 3 Units.
This course examines the motivations and experiences of polar explorers under the harshest conditions on Earth, as well as the chronicles of their explorations and hardships, dating to the 1500s for the Arctic and the 1700s for the Antarctic. Materials include The Worst Journey in the World by Aspley Cherry-Garrard who in 1911 participated in a midwinter Antarctic sledging trip to recover emperor penguin eggs. Optional field trip into the high Sierra in March.
Same as: ESS 38N, GEOLSCI 38N

EARTHSYS 39Q. Talking about Earthquakes, Volcanoes, and Floods: Science Communication and Natural Hazards. 4 Units.
In an age of fake news, how do we communicate the importance of scientific facts? How do we compel action from an individual to a national level when the facts alone aren¿t enough? In this class you will learn the basic tools of science communication through the lens of natural hazards such as earthquakes, volcanoes, and extreme weather. You will learn the basics of the science that drives these hazards, and how to communicate that science to different audiences. Recent research has shown that relaying scientific knowledge alone to potentially vulnerable populations does not have a significant impact on increasing their resilience to those hazards. Therefore, it is increasingly important to train a new generation of science communicators and translators who can effectively relay complex information in engaging and understandable ways. This will be a hands-on course where you will be working individually and in small groups to discuss class topics, share, and peer review each other¿s writing each week. This course satisfies the Write 2 requirement for undergraduates.

EARTHSYS 41N. The Global Warming Paradox. 3 Units.
Preference to freshman. Focus is on the complex climate challenges posed by the substantial benefits of energy consumption, including the critical tension between the enormous global demand for increased human well-being and the negative climate consequences of large-scale emissions of carbon dioxide. Topics include: Earth¿s energy balance; detection and attribution of climate change; the climate response to enhanced greenhouse forcing; impacts of climate change on natural and human systems; and proposed methods for curbing further climate change. Sources include peer-reviewed scientific papers, current research results, and portrayal of scientific findings by the mass media and social networks.

EARTHSYS 44N. The Invisible Majority: The Microbial World That Sustains Our Planet. 3 Units.
Microbes are often viewed through the lens of infectious disease yet they play a much broader and underappreciated role in sustaining our Earth system. From introducing oxygen into the Earth¿s atmosphere over 2 billion years ago to consuming greenhouse gases today, microbial communities have had (and continue to have) a significant impact on our planet. In this seminar, students will learn how microbes transformed the ancient Earth environment into our modern planet, how they currently sustain our Earth¿s ecosystems, and how scientists study them both in the present and in the past. Students will be exposed to the fundamentals of microbiology, biogeochemistry, and Earth history.

EARTHSYS 46N. Exploring the Critical Interface between the Land and Monterey Bay: Elkhorn Slough. 3 Units.
Preference to freshmen. Field trips to sites in the Elkhorn Slough, a small agriculturally impacted estuary that opens into Monterey Bay, a model ecosystem for understanding the complexity of estuaries, and one of California's last remaining coastal wetlands. Readings include Jane Caffrey's *Changes in a California Estuary: A Profile of Elkhorn Slough*. Basics of biogeochemistry, microbiology, oceanography, ecology, pollution, and environmental management.
Same as: ESS 46N

EARTHSYS 46Q. Environmental Impact of Energy Systems: What are the Risks?. 3 Units.
In order to reduce CO2 emissions and meet growing energy demands during the 21st Century, the world can expect to experience major shifts in the types and proportions of energy-producing systems. These decisions will depend on considerations of cost per energy unit, resource availability, and unique national policy needs. Less often considered is the environmental impact of the different energy producing systems: fossil fuels, nuclear, wind, solar, and other alternatives. One of the challenges has been not only to evaluate the environmental impact but also to develop a systematic basis for comparison of environmental impact among the energy sources. The course will consider fossil fuels (natural gas, petroleum and coal), nuclear power, wind and solar and consider the impact of resource extraction, refining and production, transmission and utilization for each energy source.
Same as: GEOLSCI 46Q

EARTHSYS 55Q. Am I a Part of Earth? Understanding of Rock, Water, and Time. 3 Units.
Am I a part of Earth? Not only is this a question of personal meaning, but also a complex question that shapes how we interact with the natural world. Answering it calls for both scientific and experiential understanding of Earth processes, as well as how geologic thinking and our individual thinking about nature have changed through time. By connecting Earth processes and rates of transformations to personal experience, we can rigorously interrogate our relationship to and/or separation from Earth.nnIn this course, you will think like a philosopher and a geochemist. You will commune with nature and calculate the history of rocks. You will use real data analysis of Earth processes to understand the limits of our knowledge about Earth history (Deep Time). You will explore your interactions with Earth materials through mindfulness activities and discuss different views of humans relative to nature through history. You will have autonomy in a course-long project that synthesizes your growing understanding of your relationship to and/or separation from Earth.nnThis course welcomes all, from rock collectors to hikers and ecofeminists to meditators. No prior experience with philosophy or Earth science is required, though an introductory high school chemistry and algebra course will be helpful. The only requirement is a willingness to examine your personal relationship with Earth from scientific and humanistic perspectives.

EARTHSYS 58Q. Understanding Our Oceans: Scientific Toys, Tools, & Trips. 3 Units.
In popular science magazines we read about deep ocean critters recently discovered or the latest threats coral reefs face. But what is it actually like to do science in the ocean-to research ocean life in the various ocean ecosystems? In this course, we will explore the latest advances in marine science-what technologies are allowing scientists to explore and investigate the ocean and what are we discovering. We will have 2 one-day fieldtrips (on Fridays) to marine research centers in Moss Landing, Monterey, and institutions in the Bay Area. This course will also expose students to what life as a marine biology/science graduate student is like.

EARTHSYS 61Q. Food and security. 3 Units.
The course will provide a broad overview of key policy issues concerning agricultural development and food security, and will assess how global governance is addressing the problem of food security. At the same time the course will provide an overview of the field of international security, and examine how governments and international institutions are beginning to include food in discussions of security.
Same as: ESS 61Q, INTNLREL 61Q

EARTHSYS 91. Earth Systems Writers Collective. 1 Unit.
Come join a community of environmental writers, publish your work, and get course credit at the same time! Are you currently working on an article, an op-ed, translating your class projects into publishable pieces or pursuing a new writing project? Are you interested in publishing your work in the quarterly Earth Systems newsletter and the annual Earth Systems magazine? In this weekly seminar, you will collaborate with others and get constructive feedback from a community of peer writers. You can enroll in the Earth Systems Writers Collective for 1 unit, or just join without signing up for course credit. May be repeated for credit.

EARTHSYS 95. Liberation Through Land: Organic Gardening and Racial Justice. 2 Units.
Through field trips, practical work and readings, this course provides students with the tools to begin cultivating a relationship to land that focuses on direct engagement with sustainable gardening, from seed to harvest. The course will take place on the O'Donohue Family Stanford Educational Farm, where students will be given the opportunity to learn how to sow seeds, prepare garden beds, amend soils, build compost, and take care of plants. The history of forced farm labor in the U.S., from slavery to low-wage migrant labor, means that many people of color encounter agricultural spaces as sites of trauma and oppression. In this course we will explore the potential for revisiting a narrative of peaceful relation to land and crop that existed long before the trauma occurred, acknowledging the beautiful history of POC coexistence with land. Since this is a practical course, there will be a strong emphasis on participation. Application available at https://goo.gl/forms/cbYX3gSGdrHgHBJH3; deadline to apply is September 18, 2018, at midnight. The course is co-sponsored by the Institute for Diversity in the Arts (IDA) and the Earth Systems Program.
Same as: AFRICAAM 95, CSRE 95

EARTHSYS 100. Environmental and Geological Field Studies in the Rocky Mountains. 3 Units.
Three-week, field-based program in the Greater Yellowstone/Teton and Wind River Mountains of Wyoming. Field-based exercises covering topics including: basics of structural geology and petrology; glacial geology; western cordillera geology; paleoclimatology; chemical weathering; aqueous geochemistry; and environmental issues such as acid mine drainage and changing land-use patterns.
Same as: ESS 101

EARTHSYS 100A. Data Science for Geoscience. 3 Units.
This course provides an overview of the most relevant areas of data science to address geoscientific challenges and questions as they pertain to the environment, earth resources & hazards. The focus lies on the methods that treat common characters of geoscientific data: multivariate, multi-scale, compositional, geospatial and space-time. In addition, the course will treat those statistical method that allow a quantification of the human dimension by looking at quantifying impact on humans (e.g. hazards, contamination) and how humans impact the environment (e.g. contamination, land use). The course focuses on developing skills that are not covered in traditional statistics and machine learning courses.
Same as: GEOLSCI 6

EARTHSYS 101. Energy and the Environment. 3 Units.
Energy use in modern society and the consequences of current and future energy use patterns. Case studies illustrate resource estimation, engineering analysis of energy systems, and options for managing carbon emissions. Focus is on energy definitions, use patterns, resource estimation, pollution. Recommended: MATH 21 or 42.
Same as: ENERGY 101

EARTHSYS 102. Fundamentals of Renewable Power. 3 Units.
Do you want a much better understanding of renewable power technologies? Did you know that wind and solar are the fastest growing forms of electricity generation? Are you interested in hearing about the most recent, and future, designs for green power? Do you want to understand what limits power extraction from renewable resources and how current designs could be improved? This course dives deep into these and related issues for wind, solar, biomass, geothermal, tidal and wave power technologies. We welcome all student, from non-majors to MBAs and grad students. If you are potentially interested in an energy or environmental related major, this course is particularly useful. Recommended: Math 21 or 42.
Same as: ENERGY 102

EARTHSYS 103. Understanding Energy. 3-5 Units.
Energy is the number one contributor to climate change and has significant consequences for our society, political system, economy, and environment. Energy is also a fundamental driver of human development and opportunity. In taking this course, students will not only understand the fundamentals of each energy resource -- including significance and potential, conversion processes and technologies, drivers and barriers, policy and regulation, and social, economic, and environmental impacts -- students will also be able to put this in the context of the broader energy system. Both depletable and renewable energy resources are covered, including oil, natural gas, coal, nuclear, biomass and biofuel, hydroelectric, wind, solar thermal and photovoltaics (PV), geothermal, and ocean energy, with cross-cutting topics including electricity, storage, climate change and greenhouse gas emissions (GHG), sustainability, green buildings, energy efficiency, transportation, and the developing world. The course is 4 units, which includes lecture and in-class discussion, readings and videos, homework assignments, virtual field trips, and a small-group discussion section once a week for 50 minutes (live participation is required, many different times will be offered). Lectures will be recorded and available on Canvas. No in-person field trips will be offered for AY 2020-2021 ¿ but alumni of the class can optionally attend field trips in future quarters. Enroll for 5 units to also attend the Workshop, an interactive discussion section on cross-cutting topics that meets once per week for 80 minutes (timing TBD). The 3-unit option requires instructor approval - please contact Diana Gragg. Open to all: pre-majors and majors, with any background! Website: https://energy.stanford.edu/understanding-energy. CEE 107S/207S Understanding Energy: Essentials is a shorter (3 unit) version of this course, offered summer quarter. Students should not take both for credit. Prerequisites: Algebra.
Same as: CEE 107A, CEE 207A

EARTHSYS 104. The Water Course. 4 Units.
The Central Valley of California provides a third of the produce grown in the U.S., but recent droughts and increasing demand have raised concerns about both food and water security. The pathway that water takes from rainfall to the irrigation of fields or household taps (¿the water course¿) determines the quantity and quality of the available water. Working with various data sources (measurements made on the ground, in wells, and from satellites) allows us to model the water budget in the valley and explore the recent impacts on freshwater supplies.
Same as: EARTHSYS 204, GEOPHYS 104, GEOPHYS 204

EARTHSYS 105. Food and Community: Food Security, Resilience and Equity. 2-3 Units.
What can communities do to bolster food security, resiliency, and equity in the face of climate change? This course aims to respond to this question, in three parts. In Part 1, we will explore the most current scientific findings on trends in anthropogenic climate forcing and the anticipated impacts on global and regional food systems. Specifically, Part I will review the anticipated impact of climate change on severe weather events, crop losses, and food price volatility and the influence of these impacts on global and regional food insecurity and hunger. In Part II, we will consider what communities can do to promote food security and equity in the face of these changes, by reviewing the emerging literature on food system resiliency. Finally, we will facilitate a conference in which multi-disciplinary teams from around the country will gather to initiate regional planning projects designed to enhance food system resilience and equity. Cardinal Course (certified by Haas Center). Limited enrollment. May be repeated for credit.
Same as: EARTHSYS 205

EARTHSYS 105A. Ecology and Natural History of Jasper Ridge Biological Preserve. 4 Units.
Ecology and Natural History of Jasper Ridge Biological Preserve an upper-division course, aims to help student learn ecology and natural history using a ¿living laboratory¿, the Jasper Ridge Preserve. The course¿s central goal is that, as a community of learning, we examine ¿via introductory discussions, followed by hands-on experiences in the field¿ the scientific basis of: ecological research, archaeology, edaphology, geology, hydrology, species interactions, land management, and multidisciplinary environmental education. The 10 sessions that compose the academic program are led by the instructors, faculty (world-experts on the themes of each session), and JRBP staff. In addition, this class trains students to become JRBP Docents that therefore join the Jasper Ridge education affiliates community. nnAfter completing this course and as new affiliates of Jasper Ridge, participants will be able to lead research-focused educational tours, assist with classes and research, and attend continuing education activities available to members of the JRBP community.
Same as: BIO 105A

EARTHSYS 105B. Ecology and Natural History of Jasper Ridge Biological Preserve. 4 Units.
Ecology and Natural History of Jasper Ridge Biological Preserve an upper-division course, aims to help student learn ecology and natural history using a ¿living laboratory¿, the Jasper Ridge Preserve. The course¿s central goal is that, as a community of learning, we examine ¿via introductory discussions, followed by hands-on experiences in the field¿ the scientific basis of: ecological research, archaeology, edaphology, geology, hydrology, species interactions, land management, and multidisciplinary environmental education. The 10 sessions that compose the academic program are led by the instructors, faculty (world-experts on the themes of each session), and JRBP staff. In addition, this class trains students to become JRBP Docents that therefore join the Jasper Ridge education affiliates community. nnAfter completing this course and as new affiliates of Jasper Ridge, participants will be able to lead research-focused educational tours, assist with classes and research, and attend continuing education activities available to members of the JRBP community.
Same as: BIO 105B

EARTHSYS 106. World Food Economy. 5 Units.
The economics of food production, consumption, and trade. The micro- and macro- determinants of food supply and demand, including the interrelationship among food, income, population, and public-sector decision making. Emphasis on the role of agriculture in poverty alleviation, economic development, and environmental outcomes. Grades based on mid-term exam and group modeling project and presentation. Enrollment is by application only and will be capped at 25, with priority given to upper level undergraduates in Economics and Earth Systems and graduate students (graduate students enroll in 206). Application found at https://economics.stanford.edu/academics/undergraduate-program/forms.
Same as: EARTHSYS 206, ECON 106, ECON 206, ESS 106, ESS 206

EARTHSYS 106B. Sustainable and Equitable Water Management. 3-4 Units.
California has committed itself to sustainable groundwater management, with passage of the Sustainable Groundwater Management Act in 2014, and safe drinking water access for all, with California¿s Human Right to Water Act in 2012. Yet, groundwater overdraft continues while over 1 million residents lack access to safe drinking water. Working with a water agency in the San Joaquin Valley, we will explore feedback loops between the two Acts and develop a plan for water management that meet the co-equal objectives of sustainable and equitable resource governance. We will work with "big" and "small" data, exploring the possibilities but also the limitations of using publicly available data for assessment and monitoring. The course will include guest speakers and interaction with public agencies and other key stakeholders.
Same as: EARTHSYS 206B, GEOPHYS 106, GEOPHYS 206

EARTHSYS 106C. Why are Scientists Engineering Our Food?. 2 Units.
This lecture and discussion course will review the scientific evidence on the use and impacts of genetic engineering in global food and agricultural systems. The class will cover the history and details of crop genetic improvement, ranging from primitive domestication to CRISPR technologies. We will examine the risks and benefits of crop genetic technologies in agriculture with regards to productivity, farm incomes, food safety, human health and nutrition, and environmental impacts. We will also discuss the current and future use of genetic engineering techniques for enhancing climate resilience and nutritional outcomes in agricultural systems worldwide. Finally, we will discuss the ethics of using modern genetic approaches for crop improvement, and the policy environment surrounding the use of these genetic techniques.nnOur expectation is that students enrolled in the course will attend all class sections and participate actively in the discussions. Students will be asked to identify peer-reviewed, scientific papers on the impacts of specific crop genetic improvements. Depending on the class size, students will also be asked to help lead class discussions. At the end of the course, students will work in groups to debate a selected topic on the use of genetic engineering in agriculture, to be announced during the course.nnPrerequisites: One course in biology and one course in economics are suggested. Completion of "Feeding Nine Billion" and "The World Food Economy" classes would also be helpful, as would a class in genetics, but there are no strict course requirements.

EARTHSYS 106D. New meat: The Science Behind Scalable Alternatives to Animal Products. 2 Units.
Plant-based meat products and the technologies used to produce them have increased in complexity from tofu (~200 BC) and wheat gluten-based meat replacements (6th century AD) to the Beyond Burger and the Impossible Burger (both 2016), which use mechanically extracted plant proteins and genetically engineered yeast producing soy leghemoglobin, respectively. This course will cover the scientific challenges and processes used to create convincing and marketable plant-based and clean meats, including the biological and chemical processes used to produce plant-based meat and clean meat; the environmental and economic drivers behind the market for meat replacements; and the dietary roles of plant- and animal-based proteins. This course is intended for undergraduates interested in learning about the technical and scientific developments involved in the production of clean and plant-based meat. Students should be familiar with introductory biology and chemistry.

EARTHSYS 107. Control of Nature. 3 Units.
Think controlling the earth's climate is science fiction? It is when you watch Snowpiercer or Dune, but scientists are already devising geoengineering schemes to slow climate change. Will we ever resurrect the woolly mammoth or even a T. Rex (think Jurassic Park)? Based on current research, that day will come in your lifetime. Who gets to decide what species to save? And more generally, what scientific and ethical principles should guide our decisions to control nature? In this course, we will examine the science behind ways that people alter and engineer the earth, critically examining the positive and negative consequences. We'll explore these issues first through popular movies and books and then, more substantively, in scientific research.
Same as: ESS 107

EARTHSYS 110. Introduction to the Foundations of Contemporary Geophysics. 3 Units.
Introduction to the foundations of contemporary geophysics. Topics drawn from broad themes in: whole Earth geodynamics, geohazards, natural resources, and environment. In each case the focus is on how the interpretation of a variety of geophysical measurements (e.g., gravity, seismology, heat flow, electromagnetics, and remote sensing) can be used to provide fundamental insight into the behavior of the Earth. The course will include a weekend field trip. Prerequisite: CME 100 or MATH 51, or co-registration in either.
Same as: GEOPHYS 110

EARTHSYS 111. Biology and Global Change. 4 Units.
The biological causes and consequences of anthropogenic and natural changes in the atmosphere, oceans, and terrestrial and freshwater ecosystems. Topics: glacial cycles and marine circulation, greenhouse gases and climate change, tropical deforestation and species extinctions, and human population growth and resource use. Prerequisite: Biology or Human Biology core or BIO 81 or graduate standing.
Same as: BIO 117, EARTHSYS 217, ESS 111

EARTHSYS 112. Human Society and Environmental Change. 4 Units.
Interdisciplinary approaches to understanding human-environment interactions with a focus on economics, policy, culture, history, and the role of the state. Prerequisite: ECON 1.
Same as: EARTHSYS 212, ESS 112, HISTORY 103D

EARTHSYS 113. Earthquakes and Volcanoes. 3 Units.
Is the "Big One" overdue in California? What kind of damage would that cause? What can we do to reduce the impact of such hazards in urban environments? Does "fracking" cause earthquakes and are we at risk? Is the United States vulnerable to a giant tsunami? The geologic record contains evidence of volcanic super eruptions throughout Earth's history. What causes these gigantic explosive eruptions, and can they be predicted in the future? This course will address these and related issues. For non-majors and potential Earth scientists. No prerequisites. More information at: https://stanford.box.com/s/zr8ar28efmuo5wtlj6gj2jbxle76r4lu.
Same as: GEOPHYS 90

EARTHSYS 114. Global Change and Emerging Infectious Disease. 4-5 Units.
The changing epidemiological environment. How human-induced environmental changes, such as global warming, deforestation and land-use conversion, urbanization, international commerce, and human migration, are altering the ecology of infectious disease transmission, and promoting their re-emergence as a global public health threat. Case studies of malaria, cholera, hantavirus, plague, and HIV.
Same as: EARTHSYS 214, ESS 213, HUMBIO 114

EARTHSYS 115. Wetlands Ecology of the Pantanal Prefield Seminar. 2-3 Units.
This seminar will prepare students for their overseas field experience in the Pantanal, Brazil, the largest wetland in the world, studying wetlands ecology and conservation in situ. Students will give presentations on specific aspects of the Pantanal and lay the groundwork for the presentations they will be giving during the field seminar where access to the internet and to other scholarly resources will be quite limited. Additional topics include: logistics, health and safety, cultural sensitivity, geography and politics, and basic language skills; also, post-field issues such as reverse culture shock, and ways in which participants can consolidate and build up their abroad experiences after they return to campus. Students will have the opportunity to participate in a pilot study aimed at developing a series of innovative online curriculum based upon their field experience.

EARTHSYS 115N. Desert Biogeography of Namibia Prefield Seminar. 3 Units.
Desert environments make up a third of the land areas on Earth, ranging from the hottest to the coldest environments. Aridity leads to the development of unique adaptations among the organisms that inhabit them. Climate change and other processes of desertification as well as increasing human demand for habitable and cultivatable areas have resulting in increasing need to better understand these systems. Namibia is a model system for studying these processes and includes the Sossuvlei (Sand Sea) World Heritable Site. This seminar will prepare students for their overseas field experience in Namibia. The seminar will provide an introduction to desert biogeography and culture, using Namibia as a case study. During the seminar, students will each give two presentations on aspects of desert biogeography and ecology, specific organisms and their adaptations to arid environments, cultural adaptations of indigenous peoples and immigrants, ecological threats and conservation efforts, and/or national and international policy towards deserts. Additional assignments include a comprehensive dossier and a final exam. Students will also carry out background research for the presentations they will be giving during the field seminar where access to the internet and to other scholarly resources will be limited. In addition, we will cover logistics, health and safety, cultural sensitivity, geography, and politics. We will deal with post-field issues such as reverse culture shock, and ways in which participants can consolidate and build up their abroad experiences after they return to campus.
Same as: AFRICAST 114N

EARTHSYS 115T. Island Biogeography of Tasmania Prefield Seminar. 3 Units.
Islands are natural laboratories for studying a wide variety of subjects including biological diversity, cultural diversity, epidemiology, geology, climate change, conservation, and evolution. This field seminar focuses on Island Biogeography in one of the most extraordinary and well-preserved ecosystems in the world: Tasmania. Tasmanian devils, wombats, and wallabies ¿ the names conjure up images of an exotic faraway place, a place to appreciate the incredibly diversity of life and how such striking forms of life came to be. This course will prepare students for their overseas seminar in Tasmania. Students will give presentations on specific aspects of the Tasmania and will lay the groundwork for the presentations they will be giving during the field seminar where access to the internet and to other scholarly resources will be quite limited. Additional topics to be addressed include: logistics, health and safety, group dynamics, cultural sensitivity, history, and politics. We will also address post-field issues such as reverse culture shock, and ways to consolidate and build up abroad experiences after students return to campus.

EARTHSYS 116. Ecology of the Hawaiian Islands. 4 Units.
Terrestrial and marine ecology and conservation biology of the Hawaiian Archipelago. Taught in the field in Hawaii as part of quarter-long sequence of courses including Earth Sciences and Anthropology. Topics include ecological succession, plant-soil interactions, conservation biology, biological invasions and ecosystem consequences, and coral reef ecology. Restricted to students accepted into the Earth Systems of Hawaii Program.
Same as: BIO 116

EARTHSYS 117. Earth Sciences of the Hawaiian Islands. 4 Units.
Progression from volcanic processes through rock weathering and soil-ecosystem development to landscape evolution. The course starts with an investigation of volcanic processes, including the volcano structure, origin of magmas, physical-chemical factors of eruptions. Factors controlling rock weathering and soil development, including depth and nutrient levels impacting plant ecosystems, are explored next. Geomorphic processes of landscape evolution including erosion rates, tectonic/volcanic activity, and hillslope stability conclude the course. Methods for monitoring and predicting eruptions, defining spatial changes in landform, landform stability, soil production rates, and measuring biogeochemical processes are covered throughout the course. This course is restricted to students accepted into the Earth Systems of Hawaii Program.
Same as: EARTH 117, ESS 117

EARTHSYS 118. Heritage, Environment, and Sovereignty in Hawaii. 4 Units.
This course explores the cultural, political economic, and environmental status of contemporary Hawaiians. What sorts of sustainable economic and environmental systems did Hawaiians use in prehistory? How was colonization of the Hawaiian Islands informed and shaped by American economic interests and the nascent imperialsm of the early 20th centrury? How was sovereignty and Native Hawaiian identity been shaped by these forces? How has tourism and the leisure industry affected the natural environment? This course uses archaeological methods, ethnohistorical sources, and historical analysis in an exploration of contemporary Hawaiian social economic and political life.
Same as: CSRE 118E, NATIVEAM 118

EARTHSYS 119. Will Work for Food. 1 Unit.
This is a speaker series class featuring highly successful innovators in the food system. Featured speakers will talk in an intimate, conversational manner about their current work, as well as about their successes, failures, and learnings along the way. Additional information can be found here: http://feedcollaborative.org/speaker-series/.
Same as: EARTHSYS 219

EARTHSYS 121. Building a Sustainable Society: New Approaches for Integrating Human and Environmental Priorities. 3 Units.
"Building a Sustainable Society: New approaches for integrating human and environmental priorities" draws on economics, natural resources management, sociology and leadership science to examine theoretical frameworks and diverse case studies that illustrate challenges as well as effective strategies in building a sustainable society where human beings and the natural environment thrive. Themes include collaborative consumption, the sharing economy, worker-owned cooperatives, community-corporate partnerships, cradle to cradle design, social entrepreneurship, impact investing, "beyond GDP", and transformative leadership. Critical perspectives, lectures and student-led discussions guide analysis of innovations within public, private and civic sectors globally. Students explore their personal values and motivations and develop their potential to become transformative leaders.

EARTHSYS 122. Evolution of Marine Ecosystems. 3-4 Units.
Life originally evolved in the ocean. When, why, and how did the major transitions occur in the history of marine life? What triggered the rapid evolution and diversification of animals in the Cambrian, after more than 3.5 billion years of Earth's history? What caused Earth's major mass extinction events? How do ancient extinction events compare to current threats to marine ecosystems? How has the evolution of primary producers impacted animals, and how has animal evolution impacted primary producers? In this course, we will review the latest evidence regarding these major questions in the history of marine ecosystems. We will develop familiarity with the most common groups of marine animal fossils. We will also conduct original analyses of paleontological data, developing skills both in the framing and testing of scientific hypotheses and in data analysis and presentation.
Same as: BIO 119, GEOLSCI 123, GEOLSCI 223B

EARTHSYS 123. Asian Americans and Environmental Justice. 3-5 Units.
One central tenet of the environmental justice movement is centering the leadership of frontline communities. Unfortunately, the struggles of Asian Americans on the frontlines of corporate environmental pollution and extraction are less visible and less well-known. In this course, we will explore the Asian American voices that have contributed to the development of the environmental justice movement and the leadership that is shaping the future of this movement.nThis course is designed to provide students with education about the history of the environmental justice movement, the future being envisioned, and the strategies that are needed to get to the vision. It will draw on lectures, readings, guest presentations, case studies, and the instructor's more than 15 years of experience with organizing and social justice campaigns. Students will learn about the principles guiding the environmental justice movement; the vision and framework of how we achieve a just transition to a regenerative economy; the process of organizing and campaign work to advance a community agenda; and skills in collecting, analyzing, and communicating information.
Same as: ASNAMST 123

EARTHSYS 123A. Biosphere-Atmosphere Interactions. 3-4 Units.
How do ecosystems respond to climate, and how do ecosystems influence climate? Covers the role of the terrestrial land surface in earth's climate system, including among others photosynthesis, transpiration, greenhouse gasses, radiation, and atmospheric water vapor. For each of these topics, attention is paid to both the underlying processes and how they can be mathematically represented in earth system models. Instruments and techniques used to measure these processes are also discussed, and, where appropriate, demonstrated.
Same as: EARTHSYS 223, ESS 123, ESS 223

EARTHSYS 124. Measurements in Earth Systems. 3-4 Units.
A classroom, laboratory, and field class designed to provide students familiarity with techniques and instrumentation used to track biological, chemical, and physical processes operating in earth systems, encompassing upland, aquatic, estuarine, and marine environments. Topics include gas and water flux measurement, nutrient and isotopic analysis, soil and water chemistry determination. Students will develop and test hypotheses, provide scientific evidence and analysis, culminating in a final presentation.
Same as: ESS 212

EARTHSYS 125. Shades of Green: Redesigning and Rethinking the Environmental Justice Movements. 3-5 Units.
Historically, discussions of race, ethnicity, culture, and equity in the environment have been relegated to the environmental justice movement, which often focuses on urban environmental degradation and remains separated from other environmental movements. This course will seek to break out of this limiting discussion. We will explore access to outdoor spaces, definitions of wilderness, who is and isn't included in environmental organizations, gender and the outdoors, how colonialism has influenced ways of knowing, and the future of climate change. The course will also have a design thinking community partnership project. Students will work with partner organizations to problem-solve around issues of access and diversity. We value a diversity of experiences and epistemological beliefs, and therefore undergraduates and graduate students from all disciplines are welcome.
Same as: CSRE 125E, EARTHSYS 225, URBANST 125

EARTHSYS 126. Perspectives in International Development. 3 Units.
In this course, we explore the contested nature of development as a concept, goal, intervention, project, and policy. Because development is often associated with ideas surrounding poverty and well-being it is used as a tool by government agencies, multilateral organizations, and non-governmental organizations to achieve livelihood improvement and biodiversity/natural resource conservation. Development projects have the potential to achieve goals that are socially, ecologically, and economically focused while providing a just distribution of benefits. What does ¿development¿ really mean? What does it include (and not include)? And who? When (under what conditions) does development work? How do we measure? Who decides? Who benefits from development, and who pays the costs? We will try to answer these questions and more like them, each week exploring themes related to development while drawing from various disciplines and contexts.

EARTHSYS 128. Evolution of Terrestrial Ecosystems. 4 Units.
The what, when, where, and how do we know it regarding life on land through time. Fossil plants, fungi, invertebrates, and vertebrates (yes, dinosaurs) are all covered, including how all of those components interact with each other and with changing climates, continental drift, atmospheric composition, and environmental perturbations like glaciation and mass extinction. The course involves both lecture and lab components. Graduate students registering at the 200-level are expected to write a term paper, but can opt out of some labs where appropriate.
Same as: BIO 148, BIO 228, GEOLSCI 128, GEOLSCI 228

EARTHSYS 130. Designing and Evaluating Community Engagement Programs for Social and Environmental Change. 3 Units.
Non-profit organizations seeking to achieve social and environmental change often run outreach and education programs to engage community members in their cause. Effective application of social science theory and methods may improve the design and evaluation of such community engagement programs. In this class, we partner with environmental and social justice organizations in the Bay Area to explore two questions: 1) How can recent findings from the social sciences be applied to design more effective community engagement programs ? 2) How can we rigorously evaluate outreach and education programs to ensure they are achieving the desired objectives? The course will include an overview of key theories from psychology, sociology, and education, field trips to partnering organizations, and a term-long community-engaged research project focused on designing and/or evaluating a local outreach or educational program that is meant to achieve social and environmental change.
Same as: ENVRES 201

EARTHSYS 130A. Ecosystems of California. 4 Units.
California is home to a huge diversity of ecosystem types and processes. This course provides an introduction to the natural history, systematics, and ecosystem ecology of California ecosystems, based on a combination of lectures, student-led projects, and weekend field trips. Ecosystems to be explored will range from coasts to mountains and from desert to wetlands. Requirements include three essays and participation in three field trips (of six options).
Same as: BIO 130

EARTHSYS 131. Pathways in Sustainability Careers. 1 Unit.
Interactive, seminar-style sessions expose students to diverse career pathways in sustainability. Professionals from a variety of careers discuss their work, their career development and decision-points in their career pathways, as well as life style aspects of their choices.
Same as: EARTH 131

EARTHSYS 132. Evolution of Earth Systems. 4 Units.
This course examines biogeochemical cycles and how they developed through the interaction between the atmosphere, hydrosphere, biosphere, and lithosphere. Emphasis is on the long-term carbon cycle and how it is connected to other biogeochemical cycles on Earth. The course consists of lectures, discussion of research papers, and quantitative modeling of biogeochemical cycles. Students produce a model on some aspect of the cycles discussed in this course. Grades based on class interaction, student presentations, and the modeling project.
Same as: EARTHSYS 232, ESS 132, ESS 232, GEOLSCI 132, GEOLSCI 232

EARTHSYS 133. Social Enterprise Workshop. 4 Units.
Social Enterprise Workshop: A team based class to design solutions to social issues. In the class students will identify issues they are interested in, such as housing, food, the environment, or college access. They will join teams of like-minded students. Working under the guidance of an experienced social entrepreneur, together they will develop a solution to one part of their issue and write a business plan for that solution. The class will also feature guests who are leaders in the field of social entrepreneurship who will share their stories and help with the business plans. The business plan exercise can be used for both nonprofits and for-profits. Previous students have started successful organizations and raised significant funds based on the business plans developed in this class. There are no prerequisites, and students do not need to have an idea for a social enterprise to join the class. Enrollment limited to 20. May be repeated for credit.
Same as: URBANST 133

EARTHSYS 135B. Waste Politics: Contesting Toxicity, Value, and Power. 3 Units.
Waste is increasingly central as an object and medium of political contestation in the contemporary world, from struggles over garbage, labor, and dignity in Senegal; to explosive remnants of war acting as rogue infrastructure in the Korean demilitarized zone. In response, waste has also become a productive concept in the environmental humanities and humanistic social sciences. In this course we will read a selection of foundational texts focused on waste, many of which draw on case studies from different parts of the world. The case of China will be emphasized, however, since China has emerged in the last few decades as a center not only of global industrial production, but also for processing the world¿s waste, contesting pollution, and fighting for environmental justice. By pairing key theoretical texts with texts dealing with waste-related issues in China and elsewhere, we will ultimately ask how contemporary global waste politics disrupts western understandings of waste, recycling, value, and more.
Same as: ANTHRO 135B, ANTHRO 235B

EARTHSYS 136. The Ethics of Stewardship. 2-3 Units.
What responsibilities do humans have to nonhuman nature and future generations? How are human communities and individuals shaped by their relationships with the natural world? What are the social, political, and moral ramifications of drawing sustenance and wealth from natural resources? Whether we realize it or not, we grapple with such questions every time we turn on the tap, fuel up cars, or eat meals -and they are key to addressing issues like global climate change and environmental justice. In this class, we consider several perspectives on this ethical question of stewardship: the role of humans in the global environment. In addition to reading written work and speaking with land stewards, we will practice stewardship at the Stanford Educational Farm. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.
Same as: EARTHSYS 236

EARTHSYS 137. Concepts and Analytic Skills for the Social Sector. 4 Units.
How to develop and grow innovative not-for-profit organizations and for-profit enterprises which have the primary goal of solving social and environmental problems. Topics include organizational mission, strategy, market/user analysis, communications, funding, recruitment and impact evaluation. Perspectives from the field of social entrepreneurship, design thinking and social change organizing. Opportunities and limits of using methods from the for-profit sector to meet social goals. Focus is on integrating theory with practical applications, including several case exercises and simulations.One-day practicum where students advise an actual social impact organization. Enrollment limited to 20. Prerequisite:consent of instructor. Email lalitvak@stanford.edu.
Same as: URBANST 132

EARTHSYS 138. International Urbanization Seminar: Cross-Cultural Collaboration for Sustainable Urban Development. 4-5 Units.
(formerly IPS 274) Comparative approach to sustainable cities, with focus on international practices and applicability to China. Tradeoffs regarding land use, infrastructure, energy and water, and the need to balance economic vitality, environmental quality, cultural heritage, and social equity. Student teams collaborate with Chinese faculty and students partners to support urban sustainability projects. Limited enrollment via application; see internationalurbanization.org for details. Prerequisites: consent of the instructor(s).
Same as: CEE 126, INTLPOL 274, URBANST 145

EARTHSYS 139. Ecosystem Services: Frontiers in the Science of Valuing Nature. 3 Units.
This course explores the science of valuing nature, beginning with its historical origins and then a primary focus on its recent development and frontiers. The principal aim of the course is to enable new research and real-world applications of InVEST (Integrated Valuation of Ecosystem Services and Tradeoffs) tools and approaches. We will discuss the interconnections between people and nature and key research frontiers, such as in the realms of biodiversity, resilience, human health, poverty alleviation, and sustainable development. The science we¿ll explore is in the service of decisions, and we will use examples from real life to illustrate why this science is so critical to informing why, where, how, and how much people need nature. Prerequisite. Basic to intermediate GIS skills are required (including working with raster, vector and tabular data; loading and editing rasters, shapefiles, and tables into a GIS; understanding coordinate systems; and performing basic raster math).
Same as: BIO 138, BIO 238, EARTHSYS 239

EARTHSYS 141. Remote Sensing of the Oceans. 3-4 Units.
How to observe and interpret physical and biological changes in the oceans using satellite technologies. Topics: principles of satellite remote sensing, classes of satellite remote sensors, converting radiometric data into biological and physical quantities, sensor calibration and validation, interpreting large-scale oceanographic features.
Same as: EARTHSYS 241, ESS 141, ESS 241, GEOPHYS 141

EARTHSYS 142. Remote Sensing of Land. 4 Units.
The use of satellite remote sensing to monitor land use and land cover, with emphasis on terrestrial changes. Topics include pre-processing data, biophysical properties of vegetation observable by satellite, accuracy assessment of maps derived from remote sensing, and methodologies to detect changes such as urbanization, deforestation, vegetation health, and wildfires.
Same as: EARTHSYS 242, ESS 162, ESS 262

EARTHSYS 143. Molecular Geomicrobiology Laboratory. 3-4 Units.
In this course, students will be studying the biosynthesis of cyclic lipid biomarkers, molecules that are produced by modern microbes that can be preserved in rocks that are over a billion years old and which geologist use as molecular fossils. Students will be tasked with identifying potential biomarker lipid synthesis genes in environmental genomic databases, expressing those genes in a model bacterial expression system in the lab, and then analyzing the lipid products that are produced. The overall goal is for students to experience the scientific research process including generating hypotheses, testing these hypotheses in laboratory experiments, and communicating their results through a publication style paper. Prerequisites: BIO83 and CHEM 121 or permission of the instructor.
Same as: BIO 142, ESS 143, ESS 243

EARTHSYS 144. Fundamentals of Geographic Information Science (GIS). 1-4 Unit.
"Everything is somewhere, and that somewhere matters." The rapid growth and maturity of spatial data technologies over the past decade represent a paradigm shift in the applied use of location data from high-level overviews of administrative interests, to highly personalized location-based services that place the individual at the center of the map, at all times. The use of spatial data and related technology continues to grow in fields ranging from environmental sciences to epidemiology to market prediction. This course will present an overview of current approaches to the use of spatial data and its creation, capture, management, analysis and presentation, in a research context. Topics will include modeling of geographic objects and associated data, modeling of geographic space and the conceptual foundations of "spatial thinking," field data collection, basic spatial statistical analysis, remote sensing & the use of satellite-based imagery, "Big Data" and machine learning approaches to spatial data, and cartographic design and presentation including the use of web-based "Storymap" platforms.n nThe course will consist of weekly lectures, guest speakers, computer lab assignments and an individual final project requirement. nnThis course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit. In AY 2020-21, a letter grade or `CR' grade satisfies the Ways requirement.
Same as: ESS 164

EARTHSYS 146A. Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation. 3 Units.
Introduction to the physics governing the circulation of the atmosphere and ocean and their control on climate with emphasis on the atmospheric circulation. Topics include the global energy balance, the greenhouse effect, the vertical and meridional structure of the atmosphere, dry and moist convection, the equations of motion for the atmosphere and ocean, including the effects of rotation, and the poleward transport of heat by the large-scale atmospheric circulation and storm systems. Prerequisites: MATH 51 or CME100 and PHYSICS 41.
Same as: CEE 161I, CEE 261I, ESS 246A

EARTHSYS 146B. Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation. 3 Units.
Introduction to the physics governing the circulation of the atmosphere and ocean and their control on climate with emphasis on the large-scale ocean circulation. This course will give an overview of the structure and dynamics of the major ocean current systems that contribute to the meridional overturning circulation, the transport of heat, salt, and biogeochemical tracers, and the regulation of climate. Topics include the tropical ocean circulation, the wind-driven gyres and western boundary currents, the thermohaline circulation, the Antarctic Circumpolar Current, water mass formation, atmosphere-ocean coupling, and climate variability. Prerequisites: MATH 51 or CME100; and PHYSICS 41; and a course that introduces the equations of fluid motion (e.g. ESS 246A, ESS 148, or CEE 101B).
Same as: CEE 162I, CEE 262I, ESS 246B

EARTHSYS 147. Ecosystem Ecology and Biogeochemistry. 3 Units.
An introduction to ecosystem ecology and terrestrial biogeochemistry. This course will focus on the dynamics of carbon and other biologically essential elements in the Earth System, on spatial scales from local to global. Prerequisites: Biology 117, Earth Systems 111, or graduate standing.
Same as: BIO 147, BIO 240, EARTHSYS 247

EARTHSYS 148. Grow it, Cook it, Eat it. An Experiential Exploration of How and Why We Eat What We Eat. 3 Units.
This course provides an introductory exploration of the social, cultural, and economic forces that influence contemporary human diets. Through the combination of interrelated lectures by expert practitioners and hands-on experience planting, tending, harvesting, cooking, and eating food from Stanford's dining hall gardens, students will learn to think critically about modern agricultural practices and the relationship between cuisine and human and ecological health outcomes. Students will also learn and apply basic practices of human-centered design to develop simple frameworks for understanding various eating behaviors in Stanford¿s dining halls and to develop and test hypotheses for how R&DE Stanford Dining might influence eating behaviors to effect better health outcomes for people and the planet. This class, which is offered through the FEED Collaborative in the School of Earth, Energy and Environmental Sciences, requires an application. For more information about the FEED Collaborative, application procedures and deadlines, and other classes we teach, please visit our website at http://feedcollaborative.org.

EARTHSYS 149. Wild Writing. 3 Units.
What is wilderness and why does it matter? In this course we will interrogate answers to this question articulated by influential and diverse American environmental thinkers of the 19th, 20th, and 21st centuries, who through their writing transformed public perceptions of wilderness and inspired such actions as the founding of the National Park System, the passage of the Wilderness Act and the Clean Air and Water Acts, the establishment of the Environmental Protection Agency, and the birth of the environmental and climate justice movements. Students will also develop their own responses to the question of what is wilderness and why it matters through a series of writing exercises that integrate personal narrative, wilderness experience, and environmental scholarship, culminating in a ~3000 word narrative nonfiction essay. This course will provide students with knowledge, tools, experience, and skills that will empower them to become more persuasive environmental storytellers and advocates.nnIf you are interested in signing up for the course, complete this pre-registration form https://stanforduniversity.qualtrics.com/jfe/form/SV_9XqZeZs036WIvop.
Same as: EARTHSYS 249

EARTHSYS 150B. Fire: Social and Ecological Contexts of Conflagration. 3 Units.
Over 1 million acres burned from California wildland fires in 2018, yet conservative estimates suggest that four times as many acres burned annually in California preceding European colonialism. In this course we will explore how climate, land management, urban development, and human social institutions contribute to contrasts in wild and prescribed (intentional anthropogenic) fire patterns worldwide. We will investigate the socio-ecological values and harms associated with different fire and land-use policies and practices, ranging from Indigenous and small-scale contexts, conservation projects, and large-scale fire suppression efforts.
Same as: ANTHRO 150B

EARTHSYS 151. Biological Oceanography. 3-4 Units.
Required for Earth Systems students in the oceans track. Interdisciplinary look at how oceanic environments control the form and function of marine life. Topics include distributions of planktonic production and abundance, nutrient cycling, the role of ocean biology in the climate system, expected effects of climate changes on ocean biology. Local weekend field trips. Designed to be taken concurrently with Marine Chemistry (ESS/EARTHSYS 152/252). Prerequisites: BIO 43 and ESS 8 or equivalent.
Same as: EARTHSYS 251, ESS 151, ESS 251

EARTHSYS 152. Marine Chemistry. 3-4 Units.
Introduction to the interdisciplinary knowledge and skills required to critically evaluate problems in marine chemistry and related disciplines. Physical, chemical, and biological processes that determine the chemical composition of seawater. Air-sea gas exchange, carbonate chemistry, and chemical equilibria, nutrient and trace element cycling, particle reactivity, sediment chemistry, and diagenesis. Examination of chemical tracers of mixing and circulation and feedbacks of ocean processes on atmospheric chemistry and climate. Designed to be taken concurrently with Biological Oceanography (ESS/EARTHSYS 151/251).
Same as: EARTHSYS 252, ESS 152, ESS 252

EARTHSYS 154. Intermediate Writing: Communicating Climate Change: Navigating the Stories from the Frontlines. 4 Units.
In the next two decades floods, droughts and famine caused by climate change will displace more than 250 million people around the world. In this course students will develop an increased understanding of how different stakeholders including scientists, aid organizations, locals, policy makers, activists, and media professionals communicate the climate change crisis. They will select a site experiencing the devastating effects and research the voices telling the stories of those sites and the audiences who are (or are not) listening. Students might want to investigate drought-ridden areas such as the Central Valley of California or Darfur, Sudan; Alpine glaciers melting in the Alps or in Alaska; the increasingly flooded Pacific islands; the hurricane ravaged Gulf Coast, among many others. Data from various stakeholders will be analyzed and synthesized for a magazine length article designed to bring attention to a region and/or issue that has previously been neglected. Students will write and submit their article for publication.nnFor students who have completed the first two levels of the writing requirement and want further work in developing writing abilities, especially within discipline-specific contexts and nonfiction genres. Individual conferences with instructor and peer workshops. Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For more information, see https://undergrad.stanford.edu/programs/pwr/explore/notation-science-writing.
Same as: PWR 91EP

EARTHSYS 155. Science of Soils. 3-4 Units.
Physical, chemical, and biological processes within soil systems. Emphasis is on factors governing nutrient availability, plant growth and production, land-resource management, and pollution within soils. How to classify soils and assess nutrient cycling and contaminant fate. Recommended: introductory chemistry and biology.
Same as: ESS 155

EARTHSYS 157. Stanford Science Podcast. 3 Units.
In this course, students will explore how podcasts can be used as a tool for effective science communication. Through a series of workshops and guest speakers, students in this course will learn the necessary journalistic and technical skills to produce high quality podcast episodes, from interviewing and storytelling to audio editing and digital publishing. Podcast episodes will highlight the cutting edge research being done at Stanford, and students will choose specific stories based on their own interests, from earth sciences to public health to big data. Final podcast episodes will be published on iTunes.
Same as: PWR 91JS

EARTHSYS 158. Geomicrobiology. 3 Units.
How microorganisms shape the geochemistry of the Earth's crust including oceans, lakes, estuaries, subsurface environments, sediments, soils, mineral deposits, and rocks. Topics include mineral formation and dissolution; biogeochemical cycling of elements (carbon, nitrogen, sulfur, and metals); geochemical and mineralogical controls on microbial activity, diversity, and evolution; life in extreme environments; and the application of new techniques to geomicrobial systems. Recommended: introductory chemistry and microbiology such as CEE 274A.
Same as: EARTHSYS 258, ESS 158, ESS 258

EARTHSYS 159. Economic, Legal, and Political Analysis of Climate-Change Policy. 5 Units.
This course will advance students understanding of economic, legal, and political approaches to avoiding or managing the problem of global climate change. Theoretical contributions as well as empirical analyses will be considered. It will address economic issues, legal constraints, and political challenges associated with various emissions-reduction and adaptation strategies, and it will consider policy efforts at the local, national, and international levels. Specific topics include: interactions among overlapping climate policies, the strengths and weaknesses of alternative policy instruments, trade-offs among alternative policy objectives, and decision making under uncertainty. Prerequisites: Econ 50 or its equivalent.
Same as: ECON 159, ECON 209, PUBLPOL 159

EARTHSYS 160. Sustainable Cities. 4-5 Units.
Community-engaged learning course that exposes students to sustainability concepts and urban planning as a tool for determining sustainable outcomes in the Bay Area. The focus will be on land use and transportation planning to housing and employment patterns, mobility, public health, and social equity. Topics will include government initiatives to counteract urban sprawl and promote smart growth and livability, political realities of organizing and building coalitions around sustainability goals, and increasing opportunities for low-income and communities of color to achieve sustainability outcomes. Students will participate in remote team-based projects in collaboration with Bay Area community partners. Prerequisites: Consent of the instructor. (Cardinal Course certified by the Haas Center.).
Same as: URBANST 164

EARTHSYS 162. Data for Sustainable Development. 3-5 Units.
The sustainable development goals (SDGs) encompass many important aspects of human and ecosystem well-being that are traditionally difficult to measure. This project-based course will focus on ways to use inexpensive, unconventional data streams to measure outcomes relevant to SDGs, including poverty, hunger, health, governance, and economic activity. Students will apply machine learning techniques to various projects outlined at the beginning of the quarter. The main learning goals are to gain experience conducting and communicating original research. Prior knowledge of machine learning techniques, such as from CS 221, CS 229, CS 231N, STATS 202, or STATS 216 is required. Open to both undergraduate and graduate students. Enrollment limited to 24. Students must apply for the class by filling out the form at https://goo.gl/forms/9LSZF7lPkHadix5D3. A permission code will be given to admitted students to register for the class.
Same as: CS 325B, EARTHSYS 262

EARTHSYS 163. Tribal Economic Development and Sustainability. 3-5 Units.
Native Americans, Alaska Natives and Inuit are disproportionately on the forefront of climate change and are being forced to adapt to climate change now. One of the biggest challenges Indigenous Nations face is building sustainable businesses that respect the environment while providing for current and future generations. This course will survey environmental, regulatory, political and financing issues associated with economic development on tribal, Alaska Native and Inuit lands. We will examine Indigenous business success stories as well as an overview of major challenges to building sustainable businesses. We will engage with Indigenous leaders and industry experts to discuss the challenges of building businesses that provide jobs and economic opportunities for Indigenous communities now while also taking into account the responsibilities Indigenous leadership has to future generations.
Same as: NATIVEAM 162

EARTHSYS 164. Introduction to Physical Oceanography. 4 Units.
The dynamic basis of oceanography. Topics: physical environment; conservation equations for salt, heat, and momentum; geostrophic flows; wind-driven flows; the Gulf Stream; equatorial dynamics and ENSO; thermohaline circulation of the deep oceans; and tides. Prerequisite: PHYSICS 41.
Same as: CEE 162D, CEE 262D, ESS 148

EARTHSYS 176. Open Space Management Practicum. 4-5 Units.
The unique patchwork of urban-to-rural land uses, property ownership, and ecosystems in our region poses numerous challenges and opportunities for regional conservation and environmental stewardship. Students in this class will address a particular challenge through a faculty-mentored research project engaged with the East Bay Regional Parks District. Grass Roots Ecology or the Amah Mutsun Land Trust that focuses on open space management. By focusing on a project driven by the needs of these organizations and carried out through engagement with the community, and with thorough reflection, study, and discussion about the roles of scientific, economic, and policy research in local-scale environmental decision-making, students will explore the underlying challenges and complexities of what it means to actually do community-engaged research for conservation and open space preservation in the real world. As such, this course will provide students with skills and experience in research design in conservation biology and ecology, community and stakeholder engagement, land use policy and planning, and the practical aspects of land and environmental management.nnAll students must complete the course application and turn it into Rachel Engstrand (rce212@stanford.edu) and Briana Swette (bswette@stanford.edu) by email. To receive priority consideration and an enrollment code, please submit the application by Monday September 10th, 2018. The course application consists of a short paragraph about your background and interest in and preparation for working on a real-world community-engaged earth systems project. The total course enrollment is necessarily limited by the project-based nature of the class.
Same as: EARTHSYS 276

EARTHSYS 176A. Open Space Practicum Independent Study. 1-2 Unit.
Additional practicum units for students intent on continuing their projects from EARTHSYS 176. Students who enroll in 176A must have completed EARTHSYS 176: Open Space Management Practicum, or have consent of the instructors.

EARTHSYS 177C. Specialized Writing and Reporting: Health and Science Journalism. 4-5 Units.
Practical, collaborative, writing-intensive advanced journalistic reporting and writing course in the specific practices and standards of health and science journalism. Science and journalism students learn how to identify and write engaging stories about medicine, global health, science, and related environmental issues; how to assess the quality and relevance of science news; how to cover the health and science beats effectively and efficiently; and how to build bridges between the worlds of journalism and science. Instructed Winter Quarter 2019 by Dr. Seema Yasmin, http://www.seemayasmin.com. nnnLimited enrollment: preference to students enrolled in or considering the Earth Systems Master of Arts, Environmental Communication Program and the Graduate Journalism Program. Prerequisite: EarthSys 191/291, COMM 104w, or consent of instructor. Admission by application only, available from dr.yasmin@stanford.edu (Meets Earth Systems WIM requirement.).
Same as: COMM 177C, COMM 277C, EARTHSYS 277C

EARTHSYS 179S. Seminar: Issues in Environmental Science, Technology and Sustainability. 1-2 Unit.
Invited faculty, researchers and professionals share their insights and perspectives on a broad range of environmental and sustainability issues. Students critique seminar presentations and associated readings.
Same as: CEE 179S, CEE 279S, ESS 179S

EARTHSYS 180. Principles and Practices of Sustainable Agriculture. 3-4 Units.
Field-based training in ecologically sound agricultural practices at the Stanford Community Farm. Weekly lessons, field work, and group projects. Field trips to educational farms in the area. Topics include: soils, composting, irrigation techniques, IPM, basic plant anatomy and physiology, weeds, greenhouse management, and marketing. Application required. Deadline: September 10 for Autumn and March 10 for Spring. nnApplication: https://stanforduniversity.qualtrics.com/jfe/form/SV_244JnBoEP7zs8Dz.
Same as: ESS 280

EARTHSYS 181. Urban Agroecology. 3 Units.
The United Nations estimates that up to 15% of the world's food is produced in and around cities. Urban populations are projected to continue rising and urban agriculture in its many forms has been shown to provide multiple benefits to urban communities. This class will survey urban agriculture around the world while training you in small-scale food production practices. The emphasis will be on ecological approaches to the design and stewardship of urban farms and gardens. nnnIf permitted, given the challenges of COVID-19, the course will be taught in-person, outdoors at the Stanford Educational Farm. nn nThis is a 3-unit, Earth Systems practicum course that meets on Wednesdays from noon to 3pm. Space is limited and applications are due by Friday 8/28. Students will be notified if they are admitted to the course by 9/4. For the course application go to: https://stanforduniversity.qualtrics.com/jfe/form/SV_86udp8aEuWUCnNH.
Same as: EARTHSYS 281, ESS 181, ESS 281, URBANST 181

EARTHSYS 182. Designing Educational Gardens. 2 Units.
A project-based course emphasizing 'ways of doing 's sustainable agricultural systems based at the new Stanford Educational Farm. Students will work individually and in small groups on the design of a new educational garden and related programs for the Stanford Educational Farm. The class will meet on 6 Fridays over the course of winter quarter. Class meetings will include an introduction to designing learning gardens and affiliated programs, 3 field trips to exemplary educational gardens in the bay area that will include tours and discussions with garden educators, and work sessions for student projects. By application only.
Same as: ESS 282

EARTHSYS 182A. Ecological Farm Systems. 1-2 Unit.
An in-person, outdoor, project-based course in sustainable agricultural systems. Students will work individually or in small groups on projects at the Stanford Educational Farm. Potential projects this fall include building educational gardens, orchard establishment and management, and seedling propagation for plant donations for low-income families in partnership with Valley Verde in San Jose. Students are also encouraged to develop their own sustainable agriculture projects based on their interests.nn nnThe class will meet in-person, outdoors at the Stanford Educational Farm. Students will be required to follow farm and University COVID-19 protocols. By application only. The Winter 2021 application can be found here (Deadline Dec. 28): https://stanforduniversity.qualtrics.com/jfe/form/SV_abKbQxC1Q2cCC2h.
Same as: EARTHSYS 282A

EARTHSYS 183. Adaptation. 3 Units.
Adaptation is the process by which organisms or societies become better suited to their environments. In this class, we will explore three distinct but related notions of adaptation. Biological adaptations arise through natural selection, while cultural adaptations arise from a variety of processes, some of which closely resemble natural selection. A newer notion of adaptation has emerged in the context of climate change where adaptation takes on a highly instrumental, and often planned, quality as a response to the negative impacts of environmental change. We will discuss each of these ideas, using their commonalities and subtle differences to develop a broader understanding of the dynamic interplay between people and their environments. Topics covered will include, among others: evolution, natural selection, levels of selection, formal models of cultural evolution, replicator dynamics, resilience, rationality and its limits, complexity, adaptive management.
Same as: ESS 185

EARTHSYS 185. Feeding Nine Billion. 4-5 Units.
Feeding a growing and wealthier population is a huge task, and one with implications for many aspects of society and the environment. There are many tough choices to be made- on fertilizers, groundwater pumping, pesticide use, organics, genetic modification, etc. Unfortunately, many people form strong opinions about these issues before understanding some of the basics of how food is grown, such as how most farmers currently manage their fields, and their reasons for doing so. The goal of this class is to present an overview of global agriculture, and the tradeoffs involved with different practices. Students will develop two key knowledge bases: basic principles of crop ecology and agronomy, and familiarity with the scale of the global food system. The last few weeks of the course will be devoted to building on this knowledge base to evaluate different future directions for agriculture.

EARTHSYS 186. Farm and Garden Environmental Education Practicum. 2 Units.
Farms and gardens provide excellent settings for place-based environmental education that emphasize human ecological relationships and experiential learning. The O'Donohue Family Stanford Educational Farm is the setting to explore the principles and practices of farm and garden-based education in conjunction with the farm's new field trip program for local youth. The course includes readings and reflections on environmental education and emphasis on learning by doing, engaging students in the practice of team teaching. Application required. Deadline: March 14.nnApplication: https://stanforduniversity.qualtrics.com/jfe/form/SV_9SPufdULCh93rbT.
Same as: EARTHSYS 286

EARTHSYS 187. FEED the Change: Redesigning Food Systems. 2-3 Units.
FEED the Change is a project-based course focused on solving real problems in the food system. Targeted at upper-class undergraduates, this course provides an opportunity for students to meet and work with thought-leading innovators, to gain meaningful field experience, and to develop connections with faculty, students, and others working to create impact in the food system. Students in the course will develop creative confidence by learning and using the basic principles and methodologies of human-centered design, storytelling, and media design. Students will also learn basic tools for working effectively in teams and for analyzing complex social systems. FEED the Change is taught at the d.school and is offered through the FEED Collaborative in the School of Earth. This class requires an application. For application information and more information about our work and about past class projects, please visit our website at http://feedcollaborative.org/classes/.

EARTHSYS 187A. The Future of Food & Farming Technology. 1 Unit.
"How are we going to feed X billion people by the year ____?" A historical refrain from corporate agribusiness, academia, national policy makers and, increasingly today, investors and technologists in innovation hotspots like Silicon Valley. But with only 60 global harvests remaining due to soil degradation, the compounding feedback loop between agriculture and climate change, and nearly a billion of our current population starving or undernourished and another billion of them overweight or obese, it begs the question of whether this is the right problem for which our food system should be solving. Some even argue, including the designers of this course, that this question is responsible for the various existential crises we face today.nnThis course will examine the history of agricultural innovation and technology to look for insights as to why our food system has gone so far off the rails. We will utilize the Stanford Educational Farm as a scaled-down model of our agricultural systems, where each student will step into the role of a modern, large scale farmer under simulated conditions. Through gamified scenarios based on real-world challenges faced by farmers, students will gain a deeper understanding of the problems facing our agriculture. Based on this nuanced understanding, students will propose new and novel uses of existing and/or emerging technologies to solve these problems. These ideas will be circulated in the marketplace of your peer farmers, where ideas will either be adopted, modified and built upon, or abandoned. This process will tap into, challenge, and hone your creative problem solving abilities. In the end, we will see who has what it takes to fundamentally shift the course of our food system,nnThis class is for students who are (a) aspiring ag-tech entrepreneurs (b) generally interested in emerging technologies or (c) seeking a deeper understanding of how large scale agriculture works.nnThe application for this course can be found on the d.school¿s website: https://dschool.stanford.edu/classes/nnCourse meets : Saturday May 4th, 10 am to 3pm, Saturday May 11th, 10am to 3pm, Saturday May 25th, 10am to 3pm.

EARTHSYS 188. Social and Environmental Tradeoffs in Climate Decision-Making. 1-2 Unit.
How can we ensure that measures taken to mitigate global climate change don't create larger social and environmental problems? What metrics should be used to compare potential climate solutions beyond cost and technical feasibility, and how should these metrics be weighed against each other? How can modeling efforts and stakeholder engagement be best integrated into climate decision making? What information are we still missing to make fully informed decisions between technologies and policies? Exploration of these questions, alongside other issues related to potential negative externalities of emerging climate solutions. Evaluation of energy, land use, and geoengineering approaches in an integrated context, culminating in a climate stabilization group project.
Same as: EARTHSYS 288

EARTHSYS 190. The Multimedia Story. 2-3 Units.
Stories are how we understand ourselves and the world. This course will teach how to plan, research, report and produce a long-form, rich-media science/environment feature story. Students will work in groups or individually to master the blending of text with data visualization, photos, audio, and video. Teachers are experienced digital journalists at leading national and international publications with a close eye on trends and innovations in online, investigative, and data journalism. nnUsing the landmark New York Times story "Snow Fall" (http://nyti.ms/1eTyf2Y) as a departure point, the course will examine the questions: how do we engage and inform the public around critical environmental topics? nnHow do we explain complex and sometimes hidden factors shaping the future of our world? Students are asked to express interest through this form: http://goo.gl/rDQogB.

EARTHSYS 191. Concepts in Environmental Communication. 3 Units.
Introduction to the history, development, and current state of communication of environmental science and policy to non-specialist audiences. Includes fundamental principles, core competencies, and major challenges of effective environmental communication in the public and policy realms and an overview of the current scope of research and practice in environmental communication. Intended for graduate students and advanced undergraduates, with a background in Earth or environmental science and/or policy studies, or in communication or journalism studies with a specific interest in environmental and science communication. Prerequisite: Earth Systems core (EarthSys 111 and EarthSys 112) or equivalent. (Meets Earth Systems WIM requirement.).
Same as: EARTHSYS 291

EARTHSYS 193. Natural Perspectives: Geology, Environment, and Art. 1 Unit.
Multi-day field trip that combines exploration of regional geology, ecology, and environmental history with guided drawing exercises in the Eastern Sierra Nevada of California. We¿ll visit several sites of geologic and environmental interest, discuss their formation and significance, and use drawing as tool for close observation. Students will gain an understanding of the natural processes shaping California, acquire new skills and techniques for artistic expression, and gain an appreciation for how scientific and aesthetic perspectives complement and enhance one another in the study of nature. No previous scientific or artistic experience is required. Preference for freshmen and sophomores.
If you are interested in signing up for the course, complete this pre-registration form: https://stanforduniversity.qualtrics.com/SE/?SID=SV_9RF2rDopROzwOxf.
Same as: EARTH 193

EARTHSYS 194. Topics in Writing & Rhetoric: Introduction to Environmental Justice: Race, Class, Gender and Place. 4 Units.
This course examines the rhetoric, history and key case studies of environmental justice while encouraging critical and collaborative thinking, reading and researching about diversity in environmental movements within the global community and at Stanford, including the ways race, class and gender have shaped environmental battles still being fought today. We center diverse voices by bringing leaders, particularly from marginalized communities on the frontlines to our classroom to communicate experiences, insights and best practices. Together we will develop and present original research projects which may serve a particular organizational or community need, such as racialized dispossession, toxic pollution and human health, or indigenous land and water rights, among many others. Prerequisite: PWR 2.
Same as: ENVRES 223, PWR 194EP

EARTHSYS 194A. Environmental Justice Colloquium. 1 Unit.
This colloquium brings the voices and vision of leading Environmental Justice (EJ) advocates to the Stanford community, in order to educate, inspire, and transform our understanding of environmental science. Environmental Justice advances a positive vision for policies and actions that fight environmental racism. EJ approaches involve centering the voices and leadership of marginalized communities in 1) ensuring equitable access to environmental benefits, and 2) preventing or mitigating the disproportionate impacts of environmental harms for all communities, regardless of gender, class, race, ethnicity, or other social positions. This colloquium highlights the work of leading EJ thinkers and practitioners, speaking from frontline organizations on a wide range of topics. These topics include acting on toxic exposures and health disparities for community resilience, climate justice and youth action, Indigenous land and water rights, green cities and Afrofuturism, food justice and intersecting social movements, queer ecologies, and more. The colloquium will host a weekly speaker, and final symposium at the end of the quarter. nnThe first meeting for this course will take place during WEEK 3.
Same as: HUMRTS 194A, URBANST 155A

EARTHSYS 196. Implementing Climate Solutions at Scale. 3 Units.
Climate change is the biggest problem humanity has ever faced, and this course will teach students about the means and complexity of solving it. The instructors will guide the students in the application of key data and analysis tools for their final project, which will involve developing integrated plans for eliminating greenhouse gas emissions (100% reductions) by 2050 for a country, state, province, sector, or industry.
Same as: EARTHSYS 296

EARTHSYS 196A. Environmental Justice and Human Rights Lab. 1 Unit.
The Environmental Justice and Human Rights Lab is an intellectual hub and supportive learning community for students engaging in environmental justice and human rights work of any kind. Environmental justice (EJ) advances a positive vision for policies and actions that fight environmental racism, and human rights (HR) center on the notion that all people, by virtue of their existence and regardless of any given status or classification, are equally entitled to fundamental rights and protections. Our semi-structured weekly sessions will foster an open learning environment for students and peer-to-peer learning connections. Sessions will include giving and receiving feedback on capstone or community-based projects, independent research, or other relevant coursework or extracurricular activity. We also welcome students who are new to these topics and would like to learn more. We are open to students of all backgrounds and disciplines at any stage of their research or project work. Following EJ and HR principles, we seek to center local, contextualised knowledge and leadership through ethical research partnerships with community members. To do so, we follow community-based participatory research approaches and decolonizing methodologies. Examples of our work to date include 1) enabling graduate students to effectively bring EJ and HR approaches into dissertation research, 2) supporting campus leaders and directly participating in diversity, equity, and inclusion (DEI) initiatives, and 3) educating and learning from one another about critical EJ and HR scholarship and anti-racist approaches to our work. Lab interests include addressing inequitable impacts of climate change, advancing decolonial approaches to land and water management, promoting food justice, combatting human trafficking and labor exploitation, promoting fair and just immigration policies, and additional EJ and HR research topics. Note that this lab is intended as an open space for engagement. If you are unable to enroll for credit, but would still like to participate, please email humanrights@stanford.edu.
Same as: HUMRTS 196

EARTHSYS 197. Directed Individual Study in Earth Systems. 1-9 Unit.
Under supervision of an Earth Systems faculty member on a subject of mutual interest.

EARTHSYS 198. Seminar on Philosophy, Politics, and the Environment. 1 Unit.
Much public discourse that touches upon the relationship of human society to the natural environment acknowledges the fundamental connection between people and the environment, but avoids or simplifies discussion of broader philosophical and political views of what this relationship is, has been, and ought to be. Expansive conceptual categories of the study of politics, economics, and society, such as capitalism, socialism, democracy, human welfare, and distribution, are often left out entirely, or used quickly and not defined clearly. In thinking big about human society and the natural world, what is ideal, and what is possible? This once-weekly seminar aims to help students develop the breadth and depth of their thinking about the relationship of human society to nature at the level of political, social, and economic philosophy. It will provide an organized setting for the understanding and critical discussion of these abstract but sometimes world-shaping ideas. Particular attention will be paid to the wide range of such views put forth in recent history, the various assumptions built into each view, and to the differing levels of influence and political effectiveness achieved by each. Discussions will be based on a weekly reading from a philosophically oriented work about humanity and the environment, such as a book chapter or a piece of long-form journalism. Grading/credit based on weekly participation and a short reflective paper.
Same as: EARTHSYS 298

EARTHSYS 199. Honors Program in Earth Systems. 1-9 Unit.
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EARTHSYS 200. Environmental Communication in Action: The SAGE Project. 3 Units.
This course is focused on writing about sustainability for a public audience through an ongoing project, SAGE (Sound Advice for a Green Earth), that is published by Stanford Magazine. Students contribute to SAGE, an eco advice column, by choosing, researching, and answering questions about sustainable living submitted by Stanford alumni and the general public. (Meets Earth Systems WIM requirement).

EARTHSYS 201. Editing for Publication. 2 Units.
Most student writing experiences end with a "final" written draft, but that leaves out crucial steps in the publication process. In this course, advanced students take responsibility for final editing and publication of the environmental advice column SAGE, starting with answers researched and written by students in EARTHSYS 200. Topics include developmental editing and project management for the SAGE project, structural editing for overall organization and impact of individual pieces, line editing for clarity and style, and fact checking and copy editing for accuracy and consistency.

EARTHSYS 204. The Water Course. 4 Units.
The Central Valley of California provides a third of the produce grown in the U.S., but recent droughts and increasing demand have raised concerns about both food and water security. The pathway that water takes from rainfall to the irrigation of fields or household taps (¿the water course¿) determines the quantity and quality of the available water. Working with various data sources (measurements made on the ground, in wells, and from satellites) allows us to model the water budget in the valley and explore the recent impacts on freshwater supplies.
Same as: EARTHSYS 104, GEOPHYS 104, GEOPHYS 204

EARTHSYS 205. Food and Community: Food Security, Resilience and Equity. 2-3 Units.
What can communities do to bolster food security, resiliency, and equity in the face of climate change? This course aims to respond to this question, in three parts. In Part 1, we will explore the most current scientific findings on trends in anthropogenic climate forcing and the anticipated impacts on global and regional food systems. Specifically, Part I will review the anticipated impact of climate change on severe weather events, crop losses, and food price volatility and the influence of these impacts on global and regional food insecurity and hunger. In Part II, we will consider what communities can do to promote food security and equity in the face of these changes, by reviewing the emerging literature on food system resiliency. Finally, we will facilitate a conference in which multi-disciplinary teams from around the country will gather to initiate regional planning projects designed to enhance food system resilience and equity. Cardinal Course (certified by Haas Center). Limited enrollment. May be repeated for credit.
Same as: EARTHSYS 105

EARTHSYS 205A. Fundamentals of Geobiology. 3 Units.
Lecture and discussion covering key topics in the history of life on Earth, as well as basic principles that apply to life in the universe. Co-evolution of Earth and life; critical intervals of environmental and biological change; geomicrobiology; paleobiology; global biogeochemical cycles; scaling of geobiological processes in space and time.
Same as: ESS 205, GEOLSCI 205

EARTHSYS 205VP. Contested markets in the Brazilian Amazon Rainforest. 2-3 Units.
Strategies of environmental movements to contain domestic and foreign corporations that are viewed as major perpetrators of rainforest devastation and the socio-economic degradation of this vast region. Topics: Origins, roles and inter-relations among corporations (zero deforestation agreements in soybean agriculture and cattle ranching), the development of environmental law and the efficacy of government and NGO movements¿ strategies, and whether this emerging economy shapes social classes, groups, tribes, family life to further embed inequality and immobility. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.
Same as: SOC 105VP, SOC 205VP

EARTHSYS 206. World Food Economy. 5 Units.
The economics of food production, consumption, and trade. The micro- and macro- determinants of food supply and demand, including the interrelationship among food, income, population, and public-sector decision making. Emphasis on the role of agriculture in poverty alleviation, economic development, and environmental outcomes. Grades based on mid-term exam and group modeling project and presentation. Enrollment is by application only and will be capped at 25, with priority given to upper level undergraduates in Economics and Earth Systems and graduate students (graduate students enroll in 206). Application found at https://economics.stanford.edu/academics/undergraduate-program/forms.
Same as: EARTHSYS 106, ECON 106, ECON 206, ESS 106, ESS 206

EARTHSYS 206B. Sustainable and Equitable Water Management. 3-4 Units.
California has committed itself to sustainable groundwater management, with passage of the Sustainable Groundwater Management Act in 2014, and safe drinking water access for all, with California¿s Human Right to Water Act in 2012. Yet, groundwater overdraft continues while over 1 million residents lack access to safe drinking water. Working with a water agency in the San Joaquin Valley, we will explore feedback loops between the two Acts and develop a plan for water management that meet the co-equal objectives of sustainable and equitable resource governance. We will work with "big" and "small" data, exploring the possibilities but also the limitations of using publicly available data for assessment and monitoring. The course will include guest speakers and interaction with public agencies and other key stakeholders.
Same as: EARTHSYS 106B, GEOPHYS 106, GEOPHYS 206

EARTHSYS 207. Spanish in Science/Science in Spanish. 2 Units.
For graduate and undergraduate students interested in the natural sciences and the Spanish language. Students will acquire the ability to communicate in Spanish using scientific language and will enhance their ability to read scientific literature written in Spanish. Emphasis on the development of science in Spanish-speaking countries or regions. Course is conducted in Spanish and intended for students pursuing degrees in the sciences, particularly disciplines such as ecology, environmental science, sustainability, resource management, anthropology, and archeology.
Same as: BIO 208, LATINAM 207

EARTHSYS 210A. Senior Capstone and Reflection. 3 Units.
The Earth Systems Senior Capstone and Reflection, required of all seniors, provides students with opportunities to synthesize and reflect on their learning in the major. Students participate in guided career development and planning activities and initiate work on an independent or group capstone project related to an Earth Systems problem or question of interest. In addition, students learn and apply principles of effective oral communication through developing and giving a formal presentation on their internship. Students must also take EARTHSYS 210P, Earth Systems Capstone Project, in the quarter following the Senior Capstone and Reflection Course. Prerequisite: Completion of an approved Earth Systems internship (EARTHSYS 260).

EARTHSYS 210B. Senior Capstone and Reflection. 3 Units.
The Earth Systems Senior Capstone and Reflection, required of all seniors, provides students with opportunities to synthesize and reflect on their learning in the major. Students participate in guided career development and planning activities and initiate work on an independent or group capstone project related to an Earth Systems problem or question of interest. In addition, students learn and apply principles of effective oral communication through developing and giving a formal presentation on their internship. Students must also take EARTHSYS 210P, Earth Systems Capstone Project, in the quarter following the Senior Capstone and Reflection Course. Prerequisite: Completion of an approved Earth Systems internship (EARTHSYS 260).

EARTHSYS 210P. Earth Systems Capstone Project. 2 Units.
Students work independently or in groups to complete their Senior Capstone Projects. They will participate in regular advising meetings with the instructor(s), and will give a final presentation on their projects at the end of the quarter in a special Earth Systems symposium. Prerequisite: EARTHSYS 210A, B, or C.

EARTHSYS 211. Fundamentals of Modeling. 3-5 Units.
Simulation models are a powerful tool for environmental research, if used properly. The major concepts and techniques for building and evaluating models. Topics include model calibration, model selection, uncertainty and sensitivity analysis, and Monte Carlo and bootstrap methods. Emphasis is on gaining hands-on experience using the R programming language. Prerequisite: Basic knowledge of statistics.
Same as: ESS 211

EARTHSYS 212. Human Society and Environmental Change. 4 Units.
Interdisciplinary approaches to understanding human-environment interactions with a focus on economics, policy, culture, history, and the role of the state. Prerequisite: ECON 1.
Same as: EARTHSYS 112, ESS 112, HISTORY 103D

EARTHSYS 214. Global Change and Emerging Infectious Disease. 4-5 Units.
The changing epidemiological environment. How human-induced environmental changes, such as global warming, deforestation and land-use conversion, urbanization, international commerce, and human migration, are altering the ecology of infectious disease transmission, and promoting their re-emergence as a global public health threat. Case studies of malaria, cholera, hantavirus, plague, and HIV.
Same as: EARTHSYS 114, ESS 213, HUMBIO 114

EARTHSYS 217. Biology and Global Change. 4 Units.
The biological causes and consequences of anthropogenic and natural changes in the atmosphere, oceans, and terrestrial and freshwater ecosystems. Topics: glacial cycles and marine circulation, greenhouse gases and climate change, tropical deforestation and species extinctions, and human population growth and resource use. Prerequisite: Biology or Human Biology core or BIO 81 or graduate standing.
Same as: BIO 117, EARTHSYS 111, ESS 111

EARTHSYS 219. Will Work for Food. 1 Unit.
This is a speaker series class featuring highly successful innovators in the food system. Featured speakers will talk in an intimate, conversational manner about their current work, as well as about their successes, failures, and learnings along the way. Additional information can be found here: http://feedcollaborative.org/speaker-series/.
Same as: EARTHSYS 119

EARTHSYS 223. Biosphere-Atmosphere Interactions. 3-4 Units.
How do ecosystems respond to climate, and how do ecosystems influence climate? Covers the role of the terrestrial land surface in earth's climate system, including among others photosynthesis, transpiration, greenhouse gasses, radiation, and atmospheric water vapor. For each of these topics, attention is paid to both the underlying processes and how they can be mathematically represented in earth system models. Instruments and techniques used to measure these processes are also discussed, and, where appropriate, demonstrated.
Same as: EARTHSYS 123A, ESS 123, ESS 223

EARTHSYS 225. Shades of Green: Redesigning and Rethinking the Environmental Justice Movements. 3-5 Units.
Historically, discussions of race, ethnicity, culture, and equity in the environment have been relegated to the environmental justice movement, which often focuses on urban environmental degradation and remains separated from other environmental movements. This course will seek to break out of this limiting discussion. We will explore access to outdoor spaces, definitions of wilderness, who is and isn't included in environmental organizations, gender and the outdoors, how colonialism has influenced ways of knowing, and the future of climate change. The course will also have a design thinking community partnership project. Students will work with partner organizations to problem-solve around issues of access and diversity. We value a diversity of experiences and epistemological beliefs, and therefore undergraduates and graduate students from all disciplines are welcome.
Same as: CSRE 125E, EARTHSYS 125, URBANST 125

EARTHSYS 227. Decision Science for Environmental Threats. 3-5 Units.
Decision science is the study of how people make decisions. It aims to describe these processes in ways that will help people make better or more well-informed decisions. It is an interdisciplinary field that draws upon psychology, economics, political science, and management, among other disciplines. It is being used in a number of domain areas and for a variety of applications, including managing freshwater resources, designing decision support tools to aid in coastal adaptation to sea-level rise, and creating "nudges" to enhance energy efficiency behaviors. This course covers behavioral theories of probabilistic inference, intuitive prediction, preference, and decision making. Topics include heuristics and biases, risk perceptions and attitudes, strategies for combining different sources of information and dealing with conflicting objectives, and the roles of group and emotional processes in decision making. This course will introduce students to foundational theories of decision science, and will involve applying these theories to understand decisions about environmental threats.
Same as: ESS 227

EARTHSYS 232. Evolution of Earth Systems. 4 Units.
This course examines biogeochemical cycles and how they developed through the interaction between the atmosphere, hydrosphere, biosphere, and lithosphere. Emphasis is on the long-term carbon cycle and how it is connected to other biogeochemical cycles on Earth. The course consists of lectures, discussion of research papers, and quantitative modeling of biogeochemical cycles. Students produce a model on some aspect of the cycles discussed in this course. Grades based on class interaction, student presentations, and the modeling project.
Same as: EARTHSYS 132, ESS 132, ESS 232, GEOLSCI 132, GEOLSCI 232

EARTHSYS 233. Mitigating Climate Change through Soil Management. 2 Units.
Climate change is one of the greatest crises facing our world. Increasing soil organic carbon storage may be a key strategy for mitigating global climate change, with the potential to offset approximately 20% of annual global fossil fuel emissions. In this course, we will learn about soil carbon cycling, its contribution to the global carbon cycle, how carbon is stored in soil, and land management practices that can increase or decrease soil carbon stocks, thereby mitigating or exacerbating climate change. Although the content is centered on soil carbon, the processes and skills learned in this course can be applied to design solutions to any environmental problem.nnPrerequisites: Some knowledge of soils, introductory chemistry, and introductory biology would be useful but not necessary. Please email the instructor if you have any concerns or questions.
Same as: ESS 233

EARTHSYS 235. Podcasting the Anthropocene. 3 Units.
The Anthropocene refers to the proposed geologic age defined by the global footprint of humankind. It's an acknowledgement of the tremendous influence people and societies exert on Earth systems. Students taking the course will identify a subject expert, workshop story ideas with fellow students and instructors, conduct interviews, iteratively write audio scripts, and learn the skills necessary to produce final audio podcast as their final project. Our expectation is that the final projects will be published on the award-winning Generation Anthropocene podcast, with possible opportunities to cross post in collaboration with external media partners. Students taking EARTHSYS 135/235 are strongly encouraged to take EARTHSYS 135A/235A beforehand. Meets Earth Systems WIM requirement. (Cardinal Course certified by the Haas Center).

EARTHSYS 236. The Ethics of Stewardship. 2-3 Units.
What responsibilities do humans have to nonhuman nature and future generations? How are human communities and individuals shaped by their relationships with the natural world? What are the social, political, and moral ramifications of drawing sustenance and wealth from natural resources? Whether we realize it or not, we grapple with such questions every time we turn on the tap, fuel up cars, or eat meals -and they are key to addressing issues like global climate change and environmental justice. In this class, we consider several perspectives on this ethical question of stewardship: the role of humans in the global environment. In addition to reading written work and speaking with land stewards, we will practice stewardship at the Stanford Educational Farm. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.
Same as: EARTHSYS 136

EARTHSYS 238. Land Use Law. 3 Units.
(Same as LAW 2505.) This course focuses on the pragmatic (more than theoretical) aspects of contemporary land use law and policy, including: the tools and legal foundation of modern land use law; the process of land development; vested property rights, development agreements, and takings; growth control, sprawl, and housing density; and direct democracy over land use. We explore how land use decisions affect environmental quality and how land use decision-making addresses environmental impacts. Special Instructions: All graduate students from other departments are encouraged to enroll, and no pre-requisites apply. Student participation is essential. Roughly two-thirds of the class time will involve a combination of lecture and classroom discussion. The remaining time will engage students in case studies based on actual land use issues and disputes. Elements used in grading: Attendance, class participation, writing assignments, and final exam. Elements used in grading: Attendance, Class Participation, Final Exam.

EARTHSYS 239. Ecosystem Services: Frontiers in the Science of Valuing Nature. 3 Units.
This course explores the science of valuing nature, beginning with its historical origins and then a primary focus on its recent development and frontiers. The principal aim of the course is to enable new research and real-world applications of InVEST (Integrated Valuation of Ecosystem Services and Tradeoffs) tools and approaches. We will discuss the interconnections between people and nature and key research frontiers, such as in the realms of biodiversity, resilience, human health, poverty alleviation, and sustainable development. The science we¿ll explore is in the service of decisions, and we will use examples from real life to illustrate why this science is so critical to informing why, where, how, and how much people need nature. Prerequisite. Basic to intermediate GIS skills are required (including working with raster, vector and tabular data; loading and editing rasters, shapefiles, and tables into a GIS; understanding coordinate systems; and performing basic raster math).
Same as: BIO 138, BIO 238, EARTHSYS 139

EARTHSYS 240. Data science for geoscience. 3 Units.
This course provides an overview of the most relevant areas of data science (applied statistics, machine learning & computer vision) to address geoscience challenges, questions and problems. Using actual geoscientific research questions as background, principles and methods of data scientific analysis, modeling, and prediction are covered. Data science areas covered are: extreme value statistics, multi-variate analysis, factor analysis, compositional data analysis, spatial information aggregation models, spatial estimation, geostatistical simulation, treating data of different scales of observation, spatio-temporal modeling (geostatistics). Application areas covered are: process geology, hazards, natural resources. Students are encouraged to participate actively in this course by means of their own data science research challenge or question.
Same as: ENERGY 240, ESS 239, GEOLSCI 240

EARTHSYS 241. Remote Sensing of the Oceans. 3-4 Units.
How to observe and interpret physical and biological changes in the oceans using satellite technologies. Topics: principles of satellite remote sensing, classes of satellite remote sensors, converting radiometric data into biological and physical quantities, sensor calibration and validation, interpreting large-scale oceanographic features.
Same as: EARTHSYS 141, ESS 141, ESS 241, GEOPHYS 141

EARTHSYS 242. Remote Sensing of Land. 4 Units.
The use of satellite remote sensing to monitor land use and land cover, with emphasis on terrestrial changes. Topics include pre-processing data, biophysical properties of vegetation observable by satellite, accuracy assessment of maps derived from remote sensing, and methodologies to detect changes such as urbanization, deforestation, vegetation health, and wildfires.
Same as: EARTHSYS 142, ESS 162, ESS 262

EARTHSYS 243. Environmental Advocacy and Policy Communication. 3 Units.
Although environmental science suggests that coordinated policy action is critically necessary to address a host of pressing issues - from global climate change to marine pollution to freshwater depletion - governments have been slow to act. This course focuses on the translation of environmental science to public discourse and public policy, with an emphasis on the causes of our current knowledge-to-action gap and policy-sphere strategies to address it. We will read classic works of environmental advocacy, map our political system and the public relations and lobbying industries that attempt to influence it, grapple with analytical perspectives on effective and ethical environmental policy communication, engage with working professionals in the field, learn effective strategies for written and oral communication with policymakers, and write and workshop op-eds.nnApplication required. Deadline Dec. 1. nApply here: https://stanforduniversity.qualtrics.com/jfe/form/SV_4IuQC5BcQdn3j6Z¿.

EARTHSYS 247. Ecosystem Ecology and Biogeochemistry. 3 Units.
An introduction to ecosystem ecology and terrestrial biogeochemistry. This course will focus on the dynamics of carbon and other biologically essential elements in the Earth System, on spatial scales from local to global. Prerequisites: Biology 117, Earth Systems 111, or graduate standing.
Same as: BIO 147, BIO 240, EARTHSYS 147

EARTHSYS 249. Wild Writing. 3 Units.
What is wilderness and why does it matter? In this course we will interrogate answers to this question articulated by influential and diverse American environmental thinkers of the 19th, 20th, and 21st centuries, who through their writing transformed public perceptions of wilderness and inspired such actions as the founding of the National Park System, the passage of the Wilderness Act and the Clean Air and Water Acts, the establishment of the Environmental Protection Agency, and the birth of the environmental and climate justice movements. Students will also develop their own responses to the question of what is wilderness and why it matters through a series of writing exercises that integrate personal narrative, wilderness experience, and environmental scholarship, culminating in a ~3000 word narrative nonfiction essay. This course will provide students with knowledge, tools, experience, and skills that will empower them to become more persuasive environmental storytellers and advocates.nnIf you are interested in signing up for the course, complete this pre-registration form https://stanforduniversity.qualtrics.com/jfe/form/SV_9XqZeZs036WIvop.
Same as: EARTHSYS 149

EARTHSYS 250. Directed Research. 1-9 Unit.
Independent research. Student develops own project with faculty supervision. May be repeated for credit.

EARTHSYS 251. Biological Oceanography. 3-4 Units.
Required for Earth Systems students in the oceans track. Interdisciplinary look at how oceanic environments control the form and function of marine life. Topics include distributions of planktonic production and abundance, nutrient cycling, the role of ocean biology in the climate system, expected effects of climate changes on ocean biology. Local weekend field trips. Designed to be taken concurrently with Marine Chemistry (ESS/EARTHSYS 152/252). Prerequisites: BIO 43 and ESS 8 or equivalent.
Same as: EARTHSYS 151, ESS 151, ESS 251

EARTHSYS 252. Marine Chemistry. 3-4 Units.
Introduction to the interdisciplinary knowledge and skills required to critically evaluate problems in marine chemistry and related disciplines. Physical, chemical, and biological processes that determine the chemical composition of seawater. Air-sea gas exchange, carbonate chemistry, and chemical equilibria, nutrient and trace element cycling, particle reactivity, sediment chemistry, and diagenesis. Examination of chemical tracers of mixing and circulation and feedbacks of ocean processes on atmospheric chemistry and climate. Designed to be taken concurrently with Biological Oceanography (ESS/EARTHSYS 151/251).
Same as: EARTHSYS 152, ESS 152, ESS 252

EARTHSYS 254. Environmental Governance. 3 Units.
How do we work together to solve environmental problems? Across the globe, who has a voice, and who ultimately decides how to balance conservation and development? How do we build governance institutions that facilitate both environmental sustainability and social equity? This seminar on environmental governance will focus on the challenges and opportunities for managing common-pool resources, like fisheries, forests, and water. Because managing environmental resources is often about managing people, we will explore the motivations underlying human behavior towards the environment. We will discuss how institutions encode our cultural values and beliefs, and how we can reshape these institutions to achieve more sustainable outcomes. Coursework includes foundational readings and a pragmatic exploration of case studies. Teaching cases address topics in community-based conservation, international protected areas, market-based approaches, coping with environmental risk, and other themes. Interested undergraduate and graduate students from any discipline are welcome.
Same as: ENVRES 250

EARTHSYS 255. Microbial Physiology. 3 Units.
Introduction to the physiology of microbes including cellular structure, transcription and translation, growth and metabolism, mechanisms for stress resistance and the formation of microbial communities. These topics will be covered in relation to the evolution of early life on Earth, ancient ecosystems, and the interpretation of the rock record. Recommended: introductory biology and chemistry.
Same as: BIO 180, ESS 255, GEOLSCI 233A

EARTHSYS 256. Soil and Water Chemistry. 3 Units.
(Graduate students register for 256.) Practical and quantitative treatment of soil processes affecting chemical reactivity, transformation, retention, and bioavailability. Principles of primary areas of soil chemistry: inorganic and organic soil components, complex equilibria in soil solutions, and adsorption phenomena at the solid-water interface. Processes and remediation of acid, saline, and wetland soils. Recommended: soil science and introductory chemistry and microbiology.
Same as: ESS 256

EARTHSYS 258. Geomicrobiology. 3 Units.
How microorganisms shape the geochemistry of the Earth's crust including oceans, lakes, estuaries, subsurface environments, sediments, soils, mineral deposits, and rocks. Topics include mineral formation and dissolution; biogeochemical cycling of elements (carbon, nitrogen, sulfur, and metals); geochemical and mineralogical controls on microbial activity, diversity, and evolution; life in extreme environments; and the application of new techniques to geomicrobial systems. Recommended: introductory chemistry and microbiology such as CEE 274A.
Same as: EARTHSYS 158, ESS 158, ESS 258

EARTHSYS 260. Internship. 1 Unit.
Supervised field, lab, or public/private sector project. May consist of directed research under the supervision of a Stanford faculty member, participation in one of several off campus Stanford programs, or an approved non-Stanford program or opportunity relevant to the student's Earth Systems studies. Required of and restricted to declared Earth Systems majors. This is a 1 unit, credit/no credit course, consisting of at least 270 hours of work. Course can be fulfilled any quarter. For more course requirements, please visit: https://earth.stanford.edu/esys/undergrad/internship.

EARTHSYS 262. Data for Sustainable Development. 3-5 Units.
The sustainable development goals (SDGs) encompass many important aspects of human and ecosystem well-being that are traditionally difficult to measure. This project-based course will focus on ways to use inexpensive, unconventional data streams to measure outcomes relevant to SDGs, including poverty, hunger, health, governance, and economic activity. Students will apply machine learning techniques to various projects outlined at the beginning of the quarter. The main learning goals are to gain experience conducting and communicating original research. Prior knowledge of machine learning techniques, such as from CS 221, CS 229, CS 231N, STATS 202, or STATS 216 is required. Open to both undergraduate and graduate students. Enrollment limited to 24. Students must apply for the class by filling out the form at https://goo.gl/forms/9LSZF7lPkHadix5D3. A permission code will be given to admitted students to register for the class.
Same as: CS 325B, EARTHSYS 162

EARTHSYS 263F. Groundwork for COP21. 1 Unit.
This course will prepare undergraduate and coterm students to observe the climate change negotiations (COP 21) in Paris in November/December 2015. Students will develop individual projects to be carried out before and during the negotiation session and be paired with mentors. Please note: Along with EARTHSYS 163E/CEE 163E, this course is part of the required two-course-set in which undergraduate and co-terminal masters degree students must enroll to receive accreditation to the climate negotiations.

EARTHSYS 272. Antarctic Marine Geology and Geophysics. 3 Units.
For upper-division undergraduates and graduate students. Intermediate and advanced topics in marine geology and geophysics, focusing on examples from the Antarctic continental margin and adjacent Southern Ocean. Topics: glaciers, icebergs, and sea ice as geologic agents (glacial and glacial marine sedimentology, Southern Ocean current systems and deep ocean sedimentation), Antarctic biostratigraphy and chronostratigraphy (continental margin evolution). Students interpret seismic lines and sediment core/well log data. Examples from a recent scientific drilling expedition to Prydz Bay, Antarctica.
Same as: ESS 242

EARTHSYS 276. Open Space Management Practicum. 4-5 Units.
The unique patchwork of urban-to-rural land uses, property ownership, and ecosystems in our region poses numerous challenges and opportunities for regional conservation and environmental stewardship. Students in this class will address a particular challenge through a faculty-mentored research project engaged with the East Bay Regional Parks District. Grass Roots Ecology or the Amah Mutsun Land Trust that focuses on open space management. By focusing on a project driven by the needs of these organizations and carried out through engagement with the community, and with thorough reflection, study, and discussion about the roles of scientific, economic, and policy research in local-scale environmental decision-making, students will explore the underlying challenges and complexities of what it means to actually do community-engaged research for conservation and open space preservation in the real world. As such, this course will provide students with skills and experience in research design in conservation biology and ecology, community and stakeholder engagement, land use policy and planning, and the practical aspects of land and environmental management.nnAll students must complete the course application and turn it into Rachel Engstrand (rce212@stanford.edu) and Briana Swette (bswette@stanford.edu) by email. To receive priority consideration and an enrollment code, please submit the application by Monday September 10th, 2018. The course application consists of a short paragraph about your background and interest in and preparation for working on a real-world community-engaged earth systems project. The total course enrollment is necessarily limited by the project-based nature of the class.
Same as: EARTHSYS 176

EARTHSYS 276A. Open Space Practicum Independent Study. 1-2 Unit.
Additional practicum units for students intent on continuing their projects from EARTHSYS 276. Students who enroll in 276A must have completed EARTHSYS 276: Open Space Management Practicum, or have consent of the instructors.

EARTHSYS 277C. Specialized Writing and Reporting: Health and Science Journalism. 4-5 Units.
Practical, collaborative, writing-intensive advanced journalistic reporting and writing course in the specific practices and standards of health and science journalism. Science and journalism students learn how to identify and write engaging stories about medicine, global health, science, and related environmental issues; how to assess the quality and relevance of science news; how to cover the health and science beats effectively and efficiently; and how to build bridges between the worlds of journalism and science. Instructed Winter Quarter 2019 by Dr. Seema Yasmin, http://www.seemayasmin.com. nnnLimited enrollment: preference to students enrolled in or considering the Earth Systems Master of Arts, Environmental Communication Program and the Graduate Journalism Program. Prerequisite: EarthSys 191/291, COMM 104w, or consent of instructor. Admission by application only, available from dr.yasmin@stanford.edu (Meets Earth Systems WIM requirement.).
Same as: COMM 177C, COMM 277C, EARTHSYS 177C

EARTHSYS 281. Urban Agroecology. 3 Units.
The United Nations estimates that up to 15% of the world's food is produced in and around cities. Urban populations are projected to continue rising and urban agriculture in its many forms has been shown to provide multiple benefits to urban communities. This class will survey urban agriculture around the world while training you in small-scale food production practices. The emphasis will be on ecological approaches to the design and stewardship of urban farms and gardens. nnnIf permitted, given the challenges of COVID-19, the course will be taught in-person, outdoors at the Stanford Educational Farm. nn nThis is a 3-unit, Earth Systems practicum course that meets on Wednesdays from noon to 3pm. Space is limited and applications are due by Friday 8/28. Students will be notified if they are admitted to the course by 9/4. For the course application go to: https://stanforduniversity.qualtrics.com/jfe/form/SV_86udp8aEuWUCnNH.
Same as: EARTHSYS 181, ESS 181, ESS 281, URBANST 181

EARTHSYS 282A. Ecological Farm Systems. 1-2 Unit.
An in-person, outdoor, project-based course in sustainable agricultural systems. Students will work individually or in small groups on projects at the Stanford Educational Farm. Potential projects this fall include building educational gardens, orchard establishment and management, and seedling propagation for plant donations for low-income families in partnership with Valley Verde in San Jose. Students are also encouraged to develop their own sustainable agriculture projects based on their interests.nn nnThe class will meet in-person, outdoors at the Stanford Educational Farm. Students will be required to follow farm and University COVID-19 protocols. By application only. The Winter 2021 application can be found here (Deadline Dec. 28): https://stanforduniversity.qualtrics.com/jfe/form/SV_abKbQxC1Q2cCC2h.
Same as: EARTHSYS 182A

EARTHSYS 286. Farm and Garden Environmental Education Practicum. 2 Units.
Farms and gardens provide excellent settings for place-based environmental education that emphasize human ecological relationships and experiential learning. The O'Donohue Family Stanford Educational Farm is the setting to explore the principles and practices of farm and garden-based education in conjunction with the farm's new field trip program for local youth. The course includes readings and reflections on environmental education and emphasis on learning by doing, engaging students in the practice of team teaching. Application required. Deadline: March 14.nnApplication: https://stanforduniversity.qualtrics.com/jfe/form/SV_9SPufdULCh93rbT.
Same as: EARTHSYS 186

EARTHSYS 288. Social and Environmental Tradeoffs in Climate Decision-Making. 1-2 Unit.
How can we ensure that measures taken to mitigate global climate change don't create larger social and environmental problems? What metrics should be used to compare potential climate solutions beyond cost and technical feasibility, and how should these metrics be weighed against each other? How can modeling efforts and stakeholder engagement be best integrated into climate decision making? What information are we still missing to make fully informed decisions between technologies and policies? Exploration of these questions, alongside other issues related to potential negative externalities of emerging climate solutions. Evaluation of energy, land use, and geoengineering approaches in an integrated context, culminating in a climate stabilization group project.
Same as: EARTHSYS 188

EARTHSYS 289. FEED Lab: Food System Design & Innovation. 3-4 Units.
FEED Lab is a course in which entrepreneurial and motivated students, engaged industry-thought leaders, and deeply experienced and connected faculty work together to design solutions to some of the food system's most consequential problems. Whether you're passionate about transforming the food system, or merely curious explore it, all students in this course will leave with practical design skills, enhanced leadership abilities, and confidence that their work will leave a lasting impact on the organizations with whom we collaborate. Students who complete this course gain access to the broad network of the FEED Collaborative, whose mission is to equip and inspire the next generation of leaders in the food system, and to connect them to meaningful opportunities after Stanford. To learn more about the FEED Collaborative, visit https://feedcollab.stanford.edu/. This course requires an application, which can be found here: https://forms.gle/5Rd93yVg8XjRCig26.
Same as: SUST 231

EARTHSYS 289A. FEED Lab: Food System Design & Innovation. 3-4 Units.
FEED Lab is a 3-4 unit introductory course in design thinking and food system innovation offered through the FEED Collaborative. Targeted at graduate students interested in food and the food system, this course provides a series of diverse, primarily hands-on experiences (design projects with industry-leading thinkers, field work, and collaborative leadership development) in which students both learn and apply the process of human-centered design to projects of real consequence in the food system. The intent of this course is to develop students' creative confidence, collaborative leadership ability, and skills in systems thinking to prepare them to be more effective as innovators and leaders in the food system. This course is mandatory for any student wishing to qualify for the FEED Collaborative's summer Leadership and Innovation Program, in which select students participate in full-time, paid, externship roles with collaborating thought-leaders in the industry. Admission is by application: http://feedcollaborative.org/classes/.

EARTHSYS 289B. FEED Lab: Food System Design & Innovation. 3-4 Units.
Primarily a follow-on course to EARTHSYS 289A, this course is an experiential education platform that enables students already experienced in design thinking to collaborate with faculty and industry thought-leaders on projects of real consequence in the local food system. A select cohort of students will work in small, diverse teams and will interact closely with the teaching team in an intentionally creative and informal classroom setting. Students will deepen their skills in design thinking and social entrepreneurship by working on projects sponsored by leading innovators in the FEED Collaborative's network. Some projects may turn into summer internships or research projects for students interested in continuing their work. Admission is by application: http://feedcollaborative.org/classes/.

EARTHSYS 290. Master's Seminar. 2 Units.
Required of and open only to Earth Systems co-terminal MS and MA students. This remote course has several elements, including, skill building through experiential learning and reflection and professional development. Students will either work in teams with a community partner in the Bay area on a predetermined project, or select a self-designed project with a partner anywhere in the world. The idea is to complete a well-defined, manageable, but important project to a high standard under significant time constraints. Our community partners have requested help with achieving their missions and seminar students will utilize their backgrounds in social/environmental problem solving to deliver a final product. Our partners have requested help with such efforts as grant and report writing, data analysis, curriculum development, symposium organizing, presentation research and preparation and communications to raise awareness about an environmental challenge. If you choose to design your own project, the instructor will help you to create this opportunity. Students will give oral presentations on their project progress throughout the quarter, culminating in a final presentation at a symposium with our partners. Students will also explore how best to communicate their interdisciplinary skills and goals through their resumes, cv¿s or cover letters, portfolios or linkedIn profiles in preparation for the next phase of their career. Guest speakers and in class workshops will complement these activities.

EARTHSYS 291. Concepts in Environmental Communication. 3 Units.
Introduction to the history, development, and current state of communication of environmental science and policy to non-specialist audiences. Includes fundamental principles, core competencies, and major challenges of effective environmental communication in the public and policy realms and an overview of the current scope of research and practice in environmental communication. Intended for graduate students and advanced undergraduates, with a background in Earth or environmental science and/or policy studies, or in communication or journalism studies with a specific interest in environmental and science communication. Prerequisite: Earth Systems core (EarthSys 111 and EarthSys 112) or equivalent. (Meets Earth Systems WIM requirement.).
Same as: EARTHSYS 191

EARTHSYS 292. Multimedia Environmental Communication. 3 Units.
Introductory theory and practice of effective, accurate and engaging use of photography, audio and video production in communicating environmental science and policy concepts to the public. Emphasis on fundamental techniques, storytelling and workflow more than technical how to or gear. Includes extensive instructor and peer critiquing of work and substantial out-of-class group project work. Limited class size, preference to Earth Systems master's students. No previous multimedia experience necessary.

EARTHSYS 293. Environmental Communication Practicum. 1-5 Unit.
Students complete an internship or similar practical experience in a professional environmental communication setting. Potential placements include environmental publications, environmental or outdoor education placements, NGOs, government agencies, on-campus departments, programs, or centers, and science centers and museums. Restricted to students admitted to the Earth Systems Master of Arts, Environmental Communication Program. Can be completed in any quarter.

EARTHSYS 294. Environmental Communication Capstone. 1-5 Unit.
The Earth Systems Master of Arts, Environmental Communication capstone project provides students with an opportunity to complete an ambitious independent project demonstrating mastery of an area of environmental communication. Capstone projects are most often applied communication projects such as writing, photography, or video projects; expressive or artistic works; or student-initiated courses, workshops, or curriculum materials. Projects focused on academic scholarship or communication theory research may also be considered. Restricted to students enrolled in the Earth Systems Master of Arts, Environmental Communication Program.

EARTHSYS 295. Environmental Communication Seminar. 1 Unit.
Weekly seminar for students enrolled in the Earth Systems Master of Arts, Environmental Communication Program, to be taken twice for credit during degree progress. Includes discussion of and reflection on current topics in environmental communication, skills and professional development workshop sessions, and mentoring and peer support for MA capstone projects.

EARTHSYS 296. Implementing Climate Solutions at Scale. 3 Units.
Climate change is the biggest problem humanity has ever faced, and this course will teach students about the means and complexity of solving it. The instructors will guide the students in the application of key data and analysis tools for their final project, which will involve developing integrated plans for eliminating greenhouse gas emissions (100% reductions) by 2050 for a country, state, province, sector, or industry.
Same as: EARTHSYS 196

EARTHSYS 297. Directed Individual Study in Earth Systems. 1-9 Unit.
Under supervision of an Earth Systems faculty member on a subject of mutual interest.

EARTHSYS 298. Seminar on Philosophy, Politics, and the Environment. 1 Unit.
Much public discourse that touches upon the relationship of human society to the natural environment acknowledges the fundamental connection between people and the environment, but avoids or simplifies discussion of broader philosophical and political views of what this relationship is, has been, and ought to be. Expansive conceptual categories of the study of politics, economics, and society, such as capitalism, socialism, democracy, human welfare, and distribution, are often left out entirely, or used quickly and not defined clearly. In thinking big about human society and the natural world, what is ideal, and what is possible? This once-weekly seminar aims to help students develop the breadth and depth of their thinking about the relationship of human society to nature at the level of political, social, and economic philosophy. It will provide an organized setting for the understanding and critical discussion of these abstract but sometimes world-shaping ideas. Particular attention will be paid to the wide range of such views put forth in recent history, the various assumptions built into each view, and to the differing levels of influence and political effectiveness achieved by each. Discussions will be based on a weekly reading from a philosophically oriented work about humanity and the environment, such as a book chapter or a piece of long-form journalism. Grading/credit based on weekly participation and a short reflective paper.
Same as: EARTHSYS 198

EARTHSYS 299. M.S. Thesis. 1-9 Unit.
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EARTHSYS 308. Carbon Dioxide and Methane Removal, Utilization, and Sequestration. 1 Unit.
This is a seminar on carbon dioxide and methane removal, utilization, and sequestration options, and their role in decarbonizing the global energy system. This course will cover topics including the global carbon balance, utilizing atmospheric carbon in engineered solutions, recycling and sequestering fossil-based carbon, and enhancing natural carbon sinks. The multidisciplinary lectures and discussions will cover elements of technology, economics, policy and social acceptance, and will be led by a series of guest lecturers. Short group project on carbon solutions.
Same as: ENERGY 308, ENVRES 295, ESS 308, ME 308

EARTHSYS 323. Stanford at Sea. 16 Units.
(Graduate students register for 323H.) Five weeks of marine science including oceanography, marine physiology, policy, maritime studies, conservation, and nautical science at Hopkins Marine Station, followed by five weeks at sea aboard a sailing research vessel in the Pacific Ocean. Shore component comprised of three multidisciplinary courses meeting daily and continuing aboard ship. Students develop an independent research project plan while ashore, and carry out the research at sea. In collaboration with the Sea Education Association of Woods Hole, MA. Only 6 units may count towards the Biology major. 2020-21 academic year offering of this course is dependent on COVID-19 regulations.
Same as: BIOHOPK 182H, BIOHOPK 323H, ESS 323

EARTHSYS 332. Theory and Practice of Environmental Education. 3 Units.
Foundational understanding of the history, theoretical underpinnings, and practice of environmental education as a tool for addressing today's pressing environmental issues. The purpose, design, and implementation of environmental education in formal and nonformal settings with youth and adult audiences. Field trip and community-based project offer opportunities for experiencing and engaging with environmental education initiatives.
Same as: EDUC 332

EARTHSYS 801. TGR Project. 0 Units.
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EMMETT INTERDISCIPLINARY PROGRAM IN ENVIRONMENT AND RESOURCES (E-IPER)

Courses offered by the Emmett Interdisciplinary Program in Environment and Resources are listed under the subject code ENVRES on the Stanford Bulletin's ExploreCourses web site (http://explorecourses.stanford.edu/search;jsessionid=75B13D9BD401BF4435773811DC678716/?view=catalog&catalog=&page=0&q=ENVRES&filter-catalognumber-ENVRES=on&filter-coursestatus-Active=on).

Mission of the Program

The Emmett Interdisciplinary Program in Environment and Resources develops the knowledge, skills, perspectives, and ways of thinking needed to understand and help solve the world's most significant environmental and resources sustainability challenges. E-IPER strives to be a model for interdisciplinary graduate education. E-IPER offers a Ph.D. in Environment and Resources, a Joint M.S. exclusively for students in Stanford's Graduate School of Business or Stanford Law School, and a Dual M.S. for students in the Ford Dorsey Master's in International Policy program, School of Medicine, or a Ph.D. program in another department. E-IPER's home is the School of Earth, Energy & Environmental Sciences; affiliated faculty come from all seven Stanford schools.

Graduate Programs in Environment and Resources

The University's basic requirements for the M.S. and Ph.D. degrees are discussed in the "Graduate Degrees (p. 65)" section of this bulletin. The E-IPER Ph.D. and M.S. degrees are guided by comprehensive requirements created with faculty and student input and approved by E-IPER's Executive Committee. To access the current Ph.D. and M.S. degree requirement documents, see the E-IPER web site (https://earth.stanford.edu/eiper/).

Learning Outcomes (Graduate)

Completion of the Ph.D. and M.S. degrees in Environment and Resources provides students with the knowledge, skills, perspectives, and ways of thinking needed to understand and help solve the world's most significant environmental and resources sustainability challenges.

Master of Science in Environment and Resources

For information on the University's basic requirements for the master's degree, see the "Graduate Degrees (p. 65)" section of this bulletin.

Joint Master's Degree

Students enrolled in a professional degree program in Stanford's Graduate School of Business or the Stanford Law School are eligible to apply for admission to the joint M.S. in Environment and Resources Degree program. Enrollment in the joint M.S. program allows students to pursue an M.S. degree concurrently with their professional degree and to count a defined number of units toward both degrees, resulting in the award of joint M.B.A. and M.S. in Environment and Resources degree or a joint J.D. and M.S. in Environment and Resources degree.

The joint M.S.-M.B.A. degree program requires a total of 129 units: 84 units for the M.B.A. and 45 units for the M.S. (compared to 98 units for the M.B.A. plus 45 units for the M.S. as separate degrees) to be completed over approximately eight academic quarters.

The joint M.S.-J.D. degree program requires a minimum of 113 units; additional units may be necessary to satisfy all requirements. The J.D. degree requires 111 units (minimum of 80 Law units and 31 non-Law units) and the M.S. degree requires 45 units. The joint degree allows up to 43 overlapping units: 31 non-Law units allowed within the J.D. degree, plus 12 professional school units allowed within the M.S. degree. The joint M.S.-J.D. may be completed in three years.

Each student's program of study focuses on a specific track (see "Joint M.S. and Dual M.S. Course Tracks" below) and is subject to the approval by the student's faculty adviser and E-IPER staff. The joint degree is conferred when the requirements for both the E-IPER M.S. and the professional degree program have been met.

In addition to requirements for the professional degree, all joint M.S. students are required to complete 45 units within the parameters outlined below. Students must achieve at least a cumulative 3.0 grade point average (GPA) for all letter-graded courses taken toward the M.S. degree. Professional school letter-graded courses are not included in the E-IPER GPA calculation, but is included in the professional school GPA calculation. The student must complete at least 23 units at the 200 level or above. Courses numbered 1 to 99 are not allowable. For application information, see the Admissions (https://earth.stanford.edu/eiper/joint-ms-admissions/) page on the E-IPER website (https://earth.stanford.edu/eiper/).

1. *Required Courses:* An introductory core course and a capstone project seminar:

		Units
ENVRES 280	Topics in Environment and Resources	2
ENVRES 290	Capstone Project Seminar in Environment and Resources	3

2. *Track Courses:* A minimum of four letter-graded courses from one M.S. course track at the 100-level or higher. Track courses must be taken for a minimum of 3 units. Specific track courses are listed below in the "Joint M.S. and Dual M.S. Course Tracks" section.
   a. Cleantech
   b. Climate and Atmosphere
   c. Energy
   d. Freshwater
   e. Global, Community, and Environmental Health
   f. Land Use and Agriculture
   g. Oceans and Estuaries
   h. Sustainable Built Environment
   i. Sustainable Design [Submit a customized course track proposal]
3. *Elective Courses:* At least four 3-5 unit letter-graded elective courses at the 100-level or higher. Elective courses may be taken from the student's selected course track, another course track, or elsewhere in the University, provided that they are relevant to the student's environment and resources course of study.

There are additional restrictions on course work used to fulfill the joint M.S. degree requirements:

- A maximum of 5 units from courses that are identified as primarily consisting of guest lectures, such as the Energy Seminar, may be counted toward the joint M.S. degree.
- A maximum of 5 units of individual study courses, independent research units (such as ENVRES 399 Directed Research in Environment and Resources) may be counted toward the joint M.S. degree. One individual study course, if taken for 3-5 letter-graded units, may be counted as one of the four elective courses.
- A maximum of 12 units of approved courses (https://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=&q=EIPER

%3A%3Ams_profschool&collapse=) related to environmental and resource fields, from any professional school, may be counted toward the joint M.S. degree. One approved professional school course may be counted as one of the four electives.

Dual Master's Degree

M.A. students in the Ford Dorsey Master's in International Policy program (MIP), M.D. students in the School of Medicine (SoM), or students pursuing a Ph.D. in another Stanford department may apply to the M.S. in Environment and Resources dual degree program. For the dual degree, students must meet the University's minimum requirements for their M.A., M.D., or Ph.D. degree and also complete an additional 45 units for the M.S. in Environment and Resources. Completion of the M.S. typically requires at least three quarters of study in addition to the time required for the student's other degree. For additional information, see the E-IPER website (https://pangea.stanford.edu/eiper/).

Each student's program of study focuses on a specific track (see "Joint M.S. and Dual M.S. Course Tracks" below) and is subject to the approval of the student's faculty adviser and E-IPER staff. The two degrees are conferred when the requirements for both the E-IPER M.S. and the other degree program have been met. For application information, see the Admissions (https://earth.stanford.edu/eiper/joint-ms-admissions/) page on the E-IPER website (https://earth.stanford.edu/eiper/).

In addition to requirements for the M.A., M.D., or Ph.D. degree, students are required to complete 45 units within the parameters outlined below. Students must achieve at least a cumulative 3.0 grade point average for all letter-graded courses taken toward the M.S. degree. The student must complete at least 23 units at the 200-level or above. Courses numbered 1 to 99 are not allowable.

1. *Required Courses:* An introductory core course and a capstone project seminar:

		Units
ENVRES 280	Topics in Environment and Resources	2
ENVRES 290	Capstone Project Seminar in Environment and Resources	3

2. *Track Courses:* A minimum of four letter-graded courses from one M.S. Course Track at the 100-level or higher. Track courses must be taken for a minimum of 3 units. Specific track courses are listed below under Joint M.S. and Dual M.S. Course Tracks.
   - Cleantech
   - Climate and Atmosphere
   - Energy
   - Freshwater
   - Global, Community, and Environmental Health
   - Land Use and Agriculture
   - Oceans and Estuaries
   - Sustainable Built Environment
   - Sustainable Design [Submit a customized course track proposal]
3. *Elective Courses:* At least four additional 3-5 unit letter-graded elective courses at the 100 level or higher. Elective courses may be taken from the student's selected course track, another course track, or elsewhere in the University, provided that they are relevant to the student's environment and resources course of study.

There are additional restrictions on course work used to fulfill the dual M.S. degree requirements:

- A maximum of 5 units from courses that are identified as primarily consisting of guest lectures, such as the Energy Seminar may be counted toward the dual M.S. degree.
- A maximum of 5 units of individual study courses, independent research (such as ENVRES 399 Directed Research in Environment and Resources) may be counted toward the dual M.S. degree. One individual study course, if taken for 3-5 letter-graded units, may be counted as one of the four elective courses.
- A maximum of 12 units of approved courses (https://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=&q=EIPER%3A%3Ams_profschool&collapse=) related to the environmental and resource fields, from any professional school, may be counted toward the dual M.S. degree. One approved professional school course may be counted as one of the four electives.

Joint M.S. and Dual M.S. Course Tracks

Students should consult the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu/) web site to view the course description, class schedule, location, eligibility, and prerequisites for all courses. Course track information and other recommended courses are also available on the E-IPER website (https://pangea.stanford.edu/eiper/).

Cleantech

		Units
APPPHYS 219	Solid State Physics Problems in Energy Technology	3
BIOE 355	Advanced Biochemical Engineering	3
CEE 176A	Energy Efficient Buildings	3
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	3-4
CEE 207A	Understanding Energy	3-5
CEE 207R	E^3: Extreme Energy Efficiency	3
CEE 226	Life Cycle Assessment for Complex Systems	3-4
CEE 272R	Modern Power Systems Engineering	3
CEE 274A	Environmental Microbiology I	3
CEE 274B	Microbial Bioenergy Systems	3
CEE 276B	100% Clean, Renewable Energy and Storage for Everything	3-4
CEE 277L	Smart Cities & Communities	3
CEE 330	Racial Equity in Energy	2-3
ECON 155	Environmental Economics and Policy	5
ENERGY 253	Carbon Capture and Sequestration	3-4
ENERGY 267	Engineering Valuation and Appraisal of Energy Assets and Projects	3
ENERGY 269	Geothermal Reservoir Engineering	3
ENERGY 293C	Energy from Wind and Water Currents	3
MATSCI 256	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution	3-4
MATSCI 302	Solar Cells	3
MATSCI 303	Principles, Materials and Devices of Batteries	3
MATSCI 316	Nanoscale Science, Engineering, and Technology	3
ME 182	Electric Transportation	3
ME 267	Ethics and Equity in Transportation Systems	3

Climate and Atmosphere

		Units
BIO 117	Biology and Global Change	4
BIO 238	Ecosystem Services: Frontiers in the Science of Valuing Nature	3

CEE 172	Air Quality Management	3
CEE 226	Life Cycle Assessment for Complex Systems	3-4
CEE 263A	Air Pollution Modeling	3-4
CEE 263B	Numerical Weather Prediction	3-4
CEE 263C	Weather and Storms	3
CEE 263D	Air Pollution and Global Warming: History, Science, and Solutions	3
CEE 265E	Adaptation to Sea Level Rise and Extreme Weather Events	3
CEE 265F	Environmental Governance and Climate Resilience	3
CEE 278A	Air Pollution Fundamentals	3
CEE 278C	Indoor Air Quality	2-3
ECON 155	Environmental Economics and Policy	5
ENERGY 253	Carbon Capture and Sequestration	3-4
ESS 246A	Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation	3
ESS 246B	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation	3
PHYSICS 199	The Physics of Energy and Climate Change	3

Energy

		Units
APPPHYS 219	Solid State Physics Problems in Energy Technology	3
CEE 176A	Energy Efficient Buildings	3
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	3-4
CEE 207A	Understanding Energy	3-5
CEE 207R	E^3: Extreme Energy Efficiency	3
CEE 226	Life Cycle Assessment for Complex Systems	3-4
CEE 226E	Advanced Topics in Integrated, Energy-Efficient Building Design	2-3
CEE 255	Introduction to Sensing Networks for CEE	3-4
CEE 256	Building Systems Design & Analysis	3-4
CEE 272R	Modern Power Systems Engineering	3
CEE 273S	Electricity Economics	3
CEE 276B	100% Clean, Renewable Energy and Storage for Everything	3-4
CEE 330	Racial Equity in Energy	2-3
ECON 155	Environmental Economics and Policy	5
EE 237	Solar Energy Conversion	3
ENERGY 101	Energy and the Environment	3
ENERGY 102	Fundamentals of Renewable Power	3
ENERGY 104	Sustainable Energy for 9 Billion	3
ENERGY 120	Fundamentals of Petroleum Engineering	3
ENERGY 204	Achieving Universal Energy Access by 2030: Can it be done?	2-3
ENERGY 226	Thermal Recovery Methods	3
ENERGY 227	Enhanced Oil Recovery	3
ENERGY 253	Carbon Capture and Sequestration	3-4
ENERGY 263	Introduction to Quantitative Methods for Energy Decisions	3
ENERGY 267	Engineering Valuation and Appraisal of Energy Assets and Projects	3
ENERGY 269	Geothermal Reservoir Engineering	3
ENERGY 271	Energy Infrastructure, Technology and Economics	3
ENERGY 291	Optimization of Energy Systems	3-4
ENERGY 293B	Fundamentals of Energy Processes	3
ENERGY 293C	Energy from Wind and Water Currents	3
GEOPHYS 208	Unconventional Reservoir Geomechanics	3
MATSCI 256	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution	3-4
MATSCI 302	Solar Cells	3
MATSCI 303	Principles, Materials and Devices of Batteries	3
MATSCI 316	Nanoscale Science, Engineering, and Technology	3
ME 182	Electric Transportation	3
ME 370A	Energy Systems I: Thermodynamics	3
ME 370B	Energy Systems II: Modeling and Advanced Concepts	4
ME 370C	Energy Systems III: Projects	3-5
MS&E 243	Energy and Environmental Policy Analysis	3
PHYSICS 199	The Physics of Energy and Climate Change	3

Freshwater

		Units
BIO 238	Ecosystem Services: Frontiers in the Science of Valuing Nature	3
CEE 101B	Mechanics of Fluids	4
CEE 174A	Providing Safe Water for the Developing and Developed World	3
CEE 174B	Wastewater Treatment: From Disposal to Resource Recovery	3
CEE 177	Aquatic Chemistry and Biology	4
CEE 226	Life Cycle Assessment for Complex Systems	3-4
CEE 260A	Physical Hydrogeology	4
CEE 260C	Contaminant Hydrogeology and Reactive Transport	3
CEE 262A	Hydrodynamics	3-4
CEE 262B	Transport and Mixing in Surface Water Flows	3-4
CEE 262E	Rivers, Streams, and Canals	3
CEE 265A	Resilience, Sustainability and Water Resources Development	3
CEE 265C	Water Resources Management	3
CEE 265D	Water and Sanitation in Developing Countries	1-3
CEE 266A	Watershed Hydrologic Processes and Models	3
CEE 266B	Water Resources and Hazards	3
CEE 266C	Dams, Reservoirs, and their Sustainability	3
CEE 270	Movement and Fate of Organic Contaminants in Waters	3
CEE 271A	Physical and Chemical Treatment Processes	3
CEE 271B	Environmental Biotechnology	4
CEE 273A	Water Chemistry Laboratory	3
ECON 155	Environmental Economics and Policy	5

Global, Community, and Environmental Health

		Units
ANTHRO 266	Political Ecology of Tropical Land Use: Conservation, Natural Resource Extraction, and Agribusiness	3-5
ANTHRO 282	Medical Anthropology	5
BIO 117	Biology and Global Change	4
BIO 238	Ecosystem Services: Frontiers in the Science of Valuing Nature	3
CEE 174A	Providing Safe Water for the Developing and Developed World	3
CEE 174B	Wastewater Treatment: From Disposal to Resource Recovery	3
CEE 226	Life Cycle Assessment for Complex Systems	3-4
CEE 260C	Contaminant Hydrogeology and Reactive Transport	3
CEE 263A	Air Pollution Modeling	3-4
CEE 263D	Air Pollution and Global Warming: History, Science, and Solutions	3
CEE 265A	Resilience, Sustainability and Water Resources Development	3
CEE 265C	Water Resources Management	3
CEE 265D	Water and Sanitation in Developing Countries	1-3
CEE 270	Movement and Fate of Organic Contaminants in Waters	3
CEE 272	Coastal Contaminants	3-4
CEE 274D	Pathogens and Disinfection	3
CEE 276	Introduction to Human Exposure Analysis	3
CEE 277S	Engineering and Sustainable Development	1-3
CEE 278A	Air Pollution Fundamentals	3
CEE 278C	Indoor Air Quality	2-3
ECON 155	Environmental Economics and Policy	5
HUMBIO 153	Parasites and Pestilence: Infectious Public Health Challenges	4
HUMBIO 166	Food and Society: Exploring Eating Behaviors in Social, Environmental, and Policy Context	4

Land Use and Agriculture

		Units
ANTHRO 266	Political Ecology of Tropical Land Use: Conservation, Natural Resource Extraction, and Agribusiness	3-5
BIO 117	Biology and Global Change	4
BIO 234	Conservation Biology: A Latin American Perspective	3
BIO 238	Ecosystem Services: Frontiers in the Science of Valuing Nature	3
BIO 279	Integrated Valuation of Ecosystem Services and Tradeoffs	1-3
CEE 226	Life Cycle Assessment for Complex Systems	3-4
CEE 236	Planning Calif: the Intersection of Climate, Land Use, Transportation & the Economy	3
CEE 275A	California Coast: Science, Policy, and Law	3-4
EARTHSYS 155	Science of Soils	3-4
EARTHSYS 185	Feeding Nine Billion	4-5
EARTHSYS 187	FEED the Change: Redesigning Food Systems	2-3
EARTHSYS 205	Food and Community: Food Security, Resilience and Equity	2-3
EARTHSYS 206	World Food Economy	5
EARTHSYS 276	Open Space Management Practicum	4-5
EARTHSYS 281	Urban Agroecology	3
EARTHSYS 289	FEED Lab: Food System Design & Innovation	3-4
EARTHSYS 289A	FEED Lab: Food System Design & Innovation	3-4
ECON 155	Environmental Economics and Policy	5
ECON 206	World Food Economy	5
ESS 155	Science of Soils	3-4
ESS 164	Fundamentals of Geographic Information Science (GIS)	1-4
ESS 206	World Food Economy	5
ESS 256	Soil and Water Chemistry	3
ESS 262	Remote Sensing of Land	4
ESS 270	Analyzing land use in a globalized world	3
ESS 280	Principles and Practices of Sustainable Agriculture	3-4
ESS 281	Urban Agroecology	3
HUMBIO 166	Food and Society: Exploring Eating Behaviors in Social, Environmental, and Policy Context	4
SUST 210	Pursuing Sustainability: Managing Complex Social Environmental Systems	3

Oceans and Estuaries

		Units
BIO 238	Ecosystem Services: Frontiers in the Science of Valuing Nature	3
BIOHOPK 263H	Oceanic Biology	4
BIOHOPK 273H	Marine Conservation Biology	4
BIOHOPK 274	Hopkins Microbiology Course	3-12
BIOHOPK 285H	Ecology and Conservation of Kelp Forest Communities	5
CEE 226	Life Cycle Assessment for Complex Systems	3-4
CEE 262D	Introduction to Physical Oceanography	4
CEE 272	Coastal Contaminants	3-4
CEE 274S	Hopkins Microbiology Course	3-12
CEE 275A	California Coast: Science, Policy, and Law	3-4
ECON 155	Environmental Economics and Policy	5
ESS 241	Remote Sensing of the Oceans	3-4
ESS 244	Marine Ecosystem Modeling	3
ESS 246A	Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation	3
ESS 246B	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation	3
ESS 251	Biological Oceanography	3-4
ESS 252	Marine Chemistry	3-4
ESS 258	Geomicrobiology	3

Sustainable Built Environment

		Units
CEE 100	Managing Sustainable Building Projects	4
CEE 174A	Providing Safe Water for the Developing and Developed World	3
CEE 174B	Wastewater Treatment: From Disposal to Resource Recovery	3
CEE 176A	Energy Efficient Buildings	3
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	3-4
CEE 207R	E^3: Extreme Energy Efficiency	3
CEE 218X	Shaping the Future of the Bay Area	3-5
CEE 226	Life Cycle Assessment for Complex Systems	3-4
CEE 226E	Advanced Topics in Integrated, Energy-Efficient Building Design	2-3
CEE 236	Planning Calif: the Intersection of Climate, Land Use, Transportation & the Economy	3
CEE 241A	Infrastructure Project Development	3
CEE 243	Intro to Urban Sys Engrg	3
CEE 255	Introduction to Sensing Networks for CEE	3-4
CEE 256	Building Systems Design & Analysis	3-4
CEE 265A	Resilience, Sustainability and Water Resources Development	3
CEE 265E	Adaptation to Sea Level Rise and Extreme Weather Events	3
CEE 276B	100% Clean, Renewable Energy and Storage for Everything	3-4
CEE 277L	Smart Cities & Communities	3
CEE 330	Racial Equity in Energy	2-3
ECON 155	Environmental Economics and Policy	5
ME 267	Ethics and Equity in Transportation Systems	3

Sustainable Design

Submit customized course track proposal prior to pursuing the Sustainable Design track. Submission of the customized course track proposal is not a guarantee of its approval. See E-IPER website (https://pangea.stanford.edu/eiper/) for detailed information about this track.

Master of Science

In exceptional circumstances, students in E-IPER's Ph.D. program may opt to complete their training with a M.S. degree. There is no direct admission to the M.S. degree program. Requirements for the M.S. include:

1. Completion of a minimum of 45 units at or above the 100-level, of which 23 units must be at or above the 200-level. Courses numbered 1 to 99 are not allowable.
2. Completion of the E-IPER Ph.D. core curriculum, with a letter grade of 'B' or higher in each course:

		Units
ENVRES 300	Introduction to Resource, Energy and Environmental Economics	3
ENVRES 315	Environmental Research Design Seminar	1
ENVRES 320	Designing Environmental Research	3-4
ENVRES 330 & ENVRES 398	Research Approaches for Environmental Problem Solving and Directed Reading in Environment and Resources	4-13

Additional courses may be chosen in consultation with the student's lead advisers. Students must maintain at least a 3.0 grade point average in all courses taken for the M.S. degree. The M.S. degree does not have an M.S. with thesis option. Students may write a M.S. thesis, but it is not formally recognized by the University.

Doctor of Philosophy in Environment and Resources

For information on the University's basic requirements for the Ph.D. degree, see the "Graduate Degrees (p. 65)" section of this bulletin.

E-IPER updates the Ph.D. requirements annually, laying out the structure of advising meetings, core courses, program activities, and milestones that guide students' progress. Each student works with a faculty advising team from different research areas to design a course of study that allows the student to develop and exhibit:

1. understanding of analytical tools and research approaches for interdisciplinary problem solving, and a mastery of those tools and approaches central to the student's thesis work
2. depth of knowledge in at least two distinct fields of inquiry; and
3. interdisciplinary breadth as determined by faculty, advising team, and student.

Program-specific Ph.D. requirements, including a timeline to achieve milestones, are outlined in detail in the current year requirements and are summarized below:

1. In the first year, completion of the Ph.D. core course sequence:

		Units
ENVRES 300	Introduction to Resource, Energy and Environmental Economics	3
ENVRES 315	Environmental Research Design Seminar	1
ENVRES 320	Designing Environmental Research	3-4
ENVRES 330	Research Approaches for Environmental Problem Solving	3
ENVRES 398	Directed Reading in Environment and Resources	1-10

2. *Fields of Inquiry:* Fulfillment of depth of knowledge in the student's two chosen fields of inquiry through courses, research, and/or independent studies as determined by the student and their two lead advisers and committee members. Fields of inquiry are central to the student's dissertation research. Students have the freedom to define and choose the two fields of inquiry in which they develop depth of understanding throughout their Ph.D. program; the fields must be distinct from one another to ensure that the student's research is interdisciplinary. Each field of inquiry is associated with a specific lead adviser.

As part of the qualifying exam, each student is required to submit a detailed essay describing:

- the two fields of inquiry, explaining the development of these fields, and their relationship to the larger disciplines from which they are drawn;
- how rigor is understood and achieved in these fields;

- the importance and applicability of these fields to the student's research questions; and
- how the student's work will combine these two fields of inquiry to produce an interdisciplinary research project that demonstrates scholarly rigor.

1. Demonstration of an interdisciplinary breadth of knowledge that is more broadly related to environment and resources; this may be in the form of courses, independent study, and/or evidence of proficiency through prior course work or other experience. Fulfillment of the interdisciplinary breadth requirement must be certified by the student's lead faculty advisers and committee members.
2. Completion of quarterly meetings with advisers during the first year, and at minimum, two annual meetings thereafter.
3. Submission of a candidacy plan for review at the second-year committee meeting and subject to the approval of that plan by the student's committee and E-IPER's faculty director. The candidacy plan documents how the student has fulfilled the program requirements to date and includes a summary of research ideas and a list of faculty who might serve as qualifying exam committee members.
4. Completion of the oral qualifying examination and completion of the requirements for candidacy, including at least 25 letter-graded graduate course units (200 level and above) with at least a 'B' (3.0) average. The qualifying exam committee must include the student's two lead advisers and two to three other faculty members with expertise in the student's research area. The majority of the qualifying exam committee should be members of the Stanford Academic Council; the chair of the committee must be a Stanford Academic Council member and may not be one of the student's two lead advisers. In exceptional cases, the committee may include a member-at-large who is not a Stanford faculty member as a fourth or fifth member.
5. Completion of a written dissertation, approved by the student's dissertation reading committee consisting of the student's lead advisers and at least one other member and passage of the University oral examination in defense of the dissertation following the guidelines outlined in the "Graduate Degrees (p. 65)" section of this bulletin. The University oral examination committee comprises the student's two lead advisers, at least two additional members, and a chair whose academic appointment is in a department outside that of the lead advisers. Normally, all committee members are Academic Council members; appointment of a non-Academic Council member must be petitioned and approved by the faculty director.

In addition to the requirements listed above, all Ph.D. students must:

1. Serve as a teaching assistant (TA) for at least one quarter, as a discussion section leader or with an opportunity to lecture in at least two class sessions, in any department or program, including but not limited to ENVRES 300 Introduction to Resource, Energy and Environmental Economics, ENVRES 320 Designing Environmental Research, or ENVRES 330 Research Approaches for Environmental Problem Solving. Seminars, including Introductory Seminars, may not be used to fulfill this requirement. Students should fulfill the teaching requirement by the end of the third year unless they obtain a firm commitment from a faculty member to TA a future course.
2. On an ongoing basis, submit grant proposals for external funding, defined as fellowship and/or research funds provided by a government agency, a private foundation, or a University entity other than E-IPER or the School of Earth, Energy and Environmental Sciences.
3. Participate each year in a Spring Quarter Annual Review in which the student and lead advisers submit progress reports for review by the E-IPER Academic Guidance Committee.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

E-IPER policy requires some courses credited to the M.S. and Ph.D. degrees to be taken for a letter grade. However, due to the special circumstances arising from the COVID-19 pandemic, these requirements are being adjusted for the 2020-21 academic year. Courses can be credited towards the degree requirements either if they have been taken for a letter grade OR with a grade of 'CR' (credit) or 'S' (satisfactory).

Graduate Advising Expectations

The Emmett Interdisciplinary Program in Environment and Resources is committed to providing academic advising in support of graduate student scholarly and professional development. Through the open discussions of scholarly ideas during regular interactions with their advisers, graduate students identify areas of focus, and more generally develop their creative and intellectual potential.

Faculty advisers guide students in designing and conducting research, selecting courses, exploring academic opportunities and professional pathways, developing teaching skills, and navigating policies and degree requirements. At the same time, they are aware and respectful of work-life balance and wellness considerations. Graduate students are proactive in seeking academic and professional guidance, and take responsibility for learning about their program’s policies and degree requirements.

Incoming students are assigned faculty adviser(s) in advance of their matriculation to the program; after further development of their research and professional interests, students may select different advisers.

As a best practice, adviser and advisee should agree upon advising expectations and then, periodically, discuss and review them in order to ensure mutual understanding.

Students should also take advantage of the larger advising network, consulting such resources as the E-IPER program staff, Stanford’s institutional resources (VPGE, Office of Graduate Life, CAPS, etc.), and individuals and networks in the broader community of scholars. While student academic progress is reviewed annually, students are expected to be active in tracking their own progress, and raising concerns in a timely manner.

The E-IPER website provides more detailed information about E-IPER advising procedures and expectations in the Joint- and Dual-M.S. programs (https://pangea.stanford.edu/eiper/curriculum/) and in the Ph.D. program (https://pangea.stanford.edu/eiper/phd-requirements/).

In the event that a student has a formal concern or complaint about their advising experience, they are encouraged to contact the E-IPER Associate Director, the E-IPER Faculty Director, the School Associate

Dean for Educational Affairs, or the School Associate Dean for Human Resources and Faculty Affairs.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Faculty Director: Nicole M. Ardoin

Director of Graduate Studies: Nicole M. Ardoin

Associate Co-Directors: Ann Marie Pettigrew and Anjana Richards

Anthropology: Lisa Curran, William H. Durham, James Ferguson, Lynn Meskell, Krish Seetah

Biology: Barbara Block, Larry B. Crowder, Gretchen C. Daily, Giulio De Leo, Rodolfo Dirzo, Anne Ehrlich (emerita), Paul Ehrlich (emeritus), Tadashi Fukami, Elizabeth Hadly, Fiorenza Micheli, Harold Mooney (emeritus), Erin Mordecai, Stephen Palumbi, Kabir Peay, Robert Sapolsky, Shripad Tuljapurkar, Peter Vitousek

Business: William Barnett, Jonathan Bendor, Steve Comello, Dan Iancu, Hau Lee, Dale T. Miller, Erica Plambeck, Hayagreeva Rao, Stefan J. Reichelstein, Dan Reicher, Baba Shiv, Itamar Simonson, Sarah A. Soule

Center for Comparative Studies in Race and Ethnicity: Michael Wilcox

Chemical Engineering: William Tarpeh

Civil and Environmental Engineering: Sarah L. Billington, Alexandria Boehm, Craig S. Criddle, John Dabiri, Jennifer Davis, Martin Fischer, David Freyberg, Olivier Fringer, Mark Jacobson, Rishee Jain, Jeffrey Koseff, Michael Lepech, Raymond Levitt (emertius), Richard Luthy, Gilbert M. Masters (emeritus), Stephen Monismith, Leonard Ortolano, Ram Rajagopal

Communications: Jon A. Krosnick

Earth System Science: Kevin Arrigo, Marshall Burke, Karen Casciotti, Page Chamberlain, Noah Diffenbaugh, Robert B. Dunbar, Scott Fendorf, Christopher Field, Christopher Francis, Steven Gorelick, Rob Jackson, James Holland Jones, Julie Kennedy (emerita), Eric Lambin, David Lobell, Pamela Matson, Anna Michalak, Rosamond Naylor, Morgan O'Neill, Leif Thomas, Gabrielle Wong-Parodi

Earth Systems Program: Patrick Archie, Sibyl Diver, Tom Hayden, Suki Hoagland, Richard Nevle

Economics: Lawrence Goulder, Charles Kolstad

Education: Nicole M. Ardoin, Daniel McFarland, Walter W. Powell

Energy Resources Engineering: Ines M. Azevedo, Sally M. Benson, Adam Brandt, Jef Caers, Margot Gerritsen, Anthony Kovscek

English: Mark Algee-Hewitt

Freeman Spogli Institute for International Studies: Walter Falcon (emeritus), Francis Fukuyama, Stephen Stedman

Geological Sciences: Gary Ernst (emeritus), Stephan Graham

Geophysics: Jenny Suckale, Mark Zoback

History: Zephyr Frank, David Kennedy, Richard White, Mikael Wolfe

Law: Michelle Anderson, Jeffrey Ball, Margaret Caldwell, Janet Martinez, Deborah Sivas, Barton Thompson, Alicia Seiger

Management Science and Engineering: Dariush Rafinejad, James Sweeney, John Weyant

Materials Science and Engineering: Michael D. McGehee

Mechanical Engineering: Arun Majumdar

Medicine: Jason Andrews, Michele Barry, Eran Bendavid, Mark Cullen, Christopher Gardner, Jeremy D Goldhaber-Fiebert, Desiree LaBeaud, Stephen P. Luby, Grant Miller, David Rehkopf, Thomas N. Robinson, Gary Schoolnik, Gary Shaw

Philosophy: Debra Satz

Physics: Leo Hollberg

Political Science: Bruce E. Cain, Terry Karl, Clayton Nall, Kenneth Schultz, Jeremy Weinstein

Program in Writing and Rhetoric: Emily Polk

Psychology: Brian Knutson

Sociology: Mark Granovetter, Douglas McAdam, Richard Scott (emeritus), Robb Willer

Statistics: Susan Holmes

Woods Institute for the Environment: Newsha Ajami, Shilajeet Banerjee, Jim Leape, Katharine Mach, Michael Wara

Outside Stanford:

Carnegie Institution: Greg Asner**,** Ken Caldeira

University of Virginia: Leon Szeptycki

Courses

ENVRES 199. Independent study. 1-5 Unit.

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Same as: ENVRES 299

ENVRES 201. Designing and Evaluating Community Engagement Programs for Social and Environmental Change. 3 Units.
Non-profit organizations seeking to achieve social and environmental change often run outreach and education programs to engage community members in their cause. Effective application of social science theory and methods may improve the design and evaluation of such community engagement programs. In this class, we partner with environmental and social justice organizations in the Bay Area to explore two questions: 1) How can recent findings from the social sciences be applied to design more effective community engagement programs ? 2) How can we rigorously evaluate outreach and education programs to ensure they are achieving the desired objectives? The course will include an overview of key theories from psychology, sociology, and education, field trips to partnering organizations, and a term-long community-engaged research project focused on designing and/or evaluating a local outreach or educational program that is meant to achieve social and environmental change.
Same as: EARTHSYS 130

ENVRES 220. The Social Ocean: Human Dimensions of Coastal and Marine Ecosystems. 1-2 Unit.
This interdisciplinary seminar examines human dimensions of current ocean issues through a series of readings, discussions, and guest lecturer presentations. Through the lenses offered by multiple disciplines and fields, we will examine and reinterpret the challenges of fisheries management, climate change, conservation/restoration, and human rights. We will welcome specialists in industry, academia, law, and the nonprofit sector to discuss theories of change for ocean issues, with a particular emphasis on marine justice. We invite students to create and share their own ¿Social Ocean Project¿ synthesizing course themes and personal reflections.

ENVRES 221. New Frontiers and Opportunities in Sustainability. 1 Unit.
Interdisciplinary exploration of how companies, government and non-profit organizations address some of the world's most significant environmental & resource sustainability challenges. Each week we will explore with an experienced sustainability practitioner new frontiers and opportunities in clean tech, policy, energy, transportation, consumer goods, agriculture, food, and sustainable built environments.

ENVRES 222. Climate Law and Policy. 3 Units.
This course offers an interdisciplinary, graduate-level survey of historical and current efforts to regulate emissions of greenhouse gases in the United States. Students will read primary legal documents, including statutes, regulations, and court cases in order to evaluate the forces and institutions shaping American climate policy. Although the class will focus on the intersection of climate policy and the legal system, no specific background in law is necessary. Elements used in grading: Grades will be based on class attendance, class participation, and either written assignments and an exam. Cross-listed with LAW 2520.

ENVRES 223. Topics in Writing & Rhetoric: Introduction to Environmental Justice: Race, Class, Gender and Place. 4 Units.
This course examines the rhetoric, history and key case studies of environmental justice while encouraging critical and collaborative thinking, reading and researching about diversity in environmental movements within the global community and at Stanford, including the ways race, class and gender have shaped environmental battles still being fought today. We center diverse voices by bringing leaders, particularly from marginalized communities on the frontlines to our classroom to communicate experiences, insights and best practices. Together we will develop and present original research projects which may serve a particular organizational or community need, such as racialized dispossession, toxic pollution and human health, or indigenous land and water rights, among many others. Prerequisite: PWR 2.
Same as: EARTHSYS 194, PWR 194EP

ENVRES 225. E-IPER Current Topics Seminar. 1 Unit.
For E-IPER Ph.D and Joint M.S. students only. Weekly presentations of E-IPER students' research and other program-related projects. Occasional guest speakers. Individual or team presentation, active participation, and regular attendance required for credit. May be taken for credit a maximum of two times. Enrollment by department consent only. Contact instructor for permission to enroll.

ENVRES 226. Energy Law. 3 Units.
Modern energy systems aim to deliver a supply of reliable, low-cost, and clean energy; in turn, they require massive capital investments in infrastructure projects, some of which have the features of a natural monopoly and therefore require ongoing economic regulation. The U.S. energy system today is subject to a complex regime of state and federal laws. We will examine the historical role of state-level electric utility regulation, tracing its evolution into the various forms of regulated and deregulated energy markets now in use in the U.S. electricity and natural gas sectors. Contemporary energy law increasingly involves a delicate federalist balance where state and federal regulators share overlapping authority in contested policy areas that are subject to major technological and economic change, as changes in the supply and costs of renewable and fossil energy resources alike transform the U.S. energy sector. Finally, we will interrogate the contested ideals of regulation and competition, which private, non-profit, and governmental stakeholders all deploy in legal and political fora to advance private gain and public goods¿most recently in a series of transformative proposals to use federal emergency powers to provide financial bailouts to legacy fossil and nuclear power plants. Students who complete the class will gain a historical understanding of how economic regulation of the energy sector has evolved since the early 20th century, a durable conceptual framework for understanding modern energy law and policy debates, and a practical understanding of energy law designed for future practitioners. Non-law students interested in energy issues are highly encouraged to take this course, as energy law literacy is essential to careers in the sector. Elements used in grading: class participation, short written assignments, and a one-day take-home final exam. Cross-listed with LAW 2503.

ENVRES 228. Private Environmental Governance. 2-3 Units.
The tools of private environmental regulation (e.g., eco-certifications, CSR initiatives, supplier contracts) have become an increasingly important source of governance. But how do they work? How do they arise--why and how can corporations participate in these voluntary measures? How do they regulate firm behavior and how can regulators police the tools themselves? This interdisciplinary seminar examines these questions and more, with readings from traditional legal sources (cases, agreements), as well as from economics, political science, and social psychology. Guest speakers and case studies will add real-world context to our exploration of theory. Elements used in grading: Students may take the course for 2 units (Option 1) or 3 units (Option 2). Attendance, class participation, and short written assignments will factor into grades for both sections. Option 1 students will also prepare a private governance proposal and presentation. Option 2 students will write a research paper meeting the Law School's R paper requirements. Please note that the last two class sessions (May 21 and 28) will have to be rescheduled. Cross-listed with the Law School (LAW 2522).

ENVRES 230. Field Survey Data Collection & Analysis. 3 Units.
In this course we will examine a range of issues related to the collection and analysis of survey data. Topics will include initiating a survey, designing an instrument, conducting enumeration, converting data from questionnaires to digital files, data analysis, empirical modeling and presenting results. Technical components will also be highly focused on application and implementation, and while prior training in econometrics would be useful, it will not be a prerequisite. The course will be tailored so that some of the specific topics covered will be based on the needs and interests of the students.

ENVRES 231. Qualitative Interviewing. 3 Units.
Addressing the theoretical underpinnings of qualitative interviews as well as the application of theory to practice, this course considers different approaches to interviewing. Interview types covered will range from group interviews to individual interviews, and from unstructured, ethnographically oriented interviews to highly structured interviews. Working with community partners to facilitate application to practice, the students will move from theory to interview design, implementation, and initial stages of analysis, with an emphasis on consistency in approach and utility in graduate-level research.
Same as: EDUC 450C

ENVRES 240. Environmental Decision-Making and Risk Perception. 1-3 Unit.
Mobilizing successful conservation efforts to mitigate climate change and preserve both local and global ecosystems requires a new way of thinking. This course will investigate the barriers to pro-environmental behavior and the heuristics and biases that cloud our ability to respond effectively to environmental problems, using insights from behavioral economics, neuroeconomics, and environmental risk perception. Emphasis on interdisciplinary applications of recent research, and implications for environmental policymaking and persuasive messaging.

ENVRES 245. Psychological Insights for Science Communication. 2-3 Units.
This course integrates lessons learned from psychology, behavioral economics, marketing, and sociology to the practice of science communication, with practical experience working to create and test new messaging for partner environmental organizations. Students learn about innate biases and heuristics that influence the communication of scientific ideas and data and the public¿s receptiveness to environmental messaging. Topics covered include information framing, attention and salience, public science literacy and numeracy, simplifying complexity and dealing with uncertainty, cultural and political contexts and social norms, and methods to motivate science engagement, evidence-based decision-making, and behavior change. Students will learn how to design new messaging strategies based on social science research and how to analyze their efficacy using basic statistical analyses in R (no prior programming knowledge is required). The course culminates in a project developing and testing new messaging strategies for real-world environmental organizations.

ENVRES 246. Measuring Success in Environmental Messaging. 1-2 Unit.
How do we understand the impacts of environmental messaging on its target audience, and ensure that it provides compelling and informative content for education, outreach, and behavior change? Once different messaging campaigns have been attempted, how do we evaluate their success? This course teaches students practical social science approaches to assess the efficacy of environmental messaging campaigns by real environmental nonprofit organizations. As a continuation of ENVRES 245, students will work with partner nonprofit organizations to analyze the performance of campaigns designed in the previous quarter, and identify the most salient and motivational aspects of the campaigns that best predicted successful and meaningful outcomes. The course will also focus on how to evaluate outcomes across heterogeneous populations, to better understand how messaging may impact a diverse audience. The statistical computing language R will be used in the course, but prior programming experience is not required. Prerequisite: ENVRES 245 : Psychological Insights for Science Communication or consent of instructor required.

ENVRES 250. Environmental Governance. 3 Units.
How do we work together to solve environmental problems? Across the globe, who has a voice, and who ultimately decides how to balance conservation and development? How do we build governance institutions that facilitate both environmental sustainability and social equity? This seminar on environmental governance will focus on the challenges and opportunities for managing common-pool resources, like fisheries, forests, and water. Because managing environmental resources is often about managing people, we will explore the motivations underlying human behavior towards the environment. We will discuss how institutions encode our cultural values and beliefs, and how we can reshape these institutions to achieve more sustainable outcomes. Coursework includes foundational readings and a pragmatic exploration of case studies. Teaching cases address topics in community-based conservation, international protected areas, market-based approaches, coping with environmental risk, and other themes. Interested undergraduate and graduate students from any discipline are welcome.
Same as: EARTHSYS 254

ENVRES 255. Moral, Civic, and Environmental Education. 3 Units.
An examination of the conceptual foundations that underlie moral, civic, and environmental action in contemporary society, and the social, cognitive, and motivational capacities that make possible constructive participation. The course will discuss both in-school and beyond-schools ways in which young people can be educated for informed and constructive participation. Among the educational methods to be considered will be narrative treatments of exemplary figures in the moral, civic, and environmental domains.
Same as: EDUC 379

ENVRES 260. Implementing & Financing a Decarbonized Economy. 3 Units.
In the forthcoming decades, the transition to a global low-carbon economy will require tens of trillions of dollars worth of capital investment. Much of that capital investment will directed towards new builds, or retrofits, of major capital projects. This course aims to give students a very practical and detailed introduction to the opportunities and challenges of developing and financing such major capital projects. Each of the instructors has decades of hands-on experience in developing and financing major capital projects. The process of developing and financing major capital projects is inherently very multidisciplinary--including engineering, business, finance, legal and (often) international relations principles. The course will start at a high level, covering the emissions landscape, policy framework, markets, and main technologies. Then we will dive much deeper into such key tasks as permitting; engineering and resource studies; project pro forma models; successfully negotiating project construction contracts and output sales contracts; arranging the financial terms and legal provisions of bank or bond debt financing; maximizing returns to equity; and monetizing tax and other governmental incentives. Students should be eager to engage in a multi-disciplinary approach both in terms of how to think about the subject matter and in terms of interacting with fellow students who bring a different academic and or work experience than their own. Class preparation for the bi-weekly sessions will require watching a pre-recorded lecture, literature review or case reading, and homework assignments designed to reinforce principles learned. A four-part case study encompassing the development of a 500 MW solar project will be used early on in the class to acquaint students with the tools and issues of project development. We plan to reserve the 1.5 hour class sessions for homework review, student case study analysis, reinforcement of technical concepts, and free-form discussion. Finally, we will divide the class into small teams to do final group projects that will be presented during the last few class sessions. The instructors do not require prior coursework in finance; and we will provide basic background materials and additional tutorials, as needed, to bring students up to the technical level required to do the coursework successfully. CONSENT OF PROGRAM FORM: In order to be considered for enrollment, please complete the Consent of Program Form: nhttps://forms.gle/U3gbzjcSgD7vpayf8 by Sunday, January 3rd at 11:59pm PST. Successful applicants will be notified when permission has been granted and will receive a permission number to register for the course in Axess by Wednesday, January 6th. Forms received after the deadline will be reviewed on a rolling basis until the class is full. ENVRES 260 is capped at 20 students. Some priority will be given to E-IPER graduate students.

ENVRES 270. Graduate Practicum in Environment and Resources. 1-5 Unit.
Opportunity for E-IPER students to pursue areas of specialization in an institutional setting such as a laboratory, clinic, research institute, governmental agency, non-governmental organization, or multilateral organization. Meets US CIS requirements for off-campus employment with endorsement from designated school official.

ENVRES 280. Topics in Environment and Resources. 2 Units.
Required core course restricted to E-IPER Joint M.S. and Dual M.S. students. This course functions as a gateway to fundamental concepts in environment, energy and sustainability. Topics include climate change, ecosystem services, life cycle assessment, energy systems, food systems, and others. Students engage with affiliated faculty, and begin to develop ways to integrate science and technology with business, law and other professional skills to solve environment and resource problems.

ENVRES 290. Capstone Project Seminar in Environment and Resources. 3 Units.
Required for and limited to E-IPER Joint M.S. and Dual M.S. students. Propose, conduct and publicly present final individual or team projects demonstrating the integration of professional (M.B.A., J.D., M.D., M.I.P., or Ph.D.) and M.S. in Environment and Resources degrees. Presentation and submission of final product required.

ENVRES 295. Carbon Dioxide and Methane Removal, Utilization, and Sequestration. 1 Unit.
This is a seminar on carbon dioxide and methane removal, utilization, and sequestration options, and their role in decarbonizing the global energy system. This course will cover topics including the global carbon balance, utilizing atmospheric carbon in engineered solutions, recycling and sequestering fossil-based carbon, and enhancing natural carbon sinks. The multidisciplinary lectures and discussions will cover elements of technology, economics, policy and social acceptance, and will be led by a series of guest lecturers. Short group project on carbon solutions.
Same as: EARTHSYS 308, ENERGY 308, ESS 308, ME 308

ENVRES 299. Independent study. 1-5 Unit.
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Same as: ENVRES 199

ENVRES 300. Introduction to Resource, Energy and Environmental Economics. 3 Units.
Required core course restricted to first year E-IPER Ph.D. students. Examination of environmental, energy and natural resource management problems through the lens of economics, with an emphasis on hands-on practical problem-solving. Topics include market failure, cost-benefit analysis, finance, risk & uncertainty, non-market valuation, regulation, green accounting, rent, renewable resources, exhaustible resources, including energy, and biodiversity. Prerequisite: proficiency in multivariate calculus. Knowledge of basic microeconomics helpful but not essential.

ENVRES 315. Environmental Research Design Seminar. 1 Unit.
Required core course restricted to first year E-IPER Ph.D. students. Series of faculty presentations and student-led discussions on interdisciplinary research design as exemplars of the research design theories discussed in ENVRES 320. Designing Environmental Research. Topics parallel the ENVRES 320 syllabus. Corequisite: ENVRES 320.

ENVRES 320. Designing Environmental Research. 3-4 Units.
Required core course restricted to first year E-IPER Ph.D. students. Research design options for causal inference in environmentally related research. Major philosophies of knowledge and how they relate to research objectives and design choices. Identification of critical elements within a broad range of research designs. Evaluation of the types of research questions for which different designs are suited, emphasizing fit between objectives, design, methods, and argument. Development of individual research design proposals, including description and justification understandable to a non-specialist. Enrollment by permission number only. Contact instructor for enrollment in course.

ENVRES 320A. Interdisciplinary Environmental Research Epistemology. 1 Unit.
Required introductory core course to ENVRES 320 restricted to first year E-IPER Ph.D. students. Research design options for causal inference in environmentally related research. Major philosophies of knowledge and how they relate to research objectives and design choices. Identification of critical elements within a broad range of research designs. Evaluation of the types of research questions for which different designs are suited, emphasizing fit between objectives, design, methods, and argument. Development of individual research design proposals, including description and justification understandable to a non-specialist.

ENVRES 330. Research Approaches for Environmental Problem Solving. 3 Units.
Required core course restricted to first year E-IPER Ph.D. students. How to develop and implement interdisciplinary research in environment and resources. Assignments include development of research questions, a preliminary literature review, and a summer funding proposal. Course is structured on peer critique and student presentations of work in progress. Corequisite: ENVRES 398 with a faculty member chosen to explore a possible dissertation topic.

ENVRES 340. E-IPER PhD Writing Seminar. 1-2 Unit.
Required core course restricted to second-year E-IPER PhD students. Actively pursue one or more writing goals relevant to this stage in their graduate studies in a structured setting. Set specific writing goals, create and follow a plan for reaching these goals, and receive substantive feedback on their written products from their peers. Examples of writing products include, but are not limited to, the student's dissertation proposal, E-IPER Fields of Inquiry essay, a literature review, or a grant or fellowship application. By the end of the course, students are expected to have completed or have made substantial progress toward their writing goal.

ENVRES 341. Theoretical Underpinnings of Environmental Behavior: Exploration and reflection. 1-3 Unit.
Human behavior is studied in many fields and disciplines at a range of scales, from the micro to the macro, with some focusing on the individual as the core, while others take a more critical approach. Theories and approaches from each can be considered in context with implications for the environment, resources, and sustainability-related issues. Using interdisciplinary frames, students in this doctoral-level seminar will apply various perspectives and lenses to advance their own empirical work through intensive, focused writing sessions. The intention is to provide a supportive structure such that students may advance their own in-progress research and ongoing writing grounded in behavioral science and social-ecological systems theories.

ENVRES 380. Innovating Large Scale Sustainable Transformations/ Collaborating for the Future. 3-4 Units.
The capacity to innovate system-level transformations is a crucial leadership modality in the face of complex systemic challenges. This class gives students the mindsets, theoretical framework, and hands-on experience in shaping innovative interventions that bring about scaled and profound transformations in the face of complex multi-factorial challenges. Students are immersed in the System Acupuncture Methodology, which combines systems thinking, strategy, design thinking, behavioral sciences, resilience theory, diffusion theory, decision theory, and a theoretical framework around scaled multi-stakeholder interventions. Tools and theories introduced in class will be used to structure large-scale transformations that simultaneously create sustainability and resilience on environmental, societal, and economic fronts. This project-based team-based class challenges students to find solutions for complex real-world challenges. Class meets in the spring quarter on Fridays 9:30am-4:20pm, weeks 1-9. Lunch will be provided. Final presentations on Friday of week 9, 3-7:30pm. Consent of instructor required. To be considered, please apply on the d.school website.
Same as: SUST 230

ENVRES 391. Curricular Practical Training. 1 Unit.
Educational opportunities in research and development labs in industry. Qualified students engage in internship work and integrate that work into their academic program. Students register during the quarter they are employed and complete a research report outlining their work activity, problems investigated, results, and follow-on projects they expect to perform. Course may be repeated for credit.

ENVRES 398. Directed Reading in Environment and Resources. 1-10 Unit.
Under supervision of an E-IPER affiliated faculty member on a subject of mutual interest. Joint M.S. students must submit an Independent Study Agreement for approval. May be repeat for credit.

ENVRES 399. Directed Research in Environment and Resources. 1-15 Unit.
For advanced graduate students. Under supervision of an E-IPER affiliated faculty member. Joint M.S. students must submit an Independent Study Agreement for approval.

ENVRES 801. TGR Project. 0 Units.
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ENVRES 802. TGR Dissertation. 0 Units.
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ENERGY RESOURCES ENGINEERING

Courses offered by the Department of Energy Resources Engineering (ERE) are listed under the subject code ENERGY on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=ENERGY&filter-catalognumber-ENERGY=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=ENERGY&filter-catalognumber-ENERGY=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=ENERGY&filter-catalognumber-ENERGY=on).

The Department of Energy Resources Engineering (ERE) awards the following degrees: Bachelor of Science, Master of Science, Engineer, and Doctor of Philosophy in Energy Resources Engineering. The department also awards the Master of Science, Engineer, and Doctor of Philosophy degrees in Petroleum Engineering. Contact the ERE student services office to determine the relevant program.

Energy Resources Engineering contributes to the engineering science needed to maintain and diversify the energy supply while finding the most rapid pathways toward greater energy sustainability. Energy Resources Engineering is concerned with the production, transformation, and impacts of energy resources including renewables and fossil fuels. Oil and natural gas are important components of the current energy system due to their widespread use, economic importance, and contributions to climate change. The flow of water, oil, and gas in the subsurface are important to quantify accurately for energy recovery, energy storage, environmental assessment, and carbon storage.

The program also has a strong interest in related energy topics such as renewable energy, global climate change, carbon capture and sequestration, energy storage and energy systems. The Energy Resources Engineering curriculum provides a sound background in basic sciences and their application to practical problems to address the complex and changing nature of the field. Course work includes the fundamentals of physics, chemistry, geology, computational physics, numerical analysis, and engineering science. Applied courses cover most aspects of energy resources engineering and some related fields such as geostatistics. The curriculum includes the fundamental aspects of energy transfer and fluid flow in subsurface geologic formations, as well as the storage, transmission and utilization of energy at the surface. These principles apply to the optimization of energy recovery from hydrocarbon and geothermal reservoirs, subsurface sequestration of carbon dioxide, energy storage, and the remediation of groundwater systems.

Faculty, graduate students, and postdoctoral scholars conduct research in areas including: energy system modeling and optimization; energy storage; data assimilation and uncertainty quantification; numerical reservoir simulation; carbon sequestration; enhanced oil recovery; geostatistical reservoir characterization; geothermal engineering; production optimization; power production from wind and wave energy; and well test analysis. Undergraduates are encouraged to participate in research projects.

The department is housed in the Green Earth Sciences Building and operates laboratories for research in batteries and energy storage, enhanced oil recovery processes, geological carbon storage operations, and geothermal engineering. Students have access to a variety of computer platforms and software for research and course work.

Mission of the Undergraduate Program in Energy Resources Engineering

The mission of the Energy Resources Engineering major is to provide students with the engineering skills and foundational knowledge needed to flourish as technical leaders within the energy industry. Such skills and knowledge include resource assessment, choices among energy alternatives, and carbon management, as well as the basic scientific background and technical skills common to engineers. The curriculum is designed to prepare students for immediate participation in many aspects of the energy industry and graduate school.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to:

1. apply skills developed in fundamental courses to real-world engineering problems.
2. research, analyze, and synthesize solutions to an original and contemporary energy problem.
3. work independently and as part of a team to develop and improve engineering solutions.
4. apply written, visual, and oral presentation skills to communicate engineering and scientific knowledge.

Graduate Programs in Energy Resources Engineering

The Energy Resources Engineering department offers two distinct degree programs at both the M.S and Ph.D. levels. One program leads to the degrees of M.S. or Ph.D. in Energy Resources Engineering, and the other leads to the degrees of M.S. or Ph.D. in Petroleum Engineering. The Engineer degree, which is offered in either Energy Resources Engineering or Petroleum Engineering, is an extended form of the M.S. degree with additional course work and research.

Learning Outcomes (Graduate)

The objective is to prepare students to be technical leaders in the energy industry, academia and research organizations through completion of independent research as well as fundamental courses in the major field and in related sciences. Students are expected to:

1. apply skills developed in fundamental courses to engineering problems.
2. research, analyze, and synthesize solutions to an original and contemporary energy problem.
3. work independently and as part of a team to develop and improve engineering solutions.
4. apply written, visual, and oral presentation skills to communicate scientific knowledge.
5. M.S. students are expected to develop in-depth technical understanding of energy problems at an advanced level.
6. Ph.D. students are expected to complete a scientific investigation that is significant, challenging and original.

Bachelor of Science in Energy Resources Engineering

The four-year program leading to the B.S. degree provides a foundation for careers in many facets of the energy industry. The curriculum includes basic science and engineering courses that provide sufficient depth for a

wide spectrum of careers in the energy, engineering, and environmental fields.

One of the goals of the program is to provide experience integrating the skills developed in individual courses to address a significant design problem. In ENERGY 199 Senior Project and Seminar in Energy Resources, taken in the senior year, student teams identify and propose technical solutions for an energy-resource related problem of current interest.

Program

The requirements for the B.S. degree in Energy Resources Engineering are similar, but not identical, to those described in the "School of Engineering" section of this bulletin. Students must satisfy the University Thinking Matters, Ways of Thinking/Ways of Doing (Ways), writing and rhetoric, and language requirements. The normal Energy Resources Engineering undergraduate program automatically satisfies the University Ways requirement in the Disciplinary Breadth areas of Natural Sciences, Engineering and Applied Sciences, and Mathematics.

Courses taken to fulfill the requirements for the major (energy resources core and depth; mathematics; engineering fundamentals; science; and technology in society) must be taken for a letter grade if the option is offered.

The Energy Resources Engineering undergraduate curriculum is designed to prepare students for participation in the energy industry or for graduate studies, while providing requisite skills to evolve as the energy landscape shifts over the next half century. The program provides a background in mathematics, basic sciences, and engineering fundamentals such as multiphase fluid flow in the subsurface. In addition, the curriculum is structured with flexibility that allows students to explore energy topics of particular individual interest and to study abroad.

In brief, the unit and subject requirements are:

	Units
Energy Resources Core	15-16
Energy Resources Depth	18
Mathematics	25
Engineering Fundamentals and Depth	20-24
Science	29-32
Technology in Society	3-5
University Requirements: Ways, Writing, Language	60-70
Total Units	170-190

The following courses constitute the normal program leading to a B.S. in Energy Resources Engineering. The program may be modified to meet a particular student's needs and interests with the adviser's prior approval.

Required Core in Energy Resources Engineering

		Units
The following courses constitute the core program in Energy Resources Engineering		
ENERGY 101	Energy and the Environment	3
ENERGY 104	Sustainable Energy for 9 Billion	3
ENERGY 120	Fundamentals of Petroleum Engineering	3
ENERGY 160	Uncertainty Quantification in Data-Centric Simulations	3
ENERGY 199	Senior Project and Seminar in Energy Resources (WIM)	3-4
Mathematics		**10**
MATH 19	Calculus	
MATH 20	Calculus	
MATH 21	Calculus	
And the following (CME series recommended):		
CME 100	Vector Calculus for Engineers	5
or MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
CME 102	Ordinary Differential Equations for Engineers	5
or MATH 53	Ordinary Differential Equations with Linear Algebra	
CME 104	Linear Algebra and Partial Differential Equations for Engineers	5
or MATH 52	Integral Calculus of Several Variables	
Science		
CHEM 31A	Chemical Principles I	5
or CHEM 31M	Chemical Principles: From Molecules to Solids	
CHEM 31B	Chemical Principles II	5
or CHEM 31M	Chemical Principles: From Molecules to Solids	
CHEM 33	Structure and Reactivity of Organic Molecules	5
PHYSICS 41	Mechanics	4
PHYSICS 43	Electricity and Magnetism	4
PHYSICS 45	Light and Heat	4
PHYSICS 46	Light and Heat Laboratory	1
GEOLSCI 1	Introduction to Geology	5
Engineering Fundamentals		
CS 106A	Programming Methodology	3-5
or CS 106X	Programming Abstractions	
CS 106B	Programming Abstractions	3-5
or CS 106X	Programming Abstractions	
ENERGY 110	Engineering Economics	3
ENGR 14	Intro to Solid Mechanics	3
ME 30	Engineering Thermodynamics (Previously ENGR 30)	3
ME 70	Introductory Fluids Engineering	3
Technology in Society, 1 course		

Earth and Energy Depth

Complete at least 5 courses from either the Renewable and Clean Energy or Petroleum Engineering emphasis lists below. Complete at least one course from the other emphasis. Units must total to at least 18 units.

		Units
Renewable and Clean Energy		
ENERGY 102	Fundamentals of Renewable Power	3
ENERGY 153	Carbon Capture and Sequestration	3-4
ENERGY 191	Optimization of Energy Systems	3-4
ENERGY 262	Physics of Wind Energy	3
ENERGY 293	Energy storage and conversion: Solar Cells, Fuel Cells, Batteries and Supercapacitors	3
ENERGY 293B	Fundamentals of Energy Processes	3
CEE 70	Environmental Science and Technology	3
CEE 176A	Energy Efficient Buildings	3
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	3-4
Petroleum Engineering		
ENERGY 112	Exploring Geosciences with MATLAB	1-3
ENERGY 118	Safety and Environmental Aspects of Oil and Gas Production	3
ENERGY 121	Fundamentals of Multiphase Flow	3
ENERGY 130	Well Log Analysis I	3

ENERGY 141	Seismic Reservoir Characterization	3-4
ENERGY 153	Carbon Capture and Sequestration	3-4
ENERGY 175	Well Test Analysis	3
ENERGY 180	Oil and Gas Production Engineering	3
ENERGY 191	Optimization of Energy Systems	3-4
GEOLSCI 106	Sediments: The Book of Earth's History	3
GEOPHYS 130	Introductory Seismology	3
GEOPHYS 182	Reflection Seismology	3

Honors Program

The program in Energy Resources Engineering leading to the Bachelor of Science with Honors provides an opportunity for independent study and research on a topic of special interest and culminates in a written report and oral presentation.

The honors program is open to students with a grade point average (GPA) of at least 3.5 in all courses required for the ERE major and minimum of 3.0 in all University course work. Qualified students intending to pursue honors must submit an Honors Program Application to the undergraduate program director no later than the eighth week of their ninth quarter, but students are encouraged to apply to the program during Winter Quarter of their junior year. The application includes a short form, an unofficial transcript, and a 2-3 page research proposal prepared by the student and endorsed by a faculty member who serves as the research adviser.

Upon approval, students enroll in the honors program via Axess. Students must enroll in a total of 9 units of ENERGY 193 Undergraduate Research Problems; these units may be spread out over the course of the senior year, and may include previous enrollment units for the same research project. Research undertaken for the honors program cannot be used as a substitute for regularly required courses. A formal written report must be submitted to the student's research adviser no later than the fourth week of the student's final quarter, and the report must be read, approved, and signed by the student's faculty adviser and a second member of the faculty. Each honors candidate must make an oral presentation of his or her research results.

Minor in Energy Resources Engineering

The minor in Energy Resources Engineering requires the following three courses plus three additional electives. Courses must be planned in consultation with an ERE adviser. Appropriate substitutions are allowed with the consent of the adviser.

Required courses

		Units
ENERGY 101	Energy and the Environment	3
ENERGY 120	Fundamentals of Petroleum Engineering	3
ENERGY 160	Uncertainty Quantification in Data-Centric Simulations	3

Elective courses

		Units
Select at least three of the following:		
ENERGY 102	Fundamentals of Renewable Power	
ENERGY 104	Sustainable Energy for 9 Billion	
ENERGY 112	Exploring Geosciences with MATLAB	
ENERGY 121	Fundamentals of Multiphase Flow	
ENERGY 130	Well Log Analysis I	
ENERGY 141	Seismic Reservoir Characterization	
ENERGY 153	Carbon Capture and Sequestration	
ENERGY 175	Well Test Analysis	
ENERGY 180	Oil and Gas Production Engineering	
ENERGY 269	Geothermal Reservoir Engineering	
GEOLSCI 106	Sediments: The Book of Earth's History	
GEOPHYS 182	Reflection Seismology	

The department offers a Master of Science in Energy Resources Engineering (p. 408), a coterminal Master of Science in Energy Resources Engineering (p. 409), and a Master of Science in Peetroleum Engineering (p. 410).

Master of Science in Energy Resources Engineering

The objective of the M.S. degree in Energy Resources Engineering is to prepare the student either for a professional career or for doctoral studies. Students in the M.S. degree program must fulfill the following:

1. Complete a 45-unit program of study. The degree has two options:
   a. a course work degree, requiring 45 units of course work
   b. a research degree, with a minimum of 39 units of course work, and the remainder consisting of no more than 6 research units.
2. Complete 3 units of ENERGY 351 ERE Master's Graduate Seminar. These units do not count toward the 45 units of course work required for the M.S. degree.
3. Course work units must be divided among two or more scientific and/or engineering disciplines and can include the core courses required for the Ph.D. degree.
4. All courses must be taken for a letter grade.
5. The program of study must be approved by the academic advisor and the department graduate program committee.
6. Students taking the research-option degree are required to complete an M.S. thesis, approved by the student's thesis committee.

Recommended Courses and Sequences

The following list is recommended for most students. With the prior consent of the student's advisor, courses listed under technical electives may be substituted based on interest or background.

Core Sequence (12 units)

		Units
ENERGY 253	Carbon Capture and Sequestration	3-4
ENERGY 293	Energy storage and conversion: Solar Cells, Fuel Cells, Batteries and Supercapacitors	3
ENERGY 293B	Fundamentals of Energy Processes	3
ENERGY 297	Fluid Mechanics and Heat Transfer	3

Mathematics and Analysis Fundamentals (12 units)

		Units
CME 200	Linear Algebra with Application to Engineering Computations	3
And select one of the following (3 units):		
CME 204	Partial Differential Equations in Engineering	3
CME 206	Introduction to Numerical Methods for Engineering	3
ENERGY 281	Applied Mathematics in Reservoir Engineering	3
And select two of the following (6 units):		
ENERGY 240	Data science for geoscience	3
ENERGY 260	Uncertainty Quantification in Data-Centric Simulations	3
ENERGY 281	Applied Mathematics in Reservoir Engineering	3
ENERGY 291	Optimization of Energy Systems	3-4

CME 204	Partial Differential Equations in Engineering	3
CME 206	Introduction to Numerical Methods for Engineering	3

Technical Elective Sequence (15 units)

		Units
Select three courses from one of the following sequences and additional technical courses to obtain 15 total elective units:		15
Geothermal:		
Select three of the following:		
ENERGY 223	Reservoir Simulation	
ENERGY 269	Geothermal Reservoir Engineering	
ME 131	Heat Transfer	
ME 370A	Energy Systems I: Thermodynamics	
Low Carbon Energy:		
Select three of the following:		
ENERGY 104	Sustainable Energy for 9 Billion	
ENERGY 223	Reservoir Simulation	
ENERGY 251	Thermodynamics of Equilibria	
ENERGY 269	Geothermal Reservoir Engineering	
ENERGY 291	Optimization of Energy Systems	
ME 370A	Energy Systems I: Thermodynamics	
ME 370B	Energy Systems II: Modeling and Advanced Concepts	
Modeling Natural Resources:		
Select three of the following:		
ENERGY 240	Data science for geoscience	
ENERGY 241	Seismic Reservoir Characterization	
GEOPHYS 262	Rock Physics	
Oil and Gas:		
Select three of the following:		
ENERGY 104	Sustainable Energy for 9 Billion	
ENERGY 175	Well Test Analysis	
ENERGY 221	Fundamentals of Multiphase Flow	
ENERGY 222	Advanced Reservoir Engineering	
ENERGY 223	Reservoir Simulation	
ENERGY 240	Data science for geoscience	
ENERGY 251	Thermodynamics of Equilibria	
Total Units		15

Research Sequence (6 units)

		Units
ENERGY 361	Master's Degree Research in Energy Resources Engineering [1]	1-6
Total Units		1-6

[1] Students choosing the self-funded course-work-only option for the M.S. degree may substitute an additional elective sequence in place of the research.

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Coterminal M.S. Program in Energy Resources Engineering

The coterminal B.S./M.S. program offers an opportunity for Stanford University students to pursue a graduate experience while completing the B.S. degree in any relevant major. Energy Resources Engineering graduate students generally come from backgrounds such as chemical, civil, or mechanical engineering; geology or other earth sciences; or physics or chemistry.

The two types of M.S. degrees, the course work only degree and the research degree, as well as the courses required to meet degree requirements, are described above in the M.S. section. Both degrees require 45 units and may take from one to two years to complete depending on circumstances unique to each student.

Requirements to enter the program are: three letters of recommendation from faculty members or job supervisors, a statement of purpose, scores from the GRE general test, and a copy of Stanford University transcripts. While the department does not require any specific GPA or GRE score, potential applicants are expected to compete favorably with graduate student applicants.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

A Petroleum Engineering or Energy Resources Engineering master's degree can be used as a terminal degree for obtaining a professional job in the engineering or energy industries, or in any related industry where application of physical principles or computer simulation skills are required. It can also be a stepping stone to a Ph.D. degree that usually leads to a professional research job or an academic position.

Students should apply to the program any time after they have completed 120 undergraduate units. Contact the Department of Energy Resources Engineering to obtain additional information. Students should have a background at least through MATH 53 (http://exploredegrees.stanford.edu/schoolofearthsciences/energyresourcesengineering/js/fckeditor/editor/fckeditor.html?InstanceName=attr_text&Toolbar=PageWizard) Ordinary Differential Equations with Linear Algebra and CS 106AB (http://exploredegrees.stanford.edu/schoolofearthsciences/energyresourcesengineering/js/fckeditor/editor/fckeditor.html?InstanceName=attr_text&Toolbar=PageWizard) Programming Methodology before beginning graduate work in this program.

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Master of Science in Petroleum Engineering

The objective is to prepare the student for professional work in the energy industry, or for doctoral studies, through completion of fundamental courses in the major field and in related sciences as well as independent research.

Students entering the graduate program are expected to have an undergraduate-level engineering or physical science background. Competence in computer programming in a high-level language (CS 106X Programming Abstractions or the equivalent) and knowledge of engineering and geological fundamentals (ENERGY 120 Fundamentals of Petroleum Engineering, ENERGY 130 Well Log Analysis I, and GEOLSCI 106 Sediments: The Book of Earth's History) are prerequisites for taking most graduate courses.

The following are minimum requirements for a student in the Department of Energy Resources Engineering to remain in good academic standing regarding course work:

1. No more than one incomplete grade at any time
2. A cumulative grade point average (GPA) of 3.0
3. A grade point average (GPA) of 2.7 each quarter
4. A minimum of 15 units completed within each two quarter period (excluding Summer Quarter).

Unless otherwise stated by the instructor, incomplete grades in courses within the department are changed to 'NP' (not passed) at the end of the quarter after the one in which the course was given. This one quarter limit is a different constraint from the maximum one-year limit allowed by the University.

Academic performance is reviewed each quarter by a faculty committee. At the beginning of the next quarter, any student not in good academic standing receives a letter from the committee or department chair stating criteria that must be met for the student to return to good academic standing. If the situation is not corrected by the end of the quarter, possible consequences include termination of financial support, termination of departmental privileges, and termination from the University.

Students funded by research grants or fellowships from the department are expected to spend at least half of their time (a minimum of 20 hours per week) on research. Continued funding is contingent upon satisfactory research effort and progress as determined by the student's advisor. After Autumn Quarter of the first year, students receive a letter from the department chair concerning their research performance. If problems are identified and they persist through the second quarter, a warning letter is sent. Problems persisting into a third quarter may lead to loss of departmental support including tuition and stipend. Similar procedures are applied in subsequent years.

A balanced master's degree program including engineering course work and research requires a minimum of one maximum-tuition academic year beyond the baccalaureate to meet the University residence requirements. Most full-time students spend at least one additional summer to complete the research requirement. An alternative master's degree program based only on course work is available, also requiring at least one full tuition academic year to meet University residence requirements.

M.S. students who anticipate continuing in the Ph.D. program should follow the research option. M.S. students receiving financial aid normally require two academic years to complete the degree. Such students must take the research option.

The candidate must fulfill the following requirements:

1. Register as a graduate student for at least 45 units.
2. Submit a program proposal for the Master's degree approved by the advisor during the first quarter of enrollment.
3. Complete 45 units with a grade point average (GPA) of at least 3.0. This requirement is satisfied by taking the core sequence, selecting one of the seven elective sequences, an appropriate number of additional courses from the list of technical electives, and completing 6 units of master's level research. Students electing the course work only M.S. degree are strongly encouraged to select an additional elective sequence in place of the research requirement. Students interested in continuing for a Ph.D. are expected to choose the research option and enroll in 6 units of ENERGY 361 Master's Degree Research in Energy Resources Engineering. All courses must be taken for a letter grade.
4. Complete 3 units of ENERGY 351 ERE Master's Graduate Seminar. These units do not count toward the 45 units of course work required for the M.S. degree.
5. Students entering without an undergraduate degree in Petroleum Engineering must make up deficiencies in previous training. Not more than 10 units of such work may be counted as part of the minimum total of 45 units toward the M.S. degree.

Research subjects include certain groundwater hydrology and environmental problems, energy industry management, flow of non-Newtonian fluids, geothermal energy, natural gas engineering, oil and gas recovery, pipeline transportation, production optimization, reservoir characterization and modeling, carbon sequestration, reservoir engineering, reservoir simulation, and transient well test analysis.

Recommended Courses and Sequences

The following list is recommended for most students. With the prior special consent of the student's advisor, courses listed under technical electives may be substituted based on interest or background.

Core Sequence (12 units)

		Units
ENERGY 221	Fundamentals of Multiphase Flow	3
ENERGY 222	Advanced Reservoir Engineering	3
ENERGY 251	Thermodynamics of Equilibria	3
ENERGY 297	Fluid Mechanics and Heat Transfer	3

Mathematics and Analysis Fundamentals (12 units)

		Units
CME 200	Linear Algebra with Application to Engineering Computations	3
And select one of the following (3 units):		
CME 204	Partial Differential Equations in Engineering	3
CME 206	Introduction to Numerical Methods for Engineering	3
ENERGY 281	Applied Mathematics in Reservoir Engineering	3
And select two of the following (6 units):		
ENERGY 240	Data science for geoscience	3
ENERGY 260	Uncertainty Quantification in Data-Centric Simulations	3
ENERGY 281	Applied Mathematics in Reservoir Engineering	3
ENERGY 291	Optimization of Energy Systems	3-4
CME 204	Partial Differential Equations in Engineering	3
CME 206	Introduction to Numerical Methods for Engineering	3

Technical Elective Sequence (15 units)

		Units
Select three courses from one of the following sequences and additional technical courses to obtain 15 total elective units:		15
Environmental:		
ENERGY 227	Enhanced Oil Recovery	
ESS 221	Contaminant Hydrogeology and Reactive Transport	
CEE 270	Movement and Fate of Organic Contaminants in Waters	
Enhanced Recovery:		
Select three of the following:		
ESS 220	Physical Hydrogeology	
ENERGY 225	Theory of Gas Injection Processes	
ENERGY 226	Thermal Recovery Methods	
ENERGY 227	Enhanced Oil Recovery	
Geostatistics and Reservoir Modeling:		
ENERGY 240	Data science for geoscience	
ENERGY 241	Seismic Reservoir Characterization	
GEOPHYS 182	Reflection Seismology	
or GEOPHYS 262	Rock Physics	
Geothermal:		
ENERGY 269	Geothermal Reservoir Engineering	
CHEMENG 120B	Energy and Mass Transport	
ME 131	Heat Transfer	
Reservoir Performance:		
Select three of the following:		
ENERGY 130	Well Log Analysis I	
ENERGY 175	Well Test Analysis	
ENERGY 223	Reservoir Simulation	
ENERGY 280	Oil and Gas Production Engineering	
GEOPHYS 202	Reservoir Geomechanics	
Simulation and Optimization:		
ENERGY 223	Reservoir Simulation	
ENERGY 224	Advanced Reservoir Simulation	
ENERGY 289	Multiscale Methods for Transport in Porous Media	
Renewable Energy:		
Select three of the following:		
ENERGY 269	Geothermal Reservoir Engineering	
or ENERGY 262	Physics of Wind Energy	
ENERGY 293	Energy storage and conversion: Solar Cells, Fuel Cells, Batteries and Supercapacitors	
ENERGY 293B	Fundamentals of Energy Processes	
ENERGY 295	Electrochemical Energy Storage Systems: Modeling and Estimation	

Research Sequence (6 units)

		Units
ENERGY 361	Master's Degree Research in Energy Resources Engineering [1]	1-6
Total Units		1-6

[1] Students choosing the self-funded course-work-only option for the M.S. degree may substitute an additional elective sequence in place of the research.

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Doctor of Philosophy in Petroleum Engineering or Energy Resources Engineering

The Ph.D. degree is conferred upon demonstration of high achievement in independent research and by presentation of the research results in a written dissertation and oral defense.

The following are minimum requirements for a student in the Department of Energy Resources Engineering to remain in good academic standing regarding course work:

1. No more than one incomplete grade at any time
2. A cumulative grade point average (GPA) of 3.25
3. A grade point average (GPA) of 2.7 each quarter
4. A minimum of 15 units completed within each two quarter period (excluding Summer Quarter).

Unless otherwise stated by the instructor, incomplete grades in courses within the department are changed to 'NP' (not passed) at the end of the quarter after the one in which the course was given. This one quarter limit is a different constraint from the maximum one-year limit allowed by the University.

Academic performance is reviewed each quarter by a faculty committee. At the beginning of the next quarter, any student not in good academic standing receives a letter from the committee or department chair stating criteria that must be met for the student to return to good academic standing. If the situation is not corrected by the end of the quarter, possible consequences include termination of financial support, termination of departmental privileges, and dismissal from the University.

Students funded by research grants or fellowships from the department are expected to spend at least half of their time (a minimum of 20 hours per week) on research. Continued funding is contingent upon satisfactory research effort and progress as determined by the student's advisor. After Autumn Quarter of the first year, students receive a letter from the department chair concerning their research performance. If problems are identified and they persist through the second quarter, a warning letter is sent. Problems persisting into a third quarter may lead to loss of departmental support including tuition and stipend. Similar procedures are applied in subsequent years.

The Ph.D. degree is awarded primarily on the basis of completion of significant, original research. Extensive course work and a minimum of 90 units of graduate work beyond the master's degree are required. Doctoral candidates planning theoretical work are encouraged to gain experimental research experience in the M.S. program. Ph.D. students receiving financial assistance are limited to 10 units per quarter and often require more than three years beyond the M.S. degree to complete the Ph.D.

In addition to University and the Department of Energy Resources Engineering basic requirements for the doctorate, the Petroleum Engineering Ph.D. and Energy Resources Engineering Ph.D. degrees have the following requirements:

1. Complete 135 units of total graduate work (90 units beyond the master's degree). The 90 units are composed of a minimum of 36 units of research and a minimum of 36 units of course work. At least half of the classes must be at a 200 level or higher and all must be taken for a letter grade. Students with an M.S. degree or other specialized training from outside ERE are generally expected to include ENERGY 221 Fundamentals of Multiphase Flow, ENERGY 297 Fluid Mechanics and Heat Transfer and ENERGY 240 Data science for geoscience, or their equivalents. The number and distribution

of courses to be taken is determined with input from the research advisors and department graduate program committee.
2. To achieve candidacy (usually during or at the end of the first year of enrollment), the student must complete 24 units of letter-graded course work beyond the M.S. degree, pass a written exam, develop a written Ph.D. research proposal, and choose a dissertation committee.
3. The research advisor(s) and two other faculty members comprise the dissertation reading committee. Upon completion of the dissertation, the student must pass a University oral examination in defense of the dissertation.
4. Act as a teaching assistant at least once, and enroll in ENERGY 359 Teaching Experience in Energy Resources Engineering.
5. Complete 4 units of ENERGY 352 ERE PhD Graduate Seminar. These units do not count toward the 36 units of course work required for the Ph.D. degree.

36 units of course work is a minimum; in some cases the research advisor may specify additional requirements to strengthen the student's expertise in particular areas. The 36 units of course work does not include required teaching experience (ENERGY 359 Teaching Experience in Energy Resources Engineering) nor required research seminars.

The dissertation must be submitted in its final form within five calendar years from the date of admission to candidacy. Candidates who fail to meet this deadline must submit an Application for Extension of Candidacy for approval by the department chair if they wish to continue in the program.

Ph.D. students entering the department are required to hold an M.S. degree in a relevant science or engineering discipline. Students wishing to follow the Ph.D. program in Petroleum Engineering must hold an M.S. degree (or equivalent) in Petroleum Engineering. Students following the Ph.D. program in Energy Resources Engineering must hold an M.S. degree (or equivalent), although it need not be in Energy Resources Engineering.

After the second quarter at Stanford, a faculty committee evaluates the student's progress. If a student is found to be deficient in course work and/or research, a written warning is issued. After the third quarter, the faculty committee decides whether or not funding should be continued for the student. Students denied funding after the third quarter are advised against proceeding with the Ph.D. proposal, though the student may choose to proceed under personal funding.

Ph.D. Degree Qualification

The procedure for Ph.D. qualification is identical for individuals who entered the department as an M.S. or as a Ph.D. student. For students completing an M.S. in the department, the student formally applies to the Ph.D. program in the second year of the M.S. degree program. The student is considered for admission to the Ph.D. program along with external applicants. The admission decision is based primarily upon research progress and course work.

There are two steps to the qualification procedure. Students first take a written exam that is offered just before the beginning of Autumn Quarter. The exam focuses upon synthesis of knowledge acquired from the core courses in ERE, or PE. Typically, students are expected to have expertise in the materials of the following classes:

ERE: ENERGY 240, 253, 293, 293B, 297 (or 221), CME 200, 204 (or ENERGY 281)

PE: ENERGY 175, 221, 222, 223, 240, 251, 260, CME 200, 204 (or ENERGY 281)

The exams are different for ERE and PE Ph.D. students, but share a goal of having students exhibit capability to solve engineering problems in the subject. Students take the exam consistent with their Ph.D. degree objective (i.e., ERE or PE).

Students continuing within the department take the written exam at the beginning of their first quarter as Ph.D. students. Students who completed their M.S. outside of the department take the written exam at the beginning of their fourth quarter as Ph.D. students. A student who does not pass the exam may be allowed to take the exam a second time; however this is a decision of the examining faculty committee. Any student who does not pass the written exam is considered to have failed the qualifying exam. Any student who is deemed to have not made sufficient research progress may not be allowed to take the written exam and research progress is taken into account for pass, fail, and retake decisions.

The second step of the Ph.D. qualifying procedure includes a written Ph.D. proposal and oral defense. Each student must select a committee of three faculty members, including the advisor(s), who read the proposal and attend the oral defense. The other committee members should be chosen in consultation with the advisor(s). One of the committee members can be a senior research scientist, or an external researcher, where appropriate. In the case of a coadvising situation, the committee may include a total of four members (three is also acceptable in this case).

The body of the written proposal, including references, should be 25-35 pages in length (note the 35-page maximum). The written proposal can additionally include, as appendices, papers that have been published or submitted, but the student should not expect the committee to read the material in the appendices. Templates (11-point font, normal margins) for the proposal should be used and are available on the department's website (https://pangea.stanford.edu/ere/current-student-resources/). The proposal, with approximate lengths for the various sections, should include:

- Introduction and literature review, including key unanswered research questions (4-8 pages)
- Problem statement and research progress to date, including formulations, data and methods used (or to be applied), initial results and discussion, etc. (15-25 pages)
- Proposed work, intellectual/practical merit, timeline (3-5 pages)
- References

The proposal must be provided to the committee, both as hard copy and via email, a minimum of two weeks prior to the oral defense. This two-week lead time is a firm requirement. The oral proposal should be scheduled for two hours. This will include a formal talk, of length 35-40 minutes, followed by questions from each committee member. Questions may be on the proposed research as well as the general field of study. The student can pass, pass with qualifications requiring more classes or teaching assistantships, or fail.

Students who completed their M.S. in the department must prepare and defend their proposal in their third quarter, not counting summer, as a Ph.D. student (this will typically be spring quarter). Students who completed their M.S. outside of the department must complete the proposal in their fourth quarter of study, not counting summer (which will typically be fall quarter of their second year). In either case the advisor may request a one-quarter delay for extenuating circumstances such as a major change in research focus between M.S. and Ph.D. programs, serious health issues, etc. Note that this request must originate from the advisor, not the student.

Students who have passed the qualification procedure and later wish to change their degree objective from PE to ERE, or vice versa, may petition

the graduate standing committee. A switch of degree objective is not automatically granted. Petitions are made in writing and must include a brief explanation of the request for a change in degree objective and a plan to make up subject matter deficiencies. At minimum, students who petition are expected to complete ultimately all courses listed as contributing subject matter to the written exam in the area of their degree objective with a minimum grade of 'B'. The graduate standing committee decides whether petitions have merit and if additional steps are needed to address deficiencies. Such switches in degree objective are considered provisional until all conditions have been met.

Course Work

The 36 units of course work may include graduate courses in Energy Resources Engineering (numbered 200 and above) and courses chosen from the following list. Other courses may be substituted with prior approval of the advisor. In general, non-technical courses are not approved.

Students who enter directly into the Ph.D. program after receiving an M.S. degree from another university are expected to show expertise in the core courses required for Stanford's M.S. degree in Energy Resources Engineering, either by including those courses in their Ph.D. degree or by showing that they have taken equivalent courses during their M.S. degree.

For a Ph.D. in Energy Resources Engineering, 12 of the 36 required course units must be completed from the following list of courses. If the student has not taken ENERGY 293 Energy storage and conversion: Solar Cells, Fuel Cells, Batteries and Supercapacitors and ENERGY 293B Fundamentals of Energy Processes or their equivalent during the M.S., then these courses must be taken during the Ph.D. (they satisfy 6 of the required 12 units).

		Units
Required to take 12 units from the following list:		
ENERGY 104	Sustainable Energy for 9 Billion	3
ENERGY 253	Carbon Capture and Sequestration	3-4
ENERGY 269	Geothermal Reservoir Engineering	3
ENERGY 291	Optimization of Energy Systems	3-4
ENERGY 293	Energy storage and conversion: Solar Cells, Fuel Cells, Batteries and Supercapacitors	3
ENERGY 293B	Fundamentals of Energy Processes	3
ENERGY 301	The Energy Seminar	1
CEE 176A	Energy Efficient Buildings	3
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	3-4
CME 206	Introduction to Numerical Methods for Engineering	3
CME 302	Numerical Linear Algebra	3
CME 306	Numerical Solution of Partial Differential Equations	3
ESS 221/CEE 260C	Contaminant Hydrogeology and Reactive Transport	3
CHEMENG 340	Molecular Thermodynamics	3
ECON 250	Environmental Economics	3-5
ECON 251	Natural Resource and Energy Economics	2-5
GEOLSCI 253	Petroleum Geology and Exploration	3
GEOPHYS 182	Reflection Seismology	3
GEOPHYS 202	Reservoir Geomechanics	3
GEOPHYS 262	Rock Physics	3
ME 131	Heat Transfer	4
ME 335A	Finite Element Analysis	3
ME 335B	Finite Element Analysis	3
ME 335C	Finite Element Analysis	3
ME 370A	Energy Systems I: Thermodynamics	3
ME 370B	Energy Systems II: Modeling and Advanced Concepts	4
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution	3-4
MATSCI 316	Nanoscale Science, Engineering, and Technology	3

Ph.D. Minor in Another Department

- The student must propose the possibility of pursuing a Ph.D. minor, clearly and explicitly, in the written Ph.D. proposal. This will then be discussed, and decided upon by the committee, during the oral portion of the Ph.D. proposal defense.
- Students can "double-count" a maximum of four courses toward both their ERE course requirements (36 units, typically 12 courses) and their minor requirements (e.g., 20 units in CS). This means that eight of the 12 courses required by ERE cannot also be applied for the minor. The course requirements for the ERE/PE Ph.D. degree must be approved in advance by the advisor as part of the Application for Candidacy. Any substitutions of courses to meet minor requirements cannot be made without the advisor's signed approval.
- We reiterate that students are required to review their course selections with their advisor at the start of every quarter.

Ph.D. Minor in Petroleum Engineering or Energy Resources Engineering

To be recommended for a Ph.D. degree with Petroleum Engineering or Energy Resources Engineering as a minor subject, a student must take 20 units of graduate-level lecture courses in the department. These courses must include ENERGY 221 Fundamentals of Multiphase Flow and ENERGY 222 Advanced Reservoir Engineering for the Petroleum Engineering minor, or ENERGY 293 Energy storage and conversion: Solar Cells, Fuel Cells, Batteries and Supercapacitors and ENERGY 293B Fundamentals of Energy Processes for the Energy Resources Engineering minor. The remaining courses should be selected from:

		Units
ENERGY 175	Well Test Analysis	3
ENERGY 223	Reservoir Simulation	3-4
ENERGY 224	Advanced Reservoir Simulation	3
ENERGY 225	Theory of Gas Injection Processes	3
ENERGY 227	Enhanced Oil Recovery	3
ENERGY 240	Data science for geoscience	3
ENERGY 241	Seismic Reservoir Characterization	3-4
ENERGY 251	Thermodynamics of Equilibria	3
ENERGY 253	Carbon Capture and Sequestration	3-4
ENERGY 269	Geothermal Reservoir Engineering	3
ENERGY 280	Oil and Gas Production Engineering	3
ENERGY 281	Applied Mathematics in Reservoir Engineering	3
ENERGY 291	Optimization of Energy Systems	3-4

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies

relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

Under normal circumstances, all courses credited to the degree have been required to be taken for a letter grade. However, due to the special circumstances arising from the COVID-19 pandemic, this requirement is being relaxed for the Autumn Quarter and Winter Quarter: courses can be credited towards the degree requirements either if they have been taken for a letter grade or with a grade of 'CR' (credit) or 'S' (satisfactory).

The COVID-19 policies for the rest of the academic year will be updated in the Bulletin when those decisions have been made.

Graduate Degree Requirements

Grading

Under normal circumstances, all courses credited to the degree have been required to be taken for a letter grade. However, due to the special circumstances arising from the COVID-19 pandemic, this requirement is being relaxed for the Autumn Quarter and Winter Quarter: courses can be credited towards the degree requirements either if they have been taken for a letter grade or with a grade of 'CR' (credit) or 'S' (satisfactory).

The COVID-19 policies for the rest of the academic year will be updated in the Bulletin when those decisions have been made.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Master's Student Advising

The Department of Energy Resources Engineering is committed to providing academic advising in support of our M.S. students’ education and professional development. When most effective, this advising relationship entails collaborative engagement by both the advisor and the advisee. As a best practice, advising expectations should be discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity.

At or before the start of graduate study, normally at the beginning of Autumn Quarter, each student is assigned an advisor: a member of our faculty who provides research advice and guidance in course selection and in exploring academic opportunities and professional pathways. A significant advising milestone is the M.S. Program Proposal that each student completes at the end of their first quarter.

The department’s graduate handbook provides information and suggested timelines for advising meetings. Typically, research M.S. students meet with their advisor on a twice weekly basis, once individually and once as part of the research group meeting. If a meeting is not possible, the student should send the advisor a brief email highlighting his/her activities for the week. Usually, the same faculty member serves as program advisor for the duration of master’s study, but the handbook does describe a process for formal advisor changes.

In addition, the Director of Graduate Studies (DGS) meets with all the master’s students at the start of the first year and is available during the academic year by email and during office hours.

Students are expected to have a discussion with their advisor during or before the first week of each quarter to agree upon the courses that the student plans to take that quarter. Advisors formally approve the study list in person or by email.

The department’s student services office is also an important part of the master’s advising team. The student services office informs students and advisors about University and department requirements, procedures, and opportunities, and it maintains the official records of advising assignments and approvals.

Finally, graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

Ph.D. Student Advising

The Department of Energy Resources Engineering is committed to providing academic advising in support of doctoral student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the advisor and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity.

Faculty advisors guide students in key areas such as selecting courses, designing and conducting research, developing teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways. The department’s graduate handbook provides information and suggested timelines for advising meetings in the different stages of the doctoral program. If a meeting is not possible, the student should send the advisor a brief email highlighting his/her activities for the week. Typically, Ph.D. students meet with their advisor on a twice weekly basis, once individually and once as part of the research group meeting.

At least once per year, either formally or informally, students and advisors are expected to review the student’s progress towards completion of their research and their degree. Such discussions may include other members of the student’s research committee, either together or individually. A formal meeting of the full committee, which may be useful if the student and advisor differ in their assessment of research progress and goals, can be called by either the student or the advisor.

Ph.D. students are initially assigned a research advisor prior to or on arrival at Stanford. This faculty member provides initial guidance in course selection, in exploring academic opportunities and professional pathways, and in identifying doctoral research opportunities. Ultimately the advisor directs the student’s dissertation. Usually, the same faculty member serves as advisor for the duration of Ph.D. study, but the handbook does describe a process for formal advisor changes.

Most students have an advisor from among the primary faculty members of the department. However, the research advisor may be a faculty member from another Stanford department who is familiar with supervising doctoral students and able to provide both advising and funding for the duration of the doctoral program. When the research advisor is from outside the department, the student must also identify a program advisor from the department's primary faculty to provide guidance on departmental requirements and opportunities.

Students are expected to have a discussion with their advisor during or before the first week of each quarter, to agree upon the courses that the

student plans to take that quarter. Advisors formally approve the study list in person or by email.

The Director of Graduate Studies (DGS) meets with all doctoral students at the start of the first year, and is available during the academic year by email and during office hours. The department's student services office is also an important part of the doctoral advising team: it informs students and advisors about University and department requirements, procedures, and opportunities, and it maintains the official records of advising assignments and approvals. Students are encouraged to talk with the DGS and the student services office for guidance in working with their advisor(s).

The department's doctoral students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

Emeriti: (Professors) Khalid Aziz, Franklin M. Orr, Jr.

Chair: Hamdi Tchelepi

Director of Graduate Studies: Roland N. Horne

Director of Undergraduate Studies: Anthony R. Kovscek

Professors: Sally M. Benson, Louis J. Durlofsky, Margot Gerritsen, Roland N. Horne, Anthony R. Kovscek, Tapan Mukerji, Daniel M. Tartakovsky, Hamdi Tchelepi

Associate Professors: Inês Azevedo, Adam Brandt

Assistant Professors: Ilenia Battiato, Simona Onori

Courtesy Professors: Stephan A. Graham, Mark Jacobson

Adjunct Faculty: Alan Burnham, David Danielson, Warren K. Kourt, Jonathan Lilien, Robert G. Lindblom, Joel Moxley, Kiran Pande, Richard Sears, Marco R. Thiele, Denis V. Voskov

Visiting Professor: Kozo Sato

Courses

ENERGY 20N. Technology in the Greenhouse. 3 Units.
The evidence that human activities are changing the climate is overwhelming. Energy use is woven throughout the fabric of modern societies, and energy systems are also a primary way that humans interact with the global Earth systems like climate. We know enough about the potential impacts of climate change to see that we need to transform the world¿s energy systems to a much cleaner set of technologies with much lower greenhouse gas emissions. Economies that use energy in a clean, cost-effective way will be much more competitive in the future. The clean energy transition is now underway, with reductions in coal use and rapid growth in solar and wind deployment, but there is much more to do to limit the adverse impacts of climate change. This seminar explores technology options available to make the changes needed, in the developed and developing worlds. There is no shortage of energy available for our use. Instead, the challenge is to convert those energy resources into services like electricity and transportation, and that conversion requires technology, as well as policies and markets that enable innovation. The scale of the world¿s energy systems is dauntingly large, and we will need a well-diversified set of options to meet the challenge. Wind, solar, nuclear, carbon capture and storage for fossil fuel use, modified agriculture, electric (and automated) vehicles, advanced air conditioning, and many other technology options exist. We will consider these technologies and ask what barriers will have to be addressed if they are to be deployed at a scale large enough to reduce the impact climate change. The format will be discussions of technologies and their potential with a project and student presentations toward the end of the quarter.

ENERGY 30N. Busting Energy Myths. 3 Units.
Energy myths and misconceptions to better equip participants to understand a pathway for global energy transformation. Key concepts developed and employed include energy [kinetic, potential, chemical, thermal, etc.], power, heat, renewables, efficiency, transmission, and life cycle analysis. Throughout this seminar groups of students are challenged with "energy myths" and their task is to deconstruct these myths and convince their classmates in oral presentations that they have indeed done so. Emphasis is on critical and analytical thinking, problem solving and presentation.

ENERGY 73. Energy Policy in California and the West. 1 Unit.
This seminar provides an in-depth analysis of the role of California state agencies and Western energy organizations in driving energy policy development, technology innovation, and market structures, in California, the West and internationally. The course covers three areas: 1) roles and responsibilities of key state agencies and Western energy organizations; 2) current and evolving energy and climate policies; and 3) development of the 21st century electricity system in California and the West. The seminar will also provide students a guideline of what to expect in professional working environment.
Same as: CEE 263G, POLISCI 73, PUBLPOL 73

ENERGY 101. Energy and the Environment. 3 Units.
Energy use in modern society and the consequences of current and future energy use patterns. Case studies illustrate resource estimation, engineering analysis of energy systems, and options for managing carbon emissions. Focus is on energy definitions, use patterns, resource estimation, pollution. Recommended: MATH 21 or 42.
Same as: EARTHSYS 101

ENERGY 101A. Energizing California. 1 Unit.
A weekend field trip featuring renewable and nonrenewable energy installations in Northern California. Tour geothermal, bioenergy, and natural gas field sites with expert guides from the Department of Energy Resources Engineering. Requirements: One campus meeting and weekend field trip. Enrollment limited to 25. Freshman have first choice.

ENERGY 102. Fundamentals of Renewable Power. 3 Units.
Do you want a much better understanding of renewable power technologies? Did you know that wind and solar are the fastest growing forms of electricity generation? Are you interested in hearing about the most recent, and future, designs for green power? Do you want to understand what limits power extraction from renewable resources and how current designs could be improved? This course dives deep into these and related issues for wind, solar, biomass, geothermal, tidal and wave power technologies. We welcome all student, from non-majors to MBAs and grad students. If you are potentially interested in an energy or environmental related major, this course is particularly useful. Recommended: Math 21 or 42.
Same as: EARTHSYS 102

ENERGY 104. Sustainable Energy for 9 Billion. 3 Units.
This course explores the global transition to a sustainable global energy system. We will formulate and program simple models for future energy system pathways. We will explore the drivers of global energy demand and carbon emissions, as well as the technologies that can help us meet this demand sustainably. We will consider constraints on the large-scale deployment of technology and difficulties of a transition at large scales and over long time periods. Assignments will focus on building models of key aspects of the energy transition, including global, regional and sectoral energy demand and emissions as well as economics of change. Prerequisites: students should be comfortable with calculus and linear algebra (e.g. Math 20, Math 51) and be familiar with computer programming (e.g. CS106A, CS106B). We will use the Python programming language to build our models.

ENERGY 110. Engineering Economics. 3 Units.
The success of energy projects and companies is judged by technical, economic and financial criteria. This course will introduce concepts of engineering economy, e.g., time value of money, life cycle costs and financial metrics, and explore their application to the business of energy. We will use case studies, business school cases and possibly industry guest lecturers. Examples from the hydrocarbon businesses that dominate energy today will provide the framework for the analysis of both conventional and renewable energy.

ENERGY 112. Exploring Geosciences with MATLAB. 1-3 Unit.
How to use MATLAB as a tool for research and technical computing, including 2-D and 3-D visualization features, numerical capabilities, and toolboxes. Practical skills in areas such as data analysis, regressions, optimization, spectral analysis, differential equations, image analysis, computational statistics, and Monte Carlo simulations. Emphasis is on scientific and engineering applications. Offered every year, autumn quarter.
Same as: GEOPHYS 112

ENERGY 118. Safety and Environmental Aspects of Oil and Gas Production. 3 Units.
This course introduces safety, environmental and regulatory aspects of oil and gas development and production. Students will learn about personal and process safety management in oil and gas, as well as major State and Federal laws and regulatory programs governing oil and gas in the US. Lectures will introduce and explain concepts of safety, regulation, environment and sustainability, further illustrated through discussion of case studies from the global oil and gas industry. Parallels with renewable energy will be discussed.
Same as: ENERGY 218

ENERGY 120. Fundamentals of Petroleum Engineering. 3 Units.
Lectures, problems, field trip. Engineering topics in petroleum recovery; origin, discovery, and development of oil and gas. Chemical, physical, and thermodynamic properties of oil and natural gas. Material balance equations and reserve estimates using volumetric calculations. Gas laws. Single phase and multiphase flow through porous media.
Same as: ENGR 120

ENERGY 121. Fundamentals of Multiphase Flow. 3 Units.
Multiphase flow in porous media. Wettability, capillary pressure, imbibition and drainage, Leverett J-function, transition zone, vertical equilibrium. Relative permeabilities, Darcy's law for multiphase flow, fractional flow equation, effects of gravity, Buckley-Leverett theory, recovery predictions, volumetric linear scaling, JBN and Jones-Rozelle determination of relative permeability. Frontal advance equation, Buckley-Leverett equation as frontal advance solution, tracers in multiphase flow, adsorption, three-phase relative permeabilities.
Same as: ENERGY 221

ENERGY 123. When Technology Meets Reality; An In-depth Look at the Deepwater Horizon Blowout and Oil Spill. 1 Unit.
The Deepwater Horizon blowout and spill in April 2010 occurred on one of the most advanced deepwater drilling rigs in the world operated by one of the most experienced companies. In this course we will look at and discuss the technologies and management practices involved in deepwater drilling and discuss how an accident like this happens and what could have been done differently to avoid it. We will focus on the Horizon and also look briefly at other high profile industrial and technological accidents.

ENERGY 130. Well Log Analysis I. 3 Units.
For earth scientists and engineers. Interdisciplinary, providing a practical understanding of the interpretation of well logs. Lectures, problem sets using real field examples: methods for evaluating the presence of hydrocarbons in rock formations penetrated by exploratory and development drilling. The fundamentals of all types of logs, including electric and non-electric logs.

ENERGY 141. Seismic Reservoir Characterization. 3-4 Units.
(Same as GP241) Practical methods for quantitative characterization and uncertainty assessment of subsurface reservoir models integrating well-log and seismic data. Multidisciplinary combination of rock-physics, seismic attributes, sedimentological information and spatial statistical modeling techniques. Student teams build reservoir models using limited well data and seismic attributes typically available in practice, comparing alternative approaches. Software provided (SGEMS, Petrel, Matlab). Offered every other year.nRecommended: ERE240/260, or GP222/223, or GP260/262 or GES253/257; ERE246, GP112.
Same as: ENERGY 241, GEOPHYS 241A

ENERGY 146. Reservoir Characterization and Flow Modeling with Outcrop Data. 3 Units.
Course gives an overview of concepts from geology and geophysics relevant for building subsurface reservoir models. Includes a required 1-day field trip and hands-on lab exercises. Target audience: MS and 1st year PhD students in PE/ERE/GS with little or no background in geology or geophysics. Topics include: basin and petroleum systems, depositional settings, deformation and diagenesis, introduction to reflection seismic data, rock and fluid property measurements, geostatistics, and flow in porous media.
Same as: ENERGY 246, GEOLSCI 246

ENERGY 153. Carbon Capture and Sequestration. 3-4 Units.
CO2 separation from syngas and flue gas for gasification and combustion processes. Transportation of CO2 in pipelines and sequestration in deep underground geological formations. Pipeline specifications, monitoring, safety engineering, and costs for long distance transport of CO2. Comparison of options for geological sequestration in oil and gas reservoirs, deep unmineable coal beds, and saline aquifers. Life cycle analysis.
Same as: ENERGY 253

ENERGY 155. Undergraduate Report on Energy Industry Training. 1-3 Unit.
On-the-job practical training under the guidance of on-site supervisors. Required report detailing work activities, problems, assignments and key results. Prerequisite: written consent of instructor.

ENERGY 160. Uncertainty Quantification in Data-Centric Simulations. 3 Units.
This course provides a brief survey of mathematical methods for uncertainty quantification. It highlights various issues, techniques and practical tools available for modeling uncertainty in quantitative models of complex dynamic systems. Specific topics include basic concepts in probability and statistics, spatial statistics (geostatistics and machine learning), Monte Carlo simulations, global and local sensitivity analyses, surrogate models, and computational alternatives to Monte Carlo simulations (e.g., quasi-MC, moment equations, the method of distributions, polynomial chaos expansions). Prerequisites: algebra (CME 104 or equivalent), introductory statistics course (CME 106 or equivalent).
Same as: ENERGY 260

ENERGY 167. Engineering Valuation and Appraisal of Energy Assets and Projects. 3 Units.
Appraisal of development and remedial work on oil and gas wells; appraisal of producing properties; estimation of productive capacity, reserves; operating costs, depletion, and depreciation; value of future profits, taxation, fair market value; original or guided research problems on economic topics with report. Prerequisite: consent of instructor.
Same as: ENERGY 267

ENERGY 171. Energy Infrastructure, Technology and Economics. 3 Units.
Oil and gas represents more than 50% of global primary energy. In delivering energy at scale, the industry has developed global infrastructure with supporting technology that gives it enormous advantages in energy markets; this course explores how the oil and gas industry operates. From the perspective of these established systems and technologies, we will look at the complexity of energy systems, and will consider how installed infrastructure enables technology development and deployment, impacts energy supply, and how existing infrastructure and capital invested in fossil energy impacts renewable energy development. Prerequisites: Energy 101 and 102 or permission of instructor.
Same as: ENERGY 271

ENERGY 175. Well Test Analysis. 3 Units.
Lectures, problems. Application of solutions of unsteady flow in porous media to transient pressure analysis of oil, gas, water, and geothermal wells. Pressure buildup analysis and drawdown. Design of well tests. Computer-aided interpretation.

ENERGY 180. Oil and Gas Production Engineering. 3 Units.
Design and analysis of production systems for oil and gas reservoirs. Topics: well completion, single-phase and multi-phase flow in wells and gathering systems, artificial lift and field processing, well stimulation, inflow performance. Prerequisite: 120.
Same as: ENERGY 280

ENERGY 191. Optimization of Energy Systems. 3-4 Units.
Introductory mathematical programming and optimization using examples from energy industries. Emphasis on problem formulation and solving, secondary coverage of algorithms. Problem topics include optimization of energy investment, production, and transportation; uncertain and intermittent energy resources; energy storage; efficient energy production and conversion. Methods include linear and nonlinear optimization, as well as multi-objective and goal programming. Tools include Microsoft Excel and AMPL mathematical programming language. Prerequisites: MATH 20, 41, or MATH 51, or consent of instructor. Programming experience helpful (e.g,, CS 106A, CS 106B).
Same as: ENERGY 291

ENERGY 192. Undergraduate Teaching Experience. 1-3 Unit.
Leading field trips, preparing lecture notes, quizzes under supervision of the instructor. May be repeated for credit.

ENERGY 193. Undergraduate Research Problems. 1-3 Unit.
Original and guided research problems with comprehensive report. May be repeated for credit.

ENERGY 194. Special Topics in Energy and Mineral Fluids. 1-3 Unit.
May be repeated for credit.

ENERGY 199. Senior Project and Seminar in Energy Resources. 3-4 Units.
Individual or group capstone project in Energy Resources Engineering. Emphasis is on report preparation. May be repeated for credit.

ENERGY 201. Laboratory Measurement of Reservoir Rock Properties. 3 Units.
In this course, students will learn methods for measuring reservoir rock properties. Techniques covered include core preservation and sample preparation; Rock petrography; Interfacial tension of fluids; Measurement of contact angles of fluids on reservoir media; Capillary pressure measurement and interpretation; Absolute and effective porosities; Absolute permeability; Multiphase flow including relative permeability and residual saturation. The class will be 1 3-hour lecture/lab per week, with readings and weekly assignments. A field trip to a professional core characterization lab may be included.

ENERGY 203. Stanford Climate Ventures. 1-3 Unit.
Solving the global climate challenge will require the creation and successful scale-up of hundreds of new ventures. This project-based course provides a launchpad for the development and creation of transformational climate ventures and innovation models. Interdisciplinary teams will research, analyze, and develop detailed launch plans for high-impact opportunities in the context of the new climate venture development framework offered in this course. Throughout the quarter, teams will complete 70+ interviews with customers, sector experts, and other partners in the emerging climatetech ecosystem, with introductions facilitated by the teaching team's unique networks in this space. Please see the course website scv.stanford.edu for more information and alumni highlights. Project lead applications are due by December 11 through tinyurl.com/scvprojectlead. Students interested in joining a project team, please briefly indicate your interest in the course at tinyurl.com/scvgeneralinterest.

ENERGY 204. Achieving Universal Energy Access by 2030: Can it be done?. 2-3 Units.
Today 1.2 billion people have no access to electricity; many more don't have power that is reliable. Activities the developed world counts on for economic growth are severely limited where there isn't reliable electricity. Cost reductions in distributed, renewable energy generation and battery storage technologies are creating opportunities to bring affordable power to communities that have never had it. This course will examine what will need to be in place so that electricity can reach everyone by 2030.

ENERGY 205. Hydrogen Economy. 1 Unit.
This is a seminar course on the hydrogen economy as a critical piece of the global energy transformation. This course will introduce the unique characteristics of hydrogen, its potential role in decarbonizing the global energy system, and how it compares to other alternative and complementary solutions. We will cover the main ideas/themes of how hydrogen is made, transported and stored, and used around the world through a series of lectures and guest speakers.

ENERGY 212. Environmental Aspects of Oil and Gas Production. 1 Unit.
This course introduces students to the major environmental aspects of oil and gas production, including law, policy, regulation, impact assessment, and mitigation. Through readings, lectures, homework, in-class activities, and case studies, students learn about the major state/federal laws and regulatory programs governing oil and gas in the U.S., industry permitting and compliance strategies, and current public stakeholder issues/challenges (with a particular focus on climate change and water management). Emerging legislative/regulatory trends, advocacy approaches, and sustainability concepts also are explored.

ENERGY 214. The Global Price of Oil. 2 Units.
Understanding the current and future price of oil requires the synthesis of geologic, engineering, financial, geopolitical, and macroeconomic information. In this seminar, we will build a global supply curve for petroleum by studying the marginal and full-cycle production costs for each of the major resource categories. We will study how reserve classification varies globally, and how global petroleum resources and reserves have changed and are likely to change over time. We will further investigate how the time lag between resource discovery, project sanctioning, and full production will affect future supply. Finally, we will study the elasticity of oil demand and how that demand is likely to change over time as the developing world gets richer and as competition from other energy sources increases.

ENERGY 216. Entrepreneurship in Energy. 2 Units.
The combined forces of climate change, technological development, and geopolitics are disrupting the energy industry, yet the competitiveness and regulated nature of the mature markets for fuel, power, and materials have created meaningful barriers to entry for startup companies. In this case based course, students will study real energy startups to understand what challenges they have overcome and continue to face. Each week, the course will focus on a different company and the founder or CEO of that company will present. Topics will include advanced battery technologies, photovoltaic manufacturing, solar and wind project development, oil & gas exploration & production, advanced biofuels, electric vehicles, distributed power generation, and financing energy startups.

ENERGY 217. Research Seminar: Energy Development in the Emerging Economy. 2-3 Units.
Through this research project, students will dive into and gain firsthand experience on evaluating the efficacy of a portfolio of 34 energy technology start-up projects in emerging economies that encompasses a range of regions, energy sectors, and technologies. Student's will learn from each project's unique experiences, and gather critical data that may help support the success of future similar endeavors. Some questions students will be looking to answer include (1) Was the project able to accomplish its goal(s)? (2) Are there common success factors or similar roadblocks? (3) Is the technology and/or solution still effective and operational?nPrerequisite: submit survey https://precourt.typeform.com/to/NdtU0Z and permission of instructor.

ENERGY 218. Safety and Environmental Aspects of Oil and Gas Production. 3 Units.
This course introduces safety, environmental and regulatory aspects of oil and gas development and production. Students will learn about personal and process safety management in oil and gas, as well as major State and Federal laws and regulatory programs governing oil and gas in the US. Lectures will introduce and explain concepts of safety, regulation, environment and sustainability, further illustrated through discussion of case studies from the global oil and gas industry. Parallels with renewable energy will be discussed.
Same as: ENERGY 118

ENERGY 221. Fundamentals of Multiphase Flow. 3 Units.
Multiphase flow in porous media. Wettability, capillary pressure, imbibition and drainage, Leverett J-function, transition zone, vertical equilibrium. Relative permeabilities, Darcy's law for multiphase flow, fractional flow equation, effects of gravity, Buckley-Leverett theory, recovery predictions, volumetric linear scaling, JBN and Jones-Rozelle determination of relative permeability. Frontal advance equation, Buckley-Leverett equation as frontal advance solution, tracers in multiphase flow, adsorption, three-phase relative permeabilities.
Same as: ENERGY 121

ENERGY 222. Advanced Reservoir Engineering. 3 Units.
Lectures, problems. General flow equations, tensor permeabilities, steady state radial flow, skin, and succession of steady states. Injectivity during fill-up of a depleted reservoir, injectivity for liquid-filled reservoirs. Flow potential and gravity forces, coning. Displacements in layered reservoirs. Transient radial flow equation, primary drainage of a cylindrical reservoir, line source solution, pseudo-steady state. Prerequisite: 221.

ENERGY 223. Reservoir Simulation. 3-4 Units.
Fundamentals of petroleum reservoir simulation. Equations for multicomponent, multiphase flow between gridblocks comprising a petroleum reservoir. Relationships between black-oil and compositional models. Techniques for developing black-oil, compositional, thermal, and dual-porosity models. Practical considerations in the use of simulators for predicting reservoir performance. Class project. Prerequisite: 221 and 246, or consent of instructor. Recommended: CME 206.

ENERGY 224. Advanced Reservoir Simulation. 3 Units.
Topics include modeling of complex wells, coupling of surface facilities, compositional modeling, dual porosity models, treatment of full tensor permeability and grid nonorthogonality, local grid refinement, higher order methods, streamline simulation, upscaling, algebraic multigrid solvers, unstructured grid solvers, history matching, other selected topics. Prerequisite: 223 or consent of instructor. May be repeated for credit.

ENERGY 225. Theory of Gas Injection Processes. 3 Units.
Lectures, problems. Theory of multicomponent, multiphase flow in porous media. Miscible displacement: diffusion and dispersion, convection-dispersion equations and its solutions. Method of characteristic calculations of chromatographic transport of multicomponent mixtures. Development of miscibility and interaction of phase behavior with heterogeneity. May be repeated for credit. Prerequisite: CME 200.

ENERGY 226. Thermal Recovery Methods. 3 Units.
Theory and practice of thermal recovery methods: steam drive, cyclic steam injections, and in situ combustion. Models of combined mass and energy transport. Estimates of heated reservoir volume and oil recovery performance. Wellbore heat losses, recovery production, and field examples.

ENERGY 227. Enhanced Oil Recovery. 3 Units.
The physics, theories, and methods of evaluating chemical, miscible, and thermal enhanced oil recovery projects. Existing methods and screening techniques, and analytical and simulation based means of evaluating project effectiveness. Dispersion-convection-adsorption equations, coupled heat, and mass balances and phase behavior provide requisite building blocks for evaluation.

ENERGY 230. Advanced Topics in Well Logging. 3 Units.
State of the art tools and analyses; the technology, rock physical basis, and applications of each measurement. Hands-on computer-based analyses illustrate instructional material. Guest speakers on formation evaluation topics. Prerequisites: 130 or equivalent; basic well logging; and standard practice and application of electric well logs.

ENERGY 240. Data science for geoscience. 3 Units.
This course provides an overview of the most relevant areas of data science (applied statistics, machine learning & computer vision) to address geoscience challenges, questions and problems. Using actual geoscientific research questions as background, principles and methods of data scientific analysis, modeling, and prediction are covered. Data science areas covered are: extreme value statistics, multi-variate analysis, factor analysis, compositional data analysis, spatial information aggregation models, spatial estimation, geostatistical simulation, treating data of different scales of observation, spatio-temporal modeling (geostatistics). Application areas covered are: process geology, hazards, natural resources. Students are encouraged to participate actively in this course by means of their own data science research challenge or question.
Same as: EARTHSYS 240, ESS 239, GEOLSCI 240

ENERGY 241. Seismic Reservoir Characterization. 3-4 Units.
(Same as GP241) Practical methods for quantitative characterization and uncertainty assessment of subsurface reservoir models integrating well-log and seismic data. Multidisciplinary combination of rock-physics, seismic attributes, sedimentological information and spatial statistical modeling techniques. Student teams build reservoir models using limited well data and seismic attributes typically available in practice, comparing alternative approaches. Software provided (SGEMS, Petrel, Matlab). Offered every other year.nRecommended: ERE240/260, or GP222/223, or GP260/262 or GES253/257; ERE246, GP112.
Same as: ENERGY 141, GEOPHYS 241A

ENERGY 246. Reservoir Characterization and Flow Modeling with Outcrop Data. 3 Units.
Course gives an overview of concepts from geology and geophysics relevant for building subsurface reservoir models. Includes a required 1-day field trip and hands-on lab exercises. Target audience: MS and 1st year PhD students in PE/ERE/GS with little or no background in geology or geophysics. Topics include: basin and petroleum systems, depositional settings, deformation and diagenesis, introduction to reflection seismic data, rock and fluid property measurements, geostatistics, and flow in porous media.
Same as: ENERGY 146, GEOLSCI 246

ENERGY 251. Thermodynamics of Equilibria. 3 Units.
Lectures, problems. The volumetric behavior of fluids at high pressure. Equation of state representation of volumetric behavior. Thermodynamic functions and conditions of equilibrium, Gibbs and Helmholtz energy, chemical potential, fugacity. Phase diagrams for binary and multicomponent systems. Calculation of phase compositions from volumetric behavior for multicomponent mixtures. Experimental techniques for phase-equilibrium measurements. May be repeated for credit.

ENERGY 252. Rock Physics. 3 Units.
Geophysical methods are used to image and characterize regions of the subsurface to explore for, evaluate and manage Earth resources (water and energy). A rock physics relationship is required to transform measured geophysical properties to the material properties of interest. Starting with the theoretical framework, we will explore the development of the rock physics transform from the laboratory to the field scale. Electrical and elastic properties and NMR. Grading based on four 2-week assignments.
Same as: GEOPHYS 262

ENERGY 253. Carbon Capture and Sequestration. 3-4 Units.
CO2 separation from syngas and flue gas for gasification and combustion processes. Transportation of CO2 in pipelines and sequestration in deep underground geological formations. Pipeline specifications, monitoring, safety engineering, and costs for long distance transport of CO2. Comparison of options for geological sequestration in oil and gas reservoirs, deep unmineable coal beds, and saline aquifers. Life cycle analysis.
Same as: ENERGY 153

ENERGY 255. Master's Report on Energy Industry Training. 1-3 Unit.
On-the-job training for master's degree students under the guidance of on-site supervisors. Students submit a report detailing work activities, problems, assignments, and key results. May be repeated for credit. Prerequisite: consent of adviser.

ENERGY 259. Presentation Skills. 1 Unit.
For teaching assistants in Energy Resources Engineering. Five two-hour sessions in the first half of the quarter. Awareness of different learning styles, grading philosophies, fair and efficient grading, text design; presentation and teaching skills, PowerPoint slide design; presentation practice in small groups. Taught in collaboration with the Center for Teaching and Learning.

ENERGY 260. Uncertainty Quantification in Data-Centric Simulations. 3 Units.
This course provides a brief survey of mathematical methods for uncertainty quantification. It highlights various issues, techniques and practical tools available for modeling uncertainty in quantitative models of complex dynamic systems. Specific topics include basic concepts in probability and statistics, spatial statistics (geostatistics and machine learning), Monte Carlo simulations, global and local sensitivity analyses, surrogate models, and computational alternatives to Monte Carlo simulations (e.g., quasi-MC, moment equations, the method of distributions, polynomial chaos expansions). Prerequisites: algebra (CME 104 or equivalent), introductory statistics course (CME 106 or equivalent).
Same as: ENERGY 160

ENERGY 262. Physics of Wind Energy. 3 Units.
Formerly CEE 261. An introduction to the analysis and modeling of wind energy resources and their extraction. Topics include the physical origins of atmospheric winds; vertical profiles of wind speed and turbulence over land and sea; the wind energy spectrum and its modification by natural topography and built environments; theoretical limits on wind energy extraction by wind turbines and wind farms; modeling of wind turbine aerodynamics and wind farm performance. Final project will focus on development of a new wind energy technology concept. Prerequisites: CEE 262A or ME 351A.
Same as: CEE 261B, ME 262

ENERGY 263. Introduction to Quantitative Methods for Energy Decisions. 3 Units.
This course provides students from various backgrounds with knowledge of the principles and quantitative methods of decision analysis and policy analysis to tackle interdisciplinary questions in the context of sustainable energy systems. We consider engineering analysis, decision analysis and economic analysis in the formulation of answers to address energy system problems. We will use methods such as life-cycle assessment, benefit-cost and cost-effectiveness analysis, microeconomics, distributional metrics, risk analysis methods, sensitivity and uncertainty analysis, multi-attribute utility theory, and simulation and optimization. The integration of uncertainty into formal methods is a fundamental component of the course.
Same as: CEE 263H

ENERGY 266. Town Hall Meeting. 1 Unit.
This course will offer students the opportunity to structure and present a simulated public meeting on a current topic involving energy production and its effects on a local community. Students will choose a topic and develop a town hall meeting event that reflects the range of concerns of public, corporate, and regulatory stakeholders. The meeting will be presented on campus to the Stanford Community and the general public. Students will have the opportunity to hone their skills in delivering persuasive oral arguments, critical thinking, and leadership.
Same as: Simulated

ENERGY 267. Engineering Valuation and Appraisal of Energy Assets and Projects. 3 Units.
Appraisal of development and remedial work on oil and gas wells; appraisal of producing properties; estimation of productive capacity, reserves; operating costs, depletion, and depreciation; value of future profits, taxation, fair market value; original or guided research problems on economic topics with report. Prerequisite: consent of instructor.
Same as: ENERGY 167

ENERGY 269. Geothermal Reservoir Engineering. 3 Units.
Conceptual models of heat and mass flows within geothermal reservoirs. The fundamentals of fluid/heat flow in porous media; convective/conductive regimes, dispersion of solutes, reactions in porous media, stability of fluid interfaces, liquid and vapor flows. Interpretation of geochemical, geological, and well data to determine reservoir properties/characteristics. Geothermal plants and the integrated geothermal system.

ENERGY 271. Energy Infrastructure, Technology and Economics. 3 Units.
Oil and gas represents more than 50% of global primary energy. In delivering energy at scale, the industry has developed global infrastructure with supporting technology that gives it enormous advantages in energy markets; this course explores how the oil and gas industry operates. From the perspective of these established systems and technologies, we will look at the complexity of energy systems, and will consider how installed infrastructure enables technology development and deployment, impacts energy supply, and how existing infrastructure and capital invested in fossil energy impacts renewable energy development. Prerequisites: Energy 101 and 102 or permission of instructor.
Same as: ENERGY 171

ENERGY 273. Special Topics in Energy Resources Engineering. 1-3 Unit.
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ENERGY 280. Oil and Gas Production Engineering. 3 Units.
Design and analysis of production systems for oil and gas reservoirs. Topics: well completion, single-phase and multi-phase flow in wells and gathering systems, artificial lift and field processing, well stimulation, inflow performance. Prerequisite: 120.
Same as: ENERGY 180

ENERGY 281. Applied Mathematics in Reservoir Engineering. 3 Units.
The philosophy of the solution of engineering problems. Methods of solution of partial differential equations: Laplace transforms, Fourier transforms, wavelet transforms, Green's functions, and boundary element methods. Prerequisites: CME 204 or MATH 131, and consent of instructor.

ENERGY 282. Chemical Kinetics and Basin Modeling. 2-3 Units.
Students will explore the structure of sedimentary organic matter and the chemical and thermodynamic requirements for generating petroleum. A wide variety of thermal maturity indicators will be explored, paying particular attention to optical indicators and predictive kinetics of Tmax and %Ro. Students will understand the advantages and pitfalls of kinetic measurements in the lab. Hands-on exercises reinforce learning targets. An optional class project allows students to take the class for 3 units instead of 2. Course readings come from the literature and Burnham's textbook.
Same as: GEOLSCI 216, GEOPHYS 216

ENERGY 289. Multiscale Methods for Transport in Porous Media. 3 Units.
The concept of "tyranny of scales" in natural/engineered porous media refers to the disparity of temporal and spatial scales at which mass, momentum, and energy transport is best understood and at which predictions are needed for practical applications. Modeling approaches that incorporate process understanding at different temporal and spatial scales are often necessary to improve our predictive capabilities of natural and engineered porous media.nThe course focuses on the fundamental understanding of multiscale systems and corresponding modeling tools to analyze them.

ENERGY 291. Optimization of Energy Systems. 3-4 Units.
Introductory mathematical programming and optimization using examples from energy industries. Emphasis on problem formulation and solving, secondary coverage of algorithms. Problem topics include optimization of energy investment, production, and transportation; uncertain and intermittent energy resources; energy storage; efficient energy production and conversion. Methods include linear and nonlinear optimization, as well as multi-objective and goal programming. Tools include Microsoft Excel and AMPL mathematical programming language. Prerequisites: MATH 20, 41, or MATH 51, or consent of instructor. Programming experience helpful (e.g,, CS 106A, CS 106B).
Same as: ENERGY 191

ENERGY 293. Energy storage and conversion: Solar Cells, Fuel Cells, Batteries and Supercapacitors. 3 Units.
This course provides an introduction and engineering exposure to energy storage and conversion systems and will cover the basic physics, chemistry and electrochemistry of solar cells, fuel cells, batteries and supercapacitors, state of the art of such technologies and recent developments. The course will also cover experimental methods and modeling tools for simulation and optimization aimed at characterizing efficiency and performance issues. Prerequisites: Equivalent coursework in thermodynamics, electronic properties, chemical principles, electricity, and magnetism.
Same as: EE 293

ENERGY 293B. Fundamentals of Energy Processes. 3 Units.
For seniors and graduate students. Covers scientific and engineering fundamentals of renewable energy processes involving heat. Thermodynamics, heat engines, solar thermal, geothermal, biomass. Recommended: MATH 19-21; PHYSICS 41, 43, 45.
Same as: EE 293B

ENERGY 293C. Energy from Wind and Water Currents. 3 Units.
This course focuses on the extraction of energy from wind, waves and tides.The emphasis in the course is technical leading to a solid understanding of established extraction systems and discussion of promising new technologies. We will also cover resource planning and production optimization through observations and computer simulations.

ENERGY 295. Electrochemical Energy Storage Systems: Modeling and Estimation. 3 Units.
The course focuses on modeling and estimation methods as necessary tools to extract the full potential from Lithium-ion batteries, specifically used in electrified vehicles. The complex nature of a battery system requires that a physics-based approach, in the form of electrochemical models, be used as a modeling platform to develop system-level control algorithms to allow designer to maximize batteries performance and longevity while guaranteeing safety operations. In this course, we will cover 1) first-principles methods to model battery dynamics, 2) electrochemical and control-oriented models, 3) estimation algorithms for real-time application. A formal exposure to state space analysis and estimation of dynamical systems will be given. Previously ENERGY 294. Prerequisites: Equivalent coursework in linear systems and control. Prior working knowledge of Matlab/Simulink¿ tools is assumed.

ENERGY 297. Fluid Mechanics and Heat Transfer. 3 Units.
Energy systems are multiphysics and multiscale in nature. This course addresses the quantitative understanding of fundamental physical processes that govern fluid flow and mass/heat transfer processes, critical to many energy systems. The course will cover conservation laws describing the dynamics of single phase flows, relevant to energy applications including, but not limited to, laminar flow solutions in pipes and ducts, Stokes flows (relevant to flow in porous media), potential and boundary layer flow theories (relevant to wind energy), heat and mass transport (relevant to geothermal and energy storage systems, reactive transport in the subsurface, CO2 sequestration). Although motivated by specific applications in the energy landscape, the course will be focused on fundamental principles and mathematical techniques to understand the basic physics underlying flow and transport processes.

ENERGY 300. Graduate Directed Reading. 1-7 Unit.
Independent studies under the direction of a faculty member for which academic credit may properly be allowed.

ENERGY 301. The Energy Seminar. 1 Unit.
Interdisciplinary exploration of current energy challenges and opportunities, with talks by faculty, visitors, and students. May be repeated for credit.
Same as: CEE 301, MS&E 494

ENERGY 308. Carbon Dioxide and Methane Removal, Utilization, and Sequestration. 1 Unit.
This is a seminar on carbon dioxide and methane removal, utilization, and sequestration options, and their role in decarbonizing the global energy system. This course will cover topics including the global carbon balance, utilizing atmospheric carbon in engineered solutions, recycling and sequestering fossil-based carbon, and enhancing natural carbon sinks. The multidisciplinary lectures and discussions will cover elements of technology, economics, policy and social acceptance, and will be led by a series of guest lecturers. Short group project on carbon solutions.
Same as: EARTHSYS 308, ENVRES 295, ESS 308, ME 308

ENERGY 309. Sustainable Energy Interdisciplinary Graduate Seminar. 1 Unit.
Graduate students will present their ongoing research to an audience of faculty and graduate students with a diversity of disciplinary perspectives regarding sustainable energy.
Same as: CEE 372, MS&E 495

ENERGY 351. ERE Master's Graduate Seminar. 1 Unit.
Current research topics. Presentations by guest speakers from Stanford and elsewhere. May be repeated for credit.

ENERGY 352. ERE PhD Graduate Seminar. 1 Unit.
Current research topics. Presentations by guest speakers from Stanford and elsewhere. May be repeated for credit.

ENERGY 355. Doctoral Report on Energy Industry Training. 1-3 Unit.
On-the-job training for doctoral students under the guidance of on-site supervisors. Students submit a report on work activities, problems, assignments, and results. May be repeated for credit. Prerequisite: consent of adviser.

ENERGY 359. Teaching Experience in Energy Resources Engineering. 1 Unit.
For TAs in Energy Resources Engineering. Course and lecture design and preparation; lecturing practice in small groups. Classroom teaching practice in an Energy Resources Engineering course for which the participant is the TA (may be in a later quarter). Taught in collaboration with the Center for Teaching and Learning.

ENERGY 360. Advanced Research Work in Energy Resources Engineering. 1-10 Unit.
Graduate-level work in experimental, computational, or theoretical research. Special research not included in graduate degree program. May be repeated for credit.

ENERGY 361. Master's Degree Research in Energy Resources Engineering. 1-6 Unit.
Experimental, computational, or theoretical research. Advanced technical report writing. Limited to 6 units total.nn (Staff).

ENERGY 362. Engineer's Degree Research in Energy Resources Engineering. 1-10 Unit.
Graduate-level work in experimental, computational, or theoretical research for Engineer students. Advanced technical report writing. Limited to 15 units total, or 9 units total if 6 units of 361 were previously credited.

ENERGY 363. Doctoral Degree Research in Energy Resources Engineering. 1-10 Unit.
Graduate-level work in experimental, computational, or theoretical research for Ph.D. students. Advanced technical report writing.

ENERGY 365. Special Research Topics in Energy Resources Engineering. 1-15 Unit.
Graduate-level research work not related to report, thesis, or dissertation. May be repeated for credit.

ENERGY 369. Practical Energy Studies. 1-3 Unit.
Students work on realistic industrial reservoir engineering problems. Focus is on optimization of production scenarios using secondary or tertiary recovery techniques. When possible, projects are conducted in direct collaboration with industry. May be repeated for credit.

ENERGY 801. TGR Project. 0 Units.
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ENERGY 802. TGR Dissertation. 0 Units.
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GEOLOGICAL SCIENCES

Courses offered by the Department of Geological Sciences are listed under the subject code GEOLSCI on the Stanford Bulletin's ExploreCourses web site (https://explorecourses.stanford.edu/search/?q=GEOLSCI&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-departmentcode-GEOLSCI=on&filter-catalognumber-GEOLSCI=on&filter-coursestatus-Active=on&filter-catalognumber-GEOLSCI=on).

The geological sciences include the study of Earth materials and processes and how those materials and processes have changed over the planet's 4.56-billion-year history and vary across other planets. More specifically, courses and research within the department address: the chemical and physical makeup and properties of minerals, rocks, soils, sediments, and water; the formation and evolution of Earth and other planets; the processes that shape planetary surfaces and interiors; the stratigraphic, paleobiological, and geochemical records of Earth history including changes in climate, oceans, and atmosphere; the observation and robotic exploration of other planets; present-day, historical, and long-term feedbacks between the geosphere and biosphere; and the origin and occurrence of our natural resources.

Besides the fundamental nature of research performed within the department, it has critical implications for the study and remediation of natural hazards (earthquakes, volcanic eruptions, landslides, and floods); environmental and geological engineering; surface and groundwater management; the assessment, exploration, and extraction of energy, mineral and water resources; ecology and conservation biology; remediation of contaminated water and soil; geological mapping and land use planning; human health and the environment; and space exploration.

Mission of the Undergraduate Program in Geological Sciences

The purpose of the undergraduate program in Geological Sciences is to provide students with a broad background in the fundamentals of the Earth and planetary sciences and the quantitative, analytical, and communications skills necessary to conduct research and think critically about questions involving the Earth and other planets. The major provides excellent preparation for graduate school and careers in geological and environmental consulting, land use planning, law, teaching, and other professions in which a background in science and an understanding of our and other planets are important.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to develop and demonstrate:

1. an understanding of fundamental concepts in Earth and planetary science.
2. the ability to collect, analyze, and interpret geological and environmental data using a variety of techniques to test hypotheses.
3. the ability to address real geological and/or environmental problems in the field.
4. the ability to communicate scientific knowledge orally, visually, and in writing.

Graduate Programs in Geological Sciences

Graduate Studies in the Department of Geological Sciences involve academic course work and independent research. Students are prepared for careers as professional scientists in research, education, or the application of the Earth and planetary sciences to mineral, energy, water, and space resources. Programs lead to the M.S., Engineer, and Ph.D. degrees. Course programs in the areas of faculty interest are tailored to the student's needs and interests with the aid of his or her research adviser. Students are encouraged to include in their program courses offered in other departments in the School of Earth, Energy and Environmental Sciences as well as in other departments in the University.

Learning Outcomes (Graduate)

The purpose of the master's program in Geological Sciences is to continue a student's training in one of a broad range of Earth or planetary science disciplines and to prepare students for either a professional career or doctoral studies.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship, high attainment in a particular field of knowledge, and the ability to conduct independent research. To this end, the objectives of the doctoral program are to enable students to develop the skills needed to conduct original investigations in a particular discipline or set of disciplines in the Earth and planetary sciences, to interpret the results, and to present the data and conclusions in a publishable manner.

Bachelor of Science in Geological Sciences

The Department of Geological Sciences offers a Bachelor of Science in Geological Sciences. Eligible students may also pursue a Bachelor of Science with Honors (p. 423). The department also offers a minor in Geological Sciences (p. 424).

Degree Requirements

The major consists of four interrelated components:

1. *Geological and Planetary Sciences Foundation*—Students must complete a set of six courses that introduce the properties of planetary materials, the processes that change the Earth and other planets, and the timescales over which those processes act. These courses provide a broad foundational knowledge that can lead to specialization in many different disciplines of the geological and environmental sciences. While these courses are not considered pre-requisite for any other courses, all must be taken at some point during each student's program of study.
2. *Disciplinary Breadth* —Students choose from a series of electives that broaden exposure to the fields represented within geoscience. These courses consist of classroom lectures, which in many cases, are augmented by field and laboratory components. Students must take eight (8) of these courses during their program of study.
3. *Geoscience Research*—Each student must complete a total of nine (9) units of research, guided by one or more faculty mentors. Students are expected to produce a thesis, which may be suitable for submission to a disciplinary journal, at the conclusion of their research projects.
4. *Field training / Capstone Experience*—Each student's educational program culminates in a capstone experience as a senior. The capstone can take one of two forms. First, students may elect to take a course in which they will use the scientific knowledge they have gained to address a real-world, applied problem chosen by a faculty instructor. Students will work in design teams to use their

geoscience background to understand the particular problem, and to apply their knowledge to design workable solutions to the chosen problem. Students are expected to present this in the form of written reports and oral presentations, which may be evaluated by a panel of non-profit specialists in the chosen area. Second, students may elect to participate in a field study program to fulfill their capstone experience. In this case, students must complete at least six weeks of field research through either departmental offerings (Research in the Field, GEOLSCI 190 (https://exploredegrees.stanford.edu/search/?P=GEOLSCI%20190) Research in the Field) or an approved outside offering, in which they learn and apply field techniques, field mapping, and then prepare a written report.

The major requires at between 58 and 74 units; letter grades are required in all courses if available. Students interested in the GS major should consult with the undergraduate program coordinator for information about options within the curriculum. It should also be recognized that the Geological Sciences are heavily dependent on the other sciences and that any undergraduate in the Geological Sciences should be looking to supplement their major course work with classes in Math, Physics, Chemistry, and Biology. However, those outside courses that might be most appropriate will depend on the background, goals, and interests of the individual student and can be explored with the faculty adviser.

Course Requirements

		Units
Geological and Planetary Sciences Foundation		**22**
Students are required to take all of the following:		
GEOLSCI 1	Introduction to Geology	5
GEOLSCI 2	Chemistry of the Earth and Planets	3
GEOLSCI 3	(Earth and Planetary Processes)	3
GEOLSCI 4	Coevolution of Earth and Life	4
GEOLSCI 6	Data Science for Geoscience	3
GEOLSCI 105	Introduction to Field Methods	3
Disciplinary Breadth		**23-34**
To gain an understanding of the breadth of subject areas within the geological sciences, students are required to take eight of the following courses (24-34 units). At least six of these courses must be 100-level courses from the "Geological Sciences" list below, while two may be from the "Supporting Disciplines" list.		
Geological Sciences		
GEOLSCI 40N	Diamonds	
GEOLSCI 42	Moving and Shaking in the Bay Area	
GEOLSCI 106	Sediments: The Book of Earth's History	
GEOLSCI 107	Journey to the Center of the Earth	
GEOLSCI 110	Our Dynamic West	
GEOLSCI 112	Geomorphology	
GEOLSCI 118X	Shaping the Future of the Bay Area	
GEOLSCI 119	Formation and Dynamics of Planets	
GEOLSCI 120	Planetary Surface Processes: Shaping the Landscape of the Solar System	
GEOLSCI TBD	(Planetary Interiors)	
GEOLSCI 123	Evolution of Marine Ecosystems	
GEOLSCI 128	Evolution of Terrestrial Ecosystems	
GEOLSCI 132	Evolution of Earth Systems	
GEOLSCI 135	Sedimentary Geochemistry and Analysis	
GEOLSCI 163	Introduction to Isotope Geochemistry	
GEOLSCI 180	Igneous Processes	
Supporting Disciplines		
CEE 177	Aquatic Chemistry and Biology	
ESS 117	Earth Sciences of the Hawaiian Islands	
ESS 152	Marine Chemistry	
ESS 155	Science of Soils	
ESS 158	Geomicrobiology	
ESS 220	Physical Hydrogeology	
ESS 256	Soil and Water Chemistry	
GEOPHYS 110	Introduction to the Foundations of Contemporary Geophysics	
GEOPHYS 120	Ice, Water, Fire	
GEOPHYS 130	Introductory Seismology	
GEOPHYS 150	Geodynamics: Our Dynamic Earth	
GEOPHYS 182	Reflection Seismology	
GEOPHYS 190	Near-Surface Geophysics: Imaging Groundwater Systems	
Geoscience Research		**9**
Gaining hands-on research with the scientific method under the guidance of a faculty mentor is a requirement for all majors.		
GEOLSCI 192	Undergraduate Research in Geological Sciences	6
GEOLSCI 197	Senior Thesis	3
Field Training / Capstone Experience		**3-9**
Each student major will participate in a capstone experience. For those interested in field research, students may take GEOLSCI 190 (Research in the Field) to satisfy the capstone experience.[1]		
GEOLSCI 190	Research in the Field	6
GEOLSCI TBD	(Capstone Experience)	3
Additional Field Opportunities (optional)		
GEOLSCI 5	Living on the Edge	
GEOLSCI 135A	Sedimentary Geochemistry Field Trip	
OSPAUSTL 10	Coral Reef Ecosystems	
Total Units		**58-74**

[1] This field course may be taken with the GEOLSCI faculty when offered, or alternatively, an approved field program may be used to satisfy this requirement. Alternatively, students may participate in a classroom-based capstone experience, during which they will use knowledge gained in the major to develop creative solutions to real-world problems in a cohort-based project. Ideally, both the field research experience and the capstone experience would be completed by all undergraduates; however, completion of only one of these courses is required to successfully complete the major.

Honors Program

The honors program provides an opportunity for year-long independent study and research on a topic of special interest, culminating in a written thesis. Students select research topics in consultation with the faculty adviser of their choosing. Research undertaken for the honors program may be of a theoretical, field, or experimental nature, or a combination of these approaches. The honors program is open to students with a GPA of at least 3.5 in GS courses and 3.0 in all University course work. Modest financial support is available from several sources to help defray laboratory and field expenses incurred in conjunction with honors research. Interested students must submit an application, including a research proposal, to the department by the end of their junior year.

Upon approval of the research proposal and entrance to the program, course credit for the honors research project and thesis preparation is assigned by the student's faculty adviser within the framework of GEOLSCI 199 Honors Program; the student must complete a total of 9 units over the course of the senior year. Up to 4 units of GEOLSCI 199 may be counted towards the elective requirement, but cannot be used as a substitute for regularly required courses.

Both a written and oral presentation of research results are required. The thesis must be read, approved, and signed by the student's faculty adviser and a second member of the faculty. In addition, honors students must participate in the GS Honors Symposium in which they present their research to the broader community. Honors students in GS are also eligible for the Firestone medal, awarded by Undergraduate Advising and Research (http://ual.stanford.edu/) for exceptional theses.

Minor in Geological Sciences

The minor in GS consists of a set of foundational courses (19 units) and three elective courses (9-14 units), totaling 28-33 units. A wide variety of courses may be used to satisfy these elective requirements. All courses must be taken for a letter grade.

Degree Requirements

		Units
Geological and Planetary Sciences Foundation		**19**
Students are required to take all of the following:		
GEOLSCI 1	Introduction to Geology	5
GEOLSCI 2	Chemistry of the Earth and Planets	3
GEOLSCI 3	(Earth and Planetary Processes)	3
GEOLSCI 4	Coevolution of Earth and Life	4
GEOLSCI 6	Data Science for Geoscience	3
Electives		**9-14**
Students must take a minimum of 9 additional units drawn primarily from the Breadth in the Discipline list in the GS major; a majority of units must be from classes within the GS department.		
To gain an understanding of the breadth of subject areas within the geological sciences, students are required to take three of the following courses (9-14 units). At least two of these courses must be from the "Geological Sciences" list below, while one may be from the "Supporting Disciplines" list.		
Geological Sciences		
GEOLSCI 40N	Diamonds	
GEOLSCI 42	Moving and Shaking in the Bay Area	
GEOLSCI 105	Introduction to Field Methods	
GEOLSCI 106	Sediments: The Book of Earth's History	
GEOLSCI 107	Journey to the Center of the Earth	
GEOLSCI 110	Our Dynamic West	
GEOLSCI 112	Geomorphology	
GEOLSCI 118X	Shaping the Future of the Bay Area	
GEOLSCI 119	Formation and Dynamics of Planets	
GEOLSCI 120	Planetary Surface Processes: Shaping the Landscape of the Solar System	
GEOLSCI TBD	(Planetary Interiors)	
GEOLSCI 123	Evolution of Marine Ecosystems	
GEOLSCI 128	Evolution of Terrestrial Ecosystems	
GEOLSCI 132	Evolution of Earth Systems	
GEOLSCI 135	Sedimentary Geochemistry and Analysis	
GEOLSCI 163	Introduction to Isotope Geochemistry	
GEOLSCI 180	Igneous Processes	
Supporting Disciplines		
CEE 177	Aquatic Chemistry and Biology	
ESS 117	Earth Sciences of the Hawaiian Islands	
ESS 152	Marine Chemistry	
ESS 155	Science of Soils	
ESS 158	Geomicrobiology	
ESS 220	Physical Hydrogeology	
ESS 256	Soil and Water Chemistry	
GEOPHYS 110	Introduction to the Foundations of Contemporary Geophysics	
GEOPHYS 120	Ice, Water, Fire	
GEOPHYS 130	Introductory Seismology	
GEOPHYS 150	Geodynamics: Our Dynamic Earth	
GEOPHYS 182	Reflection Seismology	
GEOPHYS 190	Near-Surface Geophysics: Imaging Groundwater Systems	
Additional Field Opportunities (optional)		
GEOLSCI 5	Living on the Edge	
GEOLSCI 135A	Sedimentary Geochemistry Field Trip	
OSPAUSTL 10	Coral Reef Ecosystems	
Total Units		**28-33**

On April 16, 2015, the Senate of the Academic Council approved the Master of Science in Geological Sciences. Students who matriculated into the Master of Science in Geological and Environmental Sciences have the option of changing the name of their degree to Geological Sciences. Degree requirements remain the same.

Coterminal Master of Science Degree in Geological Sciences

The coterminal B.S./M.S. program offers students the opportunity to pursue graduate research and an M.S. degree concurrently with or subsequent to their B.S. studies. The M.S. degree can serve as an entrance to a professional degree in subdisciplines within the Earth sciences such as engineering geology and environmental geology, or to graduate course work and research as an intermediate step in pursuit of the Ph.D. Regardless of professional goals, coterminal B.S./M.S. students are treated as members of the graduate community and are expected to meet all of the standards set for regular M.S. students. Applicants must have earned no fewer than 120 units toward graduation, and must submit their application no later than the quarter prior to the expected completion of their undergraduate degree, normally the Winter Quarter prior to Spring Quarter graduation. The application includes a statement of purpose, a current Stanford transcript, official Graduate Record Examination (GRE) scores, letters of recommendation from two members of the Stanford faculty (at least one of whom must be in the GS department), and a list of courses in which they intend to enroll to fulfill the M.S. degree requirements. Specific research interests should be noted in the statement of purpose and discussed with a member of the GS faculty prior to submission of the application. Coterminal students must complete a thesis describing research results.

Students must meet all requirements for both the B.S. and M.S. degrees. Students may either:

1. complete 180 units required for the B.S. degree and then complete three full-time quarters (45 units at the 100-level or above) for the M.S. degree
2. or. complete a total of fifteen quarters during which the requirements of the two degrees are fulfilled concurrently.

At least half of the courses used to satisfy the 45-unit requirement must be designated as being primarily for graduate students, normally at the 200-level or above. No more than 15 units of thesis research may be used to satisfy the 45-unit requirement. Further information about this program may be obtained from the GS office.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements

for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Admission

For admission to graduate work in the department, the applicant must have taken the Aptitude Test (verbal, quantitative, and analytical writing assessment) of the Graduate Record Examination. In keeping with University policy, applicants whose first language is not English must submit TOEFL (Test of English as a Foreign Language) scores from a test taken within the last 18 months. Individuals who have completed a B.S. or two-year M.S. program in the U.S. or other English-speaking country are not required to submit TOEFL scores.

Master of Science in Geological Sciences

Objectives

The purpose of the master's program in Geological Sciences is to continue a student's training in one of a broad range of earth science disciplines and to prepare students for either a professional career or doctoral studies.

Procedures

In consultation with the adviser, the student plans a program of course work for the first year. The student should select a thesis adviser within the first year of residence and submit to the thesis adviser a proposal for thesis research as soon as possible. The academic adviser supervises completion of the department requirements for the M.S. program (as outlined below) until the research proposal has been accepted; responsibility then passes to the thesis adviser. The student may change either thesis or academic advisers by mutual agreement and after approval of the Director of Graduate Studies.

Requirements

The University's requirements for M.S. degrees are outlined in the "Graduate Degrees (http://www.stanford.edu/dept/registrar/bulletin/4901.htm)" section of this bulletin. Practical training (GEOLSCI 385 Practical Experience in the Geosciences) may be required by some programs, with adviser approval, depending on the background of the student. Additional department requirements include the following:

1. A minimum of 45 units of course work at the 100 level or above.
   a. Half of the courses used to satisfy the 45-unit requirement must be intended as being primarily for graduate students, usually at the 200 level or above.
   b. No more than 15 units of thesis research may be used to satisfy the 45-unit requirement.
   c. Some students may be required to make up background deficiencies in addition to these basic requirements.
2. By the end of Spring Quarter of their first year in residence, students must complete at least three graduate level courses taught by a minimum of two different GS faculty members.
3. Each student must have a research adviser who is a faculty member in the department and is within the student's thesis topic area or specialized area of study.
4. M.S. students must complete at least one TA appointment (25%). Additional TA quarters may be considered and/or required in consultations with the research advisor, depending on academic goals, funding availability, or the requirements of individual graduate programs.
5. Each student must complete a thesis describing his or her research. Thesis research should begin during the first year of study at Stanford and should be completed before the end of the second year of residence.
6. Early during the thesis research period, and after consultation with the student, the thesis adviser appoints a second reader for the thesis, who must be approved by the Director of Graduate Studies; the thesis adviser is the first reader. The two readers jointly determine whether the thesis is acceptable for the M.S. degree in the department.

Engineer Degree in Geological Sciences

The Engineer degree is offered as an option for students in applied disciplines who wish to obtain a graduate education extending beyond that of an M.S., yet do not have the desire to conduct the research needed to obtain a Ph.D. A minimum of two years (six quarters) of graduate study is required. The candidate must complete 90 units of course work, no more than 10 of which may be applied to overcoming deficiencies in undergraduate training. The student must prepare a substantial thesis that meets the approval of the thesis adviser and the graduate coordinator.

On April 16, 2015, the Senate of the Academic Council approved the Doctor of Philosophy in Geological Sciences. Students who matriculated into the Doctor of Philosophy in Geological and Environmental Sciences have the option of changing the name of their degree to Geological Sciences. Degree requirements remain the same.

Doctor of Philosophy in Geological Sciences

Objectives

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship, high attainment in a particular field of knowledge, and the ability to conduct independent research. To this end, the objectives of the doctoral program are to enable students to develop the skills needed to conduct original investigations in a particular discipline or set of disciplines in the earth sciences, to interpret the results, and to present the data and conclusions in a publishable manner.

Admission

For admission to graduate work in the department, the applicant must have taken the Aptitude Test (verbal, quantitative, and analytical writing assessment) of the Graduate Record Examination. In keeping with University policy, applicants whose first language is not English must submit TOEFL (Test of English as a Foreign Language) scores from a test taken within the last 18 months. Individuals who have completed a B.S. or two-year M.S. program in the U.S. or other English-speaking country are not required to submit TOEFL scores. Previously admitted students who wish to change their degree objective from M.S. to Ph.D. must petition the GS Admissions Committee.

Requirements

The University's requirements for the Ph.D. degree are outlined in the "Graduate Degrees (p. 65)" section of this bulletin. Practical training (GEOLSCI 385 Practical Experience in the Geosciences) may be required by some programs, with advisor approval, depending on the background of the student. A summary of additional department requirements is presented below:

Students are required to take six graded graduate level courses with at least 3 units to be completed with a grade point average (GPA) of 3.0 (B) or higher. By the end of Spring Quarter of their first year in residence, students must complete at least three graduate level courses taught by a minimum of two different GS faculty members. The remaining courses can be any graded course of at least 3-units within the University. First year students are also required to take GEOLSCI 307 Research Proposal Development and Delivery.

An incoming student with a relevant master of science degree may apply for a departmental waiver for up to two of the graduate level courses to fulfill these requirements, as approved by their departmental graduate faculty advisor and the GSC. Transfer credits cannot be used to fulfill the first year requirement.

Ph.D. students must complete at least one TA appointment (25%). Additional TA quarters may be considered and/or required in consultations with the research advisor, depending on academic goals, funding availability, or the requirements of individual doctoral programs.

Each student must qualify for candidacy for the Ph.D. by the end of the sixth quarter in residence, excluding summers. Department procedures require selection of a faculty thesis advisor, preparation of a written research proposal, approval of this proposal by the thesis advisor, selection of a committee for the Ph.D. qualifying examination, and approval of the membership by the graduate coordinator and chair of the department. The research examination consists of three parts: oral presentation of a research proposal, examination on the research proposal, and examination on subject matter relevant to the proposed research. The exam should be scheduled prior to May 1, so that the outcome of the exam is known at the time of the annual spring evaluation of graduate students.

Upon qualifying for Ph.D. candidacy, the student and thesis advisor, who must be a department faculty member, choose a research committee that includes a minimum of two faculty members in the University in addition to the advisor.

During orientation, first-year students meet with the Graduate Studies Committee to discuss their proposed plan of coursework and potential research directions. Prior to the qualification exam, the student is required to organize two meetings with a research committee. During Spring Quarter of the first year, the student meets to present a brief progress report covering the past year and use of the upcoming Summer in the context of developing research topics. During the following Autumn or Winter Quarter of the second year, the student presents an update on their progress and receives feedback for planning of their qualification exam. Upon passing the qualification exams, the student is required to organize an annual Spring Quarter meeting with the research committee to present a progress report and plan for the upcoming year.

Under the supervision of the research advisory committee, the candidate must prepare a doctoral dissertation that is a contribution to knowledge and is the result of independent research. The format of the dissertation must meet University guidelines. The student is strongly urged to prepare dissertation chapters that, in scientific content and format, are readily publishable.

The doctoral dissertation is defended in the University oral examination. The research advisor and two other members of the research committee are determined to be readers of the draft dissertation. The readers are charged to read the draft and to certify in writing to the department that it is adequate to serve as a basis for the University oral examination. Upon obtaining this written certification, the student is permitted to schedule the University oral examination.

Ph.D. Minor in Geological Sciences

Candidates for the Ph.D. degree in other departments who wish to obtain a minor in Geological Sciences must complete, with a GPA of 3.0 (B) or better, 20 units in the geosciences in lecture courses intended for graduate students. The selection of courses must be approved by the student's GS advisor and the department chair.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

Classes taken CR/NC for the 2020-21 academic year will be accepted for credit towards a GS major. However, the department also encourages each student to discuss the choice of graded versus CR/NC with their faculty advisor, the Director of the Undergraduate Curriculum, George Hilley, and/or our Assistant Director of Student Service, Lauren Mendoza-Tabinas, in order to assess the best approach in the context of individual degree and career objectives.

Graduate Degree Requirements

Grading

Classes taken during the 2020-21 academic year must be taken on a graded basis in order to count toward the requirements for graded coursework for Ph.D. candidacy.

The Department of Geological Sciences is committed to providing academic advising in support of graduate student scholarly and professional development. The department strives to ensure everyone in the department has a fulfilling experience by creating an inclusive culture. The School of Earth, Energy, and Environmental Sciences shares this commitment as reflected in the Stanford Earth Policy on Respectful and Inclusive Behavior. With respect to the advising relationship, this entails collaborative and sustained engagement by both the advisor and the advisee. Both the advisor and the advisee are expected to maintain professionalism and integrity.

Inclusivity and Diversity

The Department of Geological Sciences strives to ensure that graduate students feel safe, secure, and supported during their graduate experience. It does not tolerate any form of harassment targeting race, gender identity and expression, sexual orientation, physical and mental ability, physical appearance, age and/or religion. Any experience of discrimination, harassment, or inequity in the department will not be tolerated and met with appropriate consequences in accordance to

Stanford University's Harassment and Discrimination policy. (https://adminguide.stanford.edu/chapter-1/subchapter-7/) Students can seek support from the Associate Chair of Diversity and Inclusion, Jef Caers, or the Assistant Director of Student Services, Lauren Mendoza-Tabinas.

Mental Health

Members of the Geological Sciences department recognize that challenges to mental health are real and can come from both inside and outside the academic setting. We support and encourage each other to seek resources towards mental health and well-being. If any event during the graduate experience places a student under undue stress that inhibits their performing to their potential, the department encourages the student to seek support from the Director of Graduate Studies (Wendy Mao), Assistant Director of Student Services (Lauren Mendoza-Tabinas) or University services (Counseling and Psychological Services (https://vaden.stanford.edu/caps/)).

Academic Accommodations

The Office of Accessible Education (OAE) is the campus office designated to work with Stanford students with disabilities. To comply with Stanford's academic accommodations process, faculty should not attempt to arrange accommodations by themselves with the student. Students with questions about accommodations should contact OAE to initiate a disability-related request for accommodations. When a student presents an OAE Accommodation Letter, that letter should be followed or the faculty member should work with the student and OAE to implement and/or modify the recommended accommodations. Students are expected to initiate accommodations requests in a timely manner and to provide prompt notification of changes to approved accommodations. Faculty are responsible for maintaining student confidentiality and treating all disability-related information as confidential.

Establishing Advisor-Advisee Expectations

Both advisor and advisee are expected to take responsibility in actively discussing the nature of the graduate experience. For first year students, the results of the discussion regarding the nature of the graduate experience and the expectations of each party is summarized in a document that is signed by both advisor and advisee. The relationship and expectations evolve as the student progresses through their graduate experience. Regularly scheduled advisor-advisee interactions are an important component of this relationship. Advisors are expected to check in with their students every quarter to discuss how the expectations are met and if any expectations need updating. Students are encouraged to revisit these conversations when the advisor-advisee relationship is not meeting their needs and/or expectations are not met. Additionally, a written review is held in Spring Quarter that covers the student's academic progress with their advisor(s) and committee members.

Graduate students are expected to proactively seek academic and professional guidance and take responsibility for informing themselves of policies and degree requirements for their graduate program. In addition to the primary advisor, students are highly encouraged to seek advice from other faculty in the department, as well as other faculty and researchers (Stanford or external) who align with their research interest. For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin. When needed, students can seek support and assistance from the Assistant Director of Student Services (Lauren Mendoza-Tabinas).

Guidelines for advisor-advisee interactions

The advisor-advisee relationship is mutual. Graduate students and faculty can expect mutual respect, high professional standards, and the sharing of ideas and research. Advisors should strive continuously to improve their mentoring abilities. Group dynamics can be complex; advisors should strive to be equitable in the treatment of students, including the distribution of opportunities in group, classroom, field, and laboratory settings. Further information regarding guidelines and best practices on advising and mentoring is available from the Office of the Vice Provost for Graduate Education and School-wide documents like the Minimum Graduate Advising Guidelines Earth, Energy & Environmental Sciences: School-wide Suggestions. Graduate students are expected to exercise high professional standards in their academic work, research, and mentoring partnerships and to be proactive in seeking advice and keeping the advisor informed about academic and research progress. Students and advisors are expected to both take responsibility for meeting timelines, policies, and milestones that impact degree progress. We expect respect and equity in our department at all levels from one-on-one interactions to department-wide events.

Students in need of assistance should contact the Assistant Director of Student Services, Lauren Mendoza-Tabinas, or the Assistant Dean for Student Services, Alyssa Ferree, to be informed about a clearly articulated path of contacts for their questions, concerns, and challenges around advising that they may experience. Students may also contact any school representatives listed below to discuss issues regarding advisor-advisee interactions:

- Other faculty members of your advisory committee
- Wendy Mao, Director of Graduate Studies in Geological Sciences
- Kevin Boyce, Department Chair of Geological Sciences
- Robyn Dunbar, Associate Dean for Educational Affairs
- Sue Crutcher, Associate Dean for Human Resources and Faculty Affairs
- Graduate Student Advisory Council representatives in Geological Sciences

Emeriti: (Professors) Atilla Aydin, Dennis K. Bird, Gordon E. Brown, W. Gary Ernst, James C. Ingle, Jr., Juhn G. Liou, Gail A. Mahood, Jonathan F. Stebbins, David D. Pollard

Chair: C. Kevin Boyce

Associate Chair: Wendy Mao

Director of Graduate Studies: Wendy Mao

Director of Undergraduate Studies: George Hilley

Professors: C. Kevin Boyce, Jef Caers, Page Chamberlain, Rodney C. Ewing, Stephan A. Graham, George Hilley, Donald R. Lowe, Wendy Mao, Elizabeth L. Miller, Jonathan Payne

Associate Professors: Jane Willenbring

Assistant Professors: Mathieu Lapôtre, Andrew Leslie, Ayla Pamukcu, Laura Schaefer, Erik Sperling

Professors (Research): Martin J. Grove

Courtesy Professors: Elizabeth Hadly, Simon L. Klemperer, Kate Maher, Tapan Mukerji, Sonia Tikoo

Cognate Courses

Many courses offered within the School of Earth, Energy and Environmental Sciences, as well as courses in other schools with a

significant Earth sciences component, may be used in satisfaction of optional requirements for the Geological Sciences degree. Undergraduates should discuss the options available to them with the undergraduate program coordinator; graduate students should discuss options with their advisers.

The following courses outside the School of Earth, Energy and Environmental Sciences are particularly applicable:

		Units
BIOHOPK 182H	Stanford at Sea	16
CEE 63	Weather and Storms	3
CEE 64	Air Pollution and Global Warming: History, Science, and Solutions	3
CEE 101A	Mechanics of Materials	4
CEE 101B	Mechanics of Fluids	4
CEE 101C	Geotechnical Engineering	3-4
CEE 166A	Watershed Hydrologic Processes and Models	3

Overseas Studies Courses in Geological Sciences

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
explorecourses:OSP	gs	

Courses

GEOLSCI 1. Introduction to Geology. 5 Units.
Why are earthquakes, volcanoes, and natural resources located at specific spots on the Earth surface? Why are there rolling hills to the west behind Stanford, and soaring granite walls to the east in Yosemite? What was the Earth like in the past, and what will it be like in the future? Lectures, hands-on laboratories, in-class activities, and one field trip will help you see the Earth through the eyes of a geologist. Topics include plate tectonics, the cycling and formation of different types of rocks, and how geologists use rocks to understand Earth's history.
Same as: EARTHSYS 11

GEOLSCI 2. Chemistry of the Earth and Planets. 3 Units.
Chemistry of the Earth and PlanetsnCouse Description: Introduction to chemical principles with an emphasis on applications in the Earth Sciences. Topics include: origin and distribution of the elements in the solar system and on Earth, origin and structure of the Earth, its oceans and atmosphere, crystal chemistry, structure, and transformations, predicting and balancing reactions; thermodynamics, phase diagrams, high temperature and aqueous geochemistry, weathering, isotope geochemistry, and organic geochemistry. Students will also be exposed to analytical methods used in the Earth sciences.

GEOLSCI 4. Coevolution of Earth and Life. 4 Units.
Earth is the only planet in the universe currently known to harbor life. When and how did Earth become inhabited? How have biological activities altered the planet? How have environmental changes affected the evolution of life? Are we living in a sixth mass extinction? In this course, we will develop and use the tools of geology, paleontology, geochemistry, and modeling that allow us to reconstruct Earth's 4.5 billion year history and to reconstruct the interactions between life and its host planet over the past 4 billion years. We will also ask what this long history can tell us about life's likely future on Earth. We will also use One half-day field trip.
Same as: EARTHSYS 4

GEOLSCI 5. Living on the Edge. 1 Unit.
A weekend field trip along the Pacific Coast. Tour local beaches, geology, and landforms with expert guides from the School of Earth, Energy & Environmental Sciences. Enjoy a BBQ dinner and stay overnight in tents along the coast. Get to know faculty and graduate students in Stanford Earth. Transportation, meals, and camping equipment are provided at no cost to student participants. AY2020-21 offering is dependent on the COVID-19 health situation.
Same as: EARTH 15

GEOLSCI 6. Data Science for Geoscience. 3 Units.
This course provides an overview of the most relevant areas of data science to address geoscientific challenges and questions as they pertain to the environment, earth resources & hazards. The focus lies on the methods that treat common characters of geoscientific data: multivariate, multi-scale, compositional, geospatial and space-time. In addition, the course will treat those statistical method that allow a quantification of the human dimension by looking at quantifying impact on humans (e.g. hazards, contamination) and how humans impact the environment (e.g. contamination, land use). The course focuses on developing skills that are not covered in traditional statistics and machine learning courses.
Same as: EARTHSYS 100A

GEOLSCI 14. Our National Parks. 2 Units.
Explore the history and natural science of three national parks proximal to Stanford. Under the guidance of instructors, students will work in teams to learn about chosen aspects of these parks, develop dynamic self-guided tours for public consumption, and implement (and publish) these tours using the XibitEd app for iPhones. Students will learn how to present their findings to a general, non-scientific audience, delineate physical locations at which storytelling will take place through the XibitEd system, and create and configure the content for the system. The course will culminate in the publishing of the experiential learning tours, as well as a weekend-long field trip to the Pinnacles National Park.
Same as: EARTH 14, EARTH 114A, GEOLSCI 114A

GEOLSCI 30N. Science Fiction Worlds. 3 Units.
Science fiction writers, with limited knowledge of what technologies or discoveries about space might exist in the future, must build entire worlds in their minds and craft underlying physical laws about how these fantastical places might operate and the types of environments that they could sustain. In this course, we will use popular works of science fiction from film, television, and literature as conversation starters to discuss real discoveries that have been made about how planets form and evolve over time. The class will focus on the following overarching questions: (1) What conditions are required for habitable planets to form? (2) What types of planets may actually exist, including desert worlds, lava planets, ice planets, and ocean worlds? (3) What kids of life could inhabit such diverse worlds? (3) What types of catastrophic events such as supernovas, asteroid impacts, climate changes can nurture or destroy planetary habitability?.
Same as: GEOPHYS 30N

GEOLSCI 38N. The Worst Journey in the World: The Science, Literature, and History of Polar Exploration. 3 Units.
This course examines the motivations and experiences of polar explorers under the harshest conditions on Earth, as well as the chronicles of their explorations and hardships, dating to the 1500s for the Arctic and the 1700s for the Antarctic. Materials include The Worst Journey in the World by Aspley Cherry-Garrard who in 1911 participated in a midwinter Antarctic sledging trip to recover emperor penguin eggs. Optional field trip into the high Sierra in March.
Same as: EARTHSYS 38N, ESS 38N

GEOLSCI 40N. Diamonds. 3 Units.
Preference to freshmen. Topics include the history of diamonds as gemstones, prospecting and mining, and their often tragic politics. How diamond samples provide clues for geologists to understand the Earth's deep interior and the origins of the solar system. Diamond's unique materials properties and efforts in synthesizing diamonds.

GEOLSCI 42. Moving and Shaking in the Bay Area. 4 Units.
Active faulting and erosion in the Bay Area, and its effects upon landscapes. Earth science concepts and skills through investigation of the valley, mountain, and coastal areas around Stanford. Faulting associated with the San Andreas Fault, coastal processes along the San Mateo coast, uplift of the mountains by plate tectonic processes, and landsliding in urban and mountainous areas. Field excursions; student projects.
Same as: EARTH 42

GEOLSCI 45. Developing and maintaining a habitable Earth: A global challenge?. 3 Units.
Did you ever wonder how we got here and where we are going? This course examines how the Earth became habitable for humans after 4.5 billion years of history and where we are headed as we continue to alter the Earth's livable environment. The Earth as we know it today is itself a highly tuned system of linked fluid (oceans and atmosphere) and solid (rock) envelopes that interact to maintain a highly hospitable environment for advanced life forms and civilization. From water to food to energy and mineral resources, we rely on our planet. Was this synergy always the case? Will it continue this way? We will explore how the Earth became habitable, specifically examining how those conditions arose and how they might change in the future, exploring what might happen when we perturb this system. How will the Earth respond and over what time scales? This course, taught by earth scientists who want to continue making our planet habitable for future generations, will also give you the hands on working knowledge of the Earth system and its evolution, and the tools and models we use to understand today's delicately balanced Earth system. It is our hope that at the end of this course you will have deep insights into your origins, your place in the universe, and how best to ensure that Earth remains our home.

GEOLSCI 46Q. Environmental Impact of Energy Systems: What are the Risks?. 3 Units.
In order to reduce CO2 emissions and meet growing energy demands during the 21st Century, the world can expect to experience major shifts in the types and proportions of energy-producing systems. These decisions will depend on considerations of cost per energy unit, resource availability, and unique national policy needs. Less often considered is the environmental impact of the different energy producing systems: fossil fuels, nuclear, wind, solar, and other alternatives. One of the challenges has been not only to evaluate the environmental impact but also to develop a systematic basis for comparison of environmental impact among the energy sources. The course will consider fossil fuels (natural gas, petroleum and coal), nuclear power, wind and solar and consider the impact of resource extraction, refining and production, transmission and utilization for each energy source.
Same as: EARTHSYS 46Q

GEOLSCI 59N. Earthquake 9.0: The Heritage of Fukushima Daiichi 6 Years Later. 3 Units.
We will consider the case for nuclear power as an energy source through the lens of the Fukushima disaster. Specific topics will include the cause of the earthquake and tsunami, the causes for the nuclear power plant failure, the mechanisms for the release of radioactivity at the time of the accident and today, and the ongoing human impact of this tragedy. In addition to the details of the accident and the release of radioactivity, class discussions and readings will explore the health and economic impacts of nuclear power and examine how the accident has affected the future prospects of nuclear power in Japan, the U.S., and around the world.

GEOLSCI 103. Earth Materials: Rocks in Thin Section. 3 Units.
Use of petrographic microscope to identify minerals and common mineral associations in igneous, metamorphic, and sedimentary rocks. Crystallization histories, mineral growth and reaction relations, deformation textures in metamorphic rocks, and provenance of siliciclastic rocks. Required lab section. Prerequisite 102.
Same as: GEOLSCI 203

GEOLSCI 105. Introduction to Field Methods. 3 Units.
Two-week, field-based course in the White Mountains of eastern California. Introduction to the techniques for geologic mapping and geologic investigation in the field: systematic observations and data collection for lithologic columns and structural cross-sections. Interpretation of field relationships and data to determine the stratigraphic and deformational history of the region. Prerequisite: GEOLSCI 1, recommended: GEOLSCI 102.

GEOLSCI 106. Sediments: The Book of Earth's History. 3 Units.
Topics: weathering, erosion and transportation, deposition, origins of sedimentary structures and textures, sediment composition, diagenesis, sedimentary facies, tectonics and sedimentation, and the characteristics of the major siliciclastic and carbonate depositional environments. Required Lab Section: methods of analysis of sediments in hand specimen and thin section. There is a required field problem trips to the field site(s) during the quarter, data collection and analysis, and preparation of a final written and oral report. Prerequisites: 1, 102, 103.

GEOLSCI 107. Journey to the Center of the Earth. 3 Units.
The interconnected set of dynamic systems that make up the Earth. Focus is on fundamental geophysical observations of the Earth and the laboratory experiments to understand and interpret them. What earthquakes, volcanoes, gravity, magnetic fields, and rocks reveal about the Earth's formation and evolution.
Same as: GEOLSCI 207, GEOPHYS 184, GEOPHYS 274

GEOLSCI 110. Our Dynamic West. 5 Units.
Theory, principles, and practical techniques to measure, describe, analyze, and interpret deformation-related structures on Earth. Collection of fault and fold data in the field followed by lab and computer analysis; interpretation of geologic maps and methods of cross-section construction; structural analysis of fault zones and metamorphic rocks; measuring deformation; regional structural styles and associated landforms related to plate tectonic convergence, rifting and strike-slip faulting; the evolution of mountain belts and formation of sedimentary basins. Prerequisite: GEOLSCI 1, calculus. Recommended: 102, 105.
Same as: GEOLSCI 294

GEOLSCI 112. Geomorphology. 3 Units.
Development of earth's landscapes and landforms by processes by rock uplift, weathering, hill slopes and flowing water, wind and ice. Analysis of the imprint, role, and legacy of climate and tectonics in shaping modern landscapes. Application of earth's surface processes to the evaluation of hazards posed by these phenomena.

GEOLSCI 114A. Our National Parks. 2 Units.
Explore the history and natural science of three national parks proximal to Stanford. Under the guidance of instructors, students will work in teams to learn about chosen aspects of these parks, develop dynamic self-guided tours for public consumption, and implement (and publish) these tours using the XibitEd app for iPhones. Students will learn how to present their findings to a general, non-scientific audience, delineate physical locations at which storytelling will take place through the XibitEd system, and create and configure the content for the system. The course will culminate in the publishing of the experiential learning tours, as well as a weekend-long field trip to the Pinnacles National Park.
Same as: EARTH 14, EARTH 114A, GEOLSCI 14

GEOLSCI 118X. Shaping the Future of the Bay Area. 3-5 Units.
The complex urban problems affecting quality of life in the Bay Area, from housing affordability and transportation congestion to economic vitality and social justice, are already perceived by many to be intractable, and will likely be exacerbated by climate change and other emerging environmental and technological forces. Changing urban systems to improve the equity, resilience and sustainability of communities will require new collaborative methods of assessment, goal setting, and problem solving across governments, markets, and communities. It will also require academic institutions to develop new models of co-production of knowledge across research, education, and practice. This XYZ course series is designed to immerse students in co-production for social change. The course sequence covers scientific research and ethical reasoning, skillsets in data-driven and qualitative analysis, and practical experience working with local partners on urban challenges that can empower students to drive responsible systems change in their future careers. The Autumn (X) course is specifically focused on concepts and skills, and completion is a prerequisite for participation in the Winter (Y) and/or Spring (Z) practicum quarters, which engage teams in real-world projects with Bay Area local governments or community groups. X is composed of four modules: (A) participation in two weekly classes which prominently feature experts in research and practice related to urban systems; (B) reading and writing assignments designed to deepen thinking on class topics; (C) fundamental data analysis skills, particularly focused on Excel and ArcGIS, taught in lab sessions through basic exercises; (D) advanced data analysis skills, particularly focused on geocomputation in R, taught through longer and more intensive assignments. X can be taken for 3 units (ABC), 4 units (ACD), or 5 units (ABCD). Open to undergraduate and graduate students in any major. For more information, visit http://bay.stanford.edu.
Same as: CEE 118X, CEE 218X, ESS 118X, ESS 218X, GEOLSCI 218X, GEOPHYS 118X, GEOPHYS 218X, POLISCI 218X, PUBLPOL 118X, PUBLPOL 218X

GEOLSCI 118Y. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 118Y, CEE 218Y, ESS 118Y, ESS 218Y, GEOLSCI 218Y, GEOPHYS 118Y, GEOPHYS 218Y, POLISCI 218Y, PUBLPOL 118Y, PUBLPOL 218Y

GEOLSCI 118Z. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 118Z, CEE 218Z, ESS 118Z, ESS 218Z, GEOLSCI 218Z, GEOPHYS 118Z, GEOPHYS 218Z, POLISCI 218Z

GEOLSCI 119. Formation and Dynamics of Planets. 3-4 Units.
This course will cover formation of planets within a protoplanetary disk, dynamical evolution of planetary systems (Grand Tack and Nice models, planet migration), condensation chemistry within the solar nebula and meteorite classification, classical accretion models and pebble accretion, melting, magma ocean formation and core formation on rocky objects. Topics will be discussed in the context of both the Solar system and extrasolar planet observations.
Same as: GEOLSCI 219, GEOPHYS 109, GEOPHYS 209

GEOLSCI 120. Planetary Surface Processes: Shaping the Landscape of the Solar System. 4 Units.
The surfaces of planets, moons, and other bodies are shaped and modified by a wide array of physical and chemical processes. Understanding these processes allows us to decipher the history of the Solar System. This course offers a quantitative examination of both exogenous processes - such as impact cratering and space weathering - and endogenous processes - such as tectonics, weathering, and volcanic, fluvial, eolian, and periglacial activity - as well as a brief introduction to the fundamentals of remote sensing in the context of planetary exploration. As we develop a basic mechanistic framework for these processes, we will apply our acquired knowledge through thematic discussions of the surfaces of Mercury, Venus, Earth, the Moon, Mars, asteroids, Io, Titan, Europa, Enceladus, Pluto, and comets. For upper-division undergraduates and graduate students.
Same as: GEOLSCI 220, GEOPHYS 119, GEOPHYS 219

GEOLSCI 121. What Makes a Habitable Planet?. 3 Units.
Physical processes affecting habitability such as large impacts and the atmospheric greenhouse effect, comets, geochemistry, the rise of oxygen, climate controls, and impact cratering. Detecting and interpreting the spectra of extrasolar terrestrial planets. Student-led discussions of readings from the scientific literature. Team taught by planetary scientists from NASA Ames Research Center.
Same as: GEOLSCI 221

GEOLSCI 122. Planetary Systems: Dynamics and Origins. 2-4 Units.
(Students with a strong background in mathematics and the physical sciences should register for 222.) Motions of planets and smaller bodies, energy transport in planetary systems, composition, structure and dynamics of planetary atmospheres, cratering on planetary surfaces, properties of meteorites, asteroids and comets, extrasolar planets, and planetary formation. Prerequisite: some background in the physical sciences, especially astronomy, geophysics, or physics. Students need instructor approval to take the course for 2 or 4 units.
Same as: GEOLSCI 222, GEOPHYS 122

GEOLSCI 123. Evolution of Marine Ecosystems. 3-4 Units.
Life originally evolved in the ocean. When, why, and how did the major transitions occur in the history of marine life? What triggered the rapid evolution and diversification of animals in the Cambrian, after more than 3.5 billion years of Earth's history? What caused Earth's major mass extinction events? How do ancient extinction events compare to current threats to marine ecosystems? How has the evolution of primary producers impacted animals, and how has animal evolution impacted primary producers? In this course, we will review the latest evidence regarding these major questions in the history of marine ecosystems. We will develop familiarity with the most common groups of marine animal fossils. We will also conduct original analyses of paleontological data, developing skills both in the framing and testing of scientific hypotheses and in data analysis and presentation.
Same as: BIO 119, EARTHSYS 122, GEOLSCI 223B

GEOLSCI 124. INTRODUCTION TO PLANETARY SCIENCE. 3-4 Units.
This course provides an introduction to planetary science through the exploration of processes that formed and modified planetary bodies within the Solar System and beyond. Each lecture will be given by an expert in a specific subfield of planetary sciences, with topics ranging from planetary materials and formation, planetary dynamics, planetary structure and tectonics, planetary atmospheres, impact cratering, surface processes, and astrobiology. We will also discuss how scientists investigate planets both near and far through sample analysis, telescopic and orbital remote sensing as well as in situ through robotic instruments. Although there are no prerequisites for this course, it is primarily directed towards undergraduate students who are majoring (or plan to) in the sciences or engineering. A minimum level of mathematics equivalent to high school algebra and introductory calculus will be necessary.
Same as: ESS 125, GEOPHYS 124

GEOLSCI 127. PLANETARY SCIENCE READING. 1 Unit.
The course will meet once a week to discuss a recent journal article related to the broad field of planetary science, including but not limited to cosmochemistry, planet formation, planetary geology, planetary atmospheres, Earth history, astrobiology, and exoplanets. Students will be expected to lead the group discussion at least once per quarter. No formal presentations will be required. There are no prerequisites for this course, but students should have some facility with reading scientific literature.
Same as: GEOLSCI 227, GEOPHYS 126, GEOPHYS 226

GEOLSCI 128. Evolution of Terrestrial Ecosystems. 4 Units.
The what, when, where, and how do we know it regarding life on land through time. Fossil plants, fungi, invertebrates, and vertebrates (yes, dinosaurs) are all covered, including how all of those components interact with each other and with changing climates, continental drift, atmospheric composition, and environmental perturbations like glaciation and mass extinction. The course involves both lecture and lab components. Graduate students registering at the 200-level are expected to write a term paper, but can opt out of some labs where appropriate.
Same as: BIO 148, BIO 228, EARTHSYS 128, GEOLSCI 228

GEOLSCI 132. Evolution of Earth Systems. 4 Units.
This course examines biogeochemical cycles and how they developed through the interaction between the atmosphere, hydrosphere, biosphere, and lithosphere. Emphasis is on the long-term carbon cycle and how it is connected to other biogeochemical cycles on Earth. The course consists of lectures, discussion of research papers, and quantitative modeling of biogeochemical cycles. Students produce a model on some aspect of the cycles discussed in this course. Grades based on class interaction, student presentations, and the modeling project.
Same as: EARTHSYS 132, EARTHSYS 232, ESS 132, ESS 232, GEOLSCI 232

GEOLSCI 135. Sedimentary Geochemistry and Analysis. 1-4 Unit.
Introduction to research methods in sedimentary geochemistry. Proper laboratory techniques and strategies for generating reliable data applicable to any future labwork will be emphasized. This research-based course will examine how the geochemistry of sedimentary rocks informs us about local and global environmental conditions during deposition. Students will collect geochemical data from a measured stratigraphic section in the western United States. These samples will be collected during a four-day field trip at the end of spring break (attendance encouraged but not required). In lab, students will learn low-temperature geochemical techniques focusing on the cycling of biogeochemical elements (O, C, S, and Fe) in marine sediments throughout Earth history. The focus will be on geochemistry of fine-grained siliciclastic rocks (shale) but the geochemistry of carbonates will also be explored. This is a lab-based course complemented with lectures. Students who wish to take the course for less than 4 units must receive approval from the instructor. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.
Same as: GEOLSCI 235

GEOLSCI 135A. Sedimentary Geochemistry Field Trip. 1 Unit.
Field trip to a sedimentary succession of geobiological interest. Students will measure the stratigraphic section, describe any fossils and trace fossils, and collect samples for geochemical analysis. Offered over spring break.

GEOLSCI 136. Macroevolution. 3 Units.
The course will focus on the macroevolution of animals. We will be exploring how paleobiology and developmental biology/genomics have contributed to our understanding of the origins of animals, and how patterns of evolution and extinction have shaped the diversity of animal forms we observe today.
Same as: BIO 136, BIO 236, GEOLSCI 236

GEOLSCI 141. Machine Learning for Visual Recognition in Geosciences. 1 Unit.
Analyzing images is a big part of day-to-day life of geoscientists, such as conducting seismic interpretation or lithofacies identification and classification. Furthermore, visual representation, recognition and feature extraction play a crucial role in providing a foundation to solve different geosciences research questions, including reconstructing depositional environment, marine ecosystem and tectonic history. Imagine analysis is often costly, time consuming and requires in-depth knowledge of specific geological sub-fields (igneous, metamorphic, sedimentary petrography, and micropaleontology). Recent improvements in machine learning techniques, in particular deep learning, have led to excellent performance in different computer vision tasks (e.g., image classification, segmentation) that significantly increase efficiency and reproducibility. In this course, we will go through the basics of machine learning for visual recognition by analyzing different real-world geoscience problems and try to understand how machine learning algorithms can be used to help solve these problems. This course is intended to provide an introduction to visual recognition with machine learning. No prior knowledge of machine learning and python programming are required.
Same as: GEOLSCI 241

GEOLSCI 150. Senior Seminar: Issues in Earth Sciences. 3 Units.
Focus is on written and oral communication in a topical context. Topics from current frontiers in earth science research and issues of concern to the public. Readings, oral presentations, written work, and peer review.
Same as: GEOPHYS 199

GEOLSCI 161. Quantitative Methods in Paleobiology. 3 Units.
The advent of large, publicly accessible sources of data relevant to paleobiology has opened new avenues for quantifying large-scale patterns in the history of life and for identifying their underlying causes. How and why has biodiversity changed over time? What factors control evolutionary trends within clades? How have environmental changes affected the evolution of life? In this course, we will introduce several of the most widely accessed sources of data for paleobiological analysis, such as the Paleobiology Database and Macrostrat, develop techniques for downloading and cleaning these data, and then explore several of the most commonly used statistical techniques in paleobiology, including phylogenetic analysis, phylogenetic regression and model fitting, logistic regression, ordination, and subsampling to analyze these data.
Same as: GEOLSCI 261

GEOLSCI 163. Introduction to Isotope Geochemistry. 3 Units.
Isotopic variations in nature provide key insights into the age of the Earth and its rocks, as well as the evolution of Earth¿s major reservoirs, including the mantle, crust and hydrosphere. How do we know the age of the Earth? When did continents first form? How have the oceans changed through time? This course will address these and related topics by focusing on the fundamental processes that govern isotopic variations, including radioactive decay, mass dependent isotope fractionation and dynamic transfers between reservoirs.
Same as: GEOLSCI 263

GEOLSCI 180. Igneous Processes. 3-4 Units.
For juniors, seniors and beginning graduate students in Earth Sciences. Structure and physical properties of magmas; use of phase equilibria and mineral barometers and thermometers to determine conditions of magmatic processes; melting and magmatic lineages as a function of tectonic setting; processes that control magma composition including fractional crystallization, partial melting, and assimilation; petrogenetic use of trace elements and isotopes. Optional labs emphasize identification of volcanic and plutonic rocks in thin section and interpretation of rock textures. Students taking the lab component should enroll in 4 units, as required for the Geological Sciences major; for the lab, GS 102, 103, or consent of instructor are prerequisites.
Same as: GEOLSCI 280

GEOLSCI 190. Research in the Field. 3-6 Units.
Month long courses that provide students with the opportunity to collect data in the field as part of a team-based investigation of research questions or topics under the expert guidance of knowledgeable faculty and graduate students. Topics and locations vary. May be taken multiple times for credit. Prerequisites: GS 1, GS 102, GS 105.
Same as: GEOLSCI 295

GEOLSCI 191. Stanford EARTH Field Courses. 1-2 Unit.
Four- to seven-day field trips to locations of geologic and environmental interest. Includes trips offered during Spring break. May be repeated for credit.
Same as: EARTH 191

GEOLSCI 192. Undergraduate Research in Geological Sciences. 1-10 Unit.
Field-, lab-, or literature-based. Faculty supervision. Written reports. May be repeated for credit.

GEOLSCI 197. Senior Thesis. 3-5 Units.
For seniors who wish to write a thesis based on research in 192 or as a summer research fellow. May not be repeated for credit; may not be taken if enrolled in 199.

GEOLSCI 198. Special Problems in Geological Sciences. 1-10 Unit.
Reading and instruction under faculty supervision. Written reports. May be repeated for credit.

GEOLSCI 199. Honors Program. 1-10 Unit.
Research on a topic of special interest. See "Undergraduate Honors Program" above.nMay be repeated for credit.

GEOLSCI 203. Earth Materials: Rocks in Thin Section. 3 Units.
Use of petrographic microscope to identify minerals and common mineral associations in igneous, metamorphic, and sedimentary rocks. Crystallization histories, mineral growth and reaction relations, deformation textures in metamorphic rocks, and provenance of siliciclastic rocks. Required lab section. Prerequisite 102.
Same as: GEOLSCI 103

GEOLSCI 205. Fundamentals of Geobiology. 3 Units.
Lecture and discussion covering key topics in the history of life on Earth, as well as basic principles that apply to life in the universe. Co-evolution of Earth and life; critical intervals of environmental and biological change; geomicrobiology; paleobiology; global biogeochemical cycles; scaling of geobiological processes in space and time.
Same as: EARTHSYS 205A, ESS 205

GEOLSCI 206. Topics in Organismal Paleobiology. 2-3 Units.
Seminar course covering an area of structural biology, physiology, or ecology relevant to understanding the fossil record, with the topic changing each time the course is offered. Examples of potential topics are biomineralization, fluid mechanics, biomechanics, taphonomy & biochemical preservation, and the functional morphology/fossil history of specific evolutionary groups such as vertebrates, insects, or plants.

GEOLSCI 207. Journey to the Center of the Earth. 3 Units.
The interconnected set of dynamic systems that make up the Earth. Focus is on fundamental geophysical observations of the Earth and the laboratory experiments to understand and interpret them. What earthquakes, volcanoes, gravity, magnetic fields, and rocks reveal about the Earth's formation and evolution.
Same as: GEOLSCI 107, GEOPHYS 184, GEOPHYS 274

GEOLSCI 208. Topics in Geobiology. 1 Unit.
Reading course addressing current topics in geobiology. Topics will vary from year to year, but will generally cover areas of current debate in the primary literature, such as the origin of life, the origin and consequences of oxygenic photosynthesis, environmental controls on and consequences of metabolic innovations in microbes, the early evolution of animals and plants, and the causes and consequences of major extinction events. Participants will be expected to read and present on current papers in the primary literature.
Same as: ESS 208

GEOLSCI 209. Microstructures. 3-5 Units.
Microstructures in metamorphic rocks reveal temperature, pressure, and rates of deformation in the crust and variations in its thermo-mechanical behavior. Topics include the rheology of rocks and minerals, strain partitioning, shear zones and brittle-ductile transition in the crust, mechanisms of foliation and lineation development, preferred crystallographic fabrics, and geochronologic methods useful for dating deformation. Labs involve microstructure analysis of suites of rocks from classic localities. 5 units for extra project.

GEOLSCI 210. Geologic Evolution of the Western U.S. Cordillera. 1-3 Unit.
The geologic and tectonic evolution of the U.S. Cordillera based on its rock record through time. This region provides good examples of large-scale structures and magmatic activity generated during crustal shortening, extension, and strike-slip faulting and affords opportunity to study crustal-scale processes involved in mountain building in context of plate tectonic motions.

GEOLSCI 211. Topics in Regional Geology and Tectonics. 2-3 Units.
May be repeated for credit.

GEOLSCI 212. Topics in Tectonic Geomorphology. 2 Units.
For upper-division undergraduates and graduate students. Topics vary and may include coupling among erosional, tectonic, and chemical weathering processes at the scale of orogens; historical review of tectonic geomorphology; hillslope and fluvial process response to active uplift; measures of landscape form and their relationship to tectonic uplift and bedrock lithology. May be repeated for credit.

GEOLSCI 213. Topics in Sedimentary Geology. 1 Unit.
For upper division undergraduates and graduate students. Topics vary each year but the focus is on current developments and problems in sedimentary geology, sedimentology, Archean geology, and basin analysis. These include issues in deep-water sediments, their origin, facies, and architecture; sedimentary systems on the early Earth; and relationships among tectonics, basin development, and basin fill. May be repeated for credit.

GEOLSCI 214. Quantitative Dynamic Stratigraphy. 1-2 Unit.
This seminar will address how numerical modeling of depositional systems can be used to test geological hypotheses and improve our understanding of subsurface reservoirs. What are some of the advantages as well as challenges of using computational models and Monte Carlo methods? Students will read key literature as well as develop an understanding of available software such as SEDSIM and others. 2 unit option will require completing a weekend workshop.

GEOLSCI 215. Topics in Geobiodiversity and Stable Isotopes. 1 Unit.
This course exams the key questions of biodiversity through time (Geobiodiversity) and examines how we might tackle these questions using isotope biogeochemistry. The course consists of two interwoven components. First, what are the drivers of biodiversity - such as global and regional climate change, rise of topographic barriers, supply of nutrients, etc. Second, how do organisms obtain their isotopic signatures and how these might be used to differentiate between the drivers of biodiversity. The course will use case studies of biodiversity questions in key areas such as the Cenozoic of Asia, North America, and South America to develop research questions and approaches. The course will consist of lectures, work groups, and selected readings. Grade: Credit, No Credit.

GEOLSCI 216. Chemical Kinetics and Basin Modeling. 2-3 Units.
Students will explore the structure of sedimentary organic matter and the chemical and thermodynamic requirements for generating petroleum. A wide variety of thermal maturity indicators will be explored, paying particular attention to optical indicators and predictive kinetics of Tmax and %Ro. Students will understand the advantages and pitfalls of kinetic measurements in the lab. Hands-on exercises reinforce learning targets. An optional class project allows students to take the class for 3 units instead of 2. Course readings come from the literature and Burnham's textbook.
Same as: ENERGY 282, GEOPHYS 216

GEOLSCI 218X. Shaping the Future of the Bay Area. 3-5 Units.
The complex urban problems affecting quality of life in the Bay Area, from housing affordability and transportation congestion to economic vitality and social justice, are already perceived by many to be intractable, and will likely be exacerbated by climate change and other emerging environmental and technological forces. Changing urban systems to improve the equity, resilience and sustainability of communities will require new collaborative methods of assessment, goal setting, and problem solving across governments, markets, and communities. It will also require academic institutions to develop new models of co-production of knowledge across research, education, and practice. This XYZ course series is designed to immerse students in co-production for social change. The course sequence covers scientific research and ethical reasoning, skillsets in data-driven and qualitative analysis, and practical experience working with local partners on urban challenges that can empower students to drive responsible systems change in their future careers. The Autumn (X) course is specifically focused on concepts and skills, and completion is a prerequisite for participation in the Winter (Y) and/or Spring (Z) practicum quarters, which engage teams in real-world projects with Bay Area local governments or community groups. X is composed of four modules: (A) participation in two weekly classes which prominently feature experts in research and practice related to urban systems; (B) reading and writing assignments designed to deepen thinking on class topics; (C) fundamental data analysis skills, particularly focused on Excel and ArcGIS, taught in lab sessions through basic exercises; (D) advanced data analysis skills, particularly focused on geocomputation in R, taught through longer and more intensive assignments. X can be taken for 3 units (ABC), 4 units (ACD), or 5 units (ABCD). Open to undergraduate and graduate students in any major. For more information, visit http://bay.stanford.edu.
Same as: CEE 118X, CEE 218X, ESS 118X, ESS 218X, GEOLSCI 118X, GEOPHYS 118X, GEOPHYS 218X, POLISCI 218X, PUBLPOL 118X, PUBLPOL 218X

GEOLSCI 218Y. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 118Y, CEE 218Y, ESS 118Y, ESS 218Y, GEOLSCI 118Y, GEOPHYS 118Y, GEOPHYS 218Y, POLISCI 218Y, PUBLPOL 118Y, PUBLPOL 218Y

GEOLSCI 218Z. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 118Z, CEE 218Z, ESS 118Z, ESS 218Z, GEOLSCI 118Z, GEOPHYS 118Z, GEOPHYS 218Z, POLISCI 218Z

GEOLSCI 219. Formation and Dynamics of Planets. 3-4 Units.
This course will cover formation of planets within a protoplanetary disk, dynamical evolution of planetary systems (Grand Tack and Nice models, planet migration), condensation chemistry within the solar nebula and meteorite classification, classical accretion models and pebble accretion, melting, magma ocean formation and core formation on rocky objects. Topics will be discussed in the context of both the Solar system and extrasolar planet observations.
Same as: GEOLSCI 119, GEOPHYS 109, GEOPHYS 209

GEOLSCI 220. Planetary Surface Processes: Shaping the Landscape of the Solar System. 4 Units.
The surfaces of planets, moons, and other bodies are shaped and modified by a wide array of physical and chemical processes. Understanding these processes allows us to decipher the history of the Solar System. This course offers a quantitative examination of both exogenous processes - such as impact cratering and space weathering - and endogenous processes - such as tectonics, weathering, and volcanic, fluvial, eolian, and periglacial activity - as well as a brief introduction to the fundamentals of remote sensing in the context of planetary exploration. As we develop a basic mechanistic framework for these processes, we will apply our acquired knowledge through thematic discussions of the surfaces of Mercury, Venus, Earth, the Moon, Mars, asteroids, Io, Titan, Europa, Enceladus, Pluto, and comets. For upper-division undergraduates and graduate students.
Same as: GEOLSCI 120, GEOPHYS 119, GEOPHYS 219

GEOLSCI 221. What Makes a Habitable Planet?. 3 Units.
Physical processes affecting habitability such as large impacts and the atmospheric greenhouse effect, comets, geochemistry, the rise of oxygen, climate controls, and impact cratering. Detecting and interpreting the spectra of extrasolar terrestrial planets. Student-led discussions of readings from the scientific literature. Team taught by planetary scientists from NASA Ames Research Center.
Same as: GEOLSCI 121

GEOLSCI 222. Planetary Systems: Dynamics and Origins. 2-4 Units.
(Students with a strong background in mathematics and the physical sciences should register for 222.) Motions of planets and smaller bodies, energy transport in planetary systems, composition, structure and dynamics of planetary atmospheres, cratering on planetary surfaces, properties of meteorites, asteroids and comets, extrasolar planets, and planetary formation. Prerequisite: some background in the physical sciences, especially astronomy, geophysics, or physics. Students need instructor approval to take the course for 2 or 4 units.
Same as: GEOLSCI 122, GEOPHYS 122

GEOLSCI 223. Reflection Seismology Interpretation. 1-4 Unit.
The structural and stratigraphic interpretation of seismic reflection data, emphasizing hydrocarbon traps in two and three dimensions on industry data, including workstation-based interpretation. Lectures only, 1 unit. Prerequisite: 222, or consent of instructor. (Geophys 183 must be taken for a minimum of 3 units to be eligible for Ways credit).
Same as: GEOPHYS 183, GEOPHYS 223

GEOLSCI 223B. Evolution of Marine Ecosystems. 3-4 Units.
Life originally evolved in the ocean. When, why, and how did the major transitions occur in the history of marine life? What triggered the rapid evolution and diversification of animals in the Cambrian, after more than 3.5 billion years of Earth's history? What caused Earth's major mass extinction events? How do ancient extinction events compare to current threats to marine ecosystems? How has the evolution of primary producers impacted animals, and how has animal evolution impacted primary producers? In this course, we will review the latest evidence regarding these major questions in the history of marine ecosystems. We will develop familiarity with the most common groups of marine animal fossils. We will also conduct original analyses of paleontological data, developing skills both in the framing and testing of scientific hypotheses and in data analysis and presentation.
Same as: BIO 119, EARTHSYS 122, GEOLSCI 123

GEOLSCI 224. Rivers: The Arteries of Earth's Continents. 3 Units.
Rivers are the arteries of Earth's continents, conveying water, sediments, and solutes from the headwaters to the oceans. They provide a haven for life and have been at the heart of the world's economy by generating fertile floodplains, human habitats, as well as by facilitating international commerce. This course offers a quantitative examination of rivers, from headwaters to deltas. We will first develop a basic mechanistic understanding of fluvial processes, including flow hydraulics, erosion, sediment transport, and deposition. We will then apply our acquired knowledge through thematic discussions of relevant issues. Possible themes include deltas and climate change, rivers and human activity (damming, sand mining, deforestation), rivers and the evolution of land plants, rivers and biogeochemical cycles, submarine channels, and the alien rivers of Mars and Titan.
Same as: ESS 225, GEOPHYS 221

GEOLSCI 225A. Fundamentals of Geochemical Modeling. 3 Units.
A class devoted to geochemical models and the computational and analytical tools required to successfully construct and solve them. Topics include: box models, impulse responses, transfer functions, eigenvalues, advection-diffusion-reaction models, discretization schemes, numerical methods (Euler, Runge-Kutta, Gauss-Seidel), Green's function, Laplace and Fourier transforms. The class will include a final project in which students will have the opportunity to apply the above tools to their own research or a problem of their choice.

GEOLSCI 226. The Geologic Carbon Cycle. 3 Units.
In this course, we will (1) review the cycling of carbon between Earth's rock and surface reservoirs on timescales ranging from thousands to billions of years; (2) learn how processes within the carbon cycle partition carbon into various organic and inorganic reservoirs, and how carbon cycling influences the isotope composition of the reservoirs; and (3) learn how ancient carbon cycle dynamics can be reconstructed by combining isotope and rock volume measurements with numerical models of carbon cycling. The class will include lecture, reading and discussion of classic and current papers on the geologic carbon cycle, and modeling exercises.

GEOLSCI 227. PLANETARY SCIENCE READING. 1 Unit.
The course will meet once a week to discuss a recent journal article related to the broad field of planetary science, including but not limited to cosmochemistry, planet formation, planetary geology, planetary atmospheres, Earth history, astrobiology, and exoplanets. Students will be expected to lead the group discussion at least once per quarter. No formal presentations will be required. There are no prerequisites for this course, but students should have some facility with reading scientific literature.
Same as: GEOLSCI 127, GEOPHYS 126, GEOPHYS 226

GEOLSCI 228. Evolution of Terrestrial Ecosystems. 4 Units.
The what, when, where, and how do we know it regarding life on land through time. Fossil plants, fungi, invertebrates, and vertebrates (yes, dinosaurs) are all covered, including how all of those components interact with each other and with changing climates, continental drift, atmospheric composition, and environmental perturbations like glaciation and mass extinction. The course involves both lecture and lab components. Graduate students registering at the 200-level are expected to write a term paper, but can opt out of some labs where appropriate.
Same as: BIO 148, BIO 228, EARTHSYS 128, GEOLSCI 128

GEOLSCI 232. Evolution of Earth Systems. 4 Units.
This course examines biogeochemical cycles and how they developed through the interaction between the atmosphere, hydrosphere, biosphere, and lithosphere. Emphasis is on the long-term carbon cycle and how it is connected to other biogeochemical cycles on Earth. The course consists of lectures, discussion of research papers, and quantitative modeling of biogeochemical cycles. Students produce a model on some aspect of the cycles discussed in this course. Grades based on class interaction, student presentations, and the modeling project.
Same as: EARTHSYS 132, EARTHSYS 232, ESS 132, ESS 232, GEOLSCI 132

GEOLSCI 233A. Microbial Physiology. 3 Units.
Introduction to the physiology of microbes including cellular structure, transcription and translation, growth and metabolism, mechanisms for stress resistance and the formation of microbial communities. These topics will be covered in relation to the evolution of early life on Earth, ancient ecosystems, and the interpretation of the rock record. Recommended: introductory biology and chemistry.
Same as: BIO 180, EARTHSYS 255, ESS 255

GEOLSCI 235. Sedimentary Geochemistry and Analysis. 1-4 Unit.
Introduction to research methods in sedimentary geochemistry. Proper laboratory techniques and strategies for generating reliable data applicable to any future labwork will be emphasized. This research-based course will examine how the geochemistry of sedimentary rocks informs us about local and global environmental conditions during deposition. Students will collect geochemical data from a measured stratigraphic section in the western United States. These samples will be collected during a four-day field trip at the end of spring break (attendance encouraged but not required). In lab, students will learn low-temperature geochemical techniques focusing on the cycling of biogeochemical elements (O, C, S, and Fe) in marine sediments throughout Earth history. The focus will be on geochemistry of fine-grained siliciclastic rocks (shale) but the geochemistry of carbonates will also be explored. This is a lab-based course complemented with lectures. Students who wish to take the course for less than 4 units must receive approval from the instructor. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.
Same as: GEOLSCI 135

GEOLSCI 236. Macroevolution. 3 Units.
The course will focus on the macroevolution of animals. We will be exploring how paleobiology and developmental biology/genomics have contributed to our understanding of the origins of animals, and how patterns of evolution and extinction have shaped the diversity of animal forms we observe today.
Same as: BIO 136, BIO 236, GEOLSCI 136

GEOLSCI 240. Data science for geoscience. 3 Units.
This course provides an overview of the most relevant areas of data science (applied statistics, machine learning & computer vision) to address geoscience challenges, questions and problems. Using actual geoscientific research questions as background, principles and methods of data scientific analysis, modeling, and prediction are covered. Data science areas covered are: extreme value statistics, multi-variate analysis, factor analysis, compositional data analysis, spatial information aggregation models, spatial estimation, geostatistical simulation, treating data of different scales of observation, spatio-temporal modeling (geostatistics). Application areas covered are: process geology, hazards, natural resources. Students are encouraged to participate actively in this course by means of their own data science research challenge or question.
Same as: EARTHSYS 240, ENERGY 240, ESS 239

GEOLSCI 241. Machine Learning for Visual Recognition in Geosciences. 1 Unit.
Analyzing images is a big part of day-to-day life of geoscientists, such as conducting seismic interpretation or lithofacies identification and classification. Furthermore, visual representation, recognition and feature extraction play a crucial role in providing a foundation to solve different geosciences research questions, including reconstructing depositional environment, marine ecosystem and tectonic history. Imagine analysis is often costly, time consuming and requires in-depth knowledge of specific geological sub-fields (igneous, metamorphic, sedimentary petrography, and micropaleontology). Recent improvements in machine learning techniques, in particular deep learning, have led to excellent performance in different computer vision tasks (e.g., image classification, segmentation) that significantly increase efficiency and reproducibility. In this course, we will go through the basics of machine learning for visual recognition by analyzing different real-world geoscience problems and try to understand how machine learning algorithms can be used to help solve these problems. This course is intended to provide an introduction to visual recognition with machine learning. No prior knowledge of machine learning and python programming are required.
Same as: GEOLSCI 141

GEOLSCI 246. Reservoir Characterization and Flow Modeling with Outcrop Data. 3 Units.
Course gives an overview of concepts from geology and geophysics relevant for building subsurface reservoir models. Includes a required 1-day field trip and hands-on lab exercises. Target audience: MS and 1st year PhD students in PE/ERE/GS with little or no background in geology or geophysics. Topics include: basin and petroleum systems, depositional settings, deformation and diagenesis, introduction to reflection seismic data, rock and fluid property measurements, geostatistics, and flow in porous media.
Same as: ENERGY 146, ENERGY 246

GEOLSCI 247. Architecture of Turbidite Depositional Systems. 3 Units.
This course considers the research that has led to current architectural models of turbidite deposits as we examine diverse data sets that allow us to test these models. Intense exploration and exploitation activities by the petroleum industry have significantly advanced understanding of turbidite systems. These activities stimulated research aimed at developing predictive models of the three common turbidite reservoir types: (1) confined channel systems, (2) weakly confined channel systems, and (3) unconfined lobe systems. Each of these reservoir types are examined in detail considering recognition criteria, internal structure, reservoir characteristics, and important issues related to reservoir potential and performance. Topics of discussion include controlling processes, hierarchy, variability, uncertainty and active areas of research.

GEOLSCI 248. The Petroleum System: Investigative method to explore for conventional & unconventional hydrocarbons. 1 Unit.
How the petroleum system concept can be used to more systematically investigate how hydrocarbon fluid becomes an unconventional accumulation in a pod of active source rock and how this fluid moves from this pod to a conventional pool. How to identify, map, and name a petroleum system. The conventional and unconventional accumulation as well as the use of modeling.

GEOLSCI 250. Sedimentation Mechanics. 3-4 Units.
The mechanics of sediment transport and deposition and the origins of sedimentary structures and textures as applied to interpreting modern sediments and ancient rock sequences. Dimensional analysis, fluid flow, drag, boundary layers, open channel flow, particle settling, erosion, sediment transport, sediment gravity flows, soft sediment deformation, and fluid escape. Required field trip and lab section.

GEOLSCI 251. Sedimentary Basins. 3 Units.
Analysis of the sedimentary fill and tectonic evolution of sedimentary basins. Topics: tectonic and environmental controls on depositional systems, detrital composition, burial history, and stratigraphic architecture; synthesis of basin development through time. One weekend field trip required. Prerequisites: 110, 151.

GEOLSCI 252. Sedimentary Petrography. 4 Units.
Siliciclastic sediments and sedimentary rocks. Research in modern sedimentary mineralogy and petrography and the relationship between the composition and texture of sediments and their provenance, tectonic settings, and diagenetic histories. Prerequisite: 106 or equivalent or instructor approval. Required lab section.

GEOLSCI 253. Petroleum Geology and Exploration. 3 Units.
The origin and occurrence of hydrocarbons. Topics: thermal maturation history in hydrocarbon generation, significance of sedimentary, structural and tectonic setting, trapping geometries and principles of accumulation, and exploration techniques. Prerequisites: 110, 151. Recommended: GEOPHYS 223.

GEOLSCI 254. Sedimentology and Rock Physics of Carbonates. 3-4 Units.
Processes of precipitation and sedimentation of carbonate minerals as well as their post-depositional alteration with emphasis on marine systems. Topics include: geographic and bathymetric distribution of carbonates in modern and ancient oceans; genesis and environmental significance of carbonate grains and sedimentary textures; carbonate diagenesis; changes in styles of carbonate deposition through Earth history; reservoir quality and properties defined by storage capacity, flow (permeability) and connectivity of pores (effective porosity); the interplay between these properties, the original depositional characteristics of the carbonate sediments and post-depositional alteration; relationships between dissolution processes, cementation processes, and the resulting connectivity of the flow pathways. Lab exercises emphasize petrographic and rock physics analysis of carbonate rocks at scales ranging from map and outcrop to hand sample and thin section.
Same as: GEOPHYS 254

GEOLSCI 255. Basin and Petroleum System Modeling. 3-4 Units.
For advanced undergraduates or graduate students. Students use stratigraphy, subsurface maps, and basic well log, lithologic, paleontologic, and geochemical data to construct 1-D, 2-D, and 3-D models of petroleum systems that predict the extent of source-rock thermal maturity, petroleum migration paths, and the volumes and compositions of accumulations through time (4-D). Recent software such as PetroMod designed to reconstruct basin geohistory. Recommended: 251 or 253.

GEOLSCI 257. Clastic Sequence Stratigraphy. 3 Units.
Sequence stratigraphy facilitates integration of all sources of geologic data, including seismic, log, core, and paleontological, into a time-stratigraphic model of sediment architecture. Tools applicable to regional and field scales. Emphasis is on practical applications and integration of seismic and well data to exploration and field reservoir problems. Examples from industry data; hands-on exercises.

GEOLSCI 258. Introduction to Depositional Systems. 3 Units.
The characteristics of the major sedimentary environments and their deposits in the geologic record, including alluvial fans, braided and meandering rivers, aeolian systems, deltas, open coasts, barred coasts, marine shelves, and deep-water systems. Emphasis is on subdivisions; morphology; the dynamics of modern systems; and the architectural organization and sedimentary structures, textures, and biological components of ancient deposits.

GEOLSCI 259. Stratigraphic Architecture. 1 Unit.
The stratigraphic architecture of deposits associated with a spectrum of depositional environments, using outcrop and subsurface data. Participants read and discuss selected literature.

GEOLSCI 260. Quantifying Uncertainty in Subsurface Systems. 3 Units.
Broad conceptual overview of the various components required to uncertainty quantification (UQ) for decision making in subsurface engineering problems such as oil/gas production, groundwater management, contaminant remediation, geothermal energy and mineral deposits. The emphasis lies on learning how to synthesize rather than the details of each individual discipline. The class will cover the basic data science for UQ: dimension reduction methods, Monte Carlo & global sensitivity analysis. Introduction to Bayesianism and how it applies to subsurface prediction problems, in particular, the formulation of geological prior models and the role of geostatistics. Strategies for integrating geological science, geophysics, data science and decision science into decision making under uncertainty. Team work on real field applications.

GEOLSCI 261. Quantitative Methods in Paleobiology. 3 Units.
The advent of large, publicly accessible sources of data relevant to paleobiology has opened new avenues for quantifying large-scale patterns in the history of life and for identifying their underlying causes. How and why has biodiversity changed over time? What factors control evolutionary trends within clades? How have environmental changes affected the evolution of life? In this course, we will introduce several of the most widely accessed sources of data for paleobiological analysis, such as the Paleobiology Database and Macrostrat, develop techniques for downloading and cleaning these data, and then explore several of the most commonly used statistical techniques in paleobiology, including phylogenetic analysis, phylogenetic regression and model fitting, logistic regression, ordination, and subsampling to analyze these data.
Same as: GEOLSCI 161

GEOLSCI 263. Introduction to Isotope Geochemistry. 3 Units.
Isotopic variations in nature provide key insights into the age of the Earth and its rocks, as well as the evolution of Earth¿s major reservoirs, including the mantle, crust and hydrosphere. How do we know the age of the Earth? When did continents first form? How have the oceans changed through time? This course will address these and related topics by focusing on the fundamental processes that govern isotopic variations, including radioactive decay, mass dependent isotope fractionation and dynamic transfers between reservoirs.
Same as: GEOLSCI 163

GEOLSCI 264. Geochemical Thermodynamics. 3-4 Units.
This course covers equilibrium thermodynamics relevant to geological systems with emphasis on practical numerical approaches. Students will learn how to perform Gibbs-energy minimization to define the equilibrium state of simple systems. Additional topics include: phase equilibrium, phase transitions (including melting), solution chemistry, mineral-solution equilibria, equations of state, gas phase chemistry, and element partitioning. Prerequisites: GEOLSCI 90 and GEOLSCI 102, or permission of the instructor.

GEOLSCI 266. Managing Nuclear Waste: Technical, Political and Organizational Challenges. 3 Units.
(Formerly IPS 266) The essential technical and scientific elements of the nuclear fuel cycle, focusing on the sources, types, and characteristics of the nuclear waste generated, as well as various strategies for the disposition of spent nuclear fuel - including reprocessing, transmutation, and direct geologic disposal. Policy and organizational issues, such as: options for the characteristics and structure of a new federal nuclear waste management organization, options for a consent-based process for locating nuclear facilities, and the regulatory framework for a geologic repository. A technical background in the nuclear fuel cycle, while desirable, is not required.
Same as: INTLPOL 266

GEOLSCI 280. Igneous Processes. 3-4 Units.
For juniors, seniors and beginning graduate students in Earth Sciences. Structure and physical properties of magmas; use of phase equilibria and mineral barometers and thermometers to determine conditions of magmatic processes; melting and magmatic lineages as a function of tectonic setting; processes that control magma composition including fractional crystallization, partial melting, and assimilation; petrogenetic use of trace elements and isotopes. Optional labs emphasize identification of volcanic and plutonic rocks in thin section and interpretation of rock textures. Students taking the lab component should enroll in 4 units, as required for the Geological Sciences major; for the lab, GS 102, 103, or consent of instructor are prerequisites.
Same as: GEOLSCI 180

GEOLSCI 281. Principles of 40Ar/39Ar Thermochronometry. 3-4 Units.
The 40Ar/39Ar method is based upon the K-Ar decay scheme and allows high precision geochronology and thermochronology to be performed with K-bearing minerals. Provides a detailed exploration of the method including all practical considerations and laboratory procedures for standardization and instrument calibration. A laboratory component allows practical experience in making measurements and interpreting results.

GEOLSCI 282. Interpretative Methods in Detrital Geochronology. 3 Units.
Over the past decade, the number of studies that make use of isotopic provenance data has sky-rocketed. This type of data is now routinely used throughout the geosciences to solve a broad range of geologic problems. This seminar examines the state-of-the-art of existing interpretative methods for detrital geo/thermochronology data in provenance studies and critically examines their strengths and weaknesses. While this course will touch upon sampling approaches analytical aspects of data collection, focus is primarily upon data interpretation.

GEOLSCI 283. Thermochronology and Crustal Evolution. 4 Units.
Thermochronology analyzes the competition between radioactive in-growth and temperature-dependant loss of radiogenic isotopes within radioactive mineral hosts in terms of temperature-time history. Coupled with quantitative understanding of kinetic phenomena and crustal- or landscape-scale interpretational models, thermochronology provides an important source of data for the Earth Sciences, notably tectonics, geomorphology, and petrogenesis. Focus on recent developments in thermochronology, specifically analytical and interpretative innovations developed over the past decade. Integrates the latest thermochronology techniques with field work in a small-scale research project focused upon crustal evolution.

GEOLSCI 287. Fundamentals of Mass Spectrometry. 3 Units.
This course explains ion creation, mass separation, and ion detection in mass spectrometry methods commonly used in the Earth Sciences. Gas source (C-O-H-S stable isotope, 40Ar/39Ar, and (U-Th)-He), secondary ionization (SIMS), laser ablation and solution-based mass inductively coupled (ICP-MS) and thermal ionization (TIMS) mass spectrometry techniques are also explored. Additional topics include ion optics, vacuum generation, and pressure measurement, instrument calibration, data reduction, and error propagation methods.

GEOLSCI 290. Departmental Seminar in Geological Sciences. 1 Unit.
Current research topics. Presentations by guest speakers from Stanford and elsewhere. May be repeated for credit.

GEOLSCI 291. GS Field Trips. 1 Unit.
Field trips for teaching and research purposes. Trips average 5-10 days. Prerequisite: consent of instructor.

GEOLSCI 292. Directed Reading with Geological Sciences Faculty. 1-10 Unit.
May be repeated for credit.

GEOLSCI 293. Advanced structural mapping in the field. 1-2 Unit.
Advanced geologic mapping techniques, approaches and methods of data collection in the field. 7-10 days in the field with lectures prior to the trip and follow up mapping and data analysis after the trip. Across the Cordillera September 2018.

GEOLSCI 293A. Geology of Oman Field Trip. 1 Unit.
Reading and discussion of papers addressing current topics related to the geology of Oman, including Neoproterozoic and Permian-Triassic environmental change. By invitation only. May be repeat for credit.

GEOLSCI 293B. Geology of Spain Field Trip. 1 Unit.
Reading and discussion of papers addressing current topics related to the geology of Spain. By invitation only. May be repeated for credit.

GEOLSCI 293C. Geology of Spain Field Trip. 1 Unit.
Reading and discussion of papers addressing current topics related to the geology of Spain, including the Cenozoic structure and stratigraphy of the Tabernas-Sorbas Basin, SE Spain. By invitation only. May be repeat for credit.

GEOLSCI 294. Our Dynamic West. 5 Units.
Theory, principles, and practical techniques to measure, describe, analyze, and interpret deformation-related structures on Earth. Collection of fault and fold data in the field followed by lab and computer analysis; interpretation of geologic maps and methods of cross-section construction; structural analysis of fault zones and metamorphic rocks; measuring deformation; regional structural styles and associated landforms related to plate tectonic convergence, rifting and strike-slip faulting; the evolution of mountain belts and formation of sedimentary basins. Prerequisite: GEOLSCI 1, calculus. Recommended: 102, 105.
Same as: GEOLSCI 110

GEOLSCI 295. Research in the Field. 3-6 Units.
Month long courses that provide students with the opportunity to collect data in the field as part of a team-based investigation of research questions or topics under the expert guidance of knowledgeable faculty and graduate students. Topics and locations vary. May be taken multiple times for credit. Prerequisites: GS 1, GS 102, GS 105.
Same as: GEOLSCI 190

GEOLSCI 299. Field Research. 2-4 Units.
Two-three week field research projects. Written report required. May be repeated three times.

GEOLSCI 306. Virtual Scientific Presentation and Public Speaking. 2 Units.
The ability to present your research in a compelling, concise, and engaging manner will enhance your professional career. Virtual presentations make it harder to connect and interact with the audience, and to overcome this requires new skills, including video, sound, lighting, live vs. pre-recorded content, and virtual posters. These elements will be the focus of this class. But regardless of format, I will work to convince you that the best way to capture an audience and leave a lasting impression is to tell a story, do a demo, or pick a fight. The course is taught as a series of stand-and-deliver exercises with class feedback and revision on the fly, supplemented by one-on-one coaching. We will have sessions on virtual conference presentations, virtual job interviews and job talks, departmental seminars, webinars, press interviews, and funding pitches. My pledge is that everyone will come away a more skilled and confident speaker than they were before. Grades are optional: 70% in-class exercises, 30% final project, such as your upcoming AGU, GSA, or SEG presentation. It's best to take the course when you have research to present. (http://syllabus.stanford.edu).
Same as: ESS 204, GEOPHYS 205

GEOLSCI 307. Research Proposal Development and Delivery. 2 Units.
In this class students will learn how to write rigorous, high yield, multidisciplinary proposals targeting major funding agencies. The skills gained in this class are essential to any professional career, particularly in research science. Students will write a National Science Foundation style proposal involving testable hypotheses, pilot data or calculations, and broader impact. Restricted to ESS and GS first-year graduate students. Same as: ESS 307

GEOLSCI 311. Interpretation of Tectonically Active Landscapes. 3 Units.
Focuses on interpreting various topographic attributes in terms of horizontal and vertical tectonic motions. Topics include identification, mapping, and dating of geomorphic markers, deducing tectonic motions from spatial changes in landscape steepness, understanding processes that give rise to different landscape elements, interrogating the role of climate and lithology in producing these landscape elements, and understanding relationships between tectonic motions, surface topography, and the spatial distribution of erosion. Consists of two one hour lectures per week and one laboratory section that help students gain proficiency in Quaternary mapping and interpretation of topographic metrics.

GEOLSCI 312. Analysis of Landforms. 3 Units.
Quantitative methods to analyze digital topography and to interpret rates of tectonic and geomorphic processes from topographic metrics. Topics include analysis of digital topography using local and neighborhood-based methods, spectral methods, and wavelet methods. Course consists of two one hour lectures per week and one laboratory section that will help students gain proficiency in calculating topographic metrics using ArcGIS and Matlab.

GEOLSCI 313. Modeling of Landforms. 3 Units.
Geomorphic-transport-rule-based, as well as mass- and momentum-conservation based models to understand the evolution of Earth's topography. Topics include formulation of land-sculpting processes as geomorphic transport rules, coupling this mass-conservation approach with mechanical models of crustal deformation, and analysis of landscape forms in terms of events for which mass and momentum of fluid and sediment can be conserved. Both analytical, as well as numerical (finite-volume) treatments of particular problems in tectonic geomorphology will be covered. The specific problems addressed as part of the course will be tailored to those currently investigated by class participants.

GEOLSCI 328. Seminar in Paleobiology. 1 Unit.
For graduate students. Current research topics including paleobotany, vertebrate and invertebrate evolution, paleoecology, and major events in the history of life on Earth.

GEOLSCI 336. Stanford Alpine Project Seminar. 1 Unit.
Weekly student presentations on continental collision tectonics, sedimentology, petrology, geomorphology, climate, culture, and other topics of interest. Students create a guidebook of geologic stops in advance of field trip. May be repeated for credit.

GEOLSCI 385. Practical Experience in the Geosciences. 1 Unit.
On-the-job training in the geosciences. May include summer internship; emphasizes training in applied aspects of the geosciences, and technical, organizational, and communication dimensions. Meets USCIS requirements for F-1 curricular practical training.n (Staff).

GEOLSCI 386. Graduate Teaching Experience in Geological Sciences. 1 Unit.
Practical teaching experience by serving as the primary instructor in a student-led course. Graduate student instructors are mentored by at least one faculty mentor.

GEOLSCI 398. Teaching in Geological Sciences. 1 Unit.
Practical experience in teaching by serving as a teaching assistant in a geological sciences course.

GEOLSCI 399. Advanced Projects. 1-10 Unit.
Graduate research projects that lead to reports, papers, or other products during the quarter taken. On registration, students designate faculty member and agreed-upon units.

GEOLSCI 400. Graduate Research. 1-15 Unit.
Faculty supervision. On registration, students designate faculty member and agreed-upon units.

GEOLSCI 801. TGR Project. 0 Units.
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GEOLSCI 802. TGR Dissertation. 0 Units.
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GEOPHYSICS

Courses offered by the Department of Geophysics are listed under the subject code GEOPHYS on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=GEOPHYS&filter-catalognumber-GEOPHYS=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=GEOPHYS&filter-catalognumber-GEOPHYS=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=GEOPHYS&filter-catalognumber-GEOPHYS=on).

Geophysics is the branch of Earth sciences which explores and analyzes active processes of the Earth through physical measurement. The undergraduate and graduate programs are designed to provide a background of fundamentals in science, and courses to coordinate these fundamentals with the principles of geophysics. The program leading to the Bachelor of Science (B.S.) in Geophysics permits many electives and a high degree of flexibility for each student. Graduate programs provide specialized training for professional work in resource exploration, research, and education, and lead to the degrees of Master of Science and Doctor of Philosophy.

The Department of Geophysics is housed in the Ruth Wattis Mitchell Earth Sciences Building. It has numerous research facilities, among which are a state-of-the-art broadband seismic recording station, high pressure and temperature rock properties and rock deformation laboratories, various instruments for field measurements including seismic recorders, nine dual frequency GPS receivers, and field equipment for measuring in-situ stress at great depth. Current research activities include crustal deformation, earthquake seismology and earthquake mechanics, reflection, refraction, and tomographic seismology, rock mechanics, rock physics, seismic studies of the continental lithosphere, remote sensing, environmental geophysics, and synthetic aperture radar studies.

Mission of the Undergraduate Program in Geophysics

The mission of the undergraduate program in Geophysics is to expose students to a broad spectrum of geophysics, including resource exploration, environmental geophysics, seismology, and tectonics. Students in the major obtain a solid foundation in the essentials of mathematics, physics, and geology, and build upon that foundation with advanced course work in geophysics to develop the in-depth knowledge they need to pursue advanced graduate study and professional careers in government or the private sector.

Learning Outcomes (Undergraduate)

The Geophysics Department expects its undergraduate majors to demonstrate certain learning outcomes. These learning outcomes are used to evaluate students' progress, as well as the undergraduate program itself. Students are expected to:

1. demonstrate a fundamental understanding of the physical processes governing the structure and evolution of Earth and planetary systems, including geophysical fluids, environmental hazards, and energy and freshwater resources.
2. demonstrate the ability to quantitatively describe the behavior of natural systems and the principles of geophysical measurements with physics-based mathematical models.
3. demonstrate the ability to make observations using a variety of geophysical instruments and laboratory experiments and to reduce, model, and interpret their data and uncertainties
4. demonstrate the ability to effectively communicate original scientific results as was as evaluate the published and presented results of others.

Graduate Programs in Geophysics

University requirements for the M.S. and Ph.D. are described in the "Graduate Degrees (http://www.stanford.edu/dept/registrar/bulletin/4901.htm)" section of this bulletin.

Learning Outcomes (Graduate)

The objective of the graduate program in Geophysics is to prepare students to be leaders in the geophysics industry, academia, and research organizations through completion of fundamental courses in their major field and related sciences, as well as through independent research. Students are expected to:

1. apply skills developed in fundamental courses to geophysical problems.
2. research, analyze, and synthesize solutions to an original and contemporary geophysics problem.
3. work independently and as part of a team to develop and improve geophysics solutions.
4. apply written, visual, and oral presentation skills to communicate scientific knowledge.
5. master's students are expected to develop an in-depth technical understanding of geophysics problems at an advanced level.
6. doctoral students are expected to complete a scientific investigation that is significant, challenging and original.

Bachelor of Science in Geophysics

Undergraduates in Geophysics are exposed to a broad spectrum of topics in the Earth sciences that describe and predict our planet's evolution. Majors are built on a solid foundation of mathematics and natural sciences with advanced coursework in geophysics to develop the in-depth knowledge needed to pursue advanced graduate study and professional careers in government or the private sector.

A primary focus of the Geophysics major, both as a primary and secondary major, is the senior research project. Students work closely with a faculty mentor to complete an original research paper that can result in published literature. Students selecting Geophysics as a primary major generally pursue specialized skills in areas such as resource exploration, environmental geophysics, seismology, or tectonics. For students pursuing Geophysics as a secondary major, the department encourages a multidisciplinary approach involving the application of broad knowledge to achieve a better understanding of the Earth and its future. Declared majors must maintain a cumulative grade point average (GPA) of at least 2.0.

The following courses are required for the B.S. degree in Geophysics. A written report on original research or an honors thesis is also required through participation in and GEOPHYS 199 Senior Seminar. Issues in Earth Sciences in Autumn Quarter of the senior year.

Geophysics Core Courses

Students must take all of the following:

		Units
GEOPHYS 101	Frontiers of Geophysical Research at Stanford	3
GEOPHYS 110	Introduction to the Foundations of Contemporary Geophysics	3
GEOPHYS 120	Ice, Water, Fire	3

GEOPHYS 162		3
Total Units		12

Geophysics Research

		Units
GEOPHYS 199	Senior Seminar: Issues in Earth Sciences	3
GEOPHYS 196	Undergraduate Research in Geophysics	9
Total Units		12

Supporting Mathematics Courses

		Units
CME 100	Vector Calculus for Engineers	5
or MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
or MATH 52	Integral Calculus of Several Variables	
CME 102	Ordinary Differential Equations for Engineers	5
or MATH 53	Ordinary Differential Equations with Linear Algebra	
CME 104	Linear Algebra and Partial Differential Equations for Engineers	5
or MATH 131P	Partial Differential Equations	
Total Units		15

Supporting Physics Courses

		Units
PHYSICS 41	Mechanics	4
or PHYSICS 61	Mechanics and Special Relativity	
PHYSICS 43	Electricity and Magnetism	4
or PHYSICS 63	Electricity, Magnetism, and Waves	
PHYSICS 45	Light and Heat	4
or PHYSICS 65	Quantum and Thermal Physics	
Total Units		12

Supporting Electives (18 units)

18 units of geophysics-relevant upper-level electives to be approved by the Director of Undergraduate Studies and selected from offerings across the University including, but not limited to courses in mathematics, Earth and other natural sciences, and engineering.

Substitutions allowed with the consent of Director of Undergraduate Studies; classes to be taken for a letter grade if offered, grade 'C' or better.

Honors Program

The department offers a program leading to the B.S. degree in Geophysics with honors. The honors program is open to students with a grade point average (GPA) of at least 3.5 in all courses required for the Geophysics major and minimum of 3.0 in all University course work. The guidelines are:

1. Select a research project, either theoretical, field, or experimental, that has the approval of an adviser.
2. Submit a proposal to the department, which decides on its suitability as an honors project. Qualified students intending to pursue honors are encouraged to apply to the program during Winter quarter of their junior year.
3. Course credit for the project is assigned by the adviser within the framework of GEOPHYS 198 Honors Program.
4. The decision whether a given independent study project does or does not merit an award of honors is made jointly by the department and the student's adviser. This decision is based on the quality of both the honors work and the student's other work in Earth Sciences.
5. The work done on the honors program cannot be used as a substitute for regularly required courses.

Minor in Geophysics

The Geophysics minor provides students with a general knowledge of geophysics. The minor consists of :

- Four courses in Geophysics numbered 100 or higher
- Supporting math: CME 100 Vector Calculus for Engineers (or MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications)
- Supporting physics: PHYSICS 21 Mechanics, Fluids, and Heat (or PHYSICS 41 or PHYSICS 61), PHYSICS 23 Electricity, Magnetism, and Optics (or PHYSICS 43 or PHYSICS 63), and PHYSICS 25 Modern Physics (or PHYSICS 45 or PHYSICS 65).

Coterminal Master of Science Program in Geophysics

The department offers a coterminal M.S. degree for students wishing to obtain more specialized training in Geophysics than is normally possible during study for the B.S. degree alone. A M.S. degree should be considered as the professional degree in Geophysics and is aimed at students wishing to work in a related industry, or students desiring a more focused academic study in the field than the B.S. program allows.

The coterminal M.S. degree in Geophysics is offered in conjunction with any relevant undergraduate program at Stanford. Geophysics students often enter the department with degrees in Earth Sciences, Mathematics, Physics, Chemistry, or other natural science or engineering fields. Any of these are suitable for the coterminal Geophysics program, and students interested are encouraged to discuss their own background with a Geophysics faculty member.

Admission

To apply for admission to the Geophysics coterminal M.S. program, students must submit the Coterminal Online Application (https://applyweb.com/stanterm/), including submission of a transcript, a statement of purpose, and at least two letters of recommendation. Applications with a letter of recommendation from a Geophysics faculty are generally considered the strongest. Additional letters from other academic or work-related persons also strengthen the application. There are no specific GPA requirements for entry, but the department looks for proven performance in a rigorous undergraduate curriculum as a prerequisite for admission.

Undergraduates with at least junior-level standing may apply, and applications should be submitted by the Autumn Quarter of the senior year.

The graduation requirements to obtain the degree are identical to those for the regular Geophysics master's degree.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer

of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Master of Science in Geophysics

Objectives

To enhance the student's training for professional work in geophysics through the completion of fundamental courses, both in the major fields and in related sciences, and independent research.

Degree Requirements

The candidate must complete 45 units from the following groups of courses:

1. Complete 15 units of Geophysics lecture courses with at least 9 units numbered 200 or higher.
2. Complete 9 units of non-Geophysics lecture courses in the School of Earth, Energy, and Environmental Sciences, with at least 3 units numbered 200 level or higher.
3. Complete 1-4 electives selected from courses numbered 100 or higher from mathematics, chemistry, engineering, physics, relevant biology, computer science, ecology, hydrology, or within the School of Earth, Energy, and Environmental Sciences. At least one course must be numbered 200 or higher. (GEOPHYS 201 excluded.)
4. Enroll for at least three quarters of research seminar (GEOPHYS 385 series).
5. At least 6, but not more than 15, of the 45 units must be earned by enrollment in GEOPHYS 400 Research in Geophysics for independent work on a research problem resulting in a written report accepted and archived by the candidate's faculty. A summer internship is encouraged as a venue for research, but no academic credit is given.
6. Submit a program proposal for approval by a faculty adviser in the first quarter of enrollment.
7. Each candidate must present and defend the results of his or her research at a public oral presentation attended by at least two faculty members, and turn in a thesis/report to the adviser.
8. Students are required to attend department seminars.
9. Required courses used to fulfill requirements for the M.S. in Geophysics must be lecture courses (component LEC) taken for a letter grade (unless S/NC is the only option offered).

Doctor of Philosophy in Geophysics

Objectives

The Ph.D. degree is conferred upon evidence of high attainment in Geophysics and the ability to conduct an independent investigation and present the results of such research.

Transfer Credit

An incoming student with a relevant master of science degree may apply for a departmental waiver of up to 12 units of the 30 lecture units required for the Ph.D. degree, for certain courses as approved by the departmental graduate faculty adviser. Credit for courses generally requires that students identify an equivalent Stanford course and obtain the signature of the Stanford faculty responsible for that course, stating its equivalence.

Degree Requirements

A minimum of 135 units of graduate study at Stanford must be satisfactorily completed. Required courses used to fulfill requirements for the Ph.D. in Geophysics must be lecture courses (component LEC) taken for a letter grade (unless S/NC is the only option offered). Geophysics courses used to fulfill requirements for the Ph.D. must be taught by Geophysics faculty (or senior academic staff if supervised by a faculty member). Lecture courses on geophysical topics taught by visiting faculty can only be counted as fulfilling a Geophysics requirement if approved in advance by the Department Chair and the Director of Graduate Studies. Students are required to attend the department seminars and to complete sufficient units of independent work on a research problem to meet the 135-unit University requirement. 12 units must be met by participation in the GEOPHYS 385 series, or equivalent series in other departments with the approval of the adviser and graduate coordinator. Students are encouraged to participate in the GEOPHYS 385 series from more than one faculty member or group and relevant equivalent series in other departments.

ENGR 202W Technical Communication, is recommended but not required.

The student's record must indicate outstanding scholarship, and deficiencies in previous training must be removed. Experience as a teaching assistant (quarter-time for at least two academic quarters) is required for the Ph.D. degree. For more information, see the Geophysics Administrative Guide, section 1.4.1.

The student must pass the departmental qualifying examination by the end of the sixth academic quarter; prepare under faculty supervision a dissertation that is a contribution to knowledge and the result of independent work expressed in satisfactory form; and pass the University oral examination.

The Ph.D. dissertation must be submitted in its final form within five calendar years from the date of admission to candidacy. Upon formal acceptance into a research group, the student and faculty adviser form a supervising committee consisting of at least three members who are responsible for overseeing satisfactory progress toward the Ph.D. degree. At least two committee members must be Geophysics faculty members. The committee conducts the department oral examination, and meets thereafter annually with the student to review degree progress. The Geophysics faculty monitors the progress of all students who have not yet passed their department oral examination by carrying out an annual performance appraisal at a closed faculty meeting.

Course requirements

1. *Geophysics:* 12 units, lecture courses numbered 200 and above, from 4 different Geophysics faculty with different research specializations. These units cannot be waived.
2. *Additional Geophysics:* 3 units, lecture courses numbered 120 and above
3. *School of Earth, Energy & Environmental Sciences (non-Geophysics):* 3 units, lecture courses numbered 100 or above
4. *Mathematics (numbered 100 or above), Science, and Engineering (non-School of Earth, Energy & Environmental Sciences):* 6 units, lecture courses numbered 200 or above
5. *Any of the above categories:* 6 units, lecture courses numbered 200 or above
6. *Total required units:* 30 units.

Ph.D. Qualifying Examination Requirement

1. One research proposal (10-20 pages) with a component that outlines a plan of research for 2 -3 years
2. An oral presentation with the student's advising committee on both the research proposal (~30-40 min) with questions by the committee constituting the qualifying exam.
3. The exam can include a (~5 page) second project proposal and second project presentation but is not required. A completed second project or a second project proposal (~5 pages) must be presented at the time of the first annual review following the qualifying exam.
4. The duration of the exam time should not exceed three hours. Consult with your faculty advisor for guidance on the structure of the qualifying exam.

Breadth Requirement

The purpose of the Breadth Requirement is to provide students with opportunities to develop the confidence to carry out research in multiple areas. Students cannot advance to TGR status or receive the Ph.D. degree before completion of the Breadth Requirement.

The Breadth Requirement can be met with either secondary research or secondary coursework:

1. Secondary Research (12 or more graded units)

- The secondary project must stand alone from the primary project as a separate piece of work. The following three scenarios are all acceptable: (1) new problem, new method; (2) new problem, primary project method; (3) primary project problem, new method
- The topic of the secondary project must be in Geophysics or a related discipline within the School of Earth, Energy, and Environmental Sciences (SE3).
- The secondary project must be supervised by a SE3 faculty member (academic council or research faculty), i.e., not the primary adviser or from the primary advisor's research group.
- Completion of the secondary project must result in a publication in a refereed journal, a presentation at a scientific conference or workshop, or a chapter and/or appendix in the PhD. thesis.
- Students must complete the "Geophysics Secondary Project Advising Expectations Agreement" which must be approved by the primary and secondary advisers.
- Exceptions to the above require the approval of the DGS.

2. Secondary Coursework (12 or more graded units)

- Secondary Coursework is a program of graded (or Instructor-mandated S/NC) lecture courses at the 200 level or higher.
- The secondary coursework must be in Geophysics or the School of Earth, Energy, and Environmental Sciences.
- At least 6 units must come from the Department of Geophysics. The remaining courses may be chosen from courses offered by the School of Earth, Energy and Environmental Sciences.
- Secondary coursework cannot be used to meet other degree requirements at Stanford.
- No transfer credit may be used to meet the secondary course requirement.
- Students must complete the "Geophysics Secondary Course Requirement Plan" which must be approved by the primary adviser.
- Exceptions to the above require the approval of the DGS.

Exceptions

Any exceptions to the above rules must be approved and signed by the student's adviser, by all members of the student's academic committee, by the Director of Graduate Studies and Chair.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

Under normal circumstances, all courses credited to the Geophysics degree have been required to be taken for a letter grade. For all courses taken during the 2020-21 academic year, the Geophysics department will accept letter grades or 'CR' (credit) or 'S' (satisfactory) grades in classes offered on a S/NC basis as fulfillment of requirements for the Geophysics undergraduate degree.

Graduate Degree Requirements

Grading

Under normal circumstances, all courses credited to the Geophysics degree have been required to be taken for a letter grade. For all courses taken during the 2020-21 academic year, the Geophysics department will accept letter grades or 'CR' (credit) or 'S' (satisfactory) grades in classes offered on a S/NC basis as fulfillment of requirements for the Ph.D and M.S. degrees.

Graduate Advising Expectations

The Department of Geophysics is committed to providing academic advising in support of graduate student scholarly and professional development. For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Minimum Advising Expectations for the Department of Geophysics

1. Each adviser meets with each advisee in Autumn or Winter quarter, beginning in the advisee's first year, to develop/update a document entitled "the expectations agreement" that records the agreed upon approach to the following for each individual advisee:

- Courses: the process and responsibility for selecting courses
- Thesis topic: the process and responsibility for selecting the topic
- Members of advising committee: the process and responsibility for selection
- Meetings of adviser and advisee: structure and frequency
- Conducting the research: the level of independence and progress expected, the involvement of the adviser (level of participation, nature of oversight), involvement of other collaborators (both inside and outside of research group)
- Thesis content, including expectations with respect to publications
- Writing of publications: style of interaction, policy on co-authorship, publication costs
- Conference travel/presentations: who attends/presents, frequency, financial support

- Funding (stipend, tuition, research costs): source, responsibilities, requirements for ongoing support
- In-the-office hours
- Vacations and other absences
- Expectations for Summer Quarter
- Preparing for career interests, plans after Stanford

The document, signed by both the adviser and advisee, is submitted to the Assistant Director of Student Services. If the adviser-advisee discussion would benefit from the involvement of an additional person, either the adviser or advisee can request the presence of a faculty or staff member of the school.

The expectations agreement is reviewed by the Assistant Director of Student Services and the Director of Graduate Studies, with follow-up as needed.

If there is change in adviser, the expectations agreement must be completed with the new adviser within the first quarter after the change.

2. A one-hour annual review, focused on academic progress, is held every year; in the first year this is deferred to Autumn of the second year. This meeting includes the advisee, the adviser, and at least two other faculty. Time is designated in every annual review to review the expectations agreement, circulated in advance to all those in attendance at the review.

At any time, a student with questions or concerns can approach any one of the following individuals in the school:

- Other faculty members of advisory committee
- Assistant Director of Student Services in their home department (Rachael Madison in Geophysics) or program
- Director of Graduate Studies in their home department (Jerry Harris in Geophysics) or another department
- Associate Chair for Diversity and Inclusion (Sonia Tikoo in Geophysics)
- Department Chair (Biondo Biondi in Geophysics)
- Alyssa Ferree, Assistant Dean of Student Services
- Robyn Dunbar, Associate Dean for Educational Affairs
- Sue Crutcher, Associate Dean for Human Resources and Faculty Affairs

Chair: Biondo Biondi

Associate Chair: Howard Zebker

Director of Graduate Studies: Jerry Harris

Professors: Greg Beroza, Biondo Biondi, Simon Klemperer, Rosemary J. Knight, Paul Segall, Norman H. Sleep, Howard Zebker*

Associate Professor: Eric Dunham, Tiziana Vanorio

Assistant Professors: Lucia Gualtieri, Jenny Suckale, Dustin Schroeder, Sonia Tikoo-Schantz

Professor (Research): William Ellsworth

Emeriti: Jon Claerbout, Robert Kovach, Gerald M. Mavko, Amos Nur, Jerry Harris, Mark D. Zoback

Courtesy Professors: Stephan A. Graham, Tapan Mukerji, Alexandra Konings, Mathieu Lapotre, Ayla Pamukcu, Laura Schaefer

* Joint appointment with Electrical Engineering

Courses

GEOPHYS 20N. Predicting Volcanic Eruptions. 3 Units.
The physics and chemistry of volcanic processes and modern methods of volcano monitoring. Volcanoes as manifestations of the Earth's internal energy and hazards to society. How earth scientists better forecast eruptive activity by monitoring seismic activity, bulging of the ground surface, and the discharge of volcanic gases, and by studying deposits from past eruptions. Focus is on the interface between scientists and policy makers and the challenges of decision making with incomplete information. Field trip to Mt. St. Helens, site of the 1980 eruption.

GEOPHYS 30N. Science Fiction Worlds. 3 Units.
Science fiction writers, with limited knowledge of what technologies or discoveries about space might exist in the future, must build entire worlds in their minds and craft underlying physical laws about how these fantastical places might operate and the types of environments that they could sustain. In this course, we will use popular works of science fiction from film, television, and literature as conversation starters to discuss real discoveries that have been made about how planets form and evolve over time. The class will focus on the following overarching questions: (1) What conditions are required for habitable planets to form? (2) What types of planets may actually exist, including desert worlds, lava planets, ice planets, and ocean worlds? (3) What kids of life could inhabit such diverse worlds? (3) What types of catastrophic events such as supernovas, asteroid impacts, climate changes can nurture or destroy planetary habitability?.
Same as: GEOLSCI 30N

GEOPHYS 50N. Planetary Habitability, World View, and Sustainability. 3 Units.
Sustainability lessons from the geological past Life on Earth has partially perished in sudden mass extinctions several time over the Earth's history. Threats include actions of our own volition, including fossil fuel burning as well as natural events, including the impact of large asteroids. The end Permian 250 million years ago and end Paleocene 55 million years ago extinctions involved natural burning of fossil fuels. The 65 million year ago end Cretaceous extinction involved the impact of and asteroid and possibly fossil fuel burning. Related sustainability topics in the popular press will be discussed as they arise. Student pairs lead discussions on topics on how humanity might avert these catastrophes. Offered occasionally.

GEOPHYS 54N. The Space Mission to Europa. 3 Units.
Jupiter's icy moon Europa is a leading candidate in the search for life in our solar system outside of Earth. NASA's upcoming Europa Clipper mission would investigate the habitability of the moon using a suite of nine geophysical instruments. In this course, we will use the mission as a central text around which to explore the intersection of science, engineering, management, economics, culture, and politics involved in any modern big science enterprise.

GEOPHYS 60N. Man versus Nature: Coping with Disasters Using Space Technology. 4 Units.
Preference to freshman. Natural hazards, earthquakes, volcanoes, floods, hurricanes, and fires, and how they affect people and society; great disasters such as asteroid impacts that periodically obliterate many species of life. Scientific issues, political and social consequences, costs of disaster mitigation, and how scientific knowledge affects policy. How spaceborne imaging technology makes it possible to respond quickly and mitigate consequences; how it is applied to natural disasters; and remote sensing data manipulation and analysis. GER:DB-EngrAppSci.
Same as: EE 60N

GEOPHYS 90. Earthquakes and Volcanoes. 3 Units.
Is the "Big One" overdue in California? What kind of damage would that cause? What can we do to reduce the impact of such hazards in urban environments? Does "fracking" cause earthquakes and are we at risk? Is the United States vulnerable to a giant tsunami? The geologic record contains evidence of volcanic super eruptions throughout Earth's history. What causes these gigantic explosive eruptions, and can they be predicted in the future? This course will address these and related issues. For non-majors and potential Earth scientists. No prerequisites. More information at: https://stanford.box.com/s/zr8ar28efmuo5wtlj6gj2jbxle76r4lu.
Same as: EARTHSYS 113

GEOPHYS 100. Directed Reading. 1-2 Unit.
(Staff).

GEOPHYS 101. Frontiers of Geophysical Research at Stanford. 1-3 Unit.
Required for new students entering the department and undergraduate majors. Department faculty introduce the frontiers of research problems and methods being employed or developed in the department and unique to department faculty and students: what the current research is, why the research is important, what methodologies and technologies are being used, and what the potential impact of the results might be. Graduate students register for 1 unit (Mondays only), undergraduates for 3 units which include a discussion section (Mondays and Wednesdays). Offered every year, autumn quarter.
Same as: GEOPHYS 201

GEOPHYS 104. The Water Course. 4 Units.
The Central Valley of California provides a third of the produce grown in the U.S., but recent droughts and increasing demand have raised concerns about both food and water security. The pathway that water takes from rainfall to the irrigation of fields or household taps (¿the water course¿) determines the quantity and quality of the available water. Working with various data sources (measurements made on the ground, in wells, and from satellites) allows us to model the water budget in the valley and explore the recent impacts on freshwater supplies.
Same as: EARTHSYS 104, EARTHSYS 204, GEOPHYS 204

GEOPHYS 106. Sustainable and Equitable Water Management. 3-4 Units.
California has committed itself to sustainable groundwater management, with passage of the Sustainable Groundwater Management Act in 2014, and safe drinking water access for all, with California¿s Human Right to Water Act in 2012. Yet, groundwater overdraft continues while over 1 million residents lack access to safe drinking water. Working with a water agency in the San Joaquin Valley, we will explore feedback loops between the two Acts and develop a plan for water management that meet the co-equal objectives of sustainable and equitable resource governance. We will work with "big" and "small" data, exploring the possibilities but also the limitations of using publicly available data for assessment and monitoring. The course will include guest speakers and interaction with public agencies and other key stakeholders.
Same as: EARTHSYS 106B, EARTHSYS 206B, GEOPHYS 206

GEOPHYS 108. Tectonics Field Trip. 1-3 Unit.
What does an earthquake fault look like near Earth's surface? How about the inside of, or beneath, a volcano? Why does California experience earthquakes and volcanic eruptions? Learn about thermo-physico-chemical evolution (mass transport, heat transport) in Earth's crust through a required long-weekend field trip (in 2019: evening Thurs 5/30 evening Mon 6/3, beginning of Dead Week) to eastern California and Sierra Nevada. May be repeated for credit (future destinations likely include San Andreas fault, Mendocino Triple Junction, Crater Lake, Lava Tubes, and western Basin and Range province. Lectures (typically one per week) provide context for planned trip.

GEOPHYS 109. Formation and Dynamics of Planets. 3-4 Units.
This course will cover formation of planets within a protoplanetary disk, dynamical evolution of planetary systems (Grand Tack and Nice models, planet migration), condensation chemistry within the solar nebula and meteorite classification, classical accretion models and pebble accretion, melting, magma ocean formation and core formation on rocky objects. Topics will be discussed in the context of both the Solar system and extrasolar planet observations.
Same as: GEOLSCI 119, GEOLSCI 219, GEOPHYS 209

GEOPHYS 110. Introduction to the Foundations of Contemporary Geophysics. 3 Units.
Introduction to the foundations of contemporary geophysics. Topics drawn from broad themes in: whole Earth geodynamics, geohazards, natural resources, and environment. In each case the focus is on how the interpretation of a variety of geophysical measurements (e.g., gravity, seismology, heat flow, electromagnetics, and remote sensing) can be used to provide fundamental insight into the behavior of the Earth. The course will include a weekend field trip. Prerequisite: CME 100 or MATH 51, or co-registration in either.
Same as: EARTHSYS 110

GEOPHYS 112. Exploring Geosciences with MATLAB. 1-3 Unit.
How to use MATLAB as a tool for research and technical computing, including 2-D and 3-D visualization features, numerical capabilities, and toolboxes. Practical skills in areas such as data analysis, regressions, optimization, spectral analysis, differential equations, image analysis, computational statistics, and Monte Carlo simulations. Emphasis is on scientific and engineering applications. Offered every year, autumn quarter.
Same as: ENERGY 112

GEOPHYS 118X. Shaping the Future of the Bay Area. 3-5 Units.
The complex urban problems affecting quality of life in the Bay Area, from housing affordability and transportation congestion to economic vitality and social justice, are already perceived by many to be intractable, and will likely be exacerbated by climate change and other emerging environmental and technological forces. Changing urban systems to improve the equity, resilience and sustainability of communities will require new collaborative methods of assessment, goal setting, and problem solving across governments, markets, and communities. It will also require academic institutions to develop new models of co-production of knowledge across research, education, and practice. This XYZ course series is designed to immerse students in co-production for social change. The course sequence covers scientific research and ethical reasoning, skillsets in data-driven and qualitative analysis, and practical experience working with local partners on urban challenges that can empower students to drive responsible systems change in their future careers. The Autumn (X) course is specifically focused on concepts and skills, and completion is a prerequisite for participation in the Winter (Y) and/or Spring (Z) practicum quarters, which engage teams in real-world projects with Bay Area local governments or community groups. X is composed of four modules: (A) participation in two weekly classes which prominently feature experts in research and practice related to urban systems; (B) reading and writing assignments designed to deepen thinking on class topics; (C) fundamental data analysis skills, particularly focused on Excel and ArcGIS, taught in lab sessions through basic exercises; (D) advanced data analysis skills, particularly focused on geocomputation in R, taught through longer and more intensive assignments. X can be taken for 3 units (ABC), 4 units (ACD), or 5 units (ABCD). Open to undergraduate and graduate students in any major. For more information, visit http://bay.stanford.edu.
Same as: CEE 118X, CEE 218X, ESS 118X, ESS 218X, GEOLSCI 118X, GEOLSCI 218X, GEOPHYS 218X, POLISCI 218X, PUBLPOL 118X, PUBLPOL 218X

GEOPHYS 118Y. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 118Y, CEE 218Y, ESS 118Y, ESS 218Y, GEOLSCI 118Y, GEOLSCI 218Y, GEOPHYS 218Y, POLISCI 218Y, PUBLPOL 118Y, PUBLPOL 218Y

GEOPHYS 118Z. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 118Z, CEE 218Z, ESS 118Z, ESS 218Z, GEOLSCI 118Z, GEOLSCI 218Z, GEOPHYS 218Z, POLISCI 218Z

GEOPHYS 119. Planetary Surface Processes: Shaping the Landscape of the Solar System. 4 Units.
The surfaces of planets, moons, and other bodies are shaped and modified by a wide array of physical and chemical processes. Understanding these processes allows us to decipher the history of the Solar System. This course offers a quantitative examination of both exogenous processes - such as impact cratering and space weathering - and endogenous processes - such as tectonics, weathering, and volcanic, fluvial, eolian, and periglacial activity - as well as a brief introduction to the fundamentals of remote sensing in the context of planetary exploration. As we develop a basic mechanistic framework for these processes, we will apply our acquired knowledge through thematic discussions of the surfaces of Mercury, Venus, Earth, the Moon, Mars, asteroids, Io, Titan, Europa, Enceladus, Pluto, and comets. For upper-division undergraduates and graduate students.
Same as: GEOLSCI 120, GEOLSCI 220, GEOPHYS 219

GEOPHYS 120. Ice, Water, Fire. 3-5 Units.
Introductory application of continuum mechanics to ice sheets and glaciers, water waves and tsunamis, and volcanoes. Emphasis on physical processes and mathematical description using balance of mass and momentum, combined with constitutive equations for fluids and solids. Designed for undergraduates with no prior geophysics background; also appropriate for beginning graduate students. Prerequisites: CME 100 or MATH 52 and PHYSICS 41 (or equivalent).
Same as: GEOPHYS 220

GEOPHYS 122. Planetary Systems: Dynamics and Origins. 2-4 Units.
(Students with a strong background in mathematics and the physical sciences should register for 222.) Motions of planets and smaller bodies, energy transport in planetary systems, composition, structure and dynamics of planetary atmospheres, cratering on planetary surfaces, properties of meteorites, asteroids and comets, extrasolar planets, and planetary formation. Prerequisite: some background in the physical sciences, especially astronomy, geophysics, or physics. Students need instructor approval to take the course for 2 or 4 units.
Same as: GEOLSCI 122, GEOLSCI 222

GEOPHYS 124. INTRODUCTION TO PLANETARY SCIENCE. 3-4 Units.
This course provides an introduction to planetary science through the exploration of processes that formed and modified planetary bodies within the Solar System and beyond. Each lecture will be given by an expert in a specific subfield of planetary sciences, with topics ranging from planetary materials and formation, planetary dynamics, planetary structure and tectonics, planetary atmospheres, impact cratering, surface processes, and astrobiology. We will also discuss how scientists investigate planets both near and far through sample analysis, telescopic and orbital remote sensing as well as in situ through robotic instruments. Although there are no prerequisites for this course, it is primarily directed towards undergraduate students who are majoring (or plan to) in the sciences or engineering. A minimum level of mathematics equivalent to high school algebra and introductory calculus will be necessary.
Same as: ESS 125, GEOLSCI 124

GEOPHYS 126. PLANETARY SCIENCE READING. 1 Unit.
The course will meet once a week to discuss a recent journal article related to the broad field of planetary science, including but not limited to cosmochemistry, planet formation, planetary geology, planetary atmospheres, Earth history, astrobiology, and exoplanets. Students will be expected to lead the group discussion at least once per quarter. No formal presentations will be required. There are no prerequisites for this course, but students should have some facility with reading scientific literature.
Same as: GEOLSCI 127, GEOLSCI 227, GEOPHYS 226

GEOPHYS 128. MODELING EARTH. 3-4 Units.
Most problems in Earth Science are dazzling and beautifully complex. Abstracting from this natural complexity to identify the essential components and mechanisms of a natural system is perhaps the most important, but commonly overlooked, task for developing testable mathematical models for Earth and Environmental Science. This course focuses on conceptual model development, rather than addressing the variety of formal mathematical techniques available for the analytical analysis or numerical simulation of a model. Recommended Prerequisites: CME 100 or MATH 51 (or equivalent).
Same as: GEOPHYS 228

GEOPHYS 130. Introductory Seismology. 3 Units.
Introduction to seismology including: elasticity and the wave equation, P, S, and surface waves, dispersion, ray theory, reflection and transmission of seismic waves, seismic imaging, large-scale Earth structure, earthquake location, earthquake statistics and forecasting, magnitude scales, seismic source theory.

GEOPHYS 141. Remote Sensing of the Oceans. 3-4 Units.
How to observe and interpret physical and biological changes in the oceans using satellite technologies. Topics: principles of satellite remote sensing, classes of satellite remote sensors, converting radiometric data into biological and physical quantities, sensor calibration and validation, interpreting large-scale oceanographic features.
Same as: EARTHSYS 141, EARTHSYS 241, ESS 141, ESS 241

GEOPHYS 150. Geodynamics: Our Dynamic Earth. 3-5 Units.
What processes determine the large-scale structure and motion of Earth? How does convection deep within Earth drive plate tectonics and the formation of ocean basins and mountain ranges? Drawing from fundamental principles of mechanics and thermodynamics, we develop mathematical theories for heat flow, mantle convection, and the bending and breaking of Earth's brittle crust. Scaling arguments and dimensional analysis provide intuition that is refined through analytical and numerical solution (in MATLAB) of the governing equations and validated through comparison with observations. Prerequisites: differential equations (CME 104 or MATH 53); mechanics and thermodynamics (PHYSICS 41 and 45); prior programming experience (CME 192 or CS 106A) is recommended.
Same as: GEOPHYS 250

GEOPHYS 165. Ice Penetrating Radar. 1-3 Unit.
The purpose of this course is to provide an introduction to the physics, systems, processing, and analysis of ice penetrating radar, preparing students to use it as a quantitative research tool. Target students are graduates or advanced undergraduates in geophysics, glaciology, planetary science, or engineering with an interest in the use of radar to study glaciers, ice sheets, or icy planets.nPrerequisite: EE 142 or EE 242 or PHYS 43 or instructor consent.
Same as: GEOPHYS 230

GEOPHYS 181. Fluids and Flow in the Earth: Computational Methods. 3 Units.
Interdisciplinary problems involving the state and movement of fluids in crustal systems, and computational methods to model these processes. Examples of processes include: nonlinear, time-dependent flow in porous rocks; coupling in porous rocks between fluid flow, stress, deformation, and heat and chemical transport; percolation of partial melt; diagenetic processes; pressure solution and the formation of stylolites; and transient pore pressure in fault zones. MATLAB, Lattice-Boltzmann, and COMSOL Multiphysics. Term project. No experience with COMSOL Multiphysics required. Offered every other year, winter quarter.
Same as: GEOPHYS 203

GEOPHYS 182. Reflection Seismology. 3 Units.
The principles of seismic reflection profiling, focusing on methods of seismic data acquisition and seismic data processing for hydrocarbon exploration.
Same as: GEOPHYS 222

GEOPHYS 183. Reflection Seismology Interpretation. 1-4 Unit.
The structural and stratigraphic interpretation of seismic reflection data, emphasizing hydrocarbon traps in two and three dimensions on industry data, including workstation-based interpretation. Lectures only, 1 unit. Prerequisite: 222, or consent of instructor. (Geophys 183 must be taken for a minimum of 3 units to be eligible for Ways credit).
Same as: GEOLSCI 223, GEOPHYS 223

GEOPHYS 184. Journey to the Center of the Earth. 3 Units.
The interconnected set of dynamic systems that make up the Earth. Focus is on fundamental geophysical observations of the Earth and the laboratory experiments to understand and interpret them. What earthquakes, volcanoes, gravity, magnetic fields, and rocks reveal about the Earth's formation and evolution.
Same as: GEOLSCI 107, GEOLSCI 207, GEOPHYS 274

GEOPHYS 185. Rock Physics for Reservoir Characterization. 3 Units.
How to integrate well log and laboratory data to determine and theoretically generalize rock physics transforms between sediment wave properties (acoustic and elastic impendence), bulk properties (porosity, lithology, texture, permeability), and pore fluid conditions (pore fluid and pore pressure). These transforms are used in seismic interpretation for reservoir properties, and seismic forward modeling in what-if scenarios.
Same as: GEOPHYS 260

GEOPHYS 186. Tectonophysics. 3 Units.
The physics of faulting and plate tectonics. Topics: plate driving forces, lithospheric rheology, crustal faulting, and the state of stress in the lithosphere. Exercises: lithospheric temperature and strength profiles, calculation of seismic strain from summation of earthquake moment tensors, slip on faults in 3D, and stress triggering and inversion of stress from earthquake focal mechanisms. Offered every other year, winter quarter.
Same as: GEOPHYS 290

GEOPHYS 188. Basic Earth Imaging. 2-3 Units.
Echo seismogram recording geometry, head waves, moveout, velocity estimation, making images of complex shaped reflectors, migration by Fourier and integral methods. Anti-aliasing. Dip moveout. Computer labs. See http://sep.stanford.edu/sep/prof/. Offered every year, autumn quarter. *The Geophys180 cross-listing is considered an advanced undergraduate course.
Same as: GEOPHYS 210

GEOPHYS 190. Near-Surface Geophysics: Imaging Groundwater Systems. 3 Units.
Groundwater systems in important agricultural areas of the U.S. The effects of climate change on water availability and crop production. Introduction to methodologies for describing and modeling the integrated surface and groundwater system. The use of geophysical methods to support sustainable groundwater management: airborne method for regional-scale imaging, ground-based and borehole methods for site-specific assessment. Each week includes two hours of class time, some of which will involve computer modeling/analysis of data. Pre-requisite: CME 100 or Math 51, or co-registration in either.
Same as: GEOPHYS 275

GEOPHYS 191. Observing Freshwater. 3 Units.
We will study estimates of the components of the land hydrological cycle using in-situ and satellite observations and model output. Hydrological variables are rainfall, snow, water vapor, soil moisture, stream discharge and groundwater; other variables are vegetation, surface temperature, soil types, land use and surface topography. We focus on observations and their role in the water balance of the land surface. In-class lab experience working with data. Group/individual term project & paper & presentation; no final. Pre-requisite: basic familiarity with MATLAB.

GEOPHYS 196. Undergraduate Research in Geophysics. 1-10 Unit.
Field-, lab-, or computer-based. Faculty supervision. Written reports.

GEOPHYS 197. Senior Thesis in Geophysics. 3-5 Units.
For seniors writing a thesis based on Geophysics research in 196 or as a summer research fellow. Seniors defend the results of their research at a public oral presentation.

GEOPHYS 198. Honors Program. 1-3 Unit.
Experimental, observational, or theoretical honors project and thesis in geophysics under supervision of a faculty member. Students who elect to do an honors thesis should begin planning it no later than Winter Quarter of the junior year. Prerequisites: department approval. Seniors defend the results of their research at a public oral presentation.

GEOPHYS 199. Senior Seminar: Issues in Earth Sciences. 3 Units.
Focus is on written and oral communication in a topical context. Topics from current frontiers in earth science research and issues of concern to the public. Readings, oral presentations, written work, and peer review.
Same as: GEOLSCI 150

GEOPHYS 201. Frontiers of Geophysical Research at Stanford. 1-3 Unit.
Required for new students entering the department and undergraduate majors. Department faculty introduce the frontiers of research problems and methods being employed or developed in the department and unique to department faculty and students: what the current research is, why the research is important, what methodologies and technologies are being used, and what the potential impact of the results might be. Graduate students register for 1 unit (Mondays only), undergraduates for 3 units which include a discussion section (Mondays and Wednesdays). Offered every year, autumn quarter.
Same as: GEOPHYS 101

GEOPHYS 202. Reservoir Geomechanics. 3 Units.
Basic principles of rock mechanics and the state of stress and pore pressure in sedimentary basins related to exploitation of hydrocarbon and geothermal reservoirs. Mechanisms of hydrocarbon migration, exploitation of fractured reservoirs, reservoir compaction and subsidence, hydraulic fracturing, utilization of directional and horizontal drilling to optimize well stability.Given alternate years.

GEOPHYS 203. Fluids and Flow in the Earth: Computational Methods. 3 Units.
Interdisciplinary problems involving the state and movement of fluids in crustal systems, and computational methods to model these processes. Examples of processes include: nonlinear, time-dependent flow in porous rocks; coupling in porous rocks between fluid flow, stress, deformation, and heat and chemical transport; percolation of partial melt; diagenetic processes; pressure solution and the formation of stylolites; and transient pore pressure in fault zones. MATLAB, Lattice-Boltzmann, and COMSOL Multiphysics. Term project. No experience with COMSOL Multiphysics required. Offered every other year, winter quarter.
Same as: GEOPHYS 181

GEOPHYS 204. The Water Course. 4 Units.
The Central Valley of California provides a third of the produce grown in the U.S., but recent droughts and increasing demand have raised concerns about both food and water security. The pathway that water takes from rainfall to the irrigation of fields or household taps (¿the water course¿) determines the quantity and quality of the available water. Working with various data sources (measurements made on the ground, in wells, and from satellites) allows us to model the water budget in the valley and explore the recent impacts on freshwater supplies.
Same as: EARTHSYS 104, EARTHSYS 204, GEOPHYS 104

GEOPHYS 205. Virtual Scientific Presentation and Public Speaking. 2 Units.
The ability to present your research in a compelling, concise, and engaging manner will enhance your professional career. Virtual presentations make it harder to connect and interact with the audience, and to overcome this requires new skills, including video, sound, lighting, live vs. pre-recorded content, and virtual posters. These elements will be the focus of this class. But regardless of format, I will work to convince you that the best way to capture an audience and leave a lasting impression is to tell a story, do a demo, or pick a fight. The course is taught as a series of stand-and-deliver exercises with class feedback and revision on the fly, supplemented by one-on-one coaching. We will have sessions on virtual conference presentations, virtual job interviews and job talks, departmental seminars, webinars, press interviews, and funding pitches. My pledge is that everyone will come away a more skilled and confident speaker than they were before. Grades are optional: 70% in-class exercises, 30% final project, such as your upcoming AGU, GSA, or SEG presentation. It's best to take the course when you have research to present. (http://syllabus.stanford.edu).
Same as: ESS 204, GEOLSCI 306

GEOPHYS 206. Sustainable and Equitable Water Management. 3-4 Units.
California has committed itself to sustainable groundwater management, with passage of the Sustainable Groundwater Management Act in 2014, and safe drinking water access for all, with California¿s Human Right to Water Act in 2012. Yet, groundwater overdraft continues while over 1 million residents lack access to safe drinking water. Working with a water agency in the San Joaquin Valley, we will explore feedback loops between the two Acts and develop a plan for water management that meet the co-equal objectives of sustainable and equitable resource governance. We will work with "big" and "small" data, exploring the possibilities but also the limitations of using publicly available data for assessment and monitoring. The course will include guest speakers and interaction with public agencies and other key stakeholders.
Same as: EARTHSYS 106B, EARTHSYS 206B, GEOPHYS 106

GEOPHYS 208. Unconventional Reservoir Geomechanics. 3 Units.
This course will investigate oil and gas production from extremely low permeability reservoirs. Lectures and exercises will address 1) the physical and fluid transport properties of unconventional reservoir formations, 2) stimulation techniques such as hydraulic fracturing and 3) understanding microseismicity associated with hydraulic stimulation and induced seismicity associated with wastewater injection. Prerequisite: GEOPHYS 202 or concurrent enrollment in GEOPHYS 202 is strongly recommended.

GEOPHYS 209. Formation and Dynamics of Planets. 3-4 Units.
This course will cover formation of planets within a protoplanetary disk, dynamical evolution of planetary systems (Grand Tack and Nice models, planet migration), condensation chemistry within the solar nebula and meteorite classification, classical accretion models and pebble accretion, melting, magma ocean formation and core formation on rocky objects. Topics will be discussed in the context of both the Solar system and extrasolar planet observations.
Same as: GEOLSCI 119, GEOLSCI 219, GEOPHYS 109

GEOPHYS 210. Basic Earth Imaging. 2-3 Units.
Echo seismogram recording geometry, head waves, moveout, velocity estimation, making images of complex shaped reflectors, migration by Fourier and integral methods. Anti-aliasing. Dip moveout. Computer labs. See http://sep.stanford.edu/sep/prof/. Offered every year, autumn quarter. *The Geophys180 cross-listing is considered an advanced undergraduate course.
Same as: GEOPHYS 188

GEOPHYS 211. Environmental Soundings Image Estimation. 3 Units.
Imaging principles exemplified by means of imaging geophysical data of various uncomplicated types (bathymetry, altimetry, velocity, reflectivity). Adjoints, back projection, conjugate-gradient inversion, preconditioning, multidimensional autoregression and spectral factorization, the helical coordinate, and object-based programming. Common recurring issues such as limited aperture, missing data, signal/noise segregation, and nonstationary spectra. See http://sep.stanford.edu/sep/prof/.

GEOPHYS 212. Topics in Climate Change. 2 Units.
This introductory classroom course presents Earth's climate system and explores the science and politics of global climate change. Students will learn how the climate system works, the factors that cause climate to change across different time scales, the use of models and observations to make predictions about future climate. The course will discuss possible consequences of climate change in the Earth, and it will explore the evidence for changes due to global warming. There are no prerequisites.

GEOPHYS 213. Quantitative Analysis of Geopressure for Geoscientists and Engineers. 2 Units.
In these lectures we will have a dialogue that addresses how to predict, detect and quantify subsurface fluid pressure regimes (geopressure) with more emphasis on fundamental than empiricism that is so common in this field. Rock physics and basin history modeling are important tools to develop an earth model. So is the seismic. Rock physics guided velocity and amplitude modeling tools such as velocity analysis, reflection tomography and inversion as well as basin modeling would be used to establish a common velocity model that not only yields reasonably correct description of geopressure but also an improved subsurface velocity model that yields better seismic image at correct depths.

GEOPHYS 214. Water Management in Agricultural Areas. 2 Units.
The course will introduce the new generation of methods used for investigating groundwater systems. The primary focus would be on methods for estimating the components of the aquifer water balance, which are critical elements needed for reliable projections of future conditions. The structure of the course will be lectures followed by student presentations based on follow-up readings and working with the extensive dataset from the High Plains aquifer in Kansas. The course will draw heavily on the short courses and workshops Dr. Butler has presented to practicing professionals and students over the last 15 years.

GEOPHYS 216. Chemical Kinetics and Basin Modeling. 2-3 Units.
Students will explore the structure of sedimentary organic matter and the chemical and thermodynamic requirements for generating petroleum. A wide variety of thermal maturity indicators will be explored, paying particular attention to optical indicators and predictive kinetics of Tmax and %Ro. Students will understand the advantages and pitfalls of kinetic measurements in the lab. Hands-on exercises reinforce learning targets. An optional class project allows students to take the class for 3 units instead of 2. Course readings come from the literature and Burnham's textbook.
Same as: ENERGY 282, GEOLSCI 216

GEOPHYS 218X. Shaping the Future of the Bay Area. 3-5 Units.
The complex urban problems affecting quality of life in the Bay Area, from housing affordability and transportation congestion to economic vitality and social justice, are already perceived by many to be intractable, and will likely be exacerbated by climate change and other emerging environmental and technological forces. Changing urban systems to improve the equity, resilience and sustainability of communities will require new collaborative methods of assessment, goal setting, and problem solving across governments, markets, and communities. It will also require academic institutions to develop new models of co-production of knowledge across research, education, and practice. This XYZ course series is designed to immerse students in co-production for social change. The course sequence covers scientific research and ethical reasoning, skillsets in data-driven and qualitative analysis, and practical experience working with local partners on urban challenges that can empower students to drive responsible systems change in their future careers. The Autumn (X) course is specifically focused on concepts and skills, and completion is a prerequisite for participation in the Winter (Y) and/or Spring (Z) practicum quarters, which engage teams in real-world projects with Bay Area local governments or community groups. X is composed of four modules: (A) participation in two weekly classes which prominently feature experts in research and practice related to urban systems; (B) reading and writing assignments designed to deepen thinking on class topics; (C) fundamental data analysis skills, particularly focused on Excel and ArcGIS, taught in lab sessions through basic exercises; (D) advanced data analysis skills, particularly focused on geocomputation in R, taught through longer and more intensive assignments. X can be taken for 3 units (ABC), 4 units (ACD), or 5 units (ABCD). Open to undergraduate and graduate students in any major. For more information, visit http://bay.stanford.edu.
Same as: CEE 118X, CEE 218X, ESS 118X, ESS 218X, GEOLSCI 118X, GEOLSCI 218X, GEOPHYS 118X, POLISCI 218X, PUBLPOL 118X, PUBLPOL 218X

GEOPHYS 218Y. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 118Y, CEE 218Y, ESS 118Y, ESS 218Y, GEOLSCI 118Y, GEOLSCI 218Y, GEOPHYS 118Y, POLISCI 218Y, PUBLPOL 118Y, PUBLPOL 218Y

GEOPHYS 218Z. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 118Z, CEE 218Z, ESS 118Z, ESS 218Z, GEOLSCI 118Z, GEOLSCI 218Z, GEOPHYS 118Z, POLISCI 218Z

GEOPHYS 219. Planetary Surface Processes: Shaping the Landscape of the Solar System. 4 Units.
The surfaces of planets, moons, and other bodies are shaped and modified by a wide array of physical and chemical processes. Understanding these processes allows us to decipher the history of the Solar System. This course offers a quantitative examination of both exogenous processes - such as impact cratering and space weathering - and endogenous processes - such as tectonics, weathering, and volcanic, fluvial, eolian, and periglacial activity - as well as a brief introduction to the fundamentals of remote sensing in the context of planetary exploration. As we develop a basic mechanistic framework for these processes, we will apply our acquired knowledge through thematic discussions of the surfaces of Mercury, Venus, Earth, the Moon, Mars, asteroids, Io, Titan, Europa, Enceladus, Pluto, and comets. For upper-division undergraduates and graduate students.
Same as: GEOLSCI 120, GEOLSCI 220, GEOPHYS 119

GEOPHYS 220. Ice, Water, Fire. 3-5 Units.
Introductory application of continuum mechanics to ice sheets and glaciers, water waves and tsunamis, and volcanoes. Emphasis on physical processes and mathematical description using balance of mass and momentum, combined with constitutive equations for fluids and solids. Designed for undergraduates with no prior geophysics background; also appropriate for beginning graduate students. Prerequisites: CME 100 or MATH 52 and PHYSICS 41 (or equivalent).
Same as: GEOPHYS 120

GEOPHYS 221. Rivers: The Arteries of Earth's Continents. 3 Units.
Rivers are the arteries of Earth's continents, conveying water, sediments, and solutes from the headwaters to the oceans. They provide a haven for life and have been at the heart of the world's economy by generating fertile floodplains, human habitats, as well as by facilitating international commerce. This course offers a quantitative examination of rivers, from headwaters to deltas. We will first develop a basic mechanistic understanding of fluvial processes, including flow hydraulics, erosion, sediment transport, and deposition. We will then apply our acquired knowledge through thematic discussions of relevant issues. Possible themes include deltas and climate change, rivers and human activity (damming, sand mining, deforestation), rivers and the evolution of land plants, rivers and biogeochemical cycles, submarine channels, and the alien rivers of Mars and Titan.
Same as: ESS 225, GEOLSCI 224

GEOPHYS 222. Reflection Seismology. 3 Units.
The principles of seismic reflection profiling, focusing on methods of seismic data acquisition and seismic data processing for hydrocarbon exploration.
Same as: GEOPHYS 182

GEOPHYS 223. Reflection Seismology Interpretation. 1-4 Unit.
The structural and stratigraphic interpretation of seismic reflection data, emphasizing hydrocarbon traps in two and three dimensions on industry data, including workstation-based interpretation. Lectures only, 1 unit. Prerequisite: 222, or consent of instructor. (Geophys 183 must be taken for a minimum of 3 units to be eligible for Ways credit).
Same as: GEOLSCI 223, GEOPHYS 183

GEOPHYS 224. Seismic Reflection Processing. 2-3 Units.
Workshop in computer processing of 2D and 3D seismic reflection data. Students individually process a seismic reflection profile (of their own choice or instructor-provided) from field recordings to migrated sections and subsurface images, using interactive software (OpenCPS from OpenGeophysical.com). Prerequisite: GEOPHYS 222 or consent of instructor.

GEOPHYS 225. Multiphase Instabilities and Extreme Events. 4 Units.
How fast can ice sheets disintegrate? Why do volcanoes erupt? Which processes govern thenoccurrence of landslides? And can we reduce the destructive reach of tsunamis and storm surges?nThe common denominator of what at first glance might seem like disparate systems isnmultiphase flow. The dynamic interactions between multiple solid and fluid phases, such as icenand melt-water; lava and gas; vegetation and waves, give rise to drastic nonlinearities that governnabrupt change. This class explores the role of multiphase instabilities in the onset and evolutionnof extreme events. We will explore the different types of instabilities that arise in differentnmultiphase aggregates and why they might be critical for understanding the nonlinear behaviornof natural systems.

GEOPHYS 226. PLANETARY SCIENCE READING. 1 Unit.
The course will meet once a week to discuss a recent journal article related to the broad field of planetary science, including but not limited to cosmochemistry, planet formation, planetary geology, planetary atmospheres, Earth history, astrobiology, and exoplanets. Students will be expected to lead the group discussion at least once per quarter. No formal presentations will be required. There are no prerequisites for this course, but students should have some facility with reading scientific literature.
Same as: GEOLSCI 127, GEOLSCI 227, GEOPHYS 126

GEOPHYS 227. Global Seismology. 3 Units.
Fundamentals of global-scale seismic wave propagation, including a review of the basic structure of the Earth; body waves in terms of ray-theory representation; surface waves as traveling waves and normal modes; free-oscillations of the Earth and ray-mode duality; normal mode summation, the spectral element method and synthetic seismograms; adjoint methods; seismic sources within the Earth and at the surface of the Earth (e.g. in the ocean). Recommended prerequisite: GEOPHYS 130.

GEOPHYS 228. MODELING EARTH. 3-4 Units.
Most problems in Earth Science are dazzling and beautifully complex. Abstracting from this natural complexity to identify the essential components and mechanisms of a natural system is perhaps the most important, but commonly overlooked, task for developing testable mathematical models for Earth and Environmental Science. This course focuses on conceptual model development, rather than addressing the variety of formal mathematical techniques available for the analytical analysis or numerical simulation of a model. Recommended Prerequisites: CME 100 or MATH 51 (or equivalent).
Same as: GEOPHYS 128

GEOPHYS 229. Earthquake Rupture Dynamics. 3 Units.
Physics of earthquakes, including nucleation, propagation, and arrest; slip-weakening and rate-and-state friction laws; thermal pressurization and dynamic weakening mechanisms; off-fault plasticity; dynamic fracture mechanics; earthquake energy balance. Problem sets involve numerical simulations on CEES cluster. Prerequisites: GEOPHYS 287. Offered occasionally.

GEOPHYS 230. Ice Penetrating Radar. 1-3 Unit.
The purpose of this course is to provide an introduction to the physics, systems, processing, and analysis of ice penetrating radar, preparing students to use it as a quantitative research tool. Target students are graduates or advanced undergraduates in geophysics, glaciology, planetary science, or engineering with an interest in the use of radar to study glaciers, ice sheets, or icy planets.nPrerequisite: EE 142 or EE 242 or PHYS 43 or instructor consent.
Same as: GEOPHYS 165

GEOPHYS 235. Waves and Fields in Geophysics. 3 Units.
Basic topics and approaches (theory and numerical simulations) on acoustic, electromagnetic, and elastic waves and fields for geophysical applications: dispersion, phase and group velocities, attenuation, reflection and transmission at planar interfaces, high frequency and low frequency approximations, heterogeneous media. Prerequisites: UG level class on waves or consent of instructor.

GEOPHYS 237. Evolution of Terrestrial Planets. 3 Units.
Despite forming in the inner solar system from broadly similar starting materials, Mercury, Venus, Earth, Mars, and the Moon each represent a unique outcome of the planetary formation process. Processes occurring deep inside planets drive the evolution of planetary crusts and atmospheres, which both control planetary habitability. This course explores how geophysical approaches such as gravity, topography, seismology, heat flow, and magnetism provide insight into the thermal and chemical histories of each rocky world. We cover how planetary scientists study ancient processes such as core formation, impact cratering, magnetic field generation, mantle convection, and tectonics by a combination of spacecraft measurements, modeling, and laboratory analyses of extraterrestrial materials. Recommended prerequisites: PHYSICS 41, 43, and MATH 51 or CME 100, or instructor consent.

GEOPHYS 238. Waves in Solids and Fluids. 3 Units.
Wave propagation and sources in elastic solids and compressible fluids; body, surface, and interface waves in homogeneous and plane layered media; dispersion, phase and group velocities; reflection and transmission; near-field, far-field, and static limits; effects of gravity, surface and internal gravity waves; Fourier methods and solutions in the time and frequency domains; Green's functions; reciprocity; adjoint methods and full-waveform inversion; point and line sources, finite sources, moving sources and directivity effects; multipole expansions; source representation in solids using transformation strain; application to earthquakes, volcanoes, and tsunamis. Prerequisites: Graduate-level background in continuum mechanics.
Same as: ME 347

GEOPHYS 240. Borehole Seismic Modeling and Imaging. 3 Units.
Borehole seismic imaging for applications to subsurface reservoir characterization and monitoring. Topics include data acquisition, data processing, imaging and inversion. Analysis and processing of synthetic and field datasets. Prerequisites: Waves class equivalent to GP 230, Matlab or other computer programming.

GEOPHYS 241A. Seismic Reservoir Characterization. 3-4 Units.
(Same as GP241) Practical methods for quantitative characterization and uncertainty assessment of subsurface reservoir models integrating well-log and seismic data. Multidisciplinary combination of rock-physics, seismic attributes, sedimentological information and spatial statistical modeling techniques. Student teams build reservoir models using limited well data and seismic attributes typically available in practice, comparing alternative approaches. Software provided (SGEMS, Petrel, Matlab). Offered every other year.nRecommended: ERE240/260, or GP222/223, or GP260/262 or GES253/257; ERE246, GP112.
Same as: ENERGY 141, ENERGY 241

GEOPHYS 250. Geodynamics: Our Dynamic Earth. 3-5 Units.
What processes determine the large-scale structure and motion of Earth? How does convection deep within Earth drive plate tectonics and the formation of ocean basins and mountain ranges? Drawing from fundamental principles of mechanics and thermodynamics, we develop mathematical theories for heat flow, mantle convection, and the bending and breaking of Earth's brittle crust. Scaling arguments and dimensional analysis provide intuition that is refined through analytical and numerical solution (in MATLAB) of the governing equations and validated through comparison with observations. Prerequisites: differential equations (CME 104 or MATH 53); mechanics and thermodynamics (PHYSICS 41 and 45); prior programming experience (CME 192 or CS 106A) is recommended.
Same as: GEOPHYS 150

GEOPHYS 254. Sedimentology and Rock Physics of Carbonates. 3-4 Units.
Processes of precipitation and sedimentation of carbonate minerals as well as their post-depositional alteration with emphasis on marine systems. Topics include: geographic and bathymetric distribution of carbonates in modern and ancient oceans; genesis and environmental significance of carbonate grains and sedimentary textures; carbonate diagenesis; changes in styles of carbonate deposition through Earth history; reservoir quality and properties defined by storage capacity, flow (permeability) and connectivity of pores (effective porosity); the interplay between these properties, the original depositional characteristics of the carbonate sediments and post-depositional alteration; relationships between dissolution processes, cementation processes, and the resulting connectivity of the flow pathways. Lab exercises emphasize petrographic and rock physics analysis of carbonate rocks at scales ranging from map and outcrop to hand sample and thin section.
Same as: GEOLSCI 254

GEOPHYS 255. Report on Energy Industry Training. 1-3 Unit.
On-the-job-training for master's and doctoral degree students under the guidance of on-site supervisors. Students submit a report detailing work activities, problems, assignment, and key results. May be repeated for credit. Prerequisite: written consent of adviser.

GEOPHYS 257. Introduction to Computational Earth Sciences. 1-4 Unit.
Techniques for mapping numerically intensive algorithms to modern high performance computers such as the Center for Computational Earth and Environmental Science's (CEES) . Topics include computer architecture performance analysis, and parallel programming. Topics covered include pthreads OpenMP; MPI, Cilk++, and CUDA.. Exercises using SMP and cluster computers. May be repeated for credit. Offered every other year, winter quarter.

GEOPHYS 259. Laboratory Characterization of Properties of Rocks and Geomaterials. 3-4 Units.
Lectures and laboratory experiments. Properties of rocks and geomaterials and how they relate to chemo-mechanical processes in crustal settings, reservoirs, and man-made materials. Focus is on properties such as porosity, permeability, acoustic wave velocity, and electrical resistivity. Students may investigate a scientific problem to support their own research (4 units). Prerequisites: Physics 41 (or equivalent) and CME 100.
Same as: CEE 192

GEOPHYS 260. Rock Physics for Reservoir Characterization. 3 Units.
How to integrate well log and laboratory data to determine and theoretically generalize rock physics transforms between sediment wave properties (acoustic and elastic impendence), bulk properties (porosity, lithology, texture, permeability), and pore fluid conditions (pore fluid and pore pressure). These transforms are used in seismic interpretation for reservoir properties, and seismic forward modeling in what-if scenarios.
Same as: GEOPHYS 185

GEOPHYS 261. Advanced Rock Physics Topics. 1-3 Unit.
This course will present advanced topics in elastic effective medium theory, as applied to porous rocks.

GEOPHYS 262. Rock Physics. 3 Units.
Geophysical methods are used to image and characterize regions of the subsurface to explore for, evaluate and manage Earth resources (water and energy). A rock physics relationship is required to transform measured geophysical properties to the material properties of interest. Starting with the theoretical framework, we will explore the development of the rock physics transform from the laboratory to the field scale. Electrical and elastic properties and NMR. Grading based on four 2-week assignments.
Same as: ENERGY 252

GEOPHYS 264. Three-Dimensional Imaging. 3 Units.
Multidimensional time and frequency representations, generalization of Fourier transform methods to non-Cartesian coordinate systems, Hankel and Abel transforms, line integrals, impulses and sampling, reconstruction tomography, imaging radar. The projection-slice and layergram reconstruction methods as developed in radio interferometry. Radar imaging and backprojection algorithms for 3- and 4-D imaging. In weekly labs students create software to form images using these techniques with actual data. Final project consists of design, analysis and simulation of an advanced imaging system. Prerequisites: None required, but recommend EE103, EE261, EE278, some inverse method concepts such as from Geophys281.
Same as: EE 262

GEOPHYS 265. Imaging Radar and Applications. 3 Units.
Radar remote sensing, radar image characteristics, viewing geometry, range coding, synthetic aperture processing, correlation, range migration, range/Doppler algorithms, wave domain algorithms, polar algorithm, polarimetric processing, interferometric measurements. Applications: surfafe deformation, polarimetry and target discrimination, topographic mapping surface displacements, velocities of ice fields. Prerequisites: EE261. Recommended: EE254, EE278, EE279.
Same as: EE 355

GEOPHYS 270. Electromagnetic Properties of Geological Materials. 2-3 Units.
Laboratory observations and theoretical modeling of the electromagnetic properties and nuclear magnetic resonance response of geological material. Relationships between these properties and water-saturated materials properties such as composition, water content, surface area, and permeability.

GEOPHYS 274. Journey to the Center of the Earth. 3 Units.
The interconnected set of dynamic systems that make up the Earth. Focus is on fundamental geophysical observations of the Earth and the laboratory experiments to understand and interpret them. What earthquakes, volcanoes, gravity, magnetic fields, and rocks reveal about the Earth's formation and evolution.
Same as: GEOLSCI 107, GEOLSCI 207, GEOPHYS 184

GEOPHYS 275. Near-Surface Geophysics: Imaging Groundwater Systems. 3 Units.
Groundwater systems in important agricultural areas of the U.S. The effects of climate change on water availability and crop production. Introduction to methodologies for describing and modeling the integrated surface and groundwater system. The use of geophysical methods to support sustainable groundwater management: airborne method for regional-scale imaging, ground-based and borehole methods for site-specific assessment. Each week includes two hours of class time, some of which will involve computer modeling/analysis of data. Pre-requisite: CME 100 or Math 51, or co-registration in either.
Same as: GEOPHYS 190

GEOPHYS 280. 3-D Seismic Imaging. 2-3 Units.
The principles of imaging complex structures in the Earth subsurface using 3-D reflection seismology. Emphasis is on processing methodologies and algorithms, with examples of applications to field data. Topics: acquisition geometrics of land and marine 3-D seismic surveys, time vs. depth imaging, migration by Kirchhoff methods and by wave-equation methods, migration velocity analysis, velocity model building, imaging irregularly sampled and aliased data. Computational labs involve some programming. Lab for 3 units. Offered every year, Spring quarter.

GEOPHYS 281. Geophysical Inverse Problems. 3 Units.
Concepts of inverse theory, with application to geophysics. Inverses with discrete and continuous models, generalized matrix inverses, resolving kernels, regularization, use of prior information, singular value decomposition, nonlinear inverse problems, back-projection techniques, and linear programming. Application to seismic tomography, earthquake location, migration, and fault-slip estimation. Prerequisite: MATH 51.

GEOPHYS 284. Hydrogeophysics. 3-4 Units.
The use of geophysical methods for imaging and characterizing the top 500 meters of Earth for hydrogeologic applications. Includes material properties, forward modeling, data acquisition, inversion, and integration with other forms of measurement. Each week includes two hours of lectures; plus one 1.5-hour lab that involves acquisition of field data, or computer modeling/analysis of datanOffered occasionally.

GEOPHYS 287. Earthquake Seismology. 3-5 Units.
Seismic wave propagation (body waves and surface waves, reflection/transmission), Green's functions, seismic moment tensors and equivalent forces, representation theorem, finite-source effects. Prerequisites: GEOPHYS 130 or equivalent. Offered every other year.

GEOPHYS 288A. Crustal Deformation. 3-5 Units.
Earthquake and volcanic deformation, emphasizing analytical models that can be compared to data from GPS, InSAR, and strain meters. Deformation, stress, and conservation laws. Dislocation models of strike slip and dip slip faults, in 2 and 3 dimensions. Crack models, including boundary element methods. Dislocations in layered and elastically heterogeneous earth models. Models of volcano deformation, including sills, dikes, and magma chambers. Offered every other year, autumn quarter.

GEOPHYS 288B. Crustal Deformation. 3-5 Units.
Earthquake and volcanic deformation, emphasizing analytical models that can be compared to data from GPS, InSAR, and strain meters. Viscoelasticity, post-seismic rebound, and viscoelastic magma chambers. Effects of surface topography and earth curvature on surface deformation. Gravity changes induced by deformation and elastogravitational coupling. Poro-elasticity, coupled fluid flow and deformation. Earthquake nucleation and rate-state friction. Models of earthquake cycle at plate boundaries.

GEOPHYS 289. Global Positioning System in Earth Sciences. 3-5 Units.
The basics of GPS, emphasizing monitoring crustal deformation with a precision of millimeters over baselines tens to thousands of kilometers long. Applications: mapping with GIS systems, airborne gravity and magnetic surveys, marine seismic and geophysical studies, mapping atmospheric temperature and water content, measuring contemporary plate motions, and deformation associated with active faulting and volcanism.

GEOPHYS 290. Tectonophysics. 3 Units.
The physics of faulting and plate tectonics. Topics: plate driving forces, lithospheric rheology, crustal faulting, and the state of stress in the lithosphere. Exercises: lithospheric temperature and strength profiles, calculation of seismic strain from summation of earthquake moment tensors, slip on faults in 3D, and stress triggering and inversion of stress from earthquake focal mechanisms. Offered every other year, winter quarter.
Same as: GEOPHYS 186

GEOPHYS 299. Teaching Experience in Geophysics. 1 Unit.
For TAs in Geophysics. Course and lecture design and preparation; lecturing practice in small groups. Classroom teaching practice in a Geophysics course for which the participant is the TA.

GEOPHYS 302. Seismic Wavefields in Multiscale Media. 1 Unit.
This short course will be combine elements of theoretical, computational, practical concerns centered around wavefield complexity induced by source and/or structure, and how this maps to different, appropriate wave propagation methods and inverse problems. The short course will include a mix of reading material, lecturing, and hands-on interactive exercises.

GEOPHYS 304. Effects of Global Change and Agriculture on Hydrology. 1 Unit.
Effects of global change on crop production and fluxes of water across the surface and through the subsurface. Nexus of food, energy, and water through primary literature, and relevant data analyses. Students will be introduced to concepts ranging from global climate change to climate impact assessments, and to methodologies including remote sensing, climate model downscaling, and process-based landscape hydrologic modeling.

GEOPHYS 306. Topics in Multiphase Instabilities and Extreme Events. 1 Unit.
This Seminar will explore the role of multiphase instabilities in the onset and evolution of extreme events. We will explore the different types of instabilities that arise in different multiphase aggregates and why they might be critical for understanding the nonlinear behavior of natural systems.

GEOPHYS 308. Topics in Disaster Resilience Research. 1 Unit.
This seminar will explore past and current research on disaster risk and resilience, towards the development of new frontiers in resilience engineering science research. Designed for graduate students engaged in the topic of risk and resilience research, the seminar will be organized around weekly readings and discussion groups. May be repeat for credit.
Same as: CEE 308

GEOPHYS 385A. Reflection Seismology. 1-2 Unit.
Research in reflection seismology and petroleum prospecting. May be repeated for credit.

GEOPHYS 385B. Environmental Geophysics. 1-2 Unit.
Research on the use of geophysical methods for near-surface environmental problems. May be repeated for credit.

GEOPHYS 385D. Theoretical Geophysics. 1 Unit.
Research on physics and mechanics of earthquakes, volcanoes, ice sheets, and nglaciers. Emphasis is on developing theoretical understanding of processes governing natural phenomena.

GEOPHYS 385E. Tectonics. 1-2 Unit.
Research on the origin, major structures, and tectonic processes of the Earth's crust. Emphasis is on use of deep seismic reflection and refraction data. May be repeated for credit.

GEOPHYS 385G. Radio Glaciology. 1-2 Unit.
Research on the acquisition, processing, and analysis of radio geophysical signals in observing the subsurface conditions and physical processes of ice sheets, glaciers, and icy moons.

GEOPHYS 385K. Crustal Mechanics. 1-2 Unit.
Research in areas of petrophysics, seismology, in situ stress, and subjects related to characterization of the physical properties of rock in situ. May be repeated for credit.

GEOPHYS 385L. Earthquake Seismology, Deformation, and Stress. 1 Unit.
Research on seismic source processes, crustal stress, and deformation associated with faulting and volcanism. May be repeated for credit.

GEOPHYS 385N. Experimental Rock Physics. 1-2 Unit.
Research on the use of laboratory geophysical methods for the characterization of the physical properties of rocks and their response to earth stresses, temperature, and rock-fluid interactions. May be repeated for credit.

GEOPHYS 385Q. Seismology. 1-2 Unit.
Research on Source and Structural Seismology of the Earth. May be repeated for credit.

GEOPHYS 385R. Physical Volcanology. 1 Unit.
Research on volcanic processes. May be repeat for credit.

GEOPHYS 385S. Wave Physics. 1-2 Unit.
Theory, numerical simulation, and experiments on seismic and electromagnetic waves in complex porous media. Applications from Earth imaging and in situ characterization of Earth properties, including subsurface monitoring. Presentations by faculty, research staff, students, and visitors. May be repeated for credit.

GEOPHYS 385T. Planetary Magnetism. 1-2 Unit.
Research on the application of paleomagnetism to study planetary processes such as dynamo field generation, geodynamical evolution, and impact cratering. May be repeated for credit.

GEOPHYS 385V. Poroelasticity. 1-2 Unit.
Research on the mechanical properties of porous rocks: dynamic problems of seismic velocity, dispersion, and attentuation; and quasi-static problems of faulting, fluid transport, crustal deformation, and loss of porosity. Participants define, investigate, and present an original problem of their own. May be repeated for credit.

GEOPHYS 385W. GEOPHYSICAL MULTI-PHASE FLOWS. 1-2 Unit.
Research on the dynamics of multi-phase systems that are fundamental to many geophysical problems such as ice sheets and volcanoes.

GEOPHYS 385Z. Radio Remote Sensing. 1-2 Unit.
Research applications, especially crustal deformation measurements. Recent instrumentation and system advancements. May be repeated for credit.

GEOPHYS 400. Research in Geophysics. 1-15 Unit.
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GEOPHYS 801. TGR Project. 0 Units.
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GEOPHYS 802. TGR Dissertation. 0 Units.
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SUSTAINABILITY SCIENCE AND PRACTICE

Courses offered by the Sustainability Science and Practice program are listed under the subject code SUST on the Stanford Bulletin's ExploreCourses (https://explorecourses.stanford.edu/) website.

Mission of the Coterminal Program in Sustainability Science and Practice

The Sustainability Science and Practice program (SUST for short) is an interdisciplinary coterminal master's program hosted by the School of Earth, Energy and Environmental Sciences (p. 321). The goal of the program is to prepare leaders to radically accelerate the transition to a more sustainable and just society. As the global human population climbs toward 11 billion, consumption demands increase, and disparities in wealth and opportunity persist, society must learn to equitably meet existing human needs in ways that do not forgo possibilities for future generations. These sustainability challenges are marked by extreme complexity, urgency, conflicting demands, and often a paucity of resources or political will to address them. Transforming these challenges into powerful opportunities requires a new kind of leader — one who can both envision a prosperous future for all and who can design practices and cultivate partnerships essential to building that future. The SUST program equips students with the theoretical and conceptual knowledge and the mindsets and practical skills needed to advance sustainability, securing human well-being around the world and across generations.

The curriculum covers three main elements:

Element 1: Understanding complex social-environmental systems

Students develop a "systems perspective", deepening their awareness of the dynamic and interrelated nature of social-environmental systems. They explore tools to measure, map, and model five capital assets — social, natural, human, manufactured, and knowledge capital — and their complex interactions in order to recognize potential feedbacks, thresholds, and unintended consequences, as well as to identify leverage points and opportunities for interventions that can have transformative impact.

Element 2: Understanding decision making and developing strategies for change

Students examine the roles of diverse actors who influence change in social-environmental systems and explore strategies to align decision making and behavior with sustainability. They explore mindsets and approaches of transformative leaders and examine effective strategies for advancing sustainability across sectors. Students develop skills in decision making in complex and uncertain contexts, use metrics and evaluation approaches aligned with sustainability goals, cultivate leadership orientations, and practice effective communications and storytelling approaches.

Element 3: Designing innovations with impact at scale

Students develop understanding of how to intervene in complex systems for transformative impact by exploring frameworks and tools from systems thinking, design thinking, social cognitive theory, behavioral economics, and partnership strategies. They develop practical skills in mapping complex systems and designing creative, high-leverage interventions that realign systems with the goal of intergenerational well-being.

Sustainability Leadership Practicum

To integrate and internalize core lessons from the SUST curriculum, each student completes a 120-hour practicum project of their own design, collaborating on a complex sustainability challenge with an outside partner and working through the types of constraints often faced by decision makers and leaders. Students apply the leadership mindsets, knowledge, and skills from the curriculum to this practical experience and present their final analysis and reflections to faculty and peers.

Learning Outcomes

The Sustainability Science and Practice program integrates theoretical and conceptual knowledge, mindsets, and practical skills to enable students to understand and manage complex systems, understand decision making and develop strategies for change, and cultivate partnerships and design innovations with potential for impact at scale.

The program prepares students to become effective participants and agents of change as individuals and within organizations across all sectors of society, contributing to the advancement of the goal of sustainability, i.e., the well-being of people around the world and across generations. Using a conceptual framework that connects human well-being with key underlying assets, students learn how social-environmental systems work, how decisions can be made to influence system dynamics in a way that supports sustainability goals, and how to engage with others to design new ways of managing these systems.

Master of Arts in Sustainability Science and Practice

University requirements for master's degrees are described in the "Graduate Degrees (p. 65)" section of this bulletin.

The Sustainability Science and Practice program offers current Stanford undergraduates the opportunity to apply to a one-year coterminal master's program. Students can pursue either a coterminal Master of Arts (M.A.) degree or a coterminal Master of Science (M.S.) degree.

Application and Admission

The Sustainability Science and Practice program has two coterminal degree application deadlines: October 27, 2020 and February 23, 2021. To apply, students should submit all of the following application materials via the University's online application portal:

- The online Stanford coterminal application (https://www.applyweb.com/stanterm/).
- A statement of purpose, about one page in length, that describes the applicant's sustainability interests, the experiences that have influenced the student and motivated them to apply, and what the applicant hopes to learn from and contribute to the program. The statement should provide a clear picture of who the applicant is and what matters to them.
- A current resume.
- A current Stanford unofficial transcript.
- Two letters of recommendation from Stanford faculty who know the applicant well and can speak to their qualifications and fit for the program. At least one of the faculty writers must be an Academic Council Member (i.e., professor, associate professor, or assistant professor; if unsure whether a faculty member is on Academic Council, please contact the SUST program before applying). An optional third letter of recommendation may also be submitted for consideration. The online application includes an entry field where the applicant should indicate the name and email address of each person who will be providing a recommendation. Once the applicant submits this information, each recommender will receive an automated email with instructions and a link to the application form.

- Prior to applying to the SUST program, the applicant must identify a faculty member who agrees to serve as the student's master's advisor. Potential advisors include those faculty members listed on the SUST website (https://earth.stanford.edu/sust/people/).
- Course Proposal form (https://stanford.box.com/s/0md25lmqniinzlmvtkl7dfjzepmey2jm/) reviewed and signed by the SUST student services officer and the applicant's master's advisor. The Course Proposal form lists the courses that the applicant intends to take to fulfill degree requirements. The advisor's signature of approval on the completed Course Proposal form is required at the time of application.

Applications must be submitted no later than the quarter prior to the expected completion of the bachelor's degree and within application deadlines. An application fee is assessed by the Registrar's Office for coterminal applications once a student matriculates into the program.

Students applying to the coterminal master's program must have completed a minimum of 120 units towards graduation with a recommended minimum overall Stanford GPA of 3.4.

All applicants must devise a program of study that includes a set of courses appropriate to the master's level, and determined in consultation with the master's advisor.

Students without prior coursework in Earth systems or sustainability may want to consider taking EARTHSYS 10 Introduction to Earth Systems prior to applying.

The student has the option of receiving the bachelor's degree after completing the degree's requirements, or receiving the bachelor's and master's degrees concurrently upon the completion of the master's program.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Degree Requirements

The following are required of all M.A. students:

- A minimum of 45 units of course work.
- At least 34 units of the student's course work for the master's program must be at the 200 level or above.
- All remaining course work must be at the 100 level or above.
- All courses for the master's program must be taken for a letter grade, if a letter grade is offered. Exceptions to this requirement must be approved by the program.
- A minimum overall GPA of 3.4 must be maintained.
- The majority of the student's 45 units must be designated as "arts" units. Arts and science designations for courses can be viewed on the SUST Course Spreadsheet (https://stanford.app.box.com/v/sust-courses/).
- Elective courses for the master's program must be selected from the program's pre-approved list, which is available on the SUST Course Spreadsheet. (https://stanford.app.box.com/file/124238118535/) Students may request approval for other elective courses via the program's course petition process.
- If courses required for the master's degree have been taken in the undergraduate career, students may pursue additional electives to fulfill the 45 units required for degree completion.

Required Courses

		Units
SUST Core		
Courses required for all SUST coterms:		
SUST 210	Pursuing Sustainability: Managing Complex Social Environmental Systems	3
SUST 220	Case Studies in Leading Change for Sustainability	3
SUST 297	Introduction to Systems Transformation (Topic: Introduction to Systems Transformation, a two-day immersive short course, Winter Quarter)	1
SUST 240	Sustainability Leadership Practicum	1-4
Change in the Earth System		
Courses required for all SUST coterms:		
EARTHSYS 212	Human Society and Environmental Change	4
EARTHSYS 217	Biology and Global Change	4
Psychology / Understanding Behavior		
One of the following:		
PSYCH 215	Mind, Culture, and Society	3
PSYCH 216	Public Policy and Social Psychology: Implications and Applications	4
PSYCH 265	Social Psychology and Social Change (Must be taken for 3 units)	3
PSYCH 238	Wise Interventions	4
Decision Making		
One of the following:		
LAW 7508	Problem Solving and Decision Making for Public Policy and Social Change	4
GSBGEN 367	Problem Solving for Social Change (Limited Enrollment-Check course description for details)	3
SUST 261	Art and Science of Decision Making	3-4
EARTHSYS 227	Decision Science for Environmental Threats	3-5
ENVRES 240	Environmental Decision-Making and Risk Perception (Must be taken for 3 units)	3
Design and Innovation		
Two of the following or approved alternatives:		
SUST 230	Innovating Large Scale Sustainable Transformations/Collaborating for the Future	3-4

SUST 231	FEED Lab: Food System Design & Innovation	3-4
SUST 232	Design for Sustainable Impact	3-4
ME 206A & ME 206B	Design for Extreme Affordability and Design for Extreme Affordability	8
BIOE 177	Inventing the Future	4
ME 377	Design Thinking Studio	4
LAW 806Y	Policy Practicum: Justice By Design: Eviction	2-4
FEMGEN 344F	Intersectional Design: An Expanded Approach to Gender in Tech	4-5
DESINST 250	Oceans by Design	3
DESINST 200	Forget all the Jargon, Let's Innovate	4
DESINST 203	Designing the Taboo	3
DESINST 220	Designing Futures of Work	3
DESINST 225	Designing Courageous Conversations For Impact	4
PEDS 219	Designing Healthcare For Social Justice	3

Ethics Course Requirement

All Sustainability Science and Practice students must complete at least one ethics course during their time at the University. Students who have satisfied the Ways-Ethical Reasoning undergraduate requirement are not required to take an additional ethics course. Those who have not yet satisfied this requirement are encouraged to consider one of the recommended ethics courses listed below.

		Units
PUBLPOL 234	Ethics on the Edge: Business, Non-Profit Organizations, Government, and Individuals	3
ETHICSOC 136R	Introduction to Global Justice	4
ETHICSOC 278M	Introduction to Environmental Ethics	4-5

Master of Science in Sustainability Science and Practice

University requirements for master's degrees are described in the "Graduate Degrees (p. 65)" section of this bulletin.

The Sustainability Science and Practice program offers current Stanford undergraduates the opportunity to apply to a one-year coterminal master's program. Students can pursue either a coterminal Master of Arts (M.A.) degree or a coterminal Master of Science (M.S.) degree.

Application and Admission

The Sustainability Science and Practice program has two coterminal degree application deadlines: October 27, 2020 and February 23, 2021. To apply, students should submit all of the following application materials via the University's online application portal:

- The online Stanford coterminal application (https://www.applyweb.com/stanterm/).
- A statement of purpose, about one page in length, that describes the applicant's sustainability interests, the experiences that have influenced the student and motivated them to apply, and what the applicant hopes to learn from and contribute to the program. The statement should provide a clear picture of who the applicant is and what matters to them.
- A current resume.
- A current Stanford unofficial transcript.
- Two letters of recommendation from Stanford faculty who know the applicant well and can speak to their qualifications and fit for the program. At least one of the faculty writers must be an Academic Council Member (i.e., professor, associate professor, or assistant professor; if unsure whether a faculty member is on Academic Council, please contact the SUST program before applying). An optional third letter of recommendation may also be submitted for consideration. The online application includes an entry field where the applicant should indicate the name and email address of each person who will be providing a recommendation. Once the applicant submits this information, each recommender will receive an automated email with instructions and a link to the application form.
- Prior to applying to the SUST program, the applicant must identify a faculty member who agrees to serve as the student's master's advisor. Potential advisors include those faculty members listed on the SUST website (https://earth.stanford.edu/sust/people/).
- Course Proposal form (https://stanford.box.com/s/0md25lmqniinzlmvtkl7dfjzepmey2jm/) reviewed and signed by the SUST student services officer and the applicant's master's advisor. The Course Proposal form lists the courses that the applicant intends to take to fulfill degree requirements. The advisor's signature of approval on the completed Course Proposal form is required at the time of application.

Applications must be submitted no later than the quarter prior to the expected completion of the bachelor's degree and within application deadlines. An application fee is assessed by the Registrar's Office for coterminal applications once a student matriculates into the program.

Students applying to the coterminal master's program must have completed a minimum of 120 units towards graduation with a recommended minimum overall Stanford GPA of 3.4.

All applicants must devise a program of study that includes a set of courses appropriate to the master's level, and determined in consultation with the master's advisor.

Students without prior coursework in Earth systems or sustainability may want to consider taking EARTHSYS 10 Introduction to Earth Systems prior to applying.

The student has the option of receiving the bachelor's degree after completing the degree's requirements, or receiving the bachelor's and master's degrees concurrently upon the completion of the master's program.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Degree Requirements

The following are required of all M.S. students:

- A minimum of 45 units of course work.
- At least 34 units of the student's coursework for the master's program must be at the 200 level or above.
- All remaining coursework must be at the 100 level or above.
- All courses for the master's program must be taken for a letter grade, if a letter grade is offered. Exceptions to this requirement must be approved by the program.
- A minimum overall GPA of 3.4 must be maintained.
- The majority of the student's 45 units must be designated as "science" units. Arts and science designations for courses can be viewed on the SUST Course Spreadsheet (https://stanford.app.box.com/v/sust-courses/).
- Elective courses for the master's program must be selected from the program's pre-approved list, which is available on the SUST Course Spreadsheet (https://stanford.app.box.com/v/sust-courses/). Students may request approval for other elective courses via the program's course petition process.
- If courses required for the master's degree have been taken in the undergraduate career, students may pursue additional electives to fulfill the 45 units required for degree completion.

Mathematics and Statistics Prerequisites

The Master of Science in Sustainability Science and Practice requires additional coursework in mathematics and statistics. Although students are encouraged to complete these courses prior to applying to SUST, the coursework may be taken after admission to the program. The mathematics and statistics coursework may not be counted toward the 45 units required for master's degree completion. These courses do not have to be taken for a letter grade.

		Units
Mathematics		
One of the following:		
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	5
CME 100	Vector Calculus for Engineers	5

		Units
Statistics		
One of the following:		
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	5
STATS 110	Statistical Methods in Engineering and the Physical Sciences	5
STATS 116	Theory of Probability	4
MS&E 120	Introduction to Probability	4
CS 109	Introduction to Probability for Computer Scientists	3-5
EE 178	Probabilistic Systems Analysis	3-4

Required Courses

		Units
SUST Core		
Courses required for all SUST coterms:		
SUST 210	Pursuing Sustainability: Managing Complex Social Environmental Systems	3
SUST 220	Case Studies in Leading Change for Sustainability	3
SUST 297	Introduction to Systems Transformation (Topic: Introduction to Systems Transformation, a two-day immersive short course, Winter Quarter)	1
SUST 240	Sustainability Leadership Practicum	1-4
Change in the Earth System		
Courses required for all SUST coterms:		
EARTHSYS 212	Human Society and Environmental Change	4
EARTHSYS 217	Biology and Global Change	4
Psychology / Understanding Behavior		
One of the following:		
PSYCH 215	Mind, Culture, and Society	3
PSYCH 216	Public Policy and Social Psychology: Implications and Applications	4
PSYCH 265	Social Psychology and Social Change (Must be taken for 3 units)	3
PSYCH 238	Wise Interventions	4
Decision Making		
One of the following:		
LAW 7508	Problem Solving and Decision Making for Public Policy and Social Change	4
GSBGEN 367	Problem Solving for Social Change (Limited Enrollment-Check course description for details)	3
SUST 261	Art and Science of Decision Making	3-4
EARTHSYS 227	Decision Science for Environmental Threats	3-5
ENVRES 240	Environmental Decision-Making and Risk Perception (Must be taken for 3 units)	3
Design and Innovation		
Two of the following or approved alternatives:		
SUST 230	Innovating Large Scale Sustainable Transformations/Collaborating for the Future	3-4
SUST 231	FEED Lab: Food System Design & Innovation	3-4
SUST 232	Design for Sustainable Impact	3-4
ME 206A & ME 206B	Design for Extreme Affordability and Design for Extreme Affordability	8
BIOE 177	Inventing the Future	4
ME 377	Design Thinking Studio	4
LAW 806Y	Policy Practicum: Justice By Design: Eviction	2-4
FEMGEN 344F	Intersectional Design: An Expanded Approach to Gender in Tech	4-5
DESINST 250	Oceans by Design	3
DESINST 200	Forget all the Jargon, Let's Innovate	4
DESINST 203	Designing the Taboo	3
DESINST 220	Designing Futures of Work	3

DESINST 225	Designing Courageous Conversations For Impact	4
PEDS 219	Designing Healthcare For Social Justice	3

Ethics Course Requirement

All Sustainability Science and Practice students must complete at least one ethics course during their time at the University. Students who have satisfied the Ways-Ethical Reasoning undergraduate requirement are not required to take an additional ethics course. Those who have not yet satisfied this requirement are encouraged to consider one of the recommended ethics courses listed below.

		Units
PUBLPOL 234	Ethics on the Edge: Business, Non-Profit Organizations, Government, and Individuals	3
ETHICSOC 136R	Introduction to Global Justice	4
ETHICSOC 278M	Introduction to Environmental Ethics	4-5

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

The Sustainability Science and Practice program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B-' or better level.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Graduate Advising Expectations

The Sustainability Science and Practice (SUST) program believes that a clear and productive relationship between the graduate advisor and graduate student is necessary for academic and professional success. Because the program sees itself as building leaders for the future of sustainability, it is committed to providing students with graduate advisors who embody such leadership and employ the knowledge, mindsets, and skills of the program in their role.

Acquiring an Advisor

- The SUST program website (https://earth.stanford.edu/sust/people/) includes a list of faculty members who are affiliated with the SUST program. Students research potential advisors with similar interests and shared academic focus areas that they would like to emphasize in their own studies.
- Students contact the faculty member to ask for a meeting to explore whether the advising relationship is going to be a good fit for both parties.
- While the official advisor-of-record must be on the Academic Council (i.e., professor, associate professor, or assistant professor), students may ask a non-Academic Council member to serve as a co-advisor. Students should consult with the Change Leadership for Sustainability executive director or program director about co-advising relationships.

Advising Expectations

Faculty advisors are expected to serve as intellectual advisors and professional mentors, preparing students to be ready for, and successful in, their future careers.

A prospective faculty advisor meets with a student prior to application submission to:

- Discuss the student’s motivation for applying to the program;
- Plan, review, and sign the student’s course proposal; and
- Discuss what the advisor/advisee relationship will look like.

Once admitted, the student and advisor should meet quarterly to:

- Review courses for that quarter;
- Discuss career goals and practicum ideas;
- Help connect the student with larger networks outside of Stanford for sustainability work;
- Engage the student in relevant research opportunities and projects;
- Review the student’s practicum proposal and attend (if possible) the student’s final practicum presentation. The program director is an additional resource for students, specifically for practicum planning, mentoring, and completion. Students are expected to talk with their advisor and the program director about this aspect of the program.

Meetings and Scheduling

The student is responsible for scheduling the quarterly advising meeting. In-person meetings are encouraged; however, meetings by phone or video conference are acceptable, if mutually agreed. If a student is on leave of absence, the program encourages him/her to check in with his/her advisor each quarter via email. If an advisor is on sabbatical, it is expected that planning for this would have been covered in an earlier meeting. Most faculty members on sabbatical continue the advising relationship with existing advisees, and meetings shift from in-person to phone or video conference.

Addressing Mental Health

Pursuing a master’s degree at Stanford University is one of the many exciting but challenging tasks students may be taking on. The pressures of academic work, external projects, and family affairs can at times cause students mental, physical, and emotional stress. The program encourages academic advisors to provide resources to students who may show signs of struggling with mental health, including extreme levels of anxiety and depression, or battling issues such as grief.

Resources

- Counseling and Psychological Services (CAPS) offers crisis counseling. Walk-in appointments are available, and clinicians are always on call at (650) 723-3785.
- The Graduate Life Office is available during office hours at (650) 736-7078, or 24/7 at (650) 723-8222, pager ID number 25085.
- The Bridge Peer Counseling Center offers counseling by trained students 24/7 at (650) 723-3392.
- The Office for Religious Life offers spiritual guidance for students. Call (650) 723-1762 or visit the Round Room at Memorial Church.

- The Faculty and Staff Help Center, located in Kingscote Gardens, offers confidential help for Stanford faculty and staff.
- If you are aware of someone in distress, contact CAPS, the Department of Public Safety or the Office of the Dean of Students.

Program Staff:

Faculty Director: Pamela Matson

Co-Director: Julia Novy

Program Director: Shelley Ratay

Program Coordinator: Lauren Neville

Director of Graduate Studies: Pamela Matson and Julia Novy

Affiliated Faculty and Lecturers:

- Nicole M. Ardoin (Education)
- Inêz Azevedo (Energy Resources Engineering)
- Shilajeet Banerjee (Sustainability Science and Practice)
- William Barnett (Business)
- Sally Benson (Energy Resources Engineering)
- Paul Brest (Law)
- Marshall Burke (Earth System Science)
- Karen Casciotti (Earth System Science)
- Geoffrey Cohen (Psychology)
- Gretchen C. Daily (Woods Institute for the Environment)
- Jenna Davis (Civil and Environmental Engineering)
- Noah Diffenbaugh (Earth System Science)
- Sibyl Diver (Earth System Science)
- Rob Dunbar (Earth System Science)
- Scott Fendorf (Earth System Science)
- Zephyr Frank (History)
- Margot Gerritsen (Energy Resource Engineering)
- Lynn Hildemann (Civil and Environmental Engineering)
- Pamela Hinds (Management Science and Engineering)
- Rob Jackson (Earth System Science)
- James Holland Jones (Earth System Science)
- Jeffrey Koseff (Civil and Environmental Engineering)
- Eric Lambin (Earth System Science)
- James Leape (Woods Institute for the Environment)
- Susan Liautaud (Law, Public Policy)
- David Lobell (Earth System Science)
- Hazel Markus (Psychology)
- Pamela Matson (Sustainability Science and Practice)
- Meagan Mauter (Civil and Environmental Engineering)
- Rosamond Naylor (Earth System Science)
- Julia Novy (Sustainability Science and Practice)
- Morgan O'Neill (Earth System Science)
- Hayagreeva Rao (Business)
- Deborah Rhode (Law)
- Burke Robinson (Management Science and Engineering)
- Lee Ross (Psychology)
- Matt Rothe (Sustainability Science and Practice and Earth Systems)
- Nikhil Sawe (Sustainability Science and Practice)
- Tina Seelig (Management Science and Engineering)
- Claude Steele (Psychology)
- Jenny Suckale (Geophysics)
- Barton Thompson (Law)
- Peter Vitousek (Biology)
- Jeremy Weinstein (Political Science)
- Mikael Wolfe (History)
- Gabrielle Wong-Parodi (Earth System Science)

Courses

SUST 210. Pursuing Sustainability: Managing Complex Social Environmental Systems. 3 Units.
This course provides a systems framework for understanding and managing social-environmental systems, with the ultimate goal of inclusive, equitable, intra- and intergenerational human well-being. It explores the roles of natural, human, social, technological and knowledge resources in supporting efforts toward sustainability, and examines the trade-offs, feedbacks, non-linearities and other interactions among different parts of complex systems that must be addressed to avoid unintended negative consequences for people and environment. Finally, it provides an overview of the tools, approaches, and strategies that assist with management of assets for sustainability goals. The course draws on readings from a variety of on-line sources as well as chapters and case studies provided in the required text. Priority given to SUST students. Enrollment open to seniors and graduate students only. Please contact program staff at rachelx@stanford.edu for permission code.
Same as: ESS 230

SUST 220. Case Studies in Leading Change for Sustainability. 3 Units.
This course teaches essential leadership orientations and effective approaches for advancing sustainability globally. It examines case studies and examples of leading change in the private sector, and in cross-sector collaborations involving government, business and non-profit organizations. The course teaches students the Connect, Adapt and Innovate (CAN) orientations and other skills which enhance students' ability to cultivate resilience and well-being in their lives and to lead change in complex systems. Strategies and approaches studied include B Corporations, social entrepreneurship, indigenous community-business collaborations, biomimicry, circular economy, sharing economy, corporate sustainability strategy, the UN sustainable development goals, metrics of progress beyond GDP, and transformative multi-stakeholder partnerships. Through conceptual frameworks, hands-on exercises, class discussion, reflection and interactions with sustainability leaders, students practice decision-making under uncertainty, systems thinking, resilience thinking and transformative leadership. Working in teams, students will apply their learnings in collaborative class projects. To help cultivate a highly engaged course community, please send responses to the following questions to Julia Novy (julia3@stanford.edu); admitted students will receive a permission code to be used for course enrollment. 1. What is one of the most significant challenges you've faced and how did you approach it? 2. What would you like to get out of this course? 3. What will you contribute? 4. How can I create a welcoming, engaging, and meaningful online learning experience for you? Please share any best practices or tools you have used in other environments. Class will generally meet from 1:00-3:00PM PST once a week on Zoom, including time with guest sustainability leaders, but during some weeks, we will end by 2:30PM to leave time for group project work or asynchronous learning.

SUST 230. Innovating Large Scale Sustainable Transformations/ Collaborating for the Future. 3-4 Units.
The capacity to innovate system-level transformations is a crucial leadership modality in the face of complex systemic challenges. This class gives students the mindsets, theoretical framework, and hands-on experience in shaping innovative interventions that bring about scaled and profound transformations in the face of complex multi-factorial challenges. Students are immersed in the System Acupuncture Methodology, which combines systems thinking, strategy, design thinking, behavioral sciences, resilience theory, diffusion theory, decision theory, and a theoretical framework around scaled multi-stakeholder interventions. Tools and theories introduced in class will be used to structure large-scale transformations that simultaneously create sustainability and resilience on environmental, societal, and economic fronts. This project-based team-based class challenges students to find solutions for complex real-world challenges. Class meets in the spring quarter on Fridays 9:30am-4:20pm, weeks 1-9. Lunch will be provided. Final presentations on Friday of week 9, 3-7:30pm. Consent of instructor required. To be considered, please apply on the d.school website.
Same as: ENVRES 380

SUST 231. FEED Lab: Food System Design & Innovation. 3-4 Units.
FEED Lab is a course in which entrepreneurial and motivated students, engaged industry-thought leaders, and deeply experienced and connected faculty work together to design solutions to some of the food system's most consequential problems. Whether you're passionate about transforming the food system, or merely curious explore it, all students in this course will leave with practical design skills, enhanced leadership abilities, and confidence that their work will leave a lasting impact on the organizations with whom we collaborate. Students who complete this course gain access to the broad network of the FEED Collaborative, whose mission is to equip and inspire the next generation of leaders in the food system, and to connect them to meaningful opportunities after Stanford. To learn more about the FEED Collaborative, visit https://feedcollab.stanford.edu/. This course requires an application, which can be found here: https://forms.gle/5Rd93yVg8XjRCig26.
Same as: EARTHSYS 289

SUST 232. Design for Sustainable Impact. 3-4 Units.
Addressing sustainability challenges involves purposefully designing system level transformations amidst complexity, uncertainty, severe constraints, and entrenched behaviors. This class will introduce students to techniques, tools, and mental models from the design world to address scaled sustainability challenges. The class will combine elements from Design Thinking, Systems Acupuncture, Behaviorally Informed Design, User Experience Design, and Game Design. The class will use the UN 2030 Sustainable Development Goals as an underlying framework to design interventions towards integrated sustainable outcomes. Students will form small teams and will participate in a structured design process, where they will co-create a system transformation with an emphasis on Behavior Change directed at Sustainable Impact. The class is aimed at giving students an exposure to the type of creative team processes that they would have to lead in their careers as sustainability minded leaders.

SUST 240. Sustainability Leadership Practicum. 1-4 Unit.
The Sustainability Leadership Practicum provides an opportunity for students in the SUST master's program to practice, integrate and internalize core lessons from the program curriculum. Students will independently complete a 120-hour Practicum project of their own design, collaborating on a complex sustainability challenge with an outside partner and working through the types of constraints often faced by decision makers and leaders. Through the Practicum experience, students reflect on and exercise the knowledge, mindsets and practical skills developed through their SUST coursework, including the foundational program concepts of complex social-environmental systems, change leadership, and systems innovation and transformation. Ultimately, the Practicum is designed to develop each student's identity and capacity as a transformative leader through practice. While the Practicum can be carried out and the units earned at any time during the master's program, students are encouraged to start the planning process early, allowing plenty of time to forge a relationship with a partner organization and develop a thoughtful and feasible proposal (to be approved by program leadership and the student's advisor) prior to carrying out their Practicum fieldwork. Deliverables include a reflection paper and a 15-minute final presentation. This course does not convene in a classroom setting. Instead, students are expected to attend Practicum presentation events that will be hosted quarterly. Enrollment is limited to students in the SUST coterm master's program. (Cardinal Course certified by the Haas Center).

SUST 261. Art and Science of Decision Making. 3-4 Units.
Common-sense rules and decision-making tools to achieve clarity of action for important decisions, from personal choices to organizational decisions about business strategies and public policies. The art of qualitative framing and structuring as well as the science of quantitative modeling and analysis. The essential focus, discipline, and passion needed to make high-quality decisions, and thereby increase the probability of desired outcomes. Effective normative techniques and efficient management processes for both analyzing complex decisions and implementing them in the face of an uncertain future world. Lecture topics include practical ways to: interact collaboratively with stakeholders, craft an inspirational vision, create viable alternatives, assess unbiased probabilistic information, clarify tangible and intangible preferences, develop appropriate risk/reward and portfolio models, evaluate strategies and policies across a realistic range of uncertain scenarios, analyze key sensitivities, appraise the value of gathering additional information, and build widespread commitment to implementation plans. Student teams present insights from their analyses of real decisions currently being made by business, nonprofit, and government organizations. Case studies about: energy economics, mine remediation, ocean resource preservation, bison brucellosis, nuclear waste storage, hurricane seeding, electric power production, environmental risk management, venture capital investments, and oil & gas options trading.

SUST 297. Introduction to Systems Transformation. 1 Unit.
This immersive course exposes students in the Sustainability Science and Practice coterminal master's program to systems thinking and innovation approaches that are needed in order to bring about large-scale system transformation. Scaled and complex challenges embodied in the U.N. Sustainable Development Goals are multi-stakeholder, multifactorial, inter-related, and systemic, and can only be addressed through innovations at the systems level. This hands-on session provides an introduction to innovation approaches and the mindsets that are needed to transform system behavior at scale in the real world. Students will identify skills that they will need to acquire in order to lead change toward a resilient and sustainable future. Course enrollment limited to SUST students. Please contact program staff at rachelx@stanford.edu for permission code.nInstructors: Banny Banerjee and Annette Zou.

SUST 801. TGR PROJECT. 0 Units.
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GRADUATE SCHOOL OF EDUCATION

Courses offered by the Graduate School of Education are listed under the subject code EDUC on the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=EDUC&filter-catalognumber-EDUC=on) web site.

The Stanford Graduate School of Education is a leader in pioneering new and better ways to achieve high-quality education for all. Faculty and students engage in groundbreaking and creative interdisciplinary scholarship that informs how people learn and shapes the practice and understanding of education. Through state-of-the-art research and innovative partnerships with educators worldwide, the school develops knowledge, wisdom, and imagination in its diverse and talented students so they can lead efforts to improve education around the globe.

Three graduate degrees with specialization in education are granted by the University: Master of Arts, Master of Science, and Doctor of Philosophy.

While no undergraduate majors are offered, the school offers courses for undergraduates, an undergraduate minor and an undergraduate honors program.

The Graduate School of Education is organized into three area committees: Curriculum Studies and Teacher Education (CTE); Developmental and Psychological Sciences (DAPS); and Social Sciences, Humanities, and Interdisciplinary Policy Studies in Education (SHIPS).

In addition, several cross-area programs are sponsored by faculty from more than one area. These programs include the doctoral program in Learning Sciences and Technology Design (LSTD); the doctoral program in Race, Inequality, and Language in Education (RILE); two master's level programs, the Stanford Teacher Education Program (STEP) and the Learning, Design, and Technology Program (LDT); and the undergraduate honors and minor programs.

These area committees function as administrative units that act on admissions, plan course offerings, assign advisers, monitor student academic progress, and determine program requirements. Various concentrations exist within most of these areas. Faculty members are affiliated primarily with one area but may participate in several programs. While there is a great deal of overlap and interdisciplinary emphasis across areas and programs, students are affiliated with one area committee or program and must meet its degree requirements.

Detailed information about admission and degree requirements, faculty members, and specializations related to these area committees and programs can be found in the Academics section of the School's web site (https://ed.stanford.edu/academics/).

The Graduate School of Education offers no correspondence or extension courses, and in accordance with University policy, no part-time enrollment is allowed. Work in an approved internship or as a research assistant is accommodated within the full-time program of study.

Undergraduate Programs in Education

The Graduate School of Education offers a minor and an honors program at the undergraduate level. Further information about these programs can be found at the Graduate School of Education (https://ed.stanford.edu/academics/undergraduate/) web site.

Regardless of whether they are enrolled in one of these undergraduate programs, undergraduates are also welcome in many graduate-level courses at the GSE.

Graduate Programs in Education

The Graduate School of Education offers Master of Arts, Master of Science, and Doctor of Philosophy degrees in several programs (see "Master's" and "Doctoral" tabs on this page). University and Graduate School of Education requirements must be met for each degree. The University requirements are detailed in the "Graduate Degrees (p. 65)" section of this bulletin. Students are urged to read this section carefully, noting residency, tuition, and registration requirements. A student who wishes to enroll for graduate work in the Graduate School of Education must be admitted to graduate standing by one of the school's area committees and with the approval of the Associate Dean for Student Affairs. All Graduate School of Education courses are intended for matriculated students in degree programs only.

Complete information about admissions procedures and requirements is available from Graduate Admissions (https://gradadmissions.stanford.edu/), or at the Graduate School of Education (https://ed.stanford.edu/admissions/) web site. Applicants to all programs, except for applicants to the Stanford Teacher Education Program (STEP), must submit scores from the Graduate Record Examination General Test (verbal, quantitative, and analytical or analytical writing areas); TOEFL scores are also required from those whose first language is not English. Applicants to the Stanford Teacher Education Program (STEP) are also required to submit specific test scores or acceptable equivalents as required by the California Commission on Teacher Credentialing; see the section on STEP. Test information is available at the Graduate School of Education (https://ed.stanford.edu/admissions/) web site. The Graduate School of Education takes a holistic approach to admissions by comprehensively evaluating the academic preparation, experiences, and potential of all applicants.

Honors Program in Education

The Honors Program in Education is available to undergraduates to supplement their declared majors by applying their studies to a research project inspired by their interests in education. This program enables qualified undergraduates at Stanford to extend the training in their major field of study by pursuing education courses and undertaking a supervised research thesis involving the study of education. Students apply for entry during the Spring Quarter of their junior year. Application information can be found at the Graduate School of Education (https://ed.stanford.edu/academics/undergraduate/honors/) web site. The current director of the honors program is Ari Y. Kelman, Jim Joseph Professor of Education and Jewish Studies.

In addition to completing an honors thesis over the course of their senior year, successful candidates for honors present brief reports on their research at a mini-conference held in the Spring Quarter that all the honors students in Education, as well as other members of the academic community, are invited to attend.

Required Coursework:

1. Students are required to enroll in the Undergraduate Honors Seminar during their senior year: EDUC 199A (Autumn, 3 units), EDUC 199B (Winter, 1 unit), and EDUC 199C (Spring, 1 unit)
2. Students are required to enroll in Honors Research (EDUC 140) with their adviser during Winter and Spring quarters of their senior year. The number of units is to be determined in consultation with the faculty adviser.

3. Students must also complete a minimum of 3 courses taken for a minimum of 3 units each in Education (EDUC units) before the end of their senior year. All courses must be approved by the honors director.

Minor in Education (Undergraduate)

The Graduate School of Education awards an undergraduate minor in the field of Education. The minor is structured to provide a substantial introduction to Education through a broad-based and focused study of research, theory and practice. The goals of the minor are to allow undergraduates to develop an understanding of the core issues facing educators and policymakers, to make connections to their major programs of study, and to provide rigorous preparation for graduate studies in Education.

Students interested in pursuing an undergraduate minor in Education begin by contacting the minor director (Jennifer Lynn Wolf, jlwolf@stanford.edu), who is responsible for advising all candidates and approving each student's minor plan of study. Applications for the minor are due no later than the second quarter of the junior year.

The Education minor requires three core courses to ensure coverage of the field disciplines, while offering flexibility for students pursuing specific interests. In order to graduate with a minor in Education, undergraduates must complete the minor program of study as described here, for a total of not less than 20 units and not more than 30 units, with a minimum of six courses.

Course Requirements and Distribution

1. All minor students are required to take the minor core course:

		Units
EDUC 101	Introduction to Teaching and Learning	4

2. All students are also required to take two of the following foundational courses:

		Units
EDUC 120C	Education and Society	4-5
EDUC 142	Foundational Course in Testing	2-3
EDUC 201	History of Education in the United States	3-5
EDUC 204	Introduction to Philosophy of Education	3
EDUC 371	Social Psychology and Social Change	2-3
EDUC 389A	Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations	3-5
EDUC 400A	Introduction to Statistical Methods in Education	3-4

3. Each student identifies a subfield of study in which to take at least three elective courses. Established subfields of study within the Graduate School of Education include: Teaching and Learning; Education Research and Policy; and Educational Technology. A list of suitable elective courses is provided below.

		Units
1. Subfield 1: Teaching and Learning—		
EDUC 103A	Tutoring: Seeing a Child through Literacy	3-4
EDUC 104	Introduction to the Profession of Teaching	3
EDUC 105		1
EDUC 111	The Young Adult Novel: A Literature For and About Adolescents	4
EDUC 112	Urban Education	3-5
EDUC 130	Introduction to Counseling	3
EDUC 135	Designing Research-Based Interventions to Solve Global Health Problems	3-4
EDUC 141	Counterstory in Literature and Education	3
EDUC 148	Inglés Personal: Coaching Everyday Community English	3
EDUC 149	Theory and Issues in the Study of Bilingualism	3-5
EDUC 165	History of Higher Education in the U.S.	3-5
EDUC 171	Preschool Counts: Engaging Young Children in Math	3
EDUC 213	Introduction to Teaching	3-4
EDUC 217	Free Speech, Academic Freedom, and Democracy	3
EDUC 218	Topics in Cognition and Learning: Technology and Multitasking	3
EDUC 232	Culture, Learning, and Poverty	2-3
EDUC 241	Race, Justice, and Integration	3
EDUC 245	Understanding Racial and Ethnic Identity Development	3-5
EDUC 248	Language, Literacy, and Culture	3-4
EDUC 256	Psychological and Educational Resilience Among Children and Youth	4-5
EDUC 258	Literacy Development and Instruction	3-5
EDUC 266	Educational Neuroscience	3
EDUC 277	Education of Immigrant Students: Psychological Perspectives	4
EDUC 280	Learning & Teaching of Science	3
EDUC 306A	Economics of Education in the Global Economy	5
EDUC 314	Funkentelechy: Technologies, Social Justice and Black Vernacular Cultures	5
EDUC 332	Theory and Practice of Environmental Education	3
EDUC 357	Science and Environmental Education in Informal Contexts	3-4
EDUC 360	Child Development in Contexts of Risk and Adversity	3
EDUC 365	Social, Emotional, and Personality Development	3
EDUC 379	Moral, Civic, and Environmental Education	3
EDUC 382	Student Development and the Study of College Impact	4
EDUC 389C	Race, Ethnicity, and Language: Pedagogical Possibilities	3-4
EDUC 419	Academic Achievement of Language Minority Students	3-5
EDUC 426	Unleashing Personal Potential: Behavioral Science and Design Thinking Applied to Self	2-4
2. Subfield 2: Education Research and Policy—		
EDUC 104	Introduction to the Profession of Teaching	3
EDUC 108	The Changing Face of America	4-5
EDUC 111	The Young Adult Novel: A Literature For and About Adolescents	4
EDUC 114N	Growing Up Bilingual	3
EDUC 116N	Howard Zinn and the Quest for Historical Truth	3
EDUC 117	Research and Policy on Postsecondary Access	3
EDUC 122Q	Democracy in Crisis: Learning from the Past	3

EDUC 123	Community-based Research As Tool for Social Change:Discourses of Equity in Communities & Classrooms	3-5
EDUC 135	Designing Research-Based Interventions to Solve Global Health Problems	3-4
EDUC 136	World, Societal, and Educational Change: Comparative Perspectives	4-5
EDUC 145	Writing Across Languages and Cultures: Research in Writing and Writing Instruction	3-5
EDUC 149	Theory and Issues in the Study of Bilingualism	3-5
EDUC 151	The Future of Information	4
EDUC 165	History of Higher Education in the U.S.	3-5
EDUC 177A	Well-Being in Immigrant Children & Youth: A Service Learning Course	4
EDUC 197	Gender and Education in Global and Comparative Perspectives	4
EDUC 203	Using International Test Results in Educational Research	4
EDUC 217	Free Speech, Academic Freedom, and Democracy	3
EDUC 218	Topics in Cognition and Learning: Technology and Multitasking	3
EDUC 232	Culture, Learning, and Poverty	2-3
EDUC 220D	History of School Reform: Origins, Policies, Outcomes, and Explanations	3-5
EDUC 222	Resource Allocation in Education	4-5
EDUC 241	Race, Justice, and Integration	3
EDUC 245	Understanding Racial and Ethnic Identity Development	3-5
EDUC 248	Language, Literacy, and Culture	3-4
EDUC 256	Psychological and Educational Resilience Among Children and Youth	4
EDUC 258	Literacy Development and Instruction	3-5
EDUC 266	Educational Neuroscience	3
EDUC 277	Education of Immigrant Students: Psychological Perspectives	4
EDUC 280	Learning & Teaching of Science	3
EDUC 306A	Economics of Education in the Global Economy	5
EDUC 340	Psychology and American Indian/Alaska Native Mental Health	3-5
EDUC 347	The Economics of Higher Education	3-4
EDUC 360	Child Development in Contexts of Risk and Adversity	3
EDUC 365	Social, Emotional, and Personality Development	3
EDUC 382	Student Development and the Study of College Impact	4
3. Subfield 3: Technology—		
EDUC 104	Introduction to the Profession of Teaching	3
EDUC 135	Designing Research-Based Interventions to Solve Global Health Problems	3-4
EDUC 139		3-5
EDUC 151	The Future of Information	4
EDUC 211	Beyond Bits and Atoms - Lab	3
EDUC 218	Topics in Cognition and Learning: Technology and Multitasking	3
EDUC 230	Learning Experience Design	3
EDUC 236	Beyond Bits and Atoms: Designing Technological Tools	3-4
EDUC 248	Language, Literacy, and Culture	3-4
EDUC 280	Learning & Teaching of Science	3
EDUC 295	Entrepreneurship and Innovation in Education Technology Seminar	2-3
EDUC 302	Behavior Design	3
EDUC 303	Designing Learning Spaces	3-4
EDUC 314	Funkentelechy: Technologies, Social Justice and Black Vernacular Cultures	5
EDUC 328	Topics in Learning and Technology: Core Mechanics for Learning	3
EDUC 333A	Understanding Learning Environments	3
EDUC 342	Child Development and New Technologies	3
EDUC 365	Social, Emotional, and Personality Development	3
EDUC 398	Core Mechanics for Learning	3
EDUC 391	Engineering Education and Online Learning	3

4. Course work completed for the Education Minor must meet the following criteria:
   - All courses must be taken for a letter grade.
   - All courses must be completed with a minimum GPA of 3.0.
   - Courses used to fulfill the minor may not be used to fulfill any other department degree requirements (major or minor).
   - All courses must be taken at Stanford University.

Coterminal Master's Program in Education

The Graduate School of Education admits a limited number of students from undergraduate departments within the University into a coterminal master's program. For information about the coterminal option through the Stanford Teacher Education Program (STEP), see the details under STEP (https://ed.stanford.edu/step/). Students in a coterminal program receive the bachelor's degree in their undergraduate major and the master's degree in Education. Approval of the student's undergraduate department and admission to the Graduate School of Education's M.A. program are required. Undergraduates may apply when they have completed at least 120 units toward graduation (UTG). The number of units required for the M.A. degree depends on the program requirements; see the Master's Handbook (https://ed.stanford.edu/academics/masters-handbook/) for additional information.

Applicants may learn more about the GSE's coterminal application process from the Graduate School of Education's (https://ed.stanford.edu/admissions/application-reqs/) web site. All coterm programs accept online applications. Information regarding University rules about application and eligibility for coterm admission can be found on the Registrar's web site (https://registrar.stanford.edu/students/coterminal-degree-programs/).

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer

of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken three quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to the graduate career. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Master of Arts in Education

The M.A. degree is conferred upon fulfillment of degree requirements and by recommendation of the faculty of the Graduate School of Education. Depending on the specialization (please see below), students must complete a minimum of 45-51 units at Stanford, and 27-31 units in the Graduate School of Education (EDUC units) to receive a master's degree in Education. All M.A. students must maintain a grade point average (GPA) of 3.0 or better in courses applicable to the degree. Master's students should obtain detailed program requirements from the Master's Handbook (https://ed.stanford.edu/academics/masters-handbook/). Additional detailed information regarding program content and degree requirements is available on the Graduate School of Education's (https://ed.stanford.edu/academics/masters/) web site.

The Graduate School of Education offers Master of Arts degrees in the following specializations:

- Curriculum and Teacher Education (CTE) (This is not a credentialing program; see STEP below.)
- International Comparative Education (ICE)
- International Education Policy Analysis (IEPA)
- Joint Degree with Graduate School of Business (M.A./M.B.A.)
- Joint Degree with Law School (M.A./J.D.)
- Joint Degree with Public Policy Program (M.A./M.P.P.)
- Learning, Design, and Technology (LDT)
- Policy, Organization, and Leadership Studies (POLS)

The Graduate School of Education offers Master of Science degrees in the following specializations:

- Education Data Science (EDS)
- Learning, Design, and Technology (LDT)

In addition, an M.A. degree with a teaching credential is offered in the Stanford Teacher Education Program.

Stanford Teacher Education Program (STEP)

STEP is a 12-month, full-time program leading to a Master of Arts and a preliminary California teaching credential. STEP offers a Master of Arts in Education that prepares program graduates for careers as teachers in single or multiple subject classrooms. STEP Elementary prepares students to become teachers in multiple subject classrooms. STEP Secondary prepares students to become teachers of English, World Languages (French, Mandarin, Spanish), Mathematics, Science (biology, chemistry, earth science, physics), and History/Social Science. STEP seeks to prepare and support teacher candidates to work with diverse learners to achieve high intellectual, academic, and social standards by creating equitable and successful schools and classrooms.

The 12-month STEP year begins in June with a summer quarter of intensive academic preparation and placement in a local summer school. During the academic year, students continue their course work and begin year-long field placements under the guidance of expert teachers in local schools. The Master of Arts and teaching credential require a minimum of 45 quarter units, taken during four quarters of continuous residency.

Stanford undergraduates who enroll in STEP through the coterminal program must complete their undergraduate coursework and have their bachelor's degree conferred prior to beginning in the STEP year. Coterminal STEP students graduate with a Master of Arts in Education and a recommendation for a preliminary California teaching credential.

Applicants to STEP Elementary are required to meet the basic skills requirement by one of the following methods: pass the California Basic Educational Skills Test (CBEST), an approved out of state basic skills exam, the CSET: Writing Skills or achieve qualifying scores on the SAT, ACT or AP examinations. Applicants must also pass the California Multiple Subject Examination for Teachers (CSET), and the Reading Instruction Competence Assessment Test (RICA).

Applicants to STEP Secondary are required to meet the basic skills requirement by one of the following methods: pass the California Basic Educational Skills Test (CBEST), an approved out of state basic skills exam, or achieve qualifying scores on the SAT, ACT or AP examinations. Additionally, applicants must demonstrate subject matter competence in one of two ways:

1. by passing the California Subject Examination for Teachers (CSET) in their content area; or
2. by completing a California state-approved subject matter preparation program.

The GRE is not required for STEP external or coterminal applicants.

Further information regarding admission requirements, course work, and credential requirements is available at the Stanford Teacher Education Program web site. (https://gse-step.stanford.edu/)

Doctoral Degrees in Education

The Graduate School of Education offers the Doctor of Philosophy (Ph.D.) degree in all program area committees. The degree is conferred by the University upon recommendation by the faculty of the Graduate School of Education and the University Committee on Graduate Studies. The Ph.D. requires a minimum of 135 units of course work and research completed at Stanford beyond the baccalaureate degree. Students may transfer up to 45 units of graduate course work. Students must consult with the Assistant Director of Degree Programs if they intend to transfer prior course work. Students must maintain a grade point average (GPA) of 3.0 (B) or better in courses applicable to the degree.

Students should note that admission to the doctoral program does not constitute admission to candidacy for the degree. Students must qualify and apply for candidacy by the end of their second year of study and should obtain information about procedures and requirements during their first year from the Assistant Director of Degree Programs, located in Barnum 136.

The Ph.D. degree is designed for students who are preparing for research work in public school systems, branches of government, or specialized institutions; teaching roles in education in colleges or universities, and research connected with such teaching; or other careers in educational scholarship and research.

Ph.D. students must complete a minor in another discipline taught outside the school, or hold an acceptable master's degree outside

the field of education, or complete an approved individually designed distributed minor that combines relevant advanced work taken in several disciplines outside the school.

Upon admission, the admitting area committee assigns an initial adviser from its faculty who works with the student to establish an appropriate and individualized course of study, a relevant minor, and project research plans. Other faculty members may also be consulted in this process. Details about administrative and academic requirements for each area committee and the Graduate School of Education, along with the expected time frame to complete program milestones, are given in the publication Graduate School of Education Doctoral Degree Handbook, available for download at http://ed.stanford.edu/academics/doctoral-handbook (http://ed.stanford.edu/academics/doctoral-handbook/).

The following doctoral specializations, with their sponsoring area and concentration, are offered:

- Anthropology of Education (SHIPS)
- Developmental and Psychological Sciences (DAPS)
- Economics of Education (SHIPS)
- Education Data Science (SHIPS)
- Educational Linguistics (SHIPS)
- Educational Policy (SHIPS)
- Elementary Education (CTE)
- Higher Education (SHIPS)
- History/Social Science Education (CTE)
- History of Education (SHIPS)
- International Comparative Education (SHIPS)
- Learning Sciences and Technology Design (CTE, DAPS, SHIPS)
- Literacy, Language, and English Education (CTE)
- Mathematics Education (CTE)
- Organizational Studies (SHIPS)
- Philosophy of Education (SHIPS)
- Race, Inequality, and Language in Education (CTE, DAPS, SHIPS)
- Science Education (CTE)
- Sociology of Education (SHIPS)
- Teacher Education (CTE)

Ph.D. Minor in Education

Candidates for the Ph.D. degree in other departments or schools of the University may elect to minor in Education. Requirements include a minimum of 20 quarter units of graduate course work in Education. Students choosing to minor in Education should meet with the Associate Dean for Student Affairs to determine a suitable course of study early in their program.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Graduate School of Education/Education Minor/Education Honors program counts all courses taken in academic year 2020-21 with a grade of ‘CR’ (credit) or ‘S’ (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Graduate Degree Requirements

Grading

GSE doctoral programs count all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade. GSE doctoral students completing master's degrees or Ph.D. minors in other Stanford departments should consult with and adhere to those departments' grading basis requirements for courses counted toward that department's master's degree or PhD minor.

The International Comparative Education (ICE)/International Education Policy Analysis (IEPA) MA Program has not changed its policy concerning 'CR' (credit) or 'S' (satisfactory) grades in degree requirements requiring a letter grade for academic year 2020-21.

The Joint Degree with the Graduate School of Business (MA/MBA) M.A. Program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade.

The Joint Degree with the Public Policy Program (MA/MPP) Program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade.

The Joint Degree with the Stanford Law School (MA/JD) Program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade.

The Learning, Design and Technology (LDT) MA Program has not changed its policy concerning 'CR' (credit) or 'S' (satisfactory) grades in degree requirements requiring a letter grade for academic year 2020-21.

The Policy, Organization, and Leadership Studies (POLS) MA Program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade.

The Stanford Teacher Education Program (STEP) M.A. Program has not changed its policy concerning 'CR' (credit) or 'S' (satisfactory) grades in degree requirements requiring a letter grade for academic year 2020-21.

Graduate Advising Expectations

Ph.D. Advising

These advising norms started with students entering Autumn 2019.

- A team advising approach allows students to develop working relationships with a greater diversity of faculty members.
- The adoption of team advising creates a distribution of work paired with a dynamic distribution of intellectual expertise.
- The explicit framing of advising expectations and norms supports students and faculty in finding common ground and shared expectations.
- Students and their academic advisors are expected to meet a minimum of two meetings per quarter.

- Students and their support advisors are expected to meet a minimum of one time per quarter.

Advising Structure

First-year Advising Teams

In the first year, students work with an advising team. The lead advisor, a support advisor, and a student mentor serve the role of assisting students in their matriculation into graduate study. Students meet with lead advisors a minimum of twice per quarter, and with support advisors a minimum of once per quarter.

Ph.D. Advising Teams

After year one, students select their advising team. The primary advisor is expected to serve the role of the primary academic mentor for the student. The secondary advisor(s) support students as they progress through their second to fifth year academic milestones. The primary advisor and student are expected to meet twice per quarter. The secondary advisor(s) are expected to meet a minimum of once per quarter. Members of the first-year advising team do not have to be the same as those for the Ph.D. advising team. It is not unusual for students to switch to different advisors.

Advising Guidelines

In an effort to provide students with a high standard of academic advising support, advisors and students work to build a shared expectation of best advising practices. The goal is to establish clearly communicated pathways between students and their faculty advisors.

Faculty advisors are expected to:

Provide intellectual guidance:

- help students develop academic and professional skills expected by the discipline;
- guide students to design research experiences that build on their interests;
- encourage collaboration, where appropriate, that entails the sharing of authorship or rights to intellectual property developed in research or other creative or artistic activity;
- encourage students to be open about any problems in their work relationships, including with an advisor, and actively help to resolve those problems;
- be aware of and direct students to University resources to support students;
- provide students with timely, regular, and constructive feedback on academic products.

Assist students with knowledge of Stanford and GSE policies and practices:

- familiarize themselves with relevant policies; consult with the Student Handbook and Academic Services Office;
- review students' graduate study program and help students with course selection;
- help students understand the degree program's requirements and make timely progress to degree;
- discuss authorship policy in advance of entering into collaborative projects.

Demonstrate care for student wellness:

- check-in with student to see how they are experiencing the program;
- create space for students to share challenges;
- refer students to campus resources as needed.

Assist students in preparation for the job market:

- when possible, discuss the norms and expectations of the academic field students are entering;
- assist students in preparation of research presented at conferences and in professional publications;
- guide students in acquiring the professional skills necessary for conducting high quality research;
- refer students to the EdCareers Office for career exploration and coaching.

Demonstrate professional academic behavior:

- maintain timely communication with advisees;
- set and consistently honor professional commitment and meetings in a timely manner;
- facilitate graduate students' timely academic progress toward degree completion;
- model appropriate interaction with students, staff, and faculty.

Students are expected to:

Understand scope of faculty advisors' role.

- recognize that advisors provide the intellectual environment in which students learn and conduct research;
- understand that faculty advisors are responsible for monitoring the accuracy, validity, and integrity of the students' academic work, and, in the case of research, ensuring that the contributions of all participants are properly acknowledged in publications;
- respect the time constraints and other demands on faculty members and staff;
- publish results of work done under the advisors' direction and/or in the advisors' studio or laboratory only after consultation with advisors;
- arrange meetings or communicate via other mechanisms with faculty advisors as often as necessary to keep the advisors informed of any factors that might affect their academic progress, including research or time to degree.

Be responsible for understanding and adhering to policies, requirements, and practices governing their degree and course requirements, financial support, and research activities.

- consult University and school policies and handbooks for students;
- fulfill the expectations of policies and requirements, seeking clarification from faculty advisors and staff when necessary.

Exercise high professional standards.

- observe and adhere to the University's policies on academic integrity, professional conduct, and the responsible conduct of research;
- acknowledge the contributions of faculty advisors and other members of the research team to students' work in all publications and conference presentations;
- acknowledge sources of financial support;
- maintain the confidentiality of the faculty advisors' professional activities, including research, creation of original works and other creative endeavors, in accordance with existing practices and policies of the discipline;
- informing faculty advisors of conflicts, and work towards a clear resolution;
- interact with students, staff, and faculty colleagues in a professional manner to create a respectful work environment.

ICE/IEPA M.A. Advising

Purpose

Providing assistance and accountability helps students and advisors hold similar expectations about the outcomes, intentions and organization of

advisee meetings. Having a system of collective accountability supports overall support and engagement.

Expectations

Meeting Regularity

- Every student meets with the M.A. Program Director once by the end of week two of Autumn Quarter.
- A minimum of 3 office hours meetings per quarter (one with the M.A. Program Director, faculty advisor, and teaching assistant (TA)); more are required of those collecting their own data for the M.A. paper.

Accountability Structure

- Student initiate the scheduling of the meetings via email.
- For advisors who do not post their office hours sign-ups online, an email response must be provided within two business days in an effort to identify and schedule a mutually agreeable meeting time.

Suggested Meeting Topics

With M.A. Director

- Autumn:
  a. What expertise do you want to develop? Which experiences do you hope to have while at Stanford?
  b. Course selection and other opportunities to develop that expertise and experience
  c. Short- and long-term goals and plans (e.g., career, graduate studies)
  d. M.A. Paper (topic ideas, readings, theories, data sources, etc.)
- Winter:
  a. M.A. Paper (feedback on pre-proposal; data and methods; more readings and theories, etc.)
  b. Preparing for CIES annual conference
  c. Course selection and other opportunities to develop that expertise and experience
- Spring:
  a. M.A. Paper (feedback on proposal; data analysis, findings, discussion, etc.)
  b. Course selection and other opportunities to develop that expertise and experience
  c. Help thinking through post-grad plans; building professional network
- Summer:
  a. M.A. Paper (feedback on drafts; deciding next steps, e.g., publishing)
  b. Help thinking through post-grad plans

With Faculty Advisor

- Autumn:
  a. What expertise do you want to develop? Which experiences do you hope to have while at Stanford?
  b. Course selection and other opportunities to develop that expertise and experience
  c. Short- and long-term goals and plans (e.g., career, graduate studies)
  d. M.A. Paper (topic ideas, readings, theories, data sources, etc.)
- Winter:
  a. M.A. Paper (feedback on pre-proposal; data and methods; more readings and theories, etc.)
  b. Preparing for CIES annual conference
  c. Course selection and other opportunities to develop that expertise and experience
- Spring:
  a. M.A. Paper (feedback on proposal; data analysis, findings, discussion, etc.)
  b. Course selection and other opportunities to develop that expertise and experience
  c. Help thinking through post-grad plans; building professional network
- Summer:
  a. M.A. Paper (feedback on drafts; deciding next steps, e.g., publishing)
  b. Help thinking through post-grad plans

With Teaching Assistant(s)

- Autumn:
  a. What expertise do you want to develop? Which experiences do you hope to have while at Stanford?
  b. Course selection and other opportunities to develop that expertise and experience
  c. Short- and long-term goals and plans (e.g., career, graduate studies)
  d. M.A. Paper (topic ideas, readings, theories, data sources, etc.)
- Winter:
  a. M.A. Paper (feedback on pre-proposal; data and methods; more readings and theories, etc.)
  b. Preparing for CIES annual conference
  c. Course selection and other opportunities to develop that expertise and experience
- Spring:
  a. M.A. Paper (feedback on proposal; data analysis, findings, discussion, etc.)
  b. Course selection and other opportunities to develop that expertise and experience
  c. Help thinking through post-grad plans; building professional network
- Summer:
  a. M.A. Paper (feedback on drafts; deciding next steps, e.g., publishing)
  b. Help thinking through post-grad plans

LDT Advising

Purpose

Providing assistance and accountability will help students and advisors hold similar expectations about the outcomes, intentions and organization of advisee meetings. Having a system of collective accountability supports overall support and engagement.

Expectations

Meet Regularly

- Every student meets with the LDT Program Director once by the end of the third week of Autumn quarter.
- Minimum of one meeting per quarter each with the LDT Program Director, faculty advisor, and each of the LDT program assistants.

Accountability Structure

- Student initiates the scheduling of the meetings via email or on youcanbook.me.
- For those who do not post their office hours sign-ups online, an email response must be provided within two business days in an effort to identify and schedule a mutually agreeable meeting time.

Suggested Meeting Topics

With LDT Program Director

- Autumn:
  a. Discuss the advising and meeting structure
  b. What do you want to get out of this program?
  c. Course selection and other opportunities to develop that expertise and experience

d. Preliminary thoughts about an internship
e. People and places to connect with

- Winter:
  a. How to identify a useful internship?
  b. Discuss LDT Project development: Who needs to learn what, and why is this important? How might we use technology to help?
  c. What scholarship can be useful in informing the development of your LDT project?
  d. Course selection and other opportunities to develop expertise and experience
- Spring:
  a. Discuss LDT Project development: How can you build and test your ideas?
  b. Course selection and other opportunities to develop expertise and experience
  c. Help thinking through post-grad plans
  d. How to build your professional network
- Summer:
  a. Feedback on draft presentation & report for LDT project
  b. Reflection on year and next steps
  c. Ways to stay connected with the LDT community

With Faculty Advisor

- Autumn:
  a. Discuss the advising and meeting structure. When do we meet? How often do we meet and what are the expected outcomes?
  b. What expertise do you want to develop?
  c. How do you get specific expertise?
- Winter:
  a. How can you develop a greater understanding of the field(s) you're interested in?
  b. Discuss LDT Project development: Who needs to learn what, and why is this important? How might we use technology to help?
  c. What scholarship can be useful in informing the development of your LDT project?
- Spring:
  a. Feedback on written LDT project proposal
  b. Discuss LDT Project development: How can you leverage scholarship to inform your designs? How can you test the efficacy of your prototypes?
- Summer:
  a. Feedback on draft presentation & report for LDT project
  b. Reflection on year and next steps
  c. Sign off on project/paper

With Program Assistants

- Autumn:
  a. Preliminary thoughts about "Learning Problems": What problems interest the advisee?
  b. How to connect with experts and learners?
  c. Course selection and other opportunities to learn
  d. How to make the most of the Stanford experience
- Winter:
  a. How can you develop a greater understanding of a particular issue?
  b. What scholarship can be useful in informing the development of your LDT project?
  c. How can you connect with doctoral students around your project and interests?
  d. How do Stanford students manage stress?
- Spring:
  a. Discuss LDT Project development: How can you build and test your ideas?
  b. What scholarship can be useful in informing the development of your LDT project?
  c. Opportunities to develop expertise and experience
  d. Help connecting with the alumni network
- Summer:
  a. Feedback on draft presentation & report for LDT project
  b. Reflection on year and next steps

POLS M.A. Advising

Purpose

Providing assistance and accountability helps students and advisors hold similar expectations about the outcomes, intentions, and organization of advisee conferences. Having a system of collective accountability supports overall support and engagement.

Expectations

Meeting Regularity

- Every student meets with the POLS Faculty Advisor, POLS Program Advisor and other faculty at least once per quarter.
- Additional meetings may be requested as needed.

Accountability Structure

- Student initiates the scheduling of the conference.
- The POLS Faculty Advisor and POLS Program Advisor must respond within 48 hours of receipt of the student communication in an effort to identify and schedule a mutually agreeable meeting time. Other faculty members will respond within a reasonable time.

Suggested Meeting Topics

- Autumn:
  a. Discuss the advising and meeting structure: When do they meet? How often do they meet and what are the expected outcomes?
  b. What expertise does the student want to develop?
  c. Course selection and other opportunities to develop that expertise and experience.
  d. What new methods or skills might be picked up while at the GSE?
  e. POLS field project selection.
  f. How do I make the most of my Stanford experience?
- Winter:
  a. How can the student develop a greater understanding of a particular issue?
  b. Sounding board for POLS field project development.
  c. How to build a professional network?
- Spring:
  a. Help thinking through post-POLS plans.
  b. Sounding board for POLS field project completion.

Stanford Teacher Education Program Advising

Purpose

Providing assistance and accountability helps students and advisors hold similar expectations about the outcomes, intentions, and organization of the advising relationship and advisee meetings. Having a system of collective accountability supports overall support and engagement.

Advising Norms

Provide Intellectual Guidance

- Help students develop academic and professional skills expected by their discipline and the profession.
- Encourage collaboration and collegial relationships.
- Encourage students to be open about any problems in their work relationships, including with an advisor, and actively help to resolve those problems.

- Be aware of and direct students to University resources to support students.

Assist students with knowledge of Stanford and GSE policies and practices
- Be familiar with relevant policies; consult with the Student Handbook and Academic Services Office.
- Review students' graduate study program and help students with course selection.
- Help students understand the degree program's requirements and timely progress to degree.

Demonstrate care for student wellness
- Check-in with student to see how they are experiencing the program.
- Create space for students to share challenges.
- Refer students to campus resources as needed.

Assist students in preparation for the job market
- Discuss the norms and expectations of the field students are entering.
- Guide students in acquiring the professional skills necessary for expert teaching practice.

Demonstrate professional academic behavior
- Maintain timely communication with advisees.
- Set and consistently honor professional commitment and meetings in a timely manner.
- Support students' progress toward the degree and toward employment.
- Model appropriate interaction with students, staff, and faculty.

Advising Structure

Advising in STEP is structured through a combination of individual meetings with the faculty directors and support provided through the program's supervisory system.

Advising meetings
- Every student meets with the STEP Faculty Director once by the middle of Autumn Quarter. Students schedule their individual meetings using a sign-up sheet in Google Docs.
- Additional advising meetings are scheduled, as needed, during the Faculty Directors' office hours or by appointment.

Supervisory system
- Every student has one to two cooperating teachers and a University supervisor; together they provide ongoing support for the student's development as well as provide information to the faculty directors regarding each student's progress.
- Students work with their cooperating teachers in the field every day for approximately four hours.
- Students are observed by- and receive feedback from- their University supervisors at least three times each quarter. Students meet with their supervisors in small groups for an hour each week.
- Both cooperating teachers and supervisors provide the faculty directors with feedback about each student's progress each quarter on the Quarterly Assessment.

Emeriti: (Professors) J. Myron Atkin, Arnetha Ball, John Baugh, Eamonn Callan, Larry Cuban, Linda Darling-Hammond, Claude Goldenberg, Shelley Goldman, James Greeno, Pam Grossman, Edward Haertel, Kenji Hakuta, Connie Juel, Michael Kamil, Michael W. Kirst, David Labaree, Henry M. Levin, Rachel Lotan, William F. Massy, Raymond P. McDermott, Milbrey McLaughlin, Nel Noddings, Jonathan Osborne, Denis C. Phillips, David Plank, Thomas Rohlen, Richard J. Shavelson, Lee S. Shulman, Claude Steele, Myra H. Strober, Carl E. Thoresen, Decker F. Walker, Hans Weiler

Dean: Dan Schwartz

Associate Dean for Faculty and Student Affairs: John Willinsky

Senior Associate Dean for Finance and Administration: Geoff Cox

Associate Dean for External Relations: Heather Trippel

Associate Dean for Academic Services: Shu-Ling Chen

Associate Dean for Administration: Priscilla Fiden

Assistant Dean for Information Technology and CTO: Paul Kim

Professors: Alfredo Artiles, Adam J. Banks, Brigid J. Barron, Eric Bettinger, Jo Boaler, Hilda Borko, Martin Carnoy, Geoffrey Cohen, William Damon, Tom Dee, Patricia J. Gumport, Teresa D. LaFromboise, Bruce D. McCandliss, Daniel A. McFarland, Amado M. Padilla, Roy Pea, Walter Powell, Francisco O. Ramirez, Sean Reardon, Daniel Schwartz, Guillermo Solano-Flores, Mitchell Stevens, Deborah J. Stipek, Guadalupe Valdés, Carl Wieman, John Willinsky, Sam Wineburg

Associate Professors: Subini Annamma, Anthony L. Antonio, Nicole M. Ardoin, Patricia Bromley, Bryan Brown, Ari Y. Kelman, Victor Lee, Chris Lemons, Emily J. Levine, Prashant Loyalka, Jelena Obradović, David Rogosa, Jonathan Rosa, Maria Araceli Ruiz-Primo, Rebecca Silverman

Assistant Professors: Benjamin Domingue, Antero Garcia, Nick Haber, Michael Hines, Jennifer Langer-Osuna, Sarah R. Levine, Ramón Antonio Martinez, Alvin Pearman, Farzana Saleem, Jason Yeatman

Associate Professors (Teaching): Ira Lit, Peter Williamson, Christine Min Wotipka

Associate Professor (Research): Janet Carlson

Assistant Professor (Research): Shima Salehi

Courtesy Professors: Jeremy Bailenson, Richard Banks, Carol Dweck, Eric Hanushek, John C. Mitchell, Terry Moe, Brad Osgood, Byron Reeves, Robert Reich, Brian Wandell, Caroline Winterer

Courtesy Professor (Teaching): Don Barr, Shashank Joshi, William Koski

Senior Lecturers: Gay Hoagland, Denise Pope, Ann Porteus, Jennifer Wolf

Courses

EDUC 9. Public Service Internship Preparation. 1 Unit.
Are you prepared for your internship this summer? This workshop series will help you make the most of your internship experience by setting learning goals in advance; negotiating and communicating clear roles and expectations; preparing for a professional role in a non-profit, government, or community setting; and reflecting with successful interns and community partners on how to prepare sufficiently ahead of time. You will read, discuss, and hear from guest speakers, as well as develop a learning plan specific to your summer or academic year internship placement. This course is primarily designed for students who have already identified an internship for summer or a later quarter. You are welcome to attend any and all workshops, but must attend the entire series and do the assignments for 1 unit of credit.
Same as: EARTHSYS 9, HUMBIO 9, PUBLPOL 74, URBANST 101

EDUC 11SC. Work and Family. 2 Units.
Examination into the forces behind the rise in women's paid work and subsequent changes in the workplace and in families. Topics include gendered division of labor, decisions about marriage and childrearing, economic issues, employers' role in structuring work and family, and public policy issues such as anti-discrimination laws, divorce laws, and subsidized child care.

EDUC 12SC. Hip Hop as a Universal Language. 2 Units.
This seminar-cipher considers the prospect of Hip Hop as a Universal Language. Hip Hop Culture has captured the minds of youth "all around the world, from Japan to Amsterdam" (like the homie Kurupt says), shaping youth identities, styles, attitudes, languages, fashions, and both physical and political stances. The field of global Hip Hop studies has emerged as scholars around the world grapple with what is arguably the most profound cultural, musical, and linguistic youth movement of the early 21st century. nParticipants in this seminar-cipher will be engaged in critical discussions around a particular constellation of concerns: Hip Hop Cultures, youth identities, the politics of language, race, and ethnicity, and the simultaneous processes of globalization and localization. Through the examination of various texts (scholarly readings, documentary films, guest speakers and artists), we span the Global Hip Hop Nation through scenes as diverse as Hong Kong's urban center, Germany's Mannheim inner-city district of Weststadt, the Brazilian favelas, the streets of Lagos and Dar es Salaam, and the hoods of the San Francisco Bay Area to explore Hip Hop's global linguistic flows.

EDUC 13SC. Language, Identity, and the Power of Public Discourse. 2 Units.
Have you ever engaged in a conversation with someone who sounds different than you expect? This course explores instances like those that highlight the interaction between language and identity and its implications for learning. The theme of language and identity emerges as significant because of the subtle yet powerful impact it has on our cultural interactions. We have an inherent expectation of how we expect people to communicate. Yet, do these expectations interfere with teaching and learning practices? Many individuals take seminars and classes that focus on teaching professional modes of communication and discourse. This course will offer a detailed examination of scholarship that investigates the power of the subtle messages embedded in language. In addition, to gain a sense of the power of these interactions in practice, we will engage in the following research activities: (a) Participants will engage in school site visits to examine these interactions in practice; (b) Participants will engage in critical interviews of broadcasters at a local television station to discuss the role of language and identity in their presentation; and (c) We will visit a recording studio to discuss the role of language and identity with local hip-hop producers and artists.

EDUC 14SC. Public Education and Schooling: The Great Equalizer or the Fiercely Competitive Field?. 2 Units.
Everyone seems to have an opinion about the American educational landscape. After all, we all have attended schools of various sorts, which help to shape our understandings about education. Yet, the political, social, and cultural terrains are ever-changing, especially within public education. This seminar will focus on some of the main current issues in U.S. urban schools. This course will take an interdisciplinary approach to examining major issues facing public schools today and to discussing effective policies and practices. There are two main components to the seminar: first, students will engage in a review of current educational research and policy; and second, they will conduct some service learning activity in a local, low-income public high school. In small groups, students will co-design projects that both draw on ideas generated from their readings and discussions and involve local high school students and educators.nThrough various lenses, we will survey the landscape of urban education in the United States and explore myriad theories or explanations for existing conditions, crises, and policies. Students will read a number of works that focus on the multiple environs of the educational system¿the economy, the political context, the demands of accountability and standardization, residential patterns, and social and cultural relationships. Such explanations and issues may transcend U.S. boundaries and could be applicable in multiple contemporary urban education settings.

EDUC 30N. The Science of Diverse Communities. 3 Units.
This course is an exploration. Most generally, its aim is to identify distinguishing features of good diverse communities and articulate them well enough to offer principles or guidelines for how to design and manage such communities - all with a particular focus on educational communities like schools, universities, academic disciplines, etc., but with the hope that such principles might generalize to other kinds of organizations and the broader society. The readings range from those on the origins of human communities and social identities to those on intergroup trust building. They also aim to embed our discussions in the major diversity issues of the day, or example, what's in the news about campus life. nnnThus the course has a practical purpose: to develop testable ideas for improving the comfort level, fairness and goodness-for-all of identity diverse communities--especially in educational settings. nnnThe course also has a basic science purpose: to explore the psychological significance of community. Is there a psychological need for community? Is there something about a need for community that can't be reduced to other needs, for example, for a gender, racial or sexual-orientation identity? How strong is the need for community against other needs? What kinds of human groupings can satisfy it? In meeting this need, can membership in one community substitute for membership in others? What do people need from communities in order to thrive in them? Do strong diverse communities dampen intergroup biases? Can strong community loyalty mitigate identity tensions within communities? nnnSuch questions, the hope is, will help us develop a more systematic understanding of the challenges and opportunities inherent in diverse human communities.
Same as: CSRE 30N, PSYCH 30N, SOC 179N

EDUC 32. The 5th Element: Hip Hop Knowledge, Pedagogy, and Social Justice. 1-5 Unit.
This course-series brings together leading scholars with critically-acclaimed artists, local teachers, youth, and community organizations to consider the complex relationships between culture, knowledge, pedagogy and social justice. Participants will examine the cultural meaning of knowledge as "the 5th element" of Hip Hop Culture (in addition to MCing, DJing, graffiti, and dance) and how educators and cultural workers have leveraged this knowledge for social justice. Overall, participants will gain a strong theoretical knowledge of culturally relevant and culturally sustaining pedagogies and learn to apply this knowledge by engaging with guest artists, teachers, youth, and community youth arts organizations.
Same as: AFRICAAM 32, AMSTUD 32, CSRE 32A, EDUC 432, TAPS 32

EDUC 97. Science Education through Community Service. 3 Units.
This course is about science teaching and learning in non-classroom settings. You will use the research on teaching and learning to make STEM experiences relevant to more learners, create and facilitate a learner-centered approach to science experiences in an informal setting, and practice being a culturally responsive teacher. In addition, you'll become familiar with current trends in US science education, examine your how stance on teaching and what it takes to be an effective teacher, and consider your own growth as a teacher and as someone who interacts with area youth through community service. You will spend one day a week working with two youth working alongside your peers in an after-school enrichment program for low income youth. This is a Cardinal Course, supported through the Haas Center for Public Service.

EDUC 98. Service Learning Practicum. 1 Unit.
For Alternative Spring Break program leaders. The skills and philosophical framework to develop and lead an ASB experience. May be repeat for credit.

EDUC 100A. EAST House Seminar: Current Issues and Debates in Education. 1 Unit.
EAST is the Education and Society Theme House at Stanford University. In Autumn quarter, faculty and other scholars from around the University present the latest issues, debates, and research in the field of Education. In Winter quarter, the theme is "Ten Careers in Education in Ten Weeks." Each week will feature a speaker, often Stanford alumni, from a different sector in education including school administration, arts education, information technology, special education, international development, student affairs, education consulting, and education policy. In Spring quarter, the seminar is a small group discussion of weekly readings on a focused topic in Education. Contact instructor for details. Notes: The seminar, offered by Zoom, is open to all students at Stanford with first-priority given to undergraduates, including those who are on a "flex term." Graduate students are allowed to enroll on a space-available basis. The seminar is repeatable for credit.

EDUC 100B. EAST House Seminar: Current Issues and Debates in Education. 1 Unit.
EAST is the Education and Society Theme House at Stanford University. In Autumn quarter, faculty and other scholars from around the University present the latest issues, debates, and research in the field of Education. In Winter quarter, the theme is "Ten Careers in Education in Ten Weeks." Each week will feature a speaker, often Stanford alumni, from a different sector in education including school administration, arts education, information technology, special education, international development, student affairs, education consulting, and education policy. In Spring quarter, the seminar is a small group discussion of weekly readings on a focused topic in Education. Contact instructor for details. Notes: The seminar, offered by Zoom, is open to all students at Stanford with first-priority given to undergraduates, including those who are on a "flex term." Graduate students are allowed to enroll on a space-available basis. The seminar is repeatable for credit.

EDUC 100C. EAST House Seminar: Readings on Education and Society. 1 Unit.
Education and Society Theme (EAST) House seminar. In autumn quarter, faculty and other scholars from around the University discuss the latest issues, debates, and research in the field of Education. In winter quarter, the theme is "Ten Careers in Education in Ten Weeks." Each week will feature a speaker from a different sector in education including school administration, arts education, information technology, special education, international development, student affairs, education consulting, and education policy. In the spring, the seminar is a small group discussion of weekly readings on a focused topic in Education. Contact instructor for details. Notes: Attendance at first class required. Seminar meets in the EAST House Dining Hall located at 554 Governor's Ave. The seminar is open to all students at Stanford with first-priority given to pre-assign residents of EAST House followed by other residents of EAST and all other undergraduates. Graduate students are allowed to enroll on a space-available basis. Visitors/auditors are not allowed. The seminar is required for all pre-assigned residents of EAST House and is repeatable for credit.

EDUC 101. Introduction to Teaching and Learning. 4 Units.
This course is designed to help undergraduates explore career interests in education; it is the core course for the Undergraduate Minor in Education, and fulfills requirements for Honors in Education. The course considers the philosophy, history, politics, professional practice and social structures of teaching in the United States. Students will read and discuss teaching theory and research, participate in learning activities and visit school teaching sites, as well as examine and analyze artifacts and models of teaching.

EDUC 102. Examining Social Structures, Power, and Educational Access. 2-4 Units.
Goal is to prepare Education and Youth Development fellows for their work with adolescents in the Haas Center's pre-college summer programs and to define their role in addressing educational inequities in the summer programs and beyond.

EDUC 102I. International Education Policy Workshop. 2-4 Units.
This is a project-based workshop. Practical introduction to issues in educational policy making, education reform, educational planning, implementation of policy interventions, and monitoring and evaluation in developing country contexts. Preference to students enrolled in ICE/IEAPA, but open to other students interested in international development or comparative public policy with instructor's consent. Attendance at first class required for enrollment.
Same as: EDUC 202I

EDUC 103A. Tutoring: Seeing a Child through Literacy. 3-4 Units.
This service-learning course presents the experience of learning to read and write through the eyes of a child. Participants will learn about theories and pedagogical approaches for teaching beginning reading and will engage in tutoring a child in grades K-3 via Zoom. Participants receive tutor training and learn about relevant research including the role of instruction in developing language and literacy, issues of access and equity, and bilingual literacy instruction. Practical topics include lesson planning and new technologies to address challenges of distance learning. Attendance is expected for online tutoring two times per week in addition to the weekly class meeting. The course may be repeated for credit.
Same as: EDUC 203A

EDUC 103B. Race, Ethnicity, and Linguistic Diversity in Classrooms: Sociocultural Theory and Practices. 3-5 Units.
Focus is on classrooms with students from diverse racial, ethnic and linguistic backgrounds. Studies, writing, and media representation of urban and diverse school settings; implications for transforming teaching and learning. Issues related to developing teachers with attitudes, dispositions, and skills necessary to teach diverse students.
Same as: AFRICAAM 106, CSRE 103B, EDUC 337

EDUC 104. Introduction to the Profession of Teaching. 3 Units.
This course explores the profession of teaching through an internship in a local elementary or high school classroom. Students will observe and assist instruction for four hours per week. In class, students will read, discuss, and respond to theory and research related to teaching. The course is open to all undergraduates with an interest in the teaching profession; and it may be especially useful for students who are considering entering the profession of teaching and wish to spend time in a classroom. No prior experience in teaching is required.

EDUC 106. Interactive Media in Education. 3-5 Units.
Workshop.

EDUC 107. Education and Inequality: Big Data for Large-Scale Problems. 3-5 Units.
In this course, students will use data from the Stanford Education Data Archive (SEDA) to study the patterns, causes, consequences, and remedies of educational inequality in the US. SEDA is based on 200 million test score records, administrative data, and census data from every public school, school district, and community in the US. The course will include lectures, discussion, and small group research projects using SEDA and other data.
Same as: EDUC 207, SOC 107E, SOC 205

EDUC 108. The Changing Face of America. 4-5 Units.
This upper-division seminar will explore some of the most significant issues related to educational access and equity facing American society in the 21st century. Designed for students with significant leadership potential who have already studied these topics in lecture format, this seminar will focus on in-depth analysis of the impact of race on educational access and a variety of educational reform initiatives. Please submit a brief statement with "EDUC 108" in the subject line that details your reasons for applying and what leadership skills, experience, and perspectives you would contribute to the course to: Ginny Smith (gsmith@law.stanford.edu) and Wilson Tong (wtong@commonsense.org). The deadline is rolling.
Same as: CSRE 108X, POLISCI 226A

EDUC 109. Educational Issues in Contemporary China. 3-4 Units.
Reforms such as the decentralization of school finance, emergence of private schools, expansion of higher education, and reframing of educational policy to focus on issues of quality. Have these reforms exacerbated educational inequality.
Same as: EDUC 309

EDUC 111. The Young Adult Novel: A Literature For and About Adolescents. 4 Units.
For undergraduates considering teaching or working with adolescents, and for those planning to apply to the coterminal program in the Stanford Teacher Education program (STEP). Students work together to define the genre of young adult novels. What they reveal about adolescence in America. How to read and teach young adult literature.

EDUC 112. Urban Education. 3-5 Units.
(Graduate students register for EDUC 212 or SOC 229X). Combination of social science and historical perspectives trace the major developments, contexts, tensions, challenges, and policy issues of urban education.
Same as: AFRICAAM 112, CSRE 112X, EDUC 212, SOC 129X, SOC 229X

EDUC 113N. Mix | Remix | Mixtape: Writing and Reading DJ Culture. 3 Units.
This course looks at the DJ as a crucial figure, a rhetor even, who influences both US and world culture and examines the DJ's practices as writing practices. From there we ask how other kinds of writing-public, academic, creative-can be informed by DJs and DJ culture. We will study specific practices like scratching, remixing, and the mixtape as well as different approaches and spaces in which DJs have shaped culture, from disco to Hip Hop to world music, from radio DJs to party DJs to beat-juggling and turntablism.

EDUC 114C. America Never was America to me: Race and Equity in US Public Schools. 1 Unit.
This cross-disciplinary course will use the 10-part docu-series "America to Me" to discuss the complexities of race and equity in US schools. The series follows a year in the life of a racially diverse, well-resourced high school outside Chicago, providing an in-depth look at the effects of race, equity, culture and privilege on educational opportunities, and offers insights into the teenage search for personal identity in today's climate. Two of the people featured in the series will be a part of the class, and after screening each episode, a Stanford professor will give a short talk inspired by the content of that episode. The talks will span several disciplines and theoretical perspectives, including Critical Race Theory, History, Psychology, Youth Development, Film Studies, Linguistics, and Teacher Education. Following each talk, students will engage in critical discussion around race and equity in education. Episode 10 will air during Final Exam week, but there will be no final exam.
Same as: AFRICAAM 114C, CSRE 114C, EDUC 314C

EDUC 114N. Growing Up Bilingual. 3 Units.
This course is a Freshman Introductory Seminar that has as its purpose introducing students to the sociolinguistic study of bilingualism by focusing on bilingual communities in this country and on bilingual individuals who use two languages in their everyday lives. Much attention is given to the history, significance, and consequences of language contact in the United States. The course focuses on the experiences of long-term US minority populations as well as that of recent immigrants.
Same as: CHILATST 14N, CSRE 14N

EDUC 115N. How to Learn Mathematics. 3 Units.
What is going on in mathematics education in the United States? Why do so many people hate and fear math? What contributes to the high levels of innumeracy in the general population? Why do girls and women opt out of math when they get a chance? In this seminar we will consider seminal research on math learning in K-12 classrooms, including a focus on equity. We will spend time investigating cases of teaching and learning, through watching videos and visiting schools. This seminar is for those who are interested in education, and who would like to learn about ways to help students (and maybe yourselves?) learn and enjoy mathematics. If you have had bad math experiences and would like to understand them - and put them behind you - this seminar will be particularly good for you. The final project for this class will involve developing a case of one or more math learners, investigating their journeys in the world of math.

EDUC 116. Service Learning as an Approach to Teaching. 3 Units.
History, theory, and practice. Topics include: responsive community partnerships, cultural awareness, the role of reflection, and best practices in service learning.

EDUC 116N. Howard Zinn and the Quest for Historical Truth. 3 Units.
With more than two million copies in print, Howard Zinn's A People's History is a cultural icon. We will use Zinn's book to probe how we determine what was true in the past. A People's History will be our point of departure, but our journey will visit a variety of historical trouble spots: debates about whether the US was founded as a Christian nation, Holocaust denial, and the "Birther" controversy of President Obama.
Same as: HISTORY 116N

EDUC 117. Research and Policy on Postsecondary Access. 3 Units.
The transition from high school to college. K-16 course focusing on high school preparation, college choice, remediation, pathways to college, and first-year adjustment. The role of educational policy in postsecondary access. Service Learning Course (certified by Haas Center).
Same as: EDUC 417

EDUC 117N. The Fourth "R": Religion and American Schools. 4 Units.
In this seminar, we will engage with historical, legal, and sociological texts, in order to trace the complicated relationship between church and state as it has played out in and around questions of education. Deciding what belongs in schools, what does not, whose interests are served in the process, and what the Constitution will allow are just some of the questions that will guide us. Through close readings of text and critical writing, we will develop alternative narratives about church-state issues that can make sense of everything from prayer in schools to civic education. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.
Same as: AMSTUD 117N, RELIGST 13N

EDUC 118S. Designing Your Stanford. 2 Units.
DYS uses a Design Thinking approach to help Freshmen and Sophomores learn practical tools and ideas to make the most of their Stanford experience. Topics include the purpose of college, major selection, educational and vocational wayfinding, and innovating college outcomes, explored through the design thinking process. This seminar class incorporates small group discussion, in-class activities, field exercises, personal reflection, and individual coaching. Expect ideation tools, storytelling practices, prototyping to discover more about yourself and possible paths forward. The course concludes with creation of multiple versions of what college might look like and how to make those ideas reality. All enrolled and waitlisted students should attend class on day 1 for admission. Additional course information at http://www.designingyourstanford.org.
Same as: ME 104S

EDUC 119S. The History of Native Americans of California. 5 Units.
How the federal government placed education at the center of its Indian policy in second half of 19th century, subjecting Native Americans to programs designed to erase native cultures and American Indian responses to those programs. Topics include traditional Indian education, role of religious groups, Meriam Report, Navajo-Hopi Rehabilitation Act, Johnson-O'Malley Act, and public schools.
Same as: EDUC 429S, NATIVEAM 119S

EDUC 120. Sociology of Science. 3-4 Units.
The sociology of science concerns the social structures and practices by which human beings interpret, use and create intellectual innovations. In particular we will explore the claim that scientific facts are socially constructed and ask whether such a characterization has limits. Course readings will concern the formation and decline of various thought communities, intellectual social movements, scientific disciplines, and broader research paradigms. A special focus will be placed on interdisciplinarity as we explore whether the collision of fields can result in new scientific advances. This course is suitable to advanced undergraduates and doctoral students.
Same as: EDUC 320, SOC 330, STS 200Q

EDUC 120C. Education and Society. 4-5 Units.
The effects of schools and schooling on individuals, the stratification system, and society. Education as socializing individuals and as legitimizing social institutions. The social and individual factors affecting the expansion of schooling, individual educational attainment, and the organizational structure of schooling.
Same as: EDUC 220C, SOC 130, SOC 230

EDUC 122Q. Democracy in Crisis: Learning from the Past. 3 Units.
This Sophomore Seminar will focus on U.S. democracy and will use a series of case studies of major events in our national history to explore what happened and why to American democracy at key pressure points. This historical exploration should shed light on how the current challenges facing American democracy might best be handled. (Cardinal Course certified by the Haas Center).
Same as: HISTORY 52Q, POLISCI 20Q

EDUC 123. Community-based Research As Tool for Social Change:Discourses of Equity in Communities & Classrooms. 3-5 Units.
Issues and strategies for studying oral and written discourse as a means for understanding classrooms, students, and teachers, and teaching and learning in educational contexts. The forms and functions of oral and written language in the classroom, emphasizing teacher-student and peer interaction, and student-produced texts. Individual projects utilize discourse analytic techniques.
Same as: AFRICAAM 130, CSRE 130, EDUC 322

EDUC 124. Collaborative Design and Research of Technology-integrated Curriculum. 3-4 Units.
The course introduces participatory design models for the development and research of educational materials through a studio-based, partnership driven, technology-integrated curriculum project. The special topic taken up in 2018 will be concussion education for youth. This is a studio experience working collaboratively with students, parents, and athletic coaches to design, field test, and make recommendations about learning activities and technology use for a complex curriculum that will engage immersive 360 3D technologies and social media. We will partner with TeachAids, an international nonprofit, on the curriculum development. Cardinal Course certified by the Haas Center.

EDUC 125. Exploring the US Public Education System. 3 Units.
This three-unit course is an introduction to understanding the US public education system from classrooms through board rooms. We will use five different perspectives or lenses: 1) politics and policy of compulsory education, 2) educational equity in classrooms and schools, 3) working conditions for school professionals, 4) families and communities¿the public in public education, and 5) school and district leadership. Class members will choose topics from a list of contemporary issues to determine specific course content.

EDUC 126A. Ethics and Leadership in Public Service. 3-4 Units.
This course explores ethical questions that arise in public service work, as well as leadership theory and skills relevant to public service work. Through readings, discussions, in-class activities, assignments, and guest lectures, students will develop a foundation and vision for a future of ethical and effective service leadership. This course serves as a gateway for interested students to participate in the Haas Center's Public Service Leadership Program.
Same as: CSRE 126C, ETHICSOC 79, URBANST 126A

EDUC 126B. Public Service Leadership Program Practicum. 1 Unit.
This course is for students in the Public Service Leadership Program offered through the Haas Center for Public Service. The PSLP Practicum provides an opportunity for PSLP students to reflect on their own leadership experiences and to learn from each other's leadership experiences while continuing to build a community of peer service leaders. The PSLP Practicum will meet every other week throughout the quarter.

EDUC 127. The Wellbeing of Children in Immigrant Families. 2 Units.
This course will examine the many factors that affect the social, educational, and medical wellbeing of children in immigrant families. It will do so through a case study of the immigrant children who currently live in the Buena Vista Mobile Home Park in Palo Alto. The course will approach this issue from a Service-Learning perspective, and will be a collaboration between faculty and students from Stanford and the leaders of the Buena Vista residents association.nnThe course will meet once a week for 90 minutes during the winter quarter. In addition, each student will spend 3-4 hours per week meeting with residents of the Buena Vista Mobile Home Park. To the extent possible, and with parents' knowledge and permission, students will interact with and get to know the children who live in the park, with a focus on children in school grades 6-12.

EDUC 128. Professional and Leadership Development for Frosh. 1-2 Unit.
As frosh often have difficulty finding relevant job/internships at this early stage in their education, this course represents a more thorough and direct approach to professional and leadership development. As a small cohort within Stern Hall, we will begin early discussion of career interests and exploration, develop an understanding of individual leadership styles, and garner professional leadership skill sets relevant to myriad sectors and resources to aid in this process. Final projects will work toward off site visits during spring break to explore these sectors hands-on and discuss content learned in class with key industry leaders.

EDUC 129. Boost Youth College Readiness through Effective Mathematics Tutoring. 2 Units.
Students will participate in one-on-one tutoring in mathematics with an elementary or middle school student who is enrolled in the East Palo Alto Tennis and Tutoring program (EPATT). They will attend class one evening a week, during which they will learn about the teaching of mathematics and effective tutoring strategies. They will also engage in ongoing reflection about the effectiveness of their tutoring and its impact on their tutee's college and career readiness.

EDUC 130. Introduction to Counseling. 3 Units.
The goal of counseling is to help others to create more satisfying lives for themselves. Clients learn to create and capitalize on unexpected events to open up new opportunities. The success of counseling is judged, not by the words and actions of the counselor, but by the progress that the client makes in the real world after counseling itself is ended. Students are encouraged to exert their full efforts within reasonable time limits to improve their competence.

EDUC 131. Raza Youth in Urban Schools: Mis-educating Chicana/o/x and Latina/o/x Communities. 3-5 Units.
This course focuses on the experiences of Chicana/o/x and Latina/o/x youth in U.S. public schools. We will connect historical patterns with contemporary issues in some of this nation¿s largest urban school districts in order to uncover the ways in which urban schools both reflect and reproduce structural inequalities that marginalize Chicana/o/x and Latina/o/x youth. As we consider the origins and persistence of educational inequalities in relation to longstanding forms of violence, domination, and subordination, we will also highlight histories of activism and resistance, including organized struggles for educational justice in Chicana/o/x and Latina/o/x communities. Issues to be addressed include school (de)segregation, standardized testing, educational tracking, unequal opportunities to learn, deficit perspectives, bilingualism and bilingual education, immigration and undocumented students, ethnic studies curricula, and culturally relevant/responsive/sustaining approaches to pedagogy. This course will invite students to visit and observe in urban school settings, interview key stakeholders (students, parents, teachers, and/or policy makers), and reflect on their own K-12 schooling experiences in relation to course themes.
Same as: CHILATST 131

EDUC 132. Music Education: Then, Now, and Then Again. 3 Units.
Explores the presence and impact of music across a variety of educational settings, with a focus on the historical function of music education, the current role of music education, and potential future models of music education.
Same as: MUSIC 132

EDUC 133N. The Role of Language in Education and Society. 3 Units.
The goal of this course is to explore the various issues affecting educational policy and classroom practice in multilingual, multicultural settings. In this class we will examine US and international cases to illustrate more general concerns relating to learners' bilingual/multilingual development in formal educational settings. We begin at the macro level, looking at policy contexts and program structures, and move to the micro level to consider teaching and learning in the multilingual classroom. Throughout, we consider how discourses and identities are interwoven in multilingual education policy and practice. We will also consider the role of communities in implementing change in schools.

EDUC 135. Designing Research-Based Interventions to Solve Global Health Problems. 3-4 Units.
The excitement around social innovation and entrepreneurship has spawned numerous startups focused on tackling world problems, particularly in the fields of education and health. The best social ventures are launched with careful consideration paid to research, design, and efficacy. This course offers students insights into understanding how to effectively develop, evaluate, and scale social ventures. Using TeachAids (an award-winning nonprofit educational technology social venture used in 82 countries) as a primary case study, students will be given an in-depth look into how the entity was founded and scaled globally. Guest speakers will include world-class experts and entrepreneurs in Philanthropy, Medicine, Communications, Education, and Technology. Open to both undergraduate and graduate students.
Same as: AFRICAST 135, AFRICAST 235, EDUC 335, EPI 235, HUMBIO 26, MED 235

EDUC 136. World, Societal, and Educational Change: Comparative Perspectives. 4-5 Units.
Theoretical perspectives and empirical studies on the structural and cultural sources of educational expansion and differentiation, and on the cultural and structural consequences of educational institutionalization. Research topics: education and nation building; education, mobility, and equality; education, international organizations, and world culture.
Same as: EDUC 306D, SOC 231

EDUC 137. The Role of Policy in Shaping U.S. Education: Early Childhood through High School. 3-5 Units.
We will explore current issues in preK-12 education policy including the expansion of early childhood programs, the effectiveness of accountability, the challenges facing teacher labor markets, and the financing of education. We discuss the role government and non-government agencies have (or should have) in making and evaluating education policies. In all discussions, we will call attention to the vast inequities that exist in our current education system. In this course, you will learn how to analyze and critique education policies.

EDUC 138. How College Works: An Introduction to the Sociology of Higher Education. 3-5 Units.
This course is designed for students who want to better understand the elite 4-year college system and how inequalities are both perpetuated and ameliorated by its structure and practices (focusing on gender, race, and first generation college students). This course will prepare students for their own undergraduate study at Stanford, using research and reflection. Focusing on the sociology of higher education, the course draws from research in education, sociology and gender studies. This course is designed for undergraduates, with a notable utility for first-year students, but anyone is welcome!.
Same as: FEMGEN 138A

EDUC 140. Honors Research. 1-5 Unit.
Provides opportunity for research in pursuit of senior honors theses.

EDUC 141. Counterstory in Literature and Education. 3 Units.
Counterstory is a method developed in critical legal studies that emerges out of the broad "narrative turn" in the humanities and social science. This course explores the value of this turn, especially for marginalized communities, and the use of counterstory as analysis, critique, and self-expression. Using an interdisciplinary approach, we examine counterstory as it has developed in critical theory, critical pedagogy, and critical race theory literatures, and explore it as a framework for liberation, cultural work, and spiritual exploration.
Same as: CSRE 141E, EDUC 341, LIFE 124

EDUC 141A. Counterstory Practice in Contemporary Literature and Media. 4 Units.
This seminar explores Counterstory, a methodology for exposing and challenging dominant cultural narratives about identities, events, and power. We examine counterstories in contemporary literature and media, examine the theory and craft behind them, and create original counterstories. You¿ll learn the method of counterstory not only to create your own, but also to share it with others in educational and other settings where stories are critical to social change-from journalism and documentary film to health, social justice, and community organizations. Note: this is a companion class to EDUC 141, sharing a number of lectures and activities, but designed for students interested in fulfilling the Writing & Rhetoric 2 requirement. Prerequisite: PWR 1.

EDUC 142. Foundational Course in Testing. 2-3 Units.
Examines basic ideas in standardized testing and the implications and consequences of testing (e.g., fairness, accountability, and the testing of diverse populations) from a social, critical perspective.

EDUC 143. Introduction to Data Science. 3-5 Units.
Social scientists can benefit greatly from utilizing new data sources like electronic administration records or digital communications, but they require tools and techniques to make sense of their scope and complexity. This course offers the opportunity to understand and apply popular data science techniques regarding data visualization, data reduction and data analysis.
Same as: EDUC 423, SOC 302

EDUC 145. Writing Across Languages and Cultures: Research in Writing and Writing Instruction. 3-5 Units.
Theoretical perspectives that have dominated the literature on writing research. Reports, articles, and chapters on writing research, theory, and instruction; current and historical perspectives in writing research and research findings relating to teaching and learning in this area.
Same as: CSRE 243, EDUC 243

EDUC 146. Perspectives on the Education of Linguistic Minorities. 3-4 Units.
Social, political, linguistic, and pedagogical issues associated with educating students who do not speak the language or language variety of the majority society. Focus is on the U.S.; attention to minorities elsewhere. American attitudes toward linguistic and racial minorities. Educational problems of linguistically different children and non-English- or limited-English-speaking children. Approaches to solving problems.

EDUC 148. Inglés Personal: Coaching Everyday Community English. 1-5 Unit.
This course is a 1 to 5 unit service learning course that prepares students to provide direct one-on-one service to adult English language learners in East Palo Alto and other surrounding communities. Students meet with and "coach" an adult learner on a weekly basis. Can be repeated for credit.
Same as: CHILATST 148, CSRE 148D

EDUC 149. Theory and Issues in the Study of Bilingualism. 3-5 Units.
Sociolinguistic perspective. Emphasis is on typologies of bilingualism, the acquisition of bilingual ability, description and measurement, and the nature of societal bilingualism. Prepares students to work with bilingual students and their families and to carry out research in bilingual settings.
Same as: EDUC 249

EDUC 151. The Future of Information. 4 Units.
As information has a fascinating history (see HISTORY 5A), so it possesses a promising if concerning future. Through lecture, demonstration, online modules, and in-class web-work, this course will provide students with advanced strategies in (a) identifying sources and tools for advancing the quest for information; (b) assessing elements of trust, authority, and chicanery in the provision of information; (c) recognizing the economic and legal structures shaping information sources, services, and rights; and (d) discovering who is behind what information. With a focus on the info-worlds of journalism, learning, governance, students will acquire and practice the forensic skills and web savvy of fact-checkers and investigative reporters, activists and scholars. Here's a class set to determine the future course of information. The class will be a hybrid course, combining in-class delivery of materials, with a number of classes involving students taking online modules (at their convenience) that are designed to teach information literacy skills.
Same as: STS 151

EDUC 155. First Year Reflections Seminar. 1 Unit.
Restricted to first-year undergraduates; limited enrollment. There are two options for how to participate. You can either enroll in three class weekday sessions weeks 4, 5 & 6 or one weekend section. These times provide a structured time for students to explore their identities, values, and the kind of lives they want to lead. Exercises and discussions led by faculty, staff, and upper-class student co-facilitators. Tuesday sessions will occur on 1/30, 2/6 & 2/13; Wednesday sessions will occur on 1/31, 2/7 & 2/14; Thursday sessions will occur on 2/1, 2/8 & 2/15. Weekend sections are on Saturday, 2/3 OR Sunday, 2/11 (Weekend sessions are longer and students only participate in one).

EDUC 157. Election 2020. 1 Unit.
(Also LAW 7101). We are living in extraordinary times. The historic convergence of social, economic, and public health challenges has profoundly impacted the lives of millions of Americans. In the midst of great uncertainty, the 2020 US presidential election will be perhaps the most important in our lifetimes. Will Donald J. Trump win reelection amid high unemployment, deep political polarization, and the COVID-19 pandemic that has upended life as we know it? Or will Joe Biden and a team of Democrats prevail? We will assemble a wide range of expert speakers-including preeminent political, business, foreign policy, and academic leaders-to explore these questions (and more) as we seek to cultivate a broad and informed view of this pivotal election.
Same as: CSRE 157B

EDUC 165. History of Higher Education in the U.S.. 3-5 Units.
Major periods of evolution, particularly since the mid-19th century. Premise: insights into contemporary higher education can be obtained through its antecedents, particularly regarding issues of governance, mission, access, curriculum, and the changing organization of colleges and universities.
Same as: AMSTUD 165, EDUC 265, HISTORY 158C

EDUC 170. Preparation for Independent Public Service Projects. 1 Unit.
Open only to recipients of the Haas Summer Fellowship, which offers students the opportunity to initiate and carry out an innovative service project in collaboration with a community partner. Goal is to expand upon the work fellows did during the application process with respect to the feasibility and sustainability of their field projects.

EDUC 171. Preschool Counts: Engaging Young Children in Math. 1-3 Unit.
This course is focused on concepts and theories of mathematics teaching and learning in Early Childhood Education and includes practical experience teaching aged 4-5 years using online methods. The recent distance learning context has led to new ways of interacting with children that will be explored in the course. Course participants will also investigate early math apps and current teaching technologies, as well as discuss examples of online teaching and learning in preschool and kindergarten contexts. Attendance is expected for online tutoring two times per week in addition to the weekly class meeting. The course may be repeated for credit.

EDUC 173. Gender and Higher Education: National and International Perspectives. 3-4 Units.
This course examines the ways in which higher education structures and policies interact with gender, gender identity, and other characteristics in the United States, around the world, and over time. Attention is paid to how changes in those structures and policies relate to access to, experiences in, and outcomes of higher education by gender. Students can expect to gain an understanding of theories and perspectives from the social sciences relevant to an understanding of the role of higher education in relation to structures of gender differentiation and hierarchy. Topics include undergraduate and graduate education; identity and sexuality; gender and science; gender and faculty; and feminist scholarship and pedagogy.
Same as: EDUC 273, FEMGEN 173, SOC 173, SOC 273

EDUC 176. The Design of Technologies for Casual Learning - Lab. 1 Unit.
Lab. Studio-based, participatory, and user-centered development of casual learning technologies is explored, using the Apple iPhone as a prototype platform. The term "casual" is borrowed from casual gaming to denote that the learning technologies are meant for learners to use in "extreme informal" learning circumstances (while "on the go", "any time and any place"). The class builds on learning about and synthesizing knowledge, theory and development activity in four areas including learning theories, mobile technologies, games and participatory design processes.

EDUC 177A. Well-Being in Immigrant Children & Youth: A Service Learning Course. 4 Units.
This is an interdisciplinary course that will examine the dramatic demographic changes in American society that are challenging the institutions of our country, from health care and education to business and politics. This demographic transformation is occurring first in children and youth, and understanding how social institutions are responding to the needs of immigrant children and youth to support their well-being is the goal of this course.
Same as: CHILATST 177A, CSRE 177E, HUMBIO 29A

EDUC 177B. Well-Being in Immigrant Children & Youth: A Service Learning Course. 4 Units.
This is an interdisciplinary course that will examine the dramatic demographic changes in American society that are challenging the institutions of our country, from health care and education to business and politics. This demographic transformation is occurring first in children and youth, and understanding how social institutions are responding to the needs of immigrant children and youth to support their well-being is the goal of this course.
Same as: CHILATST 177B, CSRE 177F

EDUC 177C. Well-Being in Immigrant Children & Youth: A Service Learning Course. 1-3 Unit.
This is an interdisciplinary course that will examine the dramatic demographic changes in American society that are challenging the institutions of our country, from health care and education to business and politics. This demographic transformation is occurring first in children and youth, and understanding how social institutions are responding to the needs of immigrant children and youth to support their well-being is the goal of this course.
Same as: CHILATST 177C, CSRE 177G

EDUC 178. Latino Families, Languages, and Schools. 3-5 Units.
The challenges facing schools to establish school-family partnerships with newly arrived Latino immigrant parents. How language acts as a barrier to home-school communication and parent participation. Current models of parent-school collaboration and the ideology of parental involvement in schooling.
Same as: EDUC 270

EDUC 179E. Introduction to Chicanx/Latinx Studies. 5 Units.
This course draws on intersectional and interdisciplinary approaches to introduce students to the range of issues, experiences, and methodologies that form the foundation of Latina/o/x studies. By considering the relationship between the creation of "Latinx" and "American" identities, students will critically reconsider the borders that constitute the U.S. as a political and cultural formation. The course balances depth and breadth in its study of the variety of perspectives and experiences that come to be associated with U.S. Latinxs. Thus, we will analyze the histories of predominant U.S. Latinx sub-groups, such as Mexicans/Chicanxs and Puerto Ricans, while also incorporating considerations of the ways in which broader populations with ties to Central America, South America, and the Caribbean play crucial roles in constituting U.S. Latinx identities. Topics include the U.S./Mexico border and the borderlands; (im)migration and diaspora; literary and cultural traditions; music and expressive practices; labor and structural inequality; social movements; Latinx urbanism; gender and sexuality; political and economic shifts; and inter- and intra-group relations. Sources include a range of social science and humanities scholarship. This course will meet at Sequoia High School. Transportation will be provided.
Same as: CHILATST 180E, CSRE 180E

EDUC 180. Directed Reading in Education. 1-15 Unit.
For undergraduates and master's degree students. (All Areas).

EDUC 180P. Study Trip Course. 1 Unit.
Limited to students in the POLS MA Program.

EDUC 180S. Pre-field Course for Alternative Spring Break. 1 Unit.
Limited to students participating in the Alternative Spring Break program. See http://asb.stanford.edu for more inform.

EDUC 181. Multicultural Issues in Higher Education. 4 Units.
The primary social, educational, and political issues that have surfaced in American higher education due to the rapid demographic changes occurring since the early 80s. Research efforts and the policy debates include multicultural communities, the campus racial climate, and student development; affirmative action in college admissions; multiculturalism and the curriculum; and multiculturalism and scholarship.
Same as: CSRE 181, EDUC 381

EDUC 182. Student Development and the Study of College Impact. 4 Units.
The philosophies, theories, and methods that undergird most research in higher education. How college affects students. Student development theories, models of college impact, and issues surrounding data collection, national databases, and secondary data analysis.
Same as: EDUC 382

EDUC 183. Practicum in English-Spanish School & Community Interpreting. 3-4 Units.
This practicum will assist students in developing a set of skills in English-Spanish interpreting that will prepare them to provide interpretation services in school and community settings. The course will build students' abilities to transfer intended meanings between two or more monolingual individuals of who are physically present in a school or community setting and who must communicate with each other for professional (and personal) purposes.
Same as: CHILATST 183X, EDUC 257

EDUC 185. Master's Thesis. 1-15 Unit.
(all areas).

EDUC 186. Decolonizing the Indigenous Classroom. 3-5 Units.
Using Indigenous and decolonizing perspectives on education, this interdisciplinary course will examine interaction and language in cross-cultural educational situations, including language, literacy and interethnic communication as they relate to Indigenous American classrooms. Special attention will be paid to implications of social, cultural and linguistic diversity for educational practice, along with various strategies for bridging intercultural differences between schools and Native communities.
Same as: CSRE 116, CSRE 302, EDUC 286, NATIVEAM 116

EDUC 190. Directed Research in Education. 1-15 Unit.
For undergraduates and master's students. May be repeated for credit. (all areas).

EDUC 191. Introduction to Survey Research. 3-4 Units.
Planning tasks, including problem formulation, study design, questionnaire and interview design, pretesting, sampling, interviewer training, and field management. Epistemological and ethical perspectives. Issues of design, refinement, and ethics in research that crosses boundaries of nationality, class, gender, language, and ethnicity.
Same as: EDUC 296

EDUC 192A. Interpersonal Learning & Leadership: An Introduction to the RA Role. 2 Units.
Preparing students for roles as Resident and Community Assistants, "Intelligent Leadership" explores research on college student development, leadership and the complex dynamics of our changing society both within and outside the college environment. Participants will engage in course work that builds skills relevant to their positions and allow students to implement these skills in a real world environment. Through reflection, self-examination and engagement in interpersonal dynamics and analysis, students will examine how their peer group develops while at the university.

EDUC 192B. Interpersonal Learning & Leadership - Row Staff Class. 2 Units.
"Interpersonal Learning & Leadership - Row Staff Class" explores research on leadership and the complex dynamics of our changing society. Participants will engage in course work intended to build skills relevant to being on a Row Staff team. Students will practice self reflection, risk taking, facilitating, decision-making and group leadership. Students will develop strategies to build community and facilitate challenging conversations while creating a safe environment for their peers to do the same.

EDUC 192C. Interpersonal Learning and Leadership: An introduction to the RA role while away from campus. 2 Units.
"Interpersonal Learning & Leadership" explores research on leadership and the complex dynamics of our changing society. Participants will engage in course work intended to build skills relevant to the Resident Assistant/College Assistant position. Students will practice listening, question asking, self-reflection, risk taking, facilitating, conflict mediating and decision-making. They will explore how groups of people can come together for intellectual and interpersonal learning and growth within a complex society. Students will develop strategies to build community and facilitate challenging conversations while creating a safe environment for their peers to do the same.

EDUC 192D. Interpersonal Learning and Leadership: Working with Ethnically Diverse Communities. 2 Units.
"Interpersonal Learning & Leadership" explores research on leadership and the complex dynamics of our changing society. Participants will engage in course work intended to build skills relevant to the Ethnic Theme Associate position. Students will practice listening, question asking, self reflection, risk taking, facilitating, conflict mediating, decision-making and group leadership. They will explore how groups of people can come together for intellectual and interpersonal learning and growth within a complex society. Students will develop strategies to build community and facilitate challenging conversations while creating a safe environment for their peers to do the same.

EDUC 192E. Interpersonal Learning and Leadership: An Intro to the RA Role: Summer Session Staff Only. 2 Units.
Preparing students for roles as Resident and Community Assistants, "Intelligent Leadership" explores research on college student development, leadership and the complex dynamics of our changing society both within and outside the college environment. Participants will engage in course work that builds skills relevant to their positions and allow students to implement these skills in a real world environment. Through reflection, self-examination and engagement in interpersonal dynamics and analysis, students will examine how their peer group develops while at the university.

EDUC 193A. Listen Up! Core Peer Counseling Skills. 2 Units.
Listen Up! Introduces several skills intended to promote the development of active listening skills central to connecting and engaging with others more intentionally. The first four weeks of the course walk through a general framework for offering support in a peer helping role while also introducing a wide range of skills and techniques designed to assist with gathering information, identifying and processing emotional experiences, and facilitating problem solving. In addition to these skills being central to the Bridge counsel and assisting people in distress, they are easily applied to interactions of all varieties. We encourage anyone who aspires to be more effective and intentional communicating with others to take this course. The second half of the course shifts to offering additional information and skills relevant to peer counseling and other helping roles, both personal and professional. Students will be QPR-certified, learn about interpersonal conflict, and begin to consider self-care as a helper. At the end of this course we hope you are equip with skills to approach your personal and professional relationships with more awareness, intention, and empathy.

EDUC 193B. Peer Counseling in the Chicano/Latino Community. 1 Unit.
Topics: verbal and non-verbal attending and communication skills, open and closed questions, working with feelings, summarization, and integration. Salient counseling issues including Spanish-English code switching in communication, the role of ethnic identity in self-understanding, the relationship of culture to personal development, and Chicana/o student experience in University settings. Individual training, group exercises, role play, and videotape practice.
Same as: CHILATST 193B

EDUC 193C. Psychological Well-Being On Campus: Perspectives Of The Black Diaspora. 1 Unit.
Topics: the concept of culture, Black cultural attributes and their effect on reactions to counseling, verbal and non-verbal attending, open and closed questions, working with feelings, summarization, and integration. Reading assignments, guest speakers, role play, and videotaped practice. Students develop and apply skills in the Black community on campus or in other settings that the student chooses.

EDUC 193F. Psychological Well-Being on Campus: Asian American Perspectives. 1 Unit.
Topics: the Asian family structure, and concepts of identity, ethnicity, culture, and racism in terms of their impact on individual development and the counseling process. Emphasis is on empathic understanding of Asians in America. Group exercises.
Same as: ASNAMST 193F

EDUC 193G. Psychological Well-Being on Campus: A Focus on Gender and Sexual Identities. 1 Unit.
This course examines mental health and psychological well-being across the spectrum of gender and sexual identities. It addresses the unique challenges that face LGBTQ-identified students, and provides tools for supporting peers as they navigate these challenges. Discussion topics include current conceptualizations of gender identity and sexual orientation, including sexual and gender fluidity; the intersection of queer identities with multiple identities such as ethnic/racial identify and faith/spirituality; unpacking stereotypes; queer relationships and sexuality, coming out and disclosure, and mental health issues.
Same as: FEMGEN 193G

EDUC 193N. Peer Counseling in the Native American Community. 1 Unit.
Verbal and non-verbal communication, strategic use of questions, methods of dealing with strong feelings, and conflict resolution. How elements of counseling apply to Native Americans including client, counselor, and situational variables in counseling, non-verbal communication, the role of ethnic identity in self-understanding, the relationship of culture to personal development, the impact of family on personal development, gender roles, and the experience of Native American students in university settings. Individual skill development, group exercises, and role practice.

EDUC 193P. Peer Counseling at the Bridge. 1 Unit.
Peer Counseling at the Bridge serves as the second part of the required training to staff at the Bridge. Guest speakers present on mental health themes salient to working as a peer counselor at the Bridge. Topics covered include relationships, sexual assault, depression, eating disorders, gender & sexuality, diversity, anxiety, & grief. Although this course is designed for Bridge counselors, anyone interested in an overview of themes and topics related college student mental health would benefit from the information provided in this course.

EDUC 193S. Peer Counseling on Comprehensive Sexual Health. 1 Unit.
Information on sexually transmitted infections and diseases, and birth control methods. Topics related to sexual health such as communication, societal attitudes and pressures, pregnancy, abortion, and the range of sexual expression. Role-play and peer-education outreach projects. Required for those wishing to counsel at the Sexual Health Peer Resource Center (SHPRC).

EDUC 194A. Frosh 101: Leader Training. 2 Units.
This course will prepare students to lead Frosh 101, a discussion style course designed to help first-year students with their transition to Stanford's dynamic campus. This course will expose students to inclusive teaching practices and research on the impact mental health, diversity and inclusion and sense of belonging have on the experiences of undergraduates. This course is the first of two courses that Frosh 101 leaders will take. Prerequisite: only students who have applied to be Frosh 101 section leaders can enroll.

EDUC 194B. Frosh 101: Curriculum Leader Training. 2 Units.
This course will provide Frosh 101 leaders with the content and facilitator training needed to lead a discussion style course designed to support first-year students in their transition to Stanford's dynamic campus. Prerequisite: EDUC 194A.

EDUC 195A. Origins and Legacies of Educational Progressivism: A Community Engaged Learning Course. 3-5 Units.
This course is about educational progressivism: its origins and competing factions, and the ways it continues to shape schooling today. This is a Cardinal Course, or community engaged learning course. Students will spend time each week in a local school in order to better understand how progressivism continues to influence the structure and practice of schooling, as well as the capacity of teachers and administrators to adopt, ignore, or repurpose progressive ideas to suit their needs.

EDUC 196. Senior Research in Public Service. 1-2 Unit.
Limited to seniors approved by their departments for honors thesis and admitted to the year-round Public Service Scholars Program sponsored by the Haas Center for Public Service. What standards in addition to those expected by the academy apply to research conducted as a form of public service? How can communities benefit from research? Theory and practice of research as a form of public service readings, thesis workshops, and public presentation of completed research. May be repeated for credit. Corequisite: 199.
Same as: URBANST 196

EDUC 197. Gender and Education in Global and Comparative Perspectives. 3-4 Units.
This course introduces students to theories and perspectives from the social sciences relevant to an understanding of the role of education in relation to structures of gender differentiation, hierarchy, and power. It familiarizes students with and enables them to critically evaluate research on the status of children, adolescents, and young adults around the world and their participation patterns in various sectors of society, particularly in education. Students have the opportunity to gain research skills by designing research proposals or to develop action plans on topics of their choosing related to gender and education from global and/or comparative perspectives.
Same as: FEMGEN 297, SOC 134

EDUC 198. Early Education Policy and Practice: A Global Perspective. 4 Units.
This course addresses social and educational policies affecting young children, focusing on France in comparison to the U.S. Values and beliefs about the role of the state versus parents will be considered in discussions related to federal and state/province policies, as well as other political, economic, and ideological factors that affect policies. We then consider what is known about children¿s social, emotional and cognitive development and the implications for early childhood policies and practices on children¿s development.

EDUC 199A. Undergraduate Honors Seminar. 3 Units.
Required of juniors and seniors in the honors program in the School of Education. Student involvement and apprenticeships in educational research. Participants share ongoing work on their honors thesis. Prerequisite: consent of instructor. May be repeated for credit once.

EDUC 199B. Undergraduate Honors Seminar. 1 Unit.
Required of juniors and seniors in the honors program in the School of Education. Student involvement and apprenticeships in educational research. Participants share ongoing work on their honors thesis. Prerequisite: consent of instructor. May be repeated for credit once.

EDUC 199C. Undergraduate Honors Seminar. 1 Unit.
Required of juniors and seniors in the honors program in the School of Education. Student involvement and apprenticeships in educational research. Participants share ongoing work on their honors thesis. Prerequisite: consent of instructor. May be repeated for credit once.

EDUC 200A. Introduction to Data Analysis and Interpretation. 4 Units.
Primarily for master's students in the School of Education. Focus is on reading literature and interpreting descriptive and inferential statistics, especially those commonly found in education. Topics: basic research design, instrument reliability and validity, descriptive statistics, correlation, t-tests, one-way analysis of variance, and simple and multiple regression. All offerings of this course (whether meeting on Mon & Weds or Tues & Thurs) will be taught identically.

EDUC 200B. Introduction to Qualitative Research Methods. 4 Units.
(Formerly EDUC 151.) Primarily for master's students: An introduction to the core concepts and methods of qualitative research. Through a variety of hands-on learning activities, readings, field experiences, class lectures, and discussions, students will explore the processes and products of qualitative inquiry.nnThis is a graduate level course. No undergraduates may enroll. Priority will be given to GSE students, and final enrollment depends on instructor approval after the first day of class.

EDUC 201. History of Education in the United States. 3-5 Units.
How education came to its current forms and functions, from the colonial experience to the present. Focus is on the 19th-century invention of the common school system, 20th-century emergence of progressive education reform, and the developments since WW II. The role of gender and race, the development of the high school and university, and school organization, curriculum, and teaching. Class meetings will typically end around 1:50pm.
Same as: AMSTUD 201, HISTORY 258B

EDUC 202. Introduction to International and Comparative Education. 3 Units.
Contemporary theoretical debates about educational change and development, and the international dimension of issues in education. Emphasis is on the development of students' abilities to make cross-national and historical comparisons of educational phenomena. Enrollment in EDUC 202L is required to enroll in EDUC 202.

EDUC 202I. International Education Policy Workshop. 2-4 Units.
This is a project-based workshop. Practical introduction to issues in educational policy making, education reform, educational planning, implementation of policy interventions, and monitoring and evaluation in developing country contexts. Preference to students enrolled in ICE/IEAPA, but open to other students interested in international development or comparative public policy with instructor's consent. Attendance at first class required for enrollment.
Same as: EDUC 102I

EDUC 202L. Introduction to International and Comparative Education Project Component. 1 Unit.
This course is a required project-based learning component intended only for students concurrently enrolled in EDUC 202 "Introduction to International and Comparative Education." Registration in EDUC 202 is required in order to enroll in EDUC 202L.

EDUC 203. Using International Test Results in Educational Research. 4 Units.
The course will analyze the origin and rationales given for various international tests, including FIMS, SIMS, TIMSS, PISA, the UNESO tests in Latin America and Africa, and how they have been used in research and educational policy. The readings will cover the critiques leveled at such tests, the pros and cons about each type of test, the advantages and limitations of using international test data for policy research. The class will probably also do group projects utilizing data from the tests so students can familiarize themselves directly with the data.

EDUC 203A. Tutoring: Seeing a Child through Literacy. 3-4 Units.
This service-learning course presents the experience of learning to read and write through the eyes of a child. Participants will learn about theories and pedagogical approaches for teaching beginning reading and will engage in tutoring a child in grades K-3 via Zoom. Participants receive tutor training and learn about relevant research including the role of instruction in developing language and literacy, issues of access and equity, and bilingual literacy instruction. Practical topics include lesson planning and new technologies to address challenges of distance learning. Attendance is expected for online tutoring two times per week in addition to the weekly class meeting. The course may be repeated for credit.
Same as: EDUC 103A

EDUC 204. Introduction to Philosophy of Education. 3 Units.
How to think philosophically about educational problems. Recent influential scholarship in philosophy of education. No previous study in philosophy required.
Same as: ETHICSOC 204

EDUC 205. Biosocial Medicine: The Social, Psychological, and Biological Determinants of Behavior and Wellbeing. 3 Units.
Explores how social forces, psychological influences, and biological systems combine to affect human behavior in early childhood, in the educational experience, and throughout the life course. Examines how behaviors are linked to well-being. Uses a flipped classroom model, in which a series of lectures are available for students to view on-line before class. In-class time then focuses on case studies from published research. Students must enroll in HUMBIO 65 for a letter grade to be eligible for Ways credit.
Same as: HUMBIO 65, SOMGEN 215

EDUC 206A. Applied Research Methods in International and Comparative Education I: Introduction. 1-3 Unit.
Required for M.A. students in ICE and IEPA. Orientation to the M.A. program and research project; exploration of resources for study and research.

EDUC 206B. Applied Research Methods in International and Comparative Education II: Master's Paper Proposal. 1-3 Unit.
Required for master's students in International Comparative Education (ICE) and International Education Policy Analysis (IEPA). Development of research skills through theoretical and methodological issues in comparative and international education. Completion of a pilot study and preparation of a research proposal for the master's paper.

EDUC 206C. Applied Research Methods in ICE III: Data Collection and Analysis. 1-3 Unit.
Required for master's students in International Comparative Education (ICE) and International Education Policy Analysis (IEPA). Practice in data collection, analysis, and interpretation. Preparation of the first draft of the master's paper.

EDUC 206D. Applied Research Methods in International and Comparative Education IV: Master's Paper Workshop. 3 Units.
Required for master's students in International Comparative Education (ICE) and International Education Policy Analysis (IEPA). Reviews of students' research as they finalize the master's paper.

EDUC 207. Education and Inequality: Big Data for Large-Scale Problems. 3-5 Units.
In this course, students will use data from the Stanford Education Data Archive (SEDA) to study the patterns, causes, consequences, and remedies of educational inequality in the US. SEDA is based on 200 million test score records, administrative data, and census data from every public school, school district, and community in the US. The course will include lectures, discussion, and small group research projects using SEDA and other data.
Same as: EDUC 107, SOC 107E, SOC 205

EDUC 208B. Curriculum Construction. 3-4 Units.
The theories and methods of curriculum development and improvement. Topics: curriculum ideologies, perspectives on design, strategies for diverse learners, and the politics of curriculum construction and implementation. Students develop curriculum plans for use in real settings. Service Learning Course (certified by Haas Center).

EDUC 209A. Policy, Organization, and Leadership Studies Seminar. 1-3 Unit.
This is a required course for all POLS students. The goals of the POLS Seminar (EDUC 209ABC) are to assist students in making the most of their Stanford graduate experience across several dimensions (academic, professional, and social). EDUC 209A is focused on orienting students to the academic and extra-curricular aspects of the experience as quickly as possible, while helping them coalesce as a group and learn how to leverage each other's professional knowledge. Another goals is to help student define their graduate degree goals, so they can plan their year in a very intentional manner that will result in a project or experiences they can highlight during the required Spring quarter POLS Project Forum.

EDUC 209B. Policy, Organization, and Leadership Studies Seminar. 1-3 Unit.
This is a required course for all POLS students. The goals of the POLS Seminar (EDUC 209ABC) are to assist students in making the most of their Stanford graduate experience across several dimensions (academic, professional, and social). EDUC 209B focuses on building career skills and exposing students to a range of education research, policy, and practice and begins helping students conceptualize and frame their Spring POLS Project.

EDUC 209C. Policy, Organization, and Leadership Studies Seminar. 1-3 Unit.
This is a required course for POLS students. The goals of the POLS Seminar (EDUC 209ABC) are to assist students in making the most of their Stanford graduate experience across several dimensions (academic, professional, and social). EDUC 209C focuses on developing the POLS Project for the Spring Forum while continuing to develop career skills and expose students to a range of education research, policy, and practice.

EDUC 210. Policy, Organization, and Leadership Studies Workshop. 1-5 Unit.
Required for POLS students. Scaffolds applied research for POLS field projects. Students may enroll for a total of up to eight (8) units across Winter and Spring quarters. Cardinal Course certified by the Haas Center.

EDUC 211. Beyond Bits and Atoms - Lab. 1-3 Unit.
This lab course is a hands-on introduction to the prototyping and fabrication of tangible, interactive technologies, with a special focus on learning and education. (No prior prototyping experience required.) It focuses on the design and prototyping of low-cost technologies that support learning in all contexts for a variety of diverse learners. You will be introduced to, and learn how to use state-of-the-art fabrication machines (3D printers, laser cutters, Go Go Boards, Sensors, etc.) to design educational toolkits, educational toys, science kits, and tangible user interfaces. The lab builds on the the theoretical and evidence-based foundations explored in the EDUC 236 / CS 402 Practicum. Interested students must also register for either EDUC 236 or CS 402, complete the application at bit.ly/BBA-Winter2020 by January 4 at 5 p.m., and come to the first class at 8:30 a.m. in CERAS 108.
Same as: CS 402L

EDUC 212. Urban Education. 3-5 Units.
(Graduate students register for EDUC 212 or SOC 229X). Combination of social science and historical perspectives trace the major developments, contexts, tensions, challenges, and policy issues of urban education.
Same as: AFRICAAM 112, CSRE 112X, EDUC 112, SOC 129X, SOC 229X

EDUC 213. Introduction to Teaching. 3-4 Units.
Key concepts in teaching and learning; teacher content knowledge and pedagogical content knowledge; student prior knowledge and preconceptions; cognition and metacognition; classroom culture, motivation, and management; teaching diverse populations; comparison of teaching models; analysis of teaching; standards, accountability, and assessment of learning; assessing teaching quality; online learning and teaching.

EDUC 215. LDT Internship Workshop. 1-3 Unit.
The required internship is a cornerstone of the LDT program. This course will provide students an opportunity to link their academic learning to real world experience through reflective activities and conversations. An internship agreement will be required at the beginning of the course. Students will take the course for 1 unit, unless they request additional units for unpaid internship hours.

EDUC 216. Education, Race, and Inequality in African American History, 1880-1990. 3-5 Units.
Seminar. The relationship among race, power, inequality, and education from the 1880s to the 1990s. How schools have constructed race, the politics of school desegregation, and ties between education and the late 20th-century urban crisis.
Same as: AFRICAAM 116, AMSTUD 216, CSRE 216X, HISTORY 255E

EDUC 217. Free Speech, Academic Freedom, and Democracy. 3 Units.
The course examines connected ideas of free speech, academic freedom, and democratic legitimacy that are still widely shared by many of us but have been subject to skeptical pressures both outside and inside the academy in recent years. The course explores the principled basis of these ideas, how well they might (or might not) be defended against skeptical challenge, and how they might be applied in particular controversies about the rights of students, instructors, and researchers.
Same as: ETHICSOC 217X, PHIL 278C

EDUC 218. Topics in Cognition and Learning: Technology and Multitasking. 3 Units.
In our new media ecology, has affinity for social media and multitasking become addictive? Detrimental to learning and well-being? What can we learn from studies in the developmental cognitive sciences and cognitive neurosciences of reward, attention, memory & learning, motivation, stress, and self-regulation for tackling the behavioral design problems we face in crafting better socio-technical systems? This seminar course is designed to engage students in recent advances in this rapidly growing research area via discussions of both historical and late-breaking findings in the literature. By drawing on a breadth of studies ranging from cognitive development, cognitive neuroscience, and educational/training studies, students will gain an appreciation for specific ways interdisciplinary approaches can add value to specific programs of research.

EDUC 219E. The Creative Arts in Elementary Classrooms. 2 Units.
For STEP Elementary only or for candidates in the Multiple Subjects program. Hands-on exploration of visual arts media and works of art.

EDUC 220A. Introduction to the Economics of Education. 4 Units.
The relationship between education and economic analysis. Topics: labor markets for teachers, the economics of child care, the effects of education on earnings and employment, the effects of education on economic growth and distribution of income, and the financing of education. Students who lack training in microeconomics, register for 220Y for 1 additional unit of credit.

EDUC 220B. Introduction to the Politics of Education. 4 Units.
(Same as GSBGEN 349.) The relationships between political analysis and policy formulation in education; focus is on alternative models of the political process, the nature of interest groups, political strategies, community power, the external environment of organizations, and the implementations of policy. Applications to policy analysis, implementation, and politics of reform. (APA).

EDUC 220C. Education and Society. 4-5 Units.
The effects of schools and schooling on individuals, the stratification system, and society. Education as socializing individuals and as legitimizing social institutions. The social and individual factors affecting the expansion of schooling, individual educational attainment, and the organizational structure of schooling.
Same as: EDUC 120C, SOC 130, SOC 230

EDUC 220D. History of School Reform: Origins, Policies, Outcomes, and Explanations. 3-5 Units.
Strongly recommended for students in the POLS M.A. program; others welcome. Focus is on 20th-century U.S. Intended and unintended patterns in school change; the paradox of reform that schools are often reforming but never seem to change much; rhetorics of reform and factors that inhibit change. Case studies emphasize the American high school. This course is strongly recommended for POLS students pursuing K -12 leadership.
Same as: HISTORY 258E

EDUC 220Y. Introduction to the Economics of Education: Economics Section. 1-2 Unit.
For those taking 220A who have not had microeconomics before or who need a refresher. Corequisite: 220A.

EDUC 221A. Policy Analysis in Education. 4-5 Units.
We explore current issues in preK-12 education policy including the expansion of early childhood programs, the effectiveness of accountability, the challenges facing teacher labor markets, and the financing of education. We discuss the role government and non-government agencies have (or should have) in making, implementing, and evaluating education policies. We will call attention to the vast inequities that exist in our current education system. Limited enrollment - course is designed for master's students. Undergraduates may enroll with instructor consent.

EDUC 222. Resource Allocation in Education. 4-5 Units.
This course covers economic principles and tools for informing resource allocation decisions in education. Students will review concepts related to educational goods and values; the costs and benefits of different levels and types of schooling; public versus private schooling; as well as adequacy and equity in education financing. Students will also learn about the use of educational production functions, teacher value-added estimation, cost effectiveness analysis, experimental program evaluation, systematic reviews, and causal chain analysis. Prerequisites: introductory statistics and regression analysis.

EDUC 223. Language Issues in Educational Research and Practice. 2 Units.
Provides the conceptual foundation for reasoning about language and linguistic groups as critical to making sound decisions in educational research and practice in a global economy and in multilingual societies.

EDUC 226. Curating Experience: Representation in and beyond Museums. 2-4 Units.
In an age when some 50% of museum visitors only "visit" museums online and when digital technologies have broken open archival access, anyone can be a curator, a critic, an historian, an archivist. In this context, how do museums create experiences that teach visitors about who they are and about the world around them? What are the politics of representation that shape learning in these environments? Using an experimental instructional approach, students will reconsider and redefine what it means to curate experience. (This course must be taken for a minimum of 3 units to satisfy a Ways requirement.).
Same as: AMSTUD 226X, CSRE 226X

EDUC 228E. Becoming Literate in School I. 1 Unit.
First in a three course sequence. Introduction to reading and language arts theory and methodology for candidates STEP Elementary Teacher program. Instructional methods, formats, and materials.

EDUC 228F. Becoming Literate in School II. 4 Units.
Second in a three-course required sequence of reading and language arts theory and methodology for candidates in the STEP Elementary program. Theories for guiding instruction and curricular choices.

EDUC 228G. Becoming Literate in School III. 1 Unit.
Third in a three-course required sequence of reading and language arts theory and methodology for candidates in STEP Elementary Teacher program. Theories for guiding instruction and curricular choices.

EDUC 228H. Literacy, History, and Social Science. 3 Units.
How elementary school teachers can teach history and social science within a literacy framework. Topics include: historical thinking, reading, and writing; current research; applying nonfiction reading and writing strategies to historical texts; using primary sources with elementary students; adapting instruction to meet student needs; state standards; evaluating curriculum; assessing student knowledge; developing history and social science units; and embedding history and social science into the general literacy curriculum.

EDUC 229A. Learning Design and Technology Seminar. 2-3 Units.
Four-quarter required seminar for the LDT master's program. Discussions and activities related to designing for learning with technology. Support for internships and Master's project. Theoretical and practical perspectives, hands-on development, and collaborative efforts. (LDT).

EDUC 229B. Learning Design and Technology Seminar. 1-3 Unit.
Four-quarter required seminar for the LDT master's program. Discussions and activities related to designing for learning with technology. Support for internships and Master's project. Theoretical and practical perspectives, hands-on development, and collaborative efforts. (LDT).

EDUC 229C. Learning Design and Technology Seminar. 1-3 Unit.
Four-quarter required seminar for the LDT master's program. Discussions and activities related to designing for learning with technology. Support for internships and Master's project. Theoretical and practical perspectives, hands-on development, and collaborative efforts. (LDT).

EDUC 229D. Learning Design and Technology Seminar. 2-5 Units.
Four-quarter required seminar for the LDT master's program. Discussions and activities related to designing for learning with technology. Support for internships and Master's project. Theoretical and practical perspectives, hands-on development, and collaborative efforts. (LDT).

EDUC 230. Learning Experience Design. 3 Units.
This course explores the design of tools for learning, leveraging scholarship and real-world projects to create prototypes of new digital learning tools. Students will engage in design activities to come up with prototypes of new learning tools for community partners. This year the course will focus on museums. Designing these tools will require project groups to gather and apply knowledge, evaluating options and synthesizing ideas in order to create an effective (and elegant!) solution. A community-based Cardinal Course. This course is designed to complement EDUC 281, Technology for Learners.

EDUC 231. Learning Religion: How People Acquire Religious Commitments. 4 Units.
This course will examine how people learn religion outside of school, and in conversation with popular cultural texts and practices. Taking a broad social-constructivist approach to the variety of ways people learn, this course will explore how people assemble ideas about faith, identity, community, and practice, and how those ideas inform individual, communal and global notions of religion. Much of this work takes place in formal educational environments including missionary and parochial schools, Muslim madrasas or Jewish yeshivot. However, even more takes place outside of school, as people develop skills and strategies in conversation with broader social trends. This course takes an interdisciplinary approach to questions that lie at the intersection of religion, popular culture, and education. May be repeat for credit.
Same as: AMSTUD 231X, JEWISHST 291X, RELIGST 231X

EDUC 232. Culture, Learning, and Poverty. 2-3 Units.
This course examines the categories and methods used to analyze and explain educational inequalities in the United States from 1950 to present. Approaches to theories of school failure and methods of intervention are distinguished by their ideas on the play of learning, language, cognition, culture, and social class in human development. Particular attention is given to the Culture of Poverty controversies of the 1960s and their recent emergence.

EDUC 233A. Counseling Theories and Interventions from a Multicultural Perspective. 3-5 Units.
In an era of globalization characterized by widespread migration and cultural contacts, professionals face a unique challenge: How does one practice successfully when working with clients/students from so many different backgrounds? This course focuses upon the need to examine, conceptualize, and work with individuals according to the multiple ways in which they identify themselves. It will systematically examine multicultural counseling concepts, issues, and research. Literature on counselor and client characteristics such as social status or race/ethnicity and their effects on the counseling process and outcome will be reviewed. Issues in consultation with culturally and linguistically diverse parents and students and work with migrant children and their families are but a few of the topics covered in this course.
Same as: AFRICAAM 233A, CSRE 233A

EDUC 233B. Adolescent Development and Mentoring in the Urban Context. 3 Units.
Continution of 233A. Topics include: developmental psychology and service learning; collaborating with the community;psychological research on altruism and prosocial behavior; volunteers' motivations; attributions about poverty, and the problem of prejudice.

EDUC 234. Curiosity in Artificial Intelligence. 3 Units.
How do we design artificial systems that learn as we do early in life -- as "scientists in the crib" who explore and experiment with our surroundings? How do we make AI "curious" so that it explores without explicit external feedback? Topics draw from cognitive science (intuitive physics and psychology, developmental differences), computational theory (active learning, optimal experiment design), and AI practice (self-supervised learning, deep reinforcement learning). Students present readings and complete both an introductory computational project (e.g. train a neural network on a self-supervised task) and a deeper-dive project in either cognitive science (e.g. design a novel human subject experiment) or AI (e.g. implement and test a curiosity variant in an RL environment). Prerequisites: python familiarity and practical data science (e.g. sklearn or R).
Same as: PSYCH 240A

EDUC 235. Workshop and Reading Group in Higher Education. 1-3 Unit.
This is an ongoing workshop and reading group for students and faculty engaged in research in higher education. Topics include but are not limited to postsecondary access; late adolescent and college student development; adult and lifelong learning; teaching and learning in postsecondary settings; leadership and management; federal, state, and institutional policy; student and organizational culture; and finance and economics. The focus of the workshop is to provide a faculty¿led community of support for students, faculty, and others conducting research on higher education. Accordingly, the schedule of topics each quarter will be determined by participants in the workshop to flexibly focus on current research papers and projects. The workshop will provide a space for participants to present research ideas, workshop conceptual and methodological issues, give and receive feedback on conference paper proposals and drafts, and engage in focused discussion of papers and studies relevant to their work. It is open to master's and doctoral students, and with instructor approval, undergraduates working on theses and senior papers.

EDUC 236. Beyond Bits and Atoms: Designing Technological Tools. 3-4 Units.
This course is a practicum in the design of technology-enabled curricula and hands-on learning environments. It focuses on the theories, concepts, and practices necessary to design effective, low-cost educational technologies that support learning in all contexts for a variety of diverse learners. We will explore theories and design frameworks from constructivist and constructionist learning perspectives, as well as the lenses of critical pedagogy, Universal Design for Learning (UDL), and interaction design for children. The course will concretize theories, concepts, and practices in weekly presentations (including examples) from industry experts with significant backgrounds and proven expertise in designing successful, evidence-based, educational technology products. The Practicum provides the design foundation for EDUC 211 / CS 402 L, a hands-on lab focused on introductory prototyping and the fabrication of incipient interactive, educational technologies. (No prior prototyping experience required.) Interested students must also register for either EDUC 211 or CS 402L, complete the application at bit.ly/BBA-Winter2020 by January 4 at 5 p.m., and come to the first class at 8:30 a.m. in CERAS 108.
Same as: CS 402

EDUC 237. Learning, Making, Crafting, & Creating. 3-5 Units.
This is a hands-on course that introduces students to digital fabrication and 'maker' technologies used to develop prototypes of new objects and artifacts for learning. Technologies include 3D printers, electronic textiles, laser cutters, low-threshold programming environments, and micro controllers. Constructionist learning theory and current practices for design are covered. No prior technical or prototyping experience is required.

EDUC 238. Market Oriented Policies in Education. 3-4 Units.
Introducing market dynamics in education remains a highly controversial policy issue. In this course we will discuss the main ideas supporting the market approach in education and the key arguments against these policies; we will also review some of the evidence concerning the effects of market policies in education such as privatization, vouchers, and school choice; and finally, we will study several issues related to market oriented reforms, such as performance accountability, school segregation, and peer effects in education.
Same as: SOC 238

EDUC 239. Educating Young STEM Thinkers. 3-5 Units.
The course introduces students to the design thinking process, the national conversations about the future of STEM careers, and opportunities to work with middle school students and K-12 teachers in STEM-based after-school activities and intercession camps. The course is both theory and practice focused. The purpose is twofold; to provide reflection and mentoring opportunities for students to learn about pathways to STEM careers and to introduce mentoring opportunities with young STEM thinkers.
Same as: ME 139, ME 231

EDUC 240. Adolescent Development and Learning. 3 Units.
How do adolescents develop their identities, manage their inner and outer worlds, and learn? Presuppositions: that fruitful instruction takes into account the developmental characteristics of learners and the task demands of specific curricula; and that teachers can promote learning and motivation by mediating among the characteristics of students, the curriculum, and the wider social context of the classroom. Prerequisite: STEP student or consent of instructor. (STEP).

EDUC 241. Race, Justice, and Integration. 3 Units.
Recent philosophical research on injustice, race, and the ideal of racial integration.
Same as: AFRICAAM 241, PHIL 142, PHIL 242

EDUC 242. Workshop on Instrument Development for Assessment, Research or Evaluation Purposes I. 2 Units.
This course is designed with the belief that collecting information is a routine activity in which most researchers and educators are involved. Developing and improving instruments to gather information for descriptive, assessment, research, or evaluation purposes is a goal that unites all social sciences. Therefore, this course focuses on the technical skills required to develop, judge, and/or select quality instruments in diverse domains. The course will focus on your personal journey to develop or judge an instrument on something that is important for you.

EDUC 243. Writing Across Languages and Cultures: Research in Writing and Writing Instruction. 3-5 Units.
Theoretical perspectives that have dominated the literature on writing research. Reports, articles, and chapters on writing research, theory, and instruction; current and historical perspectives in writing research and research findings relating to teaching and learning in this area.
Same as: CSRE 243, EDUC 145

EDUC 244. Classroom Management and Leadership. 3 Units.
Student and teacher roles in developing a classroom community. Strategies for classroom management within a theoretical framework. STEP secondary only.

EDUC 244E. Building Classroom Communities. 2 Units.
How to best manage a classroom. Student and teacher roles in developing a classroom community. Strategies for classroom management within a theoretical framework. STEP elementary only.

EDUC 244F. Building Classroom Communities. 1 Unit.
Skills for developing a positive classroom learning environment. Theoretical issues and opportunities to acquire strategies and make links with practice teaching class. STEP elementary only.

EDUC 245. Understanding Racial and Ethnic Identity Development. 3-5 Units.
This seminar will explore the impact and relative salience of racial/ethnic identity on select issues including: discrimination, social justice, mental health and academic performance. Theoretical perspectives on identity development will be reviewed, along with research on other social identity variables, such as social class, gender and regional identifications. New areas within this field such as the complexity of multiracial identity status and intersectional invisibility will also be discussed. Though the class will be rooted in psychology and psychological models of identity formation, no prior exposure to psychology is assumed and other disciplines-including cultural studies, feminist studies, and literature-will be incorporated into the course materials. Students will work with community partners to better understand the nuances of racial and ethnic identity development in different contexts. (Cardinal Course certified by the Haas Center).
Same as: AFRICAAM 245, CSRE 245, PSYCH 245A

EDUC 246A. Secondary Teaching Seminar. 1 Unit.
Preparation and practice in issues and strategies for teaching in classrooms with diverse students. Topics: instruction, curricular planning, classroom interaction processes, portfolio development, teacher professionalism, patterns of school organization, teaching contexts, and government educational policy. Classroom observation and student teaching with accompanying seminars during each quarter of STEP year. 16 units required for completion of the program. Prerequisite: STEP student.

EDUC 246B. Secondary Teaching Seminar. 1 Unit.
Preparation and practice in issues and strategies for teaching in classrooms with diverse students. Topics: guided observations, building classroom community, classroom interaction processes, topics in special education portfolio development, teacher professionalism, patterns of school organization, teaching contexts, and government educational policy. Classroom observation and student teaching with accompanying seminars during each quarter of STEP year. 16 units required for completion of the program. Prerequisite: STEP student.

EDUC 246C. Secondary Teaching Seminar. 3 Units.
Preparation and practice in issues and strategies for teaching in classrooms with diverse students. Topics: instruction, curricular planning, classroom interaction processes, portfolio development, teacher professionalism, patterns of school organization, teaching contexts, and government educational policy. Classroom observation and student teaching with accompanying seminars during each quarter of STEP year. 16 units required for completion of the program. Prerequisite: STEP student. (STEP).

EDUC 246D. Secondary Teaching Seminar. 1-8 Unit.
Preparation and practice in issues and strategies for teaching in classrooms with diverse students. Topics: instruction, curricular planning, classroom interaction processes, portfolio development, teacher professionalism, patterns of school organization, teaching contexts, and government educational policy. Classroom observation and student teaching with accompanying seminars during each quarter of STEP year. 16 units required for completion of the program. Prerequisite: STEP student.

EDUC 246E. Elementary Teaching Seminar. 1 Unit.
Integrating theory and practice in teacher development. Topics include: equity, democracy, and social justice in the context of teaching and learning; teacher reflection, inquiry, and research; parent/teacher relationships; youth development and community engagement; professional growth and development; teacher leadership and school change processes; preparation for the job search, the STEP Elementary Portfolio, and the STEP Elementary Conference. Prerequisite: STEP student.

EDUC 246F. Elementary Teaching Seminar. 3-5 Units.
Integrating theory and practice in teacher development. Topics include: equity, democracy, and social justice in the context of teaching and learning; teacher reflection, inquiry, and research; parent/teacher relationships; youth development and community engagement; professional growth and development; teacher leadership and school change processes; preparation for the job search, the STEP Elementary Portfolio, and the STEP Elementary Conference. Prerequisite: STEP student.

EDUC 246G. Elementary Teaching Seminar. 4 Units.
Integrating theory and practice in teacher development. Topics include: equity, democracy, and social justice in the context of teaching and learning; teacher reflection, inquiry, and research; parent/teacher relationships; youth development and community engagement; professional growth and development; teacher leadership and school change processes; preparation for the job search, the STEP Elementary Portfolio, and the STEP Elementary Conference. Prerequisite: STEP student.

EDUC 246H. Elementary Teaching Seminar. 3 Units.
Integrating theory and practice in teacher development. Topics include: equity, democracy, and social justice in the context of teaching and learning; teacher reflection, inquiry, and research; parent/teacher relationships; youth development and community engagement; professional growth and development; teacher leadership and school change processes; preparation for the job search, the STEP Elementary Portfolio, and the STEP Elementary Conference. Prerequisite: STEP student.

EDUC 247. Moral and Character Education. 3 Units.
Contemporary scholarship and educational practice related to the development of moral beliefs and conduct in young people. The psychology of moral development; major philosophical, sociological, and anthropological approaches. Topics include: natural capacities for moral awareness in the infant; peer and adult influences on moral growth during childhood and adolescence; extraordinary commitment during adulthood; cultural variation in moral judgment; feminist perspectives on morality; the education movement in today's schools; and contending theories concerning the goals of moral education.

EDUC 248. Language, Literacy, and Culture. 3-4 Units.
This field-based Cardinal Course will provide a unique opportunity to combine theory and practice in the study of language, literacy, and culture in educational settings. It is a collaborative partnership between Stanford (through the Haas Center for Public Service) and the Boys and Girls Club of the Peninsula. Stanford students will work directly with children enrolled in the Boys and Girls Club after-school program at a youth center in Redwood City.
Same as: CSRE 248X

EDUC 249. Theory and Issues in the Study of Bilingualism. 3-5 Units.
Sociolinguistic perspective. Emphasis is on typologies of bilingualism, the acquisition of bilingual ability, description and measurement, and the nature of societal bilingualism. Prepares students to work with bilingual students and their families and to carry out research in bilingual settings.
Same as: EDUC 149

EDUC 250. What Do Students Really Know? The Risks of Modern Assessment. 3 Units.
This course focuses on helping students to advance their knowledge about theory, design and research issues related to assessing student learning for accountability and learning purposes. The course explores assessment topics with a critical perspective in two contexts: large-scale and classroom assessment. The course will help students become critical test consumers, better-informed assessment evaluators, and advocator of reliable, valid and fair assessments for culturally and linguistically diverse populations.

EDUC 250A. Inquiry and Measurement in Education. 3 Units.
Part of doctoral research core. The logic of scientific inquiry in education, including identification of research questions, selection of qualitative or quantitative research methods, design of research studies, measurement, and collection, analysis and interpretation of evidence.

EDUC 251. Topics in Epistemology and Education. 3 Units.
Epistemology and education are each concerned with knowledge. Epistemology has both positive and normative aspects: it asks what knowledge is and why it is valued. Education is concerned with methods and conditions for conveying knowledge. This course will focus on current topics in epistemology with a view toward their implications for education and pedagogy. We will explore contemporary work in social epistemology and virtue epistemology; multicultural and feminist perspectives; epistemic development, and the significance of artificial intelligence and digital technology for theories of knowledge.

EDUC 252. Introduction to Test Theory. 3 Units.
Concepts of reliability and validity; derivation and use of test scales and norms; mathematical models and procedures for test validation, scoring, and interpretation.

EDUC 252L. Introduction to Test Theory - Lab. 2 Units.
This course will cover the material from 252A in an applied setting. Emphasis will be in developing a capacity for applying and interpreting psychometrics techniques to real-world and simulated data.

EDUC 253. Foundations of Learning: From Ideas to Application. 4 Units.
Education is one of the most contested spaces in American society today. But its public commentators draw on old debates in the texts of Plato, Rousseau, DuBois, Dewey and others. This course offers an opportunity to uncover the roots of current conversations about education and engage the classic works of educational philosophy, history, and humanities. We will discuss the texts, understand their ideas, and apply them to making grounded contributions to contemporary debates, policy direction, and strategic plans.

EDUC 255. Mission and Money in Education. 3 Units.
Educational institutions are defined by their academic missions and their financial structures. When we refer to public/private or nonprofit/profit sectors, these are shorthand descriptions of the different capital structures that underlie educational organizations. Increasingly, these options - and novel variations on them - exist throughout the education enterprise: in K-12 schools, higher education, and ancillary service providers. In this course we will explore the relationships between academic goals and financial structures, with particular focus on management and decision making in educational organizations.

EDUC 256. Psychological and Educational Resilience Among Children and Youth. 4-5 Units.
Theoretical, methodological, and empirical issues pertaining to the psychological and educational resilience of children and adolescents. Overview of the resilience framework, including current terminology and conceptual and measurement issues. Adaptive systems that enable some children to achieve successful adaptation despite high levels of adversity exposure. How resilience can be studied across multiple levels of analysis, ranging from cell to society. Individual, family, school, and community risk and protective factors that influence children's development and adaptation. Intervention programs designed to foster resilient adaptation in disadvantaged children's populations.
Same as: HUMBIO 149

EDUC 257. Practicum in English-Spanish School & Community Interpreting. 3-4 Units.
This practicum will assist students in developing a set of skills in English-Spanish interpreting that will prepare them to provide interpretation services in school and community settings. The course will build students' abilities to transfer intended meanings between two or more monolingual individuals of who are physically present in a school or community setting and who must communicate with each other for professional (and personal) purposes.
Same as: CHILATST 183X, EDUC 183

EDUC 258. Literacy Development and Instruction. 3-5 Units.
Literacy acquisition as a developmental and educational process. Problems that may be encountered as children learn to read. How to disentangle home, community, and school instruction from development.

EDUC 259. Application of Hierarchical Linear Models in Behavioral and Social Research. 4 Units.
The fundamental phenomenon of interest in educational research is the growth in knowledge and skills of individual students. Two facts - that children's growth is typically the object of inquiry and that such growth occurs in organizational settings - correspond to two of the most troublesome and persistent methodological problems in the social sciences: the measurement of change and the assessment of multi-level effects (also referred to as the unit of analysis problem). Although these two methodological problems have distinct, long-standing, and non-overlapping literatures, these problems, in fact, share a common cause - the inadequacy of traditional statistical techniques for the modeling of hierarchy.

EDUC 260A. Applications of Causal Inference Methods. 2 Units.
See http://rogosateaching.com/stat209/. Application of potential outcomes formulation for causal inference to research settings including: mediation, compliance adjustments, time-1 time-2 designs, encouragement designs, heterogeneous treatment effects, aggregated data, instrumental variables, analysis of covariance regression adjustments, and implementations of matching methods. Prerequisite: STATS 209A/MSE 327 or other introduction to causal inference methods. (Formerly HRP 239).
Same as: EPI 239, STATS 209B

EDUC 260B. Advanced Statistical Methods for Observational Studies. 2-3 Units.
Design principles and statistical methods for observational studies. Topics include: matching methods, sensitivity analysis, and instrumental variables. 3 unit registration requires a small project and presentation. Computing is in R. Pre-requisites: EPI 261 and 262 or STATS 209 (EPI 239), or equivalent. See http://rogosateaching.com/somgen290/.
Same as: CHPR 266, EPI 292, STATS 266

EDUC 261A. Distance Learning. 1 Unit.
Remote teaching and learning is not a new idea, however the popularity of these models has surged given the current COVID-19 pandemic. As students, parents, and teachers adapt to the dynamic nature of the current crisis, so too must our models of teaching and learning. This course is designed to begin the conversation around what synchronous and asynchronous remote teaching and learning can look like, and how considerations of equity and access are central to the realization of successful remote learning experiences.

EDUC 261B. Distance Learning. 1 Unit.
Remote teaching and learning is not a new idea, however the popularity of these models has surged given the current COVID-19 pandemic. As students, parents, and teachers adapt to the dynamic nature of the current crisis, so too must our models of teaching and learning. This course is designed to begin the conversation around what synchronous and asynchronous remote teaching and learning can look like, and how considerations of equity and access are central to the realization of successful remote learning experiences.

EDUC 261D. Computational Thinking Elective. 2-4 Units.
This course approaches computational thinking through the lens of teaching for social justice. We will examine how (and why) practitioners and schools can support students engagement with computational thinking practices through interdisciplinary means. Utilizing computational thinking as an approach to problem solving empowers individuals to recognize the influences technology brings to our society and the impact it has on ethics and equity. This course will develop students' understanding of computational thinking to engage in important ways with power, privilege, and identity. Participants must have theoretical and experiential background in teaching diverse students in k-12. Course Open to LDT & STEP MA students at the GSE only.

EDUC 261E. Curriculum and Instruction Elective in Data Science. 4 Units. Data are all around us and it is becoming imperative for educators to teach students to develop greater data acumen. Topics covered include approaches to teaching about data and data science in the secondary school, including goals for instruction, teaching techniques, and instructional resources.

EDUC 262A. Curriculum and Instruction in English. 4 Units. Approaches to teaching English in the secondary school, including goals for instruction, teaching techniques, and methods of evaluation. (STEP).

EDUC 262B. Curriculum and Instruction in English. 4 Units. Approaches to teaching English in the secondary school, including goals for instruction, teaching techniques, and methods of evaluation. STEP secondary only.

EDUC 262C. Curriculum and Instruction in English. 3 Units. Approaches to teaching English in the secondary school, including goals for instruction, teaching techniques, and methods of evaluation. (STEP).

EDUC 262D. Curriculum & Instruction Elective in English. 4 Units. Methodology of science instruction: teaching for English and language arts; linking the goals of teaching English with interdisciplinary curricula; opportunities to develop teaching materials. For STEP Program students only.

EDUC 263A. Curriculum and Instruction in Mathematics. 2 Units. The purposes and programs of mathematics in the secondary curriculum; teaching materials, methods. Prerequisite: STEP student or consent of instructor. (STEP) 263A. Sum, 263B. Aut, 263C. Win.

EDUC 263B. Curriculum and Instruction in Mathematics. 4 Units. The purposes and programs of mathematics in the secondary curriculum; teaching materials, methods. Prerequisite: STEP student or consent of instructor. (STEP) 263A. Sum, 263B. Aut, 263C. Win.

EDUC 263C. Curriculum and Instruction in Mathematics. 3 Units. The purposes and programs of mathematics in the secondary curriculum; teaching materials, methods. Prerequisite: STEP student or consent of instructor. (STEP) 263A. Sum, 263B. Aut, 263C. Win.

EDUC 263D. Curriculum & Instruction Elective in Math. 4 Units. Methodology of math instruction: teaching for mathematical thinking and reasoning; linking the goals of teaching math with literacy and interdisciplinary curricula; opportunities to develop teaching materials. For STEP Program students only.

EDUC 263E. Quantitative Reasoning in Mathematics I. 1 Unit. First of a three-course sequence in mathematics for STEP elementary teacher candidates. Content, pedagogy, and context. Mathematics subject matter; the orchestration of teaching and learning of elementary mathematics including curriculum, classroom and lesson design, and cases studies. Sociocultural and linguistic diversity, equity, differentiation of instruction, the impact of state and national standards, and home/community connections.

EDUC 263F. Quantitative Reasoning in Mathematics II. 4 Units. Second of a three-course sequence in mathematics for STEP elementary teacher candidates. Content, pedagogy, and context. Mathematics subject matter; the orchestration of teaching and learning of elementary mathematics including curriculum, classroom and lesson design, and cases studies. Sociocultural and linguistic diversity, equity, differentiation of instruction, the impact of state and national standards, and home/community connections.

EDUC 263G. Quantitative Reasoning in Mathematics III. 1 Unit. Third of a three-course sequence in mathematics for STEP elementary teacher candidates. Content, pedagogy, and context. Mathematics subject matter; the orchestration of teaching and learning of elementary mathematics including curriculum, classroom and lesson design, and cases studies. Sociocultural and linguistic diversity, equity, differentiation of instruction, the impact of state and national standards, and home/community connections.

EDUC 264A. Curriculum and Instruction in World Languages. 2 Units. Approaches to teaching foreign languages in the secondary school, including goals for instruction, teaching techniques, and methods of evaluation. Prerequisite: STEP student. (STEP).

EDUC 264B. Curriculum and Instruction in World Languages. 4 Units. Approaches to teaching foreign languages in the secondary school, including goals for instruction, teaching techniques, and methods of evaluation. STEP secondary only.

EDUC 264C. Curriculum and Instruction in World Languages. 3 Units. Approaches to teaching foreign languages in the secondary school, including goals for instruction, teaching techniques, and methods of evaluation. Prerequisite: STEP student. (STEP).

EDUC 264E. Methods and Materials in Bilingual Classrooms. 2 Units. Restricted to STEP elementary teacher candidates in the BCLAD program. Theories, research, and methods related to instruction of Spanish-English bilingual children, grades K-8. Approaches to dual language instruction, and pedagogical and curricular strategies for the instruction of reading, language arts, science, history, social science, and math in Spanish. Assessment issues and practices with bilingual students. In Spanish.

EDUC 265. History of Higher Education in the U.S.. 3-5 Units. Major periods of evolution, particularly since the mid-19th century. Premise: insights into contemporary higher education can be obtained through its antecedents, particularly regarding issues of governance, mission, access, curriculum, and the changing organization of colleges and universities.
Same as: AMSTUD 165, EDUC 165, HISTORY 158C

EDUC 266. Educational Neuroscience. 3 Units. An introduction to the growing intersection between education research and emerging research on functional brain development. Students will probe the contributions and limitations of emerging theoretical and empirical contribution of neuroscience approaches to specific academic skills such as reading and mathematics, as well as exposure to general processes crucial for educational success, including motivation, attention, and social cognition. Final projects will explore these themes in the service of interventions designed to improve how these functions.

EDUC 267A. Curriculum and Instruction in Science. 2 Units. Possible objectives of secondary science teaching and related methods: selection and organization of content and instructional materials; lab and demonstration techniques; evaluation, tests; curricular changes; ties with other subject areas. Prerequisite: STEP student or consent of instructor. (STEP).

EDUC 267B. Curriculum and Instruction in Science. 4 Units. Possible objectives of secondary science teaching and related methods: selection and organization of content and instructional materials; lab and demonstration techniques; evaluation, tests; curricular changes; ties with other subject areas. Prerequisite: STEP student or consent of instructor. (STEP).

EDUC 267C. Curriculum and Instruction in Science. 3 Units. Possible objectives of secondary science teaching and related methods: selection and organization of content and instructional materials; lab and demonstration techniques; evaluation, tests; curricular changes; ties with other subject areas. Prerequisite: STEP student or consent of instructor. (STEP).

EDUC 267D. Curriculum & Instruction Elective in Science. 4 Units. Methodology of science instruction: teaching for scientific reasoning; linking the goals of teaching science with literacy and interdisciplinary curricula; opportunities to develop teaching materials. For STEP Program students only.

EDUC 267E. Development of Scientific Reasoning and Knowledge. 2 Units.
For STEP elementary teacher candidates. Theories and methods of teaching and learning science. How to develop curricula and criteria for critiquing curricula. Students design a science curriculum plan for a real setting. State and national science frameworks and content standards. Alternative teaching approaches; how to select approaches that are compatible with learner experience and lesson objectives. Focus is on the linguistic and cultural diversity of California public school students.

EDUC 267F. Development of Scientific Reasoning and Knowledge II. 3 Units.
Continuation of 267E. Scientific knowledge and pedagogical skills for supporting science instruction. Topics include: how children build scientific understandings and what that understanding might look and sound like in young children; what school science is and how concepts are connected to the doing of it; physical, life, and earth science constructs.

EDUC 267G. Integrating the Garden into the Elementary Curriculum. 1 Unit.
This mini-course uses the garden and kitchen environments to provide teacher candidates with real-world contexts in which to explore some of the key issues that children face in health, nutrition, and sustainability. Teacher candidates will gain an understanding of how to integrate the various themes with content areas and standards and an appreciation for the importance of addressing children's health needs in an era when the country is facing increased obesity and other health problems.

EDUC 268A. Curriculum and Instruction in History and Social Science. 2 Units.
The methodology of history instruction: teaching for historical thinking and reasoning; linking the goals of teaching history with literacy; curriculum trends; and opportunities to develop teaching and resource units. Prerequisite: STEP student.

EDUC 268B. Curriculum and Instruction in History and Social Science. 4 Units.
The methodology of history instruction: teaching for historical thinking and reasoning; linking the goals of teaching history with literacy; curriculum trends; and opportunities to develop teaching and resource units. Prerequisite: STEP student.

EDUC 268C. Curriculum and Instruction in History and Social Science. 3 Units.
The methodology of history instruction: teaching for historical thinking and reasoning; linking the goals of teaching history with literacy; curriculum trends; and opportunities to develop teaching and resource units. Prerequisite: STEP student.

EDUC 268D. Curriculum & Instruction Elective in History. 4 Units.
The methodology of history instruction: teaching for historical thinking and reasoning; linking the goals of teaching history with literacy and interdisciplinary curricula; opportunities to develop teaching materials. For STEP Program students only.

EDUC 268E. Elementary History and Social Science. 3-4 Units.
Teaching and learning history and social science in the elementary grades. What is included in the discipline and why it is important to teach. The development of historical thinking among children. How students learn and understand content in these disciplines.

EDUC 269. The Ethics in Teaching. 1 Unit.
Goal is to prepare for the ethical problems teachers confront in their professional lives. Skills of ethical reasoning, familiarity with ethical concepts, and how to apply these skills and concepts in the analysis of case studies. Topics: ethical responsibility in teaching, freedom of speech and academic freedom, equality and difference, indoctrination, and the teaching of values.

EDUC 270. Latino Families, Languages, and Schools. 3-5 Units.
The challenges facing schools to establish school-family partnerships with newly arrived Latino immigrant parents. How language acts as a barrier to home-school communication and parent participation. Current models of parent-school collaboration and the ideology of parental involvement in schooling.
Same as: EDUC 178

EDUC 271. Education Policy in the United States. 3 Units.
(Same as GSBGEN 347) The course will provide students from different disciplines with an understanding of the broad educational policy context. The course will cover topics including a) school finance systems; b) an overview of policies defining and shaping the sectors and institutional forms of schooling, c) an overview of school governance, d) educational human-resource policy, e) school accountability policies at the federal and state levels; and f) school assignment policies and law, including intra- and inter-district choice policies, desegregation law and policy.

EDUC 272. Understanding and Creating Value-Added Measures of Teacher Effectiveness. 3 Units.
This seminar will explore a variety of approaches to measuring teacher effectiveness using student performance on state standardized tests. We will read the recent research literature on value-added estimation, addressing issues such as bias and measurement error. We also will use administrative data from two large districts to create and compare multiple value-added measures. The class assumes a comfort with OLS regression and basic programming in Stata.

EDUC 273. Gender and Higher Education: National and International Perspectives. 3-4 Units.
This course examines the ways in which higher education structures and policies interact with gender, gender identity, and other characteristics in the United States, around the world, and over time. Attention is paid to how changes in those structures and policies relate to access to, experiences in, and outcomes of higher education by gender. Students can expect to gain an understanding of theories and perspectives from the social sciences relevant to an understanding of the role of higher education in relation to structures of gender differentiation and hierarchy. Topics include undergraduate and graduate education; identity and sexuality; gender and science; gender and faculty; and feminist scholarship and pedagogy.
Same as: EDUC 173, FEMGEN 173, SOC 173, SOC 273

EDUC 274. School Choice: The Role of Charter Schools. 3 Units.
(Formerly EDUC 153X.) Is school choice, including vouchers, charter schools, contract schools, magnet schools, district options, and virtual schools, a threat or an opportunity for public education? Focus is on the charter school movement nationally and in California as reform strategy. Roles and responsibilities of charter schools emphasizing issues of governance, finance, curriculum, standards, and accountability.

EDUC 275. Leading Change in Schools. 3-4 Units.
This course explores organizational conditions conducive to planned change that can lead to school improvement. Particular attention is given to the plurality of leadership roles in change efforts. Intended primarily for master's students who have had some past experience working in or with schools.

EDUC 276. Classroom Assessment. 3 Units.
This course focuses on helping students to advance their knowledge about theory, design, and research issues related to assessing student learning in the classroom context. Students in this course will develop the basic conceptual and technical knowledge about assessment development and evaluation in the context of instructional units.

EDUC 277. Education of Immigrant Students: Psychological Perspectives. 4 Units.
Historical and contemporary approaches to educating immigrant students. Case study approach focuses on urban centers to demonstrate how stressed urban educational agencies serve immigrants and native-born U.S. students when confronted with overcrowded classrooms, controversy over curriculum, current school reform movements, and government policies regarding equal educational opportunity.

EDUC 278. Introduction to Program Evaluation. 3-4 Units.
Open to master's and doctoral students with priority to students in the School of Education. Focus is on the basic literature and major theoretical and practical issues in the field of program evaluation. Topics include: defining purpose, obtaining credible evidence, the role of the evaluator, working with stakeholder, values in evaluation, utilization, and professional standards. The course project is to design an evaluation for a complex national or international program selected by the instructor.

EDUC 279. American Jewish History: Learning to be Jewish in America. 2-4 Units.
This course will be a seminar in American Jewish History through the lens of education. It will address both the relationship between Jews and American educational systems, as well as the history of Jewish education in America. Plotting the course along these two axes will provide a productive matrix for a focused examination of the American Jewish experience. History students must take course for at least 3 units.
Same as: AMSTUD 279X, HISTORY 288D, JEWISHST 297X, RELIGST 279X

EDUC 280. Learning & Teaching of Science. 3 Units.
This course will provide students with a basic knowledge of the relevant research in cognitive psychology and science education and the ability to apply that knowledge to enhance their ability to learn and teach science, particularly at the undergraduate level. Course will involve readings, discussion, and application of the ideas through creation of learning activities. It is suitable for advanced undergraduates and graduate students with some science background.
Same as: ENGR 295, MED 270, PHYSICS 295, VPTL 280

EDUC 281. Technology for Learners. 3 Units.
How can we use technology to improve learning? Many hope that technology will make learning easier, faster, or accessible to more learners. This course explores a variety of approaches to designing tools for learning, the theories behind them, and the research that tests their effectiveness. Strong focus on evaluating new tools for specific learners and subjects. Space is limited. Priority is given to master's students in the LDT Master's Program. To learn about the design of digital tools for learning, we recommend taking this course together with EDUC 230, Learning Experience Design.

EDUC 282. The Politics of Knowledge in the Twentieth Century United States. 3-5 Units.
This course examines the relationship between social scientific knowledge and power in the modern United States. Topics include the emergence of social scientific disciplines, debates over objectivity, and professionalization. The course examines both how universities, philanthropic foundations, and the federal government have shaped knowledge production and how social science has influenced law, social and educational policy, and popular social thought.

EDUC 283. Child Development In and Beyond Schools. 1 Unit.
(Formerly EDUC 144). How schools form a context for children's social and cognitive development. Focus is on early and middle childhood. Transactional processes between children and learning opportunities in classroom contexts. Topics include: alternative theoretical perspectives on the nature of child development; early experience and fit with traditional school contexts; assessment practices and implications for developing identities as learners; psychological conceptions of motivational processes and alternative perspectives; the role of peer relationships in schools; and new designs for learning environments. Readings address social science and methodological issues. STEP Elementary only.

EDUC 284A. Designing Equitable Groupwork. 1 Unit.
Teaching in academically and linguistically heterogeneous classrooms requires a repertoire of pedagogical strategies. Focus is on how to provide access to intellectually challenging curriculum and equal-status interaction for students in diverse classrooms. Emphasis is on group work and its cognitive, social, and linguistic benefits for students. How to prepare for group work, equalize participation, and design learning tasks that support conceptual understanding, mastery of content and language growth. How to assess group products and individual contributions. (STEP).

EDUC 284B. Designing Equitable Groupwork. 1-2 Unit.
Teaching in academically and linguistically heterogeneous classrooms requires a repertoire of pedagogical strategies. Focus is on how to provide access to intellectually challenging curriculum and equal-status interaction for students in diverse classrooms. Emphasis is on group work and its cognitive, social, and linguistic benefits for students. How to prepare for group work, equalize participation, and design learning tasks that support conceptual understanding, mastery of content and language growth. How to assess group products and individual contributions. (STEP).

EDUC 285. Supporting Students with Special Needs. 2-3 Units.
For STEP teacher candidates. Needs of exceptional learners, identification of learning differences and disabilities, and adaptations in the regular inclusion classroom. Legal requirements of special education, testing procedures, development of individualized education plans, and support systems and services. Students follow a special needs learner to understand diagnosis, student needs, and types of services.

EDUC 285A. Supporting Students with Special Needs. 4 Units.
For STEP Secondary teacher candidates. Needs of exceptional learners, identification of learning differences and disabilities, and adaptations in the regular inclusion classroom. Legal requirements of special education, testing procedures, development of individualized education plans, and support systems and services. Students follow a special needs learner to understand diagnosis, student needs, and types of services.

EDUC 285B. Supporting Students with Special Needs. 2 Units.
For STEP Secondary teacher candidates. Needs of exceptional learners, identification of learning differences and disabilities, and adaptations in the regular inclusion classroom. Legal requirements of special education, testing procedures, development of individualized education plans, and support systems and services. Students follow a special needs learner to understand diagnosis, student needs, and types of services.

EDUC 285C. Supporting Students with Special Needs. 3 Units.
For STEP Elementary teacher candidates. Needs of exceptional learners, identification of learning differences and disabilities, and adaptations in the regular inclusion classroom. Legal requirements of special education, testing procedures, development of individualized education plans, and support systems and services. Students follow a special needs learner to understand diagnosis, student needs, and types of services.

EDUC 285D. Supporting Students with Special Needs. 3 Units.
For STEP elementary teacher candidates. Needs of exceptional learners, identification of learning differences and disabilities, and adaptations in the regular inclusion classroom. Legal requirements of special education, testing procedures, development of individualized education plans, and support systems and services. Students follow a special needs learner to understand diagnosis, student needs, and types of services.

EDUC 286. Decolonizing the Indigenous Classroom. 3-5 Units.
Using Indigenous and decolonizing perspectives on education, this interdisciplinary course will examine interaction and language in cross-cultural educational situations, including language, literacy and interethnic communication as they relate to Indigenous American classrooms. Special attention will be paid to implications of social, cultural and linguistic diversity for educational practice, along with various strategies for bridging intercultural differences between schools and Native communities.
Same as: CSRE 116, CSRE 302, EDUC 186, NATIVEAM 116

EDUC 286B. Second Language Acquisition Research. 4 Units.
Major research findings and theories in second language acquisition. Second language research and theories in formal and informal settings where a second language is learned.

EDUC 287. Graduate Research Workshop on Psychological Interventions. 3 Units.
Psychological research has the potential to create novel interventions that promote the public good. This workshop will expose students to psychologically 'wise' intervention research and to support their efforts to conduct such interventions, especially in the context of education, broadly conceived, as well as other areas. The first part of the class will address classic interventions and important topics in intervention research, including effective delivery mechanisms, sensitive behavioral outcomes, the role of theory and psychological process, and considerations of the role of time and of mechanisms that can sustain treatment effects over time. In the second part of the class, students will present and receive feedback on their own ongoing and/or future intervention research. Prerequisite: Graduate standing in Psychology or Education, or consent of instructor.
Same as: PSYCH 274

EDUC 288. Organizational Analysis. 4 Units.
This is an introductory course in organizational behavior intended primarily for master's students, delivered in a blended format. The course is applicable to a wide range of organizational settings, but pays particular attention to studies of schools, universities, nonprofit organizations, and social movements. The course has three goals: to explore a variety of organizational contexts; to investigate different theoretical approaches that elucidate these contexts; and to provide students different ways of "seeing" and managing organizations.

EDUC 289. The Centrality of Literacies in Teaching and Learning. 2 Units.
(Formerly EDUC 166.) Focus is on principles in understanding, assessing, and supporting the reading and writing processes, and the acquisition of content area literacies in secondary schools. Literacy demands within particular disciplines and how to use oral language, reading, and writing to teach content area materials more effectively to all students. (STEP).

EDUC 290. Instructional Leadership: Building Capacity for Excellent Teaching. 3-4 Units.
This course focuses on the role of leaders in designing, supporting and sustaining excellent teaching. How do leaders create the organizational conditions to focus attention on the technical core of instruction, curriculum and assessment. Course goals: 1) explore a variety of educational leadership approaches, 2) investigate the theory of action underlying these approaches to leadership and consider the implications for instructional practice and 3) develop understanding of the relationship between the leadership approach and the learning environment.

EDUC 291. Learning Sciences and Technology Design Research Seminar and Colloquium. 1-3 Unit.
Students and faculty present and critique new and original research relevant to the Learning Sciences and Technology Design doctoral program. Goal is to develop a community of scholars who become familiar with each other's work. Practice of the arts of presentation and scholarly dialogue while introducing seminal issues and fundamental works in the field.

EDUC 292. Academic Writing in Graduate Education. 2-4 Units.
In this workshop style course, you will learn principles for effective writing in graduate education and beyond. Beginning with consideration of the inherited and cultivated traditions informing your writing practices, you will examine the processes that best support your development as a writer; apply key rhetorical principles to your own writing and analyze those principles at work in other people's prose; practice writing about texts for a variety of purposes; and use feedback to revise your writing for both disciplinary-specific and public audiences. Master's students who are drafting a thesis and doctoral students who are working on qualifying papers or dissertations are especially encouraged to enroll.

EDUC 293. Church, State, & Schools: Issues in Education & Religion. 4 Units.
This course will examine interactions between religion and education, focusing on both formal and experiential sites in which people and communities explore, articulate, encounter, and perform religious ideologies and identities. The class will focus on different religious traditions and their encounters the institutions and structures of education in American culture, both in the United States and as it manifests in American culture transnationally.
Same as: AMSTUD 293, RELIGST 234X

EDUC 294. History of the Learned Book. 3-5 Units.
The course takes full advantage of the university library's Special Collections to examine the key historic works contributing to the advancement of learning and the organization of knowledge. Beginning with medieval manuscripts and progressing through all areas of human inquiry during the age of print, the course explores the economic and educational history of learned publishing in the West, while examining what these historic artifacts reveal about developments in the structure and authority, production and circulation, technology and aesthetics, of learning and knowledge.

EDUC 295. Entrepreneurship and Innovation in Education Technology Seminar. 2-3 Units.
How do entrepreneurs, educators, and VC's evaluate and grow successful education and edtech startups? Why do most startups fail, and what are the key ingredients for success? This course will teach you the skills and strategies necessary to effectively evaluate educational services and technology startups much like prospective employees, expert educators, entrepreneurs, philanthropists, and venture capital investors do. Each week, we will invite an executive or entrepreneur from a innovative education technology startup (for-profit & non-profit) as a guest speaker, and we'll evaluate all aspects of their invention. A fundamental question we'll explore in this course is how educators and technologists can collaborate to improve equity and access to education by leveraging the massive impact technology solutions can provide. Maximum capacity is 30 students; students will be admitted to the course by the professor. Juniors, Seniors and all graduate students are welcome. Students should complete this brief course interest form at http://bit.ly/educ-295. We will notify all students of their status before the first class on Monday, Sept. 23rd. Syllabus can be viewed here: http://bit.ly/educ295-syllabus2019.

EDUC 296. Introduction to Survey Research. 3-4 Units.
Planning tasks, including problem formulation, study design, questionnaire and interview design, pretesting, sampling, interviewer training, and field management. Epistemological and ethical perspectives. Issues of design, refinement, and ethics in research that crosses boundaries of nationality, class, gender, language, and ethnicity.
Same as: EDUC 191

EDUC 298. Seminar on Teaching Introductory Computer Science. 1 Unit.
Faculty, undergraduates, and graduate students interested in teaching discuss topics raised by teaching computer science at the introductory level. Prerequisite: consent of instructor.
Same as: CS 298

EDUC 299A. Equity and Schooling. 1 Unit.
(Formerly EDUC 167.) Introduction to the theories and practices of equity and democracy in education. How to think about teaching and schooling in new ways; the individual moral and political reasons for becoming a teacher. Enrollment restricted to students in the STEP Program only. (STEP).

EDUC 299B. Equity and Schooling. 4 Units.
(Formerly EDUC 167.) Introduction to the theories and practices of equity and democracy in education. How to think about teaching and schooling in new ways; the individual moral and political reasons for becoming a teacher. Enrollment restricted to students in the STEP Program only. (STEP).

EDUC 301. Workshop on Race, Ethnicity, and Language in Schools. 1-4 Unit.
The Workshop on Race, Ethnicity, and Language in Schools is a new School of Education initiative that examines the profound and enduring relationships between race, ethnicity, and language in education in the U.S. and elsewhere. The seminar brings together an inderdisciplinary group of leading scholars and graduate students in language in education to address the role of race and ethnicity in a host of complex and controversial language educational issues that cut across the areas of practice, policy, and pedagogy.

EDUC 302. Behavior Design. 3 Units.
For 2020, I've decided to focus my class on changing behavior to meet the challenges posed by COVID-19. I will teach my models and methods of Behavior Design, and together we will apply this to combatting the various challenges COVID-19 has created. Yes, we will work on interventions to directly slow the spread of COVID-19. In addition, we will try to tackle other issues that stem from this global pandemic such as loneliness, anxiety, hoarding, nurse burnout, and more. Students must apply to join this course. For more information about the course and how to apply, go here: bit.ly/educ-302-course-brief.

EDUC 303. Designing Learning Spaces. 3-4 Units.
Project-based. How space shapes personal interactions and affords learning opportunities In formal and informal settings. How to integrate learning principles into the design of spaces and develop a rubric to assess the impact on learning.

EDUC 304. Critical Theory and Pedagogy. 1-5 Unit.
The course samples the work of Critical Theory, proper, critical theory more generally, and critical pedagogy in the schools, as it draws on the educational consequences of a school of thought. The project of critical theory is examined in light of the curricular applications that it has inspired and the scholarly implications of studying education in this seemingly critical theoretical manner. Students will evaluate a particular curricular point of application of these related theoretical developments. Course may be repeated 4 times.

EDUC 305. A Political Economy of the Mind. 3-4 Units.
This course seeks categories and procedures for the appreciation, description, analysis, and reorganization of people in difficult circumstances. Examples from the history of fiction and classic political economy are used to explore the strengths and weaknesses of various approaches. In depth attention to individual lives and daily struggles give fiction and economic theory more appropriately positive views of people without the advantages of schooling than most educational research. Readings include fiction by Defoe, Austen, Dickens, Hurston, and Morrison and economic visions from Smith, Marx, Veblen, Keynes, and Galbraith.

EDUC 306A. Economics of Education in the Global Economy. 5 Units.
Case material considers development problems in the U.S. and abroad. Discussion sections on economic aspects of educational development.

EDUC 306B. Global Education Policy & Organization. 3-5 Units.
Education policy, politics, and development. Topics include: politics, interests, institutions, policy, and civil society; how schools and school systems operate as political systems; how policy making occurs in educational systems; and theories of development.
Same as: PUBLPOL 316

EDUC 306D. World, Societal, and Educational Change: Comparative Perspectives. 4-5 Units.
Theoretical perspectives and empirical studies on the structural and cultural sources of educational expansion and differentiation, and on the cultural and structural consequences of educational institutionalization. Research topics: education and nation building; education, mobility, and equality; education, international organizations, and world culture.
Same as: EDUC 136, SOC 231

EDUC 306Y. Economic Support Seminar for Education and Economic Development. 1 Unit.
Core economic concepts that address issues in education in developing and developed countries. Supply and demand, elasticity, discount rates, rate of return analysis, utility functions, and production functions. Corequisite: 306A. (Carnoy).

EDUC 307. Foundations and Contemporary Topics in Social-Educational Psychology. 2-4 Units.
At its core, social psychology is concerned with educational problems because it addresses the problem of how to change hearts and minds in lasting ways. This course explores the major ideas, theories, and findings of social psychology, their educational implications, and the insights they shed into how and when people change. There will be a focus on educational issues. Intersections with other disciplines, in particular social development and biology, will be addressed. Historical tensions and traditions, as well as classic studies and theories, will be covered. Graduate students from other disciplines, and advanced undergraduates, are welcome (class size permitting).
Same as: PSYCH 280

EDUC 308. Assessment Development, Adaptation, and Review. 3 Units.
Offers a critical perspective for examining current practices concerning the development, adaptation, and review of assessment instruments in state, national, and international assessment contexts.

EDUC 309. Educational Issues in Contemporary China. 3-4 Units.
Reforms such as the decentralization of school finance, emergence of private schools, expansion of higher education, and reframing of educational policy to focus on issues of quality. Have these reforms exacerbated educational inequality.
Same as: EDUC 109

EDUC 310. Sociology of Education. 3-5 Units.
Seminar. Key sociological theories and empirical studies of of the relationship between education and other major social institutions, focusing on drivers of educational change, the organizational infrastructures of education, and the implication of education in processes of social stratification. Targeted to doctoral students.
Same as: SOC 332

EDUC 311. Research Workshop in International Education. 1 Unit.
International Education Initiative (IEI) ¿ a cross-campus initiative to promote greater collaboration around research in international education at Stanford. It is designed to help students conduct higher quality research in international education and gain wide exposure to the international education research community. Students will have the chance to engage with invited speakers from outside Stanford, present and get feedback about their own research, and learn new methodological tools.

EDUC 312. Relational Sociology. 4 Units.
Conversations, social relationships and social networks are the core features of social life. In this course we explore how conversations, relationships, and social networks not only have their own unique and independent characteristics, but how they shape one another and come to characterize many of the settings we enter and live in. As such, students will be introduced to theories and research methodologies concerning social interaction, social relationships, and social networks, as well as descriptions of how these research strands interrelate to form a larger relational sociology that can be employed to characterize a variety of social phenomenon. This course is suitable to advanced undergraduates and doctoral students.
Same as: SOC 224B

EDUC 313. The Education of American Jews. 4 Units.
This course will take an interdisciplinary approach to the question of how American Jews negotiate the desire to retain a unique ethnic sensibility without excluding themselves from American culture more broadly. Students will examine the various ways in which people debate, deliberate, and determine what it means to be an "American Jew". This includes an investigation of how American Jewish relationships to formal and informal educational encounters through school, popular culture, religious ritual, and politics.
Same as: JEWISHST 393X, RELIGST 313X

EDUC 314. Funkentelechy: Technologies, Social Justice and Black Vernacular Cultures. 5 Units.
From texts to techne, from artifacts to discourses on science and technology, this course is an examination of how Black people in this society have engaged with the mutually consitutive relationships that endure between humans and technologies. We will focus on these engagements in vernacular cultural spaces, from storytelling traditions to music and move to ways academic and aesthetic movements have imagined these relationships. Finally, we will consider the implications for work with technologies in both school and community contexts for work in the pursuit of social and racial justice.
Same as: AFRICAAM 200N, STS 200N

EDUC 314C. America Never was America to me: Race and Equity in US Public Schools. 1 Unit.
This cross-disciplinary course will use the 10-part docu-series "America to Me" to discuss the complexities of race and equity in US schools. The series follows a year in the life of a racially diverse, well-resourced high school outside Chicago, providing an in-depth look at the effects of race, equity, culture and privilege on educational opportunities, and offers insights into the teenage search for personal identity in today's climate. Two of the people featured in the series will be a part of the class, and after screening each episode, a Stanford professor will give a short talk inspired by the content of that episode. The talks will span several disciplines and theoretical perspectives, including Critical Race Theory, History, Psychology, Youth Development, Film Studies, Linguistics, and Teacher Education. Following each talk, students will engage in critical discussion around race and equity in education. Episode 10 will air during Final Exam week, but there will be no final exam.
Same as: AFRICAAM 114C, CSRE 114C, EDUC 114C

EDUC 316. Social Network Methods. 3-5 Units.
Introduction to social network theory, methods, and research applications in sociology. Network concepts of interactionist (balance, cohesion, centrality) and structuralist (structural equivalence, roles, duality) traditions are defined and applied to topics in small groups, social movements, organizations, communities. Students apply these techniques to data on schools and classrooms.
Same as: SOC 369

EDUC 317. Computational Sociology. 1-2 Unit.
Yearlong workshop where doctoral students are encouraged to collaborate with peers and faculty who share an interest in employing computational techniques in the pursuit of researching social network dynamics, text analysis, histories, and theories of action that help explain social phenomena. Students present their own research and provide helpful feedback on others' work. Presentations may concern dissertation proposals, grants, article submissions, book proposals, datasets, methodologies and other texts. Repeatable for credit.
Same as: SOC 317W

EDUC 318. The Discourses of Teaching Reading. 3-5 Units.
Students examine language, social relationships, and students' textual sense-making to further develop their conceptions of reading comprehension and their pedagogical practice as reading teachers. What it means to comprehend text; how classroom discourse matters in the development of textual understanding; and what understandings, purposes, and relationships should matter in classroom talk about text. Field work in which students facilitate small group text discussions for the duration of the quarter at a location of their choice.

EDUC 319. Research on Teaching. 1-4 Unit.
Introduction and historical perspective to theory, methods, and substantive findings of research on teaching.

EDUC 320. Sociology of Science. 3-4 Units.
The sociology of science concerns the social structures and practices by which human beings interpret, use and create intellectual innovations. In particular we will explore the claim that scientific facts are socially constructed and ask whether such a characterization has limits. Course readings will concern the formation and decline of various thought communities, intellectual social movements, scientific disciplines, and broader research paradigms. A special focus will be placed on interdisciplinarity as we explore whether the collision of fields can result in new scientific advances. This course is suitable to advanced undergraduates and doctoral students.
Same as: EDUC 120, SOC 330, STS 200Q

EDUC 321. Nonprofits, Philanthropy & Society. 3-4 Units.
Over the past several decades nonprofit organizations have become increasingly central entities in society, and with this growing status and importance their roles are increasingly complex.We consider the social, political and economic dynamics of philanthropy and the nonprofit sector, focusing mainly (but not exclusively) on the US. The class is best suited for graduate students looking for an advanced analytic understanding of the sector and those wishing to conduct research in the field; it is not intended to provide training in nonprofit management.
Same as: PUBLPOL 321, SOC 321

EDUC 322. Community-based Research As Tool for Social Change:Discourses of Equity in Communities & Classrooms. 3-5 Units.
Issues and strategies for studying oral and written discourse as a means for understanding classrooms, students, and teachers, and teaching and learning in educational contexts. The forms and functions of oral and written language in the classroom, emphasizing teacher-student and peer interaction, and student-produced texts. Individual projects utilize discourse analytic techniques.
Same as: AFRICAAM 130, CSRE 130, EDUC 123

EDUC 323A. The Practice of Education Policy Analysis. 3-5 Units.
Key issues in the K-12 education policy. Modern theories about the making of policy and its implementation. Preparation to do policy analysis in education.

EDUC 324. The Ecology of Equality. 1-4 Unit.
A biweekly, one-hour workshop that meets throughout the full academic year. Designed for doctoral students and explores a range of issues pertaining to equity and equality in the United States and globally. Takes an interdisciplinary approach and intended for those who desire a deeper exploration of humanistic, social science and philosophical explanations for existing conditions, crises, and policies in society, as they pertain to various forms of social inequality–with a particular focus on race, ethnicity, class, gender, and sexuality.

EDUC 325A. Proseminar 1. 3 Units.
Required of and limited to first-year Education doctoral students. Core questions in education: what is taught, to whom, and why; how do people learn; how do teachers teach and how do they learn to teach; how are schools organized; how are educational systems organized; and what are the roles of education in society?.

EDUC 325B. Proseminar 2. 3 Units.
Required of and limited to first-year Education doctoral students. Core questions in education: what is taught, to whom, and why; how do people learn; how do teachers teach and how do they learn to teach; how are schools organized; how are educational systems organized; and what are the roles of education in society?.

EDUC 325C. Proseminar 3. 2-4 Units.
Required of and limited to first-year Education doctoral students. Core questions in education: what is taught, to whom, and why; how do people learn; how do teachers teach and how do they learn to teach; how are schools organized; how are educational systems organized; and what are the roles of education in society?.

EDUC 326. Advanced Regression Analysis. 3-5 Units.
Social science researchers often deal with complex data and research questions that traditional statistics models like linear regression cannot adequately address. This course offers the opportunity to understand and apply two widely used types of advanced regression analysis that allow the examination of 1) multilevel data structures (multilevel models) and 2) multivariate research questions (structural equation models).

EDUC 327A. The Conduct of Qualitative Inquiry. 3-4 Units.
Two quarter sequence for doctoral students to engage in research that anticipates, is a pilot study for, or feeds into their dissertations. Prior approval for dissertation study not required. Students engage in common research processes including: developing interview questions; interviewing; coding, analyzing, and interpreting data; theorizing; and writing up results. Participant observation as needed. Preference to students who intend to enroll in 327C.
Same as: SOC 331

EDUC 327C. The Conduct of Qualitative Inquiry. 1-4 Unit.
For doctoral students. Students bring research data for analysis and writing. Preference to those who have completed 327A.

EDUC 328. Topics in Learning and Technology: Core Mechanics for Learning. 3 Units.
Contents of the course change each year. The course can be repeated. In game play, core mechanics refers to the rules of interaction that drive the game forward. This class will consider whether there are core mechanics that can drive learning forward, and if so, how to build them into learning environments.

EDUC 329. Seminar on Teacher Professional Development. 1-4 Unit.
Theories, principles, design, and practices of professional development. Topics include: pedagogies of professional development;design principles for transformative professional development; frameworks and processes to support teacher learning; research on professional development processes and outcomes; and policy issues. Optional practicum in subsequent terms in which course participants are able to offer a professional development opportunity to practicing teachers through the Center to Support Excellence in Teaching.

EDUC 330. Teaching English Language Learners: Issues in Policy, Leadership, and Instruction. 3-4 Units.
Current perspectives and research on issues facing educators serving the English language learner population. Issues include federal education legislation, civil rights law, national Common Core Standards, content and language proficiency standards assessment and accountability, school improvement models, school structure, community engagement, addressing issues of long-term English learners, programming for newcomer ELLs, early childhood education, and promoting bilingualism.

EDUC 332. Theory and Practice of Environmental Education. 3 Units.
Foundational understanding of the history, theoretical underpinnings, and practice of environmental education as a tool for addressing today's pressing environmental issues. The purpose, design, and implementation of environmental education in formal and nonformal settings with youth and adult audiences. Field trip and community-based project offer opportunities for experiencing and engaging with environmental education initiatives.
Same as: EARTHSYS 332

EDUC 333A. Understanding Learning Environments. 3 Units.
Advanced seminar. Theoretical approaches to learning used to analyze learning environments and develop goals for designing resources and activities to support effective learning practices.

EDUC 334. Strategic Educational Research and Organizational Reform Clinic. 4 Units.
(Same as STRAMGT 360). This is a two-quarter clinical course offered in the Winter and Spring Quarters that brings together upper-level graduate students in education, law, and business from Stanford to collaborate with their peers at other universities (Columbia University, Harvard University, University of Pennsylvania, University of Michigan) and provide strategic research and consulting to public education organizations. Participants engage in a rigorous and rewarding learning experience, including:nn(i) An intensive seminar in the design, leadership and management, and transformation of public school systems, charter management organizations, start-ups, and other K-12 public- and social-sector institutions;n(ii) Comprehensive skills training in team-based problem solving, strategic policy research, managing multidimensional (operational, policy, legal) projects to specified outcomes in complex environments, client counseling, and effective communication; andn(iii) A high-priority consulting project for a public education sector client (e.g., school district, state education agency, charter management organization, non-profit) designing and implementing solutions to a complex problem at the core of the organization¿s mission to improve the educational outcomes and life chances of children. The participant's team work will allow public agencies throughout the nation to receive relevant, timely, and high-quality research and advice on institutional reforms that otherwise may not receive the attention they deserve.

EDUC 334A. Youth and Education Law Project: Clinical Practice. 4 Units.
(Same as LAW 660A). The Youth and Education Law Project offers students the opportunity to participate in a wide variety of educational rights and reform work, including direct representation of youth and families in special education and school discipline matters, community outreach and education, school reform litigation, and/or policy research and advocacy. All students have an opportunity to represent elementary and high school students with disabilities in special education proceedings, to represent students in school discipline proceedings, or to work with community groups in advocating for the provision of better and more equitable educational opportunities to their children. In addition, the clinic may pursue a specific policy research and advocacy project that will result in a written policy brief and policy proposal. Students working on special education matters have the opportunity to handle all aspects of their clients' cases. Students working in this area interview and counsel clients, investigate and develop facts, work with medical and mental health professionals and experts, conduct legal and educational research, create case plans, and represent clients at individual education program (IEP) team meetings, mediation or special education due process hearings. This work offers students a chance to study the relationship between individual special education advocacy and system-wide reform efforts such as impact litigation. Students working on school discipline matters interview and counsel clients, investigate and develop facts, interview witnesses, conduct legal and educational research, create case plan, and represent clients at school discipline hearings such as expulsion hearings. Such hearings provide the opportunity to present oral and written argument, examine witnesses, and present evidence before a hearing officer. If appropriate and necessary, such proceedings also present the opportunity to represent students on appeal before the school district board of trustees or the county board of education. The education clinic includes two or three mandatory training sessions to be held at the beginning of the term, a weekly seminar that focuses on legal skills and issues in law and education policy, regular case review, and a one hour weekly meeting with the clinic instructor. Admission is by consent of instructor. Beginning with the 2009-2010 academic year, each of the Law School's clinical courses is being offered on a full-time basis for 12 credits.

EDUC 334B. Youth and Education Law Project: Clinical Methods. 4 Units.
(Same as LAW 660B). The Youth and Education Law Project offers students the opportunity to participate in a wide variety of educational rights and reform work, including direct representation of youth and families in special education and school discipline matters, community outreach and education, school reform litigation, and/or policy research and advocacy. All students have an opportunity to represent elementary and high school students with disabilities in special education proceedings, to represent students in school discipline proceedings, or to work with community groups in advocating for the provision of better and more equitable educational opportunities to their children. In addition, the clinic may pursue a specific policy research and advocacy project that will result in a written policy brief and policy proposal. Students working on special education matters have the opportunity to handle all aspects of their clients' cases. Students working in this area interview and counsel clients, investigate and develop facts, work with medical and mental health professionals and experts, conduct legal and educational research, create case plans, and represent clients at individual education program (IEP) team meetings, mediation, or special education due process hearings. This work offers students a chance to study the relationship between individual special education advocacy and system-wide reform efforts such as impact litigation. Students working on school discipline matters interview and counsel clients, investigate and develop facts, interview witnesses, conduct legal and educational research, create case plan, and represent clients at school discipline hearings such as expulsion hearings. Such hearings provide the opportunity to present oral and written argument, examine witnesses, and present evidence before a hearing officer. If appropriate and necessary, such proceedings also present the opportunity to represent students on appeal before the school district board of trustees of the county board of education. The education clinic includes two or three mandatory training sessions to be held at the beginning of the term, a weekly seminar that focuses on legal skills and issues in law and education policy, regular case review, and a one hour weekly meeting with the clinic instructor. Admission is by consent of instructor. Beginning with the 2009-2010 academic year, each of the Law School's clinical courses is being offered on a full-time basis for 12 credits.

EDUC 334C. Youth and Education Law Project: Clinical Coursework. 4 Units.
(Same as LAW 660C). The Youth and Education Law Project offers students the opportunity to participate in a wide variety of educational rights and reform work, including direct representation of youth and families in special education and school discipline matters, community outreach and education, school reform litigation, and/or policy research and advocacy. All students have an opportunity to represent elementary and high school students with disabilities in special education proceedings, to represent students in school discipline proceedings, or to work with community groups in advocating for the provision of better and more equitable educational opportunities to their children. In addition, the clinic may pursue a specific policy research and advocacy project that will result in a written policy brief and policy proposal. Students working on special education matters have the opportunity to handle all aspects of their clients' cases. Students working in this area interview and counsel clients, investigate and develop facts, work with medical and mental health professionals and experts, conduct legal and educational research, create case plans, and represent clients at individual education program (IEP) team meetings, mediation, or special education due process hearings. This work offers students a chance to study the relationship between individual special education advocacy and system-wide reform efforts such as impact litigation. Students working on school discipline matters interview and counsel clients, investigate and develop facts, interview witnesses, conduct legal and educational research, create case plan, and represent clients at school discipline hearings such as expulsion hearings. Such hearings provide the opportunity to present oral and written argument, examine witnesses, and present evidence before a hearing officer. If appropriate and necessary, such proceedings also present the opportunity to represent students on appeal before the school district board of trustees or the county board of education. The education clinic includes two or three mandatory training sessions to be held at the beginning of the term, a weekly seminar that focuses on legal skills and issues in law and education policy, regular case review, and a one hour weekly meeting with the clinic instructor. Admission is by consent of instructor. Beginning with the 2009-2010 academic year, each of the Law School's clinical courses is being offered on a full-time basis for 12 credits.

EDUC 335. Designing Research-Based Interventions to Solve Global Health Problems. 3-4 Units.
The excitement around social innovation and entrepreneurship has spawned numerous startups focused on tackling world problems, particularly in the fields of education and health. The best social ventures are launched with careful consideration paid to research, design, and efficacy. This course offers students insights into understanding how to effectively develop, evaluate, and scale social ventures. Using TeachAids (an award-winning nonprofit educational technology social venture used in 82 countries) as a primary case study, students will be given an in-depth look into how the entity was founded and scaled globally. Guest speakers will include world-class experts and entrepreneurs in Philanthropy, Medicine, Communications, Education, and Technology. Open to both undergraduate and graduate students.
Same as: AFRICAST 135, AFRICAST 235, EDUC 135, EPI 235, HUMBIO 26, MED 235

EDUC 336. Language, Identity, and Classroom Learning. 1-3 Unit.
As contemporary research focuses on how people act and recognize each other, analyzing interaction while acknowledging identity allows for a dynamic examination of cultural interaction. Broad cultural categorization can be overly expansive in identifying the characteristics of large groups of individuals.

EDUC 336A. Law and Public Policy: Issues in Implementation. 3 Units.
(Same as LAW 636.) This seminar will focus on issues related to achieving successful implementation of the goals of legislation. It is widely recognized that the goals of legislation often are not realized and that the failure frequently rests in breakdowns in the implementation process by the agencies and organizations charged with implementing the legislation. In response to problems in implementation, the institutional context of public policy implementation is changing. One category of innovations, known by names such as "management-based regulation" and "evidence-based" social service delivery, gives broad discretion to street-level service providers but subjects them to intensive monitoring and disciplined performance comparison. Another category applies market concepts to regulation or social services, for example, by creating tradable rights (e.g. pollution allowances) or vouchers (for schools, housing, or healthcare). These, and other, new approaches are affecting both the contours of public law doctrine and the nature of lawyering in the public sector. Lawyers in the public sector are increasingly drawing on skills of institutional design and monitoring of the kind associated with private sector transactional practice. nnThis seminar will examine some of the emerging general themes of innovative policy implementation and look at a range of case studies. Topics will include the conditions under which financial and other rewards and sanctions are useful in bringing about desired behaviors, the pluses and minuses of the creation of markets as alternatives to government run programs, and efforts at improving implementation by improving management activities. Examples will be taken from both regulation and social services, and are likely to include environmental protection, education, child protective services, healthcare, food and workplace safety, nuclear power safety, and regulation of financial institutions. nnWe will invite presentations by academics and practitioners.

EDUC 337. Race, Ethnicity, and Linguistic Diversity in Classrooms: Sociocultural Theory and Practices. 3-5 Units.
Focus is on classrooms with students from diverse racial, ethnic and linguistic backgrounds. Studies, writing, and media representation of urban and diverse school settings; implications for transforming teaching and learning. Issues related to developing teachers with attitudes, dispositions, and skills necessary to teach diverse students.
Same as: AFRICAAM 106, CSRE 103B, EDUC 103B

EDUC 338. Innovations in Education. 3-4 Units.
Each year students in this course explore a new design challenge related to teaching. This year we will focus on creating school models. We welcome graduate students from a wide range of disciples. Admission by application. Please see more information at http://dschool.stanford.edu.

EDUC 339. Advanced Topics in Quantitative Policy Analysis. 1-2 Unit.
For doctoral students. How to develop a researchable question and research design, identify data sources, construct conceptual frameworks, and interpret empirical results. Presentation by student participants and scholars in the field. May be repeated for credit.

EDUC 340. Psychology and American Indian/Alaska Native Mental Health. 3-5 Units.
Western medicine's definition of health as the absence of sickness, disease, or pathology; Native American cultures' definition of health as the beauty of physical, spiritual, emotional, and social things, and sickness as something out of balance. Topics include: historical trauma; spirituality and healing; cultural identity; values and acculturation; and individual, school, and community-based interventions. Prerequisite: experience working with American Indian communities.
Same as: NATIVEAM 240, PSYCH 272

EDUC 341. Counterstory in Literature and Education. 3 Units.
Counterstory is a method developed in critical legal studies that emerges out of the broad "narrative turn" in the humanities and social science. This course explores the value of this turn, especially for marginalized communities, and the use of counterstory as analysis, critique, and self-expression. Using an interdisciplinary approach, we examine counterstory as it has developed in critical theory, critical pedagogy, and critical race theory literatures, and explore it as a framework for liberation, cultural work, and spiritual exploration.
Same as: CSRE 141E, EDUC 141, LIFE 124

EDUC 342. Child Development and New Technologies. 3 Units.
Focus is on the experiences computing technologies afford children and how these experiences might influence development. Sociocultural theories of development as a conceptual framework for understanding how computing technologies interact with the social ecology of the child and how children actively use technology to meet their own goals. Emphasis is on influences of interactive technology on cognitive development, identity, and social development equity.

EDUC 343A. Navigating the Academic Profession. 1-2 Unit.
For DARE doctoral fellows only. The roles and responsibilities of faculty members in American colleges and universities in the 21st century. How to become productive faculty members within the higher education enterprise.

EDUC 343B. Practicum for fellows in the Stanford Preparing Future Professors Program. 1-2 Unit.
Nine weekly one-hour and fifty-minute sessions consisting of discussions of: (1) the previous week's mentoring institutions' shadowing experiences and (2) readings related to session themes.

EDUC 343C. Preparing for Faculty Careers. 1 Unit.
For graduate students and postdoctoral fellows from all disciplines who are considering a faculty career of any type and at any of a broad range of institutions. Numbers are limited and so whether formally registered (grad students) or attending as auditors (grad students or postdocs), all participants must commit to attending the entire course. Begins with a methodology to help determine if a faculty career is a good fit for the values, interests and abilities of each participant. Progresses to an exploration of different types of faculty roles and different institutional contexts (e.g., tenure-track vs. non-tenure-track; research-intensive vs. teaching-intensive; large vs. small; etc.). Discusses how to identify and land a faculty position. Ends with concrete tips on how to thrive in such a role. May be repeated for credit.

EDUC 345. Adolescent Development and Schooling. 3-5 Units.
How the context of school and its relationship to other major context developments (family, peer group, and neighborhood) influence the social, emotional, and cognitive development of secondary school-aged youths. Metatheoretical approaches (mechanistic, organismic, developmental contextualist metamodels) and methods of conducting research on schooling and development (laboratory, survey, ethnographic, intervention). Topics: school transitions during adolescence; the role of school functioning in broader patterns of competence or distress; and how the organization of academic tasks, classrooms, and school environments as a whole can influence adolescent development. Focus is on middle and high school years. (PSE).

EDUC 346. Research Seminar in Higher Education. 3-5 Units.
Major issues, current structural features of the system, the historical context that shaped it, and theoretical frameworks. The purposes of higher education in light of interest groups including students, faculty, administrators, and external constituents. Issues such as diversity, stratification, decentralization, and changes that cut across these groups.

EDUC 347. The Economics of Higher Education. 3-4 Units.
(Same as GSBGEN 348) Topics: the worth of college and graduate degrees, and the utilization of highly educated graduates; faculty labor markets, careers, and workload; costs and pricing; discounting, merit aid, and access to higher education; sponsored research; academic medical centers; and technology and productivity. Emphasis is on theoretical frameworks, policy matters, and the concept of higher education as a public good. Stratification by gender, race, and social class.

EDUC 348. Policy and Practice in Science Education. 3-4 Units.
Values and beliefs that dominate contemporary thinking about the role and practice of science education, what the distinctive features of science are, and the arguments for its value as part of compulsory education. Research on the conceptual and affective outcomes of formal science education, how the changing nature of contemporary society challenges current practice, and the rationale for an alternative pedagogy, curriculum and assessment.

EDUC 349. Globalization and Higher Education. 3-4 Units.
This course examines the expansion, impact, and organization of higher education across the world. This course engages students with sociological theory and comparative research on global and national sources of influence on higher education developments, e.g. admissions criteria, curricular content, governance structure.. At the end of the course students should be able to compare and contrast developments across countries.
Same as: SOC 297

EDUC 350. Workshop on New Research. 1 Unit.
This course will integrate attendance and participation at the research lectures given by visitors with separate, faculty-led workshops that discuss the presented study, its methodologies, and the research and policy contexts in which it is situated. This workshop will also provide an opportunity for professional development relevant to academic publishing and effective presentation.

EDUC 351A. Statistical Methods for Longitudinal Research. 2 Units.
See http://rogosateaching.com/stat222/. Research designs and statistical procedures for time-ordered (repeated-measures) data. The analysis of longitudinal panel data is central to empirical research on learning, development, aging, and the effects of interventions. Topics include: measurement of change, growth curve models, analysis of durations including survival analysis, experimental and non-experimental group comparisons, reciprocal effects, stability. Prerequisite: intermediate statistical methods.
Same as: STATS 222

EDUC 351B. Statistical Issues in Testing and Assessment. 2-3 Units.
The new book by Howard Wainer, "Uneducated Guesses: Using Evidence to Uncover Misguided Education Policies" is the basis for this seminar. Also included will be supporting research literature and data analysis activities for topics such as college admissions, methods for missing data, assessment of achievement gaps, and the use of value-added analysis. See http://www-stat.stanford.edu/~rag/ed351B/.

EDUC 351C. Workshop in Technical Quality of Educational Assessments and Accountability. 3 Units.
Topics include: determinations of accuracy for individual scores and group summaries; design and reporting of educational assessments; achievement instruments in state-level accountability systems; and policy implications of statistical properties. See http://www.stanford.edu/~rag/.

EDUC 352. Education Research Partnerships. 3-5 Units.
This course focuses on developing and sustaining effective education research partnerships. Partnerships are essential in creating new research projects, conducting field-based inquiry, and in implementing lessons from research projects. The course emphasizes the power of successful partnerships in improving education while exploring potential barriers to the formation and productivity of partnerships. During this course there will be explicit opportunities for students to develop the knowledge and capacities necessary for effective collaborative partnership research.

EDUC 352A. Introduction to Research-Practice Partnerships. 1-4 Unit.
This course is an introduction to education research-practice partnerships (RPPs). It examines the distinctive characteristics of education research-practice partnerships, how they differ from other efforts to improve education, and the types of questions that have been explored by RPPs. We will discuss different types of RPPs including design based implementation research, networked improvement communities, and community-engaged research. We will then focus in more depth on design-based implementation research (DBIR), examining the theories and methodologies used in DBIR, and projects that DBIR scholars have conducted.

EDUC 352B. Seminar in Developing Partnership Research. 1-2 Unit.
In this seminar, students develop the foundational knowledge and skills for effective partnership research. This seminar introduces students to the skills and knowledge necessary for starting and sustaining partnership research through readings and discussion. In the seminar, students develop a concept for partnership research they want to pursue and receive coaching and guidance on forming and nurturing a partnership research project.

EDUC 352C. Advanced Partnership Research. 1 Unit.
Partnership research requires a dynamic skill set involving negotiations, collaboration and communication as well as knowledge of the context you are working in and the dilemmas practice partners face in their day¿to¿day work. In this course, students will work with faculty, peers, and practice partners to learn how to navigate the challenging waters of partnership research and examine challenges in their own partnership research.

EDUC 353A. Problems in Measurement: Item Response Theory. 3 Units.
Study of the mathematical models used in psychological measurement with an emphasis on item response theory (IRT). We will examine various problems, including estimation of item parameters and person abilities, polytomous response models, and other issues. A key focus of this course will be on developing applied skills with the relevant models. Prerequisites included EDUC 252 (or consent of the instructor).

EDUC 353C. Problems in Measurement: Generalizability Theory. 3 Units.
Application to analysis of educational achievement data, including performance assessments. Fundamental concepts, computer programs, and actual applications.

EDUC 354. School-Based Decision Making. 4 Units.
Leadership as it plays out in the pragmatic demands and tensions of site-level decision processes. School decision-making as a capacity-building challenge with focus on the complex interdependence of factors critical to school achievement and equity outcomes: governance, culture, curricula, resource alignment, inquiry, community engagement, and multi-cultural competence.

EDUC 355. Higher Education and Society. 3 Units.
For undergraduates and graduate students interested in what colleges and universities do, and what society expects of them. The relationship between higher education and society in the U.S. from a sociological perspective. The nature of reform and conflict in colleges and universities, and tensions in the design of higher education systems and organizations.

EDUC 356. Street History: Learning the Past in School and Out. 3-5 Units.
Interdisciplinary. Since Herodotus, history and memory have competed to shape minds: history cultivates doubt and demands interpretation; memory seeks certainty and detests that which thwarts its aims. History and memory collide in modern society, often violently. How do young people become historical amidst these forces; how do school, family, nation, and mass media contribute to the process?.
Same as: HISTORY 337C

EDUC 357. Science and Environmental Education in Informal Contexts. 3-4 Units.
There are ever-expanding opportunities to learn science in contexts outside the formal classroom, in settings such as zoos, museums, and science centers. How are issues around science and the environment presented in these contexts, how do people behave and learn in these contexts, and what messages do they take away? This course will cover the learning theories and empirical research that has been conducted in these settings. Case studies of nearby science centers will add an experiential dimension.

EDUC 358. Learning, Sharing, Publishing, and Intellectual Property. 1-4 Unit.
The educational, historical, legal, economic, technical, and ethical issues entailed in the digital-era openness and sharing of intellectual properties associated with learning (including books, websites, games, journals, etc.). The skills and knowledge for finding, developing, and evaluating resources at all educational levels, based on a grasp of the opportunities and challenges of increasing access to learning in this way. As part its global focus on open learning, the course will be run in conjunction with the OpenKnowledge MOOC "Changing the Global Course of Learning" (https://class.stanford.edu/courses/Education/OpenKnowledge/Fall2014/about), offering students the option of both experiencing and studying a MOOC on this theme, which is being co-taught in Mexico, Ghana, Canada, and the U.S. (Stanford and Fordham) in English and Spanish.

EDUC 359B. Research on Science Teaching and Learning. 2-3 Units.
An exploration and review of the main programs of research that have been conducted in the field of science education, their findings and implications.

EDUC 359C. Science Literacy. 2-3 Units.
The changing debate over conceptions of the nature of science and the calls to broaden it. Themes, directions, limitations, and epistemological foundations of the body of research on the nature of science.

EDUC 359E. Research on Mathematics Education. 2-4 Units.
Comparative and cultural perspectives on mathematics teaching and learning practices in the U.S. mathematics education in the context of cultural and educational systems. Teaching and learning as an interactive system, classroom discourse and math talk, teacher professional development, classroom culture and norms, educational equity, and issues of curriculum and standards.

EDUC 359F. Research in Mathematics Education: Conducting Inquiry. 2-4 Units.
This seminar will serve as both a workshop for developing participants' own professional trajectories as mathematics education scholars and a forum for discussion on key issues related to conducting research and making an impact in the field of mathematics education. Participants will be invited to share their own research and to engage in discussions about possible impact. This seminar is restricted to mathematics education students.

EDUC 360. Child Development in Contexts of Risk and Adversity. 3 Units.
This course provides an overview of theoretical and methodological issues pertaining to the study of child development in contexts of risk and adversity. We will begin by discussing different approaches to conceptualizing and measuring exposure to risk and adversity as well as conceptualizing and measuring children¿s adaptation. We will review different theoretical frameworks and empirical models that researchers employ to identify factors and processes that are associated with resilient or maladaptive developmental outcomes and trajectories over time. Finally, we will discuss how exemplar biological, family, school, cultural, and economic processes contribute to our understanding of children¿s adaptation and resilience. Throughout the course, we will discuss limitations of current research, directions for future research, and the translation of research findings for practitioners and policy makers. We will also consider equity issues relevant to studying adversity and adaptive functioning in diverse groups of children. Students will have the opportunity to apply the knowledge gained in the course to develop a research proposal that is aligned with their own interests and work.

EDUC 361. Workshop: Networks and Organizations. 1-3 Unit.
For students doing advanced research. Group comments and criticism on dissertation projects at any phase of completion, including data problems, empirical and theoretical challenges, presentation refinement, and job market presentations. Collaboration, debate, and shaping research ideas. Prerequisite: courses in organizational theory or social network analysis.
Same as: SOC 361W

EDUC 362. The Science Curriculum: Values and Ideology in a Contested Terrain. 2-4 Units.
The issue of what should be taught in schools is a site of contestation where issues of beliefs, values and ideologies emerge. This course will use the school science curriculum and the history of its development to explore the common positions adopted and argued for in approaching curriculum development. Course will help students develop a knowledge of curriculum reform in school science and a deeper understanding of the arguments that have shaped its present form and their historical antecedents.

EDUC 363. Stress Reactivity and Biological Sensitivity to Context. 3-4 Units.
This class is designed to introduce students to two biological system: the autonomic nervous system (ANS) and the hypothalamic-pituitary-adrenal (HPA) axis' that help children respond to and cope with daily challenges, stressors, and adversities. We will examine: (1) how the ANS and HPA systems respond to daily stressors, as well as experiences of poverty, maltreatment, and neglect; (2) how different indices of stress reactivity independently and jointly relate to various domains of competence and psychopathology; and (3) how stress reactivity moderates contextual influences on children's adaptation.

EDUC 364. Cognition and Learning. 3-4 Units.
Cognitive psychology is the study of human thought including topics including the nature of expertise, creativity, and memory. Emphasis is on learning. The role of cognitive psychology in helping people learn, and determining the most desirable type of learning and whether people have learned. Students design and conduct their own learning study.

EDUC 365. Social, Emotional, and Personality Development. 3 Units.
Limited to doctoral students in DAPS and those with a background in child and adolescent development. Developmental processes that account for psychological adaptation in social relationships, schools, and other interpersonal settings. Theoretical models of social, personality, and emotional development. Topics such as self-concept, empathy, motivation, aggression, and personality formation.

EDUC 366. Learning in Formal and Informal Environments. 3 Units.
How learning opportunities are organized in schools and non-school settings including museums, after-school clubs, community art centers, theater groups, aquariums, sports teams, and new media contexts. Sociocultural theories of development as a conceptual framework. Readings from empirical journals, web publications, and books.Collaborative written or multimedia research project in which students observe and document a non-school learning environment.

EDUC 366W. Semiotics for Ethnography. 1 Unit.
This workshop-style seminar will introduce students to a range of semiotic and linguistic anthropological approaches and tools for ethnographic analysis. A group of (linguistic) anthropologists from other universities will be invited to offer workshops, through which students will learn 1. how to teach semiotics in anthropology courses and 2. how to use semiotic concepts for their own research projects.
Same as: ANTHRO 366W

EDUC 367. Cultural Psychology. 3-5 Units.
(Formerly 292.) The relationship between culture and psychological processes; how culture becomes an integral part of cognitive, social, and moral development. Both historical and contemporary treatments of cultural psychology, including deficit models, crosscultural psychology, ecological niches, culturally specific versus universal development, sociocultural frameworks, and minority child development. The role of race and power in research on cultural psychology. Course is designed to meet the interests of doctoral students. Enrollment of undergraduate seniors considered; course content not appropriate for freshman, sophomore, nor junior undergraduates.

EDUC 368. Cognitive Development in Childhood and Adolescence. 3 Units.
This course aims to broaden and deepen students¿ understanding of cognitive development from the prenatal period through adolescence. It will examine various theoretical, methodological, and empirical issues pertaining to different domains of cognitive development, such as neurobiological plasticity, infant cognition, theory of mind, memory, language, and executive functions. Throughout the course, as we survey research findings, we will discuss (1) methods that researchers have employed in their study of cognitive development; (2) limitations of current research and directions for future research; and (3) translation of research findings for practitioners and policymakers.

EDUC 370. Parenting and Family Relationships in Childhood. 3 Units.
This course will focus on the relevance of parenting and family relationships for children's development. We will examine studies of: (1) how parental and child behaviors contribute to sensitivity, responsiveness, scaffolding, autonomy, and control within the dyad; (2) parents role in socializing children's emotions and their ethnic/racial identity; and (3) parents involvement in early education. We will discuss cultural and economic factors affecting our conceptualization, measurement, and interpretations of parents' behaviors and their interactions with their children.

EDUC 371. Social Psychology and Social Change. 2-3 Units.
The course is intended as an exploration of the major ideas, theories, and findings of social psychology and their applied status. Special attention will be given to historical issues, classic experiments, and seminal theories, and their implications for topics relevant to education. Contemporary research will also be discussed. Advanced undergraduates and graduate students from other disciplines are welcome, but priority for enrollment will be given to graduate students. In order to foster a vibrant, discussion-based class, enrollment will be capped at 20 students. Interested students should enroll in the class through simple enroll or axess. There will be an application process on the first day of class if there is overwhelming interest. Please contact the course TA, Isabelle Tay (isabelletay[at]stanford.edu), if you have any further questions.
Same as: PSYCH 265

EDUC 373. Genetics and Society. 3 Units.
This course will focus on social science engagement with developments in genetic research, focusing on two key issues. First, social scientists are trying to figure out how genetic data can be used to help them better understand phenomena they have been long endeavoring to understand. Second, social scientists try to improve understanding of how social environments moderate, amplify, or attenuate genetic influences on outcomes.
Same as: SOC 232

EDUC 374. Philanthropy and Civil Society. 1-3 Unit.
Cross-listed with Law (LAW 7071), Political Science (POLISCI 334) and Sociology (SOC 374). Associated with the Center for Philanthropy and Civil Society (PACS). Year-long workshop for doctoral students and advanced undergraduates writing senior theses on the nature of civil society or philanthropy. Focus is on pursuit of progressive research and writing contributing to the current scholarly knowledge of the nonprofit sector and philanthropy. Accomplished in a large part through peer review. Readings include recent scholarship in aforementioned fields. May be repeated for credit for a maximum of 3 units.
Same as: POLISCI 334, SOC 374

EDUC 375A. Seminar on Organizational Theory. 5 Units.
The social science literature on organizations assessed through consideration of the major theoretical traditions and lines of research predominant in the field. For PhD students only.
Same as: MS&E 389, SOC 363A

EDUC 375B. Seminar on Organizations: Institutional Analysis. 3-5 Units.
Seminar. Key lines of inquiry on organizational change, emphasizing network, institutional, and evolutionary arguments.
Same as: SOC 363B

EDUC 376. Higher Education Leadership Colloquium. 2-3 Units.
This course presents a series of speakers from Stanford and other higher education institutions who work at the middle to higher levels of administration. Speakers and topics are guided by student interest, but include a range from student affairs to finance. Sessions are intended to be interactive.

EDUC 377B. Strategic Management of Nonprofit Organizations and Social Ventures. 3 Units.
(Same as STRAMGT 368). This course seeks to provide a survey of the strategic, governance, and management issues facing a wide range of nonprofit organizations and their executive and board leaders, in the era of venture philanthropy and social entrepreneurship. The students will also be introduced to core managerial issues uniquely defined by this sector such as development/fundraising, investment management, performance management and nonprofit finance. The course also provides an overview of the sector, including its history and economics. Cases involve a range of nonprofits, from smaller, social entrepreneurial to larger, more traditional organizations, including education, social service, environment, health care, religion, NGO's and performing arts. In exploring these issues, this course reinforces the frameworks and concepts of strategic management introduced in the core first year courses. In addition to case discussions, the course employs role plays, study group exercises and many outsider speakers.

EDUC 377C. Philanthropy, Inclusivity and Leadership. 2 Units.
(Same as GSBGEN 581) A philanthropist is anyone who gives anything-time, expertise, networks, credibility, influence, dollars, experience-in any amount to create a better world. Regardless of one's age, background or profession, everyone has the potential to lead in a way that both tackles the complex social problems our interconnected world faces and creates greater inclusivity, access and impact. This demanding two-week, compressed course will provide passionate students with a brave space to develop and refine a plan for their own social change journey and amplify their potential to give, live and lead in a way that matters more. Using design thinking, students will challenge their preconceptions and wrestle with their social change approach, their privileged position as future Stanford graduates and philanthropy's role in society. Lectures and class discussions will inspire and prepare students to create social value with greater intentionality and humility. For the first class, students will submit a proposed social impact plan for their professional, philanthropic and civic lives. Over the course's six sessions, students will refine their plan, creating a formal theory of change that strategically utilizes their unique leadership platform and asset portfolio to advance opportunity and justice for a target population. Potential guest speakers include Darren Walker, President of the Ford Foundation; Justin Steele, Principal at Google.org; Crystal Hayling, Executive Director of the Libra Foundation; Rob Reich of Stanford PACS and Laura Muñoz Arnold, Co-Chair of the Laura and John Arnold Foundation.

EDUC 377E. Improving and Measuring Social Impact. 3 Units.
(Also GSBGEN 322). This course focuses on strategy and actionable measurement in government, non-profit organizations, market-based social enterprises, philanthropy, and impact investing. ¿Actionable¿ means that measurement is used by managers, investors, and other stakeholders in improving outcomes. The course explores the intersection of several ideas that seem to be in some tension with each other. (1) ¿In preparing for battle I have always found that plans are useless, but planning is indispensable.¿ (Dwight D. Eisenhower), (2) You can¿t manage what you can¿t measure, (3) Measurement is expensive and its results are often ignored, (4) ¿Not everything that counts can be counted and not everything that can be counted counts¿ (apocryphally attributed to Einstein), (5) ¿The more any quantitative social indicator is used for decision making, the more subject it will be to corruption pressures and the more apt it will be to distort and corrupt the social processes it is intended to monitor.¿ (Campbell¿s Law). Specifically, the course will include: strategic planning, logic models, theories of change, monitoring, and evaluation; measuring the social impact of governments, non-governmental organizations, and market-based social enterprises, and asking how philanthropists and impact investors can assess their own impact; impact investing, performance contracting, and social impact bonds; and techniques for improving the behavior and accountability of individuals and organizations. These issues will be addressed mainly through business school case studies, which place the students in the position of CEOs, managers, and investors called upon to make major decisions. WARNING: The course has a fair amount of reading - not more than is common in undergraduate and graduate courses, but more than is typical for MBA courses in the GSB.

EDUC 377F. Disruptions in Education. 3 Units.
(Same as GSBGEN 345). This course will explore the contemporary higher education industry, focusing especially on the places where disruptions of all kinds present significant opportunities and challenges for investors, entrepreneurs, and the businesses that serve this huge global market, as well as for faculty, students, and higher education administrators. Using a variety of readings and case studies to better understand recent disruptions and the unbundling occurring across the post-secondary landscape, from outside and inside the academy, both for-profit and non-profit, the course will examine technology in teaching and learning; the future of the degree and alternatives to the traditional credential; accreditation; competency based education; debt and education financing models; investing in the education space; and tertiary products and platforms that serve the student services market. Guests will include higher education leaders and practitioners, as well as investors and entrepreneurs. Attendance at first class meeting is required.

EDUC 377G. Problem Solving for Social Change. 3 Units.
(Also GSBGEN 367). Stanford graduates will play important roles in solving many of today's and tomorrow's major societal problems -- such as improving educational and health outcomes, conserving energy, and reducing global poverty -- which call for actions by nonprofit, business, and hybrid organizations as well as governments. This course teaches skills and bodies of knowledge relevant to these roles through problems and case studies drawn from nonprofit organizations, for-profit social enterprises, and governments. Topics include designing, implementing, scaling, and evaluating social strategies; systems thinking; decision making under risk; psychological biases that adversely affect people's decisions; methods for influencing individuals' and organizations' behavior, ranging from incentives and penalties to "nudges;" human-centered design; corporate social responsibility; and pay-for-success programs. We will apply these concepts and tools to address an actual social problem facing Stanford University. (With the exception of several classes on strategy and evaluation, there is no substantial overlap with Paul Brest's and Mark Wolfson's course, Strategic Philanthropy and Impact Investing (GSBGEN 319), which has a different focus from this one.).

EDUC 377H. Diverse Leadership as an Imperative for Impact. 3 Units.
(Same as GSBGEN 377). Our society implicitly prizes a particular approach to leadership - but today's cross-sectoral, impact-oriented leader cannot afford to be restricted to a single approach. If we aspire to address challenges across social, economic, and political arenas, with highly charged moral implications and multiple stakeholders, we have an imperative to use all available tools by discovering, celebrating, and advancing diversity in leadership. In this course, we will: (1) study a range of effective leadership approaches; (2) develop broad, transportable skills and frameworks required to lead in any complex setting - business, public sector, nonprofit sector; (3) delve into leadership tradeoffs and tensions; (4) explore and understand our own values and tacit and explicit decision-making criteria; and (5) recognize barriers to diversity and tactics to address them. Guiding questions will include: How does the context shape the solution set? What does inspired and inspiring leadership look like? How do race/gender/other identities enter into the equation? How do I develop my own brand of leadership? We will examine contemporary leaders and controversies in education and elsewhere, draw upon timeless historical thinkers, enjoy the wisdom of guest speakers, and work intensively in small groups to highlight challenges, opportunities, and tradeoffs. By exploring a range of approaches and situations, we will strive for deeper understanding of ourselves and of the context to become a more capable, empathetic and effective leaders.

EDUC 378. Social and Emotional Learning: Conceptual & Measurement Issues. 3 Units.
Social and emotional learning (SEL) is an umbrella term for the malleable, non-academic skills that support educational outcomes, such as school readiness, classroom behaviors, and academic achievement. In this course, we will discuss theoretical frameworks, empirical studies, and measurement issues pertaining to the intrapersonal SEL skills: self-control/executive functions, emotion regulation, intrinsic motivation, persistence, and growth mindset. We will also discuss school districts' efforts to promote and assess students' SEL skills.

EDUC 379. Moral, Civic, and Environmental Education. 3 Units.
An examination of the conceptual foundations that underlie moral, civic, and environmental action in contemporary society, and the social, cognitive, and motivational capacities that make possible constructive participation. The course will discuss both in-school and beyond-schools ways in which young people can be educated for informed and constructive participation. Among the educational methods to be considered will be narrative treatments of exemplary figures in the moral, civic, and environmental domains.
Same as: ENVRES 255

EDUC 380. Supervised Internship. 1-15 Unit.
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EDUC 381. Multicultural Issues in Higher Education. 4 Units.
The primary social, educational, and political issues that have surfaced in American higher education due to the rapid demographic changes occurring since the early 80s. Research efforts and the policy debates include multicultural communities, the campus racial climate, and student development; affirmative action in college admissions; multiculturalism and the curriculum; and multiculturalism and scholarship.
Same as: CSRE 181, EDUC 181

EDUC 382. Student Development and the Study of College Impact. 4 Units.
The philosophies, theories, and methods that undergird most research in higher education. How college affects students. Student development theories, models of college impact, and issues surrounding data collection, national databases, and secondary data analysis.
Same as: EDUC 182

EDUC 386. Leadership and Administration in Higher Education. 2 Units.
Definitions of leadership and leadership roles within colleges and universities. Leadership models and organizational concepts. Case study analysis of the problems and challenges facing today's higher education administrators.

EDUC 387. Workshop: Comparative Studies of Educational and Political Systems. 1-5 Unit.
Analysis of quantitative and longitudinal data on national educational systems and political structures. May be repeated for credit. Prerequisite: consent of instructor.
Same as: SOC 311A

EDUC 388A. Language Policies and Practices. 3 Units.
For STEP teacher candidates seeking to meet requirements for the English Learner Authorization on their preliminary credential. Historical, political, and legal foundations of education programs for English learners. Theories of second language learning, and research on the effectiveness of bilingual education. Theory-based methods to facilitate and measure English learners' growth in language and literacy acquisition, and create environments which promote English language development and content area learning through specially designed academic instruction in English. (STEP).

EDUC 388F. Introduction to Academic Language. 1 Unit.
This course will provide opportunities for pre-service teachers to begin to develop an understanding of language uses, forms, and mechanics through application of a functional approach to academic language. By exploring language structures (phonology, morphology, syntax, semantics) as well as lanauge-in-use (pragmatics and discourse), teacher candidates will be able to better recognize linguistic demands and challenges of students in the classroom.

EDUC 389A. Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations. 3-5 Units.
Language, as a cultural resource for shaping our identities, is central to the concepts of race and ethnicity. This seminar explores the linguistic construction of race and ethnicity across a wide variety of contexts and communities. We begin with an examination of the concepts of race and ethnicity and what it means to be "doing race," both as scholarship and as part of our everyday lives. Throughout the course, we will take a comparative perspective and highlight how different racial/ethnic formations (Asian, Black, Latino, Native American, White, etc.) participate in similar, yet different, ways of drawing racial and ethnic distinctions. The seminar will draw heavily on scholarship in (linguistic) anthropology, sociolinguistics and education. We will explore how we talk and don't talk about race, how we both position ourselves and are positioned by others, how the way we talk can have real consequences on the trajectory of our lives, and how, despite this, we all participate in maintaining racial and ethnic hierarchies and inequality more generally, particularly in schools.
Same as: ANTHRO 320A, CSRE 389A, LINGUIST 253

EDUC 389B. Race, Ethnicity, and Language: Writing Race, Ethnicity, and Language in Ethnography. 3-4 Units.
This methods seminar focuses on developing ethnographic strategies for representing race, ethnicity, and language in writing without reproducing the stereotypes surrounding these categories and practices. In addition to reading various ethnographies, students conduct their own ethnographic research to test out the authors' contrasting approaches to data collection, analysis, and representation. The goal is for students to develop a rich ethnographic toolkit that will allow them to effectively represent the (re)production and (trans)formation of racial, ethnic, and linguistic phenomena.
Same as: ANTHRO 398B, LINGUIST 254

EDUC 389C. Race, Ethnicity, and Language: Pedagogical Possibilities. 3-4 Units.
This seminar explores the intersections of language and race/racism/racialization in the public schooling experiences of students of color. We will briefly trace the historical emergence of the related fields of sociolinguistics and linguistic anthropology, explore how each of these scholarly traditions approaches the study of language, and identify key points of overlap and tension between the two fields before considering recent examples of inter-disciplinary scholarship on language and race in urban schools. Issues to be addressed include language variation and change, language and identity, bilingualism and multilingualism, language ideologies, and classroom discourse. We will pay particular attention to the implications of relevant literature for teaching and learning in urban classrooms.
Same as: AFRICAAM 389C, CSRE 385

EDUC 390. Urban Schools, Social Policy, and the Gentrifying City. 3-4 Units.
This course is designed to help students develop a more sophisticated understanding of educational inequality in the contemporary U.S. city. This course will survey existing literature about the intersection of gentrification and urban schooling, focusing on policies and practices that gave rise to the current urban condition, theory and research about urban redevelopment, collateral consequences for schools and communities, and how these issues relate to the structure and governance of urban schools as well as to the geography of opportunity more broadly.
Same as: CSRE 291, URBANST 141A

EDUC 391. Engineering Education and Online Learning. 3 Units.
A project based introduction to web-based learning design. In this course we will explore the evidence and theory behind principles of learning design and game design thinking. In addition to gaining a broad understanding of the emerging field of the science and engineering of learning, students will experiment with a variety of educational technologies, pedagogical techniques, game design principles, and assessment methods. Over the course of the quarter, interdisciplinary teams will create a prototype or a functioning piece of educational technology.
Same as: ENGR 391

EDUC 392. Education for Liberation: A History of African American Education, 1800 to the Present. 3-5 Units.
This course examines discourses around education and freedom in African American educational thought from the 19th century to the present, using both primary sources and the works of current historians. The course pays particular attention to how the educational philosophies of different African American thinkers reflected their conceptions of what shape freedom might take in the American context, and the tension between educational outlooks that sought inclusion or integration versus those that prized self-determination. We will also be attentive to the ways in which age, gender, geography, class, and color worked to influence the pursuit and achievement of various African American educational visions. This will be a 3-5 credit course and meet as a seminar open both to graduate students and advanced undergraduates.
Same as: CSRE 292

EDUC 393. Proseminar: Education, Business, Politics. 3 Units.
Overview of the field of education for joint degree (M.B.A./M.A.) students.

EDUC 394. School and District Leadership to Support English Learners' Academic Achievement. 3-4 Units.
English learners (ELs) constitute nearly 10% of the U.S. K12 population. At some point in their careers, the majority of educators will have English learners in their schools and classrooms. This course is designed for students who are considering educational policy or leadership careers and are interested in learning about the legal framework and research base for the education of ELs. NOTE: This is online course where most of the work (readings, discussions, and assignments) will be completed by students working in pairs or in groups, online or face to face. There will be two in-person class meetings on campus at the assigned day and times, one in the third week of classes and one in the last. Course is variable units, but workload will not vary. PLEASE SEE IMPORTANT NOTE BELOW IN THE "Schedule for EDUC 394" LINK.

EDUC 395. The Hidden Curriculum of Scholarly Writing. 3-5 Units.
Focus is on producing articles for scholarly journals in education and the social sciences. Ethics and craft of scholarly publishing. Writing opinion articles for lay audiences on issues of educational and social import.

EDUC 397A. Democracy and Education. 2-3 Units.
John Dewey's Democracy and Education may be the most comprehensive and influential book on educational theory and practice. Conceptualizing democracy and its implications for schooling is its central concern. We offer a close reading of Dewey's effort paired with Denis Phillips' recent chapter by chapter commentary on Dewey's book. A century after Democracy and Education in 1916 and the founding of Stanford's School of Education in 1917, Phillips' Companion invites a reexamination of American democracy and education today.

EDUC 398. Core Mechanics for Learning. 3 Units.
In game play, core mechanics refers to the rules of interaction that drive the game forward. This class will consider whether there are core mechanics that can drive learning forward, and if so, how to build them into learning environments. The course mixes basic theory, research methods, and application of learning principles.

EDUC 399A. Designing Surveys. 1-2 Unit.
This workshop/course is designed for students who are designing a survey to collect quantitative data for a research project. The workshop content draws on relevant cognitive processing theories and research related to development of good survey questions. In addition to some readings and a few mini lectures, this workshop is designed to be highly interactive and practical. By the end of the course students will have designed and pilot tested their survey instrument. Course enrollment is limited to 12 students and may be repeated for credit.

EDUC 400A. Introduction to Statistical Methods in Education. 3-4 Units.
(Formerly EDUC 160.) Basic techniques in descriptive and inferential statistics for educational research will be covered with an emphasis on rigorous preparation for intermediate and advanced courses. Topics include central tendency, variance, probability, distributions, confidence interval, t-test, F-test, correlation, regression, and analysis of variance. Non-parametric statistics and graphical principles for data representation will also be addressed. Students will also be introduced to STATA in preparation for subsequent higher level courses.

EDUC 400B. Statistical Analysis in Education: Regression. 5 Units.
Primarily for doctoral students; part of doctoral research core; prerequisite for advanced statistical methods courses in School of Education. Basic regression, a widely used data-analytic procedure, including multiple and curvilinear regression, regression diagnostics, analysis of residuals and model selection, logistic regression. Proficiency with statistical computer packages.

EDUC 401A. Mini Courses in Methodology: Statistical Packages for the Social Sciences. 1 Unit.
Statistical analysis using SPSS, including generating descriptive statistics, drawing graphs, calculating correlation coefficients, conducting t-tests, analysis of variance, and linear regression. Building up datasets, preparing datasets for analysis, conducting statistical analysis, and interpreting results.
Same as: SPSS

EDUC 401B. Mini Courses in Methodology: Stata. 1 Unit.
The goal of this course is to familiarize students with the Stata statistical software package for use in quantitative research. By the end of the course, students should be able to import and export data, clean and manage data, conduct standard statistical tests (e.g., correlation, t-test, regression), and produce a graph.

EDUC 401C. Data Analysis Examples Using R. 1 Unit.
We will do basic and intermediate level data analysis examples, likenthose that students will have seen in their courses, in R. Examplesninclude: descriptive statistics and plots, analysis of variance,ncorrelation and regression, categorical variables, multilevel data.nSee http://rogosateaching.com/ed401/.

EDUC 401D. Multilevel Modeling Using R. 1 Unit.
See http://rogosateaching.com/stat196/ . Multilevel data analysis examples using R. Topics include: two-level nested data, growth curve modeling, generalized linear models for counts and categorical data, nonlinear models, three-level analyses.
Same as: STATS 196A

EDUC 402. Formative Assessment of Literacy Learning and Performance. 2 Units.
With the emergence of national standards and assessments, the role of classroom assessments has received diminished attention. Literacy acquisition - learning to read and write as facets of academic language - is critical through the grades and across content areas. This course will cover (1) the recent history of classroom assessment, (2) a conception of assessment as practical inquiry, (3) a review of performance-based assessment methods, and (4) practical implementation of the preceding ideas.

EDUC 403. Education's Digital Future. 1 Unit.
Digital technologies are rapidly evolving and reorganizing the way we play, learn, and work. Significant questions have emerged about how digital and networked information technologies might be both narrowing and widening gaps in access to learning opportunities. It is becoming clear that technology alone will not catalyze the forms of equity that are so essential for preparing young people and their families for a rapidly changing future. Instead we need to deeply rethink and intentionally redesign the social organizations and tools that provide learning opportunities (schools, workplaces, community organizations, libraries) and study these innovations at a regional as well as national level. In this course and public seminar, designed to foster new forms of collaboration and innovation, we will engage these questions through a series of invited conversations with a broad range of stakeholders including researchers, educators, and industry representatives. May be repeat for credit.

EDUC 404. Topics in Brazilian Education: Public Policy and Innovation for the 21st Century. 1-2 Unit.
The objective of this seminar is to provide students from different backgrounds an opportunity to learn about current issues and debates on Brazilian education. The seminar will cover topics on the history of Brazilian education; an overview of current school reforms at the federal level; educational assessments; education and economic growth; educational equity; teacher labor market; technology and education; early childhood; and higher education to Brazil.

EDUC 405. Teaching the Humanities. 3 Units.
This course, designed for graduate students in the humanities and education, explores approaches to teaching the humanities at both the secondary and collegiate levels, with a focus on the teaching of text, and how the humanities can help students develop the ability to read and think critically. The course explores purposes and pedagogical approaches for teaching humanities through a variety of texts and perspectives. The course is designed as an opportunity for doctoral students in the Humanities both to enrich their own teaching, and to broaden their understanding of professional teaching opportunities, including community college and secondary school teaching.

EDUC 406. Perspectives on Teacher Learning and Lesson Study. 2-4 Units.
Seminar. Based on peer collaboration, lesson study helps to create professional communities among teachers and support their learning. Research literature, teacher thinking and beliefs, teacher professional development, and conceptual frameworks.

EDUC 407. Lytics Seminar. 1-4 Unit.
This course is a survey of research methods with applications in online learning. The methods covered are very interdisciplinary, including an introduction to machine learning, text/discourse analysis, causal modeling, and psychometrics. Broader question in research methodology are also covered, including how to formulate a good research question, when to use qualitative or quantitative methods, and the relative merits of theory-driven confirmatory vs. exploratory research. The goal of this course is to support researchers in the online learning space and other fields in their research endeavors.

EDUC 408. Social Interaction Analysis. 1-4 Unit.
This seminar will focus on foundations and methodic approaches to the study of social interaction.

EDUC 409. Managing to Outcomes in Education and Other Sectors. 2 Units.
Whether as students, taxpayers, or philanthropists, we share an interest that schools, government agencies, and nonprofit organizations effectively achieve their intended outcomes. This course asks how stakeholders and managers can assess these institutions' performance and commitment to continuous improvement. This seemingly technocratic question is often the center of political controversy, as it is today in criticisms of the student assessments required by No Child Left Behind and of "value-added" assessments of teacher performance.nnEver mindful that performance management is a graveyard of good intentions, we will study the practical aspects of institutional change - including leadership, accountability, learning, and culture ?- that often account for the difference between success and failure. We start with the presumption that you can't manage what you can't measure, but managers can usually measure only proxies rather than ultimate outcomes. In addition to the inevitable slippage between the proxies and ultimate outcomes, there is a tension between using assessments for learning and improvement, on the one hand, and for accountability, incentives, and penalties, on the other. Moreover, people have incentives to "game" any performance evaluation system.nnWe will examine the challenges of managing to outcomes in various contexts, focusing particularly on students' and teachers' performance, but also including the performance of selected government agencies (e.g., police and welfare departments), nonprofit organizations, and foundations. We will focus on the interconnections among strategic planning, performance budgeting, and performance management. We will also look at experiments with new funding vehicles that depend on measuring outcomes, such as social impact bonds, conditional cash transfers, and pay for performance schemes in healthcare and other sectors.

EDUC 411. Early Childhood Education. 3-4 Units.
This course addresses a broad set of topics that have implications for developmentally appropriate and effective early childhood education. It begins with children's social, emotional and cognitive development and issues related to poverty, culture and language. We will also examine research evidence on effective instruction for young children, evaluations of preschool interventions, and several current policy debates.

EDUC 412. Workshop in Religion and Education. 1 Unit.
This 1-unit workshop will explore the intersection of religion and education across a variety of learning environments and demographics. It invites an ongoing conversation of the relationships between schools, congregations, religious bodies, learners, seekers, philanthropy, and public education. Advanced students and visiting scholars will have an opportunity to present their work for discussion. May be repeat for credit. Same as: RELIGST 333X

EDUC 413. Ethnographies of Religion: Education, Socialization, Indoctrination. 3-5 Units.
Religion has long been a central preoccupation for ethnographers interested in the formation and function ofnsocial groups. Much ethnography of religion focuses on rituals and practices of inscription -- exploring the waysnin which religious communities turn concepts into practices (and vice versa) that reinscribe members within ancollective. These efforts take many forms, but they are, at their core, educational, insofar as they serve as anninformal curriculum for the acquisition and rehearsal of theological, communal, ritual, textual, and embodiednforms. This seminar will focus on the educational aspects central of ethnographic approaches to the study ofnreligion, looking into and beyond schools.

EDUC 414. Play and Games. 3-4 Units.
Social life would be unimaginable without play and games. Students will be introduced to social theories of play and games; the history of games and their variation; readings concerned with how play and games affect interaction and socialization; how race and gender are enacted in and through play and games; how play and games relate to creativity and innovation; and how games can be designed for engrossment and the accomplishment of various tasks and learning goals. Course intended mainly for doctoral students, though master¿s and undergraduate students are welcome. This is a new course, so please expect collaboration with instructor and other students to shape the course content.
Same as: SOC 301

EDUC 416. Issues and Alternative Approaches in the Testing of English Language Learners. 2-3 Units.
This course is intended for future researchers, practitioners, and decision makers. It examines major challenges in the testing of English language learners (ELLs) from the perspective of validity and fairness. The course provides a critical review of current practices in large-scale assessment concerning ELLs in terms of three kinds of limitations: population misspecification, measurement error, and overgeneralization. The course also promotes creative thinking in the development of alternative views and practices in ELL testing.

EDUC 417. Research and Policy on Postsecondary Access. 3 Units.
The transition from high school to college. K-16 course focusing on high school preparation, college choice, remediation, pathways to college, and first-year adjustment. The role of educational policy in postsecondary access. Service Learning Course (certified by Haas Center).
Same as: EDUC 117

EDUC 419. Academic Achievement of Language Minority Students. 3-5 Units.
Emphasis is on the current state of knowledge in the research literature and comparisons to students' experiences and observations in bilingual education, English as a second language, reading instruction, cultural issues in education, and research methods.

EDUC 421. Powerful Ideas for Learning Sciences and Technology Design: Sociocultural Practices of the Blues. 3 Units.
This course is intended as a graduate level seminar that provides in-depth readings and discussions, Professor Roy Pea's professional reflections, and student essay-writing on topics examined in Dr. Pea's select publications and associated influential writings.

EDUC 421A. Powerful Ideas for Learning Sciences and Technology Design: Distributed Intel & Installation Theory. 3 Units.
This course is intended as a graduate level seminar that provides in-depth readings and discussions on Installation Theory (Lahlou, 2018). Installation theory (IT) is a fresh synthetic theory explaining how humans construct systems that support and format behavior. The three layers of the IT framework are affordances, embodied competences and social regulation. IT can be used to analyze behaviour, and as a theory of design for behavioral change. We will explore the applications of IT for analyzing, creating, and researching learning environment designs and associated learning processes and outcomes.

EDUC 422. Studying Expertise. 3-4 Units.
This course offers an overview of ways that psychologists and learning scientists characterize knowledge, learning, and expertise. We will look at general models of knowledge representation (e.g. as a set of scripts, as socially mediated, as embodied), and knowledge representation in specific domains (e.g playing chess, solving math problems, waiting tables, or constructing literary interpretations), as well as in teaching. As a course project, you will build your own comparative study of expert and novice thinking in a domain that interests you and create an AERA style proposal and presentation to share findings.

EDUC 423. Introduction to Data Science. 3-5 Units.
Social scientists can benefit greatly from utilizing new data sources like electronic administration records or digital communications, but they require tools and techniques to make sense of their scope and complexity. This course offers the opportunity to understand and apply popular data science techniques regarding data visualization, data reduction and data analysis.
Same as: EDUC 143, SOC 302

EDUC 423A. Introduction to Data Science I: Data Processing. 3-4 Units.
Quantitative data require considerable work before they are ready to be analyzed: they are often messy, incomplete and potentially biased. This course is designed to help you thoughtfully collect, manage, clean and represent data so it can offer substantive information researchers can act upon. In our weekly sessions you will take a critical and reflective approach to these tasks and learn the technical skills needed to get your data into shape. Education and social science datasets will be our focus.
Same as: SOC 302A

EDUC 423B. Introduction to Data Science II: Machine learning. 3-4 Units.
This course centers on the question of how you can use various data science techniques to understand social phenomena. Applied to education and social science topics, the course will introduce you to supervised and unsupervised machine learning algorithms, new data, and provide you the skills to thoughtfully evaluate and assess machine learning performance and implications.
Same as: SOC 302B

EDUC 424. Introduction to Research in Curriculum and Teacher Education. 2-5 Units.
Required for first-year CTE doctoral students. How to conceptualize, design, and interpret research. How to read, interpret, and critique research; formulate meaningful research questions; evaluate and conduct a literature review; and conceptualize a study. Readings include studies from different research paradigms. Required literature review in an area students expect to explore for their qualifying paper.

EDUC 425. Advanced Topics in Research on Self and Stigma. 1-3 Unit.
This course focuses on the relevance of self, identity, and stigmatization to understanding and remedying social problems. A key focus will be on how interactions between the self-system and social systems (e.g. schools, workplaces, institutions) drive outcomes over time, including educational and economic inequality. More broadly, class discussion and readings will address a social psychological analysis of intervention and change.

EDUC 426. Unleashing Personal Potential: Behavioral Science and Design Thinking Applied to Self. 2-4 Units.
This course facilitates the application of the methods, theories, and findings of behavioral science to students own lives and improvement projects. It does so by combining behavioral science with a design thinking approach. You will learn to identify your potential, navigate to achieve it, and stay resilient during the journey. Students will design their own action plans, define goals and prototype strategies to test them, in an iterative feedback cycle. Our course thus blends two intellectual streams that seldom intersect: behavioral science and design thinking.
Same as: PSYCH 264

EDUC 427. History of the Curriculum. 3-5 Units.
Development of the school curriculum in historical context, from ancient notions rooted in religious traditions to present-day ideas about "blended curriculum," "problem-based learning," home schooling, and arguments about the contents of the Advanced Placement curriculum and recent "math wars" and "history wars." Focus will be on the core school subjects (history, civics, math, and science), with a emphasis on the explosion of curriculum development in the 1960s, such as Jerome Bruner's MACOS (Man-a-Course-of-Study), the "New Math," Biological Sciences Curriculum Study (BSCS), and Jerrald Zacharias's "New Physics." Contemporary developments will include topics such as the Afrocentric curriculum movement along with E.D. Hirsch's Core Knowledge curriculum. Focus will be on understanding the historical antecedents of contemporary trends.

EDUC 428. Intersectional Justice in Education Policy and Practice. 3-5 Units.
This 3-5-unit, graduate course is designed to explore intersectionality as a "method and a disposition, a heuristic and an analytic tool" (Carbado, Crenshaw, Mays, & Tomlinson, 2013, p. 11). To do this we explore the intellectual lineage of intersectional thought from its Black Feminist roots and trace it through its use today in education research. Within these tracings, we will delve into the (mis)uses, contestations, and iterations of intersectionality in theory and empirical research. At the heart of this course is an examination of how perceptions of and beliefs about a myriad of intertwining inequities conspire to create vectors of oppressions that land in multiply¿marginalized students' lives through the macrosociolpolitcal to the microinteractional. It interrogates the foundational ideological assumptions around culture, difference, deficit, and dis/ability in which education has traditionally been rooted. Students in the course will analyze the lineage and processes of intersectionality to understand how students at the intersections of multiple oppressions experience education within communities of practice that enact, reproduce, and resist policies and practices through their daily activities.
Same as: AFRICAAM 428

EDUC 429. Reducing Health Disparities and Closing the Achievement Gap through Health Integration in Schools. 3 Units.
(HUMBIO students must enroll in HUMBIO 122E. Med/Graduate students must enroll in PEDS 229.) Health and education are inextricably linked. If kids aren't healthy, they won't realize their full potential in school. This is especially true for children living in poverty. This course proposes to: 1) examine the important relationship between children's health and their ability to learn in school as a way to reduce heath disparities; 2) discuss pioneering efforts to identify and address manageable health barriers to learning by integrating health and education in school environments.
Same as: HUMBIO 122E, PEDS 229

EDUC 429S. The History of Native Americans of California. 5 Units.
How the federal government placed education at the center of its Indian policy in second half of 19th century, subjecting Native Americans to programs designed to erase native cultures and American Indian responses to those programs. Topics include traditional Indian education, role of religious groups, Meriam Report, Navajo-Hopi Rehabilitation Act, Johnson-O'Malley Act, and public schools.
Same as: EDUC 119S, NATIVEAM 119S

EDUC 430A. Experimental Research Design and Analysis. 3-5 Units.
The course will cover the following topics: a) the logic of causal inference and the Fisher/Neyman/Rubin counterfactual causal model (Fisher, 1935; Heckman, 1979; Holland, 1986; Neyman, 1990; Rubin, 1978); b) randomized experiments; c) complex randomized experiments in education (cluster randomized trials, multi-site trials, staggered implementation via randomization, etc.); d) policy experiments with randomization; e) meta-analysis; and f) power in randomized experiments; g) the ethics and politics of randomized experiments.

EDUC 430B. Causal Inference in Quantitative Educational and Social Science Research. 3-5 Units.
This course surveys quantitative methods to make causal inferences in the absence of randomized experiment including the use of natural and quasi-experiments, instrumental variables, regression discontinuity, fixed effects estimators, and difference-in-differences. We emphasize the proper interpretation of these research designs and critical engagement with their key assumptions for applied researchers. Prerequisites: Prior training in multivariate regression (e.g., ECON 102B or the permission of the instructor).
Same as: SOC 258B

EDUC 430C. Using Data to Describe the World: Descriptive Social Science Research Techniques. 3-5 Units.
This course focuses on the skills needed to conduct theoretically-informed and policy-relevant descriptive social science. Students read recent examples of rigorous descriptive quantitative research that exemplifies the use of data to describe important phenomena related to educational and social inequality. The course will help develop skills necessary to conceptualize, operationalize, and communicate descriptive research, including techniques related to measurement and measurement error, data harmonization, data reduction, and visualization. Students develop a descriptive project during the course. Prerequisite: satisfactory completion of a course in multivariate regression.
Same as: SOC 258C

EDUC 431. Thinking and Learning with Data. 3 Units.
Graduate seminar covering research from statistics education and the nascent field of data science education. Topics include research on students' conceptions and difficulties with core statistical ideas, learning technologies to support learning about data, and new pedagogical designs for teaching about data in both formal and informal contexts. Intended for math education, science education, and learning sciences students. Emphasis is on K-12 age group.

EDUC 432. The 5th Element: Hip Hop Knowledge, Pedagogy, and Social Justice. 1-5 Unit.
This course-series brings together leading scholars with critically-acclaimed artists, local teachers, youth, and community organizations to consider the complex relationships between culture, knowledge, pedagogy and social justice. Participants will examine the cultural meaning of knowledge as "the 5th element" of Hip Hop Culture (in addition to MCing, DJing, graffiti, and dance) and how educators and cultural workers have leveraged this knowledge for social justice. Overall, participants will gain a strong theoretical knowledge of culturally relevant and culturally sustaining pedagogies and learn to apply this knowledge by engaging with guest artists, teachers, youth, and community youth arts organizations.
Same as: AFRICAAM 32, AMSTUD 32, CSRE 32A, EDUC 32, TAPS 32

EDUC 433. Intersectional Qualitative Approaches. 3-5 Units.
This variable unit, graduate course is designed to explore intersectional analysis because intersectionality is a "method and a disposition, a heuristic and an analytic tool" (Carbado, Crenshaw, Mays, & Tomlinson, 2013, p. 11). This course engages the approaches and analyses possible within an intersectional theoretical framing by examining a wide range of interdisciplinary research methodologies and methods. We will study a myriad of innovative ways of doing intersectional scholarship and given the focus on robust methodological moves, this course will highlight questions of axiology of inquiry, analysis, and representation through an intersectional lens. Our class will investigate and create intersectional conceptual framing for designing and interpreting research. We will explore and develop qualitative or mixed¿methods research data collection, analyses, holistic interpretation, and analytic writing from an intersectional perspective.
Same as: CSRE 433

EDUC 434. Seminar in Teacher Education: Issues of Pedagogy. 1-4 Unit.
This course explores issues of pedagogy in the preparation of teachers. While much has been written about reforming teacher education, less work examines how we actually teach people to teach. Since how we teach is also what we teach in teacher education, this lack of attention to pedagogy is curious. In this class, we will investigate pedagogical approaches used in teacher education.

EDUC 436. Interfaith Dialogue on Campus: Religion, Diversity, and Higher Education. 2-5 Units.
How are we to talk across religious and spiritual differences? What is the purpose of such dialogues? What do we hope to gain from them? How do such dialogues take shape on college campuses, and what do they indicate about how students cultivate spiritual, political, and civic commitments? This course will explore these questions and others through seminar discussions, fieldwork, and writing that will examine the concepts, assumptions, and principles that shape how we think about interfaith dialogue.
Same as: AMSTUD 236, CSRE 136A, RELIGST 336X

EDUC 437. Curricular Practical Training. 1-3 Unit.
"Curricular Practical Training" independent study sections specifically created for international students in F-1 Visa Status who wish to receive credit and to be paid for internships.

EDUC 438. Second Language Acquisition Theories: Implications for Policy, Instruction and Teacher Preparation. 3-5 Units.
This course will first offer a snapshot of Second Language Acquisition (SLA) theories, contrast varying theoretical perspectives and examine how they inform the language teaching and learning process. It will then engage students in the examination and discussion of well-known approaches used in language instruction (e.g., leveled ELD, SIOP, CLIL, bilingual education, secondary foreign language education, heritage language instruction) in order to identify the theoretical perspectives informing particular pedagogies and practices.

EDUC 439. Critical Race Theory in Education. 2-5 Units.
This seminar will examine the foundational tenets of Critical Race Theory (CRT) as an analytic framework to study of inequities in P-20 education. Each week will examine how CRT tenets developed in law and were taken up in education via epistemology, methodology, and axiology. Consequently, the course will move temporally, spatially, and pedagogically across fields and siblings of Critical Race Theory. We will use the course content as a vehicle to understand the theoretical and analytical power and limits of CRT. Finally, we will explore CRT's focus on identifying and disrupting white supremacy, anti-Blackness, and interlocking inequities (re)produced in education.

EDUC 440. Re-Examining Special Education through Multiple Lenses. 1-3 Unit.
This seminar, intended to grow and shift with the changing landscape of education, with particular focus on students with learning differences and the interests of our doctoral students and faculty, begins by exploring three questions: (1) How can scholars and scientists support the growth and development of students with learning differences? (2) How do we define and critique evidence-based practices (EDPs), including what counts as evidence and in what ways do EDPs support change in school outcomes? (3) In what ways do the Americans with Disabilities Act (ADA) and the Individuals with Disabilities Education Act (IDEA) provide direction and support progress in creating fully inclusive communities across the U.S.? What are the missed opportunities, misdirections, and barriers to fully emancipated and connected lives? Conveners will likely change each quarter along with topics.

EDUC 441. The Youth Justice Lab: Imagining an Anti-Racist Public Education System. 3 Units.
This course will take an interdisciplinary approach to these issues by enrolling students from the Law School and the Graduate School of Education. Specifically, partnering with Public Counsel and IntegrateNYC, Youth Justice Lab students will gather and analyze the relevant historical and empirical research, interview and consult with experts in the field, and draft a series of research and policy memos that summarize our research and provide recommendations.

EDUC 445. Entrepreneurial Approaches to Education Reform. 3 Units.
(Same as STRAMGT 335) In this course, students will investigate opportunities and challenges of entrepreneurial ventures trying to make a positive impact in public education. The course requires a basic level of understanding of the U.S. K-12 public school system. The first session will analyze the structure of the public education as an industry, with a special emphasis on understanding the achievement gap. Subsequent sessions will explore challenges in increasing efficacy, ensuring financial sustainability, and scaling for entrepreneurs who have sought to change student outcomes, solve pain points, and innovate. The course will feature a variety of ventures (including schools, education technology, training, and supplemental services) and organizational models (for-profit, not-for-profit, and benefit corporation). This course is suitable for students aspiring to be entrepreneurs, leaders in entrepreneurial organizations, leaders in educational organizations, Board members, donors or investors. (Note: this is not a "how-to" course on starting an entrepreneurial venture.).

EDUC 447. Leading Change in Public Education. 2 Units.
(Same as STRAMGT 537) Public education in America is at a crossroads. Does our education system have what it takes to produce graduates who are prepared for college, career, and citizenship in our increasingly digital and pluralistic world? Will income and ethnic achievement gaps continue to be pervasive and persistent in our nation¿s largest urban cities? Will family zip code determine educational destiny for the next generation of students? Which strategies and reforms are truly demonstrating results and which are merely passing fads? As in all large-scale enterprises undergoing rapid, transformative change, leadership matters greatly. Fortunately, over the last decade, the reform of American public education has been led by a number of innovative and results-oriented leaders at the state, district and charter levels. These leaders are bringing additional urgency, strategies, and ideas designed to prepare America's schools and students for the century ahead. Some ideas are proving to be critical levers for change, others are facing significant political challenges, and others have not delivered on expected results. Many of them hold lessons for how future educational leaders can contribute to transforming public education for the next generation of K-12 students. This course will focus on school system leadership for education reform. The course will provide an overview of the critical issues facing K-12 public education in America today, and what is going on across the U.S. during this transformative period of change. Once this context is set, students will study education leaders and systems change strategies from the last 10-15 years at the state, district and charter levels. We will focus on leaders across five domains: Leadership in crisis situations, strategic leadership, ¿china-breaking¿ leadership, sustaining leadership, and next generation leadership. We will also look at leadership examples from outside K-12 education to broaden our thinking about what leadership styles and strategies could be successfully applied to education. Students will debate the strategies and efficacy of how different leaders approached systems-level change and will form their own working hypotheses of what is needed to help transform the American education system. Case studies in school system leadership will form the primary basis for classroom assignments and discussion. We will examine what went right and what went wrong in each case, focusing particularly on the decisions that school system leaders faced and the implications of their decisions. Most cases will be supplemented with research publications, technical notes, news clips, and/or videos to deepen students¿ understanding of the context or issues discussed in the cases. Dan Katzir worked for Bain & Company, Teach for America, Sylvan Learning Systems and the Eli and Edythe Broad Foundation before joining Alliance College-Ready Public Schools as its CEO in 2015. He is an experienced case study teacher and the editor of The Redesign of Urban School Systems: Case Studies in District Governance.

EDUC 450A. Qualitative Analysis in Education. 4 Units.
Primarily for doctoral students; part of doctoral research core. Methods for collecting and interpreting qualitative data including case study, ethnography, discourse analysis, observation, and interview.

EDUC 450B. Using Video as Data in the Learning Sciences. 1-4 Unit.
This seminar will focus on key theoretical and methodological advances in the use of digital video-based data in the learning sciences as a fruitful part of a research agenda on teaching, learning, and other educational processes. May be repeat for credit.

EDUC 450C. Qualitative Interviewing. 3 Units.
Addressing the theoretical underpinnings of qualitative interviews as well as the application of theory to practice, this course considers different approaches to interviewing. Interview types covered will range from group interviews to individual interviews, and from unstructured, ethnographically oriented interviews to highly structured interviews. Working with community partners to facilitate application to practice, the students will move from theory to interview design, implementation, and initial stages of analysis, with an emphasis on consistency in approach and utility in graduate-level research.
Same as: ENVRES 231

EDUC 451. Research Workshop on Quantitative Analyses of Textbook Content. 1-4 Unit.
This course is intended as a small research workshop for doctoral students interested in using textbooks as data for quantitative social science research. There is an emphasis on comparative work (i.e. looking between states/provinces or countries) and social science textbooks (i.e. history, civics, social studies, geography), but some flexibility to study a single context and/or other subjects (e.g. science, math) depending on data availability. Concretely, the aim is to finish the course with a rough draft of a research project that can be developed for future publication.

EDUC 453. Doctoral Dissertation. 1-15 Unit.
For doctoral students only. (all areas).

EDUC 460. Language, Culture, Cognition, and Assessment. 3 Units.
Examines the intersection of language, culture, and cognition, and the implications of this intersection in educational assessment. Knowledge from different disciplines is used to reason about assessment from the conceptual, methodological, and social perspectives.

EDUC 465. Development and Psychological Sciences (DAPS) Faculty Student Seminar. 1 Unit.
Faculty and students in the DAPS graduate training program will convene to discuss how the disciplines of developmental and psychological sciences impact education, ground these issues in the work of current faculty and advanced student research, discuss professional development issues unique to this area, and share student perspectives on the field and their progress in the program. May be repeat for credit.

EDUC 466. Doctoral Seminar in Curriculum Research. 2-4 Units.
Required of all doctoral students in CTE, normally during their second year in the program. Students present their ideas regarding a dissertation or other research project, and prepare a short research proposal that often satisfies their second-year review.

EDUC 467. QP Presentation Seminar and Symposium. 1-3 Unit.
For 3rd and 4th year PhD students in CTE. Students will learn to transform their 2nd year qualifying papers into polished oral presentations suitable for professional academic conferences. Course will cover presentation skills, including appropriate use of visuals; time management; and strategic attention to key aspects of study background, motivation, methods, findings, conclusions, and implications. At the end of the course students will participate in a series of public symposia to present the results of their QP study. For additional units students will have the option to write proposals to present their studies at professional conferences.

EDUC 468. Robotics, AI and Design of Future Education. 1 Unit.
The seminar will feature guest lectures from industry and academia to discuss the state of the affairs in the field of Robotics, Artificial Intelligence (AI), and how that will impact the future Education. The time of robotics/AI are upon us. Within the next 10 to 20 years, many jobs will be replaced by robots/AI. We will cover hot topics in Robotics, AI, how we prepare students for the rise of Robotics/AI, how we Re-design and Re-invent our education to adapt to the new era.
Same as: ME 268

EDUC 469. Workshop and Reading Group in Child Development. 1-2 Unit.
This course provides a supportive space for graduate students interested in studying child development to workshop their research questions, conceptual and methodological issues, and drafts of proposals, presentations, or papers. The participants will practice how to conduct effective peer review and offer constructive feedback. General topics include but are not limited to: (1) developmental assessments, (2) family¿level, school¿level, and neighborhood¿level factors that explain variability in children¿s outcomes, (3) examining underlying mediating and moderating processes, and (4) evaluating policies and programs.

EDUC 470. Practicum. 1-15 Unit.
For advanced graduate students. (all areas).

EDUC 480. Directed Reading. 1-15 Unit.
For advanced graduate students. (all areas).

EDUC 489. RILE Colloquium on Race, Inequality, and Language in Education. 1-2 Unit.
This course is a workshop for PhD students focusing on interdisciplinary empirical work related to Race, Inequality, and Language in Education.

EDUC 490. Directed Research. 1-15 Unit.
For advanced graduate students. (all areas).

EDUC 493. Workshop in Design and Analysis of Comparative Studies. 1-3 Unit.
A workshop for second-year and later students with data analysis or research design activities including dissertation planning or analysis. Readings and exercises developed around participating student research. Topics have included: multilevel data analysis, within-subjects designs, and implementation of matching methods for comparing non-equivalent groups. Various computing customs accommodated. See http://web.stanford.edu/~rag/ed493/. Prerequisite: intermediate statistical methods course work.

EDUC 801. TGR Project. 0 Units.
For advanced graduate students. Instructor consent required. (all areas).

EDUC 802. TGR Dissertation. 0 Units.
For advanced graduate students. Instructor consent required. (all areas).

SCHOOL OF ENGINEERING

Courses offered by the School of Engineering are listed under the subject code ENGR on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=ENGR&filter-catalognumber-ENGR=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=ENGR&filter-catalognumber-ENGR=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=ENGR&filter-catalognumber-ENGR=on).

The School of Engineering offers undergraduate programs leading to the degree of Bachelor of Science (B.S.), programs leading to both B.S. and Master of Science (M.S.) degrees, other programs leading to a B.S. with a Bachelor of Arts (B.A.) in a field of the humanities or social sciences, dual-degree programs with certain other colleges, and graduate curricula leading to the degrees of M.S., Engineer, and Ph.D.

The school has nine academic departments: Aeronautics and Astronautics, Bioengineering, Chemical Engineering, Civil and Environmental Engineering, Computer Science, Electrical Engineering, Management Science and Engineering, Materials Science and Engineering, and Mechanical Engineering. These departments and one interdisciplinary program, the Institute for Computational and Mathematical Engineering, are responsible for graduate curricula, research activities, and the departmental components of the undergraduate curricula.

In research where faculty interest and expertise embrace both engineering and the supporting sciences, there are numerous interdisciplinary research centers and programs within the school as well as several interschool activities, including the Army High Performance Computing Research Center, Biomedical Informatics Training Program, Center for Integrated Systems, Center for Work, Technology, and Organization, Collaboratory for Research on Global Projects, National Center for Physics-Based Simulation in Biology, Center for Position, Navigation, and Time, the Energy Modeling Forum, the NIH Biotechnology Graduate Training Grant in Chemical Engineering, and the Stanford Technology Ventures Program. Energy Resources Engineering (formerly Petroleum Engineering) is offered through the School of Earth, Energy, and Environmental Sciences.

The School of Engineering's Hasso Plattner Institute of Design (http://dschool.stanford.edu) (also known as "the d.school") brings together students and faculty in engineering, business, education, medicine, and the humanities to learn design thinking and work together to solve big problems in a human-centered way.

The Woods Institute for the Environment (http://environment.stanford.edu) brings together faculty, staff, and students from the schools, institutes and centers at Stanford to conduct interdisciplinary research, education, and outreach to promote an environmentally sound and sustainable world.

Global Engineering Programs (GEP) offers a portfolio of international opportunities for Stanford engineering students. Current opportunities focus on self-designed engineering internships. These opportunities enhance engineering education by providing students with an opportunity to learn about technology and engineering in a global context, to build professional networks, and to gain real world experience in a culturally diverse and international environment. Need-based financial aid is available to undergraduate students to ensure that GEP programs are inclusive. GEP programs evolve each year so students are encouraged to check the GEP website (https://gep.stanford.edu) regularly for updated opportunities and details including application deadlines.

Instruction in Engineering is offered primarily during Autumn, Winter, and Spring quarters of the regular academic year. During the Summer Quarter, a small number of undergraduate and graduate courses are offered.

Undergraduate Programs in the School of Engineering

The principal goals of the undergraduate engineering curriculum are to provide opportunities for intellectual growth in the context of an engineering discipline, for the attainment of professional competence, and for the development of a sense of the social context of technology. The curriculum is flexible, with many decisions on individual courses left to the student and the adviser. For a student with well-defined educational goals, there is often a great deal of latitude.

In addition to the special requirements for engineering majors described below, all undergraduate engineering students are subject to the University general education, writing, and foreign language requirements outlined in the first pages of this bulletin. Depending on the program chosen, students have the equivalent of from one to three quarters of free electives to bring the total number of units to 180.

The School of Engineering's *Handbook for Undergraduate Engineering Programs* is the definitive reference for all undergraduate engineering programs; it provides detailed descriptions of all undergraduate programs in the school, as well as additional information about extracurricular programs and services. Because it is revised in the summer, and updates are made to the web site on a continuing basis, the handbook reflects the most up-to-date information on School of Engineering programs for the academic year.

Accreditation

The Accreditation Board for Engineering and Technology (ABET) accredits college engineering programs nationwide using criteria and standards developed and accepted by U.S. engineering communities. At Stanford, the following undergraduate programs are accredited:

- Civil Engineering
- Mechanical Engineering

In ABET-accredited programs, students must meet specific requirements for engineering science, engineering design, mathematics, and science course work. Students are urged to consult the School of Engineering Handbook for Undergraduate Engineering Programs and their adviser.

Accreditation is important in certain areas of the engineering profession; students wishing more information about accreditation should consult their department office or the office of the Senior Associate Dean for Student Affairs in 135 Huang Engineering Center.

Policy on Satisfactory/No Credit Grading and Minimum Grade Point Average

All courses taken to satisfy major requirements (including the requirements for mathematics, science, engineering fundamentals, Technology in Society, and engineering depth) for all engineering students (including both department and School of Engineering majors) must be taken for a letter grade if the instructor offers that option: If in doubt about requirements, courses should always be taken for a letter grade.

For departmental majors, the minimum combined GPA (grade point average) for all courses taken in fulfillment of the Engineering Fundamentals requirement and the Engineering Depth requirement is 2.0. For School of Engineering majors, the minimum GPA on all engineering courses taken in fulfillment of the major requirements is 2.0.

Admission

Any students admitted to the University may declare an engineering major if they elect to do so; no additional courses or examinations are required for admission to the School of Engineering. All students admitted to Stanford as undergraduates can have pathways to success in any engineering major at Stanford.

First Year Advice

For first year students thinking about getting started in engineering or other STEM majors, the School of Engineering has a simple online tool called the Roadmap (https://ughb.stanford.edu/roadmap/) which suggests which courses might be appropriate to take in the first year. In addition, the one-unit Autumn course, ENGR 1 Want to Be an Engineer?, offers a broad exposure to STEM majors within and outside of the School of Engineering. Faculty present an overview of their program and where study of that topic might lead. Other courses that might be of interest are the IntroSems (https://undergrad.stanford.edu/programs/introsems/) and Engineering Fundamentals (for a list and areas where they might apply to a major program go to Exploring Engineering (https://ughb.stanford.edu/plans-program-sheets/exploring-engineering-courses/) on the UGHB website).

Recommended Preparation

Freshman

Students who plan to enter Stanford as freshmen and intend to major in engineering are advised to take the highest level of mathematics offered in high school. (See the "AP Credit (p. 38)" section of this bulletin for information on advanced placement in mathematics.) High school courses in physics and chemistry are strongly recommended, but not required. Additional elective course work in the humanities and social sciences is also recommended. Alternately, these courses can be taken after arrival at Stanford, and the best advice would be to begin early and have a detailed plan for completing requirements worked out.

Transfer Students

Students who do the early part of their college work elsewhere and then transfer to Stanford to complete their engineering programs should follow an engineering or pre-engineering program at the first school, selecting insofar as possible courses applicable to the requirements of the School of Engineering, that is, courses comparable to those mentioned under the Majors tab. In addition, students should work toward completing the equivalent of Stanford's foreign language requirement and as many of the University's General Education Requirements (GERs) as possible before transferring. Some transfer students may require more than four years (in total) to obtain the B.S. degree. However, Stanford affords great flexibility in planning and scheduling individual programs, which makes it possible for transfer students, who have wide variations in preparation, to plan full programs for each quarter and to progress toward graduation without undue delay.

Transfer credit is given for courses taken elsewhere whenever the courses are equivalent or substantially similar to Stanford courses in scope and rigor. The policy of the School of Engineering is to study each transfer student's preparation and make a reasonable evaluation of the courses taken prior to transfer by means of a petition process. Inquiries may be addressed to Darlene Lazar at dlazar@stanford.edu, in the Office of Student Affairs in 135 Huang Engineering Center. For more information, see the transfer credit section of the Handbook for Undergraduate Engineering Programs (http://ughb.stanford.edu).

Degree Program Options

In addition to the B.S. degrees offered by departments, the School of Engineering offers two other types of B.S. degrees:

- Bachelor of Science in Engineering (see subplan majors listed below)
- Bachelor of Science for Individually Designed Majors in Engineering (IDMEN)

There are six Engineering B.S. subplans that have been proposed by cognizant faculty groups and approved by the Undergraduate Council:

- Architectural Design
- Atmosphere/Energy
- Biomechanical Engineering
- Biomedical Computation
- Engineering Physics
- Product Design

The B.S. for an Individually Designed Major in Engineering has also been approved by the council.

Curricula for majors are offered by the departments of:

- Aeronautics and Astronautics
- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Computer Science
- Electrical Engineering
- Management Science and Engineering
- Materials Science and Engineering
- Mechanical Engineering

Curricula for majors in these departments have the following components:

- 36-45 units of mathematics and science (see Basic Requirements 1 and 2 at the end of this section)
- Engineering fundamentals (two-three courses minimum, depending up individual program requirements; see Basic Requirement 3)
- Technology in Society (TIS) (one course minimum, see Basic Requirement 4)
- Engineering depth (courses such that the total number of units for Engineering Fundamentals and Engineering Depth is between 60 and 72)
- ABET accredited majors must meet a minimum number of Engineering Science and Engineering Design units; (see Basic Requirement 5)

Consult the Handbook for Undergraduate Engineering Programs (http://ughb.stanford.edu) for additional information.

Dual Degree Programs

A Stanford undergraduate may work simultaneously toward two bachelor's degrees or toward a bachelor's and a master's degree, that is, B.A. and M.S., B.A. and M.A., B.S. and M.S., or B.S. and M.A. The degrees may be granted simultaneously or at the conclusion of different quarters. Five years are usually required for a dual or coterminal program or for a combination of these two multiple degree programs. For further information, inquire with the School of Engineering's student affairs office, 135 Huang Engineering Center, or with department contacts listed in the Handbook for Undergraduate Engineering Programs (http://ughb.stanford.edu).

Dual B.A. and B.S. Degree Program—To qualify for both degrees, a student must:

1. complete the stated University and department requirements for each degree

2. complete 15 full-time quarters (3 full-time quarters after completing 180 units)
3. complete a total of 225 units (180 units for the first bachelor's degree plus 45 units for the second bachelor's degree)

Coterminal Bachelor's and Master's Degree Program

A Stanford undergraduate may be admitted to graduate study for the purpose of working simultaneously toward a bachelor's degree and a master's degree, in the same or different disciplines. To qualify for both degrees, a student must:

1. complete, in addition to the units required for the bachelor's degree, the number of units required by the graduate department for the master's degree which in no event is fewer than the University minimum of 45 units
2. complete the requirements for the bachelor's degree (department, school, and University) and apply for conferral of the degree at the appropriate time
3. complete the department and University requirements for the master's degree and apply for conferral of the degree at the appropriate time

A student may complete the bachelor's degree before completing the master's degree, or both degrees may be completed in the same quarter.

Procedure for Applying for Admission to Coterminal Degree Programs

Stanford undergraduates apply to the pertinent graduate department using the University coterminal application. Application deadlines and admissions criteria vary by department, but in all cases the student must apply early enough to allow a departmental decision at least one quarter in advance of the anticipated date of conferral of the bachelor's degree.

Students interested in coterminal degree programs in Engineering should refer to our departments' sections of this bulletin for more detailed information. The University requirements for the coterminal master's degree are described in the "Coterminal Master's Degrees (http://exploredegrees.stanford.edu/cotermdegrees/#text)" section of this bulletin.

Graduate Programs in the School of Engineering

Admission

Application for admission with graduate standing in the school should be made to the graduate admissions committee in the appropriate department or program. While most graduate students have undergraduate preparation in an engineering curriculum, it is feasible to enter from other programs, including chemistry, geology, mathematics, or physics.

For further information and application instructions, see the department sections in this bulletin or the Graduate Admissions (http://gradadmissions.stanford.edu) website. Stanford undergraduates may also apply as coterminal students; details can be found under "Degree Program Options" in the "Undergraduate Programs in the School of Engineering (http://www.stanford.edu/dept/registrar/bulletin/5144.htm)" section of this bulletin.

Fellowships and Assistantships

Departments and divisions of the School of Engineering award graduate fellowships, research assistantships, and teaching assistantships each year.

Curricula in the School of Engineering

For further details about the following programs, see the department sections in this bulletin.

Related aspects of particular areas of graduate study are commonly covered in the offerings of several departments and divisions. Graduate students are encouraged, with the approval of their department advisers, to choose courses in departments other than their own to achieve a broader appreciation of their field of study. For example, most departments in the school offer courses concerned with nanoscience, and a student interested in an aspect of nanotechnology can often gain appreciable benefit from the related courses given by departments other than her or his own.

Departments and programs of the school offer graduate curricula as follows:

Aeronautics and Astronautics

- Aeroelasticity and Flow Simulation
- Aircraft Design, Performance, and Control
- Applied Aerodynamics
- Autonomy
- Computational Aero-Acoustics
- Computational Fluid Dynamics
- Computational Mechanics and Dynamical Systems
- Control of Robots, including Space and Deep-Underwater Robots
- Conventional and Composite Materials and Structures
- Decision Making under Uncertainty
- Direct and Large-Eddy Simulation of Turbulence
- High-Lift Aerodynamics
- Hybrid Propulsion
- Hypersonic and Supersonic Flow
- Micro and Nano Systems and Materials
- Multidisciplinary Design Optimization
- Navigation Systems (especially GPS)
- Optimal Control, Estimation, System Identification
- Sensors for Harsh Environments
- Space Debris Characterization
- Space Environment Effects on Spacecraft
- Space Plasmas
- Spacecraft Design and Satellite Engineering
- Turbulent Flow and Combustion

Bioengineering

- Biomedical Computation
- Biomedical Devices
- Biomedical Imaging
- Cell and Molecular Engineering
- Regenerative Medicine

Chemical Engineering

- Applied Statistical Mechanics
- Biocatalysis
- Biochemical Engineering
- Bioengineering
- Biophysics
- Computational Materials Science
- Colloid Science
- Dynamics of Complex Fluids
- Energy Conversion
- Functional Genomics
- Hydrodynamic Stability
- Kinetics and Catalysis
- Microrheology

- Molecular Assemblies
- Nanoscience and Technology
- Newtonian and Non-Newtonian Fluid Mechanics
- Polymer Physics
- Protein Biotechnology
- Renewable Fuels
- Semiconductor Processing
- Soft Materials Science
- Solar Utilization
- Surface and Interface Science
- Transport Mechanics

Civil and Environmental Engineering

- Atmosphere/Energy
- Environmental Engineering
- Geomechanics
- Structural Engineering
- Sustainable Design and Construction

Computational and Mathematical Engineering

- Applied and Computational Mathematics
- Computational Biology
- Computational Fluid Dynamics
- Computational Geometry and Topology
- Computational Geosciences
- Computational Medicine
- Data Science
- Discrete Mathematics and Algorithms
- Numerical Analysis
- Optimization
- Partial Differential Equations
- Stochastic Processes
- Uncertainty Quantification
- Financial Mathematics

Computer Science

See the Stanford Computer Forum (http://forum.stanford.edu/research/areas.php) for additional information.

- Algorithmic Game Theory
- Algorithms
- Artificial Intelligence
- Autonomous Agents
- Biomedical Computation
- Compilers
- Complexity Theory
- Computational and Cognitive Neuroscience
- Computational Biology
- Computational Geometry and Topology
- Computational Logic
- Computational Photography
- Computational Physics
- Computational Social Science
- Computer Architecture
- Computer Graphics
- Computer Security
- Computer Science Education
- Computer Sound
- Computer Vision
- Crowdsourcing
- Cryptography
- Database Systems
- Data Center Computing
- Data Mining
- Design and Analysis of Algorithms
- Distributed and Parallel Computation
- Distributed Systems
- Education and Learning Science
- Electronic Commerce
- Formal Verification
- General Game Playing
- Haptic Display of Virtual Environments
- Human-Computer Interaction
- Image Processing
- Information and Communication Technologies for Development
- Information Management
- Learning Theory
- Machine Learning
- Mathematical Theory of Computation
- Mobile Computing
- Multi-Agent Systems
- Nanotechnology-enabled Systems
- Natural Language and Speech Processing
- Networking and Internet Architecture
- Operating Systems
- Parallel Computing
- Probabilistic Models and Methods
- Programming Systems/Languages
- Robotics
- Robust System Design
- Scientific Computing and Numerical Analysis
- Sensor Networks
- Social and Information Networks
- Social Computing
- Ubiquitous and Pervasive Computing
- Visualization
- Web Application Infrastructure

Electrical Engineering

See EE Research at Stanford: The Big Picture (https://ee.stanford.edu/research/the-big-picture/) for additional information.

- Biomedical Devices, Sensors and Systems
- Biomedical Imaging
- Communications Systems
- Control and Optimization
- Data Science
- Electronic Devices
- Embedded Systems
- Energy Harvesting and Conversion
- Energy-Efficient Hardware Systems
- Information Theory and Applications
- Integrated Circuits and Power Electronics
- Machine Learning
- Mobile Networking
- Nanoelectronic Devices and NanoSystems
- Nanotechnology and NEMS/MEMS

- Photonics, Nanoscience and Quantum Technology
- Secure Distributed Systems
- Signal Processing and Multimedia
- Societal Networks
- Software Defined Networking

Management Science and Engineering

- Decision and Risk Analysis
- Dynamic Systems
- Economics
- Entrepreneurship
- Finance
- Information
- Marketing
- Optimization
- Organization Behavior
- Organizational Science
- Policy
- Production
- Stochastic Systems
- Strategy

Materials Science and Engineering

- Biomaterials
- Ceramics and Composites
- Computational Materials Science
- Electrical and Optical Behavior of Solids
- Electron Microscopy
- Fracture and Fatigue
- Imperfections in Crystals
- Kinetics
- Magnetic Behavior of Solids
- Magnetic Storage Materials
- Nanomaterials
- Photovoltaics
- Organic Materials
- Phase Transformations
- Physical Metallurgy
- Solid State Chemistry
- Structural Analysis
- Thermodynamics
- Thin Films
- X-Ray Diffraction

Mechanical Engineering

- Biomechanics
- Combustion Science
- Computational Mechanics
- Controls
- Design of Mechanical Systems
- Dynamics
- Environmental Science
- Experimental Stress and Analysis
- Fatigue and Fracture Mechanics
- Finite Element Analysis
- Fluid Mechanics
- Heat Transfer
- High Temperature Gas Dynamics
- Kinematics
- Manufacturing
- Mechatronics
- Product Design
- Robotics
- Sensors
- Solids
- Thermodynamics
- Turbulence

Bachelor of Science in the School of Engineering

Departments within the School of Engineering offer programs leading to the Bachelor of Science degree in the following fields:

- Aeronautics and Astronautics (p. 561)
- Bioengineering (p. 566)
- Chemical Engineering (p. 571)
- Civil Engineering (p. 573)
- Computer Science (p. 576)
- Electrical Engineering (p. 583)
- Environmental Systems Engineering (p. 590)
- Management Science and Engineering (p. 593)
- Materials Science and Engineering (p. 595)
- Mechanical Engineering (p. 598)

The School of Engineering itself offers interdisciplinary programs leading to the Bachelor of Science degree in Engineering with specializations in:

- Architectural Design (p. 563)
- Atmosphere/Energy (p. 565)
- Biomechanical Engineering (p. 568)
- Biomedical Computation (p. 570)
- Engineering Physics (p. 587)
- Product Design (p. 601)

In addition, students may elect a Bachelor of Science in an Individually Designed Major in Engineering.

Bachelor of Arts and Science (B.A.S.) in the School of Engineering

This degree is available to students who complete both the requirements for a B.S. degree in engineering and the requirements for a major or program ordinarily leading to the B.A. degree. For more information, see the "Undergraduate Degrees (p. 31)" section of this bulletin.

Undergraduate Honors in the School of Engineering

The following bachelor's programs in the School of Engineering offer an honors option for qualified students:

- Aeronautics and Astronautics (p. 561)
- Architectural Design (p. 563)
- Atmosphere/Energy (p. 565)
- Bioengineering (p. 566)
- Biomechanical Engineering (p. 568)
- Biomedical Computation (p. 570)
- Civil Engineering (p. 573)
- Computer Science (p. 576)

- Electrical Engineering (p. 583)
- Engineering Physics (p. 587)
- Environmental Systems Engineering (p. 590)
- Materials Science and Engineering (p. 595)
- Mechanical Engineering (p. 598)

Independent Study, Research, and Honors

The departments of Aeronautics and Astronautics, Bioengineering, Chemical Engineering, Civil and Environmental Engineering, Computer Science, Electrical Engineering, Materials Science and Engineering, and Mechanical Engineering, as well as the faculty overseeing the Architectural Design, Atmosphere/Energy, Biomechanical Engineering, Biomedical Computation, and Engineering Physics majors, offer qualified students opportunities to do independent study and research at an advanced level with a faculty mentor in order to receive a Bachelor of Science with honors. An honors option is also available to students pursuing an independently designed major, with the guidance and approval of their adviser.

Petroleum Engineering

Petroleum Engineering is offered by the Department of Energy Resource Engineering in the School of Earth, Energy, and Environmental Sciences. Consult the "Energy Resources Engineering (p. 406)" section of this bulletin for requirements. School of Engineering majors who anticipate summer jobs or career positions associated with the oil industry should consider enrolling in ENGR 120.

Programs in Manufacturing

Programs in manufacturing are available at the undergraduate, master's, and doctorate levels. The undergraduate programs of the departments of Civil and Environmental Engineering, Management Science and Engineering, and Mechanical Engineering provide general preparation for any student interested in manufacturing. More specific interests can be accommodated through Individually Designed Majors in Engineering (IDMENs).

Basic Requirements

Basic Requirement 1 (Mathematics)

Engineering students need a solid foundation in the calculus of continuous functions, linear algebra, differential equations, an introduction to discrete mathematics, and an understanding of statistics and probability theory. Students are encouraged to select courses on these topics. Courses that satisfy the math requirement are listed in the Undergraduate Handbook (http://ughb.stanford.edu) on the Approved Courses page of the Courses and Planning section.

Basic Requirement 2 (Science)

A strong background in the basic concepts and principles of natural science in such fields as physics, chemistry, geology, and biology is essential for engineering. Most students include the study of physics and chemistry in their programs. Courses that satisfy the science requirement are listed in the Undergraduate Handbook (http://ughb.stanford.edu) on the Approved Courses page of the Courses and Planning section.

Basic Requirement 3 (Engineering Fundamentals)

The Engineering Fundamentals requirement is satisfied by a nucleus of technically rigorous introductory courses chosen from the various engineering disciplines. It is intended to serve several purposes. First, it provides students with a breadth of knowledge concerning the major fields of endeavor within engineering. Second, it allows the incoming engineering student an opportunity to explore a number of courses before embarking on a specific academic major. Third, the individual classes each offer a reasonably deep insight into a contemporary technological subject for the interested non-engineer.

The requirement is met by taking two to three courses from the following list (the number depends upon the individual requirements of each major program):

		Units
CS 106A	Programming Methodology	5
CS 106AX	Programming Methodologies in JavaScript and Python	5
CS 106B	Programming Abstractions	5
ENGR 10	Introduction to Engineering Analysis	4
ENGR 14	Intro to Solid Mechanics	3
ENGR 15	Dynamics	3
ENGR 20	Introduction to Chemical Engineering	4
ENGR 21	Engineering of Systems	3
ENGR 40A	Introductory Electronics	3
ENGR 40B	Introductory Electronics Part II	2
ENGR 40M	An Intro to Making: What is EE	3-5
ENGR 50	Introduction to Materials Science, Nanotechnology Emphasis [1,2]	4
ENGR 50E	Introduction to Materials Science, Energy Emphasis [1]	4
ENGR 50M	Introduction to Materials Science, Biomaterials Emphasis [1]	4
ENGR 60	Engineering Economics and Sustainability	3
ENGR 62	Introduction to Optimization (same as MS&E 111)	4
ENGR 80	Introduction to Bioengineering (Engineering Living Matter) (same as BIOE 80)	4
ENGR 90	Environmental Science and Technology (same as CEE 70)	3

1 Only one course from each numbered series can be used in the Engineering Fundamentals category within a major program.

2 ENGR 40M Making Stuff: What is EE and ENGR 50 Introduction to Materials Science, Nanotechnology Emphasis may be taken on video at some of Stanford's Overseas Centers.

Basic Requirement 4 (Technology in Society)

It is important for the student to obtain a broad understanding of engineering as a social activity. To foster this aspect of intellectual and professional development, all engineering majors must take one course devoted to exploring issues arising from the interplay of engineering, technology, and society. Courses that fulfill this requirement are listed in the Undergraduate Handbook (http://ughb.stanford.edu) on the Approved Courses page of the Courses and Planning section.

Basic Requirement 5 (Engineering Topics)

In order to satisfy ABET (Accreditation Board for Engineering and Technology) requirements, a student majoring in Civil or Mechanical Engineering must complete one and a half years of engineering topics, consisting of a minimum of 68 units of Engineering Fundamentals and Engineering Depth appropriate to the student's field of study. In most cases, students meet this requirement by completing the major program core and elective requirements. A student may need to take additional courses in Depth in order to fulfill the minimum requirement. Appropriate courses assigned to fulfill each major's program are listed in the Undergraduate Handbook (http://ughb.stanford.edu) on the individual major page as listed in the Degree Programs section.

Experimentation

Civil Engineering and Mechanical Engineering must include experimental experience appropriate to the discipline. Lab courses taken in the sciences, as well as experimental work taken in courses within the School of Engineering, will fulfill this requirement.

Overseas Studies Courses in Engineering

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) web site or the Bing Overseas Studies (http://bosp.stanford.edu) web site. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

See the "Undergraduate Majors and Minors (p. 561)" menu item on the left side of this page for program-by-program descriptions of major degree requirements. All programs are listed below to facilitate export as a pdf; use the Print option in the right hand menu of this page to create such a pdf for all the tabs in the School of Engineering.

Aeronautics and Astronautics (AA)

Mission of the Undergraduate Program in Aeronautics and Astronautics

The mission of the undergraduate program in Aeronautics and Astronautics Engineering is to provide students with the fundamental principles and techniques necessary for success and leadership in the conception, design, implementation, and operation of aerospace and related engineering systems. Courses in the major introduce students to engineering principles. Students learn to apply this fundamental knowledge to conduct laboratory experiments, and aerospace system design problems. Courses in the major include engineering fundamentals, mathematics, and the sciences, as well as in-depth courses in aeronautics and astronautics, dynamics, mechanics of materials, autonomous systems, computational engineering, embedded programming, fluids engineering, and heat transfer. The major prepares students for careers in aircraft and spacecraft engineering, autonomy, robotics, unmanned aerial vehicles, drones, space exploration, air and space-based telecommunication industries, computational engineering, teaching, research, military service, and other related technology-intensive fields.

Completion of the undergraduate program in Aeronautics and Astronautics leads to the conferral of the Bachelor of Science in Aeronautics and Astronautics.

Requirements

		Units
Mathematics		
24 units minimum		
MATH 19	Calculus (required) [1]	3
MATH 20	Calculus (required) [1]	3
MATH 21	Calculus (required) [1]	4
CME 100/ENGR 154	Vector Calculus for Engineers (required) [2]	5
or MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
CME 102/ENGR 155A	Ordinary Differential Equations for Engineers (required) [2]	5
or MATH 53	Ordinary Differential Equations with Linear Algebra	
CME 106/ENGR 155C	Introduction to Probability and Statistics for Engineers (required)	4-5
or STATS 110	Statistical Methods in Engineering and the Physical Sciences	
or STATS 116	Theory of Probability	
or CS 109	Introduction to Probability for Computer Scientists	
CME 104	Linear Algebra and Partial Differential Equations for Engineers (recommended) [2]	5
or MATH 52	Integral Calculus of Several Variables	
CME 108	Introduction to Scientific Computing (recommended)	3
Science		
20 units minimum		
PHYSICS 41	Mechanics (required) [3]	4
or PHYSICS 41E	Mechanics, Concepts, Calculations, and Context	
PHYSICS 43	Electricity and Magnetism (required) [3]	4
PHYSICS 45	Light and Heat (required)	4
CHEM 31M	Chemical Principles: From Molecules to Solids (or CHEM 31A and CHEM 31B, or AP Chemistry) (required)	5
ENGR 80	Introduction to Bioengineering (Engineering Living Matter) (recommended)	4
School of Engineering approved Science Electives: See Undergraduate Handbook, Figure 4-2		3-5
Technology in Society (one course required)		
School of Engineering approved Technology in Society courses: See Undergraduate Handbook, Figure 4-3. The course must be on the School of Engineering approved list the year you take it.		3-5
AA 252	Techniques of Failure Analysis (recommended)	3
Engineering Fundamentals (three courses required)		
11 units minimum		
ENGR 21	Engineering of Systems (required)	3
CS 106A	Programming Methodology	3-5
ENGR 10	Introduction to Engineering Analysis (recommended)	4
ENGR 40M	An Intro to Making: What is EE (recommended)	3-5
Fundamentals Elective; see list of Approved Courses in Undergraduate Engineering Handbook website at ughb.stanford.edu, Figure 4-4		3-5
Aero/Astro Depth Requirements		
35 units minimum		
ENGR 14	Intro to Solid Mechanics (required)	3
ENGR 15	Dynamics (required)	3
ENGR 105	Feedback Control Design (required)	3
ME 30	Engineering Thermodynamics (required)	3
ME 70	Introductory Fluids Engineering (required)	3
AA 100	Introduction to Aeronautics and Astronautics (required)	3
AA 131	Space Flight (required)	3
AA 141	Atmospheric Flight (required)	3
AA 151	Lightweight Structures (required)	3
AA 174A	Principles of Robot Autonomy I (required)	5
AA 190	Directed Research and Writing in Aero/Astro (required) satisfies the Writing in the Major requirement, (WIM)	3-5
Aero/Astro Focus Electives		
12 units minimum		
AA 102	Introduction to Applied Aerodynamics (recommended)	3
AA 103	Air and Space Propulsion	3
AA 113	Aerospace Computational Science	3
AA 135	Introduction to Space Policy	3

AA 156	Mechanics of Composite Materials	3
AA 173	Flight Mechanics & Controls	3
CS 237B	Principles of Robot Autonomy II (AA 174B)	3-4
AA 199	Independent Study in Aero/Astro	1-5
AA 261	Building an Aerospace Startup from the Ground Up	3
AA 272	Global Positioning Systems	3
AA 279A	Space Mechanics	3
MS&E 178	The Spirit of Entrepreneurship	2
Aero/Astro Suggested Courses (not required)		
AA 149	Operation of Aerospace Systems	1
Aero/Astro Capstone Requirement		
7 units minimum. Select either the Spacecraft or Aircraft course sequence		
AA 136A	Spacecraft Design	3-5
AA 136B	Spacecraft Design Laboratory	3-5
AA 146A	Aircraft Design	4
AA 146B	Aircraft Design Laboratory	3

For additional information and sample programs see the Handbook for Undergraduate Engineering (http://ughb.stanford.edu) and the Aeronautics and Astronautics Undergraduate Program Sheet (https://ughb.stanford.edu/program-sheets/).

All courses taken for the major must be taken for a letter grade if that option is offered by the instructor.

Minimum Combined GPA for all courses in Engineering Topics (Engineering Fundamentals and Depth courses) is 2.0.

Transfer and AP credits in Math, Science, Fundamentals, and the Technology in Society course must be approved by the School of Engineering Dean's office.

1 A score of 4 on the Calculus BC test or 5 on the AB test only gives students 8 units, not 10 units, so is equal to MATH 19 + MATH 20, but not MATH 21. The Math Placement Exam determines what math course the student starts with.

2 It is recommended that the CME series (100, 102, 104) be taken rather than the MATH series (51, 52, 53). It is recommended that students taking the MATH series also take CME 192 Introduction to MATLAB.

3 A score of 5 on the AP Physics C Mechanics test places the student out of PHYSICS 41. Similarly, a score of 5 on the AP Physics Electricity and Magnetism test places the student out of PHYSICS 43.

Honors Program

The Department of Aeronautics and Astronautics honors program has been designed to allow undergraduates with strong records and enthusiasm for independent research to engage in a significant project leading to a degree with departmental honors.

Students who meet the eligibility criteria and wish to be considered for the honors program should apply to the program by the end of the junior year. All applications are subject to the review and final approval by the Aero/Astro Undergraduate Curriculum Committee.

Application Requirements:

- One-page written statement describing the research topic and signed adviser form
- GPA of 3.5 or higher in the major
- Unofficial Stanford transcript (from Axess)
- Signature of thesis adviser

Honors criteria:

- Maintain the 3.5 GPA required for admissions to the honors program.
- Arrangement with an Aero/Astro faculty member who agrees to serve as the thesis adviser. The adviser must be a member of the Academic Council.
- Under the direction of the thesis adviser, complete at least two quarters of research with a minimum of 9 units of independent research; 3 of these units may be used towards a student's Aero/Astro Focus Elective requirement.
- Submit an honors thesis (20-30 pages). Thesis is due by April 30th of senior year in order to be eligible for University prizes.
- Attend Research Experience for Undergraduates Poster Session or present in another suitable forum approved by the faculty adviser.

COVID-19-Related Degree Requirement Changes

For information on how Architectural Design (AD) degree requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 664)" in the "Civil and Environmental Engineering" of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

Architectural Design (AD)

Completion of the undergraduate program in Architectural Design leads to the conferral of the Bachelor of Science in Engineering. The subplan "Architectural Design" appears on the transcript and on the diploma.

Mission of the Undergraduate Program in Architectural Design

The mission of the undergraduate program in Architectural Design is to develop students' ability to integrate engineering and architecture in ways that blend innovative architectural design with cutting-edge engineering technologies. Courses in the program combine hands-on architectural design studios with a wide variety of other courses. Students can choose from a broad mix of elective courses concerning energy conservation, sustainability, building systems, and structures, as well as design foundation and fine arts courses. In addition to preparing students for advanced studies in architecture and construction management, the program's math and science requirements prepare students well for graduate work in other fields such as civil and environmental engineering, law, and business.

Requirements

		Units
Mathematics and Science (36 units minimum) [1]		
Mathematics		
MATH 19	Calculus	3
MATH 20	Calculus	3
MATH 21	Calculus	4
Or 10 units AP Calculus or MATH 41 & MATH 42		
CME 100	Vector Calculus for Engineers (Recommended)	5
One course in Statistics (required)		3-5
Science		
PHYSICS 41	Mechanics	4/5
Recommended:		
EARTHSYS 101	Energy and the Environment	
EARTHSYS 102	Fundamentals of Renewable Power	
CEE 64	Air Pollution and Global Warming: History, Science, and Solutions	

CEE 70	Environmental Science and Technology	
PHYSICS 23	Electricity, Magnetism, and Optics	
or PHYSICS 43	Electricity and Magnetism	
Or from School of Engineering approved list		
Technology in Society		
One course required; course chosen must be on the SoE Approved Courses list at <ughb.stanford.edu> the year taken.		3-5
Engineering Fundamentals		
Two courses minimum, see Basic Requirement 3		6-8
ENGR 14	Intro to Solid Mechanics	3
AD Depth Core [2]		
CEE 31	Accessing Architecture Through Drawing	5
or CEE 31Q	Accessing Architecture Through Drawing	
CEE 100	Managing Sustainable Building Projects (or CEE 32B or CEE 32D)	4
CEE 120A	Building Modeling for Design & Construction	3
CEE 130	Architectural Design: 3-D Modeling, Methodology, and Process	5
CEE 137B	Advanced Architecture Studio	6
ARTHIST 3	Introduction to World Architecture	5
Depth Options		**12**
See Note 2 for course options		
Depth Electives		
Elective units must be such that courses in ENGR Fundamentals, Core, Depth Options, and Depth Electives total at least 63 units. One of the following must be taken:		
CEE 32D	Construction: The Writing of Architecture	
CEE 32G	Architecture Since 1900	
CEE 32H	Responsive Structures	
CEE 32T	Making and Remaking the Architect: Edward Durell Stone and Stanford	
CEE 32U	California Modernism: The Web of Apprenticeship	
CEE 32V	Architectural Design Lecture Series Course	
CEE 32W	Making Meaning: A Purposeful Life in Design	
CEE 33B	Japanese Modern Architecture	
CEE 33C	Housing Visions	
CEE 131C	How Buildings are Made -- Materiality and Construction Methods	
CEE 131D	Urban Design Studio	
CEE 139	Design Portfolio Methods	
CEE 151	Negotiation	
Total Units		70-80

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (http://ughb.stanford.edu).

[1] School of Engineering approved list of math and science courses available in the Handbook for Undergraduate Engineering Programs at http://ughb.stanford.edu.

[2] Engineering depth options: Choose at least 12 units from the following courses: CEE 101A, CEE 101B, CEE 101C, CEE 120B, CEE 120C, CEE 134B, CEE 156, CEE 159, CEE 172, CEE 172A, CEE 176A, CEE 180, CEE 181, CEE 182, CEE 183, CEE 226, CEE 241, OR CEE 242; ME 203. Students should investigate any prerequisites for the listed courses and carefully plan course sequences with the AD director. Electives:

- CEE 32A, CEE 32B, CEE 32D, CEE 32F, CEE 32G, CEE 32H, CEE 32Q, CEE 32R, CEE 32S, CEE 32T, CEE 32U, CEE 32V, CEE 32W, CEE 33B, CEE 33C, CEE 101B, CEE 101C, CEE 120A, CEE 120B, CEE 120C, CEE 122A, CEE 122B, CEE 124, CEE 131A, CEE 131B, CEE 131C, CEE 131F, CEE 134B, CEE 139, CEE 172A, CEE 176A, CEE 180, CEE 181, CEE 182, CEE 183
- ENGR 50, ENGR 103
- ME 101, ME 110, ME 115A/B/C, ME 120, ME 203
- ARTSTUDI 13BX, ARTSTUDI 140, ARTSTUDI 145, ARTSTUDI 151, ARTSTUDI 153, ARTSTUDI 160, ARTSTUDI 162, ARTSTUDI 163, ARTSTUDI 164, ARTSTUDI 168, ARTSTUDI 170, ARTSTUDI 171, ARTSTUDI 181
- ARTHIST 142, ARTHIST 143A, ARTHIST 188A
- FILMPROD 114
- TAPS 137
- SINY 122; URBANST 110, URBANST 113, URBANST 163, URBANST 171

[3] A course may only be counted towards one elective or core requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth/Core is 2.0.

Architectural Design Honors Program

The AD honors program offers eligible students the opportunity to engage in guided original research, or project design, over the course of an academic year. For interested students the following outlines the process:

1. The student must submit a letter applying for the honors option endorsed by the student's primary adviser and honors adviser and submitted to the student services office in CEE. Applications must be received in the fourth quarter prior to graduation. It is strongly suggested that students meet with the Architectural Design Program Director well in advance of submitting an application.
2. The student must maintain a GPA of at least 3.5.
3. The student must complete an honors thesis or project. The timing and deadlines are to be decided by the program or honors adviser. At least one member of the evaluation committee must be a member of the Academic Council in the School of Engineering.
4. The student must present the work in an appropriate forum, e.g., in the same session as honors theses are presented in the department of the advisor. All honors programs require some public presentation of the thesis or project.
5. A pdf of the thesis, including the signature page signed by both readers, should be submitted to the student services officer. Students will be sent email instructions on how to archive a permanent electronic copy in Terman Engineering library.

COVID-19-Related Degree Requirement Changes

For information on how Atmosphere/Energy (A/E) degree requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 664)" in the "Civil and Environmental Engineering" of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

Atmosphere/Energy (A/E)

Completion of the undergraduate program in Atmosphere/Energy leads to the conferral of the Bachelor of Science in Engineering. The subplan "Atmosphere/Energy" appears on the transcript and on the diploma.

Mission of the Undergraduate Program in Atmosphere/Energy

Atmosphere and energy are strongly linked: fossil-fuel energy use contributes to air pollution, global warming, and weather modification; and changes in the atmosphere feed back to renewable energy resources, including wind, solar, hydroelectric, and wave resources. The mission of the undergraduate program in Atmosphere/Energy (A/E) is to provide students with the fundamental background necessary to understand large- and local-scale climate, air pollution, and energy problems and solve them through clean, renewable, and efficient energy systems. To accomplish this goal, students learn in detail the causes and proposed solutions to the problems, and learn to evaluate whether the proposed solutions are truly beneficial. A/E students take courses in renewable energy resources, indoor and outdoor air pollution, energy efficient buildings, climate change, renewable energy and clean-vehicle technologies, weather and storm systems, energy technologies in developing countries, electric grids, and air quality management. The curriculum is flexible. Depending upon their area of interest, students may take in-depth courses in energy or atmosphere and focus either on science, technology, or policy. The major is designed to provide students with excellent preparation for careers in industry, government, and research; and for study in graduate school.

Requirements

		Units
Mathematics and Science (45 units minimum):		
Mathematics		**23**
23 units minimum, including at least one course from each group:		
Group A		
MATH 53	Ordinary Differential Equations with Linear Algebra	
CME 102	Ordinary Differential Equations for Engineers	
Group B		
CME 106	Introduction to Probability and Statistics for Engineers	
STATS 60	Introduction to Statistical Methods: Precalculus	
STATS 101	Data Science 101	
STATS 110	Statistical Methods in Engineering and the Physical Sciences	
Science		**20**
20 units minimum, including all of the following:		
PHYSICS 41	Mechanics	
PHYSICS 43	Electricity and Magnetism	
or PHYSICS 45	Light and Heat	
CHEM 31B	Chemical Principles II	
or CHEM 31M	Chemical Principles: From Molecules to Solids	
CEE 70	Environmental Science and Technology [1]	
Technology in Society (1 course)		**3-5**
One 3-5 unit course required; must be on School of Engineering Approved List the year taken.		
Writing in the Major (WIM)		
One 3-5 unit course required. Choose a TiS course that fulfills a WIM:		
BIOE 131	Ethics in Bioengineering	
COMM 120W	The Rise of Digital Culture	
OR one of these WIM courses (do not fulfill TiS):		
CEE 100	Managing Sustainable Building Projects	
ENGR/CEE 102W	Technical and Professional Communication	
EARTHSYS 200	Environmental Communication in Action: The SAGE Project	
Fundamentals and Depth: At least 40 units total must be from the School of Engineering		
Engineering Fundamentals		
Two courses minimum (recommend 3), including at least one of the following:		7-9
ENGR 50E	Introduction to Materials Science, Energy Emphasis (ENGR 25E also accepted (no longer offered))	
Plus at least one of the following:		
ENGR 10	Introduction to Engineering Analysis	
A third Fundamental is optional but recommended (3-4 units)		
CS 106A	Programming Methodology	
Engineering Depth		
Required: 6-8 units. Introductory seminars may not count toward Engineering Depth [2]		
CEE 64	Air Pollution and Global Warming: History, Science, and Solutions (cannot also fulfill science requirement)	3
CEE 107A	Understanding Energy	3-5
or CEE 107S	Understanding Energy - Essentials	
34- 36 units from the following with at least four courses from each group; at least 40 of the units in ENGR Fundamentals and Depth must be from the School of Engineering:		36
Group A: Atmosphere		
AA 100	Introduction to Aeronautics and Astronautics	
CEE 63	Weather and Storms	
CEE 101B	Mechanics of Fluids	
or ME 70	Introductory Fluids Engineering	
CEE 161I	Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation	
CEE 162I	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation	
CEE 172	Air Quality Management	
CEE 178	Introduction to Human Exposure Analysis	
EARTHSYS 111	Biology and Global Change [5]	
EARTHSYS 142	Remote Sensing of Land [5]	
or EARTHSYS 14	Fundamentals of Geographic Information Science (GIS)	
EARTHSYS 159	Economic, Legal, and Political Analysis of Climate-Change Policy	
EARTHSYS 188	Social and Environmental Tradeoffs in Climate Decision-Making [5]	
PHYSICS 199	The Physics of Energy and Climate Change [5]	
EARTH 2	Climate and Society [5]	
EARTHSYS 196	Implementing Climate Solutions at Scale [5]	
Group B: Energy		
CEE 107R	E^3: Extreme Energy Efficiency	
CEE 156	Building Systems Design & Analysis	
CEE 173S	Electricity Economics	
CEE 176A	Energy Efficient Buildings	
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	
CEE 177S	Engineering and Sustainable Development	
EARTHSYS 101	Energy and the Environment [5]	

EARTHSYS 102	Fundamentals of Renewable Power [5]
ENERGY 104	Sustainable Energy for 9 Billion
ENGR 50E	Introduction to Materials Science, Energy Emphasis [3]
MATSCI 144	Thermodynamic Evaluation of Green Energy Technologies
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution
ME 182	Electric Transportation
POLISCI 73	Energy Policy in California and the West [5]
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America [5]
Total Units	95-101

[1] Can count as a science requirement or Engineering Fundamental, but not both.

[2] CEE 64 can count as a science requirement or as Engineering Depth, but not both.

[3] ENGR 50E can count as Engineering Fundamental or Engineering Depth, but not both.

[4] A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

[5] Courses outside of the School of Engineering (SoE) do not count toward the 40 units of engineering coursework required in the Fundamentals plus Depth categories.

Honors Program

The A/E honors program offers eligible students the opportunity to engage in guided original research, or project design, over the course of an academic year. Interested student must adhere to the following requirements:

1. Prospective honors students write up and submit a 1-2 page letter applying to the honors program in A/E describing the problem to be investigated. The letter must be signed by the student, the current primary adviser, and the proposed honors adviser, if different, and submitted to the student services office in the Department of Civil and Environmental Engineering (CEE). The application must include an unofficial Stanford transcript. Applications must be received in the fourth quarter prior to graduation. It is strongly suggested that prospective honors students meet with the proposed honors adviser well in advance of submitting an application.
2. Students must maintain a GPA of at least 3.5.
3. Students must complete an honors thesis or project over a period of three quarters. The typical length of the written report is 15-20 pages. The deadline for submission of the report is to be decided by the honors adviser, but should be no later than the end of the third week in May.
4. The report must be read and evaluated by the student's honors adviser and one other reader. It is the student's responsibility to find and obtain both the adviser and the reader. At least one of the two must be a member of the Academic Council in the School of Engineering.
5. Students must present the completed work in an appropriate forum, e.g. in the same session as honors theses are presented in the department of the adviser. All honors programs require some public presentation of the thesis or project.
6. Students may take up to 10 units of CEE 199H Undergraduate Honors Thesis(optional). However, students must take ENGR 202S Directed Writing Projects or its equivalent (required). Units for the writing class are beyond those required for the A/E major.
7. Two copies of the signed thesis must be provided to the CEE student services office no later than two weeks before the end of the student's graduation quarter. A pdf of the thesis, including the signature page signed by both readers, should be submitted to the student services officer by May 15. Students will be sent email instructions on how to archive a permanent electronic copy in Terman Engineering library.

For additional information and sample programs, see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

COVID-19-Related Degree Requirement Changes

For information on how Aeronautics and Astronautics degree requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 624)" in the "Bioengineering" of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

Bioengineering (BIOE)

Completion of the undergraduate program in Bioengineering leads to the conferral of the Bachelor of Science in Bioengineering.

Mission of the Undergraduate Program in Bioengineering

The Stanford Bioengineering major enables students to combine engineering and the life sciences in ways that advance scientific discovery, healthcare and medicine, manufacturing, environmental quality, culture, education, and policy. Students who major in BioE earn a fundamental engineering degree for which the raw materials, underlying basic sciences, fundamental toolkit, and future frontiers are all defined by the unique properties of living systems.

Students will complete engineering fundamentals courses, including an introduction to bioengineering and computer programming. A series of core BIOE classes beginning in the second year leads to a student-selected depth area and a senior capstone design project. The department also organizes a summer Research Experience for Undergraduates (REU) (http://bioengineering.stanford.edu/student-resources/reu/) program. BIOE graduates are well prepared to pursue careers and lead projects in research, medicine, business, law, and policy.

Requirements

		Units
Mathematics		
14 units minimum (Prerequisites: 10 units of AP or IB credit or Mathematics 20-series) [1]		
Select one of the following sequences:		
CME 100 & CME 102	Vector Calculus for Engineers and Ordinary Differential Equations for Engineers (Recommended)	10
MATH 51 & MATH 53	Linear Algebra, Multivariable Calculus, and Modern Applications and Ordinary Differential Equations with Linear Algebra	10
Select one of the following:		
CME 106	Introduction to Probability and Statistics for Engineers (Recommended)	4-5
or STATS 110	Statistical Methods in Engineering and the Physical Sciences	
or STATS 141	Biostatistics	
Science		
26 units minimum [2]		
CHEM 31M	Chemical Principles: From Molecules to Solids (formerly 31X)	5

or CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	
CHEM 33	Structure and Reactivity of Organic Molecules	5
BIO 83	Biochemistry & Molecular Biology (Recommended)	4
or BIO 82	Genetics	
BIO 84	Physiology	4
PHYSICS 41	Mechanics	4
PHYSICS 43	Electricity and Magnetism	4
Technology in Society		
BIOE 131	Ethics in Bioengineering (WIM)	3
Engineering Fundamentals		
BIOE 80	Introduction to Bioengineering (Engineering Living Matter)	4
CS 106A	Programming Methodology (or CS 106B or CS 106X)	5
Fundamentals Elective; see UGHB for approved course list; only one CS class allowed to count toward Fundamentals requirements.		3-5
Bioengineering Core		
BIOE 42	Physical Biology	4
BIOE 44	Fundamentals for Engineering Biology Lab	4
BIOE 101	Systems Biology	3
BIOE 103	Systems Physiology and Design	4
BIOE 123	Bioengineering Systems Prototyping Lab	4
BIOE 141A	Senior Capstone Design I	4
BIOE 141B	Senior Capstone Design II	4
Bioengineering Depth Electives		
Four courses, minimum 12 units:		12
BIOE 122	BioSecurity and Pandemic Resilience	
BIOE 201C	Diagnostic Devices Lab	
BIOE 209	Mathematical Modeling of Biological Systems	
BIOE 211	Biophysics of Multi-cellular Systems and Amorphous Computing	
BIOE 212	Introduction to Biomedical Informatics Research Methodology	
BIOE 214	Representations and Algorithms for Computational Molecular Biology	
BIOE 217	Translational Bioinformatics	
BIOE 220	Introduction to Imaging and Image-based Human Anatomy	
or BIOE 51	Anatomy for Bioengineers	
BIOE 221	Physics and Engineering of Radionuclide-based Medical Imaging	
BIOE 222	Physics and Engineering Principles of Multi-modality Molecular Imaging of Living Subjects	
BIOE 223	Physics and Engineering of X-Ray Computed Tomography	
BIOE 224	Probes and Applications for Multi-modality Molecular Imaging of Living Subjects	
BIOE 225	Intro to Ultrasound Physics and Ultrasound Neuromodulation	
BIOE 227	Functional MRI Methods	
BIOE 231	Protein Engineering	
BIOE 244	Advanced Frameworks and Approaches for Engineering Integrated Genetic Systems	
BIOE 260	Tissue Engineering	
BIOE 279	Computational Biology: Structure and Organization of Biomolecules and Cells	
BIOE 281	Biomechanics of Movement	
BIOE 291	Principles and Practice of Optogenetics for Optical Control of Biological Tissues	
Total Units		104-107

1 It is strongly recommended that CME 100 Vector Calculus for Engineers and CME 102 Ordinary Differential Equations for Engineers be taken rather than MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications and MATH 53 Ordinary Differential Equations with Linear Algebra. If you are taking the MATH 50 series, it is strongly recommended to take CME 192 Introduction to MATLAB. CME 106 Introduction to Probability and Statistics for Engineers utilizes MATLAB, a powerful technical computing program, and should be taken rather than STATS 110 Statistical Methods in Engineering and the Physical Sciences or STATS 141 Biostatistics. Although not required, CME 104 Linear Algebra and Partial Differential Equations for Engineers is recommended for some Bioengineering courses.

2 Science must include both Chemistry (CHEM 31A Chemical Principles I and CHEM 31B Chemical Principles II; or CHEM 31M Chemical Principles: From Molecules to Solids) and calculus-based Physics (PHYSICS 41 Mechanics and PHYSICS 43 Electricity and Magnetism), with two quarters of course work in each, in addition to two courses of BIO core. CHEM 31A Chemical Principles I and CHEM 31B Chemical Principles II are considered one course even though given over two quarters.

3 A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu). Students pursuing a premed program need to take additional courses; see the UGHB, BioE Premed 4-Year Plan.

Honors Program

The School of Engineering offers a program leading to a Bachelor of Science in Bioengineering with Honors (BIOE-BSH). This program provides the opportunity for qualified BioE majors to conduct independent research at an advanced level with a faculty research adviser and documented in an honors thesis.

In order to receive departmental honors, students admitted to the program must:

1. Declare the honors program in Axess (BIOE-BSH).
2. Maintain an overall grade point average (GPA) of at least 3.5 as calculated on the unofficial transcript.
3. Complete at least two quarters of research with a minimum of nine units of BIOE 191 Bioengineering Problems and Experimental Investigation or BIOE 191X Out-of-Department Advanced Research Laboratory in Bioengineering for a letter grade; up to three units may be used towards the bioengineering depth elective requirements.
4. Submit an electronic pdf copy of their thesis, including the signature page signed by both readers, to Bioengineering student services . Students are sent email instructions on how to archive a permanent electronic copy in Terman Engineering library.
5. Present thesis synopsis at the Bioengineering Honors Poster Fair at the end of Spring Quarter.

For program deadlines, application instructions, and more information, please see the Bioengineering Honors Program (http://

bioengineering.stanford.edu/academics/undergraduate-programs/bioengineering-honors-program/) website.

COVID-19-Related Degree Requirement Changes

Grading

The Biomechanical Engineering program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that normally require a letter grade.

Other Undergraduate Policies

The Biomechanical Engineering program encourages students to take courses for letter grades when possible in order to have complete records for use when seeking future opportunities, including employment in industry and students seeking to apply for graduate studies. Per University policy, students can change grading basis through the end of Week 8 in all four quarters in 2020-21. Students are encouraged to reach out directly to Biomechanical Engineering Program Director, Marc Elliot Levenston <levenston@stanford.edu>, for questions about petitions, especially in situations related to COVID-19 policies and grading basis

Biomechanical Engineering (BME)

Completion of the undergraduate program in Biomechanical Engineering leads to the conferral of the Bachelor of Science in Engineering. The subplan "Biomechanical Engineering" appears on the transcript and on the diploma.

Mission of the Undergraduate Program in Biomechanical Engineering

The mission of the undergraduate program in Biomechanical Engineering is to help students address health science challenges by applying engineering mechanics and design to the fields of biology and medicine. The program is interdisciplinary in nature, integrating engineering course work with biology and clinical medicine. Research and teaching in this discipline focus primarily on neuromuscular, musculoskeletal, cardiovascular, and cell and tissue biomechanics. This major prepares students for graduate studies in bioengineering, biomechanics, medicine or related areas.

Requirements

		Units
Mathematics		**21**
21 units minimum; CME sequence is recommended, but MATH sequence is acceptable; see Basic Requirement 1 [1]		
CME 102/ ENGR 155A	Ordinary Differential Equations for Engineers	
or MATH 53	Ordinary Differential Equations with Linear Algebra	
Select one of the following:		
CME 106/ ENGR 155C	Introduction to Probability and Statistics for Engineers	
STATS 110	Statistical Methods in Engineering and the Physical Sciences	
STATS 116	Theory of Probability	
STATS 141	Biostatistics	
Science (22 units Minimum)		
CHEM 31M	Chemical Principles: From Molecules to Solids (or CHEM 31A & CHEM 31B)	5
PHYSICS 41	Mechanics	4
Biology or Human Biology A/B core courses [2]		8-10
BIO 45	Introduction to Laboratory Research in Cell and Molecular Biology	4
or BIOE 44	Fundamentals for Engineering Biology Lab	
Technology in Society		
One course required; BIOE 131 satisfies both TiS and WIM requirements. TiS course must be on School of Engineering Approved Courses list in the UGHB the year taken		3-5
Engineering Topics (Engineering Science and Design)		
Engineering Fundamentals (minimum two courses; see Basic Requirement 3):		
ENGR 14	Intro to Solid Mechanics	3
Pick one of the following:		
ENGR 80	Introduction to Bioengineering (Engineering Living Matter)	
ENGR 50M	Introduction to Materials Science, Biomaterials Emphasis	
Engineering Depth		
ENGR 15	Dynamics	3
ME 30	Engineering Thermodynamics	3
ME 70	Introductory Fluids Engineering	3
ME 80	Mechanics of Materials	3
ME 389	Biomechanical Research Symposium [4]	1
Mechanical Engineering/ Biomechanical Engineering Depth		
Students are encouraged to carefully select ME and BME depth courses that complement each other and form a cohesive plan of study.		
Options to complete the ME depth sequence (3 courses, minimum 9 units): [5]		9
ENGR 105	Feedback Control Design	
ME 102	Foundations of Product Realization	
ME 103	Product Realization: Design and Making	
ME 104	Mechanical Systems Design	
ME 131	Heat Transfer	
ME 133	Intermediate Fluid Mechanics	
ME 151	Introduction to Computational Mechanics	
ME 152	Material Behaviors and Failure Prediction	
ME 161	Dynamic Systems, Vibrations and Control	
Options to complete the BME depth sequence (3 courses, minimum 9 units); (alternative courses may be allowed but only if petitioned for use in advance of being taken) [5]		9
BIOE 260	Tissue Engineering	
BIOE/ME 285	Computational Modeling in the Cardiovascular System	
ME 234	Introduction to Neuromechanics	
ME 281	Biomechanics of Movement	
ME 283	Introduction to Biomechanics and Mechanobiology	
ME 287	Mechanics of Biological Tissues	
ME 337	Mechanics of Growth	
Total Units		79-83

[1] Math: 21 units required and must include a course in differential equations (CME 102 or MATH 53; one of these required) and a course in calculus-based Statistics (CME 106 Introduction to Probability and Statistics for Engineers or STATS 110 Statistical Methods in Engineering and the Physical Sciences or STATS 116 Theory of Probability or STATS 141 Biostatistics).

[2] Students satisfy the Biology requirement by either:
- taking two of the following: BIO 82 Genetics , BIO 83 Biochemistry & Molecular Biology, BIO 84 Physiologyor BIO 86 Cell Biology requires BIO 83); or
- taking two of the following: HUMBIO 2A Genetics, Evolution, and Ecology, HUMBIO 3A Cell and Developmental Biology, or HUMBIO 4A The Human Organism

[3] There are two options for fulfilling the WIM requirement. The first option is to complete BIOE 131 Ethics in Bioengineering, which also fulfills the TiS requirement. The second option is to perform engineering research over the summer or during the academic year and enroll in 3 units of ENGR 199W Writing of Original Research for Engineers, preferably during the time a student is performing research or the following quarter, to write a technical report on the research. This second option requires an agreement with the student's faculty research supervisor.

[4] If ME 389 is not offered, other options include BIOE 393, ME 571, or course by petition.

[5] Courses may only be listed once on the program sheet i.e no double counting. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

Honors Program

The School of Engineering offers a program leading to a Bachelor of Science in Engineering: Biomechanical Engineering with Honors. This program provides an opportunity for qualified BME majors to conduct independent study and research related to biomechanical engineering at an advanced level with a faculty mentor.

Honors Criteria:

- GPA of 3.5 or higher in the major
- Arrangement with an ME faculty member (or a faculty member from another department who is approved by the BME Undergraduate Program Director) who agrees to serve as the honors adviser, plus a second faculty member who reads and approves the thesis. The honors adviser must be a member of the Academic Council in the School of Engineering.
- Submit an application to the ME student services office no later than the second week of the term two quarters before anticipated conferral (e.g., Autumn for Spring conferral, Spring for Autumn conferral). An application consists of:
  - A one-page written statement describing the research topic, with signatures indicating approval of both the thesis adviser and thesis reader on a cover page
  - An unofficial Stanford transcript;
- Applications are subject to the review and final approval by the BME Undergraduate Program Director. Applicants and thesis advisers receive written notification when a decision has been made.
- In order to graduate with honors:
  - Declare ENGR-BSH (honors) program in Axess
  - Maintain 3.5 GPA
  - Submit a completed thesis draft to the adviser by the third week of the quarter in which they intend to confer. Further revisions and final endorsement by the adviser and reader are to be finished by week six, when two bound copies are to be submitted to the Mechanical Engineering student services office. A pdf of the thesis, including the signature page signed by both readers, should also be submitted to the student services officer. Students are sent email instructions on how to archive a permanent electronic copy in Terman Engineering library.
  - Present the thesis at the Mechanical Engineering Poster Session held in mid-April. If the poster session is not not offered or the student does not confer in the Spring, an alternative presentation will be approved on a case by case basis with advisor and BME Program Director approval.

Note: Students may not use work completed towards an honors degree to satisfy BME course requirements

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

COVID-19-Related Degree Requirement Changes

The BMC Program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade. Students are encouraged to enroll in the letter grade option for degree requirements whenever possible.

Biomedical Computation (BMC)

Completion of the undergraduate program in Biomedical Computation leads to the conferral of the Bachelor of Science in Engineering. The subplan "Biomedical Computation" appears on the transcript and on the diploma.

Mission of the Undergraduate Program in Biomedical Computation

Quantitative and computational methods are central to the advancement of biology and medicine in the 21st century. These methods span the analysis of biomedical data, the construction of computational models for biological systems, and the design of computer systems that help biologists and physicians create and administer treatments to patients. The Biomedical Computation major prepares students to work at the cutting edge of this interface between computer science, biology, and medicine. Students begin their journey by acquiring foundational knowledge in the underlying biological and computational disciplines. They learn techniques in informatics and simulation and their numerous applications in understanding and analyzing biology at all levels, from individual molecules in cells to entire organs, organisms, and populations. Students then focus their efforts in a depth area of their choosing, and participate in a substantial research project with a Stanford faculty member. Upon graduation, students are prepared to enter a range of disciplines in either academia or industry.

Requirements

		Units
Mathematics		
21 unit minimum, see Basic Requirement 1		
MATH 19	Calculus (or AP Calculus)	3
MATH 20	Calculus (or AP Calculus)	3
MATH 21	Calculus (or AP Calculus)	4
CS 103	Mathematical Foundations of Computing	3-5
CS 109	Introduction to Probability for Computer Scientists	3-5
Science		
17 units minimum, see Basic Requirement 2		
PHYSICS 41	Mechanics	4
CHEM 31M	Chemical Principles: From Molecules to Solids (formerly CHEM 31X)	5
or CHEM 31B	Chemical Principles II	
CHEM 33	Structure and Reactivity of Organic Molecules	5
BIO 82	Genetics (or HUMBIO 2A)	4

BIO 83	Biochemistry & Molecular Biology (or BIO 84 or HUMBIO 3A)	4
BIO 86	Cell Biology (or HUMBIO 4A)	4
Engineering Fundamentals		
CS 106B	Programming Abstractions [4]	5
or CS 106X	Programming Abstractions	
For the second required course, see concentrations [4]		
Technology in Society		
One course required, see Basic Requirement 4; course used must be on the School of Engineering Approved Courses list in the UGHB the year taken.		3-5
Engineering		
CS 107	Computer Organization and Systems	3-5
CS 161	Design and Analysis of Algorithms	3-5
Select one of the following:		3
CS 270	Modeling Biomedical Systems	
CS 273A	The Human Genome Source Code	
CS 274	Representations and Algorithms for Computational Molecular Biology	
CS 275	Translational Bioinformatics	
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	
Research: 6 units of biomedical computation research in any department [2,3]		6
Engineering Depth Concentration (select one of the following concentrations): [7]		
Cellular/Molecular Concentration		
Mathematics: Select one of the following:		
CME 100	Vector Calculus for Engineers	
STATS 141	Biostatistics	
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
One additional Engineering Fundamental [4]		
BIO 104	Advance Molecular Biology: Epigenetics and Proteostasis	
CHEM 141	The Chemical Principles of Life I (or CHEM 171) [4]	
Cell/Mol Electives (two courses) [5,6]		
Informatics Electives (two courses) [5,6]		
Simulation Electives (two courses) [5, 6]		
Simulation, Informatics, or Cell/Mol Elective (one course) [5,6]		
Informatics Concentration		
Mathematics: Select one of the following:		
STATS 141	Biostatistics	
STATS 203	Introduction to Regression Models and Analysis of Variance	
STATS 205	Introduction to Nonparametric Statistics	
STATS 215	Statistical Models in Biology	
One additional Engineering Fundamental [4]		
Informatics Core (three courses):		
CS 145	Data Management and Data Systems	
or CS 147	Introduction to Human-Computer Interaction Design	
CS 221	Artificial Intelligence: Principles and Techniques	
or CS 228	Probabilistic Graphical Models: Principles and Techniques	
or CS 229	Machine Learning	
One additional course from the previous two lines		
Informatics Electives (three courses) [5,6]		
Cellular Electives (two courses) [5,6]		
Organs Electives (two courses) [5,6]		6-10
Organs/Organisms Concentration		
Mathematics (select one of the following):		
CME 100	Vector Calculus for Engineers	
STATS 141	Biostatistics	
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
One additional Engineering Fundamental [4]		
Biology (two courses):		
BIO 112	Human Physiology	
CHEM 141	The Chemical Principles of Life I (or BIOE 220)	
Two additional Organs Electives [5,6]		
Simulation Electives (two courses) [5,6]		
Informatics Electives (two courses) [5,6]		
Simulation, Informatics, or Organs Elective (one course) [5,6]		
Simulation Concentration		
Mathematics:		
CME 100	Vector Calculus for Engineers	
or MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
ME 30	Engineering Thermodynamics (Fulfills 2nd Engineering Fundamental)	3
Simulation Core:		
CME 102	Ordinary Differential Equations for Engineers	5
or MATH 53	Ordinary Differential Equations with Linear Algebra	
ENGR 80	Introduction to Bioengineering (Engineering Living Matter)	4
BIOE 101	Systems Biology	3
BIOE 103	Systems Physiology and Design	4
Simulation Electives (two courses) [5, 6]		
Cellular Elective (one course) [5,6]		
Organs Elective (one course) [5,6]		
Simulation, Cellular, or Organs Elective (two courses) [5,6]		
Total Units		90-104

1. Acceptable substitutes for CS 109 are STATS 116 Theory of Probability, MS&E 120 Introduction to Probability, MS&E 220 Probabilistic Analysis, EE 178 Probabilistic Systems Analysis, and CME 106 Introduction to Probability and Statistics for Engineers .
2. Research projects require pre-approval of BMC Coordinators
3. Research units taken as CS 191W Writing Intensive Senior Project or in conjunction with ENGR 199W Writing of Original Research for Engineers fulfill the Writing in the Major (WIM) requirement. CS 272 Introduction to Biomedical Informatics Research Methodology, which does not have to be taken in conjunction with research, also fulfills the WIM requirement.
4. One 3-5 unit course required; CS 106A Programming Methodology may not be used. See Engineering Fundamentals list in Handbook for Undergraduate Engineering Programs or on Approved Courses page at ughb.stanford.edu.
5. The list of electives is continually updated to include all applicable courses. For the current list of electives, see http://bmc.stanford.edu.

6 A course may only be counted towards one elective or core requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Topics (Engineering Fundamentals and Depth courses) is 2.0.

7 A total of 40 Engineering Fundamentals and Core/Depth units must be taken. The core classes only provide 27 Engineering units, so the remaining units must be taken from within the electives.

Honors Program

The Biomedical Computation program offers an honors option for qualified students, resulting in a B.S. with Honors degree in Engineering (ENGR-BSH, Biomedical Computation). An honors project is meant to be a substantial research project during the later part of a student's undergraduate career, culminating in a final written and oral presentation describing the student's project and its significance. There is no limit to the number of majors who can graduate with honors; any BMC major who is interested and meets the qualifications is considered.

1. Students apply by submitting the Honors Program Application Webform found on the BMC website and should be prepared to upload a 1-2 page proposal describing the problem the student has chosen to investigate, its significance, and the student's research plan. This plan must be endorsed by the student's research and academic advisers, one of whom must be a member of the Academic Council. In making its decision, the department evaluates the overall scope and significance of the student's proposed work.
2. Students must maintain a 3.5 GPA.
3. Students must complete three quarters of research. All three quarters must be on the same project with the same adviser. A Summer Quarter counts as one quarter of research.
   - Ideally, funding should not be obtained through summer research college sources, but rather through the UAR's Student Grants Program (http://studentgrants.stanford.edu/). In no case can the same work be double-paid by two sources.
4. Students must complete a substantial write-up of the research in the format of a publishable research paper. This research paper is expected to be approximately 20-30 pages and must be approved by the student's research adviser and by a second reader.
5. Students submit an electronic pdf of their thesis, including the signature page signed by both readers, to Bioengineering student services. Students should review deadlines on the BMC website. (https://bioengineering.stanford.edu/academics/undergraduate-programs/biomedical-computation/honors/) Students are sent email instructions on how to archive a permanent electronic copy in Terman Engineering library.
6. As the culmination of the honors project, each student presents their results in the Bioengineering Honors Poster Fair in spring quarter of their senior year.

For additional information and sample programs, see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

Chemical Engineering

Completion of the undergraduate program in Chemical Engineering leads to the conferral of the Bachelor of Science in Chemical Engineering.

Mission of the Undergraduate Program in Chemical Engineering

Chemical engineers are responsible for the conception and design of processes for the purpose of production, transformation, and transportation of materials. This activity begins with experimentation in the laboratory and is followed by implementation of the technology in full-scale production. The mission of the undergraduate program in Chemical Engineering is to develop students' understanding of the core scientific, mathematical, and engineering principles that serve as the foundation underlying these technological processes. The program's core mission is reflected in its curriculum which is built on a foundation in the sciences of chemistry, physics, and biology. Course work includes the study of applied mathematics, material and energy balances, thermodynamics, fluid mechanics, energy and mass transfer, separations technologies, chemical reaction kinetics and reactor design, and process design. The program provides students with excellent preparation for careers in the corporate sector and government, or for graduate study.

Requirements

		Units
Mathematics (24-30 units) [1]		**10**
The following sequence or approved AP credit		
MATH 19	Calculus	
MATH 20	Calculus	
MATH 21	Calculus	
Select one of the following:		5-10
CME 100	Vector Calculus for Engineers	
MATH 51 & MATH 52	Linear Algebra, Multivariable Calculus, and Modern Applications and Integral Calculus of Several Variables	
Select one of the following:		5
CME 102	Ordinary Differential Equations for Engineers	
or MATH 53	Ordinary Differential Equations with Linear Algebra	
Select one of the following:		4-5
CME 104	Linear Algebra and Partial Differential Equations for Engineers	
or CME 106	Introduction to Probability and Statistics for Engineers	
Science (23-29 units) [1]		
CHEM 31M	Chemical Principles: From Molecules to Solids	5
CHEM 33	Structure and Reactivity of Organic Molecules	5
CHEM 121	Understanding the Natural and Unnatural World through Chemistry	5
PHYSICS 41	Mechanics	4
or PHYSICS 41E	Mechanics, Concepts, Calculations, and Context	
PHYSICS 43	Electricity and Magnetism	4
Technology in Society (3-5 units)		
One course required, see Basic Requirement 4; course chosen must be on the SoE-Approved Courses list at <ughb.stanford.edu> the year taken.		3-5
Engineering Fundamentals (7-9 units)		
Two courses minimum; see Basic Requirement 3		
CHEMENG/ENGR 20	Introduction to Chemical Engineering	4
Fundamentals Elective from another School of Engineering department		3-5
See the UGHB for a list of courses.		
Chemical Engineering Depth (51 units minimum)		
CHEMENG 100	Chemical Process Modeling, Dynamics, and Control	3
CHEMENG 110A	Introduction to Chemical Engineering Thermodynamics [3]	3
CHEMENG 110B	Multi-Component and Multi-Phase Thermodynamics	3
CHEMENG 120A	Fluid Mechanics	4
CHEMENG 120B	Energy and Mass Transport	4
CHEMENG 130A	Microkinetics - Molecular Principles of Chemical Kinetics	3

CHEMENG 130B	Introduction to kinetics and reactor design	3
CHEMENG 150	Biochemical Engineering	3
CHEMENG 180	Chemical Engineering Plant Design	4
CHEMENG 181	Biochemistry I	4
CHEMENG 185A	Chemical Engineering Laboratory A (WIM)	5
CHEMENG 185B	Chemical Engineering Laboratory B	5
CHEM 171	Foundations of Physical Chemistry [4]	4
Select 1 of the following:		3
CHEMENG 140	Micro and Nanoscale Fabrication Engineering	
CHEMENG 142	Basic Principles of Heterogeneous Catalysis with Applications in Energy Transformations	
CHEMENG 160	Polymer Science and Engineering	
CHEMENG 174	Environmental Microbiology I	
CHEMENG 177	Data Science and Machine Learning Approaches in Chemical and Materials Engineering	
CHEMENG 183	Biochemistry II	
CHEMENG 190	Undergraduate Research in Chemical Engineering	
CHEMENG 190H	Undergraduate Honors Research in Chemical Engineering	
CHEMENG 196	Creating and Leading New Ventures in Engineering and Science-based Industries	
Total Units		108-118

[1] Unit count is higher if program includes one or more of the following: MATH 51 and MATH 52 in lieu of CME 100; or CHEM 31A and CHEM 31B in lieu of CHEM 31M.

[2] A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

[3] Students who completed CHEM 171 prior to academic year 2020-21 may substitute CHEMENG 110A with CHEM 171.

[4] Students who completed CHEM 173 prior to academic year 2020-21 may substitute CHEM 171 with CHEM 173.

* For additional information and sample programs, see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu)

Honors Program in Chemical Engineering

The Department of Chemical Engineering offers a program leading to the degree of Bachelor of Science in Chemical Engineering with Honors. Qualified undergraduate majors conduct independent study and research at an advanced level with faculty mentors, graduate students, and fellow undergraduates. This three quarter sequential program requires concurrent participation each quarter in the CHEMENG 191H Undergraduate Honors Seminar; completion of a faculty-approved thesis; and participation in the Chemical Engineering Honors Poster Session held annually during the Mason Lecture Series Spring Quarter. The last requirement may be fulfilled through an alternative, public, oral presentation with the approval of the department chair. A research proposal/application must be submitted at least five quarters prior to graduation with work to begin at a minimum of four quarters prior to graduation.

Admission to the honors program is by application and submission of a research proposal and is subject to approvals by faculty advisers, sponsors, and the chair of the department. Declared Chemical Engineering majors with a cumulative grade point average (GPA) of 3.5 or higher are encouraged to apply. Students must submit their applications no later than the first week in March during Winter Quarter of their junior year, assuming a June degree conferral the following year, e.g. the 2020-2021 deadline is March 1, 2021. An application includes a Stanford transcript in addition to the research proposal, approved by both the student's research thesis adviser, a faculty reader, and, if required, a chemical engineering faculty sponsor. The research adviser or the reader or, alternatively, a faculty sponsor, must be a faculty member in the Department of Chemical Engineering. Students must start their research no later than Spring Quarter their junior year and are encouraged to consider incorporating research opportunities such as those sponsored by Undergraduate Academic Life into their honors research proposal; see http://ual.stanford.edu/OO/research_opps/Grants (http://ual.stanford.edu/OO/research_opps/Grants/). See departmental student services staff in Shriram Center room 129, for more information about the application process, a proposal template, and other assistance.

In order to receive departmental honors, students admitted to the honors program must:

1. Maintain an overall grade point average (GPA) of at least 3.5 as calculated on the unofficial transcript.
2. Complete at least three quarters of research with an aggregate enrollment of a minimum of nine units in CHEMENG 190H Undergraduate Honors Research in Chemical Engineering for a letter grade; up to three units may be used towards the Chemical Engineering depth elective requirements. All quarters must focus on the same topic. The same faculty adviser and faculty reader should be maintained throughout if feasible.
3. Enroll in CHEMENG 191H Undergraduate Honors Seminar, concurrently with each quarter of enrollment in CHEMENG 190H Undergraduate Honors Research in Chemical Engineering.
4. Participate with a poster and oral presentation of thesis work at the Chemical Engineering Honors Poster Session held during the Mason Lectures week, Spring Quarter, or, at the Undergraduate Program Committee's discretion, at a comparable public event. Submit at the same time to student services one copy of the poster in electronic format.
5. Submit final drafts of a thesis simultaneously to the adviser and the reader and, if appropriate, to the Chemical Engineering faculty sponsor, no later than April 5, 2021, or the first school day of the second week of the quarter in which the degree is to be conferred.
6. Complete all work and thesis revisions and obtain indicated faculty approvals on the Certificate of Final Reading of Thesis forms by April 30, 2021, or the end of the first month of the graduation quarter.
7. Submit to departmental student services one (1) final copy of the honors thesis, as approved by the appropriate faculty. Include in each thesis an original, completed, faculty signature sheet immediately following the title page. The 2020-2021 deadline is May 3, 2021.
8. Submit to student services a copy of the honors thesis in electronic format at the same time as the final copy of the thesis.

Upon faculty approval, departmental student services to submit one electronic copy of each honors thesis to Student Affairs, School of Engineering.

Civil Engineering (CE)

Completion of the undergraduate program in Civil Engineering leads to the conferral of the Bachelor of Science in Civil Engineering.

Mission of the Undergraduate Program in Civil Engineering

The mission of the undergraduate program in Civil Engineering is to provide students with the principles of engineering and the

methodologies necessary for civil engineering practice. This pre-professional program balances the fundamentals common to many specialties in civil engineering and allows for concentration in any of seven areas: structures, construction, environmental, energy/climate, fluid mechanics/hydrology, urban systems, or sensors/analytics. Students in the major learn to apply knowledge of mathematics, science, and civil engineering to conduct experiments, design structures and systems to creatively solve engineering problems, and communicate their ideas effectively. The major prepares students for careers in consulting, industry and government, as well as for graduate studies in engineering.

Requirements

		Units
Mathematics and Science		**45**
45 units minimum; see Basic Requirement 1 and 2 [1]		
Technology in Society		
One course required		
CEE 102A	Legal / Ethical Principles in Design, Construction, Project Delivery	3
Engineering Fundamentals		
Two courses required		
ENGR 14	Intro to Solid Mechanics	3
ENGR 90/CEE 70	Environmental Science and Technology	3
Engineering Depth		
Minimum of 68 Engineering Fundamentals plus Engineering Depth; see Basic Requirement 5		
CEE 100	Managing Sustainable Building Projects [2]	4
CS 106A	Programming Methodology (or CS 106B, CS 106X, CEE 101D)	5
ME 30	Engineering Thermodynamics (or CHEMENG 110A)	3
CEE 146S	Engineering Economics and Sustainability	3
CEE 183	Integrated Civil Engineering Design Project (Senior Capstone Design Course)	4
Focus Area Electives: at least 12 units in 1 major focus are, + at least 6 units each in 3 other focus areas (see below; no double counting) [4]		**30**
Additional CEE elective units (either select from focus areas below, from additional approved courses (see Footnote 5), or must be pre-approved by CEE Curriculum Comm.)		**13**
Total Units		116

1 Mathematics must include CME 100 Vector Calculus for Engineers and CME 102 Ordinary Differential Equations for Engineers (or MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications and Differential Calculus of Several Variables and MATH 53 Ordinary Differential Equations with Linear Algebra) and a Statistics course (STATS 101 Data Science 101 or STATS 110 Statistical Methods in Engineering and the Physical Sciences or CME 106 Introduction to Probability and Statistics for Engineers or CEE 203 Probabilistic Models in Civil Engineering). Science must include PHYSICS 41 Mechanics (or PHYSICS 41E Mechanics, Concepts, Calculations, and Context); either PHYSICS 43 Electricity and Magnetism or PHYSICS 45 Light and Heat; either CHEM 31A Chemical Principles I or CHEM 31M Chemical Principles: From Molecules to Solids; at least one of CEE 177 Aquatic Chemistry and Biology (required for major focus in fluid mechanics/hydrology or environmental quality) or GEOLSCI 1 Introduction to Geology (required for major focus in structural, construction, urban systems, energy/climate or sensing/analytics); and additional physics, chemistry or mathematics to reach 45 units.

2 CEE 100 meets the Writing in the Major (WIM) requirement

3 A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

4 To satisfy ABET criteria, electives must include at least 2 of the following 4 courses: CEE 101A, 101B, 101C, 101D.

5 Preapproved courses for additional CEE elective units: ENGR 10, 15, 21, 25E, 40M (or 40A), 50 (or 50E or 50M); CEE 74N, 80N; and up to 4 units of CEE 199 or CEE 199L.

Construction Engineering Focus

		Units
CEE 120A	Building Modeling for Design & Construction	3
CEE 122A & CEE 122B	Computer Integrated Architecture/ Engineering/Construction and Computer Integrated A/E/C (each quarter = 2 units; must take both quarters)	4
CEE 131C	How Buildings are Made -- Materiality and Construction Methods	4
CEE 141A	Infrastructure Project Development	3
CEE 141B	Infrastructure Project Delivery	3
CEE 144	Design and Innovation for the Circular Economy	3
CEE 241	Managing Fabrication and Construction	4

Energy and Climate Focus

		Units
CEE 63	Weather and Storms	3
CEE 64	Air Pollution and Global Warming: History, Science, and Solutions	3
CEE 107A	Understanding Energy (or CEE 107S)	3-5
CEE 107R	E^3: Extreme Energy Efficiency	3
CEE 156	Building Systems Design & Analysis	4
CEE 172	Air Quality Management	3
CEE 176A	Energy Efficient Buildings	3
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	3-4

Environmental Fluid Mechanics & Hydrology Focus

		Units
CEE 101B	Mechanics of Fluids	4
CEE 161I	Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation	3
CEE 162D	Introduction to Physical Oceanography	4
CEE 162F	Coastal Processes	3
CEE 162I	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation	3
CEE 166A	Watershed Hydrologic Processes and Models	3
CEE 166B	Water Resources and Hazards	3
CEE 175A	California Coast: Science, Policy, and Law	3-4

Environmental Quality Engineering for Human Health Focus

		Units
CEE 172	Air Quality Management	3
CEE 174A	Providing Safe Water for the Developing and Developed World	3

CEE 174B	Wastewater Treatment: From Disposal to Resource Recovery	3
CEE 175A	California Coast: Science, Policy, and Law (alt. years)	3-4
CEE 178	Introduction to Human Exposure Analysis	3
CEE 265D	Water and Sanitation in Developing Countries	3

Sensing, Analytics and Control Focus

		Units
CEE 101D	Computations in Civil and Environmental Engineering	3
CEE 154	Data Analytics for Physical Systems	3-4
CEE 155	Introduction to Sensing Networks for CEE	3-4
CEE 156	Building Systems Design & Analysis	3
CEE 177L	Smart Cities & Communities	3
ME 161	Dynamic Systems, Vibrations and Control	3-4
ME 210	Introduction to Mechatronics	4

Structural Engineering and Mechanics Focus

		Units
CEE 101A	Mechanics of Materials	4
CEE 101C	Geotechnical Engineering	4
CEE 101D	Computations in Civil and Environmental Engineering	3
CEE 180	Structural Analysis	4
CEE 182	Structural Design	4
CEE 192	Laboratory Characterization of Properties of Rocks and Geomaterials	3-4
ME 151	Introduction to Computational Mechanics	4

Urban Systems Focus

		Units
CEE 120A	Building Modeling for Design & Construction	3
CEE 130	Architectural Design: 3-D Modeling, Methodology, and Process	5
CEE 156	Building Systems Design & Analysis	4
CEE 176A	Energy Efficient Buildings	3-4
CEE 177L	Smart Cities & Communities	3
CEE 243	Intro to Urban Sys Engrg	3

Honors Program

This program leads to a B.S. with honors for undergraduates majoring in Civil Engineering or in Environmental Systems Engineering. It is designed to encourage qualified students to undertake a more intensive study of civil and environmental engineering than is required for the normal majors through a substantial, independent research project.

The program involves an in-depth research study in an area proposed to and agreed to by a Department of Civil and Environmental Engineering faculty adviser and completion of a thesis of high quality. A written proposal for the research to be undertaken must be submitted and approved by the faculty adviser in the fourth quarter prior to graduation. At the time of application, the student must have an overall grade point average (GPA) of at least 3.3 for course work at Stanford; this GPA must be maintained to graduation. The thesis is supervised by a CEE faculty adviser and must involve input from the School of Engineering writing program by means of ENGR 202S Directed Writing Projects or ENGR 199W Writing of Original Research for Engineers. The written thesis must be approved by the thesis adviser. Students are encouraged to present their results in a seminar for faculty and students. Up to 10 units of CEE 199H Undergraduate Honors Thesis, may be taken to support the research and writing (not to duplicate ENGR 202S or ENGR 199W). These units are beyond the normal Civil Engineering or Environmental Systems Engineering major program requirements.

For additional information on the major, minor, honors and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

Computer Science (CS)

Completion of the undergraduate program in Computer Science leads to the conferral of the Bachelor of Science in Computer Science.

Mission of the Undergraduate Program in Computer Science

The mission of the undergraduate program in Computer Science is to develop students' breadth of knowledge across the subject areas of computer science, including their ability to apply the defining processes of computer science theory, abstraction, design, and implementation to solve problems in the discipline. Students take a set of core courses. After learning the essential programming techniques and the mathematical foundations of computer science, students take courses in areas such as programming techniques, automata and complexity theory, systems programming, computer architecture, analysis of algorithms, artificial intelligence, and applications. The program prepares students for careers in government, law, the corporate sector, and for graduate study.

Requirements

Mathematics (26 units minimum)—

		Units
CS 103	Mathematical Foundations of Computing	5
CS 109	Introduction to Probability for Computer Scientists	5
MATH 19	Calculus [1]	3
MATH 20	Calculus [1]	3
MATH 21	Calculus [1]	4
Plus two electives [2]		

Science (11 units minimum)—

		Units
PHYSICS 41	Mechanics	4
or PHYSICS 21	Mechanics, Fluids, and Heat	
or PHYSICS 41E	Mechanics, Concepts, Calculations, and Context	
PHYSICS 43	Electricity and Magnetism	4
or PHYSICS 23	Electricity, Magnetism, and Optics	
Science elective [3]		3

Technology in Society (3-5 units)—

One course; course chosen must be on the SoE Approved Courses list at https://ughb.stanford.edu/ the year taken; see Basic Requirements 4 in the School of Engineering section

Engineering Fundamentals (13 units minimum; see Basic Requirement 3 in the School of Engineering section)—

		Units
CS 106B	Programming Abstractions	5
or CS 106X	Programming Abstractions	
ENGR 40M	An Intro to Making: What is EE (or ENGR 40A and ENGR 40B)	3-5

Fundamentals Elective (May be an ENGR fundamentals or an additional CS Depth course. See Fig. 3-4 in the UGHB for approved ENGR fundamentals list. May not be any CS 106)	3-5
*Students who take ENGR 40A or 40M for fewer than 5 units are required to take 1-2 additional units of ENGR Fundamentals (13 units minimum), or 1-2 additional units of Depth.	

Writing in the Major—

		Units
Select one of the following:		
CS 181W	Computers, Ethics, and Public Policy	
CS 182W	Ethics, Public Policy, and Technological Change	
CS 191W	Writing Intensive Senior Project	
CS 194W	Software Project	
CS 210B	Software Project Experience with Corporate Partners	
CS 294W	Writing Intensive Research Project in Computer Science	

Computer Science Core (15 units)—

		Units
CS 107	Computer Organization and Systems	5
or CS 107E	Computer Systems from the Ground Up	
CS 110	Principles of Computer Systems	5
or CS 111	Operating Systems Principles	
CS 161	Design and Analysis of Algorithms	5

Senior Project (3 units)—

		Units
CS 191	Senior Project [7]	
CS 191W	Writing Intensive Senior Project [7]	
CS 194	Software Project	
CS 194H	User Interface Design Project	
CS 194W	Software Project	
CS 210B	Software Project Experience with Corporate Partners	
CS 294S	Research Project in Software Systems and Security	
CS 294W	Writing Intensive Research Project in Computer Science	

Computer Science Depth B.S.

Choose one of the following ten CS degree tracks (a track must consist of at least 25 units and 7 classes):

Artificial Intelligence Track—

		Units
CS 221	Artificial Intelligence: Principles and Techniques	4
Select two courses, each from a different area:		
Area I, AI Methods:		
CS 228	Probabilistic Graphical Models: Principles and Techniques	
CS 229	Machine Learning	
CS 234	Reinforcement Learning	
CS 238	Decision Making under Uncertainty	
Area II, Natural Language Processing:		
CS 124	From Languages to Information	
CS 224N	Natural Language Processing with Deep Learning	
CS 224S	Spoken Language Processing	
CS 224U	Natural Language Understanding	
Area III, Vision:		
CS 131	Computer Vision: Foundations and Applications	
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	
CS 231N	Convolutional Neural Networks for Visual Recognition	
Area IV, Robotics:		
CS 223A	Introduction to Robotics	
CS 237A	Principles of Robot Autonomy I	
Select one additional course from the Areas above or from the following:		
AI Methods:		
CS 157	Computational Logic	
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	
CS 230	Deep Learning	
CS 236	Deep Generative Models	
STATS 315A	Modern Applied Statistics: Learning	
STATS 315B	Modern Applied Statistics: Data Mining	
Comp Bio:		
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	
CS 371	Computational Biology in Four Dimensions	
Information and the Web:		
CS 276	Information Retrieval and Web Search	
CS 224W	Machine Learning with Graphs	
Other:		
CS 151	Logic Programming	
CS 227B	General Game Playing	
CS 379	Interdisciplinary Topics (Offered occasionally)	
Robotics and Control:		
CS 327A	Advanced Robotic Manipulation	
CS 329	Topics in Artificial Intelligence (with advisor approval)	
ENGR 205	Introduction to Control Design Techniques	
MS&E 251	Introduction to Stochastic Control with Applications	
MS&E 351	Dynamic Programming and Stochastic Control	
Track Electives: at least three additional courses selected from the Areas and lists above, general CS electives, or the courses listed below. Students can replace one of these electives with a course found at https://cs.stanford.edu/explore (https://cs.stanford.edu/explore/): [5]		
CS 237B	Principles of Robot Autonomy II	
CS 257	Logic and Artificial Intelligence	
CS 275	Translational Bioinformatics	
CS 326	Topics in Advanced Robotic Manipulation	
CS 330	Deep Multi-task and Meta Learning	
CS 336		
CS 338	Physical Human Robot Interaction	

CS 398	Computational Education
CS 428	Computation and Cognition: The Probabilistic Approach
EE 263	Introduction to Linear Dynamical Systems
EE 278	Introduction to Statistical Signal Processing
EE 364A	Convex Optimization I
EE 364B	Convex Optimization II
ECON 286	Game Theory and Economic Applications
MS&E 252	Decision Analysis I: Foundations of Decision Analysis
MS&E 352	Decision Analysis II: Professional Decision Analysis
MS&E 355	Influence Diagrams and Probabilistics Networks
PHIL 152	Computability and Logic
PSYCH 204A	Human Neuroimaging Methods
PSYCH 204B	Computational Neuroimaging
PSYCH 209	Neural Network Models of Cognition
STATS 200	Introduction to Statistical Inference
STATS 202	Data Mining and Analysis
STATS 205	Introduction to Nonparametric Statistics

Biocomputation Track—

		Units
The Mathematics, Science, and Engineering Fundamentals requirements are non-standard for this track. See Handbook for Undergraduate Engineering Programs for details.		
Select one of the following:		3-4
CS 221	Artificial Intelligence: Principles and Techniques	
CS 228	Probabilistic Graphical Models: Principles and Techniques	
CS 229	Machine Learning	
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	
Select one of the following:		
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	
CS 270	Modeling Biomedical Systems	
CS 273A	The Human Genome Source Code	
CS 274	Representations and Algorithms for Computational Molecular Biology	
CS 275	Translational Bioinformatics	
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	
One additional course from the lists above or the following:		3-4
CS 124	From Languages to Information	
CS 145	Data Management and Data Systems	
CS 147	Introduction to Human-Computer Interaction Design	
CS 148	Introduction to Computer Graphics and Imaging	
CS 248	Interactive Computer Graphics	
One course selected from the following:		3-4
CS 108	Object-Oriented Systems Design	4
CS 124	From Languages to Information	3-4
CS 131	Computer Vision: Foundations and Applications	3-4
CS 140	Operating Systems and Systems Programming [4]	3-4
or CS 140E	Operating systems design and implementation	
CS 142	Web Applications	3
CS 143	Compilers	3-4
CS 144	Introduction to Computer Networking	3-4
CS 145	Data Management and Data Systems	3-4
CS 146	Introduction to Game Design and Development	3
CS 147	Introduction to Human-Computer Interaction Design	3-5
CS 148	Introduction to Computer Graphics and Imaging	3-4
CS 149	Parallel Computing	3-4
CS 151	Logic Programming	3
CS 154	Introduction to the Theory of Computation	3-4
CS 155	Computer and Network Security	3
CS 157	Computational Logic	3
or PHIL 151	Metalogic	
CS 163	The Practice of Theory Research	3
CS 166	Data Structures	3-4
CS 168	The Modern Algorithmic Toolbox	3-4
CS 190	Software Design Studio	3-4
CS 195	Supervised Undergraduate Research (4 units max)	3-4
CS 197	Computer Science Research	4
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	3
CS 210A	Software Project Experience with Corporate Partners	3-4
CS 217	Hardware Accelerators for Machine Learning	3-4
CS 221	Artificial Intelligence: Principles and Techniques	3-4
CS 223A	Introduction to Robotics	3
CS 224N	Natural Language Processing with Deep Learning	3-4
CS 224S	Spoken Language Processing	2-4
CS 224U	Natural Language Understanding	3-4
CS 224W	Machine Learning with Graphs	3-4
CS 225A	Experimental Robotics	3
CS 227B	General Game Playing	3
CS 228	Probabilistic Graphical Models: Principles and Techniques	3-4
CS 229	Machine Learning	3-4
CS 229M	Machine Learning Theory	3
CS 230	Deep Learning	3-4
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	3-4
CS 231N	Convolutional Neural Networks for Visual Recognition	3-4
CS 232	Digital Image Processing	3
CS 233	Geometric and Topological Data Analysis	3
CS 234	Reinforcement Learning	3
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	3-4
CS 236	Deep Generative Models	3
CS 237A	Principles of Robot Autonomy I	3-5
CS 237B	Principles of Robot Autonomy II	3-4

CS 238	Decision Making under Uncertainty	3-4
CS 240	Advanced Topics in Operating Systems	3
CS 240LX	Advanced Systems Laboratory, Accelerated	3
CS 242	Programming Languages	3
CS 243	Program Analysis and Optimizations	3-4
CS 244	Advanced Topics in Networking	3-4
CS 244B	Distributed Systems	3
CS 245	Principles of Data-Intensive Systems	3
CS 246	Mining Massive Data Sets	3-4
CS 247	(Any suffix)	3-4
CS 248	Interactive Computer Graphics	3-4
CS 251	Cryptocurrencies and blockchain technologies	3
CS 252	Analysis of Boolean Functions	3
CS 254	Computational Complexity	3
CS 254B	Computational Complexity II	3
CS 255	Introduction to Cryptography	3
CS 261	Optimization and Algorithmic Paradigms	3
CS 263	Counting and Sampling	3
CS 265	Randomized Algorithms and Probabilistic Analysis	3
CS 269Q	Elements of Quantum Computer Programming	3
CS 269I	Incentives in Computer Science (Not Given This Year)	3
CS 270	Modeling Biomedical Systems	3
CS 271	Artificial Intelligence in Healthcare	3-4
CS 272	Introduction to Biomedical Informatics Research Methodology	3-5
CS 273A	The Human Genome Source Code	3
CS 273B	Deep Learning in Genomics and Biomedicine	3
CS 274	Representations and Algorithms for Computational Molecular Biology	3-4
CS 275	Translational Bioinformatics	4
CS 276	Information Retrieval and Web Search	3
CS 278	Social Computing	3
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	3
CS 330	Deep Multi-task and Meta Learning	3
CS 336	(Robot Perception and Decision Making: not offered this year)	
CS 348	(any suffix)	
CS 351	Open Problems in Coding Theory	3
CS 352	Pseudo-Randomness	3-4
CS 369L	Algorithmic Perspective on Machine Learning	3
CS 371	Computational Biology in Four Dimensions	3
CS 398	Computational Education	4
CME 108	Introduction to Scientific Computing	3
EE 180	Digital Systems Architecture	4
EE 263	Introduction to Linear Dynamical Systems	3
EE 282	Computer Systems Architecture	3
EE 364A	Convex Optimization I	3
BIOE 101	Systems Biology	3
MS&E 152	Introduction to Decision Analysis	3-4
MS&E 252	Decision Analysis I: Foundations of Decision Analysis	3-4
STATS 206	Applied Multivariate Analysis	3
STATS 315A	Modern Applied Statistics: Learning	3
STATS 315B	Modern Applied Statistics: Data Mining	3
GENE 211	Genomics	3
One course from the following:		3-5
CS 145	Data Management and Data Systems	3-4
CS 147	Introduction to Human-Computer Interaction Design	3-5
CS 221	Artificial Intelligence: Principles and Techniques	3-4
CS 228	Probabilistic Graphical Models: Principles and Techniques	3-4
CS 229	Machine Learning	3-4
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	3-4
CS 270	Modeling Biomedical Systems	3
CS 271	Artificial Intelligence in Healthcare	3-4
CS 273A	The Human Genome Source Code	3
CS 273B	Deep Learning in Genomics and Biomedicine	3
CS 274	Representations and Algorithms for Computational Molecular Biology	3-4
CS 275	Translational Bioinformatics	4
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	3
CS 371	Computational Biology in Four Dimensions	3
EE 263	Introduction to Linear Dynamical Systems	3
EE 364A	Convex Optimization I	3
MS&E 152	Introduction to Decision Analysis	3-4
MS&E 252	Decision Analysis I: Foundations of Decision Analysis	3-4
STATS 206	Applied Multivariate Analysis	3
STATS 315A	Modern Applied Statistics: Learning	3
STATS 315B	Modern Applied Statistics: Data Mining	3
GENE 211	Genomics	3
One course selected from the list above or the following:		
CHEMENG 150	Biochemical Engineering	3
CHEMENG 174	Environmental Microbiology I	3
APPPHYS 294	Cellular Biophysics	3
BIO 104	Advance Molecular Biology: Epigenetics and Proteostasis	5
BIO 118	(Not Given This Year)	4
BIO 214	Advanced Cell Biology	4
BIO 230	Molecular and Cellular Immunology	4
CHEM 141	The Chemical Principles of Life I	4
CHEM 171	Foundations of Physical Chemistry	4
BIOC 241	Biological Macromolecules	3-5
One course from the following:		
BIOE 220	Introduction to Imaging and Image-based Human Anatomy	3
CHEMENG 150	Biochemical Engineering	3
CHEMENG 174	Environmental Microbiology I	3
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	3-4
CS 274	Representations and Algorithms for Computational Molecular Biology	3-4
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	3
CS 371	Computational Biology in Four Dimensions	3

ME 281	Biomechanics of Movement	3
APPPHYS 294	Cellular Biophysics	3
BIO 104	Advance Molecular Biology: Epigenetics and Proteostasis	5
BIO 112	Human Physiology	4
BIO 118	(Not Given This Year)	4
BIO 158	Developmental Neurobiology	4
BIO 183	Theoretical Population Genetics	3
BIO 214	Advanced Cell Biology	4
BIO 230	Molecular and Cellular Immunology	4
CHEM 171	Foundations of Physical Chemistry	4
CHEM 141	The Chemical Principles of Life I	4
BIOC 241	Biological Macromolecules	3-5
DBIO 210	Developmental Biology	4
GENE 211	Genomics	3
SURG 101	Regional Study of Human Structure	5

Computer Engineering Track—

		Units
For this track there is a 10 unit minimum for ENGR Fundamentals and a 29 unit minimum for Depth (for track and elective courses)		
EE 108	Digital System Design	4
EE 180	Digital Systems Architecture	4
Select two of the following:		8
EE 101A	Circuits I	
EE 101B	Circuits II	
EE 102A	Signal Processing and Linear Systems I	
EE 102B	Signal Processing and Linear Systems II	
Satisfy the requirements of one of the following concentrations:		
1) Digital Systems Concentration		
CS 140	Operating Systems and Systems Programming [4]	
or CS 140E	Operating systems design and implementation	
or CS 143	Compilers	
EE 109	Digital Systems Design Lab	
EE 271	Introduction to VLSI Systems	
Plus two of the following (6-8 units):		
CS 140	Operating Systems and Systems Programming (if not counted above) [4]	
or CS 140E	Operating systems design and implementation	
or CS 143	Compilers	
CS 144	Introduction to Computer Networking	
CS 149	Parallel Computing	
CS 190	Software Design Studio	
CS 217	Hardware Accelerators for Machine Learning	
CS 244	Advanced Topics in Networking	
EE 273	Digital Systems Engineering	
EE 282	Computer Systems Architecture	
2) Robotics and Mechatronics Concentration		
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	
CS 223A	Introduction to Robotics	
ME 210	Introduction to Mechatronics	
ENGR 105	Feedback Control Design	
Plus one of the following (3-4 units):		
CS 225A	Experimental Robotics	
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	
ENGR 205	Introduction to Control Design Techniques	
ENGR 207B	Linear Control Systems II	
3) Networking Concentration		
CS 140	Operating Systems and Systems Programming (CS 140E can substitute for CS 140) [4]	
CS 144	Introduction to Computer Networking	
Plus three of the following (9-11 units):		
CS 240	Advanced Topics in Operating Systems	
or CS 240LX	Advanced Systems Laboratory, Accelerated	
CS 241	Embedded Systems Workshop	
CS 244	Advanced Topics in Networking	
CS 244B	Distributed Systems	
EE 179	Analog and Digital Communication Systems	

Graphics Track—

		Units
CS 148	Introduction to Computer Graphics and Imaging	4
CS 244	Advanced Topics in Networking	4
Select one of the following: [6]		3-5
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	
CME 104	Linear Algebra and Partial Differential Equations for Engineers (Note: students taking CME 104 are also required to take its prerequisite course, CME 102)	
CME 108	Introduction to Scientific Computing	
MATH 52	Integral Calculus of Several Variables	
MATH 113	Linear Algebra and Matrix Theory	
Select two of the following:		6-8
CS 146	Introduction to Game Design and Development	
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	
or CS 131	Computer Vision: Foundations and Applications	
CS 233	Geometric and Topological Data Analysis	
CS 348	(Computer Graphics: any suffix)	
CS 448	Topics in Computer Graphics	
Track Electives: at least two additional courses from the lists above, the general CS electives list, or the courses listed below. Students can replace one of these electives with a course found at: https://cs.stanford.edu/explore (https://cs.stanford.edu/explore/): [5]		6-8
ARTSTUDI 160	Intro to Digital / Physical Design	
ARTSTUDI 170	Photography I: Black and White	
ARTSTUDI 179	Digital Art I	
CME 302	Numerical Linear Algebra	
CME 306	Numerical Solution of Partial Differential Equations	
EE 168	Introduction to Digital Image Processing	
EE 262	Three-Dimensional Imaging	
EE 264	Digital Signal Processing	
EE 278	Introduction to Statistical Signal Processing	
EE 368	Digital Image Processing	

ME 101	Visual Thinking	
PSYCH 30	Introduction to Perception	
PSYCH 221	Image Systems Engineering	

Human-Computer Interaction Track—

		Units
CS 147	Introduction to Human-Computer Interaction Design	5
CS 247	(Any suffix)	4
CS 347	Human-Computer Interaction: Foundations and Frontiers	4
CS 142	Web Applications	3
Any one of the following:		
CS 194H	User Interface Design Project	
CS 206	Exploring Computational Journalism	
CS 210A	Software Project Experience with Corporate Partners	
CS 247	(Any suffix beyond the course used above)	
CS 278	Social Computing	
Any CS 377 'Topics in HCI' of three or more units		
CS 448B	Data Visualization	
ME 216M	Introduction to the Design of Smart Products	
At least two additional courses from the above areas or the general CS electives list. Students can replace one of these electives with a course found at https://cs.stanford.edu/explore (https://cs.stanford.edu/explore/)		
Optional Elective [5]		

Information Track—

		Units
CS 124	From Languages to Information	4
CS 145	Data Management and Data Systems	4
Two courses, from different areas:		6-9
1) Information-based AI applications		
CS 224N	Natural Language Processing with Deep Learning	
CS 224S	Spoken Language Processing	
CS 229	Machine Learning	
CS 233	Geometric and Topological Data Analysis	
CS 234	Reinforcement Learning	
2) Database and Information Systems		
CS 140	Operating Systems and Systems Programming [4]	
or CS 140E	Operating systems design and implementation	
CS 142	Web Applications	
CS 151	Logic Programming	
CS 245	Principles of Data-Intensive Systems	
CS 246	Mining Massive Data Sets	
CS 341	Project in Mining Massive Data Sets	
3) Information Systems in Biology		
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	
CS 270	Modeling Biomedical Systems	
CS 274	Representations and Algorithms for Computational Molecular Biology	
4) Information Systems on the Web		
CS 224W	Machine Learning with Graphs	
CS 276	Information Retrieval and Web Search	
At least three additional courses from the above areas or the general CS electives list. Students can replace one of these electives with a course found at https://cs.stanford.edu/explore (https://cs.stanford.edu/explore/) [5]		

Systems Track—

		Units
CS 140	Operating Systems and Systems Programming [4]	4
or CS 140E	Operating systems design and implementation	
Select one of the following:		3-4
CS 143	Compilers	
EE 180	Digital Systems Architecture	
Two additional courses from the list above or the following:		6-8
CS 144	Introduction to Computer Networking	
CS 145	Data Management and Data Systems	
CS 149	Parallel Computing	
CS 155	Computer and Network Security	
CS 190	Software Design Studio	
CS 217	Hardware Accelerators for Machine Learning	
CS 240	Advanced Topics in Operating Systems	
or CS 240LX	Advanced Systems Laboratory, Accelerated	
CS 242	Programming Languages	
CS 243	Program Analysis and Optimizations	
CS 244	Advanced Topics in Networking	
CS 245	Principles of Data-Intensive Systems	
EE 271	Introduction to VLSI Systems	
EE 282	Computer Systems Architecture	
Track Electives: at least three additional courses selected from the list above, the general CS electives list, or the courses listed below. Students can replace one of these electives with a course found at: https://cs.stanford.edu/explore (https://cs.stanford.edu/explore/) [5]		9-12
CS 241	Embedded Systems Workshop	
CS 269Q	Elements of Quantum Computer Programming	
CS 316	Advanced Multi-Core Systems	
CS 341	Project in Mining Massive Data Sets	
CS 344	Topics in Computer Networks (3 or more units, any suffix)	
CS 349	Topics in Programming Systems (with permission of undergraduate advisor)	
CS 357S	Formal Methods for Computer Systems	
CS 448	Topics in Computer Graphics	
EE 108	Digital System Design	
EE 382C	Interconnection Networks	
EE 384A	Internet Routing Protocols and Standards	
EE 384C	Wireless Local and Wide Area Networks	
EE 384E	Networked Wireless Systems	
EE 384S	Performance Engineering of Computer Systems & Networks	

Theory Track—

		Units
CS 154	Introduction to the Theory of Computation	4
Select one of the following:		3
CS 168	The Modern Algorithmic Toolbox	
CS 255	Introduction to Cryptography	

CS 261	Optimization and Algorithmic Paradigms	
CS 265	Randomized Algorithms and Probabilistic Analysis	
CS 268	Geometric Algorithms	
Two additional courses from the list above or the following:		6-8
CS 143	Compilers	
CS 151	Logic Programming	
CS 155	Computer and Network Security	
CS 157	Computational Logic	
or PHIL 151	Metalogic	
CS 163	The Practice of Theory Research	
CS 166	Data Structures	
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	
CS 228	Probabilistic Graphical Models: Principles and Techniques	
CS 233	Geometric and Topological Data Analysis	
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	
CS 236	Deep Generative Models	
CS 242	Programming Languages	
CS 250	Algebraic Error Correcting Codes	
CS 251	Cryptocurrencies and blockchain technologies	
CS 252	Analysis of Boolean Functions	
CS 254	Computational Complexity	
CS 259	(With permission of undergraduate advisor. Course offered occasionally.)	
CS 263	Counting and Sampling	
CS 269I	Incentives in Computer Science (Not Given This Year)	
CS 351	Open Problems in Coding Theory	
CS 354	Topics in Intractability: Unfulfilled Algorithmic Fantasies (Not given this year)	
CS 355	Advanced Topics in Cryptography (Not given this year)	
CS 357	Advanced Topics in Formal Methods (Not given this year)	
CS 358	Topics in Programming Language Theory	
CS 359	Topics in the Theory of Computation (with permission of undergraduate advisor)	
CS 369	Topics in Analysis of Algorithms (with permission of undergraduate advisor)	
MS&E 310	Linear Programming	
Track Electives: at least three additional courses from the lists above, the general CS electives list, or the courses listed below. Students can replace one of these electives with a course found at: https://cs.stanford.edu/explore (https://cs.stanford.edu/explore/) [5]		9-12
CS 254B	Computational Complexity II	
CS 269G	Almost Linear Time Graph Algorithms	
CME 302	Numerical Linear Algebra	
CME 305	Discrete Mathematics and Algorithms	
PHIL 152	Computability and Logic	

Unspecialized Track—

		Units
CS 154	Introduction to the Theory of Computation	4
Select one of the following:		4
CS 140	Operating Systems and Systems Programming [4]	
or CS 140E	Operating systems design and implementation	
CS 143	Compilers	
One additional course from the list above or the following:		3-4
CS 144	Introduction to Computer Networking	
CS 155	Computer and Network Security	
CS 190	Software Design Studio	
CS 242	Programming Languages	
CS 244	Advanced Topics in Networking	
EE 180	Digital Systems Architecture	
Select one of the following:		3-4
CS 221	Artificial Intelligence: Principles and Techniques	
CS 223A	Introduction to Robotics	
CS 228	Probabilistic Graphical Models: Principles and Techniques	
CS 229	Machine Learning	
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	
Select one of the following:		3-4
CS 145	Data Management and Data Systems	
CS 147	Introduction to Human-Computer Interaction Design	
CS 148	Introduction to Computer Graphics and Imaging	
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	
CS 248	Interactive Computer Graphics	
At least two courses from the general CS electives list [5]		

Individually Designed Track—

Students may propose an individually designed track. Proposals should include a minimum of 25 units and seven courses, at least four of which must be CS courses numbered 100 or above. Proposals must be approved by the faculty advisor and Director of Undergraduate Studies. See Handbook for Undergraduate Engineering Programs for further information.

Footnotes for Track Course Lists

1. MATH 19, MATH 20, and MATH 21, or AP Calculus Credit may be used as long as at least 26 MATH units are taken. AP Calculus Credit must be approved by the School of Engineering.
2. The math electives list consists of: MATH 51, MATH 52, MATH 53, MATH 104, MATH 107, MATH 108, MATH 109, MATH 110, MATH 113; CS 157, CS 205L, PHIL 151; CME 100, CME 102, CME 104, ENGR 108. Restrictions: CS 157 and PHIL 151 may not be used in combination to satisfy the math electives requirement. Students who have taken both MATH 51 and MATH 52 may not count CME 100 as an elective. Courses counted as math electives cannot also count as CS electives, and vice versa.
3. The science elective may be any course of 3 or more units from the School of Engineering Science list (Fig. 4-2 in the UGHB), PSYCH 30, or AP Chemistry Credit. Either of the PHYSICS sequences 61/63 or 21/23 may be substituted for 41/43 as long as at least 11 science units are taken. AP Chemistry Credit and AP Physics Credit must be approved by the School of Engineering.
4. CS 111 and CS 140 cannot both be counted towards the BS requirements. However, it is acceptable to count both CS 111 and CS 140E towards the BS requirements.

[5] General CS Electives: CS 108, CS 124, CS 131, CS 140 (or CS 140E), CS 142, CS 143, CS 144, CS 145, CS 146, CS 147, CS 148, CS 149, CS 154, CS 155, CS 157(or PHIL 151), CS 163, CS 166, CS 168, CS 190, CS 195 (4 units max), CS 197, CS 205L, CS 210A, CS 217, CS 221, CS 223A, CS 224N, CS 224S, CS 224U, CS 224W, CS 225A, CS 227B, CS 228, CS 229, CS 229M, CS 230, CS 231A, CS 231N, CS 232, CS 233, CS 234CS 234CS 234CS 234CS 234CS 234CS 234CS 234CS 234, CS 235, CS 237A, CS 237B, CS 238, CS 240, CS 240LX, CS 242, CS 243, CS 244, CS 244B, CS 245, CS 246, CS 247(any suffix), CS 248, CS 251, CS 252, CS 254, CS 254B, CS 255, CS 261, CS 263, CS 265, CS 269I, CS 269Q, CS 270, CS 271, CS 272, CS 273A, CS 273B, CS 274, CS 276, CS 278, CS 279, CS 330, CS 336, CS 348 (any suffix), CS 351, CS 352, CS 369L, CS 398, CME 108; EE 180, EE 282.

[6] CS 205L is strongly recommended in this list for the Graphics track. Students taking CME 104 Linear Algebra and Partial Differential Equations for Engineers are also required to take its prerequisite, CME 102 Ordinary Differential Equations for Engineers.

[7] Independent study projects (CS 191 Senior Project or CS 191W Writing Intensive Senior Project) require faculty sponsorship and must be approved by the adviser, faculty sponsor, and the CS senior project adviser (Patrick Young). A signed approval form, along with a brief description of the proposed project, should be filed the quarter before work on the project is begun. Further details can be found in the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

[8] A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

Additional Information

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB). (http://ughb.stanford.edu)

Honors Program in Computer Science

The Department of Computer Science (CS) offers an honors program for undergraduates whose academic records and personal initiative indicate that they have the necessary skills to undertake high-quality research in computer science. Admission to the program is by application only. To apply for the honors program, students must be majoring in Computer Science, have a grade point average (GPA) of at least 3.6 in courses that count toward the major, and achieve senior standing (135 or more units) by the end of the academic year in which they apply. Coterminal master's students are eligible to apply as long as they have not already received their undergraduate degree. Beyond these requirements, students who apply for the honors program must find a Computer Science faculty member who agrees to serve as the thesis adviser for the project. Thesis advisers must be members of Stanford's Academic Council.

Students who meet the eligibility requirements and wish to be considered for the honors program must submit a written application to the CS undergraduate program office by May 1 of the year preceding the honors work. The application must include a letter describing the research project, a letter of endorsement from the faculty sponsor, and a transcript of courses taken at Stanford. Each year, a faculty review committee selects the successful candidates for honors from the pool of qualified applicants.

In order to receive departmental honors, students admitted to the honors program must, in addition to satisfying the standard requirements for the undergraduate degree, do the following:

1. Complete at least 9 units of CS 191 or CS 191W under the direction of their project sponsor.
2. Attend a weekly honors seminar Winter Quarter.
3. Complete an honors thesis deemed acceptable by the thesis adviser and at least one additional faculty member.
4. Present the thesis at a public colloquium sponsored by the department.
5. Maintain the 3.6 GPA required for admission to the honors program.

Electrical Engineering (EE)

Completion of the undergraduate program in Electrical Engineering leads to the conferral of the Bachelor of Science in Electrical Engineering.

Mission of the Undergraduate Program in Electrical Engineering

The mission of the undergraduate program of the Department of Electrical Engineering is to augment the liberal education expected of all Stanford undergraduates, to impart basic understanding of electrical engineering and to develop skills in the design and building of systems that directly impact societal needs.

The program includes a balanced foundation in the physical sciences, mathematics and computing; core courses in electronics, information systems and digital systems; and develops specific skills in the analysis and design of systems. Students in the major have broad flexibility to select from disciplinary areas beyond the core, including hardware and software, information systems and science, and physical technology and science, as well as electives in multidisciplinary areas, including bio-electronics and bio-imaging, energy and environment and music.

The program prepares students for a broad range of careers—both industrial and government—as well as for professional and academic graduate education.

Requirements

		Units
MATHEMATICS AND SCIENCE		
Minimum 40 units Math and Science combined.		
Mathematics [1]		
Select one sequence: May also be satisfied with AP Calculus.		10
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	
Select one 2-course sequence:		10
CME 100 & CME 102	Vector Calculus for Engineers and Ordinary Differential Equations for Engineers (Same as ENGR 154 and ENGR 155A)	
MATH 51 & MATH 53	Linear Algebra, Multivariable Calculus, and Modern Applications and Ordinary Differential Equations with Linear Algebra [2]	
EE Math. One additional 100-level course. Select one:		3
CS 103	Mathematical Foundations of Computing	
ENGR 108	Introduction to Matrix Methods (Preferred) [3]	
MATH 113	Linear Algebra and Matrix Theory	
Statistics/Probability		3-4
EE 178	Probabilistic Systems Analysis [3]	
Science		
Minimum 12 units		
Select one sequence:		12

PHYSICS 41 & EE 65	Mechanics and Modern Physics for Engineers [4]	
PHYSICS 61 & EE 65	Mechanics and Special Relativity and Modern Physics for Engineers [4]	
Science elective. One additional 4-5 unit course from approved list in Undergraduate Handbook, Figure 4-2.		4-5
TECHNOLOGY IN SOCIETY		
One course, see Basic Requirement 4 in the School of Engineering section. The course taken must be on the School of Engineering Approved Courses list, Fig 4-3, the year it is taken.		3-5
ENGINEERING TOPICS		
Minimum 60 units comprised of: Engineering Fundamentals (minimum 10 units), Core Electrical Engineering Courses (minimum 16 units) Disciplinary Area (minimum 17 units), Electives (maximum 17 units, restrictions apply).		
Engineering Fundamentals		**10**
2 courses required; minimum 10 units.		
Select one:		
CS 106B	Programming Abstractions	5
or CS 106X	Programming Abstractions	
Choose one Fundamental from the Approved List; Recommended: ENGR 40A and ENGR 40B or ENGR 40M (recommended before taking EE 101A); taking CS 106A or a second ENGR 40-series course not allowed for the Fundamentals elective. Choose from table in Undergraduate Handbook, Approved List.		5
Core Electrical Engineering Courses		**16**
Minimum 16 units.		
EE 42	Introduction to Electromagnetics and Its Applications [5]	
EE 100	The Electrical Engineering Profession [6]	
EE 101A	Circuits I	
EE 102A	Signal Processing and Linear Systems I	
EE 108	Digital System Design	
Disciplinary Area		**17**
Minimum 17 units, 5 courses: 1-2 Required, 1 WIM/Design and 2-3 disciplinary area electives.		
Writing in the Major (WIM)		**3-5**
Select one. A single course can concurrently meet the WIM and Design Requirements.		
EE 109	Digital Systems Design Lab (WIM/Design)	
EE 133	Analog Communications Design Laboratory (WIM/Design)	
EE 134	Introduction to Photonics (WIM/Design)	
EE 153	Power Electronics (WIM/Design)	
EE 155	Green Electronics (WIM/Design)	
EE 168	Introduction to Digital Image Processing (WIM/Design)	
EE 191W	Special Studies and Reports in Electrical Engineering (WIM; Department approval required) [7]	
EE 264W	Digital Signal Processing (WIM/Design)	
EE 267W	Virtual Reality (WIM/Design)	
CS 194W	Software Project (WIM/Design)	
Design Course		**3-5**
Select one. Students may select their Design course from any Disciplinary Area.		
EE 109	Digital Systems Design Lab (WIM/Design)	
EE 133	Analog Communications Design Laboratory (WIM/Design)	
EE 134	Introduction to Photonics (WIM/Design)	
EE 153	Power Electronics (WIM/Design)	
EE 155	Green Electronics (WIM/Design)	
EE 168	Introduction to Digital Image Processing (WIM/Design)	
EE 185C	Engineering a Smart Object - Adding connectivity and Putting it ALL together (Design)	
EE 262	Three-Dimensional Imaging (Design)	
EE 264	Digital Signal Processing (Design) [8]	
EE 264W	Digital Signal Processing (WIM/Design)	
EE 267	Virtual Reality (Design) [8]	
EE 267W	Virtual Reality (WIM/Design)	
CS 194	Software Project (Design)	
CS 194W	Software Project (WIM/Design)	
Electives [9]		**17**
Minimum 17 units. The elective units should be sufficient to meet the 60 unit total for the major, over and above the 40 units of Math and Science. Depending on units completed in the Disciplinary Area, elective units will be in the range of 17 units or less. Students may select electives from the disciplinary areas; from the multidisciplinary elective areas; or any combination of disciplinary and multidisciplinary areas. May include up to two additional Engineering Fundamentals and any letter graded EE courses (minus any previously noted restrictions). Freshman and Sophomore seminars, EE 191 and CS 106A do not count toward the 60 units. Students may have fewer elective units if they have more units in their disciplinary area.		

1 MATH 41 and MATH 42 are no longer offered and have been replaced by MATH 19, MATH 20, and MATH 21.

2 MATH 51 may be replaced by MATH 52. MATH 53 may be replaced by CME 102.

3 If used for math, ENGR 108 may not be used as an EE disciplinary elective. Students may petition to use CS 109 in place of EE 178.

4 Students may petition to have either PHYSICS 65 or the combination of PHYSICS 45 and PHYSICS 70 count as an alternative to EE 65.

5 Students may petition to use PHYSICS 43 or PHYSICS 63 in place of EE 42. The EE introductory class ENGR 40A and ENGR 40B or ENGR 40M may be taken concurrently with either EE 42 or PHYSICS 43. There are no prerequisites for ENGR 40A and ENGR 40B or ENGR 40M.

6 For upper division students, a 200-level seminar in their disciplinary area will be accepted, on petition.

7 EE 191W may satisfy WIM only if it is a follow-up to an REU, independent study project or as part of an honors thesis project where a faculty agrees to provide supervision of writing a technical paper and with suitable support from the Writing Center.

8 To satisfy Design, must take EE 264 or EE 267 for 4 units and complete the laboratory project.

9 A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

Disciplinary Areas

		Units
Hardware and Software		
EE 180	Digital Systems Architecture (Required)	4
EE 104	Introduction to Machine Learning	3-5
EE 107	Embedded Networked Systems	3

EE 109	Digital Systems Design Lab (WIM/Design)	4
EE 118	Introduction to Mechatronics	4
EE 155	Green Electronics (Design)	4
EE 185C	Engineering a Smart Object - Adding connectivity and Putting it ALL together (Design)	3
EE 264	Digital Signal Processing (Design)	3-4
EE 264W	Digital Signal Processing (WIM/Design)	5
EE 267	Virtual Reality (Design)	3-4
EE 267W	Virtual Reality (WIM/Design)	5
EE 271	Introduction to VLSI Systems	3
EE 272A	Design Projects in VLSI Systems I	3-4
EE 272B	Design Projects in VLSI Systems II	3-4
EE 273	Digital Systems Engineering	3
EE 282	Computer Systems Architecture	3
EE 285	Embedded Systems Workshop	3
CS 107	Computer Organization and Systems (Required prerequisite for EE 180; CS 107E preferred)	3-5
or CS 107E	Computer Systems from the Ground Up	
CS 108	Object-Oriented Systems Design	3-4
CS 110	Principles of Computer Systems	3-5
CS 131	Computer Vision: Foundations and Applications	3-4
CS 140	Operating Systems and Systems Programming	3-4
CS 143	Compilers	3-4
CS 144	Introduction to Computer Networking	3-4
CS 145	Data Management and Data Systems	3-4
CS 148	Introduction to Computer Graphics and Imaging	3-4
CS 149	Parallel Computing	3-4
CS 155	Computer and Network Security	3
CS 194W	Software Project (WIM/Design)	3
CS 221	Artificial Intelligence: Principles and Techniques	3-4
CS 223A	Introduction to Robotics	3
CS 224N	Natural Language Processing with Deep Learning	3-4
CS 225A	Experimental Robotics	3
CS 229	Machine Learning	3-4
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	3-4
CS 231N	Convolutional Neural Networks for Visual Recognition	3-4
CS 241	Embedded Systems Workshop	3
CS 244	Advanced Topics in Networking	3-4
Information Systems and Science		
EE 102B	Signal Processing and Linear Systems II (Required)	4
EE 104	Introduction to Machine Learning	3-5
EE 107	Embedded Networked Systems	3
EE 118	Introduction to Mechatronics	4
EE 124	Introduction to Neuroelectrical Engineering	3
EE 133	Analog Communications Design Laboratory (WIM/Design)	3-4
EE 155	Green Electronics (WIM/Design)	4
EE 168	Introduction to Digital Image Processing (WIM/Design)	3-4
EE 169	Introduction to Bioimaging	3
EE 179	Analog and Digital Communication Systems	3
EE 260A	Principles of Robot Autonomy I	3-5
EE 260B	Principles of Robot Autonomy II	3-4
EE 261	The Fourier Transform and Its Applications	3
EE 262	Three-Dimensional Imaging (Design)	3
EE 263	Introduction to Linear Dynamical Systems	3
EE 264	Digital Signal Processing (Design)	3-4
EE 264W	Digital Signal Processing (WIM/Design)	5
EE 266	Introduction to Stochastic Control with Applications	3
EE 267	Virtual Reality (Design)	3-4
EE 267W	Virtual Reality (WIM/Design)	5
EE 269	Signal Processing for Machine Learning	3
EE 276	Information Theory	3
EE 278	Introduction to Statistical Signal Processing	3
EE 279	Introduction to Digital Communication	3
ENGR 105	Feedback Control Design	3
ENGR 205	Introduction to Control Design Techniques	3
CS 107	Computer Organization and Systems	3-5
CS 229	Machine Learning	3-4
Physical Technology and Science		
EE 101B	Circuits II (Required)	4
EE 107	Embedded Networked Systems	3
EE 114	Fundamentals of Analog Integrated Circuit Design	3-4
EE 116	Semiconductor Devices for Energy and Electronics	3
EE 118	Introduction to Mechatronics	4
EE 124	Introduction to Neuroelectrical Engineering	3
EE 133	Analog Communications Design Laboratory (WIM/Design)	3-4
EE 134	Introduction to Photonics (WIM/Design)	4
EE 142	Engineering Electromagnetics	3
EE 153	Power Electronics (WIM/Design)	3-4
EE 155	Green Electronics (WIM/Design)	4
EE 157	Electric Motors for Renewable Energy, Robotics, and Electric Vehicles	3
EE 212	Integrated Circuit Fabrication Processes	3
EE 214B	Advanced Integrated Circuit Design	3
EE 216	Principles and Models of Semiconductor Devices	3
EE 222	Applied Quantum Mechanics I	3
EE 223	Applied Quantum Mechanics II	3
EE 236A	Modern Optics	3
EE 236B	Guided Waves	3
EE 242	Electromagnetic Waves	3
EE 247	Introduction to Optical Fiber Communications	3
EE 264	Digital Signal Processing (Design)	3-4
EE 264W	Digital Signal Processing (WIM/Design)	5
EE 267	Virtual Reality (Design)	3-4
EE 267W	Virtual Reality (WIM/Design)	5
EE 271	Introduction to VLSI Systems	3
EE 272A	Design Projects in VLSI Systems I	3-4
EE 272B	Design Projects in VLSI Systems II	3-4

EE 273	Digital Systems Engineering	3
EE 282	Computer Systems Architecture	3
ENGR 105	Feedback Control Design	3
ENGR 205	Introduction to Control Design Techniques	3
CS 107	Computer Organization and Systems	3-5

Multidisciplinary Area Electives

Bio-electronics and Bio-imaging		
EE 101B	Circuits II	4
EE 102B	Signal Processing and Linear Systems II	4
EE 107	Embedded Networked Systems	3
EE 124	Introduction to Neuroelectrical Engineering	3
EE 134	Introduction to Photonics (WIM/Design)	4
EE 168	Introduction to Digital Image Processing (WIM/Design)	4
EE 169	Introduction to Bioimaging	3
EE 225	Biochips and Medical Imaging	3
EE 235	Analytical Methods in Biotechnology	3
BIOE 131	Ethics in Bioengineering	3
BIOE 248	Neuroengineering Laboratory	3
MED 275B	Biodesign Fundamentals	4
Energy and Environment		
EE 101B	Circuits II	4
EE 116	Semiconductor Devices for Energy and Electronics	3
EE 134	Introduction to Photonics (WIM/Design)	4
EE 153	Power Electronics (WIM/Design)	3-4
EE 155	Green Electronics (WIM/Design)	4
EE 157	Electric Motors for Renewable Energy, Robotics, and Electric Vehicles	3
EE 168	Introduction to Digital Image Processing (WIM/Design)	3-4
EE 180	Digital Systems Architecture	4
EE 263	Introduction to Linear Dynamical Systems	3
EE 293	Energy storage and conversion: Solar Cells, Fuel Cells, Batteries and Supercapacitors	3
EE 293B	Fundamentals of Energy Processes	3
CEE 107A	Understanding Energy (Formerly CEE 173A)	3-5
CEE 155	Introduction to Sensing Networks for CEE	3-4
CEE 176A	Energy Efficient Buildings	3
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	3-4
ENGR 105	Feedback Control Design	3
ENGR 205	Introduction to Control Design Techniques	3
MATSCI 142	Quantum Mechanics of Nanoscale Materials (Formerly MATSCI 157)	4
MATSCI 152	Electronic Materials Engineering	4
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution	3-4
ME 227	Vehicle Dynamics and Control	3
ME 271E		4
Music		
EE 102B	Signal Processing and Linear Systems II	4
EE 109	Digital Systems Design Lab (WIM/Design)	4
EE 264	Digital Signal Processing (Design)	3-4
EE 264W	Digital Signal Processing (WIM/Design)	5
MUSIC 250A	Physical Interaction Design for Music	3-4
MUSIC 256A	Music, Computing, Design: The Art of Design	3-4
MUSIC 256B	Music, Computing, Design II: Virtual and Augmented Reality for Music	3-4
MUSIC 257	Neuroplasticity and Musical Gaming	3-5
MUSIC 320A	Introduction to Audio Signal Processing Part I: Spectrum Analysis	3
MUSIC 320B	Introduction to Audio Signal Processing Part II: Digital Filters	3-4
MUSIC 420A	Signal Processing Models in Musical Acoustics [2]	3-4
MUSIC 421A	Time-Frequency Audio Signal Processing [2]	3-4
MUSIC 422	Perceptual Audio Coding [2]	3
MUSIC 424	Signal Processing Techniques for Digital Audio Effects [2]	3-4

[1] ENGR 108 may be used for disciplinary area if not used for EE Math.

[2] Best taken as a coterm student.

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

Honors Program in Electrical Engineering

The Department of Electrical Engineering offers a program leading to a Bachelor of Science in Electrical Engineering with Honors. This program offers a unique opportunity for qualified undergraduate majors to conduct independent study and research at an advanced level with a faculty mentor, graduate students, and fellow undergraduates.

Admission to the honors program is by application. Declared EE majors with a grade point average (GPA) of at least 3.5 in Electrical Engineering are eligible to submit an application. Applications must be submitted by Autumn Quarter of the senior year, be signed by the thesis advisor and second reader (one must be a member of the EE Faculty), and include an honors proposal. Students need to declare honors on Axess.

In order to receive departmental honors, students admitted to the honors program must:

1. Submit an application, including the thesis proposal, by Autumn Quarter of senior year signed by the thesis advisor and second reader (one must be a member of the Electrical Engineering faculty).
2. Declare the EE Honors major in Axess before the end of Autumn Quarter of senior year.
3. Maintain a grade point average of at least 3.5 in Electrical Engineering courses.
4. Complete at least 10 units of EE 191 or EE 191W with thesis adviser for a letter grade. EE 191 units do not count toward the required 60 units, with the exception of EE 191W if approved to satisfy WIM.
5. Submit one final copy of the honors thesis approved by the advisor and second reader to the EE Degree Progress Officer by May 15.
6. Attend poster and oral presentation held at the end of Spring Quarter or present in another suitable forum approved by the faculty advisor.

COVID-19-Related Degree Requirement Changes

The Engineering Physics program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Engineering Physics (EPHYS)

Completion of the undergraduate program in Engineering Physics leads to the conferral of the Bachelor of Science in Engineering. The subplan "Engineering Physics" appears on the transcript and on the diploma.

Mission of the Undergraduate Program in Engineering Physics

The mission of the undergraduate program in Engineering Physics is to provide students with a strong foundation in physics and mathematics, together with engineering and problem-solving skills. All majors take high-level math and physics courses as well as engineering courses. This background prepares them to tackle complex problems in multidisciplinary areas that are at the forefront of 21st-century technology such as aerospace physics, biophysics, computational science, quantum science & engineering, materials science, nanotechnology, electromechanical systems, renewable energy, and any other engineering field that requires a solid background in physics. Because the program emphasizes science, mathematics, and engineering, students are well prepared to pursue graduate work in engineering, physics, or applied physics.

Requirements

		Units
Mathematics		
Select one of the following sequences:		10
MATH 51 & MATH 52	Linear Algebra, Multivariable Calculus, and Modern Applications and Integral Calculus of Several Variables	
CME 100 & CME 104	Vector Calculus for Engineers and Linear Algebra and Partial Differential Equations for Engineers	
MATH 53	Ordinary Differential Equations with Linear Algebra	5
or CME 102	Ordinary Differential Equations for Engineers	
MATH 131P	Partial Differential Equations (or CME 204 or MATH 173 or MATH 220 or PHYSICS 111)	3
Science		
PHYSICS 41	Mechanics (or PHYSICS 61)	4
PHYSICS 42	Classical Mechanics Laboratory (or PHYSICS 62)	1
PHYSICS 43	Electricity and Magnetism (or PHYSICS 63)	4
PHYSICS 67	Introduction to Laboratory Physics [1]	2
PHYSICS 45	Light and Heat (or PHYSICS 65)	4
PHYSICS 46	Light and Heat Laboratory (or PHYSICS 67)	1
PHYSICS 70	Foundations of Modern Physics (if taking the 40 series)	4
Technology in Society		
One course required; course must be on the School of Engineering Approved List, Fig 4-3 in the UGHB, the year it is taken. See Basic Requirement 4.		3-5
Engineering Fundamentals		
Two courses minimum (CS 106A or B recommended) [2]		6-10
Engineering Physics Depth (core)		
Advanced Mathematics:		
One advanced math elective such as		3-5
EE 261	The Fourier Transform and Its Applications	
PHYSICS 112	Mathematical Methods for Physics	
CS 109	Introduction to Probability for Computer Scientists	
CME 106	Introduction to Probability and Statistics for Engineers	
Also qualified are EE 263, any Math or Statistics course numbered 100 or above, and any CME course numbered 200 or above, except CME 206.		
Advanced Mechanics:		3-4
AA 242A	Classical Dynamics (or ME 333 or PHYSICS 110)	3
Intermediate Electricity and Magnetism		6-8
Select one of the following sequences:		
PHYSICS 120 & PHYSICS 121	Intermediate Electricity and Magnetism I and Intermediate Electricity and Magnetism II	
EE 142 & EE 242	Engineering Electromagnetics and Electromagnetic Waves	
Numerical Methods		
Select one of the following:		3-4
CME 108	Introduction to Scientific Computing	
CME 206/ ME 300C	Introduction to Numerical Methods for Engineering	
PHYSICS 113	Computational Physics	
Electronics Lab		
Select one of the following:		3-5
EE 101A	Circuits I	
EE 101B	Circuits II	
ENGR 40M	An Intro to Making: What is EE (or ENGR 40A+ENGR 40B; must take both [not offered 2019-20])	
PHYSICS 104	Electronics and Introduction to Experimental Methods (2020-21 only)	
PHYSICS 105	Intermediate Physics Laboratory I: Analog Electronics	
APPPHYS 207	Laboratory Electronics	
Writing in the Major (WIM)		
Select one of the following:		4-5
AA 190	Directed Research and Writing in Aero/ Astro (for Aerospace specialty only)	
ENGR 199W	Writing of Original Research for Engineers (for students pursuing an independent research project)	
BIOE 131	Ethics in Bioengineering (for Biophysics specialty only)	
CS 181W	Computers, Ethics, and Public Policy (for Computational Science specialty or other specialty with prereqs)	
CS 182W	Ethics, Public Policy, and Technological Change (for Computational Science specialty or other specialty with prereqs)	
EE 134	Introduction to Photonics (for Photonics specialty only. Not offered 2019-20)	
MATSCI 161	Energy Materials Laboratory (for Materials Science and Renewable Energy specialties)	
MATSCI 164	Electronic and Photonic Materials and Devices Laboratory (for Materials Science and Renewable Energy specialties)	
PHYSICS 107	Intermediate Physics Laboratory II: Experimental Techniques and Data Analysis (for Quantum Science & Engineering or other specialty)	
Quantum Mechanics		
Select one of the following sequences:		6-8
EE 222 & EE 223	Applied Quantum Mechanics I and Applied Quantum Mechanics II	

PHYSICS 130 & PHYSICS 131	Quantum Mechanics I and Quantum Mechanics II	
Thermodynamics and Statistical Mechanics		
PHYSICS 170 & PHYSICS 171	Thermodynamics, Kinetic Theory, and Statistical Mechanics I and Thermodynamics, Kinetic Theory, and Statistical Mechanics II	3-8
or ME 346A	Introduction to Statistical Mechanics	
Design Course		
Select one of the following:		3-4
AA 236A	Spacecraft Design	
CS 108	Object-Oriented Systems Design	
EE 133	Analog Communications Design Laboratory	
ME 203	Design and Manufacturing	
ME 210	Introduction to Mechatronics	
PHYSICS 108	Advanced Physics Laboratory: Project	
Specialty Tracks		
See Undergraduate Engineering Handbook for important details. Select three courses from one specialty area:		9-12
Aerospace Physics:		
AA 203	Optimal and Learning-based Control	
AA 205	Rarefied and Ionized Gases	
AA 244A	Introduction to Plasma Physics and Engineering	
AA 251	Introduction to the Space Environment	
AA 279A	Space Mechanics	
ME 161	Dynamic Systems, Vibrations and Control	
Biophysics:		
APPPHYS 205	Introduction to Biophysics	
BIO 132	Advanced Imaging Lab in Biophysics	
BIOE 42	Physical Biology	
BIOE 44	Fundamentals for Engineering Biology Lab	
BIOE 101	Systems Biology	
BIOE 103	Systems Physiology and Design	
BIOE 123	Bioengineering Systems Prototyping Lab	
BIOE 211	Biophysics of Multi-cellular Systems and Amorphous Computing	
BIOE 214	Representations and Algorithms for Computational Molecular Biology	
EE 169	Introduction to Bioimaging	
or EE 369A	Medical Imaging Systems I	
Computational Science:		
CME 212	Advanced Software Development for Scientists and Engineers	
CME 215A	Advanced Computational Fluid Dynamics	
CME 215B	Advanced Computational Fluid Dynamics	
Any CME course with course number greater than 300 and less than 390		
CS 103	Mathematical Foundations of Computing	
CS 154	Introduction to the Theory of Computation	
CS 161	Design and Analysis of Algorithms	
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	
CS 221	Artificial Intelligence: Principles and Techniques	
CS 228	Probabilistic Graphical Models: Principles and Techniques	
CS 229	Machine Learning	
STATS 202	Data Mining and Analysis	
Electromechanical System Design:		
ME 80	Mechanics of Materials	
ME 104	Mechanical Systems Design (formerly ME 112)	
ME 210	Introduction to Mechatronics	
or EE 118	Introduction to Mechatronics	
Materials Science:		
Any MATSCI courses numbered 151 to 199 (except 159Q) or PHYSICS 172		
Quantum Science & Engineering (See UGHB for further important details.)		
APPPHYS 203	Atoms, Fields and Photons	
APPPHYS 225	Probability and Quantum Mechanics	
APPPHYS 228	Quantum Hardware	
CS 254	Computational Complexity	
CS 269Q	Elements of Quantum Computer Programming	
EE 234	Photonics Laboratory	
EE 236C	Lasers	
EE 243	Semiconductor Optoelectronic Devices	
EE 340	Optical Micro- and Nano-Cavities	
PHYSICS 106	Experimental Methods in Quantum Physics	
PHYSICS 134	Advanced Topics in Quantum Mechanics	
PHYSICS 182	Quantum Gases	
PHYSICS 230	Graduate Quantum Mechanics I	
PHYSICS 231	Graduate Quantum Mechanics II	
STATS 376A	Information Theory	
Renewable Energy:		
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	
EE 153	Power Electronics	
EE 155	Green Electronics	
EE 293B	Fundamentals of Energy Processes	
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution	
MATSCI 302	Solar Cells	
MATSCI 316	Nanoscale Science, Engineering, and Technology	
ME 260		
Total Units		93-119

1 PHYSICS 67 Introduction to Laboratory Physics (2 units), recommended in place of PHYSICS 44 Electricity and Magnetism Lab

2 The Engineering Fundamental courses are to be selected from the Basic Requirements 3 list. Fundamentals courses acceptable for the core program may also be used to satisfy the fundamentals requirement as long as 45 unduplicated units of Engineering are taken.

3 Although not required, PHYSICS 59 (https://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=&q=physics59&collapse=) (Frontiers in Physics Research, 1 unit) and PHYSICS 91SI (https://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=&q=physics91si&collapse=) (Practical Computing for Scientists, 2 units) are highly recommended.

[4] A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

Honors Program

The School of Engineering offers a program leading to a Bachelor of Science in Engineering: Engineering Physics with Honors.

Honors Criteria

1. Minimum overall GPA of 3.5.
2. Independent research conducted at an advanced level with a faculty research adviser and documented in an honors thesis. The honors candidate must identify a faculty member who will serve as his or her honors research adviser and a second reader who will be asked to read the thesis and give feedback before endorsing the thesis. One of the two must be a member of the Academic Council and in the School of Engineering.

Application: The deadline to apply is November 1 in Autumn Quarter of the senior year. The application documents should be submitted to the Student Services Officer. Applications are reviewed by a subcommittee of the faculty advisers for Engineering Physics majors. Applicants and thesis advisers receive written notification when the application is approved. An application consists of three items:

1. One-page description of the research topic
2. The Honors Application form is available on Engineering Physics (https://ughb.stanford.edu/majors-minors/major-programs/engineering-physics-program/) page of the Undergraduate handbook. It must be signed by honors thesis adviser.
3. Unofficial Stanford transcript

Requirements and Timeline for Honors in Engineering Physics:

1. Declare the honors program in Axess (ENGR-BSH, Subplan: Engineering Physics)
2. Obtain application form from the student services officer.
3. Apply to honors program by November 1 in the Autumn Quarter of the senior year.
4. Maintain an overall GPA of at least 3.5.
5. Optional: Under direction of the thesis adviser, students may enroll for research units in ENGR 199W Writing of Original Research for Engineers or in departmental courses such as AA 190 Directed Research and Writing in Aero/Astro or ME 191H Honors Research.
6. Submit a completed thesis draft to the research adviser and second reader by April 15.
7. Present the thesis work in an oral presentation or poster session in an appropriate forum (e.g., an event that showcases undergraduate research and is organized by the department of the adviser, the school of the adviser, or the University).
8. Incorporate feedback, which the adviser and second reader should provide by April 30, and obtain final endorsement signatures from the thesis adviser and second reader by May 15.
9. Submit a pdf of the thesis, including the signature page signed by both readers, to the student services officer by May 15. Students are sent email instructions on how to archive a permanent electronic copy in Terman Engineering library.

Environmental Systems Engineering (EnvSE)

Completion of the undergraduate program in Environmental Systems Engineering leads to the conferral of the Bachelor of Science in Environmental Systems Engineering.

Mission of the Undergraduate Program in Environmental Systems Engineering

The mission of the undergraduate program in Environmental Systems Engineering is to prepare students for incorporating environmentally sustainable design, strategies and practices into natural and built systems and infrastructure involving buildings, water supply, and coastal regions. Courses in the program are multidisciplinary in nature, combining math/science/engineering fundamentals, and tools and skills considered essential for an engineer, along with a choice of one of three focus areas for more in-depth study: coastal environments, freshwater environments, or urban environments. This major offers somewhat more flexibility in the curriculum than the Civil Engineering degree program, and requires fewer units. The program of study, which includes a capstone experience, aims to equip engineering students to take on the complex challenges of the twenty-first century involving natural and built environments, in consulting and industry as well as in graduate school.

Degree Requirements

		Units
Mathematics and Science		
See Basic Requirement 1 and 2 [1]		36
Technology in Society (TiS)		
One 3-5 unit course required, course chosen must be on the SoE Approved Courses list at <ughb.stanford.edu> the year taken; see Basic Requirement 4 [4]		3-5
Engineering Fundamentals		
Two courses minimum (see Basic Requirement 3), including:		
CS 106A	Programming Methodology	5
(or CS 106X)		
ENGR 14	Intro to Solid Mechanics	3
Fundamental Tools/Skills [2]		**9**
in visual, oral/written communication, and modeling/analysis		
Specialty Courses, in either		**40**
Coastal environments (see below)		
or Freshwater environments (see below)		
or Urban environments (see below)		
Total Units		**96-98**

[1] Math must include CME 100 Vector Calculus for Engineers (or MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications), and either a Probability/Statistics course or CME 102 Ordinary Differential Equations for Engineers (or MATH 53 Ordinary Differential Equations with Linear Algebra). Science must include PHYSICS 41 Mechanics; and either CHEM 31B Chemical Principles II or CHEM 31M Chemical Principles: From Molecules to Solids (or PHYSICS 43 Electricity and Magnetism, for Urban focus area only).

[2] Fundamental tools/skills must include:
1. CEE 1 Introduction to Environmental Systems Engineering;
2. at least one visual communication class from CEE 31 Accessing Architecture Through Drawing / CEE 31Q Accessing Architecture Through Drawing, DESINST 270 Visual Design Fundamentals, ME 101 Visual Thinking, ME 110 Design Sketching, ARTSTUDI 160 Intro to Digital / Physical Design, or OSPPARIS 44 EAP. Analytical Drawing and Graphic Art;
3. at least one oral/written communication class from ENGR 103 Public Speaking, CEE 102W Technical and Professional Communication, ENGR 202W Technical Communication, CEE 151 Negotiation, EARTHSYS 191 Concepts in Environmental Communication or ORALCOMM 117 The Art of Effective Speaking;
4. at least one modeling/analysis class from CEE 101D Computations in Civil and Environmental Engineering (or CEE 101S) if not counted as Math, CEE 120A Building Modeling for Design & Construction (online only), CEE 146S Engineering Economics and Sustainability (online only), CEE 118X Shaping the Future of the Bay Area, CEE 155 Introduction to Sensing Networks for CEE, CEE 226 Life Cycle Assessment for Complex Systems, CME 211 Software Development for Scientists and Engineers, CS 102 , EARTHSYS 140 , EARTHSYS 142 Remote Sensing of Land, EARTHSYS 144 Fundamentals of Geographic Information Science (GIS), or ESS 227 Decision Science for Environmental Threats

[3] A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

[4] Basic Requirement 4: Technology in Society (TiS) requirement.

Urban Environments Focus Area (40 units)

		Units
Required		
CEE 100	Managing Sustainable Building Projects	4
CEE 101B	Mechanics of Fluids	4
CEE 146S	Engineering Economics and Sustainability	3
CEE 176A	Energy Efficient Buildings	3
or		
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	3-4
Electives (at least two of the 4 areas below must be included with at least 3 units from 2nd area)		
Building Systems		
CEE 102A	Legal / Ethical Principles in Design, Construction, Project Delivery	3
CEE 120B	Advanced Building Modeling Workshop	2-4
CEE 130	Architectural Design: 3-D Modeling, Methodology, and Process	5
or		
CEE 131C	How Buildings are Made -- Materiality and Construction Methods	4
CEE 156	Building Systems Design & Analysis	4
Energy Systems		
CEE 107A	Understanding Energy (or CEE 107S, Sum. 3-4 units)	4-5
CEE 176B	100% Clean, Renewable Energy and Storage for Everything ((if not counted as req'd course))	3-4
ENERGY 104	Sustainable Energy for 9 Billion	3
CEE 173S	Electricity Economics	3
or		
ENERGY 171	Energy Infrastructure, Technology and Economics	3
or		
ENERGY 191	Optimization of Energy Systems	3-4
Water Systems		
CEE 166A	Watershed Hydrologic Processes and Models	4
CEE 166B	Water Resources and Hazards	4
CEE 170	Aquatic and Organic Chemistry for Environmental Engineering	3
CEE 174A	Providing Safe Water for the Developing and Developed World	3
CEE 174B	Wastewater Treatment: From Disposal to Resource Recovery	3
Urban Planning, Design, Analysis		
CEE 6	Physics of Cities	3
CEE 136	Planning Calif: the Intersection of Climate, Land Use, Transportation & the Economy	3
or		
CEE 275D	Environmental Policy Analysis	3-4
or		
CEE 273B	The Business of Water	2
CEE 177L	Smart Cities & Communities	3
URBANST 113	Introduction to Urban Design: Contemporary Urban Design in Theory and Practice	5
or		
URBANST 164	Sustainable Cities	4-5
or		
URBANST 165	(alt. years)	4-5
ME 267	Ethics and Equity in Transportation Systems	3
Capstone (one class required)		
CEE 131D	Urban Design Studio ((or CEE 131E))	5
CEE 141A	Infrastructure Project Development	3
CEE 141B	Infrastructure Project Delivery	3
CEE 226E	Advanced Topics in Integrated, Energy-Efficient Building Design	2-3
CEE 218Y	Shaping the Future of the Bay Area	3-5
CEE 218Z	Shaping the Future of the Bay Area	3-5
CEE 243	Intro to Urban Sys Engrg	3
CEE 265F	Environmental Governance and Climate Resilience	3
CEE 199	Undergraduate Research in Civil and Environmental Engineering	3-4

Freshwater Environments Focus Area (40 units)

		Units
Required		
CEE 70	Environmental Science and Technology	3
CEE 101B	Mechanics of Fluids	4
CEE 177	Aquatic Chemistry and Biology ((or CEE 170))	4
CEE 166A	Watershed Hydrologic Processes and Models	4
or		
CEE 174A	Providing Safe Water for the Developing and Developed World	3
or		
CEE 162E	Rivers, Streams, and Canals	3
Electives		
CEE 162E	Rivers, Streams, and Canals (if not counted as a required course)	3
CEE 162F	Coastal Processes	3

CEE 166A	Watershed Hydrologic Processes and Models (if not counted as a required course)	4
CEE 166B	Water Resources and Hazards	4
CEE 136	Planning Calif: the Intersection of Climate, Land Use, Transportation & the Economy	3
or		
CEE 275D	Environmental Policy Analysis	3-4
or		
CEE 273B	The Business of Water	2
CEE 174A	Providing Safe Water for the Developing and Developed World ((prereq: CHEM 31B) (if not counted as a req'd course))	3
CEE 174B	Wastewater Treatment: From Disposal to Resource Recovery ((prereq: CEE 174A))	3
CEE 177L	Smart Cities & Communities	3
or		
CEE 260D	Remote Sensing of Hydrology (prerequisite CS 106A)	3
CEE 265A	Resilience, Sustainability and Water Resources Development (offered occasionally)	3
CEE 265D	Water and Sanitation in Developing Countries	3
BIOHOPK 150H	Ecological Mechanics (alternate years)	3
Capstone (1 class required)		
CEE 141A	Infrastructure Project Development (recommended prerequisite: CEE 136)	3
CEE 218Y	Shaping the Future of the Bay Area	3-5
CEE 218Z	Shaping the Future of the Bay Area	3-5
CEE 199	Undergraduate Research in Civil and Environmental Engineering (must petition CEE UG Committee for approval, prior to enrollment; must have completed at least 6 focus area classes, excluding Breadth)	3-4

Coastal Environments Focus Area (40 units)

		Units
Required		
CEE 70	Environmental Science and Technology	3
CEE 101B	Mechanics of Fluids	4
And two of the following 4 classes:		
CEE 162F	Coastal Processes	3
CEE 162D	Introduction to Physical Oceanography	4
CEE 162I	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation	3
CEE 175A	California Coast: Science, Policy, and Law	3-4
Electives		
CEE 162D	Introduction to Physical Oceanography (if not counted as a required class)	4
CEE 162F	Coastal Processes (if not counted as a required class)	3
CEE 162I	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation (if not counted as a req'd class)	3
CEE 166A	Watershed Hydrologic Processes and Models	4
CEE 136	Planning Calif: the Intersection of Climate, Land Use, Transportation & the Economy	3
or		
CEE 275D	Environmental Policy Analysis	3-4
or		
CEE 273B	The Business of Water	2
CEE 174A	Providing Safe Water for the Developing and Developed World	3
CEE 174B	Wastewater Treatment: From Disposal to Resource Recovery	3
CEE 175A	California Coast: Science, Policy, and Law	3-4
CEE 177	Aquatic Chemistry and Biology	4
or CEE 170	Aquatic and Organic Chemistry for Environmental Engineering	
CEE 272	Coastal Contaminants	3-4
BIOHOPK 150H	Ecological Mechanics	3
BIO 30	Ecology for Everyone	4
or		
BIO 81	Introduction to Ecology	4
or		
BIOHOPK 81	Introduction to Ecology	4
or		
EARTHSYS 116	Ecology of the Hawaiian Islands	4
or		
OSPAUSTL 32	Coastal Ecosystems	3
or		
OSPGEN 53		2
or		
OSPSANTG 85	Marine Ecology of Chile and the South Pacific	5
DESINST 250	Oceans by Design	3
ESS 8	The Oceans: An Introduction to the Marine Environment	4
or		
ESS 240	Advanced Oceanography	3
or		
BIOHOPK 182H	Stanford at Sea (Oceanography portion - only 4 units may count)	4
EARTHSYS 141	Remote Sensing of the Oceans	3-4
EARTHSYS 151	Biological Oceanography	3-4
to be taken concurrently with		
EARTHSYS 152	Marine Chemistry	3-4
Capstone (1 class required)		
CEE 141A	Infrastructure Project Development	3
CEE 218Y	Shaping the Future of the Bay Area	3-5
CEE 218Z	Shaping the Future of the Bay Area	3-5
CEE 199	Undergraduate Research in Civil and Environmental Engineering (must petition CEE UG Committee for approval, prior to enrollment; must have completed at least 6 focus area classes, excluding Breadth)	3-4

Honors Program

This program leads to a B.S. with honors for undergraduates majoring in Civil Engineering or in Environmental Systems Engineering. It is designed to encourage qualified students to undertake a more intensive study of civil and environmental engineering than is required for the normal majors through a substantial, independent research project.

The program involves an in-depth research study in an area proposed to and agreed to by a Department of Civil and Environmental Engineering faculty adviser and completion of a thesis of high quality. A written proposal for the research to be undertaken must be submitted and

approved by the faculty advisor in the fourth quarter prior to graduation. At the time of application, the student must have an overall grade point average (GPA) of at least 3.3 for course work at Stanford; this GPA must be maintained to graduation. The thesis is supervised by a CEE faculty adviser and must involve input from the School of Engineering writing program by means of ENGR 202S Directed Writing Projects or ENGR 199W Writing of Original Research for Engineers. The written thesis must be approved by the thesis adviser. Students are encouraged to present their results in a seminar for faculty and students. Up to 10 units of CEE 199H Undergraduate Honors Thesis, may be taken to support the research and writing (not to duplicate ENGR 202S or ENGR 199W). These units are beyond the normal Civil Engineering or Environmental Systems Engineering major program requirements.

For additional information on the major, minor, honors, and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

COVID-19-Related Degree Requirement Changes

The IDMEN Program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade. Students are encouraged to enroll in the letter grade option for degree requirements whenever possible.

Individually Designed Major in Engineering (IDMEN)

Completion of the undergraduate program in Individually Designed Majors in Engineering (IDMEN) leads to the conferral of the Bachelor of Science in an Individually Designed Major: (approved title). The approved title of the IDMEN also appears on the transcript.

Mission of the Undergraduate Program in Individually Designed Majors in Engineering

The mission of the undergraduate program in Individually Designed Majors in Engineering (IDMEN) is to provide students with an understanding of engineering principles and the analytical and problem solving, design, and communication skills necessary to be successful in the field. The B.S. for IDMENs is intended for undergraduates interested in pursuing engineering programs that, by virtue of their focus and intellectual content, cannot be accommodated by existing departmental majors or the pre-approved School of Engineering majors. Core courses in the curriculum include engineering fundamentals, mathematics, technology in society, and the sciences. Students then take additional courses pertinent to their IDMEN major. The program prepares students for careers in government and the corporate sector, and for graduate study.

B.S. in Individually Designed Majors in Engineering

The B.S. degree for IDMENs is intended for undergraduates interested in pursuing engineering programs that, by virtue of their focus and intellectual content, cannot be accommodated by existing departmental majors or the pre-approved School of Engineering majors. IDMEN curricula are designed by students with the assistance of two faculty advisers of their choice and are submitted to the Undergraduate Council's Subcommittee on Individually Designed Majors. The degree conferred is "Bachelor of Science in Individually Designed Major in Engineering: (approved title)."

Students must submit written proposals to the IDMEN subcommittee detailing their course of study. Programs must meet the following requirements: mathematics (21 units minimum, see Basic Requirement 1 under the Bachelor's tab); science (17 units minimum, see Basic Requirement 2); Technology in Society (one course from School of Engineering Approved Courses list; the course must be on the list the year it is taken; see Basic Requirement 4); at least two Engineering Fundamentals courses, see Basic Requirement 3 for a list of courses; a minimum of 34 units of engineering depth courses, including a capstone depth course with content relevant to proposed goals; and sufficient relevant additional course work to bring the total number of units to at least 90 and at most 107. Neither Introductory Seminar (IntroSem) nor Sophomore College (SC) courses may count toward the major. Students may take additional courses pertinent to their IDMEN major, but the IDMEN proposal itself may not exceed 107 units. Students are responsible for completing the prerequisites for all courses included in their majors.

Each proposal should begin with a statement describing the proposed major. In the statement, the student should make clear the motivation for and goal of the major, and indicate how it relates to her or his projected career plans. The statement should specify how the courses to be taken relate to and move the student toward realizing the major's goal. A proposed title for the major should be included. The title approved by the IDMEN Subcommittee is listed on the student's official University transcript and on the diploma in this form: "Individually Designed Major in Subplan", where "Subplan" is the title approved by the IDMEN Subcommittee.

The proposal statement should be followed by a completed Program Sheet listing all the courses comprising the student's IDMEN curriculum, organized by the five categories printed on the sheet (mathematics, science, technology in society, engineering fundamentals, and engineering depth). Normally, the courses selected should comprise a well-coordinated sequence or sequences that provide mastery of important principles and techniques in a well-defined field. In some circumstances, especially if the proposal indicates that the goal of the major is to prepare the student for graduate work outside of engineering, a more general engineering program may be appropriate. A four-year study plan, showing courses to be taken each quarter, should also be included in the student's IDMEN proposal.

The proposal must be signed by two faculty members who certify that they endorse the major as described in the proposal and that they agree to serve as the student's permanent advisers. One of the faculty members, who must be a member of the School of Engineering and of the Academic Council, acts as the student's primary adviser. The proposal must be accompanied by a statement from that person giving an appraisal of the academic value and viability of the proposed major.

Students proposing an IDMEN must have at least four quarters of undergraduate work remaining at Stanford after the quarter in which their proposals are first submitted. Any changes in a previously approved major must be endorsed by the advisers and approved by the IDMEN subcommittee. A request by a student to make changes in her or his approved curriculum must be made sufficiently far in advance so that, should the request be denied, adequate time remains to complete the original, approved curriculum. Proposals are reviewed and acted upon once a quarter (Autumn, Winter, and Spring). Planning forms may be obtained from the Handbook for Undergraduate Engineering Programs at http://ughb.stanford.edu (http://ughb.stanford.edu/). Completed proposals should be submitted to Darlene Lazar in the Office of Student Affairs, Huang Engineering Center, Suite 135 or scan to dlazar@stanford.edu. An IDMEN cannot be a student's secondary major.

Honors in Individually Designed Major in Engineering

Qualified IDMEN students may pursue a Bachelor's degree with Honors (IDMEN-BSH) following the general guidelines outlined below, and consulting with advisers to set a topic and any further parameters regarding directed reading or research, special honors seminars, and the format of the honors work. The honors thesis, and any course work associated with the honors degree, is above and beyond the scope of the major itself and cannot be counted as part of the basic IDMEN-BS requirements.

1. The student must submit a letter applying for the honors option endorsed by the student' primary adviser and honors adviser; the letter should be submitted to the Office of Student Affairs in 135 Huang no later than mid-October of the senior year.
2. The IDMEN honors adviser may require course work beyond what is required for the BS without honors.
3. The student must maintain a GPA of at least 3.5.
4. The student must complete an honors thesis or project. The manner of evaluating the work will be set by the honors adviser and a second reader, one of whom must be a member of the Academic Council in the School of Engineering. The deadline to submit the thesis or project will be decided by the honors or program adviser but should be set by mid-May at latest.
5. The student must present the work in an appropriate forum, e.g., in the same session as honors theses are presented in the department of the adviser.
6. A a pdf of the thesis, including the signature page signed by both readers, must be submitted to the Office of Student Affairs by the end of the second week of May. Students will be sent email instructions on how to archive a permanent electronic copy in the Terman Engineering library.

Management Science and Engineering (MS&E)

Completion of the undergraduate program in Management Science and Engineering leads to the conferral of the Bachelor of Science in Management Science and Engineering.

Requirements

		Units
Mathematics and Science		**43**
Up to ten units of AP/IB Calculus, MATH 19, 20, and/or 21. [1]		10
All required; see SoE Basic Requirements 1 and 2		22
CME 100	Vector Calculus for Engineers	
or MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
ENGR 108	Introduction to Matrix Methods (formerly CME 103)	
MS&E 120	Introduction to Probability	
MS&E 121	Introduction to Stochastic Modeling	
MS&E 125	Introduction to Applied Statistics	
Select two of the following: [2]		8
CHEM 31B	Chemical Principles II	
CHEM 33	Structure and Reactivity of Organic Molecules	
PHYSICS 41	Mechanics	
or PHYSICS 21	Mechanics, Fluids, and Heat	
PHYSICS 43	Electricity and Magnetism	
or PHYSICS 23	Electricity, Magnetism, and Optics	
BIO 81	Introduction to Ecology	
BIO 82	Genetics	
BIO 83	Biochemistry & Molecular Biology	
BIO 84	Physiology	
BIO 85	Evolution	
BIO 86	Cell Biology	
Math, Science, or Statistics Elective from SoE approved lists. [3]		3
Technology in Society [4]		**3**
Select one of the following; see SoE Basic Requirement 4		
AA 252	Techniques of Failure Analysis	
BIOE 131	Ethics in Bioengineering	
COMM 120W	The Rise of Digital Culture	
CS 181	Computers, Ethics, and Public Policy	
CS 182	Ethics, Public Policy, and Technological Change	
ENGR 117	Expanding Engineering Limits: Culture, Diversity, and Equity	
ENGR 148	Principled Entrepreneurial Decisions	
ME 267	Ethics and Equity in Transportation Systems	
MS&E 193	Technology and National Security: Past, Present, and Future	
POLISCI 114S	International Security in a Changing World	
STS 1	The Public Life of Science and Technology	
Engineering Fundamentals [5]		**12**
Three required; see SoE Basic Requirement 3		
CS 106A	Programming Methodology [6]	
MS&E 111	Introduction to Optimization	
or MS&E 111X	Introduction to Optimization (Accelerated)	
Select one of the following:		
ENGR 10	Introduction to Engineering Analysis	
ENGR 14	Intro to Solid Mechanics	
ENGR 15	Dynamics	
ENGR 20	Introduction to Chemical Engineering	
ENGR 21	Engineering of Systems	
ENGR 40A	Introductory Electronics	
ENGR 40M	An Intro to Making: What is EE	
ENGR 42	Introduction to Electromagnetics and Its Applications	
ENGR 50	Introduction to Materials Science, Nanotechnology Emphasis	
ENGR 50E	Introduction to Materials Science, Energy Emphasis	
ENGR 50M	Introduction to Materials Science, Biomaterials Emphasis	
ENGR 80	Introduction to Bioengineering (Engineering Living Matter)	
ENGR 90	Environmental Science and Technology	
Engineering Depth [5]		**52**
Core Courses (all six required)		28
CS 106B	Programming Abstractions	
ECON 1	Principles of Economics	
ECON 50	Economic Analysis I	
MS&E 108	Senior Project (WIM)	
MS&E 140	Accounting for Managers and Entrepreneurs	
MS&E 180	Organizations: Theory and Management	
Area Courses (eight required; see below)		24

Depth Areas

Choose eight courses; four courses from a primary area and two courses from each of the other two areas.

Finance and Decision Area

Students choosing F&D as their primary area must take at least two of ECON 51 (or MS&E 241), MS&E 145 (or 245A), and MS&E 152 (or 252).

Introductory (no prerequisites)	
ECON 143	Finance, Corporations, and Society
MS&E 152	Introduction to Decision Analysis

Intermediate (has prerequisites and/or appropriate for juniors and seniors)	
MS&E 145	Introduction to Finance and Investment
MS&E 146	Corporate Financial Management
MS&E 252	Decision Analysis I: Foundations of Decision Analysis
Advanced (intended primarily for graduate students, but may be taken by advanced undergraduates)	
MS&E 241	Economic Analysis
MS&E 245A	Investment Science
MS&E 245B	Advanced Investment Science
MS&E 246	Financial Risk Analytics
MS&E 250A	Engineering Risk Analysis
MS&E 250B	Project Course in Engineering Risk Analysis
Operations and Analytics Area	
Students choosing O&A as their primary area may also include one of CS 161, CS 229, or STATS 202 in their selections.	
Methods	
MS&E 112	Mathematical Programming and Combinatorial Optimization
MS&E 135	Networks
MS&E 213	Introduction to Optimization Theory
MS&E 223	Simulation
MS&E 226	Fundamentals of Data Science: Prediction, Inference, Causality
MS&E 231	Introduction to Computational Social Science
MS&E 251	Introduction to Stochastic Control with Applications
Applications	
MS&E 130	Information Networks and Services
MS&E 230	Incentives and Algorithms
MS&E 232	Introduction to Game Theory
MS&E 232H	Introduction to Game Theory
MS&E 234	Data Privacy and Ethics
MS&E 235	Network Structure and Epidemics
MS&E 260	Introduction to Operations Management
MS&E 263	Healthcare Operations Management
MS&E 267	Service Operations and the Design of Marketplaces
MS&E 330	Law, Order, & Algorithms
MS&E 463	Healthcare Systems Design
Organizations, Technology, and Policy Area	
Introductory (no prerequisites)	
ENGR 148	Principled Entrepreneurial Decisions
MS&E 193	Technology and National Security: Past, Present, and Future
Advanced (has prerequisites and/or appropriate for juniors and seniors)	
BIOE 177	Inventing the Future
ENGR 145	Technology Entrepreneurship
MS&E 175	Innovation, Creativity, and Change
MS&E 182A	Leading Organizational Change
MS&E 182B	Leading Organizational Change II
MS&E 184	Future of Work: Issues in Organizational Learning and Design
MS&E 185	Global Work
MS&E 188	Organizing for Good
MS&E 243	Energy and Environmental Policy Analysis
MS&E 292	Health Policy Modeling

1 Students without AP/IB mathematics credit, who skip MATH 19, 20, and/or 21, may petition to waive up to 10 units of math.

2 AP/IB credit for Chemistry and Physics may be used.

3 Electives must come from the School of Engineering approved list or PSYCH 50 Introduction to Cognitive Neuroscience, may not repeat material from any other requirement, and may not be used to also satisfy an engineering fundamentals or depth requirement. AP/IB credit for Chemistry and Physics may be used if not used above.

4 A course may only be counted towards one requirement; courses used to satisfy the TiS requirement may not be used to also satisfy a depth area requirement.

5 Engineering fundamentals plus engineering depth must total a minimum of 60 units. Recommended engineering fundamentals are E25B, E25E, E40A, E40M, and E80. MS&E majors may not use E60, or E70B as engineering fundamentals.

6 Students may petition to waive CS 106A Programming Methodology after completion of CS 106B Programming Abstraction, and/or ECON 1 Principles of Economics after completion of ECON 50 Economic Analysis I.

7 All courses taken for the major must be taken for a letter grade. Minimum combined GPA for all courses in Engineering Topics (Engineering Fundamentals and Depth courses) is 2.0.

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

Bachelor of Science in Materials Science and Engineering (MSE/MATSCI)

Completion of the undergraduate program in Materials Science and Engineering leads to the conferral of the Bachelor of Science in Materials Science and Engineering.

Mission of the Undergraduate Program in Materials Science and Engineering

The mission of the undergraduate program in Materials Science and Engineering is to provide students with a strong foundation in materials science and engineering with emphasis on the fundamental scientific and engineering principles which underlie the knowledge and implementation of material structure, processing, properties, and performance of all classes of materials used in engineering systems. Courses in the program develop students' knowledge of modern materials science and engineering, teach them to apply this knowledge analytically to create effective and novel solutions to practical problems, and develop their communication skills and ability to work collaboratively. The program prepares students for careers in industry and for further study in graduate school.

The B.S. in Materials Science and Engineering provides training for the materials engineer and also preparatory training for graduate work in materials science. Capable undergraduates are encouraged to take at least one year of graduate study to extend their course work through the coterminal degree program which leads to an M.S. in Materials Science and Engineering. Coterminal degree programs are encouraged both for undergraduate majors in Materials Science and Engineering and for undergraduate majors in related disciplines.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's

undergraduate program. Students are expected to demonstrate the ability to:

1. Apply the knowledge of mathematics, science, and engineering to assess and synthesize scientific evidence, concepts, theories, and experimental data relating to the natural or physical world.
2. Extend students' knowledge of the natural or physical world beyond that obtained from secondary education by refining their powers of scientific observation, the essential process by which data is gained for subsequent analysis.
3. Design and conduct experiments, as well as understand and utilize the scientific method in formulating hypotheses and designing experiments to test hypotheses.
4. Function on multidisciplinary teams, while communicating effectively.
5. Identify, formulate, and solve engineering issues by applying conceptual thinking to solve certain problems, bypassing calculations or rote learning and relying on the fundamental meaning behind laws of nature.
6. Understand professional and ethical responsibility.
7. Understand the impact of engineering solutions in a global, economic, environmental, and societal context.
8. Demonstrate a working knowledge of contemporary issues.
9. Recognize the need for, and engage in, lifelong learning.
10. Apply the techniques, skills, and modern engineering tools necessary for engineering practice.
11. Transition from engineering concepts and theory to real engineering applications and understanding the distinction between scientific evidence and theory, inductive and deductive reasoning, and understanding the role of each in scientific inquiry.

Degree Requirements

		Units
Mathematics		
20 units minimum		
Select one of the following:		5
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
CME 100/ ENGR 154	Vector Calculus for Engineers	
Select one of the following:		5
MATH 52	Integral Calculus of Several Variables	
CME 104/ ENGR 155B	Linear Algebra and Partial Differential Equations for Engineers	
Select one of the following:		5
MATH 53	Ordinary Differential Equations with Linear Algebra	
CME 102/ ENGR 155A	Ordinary Differential Equations for Engineers	
One additional course [1]		5
Science		
20 units minimum		
Must include a full year (15 units) of calculus-based physics or chemistry, with one quarter of study (5 units) in the other subject. [2]		20
Technology in Society		
One course minimum [3]		3-5
Engineering Fundamentals		
Two courses minimum		
Select one of the following:		4
ENGR 50	Introduction to Materials Science, Nanotechnology Emphasis [4]	
ENGR 50E	Introduction to Materials Science, Energy Emphasis [4]	
ENGR 50M	Introduction to Materials Science, Biomaterials Emphasis [4]	
At least one additional courses [4]		3-5
Department Requirements: MSE Fundamentals, Depth & Focus Areas		
Materials Science Fundamentals: All of the following courses:		16
MATSCI 142	Quantum Mechanics of Nanoscale Materials	
MATSCI 143	Materials Structure and Characterization	
MATSCI 144	Thermodynamic Evaluation of Green Energy Technologies	
MATSCI 145	Kinetics of Materials Synthesis	
Two of the following courses:		8
MATSCI 151	Microstructure and Mechanical Properties	
MATSCI 152	Electronic Materials Engineering	
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution	
MATSCI 158	Soft Matter in Biomedical Devices, Microelectronics, and Everyday Life	
MATSCI 190	Organic and Biological Materials	
MATSCI 192	Materials Chemistry	
MATSCI 193	Atomic Arrangements in Solids	
MATSCI 194	Thermodynamics and Phase Equilibria	
MATSCI 195	Waves and Diffraction in Solids	
MATSCI 196	Defects in Crystalline Solids	
MATSCI 197	Rate Processes in Materials	
MATSCI 198	Mechanical Properties of Materials	
MATSCI 199	Electronic and Optical Properties of Solids	
Materials Science & Engineering Depth		**16**
Four laboratory courses for Sixteen units; Four units must be WIM		
MATSCI 160	Nanomaterials Laboratory	
MATSCI 161	Energy Materials Laboratory (WIM)	
MATSCI 162	X-Ray Diffraction Laboratory	
MATSCI 163	Mechanical Behavior Laboratory	
MATSCI 164	Electronic and Photonic Materials and Devices Laboratory (WIM)	
MATSCI 165	Nanoscale Materials Physics Computation Laboratory	
MATSCI 166	Data Science and Machine Learning Approaches in Chemical and Materials Engineering	
Focus Area Options [5, 6]		13
Total Units		103-107

[1] See a list of approved math courses at ughb.stanford.edu (https://ughb.stanford.edu/courses-and-planning/approved-courses/). AP/IB Credit (https://ughb.stanford.edu/petitions/ap-credit/) may also be used to meet the 20 units minimum, but cannot replace the three required courses.

[2] See a list of approved science courses at ughb.stanford.edu (https://ughb.stanford.edu/courses-and-planning/approved-courses/). AP/IB Credit (https://ughb.stanford.edu/petitions/ap-credit/)may also be used to meet the 20 units minimum in some cases; see the AP chart in the Bulletin or check with the School of Engineering in 135 Huang Engineering Center.

[3] See a list of approved Technology in Society courses at ughb.stanford.edu (https://ughb.stanford.edu/courses-and-planning/approved-courses/). Course chosen must be on the approved list the year taken.

[4] See a list of approved Engineering Fundamentals Courses at ugh.stanford.edu. Course chosen must be on the approved list the year taken.

[5] Focus Area Options: 13 units from one of the following Focus Area Options below. If the focus area contains only 12 units, but the combined unit total in major (SoE Fundamentals, MSE Fundamentals, MSE Depth and the Focus Area) is at 60 or more, it will be allowed and no petition is necessary.

[6] The self-defined focus area option requires additional approval; program deviation forms for this option can be found on the MSE website (https://mse.stanford.edu/student-resources/forms/undergraduate/).

[7] A course may only be counted towards one requirement; it may not be double-counted. For the 2020-2021 academic year, all courses taken for the major may be taken for either a letter grade (if offered by the instructor) or for CR and count towards degree requirements. Minimum Combined GPA for all courses in Engineering Topics (Engineering Fundamentals and Depth courses) is 2.0.

Focus Area Options (Four courses for a minimum of 13 units; select from one of the ten Focus Areas.)

Bioengineering	
BIOE 80	Introduction to Bioengineering (Engineering Living Matter)
BIOE 220	Introduction to Imaging and Image-based Human Anatomy
BIOE 260	Tissue Engineering
BIOE 281	Biomechanics of Movement
BIOE 381	Orthopaedic Bioengineering
MATSCI 158	Soft Matter in Biomedical Devices, Microelectronics, and Everyday Life
MATSCI 190	Organic and Biological Materials
MATSCI 225	Biochips and Medical Imaging
MATSCI 380	Nano-Biotechnology
MATSCI 381	Biomaterials in Regenerative Medicine
MATSCI 384	Materials Advances for Neurotechnology: Materials Meet the Mind
Chemical Engineering	
CHEM 171	Foundations of Physical Chemistry
CHEMENG 130	
CHEMENG 140	Micro and Nanoscale Fabrication Engineering
CHEMENG 150	Biochemical Engineering
MATSCI 158	Soft Matter in Biomedical Devices, Microelectronics, and Everyday Life
Chemistry	
CHEM 151	Inorganic Chemistry I
CHEM 153	Inorganic Chemistry II
CHEM 171	Foundations of Physical Chemistry
CHEM 173	Physical Chemistry II
CHEM 175	Physical Chemistry III
CHEM 181	Biochemistry I
CHEM 183	Biochemistry II
CHEM 185	Biophysical Chemistry
Electronics & Photonics	
EE 101A	Circuits I
EE 101B	Circuits II
EE 102A	Signal Processing and Linear Systems I
EE 102B	Signal Processing and Linear Systems II
EE 116	Semiconductor Devices for Energy and Electronics
EE 134	Introduction to Photonics
EE 142	Engineering Electromagnetics (Formerly EE 141)
EE 155	Green Electronics
ME 210	Introduction to Mechatronics
MATSCI 343	Organic Semiconductors for Electronics and Photonics
MATSCI 346	Nanophotonics
Energy Technology	
EE 293B	Fundamentals of Energy Processes
EE 155	Green Electronics
CEE 107A	Understanding Energy
EE 293B	Fundamentals of Energy Processes
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution
MATSCI 302	Solar Cells
MATSCI 303	Principles, Materials and Devices of Batteries
ME 262	Physics of Wind Energy
Materials Characterization Techniques	
MATSCI 320	Nanocharacterization of Materials
MATSCI 321	Transmission Electron Microscopy
MATSCI 322	Transmission Electron Microscopy Laboratory
MATSCI 323	Thin Film and Interface Microanalysis
MATSCI 326	X-Ray Science and Techniques
CHEMENG 345	Fundamentals and Applications of Spectroscopy
BIO 232	Advanced Imaging Lab in Biophysics
APPPHYS 201	Electrons and Photons (PHOTON 201)
Mechanical Behavior & Design	
AA 240	Analysis of Structures
AA 256	Mechanics of Composites
MATSCI 198	Mechanical Properties of Materials
MATSCI 241	Mechanical Behavior of Nanomaterials
MATSCI 358	Fracture and Fatigue of Materials and Thin Film Structures
ME 80	Mechanics of Materials
or CEE 101A	Mechanics of Materials
ME 203	Design and Manufacturing
Nanoscience	
ENGR 240	Introduction to Micro and Nano Electromechanical Systems
MATSCI 241	Mechanical Behavior of Nanomaterials
MATSCI 316	Nanoscale Science, Engineering, and Technology
MATSCI 320	Nanocharacterization of Materials
MATSCI 346	Nanophotonics
MATSCI 347	Magnetic materials in nanotechnology, sensing, and energy
MATSCI 380	Nano-Biotechnology
Physics	
PHYSICS 70	Foundations of Modern Physics

PHYSICS 110	Advanced Mechanics
PHYSICS 120	Intermediate Electricity and Magnetism I
PHYSICS 121	Intermediate Electricity and Magnetism II
PHYSICS 130	Quantum Mechanics I
PHYSICS 131	Quantum Mechanics II
PHYSICS 134	Advanced Topics in Quantum Mechanics
PHYSICS 170	Thermodynamics, Kinetic Theory, and Statistical Mechanics I
PHYSICS 171	Thermodynamics, Kinetic Theory, and Statistical Mechanics II
PHYSICS 172	Solid State Physics
Self-Defined Option	
Petition for a self-defined cohesive program. [7]	

For additional information and sample, programs see the Handbook for Undergraduate Engineering Programs (http://ughb.stanford.edu).

Honors Program

The Materials Science and Engineering honors program offers an opportunity for undergraduate Materials Science and Engineering majors with a GPA of 3.5 or higher to pursue independent research at an advanced level, supported by a faculty advisor and graduate student mentors. The main requirements are as follows:

1. Application to the honors program (must be pre-approved by faculty advisor)
2. Enrollment in MATSCI 150 Undergraduate Research and participation in an independent research project over three sequential full quarters
3. Completion of a faculty-approved thesis
4. Participation in either a poster or oral presentation of thesis work at a Stanford Symposium/event or, at your faculty advisor's discretion, in a comparable public event.

Since this requires three full quarters of research in addition to a final written thesis and presentation following completion of the work, students must apply to the program no less than four quarters prior to their planned graduation date. Materials Science and Engineering majors pursuing a typical four-year graduation timeline should meet with student services no later than the Winter Quarter of their junior year to receive information on the application process.

All requirements for the honors program are in addition to the normal undergraduate program requirements.

To apply to the MATSCI Honors program

- Have an overall GPA of 3.5 or higher (as calculated on the unofficial transcript) prior to application.
- Seek out a faculty research advisor and agree on a proposed research topic. If the research advisor is not a member of the MSE faculty or not a member of the School of Engineering Academic Council, students must have a second advisor who fulfills these requirements.
- Compose a brief (less than 1 page) summary of proposed research, including a proposed title, and submit along with unofficial transcript and signed application/faculty endorsement (https://mse.stanford.edu/student-resources/forms/undergraduate/).
- Submit application to MATSCI student services (Durand 113) at least four quarters prior to planned graduation.

To complete the MATSCI Honors program

- Overall GPA of 3.5 or higher (as calculated on the unofficial transcript) at graduation.
- Complete at least three quarters of research with a minimum of 9 units of MATSCI 150 (students may petition out of unit requirement with faculty adviser approval). All quarters must focus on the same topic. Maintain the same faculty adviser throughout, if possible.
- Present either a poster or oral presentation of thesis work at a Stanford event or, at the faculty advisor's discretion, in a comparable public event.
- Submit final drafts of an honors thesis to two faculty readers (one must be your research advisor, and one must be an MSE faculty member/SoE Academic Council member) at least one quarter prior to graduation. Both must approve the thesis by completing the signature page (https://mse.stanford.edu/student-resources/forms/undergraduate/).
- Submit to MATSCI student services (Durand 113) one copy of the honors thesis and signed signature page (in electronic or physical form) at least one quarter prior to graduation.

Mechanical Engineering (ME)

Completion of the undergraduate program in Mechanical Engineering leads to the conferral of the Bachelor of Science in Mechanical Engineering.

Mission of the Undergraduate Program in Mechanical Engineering

The mission of the undergraduate program in Mechanical Engineering is to provide students with a balance of theoretical and practical experiences that enable them to address a variety of societal needs. The curriculum encompasses elements from a wide range of disciplines built around the themes of biomedicine, computational engineering, design, energy, and multiscale engineering. Course work may include mechatronics, computational simulation, solid and fluid dynamics, microelectromechanical systems, biomechanical engineering, energy science and technology, propulsion, sensing and control, nano- and micro- mechanics, and design. The program prepares students for entry-level work as mechanical engineers and for graduate studies in either an engineering discipline or other fields where a broad engineering background is useful.

Core Requirements

		Units
Mathematics		
24 units minimum; see Basic Requirement 1 [1]		
CME 102/ENGR 155A	Ordinary Differential Equations for Engineers	5
or MATH 53	Ordinary Differential Equations with Linear Algebra	
Select one of the following:		3-5
CME 106/ ENGR 155C	Introduction to Probability and Statistics for Engineers	
STATS 110	Statistical Methods in Engineering and the Physical Sciences	
STATS 116	Theory of Probability	
Plus additional courses to total min. 24		
Science		
20 units minimum; see Basic Requirement 2 [1]		
Plus addtional required courses [1]		
CHEM 31M	Chemical Principles: From Molecules to Solids	5
Technology in Society		
One course required; TIS courses should be selected from AA 252, BIOE 131, COMM 120W, CS 181, ENGR 131, HUMBIO 174, ME 267, or MSE 193.		3-5
Engineering Fundamentals		
Two courses minimum; see Basic Requirement 3		

ENGR 14	Intro to Solid Mechanics	3
CS 106A	Programming Methodology	5
or CS 106B	Programming Abstractions	
Engineering Core		
Minimum of 68 Engineering Science and Design ABET units; see Basic Requirement 5		
ME 1	Introduction to Mechanical Engineering	3
ENGR 15	Dynamics	3
ME 80	Mechanics of Materials	3
ME 30	Engineering Thermodynamics	3
ME 70	Introductory Fluids Engineering	3
ME 102	Foundations of Product Realization	3
ME 103	Product Realization: Design and Making	4
ME 104	Mechanical Systems Design	4
ME 131	Heat Transfer	4
ME 123	Computational Engineering	4
ME 170A	Mechanical Engineering Design- Integrating Context with Engineering [2,3]	4
ME 170B	Mechanical Engineering Design: Integrating Context with Engineering [2,3]	4

Core Concentrations and Concentration Electives

In addition to completing core requirements, students must choose one of the concentrations paths below. In addition to their concentration specific 3-courses, students select 2-3 additional courses such that the combination adds up to a minimum of 18 units. One of these additional courses must be from technical electives associated with the student's selected concentration. The other 1-2 courses could come from either technical electives from the student's selected concentration or any other concentration and its associated technical electives. Up to 3 units of ME 191 Engineering Problems and Experimental Investigation may be petitioned to count as technical elective.

For students choosing the Materials and Structures concentration path, in addition to the 2 concentration-specific courses, students must select at least 2 courses from the Materials and Structures electives, in addition to courses from other concentrations, as technical electives.

		Units
Dynamic Systems and Controls Concentration		
ME 161	Dynamic Systems, Vibrations and Control	3
ENGR 105	Feedback Control Design	3
Pick one of:		
ME 227	Vehicle Dynamics and Control	3
ME 327	Design and Control of Haptic Systems (not offered AY21)	3
Dynamic Systems and Controls Electives		
ENGR 205	Introduction to Control Design Techniques	3
ME 210	Introduction to Mechatronics (not offered AY21)	4
ME 220	Introduction to Sensors	4
ME 331A	Advanced Dynamics & Computation (not offered AY21)	3
ME 485	Modeling and Simulation of Human Movement	3
Pick one, if not used in concentration already:		
ME 227	Vehicle Dynamics and Control	3
ME 327	Design and Control of Haptic Systems (not offered AY21)	3

		Units
Materials and Structures Concentration		
ME 149	Mechanical Measurements	3
ME 152	Material Behaviors and Failure Prediction	3
Materials and Structures Electives		
(2 M&S electives required for students in M&S concentration)		
AA 240	Analysis of Structures	3
MATSCI 198	Mechanical Properties of Materials	3-4
ME 234	Introduction to Neuromechanics (not offered AY21)	3
ME 241	Mechanical Behavior of Nanomaterials (not offered AY21)	3
ME 281	Biomechanics of Movement	3
ME 283	Introduction to Biomechanics and Mechanobiology (not offered AY21)	3
ME 287	Mechanics of Biological Tissues (not offered AY21)	4
ME 331A	Advanced Dynamics & Computation (not offered AY21)	3
ME 335A	Finite Element Analysis	3
ME 338	Continuum Mechanics	3
ME 339	Introduction to parallel computing using MPI, openMP, and CUDA	3
ME 345	Fatigue Design and Analysis	3
ME 348	Experimental Stress Analysis	3

		Units
Product Realization Concentration		
ME 127	Design for Additive Manufacturing	3
ME 128	Computer-Aided Product Realization	3
ME 129	Manufacturing Processes and Design (offered AY 19-20)	3
Product Realization Electives		
ENGR 110	Perspectives in Assistive Technology (ENGR 110)	1-2
ENGR 240	Introduction to Micro and Nano Electromechanical Systems	3
ME 181	Deliverables: A Mechanical Engineering Design Practicum	3
CME 106	Introduction to Probability and Statistics for Engineers	4
ME 210	Introduction to Mechatronics (not offered AY21)	4
ME 263	The Chair	3-4
or ME 298	Silversmithing and Design	
ME 309	(not offered AY21)	3
ME 324	Precision Engineering	4

		Units
Thermo, Fluids, and Heat Transfer Concentration		
ME 149	Mechanical Measurements	3
ME 132	Intermediate Thermodynamics	4
ME 133	Intermediate Fluid Mechanics	3
Thermo, Fluids, and Heat Transfer Electives		
ME 257	Gas-Turbine Design Analysis (not offered AY21)	3
ME 351A	Fluid Mechanics	3
ME 351B	Fluid Mechanics	3
ME 352B	Fundamentals of Heat Conduction (not offered AY21)	3

ME 352C	Convective Heat Transfer (not offered AY21)	3
ME 352D	Nanoscale heat, mass and charge transport	3
ME 362A	Physical Gas Dynamics	3
ME 370A	Energy Systems I: Thermodynamics	3
ME 370B	Energy Systems II: Modeling and Advanced Concepts	4
ME 371	Combustion Fundamentals	3
AA 283	Aircraft and Rocket Propulsion	3

[1] Math and science must total 45 units.
- Math: 24 units required and must include a course in differential equations (CME 102 Ordinary Differential Equations for Engineers or MATH 53 Ordinary Differential Equations with Linear Algebra; one of these required) and calculus-based Statistics (CME 106 Introduction to Probability and Statistics for Engineers or STATS 110 Statistical Methods in Engineering and the Physical Sciences or STATS 116 is required.
- Science: 20 units minimum and requires courses in calculus-based Physics and Chemistry, with at least a full year (3 courses) in one or the other. CHEM 31A Chemical Principles I/CHEM 31B Chemical Principles II are considered one course because they cover the same material as CHEM 31M but at a slower pace. CHEM 31M is recommended.

[2] ME 170A and ME 170B fulfill the WIM requirement. In AY 2020-21, the same grading basis applies to both ME 170A and ME 170B, and cannot be changed after week 8 of enrollment in ME 170A.

[3] ME 170A (http://exploredegrees.stanford.edu/search/?P=ME%20170A) and ME 170B (http://exploredegrees.stanford.edu/search/?P=ME%20170B) are a two quarter Capstone Design Sequence and must be taken in consecutive quarters.

[4] A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum combined GPA for all courses in Engineering Topics (Engineering Fundamentals and Depth courses) is 2.0.

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

BSME 1.0 Notes

Those students (primarily seniors) who are completing BSME 1.0 from AY 2017-2018 or earlier should refer to bulletins from the academic year that corresponds with their program sheet.

Honors Program in Mechanical Engineering

The Department of Mechanical Engineering offers a program leading to a B.S. in Mechanical Engineering with honors. This program offers a unique opportunity for qualified undergraduate engineering majors to conduct independent study and research at an advanced level with a faculty mentor.

Mechanical Engineering majors who have a grade point average (GPA) of 3.5 or higher in the major may apply for the honors program. Students who meet the eligibility requirement and wish to be considered for the honors program must submit a written application to the Mechanical Engineering student services office no later than the second week of Autumn Quarter in the senior year. The application to enter the program can be obtained from the ME student services office, and must contain a one-page statement describing the research topic and include an unofficial Stanford transcript. In addition, the application must be approved by a Mechanical Engineering faculty member who agrees to serve as the thesis adviser for the project. Thesis advisers must be members of Stanford's Academic Council.

In order to receive departmental honors, students admitted to the program must:

1. Maintain the 3.5 GPA required for admission to the honors program.
2. Submit a completed thesis draft to the adviser by the 3rd week of the quarter they intend to confer. Further revisions and final endorsement by the adviser are to be finished by week 6, when two bound copies are to be submitted to the Mechanical Engineering student services office.
3. Present the thesis at the Mechanical Engineering Poster Session held in mid-April. If the poster session is not offered or the student does not confer in the spring, an alternative presentation will be approved on a case by case basis with advisor and UGCC chair approval.

Note: Students may not use work completed towards an honors degree to satisfy the B.S. in ME course requirements.

COVID-19-Related Degree Requirement Changes

Grading

The Product Design Program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that normally require a letter grade.

Other Undergraduate Policies

The Product Design Program encourages students to take courses for letter grades when possible in order to have complete records for use when seeking future opportunities, including employment in industry and students seeking to apply for graduate studies. Per University policy, students can change grading basis through the end of Week 8 in Autumn, Winter, and Spring, and Week 6 in Summer. Students are encouraged to reach out directly to Product Design Program Director, William Burnett <wburnett@stanford.edu>, for questions about petitions, especially in situations related to COVID-19 policies and grading basis.

Product Design (PD)

Completion of the undergraduate program in Product Design leads to the conferral of the Bachelor of Science in Engineering. The subplan Product Design appears on the transcript and on the diploma.

Mission of the Undergraduate Program in Product Design

The mission of the undergraduate program in Product Design is to graduate designers who can synthesize technology, human factors, and business factors in the service of human need. The program teaches a design process that encourages creativity, craftsmanship, aesthetics, and personal expression, and emphasizes brainstorming and need finding. The course work provides students with the skills necessary to carry projects from initial concept to completion of working prototypes. Students studying product design follow the basic Mechanical Engineering curriculum and are expected to meet the University requirements for a Bachelor of Science degree. The program prepares students for careers in industry and for graduate study.

Requirements

	Units
Mathematics and Science	**36 units minimum**
Mathematics [1,2]	**20 units minimum**

Recommended: one course in Statistics [1]

Science [2,3]		**17 units minimum**
17 units minimum : Minimum of 9 units of SoE approved science and 8 units of Behavioral Science [2,3]		
PHYSICS 41	Mechanics	4
PSYCH 1	Introduction to Psychology	5
PSYCH or HUMBIO elective [3]		3-5
Technology in Society		**3-5 units**
One course required; must be on the SoE approved TiS courses list at <ughb.stanford.edu> the year it is taken..		
Engineering Fundamentals		**8 units minimum**
CS 106A	Programming Methodology (or CS 106B)	5
ENGR 40M	An Intro to Making: What is EE (or ENGR 40A)	3-5
or ENGR 40A	Introductory Electronics	
Product Design Engineering Depth		**54 units minimum**
ME 125 and ME 216M OR two Art Studio or Computer Science courses, 100 series or higher		6
ENGR 14	Intro to Solid Mechanics	3
ME 80	Mechanics of Materials	3
ME 101	Visual Thinking	4
ME 102	Foundations of Product Realization	3
ME 103	Product Realization: Design and Making	4
ME 104	Mechanical Systems Design	4
ME 110	Design Sketching	2
ME 115A	Introduction to Human Values in Design	3
ME 115B	Product Design Methods	4
ME 120	History and Ethics of Design	3
ME 115C	Designing Your Business	3
ME 125	Visual Frontiers (or ARTSTUDI or CS course)	3
ME 216A	Advanced Product Design: Needfinding [7]	4
ME 216B	Advanced Product Design: Implementation 1 [6]	4
ME 216C	Advanced Product Design: Implementation 2 [6]	4
ME 216M	Introduction to the Design of Smart Products (or ARTSTUDI or CS course)	3-4

1 Math requirements can be met with the Math 19, 20, 21 series, or up to 10 units AP or IB Calculus; and courses from the MATH 50 series and/or the CME 100 series; STATS 60 or STATS 160 are recommended

2 AP units can be applied; have these approved by SoE Dean's Office (email Darlene Lazar at dlazar@stanford.edu) prior to final quarter and before asking advisor to sign-off.

3 School of Engineering approved science list available at http://ughb.stanford.edu (http://ughb.stanford.edu/). PSYCH electives numbered 30-200 or HUMBIO 82A or HUMBIO 160 are pre-approved.

4 ME 216B & ME 216C will fulfill the Writing in the Major (WIM) requirement for Product Design beginning 2019-20.

5 ME 115C (not available 2020-21) is the only course that can be waived if a student takes a quarter overseas or at one of the BOSP campuses in New York or Washington DC. Students should plan their overseas quarter to take place in sophomore year, or Spring Quarter of the junior year only. If the student elects to go overseas junior year, the total depth units are reduced by 3; this is approved without petition.

6 You may substitute ME 216B and ME 216C with ME 206A and ME 206B Design for Extreme Affordability.

7 ME 216A must be taken for 4 units by all PD majors.

A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Topics (Engineering Fundamentals and Depth courses) is 2.0.

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

The joint major program (JMP) was discontinued at the end of the academic year 2018-19. Students may no longer declare this program. All students with declared joint majors are permitted to complete their degree; faculty and departments are committed to providing the necessary advising support.

See the "Joint Major Program (p. 33)" section of this bulletin for a description of University requirements for the JMP. See also the Undergraduate Advising and Research JMP (https://majors.stanford.edu/more-ways-explore/joint-majors-csx/) web site and its associated FAQs.

Students completing the JMP receive a B.A.S. (Bachelor of Arts and Science).

Mission

The Joint Major provides a unique opportunity to gain mastery in two disciplines: Computer Science and a selected humanities field. Unlike the double major or dual major, the Joint Major emphasizes integration of the two fields through a cohesive, transdisciplinary course of study and integrated capstone experience. The Joint Major not only blends the intellectual traditions of two Stanford departments-it does so in a way that reduces the total unit requirement for each major.

Computer Science Major Requirements in the Joint Major Program

(See the respective humanities department Joint Major Program section of this bulletin for details on humanities major requirements.)

The CS requirements for the Joint Major follow the CS requirements for the CS-BS degree with the following exceptions:

1. Two of the depth electives are waived. The waived depth electives are listed below for each CS track.
2. The Senior Project is fulfilled with a joint capstone project. The student enrolls in CS191 or 191W (3 units) during the senior year. Depending on the X department, enrollment in an additional Humanities capstone course may also be required. But, at a minimum, 3 units of CS191 or 191W must be completed.
3. There is no double-counting of units between majors. If a course is required for both the CS and Humanities majors, the student will work with one of the departments to identify an additional course - one which will benefit the academic plan - to apply to that major's total units requirement.
4. For CS, WIM can be satisfied with CS181W or CS191W.

Depth Electives for CS Tracks for students completing a Joint Major:

Artificial Intelligence Track:
One Track Elective (rather than three).

Biocomputation Track:
One course from Note 3 of the Department Program Sheet, plus one course from Note 4 of the Program Sheet..

Computer Engineering Track:
- EE 108A and 108B
- One of the following: EE 101A, 101B, 102A, 102B
- Satisfy the requirements of one of the following concentrations:

1. Digital Systems Concentration: CS 140 or 143; EE 109, 271; plus one of CS 140 or 143 (if not counted above), 144, 149, 240E, 244: EE 273, 282
2. Robotics and Mechatronics Concentration: CS 205A, 223A; ME 210; ENGR 105
3. Networking Concentration: CS 140, 144; plus two of the following, CS 240, 240E, 244, 244B, 244E, 249A, 249B, EE 179, EE 276

Graphics Track:
No Track Electives required (rather than two)

HCI Track:
No Interdisciplinary HCI Electives required

Information Track:

One Track Elective (rather than three)

Systems Track:
One Track Elective (rather than three)

Theory Track:
One Track Elective (rather than three)

Unspecialized Track:
No Track Electives required (rather than two)

Individually Designed Track:
Proposals should include a minimum of five (rather than seven) courses, at least four of which must be CS courses numbered 100 or above.

Dropping a Joint Major Program

To drop the joint major, students must submit the Declaration or Change of Undergraduate Major, Minor, Honors, or Degree Program (https://stanford.box.com/change-UG-program/). Students may also consult the Student Services Center (http://studentservicescenter.stanford.edu/) with questions concerning dropping the joint major.

Transcript and Diploma

Students completing a joint major graduate with a B.A.S. degree. The two majors are identified on one diploma separated by a hyphen. There will be a notation indicating that the student has completed a "Joint Major." The two majors are identified on the transcript with a notation indicating that the student has completed a "Joint Major."

See the "Undergraduate Majors and Minors (p. 561)" menu item on the left side of this page for program-by-program descriptions of minor requirements. All programs are listed below to facilitate export as a pdf; use the Print option in the right hand menu of this page to create such a pdf for all the tabs in the School of Engineering.

Minor in the School of Engineering

An undergraduate minors in some Engineering programs may be pursued by interested students; see the Handbook for Undergraduate Engineering Programs, or consult with a department's undergraduate program representative or the Office of Student Affairs, Huang Engineering Center, Suite 135.

Minors are offered in the following programs:

- Aeronautics and Astronautics (AA) Minor (p. 605)
- Chemical Engineering Minor (p. 639)
- Civil Engineering (CE) Minor (p. 661)
- Computer Science (CS) Minor (p. 715)
- Electrical Engineering (EE) Minor (p. 760)
- Environmental Systems Engineering (EnvSE) Minor (p. 661)
- Management Science and Engineering (MS&E) Minor (p. 802)
- Materials Science and Engineering (MATSCI) Minor (p. 830)
- Mechanical Engineering (ME) Minor (p. 851)

General requirements and policies for a minor in the School of Engineering are:

1. A set of courses totaling not less than 20 and not more than 36 units, with a minimum of six courses of at least 3 units each. These courses must be taken for a letter grade except where letter grades are not offered, and a minimum GPA of 2.0 within the minor course list must be maintained (departments may require a higher GPA if they choose).
2. The set of courses should be sufficiently coherent as to present a body of knowledge within a discipline or subdiscipline.
3. Prerequisite mathematics, statistics, or science courses, such as those normally used to satisfy the school's requirements for a department major, may not be used to satisfy the requirements of the minor; conversely, engineering courses that serve as prerequisites for subsequent courses must be included in the unit total of the minor program.
4. Courses used for the major and/or minor core must not be duplicated within any other of the student's degree programs; that is, students may not overlap (double-count) courses for completing core major and minor requirements.

Departmentally based minor programs are structured at the discretion of the sponsoring department, subject only to requirements 1, 2, 3, and 4 above. Interdisciplinary minor programs may be submitted to the Undergraduate Council for approval and sponsorship. A general Engineering minor is not offered.

Aeronautics and Astronautics (AA) Minor

The Aero/Astro minor introduces undergraduates to the key elements of modern aerospace systems. Within the minor, students may focus on aircraft, spacecraft, or disciplines relevant to both. The course requirements for the minor are described in detail below. If any core classes (aside from ENGR 21; see footnote) are part of student's major or other degree program, the Aero/Astro adviser can help select substitute courses to fulfill the Aero/Astro minor requirements; no double counting allowed. All courses taken for the minor must be taken for a letter grade if that option is offered by the instructor. Minimum GPA for all minor courses combined is 2.0.

The following core courses fulfill the minor requirements:

AA Core

12 Core Units, 24 Total Program Units		
ENGR 21	Engineering of Systems [1]	3

AA 100	Introduction to Aeronautics and Astronautics	3
AA 131	Space Flight	3
AA 141	Atmospheric Flight	3
AA Electives		
Choose 4 courses		
ENGR 105	Feedback Control Design	3
ME 70	Introductory Fluids Engineering	3
AA 102	Introduction to Applied Aerodynamics	3
AA 103	Air and Space Propulsion	3
AA 113	Aerospace Computational Science	3
AA 135	Introduction to Space Policy	3
AA 151	Lightweight Structures	3
AA 156	Mechanics of Composite Materials	3
AA 173	Flight Mechanics & Controls	3
AA 174A	Principles of Robot Autonomy I	5
AA 261	Building an Aerospace Startup from the Ground Up	3
AA 272	Global Positioning Systems	3
AA 279A	Space Mechanics	3

[1] ENGR 21 is waived as minor requirement if already taken as part of the major program.

Chemical Engineering Minor

The following core courses fulfill the minor requirements:

		Units
ENGR 20	Introduction to Chemical Engineering	4
CHEMENG 100	Chemical Process Modeling, Dynamics, and Control	3
CHEMENG 110A	Introduction to Chemical Engineering Thermodynamics	3
CHEMENG 110B	Multi-Component and Multi-Phase Thermodynamics	3
CHEMENG 120A	Fluid Mechanics	4
CHEMENG 120B	Energy and Mass Transport	4
CHEMENG 130B	Introduction to kinetics and reactor design	3
CHEMENG 185A	Chemical Engineering Laboratory A	5
CHEMENG 180	Chemical Engineering Plant Design	4
Select one of the following:		3
CHEMENG 140	Micro and Nanoscale Fabrication Engineering	
CHEMENG 142	Basic Principles of Heterogeneous Catalysis with Applications in Energy Transformations	
CHEMENG 160	Polymer Science and Engineering	
CHEMENG 174	Environmental Microbiology I	
CHEMENG 181	Biochemistry I	
Total Units		36

Civil Engineering (CE) Minor

The civil engineering minor is intended to give students a focused introduction to one or more areas of civil engineering. Departmental expertise and undergraduate course offerings are available in the areas of Architectural Design, Construction Engineering and Management, and Structural and Geotechnical Engineering. Students interested in Environmental and Water Studies should refer to the Environmental Systems Engineering minor.

The minimum prerequisite for a civil engineering minor is MATH 19 Calculus (or MATH 20 Calculus or MATH 21 Calculus); however, many courses of interest require PHYSICS 41 Mechanics and/or MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications as prerequisites. The minimum prerequisite for a Civil Engineering minor focusing on architectural design is MATH 19 Calculus (or MATH 20 Calculus or MATH 21 Calculus). Students should recognize that a minor in civil engineering is not an ABET-accredited degree program.

Since undergraduates having widely varying backgrounds may be interested in obtaining a civil engineering minor, and the field itself is so broad, no single set of course requirements will be appropriate for all students. Instead, interested students are encouraged to propose their own set of courses within the guidelines listed below. Additional information, including example minor programs, are provided on the CEE web site (http://cee.stanford.edu/prospective/undergrad/minor_overview.html) and in Chapter 6 of the Handbook for Undergraduate Engineering Programs (http://ughb.stanford.edu/).

General guidelines are:

1. A civil engineering minor must contain at least 24 units of course work not taken for the major, and must consist of at least six classes of at least 3 units each of letter-graded work, except where letter grades are not offered.
2. The list of courses must represent a coherent body of knowledge in a focused area, and should include classes that build upon one another. Example programs are given on the CEE webpage.

Professor Anne Kiremidjian (kiremidjian@stanford.edu) is the CEE undergraduate minor adviser in Structural Engineering and Construction Engineering and Management. John Barton (jhbarton@stanford.edu (http://www.stanford.edu/dept/registrar/bulletin/jhbarton@stanford.edu)), Program Director for Architectural Design, is the undergraduate minor adviser in Architectural Design. Students must consult the appropriate adviser when developing their minor program, and obtain approval of the finalized study list from them.

Computer Science (CS) Minor

The following core courses fulfill the minor requirements. Prerequisites include the standard mathematics sequence through MATH 51 (or CME 100).

		Units
Introductory Programming (AP Credit may be used to fulfill this requirement):		
CS 106B	Programming Abstractions	5
or CS 106X	Programming Abstractions	
Core:		
CS 103	Mathematical Foundations of Computing	5
CS 107	Computer Organization and Systems	5
or CS 107E	Computer Systems from the Ground Up	
CS 109	Introduction to Probability for Computer Scientists	5
Electives (choose two courses from different areas):		
Artificial Intelligence—		
CS 124	From Languages to Information	4
CS 221	Artificial Intelligence: Principles and Techniques	4
CS 229	Machine Learning	3-4
Human-Computer Interaction—		
CS 147	Introduction to Human-Computer Interaction Design	4
Software—		

CS 108	Object-Oriented Systems Design	4
CS 110	Principles of Computer Systems	5
Systems—		
CS 140	Operating Systems and Systems Programming	4
or CS 140E	Operating systems design and implementation	
CS 143	Compilers	4
CS 144	Introduction to Computer Networking	4
CS 145	Data Management and Data Systems	4
CS 148	Introduction to Computer Graphics and Imaging	4
Theory—		
CS 154	Introduction to the Theory of Computation	4
CS 157	Computational Logic	3
CS 161	Design and Analysis of Algorithms	5

Note: for students with no programming background and who begin with CS 106A, the minor consists of seven courses.

Electrical Engineering (EE) Minor

The options for completing a minor in EE are outlined below. Students must complete a minimum of 23-25 units, as follows:

		Units
Select one:		5
EE 42	Introduction to Electromagnetics and Its Applications	
EE 65	Modern Physics for Engineers	
ENGR 40A & ENGR 40B	Introductory Electronics and Introductory Electronics Part II	
ENGR 40M	An Intro to Making: What is EE	
Select one:		8
Option I:		
EE 101A	Circuits I	
EE 101B	Circuits II	
Option II:		
EE 102A	Signal Processing and Linear Systems I	
EE 102B	Signal Processing and Linear Systems II	
Option III:		
EE 102A	Signal Processing and Linear Systems I	
ENGR 108	Introduction to Matrix Methods	
Option IV:		
EE 108	Digital System Design	
EE 180	Digital Systems Architecture	
In addition, four letter-graded EE courses at the 100-level or higher must be taken (12 units minimum). CS 107 is required as a prerequisite for EE 180, but can count as one of the four classes.		12

Environmental Systems Engineering (EnvSE) Minor

The Environmental Systems Engineering minor is intended to give students a focused introduction to one or more areas of Environmental Systems Engineering. Departmental expertise and undergraduate course offerings are available in the areas of environmental engineering and science, environmental fluid mechanics and hydrology, and atmosphere/energy. The minimum prerequisite for an Environmental Systems Engineering minor is MATH 19 Calculus (or MATH 20 Calculus or MATH 21 Calculus); additionally, many courses of interest require PHYSICS 41 Mechanics and/or MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications as prerequisites.

Students should recognize that a minor in Environmental Systems Engineering is not an ABET-accredited degree program.

Since undergraduates having widely varying backgrounds may be interested in obtaining an Environmental Systems Engineering minor, no single set of course requirements is appropriate for all students. Instead, interested students are encouraged to propose their own set of courses within the guidelines listed below. Additional information on preparing a minor program is available in the Undergraduate Engineering Handbook (http://web.stanford.edu/group/ughb/cgi-bin/handbook/index.php/Handbooks/).

General guidelines are—

- An Environmental Systems Engineering minor must contain at least 24 units of course work not taken for the major, and must consist of at least six classes of at least 3 units each of letter-graded work, except where letter grades are not offered.
- The list of courses must represent a coherent body of knowledge in a focused area, and should include classes that build upon one another. Example programs are available on the CEE web site (https://cee.stanford.edu/academics/undergraduate-programs/minor/).

Professor Nicholas Ouellette (nto@stanford.edu) is the CEE undergraduate minor adviser in Environmental Systems Engineering. Students must consult with Professor Ouellette (https://cee.stanford.edu/people/nicholas-t-ouellette/) in developing their minor program, and obtain approval of the finalized study list from him.

Management Science and Engineering (MS&E) Minor

The following courses are required to fulfill the minor requirements:

		Units
Prerequisites (two courses; letter-graded or CR/NC)		
CME 100	Vector Calculus for Engineers	5
or MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
CS 106A	Programming Methodology	5
Minor requirements (seven courses; all letter-graded)		
MS&E 111	Introduction to Optimization	3-4
or MS&E 111X	Introduction to Optimization (Accelerated)	
MS&E 120	Introduction to Probability [1]	4
MS&E 121	Introduction to Stochastic Modeling	4
MS&E 125	Introduction to Applied Statistics	4
MS&E 180	Organizations: Theory and Management	4
Electives (select any two 100- or 200-level MS&E courses)		6
Recommended courses		
In addition to the required prerequisite and minor courses, it is recommended that students also take the following courses.		
ECON 50	Economic Analysis I	5
MS&E 140	Accounting for Managers and Entrepreneurs (may be used as one of the required electives above)	3-4

[1] Students completing a calculus-based probability course such as CS 109 or STATS 116 for their major, may substitute another MS&E course for MS&E 120.

Materials Science and Engineering (MATSCI) Minor

A minor in Materials Science and Engineering allows interested students to explore the role of materials in modern technology and to gain an understanding of the fundamental processes that govern materials behavior.

The following courses fulfill the minor requirements:

		Units
Engineering Fundamentals		
Select one of the following:		4
ENGR 50	Introduction to Materials Science, Nanotechnology Emphasis	
ENGR 50E	Introduction to Materials Science, Energy Emphasis	
ENGR 50M	Introduction to Materials Science, Biomaterials Emphasis	
Materials Science Fundamentals and Engineering Depth		
Select six of the following:		24
MATSCI 142	Quantum Mechanics of Nanoscale Materials	
MATSCI 143	Materials Structure and Characterization	
MATSCI 144	Thermodynamic Evaluation of Green Energy Technologies	
MATSCI 145	Kinetics of Materials Synthesis	
MATSCI 151	Microstructure and Mechanical Properties	
MATSCI 152	Electronic Materials Engineering	
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution	
MATSCI 158	Soft Matter in Biomedical Devices, Microelectronics, and Everyday Life	
MATSCI 160	Nanomaterials Laboratory	
MATSCI 161	Energy Materials Laboratory	
MATSCI 162	X-Ray Diffraction Laboratory	
MATSCI 163	Mechanical Behavior Laboratory	
MATSCI 164	Electronic and Photonic Materials and Devices Laboratory	
MATSCI 165	Nanoscale Materials Physics Computation Laboratory	
MATSCI 190	Organic and Biological Materials	
MATSCI 192	Materials Chemistry	
MATSCI 193	Atomic Arrangements in Solids	
MATSCI 194	Thermodynamics and Phase Equilibria	
MATSCI 195	Waves and Diffraction in Solids	
MATSCI 196	Defects in Crystalline Solids	
MATSCI 197	Rate Processes in Materials	
MATSCI 198	Mechanical Properties of Materials	
MATSCI 199	Electronic and Optical Properties of Solids	
Total Units		28

Mechanical Engineering (ME) Minor

The following courses fulfill the minor requirements:

		Units
General Minor *		
ENGR 14	Intro to Solid Mechanics	3
ENGR 15	Dynamics	3
ME 1	Introduction to Mechanical Engineering	3
ME 30	Engineering Thermodynamics	3
ME 70	Introductory Fluids Engineering	3
Plus two of the following:		
ME 80	Mechanics of Materials	3
ME 102	Foundations of Product Realization	3
ME 131	Heat Transfer	4
ME 161	Dynamic Systems, Vibrations and Control	3
Total Units: 21		
Thermosciences Minor **		
ENGR 14	Intro to Solid Mechanics	3
ME 30	Engineering Thermodynamics	3
ME 70	Introductory Fluids Engineering	3
ME 131	Heat Transfer	4
ME 132	Intermediate Thermodynamics	4
ME 133	Intermediate Fluid Mechanics (offered SPR 18-19; more information to come)	3
ME 149	Mechanical Measurements	3
Total units: 23		
Mechanical Design Minor ***		
ENGR 14	Intro to Solid Mechanics	3
ME 80	Mechanics of Materials	3
ME 1	Introduction to Mechanical Engineering	3
ME 102	Foundations of Product Realization	3
ME 103	Product Realization: Design and Making	4
ME 104	Mechanical Systems Design	4
Plus one of the following:		
ME 127	Design for Additive Manufacturing	3
ME 128	Computer-Aided Product Realization	3-4
ME 129	Manufacturing Processes and Design	3
ME 210	Introduction to Mechatronics	4
ME 220	Introduction to Sensors	3-4
Total units: 23		

* This minor aims to expose students to the breadth of ME in terms of topics and analytic and design activities. Prerequisites: MATH 19 Calculus, MATH 20 Calculus, MATH 21 Calculus, and PHYSICS 41 Mechanics or PHYSICS 41E Mechanics, Concepts, Calculations, and Context.

** Prerequisites: MATH 19 Calculus, MATH 20 Calculus, MATH 21 Calculus , MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications (or CME 100 Vector Calculus for Engineers) and PHYSICS 41 Mechanics or PHYSICS 41E Mechanics, Concepts, Calculations, and Context.

*** This minor aims to expose students to design activities supported by analysis. Prerequisites: MATH 19 Calculus, MATH 20 Calculus, MATH 21 Calculus,PHYSICS 42 Classical Mechanics Laboratory, and PHYSICS 41 Mechanics or PHYSICS 41E Mechanics, Concepts, Calculations, and Context.

Master of Science in the School of Engineering

The M.S. degree is conferred on graduate students in engineering according to the University regulations stated in the "Graduate Degrees (p. 65)" section of this bulletin, and is described in the various department listings. A minimum of 45 units is usually required in M.S. programs in the School of Engineering. The presentation of a thesis is not a school requirement. Further information is found in departmental listings.

Master of Science in Engineering

The M.S. in Engineering is available to students who wish to follow an interdisciplinary program of study that does not conform to a normal graduate program in a department.

Each student's program is administered by the particular department in which it is lodged and must meet the standard of quality of that department. Transfer into this program is possible from any graduate program by application through the appropriate department; the department then recommends approval to the Office of Student Affairs in the School of Engineering. The application should be submitted before completing 18 units of the proposed program; it should include a statement describing the objectives of the program, the coherence of the proposed course work, and why this course of study cannot conform to existing graduate programs. Normally, it would include the approval of at least one faculty member willing to serve as adviser. (A co-advising team may be appropriate for interdisciplinary programs.) Each student's program is administered by the particular department in which it is lodged and must meet the standard of quality of that department. The actual transfer is accomplished through the Graduate Authorization Petition process.

There are three school requirements for the M.S. degree in Engineering:

1. The student's program must be a coherent one with a well-defined objective and must be approved by a department within the school which has experience with graduate-level teaching and advising in the program area.
2. The student's program must include at least 21 units of courses within the School of Engineering with catalog numbers of 200 or above in which the student receives letter grades.
3. The program must include a total of at least 45 units.

Departments may have additional requirements or expectations for programs of study which they would recommend for this degree; further information may be found in departmental listings or handbooks.

The M.S. in Engineering is rarely pursued as a coterminal program, and potential coterms are encouraged to explore the range of master's options in the departments and interdisciplinary programs. In the unusual circumstance of a coterminal application to the M.S. in Engineering, the application process should be the same as described above, using either the Graduate Authorization Petition in Axess (for coterminal students who want to transfer between MS programs) or the the Application for Admission to Coterminal Masters' Program (http://registrar.stanford.edu/pdf/CotermApplic.pdf) (for students who have not yet been admitted to a master's program). The policy for transferring courses taken as an undergraduate prior to coterm admission to the M.S. in Engineering corresponds to the policy of the particular department in which the student's program is lodged and administered. A clear statement of the department's coterminal policy, and how it applies to the applicant within the Master of Science in Engineering program, should be added to the application materials.

Honors Cooperative Program

Industrial firms, government laboratories, and other organizations may participate in the Honors Cooperative Program (HCP), a program that permits qualified engineers, scientists, and technology professionals admitted to Stanford graduate degree programs to register for Stanford courses and obtain the degree on a part-time basis. In many areas of concentration, the master's degree can be obtained entirely online.

Through this program, many graduate courses offered by the School of Engineering on campus are made available through the Stanford Center for Professional Development (SCPD). SCPD delivers more than 250 courses a year online. For HCP employees who are not part of a graduate degree program at Stanford, courses and certificates are also available through a non-degree option (NDO) and a non-credit professional education program. Non-credit short courses may be customized to meet a company's needs. For a full description of educational services provided by SCPD, see the SCPD website (http://scpd.stanford.edu); call (650) 204-3984; fax (650) 725-2868; or email scpd-gradstudents@stanford.edu.

Engineer Degree in the School of Engineering

The degree of Engineer is intended for students who want additional graduate training beyond that offered in an M.S. program. The program of study must satisfy the student's department and must include at least 90 units beyond the B.S. degree. The presentation of a thesis is required. The University regulations for the Engineer degree are stated in the "Graduate Degrees (p. 65)" section of this bulletin, and further information is available in the individual departmental sections of this bulletin.

Doctor of Philosophy in the School of Engineering

Programs leading to the Ph.D. degree are offered in each of the departments of the school. University regulations for the Ph.D. are given in the "Graduate Degrees (p. 65)" section of this bulletin. Further information is found in departmental listings.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate and graduate grading in the School of Engineering is determined by the department or program. Refer to the COVID-19 tab within each of the departmental sections, or check the Undergraduate Majors and Minors (p. 561) pages for policy on undergraduate school-sponsored majors and minors.

Dean: Jennifer Widom

Senior Associate Deans: Ken Goodson (Faculty and Academic Affairs), Scott Calvert (Administration), Thomas Kenny (Student Affairs)

Associate Dean: Kirsti Copeland (Student Affairs)

Assistant Dean: Sally Gressens (Graduate Student Affairs)

Overseas Studies Courses in Engineering

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPBER 40M	An Intro to Making: What is EE	5
OSPBER 50M	Introductory Science of Materials	4
OSPFLOR 50M	Introductory Science of Materials	4
OSPPARIS 40M	An Intro to Making: What is EE	5
OSPPARIS 50M	Introductory Science of Materials	4

Courses

ENGR 1. Want to Be an Engineer?. 1 Unit.
This course is designed for you if you are a new student who has a hypothesis that you want to be a scientist, mathematician, or engineer but don't yet know what you want to major in. As a scientist, you know that you need data to test your hypothesis. As a design thinker, you know that there is no way forward except to be exposed to different things and weigh the results. As a potential engineer, you know that you need lots of information to make a decision. Each week a panel of faculty from STEM majors in the School of Engineering, the School of Humanities & Sciences, and Stanford Earth will present with the goal of helping you discover if their field is right for you.

ENGR 2A. SSEA Seminar: Developing Your Leadership Toolkit. 1 Unit.
In this weekly seminar, SSEA students will learn practical leadership skills so they can successfully navigate academic and professional opportunities while at Stanford and achieve meaningful results. Mentorship and career exploration will also be delivered through an inspiring line up of guest speakers and interactive activities.

ENGR 10. Introduction to Engineering Analysis. 4 Units.
Integrated approach to the fundamental scientific principles that are the cornerstones of engineering analysis: conservation of mass, atomic species, charge, momentum, angular momentum, energy, production of entropy expressed in the form of balance equations on carefully defined systems, and incorporating simple physical models. Emphasis is on setting up analysis problems arising in engineering. Topics: simple analytical solutions, numerical solutions of linear algebraic equations, and laboratory experiences. Provides the foundation and tools for subsequent engineering courses. Prerequisite: AP Physics and AP Calculus or equivalent.

ENGR 14. Intro to Solid Mechanics. 3 Units.
Introduction to engineering analysis using the principles of engineering solid mechanics. Builds on the math and physical reasoning concepts in Physics 41 to develop skills in evaluation of engineered systems across a variety of fields. Foundational ideas for more advanced solid mechanics courses such as ME80 or CEE101A. Interactive lecture sessions focused on mathematical application of key concepts, with weekly complementary lab session on testing and designing systems that embody these concepts. Limited enrollment, subject to instructor approval. Pre-requisite: Physics 41. When signing up for this course make sure to sign up both for the lecture and for a Discussion Section.

ENGR 15. Dynamics. 3 Units.
The application of Newton's Laws to solve 2-D and 3-D static and dynamic problems, particle and rigid body dynamics, freebody diagrams, and equations of motion, with application to mechanical, biomechanical, and aerospace systems. Computer numerical solution and dynamic response. Prerequisites: Calculus (differentiation and integration) such as Math 19, 20; and ENGR 14 (statics and strength) or a mechanics course in physics such as PHYSICS 41.

ENGR 20. Introduction to Chemical Engineering. 4 Units.
Overview of chemical engineering through discussion and engineering analysis of physical and chemical processes. Topics: overall staged separations, material and energy balances, concepts of rate processes, energy and mass transport, and kinetics of chemical reactions. Applications of these concepts to areas of current technological importance: biotechnology, energy, production of chemicals, materials processing, and purification. Prerequisite: CHEM 31.
Same as: CHEMENG 20

ENGR 21. Engineering of Systems. 3 Units.
A high-level look at techniques for analyzing and designing complex, multidisciplinary engineering systems, such as aircraft, spacecraft, automobiles, power plants, cellphones, robots, biomedical devices, and many others. The need for multi-level design, modeling and simulation approaches, computation-based design, and hardware and software-in-the-loop simulations will be demonstrated through a variety of examples and case studies. Several aspects of system engineering will be applied to the design of large-scale interacting systems and contrasted with subsystems such as hydraulic systems, electrical systems, and brake systems. The use of design-thinking, story-boarding, mockups, sensitivity analysis, simulation, team-based design, and the development of presentation skills will be fostered through several realistic examples in several fields of engineering.

ENGR 40A. Introductory Electronics. 3 Units.
Instruction will be completed in the first seven weeks of the quarter. Students not majoring in Electrical Engineering may choose to take only ENGR 40A; Electrical Engineering majors should take both ENGR 40A and ENGR 40B. Overview of electronic circuits and applications. Electrical quantities and their measurement, including operation of the oscilloscope. Basic models of electronic components including resistors, capacitors, inductors, and operational amplifiers. Lab. Lab assignments. Enrollment limited to 300.

ENGR 40B. Introductory Electronics Part II. 2 Units.
Instruction will be completed in the final three weeks of the quarter. Students should not enroll in ENGR 40B without having taken (or enrolling concurrently in) ENGR 40A. Project on digital hardware and software implementations of a robotic car. Lab. Lab assignments. Pre- or co-requisite: ENGR 40A. Enrollment limited to 300.

ENGR 40M. An Intro to Making: What is EE. 5 Units.
Is a hands-on class where students learn to make stuff. Through the process of building, you are introduced to the basic areas of EE. Students build a "useless box" and learn about circuits, feedback, and programming hardware, a light display for your desk and bike and learn about coding, transforms, and LEDs, a solar charger and an EKG machine and learn about power, noise, feedback, more circuits, and safety. And you get to keep the toys you build. Prerequisite: CS 106A.

ENGR 42. Introduction to Electromagnetics and Its Applications. 5 Units.
Electricity and magnetism and its essential role in modern electrical engineering devices and systems, such as sensors, displays, DVD players, and optical communication systems. The topics that will be covered include electrostatics, magnetostatics, Maxwell's equations, one-dimensional wave equation, electromagnetic waves, transmission lines, and one-dimensional resonators. Pre-requisites: none.
Same as: EE 42

ENGR 50. Introduction to Materials Science, Nanotechnology Emphasis. 4 Units.
The structure, bonding, and atomic arrangements in materials leading to their properties and applications. Topics include electronic and mechanical behavior, emphasizing nanotechnology, solid state devices, and advanced structural and composite materials.

ENGR 50E. Introduction to Materials Science, Energy Emphasis. 4 Units.
Materials structure, bonding and atomic arrangements leading to their properties and applications. Topics include electronic, thermal and mechanical behavior; emphasizing energy related materials and challenges.

ENGR 50M. Introduction to Materials Science, Biomaterials Emphasis. 4 Units.
Topics include: the relationship between atomic structure and macroscopic properties of man-made and natural materials; mechanical and thermodynamic behavior of surgical implants including alloys, ceramics, and polymers; and materials selection for biotechnology applications such as contact lenses, artificial joints, and cardiovascular stents. No prerequisite.

ENGR 60. Engineering Economics and Sustainability. 3 Units.
Engineering Economics is a subset of the field of economics that draws upon the logic of economics, but adds that analytical power of mathematics and statistics. The concepts developed in this course are broadly applicable to many professional and personal decisions, including making purchasing decisions, deciding between project alternatives, evaluating different processes, and balancing environmental and social costs against economic costs. The concepts taught in this course will be increasingly valuable as students climb the carrier ladder in private industry, a non-governmental organization, a public agency, or in founding their own startup. Eventually, the ability to make informed decisions that are based in fundamental analysis of alternatives is a part of every career. As such, this course is recommended for engineering and non-engineering students alike. This course is taught exclusively online in every quarter it is offered. (Prerequisites: MATH 19 or 20 or approved equivalent.).
Same as: CEE 146S

ENGR 62. Introduction to Optimization. 3-4 Units.
Formulation and computational analysis of linear, quadratic, and other convex optimization problems. Applications in machine learning, operations, marketing, finance, and economics. Prerequisite: CME 100 or MATH 51.
Same as: MS&E 111, MS&E 211

ENGR 62X. Introduction to Optimization (Accelerated). 3-4 Units.
Optimization theory and modeling. The role of prices, duality, optimality conditions, and algorithms in finding and recognizing solutions. Perspectives: problem formulation, analytical theory, computational methods, and recent applications in engineering, finance, and economics. Theories: finite dimensional derivatives, convexity, optimality, duality, and sensitivity. Methods: simplex and interior-point, gradient, Newton, and barrier. Prerequisite: CME 100 or MATH 51 or equivalent.
Same as: MS&E 111X, MS&E 211X

ENGR 80. Introduction to Bioengineering (Engineering Living Matter). 4 Units.
Students completing BIOE.80 should have a working understanding for how to approach the systematic engineering of living systems to benefit all people and the planet. Our main goals are (1) to help students learn ways of thinking about engineering living matter and (2) to empower students to explore the broader ramifications of engineering life. Specific concepts and skills covered include but are not limited to: capacities of natural life on Earth; scope of the existing human-directed bioeconomy; deconstructing complicated problems; reaction & diffusion systems; microbial human anatomy; conceptualizing the engineering of biology; how atoms can be organized to make molecules; how to print DNA from scratch; programming genetic sensors, logic, & actuators; biology beyond molecules (photons, electrons, etc.); what constraints limit what life can do?; what will be the major health challenges in 2030?; how does what we want shape bioengineering?; who should choose and realize various competing bioengineering futures?.
Same as: BIOE 80

ENGR 90. Environmental Science and Technology. 3 Units.
Introduction to environmental quality and the technical background necessary for understanding environmental issues, controlling environmental degradation, and preserving air and water quality. Material balance concepts for tracking substances in the environmental and engineering systems.
Same as: CEE 70

ENGR 100. Teaching Public Speaking. 3 Units.
The theory and practice of teaching public speaking and presentation development. Lectures/discussions on developing an instructional plan, using audiovisual equipment for instruction, devising tutoring techniques, and teaching delivery, organization, audience analysis, visual aids, and unique speaking situations. Weekly practice speaking. Students serve as apprentice speech tutors. Those completing course may become paid speech instructors in the Technical Communications Program. Prerequisite: consent of instructor.

ENGR 102W. Technical and Professional Communication. 3 Units.
Effective communication skills will help you advance quickly. Learn the best technical and professional techniques in writing and speaking. Group workshops and individual conferences with instructors. Designed for undergraduates going into industry. Allowed to fulfill WIM for Atmosphere/Energy and Environmental Systems Engineering majors only.
Same as: CEE 102W

ENGR 103. Public Speaking. 3 Units.
Priority to Engineering students. Introduction to speaking activities, from impromptu talks to carefully rehearsed formal professional presentations. How to organize and write speeches, analyze audiences, create and use visual aids, combat nervousness, and deliver informative and persuasive speeches effectively. Weekly class practice, rehearsals in one-on-one tutorials, videotaped feedback. Limited enrollment.
Same as: ENGR 203

ENGR 105. Feedback Control Design. 3 Units.
Design of linear feedback control systems for command-following error, stability, and dynamic response specifications. Root-locus and frequency response design techniques. Examples from a variety of fields. Some use of computer aided design with MATLAB. Prerequisites: Dynamics systems (EE 102B or ME 161), and ordinary differential equations (CME 102 or Math 53). This course will include synchronous teaching sessions, but will be recorded to allow asynchronous participation.

ENGR 108. Introduction to Matrix Methods. 3-5 Units.
Formerly EE 103/CME 103. Introduction to applied linear algebra with emphasis on applications. Vectors, norm, and angle; linear independence and orthonormal sets; applications to document analysis. Clustering and the k-means algorithm. Matrices, left and right inverses, QR factorization. Least-squares and model fitting, regularization and cross-validation. Constrained and nonlinear least-squares. Applications include time-series prediction, tomography, optimal control, and portfolio optimization. Undergraduate students should enroll for 5 units, and graduate students should enroll for 3 units. Prerequisites:MATH 51 or CME 100, and basic knowledge of computing (CS 106A is more than enough, and can be taken concurrently). ENGR 108 and Math 104 cover complementary topics in applied linear algebra. The focus of ENGR 108 is on a few linear algebra concepts, and many applications; the focus of Math 104 is on algorithms and concepts.

ENGR 110. Perspectives in Assistive Technology (ENGR 110). 1-2 Unit.
Online seminar and student project course that explores the personal, medical, social, ethical, and technical challenges surrounding the design, development, and use of technologies that improve the lives of people with disabilities and older adults. Guest lecturers include engineers, clinicians, researchers, and individuals with disabilities. Students from any discipline are welcome to enroll. Two credit units for students who pursue an individual assistive technology project (letter grade or S/NC) with a community partner. One credit unit for seminar attendance only (S/NC). See course website http://engr110.stanford.edu for more information. Designated a Cardinal Course by the Haas Center for Public Service.
Same as: ENGR 210

ENGR 113A. Solar Decathlon 2015. 3 Units.
Open to all majors. Seminar / Lab format course facilitates the student-led administration, conception, development, and execution of the Solar Decathlon 2015 competition entry sponsored by the US Department of Energy. (http://www.solardecathlon.gov/) Students shall learn best practices in creating design teams to address multi-disciplinary design problems. Students shall work both as individuals and in teams across multiple Stanford SD2015 phases of project management, research, fundraising, design, engineering, contracting, construction administration, and competitive testing in Irvine CA.
Same as: ENGR 213A

ENGR 113B. Solar Decathlon 2015. 3 Units.
Open to all majors. Seminar / Lab format course facilitates the student-led administration, conception, development, and execution of the Solar Decathlon 2015 competition entry sponsored by the US Department of Energy. (http://www.solardecathlon.gov/) Students shall learn best practices in creating design teams to address multi-disciplinary design problems. Students shall work both as individuals and in teams across multiple Stanford SD2015 phases of project management, research, fundraising, design, engineering, contracting, construction administration, and competitive testing in Irvine CA.
Same as: ENGR 213B

ENGR 113C. Solar Decathlon 2015. 3 Units.
Open to all majors. Seminar / Lab format course facilitates the student-led administration, conception, development, and execution of the Solar Decathlon 2015 competition entry sponsored by the US Department of Energy. (http://www.solardecathlon.gov/) Students shall learn best practices in creating design teams to address multi-disciplinary design problems. Students shall work both as individuals and in teams across multiple Stanford SD2015 phases of project management, research, fundraising, design, engineering, contracting, construction administration, and competitive testing in Irvine CA.
Same as: ENGR 213C

ENGR 113D. SOLAR DECATHLON 2015. 3 Units.
Open to all majors. Seminar / Lab format course facilitates the student-led administration, conception, development, and execution of the Solar Decathlon 2015 competition entry sponsored by the US Department of Energy. (http://www.solardecathlon.gov/) Students shall learn best practices in creating design teams to address multi-disciplinary design problems. Students shall work both as individuals and in teams across multiple Stanford SD2015 phases of project management, research, fundraising, design, engineering, contracting, construction administration, and competitive testing in Irvine CA.
Same as: ENGR 213D

ENGR 115. Design the Tech Challenge. 2 Units.
Students work with Tech Museum of San Jose staff to design the Tech Challenge, a yearly engineering competition for 6-12th grade students. Brainstorming, field trips to the museum, prototyping, coaching, and presentations to the Tech Challenge advisory board. See at http://techchallenge.thetech.org. May be repeated for credit.
Same as: ENGR 215

ENGR 117. Expanding Engineering Limits: Culture, Diversity, and Equity. 3 Units.
This course investigates how culture and diversity shape who becomes an engineer, what problems get solved, and the quality of designs, technology, and products. As a course community, we consider how cultural beliefs about race, ethnicity, gender, sexuality, abilities, socioeconomic status, and other intersectional aspects of identity interact with beliefs about engineering, influence diversity in the field, and affect equity in engineering education and practice. We also explore how engineering cultures and environments respond to and change with individual and institutional agency. The course involves weekly presentations by scholars and engineers, readings, short writing assignments, small-group discussion, and hands-on, student-driven projects. Students can enroll in the course for 1 unit (lectures only), or 3 units (lectures+discussion+project). For 1 unit, students should sign up for Section 1 and Credit/No Credit grading, and for 3 units students should sign up for Section 2 and either the C/NC or Grade option.
Same as: CSRE 117, CSRE 217, ENGR 217, FEMGEN 117, FEMGEN 217

ENGR 119. Community Engagement Preparation Seminar. 1 Unit.
This seminar is designed for engineering students who have already committed to an experiential learning program working directly with a community partner on a project of mutual benefit. This seminar is targeted at students participating in the Summer Service Learning Program offered through Stanford¿s Global Engineering Program.
Same as: ENGR 219

ENGR 120. Fundamentals of Petroleum Engineering. 3 Units.
Lectures, problems, field trip. Engineering topics in petroleum recovery; origin, discovery, and development of oil and gas. Chemical, physical, and thermodynamic properties of oil and natural gas. Material balance equations and reserve estimates using volumetric calculations. Gas laws. Single phase and multiphase flow through porous media.
Same as: ENERGY 120

ENGR 140A. Leadership of Technology Ventures. 3-4 Units.
First of three-part sequence for students selected to the Mayfield Fellows Program. Management and leadership within high technology startups, focusing on entrepreneurial skills related to product and market strategy, venture financing and cash flow management, team recruiting and organizational development, and the challenges of managing growth and handling adversity in emerging ventures. Other engineering faculty, founders, and venture capitalists participate as appropriate. Recommended: accounting or finance course (MS&E 140, ECON 90, or ENGR 60).

ENGR 140B. Leadership of Technology Ventures. 1-2 Unit.
Open to Mayfield Fellows only; taken during the summer internship at a technology startup. Students exchange experiences and continue the formal learning process. Activities journal. Credit given following quarter.

ENGR 140C. Leadership of Technology Ventures. 2-3 Units.
Open to Mayfield Fellows only. Capstone to the 140 sequence. Students, faculty, employers, and venture capitalists share recent internship experiences and analytical frameworks. Students develop living case studies and integrative project reports.

ENGR 145. Technology Entrepreneurship. 4 Units.
How does the entrepreneurship process enable the creation and growth of high-impact enterprises? Why does entrepreneurial leadership matter even in a large organization or a non-profit venture? What are the differences between just an idea and true opportunity? How do entrepreneurs form teams and gather the resources necessary to create a successful startup? Mentor-guided projects focus on analyzing students' ideas, case studies allow for examining the nuances of innovation, research examines the entrepreneurial process, and expert guests allow for networking with Silicon Valley's world-class entrepreneurs and venture capitalists. For undergraduates of all majors with interest in startups the leverage breakthrough information, energy, medical and consumer technologies. No prerequisites. Limited enrollment.
Same as: ENGR 145S

ENGR 145S. Technology Entrepreneurship. 4 Units.
How does the entrepreneurship process enable the creation and growth of high-impact enterprises? Why does entrepreneurial leadership matter even in a large organization or a non-profit venture? What are the differences between just an idea and true opportunity? How do entrepreneurs form teams and gather the resources necessary to create a successful startup? Mentor-guided projects focus on analyzing students' ideas, case studies allow for examining the nuances of innovation, research examines the entrepreneurial process, and expert guests allow for networking with Silicon Valley's world-class entrepreneurs and venture capitalists. For undergraduates of all majors with interest in startups the leverage breakthrough information, energy, medical and consumer technologies. No prerequisites. Limited enrollment.
Same as: ENGR 145

ENGR 148. Principled Entrepreneurial Decisions. 3 Units.
Examines how leaders tackle significant events that occur in high-growth entrepreneurial companies. Students prepare their minds for the difficult entrepreneurial situations that they will encounter in their lives in whatever their chosen career. Cases and guest speakers discuss not only the business rationale for the decisions taken but also how their principles affected those decisions. The teaching team brings its wealth of experience in both entrepreneurship and VC investing to the class. Previous entrepreneurship coursework or experience preferred. Limited enrollment. Admission by application: http://web.stanford.edu/class/engr248/apply.
Same as: ENGR 248

ENGR 150. Data Challenge Lab. 3-5 Units.
In this lab, students develop the practical skills of data science by solving a series of increasingly difficult, real problems. Skills developed include: data manipulation, data visualization, exploratory data analysis, and basic modeling. The data challenges each student undertakes are based upon their current skills. Students receive one-on-one coaching and see how expert practitioners solve the same challenges. Limited enrollment; application required. See http://datalab.stanford.edu for more information.
Same as: COMM 173E

ENGR 154. Vector Calculus for Engineers. 5 Units.
Computation and visualization using MATLAB. Differential vector calculus: vector-valued functions, analytic geometry in space, functions of several variables, partial derivatives, gradient, linearization, unconstrained maxima and minima, Lagrange multipliers and applications to trajectory simulation, least squares, and numerical optimization. Introduction to linear algebra: matrix operations, systems of algebraic equations with applications to coordinate transformations and equilibrium problems. Integral vector calculus: multiple integrals in Cartesian, cylindrical, and spherical coordinates, line integrals, scalar potential, surface integrals, Green's, divergence, and Stokes' theorems. Numerous examples and applications drawn from classical mechanics, fluid dynamics and electromagnetism. Prerequisites: knowledge of single-variable calculus equivalent to the content of Math 19-21 (e.g., 5 on Calc BC, 4 on Calc BC with Math 21, 5 on Calc AB with Math 21). Placement diagnostic (recommendation non-binding) at: https://exploredegrees.stanford.edu/undergraduatedegreesandprograms/#aptext.
Same as: CME 100

ENGR 155A. Ordinary Differential Equations for Engineers. 5 Units.
Analytical and numerical methods for solving ordinary differential equations arising in engineering applications are presented. For analytical methods students learn to solve linear and non-linear first order ODEs; linear second order ODEs; and Laplace transforms. Numerical methods using MATLAB programming tool kit are also introduced to solve various types of ODEs including: first and second order ODEs, higher order ODEs, systems of ODEs, initial and boundary value problems, finite differences, and multi-step methods. This also includes accuracy and linear stability analyses of various numerical algorithms which are essential tools for the modern engineer. This class is foundational for professional careers in engineering and as a preparation for more advanced classes at the undergraduate and graduate levels. Prerequisites: knowledge of single-variable calculus equivalent to the content of Math 19-21 (e.g., 5 on Calc BC, 4 on Calc BC with Math 21, 5 on Calc AB with Math 21). Placement diagnostic (recommendation non-binding) at: https://exploredegrees.stanford.edu/undergraduatedegreesandprograms/#aptext.
Same as: CME 102

ENGR 155B. Linear Algebra and Partial Differential Equations for Engineers. 5 Units.
Linear algebra: systems of algebraic equations, Gaussian elimination, undetermined and overdetermined systems, coupled systems of ordinary differential equations, LU factorization, eigensystem analysis, normal modes. Linear independence, vector spaces, subspaces and basis. Numerical analysis applied to structural equilibrium problems, electrical networks, and dynamic systems. Fourier series with applications, partial differential equations arising in science and engineering, analytical solutions of partial differential equations. Applications in heat and mass transport, mechanical vibration and acoustic waves, transmission lines, and fluid mechanics. Numerical methods for solution of partial differential equations: iterative techniques, stability and convergence, time advancement, implicit methods, von Neumann stability analysis. Examples and applications drawn from a variety of engineering fields. Prerequisite: CME102/ENGR155A.
Same as: CME 104

ENGR 155C. Introduction to Probability and Statistics for Engineers. 4 Units.
Probability: random variables, independence, and conditional probability; discrete and continuous distributions, moments, distributions of several random variables. Numerical simulation using Monte Carlo techniques. Topics in mathematical statistics: random sampling, point estimation, confidence intervals, hypothesis testing, non-parametric tests, regression and correlation analyses. Numerous applications in engineering, manufacturing, reliability and quality assurance, medicine, biology, and other fields. Prerequisite: CME100/ENGR154 or Math 51 or 52.
Same as: CME 106

ENGR 159Q. Japanese Companies and Japanese Society. 3 Units.
Preference to sophomores. The structure of a Japanese company from the point of view of Japanese society. Visiting researchers from Japanese companies give presentations on their research enterprise. The Japanese research ethic. The home campus equivalent of a Kyoto SCTI course.
Same as: MATSCI 159Q

ENGR 177A. Engineering and Sustainable Development: Toolkit. 1-3 Unit.
The first of a two-quarter, project-based course sequence that address cultural, sociopolitical, organizational, technical, and ethical issues at the heart of implementing sustainable engineering projects in a developing world. Students work in interdisciplinary project teams to tackle real-world design challenges in partnership with social entrepreneurs, local communities, and/or NGOs. While students must have the skills and aptitude necessary to make meaningful contributions to technical product designs, the course is open to all backgrounds and majors. The first quarter focuses on cultural awareness, ethical implications, user requirements, conceptual design, feasibility analysis, and implementation planning. Admission is by application. Students should plan to enroll in CEE 177S/277S (ENGR 177B/277B) Engineering & Sustainable Development: Implementation following successful completion of this course. Designated a Cardinal Course by the Haas Center for Public Service. To satisfy a Ways requirement, students must register for an undergraduate course number (CEE 177S or ENGR 177A) and this course must be taken for at least 3 units. In AY 2020-21, a letter grade or `CR' grade satisfies the Ways requirement.
Same as: CEE 177X, CEE 277X, ENGR 277A

ENGR 177B. Engineering and Sustainable Development. 1-3 Unit.
The second of a two-quarter, project-based course sequence that address cultural, political, organizational, technical and business issues at the heart of implementing sustainable engineering projects in the developing world. Students work in interdisciplinary project teams to tackle real-world design challenges in partnership with social entrepreneurs and/or NGOs. This quarter focuses on implementation, evaluation, and deployment of the designs developed in the winter quarter. Designated a Cardinal Course by the Haas Center for Public Service.
Same as: CEE 177S, CEE 277S, ENGR 277B

ENGR 192. Engineering Public Service Project. 1-2 Unit.
Volunteer work on a public service project with a technical engineering component. Project requires a faculty sponsor and a community partner such as a nonprofit organization, school, or individual. Required report. See http://soe.stanford.edu/publicservice. May be repeated for credit. Prerequisite: consent of instructor.

ENGR 193. Discover Engineering: How to Aim High, Embrace Uncertainty, and Achieve Impact. 1 Unit.
This weekly seminar will provide students of all engineering majors with practical leadership skills training (e.g. how to network, advocate for yourself, assert influence) in order to make innovative and meaningful contributions in their fields. Career exploration and mentorship opportunities will be delivered through an inspiring line up of guest speakers and interactive activities, demonstrations and tours. May be repeat for credit.

ENGR 199. Special Studies in Engineering. 1-15 Unit.
Special studies, lab work, or reading under the direction of a faculty member. Often research experience opportunities exist in ongoing research projects. Students make arrangements with individual faculty and enroll in the section number corresponding to the particular faculty member. May be repeated for credit. Prerequisite: consent of instructor.

ENGR 199A. Additional Calculus for Engineers. 1 Unit.
Additional problem solving practice for the calculus courses. Sections are designed to allow students to acquire a deeper understanding of calculus and its applications, work collaboratively, and develop a mastery of the material. Limited enrollment, permission of instructor required. Concurrent enrollment in MATH 19, 20, 52, or 53 required.

ENGR 199W. Writing of Original Research for Engineers. 1-3 Unit.
Technical writing in science and engineering. Students produce a substantial document describing their research, methods, and results. Prerequisite: completion of freshman writing requirements; prior or concurrent in 2 units of research in the major department; and consent of instructor. WIM for select School of Engineering majors with permission from advisor.

ENGR 202C. Technical Communication for CEE SDC Students. 3 Units.
Students learn how to write and present technical information clearly, with a focus on how to draft and revise reader-centered professional documents. The course includes elements of effective oral communication and presentation.This offering for CEE SDC students only.

ENGR 202S. Directed Writing Projects. 1 Unit.
Individualized writing instruction for students working on writing projects such as dissertations, proposals, grant applications, theses, journal articles, conference papers, and teaching and research statements. Weekly one-on-one conferences with writing instructors from the Technical Communication Program. Students receive close attention to and detailed feedback on their writing. TCP Director assigns each student to an instructor. No prerequisite. Grading: Satisfactory/No Credit. This course may be repeated for credit.

ENGR 202W. Technical Communication. 3 Units.
This course focuses on how to write clear, concise, and organized technical writing. Through interactive presentations, group workshops, and individual conferences, students learn best practices for communicating to academic and professional audiences for a range of purposes.

ENGR 203. Public Speaking. 3 Units.
Priority to Engineering students. Introduction to speaking activities, from impromptu talks to carefully rehearsed formal professional presentations. How to organize and write speeches, analyze audiences, create and use visual aids, combat nervousness, and deliver informative and persuasive speeches effectively. Weekly class practice, rehearsals in one-on-one tutorials, videotaped feedback. Limited enrollment.
Same as: ENGR 103

ENGR 205. Introduction to Control Design Techniques. 3 Units.
Review of root-locus and frequency response techniques for control system analysis and synthesis. State-space techniques for modeling, full-state feedback regulator design, pole placement, and observer design. Combined observer and regulator design. Lab experiments on computers connected to mechanical systems. Prerequisites: 105, MATH 103, 113. Recommended: Matlab.

ENGR 207A. Linear Control Systems I. 3 Units.
Introduction to control of discrete-time linear systems. State-space models. Controllability and observability. The linear quadratic regulator. Prerequisite: 105 or 205.

ENGR 207B. Linear Control Systems II. 3 Units.
Probabilistic methods for control and estimation. Statistical inference for discrete and continuous random variables. Linear estimation with Gaussian noise. The Kalman filter. Prerequisite: EE 263.

ENGR 209A. Analysis and Control of Nonlinear Systems. 3 Units.
Introduction to nonlinear phenomena: multiple equilibria, limit cycles, bifurcations, complex dynamical behavior. Planar dynamical systems, analysis using phase plane techniques. Describing functions. Lyapunov stability theory. SISO feedback linearization, sliding mode control. Design examples. Prerequisite: 205.

ENGR 210. Perspectives in Assistive Technology (ENGR 110). 1-2 Unit.
Online seminar and student project course that explores the personal, medical, social, ethical, and technical challenges surrounding the design, development, and use of technologies that improve the lives of people with disabilities and older adults. Guest lecturers include engineers, clinicians, researchers, and individuals with disabilities. Students from any discipline are welcome to enroll. Two credit units for students who pursue an individual assistive technology project (letter grade or S/NC) with a community partner. One credit unit for seminar attendance only (S/NC). See course website http://engr110.stanford.edu for more information. Designated a Cardinal Course by the Haas Center for Public Service.
Same as: ENGR 110

ENGR 213. Solar Decathlon. 1-4 Unit.
Open to all engineering majors. Project studio for all work related to the Solar Decathlon 2013 competition. Each student will develop a personal work plan for the quarter with his or her advisor and perform multidisciplinary collaboration on designing systems for the home or pre-construction planning. Work may continue through the summer as a paid internship, as well as through the next academic year. For more information about the team and the competition, please visit solardecathlon.stanford.edu.

ENGR 213A. Solar Decathlon 2015. 3 Units.
Open to all majors. Seminar / Lab format course facilitates the student-led administration, conception, development, and execution of the Solar Decathlon 2015 competition entry sponsored by the US Department of Energy. (http://www.solardecathlon.gov/) Students shall learn best practices in creating design teams to address multi-disciplinary design problems. Students shall work both as individuals and in teams across multiple Stanford SD2015 phases of project management, research, fundraising, design, engineering, contracting, construction administration, and competitive testing in Irvine CA.
Same as: ENGR 113A

ENGR 213B. Solar Decathlon 2015. 3 Units.
Open to all majors. Seminar / Lab format course facilitates the student-led administration, conception, development, and execution of the Solar Decathlon 2015 competition entry sponsored by the US Department of Energy. (http://www.solardecathlon.gov/) Students shall learn best practices in creating design teams to address multi-disciplinary design problems. Students shall work both as individuals and in teams across multiple Stanford SD2015 phases of project management, research, fundraising, design, engineering, contracting, construction administration, and competitive testing in Irvine CA.
Same as: ENGR 113B

ENGR 213C. Solar Decathlon 2015. 3 Units.
Open to all majors. Seminar / Lab format course facilitates the student-led administration, conception, development, and execution of the Solar Decathlon 2015 competition entry sponsored by the US Department of Energy. (http://www.solardecathlon.gov/) Students shall learn best practices in creating design teams to address multi-disciplinary design problems. Students shall work both as individuals and in teams across multiple Stanford SD2015 phases of project management, research, fundraising, design, engineering, contracting, construction administration, and competitive testing in Irvine CA.
Same as: ENGR 113C

ENGR 213D. SOLAR DECATHLON 2015. 3 Units.
Open to all majors. Seminar / Lab format course facilitates the student-led administration, conception, development, and execution of the Solar Decathlon 2015 competition entry sponsored by the US Department of Energy. (http://www.solardecathlon.gov/) Students shall learn best practices in creating design teams to address multi-disciplinary design problems. Students shall work both as individuals and in teams across multiple Stanford SD2015 phases of project management, research, fundraising, design, engineering, contracting, construction administration, and competitive testing in Irvine CA.
Same as: ENGR 113D

ENGR 215. Design the Tech Challenge. 2 Units.
Students work with Tech Museum of San Jose staff to design the Tech Challenge, a yearly engineering competition for 6-12th grade students. Brainstorming, field trips to the museum, prototyping, coaching, and presentations to the Tech Challenge advisory board. See at http://techchallenge.thetech.org. May be repeated for credit.
Same as: ENGR 115

ENGR 217. Expanding Engineering Limits: Culture, Diversity, and Equity. 3 Units.
This course investigates how culture and diversity shape who becomes an engineer, what problems get solved, and the quality of designs, technology, and products. As a course community, we consider how cultural beliefs about race, ethnicity, gender, sexuality, abilities, socioeconomic status, and other intersectional aspects of identity interact with beliefs about engineering, influence diversity in the field, and affect equity in engineering education and practice. We also explore how engineering cultures and environments respond to and change with individual and institutional agency. The course involves weekly presentations by scholars and engineers, readings, short writing assignments, small-group discussion, and hands-on, student-driven projects. Students can enroll in the course for 1 unit (lectures only), or 3 units (lectures+discussion+project). For 1 unit, students should sign up for Section 1 and Credit/No Credit grading, and for 3 units students should sign up for Section 2 and either the C/NC or Grade option.
Same as: CSRE 117, CSRE 217, ENGR 117, FEMGEN 117, FEMGEN 217

ENGR 219. Community Engagement Preparation Seminar. 1 Unit.
This seminar is designed for engineering students who have already committed to an experiential learning program working directly with a community partner on a project of mutual benefit. This seminar is targeted at students participating in the Summer Service Learning Program offered through Stanford¿s Global Engineering Program.
Same as: ENGR 119

ENGR 231. Transformative Design. 3 Units.
Too many alums are doing what they've always been told they're good at, and are living with regret and a sense that they're just resigned to doing this thing for the rest of their lives. Capabilities displaced their values as the primary decision driver in their lives. Our ultimate goal is to restore a sense of agency and passion into the lives of current Stanford students by creating the space to explore and experiment with the greatest design project possible: YOUR LIFE. We will turn d.school tools and mindsets onto the topic of our lives -- not in theory, but in reality -- and will prototype changes to make your life and career more fulfilling and rewarding. We will actively empathize and experiment in your life and work, so if you don't want to do that kind of self-examination, this class will not be a good fit for you.

ENGR 240. Introduction to Micro and Nano Electromechanical Systems. 3 Units.
Miniaturization technologies now have important roles in materials, mechanical, and biomedical engineering practice, in addition to being the foundation for information technology. This course will target an audience of first-year engineering graduate students and motivated senior-level undergraduates, with the goal of providing an introduction to M/NEMS fabrication techniques, selected device applications, and the design tradeoffs in developing systems. The course has no specific prerequisites, other than graduate or senior standing in engineering; otherwise, students will require permission of the instructors.

ENGR 241. Advanced Micro and Nano Fabrication Laboratory. 3 Units.
This project course focuses on developing processes for ExFab, a shared facility that supports flexible lithography, heterogeneous integration, and rapid micro prototyping. Team projects are approved by the instructor and are mentored by an ExFab staff member. Students will plan and execute experiments and document them in a final presentation and report, to be made available on the lab's Wiki for the benefit of the Stanford research community. This year's offering of ENGR241 will span two quarters: students interested in taking this course must sign up for both fall and winter courses, and will be researching a single project over that time. Students must consult with Prof. Fan or the SNF staff before signing up. For Autumn 18-19, the course will meet from 4:00pm-5:50pm in Allen 101X (note the start time).

ENGR 243. LAW, TECHNOLOGY, AND LIBERTY. 2 Units.
New technologies from gene editing to networked computing have already transformed our economic and social structures and are increasingly changing what it means to be human. What role has law played in regulating and shaping these technologies? And what role can and should it play in the future? This seminar will consider these and related questions, focusing on new forms of networked production, the new landscape of security and scarcity, and the meaning of human nature and ecology in an era of rapid technological change. Readings will be drawn from a range of disciplines, including science and engineering, political economy, and law. The course will feature several guest speakers. There are no formal prerequisites in either engineering or law, but students should be committed to pursuing novel questions in an interdisciplinary context. The enrollment goal is to balance the class composition between law and non-law students. Elements used in grading: Attendance, Class Participation, Written Assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. This course is cross-listed with the School of Engineering (TBA). May be repeat for credit.
Same as: BIOE 242

ENGR 245. The Lean LaunchPad: Getting Your Lean Startup Off the Ground. 3-4 Units.
Learn how to turn a technical idea from a lab, research, or vision into a successful business using the Lean Launchpad process (business model canvas, customer development, running experiments, and agile engineering.) Hands-on experiential class. 15+ hours per week talking to customers, regulators and partners outside the classroom, plus time building minimal viable products. This class is the basis of the National Science Foundation I-Corps ¿ with a focus on understanding all the components to build for deep technology and life science applications. Team applications required in March. Proposals may be software, hardware, or service of any kind. See course website http://leanlaunchpad.stanford.edu/. Prerequisite: interest in and passion for exploring whether your technology idea can become a real company. Limited enrollment.

ENGR 248. Principled Entrepreneurial Decisions. 3 Units.
Examines how leaders tackle significant events that occur in high-growth entrepreneurial companies. Students prepare their minds for the difficult entrepreneurial situations that they will encounter in their lives in whatever their chosen career. Cases and guest speakers discuss not only the business rationale for the decisions taken but also how their principles affected those decisions. The teaching team brings its wealth of experience in both entrepreneurship and VC investing to the class. Previous entrepreneurship coursework or experience preferred. Limited enrollment. Admission by application: http://web.stanford.edu/class/engr248/apply.
Same as: ENGR 148

ENGR 250. Data Challenge Lab. 1-6 Unit.
In this lab, students develop the practical skills of data science by solving a series of increasingly difficult, real problems. Skills developed include: data manipulation, exploratory data analysis, data visualization, and predictive modeling. The data challenges each student undertakes are based upon their current skills. Students receive one-on-one coaching and see how expert practitioners solve the same challenges. Prerequisite: ENGR150. Limited enrollment; application required. May be repeated for credit. See http://datalab.stanford.edu for more information.

ENGR 277A. Engineering and Sustainable Development: Toolkit. 1-3 Unit.
The first of a two-quarter, project-based course sequence that address cultural, sociopolitical, organizational, technical, and ethical issues at the heart of implementing sustainable engineering projects in a developing world. Students work in interdisciplinary project teams to tackle real-world design challenges in partnership with social entrepreneurs, local communities, and/or NGOs. While students must have the skills and aptitude necessary to make meaningful contributions to technical product designs, the course is open to all backgrounds and majors. The first quarter focuses on cultural awareness, ethical implications, user requirements, conceptual design, feasibility analysis, and implementation planning. Admission is by application. Students should plan to enroll in CEE 177S/277S (ENGR 177B/277B) Engineering & Sustainable Development: Implementation following successful completion of this course. Designated a Cardinal Course by the Haas Center for Public Service. To satisfy a Ways requirement, students must register for an undergraduate course number (CEE 177S or ENGR 177A) and this course must be taken for at least 3 units. In AY 2020-21, a letter grade or `CR' grade satisfies the Ways requirement.
Same as: CEE 177X, CEE 277X, ENGR 177A

ENGR 277B. Engineering and Sustainable Development. 1-3 Unit.
The second of a two-quarter, project-based course sequence that address cultural, political, organizational, technical and business issues at the heart of implementing sustainable engineering projects in the developing world. Students work in interdisciplinary project teams to tackle real-world design challenges in partnership with social entrepreneurs and/or NGOs. This quarter focuses on implementation, evaluation, and deployment of the designs developed in the winter quarter. Designated a Cardinal Course by the Haas Center for Public Service.
Same as: CEE 177S, CEE 277S, ENGR 177B

ENGR 280. From Play to Innovation. 2-4 Units.
Focus is on enhancing the innovation process with playfulness. The class will be project-based and team-centered. We will investigate the human "state of play" to reach an understanding of its principal attributes and how important it is to creative thinking. We will explore play behavior, its development, and its biological basis. We will then apply those principles through design thinking to promote innovation in the corporate world. Students will work with real-world partners on design projects with widespread application. This course requires an application. You can find the application here: dschool.stanford.edu/classes.

ENGR 281. d.media - Designing Media that Matters. 2-3 Units.
The combination of always-on smartphones, instant access to information and global social sharing is changing behavior and shifting cultural norms. How can we design digital experiences that make this change positive? Join the d.media team and find out! This course is project-based and hands-on. Three projects will explore visual design, interaction design and behavioral design all in the context of today's technology landscape and in service of a socially positive user experience. See http://dmedia.stanford.edu, Admission by application. See dschool.stanford.edu/classes for more information.

ENGR 295. Learning & Teaching of Science. 3 Units.
This course will provide students with a basic knowledge of the relevant research in cognitive psychology and science education and the ability to apply that knowledge to enhance their ability to learn and teach science, particularly at the undergraduate level. Course will involve readings, discussion, and application of the ideas through creation of learning activities. It is suitable for advanced undergraduates and graduate students with some science background.
Same as: EDUC 280, MED 270, PHYSICS 295, VPTL 280

ENGR 298. Seminar in Fluid Mechanics. 1 Unit.
Interdepartmental. Problems in all branches of fluid mechanics, with talks by visitors, faculty, and students. Graduate students may register for 1 unit, without letter grade; a letter grade is given for talks. May be repeated for credit.

ENGR 299. Special Studies in Engineering. 1-15 Unit.
Special studies, lab work, or reading under the direction of a faculty member. Often research experience opportunities exist in ongoing research projects. Students make arrangements with individual faculty and enroll in the corresponding section. Prerequisite: consent of instructor.

ENGR 311A. Women's Perspectives. 1 Unit.
Graduate seminar series, driven by student interests, with guest speakers from academia and industry. Previous themes have included Finding your North, Becoming Fearless, Daydreams to Reality, and Letters to My Younger Self. Discussion is encouraged as graduate students share experiences and learn with speakers and each other. Possible topics of discussion range from time management and career choices to diversity, health, and family. Several optional informal dinners are hosted after the seminar to continue conversation with the speakers. May be repeated for credit.

ENGR 311B. Designing the Professional. 1 Unit.
Wondering how to weave together what really fits you, is doable, and will be satisfying and meaningful? Have more questions than answers? Have too many ideas for your career, or not enough? This course applies the mindsets and innovation principles of design thinking to the "wicked problem" of designing your life and vocation. Students gain awareness and empathy, define areas of life and work on which they want to work, ideate about ways to move forward, try small prototypes, and test their assumptions. The course is highly interactive. It will conclude with creation of 3 versions of the next 5 years and prototype ideas to begin making those futures a reality. The course will include brief readings, writing, reflections, and in-class exercises. Expect to practice ideation and prototyping methodologies, decision making practices and to participate in interactive activities in pairs, trios, and small groups. Seminar open to all graduate students and Postdocs in all 7 schools.

ENGR 311D. Portfolio to Professional: Supporting the Development of Digital Presence Through ePortfolios. 1 Unit.
This course guides graduate students in creating a professional ePortfolio and establishing an online presence. The course includes seminar-style presentations and discussions, opportunities for feedback with career mentors, classmates, alumni, employers, and other community members using think-aloud protocols and peer review approaches. Curriculum modules focus on strategies for telling your story in the digital environment, platform considerations, evidence and architecture, visual design and user experience. Open to all graduate students and majors.

ENGR 312. Science and Engineering Course Design. 2-3 Units.
For students interested in an academic career and who anticipate designing science or engineering courses at the undergraduate or graduate level. Goal is to apply research on science and engineering learning to the design of effective course materials. Topics include syllabus design, course content and format decisions, assessment planning and grading, and strategies for teaching improvement.
Same as: CTL 312

ENGR 313. Topics in Engineering and Science Education. 1-2 Unit.
This seminar series focuses on topics related to teaching science, technology, engineering, and math (STEM) courses based on education research. Each year focuses on a different topic related to STEM education. This course may be repeated for credit each year. This year we will explore problem-based learning in STEM courses, particularly focusing on design and evaluation of problem-based learning activities. The course will involve in-class discussions, small group activities, and guest lectures. Throughout the quarter, there will be several opportunities for directly practicing and applying STEM education strategies to specific teaching goals in your field.

ENGR 341. Micro/Nano Systems Design and Fabrication. 3-5 Units.
Laboratory course in micro and nano fabrication technology that combines lectures on theory and fundamentals with hands-on training in the Stanford Nanofabrication Facility. Prerequisite: ENGR 240 or equivalent.

ENGR 342. MEMS Laboratory II. 3-4 Units.
Emphasis is on tools and methodologies for designing and fabricating N/MEMS-based solutions. Student interdisciplinary teams collaborate to invent, develop, and integrate N/MEMS solutions. Design alternatives fabricated and tested with emphasis on manufacturability, assembly, test, and design. Limited enrollment. Prerequisite: ENGR 341.

ENGR 350. Data Impact Lab. 1-6 Unit.
In this lab, multi-disciplinary teams of students tackle high-impact, unsolved problems for social sector partners. Teams receive mentorship and coaching from Stanford faculty, domain experts, and data science experts from industry. Sample projects include innovations for: poverty alleviation in the developing world, local government services, education, and healthcare. Limited enrollment; application required. May be repeated for credit. See http://datalab.stanford.edu for more information.

ENGR 391. Engineering Education and Online Learning. 3 Units.
A project based introduction to web-based learning design. In this course we will explore the evidence and theory behind principles of learning design and game design thinking. In addition to gaining a broad understanding of the emerging field of the science and engineering of learning, students will experiment with a variety of educational technologies, pedagogical techniques, game design principles, and assessment methods. Over the course of the quarter, interdisciplinary teams will create a prototype or a functioning piece of educational technology.
Same as: EDUC 391

ENGR 395. Summer Opportunities in Engineering Research & Leadership. 1 Unit.
Summer First provides Fellows from a range of engineering disciplines the opportunity to gain exposure to the wealth of resources on campus, and explore the research environment(s) in their own doctoral programs. This experience effectively serves as a supplementary research rotation for these graduate students, enabling them to explore research options over an additional quarter. Fellows also engage in small literature discussion groups, professional development workshops, excursions, mentoring opportunities, and social activities as a mechanism for fostering a sense of belonging and community. Fellows are incoming first year PhD students nominated by their departments. Instructor permission required.

UNDERGRADUATE MAJORS AND MINORS

Bachelor of Science in the School of Engineering

Departments within the School of Engineering offer programs leading to the Bachelor of Science degree in the following fields:

- Aeronautics and Astronautics (p. 561)
- Bioengineering (p. 566)
- Chemical Engineering (p. 571)
- Civil Engineering (p. 573)
- Computer Science (p. 576)
- Electrical Engineering (p. 583)
- Environmental Systems Engineering (p. 590)
- Management Science and Engineering (p. 593)
- Materials Science and Engineering (p. 595)
- Mechanical Engineering (p. 598)

The School of Engineering itself offers interdisciplinary programs leading to the Bachelor of Science degree in Engineering with specializations in:

- Architectural Design (p. 563)
- Atmosphere/Energy (p. 565)
- Biomechanical Engineering (p. 568)
- Biomedical Computation (p. 570)
- Engineering Physics (p. 587)
- Product Design (p. 601)

In addition, students may elect a Bachelor of Science in an Individually Designed Major in Engineering.

Bachelor of Arts and Science (B.A.S.) in the School of Engineering

This degree is available to students who complete both the requirements for a B.S. degree in engineering and the requirements for a major or program ordinarily leading to the B.A. degree. For more information, see the "Undergraduate Degrees (p. 31)" section of this bulletin.

Undergraduate Honors in the School of Engineering

The following bachelor's programs in the School of Engineering offer an honors option for qualified students:

- Aeronautics and Astronautics (p. 561)
- Architectural Design (p. 563)
- Atmosphere/Energy (p. 565)
- Bioengineering (p. 566)
- Biomechanical Engineering (p. 568)
- Biomedical Computation (p. 570)
- Civil Engineering (p. 573)
- Computer Science (p. 576)
- Electrical Engineering (p. 583)
- Engineering Physics (p. 587)
- Environmental Systems Engineering (p. 590)
- Materials Science and Engineering (p. 595)
- Mechanical Engineering (p. 598)

Additional Information

Additional information on core requirements for the B.S and B.A.S. in the School of Engineering is available on the Bachelor's tab (p. 509) of this section of this bulletin.

Minor in the School of Engineering

An undergraduate minors in some Engineering programs may be pursued by interested students; see the Handbook for Undergraduate Engineering Programs, or consult with a department's undergraduate program representative or the Office of Student Affairs, Huang Engineering Center, Suite 135.

Minors are offered in the following programs:

- Aeronautics and Astronautics (AA) Minor (p. 605)
- Chemical Engineering Minor (p. 639)
- Civil Engineering (CE) Minor (p. 661)
- Computer Science (CS) Minor (p. 715)
- Electrical Engineering (EE) Minor (p. 760)
- Environmental Systems Engineering (EnvSE) Minor (p. 661)
- Management Science and Engineering (MS&E) Minor (p. 802)
- Materials Science and Engineering (MATSCI) Minor (p. 830)
- Mechanical Engineering (ME) Minor (p. 851)

General requirements and policies for a minor in the School of Engineering are:

1. A set of courses totaling not less than 20 and not more than 36 units, with a minimum of six courses of at least 3 units each. These courses must be taken for a letter grade except where letter grades are not offered, and a minimum GPA of 2.0 within the minor course list must be maintained (departments may require a higher GPA if they choose).
2. The set of courses should be sufficiently coherent as to present a body of knowledge within a discipline or subdiscipline.
3. Prerequisite mathematics, statistics, or science courses, such as those normally used to satisfy the school's requirements for a department major, may not be used to satisfy the requirements of the minor; conversely, engineering courses that serve as prerequisites for subsequent courses must be included in the unit total of the minor program.
4. Courses used for the major and/or minor core must not be duplicated within any other of the student's degree programs; that is, students may not overlap (double-count) courses for completing core major and minor requirements.

Departmentally based minor programs are structured at the discretion of the sponsoring department, subject only to requirements 1, 2, 3, and 4 above. Interdisciplinary minor programs may be submitted to the Undergraduate Council for approval and sponsorship. A general Engineering minor is not offered.

Aeronautics and Astronautics Undergraduate Major

COVID-19-Related Degree Requirement Changes

For information on how Aeronautics and Astronautics degree requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 609)" in the "Aeronautics and Astronautics" of this

bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

See the "Department of Aeronautics and Astronautics (p. 603)" section of this bulletin for additional information on the department, and its programs and faculty.

The department offers a B.S. as well as a minor in Aeronautics and Astronautics.

Aeronautics and Astronautics (AA)

Mission of the Undergraduate Program in Aeronautics and Astronautics

The mission of the undergraduate program in Aeronautics and Astronautics Engineering is to provide students with the fundamental principles and techniques necessary for success and leadership in the conception, design, implementation, and operation of aerospace and related engineering systems. Courses in the major introduce students to engineering principles. Students learn to apply this fundamental knowledge to conduct laboratory experiments, and aerospace system design problems. Courses in the major include engineering fundamentals, mathematics, and the sciences, as well as in-depth courses in aeronautics and astronautics, dynamics, mechanics of materials, autonomous systems, computational engineering, embedded programming, fluids engineering, and heat transfer. The major prepares students for careers in aircraft and spacecraft engineering, autonomy, robotics, unmanned aerial vehicles, drones, space exploration, air and space-based telecommunication industries, computational engineering, teaching, research, military service, and other related technology-intensive fields.

Completion of the undergraduate program in Aeronautics and Astronautics leads to the conferral of the Bachelor of Science in Aeronautics and Astronautics.

Requirements

		Units
Mathematics		
24 units minimum		
MATH 19	Calculus (required) [1]	3
MATH 20	Calculus (required) [1]	3
MATH 21	Calculus (required) [1]	4
CME 100/ENGR 154	Vector Calculus for Engineers (required) [2]	5
or MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
CME 102/ENGR 155A	Ordinary Differential Equations for Engineers (required) [2]	5
or MATH 53	Ordinary Differential Equations with Linear Algebra	
CME 106/ENGR 155C	Introduction to Probability and Statistics for Engineers (required)	4-5
or STATS 110	Statistical Methods in Engineering and the Physical Sciences	
or STATS 116	Theory of Probability	
or CS 109	Introduction to Probability for Computer Scientists	
CME 104	Linear Algebra and Partial Differential Equations for Engineers (recommended) [2]	5
or MATH 52	Integral Calculus of Several Variables	
CME 108	Introduction to Scientific Computing (recommended)	3
Science		
20 units minimum		
PHYSICS 41	Mechanics (required) [3]	4
or PHYSICS 41E	Mechanics, Concepts, Calculations, and Context	
PHYSICS 43	Electricity and Magnetism (required) [3]	4
PHYSICS 45	Light and Heat (required)	4
CHEM 31M	Chemical Principles: From Molecules to Solids (or CHEM 31A and CHEM 31B, or AP Chemistry) (required)	5
ENGR 80	Introduction to Bioengineering (Engineering Living Matter) (recommended)	4
School of Engineering approved Science Electives: See Undergraduate Handbook, Figure 4-2		3-5
Technology in Society (one course required)		
School of Engineering approved Technology in Society courses: See Undergraduate Handbook, Figure 4-3. The course must be on the School of Engineering approved list the year you take it.		3-5
AA 252	Techniques of Failure Analysis (recommended)	3
Engineering Fundamentals (three courses required)		
11 units minimum		
ENGR 21	Engineering of Systems (required)	3
CS 106A	Programming Methodology	3-5
ENGR 10	Introduction to Engineering Analysis (recommended)	4
ENGR 40M	An Intro to Making: What is EE (recommended)	3-5
Fundamentals Elective; see list of Approved Courses in Undergraduate Engineering Handbook website at ughb.stanford.edu, Figure 4-4		3-5
Aero/Astro Depth Requirements		
35 units minimum		
ENGR 14	Intro to Solid Mechanics (required)	3
ENGR 15	Dynamics (required)	3
ENGR 105	Feedback Control Design (required)	3
ME 30	Engineering Thermodynamics (required)	3
ME 70	Introductory Fluids Engineering (required)	3
AA 100	Introduction to Aeronautics and Astronautics (required)	3
AA 131	Space Flight (required)	3
AA 141	Atmospheric Flight (required)	3
AA 151	Lightweight Structures (required)	3
AA 174A	Principles of Robot Autonomy I (required)	5
AA 190	Directed Research and Writing in Aero/Astro (required) satisfies the Writing in the Major requirement, (WIM)	3-5
Aero/Astro Focus Electives		
12 units minimum		
AA 102	Introduction to Applied Aerodynamics (recommended)	3
AA 103	Air and Space Propulsion	3
AA 113	Aerospace Computational Science	3
AA 135	Introduction to Space Policy	3
AA 156	Mechanics of Composite Materials	3
AA 173	Flight Mechanics & Controls	3
CS 237B	Principles of Robot Autonomy II (AA 174B)	3-4
AA 199	Independent Study in Aero/Astro	1-5
AA 261	Building an Aerospace Startup from the Ground Up	3
AA 272	Global Positioning Systems	3
AA 279A	Space Mechanics	3
MS&E 178	The Spirit of Entrepreneurship	2

Aero/Astro Suggested Courses (not required)		
AA 149	Operation of Aerospace Systems	1
Aero/Astro Capstone Requirement		
7 units minimum. Select either the Spacecraft or Aircraft course sequence		
AA 136A	Spacecraft Design	3-5
AA 136B	Spacecraft Design Laboratory	3-5
AA 146A	Aircraft Design	4
AA 146B	Aircraft Design Laboratory	3

For additional information and sample programs see the Handbook for Undergraduate Engineering (http://ughb.stanford.edu) and the Aeronautics and Astronautics Undergraduate Program Sheet (https://ughb.stanford.edu/program-sheets/).

All courses taken for the major must be taken for a letter grade if that option is offered by the instructor.

Minimum Combined GPA for all courses in Engineering Topics (Engineering Fundamentals and Depth courses) is 2.0.

Transfer and AP credits in Math, Science, Fundamentals, and the Technology in Society course must be approved by the School of Engineering Dean's office.

1 A score of 4 on the Calculus BC test or 5 on the AB test only gives students 8 units, not 10 units, so is equal to MATH 19 + MATH 20, but not MATH 21. The Math Placement Exam determines what math course the student starts with.

2 It is recommended that the CME series (100, 102, 104) be taken rather than the MATH series (51, 52, 53). It is recommended that students taking the MATH series also take CME 192 Introduction to MATLAB.

3 A score of 5 on the AP Physics C Mechanics test places the student out of PHYSICS 41. Similarly, a score of 5 on the AP Physics Electricity and Magnetism test places the student out of PHYSICS 43.

Honors Program

The Department of Aeronautics and Astronautics honors program has been designed to allow undergraduates with strong records and enthusiasm for independent research to engage in a significant project leading to a degree with departmental honors.

Students who meet the eligibility criteria and wish to be considered for the honors program should apply to the program by the end of the junior year. All applications are subject to the review and final approval by the Aero/Astro Undergraduate Curriculum Committee.

Application Requirements:

- One-page written statement describing the research topic and signed adviser form
- GPA of 3.5 or higher in the major
- Unofficial Stanford transcript (from Axess)
- Signature of thesis adviser

Honors criteria:

- Maintain the 3.5 GPA required for admissions to the honors program.
- Arrangement with an Aero/Astro faculty member who agrees to serve as the thesis adviser. The adviser must be a member of the Academic Council.
- Under the direction of the thesis adviser, complete at least two quarters of research with a minimum of 9 units of independent research; 3 of these units may be used towards a student's Aero/Astro Focus Elective requirement.
- Submit an honors thesis (20-30 pages). Thesis is due by April 30th of senior year in order to be eligible for University prizes.
- Attend Research Experience for Undergraduates Poster Session or present in another suitable forum approved by the faculty adviser.

Aeronautics and Astronautics (AA) Minor

The Aero/Astro minor introduces undergraduates to the key elements of modern aerospace systems. Within the minor, students may focus on aircraft, spacecraft, or disciplines relevant to both. The course requirements for the minor are described in detail below. If any core classes (aside from ENGR 21; see footnote) are part of student's major or other degree program, the Aero/Astro adviser can help select substitute courses to fulfill the Aero/Astro minor requirements; no double counting allowed. All courses taken for the minor must be taken for a letter grade if that option is offered by the instructor. Minimum GPA for all minor courses combined is 2.0.

The following core courses fulfill the minor requirements:

AA Core		
12 Core Units, 24 Total Program Units		
ENGR 21	Engineering of Systems [1]	3
AA 100	Introduction to Aeronautics and Astronautics	3
AA 131	Space Flight	3
AA 141	Atmospheric Flight	3
AA Electives		
Choose 4 courses		
ENGR 105	Feedback Control Design	3
ME 70	Introductory Fluids Engineering	3
AA 102	Introduction to Applied Aerodynamics	3
AA 103	Air and Space Propulsion	3
AA 113	Aerospace Computational Science	3
AA 135	Introduction to Space Policy	3
AA 151	Lightweight Structures	3
AA 156	Mechanics of Composite Materials	3
AA 173	Flight Mechanics & Controls	3
AA 174A	Principles of Robot Autonomy I	5
AA 261	Building an Aerospace Startup from the Ground Up	3
AA 272	Global Positioning Systems	3
AA 279A	Space Mechanics	3

1 ENGR 21 is waived as minor requirement if already taken as part of the major program.

Architectual Design Undergraduate Major

COVID-19-Related Degree Requirement Changes

For information on how Architectural Design (AD) degree requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 664)" in the "Civil and Environmental Engineering" of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

Architectural Design (AD)

Completion of the undergraduate program in Architectural Design leads to the conferral of the Bachelor of Science in Engineering. The subplan "Architectural Design" appears on the transcript and on the diploma.

Mission of the Undergraduate Program in Architectural Design

The mission of the undergraduate program in Architectural Design is to develop students' ability to integrate engineering and architecture in ways that blend innovative architectural design with cutting-edge engineering technologies. Courses in the program combine hands-on architectural design studios with a wide variety of other courses. Students can choose from a broad mix of elective courses concerning energy conservation, sustainability, building systems, and structures, as well as design foundation and fine arts courses. In addition to preparing students for advanced studies in architecture and construction management, the program's math and science requirements prepare students well for graduate work in other fields such as civil and environmental engineering, law, and business.

Requirements

		Units
Mathematics and Science (36 units minimum) [1]		
Mathematics		
MATH 19	Calculus	3
MATH 20	Calculus	3
MATH 21	Calculus	4
Or 10 units AP Calculus or MATH 41 & MATH 42		
CME 100	Vector Calculus for Engineers (Recommended)	5
One course in Statistics (required)		3-5
Science		
PHYSICS 41	Mechanics	4/5
Recommended:		
EARTHSYS 101	Energy and the Environment	
EARTHSYS 102	Fundamentals of Renewable Power	
CEE 64	Air Pollution and Global Warming: History, Science, and Solutions	
CEE 70	Environmental Science and Technology	
PHYSICS 23	Electricity, Magnetism, and Optics	
or PHYSICS 43	Electricity and Magnetism	
Or from School of Engineering approved list		
Technology in Society		
One course required; course chosen must be on the SoE Approved Courses list at <ughb.stanford.edu> the year taken.		3-5
Engineering Fundamentals		
Two courses minimum, see Basic Requirement 3		6-8
ENGR 14	Intro to Solid Mechanics	3
AD Depth Core [2]		
CEE 31	Accessing Architecture Through Drawing	5
or CEE 31Q	Accessing Architecture Through Drawing	
CEE 100	Managing Sustainable Building Projects (or CEE 32B or CEE 32D)	4
CEE 120A	Building Modeling for Design & Construction	3
CEE 130	Architectural Design: 3-D Modeling, Methodology, and Process	5
CEE 137B	Advanced Architecture Studio	6
ARTHIST 3	Introduction to World Architecture	5
Depth Options		**12**
See Note 2 for course options		
Depth Electives		
Elective units must be such that courses in ENGR Fundamentals, Core, Depth Options, and Depth Electives total at least 63 units. One of the following must be taken:		
CEE 32D	Construction: The Writing of Architecture	
CEE 32G	Architecture Since 1900	
CEE 32H	Responsive Structures	
CEE 32T	Making and Remaking the Architect: Edward Durell Stone and Stanford	
CEE 32U	California Modernism: The Web of Apprenticeship	
CEE 32V	Architectural Design Lecture Series Course	
CEE 32W	Making Meaning: A Purposeful Life in Design	
CEE 33B	Japanese Modern Architecture	
CEE 33C	Housing Visions	
CEE 131C	How Buildings are Made -- Materiality and Construction Methods	
CEE 131D	Urban Design Studio	
CEE 139	Design Portfolio Methods	
CEE 151	Negotiation	
Total Units		70-80

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (http://ughb.stanford.edu).

1 School of Engineering approved list of math and science courses available in the Handbook for Undergraduate Engineering Programs at http://ughb.stanford.edu.

2 Engineering depth options: Choose at least 12 units from the following courses: CEE 101A, CEE 101B, CEE 101C, CEE 120B, CEE 120C, CEE 134B, CEE 156, CEE 159, CEE 172, CEE 172A, CEE 176A, CEE 180, CEE 181, CEE 182, CEE 183, CEE 226, CEE 241, OR CEE 242; ME 203. Students should investigate any prerequisites for the listed courses and carefully plan course sequences with the AD director. Electives:

- CEE 32A, CEE 32B, CEE 32D, CEE 32F, CEE 32G, CEE 32H, CEE 32Q, CEE 32R, CEE 32S, CEE 32T, CEE 32U, CEE 32V, CEE 32W, CEE 33B, CEE 33C, CEE 101B, CEE 101C, CEE 120A, CEE 120B, CEE 120C, CEE 122A, CEE 122B, CEE 124, CEE 131A, CEE 131B, CEE 131C, CEE 131F, CEE 134B, CEE 139, CEE 172A, CEE 176A, CEE 180, CEE 181, CEE 182, CEE 183
- ENGR 50, ENGR 103
- ME 101, ME 110, ME 115A/B/C, ME 120, ME 203
- ARTSTUDI 13BX, ARTSTUDI 140, ARTSTUDI 145, ARTSTUDI 151, ARTSTUDI 153, ARTSTUDI 160, ARTSTUDI 162, ARTSTUDI 163, ARTSTUDI 164, ARTSTUDI 168, ARTSTUDI 170, ARTSTUDI 171, ARTSTUDI 181
- ARTHIST 142, ARTHIST 143A, ARTHIST 188A
- FILMPROD 114
- TAPS 137
- SINY 122; URBANST 110, URBANST 113, URBANST 163, URBANST 171

3 A course may only be counted towards one elective or core requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth/Core is 2.0.

Architectural Design Honors Program

The AD honors program offers eligible students the opportunity to engage in guided original research, or project design, over the course of an academic year. For interested students the following outlines the process:

1. The student must submit a letter applying for the honors option endorsed by the student's primary adviser and honors adviser and submitted to the student services office in CEE. Applications must be received in the fourth quarter prior to graduation. It is strongly suggested that students meet with the Architectural Design Program Director well in advance of submitting an application.
2. The student must maintain a GPA of at least 3.5.
3. The student must complete an honors thesis or project. The timing and deadlines are to be decided by the program or honors adviser. At least one member of the evaluation committee must be a member of the Academic Council in the School of Engineering.
4. The student must present the work in an appropriate forum, e.g., in the same session as honors theses are presented in the department of the advisor. All honors programs require some public presentation of the thesis or project.
5. A pdf of the thesis, including the signature page signed by both readers, should be submitted to the student services officer. Students will be sent email instructions on how to archive a permanent electronic copy in Terman Engineering library.

Atmosphere/Energy Undergraduate Major

COVID-19-Related Degree Requirement Changes

For information on how Atmosphere/Energy (A/E) degree requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 664)" in the "Civil and Environmental Engineering" of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

Atmosphere/Energy (A/E)

Completion of the undergraduate program in Atmosphere/Energy leads to the conferral of the Bachelor of Science in Engineering. The subplan "Atmosphere/Energy" appears on the transcript and on the diploma.

Mission of the Undergraduate Program in Atmosphere/Energy

Atmosphere and energy are strongly linked: fossil-fuel energy use contributes to air pollution, global warming, and weather modification; and changes in the atmosphere feed back to renewable energy resources, including wind, solar, hydroelectric, and wave resources. The mission of the undergraduate program in Atmosphere/Energy (A/E) is to provide students with the fundamental background necessary to understand large- and local-scale climate, air pollution, and energy problems and solve them through clean, renewable, and efficient energy systems. To accomplish this goal, students learn in detail the causes and proposed solutions to the problems, and learn to evaluate whether the proposed solutions are truly beneficial. A/E students take courses in renewable energy resources, indoor and outdoor air pollution, energy efficient buildings, climate change, renewable energy and clean-vehicle technologies, weather and storm systems, energy technologies in developing countries, electric grids, and air quality management. The curriculum is flexible. Depending upon their area of interest, students may take in-depth courses in energy or atmosphere and focus either on science, technology, or policy. The major is designed to provide students with excellent preparation for careers in industry, government, and research; and for study in graduate school.

Requirements

		Units
Mathematics and Science (45 units minimum):		
Mathematics		**23**
23 units minimum, including at least one course from each group:		
Group A		
MATH 53	Ordinary Differential Equations with Linear Algebra	
CME 102	Ordinary Differential Equations for Engineers	
Group B		
CME 106	Introduction to Probability and Statistics for Engineers	
STATS 60	Introduction to Statistical Methods: Precalculus	
STATS 101	Data Science 101	
STATS 110	Statistical Methods in Engineering and the Physical Sciences	
Science		**20**
20 units minimum, including all of the following:		
PHYSICS 41	Mechanics	
PHYSICS 43	Electricity and Magnetism	
or PHYSICS 45	Light and Heat	
CHEM 31B	Chemical Principles II	
or CHEM 31M	Chemical Principles: From Molecules to Solids	
CEE 70	Environmental Science and Technology [1]	
Technology in Society (1 course)		**3-5**
One 3-5 unit course required; must be on School of Engineering Approved List the year taken.		
Writing in the Major (WIM)		
One 3-5 unit course required. Choose a TiS course that fulfills a WIM:		
BIOE 131	Ethics in Bioengineering	
COMM 120W	The Rise of Digital Culture	
OR one of these WIM courses (do not fulfill TiS):		
CEE 100	Managing Sustainable Building Projects	
ENGR/CEE 102W	Technical and Professional Communication	
EARTHSYS 200	Environmental Communication in Action: The SAGE Project	
Fundamentals and Depth: At least 40 units total must be from the School of Engineering		
Engineering Fundamentals		
Two courses minimum (recommend 3), including at least one of the following:		7-9
ENGR 50E	Introduction to Materials Science, Energy Emphasis (ENGR 25E also accepted (no longer offered))	
Plus at least one of the following:		
ENGR 10	Introduction to Engineering Analysis	
A third Fundamental is optional but recommended (3-4 units)		
CS 106A	Programming Methodology	
Engineering Depth		
Required: 6-8 units. Introductory seminars may not count toward Engineering Depth [2]		
CEE 64	Air Pollution and Global Warming: History, Science, and Solutions (cannot also fulfill science requirement)	3
CEE 107A	Understanding Energy	3-5
or CEE 107S	Understanding Energy - Essentials	
34- 36 units from the following with at least four courses from each group; at least 40 of the units in ENGR Fundamentals and Depth must be from the School of Engineering:		36
Group A: Atmosphere		
AA 100	Introduction to Aeronautics and Astronautics	

CEE 63	Weather and Storms
CEE 101B	Mechanics of Fluids
or ME 70	Introductory Fluids Engineering
CEE 161I	Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation
CEE 162I	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation
CEE 172	Air Quality Management
CEE 178	Introduction to Human Exposure Analysis
EARTHSYS 111	Biology and Global Change [5]
EARTHSYS 142	Remote Sensing of Land [5]
or EARTHSYS 14	Fundamentals of Geographic Information Science (GIS)
EARTHSYS 159	Economic, Legal, and Political Analysis of Climate-Change Policy
EARTHSYS 188	Social and Environmental Tradeoffs in Climate Decision-Making [5]
PHYSICS 199	The Physics of Energy and Climate Change [5]
EARTH 2	Climate and Society [5]
EARTHSYS 196	Implementing Climate Solutions at Scale [5]
Group B: Energy	
CEE 107R	E^3: Extreme Energy Efficiency
CEE 156	Building Systems Design & Analysis
CEE 173S	Electricity Economics
CEE 176A	Energy Efficient Buildings
CEE 176B	100% Clean, Renewable Energy and Storage for Everything
CEE 177S	Engineering and Sustainable Development
EARTHSYS 101	Energy and the Environment [5]
EARTHSYS 102	Fundamentals of Renewable Power [5]
ENERGY 104	Sustainable Energy for 9 Billion
ENGR 50E	Introduction to Materials Science, Energy Emphasis [3]
MATSCI 144	Thermodynamic Evaluation of Green Energy Technologies
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution
ME 182	Electric Transportation
POLISCI 73	Energy Policy in California and the West [5]
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America [5]
Total Units	95-101

1 Can count as a science requirement or Engineering Fundamental, but not both.

2 CEE 64 can count as a science requirement or as Engineering Depth, but not both.

3 ENGR 50E can count as Engineering Fundamental or Engineering Depth, but not both.

4 A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

5 Courses outside of the School of Engineering (SoE) do not count toward the 40 units of engineering coursework required in the Fundamentals plus Depth categories.

Honors Program

The A/E honors program offers eligible students the opportunity to engage in guided original research, or project design, over the course of an academic year. Interested student must adhere to the following requirements:

1. Prospective honors students write up and submit a 1-2 page letter applying to the honors program in A/E describing the problem to be investigated. The letter must be signed by the student, the current primary adviser, and the proposed honors adviser, if different, and submitted to the student services office in the Department of Civil and Environmental Engineering (CEE). The application must include an unofficial Stanford transcript. Applications must be received in the fourth quarter prior to graduation. It is strongly suggested that prospective honors students meet with the proposed honors adviser well in advance of submitting an application.
2. Students must maintain a GPA of at least 3.5.
3. Students must complete an honors thesis or project over a period of three quarters. The typical length of the written report is 15-20 pages. The deadline for submission of the report is to be decided by the honors adviser, but should be no later than the end of the third week in May.
4. The report must be read and evaluated by the student's honors adviser and one other reader. It is the student's responsibility to find and obtain both the adviser and the reader. At least one of the two must be a member of the Academic Council in the School of Engineering.
5. Students must present the completed work in an appropriate forum, e.g. in the same session as honors theses are presented in the department of the adviser. All honors programs require some public presentation of the thesis or project.
6. Students may take up to 10 units of CEE 199H Undergraduate Honors Thesis(optional). However, students must take ENGR 202S Directed Writing Projects or its equivalent (required). Units for the writing class are beyond those required for the A/E major.
7. Two copies of the signed thesis must be provided to the CEE student services office no later than two weeks before the end of the student's graduation quarter. A pdf of the thesis, including the signature page signed by both readers, should be submitted to the student services officer by May 15. Students will be sent email instructions on how to archive a permanent electronic copy in Terman Engineering library.

For additional information and sample programs, see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

Bioengineering Undergraduate Major

COVID-19-Related Degree Requirement Changes

For information on how Bioengineering degree requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 624)" in the "Bioengineering" of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

See the "Department of Bioengineering (p. 620)" section of this bulletin for additional information on the department, and its programs and faculty.

COVID-19-Related Degree Requirement Changes

For information on how Aeronautics and Astronautics degree requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 624)" in the "Bioengineering" of this bulletin. For

University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

Bioengineering (BIOE)

Completion of the undergraduate program in Bioengineering leads to the conferral of the Bachelor of Science in Bioengineering.

Mission of the Undergraduate Program in Bioengineering

The Stanford Bioengineering major enables students to combine engineering and the life sciences in ways that advance scientific discovery, healthcare and medicine, manufacturing, environmental quality, culture, education, and policy. Students who major in BioE earn a fundamental engineering degree for which the raw materials, underlying basic sciences, fundamental toolkit, and future frontiers are all defined by the unique properties of living systems.

Students will complete engineering fundamentals courses, including an introduction to bioengineering and computer programming. A series of core BIOE classes beginning in the second year leads to a student-selected depth area and a senior capstone design project. The department also organizes a summer Research Experience for Undergraduates (REU) (http://bioengineering.stanford.edu/student-resources/reu/) program. BIOE graduates are well prepared to pursue careers and lead projects in research, medicine, business, law, and policy.

Requirements

		Units
Mathematics		
14 units minimum (Prerequisites: 10 units of AP or IB credit or Mathematics 20-series) [1]		
Select one of the following sequences:		
CME 100 & CME 102	Vector Calculus for Engineers and Ordinary Differential Equations for Engineers (Recommended)	10
MATH 51 & MATH 53	Linear Algebra, Multivariable Calculus, and Modern Applications and Ordinary Differential Equations with Linear Algebra	10
Select one of the following:		
CME 106	Introduction to Probability and Statistics for Engineers (Recommended)	4-5
or STATS 110	Statistical Methods in Engineering and the Physical Sciences	
or STATS 141	Biostatistics	
Science		
26 units minimum [2]		
CHEM 31M	Chemical Principles: From Molecules to Solids (formerly 31X)	5
or CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	
CHEM 33	Structure and Reactivity of Organic Molecules	5
BIO 83	Biochemistry & Molecular Biology (Recommended)	4
or BIO 82	Genetics	
BIO 84	Physiology	4
PHYSICS 41	Mechanics	4
PHYSICS 43	Electricity and Magnetism	4
Technology in Society		
BIOE 131	Ethics in Bioengineering (WIM)	3
Engineering Fundamentals		
BIOE 80	Introduction to Bioengineering (Engineering Living Matter)	4
CS 106A	Programming Methodology (or CS 106B or CS 106X)	5
Fundamentals Elective; see UGHB for approved course list; only one CS class allowed to count toward Fundamentals requirements.		3-5
Bioengineering Core		
BIOE 42	Physical Biology	4
BIOE 44	Fundamentals for Engineering Biology Lab	4
BIOE 101	Systems Biology	3
BIOE 103	Systems Physiology and Design	4
BIOE 123	Bioengineering Systems Prototyping Lab	4
BIOE 141A	Senior Capstone Design I	4
BIOE 141B	Senior Capstone Design II	4
Bioengineering Depth Electives		
Four courses, minimum 12 units:		12
BIOE 122	BioSecurity and Pandemic Resilience	
BIOE 201C	Diagnostic Devices Lab	
BIOE 209	Mathematical Modeling of Biological Systems	
BIOE 211	Biophysics of Multi-cellular Systems and Amorphous Computing	
BIOE 212	Introduction to Biomedical Informatics Research Methodology	
BIOE 214	Representations and Algorithms for Computational Molecular Biology	
BIOE 217	Translational Bioinformatics	
BIOE 220	Introduction to Imaging and Image-based Human Anatomy	
or BIOE 51	Anatomy for Bioengineers	
BIOE 221	Physics and Engineering of Radionuclide-based Medical Imaging	
BIOE 222	Physics and Engineering Principles of Multi-modality Molecular Imaging of Living Subjects	
BIOE 223	Physics and Engineering of X-Ray Computed Tomography	
BIOE 224	Probes and Applications for Multi-modality Molecular Imaging of Living Subjects	
BIOE 225	Intro to Ultrasound Physics and Ultrasound Neuromodulation	
BIOE 227	Functional MRI Methods	
BIOE 231	Protein Engineering	
BIOE 244	Advanced Frameworks and Approaches for Engineering Integrated Genetic Systems	
BIOE 260	Tissue Engineering	
BIOE 279	Computational Biology: Structure and Organization of Biomolecules and Cells	
BIOE 281	Biomechanics of Movement	
BIOE 291	Principles and Practice of Optogenetics for Optical Control of Biological Tissues	
Total Units		104-107

[1] It is strongly recommended that CME 100 Vector Calculus for Engineers and CME 102 Ordinary Differential Equations for Engineers be taken rather than MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications and MATH 53 Ordinary Differential Equations with Linear Algebra. If you are taking the MATH 50 series, it is strongly recommended to take CME 192 Introduction to MATLAB. CME 106 Introduction to Probability and Statistics for Engineers utilizes MATLAB, a powerful technical computing program, and should be taken rather than STATS 110 Statistical Methods in Engineering and the Physical Sciences or STATS 141 Biostatistics. Although not required, CME 104 Linear Algebra and Partial Differential Equations for Engineers is recommended for some Bioengineering courses.

[2] Science must include both Chemistry (CHEM 31A Chemical Principles I and CHEM 31B Chemical Principles II; or CHEM 31M Chemical Principles: From Molecules to Solids) and calculus-based Physics (PHYSICS 41 Mechanics and PHYSICS 43 Electricity and Magnetism), with two quarters of course work in each, in addition to two courses of BIO core. CHEM 31A Chemical Principles I and CHEM 31B Chemical Principles II are considered one course even though given over two quarters.

[3] A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu). Students pursuing a premed program need to take additional courses; see the UGHB, BioE Premed 4-Year Plan.

Honors Program

The School of Engineering offers a program leading to a Bachelor of Science in Bioengineering with Honors (BIOE-BSH). This program provides the opportunity for qualified BioE majors to conduct independent research at an advanced level with a faculty research adviser and documented in an honors thesis.

In order to receive departmental honors, students admitted to the program must:

1. Declare the honors program in Axess (BIOE-BSH).
2. Maintain an overall grade point average (GPA) of at least 3.5 as calculated on the unofficial transcript.
3. Complete at least two quarters of research with a minimum of nine units of BIOE 191 Bioengineering Problems and Experimental Investigation or BIOE 191X Out-of-Department Advanced Research Laboratory in Bioengineering for a letter grade; up to three units may be used towards the bioengineering depth elective requirements.
4. Submit an electronic pdf copy of their thesis, including the signature page signed by both readers, to Bioengineering student services . Students are sent email instructions on how to archive a permanent electronic copy in Terman Engineering library.
5. Present thesis synopsis at the Bioengineering Honors Poster Fair at the end of Spring Quarter.

For program deadlines, application instructions, and more information, please see the Bioengineering Honors Program (http://bioengineering.stanford.edu/academics/undergraduate-programs/bioengineering-honors-program/) website.

Biomechanical Engineering Undergraduate Major

COVID-19-Related Degree Requirement Changes

Grading

The Biomechanical Engineering program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that normally require a letter grade.

Other Undergraduate Policies

The Biomechanical Engineering program encourages students to take courses for letter grades when possible in order to have complete records for use when seeking future opportunities, including employment in industry and students seeking to apply for graduate studies. Per University policy, students can change grading basis through the end of Week 8 in all four quarters in 2020-21. Students are encouraged to reach out directly to Biomechanical Engineering Program Director, Marc Elliot Levenston <levenston@stanford.edu>, for questions about petitions, especially in situations related to COVID-19 policies and grading basis

Biomechanical Engineering (BME)

Completion of the undergraduate program in Biomechanical Engineering leads to the conferral of the Bachelor of Science in Engineering. The subplan "Biomechanical Engineering" appears on the transcript and on the diploma.

Mission of the Undergraduate Program in Biomechanical Engineering

The mission of the undergraduate program in Biomechanical Engineering is to help students address health science challenges by applying engineering mechanics and design to the fields of biology and medicine. The program is interdisciplinary in nature, integrating engineering course work with biology and clinical medicine. Research and teaching in this discipline focus primarily on neuromuscular, musculoskeletal, cardiovascular, and cell and tissue biomechanics. This major prepares students for graduate studies in bioengineering, biomechanics, medicine or related areas.

Requirements

		Units
Mathematics		**21**
21 units minimum; CME sequence is recommended, but MATH sequence is acceptable; see Basic Requirement 1 [1]		
CME 102/ ENGR 155A	Ordinary Differential Equations for Engineers	
or MATH 53	Ordinary Differential Equations with Linear Algebra	
Select one of the following:		
CME 106/ ENGR 155C	Introduction to Probability and Statistics for Engineers	
STATS 110	Statistical Methods in Engineering and the Physical Sciences	
STATS 116	Theory of Probability	
STATS 141	Biostatistics	
Science (22 units Minimum)		
CHEM 31M	Chemical Principles: From Molecules to Solids (or CHEM 31A & CHEM 31B)	5
PHYSICS 41	Mechanics	4
Biology or Human Biology A/B core courses [2]		8-10

BIO 45	Introduction to Laboratory Research in Cell and Molecular Biology	4
or BIOE 44	Fundamentals for Engineering Biology Lab	
Technology in Society		
One course required; BIOE 131 satisfies both TiS and WIM requirements. TiS course must be on School of Engineering Approved Courses list in the UGHB the year taken		3-5
Engineering Topics (Engineering Science and Design)		
Engineering Fundamentals (minimum two courses; see Basic Requirement 3):		
ENGR 14	Intro to Solid Mechanics	3
Pick one of the following:		
ENGR 80	Introduction to Bioengineering (Engineering Living Matter)	
ENGR 50M	Introduction to Materials Science, Biomaterials Emphasis	
Engineering Depth		
ENGR 15	Dynamics	3
ME 30	Engineering Thermodynamics	3
ME 70	Introductory Fluids Engineering	3
ME 80	Mechanics of Materials	3
ME 389	Biomechanical Research Symposium [4]	1
Mechanical Engineering/ Biomechanical Engineering Depth		
Students are encouraged to carefully select ME and BME depth courses that complement each other and form a cohesive plan of study.		
Options to complete the ME depth sequence (3 courses, minimum 9 units): [5]		9
ENGR 105	Feedback Control Design	
ME 102	Foundations of Product Realization	
ME 103	Product Realization: Design and Making	
ME 104	Mechanical Systems Design	
ME 131	Heat Transfer	
ME 133	Intermediate Fluid Mechanics	
ME 151	Introduction to Computational Mechanics	
ME 152	Material Behaviors and Failure Prediction	
ME 161	Dynamic Systems, Vibrations and Control	
Options to complete the BME depth sequence (3 courses, minimum 9 units); (alternative courses may be allowed but only if petitioned for use in advance of being taken) [5]		9
BIOE 260	Tissue Engineering	
BIOE/ME 285	Computational Modeling in the Cardiovascular System	
ME 234	Introduction to Neuromechanics	
ME 281	Biomechanics of Movement	
ME 283	Introduction to Biomechanics and Mechanobiology	
ME 287	Mechanics of Biological Tissues	
ME 337	Mechanics of Growth	
Total Units		79-83

[1] Math: 21 units required and must include a course in differential equations (CME 102 or MATH 53; one of these required) and a course in calculus-based Statistics (CME 106 Introduction to Probability and Statistics for Engineers or STATS 110 Statistical Methods in Engineering and the Physical Sciences or STATS 116 Theory of Probability or STATS 141 Biostatistics).

[2] Students satisfy the Biology requirement by either:
- taking two of the following: BIO 82 Genetics , BIO 83 Biochemistry & Molecular Biology, BIO 84 Physiologyor BIO 86 Cell Biology requires BIO 83); or
- taking two of the following: HUMBIO 2A Genetics, Evolution, and Ecology, HUMBIO 3A Cell and Developmental Biology, or HUMBIO 4A The Human Organism

[3] There are two options for fulfilling the WIM requirement. The first option is to complete BIOE 131 Ethics in Bioengineering, which also fulfills the TiS requirement. The second option is to perform engineering research over the summer or during the academic year and enroll in 3 units of ENGR 199W Writing of Original Research for Engineers, preferably during the time a student is performing research or the following quarter, to write a technical report on the research. This second option requires an agreement with the student's faculty research supervisor.

[4] If ME 389 is not offered, other options include BIOE 393, ME 571, or course by petition.

[5] Courses may only be listed once on the program sheet i.e no double counting. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

Honors Program

The School of Engineering offers a program leading to a Bachelor of Science in Engineering: Biomechanical Engineering with Honors. This program provides an opportunity for qualified BME majors to conduct independent study and research related to biomechanical engineering at an advanced level with a faculty mentor.

Honors Criteria:

- GPA of 3.5 or higher in the major
- Arrangement with an ME faculty member (or a faculty member from another department who is approved by the BME Undergraduate Program Director) who agrees to serve as the honors adviser, plus a second faculty member who reads and approves the thesis. The honors adviser must be a member of the Academic Council in the School of Engineering.
- Submit an application to the ME student services office no later than the second week of the term two quarters before anticipated conferral (e.g., Autumn for Spring conferral, Spring for Autumn conferral). An application consists of:
  - A one-page written statement describing the research topic, with signatures indicating approval of both the thesis adviser and thesis reader on a cover page
  - An unofficial Stanford transcript;
- Applications are subject to the review and final approval by the BME Undergraduate Program Director. Applicants and thesis advisers receive written notification when a decision has been made.
- In order to graduate with honors:
  - Declare ENGR-BSH (honors) program in Axess
  - Maintain 3.5 GPA
  - Submit a completed thesis draft to the adviser by the third week of the quarter in which they intend to confer. Further revisions and final endorsement by the adviser and reader are to be finished by week six, when two bound copies are to be submitted to the Mechanical Engineering student services office. A pdf of the thesis, including the signature page signed by both readers, should also be submitted to the student services officer. Students are sent email instructions on how to archive a permanent electronic copy in Terman Engineering library.

- Present the thesis at the Mechanical Engineering Poster Session held in mid-April. If the poster session is not not offered or the student does not confer in the Spring, an alternative presentation will be approved on a case by case basis with advisor and BME Program Director approval.

Note: Students may not use work completed towards an honors degree to satisfy BME course requirements

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

Biomedical Computation Undergraduate Major

COVID-19-Related Degree Requirement Changes

The BMC Program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade. Students are encouraged to enroll in the letter grade option for degree requirements whenever possible.

Biomedical Computation (BMC)

Completion of the undergraduate program in Biomedical Computation leads to the conferral of the Bachelor of Science in Engineering. The subplan "Biomedical Computation" appears on the transcript and on the diploma.

Mission of the Undergraduate Program in Biomedical Computation

Quantitative and computational methods are central to the advancement of biology and medicine in the 21st century. These methods span the analysis of biomedical data, the construction of computational models for biological systems, and the design of computer systems that help biologists and physicians create and administer treatments to patients. The Biomedical Computation major prepares students to work at the cutting edge of this interface between computer science, biology, and medicine. Students begin their journey by acquiring foundational knowledge in the underlying biological and computational disciplines. They learn techniques in informatics and simulation and their numerous applications in understanding and analyzing biology at all levels, from individual molecules in cells to entire organs, organisms, and populations. Students then focus their efforts in a depth area of their choosing, and participate in a substantial research project with a Stanford faculty member. Upon graduation, students are prepared to enter a range of disciplines in either academia or industry.

Requirements

		Units
Mathematics		
21 unit minimum, see Basic Requirement 1		
MATH 19	Calculus (or AP Calculus)	3
MATH 20	Calculus (or AP Calculus)	3
MATH 21	Calculus (or AP Calculus)	4
CS 103	Mathematical Foundations of Computing	3-5
CS 109	Introduction to Probability for Computer Scientists	3-5
Science		
17 units minimum, see Basic Requirement 2		
PHYSICS 41	Mechanics	4
CHEM 31M	Chemical Principles: From Molecules to Solids (formerly CHEM 31X)	5
or CHEM 31B	Chemical Principles II	
CHEM 33	Structure and Reactivity of Organic Molecules	5
BIO 82	Genetics (or HUMBIO 2A)	4
BIO 83	Biochemistry & Molecular Biology (or BIO 84 or HUMBIO 3A)	4
BIO 86	Cell Biology (or HUMBIO 4A)	4
Engineering Fundamentals		
CS 106B	Programming Abstractions [4]	5
or CS 106X	Programming Abstractions	
For the second required course, see concentrations [4]		
Technology in Society		
One course required, see Basic Requirement 4; course used must be on the School of Engineering Approved Courses list in the UGHB the year taken.		3-5
Engineering		
CS 107	Computer Organization and Systems	3-5
CS 161	Design and Analysis of Algorithms	3-5
Select one of the following:		3
CS 270	Modeling Biomedical Systems	
CS 273A	The Human Genome Source Code	
CS 274	Representations and Algorithms for Computational Molecular Biology	
CS 275	Translational Bioinformatics	
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	
Research: 6 units of biomedical computation research in any department [2,3]		6
Engineering Depth Concentration (select one of the following concentrations): [7]		
Cellular/Molecular Concentration		
Mathematics: Select one of the following:		
CME 100	Vector Calculus for Engineers	
STATS 141	Biostatistics	
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
One additional Engineering Fundamental [4]		
BIO 104	Advance Molecular Biology: Epigenetics and Proteostasis	
CHEM 141	The Chemical Principles of Life I (or CHEM 171) [4]	
Cell/Mol Electives (two courses) [5,6]		
Informatics Electives (two courses) [5,6]		
Simulation Electives (two courses) [5, 6]		
Simulation, Informatics, or Cell/Mol Elective (one course) [5,6]		
Informatics Concentration		
Mathematics: Select one of the following:		
STATS 141	Biostatistics	
STATS 203	Introduction to Regression Models and Analysis of Variance	
STATS 205	Introduction to Nonparametric Statistics	
STATS 215	Statistical Models in Biology	
One additional Engineering Fundamental [4]		
Informatics Core (three courses):		
CS 145	Data Management and Data Systems	
or CS 147	Introduction to Human-Computer Interaction Design	
CS 221	Artificial Intelligence: Principles and Techniques	

or CS 228	Probabilistic Graphical Models: Principles and Techniques	
or CS 229	Machine Learning	
One additional course from the previous two lines		
Informatics Electives (three courses) [5,6]		
Cellular Electives (two courses) [5,6]		
Organs Electives (two courses) [5,6]		6-10
Organs/Organisms Concentration		
Mathematics (select one of the following):		
CME 100	Vector Calculus for Engineers	
STATS 141	Biostatistics	
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
One additional Engineering Fundamental [4]		
Biology (two courses):		
BIO 112	Human Physiology	
CHEM 141	The Chemical Principles of Life I (or BIOE 220)	
Two additional Organs Electives [5,6]		
Simulation Electives (two courses) [5,6]		
Informatics Electives (two courses) [5,6]		
Simulation, Informatics, or Organs Elective (one course) [5,6]		
Simulation Concentration		
Mathematics:		
CME 100	Vector Calculus for Engineers	
or MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
ME 30	Engineering Thermodynamics (Fulfills 2nd Engineering Fundamental)	3
Simulation Core:		
CME 102	Ordinary Differential Equations for Engineers	5
or MATH 53	Ordinary Differential Equations with Linear Algebra	
ENGR 80	Introduction to Bioengineering (Engineering Living Matter)	4
BIOE 101	Systems Biology	3
BIOE 103	Systems Physiology and Design	4
Simulation Electives (two courses) [5, 6]		
Cellular Elective (one course) [5,6]		
Organs Elective (one course) [5,6]		
Simulation, Cellular, or Organs Elective (two courses) [5,6]		
Total Units		90-104

1 Acceptable substitutes for CS 109 are STATS 116 Theory of Probability, MS&E 120 Introduction to Probability, MS&E 220 Probabilistic Analysis, EE 178 Probabilistic Systems Analysis, and CME 106 Introduction to Probability and Statistics for Engineers .

2 Research projects require pre-approval of BMC Coordinators

3 Research units taken as CS 191W Writing Intensive Senior Project or in conjunction with ENGR 199W Writing of Original Research for Engineers fulfill the Writing in the Major (WIM) requirement. CS 272 Introduction to Biomedical Informatics Research Methodology, which does not have to be taken in conjunction with research, also fulfills the WIM requirement.

4 One 3-5 unit course required; CS 106A Programming Methodology may not be used. See Engineering Fundamentals list in Handbook for Undergraduate Engineering Programs or on Approved Courses page at ughb.stanford.edu.

5 The list of electives is continually updated to include all applicable courses. For the current list of electives, see http://bmc.stanford.edu.

6 A course may only be counted towards one elective or core requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Topics (Engineering Fundamentals and Depth courses) is 2.0.

7 A total of 40 Engineering Fundamentals and Core/Depth units must be taken. The core classes only provide 27 Engineering units, so the remaining units must be taken from within the electives.

Honors Program

The Biomedical Computation program offers an honors option for qualified students, resulting in a B.S. with Honors degree in Engineering (ENGR-BSH, Biomedical Computation). An honors project is meant to be a substantial research project during the later part of a student's undergraduate career, culminating in a final written and oral presentation describing the student's project and its significance. There is no limit to the number of majors who can graduate with honors; any BMC major who is interested and meets the qualifications is considered.

1. Students apply by submitting the Honors Program Application Webform found on the BMC website and should be prepared to upload a 1-2 page proposal describing the problem the student has chosen to investigate, its significance, and the student's research plan. This plan must be endorsed by the student's research and academic advisers, one of whom must be a member of the Academic Council. In making its decision, the department evaluates the overall scope and significance of the student's proposed work.
2. Students must maintain a 3.5 GPA.
3. Students must complete three quarters of research. All three quarters must be on the same project with the same adviser. A Summer Quarter counts as one quarter of research.
   - Ideally, funding should not be obtained through summer research college sources, but rather through the UAR's Student Grants Program (http://studentgrants.stanford.edu/). In no case can the same work be double-paid by two sources.
4. Students must complete a substantial write-up of the research in the format of a publishable research paper. This research paper is expected to be approximately 20-30 pages and must be approved by the student's research adviser and by a second reader.
5. Students submit an electronic pdf of their thesis, including the signature page signed by both readers, to Bioengineering student services. Students should review deadlines on the BMC website. (https://bioengineering.stanford.edu/academics/undergraduate-programs/biomedical-computation/honors/) Students are sent email instructions on how to archive a permanent electronic copy in Terman Engineering library.
6. As the culmination of the honors project, each student presents their results in the Bioengineering Honors Poster Fair in spring quarter of their senior year.

For additional information and sample programs, see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

Chemical Engineering Undergraduate Major

COVID-19-Related Degree Requirement Changes

For information on how Chemical Engineering degree requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 644)" in the "Chemical Engineering" of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

See the "Department of Chemical Engineering (p. 637)" section of this bulletin for additional information on the department, and its programs and faculty.

The department offers a B.S. as well as a minor in Chemical Engineering.

Chemical Engineering

Completion of the undergraduate program in Chemical Engineering leads to the conferral of the Bachelor of Science in Chemical Engineering.

Mission of the Undergraduate Program in Chemical Engineering

Chemical engineers are responsible for the conception and design of processes for the purpose of production, transformation, and transportation of materials. This activity begins with experimentation in the laboratory and is followed by implementation of the technology in full-scale production. The mission of the undergraduate program in Chemical Engineering is to develop students' understanding of the core scientific, mathematical, and engineering principles that serve as the foundation underlying these technological processes. The program's core mission is reflected in its curriculum which is built on a foundation in the sciences of chemistry, physics, and biology. Course work includes the study of applied mathematics, material and energy balances, thermodynamics, fluid mechanics, energy and mass transfer, separations technologies, chemical reaction kinetics and reactor design, and process design. The program provides students with excellent preparation for careers in the corporate sector and government, or for graduate study.

Requirements

		Units
Mathematics (24-30 units) [1]		**10**
The following sequence or approved AP credit		
MATH 19	Calculus	
MATH 20	Calculus	
MATH 21	Calculus	
Select one of the following:		5-10
CME 100	Vector Calculus for Engineers	
MATH 51 & MATH 52	Linear Algebra, Multivariable Calculus, and Modern Applications and Integral Calculus of Several Variables	
Select one of the following:		5
CME 102	Ordinary Differential Equations for Engineers	
or MATH 53	Ordinary Differential Equations with Linear Algebra	
Select one of the following:		4-5
CME 104	Linear Algebra and Partial Differential Equations for Engineers	
or CME 106	Introduction to Probability and Statistics for Engineers	
Science (23-29 units) [1]		
CHEM 31M	Chemical Principles: From Molecules to Solids	5
CHEM 33	Structure and Reactivity of Organic Molecules	5
CHEM 121	Understanding the Natural and Unnatural World through Chemistry	5
PHYSICS 41	Mechanics	4
or PHYSICS 41E	Mechanics, Concepts, Calculations, and Context	
PHYSICS 43	Electricity and Magnetism	4
Technology in Society (3-5 units)		
One course required, see Basic Requirement 4; course chosen must be on the SoE-Approved Courses list at <ughb.stanford.edu> the year taken.		3-5
Engineering Fundamentals (7-9 units)		
Two courses minimum; see Basic Requirement 3		
CHEMENG/ENGR 20	Introduction to Chemical Engineering	4
Fundamentals Elective from another School of Engineering department		3-5
See the UGHB for a list of courses.		
Chemical Engineering Depth (51 units minimum)		
CHEMENG 100	Chemical Process Modeling, Dynamics, and Control	3
CHEMENG 110A	Introduction to Chemical Engineering Thermodynamics [3]	3
CHEMENG 110B	Multi-Component and Multi-Phase Thermodynamics	3
CHEMENG 120A	Fluid Mechanics	4
CHEMENG 120B	Energy and Mass Transport	4
CHEMENG 130A	Microkinetics - Molecular Principles of Chemical Kinetics	3
CHEMENG 130B	Introduction to kinetics and reactor design	3
CHEMENG 150	Biochemical Engineering	3
CHEMENG 180	Chemical Engineering Plant Design	4
CHEMENG 181	Biochemistry I	4
CHEMENG 185A	Chemical Engineering Laboratory A (WIM)	5
CHEMENG 185B	Chemical Engineering Laboratory B	5
CHEM 171	Foundations of Physical Chemistry [4]	4
Select 1 of the following:		3
CHEMENG 140	Micro and Nanoscale Fabrication Engineering	
CHEMENG 142	Basic Principles of Heterogeneous Catalysis with Applications in Energy Transformations	
CHEMENG 160	Polymer Science and Engineering	
CHEMENG 174	Environmental Microbiology I	
CHEMENG 177	Data Science and Machine Learning Approaches in Chemical and Materials Engineering	
CHEMENG 183	Biochemistry II	
CHEMENG 190	Undergraduate Research in Chemical Engineering	
CHEMENG 190H	Undergraduate Honors Research in Chemical Engineering	
CHEMENG 196	Creating and Leading New Ventures in Engineering and Science-based Industries	
Total Units		108-118

[1] Unit count is higher if program includes one or more of the following: MATH 51 and MATH 52 in lieu of CME 100; or CHEM 31A and CHEM 31B in lieu of CHEM 31M.

[2] A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

[3] Students who completed CHEM 171 prior to academic year 2020-21 may substitute CHEMENG 110A with CHEM 171.

[4] Students who completed CHEM 173 prior to academic year 2020-21 may substitute CHEM 171 with CHEM 173.

* For additional information and sample programs, see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu)

Honors Program in Chemical Engineering

The Department of Chemical Engineering offers a program leading to the degree of Bachelor of Science in Chemical Engineering with Honors. Qualified undergraduate majors conduct independent study and research at an advanced level with faculty mentors, graduate students, and fellow undergraduates. This three quarter sequential program requires concurrent participation each quarter in the CHEMENG 191H Undergraduate Honors Seminar; completion of a faculty-approved thesis; and participation in the Chemical Engineering Honors Poster Session held annually during the Mason Lecture Series Spring Quarter. The last requirement may be fulfilled through an alternative, public, oral presentation with the approval of the department chair. A research proposal/application must be submitted at least five quarters prior to graduation with work to begin at a minimum of four quarters prior to graduation.

Admission to the honors program is by application and submission of a research proposal and is subject to approvals by faculty advisers, sponsors, and the chair of the department. Declared Chemical Engineering majors with a cumulative grade point average (GPA) of 3.5 or higher are encouraged to apply. Students must submit their applications no later than the first week in March during Winter Quarter of their junior year, assuming a June degree conferral the following year, e.g. the 2020-2021 deadline is March 1, 2021. An application includes a Stanford transcript in addition to the research proposal, approved by both the student's research thesis adviser, a faculty reader, and, if required, a chemical engineering faculty sponsor. The research adviser or the reader or, alternatively, a faculty sponsor, must be a faculty member in the Department of Chemical Engineering. Students must start their research no later than Spring Quarter their junior year and are encouraged to consider incorporating research opportunities such as those sponsored by Undergraduate Academic Life into their honors research proposal; see http://ual.stanford.edu/OO/research_opps/Grants (http://ual.stanford.edu/OO/research_opps/Grants/). See departmental student services staff in Shriram Center room 129, for more information about the application process, a proposal template, and other assistance.

In order to receive departmental honors, students admitted to the honors program must:

1. Maintain an overall grade point average (GPA) of at least 3.5 as calculated on the unofficial transcript.
2. Complete at least three quarters of research with an aggregate enrollment of a minimum of nine units in CHEMENG 190H Undergraduate Honors Research in Chemical Engineering for a letter grade; up to three units may be used towards the Chemical Engineering depth elective requirements. All quarters must focus on the same topic. The same faculty adviser and faculty reader should be maintained throughout if feasible.
3. Enroll in CHEMENG 191H Undergraduate Honors Seminar, concurrently with each quarter of enrollment in CHEMENG 190H Undergraduate Honors Research in Chemical Engineering.
4. Participate with a poster and oral presentation of thesis work at the Chemical Engineering Honors Poster Session held during the Mason Lectures week, Spring Quarter, or, at the Undergraduate Program Committee's discretion, at a comparable public event. Submit at the same time to student services one copy of the poster in electronic format.
5. Submit final drafts of a thesis simultaneously to the adviser and the reader and, if appropriate, to the Chemical Engineering faculty sponsor, no later than April 5, 2021, or the first school day of the second week of the quarter in which the degree is to be conferred.
6. Complete all work and thesis revisions and obtain indicated faculty approvals on the Certificate of Final Reading of Thesis forms by April 30, 2021, or the end of the first month of the graduation quarter.
7. Submit to departmental student services one (1) final copy of the honors thesis, as approved by the appropriate faculty. Include in each thesis an original, completed, faculty signature sheet immediately following the title page. The 2020-2021 deadline is May 3, 2021.
8. Submit to student services a copy of the honors thesis in electronic format at the same time as the final copy of the thesis.

Upon faculty approval, departmental student services to submit one electronic copy of each honors thesis to Student Affairs, School of Engineering.

Chemical Engineering Minor

The following core courses fulfill the minor requirements:

		Units
ENGR 20	Introduction to Chemical Engineering	4
CHEMENG 100	Chemical Process Modeling, Dynamics, and Control	3
CHEMENG 110A	Introduction to Chemical Engineering Thermodynamics	3
CHEMENG 110B	Multi-Component and Multi-Phase Thermodynamics	3
CHEMENG 120A	Fluid Mechanics	4
CHEMENG 120B	Energy and Mass Transport	4
CHEMENG 130B	Introduction to kinetics and reactor design	3
CHEMENG 185A	Chemical Engineering Laboratory A	5
CHEMENG 180	Chemical Engineering Plant Design	4
Select one of the following:		3
CHEMENG 140	Micro and Nanoscale Fabrication Engineering	
CHEMENG 142	Basic Principles of Heterogeneous Catalysis with Applications in Energy Transformations	
CHEMENG 160	Polymer Science and Engineering	
CHEMENG 174	Environmental Microbiology I	
CHEMENG 181	Biochemistry I	
Total Units		36

Civil Engineering Undergraduate Major

COVID-19-Related Degree Requirement Changes

For information on how Civil Engineering degree requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 664)" in the "Civil and Environmental Engineering" of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

See the "Department of Civil and Environmental Engineering (p. 653)" section of this bulletin for additional information on the department, and its programs and faculty.

The department offers a B.S. as well as a minor in Civil Engineering (see following), as well as a B.S. in Environmental Systems Engineering (p. 590) and a minor in Environmental Systems Engineering (p. 661).

Civil Engineering (CE)

Completion of the undergraduate program in Civil Engineering leads to the conferral of the Bachelor of Science in Civil Engineering.

Mission of the Undergraduate Program in Civil Engineering

The mission of the undergraduate program in Civil Engineering is to provide students with the principles of engineering and the methodologies necessary for civil engineering practice. This pre-professional program balances the fundamentals common to many specialties in civil engineering and allows for concentration in any of seven areas: structures, construction, environmental, energy/climate, fluid mechanics/hydrology, urban systems, or sensors/analytics. Students in the major learn to apply knowledge of mathematics, science, and civil engineering to conduct experiments, design structures and systems to creatively solve engineering problems, and communicate their ideas effectively. The major prepares students for careers in consulting, industry and government, as well as for graduate studies in engineering.

Requirements

		Units
Mathematics and Science		**45**
45 units minimum; see Basic Requirement 1 and 2 [1]		
Technology in Society		
One course required		
CEE 102A	Legal / Ethical Principles in Design, Construction, Project Delivery	3
Engineering Fundamentals		
Two courses required		
ENGR 14	Intro to Solid Mechanics	3
ENGR 90/CEE 70	Environmental Science and Technology	3
Engineering Depth		
Minimum of 68 Engineering Fundamentals plus Engineering Depth; see Basic Requirement 5		
CEE 100	Managing Sustainable Building Projects [2]	4
CS 106A	Programming Methodology (or CS 106B, CS 106X, CEE 101D)	5
ME 30	Engineering Thermodynamics (or CHEMENG 110A)	3
CEE 146S	Engineering Economics and Sustainability	3
CEE 183	Integrated Civil Engineering Design Project (Senior Capstone Design Course)	4
Focus Area Electives: at least 12 units in 1 major focus are, + at least 6 units each in 3 other focus areas (see below; no double counting) [4]		**30**
Additional CEE elective units (either select from focus areas below, from additional approved courses (see Footnote 5), or must be pre-approved by CEE Curriculum Comm.)		**13**
Total Units		116

1 Mathematics must include CME 100 Vector Calculus for Engineers and CME 102 Ordinary Differential Equations for Engineers (or MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications and Differential Calculus of Several Variables and MATH 53 Ordinary Differential Equations with Linear Algebra) and a Statistics course (STATS 101 Data Science 101 or STATS 110 Statistical Methods in Engineering and the Physical Sciences or CME 106 Introduction to Probability and Statistics for Engineers or CEE 203 Probabilistic Models in Civil Engineering). Science must include PHYSICS 41 Mechanics (or PHYSICS 41E Mechanics, Concepts, Calculations, and Context); either PHYSICS 43 Electricity and Magnetism or PHYSICS 45 Light and Heat; either CHEM 31A Chemical Principles I or CHEM 31M Chemical Principles: From Molecules to Solids; at least one of CEE 177 Aquatic Chemistry and Biology (required for major focus in fluid mechanics/ hydrology or environmental quality) or GEOLSCI 1 Introduction to Geology (required for major focus in structural, construction, urban systems, energy/climate or sensing/analytics); and additional physics, chemistry or mathematics to reach 45 units.

2 CEE 100 meets the Writing in the Major (WIM) requirement

3 A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

4 To satisfy ABET criteria, electives must include at least 2 of the following 4 courses: CEE 101A, 101B, 101C, 101D.

5 Preapproved courses for additional CEE elective units: ENGR 10, 15, 21, 25E, 40M (or 40A), 50 (or 50E or 50M); CEE 74N, 80N; and up to 4 units of CEE 199 or CEE 199L.

Construction Engineering Focus

		Units
CEE 120A	Building Modeling for Design & Construction	3
CEE 122A & CEE 122B	Computer Integrated Architecture/ Engineering/Construction and Computer Integrated A/E/C (each quarter = 2 units; must take both quarters)	4
CEE 131C	How Buildings are Made -- Materiality and Construction Methods	4
CEE 141A	Infrastructure Project Development	3
CEE 141B	Infrastructure Project Delivery	3
CEE 144	Design and Innovation for the Circular Economy	3
CEE 241	Managing Fabrication and Construction	4

Energy and Climate Focus

		Units
CEE 63	Weather and Storms	3
CEE 64	Air Pollution and Global Warming: History, Science, and Solutions	3
CEE 107A	Understanding Energy (or CEE 107S)	3-5
CEE 107R	E^3: Extreme Energy Efficiency	3
CEE 156	Building Systems Design & Analysis	4
CEE 172	Air Quality Management	3
CEE 176A	Energy Efficient Buildings	3
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	3-4

Environmental Fluid Mechanics & Hydrology Focus

		Units
CEE 101B	Mechanics of Fluids	4
CEE 161I	Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation	3
CEE 162D	Introduction to Physical Oceanography	4
CEE 162F	Coastal Processes	3
CEE 162I	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation	3
CEE 166A	Watershed Hydrologic Processes and Models	3
CEE 166B	Water Resources and Hazards	3
CEE 175A	California Coast: Science, Policy, and Law	3-4

Environmental Quality Engineering for Human Health Focus

		Units
CEE 172	Air Quality Management	3
CEE 174A	Providing Safe Water for the Developing and Developed World	3
CEE 174B	Wastewater Treatment: From Disposal to Resource Recovery	3
CEE 175A	California Coast: Science, Policy, and Law (alt. years)	3-4
CEE 178	Introduction to Human Exposure Analysis	3
CEE 265D	Water and Sanitation in Developing Countries	3

Sensing, Analytics and Control Focus

		Units
CEE 101D	Computations in Civil and Environmental Engineering	3
CEE 154	Data Analytics for Physical Systems	3-4
CEE 155	Introduction to Sensing Networks for CEE	3-4
CEE 156	Building Systems Design & Analysis	3
CEE 177L	Smart Cities & Communities	3
ME 161	Dynamic Systems, Vibrations and Control	3-4
ME 210	Introduction to Mechatronics	4

Structural Engineering and Mechanics Focus

		Units
CEE 101A	Mechanics of Materials	4
CEE 101C	Geotechnical Engineering	4
CEE 101D	Computations in Civil and Environmental Engineering	3
CEE 180	Structural Analysis	4
CEE 182	Structural Design	4
CEE 192	Laboratory Characterization of Properties of Rocks and Geomaterials	3-4
ME 151	Introduction to Computational Mechanics	4

Urban Systems Focus

		Units
CEE 120A	Building Modeling for Design & Construction	3
CEE 130	Architectural Design: 3-D Modeling, Methodology, and Process	5
CEE 156	Building Systems Design & Analysis	4
CEE 176A	Energy Efficient Buildings	3-4
CEE 177L	Smart Cities & Communities	3
CEE 243	Intro to Urban Sys Engrg	3

Honors Program

This program leads to a B.S. with honors for undergraduates majoring in Civil Engineering or in Environmental Systems Engineering. It is designed to encourage qualified students to undertake a more intensive study of civil and environmental engineering than is required for the normal majors through a substantial, independent research project.

The program involves an in-depth research study in an area proposed to and agreed to by a Department of Civil and Environmental Engineering faculty adviser and completion of a thesis of high quality. A written proposal for the research to be undertaken must be submitted and approved by the faculty adviser in the fourth quarter prior to graduation. At the time of application, the student must have an overall grade point average (GPA) of at least 3.3 for course work at Stanford; this GPA must be maintained to graduation. The thesis is supervised by a CEE faculty adviser and must involve input from the School of Engineering writing program by means of ENGR 202S Directed Writing Projects or ENGR 199W Writing of Original Research for Engineers. The written thesis must be approved by the thesis adviser. Students are encouraged to present their results in a seminar for faculty and students. Up to 10 units of CEE 199H Undergraduate Honors Thesis, may be taken to support the research and writing (not to duplicate ENGR 202S or ENGR 199W). These units are beyond the normal Civil Engineering or Environmental Systems Engineering major program requirements.

For additional information on the major, minor, honors and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

Honors Program

This program leads to a B.S. with honors for undergraduates majoring in Civil Engineering or in Environmental Systems Engineering. It is designed to encourage qualified students to undertake a more intensive study of civil and environmental engineering than is required for the normal majors through a substantial, independent research project.

The program involves an in-depth research study in an area proposed to and agreed to by a Department of Civil and Environmental Engineering faculty adviser and completion of a thesis of high quality. A written proposal for the research to be undertaken must be submitted and approved by the faculty advisor in the fourth quarter prior to graduation. At the time of application, the student must have an overall grade point average (GPA) of at least 3.3 for course work at Stanford; this GPA must be maintained to graduation. The thesis is supervised by a CEE faculty adviser and must involve input from the School of Engineering writing program by means of ENGR 202S Directed Writing Projects or ENGR 199W Writing of Original Research for Engineers. The written thesis must be approved by the thesis adviser. Students are encouraged to present their results in a seminar for faculty and students. Up to 10 units of CEE 199H Undergraduate Honors Thesis, may be taken to support the research and writing (not to duplicate ENGR 202S or ENGR 199W). These units are beyond the normal Civil Engineering or Environmental Systems Engineering major program requirements.

Civil Engineering (CE) Minor

The civil engineering minor is intended to give students a focused introduction to one or more areas of civil engineering. Departmental expertise and undergraduate course offerings are available in the areas of Architectural Design, Construction Engineering and Management, and Structural and Geotechnical Engineering. Students interested in Environmental and Water Studies should refer to the Environmental Systems Engineering minor.

The minimum prerequisite for a civil engineering minor is MATH 19 Calculus (or MATH 20 Calculus or MATH 21 Calculus); however, many courses of interest require PHYSICS 41 Mechanics and/or MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications as prerequisites. The minimum prerequisite for a Civil Engineering minor focusing on architectural design is MATH 19 Calculus (or MATH 20 Calculus or MATH 21 Calculus). Students should recognize that a minor in civil engineering is not an ABET-accredited degree program.

Since undergraduates having widely varying backgrounds may be interested in obtaining a civil engineering minor, and the field itself is so broad, no single set of course requirements will be appropriate for all students. Instead, interested students are encouraged to propose their own set of courses within the guidelines listed below. Additional information, including example minor programs, are provided on the CEE web site (http://cee.stanford.edu/prospective/undergrad/minor_overview.html) and in Chapter 6 of the Handbook for Undergraduate Engineering Programs (http://ughb.stanford.edu/).

General guidelines are:

1. A civil engineering minor must contain at least 24 units of course work not taken for the major, and must consist of at least six classes of at least 3 units each of letter-graded work, except where letter grades are not offered.
2. The list of courses must represent a coherent body of knowledge in a focused area, and should include classes that build upon one another. Example programs are given on the CEE webpage.

Professor Anne Kiremidjian (kiremidjian@stanford.edu) is the CEE undergraduate minor adviser in Structural Engineering and Construction Engineering and Management. John Barton (jhbarton@stanford.edu (http://www.stanford.edu/dept/registrar/bulletin/jhbarton@stanford.edu)), Program Director for Architectural Design, is the undergraduate minor adviser in Architectural Design. Students must consult the appropriate adviser when developing their minor program, and obtain approval of the finalized study list from them.

Computer Science Undergraduate Major

COVID-19-Related Degree Requirement Changes

For information on how Computer Science degree requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 723)" in the "Computer Science" of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

See the "Department of Computer Science (p. 706)" section of this bulletin for additional information on the department, and its programs and faculty.

The department offers a B.S. as well as a minor in Computer Science.

Computer Science (CS)

Completion of the undergraduate program in Computer Science leads to the conferral of the Bachelor of Science in Computer Science.

Mission of the Undergraduate Program in Computer Science

The mission of the undergraduate program in Computer Science is to develop students' breadth of knowledge across the subject areas of computer science, including their ability to apply the defining processes of computer science theory, abstraction, design, and implementation to solve problems in the discipline. Students take a set of core courses. After learning the essential programming techniques and the mathematical foundations of computer science, students take courses in areas such as programming techniques, automata and complexity theory, systems programming, computer architecture, analysis of algorithms, artificial intelligence, and applications. The program prepares students for careers in government, law, the corporate sector, and for graduate study.

Requirements

Mathematics (26 units minimum)—

		Units
CS 103	Mathematical Foundations of Computing	5
CS 109	Introduction to Probability for Computer Scientists	5
MATH 19	Calculus [1]	3
MATH 20	Calculus [1]	3
MATH 21	Calculus [1]	4
Plus two electives [2]		

Science (11 units minimum)—

		Units
PHYSICS 41	Mechanics	4
or PHYSICS 21	Mechanics, Fluids, and Heat	
or PHYSICS 41E	Mechanics, Concepts, Calculations, and Context	
PHYSICS 43	Electricity and Magnetism	4
or PHYSICS 23	Electricity, Magnetism, and Optics	
Science elective [3]		3

Technology in Society (3-5 units)—

One course; course chosen must be on the SoE Approved Courses list at https://ughb.stanford.edu/ the year taken; see Basic Requirements 4 in the School of Engineering section

Engineering Fundamentals (13 units minimum; see Basic Requirement 3 in the School of Engineering section)—

		Units
CS 106B	Programming Abstractions	5
or CS 106X	Programming Abstractions	
ENGR 40M	An Intro to Making: What is EE (or ENGR 40A and ENGR 40B)	3-5
Fundamentals Elective (May be an ENGR fundamentals or an additional CS Depth course. See Fig. 3-4 in the UGHB for approved ENGR fundamentals list. May not be any CS 106)		3-5
*Students who take ENGR 40A or 40M for fewer than 5 units are required to take 1-2 additional units of ENGR Fundamentals (13 units minimum), or 1-2 additional units of Depth.		

Writing in the Major—

		Units
Select one of the following:		
CS 181W	Computers, Ethics, and Public Policy	
CS 182W	Ethics, Public Policy, and Technological Change	
CS 191W	Writing Intensive Senior Project	
CS 194W	Software Project	
CS 210B	Software Project Experience with Corporate Partners	
CS 294W	Writing Intensive Research Project in Computer Science	

Computer Science Core (15 units)—

		Units
CS 107	Computer Organization and Systems	5
or CS 107E	Computer Systems from the Ground Up	
CS 110	Principles of Computer Systems	5
or CS 111	Operating Systems Principles	
CS 161	Design and Analysis of Algorithms	5

Senior Project (3 units)—

		Units
CS 191	Senior Project [7]	
CS 191W	Writing Intensive Senior Project [7]	
CS 194	Software Project	
CS 194H	User Interface Design Project	
CS 194W	Software Project	
CS 210B	Software Project Experience with Corporate Partners	
CS 294S	Research Project in Software Systems and Security	
CS 294W	Writing Intensive Research Project in Computer Science	

Computer Science Depth B.S.

Choose one of the following ten CS degree tracks (a track must consist of at least 25 units and 7 classes):

Artificial Intelligence Track—

		Units
CS 221	Artificial Intelligence: Principles and Techniques	4
Select two courses, each from a different area:		
Area I, AI Methods:		
CS 228	Probabilistic Graphical Models: Principles and Techniques	
CS 229	Machine Learning	
CS 234	Reinforcement Learning	
CS 238	Decision Making under Uncertainty	
Area II, Natural Language Processing:		
CS 124	From Languages to Information	
CS 224N	Natural Language Processing with Deep Learning	
CS 224S	Spoken Language Processing	
CS 224U	Natural Language Understanding	
Area III, Vision:		
CS 131	Computer Vision: Foundations and Applications	
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	
CS 231N	Convolutional Neural Networks for Visual Recognition	
Area IV, Robotics:		
CS 223A	Introduction to Robotics	
CS 237A	Principles of Robot Autonomy I	
Select one additional course from the Areas above or from the following:		
AI Methods:		
CS 157	Computational Logic	
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	
CS 230	Deep Learning	
CS 236	Deep Generative Models	
STATS 315A	Modern Applied Statistics: Learning	
STATS 315B	Modern Applied Statistics: Data Mining	
Comp Bio:		
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	
CS 371	Computational Biology in Four Dimensions	
Information and the Web:		
CS 276	Information Retrieval and Web Search	
CS 224W	Machine Learning with Graphs	
Other:		
CS 151	Logic Programming	
CS 227B	General Game Playing	
CS 379	Interdisciplinary Topics (Offered occasionally)	
Robotics and Control:		
CS 327A	Advanced Robotic Manipulation	
CS 329	Topics in Artificial Intelligence (with advisor approval)	
ENGR 205	Introduction to Control Design Techniques	
MS&E 251	Introduction to Stochastic Control with Applications	
MS&E 351	Dynamic Programming and Stochastic Control	
Track Electives: at least three additional courses selected from the Areas and lists above, general CS electives, or the courses listed below. Students can replace one of these electives with a course found at https://cs.stanford.edu/explore (https://cs.stanford.edu/explore/): [5]		
CS 237B	Principles of Robot Autonomy II	
CS 257	Logic and Artificial Intelligence	
CS 275	Translational Bioinformatics	
CS 326	Topics in Advanced Robotic Manipulation	
CS 330	Deep Multi-task and Meta Learning	
CS 336		
CS 338	Physical Human Robot Interaction	
CS 398	Computational Education	
CS 428	Computation and Cognition: The Probabilistic Approach	
EE 263	Introduction to Linear Dynamical Systems	
EE 278	Introduction to Statistical Signal Processing	
EE 364A	Convex Optimization I	
EE 364B	Convex Optimization II	
ECON 286	Game Theory and Economic Applications	
MS&E 252	Decision Analysis I: Foundations of Decision Analysis	
MS&E 352	Decision Analysis II: Professional Decision Analysis	
MS&E 355	Influence Diagrams and Probabilistics Networks	
PHIL 152	Computability and Logic	
PSYCH 204A	Human Neuroimaging Methods	
PSYCH 204B	Computational Neuroimaging	
PSYCH 209	Neural Network Models of Cognition	
STATS 200	Introduction to Statistical Inference	

STATS 202	Data Mining and Analysis	
STATS 205	Introduction to Nonparametric Statistics	

Biocomputation Track—

		Units
The Mathematics, Science, and Engineering Fundamentals requirements are non-standard for this track. See Handbook for Undergraduate Engineering Programs for details.		
Select one of the following:		3-4
CS 221	Artificial Intelligence: Principles and Techniques	
CS 228	Probabilistic Graphical Models: Principles and Techniques	
CS 229	Machine Learning	
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	
Select one of the following:		
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	
CS 270	Modeling Biomedical Systems	
CS 273A	The Human Genome Source Code	
CS 274	Representations and Algorithms for Computational Molecular Biology	
CS 275	Translational Bioinformatics	
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	
One additional course from the lists above or the following:		3-4
CS 124	From Languages to Information	
CS 145	Data Management and Data Systems	
CS 147	Introduction to Human-Computer Interaction Design	
CS 148	Introduction to Computer Graphics and Imaging	
CS 248	Interactive Computer Graphics	
One course selected from the following:		3-4
CS 108	Object-Oriented Systems Design	4
CS 124	From Languages to Information	3-4
CS 131	Computer Vision: Foundations and Applications	3-4
CS 140	Operating Systems and Systems Programming [4]	3-4
or CS 140E	Operating systems design and implementation	
CS 142	Web Applications	3
CS 143	Compilers	3-4
CS 144	Introduction to Computer Networking	3-4
CS 145	Data Management and Data Systems	3-4
CS 146	Introduction to Game Design and Development	3
CS 147	Introduction to Human-Computer Interaction Design	3-5
CS 148	Introduction to Computer Graphics and Imaging	3-4
CS 149	Parallel Computing	3-4
CS 151	Logic Programming	3
CS 154	Introduction to the Theory of Computation	3-4
CS 155	Computer and Network Security	3
CS 157	Computational Logic	3
or PHIL 151	Metalogic	
CS 163	The Practice of Theory Research	3
CS 166	Data Structures	3-4
CS 168	The Modern Algorithmic Toolbox	3-4
CS 190	Software Design Studio	3-4
CS 195	Supervised Undergraduate Research (4 units max)	3-4
CS 197	Computer Science Research	4
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	3
CS 210A	Software Project Experience with Corporate Partners	3-4
CS 217	Hardware Accelerators for Machine Learning	3-4
CS 221	Artificial Intelligence: Principles and Techniques	3-4
CS 223A	Introduction to Robotics	3
CS 224N	Natural Language Processing with Deep Learning	3-4
CS 224S	Spoken Language Processing	2-4
CS 224U	Natural Language Understanding	3-4
CS 224W	Machine Learning with Graphs	3-4
CS 225A	Experimental Robotics	3
CS 227B	General Game Playing	3
CS 228	Probabilistic Graphical Models: Principles and Techniques	3-4
CS 229	Machine Learning	3-4
CS 229M	Machine Learning Theory	3
CS 230	Deep Learning	3-4
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	3-4
CS 231N	Convolutional Neural Networks for Visual Recognition	3-4
CS 232	Digital Image Processing	3
CS 233	Geometric and Topological Data Analysis	3
CS 234	Reinforcement Learning	3
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	3-4
CS 236	Deep Generative Models	3
CS 237A	Principles of Robot Autonomy I	3-5
CS 237B	Principles of Robot Autonomy II	3-4
CS 238	Decision Making under Uncertainty	3-4
CS 240	Advanced Topics in Operating Systems	3
CS 240LX	Advanced Systems Laboratory, Accelerated	3
CS 242	Programming Languages	3
CS 243	Program Analysis and Optimizations	3-4
CS 244	Advanced Topics in Networking	3-4
CS 244B	Distributed Systems	3
CS 245	Principles of Data-Intensive Systems	3
CS 246	Mining Massive Data Sets	3-4
CS 247	(Any suffix)	3-4
CS 248	Interactive Computer Graphics	3-4
CS 251	Cryptocurrencies and blockchain technologies	3
CS 252	Analysis of Boolean Functions	3
CS 254	Computational Complexity	3
CS 254B	Computational Complexity II	3
CS 255	Introduction to Cryptography	3
CS 261	Optimization and Algorithmic Paradigms	3
CS 263	Counting and Sampling	3

CS 265	Randomized Algorithms and Probabilistic Analysis	3
CS 269Q	Elements of Quantum Computer Programming	3
CS 269I	Incentives in Computer Science (Not Given This Year)	3
CS 270	Modeling Biomedical Systems	3
CS 271	Artificial Intelligence in Healthcare	3-4
CS 272	Introduction to Biomedical Informatics Research Methodology	3-5
CS 273A	The Human Genome Source Code	3
CS 273B	Deep Learning in Genomics and Biomedicine	3
CS 274	Representations and Algorithms for Computational Molecular Biology	3-4
CS 275	Translational Bioinformatics	4
CS 276	Information Retrieval and Web Search	3
CS 278	Social Computing	3
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	3
CS 330	Deep Multi-task and Meta Learning	3
CS 336	(Robot Perception and Decision Making: not offered this year)	
CS 348	(any suffix)	
CS 351	Open Problems in Coding Theory	3
CS 352	Pseudo-Randomness	3-4
CS 369L	Algorithmic Perspective on Machine Learning	3
CS 371	Computational Biology in Four Dimensions	3
CS 398	Computational Education	4
CME 108	Introduction to Scientific Computing	3
EE 180	Digital Systems Architecture	4
EE 263	Introduction to Linear Dynamical Systems	3
EE 282	Computer Systems Architecture	3
EE 364A	Convex Optimization I	3
BIOE 101	Systems Biology	3
MS&E 152	Introduction to Decision Analysis	3-4
MS&E 252	Decision Analysis I: Foundations of Decision Analysis	3-4
STATS 206	Applied Multivariate Analysis	3
STATS 315A	Modern Applied Statistics: Learning	3
STATS 315B	Modern Applied Statistics: Data Mining	3
GENE 211	Genomics	3
One course from the following:		3-5
CS 145	Data Management and Data Systems	3-4
CS 147	Introduction to Human-Computer Interaction Design	3-5
CS 221	Artificial Intelligence: Principles and Techniques	3-4
CS 228	Probabilistic Graphical Models: Principles and Techniques	3-4
CS 229	Machine Learning	3-4
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	3-4
CS 270	Modeling Biomedical Systems	3
CS 271	Artificial Intelligence in Healthcare	3-4
CS 273A	The Human Genome Source Code	3
CS 273B	Deep Learning in Genomics and Biomedicine	3
CS 274	Representations and Algorithms for Computational Molecular Biology	3-4
CS 275	Translational Bioinformatics	4
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	3
CS 371	Computational Biology in Four Dimensions	3
EE 263	Introduction to Linear Dynamical Systems	3
EE 364A	Convex Optimization I	3
MS&E 152	Introduction to Decision Analysis	3-4
MS&E 252	Decision Analysis I: Foundations of Decision Analysis	3-4
STATS 206	Applied Multivariate Analysis	3
STATS 315A	Modern Applied Statistics: Learning	3
STATS 315B	Modern Applied Statistics: Data Mining	3
GENE 211	Genomics	3
One course selected from the list above or the following:		
CHEMENG 150	Biochemical Engineering	3
CHEMENG 174	Environmental Microbiology I	3
APPPHYS 294	Cellular Biophysics	3
BIO 104	Advance Molecular Biology: Epigenetics and Proteostasis	5
BIO 118	(Not Given This Year)	4
BIO 214	Advanced Cell Biology	4
BIO 230	Molecular and Cellular Immunology	4
CHEM 141	The Chemical Principles of Life I	4
CHEM 171	Foundations of Physical Chemistry	4
BIOC 241	Biological Macromolecules	3-5
One course from the following:		
BIOE 220	Introduction to Imaging and Image-based Human Anatomy	3
CHEMENG 150	Biochemical Engineering	3
CHEMENG 174	Environmental Microbiology I	3
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	3-4
CS 274	Representations and Algorithms for Computational Molecular Biology	3-4
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	3
CS 371	Computational Biology in Four Dimensions	3
ME 281	Biomechanics of Movement	3
APPPHYS 294	Cellular Biophysics	3
BIO 104	Advance Molecular Biology: Epigenetics and Proteostasis	5
BIO 112	Human Physiology	4
BIO 118	(Not Given This Year)	4
BIO 158	Developmental Neurobiology	4
BIO 183	Theoretical Population Genetics	3
BIO 214	Advanced Cell Biology	4
BIO 230	Molecular and Cellular Immunology	4
CHEM 171	Foundations of Physical Chemistry	4
CHEM 141	The Chemical Principles of Life I	4
BIOC 241	Biological Macromolecules	3-5
DBIO 210	Developmental Biology	4
GENE 211	Genomics	3
SURG 101	Regional Study of Human Structure	5

Computer Engineering Track—

		Units
For this track there is a 10 unit minimum for ENGR Fundamentals and a 29 unit minimum for Depth (for track and elective courses)		
EE 108	Digital System Design	4
EE 180	Digital Systems Architecture	4
Select two of the following:		8
EE 101A	Circuits I	
EE 101B	Circuits II	
EE 102A	Signal Processing and Linear Systems I	
EE 102B	Signal Processing and Linear Systems II	
Satisfy the requirements of one of the following concentrations:		
1) Digital Systems Concentration		
CS 140	Operating Systems and Systems Programming [4]	
or CS 140E	Operating systems design and implementation	
or CS 143	Compilers	
EE 109	Digital Systems Design Lab	
EE 271	Introduction to VLSI Systems	
Plus two of the following (6-8 units):		
CS 140	Operating Systems and Systems Programming (if not counted above) [4]	
or CS 140E	Operating systems design and implementation	
or CS 143	Compilers	
CS 144	Introduction to Computer Networking	
CS 149	Parallel Computing	
CS 190	Software Design Studio	
CS 217	Hardware Accelerators for Machine Learning	
CS 244	Advanced Topics in Networking	
EE 273	Digital Systems Engineering	
EE 282	Computer Systems Architecture	
2) Robotics and Mechatronics Concentration		
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	
CS 223A	Introduction to Robotics	
ME 210	Introduction to Mechatronics	
ENGR 105	Feedback Control Design	
Plus one of the following (3-4 units):		
CS 225A	Experimental Robotics	
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	
ENGR 205	Introduction to Control Design Techniques	
ENGR 207B	Linear Control Systems II	
3) Networking Concentration		
CS 140	Operating Systems and Systems Programming (CS 140E can substitute for CS 140) [4]	
CS 144	Introduction to Computer Networking	
Plus three of the following (9-11 units):		
CS 240	Advanced Topics in Operating Systems	
or CS 240LX	Advanced Systems Laboratory, Accelerated	
CS 241	Embedded Systems Workshop	
CS 244	Advanced Topics in Networking	
CS 244B	Distributed Systems	
EE 179	Analog and Digital Communication Systems	

Graphics Track—

		Units
CS 148	Introduction to Computer Graphics and Imaging	4
CS 244	Advanced Topics in Networking	4
Select one of the following: [6]		3-5
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	
CME 104	Linear Algebra and Partial Differential Equations for Engineers (Note: students taking CME 104 are also required to take its prerequisite course, CME 102)	
CME 108	Introduction to Scientific Computing	
MATH 52	Integral Calculus of Several Variables	
MATH 113	Linear Algebra and Matrix Theory	
Select two of the following:		6-8
CS 146	Introduction to Game Design and Development	
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	
or CS 131	Computer Vision: Foundations and Applications	
CS 233	Geometric and Topological Data Analysis	
CS 348	(Computer Graphics: any suffix)	
CS 448	Topics in Computer Graphics	
Track Electives: at least two additional courses from the lists above, the general CS electives list, or the courses listed below. Students can replace one of these electives with a course found at: https://cs.stanford.edu/explore (https://cs.stanford.edu/explore/): [5]		6-8
ARTSTUDI 160	Intro to Digital / Physical Design	
ARTSTUDI 170	Photography I: Black and White	
ARTSTUDI 179	Digital Art I	
CME 302	Numerical Linear Algebra	
CME 306	Numerical Solution of Partial Differential Equations	
EE 168	Introduction to Digital Image Processing	
EE 262	Three-Dimensional Imaging	
EE 264	Digital Signal Processing	
EE 278	Introduction to Statistical Signal Processing	
EE 368	Digital Image Processing	
ME 101	Visual Thinking	
PSYCH 30	Introduction to Perception	
PSYCH 221	Image Systems Engineering	

Human-Computer Interaction Track—

		Units
CS 147	Introduction to Human-Computer Interaction Design	5
CS 247	(Any suffix)	4
CS 347	Human-Computer Interaction: Foundations and Frontiers	4
CS 142	Web Applications	3
Any one of the following:		
CS 194H	User Interface Design Project	
CS 206	Exploring Computational Journalism	
CS 210A	Software Project Experience with Corporate Partners	
CS 247	(Any suffix beyond the course used above)	

CS 278	Social Computing	
Any CS 377 'Topics in HCI' of three or more units		
CS 448B	Data Visualization	
ME 216M	Introduction to the Design of Smart Products	
At least two additional courses from the above areas or the general CS electives list. Students can replace one of these electives with a course found at https://cs.stanford.edu/explore (https://cs.stanford.edu/explore/)		
Optional Elective [5]		

Information Track—

		Units
CS 124	From Languages to Information	4
CS 145	Data Management and Data Systems	4
Two courses, from different areas:		6-9
1) Information-based AI applications		
CS 224N	Natural Language Processing with Deep Learning	
CS 224S	Spoken Language Processing	
CS 229	Machine Learning	
CS 233	Geometric and Topological Data Analysis	
CS 234	Reinforcement Learning	
2) Database and Information Systems		
CS 140	Operating Systems and Systems Programming [4]	
or CS 140E	Operating systems design and implementation	
CS 142	Web Applications	
CS 151	Logic Programming	
CS 245	Principles of Data-Intensive Systems	
CS 246	Mining Massive Data Sets	
CS 341	Project in Mining Massive Data Sets	
3) Information Systems in Biology		
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	
CS 270	Modeling Biomedical Systems	
CS 274	Representations and Algorithms for Computational Molecular Biology	
4) Information Systems on the Web		
CS 224W	Machine Learning with Graphs	
CS 276	Information Retrieval and Web Search	
At least three additional courses from the above areas or the general CS electives list. Students can replace one of these electives with a course found at https://cs.stanford.edu/explore (https://cs.stanford.edu/explore/) [5]		

Systems Track—

		Units
CS 140	Operating Systems and Systems Programming [4]	4
or CS 140E	Operating systems design and implementation	
Select one of the following:		3-4
CS 143	Compilers	
EE 180	Digital Systems Architecture	
Two additional courses from the list above or the following:		6-8
CS 144	Introduction to Computer Networking	
CS 145	Data Management and Data Systems	
CS 149	Parallel Computing	
CS 155	Computer and Network Security	
CS 190	Software Design Studio	
CS 217	Hardware Accelerators for Machine Learning	
CS 240	Advanced Topics in Operating Systems	
or CS 240LX	Advanced Systems Laboratory, Accelerated	
CS 242	Programming Languages	
CS 243	Program Analysis and Optimizations	
CS 244	Advanced Topics in Networking	
CS 245	Principles of Data-Intensive Systems	
EE 271	Introduction to VLSI Systems	
EE 282	Computer Systems Architecture	
Track Electives: at least three additional courses selected from the list above, the general CS electives list, or the courses listed below. Students can replace one of these electives with a course found at: https://cs.stanford.edu/explore (https://cs.stanford.edu/explore/) [5]		9-12
CS 241	Embedded Systems Workshop	
CS 269Q	Elements of Quantum Computer Programming	
CS 316	Advanced Multi-Core Systems	
CS 341	Project in Mining Massive Data Sets	
CS 344	Topics in Computer Networks (3 or more units, any suffix)	
CS 349	Topics in Programming Systems (with permission of undergraduate advisor)	
CS 357S	Formal Methods for Computer Systems	
CS 448	Topics in Computer Graphics	
EE 108	Digital System Design	
EE 382C	Interconnection Networks	
EE 384A	Internet Routing Protocols and Standards	
EE 384C	Wireless Local and Wide Area Networks	
EE 384E	Networked Wireless Systems	
EE 384S	Performance Engineering of Computer Systems & Networks	

Theory Track—

		Units
CS 154	Introduction to the Theory of Computation	4
Select one of the following:		3
CS 168	The Modern Algorithmic Toolbox	
CS 255	Introduction to Cryptography	
CS 261	Optimization and Algorithmic Paradigms	
CS 265	Randomized Algorithms and Probabilistic Analysis	
CS 268	Geometric Algorithms	
Two additional courses from the list above or the following:		6-8
CS 143	Compilers	
CS 151	Logic Programming	
CS 155	Computer and Network Security	
CS 157	Computational Logic	
or PHIL 151	Metalogic	
CS 163	The Practice of Theory Research	
CS 166	Data Structures	
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	
CS 228	Probabilistic Graphical Models: Principles and Techniques	
CS 233	Geometric and Topological Data Analysis	

CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	
CS 236	Deep Generative Models	
CS 242	Programming Languages	
CS 250	Algebraic Error Correcting Codes	
CS 251	Cryptocurrencies and blockchain technologies	
CS 252	Analysis of Boolean Functions	
CS 254	Computational Complexity	
CS 259	(With permission of undergraduate advisor. Course offered occasionally.)	
CS 263	Counting and Sampling	
CS 269I	Incentives in Computer Science (Not Given This Year)	
CS 351	Open Problems in Coding Theory	
CS 354	Topics in Intractability: Unfulfilled Algorithmic Fantasies (Not given this year)	
CS 355	Advanced Topics in Cryptography (Not given this year)	
CS 357	Advanced Topics in Formal Methods (Not given this year)	
CS 358	Topics in Programming Language Theory	
CS 359	Topics in the Theory of Computation (with permission of undergraduate advisor)	
CS 369	Topics in Analysis of Algorithms (with permission of undergraduate advisor)	
MS&E 310	Linear Programming	
Track Electives: at least three additional courses from the lists above, the general CS electives list, or the courses listed below. Students can replace one of these electives with a course found at: https://cs.stanford.edu/explore (https://cs.stanford.edu/explore/) [5]		9-12
CS 254B	Computational Complexity II	
CS 269G	Almost Linear Time Graph Algorithms	
CME 302	Numerical Linear Algebra	
CME 305	Discrete Mathematics and Algorithms	
PHIL 152	Computability and Logic	

Unspecialized Track—

		Units
CS 154	Introduction to the Theory of Computation	4
Select one of the following:		4
CS 140	Operating Systems and Systems Programming [4]	
or CS 140E	Operating systems design and implementation	
CS 143	Compilers	
One additional course from the list above or the following:		3-4
CS 144	Introduction to Computer Networking	
CS 155	Computer and Network Security	
CS 190	Software Design Studio	
CS 242	Programming Languages	
CS 244	Advanced Topics in Networking	
EE 180	Digital Systems Architecture	
Select one of the following:		3-4
CS 221	Artificial Intelligence: Principles and Techniques	
CS 223A	Introduction to Robotics	
CS 228	Probabilistic Graphical Models: Principles and Techniques	
CS 229	Machine Learning	
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	
Select one of the following:		3-4
CS 145	Data Management and Data Systems	
CS 147	Introduction to Human-Computer Interaction Design	
CS 148	Introduction to Computer Graphics and Imaging	
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	
CS 248	Interactive Computer Graphics	
At least two courses from the general CS electives list [5]		

Individually Designed Track—

Students may propose an individually designed track. Proposals should include a minimum of 25 units and seven courses, at least four of which must be CS courses numbered 100 or above. Proposals must be approved by the faculty advisor and Director of Undergraduate Studies. See Handbook for Undergraduate Engineering Programs for further information.

Footnotes for Track Course Lists

1 MATH 19, MATH 20, and MATH 21, or AP Calculus Credit may be used as long as at least 26 MATH units are taken. AP Calculus Credit must be approved by the School of Engineering.

2 The math electives list consists of: MATH 51, MATH 52, MATH 53, MATH 104, MATH 107, MATH 108, MATH 109, MATH 110, MATH 113; CS 157, CS 205L, PHIL 151; CME 100, CME 102, CME 104, ENGR 108. Restrictions: CS 157 and PHIL 151 may not be used in combination to satisfy the math electives requirement. Students who have taken both MATH 51 and MATH 52 may not count CME 100 as an elective. Courses counted as math electives cannot also count as CS electives, and vice versa.

3 The science elective may be any course of 3 or more units from the School of Engineering Science list (Fig. 4-2 in the UGHB), PSYCH 30, or AP Chemistry Credit. Either of the PHYSICS sequences 61/63 or 21/23 may be substituted for 41/43 as long as at least 11 science units are taken. AP Chemistry Credit and AP Physics Credit must be approved by the School of Engineering.

4 CS 111 and CS 140 cannot both be counted towards the BS requirements. However, it is acceptable to count both CS 111 and CS 140E towards the BS requirements.

5 General CS Electives: CS 108, CS 124, CS 131, CS 140 (or CS 140E), CS 142, CS 143, CS 144, CS 145, CS 146, CS 147, CS 148, CS 149, CS 154, CS 155, CS 157(or PHIL 151), CS 163, CS 166, CS 168, CS 190, CS 195 (4 units max), CS 197, CS 205L, CS 210A, CS 217, CS 221, CS 223A, CS 224N, CS 224S, CS 224U, CS 224W, CS 225A, CS 227B, CS 228, CS 229, CS 229M, CS 230, CS 231A, CS 231N, CS 232, CS 233, CS 234CS 234CS 234CS 234CS 234CS 234CS 234CS 234CS 234, CS 235, CS 237A, CS 237B, CS 238, CS 240, CS 240LX, CS 242, CS 243, CS 244, CS 244B, CS 245, CS 246, CS 247(any suffix), CS 248, CS 251, CS 252, CS 254, CS 254B, CS 255, CS 261, CS 263, CS 265, CS 269I, CS 269Q, CS 270, CS 271, CS 272, CS 273A, CS 273B, CS 274, CS 276, CS 278, CS 279, CS 330, CS 336, CS 348 (any suffix), CS 351, CS 352, CS 369L, CS 398, CME 108; EE 180, EE 282.

6 CS 205L is strongly recommended in this list for the Graphics track. Students taking CME 104 Linear Algebra and Partial Differential Equations for Engineers are also required to take its prerequisite, CME 102 Ordinary Differential Equations for Engineers.

[7] Independent study projects (CS 191 Senior Project or CS 191W Writing Intensive Senior Project) require faculty sponsorship and must be approved by the adviser, faculty sponsor, and the CS senior project adviser (Patrick Young). A signed approval form, along with a brief description of the proposed project, should be filed the quarter before work on the project is begun. Further details can be found in the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

[8] A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

Additional Information

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB). (http://ughb.stanford.edu)

Honors Program in Computer Science

The Department of Computer Science (CS) offers an honors program for undergraduates whose academic records and personal initiative indicate that they have the necessary skills to undertake high-quality research in computer science. Admission to the program is by application only. To apply for the honors program, students must be majoring in Computer Science, have a grade point average (GPA) of at least 3.6 in courses that count toward the major, and achieve senior standing (135 or more units) by the end of the academic year in which they apply. Coterminal master's students are eligible to apply as long as they have not already received their undergraduate degree. Beyond these requirements, students who apply for the honors program must find a Computer Science faculty member who agrees to serve as the thesis adviser for the project. Thesis advisers must be members of Stanford's Academic Council.

Students who meet the eligibility requirements and wish to be considered for the honors program must submit a written application to the CS undergraduate program office by May 1 of the year preceding the honors work. The application must include a letter describing the research project, a letter of endorsement from the faculty sponsor, and a transcript of courses taken at Stanford. Each year, a faculty review committee selects the successful candidates for honors from the pool of qualified applicants.

In order to receive departmental honors, students admitted to the honors program must, in addition to satisfying the standard requirements for the undergraduate degree, do the following:

1. Complete at least 9 units of CS 191 or CS 191W under the direction of their project sponsor.
2. Attend a weekly honors seminar Winter Quarter.
3. Complete an honors thesis deemed acceptable by the thesis adviser and at least one additional faculty member.
4. Present the thesis at a public colloquium sponsored by the department.
5. Maintain the 3.6 GPA required for admission to the honors program.

Computer Science (CS) Minor

The following core courses fulfill the minor requirements. Prerequisites include the standard mathematics sequence through MATH 51 (or CME 100).

		Units
Introductory Programming (AP Credit may be used to fulfill this requirement):		
CS 106B	Programming Abstractions	5
or CS 106X	Programming Abstractions	
Core:		
CS 103	Mathematical Foundations of Computing	5
CS 107	Computer Organization and Systems	5
or CS 107E	Computer Systems from the Ground Up	
CS 109	Introduction to Probability for Computer Scientists	5
Electives (choose two courses from different areas):		
Artificial Intelligence—		
CS 124	From Languages to Information	4
CS 221	Artificial Intelligence: Principles and Techniques	4
CS 229	Machine Learning	3-4
Human-Computer Interaction—		
CS 147	Introduction to Human-Computer Interaction Design	4
Software—		
CS 108	Object-Oriented Systems Design	4
CS 110	Principles of Computer Systems	5
Systems—		
CS 140	Operating Systems and Systems Programming	4
or CS 140E	Operating systems design and implementation	
CS 143	Compilers	4
CS 144	Introduction to Computer Networking	4
CS 145	Data Management and Data Systems	4
CS 148	Introduction to Computer Graphics and Imaging	4
Theory—		
CS 154	Introduction to the Theory of Computation	4
CS 157	Computational Logic	3
CS 161	Design and Analysis of Algorithms	5

Note: for students with no programming background and who begin with CS 106A, the minor consists of seven courses.

Electrical Engineering Undergraduate Major

COVID-19-Related Degree Requirement Changes

For information on how Electrical Engineering degree requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 762)" in the "Electrical Engineering" of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

See the "Department of Electrical Engineering (p. 755)" section of this bulletin for additional information on the department, and its programs and faculty.

The department offers a B.S. as well as a minor in Electrical Engineering.

Electrical Engineering (EE)

Completion of the undergraduate program in Electrical Engineering leads to the conferral of the Bachelor of Science in Electrical Engineering.

Mission of the Undergraduate Program in Electrical Engineering

The mission of the undergraduate program of the Department of Electrical Engineering is to augment the liberal education expected of all Stanford undergraduates, to impart basic understanding of electrical engineering and to develop skills in the design and building of systems that directly impact societal needs.

The program includes a balanced foundation in the physical sciences, mathematics and computing; core courses in electronics, information systems and digital systems; and develops specific skills in the analysis and design of systems. Students in the major have broad flexibility to select from disciplinary areas beyond the core, including hardware and software, information systems and science, and physical technology and science, as well as electives in multidisciplinary areas, including bio-electronics and bio-imaging, energy and environment and music.

The program prepares students for a broad range of careers—both industrial and government—as well as for professional and academic graduate education.

Requirements

		Units
MATHEMATICS AND SCIENCE		
Minimum 40 units Math and Science combined.		
Mathematics [1]		
Select one sequence: May also be satisfied with AP Calculus.		10
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	
Select one 2-course sequence:		10
CME 100 & CME 102	Vector Calculus for Engineers and Ordinary Differential Equations for Engineers (Same as ENGR 154 and ENGR 155A)	
MATH 51 & MATH 53	Linear Algebra, Multivariable Calculus, and Modern Applications and Ordinary Differential Equations with Linear Algebra [2]	
EE Math. One additional 100-level course. Select one:		3
CS 103	Mathematical Foundations of Computing	
ENGR 108	Introduction to Matrix Methods (Preferred) [3]	
MATH 113	Linear Algebra and Matrix Theory	
Statistics/Probability		3-4
EE 178	Probabilistic Systems Analysis [3]	
Science		
Minimum 12 units		
Select one sequence:		12
PHYSICS 41 & EE 65	Mechanics and Modern Physics for Engineers [4]	
PHYSICS 61 & EE 65	Mechanics and Special Relativity and Modern Physics for Engineers [4]	
Science elective. One additional 4-5 unit course from approved list in Undergraduate Handbook, Figure 4-2.		4-5
TECHNOLOGY IN SOCIETY		
One course, see Basic Requirement 4 in the School of Engineering section. The course taken must be on the School of Engineering Approved Courses list, Fig 4-3, the year it is taken.		3-5
ENGINEERING TOPICS		
Minimum 60 units comprised of: Engineering Fundamentals (minimum 10 units), Core Electrical Engineering Courses (minimum 16 units) Disciplinary Area (minimum 17 units), Electives (maximum 17 units, restrictions apply).		
Engineering Fundamentals		**10**
2 courses required; minimum 10 units.		
Select one:		
CS 106B	Programming Abstractions	5
or CS 106X	Programming Abstractions	
Choose one Fundamental from the Approved List; Recommended: ENGR 40A and ENGR 40B or ENGR 40M (recommended before taking EE 101A); taking CS 106A or a second ENGR 40-series course not allowed for the Fundamentals elective. Choose from table in Undergraduate Handbook, Approved List.		5
Core Electrical Engineering Courses		**16**
Minimum 16 units.		
EE 42	Introduction to Electromagnetics and Its Applications [5]	
EE 100	The Electrical Engineering Profession [6]	
EE 101A	Circuits I	
EE 102A	Signal Processing and Linear Systems I	
EE 108	Digital System Design	
Disciplinary Area		**17**
Minimum 17 units, 5 courses: 1-2 Required, 1 WIM/Design and 2-3 disciplinary area electives.		
Writing in the Major (WIM)		**3-5**
Select one. A single course can concurrently meet the WIM and Design Requirements.		
EE 109	Digital Systems Design Lab (WIM/Design)	
EE 133	Analog Communications Design Laboratory (WIM/Design)	
EE 134	Introduction to Photonics (WIM/Design)	
EE 153	Power Electronics (WIM/Design)	
EE 155	Green Electronics (WIM/Design)	
EE 168	Introduction to Digital Image Processing (WIM/Design)	
EE 191W	Special Studies and Reports in Electrical Engineering (WIM; Department approval required) [7]	
EE 264W	Digital Signal Processing (WIM/Design)	
EE 267W	Virtual Reality (WIM/Design)	
CS 194W	Software Project (WIM/Design)	
Design Course		**3-5**
Select one. Students may select their Design course from any Disciplinary Area.		
EE 109	Digital Systems Design Lab (WIM/Design)	
EE 133	Analog Communications Design Laboratory (WIM/Design)	
EE 134	Introduction to Photonics (WIM/Design)	
EE 153	Power Electronics (WIM/Design)	
EE 155	Green Electronics (WIM/Design)	
EE 168	Introduction to Digital Image Processing (WIM/Design)	
EE 185C	Engineering a Smart Object - Adding connectivity and Putting it ALL together (Design)	
EE 262	Three-Dimensional Imaging (Design)	
EE 264	Digital Signal Processing (Design) [8]	
EE 264W	Digital Signal Processing (WIM/Design)	

EE 267	Virtual Reality (Design) [8]	
EE 267W	Virtual Reality (WIM/Design)	
CS 194	Software Project (Design)	
CS 194W	Software Project (WIM/Design)	
Electives [9]		**17**

Minimum 17 units. The elective units should be sufficient to meet the 60 unit total for the major, over and above the 40 units of Math and Science. Depending on units completed in the Disciplinary Area, elective units will be in the range of 17 units or less. Students may select electives from the disciplinary areas; from the multidisciplinary elective areas; or any combination of disciplinary and multidisciplinary areas. May include up to two additional Engineering Fundamentals and any letter graded EE courses (minus any previously noted restrictions). Freshman and Sophomore seminars, EE 191 and CS 106A do not count toward the 60 units. Students may have fewer elective units if they have more units in their disciplinary area.

1 MATH 41 and MATH 42 are no longer offered and have been replaced by MATH 19, MATH 20, and MATH 21.

2 MATH 51 may be replaced by MATH 52. MATH 53 may be replaced by CME 102.

3 If used for math, ENGR 108 may not be used as an EE disciplinary elective. Students may petition to use CS 109 in place of EE 178.

4 Students may petition to have either PHYSICS 65 or the combination of PHYSICS 45 and PHYSICS 70 count as an alternative to EE 65.

5 Students may petition to use PHYSICS 43 or PHYSICS 63 in place of EE 42. The EE introductory class ENGR 40A and ENGR 40B or ENGR 40M may be taken concurrently with either EE 42 or PHYSICS 43. There are no prerequisites for ENGR 40A and ENGR 40B or ENGR 40M.

6 For upper division students, a 200-level seminar in their disciplinary area will be accepted, on petition.

7 EE 191W may satisfy WIM only if it is a follow-up to an REU, independent study project or as part of an honors thesis project where a faculty agrees to provide supervision of writing a technical paper and with suitable support from the Writing Center.

8 To satisfy Design, must take EE 264 or EE 267 for 4 units and complete the laboratory project.

9 A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

Disciplinary Areas

		Units
Hardware and Software		
EE 180	Digital Systems Architecture (Required)	4
EE 104	Introduction to Machine Learning	3-5
EE 107	Embedded Networked Systems	3
EE 109	Digital Systems Design Lab (WIM/Design)	4
EE 118	Introduction to Mechatronics	4
EE 155	Green Electronics (Design)	4
EE 185C	Engineering a Smart Object - Adding connectivity and Putting it ALL together (Design)	3
EE 264	Digital Signal Processing (Design)	3-4
EE 264W	Digital Signal Processing (WIM/Design)	5
EE 267	Virtual Reality (Design)	3-4
EE 267W	Virtual Reality (WIM/Design)	5
EE 271	Introduction to VLSI Systems	3
EE 272A	Design Projects in VLSI Systems I	3-4
EE 272B	Design Projects in VLSI Systems II	3-4
EE 273	Digital Systems Engineering	3
EE 282	Computer Systems Architecture	3
EE 285	Embedded Systems Workshop	3
CS 107	Computer Organization and Systems (Required prerequisite for EE 180; CS 107E preferred)	3-5
or CS 107E	Computer Systems from the Ground Up	
CS 108	Object-Oriented Systems Design	3-4
CS 110	Principles of Computer Systems	3-5
CS 131	Computer Vision: Foundations and Applications	3-4
CS 140	Operating Systems and Systems Programming	3-4
CS 143	Compilers	3-4
CS 144	Introduction to Computer Networking	3-4
CS 145	Data Management and Data Systems	3-4
CS 148	Introduction to Computer Graphics and Imaging	3-4
CS 149	Parallel Computing	3-4
CS 155	Computer and Network Security	3
CS 194W	Software Project (WIM/Design)	3
CS 221	Artificial Intelligence: Principles and Techniques	3-4
CS 223A	Introduction to Robotics	3
CS 224N	Natural Language Processing with Deep Learning	3-4
CS 225A	Experimental Robotics	3
CS 229	Machine Learning	3-4
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	3-4
CS 231N	Convolutional Neural Networks for Visual Recognition	3-4
CS 241	Embedded Systems Workshop	3
CS 244	Advanced Topics in Networking	3-4
Information Systems and Science		
EE 102B	Signal Processing and Linear Systems II (Required)	4
EE 104	Introduction to Machine Learning	3-5
EE 107	Embedded Networked Systems	3
EE 118	Introduction to Mechatronics	4
EE 124	Introduction to Neuroelectrical Engineering	3
EE 133	Analog Communications Design Laboratory (WIM/Design)	3-4
EE 155	Green Electronics (WIM/Design)	4
EE 168	Introduction to Digital Image Processing (WIM/Design)	3-4
EE 169	Introduction to Bioimaging	3
EE 179	Analog and Digital Communication Systems	3
EE 260A	Principles of Robot Autonomy I	3-5
EE 260B	Principles of Robot Autonomy II	3-4
EE 261	The Fourier Transform and Its Applications	3
EE 262	Three-Dimensional Imaging (Design)	3
EE 263	Introduction to Linear Dynamical Systems	3
EE 264	Digital Signal Processing (Design)	3-4
EE 264W	Digital Signal Processing (WIM/Design)	5

EE 266	Introduction to Stochastic Control with Applications	3
EE 267	Virtual Reality (Design)	3-4
EE 267W	Virtual Reality (WIM/Design)	5
EE 269	Signal Processing for Machine Learning	3
EE 276	Information Theory	3
EE 278	Introduction to Statistical Signal Processing	3
EE 279	Introduction to Digital Communication	3
ENGR 105	Feedback Control Design	3
ENGR 205	Introduction to Control Design Techniques	3
CS 107	Computer Organization and Systems	3-5
CS 229	Machine Learning	3-4
Physical Technology and Science		
EE 101B	Circuits II (Required)	4
EE 107	Embedded Networked Systems	3
EE 114	Fundamentals of Analog Integrated Circuit Design	3-4
EE 116	Semiconductor Devices for Energy and Electronics	3
EE 118	Introduction to Mechatronics	4
EE 124	Introduction to Neuroelectrical Engineering	3
EE 133	Analog Communications Design Laboratory (WIM/Design)	3-4
EE 134	Introduction to Photonics (WIM/Design)	4
EE 142	Engineering Electromagnetics	3
EE 153	Power Electronics (WIM/Design)	3-4
EE 155	Green Electronics (WIM/Design)	4
EE 157	Electric Motors for Renewable Energy, Robotics, and Electric Vehicles	3
EE 212	Integrated Circuit Fabrication Processes	3
EE 214B	Advanced Integrated Circuit Design	3
EE 216	Principles and Models of Semiconductor Devices	3
EE 222	Applied Quantum Mechanics I	3
EE 223	Applied Quantum Mechanics II	3
EE 236A	Modern Optics	3
EE 236B	Guided Waves	3
EE 242	Electromagnetic Waves	3
EE 247	Introduction to Optical Fiber Communications	3
EE 264	Digital Signal Processing (Design)	3-4
EE 264W	Digital Signal Processing (WIM/Design)	5
EE 267	Virtual Reality (Design)	3-4
EE 267W	Virtual Reality (WIM/Design)	5
EE 271	Introduction to VLSI Systems	3
EE 272A	Design Projects in VLSI Systems I	3-4
EE 272B	Design Projects in VLSI Systems II	3-4
EE 273	Digital Systems Engineering	3
EE 282	Computer Systems Architecture	3
ENGR 105	Feedback Control Design	3
ENGR 205	Introduction to Control Design Techniques	3
CS 107	Computer Organization and Systems	3-5

Multidisciplinary Area Electives

Bio-electronics and Bio-imaging

EE 101B	Circuits II	4
EE 102B	Signal Processing and Linear Systems II	4
EE 107	Embedded Networked Systems	3
EE 124	Introduction to Neuroelectrical Engineering	3
EE 134	Introduction to Photonics (WIM/Design)	4
EE 168	Introduction to Digital Image Processing (WIM/Design)	4
EE 169	Introduction to Bioimaging	3
EE 225	Biochips and Medical Imaging	3
EE 235	Analytical Methods in Biotechnology	3
BIOE 131	Ethics in Bioengineering	3
BIOE 248	Neuroengineering Laboratory	3
MED 275B	Biodesign Fundamentals	4
Energy and Environment		
EE 101B	Circuits II	4
EE 116	Semiconductor Devices for Energy and Electronics	3
EE 134	Introduction to Photonics (WIM/Design)	4
EE 153	Power Electronics (WIM/Design)	3-4
EE 155	Green Electronics (WIM/Design)	4
EE 157	Electric Motors for Renewable Energy, Robotics, and Electric Vehicles	3
EE 168	Introduction to Digital Image Processing (WIM/Design)	3-4
EE 180	Digital Systems Architecture	4
EE 263	Introduction to Linear Dynamical Systems	3
EE 293	Energy storage and conversion: Solar Cells, Fuel Cells, Batteries and Supercapacitors	3
EE 293B	Fundamentals of Energy Processes	3
CEE 107A	Understanding Energy (Formerly CEE 173A)	3-5
CEE 155	Introduction to Sensing Networks for CEE	3-4
CEE 176A	Energy Efficient Buildings	3
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	3-4
ENGR 105	Feedback Control Design	3
ENGR 205	Introduction to Control Design Techniques	3
MATSCI 142	Quantum Mechanics of Nanoscale Materials (Formerly MATSCI 157)	4
MATSCI 152	Electronic Materials Engineering	4
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution	3-4
ME 227	Vehicle Dynamics and Control	3
ME 271E		4
Music		
EE 102B	Signal Processing and Linear Systems II	4
EE 109	Digital Systems Design Lab (WIM/Design)	4
EE 264	Digital Signal Processing (Design)	3-4
EE 264W	Digital Signal Processing (WIM/Design)	5
MUSIC 250A	Physical Interaction Design for Music	3-4
MUSIC 256A	Music, Computing, Design: The Art of Design	3-4
MUSIC 256B	Music, Computing, Design II: Virtual and Augmented Reality for Music	3-4
MUSIC 257	Neuroplasticity and Musical Gaming	3-5
MUSIC 320A	Introduction to Audio Signal Processing Part I: Spectrum Analysis	3
MUSIC 320B	Introduction to Audio Signal Processing Part II: Digital Filters	3-4
MUSIC 420A	Signal Processing Models in Musical Acoustics [2]	3-4
MUSIC 421A	Time-Frequency Audio Signal Processing [2]	3-4

MUSIC 422	Perceptual Audio Coding [2]	3
MUSIC 424	Signal Processing Techniques for Digital Audio Effects [2]	3-4

1 ENGR 108 may be used for disciplinary area if not used for EE Math.

2 Best taken as a coterm student.

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

Honors Program in Electrical Engineering

The Department of Electrical Engineering offers a program leading to a Bachelor of Science in Electrical Engineering with Honors. This program offers a unique opportunity for qualified undergraduate majors to conduct independent study and research at an advanced level with a faculty mentor, graduate students, and fellow undergraduates.

Admission to the honors program is by application. Declared EE majors with a grade point average (GPA) of at least 3.5 in Electrical Engineering are eligible to submit an application. Applications must be submitted by Autumn Quarter of the senior year, be signed by the thesis advisor and second reader (one must be a member of the EE Faculty), and include an honors proposal. Students need to declare honors on Axess.

In order to receive departmental honors, students admitted to the honors program must:

1. Submit an application, including the thesis proposal, by Autumn Quarter of senior year signed by the thesis advisor and second reader (one must be a member of the Electrical Engineering faculty).
2. Declare the EE Honors major in Axess before the end of Autumn Quarter of senior year.
3. Maintain a grade point average of at least 3.5 in Electrical Engineering courses.
4. Complete at least 10 units of EE 191 or EE 191W with thesis adviser for a letter grade. EE 191 units do not count toward the required 60 units, with the exception of EE 191W if approved to satisfy WIM.
5. Submit one final copy of the honors thesis approved by the advisor and second reader to the EE Degree Progress Officer by May 15.
6. Attend poster and oral presentation held at the end of Spring Quarter or present in another suitable forum approved by the faculty advisor.

Electrical Engineering (EE) Minor

The options for completing a minor in EE are outlined below. Students must complete a minimum of 23-25 units, as follows:

		Units
Select one:		5
EE 42	Introduction to Electromagnetics and Its Applications	
EE 65	Modern Physics for Engineers	
ENGR 40A & ENGR 40B	Introductory Electronics and Introductory Electronics Part II	
ENGR 40M	An Intro to Making: What is EE	
Select one:		8
Option I:		
EE 101A	Circuits I	
EE 101B	Circuits II	
Option II:		
EE 102A	Signal Processing and Linear Systems I	
EE 102B	Signal Processing and Linear Systems II	
Option III:		
EE 102A	Signal Processing and Linear Systems I	
ENGR 108	Introduction to Matrix Methods	
Option IV:		
EE 108	Digital System Design	
EE 180	Digital Systems Architecture	
In addition, four letter-graded EE courses at the 100-level or higher must be taken (12 units minimum). CS 107 is required as a prerequisite for EE 180, but can count as one of the four classes.		12

Engineering Physics Undergraduate Major

COVID-19-Related Degree Requirement Changes

The Engineering Physics program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Engineering Physics (EPHYS)

Completion of the undergraduate program in Engineering Physics leads to the conferral of the Bachelor of Science in Engineering. The subplan "Engineering Physics" appears on the transcript and on the diploma.

Mission of the Undergraduate Program in Engineering Physics

The mission of the undergraduate program in Engineering Physics is to provide students with a strong foundation in physics and mathematics, together with engineering and problem-solving skills. All majors take high-level math and physics courses as well as engineering courses. This background prepares them to tackle complex problems in multidisciplinary areas that are at the forefront of 21st-century technology such as aerospace physics, biophysics, computational science, quantum science & engineering, materials science, nanotechnology, electromechanical systems, renewable energy, and any other engineering field that requires a solid background in physics. Because the program emphasizes science, mathematics, and engineering, students are well prepared to pursue graduate work in engineering, physics, or applied physics.

Requirements

		Units
Mathematics		
Select one of the following sequences:		10
MATH 51 & MATH 52	Linear Algebra, Multivariable Calculus, and Modern Applications and Integral Calculus of Several Variables	
CME 100 & CME 104	Vector Calculus for Engineers and Linear Algebra and Partial Differential Equations for Engineers	
MATH 53	Ordinary Differential Equations with Linear Algebra	5
or CME 102	Ordinary Differential Equations for Engineers	
MATH 131P	Partial Differential Equations (or CME 204 or MATH 173 or MATH 220 or PHYSICS 111)	3
Science		
PHYSICS 41	Mechanics (or PHYSICS 61)	4
PHYSICS 42	Classical Mechanics Laboratory (or PHYSICS 62)	1
PHYSICS 43	Electricity and Magnetism (or PHYSICS 63)	4
PHYSICS 67	Introduction to Laboratory Physics [1]	2
PHYSICS 45	Light and Heat (or PHYSICS 65)	4

PHYSICS 46	Light and Heat Laboratory (or PHYSICS 67)	1
PHYSICS 70	Foundations of Modern Physics (if taking the 40 series)	4
Technology in Society		
One course required; course must be on the School of Engineering Approved List, Fig 4-3 in the UGHB, the year it is taken. See Basic Requirement 4.		3-5
Engineering Fundamentals		
Two courses minimum (CS 106A or B recommended) [2]		6-10
Engineering Physics Depth (core)		
Advanced Mathematics:		
One advanced math elective such as		3-5
EE 261	The Fourier Transform and Its Applications	
PHYSICS 112	Mathematical Methods for Physics	
CS 109	Introduction to Probability for Computer Scientists	
CME 106	Introduction to Probability and Statistics for Engineers	
Also qualified are EE 263, any Math or Statistics course numbered 100 or above, and any CME course numbered 200 or above, except CME 206.		
Advanced Mechanics:		3-4
AA 242A	Classical Dynamics (or ME 333 or PHYSICS 110)	3
Intermediate Electricity and Magnetism		6-8
Select one of the following sequences:		
PHYSICS 120 & PHYSICS 121	Intermediate Electricity and Magnetism I and Intermediate Electricity and Magnetism II	
EE 142 & EE 242	Engineering Electromagnetics and Electromagnetic Waves	
Numerical Methods		
Select one of the following:		3-4
CME 108	Introduction to Scientific Computing	
CME 206/ ME 300C	Introduction to Numerical Methods for Engineering	
PHYSICS 113	Computational Physics	
Electronics Lab		
Select one of the following:		3-5
EE 101A	Circuits I	
EE 101B	Circuits II	
ENGR 40M	An Intro to Making: What is EE (or ENGR 40A+ENGR 40B; must take both [not offered 2019-20])	
PHYSICS 104	Electronics and Introduction to Experimental Methods (2020-21 only)	
PHYSICS 105	Intermediate Physics Laboratory I: Analog Electronics	
APPPHYS 207	Laboratory Electronics	
Writing in the Major (WIM)		
Select one of the following:		4-5
AA 190	Directed Research and Writing in Aero/ Astro (for Aerospace specialty only)	
ENGR 199W	Writing of Original Research for Engineers (for students pursuing an independent research project)	
BIOE 131	Ethics in Bioengineering (for Biophysics specialty only)	
CS 181W	Computers, Ethics, and Public Policy (for Computational Science specialty or other specialty with prereqs)	
CS 182W	Ethics, Public Policy, and Technological Change (for Computational Science specialty or other specialty with prereqs)	
EE 134	Introduction to Photonics (for Photonics specialty only. Not offered 2019-20)	
MATSCI 161	Energy Materials Laboratory (for Materials Science and Renewable Energy specialties)	
MATSCI 164	Electronic and Photonic Materials and Devices Laboratory (for Materials Science and Renewable Energy specialties)	
PHYSICS 107	Intermediate Physics Laboratory II: Experimental Techniques and Data Analysis (for Quantum Science & Engineering or other specialty)	
Quantum Mechanics		
Select one of the following sequences:		6-8
EE 222 & EE 223	Applied Quantum Mechanics I and Applied Quantum Mechanics II	
PHYSICS 130 & PHYSICS 131	Quantum Mechanics I and Quantum Mechanics II	
Thermodynamics and Statistical Mechanics		
PHYSICS 170 & PHYSICS 171	Thermodynamics, Kinetic Theory, and Statistical Mechanics I and Thermodynamics, Kinetic Theory, and Statistical Mechanics II	3-8
or ME 346A	Introduction to Statistical Mechanics	
Design Course		
Select one of the following:		3-4
AA 236A	Spacecraft Design	
CS 108	Object-Oriented Systems Design	
EE 133	Analog Communications Design Laboratory	
ME 203	Design and Manufacturing	
ME 210	Introduction to Mechatronics	
PHYSICS 108	Advanced Physics Laboratory: Project	
Specialty Tracks		
See Undergraduate Engineering Handbook for important details. Select three courses from one specialty area:		9-12
Aerospace Physics:		
AA 203	Optimal and Learning-based Control	
AA 205	Rarefied and Ionized Gases	
AA 244A	Introduction to Plasma Physics and Engineering	
AA 251	Introduction to the Space Environment	
AA 279A	Space Mechanics	
ME 161	Dynamic Systems, Vibrations and Control	
Biophysics:		
APPPHYS 205	Introduction to Biophysics	
BIO 132	Advanced Imaging Lab in Biophysics	
BIOE 42	Physical Biology	
BIOE 44	Fundamentals for Engineering Biology Lab	
BIOE 101	Systems Biology	
BIOE 103	Systems Physiology and Design	
BIOE 123	Bioengineering Systems Prototyping Lab	
BIOE 211	Biophysics of Multi-cellular Systems and Amorphous Computing	
BIOE 214	Representations and Algorithms for Computational Molecular Biology	

EE 169	Introduction to Bioimaging
or EE 369A	Medical Imaging Systems I
Computational Science:	
CME 212	Advanced Software Development for Scientists and Engineers
CME 215A	Advanced Computational Fluid Dynamics
CME 215B	Advanced Computational Fluid Dynamics
Any CME course with course number greater than 300 and less than 390	
CS 103	Mathematical Foundations of Computing
CS 154	Introduction to the Theory of Computation
CS 161	Design and Analysis of Algorithms
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning
CS 221	Artificial Intelligence: Principles and Techniques
CS 228	Probabilistic Graphical Models: Principles and Techniques
CS 229	Machine Learning
STATS 202	Data Mining and Analysis
Electromechanical System Design:	
ME 80	Mechanics of Materials
ME 104	Mechanical Systems Design (formerly ME 112)
ME 210	Introduction to Mechatronics
or EE 118	Introduction to Mechatronics
Materials Science:	
Any MATSCI courses numbered 151 to 199 (except 159Q) or PHYSICS 172	
Quantum Science & Engineering (See UGHB for further important details.)	
APPPHYS 203	Atoms, Fields and Photons
APPPHYS 225	Probability and Quantum Mechanics
APPPHYS 228	Quantum Hardware
CS 254	Computational Complexity
CS 269Q	Elements of Quantum Computer Programming
EE 234	Photonics Laboratory
EE 236C	Lasers
EE 243	Semiconductor Optoelectronic Devices
EE 340	Optical Micro- and Nano-Cavities
PHYSICS 106	Experimental Methods in Quantum Physics
PHYSICS 134	Advanced Topics in Quantum Mechanics
PHYSICS 182	Quantum Gases
PHYSICS 230	Graduate Quantum Mechanics I
PHYSICS 231	Graduate Quantum Mechanics II
STATS 376A	Information Theory
Renewable Energy:	
CEE 176B	100% Clean, Renewable Energy and Storage for Everything
EE 153	Power Electronics
EE 155	Green Electronics
EE 293B	Fundamentals of Energy Processes
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution
MATSCI 302	Solar Cells
MATSCI 316	Nanoscale Science, Engineering, and Technology
ME 260	
Total Units	93-119

1 PHYSICS 67 Introduction to Laboratory Physics (2 units), recommended in place of PHYSICS 44 Electricity and Magnetism Lab

2 The Engineering Fundamental courses are to be selected from the Basic Requirements 3 list. Fundamentals courses acceptable for the core program may also be used to satisfy the fundamentals requirement as long as 45 unduplicated units of Engineering are taken.

3 Although not required, PHYSICS 59 (https://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=&q=physics59&collapse=) (Frontiers in Physics Research, 1 unit) and PHYSICS 91SI (https://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=&q=physics91si&collapse=) (Practical Computing for Scientists, 2 units) are highly recommended.

4 A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

Honors Program

The School of Engineering offers a program leading to a Bachelor of Science in Engineering: Engineering Physics with Honors.

Honors Criteria

1. Minimum overall GPA of 3.5.
2. Independent research conducted at an advanced level with a faculty research adviser and documented in an honors thesis. The honors candidate must identify a faculty member who will serve as his or her honors research adviser and a second reader who will be asked to read the thesis and give feedback before endorsing the thesis. One of the two must be a member of the Academic Council and in the School of Engineering.

Application: The deadline to apply is November 1 in Autumn Quarter of the senior year. The application documents should be submitted to the Student Services Officer. Applications are reviewed by a subcommittee of the faculty advisers for Engineering Physics majors. Applicants and thesis advisers receive written notification when the application is approved. An application consists of three items:

1. One-page description of the research topic
2. The Honors Application form is available on Engineering Physics (https://ughb.stanford.edu/majors-minors/major-programs/engineering-physics-program/) page of the Undergraduate handbook. It must be signed by honors thesis adviser.
3. Unofficial Stanford transcript

Requirements and Timeline for Honors in Engineering Physics:

1. Declare the honors program in Axess (ENGR-BSH, Subplan: Engineering Physics)
2. Obtain application form from the student services officer.
3. Apply to honors program by November 1 in the Autumn Quarter of the senior year.
4. Maintain an overall GPA of at least 3.5.

5. Optional: Under direction of the thesis adviser, students may enroll for research units in ENGR 199W Writing of Original Research for Engineers or in departmental courses such as AA 190 Directed Research and Writing in Aero/Astro or ME 191H Honors Research.
6. Submit a completed thesis draft to the research adviser and second reader by April 15.
7. Present the thesis work in an oral presentation or poster session in an appropriate forum (e.g., an event that showcases undergraduate research and is organized by the department of the adviser, the school of the adviser, or the University).
8. Incorporate feedback, which the adviser and second reader should provide by April 30, and obtain final endorsement signatures from the thesis adviser and second reader by May 15.
9. Submit a pdf of the thesis, including the signature page signed by both readers, to the student services officer by May 15. Students are sent email instructions on how to archive a permanent electronic copy in Terman Engineering library.

Environmental Systems Engineering Undergraduate Major

COVID-19-Related Degree Requirement Changes

For information on how Environmental Systems Engineering degree requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 664)" in the "Civil and Environmental Engineering" of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

See the "Department of Civil and Environmental Engineering (p. 653)" section of this bulletin for additional information on the department, and its programs and faculty.

The department offers a B.S. as well as a minor in Environmental Systems Engineering (see following), as well as a B.S. in Civil Engineering (p. 573) and a minor in Civil Engineering (p. 661).

Environmental Systems Engineering (EnvSE)

Completion of the undergraduate program in Environmental Systems Engineering leads to the conferral of the Bachelor of Science in Environmental Systems Engineering.

Mission of the Undergraduate Program in Environmental Systems Engineering

The mission of the undergraduate program in Environmental Systems Engineering is to prepare students for incorporating environmentally sustainable design, strategies and practices into natural and built systems and infrastructure involving buildings, water supply, and coastal regions. Courses in the program are multidisciplinary in nature, combining math/science/engineering fundamentals, and tools and skills considered essential for an engineer, along with a choice of one of three focus areas for more in-depth study: coastal environments, freshwater environments, or urban environments. This major offers somewhat more flexibility in the curriculum than the Civil Engineering degree program, and requires fewer units. The program of study, which includes a capstone experience, aims to equip engineering students to take on the complex challenges of the twenty-first century involving natural and built environments, in consulting and industry as well as in graduate school.

Degree Requirements

		Units
Mathematics and Science		
See Basic Requirement 1 and 2 [1]		36
Technology in Society (TiS)		
One 3-5 unit course required, course chosen must be on the SoE Approved Courses list at <ughb.stanford.edu> the year taken; see Basic Requirement 4 [4]		3-5
Engineering Fundamentals		
Two courses minimum (see Basic Requirement 3), including:		
CS 106A	Programming Methodology	5
(or CS 106X)		
ENGR 14	Intro to Solid Mechanics	3
Fundamental Tools/Skills [2]		**9**
in visual, oral/written communication, and modeling/analysis		
Specialty Courses, in either		**40**
Coastal environments (see below)		
or Freshwater environments (see below)		
or Urban environments (see below)		
Total Units		**96-98**

[1] Math must include CME 100 Vector Calculus for Engineers (or MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications), and either a Probability/Statistics course or CME 102 Ordinary Differential Equations for Engineers (or MATH 53 Ordinary Differential Equations with Linear Algebra). Science must include PHYSICS 41 Mechanics; and either CHEM 31B Chemical Principles II or CHEM 31M Chemical Principles: From Molecules to Solids (or PHYSICS 43 Electricity and Magnetism, for Urban focus area only).

[2] Fundamental tools/skills must include:

1. CEE 1 Introduction to Environmental Systems Engineering;
2. at least one visual communication class from CEE 31 Accessing Architecture Through Drawing / CEE 31Q Accessing Architecture Through Drawing, DESINST 270 Visual Design Fundamentals, ME 101 Visual Thinking, ME 110 Design Sketching, ARTSTUDI 160 Intro to Digital / Physical Design, or OSPPARIS 44 EAP. Analytical Drawing and Graphic Art;
3. at least one oral/written communication class from ENGR 103 Public Speaking, CEE 102W Technical and Professional Communication, ENGR 202W Technical Communication, CEE 151 Negotiation, EARTHSYS 191 Concepts in Environmental Communication or ORALCOMM 117 The Art of Effective Speaking;
4. at least one modeling/analysis class from CEE 101D Computations in Civil and Environmental Engineering (or CEE 101S) if not counted as Math, CEE 120A Building Modeling for Design & Construction (online only), CEE 146S Engineering Economics and Sustainability (online only), CEE 118X Shaping the Future of the Bay Area, CEE 155 Introduction to Sensing Networks for CEE, CEE 226 Life Cycle Assessment for Complex Systems, CME 211 Software Development for Scientists and Engineers, CS 102 , EARTHSYS 140 , EARTHSYS 142 Remote Sensing of Land, EARTHSYS 144 Fundamentals of Geographic Information Science (GIS), or ESS 227 Decision Science for Environmental Threats

[3] A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

[4] Basic Requirement 4: Technology in Society (TiS) requirement.

Urban Environments Focus Area (40 units)

		Units
Required		
CEE 100	Managing Sustainable Building Projects	4
CEE 101B	Mechanics of Fluids	4
CEE 146S	Engineering Economics and Sustainability	3

CEE 176A	Energy Efficient Buildings	3
or		
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	3-4
Electives (at least two of the 4 areas below must be included with at least 3 units from 2nd area)		
Building Systems		
CEE 102A	Legal / Ethical Principles in Design, Construction, Project Delivery	3
CEE 120B	Advanced Building Modeling Workshop	2-4
CEE 130	Architectural Design: 3-D Modeling, Methodology, and Process	5
or		
CEE 131C	How Buildings are Made -- Materiality and Construction Methods	4
CEE 156	Building Systems Design & Analysis	4
Energy Systems		
CEE 107A	Understanding Energy (or CEE 107S, Sum. 3-4 units)	4-5
CEE 176B	100% Clean, Renewable Energy and Storage for Everything ((if not counted as req'd course))	3-4
ENERGY 104	Sustainable Energy for 9 Billion	3
CEE 173S	Electricity Economics	3
or		
ENERGY 171	Energy Infrastructure, Technology and Economics	3
or		
ENERGY 191	Optimization of Energy Systems	3-4
Water Systems		
CEE 166A	Watershed Hydrologic Processes and Models	4
CEE 166B	Water Resources and Hazards	4
CEE 170	Aquatic and Organic Chemistry for Environmental Engineering	3
CEE 174A	Providing Safe Water for the Developing and Developed World	3
CEE 174B	Wastewater Treatment: From Disposal to Resource Recovery	3
Urban Planning, Design, Analysis		
CEE 6	Physics of Cities	3
CEE 136	Planning Calif: the Intersection of Climate, Land Use, Transportation & the Economy	3
or		
CEE 275D	Environmental Policy Analysis	3-4
or		
CEE 273B	The Business of Water	2
CEE 177L	Smart Cities & Communities	3
URBANST 113	Introduction to Urban Design: Contemporary Urban Design in Theory and Practice	5
or		
URBANST 164	Sustainable Cities	4-5
or		
URBANST 165	(alt. years)	4-5
ME 267	Ethics and Equity in Transportation Systems	3
Capstone (one class required)		
CEE 131D	Urban Design Studio ((or CEE 131E))	5
CEE 141A	Infrastructure Project Development	3
CEE 141B	Infrastructure Project Delivery	3
CEE 226E	Advanced Topics in Integrated, Energy-Efficient Building Design	2-3
CEE 218Y	Shaping the Future of the Bay Area	3-5
CEE 218Z	Shaping the Future of the Bay Area	3-5
CEE 243	Intro to Urban Sys Engrg	3
CEE 265F	Environmental Governance and Climate Resilience	3
CEE 199	Undergraduate Research in Civil and Environmental Engineering	3-4

Freshwater Environments Focus Area (40 units)

		Units
Required		
CEE 70	Environmental Science and Technology	3
CEE 101B	Mechanics of Fluids	4
CEE 177	Aquatic Chemistry and Biology ((or CEE 170))	4
CEE 166A	Watershed Hydrologic Processes and Models	4
or		
CEE 174A	Providing Safe Water for the Developing and Developed World	3
or		
CEE 162E	Rivers, Streams, and Canals	3
Electives		
CEE 162E	Rivers, Streams, and Canals (if not counted as a required course)	3
CEE 162F	Coastal Processes	3
CEE 166A	Watershed Hydrologic Processes and Models (if not counted as a required course)	4
CEE 166B	Water Resources and Hazards	4
CEE 136	Planning Calif: the Intersection of Climate, Land Use, Transportation & the Economy	3
or		
CEE 275D	Environmental Policy Analysis	3-4
or		
CEE 273B	The Business of Water	2
CEE 174A	Providing Safe Water for the Developing and Developed World ((prereq: CHEM 31B) (if not counted as a req'd course))	3
CEE 174B	Wastewater Treatment: From Disposal to Resource Recovery ((prereq: CEE 174A))	3
CEE 177L	Smart Cities & Communities	3
or		
CEE 260D	Remote Sensing of Hydrology (prerequisite CS 106A)	3
CEE 265A	Resilience, Sustainability and Water Resources Development (offered occasionally)	3
CEE 265D	Water and Sanitation in Developing Countries	3
BIOHOPK 150H	Ecological Mechanics (alternate years)	3
Capstone (1 class required)		
CEE 141A	Infrastructure Project Development (recommended prerequisite: CEE 136)	3
CEE 218Y	Shaping the Future of the Bay Area	3-5
CEE 218Z	Shaping the Future of the Bay Area	3-5

CEE 199	Undergraduate Research in Civil and Environmental Engineering (must petition CEE UG Committee for approval, prior to enrollment; must have completed at least 6 focus area classes, excluding Breadth)	3-4

Coastal Environments Focus Area (40 units)

		Units
Required		
CEE 70	Environmental Science and Technology	3
CEE 101B	Mechanics of Fluids	4
And two of the following 4 classes:		
CEE 162F	Coastal Processes	3
CEE 162D	Introduction to Physical Oceanography	4
CEE 162I	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation	3
CEE 175A	California Coast: Science, Policy, and Law	3-4
Electives		
CEE 162D	Introduction to Physical Oceanography (if not counted as a required class)	4
CEE 162F	Coastal Processes (if not counted as a required class)	3
CEE 162I	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation (if not counted as a req'd class)	3
CEE 166A	Watershed Hydrologic Processes and Models	4
CEE 136	Planning Calif: the Intersection of Climate, Land Use, Transportation & the Economy	3
or		
CEE 275D	Environmental Policy Analysis	3-4
or		
CEE 273B	The Business of Water	2
CEE 174A	Providing Safe Water for the Developing and Developed World	3
CEE 174B	Wastewater Treatment: From Disposal to Resource Recovery	3
CEE 175A	California Coast: Science, Policy, and Law	3-4
CEE 177	Aquatic Chemistry and Biology	4
or CEE 170	Aquatic and Organic Chemistry for Environmental Engineering	
CEE 272	Coastal Contaminants	3-4
BIOHOPK 150H	Ecological Mechanics	3
BIO 30	Ecology for Everyone	4
or		
BIO 81	Introduction to Ecology	4
or		
BIOHOPK 81	Introduction to Ecology	4
or		
EARTHSYS 116	Ecology of the Hawaiian Islands	4
or		
OSPAUSTL 32	Coastal Ecosystems	3
or		
OSPGEN 53		2
or		
OSPSANTG 85	Marine Ecology of Chile and the South Pacific	5
DESINST 250	Oceans by Design	3
ESS 8	The Oceans: An Introduction to the Marine Environment	4
or		
ESS 240	Advanced Oceanography	3
or		
BIOHOPK 182H	Stanford at Sea (Oceanography portion - only 4 units may count)	4
EARTHSYS 141	Remote Sensing of the Oceans	3-4
EARTHSYS 151	Biological Oceanography	3-4
to be taken concurrently with		
EARTHSYS 152	Marine Chemistry	3-4
Capstone (1 class required)		
CEE 141A	Infrastructure Project Development	3
CEE 218Y	Shaping the Future of the Bay Area	3-5
CEE 218Z	Shaping the Future of the Bay Area	3-5
CEE 199	Undergraduate Research in Civil and Environmental Engineering (must petition CEE UG Committee for approval, prior to enrollment; must have completed at least 6 focus area classes, excluding Breadth)	3-4

Honors Program

This program leads to a B.S. with honors for undergraduates majoring in Civil Engineering or in Environmental Systems Engineering. It is designed to encourage qualified students to undertake a more intensive study of civil and environmental engineering than is required for the normal majors through a substantial, independent research project.

The program involves an in-depth research study in an area proposed to and agreed to by a Department of Civil and Environmental Engineering faculty adviser and completion of a thesis of high quality. A written proposal for the research to be undertaken must be submitted and approved by the faculty advisor in the fourth quarter prior to graduation. At the time of application, the student must have an overall grade point average (GPA) of at least 3.3 for course work at Stanford; this GPA must be maintained to graduation. The thesis is supervised by a CEE faculty adviser and must involve input from the School of Engineering writing program by means of ENGR 202S Directed Writing Projects or ENGR 199W Writing of Original Research for Engineers. The written thesis must be approved by the thesis adviser. Students are encouraged to present their results in a seminar for faculty and students. Up to 10 units of CEE 199H Undergraduate Honors Thesis, may be taken to support the research and writing (not to duplicate ENGR 202S or ENGR 199W). These units are beyond the normal Civil Engineering or Environmental Systems Engineering major program requirements.

For additional information on the major, minor, honors, and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

Honors Program

This program leads to a B.S. with honors for undergraduates majoring in Civil Engineering or in Environmental Systems Engineering. It is designed to encourage qualified students to undertake a more intensive study of civil and environmental engineering than is required for the normal majors through a substantial, independent research project.

The program involves an in-depth research study in an area proposed to and agreed to by a Department of Civil and Environmental Engineering faculty adviser and completion of a thesis of high quality. A written proposal for the research to be undertaken must be submitted and approved by the faculty advisor in the fourth quarter prior to graduation. At the time of application, the student must have an overall grade point average (GPA) of at least 3.3 for course work at Stanford; this GPA

must be maintained to graduation. The thesis is supervised by a CEE faculty adviser and must involve input from the School of Engineering writing program by means of ENGR 202S Directed Writing Projects or ENGR 199W Writing of Original Research for Engineers. The written thesis must be approved by the thesis adviser. Students are encouraged to present their results in a seminar for faculty and students. Up to 10 units of CEE 199H Undergraduate Honors Thesis, may be taken to support the research and writing (not to duplicate ENGR 202S or ENGR 199W). These units are beyond the normal Civil Engineering or Environmental Systems Engineering major program requirements.

Environmental Systems Engineering (EnvSE) Minor

The Environmental Systems Engineering minor is intended to give students a focused introduction to one or more areas of Environmental Systems Engineering. Departmental expertise and undergraduate course offerings are available in the areas of environmental engineering and science, environmental fluid mechanics and hydrology, and atmosphere/energy. The minimum prerequisite for an Environmental Systems Engineering minor is MATH 19 Calculus (or MATH 20 Calculus or MATH 21 Calculus); additionally, many courses of interest require PHYSICS 41 Mechanics and/or MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications as prerequisites. Students should recognize that a minor in Environmental Systems Engineering is not an ABET-accredited degree program.

Since undergraduates having widely varying backgrounds may be interested in obtaining an Environmental Systems Engineering minor, no single set of course requirements is appropriate for all students. Instead, interested students are encouraged to propose their own set of courses within the guidelines listed below. Additional information on preparing a minor program is available in the Undergraduate Engineering Handbook (http://web.stanford.edu/group/ughb/cgi-bin/handbook/index.php/Handbooks/).

General guidelines are—

- An Environmental Systems Engineering minor must contain at least 24 units of course work not taken for the major, and must consist of at least six classes of at least 3 units each of letter-graded work, except where letter grades are not offered.
- The list of courses must represent a coherent body of knowledge in a focused area, and should include classes that build upon one another. Example programs are available on the CEE web site (https://cee.stanford.edu/academics/undergraduate-programs/minor/).

Professor Nicholas Ouellette (nto@stanford.edu) is the CEE undergraduate minor adviser in Environmental Systems Engineering. Students must consult with Professor Ouellette (https://cee.stanford.edu/people/nicholas-t-ouellette/) in developing their minor program, and obtain approval of the finalized study list from him.

Management Science and Engineering Undergraduate Major

COVID-19-Related Degree Requirement Changes

For information on how Management Science and Engineering degree requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 813)" in the "Management Science and Engineering" of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

See the "Department of Management Science and Engineering (p. 799)" section of this bulletin for additional information on the department, and its programs and faculty.

The department offers a B.S. as well as a minor in Management Science and Engineering.

Management Science and Engineering (MS&E)

Completion of the undergraduate program in Management Science and Engineering leads to the conferral of the Bachelor of Science in Management Science and Engineering.

Requirements

		Units
Mathematics and Science		**43**
Up to ten units of AP/IB Calculus, MATH 19, 20, and/or 21. [1]		10
All required; see SoE Basic Requirements 1 and 2		22
CME 100	Vector Calculus for Engineers	
or MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
ENGR 108	Introduction to Matrix Methods (formerly CME 103)	
MS&E 120	Introduction to Probability	
MS&E 121	Introduction to Stochastic Modeling	
MS&E 125	Introduction to Applied Statistics	
Select two of the following: [2]		8
CHEM 31B	Chemical Principles II	
CHEM 33	Structure and Reactivity of Organic Molecules	
PHYSICS 41	Mechanics	
or PHYSICS 21	Mechanics, Fluids, and Heat	
PHYSICS 43	Electricity and Magnetism	
or PHYSICS 23	Electricity, Magnetism, and Optics	
BIO 81	Introduction to Ecology	
BIO 82	Genetics	
BIO 83	Biochemistry & Molecular Biology	
BIO 84	Physiology	
BIO 85	Evolution	
BIO 86	Cell Biology	
Math, Science, or Statistics Elective from SoE approved lists. [3]		3
Technology in Society [4]		**3**
Select one of the following; see SoE Basic Requirement 4		
AA 252	Techniques of Failure Analysis	
BIOE 131	Ethics in Bioengineering	
COMM 120W	The Rise of Digital Culture	
CS 181	Computers, Ethics, and Public Policy	
CS 182	Ethics, Public Policy, and Technological Change	
ENGR 117	Expanding Engineering Limits: Culture, Diversity, and Equity	
ENGR 148	Principled Entrepreneurial Decisions	
ME 267	Ethics and Equity in Transportation Systems	
MS&E 193	Technology and National Security: Past, Present, and Future	
POLISCI 114S	International Security in a Changing World	
STS 1	The Public Life of Science and Technology	
Engineering Fundamentals [5]		**12**

Three required; see SoE Basic Requirement 3		
CS 106A	Programming Methodology [6]	
MS&E 111	Introduction to Optimization	
or MS&E 111X	Introduction to Optimization (Accelerated)	
Select one of the following:		
ENGR 10	Introduction to Engineering Analysis	
ENGR 14	Intro to Solid Mechanics	
ENGR 15	Dynamics	
ENGR 20	Introduction to Chemical Engineering	
ENGR 21	Engineering of Systems	
ENGR 40A	Introductory Electronics	
ENGR 40M	An Intro to Making: What is EE	
ENGR 42	Introduction to Electromagnetics and Its Applications	
ENGR 50	Introduction to Materials Science, Nanotechnology Emphasis	
ENGR 50E	Introduction to Materials Science, Energy Emphasis	
ENGR 50M	Introduction to Materials Science, Biomaterials Emphasis	
ENGR 80	Introduction to Bioengineering (Engineering Living Matter)	
ENGR 90	Environmental Science and Technology	
Engineering Depth [5]		**52**
Core Courses (all six required)		28
CS 106B	Programming Abstractions	
ECON 1	Principles of Economics	
ECON 50	Economic Analysis I	
MS&E 108	Senior Project (WIM)	
MS&E 140	Accounting for Managers and Entrepreneurs	
MS&E 180	Organizations: Theory and Management	
Area Courses (eight required; see below)		24

Depth Areas

Choose eight courses; four courses from a primary area and two courses from each of the other two areas.

Finance and Decision Area	
Students choosing F&D as their primary area must take at least two of ECON 51 (or MS&E 241), MS&E 145 (or 245A), and MS&E 152 (or 252).	
Introductory (no prerequisites)	
ECON 143	Finance, Corporations, and Society
MS&E 152	Introduction to Decision Analysis
Intermediate (has prerequisites and/or appropriate for juniors and seniors)	
MS&E 145	Introduction to Finance and Investment
MS&E 146	Corporate Financial Management
MS&E 252	Decision Analysis I: Foundations of Decision Analysis
Advanced (intended primarily for graduate students, but may be taken by advanced undergraduates)	
MS&E 241	Economic Analysis
MS&E 245A	Investment Science
MS&E 245B	Advanced Investment Science
MS&E 246	Financial Risk Analytics
MS&E 250A	Engineering Risk Analysis
MS&E 250B	Project Course in Engineering Risk Analysis
Operations and Analytics Area	
Students choosing O&A as their primary area may also include one of CS 161, CS 229, or STATS 202 in their selections.	
Methods	
MS&E 112	Mathematical Programming and Combinatorial Optimization
MS&E 135	Networks
MS&E 213	Introduction to Optimization Theory
MS&E 223	Simulation
MS&E 226	Fundamentals of Data Science: Prediction, Inference, Causality
MS&E 231	Introduction to Computational Social Science
MS&E 251	Introduction to Stochastic Control with Applications
Applications	
MS&E 130	Information Networks and Services
MS&E 230	Incentives and Algorithms
MS&E 232	Introduction to Game Theory
MS&E 232H	Introduction to Game Theory
MS&E 234	Data Privacy and Ethics
MS&E 235	Network Structure and Epidemics
MS&E 260	Introduction to Operations Management
MS&E 263	Healthcare Operations Management
MS&E 267	Service Operations and the Design of Marketplaces
MS&E 330	Law, Order, & Algorithms
MS&E 463	Healthcare Systems Design
Organizations, Technology, and Policy Area	
Introductory (no prerequisites)	
ENGR 148	Principled Entrepreneurial Decisions
MS&E 193	Technology and National Security: Past, Present, and Future
Advanced (has prerequisites and/or appropriate for juniors and seniors)	
BIOE 177	Inventing the Future
ENGR 145	Technology Entrepreneurship
MS&E 175	Innovation, Creativity, and Change
MS&E 182A	Leading Organizational Change
MS&E 182B	Leading Organizational Change II
MS&E 184	Future of Work: Issues in Organizational Learning and Design
MS&E 185	Global Work
MS&E 188	Organizing for Good
MS&E 243	Energy and Environmental Policy Analysis
MS&E 292	Health Policy Modeling

1 Students without AP/IB mathematics credit, who skip MATH 19, 20, and/or 21, may petition to waive up to 10 units of math.

2 AP/IB credit for Chemistry and Physics may be used.

3 Electives must come from the School of Engineering approved list or PSYCH 50 Introduction to Cognitive Neuroscience, may not repeat material from any other requirement, and may not be used to also satisfy an engineering fundamentals or depth requirement. AP/IB credit for Chemistry and Physics may be used if not used above.

4 A course may only be counted towards one requirement; courses used to satisfy the TiS requirement may not be used to also satisfy a depth area requirement.

[5] Engineering fundamentals plus engineering depth must total a minimum of 60 units. Recommended engineering fundamentals are E25B, E25E, E40A, E40M, and E80. MS&E majors may not use E60, or E70B as engineering fundamentals.

[6] Students may petition to waive CS 106A Programming Methodology after completion of CS 106B Programming Abstraction, and/or ECON 1 Principles of Economics after completion of ECON 50 Economic Analysis I.

[7] All courses taken for the major must be taken for a letter grade. Minimum combined GPA for all courses in Engineering Topics (Engineering Fundamentals and Depth courses) is 2.0.

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

Management Science and Engineering (MS&E) Minor

The following courses are required to fulfill the minor requirements:

		Units
Prerequisites (two courses; letter-graded or CR/NC)		
CME 100	Vector Calculus for Engineers	5
or MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
CS 106A	Programming Methodology	5
Minor requirements (seven courses; all letter-graded)		
MS&E 111	Introduction to Optimization	3-4
or MS&E 111X	Introduction to Optimization (Accelerated)	
MS&E 120	Introduction to Probability [1]	4
MS&E 121	Introduction to Stochastic Modeling	4
MS&E 125	Introduction to Applied Statistics	4
MS&E 180	Organizations: Theory and Management	4
Electives (select any two 100- or 200-level MS&E courses)		6
Recommended courses		
In addition to the required prerequisite and minor courses, it is recommended that students also take the following courses.		
ECON 50	Economic Analysis I	5
MS&E 140	Accounting for Managers and Entrepreneurs (may be used as one of the required electives above)	3-4

[1] Students completing a calculus-based probability course such as CS 109 or STATS 116 for their major, may substitute another MS&E course for MS&E 120.

Materials Science and Engineering Undergraduate Major

COVID-19-Related Degree Requirement Changes

For information on how Materials Science and Engineering degree requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 834)" in the "Materials Science and Engineering" of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

See the "Department of Materials Science and Engineering (p. 827)" section of this bulletin for additional information on the department, and its programs and faculty.

The department offers a B.S. as well as a minor in Materials Science and Engineering.

Bachelor of Science in Materials Science and Engineering (MSE/MATSCI)

Completion of the undergraduate program in Materials Science and Engineering leads to the conferral of the Bachelor of Science in Materials Science and Engineering.

Mission of the Undergraduate Program in Materials Science and Engineering

The mission of the undergraduate program in Materials Science and Engineering is to provide students with a strong foundation in materials science and engineering with emphasis on the fundamental scientific and engineering principles which underlie the knowledge and implementation of material structure, processing, properties, and performance of all classes of materials used in engineering systems. Courses in the program develop students' knowledge of modern materials science and engineering, teach them to apply this knowledge analytically to create effective and novel solutions to practical problems, and develop their communication skills and ability to work collaboratively. The program prepares students for careers in industry and for further study in graduate school.

The B.S. in Materials Science and Engineering provides training for the materials engineer and also preparatory training for graduate work in materials science. Capable undergraduates are encouraged to take at least one year of graduate study to extend their course work through the coterminal degree program which leads to an M.S. in Materials Science and Engineering. Coterminal degree programs are encouraged both for undergraduate majors in Materials Science and Engineering and for undergraduate majors in related disciplines.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate the ability to:

1. Apply the knowledge of mathematics, science, and engineering to assess and synthesize scientific evidence, concepts, theories, and experimental data relating to the natural or physical world.
2. Extend students' knowledge of the natural or physical world beyond that obtained from secondary education by refining their powers of scientific observation, the essential process by which data is gained for subsequent analysis.
3. Design and conduct experiments, as well as understand and utilize the scientific method in formulating hypotheses and designing experiments to test hypotheses.
4. Function on multidisciplinary teams, while communicating effectively.
5. Identify, formulate, and solve engineering issues by applying conceptual thinking to solve certain problems, bypassing calculations or rote learning and relying on the fundamental meaning behind laws of nature.
6. Understand professional and ethical responsibility.
7. Understand the impact of engineering solutions in a global, economic, environmental, and societal context.
8. Demonstrate a working knowledge of contemporary issues.
9. Recognize the need for, and engage in, lifelong learning.
10. Apply the techniques, skills, and modern engineering tools necessary for engineering practice.

11. Transition from engineering concepts and theory to real engineering applications and understanding the distinction between scientific evidence and theory, inductive and deductive reasoning, and understanding the role of each in scientific inquiry.

Degree Requirements

		Units
Mathematics		
20 units minimum		
Select one of the following:		5
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
CME 100/ ENGR 154	Vector Calculus for Engineers	
Select one of the following:		5
MATH 52	Integral Calculus of Several Variables	
CME 104/ ENGR 155B	Linear Algebra and Partial Differential Equations for Engineers	
Select one of the following:		5
MATH 53	Ordinary Differential Equations with Linear Algebra	
CME 102/ ENGR 155A	Ordinary Differential Equations for Engineers	
One additional course [1]		5
Science		
20 units minimum		
Must include a full year (15 units) of calculus-based physics or chemistry, with one quarter of study (5 units) in the other subject. [2]		20
Technology in Society		
One course minimum [3]		3-5
Engineering Fundamentals		
Two courses minimum		
Select one of the following:		4
ENGR 50	Introduction to Materials Science, Nanotechnology Emphasis [4]	
ENGR 50E	Introduction to Materials Science, Energy Emphasis [4]	
ENGR 50M	Introduction to Materials Science, Biomaterials Emphasis [4]	
At least one additional courses [4]		3-5
Department Requirements: MSE Fundamentals, Depth & Focus Areas		
Materials Science Fundamentals: All of the following courses:		16
MATSCI 142	Quantum Mechanics of Nanoscale Materials	
MATSCI 143	Materials Structure and Characterization	
MATSCI 144	Thermodynamic Evaluation of Green Energy Technologies	
MATSCI 145	Kinetics of Materials Synthesis	
Two of the following courses:		8
MATSCI 151	Microstructure and Mechanical Properties	
MATSCI 152	Electronic Materials Engineering	
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution	
MATSCI 158	Soft Matter in Biomedical Devices, Microelectronics, and Everyday Life	
MATSCI 190	Organic and Biological Materials	
MATSCI 192	Materials Chemistry	
MATSCI 193	Atomic Arrangements in Solids	
MATSCI 194	Thermodynamics and Phase Equilibria	
MATSCI 195	Waves and Diffraction in Solids	
MATSCI 196	Defects in Crystalline Solids	
MATSCI 197	Rate Processes in Materials	
MATSCI 198	Mechanical Properties of Materials	
MATSCI 199	Electronic and Optical Properties of Solids	
Materials Science & Engineering Depth		**16**
Four laboratory courses for Sixteen units; Four units must be WIM		
MATSCI 160	Nanomaterials Laboratory	
MATSCI 161	Energy Materials Laboratory (WIM)	
MATSCI 162	X-Ray Diffraction Laboratory	
MATSCI 163	Mechanical Behavior Laboratory	
MATSCI 164	Electronic and Photonic Materials and Devices Laboratory (WIM)	
MATSCI 165	Nanoscale Materials Physics Computation Laboratory	
MATSCI 166	Data Science and Machine Learning Approaches in Chemical and Materials Engineering	
Focus Area Options [5, 6]		13
Total Units		103-107

1. See a list of approved math courses at ughb.stanford.edu (https://ughb.stanford.edu/courses-and-planning/approved-courses/). AP/IB Credit (https://ughb.stanford.edu/petitions/ap-credit/) may also be used to meet the 20 units minimum, but cannot replace the three required courses.
2. See a list of approved science courses at ughb.stanford.edu (https://ughb.stanford.edu/courses-and-planning/approved-courses/). AP/IB Credit (https://ughb.stanford.edu/petitions/ap-credit/)may also be used to meet the 20 units minimum in some cases; see the AP chart in the Bulletin or check with the School of Engineering in 135 Huang Engineering Center.
3. See a list of approved Technology in Society courses at ughb.stanford.edu (https://ughb.stanford.edu/courses-and-planning/approved-courses/). Course chosen must be on the approved list the year taken.
4. See a list of approved Engineering Fundamentals Courses at ugh.stanford.edu. Course chosen must be on the approved list the year taken.
5. Focus Area Options: 13 units from one of the following Focus Area Options below. If the focus area contains only 12 units, but the combined unit total in major (SoE Fundamentals, MSE Fundamentals, MSE Depth and the Focus Area) is at 60 or more, it will be allowed and no petition is necessary.
6. The self-defined focus area option requires additional approval; program deviation forms for this option can be found on the MSE website (https://mse.stanford.edu/student-resources/forms/undergraduate/).
7. A course may only be counted towards one requirement; it may not be double-counted. For the 2020-2021 academic year, all courses taken for the major may be taken for either a letter grade (if offered by the instructor) or for CR and count towards degree requirements. Minimum Combined GPA for all courses in Engineering Topics (Engineering Fundamentals and Depth courses) is 2.0.

Focus Area Options (Four courses for a minimum of 13 units; select from one of the ten Focus Areas.)

Bioengineering	
BIOE 80	Introduction to Bioengineering (Engineering Living Matter)
BIOE 220	Introduction to Imaging and Image-based Human Anatomy
BIOE 260	Tissue Engineering
BIOE 281	Biomechanics of Movement
BIOE 381	Orthopaedic Bioengineering
MATSCI 158	Soft Matter in Biomedical Devices, Microelectronics, and Everyday Life
MATSCI 190	Organic and Biological Materials
MATSCI 225	Biochips and Medical Imaging
MATSCI 380	Nano-Biotechnology
MATSCI 381	Biomaterials in Regenerative Medicine
MATSCI 384	Materials Advances for Neurotechnology: Materials Meet the Mind
Chemical Engineering	
CHEM 171	Foundations of Physical Chemistry
CHEMENG 130	
CHEMENG 140	Micro and Nanoscale Fabrication Engineering
CHEMENG 150	Biochemical Engineering
MATSCI 158	Soft Matter in Biomedical Devices, Microelectronics, and Everyday Life
Chemistry	
CHEM 151	Inorganic Chemistry I
CHEM 153	Inorganic Chemistry II
CHEM 171	Foundations of Physical Chemistry
CHEM 173	Physical Chemistry II
CHEM 175	Physical Chemistry III
CHEM 181	Biochemistry I
CHEM 183	Biochemistry II
CHEM 185	Biophysical Chemistry
Electronics & Photonics	
EE 101A	Circuits I
EE 101B	Circuits II
EE 102A	Signal Processing and Linear Systems I
EE 102B	Signal Processing and Linear Systems II
EE 116	Semiconductor Devices for Energy and Electronics
EE 134	Introduction to Photonics
EE 142	Engineering Electromagnetics (Formerly EE 141)
EE 155	Green Electronics
ME 210	Introduction to Mechatronics
MATSCI 343	Organic Semiconductors for Electronics and Photonics
MATSCI 346	Nanophotonics
Energy Technology	
EE 293B	Fundamentals of Energy Processes
EE 155	Green Electronics
CEE 107A	Understanding Energy
EE 293B	Fundamentals of Energy Processes
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution
MATSCI 302	Solar Cells
MATSCI 303	Principles, Materials and Devices of Batteries
ME 262	Physics of Wind Energy
Materials Characterization Techniques	
MATSCI 320	Nanocharacterization of Materials
MATSCI 321	Transmission Electron Microscopy
MATSCI 322	Transmission Electron Microscopy Laboratory
MATSCI 323	Thin Film and Interface Microanalysis
MATSCI 326	X-Ray Science and Techniques
CHEMENG 345	Fundamentals and Applications of Spectroscopy
BIO 232	Advanced Imaging Lab in Biophysics
APPPHYS 201	Electrons and Photons (PHOTON 201)
Mechanical Behavior & Design	
AA 240	Analysis of Structures
AA 256	Mechanics of Composites
MATSCI 198	Mechanical Properties of Materials
MATSCI 241	Mechanical Behavior of Nanomaterials
MATSCI 358	Fracture and Fatigue of Materials and Thin Film Structures
ME 80	Mechanics of Materials
or CEE 101A	Mechanics of Materials
ME 203	Design and Manufacturing
Nanoscience	
ENGR 240	Introduction to Micro and Nano Electromechanical Systems
MATSCI 241	Mechanical Behavior of Nanomaterials
MATSCI 316	Nanoscale Science, Engineering, and Technology
MATSCI 320	Nanocharacterization of Materials
MATSCI 346	Nanophotonics
MATSCI 347	Magnetic materials in nanotechnology, sensing, and energy
MATSCI 380	Nano-Biotechnology
Physics	
PHYSICS 70	Foundations of Modern Physics
PHYSICS 110	Advanced Mechanics
PHYSICS 120	Intermediate Electricity and Magnetism I
PHYSICS 121	Intermediate Electricity and Magnetism II
PHYSICS 130	Quantum Mechanics I
PHYSICS 131	Quantum Mechanics II
PHYSICS 134	Advanced Topics in Quantum Mechanics
PHYSICS 170	Thermodynamics, Kinetic Theory, and Statistical Mechanics I
PHYSICS 171	Thermodynamics, Kinetic Theory, and Statistical Mechanics II
PHYSICS 172	Solid State Physics
Self-Defined Option	
Petition for a self-defined cohesive program. [7]	

For additional information and sample, programs see the Handbook for Undergraduate Engineering Programs (http://ughb.stanford.edu).

Honors Program

The Materials Science and Engineering honors program offers an opportunity for undergraduate Materials Science and Engineering majors with a GPA of 3.5 or higher to pursue independent research at

an advanced level, supported by a faculty advisor and graduate student mentors. The main requirements are as follows:

1. Application to the honors program (must be pre-approved by faculty advisor)
2. Enrollment in MATSCI 150 Undergraduate Research and participation in an independent research project over three sequential full quarters
3. Completion of a faculty-approved thesis
4. Participation in either a poster or oral presentation of thesis work at a Stanford Symposium/event or, at your faculty advisor's discretion, in a comparable public event.

Since this requires three full quarters of research in addition to a final written thesis and presentation following completion of the work, students must apply to the program no less than four quarters prior to their planned graduation date. Materials Science and Engineering majors pursuing a typical four-year graduation timeline should meet with student services no later than the Winter Quarter of their junior year to receive information on the application process.

All requirements for the honors program are in addition to the normal undergraduate program requirements.

To apply to the MATSCI Honors program

- Have an overall GPA of 3.5 or higher (as calculated on the unofficial transcript) prior to application.
- Seek out a faculty research advisor and agree on a proposed research topic. If the research advisor is not a member of the MSE faculty or not a member of the School of Engineering Academic Council, students must have a second advisor who fulfills these requirements.
- Compose a brief (less than 1 page) summary of proposed research, including a proposed title, and submit along with unofficial transcript and signed application/faculty endorsement (https://mse.stanford.edu/student-resources/forms/undergraduate/).
- Submit application to MATSCI student services (Durand 113) at least four quarters prior to planned graduation.

To complete the MATSCI Honors program

- Overall GPA of 3.5 or higher (as calculated on the unofficial transcript) at graduation.
- Complete at least three quarters of research with a minimum of 9 units of MATSCI 150 (students may petition out of unit requirement with faculty adviser approval). All quarters must focus on the same topic. Maintain the same faculty adviser throughout, if possible.
- Present either a poster or oral presentation of thesis work at a Stanford event or, at the faculty advisor's discretion, in a comparable public event.
- Submit final drafts of an honors thesis to two faculty readers (one must be your research advisor, and one must be an MSE faculty member/SoE Academic Council member) at least one quarter prior to graduation. Both must approve the thesis by completing the signature page (https://mse.stanford.edu/student-resources/forms/undergraduate/).
- Submit to MATSCI student services (Durand 113) one copy of the honors thesis and signed signature page (in electronic or physical form) at least one quarter prior to graduation.

Materials Science and Engineering (MATSCI) Minor

A minor in Materials Science and Engineering allows interested students to explore the role of materials in modern technology and to gain an understanding of the fundamental processes that govern materials behavior.

The following courses fulfill the minor requirements:

		Units
Engineering Fundamentals		
Select one of the following:		4
ENGR 50	Introduction to Materials Science, Nanotechnology Emphasis	
ENGR 50E	Introduction to Materials Science, Energy Emphasis	
ENGR 50M	Introduction to Materials Science, Biomaterials Emphasis	
Materials Science Fundamentals and Engineering Depth		
Select six of the following:		24
MATSCI 142	Quantum Mechanics of Nanoscale Materials	
MATSCI 143	Materials Structure and Characterization	
MATSCI 144	Thermodynamic Evaluation of Green Energy Technologies	
MATSCI 145	Kinetics of Materials Synthesis	
MATSCI 151	Microstructure and Mechanical Properties	
MATSCI 152	Electronic Materials Engineering	
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution	
MATSCI 158	Soft Matter in Biomedical Devices, Microelectronics, and Everyday Life	
MATSCI 160	Nanomaterials Laboratory	
MATSCI 161	Energy Materials Laboratory	
MATSCI 162	X-Ray Diffraction Laboratory	
MATSCI 163	Mechanical Behavior Laboratory	
MATSCI 164	Electronic and Photonic Materials and Devices Laboratory	
MATSCI 165	Nanoscale Materials Physics Computation Laboratory	
MATSCI 190	Organic and Biological Materials	
MATSCI 192	Materials Chemistry	
MATSCI 193	Atomic Arrangements in Solids	
MATSCI 194	Thermodynamics and Phase Equilibria	
MATSCI 195	Waves and Diffraction in Solids	
MATSCI 196	Defects in Crystalline Solids	
MATSCI 197	Rate Processes in Materials	
MATSCI 198	Mechanical Properties of Materials	
MATSCI 199	Electronic and Optical Properties of Solids	
Total Units		28

Mechanical Engineering Undergraduate Major

COVID-19-Related Degree Requirement Changes

For information on how Mechanical Engineering degree requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 856)" in the "Mechanical Engineering" of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

See the "Department of Mechanical Engineering (p. 846)" section of this bulletin for additional information on the department, and its programs and faculty.

The department offers a B.S. as well as a minor in Mechanical Engineering.

Mechanical Engineering (ME)

Completion of the undergraduate program in Mechanical Engineering leads to the conferral of the Bachelor of Science in Mechanical Engineering.

Mission of the Undergraduate Program in Mechanical Engineering

The mission of the undergraduate program in Mechanical Engineering is to provide students with a balance of theoretical and practical experiences that enable them to address a variety of societal needs. The curriculum encompasses elements from a wide range of disciplines built around the themes of biomedicine, computational engineering, design, energy, and multiscale engineering. Course work may include mechatronics, computational simulation, solid and fluid dynamics, microelectromechanical systems, biomechanical engineering, energy science and technology, propulsion, sensing and control, nano- and micro- mechanics, and design. The program prepares students for entry-level work as mechanical engineers and for graduate studies in either an engineering discipline or other fields where a broad engineering background is useful.

Core Requirements

		Units
Mathematics		
24 units minimum; see Basic Requirement 1 [1]		
CME 102/ENGR 155A	Ordinary Differential Equations for Engineers	5
or MATH 53	Ordinary Differential Equations with Linear Algebra	
Select one of the following:		3-5
CME 106/ ENGR 155C	Introduction to Probability and Statistics for Engineers	
STATS 110	Statistical Methods in Engineering and the Physical Sciences	
STATS 116	Theory of Probability	
Plus additional courses to total min. 24		
Science		
20 units minimum; see Basic Requirement 2 [1]		
Plus addtional required courses [1]		
CHEM 31M	Chemical Principles: From Molecules to Solids	5
Technology in Society		
One course required; TIS courses should be selected from AA 252, BIOE 131, COMM 120W, CS 181, ENGR 131, HUMBIO 174, ME 267, or MSE 193.		3-5
Engineering Fundamentals		
Two courses minimum; see Basic Requirement 3		
ENGR 14	Intro to Solid Mechanics	3
CS 106A	Programming Methodology	5
or CS 106B	Programming Abstractions	
Engineering Core		
Minimum of 68 Engineering Science and Design ABET units; see Basic Requirement 5		
ME 1	Introduction to Mechanical Engineering	3
ENGR 15	Dynamics	3
ME 80	Mechanics of Materials	3
ME 30	Engineering Thermodynamics	3
ME 70	Introductory Fluids Engineering	3
ME 102	Foundations of Product Realization	3
ME 103	Product Realization: Design and Making	4
ME 104	Mechanical Systems Design	4
ME 131	Heat Transfer	4
ME 123	Computational Engineering	4
ME 170A	Mechanical Engineering Design- Integrating Context with Engineering [2,3]	4
ME 170B	Mechanical Engineering Design: Integrating Context with Engineering [2,3]	4

Core Concentrations and Concentration Electives

In addition to completing core requirements, students must choose one of the concentrations paths below. In addition to their concentration specific 3-courses, students select 2-3 additional courses such that the combination adds up to a minimum of 18 units. One of these additional courses must be from technical electives associated with the student's selected concentration. The other 1-2 courses could come from either technical electives from the student's selected concentration or any other concentration and its associated technical electives. Up to 3 units of ME 191 Engineering Problems and Experimental Investigation may be petitioned to count as technical elective.

For students choosing the Materials and Structures concentration path, in addition to the 2 concentration-specific courses, students must select at least 2 courses from the Materials and Structures electives, in addition to courses from other concentrations, as technical electives.

		Units
Dynamic Systems and Controls Concentration		
ME 161	Dynamic Systems, Vibrations and Control	3
ENGR 105	Feedback Control Design	3
Pick one of:		
ME 227	Vehicle Dynamics and Control	3
ME 327	Design and Control of Haptic Systems (not offered AY21)	3
Dynamic Systems and Controls Electives		
ENGR 205	Introduction to Control Design Techniques	3
ME 210	Introduction to Mechatronics (not offered AY21)	4
ME 220	Introduction to Sensors	4
ME 331A	Advanced Dynamics & Computation (not offered AY21)	3
ME 485	Modeling and Simulation of Human Movement	3
Pick one, if not used in concentration already:		
ME 227	Vehicle Dynamics and Control	3
ME 327	Design and Control of Haptic Systems (not offered AY21)	3

		Units
Materials and Structures Concentration		
ME 149	Mechanical Measurements	3
ME 152	Material Behaviors and Failure Prediction	3
Materials and Structures Electives		
(2 M&S electives required for students in M&S concentration)		
AA 240	Analysis of Structures	3
MATSCI 198	Mechanical Properties of Materials	3-4
ME 234	Introduction to Neuromechanics (not offered AY21)	3
ME 241	Mechanical Behavior of Nanomaterials (not offered AY21)	3

ME 281	Biomechanics of Movement	3
ME 283	Introduction to Biomechanics and Mechanobiology (not offered AY21)	3
ME 287	Mechanics of Biological Tissues (not offered AY21)	4
ME 331A	Advanced Dynamics & Computation (not offered AY21)	3
ME 335A	Finite Element Analysis	3
ME 338	Continuum Mechanics	3
ME 339	Introduction to parallel computing using MPI, openMP, and CUDA	3
ME 345	Fatigue Design and Analysis	3
ME 348	Experimental Stress Analysis	3

		Units
Product Realization Concentration		
ME 127	Design for Additive Manufacturing	3
ME 128	Computer-Aided Product Realization	3
ME 129	Manufacturing Processes and Design (offered AY 19-20)	3
Product Realization Electives		
ENGR 110	Perspectives in Assistive Technology (ENGR 110)	1-2
ENGR 240	Introduction to Micro and Nano Electromechanical Systems	3
ME 181	Deliverables: A Mechanical Engineering Design Practicum	3
CME 106	Introduction to Probability and Statistics for Engineers	4
ME 210	Introduction to Mechatronics (not offered AY21)	4
ME 263	The Chair	3-4
or ME 298	Silversmithing and Design	
ME 309	(not offered AY21)	3
ME 324	Precision Engineering	4

		Units
Thermo, Fluids, and Heat Transfer Concentration		
ME 149	Mechanical Measurements	3
ME 132	Intermediate Thermodynamics	4
ME 133	Intermediate Fluid Mechanics	3
Thermo, Fluids, and Heat Transfer Electives		
ME 257	Gas-Turbine Design Analysis (not offered AY21)	3
ME 351A	Fluid Mechanics	3
ME 351B	Fluid Mechanics	3
ME 352B	Fundamentals of Heat Conduction (not offered AY21)	3
ME 352C	Convective Heat Transfer (not offered AY21)	3
ME 352D	Nanoscale heat, mass and charge transport	3
ME 362A	Physical Gas Dynamics	3
ME 370A	Energy Systems I: Thermodynamics	3
ME 370B	Energy Systems II: Modeling and Advanced Concepts	4
ME 371	Combustion Fundamentals	3
AA 283	Aircraft and Rocket Propulsion	3

[1] Math and science must total 45 units.
- Math: 24 units required and must include a course in differential equations (CME 102 Ordinary Differential Equations for Engineers or MATH 53 Ordinary Differential Equations with Linear Algebra; one of these required) and calculus-based Statistics (CME 106 Introduction to Probability and Statistics for Engineers or STATS 110 Statistical Methods in Engineering and the Physical Sciences or STATS 116 is required.
- Science: 20 units minimum and requires courses in calculus-based Physics and Chemistry, with at least a full year (3 courses) in one or the other. CHEM 31A Chemical Principles I/CHEM 31B Chemical Principles II are considered one course because they cover the same material as CHEM 31M but at a slower pace. CHEM 31M is recommended.

[2] ME 170A and ME 170B fulfill the WIM requirement. In AY 2020-21, the same grading basis applies to both ME 170A and ME 170B, and cannot be changed after week 8 of enrollment in ME 170A.

[3] ME 170A (http://exploredegrees.stanford.edu/search/?P=ME%20170A) and ME 170B (http://exploredegrees.stanford.edu/search/?P=ME%20170B) are a two quarter Capstone Design Sequence and must be taken in consecutive quarters.

[4] A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum combined GPA for all courses in Engineering Topics (Engineering Fundamentals and Depth courses) is 2.0.

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

BSME 1.0 Notes

Those students (primarily seniors) who are completing BSME 1.0 from AY 2017-2018 or earlier should refer to bulletins from the academic year that corresponds with their program sheet.

Honors Program in Mechanical Engineering

The Department of Mechanical Engineering offers a program leading to a B.S. in Mechanical Engineering with honors. This program offers a unique opportunity for qualified undergraduate engineering majors to conduct independent study and research at an advanced level with a faculty mentor.

Mechanical Engineering majors who have a grade point average (GPA) of 3.5 or higher in the major may apply for the honors program. Students who meet the eligibility requirement and wish to be considered for the honors program must submit a written application to the Mechanical Engineering student services office no later than the second week of Autumn Quarter in the senior year. The application to enter the program can be obtained from the ME student services office, and must contain a one-page statement describing the research topic and include an unofficial Stanford transcript. In addition, the application must be approved by a Mechanical Engineering faculty member who agrees to serve as the thesis adviser for the project. Thesis advisers must be members of Stanford's Academic Council.

In order to receive departmental honors, students admitted to the program must:

1. Maintain the 3.5 GPA required for admission to the honors program.
2. Submit a completed thesis draft to the adviser by the 3rd week of the quarter they intend to confer. Further revisions and final endorsement by the adviser are to be finished by week 6, when two bound copies are to be submitted to the Mechanical Engineering student services office.
3. Present the thesis at the Mechanical Engineering Poster Session held in mid-April. If the poster session is not offered or the student does

not confer in the spring, an alternative presentation will be approved on a case by case basis with advisor and UGCC chair approval.

Note: Students may not use work completed towards an honors degree to satisfy the B.S. in ME course requirements.

Mechanical Engineering (ME) Minor

The following courses fulfill the minor requirements:

		Units
General Minor *		
ENGR 14	Intro to Solid Mechanics	3
ENGR 15	Dynamics	3
ME 1	Introduction to Mechanical Engineering	3
ME 30	Engineering Thermodynamics	3
ME 70	Introductory Fluids Engineering	3
Plus two of the following:		
ME 80	Mechanics of Materials	3
ME 102	Foundations of Product Realization	3
ME 131	Heat Transfer	4
ME 161	Dynamic Systems, Vibrations and Control	3
Total Units: 21		
Thermosciences Minor **		
ENGR 14	Intro to Solid Mechanics	3
ME 30	Engineering Thermodynamics	3
ME 70	Introductory Fluids Engineering	3
ME 131	Heat Transfer	4
ME 132	Intermediate Thermodynamics	4
ME 133	Intermediate Fluid Mechanics (offered SPR 18-19; more information to come)	3
ME 149	Mechanical Measurements	3
Total units: 23		
Mechanical Design Minor ***		
ENGR 14	Intro to Solid Mechanics	3
ME 80	Mechanics of Materials	3
ME 1	Introduction to Mechanical Engineering	3
ME 102	Foundations of Product Realization	3
ME 103	Product Realization: Design and Making	4
ME 104	Mechanical Systems Design	4
Plus one of the following:		
ME 127	Design for Additive Manufacturing	3
ME 128	Computer-Aided Product Realization	3-4
ME 129	Manufacturing Processes and Design	3
ME 210	Introduction to Mechatronics	4
ME 220	Introduction to Sensors	3-4
Total units: 23		

* This minor aims to expose students to the breadth of ME in terms of topics and analytic and design activities. Prerequisites: MATH 19 Calculus, MATH 20 Calculus, MATH 21 Calculus, and PHYSICS 41 Mechanics or PHYSICS 41E Mechanics, Concepts, Calculations, and Context.

** Prerequisites: MATH 19 Calculus, MATH 20 Calculus, MATH 21 Calculus , MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications (or CME 100 Vector Calculus for Engineers) and PHYSICS 41 Mechanics or PHYSICS 41E Mechanics, Concepts, Calculations, and Context.

*** This minor aims to expose students to design activities supported by analysis. Prerequisites: MATH 19 Calculus, MATH 20 Calculus, MATH 21 Calculus,PHYSICS 42 Classical Mechanics Laboratory, and PHYSICS 41 Mechanics or PHYSICS 41E Mechanics, Concepts, Calculations, and Context.

Product Design Undergraduate Major

COVID-19-Related Degree Requirement Changes

Grading

The Product Design Program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that normally require a letter grade.

Other Undergraduate Policies

The Product Design Program encourages students to take courses for letter grades when possible in order to have complete records for use when seeking future opportunities, including employment in industry and students seeking to apply for graduate studies. Per University policy, students can change grading basis through the end of Week 8 in Autumn, Winter, and Spring, and Week 6 in Summer. Students are encouraged to reach out directly to Product Design Program Director, William Burnett <wburnett@stanford.edu>, for questions about petitions, especially in situations related to COVID-19 policies and grading basis.

Product Design (PD)

Completion of the undergraduate program in Product Design leads to the conferral of the Bachelor of Science in Engineering. The subplan Product Design appears on the transcript and on the diploma.

Mission of the Undergraduate Program in Product Design

The mission of the undergraduate program in Product Design is to graduate designers who can synthesize technology, human factors, and business factors in the service of human need. The program teaches a design process that encourages creativity, craftsmanship, aesthetics, and personal expression, and emphasizes brainstorming and need finding. The course work provides students with the skills necessary to carry projects from initial concept to completion of working prototypes. Students studying product design follow the basic Mechanical Engineering curriculum and are expected to meet the University requirements for a Bachelor of Science degree. The program prepares students for careers in industry and for graduate study.

Requirements

		Units
Mathematics and Science		**36 units minimum**
Mathematics [1,2]		**20 units minimum**
Recommended: one course in Statistics [1]		
Science [2,3]		**17 units minimum**
17 units minimum : Minimum of 9 units of SoE approved science and 8 units of Behavioral Science [2,3]		
PHYSICS 41	Mechanics	4
PSYCH 1	Introduction to Psychology	5
PSYCH or HUMBIO elective [3]		3-5

Technology in Society		**3-5 units**
One course required; must be on the SoE approved TiS courses list at <ughb.stanford.edu> the year it is taken..		
Engineering Fundamentals		**8 units minimum**
CS 106A	Programming Methodology (or CS 106B)	5
ENGR 40M	An Intro to Making: What is EE (or ENGR 40A)	3-5
or ENGR 40A	Introductory Electronics	
Product Design Engineering Depth		**54 units minimum**
ME 125 and ME 216M OR two Art Studio or Computer Science courses, 100 series or higher		6
ENGR 14	Intro to Solid Mechanics	3
ME 80	Mechanics of Materials	3
ME 101	Visual Thinking	4
ME 102	Foundations of Product Realization	3
ME 103	Product Realization: Design and Making	4
ME 104	Mechanical Systems Design	4
ME 110	Design Sketching	2
ME 115A	Introduction to Human Values in Design	3
ME 115B	Product Design Methods	4
ME 120	History and Ethics of Design	3
ME 115C	Designing Your Business	3
ME 125	Visual Frontiers (or ARTSTUDI or CS course)	3
ME 216A	Advanced Product Design: Needfinding [7]	4
ME 216B	Advanced Product Design: Implementation 1 [6]	4
ME 216C	Advanced Product Design: Implementation 2 [6]	4
ME 216M	Introduction to the Design of Smart Products (or ARTSTUDI or CS course)	3-4

1 Math requirements can be met with the Math 19, 20, 21 series, or up to 10 units AP or IB Calculus; and courses from the MATH 50 series and/or the CME 100 series; STATS 60 or STATS 160 are recommended

2 AP units can be applied; have these approved by SoE Dean's Office (email Darlene Lazar at dlazar@stanford.edu) prior to final quarter and before asking advisor to sign-off.

3 School of Engineering approved science list available at http://ughb.stanford.edu (http://ughb.stanford.edu/). PSYCH electives numbered 30-200 or HUMBIO 82A or HUMBIO 160 are pre-approved.

4 ME 216B & ME 216C will fulfill the Writing in the Major (WIM) requirement for Product Design beginning 2019-20.

5 ME 115C (not available 2020-21) is the only course that can be waived if a student takes a quarter overseas or at one of the BOSP campuses in New York or Washington DC. Students should plan their overseas quarter to take place in sophomore year, or Spring Quarter of the junior year only. If the student elects to go overseas junior year, the total depth units are reduced by 3; this is approved without petition.

6 You may substitute ME 216B and ME 216C with ME 206A and ME 206B Design for Extreme Affordability.

7 ME 216A must be taken for 4 units by all PD majors.

A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Topics (Engineering Fundamentals and Depth courses) is 2.0.

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

AERONAUTICS AND ASTRONAUTICS

Courses offered by the Department of Aeronautics and Astronautics are listed under the subject code AA on the (https://explorecourses.stanford.edu/search/?filter-term-Autumn=on&filter-catalognumber-AA=on&filter-term-Summer=on&page=0&q=AA&filter-coursestatus-Active=on&view=catalog&filter-term-Spring=on&collapse=&filter-term-Winter=on&catalog=71)*Stanford Bulletin's* ExploreCourses web site.

The Department of Aeronautics and Astronautics prepares students for professional positions in industry, government, and academia by offering a comprehensive program of undergraduate and graduate teaching and research. In this broad program, students have the opportunity to learn and integrate multiple engineering disciplines. The program emphasizes structural, aerodynamic, guidance and control, and propulsion problems of aircraft and spacecraft. Courses in the teaching program lead to the degrees of Bachelor of Science, Master of Science, Engineer, and Doctor of Philosophy. Undergraduates and doctoral students in other departments may also elect a minor in Aeronautics and Astronautics.

Requirements for all degrees include courses on basic topics in Aeronautics and Astronautics, as well as in mathematics, and related fields in engineering and the sciences.

The current research and teaching activities cover a number of advanced fields, with emphasis on:

- Aeroelasticity and Flow Simulation
- Aircraft Design, Performance, and Control
- Applied Aerodynamics
- Astrodynamics
- Autonomy
- Computational Aero-Acoustics
- Computational Fluid Dynamics
- Computational Mechanics and Dynamical Systems
- Control of Robots, including Space and Deep-Underwater Robots
- Conventional and Composite Materials and Structures
- Decision Making under Uncertainty
- Direct and Large-Eddy Simulation of Turbulence
- High-Lift Aerodynamics
- Hybrid Propulsion
- Hypersonic and Supersonic Flow
- Micro and Nano Systems and Materials
- Mission Planning and Spacecraft Operations
- Multidisciplinary Design Optimization
- Navigation Systems (especially GPS)
- Optimal Control, Estimation, System Identification
- Sensors for Harsh Environments
- Space Debris Characterization
- Space Environment Effects on Spacecraft
- Space Plasmas
- Space Policy and Economics
- Spacecraft Design and Satellite Engineering
- Spacecraft Guidance, Navigation, and Control
- Turbulent Flow and Combustion

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. an ability to apply the knowledge of mathematics, science, and engineering to understand and solve complex interdisciplinary problems.
2. an ability to design and conduct relevant experiments, as well as to analyze and interpret the resulting outcomes to make appropriate design choices.
3. the broad education necessary to understand the impact of engineering solutions in a global and societal context.
4. an ability to work professionally in aircraft and spacecraft engineering, space exploration, air- and space-based telecommunication industries, autonomous systems, robotics, commercial space transportation, teaching, research, military service, and many related technology-intensive fields.
5. an ability to understand multidisciplinary challenges of modern aircraft and spacecraft design at the system level.
6. an ability to communicate effectively and to work in diverse and inter-disciplinary teams to accomplish objectives.
7. an understanding of professional and ethical responsibility.
8. an understanding of the impact that engineering solutions can have through entrepreneurial processes.
9. a recognition of the need for and an ability to engage in life-long learning, and to make original contributions in Aeronautics and Astronautics and related fields.

Learning Outcomes (Graduate)

The purpose of the master's program is to provide students with the knowledge and skills necessary for a professional career or doctoral studies. This is done through course work which provides a solid grounding in the basic disciplines, including fluid mechanics, dynamics and control, propulsion, structural mechanics, and applied or computational mathematics, and course work or supervised research which provides depth and breadth in the student's area of specialization.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research. Through course work and guided research, the program prepares students to make original contributions in Aeronautics and Astronautics and related fields.

Graduate Programs in Aeronautics and Astronautics

Admission

To be eligible to apply for admission to the department, a student must have a bachelor's degree in engineering, physical science, mathematics, or an acceptable equivalent. Beginning with the application term 2021-2022, an MS degree will no longer be required to apply to the PhD program in Aeronautics and Astronautics. Students with a Bachelor's degree who ultimately intend to complete a PhD degree are strongly encouraged to apply directly to the PhD program, rather than the MS program. A completed application (including letters of recommendation, transcripts and GRE/TOEFL scores) must be received by the application deadline.

Information about admission to the Honors Cooperative Program is included in the "School of Engineering (p. 552)" section of this bulletin. The department considers HCP applications for the Autumn, Winter and Spring Quarters; prospective applicants may contact the department's student services office with questions.

The Graduate Record Exam (GRE) General Test is required for application to the department. Further information and application forms for all graduate degree programs may be obtained from Graduate Admissions, the Registrar's Office, http://gradadmissions.stanford.edu.

Transfer Credits

The number of transfer credits allowed for each degree (Engineer and Ph.D.) is delineated in the "Graduate Degrees (p. 82)" section of this bulletin; transfer credit is not accepted for the master's degree. Transfer credit is allowed only for courses taken as a graduate student, after receiving a bachelor's degree, in which equivalence to Stanford courses is established and for which a grade of 'B' or better has been awarded. Transfer credits, if approved, reduce the total number of Stanford units required for a degree.

Fellowships and Assistantships

Fellowships and course or research assistantships are available to qualified graduate students. Fellowships sponsored by Gift Funds, Stanford University, and Industrial Affiliates of Stanford University in Aeronautics and Astronautics provide grants to several first-year students for up to five quarters to cover tuition and living expenses. Stanford Graduate Fellowships, sponsored by the University, provide grants for up to three full years of study and research; each year, the department is invited to nominate several outstanding doctoral or predoctoral students for these prestigious awards. Students who have excelled in their course work at Stanford are eligible for course assistantships in the department; those who have demonstrated research capability are eligible for research assistantships from individual faculty members. Students may also hold assistantships in other departments if the work is related to their academic progress; the criteria for selecting course or research assistants are determined by each hiring department. A standard, 20 hours/week course or research assistantship provides a semi-monthly salary and an 8-10 unit tuition grant per quarter. Research assistants may be given the opportunity of additional summer employment. They may use their work as the basis for a dissertation or Engineer's thesis.

Aeronautics and Astronautics Facilities

The work of the department is centered in the William F. Durand Building for Space Engineering and Science. This 120,000 square foot building houses advanced research and teaching facilities and concentrates in one complex the Department of Aeronautics and Astronautics. The Durand Building also houses faculty and staff offices and conference rooms.

Through the department's close relations with nearby NASA-Ames Research Center, students and faculty have access to one of the best and most extensive collections of experimental aeronautical research facilities in the world, as well as the latest generation of supercomputers.

General Information

Further information about the facilities and programs of the department is available at http://aa.stanford.edu, or from the department's student services office.

The department has a student branch of the American Institute of Aeronautics and Astronautics, which sponsors programs and speakers covering aerospace topics and social events. It also conducts visits to nearby research, government, and industrial facilities, and sponsors a Young Astronauts Program in the local schools.

Aeronautics and Astronautics (AA)

Mission of the Undergraduate Program in Aeronautics and Astronautics

The mission of the undergraduate program in Aeronautics and Astronautics Engineering is to provide students with the fundamental principles and techniques necessary for success and leadership in the conception, design, implementation, and operation of aerospace and related engineering systems. Courses in the major introduce students to engineering principles. Students learn to apply this fundamental knowledge to conduct laboratory experiments, and aerospace system design problems. Courses in the major include engineering fundamentals, mathematics, and the sciences, as well as in-depth courses in aeronautics and astronautics, dynamics, mechanics of materials, autonomous systems, computational engineering, embedded programming, fluids engineering, and heat transfer. The major prepares students for careers in aircraft and spacecraft engineering, autonomy, robotics, unmanned aerial vehicles, drones, space exploration, air and space-based telecommunication industries, computational engineering, teaching, research, military service, and other related technology-intensive fields.

Completion of the undergraduate program in Aeronautics and Astronautics leads to the conferral of the Bachelor of Science in Aeronautics and Astronautics.

Requirements

		Units
Mathematics		
24 units minimum		
MATH 19	Calculus (required) [1]	3
MATH 20	Calculus (required) [1]	3
MATH 21	Calculus (required) [1]	4
CME 100/ENGR 154	Vector Calculus for Engineers (required) [2]	5
or MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
CME 102/ENGR 155A	Ordinary Differential Equations for Engineers (required) [2]	5
or MATH 53	Ordinary Differential Equations with Linear Algebra	
CME 106/ENGR 155C	Introduction to Probability and Statistics for Engineers (required)	4-5
or STATS 110	Statistical Methods in Engineering and the Physical Sciences	
or STATS 116	Theory of Probability	
or CS 109	Introduction to Probability for Computer Scientists	
CME 104	Linear Algebra and Partial Differential Equations for Engineers (recommended) [2]	5
or MATH 52	Integral Calculus of Several Variables	
CME 108	Introduction to Scientific Computing (recommended)	3
Science		
20 units minimum		
PHYSICS 41	Mechanics (required) [3]	4
or PHYSICS 41E	Mechanics, Concepts, Calculations, and Context	
PHYSICS 43	Electricity and Magnetism (required) [3]	4
PHYSICS 45	Light and Heat (required)	4
CHEM 31M	Chemical Principles: From Molecules to Solids (or CHEM 31A and CHEM 31B, or AP Chemistry) (required)	5
ENGR 80	Introduction to Bioengineering (Engineering Living Matter) (recommended)	4
School of Engineering approved Science Electives: See Undergraduate Handbook, Figure 4-2		3-5
Technology in Society (one course required)		
School of Engineering approved Technology in Society courses: See Undergraduate Handbook, Figure 4-3. The course must be on the School of Engineering approved list the year you take it.		3-5

AA 252	Techniques of Failure Analysis (recommended)	3
Engineering Fundamentals (three courses required)		
11 units minimum		
ENGR 21	Engineering of Systems (required)	3
CS 106A	Programming Methodology	3-5
ENGR 10	Introduction to Engineering Analysis (recommended)	4
ENGR 40M	An Intro to Making: What is EE (recommended)	3-5
Fundamentals Elective; see list of Approved Courses in Undergraduate Engineering Handbook website at ughb.stanford.edu, Figure 4-4		3-5
Aero/Astro Depth Requirements		
35 units minimum		
ENGR 14	Intro to Solid Mechanics (required)	3
ENGR 15	Dynamics (required)	3
ENGR 105	Feedback Control Design (required)	3
ME 30	Engineering Thermodynamics (required)	3
ME 70	Introductory Fluids Engineering (required)	3
AA 100	Introduction to Aeronautics and Astronautics (required)	3
AA 131	Space Flight (required)	3
AA 141	Atmospheric Flight (required)	3
AA 151	Lightweight Structures (required)	3
AA 174A	Principles of Robot Autonomy I (required)	5
AA 190	Directed Research and Writing in Aero/Astro (required) satisfies the Writing in the Major requirement, (WIM)	3-5
Aero/Astro Focus Electives		
12 units minimum		
AA 102	Introduction to Applied Aerodynamics (recommended)	3
AA 103	Air and Space Propulsion	3
AA 113	Aerospace Computational Science	3
AA 135	Introduction to Space Policy	3
AA 156	Mechanics of Composite Materials	3
AA 173	Flight Mechanics & Controls	3
CS 237B	Principles of Robot Autonomy II (AA 174B)	3-4
AA 199	Independent Study in Aero/Astro	1-5
AA 261	Building an Aerospace Startup from the Ground Up	3
AA 272	Global Positioning Systems	3
AA 279A	Space Mechanics	3
MS&E 178	The Spirit of Entrepreneurship	2
Aero/Astro Suggested Courses (not required)		
AA 149	Operation of Aerospace Systems	1
Aero/Astro Capstone Requirement		
7 units minimum. Select either the Spacecraft or Aircraft course sequence		
AA 136A	Spacecraft Design	3-5
AA 136B	Spacecraft Design Laboratory	3-5
AA 146A	Aircraft Design	4
AA 146B	Aircraft Design Laboratory	3

For additional information and sample programs see the Handbook for Undergraduate Engineering (http://ughb.stanford.edu) and the Aeronautics and Astronautics Undergraduate Program Sheet (https://ughb.stanford.edu/program-sheets/).

All courses taken for the major must be taken for a letter grade if that option is offered by the instructor.

Minimum Combined GPA for all courses in Engineering Topics (Engineering Fundamentals and Depth courses) is 2.0.

Transfer and AP credits in Math, Science, Fundamentals, and the Technology in Society course must be approved by the School of Engineering Dean's office.

1 A score of 4 on the Calculus BC test or 5 on the AB test only gives students 8 units, not 10 units, so is equal to MATH 19 + MATH 20, but not MATH 21. The Math Placement Exam determines what math course the student starts with.

2 It is recommended that the CME series (100, 102, 104) be taken rather than the MATH series (51, 52, 53). It is recommended that students taking the MATH series also take CME 192 Introduction to MATLAB.

3 A score of 5 on the AP Physics C Mechanics test places the student out of PHYSICS 41. Similarly, a score of 5 on the AP Physics Electricity and Magnetism test places the student out of PHYSICS 43.

Honors Program

The Department of Aeronautics and Astronautics honors program has been designed to allow undergraduates with strong records and enthusiasm for independent research to engage in a significant project leading to a degree with departmental honors.

Students who meet the eligibility criteria and wish to be considered for the honors program should apply to the program by the end of the junior year. All applications are subject to the review and final approval by the Aero/Astro Undergraduate Curriculum Committee.

Application Requirements:

- One-page written statement describing the research topic and signed adviser form
- GPA of 3.5 or higher in the major
- Unofficial Stanford transcript (from Axess)
- Signature of thesis adviser

Honors criteria:

- Maintain the 3.5 GPA required for admissions to the honors program.
- Arrangement with an Aero/Astro faculty member who agrees to serve as the thesis adviser. The adviser must be a member of the Academic Council.
- Under the direction of the thesis adviser, complete at least two quarters of research with a minimum of 9 units of independent research; 3 of these units may be used towards a student's Aero/Astro Focus Elective requirement.
- Submit an honors thesis (20-30 pages). Thesis is due by April 30th of senior year in order to be eligible for University prizes.
- Attend Research Experience for Undergraduates Poster Session or present in another suitable forum approved by the faculty adviser.

Aeronautics and Astronautics (AA) Minor

The Aero/Astro minor introduces undergraduates to the key elements of modern aerospace systems. Within the minor, students may focus on aircraft, spacecraft, or disciplines relevant to both. The course requirements for the minor are described in detail below. If any core classes (aside from ENGR 21; see footnote) are part of student's major or other degree program, the Aero/Astro adviser can help select substitute courses to fulfill the Aero/Astro minor requirements; no double counting allowed. All courses taken for the minor must be taken for a letter grade

if that option is offered by the instructor. Minimum GPA for all minor courses combined is 2.0.

The following core courses fulfill the minor requirements:

		Units
AA Core		
12 Core Units, 24 Total Program Units		
ENGR 21	Engineering of Systems [1]	3
AA 100	Introduction to Aeronautics and Astronautics	3
AA 131	Space Flight	3
AA 141	Atmospheric Flight	3
AA Electives		
Choose 4 courses		
ENGR 105	Feedback Control Design	3
ME 70	Introductory Fluids Engineering	3
AA 102	Introduction to Applied Aerodynamics	3
AA 103	Air and Space Propulsion	3
AA 135	Introduction to Space Policy	3
AA 151	Lightweight Structures	3
AA 156	Mechanics of Composite Materials	3
AA 173	Flight Mechanics & Controls	3
AA 174A	Principles of Robot Autonomy I	3-4
CS 237B	Principles of Robot Autonomy II	3-4
AA 261	Building an Aerospace Startup from the Ground Up	3
AA 272	Global Positioning Systems	3
AA 279A	Space Mechanics	3

[1] ENGR 21 is waived as minor requirement if already taken as part of the major program.

Master of Science in Aeronautics and Astronautics

The University's basic requirements for the master's degree are outlined in the "Graduate Degrees (p. 65)" section of this bulletin.

Students with an aeronautical engineering background should be able to complete the master's degree in five quarters; note that many courses are not taught during the summer. Students with a bachelor's degree in Physical Science, Mathematics, or other areas of Engineering may find it necessary to take certain prerequisite courses, which may lengthen the time required to obtain the master's degree.

The Master of Science (M.S.) program is a terminal degree program. It is based on the completion of lecture courses focused on a theme within the discipline of Aeronautics and Astronautics engineering. No thesis is offered. Research is optional (required to take the qualifying examination).

Grade Point Averages

A minimum grade point average (GPA) of 2.75 is required to fulfill the department's master's degree requirements. A minimum GPA of 3.5 is required for eligibility to attempt the Ph.D. qualifying examination. Students must also meet the University's quarterly academic requirements for graduate students as described in the "Degree Progress (p. 70)" section of this bulletin and in the "Satisfactory Progress" section of the Guide to Graduate Studies in Aeronautics and Astronautics. All courses (excluding seminars) used to satisfy the requirements for basic courses, mathematics and technical electives must be taken for a letter grade. Insufficient grade points on which to base the GPA may delay expected degree conferral or result in refusal of permission to take the qualifying examinations.

Course Requirements

The master's degree program requires 45 quarter units of course work, which must be taken at Stanford. The course work is divided into four categories:

- Basic Courses
- Mathematics Courses
- Technical Electives
- Other Electives

Basic Courses

Master's degree candidates must select eight courses as follows:

		Units
(I) Five courses in the basic areas of Aeronautics and Astronautics (one in each area):		
Fluids		
AA 200	Applied Aerodynamics	3
AA 210A	Fundamentals of Compressible Flow	3
Structures		
AA 240	Analysis of Structures	3
Guidance and Control		
ENGR 105	Feedback Control Design	3
ENGR 205	Introduction to Control Design Techniques	3
Propulsion		
AA 283	Aircraft and Rocket Propulsion	3
Experimentation/Design Requirements (see courses under Related Courses tab above)		
(II) Three courses (one each from three of the four areas below)		
Fluids		
AA 200	Applied Aerodynamics	3
AA 210A	Fundamentals of Compressible Flow	3
AA 244A	Introduction to Plasma Physics and Engineering	3
Structures		
AA 242B	Mechanical Vibrations	3
AA 256	Mechanics of Composites	3
AA 280	Smart Structures	3
Guidance and Control		
AA 242A	Classical Dynamics	3
AA 242B	Mechanical Vibrations	3
AA 251	Introduction to the Space Environment	3
AA 271A	Dynamics and Control of Spacecraft and Aircraft	3
AA 272	Global Positioning Systems	3
AA 274A	Principles of Robot Autonomy I	3-4
AA 277	Multi-robot Control, Communication, and Sensing	3
AA 279A	Space Mechanics	3
One course selected from AA courses numbered 200 and above, excluding seminars and independent research		

Course Waivers

Waivers of the basic courses required for the M.S. degree in Aeronautics and Astronautics can only be granted by the instructor of that course. Students who believe that they have had a substantially equivalent course at another institution should consult with the course instructor to determine if they are eligible for a waiver, and with their adviser to

judge the effect on their overall program plans. To request a waiver, students should fill out a Petition for Waiver form (reverse side of the department's program proposal) and have it approved by the instructor and their adviser. One additional technical elective must be added for each basic course that is waived.

Mathematics Courses

M.S. candidates are expected to exhibit competence in applied mathematics. Students meet this requirement by taking two courses, for a minimum of 6 units, of either advanced mathematics offered by the Mathematics Department or technical electives that strongly emphasize applied mathematics. Common choices include:

- AA 203 Optimal and Learning-based Control
- AA 212 Advanced Feedback Control Design
- AA 214 Numerical Methods for Compressible Flows
- AA 218 Introduction to Symmetry Analysis
- AA 222 Engineering Design Optimization
- AA 228 Decision Making under Uncertainty
- AA 242B Mechanical Vibrations

See the list of mathematics courses under Related Courses (http://exploredegrees.stanford.edu/aeronauticsandastronautics/#relatedcoursestext) tab for additional suggestions, which includes all courses in the Mathematics Department numbered 200 or above.

A maximum of three independent study/research units (AA 290 or independent study in another department) may count toward your M.S. program. If you fulfill your experimentation/design requirement with a course other than AA 290 (or equivalent from another department), it is possible to count AA 290 as a technical or free elective.

Technical Electives

Students, in consultation with their adviser, select at least four courses* from among the graduate-level courses, totaling at least 12 units, from departments in the School of Engineering and related science departments. These courses should be taken for a letter grade; the student should not elect the credit/no-credit option for any course except free elective.

*Up to three seminar units may count toward an M.S. program, and are counted as one technical elective. At least three additional graduate courses offered in Engineering or related math/science departments should be taken to meet the technical elective section requirement.

Other Electives

It is recommended that all candidates enroll in a humanities or social sciences course to complete the 45-unit requirement. Practicing courses in, for example, art, music, and physical education do not qualify in this category. Language courses may qualify.

Coterminal Master's Program in Aeronautics and Astronautics

This program allows Stanford undergraduates an opportunity to work simultaneously toward a B.S. degree and an M.S. in Aeronautics and Astronautics. Stanford undergraduates who wish to continue their studies for the master of science degree in the coterminal program must have earned a minimum of 120 units towards graduation. This includes allowable Advanced Placement (AP) and transfer credit.

The department-specific Aero/Astro coterminal program application, which includes information and deadlines, can be obtained from the Aero/Astro Student Services Office (https://aa.stanford.edu/academics/student-services-office/). A completed application (including letters of recommendation, transcripts and GRE scores) must be received no later than the quarter prior to the expected completion of the undergraduate degree. Admission is granted or denied through the departmental faculty admissions committee. Stanford undergraduates interested in learning more about receiving an Aero/Astro master's degree as a coterm student should review the information on the University Registrar's web site (https://registrar.stanford.edu/students/coterminal-degree-programs/) and visit the Aero/Astro Student Services Office (https://aa.stanford.edu/academics/student-services-office/).

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

The Honors Cooperative Program

The Honors Cooperative Program (HCP) makes it possible for academically qualified engineers and scientists in nearby companies to be part-time master's students in Aeronautics and Astronautics while continuing nearly full-time professional employment. Prospective HCP students follow the same admission process and must meet the same admission requirements as full-time master's students. For more information regarding the Honors Cooperative Program, see the "School of Engineering (p. 552)" section of this bulletin.

Master of Science in Engineering (AA)

Students whose career objectives require a more interdepartmental or narrowly focused program than is possible in the M.S. program in Aeronautics and Astronautics (Aero/Astro) may pursue a program for an M.S. degree in Engineering (45 units). This program is described in the "Graduate Programs in the School of Engineering (p.)" section of this bulletin.

Sponsorship by the Department of Aeronautics and Astronautics in this more general program requires that the student file a proposal before completing 18 units of the proposed graduate program. The proposal must be accompanied by a statement explaining the objectives of the program and how the program is coherent, contains depth, and fulfills a well-defined career objective. The proposed program must include at least 12 units of graduate-level work in the department and meet rigorous standards of technical breadth and depth comparable to the regular Aero/Astro Master of Science program. The grade and unit requirements are the same as for the M.S. degree in Aeronautics and Astronautics.

Engineer in Aeronautics and Astronautics

The degree of Engineer represents an additional year (or more) of study beyond the M.S. degree and includes a research thesis. The program is designed for students who wish to do professional engineering work upon graduation and who want to engage in more specialized study than is afforded by the master's degree alone. It is expected that full-time students will be able to complete the degree within two years of study after the master's degree.

The University's basic requirements for the degree of Engineer are outlined in the "Graduate Degrees (p. 65)" section of this bulletin. The following are department requirements.

The candidate's prior study program should have fulfilled the department's requirements for the master's degree or a substantial equivalent. Beyond the master's degree, a total of 45 units of work is required, including a thesis and a minimum of 21 units of courses chosen as follows:

1. 21 units of approved technical electives, of which 6 are in mathematics or applied mathematics. See the list of mathematics courses under Related Courses tab above. All courses in the Mathematics Department numbered 200 or above are included. The remaining 15 units are chosen in consultation with the adviser, and represent a coherent field of study related to the thesis topic. Suggested fields include: (a) acoustics, (b) aerospace structures, (c) aerospace systems synthesis and design, (d) analytical and experimental methods in solid and fluid mechanics, (e) computational fluid dynamics, and (f) guidance and control.
2. The remaining 24 units may be thesis, research, technical courses, or free electives.

Candidates for the degree of Engineer are expected to have a minimum grade point average (GPA) of 3.0 for work in courses beyond those required for the master's degree. All courses except seminars and directed research should be taken for a letter grade.

Engineer's thesis

For specific information on the format and deadlines for submission of theses, please check with the Graduate Degree Progress Office. The department recommends that students follow the format defined in the handbook Directions for Preparing Doctoral Dissertations (https://studentaffairs.stanford.edu/registrar/students/dissertation-thesis/), available in the Graduate Degree Progress Office. Note: the adviser must sign the thesis before the filing deadline, which is generally the last day of classes during the graduation quarter.

Doctor of Philosophy in Aeronautics and Astronautics

The University's basic requirements for the Ph.D. degree are outlined in the "Graduate Degrees (p. 65)" section of this bulletin.

Department requirements are stated below. Beginning with the application term 2021-22, an M.S. degree is no longer required to apply to the Ph.D. program in Aeronautics and Astronautics. Students with a bachelor's degree who ultimately intend to complete a Ph.D. degree are strongly encouraged to apply directly to the Ph.D. program, rather than the M.S. program. Students who are currently pursuing the M.S. in the department and wish to continue for the Ph.D. should submit a graduate program authorization petition form online through Axess before their last quarter in the master's program.

Before beginning dissertation research for the Ph.D. degree, a student must pass the departmental qualifying examination. A student must meet the following conditions by the appropriate deadline to be able to take the qualifying examination:

1. 30 units of master's course work completed. A student who has completed fewer than 30 units may petition to take the qualifying examination.
2. Stanford graduate GPA of 3.5 or higher.
3. Investigation of a research problem, under the direction of a faculty member who evaluates this work as evidence of the potential for doctoral research. The minimum requirement for taking the qualifying examination is to complete 3 units of AA 290 before the qualifying examination quarter.

Additional information about the deadlines, nature, and scope of the Ph.D. qualifying examination can be obtained from the department. Recommended courses to prepare for the qualifying examination are listed on the Aero/Astro website (http://aa.stanford.edu/academics/graduate-programs/doctoral-program/). After passing the exam, the student must submit an approved program of Ph.D. course work on an Application for Candidacy for Doctoral Degree to the Aero/Astro student services office.

Course Requirements

Each individual Ph.D. program in Aeronautics and Astronautics, designed by the student in consultation with the adviser, should represent a strong and cohesive program reflecting the student's major field of interest. A total of 90 units of credit is required beyond the M.S. Of these 90 units, a minimum of 27 must be formal course work (excluding research, directed study and seminars), consisting primarily of graduate courses in engineering and the pertinent sciences. The remainder of the 90 units may be in the form of either Ph.D. dissertation units or free electives. For students who elect a minor in another department, a maximum of 9 units from the minor program may be included in the 27 units of formal course work; the remaining minor units may be considered free electives and are included in the 90 unit total required for the Aero/Astro Ph.D. degree.

Ph.D. students in Aeronautics and Astronautics must take 9 units of mathematics courses, with at least 6 of these units from courses with numbers over 200. The Aero/Astro department and other engineering departments offer many courses that have sufficient mathematical content that they may be used to satisfy the mathematics requirement. See the list of mathematics courses under Related Courses (p. 610) tab for suggestions. Others may be acceptable if approved by the adviser and the Aero/Astro student services office. University requirements for continuous registration apply to doctoral students for the duration of the degree.

Grade Point Average

A minimum grade point average (GPA) of 3.0 is required to fulfill the department's Ph.D. degree requirements. It is incumbent upon Ph.D. students to request letter grades in all courses listed on the Application for Candidacy form.

Candidacy

Ph.D. students must complete the candidacy process and be admitted to candidacy by their second year of doctoral study. There are two requirements for admission to Ph.D. candidacy in Aeronautics and Astronautics: students must first pass the departmental qualifying exam and must then submit an application for candidacy. The candidacy form lists the courses the student will take to fulfill the requirements for the degree. The form must include the 90 non-M.S. units required for the Ph.D.; it should be signed by the adviser and submitted to the Aero/Astro student services office for the candidacy chairman's signature. Aero/Astro has a department-specific candidacy form, which may be obtained in the Aero/Astro student services office. Candidacy is valid for up to five years; this term is not affected by leaves of absence.

Dissertation Reading Committee

Each Ph.D. candidate is required to establish a reading committee for the doctoral dissertation within six months after passing the department's Ph.D. qualifying exam. Thereafter, the student should consult frequently with all members of the committee about the direction and progress of the dissertation research.

A dissertation reading committee consists of the principal dissertation adviser and at least two other readers. If the principal adviser is emeritus, there should be a non-emeritus co-adviser. It is expected that at least two members of the Aero/Astro faculty be on each reading committee. If the principal research adviser is not within the Aero/Astro department, then the student's Aero/Astro academic adviser should be one of those members. The initial committee, and any subsequent changes, must be approved by the department Chair.

Although all readers are usually members of the Stanford Academic Council, the department Chair may approve one non-Academic Council reader if the person brings unusual and necessary expertise to the dissertation research. Generally, this non-Academic Council reader will be a fourth reader, in addition to three Academic Council members.

University Oral Examination

The Ph.D. candidate is required to take the University oral examination after the dissertation is substantially completed (with the dissertation draft in writing), but before final approval. The examination consists of a public presentation of dissertation research, followed by substantive private questioning on the dissertation and related fields by the University oral committee (four faculty examiners, plus a chairman). The examiners usually include the three members on the student's Ph.D. reading committee. The chairman must not be in the same department as the student or the adviser. Once the oral examination has been passed, the student finalizes the dissertation for reading committee review and final approval. Forms for the University oral examination scheduling and a one-page dissertation abstract should be submitted to the Aero/Astro student services office at least three weeks prior to the date of the oral examination for departmental review and approval. Students must be enrolled during the quarter when they take their University oral examination. If the oral examination takes place during the vacation time between quarters, the student must be enrolled in the prior quarter.

Doctoral Dissertation

See the Directions for Preparing Doctoral Dissertation (https://registrar.stanford.edu/students/dissertation-and-thesis-submission/preparing-dissertations-electronic-submission/format/), which outlines the University guidelines for preparing a Ph.D. dissertation.

When a student is ready for a final draft of the dissertation, the student should make an appointment to consult with the graduate degree progress officer in the Registrar's Office to review the completion of the Ph.D. program and the strict formatting requirements for the dissertation. Students must submit the final version of the dissertation to the Registrar's Office no later than the posted deadline. *Note:* All members of the reading committee must sign the dissertation before the filing deadline.

The student's Ph.D. reading committee and University oral committee must each include at least one faculty member from Aeronautics and Astronautics.

Ph.D. Minor in Aeronautics and Astronautics

A student who wishes to obtain a Ph.D. minor in Aeronautics and Astronautics should consult the Aero/Astro student services office for designation of a minor adviser. A minor in Aeronautics and Astronautics may be obtained by completing 20 units of graduate-level courses in the Department of Aeronautics and Astronautics, following a program and performance approved by the department's candidacy chair. The student's Ph.D. reading committee and University oral committee must each include at least one faculty member from Aero/Astro.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

While students are encouraged to take courses for a letter grade whenever possible, the Aeronautics and Astronautics Department counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Graduate Degree Requirements

Grading

The Aeronautics and Astronautics Department has not changed its policy concerning utilization of 'CR' (credit) or 'S' (satisfactory) grades towards degree requirements requiring a letter grade for academic year 2020-21. However, to accommodate students who have been impacted in different ways by COVID-19 during the academic year 2020-21, students may submit a petition requesting to have a course with a grade of 'CR' (credit) or 'S' (satisfactory) count towards degree requirements that otherwise require a letter grade. Any petition submitted after the Change of Grading Basis Deadline will require additional approval by the Registrar's Office.

Graduate Advising Expectations

The Department of Aeronautics and Astronautics is committed to providing academic advising in support of graduate student education and professional development. The advising relationship should entail collaborative engagement by both the adviser and the advisee. As a best practice, advising expectations should be discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

In addition, the faculty Candidacy Chair is available for consultation during the academic year by email and during office hours. The Aero/Astro student services office is also an important part of the advising team. Staff in the office inform students and advisers about university and department requirements, procedures, and opportunities, and maintain the official records of advising assignments and approvals.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Master of Science

At the start of graduate study, each student is assigned a master's program adviser: a member of our faculty who provides guidance in course selection, course planning, and in exploring short and long term academic opportunities and professional pathways. The program adviser serves as the first resource for consultation and advice about a student's academic program. The Guide to Graduate Studies in Aeronautics and Astronautics (https://aa.stanford.edu/sites/default/files/aa_guide_to_graduate_studies_2017-18_0.pdf) provides information and suggested timelines for advising meetings. Usually, the same faculty member serves as program adviser for the duration of master's study. In rare instances, a formal adviser change request may be considered. See the Aero/Astro student services office for additional information on this process.

Ph.D. and Engineer

Faculty research advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways. The Guide to Graduate Studies in Aeronautics and Astronautics (https://aa.stanford.edu/sites/default/files/aa_guide_to_graduate_studies_2017-18_0.pdf) provides information and suggested timelines for advising meetings in the different stages of the doctoral or engineering program. Each individual program, designed by the student in consultation with the research adviser, should represent a strong and cohesive program reflecting the student's major field of interest. When the research adviser is from outside the Aero/Astro department, the student must also identify a program adviser from departmental primary faculty to provide guidance on departmental requirements and opportunities.

Emeriti: (Professors) Arthur E. Bryson, Richard Christensen, Daniel B. DeBra, Antony Jameson, Robert W. MacCormack, Bradford W. Parkinson*, J. David Powell*, George S. Springer, Charles Steele, Stephen W. Tsai*

Chair: Charbel Farhat

Director of Graduate Studies: Stephen Rock

Director of Undergraduate Studies: Marco Pavone

Professors: Juan Alonso, Brian J. Cantwell, Fu-Kuo Chang, Charbel Farhat, Ilan Kroo, Sanjiva Lele, Stephen Rock

Professor (Research): Todd Walter

Associate Professor: Sigrid Close, Mykel Kochenderfer, Marco Pavone, Debbie Senesky

Assistant Professors: Simone D'Amico, Grace Gao, Ken Hara, Mac Schwager

Adjunct Professors: Andrew Barrows, G. Scott Hubbard

Lecturers: Abid Kemal, Sherman Lo

* Recalled to active duty.

Experimentation/Design Requirements Courses

The following courses satisfy the master's Experimentation/Design Requirements.

		Units
AA 236A	Spacecraft Design	4
AA 236B	Spacecraft Design Laboratory	3-5
AA 236C	Spacecraft Design Laboratory	3-5
AA 274A	Principles of Robot Autonomy I	3-5
AA 279C	Spacecraft Attitude Determination and Control	3
AA 279D	Spacecraft Formation-Flying and Rendezvous	3
AA 284B	Propulsion System Design Laboratory	3
AA 284C	Propulsion System Design Laboratory	3
CS 225A	Experimental Robotics	3
CS 402L	Beyond Bits and Atoms - Lab	1-3
EE 233	Analog Communications Design Laboratory	3-4
EE 234	Photonics Laboratory	3
EE 251	High-Frequency Circuit Design Laboratory	3
EE 312	Integrated Circuit Fabrication Laboratory	3-4
ENGR 341	Micro/Nano Systems Design and Fabrication	3-5
MATSCI 160	Nanomaterials Laboratory	3-4
MATSCI 164	Electronic and Photonic Materials and Devices Laboratory	3-4
MATSCI 171	Energy Materials Laboratory	3-4
MATSCI 172	X-Ray Diffraction Laboratory	3-4
MATSCI 173	Mechanical Behavior Laboratory	3-4
MATSCI 322	Transmission Electron Microscopy Laboratory	3
ME 210	Introduction to Mechatronics	4
ME 218A	Smart Product Design Fundamentals	4-5
ME 218B	Smart Product Design Applications	4-5
ME 218C	Smart Product Design Practice	5
ME 218D	Smart Product Design: Projects	3-4
ME 220	Introduction to Sensors	4
ME 310A	Global Engineering Design Thinking, Innovation, and Entrepreneurship	4
ME 310B	Global Engineering Design Thinking, Innovation, and Entrepreneurship	4
ME 310C	Global Engineering Design Thinking, Innovation, and Entrepreneurship	4
ME 324	Precision Engineering	4
ME 348	Experimental Stress Analysis	3
ME 354	Experimental Methods in Fluid Mechanics	4-5
ME 367	Optical Diagnostics and Spectroscopy Laboratory	4

Mathematics Courses

Each Aero/Astro degree has a mathematics requirement, for which courses on the following list are pre-approved. (Other advanced courses may also be acceptable.) Students should consult with their advisers in selecting the most appropriate classes for their field. M.S. candidates select 2 courses; they may also use the mathematics courses listed as common choices in the master's degree course requirements . Engineers select 2 courses; Ph.D. candidates select 3 courses, with at least 6 units from courses numbered above 200.

		Units
AA 203	Optimal and Learning-based Control	3
AA 212	Advanced Feedback Control Design	3

AA 214	Numerical Methods for Compressible Flows	3
AA 218	Introduction to Symmetry Analysis	3
AA 222	Engineering Design Optimization	3-4
AA 228	Decision Making under Uncertainty	3-4
AA 242B	Mechanical Vibrations	3
AA 273	State Estimation and Filtering for Robotic Perception	3
AA 277	Multi-robot Control, Communication, and Sensing	3
CEE 281	Mechanics and Finite Elements	3
CME 108	Introduction to Scientific Computing	3
CME 302	Numerical Linear Algebra	3
CME 303	Partial Differential Equations of Applied Mathematics	3
CME 306	Numerical Solution of Partial Differential Equations	3
CME 307	Optimization	3
CME 308	Stochastic Methods in Engineering	3
CS 221	Artificial Intelligence: Principles and Techniques	3-4
CS 229	Machine Learning	3-4
EE 261	The Fourier Transform and Its Applications	3
EE 263	Introduction to Linear Dynamical Systems	3
EE 264	Digital Signal Processing	3-4
EE 278	Introduction to Statistical Signal Processing	3
EE 364A	Convex Optimization I	3
EE 364B	Convex Optimization II	3
ENGR 207B	Linear Control Systems II	3
ENGR 209A	Analysis and Control of Nonlinear Systems	3
MATH 113	Linear Algebra and Matrix Theory	3
MATH 115	Functions of a Real Variable	3
MATH 120	Groups and Rings	3
MATH 171	Fundamental Concepts of Analysis	3
ME 300A	Linear Algebra with Application to Engineering Computations	3
ME 300B	Partial Differential Equations in Engineering	3
ME 300C	Introduction to Numerical Methods for Engineering	3
ME 335A	Finite Element Analysis	3
ME 335B	Finite Element Analysis	3
ME 335C	Finite Element Analysis	3
ME 408	Spectral Methods in Computational Physics	3
ME 469	Computational Methods in Fluid Mechanics	3
MS&E 201	Dynamic Systems	3
MS&E 221	Stochastic Modeling	3
MS&E 311	Optimization	3
MS&E 351	Dynamic Programming and Stochastic Control	3
PHYSICS 211	Continuum Mechanics	3
STATS 110	Statistical Methods in Engineering and the Physical Sciences	5
STATS 116	Theory of Probability	4
STATS 217	Introduction to Stochastic Processes I	3

Courses

AA 47SI. Why Go To Space?. 1 Unit.
Why do we spend billions of dollars exploring space? What can modern policymakers, entrepreneurs, and industrialists do to help us achieve our goals beyond planet Earth? Whether it is the object of exploration, science, civilization, or conquest, few domains have captured the imagination of a species like space. This course is an introduction to space policy issues, with an emphasis on the modern United States. We will present a historical overview of space programs from all around the world, and then spend the last five weeks discussing present policy issues, through lectures and guest speakers from NASA, the Department of Defense, new and legacy space industry companies, and more. Students will present on one issue that piques their interest, selecting from various domains including commercial concerns, military questions, and geopolitical considerations.

AA 93. Building Trust in Autonomy. 1 Unit.
Preparatory course for Bing Overseas Studies summer course in Edinburgh. Prerequisite: Requires instructor consent.

AA 100. Introduction to Aeronautics and Astronautics. 3 Units.
This class introduces the basics of aeronautics and astronautics through applied physics, hands-on activities, and real world examples. The principles of fluid flow, flight, and propulsion for aircraft will be illustrated, including the creation of lift and drag, aerodynamic performance including takeoff, climb, range, and landing. The principles of orbits, maneuvers, space environment, and propulsion for spacecraft will be illustrated. Students will be exposed to the history and challenges of aeronautics and astronautics.

AA 102. Introduction to Applied Aerodynamics. 3 Units.
This course explores the fundamentals of the behavior of aerodynamic surfaces (airfoils, wings, bodies) immersed in a fluid across all speed regimes (from subsonic to supersonic/hypersonic). We will cover airfoil theory (subsonic and supersonic), wing theory, and introduction to viscous flows and both laminar and turbulent boundary layers, and the topic of flow transition. At the completion of this course, students will be able to understand and predict the forces and movements generated by aerodynamic configurations of interest. Assignments require a basic introductory knowledge of MATLAB or another suitable programming language. Prerequisites: CME 100 and CME 102 (or equivalent), PHYS 41, AA 100, and AA 101 or ME 70.

AA 103. Air and Space Propulsion. 3 Units.
This course is designed to introduce the student to fundamental concepts of air-breathing and rocket propulsion including advanced concepts for space propulsion. Topics: the physical mechanisms of thrust creation and the parameters used to characterize propulsion system performance; comparison of airbreathing engine cycles; introduction to chemical rockets; multistage launch systems; plasmas and electric propulsion; solar sails and laser assisted propulsion. Prerequisites: AA 100, ENGR 30, and ME 70 (or equivalent).

AA 108N. Surviving Space. 3 Units.
Space is dangerous. Anything we put into orbit has to survive the intense forces experienced during launch, extreme temperature changes, impacts by cosmic rays and energetic protons and electrons, as well as hits by human-made orbital debris and meteoroids. If we venture beyond Earth's sphere of influence, we must also then endure the extreme plasma environment without the protection of our magnetic field. With all of these potential hazards, it is remarkable that our space program has experienced so few catastrophic failures. In this seminar, students will learn how engineers design and test spacecraft to ensure survivability in this harsh space environment. We will explore three different space environment scenarios, including a small satellite that must survive in Low Earth Orbit (LEO), a large spacecraft headed to rendezvous with an asteroid, and a human spaceflight mission to Mars.

AA 109Q. Aerodynamics of Race Cars. 3 Units.
Almost as soon as cars had been invented, races of various kinds were organized. In all its forms (open-wheel, touring car, sports car, production-car, one-make, stock car, etc.), car racing is today a very popular sport with a huge media coverage and significant commercial sponsorships. More importantly, it is a proving ground for new technologies and a battlefield for the giants of the automotive industry. While race car performance depends on elements such as engine power, chassis design, tire adhesion and of course, the driver, aerodynamics probably plays the most vital role in determining the performance and efficiency of a race car. Front and/or rear wings are visible on many of them. During this seminar, you will learn about many other critical components of a race car including diffusers and add-ons such as vortex generators and spoilers. You will also discover that due to the competitive nature of this sport and its associated short design cycles, engineering decisions about a race car must rely on combined information from track, wind tunnel, and numerical computations. It is clear that airplanes fly on wings. However, when you have completed this seminar, you will be able to understand that cars fly on their tires. You will also be able to appreciate that aerodynamics is important not only for drag reduction, but also for increasing cornering speeds and lateral stability. You will be able to correlate between a race car shape and the aerodynamics effects intended for influencing performance. And if you have been a fan of the Ferrari 458 Italia, you will be able to figure out what that black moustache in the front of the car was for.

AA 113. Aerospace Computational Science. 3 Units.
Computational methods are pervasive in analysis, design and optimization of aerospace systems. This course introduces the fundamental concepts underlying aerospace computational science. Starting from the concepts of meshes, elements and point clouds, interpolation, quadrature and time integration, the techniques of finite difference, finite volume and finite element discretization of general PDE problems, and analysis of the accuracy, consistency and stability of discretized problems including treatment of boundary conditions are developed. In depth applications to computations of ideal subsonic, transonic and supersonic flows, and viscous internal and external flow with a turbulence model are introduced. Through the use of commercial and research software (ANSYS Fluent, SU2 and AERO Suite) the student is exposed to the use of computational tools for solving practical aerospace engineering problems. The course culminates with the treatment of multidisciplinary aerospace problems involving coupling across more than one discipline, such as aero-thermal analysis (for hypersonic vehicle performance analysis or gas turbine blade cooling), fluid-structure interaction problems (such as flutter or flapping wing aeroelastic performance), and aeroacoustics (such as jet noise for next generation commercial supersonic transport or noise radiation from multi-rotor urban air mobility platform). Students are expected to pursue significant computational projects in two-person teams. nPrerequisites: CME102, CME104 (multivariable calculus, linear algebra, ODEs and some PDEs), ENGR 14, ME 30, ME70, and Recommended courses: AA102, AA103.

AA 115Q. The Global Positioning System: Where on Earth are We, and What Time is It?. 3 Units.
Preference to freshmen. Why people want to know where they are: answers include cross-Pacific trips of Polynesians, missile guidance, and distraught callers. How people determine where they are: navigation technology from dead-reckoning, sextants, and satellite navigation (GPS). Hands-on experience. How GPS works; when it does not work; possibilities for improving performance.

AA 116Q. Electric Automobiles and Aircraft. 3 Units.
Transportation accounts for nearly one-third of American energy use and greenhouse gas emissions and three-quarters of American oil consumption. It has crucial impacts on climate change, air pollution, resource depletion, and national security. Students wishing to address these issues reconsider how we move, finding sustainable transportation solutions. An introduction to the issue, covering the past and present of transportation and its impacts; examining alternative fuel proposals; and digging deeper into the most promising option: battery electric vehicles. Energy requirements of air, ground, and maritime transportation; design of electric motors, power control systems, drive trains, and batteries; and technologies for generating renewable energy. Two opportunities for hands-on experiences with electric cars. Prerequisites: Introduction to calculus and Physics AP or elementary mechanics.

AA 118N. How to Design a Space Mission: from Concept to Execution. 3 Units.
Space exploration is truly fascinating. From the space race led by governments as an outgrowth of the Cold War to the new era of space commercialization led by private companies and startups, more than 50 years have passed, characterized by great leaps forward and discoveries. We will learn how space missions are designed, from concept to execution, based on the professional experience of the lecturer and numerous examples of spacecraft, including unique hardware demonstrations by startups of the Silicon Valley. We will study the essentials of systems engineering as applicable to a variety of mission types, for communication, navigation, science, commercial, and military applications. We will explore the various elements of a space mission, including the spacecraft, ground, and launch segments with their functionalities. Special emphasis will be given to the design cycle, to understand how spacecraft are born, from the stakeholders' needs, through analysis, synthesis, all the way to their integration and validation. We will compare the current designs with those employed in the early days of the space age, and show the importance of economics in the development of spacecraft. Finally, we will brainstorm startup ideas and apply the concepts learned to a notional space mission design as a team.

AA 119N. 3D Printed Aerospace Structures. 3 Units.
The demand for rapid prototyping of lightweight, complex, and low-cost structures has led the aerospace industry to leverage three-dimensional (3D) printing as a manufacturing technology. For example, the manufacture of aircraft engine components, unmanned aerial vehicle (UAV) wings, CubeSat parts, and satellite sub-systems have recently been realized with 3D printing and other additive manufacturing techniques. In this freshman seminar, a survey of state-of-the-art 3D printing processes will be reviewed and the process-dependent properties of 3D-printed materials and structures will be analyzed in detail. In addition, the advantages and disadvantages of this manufacturing approach will be debated during class! To give students exposure to 3D printing systems in action, tours of actual 3D printing facilities on campus (Stanford's Product Realization Laboratory), as well as in Silicon Valley (e.g., Made in Space) will be conducted.

AA 120Q. Building Trust in Autonomy. 3 Units.
Major advances in both hardware and software have accelerated the development of autonomous systems that have the potential to bring significant benefits to society. Google, Tesla, and a host of other companies are building autonomous vehicles that can improve safety and provide flexible mobility options for those who cannot drive themselves. On the aviation side, the past few years have seen the proliferation of unmanned aircraft that have the potential to deliver medicine and monitor agricultural crops autonomously. In the financial domain, a significant portion of stock trades are performed using automated trading algorithms at a frequency not possible by human traders. How do we build these systems that drive our cars, fly our planes, and invest our money? How do we develop trust in these systems? What is the societal impact on increased levels of autonomy?.

AA 121Q. It IS Rocket Science!. 3 Units.
It's an exciting time for space exploration. Companies like SpaceX and Blue Origin are launching rockets into space and bringing them back for reuse. NASA is developing the world's most powerful rocket. Startups are deploying constellations of hundreds of cubesats for communications, navigation, and earth monitoring. The human race has recently gotten a close look at Pluto, soft landed on a comet, and orbited two asteroids. The upcoming launch of the James Webb Space Telescope will allow astronomers to look closer to the beginning of time than ever before. The workings of space systems remain mysterious to most people, but in this seminar we'll pull back the curtain for a look at the basics of "rocket science." How does a SpaceX rocket get into space? How do Skybox satellites capture images for Google Earth? How did the New Horizons probe find its way to Pluto? How do we communicate with spacecraft that are so distant? We'll explore these topics and a range of others during the quarter. We'll cover just enough physics and math to determine where to look in the sky for a spacecraft, planet, or star. Then we'll check our math by going outside for an evening pizza party observing these objects in the night sky. We'll also visit a spacecraft production facility or Mission Operations Center to see theory put into practice.

AA 122N. Dawn of the Drones: How Will Unmanned Aerial Systems Change Our World?. 3 Units.
Unmanned aerial systems (UASs) have exploded on the scene in recent years, igniting a national debate about how to use them, how to regulate them, and how to make them safe. This seminar will dive into the many engineering challenges behind the headlines: in the future, how will we engineer UASs ranging in size from simple RC toys to highly-sophisticated autonomous scientific and military data gathering systems? This seminar will examine the key elements required to conceive, implement, deploy, and operate state-of-the-art of drone systems: What variety of problems can they help us solve? How autonomous are they and how autonomous do they need to be? What are the key technical bottlenecks preventing widespread deployment? How are they different from commercial aircraft? What kinds of companies will serve the market for UAV-related products and services? What business models will be successful and why? We will emphasize aspects of design, autonomy, reliability, navigation, sensing, and perception, as well as coordination/collaboration through a series of case studies drawn from our recent experience. Examples include imaging efforts to map the changing coral reefs in the South Pacific, using and controlling swarms of unmanned systems to perform search and rescue missions over large areas, and package delivery systems over large metropolitan areas. Hands-on experience with Stanford-developed UASs will be part of the seminar.

AA 131. Space Flight. 3 Units.
This class is all about how to build a spacecraft. It is designed to introduce undergraduate engineering students to the engineering fundamentals of conceiving, designing, implementing, and operating satellites and other space systems. Topics include orbital dynamics, attitude dynamics, mission design, and subsystem technologies. The space environment and the seven classic spacecraft subsystems - propulsion, attitude control and navigation, structure, thermal, power, telemetry and command, and payload - will be explored in detail. Prerequisites: Freshman-level physics, basic calculus and differential equations.

AA 135. Introduction to Space Policy. 3 Units.
The last decade has seen dramatic developments and a rekindling of interest in space efforts. Silicon Valley has invested in a range of activities, including reusable launch services, constellations of communication and observation satellites, off-planet resource development, and even space tourism. Governments are restructuring their space-oriented military and regulatory agencies. Scientific missions continue to benefit from advances in technology, extending the reach and capabilities of robotic missions. Human missions will finally revisit deep space after decades spent solely in low earth orbit. nnThis course investigates the economic, policy, and engineering challenges to building a thriving private and public space industry. We begin with a review of historical space efforts, both public and private. We will investigate current efforts in detail, including budgeting, regulatory frameworks, and the key drivers of the renewed space activity. Externalities provide a core rationale for governmental policy action, including such topics as conflicts over spectrum used by space assets, stimulating innovation, orbital debris challenges, dual-use space technologies, and unclear or conflicting rights to develop space-based resources. Leaders from government and new space companies will occasionally participate in the class.nnStudents will be expected to participate in policy and case discussions, contribute several papers including a final project paper, and complete problem and policy analyses. Readings will include articles, policy papers, HBS cases, regulatory filings, and mission reviews.
Same as: PUBLPOL 131

AA 136A. Spacecraft Design. 4 Units.
The design and implementation of unmanned spacecraft and spacecraft subsystems emphasizing identification of design drivers, current design methods, hands-on experience. The focus will be on the emerging nano-satellite platforms. For 2021, each student will have a CubeSat kit from which practical experiments and subsystems will be developed. Topics: spacecraft configuration design, modern project management approaches, mechanical design, structure and thermal subsystem design, attitude control, electric power, command and telemetry, design integration and operations ¿ as applied to current nano-satellite missions in Low Earth Orbit (LEO) and beyond.nnRequired for Aero/Astro majors. Intended for AA seniors and graduate students. For all other majors consent of instructor is required. Student's mailing address is required to ship CubeSat kit.
Same as: AA 236A

AA 136B. Spacecraft Design Laboratory. 3-5 Units.
Space Capstone II. Required for Aero/Astro majors. Continuation of 236A. Emphasis is on practical application of systems engineering to the life cycle program of spacecraft design, testing, launching, and operations. Prerequisite: 236A or consent of instructor.
Same as: AA 236B

AA 141. Atmospheric Flight. 3 Units.
From people's initial dreams and theories of flight to future design problems, this class introduces students to flight in the atmosphere and the multidisciplinary challenges of aircraft design. We will discuss how new approaches to airplane propulsion, structures, autonomy, and aerodynamics can lead to environmentally sustainable future transportation, supersonic flight, and personal air vehicles. We will look at how local companies are developing autonomous aircraft, inspired by natural flyers, to systems that will provide ubiquitous internet access flying at twice the altitude of airliners. Prerequisites: MATH 20, 21 or equivalents; elementary physics.

AA 146A. Aircraft Design. 4 Units.
Air Capstone I. Required for Aero/Astro majors. This course will be taught entirely online. This capstone design class allows students to apply knowledge from prior classes in a way that emphasizes the interactions between disciplines, and demonstrates how theoretical topics are synthesized in the practical design of an aircraft concept. In part A of this two quarter sequence, students will analyze an existing multi-rotor aircraft by examining, modeling, and critiquing its subsystems. Simultaneously, the students will design a new multi-rotor concept to optimize some design criteria (e.g. flight time, speed, agility, lifting capacity). The class will involve modeling the rigid body dynamics, the structure of the airframe, and aerodynamics of the rotors and airframe, as well as considering the electronics, motors, battery, sensors, and feedback control algorithms for the multi-rotor. Kits of materials and tools will be mailed to each student, enabling them to conduct hands-on exercises. nnnPrerequisites:nn1. Math 20, 21 or 41, 42 or equivalentsnn2. Elementary physics, and AA100 or equivalent classesnn3. Additional required AA courses dealing with aero, structures, and controls.

AA 146B. Aircraft Design Laboratory. 3 Units.
Air Capstone II. Required for Aero/Astro majors. This capstone design class brings together the material from prior classes in a way that emphasizes the interactions between disciplines and demonstrates how some of the more theoretical topics are synthesized in practical design of an aircraft concept. The class will address a single problem developed by the faculty and staff. Students will spend two quarters designing a system that addresses the objectives and requirements posed at the beginning of the course sequence. They will work individually and in teams, focusing on some aspect of the problem but exposed to many different disciplines and challenges. The second quarter will focus on the demonstration of a physical system incorporating features of the design solution. This may be accomplished with a set of experiments or a flight demonstration involving data gathering and synthesis of work in a final report authored by the team.nnnPrerequisites: AA 146A.
Same as: AA 246X

AA 149. Operation of Aerospace Systems. 1 Unit.
This course provides a connection with the products of aerospace design through the use of tours, guest speakers, flight simulation, and hands-on exposure to systems used by pilots and space mission operators. We discuss real-world experiences with operators of spacecraft and launch vehicles, and we hear from pilots of manned and unmanned aircraft. Skills required to operate systems in the past, present, and future are addressed. Students will also develop an appreciation of the effects of human factors on aviation safety and the importance of space situational awareness. Anticipated tours include an air traffic control facility and a spacecraft operations center. Some class sessions will be off campus tours at local facilities; these will require some scheduling flexibility outside of normal class hours.

AA 151. Lightweight Structures. 3 Units.
The development of lightweight structures aids in enhancing the robustness, efficiency, and cost of aerospace systems. In this course, the theoretical principles used to analyze stress-strain behavior, beam bending, torsion, and thin-walled structures will be reviewed and exercised. In addition, students will study structures under various loading conditions found in real-world applications such as the design of airframes, high-altitude balloons, and solar sails. Students from various disciplines of engineering can benefit from this course. ENGR 14 (Introduction to Solid Mechanics) is a highly recommended prerequisite.

AA 156. Mechanics of Composite Materials. 3 Units.
This course covers topics related to fiber reinforced composites. Students will learn about stress, strain, and design of composite laminates and honeycomb structures. The course will also provide an overview of failure modes and criteria, environmental effects, and manufacturing processes. An individual design project is required of each student, resulting in a usable computer software.

AA 172. GUIDANCE & NAVIGATION. 3 Units.
Position, Navigation and Timing (PNT) is an increasingly critical element of aerospace and autonomous systems from autonomous cars to commercial jets to deep space probes. Analyze how modern navigation systems work including dead reckoning (speed, direction), radio navigation systems (ground based and satellite) and inertial navigation. Examine the safety and secure use of these systems for guiding commercial aviation and autonomous navigation applications. Explore emerging technologies that may affect the capability and design of future aerospace systems including pulsar navigation for deep space missions and cellular and other signals to aid urban navigation of UAVs, self-driving cars and rail. nnPrerequisites: E15 and familiarity with Matlab and Linear Algebra.

AA 173. Flight Mechanics & Controls. 3 Units.
Aircraft flight dynamics, stability, and their control system design; frame transformations, non-linear equations of motion for aircraft; linearization of longitudinal and lateral-directional dynamics; aircraft static longitudinal and lateral/directional stability and control; observability and controllability; PID feedback control; Prerequisites: E15, E105, AA100 and familiarity with MATLAB.

AA 174A. Principles of Robot Autonomy I. 3-5 Units.
Basic principles for endowing mobile autonomous robots with perception, planning, and decision-making capabilities. Algorithmic approaches for robot perception, localization, and simultaneous localization and mapping; control of non-linear systems, learning-based control, and robot motion planning; introduction to methodologies for reasoning under uncertainty, e.g., (partially observable) Markov decision processes. Extensive use of the Robot Operating System (ROS) for demonstrations and hands-on activities. Prerequisites: CS 106A or equivalent, CME 100 or equivalent (for linear algebra), and CME 106 or equivalent (for probability theory).
Same as: AA 274A, CS 237A, EE 260A

AA 174B. Principles of Robot Autonomy II. 3-4 Units.
This course teaches advanced principles for endowing mobile autonomous robots with capabilities to autonomously learn new skills and to physically interact with the environment and with humans. It also provides an overview of different robot system architectures. Concepts that will be covered in the course are: Reinforcement Learning and its relationship to optimal control, contact and dynamics models for prehensile and non-prehensile robot manipulation, imitation learning and human intent inference, as well as different system architectures and their verification. Students will earn the theoretical foundations for these concepts and implement them on mobile manipulation platforms. In homeworks, the Robot Operating System (ROS) will be used extensively for demonstrations and hands-on activities. Prerequisites: CS106A or equivalent, CME 100 or equivalent (for linear algebra), CME 106 or equivalent (for probability theory), and AA 171/274.
Same as: AA 274B, CS 237B, EE 260B

AA 190. Directed Research and Writing in Aero/Astro. 3-5 Units.
For undergraduates. Experimental or theoretical work under faculty direction, and emphasizing development of research and communication skills. Written report(s) and letter grade required; if this is not appropriate, enroll in 199. Consult faculty in area of interest for appropriate topics, involving one of the graduate research groups or other special projects. May be repeated for credit. Prerequisite: consent of student services manager and instructor.

AA 199. Independent Study in Aero/Astro. 1-5 Unit.
Directed reading, lab, or theoretical work for undergraduate students. Consult faculty in area of interest for appropriate topics involving one of the graduate research groups or other special projects. May be repeated for credit. Prerequisite: consent of instructor.

AA 200. Applied Aerodynamics. 3 Units.
Analytical and numerical techniques for the aerodynamic analysis of aircraft, focusing on airfoil theory, finite wing theory, far-field and Trefftz-plane analysis, two-dimensional laminar and turbulent boundary layers in airfoil analysis, laminar-to-turbulent transition, compressibility effects, and similarity rules. Biweekly assignments require MATLAB or a suitable programming language. Prerequisite: undergraduate courses in basic fluid mechanics and applied aerodynamics, AA 210A.

AA 201A. Fundamentals of Acoustics. 3 Units.
Acoustic equations for a stationary homogeneous fluid; wave equation; plane, spherical, and cylindrical waves; harmonic (monochromatic) waves; simple sound radiators; reflection and transmission of sound at interfaces between different media; multipole analysis of sound radiation; Kirchoff integral representation; scattering and diffraction of sound; propagation through ducts (dispersion, attenuation, group velocity); sound in enclosed regions (reverberation, absorption, and dispersion); radiation from moving sources; propagation in the atmosphere and underwater. Prerequisite: first-year graduate standing in engineering, mathematics, sciences; or consent of instructor.

AA 201B. Topics in Aeroacoustics. 3 Units.
Acoustic equations for moving medium, simple sources, Kirchhoff formula, and multipole representation; radiation from moving sources; acoustic analogy approach to sound generation in compact flows; theories of Lighthill, Powell, and Mohring; acoustic radiation from moving surfaces; theories of Curl, Ffowcs Williams, and Hawkings; application of acoustic theories to the noise from propulsive jets, and airframe and rotor noise; computational methods for acoustics. Prerequisite: 201A or consent of instructor.

AA 203. Optimal and Learning-based Control. 3 Units.
Optimal control solution techniques for systems with known and unknown dynamics. Dynamic programming, Hamilton-Jacobi reachability, and direct and indirect methods for trajectory optimization. Introduction to model predictive control. Model-based reinforcement learning, and connections between modern reinforcement learning in continuous spaces and fundamental optimal control ideas.

AA 204. Spacecraft Electric Propulsion. 3 Units.
The fundamentals of electric propulsion for spacecraft, which exists at the junction of traditional fluid dynamics, plasma physics, and aerospace engineering. The design and physics of electrothermal, electrostatic, and electromagnetic propulsion devices. Prerequisites: prior familiarity and experience with electromagnetism (Maxwell's equations, Ohm's law); fluid dynamics (fluid equations, choked flow, nozzles, Mach number); chemistry (stoichiometry, heat of formation, heat of reaction); and orbital dynamics (rocket equation, thrust, specific impulse, delta-v).

AA 205. Rarefied and Ionized Gases. 3 Units.
Compressible, viscous, rarefied, and ionized gas flow models derived from kinetic theory, quantum mechanics, and statistical mechanics. Equilibrium properties and non-equilibrium processes via collisions and radiation. Monte Carlo collision models for non-equilibrium gas dynamics and partially ionized plasmas. Prerequisite: undergraduate courses in fluid mechanics and thermodynamics, ME 362A recommended but not required.
Same as: ME 362C

AA 206. Bio-Aerodynamics. 3 Units.
Topics: flapping flight, low Reynolds number aerodynamics, wing design, flocks, swarms, and dynamic soaring. Readings from current and historical literature dealing with theoretical and observational studies. Applications in aircraft design, and simulation-based problem sets. Prerequisite: course in aerodynamics such as 100, 200A, or 241A.

AA 208. Aerodynamics of Aircraft Dynamic Response and Stability. 3 Units.
Companion to 200A for those interested in control and guidance. Typical vehicles and the technical tradeoffs affecting their design. Equations of motion, stressing applications to dynamic performance, stability, and forced response. Forms and sources for the required aerodynamic data. Response to small disturbances and stability derivatives. Static stability and trim. Review of aerodynamic fundamentals, leading to airload predictions for wings, bodies, and complete aircraft. Paneling and other methods for derivative estimation. Natural motions of the aircraft, and the influence on them of various configuration parameters. Vehicle behavior in maneuvers of small and large amplitudes. Prerequisites: 200A, 210A, or equivalents (may be taken concurrently).

AA 210A. Fundamentals of Compressible Flow. 3 Units.
Topics: development of the three-dimensional, non-steady, field equations for describing the motion of a viscous, compressible fluid; differential and integral forms of the equations; constitutive equations for a compressible fluid; the entropy equation; compressible boundary layers; area-averaged equations for one-dimensional steady flow; shock waves; channel flow with heat addition and friction; flow in nozzles and inlets; oblique shock waves; Prandtl-Meyer expansion; unsteady one-dimensional flow; the shock tube; small disturbance theory; acoustics in one-dimension; steady flow in two-dimensions; potential flow; linearized potential flow; lift and drag of thin airfoils. Prerequisites: undergraduate background in fluid mechanics and thermodynamics.

AA 210B. Fundamentals of Compressible Flow. 3 Units.
Continuation of 210A with emphasis on more general flow geometry. Use of exact solutions to explore the hypersonic limit. Identification of similarity parameters. Solution methods for the linearized potential equation with applications to wings and bodies in steady flow; their relation to physical acoustics and wave motion in nonsteady flow. Nonlinear solutions for nonsteady constant area flow and introduction to Riemann invariants. Elements of the theory of characteristics; nozzle design; extension to nonisentropic flow. Real gas effects in compressible flow. Flows in various gas dynamic testing facilities. Prerequisite: 210A.

AA 212. Advanced Feedback Control Design. 3 Units.
Analysis and design techniques for multivariable feedback systems. State-space concepts, observability, controllability, eigenvalues, eigenvectors, stability, and canonical representations. Approaches for robust feedback control design, chiefly H2, H-infinity, and mu-synthesis. System identification and adaptive control design. Use of computer-aided design with MATLAB. Prerequisite: ENGR 105, ENGR 205. Recommended: Linear algebra (EE 263 or equivalent).

AA 214. Numerical Methods for Compressible Flows. 3 Units.
For M.S.-level graduate students. Covers the hierarchy of mathematical models for compressible flows. Introduction to finite difference, finite volume, and finite element methods for their computation. Ideal potential flow; transonic potential flow; Euler equations; Navier-Stokes equations; representative model problems; shocks, expansions, and contact discontinuities; treatment of boundary conditions; time and pseudo-time integration schemes. Prerequisites: basic knowledge of linear algebra and ODEs (CME 206 or equivalent).

AA 214C. Numerical Computation of Viscous Flow. 3 Units.
Numerical methods for solving parabolic sets of partial differential equations. Numerical approximation of the equations describing compressible viscous flow with adiabatic, isothermal, slip, and no-slip wall boundary conditions. Applications to the Navier-Stokes equations in two and three dimensions at high Reynolds number. Computational problems are assigned. Prerequisite: 214B.

AA 215A. Advanced Computational Fluid Dynamics. 3 Units.
High resolution schemes for capturing shock waves and contact discontinuities; upwinding and artificial diffusion; LED and TVD concepts; alternative flow splittings; numerical shock structure. Discretization of Euler and Navier Stokes equations on unstructured meshes; the relationship between finite volume and finite element methods. Time discretization; explicit and implicit schemes; acceleration of steady state calculations; residual averaging; math grid preconditioning. Automatic design; inverse problems and aerodynamic shape optimization via adjoint methods. Pre- or corequisite: 214B or equivalent.
Same as: CME 215A

AA 215B. Advanced Computational Fluid Dynamics. 3 Units.
High resolution schemes for capturing shock waves and contact discontinuities; upwinding and artificial diffusion; LED and TVD concepts; alternative flow splittings; numerical shock structure. Discretization of Euler and Navier Stokes equations on unstructured meshes; the relationship between finite volume and finite element methods. Time discretization; explicit and implicit schemes; acceleration of steady state calculations; residual averaging; math grid preconditioning. Automatic design; inverse problems and aerodynamic shape optimization via adjoint methods. Pre- or corequisite: 214B or equivalent.
Same as: CME 215B

AA 218. Introduction to Symmetry Analysis. 3 Units.
Methods of symmetry analysis and their use in the reduction and simplification of physical problems. Topics: dimensional analysis, phase-space analysis of autonomous systems of ordinary differential equations, use of Lie groups to reduce the order of nonlinear ODEs and to generate integrating factors, use of Lie groups to reduce the dimension of partial differential equations and to generate similarity variables, exact solutions of nonlinear PDEs generated from groups. Mathematica-based software developed by the instructor is used for finding invariant groups of ODEs and PDEs.

AA 222. Engineering Design Optimization. 3-4 Units.
Design of engineering systems within a formal optimization framework. This course covers the mathematical and algorithmic fundamentals of optimization, including derivative and derivative-free approaches for both linear and non-linear problems, with an emphasis on multidisciplinary design optimization. Topics will also include quantitative methodologies for addressing various challenges, such as accommodating multiple objectives, automating differentiation, handling uncertainty in evaluations, selecting design points for experimentation, and principled methods for optimization when evaluations are expensive. Applications range from the design of aircraft to automated vehicles. Prerequisites: some familiarity with probability, programming, and multivariable calculus.
Same as: CS 361

AA 228. Decision Making under Uncertainty. 3-4 Units.
This course is designed to increase awareness and appreciation for why uncertainty matters, particularly for aerospace applications. Introduces decision making under uncertainty from a computational perspective and provides an overview of the necessary tools for building autonomous and decision-support systems. Following an introduction to probabilistic models and decision theory, the course will cover computational methods for solving decision problems with stochastic dynamics, model uncertainty, and imperfect state information. Topics include: Bayesian networks, influence diagrams, dynamic programming, reinforcement learning, and partially observable Markov decision processes. Applications cover: air traffic control, aviation surveillance systems, autonomous vehicles, and robotic planetary exploration. Prerequisites: basic probability and fluency in a high-level programming language.
Same as: CS 238

AA 229. Advanced Topics in Sequential Decision Making. 3-4 Units.
Survey of recent research advances in intelligent decision making for dynamic environments from a computational perspective. Efficient algorithms for single and multiagent planning in situations where a model of the environment may or may not be known. Partially observable Markov decision processes, approximate dynamic programming, and reinforcement learning. New approaches for overcoming challenges in generalization from experience, exploration of the environment, and model representation so that these methods can scale to real problems in a variety of domains including aerospace, air traffic control, and robotics. Students are expected to produce an original research paper on a relevant topic. Prerequisites: AA 228/CS 238 or CS 221.
Same as: CS 239

AA 236A. Spacecraft Design. 4 Units.
The design and implementation of unmanned spacecraft and spacecraft subsystems emphasizing identification of design drivers, current design methods, hands-on experience. The focus will be on the emerging nano-satellite platforms. For 2021, each student will have a CubeSat kit from which practical experiments and subsystems will be developed. Topics: spacecraft configuration design, modern project management approaches, mechanical design, structure and thermal subsystem design, attitude control, electric power, command and telemetry, design integration and operations ¿ as applied to current nano-satellite missions in Low Earth Orbit (LEO) and beyond.nnRequired for Aero/Astro majors. Intended for AA seniors and graduate students. For all other majors consent of instructor is required. Student's mailing address is required to ship CubeSat kit.
Same as: AA 136A

AA 236B. Spacecraft Design Laboratory. 3-5 Units.
Space Capstone II. Required for Aero/Astro majors. Continuation of 236A. Emphasis is on practical application of systems engineering to the life cycle program of spacecraft design, testing, launching, and operations. Prerequisite: 236A or consent of instructor.
Same as: AA 136B

AA 236C. Spacecraft Design Laboratory. 3-5 Units.
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AA 240. Analysis of Structures. 3 Units.
Analyses of solid and thin walled section beams, trusses, frames, rings, monocoque and semimonocoque structures. Determination of stresses, strains, and deformations, and failure in structures; structural stability and buckling; material behavior: plasticity and fracture. Emphasis on energy methods and introduction of finite element methods. Prerequisite: ENGR 14 or equivalent.

AA 240B. Analysis of Structures. 3 Units.
Thin plate analysis. Structural stability. Material behavior: plasticity and fracture. Introduction of finite element analysis; truss, frame, and plate structures. Prerequisite: 240A or consent of instructor.

AA 241A. Introduction to Aircraft Design, Synthesis, and Analysis. 3 Units.
New aircraft systems emphasizing commercial aircraft. Economic and technological factors that create new aircraft markets. Determining market demands and system mission performance requirements; optimizing configuration to comply with requirements; the interaction of disciplines including aerodynamics, structures, propulsion, guidance, payload, ground support, and parametric studies. Applied aerodynamic and design concepts for use in configuration analysis. Application to a student-selected aeronautical system; applied structural fundamentals emphasizing fatigue and fail-safe considerations; design load determination; weight estimation; propulsion system performance; engine types; environmental problems; performance estimation. Direct/indirect operating costs prediction and interpretation. Aircraft functional systems; avionics; aircraft reliability and maintainability. Prerequisite: 100 or equivalent.

AA 241B. Introduction to Aircraft Design, Synthesis, and Analysis. 3 Units.
New aircraft systems emphasizing commercial aircraft. Economic and technological factors that create new aircraft markets. Determining market demands and system mission performance requirements; optimizing configuration to comply with requirements; the interaction of disciplines including aerodynamics, structures, propulsion, guidance, payload, ground support, and parametric studies. Applied aerodynamic and design concepts for use in configuration analysis. Application to a student-selected aeronautical system; applied structural fundamentals emphasizing fatigue and fail-safe considerations; design load determination; weight estimation; propulsion system performance; engine types; environmental problems; performance estimation. Direct/indirect operating costs prediction and interpretation. Aircraft functional systems; avionics; aircraft reliability and maintainability. Prerequisite: 100 or equivalent.

AA 242A. Classical Dynamics. 3 Units.
Accelerating and rotating reference frames. Kinematics of rigid body motion; Euler angles, direction cosines. D'Alembert's principle, equations of motion. Inertia properties of rigid bodies. Dynamics of coupled rigid bodies. Lagrange's equations and their use. Dynamic behavior, stability, and small departures from equilibrium. Prerequisite: ENGR 15 or equivalent.

AA 242B. Mechanical Vibrations. 3 Units.
For M.S.-level graduate students. Covers the vibrations of discrete systems and continuous structures. Introduction to the computational dynamics of linear engineering systems. Review of analytical dynamics of discrete systems; undamped and damped vibrations of N-degree-of-freedom systems; continuous systems; approximation of continuous systems by displacement methods; solution methods for the Eigenvalue problem; direct time-integration methods. Prerequisites: AA 242A or equivalent (recommended but not required); basic knowledge of linear algebra and ODEs; no prior knowledge of structural dynamics is assumed.
Same as: ME 242B

AA 244A. Introduction to Plasma Physics and Engineering. 3 Units.
Physics and engineering of plasmas, including space and laboratory plasmas. Debye length and distribution functions. Single-particle motion and drifts. Plasmas as fluids and fluid drifts. Waves in plasmas, including electrostatic and electromagnetic. Diffusion and resistivity. Magnetohydrodynamics.

AA 244B. Advanced Plasma Physics and Engineering. 3 Units.
Plasma waves and instabilities. Kinetic theory and the Vlasov equation. Nonlinear effects and solutions. Plasma diagnostics in ground- and space-based experiments. Computational plasma simulation techniques, including particle-in-cell methods, boundary conditions, and field solvers. Prerequisites: AA 244A or consent of instructor.

AA 246X. Aircraft Design Laboratory. 3 Units.
Air Capstone II. Required for Aero/Astro majors. This capstone design class brings together the material from prior classes in a way that emphasizes the interactions between disciplines and demonstrates how some of the more theoretical topics are synthesized in practical design of an aircraft concept. The class will address a single problem developed by the faculty and staff. Students will spend two quarters designing a system that addresses the objectives and requirements posed at the beginning of the course sequence. They will work individually and in teams, focusing on some aspect of the problem but exposed to many different disciplines and challenges. The second quarter will focus on the demonstration of a physical system incorporating features of the design solution. This may be accomplished with a set of experiments or a flight demonstration involving data gathering and synthesis of work in a final report authored by the team.nnnPrerequisites: AA 146A.
Same as: AA 146B

AA 250. Nanomaterials for Aerospace. 3 Units.
Properties of nanomaterials and current approaches for engineering spacecraft, aircraft, and subsystems with nanotechnology. Manufacturing of nanomaterials; nano-fiber reinforced composites; structural mechanics of nanomaterials; structure-property relationships; and application of nanotechnology for lightweight structures, thermal protection, nanopropellants, and nanoelectronics.

AA 251. Introduction to the Space Environment. 3 Units.
The environment through which space probes and vehicles travel and orbit. Survey of physical phenomena in the sun, solar wind, magnetospheres, ionospheres, and upper atmospheres of objects in the solar system. Introduction to the physical processes governing space plasmas, solar-terrestrial interactions, and ionized and neutral media surrounding the Earth and other solar system bodies. Prerequisite: AA 244A.

AA 252. Techniques of Failure Analysis. 3 Units.
Introduction to the field of failure analysis, including fire and explosion analysis, large scale catastrophe projects, traffic accident reconstruction, aircraft accident investigation, human factors, biomechanics and accidents, design defect cases, materials failures and metallurgical procedures, and structural failures. Product liability, failure modes and effects analysis, failure prevention, engineering ethics, and the engineer as expert witness.

AA 256. Mechanics of Composites. 3 Units.
Fiber reinforced composites. Stress, strain, and strength of composite laminates and honeycomb structures. Failure modes and failure criteria. Environmental effects. Manufacturing processes. Design of composite structures. Individual design project required of each student, resulting in a usable computer software. Prerequisite: ME 80 or equivalent.

AA 257. Design of Multifunctional Composites. 3 Units.
The course emphasizes embedded technologies to integrate composite materials with sensors, actuators, battery, electronics, and software to create a new class of multifunctional materials to minimize weight and enhance performance. The multifunctional composites are not only able to carry mechanical loads but also are capable of self-diagnostics (structural health monitoring), sensing for harsh environment (impact), and harvesting and storing electrical energy. The class will involve heavily hands-on design, analysis, and manufacturing. The class is divided into working teams (design, analysis, manufacturing, and tests) to design and build a marketable product with the materials. Prerequisite: 256 or consent of instructor.

AA 260. Sustainable Aviation. 3 Units.
Quantitative assessment of the impact of aviation on the environment including noise, local, and global emissions, and models used to predict it. Current and future technologies that may allow the air transportation system to meet anticipated growth while reducing or minimizing environmental problems. Atmospheric effects of NOx, CO2, particulates, unburned hydrocarbons, and water vapor deposition at high altitudes and metrics for assessing global climate effects. Noise sources, measurement, and mitigation strategies. Fundamentals of aircraft and engine performance needed to assess current and future concepts. Major national and international policy implications of existing and future technology choices. Recommended: AA 241B.

AA 261. Building an Aerospace Startup from the Ground Up. 3 Units.
Silicon Valley has experienced a dramatic increase in aerospace-focused, venture capital-backed companies over the last decade. This course will examine what drives success and failure in these ventures, with applicability to prospective founders, employees, investors, or those with a general interest in understanding how real companies operate on a day-to-day basis. The course will cover the entire life cycle of aerospace startups, from idea to product, first financing to exit. Half of the class sessions will be lectures focused on the nuts and bolts of building an aerospace startup. The other sessions will explore critical decision making of recent aerospace startups, through case studies. Often, the protagonists from the case studies will join the class to provide their thinking as they navigated these bet-the-company decisions. Grading will be determined by a combination of hands-on projects and class participation. The instructors are former aerospace entrepreneurs who have raised more than $100 million in capital, launched satellites and derived products from those satellites, and who successfully exited their venture which returned 10x to initial investors.

AA 271A. Dynamics and Control of Spacecraft and Aircraft. 3 Units.
The dynamic behavior of aircraft and spacecraft, and the design of automatic control systems for them. For aircraft: non-linear and linearized longitudinal and lateral dynamics; linearized aerodynamics; natural modes of motion; autopilot design to enhance stability, control the flight path, and perform automatic landings. For spacecraft in orbit: natural longitudinal and lateral dynamic behavior and the design of attitude control systems. Prerequisites: AA242A, ENGR 105.

AA 272. Global Positioning Systems. 3 Units.
The principles of satellite navigation using Global Positioning Systems (GPS). Positioning techniques using code tracking, single and dual frequency, carrier aiding, and use of differential and assisted GPS/GNSS for improved accuracy and integrity. Students will learn the building blocks to go from raw received satellite time in nanoseconds all the way to a sophisticated position solution. Using provided Android smartphones, students will collect data and implement an open-ended course project where the goal is to get creative and solve an interesting problem using the tools developed in this course. Prerequisites: familiarity with matrix algebra and MatLab (or another mathematical programming language).

AA 272D. Integrated Navigation Systems. 3 Units.
Navigation satellites (GPS, GLONASS), GPS receivers, principles of inertial navigation for ships, aircraft, and spacecraft. Kalman Filters to integrate GPS and inertial sensors. Radio navigation aids (VOR, DME, LORAN, ILS). Doppler navigation systems. Prerequisites: 272C; ENGR 15, 105. Recommended: ENGR 205.

AA 273. State Estimation and Filtering for Robotic Perception. 3 Units.
Kalman filtering, recursive Bayesian filtering, and nonlinear filter architectures including the extended Kalman filter, particle filter, and unscented Kalman filter. Observer-based state estimation for linear and non-linear systems. Examples from aerospace, including state estimation for fixed-wing aircraft, rotorcraft, spacecraft, and planetary rovers, with applications to control, navigation, and autonomy.

AA 274A. Principles of Robot Autonomy I. 3-5 Units.
Basic principles for endowing mobile autonomous robots with perception, planning, and decision-making capabilities. Algorithmic approaches for robot perception, localization, and simultaneous localization and mapping; control of non-linear systems, learning-based control, and robot motion planning; introduction to methodologies for reasoning under uncertainty, e.g., (partially observable) Markov decision processes. Extensive use of the Robot Operating System (ROS) for demonstrations and hands-on activities. Prerequisites: CS 106A or equivalent, CME 100 or equivalent (for linear algebra), and CME 106 or equivalent (for probability theory).
Same as: AA 174A, CS 237A, EE 260A

AA 274B. Principles of Robot Autonomy II. 3-4 Units.
This course teaches advanced principles for endowing mobile autonomous robots with capabilities to autonomously learn new skills and to physically interact with the environment and with humans. It also provides an overview of different robot system architectures. Concepts that will be covered in the course are: Reinforcement Learning and its relationship to optimal control, contact and dynamics models for prehensile and non-prehensile robot manipulation, imitation learning and human intent inference, as well as different system architectures and their verification. Students will earn the theoretical foundations for these concepts and implement them on mobile manipulation platforms. In homeworks, the Robot Operating System (ROS) will be used extensively for demonstrations and hands-on activities. Prerequisites: CS106A or equivalent, CME 100 or equivalent (for linear algebra), CME 106 or equivalent (for probability theory), and AA 171/274.
Same as: AA 174B, CS 237B, EE 260B

AA 275. Navigation for Autonomous Systems. 3 Units.
Navigation is a key element in many autonomous systems, from self-driving cars to flying robots. In this course you will learn about the technologies that enable autonomous navigation. Topics: navigational system design using GPS as an example; data-driven approach using machine learning and deep learning; model-based approach using probabilistic graph model; theory-based approach using formal verification; intelligent navigational sensor fusion; cyber security and integrity monitoring for localization and navigation. Prerequisites: AA 228 or EE 278; and EE 263 or AA 212. Recommended: AA 272, EE 261, AA 273.

AA 277. Multi-robot Control, Communication, and Sensing. 3 Units.
Survey of current research topics in multi-robot systems including multi-agent consensus, formation control, coverage control and sensor deployment, collision avoidance, cooperative mapping, and distributed Bayesian filtering. Students will develop skills in evaluating and critiquing research papers, and will conduct a final research project.

AA 279A. Space Mechanics. 3 Units.
Orbits of near-earth satellites and interplanetary probes; relative motion in orbit; transfer and rendezvous; orbit determination; influence of earth's oblateness; sun and moon effects on earth satellites; decay of satellite orbits; invited lectures from industry. Prerequisite: ENGR 15 and familiarity with MatLab.

AA 279B. Advanced Space Mechanics. 3 Units.
Restricted 3-body problem. Relative motion, Hill's and Clohessy-Wiltshire equations. Lambert's problem. Satellite constellations and optimization. Communications and link budgets. Space debris. High fidelity simulation. Interplanetary mission planning, launch windows and gravity assists. Basic trajectory optimization. Several guest lectures from practitioners in the field. Individual final project chosen in consultation with instructor. Prerequisites: 279A or equivalent with permission of instructor. Fluency with MATLAB (or another mathematical programming language with 2D and 3D plotting capabilities).

AA 279C. Spacecraft Attitude Determination and Control. 3 Units.
Attitude representation and parametrization; unperturbed and perturbed attitude dynamics and stability; attitude sensors and actuators; linear and nonlinear attitude control; optimal attitude maneuvers; dynamics of flexible spacecraft and space tethers; invited lectures from industry. Prerequisites: AA 242A, ENGR 105, AA 279A, and familiarity with MatLab.

AA 279D. Spacecraft Formation-Flying and Rendezvous. 3 Units.
Keplerian orbital mechanics and orbital perturbations; the general relative motion problem; linear formation flying dynamics and control; impulsive station-keeping and reconfiguration; high order relative motion equations; formulation of relative motion using orbital elements; perturbation-invariant formations; nonlinear formation control; low-thrust propulsion for formation flying; relative navigation using GNSS and optical navigation; applications: sparse-aperture imaging, remote sensing, on-orbit servicing, rendezvous, and docking. Prerequisite: AA 242A, ENGR 105, AA 279A, and familiarity with MatLab.

AA 280. Smart Structures. 3 Units.
Mechanics of smart materials and current approaches for engineering smart structures to monitor health, self heal, and adapt to environment. Definition of smart structures; constitutive models for smart materials; piezoelectric ceramics; electro-active polymers; shape memory alloys; bio-inspired materials and structures; self-healing materials; sensors and sensor networks; structural health monitoring; and energy harvesting. Prerequisite: AA 240A or consent of instructor.

AA 283. Aircraft and Rocket Propulsion. 3 Units.
Introduction to the design and performance of airbreathing and rocket engines. Topics: the physical parameters used to characterize propulsion system performance; gas dynamics of nozzles and inlets; cycle analysis of ramjets, turbojets, turbofans, and turboprops; component matching and the compressor map; introduction to liquid and solid propellant rockets; multistage rockets; hybrid rockets; thermodynamics of reacting gases. Prerequisites: undergraduate background in fluid mechanics and thermodynamics.

AA 284A. Advanced Rocket Propulsion. 1-3 Unit.
The principles of rocket propulsion system design and analysis. Fundamental aspects of the physics and chemistry of rocket propulsion. Focus is on the design and analysis of chemical propulsion systems including liquids, solids, and hybrids. Nonchemical propulsion concepts such as electric and nuclear rockets. Launch vehicle design and optimization issues including trajectory calculations. Limited enrollment. Prerequisites: 283 or consent of instructor.

AA 284B. Propulsion System Design Laboratory. 3 Units.
Propulsion systems engineering through the design and operation of a sounding rocket. Students work in small teams through a full project cycle including requirements definition, performance analysis, system design, fabrication, ground and flight testing, and evaluation. Prerequisite: 284A and consent of instructor.

AA 284C. Propulsion System Design Laboratory. 3 Units.
Continuation of 284A,B. Prerequisite: 284B, and consent of instructor.

AA 289. Robotics and Autonomous Systems Seminar. 1 Unit.
Seminar talks by researchers and industry professionals on topics related to modern robotics and autonomous systems. Broadly, talks will cover robotic design, perception and navigation, planning and control, and learning for complex robotic systems. May be repeated for credit.
Same as: CS 529

AA 290. Problems in Aero/Astro. 1-5 Unit.
(Undergraduates register for 190 or 199.) Experimental, theoretical, or computational investigation. Students may work in any field of special interest. This course is designed to develop students' understanding of what a research problem is and the skills needed to successfully approach and conduct research. Register in Axess for section belonging to your research supervisor once the faculty member agrees to supervise your independent study. May be repeated for credit.

AA 290S. Problems in Aero/Astro. 1-15 Unit.
(Undergraduates register for 190 or 199.) Experimental, theoretical, or computational investigation. Students may work in any field of special interest. This course is designed to develop students' understanding of what a research problem is and the skills needed to successfully approach and conduct research. Register in Axess for section belonging to your research supervisor once the faculty member agrees to supervise your independent study. May be repeated for credit.

AA 291. Practical Training. 1-3 Unit.
Educational opportunities in high-technology research and development labs in aerospace and related industries. Internship integrated into a student's academic program. Research report outlining work activity, problems investigated, key results, and any follow-on projects. Meets the requirements for Curricular Practical Training for students on F-1 visas. Student is responsible for arranging own employment and should see department student services manager before enrolling. May be repeated for credit.

AA 294. Case Studies in Aircraft Design. 1 Unit.
Presentations by researchers and industry professionals. Registration for credit optional. May be repeated for credit.

AA 295. Aerospace Structures and Materials. 1 Unit.
Presentations by researchers and industry professionals in aerospace structures and materials. May be repeated for credit.

AA 297. Seminar in Guidance, Navigation, and Control. 1 Unit.
For graduate students with an interest in automatic control applications in flight mechanics, guidance, navigation, and mechanical design of control systems; others invited. Problems in all branches of vehicle control, guidance, and instrumentation presented by researchers on and off campus. Registration for credit optional. May be repeated for credit.

AA 300. Engineer Thesis. 1-15 Unit.
Thesis for degree of Engineer. Students register for section belonging to their thesis adviser.

AA 301. Ph.D. Dissertation. 1-15 Unit.
Prerequisite: completion of Ph.D qualifying exams. Students register for section belonging to their thesis adviser. (Staff).

AA 801. TGR Engineer Thesis. 0 Units.
Engineer's thesis or non-doctoral work for a TGR student.

AA 802. TGR Ph.D. Dissertation. 0 Units.
Doctoral dissertation for a TGR student in PhD program.

BIOENGINEERING

Courses offered by the Department of Bioengineering are listed under the subject code BIOE (https://explorecourses.stanford.edu/search/?q=BIOE&view=catalog&page=0&academicYear=&collapse=&filter-coursestatus-Active=on&filter-departmentcode-BIOE=on&filter-catalognumber-BIOE=on) on the *Stanford Bulletin's* ExploreCourses web site.

Bioengineering is jointly supported by the School of Engineering and the School of Medicine. The facilities and personnel of the Department of Bioengineering are housed in the Shriram Center, James H. Clark Center, the William F. Durand Building for Space Engineering and Science, the William M. Keck Science Building, the Jerry Yang and Akiko Yamazaki Environment and Energy Building, and the Richard M. Lucas Center for Magnetic Resonance Spectroscopy and Imaging. The departmental headquarters is in the Shriram Center for Bioengineering and Chemical Engineering.

Courses in the teaching program lead to the degrees of Bachelor of Science in Bioengineering, Master of Science and Doctor of Philosophy. The department collaborates in research and teaching programs with faculty members in Chemical Engineering, Mechanical Engineering, Electrical Engineering, and departments in the School of Medicine. Quantitative biology is the core science base of the department. The research and educational thrusts are in biomedical computation, biomedical imaging, biomedical devices, regenerative medicine, and cell/molecular engineering. The clinical dimension of the department includes cardiovascular medicine, neuroscience, orthopedics, cancer care, neurology, and the environment.

Mission of the Undergraduate Program in Bioengineering

The Stanford Bioengineering (BIOE) major enables students to combine engineering and the life sciences in ways that advance scientific discovery, healthcare and medicine, manufacturing, environmental quality, culture, education, and policy. Students who major in bioengineering earn a fundamental engineering degree for which the raw materials, underlying basic sciences, fundamental toolkit, and future frontiers are all defined by the unique properties of living systems.

The department offers an undergraduate major in Bioengineering leading to the B.S. degree in Bioengineering.

Learning Outcomes (Undergraduate)

The learning outcomes are used in evaluating students as well as the department's undergraduate program. The department expects undergraduate majors in the program to be able to demonstrate the ability to:

1. Apply the knowledge of mathematics, science, and engineering.
2. Design and conduct experiments, as well to analyze and interpret data.
3. Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. Function on multidisciplinary teams.
5. Identify, formulate, and solve engineering problems.
6. Understand professional and ethical responsibility.
7. Communicate effectively.
8. Understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. Demonstrate a working knowledge of contemporary issues.
10. Apply the techniques, skills, and modern engineering tools necessary for engineering practice.
11. Transition from engineering concepts and theory to real engineering applications.

Learning Outcomes (Graduate)

The purpose of the master's program is to provide students with the knowledge and skills necessary for a professional career or doctoral studies. This is done through coursework with specialization in an area of the field, including biomedical computation, regenerative medicine and tissue engineering, molecular and cell bioengineering, biomedical imaging, and biomedical devices.

The PhD is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research. Through coursework and guided research, the program prepares students to make original contributions in Bioengineering and related fields.

Graduate Programs in Bioengineering

The University's requirements for the M.S. and Ph.D. degrees are outlined in the "Graduate Degrees (p. 65)" section of this bulletin.

Admission

Students are expected to enter with a series of core competencies in mathematics, biology, chemistry, physics, computing, and engineering. Students entering the program are assessed by the examination of their undergraduate transcripts and research experiences. Specifically, the department requires that students have completed mathematics through multivariable calculus and differential equations, completed a series of undergraduate biology courses and completed physics, chemistry, and computer sciences courses required of all undergraduate majors in engineering.

Qualified applicants are encouraged to apply for predoctoral national competitive fellowships, especially those from the National Science Foundation. Applicants to the Ph.D. program should consult with their financial aid officers for information and applications.

The deadline for receiving applications is December 1, 2020. The Graduate Record Examination (GRE) is not required for admission to the M.S. or Ph.D. program in Bioengineering.

Further information and application instructions for all graduate degree programs may be obtained from Graduate Admissions (http://gradadmissions.stanford.edu).

Bachelor of Science in Bioengineering

The department offers an undergraduate major in Bioengineering (BIOE) leading to the B.S. degree in Engineering. For additional information, see the *Handbook for Undergraduate Engineering Programs (UGHB)*.

COVID-19-Related Degree Requirement Changes

For information on how Aeronautics and Astronautics degree requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 624)" in the "Bioengineering" of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

Bioengineering (BIOE)

Completion of the undergraduate program in Bioengineering leads to the conferral of the Bachelor of Science in Bioengineering.

Mission of the Undergraduate Program in Bioengineering

The Stanford Bioengineering major enables students to combine engineering and the life sciences in ways that advance scientific discovery, healthcare and medicine, manufacturing, environmental quality, culture, education, and policy. Students who major in BioE earn a fundamental engineering degree for which the raw materials, underlying basic sciences, fundamental toolkit, and future frontiers are all defined by the unique properties of living systems.

Students will complete engineering fundamentals courses, including an introduction to bioengineering and computer programming. A series of core BIOE classes beginning in the second year leads to a student-selected depth area and a senior capstone design project. The department also organizes a summer Research Experience for Undergraduates (REU) (http://bioengineering.stanford.edu/student-resources/reu/) program. BIOE graduates are well prepared to pursue careers and lead projects in research, medicine, business, law, and policy.

Requirements

		Units
Mathematics		
14 units minimum (Prerequisites: 10 units of AP or IB credit or Mathematics 20-series) [1]		
Select one of the following sequences:		
CME 100 & CME 102	Vector Calculus for Engineers and Ordinary Differential Equations for Engineers (Recommended)	10
MATH 51 & MATH 53	Linear Algebra, Multivariable Calculus, and Modern Applications and Ordinary Differential Equations with Linear Algebra	10
Select one of the following:		
CME 106	Introduction to Probability and Statistics for Engineers (Recommended)	4-5
or STATS 110	Statistical Methods in Engineering and the Physical Sciences	
or STATS 141	Biostatistics	
Science		
26 units minimum [2]		
CHEM 31M	Chemical Principles: From Molecules to Solids (formerly 31X)	5
or CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	
CHEM 33	Structure and Reactivity of Organic Molecules	5
BIO 83	Biochemistry & Molecular Biology (Recommended)	4
or BIO 82	Genetics	
BIO 84	Physiology	4
PHYSICS 41	Mechanics	4
PHYSICS 43	Electricity and Magnetism	4
Technology in Society		
BIOE 131	Ethics in Bioengineering (WIM)	3
Engineering Fundamentals		
BIOE 80	Introduction to Bioengineering (Engineering Living Matter)	4
CS 106A	Programming Methodology (or CS 106B or CS 106X)	5
Fundamentals Elective; see UGHB for approved course list; only one CS class allowed to count toward Fundamentals requirements.		3-5
Bioengineering Core		
BIOE 42	Physical Biology	4
BIOE 44	Fundamentals for Engineering Biology Lab	4
BIOE 101	Systems Biology	3
BIOE 103	Systems Physiology and Design	4
BIOE 123	Bioengineering Systems Prototyping Lab	4
BIOE 141A	Senior Capstone Design I	4
BIOE 141B	Senior Capstone Design II	4
Bioengineering Depth Electives		
Four courses, minimum 12 units:		12
BIOE 122	BioSecurity and Pandemic Resilience	
BIOE 201C	Diagnostic Devices Lab	
BIOE 209	Mathematical Modeling of Biological Systems	
BIOE 211	Biophysics of Multi-cellular Systems and Amorphous Computing	
BIOE 212	Introduction to Biomedical Informatics Research Methodology	
BIOE 214	Representations and Algorithms for Computational Molecular Biology	
BIOE 217	Translational Bioinformatics	
BIOE 220	Introduction to Imaging and Image-based Human Anatomy	
or BIOE 51	Anatomy for Bioengineers	
BIOE 221	Physics and Engineering of Radionuclide-based Medical Imaging	
BIOE 222	Physics and Engineering Principles of Multi-modality Molecular Imaging of Living Subjects	
BIOE 223	Physics and Engineering of X-Ray Computed Tomography	
BIOE 224	Probes and Applications for Multi-modality Molecular Imaging of Living Subjects	
BIOE 225	Intro to Ultrasound Physics and Ultrasound Neuromodulation	
BIOE 227	Functional MRI Methods	
BIOE 231	Protein Engineering	
BIOE 244	Advanced Frameworks and Approaches for Engineering Integrated Genetic Systems	
BIOE 260	Tissue Engineering	
BIOE 279	Computational Biology: Structure and Organization of Biomolecules and Cells	
BIOE 281	Biomechanics of Movement	
BIOE 291	Principles and Practice of Optogenetics for Optical Control of Biological Tissues	
Total Units		104-107

[1] It is strongly recommended that CME 100 Vector Calculus for Engineers and CME 102 Ordinary Differential Equations for Engineers be taken rather than MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications and MATH 53 Ordinary Differential Equations with Linear Algebra. If you are taking the MATH 50 series, it is strongly recommended to take CME 192 Introduction to MATLAB. CME 106 Introduction to Probability and Statistics for Engineers utilizes MATLAB, a powerful technical computing program, and should be taken rather than STATS 110 Statistical Methods in Engineering and the Physical Sciences or STATS 141 Biostatistics. Although not required, CME 104 Linear Algebra and Partial Differential Equations for Engineers is recommended for some Bioengineering courses.

[2] Science must include both Chemistry (CHEM 31A Chemical Principles I and CHEM 31B Chemical Principles II; or CHEM 31M Chemical Principles: From Molecules to Solids) and calculus-based Physics (PHYSICS 41 Mechanics and PHYSICS 43 Electricity and Magnetism), with two quarters of course work in each, in addition to two courses of BIO core. CHEM 31A Chemical Principles I and CHEM 31B Chemical Principles II are considered one course even though given over two quarters.

[3] A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu). Students pursuing a premed program need to take additional courses; see the UGHB, BioE Premed 4-Year Plan.

Honors Program

The School of Engineering offers a program leading to a Bachelor of Science in Bioengineering with Honors (BIOE-BSH). This program provides the opportunity for qualified BioE majors to conduct independent research at an advanced level with a faculty research adviser and documented in an honors thesis.

In order to receive departmental honors, students admitted to the program must:

1. Declare the honors program in Axess (BIOE-BSH).
2. Maintain an overall grade point average (GPA) of at least 3.5 as calculated on the unofficial transcript.
3. Complete at least two quarters of research with a minimum of nine units of BIOE 191 Bioengineering Problems and Experimental Investigation or BIOE 191X Out-of-Department Advanced Research Laboratory in Bioengineering for a letter grade; up to three units may be used towards the bioengineering depth elective requirements.
4. Submit an electronic pdf copy of their thesis, including the signature page signed by both readers, to Bioengineering student services . Students are sent email instructions on how to archive a permanent electronic copy in Terman Engineering library.
5. Present thesis synopsis at the Bioengineering Honors Poster Fair at the end of Spring Quarter.

For program deadlines, application instructions, and more information, please see the Bioengineering Honors Program (http://bioengineering.stanford.edu/academics/undergraduate-programs/bioengineering-honors-program/) website.

Coterminal Master's Program in Bioengineering

This option is available to Stanford undergraduates who wish to work simultaneously toward a B.S. one major as well as an M.S. in Bioengineering. The degrees may be granted simultaneously or at the conclusion of different quarters, though the bachelor's degree cannot be awarded after the master's degree has been granted.

The University minimum requirements for the coterminal program are 180 units for the bachelor's degree plus 45 unduplicated units for the master's degree.

In order to apply for the coterminal master's program students must have completed six, non-summer quarters at Stanford (two non-summer quarters for transfer students), have completed 120 undergraduate units, and must have declared the undergraduate major. They must be accepted into our program one quarter before receiving the B.S. degree.

The deadline for receiving applications is December 1, 2020. The Graduate Record Examination (GRE) is not required for admission to the M.S. or Ph.D. program in Bioengineering.

The application must provide evidence of potential for strong academic performance as a graduate student. The application is evaluated and acted upon by the graduate admissions committee of the department. Students are expected to enter with a series of core competencies in mathematics, biology, chemistry, physics, computing, and engineering. Typically, a GPA of at least 3.5 in engineering, science, and math is expected.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Master of Science in Bioengineering

The Master of Science in Bioengineering requires 45 units of coursework. The curriculum consists of core bioengineering courses, technical electives, core seminars and unrestricted electives. Core courses focus on quantitative biology and biological systems analysis. Approved technical electives are chosen by the student in consultation with his/her graduate adviser, and can be selected from graduate course offerings in mathematics, statistics, engineering, physical sciences, life sciences, and medicine. Seminars highlight emerging research in bioengineering and provide training in research ethics. Unrestricted electives can be freely chosen by the student in association with his/her adviser.

Requirements

All courses for the MS degree in Bioengineering must be taken for a letter grade if offered by the instructor (only exceptions are research units). Minimum Grade Point Average (GPA) for all courses (combined) is a 3.0. The department's requirements for the M.S. in Bioengineering are:

1. Core Bioengineering courses (10 units)

The following courses are required:

		Units
BIOE 300A	Molecular and Cellular Bioengineering	3
BIOE 300B	Quantitative Physiology	3

Select two of the following:		4-5
BIOE 301A	Molecular and Cellular Engineering Lab	2
BIOE 301B	Clinical Needs and Technology	2
BIOE 301C	Diagnostic Devices Lab	2
BIOE 301D	Microfluidic Device Laboratory	3-4
BIOE 301E	Computational protein modeling laboratory	2
BIOE 301P	Research Data & Computation	2

These courses, together with the approved technical electives, should form a cohesive course of study that provides depth and breadth.

2. Approved Technical Electives (27 units)

These units must be selected from graduate courses in mathematics, statistics, engineering, physical science, life science, and medicine. They should be chosen in concert with the bioengineering courses to provide a cohesive degree program in a bioengineering focus area. Students are required to take at least one course in some area of device or instrumentation. Up to 9 units of directed study and research may be used as approved electives.

3. Core Seminars (2 units)

The seminar units should be fulfilled through:

		Units
BIOE 393	Bioengineering Departmental Research Colloquium	1
MED 255	The Responsible Conduct of Research	1

Other relevant seminar units may also be used with the approval of the faculty adviser. One of the seminar units must be MED 255 The Responsible Conduct of Research.

4. Unrestricted Electives (6 units).

M.S. Program Proposal

Students are assigned an initial faculty adviser to assist them in designing a plan of study that creates a cohesive degree program.

To ensure that an appropriate program is pursued by all M.S. candidates, students who first matriculate at Stanford at the graduate level must:

1. submit an adviser-approved Program Proposal for a Master's Degree form to the student services office during the first month of the first quarter of enrollment
2. obtain approval from the M.S. adviser and the Chair of Graduate Studies for any subsequent program change or changes.

It is expected that the requirements for the M.S. in Bioengineering can be completed within approximately one year. There is no thesis requirement for the M.S..

Due to the interdisciplinary nature of Bioengineering, a number of courses are offered directly through the Bioengineering Department but many are available through other departments. See respective ExploreCourses for course descriptions.

Doctor of Philosophy in Bioengineering

The University's basic requirements for the Ph.D. degree are outlined in the "Graduate Degrees (p. 65)" section of this bulletin.

A student studying for the Ph.D. degree must complete a master's degree (45 units) comparable to that of the Stanford M.S. degree in Bioengineering. Up to 45 units of master's degree residency units may be counted towards the degree. The Ph.D. degree is awarded after the completion of a minimum of 135 units of graduate work as well as satisfactory completion of any additional University requirements. Students admitted to the Ph.D. program with an M.S. degree must complete at least 90 units of work at Stanford. The maximum number of transfer units is 45.

On the basis of the research interests expressed in their application, students are assigned an initial faculty adviser who assists them in choosing courses and identifying research opportunities. One of the most important goals of the first year is to identify a primary research adviser. The department does not require formal lab rotations, but students are encouraged to explore research activities in three or a maximum of four labs during their first academic year.

Prior to being formally admitted to candidacy for the Ph.D. degree, the student must demonstrate knowledge of Bioengineering fundamentals and a potential for research by passing a qualifying oral examination before the end of the second year.

In the beginning of the second year, the student is required to select a quantitative topic and a biology/medicine topic on which to be examined. Approximately one month before the exam, the student must submit an application containing items including a curriculum vitae, 2-3 page research project proposal, and transcript to the student services office. The exams are taken during a two-day period in Spring Quarter for all students. More information about the exam may be obtained from the student services office.

Successfully passing the qualifying exam, as well as completing the master's degree requirements, is required for students to advance to candidacy. Advancement to candidacy by University requirements must occur by the end of the Summer of the second year. Thus, all required master's degree coursework must be completed during the first two years of graduate study. Students who transfer master's degree residency units to the Bioengineering Ph.D. degree are still required to fulfill the core course and core seminar requirements. In cases where students have already completed an equivalent course as part of their master's degree, they may submit a petition to the graduate studies committee to have their previous coursework applied to the core bioengineering course requirement.

In addition to the course requirements of the M.S. degree, doctoral candidates must complete a minimum of 15 additional units of approved formal course work (excluding research, directed study, and seminars). Finally, serving as a teaching assistant for two courses is a requirement for the Ph.D. in Bioengineering. Both the 15 additional units and the teaching assistant requirement must be completed before the end of the 3rd year.

Dissertation Reading Committee

Each Ph.D. candidate is required to establish a reading committee for the doctoral dissertation within six months after passing the department's Ph.D.. qualifying exams. Thereafter, the student should consult frequently with all members of the committee about the direction and progress of the dissertation research, no less than once per year.

A dissertation reading committee consists of the principal dissertation adviser and at least two other readers. Reading committees in Bioengineering may include faculty from another department. It is required that two members of the Bioengineering faculty, including primary and/or courtesy faculty be on each reading committee. The initial committee and any subsequent changes must be officially approved by the Department Chair.

University Oral and Dissertation

The Ph.D. candidate is required to take the University oral examination after the dissertation is substantially completed (with the dissertation draft in writing) but before final approval. The examination consists of a public presentation of dissertation research, followed by substantive private questioning on the dissertation and related fields by the University oral committee (four selected faculty members, plus a chair from another

department). Once the oral has been passed, the student finalizes the dissertation for reading committee review and final approval.

Ph.D. Minor in Bioengineering

Doctoral students pursuing a Ph.D. degree in a degree program other than Bioengineering may apply for the Ph.D. minor in Bioengineering. A minor is not a requirement for any degree but is available when agreed upon by the student and the major and minor department.

A student desiring a Ph.D. minor in Bioengineering must have a minor program adviser who is a regular Bioengineering faculty member. This adviser must be a member of the student's reading committee for the doctoral dissertation, and the entire reading committee must meet at least one year prior to the date of the student's dissertation defense.

The Ph.D. minor program must include at least 20 units of course work in Stanford Bioengineering or Bioengineering cognate courses at or above the 200 level. Of these 20 units, no more than 10 can be in cognate courses. All courses listed to fulfill the 20-unit requirement must be taken for a letter grade and the GPA must be at least 3.25. Courses used for a minor may not be used to also meet the requirements for a master's degree.

M.D./Ph.D. Dual Degree Program

Students interested in a career oriented towards bioengineering and medicine can pursue the combined M.D./Ph.D. degree program. Stanford has two ways to do an M.D./Ph.D. U.S. citizens and permanent residents can apply to the Medical Scientist Training Program and can be accepted with funding from both M.D. and Ph.D. programs for stipend and tuition. They then apply to the Bioengineering Ph.D. during their first or second year of M.D. training. Students not admitted to the Medical Scientist Training Program must apply to be admitted separately to the M.D. program and the Ph.D. program of their choice.

The Ph.D. is administered by the Department of Bioengineering. To be formally admitted as a Ph.D. degree candidate in this combined degree program, the student must apply through normal departmental channels and must have earned or have plans to earn an M.S. in Bioengineering or another engineering discipline at Stanford or another university. The M.S. requires 45 units of course work which consists of core bioengineering courses, technical electives, seminars, and 6 unrestricted units. It is not permissible to substitute medical school courses for the bioengineering core course requirements. Students must also pass the Department of Bioengineering Ph.D. qualifying examination.

For students fulfilling the full M.D. requirements who earned their master's level engineering degree at Stanford, the Department of Bioengineering waives the normal departmental requirement of 15 units applied towards the Ph.D. degree beyond the master's degree level through formal coursework. Consistent with the University Ph.D. requirements, the department accepts 15 units comprised of courses, research, or seminars approved by the student's academic adviser and the department chair. Students not completing their M.S. engineering degree at Stanford are required to take 15 units of formal course work in engineering-related areas as determined by their academic adviser.

Joint Degree Programs in Bioengineering and the School of Law

The School of Law and the Department of Bioengineering offer joint programs leading to either a J.D. degree combined with an M.S. degree in Bioengineering or to a J.D. degree combined with a Ph.D. in Bioengineering.

The J.D./M.S. and J.D./Ph.D. degree programs are designed for students who wish to prepare themselves intensively for careers in areas relating to both law and bioengineering. Students interested in either joint degree program must apply and gain entrance separately to the School of Law and the Department of Bioengineering and, as an additional step, must secure permission from both academic units to pursue degrees in those units as part of a joint degree program. Interest in either joint degree program should be noted on the student's admission applications and may be considered by the admissions committee of each program. Alternatively, an enrolled student in either the Law School or the Bioengineering Department may apply for admission to the other program and for joint degree status in both academic units after commencing study in either program.

Joint degree students may elect to begin their course of study in either the School of Law or the Department of Bioengineering. Faculty advisers from each academic unit will participate in the planning and supervision of the student's joint program. Students must be enrolled full time in the Law School for the first year of law school, and, at some point during the joint program, may be required to devote one or more quarters largely or exclusively to studies in the Bioengineering program regardless of whether enrollment at that time is in the Law School or in the Department of Bioengineering. At all other times, enrollment may be in the graduate school or the Law School, and students may choose courses from either program regardless of where enrolled. Students must satisfy the requirements for both the J.D. and the M.S. or Ph.D. degrees as specified in the *Stanford Bulletin* or elsewhere.

The Law School shall approve courses from the Bioengineering Department that may count toward the J.D. degree, and the Bioengineering Department shall approve courses from the Law School that may count toward the M.S. or Ph.D. degree in Bioengineering. In either case, approval may consist of a list applicable to all joint degree students or may be tailored to each individual student's program. The lists may differ depending on whether the student is pursuing an M.S. or a Ph.D. in Bioengineering.

In the case of a J.D./MS program, no more than 45 units of approved courses may be counted toward both degrees. In the case of a J.D./Ph.D. program, no more than 54 units of approved courses may be counted toward both degrees. In either case, no more than 36 units of courses that originate outside the Law School may count toward the law degree. To the extent that courses under this joint degree program originate outside of the Law School but count toward the law degree, the law school credits permitted under Section 17(1) of the Law School Regulations shall be reduced on a unit-per-unit basis, but not below zero. The maximum number of law school credits that may be counted toward the M.S. or Ph.D. in Bioengineering is the greater of: (i) 15 units; or (ii) the maximum number of units from courses outside of the department that M.S. or Ph.D. candidates in Bioengineering are permitted to count toward the applicable degree under general departmental guidelines or in the case of a particular student's individual program. Tuition and financial aid arrangements will normally be through the school in which the student is then enrolled.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Bioengineering department counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Students are encouraged to enroll in the letter grade option for degree requirements whenever possible.

Other Undergraduate Policies

Honors students are required to enroll and receive letter grades for any courses that offer letter grades for their degree requirements. The minimum GPA requirement to receive departmental honors is a 3.5 cumulative GPA.

Graduate Degree Requirements

Grading

The Bioengineering department counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade.

Students are encouraged to enroll in the letter grade option for degree requirements whenever possible.

Graduate Advising Expectations

The Department of Bioengineering is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Master's Advising

At the start of graduate study, each student is assigned a master's program adviser: a member of our faculty who provide guidance in course selection and in exploring academic opportunities and professional pathways. The department's graduate handbook provides information and suggested timelines for advising meetings. Usually, the same faculty member serves as a program adviser for the duration of master's study, but the handbook does describe a process for formal adviser changes.

In addition, the faculty Director of Graduate Studies (DGS) is available during the academic year by email and during office hours.

The department's student services office is also an important part of the master's advising team. They inform students and advisers about University and department requirements, procedures, and opportunities, and they maintain the official records of advising assignments and approvals.

Doctoral Advising

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways. The department's graduate handbook provides information and suggested timelines for advising meetings in the different stages of the doctoral program.

Ph.D. students are initially assigned a program adviser on the basis of the interests expressed in their application. This faculty member provides initial guidance in course selection, in exploring academic opportunities and professional pathways, and in identifying doctoral research opportunities.

Students identify their doctoral research/thesis adviser prior to the end of the first year of study. The research adviser assumes primary responsibility for the future direction of the student, taking on the roles previously filled by the program adviser, and ultimately directs the student's dissertation. Most students find an adviser from among the primary faculty members of our department. However, the research adviser may be a faculty member from another Stanford department who is a member of the Academic Council, familiar with supervising doctoral students, and able to provide both advising and funding for the duration of the doctoral program. When the research adviser is from outside our department, the student must identify reading committee members from the BioE faculty.

MCL faculty may not be the primary advisers of students. Although a co-adviser from the MCL line is permissible in some situations, the primary adviser must provide at least 50% of the mentoring for the student. Evidence that a student is receiving greater than 50% of mentoring from the primary adviser include: full attendance of lab meetings, regular one-on-one meetings, dedicated space in the primary adviser's lab, funding provided by the primary adviser, and research being performed in an area that is of current relevance to the primary adviser. Advising situations that do not meet these criteria are subject to review by the graduate studies committee.

Throughout the Ph.D., each student is required to fill out an annual Individual Developmental Plan (IDP), usually in the Summer. The IDP is then discussed with the research adviser, as a way to facilitate: advising the student, both during and beyond the PhD; establishing clear expectations on both sides with respect to degree progress and timely graduation; and emphasizing the importance of wellness in graduate school, together with access to University wellness resources.

The Faculty Director of Graduate Studies (DGS) is also available during the academic year by email and during office hours. The department's student services office is also an important part of the doctoral advising team: they inform students and advisers about University and department requirements, procedures, and opportunities, and they maintain the official records of advising assignments and approvals. Students are encouraged to talk with the DGS and the student services office as they consider adviser selection or for guidance in working with their adviser(s).

Chair: Jennifer R. Cochran

Director of Undergraduate Studies: Karl Deisseroth

Director of Graduate Studies: Markus Willard Covert

Professors: Russ B. Altman, Kwabena Boahen, Wah Chiu, Jennifer R. Cochran, Markus Willard Covert, Karl Deisseroth, Scott L. Delp, Norbert J. Pelc, Stephen R. Quake, Christina D. Smolke, James R. Swartz, Paul Yock

Associate Professors: Annelise E. Barron, Zev David Bryant, David B. Camarillo, Andrew Endy, Michael Fischbach, Kerwyn C. Huang, Jin

Hyung Lee, Michael Z. Lin, Jan T. Liphardt, Alison Lesley Marsden, Manu Prakash, Fan Yang

Assistant Professors: Lacramioara Bintu, Polly M. Fordyce, Possu Huang, Paul Nuyujukian, Lei Stanley Qi, Mark Skylar-Scott, Bo Wang

Professors, by courtesy: Bruce L. Daniel, James Dunn, Jeffrey A. Feinstein, Daniel S. Fisher, Garry E. Gold, Stuart B. Goodman, Geoffrey C. Gurtner, Brian Hargreaves, Thomas M. Krummel, Ellen Kuhl, Craig Levin, Michael T. Longaker, David Magnus, Lloyd B. Minor, Kim Butts Pauly, Krishna Shenoy, Paul J. Wang, Yiping Joseph Woo

Associate Professors, by courtesy: Sarah Heilshorn, Marc E. Levenston, Sakti Srivastava, Yunzhi Peter Yang

Assistant Professors, by courtesy: Eric Appel, Mary Frances Nunez Teruel, James K. Wall

Adjunct Professors: Uday Kumar, John Linehan, Vijay Pande, Marc L. Salit, Gordon Saul, Charles A. Taylor

Lecturers: Megan Palmer, Michael Specter, Joseph Towles, Ross D. Venook, Paul Vorster

Graduate Related Courses

		Units
BIOMEDIN 210	Modeling Biomedical Systems	3
BIOMEDIN 217	Translational Bioinformatics	4
EE 369A	Medical Imaging Systems I	3
EE 369B	Medical Imaging Systems II	3
ME 287	Mechanics of Biological Tissues	4

Courses

BIOE 10SC. Needs Finding in Healthcare. 2 Units.
Are you on an engineering pathway, but trying to decide if opportunities in healthcare might be of interest to you? Or, are you committed to a career in healthcare, but eager to explore how to incorporate technology innovation into your plans? In either case, Needs Finding in Healthcare is the Sophomore College for you!nnMany courses offered during the regular academic year provide students with the opportunity to understand healthcare problems and invent new technologies to address them. But none give undergraduates the chance to observe the delivery of healthcare in the real world and identify important unmet needs for themselves¿until now! nnNeeds Finding in Healthcare is a new Sophomore College program offered by Professor Paul Yock and the Stanford Biodesign team. We¿re looking for students who are passionate about innovation and interested in how technology can be applied to help make healthcare better for patients everywhere. Over three weeks, you¿ll spend time: learning the fundamentals of the biodesign innovation process for health technology innovation, performing first-hand observations of care delivery in the Stanford¿s hospital and clinics ¿ specifically in surgery and the emergency room ¿ to identify compelling unmet needs, conducting background research and interacting with physicians and patients to understand and prioritize those needs, and brainstorming and building early-stage prototypes to enhance your understanding of the unmet need and critical requirements for solving it. nnIn addition, you¿ll meet experienced innovators from the health technology field and explore different career pathways in this dynamic space. Join us if you want to make a difference at the intersection of medicine and engineering!nnOther requirements/information:nnOver the summer, students will be need to work with Stanford Biodesign to gain medical clearance to perform observations in the Stanford Hospital and Clinics. This will involve completing required paperwork, submitting vaccination records, and making a trip to the School of Medicine badging office. Complete instructions and important deadlines will be provided upon acceptance into the program.

BIOE 32Q. Bon Appétit, Marie Curie! The Science Behind Haute Cuisine. 3 Units.
This seminar is for anyone who loves food, cooking or science! We will focus on the science and biology behind the techniques and the taste buds. Not a single lecture will pass by without a delicious opportunity - each weekly meeting will include not only lecture, but also a lab demonstration and a chance to prepare classic dishes that illustrate that day's scientific concepts.

BIOE 36Q. The Biophysics of Innate Immunity. 3 Units.
The innate immune system provides our first line of defense against disease--bothninfections, and cancer. Innate immune effectors such as host defense peptides arendeployed by numerous cell types (for instance neutrophils, macrophages, NK cells,nepithelial cells and keratinocytes) and work by biophysical mechanisms of action. The ourse draws from the primary literature and covers the evolution, structures, mechanisms,and physiological functions of important "innate immune effectors" (components of the innate immune system that can attack pathogens, and infected or host cells, and kill or incapacitate them directly). The course is aimed at students who have an interest in biochemistry, molecular/cellular biology, biophysics, and/or bioengineering.

BIOE 42. Physical Biology. 4 Units.
BIOE 42 is designed to introduce students to general engineering principles that have emerged from theory and experiments in biology. Topics covered will cover the scales from molecules to cells to organisms, including fundamental principles of entropy, diffusion, and continuum mechanics. These topics will link to several biological questions, including DNA organization, ligand binding, cytoskeletal mechanics, and the electromagnetic origin of nerve impulses. In all cases, students will learn to develop toy models that can explain quantitative measurements of the function of biological systems. Prerequisites: MATH 19, 20, 21 CHEM 31A, B (or 31X), PHYSICS 41; strongly recommended: CS 106A, CME 100 or MATH 51, and CME 106; or instructor approval.

BIOE 44. Fundamentals for Engineering Biology Lab. 4 Units.
An introduction to next-generation techniques in genetic, molecular, biochemical, and cellular engineering. Lectures cover advances in the field of synthetic biology with emphasis on genetic engineering, CRISPR gene editing technology, the DIY bio movement, plasmid design, gene synthesis, genetic circuits, safety and bio ethics. At-home lab modules will teach students how to isolate DNA from living matter, make genetic alterations by plasmid transformations and introduce students to experimental design. During the final weeks of the course students work in groups to design a DNA device. Group projects will build upon current research including: gene and genome engineering via decoupled design, component engineering with a focus on molecular design and quantitative analysis of experiments, device and system engineering using abstracted genetically encoded objects, and product development based on useful applications of biological technologies. Concurrent or previous enrollment in BIO 82 or BIO 83.

BIOE 51. Anatomy for Bioengineers. 4 Units.
Fundamental human anatomy, spanning major body systems and tissues including nerve, muscle, bone, cardiovascular, respiratory, gastrointestinal, and renal systems. Explore intricacies of structure and function, and how various body parts come together to form a coherent and adaptable living being. Correlate clinical conditions and therapeutic interventions. Participate in lab sessions with predissected cadaveric material and hands-on learning to gain understanding of the bioengineering human application domain. Encourage anatomical thinking, defining challenges and opportunities for bioengineers.

BIOE 60. Beyond Bitcoin: Applications of Distributed Trust. 1 Unit.
In the past, people have relied on trusted third parties to facilitate the transactions that define our lives: how we store medical records, how we share genomic information with scientists and drug companies, where we get our news, and how we communicate. Advances in distributed systems and cryptography allow us to eschew such parties. Today, we can create a global, irrefutable ledger of transactions, events, and diagnoses, such that rewriting history is computationally infeasible. What can we build on top of such a powerful data structure? What are the consequences of pseudo-legal contracts and promises written in mathematical ink? In this class, we will bring together experts in cryptography, healthcare, and distributed consensus with students across the university. The first weeks present a technical overview of block chain primitives. In the following weeks, the class will focus on discussing applications and policy issues through lectures and guest speakers from various domains across both academia and industry. Limited enrollment, subject to instructor approval.

BIOE 70Q. Medical Device Innovation. 3 Units.
BIOE 70Q invites students to apply design thinking to the creation of healthcare technologies. Students will learn about the variety of factors that shape healthcare innovation, and through hands-on design projects, invent their own solutions to clinical needs. Guest instructors will include engineers, doctors, entrepreneurs, and others who have helped bring ideas from concept to clinical use.

BIOE 72N. Pathophysiology and Design for Cardiovascular Disease. 3 Units.
Future physicians, social and biological scientists, and engineers will be the core of teams that solve major problems threatening human health. Bridging these diverse areas will require thinkers who can understand human biology and also think broadly about approaching such challenges.nnFocusing on heart disease, students in this seminar will learn about the multi-factorial problems leading to the leading cause of death in the U.S., along with how to apply design thinking to innovate in the context of healthcare.

BIOE 80. Introduction to Bioengineering (Engineering Living Matter). 4 Units.
Students completing BIOE.80 should have a working understanding for how to approach the systematic engineering of living systems to benefit all people and the planet. Our main goals are (1) to help students learn ways of thinking about engineering living matter and (2) to empower students to explore the broader ramifications of engineering life. Specific concepts and skills covered include but are not limited to: capacities of natural life on Earth; scope of the existing human-directed bioeconomy; deconstructing complicated problems; reaction & diffusion systems; microbial human anatomy; conceptualizing the engineering of biology; how atoms can be organized to make molecules; how to print DNA from scratch; programming genetic sensors, logic, & actuators; biology beyond molecules (photons, electrons, etc.); what constraints limit what life can do?; what will be the major health challenges in 2030?; how does what we want shape bioengineering?; who should choose and realize various competing bioengineering futures?.
Same as: ENGR 80

BIOE 91B. Race in Technology. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Winter quarter focuses on technology. How do race and racism affect the design and social impact of technology, broadly defined? Can new or different technology help to reduce racial bias? Invited speakers will address the role of race in such issues as energy infrastructure, nuclear arms control, algorithmic accountability, machine learning, artificial intelligence, and synthetic biology. Talks will take a variety of forms, ranging from panel discussions to interviews and lectures. Weekly assignments: read a related article and participate in an online discussion.
Same as: AFRICAAM 51B, CEE 151B, COMM 51B, CSRE 51B, HUMBIO 71B, STS 51B

BIOE 91C. Race in Medicine. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Spring quarter focuses on medicine. How do race and racism affect medical research and medical care? What accounts for health disparities among racial groups? What are the history, ethics, legal, and social issues surrounding racialized medical experiments and treatments? Invited speakers will address these and other issues. Talks will take a variety of forms: conversations, interviews, panels, and others. Weekly assignments: read a related article and participate in an online discussion.
Same as: AFRICAAM 51C, CEE 151C, CSRE 51C, HUMBIO 71C, STS 51C

BIOE 101. Systems Biology. 3 Units.
Complex biological behaviors through the integration of computational modeling and molecular biology. Topics: reconstructing biological networks from high-throughput data and knowledge bases. Network properties. Computational modeling of network behaviors at the small and large scale. Using model predictions to guide an experimental program. Robustness, noise, and cellular variation. Prerequisites: CME 102; BIO 82, BIO 84; or consent of instructor.
Same as: BIOE 210

BIOE 102. Physical Biology of Macromolecules. 4 Units.
Principles of statistical physics, thermodynamics, and kinetics with applications to molecular biology. Topics include entropy, temperature, chemical forces, enzyme kinetics, free energy and its uses, self assembly, cooperative transitions in macromolecules, molecular machines, feedback, and accurate replication. Prerequisites: MATH 19, 20, 21; CHEM 31A, B (or 31X); strongly recommended: PHYSICS 41, CME 100 or MATH 51, and CME 106; or instructor approval.

BIOE 103. Systems Physiology and Design. 4 Units.
Physiology of intact human tissues, organs, and organ systems in health and disease, and bioengineering tools used (or needed) to probe and model these physiological systems. Topics: Clinical physiology, network physiology and system design/plasticity, diseases and interventions (major syndromes, simulation, and treatment, instrumentation for intervention, stimulation, diagnosis, and prevention), and new technologies including tissue engineering and optogenetics. Discussions of pathology of these systems in a clinical-case based format, with a view towards identifying unmet clinical needs. Learning computational skills that not only enable simulation of these systems but also apply more broadly to biomedical data analysis. Prerequisites: CME 102; PHYSICS 41; BIO 82, BIO 84.

BIOE 103B. Systems Physiology and Design. 4 Units.
ONLINE Offering of BIOE 103. This pilot class, BIOE103B, is an entirely online offering with the same content, learning goals, and prerequisites as BIOE 103. Students attend class by watching videos and completing assignments remotely. Students may attend recitation and office hours in person, but cannot attend the BIOE103 in-person lecture due to room capacity restraints. Physiology of intact human tissues, organs, and organ systems in health and disease, and bioengineering tools used (or needed) to probe and model these physiological systems. Topics: Clinical physiology, network physiology and system design/plasticity, diseases and interventions (major syndromes, simulation, and treatment, instrumentation for intervention, stimulation, diagnosis, and prevention), and new technologies including tissue engineering and optogenetics. Discussions of pathology of these systems in a clinical-case based format, with a view towards identifying unmet clinical needs. Learning computational skills that not only enable simulation of these systems but also apply more broadly to biomedical data analysis. Prerequisites: CME 102; PHYSICS 41; BIO 82, BIO 84. strongly recommended PHYSICS 43. Enrollment with Instructor approval.

BIOE 122. BioSecurity and Pandemic Resilience. 4-5 Units.
Overview of the most pressing biosecurity issues facing the world today, with a special focus on the COVID-19 pandemic. Critical examination of ways of enhancing biosecurity and pandemic resilience to the current and future pandemics. Examination of how the US and the world is able to withstand a pandemic or a bioterrorism attack, how the medical/healthcare field, government, and technology sectors are involved in biosecurity and pandemic or bioterrorism preparedness and response and how they interface; the rise of synthetic biology with its promises and threats; global bio-surveillance; effectiveness of various containment and mitigation measures; hospital surge capacity; medical challenges; development, production, and distribution of countermeasures such as vaccines and drugs; supply chain challenges; public health and policy aspects of pandemic preparedness and response; administrative and engineering controls to enhance pandemic resilience; testing approaches and challenges; promising technologies for pandemic response and resilience, and other relevant topics. Guest lecturers have included former Secretary of State Condoleezza Rice, former Special Assistant on BioSecurity to Presidents Clinton and Bush Jr. Dr. Ken Bernard, Chief Medical Officer of the Homeland Security Department Dr. Alex Garza, eminent scientists, public health leaders, innovators and physicians in the field, and leaders of relevant technology companies. Open to medical, graduate, and undergraduate students. No prior background in biology necessary. Additional 1 unit for writing a research paper for 5 units total maximum.
Same as: EMED 122, EMED 222, PUBLPOL 122, PUBLPOL 222

BIOE 123. Bioengineering Systems Prototyping Lab. 4 Units.
The Bioengineering System Prototyping Laboratory is a fast-paced, team-based system engineering experience, in which teams of 2-3 students design and build a fermenter that meets a set of common requirements along with a set of unique team-determined requirements. Students learn-by-doing hands-on skills in electronics and mechanical design and fabrication. Teams also develop process skills and an engineering mindset by aligning specifications with requirements, developing output metrics and measuring performance, and creating project proposals and plans. The course culminates in demonstration of a fully functioning fermenter that meets the teams' self-determined metrics. n nLearning goals: 1) Design, fabricate, integrate, and characterize practical electronic and mechanical hardware systems that meet clear requirements in the context of Bioengineering (i.e., build something that works). 2) Use prototyping tools, techniques, and instruments, including: CAD, 3D printing, laser cutting, microcontrollers, and oscilloscopes. 3) Create quantitative system specifications and test measurement plans to demonstrate that a design meets user requirements. 4) Communicate design elements, choices, specifications, and performance through design reviews and written reports. 5) Collaborate as a team member on a complex system design project (e.g., a fermenter). n nLimited enrollment, with priority for Bioengineering undergraduates. Prerequisites: Physics 43, or equivalent. Experience with Matlab and/or Python is recommended.

BIOE 131. Ethics in Bioengineering. 3 Units.
Bioengineering focuses on the development and application of new technologies in the biology and medicine. These technologies often have powerful effects on living systems at the microscopic and macroscopic level. They can provide great benefit to society, but they also can be used in dangerous or damaging ways. These effects may be positive or negative, and so it is critical that bioengineers understand the basic principles of ethics when thinking about how the technologies they develop can and should be applied. On a personal level, every bioengineer should understand the basic principles of ethical behavior in the professional setting. This course will involve substantial writing, and will use case-study methodology to introduce both societal and personal ethical principles, with a focus on practical applications.
Same as: ETHICSOC 131X

BIOE 141A. Senior Capstone Design I. 4 Units.
Lecture/Lab. First course of two-quarter capstone sequence. Team based project introduces students to the process of designing new biological technologies to address societal needs. Topics include methods for validating societal needs, brainstorming, concept selection, and the engineering design process. First quarter deliverable is a design for the top concept. Second quarter involves implementation and testing. Guest lectures and practical demonstrations are incorporated. Prerequisites: BIOE 123 and BIOE 44. This course is open only to seniors in the undergraduate Bioengineering program.

BIOE 141B. Senior Capstone Design II. 4 Units.
Lecture/Lab. Second course of two-quarter capstone sequence. Team based project introduces students to the process of designing new biological technologies to address societal needs. Emphasis is on implementing and testing the design from the first quarter with the at least one round of prototype iteration. Guest lectures and practical demonstrations are incorporated. Prerequisites: BIOE123 and BIOE44. This course is open only to seniors in the undergraduate Bioengineering program. IMPORTANT NOTE: class meets in Shriram 112.

BIOE 150. Biochemical Engineering. 3 Units.
Systems-level combination of chemical engineering concepts with biological principles. The production of protein pharmaceuticals as a paradigm to explore quantitative biochemistry and cellular physiology, the elemental stoichiometry of metabolism, recombinant DNA technology, synthetic biology and metabolic engineering, fermentation development and control, product isolation and purification, protein folding and formulation, and biobusiness and regulatory issues. Prerequisite: CHEMENG 181 (formerly 188) or BIOSCI 41 or equivalent.
Same as: CHEMENG 150, CHEMENG 250

BIOE 158. Soft Matter in Biomedical Devices, Microelectronics, and Everyday Life. 4 Units.
The relationships between molecular structure, morphology, and the unique physical, chemical, and mechanical behavior of polymers and other types of soft matter are discussed. Topics include methods for preparing synthetic polymers and examination of how enthalpy and entropy determine conformation, solubility, mechanical behavior, microphase separation, crystallinity, glass transitions, elasticity, and linear viscoelasticity. Case studies covering polymers in biomedical devices and microelectronics will be covered. Recommended: ENGR 50 and Chem 31A or equivalent.
Same as: MATSCI 158

BIOE 177. Inventing the Future. 4 Units.
The famous computer scientist, Alan Kay, once said, "The best way to predict the future is to invent it." As such, we are all responsible for inventing the future we hope we and our descendants will experience. In this highly interactive course, we will be exploring how to predict and invent the future and why this is important by focusing on a wide range of frontier technologies, such as robotics, AI, genomics, autonomous vehicles, blockchain, 3D Printing, VR/AR, synthetic meat, etc. The class will feature debates in which students present utopian and dystopian scenarios, and determine what has to be done to inoculate ourselves against the negative consequences. Limited enrollment. Admission by application: dschool.stanford.edu/classes.

BIOE 191. Bioengineering Problems and Experimental Investigation. 1-5 Unit.
Directed study and research for undergraduates on a subject of mutual interest to student and instructor. Prerequisites: consent of instructor and adviser. (Staff).

BIOE 191X. Out-of-Department Advanced Research Laboratory in Bioengineering. 1-15 Unit.
Individual research by arrangement with out-of-department instructors. Credit for 191X is restricted to declared Bioengineering majors pursuing honors and requires department approval. See http://bioengineering.stanford.edu/education/undergraduate.html for additional information. May be repeated for credit.

BIOE 193. Interdisciplinary Approaches to Human Health Research. 1 Unit.
For undergraduate students participating in the Stanford ChEM-H Undergraduate Scholars Program. This course will expose students to interdisciplinary research questions and approaches that span chemistry, engineering, biology, and medicine. Focus is on the development and practice of scientific reading, writing, and presentation skills intended to complement hands-on laboratory research. Students will read scientific articles, write research proposals, make posters, and give presentations.
Same as: BIO 193, CHEM 193, CHEMENG 193

BIOE 196. INTERACTIVE MEDIA AND GAMES. 1 Unit.
Interactive media and games increasingly pervade and shape our society. In addition to their dominant roles in entertainment, video games play growing roles in education, arts, and science. This seminar series brings together a diverse set of experts to provide interdisciplinary perspectives on these media regarding their history, technologies, scholarly research, industry, artistic value, and potential future.
Same as: BIOPHYS 196, CS 544

BIOE 199A. Inventing Synthetic Biosystems. 1-2 Unit.
Biology as a technology is burgeoning, leading to diverse cultural, economic, geopolitical, and natural outcomes. Students in this course will learn to step back from the overwhelming immediacy of biotechnology's application and to instead adopt a culture of play that enables qualitative expansion of ideas and possibilities. So enriched students will also learn to map ideas onto a future constrained by practical realities and market dynamics. Active in-class participation and a team-based final project are required.

BIOE 201C. Diagnostic Devices Lab. 2 Units.
This course exposes students to the engineering principles and clinical application of medical devices through lectures and hands-on labs, performed in teams of two. Teams take measurements with these devices and fit their data to theory presented in the lecture. Devices covered include X-ray, CT, MRI, EEG, ECG, Ultrasound and BMI (Brain-machine interface). Prerequisites: BIOE 103 or BIOE 300B.
Same as: BIOE 301C

BIOE 209. Mathematical Modeling of Biological Systems. 3 Units.
The course covers mathematical and computational techniques needed to solve advanced problems encountered in applied bioengineering. Fundamental concepts are presented in the context of their application to biological and physiological problems including cancer, cardiovascular disease, infectious disease, and systems biology. Topics include Taylor's Series expansions, parameter estimation, regression, nonlinear equations, linear systems, optimization, numerical differentiation and integration, stochastic methods, ordinary differential equations and Fourier series. Python, Matlab and other software will be used for weekly assignments and projects.nPrerequisites: Math 51, 52, 53; prior programming experience (Matlab or other language at level of CS 106a or higher).
Same as: CME 209

BIOE 210. Systems Biology. 3 Units.
Complex biological behaviors through the integration of computational modeling and molecular biology. Topics: reconstructing biological networks from high-throughput data and knowledge bases. Network properties. Computational modeling of network behaviors at the small and large scale. Using model predictions to guide an experimental program. Robustness, noise, and cellular variation. Prerequisites: CME 102; BIO 82, BIO 84; or consent of instructor.
Same as: BIOE 101

BIOE 211. Biophysics of Multi-cellular Systems and Amorphous Computing. 2-3 Units.
Provides an interdisciplinary perspective on the design, emergent behavior, and functionality of multi-cellular biological systems such as embryos, biofilms, and artificial tissues and their conceptual relationship to amorphous computers. Students discuss relevant literature and introduced to and apply pertinent mathematical and biophysical modeling approaches to various aspect multi-cellular systems, furthermore carry out real biology experiments over the web. Specific topics include: (Morphogen) gradients; reaction-diffusion systems (Turing patterns); visco-elastic aspects and forces in tissues; morphogenesis; coordinated gene expression, genetic oscillators and synchrony; genetic networks; self-organization, noise, robustness, and evolvability; game theory; emergent behavior; criticality; symmetries; scaling; fractals; agent based modeling. The course is geared towards a broadly interested graduate and advanced undergraduates audience such as from bio / applied physics, computer science, developmental and systems biology, and bio / tissue / mechanical / electrical engineering. Prerequisites: Previous knowledge in one programming language - ideally Matlab - is recommended; undergraduate students benefit from BIOE 42, or equivalent.
Same as: BIOE 311, BIOPHYS 311, DBIO 211

BIOE 212. Introduction to Biomedical Informatics Research Methodology. 3-5 Units.
Capstone Biomedical Informatics (BMI) experience. Hands-on software building. Student teams conceive, design, specify, implement, evaluate, and report on a software project in the domain of biomedicine. Creating written proposals, peer review, providing status reports, and preparing final reports. Issues related to research reproducibility. Guest lectures from professional biomedical informatics systems builders on issues related to the process of project management. Software engineering basics. Because the team projects start in the first week of class, attendance that week is strongly recommended. Prerequisites: BIOMEDIN 210 or 214 or 215 or 217 or 260. Preference to BMI graduate students. Consent of instructor required.
Same as: BIOMEDIN 212, CS 272, GENE 212

BIOE 213. Stochastic and Nonlinear Dynamics. 3 Units.
Theoretical analysis of dynamical processes: dynamical systems, stochastic processes, and spatiotemporal dynamics. Motivations and applications from biology and physics. Emphasis is on methods including qualitative approaches, asymptotics, and multiple scale analysis. Prerequisites: ordinary and partial differential equations, complex analysis, and probability or statistical physics.
Same as: APPPHYS 223, BIO 223, PHYSICS 223

BIOE 214. Representations and Algorithms for Computational Molecular Biology. 3-4 Units.
Topics: introduction to bioinformatics and computational biology, algorithms for alignment of biological sequences and structures, computing with strings, phylogenetic tree construction, hidden Markov models, basic structural computations on proteins, protein structure prediction, protein threading techniques, homology modeling, molecular dynamics and energy minimization, statistical analysis of 3D biological data, integration of data sources, knowledge representation and controlled terminologies for molecular biology, microarray analysis, machine learning (clustering and classification), and natural language text processing. Prerequisite: CS 106B; recommended: CS161; consent of instructor for 3 units.
Same as: BIOMEDIN 214, CS 274, GENE 214

BIOE 215. Physics-Based Simulation of Biological Structure. 3 Units.
Modeling, simulation, analysis, and measurement of biological systems. Computational tools for determining the behavior of biological structures-from molecules to organisms. Numerical solutions of algebraic and differential equations governing biological processes. Simulation laboratory examples in biology, engineering, and computer science. Limited enrollment. Prerequisites: basic biology, mechanics (F=ma), ODEs, and proficiency in C or C++ programming.

BIOE 217. Translational Bioinformatics. 3-4 Units.
Computational methods for the translation of biomedical data into diagnostic, prognostic, and therapeutic applications in medicine. Topics: multi-scale omics data generation and analysis, utility and limitations of public biomedical resources, machine learning and data mining, issues and opportunities in drug discovery, and mobile/digital health solutions. Case studies and course project. Prerequisites: programming ability at the level of CS 106A and familiarity with biology and statistics.
Same as: BIOMEDIN 217, CS 275, GENE 217

BIOE 219. Special Topics in Development and Cancer: Evolutionary and Quantitative Perspectives. 3 Units.
The course will serve as a literature-based introductory guide for synthesis of ideas in developmental biology and cancer, with an emphasis on evolutionary analysis and quantitative thinking. The goal for this course is for students to understand how we know what we know about fundamental questions in the field of developmental biology and cancer, and how we ask good questions for the future. We will discuss how studying model organisms has provided the critical breakthroughs that have helped us understand developmental and disease mechanisms in higher organisms. The students are expected to be able to read the primary literature and think critically about experiments to understand what is actually known and what questions still remain unanswered. Students will develop skills in the educated guesswork to apply order-of-magnitude methodology to questions in development and cancer.
Same as: DBIO 219

BIOE 220. Introduction to Imaging and Image-based Human Anatomy. 3 Units.
Focus on learning the fundamentals of each imaging modality including X-ray Imaging, Ultrasound, CT, and MRI, to learn normal human anatomy and how it appears on medical images, to learn the relative strengths of the modalities, and to answer, "What am I looking at?" Course website: http://bioe220.stanford.edu.
Same as: RAD 220

BIOE 221. Physics and Engineering of Radionuclide-based Medical Imaging. 3 Units.
Physics, instrumentation, and algorithms for radionuclide-based medical imaging, with a focus on positron emission tomography (PET) and single photon emission computed tomography (SPECT). Topics include basic physics of photon emission from the body and detection, sensors, readout and data acquisition electronics, system design, strategies for tomographic image reconstruction, system calibration and data correction algorithms, methods of image quantification, and image quality assessment, and current developments in the field. Prerequisites: A year of university-level mathematics and physics.
Same as: RAD 221

BIOE 221G. Gut Microbiota in Health and Disease. 3 Units.
Preference to graduate students. Focus is on the human gut microbiota. Students will receive instruction on computational approaches to analyze microbiome data and must complete a related project.
Same as: GENE 208, MI 221

BIOE 222. Physics and Engineering Principles of Multi-modality Molecular Imaging of Living Subjects. 3-4 Units.
Physics and Engineering Principles of Multi-modality Molecular Imaging of Living Subjects (RAD 222A). Focuses on instruments, algorithms and other technologies for non-invasive imaging of molecular processes in living subjects. Introduces research and clinical molecular imaging modalities, including PET, SPECT, MRI, Ultrasound, Optics, and Photoacoustics. For each modality, lectures cover the basics of the origin and properties of imaging signal generation, instrumentation physics and engineering of signal detection, signal processing, image reconstruction, image data quantification, applications of machine learning, and applications of molecular imaging in medicine and biology research.
Same as: RAD 222

BIOE 223. Physics and Engineering of X-Ray Computed Tomography. 3 Units.
CT scanning geometries, production of x-rays, interactions of x-rays with matter, 2D and 3D CT reconstruction, image presentation, image quality performance parameters, system components, image artirfacts, radiation dose. Prerequisites: differential and integral calculus. Knowledge of Fourier transforms (EE261) recommended.
Same as: RAD 223

BIOE 224. Probes and Applications for Multi-modality Molecular Imaging of Living Subjects. 4 Units.
We will focus on design, development, and application of imaging agents that target specific cellular and molecular aspects of disease. Covers the strengths and limitations of different imaging agents and how to optimize their design for image-guided intra-operative procedures, brain imaging, probing infection, or interrogating tumor metabolism. Emphasis this year will be on clinical molecular imaging, state-of-the-art strategies for early detection of dementia, imaging response to cancer immunotherapy, and how ¿Deep Learning¿ can be used for probe design and high-throughput automated image analysis.
Same as: RAD 224

BIOE 225. Intro to Ultrasound Physics and Ultrasound Neuromodulation. 3 Units.
This course covers the basic concepts of ultrasound physics including acoustic properties of biological tissues, transducer hardware, beam formation, and beam modeling. The course will then cover basic neuronal physiology and how ultrasound can be used to affect it. It will cover how we study ultrasound neuromodulation through animal models and human studies. The course will conclude with a series of lectures on the breadth of research on ultrasonic manipulation of behavior and psychiatric disorders.Course website: http://bioe225.stanford.edu.
Same as: RAD 225

BIOE 226. MRI Spin Physics, Relaxation Theory, and Contrast Mechanisms. 3 Units.
This course covers fundamental principles of magnetic resonance imaging (MRI) and spectroscopy (MRS) focusing on the analytic tools needed to understand interactions among nuclear spins, relaxation processes, and image contrast. Starting from a quantum mechanical description of NMR, we'll study J-coupling, the most mathematically tractable coupling mechanism, and its fundamental importance in MRS. Next, we will extend these concepts to develop NMR relaxation theory, which provides the foundation for analyzing multiple in vivo MRI contrast mechanisms and contrast agents.
Same as: RAD 226

BIOE 227. Functional MRI Methods. 3 Units.
Basics of functional magnetic resonance neuroimaging, including data acquisition, analysis, and experimental design. Journal club sections. Cognitive neuroscience and clinical applications. Prerequisites: basic physics, mathematics; neuroscience recommended.
Same as: BIOPHYS 227, RAD 227

BIOE 229. Advanced Research Topics in Multi-modality Molecular Imaging of Living Subjects. 3-4 Units.
Covers advanced topics and controversies in molecular imaging in the understanding of biology and disease. Lectures will include discussion on instrumentation, probes and bioassays. Topics will address unmet needs for visualization and quantification of molecular pathways in biology as well as for diagnosis and disease management. Areas of unmet clinical needs include those in oncology, neurology, cardiovascular medicine and musculoskeletal diseases. The aim is to identify important problems and controversies in a field and address them by providing background and relevance through review of the relevant primary literature, and then proposing and evaluating innovative imaging strategies that are designed to address the problem. The organization of lectures is similar to the thought process that is necessary for writing an NIH grant proposal in which aims are proposed and supported by background and relevance. The innovation of proposed approaches will be highlighted. An aim of the course is to inform students on how to creatively think about a problem and propose a solution focusing on the key elements of writing a successful grant proposal. Prerequisites: none.

BIOE 231. Protein Engineering. 3 Units.
The design and engineering of biomolecules emphasizing proteins, antibodies, and enzymes. Combinatorial and rational methodologies, protein structure and function, and biophysical analyses of modified biomolecules. Clinically relevant examples from the literature and biotech industry. Prerequisite: basic biochemistry. Winter, Cochran.
Same as: BIOE 331

BIOE 236. Biophysical Mechanisms of Innate Immunity. 3 Units.
Course Description: The innate immune system provides our first line of defense against infections of all kinds as well as cancer; and dysregulation of innate immunity underlies autoimmune conditions. Innate immune effectors, e.g. host defense peptides are deployed by many cell types (neutrophils, macrophages, NK cells, epithelial cells, keratinocytes, others) and attack by biophysical mechanisms. Using primary literature, we will discuss the breadth, evolution, structures, mechanisms, and functions of key cellular and molecular innate immune effectors. Appropriate for grad students and advanced undergrads with knowledge of biochemistry, molecular/cellular biology, biophysics, and/or bioengineering. Objectives: This course teaches key biophysical aspects and mechanisms of the human innate immune system and its cellular and molecular effectors. We discuss the current understanding and hypotheses for how misregulation of innate immunity contribute to inflammatory and autoimmune conditions. Students gain individualized, mentored experience in creative planning and writing of a technical paper on an intriguing topic in medicine using primary literature as a resource, and practice giving lectures about the results of their research to their peers.

BIOE 238. Principles and Tools for Metrology in Biology. 2 Units.
A practical introduction to the science of measurement. Emphasis is on the tools used to parse a biological measurement problem. Students will learn to identify and quantitatively address the critical sources of variability and bias using the core concepts of uncertainty, traceability, and validation. Case studies will illustrate use of metrology in current and emergent bioscience and engineering applications.

BIOE 240. The Biology Revolution. 1 Unit.
Over the last century, engineering advances have brought us incredible marvels of transportation, manufacturing, construction, healthcare, and agriculture; essentially, the modern world as we know it. However, it has been driven in unsustainable means, leading to incredible levels of pollution, global warming, world hunger, and skyrocketing healthcare costs. But we are at a new juncture in our understanding of biology and the technological tools now available to us. Just as chemists used engineering principles to create chemical engineering, a natural means to accelerate re-gaining an alignment with nature would be to engineer biology. In short, this kind of bioengineering research can lead to processes and products where biology itself has been designed through engineering principles: bacteria engineered to produce chemicals; engineered organs to replace faulty ones; novel diagnostic modalities; the ability to engineer cells as if they were machines. What are the impacts if incorporating these new technologies and technological modalities? What is the ultimate impact to our society and planet if we truly begin to engineer biology? And what is the cost of *not* doing so? This course will examine what engineering biology actually means; consider case studies of what kind of products, companies and innovations are already resulting from this new discipline and approach, from street lights made of luciferous trees to creating `clean¿ meat in the lab to engineering the immune system to fight cancer; and discuss what kind of systemic shifts will be required to make this happen in terms of politics, economics, and science.

BIOE 241. Biological Macromolecules. 3-5 Units.
The physical and chemical basis of macromolecular function. Topics include: forces that stabilize macromolecular structure and their complexes; thermodynamics and statistical mechanics of macromolecular folding, binding, and allostery; diffusional processes; kinetics of enzymatic processes; the relationship of these principles to practical application in experimental design and interpretation. The class emphasizes interactive learning, and is divided among lectures, in-class group problem solving, and discussion of current and classical literature. Enrollment limited to 30. Prerequisites: Background in biochemistry and physical chemistry recommended but material available for those with deficiency in these areas; undergraduates with consent of instructor only.
Same as: BIOC 241, BIOPHYS 241, SBIO 241

BIOE 242. LAW, TECHNOLOGY, AND LIBERTY. 2 Units.
New technologies from gene editing to networked computing have already transformed our economic and social structures and are increasingly changing what it means to be human. What role has law played in regulating and shaping these technologies? And what role can and should it play in the future? This seminar will consider these and related questions, focusing on new forms of networked production, the new landscape of security and scarcity, and the meaning of human nature and ecology in an era of rapid technological change. Readings will be drawn from a range of disciplines, including science and engineering, political economy, and law. The course will feature several guest speakers. There are no formal prerequisites in either engineering or law, but students should be committed to pursuing novel questions in an interdisciplinary context. The enrollment goal is to balance the class composition between law and non-law students. Elements used in grading: Attendance, Class Participation, Written Assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. This course is cross-listed with the School of Engineering (TBA). May be repeat for credit.
Same as: ENGR 243

BIOE 244. Advanced Frameworks and Approaches for Engineering Integrated Genetic Systems. 4 Units.
Concepts and techniques for the design and implementation of engineered genetic systems. Topics covered include the quantitative exploration of tools that support (a) molecular component engineering, (b) abstraction and composition of functional genetic devices, (c) use of control and dynamical systems theory in device and systems design, (d) treatment of molecular "noise", (e) integration of DNA-encoded programs within cellular chassis, (f) designing for evolution, and (g) the use of standards in measurement, genetic layout architecture, and data exchange. Prerequisites: CME104, CME106, CHEM 33, BIO41, BIO42, BIOE41, BIOE42, and BIOE44 (or equivalents), or permission of the instructors.

BIOE 248. Neuroengineering Laboratory. 3 Units.
Laboratory course exploring the basics of neuroelectrophysiology, neuroengineering, and closed-loop neural decoding. Course will use low-cost electrophysiological amplifying equipment and a real-time recording and computational system to measure neural action potentials from invertebrates, record electromyography from people, and create real-time neural decoders for closed-loop human movement control experiments. xFundamental properties of neurons and systems neuroscience will be experimentally verified. Engineering concepts surrounding neural decoders will be explored. Final project in the course will be a student-conceived in-depth experiment. Course information at: http://bioe248.stanford.edu.
Same as: NSUR 248

BIOE 256. Technology Assessment and Regulation of Medical Devices. 3 Units.
Regulatory approval and reimbursement for new health technologies are critical success factors for product commercialization. This course explores the regulatory and payer environment in the U.S. and abroad, as well as common methods of health technology assessment. Students will learn frameworks to identify factors relevant to the adoption of new health technologies, and the management of those factors in the design and development phases of bringing a product to market through case studies, guest speakers from government (FDA) and industry, and a course project.
Same as: MS&E 256

BIOE 260. Tissue Engineering. 4 Units.
Principles of tissue engineering and design strategies for practical applications for tissue repair. Topics include tissue morphogenesis, stem cells, biomaterials, controlled drug and gene delivery, and paper discussions. Students will learn skills for lab research through interactive lectures, paper discussions and research proposal development. Students work in small teams to work on develop research proposal for authentic tissue engineering problems. Lab sessions will teach techniques for culturing cells in 3D, as well as fabricating and characterizing hydrogels as 3D cell niche.
Same as: ORTHO 260

BIOE 271. Frugal Science. 4 Units.
As a society, we find ourselves surrounded by planetary-scale challenges ranging from lack of equitable access to health care to environmental degradation to dramatic loss of biodiversity. One common theme that runs across these challenges is the need to invent cost-effective solutions with the potential to scale. The current COVID-19 pandemic provides yet another example of such a need. In this course, participants will learn principles of frugal science to design scalable solutions with a cost versus performance rubric and explore creative means to break the accessibility barrier. Using historic and current examples, we will emphasize the importance of first-principles science to tackle design challenges with everyday building blocks. Enrollment is by application only; we will be accepting a mixed cohort of Stanford undergrad and graduate students from all schools/majors, who will team up with collaborators from across the globe to build concrete solutions to planetary-scale challenges. Come learn how to solve serious challenges with a little bit of play. Apply at www.frugalscience.org/class.

BIOE 273. Biodesign for Digital Health. 3 Units.
Health care is facing significant cross-industry challenges and opportunities created by a number of factors including: the increasing need for improved access to affordable, high-quality care; growing demand from consumers for greater control of their health and health data; the shift in focus from sick care to prevention and health optimization; aging demographics and the increased burden of chronic conditions; and new emphasis on real-world, measurable health outcomes for individuals and populations. Moreover, the delivery of health information and services is no longer tied to traditional brick and mortar hospitals and clinics: it has increasingly become "mobile," enabled by apps, sensors, wearables; simultaneously, it has been augmented and often revolutionized by emerging digital and information technologies, as well as by the data that these technologies generate. This multifactorial transformation presents opportunities for innovation across the entire cycle of care, from wellness, to acute and chronic diseases, to care at the end of life. But how does one approach innovation in digital health to address these health care challenges while ensuring the greatest chance of success? At Stanford Biodesign, we believe that innovation is a process that can be learned, practiced, and perfected; and, it starts with a need. In Biodesign for Digital Health, students will learn about digital health and the Biodesign needs-driven innovation process from over 50 industry experts. Over the course of ten weeks, these speakers join the teaching team in a dynamic classroom environment that includes lectures, panel discussions, and breakout sessions. These experts represent startups, corporations, venture capital firms, accelerators, research labs, health organizations, and more. Student teams will take actual digital and mobile health challenges and learn how to apply Biodesign innovation principles to research and evaluate needs, ideate solutions, and objectively assess them against key criteria for satisfying the needs. Teams take a hands-on approach with the support of need coaches and mentors. On the final day of class, teams present to a panel of digital health experts and compete for project extension funding. Friday section will be used for team projects and for scheduled workshops. Limited enrollment for this course. Students need to submit their application online via: https://stanforduniversity.qualtrics.com/jfe/form/SV_28ZWIF8RJsyMvCR.
Same as: MED 273

BIOE 279. Computational Biology: Structure and Organization of Biomolecules and Cells. 3 Units.
Computational techniques for investigating and designing the three-dimensional structure and dynamics of biomolecules and cells. These computational methods play an increasingly important role in drug discovery, medicine, bioengineering, and molecular biology. Course topics include protein structure prediction, protein design, drug screening, molecular simulation, cellular-level simulation, image analysis for microscopy, and methods for solving structures from crystallography and electron microscopy data. Prerequisites: elementary programming background (CS 106A or equivalent) and an introductory course in biology or biochemistry.
Same as: BIOMEDIN 279, BIOPHYS 279, CME 279, CS 279

BIOE 281. Biomechanics of Movement. 3 Units.
Experimental techniques to study human and animal movement including motion capture systems, EMG, force plates, medical imaging, and animation. The mechanical properties of muscle and tendon, and quantitative analysis of musculoskeletal geometry. Projects and demonstrations emphasize applications of mechanics in sports, orthopedics, and rehabilitation.
Same as: ME 281

BIOE 282. Performance, Development, and Adaptation of Skeletal Muscle. 3 Units.
Fundamentals of skeletal muscle by study of classical and recent research articles. Emphasis on the interactions between mechanics, biology, and electrophysiology in skeletal muscle performance, development, adaptation, control, and disease. Lab activities explore research methods discussed in class. Limited Enrollment. Applications due Friday, September 16th by 5pm. Applications available at http://bioe282.stanford.edu/. Prerequisites: engineering or biology core coursework. Fall (Cromie, Liske, Steele, Delp).

BIOE 283. Mechanotransduction in Cells and Tissues. 3 Units.
Mechanical cues play a critical role in development, normal functioning of cells and tissues, and various diseases. This course will cover what is known about cellular mechanotransduction, or the processes by which living cells sense and respond to physical cues such as physiological forces or mechanical properties of the tissue microenvironment. Experimental techniques and current areas of active investigation will be highlighted. This class is for graduate students only.
Same as: BIOPHYS 244, ME 244

BIOE 285. Computational Modeling in the Cardiovascular System. 3 Units.
This course introduces computational modeling methods for cardiovascular blood flow and physiology. Topics in this course include analytical and computational methods for solutions of flow in deformable vessels, one-dimensional equations of blood flow, cardiovascular anatomy, lumped parameter models, vascular trees, scaling laws, biomechanics of the circulatory system, and 3D patient specific modeling with finite elements; course will provide an overview of the diagnosis and treatment of adult and congenital cardiovascular diseases and review recent research in the literature in a journal club format. Students will use SimVascular software to do clinically-oriented projects in patient specific blood flow simulations. Pre-requisites: CME102, ME133 and CME192.
Same as: CME 285, ME 285

BIOE 291. Principles and Practice of Optogenetics for Optical Control of Biological Tissues. 3 Units.
Principles and practice of optical control of biological processes (optogenetics), emphasizing bioengineering approaches. Theoretical, historical, and current practice of the field. Requisite molecular-genetic, optoelectronic, behavioral, clinical, and ethical concepts, and mentored analysis and presentation of relevant papers. Final projects of research proposals and a laboratory component in BioX to provide hands-on training. Contact instructor before registering.

BIOE 299B. Practical Training. 1 Unit.
Educational opportunities in high technology research and development labs in industry. Students engage in internship work and integrate that work into their academic program. Following internship work, students complete a research report outlining work activity, problems investigated, key results, and follow-up projects they expect to perform. Meets the requirements for curricular practical training for students on F-1 visas. Student is responsible for arranging own internship/employment and faculty sponsorship. Register under faculty sponsor's section number. All paperwork must be completed by student and faculty sponsor, as the student services office does not sponsor CPT. Students are allowed only two quarters of CPT per degree program. Course may be repeated twice.

BIOE 300A. Molecular and Cellular Bioengineering. 3 Units.
The molecular and cellular bases of life from an engineering perspective. Analysis and engineering of biomolecular structure and dynamics, enzyme function, molecular interactions, metabolic pathways, signal transduction, and cellular mechanics. Quantitative primary literature. Prerequisites: CHEM 171 and BIO 41 or equivalents; MATLAB or an equivalent programming language.

BIOE 300B. Quantitative Physiology. 3 Units.
An engineering approach to understanding physiological phenomenon. Course introduces weekly topics in biology and human physiology paired with a mathematical approach to modeling and understanding that week's topic. No strict prerequisites. No prior background in biology is required or assumed. Familiarity with linear algebra, statistics, and programming is recommended. Course information at: http://bioe300b.stanford.edu.

BIOE 300C. Medical Devices, Diagnostics, and Pharmaceuticals: Technologies, Regulation, and Applications. 3 Units.
Preference to Bioengineering graduate students. Major classes of technologies including imaging techniques, chemical diagnostics, drug design and delivery. Topics include pacemakers, fMRI, PCR, stents, and biomaterials. Principles, practical limitations, and feature trade-offs in clinical settings.

BIOE 301A. Molecular and Cellular Engineering Lab. 2 Units.
Preference to Bioengineering graduate students. Practical applications of biotechnology and molecular bioengineering including recombinant DNA techniques, molecular cloning, microbial cell growth and manipulation, and library screening. Emphasis is on experimental design and data analysis. Limited enrollment. Fall.

BIOE 301B. Clinical Needs and Technology. 2 Units.
The goal of this course is to introduce bioengineering students to medical technology as it is used in current clinical practice, in the modern tertiary care, subspecialty hospital. Half of the course will be devoted to labs, in which small groups of students participate in hands-on experiences using advanced clinical technology in areas such as medical imaging, robotic surgery, and minimally invasive diagnosis and treatment. The second half of the course brings pairs of students and clinical faculty mentors together for a more in-depth, focused exposure to clinical care in one specific area. Final grades will be based on attendance, and presentations made by each pair of student to the class about their mentoring experience.

BIOE 301C. Diagnostic Devices Lab. 2 Units.
This course exposes students to the engineering principles and clinical application of medical devices through lectures and hands-on labs, performed in teams of two. Teams take measurements with these devices and fit their data to theory presented in the lecture. Devices covered include X-ray, CT, MRI, EEG, ECG, Ultrasound and BMI (Brain-machine interface). Prerequisites: BIOE 103 or BIOE 300B.
Same as: BIOE 201C

BIOE 301D. Microfluidic Device Laboratory. 3-4 Units.
This course exposes students to the design, fabrication, and testing of microfluidic devices for biological applications through combination of lectures and hands-on lab sessions. In teams of two, students will produce a working prototype devices designed to address specific design challenges within the biological community using photolithography, soft lithography, and imaging techniques.
Same as: GENE 207

BIOE 301E. Computational protein modeling laboratory. 2 Units.
This course covers hands-on computational methods related to protein structural modeling. Through solving a series of curated problems, students build their own software tools and develop protocols to model and analyze structures. Topics: protein visualization, Rosetta software suite, structural prediction, homology modeling and protein design.

BIOE 301P. Research Data & Computation. 2 Units.
Computational lab course that spans research data processing workflow starting just after the point of acquisition through to computation and visualization. Topics will span Stanford specific best practices for data storage, code management, file formats, data curation, toolchain creation, interactive and batch computing, dynamic visualization, and distributed computing. Students will work with a dataset of their choosing when working through topics.

BIOE 311. Biophysics of Multi-cellular Systems and Amorphous Computing. 2-3 Units.
Provides an interdisciplinary perspective on the design, emergent behavior, and functionality of multi-cellular biological systems such as embryos, biofilms, and artificial tissues and their conceptual relationship to amorphous computers. Students discuss relevant literature and introduced to and apply pertinent mathematical and biophysical modeling approaches to various aspect multi-cellular systems, furthermore carry out real biology experiments over the web. Specific topics include: (Morphogen) gradients; reaction-diffusion systems (Turing patterns); visco-elastic aspects and forces in tissues; morphogenesis; coordinated gene expression, genetic oscillators and synchrony; genetic networks; self-organization, noise, robustness, and evolvability; game theory; emergent behavior; criticality; symmetries; scaling; fractals; agent based modeling. The course is geared towards a broadly interested graduate and advanced undergraduates audience such as from bio / applied physics, computer science, developmental and systems biology, and bio / tissue / mechanical / electrical engineering. Prerequisites: Previous knowledge in one programming language - ideally Matlab - is recommended; undergraduate students benefit from BIOE 42, or equivalent.
Same as: BIOE 211, BIOPHYS 311, DBIO 211

BIOE 313. Neuromorphics: Brains in Silicon. 3 Units.
(Formerly EE 304) Neuromorphic systems run perceptual, cognitive and motor tasks in real-time on a network of highly interconnected nonlinear units. To maximize density and minimize energy, these units--like the brain's neurons--are heterogeneous and stochastic. The first half of the course covers learning algorithms that automatically synthesize network configurations to perform a desired computation on a given heterogeneous neural substrate. The second half of the course surveys system-on-a-chip architectures that efficiently realize highly interconnected networks and mixed analog-digital circuit designs that implement area and energy-efficient nonlinear units. Prerequisites: EE102A is required.
Same as: EE 207

BIOE 331. Protein Engineering. 3 Units.
The design and engineering of biomolecules emphasizing proteins, antibodies, and enzymes. Combinatorial and rational methodologies, protein structure and function, and biophysical analyses of modified biomolecules. Clinically relevant examples from the literature and biotech industry. Prerequisite: basic biochemistry. Winter, Cochran.
Same as: BIOE 231

BIOE 333. Interfacial Phenomena and Bionanotechnology. 3 Units.
Control over and understanding of interfacial phenomena and colloidal science are the essential foundation of bionanotechnology. Key mathematical relationships derived by Laplace, Gibbs, Kelvin and Young are derived and explained, along with the thermodynamics of systems of large interfacial area. Forces controlling surface and interfacial phenomena and surfactant and biomacromolecule self-assembly are discussed. Protein folding/unfolding and aggregation, and nano- and microfluidics are elucidated in these terms. Students will gain insight into the interplay between physical and chemical properties of biomolecules. Spring, (Barron, A.).

BIOE 334. Engineering Principles in Molecular Biology. 3 Units.
The achievements and difficulties that exemplify the interface of theory and quantitative experiment. Topics include: bistability, cooperativity, robust adaptation, kinetic proofreading, analysis of fluctuations, sequence analysis, clustering, phylogenetics, maximum likelihood methods, and information theory. Sources include classic papers.

BIOE 335. Molecular Motors I. 3 Units.
Physical mechanisms of mechanochemical coupling in biological molecular motors, using F1 ATPase as the major model system. Applications of biochemistry, structure determination, single molecule tracking and manipulation, protein engineering, and computational techniques to the study of molecular motors.

BIOE 337. Organismic Biophysics and Living Soft-matter. 3 Units.
Integrated physical biology; from molecules to organisms. Tree of life, diversity of life forms. Multi-scale/hierarchical systems in biophysics, Hierarchical self-organization. Basic theory of squishy materials, colloidal physics. Phase transitions in living soft-matter. Experimental techniques in soft-matter physics. Active fluid models for living matter. Design of self-assembling and self-organizing, biomimetic supramolecular systems.

BIOE 342A. Mechanobiology and Biofabrication Methods. 3 Units.
Cell mechanobiology topics including cell structure, mechanical models, and chemo-mechanical signaling. Review and apply methods for controlling and analyzing the biomechanics of cells using traction force microscopy, AFM, micropatterning and cell stimulation. Practice and theory for the design and application of methods for quantitative cell mechanobiology.
Same as: BIOPHYS 342A, ME 342A

BIOE 355. Advanced Biochemical Engineering. 3 Units.
Combines biological knowledge and methods with quantitative engineering principles. Quantitative review of biochemistry and metabolism; recombinant DNA technology and synthetic biology (metabolic engineering). The production of protein pharaceuticals as a paradigm for the application of chemical engineering principles to advanced process development within the framework of current business and regulatory requirements. Prerequisite: CHEMENG 181 (formerly 188) or BIOSCI 41, or equivalent.
Same as: CHEMENG 355

BIOE 361. Biomaterials in Regenerative Medicine. 3 Units.
Materials design and engineering for regenerative medicine. How materials interact with cells through their micro- and nanostructure, mechanical properties, degradation characteristics, surface chemistry, and biochemistry. Examples include novel materials for drug and gene delivery, materials for stem cell proliferation and differentiation, and tissue engineering scaffolds. Prerequisites: undergraduate chemistry, and cell/molecular biology or biochemistry.
Same as: MATSCI 381

BIOE 370. Microfluidic Device Laboratory. 2 Units.
Fabrication of microfluidic devices for biological applications. Photolithography, soft lithography, and micromechanical valves and pumps. Emphasis is on device design, fabrication, and testing.

BIOE 371. Global Biodesign: Medical Technology in an International Context. 1 Unit.
This course (BIOE371, MED271) exposes students to the challenges and opportunities of developing and implementing innovative health technologies to help patients around the world. Non-communicable diseases, such as metabolic and chronic respiratory disease, now account for 7 in 10 deaths worldwide, creating the need for innovative health technologies that work across diverse global markets. At the beginning of the quarter, the course will provide an overview of the dynamic global health technology industry. Next, faculty members, guest experts, and students will discuss key differences and similarities when commercializing new products in the for-profit health technology sector across six important regions: the US and Europe, China and Japan, and India and Brazil. Finally, the course will explore critical ¿global health¿ issues that transcend international borders and how technology can be leveraged to address them. This section will culminate with an interactive debate focused on whether for-profit, nonprofit, or hybrid models are best for implementing sustainable global health solutions. The last class will be devoted to synthesis, reflection, and a discussion of career opportunities in the global health technology field.
Same as: MED 271

BIOE 374A. Biodesign Innovation: Needs Finding and Concept Creation. 4 Units.
In this two-quarter course series (BIOE 374A/B, MED 272A/B, ME 368A/B, OIT 384/5), multidisciplinary student teams identify real-world unmet healthcare needs, invent new health technologies to address them, and plan for their implementation into patient care. During the first quarter (winter), students select and characterize an important unmet healthcare problem, validate it through primary interviews and secondary research, and then brainstorm and screen initial technology-based solutions. In the second quarter (spring), teams select a lead solution and move it toward the market through prototyping, technical re-risking, strategies to address healthcare-specific requirements (regulation, reimbursement), and business planning. Final presentations in winter and spring are made to a panel of prominent health technology experts and/or investors. Class sessions include faculty-led instruction and case studies, coaching sessions by industry specialists, expert guest lecturers, and interactive team meetings. Enrollment is by application only, and students are required to participate in both quarters of the course. Visit http://biodesign.stanford.edu/programs/stanford-courses/biodesign-innovation.html to access the application, examples of past projects, and student testimonials. More information about Stanford Biodesign, which has led to the creation of 50 venture-backed healthcare companies and has helped hundreds of student launch health technology careers, can be found at http://biodesign.stanford.edu/.
Same as: ME 368A, MED 272A

BIOE 374B. Biodesign Innovation: Concept Development and Implementation. 4 Units.
In this two-quarter course series (BIOE 374A/B, MED 272A/B, ME 368A/B, OIT 384/5), multidisciplinary student teams identify real-world unmet healthcare needs, invent new health technologies to address them, and plan for their implementation into patient care. During the first quarter (winter), students select and characterize an important unmet healthcare problem, validate it through primary interviews and secondary research, and then brainstorm and screen initial technology-based solutions. In the second quarter (spring), teams select a lead solution and move it toward the market through prototyping, technical re-risking, strategies to address healthcare-specific requirements (regulation, reimbursement), and business planning. Final presentations in winter and spring are made to a panel of prominent health technology experts and/or investors. Class sessions include faculty-led instruction and case studies, coaching sessions by industry specialists, expert guest lecturers, and interactive team meetings. Enrollment is by application only, and students are required to participate in both quarters of the course. Visit http://biodesign.stanford.edu/programs/stanford-courses/biodesign-innovation.html to access the application, examples of past projects, and student testimonials. More information about Stanford Biodesign, which has led to the creation of 50 venture-backed healthcare companies and has helped hundreds of student launch health technology careers, can be found at http://biodesign.stanford.edu/.
Same as: ME 368B, MED 272B

BIOE 375A. Biodesign Innovation: Needs Finding and Concept Creation. 2 Units.
Enrollment limited to SCPD students. Two quarter sequence. Inventing new medical devices and instrumentation, including: methods of validating medical needs; techniques for analyzing intellectual property; basics of regulatory (FDA) and reimbursement planning; brainstorming and early prototyping. Guest lecturers and practical demonstrations.

BIOE 375B. Biodesign Innovation: Concept Development and Implementation. 2 Units.
Enrollment limited to SCPD students. Two quarter sequence. How to take a medical device invention forward from early concept to technology translation and development. Topics include prototyping; patent strategies; advanced planning for reimbursement and FDA approval; choosing translation route (licensing versus start-up); ethical issues including conflict of interest; fundraising approaches and cash requirements; essentials of writing a business or research plan; strategies for assembling a development team. Prerequisite: BIOE 375A.

BIOE 376. Startup Garage: Design. 4 Units.
A hands-on, project-based course, in which teams identify and work with users, domain experts, and industry participants to identify an unmet customer need, design new products or services that meet that need, and develop business models to support the creation and launch of startup products or services. This course integrates methods from human-centered design, lean startup, and business model planning. Each team will conceive, design, build, and field-test critical aspects of both the product or service and the business model.

BIOE 377. Startup Garage: Testing and Launch. 4 Units.
STRAMGT 356/BIOE 376 teams that concluded at the end of fall quarter that their preliminary product or service and business model suggest a path to viability, may continue with STRAMGT 366/BIOE 377 in winter quarter. Teams develop more elaborate versions of their product/service and business model, perform a series of experiments to test key hypotheses about their product and business model, and prepare and present an investor pitch for a seed round of financing to a panel of seasoned investors and entrepreneurs.

BIOE 381. Orthopaedic Bioengineering. 3 Units.
Engineering approaches applied to the musculoskeletal system in the context of surgical and medical care. Fundamental anatomy and physiology. Material and structural characteristics of hard and soft connective tissues and organ systems, and the role of mechanics in normal development and pathogenesis. Engineering methods used in the evaluation and planning of orthopaedic procedures, surgery, and devices. Open to graduate students and undergraduate seniors.
Same as: ME 381

BIOE 385. Biomaterials for Drug Delivery. 3 Units.
Fundamental concepts in engineering materials for drug delivery. The human body is a highly interconnected network of different tissues and there are all sorts of barriers to getting pharmaceutical drugs to the right place at the right time. Topics include drug delivery mechanisms (passive, targeted), therapeutic modalities and mechanisms of action, engineering principles of controlled release and quantitative understanding of drug transport, chemical and physical characteristics of delivery molecules and assemblies, significance of biodistribution and pharmacokinetic models, toxicity of biomaterials and drugs, and immune responses.
Same as: MATSCI 385

BIOE 390. Introduction to Bioengineering Research. 1-2 Unit.
Preference to medical and bioengineering graduate students with first preference given to Bioengineering Scholarly Concentration medical students. Bioengineering is an interdisciplinary field that leverages the disciplines of biology, medicine, and engineering to understand living systems, and engineer biological systems and improve engineering designs and human and environmental health. Students and faculty make presentations during the course. Students expected to make presentations, complete a short paper, read selected articles, and take quizzes on the material.
Same as: MED 289

BIOE 391. Directed Study. 1-6 Unit.
May be used to prepare for research during a later quarter in 392. Faculty sponsor required. May be repeated for credit.

BIOE 392. Directed Investigation. 1-10 Unit.
For Bioengineering graduate students. Previous work in 391 may be required for background; faculty sponsor required. May be repeated for credit.

BIOE 393. Bioengineering Departmental Research Colloquium. 1 Unit.
Required Bioengineering department colloquium for first year Ph.D. and M.S. students. Topics include applications of engineering to biology, medicine, biotechnology, and medical technology, including biodesign and devices, molecular and cellular engineering, regenerative medicine and tissue engineering, biomedical imaging, and biomedical computation.

BIOE 395. Problem choice and decision trees in science and engineering. 2 Units.
Science and engineering researchers often spend days choosing a problem and years solving it. However, the problem initially chosen and subsequent course adjustments made along the project's decision tree, have an outsize influence on its likelihood of success and ultimate impact. This course will establish a framework for choosing problems and navigating a project's decision tree, emphasizing the role of intuition-building exercises and a stepwise analysis of assumptions. No prior knowledge is required.

BIOE 450. Advances in Biotechnology. 3 Units.
Overview of cutting edge advances in biotechnology with a focus on therapeutic and health-related topics. Academic and industrial speakers from a range of areas including protein engineering, immuno-oncology, DNA sequencing, the microbiome, phamacogenomics, industrial enzymes, synthetic biology, and more. Course is designed for students interested in pursuing a career in the biotech industry.
Same as: CHEMENG 450

BIOE 454. Synthetic Biology and Metabolic Engineering. 3 Units.
Principles for the design and optimization of new biological systems. Development of new enzymes, metabolic pathways, other metabolic systems, and communication systems among organisms. Example applications include the production of central metabolites, amino acids, pharmaceutical proteins, and isoprenoids. Economic challenges and quantitative assessment of metabolic performance. Pre- or corequisite: CHEMENG 355 or equivalent.
Same as: CHEMENG 454

BIOE 459. Frontiers in Interdisciplinary Biosciences. 1 Unit.
Students register through their affiliated department; otherwise register for CHEMENG 459. For specialists and non-specialists. Sponsored by the Stanford BioX Program. Three seminars per quarter address scientific and technical themes related to interdisciplinary approaches in bioengineering, medicine, and the chemical, physical, and biological sciences. Leading investigators from Stanford and the world present breakthroughs and endeavors that cut across core disciplines. Pre-seminars introduce basic concepts and background for non-experts. Registered students attend all pre-seminars; others welcome. See http://biox.stanford.edu/courses/459.html. Recommended: basic mathematics, biology, chemistry, and physics.
Same as: BIO 459, BIOC 459, CHEM 459, CHEMENG 459, PSYCH 459

BIOE 485. Modeling and Simulation of Human Movement. 3 Units.
Direct experience with the computational tools used to create simulations of human movement. Lecture/labs on animation of movement; kinematic models of joints; forward dynamic simulation; computational models of muscles, tendons, and ligaments; creation of models from medical images; control of dynamic simulations; collision detection and contact models. Prerequisite: 281, 331A,B, or equivalent.
Same as: ME 485

BIOE 500. Thesis. 1-15 Unit.
(Staff).
Same as: Ph.D.

BIOE 802. TGR Dissertation. 0 Units.
(Staff).

CHEMICAL ENGINEERING

Courses offered by the Department of Chemical Engineering are listed under the subject code CHEMENG on the (https://explorecourses.stanford.edu/search/?q=CHEMENG&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-departmentcode-CHEMENG=on&filter-catalognumber-CHEMENG=on&filter-coursestatus-Active=on&filter-catalognumber-CHEMENG=on)*Stanford Bulletin's* ExploreCourses web site.

Research investigations are currently being carried out in the following fields: applied statistical mechanics, biocatalysis, bioengineering, biophysics, colloid science, computational materials science, electronic materials, hydrodynamic stability, kinetics and catalysis, Newtonian and non-Newtonian fluid mechanics, polymer science, renewable energy, rheo-optics of polymeric systems, and surface and interface science. Additional information may be found at http://cheme.stanford.edu.

The Department of Chemical Engineering offers opportunities for both undergraduates and graduate students to pursue course work and research in energy sciences and technology, which include the chemical, physical, mathematical, and engineering sciences.

In addition, both undergraduates and graduate students can pursue work in interdisciplinary biosciences, which include the chemical, biological, physical, mathematical, and engineering sciences. Students are encouraged to review course offerings in all departments of the School of Engineering and to seek academic advising with individual chemical engineering faculty. Students wishing assistance should talk with student services staff in the department.

Further information about the department also may be found on the department's website (http://cheme.stanford.edu). Undergraduates considering majoring in Chemical Engineering are encouraged to talk with faculty and to meet with student services' staff in Shriram room 129. Students interested in pursuing advanced work in chemical engineering, including coterminal degrees, should contact the student services manager. Admission to an advanced degree program for an active Stanford graduate student is by approval of a Graduate Authorization Petition. All other interested applicants should go to the Graduate Admissions (https://gradadmissions.stanford.edu/) website for general and departmental information about the requirements and processes for applying for admission to a graduate degree program.

Mission of the Undergraduate Program in Chemical Engineering

Chemical engineers are responsible for the conception and design of processes for the purpose of production, transformation, and transportation of materials. This activity begins with experimentation in the laboratory and is followed by implementation of the technology in full-scale production. The mission of the undergraduate program in Chemical Engineering is to develop students' understanding of the core scientific, mathematical, and engineering principles that serve as the foundation underlying these technological processes. The program's core mission is reflected in its curriculum which is built on a foundation in the sciences of chemistry, physics, and biology. Course work includes the study of applied mathematics, material and energy balances, thermodynamics, fluid mechanics, energy and mass transfer, separations technologies, chemical reaction kinetics and reactor design, and process design. The program provides students with excellent preparation for careers in the corporate sector and government or for advanced study.

Learning Outcomes (Undergraduate)

Learning outcomes are used in evaluating students and the undergraduate program. The department expects undergraduate majors in the program to be able to demonstrate the following:

1. an ability to apply knowledge of mathematics, science, and engineering.
2. an ability to design and conduct experiments, as well as to analyze and interpret data.
3. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. an ability to function on multidisciplinary teams.
5. an ability to identify, formulate, and solve engineering problems.
6. an understanding of professional and ethical responsibility.
7. an ability to communicate effectively.
8. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. a recognition of the need for, and an ability to engage in life-long learning.
10. a knowledge of contemporary issues.
11. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Learning Outcomes (Graduate)

The purpose of the master's program is to provide students with the knowledge and skills necessary for a professional career or doctoral studies. This is done through advanced lecture course work in the fundamentals of the field, including microhydrodynamics, molecular thermodynamics, kinetics, spectroscopy, applied mathematics, and biochemical engineering, in addition to the student's area of specialization. All students must master the fundamental chemical, physical, and biological concepts that govern molecular behavior.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research. Through course work and guided research, the program prepares students to make original contributions in Chemical Engineering and related fields.

Graduate Programs in Chemical Engineering

The University's requirements, including residency requirements, for the M.S., Engineer, and Ph.D. degrees are summarized in the "Graduate Degrees (p. 65)" section of this bulletin.

Current research and teaching activities cover a number of advanced topics in chemical engineering, including applied statistical mechanics, biocatalysis, biochemical engineering, bioengineering, biophysics, computational materials science, colloid science, dynamics of complex fluids, energy conversion, functional genomics, hydrodynamic stability, kinetics and catalysis, microrheology, molecular assemblies, nanoscience and technology, Newtonian and non-Newtonian fluid mechanics, polymer physics, protein biotechnology, renewable fuels, semiconductor processing, soft materials science, solar utilization, surface and interface science, and transport mechanics.

Fellowships and Assistantships

Qualified predoctoral applicants are encouraged to apply for nationally competitive fellowships, for example, those from the National Science Foundation. Applicants to the Ph.D. program should consult with their financial aid officers for application information and advice. In

the absence of other awards, incoming Ph.D. students normally are awarded departmental fellowships. Matriculated Ph.D. students are supported primarily by fellowship awards and assistantship research or teaching appointments. All students are encouraged to apply for external competitive fellowships and may obtain information about various awarding agencies from faculty advisers and student services. Assistantships are paid positions for graduate students that, in addition to a salary, provide the benefit of a tuition allocation. Individual faculty members appoint students to research assistantships; the department chair appoints doctoral students to teaching assistantships. Contact departmental student services for additional information.

Bachelor of Science in Chemical Engineering

The Chemical Engineering B.S. program requires basic courses in biology, chemistry, engineering, mathematics, and physics. The depth sequence of courses required for the major in chemical engineering provides training in applied chemical kinetics, biochemical engineering, electronic materials, engineering thermodynamics, plant design, polymers, process analysis and control, separation processes, and transport phenomena. Undergraduates who are considering and/or wish to major in chemical engineering should talk with departmental student services as early as during freshman orientation if feasible and consult the curriculum outlined in the "Undergraduate Program in Chemical Engineering" section of this bulletin. Courses taken to fulfill the requirements for the major (courses in mathematics; science; technology and society; engineering fundamentals; and engineering depth) must be taken for a letter grade if this option is offered.

Representative sequences of courses leading to a B.S. in Chemical Engineering, in both flow chart and 4-year, quarter-by-quarter formats, can be found in the *Handbook for Undergraduate Engineering Programs,* available at http://ughb.stanford.edu (https://ughb.stanford.edu/). These are explanatory examples, with each sequence starting at a different level and demonstrating how a student, based on his or her pre-college preparation, can complete the major in four years. These typical course schedules are available as well from departmental student services and chemical engineering faculty advisers for undergraduates. It is recommended that students discuss their prospective programs with the chemical engineering faculty advisers, particularly if they are transferring from another major such as Biology, Chemistry, Physics, or another Engineering major. With advance planning, students can usually arrange to attend one of the overseas campuses.

Students interested in a minor in Chemical Engineering should consult the requirements for a "Minor in Chemical Engineering (p. 639)" section of this bulletin.

Chemical Engineering

Completion of the undergraduate program in Chemical Engineering leads to the conferral of the Bachelor of Science in Chemical Engineering.

Mission of the Undergraduate Program in Chemical Engineering

Chemical engineers are responsible for the conception and design of processes for the purpose of production, transformation, and transportation of materials. This activity begins with experimentation in the laboratory and is followed by implementation of the technology in full-scale production. The mission of the undergraduate program in Chemical Engineering is to develop students' understanding of the core scientific, mathematical, and engineering principles that serve as the foundation underlying these technological processes. The program's core mission is reflected in its curriculum which is built on a foundation in the sciences of chemistry, physics, and biology. Course work includes the study of applied mathematics, material and energy balances, thermodynamics, fluid mechanics, energy and mass transfer, separations technologies, chemical reaction kinetics and reactor design, and process design. The program provides students with excellent preparation for careers in the corporate sector and government, or for graduate study.

Requirements

		Units
Mathematics (24-30 units) [1]		**10**
The following sequence or approved AP credit		
MATH 19	Calculus	
MATH 20	Calculus	
MATH 21	Calculus	
Select one of the following:		5-10
CME 100	Vector Calculus for Engineers	
MATH 51 & MATH 52	Linear Algebra, Multivariable Calculus, and Modern Applications and Integral Calculus of Several Variables	
Select one of the following:		5
CME 102	Ordinary Differential Equations for Engineers	
or MATH 53	Ordinary Differential Equations with Linear Algebra	
Select one of the following:		4-5
CME 104	Linear Algebra and Partial Differential Equations for Engineers	
or CME 106	Introduction to Probability and Statistics for Engineers	
Science (23-29 units) [1]		
CHEM 31M	Chemical Principles: From Molecules to Solids	5
CHEM 33	Structure and Reactivity of Organic Molecules	5
CHEM 121	Understanding the Natural and Unnatural World through Chemistry	5
PHYSICS 41	Mechanics	4
or PHYSICS 41E	Mechanics, Concepts, Calculations, and Context	
PHYSICS 43	Electricity and Magnetism	4
Technology in Society (3-5 units)		
One course required, see Basic Requirement 4; course chosen must be on the SoE-Approved Courses list at <ughb.stanford.edu> the year taken.		3-5
Engineering Fundamentals (7-9 units)		
Two courses minimum; see Basic Requirement 3		
CHEMENG/ENGR 20	Introduction to Chemical Engineering	4
Fundamentals Elective from another School of Engineering department		3-5
See the UGHB for a list of courses.		
Chemical Engineering Depth (51 units minimum)		
CHEMENG 100	Chemical Process Modeling, Dynamics, and Control	3
CHEMENG 110A	Introduction to Chemical Engineering Thermodynamics [3]	3
CHEMENG 110B	Multi-Component and Multi-Phase Thermodynamics	3
CHEMENG 120A	Fluid Mechanics	4
CHEMENG 120B	Energy and Mass Transport	4
CHEMENG 130A	Microkinetics - Molecular Principles of Chemical Kinetics	3
CHEMENG 130B	Introduction to kinetics and reactor design	3
CHEMENG 150	Biochemical Engineering	3
CHEMENG 180	Chemical Engineering Plant Design	4
CHEMENG 181	Biochemistry I	4
CHEMENG 185A	Chemical Engineering Laboratory A (WIM)	5

CHEMENG 185B	Chemical Engineering Laboratory B	5
CHEM 171	Foundations of Physical Chemistry [4]	4
Select 1 of the following:		3
CHEMENG 140	Micro and Nanoscale Fabrication Engineering	
CHEMENG 142	Basic Principles of Heterogeneous Catalysis with Applications in Energy Transformations	
CHEMENG 160	Polymer Science and Engineering	
CHEMENG 174	Environmental Microbiology I	
CHEMENG 177	Data Science and Machine Learning Approaches in Chemical and Materials Engineering	
CHEMENG 183	Biochemistry II	
CHEMENG 190	Undergraduate Research in Chemical Engineering	
CHEMENG 190H	Undergraduate Honors Research in Chemical Engineering	
CHEMENG 196	Creating and Leading New Ventures in Engineering and Science-based Industries	
Total Units		108-118

[1] Unit count is higher if program includes one or more of the following: MATH 51 and MATH 52 in lieu of CME 100; or CHEM 31A and CHEM 31B in lieu of CHEM 31M.

[2] A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

[3] Students who completed CHEM 171 prior to academic year 2020-21 may substitute CHEMENG 110A with CHEM 171.

[4] Students who completed CHEM 173 prior to academic year 2020-21 may substitute CHEM 171 with CHEM 173.

* For additional information and sample programs, see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu)

Honors Program in Chemical Engineering

The Department of Chemical Engineering offers a program leading to the degree of Bachelor of Science in Chemical Engineering with Honors. Qualified undergraduate majors conduct independent study and research at an advanced level with faculty mentors, graduate students, and fellow undergraduates. This three quarter sequential program requires concurrent participation each quarter in the CHEMENG 191H Undergraduate Honors Seminar; completion of a faculty-approved thesis; and participation in the Chemical Engineering Honors Poster Session held annually during the Mason Lecture Series Spring Quarter. The last requirement may be fulfilled through an alternative, public, oral presentation with the approval of the department chair. A research proposal/application must be submitted at least five quarters prior to graduation with work to begin at a minimum of four quarters prior to graduation.

Admission to the honors program is by application and submission of a research proposal and is subject to approvals by faculty advisers, sponsors, and the chair of the department. Declared Chemical Engineering majors with a cumulative grade point average (GPA) of 3.5 or higher are encouraged to apply. Students must submit their applications no later than the first week in March during Winter Quarter of their junior year, assuming a June degree conferral the following year, e.g. the 2020-2021 deadline is March 1, 2021. An application includes a Stanford transcript in addition to the research proposal, approved by both the student's research thesis adviser, a faculty reader, and, if required, a chemical engineering faculty sponsor. The research adviser or the reader or, alternatively, a faculty sponsor, must be a faculty member in the Department of Chemical Engineering. Students must start their research no later than Spring Quarter their junior year and are encouraged to consider incorporating research opportunities such as those sponsored by Undergraduate Academic Life into their honors research proposal; see http://ual.stanford.edu/OO/research_opps/Grants (http://ual.stanford.edu/OO/research_opps/Grants/). See departmental student services staff in Shriram Center room 129, for more information about the application process, a proposal template, and other assistance.

In order to receive departmental honors, students admitted to the honors program must:

1. Maintain an overall grade point average (GPA) of at least 3.5 as calculated on the unofficial transcript.
2. Complete at least three quarters of research with an aggregate enrollment of a minimum of nine units in CHEMENG 190H Undergraduate Honors Research in Chemical Engineering for a letter grade; up to three units may be used towards the Chemical Engineering depth elective requirements. All quarters must focus on the same topic. The same faculty adviser and faculty reader should be maintained throughout if feasible.
3. Enroll in CHEMENG 191H Undergraduate Honors Seminar, concurrently with each quarter of enrollment in CHEMENG 190H Undergraduate Honors Research in Chemical Engineering.
4. Participate with a poster and oral presentation of thesis work at the Chemical Engineering Honors Poster Session held during the Mason Lectures week, Spring Quarter, or, at the Undergraduate Program Committee's discretion, at a comparable public event. Submit at the same time to student services one copy of the poster in electronic format.
5. Submit final drafts of a thesis simultaneously to the adviser and the reader and, if appropriate, to the Chemical Engineering faculty sponsor, no later than April 5, 2021, or the first school day of the second week of the quarter in which the degree is to be conferred.
6. Complete all work and thesis revisions and obtain indicated faculty approvals on the Certificate of Final Reading of Thesis forms by April 30, 2021, or the end of the first month of the graduation quarter.
7. Submit to departmental student services one (1) final copy of the honors thesis, as approved by the appropriate faculty. Include in each thesis an original, completed, faculty signature sheet immediately following the title page. The 2020-2021 deadline is May 3, 2021.
8. Submit to student services a copy of the honors thesis in electronic format at the same time as the final copy of the thesis.

Upon faculty approval, departmental student services to submit one electronic copy of each honors thesis to Student Affairs, School of Engineering.

Chemical Engineering Minor

The following core courses fulfill the minor requirements:

		Units
ENGR 20	Introduction to Chemical Engineering	4
CHEMENG 100	Chemical Process Modeling, Dynamics, and Control	3
CHEMENG 110A	Introduction to Chemical Engineering Thermodynamics	3
CHEMENG 110B	Multi-Component and Multi-Phase Thermodynamics	3
CHEMENG 120A	Fluid Mechanics	4
CHEMENG 120B	Energy and Mass Transport	4
CHEMENG 130B	Introduction to kinetics and reactor design	3

CHEMENG 185A	Chemical Engineering Laboratory A	5
CHEMENG 180	Chemical Engineering Plant Design	4
Select one of the following:		3
CHEMENG 140	Micro and Nanoscale Fabrication Engineering	
CHEMENG 142	Basic Principles of Heterogeneous Catalysis with Applications in Energy Transformations	
CHEMENG 160	Polymer Science and Engineering	
CHEMENG 174	Environmental Microbiology I	
CHEMENG 181	Biochemistry I	
Total Units		36

Master of Science in Chemical Engineering

A range of M.S. programs comprising appropriate course work is available to accommodate students wishing to obtain further academic preparation before pursuing a chemical engineering career or a degree program. The degree requirements are lecture course based; there are no research or thesis requirements. This is a terminal M.S. degree, i.e. this degree is not a prerequisite for nor does it lead to admission to the department's Ph.D. program.

Coterminal master's students should see the specific requirements for the coterminal degree below.

For conferral of a master's degree in Chemical Engineering, the following departmental requirements must be met.

Unit and Course Requirements for the Master's Degree

Students terminating their graduate work with the M.S. degree in Chemical Engineering must develop a graduate-level, thematic M.S. program consisting of a minimum of 45 completed units of academic work that includes:

1. Four (4) Chemical Engineering core graduate lecture courses selected from the CHEMENG 300 series listed below.

		Units
May select from:		
CHEMENG 300	Applied Mathematics in the Chemical and Biological Sciences	3
CHEMENG 310	Microhydrodynamics	3
CHEMENG 320	Chemical Kinetics and Reaction Engineering	3
CHEMENG 340	Molecular Thermodynamics	3
CHEMENG 345	Fundamentals and Applications of Spectroscopy	3
CHEMENG 355	Advanced Biochemical Engineering	3

2. An additional four (4) Chemical Engineering graduate-level lecture courses. May not use CHEMENG 699 Colloquiumor any CHEMENG 500-level course.
3. Three (3) units of CHEMENG 699 Colloquium.
4. An additional 18 units, selected from graduate-level science, math, or engineering lecture courses (3 units or more) in any appropriate department. Of these 18 units, 6 must be graduate-level science, math, or engineering lecture courses. The remaining 12 units can come from a combination of the following categories:
   - An additional 3-12 units of graduate-level science, math, or engineering lecture courses.
   - No more than 6 units of non-science, math, or engineering lecture courses.
   - No more than 6 units of lab courses.
   - No more than 6 units combined of research units or seminar courses on science, math, or engineering topics under the following conditions:
     - Up to 6 units of research.
     - No more than 3 of these 6 units can be taken as seminar courses; examples include: 1 unit seminar and 5 units research; 2 units seminar and 4 units research; 3 units seminar and 3 units research.

Credit toward the required minimum of 45 completed units for the M.S. degree is not given for Chemical Engineering special topics courses numbered in the 500 series.

To ensure that an appropriate Chemical Engineering graduate program is pursued by each M.S. candidate, students who first matriculate at Stanford at the graduate level must do the following, during the first quarter, no later than the seventh week:

1. Complete a Program Proposal for a Master's Degree form, that is approved by the M.S. adviser.
2. Submit this petition form to departmental student services, for review by the graduate curriculum committee.
3. Obtain approval for any subsequent program change or changes, using a freshly completed Program Proposal form, from the M.S. adviser and the faculty chair of the graduate curriculum committee.

All M.S. candidates must obtain approvals for the final M.S. program no later than the seventh week of the quarter preceding the quarter of degree conferral, in order to permit amendment of the final quarter's study list if the faculty deem this necessary. Students with questions should contact departmental graduate student services.

Minimum Grade Requirement

Any course used to satisfy the 45-unit minimum for the Master of Science degree must be taken for a letter grade, if offered. An overall grade point average (GPA) of 3.0 must be maintained for these courses.

Research Experience

Students in the M.S. program wishing to obtain research experience should talk with departmental student services and work with the M.S. faculty adviser on the choice of research adviser as early as feasible and in advance of the anticipated quarter(s) of research. Once arrangements are mutually agreed upon, including the number of units, students enroll in the appropriate section of CHEMENG 600 Graduate Research in Chemical Engineering. A written report describing the results of the research undertaken must be submitted to and approved by the research adviser. Research units may not be substituted for any of the required four 300-level core lecture courses.

Coterminal Master's Degrees in Chemical Engineering

Stanford undergraduates with strong academic records may apply to study for a master's degree while at the same time completing their bachelor's degree(s). Interested students should discuss their educational goals with their faculty advisers and talk with departmental graduate student services about the application requirements before submitting an application in Axess. Students, who have completed at least 120 units toward an undergraduate degree and complete their applications by the seventh week of a quarter, may be admitted to the Chemical Engineering M.S. program the following quarter. The GRE is not required for students applying for the Chemical Engineering coterminal master's degree.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Master of Science in Chemical Engineering

A range of M.S. programs comprising appropriate course work is available to accommodate students wishing to obtain further academic preparation before pursuing a chemical engineering career or a degree program. The degree requirements are lecture course based; there are no research or thesis requirements. This is a terminal M.S. degree, i.e. this degree is not a prerequisite for nor does it lead to admission to the department's Ph.D. program.

The Honors Cooperative Program (HCP) M.S. program, available completely online, makes it possible for academically qualified engineers and scientists in industry to be part-time graduate students in Chemical Engineering while continuing professional employment. Prospective HCP M.S. students follow the same admissions process and must meet the same admissions requirements as full-time residential M.S. students.

For conferral of a master's degree in Chemical Engineering, the following departmental requirements must be met.

Unit and Course Requirements for the Master's Degree

Students terminating their graduate work with the M.S. degree in Chemical Engineering must develop a graduate-level, thematic M.S. program consisting of a minimum of 45 completed units of academic work that includes:

1. Four (4) Chemical Engineering core graduate lecture courses selected from the CHEMENG 300 series listed below.

		Units
May select from:		
CHEMENG 300	Applied Mathematics in the Chemical and Biological Sciences	3
CHEMENG 310	Microhydrodynamics	3
CHEMENG 320	Chemical Kinetics and Reaction Engineering	3
CHEMENG 340	Molecular Thermodynamics	3
CHEMENG 345	Fundamentals and Applications of Spectroscopy	3
CHEMENG 355	Advanced Biochemical Engineering	3

2. An additional four (4) Chemical Engineering graduate-level lecture courses. May not use CHEMENG 699 Colloquium or any CHEMENG 500-level course.
   - Additional core Chemical Engineering lecture course from the CHEMENG 300 series.
   - Graduate electives in Chemical Engineering.

		Units
CHEMENG 242	Basic Principles of Heterogeneous Catalysis with Applications in Energy Transformations	3
CHEMENG 250	Biochemical Engineering	3
CHEMENG 260	Polymer Science and Engineering	3
CHEMENG 277	Data Science and Machine Learning Approaches in Chemical and Materials Engineering	3
CHEMENG 283	Biochemistry II	3
CHEMENG 296	Creating and Leading New Ventures in Engineering and Science-based Industries	3
CHEMENG 432	Electrochemical Energy Conversion	3
CHEMENG 443	Principles and practice of heterogeneous catalysis	3
CHEMENG 450	Advances in Biotechnology	3

3. HCP students may use any of the following to satisfy this requirement:
   - Three (3) units of CHEMENG 699 Colloquium.
   - Three (3) units of a seminar/speaker series in engineering, science, or math.
   - A three-unit graduate course in engineering, science, or math.
4. An additional 18 units, selected from graduate-level science, math, or engineering lecture courses (3 units or more) in any appropriate department. Of these 18 units, 6 must be graduate-level science, math, or engineering lecture courses. The remaining 12 units can come from a combination of the following categories:
   - An additional 3-12 units of graduate-level science, math, or engineering lecture courses.
   - No more than 6 units of non-science, math, or engineering lecture courses.
   - No more than 3 units of seminar courses on science, math, or engineering topics.

Credit toward the required minimum of 45 completed units for the M.S. degree is not given for Chemical Engineering special topics courses numbered in the 500 series.

To ensure that an appropriate Chemical Engineering graduate program is pursued by each M.S. candidate, students who first matriculate at Stanford at the graduate level must do the following, during the first quarter, no later than the seventh week:

1. Complete a Program Proposal for a Master's Degree form, that is approved by the M.S. adviser.
2. Submit this petition form to departmental student services, for review by the graduate curriculum committee.
3. Obtain approval for any subsequent program change or changes, using a freshly completed Program Proposal form, from the M.S. adviser and the faculty chair of the graduate curriculum committee.

All M.S. candidates must obtain approvals for the final M.S. program no later than the seventh week of the quarter preceding the quarter of degree

conferral, in order to permit amendment of the final quarter's study list if the faculty deem this necessary. Students with questions should contact departmental graduate student services.

Minimum Grade Requirement

Any course used to satisfy the 45-unit minimum for the Master of Science degree must be taken for a letter grade, if offered. An overall grade point average (GPA) of 3.0 must be maintained for these courses.

Research Experience

Students in the M.S. program wishing to obtain research experience should talk with departmental student services and work with the M.S. faculty adviser on the choice of research adviser as early as feasible and in advance of the anticipated quarter(s) of research. Once arrangements are mutually agreed upon, including the number of units, students enroll in the appropriate section of CHEMENG 600 Graduate Research in Chemical Engineering. A written report describing the results of the research undertaken must be submitted to and approved by the research adviser. Research units may not be substituted for any of the required four 300-level core lecture courses.

Engineer in Chemical Engineering

The degree of Engineer is awarded after the completion of a minimum of 90 units of graduate work beyond the B.S. degree and the satisfactory completion of all University requirements plus the following departmental requirements. Application to this program is open only to active chemical engineering M.S. or Ph.D. candidates. This degree is not a prerequisite for the Ph.D. program.

Unit and Course Requirements

A minimum of 90 completed units is required, including a component of a minimum of 45 units in science and engineering courses, consisting of 42 lecture units and 3 CHEMENG 699 Colloquium units. The required CHEMENG courses are listed below.

		Units
CHEMENG 300	Applied Mathematics in the Chemical and Biological Sciences	3
CHEMENG 310	Microhydrodynamics	3
CHEMENG 320	Chemical Kinetics and Reaction Engineering	3
CHEMENG 340	Molecular Thermodynamics	3
CHEMENG 345	Fundamentals and Applications of Spectroscopy	3
CHEMENG 355	Advanced Biochemical Engineering	3
Plus 3 units of:		
CHEMENG 699	Colloquium	1

The additional lecture courses, (24 units), may be chosen from graduate level science and engineering courses according to the guidelines given in the "Master's (p. 640)" section and with the consent of the graduate curriculum committee chair and the department chair. In fulfilling the required 45-unit requirement for lecture course units, the course work may not include chemical engineering's 500 level seminar courses or similar 1-2 unit courses in other departments. The remaining 45 units are primarily research units.

Students seeking the Engineer degree may petition to add a M.S. program and apply for the M.S. degree once the requirements for that degree have been fulfilled. See General Requirements in the "Graduate Degrees (p. 65)" section of this bulletin and Chemical Engineering's "Master's (p. 640)" section.

Minimum Grade Requirement

Any course intended to satisfy the Engineer degree requirements must be taken for a letter grade, if offered. An overall grade point average (GPA) of 3.0 must be maintained.

Reading Committee Requirement

All candidates are required to have an initial meeting with their reading committees by the end of their ninth quarter. The committee must have a minimum of two members, both of whom are Chemical Engineering faculty members. The reading committee meetings are intended to be discussion sessions, to help to focus and guide the thesis project; they are not examinations.

Students are responsible for reporting meeting dates to departmental student services.

Thesis Requirement

The thesis must represent a substantial piece of research equivalent to nine months of full-time effort and must be approved by the student's reading committee.

Qualification for the Ph.D. Program by Students Ready to Receive the Degree of Engineer

After completing the requirements for the Engineer degree, a student may petition to be examined on the research work completed for that degree, for the purpose of qualifying for admission to Ph.D. candidacy. If the petition is approved, the student's thesis must be approved by the reading committee and available in its final form for inspection by the entire faculty at least two weeks prior to the scheduled date of said examination.

Doctor of Philosophy in Chemical Engineering

The University's general requirements for the Ph.D. are specified in the "Graduate Degrees (p. 65)" section of this bulletin.

The Ph.D. degree is awarded after the completion of a minimum of 135 units of graduate work as well as satisfactory completion of any additional University requirements and the following departmental requirements. Completion of a M.S. degree is not a prerequisite for beginning, pursuing, or completing doctoral work.

Unit and Course Requirements

A minimum of 135 completed units is required, including a component of a minimum of 45 units in science and engineering courses, consisting of 42 lecture units and 3 units of CHEMENG 699 Colloquium.

1. CHEMENG 699 should be taken all years each quarter of the academic year; all these units count toward the required 135 units.
2. The research units for CHEMENG 399 count toward the required 135 units, but may not be counted toward the 45 unit component.
3. Students working with a research adviser should enroll each quarter in the 500 series, 600, and 699 as appropriate and as study list unit limits permit. All these seminar and research units are included within the required minimum of 135 units for degree.

Students with questions or issues should contact departmental graduate student services (http://cheme.stanford.edu/about/contact/).

The following courses are required:

		Units
CHEMENG 300	Applied Mathematics in the Chemical and Biological Sciences	3
CHEMENG 310	Microhydrodynamics	3

CHEMENG 320	Chemical Kinetics and Reaction Engineering	3
CHEMENG 340	Molecular Thermodynamics	3
CHEMENG 345	Fundamentals and Applications of Spectroscopy	3
CHEMENG 355	Advanced Biochemical Engineering	3
CHEMENG 399	Graduate Research Rotation in Chemical Engineering	1
CHEMENG 699	Colloquium	1
Plus two courses at the 400 course level; in 2020-21 the following are available:		
CHEMENG 424	Structure and Reactivity of Solid Surfaces	3
CHEMENG 432	Electrochemical Energy Conversion	3
CHEMENG 443	Principles and practice of heterogeneous catalysis	3
CHEMENG 450	Advances in Biotechnology	3
CHEMENG 456	Microbial Bioenergy Systems	3

These courses are to be taken at Stanford, and any petition to substitute another graduate-level course for any of these core courses must be approved by the department chair. The remaining graduate-level science and engineering lecture courses may be chosen from any department. A student may petition the department chair for approval to include an upper-division undergraduate science or engineering lecture course. All proposals for Ph.D. required course work must be approved by the student's adviser and the department chair or the chair of the department's Graduate Curriculum Committee. Students with questions, concerns, or issues should contact student services staff in the department office in Shriram Center, room 129.

Ph.D. students may petition to add a M.S. degree program to their university record; submit in a Graduate Authorization petition in Axess. Once the online petition is approved, the M.S. candidate must complete a Program Proposal for a Master's Degree form and submit it to departmental student services.

Ph.D. students with a M.S. program apply in Axess for M.S. degree conferral. (See the "Master of Science in Chemical Engineering (p. 640)" section in this bulletin.) The M.S. degree must be awarded within the University's candidacy period for completion of a master's degree.

Minimum Grade Requirement

Any course intended to satisfy the Ph.D. degree requirements must be taken for a letter grade, if offered. A GPA of 3.0 or above is required by the end of the first year, in order to continue in the Ph.D. program. The overall grade point average (GPA) of at least 3.0 must be maintained.

Degree Milestones

Degree milestones indicate progress toward degree. They are listed on unofficial transcripts and document satisfactory and timely completion of various events, such as securing research advisers, candidacy examinations, submission of completed degree progress forms, dates of reading committee meetings, assisting with the teaching CHEMENG courses. Report and submit forms as appropriate to departmental student services. Students with questions or issues should talk with student services staff; students approaching a milestone should be aware of intradepartmental communications and support, and students with concerns should discuss them with student services staff.

Candidacy

To be advanced to Ph.D. candidacy, the student must secure a research dissertation adviser (and any required co-adviser), maintain a 3.0 or higher GPA, successfully complete a Ph.D. candidacy examination, and submit a completed Application for Candidacy for Doctoral Degree form.

First, the research adviser and any required co-adviser must be established by the end of the second quarter in the Ph.D. program. Failure to do so leads to termination of a student's study toward a Ph.D. in Chemical Engineering; however, the student may continue to work toward an M.S. degree (see the "Master of Science in Chemical Engineering (p. 640)" section of this bulletin). Departmental Ph.D. financial support does not continue.

Second, the Ph.D. candidacy examination before a faculty committee by the end of the fifth quarter. It consists of (a) a student's written research perspective and oral presentation of their thinking about their research proposal and current progress and (b) an examination by faculty members of the proposal specifics as well as the student's understanding of the fundamental chemical, physical, and biological concepts that govern the molecular behavior of the system being studied. Upon successful completion of this examination, candidates must submit an Application for Candidacy for Doctoral Degree form, approved by their research adviser(s), to departmental graduate student services within two months.

Teaching Requirement

Teaching experience is considered an essential component of pre-doctoral training because it assists in the further development and refinement of candidates' skills in conveying what they know, think, and conclude, based on articulated assumptions and knowledge. All Ph.D. candidates, regardless of the source of their financial support, are required to assist in the teaching of a minimum of two chemical engineering courses.

Reading Committee Requirement

Reading committee meetings are intended to be discussion sessions with all members of the reading committee participating that help to focus and refine the dissertation project; they are not examinations.

By the end of the second year, all Ph.D. candidates are required to assemble reading committees and submit Doctoral Dissertation Reading Committee forms signed by research advisers to student services.

By the end of the first quarter of the third year, candidates are required to have an initial meeting with the complete reading committee. It is the candidate's responsibility to schedule committee meetings, and the faculty's to respond in a timely manner to scheduling requests. The composition of the reading committee may be amended; submit appropriate form to student services. Candidates are responsible for reporting meeting dates to departmental student services.

The faculty strongly encourage doctoral candidates to take advantage of the benefits of annual committee meetings, to enable candidates to benefit from this type of open discussion, support, and recommendations from faculty.

Research Poster Requirement

Experience in analyzing and presenting one's research to diverse audiences also is an essential component of predoctoral training, and faculty strongly encourage candidates to do so several times each year, starting in the second year. All candidates in their third year are required to prepare and present a research poster during the annual Mason Lectures week in spring quarter.

Dissertation and Oral Defense Requirements

A dissertation based on a successful investigation of a fundamental problem in chemical engineering is required. A student is expected to have fulfilled all the requirements for this degree, including the completion of a dissertation approved by his or her research adviser(s) and reading committee members within approximately five years after enrolling the Ph.D. program. Upon adviser approval (s), copies of the final draft of the dissertation must be distributed to each reading committee member. No sooner than three weeks after this distribution, a student

may schedule an oral examination. This examination is a dissertation defense, based on the candidate's dissertation research, and is in the form of a public seminar followed by a private examination by the faculty members on the student's oral examination committee. Satisfactory performance in the oral examination and acceptance of an approved dissertation by Graduate Degree Progress, Office of the University Registrar, leads to Ph.D. degree conferral.

Ph.D. Minor in Chemical Engineering

The University's general requirements for the Ph.D. minor are specified in the "Graduate Degrees (p. 65)" section of this bulletin. An application for a Ph.D. minor must be approved by both the major and minor departments.

A student proposing a Ph.D. minor in Chemical Engineering must work with a minor program adviser who has a faculty appointment in Chemical Engineering. This adviser must be included as a member of the student's reading committee for the doctoral dissertation, and the entire reading committee must meet at least once with the candidate. This meeting should occur at least one year prior to the scheduling of the student's oral examination; the department strongly prefers that regular meetings of the complete reading committee start in the second year of graduate study. In addition, the Chemical Engineering faculty member who is the minor adviser must be a member of the student's University oral examination committee.

The Ph.D. minor program must include at least 20 units of graduate-level lecture courses (numbered at the 200 level or above), but may not include any 1-2 unit lecture courses in the 20-unit minimum. The list of courses must form a coherent program and must be approved by the minor program adviser and the chair of this department. All courses for the minor must be taken for a letter grade, and a GPA of at least 3.0 must be earned for these courses.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of Chemical Engineering counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Graduate Degree Requirements

Grading

The Department of Chemical Engineering counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B-' or better level.

Students enrolled in the doctoral program must take core course requirements (CHEMENG 300-level and 400-level) for a letter grade. Exceptions to this policy will be reviewed by the Chemical Engineering Department's Graduate Curriculum Committee on a case-by-case basis.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Master's Student Advising

The Department of Chemical Engineering is committed to providing academic advising in support of our M.S. students' education and professional development. When most effective, this advising relationship entails collaborative engagement by both the adviser and the advisee. As a best practice, advising expectations should be discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

At the start of graduate study, normally at the beginning of the Fall quarter, each student is assigned a master's program adviser: a member of our faculty who will provide guidance in course selection and in exploring academic opportunities and professional pathways. The department's graduate handbook (https://cheme.stanford.edu/masters-handbook/) provides information and suggested timelines for advising meetings. Usually, the same faculty member serves as program adviser for the duration of master's study, but the handbook does describe a process for formal adviser changes.

In addition, the Director of Graduate Studies (DGS) and the Graduate Committee meets with all the master's students at the start of the first year, and are available during the academic year by email and during office hours.

Our department's student services office is also an important part of the master's advising team. They inform students and advisers about university and department requirements, procedures, and opportunities, and they maintain the official records of advising assignments and approvals.

Finally, graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Ph.D. Student Advising

The Department of Chemical Engineering is committed to providing academic advising in support of doctoral student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways. The department's graduate handbook provides information and suggested timelines for advising meetings in the different stages of the doctoral program.

Ph.D. students are initially assigned a program adviser at the outset of their matriculation at Stanford. This faculty member will provide initial guidance in course selection, in exploring academic opportunities and professional pathways, and in identifying doctoral research opportunities.

The department does require formal lab rotations during two quarters prior to selecting a doctoral research/thesis adviser.

Graduate students are expected to select a thesis adviser before the end of the first year of the program. Students are encouraged to work collaboratively with their adviser to establish a dissertation project and form a Dissertation Reading Committee. Advancement to doctoral candidacy is expected to occur prior to the end of the fourth quarter of the program. The process and timing of adviser selection is described in the Graduate Academic Policies and Procedures (GAP) (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/page-3-3-1/). The research supervisor assumes primary responsibility for the future direction of the student, taking on the roles previously filled by the program adviser, and will ultimately direct the student's dissertation. Most students find an adviser from among the primary faculty members of our department. However, the research adviser may be a faculty member from another Stanford department who is familiar with supervising doctoral students and able to provide both advising and funding for the duration of the doctoral program. When the research adviser is from outside our department, the student will also identify a program adviser from our primary faculty, to provide guidance on departmental requirements and opportunities. Thesis advisers are expected to meet with graduate students at least once each year to discuss and help develop the student's program plan. Additionally, advisers and students should meet on a regular basis throughout the year to discuss the student's professional development in key areas such as selecting courses, designing and conducting research, developing teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

The Director of Graduate Studies (DGS) meets with all the doctoral students at the start of the first year, and is available during the academic year by email and during office hours. Our department's student services office is also an important part of the doctoral advising team: they inform students and advisers about university and department requirements, procedures, and opportunities, and they maintain the official records of advising assignments and approvals. Students are encouraged to talk with the DGS and the student services office as they consider adviser selection, or for guidance in working with their adviser(s).

Our doctoral students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

Additionally, the program adheres to the advising guidelines and responsibilities listed by the Office of the Vice Provost for Graduate Education (https://vpge.stanford.edu/academic-guidance/advising-mentoring/) (VPGE) and in the Graduate Academic Policies (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/page-3-3-1/) (GAP).

Emeriti: (Professors) Andreas Acrivos, George M. Homsy, Robert J. Madix, Channing R. Robertson

Chair: Zhenan Bao

Professors: Zhenan Bao, Stacey F. Bent, Curtis W. Frank, Gerald G. Fuller, Chaitan Khosla, Eric S. G. Shaqfeh, Andrew J. Spakowitz, Alfred M. Spormann, James R. Swartz

Associate Professors: Alexander R. Dunn, Thomas F. Jaramillo, Elizabeth S. Sattely

Assistant Professors: Monther Abu-Remaileh, Matteo Cargnello, Xiaojing Gao, Danielle J. Mai, Jian Qin, William A. Tarpeh, Roseanna N. Zia

Courtesy Professors: Lynette S. Cegelski, Jennifer R. Cochran, Sarah C. Heilshorn, Daniel Herschlag, Meagen Mauter, David Myung, H. Tom Soh, Robert M. Waymouth

Senior Lecturer: Lisa Y. Hwang

Lecturers: Ricardo B. Levy, Howard B. Rosen

Adjunct Lecturer: Sara Loesch-Frank

Adjunct Professors: Ying-Chih Chang, Shari B. Libicki, John Moalli, Do Y. Yoon

Cognate Courses for Advanced Degrees in Chemical Engineering

In addition to core CHEMENG graduate courses in the 300 series and elective CHEMENG graduate courses in the 200 and 400 series, students pursuing advanced degrees in chemical engineering include elective courses offered by other departments. The following list is a partial list of the more frequently chosen courses and is subdivided into five focus areas.

		Units
Broadly Applicable		
APPPHYS 207	Laboratory Electronics	4
CHEM 221	Advanced Organic Chemistry I	3
CHEM 271	Advanced Physical Chemistry	3
CHEM 273	Advanced Physical Chemistry	3
EE 261	The Fourier Transform and Its Applications	3
STATS 200	Introduction to Statistical Inference	4
Biochemistry and Bioengineering focus *		
BIOE 331	Protein Engineering	3
BIOPHYS/SBIO 241	Biological Macromolecules	5
CBIO 241	Cellular Basis of Cancer	4
MCP 256	How Cells Work: Energetics, Compartments, and Coupling in Cell Biology	4
SBIO 241	Biological Macromolecules	5
Fluid Mechanics, Applied Mathematics, and Numerical Analysis focus **		
AA 218	Introduction to Symmetry Analysis	3
CME 200	Linear Algebra with Application to Engineering Computations	3
CME 204	Partial Differential Equations in Engineering	3
CME 206	Introduction to Numerical Methods for Engineering	3
CME 212	Advanced Software Development for Scientists and Engineers	3
ME 351A	Fluid Mechanics	3
ME 457	Fluid Flow in Microdevices	3
Materials Science focus ***		
MATSCI 210	Organic and Biological Materials	3
MATSCI 251	Microstructure and Mechanical Properties	3
MATSCI 316	Nanoscale Science, Engineering, and Technology	3
MATSCI 343	Organic Semiconductors for Electronics and Photonics	3
MATSCI 380	Nano-Biotechnology	3
Microelectronics focus ****		
AA 218	Introduction to Symmetry Analysis	3
CME 200	Linear Algebra with Application to Engineering Computations	3
CME 204	Partial Differential Equations in Engineering	3

CME 206	Introduction to Numerical Methods for Engineering	3
CME 212	Advanced Software Development for Scientists and Engineers	3
ME 457	Fluid Flow in Microdevices	3
Microelectronics focus		
AA 218	Introduction to Symmetry Analysis	3
CME 200	Linear Algebra with Application to Engineering Computations	3
CME 204	Partial Differential Equations in Engineering	3
CME 206	Introduction to Numerical Methods for Engineering	3
CME 212	Advanced Software Development for Scientists and Engineers	3
ME 457	Fluid Flow in Microdevices	3

* e.g., with CHEMENG 281 Biochemistry I, CHEMENG 283 Biochemistry II, CHEMENG 454 Synthetic Biology and Metabolic Engineering, CHEMENG 456 Microbial Bioenergy Systems.

** e.g., with CHEMENG 462 Complex Fluids and Non-Newtonian Flows.

*** e.g., with CHEMENG 442 Suspension Mechanics, CHEMENG 464 Polymer Chemistry, CHEMENG 466 Polymer Physics.

**** e.g., with CHEMENG 240 Micro and Nanoscale Fabrication Engineering.

Courses

CHEMENG 10. The Chemical Engineering Profession. 1 Unit.
Open to all undergraduates. Overview of and careers in chemical engineering; opportunities to develop networks with working professionals. Panel discussions on career paths and post-graduation opportunities available. Areas include biotechnology, electronics, energy, environment, management consulting, nanotechnology, and graduate school in business, law, medicine, and engineering.

CHEMENG 20. Introduction to Chemical Engineering. 4 Units.
Overview of chemical engineering through discussion and engineering analysis of physical and chemical processes. Topics: overall staged separations, material and energy balances, concepts of rate processes, energy and mass transport, and kinetics of chemical reactions. Applications of these concepts to areas of current technological importance: biotechnology, energy, production of chemicals, materials processing, and purification. Prerequisite: CHEM 31.
Same as: ENGR 20

CHEMENG 31N. When Chemistry Meets Engineering. 3 Units.
Preference to freshmen. Chemistry and engineering are subjects that are ubiquitous around us. But what happens when the two meet? Students will explore this question by diving into experimental problems that scientists and engineers have to face on a daily basis. Many processes that are taken for granted have been developed by understanding science at a very fundamental level and then applying it to large and important industrial processes. In this seminar, students will explore some of the basic concepts that are important to address chemical engineering problems through experimental work. Students will build materials for energy and environmental applications, understand how to separate mixtures into pure compounds, produce fuels, and will learn to look at the chemical properties of molecules that are part of daily life with a different eye.

CHEMENG 60Q. Environmental Regulation and Policy. 3 Units.
Preference to sophomores. How does government, politics and science affect environmental policy? We examine environmental policy including the precautionary principal, acceptable risks, mathematical models, and cost-effectiveness of regulation. You will learn how data is changing environmental regulation and how different administrations mold environmental policy in real-time. We examine the use of science and engineering, its media presentation and misrepresentation, and the effect of public scientific and technical literacy. You will learn how to participate in the process and effect change.

CHEMENG 70Q. Masters of Disaster. 3 Units.
Preference to sophomores. For students interested in science, engineering, politics, and the law. Learn from past disasters to avoid future ones. How disasters can be tracked to failures in the design process. The roles of engineers, artisans, politicians, lawyers, and scientists in the design of products. Failure as rooted in oversight in adhering to the design process. Student teams analyze real disasters and design new products presumably free from the potential for disastrous outcomes.

CHEMENG 80Q. Art, Chemistry, and Madness: The Science of Art Materials. 3 Units.
Preference to sophomores. Chemistry of natural and synthetic pigments in five historical palettes: earth (paleolithic), classical (Egyptian, Greco-Roman), medieval European (Middle Ages), Renaissance (old masters), and synthetic (contemporary). Composite nature of paints using scanning electron microscopy images; analytical techniques used in art conservation, restoration, and determination of provenance; and inherent health hazards. Paintings as mechanical structures. Hands-on laboratory includes stretching canvas, applying gesso grounds, grinding pigments, preparing egg tempera paint, bamboo and quill pens, gilding and illumination, and papermaking.

CHEMENG 90Q. Dare to Care: Compassionate Design. 3 Units.
Imagine yourself with your abundant creativity, intellect, and passion, but your ability to move or speak is diminished. How would you face the world, how would you thrive at Stanford, how would you relay to people your ideas and creations? How would you share yourself and your ideas with the world? nThere are more than 50 million individuals in America with at least one disability, and in the current world of design, these differences are often overlooked. How do we as designers empower people of diverse physical abilities and provide them with means of self-expression?nnIn Compassionate Design, students from any prospective major are invited to explore the engineering design process by examining the needs of persons with disabilities. Through invited guests, students will have the opportunity to directly engage people with different types of disabilities as a foundation to design products that address problems of motion and mobility, vision, speech and hearing. For example, in class, students will interview people who are deaf, blind, have cerebral palsy, or other disabling conditions. Students will then be asked, using the design tools they have been exposed to as part of the seminar, to create a particular component or device that enhances the quality of life for that user or users with similar limitations.nnPresentation skills are taught and emphasized as students will convey their designs to the class and instructors. Students will complete this seminar with a compassionate view toward design for the disabled, they will acquire a set of design tools that they can use to empower themselves and others in whatever direction they choose to go, and they will have increased confidence and abilities in presenting in front of an audience.

CHEMENG 100. Chemical Process Modeling, Dynamics, and Control. 3 Units.
Mathematical methods applied to engineering problems using chemical engineering examples. The development of mathematical models to describe chemical process dynamic behavior. Analytical and computer simulation techniques for the solution of ordinary differential equations. Dynamic behavior of linear first- and second-order systems. Introduction to process control. Dynamics and stability of controlled systems. Prerequisites: CHEMENG 20 or ENGR 20; CME 102 or MATH 53.

CHEMENG 110A. Introduction to Chemical Engineering Thermodynamics. 3 Units.
Thermodynamics of single-component systems: laws of thermodynamics, thermodynamic properties, equations of state, properties of ideal and real fluids, phase transitions and phase equilibrium, design of thermodynamic processes including refrigeration and power cycles. This course is intended for undergraduate sophomores and juniors in engineering and/or the chemical sciences; first-year students require consent of instructor. Pre-/Corequisites: CHEM 33, PHYS 41, MATH 51 or CME 100.

CHEMENG 110B. Multi-Component and Multi-Phase Thermodynamics. 3 Units.
Thermodynamic properties, equations of state, properties of non-ideal systems including mixtures, and phase and chemical equilibria. Prerequisite: CHEMENG 110A or equivalent.

CHEMENG 120A. Fluid Mechanics. 4 Units.
The flow of isothermal fluids from a momentum transport viewpoint. Continuum hypothesis, scalar and vector fields, fluid statics, non-Newtonian fluids, shell momentum balances, equations of motion and the Navier-Stokes equations, creeping and potential flow, parallel and nearly parallel flows, time-dependent parallel flows, boundary layer theory and separation, introduction to drag correlations. Prerequisites: junior in Chemical Engineering or consent of instructor; CHEMENG 100 and CME 102 or equivalent.

CHEMENG 120B. Energy and Mass Transport. 4 Units.
General diffusive transport, heat transport by conduction, Fourier's law, conduction in composites with analogies to electrical circuits, advection-diffusion equations, forced convection, boundary layer heat transport via forced convection in laminar flow, forced convection correlations, free convection, free convection boundary layers, free convection correlations and application to geophysical flows, melting and heat transfer at interfaces, radiation, diffusive transport of mass for dilute and non-dilute transfer, mass and heat transport analogies, mass transport with bulk chemical reaction, mass transport with interfacial chemical reaction, evaporation. Prerequisite CHEMENG 120A or consent of instructor.

CHEMENG 130A. Microkinetics - Molecular Principles of Chemical Kinetics. 3 Units.
This course will cover the basis of chemical kinetics that are used to design chemical processes and reactor design. Topics include: origin of rate expression in chemical reactions; experimental generation and analysis of kinetic data; relationship between kinetic and thermodynamic quantities; concepts of elementary steps and reaction orders; reactions in parallel and in sequence; branched reactions; collision theory and introduction to transition state theory; heterogeneous catalysis and surface reactions; enzymatic catalysis; applications of kinetics. Prerequisite CHEMENG 110B or consent of instructor.

CHEMENG 130B. Introduction to kinetics and reactor design. 3 Units.
Introduction to kinetics and reactor design. Identification and comparison of different reactors. Application of rate laws, pseudo steady-state, quasi-equilibrium, and other non-reactive components to develop mathematical models describing different types of reactor systems. Analysis of reaction kinetics in the context of reactor design, and determination of rate laws and reaction mechanisms. Assessment and troubleshooting of reactors by identifying sources of deviations. Application of concepts of reactor design to questions in different fields such as ecology and epidemiology. Prerequisites: 130A or equivalent.

CHEMENG 140. Micro and Nanoscale Fabrication Engineering. 3 Units.
(Same as CHEMENG 140) Survey of fabrication and processing technologies in industrial sectors, such as semiconductor, biotechnology, and energy. Chemistry and transport of electronic and energy device fabrication. Solid state materials, electronic devices and chemical processes including crystal growth, chemical vapor deposition, etching, oxidation, doping, diffusion, thin film deposition, plasma processing. Micro and nanopatterning involving photolithography, unconventional soft lithography and self assembly. Recommended: CHEM 33, 171, and PHYSICS 55.
Same as: CHEMENG 240

CHEMENG 142. Basic Principles of Heterogeneous Catalysis with Applications in Energy Transformations. 3 Units.
(Formerly 124/224) Introduction to heterogeneous catalysis, including models of surface reactivity, surface equilibria, kinetics of surface reactions, electronic and geometrical effects in heterogeneous catalysis, trends in reactivity, catalyst structure and composition, electro-catalysis and photo-catalysis. Selected applications and challenges in energy transformations will be discussed. Prerequisites: CHEM 31AB or 31X, CHEM 171, CHEM 175 or CHEMENG 170 or equivalents. Recommended: CHEM 173.
Same as: CHEMENG 242

CHEMENG 150. Biochemical Engineering. 3 Units.
Systems-level combination of chemical engineering concepts with biological principles. The production of protein pharmaceuticals as a paradigm to explore quantitative biochemistry and cellular physiology, the elemental stoichiometry of metabolism, recombinant DNA technology, synthetic biology and metabolic engineering, fermentation development and control, product isolation and purification, protein folding and formulation, and biobusiness and regulatory issues. Prerequisite: CHEMENG 181 (formerly 188) or BIOSCI 41 or equivalent.
Same as: BIOE 150, CHEMENG 250

CHEMENG 160. Polymer Science and Engineering. 3 Units.
Interrelationships among molecular structure, morphology, and mechanical behavior of polymers. Topics include amorphous and semicrystalline polymers, glass transitions, rubber elasticity, linear viscoelasticity, and rheology. Applications of polymers in biomedical devices and microelectronics. Prerequisites: CHEM 33 and 171, or equivalent.
Same as: CHEMENG 260

CHEMENG 174. Environmental Microbiology I. 3 Units.
Basics of microbiology and biochemistry. The biochemical and biophysical principles of biochemical reactions, energetics, and mechanisms of energy conservation. Diversity of microbial catabolism, flow of organic matter in nature: the carbon cycle, and biogeochemical cycles. Bacterial physiology, phylogeny, and the ecology of microbes in soil and marine sediments, bacterial adhesion, and biofilm formation. Microbes in the degradation of pollutants. Prerequisites: CHEM 33,CHEM 121 (formerly CHEM 35), and BIOSCI 83, CHEMENG 181, or equivalents.
Same as: BIO 273A, CEE 274A, CHEMENG 274

CHEMENG 177. Data Science and Machine Learning Approaches in Chemical and Materials Engineering. 3 Units.
.
Same as: CHEMENG 277, MATSCI 166, MATSCI 176

CHEMENG 180. Chemical Engineering Plant Design. 4 Units.
Open to seniors in chemical engineering or by consent of instructor. Application of chemical engineering principles to the design of practical plants for the manufacture of chemicals and related materials. Topics: flow-sheet development from a conceptual design, equipment design for distillation, chemical reactions, heat transfer, pumping, and compression; estimation of capital expenditures and production costs; plant construction.

CHEMENG 181. Biochemistry I. 4 Units.
Structure and function of major classes of biomolecules, including proteins, carbohydrates and lipids. Mechanistic analysis of properties of proteins including catalysis, signal transduction and membrane transport. Students will also learn to critically analyze data from the primary biochemical literature. Satisfies Central Menu Area 1 for Bio majors. Prerequisites: Chem 121 (formerly 35).
Same as: CHEM 181, CHEMENG 281

CHEMENG 183. Biochemistry II. 3 Units.
Focus on metabolic biochemistry: the study of chemical reactions that provide the cell with the energy and raw materials necessary for life. Topics include glycolysis, gluconeogenesis, the citric acid cycle, oxidative phosphorylation, photosynthesis, the pentose phosphate pathway, and the metabolism of glycogen, fatty acids, amino acids, and nucleotides as well as the macromolecular machines that synthesize RNA, DNA, and proteins. Medical relevance is emphasized throughout. Satisfies Central Menu Area 1 for Bio majors. Prerequisite: CHEM 181 or CHEM 141 or CHEMENG 181/281.
Same as: CHEM 183, CHEMENG 283

CHEMENG 185A. Chemical Engineering Laboratory A. 5 Units.
This is the first course in a two-quarter sequence that focuses on critical thinking in experimental aspects of chemical engineering. Critical thinking skills will be developed and practiced through guided lab modules with an emphasis on experimental design, data analysis, and technical communication. In addition to lectures, students are required to attend a weekly lab discussion section (approximately 1 hour each) to be scheduled near the start of the quarter. Due to COVID19 circumstances, all course activities will be held online. TAs will conduct experimental work in the lab based on student input on experimental design, and students will be able to view videos showing the sample preparation and data acquisition processes asynchronously. Students will also work in teams to prepare initial project proposals to be carried out in the following quarter in CHEMENG185B. Satisfies the Writing in the Major (WIM) requirement. Prerequisites: CHEMENG 120A, CHEMENG 120B, CHEMENG 130B, and CHEMENG 181.

CHEMENG 185B. Chemical Engineering Laboratory B. 5 Units.
Second quarter of two-quarter sequence. Experimental aspects of chemical engineering. Emphasizes experimental design, project execution, team organization, and communication skills. Lab section times will not be assigned, though students should expect to spend at least 5 hours per week on average in the lab working on their team research projects. Labs will typically be available M-F between 9am-6pm; to be arranged separately. Prerequisite: CHEMENG 185A. Corequisite: CHEMENG 150.

CHEMENG 190. Undergraduate Research in Chemical Engineering. 1-6 Unit.
Laboratory or theoretical work for undergraduates under the supervision of a faculty member. Research in one of the graduate research groups or other special projects in the undergraduate chemical engineering lab. Students should consult advisers for information on available projects. Course may be repeated.

CHEMENG 190H. Undergraduate Honors Research in Chemical Engineering. 1-5 Unit.
For Chemical Engineering majors pursuing a B.S. with Honors degree who have submitted an approved research proposal to the department. Unofficial transcript must document BSH status and at least 9 units of 190H research for a minimum of 3 quarters May be repeated for credit.

CHEMENG 191H. Undergraduate Honors Seminar. 1 Unit.
For Chemical Engineering majors approved for B.S. with Honors research program. Honors research proposal must be submitted and unofficial transcript document BSH status prior to required concurrent registration in 190H and 191H. May be repeated for credit. Corequisite: 190H.

CHEMENG 193. Interdisciplinary Approaches to Human Health Research. 1 Unit.
For undergraduate students participating in the Stanford ChEM-H Undergraduate Scholars Program. This course will expose students to interdisciplinary research questions and approaches that span chemistry, engineering, biology, and medicine. Focus is on the development and practice of scientific reading, writing, and presentation skills intended to complement hands-on laboratory research. Students will read scientific articles, write research proposals, make posters, and give presentations.
Same as: BIO 193, BIOE 193, CHEM 193

CHEMENG 196. Creating and Leading New Ventures in Engineering and Science-based Industries. 3 Units.
Open to seniors and graduate students interested in the creation of new ventures and entrepreneurship in engineering and science intensive industries such as chemical, energy, materials, bioengineering, environmental, clean-tech, pharmaceuticals, medical, and biotechnology. Exploration of the dynamics, complexity, and challenges that define creating new ventures, particularly in industries that require long development times, large investments, integration across a wide range of technical and non-technical disciplines, and the creation and protection of intellectual property. Covers business basics, opportunity viability, creating start-ups, entrepreneurial leadership, and entrepreneurship as a career. Teaching methods include lectures, case studies, guest speakers, and individual and team projects.
Same as: CHEM 196, CHEM 296, CHEMENG 296

CHEMENG 199. Undergraduate Practical Training. 1 Unit.
Only for undergraduate students majoring in Chemical Engineering. Students obtain employment in a relevant industrial or research activity to enhance their professional experience. Students submit a concise report detailing work activities, problems worked on, and key results. May be repeated for credit up to 3 units. Prerequisite: qualified offer of employment and consent of department. Prior approval by the Chemical Engineering Department is required; you must contact the Chemical Engineering Department's Student Services staff for instructions before being granted permission to enroll.

CHEMENG 240. Micro and Nanoscale Fabrication Engineering. 3 Units.
(Same as CHEMENG 140) Survey of fabrication and processing technologies in industrial sectors, such as semiconductor, biotechnology, and energy. Chemistry and transport of electronic and energy device fabrication. Solid state materials, electronic devices and chemical processes including crystal growth, chemical vapor deposition, etching, oxidation, doping, diffusion, thin film deposition, plasma processing. Micro and nanopatterning involving photolithography, unconventional soft lithography and self assembly. Recommended: CHEM 33, 171, and PHYSICS 55.
Same as: CHEMENG 140

CHEMENG 242. Basic Principles of Heterogeneous Catalysis with Applications in Energy Transformations. 3 Units.
(Formerly 124/224) Introduction to heterogeneous catalysis, including models of surface reactivity, surface equilibria, kinetics of surface reactions, electronic and geometrical effects in heterogeneous catalysis, trends in reactivity, catalyst structure and composition, electro-catalysis and photo-catalysis. Selected applications and challenges in energy transformations will be discussed. Prerequisites: CHEM 31AB or 31X, CHEM 171, CHEM 175 or CHEMENG 170 or equivalents. Recommended: CHEM 173.
Same as: CHEMENG 142

CHEMENG 250. Biochemical Engineering. 3 Units.
Systems-level combination of chemical engineering concepts with biological principles. The production of protein pharmaceuticals as a paradigm to explore quantitative biochemistry and cellular physiology, the elemental stoichiometry of metabolism, recombinant DNA technology, synthetic biology and metabolic engineering, fermentation development and control, product isolation and purification, protein folding and formulation, and biobusiness and regulatory issues. Prerequisite: CHEMENG 181 (formerly 188) or BIOSCI 41 or equivalent.
Same as: BIOE 150, CHEMENG 150

CHEMENG 260. Polymer Science and Engineering. 3 Units.
Interrelationships among molecular structure, morphology, and mechanical behavior of polymers. Topics include amorphous and semicrystalline polymers, glass transitions, rubber elasticity, linear viscoelasticity, and rheology. Applications of polymers in biomedical devices and microelectronics. Prerequisites: CHEM 33 and 171, or equivalent.
Same as: CHEMENG 160

CHEMENG 270. Mechanics of Soft Matter: Rheology. 3 Units.
Soft matter comes in many forms and includes polymeric materials, suspensions, emulsions, foams, gels, and living tissue. These materials are characterized by being easily deformed and possessing internal relaxation time spectra. They are viscoelastic with responses that are intermediate between purely viscous liquids and perfectly elastic solids. This course provides an introduction to the subject of rheology, which concerns the deformation and flow of complex liquids and solids. Rheological testing is aimed at determining the relationships between the applied stresses in these materials and the resulting deformations. These are characterized by material functions, such as viscosity (shear and extensional), moduli, and compliances. These functions reflect the microstructure of the material being tested and microstructural models of polymers (single chain theories and reptation-based models), suspensions, emulsions, and foams will be presented. Experimental methods to measure materials subjected to both shearing and elongational deformations will be described. Many soft matter systems are influenced by interfacial phenomena (foams, emulsions, thin films in the human body) and interfacial rheological techniques will be discussed. Advanced undergraduates register for 270; graduates register for 470. Prerequisites: ChE 120A or its equivalent (concurrent enrollment is permissible).
Same as: CHEMENG 470

CHEMENG 274. Environmental Microbiology I. 3 Units.
Basics of microbiology and biochemistry. The biochemical and biophysical principles of biochemical reactions, energetics, and mechanisms of energy conservation. Diversity of microbial catabolism, flow of organic matter in nature: the carbon cycle, and biogeochemical cycles. Bacterial physiology, phylogeny, and the ecology of microbes in soil and marine sediments, bacterial adhesion, and biofilm formation. Microbes in the degradation of pollutants. Prerequisites: CHEM 33,CHEM 121 (formerly CHEM 35), and BIOSCI 83, CHEMENG 181, or equivalents.
Same as: BIO 273A, CEE 274A, CHEMENG 174

CHEMENG 277. Data Science and Machine Learning Approaches in Chemical and Materials Engineering. 3 Units.
.
Same as: CHEMENG 177, MATSCI 166, MATSCI 176

CHEMENG 281. Biochemistry I. 4 Units.
Structure and function of major classes of biomolecules, including proteins, carbohydrates and lipids. Mechanistic analysis of properties of proteins including catalysis, signal transduction and membrane transport. Students will also learn to critically analyze data from the primary biochemical literature. Satisfies Central Menu Area 1 for Bio majors. Prerequisites: Chem 121 (formerly 35).
Same as: CHEM 181, CHEMENG 181

CHEMENG 283. Biochemistry II. 3 Units.
Focus on metabolic biochemistry: the study of chemical reactions that provide the cell with the energy and raw materials necessary for life. Topics include glycolysis, gluconeogenesis, the citric acid cycle, oxidative phosphorylation, photosynthesis, the pentose phosphate pathway, and the metabolism of glycogen, fatty acids, amino acids, and nucleotides as well as the macromolecular machines that synthesize RNA, DNA, and proteins. Medical relevance is emphasized throughout. Satisfies Central Menu Area 1 for Bio majors. Prerequisite: CHEM 181 or CHEM 141 or CHEMENG 181/281.
Same as: CHEM 183, CHEMENG 183

CHEMENG 296. Creating and Leading New Ventures in Engineering and Science-based Industries. 3 Units.
Open to seniors and graduate students interested in the creation of new ventures and entrepreneurship in engineering and science intensive industries such as chemical, energy, materials, bioengineering, environmental, clean-tech, pharmaceuticals, medical, and biotechnology. Exploration of the dynamics, complexity, and challenges that define creating new ventures, particularly in industries that require long development times, large investments, integration across a wide range of technical and non-technical disciplines, and the creation and protection of intellectual property. Covers business basics, opportunity viability, creating start-ups, entrepreneurial leadership, and entrepreneurship as a career. Teaching methods include lectures, case studies, guest speakers, and individual and team projects.
Same as: CHEM 196, CHEM 296, CHEMENG 196

CHEMENG 299. Graduate Practical Training. 1 Unit.
Only for graduate students majoring in Chemical Engineering. Students obtain employment in a relevant industrial or research activity to enhance their professional experience. Students submit a concise report detailing work activities, problems worked on, and key results. May be repeated for credit up to 3 units. Prerequisite: qualified offer of employment and consent of department. Prior approval by the Chemical Engineering Department is required; you must contact the Chemical Engineering Department's Student Services staff for instructions before being granted permission to enroll.

CHEMENG 300. Applied Mathematics in the Chemical and Biological Sciences. 3 Units.
Mathematical solution methods via applied problems including chemical reaction sequences, mass and heat transfer in chemical reactors, quantum mechanics, fluid mechanics of reacting systems, and chromatography. Topics include generalized vector space theory, linear operator theory with eigenvalue methods, phase plane methods, perturbation theory (regular and singular), solution of parabolic and elliptic partial differential equations, and transform methods (Laplace and Fourier). Prerequisites: CME 102/ENGR 155A and CME 104/ENGR 155B, or equivalents.
Same as: CME 330

CHEMENG 310. Microhydrodynamics. 3 Units.
Transport phenomena on small-length scales appropriate to applications in microfluidics, complex fluids, and biology. The basic equations of mass, momentum, and energy, derived for incompressible fluids and simplified to the slow-flow limit. Topics: solution techniques utilizing expansions of harmonic and Green's functions; singularity solutions; flows involving rigid particles and fluid droplets; applications to suspensions; lubrication theory for flows in confined geometries; slender body theory; and capillarity and wetting. Prerequisites: 120A,B, 300, or equivalents.
Same as: ME 451D

CHEMENG 320. Chemical Kinetics and Reaction Engineering. 3 Units.
Theoretical and experimental tools useful in understanding and manipulating reactions mediated by small-molecules and biological catalysts. Theoretical: first classical chemical kinetics and transition state theory; then RRKM theory and Monte Carlo simulations. Experimental approaches include practical application of modern spectroscopic techniques, stopped-flow measurements, temperature-jump experiments, and single-molecule approaches to chemical and biological systems. Both theory and application are framed with regard to systems of particular interest, including industrially relevant enzymes, organometallic catalysts, heterogeneous catalysis, electron transfer reactions, and chemical kinetics within living cells.

CHEMENG 340. Molecular Thermodynamics. 3 Units.
Classical thermodynamics and quantum mechanics. Development of statistical thermodynamics to address the collective behavior of molecules. Establishment of theories for gas, liquid, and solid phases, including phase transitions and critical behavior. Applications include electrolytes, ion channels, surface adsorption, ligand binding to proteins, hydrogen bonding in water, hydrophobicity, polymers, and proteins.

CHEMENG 345. Fundamentals and Applications of Spectroscopy. 3 Units.
Theoretical basis and experimental aspects of atomic and molecular spectroscopy, including spectroscopic transitions, transition probabilities, and selection rules. Applications of rotational, vibrational, and electronic spectroscopies emphasize the use of spectroscopy in modern research. Specific topics include but are not limited to microwave spectroscopy, infrared spectroscopy and Raman scattering, and photoelectron and fluorescence spectroscopies. Prerequisites: CME 104 or an equivalent intro to partial differential equations; CHEMENG 110A or CHEM 171 or an equivalent intro to physical chemistry.
Same as: PHOTON 345

CHEMENG 355. Advanced Biochemical Engineering. 3 Units.
Combines biological knowledge and methods with quantitative engineering principles. Quantitative review of biochemistry and metabolism; recombinant DNA technology and synthetic biology (metabolic engineering). The production of protein pharaceuticals as a paradigm for the application of chemical engineering principles to advanced process development within the framework of current business and regulatory requirements. Prerequisite: CHEMENG 181 (formerly 188) or BIOSCI 41, or equivalent.
Same as: BIOE 355

CHEMENG 399. Graduate Research Rotation in Chemical Engineering. 1 Unit.
Introduction to graduate level laboratory and theoretical work. Performance in this course comprises part of the mandatory evaluation for pre-candidacy standing and suitability to continue in the chemical engineering Ph.D. program.

CHEMENG 420. Growth and Form. 3 Units.
Advanced topics course examining the role of physical forces in shaping living cells, tissues, and organs, making use of D'Arcy Thompson's classic text On Growth and Form. The course begins with a review of relevant physical principles drawn from statistical physics, polymer theory, rheology and materials science. We then examine current knowledge of cellular mechanotransduction pathways, the roles of physical forces in guiding embryonic development, and the contribution of aberrant cellular response to mechanical cues in heart disease and cancer. The course concludes by examining current frontiers in stem cell biology and tissue engineering.

CHEMENG 424. Structure and Reactivity of Solid Surfaces. 3 Units.
The structure of solid surfaces including experimental methods for determining the structure of single crystal surfaces. The adsorption of molecules on these surfaces including the thermodynamics of adsorption processes, surface diffusion, and surface reactions. Molecular structure of adsorbates. Current topics in surface structure and reactivity, including systems for heterogeneous catalysis and electronic materials.

CHEMENG 432. Electrochemical Energy Conversion. 3 Units.
Electrochemistry is playing an increasingly important role in renewable energy. This course aims to cover the fundamentals of electrochemistry, and then build on that knowledge to cover applications of electrochemistry in energy conversion. Topics to be covered include fuel cells, solar water-splitting, CO2 conversion to fuels and chemicals, batteries, redox flow cells, and supercapacitors. Prerequisites: CHEM 31AB or 31 X, CHEM 33, CHEM 171, CHEM 175 or CHEMENG 170, or equivalents. Recommended: CHEM 173.

CHEMENG 442. Suspension Mechanics. 3-4 Units.
The course will begin with a brief recap of low-Reynolds number hydrodynamics and the analytical foundations for the study of pair-level particle interactions in a Newtonian solvent. Extension to many-body interactions will be covered in detail, with an introductory overview of computational methods. Brownian motion, thermodynamic forces, and other interparticle forces will be discussed, and various approaches for theoretical modeling will be covered, including Fokker-Planck / Smoluchowski analysis and Langevin analysis. Theoretical and computational modeling of material properties via averaging techniques will be studied, in the context of micromechanical and continuum models. Landmark results in the microrheology and rheology of complex fluids will be covered, including sedimentation, non-Newtonian rheology (including shear thinning and thickening; viscoelasticity and memory behaviors; yield-stress behavior; glassy aging; diffusion; normal stress differences).

CHEMENG 443. Principles and practice of heterogeneous catalysis. 3 Units.
Principles and practical aspects of heterogeneous catalysis. Preparation of catalytic solids. Techniques for the structural characterization of catalysts, including in-situ and operando. Best practices in both structural and catalytic characterization. Kinetic experiments for the characterization of catalytic activity of materials and the determination of active sites. Examples of industrial catalytic processes utilizing heterogeneous catalysts. Perspectives on the role of heterogeneous catalysis in energy and environmental challenges. Pre-Reqs: UG physical chemistry (171), thermodynamics (110) and kinetics (130) or equivalents.

CHEMENG 444. Electronic Structure Theory and Applications to Chemical Kinetics. 3 Units.
Fundamentals of electronic structure theory to describe materials properties and chemical reactivity. nLearning objectives: Understand the basis for modern electronic structure calculations, understand the relationship between electronic structure, materials properties, and chemical kinetics, be able to read the current literature, be able to do own calculations. nImportant components of the lectures: An overview of quantum chemical methods, introduction to methods for periodic systems, density functional theory and current approximations to describe exchange and correlation effects, methods to describe excited states, transition state theory and methods to calculate partition functions. nThe Lab: Leaning to do DFT calculations.

CHEMENG 450. Advances in Biotechnology. 3 Units.
Overview of cutting edge advances in biotechnology with a focus on therapeutic and health-related topics. Academic and industrial speakers from a range of areas including protein engineering, immuno-oncology, DNA sequencing, the microbiome, phamacogenomics, industrial enzymes, synthetic biology, and more. Course is designed for students interested in pursuing a career in the biotech industry.
Same as: BIOE 450

CHEMENG 454. Synthetic Biology and Metabolic Engineering. 3 Units.
Principles for the design and optimization of new biological systems. Development of new enzymes, metabolic pathways, other metabolic systems, and communication systems among organisms. Example applications include the production of central metabolites, amino acids, pharmaceutical proteins, and isoprenoids. Economic challenges and quantitative assessment of metabolic performance. Pre- or corequisite: CHEMENG 355 or equivalent.
Same as: BIOE 454

CHEMENG 456. Microbial Bioenergy Systems. 3 Units.
Introduction to microbial metabolic pathways and to the pathway logic with a special focus on microbial bioenergy systems. The first part of the course emphasizes the metabolic and biochemical principles of pathways, whereas the second part is more specifically directed toward using this knowledge to understand existing systems and to design innovative microbial bioenergy systems for biofuel, biorefinery, and environmental applications. There also is an emphasis on the implications of rerouting of energy and reducing equivalents for the fitness and ecology of the organism. Prerequisites: CHEMENG 174 or 181 and organic chemistry, or equivalents.
Same as: BIO 273B, CEE 274B

CHEMENG 459. Frontiers in Interdisciplinary Biosciences. 1 Unit.
Students register through their affiliated department; otherwise register for CHEMENG 459. For specialists and non-specialists. Sponsored by the Stanford BioX Program. Three seminars per quarter address scientific and technical themes related to interdisciplinary approaches in bioengineering, medicine, and the chemical, physical, and biological sciences. Leading investigators from Stanford and the world present breakthroughs and endeavors that cut across core disciplines. Pre-seminars introduce basic concepts and background for non-experts. Registered students attend all pre-seminars; others welcome. See http://biox.stanford.edu/courses/459.html. Recommended: basic mathematics, biology, chemistry, and physics.
Same as: BIO 459, BIOC 459, BIOE 459, CHEM 459, PSYCH 459

CHEMENG 460. Interfacial Engineering of Soft Matter. 3 Units.
Interfacial engineering is a culmination of a century of interdisciplinary science and engineering. The foundation is provided by the thermodynamics of surface tension, surface chemistry and adsorption, which govern the properties of catalysts, colloids and surfactants. Microminiaturization of soft and hard materials and the growth of nanotechnology have led to dramatic increases in the surface-to-volume ratio. Knowledge of the principles of interfacial engineering can be used in the application domains of microelectronics chips and packaging, polymer composites, advanced ceramics, biomedical implants and bioanalytical devices. This course will cover the fundamentals of interface physics and chemistry, with an emphasis on soft matter, including phospholipids, proteins and synthetic polymers at interfaces. Specific topics will include intermolecular forces and potentials; solvation, structural and hydration forces; particle-particle interactions; interfacial thermodynamics; Poisson-Boltzmann theory of the diffuse electric double layer; electrokinetic phenomena; colloidal aggregation; and molecular assemblies.

CHEMENG 462. Complex Fluids and Non-Newtonian Flows. 3 Units.
Definition of a complex liquid and microrheology. Division of complex fluids into suspensions, solutions, and melts. Suspensions as colloidal and non-colloidal. Extra stress and relation to the stresslet. Suspension rheology including Brownian and non-Brownian fibers. Microhydrodynamics and the Fokker-Planck equation. Linear viscoelasticity and the weak flow limit. Polymer solutions including single mode (dumbbell) and multimode models. Nonlinear viscoelasticity. Intermolecular effects in nondilute solutions and melts and the concept of reptation. Prerequisites: low Reynolds number hydrodynamics or consent of instructor.
Same as: ME 455

CHEMENG 464. Polymer Chemistry. 3 Units.
Polymer material design, synthesis, characterization, and application. Topics include organic and kinetic aspects of polymerization, polymer characterization techniques, and structure and properties of bulk polymers for commercial applications and emerging technologies.

CHEMENG 466. Polymer Physics. 3 Units.
Concepts and applications in the equilibrium and dynamic behavior of complex fluids. Topics include solution thermodynamics, scaling concepts, semiflexibility, characterization of polymer size (light scattering, osmotic pressure, size-exclusion chromatography, intrinsic viscosity), viscoelasticity, rheological measurements, polyelectrolytes, liquid crystals, biopolymers, and gels.

CHEMENG 469. Solid Structure and Properties of Polymers. 3 Units.
Fundamental structure-properties relationships of solid polymers in bulk and thin films. Topics include chain conformations in bulk amorphous polymers, glass transition, crystallization, semi-crystalline morphology, liquid crystalline order, polymer blends, block copolymers, polymer networks/gels, polymers of high current interest, and experimental methods of characterizing polymer structure.

CHEMENG 470. Mechanics of Soft Matter: Rheology. 3 Units.
Soft matter comes in many forms and includes polymeric materials, suspensions, emulsions, foams, gels, and living tissue. These materials are characterized by being easily deformed and possessing internal relaxation time spectra. They are viscoelastic with responses that are intermediate between purely viscous liquids and perfectly elastic solids. This course provides an introduction to the subject of rheology, which concerns the deformation and flow of complex liquids and solids. Rheological testing is aimed at determining the relationships between the applied stresses in these materials and the resulting deformations. These are characterized by material functions, such as viscosity (shear and extensional), moduli, and compliances. These functions reflect the microstructure of the material being tested and microstructural models of polymers (single chain theories and reptation-based models), suspensions, emulsions, and foams will be presented. Experimental methods to measure materials subjected to both shearing and elongational deformations will be described. Many soft matter systems are influenced by interfacial phenomena (foams, emulsions, thin films in the human body) and interfacial rheological techniques will be discussed. Advanced undergraduates register for 270; graduates register for 470. Prerequisites: ChE 120A or its equivalent (concurrent enrollment is permissible).
Same as: CHEMENG 270

CHEMENG 482. The Startup Garage: Design. 4 Units.
(Same as STRAMGT 356) The Startup Garage is an experiential lab course that focuses on the design, testing and launch of a new venture. Multidisciplinary student teams work through an iterative process of understanding user needs, creating a point of view statement, ideating and prototyping new product and services and their business models, and communicating the user need, product, service and business models to end-users, partners, and investors. In the autumn quarter, teams will: identify and validate a compelling user need and develop very preliminary prototypes for a new product or service and business models. Students form teams, conduct field work and iterate on the combination of business model -- product -- market. Teams will present their first prototypes (business model - product - market) at the end of the quarter to a panel of entrepreneurs, venture capitalists, angel investors and faculty.
Same as: SOMGEN 282

CHEMENG 484. The Startup Garage: Testing and Launch. 4 Units.
This is the second quarter of the two-quarter series. In this quarter, student teams expand the field work they started in the fall quarter. They get out of the building to talk to potential customers, partners, distributors, and investors to test and refine their business model, product/service and market. This quarter the teams will be expected to develop and test a minimally viable product, iterate, and focus on validated lessons on: the market opportunity, user need and behavior, user interactions with the product or service, business unit economics, sale and distribution models, partnerships, value proposition, and funding strategies. Teams will interact with customers, partners, distributors, investors and mentors with the end goal of developing and delivering a funding pitch to a panel of entrepreneurs, venture capitalists, angel investors and faculty.
Same as: SOMGEN 284

CHEMENG 500. Special Topics in Protein Biotechnology. 1 Unit.
Recent developments and current research. May be repeated for credit. Prerequisite: graduate standing and consent of instructor.

CHEMENG 501. Special Topics in Semiconductor Processing. 1 Unit.
Recent developments and current research. May be repeated for credit. Prerequisite: graduate standing and consent of instructor.

CHEMENG 503. Special Topics in Biocatalysis. 1 Unit.
Recent developments and current research. May be repeated for credit. Prerequisite: graduate standing and consent of instructor.

CHEMENG 505. Special Topics in Microrheology. 1 Unit.
Recent developments and current research. May be repeated for credit. Prerequisite: graduate standing and consent of instructor.

CHEMENG 507. Special Topics in Polymer Physics and Molecular Assemblies. 1 Unit.
Recent developments and current research. May be repeated for credit. Prerequisite: graduate standing and consent of instructor.

CHEMENG 510. Special Topics in Transport Mechanics. 1 Unit.
Recent developments and current research. May be repeated for credit. Prerequisite: graduate standing and consent of instructor.

CHEMENG 513. Special Topics in Functional Organic Materials for Electronic and Optical Devices. 1 Unit.
Recent developments and current research. May be repeated for credit. Prerequisite: graduate standing and consent of instructor.

CHEMENG 514. Special Topics in Biopolymer Physics. 1 Unit.
Recent developments and current research. May be repeated for credit. Prerequisite: graduate standing and consent of instructor.

CHEMENG 515. Special Topics in Molecular and Systems Biology. 1 Unit.
Recent developments and current research. May be repeated for credit. Prerequisite: graduate standing and consent of instructor.

CHEMENG 516. Special Topics in Energy and Catalysis. 1 Unit.
Recent developments and current research. May be repeated for credit. Prerequisite: graduate standing and consent of instructor.

CHEMENG 517. Special Topics in Microbial Physiology and Metabolism. 1 Unit.
Recent developments and current research. May be repeated for credit. Prerequisite: graduate standing and consent of instructor.

CHEMENG 518. Special Topics in Advanced Biophysics and Protein Design. 1 Unit.
Recent developments and current research. May be repeated for credit. Prerequisite: graduate standing and consent of instructor.

CHEMENG 519. Special Topics in Interface Science and Catalysis. 1 Unit.
Recent developments and current research. May be repeated for credit. Prerequisite: graduate standing and consent of instructor.

CHEMENG 520. Special Topics in Biological Chemistry. 1 Unit.
Recent developments and current research. May be repeated for credit. Prerequisite: graduate standing and consent of instructor.

CHEMENG 521. Special Topics in Nanostructured Materials for Energy and the Environment. 1 Unit.
Recent developments and current research. May be repeated for credit. Prerequisite: graduate standing and consent of instructor.

CHEMENG 522. Special Topics in Soft Matter and Molecular Physics. 1 Unit.
Recent developments and current research. May be repeated for credit. Prerequisite: graduate standing and consent of instructor.

CHEMENG 523. Special Topics in Suspension Dynamics. 1 Unit.
Recent developments and current research. May be repeated for credit. Prerequisite: graduate standing and consent of instructor.

CHEMENG 524. Special Topics in Electrochemistry and Water Treatment. 1 Unit.
Recent developments and current research. May be repeated for credit. Prerequisite: graduate standing and consent of instructor.

CHEMENG 600. Graduate Research in Chemical Engineering. 1-12 Unit.
Laboratory and theoretical work leading to partial fulfillment of requirements for an advanced degree. Course may be repeated for credit.

CHEMENG 699. Colloquium. 1 Unit.
Weekly lectures by experts from academia and industry in the field of chemical engineering. Course may be repeated for credit.

CHEMENG 801. TGR Project. 0 Units.
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CHEMENG 802. TGR Dissertation. 0 Units.
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CIVIL AND ENVIRONMENTAL ENGINEERING

Courses offered by the Department of Civil and Environmental Engineering are listed under the subject code CEE (https://explorecourses.stanford.edu/search/?view=catalog&academicYear=&q=CEE&filter-departmentcode-CEE=on&filter-coursestatus-Active=on&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&page=0) on the *Stanford Bulletin's* ExploreCourses (https://explorecourses.stanford.edu/) web site.

The Department of Civil and Environmental Engineering (CEE) at Stanford conducts fundamental and applied research to advance the civil and environmental engineering professions, educate future academic and industry leaders, and prepare students for careers in professional practice. Civil and environmental engineers work to protect and sustain the natural environment while creating and maintaining a resilient, sustainable built environment. Civil and environmental engineers are essential to providing the necessities of human life, including water, air, shelter, the infrastructure, and energy, in increasingly more efficient and renewable ways.

Research and teaching in the department focus on the theme of engineering for sustainability, including three core areas: built environment, environmental and water studies, and atmosphere/energy. In the area of sustainable built environments, the focus is on processes, techniques, materials, and monitoring technologies for planning, design, construction and operation of environmentally sensitive, economically efficient, performance-based buildings and infrastructure, and managing associated risks from natural and man-made hazards. In the area of environmental and water studies, the focus is on creating plans, policies, science-based assessment models and engineered systems to manage water in ways that protect human health, promote human welfare, and provide freshwater and coastal ecosystem services. In the atmosphere/energy area, research and teaching focus on fundamental energy and atmospheric engineering and science, assessment of energy-use effects on atmospheric processes and air quality, and analysis and design energy-efficient generation and use systems with minimal environmental impact.

The department oversees undergraduate programs in Civil Engineering and in Environmental Systems Engineering. The department also hosts the School of Engineering undergraduate major in Architectural Design and the undergraduate major in Atmosphere/Energy - both of which lead to a B.S. in Engineering.

Mission of the Undergraduate Program in Civil Engineering

The mission of the undergraduate program in Civil Engineering is to equip students with the knowledge and skills needed for world-class civil engineering practice. This pre-professional program balances the fundamentals common to many specialties in civil engineering and allows for concentration in any of seven areas: structures, construction, environmental, energy/climate, fluid mechanics/hydrology, urban systems, or sensors/analytics. Students in the major learn to apply knowledge of mathematics, science, and civil engineering to conduct experiments, design structures and systems to creatively solve engineering problems, and communicate their ideas effectively. The major prepares students for careers in consulting, industry and government, as well as for graduate studies in science and engineering.

Mission of the Undergraduate Program in Environmental Systems Engineering

The mission of the undergraduate program in Environmental Systems Engineering is to prepare students for incorporating environmentally sustainable design, strategies and practices into natural and built systems and infrastructure involving buildings, water supply, and urban coastal regions. Courses in the program are multidisciplinary in nature, combining math/science/engineering fundamentals, and tools and skills considered essential for an engineer, along with a choice of one of three focus areas for more in-depth study: coastal environments, freshwater environments, or urban environments. This major offers somewhat more flexibility in the curriculum than the Civil Engineering degree program, and requires fewer units. The program of study, which includes a capstone experience, aims to equip engineering students to take on the complex challenges of the twenty-first century involving natural and built environments, in consulting and industry as well as in graduate school.

Learning Outcomes (Undergraduate)

Undergraduates in the Civil Engineering and the Environmental Systems Engineering programs are expected to achieve the following learning outcomes through their major. These learning outcomes are used both in evaluating students and the department's undergraduate programs. Students are expected to demonstrate the ability to:

1. identify, formulate, and solve complex engineering problems by applying principles of engineering, science and mathematics.
2. apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. communicate effectively with a range of audiences.
4. recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. acquire and apply new knowledge as needed, using appropriate learning strategies.

Learning Outcomes (Graduate)

The purpose of the master's program is to equip students with the knowledge and skills necessary for a successful professional career or for the pursuit of doctoral studies. Students are prepared through course work that is organized into three broad areas including the built environment, atmosphere and energy, and environmental engineering. Graduate students must master the analytical, quantitative, and interpretive skills necessary for successful leadership in their chosen field.

The Ph.D. is conferred upon candidates who have demonstrated substantial original scholarship and the ability to conduct independent research. The Ph.D. program prepares students to make original contributions to the theory and practice of Civil and Environmental Engineering and related fields.

Graduate Programs in Civil and Environmental Engineering

The Department of Civil and Environmental Engineering (CEE) offers graduate degrees structured in three areas of study.

- The Atmosphere/Energy Program offers degrees with the designation of Atmosphere/Energy.
- The Sustainable Built Environment Program offers degrees with two designations:
  - Structural Engineering and Geomechanics
  - Sustainable Design and Construction
- The Environmental Engineering Program offers degrees with the designation of Environmental Engineering

For detailed information on these programs and degree designations, see the "Programs of Graduate Study in Civil and Environmental Engineering" section of this bulletin.

Admissions and Financial Aid

Applications require online submission of the application form and statement of purpose, followed by three letters of recommendation, results of the General Section of the Graduate Record Examination, and transcripts of all courses taken at colleges and universities. See http://gradadmissions.stanford.edu. Policies for each of the programs in the department are available on the department website. See: http://cee.stanford.edu. Successful applicants are advised as to the degree and program for which they are admitted. If students wish to transfer from one CEE program to another after being accepted, an application for the intradepartmental change must be filed within the department. If, after enrollment at Stanford, students wish to continue toward a degree beyond that for which they were originally admitted, a written application must be made to the Department of Civil and Environmental Engineering.

The department maintains a continuing program of merit-based financial aid for graduate students. Merit-based financial aid consists of teaching assistantships and/or research assistantships for up to half-time work, with the assumption that students spend the rest of their time on coursework and research required for completion of the degree. Fellowship and scholarship awards or loans may supplement assistantships and other basic support. Continued support is generally provided for further study toward the Engineer or Ph.D. degree based on the student's performance, the availability of research funds, and requisite staffing of current research projects.

Research Centers and Facilities

Environmental engineering research in the department is conducted primarily in the Bob and Norma Street Environmental Fluid Mechanics Laboratory (EFML) and the Environmental Engineering and Science Laboratory (EESL). The EESL is home to the National Science Foundation (NSF) supported Engineering Research Center for Re-inventing the Nation's Urban Water Infrastructure (ReNUWIt), a four-university consortium that seeks more sustainable solutions to urban water challenges in the arid west; the William and Cloy Codiga Resource Recovery Center (CR2C), a new facility for pilot-scale testing of resource recovery technology; and one of the sites for the U.S. Department of Energy supported Energy-Water Desalination Hub entitled the National Alliance for Water Innovation. Other centers and groups in the department related to environmental engineering include the Environmental Informatics Group, the National Performance of Dams Program (NPDP), and the center for Sustainable Development and Global Competitiveness (SDGC). There is also extensive collaboration with research centers and groups throughout the university, including the Stanford Woods Institute for the Environment, the Stanford Program on Water, Health & Development, the Bill Lane Center for the American West, the Carnegie Institution, the Center for Innovation in Global Health, Stanford Bio-X, the Environmental and Natural Resources Law and Policy Program, the Freeman Spogli Institute for International Studies, and the Precourt Institute for Energy.

Several research centers in the department focus on improving the sustainability of the built environment. The John A. Blume Earthquake Engineering Center conducts research on earthquake engineering including advanced sensing and control, innovative materials, and risk hazard assessment. Research and advanced global teamwork education is conducted in the Project Based Learning (PBL) Laboratory. The Center for Integrated Facility Engineering (CIFE) employs advanced information technologies and concepts to integrate the facility development process and enhance the usability, buildability, operability, and sustainability of the built environment. The Global Projects Center (GPC) is a multi-discipline, multi-university research program aimed at improving the performance of global engineering and construction projects, with a special focus on financing and governance of sustainable civil and social infrastructure projects. The Stanford Sustainable Systems Lab (S3L) aims to advance the state of the art in the design, monitoring and management of built environment systems, with a special focus on smart grid, smart buildings and smart infrastructures.

Programs of Graduate Study in Civil and Environmental Engineering

Atmosphere/Energy Program

The Atmosphere/Energy Program in Civil and Environmental Engineering combines atmospheric science with energy science and engineering. The main goals of the program are to educate students and the public, through courses, research, and public outreach, about the causes of climate, air pollution, and weather problems and methods of addressing these problems through renewable and efficient energy systems. In addition, students learn about feedback between the atmosphere and renewable energy systems and the effects of the current energy infrastructure on the atmosphere.

Major focus areas of energy research include examining the resource availability of renewable energies, such as wind, solar, and wave, and studying optimal methods of combining renewable energies together to match energy supply with instantaneous demand. This type of work is generally done through a combination of data analysis, three-dimensional atmospheric computer modeling of wind, solar, wave, and hydroelectric power resources, and transmission load flow computer modeling. Other energy research, performed through three-dimensional computer modeling, focuses on the effects, for example, of hydrogen fuel cell vehicles on air pollution and the ozone layer and the effects of ethanol and diesel vehicles on air quality and climate. Studies also examine the feedback of wind turbines to the atmosphere and the effects of climate change on wind and solar energy resources.

Atmospheric research in the program generally involves laboratory work, field measurements, or three-dimensional computer modeling of the combined atmosphere, ocean, and land surface. An example of laboratory work includes measuring the properties of organic particulate matter that forms in the atmosphere. Examples of fieldwork include measuring exposures to secondhand smoke, allergens, and emissions from building materials.

Computer modeling is performed at a variety of spatial scales, from the globe down to the size of a building or smaller. Some examples of modeling studies include examining the effects of air pollution particles on clouds, rainfall, water supply, ultraviolet radiation, the stratospheric ozone layer, and climate, simulating the dispersion of toxic contaminants in an urban street canyon, studying the effects of aircraft exhaust and biomass burning on climate, studying the effects of carbon dioxide

domes over cities on air pollution mortality, and studying the leading causes of global warming and their impacts.

Students interested in the Atmosphere and also Clean Renewable Energy systems would most likely apply to the Atmosphere/Energy Program. Those interested in the Atmosphere and also Water systems would most likely apply to the Environmental Engineering Program. Those interested in Atmospheric topics alone (e.g. weather, climate, pollution and its impacts) could apply to either, depending on the courses of interest.

Environmental Engineering Program

The mission of the Environmental Engineering program is to develop state-of-the-art knowledge, models, and processes which form the core of environmental engineering practice, and to train and educate current and future academic and professional environmental leaders. We do this by synthesizing physical, biological, and chemical facets of engineering and science along with elements of the social sciences into our research and teaching. Ultimately, the goal is to protect and sustain our natural resources and human health and contribute to the sustainable development of physical infrastructure, including systems for wastewater treatment, water supply, renewable energy, and resilient coastal environments.

Research and coursework in the Environmental Engineering program are centered around five focus areas:

- Aquatic Chemistry, Biology, and Process Engineering
- Environmental and Geophysical Fluid Mechanics
- Environmental Data, Statistics, and Modeling
- Human Health and the Environment
- Hydrology and Water Resources

Research in the program spans the physical, chemical, and biological dimensions of Environmental Engineering. The physical aspects are the primary focus of research in the Bob and Norma Street Environmental Fluid Mechanics Laboratory (EFML), whereas research on the chemical and biological aspects is conducted in the Environmental Engineering and Science Laboratory (EESL). The EESL is home to the National Science Foundation (NSF) supported Engineering Research Center for Re-inventing the Nation's Urban Water Infrastructure (ReNUWIt), a four-university consortium that seeks more sustainable solutions to urban water challenges in the arid west, the William and Cloy Codiga Resource Recovery Center (CR2C), a facility for pilot-scale testing of resource recovery technology, and one of the sites for the U.S. Department of Energy supported Energy-Water Desalination Hub entitled the National Alliance for Water Innovation. There is extensive crossover between the EFML and the EESL, reflecting the interdisciplinary nature of environmental engineering that seeks to quantify physical, biological, and chemical processes in the environment in an integrated way. Environmental research is also conducted in numerous centers and groups in the department including the Environmental Informatics Group, the National Performance of Dams Program (NPDP), and the center for Sustainable Development and Global Competitiveness (SDGC). There is also extensive collaboration with research centers and groups throughout the university, including the Stanford Woods Institute for the Environment, the Bill Lane Center for the American West, the Carnegie Institution, the Center for Innovation in Global Health, Stanford Bio-X, the Environmental and Natural Resources Law and Policy Program, the Freeman Spogli Institute for International Studies, and the Precourt Institute for Energy.

Courses in the Environmental Data, Statistics and Modeling, Environmental and Geophysical Fluid Mechanics, and Hydrology and Water Resources focus areas concentrate on developing an understanding of the physical processes controlling the movement of mass, energy, and momentum in aquatic environments and the atmosphere. Specific course topics include experimental methods, fluid transport and mixing processes, the fluid mechanics of stratified flows, natural flows in coastal waters, estuaries, lakes, and open channels, turbulence and its modeling, flow and transport in porous media, stochastic methods in both surface and subsurface hydrology, watershed hydrology and modeling, water resources infrastructure and systems, global atmospheric circulation, the atmospheric boundary layer, air pollution from global to indoor scales, and wind energy.
Courses in the Aquatic Chemistry, Biology, and Process Engineering and Human Health and the Environment focus areas emphasize the chemical, biological, and engineering aspects of air and water quality and pollution fate and transport, along with characterizing human health risks and developing testing strategies to protect public health. Specific course topics include chemical principles and their application to the analysis and solution of problems in aqueous environments, biochemical and biophysical principles of biochemical reactions, physical and chemical unit operations for water treatment, microbial processes for the transformation of environmental contaminants, microbial metabolic pathways in microbial bioenergy systems, the movement and survival of pathogens in the environment, use of microbial bioreactors for degradation of contaminants and recovery of clean water, quantification of human exposure to toxic chemicals and pathogens in the environment, methods to enumerate and isolate organisms used to assess risk of enteric illnesses in drinking and recreational waters, and the impacts of water supply and wastewater management approaches on public health around the globe.

Sustainable Built Environment Program

The Sustainable Built Environment program includes subprograms in Structural Engineering and Geomechanics, and Sustainable Design and Construction. These programs focus on educating practitioners and researchers to plan, design, build, and operate more sustainable buildings and infrastructure.

The Structural Engineering and Geomechanics (SEG) subprogram educates designers and researchers who want to progress beyond traditional life safety code-based design, to develop and disseminate performance-based structural and geotechnical engineering methods and tools that maximize the lifecycle economic value of facilities.

The Sustainable Design and Construction (SDC) subprogram provides courses in sustainable, multi-stakeholder design methods and tools that incorporate lifecycle assessment, project planning and entitlement, green architectural design, lighting, and energy analysis, power systems, transportation, water supply and wastewater treatment to educate students interested in promoting more sustainable development of buildings and infrastructure.

Admission is managed separately for these two subprograms; prospective students should indicate their preference on their application.

Structural Engineering and Geomechanics

The Structural Engineering and Geomechanics (SEG) subprogram encompasses teaching and research in structural design and analysis, structural materials, earthquake engineering and structural dynamics, advanced sensing and structural health monitoring, data science for smart structures and cities, risk and reliability analysis, disaster resilience, computational science and engineering, solid mechanics, computational mechanics, and geomechanics. The SEG subprogram prepares students for industrial or academic careers.

Students can balance engineering fundamentals with modern computational and experimental methods to customize programs to launch careers as consultants on large and small projects, designers, and engineering analysts.

Structural design and analysis focuses on the conceptual design of structural systems and on computational methods for predicting the static and dynamic, linear and nonlinear responses of structures.

Structural materials research and teaching focuses on the design and analysis of high-performance as well as low-environmental impact materials.

Earthquake engineering and structural dynamics addresses earthquake phenomena, ground shaking, and the behavior, analysis, and design of structures under seismic and other dynamic forces.

Advanced sensing and data science focuses on development and application of sensing, signal processing, and machine learning for structural systems. The goal is to better understand those systems and improve their performance as well as user experience. Applications include structural health monitoring, intelligent transportation system, occupant activity/health monitoring, and interactive space.

Reliability and risk analysis focuses on assessing damage and losses to structures and lifeline systems under earthquakes, wind and other hazards; insights from these assessments are used to engineer more sustainable structures and more resilient communities.

Computational science and engineering emphasizes the application of modern computing methods to structural engineering and geomechanics, and encompasses numerical, structural, and geotechnical analysis.

In the area of geomechanics, students focus on the application of the principles of computational and applied mechanics to problems involving geologic materials including soil and rock, as well as on the use of computational methods for analysis and design of foundations and earth structures.

Sustainable Design and Construction

The Sustainable Design and Construction (SDC) subprogram prepares students for careers in managing the planning, design, construction, and operation of sustainable buildings and infrastructure so that their lifecycle economic value, their net contribution to environmental functions and services, and their social equity are maximized. To give students the breadth and depth necessary to become leaders in practice or research in sustainable design and construction, the SDC program offers four tracks of study: construction, energy, structures, water and sustainable urban systems. In addition to providing critical skills and the necessary industry context, each track offers courses in the following areas of competency: Construction engineering and management; building and infrastructure development; structural performance, design, and analysis; infrastructure systems; energy systems, energy efficiency, and atmosphere.

Classes address advanced topics like modern company and project management methods; cutting-edge information technology, metrics and tools to enhance lifecycle sustainability of the built environment; sensor networks embedded in intelligent buildings and infrastructure; strategy, economics, entrepreneurship and organization design for new businesses; and corporate or governmental initiatives aimed at enhancing the sustainability of buildings and infrastructure.

The SDC subprogram is intended for students with undergraduate degrees in architecture, engineering, science, construction management, economics, or business who wish to pursue careers that enhance the sustainability of the built environment.

Employers of past SDC graduates include: architectural and engineering design firms, constructors, design-build firms, and developers focused on delivering green buildings and infrastructure; energy and sustainability consultants; facility management or sustainability departments within large companies; clean-tech start ups, and venture funds.

SDC Construction (SDC-C)

The SDC-C track includes courses in construction engineering and management and introduces advanced modeling and visualization methods and tools - including artificial intelligence and data science applications - known as virtual design and construction. This track prepares technically qualified students for leadership roles in engineering and management in all phases of the development of major constructed facilities. It emphasizes management techniques useful in organizing, planning, and controlling the activities of diverse specialists working within the unique project environment of the construction industry, and it covers construction engineering aspects of heavy, industrial, and building construction. Additional related course work is available from other programs within the department, from other engineering departments, and from other schools in the University such as Earth Sciences and the Graduate School of Business. SDC-C allows students substantial flexibility to tailor their program of study for careers with general contractors, specialty contractors, real estate or infrastructure developers, or facility owners and operators.

SDC-Energy (SDC-E)

The SDC-Energy (SDC-E) track includes courses on design and construction of buildings and infrastructure systems to produce, distribute, and consume energy sustainably. SDC-E prepares students for careers in design and construction of building energy systems, renewable power generating systems, and smart power grids connected to smart buildings and infrastructure, cleantech venture capital, sustainability-focused public policy, green real estate development, and sustainability management positions.

SDC-E includes courses from the CEE department and several other departments at Stanford on sustainable HVAC design and construction of small scale and large structures, the planning, design and construction of renewable power systems, and sensing and control technologies to link integrated smart grids with intelligent buildings, data centers and infrastructure systems.

SDC-Structures (SDC-S)

The SDC-Structures (SDC-S) track includes courses from construction engineering and management and Structural Engineering and Geomechanics (SEG) to prepare students for careers in design and construction firms that provide integrated design-build project delivery, construction management, and pre-construction services.

This track prepares students for multidisciplinary collaborative teamwork in an integrated design and construction process. The subprogram extends a student's design or construction background with core courses in each of these areas and develops the background needed to understand the concerns and expertise of the many project stakeholders. It includes a comprehensive project-based learning experience.

The SDC-S track is intended for applicants with backgrounds in engineering and science. Applicants should also have a background in the planning, design, or construction of built structures by virtue of work experience and/or their undergraduate education. Knowledge in subjects from the traditional areas of civil engineering is necessary for students to receive the degree and to satisfy prerequisite requirements for some of the required graduate courses. Students with an undergraduate degree in Civil Engineering, and who expect to pursue careers with design or construction firms that emphasize design-build, EPC, or turnkey projects should consider SDC-S.

SDC-Sustainable Urban Systems (SDC-SUS)

The SDC-Sustainable Urban Systems (SDC-SUS) track combines courses by several faculty from the Department of Civil and Environmental Engineering with courses on sustainable design and construction to focus on the urban scale of the built environment. The SDC-SUS track prepares students for careers in sustainable design, construction, and operation of infrastructure systems and communities.

This track offers courses in frameworks for urban-scale planning of infrastructure systems, technologies to model, simulate, analyze, and visualize the built environment at the urban scale, urban planning, and data analysis. The track includes a significant project-based experience on an actual project in a community.

This track is intended for students with a background in urban planning and systems-level understanding of the built environment from economic, environmental, or social perspectives with an interest to enhance the sustainability of the built environment through leadership roles in public agencies, city government, financial institutions, engineering firms, or technology providers.

Bachelor of Science in Civil Engineering

The B.S. in Civil Engineering is an ABET accredited program, which integrates research with engineering education. The B.S. in Civil Engineering offers a core providing a strong foundation in engineering, plus a choice of the following seven focus areas offering students the flexibility to align their studies with their interests: structures; construction; energy and climate; environmental engineering and health; fluid mechanics and hydrology; urban systems; or sensing, analytics and control.

Three educational objectives structure the Civil Engineering degree program. Graduates of the program are expected within a few years of graduation, to have the ability to:

1. Establish themselves as practicing professionals in civil or environmental engineering or a related field.
2. Pursue graduate study in civil or environmental engineering or other fields.
3. Work effectively as responsible professionals independently or in teams handling increasingly complex professional and societal expectations.

Students who major in Civil Engineering must complete the appropriate requirements for the B.S. degree listed. Because the undergraduate engineering curriculum provides breadth of study, students who intend to enter professional practice in civil engineering should plan to obtain their professional education at the graduate level.

A number of undergraduate programs at Stanford may be of interest to students looking at the Civil Engineering major. Students may consider related programs in the department in Atmosphere/Energy and Environmental Systems Engineering. For structures or construction, students might consider Architectural Design. And for construction, the urban focus area within Environmental Systems Engineering may be of interest.

Civil Engineering (CE)

Completion of the undergraduate program in Civil Engineering leads to the conferral of the Bachelor of Science in Civil Engineering.

Mission of the Undergraduate Program in Civil Engineering

The mission of the undergraduate program in Civil Engineering is to provide students with the principles of engineering and the methodologies necessary for civil engineering practice. This pre-professional program balances the fundamentals common to many specialties in civil engineering and allows for concentration in any of seven areas: structures, construction, environmental, energy/climate, fluid mechanics/hydrology, urban systems, or sensors/analytics. Students in the major learn to apply knowledge of mathematics, science, and civil engineering to conduct experiments, design structures and systems to creatively solve engineering problems, and communicate their ideas effectively. The major prepares students for careers in consulting, industry and government, as well as for graduate studies in engineering.

Requirements

		Units
Mathematics and Science		**45**
45 units minimum; see Basic Requirement 1 and 2 [1]		
Technology in Society		
One course required		
CEE 102A	Legal / Ethical Principles in Design, Construction, Project Delivery	3
Engineering Fundamentals		
Two courses required		
ENGR 14	Intro to Solid Mechanics	3
ENGR 90/CEE 70	Environmental Science and Technology	3
Engineering Depth		
Minimum of 68 Engineering Fundamentals plus Engineering Depth; see Basic Requirement 5		
CEE 100	Managing Sustainable Building Projects [2]	4
CS 106A	Programming Methodology (or CS 106B, CS 106X, CEE 101D)	5
ME 30	Engineering Thermodynamics (or CHEMENG 110A)	3
CEE 146S	Engineering Economics and Sustainability	3
CEE 183	Integrated Civil Engineering Design Project (Senior Capstone Design Course)	4
Focus Area Electives: at least 12 units in 1 major focus are, + at least 6 units each in 3 other focus areas (see below; no double counting) [4]		**30**
Additional CEE elective units (either select from focus areas below, from additional approved courses (see Footnote 5), or must be pre-approved by CEE Curriculum Comm.)		**13**
Total Units		116

1 Mathematics must include CME 100 Vector Calculus for Engineers and CME 102 Ordinary Differential Equations for Engineers (or MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications and Differential Calculus of Several Variables and MATH 53 Ordinary Differential Equations with Linear Algebra) and a Statistics course (STATS 101 Data Science 101 or STATS 110 Statistical Methods in Engineering and the Physical Sciences or CME 106 Introduction to Probability and Statistics for Engineers or CEE 203 Probabilistic Models in Civil Engineering). Science must include PHYSICS 41 Mechanics (or PHYSICS 41E Mechanics, Concepts, Calculations, and Context); either PHYSICS 43 Electricity and Magnetism or PHYSICS 45 Light and Heat; either CHEM 31A Chemical Principles I or CHEM 31M Chemical Principles: From Molecules to Solids; at least one of CEE 177 Aquatic Chemistry and Biology (required for major focus in fluid mechanics/ hydrology or environmental quality) or GEOLSCI 1 Introduction to Geology (required for major focus in structural, construction, urban systems, energy/climate or sensing/analytics); and additional physics, chemistry or mathematics to reach 45 units.

2 CEE 100 meets the Writing in the Major (WIM) requirement

3 A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

4 To satisfy ABET criteria, electives must include at least 2 of the following 4 courses: CEE 101A, 101B, 101C, 101D.

5 Preapproved courses for additional CEE elective units: ENGR 10, 15, 21, 25E, 40M (or 40A), 50 (or 50E or 50M); CEE 74N, 80N; and up to 4 units of CEE 199 or CEE 199L.

Construction Engineering Focus

		Units
CEE 120A	Building Modeling for Design & Construction	3
CEE 122A & CEE 122B	Computer Integrated Architecture/ Engineering/Construction and Computer Integrated A/E/C (each quarter = 2 units; must take both quarters)	4
CEE 131C	How Buildings are Made -- Materiality and Construction Methods	4
CEE 141A	Infrastructure Project Development	3
CEE 141B	Infrastructure Project Delivery	3
CEE 144	Design and Innovation for the Circular Economy	3
CEE 241	Managing Fabrication and Construction	4

Energy and Climate Focus

		Units
CEE 63	Weather and Storms	3
CEE 64	Air Pollution and Global Warming: History, Science, and Solutions	3
CEE 107A	Understanding Energy (or CEE 107S)	3-5
CEE 107R	E^3: Extreme Energy Efficiency	3
CEE 156	Building Systems Design & Analysis	4
CEE 172	Air Quality Management	3
CEE 176A	Energy Efficient Buildings	3
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	3-4

Environmental Fluid Mechanics & Hydrology Focus

		Units
CEE 101B	Mechanics of Fluids	4
CEE 161I	Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation	3
CEE 162D	Introduction to Physical Oceanography	4
CEE 162F	Coastal Processes	3
CEE 162I	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation	3
CEE 166A	Watershed Hydrologic Processes and Models	3
CEE 166B	Water Resources and Hazards	3
CEE 175A	California Coast: Science, Policy, and Law	3-4

Environmental Quality Engineering for Human Health Focus

		Units
CEE 172	Air Quality Management	3
CEE 174A	Providing Safe Water for the Developing and Developed World	3
CEE 174B	Wastewater Treatment: From Disposal to Resource Recovery	3
CEE 175A	California Coast: Science, Policy, and Law (alt. years)	3-4
CEE 178	Introduction to Human Exposure Analysis	3
CEE 265D	Water and Sanitation in Developing Countries	3

Sensing, Analytics and Control Focus

		Units
CEE 101D	Computations in Civil and Environmental Engineering	3
CEE 154	Data Analytics for Physical Systems	3-4
CEE 155	Introduction to Sensing Networks for CEE	3-4
CEE 156	Building Systems Design & Analysis	3
CEE 177L	Smart Cities & Communities	3
ME 161	Dynamic Systems, Vibrations and Control	3-4
ME 210	Introduction to Mechatronics	4

Structural Engineering and Mechanics Focus

		Units
CEE 101A	Mechanics of Materials	4
CEE 101C	Geotechnical Engineering	4
CEE 101D	Computations in Civil and Environmental Engineering	3
CEE 180	Structural Analysis	4
CEE 182	Structural Design	4
CEE 192	Laboratory Characterization of Properties of Rocks and Geomaterials	3-4
ME 151	Introduction to Computational Mechanics	4

Urban Systems Focus

		Units
CEE 120A	Building Modeling for Design & Construction	3
CEE 130	Architectural Design: 3-D Modeling, Methodology, and Process	5
CEE 156	Building Systems Design & Analysis	4
CEE 176A	Energy Efficient Buildings	3-4
CEE 177L	Smart Cities & Communities	3
CEE 243	Intro to Urban Sys Engrg	3

Honors Program

This program leads to a B.S. with honors for undergraduates majoring in Civil Engineering or in Environmental Systems Engineering. It is designed to encourage qualified students to undertake a more intensive study of civil and environmental engineering than is required for the normal majors through a substantial, independent research project.

The program involves an in-depth research study in an area proposed to and agreed to by a Department of Civil and Environmental Engineering faculty adviser and completion of a thesis of high quality. A written proposal for the research to be undertaken must be submitted and approved by the faculty adviser in the fourth quarter prior to graduation. At the time of application, the student must have an overall grade point average (GPA) of at least 3.3 for course work at Stanford; this GPA must be maintained to graduation. The thesis is supervised by a CEE faculty adviser and must involve input from the School of Engineering writing program by means of ENGR 202S Directed Writing Projects or ENGR 199W Writing of Original Research for Engineers. The written thesis must be approved by the thesis adviser. Students are encouraged to present their results in a seminar for faculty and students. Up to 10 units of CEE 199H Undergraduate Honors Thesis, may be taken to support the research and writing (not to duplicate ENGR 202S or ENGR 199W). These units are beyond the normal Civil Engineering or Environmental Systems Engineering major program requirements.

For additional information on the major, minor, honors and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

Bachelor of Science in Environmental Systems Engineering

For undergraduate studies focusing on Environmental Engineering, two options are available. The undergraduate Civil Engineering major (which is ABET-accredited) offers the ability to focus on environmental topics, and the Environmental Systems Engineering major (which is not ABET-accredited) offers a choice of focusing on coastal environments, freshwater environments, or urban environments.

Environmental Systems Engineering (EnvSE)

Completion of the undergraduate program in Environmental Systems Engineering leads to the conferral of the Bachelor of Science in Environmental Systems Engineering.

Mission of the Undergraduate Program in Environmental Systems Engineering

The mission of the undergraduate program in Environmental Systems Engineering is to prepare students for incorporating environmentally sustainable design, strategies and practices into natural and built systems and infrastructure involving buildings, water supply, and coastal regions. Courses in the program are multidisciplinary in nature, combining math/science/engineering fundamentals, and tools and skills considered essential for an engineer, along with a choice of one of three focus areas for more in-depth study: coastal environments, freshwater environments, or urban environments. This major offers somewhat more flexibility in the curriculum than the Civil Engineering degree program, and requires fewer units. The program of study, which includes a capstone experience, aims to equip engineering students to take on the complex challenges of the twenty-first century involving natural and built environments, in consulting and industry as well as in graduate school.

Degree Requirements

		Units
Mathematics and Science		
See Basic Requirement 1 and 2 [1]		36
Technology in Society (TiS)		
One 3-5 unit course required, course chosen must be on the SoE Approved Courses list at <ughb.stanford.edu> the year taken; see Basic Requirement 4 [4]		3-5
Engineering Fundamentals		
Two courses minimum (see Basic Requirement 3), including:		
CS 106A	Programming Methodology	5
(or CS 106X)		
ENGR 14	Intro to Solid Mechanics	3
Fundamental Tools/Skills [2]		**9**
in visual, oral/written communication, and modeling/analysis		
Specialty Courses, in either		**40**
Coastal environments (see below)		
or Freshwater environments (see below)		
or Urban environments (see below)		
Total Units		**96-98**

1 Math must include CME 100 Vector Calculus for Engineers (or MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications), and either a Probability/Statistics course or CME 102 Ordinary Differential Equations for Engineers (or MATH 53 Ordinary Differential Equations with Linear Algebra). Science must include PHYSICS 41 Mechanics; and either CHEM 31B Chemical Principles II or CHEM 31M Chemical Principles: From Molecules to Solids (or PHYSICS 43 Electricity and Magnetism, for Urban focus area only).

2 Fundamental tools/skills must include:

1. CEE 1 Introduction to Environmental Systems Engineering;
2. at least one visual communication class from CEE 31 Accessing Architecture Through Drawing / CEE 31Q Accessing Architecture Through Drawing, DESINST 270 Visual Design Fundamentals, ME 101 Visual Thinking, ME 110 Design Sketching, ARTSTUDI 160 Intro to Digital / Physical Design, or OSPPARIS 44 EAP. Analytical Drawing and Graphic Art;
3. at least one oral/written communication class from ENGR 103 Public Speaking, CEE 102W Technical and Professional Communication, ENGR 202W Technical Communication, CEE 151 Negotiation, EARTHSYS 191 Concepts in Environmental Communication or ORALCOMM 117 The Art of Effective Speaking;
4. at least one modeling/analysis class from CEE 101D Computations in Civil and Environmental Engineering (or CEE 101S) if not counted as Math, CEE 120A Building Modeling for Design & Construction (online only), CEE 146S Engineering Economics and Sustainability (online only), CEE 118X Shaping the Future of the Bay Area, CEE 155 Introduction to Sensing Networks for CEE, CEE 226 Life Cycle Assessment for Complex Systems, CME 211 Software Development for Scientists and Engineers, CS 102 , EARTHSYS 140 , EARTHSYS 142 Remote Sensing of Land, EARTHSYS 144 Fundamentals of Geographic Information Science (GIS), or ESS 227 Decision Science for Environmental Threats

3 A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

4 Basic Requirement 4: Technology in Society (TiS) requirement.

Urban Environments Focus Area (40 units)

		Units
Required		
CEE 100	Managing Sustainable Building Projects	4
CEE 101B	Mechanics of Fluids	4
CEE 146S	Engineering Economics and Sustainability	3
CEE 176A	Energy Efficient Buildings	3
or		
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	3-4
Electives (at least two of the 4 areas below must be included with at least 3 units from 2nd area)		
Building Systems		
CEE 102A	Legal / Ethical Principles in Design, Construction, Project Delivery	3
CEE 120B	Advanced Building Modeling Workshop	2-4
CEE 130	Architectural Design: 3-D Modeling, Methodology, and Process	5
or		
CEE 131C	How Buildings are Made -- Materiality and Construction Methods	4
CEE 156	Building Systems Design & Analysis	4
Energy Systems		
CEE 107A	Understanding Energy (or CEE 107S, Sum. 3-4 units)	4-5
CEE 176B	100% Clean, Renewable Energy and Storage for Everything ((if not counted as req'd course))	3-4
ENERGY 104	Sustainable Energy for 9 Billion	3

CEE 173S	Electricity Economics	3
or		
ENERGY 171	Energy Infrastructure, Technology and Economics	3
or		
ENERGY 191	Optimization of Energy Systems	3-4
Water Systems		
CEE 166A	Watershed Hydrologic Processes and Models	4
CEE 166B	Water Resources and Hazards	4
CEE 170	Aquatic and Organic Chemistry for Environmental Engineering	3
CEE 174A	Providing Safe Water for the Developing and Developed World	3
CEE 174B	Wastewater Treatment: From Disposal to Resource Recovery	3
Urban Planning, Design, Analysis		
CEE 6	Physics of Cities	3
CEE 136	Planning Calif: the Intersection of Climate, Land Use, Transportation & the Economy	3
or		
CEE 275D	Environmental Policy Analysis	3-4
or		
CEE 273B	The Business of Water	2
CEE 177L	Smart Cities & Communities	3
URBANST 113	Introduction to Urban Design: Contemporary Urban Design in Theory and Practice	5
or		
URBANST 164	Sustainable Cities	4-5
or		
URBANST 165	(alt. years)	4-5
ME 267	Ethics and Equity in Transportation Systems	3
Capstone (one class required)		
CEE 131D	Urban Design Studio ((or CEE 131E))	5
CEE 141A	Infrastructure Project Development	3
CEE 141B	Infrastructure Project Delivery	3
CEE 226E	Advanced Topics in Integrated, Energy-Efficient Building Design	2-3
CEE 218Y	Shaping the Future of the Bay Area	3-5
CEE 218Z	Shaping the Future of the Bay Area	3-5
CEE 243	Intro to Urban Sys Engrg	3
CEE 265F	Environmental Governance and Climate Resilience	3
CEE 199	Undergraduate Research in Civil and Environmental Engineering	3-4

Freshwater Environments Focus Area (40 units)

		Units
Required		
CEE 70	Environmental Science and Technology	3
CEE 101B	Mechanics of Fluids	4
CEE 177	Aquatic Chemistry and Biology ((or CEE 170))	4
CEE 166A	Watershed Hydrologic Processes and Models	4
or		
CEE 174A	Providing Safe Water for the Developing and Developed World	3
or		
CEE 162E	Rivers, Streams, and Canals	3
Electives		
CEE 162E	Rivers, Streams, and Canals (if not counted as a required course)	3
CEE 162F	Coastal Processes	3
CEE 166A	Watershed Hydrologic Processes and Models (if not counted as a required course)	4
CEE 166B	Water Resources and Hazards	4
CEE 136	Planning Calif: the Intersection of Climate, Land Use, Transportation & the Economy	3
or		
CEE 275D	Environmental Policy Analysis	3-4
or		
CEE 273B	The Business of Water	2
CEE 174A	Providing Safe Water for the Developing and Developed World ((prereq: CHEM 31B) (if not counted as a req'd course))	3
CEE 174B	Wastewater Treatment: From Disposal to Resource Recovery ((prereq: CEE 174A))	3
CEE 177L	Smart Cities & Communities	3
or		
CEE 260D	Remote Sensing of Hydrology (prerequisite CS 106A)	3
CEE 265A	Resilience, Sustainability and Water Resources Development (offered occasionally)	3
CEE 265D	Water and Sanitation in Developing Countries	3
BIOHOPK 150H	Ecological Mechanics (alternate years)	3
Capstone (1 class required)		
CEE 141A	Infrastructure Project Development (recommended prerequisite: CEE 136)	3
CEE 218Y	Shaping the Future of the Bay Area	3-5
CEE 218Z	Shaping the Future of the Bay Area	3-5
CEE 199	Undergraduate Research in Civil and Environmental Engineering (must petition CEE UG Committee for approval, prior to enrollment; must have completed at least 6 focus area classes, excluding Breadth)	3-4

Coastal Environments Focus Area (40 units)

		Units
Required		
CEE 70	Environmental Science and Technology	3
CEE 101B	Mechanics of Fluids	4
And two of the following 4 classes:		
CEE 162F	Coastal Processes	3
CEE 162D	Introduction to Physical Oceanography	4
CEE 162I	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation	3
CEE 175A	California Coast: Science, Policy, and Law	3-4
Electives		
CEE 162D	Introduction to Physical Oceanography (if not counted as a required class)	4
CEE 162F	Coastal Processes (if not counted as a required class)	3

CEE 162I	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation (if not counted as a req'd class)	3
CEE 166A	Watershed Hydrologic Processes and Models	4
CEE 136	Planning Calif: the Intersection of Climate, Land Use, Transportation & the Economy	3
or		
CEE 275D	Environmental Policy Analysis	3-4
or		
CEE 273B	The Business of Water	2
CEE 174A	Providing Safe Water for the Developing and Developed World	3
CEE 174B	Wastewater Treatment: From Disposal to Resource Recovery	3
CEE 175A	California Coast: Science, Policy, and Law	3-4
CEE 177	Aquatic Chemistry and Biology	4
or CEE 170	Aquatic and Organic Chemistry for Environmental Engineering	
CEE 272	Coastal Contaminants	3-4
BIOHOPK 150H	Ecological Mechanics	3
BIO 30	Ecology for Everyone	4
or		
BIO 81	Introduction to Ecology	4
or		
BIOHOPK 81	Introduction to Ecology	4
or		
EARTHSYS 116	Ecology of the Hawaiian Islands	4
or		
OSPAUSTL 32	Coastal Ecosystems	3
or		
OSPGEN 53		2
or		
OSPSANTG 85	Marine Ecology of Chile and the South Pacific	5
DESINST 250	Oceans by Design	3
ESS 8	The Oceans: An Introduction to the Marine Environment	4
or		
ESS 240	Advanced Oceanography	3
or		
BIOHOPK 182H	Stanford at Sea (Oceanography portion - only 4 units may count)	4
EARTHSYS 141	Remote Sensing of the Oceans	3-4
EARTHSYS 151	Biological Oceanography	3-4
to be taken concurrently with		
EARTHSYS 152	Marine Chemistry	3-4
Capstone (1 class required)		
CEE 141A	Infrastructure Project Development	3
CEE 218Y	Shaping the Future of the Bay Area	3-5
CEE 218Z	Shaping the Future of the Bay Area	3-5
CEE 199	Undergraduate Research in Civil and Environmental Engineering (must petition CEE UG Committee for approval, prior to enrollment; must have completed at least 6 focus area classes, excluding Breadth)	3-4

Honors Program

This program leads to a B.S. with honors for undergraduates majoring in Civil Engineering or in Environmental Systems Engineering. It is designed to encourage qualified students to undertake a more intensive study of civil and environmental engineering than is required for the normal majors through a substantial, independent research project.

The program involves an in-depth research study in an area proposed to and agreed to by a Department of Civil and Environmental Engineering faculty adviser and completion of a thesis of high quality. A written proposal for the research to be undertaken must be submitted and approved by the faculty advisor in the fourth quarter prior to graduation. At the time of application, the student must have an overall grade point average (GPA) of at least 3.3 for course work at Stanford; this GPA must be maintained to graduation. The thesis is supervised by a CEE faculty adviser and must involve input from the School of Engineering writing program by means of ENGR 202S Directed Writing Projects or ENGR 199W Writing of Original Research for Engineers. The written thesis must be approved by the thesis adviser. Students are encouraged to present their results in a seminar for faculty and students. Up to 10 units of CEE 199H Undergraduate Honors Thesis, may be taken to support the research and writing (not to duplicate ENGR 202S or ENGR 199W). These units are beyond the normal Civil Engineering or Environmental Systems Engineering major program requirements.

For additional information on the major, minor, honors, and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

Honors Program

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The program involves an in-depth research study in an area proposed to and agreed to by a Department of Civil and Environmental Engineering faculty adviser and completion of a thesis of high quality. A written proposal for the research to be undertaken must be submitted and approved by the faculty advisor in the fourth quarter prior to graduation. At the time of application, the student must have an overall grade point average (GPA) of at least 3.3 for course work at Stanford; this GPA must be maintained to graduation. The thesis is supervised by a CEE faculty adviser and must involve input from the School of Engineering writing program by means of ENGR 202S Directed Writing Projects or ENGR 199W Writing of Original Research for Engineers. The written thesis must be approved by the thesis adviser. Students are encouraged to present their results in a seminar for faculty and students. Up to 10 units of CEE 199H Undergraduate Honors Thesis, may be taken to support the research and writing (not to duplicate ENGR 202S or ENGR 199W). These units are beyond the normal Civil Engineering or Environmental Systems Engineering major program requirements.

Minor in Civil Engineering or Environmental Systems Engineering

The department offers a minor in Civil Engineering and a minor in Environmental Systems Engineering. Departmental expertise and undergraduate course offerings are available in the areas of environmental engineering and science, environmental fluid mechanics and hydrology, and atmosphere/energy. The courses required for the minors typically have prerequisites. Minors are not ABET-accredited programs.

Civil Engineering (CE) Minor

The civil engineering minor is intended to give students a focused introduction to one or more areas of civil engineering. Departmental expertise and undergraduate course offerings are available in the areas of Architectural Design, Construction Engineering and Management, and Structural and Geotechnical Engineering. Students interested in Environmental and Water Studies should refer to the Environmental Systems Engineering minor.

The minimum prerequisite for a civil engineering minor is MATH 19 Calculus (or MATH 20 Calculus or MATH 21 Calculus); however, many courses of interest require PHYSICS 41 Mechanics and/or MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications as prerequisites. The minimum prerequisite for a Civil Engineering minor focusing on architectural design is MATH 19 Calculus (or MATH 20 Calculus or MATH 21 Calculus). Students should recognize that a minor in civil engineering is not an ABET-accredited degree program.

Since undergraduates having widely varying backgrounds may be interested in obtaining a civil engineering minor, and the field itself is so broad, no single set of course requirements will be appropriate for all students. Instead, interested students are encouraged to propose their own set of courses within the guidelines listed below. Additional information, including example minor programs, are provided on the CEE web site (http://cee.stanford.edu/prospective/undergrad/minor_overview.html) and in Chapter 6 of the Handbook for Undergraduate Engineering Programs (http://ughb.stanford.edu/).

General guidelines are:

1. A civil engineering minor must contain at least 24 units of course work not taken for the major, and must consist of at least six classes of at least 3 units each of letter-graded work, except where letter grades are not offered.
2. The list of courses must represent a coherent body of knowledge in a focused area, and should include classes that build upon one another. Example programs are given on the CEE webpage.

Professor Anne Kiremidjian (kiremidjian@stanford.edu) is the CEE undergraduate minor adviser in Structural Engineering and Construction Engineering and Management. John Barton (jhbarton@stanford.edu (http://www.stanford.edu/dept/registrar/bulletin/jhbarton@stanford.edu)), Program Director for Architectural Design, is the undergraduate minor adviser in Architectural Design. Students must consult the appropriate adviser when developing their minor program, and obtain approval of the finalized study list from them.

Environmental Systems Engineering (EnvSE) Minor

The Environmental Systems Engineering minor is intended to give students a focused introduction to one or more areas of Environmental Systems Engineering. Departmental expertise and undergraduate course offerings are available in the areas of environmental engineering and science, environmental fluid mechanics and hydrology, and atmosphere/energy. The minimum prerequisite for an Environmental Systems Engineering minor is MATH 19 Calculus (or MATH 20 Calculus or MATH 21 Calculus); additionally, many courses of interest require PHYSICS 41 Mechanics and/or MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications as prerequisites. Students should recognize that a minor in Environmental Systems Engineering is not an ABET-accredited degree program.

Since undergraduates having widely varying backgrounds may be interested in obtaining an Environmental Systems Engineering minor, no single set of course requirements is appropriate for all students. Instead, interested students are encouraged to propose their own set of courses within the guidelines listed below. Additional information on preparing a minor program is available in the Undergraduate Engineering Handbook (http://web.stanford.edu/group/ughb/cgi-bin/handbook/index.php/Handbooks/).

General guidelines are—

- An Environmental Systems Engineering minor must contain at least 24 units of course work not taken for the major, and must consist of at least six classes of at least 3 units each of letter-graded work, except where letter grades are not offered.
- The list of courses must represent a coherent body of knowledge in a focused area, and should include classes that build upon one another. Example programs are available on the CEE web site (https://cee.stanford.edu/academics/undergraduate-programs/minor/).

Professor Nicholas Ouellette (nto@stanford.edu) is the CEE undergraduate minor adviser in Environmental Systems Engineering. Students must consult with Professor Ouellette (https://cee.stanford.edu/people/nicholas-t-ouellette/) in developing their minor program, and obtain approval of the finalized study list from him.

Coterminal M.S. Program in Civil and Environmental Engineering

Stanford undergraduates who wish to continue their studies for the Master of Science degree in the coterminal program at Stanford must have earned a minimum of 120 units towards graduation. This includes allowable Advanced Placement (AP) and transfer credit. Applicants must submit their application no later than the quarter prior to the expected completion of their undergraduate degree and are expected to meet the Department of Civil and Environmental Engineering application deadlines for coterminal applicants for graduate study (the third Friday of January). Applications are considered once a year during Winter Quarter. An application must display evidence of potential for strong academic performance as a graduate student.

It is recommended that students who contemplate advanced study at Stanford discuss their plans with their advisers in the junior year.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Master of Science in Civil and Environmental Engineering

The following programs are available leading to the M.S. degree in Civil and Environmental Engineering:

- Atmosphere/Energy
- Environmental Engineering
- Structural Engineering and Geomechanics
- Sustainable Design and Construction

Students admitted to graduate study with a B.S. in Civil Engineering, or equivalent, from an accredited curriculum can satisfy the requirements for the M.S. degree in Civil and Environmental Engineering by completing a minimum of 45 units beyond the B.S. All 45 units must be taken at Stanford. A minimum 2.75 grade point average (GPA) is required for candidates to be recommended for the M.S. degree. No thesis is required.

The program of study must be approved by the faculty of the department and should include at least 45 units of courses in engineering, mathematics, science, and related fields unless it can be shown that other work is pertinent to the student's objectives. Additional program area requirements are available on the department web site and from the department's student services office (Y2E2 room 316).

Candidates for the M.S. in Civil and Environmental Engineering who do not have a B.S. in Civil Engineering may, in addition to the above, be required to complete those undergraduate courses deemed important to their graduate programs. In such cases, more than three quarters is often required to obtain the degree.

Engineer in Civil and Environmental Engineering

A student with an M.S. in Civil Engineering may satisfy the requirements of the degree of Engineer in Civil and Environmental Engineering by completing 45 unduplicated course work and research units for a total of 90 units. Engineer candidates must submit an acceptable thesis (12-15 units) and maintain a minimum GPA of 3.0. The program of study must be approved by a faculty member in the department.

This degree is recommended for those desiring additional graduate education, especially those planning a career in professional practice. The thesis normally should be started in the first quarter of graduate study after the M.S. degree. Programs are offered in the fields of specialization mentioned for the M.S. degree. For students who will continue study toward a CEE Ph.D., the Engineer thesis topic must be significantly different from their doctoral research.

Graduate students who lack adequate background in their area of specialization (e.g. lack a prior degree in civil engineering, if required in their program) or who are not full-time students should expect to be enrolled for more than two years. Engineer degree candidates should develop individually tailored expected-progress timetables in consultation with their program advisers.

For graduate students not currently attending Stanford, admission to study for the Engineer degree in the Department of Civil and Environmental Engineering begins with the office of Graduate Admissions (http://www.stanford.edu/home/admission/index/html/).

If you are currently pursuing a graduate degree at Stanford, and wish to apply for the Engineer degree program, submit an Application for Post-Masters Study (available in the department office, Y2E2 Room 314). This form is typically filed during your second quarter of graduate study, by January 15, so that your application may be reviewed during the normal graduate admissions cycle. You may apply at a later date if your adviser feels that it is appropriate to do so.

A minimum of 90 quarter units of full-time graduate study (or equivalent part-time graduate study) is required for the Engineer degree. For most students, the master's degree supplies 45 of these units.

If your master's degree was obtained at another school, you can apply to transfer up to 45 quarter units of residency credit by completing an Application for Transfer Credit for Graduate Work Done Elsewhere. No units need to be transferred if you hold an M.S. degree from Stanford.

Doctor of Philosophy in Civil and Environmental Engineering

The Ph.D. is offered under the general regulations of the University as set forth in the "Graduate Degrees" section of this bulletin. This degree is recommended for those who expect to engage in a professional career in research, teaching, or technical work of an advanced nature. The Ph.D. program requires a total of 135 units of graduate study, at least 90 units of which must be at Stanford. Up to 45 units of graduate study can be represented by the M.S. program described above. Additionally, up to 45 units of graduate study can be represented by the Engineer (ENG) program as described above if both the M.S. and ENG units were all completed at Stanford. Students must maintain a minimum GPA of 3.0 in post-M.S. course work. All candidates for the Ph.D. degree are required to complete CEE 200 in conjunction with a one-quarter teaching assistantship/course assistantship to gain training and instructional experience. Further information on Ph.D. requirements and regulations is found in the department Graduate Handbook.

The program of study is arranged via consultation between the prospective candidate and their dissertation research adviser. This program of study considers the interests of the student, and the background needed for their thesis topic, within the framework of the requirements of the department and the University.

By the end of a student's sixth quarter as an enrolled PhD student, excluding summers, the student is expected to pass both parts of the department's General Qualifying Examination (GQE) to be admitted to candidacy for the doctoral degree. The purpose of the GQE is to ensure that the student is adequately prepared to undertake doctoral research and has a well planned research topic. The exam include (1) a written and/or oral general examination of the candidate's doctoral major field, (2) a presentation and defense of the candidate's doctoral research dissertation proposal, or (3) a combination research proposal and general examination. The GQE is administered by an advisory committee consisting of at least three Stanford faculty members, including a chair who is a faculty member in Civil and Environmental Engineering, and the student's doctoral adviser. When the primary advisor is not a member of the CEE faculty (CEE-Academic Council), there must be a CEE faculty (CEE-Academic Council) co-adviser, and the committee will consist of four examiners, with a minimum of two members who are Academic Council in the CEE department. All members are normally on the Stanford Academic Council. A petition for appointment of one advisory committee member who is not on the Academic Council may be made if the proposed person contributes an area of expertise that is not readily available from the faculty. Such petitions are subject to approval by the department chair. When the primary research adviser is not a member of the CEE Academic Council faculty, there must be a CEE faculty (CEE-Academic Council) co-adviser, and the committee will consist of four examiners, with a minimum of two members who are Academic Council faculty in the CEE department.

Ph.D. Minor in Civil and Environmental Engineering

A Ph.D. minor is a program outside a major department. Requirements for a minor are established by the minor department. Acceptance of the minor as part of the total Ph.D. program is determined by the major

department. Application for the Ph.D. minor must be approved by both the major and the minor department, and the minor department must be represented at the University oral examination.

A student desiring a Ph.D. minor in Civil and Environmental Engineering (CEE) must have a minor program adviser who is both a CEE faculty member and a member of the Academic Council. The faculty member must be in the program of the designated minor subfield of CEE. This adviser must be a member of the student's University oral examination committee and the reading committee for the doctoral dissertation.

The program must include at least 20 units of graduate-level course work (courses numbered 200 or above, excluding special studies and thesis) in CEE completed at Stanford University. Units taken for the minor cannot be counted as part of the 45 unduplicated units for the PhD major. The list of courses must form a coherent program and must be approved by the minor program adviser and the CEE chair. A minimum GPA of 3.0 must be achieved in these courses.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

Students in the Atmosphere/Energy (A/E), Architectural Design (AD), Civil Engineering (CE), and Environmental Systems Engineering (EnvSE) majors may count S/NC and CR/NC classes taken in 2020-21 (Autumn, Winter, Spring, or Summer) towards their Math, Science, Engineering Fundamentals, TiS, WIM, and Depth Requirements. For classes taken in 2020-21, there are no limits on the number of S/NC or CR/NC courses, or the number of S/NC or CR/NC units, which may count towards any of these four majors.

"Depth Requirements" are labelled in various ways in these four majors, including Engineering Depth, Required Core, Required Specialty, Focus Area Requirements, Depth Electives, Specialty Electives, Focus Electives, Depth Options, Breadth Electives, Additional Units, Senior Capstone, and Fundamental Tools/Skills; all of these categories are depth requirements, and may be taken S/NC or CR/NC in 2020-21 and counted as part of the major.

Graduate Degree Requirements

Grading

Grade Type Requirement Courses taken to satisfy the requirements for a graduate degree (M.S., Engineer, or Ph.D.) normally should be taken for a letter grade (A, B, C, or D). Core courses taken to satisfy a degree's subplan (AE, EnvEng, EES, EFMH, , SDC or SEG) require a letter grade. An exception to this policy is made when a course is offered only on a satisfactory/no credit (S/NC) basis.

The following additional exception to this policy applies: there is no restriction on the number of units taken for CR/NC in Summer 2020, Autumn 2020, Winter 2021, Spring 2021, and Summer 2021 which may be counted to satisfy the requirements for a CEE graduate degree. However, students should inform themselves of the limits to the number of S/NC units their subplans will accept toward a degree. Unless the program specifies otherwise, the Graduate School of Business (GSB) and Law School grading systems are considered to be graded units.

Graduate Advising Expectations

Faculty advisers serve as intellectual and professional mentors to their graduate students. They are expected to provide knowledgeable support concerning policies for graduate studies, help prepare their students to be competitive for employment, maintain a high level of professionalism, and establish expectations concerning adviser/advisee relationship consistent with University and department standards. General University policies on advising and the conduct of research can be found at VPGE's Advising and Mentoring (https://vpge.stanford.edu/academic-guidance/advising-mentoring/) web site.

It is important to distinguish between master's and doctoral advising. Master's students are assigned academic program advisers randomly, unless they explicitly request a specific faculty to advise them. The process by which a master's student can change advisers is flexible and can be done without any paperwork, provided that the change of adviser is made within the same program. The student, however, is expected to inform their old and new academic advisers, as well as the department's students services office, of such a change. Doctoral students, on the other hand, are expected to be advised by the faculty who admitted them throughout the duration of their doctoral studies. Any change in adviser requires a formal admit letter from the new adviser that includes an explicit commitment to support the student financially throughout the duration of their doctoral studies.

Master's students are expected to meet with their academic program advisers at the beginning of the school year to discuss their courses and proposed year-long academic plans. They are empowered to request an appointment with their adviser at any time throughout the school year to discuss any problems that arise with their studies, or changes with their academic plans.

Doctoral students and their faculty advisers are expected to discuss and agree on how regular meetings will be set up within a day or two of the student's start as a Ph.D. student. The discussion should include meeting frequency and deliverables associated with any of those meetings. They should discuss and agree on how the degree progress will be monitored, for example, through a department annual review process or regular meetings with adviser and thesis committees. They should also discuss all the requirements of the Ph.D. degree, including expectations for the General Qualifying Examination, how and when to select and convene the dissertation reading or thesis committee, when and how to decide when a student is ready to graduate, and when to take the University Oral Examination.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Emeriti: (Professors) James O. Leckie, Raymond E. Levitt*, Gilbert M. Masters*, Perry L. McCarty*, Henry W. Parker, Martin Reinhard*, Haresh C. Shah, Robert L. Street*, Clyde B. Tatum*, Paul M. Teicholz

Chair: Lynn M. Hildemann

Associate Chairs: Ronaldo I. Borja, Michael D. Lepech

Co-Directors of Graduate Studies: David L. Freyberg, Nicholas T. Ouellette

Professors: Jack W. Baker, Sarah L. Billington, Alexandria B. Boehm, Ronaldo I. Borja, Craig S. Criddle, Jennifer Davis, Gregory G. Deierlein, Martin A. Fischer, Oliver B. Fringer, Lynn M. Hildemann, Mark Z. Jacobson, Anne S. Kiremidjian, Peter K. Kitanidis (on sabbatical Winter Quarter),

Jeffrey R. Koseff, Kincho H. Law, Richard G. Luthy, Eduardo Miranda, William A. Mitch, Stephen G. Monismith, Leonard Ortolano, Nicholas T. Ouellette, Alfred M. Spormann

Associate Professors: David L. Freyberg, Michael D. Lepech, Christian Linder, Meagan Mauter, Haeyoung Noh, Ram Rajagopal

Assistant Professors: Sarah Fletcher, Catherine Gorlé, Rishee Jain

Emeritus Courtesy Professor: Peter M. Pinsky

Courtesy Professor: Margot G. Gerritsen

Courtesy Associate Professor: Leif Thomas

Courtesy Assistant Professor: Jenny Suckale

Senior Lecturer: John Barton

Lecturers: Michael Azgour, Thomas Beischer, Michael Bennon, Beverly Choe Harris, Stanley Christensen, Daniel Colvard, Kyle Douglas, Derek Fong, Renate Fruchter, Diana Gragg, Darryl Goodson, Robert Groves, Kenneth Hayes, Daniel Johnson, Glenn Katz, David Kleiman, Drew Krafcik, Nelson Koen Cohen, Royal Kopperud, Amy Larimer, Michael Lyons, Renë Morkos, Jose Luis Moscovich, Andrew Peterman, Alexander (Sandy) Robertson, Peter Rumsey, Hattie Stroud, Anand Subramani, Sebastien Tilmans, Ethen J. Wood, Jon Wren, Jiaona Zhang

Adjunct Lecturers: Leo Chow, Dimitris Farmakis, Erik Kolderup, Ashby Monk, Peter Rumsey, Mark Sarkisian, Bryan Shiles, Kristen Stasio, Christopher Wasney, Allison Williams

Adjunct Professors: Howard Ashcraft, Vladimir Bazjanac, Terry Beaubois, James Cloern, Angelos Findikakis, Robert Groves, Robert Hickey, Jeremy Isenberg, Calvin Kam, Michael Kavanaugh, Gloria Lau, Mike Lyons, Andrew Manning, Martin McCann Jr, Paul Meyer, Pedram Mokrian, Piotr Moncarz, Jose Luis Moscovitch, Colin Ong, Wayne Ott, Benedict Schwegler, Brian Sedar, Patrick Shiel, Michael Steep, Avram Tucker, Jie Wang, Jane Woodward, Jon Wren

Visiting Professor:

* Recalled to active duty.

Overseas Studies Courses in Civil and Environmental Engineering

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPAUSTL 10	Coral Reef Ecosystems	3
OSPAUSTL 28	Terrestrial Ecology and Conservation	3
OSPAUSTL 32	Coastal Ecosystems	3
OSPPARIS 44	EAP. Analytical Drawing and Graphic Art	2
OSPSANTG 85	Marine Ecology of Chile and the South Pacific	5
SINY 162	Sustainable and Resilient Urban Systems in NYC	3-4

Note: OSPAUSTL 10 and OSPAUSTL 28 may count towards the ENVSE-BS Breadth. OSPAUSTL 32 and OSPSANTG 85 may count towards the ENVSE-BS, Coastal Environments Focus Area Electives. SINY 162 may count towards the ENVSE-BS, Urban Environments Focus Area Electives. OSPPARIS 44 may count towards the ENVSE-BS, Fundamental Tools/Skills in visual, oral/written communication.

Courses

CEE 1. Introduction to Environmental Systems Engineering. 1 Unit.
Field trips visiting environmental systems installations in Northern California, including coastal, freshwater, and urban infrastructure. Requirements: Several campus meetings, and field trips. Enrollment limited; priority given to undergraduates who have declared Environmental Systems Engineering major, and undeclared Fr/Sophs.

CEE 1A. Graphics Course. 2 Units.
This course, intended for students taking a design studio, will focus on presentation theories, skills and design approaches. Through readings and exercises, and ultimately the student's own work, students will develop skill and complexity in their graphic and verbal presentations.

CEE 6. Physics of Cities. 3 Units.
An introduction to the modern study of complex systems with cities as an organizing focus. Topics will include: cities as interacting systems; cities as networks; flows of resources and information through cities; principles of organization, self-organization, and complexity; how the properties of cities scale with size; and human movement patterns. No particular scientific background is required, but comfort with basic mathematics will be assumed. Prerequisites: MATH 19 and 20, or the equivalent. Same as: URBANST 109

CEE 10A. Introduction to Architecture. 2 Units.
This class introduces students to the discipline of architecture and to the fundamental question: What is an architect and how is architecture distinct from other arts and sciences? To answer this question, the class will focus on concepts important to the practice of architecture including: project conception, drawing, modeling, materials, structure, form, and professionalism. These terms will be investigated through short talks, site visits, historical precedent, in-class exercises, panel discussions and two on-campus case studies. No prior knowledge of architecture is required.

CEE 10B. Presentation Skills. 0 Units.
TBD.

CEE 31. Accessing Architecture Through Drawing. 5 Units.
Preference to Architectural Design and CEE majors; others by consent of instructor. Drawing architecture to probe the intricacies and subtleties that characterize contemporary buildings. How to dissect buildings and appreciate the formal elements of a building, including scale, shape, proportion, colors and materials, and the problem solving reflected in the design. Students construct conventional architectural drawings, such as plans, elevations, and perspectives. Limited enrollment.

CEE 31Q. Accessing Architecture Through Drawing. 5 Units.
Preference to sophomores. Drawing architecture provides a deeper understanding of the intricacies and subtleties that characterize contemporary buildings. How to dissect buildings and appreciate the formal elements of a building, including scale, shape, proportion, colors and materials, and the problem solving reflected in the design. Students construct conventional architectural drawings, such as plans, elevations, and perspectives. Limited enrollment.

CEE 32A. Psychology of Architecture. 3 Units.
This course argues that architecture often neglects the interdisciplinary investigation of our internal psychological experience and the way it impacts our creation of space. How does our inner life influence external design? How are we impacted emotionally, physically, psychologically by the spaces we inhabit day to day? How might we intentionally imbue personal and public spaces with specific emotions? This seminar serves as a call to action for students interested in approaching architecture with a holistic understanding of the emotional impact of space. Sample topics addressed will include: conscious vs. unconscious design; the ego of architecture; psycho-spatial perspectives; ideas of home; integral/holistic architecture; phenomenology of inner and outer spaces; exploring archetypal architecture; and translating emotion through environment.

CEE 32B. Design Theory. 4 Units.
This seminar focuses on the key themes, histories, and methods of architectural theory -- a form of architectural practice that establishes the aims and philosophies of architecture. Architectural theory is primarily written, but it also incorporates drawing, photography, film, and other media. nnOne of the distinctive features of modern and contemporary architecture is its pronounced use of theory to articulate its aims. One might argue that modern architecture is modern because of its incorporation of theory. This course focuses on those early-modern, modern, and late-modern writings that have been and remain entangled with contemporary architectural thought and design practice. nnRather than examine the development of modern architectural theory chronologically, it is explored architectural through thematic topics. These themes enable the student to understand how certain architectural theoretical concepts endure, are transformed, and can be furthered through his/her own explorations.nCEE 32B is a crosslisting of ARTHIST 217B/417B.

CEE 32D. Construction: The Writing of Architecture. 4 Units.
This seminar focuses on the construction of architectural writing. The class will analyze this idea through four topics: formal analysis, manifesto, translation, and preservation. The seminar is divided into two-week modules with each of these four concepts functioning as organizing principles. nnThe first week of each module will involve familiarizing the seminar with both the terms and rhetorical tactics of the given theme by reading and analyzing specific texts and completing a short written analysis (1-2 pages). The second week will expand upon this foundation and involve further analysis in addition to each student writing a short paper (3-4 pages) drawing on the examples discussed and their own experiences in the discipline. The goal of the seminar is for each student to be able to analyze how an architectural writing is constructed and to develop his/her skills in the construction of his/her own writing.

CEE 32F. Light, Color, and Space. 3 Units.
This course explores color and light as a medium for spatial perception. Through the introduction of color theory, color mixing, and light analyses, students will learn to see and use light and color fields as a way to shape experience. We will examine the work of a range of architects and artist who use light and color to expand the field of perception (i.e. Rothko, Turrell, Eliasson, Holl, Aalto).

CEE 32G. Architecture Since 1900. 4 Units.
Art 142 is an introduction to the history of architecture since 1900 and how it has shaped and been shaped by its cultural contexts. The class also investigates the essential relationship between built form and theory during this period.
Same as: ARTHIST 142

CEE 32H. Responsive Structures. 3 Units.
This Design Build seminar investigates the use of metal as a structural, spatial and organizational medium. We will examine the physical properties of post-formable plywood, and develop a structural system and design which respond to site and programmatic conditions. The process includes model building, prototyping, development of joinery, and culminates in the full scale installation of the developed design on campus. This course may be repeated for credit (up to three times). Class meeting days/times are as follows:n1st session : April 4, 10am - 6pmn2nd session : April 25th, 10am - 6pm n3rd session: May 5 , 6pm-9pm (Jun will not attend) nFinal Build dates: nMay 16 10am-eveningnMay 17th. 10am- 6:30 pm.
Same as: CEE 132H

CEE 32Q. Place: Making Space Now. 3 Units.
This seminar argues that architeccts are ultimately "placemakers," and questions what that means in the contemporary world. Part I investigates the meaning of the word "place." Additional background for understanding contemporary place making will include a critique of the history of modern place-making through an examination of modern form. Part II examines two traditional notions of place by scale: from "home" to "the city." What elements give these conceptions of space a sense of place? To answer this question, themes such as memory, mapping, and boundary, among others, will be investigated. part III presents challenges to the traditional notions of place discussed in Part II. Topics addressed include: What does it mean to be "out of place"? What sense of place does a nomad have, and how is this represented? What are the "non-places" and how can architects design for these spaces? Part IV addresses the need to re-conceptualize contemporary space. The role of digital and cyber technologies, the construction of locality in a global world, and the in-between places that result from a world in flux are topics discussed in this section of the seminar. nLearning goals: Specific goals include clsoe reading of texts, understanding of philosophical thinking and writing, argument under uncertainty, and developed concepts of place, space and architecture.

CEE 32R. American Architecture. 4 Units.
A historically based understanding of what defines American architecture. What makes American architecture American, beginning with indigenous structures of pre-Columbian America. Materials, structure, and form in the changing American context. How these ideas are being transformed in today's globalized world.
Same as: AMSTUD 143A, ARTHIST 143A, ARTHIST 343A

CEE 32S. The Situated Workplace and Public Life. 4 Units.
The modern workplace has undergone fundamental change and continues to evolve. The context of work in many industries is today being shaped substantially by changing workforce demographics, the pervasiveness of mobile and embedded information technologies, hyper-connected work models on a global scale, evolving notions of health and well being, etc. nnOur public realm is changing too. People are moving to cities in greater numbers than ever before posing both challenges and opportunities related to new levels of density, sustainable resource management, resilient infrastructures, as well as new forms of civic engagement at neighborhood levels, to name but a few. These changes at an urban scale impact how and where public life happens and how it interacts with new modalities at work.nnThis course will combine research, conceptual explorations, studio design work, seminars and guest lectures to explore the impact of the changing workplace on the morphology of the city by examining these bi-coastal seats of innovation. As the creative workplace continues to evolve, how will it engage the public realm within both well-established urban frameworks such as San Francisco and Boston, and emerging suburban contexts, such as Silicon Valley?nnThe course will join graduate students from the Northeastern University School of Architecture with students from the Stanford University Architectural Design program. Students will reside primarily at their prospective universities and will travel selectively for site research, team charettes and project reviews. Project sites on both coasts will be utilized for research and studio work. This is an opportunity for students from two top universities, both situated in the epicenters of workplace change, to explore and conduct valuable research on an issue that is changing their urban environments.

CEE 32T. Making and Remaking the Architect: Edward Durell Stone and Stanford. 4 Units.
How does an architect establish a career? How is an architect remembered? What makes a building significant and how should it be preserved, if at all? Fundamental questions about the practice and production of architecture will be examined in this seminar that focuses on the work of Edward Durell Stone (1902-78) and specifically on his work at Stanford and in Palo Alto. By 1955, Stone was so well established that he founded an office in Palo Alto to design the Stanford Medical Center (currently slated for destruction) and several other significant local public buildings, such as the Palo Alto Civic Center. Through site visits to his buildings, research in the Stanford archives, and interviews with architects who worked in his office (among other strategies), students will question how architecture produced in the immediate post-WWII period is thought about historically and how and when it should be preserved.

CEE 32U. California Modernism: The Web of Apprenticeship. 4 Units.
This course will study at the development of Modernism in pre and post WWII California. The class will investigate responses to climatic, technological, and cultural changes that were specific to the state but have now become an idealized tread. We will look at architects and landscape architects who apprenticed with significant design leaders and track how their involvement and explore resulted in changes in building technologies, and influenced the next generation of design thinking and experimentation. The investigations will occur through research, drawings and models, as well as site visits.

CEE 32V. Architectural Design Lecture Series Course. 1 Unit.
This seminar is a companion to the Spring Architecture and Landscape Architecture Lecture Series. Students will converse with lecturers before the lectures, attend the lecture, and prepare short documents (written, graphic, exploratory) for two of the lectures. The four course meeting dates will correspond with the lecture dates TBD. The meeting times are 4:30 PM -5:30 PM for the seminar and 6:30 - 7:45 for the lecture.

CEE 32W. Making Meaning: A Purposeful Life in Design. 3 Units.
As designers, how do we lead a life with meaning? What is a fuulfilling life in design and how do we develop personal and professional practices that support this aim? This experiential course will explore how to nourish a purposeful life amidst a culture that can value productivity over presence in the field, identifying "busyness" as a marker of personal worth. How do we bring depth to not only the design process but our individual and collective lives as well? Investigations will include: exploring personal passions, discovering meaningful work in design, understanding work/life/play balance, practicing self-reflection, integrating wellness, cultivating community, and practicing design with integrity. Our time in class will be enjoyed sharing meals, discourse, play, and reflections with both the class cohort and designers that lead lives or purpose and meaning.

CEE 32X. Modern and Contemporary World Architecture: A Cultural History in Twenty Five Buildings. 4 Units.
This survey course is a guided tour of twenty five case studies from the last hundred years; interrogates how architecture responds to the aesthetic, technological, political, and cultural issues of the societies they belong to, all over the world.
Same as: ARTHIST 141

CEE 32Y. Architecture & Gender. 4 Units.
This advanced seminar introduces students to the seemingly inconspicuous relation between architecture and gender. The course studies how modern societies create easily, controlled docile spaces, thus pursuing the absent bodies of its members - be it through symbolic or material means. This troubled history of the powers of architecture to neglect sexuality and impose strict gender roles is analyzed in class discussions through recent feminist and queer theoretical approaches and tested on case studies.
Same as: ARTHIST 248A

CEE 33A. Michelangelo Architect. 5 Units.
The architecture of Michelangelo Buonarroti (1475-1564), "Father and Master of all the Arts," redefined the possibilities of architectural expression for generations. This course considers his civic, ecclesiastic, and palatial works. It proceeds from his beginnings in Medicean Florence to his fulfillment in Papal Rome. It examines the anxiety of influence following his death and his enduring legacy in modernism. Topics include: Michelangelo's debt to Classical and Early Renaissance prototypes; his transformation of the canon; the iterative sketch as disegno; architecture and the body; the queering of architectural language; sketch, scale, and materiality; Modernism and Michelangelo. The historiography of Michelangelo has predominantly favored studies in painting and sculpture. Our focus on architecture encourages students to test new ideas and alternative approaches to his work.
Same as: ARTHIST 416A, ITALIAN 216

CEE 33B. Japanese Modern Architecture. 4 Units.
This seminar will examine Japanese architecture and theory since 1900. Through a combination of case studies, readings, and chronological overview, students will develop an in-depth understanding of the aesthetic, expression of construction, structural dynamics, material choices, and philosophical viewpoints that impact Japanese modern and contemporary architectural design. Through lectures, class discussions, a series of weekly writing assignments, and a longer paper and presentation, students will develop the tools to analyze and understand Japanese design of today.

CEE 33C. Housing Visions. 3 Units.
This course provides an introduction to American Housing practices, spanning from the Industrial Age to the present. Students will examine a range of projects that have aspired to a range of social, economic and/or environmental visions. While learning about housing typologies, students will also evaluate the ethical role that housing plays within society. The course focuses on the tactical potentials of housing, whether it is to provide a strong community, solve crisis situations, integrate social services, or encourage socio-economic mixture. Students will learn housing design principles and organizational strategies, and the impact of design on the urban environment. They will discuss themes of shared spaces and defensible spaces; and how design can accommodate the evolving demographics and culture of this country. For example, how can housing design address the changing relationship between living and working? What is the role of housing and ownership in economic mobility? These issues will be discussed within the context the changing composition of the American population and economy. n nThis course will be primarily discussion-based, using slideshows, readings and field trips as a departure points for student-generated conversations. Each student will be asked to lead a class discussion based on his/her research topic. Students will evaluate projects, identifying which aspects of the initial housing visions were realized, which did not, and why. Eventually, students might identify factors that lead to ¿successful¿ projects, and/or formulate new approaches that can strengthen or redefine the progressive role of housing: one inclusive of the complex social, economic, and ethical dimensions of design.
Same as: URBANST 103C

CEE 40. Approaching Palau: Preparation and Research Ideation and Development. 1 Unit.
This class is a seminar designed to prepare students participating in the 2019 Palau Seminar for possible research activities. Enrollment by approval of the instructors.
Same as: ESS 40

CEE 63. Weather and Storms. 3 Units.
Daily and severe weather and global climate. Topics: structure and composition of the atmosphere, fog and cloud formation, rainfall, local winds, wind energy, global circulation, jet streams, high and low pressure systems, inversions, el Niño, la Niña, atmosphere/ocean interactions, fronts, cyclones, thunderstorms, lightning, tornadoes, hurricanes, pollutant transport, global climate and atmospheric optics.
Same as: CEE 263C

CEE 64. Air Pollution and Global Warming: History, Science, and Solutions. 3 Units.
Survey of Survey of air pollution and global warming and their renewable energy solutions. Topics: evolution of the Earth's atmosphere, history of discovery of chemicals in the air, bases and particles in urban smog, visibility, indoor air pollution, acid rain, stratospheric and Antarctic ozone loss, the historic climate record, causes and effects of global warming, impacts of energy systems on pollution and climate, renewable energy solutions to air pollution and global warming. UG Reqs: GER: DBNatSci.
Same as: CEE 263D

CEE 70. Environmental Science and Technology. 3 Units.
Introduction to environmental quality and the technical background necessary for understanding environmental issues, controlling environmental degradation, and preserving air and water quality. Material balance concepts for tracking substances in the environmental and engineering systems.
Same as: ENGR 90

CEE 70N. Water, Public Health, and Engineering. 3 Units.
Preference to frosh. Linkages between water, wastewater and public health, with an emphasis on engineering interventions. Topics include the history of water and wastewater infrastructure development in the U.S. and Europe; evolution of epidemiological approaches for water-related health challenges; biological and chemical contaminants in water and wastewater and their management; and current trends and challenges in access to water and sanitation around the world. Identifying ways in which freshwater contributes to human health; exposure routes for water- and sanitation-illness. Classifying illnesses by pathogen type and their geographic distribution. Identifying the health and economic consequences of water- and sanitation-related illnesses; costs and benefits of curative and preventative interventions. Interpreting data related to epidemiological and environmental concepts. No previous experience in engineering is required.

CEE 73. Water: An Introduction. 3 Units.
Lake Tahoe's waters are so clear you can follow a diver 70 feet below your boat. A Lake Erie summer often means that nearshore waters have a green surface scum obscuring everything below. California, suffering from drought, is seriously considering reclamation and direct potable reuse of sewage -- aka toilet to tap. Can we (or should we) do this? Why is Tahoe clear, Erie green? This class introduces students to the fundamental tools and science used to understand and manage both natural and human-engineered water systems. Each student will use these tools to explore a water topic of their choosing.

CEE 74N. Grand Challenges in Environmental Engineering. 3 Units.
In 2019, the U.S. National Academies of Science assembled a team of leading scientists and engineers to identify the most pressing environmental challenges of the 21st century. From sustainably supplying food, water, and energy to a growing population to curbing climate change and adapting to its impacts, this report highlights the essential role that environmental engineers will play in preparing humanity to face a new and uncertain future. This Introductory Seminar will engage students in classroom lectures, small group problem solving, large group discussion, on-site field trips, and an independent research report to explore the key scientific questions and technical innovations needed to address environmental grand challenges. At the end of the course, students will be literate in pressing environmental issues, master the basic principles of environmental engineering, and understand the role of environmental engineers in the broader science, policy, and political ecosystem of scholars and practitioners dedicated to addressing environmental grand challenges. Students from all backgrounds and interest areas are welcome.

CEE 80N. Engineering the Built Environment: An Introduction to Structural Engineering. 3 Units.
In this seminar, students will be introduced to the history of modern bridges, buildings and other large-scale structures. Classes will include presentations on transformations in structural design inspired by the development of new materials, increased understanding of hazardous overloads and awareness of environmental impacts. Basic principles of structural engineering and how to calculate material efficiency and structural safety of structural forms will be taught using case studies. The course will include a field trip to a Bay Area large-scale structure, hands-on experience building a tower and computational modeling of bridges, and a paper and presentation on a structure or structural form of interest to the student. The goal of this course is for students to develop an understanding and appreciation of modern structures, influences that have led to new forms, and the impact of structural design on society and the environment. Students from all backgrounds are welcome.

CEE 83. Seismic Design Workshop. 2 Units.
Introduction to seismic design for undergraduate students. Structural design concepts are introduced based on physical and mathematical principles. General overview of mechanics of materials, structural analysis, structural systems and earthquake resistant design. The class is intended to prepare students for the EERI 2018 Seismic Design Competition, where students design, analyze and fabricate a five-feet tall balsa wood structure. Hands on workshops focus on numerical simulation using commercial software and experimental testing. All majors are welcome. Pre-requisite: Physics 41, recommended: ENGR 14.

CEE 100. Managing Sustainable Building Projects. 4 Units.
Managing the life cycle of buildings from the owner, designer, and contractor perspectives emphasizing sustainability goals; methods to define, communicate, coordinate, and manage multidisciplinary project objectives including scope, quality, life cycle cost and value, schedule, safety, energy, and social concerns; roles, responsibilities, and risks for project participants; virtual design and construction methods for product, organization, and process modeling; lifecycle assessment methods; individual writing assignment related to a real world project.

CEE 101A. Mechanics of Materials. 4 Units.
Introduction to beam and column theory. Normal stress and strain in beams under various loading conditions; shear stress and shear flow; deflections of determinate and indeterminate beams; analysis of column buckling; structural loads in design; strength and serviceability criteria. Lab experiments. Prerequisites: ENGR 14.

CEE 101B. Mechanics of Fluids. 4 Units.
Physical properties of fluids and their effect on flow behavior; equations of motion for incompressible ideal flow, including the special case of hydrostatics; continuity, energy, and momentum principles; control volume analysis; laminar and turbulent flows; internal and external flows in specific engineering applications including pipes and open channels; elements of boundary-layer theory. Prerequisites: E14, Physics 41, Math 51, or CME 100.

CEE 101C. Geotechnical Engineering. 3-4 Units.
Introduction to the principles of soil mechanics. Soil classification, shear strength and stress-strain behavior of soils, consolidation theory, analysis and design of earth retaining structures, introduction to shallow and deep foundation design, slope stability. Lab projects. Prerequisite: ENGR 14. Recommended: 101A.

CEE 101D. Computations in Civil and Environmental Engineering. 3 Units.
Computational and visualization methods in the design and analysis of civil and environmental engineering systems. Focus is on applications of MATLAB. How to develop a more lucid and better organized programming style.
Same as: CEE 201D

CEE 101S. Science & Engineering Problem-Solving with MatLab.. 3 Units.
Introduction to the application of MATLAB as a powerful tool to solve a variety of science and engineering problems. Exposure to computational and visualization tools available through MATLAB to analyze, solve, and visualize some common problems of interest in science and engineering. Prequisite: Calculus. Note: students enrolling in CEE 201S must seek the consent of instructor.
Same as: CEE 201S

CEE 102A. Legal / Ethical Principles in Design, Construction, Project Delivery. 3 Units.
Introduction to the key legal principles affecting design, construction and the delivery of infrastructure projects. The course begins with an introduction to the structure of law, including principles of contract, negligence, professional responsibility, intellectual property, land use and environmental law, then draws on these concepts to examine current and developing means of project delivery. Limited class size. Enrollment preference given to undergraduates majoring in CE and EnvSE. Undergraduates wishing to have CEE 102A count as their Technology in Society (TiS) class must take it for a letter grade.

CEE 102W. Technical and Professional Communication. 3 Units.
Effective communication skills will help you advance quickly. Learn the best technical and professional techniques in writing and speaking. Group workshops and individual conferences with instructors. Designed for undergraduates going into industry. Allowed to fulfill WIM for Atmosphere/Energy and Environmental Systems Engineering majors only.
Same as: ENGR 102W

CEE 103S. Machine Learning: Concepts & Applications in Civil & Environmental Engineering. 3 Units.
Introduction to machine learning concepts, tools and methodologies for incorporating intelligence and smart technology into environmental data applications. Learning algorithms and development of a machine learning pipeline. Set-up of a machine learning platform on an IoT edge sensor device. Prerequisite: CS 106A or equivalent Python programming experience.
Same as: CEE 203S

CEE 107A. Understanding Energy. 3-5 Units.
Energy is the number one contributor to climate change and has significant consequences for our society, political system, economy, and environment. Energy is also a fundamental driver of human development and opportunity. In taking this course, students will not only understand the fundamentals of each energy resource -- including significance and potential, conversion processes and technologies, drivers and barriers, policy and regulation, and social, economic, and environmental impacts -- students will also be able to put this in the context of the broader energy system. Both depletable and renewable energy resources are covered, including oil, natural gas, coal, nuclear, biomass and biofuel, hydroelectric, wind, solar thermal and photovoltaics (PV), geothermal, and ocean energy, with cross-cutting topics including electricity, storage, climate change and greenhouse gas emissions (GHG), sustainability, green buildings, energy efficiency, transportation, and the developing world. The course is 4 units, which includes lecture and in-class discussion, readings and videos, homework assignments, virtual field trips, and a small-group discussion section once a week for 50 minutes (live participation is required, many different times will be offered). Lectures will be recorded and available on Canvas. No in-person field trips will be offered for AY 2020-2021 ¿ but alumni of the class can optionally attend field trips in future quarters. Enroll for 5 units to also attend the Workshop, an interactive discussion section on cross-cutting topics that meets once per week for 80 minutes (timing TBD). The 3-unit option requires instructor approval - please contact Diana Gragg. Open to all: pre-majors and majors, with any background! Website: https://energy.stanford.edu/understanding-energy. CEE 107S/207S Understanding Energy: Essentials is a shorter (3 unit) version of this course, offered summer quarter. Students should not take both for credit. Prerequisites: Algebra.
Same as: CEE 207A, EARTHSYS 103

CEE 107H. Applied Hope: Whole-Systems Thinking on Energy Solutions. 2 Units.
Whole-systems thinking has yielded transformative insights about prospects for sustainability across a series of energy and environmental challenges. Taught by Amory Lovins, co-founder of Rocky Mountain Institute, this seminar will cover four decades of ground-breaking analysis and validated results that have transformed what is thought to be possible across multiple fields. Topics will include highly efficient buildings, vehicles, and industrial processes; winning the fossil fuel endgames; nuclear power and security; natural capitalism; distributed energy and resilience; and profitable climate protection.
Same as: CEE 207H

CEE 107R. E^3: Extreme Energy Efficiency. 3 Units.
Be part of a unique course about extreme energy efficiency and integrative design! We will meet remotely for once a week throughout the winter quarter. E^3 will focus on efficiency techniques' design, performance, choice, evolution, integration, barrier-busting, profitable business-led implementation, and implications for energy supply, competitive success, environment, development, security, etc. Examples will span very diverse sectors, applications, issues, and disciplines, covering different energy themes throughout the quarter: buildings, transportation, industry, and implementation and implications, including renewable energy synergy and integration. Solid technical grounding and acquaintance with basic economics and business concepts will both be helpful. The course will be composed of keynote lectures, exercises, and interactive puzzlers synthesizing integrative design principles. Students will be introduced to Factor 10 Engineering, the approach for optimizing the whole system for multiple benefits. Students will work closely and interactively with RMI staff including Amory Lovins, cofounder and Chief Scientist of Rocky Mountain Institute (RMI), and Dr. Holmes Hummel, founder of Clean Energy Works. Exercises will illuminate challenges RMI has faced and solutions it has created in real-world design. Students will explore clean-sheet solutions that meet end-use demands and optimize whole-system resource efficiency, often with expanding rather than diminishing returns to investments, i.e. making big savings cheaper than small ones. All backgrounds and disciplines, both undergraduate and graduate, are welcome to enroll. There is no application this year. Prerequisite - completion of one of the following courses or their equivalent is required: CEE 107A/207A/ Earthsys 103, CEE 107S/ CEE 207S, CEE 176A, CEE 176B. Course details are available at the website: https://energy.stanford.edu/extreme-energy-efficiency.
Same as: CEE 207R

CEE 107S. Understanding Energy - Essentials. 3-4 Units.
Energy is the number one contributor to climate change and has significant consequences for our society, political system, economy, and environment. Energy is also a fundamental driver of human development and opportunity. Students will learn the fundamentals of each energy resource -- including significance and potential, drivers and barriers, policy and regulation, and social, economic, and environmental impacts -- and will be able to put this in the context of the broader energy system. Both depletable and renewable energy resources are covered, including oil, natural gas, coal, nuclear, biomass and biofuel, hydroelectric, wind, solar thermal and photovoltaics (PV), geothermal, and ocean energy, with cross-cutting topics including electricity, storage, climate change and greenhouse gas emissions (GHG), sustainability, green buildings, energy efficiency, transportation, and the developing world. The course is 3 units, which includes lecture, readings and videos, assignments, and one required off-site field trip. Field trip offerings differ each quarter but may include Diablo Canyon nuclear power plant, Shasta dam, Tesla Gigafactory, NextEra wind farm, San Ardo oil field, Geyser¿s geothermal power plants, NEXTracker Solar PV, etc. Enroll for 4 units to also attend the Workshop, an interactive discussion section on cross-cutting topics that meets once per week for 80 minutes (timing TBD).This is a course for all: pre-majors and majors, with any background - no prior energy knowledge necessary. For a course that covers all of this plus goes more in-depth, check out CEE 107A/207A/ EarthSys 103 Understanding Energy offered in the autumn and spring quarters (students should not take both for credit). Website: http://web.stanford.edu/class/cee207a/ Prerequisites: Algebra.
Same as: CEE 207S

CEE 112A. Industry Applications of Virtual Design & Construction. 2-4 Units.
Building upon the concept of VDC Scorecard, CEE 112A/212A investigates in the management of Virtual Design and Construction (VDC) programs and projects in the building industry. Interacting with experts and professionals in real estate, architecture, engineering, construction and technology providers, students will learn from the industry applications of Building Information Modeling and its relationship with Integrated Project Delivery, Sustainable Design and Construction. Students will conduct case studies to evaluate the maturity of VDC planning, adoption, technology and performance in practice. Students taking 3 or 4 units will be paired up with independent research or case study projects on the industry applications of VDC. No prerequisite. See CEE112B/212B in the Winter Quarter and CEE 112C/212C in the Spring Quarter.

CEE 112B. Industry Applications of Virtual Design & Construction. 2-4 Units.
CEE 112B/212B is a practicum on the Industry Applications on Virtual Design and Construction (VDC). Students will gain insights and develop skills that are essential for academic research, internships or industry practice in VDC and Building Information Modeling (BIM). Students can choose between one of the two project topics: [1] Industrialized Construction with Virtual Parts (No Prerequisite) or [2] Industry Benchmarking & Applications of the VDC Management Scorecard (Suggested Prerequisite: CEE 112A/212A).
Same as: CEE 212B

CEE 112C. Industry Applications of Virtual Design & Construction. 2-4 Units.
Following the Autumn- and Winter-quarter course series, CEE 112C/212C is an industry-focused and project-based practicum that focuses on the industry applications of Virtual Design and Construction (VDC). Students will be paired up with industry-based VDC projects with public owners and private developers, such as GSA Public Buildings Service, the Hong Kong Mass Transit Railway, Optima, Walt Disney Imagineering, Microsoft facilities and/or other CIFE International members. Independently, students will conduct case studies and/or develop VDC and building information models (BIM) using off-the-shelf technologies for project analysis, collaboration, communication and optimization. Students will gain insights and develop skills that are essential for academic research, internships or industry practice in VDC. Prerequisite: CEE 112A/212A, CEE 112B/212B, CEE 159C/259C, CEE 159D/259D, or Instructor's Approval.
Same as: CEE 212C

CEE 112D. Industry Applications of Virtual Design and Construction. 2-4 Units.
A continuation of the CEE 112/212 series, CEE 112D/212D is an industry-focused and project-based practicum that focuses on the industry applications of Virtual Design and Construction (VDC). Students will be paired up with industry-based VDC research or application opportunities with public owners and private developers, professional associations, and/or other member organizations of the Center for Integrated Facility Engineering at Stanford. Independently, students will conduct case studies, research activities, and/or develop VDC and building information models (BIM) using off-the-shelf technologies for project analysis, collaboration, communication and optimization. Students will gain insights and develop skills that are essential for academic research, internships or industry practice in VDC. Prerequisite: CEE110/210, CEE 112C/212C, CEE 122B/222B, or Instructor's Approval.
Same as: CEE 212D

CEE 113. Patterns of Sustainability. 1-4 Unit.
This seminar examines the interrelated sustainability of the natural, built and social environments of places in which we live. Several BOSP centers and the home Stanford campus will hold this 1-2 unit seminar simultaneously and collaborate with a shared curriculum, assignments, web conference and a Wiki. The goal of the collaborative arrangement is to expose, share, compare and contrast views of sustainability in different parts of the world. We will look at and assess aspects of sustainability of the places we are living from a theoretical perspective from the literature, from observations and interviews in the countries in which we study.
Same as: CEE 213

CEE 114. Frontier Technology: Understanding and Preparing for Technology in the Next Economy. 2 Units.
The next wave of technological innovation and globalization will affect our countries, our societies, and ourselves. This interdisciplinary course provides an introduction to frontier technology, the intersection where radical forward thinking and real-world implementation meet. Topics covered include artificial intelligence, additive manufacturing and advanced robotics, smart cities and urban mobility, telecommunications with 5G, and other key emerging technologies in society. These technologies have vast potential to address the largest global challenges of the 21st century, ushering in a new era of progress and change. Limited enrollment, contact instructors for application.
Same as: CEE 214, MED 114, MED 214, PSYC 114

CEE 118X. Shaping the Future of the Bay Area. 3-5 Units.
The complex urban problems affecting quality of life in the Bay Area, from housing affordability and transportation congestion to economic vitality and social justice, are already perceived by many to be intractable, and will likely be exacerbated by climate change and other emerging environmental and technological forces. Changing urban systems to improve the equity, resilience and sustainability of communities will require new collaborative methods of assessment, goal setting, and problem solving across governments, markets, and communities. It will also require academic institutions to develop new models of co-production of knowledge across research, education, and practice. This XYZ course series is designed to immerse students in co-production for social change. The course sequence covers scientific research and ethical reasoning, skillsets in data-driven and qualitative analysis, and practical experience working with local partners on urban challenges that can empower students to drive responsible systems change in their future careers. The Autumn (X) course is specifically focused on concepts and skills, and completion is a prerequisite for participation in the Winter (Y) and/or Spring (Z) practicum quarters, which engage teams in real-world projects with Bay Area local governments or community groups. X is composed of four modules: (A) participation in two weekly classes which prominently feature experts in research and practice related to urban systems; (B) reading and writing assignments designed to deepen thinking on class topics; (C) fundamental data analysis skills, particularly focused on Excel and ArcGIS, taught in lab sessions through basic exercises; (D) advanced data analysis skills, particularly focused on geocomputation in R, taught through longer and more intensive assignments. X can be taken for 3 units (ABC), 4 units (ACD), or 5 units (ABCD). Open to undergraduate and graduate students in any major. For more information, visit http://bay.stanford.edu.
Same as: CEE 218X, ESS 118X, ESS 218X, GEOLSCI 118X, GEOLSCI 218X, GEOPHYS 118X, GEOPHYS 218X, POLISCI 218X, PUBLPOL 118X, PUBLPOL 218X

CEE 118Y. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 218Y, ESS 118Y, ESS 218Y, GEOLSCI 118Y, GEOLSCI 218Y, GEOPHYS 118Y, GEOPHYS 218Y, POLISCI 218Y, PUBLPOL 118Y, PUBLPOL 218Y

CEE 118Z. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 218Z, ESS 118Z, ESS 218Z, GEOLSCI 118Z, GEOLSCI 218Z, GEOPHYS 118Z, GEOPHYS 218Z, POLISCI 218Z

CEE 120A. Building Modeling for Design & Construction. 3 Units.
The foundational Building Information Modeling course introduces techniques for creating, managing, and applying of building information models in the building design and construction process. The course covers processes and tools for creating, organizing, and working with 2D and 3D computer representations of building components and geometries to produce models used in architectural design, construction planning and documentation, rendering and visualization, simulation, and analysis.
Same as: CEE 220A

CEE 120B. Advanced Building Modeling Workshop. 2-4 Units.
This course builds upon the Building Information Model concepts introduced in 120A/220A and illustrates how BIM modeling tools are used to design, analyze, and model building systems including structural, mechanical, electrical, plumbing and fire protection. Course covers the physical principles, design criteria, and design strategies for each system and explores processes and tools for modeling those systems and analyzing their performance.nTopics include: building envelopes, access systems, structural systems modeling and analysis, mechanical / HVAC systems, plumbing and fire protection systems, electrical systems, and systems integration/coordination.
Same as: CEE 220B

CEE 120C. Parametric Design and Optimization. 2-4 Units.
This course explores tools and techniques for computational design and parametric modeling as a foundation for design optimization. Class sessions will introduce several parametric design modeling platforms and scripting environments that enable rapid generation of 3D models and enable rapid evaluation of parametrically-driven design alternatives.nnTopics to be featured include:n-Principles of parametric design vs. direct modelingn-Design exploration using parametric modeling platforms (Revit/FormIt, Rhino)n-Visual scripting languages and environments (Dynamo, Grasshopper, DesignScript)n-Single- and multi-dimensional optimization techniques and guidance strategies.
Same as: CEE 220C

CEE 120S. Building Information Modeling Special Study. 2-4 Units.
Special studies of Building Information Modeling strategies and techniques focused on creating, managing, and applying models in the building design and construction process. Processes and tools for creating, organizing, and working with 2D and 3D computer representations of building components to produce models used in design, construction planning, visualization, and analysis.Contact glkatz@stanford.edu for more information.
Same as: CEE 220S

CEE 122A. Computer Integrated Architecture/Engineering/Construction. 2 Units.
Undergraduates serve as apprentices to graduate students in the AEC global project teams in CEE 222A. Apprentices participate in all activities of the AEC team, including the goals, objectives, constraints, tasks, and process of a crossdisciplinary global AEC teamwork in the concept development phase of a comprehensive building project. Prerequisite: consent of instructor.
Same as: A/E/C

CEE 122B. Computer Integrated A/E/C. 2 Units.
Undergraduates serve as apprentices to graduate students in the AEC global project teams in CEE 222B. Project activity focuses on modeling, simulation, life-cycle cost, and cost benefit analysis in the project development phase. Prerequisite: CEE 122A.

CEE 124. Sustainable Development Studio. 1-5 Unit.
(Graduate students register for 224A.) Project-based. Sustainable design, development, use and evolution of buildings; connections of building systems to broader resource systems. Areas include architecture, structure, materials, energy, water, air, landscape, and food. Projects use a cradle-to-cradle approach focusing on technical and biological nutrient cycles and information and knowledge generation and organization. May be repeated for credit.

CEE 124E. Ethics in Urban Systems. 3 Units.
This course will explore a comprehensive understanding of ethical challenges across dimensions of sustainability, resilience, equity, and well-being in urban systems, and the professional responsibilities of engineers in addressing those ethical challenges. We will cover theoretical and philosophical concepts and examine case studies in historical and current context, as well as produce written work, so as to prepare students¿ ethical systems before they engage in project-based learning. Students will build practical skills in ethical reasoning, including statistics, accounting, needfinding, and communication.

CEE 124S. Sustainable Urban Systems Seminar. 1 Unit.
The Sustainable Urban Systems (SUS) Seminar Series will feature speakers from academia, practice, industry, and government who are on the forefront of research and innovation in sustainable urban systems. The SUS Seminar will be open to the public; students will have the option of obtaining 1 unit of course credit based on attendance and completion of writing assignments.
Same as: CEE 224S

CEE 124X. Shaping the Future of the Bay Area. 3-5 Units.
Note to students: please be advised that the course number for this course has been changed to: CEE 218X, which is offered Autumn 2019-20. If you are interested in taking this course, please enroll in CEE 218X instead for Autumn 2019-20.
Same as: CEE 224X

CEE 125. Defining Smart Cities: Visions of Urbanism for the 21st Century. 3-4 Units.
Technological innovations have and will disrupt all domains of urban life, from housing to healthcare to city management to transportation. This seminar is aimed at future technologists, entrepreneurs, policymakers, and urban planners to define and evaluate the smartness of a city through three lenses: technology, equity, and policy. Through readings, seminar discussions, guest speakers, and a final project, we will explore how a smart city can leverage technology for a higher quality of life, less inequality in access to services, and tighter human communities. You will come away with a framework for understanding how to maximize the social good of emerging technologies. Course material is appropriate for students from all disciplines. Students who enroll in the course for 4 units will participate in an off-campus field component during Spring Break.
Same as: CEE 225, URBANST 174

CEE 126. International Urbanization Seminar: Cross-Cultural Collaboration for Sustainable Urban Development. 4-5 Units.
(formerly IPS 274) Comparative approach to sustainable cities, with focus on international practices and applicability to China. Tradeoffs regarding land use, infrastructure, energy and water, and the need to balance economic vitality, environmental quality, cultural heritage, and social equity. Student teams collaborate with Chinese faculty and students partners to support urban sustainability projects. Limited enrollment via application; see internationalurbanization.org for details. Prerequisites: consent of the instructor(s).
Same as: EARTHSYS 138, INTLPOL 274, URBANST 145

CEE 126X. Hard Earth: Environmental Justice. 1 Unit.
Environmental policies often have disparate impacts on marginalized people. The fall 2019 Hard Earth series will feature biweekly talks by Stanford graduate students who are investigating pressing questions at the intersection of environmental justice and health, energy, and climate change. On the alternate weeks, students who have enrolled to take the full Hard Earth series as a one-unit course (CEE 126XYZ | EARTH 126XYZ) meet for a deeper discussion about the prior week¿s presentation. There will be one culminating talk by a non-student sustainability expert. Learn more about Hard Earth here: https://roblesustainability.stanford.edu/initiatives/hard-earth.
Same as: EARTH 126X

CEE 126Y. Hard Earth: Stanford Graduate-Student Talks Exploring Tough Environmental Dilemmas. 1 Unit.
Environmental disasters are striking with alarming frequency. Many, including wildfires and ecosystem collapse, are hitting California. The winter 2019 Hard Earth series will feature biweekly talks by Stanford graduate students whose research probes how people are coping with, adapting to, and changing their lives in the face of environmental catastrophe. Their talks will focus on events close to home in California. Students who choose to enroll in the entire quarterly series as a 1-unit class will, in the weeks between the talks, discuss what¿s happening in California in the context of the rest of the world.
Same as: EARTH 126Y

CEE 126Z. Hard Earth: The Interconnected Impacts of Global Climate Change. 1 Unit.
The COVID crisis makes one thing clear: society is ill-equipped to deal with disasters that do not respect borders and can cripple social and economic systems. Climate change, though radically different from a virus, similarly is a global threat. This class will feature virtual biweekly talks by four graduate students whose research probes a changing climate's already-occurring impacts on livelihoods, jobs, food, and social safety nets around the world. In the weeks in between the talks, we will hold a group discussion to explore how we can, as a global society, re-imagine our response to disaster.
Same as: EARTH 126Z

CEE 130. Architectural Design: 3-D Modeling, Methodology, and Process. 5 Units.
Preference to Architectural Design majors; others by consent of instructor. Projects investigate conceptual approaches to the design of key architectural elements, such as wall and roof. Functional and structural considerations. Focus is on constructing 3-D models in a range of materials; 3-D computer modeling. Students keep a graphic account of the evolution of their design process. Final project entails design of a simple structure. Limited enrollment. Pre- or corequisite: CEE 31 or 31Q.

CEE 130B. Quest for an Inclusive Clean Energy Economy. 3 Units.
Building bridges across the clean energy divide involves addressing barriers to participation. These barriers affect the pace of investment, especially for distributed energy solutions such as building energy upgrades, on-site solar, and transportation electrification. This course will explore innovative business models that are responsive to calls for equity and inclusion, and it will give special attention to California's ongoing clean energy finance rulemaking in the utility sector to open the clean energy economy for all.
Same as: CEE 330B

CEE 130R. Racial Equity in Energy. 2-3 Units.
The built environment and the energy systems that meet its requirements is a product of decisions forged in a context of historical inequity produced by cultural, political, and economic forces expressed through decisions at individual and institutional levels. This interdisciplinary course will examine the imprint of systemic racial inequity in the U.S. that has produced a clean energy divide and a heritage of environmental injustice. Drawing on current events, students will also explore contemporary strategies that center equity in the quest for rapid technology transitions in the energy sector to address climate change, public health, national security, and community resilience. Prerequisites:By permission of the instructor. Preferable to have completed Understanding Energy (CEE 107A/207A/EarthSys 103/CEE 107S/207S) or a similar course at another institution if a graduate student.
Same as: CEE 330

CEE 131A. Professional Practice: Mixed-Use Design in an Urban Setting. 4 Units.
The delivery of a successful building design program involves unique collaboration between architect and client. This course will endeavor to teach the skills necessary for a designer to identify, evaluate, conceptualize and fully document a complex mixed-use urban design. Students will complete the course with a detailed knowledge of the consultants, engineers and other professionals needed for a complete program. Course deliverables will include three short assignments and a final project consisting of basic schematic drawings for the selected project.nnGuest presenters will cover topics of interest. Lectures, discussions, in-class studio-work and an oral presentation.nPre-requisite: CEE 130.

CEE 131B. Financial Management of Sustainable Urban Systems. 3 Units.
Focus is on financial management of sustainable urban systems. The course will study different kinds of financial services available, the management of financial resources, and relationships to financial service providers. The course will also study how financial services and relationships to financial service providers can be used to accomplish construction management, energy, and architecture work in sustainable urban systems. The learning outcome is an understanding of how financial services can be used in development of sustainable urban systems. nnThe course work is structured so that there are three modules: 1) general knowledge of financial management, 2) in-depth application in construction management, energy, or architecture, and 3) comparison of similarities and differences in-between the in-depth applications. Students will focus on one of the in-depth applications in a group work, and present the result of this application to students that make other applications. A key learning aspect is the understanding of how finance is used in construction management, energy, and architecture work. Students should be able to show the value, financial viability, and risk management of sustainable urban system development in construction management, energy, and architecture. Students should be able to finance construction management, energy, and architecture work. nnReadings include applications of finance and management to construction management, energy, or architecture. Guest speakers include developers, financial managers at construction firms, managers at energy firms, construction managers.

CEE 131C. How Buildings are Made -- Materiality and Construction Methods. 4 Units.
This course will provide an introduction to the materials and methods used in building construction. A combination of in-class lectures, reading assignments, and building site visits will provide students with an awareness of construction materials and their use within building systems. All relevant building types and construction materials will be explored, including wood, steel, concrete and masonry. Building foundations and basic structural systems will be explained. Building envelope elements will be considered, with an analysis of various glass and glazing materials, cladding types, and roofing systems. Interior Floor, wall and ceiling finishes will be discussed. New and emerging building trends will also be examined, wuch as prefabricated and modular construction. Guest presenters, drawn from Bay Area consulting firms, will cover several topics of interest. Students will have an opportunity to experience real world material applications at local construction sites, and gain a thorough understanding of the construction process.

CEE 131D. Urban Design Studio. 5 Units.
The practical application of urban design theory. Projects focus on designing neighborhood and downtown regions to balance livability, revitalization, population growth, and historic preservation.
Same as: URBANST 171

CEE 131E. Team Urban Design Studio. 5 Units.
This new class offers an exciting variation on the 'individual project' studio format. Students work as a team to propose a single consensus solution to a real-world design challenge. This collaborative studio experience more closely reflects the creative process in the design and planning professions where a group of individuals works together to brainstorm, shape, develop, and illustrate a community design solution. There are a number of benefits to this team-oriented approach: it is a more nurturing environment for students that do not have design backgrounds, it allows for more peer-to-peer learning, and it takes best advantage of varied student skill sets. But perhaps the greatest benefit is that a team of students working together on a common project will be able to develop a more comprehensive solution than any one student working alone. This means that the class "deliverable" at the end of quarter could be detailed enough to be of significant value to a stakeholder or client group from the larger community. This studio class, working under the guidance of an experienced instructor, functions like a design firm in providing professional-grade deliverables to real-world community design "clients'.
Same as: URBANST 183

CEE 131G. Fabrication in Architectural Design. 4 Units.
Design course focused on architectural fabrication processes. Students build individual design projects using wood and metalworking process. This is a lab-based course operating out of the Product Realization Lab (PRL), with one lecture and one lab session per week. Lectures focus on design development as well as the theory and practice of fabrication processes. Structured labs take students' skills from paper-based modeling to full-scale construction processes using actual materials. Prior PRL/Room 036 experience is desirable but not required.
Prerequisites: CEE 31, CEE 31Q (required), E 14 (recommended).

CEE 132H. Responsive Structures. 3 Units.
This Design Build seminar investigates the use of metal as a structural, spatial and organizational medium. We will examine the physical properties of post-formable plywood, and develop a structural system and design which respond to site and programmatic conditions. The process includes model building, prototyping, development of joinery, and culminates in the full scale installation of the developed design on campus. This course may be repeated for credit (up to three times). Class meeting days/times are as follows:n1st session : April 4, 10am - 6pmn2nd session : April 25th, 10am - 6pm n3rd session: May 5 , 6pm-9pm (Jun will not attend) nFinal Build dates: nMay 16 10am-eveningnMay 17th. 10am- 6:30 pm.
Same as: CEE 32H

CEE 133G. Architectural History & Drawing in Eastern Europe. 2 Units.
Students in this seminar will travel to Prague, Czech Republic and Krakow, Poland for a week of historical morning walks and discussions about architectural and urbanism in each city. Afternoon sketching sessions will focus attention on some of the locations visited earlier that day. Buildings, sites and monuments from the Middle Ages to the present will be assessed, questioned, and drawn. Short reading assignments and/or films provide a background for each day's examination of a section of these two cities. Possible day trips may include site visits to Auschwitz and the Wieliczka Salt Mine. Casual late afternoon excursions will complement themes of the course. Upon returning to Stanford, the seminar will meet four times to discuss observations and organize a small exhibition of the sketches made during the trip.

CEE 133H. Painting: Architecture in the Environment. 3 Units.
This five-week course engages students in deconstructing architectural structures in relation to the environment by way of observational painting with acrylics. Through on location painting and studio sessions, students build creative capacities and develop critical thinking skills as we focus on the fundamentals of painting, discuss precedents from art and architectural history, and engage in constructive group critiques. Color theory, as it relates to value and applies to light on form and material, is examined and put into practice as students mix paint and explore a variety of techniques. Volume is a major component as we apply principles of proportion, perspective, and depth to convincingly articulate spatial relationships. Composition and design principles are investigated throughout the painting process, from preparatory graphite sketches through project completion. Active painting is enhanced by focused exercises, demonstrations, slide lectures, readings, and museum visits, all which facilitate a deeper understanding of architecture via painting. (Note: this course meets for only 5 weeks: Jan 8 - Feb 7, 2019).

CEE 134B. Intermediate Arch Studio. 5 Units.
This studio offers students experience in working with a real site and a real client program to develop a community facility. Students will develop site analysis, review a program for development and ultimately design their own solutions that meet client and community goals. Sustainability, historic preservation, community needs and materials will all play a part in the development of students final project. Students will also gain an understanding of graphic conventions, verbal and presentation techniques. Course may be repeated for credit.
Same as: CEE 234B

CEE 136. Planning Calif: the Intersection of Climate, Land Use, Transportation & the Economy. 3 Units.
Cities and urban areas have always been transformed by major external changes like pandemics and public health crises. California is both in the midst of its greatest economic recession since the Great Depression and experiencing a pandemic that has the potential to reshape many aspects of life. Planning for cities and regions, however, is a long game that requires follow-through on decisions made sometimes over many decades. How do we balance the shocks to our assumptions from the current Covid world with the need to plan long-term for issues like affordable housing and equitable cities, and perhaps most fundamentally, prepare our cities and communities for the inevitability of climate change and climate impact? nnnnThis course takes an interdisciplinary view of the key contemporary planning topics in California. It does so from looking at the intersection of climate laws, land use changes, the need for housing, travel patterns and the availability of high quality jobs and employment. This course will give you an understanding of the roles of key levels of government, from the state to the region/metropolitan scale, to the city and county, down to the neighborhood and parcel level. it will give students insight into leading themes and issues of the day in California such as the future of downtowns, the role of high speed rail, the impact of telework, automation in the construction of housing, drawing from examples in San Jose and San Francisco, the Central Valley, the state legislature, Southern California. Within each of these topics we will look at the impact of decisions on equity as well as climate and the economy. nnnnThe instructors are Kristy Wang, formerly SPUR¿s Community Planning Policy Director, and Egon Terplan, Senior Advisor for Economic Development and Transportation in the California Governor¿s Office, formerly SPUR¿s Regional Planning Director. (Affiliations for identification purposes only).
Same as: CEE 236, PUBLPOL 130, PUBLPOL 230, URBANST 130

CEE 137B. Advanced Architecture Studio. 6 Units.
This course will focus on the topic of interdisciplinary collaboration and its role in the development of design concepts. Specifically, the integration of structural with architectural considerations to produce a unified urban, spatial, tectonic and structural proposition will be our field of investigation. This course is an architecture studio course where class time will be spent primarily in individual or group desk critiques and pin-up sessions. May be repeat for credit. Total completions allowed: 3. Additionally, there will be lectures, case study presentations and a field trip. Prerequisites: required: CEE 31 (or 31Q) Drawing, CEE 120A and CEE 130 Design.
Same as: CEE 237B

CEE 139. Design Portfolio Methods. 4 Units.
The portfolio is an essential creative tool used to communicate academic work, design philosophies, and professional intent. This course will explore elements of graphic design, presentation, communication, binding, printing, and construction, yielding a final portfolio (physical and digital) for professional, academic or personal purposes. Limited enrollment. Prerequisites: two Art, Design, or Architecture studio courses, or consent of instructor. nNote: CEE139 will run M/W from 10:30am-12:20pm, Autumn 2020-21.
Same as: CEE 239

CEE 141A. Infrastructure Project Development. 3 Units.
Infrastructure is critical to the economy, global competitiveness and quality of life. Topics include energy, transportation, water, public facilities, and communications sectors. Analysis of the condition of the nation's infrastructure and how projects are planned and financed. Focus is on public works in the U.S. The role of public and private sectors through a step-by-step study of the project development process. Case studies of real infrastructure projects. Industry guest speakers. Student teams prepare project environmental impact statements.
Same as: CEE 241A

CEE 141B. Infrastructure Project Delivery. 3 Units.
Infrastructure is critical to the economy, global competitiveness and quality of life. Topics include energy, transportation, water, public facilities ,and communications sectors. Analysis of how projects are designed, constructed, operated, and maintained. Focus is on public works projects in the U.S. Alternative project delivery approaches and organizational strategies. Case studies of real infrastructure projects. Industry guest speakers. Student teams prepare finance/design/build/operate/maintain project proposals.
Same as: CEE 241B

CEE 141C. Global Infrastructure Projects Seminar. 1-2 Unit.
Nine current global infrastructure projects presented by top project executives or company leaders from industry. Water, transportation, energy and communication projects are featured. Course provides comparisons of project development, win and delivery approaches for mega-projects around the world. Alternative project delivery methods, the role of public and private sector, different project management and construction strategies, and lessons learned. The course also includes field trips to local mega-projects. Grade (one unit) is based on attending all 9 lectures and at least 2 field trips.
Same as: CEE 241C

CEE 144. Design and Innovation for the Circular Economy. 3 Units.
The last 150 years of our industrial evolution have been material and energy intensive. The linear model of production and consumption manufactures goods from raw materials, wells and uses them, and then discards the products as waste. Circular economy provides a framework for systems-level redesign. It builds on schools of thought including regenerative design, performance economy industrial ecology, blue economy, biomimicry, and cradle to cradle. This course introduces the concepts of the circular economy and applies them to case studies of consumer products, household goods, and fixed assets.n nStudents will conduct independent projects on circular economy. Students may work alone or in small teams under the guidance of the teaching team and various collaborators worldwide. Class is limited to 14 students. All disciplines are welcome. This class fulfills the Writing & Rhetoric 2 requirement. Prerequisite: PWR 1.

CEE 146S. Engineering Economics and Sustainability. 3 Units.
Engineering Economics is a subset of the field of economics that draws upon the logic of economics, but adds that analytical power of mathematics and statistics. The concepts developed in this course are broadly applicable to many professional and personal decisions, including making purchasing decisions, deciding between project alternatives, evaluating different processes, and balancing environmental and social costs against economic costs. The concepts taught in this course will be increasingly valuable as students climb the carrier ladder in private industry, a non-governmental organization, a public agency, or in founding their own startup. Eventually, the ability to make informed decisions that are based in fundamental analysis of alternatives is a part of every career. As such, this course is recommended for engineering and non-engineering students alike. This course is taught exclusively online in every quarter it is offered. (Prerequisites: MATH 19 or 20 or approved equivalent.).
Same as: ENGR 60

CEE 151. Negotiation. 3 Units.
Students learn to prepare for and conduct negotiations in a variety of arenas including getting a job, managing workplace conflict, negotiating transactions, and managing personal relationships. Interactive class. The internationally travelled instructor who has mediated cases in over 75 countries will require students to negotiate real life case studies and discuss their results in class. Application required before first day of class; students should enroll on Axess and complete the application on Canvas before March 20, 2020. Note: there is a class fee of $130 for access to case files and readings.
Same as: CEE 251, EARTH 251, PUBLPOL 152

CEE 151A. Race in Science. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Fall quarter focuses on science. What is the science of race and racism? How does race affect scientific work? Weekly guest speakers will address such issues as the psychology and anthropology of race and racism; how race, language, and culture affect education; race in environmental science and environmental justice; the science of reducing police violence; and the role of race in genomic research. Talks will take a variety of forms, from panel discussions to interviews and lectures. Weekly assignments: read a related article and participate in an online discussion.
Same as: AFRICAAM 51A, COMM 51A, CSRE 51A, HUMBIO 71A, STS 51A

CEE 151B. Race in Technology. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Winter quarter focuses on technology. How do race and racism affect the design and social impact of technology, broadly defined? Can new or different technology help to reduce racial bias? Invited speakers will address the role of race in such issues as energy infrastructure, nuclear arms control, algorithmic accountability, machine learning, artificial intelligence, and synthetic biology. Talks will take a variety of forms, ranging from panel discussions to interviews and lectures. Weekly assignments: read a related article and participate in an online discussion.
Same as: AFRICAAM 51B, BIOE 91B, COMM 51B, CSRE 51B, HUMBIO 71B, STS 51B

CEE 151C. Race in Medicine. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Spring quarter focuses on medicine. How do race and racism affect medical research and medical care? What accounts for health disparities among racial groups? What are the history, ethics, legal, and social issues surrounding racialized medical experiments and treatments? Invited speakers will address these and other issues. Talks will take a variety of forms: conversations, interviews, panels, and others. Weekly assignments: read a related article and participate in an online discussion.
Same as: AFRICAAM 51C, BIOE 91C, CSRE 51C, HUMBIO 71C, STS 51C

CEE 154. Data Analytics for Physical Systems. 3-4 Units.
This course introduces practical applications of data analytics and machine learning from understanding sensor data to extracting information and decision making in the context of sensed physical systems. Many civil engineering applications involve complex physical systems, such as buildings, transportation, and infrastructure systems, which are integral to urban systems and human activities. Emerging data science techniques and rapidly growing data about these systems have enabled us to better understand them and make informed decisions. In this course, students will work with real-world data to learn about challenges in analyzing data, applications of statistical analysis and machine learning techniques using MATLAB, and limitations of the outcomes in domain-specific contexts. Topics include data visualization, noise cleansing, frequency domain analysis, forward and inverse modeling, feature extraction, machine learning, and error analysis. Prerequisites: CS106A, CME 100/Math51, Stats110/101, or equivalent.
Same as: CEE 254

CEE 155. Introduction to Sensing Networks for CEE. 3-4 Units.
Introduce the design and implementation of sensor networks for monitoring the built and natural environment. Emphasis on the integration of modern sensor and communication technologies, signal processing and statistical models for network data analysis and interpretation to create practical deployments to enable sustainable systems, in areas such as energy, weather, transportation and buildings. Students will be involved in a practical project that may involve deploying a small sensor system, data models and analysis and signal processing. Limited enrollment.
Same as: CEE 255

CEE 156. Building Systems Design & Analysis. 3-4 Units.
HVAC, lighting, and envelope systems for commercial and institutional buildings, with a focus on energy efficient design. Knowledge and skills required in the development of low-energy buildings that provide high quality environment for occupants.
Same as: CEE 256

CEE 157. Sustainable Finance and Investment Seminar. 1 Unit.
The course aims to equip the Stanford community with the knowledge and networks required to undertake significant future work on sustainable finance and investment. The course will be given in a? seminar?format, which explores multiple disciplines of sustainable finance with talks by researchers associated with the Stanford Precourt Institute for Energy¿s Sustainable Finance Initiative and visiting speakers. The course features three highly interactive modules: (1) risk and opportunities of sustainable finance, (2) business and financial innovation toward sustainability, and (3) sustainability assessment and advanced data technologies. The contents covered by this course include but are not limited to systems and theories in sustainable finance and investment such as active ownership, carbon markets and policies, climate finance, environmental disclosure and reporting, divestment, engagement, environmental, social, and governance (ESG), green banks, green bonds, green benchmarks and indices, impact investing, public-private partnerships, responsible investment, stranded assets, and green taxonomies. Seminar meets weekly during the Spring Quarter.
Same as: CEE 257

CEE 161I. Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation. 3 Units.
Introduction to the physics governing the circulation of the atmosphere and ocean and their control on climate with emphasis on the atmospheric circulation. Topics include the global energy balance, the greenhouse effect, the vertical and meridional structure of the atmosphere, dry and moist convection, the equations of motion for the atmosphere and ocean, including the effects of rotation, and the poleward transport of heat by the large-scale atmospheric circulation and storm systems. Prerequisites: MATH 51 or CME100 and PHYSICS 41.
Same as: CEE 261I, EARTHSYS 146A, ESS 246A

CEE 162A. Mechanics of Fluids. 3 Units.
Course content is the same as CEE 101B but without the Tuesday lecture and lab component. Permission of the instructor is required first to enroll in CEE 162A. Prerequisites: E14, Physics 41 and Math 51.

CEE 162D. Introduction to Physical Oceanography. 4 Units.
The dynamic basis of oceanography. Topics: physical environment; conservation equations for salt, heat, and momentum; geostrophic flows; wind-driven flows; the Gulf Stream; equatorial dynamics and ENSO; thermohaline circulation of the deep oceans; and tides. Prerequisite: PHYSICS 41.
Same as: CEE 262D, EARTHSYS 164, ESS 148

CEE 162E. Rivers, Streams, and Canals. 3 Units.
Introduction to the movement of water through natural and engineered channels, streams, and rivers. Basic equations and theory (mass, momentum, and energy equations) for steady and unsteady descriptions of the flow. Application of theory to the design of flood- control and canal systems. Flow controls such as weirs and sluice gates; gradually varied flow; Saint-Venant equations and flood waves; and method of characteristics. Open channel flow laboratory experiments: controls such as weirs and gates, gradually varied flow, and waves. Limited enrollment in lab section. Prerequisite: CEE 101B or CEE 162A.
Same as: CEE 262E

CEE 162F. Coastal Processes. 3 Units.
Formerly Coastal Engineering. Fluid dynamics and sediment transport processes that govern the physical behavior of the coastal ocean. Topics: waves, coastal sediment transport, tides, storm surge, sea-level rise, estuarine circulation, river plumes, and upwelling. Prerequisite: PHYSICS 41.

CEE 162I. Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation. 3 Units.
Introduction to the physics governing the circulation of the atmosphere and ocean and their control on climate with emphasis on the large-scale ocean circulation. This course will give an overview of the structure and dynamics of the major ocean current systems that contribute to the meridional overturning circulation, the transport of heat, salt, and biogeochemical tracers, and the regulation of climate. Topics include the tropical ocean circulation, the wind-driven gyres and western boundary currents, the thermohaline circulation, the Antarctic Circumpolar Current, water mass formation, atmosphere-ocean coupling, and climate variability. Prerequisites: MATH 51 or CME100; and PHYSICS 41; and a course that introduces the equations of fluid motion (e.g. ESS 246A, ESS 148, or CEE 101B).
Same as: CEE 262I, EARTHSYS 146B, ESS 246B

CEE 164H. Quantitative methods for marine ecology and conservation. 4 Units.
The goal of this course is to learn the foundations of ecological modelling with a specific (but not exclusive) focus on marine conservation and sustainable exploitation of renewable resources. Students will be introduced to a range of methods ¿ from basic to advanced ¿to characterize population structure, conduct demographic analyses, estimate extinction risk, identify temporal trends and spatial patterns, quantify the effect of environmental determinants and anthropogenic pressures on the dynamics of marine populations, describe the potential for adaptation to climate change. This course will emphasize learning by doing, and will rely heavily on practical computer laboratories, in R and/or Phyton, based on data from our own research activities or peer reviewed publications. Students with a background knowledge of statistics, programming and calculus will be most welcome.
Same as: BIOHOPK 143H, BIOHOPK 243H, CEE 264H

CEE 165C. Water Resources Management. 3 Units.
Water resources management is studied in the context of increasing population, economic growth, and the effect of climate change on the available water resources. The class examines the question of how to achieve the optimal equilibrium between water supply and water demand, under specific local and regional physical environmental, social and economic constraints. Basic water management principles are reviewed in the context of sustainable development, increasing water scarcity in many parts of the world, and hydrologic uncertainty including that associated with climate change. Specific topics include the management of operations and water quality in reservoirs, river basins, and groundwater systems; non-conventional water sources such as treated wastewater and desalination; demand management options; and the institutional and legal framework of water management.
Same as: CEE 265C

CEE 165H. Big Earth Hackathon Wildland Fire Challenge. 3 Units.
Participate in Stanford's Big Earth Hackathon challenge on wildland fires by finding an innovative solution to wildland fire prediction, prevention, and/or evacuation. Students work in self-organized diverse teams of 2-4 students in weeks 1-8, with a final presentation of the work on Friday May 29. The teams will spend the first few weeks designing their specific team problem/scope/goals under one of three primary areas of focus. Guidance in the design and solution processes will be provided by faculty, industry and/or community leaders. Workshops in data analysis, programming, GIS, and fundamental issues related to wildfires will be provided at the start of the quarter to give students tools and insights to define and tackle problems.
Same as: CEE 265H, EARTH 165H, EARTH 265H

CEE 166A. Watershed Hydrologic Processes and Models. 3 Units.
Introduction to the occurrence and movement of water in the natural environment and its role in creating and maintaining terrestrial, wetland, and aquatic habitat. Hydrologic processes, including precipitation, evaporation, transpiration, snowmelt, infiltration, subsurface flow, runoff, and streamflow. Rivers and lakes, springs and swamps. Emphasis is on observation and measurement, data analysis, modeling, and prediction. Prerequisite: CEE 101B or CEE 162A or equivalent. (Freyberg).
Same as: CEE 266A

CEE 166B. Water Resources and Hazards. 3 Units.
Sociotechnical systems associated with human use of water as a resource and the hazards posed by too much or too little water. Potable and non-potable water use and conservation. Irrigation, hydroelectric power generation, rural and urban water supply systems, storm water management, flood damage mitigation, and water law and institutions. Emphasis is on engineering design. Prerequisite: 166A/266A or equivalent. (Freyberg).
Same as: CEE 266B

CEE 170. Aquatic and Organic Chemistry for Environmental Engineering. 3 Units.
This course provides a solid foundation in the most important aspects of general, aquatic and organic chemistry. Nearly all of aspects environmental engineering apply the chemistry concepts discussed in this course. Given that each of the chemistry subjects to be addressed are standalone classes, this class highlights only the most relevant material to environmental engineering. The class focuses on developing general background skills needed for subsequent classes in environmental engineering focusing on their applications, although certain applications will be discussed for illustration.
Same as: CEE 270M

CEE 171F. New Indicators of Well-Being and Sustainability. 3 Units.
Explore new ways to better measure human development, comprehensive wealth and sustainability beyond standard economic indicators such as income and GDP. Examine how new indicators shape global, national and local policy worldwide. Well-being topics include health, happiness, trust, inequality and governance. Sustainability topics include sustainable development, environmental performance indicators, material flow analysis and decoupling, and inclusive wealth indicators. Students will build their own indicator of well-being and sustainability for a term paper.

CEE 171G. Environmental & Ecological Economics. 3 Units.
Ideas, tools and policy solutions in environmental and ecological economics covering a wide range of topics: biodiversity and ecosystems management, energy and climate change mitigation, environmental health and environmental justice, new indicators of well-being and sustainability beyond GDP and growth and sustainable urban systems.
Same as: CEE 271G

CEE 172. Air Quality Management. 3 Units.
Quantitative introduction to the engineering methods used to study and seek solutions to current air quality problems. Topics: global atmospheric changes, urban sources of air pollution, indoor air quality problems, design and efficiencies of pollution control devices, and engineering strategies for managing air quality. Prerequisites: 70, MATH 51.

CEE 173. Urban Water. 3 Units.
This course explores technical, economic, institutional, social,npolicy, and legal aspects of urban water using case studies fromnlocations around the world. The course will include lectures andndiscussions. Lectures will provide foundational information on thenlink between water and human and ecosystem health, drinking water andnwastewater treatment methods, as well as policies and guidelinesn(local, national, and global from the World Health Organization) onnwater and wastewater, and the role of various stakeholders includingninstitutions and the public, in the outcome of water conflicts.nStudents will dive into details of nuanced conflicts over waternthrough case studies using discussion and debate. Course themesninclude (1) scientific uncertainty, (2) institutions, stakeholders,nand human behavior matter, and (3) complexity of the couplednhuman-ecosystem-urban water system.

CEE 173S. Electricity Economics. 3 Units.
This course develops a foundation of economic principles for the electric utility on the topics of regulation, planning, and operation. A particular emphasis is given to emerging electricity sector topics such as renewable planning and integration, distributed energy resources, energy storage, and market design. The course uses these economic principles to assess the effects of existing and proposed policy including the potential for value creation and disruption.
Same as: CEE 273S

CEE 174A. Providing Safe Water for the Developing and Developed World. 3 Units.
This course will cover basic hydraulics and the fundamental processes used to provide and control water, and will introduce the basics of engineering design. In addition to understanding the details behind the fundamental processes, students will learn to feel comfortable developing initial design criteria (30% designs) for fundamental processes. Students should also develop a feel for the typical values of water treatment parameters and the equipment involved. The course should enable students to work competently in environmental engineering firms or on non-profit projects in the developing world such as Engineers without Borders. Pre-requisite: Chem31B/M.

CEE 174B. Wastewater Treatment: From Disposal to Resource Recovery. 3 Units.
This course builds upon CEE 174A, covering basic hydraulics and the fundamental processes used to treat wastewater. In addition to understanding the details behind the fundamental processes, students will learn to feel comfortable developing initial design criteria (30% designs) for fundamental processes. Students should also develop a feel for the typical values of water treatment parameters and the equipment involved. After covering conventional processes, the class addresses newer processes used to meet emerging treatment objectives, including nutrient removal, composting of biosolids and recycling of wastewater for beneficial uses, including potable reuse. Pre-requisites: CEE 174A.

CEE 175A. California Coast: Science, Policy, and Law. 3-4 Units.
This interdisciplinary course integrates the legal, scientific, and policy dimensions of how we characterize and manage resource use and allocation along the California coast. We will use this geographic setting as the vehicle for exploring more generally how agencies, legislatures, and courts resolve resource-use conflicts and the role that scientific information and uncertainty play in the process. Our focus will be on the land-sea interface as we explore contemporary coastal land-use and marine resource decision-making, including coastal pollution, public health, ecosystem management; public access; private development; local community and state infrastructure; natural systems and significant threats; resource extraction; and conservation, mitigation and restoration. Students will learn the fundamental physics, chemistry, and biology of the coastal zone, tools for exploring data collected in the coastal ocean, and the institutional framework that shapes public and private decisions affecting coastal resources. There will be 3 to 4 written assignments addressing policy and science issues during the quarter, as well as a take-home final assignment. Special Instructions: In-class work and discussion is often done in interdisciplinary teams of students from the School of Law, the School of Engineering, the School of Humanities and Sciences, and the School of Earth, Energy, and Environmental Sciences. Students are expected to participate in class discussion and field trips. Elements used in grading: Participation, including class session and field trip attendance, writing and quantitative assignments. Cross-listed with Civil & Environmental Engineering (CEE 175A/275A), Earth Systems (EARTHSYS 175/275), and Law (LAW 2510). Open to graduate students and to advanced undergraduates with instructor consent. Enrollment limited; priority given to CEE majors and Law School students.
Same as: CEE 275A

CEE 175Q. Changing Human Behavior: Drivers and Barriers in Environmental Action. 2 Units.
Beyond the scientific and technological challenges of climate change, there are important psychological factors and barriers to individual attitude and behavior change. Students will analyze and identify barriers to individual action; distinguish between targeting individual behaviors vs. attitudes; understand specific psychological challenges and opportunities that climate change raises; develop strategies to address these factors in contexts where behavior change is sought. Students will propose and develop their own ideas for addressing a specific psychological barrier to individual action in an environmental context.

CEE 175S. Environmental Entrepreneurship and Innovation. 3 Units.
Our current infrastructure for provision of critical services-clean water, energy, transportation, environmental protection; requires substantial upgrades. As a complement to the scientific and engineering innovations taking place in the environmental field, this course emphasizes the analysis of economic factors and value propositions that align value chain stakeholder interests.
Same as: CEE 275S

CEE 176A. Energy Efficient Buildings. 3 Units.
Quantitative evaluation of technologies and techniques for reducing energy demand of residential-scale buildings. Heating and cooling load calculations, financial analysis, passive-solar design techniques, water heating systems, photovoltaic system sizing for net-zero-energy all-electric homes.

CEE 176B. 100% Clean, Renewable Energy and Storage for Everything. 3-4 Units.
This course discusses elements of a transition to 100% clean, renewable energy in the electricity, transportation, heating/cooling, and industrial sectors for towns, cities, states, countries, and companies. It examines wind, solar, geothermal, hydroelectric, tidal, and wave characteristics and resources; electricity, heat, cold and hydrogen storage; transmission and distribution; matching power demand with supply on the grid: efficiency; replacing fossil with electric appliances and machines in the buildings and industry; energy, health, and climate costs and savings; land requirements; feedbacks of renewables to the atmosphere; and 100% clean, renewable energy roadmaps to guide transitions.
Same as: CEE 276B

CEE 176C. Energy Storage Integration - Vehicles, Renewables, and the Grid. 3 Units.
This course will provide in-depth introduction to existing energy storage solutions being used on the electric grid and in vehicles with a primary focus on batteries and electrochemical storage. We will discuss the operating characteristics, cost and efficiency of these technologies and how tradeoff decisions can be made. Special attention will be given to system-level integration of new storage technologies, including chargers, inverters, battery management systems and controls, into the existing vehicle and grid infrastructure. Further investigations include issues relating to integration of electric vehicle charging with demand-side management, scheduled renewable energy absorption and local grid balancing. Class format involves regular guest lectures, required lab participation, and field trips to relevant sites. Enrollment is limited; if you are interested in taking the course, please fill out a brief questionnaire at http://goo.gl/forms/i3YH91Qx05 n Please contact jtaggart@stanford.edu with any questions regarding the application or course information.
Same as: CEE 276C

CEE 176G. Sustainability Design Thinking. 3 Units.
Application design thinking to make sustainability compelling, impactful and realizable. Analysis of contextual, functional and human-centered design thinking techniques to promote sustainable design of products and environments by holistically considering space, form, environment, energy, economics, and health. Includes Studio project work in prototyping, modeling, testing, and realizing sustainable design ideas.
Same as: CEE 276G

CEE 177. Aquatic Chemistry and Biology. 4 Units.
Introduction to chemical and biological processes in the aqueous environment. Basic aqueous equilibria; the structure, behavior, and fate of major classes of chemicals that dissolve in water; redox reactions; the biochemistry of aquatic microbial life; and biogeochemical processes that govern the fate of nutrients and metals in the environment and in engineered systems. Prerequisite: CHEM 31.

CEE 177L. Smart Cities & Communities. 3 Units.
A city is comprised of people and a complex system of systems connected by data. A nexus of forces ¿ IoT, open data, analytics, AI, and systems of engagement ¿ present new opportunities to increase the efficiency of urban systems, improve the efficacy of public services, and assure the resiliency of the community. Systems studied include: water, energy, transportation, buildings, food production, and social services. The roles of policy and behavior change as well as the risks of smart cities will be discussed. How cities are applying innovation to address the unprecedented challenges of COVID-19 will also be explored.
Same as: CEE 277L

CEE 177Q. Data Analysis, Presentation, and Interpretation in Environmental Engineering. 3 Units.
This class is designed for students interested in pursuing research-based careers. It covers practical aspects of data analysis, presentation, interpretation relevant to the field of environmental engineering. Learning objectives include identifying and refining research questions, choosing appropriate data analysis methods, and applying principles of effective visual and written presentation of proposed research and research findings. Additional topics to be covered include preparing a constructive review, research ethics, and navigating the publication process.
Same as: CEE 277Q

CEE 177S. Engineering and Sustainable Development. 1-3 Unit.
The second of a two-quarter, project-based course sequence that address cultural, political, organizational, technical and business issues at the heart of implementing sustainable engineering projects in the developing world. Students work in interdisciplinary project teams to tackle real-world design challenges in partnership with social entrepreneurs and/or NGOs. This quarter focuses on implementation, evaluation, and deployment of the designs developed in the winter quarter. Designated a Cardinal Course by the Haas Center for Public Service.
Same as: CEE 277S, ENGR 177B, ENGR 277B

CEE 177X. Engineering and Sustainable Development: Toolkit. 1-3 Unit.
The first of a two-quarter, project-based course sequence that address cultural, sociopolitical, organizational, technical, and ethical issues at the heart of implementing sustainable engineering projects in a developing world. Students work in interdisciplinary project teams to tackle real-world design challenges in partnership with social entrepreneurs, local communities, and/or NGOs. While students must have the skills and aptitude necessary to make meaningful contributions to technical product designs, the course is open to all backgrounds and majors. The first quarter focuses on cultural awareness, ethical implications, user requirements, conceptual design, feasibility analysis, and implementation planning. Admission is by application. Students should plan to enroll in CEE 177S/277S (ENGR 177B/277B) Engineering & Sustainable Development: Implementation following successful completion of this course. Designated a Cardinal Course by the Haas Center for Public Service. To satisfy a Ways requirement, students must register for an undergraduate course number (CEE 177S or ENGR 177A) and this course must be taken for at least 3 units. In AY 2020-21, a letter grade or `CR' grade satisfies the Ways requirement.
Same as: CEE 277X, ENGR 177A, ENGR 277A

CEE 178. Introduction to Human Exposure Analysis. 3 Units.
(Graduate students register for 276.) Scientific and engineering issues involved in quantifying human exposure to toxic chemicals in the environment. Pollutant behavior, inhalation exposure, dermal exposure, and assessment tools. Overview of the complexities, uncertainties, and physical, chemical, and biological issues relevant to risk assessment. Lab projects. Recommended: MATH 51. Apply at first class for admission.
Same as: CEE 276

CEE 178S. Air Pollution Science & Engineering. 3 Units.
Human health and environmental impact of air pollution. Types, sources and production processes of key air pollutants in indoor and outdoor environments. Engineering solutions in air pollution remediation and mitigation. Role of science-informed policy and regulation in air resources protection. Measurement of particulate matter and carbon monoxide. Preparation of a research poster, video short, op-ed, or other media on an air pollution problem.
Same as: CEE 278S

CEE 179A. Water Chemistry Laboratory. 3 Units.
(Graduate students register for 273A.) Laboratory application of techniques for the analysis of natural and contaminated waters, emphasizing instrumental techniques.
Same as: CEE 273A

CEE 179C. Environmental Engineering Design. 5 Units.
Application of engineering fundamentals including environmental engineering, hydrology, and engineering economy to a design problem. Enrollment limited; preference to seniors in Civil and Environmental Engineering.

CEE 179F. Frontiers of Anaerobic Treatment. 1 Unit.
This seminar will present the latest findings on the operation and performance of ground-breaking anaerobic treatment processes for domestic wastewater. Specifically, this seminar will examine the performance of the Staged Anaerobic Fluidized-bed Membrane Bioreactor (SAF-MBR) using results from ongoing operations at the Codiga Resource Recover Center and from previous and parallel research efforts. The seminars will incorporate a description of the fundamentals of anaerobic treatment processes, a discussion of how the SAF-MBR process is different from typical anaerobic processes, and insights from operations along with implications for system design. Course work will include explorations of the costs, benefits, and market potential of this technology.
Same as: CEE 279F

CEE 179S. Seminar: Issues in Environmental Science, Technology and Sustainability. 1-2 Unit.
Invited faculty, researchers and professionals share their insights and perspectives on a broad range of environmental and sustainability issues. Students critique seminar presentations and associated readings.
Same as: CEE 279S, EARTHSYS 179S, ESS 179S

CEE 180. Structural Analysis. 4 Units.
Analysis of beams, trusses, frames; method of indeterminate analysis by consistent displacement, least work, superposition equations, moment distribution. Introduction to matrix methods and computer methods of structural analysis. Prerequisite: 101A and ENGR 14.

CEE 182. Structural Design. 3-4 Units.
Students will learn the principles of structural engineering design including how to design structural components of reinforced concrete (e.g., beams, columns, and slabs) and steel (e.g., beams, columns, tension and compression members, and connections) for various structural systems. Skills will be gained through problem sets and a design project. (Note: this course replaces the combination of CEE 181 and CEE 182 taught separately in previous years). Pre-requisite: CEE 180.

CEE 183. Integrated Civil Engineering Design Project. 4 Units.
Studio format. Design concepts for civil engineering facilities from schematic design through construction, taking into account sustainable engineering issues. Design exercises culminating in the design of a civil engineering facility, emphasizing structural systems and materials and integration with architectural, construction and other project requirements. Prerequisites: CEE 180, 181, 182; CEE 120A (or equivalent background in BIM), civil engineering major; architectural design major with instructor consent.

CEE 192. Laboratory Characterization of Properties of Rocks and Geomaterials. 3-4 Units.
Lectures and laboratory experiments. Properties of rocks and geomaterials and how they relate to chemo-mechanical processes in crustal settings, reservoirs, and man-made materials. Focus is on properties such as porosity, permeability, acoustic wave velocity, and electrical resistivity. Students may investigate a scientific problem to support their own research (4 units). Prerequisites: Physics 41 (or equivalent) and CME 100.
Same as: GEOPHYS 259

CEE 198. Directed Reading or Special Studies in Civil Engineering. 1-4 Unit.
Written report or oral presentation required. Students must obtain a faculty sponsor.

CEE 199. Undergraduate Research in Civil and Environmental Engineering. 1-4 Unit.
Written report or oral presentation required. Students must obtain a faculty sponsor.

CEE 199A. Special Projects in Architecture. 1-4 Unit.
Faculty-directed study or internship. May be repeated for credit. Prerequisite: consent of instructor.

CEE 199B. Directed Studies in Architecture. 1-4 Unit.
Projects may include studio-mentoring activities, directed reading and writing on topics in the history and theory of architectural design, or investigations into design methodologies.

CEE 199C. Independent Research in Civil and Environmental Engineering. 1-5 Unit.
Enrollment restricted to CEE students enrolling in classes via SCPD. Directed study of a topic in civil and environmental engineering, under the supervision of a CEE professor. Students enrolling must email Profs. Lepech and Hildemann, cc'ing their research supervisor, to indicate with which CEE faculty member they will be working.
Same as: CEE 299C

CEE 199E. Outreach and Mentoring Program Development in CEE. 1-2 Unit.
Open to undergraduates who are declared majors in Civil Engineering, Environmental Engineering, Atmosphere/Energy, and Architectural Design. Will brainstorm and develop an innovative curriculum and engaging activities for CEE 10 (Intro. to the Civil & Environmental Engineering Professions).

CEE 199H. Undergraduate Honors Thesis. 2-3 Units.
For students who have declared the Civil Engineering B.S. honors major and have obtained approval of a topic for research under the guidance of a CEE faculty adviser. Letter grade only. Written thesis or oral presentation required.n (Staff).

CEE 199J. Independent Projects in Environmental & Sustainability Communications. 1 Unit.
Directed independent projects in the communication of environmental and sustainability topics. Selected assignments may explore research, education, mass media, and social media channels. Students will self-research formats, content, and media requirements. Emphasis on design thinking and creativity. Enrollment by Permission Number only. Prerequisite: Consent of Instructor.
Same as: CEE 299J

CEE 199L. Independent Project in Civil and Environmental Engineering. 1-4 Unit.
Prerequisite: Consent of Instructor.

CEE 199S. Undergraduate Summer Research in Civil and Environmental Engineering. 1-6 Unit.
Investigation of a research topic in civil and environmental engineering. For students admitted to the Stanford Summer Session program. Written report or oral presentation required. Students must obtain a faculty or research staff sponsor.

CEE 200A. Teaching of Civil and Environmental Engineering. 1 Unit.
Required of CEE Ph.D. students. Strategies for effective teaching and introduction to engineering pedagogy. Topics: problem solving techniques and learning styles, individual and group instruction, the role of TAs, balancing other demands, grading. Teaching exercises. Register for quarter of teaching assistantship: 200A. Aut; 200B. Win; 200C. Spr.

CEE 200B. Teaching of Civil and Environmental Engineering. 1 Unit.
Required of CEE Ph.D. students. Strategies for effective teaching and introduction to engineering pedagogy. Topics: problem solving techniques and learning styles, individual and group instruction, the role of TAs, balancing other demands, grading. Teaching exercises. Register for quarter of teaching assistantship. May be repeated for credit. 200A. Aut, 200B. Win, 200C. Spr.

CEE 200C. Teaching of Civil and Environmental Engineering. 1 Unit.
Required of CEE Ph.D. students. Strategies for effective teaching and introduction to engineering pedagogy. Topics: problem solving techniques and learning styles, individual and group instruction, the role of TAs, balancing other demands, grading. Teaching exercises. Register for quarter of teaching assistantship. May be repeated for credit. 200A. Aut, 200B. Win, 200C. Spr.

CEE 201D. Computations in Civil and Environmental Engineering. 3 Units.
Computational and visualization methods in the design and analysis of civil and environmental engineering systems. Focus is on applications of MATLAB. How to develop a more lucid and better organized programming style.
Same as: CEE 101D

CEE 201E. Nonlinear Dynamics. 3 Units.
Most real-world systems are to some degree nonlinear, and the addition of nonlinearity can lead to qualitatively different kinds of behavior as compared with linear systems. This course provides an introduction to the analysis of nonlinear dynamical systems, with examples drawn from across the sciences and engineering. In addition to formal analysis, the course will emphasize qualitative and geometric thinking. Topics will include one-dimensional systems; bifurcations; phase-plane analysis; nonlinear oscillators; and chaos, fractals, and strange attractors. Prerequisites: Differential equations at the level of CME 102 and linear algebra at the level of CME 104; some programming experience.

CEE 201S. Science & Engineering Problem-Solving with MatLab.. 3 Units.
Introduction to the application of MATLAB as a powerful tool to solve a variety of science and engineering problems. Exposure to computational and visualization tools available through MATLAB to analyze, solve, and visualize some common problems of interest in science and engineering. Prequisite: Calculus. Note: students enrolling in CEE 201S must seek the consent of instructor.
Same as: CEE 101S

CEE 202. Construction Law and Claims. 3-4 Units.
Concepts include the preparation and analysis of construction claims, cost overrun and schedule delay analysis, general legal principles, contracts, integrated project delivery, public private partnerships and the resolution of construction disputes through ADR and litigation. Requires attendance of the ten weeks of Monday classes and the first five weeks of Wednesday classes.

CEE 203. Probabilistic Models in Civil Engineering. 3-4 Units.
Introduction to probability modeling and statistical analysis in civil engineering. Emphasis is on the practical issues of model selection, interpretation, and calibration. Application of common probability models used in civil engineering including Poisson processes and extreme value distributions. Parameter estimation. Linear regression.

CEE 203S. Machine Learning: Concepts & Applications in Civil & Environmental Engineering. 3 Units.
Introduction to machine learning concepts, tools and methodologies for incorporating intelligence and smart technology into environmental data applications. Learning algorithms and development of a machine learning pipeline. Set-up of a machine learning platform on an IoT edge sensor device. Prerequisite: CS 106A or equivalent Python programming experience.
Same as: CEE 103S

CEE 204. Structural Reliability. 3-4 Units.
Procedures for evaluating the safety of structural components and systems. First-and second-order estimates of failure probabilities of engineered systems. Sensitivity of failure probabilities to assumed parameter values. Measures of the relative importance of random variables. Reliability of systems with multiple failure modes. Reliability updating. Simulation methods and variance reduction techniques. Prerequisite: 203 or equivalent.

CEE 205A. Structural Materials Testing and Simulation. 3-4 Units.
Hands-on laboratory experience with fabrication, computer simulation, and experimental testing of material and small-scale structural components. Comparison of innovative and traditional structural materials. Behavior and application of high-performance fiber reinforced concrete materials for new design, fiber-reinforced polymeric materials for structural retrofits and introduction to sustainable, bio-based composites. Prerequisites: basic course in reinforced concrete design CEE 182 or equivalent.

CEE 205B. Advanced Topics in Structural Concrete. 3 Units.
Concepts and application of strut and tie modeling including deep beams, design for torsion resistance, beam-column joints, bridge components, and post-tensioned anchor zones. Course project integrating computer simulation and physical experimentation of a structural concrete component. Prerequisites: CEE 285A or equivalent.

CEE 206. Decision Analysis for Civil and Environmental Engineers. 3 Units.
Current challenges in selecting an appropriate site, alternate design, or retrofit strategy based on environmental, economic, and social factors can be best addressed through applications of decision science. Basics of decision theory, including development of decision trees with discrete and continuous random variables, expected value decision making, utility theory value of information, and elementary multi-attribute decision making will be covered in the class. Examples will cover many areas of civil and environmental engineering problems. Prerequisite: CEE 203 or equivalent. (Note: This course will be offered in Fall of 2020).

CEE 207A. Understanding Energy. 3-5 Units.
Energy is the number one contributor to climate change and has significant consequences for our society, political system, economy, and environment. Energy is also a fundamental driver of human development and opportunity. In taking this course, students will not only understand the fundamentals of each energy resource -- including significance and potential, conversion processes and technologies, drivers and barriers, policy and regulation, and social, economic, and environmental impacts -- students will also be able to put this in the context of the broader energy system. Both depletable and renewable energy resources are covered, including oil, natural gas, coal, nuclear, biomass and biofuel, hydroelectric, wind, solar thermal and photovoltaics (PV), geothermal, and ocean energy, with cross-cutting topics including electricity, storage, climate change and greenhouse gas emissions (GHG), sustainability, green buildings, energy efficiency, transportation, and the developing world. The course is 4 units, which includes lecture and in-class discussion, readings and videos, homework assignments, virtual field trips, and a small-group discussion section once a week for 50 minutes (live participation is required, many different times will be offered). Lectures will be recorded and available on Canvas. No in-person field trips will be offered for AY 2020-2021 ¿ but alumni of the class can optionally attend field trips in future quarters. Enroll for 5 units to also attend the Workshop, an interactive discussion section on cross-cutting topics that meets once per week for 80 minutes (timing TBD). The 3-unit option requires instructor approval - please contact Diana Gragg. Open to all: pre-majors and majors, with any background! Website: https://energy.stanford.edu/understanding-energy. CEE 107S/207S Understanding Energy: Essentials is a shorter (3 unit) version of this course, offered summer quarter. Students should not take both for credit. Prerequisites: Algebra.
Same as: CEE 107A, EARTHSYS 103

CEE 207H. Applied Hope: Whole-Systems Thinking on Energy Solutions. 2 Units.
Whole-systems thinking has yielded transformative insights about prospects for sustainability across a series of energy and environmental challenges. Taught by Amory Lovins, co-founder of Rocky Mountain Institute, this seminar will cover four decades of ground-breaking analysis and validated results that have transformed what is thought to be possible across multiple fields. Topics will include highly efficient buildings, vehicles, and industrial processes; winning the fossil fuel endgames; nuclear power and security; natural capitalism; distributed energy and resilience; and profitable climate protection.
Same as: CEE 107H

CEE 207R. E^3: Extreme Energy Efficiency. 3 Units.
Be part of a unique course about extreme energy efficiency and integrative design! We will meet remotely for once a week throughout the winter quarter. E^3 will focus on efficiency techniques' design, performance, choice, evolution, integration, barrier-busting, profitable business-led implementation, and implications for energy supply, competitive success, environment, development, security, etc. Examples will span very diverse sectors, applications, issues, and disciplines, covering different energy themes throughout the quarter: buildings, transportation, industry, and implementation and implications, including renewable energy synergy and integration. Solid technical grounding and acquaintance with basic economics and business concepts will both be helpful. The course will be composed of keynote lectures, exercises, and interactive puzzlers synthesizing integrative design principles. Students will be introduced to Factor 10 Engineering, the approach for optimizing the whole system for multiple benefits. Students will work closely and interactively with RMI staff including Amory Lovins, cofounder and Chief Scientist of Rocky Mountain Institute (RMI), and Dr. Holmes Hummel, founder of Clean Energy Works. Exercises will illuminate challenges RMI has faced and solutions it has created in real-world design. Students will explore clean-sheet solutions that meet end-use demands and optimize whole-system resource efficiency, often with expanding rather than diminishing returns to investments, i.e. making big savings cheaper than small ones. All backgrounds and disciplines, both undergraduate and graduate, are welcome to enroll. There is no application this year. Prerequisite - completion of one of the following courses or their equivalent is required: CEE 107A/207A/ Earthsys 103, CEE 107S/ CEE 207S, CEE 176A, CEE 176B. Course details are available at the website: https://energy.stanford.edu/extreme-energy-efficiency.
Same as: CEE 107R

CEE 207S. Understanding Energy - Essentials. 3-4 Units.
Energy is the number one contributor to climate change and has significant consequences for our society, political system, economy, and environment. Energy is also a fundamental driver of human development and opportunity. Students will learn the fundamentals of each energy resource -- including significance and potential, drivers and barriers, policy and regulation, and social, economic, and environmental impacts -- and will be able to put this in the context of the broader energy system. Both depletable and renewable energy resources are covered, including oil, natural gas, coal, nuclear, biomass and biofuel, hydroelectric, wind, solar thermal and photovoltaics (PV), geothermal, and ocean energy, with cross-cutting topics including electricity, storage, climate change and greenhouse gas emissions (GHG), sustainability, green buildings, energy efficiency, transportation, and the developing world. The course is 3 units, which includes lecture, readings and videos, assignments, and one required off-site field trip. Field trip offerings differ each quarter but may include Diablo Canyon nuclear power plant, Shasta dam, Tesla Gigafactory, NextEra wind farm, San Ardo oil field, Geyser¿s geothermal power plants, NEXTracker Solar PV, etc. Enroll for 4 units to also attend the Workshop, an interactive discussion section on cross-cutting topics that meets once per week for 80 minutes (timing TBD).This is a course for all: pre-majors and majors, with any background - no prior energy knowledge necessary. For a course that covers all of this plus goes more in-depth, check out CEE 107A/207A/ EarthSys 103 Understanding Energy offered in the autumn and spring quarters (students should not take both for credit). Website: http://web.stanford.edu/class/cee207a/
Prerequisites: Algebra.
Same as: CEE 107S

CEE 209B. Disaster Risk and International Development Seminar. 2 Units.
The human and economic impacts of natural disasters are ever increasing and disproportionately affecting lower-income countries. In act there is mounting evidence that these ever more frequent shocks threaten to reverse development progress in low-income countries. This seminar course will explore the theory and practice of disaster risk reduction in international development contexts. Weekly readings (and occasional guest lectures) will cover key issues in development theory, a history of "a risk society", participation, human-centered planning, ethics in engineering, and other topics. The seminar will be structured through weekly readings, brief writing responses and group discussion.

CEE 209S. Disaster Resilience Seminar. 1 Unit.
This seminar will present topics associated with quantifying, communicating and improving the resilience of urban areas to disasters. Speakers from a range of disciplines will present current research, application, and thinking on innovations, current best practices and the future of disaster resilience. Guest speakers, supplemental reading, and group discussion will be utilized to teach about the complex nature of natural disasters, the impacts on different regions, and the multi-disciplinary/multi-cultural ways of thinking to prepare communities.

CEE 212A. Industry Applications of Virtual Design & Construction. 2-4 Units.
Building upon the concept of the VDC Scorecard, CEE 112A/212A investigates in the management of Virtual Design and Construction (VDC) programs and projects in the building industry. Interacting with experts and professionals in real estate, architecture, engineering , construction and technology providers, students will learn from the industry applications of Building Information Modeling and its relationship with Integrated Project Delivery, Sustainable Design and Construction, and Virtual Design and Construction. Students will conduct case studies to evaluate the maturity of VDC planning, adoption, technology and performance in practice. Students taking 3 or 4 units will be paired up with independent research or case study projects on the industry applications of VDC. No prerequisite. See CEE 112B/212B in the Winter Quarter and CEE 112C/212C in the Spring Quarter.

CEE 212B. Industry Applications of Virtual Design & Construction. 2-4 Units.
CEE 112B/212B is a practicum on the Industry Applications on Virtual Design and Construction (VDC). Students will gain insights and develop skills that are essential for academic research, internships or industry practice in VDC and Building Information Modeling (BIM). Students can choose between one of the two project topics: [1] Industrialized Construction with Virtual Parts (No Prerequisite) or [2] Industry Benchmarking & Applications of the VDC Management Scorecard (Suggested Prerequisite: CEE 112A/212A).
Same as: CEE 112B

CEE 212C. Industry Applications of Virtual Design & Construction. 2-4 Units.
Following the Autumn- and Winter-quarter course series, CEE 112C/212C is an industry-focused and project-based practicum that focuses on the industry applications of Virtual Design and Construction (VDC). Students will be paired up with industry-based VDC projects with public owners and private developers, such as GSA Public Buildings Service, the Hong Kong Mass Transit Railway, Optima, Walt Disney Imagineering, Microsoft facilities and/or other CIFE International members. Independently, students will conduct case studies and/or develop VDC and building information models (BIM) using off-the-shelf technologies for project analysis, collaboration, communication and optimization. Students will gain insights and develop skills that are essential for academic research, internships or industry practice in VDC. Prerequisite: CEE 112A/212A, CEE 112B/212B, CEE 159C/259C, CEE 159D/259D, or Instructor's Approval.
Same as: CEE 112C

CEE 212D. Industry Applications of Virtual Design and Construction. 2-4 Units.
A continuation of the CEE 112/212 series, CEE 112D/212D is an industry-focused and project-based practicum that focuses on the industry applications of Virtual Design and Construction (VDC). Students will be paired up with industry-based VDC research or application opportunities with public owners and private developers, professional associations, and/or other member organizations of the Center for Integrated Facility Engineering at Stanford. Independently, students will conduct case studies, research activities, and/or develop VDC and building information models (BIM) using off-the-shelf technologies for project analysis, collaboration, communication and optimization. Students will gain insights and develop skills that are essential for academic research, internships or industry practice in VDC. Prerequisite: CEE110/210, CEE 112C/212C, CEE 122B/222B, or Instructor's Approval.
Same as: CEE 112D

CEE 213. Patterns of Sustainability. 1-4 Unit.
This seminar examines the interrelated sustainability of the natural, built and social environments of places in which we live. Several BOSP centers and the home Stanford campus will hold this 1-2 unit seminar simultaneously and collaborate with a shared curriculum, assignments, web conference and a Wiki. The goal of the collaborative arrangement is to expose, share, compare and contrast views of sustainability in different parts of the world. We will look at and assess aspects of sustainability of the places we are living from a theoretical perspective from the literature, from observations and interviews in the countries in which we study.
Same as: CEE 113

CEE 214. Frontier Technology: Understanding and Preparing for Technology in the Next Economy. 2 Units.
The next wave of technological innovation and globalization will affect our countries, our societies, and ourselves. This interdisciplinary course provides an introduction to frontier technology, the intersection where radical forward thinking and real-world implementation meet. Topics covered include artificial intelligence, additive manufacturing and advanced robotics, smart cities and urban mobility, telecommunications with 5G, and other key emerging technologies in society. These technologies have vast potential to address the largest global challenges of the 21st century, ushering in a new era of progress and change. Limited enrollment, contact instructors for application.
Same as: CEE 114, MED 114, MED 214, PSYC 114

CEE 217. Renewable Energy Infrastructure. 2 Units.
Construction of renewable energy infrastructure: geothermal, solar thermal, solar photovoltaic, wind, biomass. Construction and engineering challenges and related issues and drivers for performance, cost, and environmental impact. Context of renewable energy infrastructure development including comparison of the types of renewable energy, key economic, environmental, and social contextual factors, applicability of a type of renewable energy given a context, related barriers and opportunities. Class project to plan a start-up for developing a type of energy infrastructure based on an engineering innovation.

CEE 218X. Shaping the Future of the Bay Area. 3-5 Units.
The complex urban problems affecting quality of life in the Bay Area, from housing affordability and transportation congestion to economic vitality and social justice, are already perceived by many to be intractable, and will likely be exacerbated by climate change and other emerging environmental and technological forces. Changing urban systems to improve the equity, resilience and sustainability of communities will require new collaborative methods of assessment, goal setting, and problem solving across governments, markets, and communities. It will also require academic institutions to develop new models of co-production of knowledge across research, education, and practice. This XYZ course series is designed to immerse students in co-production for social change. The course sequence covers scientific research and ethical reasoning, skillsets in data-driven and qualitative analysis, and practical experience working with local partners on urban challenges that can empower students to drive responsible systems change in their future careers. The Autumn (X) course is specifically focused on concepts and skills, and completion is a prerequisite for participation in the Winter (Y) and/or Spring (Z) practicum quarters, which engage teams in real-world projects with Bay Area local governments or community groups. X is composed of four modules: (A) participation in two weekly classes which prominently feature experts in research and practice related to urban systems; (B) reading and writing assignments designed to deepen thinking on class topics; (C) fundamental data analysis skills, particularly focused on Excel and ArcGIS, taught in lab sessions through basic exercises; (D) advanced data analysis skills, particularly focused on geocomputation in R, taught through longer and more intensive assignments. X can be taken for 3 units (ABC), 4 units (ACD), or 5 units (ABCD). Open to undergraduate and graduate students in any major. For more information, visit http://bay.stanford.edu.
Same as: CEE 118X, ESS 118X, ESS 218X, GEOLSCI 118X, GEOLSCI 218X, GEOPHYS 118X, GEOPHYS 218X, POLISCI 218X, PUBLPOL 118X, PUBLPOL 218X

CEE 218Y. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 118Y, ESS 118Y, ESS 218Y, GEOLSCI 118Y, GEOLSCI 218Y, GEOPHYS 118Y, GEOPHYS 218Y, POLISCI 218Y, PUBLPOL 118Y, PUBLPOL 218Y

CEE 218Z. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 118Z, ESS 118Z, ESS 218Z, GEOLSCI 118Z, GEOLSCI 218Z, GEOPHYS 118Z, GEOPHYS 218Z, POLISCI 218Z

CEE 220A. Building Modeling for Design & Construction. 3 Units.
The foundational Building Information Modeling course introduces techniques for creating, managing, and applying of building information models in the building design and construction process. The course covers processes and tools for creating, organizing, and working with 2D and 3D computer representations of building components and geometries to produce models used in architectural design, construction planning and documentation, rendering and visualization, simulation, and analysis.
Same as: CEE 120A

CEE 220B. Advanced Building Modeling Workshop. 2-4 Units.
This course builds upon the Building Information Model concepts introduced in 120A/220A and illustrates how BIM modeling tools are used to design, analyze, and model building systems including structural, mechanical, electrical, plumbing and fire protection. Course covers the physical principles, design criteria, and design strategies for each system and explores processes and tools for modeling those systems and analyzing their performance.nTopics include: building envelopes, access systems, structural systems modeling and analysis, mechanical / HVAC systems, plumbing and fire protection systems, electrical systems, and systems integration/coordination.
Same as: CEE 120B

CEE 220C. Parametric Design and Optimization. 2-4 Units.
This course explores tools and techniques for computational design and parametric modeling as a foundation for design optimization. Class sessions will introduce several parametric design modeling platforms and scripting environments that enable rapid generation of 3D models and enable rapid evaluation of parametrically-driven design alternatives.nnTopics to be featured include:n-Principles of parametric design vs. direct modelingn-Design exploration using parametric modeling platforms (Revit/FormIt, Rhino)n-Visual scripting languages and environments (Dynamo, Grasshopper, DesignScript)n-Single- and multi-dimensional optimization techniques and guidance strategies.
Same as: CEE 120C

CEE 220S. Building Information Modeling Special Study. 2-4 Units.
Special studies of Building Information Modeling strategies and techniques focused on creating, managing, and applying models in the building design and construction process. Processes and tools for creating, organizing, and working with 2D and 3D computer representations of building components to produce models used in design, construction planning, visualization, and analysis.Contact glkatz@stanford.edu for more information.
Same as: CEE 120S

CEE 221A. Planning Tools and Methods in the Power Sector. 3-4 Units.
This course covers the planning methods most commonly used in the power sector today. It covers both the fundamental methods used and their applications to electricity generation, transmission and distribution planning, integrated resource planning using both energy efficiency and renewable resources as well as utility finance and ratemaking. The methods covered will include forecasting (time series, regression and the use of markets), resource assessment (including energy efficiency and demand-side management) optimization (in power markets operation and in expansion planning) and the processes used in decision-making.

CEE 222A. Computer Integrated Architecture/Engineering/Construction (AEC) Global Teamwork. 3 Units.
AEC students engage in a crossdisciplinary, collaborative, geographically distributed, and multicultural project-based teamwork. AEC teams exercise their domain knowledge and information technologies in a multidisciplinary context focusing on the design and construction concept development phase of a comprehensive building project. Prerequisite: interview with Instructor in Autumn Quarter.

CEE 222B. Computer Integrated Architecture/Engineering/Construction (AEC) Global Teamwork. 2 Units.
Global AEC student teams continue their project activity focusing on the most challenging concept developed in 222A and chosen jointly with their client. Comprehensive team project focusing on design and construction, including: project development and documentation; detailing, 3D and 4D modeling, simulation, sustainable concepts, cost benefit analysis, and life-cycle cost analysis; and final project presentation of product and process. Prerequisite: CEE 222A.

CEE 223. Materials for Sustainable Built Environments. 3 Units.
In this course, students will learn about new and traditional construction materials for use in sustainable building and infrastructure projects. Materials will include cement-based materials, fiber-reinforced polymer composites, and timber for structural and non-structural applications including facades, insulation, and paving. Material properties, their performance over time and their impact on people and the environment will be discussed and students will complete a design project in teams. Pre-requisites: CEE 101A or equivalent. Knowledge of structural design with reinforced concrete and steel recommended.

CEE 223A. Cement-based Materials, Properties and Durability. 2 Units.
Students will develop an understanding of the chemical and physical processes of cement and concrete hydration, strength development, mechanical performance and durability. Students will learn how the properties of materials and admixture combine to create a wide range of cement-based materials used in the built environment. The course will address sustainable construction, including the use of alternative cements, admixtures, and aggregates. Students will apply the principles in this course to various aspects of civil and structural engineering, including innovative mix design specification and review, structural investigations and failure analysis, and cementitious materials research.

CEE 224A. Design and Operation of Integrated Infrastructure Systems. 3 Units.
In the next decade, countries will spend trillions of dollars on built infrastructure, the effect of which is to preserve our isolated infrastructure systems¿ status quo. Regulatory bodies like Public Utility Commissions (PUC) have unintentionally institutionalized this effect, with sometimes disastrous results, when in fact these isolated systems interact in ways that create new opportunities and new challenges. Infrastructure can be made more flexible and resilient but only when we know how to design, interconnect, and operate urban systems as an integrated whole, and when quality of life is the explicit motivation. These systems include Energy, Transportation, Communication, Water, Air, Green Space and Geophysical systems.nnThis class will introduce the basics of current infrastructure systems and explore in greater depth how these systems can be integrated in design and in operations. During the first half of the quarter, class lectures and guest speakers will develop the principles of infrastructure design and operations. The focus of the second half of the quarter will be directed student research to explore in greater detail the integration of two or more infrastructure systems, concluding with a written paper and class presentation.nnAt the end of this course students will have a framework for understanding integrated infrastructure design from multiple engineering and civic perspectives. Specific topics will be: n- Boundaries and boundary conditions between Built Urban Infrastructure Systems and Natural Urban infrastructure Systems n- Materials and Energy Flows between Built and Natural Urban Systemsn- Quantifying and Normalizing Urban Materials and Energy Flowsn- Basis of physical control of Infrastructure Systemsn- Basis of legal and economic control of Infrastructure systemsn- Metrics to evaluate single system and integrated system performancenStudents must submit an application for admission to this course: https://docs.google.com/forms/d/e/1FAIpQLSfxTP9MWxbOMJOYXOA3kK1ZWAPJHCkptxaXfGQ80o0Nz7d6cA/viewform?usp=sf_link.

CEE 224S. Sustainable Urban Systems Seminar. 1 Unit.
The Sustainable Urban Systems (SUS) Seminar Series will feature speakers from academia, practice, industry, and government who are on the forefront of research and innovation in sustainable urban systems. The SUS Seminar will be open to the public; students will have the option of obtaining 1 unit of course credit based on attendance and completion of writing assignments.
Same as: CEE 124S

CEE 224X. Shaping the Future of the Bay Area. 3-5 Units.
Note to students: please be advised that the course number for this course has been changed to: CEE 218X, which is offered Autumn 2019-20. If you are interested in taking this course, please enroll in CEE 218X instead for Autumn 2019-20.
Same as: CEE 124X

CEE 225. Defining Smart Cities: Visions of Urbanism for the 21st Century. 3-4 Units.
Technological innovations have and will disrupt all domains of urban life, from housing to healthcare to city management to transportation. This seminar is aimed at future technologists, entrepreneurs, policymakers, and urban planners to define and evaluate the smartness of a city through three lenses: technology, equity, and policy. Through readings, seminar discussions, guest speakers, and a final project, we will explore how a smart city can leverage technology for a higher quality of life, less inequality in access to services, and tighter human communities. You will come away with a framework for understanding how to maximize the social good of emerging technologies. Course material is appropriate for students from all disciplines. Students who enroll in the course for 4 units will participate in an off-campus field component during Spring Break.
Same as: CEE 125, URBANST 174

CEE 226. Life Cycle Assessment for Complex Systems. 3-4 Units.
Life cycle modeling of products, industrial processes, and infrastructure/building systems; material and energy balances for large interdependent systems; environmental accounting; and life cycle costing. These methods, based on ISO 14000 standards, are used to examine emerging technologies, such as biobased products, building materials, building integrated photovoltaics, and alternative design strategies, such as remanufacturing, dematerialization, LEED, and Design for Environment: DfE. Student teams complete a life cycle assessment of a product or system chosen from industry.

CEE 226E. Advanced Topics in Integrated, Energy-Efficient Building Design. 2-3 Units.
This class explores innovative methods for designing, developing, and financing high performance low carbon buildings. At this pivotal moment, as building codes in California and around the world move towards decarbonization and all electric buildings, this class will perfectly position students to enter the field of the built environment with the ideal tools and knowledge to tackle the quickly changing industry. Students will learn best practices to reduce energy and integrate solar PV generation and energy storage in commercial buildings in pursuit of Net Zero Energy and Net Zero Carbon buildings. The class is taught by Peter Rumsey, a widely recognized global leader in energy efficiency and sustainable building design, who has directed the design of 20 LEED Platinum Certified, 3 Living Building Challenge and 22 Net Zero projects worldwide. Lectures also include presentations and panels featuring several other foremost experts and practitioners in the field of green buildings. Optional site visits to local innovative Net Zero Energy and LEED buildings provide context to support lectures. CEE 176A and CEE 156/256 or similar courses are recommended prerequisites but not required. All students are expected to participate in a group-based, term project focused on the design and development of a Net Zero Energy building.

CEE 227. Global Project Finance. 3-5 Units.
Public and private sources of finance for large, complex, capital-intensive projects in developed and developing countries. Benefits and disadvantages, major participants, risk sharing, and challenges of project finance in emerging markets. Financial, economic, political, cultural, and technological elements that affect project structures, processes, and outcomes. Case studies. Limited enrollment.

CEE 228. Methods in Urban Systems. 3 Units.
Introduction to quantitative tools and methods for solving problems in urban systems, including geographic information science (GIS), modeling, data analysis, and programming methodologies.

CEE 229A. Reinventing the Design & Construction of Buildings. 2-3 Units.
Challenge to students from all departments -- Making buildings is still painfully laborious and expensive. Can you radically rethink how buildings are designed and constructed? This project-based course balances theory, research, design. We will 1) study why/how Architecture and Construction industry are lagging behind other industries, 2) work with leading professionals to analyze roadblocks preventing them from building cheaper, faster, better, and 3) develop solutions to tackle these problems and advance the industry. You will consider questions such as: Why does it take 6-9 months to build a single family home? Can AI accelerate the architectural design process? How can designers leverage data/IoT? Which new materials offer significant savings and can be adopted for global solutions? Where can the supply chain be optimized? How can we design new technologies that tradesmen and luddites will use? The course is two terms (Winter CEE 229A, Spring CEE 229B).

CEE 229B. Reinventing the Design & Construction of Buildings. 2-3 Units.
Challenge to students from all departments -- Making buildings is still painfully laborious and expensive. Can you radically rethink how buildings are designed and constructed? This project-based course balances theory, research, design. We will 1) study why/how Architecture and Construction industry are lagging behind other industries, 2) work with leading professionals to analyze roadblocks preventing them from building cheaper, faster, better, and 3) develop solutions to tackle these problems and advance the industry. You will consider questions such as: Why does it take 6-9 months to build a single family home? Can AI accelerate the architectural design process? How can designers leverage data/IoT? Which new materials offer significant savings and can be adopted for global solutions? Where can the supply chain be optimized? How can we design new technologies that tradesmen and luddites will use? The course is two terms (Winter CEE 229A, Spring CEE 229B).

CEE 229S. Climate Change Adaptation in the Coastal Built Environment. 1 Unit.
How will climate change impact coastal ports and harbors around the world? Leading experts discuss the latest science, policy, and engineering research on this important issue, including the necessary response to protect ports and harbors from significant sea-level rise and storm surge. Focus is on the built environment. Guest speakers. CEE 229/129 for research option. See www.groupspaces.com/seaports2100.

CEE 231. Urban Design. 3 Units.
Introduction to principles of urban design, including buildings, infrastructure, and landscape.

CEE 234B. Intermediate Arch Studio. 5 Units.
This studio offers students experience in working with a real site and a real client program to develop a community facility. Students will develop site analysis, review a program for development and ultimately design their own solutions that meet client and community goals. Sustainability, historic preservation, community needs and materials will all play a part in the development of students final project. Students will also gain an understanding of graphic conventions, verbal and presentation techniques. Course may be repeated for credit.
Same as: CEE 134B

CEE 236. Planning Calif: the Intersection of Climate, Land Use, Transportation & the Economy. 3 Units.
Cities and urban areas have always been transformed by major external changes like pandemics and public health crises. California is both in the midst of its greatest economic recession since the Great Depression and experiencing a pandemic that has the potential to reshape many aspects of life. Planning for cities and regions, however, is a long game that requires follow-through on decisions made sometimes over many decades. How do we balance the shocks to our assumptions from the current Covid world with the need to plan long-term for issues like affordable housing and equitable cities, and perhaps most fundamentally, prepare our cities and communities for the inevitability of climate change and climate impact? nnnnThis course takes an interdisciplinary view of the key contemporary planning topics in California. It does so from looking at the intersection of climate laws, land use changes, the need for housing, travel patterns and the availability of high quality jobs and employment. This course will give you an understanding of the roles of key levels of government, from the state to the region/metropolitan scale, to the city and county, down to the neighborhood and parcel level. it will give students insight into leading themes and issues of the day in California such as the future of downtowns, the role of high speed rail, the impact of telework, automation in the construction of housing, drawing from examples in San Jose and San Francisco, the Central Valley, the state legislature, Southern California. Within each of these topics we will look at the impact of decisions on equity as well as climate and the economy. nnnnThe instructors are Kristy Wang, formerly SPUR¿s Community Planning Policy Director, and Egon Terplan, Senior Advisor for Economic Development and Transportation in the California Governor¿s Office, formerly SPUR¿s Regional Planning Director. (Affiliations for identification purposes only).
Same as: CEE 136, PUBLPOL 130, PUBLPOL 230, URBANST 130

CEE 237B. Advanced Architecture Studio. 6 Units.
This course will focus on the topic of interdisciplinary collaboration and its role in the development of design concepts. Specifically, the integration of structural with architectural considerations to produce a unified urban, spatial, tectonic and structural proposition will be our field of investigation. This course is an architecture studio course where class time will be spent primarily in individual or group desk critiques and pin-up sessions. May be repeat for credit. Total completions allowed: 3. Additionally, there will be lectures, case study presentations and a field trip. Prerequisites: required: CEE 31 (or 31Q) Drawing, CEE 120A and CEE 130 Design.
Same as: CEE 137B

CEE 239. Design Portfolio Methods. 4 Units.
The portfolio is an essential creative tool used to communicate academic work, design philosophies, and professional intent. This course will explore elements of graphic design, presentation, communication, binding, printing, and construction, yielding a final portfolio (physical and digital) for professional, academic or personal purposes. Limited enrollment. Prerequisites: two Art, Design, or Architecture studio courses, or consent of instructor. nNote: CEE139 will run M/W from 10:30am-12:20pm, Autumn 2020-21.
Same as: CEE 139

CEE 240. Project Assessment and Budgeting. 3 Units.
Course objectives: 1) learn the processes of determining the quantities of permanent materials required and the associated construction quantities; 2) learn the capabilities of construction equipment; 3) be introduced to the make-up of construction crews; 4) design concrete form systems; 5) utilize the historic productivity of a crew to estimate the cost of construction; 6) write construction logic to create a critical path project schedule; 7) distribute the cost of construction over schedule activities to generate a cash flow curve and monthly payment schedule for the project.nConstruction engineering: A construction project that has reached final design must be quantified, a delivery schedule developed, it's final total price determined and the month by month demand for cash payments established. Each student will perform these activities to satisfy a "Course Project" requirement utilizing actual project design drawings obtained from the companies of the Guest Lectures and others. Guest Lecturers from: Disney Construction, Pankow Construction, Granite Construction, Stacy & Witbeck Incorporated.

CEE 241. Managing Fabrication and Construction. 4 Units.
Methods to manage the physical production of construction projects; design, analysis, and optimization of the fabricate-assemble process including performance metrics. Project management techniques and production system design including: push versus pull methods; master scheduling and look-ahead scheduling; scope, cost, and schedule control; earned value analysis; critical path method; location-based scheduling; 4D modeling; workflow; trade coordination; methods to understand uncertainty and reduce process variability; and supply chain systems including made-to-stock, engineered-to-order, and made-to-order. Prerequisite: 100 or consent of instructor.

CEE 241A. Infrastructure Project Development. 3 Units.
Infrastructure is critical to the economy, global competitiveness and quality of life. Topics include energy, transportation, water, public facilities, and communications sectors. Analysis of the condition of the nation's infrastructure and how projects are planned and financed. Focus is on public works in the U.S. The role of public and private sectors through a step-by-step study of the project development process. Case studies of real infrastructure projects. Industry guest speakers. Student teams prepare project environmental impact statements.
Same as: CEE 141A

CEE 241B. Infrastructure Project Delivery. 3 Units.
Infrastructure is critical to the economy, global competitiveness and quality of life. Topics include energy, transportation, water, public facilities ,and communications sectors. Analysis of how projects are designed, constructed, operated, and maintained. Focus is on public works projects in the U.S. Alternative project delivery approaches and organizational strategies. Case studies of real infrastructure projects. Industry guest speakers. Student teams prepare finance/design/build/operate/maintain project proposals.
Same as: CEE 141B

CEE 241C. Global Infrastructure Projects Seminar. 1-2 Unit.
Nine current global infrastructure projects presented by top project executives or company leaders from industry. Water, transportation, energy and communication projects are featured. Course provides comparisons of project development, win and delivery approaches for mega-projects around the world. Alternative project delivery methods, the role of public and private sector, different project management and construction strategies, and lessons learned. The course also includes field trips to local mega-projects. Grade (one unit) is based on attending all 9 lectures and at least 2 field trips.
Same as: CEE 141C

CEE 241P. Integrated Management of Fabrication and Construction. 3-4 Units.
Application of the fundamental fabrication and construction management concepts covered in CEE 241T to an actual project; integrated software environments; integration of scope, schedule, and cost information for scheduling, estimating, and progress control; scope management with BIM; off-site fabrication vs. on-site construction and supply chain coordination; group project; project permitting, potential for a joint project with CEE 242P. Prerequisites: CEE 210, CEE 241T.

CEE 242. Organization Design for Projects and Companies. 3-4 Units.
Introduction to organizational behavior and organizational design for construction projects and companies. Class incorporates readings, individual, small group and large group case study assignments. Students use computer simulation to design real-world project organizations.

CEE 242P. Designing Project Organizations. 2 Units.
Sequel to CEE 242T. Course develops information-processing approach for designing project and project-based company organizations to deliver sustainable construction projects; includes design of organizations and work processes for integrated project delivery and public-private partnership concession project delivery. Term project applies computer-based organization simulation to optimize design of project organization for a participating company.

CEE 242R. Project Risk Analysis. 3 Units.
Teaches principles and methods for quantitative modeling and mitigation of risks in project planning, design, construction and operation, using new MS Excel capabilities and standardized probability distributions. Several case studies will be covered, including ongoing work with PG&E to roll up operational risks.

CEE 242T. Organizational Behavior and Design for Construction. 2 Units.
Introduction to organizational behavior and organizational design for Architecture, Engineering and Construction projects and companies. Class incorporates readings, individual and group case study assignments. Students use computer simulation to analyze project organizations and predict schedule, cost and quality risks. This class is a prerequisite for CEE 242P.

CEE 243. Intro to Urban Sys Engrg. 3 Units.
This course is an introduction to the interdisciplinary domain of urban systems engineering. It will provide you with a high-level understanding of the motivation for studying sustainable cities and urban systems, systems-based modeling approaches and the social actor theories embedded in the urban sustainability decision making process. Coursework will be comprised of three group mini-projects corresponding to course modules.

CEE 244. Accounting, Finance & Valuation for Engineers & Constructors. 3 Units.
Concepts of financial accounting and economics emphasizing the construction industry. Financial statements, accounting concepts, project accounting methods, and the nature of project costs. Case study of major construction contractor. Ownership structure, working capital, and the sources and uses of funds.

CEE 246. Venture Creation for the Real Economy. 3-4 Units.
CEE 246 is a unique course geared toward developing entrepreneurial businesses (both start-ups and internal ventures). This team, project-based class teaches students how to exploit emerging materials science, engineering and IT technologies to radically apply innovation to the real economy e.g., new products and services that produce real economic value for society as well as for the entrepreneurs. Areas of focus include: Sustainable Buildings and Infrastructure, Digital Cities and Communities, Clean Energy, Transportation and Logistics, Advanced Manufacturing, Digital Health Care, and Education. nnWith one-on-one support from seasoned industry mentors and influential guest speakers, the course guides students through the three key elements of new venture creation: identifying opportunities, developing business plans, and determining funding sources. The class culminates with business presentations to industry experts, VCs and other investors. The goal is to equip students with the knowledge and network to create impactful business ideas, many of which have been launched from this class. To apply for this limited enrollment course, students must submit the following application: https://forms.gle/nNCnX3kty56Wbo986.
Same as: MS&E 273

CEE 246B. Real Estate Development and Finance. 3 Units.
Introduction to the Real Estate Development Process from conception, feasibility analysis, due diligence, entitlements, planning, financing, market analysis, contract negotiation, construction, marketing, asset management and disposition. Pro-forma and Financial modeling in Real Estate. Financing options for different types of Real Estate projects and products. Redevelopment projects. Affordable Housing. The class will combine lectures, case studies, field work (Group Project) and guest speakers. Recommended knowledge of spreadsheets. Prerequisites: highly recommended Engineering Economy (CEE 246A or ENGR 60) or any Introduction to Finance class (concepts of Present Worth and IRR). Attendance to the first class is mandatory.

CEE 246S. Real Estate Finance Seminar or Real Estate Career Development Seminar. 1 Unit.
Real Estate Development and Finance presented by industry guest speakers. Executives from different Real Estate companies will give an overview of their business and projects. (Residential, Retail, Commercial, Mixed Used, REITs, Redevelopment Projects, Affordable Housing, public and private real estate companies, real estate funds, etc.). Short Real Estate Case Studies will be given as homework. Two optional field trips. Attendance to the first class is mandatory. (Please note that the classroom is Y2E2 111 for Spring 2019-20).

CEE 247A. Network Governance. 3-4 Units.
This course aims at providing students with insights, concepts and skills needed to understand the dynamics of multi-actor interaction processes in uncertain and often highly politicized contexts and to be able to cope with technological and strategic uncertainties and risks including the unpredictable behavior of actors. They will develop knowledge, skills and competences about how to manage divergent and conflicting interests of different actors including principles of integrative negotiation, communication and mediation.

CEE 248. Introduction to Real Estate Development. 2 Units.
This course will offer students an introduction to Real Estate Development. Senior Principals from Sares Regis, a regional commercial and residential real estate development company, will cover topics on all aspects of the development process. Guest speakers from the fields of architecture and engineering, finance and marketing will participate in some of the classes. They will offer the students a window into the world of how houses, apartments, office buildings and public facilities are conceived of, brought through the design and approval process, financed, marketed and then sold and/or rented. There will be nine 1.5-hour lectures (robust class discussion encouraged). Throughout the quarter, the students will work on a group case study assignment about one local project that is currently being built or was recently completed. This assignment will be due in the form of a presentation during the final exam period. No prior knowledge of real estate is required. Classes commence on April 2nd and complete on May 28th. Number of students is limited to 30. Undergraduates must apply by submitting a one-page essay explaining their interest in taking the class to mradyk@srgnc.com by March 6, 2020.

CEE 250. Product Management Fundamentals for the Real Economy. 3 Units.
This course teaches students how to apply product management skills to create products and services for the "real economy." Students will learn the basics of product management and the product lifecycle and design a product in a team setting. They will also learn iterative product development with an eye towards applying those skills towards products that produce real economic value for society as well as the entrepreneurs. This course includes instruction from seasoned industry veterans and guest speakers. Students will be guided through identifying an opportunity, designing a solution, launching a product, and building a roadmap. The content is tailored to students interested in developing real products and delivering solutions within startups, established companies, non-profits, governments, and non-governmental organizations. The goal is to teach students the fundamentals of product management and equip them with the knowledge to make meaningful progress on some of the biggest challenges facing society. This course requires an application due to limited enrollment. Application link: https://forms.gle/3f9RRpgF9zjpXkfq8 . Application deadline: Sunday, September 13, 9PM PST.

CEE 251. Negotiation. 3 Units.
Students learn to prepare for and conduct negotiations in a variety of arenas including getting a job, managing workplace conflict, negotiating transactions, and managing personal relationships. Interactive class. The internationally travelled instructor who has mediated cases in over 75 countries will require students to negotiate real life case studies and discuss their results in class. Application required before first day of class; students should enroll on Axess and complete the application on Canvas before March 20, 2020. Note: there is a class fee of $130 for access to case files and readings.
Same as: CEE 151, EARTH 251, PUBLPOL 152

CEE 252. Construction Methods for Concrete and Steel Structures. 3 Units.
Providing technical support for concrete and steel construction operations on buildings or infrastructure projects. Concrete materials, construction properties of fresh concrete. Resources and operations for batching, transporting, placing, finishing, and curing concrete. Design, fabrication, and use of formwork. Special operations and formwork systems. Detailing, fabricating, erecting, and connecting structural steel. Lifting equipment and lift planning. Welding processes, operations, and quality control. Readings, exercises and course projects.

CEE 252Q. Construction Engineering Fundamentals. 2 Units.
Construction engineering is a series of technical activities to meet project objectives related to cost and schedule, safety, quality, and sustainability. These activities include: 1) designing temporary works and construction work processes; 2) providing the required temporary and permanent resources; and 3) integrating activities to consider construction during all project phases and between projects. The objectives of CEE 252Q are to learn about the technical fundamentals, resources, and field operations required to complete construction engineering activities and to develop a foundation for continued related learning. The course requires reviewing recorded presentations and other online resources, completing queries, participating in class sessions with guest speakers and in field trips, and completing group exercises and projects. The exercises, completed by all of the student groups, include construction engineering activities for earthwork, concrete construction, and steel erection. Each group will also complete a project to analyze one of the following types of systems or facilities: building electrical systems, lighting systems, HVAC systems, control systems, solar photovoltaic power plant, and wind turbine power plant.

CEE 254. Data Analytics for Physical Systems. 3-4 Units.
This course introduces practical applications of data analytics and machine learning from understanding sensor data to extracting information and decision making in the context of sensed physical systems. Many civil engineering applications involve complex physical systems, such as buildings, transportation, and infrastructure systems, which are integral to urban systems and human activities. Emerging data science techniques and rapidly growing data about these systems have enabled us to better understand them and make informed decisions. In this course, students will work with real-world data to learn about challenges in analyzing data, applications of statistical analysis and machine learning techniques using MATLAB, and limitations of the outcomes in domain-specific contexts. Topics include data visualization, noise cleansing, frequency domain analysis, forward and inverse modeling, feature extraction, machine learning, and error analysis. Prerequisites: CS106A, CME 100/Math51, Stats110/101, or equivalent.
Same as: CEE 154

CEE 255. Introduction to Sensing Networks for CEE. 3-4 Units.
Introduce the design and implementation of sensor networks for monitoring the built and natural environment. Emphasis on the integration of modern sensor and communication technologies, signal processing and statistical models for network data analysis and interpretation to create practical deployments to enable sustainable systems, in areas such as energy, weather, transportation and buildings. Students will be involved in a practical project that may involve deploying a small sensor system, data models and analysis and signal processing. Limited enrollment.
Same as: CEE 155

CEE 256. Building Systems Design & Analysis. 3-4 Units.
HVAC, lighting, and envelope systems for commercial and institutional buildings, with a focus on energy efficient design. Knowledge and skills required in the development of low-energy buildings that provide high quality environment for occupants.
Same as: CEE 156

CEE 257. Sustainable Finance and Investment Seminar. 1 Unit.
The course aims to equip the Stanford community with the knowledge and networks required to undertake significant future work on sustainable finance and investment. The course will be given in a? seminar?format, which explores multiple disciplines of sustainable finance with talks by researchers associated with the Stanford Precourt Institute for Energy¿s Sustainable Finance Initiative and visiting speakers. The course features three highly interactive modules: (1) risk and opportunities of sustainable finance, (2) business and financial innovation toward sustainability, and (3) sustainability assessment and advanced data technologies. The contents covered by this course include but are not limited to systems and theories in sustainable finance and investment such as active ownership, carbon markets and policies, climate finance, environmental disclosure and reporting, divestment, engagement, environmental, social, and governance (ESG), green banks, green bonds, green benchmarks and indices, impact investing, public-private partnerships, responsible investment, stranded assets, and green taxonomies. Seminar meets weekly during the Spring Quarter.
Same as: CEE 157

CEE 258. Donald R. Watson Seminar in Construction Engineering and Management. 1 Unit.
Presentations from construction industry leaders. Discussions with speakers from various segments of industry regarding career options. During Autumn 2020, this course will be offered "remote-only" and "synchronous." Students interested in taking CEE 258 with an in-person component should enroll in CEE 258C.

CEE 258B. Donald R. Watson Seminar in Construction Engineering and Management. 1 Unit.
Weekly seminars and field trips focusing on technical aspects of concrete and steel construction. Submission of abstract and paper required.

CEE 258C. Donald R. Watson Seminar in Construction Engineering and Management. 1 Unit.
Presentations from construction industry leaders. Discussions with speakers from various segments of industry regarding career options. During Autumn 2020, this course will be offered 'remote + in-person' and 'synchronous.' Students interested in taking CEE 258C must submit an online application found here; https://forms.gle/dLADjwGeYNu7ppcp7. Students interested in taking CEE 258C without an in-person component should enroll in CEE 258.

CEE 259A. Construction Problems. 1-3 Unit.
Group-selected problems in construction techniques, equipment, or management; preparation of oral and written reports. Guest specialists from the construction industry. See 299 for individual studies. Prerequisites: graduate standing in CEM program and consent of instructor.

CEE 259B. Construction Problems. 1-3 Unit.
Group-selected problems in construction techniques, equipment, or management; preparation of oral and written reports. Guest specialists from the construction industry. See 299 for individual studies. Prerequisites: graduate standing in CEM program and consent of instructor.

CEE 260A. Physical Hydrogeology. 4 Units.
(Formerly GES 230.) Theory of underground water occurrence and flow, analysis of field data and aquifer tests, geologic groundwater environments, solution of field problems, and groundwater modeling. Introduction to groundwater contaminant transport and unsaturated flow. Lab. Prerequisite: elementary calculus.
Same as: ESS 220

CEE 260C. Contaminant Hydrogeology and Reactive Transport. 3 Units.
Decades of industrial activity have released vast quantities of contaminants to groundwater, threatening water resources, ecosystems and human health. What processes control the fate and transport of contaminants in the subsurface? What remediation strategies are effective and what are the tradeoffs among them? How are these processes represented in models used for regulatory and decision-making purposes? This course will address these and related issues by focusing on the conceptual and quantitative treatment of advective-dispersive transport with reacting solutes, including modern methods of contaminant transport simulation. Some Matlab programming / program modification required. Prerequisite: Physical Hydrogeology ESS 220 / CEE 260A (Gorelick) or equivalent and college-level course work in chemistry.
Same as: ESS 221

CEE 260D. Remote Sensing of Hydrology. 3 Units.
This class discusses the methods available for remote sensing of the components of the terrestrial hydrologic cycle and how to use them. Topics include the hydrologic cycle, relevant sensor types and the electromagnetic spectrum, active/passive microwave remote sensing (snow, soil moisture, canopy water content, rainfall), thermal sensing of evapotranspiration, gravity and hyperspectral methods, as well as an introduction to data assimilation and calibration/validation approaches for hydrologic variables. Pre-requisite: programming experience.
Same as: ESS 224

CEE 261A. Physics of Wind. 3 Units.
An introduction to the Atmospheric Boundary Layer (ABL), including measurements and simulations of ABL flows. Wind and flow, turbulent transport, buoyancy and virtual potential temperature, the diurnal cycle. Derivation of the governing equations, simplifications and assumptions. Turbulence kinetic energy and its budget, ABL stability, the Richardson number and the Obukhov length. Analysis of boundary layer turbulence. Overview of field and wind tunnel measurement techniques, and of computational models from meso- to micro-scale. a Discussion of micro-scale applications, including pedestrian wind comfort, pollutant dispersion and wind loading, and an introduction to uncertainty quantification for ABL flows. Prerequisites: Knowledge of fluid mechanics.

CEE 261B. Physics of Wind Energy. 3 Units.
Formerly CEE 261. An introduction to the analysis and modeling of wind energy resources and their extraction. Topics include the physical origins of atmospheric winds; vertical profiles of wind speed and turbulence over land and sea; the wind energy spectrum and its modification by natural topography and built environments; theoretical limits on wind energy extraction by wind turbines and wind farms; modeling of wind turbine aerodynamics and wind farm performance. Final project will focus on development of a new wind energy technology concept. Prerequisites: CEE 262A or ME 351A.
Same as: ENERGY 262, ME 262

CEE 261C. Wind Engineering for Sustainable Cities. 3 Units.
An introduction to structural and environmental wind engineering for the design of sustainable buildings and cities, covering the physics and analysis of wind loading, urban flow and dispersion, and natural ventilation. Topics include: the atmospheric boundary layer and design wind speeds; bluff body aerodynamics; calculating design wind loads from building codes, wind tunnel experiments or computational fluid dynamics; analyzing pedestrian wind comfort and pollutant dispersion; and the design and analysis of natural ventilation systems using envelope models, scale modeling, full-scale measurements, and computational fluid dynamics. Measurement and simulation data of the flow on Stanford¿s Engineering Quad and in the Y2E2 building will be used throughout the course to illustrate the different concepts and methods.

CEE 261I. Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation. 3 Units.
Introduction to the physics governing the circulation of the atmosphere and ocean and their control on climate with emphasis on the atmospheric circulation. Topics include the global energy balance, the greenhouse effect, the vertical and meridional structure of the atmosphere, dry and moist convection, the equations of motion for the atmosphere and ocean, including the effects of rotation, and the poleward transport of heat by the large-scale atmospheric circulation and storm systems. Prerequisites: MATH 51 or CME100 and PHYSICS 41.
Same as: CEE 161I, EARTHSYS 146A, ESS 246A

CEE 262A. Hydrodynamics. 3-4 Units.
The flow of incompressible viscous fluid; emphasis is on developing an understanding of fluid dynamics that can be applied to environmental flows. Topics: kinematics of fluid flow; equations of mass and momentum conservation (including density variations); some exact solutions to the Navier-Stokes equations; appropriate analysis of fluid flows including Stokes flows, potential flows, and laminar boundary layers; and an introduction to the effects of rotation and stratification through scaling analysis of fluid flows. Prerequisites: 101B or consent of instructor; and some knowledge of vector calculus and differential equations.

CEE 262B. Transport and Mixing in Surface Water Flows. 3-4 Units.
Application of fluid mechanics to problems of pollutant transport and mixing in the water environment. Mathematical models of advection, diffusion, and dispersion. Application of theory to problems of transport and mixing in rivers, estuaries, and lakes and reservoirs. Recommended: 262A and CME 102 (formerly ENGR 155A), or equivalents.

CEE 262C. Coastal Ocean Modeling. 3 Units.
Introduction to numerical methods for modeling flows in the coastal ocean and estuaries that are influenced by river flows, tides, winds and gravity waves. Topics include stability and accuracy analysis, curvilinear and unstructured grids, implicit/explicit methods, transport and diffusion, shallow water equations, nonhydrostatic equations, Navier-Stokes solvers, turbulence modeling, and wave modeling. Prerequisites: CEE 262A, CME 206, or equivalent.

CEE 262D. Introduction to Physical Oceanography. 4 Units.
The dynamic basis of oceanography. Topics: physical environment; conservation equations for salt, heat, and momentum; geostrophic flows; wind-driven flows; the Gulf Stream; equatorial dynamics and ENSO; thermohaline circulation of the deep oceans; and tides. Prerequisite: PHYSICS 41.
Same as: CEE 162D, EARTHSYS 164, ESS 148

CEE 262E. Rivers, Streams, and Canals. 3 Units.
Introduction to the movement of water through natural and engineered channels, streams, and rivers. Basic equations and theory (mass, momentum, and energy equations) for steady and unsteady descriptions of the flow. Application of theory to the design of flood- control and canal systems. Flow controls such as weirs and sluice gates; gradually varied flow; Saint-Venant equations and flood waves; and method of characteristics. Open channel flow laboratory experiments: controls such as weirs and gates, gradually varied flow, and waves. Limited enrollment in lab section. Prerequisite: CEE 101B or CEE 162A.
Same as: CEE 162E

CEE 262F. Ocean Waves. 3 Units.
The fluid mechanics of surface gravity waves in the ocean of relevance to engineers and oceanographers. Topics include irrotational waves, wave dispersion, wave spectra, effects of bathymetry (shoaling), mass transport, effects of viscosity, and mean currents driven by radiation stresses. Prerequisite: CEE 262A or a graduate class in fluid mechanics.

CEE 262G. Sediment Transport Physics and Modeling. 3 Units.
Mechanics of sediment transport in rivers, estuaries and coastal oceans, with an emphasis on development of models and application of three-dimensional software tools. Topics include bottom boundary layers in steady and wave-driven flows, bedform dynamics, suspended and bedload transport, cohesive sediments. Prerequisites: CEE262A, CEE 262C or consent of instructor.

CEE 262H. Observational Methods in Coastal Oceanography. 3 Units.
TBA.

CEE 262I. Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation. 3 Units.
Introduction to the physics governing the circulation of the atmosphere and ocean and their control on climate with emphasis on the large-scale ocean circulation. This course will give an overview of the structure and dynamics of the major ocean current systems that contribute to the meridional overturning circulation, the transport of heat, salt, and biogeochemical tracers, and the regulation of climate. Topics include the tropical ocean circulation, the wind-driven gyres and western boundary currents, the thermohaline circulation, the Antarctic Circumpolar Current, water mass formation, atmosphere-ocean coupling, and climate variability. Prerequisites: MATH 51 or CME100; and PHYSICS 41; and a course that introduces the equations of fluid motion (e.g. ESS 246A, ESS 148, or CEE 101B).
Same as: CEE 162I, EARTHSYS 146B, ESS 246B

CEE 263A. Air Pollution Modeling. 3-4 Units.
The numerical modeling of urban, regional, and global air pollution focusing on gas chemistry and radiative transfer. Stratospheric, free-tropospheric, and urban chemistry. Methods for solving stiff systems of chemical ordinary differential, including the multistep implicit-explicit method, Gear's method with sparse-matrix techniques, and the family method. Numerical methods of solving radiative transfer, coagulation, condensation, and chemical equilibrium problems. Project involves developing a basic chemical ordinary differential equation solver. Prerequisite: CS 106A or equivalent.

CEE 263B. Numerical Weather Prediction. 3-4 Units.
Numerical weather prediction. Continuity equations for air and water vapor, the thermodynamic energy equation, and momentum equations derived for the atmosphere. Numerical methods of solving partial differential equations, including finite-difference, finite-element, semi-Lagrangian, and pseudospectral methods. Time-stepping schemes: the forward-Euler, backward-Euler, Crank-Nicolson, Heun, Matsuno, leapfrog, and Adams-Bashforth schemes. Boundary-layer turbulence parameterizations, soil moisture, and cloud modeling. Project developing a basic weather prediction model. Prerequisite: CS 106A or equivalent.

CEE 263C. Weather and Storms. 3 Units.
Daily and severe weather and global climate. Topics: structure and composition of the atmosphere, fog and cloud formation, rainfall, local winds, wind energy, global circulation, jet streams, high and low pressure systems, inversions, el Niño, la Niña, atmosphere/ocean interactions, fronts, cyclones, thunderstorms, lightning, tornadoes, hurricanes, pollutant transport, global climate and atmospheric optics.
Same as: CEE 63

CEE 263D. Air Pollution and Global Warming: History, Science, and Solutions. 3 Units.
Survey of Survey of air pollution and global warming and their renewable energy solutions. Topics: evolution of the Earth's atmosphere, history of discovery of chemicals in the air, bases and particles in urban smog, visibility, indoor air pollution, acid rain, stratospheric and Antarctic ozone loss, the historic climate record, causes and effects of global warming, impacts of energy systems on pollution and climate, renewable energy solutions to air pollution and global warming. UG Reqs: GER: DBNatSci.
Same as: CEE 64

CEE 263G. Energy Policy in California and the West. 1 Unit.
This seminar provides an in-depth analysis of the role of California state agencies and Western energy organizations in driving energy policy development, technology innovation, and market structures, in California, the West and internationally. The course covers three areas: 1) roles and responsibilities of key state agencies and Western energy organizations; 2) current and evolving energy and climate policies; and 3) development of the 21st century electricity system in California and the West. The seminar will also provide students a guideline of what to expect in professional working environment.
Same as: ENERGY 73, POLISCI 73, PUBLPOL 73

CEE 263H. Introduction to Quantitative Methods for Energy Decisions. 3 Units.
This course provides students from various backgrounds with knowledge of the principles and quantitative methods of decision analysis and policy analysis to tackle interdisciplinary questions in the context of sustainable energy systems. We consider engineering analysis, decision analysis and economic analysis in the formulation of answers to address energy system problems. We will use methods such as life-cycle assessment, benefit-cost and cost-effectiveness analysis, microeconomics, distributional metrics, risk analysis methods, sensitivity and uncertainty analysis, multi-attribute utility theory, and simulation and optimization. The integration of uncertainty into formal methods is a fundamental component of the course.
Same as: ENERGY 263

CEE 263S. Atmosphere/Energy Seminar. 1 Unit.
Interdisciplinary seminar with talks by researchers and practitioners in the fields of atmospheric science and renewable energy engineering. Addresses the causes of climate, air pollution, and weather problems and methods of addressing these problems through renewable and efficient energy systems. May be repeated for credit.

CEE 264H. Quantitative methods for marine ecology and conservation. 4 Units.
The goal of this course is to learn the foundations of ecological modelling with a specific (but not exclusive) focus on marine conservation and sustainable exploitation of renewable resources. Students will be introduced to a range of methods ¿ from basic to advanced ¿to characterize population structure, conduct demographic analyses, estimate extinction risk, identify temporal trends and spatial patterns, quantify the effect of environmental determinants and anthropogenic pressures on the dynamics of marine populations, describe the potential for adaptation to climate change. This course will emphasize learning by doing, and will rely heavily on practical computer laboratories, in R and/or Phyton, based on data from our own research activities or peer reviewed publications. Students with a background knowledge of statistics, programming and calculus will be most welcome.
Same as: BIOHOPK 143H, BIOHOPK 243H, CEE 164H

CEE 265A. Resilience, Sustainability and Water Resources Development. 3 Units.
"Sustainability" has been part of the vocabulary of water engineers since the 1990s, and in the past decade, "resilience" has appeared with increasing frequency in combination with sustainability in the water resources literature. In this course, students learn about sustainability and resilience as cultural ideals and, at times, sources of confusion. They will also investigate how these concepts are influencing the development and management of water resources. Sustainability and resilience concepts are illustrated using cases studies involving water development agencies in the US and other counties. These studies illustrate the role of political, social, economic, and environmental factors in decision making. Topics include multipurpose dams, structural and non-structural flood control measures, and drought management strategies. The course also examines the work of international aid organizations and NGOs in promoting sustainability and resilience in water resources development. Students will have many opportunities to sharpen their oral communication and writing abilities. Enrollment limited to 25 students. This is a Remote-Synchronous course. If you are interested in taking this course, please attend the first class regardless of your formal enrollment status. (See Zoom link on the CEE 265A Canvas site.) If more than 25 students wish to take the class, decisions on final enrollment will be based on completion of an admissions essay described on the first day of class. Intended for juniors, seniors and graduate students. No prerequisites.

CEE 265C. Water Resources Management. 3 Units.
Water resources management is studied in the context of increasing population, economic growth, and the effect of climate change on the available water resources. The class examines the question of how to achieve the optimal equilibrium between water supply and water demand, under specific local and regional physical environmental, social and economic constraints. Basic water management principles are reviewed in the context of sustainable development, increasing water scarcity in many parts of the world, and hydrologic uncertainty including that associated with climate change. Specific topics include the management of operations and water quality in reservoirs, river basins, and groundwater systems; non-conventional water sources such as treated wastewater and desalination; demand management options; and the institutional and legal framework of water management.
Same as: CEE 165C

CEE 265D. Water and Sanitation in Developing Countries. 1-3 Unit.
Economic, social, political, and technical aspects of sustainable water supply and sanitation service provision in developing countries. Service pricing, alternative institutional structures including privatization, and the role of consumer demand and community participation in the planning process. Environmental and public health considerations, and strategies for serving low-income households. Limited enrollment. Prerequisite: consent of instructor, see jennadavis.stanford.edu for application.

CEE 265E. Adaptation to Sea Level Rise and Extreme Weather Events. 3 Units.
Students are introduced to basic aspects of climate change in the context of sea level rise and the intensity and frequency of extreme-weather events, including floods, droughts and wildfires. Climate change adaptations are adjustments in behaviors, plans and projects to reduce society's vulnerability to climate change impacts. Major adaptation approaches relevant to civil and environmental engineers are emphasized. Adaptation measures considered include structural and ecologically-based measures for dealing with sea level rise, storm surges, floods and wildfires. In the context of coastal flooding, consideration is also given to ¿managed retreat¿ (i.e., deliberately altering flood defenses to allow flooding of presently protected areas). Influence of climate change on migration is also considered. Additional measures to reduce vulnerability include emergency preparedness and disaster response management systems. Illustrations of innovative adaptation measures taken by cities around the world are featured. Common barriers to climate change adaptation are also reviewed. Limited enrollment. Students from all departments and programs are welcome, with some admission preference given to students in CEE graduate programs followed by CEE Department seniors.

CEE 265F. Environmental Governance and Climate Resilience. 3 Units.
Adaptation to climate change will not only require new infrastructure and policies, but it will also challenge our local, state and national governments to collaborate across jurisdictional lines in ways that include many different types of private and nonprofit organizations and individual actors. The course explores what it means for communities to be resilient and how they can reach that goal in an equitable and effective way. Using wildfires in California as a case study, the course assesses specific strategies, such as controlled burns and building codes, and a range of planning and policy measures that can be used to enhance climate resilience. In addition, it considers how climate change and development of forested exurban areas (among other factors) have influenced the size and severity of wildfires. The course also examines the obstacles communities face in selecting and implementing adaptation measures (e.g., resource constraints, incentives to develop in forested areas, inadequate policy enforcement, and weak inter-agency coordination). Officials from various Bay Area organizations contribute to aspects of the course; and students will present final papers to local government offcials. Limited enrollment. Students will be asked to prepare application essays on the first day of class. Course is intended for seniors and graduate students.
Same as: POLISCI 227B, PUBLPOL 265F

CEE 265H. Big Earth Hackathon Wildland Fire Challenge. 3 Units.
Participate in Stanford's Big Earth Hackathon challenge on wildland fires by finding an innovative solution to wildland fire prediction, prevention, and/or evacuation. Students work in self-organized diverse teams of 2-4 students in weeks 1-8, with a final presentation of the work on Friday May 29. The teams will spend the first few weeks designing their specific team problem/scope/goals under one of three primary areas of focus. Guidance in the design and solution processes will be provided by faculty, industry and/or community leaders. Workshops in data analysis, programming, GIS, and fundamental issues related to wildfires will be provided at the start of the quarter to give students tools and insights to define and tackle problems.
Same as: CEE 165H, EARTH 165H, EARTH 265H

CEE 265I. Poverty, Infrastructure and Climate. 2-3 Units.
Lack of access to physical infrastructure such as roads, water supply and electricity is a key element of how 'poverty' is often defined. At the same time, the causal pathways that link infrastructure and economic development are not well understood, and are likely being re-shaped by a changing climate. Students in this course will contribute to a new initiative on poverty, infrastructure and climate change by (1) reviewing and synthesizing literature from relevant scholarly communities, (2) co-creating a conceptual causal model of the ways in which infrastructure (particularly roads and water assets) contributes to poverty alleviation, and (3) contributing to the design of applied research effort on these topics in sub-Saharan Africa. Students who opt for the 3-unit enrollment will have an additional supervised project that could take the form of a review paper, research proposal, or analysis of secondary data. There are no formal pre-requisites for the class; students from all schools and departments are welcome. Enrollment requires permission of the instructors. Interested students are invited to submit an application at https://tiny.cc/EPIC-Stanford.
Same as: ESS 264

CEE 266A. Watershed Hydrologic Processes and Models. 3 Units.
Introduction to the occurrence and movement of water in the natural environment and its role in creating and maintaining terrestrial, wetland, and aquatic habitat. Hydrologic processes, including precipitation, evaporation, transpiration, snowmelt, infiltration, subsurface flow, runoff, and streamflow. Rivers and lakes, springs and swamps. Emphasis is on observation and measurement, data analysis, modeling, and prediction. Prerequisite: CEE 101B or CEE 162A or equivalent. (Freyberg).
Same as: CEE 166A

CEE 266B. Water Resources and Hazards. 3 Units.
Sociotechnical systems associated with human use of water as a resource and the hazards posed by too much or too little water. Potable and non-potable water use and conservation. Irrigation, hydroelectric power generation, rural and urban water supply systems, storm water management, flood damage mitigation, and water law and institutions. Emphasis is on engineering design. Prerequisite: 166A/266A or equivalent. (Freyberg).
Same as: CEE 166B

CEE 266C. Dams, Reservoirs, and their Sustainability. 3 Units.
An investigation of dams and reservoirs and their short- and long-term costs, benefits, and impacts. Dam safety, operating rules and reoperation in response to change, fish passage, reservoir sediment management, fish passage and habitat, dam removal. Heavy reliance on case studies, technical literature, and discussion. Enrollment limited. Graduate status or permission of the instructor. Prerequisite: CEE 266A, 266B, or equivalents.

CEE 266E. California's Water Policy and Management: Toward A Sustainable Future. 1 Unit.
This seminar series focuses on the dramatic changes in recent decades in California water policy and management and how water researchers can help forge modern, collaborative solutions that will allow the state to adapt to an uncertain and challenging future. The seminar will meet six times during the Spring Quarter. The heart of the series will include four seminars with panels of outside experts covering the following topics: 1) The diversification of California's water supply portfolio; 2) The rise of the coequal goals of ecosystem restoration and water supply reliability; 3) The ongoing tension between collaborative and adversarial decision-making processes; and 4) Implications for water researchers seeking to help define pathways to meaningful solutions. In addition to these four seminar sessions, there will be an introductory California Water 101 session for students and a closing session on what we have learned. Students will be assigned readings and required to develop questions for discussion. Lead instructor for the seminar will be Landreth Visiting Fellow Dr. Timothy Quinn. Dr. Quinn spent more than ten years as the executive director of the Association of California Water Agencies, and more than twenty years as the Deputy General Manager of the Metropolitan Water District of Southern California. Over the course of that career, he was at the center of every major water management issue facing the state of California, including the state's use of Colorado River water, management of the Bay Delta, and sustainable groundwater management. This class will meet the first five weeks of the quarter. Elements used in grading: Attendance, Class Participation, Written Assignments. Cross-listed with Law 2521.

CEE 266F. Stochastic Hydrology. 3 Units.
Hydrological processes like precipitation, streamflow, and groundwater flow are highly variable over time and across locations. Quantifying the uncertainty in hydrological models and simulating future conditions is critical for informing the development and management of civil infrastructure systems. This course introduces students to statistical methods used in hydrology for data analysis, risk and uncertainty analysis, and simulation. Topics include: flood and drought frequency, time series analysis, rainfall-runoff modeling, and lake water quality. Methods include: applied probability theory, extreme value theory, parameter estimation, regression, time series analysis, transfer functions, Bayesian methods. Prerequisites: CEE 266A or equivalent and a class in probability and/or statistics.

CEE 266G. Water Resources Systems Analysis. 3 Units.
Water resources planners use computational systems engineering models to inform decisions about operations, infrastructure development, and policy. Systems models evaluate alternative decisions against performance metrics like water reliability, access, cost, electricity production, and ecosystem services under a range of hydrological and social conditions. This course will introduce computational methods used in decision-support and common applications in water resources. Focus is on applied optimization methods such as linear programming, dynamic programming, and evolutionary algorithms as well as stochastic simulation. Application areas may include: reservoir operation, environmental flow alteration, hydropower, and flood control. Attention will be given to multi-objective analysis and climate change adaptation. Assignments will involve programming in Python; some Python tutorials will be provided, but prior programming experience is recommended. Prerequisites: CEE 166A or equivalent.

CEE 267. Applied Data Analysis and Uncertainty Quantification. 3 Units.
Probabilistic and statistical methods with emphasis on basic concepts and tools, illustrated with applications from environmental and water studies. Topics: exploratory data analysis; probability theory; classical statistics; Bayesian statistics; geostatistics; and inverse problems.

CEE 269A. Environmental Engineering Seminar. 1 Unit.
Presentations on current research in environmental engineering by Civil & Environmental Engineering faculty.

CEE 269B. Environmental Engineering Seminar. 1 Unit.
Presentations on current research, practice and thinking in environmental engineering by visiting academics and practitioners.

CEE 269C. Environmental Engineering Seminar. 1 Unit.
Presentations on current research, practice and thinking in environmental engineering by visiting academics and practitioners.

CEE 270. Movement and Fate of Organic Contaminants in Waters. 3 Units.
Transport of chemical constituents in surface and groundwater including advection, dispersion, sorption, interphase mass transfer, and transformation; impacts on water quality. Emphasis is on physicochemical processes and the behavior of hazardous waste contaminants. Prerequisites: undergraduate chemistry and calculus. Recommended: 101B.

CEE 270B. Environmental Organic Reaction Chemistry. 2-3 Units.
With over 70,000 chemicals now in production worldwide, predicting their fate in the environment is a difficult task. The course focuses on developing two key skillls. First, students should develop the ability to derive mass balance equations used to quantify the fate of chemicals in the environment. With so many chemicals having been introduced in the past ~60 years, many of the key parameters needed for mass balance models have not been measured experimentally. The class builds on CEE 270, which developed methods of predicting equilibrium partitioning coefficients. For many situations involving reactions of target contaminants, equilibrium is not attained. The course develops methods of predicting the reactivity of chemicals based upon their chemical structures both qualitatively and quantitatively. natural reaction processes covered include acid-base speciation, nucleophilic substitution, oxidation/reduction reactions, and photochemical reactions. Key treatment ractions (ozone, UV treatment and advanced oxidation) are also covered. Prerequisites: CEE 270, Chem 31B/M.

CEE 270M. Aquatic and Organic Chemistry for Environmental Engineering. 3 Units.
This course provides a solid foundation in the most important aspects of general, aquatic and organic chemistry. Nearly all of aspects environmental engineering apply the chemistry concepts discussed in this course. Given that each of the chemistry subjects to be addressed are standalone classes, this class highlights only the most relevant material to environmental engineering. The class focuses on developing general background skills needed for subsequent classes in environmental engineering focusing on their applications, although certain applications will be discussed for illustration.
Same as: CEE 170

CEE 270S. Environmental Disasters. 2 Units.
Mining and critical review of scientific literature for environmental impacts, especially chemical contamination caused by natural and anthropogenic disasters. Focus is on the development of research review skills, critical thinking and discussion of findings.

CEE 271A. Physical and Chemical Treatment Processes. 3 Units.
Physical and chemical unit operations for water treatment, emphasizing process combinations for drinking water supply. Application of the principles of chemistry, rate processes, fluid dynamics, and process engineering to define and solve water treatment problems by flocculation, sedimentation, filtration, disinfection, oxidation, aeration, and adsorption. Investigative paper on water supply and treatment. Prerequisites: CEE 101B (or CEE 162A); CEE 270. Recommended: 273.

CEE 271B. Environmental Biotechnology. 4 Units.
Stoichiometry, kinetics, and thermodynamics of microbial processes for the transformation of environmental contaminants. Design of dispersed growth and biofilm-based processes. Applications include treatment of municipal and industrial waste waters, detoxification of hazardous chemicals, and groundwater remediation. Prerequisites: 270; 177 or 274A or equivalents.

CEE 271D. Introduction to Wastewater Treatment Process Modeling. 2 Units.
The course will present a structured protocol for simulator application comprising project definition, data collection and reconciliation, model set-up, calibration and validation, and simulation and result interpretation. This course will include a series of guided simulation exercises evaluating resource consumption (e.g., electrical energy, natural gas, chemicals) and resource recovery (e.g., biogas, struvite, biosolids, recycled water) from a variety of treatment plant configurations. Coursework will consist of guided simulation exercises, an end-of-the-quarter project evaluating an assigned plant configuration, and presenting model results to the class. Enrollment will be limited, with preference to CEE graduate students.

CEE 271G. Environmental & Ecological Economics. 3 Units.
Ideas, tools and policy solutions in environmental and ecological economics covering a wide range of topics: biodiversity and ecosystems management, energy and climate change mitigation, environmental health and environmental justice, new indicators of well-being and sustainability beyond GDP and growth and sustainable urban systems.
Same as: CEE 171G

CEE 271M. Transport Phenomena: Momentum, heat and mass transport. 3 Units.
Heat, mass and momentum transfer theory from the viewpoint of basic transport equations. Steady and unsteady state; laminar and turbulent flow; boundary layer theory. Prerequisites: fluid mechanics, ordinary differential equations.
Same as: CEE 371M

CEE 272. Coastal Contaminants. 3-4 Units.
Coastal pollution and its effects on ecosystems and human health. The sources, fate, and transport of human pathogens and nutrients. Background on coastal ecosystems and coastal transport phenomena including tides, waves, and cross shelf transport. Introduction to time series analysis with MATLAB. Undergraduates require consent of instructor.

CEE 272R. Modern Power Systems Engineering. 3 Units.
Focus is on Power Engineering from a systems point of view. Topics covered may include modeling of generation, transmission and distribution systems, load flow analysis, transient and steady-state stability analysis. Special emphasis given to modern market operations and dispatch, modeling intermittent controllable power sources, storage technologies, mechanisms for demand response, sensing the grid and the role of market mechanisms for deep integration. Course content may vary year to year.

CEE 272T. SmartGrids and Advanced Power Systems Seminar. 1-2 Unit.
A series of seminar and lectures focused on power engineering. Renowned researchers from universities and national labs will deliver bi-weekly seminars on the state of the art of power system engineering. Seminar topics may include: power system analysis and simulation, control and stability, new market mechanisms, computation challenges and solutions, detection and estimation, and the role of communications in the grid. The instructors will cover relevant background materials in the in-between weeks. The seminars are planned to continue throughout the next academic year, so the course may be repeated for credit.
Same as: EE 292T

CEE 273A. Water Chemistry Laboratory. 3 Units.
(Graduate students register for 273A.) Laboratory application of techniques for the analysis of natural and contaminated waters, emphasizing instrumental techniques.
Same as: CEE 179A

CEE 273B. The Business of Water. 1-2 Unit.
One of the fastest growing economic sectors is the water field, and private water companies are playing an increasingly important role in improving water management around the world. In some cases, however, the involvement of private companies in the water sector has also proven controversial (e.g., when private companies have taken over public water supply systems in developing countries such as Bolivia). This course will look at established or emerging businesses in the water sector and the legal, economic, and social issues that they generate. These businesses include investor-owned water utilities, water technology companies (e.g., companies investing in new desalination or water recycling technologies), water-right funds (who directly buy and sell water rights), social impact funds, innovative agricultural operations, water concessionaires, and infrastructure construction companies and investors. Each week will focus on a different business and company. Company executives will attend the class session and discuss their business with the class. In most classes, we will examine (1) the viability and efficacy of the company's business plan, (2) the legal and/or social issues arising from the business' work, and (3) how the business might contribute to improved water management and policy. Each student will be expected to write (1) two short reflection papers during the course of the quarter on businesses that present to the class, and (2) a 15-page paper at the conclusion on the class on either a water company of the student's choice or a policy initiative that can improve the role that business plays in improving water management (either in a particular sector or more generally). Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper.

CEE 273C. Environmental Engineering Applications of Membrane Technology. 3 Units.
Introduction to membrane technology and processes with applications in R&D, water/wastewater treatment, and renewable energy. Membrane separation principles, reverse osmosis, nanofiltration, membrane characterization techniques, mass transport phenomena, fouling processes, rejection of salts and trace organics, brine disposal system design, energy and cost considerations, and pre- and post-treatment procedures. Case studies in environmental sustainability issues related to full scale treatment engineering.

CEE 273F. Urban Water Use Efficiency and Conservation. 2 Units.
Introduction to water reuse, including membrane treatment, groundwater infiltration, artificial turf, and runoff collection and use.

CEE 273M. Desalination for a Circular Water Economy. 3 Units.
This course will explore the technological innovations required to support a circular water economy in which nontraditional water is treated to fit-for-purpose standards and reused locally. The first part of this course will review the key constituents present in nontraditional source waters and the state-of-the-art pretreatment, desalination, and concentrate disposal technologies for their removal. Attention will be given to the thermodynamic and operational barriers to improving the efficiency and cost-effectiveness of current technologies. The second part of this course will identify opportunities for next generation autonomous, precise, resilient, process-intensified, modular, and electrically powered desalination alternatives to lower the cost and energy intensity of water reuse. Finally, we will conclude by assessing the scale of the opportunity for water reuse and the technical, policy, and legal barriers to doing so. Over the duration of the course, students will form teams to perform an in-depth review of a single nontraditional source water treatment train, research the state-of-technology relative that required for reuse, and perform a quantitative estimate of life cycle capex and opex costs. Course structure: This course combines a lecture-based introduction to critical material with extensive in-class discussion of daily readings from the peer reviewed literature. As such, it is designed for graduate students across the university with a solid knowledge of physicochemical processes and a basic understanding of traditional water treatment technologies. Assessment elements will include class participation, responses on 4 written assignments, and a final project. Class sessions will include occasional field trips to manufacturers and end users of desalination components, special seminars by invited guests, and presentations of final projects. Enrollment limited to 10. Prospective students must submit an application and be accepted into the course prior to enrolling. Weblink to application: https://forms.gle/SAm7EZJbdvitPzpA6 n CEE 271A is a prerequisite for CEE 273M.

CEE 273S. Electricity Economics. 3 Units.
This course develops a foundation of economic principles for the electric utility on the topics of regulation, planning, and operation. A particular emphasis is given to emerging electricity sector topics such as renewable planning and integration, distributed energy resources, energy storage, and market design. The course uses these economic principles to assess the effects of existing and proposed policy including the potential for value creation and disruption.
Same as: CEE 173S

CEE 274A. Environmental Microbiology I. 3 Units.
Basics of microbiology and biochemistry. The biochemical and biophysical principles of biochemical reactions, energetics, and mechanisms of energy conservation. Diversity of microbial catabolism, flow of organic matter in nature: the carbon cycle, and biogeochemical cycles. Bacterial physiology, phylogeny, and the ecology of microbes in soil and marine sediments, bacterial adhesion, and biofilm formation. Microbes in the degradation of pollutants. Prerequisites: CHEM 33,CHEM 121 (formerly CHEM 35), and BIOSCI 83, CHEMENG 181, or equivalents.
Same as: BIO 273A, CHEMENG 174, CHEMENG 274

CEE 274B. Microbial Bioenergy Systems. 3 Units.
Introduction to microbial metabolic pathways and to the pathway logic with a special focus on microbial bioenergy systems. The first part of the course emphasizes the metabolic and biochemical principles of pathways, whereas the second part is more specifically directed toward using this knowledge to understand existing systems and to design innovative microbial bioenergy systems for biofuel, biorefinery, and environmental applications. There also is an emphasis on the implications of rerouting of energy and reducing equivalents for the fitness and ecology of the organism. Prerequisites: CHEMENG 174 or 181 and organic chemistry, or equivalents.
Same as: BIO 273B, CHEMENG 456

CEE 274D. Pathogens and Disinfection. 3 Units.
Introduction to epidemiology, major pathogens and infectious diseases, the immune system, movement and survival of pathogens in the environment, transfer of virulence and antibiotic resistance genes, and pathogen control, with an emphasis on public health engineering measures (disinfection). Prerequisite: 274A.

CEE 274P. Environmental Health Microbiology Lab. 3-4 Units.
Microbiology skills including culture-, microscope-, and molecular-based detection techniques. Focus is on standard and EPA-approved methods to enumerate and isolate organisms used to assess risk of enteric illnesses, such as coliforms, enterococci, and coliphage, in drinking and recreational waters including lakes, streams, and coastal waters. Student project to assess the microbial water quality of a natural water. Limited enrollment; priority to CEE graduate students. An application form must be filed and approved before admission to the class.

CEE 274S. Hopkins Microbiology Course. 3-12 Units.
(Formerly GES 274S.) Four-week, intensive. The interplay between molecular, physiological, ecological, evolutionary, and geochemical processes that constitute, cause, and maintain microbial diversity. How to isolate key microorganisms driving marine biological and geochemical diversity, interpret culture-independent molecular characterization of microbial species, and predict causes and consequences. Laboratory component: what constitutes physiological and metabolic microbial diversity; how evolutionary and ecological processes diversify individual cells into physiologically heterogeneous populations; and the principles of interactions between individuals, their population, and other biological entities in a dynamically changing microbial ecosystem. Prerequisites: CEE 274A and CEE 274B, or equivalents.
Same as: BIO 274S, BIOHOPK 274, ESS 253S

CEE 275A. California Coast: Science, Policy, and Law. 3-4 Units.
This interdisciplinary course integrates the legal, scientific, and policy dimensions of how we characterize and manage resource use and allocation along the California coast. We will use this geographic setting as the vehicle for exploring more generally how agencies, legislatures, and courts resolve resource-use conflicts and the role that scientific information and uncertainty play in the process. Our focus will be on the land-sea interface as we explore contemporary coastal land-use and marine resource decision-making, including coastal pollution, public health, ecosystem management; public access; private development; local community and state infrastructure; natural systems and significant threats; resource extraction; and conservation, mitigation and restoration. Students will learn the fundamental physics, chemistry, and biology of the coastal zone, tools for exploring data collected in the coastal ocean, and the institutional framework that shapes public and private decisions affecting coastal resources. There will be 3 to 4 written assignments addressing policy and science issues during the quarter, as well as a take-home final assignment. Special Instructions: In-class work and discussion is often done in interdisciplinary teams of students from the School of Law, the School of Engineering, the School of Humanities and Sciences, and the School of Earth, Energy, and Environmental Sciences. Students are expected to participate in class discussion and field trips. Elements used in grading: Participation, including class session and field trip attendance, writing and quantitative assignments. Cross-listed with Civil & Environmental Engineering (CEE 175A/275A), Earth Systems (EARTHSYS 175/275), and Law (LAW 2510). Open to graduate students and to advanced undergraduates with instructor consent. Enrollment limited; priority given to CEE majors and Law School students.
Same as: CEE 175A

CEE 275B. Process Design for Environmental Biotechnology. 3 Units.
Use of microbial bioreactors for degradation of contaminants and recovery of clean water, clean energy and/or green materials. Student teams design, operate, and analyze bioreactors and learn to write consulting style reports. Limited enrollment. Prerequisites: 271B.

CEE 275C. Water, Sanitation and Health. 1-4 Unit.
Students acquire basic knowledge to participate in a dialogue on water, sanitation and health issues in developing and developed countries. The focus is on enteric pathogenic pollutants. Material includes: Important pathogens, their modes of transmission and the diseases they cause, their fate and transport in the environment, and the means by which they are measured; statistical methods for processing and interpreting waterborne pollutant concentrations, and interpreting data from epidemiology studies; microbial source tracking; epidemiology and quantitative microbial risk assessment; reduction of pathogens in water and sludge; and non-experimental water, sanitation, and hygiene research. Several laboratory sessions will allow students to measure indicator bacteria and viruses using culture-based techniques and expose students to molecular methods for measuring health-relevant targets in water.

CEE 275D. Environmental Policy Analysis. 3-4 Units.
Environmental policy formation is a complex process involving a large number of actors making value laden interpretations of scientifically complex phenomena. This course explores the origins of this complexity and its implications for the future of environmental decision making and policy-directed environmental engineering. We will begin by asking what good environmental policy looks like, including how we set policy for groups of individuals with diverse preferences, how we value preferences across space and time, and how we account for the deep uncertainty that permeates environmental systems. We then turn to how environmental policies are actually developed, exploring the technical, cognitive, organizational, and systemic barriers to implementing ¿good¿ policy. Finally, will explore the role of scientific evidence in shaping environmental policy and the mechanisms by which policy shapes engineering and science research. Students will gain familiarity with the existing theories, methods, and strategies used to set environmental policy; critically examine the embedded assumptions and inherent shortcomings of these approaches; and practice their thoughtful and ethical application to timely environmental challenges. Course Structure: This course combines a lecture-based introduction to critical material with extensive in-class discussion of daily readings from the policy analysis canon. As such, it is designed for PhD and Masters students across the university with an interest in exploring the effective role of science in setting public policy and comfort in reading primary literature. Upper level undergraduates are welcome with instructor consent. Assessment elements will include class participation, responses on 4 to 5 written assignments, and a take-home final. Occasional Friday recitation sessions will provide guidance on the application of policy analysis methods,.

CEE 275K. The Practice of Environmental Consulting. 2 Units.
Class consists of eight interactive two-hour seminars with discussions, and will cover the evolution of the environmental consulting business, strategic choices and alternative business models for private and public firms, a review of the key operational issues in managing firm, organizational strategies, knowledge management and innovation, and ethical issues in providing professional services. Case studies will be used to illustrate key concepts. Selected reading materials drawn from the technical and business literature on the consulting business. Student groups will prepare and present an abbreviated business plan for an environmental based business. Enrollment limited to CEE MS and PHD students.

CEE 275P. Persuasive Communication for Environmental Scientists, Practitioners, and Entrepreneurs. 2 Units.
Achieving environmental goals depends not only on innovative ideas and great science but also persuasive communication. What makes communication persuasive? The ability of the communicator to create value for his or her audience. This course will teach students how to: 1) focus on their audience and 2) create value for their audience using research-proven communication techniques. Students will master these techniques through oral and written exercises so that, after taking this course, they will speak and write more persuasively.

CEE 275S. Environmental Entrepreneurship and Innovation. 3 Units.
Our current infrastructure for provision of critical services-clean water, energy, transportation, environmental protection; requires substantial upgrades. As a complement to the scientific and engineering innovations taking place in the environmental field, this course emphasizes the analysis of economic factors and value propositions that align value chain stakeholder interests.
Same as: CEE 175S

CEE 276. Introduction to Human Exposure Analysis. 3 Units.
(Graduate students register for 276.) Scientific and engineering issues involved in quantifying human exposure to toxic chemicals in the environment. Pollutant behavior, inhalation exposure, dermal exposure, and assessment tools. Overview of the complexities, uncertainties, and physical, chemical, and biological issues relevant to risk assessment. Lab projects. Recommended: MATH 51. Apply at first class for admission.
Same as: CEE 178

CEE 276B. 100% Clean, Renewable Energy and Storage for Everything. 3-4 Units.
This course discusses elements of a transition to 100% clean, renewable energy in the electricity, transportation, heating/cooling, and industrial sectors for towns, cities, states, countries, and companies. It examines wind, solar, geothermal, hydroelectric, tidal, and wave characteristics and resources; electricity, heat, cold and hydrogen storage; transmission and distribution; matching power demand with supply on the grid: efficiency; replacing fossil with electric appliances and machines in the buildings and industry; energy, health, and climate costs and savings; land requirements; feedbacks of renewables to the atmosphere; and 100% clean, renewable energy roadmaps to guide transitions.
Same as: CEE 176B

CEE 276C. Energy Storage Integration - Vehicles, Renewables, and the Grid. 3 Units.
This course will provide in-depth introduction to existing energy storage solutions being used on the electric grid and in vehicles with a primary focus on batteries and electrochemical storage. We will discuss the operating characteristics, cost and efficiency of these technologies and how tradeoff decisions can be made. Special attention will be given to system-level integration of new storage technologies, including chargers, inverters, battery management systems and controls, into the existing vehicle and grid infrastructure. Further investigations include issues relating to integration of electric vehicle charging with demand-side management, scheduled renewable energy absorption and local grid balancing. Class format involves regular guest lectures, required lab participation, and field trips to relevant sites. Enrollment is limited; if you are interested in taking the course, please fill out a brief questionnaire at http://goo.gl/forms/i3YH91Qx05 n Please contact jtaggart@stanford.edu with any questions regarding the application or course information.
Same as: CEE 176C

CEE 276G. Sustainability Design Thinking. 3 Units.
Application design thinking to make sustainability compelling, impactful and realizable. Analysis of contextual, functional and human-centered design thinking techniques to promote sustainable design of products and environments by holistically considering space, form, environment, energy, economics, and health. Includes Studio project work in prototyping, modeling, testing, and realizing sustainable design ideas.
Same as: CEE 176G

CEE 277A. An Introduction to fuzzy set QCA. 2-3 Units.
This course provides an introduction to the theory and practice of fuzzy set qualitative comparative analysis (fsQCA). It is designed for students with an interest in using fsQCA in their research. We will review the development of this analytical approach and identify the types of research question for which fsQCA is more and less appropriate. Through lectures and exercises that use fsQCA software, students will master key concepts underlying the methodology, including set theory, Boolean algebra, fuzzy versus crisp set analysis, principles of coding causal conditions and outcomes, and interpreting consistency and coverage metrics. There are no pre-requisites for the course; however, enrollment is capped, and permission of the instructor is required to enroll. Please visit http://jennadavis.stanford.edu/courses-taught-jenna-davis to complete an application.

CEE 277F. Advanced Field Methods in Water, Health and Development. 1-10 Unit.
Field methods for assessing household stored water quality, hand contamination, behaviors, and knowledge related to water, sanitation and health. Limited enrollment. Instructor consent required.

CEE 277L. Smart Cities & Communities. 3 Units.
A city is comprised of people and a complex system of systems connected by data. A nexus of forces ¿ IoT, open data, analytics, AI, and systems of engagement ¿ present new opportunities to increase the efficiency of urban systems, improve the efficacy of public services, and assure the resiliency of the community. Systems studied include: water, energy, transportation, buildings, food production, and social services. The roles of policy and behavior change as well as the risks of smart cities will be discussed. How cities are applying innovation to address the unprecedented challenges of COVID-19 will also be explored.
Same as: CEE 177L

CEE 277Q. Data Analysis, Presentation, and Interpretation in Environmental Engineering. 3 Units.
This class is designed for students interested in pursuing research-based careers. It covers practical aspects of data analysis, presentation, interpretation relevant to the field of environmental engineering. Learning objectives include identifying and refining research questions, choosing appropriate data analysis methods, and applying principles of effective visual and written presentation of proposed research and research findings. Additional topics to be covered include preparing a constructive review, research ethics, and navigating the publication process.
Same as: CEE 177Q

CEE 277S. Engineering and Sustainable Development. 1-3 Unit.
The second of a two-quarter, project-based course sequence that address cultural, political, organizational, technical and business issues at the heart of implementing sustainable engineering projects in the developing world. Students work in interdisciplinary project teams to tackle real-world design challenges in partnership with social entrepreneurs and/or NGOs. This quarter focuses on implementation, evaluation, and deployment of the designs developed in the winter quarter. Designated a Cardinal Course by the Haas Center for Public Service.
Same as: CEE 177S, ENGR 177B, ENGR 277B

CEE 277X. Engineering and Sustainable Development: Toolkit. 1-3 Unit.
The first of a two-quarter, project-based course sequence that address cultural, sociopolitical, organizational, technical, and ethical issues at the heart of implementing sustainable engineering projects in a developing world. Students work in interdisciplinary project teams to tackle real-world design challenges in partnership with social entrepreneurs, local communities, and/or NGOs. While students must have the skills and aptitude necessary to make meaningful contributions to technical product designs, the course is open to all backgrounds and majors. The first quarter focuses on cultural awareness, ethical implications, user requirements, conceptual design, feasibility analysis, and implementation planning. Admission is by application. Students should plan to enroll in CEE 177S/277S (ENGR 177B/277B) Engineering & Sustainable Development: Implementation following successful completion of this course. Designated a Cardinal Course by the Haas Center for Public Service. To satisfy a Ways requirement, students must register for an undergraduate course number (CEE 177S or ENGR 177A) and this course must be taken for at least 3 units. In AY 2020-21, a letter grade or `CR' grade satisfies the Ways requirement.
Same as: CEE 177X, ENGR 177A, ENGR 277A

CEE 278A. Air Pollution Fundamentals. 3 Units.
The sources and health effects of gaseous and particulate air pollutants. The influence of meteorology on pollution: temperature profiles, stability classes, inversion layers, turbulence. Atmospheric diffusion equations, downwind dispersion of emissions from point and line sources. Removal of air pollutants via settling, diffusion, coagulation, precipitation, Mechanisms for ozone formation, in the troposphere versus in the stratosphere. Effects of airborne particle size and composition on light scattering/absorption, and on visual range. Prerequisites: MATH 51 or equivalent. Recommended: 101B, CHEM 31A, or equivalents.

CEE 278C. Indoor Air Quality. 2-3 Units.
Factors affecting the levels of air pollutants in the built indoor environment. The influence of ventilation, office equipment, floor coverings, furnishings, cleaning practices, and human activities on air quality including carbon dioxide, VOCs, resuspended dust, and airborne molds and fungi. Limited enrollment, preference to CEE students. Prerequisites: Math 21 and CEE 70, or equivalents.

CEE 278S. Air Pollution Science & Engineering. 3 Units.
Human health and environmental impact of air pollution. Types, sources and production processes of key air pollutants in indoor and outdoor environments. Engineering solutions in air pollution remediation and mitigation. Role of science-informed policy and regulation in air resources protection. Measurement of particulate matter and carbon monoxide. Preparation of a research poster, video short, op-ed, or other media on an air pollution problem.
Same as: CEE 178S

CEE 279F. Frontiers of Anaerobic Treatment. 1 Unit.
This seminar will present the latest findings on the operation and performance of ground-breaking anaerobic treatment processes for domestic wastewater. Specifically, this seminar will examine the performance of the Staged Anaerobic Fluidized-bed Membrane Bioreactor (SAF-MBR) using results from ongoing operations at the Codiga Resource Recover Center and from previous and parallel research efforts. The seminars will incorporate a description of the fundamentals of anaerobic treatment processes, a discussion of how the SAF-MBR process is different from typical anaerobic processes, and insights from operations along with implications for system design. Course work will include explorations of the costs, benefits, and market potential of this technology.
Same as: CEE 179F

CEE 279S. Seminar: Issues in Environmental Science, Technology and Sustainability. 1-2 Unit.
Invited faculty, researchers and professionals share their insights and perspectives on a broad range of environmental and sustainability issues. Students critique seminar presentations and associated readings.
Same as: CEE 179S, EARTHSYS 179S, ESS 179S

CEE 280. Advanced Structural Analysis. 3-4 Units.
Theoretical development and computer implementation of direct stiffness method of structural analysis; virtual work principles; computation of element stiffness matrices and load vectors; direct assembly procedures; equation solution techniques. Analysis of two- and three-dimensional truss and frame structures, thermal loads, and substructuring and condensation techniques for large systems. Practical modeling techniques and programming assignments. Introduction to nonlinear analysis concepts. Prerequisites: elementary structural analysis and matrix algebra.

CEE 281. Mechanics and Finite Elements. 3 Units.
Fluid conduction and solid deformation; conservation laws: balance of mass and balance of momentum; generalized Darcy's law and Hooke's law in 3D; the use of tensors in mechanics; finite element formulation of boundary-value problems; variational equations and Galerkin approximations; basic shape functions, numerical integration, and assembly operations.

CEE 282. Nonlinear Structural Analysis. 3-4 Units.
Introduction to methods of geometric and material nonlinear analysis, emphasizing modeling approaches for framed structures. Large-displacement analysis, concentrated and distributed plasticity models, and nonlinear solution methods. Applications to frame stability and performance-based seismic design. Assignments emphasize computer implementation and applications. Prerequisites: 280 and an advanced course in structural behavior (e.g., 285A, 285B or equivalent).

CEE 283. Structural Dynamics. 3-4 Units.
Vibrations and dynamic response of simple structures under time dependent loads; dynamic analysis of single and multiple degrees of freedom systems; support motion; response spectra.

CEE 284. Finite Element Methods in Structural Dynamics. 3-4 Units.
Computational methods for structural dynamics analysis of discrete and continuous systems in free and forced vibration; finite element formulation; modal analysis; numerical methods; introduction to nonlinear dynamics; advanced topics. Prerequisites: 280, 283.

CEE 285A. Advanced Structural Concrete Behavior and Design. 3-4 Units.
Behavior and design of reinforced and prestressed concrete for building and bridge design. Topics will include flexural behavior, prestressed concrete design, and two-way slab design & analysis, among others.

CEE 285B. Advanced Structural Steel Behavior and Design. 3-4 Units.
Advanced topics in structural steel design. Topics include composite floor systems; bolted and welded connections; beam-column connections; innovative lateral load resisting systems. As part of this course students design a 15-story steel building. Prerequisite: basic course in structural steel design CEE181 or equivalent.

CEE 285C. Strut-and-Tie-Modeling for Structural Concrete. 2 Units.
This course presents the concepts and application of strut-and-tie modeling (STM) for structural concrete elements. Students will identify regions within structures where STM can be used for design, apply the methodology to locate and detail reinforcement, and check the capacity of their model. Applications of the method will be illustrated for deep beams, corbels, post-tensioned anchorage zones, torsion resistance, and bridge components. Various strut-and-tie models will be evaluated based on efficiency, economy, and performance.

CEE 286. Structural Monitoring. 3-4 Units.
Introduction to structural monitoring systems that enable us to understand the states of structures and excitations. Theoretical background on linear time-invariant systems, time-series modeling, frequency analysis, and features extractions in the context of structural systems. Damage diagnosis algorithms and excitation characterization using both physics- and data-based methods for civil structures. Emphasis on the underlying physical interpretations and their practical usage. Prerequisites: CEE 203/CEE 254, CEE 283, CS 106A/X or equivalent.

CEE 287. Earthquake Resistant Design and Construction. 3-4 Units.
Evaluation, design, and construction of structures in seismic regions. Factors influencing earthquake ground motions, design spectra, design of linear and nonlinear single- and multiple-degree-of-freedom-system structures, force-based and displacement-based design methods, capacity design, detailing and construction of steel and reinforced concrete structures, introduction to performance-based design, seismic isolation, and energy dissipation. Prerequisites: 283 and either 285A or 285B.

CEE 288. Introduction to Performance Based Earthquake Engineering. 3-4 Units.
Earthquake phenomena, faulting, ground motion, earthquake hazard formulation, effects of earthquakes on manmade structures, response spectra, Fourier spectra, soil effects on ground motion and structural damage, methods for structural damage evaluation, and formulation of the performance-based earthquake engineering problems. Prerequisite: CEE 203; and co-requisite: CEE 283.

CEE 289. Random Vibrations. 3-4 Units.
Introduction to random processes. Correlation and power spectral density functions. Stochastic dynamic analysis of multi-degree-of-freedom structures subjected to stationary and non-stationary random excitations. Crossing rates, first-excursion probability, and distributions of peaks and extremes. Applications in earthquake, wind, and ocean engineering. Prerequisite: 203 or equivalent.

CEE 290. Structural Performance and Failures. 2 Units.
Basic concepts in the definition of satisfactory structural performance; key elements in structural performance; types of failures, ranging from reduced serviceability to total collapse; failure sources and their root cause allocation, emphasizing design/construction process failures; failure prevention mechanisms; illustration with real life examples.

CEE 291. Solid Mechanics. 3 Units.
Vector and tensor algebra; vector and tensor analysis; kinetics, basic physical quantities, global and local balance laws, representative material models of 1D and 3D continua at small strains; thermodynamics of general internal variable formulations of inelasticity; integration algorithms for inelastic 1D and 3D materials; basic solution techniques for boundary value problems in 1D and 3D.

CEE 292X. Battery Systems for Transportation and Grid Services. 1-3 Unit.
Driven by high-capacity battery systems, electrification is transforming mobility solutions and the grid that powers them. This course provides an introduction to battery systems for transportation and grid services: cell technologies, topology selection, thermal and aging management, safety monitoring, AC and DC charging, and operation control/optimization. Invited experts introduce students to the state of the heart of each topic. The course is aimed at mezzanine and graduate levels students who wish to design battery systems, model them from data, integrate them into applications, or just learn about them. It can be taken for 1 unit (Credit/no Credit) for attending seminars, or for 3 units (letter grade only) for also doing an optional project. Prerequisites: No prerequisites needed for taking the course for 1 unit. Relevant background in selected project area is recommended, for example, CEE 272R for grid applications; EE 253 for AC or DC charging and battery controller design; CEE 322, CS 229 or EE 104 for data-based projects.
Same as: EE 292X

CEE 293. Foundations and Earth Structures. 2-3 Units.
Types, characteristics, analysis, and design of shallow and deep foundations; rigid and flexible retaining walls; braced excavations; settlement of footings in sands and clays; slope stability analysis by method of slices including search algorithms for the critical slip surface. Prerequisite: 101C or equivalent.

CEE 296. Regional Seismic Risk Analysis and Risk Management. 3 Units.
This course is aimed at students who are interested in rigorous modeling of earthquake impacts at regional scale and data-driven design of risk management strategies. The first half of the course will focus on building computational tools for simulation of earthquake shaking, damage to buildings and infrastructure, and the resulting social and economic losses. The second half of the course will explore how impact modeling relates to disaster recovery policy, infrastructure investment planning, and other aspects of disaster risk management. The class will include guest speakers from government institutions, private sector, and academia who work at the intersection of risk modeling and planning/policy. The students will also conduct a regional seismic risk analysis tailored to a specific risk management objective, as part of a final project.

CEE 297M. Managing Critical Infrastructure. 2 Units.
Safe and effective performance of infrastructure systems is critical to our economy, quality of life and safety. This course will present topics associated with risk analysis and management of critical civil infrastructure systems, tolerable risk and community resilience. Methods of risk analysis including systems analysis, reliability analysis, expert elicitation and systems analysis for spatially distributed infrastructure systems will be presented. Aspects of seismic and flood risk analysis will also be discussed. Case histories and lessons learned from Hurricane Katrina, Tohoku earthquake, among others will be presented. The evolution of change in the risk management of civil infrastructure systems; how they are analyzed, designed and operated is discussed. Guest speakers. Student presentations. (Prerequisite: CEE 203 or equivalent).

CEE 298. Structural Engineering and Geomechanics Seminar. 1 Unit.
Recommended for all graduate students. Lectures on topics of current interest in professional practice and research.

CEE 299. Independent Study in Civil Engineering for CEE-MS Students. 1-5 Unit.
Directed study for CEE-MS students on subjects of mutual interest to students and faculty. Student must obtain faculty sponsor.

CEE 299C. Independent Research in Civil and Environmental Engineering. 1-5 Unit.
Enrollment restricted to CEE students enrolling in classes via SCPD. Directed study of a topic in civil and environmental engineering, under the supervision of a CEE professor. Students enrolling must email Profs. Lepech and Hildemann, cc'ing their research supervisor, to indicate with which CEE faculty member they will be working.
Same as: CEE 199C

CEE 299E. Graduate Summer Research in CEE. 1-6 Unit.
Investigation of a research topic in civil and environmental engineering. For students admitted to the Stanford Summer Session program. Written report or oral presentation required. Students must obtain a faculty or research staff sponsor.

CEE 299I. Independent Study in CEE for Grad Students. 1-5 Unit.
CEE 299I - Independent Study in CEE for Graduate StudentsnDirected study of a topic in civil and environmental engineering, under the supervision of a CEE professor. Students wishing to enroll must email Prof Hildemann to request a permission code, cc'ing their independent study supervisor. The email must indicate with which CEE faculty member they will be working, and for how many units. Course is hybrid; some in-person meetings required.

CEE 299J. Independent Projects in Environmental & Sustainability Communications. 1 Unit.
Directed independent projects in the communication of environmental and sustainability topics. Selected assignments may explore research, education, mass media, and social media channels. Students will self-research formats, content, and media requirements. Emphasis on design thinking and creativity. Enrollment by Permission Number only. Prerequisite: Consent of Instructor.
Same as: CEE 199J

CEE 299L. Independent Project in Civil and Environmental Engineering. 1-4 Unit.
Prerequisite: Consent of Instructor.

CEE 300. Thesis. 1-15 Unit.
Research by Engineer candidates.
Same as: Engineer Degree

CEE 301. The Energy Seminar. 1 Unit.
Interdisciplinary exploration of current energy challenges and opportunities, with talks by faculty, visitors, and students. May be repeated for credit.
Same as: ENERGY 301, MS&E 494

CEE 305. Damage and Failure Mechanics of Structural Systems. 3-4 Units.
Examine the mechanics and failure mechanisms of structural deterioration mechanisms and hazards. Overview of fracture mechanics concepts as a general basis for analyzing brittle failure modes in steel and concrete structures. Analysis and design theory for corrosion, fatigue, fire and other damage mechanisms in steel and concrete structures. New methods for mitigation of these failure modes and hazards will be introduced, including new construction materials, structural designs and protection methods.

CEE 306. Computational Fracture Mechanics. 3 Units.
Review of solid mechanics at small strains; energy principles of mechanics; introduction to fracture mechanics; constrained problems; advanced finite element concepts like mixed, assumed, and enhanced strain methods; computational fracture strategies like cohesive finite elements, embedded and extended finite element methods, and phase field approaches to fracture. Prerequisite: CEE 281, CEE 291, or equivalent.

CEE 308. Topics in Disaster Resilience Research. 1 Unit.
This seminar will explore past and current research on disaster risk and resilience, towards the development of new frontiers in resilience engineering science research. Designed for graduate students engaged in the topic of risk and resilience research, the seminar will be organized around weekly readings and discussion groups. May be repeat for credit.
Same as: GEOPHYS 308

CEE 310. Computational Solid Mechanics. 3 Units.
Review of tensor algebra and analysis; kinematics of solids at finite deformation; basic mechanical principles; formulation and algorithmic implementation of finite elasticity, finite viscoelasticity, and finite plasticity; discrete variational formulation and non-linear finite element implementation in a C++ environment. Prerequisite: CEE 281, CEE 291, or equivalent.

CEE 314. Computational Poromechanics. 3 Units.
Continuum and finite element formulations of steady-state and transient fluid conduction problems; elliptic, parabolic, and hyperbolic systems; time integration - stability, accuracy, high-frequency numerical damping; coupled solid deformation/fluid flow; thermodynamically consistent effective stress; mixed finite element formulation; inf-sup condition; stabilized mixed finite elements; unsaturated flow in geomechanics. Computing assignments. Prerequisite: CEE 281 or equivalent.

CEE 315. Plasticity Modeling and Computation. 3 Units.
Rate-independent elastoplasticity; classical plasticity models for metals and cohesive-frictional materials; cap plasticity models for porous materials; return-mapping algorithm; shear bands, faults, and other discontinuities; Lagrange multipliers, penalty, and augmented Lagrangian methods for frictional contact; extended finite element and strong discontinuity methods; rate-dependent viscoplasticity; Duvaut-Lions and Perzyna models; creep and stress relaxation. Prerequisite: CEE 281 or equivalent.

CEE 316. Sustainable Built Environment Research. 3 Units.
Intended for early stage Ph.D. students in Sustainable Design and Construction (SDC). Covers dominant methodological approaches at the intersection of engineering, social management science and computer science. Overviews an array of methods available for research, focusing on methods commonly used in SDC. Publications using various methods will be analyzed, and journal review processes will be discussed. Major deliverable is research proposal using one or more of the methods discussed. Students will gain familiarity with the array of methods available for SDC research, know how to apply the methods in their own research area, and receive guidance on publishing their research in scientific journals.

CEE 320. Integrated Facility Engineering. 1 Unit.
Individual and group presentations on goals, research, and state-of-practice of virtual design and construction in support of integrated facility engineering, including objectives for the application and further development of virtual design and construction technologies. May be repeated for credit.

CEE 322. Data Analytics for Urban Systems. 3 Units.
TBA.

CEE 323A. Infrastructure Finance and Governance. 1 Unit.
Presentation and discussion of early stage or more mature research on a variety of topics related to financing, governance and sustainability of civil infrastructure projects by researchers associated with the Global Projects Center and visiting speakers. To obtain one unit of credit, students must attend and participate in all seminars, with up to two excused absences. Seminar meets weekly during Autumn, Winter and Spring Quarters.

CEE 323B. Infrastructure Finance and Governance. 1 Unit.
Presentation and discussion of early stage or more mature research on a variety of topics related to financing, governance and sustainability of civil infrastructure projects by researchers associated with the Global Projects Center and visiting speakers. To obtain one unit of credit, students must attend and participate in all seminars, with up to two excused absences. Seminar meets weekly during Autumn, Winter, and Spring quarters.

CEE 323C. Reinventing Disruptive Innovation for Civil Engineering. 1 Unit.
Reinventing Disruptive Innovation explores how we should approach early stage disruptive technologies for civil engineering. It takes into consideration fundamental market shifts in where technology is being developed and shift in funding. Today, $300B is invested annually in venture backed technology development versus $200B in corporate R&D dedicated to new innovation out of a total spend of $2 Trillion. This fundamental shift has altered the landscape on how innovation is done and how we need to develop new strategies to be effective in integrating appropriate technology for civil engineering. nThe course will train students in new methods on innovation, and also present real world case examples of new startup technologies crossing every category from advanced material sciences to behavioral technologies.

CEE 324. Industrialized Construction. 1-2 Unit.
The course will present driving forces, comprehensive concepts, technologies, and managerial aspects of Industrialized Construction. Further a series of case studies of successful and failed industry implementations in Sweden, North America and Japan will be presented, showcasing process and technology platforms; use of renewable resources and other sustainable design and construction practices. The contrast between industrialized construction practices in Sweden, the U.S. and other countries is highlighted. Project-orientated vs. product-oriented approaches are essential, along with business models and strategies for industrialized construction companies and their opportunities for innovations. The course includes lectures, case studies, and course group-project assignments with leading companies in the industry. Visiting lecturer Dr Jerker Lessing, one of Sweden's leading experts on industrialized construction with more than 15 years of experience in this field, is giving this course. This is a unique opportunity to learn about this comprehensive, emerging construction concept. Dr Lessing's research at Lund University has pioneered the area of industrialized construction and established models and strategic perspectives that are widely adopted throughout academia and industry. Dr Lessing has published articles and books and he frequently lectures on the topic in Sweden and internationally. He is the Director and General manager of Research and Development at BoKlok, an industrialized house-building company which is a joint venture of the construction company SKANSKA and furniture giant IKEA. The class will be taught as a condensed two week course. Readings and discussions will be organized in the weeks before the lecture component of the class, a group project after. During weeks 1-5, class will not meet regularly and only meet a few times for reading discussions and guest speakers. When they occur, these meetings will be held either Tuesday or Thursday 8-9am in Y2E2 292A. A detailed class schedule will be available before the start of the quarter. Attendance mandatory. No exam. Case and problem discussion. Auditing not allowed. Eligible for SDC Building & Infrastructure Development concentration area requirement. Number of students limited to 20. Prerequisite: CEE 100 or equivalent. Direct questions to jerker.lessing@boklok.se.

CEE 325. CapaCity Design Studio. 5 Units.
Silicon Valley¿s rapid expansion has created explosive urban development in a fragile and under-prepared natural context. Delicate coastal ecology and rapid urbanization (expanding technology headquarters, new residential housing, parking, services, etc.) are competing for space. The same land also serves the regional functions of transport, open space, recreation, water supply, flood protection and wastewater treatment. Compounding the problems between these competing factors are global climate change instabilities increasing the certainty of catastrophic flooding, infrastructure collapse, and other urban resilience challenges.nnStudents will be immersed in a process that allows them to understand and spatially identify these risks, develop a vocabulary and an understanding of innovative tools to respond to them, and then work with expert practitioners to create unique design responses. Students will be provided with urban design frameworks (for planning, site development, and conservation) combined with advanced sustainable design concepts (such as resource co-optimization, adaptable infrastructure platforms, and high performance urban ecology) by working with expert lecturers and in small groups. Students will ultimately develop a series of visual and technical presentations to propose a final thesis for a local intervention that could be replicated in other coastal contexts globally.nnThis course has been designed to develop student learning through a project-based format. Students will be organized into design teams of 3 or 4 and will have the semester to collaborate with partners on an interdisciplinary proposal including policy and design recommendations.

CEE 326. Autonomous Vehicles Studio. 2-3 Units.
Autonomous vehicles have been a fast-growing area of interest for research, development, and commercialization. This interdisciplinary research-based class explores the design and development of autonomous vehicles. Research teams will study the interaction of the human driver and autonomous driving system, particularly in dangerous situations of autonomous systems failures. Collaborate with national and international experts. Independent and team projects will contribute to ongoing research. May be repeated for credit.

CEE 327. Construction Robotics. 3 Units.
Advances in technologies, such as sensing, positioning, and computing, combined with Building Information Models (BIM) enable the use of robots in unstructured environments like construction. Class sessions contrast the development of construction robots with manufacturing robots, showcase the application of construction robots to at least ten tasks, such as drilling, painting, layout, bricklaying, etc., and introduce the Robotics Evaluation Framework (REF). The small-group class project carried out with industry partners applies the REF to compare the health and safety, quality, schedule, and cost performance of robotic and traditional construction methods.

CEE 328A. Multidisciplinary Design and Simulation of Building Envelopes. 3 Units.
Curtain walls are a manufactured product ubiquitous in the world of architecture and engineering that must meet structural, thermal, acoustic, environmental, and economic performance requirements. This course focuses on design strategies for building envelopes and explores new design approaches including parametric 3D modeling, simulation, and Multidsiciplinary Design Optimization (MDO) methods that leverage computation to augment human abilities to identify novel, high performing solutions. Prerequisite: CEE 220A or equivalent. Limited to 16 students.

CEE 329. Artificial Intelligence Applications in the AEC Industry. 2 Units.
Through weekly lectures given by prominent researchers, practicing professionals, and entrepreneurs, this class will examine important industry problems and critically assess corresponding AI directions in both academia and industry. Students will gain an understanding of how AI can be used to provide solutions in the architecture, engineering, and construction industry and asses the technology, feasibility, and corresponding implementation effort. Students are expected to participate actively in the lectures and discussions, submit triweekly reflection writings, and present their own evaluation of existing solutions. Enrollment limited to 12 students.

CEE 329S. Seminar on Artificial Intelligence Applications in the AEC Industry. 1 Unit.
Through weekly lectures given by prominent researchers, practicing professionals, and entrepreneurs, this class will examine important industry problems and critically assess corresponding AI directions in both academia and industry. Students will gain an understanding of how AI can be used to provide solutions in the architecture, engineering, and construction industry and asses the technology, feasibility, and corresponding implementation effort. Students are expected to actively prepare for and participate in all lectures and corresponding discussions.

CEE 330. Racial Equity in Energy. 2-3 Units.
The built environment and the energy systems that meet its requirements is a product of decisions forged in a context of historical inequity produced by cultural, political, and economic forces expressed through decisions at individual and institutional levels. This interdisciplinary course will examine the imprint of systemic racial inequity in the U.S. that has produced a clean energy divide and a heritage of environmental injustice. Drawing on current events, students will also explore contemporary strategies that center equity in the quest for rapid technology transitions in the energy sector to address climate change, public health, national security, and community resilience. Prerequisites:By permission of the instructor. Preferable to have completed Understanding Energy (CEE 107A/207A/EarthSys 103/CEE 107S/207S) or a similar course at another institution if a graduate student.
Same as: CEE 130R

CEE 330B. Quest for an Inclusive Clean Energy Economy. 3 Units.
Building bridges across the clean energy divide involves addressing barriers to participation. These barriers affect the pace of investment, especially for distributed energy solutions such as building energy upgrades, on-site solar, and transportation electrification. This course will explore innovative business models that are responsive to calls for equity and inclusion, and it will give special attention to California's ongoing clean energy finance rulemaking in the utility sector to open the clean energy economy for all.
Same as: CEE 130B

CEE 341. Virtual Design and Construction. 3 Units.
Virtual Design and Construction (VDC) starts by understanding the client's objectives for building performance and the translation of these objectives into measurable project and production objectives. Based on a culture of proactive and constructive engagement, three mutually supportive strategies are essential to achieve these objectives: (1) the knowledge of the many disciplines contributing to the design and construction of a buildable, usable, operable, and sustainable building needs to be orchestrated concurrently, (2) the information supporting the project team must be integrated and be accessible seamlessly, and (3) the workflow carried out by the project team must enable the creation of integrated knowledge and information and lead to decisions that stick. This course will teach all the essential elements of VDC. This is an online course. Prerequisite: 100 or consent of instructor. Recommended: CEE 240, CEE 241.

CEE 345. Network Analysis for Urban Systems. 3 Units.
The objectives of this course are to: 1) introduce you to the mathematical theory of networks and common metrics of networks; 2) develop an understanding of how to utilize network models to study urban systems; 3) provide an opportunity to apply network models to analyze a real urban system. Students are expected to have a strong background in calculus and linear algebra before taking this course and should be comfortable with the calculation and manipulation of matrices. Experience in a numerical scripting language (preferably Python, R or Matlab) is necessary for the final project. Coursework will consist of graded problem sets pertaining to both theory of networks and applications to urban systems. There will be a final project where students will be required to apply network based methods to the analysis of real data of an urban system. (subject to change).

CEE 350. Engineering Writing, Reviewing and Presentations. 3 Units.
This class will cover key skills for future professors including how to write journal articles suitable for Environmental Science & Technology, 2) how to review articles for such journals, and how to deliver an effective presentation. The class is organized to provide criticism between peers on these topics.

CEE 361. Turbulence Modeling for Environmental Fluid Mechanics. 2-4 Units.
An introduction to turbulence and its modeling, including Reynolds-average and large-eddy simulation models. Derivation of closure approximations and models. Impact of numerical code truncation error on turbulence model value and accuracy. Discussion of typical models and their applications to turbulent flows in rivers, estuaries, the coastal ocean and the atmospheric boundary layer (e.g., wind turbines and weather models). Prerequisites: knowledge of hydrodynamics or atmosphere dynamics and the basics of transport and mixing in the environment; consent of instructor.

CEE 362. Numerical Modeling of Subsurface Processes. 3-4 Units.
Numerical modeling including: problem formulation, PDEs and weak formulations, and choice of boundary conditions; solution using the finite-element code COMSOL Multiphysics with a variety of solvers and pre- and postprocessing of data; and interpretation of results. Problems include: flow in saturated porous media with complex boundaries and heterogeneities; solute transport with common reaction models; effects of heterogeneity on dispersion, dilution, and mixing of solutes; variable-density flow and seawater intrusion; upscaling or coarsening of scale; and biofilm modeling. Enrollment limited to 5.

CEE 362A. Uncertainty Quantification. 3 Units.
Uncertainty is an unavoidable component of engineering practice and decision making. Representing a lack of knowledge, uncertainty stymies our attempts to draw scientific conclusions, and to confidently design engineering solutions. Failing to account for uncertainty can lead to false discoveries, while inaccurate assessment of uncertainties can lead to overbuilt engineering designs. Overcoming these issues requires identifying, quantifying, and managing uncertainties through a combination of technical skills and an appropriate mindset. This class will introduce modern techniques for quantifying and propagating uncertainty and current challenges. Emphasis will be on applying techniques in genuine applications, through assignments, case studies, and student-defined projects. Prerequisite: Basic probability and statistics at the level of CME 106 or equivalent.
Same as: ME 470

CEE 362G. Imaging with Incomplete Information. 3-4 Units.
Statistical and computational methods for inferring images from incomplete data. Bayesian inference methods are used to combine data and quantify uncertainty in the estimate. Fast linear algebra tools are used to solve problems with many pixels and many observations. Applications from several fields but mainly in earth sciences. Prerequisites: Linear algebra and probability theory.
Same as: CME 262

CEE 363A. Mechanics of Stratified Flows. 3 Units.
The effects of density stratification on flows in the natural environment. Basic properties of linear internal waves in layered and continuous stratification. Flows established by internal waves. Internal hydraulics and gravity currents. Turbulence in stratified fluids. Prerequisites: 262A,B, CME 204.

CEE 363B. Chaos and Turbulence. 3 Units.
An overview of the statistical analysis of unsteady flows, with a focus on chaos and turbulence. Topics will include random variables and statistical analysis; self-similarity, scaling, and symmetries; the turbulent energy cascade and the Kolmogorov similarity hypotheses; intermittency, refined similarity, and multifractal analysis; mixing and transport in chaotic and turbulent flows; and an overview of the effects of additional conservation laws on flow statistics. Prerequisites: CEE 262A or ME 351A, or permission of instructor.

CEE 363C. Ocean and Estuarine Modeling. 3 Units.
Advanced topics in modeling for ocean and estuarine environments, including methods for shallow water, primitive, and nonhydrostatic equations on Cartesian, curvilinear, and unstructured finite-volume grid systems. Topics include accuracy and stability analyses, free-surface methods, nonhydrostatic solvers, turbulence modeling, vertical coordinate systems, and advanced Eulerian and Lagrangian advection techniques. Prerequisites: CEE262A or ME351A, CME 200, 206, or equivalents.

CEE 363D. Topics in Fundamental Turbulence. 2 Units.
A seminar-style class exploring the fundamental nature of turbulence via the primary literature, including both classical and contemporary papers. Students will be expected to present papers and lead discussions over the course of the quarter. Enrollment is limited and requires the consent of the instructor. Prior graduate coursework in fluid mechanics and turbulence is expected.

CEE 363F. Geophysical Fluid Dynamics. 3 Units.
The fundamental dynamics of rotating stratified fluids. Topics include inertia-gravity waves, geostrophic and cyclogeostrophic balance, vorticity and potential vorticity dynamics, quasi-geostrophic motions, planetary and topographic Rossby waves, inertial, symmetric, barotropic, and baroclinic instability, Ekman layers, and the frictional spin-down of geostrophic flows. Prerequisites: CEE 262A or a graduate class in fluid mechanics. Recommended math background: vector calculus, ordinary differential equations, and partial differential equations.
Same as: ESS 363F

CEE 363G. Field Techniques in Coastal Oceanography. 3 Units.
This course focuses on the design and implementation of coastal oceanographic field studies from implementation through analysis. A wide range of field instrumentation and techniques, including AUVs and scientific diving is covered. Field studies. Data collection and analysis under instructor guidance.

CEE 363H. Topics in Stratified Turbulence. 2 Units.
An exploration of classical and current papers dealing with the behavior of turbulence in stratified environments. This is a seminar-style class where each student will be expected to make presentations and lead discussions during the course of the quarter. Enrollment is limited and is based on the consent of the instructor. Prerequisites -- graduate coursework in turbulence and stratified flows.

CEE 363I. Coral Reefs of the Western Pacific: Interdisciplinary Perspectives, Emerging Crises, and Solutions. 1 Unit.
This new graduate-level course focusses on the complex interplay of biology, physics, chemistry, and human activities that both promotes and limits the development of coral reefs. We will examine the ecology of these biodiverse systems as well as the service they provide in terms of rapid nutrient recycling, coastal protection, and maintenance of large populations of fish. New advances in our understanding of coral reefs will be highlighted, including the role of climate variability and micro- and mesoscale fluid flow in controlling reef growth and persistence, the physiology, genomics, and physics underpinning thermal resilience in corals, contributing and mitigating factors involved in the current decline of coral reefs, ocean acidification, fishing, reef-scale trophic modeling, ecological interactions and trophic cascades, and reefs as part of complex seascapes and linkages with other marine ecosystems. The course will conclude with an analysis of science to policy case studies and future opportunities. The faculty leaders collectively have over 100 years of field experience working in coral reefs of the Pacific and despite our forced online teaching and learning format will endeavor to bring the coral reef field experience to life for this class.
Same as: BIO 355, BIOHOPK 355, ESS 355

CEE 365A. Advanced Topics in Environmental Fluid Mechanics and Hydrology. 2-6 Units.
Students must obtain a faculty sponsor.

CEE 365B. Advanced Topics in Environmental Fluid Mechanics and Hydrology. 2-6 Units.
Students must obtain a faculty sponsor.

CEE 365C. Advanced Topics in Environmental Fluid Mechanics and Hydrology. 2-6 Units.
Students must obtain a faculty sponsor.

CEE 365D. Advanced Topics in Environmental Fluid Mechanics and Hydrology. 2-6 Units.
Students must obtain a faculty sponsor.

CEE 370A. Environmental Research. 5-6 Units.
Introductory research experience for first-year Ph.D. students in the Environmental Engineering and Science program. 15-18 hours/week on research over three quarters. 370A requires written literature survey on a research topic; 370B requires oral presentation on experimental techniques and research progress; 370C requires written or oral presentation of preliminary doctoral research proposal. Students must obtain a faculty sponsor.

CEE 370B. Environmental Research. 5-6 Units.
Introductory research experience for first-year Ph.D. students in the Environmental Engineering and Science program. 15-18 hours/week on research over three quarters. 370A requires written literature survey on a research topic; 370B requires oral presentation on experimental techniques and research progress; 370C requires written or oral presentation of preliminary doctoral research proposal. Students must obtain a faculty sponsor.

CEE 370C. Environmental Research. 5-6 Units.
Introductory research experience for first-year Ph.D. students in the Environmental Engineering and Science program. 15-18 hours/week on research over three quarters. 370A requires written literature survey on a research topic; 370B requires oral presentation on experimental techniques and research progress; 370C requires written or oral presentation of preliminary doctoral research proposal. Students must obtain a faculty sponsor.

CEE 370D. Environmental Research. 3-6 Units.
Introductory research experience for first-year Ph.D. students in the Environmental Engineering and Science program. 15-18 hours/week on research over three quarters. 370A requires written literature survey on a research topic; 370B requires oral presentation on experimental techniques and research progress; 370C requires written or oral presentation of preliminary doctoral research proposal. Students must obtain a faculty sponsor.

CEE 370M. Independent Study in Environmental Chemistry Research. 3 Units.
Environmental chemistry laboratory research. Summer Quarter only. For doctoral students in the Mitch research group. May be repeated for credit.

CEE 371L. Helminthic Disease Monitoring and Control.. 5 Units.
Assessment will be based upon weekly written and/or oral reports, with a final written critical review due at the end of the quarter.

CEE 371M. Transport Phenomena: Momentum, heat and mass transport. 3 Units.
Heat, mass and momentum transfer theory from the viewpoint of basic transport equations. Steady and unsteady state; laminar and turbulent flow; boundary layer theory. Prerequisites: fluid mechanics, ordinary differential equations.
Same as: CEE 271M

CEE 372. Sustainable Energy Interdisciplinary Graduate Seminar. 1 Unit.
Graduate students will present their ongoing research to an audience of faculty and graduate students with a diversity of disciplinary perspectives regarding sustainable energy.
Same as: ENERGY 309, MS&E 495

CEE 374A. Introduction to Physiology of Microbes in Biofilms. 1-6 Unit.
Diversification of biofilm populations, control of gene expression in biofilm environments, and evolution of novel genetic traits in biofilms.

CEE 374B. Introduction to Physiology of Microbes in Biofilms. 1-6 Unit.
Diversification of biofilm populations, control of gene expression in biofilm environments, and evolution of novel genetic traits in biofilms.

CEE 374C. Introduction to Physiology of Microbes in Biofilms. 1-6 Unit.
Diversification of biofilm populations, control of gene expression in biofilm environments, and evolution of novel genetic traits in biofilms.

CEE 374D. Introduction to Physiology of Microbes in Biofilms. 1-6 Unit.
Diversification of biofilm populations, control of gene expression in biofilm environments, and evolution of novel genetic traits in biofilms.

CEE 374M. Advanced Topics in Watershed Systems Modeling. 4 Units.
Basic principles of watershed systems analysis is required for water resources evaluation, watershed-scale water quality issues, and watershed-scale pollutant transport problems. The dynamics of watershed-scale processes and the human impact on natural systems, and for developing remediation strategies are studied, including terrain analysis and surface and subsurface characterization procedures and analysis.

CEE 374S. Advanced Topics in Microbial Pollution. 1-5 Unit.
May be repeated for credit. Prerequisite: consent of instructor.

CEE 374W. Advanced Topics in Water, Health and Development. 1-18 Unit.
Advanced topics in water, health and development. Emphasis on low-and-middle-income countries. Class content varies according to interests of students. Instructor consent required.

CEE 374X. Advanced Topics in Multivariate Statistical Analysis. 1-6 Unit.
Analysis of experimental and non-experimental data using multivariate modeling approaches. May be repeated for credit. Permission of instructor required for enrollment.

CEE 374Z. Urban Water Conflicts. 3 Units.
Students in this course will review and discuss current literature on urban water conflicts using a case-study approach. We will consider the technical, economic, social, policy, and law aspects of the conflicts. Each student will take responsibility for leading 1-2 class sessions (depending on the final number of students enrolled in the course), and will write a description of the case study as well as a short proposal describing novel research on urban water conflicts. Course enrollment is capped. Permission to enroll must be obtained from the instructor through an application process.

CEE 377. Research Proposal Writing in Environmental Engineering and Science. 1-3 Unit.
For first- and second-year post-master's students preparing for thesis defense. Students develop progress reports and agency-style research proposals, and present a proposal in oral form. Prerequisite: consent of thesis adviser.

CEE 378D. Seminar of Statistical Analysis of Multidisciplinary Primary Data. 1-3 Unit.
Practical management and analysis techniques for primary data collected in multidisciplinary projects. Selection of appropriate statistical tests, interpretation of results, and effective communication of findings to lay audiences. Univariate, bivariate and multivariate techniques, including hypothesis testing, nonparametric statistics, regression analysis and matching. Use of SPSS statistical package. Limited enrollment. Prerequisite: consent of instructor.

CEE 379. Introduction to PHD Studies in Civil and Environmental Engineering. 1 Unit.
This seminar course will cover important topics for students considering a PhD in Civil and Environmental Engineering. Sessions will include presentations and discussions on career development, exploring research and adviser options, and the mechanics of PhD studies, including General Qualifying Exam requirements for all CEE PHD Students. In addition, CEE faculty will give presentations on their research. This seminar is required for CEE students considering a PHD or preparing to sit for the General Qualifying Exam in Civil and Environmental Engineering. Students may only receive credit for one of CEE 379 or CEE 379C.

CEE 379C. Introduction to CEE Graduate Studies. 1 Unit.
This course will cover important topics for students starting graduate studies in Civil and Environmental Engineering. Sessions will include presentations and discussions on career development, exploring research and adviser options, and the mechanics of PhD studies, including General Qualifying Exam requirements for all CEE PHD Students. In addition, CEE faculty will give presentations on their research. This seminar is only open to graduate students in CEE; it has required synchronous remote lectures has required in-person discussion sections. Students can only receive credit for one of CEE379 (remote only; open to all) or CEE379C (hybrid; limited enrollment, application required - see cee.stanford.edu/cee-courses-offered-ay-2020-21).

CEE 381. Advanced Engineering Informatics. 1-4 Unit.
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CEE 385. Performance-Based Earthquake Engineering. 3-4 Units.
Synthesis and application of approaches to performance-based design and assessment that recently have been developed or are under development. Emphasis is on quantitative decision making based on life-cycle considerations that incorporate direct losses, downtime losses, and collapse, and the associated uncertainties. Hazard analysis, response simulation, damage and loss estimation, collapse prediction. Case studies. Prerequisites: 282, 287, and 288.

CEE 398. Report on Civil Engineering Training. 1 Unit.
On-the-job training under the guidance of experienced, on-site supervisors; meets the requirements for Curricular Practical Training for students on F-1 visas. Students submit a concise report detailing work activities, problems worked on, and key results. Prerequisite: qualified offer of employment and consent of adviser as per I-Center procedures.

CEE 399. Advanced Engineering Problems. 1-10 Unit.
Individual graduate work under the direction of a faculty member on a subject of mutual interest. For Engineer Degree students and Pre-quals Doctoral students. Student must have faculty sponsor. May be repeated for credit.

CEE 400. Thesis. 1-15 Unit.
For students who have successfully completed the department general qualifying examination. Research and dissertation for the Ph.D. degree.
Same as: Ph.D. Degree

CEE 707. Hacking for Urban Resilience: Expecting the Unexpected with a Lean Launchpad Mindset. 3-4 Units.
People, businesses and the built environment constituting major urban centers are fragile by their very nature. Aging infrastructure built on land subject to earthquake, flood and drought risks, neighborhood housing inequality, quality food, water, air, transportation and energy allocated based on ability to pay, jobs restructured by the global economy, and local political forces, cyber risks and data malfeasance creeping into digital lifestyles and urban systems. The cascading risks of failure from urban fragility play out in multiple scenarios, endangering local and regional economic, environmental and social systems. In the heat of urban emergency, rapid problem definition, innovative solution design and prototyping are unleashed and take control of the situational dynamics. nnLean startup methodologies that have successfully driven Silicon Valley¿s pace of innovation can improve governments¿ ability to respond to the same dynamics.nnIn this class student teams will take actual urban resilience problems working with governmental organizations will apply ¿lean startup¿ principles to discover and validate beneficiary needs and to continually build iterative prototypes to validate the original the problem and build solution pathways. Teams take a hands-on approach, and are mentored by close engagement with actual Chief Resilience Officers, emergency responders, business and utility continuity executives, national and international response agencies, technology companies and nonprofits. Team applications required by [_____]. Limited enrollment.

CEE 801. TGR Project. 0 Units.
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Same as: Engineer Degree

CEE 802. TGR Dissertation. 0 Units.

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Same as: PhD degree

COMPUTER SCIENCE

Courses offered by the Department of Computer Science are listed under the subject code CS on the *Stanford Bulletin's* ExploreCourses (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=CS&filter-catalognumber-CS=on&filter-coursestatus-Active=on) web site.

The Department of Computer Science (CS) operates and supports computing facilities for departmental education, research, and administration needs. Current CS students have access to a departmental student machine for general use and computer labs located in the Gates Building. In addition, most students have access to systems located in their research areas.

Each research group in Computer Science has systems specific to its research needs. These systems include workstations, computer clusters, GPU clusters, and local file servers. Servers and workstations running Linux , MacOS, or various versions of Windows are commonplace. Support for course work and instruction is provided on systems available through U (http://itservices.stanford.edu/)niversity IT (https://uit.stanford.edu/) (UIT) and the School of Engineering (http://engineering.stanford.edu/) (SoE).

Mission of the Undergraduate Program in Computer Science

The mission of the undergraduate program in Computer Science is to develop students' breadth of knowledge across the subject areas of computer science, including their ability to apply the defining processes of computer science theory, abstraction, design, and implementation to solve problems in the discipline. Students take a set of core courses. After learning the essential programming techniques and the mathematical foundations of computer science, students take courses in areas such as programming techniques, automata and complexity theory, systems programming, computer architecture, analysis of algorithms, artificial intelligence, and applications. The program prepares students for careers in government, law, and the corporate sector, and for graduate study.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to be able to:

1. Apply the knowledge of mathematics, science, and engineering.
2. Design and conduct experiments, as well to analyze and interpret data.
3. Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. Function on multidisciplinary teams.
5. Identify, formulate, and solve engineering problems.
6. Understand professional and ethical responsibility.
7. Communicate effectively.
8. Understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. Demonstrate a working knowledge of contemporary issues.
10. Apply the techniques, skills, and modern engineering tools necessary for engineering practice.
11. Transition from engineering concepts and theory to real engineering applications.

Learning Outcomes (Graduate)

The purpose of the master's program is to provide students with the knowledge and skills necessary for a professional career or doctoral studies. This is done through course work in the foundational elements of the field and in at least one graduate specialization. Areas of specialization include artificial intelligence, biocomputation, computer and network security, human-computer interaction, information management and analytics, real-world computing, software theory, systems, and theoretical computer science.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research. Through course work and guided research, the program prepares students to make original contributions in Computer Science and related fields.

Graduate Programs in Computer Science

The University's basic requirements for the M.S. and Ph.D. degrees are discussed in the "Graduate Degrees (p. 65)" section of this bulletin.

Computer Science Course Catalog Numbering System

The first digit of a CS course number indicates its general level of sophistication:

Digit	Description
001-099	Service courses for nontechnical majors
100-199	Other service courses, basic undergraduate
200-299	Advanced undergraduate/beginning graduate
300-399	Advanced graduate
400-499	Experimental
500-599	Graduate seminars

The tens digit indicates the area of Computer Science it addresses:

Digit	Description
00-09	Introductory, miscellaneous
10-19	Hardware and Software Systems
20-39	Artificial Intelligence
40-49	Software Systems
50-59	Mathematical Foundations of Computing
60-69	Analysis of Algorithms
70-79	Computational Biology and Interdisciplinary Topics
90-99	Independent Study and Practicum

Bachelor of Science in Computer Science

The department offers both a major in Computer Science and a minor in Computer Science. Further information is available in the Handbook for Undergraduate Engineering Programs (UGHB) *(*http://ughb.stanford.edu*)* published by the School of Engineering. The Computer Science major offers a number of tracks (programs of study) from which students can choose, allowing them to focus their program on the areas of

most interest. These tracks also reflect the broad diversity of areas in computing disciplines. The department has an honors program.

In addition to Computer Science itself, Stanford offers several interdisciplinary degrees with a substantial computer science component. The Symbolic Systems major (in the School of Humanities and Sciences) offers an opportunity to explore computer science and its relation to linguistics, philosophy, and psychology. The Mathematical and Computational Sciences major (also Humanities and Sciences) allows students to explore computer science along with more mathematics, statistics, and operations research.

Computer Science (CS)

Completion of the undergraduate program in Computer Science leads to the conferral of the Bachelor of Science in Computer Science.

Mission of the Undergraduate Program in Computer Science

The mission of the undergraduate program in Computer Science is to develop students' breadth of knowledge across the subject areas of computer science, including their ability to apply the defining processes of computer science theory, abstraction, design, and implementation to solve problems in the discipline. Students take a set of core courses. After learning the essential programming techniques and the mathematical foundations of computer science, students take courses in areas such as programming techniques, automata and complexity theory, systems programming, computer architecture, analysis of algorithms, artificial intelligence, and applications. The program prepares students for careers in government, law, the corporate sector, and for graduate study.

Requirements

Mathematics (26 units minimum)—

		Units
CS 103	Mathematical Foundations of Computing	5
CS 109	Introduction to Probability for Computer Scientists	5
MATH 19	Calculus [1]	3
MATH 20	Calculus [1]	3
MATH 21	Calculus [1]	4
Plus two electives [2]		

Science (11 units minimum)—

		Units
PHYSICS 41	Mechanics	4
or PHYSICS 21	Mechanics, Fluids, and Heat	
or PHYSICS 41E	Mechanics, Concepts, Calculations, and Context	
PHYSICS 43	Electricity and Magnetism	4
or PHYSICS 23	Electricity, Magnetism, and Optics	
Science elective [3]		3

Technology in Society (3-5 units)—

One course; course chosen must be on the SoE Approved Courses list at https://ughb.stanford.edu/ the year taken; see Basic Requirements 4 in the School of Engineering section

Engineering Fundamentals (13 units minimum; see Basic Requirement 3 in the School of Engineering section)—

		Units
CS 106B	Programming Abstractions	5
or CS 106X	Programming Abstractions	
ENGR 40M	An Intro to Making: What is EE (or ENGR 40A and ENGR 40B)	3-5
Fundamentals Elective (May be an ENGR fundamentals or an additional CS Depth course. See Fig. 3-4 in the UGHB for approved ENGR fundamentals list. May not be any CS 106)		3-5
*Students who take ENGR 40A or 40M for fewer than 5 units are required to take 1-2 additional units of ENGR Fundamentals (13 units minimum), or 1-2 additional units of Depth.		

Writing in the Major—

		Units
Select one of the following:		
CS 181W	Computers, Ethics, and Public Policy	
CS 182W	Ethics, Public Policy, and Technological Change	
CS 191W	Writing Intensive Senior Project	
CS 194W	Software Project	
CS 210B	Software Project Experience with Corporate Partners	
CS 294W	Writing Intensive Research Project in Computer Science	

Computer Science Core (15 units)—

		Units
CS 107	Computer Organization and Systems	5
or CS 107E	Computer Systems from the Ground Up	
CS 110	Principles of Computer Systems	5
or CS 111	Operating Systems Principles	
CS 161	Design and Analysis of Algorithms	5

Senior Project (3 units)—

		Units
CS 191	Senior Project [7]	
CS 191W	Writing Intensive Senior Project [7]	
CS 194	Software Project	
CS 194H	User Interface Design Project	
CS 194W	Software Project	
CS 210B	Software Project Experience with Corporate Partners	
CS 294S	Research Project in Software Systems and Security	
CS 294W	Writing Intensive Research Project in Computer Science	

Computer Science Depth B.S.

Choose one of the following ten CS degree tracks (a track must consist of at least 25 units and 7 classes):

Artificial Intelligence Track—

		Units
CS 221	Artificial Intelligence: Principles and Techniques	4
Select two courses, each from a different area:		
Area I, AI Methods:		
CS 228	Probabilistic Graphical Models: Principles and Techniques	
CS 229	Machine Learning	
CS 234	Reinforcement Learning	
CS 238	Decision Making under Uncertainty	
Area II, Natural Language Processing:		

CS 124	From Languages to Information
CS 224N	Natural Language Processing with Deep Learning
CS 224S	Spoken Language Processing
CS 224U	Natural Language Understanding
Area III, Vision:	
CS 131	Computer Vision: Foundations and Applications
CS 231A	Computer Vision: From 3D Reconstruction to Recognition
CS 231N	Convolutional Neural Networks for Visual Recognition
Area IV, Robotics:	
CS 223A	Introduction to Robotics
CS 237A	Principles of Robot Autonomy I
Select one additional course from the Areas above or from the following:	
AI Methods:	
CS 157	Computational Logic
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning
CS 230	Deep Learning
CS 236	Deep Generative Models
STATS 315A	Modern Applied Statistics: Learning
STATS 315B	Modern Applied Statistics: Data Mining
Comp Bio:	
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells
CS 371	Computational Biology in Four Dimensions
Information and the Web:	
CS 276	Information Retrieval and Web Search
CS 224W	Machine Learning with Graphs
Other:	
CS 151	Logic Programming
CS 227B	General Game Playing
CS 379	Interdisciplinary Topics (Offered occasionally)
Robotics and Control:	
CS 327A	Advanced Robotic Manipulation
CS 329	Topics in Artificial Intelligence (with advisor approval)
ENGR 205	Introduction to Control Design Techniques
MS&E 251	Introduction to Stochastic Control with Applications
MS&E 351	Dynamic Programming and Stochastic Control
Track Electives: at least three additional courses selected from the Areas and lists above, general CS electives, or the courses listed below. Students can replace one of these electives with a course found at https://cs.stanford.edu/explore (https://cs.stanford.edu/explore/): [5]	
CS 237B	Principles of Robot Autonomy II
CS 257	Logic and Artificial Intelligence
CS 275	Translational Bioinformatics
CS 326	Topics in Advanced Robotic Manipulation
CS 330	Deep Multi-task and Meta Learning
CS 336	Physical Human Robot Interaction
CS 338	Physical Human Robot Interaction
CS 398	Computational Education
CS 428	Computation and Cognition: The Probabilistic Approach
EE 263	Introduction to Linear Dynamical Systems
EE 278	Introduction to Statistical Signal Processing
EE 364A	Convex Optimization I
EE 364B	Convex Optimization II
ECON 286	Game Theory and Economic Applications
MS&E 252	Decision Analysis I: Foundations of Decision Analysis
MS&E 352	Decision Analysis II: Professional Decision Analysis
MS&E 355	Influence Diagrams and Probabilistics Networks
PHIL 152	Computability and Logic
PSYCH 204A	Human Neuroimaging Methods
PSYCH 204B	Computational Neuroimaging
PSYCH 209	Neural Network Models of Cognition
STATS 200	Introduction to Statistical Inference
STATS 202	Data Mining and Analysis
STATS 205	Introduction to Nonparametric Statistics

Biocomputation Track—

		Units
The Mathematics, Science, and Engineering Fundamentals requirements are non-standard for this track. See Handbook for Undergraduate Engineering Programs for details.		
Select one of the following:		3-4
CS 221	Artificial Intelligence: Principles and Techniques	
CS 228	Probabilistic Graphical Models: Principles and Techniques	
CS 229	Machine Learning	
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	
Select one of the following:		
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	
CS 270	Modeling Biomedical Systems	
CS 273A	The Human Genome Source Code	
CS 274	Representations and Algorithms for Computational Molecular Biology	
CS 275	Translational Bioinformatics	
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	
One additional course from the lists above or the following:		3-4
CS 124	From Languages to Information	
CS 145	Data Management and Data Systems	
CS 147	Introduction to Human-Computer Interaction Design	
CS 148	Introduction to Computer Graphics and Imaging	
CS 248	Interactive Computer Graphics	
One course selected from the following:		3-4
CS 108	Object-Oriented Systems Design	4
CS 124	From Languages to Information	3-4

CS 131	Computer Vision: Foundations and Applications	3-4
CS 140	Operating Systems and Systems Programming [4]	3-4
or CS 140E	Operating systems design and implementation	
CS 142	Web Applications	3
CS 143	Compilers	3-4
CS 144	Introduction to Computer Networking	3-4
CS 145	Data Management and Data Systems	3-4
CS 146	Introduction to Game Design and Development	3
CS 147	Introduction to Human-Computer Interaction Design	3-5
CS 148	Introduction to Computer Graphics and Imaging	3-4
CS 149	Parallel Computing	3-4
CS 151	Logic Programming	3
CS 154	Introduction to the Theory of Computation	3-4
CS 155	Computer and Network Security	3
CS 157	Computational Logic	3
or PHIL 151	Metalogic	
CS 163	The Practice of Theory Research	3
CS 166	Data Structures	3-4
CS 168	The Modern Algorithmic Toolbox	3-4
CS 190	Software Design Studio	3-4
CS 195	Supervised Undergraduate Research (4 units max)	3-4
CS 197	Computer Science Research	4
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	3
CS 210A	Software Project Experience with Corporate Partners	3-4
CS 217	Hardware Accelerators for Machine Learning	3-4
CS 221	Artificial Intelligence: Principles and Techniques	3-4
CS 223A	Introduction to Robotics	3
CS 224N	Natural Language Processing with Deep Learning	3-4
CS 224S	Spoken Language Processing	2-4
CS 224U	Natural Language Understanding	3-4
CS 224W	Machine Learning with Graphs	3-4
CS 225A	Experimental Robotics	3
CS 227B	General Game Playing	3
CS 228	Probabilistic Graphical Models: Principles and Techniques	3-4
CS 229	Machine Learning	3-4
CS 229M	Machine Learning Theory	3
CS 230	Deep Learning	3-4
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	3-4
CS 231N	Convolutional Neural Networks for Visual Recognition	3-4
CS 232	Digital Image Processing	3
CS 233	Geometric and Topological Data Analysis	3
CS 234	Reinforcement Learning	3
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	3-4
CS 236	Deep Generative Models	3
CS 237A	Principles of Robot Autonomy I	3-5
CS 237B	Principles of Robot Autonomy II	3-4
CS 238	Decision Making under Uncertainty	3-4
CS 240	Advanced Topics in Operating Systems	3
CS 240LX	Advanced Systems Laboratory, Accelerated	3
CS 242	Programming Languages	3
CS 243	Program Analysis and Optimizations	3-4
CS 244	Advanced Topics in Networking	3-4
CS 244B	Distributed Systems	3
CS 245	Principles of Data-Intensive Systems	3
CS 246	Mining Massive Data Sets	3-4
CS 247	(Any suffix)	3-4
CS 248	Interactive Computer Graphics	3-4
CS 251	Cryptocurrencies and blockchain technologies	3
CS 252	Analysis of Boolean Functions	3
CS 254	Computational Complexity	3
CS 254B	Computational Complexity II	3
CS 255	Introduction to Cryptography	3
CS 261	Optimization and Algorithmic Paradigms	3
CS 263	Counting and Sampling	3
CS 265	Randomized Algorithms and Probabilistic Analysis	3
CS 269Q	Elements of Quantum Computer Programming	3
CS 269I	Incentives in Computer Science (Not Given This Year)	3
CS 270	Modeling Biomedical Systems	3
CS 271	Artificial Intelligence in Healthcare	3-4
CS 272	Introduction to Biomedical Informatics Research Methodology	3-5
CS 273A	The Human Genome Source Code	3
CS 273B	Deep Learning in Genomics and Biomedicine	3
CS 274	Representations and Algorithms for Computational Molecular Biology	3-4
CS 275	Translational Bioinformatics	4
CS 276	Information Retrieval and Web Search	3
CS 278	Social Computing	3
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	3
CS 330	Deep Multi-task and Meta Learning	3
CS 336	(Robot Perception and Decision Making: not offered this year)	
CS 348	(any suffix)	
CS 351	Open Problems in Coding Theory	3
CS 352	Pseudo-Randomness	3-4
CS 369L	Algorithmic Perspective on Machine Learning	3
CS 371	Computational Biology in Four Dimensions	3
CS 398	Computational Education	4
CME 108	Introduction to Scientific Computing	3
EE 180	Digital Systems Architecture	4
EE 263	Introduction to Linear Dynamical Systems	3
EE 282	Computer Systems Architecture	3
EE 364A	Convex Optimization I	3
BIOE 101	Systems Biology	3
MS&E 152	Introduction to Decision Analysis	3-4

MS&E 252	Decision Analysis I: Foundations of Decision Analysis	3-4
STATS 206	Applied Multivariate Analysis	3
STATS 315A	Modern Applied Statistics: Learning	3
STATS 315B	Modern Applied Statistics: Data Mining	3
GENE 211	Genomics	3
One course from the following:		3-5
CS 145	Data Management and Data Systems	3-4
CS 147	Introduction to Human-Computer Interaction Design	3-5
CS 221	Artificial Intelligence: Principles and Techniques	3-4
CS 228	Probabilistic Graphical Models: Principles and Techniques	3-4
CS 229	Machine Learning	3-4
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	3-4
CS 270	Modeling Biomedical Systems	3
CS 271	Artificial Intelligence in Healthcare	3-4
CS 273A	The Human Genome Source Code	3
CS 273B	Deep Learning in Genomics and Biomedicine	3
CS 274	Representations and Algorithms for Computational Molecular Biology	3-4
CS 275	Translational Bioinformatics	4
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	3
CS 371	Computational Biology in Four Dimensions	3
EE 263	Introduction to Linear Dynamical Systems	3
EE 364A	Convex Optimization I	3
MS&E 152	Introduction to Decision Analysis	3-4
MS&E 252	Decision Analysis I: Foundations of Decision Analysis	3-4
STATS 206	Applied Multivariate Analysis	3
STATS 315A	Modern Applied Statistics: Learning	3
STATS 315B	Modern Applied Statistics: Data Mining	3
GENE 211	Genomics	3
One course selected from the list above or the following:		
CHEMENG 150	Biochemical Engineering	3
CHEMENG 174	Environmental Microbiology I	3
APPPHYS 294	Cellular Biophysics	3
BIO 104	Advance Molecular Biology: Epigenetics and Proteostasis	5
BIO 118	(Not Given This Year)	4
BIO 214	Advanced Cell Biology	4
BIO 230	Molecular and Cellular Immunology	4
CHEM 141	The Chemical Principles of Life I	4
CHEM 171	Foundations of Physical Chemistry	4
BIOC 241	Biological Macromolecules	3-5
One course from the following:		
BIOE 220	Introduction to Imaging and Image-based Human Anatomy	3
CHEMENG 150	Biochemical Engineering	3
CHEMENG 174	Environmental Microbiology I	3
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	3-4
CS 274	Representations and Algorithms for Computational Molecular Biology	3-4
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	3
CS 371	Computational Biology in Four Dimensions	3
ME 281	Biomechanics of Movement	3
APPPHYS 294	Cellular Biophysics	3
BIO 104	Advance Molecular Biology: Epigenetics and Proteostasis	5
BIO 112	Human Physiology	4
BIO 118	(Not Given This Year)	4
BIO 158	Developmental Neurobiology	4
BIO 183	Theoretical Population Genetics	3
BIO 214	Advanced Cell Biology	4
BIO 230	Molecular and Cellular Immunology	4
CHEM 171	Foundations of Physical Chemistry	4
CHEM 141	The Chemical Principles of Life I	4
BIOC 241	Biological Macromolecules	3-5
DBIO 210	Developmental Biology	4
GENE 211	Genomics	3
SURG 101	Regional Study of Human Structure	5

Computer Engineering Track—

		Units
For this track there is a 10 unit minimum for ENGR Fundamentals and a 29 unit minimum for Depth (for track and elective courses)		
EE 108	Digital System Design	4
EE 180	Digital Systems Architecture	4
Select two of the following:		8
EE 101A	Circuits I	
EE 101B	Circuits II	
EE 102A	Signal Processing and Linear Systems I	
EE 102B	Signal Processing and Linear Systems II	
Satisfy the requirements of one of the following concentrations:		
1) Digital Systems Concentration		
CS 140	Operating Systems and Systems Programming [4]	
or CS 140E	Operating systems design and implementation	
or CS 143	Compilers	
EE 109	Digital Systems Design Lab	
EE 271	Introduction to VLSI Systems	
Plus two of the following (6-8 units):		
CS 140	Operating Systems and Systems Programming (if not counted above) [4]	
or CS 140E	Operating systems design and implementation	
or CS 143	Compilers	
CS 144	Introduction to Computer Networking	
CS 149	Parallel Computing	
CS 190	Software Design Studio	
CS 217	Hardware Accelerators for Machine Learning	
CS 244	Advanced Topics in Networking	
EE 273	Digital Systems Engineering	
EE 282	Computer Systems Architecture	
2) Robotics and Mechatronics Concentration		
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	
CS 223A	Introduction to Robotics	
ME 210	Introduction to Mechatronics	
ENGR 105	Feedback Control Design	

Plus one of the following (3-4 units):		
CS 225A	Experimental Robotics	
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	
ENGR 205	Introduction to Control Design Techniques	
ENGR 207B	Linear Control Systems II	
3) Networking Concentration		
CS 140	Operating Systems and Systems Programming (CS 140E can substitute for CS 140) [4]	
CS 144	Introduction to Computer Networking	
Plus three of the following (9-11 units):		
CS 240	Advanced Topics in Operating Systems	
or CS 240LX	Advanced Systems Laboratory, Accelerated	
CS 241	Embedded Systems Workshop	
CS 244	Advanced Topics in Networking	
CS 244B	Distributed Systems	
EE 179	Analog and Digital Communication Systems	

Graphics Track—

		Units
CS 148	Introduction to Computer Graphics and Imaging	4
CS 244	Advanced Topics in Networking	4
Select one of the following: [6]		3-5
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	
CME 104	Linear Algebra and Partial Differential Equations for Engineers (Note: students taking CME 104 are also required to take its prerequisite course, CME 102)	
CME 108	Introduction to Scientific Computing	
MATH 52	Integral Calculus of Several Variables	
MATH 113	Linear Algebra and Matrix Theory	
Select two of the following:		6-8
CS 146	Introduction to Game Design and Development	
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	
or CS 131	Computer Vision: Foundations and Applications	
CS 233	Geometric and Topological Data Analysis	
CS 348	(Computer Graphics: any suffix)	
CS 448	Topics in Computer Graphics	
Track Electives: at least two additional courses from the lists above, the general CS electives list, or the courses listed below. Students can replace one of these electives with a course found at: https://cs.stanford.edu/explore (https://cs.stanford.edu/explore/): [5]		6-8
ARTSTUDI 160	Intro to Digital / Physical Design	
ARTSTUDI 170	Photography I: Black and White	
ARTSTUDI 179	Digital Art I	
CME 302	Numerical Linear Algebra	
CME 306	Numerical Solution of Partial Differential Equations	
EE 168	Introduction to Digital Image Processing	
EE 262	Three-Dimensional Imaging	
EE 264	Digital Signal Processing	
EE 278	Introduction to Statistical Signal Processing	
EE 368	Digital Image Processing	
ME 101	Visual Thinking	
PSYCH 30	Introduction to Perception	
PSYCH 221	Image Systems Engineering	

Human-Computer Interaction Track—

		Units
CS 147	Introduction to Human-Computer Interaction Design	5
CS 247	(Any suffix)	4
CS 347	Human-Computer Interaction: Foundations and Frontiers	4
CS 142	Web Applications	3
Any one of the following:		
CS 194H	User Interface Design Project	
CS 206	Exploring Computational Journalism	
CS 210A	Software Project Experience with Corporate Partners	
CS 247	(Any suffix beyond the course used above)	
CS 278	Social Computing	
Any CS 377 'Topics in HCI' of three or more units		
CS 448B	Data Visualization	
ME 216M	Introduction to the Design of Smart Products	
At least two additional courses from the above areas or the general CS electives list. Students can replace one of these electives with a course found at https://cs.stanford.edu/explore (https://cs.stanford.edu/explore/)		
Optional Elective [5]		

Information Track—

		Units
CS 124	From Languages to Information	4
CS 145	Data Management and Data Systems	4
Two courses, from different areas:		6-9
1) Information-based AI applications		
CS 224N	Natural Language Processing with Deep Learning	
CS 224S	Spoken Language Processing	
CS 229	Machine Learning	
CS 233	Geometric and Topological Data Analysis	
CS 234	Reinforcement Learning	
2) Database and Information Systems		
CS 140	Operating Systems and Systems Programming [4]	
or CS 140E	Operating systems design and implementation	
CS 142	Web Applications	
CS 151	Logic Programming	
CS 245	Principles of Data-Intensive Systems	
CS 246	Mining Massive Data Sets	
CS 341	Project in Mining Massive Data Sets	
3) Information Systems in Biology		
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	
CS 270	Modeling Biomedical Systems	
CS 274	Representations and Algorithms for Computational Molecular Biology	

4) Information Systems on the Web	
CS 224W	Machine Learning with Graphs
CS 276	Information Retrieval and Web Search
At least three additional courses from the above areas or the general CS electives list. Students can replace one of these electives with a course found at https://cs.stanford.edu/explore (https://cs.stanford.edu/explore/) [5]	

Systems Track—

		Units
CS 140	Operating Systems and Systems Programming [4]	4
or CS 140E	Operating systems design and implementation	
Select one of the following:		3-4
CS 143	Compilers	
EE 180	Digital Systems Architecture	
Two additional courses from the list above or the following:		6-8
CS 144	Introduction to Computer Networking	
CS 145	Data Management and Data Systems	
CS 149	Parallel Computing	
CS 155	Computer and Network Security	
CS 190	Software Design Studio	
CS 217	Hardware Accelerators for Machine Learning	
CS 240	Advanced Topics in Operating Systems	
or CS 240LX	Advanced Systems Laboratory, Accelerated	
CS 242	Programming Languages	
CS 243	Program Analysis and Optimizations	
CS 244	Advanced Topics in Networking	
CS 245	Principles of Data-Intensive Systems	
EE 271	Introduction to VLSI Systems	
EE 282	Computer Systems Architecture	
Track Electives: at least three additional courses selected from the list above, the general CS electives list, or the courses listed below. Students can replace one of these electives with a course found at: https://cs.stanford.edu/explore (https://cs.stanford.edu/explore/) [5]		9-12
CS 241	Embedded Systems Workshop	
CS 269Q	Elements of Quantum Computer Programming	
CS 316	Advanced Multi-Core Systems	
CS 341	Project in Mining Massive Data Sets	
CS 344	Topics in Computer Networks (3 or more units, any suffix)	
CS 349	Topics in Programming Systems (with permission of undergraduate advisor)	
CS 357S	Formal Methods for Computer Systems	
CS 448	Topics in Computer Graphics	
EE 108	Digital System Design	
EE 382C	Interconnection Networks	
EE 384A	Internet Routing Protocols and Standards	
EE 384C	Wireless Local and Wide Area Networks	
EE 384E	Networked Wireless Systems	
EE 384S	Performance Engineering of Computer Systems & Networks	

Theory Track—

		Units
CS 154	Introduction to the Theory of Computation	4
Select one of the following:		3
CS 168	The Modern Algorithmic Toolbox	
CS 255	Introduction to Cryptography	
CS 261	Optimization and Algorithmic Paradigms	
CS 265	Randomized Algorithms and Probabilistic Analysis	
CS 268	Geometric Algorithms	
Two additional courses from the list above or the following:		6-8
CS 143	Compilers	
CS 151	Logic Programming	
CS 155	Computer and Network Security	
CS 157	Computational Logic	
or PHIL 151	Metalogic	
CS 163	The Practice of Theory Research	
CS 166	Data Structures	
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	
CS 228	Probabilistic Graphical Models: Principles and Techniques	
CS 233	Geometric and Topological Data Analysis	
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	
CS 236	Deep Generative Models	
CS 242	Programming Languages	
CS 250	Algebraic Error Correcting Codes	
CS 251	Cryptocurrencies and blockchain technologies	
CS 252	Analysis of Boolean Functions	
CS 254	Computational Complexity	
CS 259	(With permission of undergraduate advisor. Course offered occasionally.)	
CS 263	Counting and Sampling	
CS 269I	Incentives in Computer Science (Not Given This Year)	
CS 351	Open Problems in Coding Theory	
CS 354	Topics in Intractability: Unfulfilled Algorithmic Fantasies (Not given this year)	
CS 355	Advanced Topics in Cryptography (Not given this year)	
CS 357	Advanced Topics in Formal Methods (Not given this year)	
CS 358	Topics in Programming Language Theory	
CS 359	Topics in the Theory of Computation (with permission of undergraduate advisor)	
CS 369	Topics in Analysis of Algorithms (with permission of undergraduate advisor)	
MS&E 310	Linear Programming	
Track Electives: at least three additional courses from the lists above, the general CS electives list, or the courses listed below. Students can replace one of these electives with a course found at: https://cs.stanford.edu/explore (https://cs.stanford.edu/explore/) [5]		9-12
CS 254B	Computational Complexity II	
CS 269G	Almost Linear Time Graph Algorithms	
CME 302	Numerical Linear Algebra	

CME 305	Discrete Mathematics and Algorithms	
PHIL 152	Computability and Logic	

Unspecialized Track—

		Units
CS 154	Introduction to the Theory of Computation	4
Select one of the following:		4
CS 140	Operating Systems and Systems Programming [4]	
or CS 140E	Operating systems design and implementation	
CS 143	Compilers	
One additional course from the list above or the following:		3-4
CS 144	Introduction to Computer Networking	
CS 155	Computer and Network Security	
CS 190	Software Design Studio	
CS 242	Programming Languages	
CS 244	Advanced Topics in Networking	
EE 180	Digital Systems Architecture	
Select one of the following:		3-4
CS 221	Artificial Intelligence: Principles and Techniques	
CS 223A	Introduction to Robotics	
CS 228	Probabilistic Graphical Models: Principles and Techniques	
CS 229	Machine Learning	
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	
Select one of the following:		3-4
CS 145	Data Management and Data Systems	
CS 147	Introduction to Human-Computer Interaction Design	
CS 148	Introduction to Computer Graphics and Imaging	
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	
CS 248	Interactive Computer Graphics	
At least two courses from the general CS electives list [5]		

Individually Designed Track—

Students may propose an individually designed track. Proposals should include a minimum of 25 units and seven courses, at least four of which must be CS courses numbered 100 or above. Proposals must be approved by the faculty advisor and Director of Undergraduate Studies. See Handbook for Undergraduate Engineering Programs for further information.

Footnotes for Track Course Lists

1 MATH 19, MATH 20, and MATH 21, or AP Calculus Credit may be used as long as at least 26 MATH units are taken. AP Calculus Credit must be approved by the School of Engineering.

2 The math electives list consists of: MATH 51, MATH 52, MATH 53, MATH 104, MATH 107, MATH 108, MATH 109, MATH 110, MATH 113; CS 157, CS 205L, PHIL 151; CME 100, CME 102, CME 104, ENGR 108. Restrictions: CS 157 and PHIL 151 may not be used in combination to satisfy the math electives requirement. Students who have taken both MATH 51 and MATH 52 may not count CME 100 as an elective. Courses counted as math electives cannot also count as CS electives, and vice versa.

3 The science elective may be any course of 3 or more units from the School of Engineering Science list (Fig. 4-2 in the UGHB), PSYCH 30, or AP Chemistry Credit. Either of the PHYSICS sequences 61/63 or 21/23 may be substituted for 41/43 as long as at least 11 science units are taken. AP Chemistry Credit and AP Physics Credit must be approved by the School of Engineering.

4 CS 111 and CS 140 cannot both be counted towards the BS requirements. However, it is acceptable to count both CS 111 and CS 140E towards the BS requirements.

5 General CS Electives: CS 108, CS 124, CS 131, CS 140 (or CS 140E), CS 142, CS 143, CS 144, CS 145, CS 146, CS 147, CS 148, CS 149, CS 154, CS 155, CS 157(or PHIL 151), CS 163, CS 166, CS 168, CS 190, CS 195 (4 units max), CS 197, CS 205L, CS 210A, CS 217, CS 221, CS 223A, CS 224N, CS 224S, CS 224U, CS 224W, CS 225A, CS 227B, CS 228, CS 229, CS 229M, CS 230, CS 231A, CS 231N, CS 232, CS 233, CS 234CS 234CS 234CS 234CS 234CS 234CS 234CS 234CS 234, CS 235, CS 237A, CS 237B, CS 238, CS 240, CS 240LX, CS 242, CS 243, CS 244, CS 244B, CS 245, CS 246, CS 247(any suffix), CS 248, CS 251, CS 252, CS 254, CS 254B, CS 255, CS 261, CS 263, CS 265, CS 269I, CS 269Q, CS 270, CS 271, CS 272, CS 273A, CS 273B, CS 274, CS 276, CS 278, CS 279, CS 330, CS 336, CS 348 (any suffix), CS 351, CS 352, CS 369L, CS 398, CME 108; EE 180, EE 282.

6 CS 205L is strongly recommended in this list for the Graphics track. Students taking CME 104 Linear Algebra and Partial Differential Equations for Engineers are also required to take its prerequisite, CME 102 Ordinary Differential Equations for Engineers.

7 Independent study projects (CS 191 Senior Project or CS 191W Writing Intensive Senior Project) require faculty sponsorship and must be approved by the adviser, faculty sponsor, and the CS senior project adviser (Patrick Young). A signed approval form, along with a brief description of the proposed project, should be filed the quarter before work on the project is begun. Further details can be found in the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

8 A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

Additional Information

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB). (http://ughb.stanford.edu)

Honors Program in Computer Science

The Department of Computer Science (CS) offers an honors program for undergraduates whose academic records and personal initiative indicate that they have the necessary skills to undertake high-quality research in computer science. Admission to the program is by application only. To apply for the honors program, students must be majoring in Computer Science, have a grade point average (GPA) of at least 3.6 in courses that count toward the major, and achieve senior standing (135 or more units) by the end of the academic year in which they apply. Coterminal master's students are eligible to apply as long as they have not already received their undergraduate degree. Beyond these requirements, students who apply for the honors program must find a Computer Science faculty member who agrees to serve as the thesis adviser for the project. Thesis advisers must be members of Stanford's Academic Council.

Students who meet the eligibility requirements and wish to be considered for the honors program must submit a written application to the CS undergraduate program office by May 1 of the year preceding the honors work. The application must include a letter describing the research project, a letter of endorsement from the faculty sponsor, and a transcript

of courses taken at Stanford. Each year, a faculty review committee selects the successful candidates for honors from the pool of qualified applicants.

In order to receive departmental honors, students admitted to the honors program must, in addition to satisfying the standard requirements for the undergraduate degree, do the following:

1. Complete at least 9 units of CS 191 or CS 191W under the direction of their project sponsor.
2. Attend a weekly honors seminar Winter Quarter.
3. Complete an honors thesis deemed acceptable by the thesis adviser and at least one additional faculty member.
4. Present the thesis at a public colloquium sponsored by the department.
5. Maintain the 3.6 GPA required for admission to the honors program.

Guide to Choosing Introductory Courses

Students arriving at Stanford have widely differing backgrounds and goals, but most find that the ability to use computers effectively is beneficial to their education. The department offers many introductory courses to meet the needs of these students.

For students whose principal interest is an exposure to the fundamental ideas behind computer science and programming, CS 101 or CS 105 are the most appropriate courses. They are intended for students in nontechnical disciplines who expect to make some use of computers, but who do not expect to go on to more advanced courses. CS 101 and CS 105 meet the Ways of Thinking Ways of Doing breadth requirements in Formal Reasoning and include an introduction to programming and the use of modern Internet-based technologies. Students interested in learning to use the computer should consider CS 1C, Introduction to Computing at Stanford.

Students who intend to pursue a serious course of study in computer science may enter the program at a variety of levels, depending on their background. Students with little prior experience or those who wish to take more time to study the fundamentals of programming should take CS 106A followed by CS 106B. Students in CS 106A need not have prior programming experience. Students with significant prior exposure to programming or those who want an intensive introduction to the field may start directly in CS 106B. CS 106A uses Python as its programming language; CS 106B uses C++. No prior knowledge of these languages is assumed, and the prior programming experience required for CS 106B may be in any language. In all cases, students are encouraged to discuss their background with the instructors responsible for these courses.

After the introductory sequence, Computer Science majors and those who need a significant background in computer science for related majors in engineering should take CS 103, CS 107 and CS 110. CS 103 offers an introduction to the mathematical and theoretical foundations of computer science. CS 107 exposes students to a variety of programming concepts that illustrate critical strategies used in systems development; CS 110 builds on this material, focusing on the development of larger-scale software making use of systems and networking abstractions.

In summary:

For exposure:	
CS 1C	Introduction to Computing at Stanford
For nontechnical use:	
CS 101	Introduction to Computing Principles
or CS 105	Introduction to Computers
For scientific use:	
CS 106A	Programming Methodology
For a technical introduction:	
CS 106A	Programming Methodology
For significant use:	
CS 106A & CS 106B	Programming Methodology and Programming Abstractions
CS 103	Mathematical Foundations of Computing
CS 107	Computer Organization and Systems
CS 110	Principles of Computer Systems

Overseas Studies Courses in Computer Science

For course descriptions and additional offerings, see the listings in the *Stanford Bulletin's* ExploreCourses web site (http://explorecourses.stanford.edu) or the Bing Overseas Studies web site (http://bosp.stanford.edu). Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

Joint Major Program: Computer Science and a Humanities Major

The joint major program (JMP) was discontinued at the end of the academic year 2018-19. Students may no longer declare this program. All students with declared joint majors are permitted to complete their degree; faculty and departments are committed to providing the necessary advising support.

See the "Joint Major Program (p. 33)" section of this bulletin for a description of University requirements for the JMP. See also the Undergraduate Advising and Research JMP (https://majors.stanford.edu/more-ways-explore/joint-majors-csx/) web site and its associated FAQs.

Students completing the JMP receive a B.A.S. (Bachelor of Arts and Science).

Mission

The Joint Major provides a unique opportunity to gain mastery in two disciplines: Computer Science and a selected humanities field. Unlike the double major or dual major, the Joint Major emphasizes integration of the two fields through a cohesive, transdisciplinary course of study and integrated capstone experience. The Joint Major not only blends the intellectual traditions of two Stanford departments-it does so in a way that reduces the total unit requirement for each major.

Computer Science Major Requirements in the Joint Major Program

(See the respective humanities department Joint Major Program section of this bulletin for details on humanities major requirements.)

The CS requirements for the Joint Major follow the CS requirements for the CS-BS degree with the following exceptions:

1. Two of the depth electives are waived. The waived depth electives are listed below for each CS track.
2. The Senior Project is fulfilled with a joint capstone project. The student enrolls in CS191 or 191W (3 units) during the senior year. Depending on the X department, enrollment in an additional Humanities capstone course may also be required. But, at a minimum, 3 units of CS191 or 191W must be completed.
3. There is no double-counting of units between majors. If a course is required for both the CS and Humanities majors, the student will work with one of the departments to identify an additional course - one

which will benefit the academic plan - to apply to that major's total units requirement.

4. For CS, WIM can be satisfied with CS181W or CS191W.

Depth Electives for CS Tracks for students completing a Joint Major:

Artificial Intelligence Track:
One Track Elective (rather than three).

Biocomputation Track:
One course from Note 3 of the Department Program Sheet, plus one course from Note 4 of the Program Sheet..

Computer Engineering Track:
- EE 108A and 108B
- One of the following: EE 101A, 101B, 102A, 102B
- Satisfy the requirements of one of the following concentrations:

1. Digital Systems Concentration: CS 140 or 143; EE 109, 271; plus one of CS 140 or 143 (if not counted above), 144, 149, 240E, 244: EE 273, 282
2. Robotics and Mechatronics Concentration: CS 205A, 223A; ME 210; ENGR 105
3. Networking Concentration: CS 140, 144; plus two of the following, CS 240, 240E, 244, 244B, 244E, 249A, 249B, EE 179, EE 276

Graphics Track:
No Track Electives required (rather than two)

HCI Track:
No Interdisciplinary HCI Electives required

Information Track:

One Track Elective (rather than three)

Systems Track:
One Track Elective (rather than three)

Theory Track:
One Track Elective (rather than three)

Unspecialized Track:
No Track Electives required (rather than two)

Individually Designed Track:
Proposals should include a minimum of five (rather than seven) courses, at least four of which must be CS courses numbered 100 or above.

Dropping a Joint Major Program

To drop the joint major, students must submit the Declaration or Change of Undergraduate Major, Minor, Honors, or Degree Program (https://stanford.box.com/change-UG-program/). Students may also consult the Student Services Center (http://studentservicescenter.stanford.edu/) with questions concerning dropping the joint major.

Transcript and Diploma

Students completing a joint major graduate with a B.A.S. degree. The two majors are identified on one diploma separated by a hyphen. There will be a notation indicating that the student has completed a "Joint Major." The two majors are identified on the transcript with a notation indicating that the student has completed a "Joint Major."

Computer Science (CS) Minor

The following core courses fulfill the minor requirements. Prerequisites include the standard mathematics sequence through MATH 51 (or CME 100).

		Units
Introductory Programming (AP Credit may be used to fulfill this requirement):		
CS 106B	Programming Abstractions	5
or CS 106X	Programming Abstractions	
Core:		
CS 103	Mathematical Foundations of Computing	5
CS 107	Computer Organization and Systems	5
or CS 107E	Computer Systems from the Ground Up	
CS 109	Introduction to Probability for Computer Scientists	5
Electives (choose two courses from different areas):		
Artificial Intelligence—		
CS 124	From Languages to Information	4
CS 221	Artificial Intelligence: Principles and Techniques	4
CS 229	Machine Learning	3-4
Human-Computer Interaction—		
CS 147	Introduction to Human-Computer Interaction Design	4
Software—		
CS 108	Object-Oriented Systems Design	4
CS 110	Principles of Computer Systems	5
Systems—		
CS 140	Operating Systems and Systems Programming	4
or CS 140E	Operating systems design and implementation	
CS 143	Compilers	4
CS 144	Introduction to Computer Networking	4
CS 145	Data Management and Data Systems	4
CS 148	Introduction to Computer Graphics and Imaging	4
Theory—		
CS 154	Introduction to the Theory of Computation	4
CS 157	Computational Logic	3
CS 161	Design and Analysis of Algorithms	5

Note: for students with no programming background and who begin with CS 106A, the minor consists of seven courses.

Master of Science in Computer Science

In general, the M.S. degree in Computer Science is intended as a terminal professional degree and does not lead to the Ph.D. degree. Most students planning to obtain the Ph.D. degree should apply directly for admission to the Ph.D. program. Some students, however, may wish to complete the master's program before deciding whether to pursue the Ph.D. To give such students a greater opportunity to become familiar with research, the department has a program leading to a master's degree with distinction in research. This program is described in more detail below.

Admission

Applications to the M.S. program and all supporting documents must be submitted and received online by the published deadline. Information on admission requirements (http://cs.stanford.edu/admissions/) is available on the department's web site; see also the department's deadlines page

(https://cs.stanford.edu/admissions/deadlines/). Exceptions are made for applicants who are already students at Stanford and are applying to the coterminal program (https://cs.stanford.edu/admissions/current-stanford-students/coterminal-program/).

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Requirements

A candidate is required to complete a program of 45 units. At least 36 of these must be graded units, passed with a grade point average (GPA) of 3.0 (B) or better. The 45 units may include no more than 10 units of courses from those listed below in Requirement 1. Thus, students needing to take more than two of the courses listed in Requirement 1 actually complete more than 45 units of course work in the program. Only well-prepared students may expect to finish the program in one year; most students complete the program in six quarters. Students hoping to complete the program with 45 units should already have a substantial background in computer science, including course work or experience equivalent to all of Requirement 1 and some prior course work related to their specialization area.

Requirement 1: Foundations—

Students must complete the following courses, or waive out of them by providing evidence to their advisers that similar or more advanced courses have been taken, either at Stanford or another institution (total units used to satisfy foundations requirement may not exceed 10):

Logic, Automata, and Computability	
CS 103	Mathematical Foundations of Computing
Probability	
Select one of the following:	
CS 109	Introduction to Probability for Computer Scientists
STATS 116	Theory of Probability
MS&E 220	Probabilistic Analysis
CME 106	Introduction to Probability and Statistics for Engineers
EE 178	Probabilistic Systems Analysis
Algorithmic Analysis	
CS 161	Design and Analysis of Algorithms
Computer Organization and Systems	
CS 107	Computer Organization and Systems
or CS 107E	Computer Systems from the Ground Up
Principles of Computer Systems	
CS 110	Principles of Computer Systems
or CS 111	Operating Systems Principles

Requirement 2: Significant Software Implementation—

Students must complete at least one course designated as having a significant software implementation component. The list of such courses includes:

CS 140	Operating Systems and Systems Programming	3-4
or CS 140E	Operating systems design and implementation	
CS 143	Compilers	3-4
CS 144	Introduction to Computer Networking	3-4
CS 145	Data Management and Data Systems	3-4
CS 148	Introduction to Computer Graphics and Imaging	3-4
CS 151	Logic Programming	3
CS 190	Software Design Studio	3-4
CS 210B	Software Project Experience with Corporate Partners	3-4
CS 221	Artificial Intelligence: Principles and Techniques	3-4
CS 227B	General Game Playing	3
CS 231N	Convolutional Neural Networks for Visual Recognition	3-4
CS 243	Program Analysis and Optimizations	3-4
CS 248	Interactive Computer Graphics	3-4
CS 341	Project in Mining Massive Data Sets	3

Requirement 3: Breadth—

Students must complete at least three courses, with each course chosen from a different Breadth area A, B, C or D. Breadth courses may not be waived, must be taken for at least 3 units each, and must be completed for a letter grade. Each of the three Breadth courses must be from different Areas:

Breadth Area A: Mathematical and Theoretical Foundations

- CS 154, CS 157, CS 168, CS 254, CS 258 (Not Given This Year), CS 261, CS 265, CS 361; EE 364B; PHIL 251

Breadth Area B: Computer Systems

- CS 143, CS 144, CS 242, CS 243, CS 244, CS 244B, CS 316, CS 358; EE 180, EE 282, EE 284

Breadth Area C: Applications

- CS 145, CS 147, CS 148, CS 155, CS 221, CS 223A, CS 224N, CS 224U, CS 224W, CS 227B, CS 228, CS 229, CS 229M, CS 231A, CS 245, CS 246, CS 247 (any suffix), CS 248, CS 251, CS 255, CS 273A, CS 273B, CS 279, CS 348B, CS 348C, CS 355, CS 356, CS 448B

Breadth Area D: Computing and Society

- CS 181, CS 182, CS 384; AMSTUD 133, AMSTUD 145; ANTHRO 132D; COMM 120W, COMM 124, COMM 145, COMM 154, COMM 166, COMM 186W, COMM 230A, COMM 230B, COMM 230C; DESINST 215, DESINST 240; ENGLISH 184D; ENGR 248; HISTORY 244F; LINGUIST 230A; ME 177; MS&E 193, MS&E 231, MS&E 234, MS&E 254; POLISCI 150A; PSYCH 215; PUBLPOL 103F

Requirement 4: Specialization—
All courses taken for this requirement must be taken on a letter grade basis for three or more units.

- A program of 21 units must be completed. A maximum of 6 units of independent study (CS 393, CS 395, CS 399) may be counted toward the specialization.

Specialization Areas—
Nine approved specialization areas which may be used to satisfy Requirement 4 are listed following. Students may propose to the M.S. program committee other coherent programs that meet their goals and satisfy the basic requirements.

Courses marked with an asterisk (*) require consent of the faculty adviser. Courses marked with a double asterisk (**) may be waived by students with equivalent course work and with the approval of their adviser.

1. Artificial Intelligence—

A.

CS 221	Artificial Intelligence: Principles and Techniques **

B. Select at least four of the following:

CS 223A	Introduction to Robotics
CS 224N	Natural Language Processing with Deep Learning
CS 224S	Spoken Language Processing
CS 224U	Natural Language Understanding
CS 224W	Machine Learning with Graphs
CS 228	Probabilistic Graphical Models: Principles and Techniques
CS 229	Machine Learning
CS 231A	Computer Vision: From 3D Reconstruction to Recognition
CS 231N	Convolutional Neural Networks for Visual Recognition
CS 234	Reinforcement Learning
CS 237A	Principles of Robot Autonomy I
CS 237B	Principles of Robot Autonomy II
CS 238	Decision Making under Uncertainty

C. A total of at least 21 units from categories A, B, and the following:

CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning
CS 217	Hardware Accelerators for Machine Learning
CS 225A	Experimental Robotics
CS 227B	General Game Playing
CS 229M	Machine Learning Theory
CS 230	Deep Learning
CS 232	Digital Image Processing
CS 233	Geometric and Topological Data Analysis
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation
CS 236	Deep Generative Models
CS 237A	Principles of Robot Autonomy I
CS 237B	Principles of Robot Autonomy II
CS 239	Advanced Topics in Sequential Decision Making
CS 246	Mining Massive Data Sets
CS 257	Logic and Artificial Intelligence
CS 270	Modeling Biomedical Systems
CS 271	Artificial Intelligence in Healthcare
CS 273A	The Human Genome Source Code
CS 273B	Deep Learning in Genomics and Biomedicine
CS 274	Representations and Algorithms for Computational Molecular Biology
CS 275	Translational Bioinformatics
CS 276	Information Retrieval and Web Search
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells
CS 294A	Research Project in Artificial Intelligence *
CS 323	Automated Reasoning: Theory and Applications
CS 325B	Data for Sustainable Development
CS 326	Topics in Advanced Robotic Manipulation
CS 327A	Advanced Robotic Manipulation (Not given this year)
CS 328	Topics in Computer Vision
CS 329	Topics in Artificial Intelligence
CS 330	Deep Multi-task and Meta Learning
CS 331B	Representation Learning in Computer Vision
CS 332	Advanced Survey of Reinforcement Learning
CS 333	Algorithms for Interactive Robotics
CS 341	Project in Mining Massive Data Sets
CS 345	(Offered occasionally)
CS 368	Algorithmic Techniques for Big Data
CS 369L	Algorithmic Perspective on Machine Learning
CS 369M	Metric Embeddings and Algorithmic Applications
CS 371	Computational Biology in Four Dimensions
CS 375	Large-Scale Neural Network Modeling for Neuroscience
CS 377	Topics in Human-Computer Interaction (CS 377 with any suffix) *
CS 379	Interdisciplinary Topics (CS 379 with any suffix) *
CS 393	Computer Laboratory *
CS 395	Independent Database Project *
CS 398	Computational Education
CS 399	Independent Project *
CS 428	Computation and Cognition: The Probabilistic Approach
APPPHYS 293	Theoretical Neuroscience
EE 263	Introduction to Linear Dynamical Systems
EE 276	Information Theory
EE 278	Introduction to Statistical Signal Processing
EE 364A	Convex Optimization I
EE 364B	Convex Optimization II
EE 377	Information Theory and Statistics
EE 378B	Inference, Estimation, and Information Processing
ENGR 205	Introduction to Control Design Techniques
ENGR 209A	Analysis and Control of Nonlinear Systems

MS&E 226	Fundamentals of Data Science: Prediction, Inference, Causality
MS&E 251	Introduction to Stochastic Control with Applications
MS&E 252	Decision Analysis I: Foundations of Decision Analysis
MS&E 351	Dynamic Programming and Stochastic Control
MS&E 352	Decision Analysis II: Professional Decision Analysis
MS&E 353	Decision Analysis III: Frontiers of Decision Analysis
PSYCH 209	Neural Network Models of Cognition
STATS 202	Data Mining and Analysis
STATS 315A	Modern Applied Statistics: Learning
STATS 315B	Modern Applied Statistics: Data Mining

Those students who have waived out of CS 221 may take an additional course in either area (B) or (C).

2. Biocomputation—

A. Select at least four of the following:

CS 235	Computational Methods for Biomedical Image Analysis and Interpretation
CS 270	Modeling Biomedical Systems
CS 272	Introduction to Biomedical Informatics Research Methodology
CS 273A	The Human Genome Source Code
CS 274	Representations and Algorithms for Computational Molecular Biology
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells

B. A total of at least 21 units from category (A) and the following:

CS 228	Probabilistic Graphical Models: Principles and Techniques
CS 229	Machine Learning
CS 230	Deep Learning
CS 231N	Convolutional Neural Networks for Visual Recognition
CS 233	Geometric and Topological Data Analysis
CS 236	Deep Generative Models
CS 245	Principles of Data-Intensive Systems
CS 246	Mining Massive Data Sets
CS 261	Optimization and Algorithmic Paradigms
CS 264	Beyond Worst-Case Analysis
CS 265	Randomized Algorithms and Probabilistic Analysis
CS 268	Geometric Algorithms
CS 273B	Deep Learning in Genomics and Biomedicine
CS 275	Translational Bioinformatics
CS 325B	Data for Sustainable Development
CS 341	Project in Mining Massive Data Sets
CS 345	(Offered occasionally)
CS 371	Computational Biology in Four Dimensions
CS 375	Large-Scale Neural Network Modeling for Neuroscience
CS 393	Computer Laboratory *
CS 395	Independent Database Project *
CS 399	Independent Project *
APPPHYS 293	Theoretical Neuroscience
GENE 211	Genomics

3. Computer and Network Security—

A.

CS 140	Operating Systems and Systems Programming **
or CS 140E	Operating systems design and implementation
CS 144	Introduction to Computer Networking **
CS 155	Computer and Network Security
CS 255	Introduction to Cryptography
CS 356	Topics in Computer and Network Security

B. Select at least three of the following:

CS 142	Web Applications
CS 190	Software Design Studio
CS 240	Advanced Topics in Operating Systems
CS 244	Advanced Topics in Networking
CS 244B	Distributed Systems
CS 253	Web Security
CS 261	Optimization and Algorithmic Paradigms
CS 265	Randomized Algorithms and Probabilistic Analysis
CS 340	Topics in Computer Systems
CS 344	Topics in Computer Networks (CS 344 with any suffix)
CS 355	Advanced Topics in Cryptography (Not given this year)

C. A total of at least 21 units from categories (A), (B), and the following:

CS 245	Principles of Data-Intensive Systems
CS 251	Cryptocurrencies and blockchain technologies
CS 264	Beyond Worst-Case Analysis
CS 294S	Research Project in Software Systems and Security (Not given this year) *
CS 341	Project in Mining Massive Data Sets
CS 345	(Offered occasionally)
CS 393	Computer Laboratory *
CS 395	Independent Database Project *
CS 399	Independent Project *
EE 384A	Internet Routing Protocols and Standards
EE 384C	Wireless Local and Wide Area Networks
EE 384S	Performance Engineering of Computer Systems & Networks

4. Human-Computer Interaction—

A.

CS 147	Introduction to Human-Computer Interaction Design **
CS 247	(Any suffix) **
CS 347	Human-Computer Interaction: Foundations and Frontiers
CS 142	Web Applications

B. A total of at least 21 units from category (A) and at least 3 of the following:

CS 194H	User Interface Design Project
CS 206	Exploring Computational Journalism
CS 210A	Software Project Experience with Corporate Partners

CS 278	Social Computing
CS 377	Topics in Human-Computer Interaction (CS 377 with any suffix and 3 or more units)
CS 448B	Data Visualization
ME 216M	Introduction to the Design of Smart Products
CS 247	(HCI Design Studio (any suffix) in addition to the course taken to satisfy category (A))

5. Information Management and Analytics—

A.

CS 145	Data Management and Data Systems **	3-4

B. Select at least four of the following:

CS 224N	Natural Language Processing with Deep Learning
CS 224W	Machine Learning with Graphs
CS 229	Machine Learning
CS 245	Principles of Data-Intensive Systems
CS 246	Mining Massive Data Sets
CS 263	Counting and Sampling
CS 276	Information Retrieval and Web Search
CS 345	(Offered occasionally)

C. A total of at least 21 units from categories (A), (B) and the following:

CS 144	Introduction to Computer Networking
CS 151	Logic Programming
CS 190	Software Design Studio
CS 224S	Spoken Language Processing
CS 224U	Natural Language Understanding
CS 228	Probabilistic Graphical Models: Principles and Techniques
CS 229M	Machine Learning Theory
CS 230	Deep Learning
CS 231A	Computer Vision: From 3D Reconstruction to Recognition
CS 231N	Convolutional Neural Networks for Visual Recognition
CS 233	Geometric and Topological Data Analysis
CS 234	Reinforcement Learning
CS 236	Deep Generative Models
CS 240	Advanced Topics in Operating Systems
CS 242	Programming Languages
CS 243	Program Analysis and Optimizations
CS 244	Advanced Topics in Networking
CS 244B	Distributed Systems
CS 251	Cryptocurrencies and blockchain technologies
CS 255	Introduction to Cryptography
CS 270	Modeling Biomedical Systems
CS 272	Introduction to Biomedical Informatics Research Methodology
CS 273A	The Human Genome Source Code
CS 274	Representations and Algorithms for Computational Molecular Biology
CS 275	Translational Bioinformatics
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells
CS 316	Advanced Multi-Core Systems
CS 320	Value of Data and AI
CS 325B	Data for Sustainable Development
CS 341	Project in Mining Massive Data Sets
CS 344	Topics in Computer Networks (CS 344 with any suffix)
CS 349D	Cloud Computing Technology
CS 393	Computer Laboratory *
CS 395	Independent Database Project *
CS 399	Independent Project *
MS&E 226	Fundamentals of Data Science: Prediction, Inference, Causality
STATS 315A	Modern Applied Statistics: Learning
STATS 315B	Modern Applied Statistics: Data Mining

Note that if CS145 was waived in area (A), students should take an additional course from either area (B) or (C) in its place.

6. Real-World Computing—

A. Select at least three of the following:

CS 148	Introduction to Computer Graphics and Imaging
CS 223A	Introduction to Robotics
CS 231A	Computer Vision: From 3D Reconstruction to Recognition
CS 248	Interactive Computer Graphics

B. Select at least three of the following:

CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning
CS 233	Geometric and Topological Data Analysis
CS 268	Geometric Algorithms
CS 348A	Computer Graphics: Geometric Modeling & Processing
CS 348B	Computer Graphics: Image Synthesis Techniques
CS 348C	Computer Graphics: Animation and Simulation
CS 348E	Character Animation: Modeling, Simulation, and Control of Human Motion
CS 348K	Visual Computing Systems
CME 302	Numerical Linear Algebra
CME 306	Numerical Solution of Partial Differential Equations

C. A total of at least 21 units from categories (A), (B), and the following:

CS 146	Introduction to Game Design and Development
CS 225A	Experimental Robotics
CS 228	Probabilistic Graphical Models: Principles and Techniques
CS 229	Machine Learning
CS 230	Deep Learning
CS 232	Digital Image Processing
or EE 368	Digital Image Processing
CS 247	(Any suffix)
CS 270	Modeling Biomedical Systems
CS 272	Introduction to Biomedical Informatics Research Methodology
CS 273A	The Human Genome Source Code
CS 274	Representations and Algorithms for Computational Molecular Biology
CS 294A	Research Project in Artificial Intelligence *

CS 326	Topics in Advanced Robotic Manipulation
CS 327A	Advanced Robotic Manipulation (Not given this year)
CS 328	Topics in Computer Vision
CS 331B	Representation Learning in Computer Vision
CS 333	Algorithms for Interactive Robotics
CS 393	Computer Laboratory *
CS 395	Independent Database Project *
CS 399	Independent Project *
CS 448	Topics in Computer Graphics (CS 448 with any suffix)
EE 267	Virtual Reality

7. Software Theory—

A.

CS 242	Programming Languages
CS 243	Program Analysis and Optimizations

B. Select at least one of the following:

CS 221	Artificial Intelligence: Principles and Techniques
CS 244	Advanced Topics in Networking
CS 245	Principles of Data-Intensive Systems
CS 341	Project in Mining Massive Data Sets

C. Select at least one of the following:

CS 255	Introduction to Cryptography
CS 350	Secure Compilation
CS 355	Advanced Topics in Cryptography (Not given this year)
CS 356	Topics in Computer and Network Security

D. A total of at least 21 units from (A), (B), (C), or the following:

CS 151	Logic Programming
CS 250	Algebraic Error Correcting Codes
CS 252	Analysis of Boolean Functions
CS 261	Optimization and Algorithmic Paradigms
CS 264	Beyond Worst-Case Analysis
CS 265	Randomized Algorithms and Probabilistic Analysis
CS 268	Geometric Algorithms
CS 294S	Research Project in Software Systems and Security (Not given this year) *
CS 393	Computer Laboratory *
CS 395	Independent Database Project *
CS 399	Independent Project *

8. Systems—

A.

CS 140	Operating Systems and Systems Programming **
or CS 140E	Operating systems design and implementation
CS 144	Introduction to Computer Networking **
CS 240	Advanced Topics in Operating Systems

B. Select at least four of the following:

CS 190	Software Design Studio
CS 242	Programming Languages
CS 243	Program Analysis and Optimizations
CS 244	Advanced Topics in Networking
CS 245	Principles of Data-Intensive Systems
CS 248	Interactive Computer Graphics
CS 348B	Computer Graphics: Image Synthesis Techniques
EE 271	Introduction to VLSI Systems
EE 282	Computer Systems Architecture

C. A total of at least 21 units from categories (A), (B), and the following:

CS 149	Parallel Computing
CS 217	Hardware Accelerators for Machine Learning
CS 241	Embedded Systems Workshop
CS 244B	Distributed Systems
CS 246	Mining Massive Data Sets
CS 251	Cryptocurrencies and blockchain technologies
CS 255	Introduction to Cryptography
CS 269Q	Elements of Quantum Computer Programming
CS 270	Modeling Biomedical Systems
CS 272	Introduction to Biomedical Informatics Research Methodology
CS 276	Information Retrieval and Web Search
CS 294S	Research Project in Software Systems and Security (Not given this year) *
CS 315B	Parallel Computing Research Project
CS 316	Advanced Multi-Core Systems
CS 340	Topics in Computer Systems (Offered occasionally)
CS 341	Project in Mining Massive Data Sets
CS 343D	Domain-Specific Programming Models and Compilers
CS 344	Topics in Computer Networks (CS 344 with any suffix)
CS 348A	Computer Graphics: Geometric Modeling & Processing
CS 348C	Computer Graphics: Animation and Simulation
CS 348E	Character Animation: Modeling, Simulation, and Control of Human Motion
CS 348I	Computer Graphics in the Era of AI
CS 348K	Visual Computing Systems
CS 349	Topics in Programming Systems (CS 349 with any suffix)
CS 356	Topics in Computer and Network Security
CS 357S	Formal Methods for Computer Systems
CS 393	Computer Laboratory *
CS 395	Independent Database Project *
CS 399	Independent Project *
CS 448	Topics in Computer Graphics (CS 448 with any suffix)
EE 267	Virtual Reality
EE 273	Digital Systems Engineering
EE 382C	Interconnection Networks
EE 384A	Internet Routing Protocols and Standards
EE 384C	Wireless Local and Wide Area Networks
EE 384S	Performance Engineering of Computer Systems & Networks

9. Theoretical Computer Science—

A.

CS 154	Introduction to the Theory of Computation **
CS 261	Optimization and Algorithmic Paradigms

B. A total of at least 21 units from category (A) and the following:

CS 151	Logic Programming
CS 163	The Practice of Theory Research
CS 166	Data Structures
CS 168	The Modern Algorithmic Toolbox
CS 228	Probabilistic Graphical Models: Principles and Techniques
CS 233	Geometric and Topological Data Analysis
CS 236	Deep Generative Models
CS 246	Mining Massive Data Sets
CS 250	Algebraic Error Correcting Codes
CS 251	Cryptocurrencies and blockchain technologies
CS 252	Analysis of Boolean Functions
CS 254	Computational Complexity
CS 254B	Computational Complexity II
CS 255	Introduction to Cryptography
CS 257	Logic and Artificial Intelligence
CS 264	Beyond Worst-Case Analysis
CS 265	Randomized Algorithms and Probabilistic Analysis
CS 268	Geometric Algorithms
CS 269G	Almost Linear Time Graph Algorithms
CS 269I	Incentives in Computer Science
CS 269O	Introduction to Optimization Theory
CS 341	Project in Mining Massive Data Sets
CS 345	(Offered occasionally)
CS 351	Open Problems in Coding Theory
CS 352	Pseudo-Randomness
CS 354	Topics in Intractability: Unfulfilled Algorithmic Fantasies (Not given this year)
CS 355	Advanced Topics in Cryptography (Not given this year)
CS 358	Topics in Programming Language Theory
CS 359	Topics in the Theory of Computation *
CS 368	Algorithmic Techniques for Big Data
CS 369	Topics in Analysis of Algorithms *
CS 393	Computer Laboratory *
CS 395	Independent Database Project *
CS 399	Independent Project *
CS 468	Topics in Geometric Algorithms: Non-Euclidean Methods in Machine Learning *
EE 364A	Convex Optimization I
MS&E 310	Linear Programming
MS&E 315	Advanced Optimization Theory
MS&E 319	Approximation Algorithms

- Multiple CS 359, CS 369, and/or CS 468 courses may be taken as long as they are each on different topics, denoted by different letter suffixes for the courses.

* With consent of faculty adviser.

** Students with equivalent course work may waive with approval of their adviser.

Requirement 5

Additional elective units must be technical courses, numbered 100 or above, related to the degree program and approved by the adviser and MS program administrator. Up to one elective may be of a non-technical nature as long as it is related to the degree program and has advisor approval. All CS courses numbered above 111 with the exception of CS 196, CS 198, CS 390A, CS 390B, and CS 390C, taken for 3 or more units are pre-approved as elective courses. Additionally, up to a maximum of 3 units of 1-2 unit seminars offered in the School of Engineering may be counted as electives. Elective courses that also satisfy a Breadth requirement must be taken for a letter grade. Otherwise, elective courses may be taken on a satisfactory/no credit basis provided that a minimum of 36 graded units is presented within the 45-unit program.

Master of Science with Distinction in Research

A student who wishes to pursue the M.S. in CS with distinction in research must first identify a faculty adviser who agrees to supervise and support the research work. The research adviser must be a member of the Academic Council and must hold an appointment in Computer Science. The student and principal adviser must also identify another faculty member, who need not be in the Department of Computer Science, to serve as a secondary adviser and reader for the research report. In addition, the student must complete the following requirements beyond those for the regular M.S. in CS degree:

1. *Research Experience*—The program must include significant research experience at the level of a half-time commitment over the course of three academic quarters. In any given quarter, the half-time research commitment may be satisfied by a 50 percent appointment to a departmentally supported research assistantship, 6 units of independent study (CS 393, CS 395, or CS 399), or a prorated combination of the two (such as a 25 percent research assistantship supplemented by 3 units of independent study). This research must be carried out under the direction of the primary or secondary adviser.
2. *Supervised Writing and Research*—In addition to the research experience outlined in the previous requirement, students must enroll in at least 3 units of independent research (CS 393, CS 395, or CS 399) under the direction of their primary or secondary adviser. These units should be closely related to the research described in the first requirement, but focused more directly on the preparation of the research report described in the next section. The writing and research units described in parts (1) and (2) may be counted toward the 45 units required for the degree.
3. All independent study units (CS 393, CS 395, CS 399) must be taken for letter grades and a GPA of 3.0 (B) or better must be maintained.
4. *Research Report*—Students must complete a significant report describing their research and its conclusions. The research report represents work that is publishable in a journal or at a high-quality conference, although it is presumably longer and more expansive in scope than a typical conference paper. A copy of the research report must be submitted to the student services office in the department three weeks before the beginning of the examination period in the student's final quarter. Both the primary and secondary adviser must approve the research report before the distinction-in-research designation can be conferred.

Joint M.S. and MBA Degree

The joint MS in Computer Science/MBA degree links two of Stanford University's world-class programs. This joint degree offers students an opportunity to develop advanced technical and managerial skills for a

broader perspective on both existing technologies and new technology ventures.

Admission to the joint MSCS/MBA program requires that students apply and be accepted independently to both the Computer Science Department in the School of Engineering and the Graduate School of Business. Students may apply concurrently, or elect to begin their course of study in CS and apply to the GSB during their first year.

Additional information on the MS in Computer Science/MBA Joint Degree Program and its requirements is available on the department's web site (https://cs.stanford.edu/academics/joint-degree-programs/joint-cs-msmba-degree/).

Joint M.S. and Law Degree

Law students interested in pursuing an M.S. in Computer Science must apply for admission to the Computer Science Department either (i) concurrently with applying to the Law School; or (ii) after being admitted to the Law School, but no later than the earlier of: (a) the end of the second year of Law School; or (b) the Computer Science Department's admission deadline for the year following that second year of Law School.

In addition to being admitted separately to the Law School and the Computer Science Department, students must secure permission from both academic units to pursue degrees in those units as part of a joint degree program.

J.D./M.S. students may elect to begin their course of study in either the Law School or the Computer Science Department. Faculty advisors from each academic unit participate in the planning and supervising of the student's joint program. Students must be enrolled full-time in the Law School for the first year of law studies. Otherwise, enrollment may be in the graduate school or the Law School, and students may choose courses from either program regardless of where enrolled. Students must satisfy the requirements for both the J.D. degree as specified by the Law School and the M.S. degree as specified in this Bulletin.

The Law School approves courses from the Department of Computer Science that may count toward the J.D. degree, and the Computer Science Department approves courses from the Law School that may count toward the M.S. degree in Computer Science. In either case, approval may consist of a list applicable to all joint-degree students or may be tailored to each individual student program. No more than 45 units of approved courses may be counted toward both degrees. No more than 36 units of courses that originate outside the Law School may count toward the Law degree. To the extent that courses under this joint degree program originate outside of the Law School but count toward the Law degree, the Law School credits permitted under Section 17(1) of the Law School Regulations shall be reduced on a unit-per-unit basis, but not below zero. The maximum number of Law School credits that may be counted toward the M.S. in Computer Science is the greater of: (i) 12 units; or (ii) the maximum number of units from courses outside of the department that M.S. candidates in Computer Science are permitted to count toward the M.S. in the case of a particular student's individual program. Tuition and financial aid arrangements are normally through the school in which the student is then enrolled.

Teaching and Research Assistantships in Computer Science

Graduate student assistantships are available. Half-time assistants receive a tuition scholarship for 8, 9, or 10 units per quarter during the academic year, and in addition receive a monthly stipend.

Duties for half-time assistants during the academic year involve approximately 20 hours of work per week. Course assistants (CAs) help an instructor teach a course by conducting discussion sections, consulting with students, and grading examinations. Research assistants (RAs) help faculty and senior staff members with research in computer science. Many MS students are hired to staff teaching and research assistantships. However, MS students should not plan on being appointed to an assistantship.

Students with fellowships may have the opportunity to supplement their stipends by serving as graduate student assistants.

Doctor of Philosophy in Computer Science

The University's basic requirements for the Ph.D. degree are outlined in the "Graduate Degrees (p. 65)" section of this bulletin. Department requirements are stated below.

Requirements

Applications to the Ph.D. program and all supporting documents must be submitted and received online by the published deadline. See the department's web site for admissions requirements and the application deadline (https://cs.stanford.edu/admissions/general-information/). Changes or updates to the admission process are posted in September.

The following are general department requirements. Contact the Computer Science Ph.D. administrator for details.

1. A student should plan and complete a coherent program of study covering the basic areas of computer science and related disciplines. The student's adviser has primary responsibility for the adequacy of the program, which is subject to review by the Student Services Office.
2. The first year of the Ph.D. program is spent working with 1-3 different professors on a rotating basis. The intent is to allow the first-year Ph.D. student to work with a variety of professors before aligning with a permanent program adviser. Students who don't need the full year to find a professor to align with will have the option of aligning within the first or second quarter.
3. The CS 300 (http://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=&q=CS+300&collapse=) Departmental Lecture Series seminar gives faculty the opportunity to explain their research to first year CS Ph.D. students. First year CS Ph.D. students are required to attend 2/3 of the classes to receive credit.
4. A student must complete 135 course units for graduation. Computer Science Ph.D. students take 8-10 units per quarter. Credit for coursework done elsewhere (up to the maximum of 45 course units) may be applied to graduation requirements. Students must also take at least three units of coursework from four different faculty members. There are NO courses specifically required by the CS Ph.D. program except for the 1 unit CS 300 (https://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=&q=CS+300&collapse=) Departmental Lecture Series and CS 499 Advanced Reading and Research or its equivalent. At least one course must be taken for a letter grade. A 3.0 GPA must be maintained.
5. Each student, to remain in the Ph.D. program, must satisfy the breadth requirement covering introductory-level graduate material in major areas of computer science. A student must fulfill two breadth-area requirements in each of three general areas by the end of the second year in the program. If students have fulfilled the six breadth-area requirements, and taken courses from at least four different faculty who are members of the Academic Council, they are eligible to apply for candidacy prior to the second year in the program. An up-to-date list of courses that satisfy the breadth requirements (http://cs.stanford.edu/education/phd/) can be found on the department's web site. The student must completely satisfy the breadth requirement by the end of the second year in the program

and must pass a qualifying exam in the general area of their expected dissertation by the end of the third year in the program.

6. University policy requires that all doctoral students declare candidacy by the end of the sixth quarter in residence, excluding summers. However, after aligning with a permanent adviser, passing six breadth requirements, and taking classes with four different faculty, a student is eligible to file for candidacy prior to the sixth quarter. The candidacy form serves as a "contract" between the department and the student. The department acknowledges that the student is a *bona fide* candidate for the Ph.D. and agrees that the program submitted by the student is sufficient to warrant granting the Ph.D. upon completion. Candidacy expires five years from the date of submission of the candidacy form, rounded to the end of the quarter. In special cases, the department may extend a student's candidacy, but is under no obligation to do so.
7. Each student is required to pass a qualifying exam in their area by the end of their third year in the program. A student may only take the qualifying exam twice. If the student fails the qualifying exam a second time, the Ph.D. program committee is convened to discuss the student's lack of reasonable academic progress. Failing the exam a second time is cause for dismissal from the Computer Science Ph.D. program and the committee meets to discuss the final outcome for the student.
8. As part of the training for the Ph.D., the student is also required to complete at least four units (a unit is ten hours per week for one quarter) as a course assistant or instructor for courses in Computer Science numbered 100 or above.
9. The student must present an oral thesis proposal and submit the form to their full Reading Committee by Spring Quarter of the fourth year. The Thesis Proposal Form (https://cs.stanford.edu/degrees/phd/PhD/ThesisProposalForm.pdf) must be filled out, signed and approved by all the members of the committee and submitted to the CS Ph.D. student services in Gates 196. The goal of the thesis proposal is to enable students to get better formative feedback from their reading committee on what directions to take to successfully complete a quality dissertation. The thesis proposal should allow plenty of time for discussion with the eading committee about the direction of the thesis research.
10. The Oral Thesis Proposal must be submitted before the end of the fourth year.
11. The most important requirement is the dissertation. After passing the required qualifying examination, each student must secure the agreement of a member of the department faculty to act as the dissertation adviser. The dissertation adviser is often the student's program adviser.
12. The student must pass a University oral examination in the form of a defense of the dissertation. This is typically held after all or a substantial portion of the dissertation research has been completed.
13. The student is expected to demonstrate the ability to present scholarly material orally in the dissertation defense.
14. The dissertation must be accepted by a reading committee composed of the principal dissertation adviser, a second member from within the department, and a third member chosen from within or outside of the University. The department requires at least two committee members to be affiliated with the Computer Science department. The principal adviser and at least one of the other committee members must be Academic Council members.

Guidelines for Reasonable Progress

- By the end of the first academic year, you should align with a permanent adviser. Students are welcome to switch advisers, but a student should not have significant periods of time (after the first year) with no adviser.
- A student must make satisfactory progress in his or her research, as determined by his or her adviser.
- By Spring Quarter of the second year, a student should complete all six breadth area requirements, two breadth area requirements in each of three areas, and file for candidacy.
- By Spring Quarter of the third year, a student should pass a Qualifying Examination (https://cs.stanford.edu/academics/phd/qualifying-exams/) in the area of his or her intended dissertation.
- Within one year of passing the Qualifying Examination, a student should form a Reading Committee and submit a signed Reading Committee Form (https://stanford.app.box.com/v/docdiss-reading-committee-form/) to the PhD Student Services office in Gates 196.
- By Spring Quarter of the fourth year, a student should schedule a Thesis Proposal with the reading committee members and submit the Thesis Proposal Form (http://cs.stanford.edu/degrees/phd/PhD/ThesisProposalForm.pdf) to the Ph.D. student services office in Gates 196.

Ph.D. Minor in Computer Science

For a minor in Computer Science, a candidate must complete 20 units of Computer Science coursework numbered 200 or above, except for the 100-level courses listed on the Ph.D. Minor Worksheet (https://cs.stanford.edu/sites/default/files/PhDMinorWorksheet_2.pdf) (pdf). At least three of the courses must be master's core courses to provide breadth and one course numbered 300 or above to provide depth. One of the courses taken must include a significant programming project to demonstrate programming efficiency. Courses must be taken for a letter grade and passed with a grade of 'B' or better. Applications for a minor in Computer Science are submitted at the same time as admission to candidacy.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

For B.S. requirements, courses in which students receive a grade of 'S' or 'CR' can be counted toward program requirements as if taken for a letter grade.

Graduate Degree Requirements

Grading

For M.S. requirements, courses in which students receive a grade of 'S' or 'CR' can be counted toward program requirements as if taken for a letter grade.

For Ph.D. requirements, courses in which students receive a grade of 'S' or 'CR' can be counted toward program requirements with the

exception of the Breadth requirement. With regard to satisfying Breadth requirements:

- For classes that offer a letter grade option, students must take the class for a letter grade and receive a grade of 'A-' or better in order to satisfy the respective Breadth requirement.
- For classes being offered only with an S/NC grading basis (i.e., a letter grade option is not available), students should tell the instructor and Jay Subramanian (CS Ph.D. Student Services Office) at the beginning of the quarter about their desire to use the class to satisfy the Breadth requirement. At the end of the quarter, the instructor will decide whether the student's performance in the class satisfies the Breadth requirement (i.e., the instructor determines whether the student's performance corresponds to work at an 'A-' level or higher).

Graduate Advising Expectations

The Department of Computer Science is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of Computer Science policy on graduate advising, see the Computer Science Graduate Advising (https://cs.stanford.edu/academics/phd/phd-advising/) link. For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Emeriti (Professors): Tom Binford, David Cheriton (http://www.stanford.edu/~cheriton/), David Dill (https://profiles.stanford.edu/david-dill/)*, Edward Feigenbaum (http://ksl-web.stanford.edu/people/eaf/), Richard Fikes (http://www.stanford.edu/~fikes/), Donald E. Knuth (http://www-cs-faculty.stanford.edu/~knuth/)*, Jean-Claude Latombe (http://robotics.stanford.edu/~latombe/), Marc Levoy (http://graphics.stanford.edu/~levoy/), Teresa Meng (http://dualist.stanford.edu/~thm/), Serge Plotkin (http://troll-w.stanford.edu/plotkin/), Vaughan Pratt (http://boole.stanford.edu/pratt.html), Eric Roberts (http://cs.stanford.edu/people/eroberts/), Ken Salisbury (https://profiles.stanford.edu/john-salisbury/), Yoav Shoham (http://robotics.stanford.edu/~shoham/), Jeffrey D. Ullman (http://infolab.stanford.edu/~ullman/), Gio Wiederhold (http://infolab.stanford.edu/people/gio.html), Terry Winograd (http://hci.stanford.edu/winograd/)

Chair: John Mitchell (http://theory.stanford.edu/people/jcm/home.html)

Associate Chair for Education: Mehran Sahami (http://robotics.stanford.edu/users/sahami/bio.html)

Director of Ph.D. Program: John Ousterhout (https://web.stanford.edu/~ouster/cgi-bin/home.php)

Director of M.S. Program: Omer Reingold (https://omereingold.wordpress.com)

Director of B.S. Program: Gerald Cain (http://profiles.stanford.edu/gerald-cain/)

Professors: Maneesh Agrawala (http://graphics.stanford.edu/~maneesh/), Alex Aiken (http://theory.stanford.edu/~aiken/), Dan Boneh (http://crypto.stanford.edu/~dabo/), Moses Charikar (https://profiles.stanford.edu/moses-charikar/), Ronald P. Fedkiw (http://physbam.stanford.edu/~fedkiw/), Leonidas J. Guibas (http://geometry.stanford.edu/member/guibas/), Patrick Hanrahan (http://www-graphics.stanford.edu/~hanrahan/), John Hennessy (https://web.stanford.edu/~hennessy/), Mark A. Horowitz (http://www-vlsi.stanford.edu/~horowitz/), Doug James (http://www.cs.cornell.edu/~djames/), Dan Jurafsky (http://web.stanford.edu/~jurafsky/), Oussama Khatib (http://robotics.stanford.edu/~ok/), Christoforos Kozyrakis (http://csl.stanford.edu/~christos/), Monica Lam (http://suif.stanford.edu/~lam/), James Landay (https://profiles.stanford.edu/james-landay/), Fei-Fei Li (http://vision.stanford.edu/), Christopher Manning (http://nlp.stanford.edu/~manning/), David Mazieres (http://www.scs.stanford.edu/~dm/), Nick McKeown (http://tiny-tera.stanford.edu/~nickm/), John Mitchell (http://theory.stanford.edu/people/jcm/home.html), Subhasish Mitra (http://www.stanford.edu/~subh/), Kunle Olukotun (http://ogun.stanford.edu/~kunle/), John Ousterhout (http://www.stanford.edu/~ouster/cgi-bin/home.php), Balaji Prabhakar (http://www.stanford.edu/~balaji/), Omer Reingold (https://profiles.stanford.edu/omer-reingold/), Mendel Rosenblum (http://web.stanford.edu/~mendel/), Jennifer Widom (http://infolab.stanford.edu/~widom/)

Associate Professors: Gill Bejerano (http://bejerano.stanford.edu/), Michael Bernstein (https://hci.stanford.edu/msb/), Ron Dror (http://cs.stanford.edu/people/rondror/), Dawson Engler (http://www.stanford.edu/~engler/), Michael Genesereth (http://logic.stanford.edu/people/genesereth/genesereth.html), Noah Goodman (http://cocolab.stanford.edu/ndg.html), Sachin Katti (http://web.stanford.edu/~skatti/), Jure Leskovec (http://cs.stanford.edu/people/jure/), Karen Liu (http://ckllab.stanford.edu/c-karen-liu/), Percy Liang (https://cs.stanford.edu/~pliang/), Philip Levis (http://csl.stanford.edu/~pal/), Christopher Re (http://cs.stanford.edu/people/chrismre/), Silvio Savarese (http://cvgl.stanford.edu/silvio/), Gregory Valiant (http://theory.stanford.edu/~valiant/)

Assistant Professors: Nima Anari (https://nimaanari.com), Jeannette Bogh (http://web.stanford.edu/~bohg/), Emma Brunskill (https://profiles.stanford.edu/emma-brunskill/?tab=bio), Zakir Durumeric (https://zakird.com/), Stefano Ermon (http://cs.stanford.edu/~ermon/), Kayvon Fatahalian (http://graphics.stanford.edu/~kayvonf/), Chelsea Finn (https://people.eecs.berkeley.edu/~cbfinn/), Tatsu Hashimoto (http://thashim.github.io), Fredrik Kjolstad (http://fredrikbk.com), Anshul Kundaje (https://sites.google.com/site/anshulkundaje/), Tengyu Ma (http://ai.stanford.edu/~tengyuma/), Chris Piech (https://stanford.edu/~cpiech/bio/), Aviad Rubinstein (http://cs.stanford.edu/~aviad/), Dorsa Sadigh (https://profiles.stanford.edu/dorsa-sadigh/), Li-Yang Tan (http://theory.stanford.edu/~liyang/), Caroline Trippel (http://cs.stanford.edu/people/trippel/), Keith Winstein (http://web.mit.edu/keithw/), Mary Wootters (https://profiles.stanford.edu/mary-wootters/), Daniel Yamins (http://neuroailab.stanford.edu/), Matei Zaharia (https://profiles.stanford.edu/matei-zaharia/)

Professors (Research): Clark Barrett (http://www.cs.nyu.edu/~barrett/), William J. Dally (http://cva.stanford.edu/billd_webpage_new.html)

Professor (Teaching): Mehran Sahami (http://robotics.stanford.edu/users/sahami/bio.html)

Courtesy Professors: Russ Altman (http://bmir.stanford.edu/people/view.php/russ_b_altman/), Kwabena Boahen (http://web.stanford.edu/group/brainsinsilicon/boahen.html), Stephen Boyd (http://www.stanford.edu/~boyd/), Jacob Fox (http://stanford.edu/

~jacobfox/), Patrick Hayden (http://web.stanford.edu/~phayden/), Michael Levitt (http://profiles.stanford.edu/michael-levitt/), Roy Pea (http://ed.stanford.edu/faculty/roypea/), Daniel Rubin (http://profiles.stanford.edu/daniel-rubin/)

Courtesy Associate Professors: Ashish Goel (http://www.stanford.edu/~ashishg/), Mykel Kochenderfer, (http://mykel.kochenderfer.com) Marco Pavone (http://web.stanford.edu/~pavone/), Chris Potts (http://web.stanford.edu/~cgpotts/), Ge Wang (https://ccrma.stanford.edu/~ge/)

Courtesy Assistant Professors: Mohammad Akbarpour (http://web.stanford.edu/~mohamwad/), John Duchi (http://web.stanford.edu/~jduchi/), Sean Follmer (http://profiles.stanford.edu/sean-follmer/), Surya Ganguli (http://profiles.stanford.edu/surya-ganguli/), Sharad Goel (http://5harad.com), Thomas Icard, (http://web.stanford.edu/~icard/) Ramesh Johari (http://web.stanford.edu/~rjohari/), Scott Linderman (http://web.stanford.edu/~swl1/), Stephen Montgomery (http://montgomerylab.stanford.edu/), Priyanka Raina (http://profiles.stanford.edu/priyanka-raina/), Aaron Sidford (http://web.stanford.edu/~sidford/), Gordon Wetzstein (http://stanford.edu/~gordonwz/), Serena Yeung (http://ai.stanford.edu/~syyeung/), James Zou (http://www.james-zou.com)

Senior Lecturers: Gerald Cain (http://profiles.stanford.edu/gerald-cain/), Cynthia Lee (http://profiles.stanford.edu/48960/), Nicholas J. Parlante (https://cs.stanford.edu/people/nick/), Keith Schwarz (http://www.keithschwarz.com), Julie Zelenski (https://www-cs-faculty.stanford.edu/~zelenski/)

Lecturers: Jay Borenstein (http://web.stanford.edu/class/cs210/about.html), Chris Gregg (http://profiles.stanford.edu/christopher-gregg/), Julie Stanford (http://profiles.stanford.edu/julie-stanford/), Nick Troccoli (http://web.stanford.edu/~troccoli/), Christina Wodtke (http://profiles.stanford.edu/christina-wodtke/), Lisa Yan (http://stanford.edu/~yanlisa/), Patrick Young (http://www.stanford.edu/~psyoung/)

Adjunct Professors: Peter Bailis (http://www.bailis.org), Edward Chang (http://infolab.stanford.edu/~echang/), Changhoom Kim (http://profiles.stanford.edu/changhoon-kim/), Daphne Koller (http://ai.stanford.edu/~koller/), Bill MacCartney (http://nlp.stanford.edu/~wcmac/), Andrew Ng (http://www.andrewng.org/), Sebastian Thrun (http://robots.stanford.edu/)

Visiting Assistant Professors: Lucjan Hanzlik (http://cs.stanford.edu/~lhanzlik/), Kamil Kluczniak (http://profiles.stanford.edu/kamil-krzysztof-kluczniak/), Marco Patrignani (http://theory.stanford.edu/~mp/mp/Home.html), Atri Rudra

Secondary Appointment in CS: Anshul Kundaje (http://profiles.stanford.edu/anshul-kundaje/)

*recalled to active duty.

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPOXFRD 62	Digital Technology in the UK	4-5
OSPOXFRD 63	Digital Technology in the UK	3-4

Courses

CS 1C. Introduction to Computing at Stanford. 1 Unit.
For those who want to learn more about Stanford's computing environment. Topics include: computer maintenance and security, computing resources, Internet privacy, and copyright law. One-hour lecture/demonstration in dormitory clusters prepared and administered weekly by Student Technology. Final project. Not a programming course. Same as: VPTL 1

CS 1U. Practical Unix. 1 Unit.
A practical introduction to using the Unix operating system with a focus on Linux command line skills. Class will consist of video tutorials and weekly hands-on lab sections. Topics include: grep and regular expressions, ZSH, Vim and Emacs, basic and advanced GDB features, permissions, working with the file system, revision control, Unix utilities, environment customization, and using Python for shell scripts. Topics may be added, given sufficient interest. Course website: http://cs1u.stanford.edu.

CS 7. Personal Finance for Engineers. 1 Unit.
Introduction to the fundamentals and analysis specifically needed by engineers to make informed and intelligent financial decisions. Course will focus on actual industry-based financial information from technology companies and realistic financial issues. Topics include: behavioral finance, budgeting, debt, compensation, stock options, investing and real estate. No prior finance or economics experience required.

CS 9. Problem-Solving for the CS Technical Interview. 1 Unit.
This course will prepare students to interview for software engineering and related internships and full-time positions in industry. Drawing on multiple sources of actual interview questions, students will learn key problem-solving strategies specific to the technical/coding interview. Students will be encouraged to synthesize information they have learned across different courses in the major. Emphasis will be on the oral and combination written-oral modes of communication common in coding interviews, but which are unfamiliar settings for problem solving for many students. Prerequisites: CS 106B or X.

CS 11SI. How to Make VR: Introduction to Virtual Reality Design and Development. 2 Units.
In this hands-on, experiential course, students will design and develop virtual reality applications. You'll learn how to use the Unity game engine, the most popular platform for creating immersive applications. The class will teach the design best-practices and the creation pipeline for VR applications. Students will work in groups to present a final project in building an application for the Oculus Go headset. Enrollment is limited and by application only. See https://cs11si.stanford.edu for more information. Prerequisite: CS 106A or equivalent.

CS 21SI. AI for Social Good. 2 Units.
Students will learn about and apply cutting-edge artificial intelligence techniques to real-world social good spaces (such as healthcare, government, education, and environment). Taught jointly by CS+Social Good and the Stanford AI Group, the aim of the class is to empower students to apply these techniques outside of the classroom. The class will focus on techniques from machine learning and deep learning, including regression, support vector machines (SVMs), neural networks, convolutional neural networks (CNNs), and recurrent neural networks (RNNs). The course alternates between lectures on machine learning theory and discussions with invited speakers, who will challenge students to apply techniques in their social good domains. Students complete weekly coding assignments reinforcing machine learning concepts and applications. Prerequisites: programming experience at the level of CS107, mathematical fluency at the level of CS103, comfort with probability at the level of CS109 (or equivalent). Application required for enrollment.

CS 22A. The Social & Economic Impact of Artificial Intelligence. 1 Unit.
Recent advances in computing may place us at the threshold of a unique turning point in human history. Soon we are likely to entrust management of our environment, economy, security, infrastructure, food production, healthcare, and to a large degree even our personal activities, to artificially intelligent computer systems. The prospect of "turning over the keys" to increasingly autonomous systems raises many complex and troubling questions. How will society respond as versatile robots and machine-learning systems displace an ever-expanding spectrum of blue- and white-collar workers? Will the benefits of this technological revolution be broadly distributed or accrue to a lucky few? How can we ensure that these systems are free of algorithmic bias and respect human ethical principles? What role will they play in our system of justice and the practice of law? How will they be used or abused in democratic societies and autocratic regimes? Will they alter the geopolitical balance of power, and change the nature of warfare? The goal of CS22a is to equip students with the intellectual tools, ethical foundation, and psychological framework to successfully navigate the coming age of intelligent machines.
Same as: INTLPOL 200

CS 24. Minds and Machines. 4 Units.
(Formerly SYMSYS 100). An overview of the interdisciplinary study of cognition, information, communication, and language, with an emphasis on foundational issues: What are minds? What is computation? What are rationality and intelligence? Can we predict human behavior? Can computers be truly intelligent? How do people and technology interact, and how might they do so in the future? Lectures focus on how the methods of philosophy, mathematics, empirical research, and computational modeling are used to study minds and machines. Students must take this course before being approved to declare Symbolic Systems as a major. All students interested in studying Symbolic Systems are urged to take this course early in their student careers. The course material and presentation will be at an introductory level, without prerequisites. If you have any questions about the course, please email symsys1staff@gmail.com.
Same as: LINGUIST 35, PHIL 99, PSYCH 35, SYMSYS 1, SYMSYS 200

CS 28. Artificial Intelligence, Entrepreneurship and Society in the 21st Century and Beyond. 2 Units.
Technical developments in artificial intelligence (AI) have opened up new opportunities for entrepreneurship, as well as raised profound longer term questions about how human societal and economic systems may be reorganized to accommodate the rise of intelligent machines. In this course, closely cotaught by a Stanford professor and a leading Silicon Valley venture capitalist, we will examine the current state of the art capabilities of existing artificial intelligence systems, as well as economic challenges and opportunities in early stage startups and large companies that could leverage AI. We will focus on gaps between business needs and current technical capabilities to identify high impact directions for the development of future AI technology. Simultaneously, we will explore the longer term societal impact of AI driven by inexorable trends in technology and entrepreneurship. The course includes guest lectures from leading technologists and entrepreneurs who employ AI in a variety of fields, including healthcare, education, selfdriving cars, computer security, natural language interfaces, computer vision systems, and hardware acceleration.

CS 31N. Counterfactuals: The Science of What Ifs?. 3 Units.
How might the past have changed if different decisions were made? This question has captured the fascination of people for hundreds of years. By precisely asking, and answering such questions of counterfactual inference, we have the opportunity to both understand the impact of past decisions (has climate change worsened economic inequality?) and inform future choices (can we use historical electronic medical records data about decision made and outcomes, to create better protocols to enhance patient health?). In this course I will introduce some of the most common quantitative approaches to counterfactual reasoning, as well as give a wide sampling of some of the many important problems and questions that can be addressed through the lense of counterfactual reasoning, including in climate change, healthcare and economics. No prior experience with counterfactual or ¿what if¿ reasoning, nor probability, is required.

CS 41. Hap.py Code: The Python Programming Language. 2 Units.
This course is about the fundamentals and contemporary usage of the Python programming language. The primary focus is on developing best practices in writing Python and exploring the extensible and unique parts of the Python language. Topics include: Pythonic conventions, data structures such as list comprehensions, anonymous functions, iterables, powerful built-ins (e.g. map, filter, zip), and Python libraries. For the last few weeks, students will work with course staff to develop their own significant Python project. Prerequisite: CS106B, CS106X, or equivalent.

CS 43. Functional Programming Abstractions. 2 Units.
This course covers the fundamentals of functional programming and algebraic type systems, and explores a selection of related programming paradigms and current research. Haskell is taught and used throughout the course, though much of the material is applicable to other languages. Material will be covered from both theoretical and practical points of view, and topics will include higher order functions, immutable data structures, algebraic data types, type inference, lenses and optics, effect systems, concurrency and parallelism, and dependent types. Prerequisites: Programming maturity and comfort with math proofs, at the levels of CS107 and CS103.

CS 44N. Great Ideas in Graphics. 3 Units.
A hands-on interactive and fun exploration of great ideas from computer graphics. Motivated by graphics concepts, mathematical foundations and computer algorithms, students will explore an eccentric selection of "great ideas" through short weekly programming projects. Project topics will be selected from a diverse array of computer graphics concepts and historical elements.

CS 47. Cross-Platform Mobile Development. 2 Units.
The fundamentals of cross-platform mobile application development using the React Native framework (RN). Primary focus on enabling students to build apps for both iOS and Android using RN. Students will explore the unique aspects that made RN a primary tool for mobile development within Facebook, Instagram, Walmart, Tesla, and UberEats. Skills developed over the course will be consolidated by the completion of a final project. No required prerequisites. Website: web.stanford.edu/class/cs47/. To enroll in the class, please fill the following application: https://forms.gle/nDnuR3R6N9LozXUdA. The application deadline is January 15th at 6:00 pm.

CS 49N. Using Bits to Control Atoms. 3 Units.
This is a crash course in how to use a stripped-down computer system about the size of a credit card (the rasberry pi computer) to control as many different sensors as we can implement in ten weeks, including LEDs, motion sensors, light controllers, and accelerometers. The ability to fearlessly grab a set of hardware devices, examine the data sheet to see how to use it, and stitch them together using simple code is a secret weapon that software-only people lack, and allows you to build many interesting gadgets. We will start with a "bare metal" system --- no operating system, no support --- and teach you how to read device data sheets describing sensors and write the minimal code needed to control them (including how to debug when things go wrong, as they always do). This course differs from most in that it is deliberately mostly about what and why rather than how --- our hope is that the things you are able at the end will inspire you to follow the rest of the CS curriculum to understand better how things you've used work. Prerequisites: knowledge of the C programming language. A Linux or Mac laptop that you are comfortable coding on.

CS 50. Using Tech for Good. 2 Units.
Students in the class will work in small teams to implement high-impact projects for partner organizations. Taught by the CS+Social Good team, the aim of the class is to empower you to leverage technology for social good by inspiring action, facilitating collaboration, and forging pathways towards global change. Recommended: CS 106B, CS 42 or 142. Class is open to students of all years. May be repeated for credit. Cardinal Course certified by the Haas Center.

CS 51. CS + Social Good Studio: Designing Social Impact Projects. 2 Units.
Get real-world experience researching and developing your own social impact project! Students work in small teams to develop high-impact projects around problem domains provided by partner organizations, under the guidance and support of design/technical coaches from industry and non-profit domain experts. Main class components are workshops, community discussions, guest speakers and mentorship. Studio provides an outlet for students to create social change through CS while engaging in the full product development cycle on real-world projects. The class culminates in a showcase where students share their project ideas and Minimum Viable Product prototypes with stakeholders and the public. Application required; please see cs51.stanford.edu for more information.

CS 52. CS + Social Good Studio: Implementing Social Good Projects. 2 Units.
Continuation of CS51 (CS + Social Good Studio). Teams enter the quarter having completed and tested a minimal viable product (MVP) with a well-defined target user, and a community partner. Students will learn to apply scalable technical frameworks, methods to measure social impact, tools for deployment, user acquisition techniques and growth/exit strategies. The purpose of the class is to facilitate students to build a sustainable infrastructure around their product idea. CS52 will host mentors, guest speakers and industry experts for various workshops and coaching-sessions. The class culminates in a showcase where students share their projects with stakeholders and the public. Prerequisite: CS 51, or consent of instructor.

CS 56N. Great Discoveries and Inventions in Computing. 3 Units.
This seminar will explore some of both the great discoveries that underlie computer science and the inventions that have produced the remarkable advances in computing technology. Key questions we will explore include: What is computable? How can information be securely communicated? How do computers fundamentally work? What makes computers fast? Our exploration will look both at the principles behind the discoveries and inventions, as well as the history and the people involved in those events. Some exposure to programming is required.

CS 57N. Randomness: Computational and Philosophical Approaches. 3 Units.
Is it ever reasonable to make a decision randomly? For example, would you ever let an important choice depend on the flip of a coin? Can randomness help us answer difficult questions more accurately or more efficiently? What is randomness anyway? Can an object be random? Are there genuinely random processes in the world, and if so, how can we tell? In this seminar, we will explore these questions through the lenses of philosophy and computation. By the end of the quarter students should have an appreciation of the many roles that randomness plays in both humanities and sciences, as well as a grasp of some of the key analytical tools used to study the concept. The course will be self-contained, and no prior experience with randomness/probability is necessary.
Same as: PHIL 3N

CS 58. You Say You Want a Revolution. 2 Units.
This project-based course will give creative students an opportunity to work together on revolutionary change leveraging blockchain technology. The course will provide opportunities for students to become operationally familiar with blockchain concepts, supported by presentation of blockchain fundamentals at a level accessible to those with or without a strong technical background. Specific topics include: incentives, ethics, crypto-commons, values, FOMO 3D, risks, implications and social good. Students will each discover a new possible use-case for blockchain and prototype their vision for the future accordingly. Application and impact areas may come from medicine, law, economics, history, anthropology, or other sectors. Student diversity of background will be valued highly.
Same as: Blockchain Edition

CS 58N. The Blockchain Revolution Will Not Be Televised. 3 Units.
This seminar will explore the nature of revolutions supported and enabled by technological change, using the Internet and smart phone as two historical examples and focusing on blockchain technology and potential applications such as money, banking, supply chain and market trading. In this project-based course, one meeting per week will bring in new information, including visiting experts. Other class meetings will involve team work, presentations, and discussion. Each student will help lead a section; the class collectively will produce a final book/movie/blog, in a medium selected by the class.

CS 80Q. Race and Gender in Silicon Valley. 3 Units.
Join us as we go behind the scenes of some of the big headlines about trouble in Silicon Valley. We'll start with the basic questions like who decides who gets to see themselves as "a computer person," and how do early childhood and educational experiences shape our perceptions of our relationship to technology? Then we'll see how those questions are fundamental to a wide variety of recent events from #metoo in tech companies, to the ways the under-representation of women and people of color in tech companies impacts the kinds of products that Silicon Valley brings to market. We'll see how data and the coming age of AI raise the stakes on these questions of identity and technology. How can we ensure that AI technology will help reduce bias in human decision-making in areas from marketing to criminal justice, rather than amplify it?.
Same as: AFRICAAM 80Q

CS 81SI. AI Interpretability and Fairness. 1 Unit.
As black-box AI models grow increasingly relevant in human-centric applications, explainability and fairness becomes increasingly necessary for trust in adopting AI models. This seminar class introduces students to major problems in AI explainability and fairness, and explores key state-of-theart methods. Key technical topics include surrogate methods, feature visualization, network dissection, adversarial debiasing, and fairness metrics. There will be a survey of recent legal and policy trends. Each week a guest lecturer from AI research, industry, and related policy fields will present an open problem and solution, followed by a roundtable discussion with the class. Students have the opportunity to present a topic of interestnor application to their own projects (solo or in teams) in the final class. Code examples of each topic will be provided for students interested in a particular topic, but there will be no required coding components. Students who will benefit most from this class have exposure to AI, such as through projects and related coursework (e.g. statistics, CS221, CS230, CS229). Students who are pursuing subjects outside of the CS department (e.g. sciences, social sciences, humanities) with sufficient mathematical maturity are welcomed to apply. Enrollment limited to 20.

CS 82SI. Wellness in Tech: Designing an Intentional Lifestyle in a Tech-Driven World. 1 Unit.
Would deleting Facebook make us all happier? Of the 16 hours we spend awake each day on average, over 11 of those hours are spent interacting with digital media. In an always-on, tech-driven world, how do we regain control over our wellbeing?nThis 1 unit course is part workshop, part seminar, with a focus on tackling and re-framing the relationship between technology and wellness. What are the principles of human flourishing, and what is technology's role in promoting them? How can self-compassion and an appreciation for diversity lead to the development of products that enhance our collective happiness? Using human-centered design thinking, we will explore how technology both propels and hinders us- as individuals and as a society. By the end of this course, you will have tangible insights and methods to regain control over your relationship with technology. No coding involved; however we will be deeply exploring the human operating system. Students from all programs and areas of study are encouraged to apply.

CS 83. Playback Theater. 3 Units.
Playback combines elements of theater, community work and storytelling. In a playback show, a group of actors and musicians create an improvised performance based on the audience's personal stories. A playback show brings about a powerful listening and sharing experience. During the course, we will tell, listen, play together, and train in playback techniques. We will write diaries to process our experience in the context of education and research. The course is aimed to strengthen listening abilities, creativity and the collaborative spirit, all integral parts of doing great science. In playback, as in research, we are always moving together, from the known, to the unknown, and back. There is limited enrollment for this class. Application is required.

CS 84. Emotional Intelligence. 2 Units.
This hands-on course is aimed at Stanford engineers who wish to be successful in start-ups or engineering-focused organizations. It is based on decades of observations by the instructors, witnessing that fresh graduates routinely struggle to survive and create an impact in the corporate world. A key objective is for students to develop a basic set of skills to master day-to-day personal interactions, and to understand the dynamics of work environments. The course then aims to guide students with more complex tasks, such as how to run effective meetings or how to work in multi-disciplinary teams. Whether you wish to become a start-up founder and CEO; a manager at a tech-centric company; or an individual contributor at Facebook or Google: if you wish to hit the ground running and be highly effective from your first day at work, this course is for you!.

CS 91SI. Digital Canvas: An Introduction to UI/UX Design. 2 Units.
Become familiar with prototype-design tools like Sketch and Marvel while also learning important design concepts in a low-stress environment. Focus is on the application of UI/UX design concepts to actual user interfaces: the creation of wireframes, high-fidelity mockups, and clickable prototypes. We will look at what makes a good or bad user interface, effective design techniques, and how to employ these techniques using Sketch and Marvel to make realistic prototypes. This course is ideal for anyone with little to no visual design experience who would like to build their skill set in UI/UX for app or web design. Also ideal for anyone with experience in front or back-end web development or human-computer interaction that would want to sharpen their visual design and analysis skills for UI/UX.

CS 93. Teaching AI. 1 Unit.
For graduate students who are TA-ing an AI course. This course prepares new AI section leaders to teach, write, and evaluate AI content. In class, you will be evaluating final projects individually and as a group. You will have discussions criticizing papers and assigning grades to them. You will analyze and solve discussion session problems on the board, explain algorithmsnlike backpropagation, and learn how to give constructive feedback to students. The class will also include a guest speaker who will give teaching advice and talk about AI. Focus is on teaching skills, techniques, and final projects grading. The class meets once a week for the first 6 weeks of the quarter.

CS 100A. Problem-solving Lab for CS106A. 1 Unit.
Additional problem solving practice for the introductory CS course CS 106A. Sections are designed to allow students to acquire a deeper understanding of CS and its applications, work collaboratively, and develop a mastery of the material. Limited enrollment, permission of instructor required. Concurrent enrollment in CS 106A required.

CS 100B. Problem-solving Lab for CS106B. 1 Unit.
Additional problem solving practice for the introductory CS course CS106B. Sections are designed to allow students to acquire a deeper understanding of CS and its applications, work collaboratively, and develop a mastery of the material. Limited enrollment, permission of instructor required. Concurrent enrollment in CS 106B required.

CS 101. Introduction to Computing Principles. 3-5 Units.
Introduces the essential ideas of computing: data representation, algorithms, programming "code", computer hardware, networking, security, and social issues. Students learn how computers work and what they can do through hands-on exercises. In particular, students will see the capabilities and weaknesses of computer systems so they are not mysterious or intimidating. Course features many small programming exercises, although no prior programming experience is assumed or required. CS101 is not a complete programming course such as CS106A. CS101 is effectively an alternative to CS105. A laptop computer is recommended for the in-class exercises.

CS 103. Mathematical Foundations of Computing. 3-5 Units.
What are the theoretical limits of computing power? What problems can be solved with computers? Which ones cannot? And how can we reason about the answers to these questions with mathematical certainty? This course explores the answers to these questions and serves as an introduction to discrete mathematics, computability theory, and complexity theory. At the completion of the course, students will feel comfortable writing mathematical proofs, reasoning about discrete structures, reading and writing statements in first-order logic, and working with mathematical models of computing devices. Throughout the course, students will gain exposure to some of the most exciting mathematical and philosophical ideas of the late nineteenth and twentieth centuries. Specific topics covered include formal mathematical proofwriting, propositional and first-order logic, set theory, binary relations, functions (injections, surjections, and bijections), cardinality, basic graph theory, the pigeonhole principle, mathematical induction, finite automata, regular expressions, the Myhill-Nerode theorem, context-free grammars, Turing machines, decidable and recognizable languages, self-reference and undecidability, verifiers, and the P versus NP question. Students with significant proofwriting experience are encouraged to instead take CS154. Students interested in extra practice and support with the course are encouraged to concurrently enroll in CS103A. Prerequisite: CS106B or equivalent. CS106B may be taken concurrently with CS103.

CS 103A. Mathematical Problem-solving Strategies. 1 Unit.
Problem solving strategies and techniques in discrete mathematics and computer science. Additional problem solving practice for CS103. In-class participation required. Prerequisite: consent of instructor. Co-requisite: CS103.

CS 105. Introduction to Computers. 3-5 Units.
For non-technical majors. What computers are and how they work. Practical experience in programming. Construction of computer programs and basic design techniques. A survey of Internet technology and the basics of computer hardware. Students in technical fields and students looking to acquire programming skills should take 106A or 106X. Students with prior computer science experience at the level of 106 or above require consent of instructor. Prerequisite: minimal math skills.

CS 106A. Programming Methodology. 3-5 Units.
Introduction to the engineering of computer applications emphasizing modern software engineering principles: program design, decomposition, encapsulation, abstraction, and testing. Emphasis is on good programming style and the built-in facilities of respective languages. Uses the Python programming language. No prior programming experience required.

CS 106AX. Programming Methodologies in JavaScript and Python. 3-5 Units.
Introduction to the engineering of computer applications emphasizing modern software engineering principles: object-oriented design, decomposition, encapsulation, abstraction, and testing. This course targets an audience with prior programming experience, and that prior experience is leveraged so material can be covered in greater depth.
Same as: Accelerated

CS 106B. Programming Abstractions. 3-5 Units.
Abstraction and its relation to programming. Software engineering principles of data abstraction and modularity. Object-oriented programming, fundamental data structures (such as stacks, queues, sets) and data-directed design. Recursion and recursive data structures (linked lists, trees, graphs). Introduction to time and space complexity analysis. Uses the programming language C++ covering its basic facilities. Prerequisite: 106A or equivalent.

CS 106E. Exploration of Computing. 3-4 Units.
A follow up class to CS106A for non-majors which will both provide practical web programming skills and cover essential computing topics including computer security and privacy. Additional topics will include digital representation of images and music, an exploration of how the Internet works, and a look at the internals of the computer. Students taking the course for 4 units will be required to carry out supplementary programming assignments in addition to the course's regular assignments. Prerequisite: 106A or equivalent.

CS 106L. Standard C++ Programming Laboratory. 1 Unit.
Supplemental lab to 106B and 106X. Additional features of standard C++ programming practice. Possible topics include advanced C++ language features, standard libraries, STL containers and algorithms, templates, object memory management, operator overloading, and move semantics. Prerequisite: consent of instructor. Corequisite: CS106B or CS106X.

CS 106M. Enrichment Adventures in Programming Abstractions. 1 Unit.
This enrichment add-on is a companion course to CS106B to explore additional topics and go into further depth. Specific topics to be announced per-quarter. Fall quarter 2020 will focus on the algorithms that power our modern world -- search engines, pattern recognition, data compression/encryption, error correction, digital signatures, and others. Students must be co-enrolled in CS106B. Refer to cs106m.stanford.edu for more information.

CS 106S. Coding for Social Good. 1 Unit.
Survey course on applications of fundamental computer science concepts from CS 106B/X to problems in the social good space (such as health, government, education, and environment). Each week consists of in-class activities designed by student groups, local tech companies, and nonprofits. Introduces students to JavaScript and the basics of web development. Some of the topics we will cover include mental health chatbots, tumor classification with basic machine learning, sentiment analysis of tweets on refugees, and storytelling through virtual reality. Pre/Corequisite: CS106B or CS106X.

CS 106X. Programming Abstractions. 3-5 Units.
Intensive version of 106B for students with a strong programming background interested in a rigorous treatment of the topics at an accelerated pace. Significant amount of additional advanced material and substantially more challenging projects. Some projects may relate to CS department research. Prerequisite: excellence in 106A or equivalent, or consent of instructor.
Same as: Accelerated

CS 107. Computer Organization and Systems. 3-5 Units.
Introduction to the fundamental concepts of computer systems. Explores how computer systems execute programs and manipulate data, working from the C programming language down to the microprocessor. Topics covered include: the C programming language, data representation, machine-level code, computer arithmetic, elements of code compilation, memory organization and management, and performance evaluation and optimization. Prerequisites: 106B or X, or consent of instructor.

CS 107A. Problem-solving Lab for CS107. 1 Unit.
Additional problem solving practice for the introductory CS course CS107. Sections are designed to allow students to acquire a deeper understanding of CS and its applications, work collaboratively, and develop a mastery of the material. Limited enrollment, permission of instructor required. Concurrent enrollment in CS 107 required.

CS 107E. Computer Systems from the Ground Up. 3-5 Units.
Introduction to the fundamental concepts of computer systems through bare metal programming on the Raspberry Pi. Explores how five concepts come together in computer systems: hardware, architecture, assembly code, the C language, and software development tools. Students do all programming with a Raspberry Pi kit and several add-ons (LEDs, buttons). Topics covered include: the C programming language, data representation, machine-level code, computer arithmetic, compilation, memory organization and management, debugging, hardware, and I/O. Prerequisite: CS106B or CS106X, and consent of instructor.

CS 108. Object-Oriented Systems Design. 3-4 Units.
Software design and construction in the context of large OOP libraries. Taught in Java. Topics: OOP design, design patterns, testing, graphical user interface (GUI) OOP libraries, software engineering strategies, approaches to programming in teams. Prerequisite: 107.

CS 109. Introduction to Probability for Computer Scientists. 3-5 Units.
Topics include: counting and combinatorics, random variables, conditional probability, independence, distributions, expectation, point estimation, and limit theorems. Applications of probability in computer science including machine learning and the use of probability in the analysis of algorithms. Prerequisites: 103, 106B or X, multivariate calculus at the level of MATH 51 or CME 100 or equivalent.

CS 109A. Problem-solving Lab for CS109. 1 Unit.
Additional problem solving practice for the introductory CS course CS109. Sections are designed to allow students to acquire a deeper understanding of CS and its applications, work collaboratively, and develop a mastery of the material. Enrollment limited to 30 students, permission of instructor required. Concurrent enrollment in CS 109 required.

CS 110. Principles of Computer Systems. 3-5 Units.
Principles and practice of engineering of computer software and hardware systems. Topics include: techniques for controlling complexity; strong modularity using client-server design, virtual memory, and threads; networks; atomicity and coordination of parallel activities. Prerequisite: 107.

CS 110A. Problem Solving Lab for CS110. 1 Unit.
Additional design and implementation problems to complement the material taught in CS110. In-class participation is required. Prerequisite: consent of instructor. Corequisite: CS110.

CS 110L. Principles of Computer Systems Laboratory. 2 Units.
Supplemental lab to CS110. Examines how the Rust programming language can be used to build robust systems software. Course is project-based and will explore additional topics in filesystems, concurrency, and networking through the lens of Rust. Corequisite: CS110.

CS 111. Operating Systems Principles. 3-5 Units.
Explores operating system concepts including concurrency, synchronization, scheduling, processes, virtual memory, I/O, file systems, and protection. Available as a substitute for CS110 that fulfills any requirement satisfied by CS110. Prerequisite: CS107.

CS 124. From Languages to Information. 3-4 Units.
Extracting meaning, information, and structure from human language text, speech, web pages, social networks. Introducing methods (regex, edit distance, naive Bayes, logistic regression, neural embeddings, inverted indices, collaborative filtering, PageRank), applications (chatbots, sentiment analysis, information retrieval, question answering, text classification, social networks, recommender systems), and ethical issues in both. Prerequisites: CS106B.
Same as: LINGUIST 180, LINGUIST 280

CS 129. Applied Machine Learning. 3-4 Units.
(Previously numbered CS 229A.) You will learn to implement and apply machine learning algorithms. This course emphasizes practical skills, and focuses on giving you skills to make these algorithms work. You will learn about commonly used learning techniques including supervised learning algorithms (logistic regression, linear regression, SVM, neural networks/deep learning), unsupervised learning algorithms (k-means), as well as learn about specific applications such as anomaly detection and building recommender systems. This class is taught in the flipped-classroom format. You will watch videos and complete in-depth programming assignments and online quizzes at home, then come to class for discussion sections. This class will culminate in an open-ended final project, which the teaching team will help you on. Prerequisites: Programming at the level of CS106B or 106X, and basic linear algebra such as Math 51.

CS 131. Computer Vision: Foundations and Applications. 3-4 Units.
Computer Vision technologies are transforming automotive, healthcare, manufacturing, agriculture and many other sections. Today, household robots can navigate spaces and perform duties, search engines can index billions of images and videos, algorithms can diagnose medical images for diseases, and smart cars can see and drive safely. Lying in the heart of these modern AI applications are computer vision technologies that can perceive, understand, and reconstruct the complex visual world. This course is designed for students who are interested in learning about the fundamental principles and important applications of Computer Vision. This course will introduce a number of fundamental concepts in image processing and expose students to a number of real-world applications. It will guide students through a series of projects to implement cutting-edge algorithms. There will be optional discussion sections on Fridays. Prerequisites: Students should be familiar with Python, Calculus & Linear Algebra.

CS 140. Operating Systems and Systems Programming. 3-4 Units.
Operating systems design and implementation. Basic structure; synchronization and communication mechanisms; implementation of processes, process management, scheduling, and protection; memory organization and management, including virtual memory; I/O device management, secondary storage, and file systems. Prerequisite: CS110.

CS 140E. Operating systems design and implementation. 3-4 Units.
Students will implement a simple, clean operating system (virtual memory, processes, file system) in the C programming language, on a rasberry pi computer and use the result to run a variety of devices and implement a final project. All hardware is supplied by the instructor, and no previous experience with operating systems, raspberry pi, or embedded programming is required.

CS 141. Introduction to Computer Sound. 3 Units.
Core mathematics and methods for computer sound with applications to computer science. Background on digital signal processing; time- and frequency-domain methods. Project-focussed exploration of computer sound areas: fundamentals of sound analysis & synthesis, robotics and learning (sound features, filterbanks & deep learning, perception, localization, tracking, manipulation), speech (recognition, synthesis), virtual and augmented reality (3D auralization, HRTFs, reverberation), computational acoustics (wave simulation, physics-based modeling, animation sound), computer music (music synthesis, instrument modeling, audio effects, historical aspects), games (game audio, music and sound design, middleware), hardware acceleration (architectures, codecs, synthesizers). Prerequisite: CS 106A or equivalent programming experience.

CS 142. Web Applications. 3 Units.
Concepts and techniques used in constructing interactive web applications. Browser-side web facilities such as HTML, cascading stylesheets, the document object model, and JavaScript frameworks and Server-side technologies such as server-side JavaScript, sessions, and object-oriented databases. Issues in web security and application scalability. New models of web application deployment. Prerequisite: CS 107.

CS 143. Compilers. 3-4 Units.
Principles and practices for design and implementation of compilers and interpreters. Topics: lexical analysis; parsing theory; symbol tables; type systems; scope; semantic analysis; intermediate representations; runtime environments; code generation; and basic program analysis and optimization. Students construct a compiler for a simple object-oriented language during course programming projects. Prerequisites: 103 or 103B, and 107.

CS 144. Introduction to Computer Networking. 3-4 Units.
Principles and practice. Structure and components of computer networks, with focus on the Internet. Packet switching, layering, and routing. Transport and TCP. reliable delivery over an unreliable network, flow control, congestion control. Network names, addresses and ethernet switching. Includes significant programming component in C/C++; students build portions of the internet TCP/IP software. Prerequisite: CS110.

CS 145. Data Management and Data Systems. 3-4 Units.
Introduction to the use, design, and implementation of database and data-intensive systems, including data models; schema design; data storage; query processing, query optimization, and cost estimation; concurrency control, transactions, and failure recovery; distributed and parallel execution; semi-structured databases; and data system support for advanced analytics and machine learning. Prerequisites: 103 and 107 (or equivalent).

CS 146. Introduction to Game Design and Development. 3-4 Units.
This project-based course provides a survey on designing and engineering video games. Through creating their own games each week, students explore topics including 2D/3D Art, Audio, User Interface design, Production, Narrative Design, Marketing, and Publishing. Speakers from the games industry will provide insights and context during a weekly seminar. Classroom meetings will be used to foster student project discussions, and deepen understanding of material. The course culminates with students forming project teams to create a final video game. Assignments will be completed within the Unity game development engine; prior Unity experience is welcomed but not required. Given class size limitations, an online survey will be used to achieve a diverse class composition. Prerequisite: CS 106 (B or X).

CS 147. Introduction to Human-Computer Interaction Design. 3-5 Units.
Introduces fundamental methods and principles for designing, implementing, and evaluating user interfaces. Topics: user-centered design, rapid prototyping, experimentation, direct manipulation, cognitive principles, visual design, social software, software tools. Learn by doing: work with a team on a quarter-long design project, supported by lectures, readings, and studios. Prerequisite: 106B or X or equivalent programming experience. Recommended that CS Majors have also taken one of 142, 193P, or 193A.

CS 148. Introduction to Computer Graphics and Imaging. 3-4 Units.
Introductory prerequisite course in the computer graphics sequence introducing students to the technical concepts behind creating synthetic computer generated images. In addition to scanline rendering, ray tracing is introduced at the beginning of the course, since modern consoles now include ray tracing. This is followed by discussions of underlying mathematical concepts including triangles, normals, interpolation, texture/bump mapping, anti-aliasing, acceleration structures, etc. Importantly, the course will discuss handling light/color for image formats, computer displays, printers, etc., as well as how light interacts with the environment, constructing engineering models such as the BRDF, and various simplifications into more basic lighting and shading models. The final class mini-project consists of building out a ray tracer to create visually compelling images. Starter codes and code bits will be provided to aid in development, but this class focuses on what you can do with the code as opposed to what the code itself looks like. Therefore grading is weighted toward in person "demos" of the code in action - creativity and the production of impressive visual imagery are highly encouraged/rewarded. Prerequisites: CS107, MATH51.

CS 149. Parallel Computing. 3-4 Units.
This course is an introduction to parallelism and parallel programming. Most new computer architectures are parallel; programming these machines requires knowledge of the basic issues of and techniques for writing parallel software. Topics: varieties of parallelism in current hardware (e.g., fast networks, multicore, accelerators such as GPUs, vector instruction sets), importance of locality, implicit vs. explicit parallelism, shared vs. non-shared memory, synchronization mechanisms (locking, atomicity, transactions, barriers), and parallel programming models (threads, data parallel/streaming, MapReduce, Apache Spark, SPMD, message passing, SIMT, transactions, and nested parallelism). Significant parallel programming assignments will be given as homework. The course is open to students who have completed the introductory CS course sequence through 110.

CS 151. Logic Programming. 3 Units.
Logic Programming is a style of programming based on symbolic logic. In writing a logic program, the programmer describes the application area of the program (as a set of logical sentences) without reference to the internal data structures or operations of the system executing the program. In this regard, a logic program is more of a specification than an implementation; and logic programs are often called runnable specifications. This course introduces basic logic programming theory, current technology, and examples of common applications, notably deductive databases, logical spreadsheets, enterprise management, computational law, and game playing. Work in the course takes the form of readings and exercises, weekly programming assignments, and a term-long project. Prerequisite: CS 106B or equivalent.

CS 152. Trust and Safety Engineering. 3 Units.
An introduction to the ways consumer internet services are abused to cause real human harm and the potential operational, product and engineering responses. Students will learn about spam, fraud, account takeovers, the use of social media by terrorists, misinformation, child exploitation, harassment, bullying and self-harm. This will include studying both the technical and sociological roots of these harms and the ways various online providers have responded. Our goal is to provide students with an understanding of how the technologies they may build have been abused in the past and how they might spot future abuses earlier. The class is taught by a long-time practitioner and supplemented by guest lecturers from tech companies and non-profits. Fulfills the Technology in Society requirement. Prerequisite: CS106B or equivalent for grad students. Content note: This class will cover real-world harmful behavior and expose students to potentially upsetting material.

CS 154. Introduction to the Theory of Computation. 3-4 Units.
This course provides a mathematical introduction to the following questions: What is computation? Given a computational model, what problems can we hope to solve in principle with this model? Besides those solvable in principle, what problems can we hope to efficiently solve? In many cases we can give completely rigorous answers; in other cases, these questions have become major open problems in computer science and mathematics. By the end of this course, students will be able to classify computational problems in terms of their computational complexity (Is the problem regular? Not regular? Decidable? Recognizable? Neither? Solvable in P? NP-complete? PSPACE-complete?, etc.). Students will gain a deeper appreciation for some of the fundamental issues in computing that are independent of trends of technology, such as the Church-Turing Thesis and the P versus NP problem. Prerequisites: CS 103 or 103B.

CS 155. Computer and Network Security. 3 Units.
For seniors and first-year graduate students. Principles of computer systems security. Attack techniques and how to defend against them. Topics include: network attacks and defenses, operating system security, application security (web, apps, databases), malware, privacy, and security for mobile devices. Course projects focus on building reliable code. Prerequisite: 110. Recommended: basic Unix.

CS 157. Computational Logic. 3 Units.
Rigorous introduction to Symbolic Logic from a computational perspective. Encoding information in the form of logical sentences. Reasoning with information in this form. Overview of logic technology and its applications - in mathematics, science, engineering, business, law, and so forth. Topics include the syntax and semantics of Propositional Logic, Relational Logic, and Herbrand Logic, validity, contingency, unsatisfiability, logical equivalence, entailment, consistency, natural deduction (Fitch), mathematical induction, resolution, compactness, soundness, completeness.

CS 161. Design and Analysis of Algorithms. 3-5 Units.
Worst and average case analysis. Recurrences and asymptotics. Efficient algorithms for sorting, searching, and selection. Data structures: binary search trees, heaps, hash tables. Algorithm design techniques: divide-and-conquer, dynamic programming, greedy algorithms, amortized analysis, randomization. Algorithms for fundamental graph problems: minimum-cost spanning tree, connected components, topological sort, and shortest paths. Possible additional topics: network flow, string searching. Prerequisite: 103 or 103B; 109 or STATS 116.

CS 161A. Problem-Solving Lab for CS161. 1 Unit.
Additional problem solving practice for CS161. Sections are designed to allow students to acquire a deeper understanding of CS and its applications, work collaboratively, and develop a mastery of the material. Concurrent enrollment in CS 161 required. Limited enrollment, permission of instructor, and application required.

CS 163. The Practice of Theory Research. 3 Units.
(Previously numbered CS 353). Introduction to research in the Theory of Computing, with an emphasis on research methods (the practice of research), rather than on any particular body of knowledge. The students will participate in a highly structured research project: starting from reading research papers from a critical point of view and conducting bibliography searches, through suggesting new research directions, identifying relevant technical areas, and finally producing and communicating new insights. The course will accompany the projects with basic insights on the main ingredients of research. Research experience is not required, but basic theory knowledge and mathematical maturity are expected. The target participants are advanced undergrads as well as MS students with interest in CS theory. Prerequisites: CS161 and CS154. Limited class size.

CS 166. Data Structures. 3-4 Units.
This course is designed as a deep dive into the design, analysis, implementation, and theory of data structures. Over the course of the quarter, we'll explore fundamental techniques in data structure design (isometries, amortization, randomization, word-level parallelism, etc.). In doing so, we'll see a number of classic data structures like Fibonacci heaps and suffix trees as well as more modern data structures like count-min sketches and range minimum queries. By the time we've finished, we'll have seen some truly beautiful strategies for solving problems efficiently. Prerequisites: CS107 and CS161.

CS 168. The Modern Algorithmic Toolbox. 3-4 Units.
This course will provide a rigorous and hands-on introduction to the central ideas and algorithms that constitute the core of the modern algorithms toolkit. Emphasis will be on understanding the high-level theoretical intuitions and principles underlying the algorithms we discuss, as well as developing a concrete understanding of when and how to implement and apply the algorithms. The course will be structured as a sequence of one-week investigations; each week will introduce one algorithmic idea, and discuss the motivation, theoretical underpinning, and practical applications of that algorithmic idea. Each topic will be accompanied by a mini-project in which students will be guided through a practical application of the ideas of the week. Topics include hashing, dimension reduction and LSH, boosting, linear programming, gradient descent, sampling and estimation, and an introduction to spectral techniques. Prerequisites: CS107 and CS161, or permission from the instructor.

CS 170. Stanford Laptop Orchestra: Composition, Coding, and Performance. 1-5 Unit.
Classroom instantiation of the Stanford Laptop Orchestra (SLOrk) which includes public performances. An ensemble of more than 20 humans, laptops, controllers, and special speaker arrays designed to provide each computer-mediated instrument with its sonic identity and presence. Topics and activities include issues of composing for laptop orchestras, instrument design, sound synthesis, programming, and live performance. May be repeated four times for credit. Space is limited; see https://ccrma.stanford.edu/courses/128 for information about the application and enrollment process. May be repeat for credit.
Same as: MUSIC 128

CS 181. Computers, Ethics, and Public Policy. 4 Units.
Ethical and social issues related to the development and use of computer technology. Ethical theory, and social, political, and legal considerations. Scenarios in problem areas: privacy, reliability and risks of complex systems, and responsibility of professionals for applications and consequences of their work. Prerequisite: CS106A. To take this course, students need permission of instructor and may need to complete an assignment due at the first day of class. Please see https://cs181.stanford.edu for more information.

CS 181W. Computers, Ethics, and Public Policy. 4 Units.
Writing-intensive version of CS181. Satisfies the WIM requirement for Computer Science, Engineering Physics, STS, and Math/Comp Sci undergraduates. To take this course, students need permission of instructor and may need to complete an assignment due at the first day of class. Please see https://cs181.stanford.edu for more information.
Same as: WIM

CS 182. Ethics, Public Policy, and Technological Change. 5 Units.
Examination of recent developments in computing technology and platforms through the lenses of philosophy, public policy, social science, and engineering. Course is organized around four main units: algorithmic decision-making and bias; data privacy and civil liberties; artificial intelligence and autonomous systems; and the power of private computing platforms. Each unit considers the promise, perils, rights, and responsibilities at play in technological developments. Prerequisite: CS106A.
Same as: COMM 180, ETHICSOC 182, PHIL 82, POLISCI 182, PUBLPOL 182

CS 182W. Ethics, Public Policy, and Technological Change. 5 Units.
Writing-intensive version of CS182. Satisfies the WIM requirement for Computer Science, Engineering Physics, STS, and Math/Comp Sci undergraduates (and is only open to those majors). Prerequisite: CS106A. See CS182 for lecture day/time information. Enroll in either CS 182 or CS 182W, not both. Enrollment in WIM version of the course is limited to 120 students. Enrollment is restricted to seniors and coterminal students until January 4, 2021. Starting January 4, 2021, enrollment will open to all students if additional spaces remain available in the class.
Same as: WIM

CS 183E. Effective Leadership in High-Tech. 1 Unit.
You will undoubtedly leave Stanford with the technical skills to excel in your first few jobs. But non-technical skills are just as critical to making a difference. This seminar is taught by two industry veterans in engineering leadership and product management. In a small group setting, we will explore how you can be a great individual contributor (communicating with clarity, getting traction for your ideas, resolving conflict, and delivering your best work) and how you can transition into leadership roles (finding leadership opportunities, creating a great team culture, hiring and onboarding new team members). We will end by turning back to your career (picking your first job and negotiating your offer, managing your career changes, building a great network, and succeeding with mentors). Prerequisites: Preference given to seniors and co-terms in Computer Science and related majors. Enrollment limited and application required for admittance.

CS 184. Bridging Policy and Tech Through Design. 3 Units.
This project-based course aims to bring together students from computer science and the social sciences to work with external partner organizations at the nexus of digital technology and public policy. Students will collaborate in interdisciplinary teams on a problem with a partner organization. Along with the guidance of faculty mentors and the teaching staff, students will engage in a project with outcomes ranging from policy memos and white papers to data visualizations and software. Possible projects suggested by partner organizations will be presented at an information session in early March. Following the infosession, a course application will open for teams to be selected before the start of Spring Quarter. Students may apply to a project with a partner organization or with a preformed team and their own idea to be reviewed for approval by the course staff. There will be one meeting per week for the full class and at least one weekly meeting with the project-based team mentors. Prerequisites: Appropriate preparation depends on the nature of the project proposed, and will be verified by the teaching staff based on your application.
Same as: PUBLPOL 170

CS 187. Design for Impact in Social Systems. 3-4 Units.
The COVID pandemic has both revealed many of our underlying civilization problems and unleashed a desire for radical change. Effective responses will require people who know how to collaborate creatively and confidently, and act in systems with self-awareness. In this project based course, we will embrace complexity without being paralyzed by it. Working on a real-world challenge related to social health and civic fabric (e.g. political polarization, loneliness and social isolation) you will practice identifying high-leverage entry points for change, rigorously framing problems, and making process and product development decisions by evaluating impact. The course draws from HCD, systems thinking, strategic foresight, emotional intelligence, and agile team operations to prepare you to be even more successful as a designer, researcher, product manager, entrepreneur, or activist. If you tend to be more theory oriented, this course will get you into action. If you¿re quick to action, this course will give you a wider foundation for making a positive impact. Prerequisite: Strongly recommend CS147, ME216A or a d.school class on needfinding.

CS 190. Software Design Studio. 3-4 Units.
This course teaches the art of software design: how to decompose large complex systems into classes that can be implemented and maintained easily. Topics include the causes of complexity, modular design, techniques for creating deep classes, minimizing the complexity associated with exceptions, in-code documentation, and name selection. The class involves significant system software implementation and uses an iterative approach consisting of implementation, review, and revision. The course is taught in a studio format with in-class discussions and code reviews in addition to lectures. Prerequisite: CS 140 or equivalent. Apply at: https://web.stanford.edu/class/cs190.

CS 191. Senior Project. 1-6 Unit.
Restricted to Computer Science students. Group or individual projects under faculty direction. Register using instructor's section number. A project can be either a significant software application or publishable research. Software application projects include substantial programming and modern user-interface technologies and are comparable in scale to shareware programs or commercial applications. Research projects may result in a paper publishable in an academic journal or presentable at a conference. Public presentation of final application or research results is required. Prerequisite: Completion of at least 135 units and consent of instructor. Project proposal form is required before the beginning of the quarter of enrollment: https://cs.stanford.edu/degrees/undergrad/Senior%20Project%20Proposal.pdf.

CS 191W. Writing Intensive Senior Project. 3-6 Units.
Restricted to Computer Science students. Writing-intensive version of CS191. Register using instructor's section number. Prerequisite: Completion of at least 135 units and consent of instructor. Project proposal form is required before the beginning of the quarter of enrollment: https://cs.stanford.edu/degrees/undergrad/Senior%20Project%20Proposal.pdf.
Same as: WIM

CS 192. Programming Service Project. 1-4 Unit.
Restricted to Computer Science students. Appropriate academic credit (without financial support) is given for volunteer computer programming work of public benefit and educational value. Register using the section number associated with the instructor. Prerequisite: consent of instructor.

CS 193A. Android Programming. 3 Units.
Introduction to building applications for Android platform. Examines key concepts of Android programming: tool chain, application life-cycle, views, controls, intents, designing mobile UIs, networking, threading, and more. Features weekly lectures and a series of small programming projects. Phone not required, but a phone makes the projects more engaging. Prerequisites: 106B or Java experience at 106B level. Enrollment limited and application required.

CS 193C. Client-Side Internet Technologies. 3 Units.
Client-side technologies used to create web sites such as Google maps or Gmail. Includes HTML5, CSS, JavaScript, the Document Object Model (DOM), and Ajax. Prerequisite: programming experience at the level of CS106A.

CS 193P. iOS Application Development. 3 Units.
Build mobile applications using tools and APIs in iOS. Developing applications for the iPhone and iPad requires integration of numerous concepts including functional programming, object-oriented programming, computer-human interfaces, graphics, animation, reactive interfaces, Model-View-Intent (MVI) and Model-View-View-Model (MVVM) design paradigms, object-oriented databases, networking, and interactive performance considerations including multi-threading. This course will require you to learn a new programming language (Swift) as well as a new-to-iOS development environment, SwiftUI. Prerequisites: All coursework (homework and final project) involves writing code, so writing a lot of code should not be ¿new¿ to you (coding experience in almost any language is valuable, but object-oriented (e.g. CS108) and/or functional programming languages (e.g. CS43) are most highly recommended). CS106A and B (or X) and CS107 (or equivalent) are hard prerequisites. Any other courses that help to develop your maturity as a programmer are also recommended.

CS 193Q. Introduction to Python Programming. 1 Unit.
CS193Q teaches basic Python programming with a similar end-condition to CS106AP. strings, lists, numbers, dicts, loops, logic, functions, testings, decomposition and style, and modules. CS193Q assumes knowledge of some programming language, and proceeds by showing how each common programming idea is expressed in Python. CS193Q moves very quickly, meeting 3 times for 4 hours for a total of 12 hours which is a mixture of lecture and lab time.

CS 193U. Video Game Development in C++ and Unreal Engine. 3 Units.
Hands-on game development in C++ using Unreal Engine 4, the game engine that triple-A games like Fortnite, PUBG, and Gears of War are all built on. Students will be introduced to the Unreal editor, game frameworks, physics, AI, multiplayer and networking, UI, and profiling and optimization. Project-based course where you build your own games and gain a solid foundation in Unreal's architecture that will apply to any future game projects. Pre-requisites: CS106B or CS106X required. CS107 and CS110 recommended.

CS 193X. Web Programming Fundamentals. 3 Units.
Introduction to full-stack web development with an emphasis on fundamentals. Client-side topics include layout and rendering through HTML and CSS, event-driven programming through JavaScript, and single-threaded asynchronous programming techniques including Promises. Focus on modern standardized APIs and best practices. Server-side topics include the development of RESTful APIs, JSON services, and basic server-side storage techniques. Covers desktop and mobile web development. Prerequisite: 106B or equivalent.

CS 194. Software Project. 3 Units.
Design, specification, coding, and testing of a significant team programming project under faculty supervision. Documentation includes capture of project rationale, design and discussion of key performance indicators, a weekly progress log and a software architecture diagram. Public demonstration of the project at the end of the quarter. Preference given to seniors. May be repeated for credit. Prerequisites: CS 110 and CS 161.

CS 194A. Android Programming Workshop. 1 Unit.
Learn basic, foundational techniques for developing Android mobile applications and apply those toward building a single or multi page, networked Android application.

CS 194H. User Interface Design Project. 3-4 Units.
Advanced methods for designing, prototyping, and evaluating user interfaces to computing applications. Novel interface technology, advanced interface design methods, and prototyping tools. Substantial, quarter-long course project that will be presented in a public presentation. Prerequisites: CS 147, or permission of instructor.

CS 194W. Software Project. 3 Units.
Restricted to Computer Science and Electrical Engineering undergraduates. Writing-intensive version of CS194. Preference given to seniors.
Same as: WIM

CS 195. Supervised Undergraduate Research. 3-4 Units.
Directed research under faculty supervision. Register using instructor's section number. Students are required to submit a written report and give a public presentation on their work. Prerequisite: consent of instructor.

CS 196. Computer Consulting. 2 Units.
Focus is on Macintosh and Windows operating system maintenance, and troubleshooting through hardware and software foundation and concepts. Topics include operating systems, networking, security, troubleshooting methodology with emphasis on Stanford's computing environment. Final project. Not a programming course.
Same as: VPTL 196

CS 197. Computer Science Research. 4 Units.
An onramp for students interested in breaking new ground in the frontiers of computer science. Students select a research area (AI, HCI, Systems, etc.), and are matched with a quarter-long project and a Ph.D. student mentor. Lectures by faculty introduce the fundamentals of computer science research; special interest group meetings provide peer mentorship and feedback. Alumni of the course are given the opportunity to be connected to faculty for ongoing research, or to repeat the class under CS197A for credit (but no lecture component) to continue work on their projects. Prerequisites: Enrollment is by application. CS106B is required; CS107 is strongly recommended. Team projects will involve programming.

CS 198. Teaching Computer Science. 3-4 Units.
Students lead a discussion section of 106A while learning how to teach a programming language at the introductory level. Focus is on teaching skills, techniques, and course specifics. Application and interview required; see http://cs198.stanford.edu.

CS 198B. Additional Topics in Teaching Computer Science. 1 Unit.
Students build on the teaching skills developed in CS198. Focus is on techniques used to teach topics covered in CS106B. Prerequisite: successful completion of CS198.

CS 199. Independent Work. 1-6 Unit.
Special study under faculty direction, usually leading to a written report. Register using instructor's section number. Letter grade; if not appropriate, enroll in CS199P. Prerequisite: consent of instructor.

CS 199P. Independent Work. 1-6 Unit.
Special study under faculty direction, usually leading to a written report. Register using instructor's section number. CR/NC only, if not appropriate, enroll in CS199. Prerequisite: consent of instructor.

CS 202. Law for Computer Science Professionals. 1 Unit.
Businesses are built on ideas. Today¿s successful companies are those that most effectively generate, protect, and exploit new and valuable business ideas. Over the past 40 years, ¿intellectual capital¿ has emerged as the leading assets class. Ocean Tomo® estimates that over 80% of the market value of S&P 500 corporations now stems from ¿intangible¿ assets, which consist largely of intellectual property (IP) assets (e.g., the company and product names, logos and designs; patentable inventions; proprietary software and databases, and other proprietary product, manufacturing and marketing information). It is therefore vital for entrepreneurs and other business professionals to have a basic understanding of IP and how it is procured, protected, and exploited. This course provides an overview of the many and varied IP issues that students will confront during their careers. It is intended to be both informative and fun. Classes will cover the basics of patent, trademark, copyright, and trade secret law. Current issues in these areas will be covered, including patent protection for software and business methods, copyrightability of computer programs and APIs, issues relating to artificial intelligence, and the evolving protection for trademarks and trade secrets. Emerging issues concerning the federal Computer Fraud & Abuse Act (CFAA) and ¿hacking¿ will be covered, as will employment issues, including employee proprietary information and invention assignment agreements, work made for hire agreements, confidentiality agreements, non-compete agreements and other potential post-employment restrictions. Recent notable lawsuits will be discussed, including Apple v. Samsung (patents), Alice Corp. v. CLS Bank (software and business method patents), Oracle v. Google (software/APIs), Waymo v. Uber (civil and criminal trade secret theft), and hiQ v. LinkedIn (CFAA). IP law evolves constantly and new headline cases that arise during the term are added to the class discussion. Guest lectures typically include experts on open source software; legal and practical issues confronted by business founders; and, consulting and testifying as an expert in IP litigation. Although many of the issues discussed will involve technology disputes, the course also covers IP issues relating to art, music, photography, and literature. Classes are presented in an open discussion format and they are designed to be enjoyed by students of all backgrounds and areas of expertise.

CS 203. Cybersecurity: A Legal and Technical Perspective. 2 Units.
(Formerly IPS 251) This class will use the case method to teach basic computer, network, and information security from technology, law, policy, and business perspectives. Using real world topics, we will study the technical, legal, policy, and business aspects of an incident or issue and its potential solutions. The case studies will be organized around the following topics: vulnerability disclosure, state sponsored sabotage, corporate and government espionage, credit card theft, theft of embarrassing personal data, phishing and social engineering attacks, denial of service attacks, attacks on weak session management and URLs, security risks and benefits of cloud data storage, wiretapping on the Internet, and digital forensics. Students taking the class will learn about the techniques attackers use, applicable legal prohibitions, rights, and remedies, the policy context, and strategies in law, policy and business for managing risk. Grades will be based on class participation, two reflection papers, and a final exam. Special Instructions: This class is limited to 65 students, with an effort made to have students from Stanford Law School (30 students will be selected by lottery) and students from Computer Science (30 students) and International Policy Studies (5 students). Elements used in grading: Class Participation (20%), Written Assignments (40%), Final Exam (40%). Cross-listed with the Law School (Law 4004) and International Policy Studies (IPS course number TBD).
Same as: INTLPOL 251

CS 204. Computational Law. 2-3 Units.
Computational Law is an innovative approach to legal informatics concerned with the representation of regulations in computable form. From a practical perspective, Computational Law is important as the basis for computer systems capable of performing useful legal calculations, such as compliance checking, legal planning, and regulatory analysis. In this course, we look at the theory of Computational Law, we review relevant technology and applications, we discuss the prospects and problems of Computational Law, and we examine its philosophical and legal implications. Work in the course consists of reading, class discussion, and practical exercises.

CS 205L. Continuous Mathematical Methods with an Emphasis on Machine Learning. 3 Units.
A survey of numerical approaches to the continuous mathematics used throughout computer science with an emphasis on machine and deep learning. Although motivated from the standpoint of machine learning, the course will focus on the underlying mathematical methods including computational linear algebra and optimization, as well as special topics such as automatic differentiation via backward propagation, momentum methods from ordinary differential equations, CNNs, RNNs, etc. Written homework assignments focus on various concepts; additionally, students choose either a take-home final exam or a series of programming assignments geared towards neural network creation, training, and inference. (Replaces CS205A, and satisfies all similar requirements.) Prerequisites: Math 51; Math104 or MATH113 or equivalent or comfort with the associated material.

CS 206. Exploring Computational Journalism. 3 Units.
This project-based course will explore the field of computational journalism, including the use of Data Science, Info Visualization, AI, and emerging technologies to help journalists discover and tell stories, understand their audience, advance free speech, and build trust. Admission by application; please email Serdar Tumgoren at tumgoren@stanford.edu to request application.
Same as: COMM 281

CS 208E. Great Ideas in Computer Science. 3 Units.
Great Ideas in Computer Science Covers the intellectual tradition of computer science emphasizing ideas that reflect the most important milestones in the history of the discipline. Topics include programming and problem solving; implementing computation in hardware; algorithmic efficiency; the theoretical limits of computation; cryptography and security; computer networks; machine learning; and the philosophy behind artificial intelligence. Readings will include classic papers along with additional explanatory material.

CS 209. Law, Order, & Algorithms. 3 Units.
Human decision making is increasingly being displaced by predictive algorithms. Judges sentence defendants based on statistical risk scores; regulators take enforcement actions based on predicted violations; advertisers target materials based on demographic attributes; and employers evaluate applicants and employees based on machine-learned models. One concern with the rise of such algorithmic decision making is that it may replicate or exacerbate human bias. This course surveys the legal and ethical principles for assessing the equity of algorithms, describes statistical techniques for designing fair systems, and considers how anti-discrimination law and the design of algorithms may need to evolve to account for machine bias. Concepts will be developed in part through guided in-class coding exercises. Admission is by consent of instructor and is limited to 20 students. To enroll in the class, please complete the course application by March 20, available at: https://5harad.com/mse330/. Grading is based on response papers, class participation, and a final project. Prerequisite: CS 106A or equivalent knowledge of coding.
Same as: CSRE 230, MS&E 330, SOC 279

CS 210A. Software Project Experience with Corporate Partners. 3-4 Units.
Two-quarter project course. Focus is on real-world software development. Corporate partners seed projects with loosely defined challenges from their R&D labs; students innovate to build their own compelling software solutions. Student teams are treated as start-up companies with a budget and a technical advisory board comprised of instructional staff and corporate liaisons. Teams will typically travel to the corporate headquarters of their collaborating partner, meaning some teams will travel internationally. Open loft classroom format such as found in Silicon Valley software companies. Exposure to: current practices in software engineering; techniques for stimulating innovation; significant development experience with creative freedoms; working in groups; real-world software engineering challenges; public presentation of technical work; creating written descriptions of technical work. Prerequisites: CS 109 and 110.

CS 210B. Software Project Experience with Corporate Partners. 3-4 Units.
Continuation of CS210A. Focus is on real-world software development. Corporate partners seed projects with loosely defined challenges from their R&D labs; students innovate to build their own compelling software solutions. Student teams are treated as start-up companies with a budget and a technical advisory board comprised of the instructional staff and corporate liaisons. Teams will typically travel to the corporate headquarters of their collaborating partner, meaning some teams will travel internationally. Open loft classroom format such as found in Silicon Valley software companies. Exposure to: current practices in software engineering; techniques for stimulating innovation; significant development experience with creative freedoms; working in groups; real world software engineering challenges; public presentation of technical work; creating written descriptions of technical work. Prerequisites: CS 210A.

CS 213. Creating Great VR: From Ideation to Monetization. 1 Unit.
Covering everything from VR fundamentals to futurecasting to launch management, this course will expose you to best practices and guidance from VR leaders that helps positions you to build great VR experiences.

CS 217. Hardware Accelerators for Machine Learning. 3-4 Units.
This course provides in-depth coverage of the architectural techniques used to design accelerators for training and inference in machine learning systems. This course will cover classical ML algorithms such as linear regression and support vector machines as well as DNN models such as convolutional neural nets, and recurrent neural nets. We will consider both training and inference for these models and discuss the impact of parameters such as batch size, precision, sparsity and compression on the accuracy of these models. We will cover the design of accelerators for ML model inference and training. Students will become familiar with hardware implementation techniques for using parallelism, locality, and low precision to implement the core computational kernels used in ML. To design energy-efficient accelerators, students will develop the intuition to make trade-offs between ML model parameters and hardware implementation techniques. Students will read recent research papers and complete a design project. Prerequisites: CS 149 or EE 180. CS 229 is ideal, but not required.

CS 221. Artificial Intelligence: Principles and Techniques. 3-4 Units.
Artificial intelligence (AI) has had a huge impact in many areas, including medical diagnosis, speech recognition, robotics, web search, advertising, and scheduling. This course focuses on the foundational concepts that drive these applications. In short, AI is the mathematics of making good decisions given incomplete information (hence the need for probability) and limited computation (hence the need for algorithms). Specific topics include search, constraint satisfaction, game playing,n Markov decision processes, graphical models, machine learning, and logic. Prerequisites: CS 103 or CS 103B/X, CS 106B or CS 106X, CS 109, and CS 161 (algorithms, probability, and object-oriented programming in Python). We highly recommend comfort with these concepts before taking the course, as we will be building on them with little review.

CS 223A. Introduction to Robotics. 3 Units.
Robotics foundations in modeling, design, planning, and control. Class covers relevant results from geometry, kinematics, statics, dynamics, motion planning, and control, providing the basic methodologies and tools in robotics research and applications. Concepts and models are illustrated through physical robot platforms, interactive robot simulations, and video segments relevant to historical research developments or to emerging application areas in the field. Recommended: matrix algebra.
Same as: ME 320

CS 224N. Natural Language Processing with Deep Learning. 3-4 Units.
Methods for processing human language information and the underlying computational properties of natural languages. Focus on deep learning approaches: understanding, implementing, training, debugging, visualizing, and extending neural network models for a variety of language understanding tasks. Exploration of natural language tasks ranging from simple word level and syntactic processing to coreference, question answering, and machine translation. Examination of representative papers and systems and completion of a final project applying a complex neural network model to a large-scale NLP problem. Prerequisites: calculus and linear algebra; CS124, CS221, or CS229.
Same as: LINGUIST 284, SYMSYS 195N

CS 224S. Spoken Language Processing. 2-4 Units.
Introduction to spoken language technology with an emphasis on dialogue and conversational systems. Deep learning and other methods for automatic speech recognition, speech synthesis, affect detection, dialogue management, and applications to digital assistants and spoken language understanding systems. Prerequisites: CS124, CS221, CS224N, or CS229.
Same as: LINGUIST 285

CS 224U. Natural Language Understanding. 3-4 Units.
Project-oriented class focused on developing systems and algorithms for robust machine understanding of human language. Draws on theoretical concepts from linguistics, natural language processing, and machine learning. Topics include lexical semantics, distributed representations of meaning, relation extraction, semantic parsing, sentiment analysis, and dialogue agents, with special lectures on developing projects, presenting research results, and making connections with industry. Prerequisites: one of LINGUIST 180/280, CS 124, CS 224N, or CS 224S.
Same as: LINGUIST 188, LINGUIST 288, SYMSYS 195U

CS 224W. Machine Learning with Graphs. 3-4 Units.
Many complex data can be represented as a graph of relationships between objects. Such networks are a fundamental tool for modeling complex social, technological, and biological systems. This course focuses on the computational, algorithmic, and modeling challenges specific to the analysis of massive graphs. By means of studying the underlying graph structure and its features, students are introduced to machine learning techniques and data mining tools apt to reveal insights on a variety of networks. Topics include: representation learning and Graph Neural Networks; algorithms for the World Wide Web; reasoning over Knowledge Graphs; influence maximization; disease outbreak detection, social network analysis. Prerequisites: CS109, any introductory course in Machine Learning.

CS 225A. Experimental Robotics. 3 Units.
Hands-on laboratory course experience in robotic manipulation. Topics include robot kinematics, dynamics, control, compliance, sensor-based collision avoidance, and human-robot interfaces. Second half of class is devoted to final projects using various robotic platforms to build and demonstrate new robot task capabilities. Previous projects include the development of autonomous robot behaviors of drawing, painting, playing air hocket, yoyo, basketball, ping-pong or xylophone. Prerequisites: 223A or equivalent.

CS 227B. General Game Playing. 3 Units.
A general game playing system accepts a formal description of a game to play it without human intervention or algorithms designed for specific games. Hands-on introduction to these systems and artificial intelligence techniques such as knowledge representation, reasoning, learning, and rational behavior. Students create GGP systems to compete with each other and in external competitions. Prerequisite: programming experience. Recommended: 103 or equivalent.

CS 228. Probabilistic Graphical Models: Principles and Techniques. 3-4 Units.
Probabilistic graphical modeling languages for representing complex domains, algorithms for reasoning using these representations, and learning these representations from data. Topics include: Bayesian and Markov networks, extensions to temporal modeling such as hidden Markov models and dynamic Bayesian networks, exact and approximate probabilistic inference algorithms, and methods for learning models from data. Also included are sample applications to various domains including speech recognition, biological modeling and discovery, medical diagnosis, message encoding, vision, and robot motion planning. Prerequisites: basic probability theory and algorithm design and analysis.

CS 229. Machine Learning. 3-4 Units.
Topics: statistical pattern recognition, linear and non-linear regression, non-parametric methods, exponential family, GLMs, support vector machines, kernel methods, deep learning, model/feature selection, learning theory, ML advice, clustering, density estimation, EM, dimensionality reduction, ICA, PCA, reinforcement learning and adaptive control, Markov decision processes, approximate dynamic programming, and policy search. Prerequisites: knowledge of basic computer science principles and skills at a level sufficient to write a reasonably non-trivial computer program in Python/numpy, familiarity with probability theory to the equivalency of CS109 or STATS116, and familiarity with multivariable calculus and linear algebra to the equivalency of MATH51.
Same as: STATS 229

CS 229M. Machine Learning Theory. 3 Units.
How do we use mathematical thinking to design better machine learning methods? This course focuses on developing mathematical tools for answering these questions. This course will cover fundamental concepts and principled algorithms in machine learning. We have a special focus on modern large-scale non-linear models such as matrix factorization models and deep neural networks. In particular, we will cover concepts and phenomenon such as uniform convergence, double descent phenomenon, implicit regularization, and problems such as matrix completion, bandits, and online learning (and generally sequential decision making under uncertainty). Prerequisites: linear algebra (MATH 51 or CS 205), probability theory (STATS 116, MATH 151 or CS 109), and machine learning (CS 229, STATS 229, or STATS 315A).
Same as: STATS 214

CS 230. Deep Learning. 3-4 Units.
Deep Learning is one of the most highly sought after skills in AI. We will help you become good at Deep Learning. In this course, you will learn the foundations of Deep Learning, understand how to build neural networks, and learn how to lead successful machine learning projects. You will learn about Convolutional networks, RNNs, LSTM, Adam, Dropout, BatchNorm, Xavier/He initialization, and more. You will work on case studies from healthcare, autonomous driving, sign language reading, music generation, and natural language processing. You will master not only the theory, but also see how it is applied in industry. You will practice all these ideas in Python and in TensorFlow, which we will teach. AI is transforming multiple industries. After this course, you will likely find creative ways to apply it to your work. This class is taught in the flipped-classroom format. You will watch videos and complete in-depth programming assignments and online quizzes at home, then come in to class for advanced discussions and work on projects. This class will culminate in an open-ended final project, which the teaching team will help you on. Prerequisites: Familiarity with programming in Python and Linear Algebra (matrix / vector multiplications). CS 229 may be taken concurrently.

CS 231A. Computer Vision: From 3D Reconstruction to Recognition. 3-4 Units.
(Formerly 223B) An introduction to the concepts and applications in computer vision. Topics include: cameras and projection models, low-level image processing methods such as filtering and edge detection; mid-level vision topics such as segmentation and clustering; shape reconstruction from stereo, as well as high-level vision tasks such as object recognition, scene recognition, face detection and human motion categorization. Prerequisites: linear algebra, basic probability and statistics.

CS 231C. Computer Vision and Image Analysis of Art. 3 Units.
This course presents the application of rigorous image processing, computer vision, machine learning, computer graphics and artificial intelligence techniques to problems in the history and interpretation of fine art paintings, drawings, murals and other two-dimensional works, including abstract art. The course focuses on the aspects of these problems that are unlike those addressed widely elsewhere in computer image analysis applied to physics-constrained images in photographs, videos, and medical images, such as the analysis of brushstrokes and marks, medium, inferring artists¿ working methods, compositional principles, stylometry (quantification of style), the tracing of artistic influence, and art attribution and authentication. The course revisits classic problems, such as image-based object recognition, but in highly non-realistic, stylized artworks. Recommended: One of CS 131 or EE 168 or equivalent; ARTHIST 1B. Prerequisites: Programming proficiency in at least one of C, C++, Python, Matlab or Mathematica and tools/ frameworks such as OpenCV or Matlab's Image Processing toolbox.

CS 231N. Convolutional Neural Networks for Visual Recognition. 3-4 Units.
Computer Vision has become ubiquitous in our society, with applications in search, image understanding, apps, mapping, medicine, drones, and self-driving cars. Core to many of these applications are visual recognition tasks such as image classification and object detection. Recent developments in neural network approaches have greatly advanced the performance of these state-of-the-art visual recognition systems. This course is a deep dive into details of neural-network based deep learning methods for computer vision. During this course, students will learn to implement, train and debug their own neural networks and gain a detailed understanding of cutting-edge research in computer vision. We will cover learning algorithms, neural network architectures, and practical engineering tricks for training and fine-tuning networks for visual recognition tasks. Prerequisites: Proficiency in Python; CS131 and CS229 or equivalents; MATH21 or equivalent, linear algebra.

CS 232. Digital Image Processing. 3 Units.
Image sampling and quantization color, point operations, segmentation, morphological image processing, linear image filtering and correlation, image transforms, eigenimages, multiresolution image processing, noise reduction and restoration, feature extraction and recognition tasks, image registration. Emphasis is on the general principles of image processing. Students learn to apply material by implementing and investigating image processing algorithms in Matlab and optionally on Android mobile devices. Term project. Recommended: EE261, EE278.
Same as: EE 368

CS 233. Geometric and Topological Data Analysis. 3 Units.
Mathematical and computational tools for the analysis of data with geometric content, such images, videos, 3D scans, GPS traces -- as well as for other data embedded into geometric spaces. Global and local geometry descriptors allowing for various kinds of invariances. The rudiments of computational topology and persistent homology on sampled spaces. Clustering and other unsupervised techniques. Spectral methods for graph data. Linear and non-linear dimensionality reduction techniques. Alignment, matching, and map computation between geometric data sets. Function spaces and functional maps. Networks of data sets and joint analysis for segmentation and labeling. Deep learning on irregular geometric data. Prerequisites: discrete algorithms at the level of CS161; linear algebra at the level of Math51 or CME103.
Same as: CME 251

CS 234. Reinforcement Learning. 3 Units.
To realize the dreams and impact of AI requires autonomous systems that learn to make good decisions. Reinforcement learning is one powerful paradigm for doing so, and it is relevant to an enormous range of tasks, including robotics, game playing, consumer modeling and healthcare. This class will briefly cover background on Markov decision processes and reinforcement learning, before focusing on some of the central problems, including scaling up to large domains and the exploration challenge. One key tool for tackling complex RL domains is deep learning and this class will include at least one homework on deep reinforcement learning. Prerequisites: proficiency in python, CS 229 or equivalents or permission of the instructor; linear algebra, basic probability.

CS 235. Computational Methods for Biomedical Image Analysis and Interpretation. 3-4 Units.
The latest biological and medical imaging modalities and their applications in research and medicine. Focus is on computational analytic and interpretive approaches to optimize extraction and use of biological and clinical imaging data for diagnostic and therapeutic translational medical applications. Topics include major image databases, fundamental methods in image processing and quantitative extraction of image features, structured recording of image information including semantic features and ontologies, indexing, search and content-based image retrieval. Case studies include linking image data to genomic, phenotypic and clinical data, developing representations of image phenotypes for use in medical decision support and research applications and the role that biomedical imaging informatics plays in new questions in biomedical science. Includes a project. Enrollment for 3 units requires instructor consent. Prerequisites: programming ability at the level of CS 106A, familiarity with statistics, basic biology. Knowledge of Matlab or Python highly recommended.
Same as: BIOMEDIN 260, RAD 260

CS 236. Deep Generative Models. 3 Units.
Generative models are widely used in many subfields of AI and Machine Learning. Recent advances in parameterizing these models using neural networks, combined with progress in stochastic optimization methods, have enabled scalable modeling of complex, high-dimensional data including images, text, and speech. In this course, we will study the probabilistic foundations and learning algorithms for deep generative models, including Variational Autoencoders (VAE), Generative Adversarial Networks (GAN), and flow models. The course will also discuss application areas that have benefitted from deep generative models, including computer vision, speech and natural language processing, and reinforcement learning. Prerequisites: Basic knowledge about machine learning from at least one of CS 221, 228, 229 or 230. Students will work with computational and mathematical models and should have a basic knowledge of probabilities and calculus. Proficiency in some programming language, preferably Python, required.

CS 236G. Generative Adversarial Networks. 3 Units.
Generative Adversarial Networks (GANs) have rapidly emerged as the state-of-the-art technique in realistic image generation. This course presents theoretical intuition and practical knowledge on GANs, from their simplest to their state-of-the-art forms. Their benefits and applications span realistic image editing that is omnipresent in popular app filters, enabling tumor classification under low data schemes in medicine, and visualizing realistic scenarios of climate change destruction. This course also examines key challenges of GANs today, including reliable evaluation, inherent biases, and training stability. After this course, students should be familiar with GANs and the broader generative models and machine learning contexts in which these models are situated. Prerequisites: linear algebra, statistics, CS106B, plus a graduate-level AI course such as: CS230, CS229 (or CS129), or CS221.

CS 237A. Principles of Robot Autonomy I. 3-5 Units.
Basic principles for endowing mobile autonomous robots with perception, planning, and decision-making capabilities. Algorithmic approaches for robot perception, localization, and simultaneous localization and mapping; control of non-linear systems, learning-based control, and robot motion planning; introduction to methodologies for reasoning under uncertainty, e.g., (partially observable) Markov decision processes. Extensive use of the Robot Operating System (ROS) for demonstrations and hands-on activities. Prerequisites: CS 106A or equivalent, CME 100 or equivalent (for linear algebra), and CME 106 or equivalent (for probability theory).
Same as: AA 174A, AA 274A, EE 260A

CS 237B. Principles of Robot Autonomy II. 3-4 Units.
This course teaches advanced principles for endowing mobile autonomous robots with capabilities to autonomously learn new skills and to physically interact with the environment and with humans. It also provides an overview of different robot system architectures. Concepts that will be covered in the course are: Reinforcement Learning and its relationship to optimal control, contact and dynamics models for prehensile and non-prehensile robot manipulation, imitation learning and human intent inference, as well as different system architectures and their verification. Students will earn the theoretical foundations for these concepts and implement them on mobile manipulation platforms. In homeworks, the Robot Operating System (ROS) will be used extensively for demonstrations and hands-on activities. Prerequisites: CS106A or equivalent, CME 100 or equivalent (for linear algebra), CME 106 or equivalent (for probability theory), and AA 171/274.
Same as: AA 174B, AA 274B, EE 260B

CS 238. Decision Making under Uncertainty. 3-4 Units.
This course is designed to increase awareness and appreciation for why uncertainty matters, particularly for aerospace applications. Introduces decision making under uncertainty from a computational perspective and provides an overview of the necessary tools for building autonomous and decision-support systems. Following an introduction to probabilistic models and decision theory, the course will cover computational methods for solving decision problems with stochastic dynamics, model uncertainty, and imperfect state information. Topics include: Bayesian networks, influence diagrams, dynamic programming, reinforcement learning, and partially observable Markov decision processes. Applications cover: air traffic control, aviation surveillance systems, autonomous vehicles, and robotic planetary exploration. Prerequisites: basic probability and fluency in a high-level programming language.
Same as: AA 228

CS 239. Advanced Topics in Sequential Decision Making. 3-4 Units.
Survey of recent research advances in intelligent decision making for dynamic environments from a computational perspective. Efficient algorithms for single and multiagent planning in situations where a model of the environment may or may not be known. Partially observable Markov decision processes, approximate dynamic programming, and reinforcement learning. New approaches for overcoming challenges in generalization from experience, exploration of the environment, and model representation so that these methods can scale to real problems in a variety of domains including aerospace, air traffic control, and robotics. Students are expected to produce an original research paper on a relevant topic. Prerequisites: AA 228/CS 238 or CS 221.
Same as: AA 229

CS 240. Advanced Topics in Operating Systems. 3 Units.
Recent research. Classic and new papers. Topics: virtual memory management, synchronization and communication, file systems, protection and security, operating system extension techniques, fault tolerance, and the history and experience of systems programming. Prerequisite: 140 or equivalent.

CS 240LX. Advanced Systems Laboratory, Accelerated. 3 Units.
This is an implementation-heavy, lab-based class that covers similar topics as CS240, but by writing code versus discussing papers. Our code will run "bare-metal" (without an operating system) on the widely-used ARM-based raspberry pi. Bare-metal lets us do interesting tricks without constantly fighting a lumbering, general-purpose OS that cannot get out of its own way. We will do ten projects, one per week, where each project covers two labs of (at a minimum) several hours each and a non-trivial amount of outside work. The workload is significant, but I will aim to not waste your time. Prerequisite: CS140E or instructor permission.

CS 241. Embedded Systems Workshop. 3 Units.
Project-centric building hardware and software for embedded computing systems. Students work on an existing project of their own or join one of these projects. Syllabus topics will be determined by the needs of the enrolled students and projects. Examples of topics include: interrupts and concurrent programming, deterministic timing and synchronization, state-based programming models, filters, frequency response, and high-frequency signals, low power operation, system and PCB design, security, and networked communication. Prerequisite: CS107 (or equivalent).
Same as: EE 285

CS 242. Programming Languages. 3-4 Units.
This course explores models of computation, both old, like functional programming with the lambda calculus (circa 1930), and new, like memory-safe systems programming with Rust (circa 2010). Topics include type systems (polymorphism, algebraic data types, static vs. dynamic), control flow (exceptions, continuations), concurrency/parallelism, metaprogramming, and the semantic gap between computational models and modern hardware. The study of programming languages is equal parts systems and theory, looking at how a rigorous understanding of the syntax, structure, and semantics of computation enables formal reasoning about the behavior and properties of complex real-world systems. In light of today's Cambrian explosion of new programming languages, this course also seeks to provide a conceptual clarity on how to compare and contrast the multitude of programming languages, models, and paradigms in the modern programming landscape. Prerequisites: 103, 110.

CS 243. Program Analysis and Optimizations. 3-4 Units.
Program analysis techniques used in compilers and software development tools to improve productivity, reliability, and security. The methodology of applying mathematical abstractions such as graphs, fixpoint computations, binary decision diagrams in writing complex software, using compilers as an example. Topics include data flow analysis, instruction scheduling, register allocation, parallelism, data locality, interprocedural analysis, and garbage collection. Prerequisites: 103 or 103B, and 107.

CS 244. Advanced Topics in Networking. 3-4 Units.
Classic papers, new ideas, and research papers in networking. Architectural principles: why the Internet was designed this way? Congestion control. Wireless and mobility; software-defined networks (SDN) and network virtualization; content distribution networks; packet switching; data-center networks. Prerequisite: 144 or equivalent.

CS 244B. Distributed Systems. 3 Units.
Distributed operating systems and applications issues, emphasizing high-level protocols and distributed state sharing as the key technologies. Topics: distributed shared memory, object-oriented distributed system design, distributed directory services, atomic transactions and time synchronization, application-sufficient consistency, file access, process scheduling, process migration, and storage/communication abstractions on distribution, scale, robustness in the face of failure, and security. Prerequisites: CS 144.

CS 245. Principles of Data-Intensive Systems. 3 Units.
Most important computer applications have to reliably manage and manipulate datasets. This course covers the architecture of modern data storage and processing systems, including relational databases, cluster computing frameworks, streaming systems and machine learning systems. Topics include storage management, query optimization, transactions, concurrency, fault recovery, and parallel processing, with a focus on the key design ideas shared across many types of data-intensive systems. Prerequisites: CS 145, 161.

CS 246. Mining Massive Data Sets. 3-4 Units.
The availability of massive datasets is revolutionizing science and industry. This course discusses data mining and machine learning algorithms for analyzing very large amounts of data. Topics include: Big data systems (Hadoop, Spark); Link Analysis (PageRank, spam detection); Similarity search (locality-sensitive hashing, shingling, min-hashing); Stream data processing; Recommender Systems; Analysis of social-network graphs; Association rules; Dimensionality reduction (UV, SVD, and CUR decompositions); Algorithms for large-scale mining (clustering, nearest-neighbor search); Large-scale machine learning (decision tree ensembles); Multi-armed bandit; Computational advertising. Prerequisites: At least one of CS107 or CS145.

CS 246H. Mining Massive Data Sets Hadoop Lab. 1 Unit.
Supplement to CS 246 providing additional material on the Apache Hadoop family of technologies. Students will learn how to implement data mining algorithms using Hadoop and Apache Spark, how to implement and debug complex data mining and data transformations, and how to use two of the most popular big data SQL tools. Topics: data mining, machine learning, data ingest, and data transformations using Hadoop, Spark, Apache Impala, Apache Hive, Apache Kafka, Apache Sqoop, Apache Flume, Apache Avro, and Apache Parquet. Prerequisite: CS 107 or equivalent.

CS 247A. Design for Artificial Intelligence. 3-4 Units.
A project-based course that builds on the introduction to design in CS147 by focusing on advanced methods and tools for research, prototyping, and user interface design. Studio based format with intensive coaching and iteration to prepare students for tackling real world design problems. This course takes place entirely in studios; you must plan on attending every studio to take this class. The focus of CS247A is design for human-centered artificial intelligence experiences. What does it mean to design for AI? What is HAI? How do you create responsible, ethical, human centered experiences? Let us explore what AI actually is and the constraints, opportunities and specialized processes necessary to create AI systems that work effectively for the humans involved. Prerequisites: CS147 or equivalent background in design thinking.
Same as: SYMSYS 195A

CS 247B. Design for Behavior Change. 3-4 Units.
Over the last decade, tech companies have invested in shaping user behavior, sometimes for altruistic reasons like helping people change bad habits into good ones, and sometimes for financial reasons such as increasing engagement. In this project-based hands-on course, students explore the design of systems, information and interface for human use. We will model the flow of interactions, data and context, and crafting a design that is useful, appropriate and robust. Students will design and prototype utility apps or games as a response to the challenges presented. We will also examine the ethical consequences of design decisions and explore current issues arising from unintended consequences. Prerequisite: CS147 or equivalent.
Same as: SYMSYS 195B

CS 247G. Introduction to Game Design. 3-4 Units.
A project-based course that builds on the introduction to design in CS147 by focusing on advanced methods and tools for research, prototyping, and user interface design. Studio based format with intensive coaching and iteration to prepare students for tackling real world design problems. This course takes place entirely in studios; please plan on attending every studio to take this class. nThe focus of CS247g is an introduction to theory and practice of the design of games. We will make digital and paper games, do rapid iteration and run user research studies appropriate to game design. This class has multiple short projects, allowing us to cover a variety of genres, from narrative to pure strategy. Prerequisites: 147 or equivalent background.
Same as: SYMSYS 195G

CS 247I. Design for Understanding. 3-4 Units.
Complex problems require sophisticated approaches. In this project-based hands-on course, students explore the design of systems, information and interface for human use. We will model the flow of interactions, data and context, and crafting a design that is useful, appropriate and robust. Students will create utility apps or games as a response to the challenges presented. We will also examine the ethical consequences of design decisions and explore current issues arising from unintended consequences. Prerequisite: CS 147 or equivalent.

CS 247S. Service Design. 3-4 Units.
A project-based course that builds on the introduction to design in CS147 by focusing on advanced methods and tools for research, prototyping, and user interface design. Studio based format with intensive coaching and iteration to prepare students for tackling real world design problems. This course takes place entirely in studios; you must plan on attending every studio to take this class. The focus of CS247S is Service Design. In this course we will be looking at experiences that address the needs of multiple types of stakeholders at different touchpoints - digital, physical, and everything in between. If you have ever taken an Uber, participated in the Draw, engaged with your bank, or ordered a coffee through the Starbucks app, you have experienced a service that must have a coordinated experience for the customer, the service provider, and any other stakeholders involved. Let us explore what specialized tools and processes are required to created these multi-faceted interactions. Prerequisites: CS147 or equivalent background in design thinking.
Same as: SYMSYS 195S

CS 248. Interactive Computer Graphics. 3-4 Units.
This course provides a comprehensive introduction to interactive computer graphics, focusing on fundamental concepts and techniques, as well as their cross-cutting relationship to multiple problem domains in interactive graphics (such as rendering, animation, geometry, image processing). Topics include: 2D and 3D drawing, sampling theory, interpolation, rasterization, image compositing, the real-time GPU graphics pipeline (and parallel rendering), VR rendering, geometric transformations, curves and surfaces, geometric data structures, subdivision, meshing, spatial hierarchies, image processing, time integration, physically-based animation, and inverse kinematics. The course will involve several in-depth programming assignments and a self-selected final project that explores concepts covered in the class. Prerequisite: CS 107, MATH 51.

CS 250. Algebraic Error Correcting Codes. 3 Units.
Introduction to the theory of error correcting codes, emphasizing algebraic constructions, and diverse applications throughout computer science and engineering. Topics include basic bounds on error correcting codes; Reed-Solomon and Reed-Muller codes; list-decoding, list-recovery and locality. Applications may include communication, storage, complexity theory, pseudorandomness, cryptography, streaming algorithms, group testing, and compressed sensing. Prerequisites: Linear algebra, basic probability (at the level of, say, CS109, CME106 or EE178) and "mathematical maturity" (students will be asked to write proofs). Familiarity with finite fields will be helpful but not required.
Same as: EE 387

CS 251. Cryptocurrencies and blockchain technologies. 3 Units.
For advanced undergraduates and for graduate students. The potential applications for Bitcoin-like technologies is enormous. The course will cover the technical aspects of cryptocurrencies, blockchain technologies, and distributed consensus. Students will learn how these systems work and how to engineer secure software that interacts with the Bitcoin network and other cryptocurrencies. Prerequisite: CS110. Recommended: CS255.

CS 252. Analysis of Boolean Functions. 3 Units.
Boolean functions are among the most basic objects of study in theoretical computer science. This course is about the study of boolean functions from a complexity-theoretic perspective, with an emphasis on analytic methods. We will cover fundamental concepts and techniques in this area, including influence and noise sensitivity, polynomial approximation, hypercontractivity, probabilistic invariance principles, and Gaussian analysis. We will see connections to various areas of theoretical computer science, including circuit complexity, pseudorandomness, classical and quantum query complexity, learning theory, and property testing. Prerequisites: CS 103 and CS 109 or equivalents. CS 154 and CS 161 recommended.

CS 253. Web Security. 3 Units.
Principles of web security. The fundamentals and state-of-the-art in web security. Attacks and countermeasures. Topics include: the browser security model, web app vulnerabilities, injection, denial-of-service, TLS attacks, privacy, fingerprinting, same-origin policy, cross site scripting, authentication, JavaScript security, emerging threats, defense-in-depth, and techniques for writing secure code. Course projects include writing security exploits, defending insecure web apps, and implementing emerging web standards. Prerequisite: CS 142 or equivalent web development experience.

CS 254. Computational Complexity. 3 Units.
An introduction to computational complexity theory. Topics include the P versus NP problem and other major challenges of complexity theory; Space complexity: Savitch's theorem and the Immerman-Szelepscényi theorem; P, NP, coNP, and the polynomial hierarchy; The power of randomness in computation; Non-uniform computation and circuit complexity; Interactive proofs. Prerequisites: 154 or equivalent; mathematical maturity.

CS 254B. Computational Complexity II. 3 Units.
A continuation of CS254 (Computational Complexity). Topics include Barriers to P versus NP; The relationship between time and space, and time-space tradeoffs for SAT; The hardness versus randomness paradigm; Average-case complexity; Fine-grained complexity; Current and new areas of complexity theory research. Prerequisite: CS254.

CS 255. Introduction to Cryptography. 3 Units.
For advanced undergraduates and graduate students. Theory and practice of cryptographic techniques used in computer security. Topics: encryption (symmetric and public key), digital signatures, data integrity, authentication, key management, PKI, zero-knowledge protocols, and real-world applications. Prerequisite: basic probability theory.

CS 257. Logic and Artificial Intelligence. 2-4 Units.
This is a course at the intersection of philosophical logic and artificial intelligence. After reviewing recent work in AI that has leveraged ideas from logic, we will slow down and study in more detail various components of high-level intelligence and the tools that have been designed to capture those components. Specific areas will include: reasoning about belief and action, causality and counterfactuals, legal and normative reasoning, natural language inference, and Turing-complete logical formalisms including (probabilistic) logic programming and lambda calculus. Our main concern will be understanding the logical tools themselves, including their formal properties and how they relate to other tools such as probability and statistics. At the end, students should expect to have learned a lot more about logic, and also to have a sense for how logic has been and can be used in AI applications. Prerequisites: A background in logic, at least at the level of Phil 151, will be expected. In case a student is willing to put in the extra work to catch up, it may be possible to take the course with background equivalent to Phil 150 or CS 157. A background in AI, at the level of CS 221, would also be very helpful and will at times be expected. 2 unit option only for PhD students past the second year. Course website: http://web.stanford.edu/class/cs257/.
Same as: PHIL 356C

CS 259Q. Quantum Computing. 3 Units.
The course introduces the basics of quantum algorithms, quantum computational complexity, quantum information theory, and quantum cryptography, including the models of quantum circuits and quantum Turing machines, Shor's factoring algorithms, Grover's search algorithm, the adiabatic algorithms, quantum error-correction, impossibility results for quantum algorithms, Bell's inequality, quantum information transmission, and quantum coin flipping. Prerequisites: knowledge of linear algebra, discrete probability and algorithms.

CS 260. Geometry of Polynomials in Algorithm Design. 3 Units.
Over the years, many powerful algorithms have been built via tools such as linear programming relaxations, spectral properties of graphs, and others, that all bridge the discrete and continuous worlds. This course will cover another such tool recently gaining popularity: polynomials, their roots, and their analytic properties, collectively known as geometry of polynomials. The course will cover fundamental properties of polynomials that are useful in designing algorithms, and then will showcase applications in several areas of algorithm design: combinatorial optimization, graph sparsification, high-dimensional expanders, analysis of random walks on combinatorial objects, and counting algorithms. Prerequisites: CS161 or equivalent. Basic knowledge of probability, linear algebra, and calculus.

CS 261. Optimization and Algorithmic Paradigms. 3 Units.
Algorithms for network optimization: max-flow, min-cost flow, matching, assignment, and min-cut problems. Introduction to linear programming. Use of LP duality for design and analysis of algorithms. Approximation algorithms for NP-complete problems such as Steiner Trees, Traveling Salesman, and scheduling problems. Randomized algorithms. Introduction to sub-linear algorithms and decision making under uncertainty. Prerequisite: 161 or equivalent.

CS 263. Counting and Sampling. 3 Units.
This course will cover various algorithm design techniques for two intimately connected class of problems: sampling from complex probability distributions and counting combinatorial structures. A large part of the course will cover Markov Chain Monte Carlo techniques: coupling, stationary times, canonical paths, Poincare and log-Sobolev inequalities. Other topics include correlation decay in spin systems, variational techniques, holographic algorithms, and polynomial interpolation-based counting. Prerequisites: CS161 or equivalent, STAT116 or equivalent.

CS 264. Beyond Worst-Case Analysis. 3 Units.
This course is motivated by problems for which the traditional worst-case analysis of algorithms fails to differentiate meaningfully between different solutions, or recommends an intuitively "wrong" solution over the "right" one. This course studies systematically alternatives to traditional worst-case analysis that nevertheless enable rigorous and robust guarantees on the performance of an algorithm. Topics include: instance optimality; smoothed analysis; parameterized analysis and condition numbers; models of data (pseudorandomness, locality, diffuse adversaries, etc.); average-case analysis; robust distributional analysis; resource augmentation; planted and semi-random graph models. Motivating problems will be drawn from online algorithms, online learning, constraint satisfaction problems, graph partitioning, scheduling, linear programming, hashing, machine learning, and auction theory. Prerequisites: CS161 (required). CS261 is recommended but not required.

CS 265. Randomized Algorithms and Probabilistic Analysis. 3 Units.
Randomness pervades the natural processes around us, from the formation of networks, to genetic recombination, to quantum physics. Randomness is also a powerful tool that can be leveraged to create algorithms and data structures which, in many cases, are more efficient and simpler than their deterministic counterparts. This course covers the key tools of probabilistic analysis, and application of these tools to understand the behaviors of random processes and algorithms. Emphasis is on theoretical foundations, though we will apply this theory broadly, discussing applications in machine learning and data analysis, networking, and systems. Topics include tail bounds, the probabilistic method, Markov chains, and martingales, with applications to analyzing random graphs, metric embeddings, random walks, and a host of powerful and elegant randomized algorithms. Prerequisites: CS 161 and STAT 116, or equivalents and instructor consent.
Same as: CME 309

CS 268. Geometric Algorithms. 3 Units.
Techniques for design and analysis of efficient geometric algorithms for objects in 2-, 3-, and higher dimensions. Topics: convexity, triangulations and simplicial complexes, sweeping, partitioning, and point location. Voronoi/Delaunay diagrams and their properties. Arrangements of curves and surfaces. Intersection and visibility problems. Geometric searching and optimization. Random sampling methods. Range searching. Impact of numerical issues in geometric computation. Example applications to robotic motion planning, visibility preprocessing and rendering in graphics, and model-based recognition in computer vision. Prerequisite: discrete algorithms at the level of CS161. Recommended: CS164.

CS 269G. Almost Linear Time Graph Algorithms. 3 Units.
Over the past decade there has been an explosion in activity in designing new provably efficient fast graph algorithms. Leveraging techniques from disparate areas of computer science and optimization researchers have made great strides on improving upon the best known running times for fundamental optimization problems on graphs, in many cases breaking long-standing barriers to efficient algorithm design. In this course we will survey these results and cover the key algorithmic tools they leverage to achieve these breakthroughs. Possible topics include but are not limited to, spectral graph theory, sparsification, oblivious routing, local partitioning, Laplacian system solving, and maximum flow. Prerequisites: calculus and linear algebra.
Same as: MS&E 313

CS 269I. Incentives in Computer Science. 3 Units.
Many 21st-century computer science applications require the design of software or systems that interact with multiple self-interested participants. This course will provide students with the vocabulary and modeling tools to reason about such design problems. Emphasis will be on understanding basic economic and game theoretic concepts that are relevant across many application domains, and on case studies that demonstrate how to apply these concepts to real-world design problems. Topics include auction and contest design, equilibrium analysis, cryptocurrencies, design of networks and network protocols, reputation systems, social choice, and social network analysis. Case studies include BGP routing, Bitcoin, eBay's reputation system, Facebook's advertising mechanism, Mechanical Turk, and dynamic pricing in Uber/Lyft. Prerequisites: CS106B/X and CS161, or permission from the instructor.

CS 269O. Introduction to Optimization Theory. 3 Units.
Introduction of core algorithmic techniques and proof strategies that underlie the best known provable guarantees for minimizing high dimensional convex functions. Focus on broad canonical optimization problems and survey results for efficiently solving them, ultimately providing the theoretical foundation for further study in optimization. In particular, focus will be on first-order methods for both smooth and non-smooth convex function minimization as well as methods for structured convex function minimization, discussing algorithms such as gradient descent, accelerated gradient descent, mirror descent, Newton's method, interior point methods, and more. Prerequisite: multivariable calculus and linear algebra.
Same as: MS&E 213

CS 269Q. Elements of Quantum Computer Programming. 3 Units.
For advanced undergraduates and for graduate students. Quantum computing is an emerging computational paradigm with vast potential. This course is an introduction to modern quantum programming for students who want to work with quantum computing technologies and learn about new paradigms of computation. A physics / quantum mechanics background is not required. Students will learn the model of quantum computation, quantum programming languages, hybrid quantum/classical programming, quantum algorithms, quantum error correction, and applications. The course is hands on using open source Python packages for working with publicly available quantum processors. Prerequisites: linear algebra and programming at the undergraduate level.

CS 270. Modeling Biomedical Systems. 3 Units.
At the core of informatics is the problem of creating computable models of biomedical phenomena. This course explores methods for modeling biomedical systems with an emphasis on contemporary semantic technology, including knowledge graphs. Topics: data modeling, knowledge representation, controlled terminologies, ontologies, reusable problem solvers, modeling problems in healthcare information technology and other aspects of informatics. Students acquire hands-on experience with several systems and tools. Prerequisites: CS106A. Basic familiarity with Python programming, biology, probability, and logic are assumed.
Same as: BIOMEDIN 210

CS 271. Artificial Intelligence in Healthcare. 3-4 Units.
Healthcare is one of the most exciting application domains of artificial intelligence, with transformative potential in areas ranging from medical image analysis to electronic health records-based prediction and precision medicine. This course will involve a deep dive into recent advances in AI in healthcare, focusing in particular on deep learning approaches for healthcare problems. We will start from foundations of neural networks, and then study cutting-edge deep learning models in the context of a variety of healthcare data including image, text, multimodal and time-series data. In the latter part of the course, we will cover advanced topics on open challenges of integrating AI in a societal application such as healthcare, including interpretability, robustness, privacy and fairness. The course aims to provide students from diverse backgrounds with both conceptual understanding and practical grounding of cutting-edge research on AI in healthcare. Prerequisites: Proficiency in Python or ability to self-learn; familiarity with machine learning and basic calculus, linear algebra, statistics; familiarity with deep learning highly recommended (e.g. prior experience training a deep learning model).
Same as: BIODS 220, BIOMEDIN 220

CS 272. Introduction to Biomedical Informatics Research Methodology. 3-5 Units.
Capstone Biomedical Informatics (BMI) experience. Hands-on software building. Student teams conceive, design, specify, implement, evaluate, and report on a software project in the domain of biomedicine. Creating written proposals, peer review, providing status reports, and preparing final reports. Issues related to research reproducibility. Guest lectures from professional biomedical informatics systems builders on issues related to the process of project management. Software engineering basics. Because the team projects start in the first week of class, attendance that week is strongly recommended. Prerequisites: BIOMEDIN 210 or 214 or 215 or 217 or 260. Preference to BMI graduate students. Consent of instructor required.
Same as: BIOE 212, BIOMEDIN 212, GENE 212

CS 273A. The Human Genome Source Code. 3 Units.
A computational primer to "hacking" the most amazing operating system "disk" on the planet: your genome. Handling genomic data is deceptively easy. But that's muscle. You want to be the brain, too. Topics include genome sequencing (assembling source code from code fragments); the human genome functional landscape: variable assignments (genes), control-flow logic (gene regulation) and run-time stack (epigenomics); human disease and personalized genomics (as a hunt for bugs in the human code); genome editing (code injection) to cure the incurable; and the source code modifications behind amazing animal adaptations. The course will introduce ideas from computational genomics, machine learning and natural language processing. Course includes primers on molecular biology, and text processing languages. Prerequisites: CS106A or equivalent. No biological background assumed.
Same as: BIOMEDIN 273A, DBIO 273A

CS 273B. Deep Learning in Genomics and Biomedicine. 3 Units.
Recent breakthroughs in high-throughput genomic and biomedical data are transforming biological sciences into "big data" disciplines. In parallel, progress in deep neural networks are revolutionizing fields such as image recognition, natural language processing and, more broadly, AI. This course explores the exciting intersection between these two advances. The course will start with an introduction to deep learning and overview the relevant background in genomics and high-throughput biotechnology, focusing on the available data and their relevance. It will then cover the ongoing developments in deep learning (supervised, unsupervised and generative models) with the focus on the applications of these methods to biomedical data, which are beginning to produced dramatic results. In addition to predictive modeling, the course emphasizes how to visualize and extract interpretable, biological insights from such models. Recent papers from the literature will be presented and discussed. Students will be introduced to and work with popular deep learning software frameworks. Students will work in groups on a final class project using real world datasets. Prerequisites: College calculus, linear algebra, basic probability and statistics such as CS 109, and basic machine learning such as CS 229. No prior knowledge of genomics is necessary.
Same as: BIODS 237, BIOMEDIN 273B, GENE 236

CS 273C. Cloud Computing for Biology and Healthcare. 3 Units.
Big Data is radically transforming healthcare. To provide real-time personalized healthcare, we need hardware and software solutions that can efficiently store and process large-scale biomedical datasets. In this class, students will learn the concepts of cloud computing and parallel systems' architecture. This class prepares students to understand how to design parallel programs for computationally intensive medical applications and how to run these applications on computing frameworks such as Cloud Computing and High Performance Computing (HPC) systems. Prerequisites: familiarity with programming in Python and R.
Same as: BIOMEDIN 222, GENE 222

CS 274. Representations and Algorithms for Computational Molecular Biology. 3-4 Units.
Topics: introduction to bioinformatics and computational biology, algorithms for alignment of biological sequences and structures, computing with strings, phylogenetic tree construction, hidden Markov models, basic structural computations on proteins, protein structure prediction, protein threading techniques, homology modeling, molecular dynamics and energy minimization, statistical analysis of 3D biological data, integration of data sources, knowledge representation and controlled terminologies for molecular biology, microarray analysis, machine learning (clustering and classification), and natural language text processing. Prerequisite: CS 106B; recommended: CS161; consent of instructor for 3 units.
Same as: BIOE 214, BIOMEDIN 214, GENE 214

CS 275. Translational Bioinformatics. 3-4 Units.
Computational methods for the translation of biomedical data into diagnostic, prognostic, and therapeutic applications in medicine. Topics: multi-scale omics data generation and analysis, utility and limitations of public biomedical resources, machine learning and data mining, issues and opportunities in drug discovery, and mobile/digital health solutions. Case studies and course project. Prerequisites: programming ability at the level of CS 106A and familiarity with biology and statistics.
Same as: BIOE 217, BIOMEDIN 217, GENE 217

CS 275A. Symbolic Musical Information. 2-4 Units.
Focus on symbolic data for music applications including advanced notation systems, optical music recognition, musical data conversion, and internal structure of MIDI files.
Same as: MUSIC 253

CS 275B. Computational Music Analysis. 2-4 Units.
Leveraging off three synchronized sets of symbolic data resources for notation and analysis, the lab portion introduces students to the open-source Humdrum Toolkit for music representation and analysis. Issues of data content and quality as well as methods of information retrieval, visualization, and summarization are considered in class. Grading based primarily on student projects. Prerequisite: 253 or consent of instructor.
Same as: MUSIC 254

CS 276. Information Retrieval and Web Search. 3 Units.
Text information retrieval systems; efficient text indexing; Boolean, vector space, and probabilistic retrieval models; ranking and rank aggregation; evaluating IR systems; text clustering and classification; Web search engines including crawling and indexing, link-based algorithms, web metadata, and question answering; distributed word representations. Prerequisites: CS 107, CS 109, CS 161.
Same as: LINGUIST 286

CS 278. Social Computing. 3 Units.
Today we interact with our friends and enemies, our team partners and romantic partners, and our organizations and societies, all through computational systems. How do we design these social computing systems to be effective and responsible? This course covers design patterns for social computing and crowdsourcing systems, and the foundational ideas that underpin them. Students will engage in the creation of new computationally-mediated social environments.

CS 279. Computational Biology: Structure and Organization of Biomolecules and Cells. 3 Units.
Computational techniques for investigating and designing the three-dimensional structure and dynamics of biomolecules and cells. These computational methods play an increasingly important role in drug discovery, medicine, bioengineering, and molecular biology. Course topics include protein structure prediction, protein design, drug screening, molecular simulation, cellular-level simulation, image analysis for microscopy, and methods for solving structures from crystallography and electron microscopy data. Prerequisites: elementary programming background (CS 106A or equivalent) and an introductory course in biology or biochemistry.
Same as: BIOE 279, BIOMEDIN 279, BIOPHYS 279, CME 279

CS 294A. Research Project in Artificial Intelligence. 3 Units.
Student teams under faculty supervision work on research and implementation of a large project in AI. State-of-the-art methods related to the problem domain. Prerequisites: AI course from 220 series, and consent of instructor.

CS 294S. Research Project in Software Systems and Security. 3 Units.
Topics vary. Focus is on emerging research themes such as programmable open mobile Internet that spans multiple system topics such as human-computer interaction, programming systems, operating systems, networking, and security. May be repeated for credit. Prerequisites: CS 103 and 107.

CS 294W. Writing Intensive Research Project in Computer Science. 3 Units.
Restricted to Computer Science and Computer Systems Engineering undergraduates. Students enroll in the CS 294W section attached to the CS 294 project they have chosen.

CS 298. Seminar on Teaching Introductory Computer Science. 1 Unit.
Faculty, undergraduates, and graduate students interested in teaching discuss topics raised by teaching computer science at the introductory level. Prerequisite: consent of instructor.
Same as: EDUC 298

CS 300. Departmental Lecture Series. 1 Unit.
Priority given to first-year Computer Science Ph.D. students. CS Masters students admitted if space is available. Presentations by members of the department faculty, each describing informally his or her current research interests and views of computer science as a whole.

CS 309. Industrial Lectureships in Computer Science. 1 Unit.
Guest computer scientist. By arrangement. May be repeated for credit.

CS 309A. Cloud Computing Seminar. 1 Unit.
For science, engineering, computer science, business, education, medicine, and law students. Cloud computing is bringing information systems out of the back office and making it core to the entire economy. Furthermore with the advent of smarter machines cloud computing will be integral to building a more precision planet. This class is intended for all students who want to begin to understand the implications of this technology. Guest industry experts are public company CEOs who are either delivering cloud services or using cloud services to transform their businesses.

CS 315B. Parallel Computing Research Project. 3 Units.
Advanced topics and new paradigms in parallel computing including parallel algorithms, programming languages, runtime environments, library debugging/tuning tools, and scalable architectures. Research project. Prerequisite: consent of instructor.

CS 316. Advanced Multi-Core Systems. 3 Units.
In-depth coverage of the architectural techniques used in modern, multi-core chips for mobile and server systems. Advanced processor design techniques (superscalar cores, VLIW cores, multi-threaded cores, energy-efficient cores), cache coherence, memory consistency, vector processors, graphics processors, heterogeneous processors, and hardware support for security and parallel programming. Students will become familiar with complex trade-offs between performance-power-complexity and hardware-software interactions. A central part of CS316 is a project on an open research question on multi-core technologies. Prerequisites: EE 180 (formerly 108B) and EE 282. Recommended: CS 149.

CS 319. Topics in Digital Systems. 3 Units.
Advanced material is often taught for the first time as a topics course, perhaps by a faculty member visiting from another institution. May be repeated for credit.

CS 320. Value of Data and AI. 3 Units.
Many of the most valuable companies in the world and the most innovative startups have business models based on data and AI, but our understanding about the economic value of data, networks and algorithmic assets remains at an early stage. For example, what is the value of a new dataset or an improved algorithm? How should investors value a data-centric business such as Netflix, Uber, Google, or Facebook? And what business models can best leverage data and algorithmic assets in settings as diverse as e-commerce, manufacturing, biotech and humanitarian organizations? In this graduate seminar, we will investigate these questions by studying recent research on these topics and by hosting in-depth discussions with experts from industry and academia. Key topics will include value of data quantity and quality in statistics and AI, business models around data, networks, scaling effects, economic theory around data, and emerging data protection regulations. Students will also conduct a group research projects in this field.nnPrerequisites: Sufficient mathematical maturity to follow the technical content; some familiarity with data mining and machine learning and at least an undergraduate course in statistics are recommended.

CS 323. Automated Reasoning: Theory and Applications. 3-4 Units.
Intelligent computer agents must reason about complex, uncertain, and dynamic environments. This course is a graduate level introduction to automated reasoning techniques and their applications, covering logical and probabilistic approaches. Topics include: logical and probabilistic foundations, backtracking strategies and algorithms behind modern SAT solvers, stochastic local search and Markov Chain Monte Carlo algorithms, variational techniques, classes of reasoning tasks and reductions, and applications.

CS 325B. Data for Sustainable Development. 3-5 Units.
The sustainable development goals (SDGs) encompass many important aspects of human and ecosystem well-being that are traditionally difficult to measure. This project-based course will focus on ways to use inexpensive, unconventional data streams to measure outcomes relevant to SDGs, including poverty, hunger, health, governance, and economic activity. Students will apply machine learning techniques to various projects outlined at the beginning of the quarter. The main learning goals are to gain experience conducting and communicating original research. Prior knowledge of machine learning techniques, such as from CS 221, CS 229, CS 231N, STATS 202, or STATS 216 is required. Open to both undergraduate and graduate students. Enrollment limited to 24. Students must apply for the class by filling out the form at https://goo.gl/forms/9LSZF7lPkHadix5D3. A permission code will be given to admitted students to register for the class.
Same as: EARTHSYS 162, EARTHSYS 262

CS 326. Topics in Advanced Robotic Manipulation. 3-4 Units.
This course provides a survey of the most important and influential concepts in autonomous robotic manipulation. It includes classical concepts that are still widely used and recent approaches that have changed the way we look autonomous manipulation. We cover approaches towards motion planning and control using visual and tactile perception as well as machine learning. This course is especially concerned with new approaches for overcoming challenges in generalization from experience, exploration of the environment, and learning representation so that these methods can scale to real problems. Students are expected to present one paper in a tutorial, debate a paper once from the Pro and once from the Con side. They are also expected to propose an original research project and work on it towards a research paper. Recommended: CS 131, 223A, 229 or equivalents.

CS 327A. Advanced Robotic Manipulation. 3 Units.
Advanced control methodologies and novel design techniques for complex human-like robotic and bio mechanical systems. Class covers the fundamentals in operational space dynamics and control, elastic planning, human motion synthesis. Topics include redundancy, inertial properties, haptics, simulation, robot cooperation, mobile manipulation, human-friendly robot design, humanoids and whole-body control. Additional topcs in emerging areas are presented by groups of students at the end-of-quarter mini-symposium. Prerequisites: 223A or equivalent.

CS 328. Topics in Computer Vision. 3 Units.
Fundamental issues of, and mathematical models for, computer vision. Sample topics: camera calibration, texture, stereo, motion, shape representation, image retrieval, experimental techniques. May be repeated for credit. Prerequisites: 205, 223B, or equivalents.

CS 329. Topics in Artificial Intelligence. 3 Units.
Advanced material is often taught for the first time as a topics course, perhaps by a faculty member visiting from another institution. May be repeated for credit.

CS 329D. Machine Learning Under Distributional Shifts. 3 Units.
The progress of machine learning systems has seemed remarkable and inexorable ¿ a wide array of benchmark tasks including image classification, speech recognition, and question answering have seen consistent and substantial accuracy gains year on year. However, these same models are known to fail consistently on atypical examples and domains not contained within the training data. The goal of the course is to introduce the variety of areas in which distributional shifts appear, as well as provide theoretical characterization and learning bounds for distribution shifts. Prerequisites: CS229 or equivalent. Recommended: CS229T (or basic knowledge of learning theory).

CS 329M. Topics in Artificial Intelligence: Algorithms of Advanced Machine Learning. 3 Units.
This advanced graduate course explores in depth several important classes of algorithms in modern machine learning. We will focus on understanding the mathematical properties of these algorithms in order to gain deeper insights on when and why they perform well. We will also study applications of each algorithm on interesting, real-world settings. Topics include: spectral clustering, tensor decomposition, Hamiltonian Monte Carlo, adversarial training, and variational approximation. Students will learn mathematical techniques for analyzing these algorithms and hands-on experience in using them. We will supplement the lectures with latest papers and there will be a significant research project component to the class. Prerequisites: Probability (CS 109), linear algebra (Math 113), machine learning (CS 229), and some coding experience.

CS 329S. Machine Learning Systems Design. 3-4 Units.
This project-based course covers the iterative process for designing, developing, and deploying machine learning systems. It focuses on systems that require massive datasets and compute resources, such as large neural networks. Students will learn about the different layers of the data pipeline, approaches to model selection, training, scaling, as well as how to deploy, monitor, and maintain ML systems. In the process, students will learn about important issues including privacy, fairness, and security. Pre-requisites: At least one of the following; CS229, CS230, CS231N, CS224N or equivalent. Students should have a good understanding of machine learning algorithms and should be familiar with at least one framework such as TensorFlow, PyTorch, JAX.

CS 330. Deep Multi-task and Meta Learning. 3 Units.
While deep learning has achieved remarkable success in supervised and reinforcement learning problems, such as image classification, speech recognition, and game playing, these models are, to a large degree, specialized for the single task they are trained for. This course will cover the setting where there are multiple tasks to be solved, and study how the structure arising from multiple tasks can benleveraged to learn more efficiently or effectively. This includes: goal-conditioned reinforcement learning techniques that leverage the structure of the provided goal space to learn many tasks significantly faster; meta-learning methods that aim to learn efficient learning algorithms that can learn new tasks quickly; curriculum and lifelong learning, where the problem requires learning a sequence of tasks, leveraging their shared structure to enable knowledge transfer. This is a graduate-level course. By the end of the course, students should be able to understand andnimplement the state-of-the-art multi-task learning algorithms and be ready to conduct research on these topics. Prerequisites: CS 229 or equivalent. Familiarity with deep learning, reinforcement learning, and machine learning is assumed.

CS 331B. Representation Learning in Computer Vision. 3 Units.
A representation performs the task of converting an observation in the real world (e.g. an image, a recorded speech signal, a word in a sentence) into a mathematical form (e.g. a vector). This mathematical form is then used by subsequent steps (e.g. a classifier) to produce the outcome, such as classifying an image or recognizing a spoken word. Forming the proper representation for a task is an essential problem in modern AI. In this course, we focus on 1) establishing why representations matter, 2) classical and moderns methods of forming representations in Computer Vision, 3) methods of analyzing and probing representations, 4) portraying the future landscape of representations with generic and comprehensive AI/vision systems over the horizon, and finally 5) going beyond computer vision by talking about non-visual representations, such as the ones used in NLP or neuroscience. The course will heavily feature systems based on deep learning and convolutional neural networks. We will have several teaching lectures, a number of prominent external guest speakers, as well as presentations by the students on recent papers and their projects. nnRequired Prerequisites: CS131A, CS231A, CS231B, or CS231N. If you do not have the required prerequisites, please contact a member of the course staff before enrolling in this course.

CS 332. Advanced Survey of Reinforcement Learning. 3 Units.
This class will provide a core overview of essential topics and new research frontiers in reinforcement learning. Planned topics include: model free and model based reinforcement learning, policy search, Monte Carlo Tree Search planning methods, off policy evaluation, exploration, imitation learning, temporal abstraction/hierarchical approaches, safety and risk sensitivity, human-in-the-loop RL, inverse reinforcement learning, learning to communicate, and insights from human learning. Students are expected to create an original research paper on a related topic. Prerequisites: CS 221 or AA 238/CS 238 or CS 234 or CS 229 or similar experience.

CS 333. Algorithms for Interactive Robotics. 3-4 Units.
Once confined to the manufacturing floor, robots are quickly entering the public space at multiple levels: drones, surgical robots, service robots, and self-driving cars are becoming tangible technologies impacting the human experience. Our goal in this class is to learn about and design algorithms that enable robots to reason about their actions, interact with one another, the humans, and the environment they live in, as well as plan safe strategies that humans can trust and rely on. This is a project-based graduate course that covers a broad set of algorithms in robotics, machine learning, and control theory for the goal of developing interactive human-robot systems. Recommended: Introductory course in AI, machine learning, and robotics.

CS 335. Fair, Accountable, and Transparent (FAccT) Deep Learning. 3 Units.
Deep learning-based AI systems have demonstrated remarkable learning capabilities. A growing field in deep learning research focuses on improving the Fairness, Accountability, and Transparency (FAccT) of a model in addition to its performance. Although FAccT will be difficult to achieve, emerging technical approaches in this topic show promise in making better FAccT AI systems. In this course, we will study the rigorous computer science necessary foundations for FAccT deep learning and dive into the technical underpinnings of topics including fairness, robustness, interpretability, accountability, and privacy. These topics reflect state-of-the-art research in FAccT, are socially important, and they have strong industrial interest due to government and other policy regulation. This course will focus on the algorithmic and statistical methods needed to approach FAccT AI from a deep learning perspective. We will also discuss several application areas where we can apply these techniques. Prerequisites: Intermediate knowledge of statistics, machine learning, and AI. Qualified students will have taken any one of the following, or their advanced equivalents: CS224N, CS230, CS231N, CS236, CS273B. Alternatively, students who have taken CS229 or have equivalent knowledge can be admitted with the permission of the instructors.

CS 337. AI-Assisted Care. 1 Unit.
AI has been advancing quickly, with its impact everywhere. In healthcare, innovation in AI could help transforming of our healthcare system. This course offers a diverse set of research projects focusing on cutting edge computer vision and machine learning technologies to solve some of healthcare's most important problems. The teaching team and teaching assistants will work closely with students on research projects in this area. Research projects include Care for Senior at Senior Home, Surgical Quality Analysis, AI Assisted Parenting, Burn Analysis & Assessment and more. AI areas include Video Understanding, Image Classification, Object Detection, Segmentation, Action Recognition, Deep Learning, Reinforcement Learning, HCI and more. The course is open to students in both school of medicine and school of engineering.
Same as: MED 277

CS 338. Physical Human Robot Interaction. 3 Units.
Robotics researchers and futurists have long dreamed of robots that can serve as assistants or caregivers. One important research area to develop such robots in the immediate future is Physical Human-Robot Interaction (pHRI). Assistive robots have the potential to provide adaptable and intelligent assistance to people in need, but developing such a robot is challenging because the robot needs to coordinate its motion with human, often through physical contacts. Reliable mechanical and control methods need to be developed in consideration of actively participating humans, while safety and dependability issues have to be addressed to successfully introduce robots in everyday environments. In this hands-on project-based course, students will learn about future opportunities and present realities for autonomous robots that provide physical assistance to humans. Students will also gain experience with key technologies for the creation of autonomous robots, including perception, action, human-robot interaction, and learning. Prerequisites: CS223A.

CS 339N. Machine Learning Methods for Neural Data Analysis. 3 Units.
With modern high-density electrodes and optical imaging techniques, neuroscientists routinely measure the activity of hundreds, if not thousands, of cells simultaneously. Coupled with high-resolution behavioral measurements, genetic sequencing, and connectomics, these datasets offer unprecedented opportunities to learn how neural circuits function. This course will study statistical machine learning methods for analysing such datasets, including: spike sorting, calcium deconvolution, and voltage smoothing techniques for extracting relevant signals from raw data; markerless tracking methods for estimating animal pose in behavioral videos; network models for connectomics and fMRI data; state space models for analysis of high-dimensional neural and behavioral time-series; point process models of neural spike trains; and deep learning methods for neural encoding and decoding. We will develop the theory behind these models and algorithms and then apply them to real datasets in the homeworks and final project.This course is similar to STATS215: Statistical Models in Biology and STATS366: Modern Statistics for Modern Biology, but it is specifically focused on statistical machine learning methods for neuroscience data. Prerequisites: Students should be comfortable with basic probability (STATS 116) and statistics (at the level of STATS 200). This course will place a heavy emphasis on implementing models and algorithms, so coding proficiency is required.
Same as: NBIO 220, STATS 220, STATS 320

CS 340. Topics in Computer Systems. 3-4 Units.
Topics vary every quarter, and may include advanced material being taught for the first time. May be repeated for credit.

CS 340LX. Advanced Operating System Lab: Accelerated. 2 Units.
This is an implementation-heavy, lab-based class that continues the topics from CS240LX. The labs will be more specialized, with an emphasis on research-worthy topics and techniques. The class format will follow CS240LX: two labs, twice a week, along with a set of research papers for context. Enrollment requires instructor permission.
Same as: II

CS 341. Project in Mining Massive Data Sets. 3 Units.
Students work in teams of three to solve a problem involving the analysis of a massive dataset. A proposal, early in March is required. There will be an information session (announced in CS246) explaining the datasets available in early March and this information will also be on the CS341 course website in late February. Each accepted team will be assigned a mentor who will work with them regularly throughout the quarter. Teams will also be provided access to significant computing resources on a commercial public cloud.

CS 342. Building for Digital Health. 3 Units.
This project-based course will provide a comprehensive overview of key requirements in the design and full-stack implementation of a digital health research application. Several pre-vetted and approved projects from the Stanford School of Medicine will be available for students to select from and build. Student teams learn about all necessary approval processes to deploy a digital health solution (data privacy clearance/ I RB approval, etc.) and be guided in the development of front-end and back-end infrastructure using best practices. The final project will be the presentation and deployment of a fully approved digital health research application. CS106A, CS106B, Recommended: CS193P/A, CS142, CS47, CS110. Limited enrollment for this course.
Same as: MED 253

CS 343D. Domain-Specific Programming Models and Compilers. 3 Units.
This class will cover the principles and practices of domain-specific programming models and compilers for dense and sparse applications in scientific computing, data science, and machine learning. We will study programming models from the recent literature, categorize them, and discuss their properties. We will also discuss promising directions for their compilation, including the separation of algorithm, schedule, and data representation, polyhedral compilation versus rewrite rules, and sparse iteration theory. Prerequisites: CS161 or equivalent, STATS116 or equivalent.

CS 344. Topics in Computer Networks. 3 Units.
This class could also be called "Build an Internet Router": Students work in teams of two to build a fully functioning Internet router, gaining hands-on experience building the hardware and software of a high-performance network system. Students design the control plane in C on a linux host and design the data plane in the new P4 language on the NetFPGA 4 x 10GE switch. For the midterm milestone, teams must demonstrate that their routers can interoperate with the other teams by building a small scale datacenter topology. In the final 3-4 weeks of the class, teams will participate in an open-ended design challenge. Prerequisites: At least one student in each team must have taken CS144 at Stanford and completed Lab 3 (static router). No Verilog or FPGA programming experience is required. May be repeated for credit.

CS 345S. Data-intensive Systems for the Next 1000x. 3-4 Units.
The last decade saw enormous shifts in the design of large-scale data-intensive systems due to the rise of Internet services, cloud computing, and Big Data processing. Where will we see the next 1000x increases in scale and data volume, and how should data-intensive systems accordingly evolve? This course will critically examine a range of trends, including the Internet of Things, drones, smart cities, and emerging hardware capabilities, through the lens of software systems research and design. Students will perform a comparative analysis by reading and discussing cutting-edge research while performing their own original research. Prerequisites: Strong background in software systems, especially databases (CS 245) and distributed systems (CS 244B), and/or machine learning (CS 229). Undergraduates who have completed CS 245 are strongly encouraged to attend.

CS 347. Human-Computer Interaction: Foundations and Frontiers. 3-4 Units.
(Previously numbered CS376.) How will the future of human-computer interaction evolve? This course equips students with the major animating theories of human-computer interaction, and connects those theories to modern innovations in research. Major theories are drawn from interaction (e.g., tangible and ubiquitous computing), social computing (e.g., Johansen matrix), and design (e.g., reflective practitioner, wicked problems), and span domains such as AI+HCI (e.g., mixed initiative interaction), accessibility (e.g., ability based design), and interface software tools (e.g., threshold/ceiling diagrams). Students read and comment on multiple research papers per week, and perform a quarter-long research project. Prerequisites: For CS and Symbolic Systems undergraduates/masters students, CS147 or CS247. No prerequisite for PhD students or students outside of CS and Symbolic Systems.

CS 348A. Computer Graphics: Geometric Modeling & Processing. 3 Units.
The mathematical tools needed for the geometrical aspects of computer graphics and especially for modeling smooth shapes. The course covers classical computer-aided design, geometry processing, and data-driven approaches for shape generation. Fundamentals: homogeneous coordinates and transformation. Theory of parametric and implicit curve and surface models: polar forms, Bézier arcs and de Casteljau subdivision, continuity constraints, B-splines, tensor product, and triangular patch surfaces. Subdivision surfaces and multi-resolution representations of geometry. Surface reconstruction from scattered data points. Geometry processing on meshes, including simplification and parametrization. Deep neural generative models for 3D geometry: parametric and implicit approaches, VAEs and GANs. Prerequisite: linear algebra at the level of CME103. Recommended: CS248.

CS 348B. Computer Graphics: Image Synthesis Techniques. 3-4 Units. Intermediate level, emphasizing high-quality image synthesis algorithms and systems issues in rendering. Topics include: Reyes and advanced rasterization, including motion blur and depth of field; ray tracing and physically based rendering; Monte Carlo algorithms for rendering, including direct illumination and global illumination; path tracing and photon mapping; surface reflection and light source models; volume rendering and subsurface scattering; SIMD and multi-core parallelism for rendering. Written assignments and programming projects. Prerequisite: 248 or equivalent. Recommended: Fourier analysis or digital signal processing.

CS 348C. Computer Graphics: Animation and Simulation. 3 Units. Core mathematics and methods for computer animation and motion simulation. Traditional animation techniques. Physics-based simulation methods for modeling shape and motion: particle systems, constraints, rigid bodies, deformable models, collisions and contact, fluids, and fracture. Animating natural phenomena. Methods for animating virtual characters and crowds. Additional topics selected from data-driven animation methods, realism and perception, animation systems, motion control, real-time and interactive methods, and multi-sensory feedback. Recommended: CS 148 and/or 205A. Prerequisite: linear algebra.

CS 348E. Character Animation: Modeling, Simulation, and Control of Human Motion. 3 Units. This course introduces technologies and mathematical tools for simulating, modeling, and controlling human/animal movements. Students will be exposed to integrated knowledge and techniques across computer graphics, robotics, machine learning and biomechanics. The topics include numerical integration, 3D character modeling, keyframe animation, skinning/rigging, multi-body dynamics, human kinematics, muscle dynamics, trajectory optimization, learning policies for motor skills, and motion capture. Students who successfully complete this course will be able to use and modify physics simulator for character animation or robotic applications, to design/train control policies for locomotion or manipulation tasks on virtual agents, and to leverage motion capture data for synthesizing realistic virtual humans. The evaluation of this course is based on three assignments and an open-ended research project. Recommended Prerequisite: CS148 or CS205A.

CS 348I. Computer Graphics in the Era of AI. 3 Units. This course introduces deep learning methods and AI technologies applied to four main areas of Computer Graphics: rendering, geometry, animation, and computational photography. We will study a wide range of problems on content creation for images, shapes, and animations, recently advanced by deep learning techniques. For each problem, we will understand its conventional solutions, study the state-of-the-art learning-based approaches, and critically evaluate their results as well as the impacts to researchers and practitioners in Computer Graphics. The topics include differentiable rendering/neural rendering, BRDF estimation, texture synthesis, denoising, procedural modeling, mesh segmentation, view prediction, colorization, style transfer, sketch simplification, character animation, physics simulation, and facial animation. Through programming projects and homework, students who successfully complete this course will be able to use neural rendering algorithms for image manipulation, to apply neural procedural modeling for shape and scene synthesis, to implement policy learning algorithms for creating character animation, and to exploit data-driven methods for simulating physical phenomena. Recommended Prerequisites: CS248, CS231N, CS229, CS205A.

CS 348K. Visual Computing Systems. 3-4 Units. Visual computing tasks such as computational photography, image/video understanding, and real-time 3D graphics are key responsibilities of modern computer systems ranging from sensor-rich smart phones, autonomous robots, and large data centers. These workloads demand exceptional system efficiency and this course examines the key ideas, techniques, and challenges associated with the design of parallel, heterogeneous systems that execute and accelerate visual computing applications. This course is intended for graduate and advanced undergraduate-level students interested in architecting efficient graphics, image processing, and computer vision systems (both new hardware architectures and domain-optimized programming frameworks) and for students in graphics, vision, and ML that seek to understand throughput computing concepts so they can develop scalable algorithms for these platforms. Students will perform daily research paper readings, complete simple programming assignments, and compete a self-selected term project. Prerequisites: CS 107 or equivalent. Highly recommended: Parallel Computing (CS149) or Computer Architecture (EE 282). Students will benefit from some background in deep learning (CS 230, CS 231N), computer vision (CS 231A), digital image processing (CS 232) or computer graphics (CS248).

CS 349. Topics in Programming Systems. 3 Units. Advanced material is often taught for the first time as a topics course, perhaps by a faculty member visiting from another institution. May be repeated for credit.

CS 349D. Cloud Computing Technology. 3 Units. The largest change in the computer industry over the past five years has arguably been the emergence of cloud computing: organizations are increasingly moving their workloads to managed public clouds and using new, global-scale services that were simply not possible in private datacenters. However, both building and using cloud systems remains a black art with many difficult research challenges. This research seminar will cover industry and academic work on cloud computing and survey challenges including programming interfaces, cloud native applications, resource management, pricing, availability and reliability, privacy and security. Students will also propose and develop an original research project.n nPrerequisites: For graduate students, background in computer systems (CS 240, 244, 244B or 245) is strongly recommended. Undergrads will need instructor's approval.

CS 349F. Technology for Financial Systems. 2 Units. Financial systems have spurred technological innovation and, in turn, are driven byncutting-edge technological developments. This course explores the synergy.nStudents will learn from faculty and industry experts how to build faster and fairer financial systems. Topics include network infrastructure: data center fabrics, ultra-low latency trading systems; cloud computing infrastructure: building large-scale risk computation platforms using virtual machines, containers and serverless computing. A particular focus will be on challenges and opportunities presented by cloud-native financial exchanges: the course will provide such an exchange and student groups will write programs for high-frequency and algorithmic trading. Recommended: Knowledge of basic Networking, OS, or Distributed Systems (CS 144, 140, or equivalent), as well as basic EE courses (EE 178) will be useful.

CS 349G. Selected Reading of Ph.D. Dissertations. 3 Units. Detailed reading of 5 selected Ph.D. dissertations within a field of computer science. For undergraduates, the course is an introduction to advanced foundational concepts within a field as well as an in-depth look at detailed research. For graduate students, the course focuses on historical reading as well as an opportunity to read dissertations and discuss their strengths and weaknesses. Both groups of students discuss historical context, how ideas succeeded or did not and why, and how they manifest in modern technology. The discussion of each dissertation completes with a guest lecture by its author. The selected dissertations change with each offering but are always from a coherent time period and topic area. Prerequisites: CS110 for undergraduates, EE282 for graduate students.

CS 349T. Project Lab: Video and Audio Technology for Live Theater in the Age of COVID. 3 Units.
This class is part of a multi-disciplinary collaboration between researchers in the CS, EE, and TAPS departments to design and develop a system to host a live theatrical production that will take place over the Internet in the winter quarter. The performing arts have been greatly affected by a transition to theater over Zoom and its competitors, none of which are great at delivering low-latency audio to actors, or high-quality audio and video to the audience, or feedback from the audience back to actors. These are big technical challenges. During the fall, we'll build a system that improves on current systems in certain areas: audio quality and latency over spotty Internet connections, video quality and realistic composited scenes with multiple actors, audience feedback, and perhaps digital puppetry. Students will learn to be part of a deadline-driven software development effort working to meet the needs of a theater director and creative specialists -- while communicating the effect of resource limits and constraints to a nontechnical audience. This is an experimental hands-on laboratory class, and our direction may shift as the creative needs of the theatrical production evolve. Based on the success of class projects and subsequent needs, some students may be invited to continue in the winter term with a research appointment (for pay or credit) to operate the system you have built and instruct actors and creative professionals how to work with the system through rehearsals and the final performance before spring break. Prerequisites: CS110 or EE102A. Recommended: familiarity with Linux, C++, and Git. Same as: EE 192T

CS 350. Secure Compilation. 3 Units.
This course explores the field of secure compilation, which sits at the intersection between security and programming languages. The course covers the following topics: threat models for secure compilers, formal criteria for secure compilers to adhere to, security relevance of secure compilation criteria, security architectures employed to achieve secure compilation, proof techniques for secure compilation with a focus on backtranslation.

CS 351. Open Problems in Coding Theory. 3 Units.
Coding theory is the study of how to encode data to protect it from noise. Coding theory touches CS, EE, math, and many other areas, and there are exciting open problems at all of these frontiers. In this class, we will explore these open problems by reading recent research papers and thinking about some open problems together. Required work will involve reading and presenting research papers, as well as working in small groups at these open problems and presenting progress. (Solving an open problem is not required!) Topics will depend on student interest and may include locality, coded computation, index coding, interactive communication, and group testing. Prerequisites: CS250 / EE387 or EE388; or linear algebra and permission of the instructor.

CS 352. Pseudo-Randomness. 3-4 Units.
Pseudorandomness is the widely applicable theory of efficiently generating objects that look random, despite being constructed using little or no randomness. Since psudorandom objects can replace uniformly distributed ones (in a well-defined sense), one may view pseudorandomness as an extension of our understanding of randomness through the computational lens. We will study the basic tools pseudorandomness, such as limited independence, randomness extractors, expander graphs, and pseudorandom generators. We will also discuss the applications of pseudrandomness to derandomization, cryptography and more. We will cover classic result as well as cutting-edge techniques. Prerequisites: CS 154 and CS 161, or equivalents.

CS 354. Topics in Intractability: Unfulfilled Algorithmic Fantasies. 3 Units.
Over the past 45 years, understanding NP-hardness has been an amazingly useful tool for algorithm designers. This course will expose students to additional ways to reason about obstacles for designing efficient algorithms. Topics will include unconditional lower bounds (query- and communication-complexity), total problems, Unique Games, average-case complexity, and fine-grained complexity. Prerequisites: CS 161 or equivalent. CS 254 recommended but not required.

CS 355. Advanced Topics in Cryptography. 3 Units.
Topics: Pseudo randomness, multiparty computation, pairing-based and lattice-based cryptography, zero knowledge protocols, and new encryption and integrity paradigms. May be repeated for credit. Prerequisite: CS255.

CS 356. Topics in Computer and Network Security. 3 Units.
Research seminar covering foundational work and current topics in computer and network security. Students will read and discuss published research papers as well as complete an original research project in small groups. Open to Ph.D. and masters students as well as advanced undergraduate students. Prerequisites: While the course has no official prerequisites, students need a mature understanding of software systems and networks to be successful. We strongly encourage students to first take CS155: Computer and Network Security.

CS 357. Advanced Topics in Formal Methods. 3 Units.
Topics vary annually. Recent offerings have covered the foundations of static analysis, including decision procedures for important theories (SAT, linear integer constraints, SMT solvers), model checking, abstract interpretation, and constraint-based analysis. May be repeated for credit.

CS 357S. Formal Methods for Computer Systems. 3 Units.
The complexity of modern computer systems requires rigorous and systematic verification/validation techniques to evaluate their ability to correctly and securely support application programs. To this end, a growing body of work in both industry and academia leverages formal methods techniques to solve computer systems challenges. This course is a research seminar that will cover foundational work and current topics in the application of formal methods-style techniques (some possible examples include SAT/SMT, model checking, symbolic execution, theorem proving, program synthesis, fuzzing) to reliable and secure computer systems design. The course can be thought of as an applied formal methods course where the application is reliable and secure architecture, microarchitecture, and distributed systems design. Prior formal methods experience is not necessary. Students will read and discuss published research papers and complete an original research project. Open to PhD and masters students as well as advanced undergraduate students. Prerequisites: EE180 Digital Systems Architecture or comparable course, or consent of instructor.

CS 358. Topics in Programming Language Theory. 3 Units.
Advanced material is often taught for the first time as a topics course, perhaps by a faculty member visiting from another institution. May be repeated for credit.

CS 358A. Programming Language Foundations. 3 Units.
This course introduces advanced formal systems and programming languages as well as techniques to reason formally about them. Possible systems of study include: the lambda calculus, System F, the Pi and Spi calculi, simply-typed languages, security type systems for non-interference, robust safety, linear types, ownership types, session types, logical relations and semantic models etc.

CS 359. Topics in the Theory of Computation. 3 Units.
Advanced material is often taught for the first time as a topics course, perhaps by a faculty member visiting from another institution. May be repeated for credit.

CS 360. Simplicity and Complexity in Economic Theory. 3-5 Units.
Technology has enabled the emergence of economic systems of formerly inconceivable complexity. Nevertheless, some technology-related economic problems are so complex that either supercomputers cannot solve them in a reasonable time, or they are too complex for humans to comprehend. Thus, modern economic designs must still be simple enough for humans to understand, and must address computationally complex problems in an efficient fashion. This topics course explores simplicity and complexity in economics, primarily via theoretical models. We will focus on recent advances. Key topics include (but are not limited to) resource allocation in complex environments, communication complexity and information aggregation in markets, robust mechanisms, dynamic matching theory, influence maximization in networks, and the design of simple (user-friendly) mechanisms. Some applications include paired kidney exchange, auctions for electricity and for radio spectrum, ride-sharing platforms, and the diffusion of information. Prerequisites: Econ 203 or equivalent.
Same as: ECON 284

CS 361. Engineering Design Optimization. 3-4 Units.
Design of engineering systems within a formal optimization framework. This course covers the mathematical and algorithmic fundamentals of optimization, including derivative and derivative-free approaches for both linear and non-linear problems, with an emphasis on multidisciplinary design optimization. Topics will also include quantitative methodologies for addressing various challenges, such as accommodating multiple objectives, automating differentiation, handling uncertainty in evaluations, selecting design points for experimentation, and principled methods for optimization when evaluations are expensive. Applications range from the design of aircraft to automated vehicles. Prerequisites: some familiarity with probability, programming, and multivariable calculus.
Same as: AA 222

CS 366. Computational Social Choice. 3 Units.
An in-depth treatment of algorithmic and game-theoretic issues in social choice. Topics include common voting rules and impossibility results; ordinal vs cardinal voting; market approaches to large scale decision making; voting in complex elections, including multi-winner elections and participatory budgeting; protocols for large scale negotiation and deliberation; fairness in societal decision making;nalgorithmic approaches to governance of modern distributed systems such as blockchains and community-mediated social networks; opinion dynamics and polarization. Prerequisites: algorithms at the level of 212 or CS 161, probability at the level of 221, and basic game theory, or consent of instructor.
Same as: MS&E 336

CS 368. Algorithmic Techniques for Big Data. 3 Units.
(Previously numbered CS 369G.) Designing algorithms for efficient processing of large data sets poses unique challenges. This course will discuss algorithmic paradigms that have been developed to efficiently process data sets that are much larger than available memory. We will cover streaming algorithms and sketching methods that produce compact datanstructures, dimension reduction methods that preserve geometric structure, efficient algorithms for numerical linear algebra, graph sparsification methods, as well as impossibility results for these techniques.

CS 369. Topics in Analysis of Algorithms. 3 Units.
Advanced material is often taught for the first time as a topics course, perhaps by a faculty member visiting from another institution. May be repeated for credit.

CS 369H. Hierarchies of Integer Programming Relaxations. 3 Units.
Mathematical programming relaxations of integer programming formulations are a popular way to apply convex optimization techniques to hard combinatorial optimization problems. Such relaxations can be made closer to their integer programming counterparts by adding constraints; a systematic way to achieve this is via hierarchies of relaxations. Several such hierarchies are well-studied in the literature: Lovasz-Schrijver, Sherali-Adams and the Parrilo-Lasserre sum-of-squares (SoS) hierarchy. Recently, these hierarchies have received a lot of attention due to their potential to make progress on long standing algorithmic questions, and connections to various other areas such as computational complexity, combinatorial and polynomial optimization, quantum computing, proof complexity and so on. In this course we will cover recent research results in this area for problems arising from optimization, machine learning, computational complexity and more, discussing both lower and upper bounds. Prerequisites: Mathematical maturity (required), exposure to algorithms (strongly recommended), and optimization (recommended).

CS 369L. Algorithmic Perspective on Machine Learning. 3 Units.
Many problems in machine learning are intractable in the worst case, andnpose a challenge for the design of algorithms with provable guarantees. In this course, we will discuss several success stories at the intersection of algorithm design and machine learning, focusing on devising appropriate models and mathematical tools to facilitate rigorous analysis.

CS 369M. Metric Embeddings and Algorithmic Applications. 3 Units.
Low distortion embeddings of finite metric spaces is a topic at the intersection of mathematics and theoretical computer science. Much progress in this area in recent years has been motivated by algorithmic applications. Mapping complicated metrics of interest to simpler metrics (normed spaces, trees, and so on) gives access to a powerful algorithmic toolkit for approximation algorithms, online algorithms as well as for efficient search and indexing of large data sets. In a different vein, convex relaxations are a useful tool for graph partitioning problems; central to the analysis are metric embedding questions for certainly computationally defined metrics. In this course, we will see several classical and recent results on metric embeddings with a focus on algorithmic applications. Students will be expected to have a strong background in algorithms and probability.

CS 371. Computational Biology in Four Dimensions. 3 Units.
Cutting-edge research on computational techniques for investigating and designing the three-dimensional structure and dynamics of biomolecules, cells, and everything in between. These techniques, which draw on approaches ranging from physics-based simulation to machine learning, play an increasingly important role in drug discovery, medicine, bioengineering, and molecular biology. Course is devoted primarily to reading, presentation, discussion, and critique of papers describing important recent research developments. Prerequisite: CS 106A or equivalent, and an introductory course in biology or biochemistry. Recommended: some experience in mathematical modeling (does not need to be a formal course).
Same as: BIOMEDIN 371, BIOPHYS 371, CME 371

CS 372. Artificial Intelligence for Disease Diagnosis and Information Recommendations. 3 Units.
Artificial intelligence, specifically deep learning, stands out as one of the most transformative technologies of the past decade. AI can already outperform humans in several computer vision and natural language processing tasks. However, we still face some of the same limitations and obstacles that led to the demise of the first AI boom phase five decades ago. This research-oriented course will first review and reveal the limitations (e.g., iid assumption on training and testing data, voluminous training data requirement, and lacking interpretability) of some widely used AI algorithms, including convolutional neural networks (CNNs), transformers, reinforcement learning, and generative adversarial networks (GANs). To address these limitations, we will then explore topics including transfer learning for remedying data scarcity, knowledge-guided multimodal learning for improving data diversity, out of distribution generalization, attention mechanisms for enabling Interpretability, meta learning, and privacy-preserving training data management. The course will be taught through a combination of lecture and project sessions. Lectures on specialized AI applications (e.g., cancer/depression diagnosis and treatment, AI/VR for surgery, and health education) will feature guest speakers from academia and industry. Students will be assigned to work on an extensive project that is relevant to their fields of study (e.g., CS, Medicine, and Data Science). Projects may involve conducting literature surveys, formulating ideas, and implementing these ideas. Example project topics are but not limited to 1) knowledge guided GANs for improving training data diversity, 2) disease diagnosis via multimodal symptom checking, and 3) fake and biased news/information detection.

CS 373. Statistical and Machine Learning Methods for Genomics. 3 Units.
Introduction to statistical and computational methods for genomics. Sample topics include: expectation maximization, hidden Markov model, Markov chain Monte Carlo, ensemble learning, probabilistic graphical models, kernel methods and other modern machine learning paradigms. Rationales and techniques illustrated with existing implementations used in population genetics, disease association, and functional regulatory genomics studies. Instruction includes lectures and discussion of readings from primary literature. Homework and projects require implementing some of the algorithms and using existing toolkits for analysis of genomic datasets.
Same as: BIO 268, BIOMEDIN 245, STATS 345

CS 375. Large-Scale Neural Network Modeling for Neuroscience. 1-3 Unit.
Introduction to designing, building, and training large-scale neural networks for modeling brain and behavioral data, including: deep convolutional neural network models of sensory systems (vision, audition, somatosensation); variational and generative methods for neural interpretation; recurrent neural networks for dynamics, memory and attention; interactive agent-based deep reinforcement learning for cognitive modeling; and methods and metrics for comparing such models to real-world neural data. Attention will be given both to established methods as well as cutting-edge techniques. Students will learn conceptual bases for deep neural network models and will also implement learn to implement and train large-scale models in Tensorflow using GPUs. Requirements: Fluency in Unix shell and Python programming; familiarity with differential equations, linear algebra, and probability theory; priori experience with modern machine learning concepts (e.g. CS229) and basic neural network training tools (eg. CS230 and/or CS231n). Prior knowledge of basic cognitive science or neuroscience not required but helpful.
Same as: PSYCH 249

CS 377. Topics in Human-Computer Interaction. 2-3 Units.
Contents change each quarter. May be repeated for credit. See http://hci.stanford.edu/academics for offerings.

CS 377E. Designing Solutions to Global Grand Challenges. 3-4 Units.
In this course we creatively apply information technologies to collectively attack Global Grand Challenges (e.g., global warming, rising healthcare costs and declining access, and ensuring quality education for all). Interdisciplinary student teams will carry out need-finding within a target domain, followed by brainstorming to propose a quarter long project. Teams will spend the rest of the quarter applying user-centered design methods to rapidly iterate through design, prototyping, and testing of their solutions. This course will interweave a weekly lecture with a weekly studio session where students apply the techniques hands-on in a small-scale, supportive environment.

CS 377G. Designing Serious Games. 3-4 Units.
Over the last few years we have seen the rise of "serious games" to promote understanding of complex social and ecological challenges, and to create passion for solving them. This project-based course provides an introduction to game design principals while applying them to games that teach. Run as a hands-on studio class, students will design and prototype games for social change and civic engagement. We will learn the fundamentals of games design via lecture and extensive reading in order to make effective games to explore issues facing society today. The course culminates in an end-of- quarter open house to showcase our games. Prerequisite: CS147 or equivalent. 247G recommended, but not required.

CS 377N. Introduction to the Design of Smart Products. 3-4 Units.
This course will focus on the technical mechatronic skills as well as the human factors and interaction design considerations required for the design of smart products and devices. Students will learn techniques for rapid prototyping of smart devices, best practices for physical interaction design, fundamentals of affordances and signifiers, and interaction across networked devices. Students will be introduced to design guidelines for integrating electrical components such as PCBs into mechanical assemblies and consider the physical form of devices, not just as enclosures but also as a central component of the smart product. Prerequisites include: CS106A and E40 highly recommended, or instructor approval.
Same as: ME 216M

CS 377P. Advanced User Interface Design Patterns. 3 Units.
User interface design is about creating the most effective, intuitive design possible to help users achieve a specific goal. While understanding users is one part of the equation, the other part is a strong understanding of user interface design rules and patterns that you can apply to solve their needs. This course will deep dive into user interface design across mobile, desktop, and wearable platforms covering common patterns, when to use them, and when to break them. Each week will cover a different user interface design challenge and explore the patterns in areas such as data input, search & filters, tables and lists, content organization, navigation, dark patterns and more. Through the use of in class exercises, integrated design challenges, and an exploration of examples, students will leave the class knowing how to integrate user interface patterns into their design work to create powerful, effective digital experiences. Prerequisite: CS 147 or equivalent. 247 recommended but not required.

CS 377Q. Designing for Accessibility. 3-4 Units.
Designing for accessibility is a valuable and important skill in the UX community. As businesses are becoming more aware of the needs and scope of people with some form of disability, the benefits of universal design, where designing for accessibility ends up benefitting everyone, are becoming more apparent. This class introduces fundamental Human Computer Interaction (HCI) concepts and skills in designing for accessibility. Student projects will identify an accessibility need, prototype a design solution, and conduct a user study with a person with a disability. Prerequisites: Background in human-centered design (e.g., CS 147, CS 247, ME 115A, or a d.school class) is required. Web or mobile programming experience (e.g., CS 142), or experience with qualitative user studies may be helpful. The class involves team design projects and prototyping.

CS 377T. Topics in Human-Computer Interaction: Teaching Studio Classes. 3 Units.
Studio teaching is a practice that dates back to the apprentice days of art studios. In this course, you will learn to teach project based classes that include critique. We will also cover effective coaching, design of projects and exercises, and curating material in order to maximize the effectiveness of a flipped classroom. Recommended for TAs in HCI.

CS 377U. Understanding Users. 3-4 Units.
This project-based class focuses on understanding the use of technology in the world. Students will learn generative and evaluative research methods to explore how systems are appropriated into everyday life in a quarter-long project where they design, implement and evaluate a novel mobile application. Quantitative (e.g. A/B testing, instrumentation, analytics, surveys) and qualitative (e.g. diary studies, contextual inquiry, ethnography) methods and their combination will be covered along with practical experience applying these methods in their project. Prerequisites: CS 147, 193A/193P (or equivalent mobile programming experience).

CS 379. Interdisciplinary Topics. 3 Units.
Advanced material is often taught for the first time as a topics course, perhaps by a faculty member visiting from another institution. May be repeated for credit.

CS 379C. Computational Models of the Neocortex. 3 Units.
This class focuses on building agents that achieve human-level performance in specialized technical domains and are adept at collaborating with humans using natural language. We draw upon research in cognitive and systems neuroscience to take advantage of what is known about how humans communicate and solve problems in order to design advanced artificial neural network architectures. For more detail, see http://www.stanford.edu/class/cs379c/ with special attention to the CALENDAR and DISCUSSION tabs from past classes available by following the ARCHIVES link.

CS 384. Seminar on Ethical and Social Issues in Natural Language Processing. 3-4 Units.
Seminar covering issues in natural language processing related to ethical and social issues and the overall impact of these algorithms on people and society. Topics include: bias in data and models, privacy and computational profiling, measuring civility and toxicity online, computational propaganda, manipulation and framing, fairness/equity, power, recommendations and filter bubbles, applications to social good, and philosophical foundations of ethical investigation. Prerequisites: CS 224N and 224U.

CS 390A. Curricular Practical Training. 1 Unit.
Educational opportunities in high technology research and development labs in the computing industry. Qualified computer science students engage in internship work and integrate that work into their academic program. Students register under their faculty advisor during the quarter they are employed and complete a research report outlining their work activity, problems investigated, results, and follow-on projects they expect to perform. CS390A, CS390B, and CS390C may each be taken once.

CS 390B. Curricular Practical Training. 1 Unit.
Educational opportunities in high technology research and development labs in the computing industry. Qualified computer science students engage in internship work and integrate that work into their academic program. Students register under their faculty advisor during the quarter they are employed and complete a research report outlining their work activity, problems investigated, results, and follow-on projects they expect to perform. CS390A, CS390B, and CS390C may each be taken once.

CS 390C. Curricular Practical Training. 1 Unit.
Educational opportunities in high technology research and development labs in the computing industry. Qualified computer science students engage in internship work and integrate that work into their academic program. Students register under their faculty advisor during the quarter they are employed and complete a research report outlining their work activity, problems investigated, results, and follow-on projects they expect to perform. CS 390A, CS390B, and CS390C may each be taken once.

CS 390D. Part-time Curricular Practical Training. 1 Unit.
For qualified computer science PhD students only. Permission number required for enrollment; see the CS PhD program administrator in Gates room 195. Educational opportunities in high technology research and development labs in the computing industry. Qualified computer science PhD students engage in research and integrate that work into their academic program. Students register under their faculty advisor during the quarter they are employed and complete a research report outlining their work activity, problems investigated, results, and follow-on projects they expect to perform. Students on F1 visas should be aware that completing 12 or more months of full-time CPT will make them ineligible for Optional Practical Training (OPT).

CS 393. Computer Laboratory. 1-9 Unit.
For CS graduate students. A substantial computer program is designed and implemented; written report required. Recommended as a preparation for dissertation research. Register using the section number associated with the instructor. Prerequisite: consent of instructor.

CS 395. Independent Database Project. 1-6 Unit.
For graduate students in Computer Science. Use of database management or file systems for a substantial application or implementation of components of database management system. Written analysis and evaluation required. Register using the section number associated with the instructor. Prerequisite: consent of instructor.

CS 398. Computational Education. 4 Units.
This course covers cutting-edge education algorithms used to model students, assess learning, and design widely deployable tools for open access education. The goal of the course is for you to be ready to lead your own computation education research project. Topics include knowledge tracing, generative grading, teachable agents, and challenges and opportunities implementing computational education in diverse contexts around the world. The course will consist of group and individual work and encourages creativity. Recommended: CS 142 and/or CS 221. Prerequisites: CS 106B and 109.

CS 399. Independent Project. 1-9 Unit.
Letter grade only. This course is for masters students only. Undergraduate students should enroll in CS199; PhD students should enroll in CS499. Letter grade; if not appropriate, enroll in CS399P. Register using the section number associated with the instructor. Prerequisite: consent of instructor.

CS 399P. Independent Project. 1-9 Unit.
Graded satisfactory/no credit. This course is for masters students only. Undergraduate students should enroll in CS199; PhD students should enroll in CS499. S/NC only; if not appropriate, enroll in CS399. Register using the section number associated with the instructor. Prerequisite: consent of instructor.

CS 402. Beyond Bits and Atoms: Designing Technological Tools. 3-4 Units.
This course is a practicum in the design of technology-enabled curricula and hands-on learning environments. It focuses on the theories, concepts, and practices necessary to design effective, low-cost educational technologies that support learning in all contexts for a variety of diverse learners. We will explore theories and design frameworks from constructivist and constructionist learning perspectives, as well as the lenses of critical pedagogy, Universal Design for Learning (UDL), and interaction design for children. The course will concretize theories, concepts, and practices in weekly presentations (including examples) from industry experts with significant backgrounds and proven expertise in designing successful, evidence-based, educational technology products. The Practicum provides the design foundation for EDUC 211 / CS 402 L, a hands-on lab focused on introductory prototyping and the fabrication of incipient interactive, educational technologies. (No prior prototyping experience required.) Interested students must also register for either EDUC 211 or CS 402L, complete the application at bit.ly/BBA-Winter2020 by January 4 at 5 p.m., and come to the first class at 8:30 a.m. in CERAS 108.
Same as: EDUC 236

CS 402L. Beyond Bits and Atoms - Lab. 1-3 Unit.
This lab course is a hands-on introduction to the prototyping and fabrication of tangible, interactive technologies, with a special focus on learning and education. (No prior prototyping experience required.) It focuses on the design and prototyping of low-cost technologies that support learning in all contexts for a variety of diverse learners. You will be introduced to, and learn how to use state-of-the-art fabrication machines (3D printers, laser cutters, Go Go Boards, Sensors, etc.) to design educational toolkits, educational toys, science kits, and tangible user interfaces. The lab builds on the the theoretical and evidence-based foundations explored in the EDUC 236 / CS 402 Practicum. Interested students must also register for either EDUC 236 or CS 402, complete the application at bit.ly/BBA-Winter2020 by January 4 at 5 p.m., and come to the first class at 8:30 a.m. in CERAS 108.
Same as: EDUC 211

CS 421. Designing AI to Cultivate Human Well-Being. 2 Units.
Artificial Intelligence (AI) has the potential to drive us towards a better future for all of humanity, but it also comes with significant risks and challenges. At its best, AI can help humans mitigate climate change, diagnose and treat diseases more effectively, enhance learning, and improve access to capital throughout the world. But it also has the potential to exacerbate human biases, destroy trust in information flow, displace entire industries, and amplify inequality throughout the world. We have arrived at a pivotal moment in the development of the technology in which we must establish a foundation for how we will design AI to capture the positive potential and mitigate the negative risks. To do this, building AI must be an inclusive, interactive, and introspective process guided by an affirmative vision of a beneficial AI-future. The goal of this interdisciplinary class is to bridge the gap between technological and societal objectives: How do we design AI to promote human well-being? The ultimate aim is to provide tools and frameworks to build a more harmonious human society based on cooperation toward a shared vision. Thus, students are trained in basic science to understand what brings about the conditions for human flourishing and will create meaningful AI technologies that aligns with the PACE framework: 1) has a clear and meaningful purpose, 2) augments human dignity and autonomy, 3) creates a feeling of inclusivity and collaboration, 4) creates shared prosperity and a sense of forward movement (excellence). Toward this end, students work in interdisciplinary teams on a final project and propose a solution that tackles a significant societal challenge by leveraging technology and frameworks on human thriving.

CS 422. Interactive and Embodied Learning. 3 Units.
Most successful machine learning algorithms of today use either carefully curated, human-labeled datasets, or large amounts of experience aimed at achieving well-defined goals within specific environments. In contrast, people learn through their agency: they interact with their environments, exploring and building complex mental models of their world so as to be able to flexibly adapt to a wide variety of tasks. One crucial next direction in artificial intelligence is to create artificial agents that learn in this flexible and robust way. Students will read and take turns presenting current works, and they will produce a proposal of a feasible next research direction. Prerequisites: CS229, CS231N, CS234 (or equivalent).

CS 428. Computation and Cognition: The Probabilistic Approach. 3 Units.
This course will introduce the probabilistic approach to cognitive science, in which learning and reasoning are understood as inference in complex probabilistic models. Examples will be drawn from areas including concept learning, causal reasoning, social cognition, and language understanding. Formal modeling ideas and techniques will be discussed in concert with relevant empirical phenomena.
Same as: PSYCH 204

CS 431. High-level Vision: From Neurons to Deep Neural Networks. 1-3 Unit.
Interdisciplinary seminar focusing on understanding how computations in the brain enable rapid and efficient object perception. Covers topics from multiple perspectives drawing on recent research in Psychology, Neuroscience, and Computer Science. Emphasis on discussing recent empirical findings, methods and theoretical debates in the field.
Same as: PSYCH 250

CS 448. Topics in Computer Graphics. 3-4 Units.
Topic changes each quarter. Recent topics: computational photography, datanvisualization, character animation, virtual worlds, graphics architectures, advanced rendering. See http://graphics.stanford.edu/courses for offererings and prerequisites. May be repeated for credit.

CS 448B. Data Visualization. 3-4 Units.
Techniques and algorithms for creating effective visualizations based on principles from graphic design, visual art, perceptual psychology, and cognitive science. Topics: graphical perception, data and image models, visual encoding, graph and tree layout, color, animation, interaction techniques, automated design. Lectures, reading, and project. Prerequisite: one of CS147, CS148, or equivalent.
Same as: SYMSYS 195V

CS 448H. Topics in Computer Graphics: Agile Hardware Design. 3 Units.
Topic changes each quarter. Recent topics: computational photography, data visualization, character animation, virtual worlds, graphics architectures, advanced rendering. See http://graphics.stanford.edu/courses for offerings and prerequisites. May be repeated for credit.

CS 448I. Computational Imaging and Display. 3 Units.
Spawned by rapid advances in optical fabrication and digital processing power, a new generation of imaging technology is emerging: computational cameras at the convergence of applied mathematics, optics, and high-performance computing. Similar trends are observed for modern displays pushing the boundaries of resolution, contrast, 3D capabilities, and immersive experiences through the co-design of optics, electronics, and computation. This course serves as an introduction to the emerging field of computational imaging and displays. Students will learn to master bits and photons.
Same as: EE 367

CS 448M. Making Making Machines for Makers. 3-4 Units.
An introductory, project-based exploration of systems and processes for making things using computer-aided design and manufacturing, and an introduction to machines and machine tools. Emphasis will be placed on building novel machines and related software for use by "makers" and interactive machines. Course projects will encourage students to understand, build and modify/hack a sequence of machines: (1) an embroidery machine for custom textiles, (2) a paper cutting machine (with drag knife) for ornamental design, and (3) an XY plotter with Arduino controller. Through these projects students explore both (i) principles of operation (mechanical, stepper motors and servos, electrical control, computer software), and (ii) computer algorithms (trajectory, tool path, design). Current trends in interactive machines will be surveyed. The course will culminate in a final student-selected project. Prerequisite: CS106A or equivalent programming experience. Students should have a desire to make things.

CS 448P. Hacking the Pandemic. 3 Units.
This timely project-based course provides a venue for students to apply their skills in computing and other areas to help people cope with the Coronavirus Disease 2019 (CoViD-19) pandemic. In addition to brief lectures, guest speakers, and moderated discussions and brainstorming sessions, the course will primarily consist of self-organized team projects where students find creative ways to contribute by leveraging any and all computational tools at our disposal (e.g., algorithms, app development, HCI, remote interaction and communication, data visualization, modeling and simulation, fabrication and 3d printing, design, computer games, VR, computer systems and networking, AI, statistics, bioinformatics, etc.). Prerequisite: CS106B.

CS 448V. Topics in Computer Graphics: Computational Video Manipulation. 3 Units.
The goal of this graduate (advanced undergraduate also welcome) course is to survey recent work on computational video analysis and manipulation techniques. We will learn how to acquire, represent, edit and remix video. Several popular video manipulation algorithms will be presented, with an emphasis on using these techniques to build practical systems. Students will have the opportunity to acquire their own video and implement the processing tools needed to computationally analyze and manipulate it. The course will be project based with a substantial final project.

CS 468. Topics in Geometric Algorithms: Non-Euclidean Methods in Machine Learning. 3 Units.
Contents of this course vary with each offering. Past offerings have included geometric matching, surface reconstruction, collision detection, computational topology., differential geometry for computer scientists, computational symmetry and regularity, and data-driven shape analysis. The 2020-21 offering will be on Non-Euclidean Methods in Machine Learning. May be repeated for credit.nPrerequisites: Math 51 and 52 or equivalent, basic coding.

CS 472. Data science and AI for COVID-19. 2 Units.
This project class investigates and models COVID-19 using tools from data science and machine learning. We will introduce the relevant background for the biology and epidemiology of the COVID-19 virus. Then we will critically examine current models that are used to predict infection rates in the population as well as models used to support various public health interventions (e.g. herd immunity and social distancing). The core of this class will be projects aimed to create tools that can assist in the ongoing global health efforts. Potential projects include data visualization and education platforms, improved modeling and predictions, social network and NLP analysis of the propagation of COVID-19 information, and behavior-nudging tools. The class is aimed toward students with experience in data science and AI, and will include guest lectures by biomedical experts. Prerequisites: background in machine learning and statistics (CS229, STATS216 or equivalent). Some biological background is helpful but not required.
Same as: BIODS 472, BIOMEDIN 472

CS 476A. Music, Computing, Design: The Art of Design. 3-4 Units.
Creative design for computer music software. Programming, audiovisual design, as well as software design for musical tools, instruments, toys, and games. Provides paradigms and strategies for designing and building music software, with emphases on interactive systems, aesthetics, and artful product design. Course work includes several programming assignments and a "design+implement" final project. Prerequisite: experience in C/C++ and/or Java.See https://ccrma.stanford.edu/courses/256a/.
Same as: MUSIC 256A

CS 476B. Music, Computing, Design II: Virtual and Augmented Reality for Music. 3-4 Units.
Aesthetics, design, and exploration of creative musical applications of virtual reality (VR) and augmented reality (AR), centered around VR and mobile technologies. Comparison between AR, VR, and traditional software design paradigms for music. Topics include embodiment, interaction design, novel instruments, social experience, software design + prototyping. Prerequisite: MUSIC 256A / CS 476A.
Same as: MUSIC 256B

CS 481. Digital Technology and Law: Foundations. 3 Units.
Taught by a team of law and engineering faculty, this unique interdisciplinary course will empower students across the University to work together and exercise leadership on critically important debates at the intersection of law and digital technology. Designed as an accessible survey, the course will equip students with two powerful bases of knowledge: (i) a working technical grasp of key digital technologies (e.g., AI and machine learning, internet structure, encryption, blockchain); and (ii) basic fluency in the key legal frameworks implicated by each (e.g., privacy, cybersecurity, anti-discrimination, free speech, torts, procedural fairness). Substantively, the course will be organized into modules focused on distinct law-tech intersections, including: platform regulation, speech, and intermediary liability; algorithmic bias and civil rights; autonomous systems, safety, and tort liability; "smart" contracting; data privacy and consumer protection; "legal tech," litigation, and access to justice; government use of AI; and encryption and criminal procedure. Each module will be explored via a mix of technical and legal instruction, case study discussions, in-class practical exercises, and guest speakers from industry, government, academe, and civil society. Law students will emerge from the course with a basic understanding of core digital technologies and related legal frameworks and a roadmap of curricular and career pathways one might follow to pursue each area further. Students from elsewhere in the University, from engineering to business to the social sciences and beyond, will emerge with an enhanced capacity to critically assess the legal and policy implications of new digital technologies and the ways society can work to ensure those technologies serve the public good. All students will learn to work together across disciplinary divides to solve technical, legal, and practical problems. There are no course prerequisites, and no prior legal or technical training will be assumed. Students will be responsible for short discussion papers or a final paper. After the term begins, students electing the final paper option can transfer from section 1 to section 2, which meets the R requirement, with consent of the instructor. This class is cross-listed in the University and undergraduates and graduates are eligible to take it. Consent Application for Non-Law Students: We will try to accommodate all students interested in the course. But to facilitate planning and confirm interest, please fill out a consent application (https://forms.gle/hLAQ7JUm2jFTWQzE9) by March 13, 2020. Applications received after March 13 will be considered on a rolling basis. Elements used in grading: Attendance, Class Participation; Written Assignments or Final Paper.

CS 499. Advanced Reading and Research. 1-15 Unit.
Letter grade only. Advanced reading and research for CS PhD students. Register using the section number associated with the instructor. Prerequisite: consent of instructor. This course is for PhD students only. Undergraduate students should enroll in CS199, masters students should enroll in CS399. Letter grade; if not appropriate, enroll in CS499P.

CS 499P. Advanced Reading and Research. 1-15 Unit.
Graded satisfactory/no credit. Advanced reading and research for CS PhD students. Register using the section number associated with the instructor. Prerequisite: consent of instructor. This course is for PhD students only. Undergraduate students should enroll in CS199, masters students should enroll in CS399. S/NC only; if not appropriate, enroll in CS499.

CS 520. Knowledge Graphs. 1 Unit.
Knowledge graphs have emerged as a compelling abstraction for organizing world'snstructured knowledge over the internet, capturing relationships among key entities ofninterest to enterprises, and a way to integrate information extracted from multiplendata sources. Knowledge graphs have also started to play a central role in machine nlearning and natural language processing as a method to incorporate world knowledge, as a target knowledge representation for extracted knowledge, and for explaining what is being learned. This class is a graduate level research seminar featuring prominent researchers and industry practitioners working on different aspects of knowledge graphs. It will showcase how latest research in AI, database systems and HCI is coming together in integrated intelligent systems centered around knowledge graphs.

CS 521. Seminar on AI Safety. 1 Unit.
In this seminar, we will focus on the challenges in the design of safe and verified AI-based systems. We will explore some of the major problems in this area from the viewpoint of industry and academia. We plan to have a weekly seminar speaker to discuss issues such as verification of AI systems, reward misalignment and hacking, secure and attack-resilient AI systems, diagnosis and repair, issues regarding policy and ethics, as well as the implications of AI safety in automotive industry. Prerequisites: There are no official prerequisites but an introductory course in artificial intelligence is recommended.

CS 522. Seminar in Artificial Intelligence in Healthcare. 1 Unit.
Artificial intelligence is poised to make radical changes in healthcare, transforming areas such as diagnosis, genomics, surgical robotics, and drug discovery. In the coming years, artificial intelligence has the potential to lower healthcare costs, identify more effective treatments, and facilitate prevention and early detection of diseases. This class is a seminar series featuring prominent researchers, physicians, entrepreneurs, and venture capitalists, all sharing their thoughts on the future of healthcare. We highly encourage students of all backgrounds to enroll (no AI/healthcare background necessary). Speakers and more at shift.stanford.edu/healthai.

CS 529. Robotics and Autonomous Systems Seminar. 1 Unit.
Seminar talks by researchers and industry professionals on topics related to modern robotics and autonomous systems. Broadly, talks will cover robotic design, perception and navigation, planning and control, and learning for complex robotic systems. May be repeated for credit.
Same as: AA 289

CS 544. INTERACTIVE MEDIA AND GAMES. 1 Unit.
Interactive media and games increasingly pervade and shape our society. In addition to their dominant roles in entertainment, video games play growing roles in education, arts, and science. This seminar series brings together a diverse set of experts to provide interdisciplinary perspectives on these media regarding their history, technologies, scholarly research, industry, artistic value, and potential future.
Same as: BIOE 196, BIOPHYS 196

CS 547. Human-Computer Interaction Seminar. 1 Unit.
Weekly speakers on human-computer interaction topics. May be repeated for credit.

CS 549. Human-Computer Interaction in the Real World. 1 Unit.
Intended for students who are pursuing a focus on HCI, this course focuses on showing students how HCI gets applied in industry across different types of companies. The course consists of on-site visits to large companies (for example Google, Yahoo, Square, Tesla) and to startups to talk to the HCI practitioners at these companies and learn first hand how HCI and design fits in at different companies. The objective of this class is to have students understand how HCI practitioners fit into organizations, the roles they play, and what skills they need in the real world to be able to do their magic.

CS 571. Surgical Robotics Seminar. 1 Unit.
Surgical robots developed and implemented clinically on varying scales. Seminar goal is to expose students from engineering, medicine, and business to guest lecturers from academia and industry. Engineering and clinical aspects connected to design and use of surgical robots, varying in degree of complexity and procedural role. May be repeated for credit.
Same as: ME 571

CS 581. Media Innovation. 1 Unit.
This course will introduce students interested in computer science, engineering, and media to what is possible and probable when it comes to media innovation. Speakers from multiple disciplines and industry will discuss a range of topics in the context of evolving media with a focus on the technical trends, opportunities and challenges surfacing in the unfolding media ecosystem. Speakers will underscore the need to innovate to survive in the media and information industries. Open to both undergraduates and graduate students.

CS 802. TGR Dissertation. 0 Units.
Terminal Graduate Registration (TGR). CS PhD students who have their TGR form approved should register under the section number associated with their faculty advisor.

ELECTRICAL ENGINEERING

Courses offered by the Department of Electrical Engineering are listed under the subject code EE (https://explorecourses.stanford.edu/search/?view=catalog&academicYear=&q=EE&filter-departmentcode-EE=on&filter-coursestatus-Active=on&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&page=0) on the *Stanford Bulletin's* ExploreCourses web site.

The Department of Electrical Engineering (EE) at Stanford innovates by conducting fundamental and applied research to develop physical technologies, hardware and software systems, and information technologies; it educates future academic and industry leaders; and it prepares students for careers in industry, academia, and research labs.

Electrical Engineering has effected societal changes at the heart of the information revolution. Electrical and electronic devices—realized in both hardware and software—are integral to daily life, whether in the home, in health care, in recreation, or in the infrastructure for communication and computation. Electrical engineers use theories and tools from mathematics and physics to develop systems ranging from smart electric grids, wired and wireless communications and networking, embedded systems, integrated electronics, imaging and sensing devices, to Internet-based information technology.

The Electrical Engineering Department offers the following degrees: Bachelor of Science, Master of Science, and Doctor of Philosophy. The department also offers joint degrees in Electrical Engineering and Law (M.S./J.D.) and Electrical Engineering and Business Administration (M.S./M.B.A.). A minor can be obtained for the Bachelor of Science and Doctor of Philosophy.

Undergraduate Program in Electrical Engineering

The mission of the undergraduate program of the Department of Electrical Engineering is to augment the liberal education expected of all Stanford undergraduates, to impart basic understanding of electrical engineering, and to develop skills in the design and building of systems that directly impact societal needs.

The program includes a balanced foundation in the physical sciences, mathematics and computing; core courses in electronics, information systems and digital systems; and develops specific skills in the analysis and design of systems. Students in the major have broad flexibility to select from disciplinary areas beyond the core, including hardware and software, information systems and science, and physical technology and science, as well as electives in multidisciplinary areas, including bio-electronics and bio-imaging, energy and environment and music.

The program prepares students for a broad range of careers—both industrial and government—as well as for professional and academic graduate education.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. The educational objectives of the program are:

1. Technical knowledge—provide a knowledge of electrical engineering principles along with the required supporting knowledge of computing, engineering fundamentals, mathematics, and science. The program must include depth in at least one disciplinary area, currently including hardware and software, information systems and science, and physical technology and science.
2. Laboratory and design skills—develop the basic skills needed to perform and design experimental projects. Develop the ability to formulate problems and projects and to plan a process for solution, taking advantage of diverse technical knowledge and skills.
3. Communications skills—develop the ability to organize and present information and to write and speak effective English.
4. Preparation for further study—provide sufficient breadth and depth for successful subsequent graduate study, postgraduate study, or lifelong learning programs.
5. Preparation for the profession—provide an appreciation for the broad spectrum of issues arising in professional practice, including economics, ethics, leadership, professional organizations, safety, service, and teamwork.

Graduate Programs in Electrical Engineering

University regulations governing the M.S. and Ph.D. degrees are described in the "Graduate Degrees (p. 65)" section of this bulletin.

The profession of electrical engineering demands a strong foundation in physical science and mathematics, a broad knowledge of engineering techniques, and an understanding of the relationship between technology and society. Curricula at Stanford are planned to offer the breadth of education and depth of training necessary for leadership in the profession. To engage in this profession with competence, four years of undergraduate study and at least one year of postgraduate study are recommended. For those who plan to work in highly technical development or fundamental research, additional graduate study is desirable.

The degree of Master of Science is offered under the general regulations of the University. The master's program, requiring a minimum of 45 units of graduate study, should be considered by those with the ability and desire to make a life's work of professional practice or continued graduate study.

The degree of Doctor of Philosophy is offered under the general regulations of the University. The doctoral program, requiring a minimum of 135 units of graduate study, should be considered by those with the ability and desire to make a life's work of research or teaching.

Learning Outcomes (Graduate)

The purpose of the master's program is to provide students with the knowledge and skills necessary for a professional career or doctoral studies. This is done through course work providing specialization in one area of Electrical Engineering and breadth in several other areas. Areas of specialization include Circuits, Software and Hardware Systems, Communications and Networking, Physical Technology and Science, and Signal Processing, Control and Optimization.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research. Through course work and guided research, the program prepares students to make original contributions in Electrical Engineering and related fields.

Application for Admission

Applications for graduate admission in Electrical Engineering (EE) should be completed electronically at the Graduate Admissions (http://gradadmissions.stanford.edu) web site. See the Electrical Engineering graduate admissions (http://ee.stanford.edu/admissions/) web site for department specific information.

Disciplinary Areas in Electrical Engineering

Electrical Engineering spans a diverse set of intellectual disciplines and applications. The disciplines can be grouped into three overlapping and interrelated areas:

Hardware/Software Systems

- Data Science
- Embedded Systems
- Energy-Efficient Hardware Systems
- Integrated Circuits and Power Electronics
- Secure Distributed Systems
- Software Defined Networking
- Mobile Networking

Information Systems and Science

- Biomedical Imaging
- Communications Systems
- Control and Optimization
- Data Science
- Information Theory and Applications
- Machine Learning
- Societal Networks
- Signal Processing and Multimedia

Physical Technology and Science

- Biomedical Devices, Sensors and Systems
- Energy Harvesting and Conversion
- Integrated Circuits and Power Electronics
- Nanoelectronic Devices and Nanosystems
- NEMS/MEMS
- Photonics, Nanoscience and Quantum Technology

Multidisciplinary Research

EE faculty collaborate with researchers from other departments and schools across campus. While some of the most prominent applications of electrical engineering in the past few decades have been in information technology, EE tools and techniques are being increasingly applied more broadly to address major societal problems in areas such as:

Biomedical

Research in the biomedical area utilizes engineering approaches to meet the unmet needs in diagnosis, staging, treatment, and mitigation of illnesses including cancer, diabetes, heart diseases, as well as brain disorders. Lower-cost, prevention-oriented health care delivery is critically needed, as well as new approaches to previously untreatable health conditions. Addressing these challenges requires discovering and creating fundamentally new devices and systems for critical diagnostics (sensors, imaging), therapeutic (lasers, pacemakers, and neural interfaces), and analytical (high-throughput sequencing, healthcare IT) technologies.

Energy

Research in energy is motivated at the macro level by the rapid rise in worldwide demand for electricity and the threat of global climate change and on the micro level by the explosion in the number of mobile devices and sensors whose performance and lifetimes are limited by energy.

On the macro level, electronic loads, such as data centers, smart appliances, and electric vehicles, are poised to overtake traditional industrial loads in consumption share. Renewable energy will make up at least half of the generation mix and drive adoption of novel technologies such as storage, fuel cells, waste to power and distributed generation. Our research investigates techniques such as demand response and the use of energy storage to reduce peak demand and address variability of renewable energy.

On the micro level, we are exploring energy efficient devices, power electronics, system architectures, and network protocols, as well as ways to harvest energy from the environment for wearable devices and the Internet of things.

For additional information, see the Department of Electrical Engineering's Research (https://ee.stanford.edu/research/the-big-picture/) web site.

Electrical Engineering Course Catalog Numbering System

Electrical Engineering courses are typically numbered according to the year in which the courses are normally taken.

Number	Year
010-099	first or second year undergraduate
100-199	second through fourth year undergraduate
200-299	mezzanine courses for advanced undergraduate or first-year graduate
300-399	second through fourth year graduate
400-499	specialized courses for advanced graduate
600-799	special summer courses

Undergraduate Programs in Electrical Engineering

To major in Electrical Engineering (EE), undergraduates should follow the requirements below. Students must have a program planning sheet approved by their advisor and the department once they declare the EE major. A final version of the completed and signed program sheet is due to the department no later than one month prior to the last quarter of senior year. Program sheets are available in the Undergraduate Handbook (https://ughb.stanford.edu). Students must receive at least a 2.0 grade point average (GPA) in courses taken for the EE major; all classes, except for classes taken from Spring 2019-2020 to Summer 2020-2021, must be taken for a letter grade.

Students interested in a minor should consult the "Minor in Electrical Engineering (p. 760)" tab of this section of this bulletin.

A Stanford undergraduate may work simultaneously toward the B.S. and M.S. degrees. See the Master's tab (p. 760) of this section of the bulletin.

Electrical Engineering (EE)

Completion of the undergraduate program in Electrical Engineering leads to the conferral of the Bachelor of Science in Electrical Engineering.

Mission of the Undergraduate Program in Electrical Engineering

The mission of the undergraduate program of the Department of Electrical Engineering is to augment the liberal education expected of all Stanford undergraduates, to impart basic understanding of electrical engineering and to develop skills in the design and building of systems that directly impact societal needs.

The program includes a balanced foundation in the physical sciences, mathematics and computing; core courses in electronics, information systems and digital systems; and develops specific skills in the analysis and design of systems. Students in the major have broad flexibility to select from disciplinary areas beyond the core, including hardware and software, information systems and science, and physical technology and science, as well as electives in multidisciplinary areas, including bio-electronics and bio-imaging, energy and environment and music.

The program prepares students for a broad range of careers—both industrial and government—as well as for professional and academic graduate education.

Requirements

		Units
MATHEMATICS AND SCIENCE		
Minimum 40 units Math and Science combined.		
Mathematics [1]		
Select one sequence: May also be satisfied with AP Calculus.		10
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	
Select one 2-course sequence:		10
CME 100 & CME 102	Vector Calculus for Engineers and Ordinary Differential Equations for Engineers (Same as ENGR 154 and ENGR 155A)	
MATH 51 & MATH 53	Linear Algebra, Multivariable Calculus, and Modern Applications and Ordinary Differential Equations with Linear Algebra [2]	
EE Math. One additional 100-level course. Select one:		3
CS 103	Mathematical Foundations of Computing	
ENGR 108	Introduction to Matrix Methods (Preferred) [3]	
MATH 113	Linear Algebra and Matrix Theory	
Statistics/Probability		3-4
EE 178	Probabilistic Systems Analysis [3]	
Science		
Minimum 12 units		
Select one sequence:		12
PHYSICS 41 & EE 65	Mechanics and Modern Physics for Engineers [4]	
PHYSICS 61 & EE 65	Mechanics and Special Relativity and Modern Physics for Engineers [4]	
Science elective. One additional 4-5 unit course from approved list in Undergraduate Handbook, Figure 4-2.		4-5
TECHNOLOGY IN SOCIETY		
One course, see Basic Requirement 4 in the School of Engineering section. The course taken must be on the School of Engineering Approved Courses list, Fig 4-3, the year it is taken.		3-5
ENGINEERING TOPICS		
Minimum 60 units comprised of: Engineering Fundamentals (minimum 10 units), Core Electrical Engineering Courses (minimum 16 units) Disciplinary Area (minimum 17 units), Electives (maximum 17 units, restrictions apply).		
Engineering Fundamentals		**10**
2 courses required; minimum 10 units.		
Select one:		
CS 106B	Programming Abstractions	5
or CS 106X	Programming Abstractions	
Choose one Fundamental from the Approved List; Recommended: ENGR 40A and ENGR 40B or ENGR 40M (recommended before taking EE 101A); taking CS 106A or a second ENGR 40-series course not allowed for the Fundamentals elective. Choose from table in Undergraduate Handbook, Approved List.		5
Core Electrical Engineering Courses		**16**
Minimum 16 units.		
EE 42	Introduction to Electromagnetics and Its Applications [5]	
EE 100	The Electrical Engineering Profession [6]	
EE 101A	Circuits I	
EE 102A	Signal Processing and Linear Systems I	
EE 108	Digital System Design	
Disciplinary Area		**17**
Minimum 17 units, 5 courses: 1-2 Required, 1 WIM/Design and 2-3 disciplinary area electives.		
Writing in the Major (WIM)		**3-5**
Select one. A single course can concurrently meet the WIM and Design Requirements.		
EE 109	Digital Systems Design Lab (WIM/Design)	
EE 133	Analog Communications Design Laboratory (WIM/Design)	
EE 134	Introduction to Photonics (WIM/Design)	
EE 153	Power Electronics (WIM/Design)	
EE 155	Green Electronics (WIM/Design)	
EE 168	Introduction to Digital Image Processing (WIM/Design)	
EE 191W	Special Studies and Reports in Electrical Engineering (WIM; Department approval required) [7]	
EE 264W	Digital Signal Processing (WIM/Design)	
EE 267W	Virtual Reality (WIM/Design)	
CS 194W	Software Project (WIM/Design)	
Design Course		**3-5**
Select one. Students may select their Design course from any Disciplinary Area.		
EE 109	Digital Systems Design Lab (WIM/Design)	
EE 133	Analog Communications Design Laboratory (WIM/Design)	
EE 134	Introduction to Photonics (WIM/Design)	
EE 153	Power Electronics (WIM/Design)	
EE 155	Green Electronics (WIM/Design)	
EE 168	Introduction to Digital Image Processing (WIM/Design)	
EE 185C	Engineering a Smart Object - Adding connectivity and Putting it ALL together (Design)	
EE 262	Three-Dimensional Imaging (Design)	
EE 264	Digital Signal Processing (Design) [8]	
EE 264W	Digital Signal Processing (WIM/Design)	
EE 267	Virtual Reality (Design) [8]	
EE 267W	Virtual Reality (WIM/Design)	
CS 194	Software Project (Design)	
CS 194W	Software Project (WIM/Design)	
Electives [9]		**17**

Minimum 17 units. The elective units should be sufficient to meet the 60 unit total for the major, over and above the 40 units of Math and Science. Depending on units completed in the Disciplinary Area, elective units will be in the range of 17 units or less. Students may select electives from the disciplinary areas; from the multidisciplinary elective areas; or any combination of disciplinary and multidisciplinary areas. May include up to two additional Engineering Fundamentals and any letter graded EE courses (minus any previously noted restrictions). Freshman and Sophomore seminars, EE 191 and CS 106A do not count toward the 60 units. Students may have fewer elective units if they have more units in their disciplinary area.

1 MATH 41 and MATH 42 are no longer offered and have been replaced by MATH 19, MATH 20, and MATH 21.

2 MATH 51 may be replaced by MATH 52. MATH 53 may be replaced by CME 102.

3 If used for math, ENGR 108 may not be used as an EE disciplinary elective. Students may petition to use CS 109 in place of EE 178.

4 Students may petition to have either PHYSICS 65 or the combination of PHYSICS 45 and PHYSICS 70 count as an alternative to EE 65.

5 Students may petition to use PHYSICS 43 or PHYSICS 63 in place of EE 42. The EE introductory class ENGR 40A and ENGR 40B or ENGR 40M may be taken concurrently with either EE 42 or PHYSICS 43. There are no prerequisites for ENGR 40A and ENGR 40B or ENGR 40M.

6 For upper division students, a 200-level seminar in their disciplinary area will be accepted, on petition.

7 EE 191W may satisfy WIM only if it is a follow-up to an REU, independent study project or as part of an honors thesis project where a faculty agrees to provide supervision of writing a technical paper and with suitable support from the Writing Center.

8 To satisfy Design, must take EE 264 or EE 267 for 4 units and complete the laboratory project.

9 A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum Combined GPA for all courses in Engineering Fundamentals and Depth is 2.0.

Disciplinary Areas

		Units
Hardware and Software		
EE 180	Digital Systems Architecture (Required)	4
EE 104	Introduction to Machine Learning	3-5
EE 107	Embedded Networked Systems	3
EE 109	Digital Systems Design Lab (WIM/Design)	4
EE 118	Introduction to Mechatronics	4
EE 155	Green Electronics (Design)	4
EE 185C	Engineering a Smart Object - Adding connectivity and Putting it ALL together (Design)	3
EE 264	Digital Signal Processing (Design)	3-4
EE 264W	Digital Signal Processing (WIM/Design)	5
EE 267	Virtual Reality (Design)	3-4
EE 267W	Virtual Reality (WIM/Design)	5
EE 271	Introduction to VLSI Systems	3
EE 272A	Design Projects in VLSI Systems I	3-4
EE 272B	Design Projects in VLSI Systems II	3-4
EE 273	Digital Systems Engineering	3
EE 282	Computer Systems Architecture	3
EE 285	Embedded Systems Workshop	3
CS 107	Computer Organization and Systems (Required prerequisite for EE 180; CS 107E preferred)	3-5
or CS 107E	Computer Systems from the Ground Up	
CS 108	Object-Oriented Systems Design	3-4
CS 110	Principles of Computer Systems	3-5
CS 131	Computer Vision: Foundations and Applications	3-4
CS 140	Operating Systems and Systems Programming	3-4
CS 143	Compilers	3-4
CS 144	Introduction to Computer Networking	3-4
CS 145	Data Management and Data Systems	3-4
CS 148	Introduction to Computer Graphics and Imaging	3-4
CS 149	Parallel Computing	3-4
CS 155	Computer and Network Security	3
CS 194W	Software Project (WIM/Design)	3
CS 221	Artificial Intelligence: Principles and Techniques	3-4
CS 223A	Introduction to Robotics	3
CS 224N	Natural Language Processing with Deep Learning	3-4
CS 225A	Experimental Robotics	3
CS 229	Machine Learning	3-4
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	3-4
CS 231N	Convolutional Neural Networks for Visual Recognition	3-4
CS 241	Embedded Systems Workshop	3
CS 244	Advanced Topics in Networking	3-4
Information Systems and Science		
EE 102B	Signal Processing and Linear Systems II (Required)	4
EE 104	Introduction to Machine Learning	3-5
EE 107	Embedded Networked Systems	3
EE 118	Introduction to Mechatronics	4
EE 124	Introduction to Neuroelectrical Engineering	3
EE 133	Analog Communications Design Laboratory (WIM/Design)	3-4
EE 155	Green Electronics (WIM/Design)	4
EE 168	Introduction to Digital Image Processing (WIM/Design)	3-4
EE 169	Introduction to Bioimaging	3
EE 179	Analog and Digital Communication Systems	3
EE 260A	Principles of Robot Autonomy I	3-5
EE 260B	Principles of Robot Autonomy II	3-4
EE 261	The Fourier Transform and Its Applications	3
EE 262	Three-Dimensional Imaging (Design)	3
EE 263	Introduction to Linear Dynamical Systems	3
EE 264	Digital Signal Processing (Design)	3-4
EE 264W	Digital Signal Processing (WIM/Design)	5
EE 266	Introduction to Stochastic Control with Applications	3
EE 267	Virtual Reality (Design)	3-4
EE 267W	Virtual Reality (WIM/Design)	5
EE 269	Signal Processing for Machine Learning	3
EE 276	Information Theory	3

EE 278	Introduction to Statistical Signal Processing	3
EE 279	Introduction to Digital Communication	3
ENGR 105	Feedback Control Design	3
ENGR 205	Introduction to Control Design Techniques	3
CS 107	Computer Organization and Systems	3-5
CS 229	Machine Learning	3-4
Physical Technology and Science		
EE 101B	Circuits II (Required)	4
EE 107	Embedded Networked Systems	3
EE 114	Fundamentals of Analog Integrated Circuit Design	3-4
EE 116	Semiconductor Devices for Energy and Electronics	3
EE 118	Introduction to Mechatronics	4
EE 124	Introduction to Neuroelectrical Engineering	3
EE 133	Analog Communications Design Laboratory (WIM/Design)	3-4
EE 134	Introduction to Photonics (WIM/Design)	4
EE 142	Engineering Electromagnetics	3
EE 153	Power Electronics (WIM/Design)	3-4
EE 155	Green Electronics (WIM/Design)	4
EE 157	Electric Motors for Renewable Energy, Robotics, and Electric Vehicles	3
EE 212	Integrated Circuit Fabrication Processes	3
EE 214B	Advanced Integrated Circuit Design	3
EE 216	Principles and Models of Semiconductor Devices	3
EE 222	Applied Quantum Mechanics I	3
EE 223	Applied Quantum Mechanics II	3
EE 236A	Modern Optics	3
EE 236B	Guided Waves	3
EE 242	Electromagnetic Waves	3
EE 247	Introduction to Optical Fiber Communications	3
EE 264	Digital Signal Processing (Design)	3-4
EE 264W	Digital Signal Processing (WIM/Design)	5
EE 267	Virtual Reality (Design)	3-4
EE 267W	Virtual Reality (WIM/Design)	5
EE 271	Introduction to VLSI Systems	3
EE 272A	Design Projects in VLSI Systems I	3-4
EE 272B	Design Projects in VLSI Systems II	3-4
EE 273	Digital Systems Engineering	3
EE 282	Computer Systems Architecture	3
ENGR 105	Feedback Control Design	3
ENGR 205	Introduction to Control Design Techniques	3
CS 107	Computer Organization and Systems	3-5

Multidisciplinary Area Electives

Bio-electronics and Bio-imaging		
EE 101B	Circuits II	4
EE 102B	Signal Processing and Linear Systems II	4
EE 107	Embedded Networked Systems	3
EE 124	Introduction to Neuroelectrical Engineering	3
EE 134	Introduction to Photonics (WIM/Design)	4
EE 168	Introduction to Digital Image Processing (WIM/Design)	4
EE 169	Introduction to Bioimaging	3
EE 225	Biochips and Medical Imaging	3
EE 235	Analytical Methods in Biotechnology	3
BIOE 131	Ethics in Bioengineering	3
BIOE 248	Neuroengineering Laboratory	3
MED 275B	Biodesign Fundamentals	4
Energy and Environment		
EE 101B	Circuits II	4
EE 116	Semiconductor Devices for Energy and Electronics	3
EE 134	Introduction to Photonics (WIM/Design)	4
EE 153	Power Electronics (WIM/Design)	3-4
EE 155	Green Electronics (WIM/Design)	4
EE 157	Electric Motors for Renewable Energy, Robotics, and Electric Vehicles	3
EE 168	Introduction to Digital Image Processing (WIM/Design)	3-4
EE 180	Digital Systems Architecture	4
EE 263	Introduction to Linear Dynamical Systems	3
EE 293	Energy storage and conversion: Solar Cells, Fuel Cells, Batteries and Supercapacitors	3
EE 293B	Fundamentals of Energy Processes	3
CEE 107A	Understanding Energy (Formerly CEE 173A)	3-5
CEE 155	Introduction to Sensing Networks for CEE	3-4
CEE 176A	Energy Efficient Buildings	3
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	3-4
ENGR 105	Feedback Control Design	3
ENGR 205	Introduction to Control Design Techniques	3
MATSCI 142	Quantum Mechanics of Nanoscale Materials (Formerly MATSCI 157)	4
MATSCI 152	Electronic Materials Engineering	4
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution	3-4
ME 227	Vehicle Dynamics and Control	3
ME 271E		4
Music		
EE 102B	Signal Processing and Linear Systems II	4
EE 109	Digital Systems Design Lab (WIM/Design)	4
EE 264	Digital Signal Processing (Design)	3-4
EE 264W	Digital Signal Processing (WIM/Design)	5
MUSIC 250A	Physical Interaction Design for Music	3-4
MUSIC 256A	Music, Computing, Design: The Art of Design	3-4
MUSIC 256B	Music, Computing, Design II: Virtual and Augmented Reality for Music	3-4
MUSIC 257	Neuroplasticity and Musical Gaming	3-5
MUSIC 320A	Introduction to Audio Signal Processing Part I: Spectrum Analysis	3
MUSIC 320B	Introduction to Audio Signal Processing Part II: Digital Filters	3-4
MUSIC 420A	Signal Processing Models in Musical Acoustics [2]	3-4
MUSIC 421A	Time-Frequency Audio Signal Processing [2]	3-4
MUSIC 422	Perceptual Audio Coding [2]	3
MUSIC 424	Signal Processing Techniques for Digital Audio Effects [2]	3-4

[1] ENGR 108 may be used for disciplinary area if not used for EE Math.
[2] Best taken as a coterm student.

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

Honors Program in Electrical Engineering

The Department of Electrical Engineering offers a program leading to a Bachelor of Science in Electrical Engineering with Honors. This program offers a unique opportunity for qualified undergraduate majors to conduct independent study and research at an advanced level with a faculty mentor, graduate students, and fellow undergraduates.

Admission to the honors program is by application. Declared EE majors with a grade point average (GPA) of at least 3.5 in Electrical Engineering are eligible to submit an application. Applications must be submitted by Autumn Quarter of the senior year, be signed by the thesis advisor and second reader (one must be a member of the EE Faculty), and include an honors proposal. Students need to declare honors on Axess.

In order to receive departmental honors, students admitted to the honors program must:

1. Submit an application, including the thesis proposal, by Autumn Quarter of senior year signed by the thesis advisor and second reader (one must be a member of the Electrical Engineering faculty).
2. Declare the EE Honors major in Axess before the end of Autumn Quarter of senior year.
3. Maintain a grade point average of at least 3.5 in Electrical Engineering courses.
4. Complete at least 10 units of EE 191 or EE 191W with thesis adviser for a letter grade. EE 191 units do not count toward the required 60 units, with the exception of EE 191W if approved to satisfy WIM.
5. Submit one final copy of the honors thesis approved by the advisor and second reader to the EE Degree Progress Officer by May 15.
6. Attend poster and oral presentation held at the end of Spring Quarter or present in another suitable forum approved by the faculty advisor.

Electrical Engineering (EE) Minor

The options for completing a minor in EE are outlined below. Students must complete a minimum of 23-25 units, as follows:

		Units
Select one:		5
EE 42	Introduction to Electromagnetics and Its Applications	
EE 65	Modern Physics for Engineers	
ENGR 40A & ENGR 40B	Introductory Electronics and Introductory Electronics Part II	
ENGR 40M	An Intro to Making: What is EE	
Select one:		8
Option I:		
EE 101A	Circuits I	
EE 101B	Circuits II	
Option II:		
EE 102A	Signal Processing and Linear Systems I	
EE 102B	Signal Processing and Linear Systems II	
Option III:		
EE 102A	Signal Processing and Linear Systems I	
ENGR 108	Introduction to Matrix Methods	
Option IV:		
EE 108	Digital System Design	
EE 180	Digital Systems Architecture	
In addition, four letter-graded EE courses at the 100-level or higher must be taken (12 units minimum). CS 107 is required as a prerequisite for EE 180, but can count as one of the four classes.		12

Master of Science in Electrical Engineering

Students with undergraduate degrees in physics, mathematics, or related sciences, as well as in various branches of engineering, are invited to apply for admission. They should typically be able to complete the master's degree in five quarters; note that many courses are not taught during the Summer. Capable students without formal undergraduate preparation in electrical engineering may also be admitted for graduate study. Such students may have graduated in any field and may hold either the B.S. or B.A. degree. Graduate study in electrical engineering demands that students be adequately prepared in areas such as circuits, digital systems, fields, lab work, mathematics, and physics.

It is the student's responsibility, in consultation with an advisor, to determine whether the prerequisites for advanced courses have been met. Prerequisite courses ordinarily taken by undergraduates may be included as part of the graduate program of study. However, if the number of these are large, the proposed program may contain more than the minimum 45 units, and the time required to meet the degree requirements may be increased.

The master's degree program may provide advanced preparation for professional practice or for teaching at the junior college level. The faculty are assigned as program advisors who provide guidance in course selection and in exploring academic opportunities and professional pathways. Each student, with the help of a program advisor, prepares an individual program and submits it to the department for approval. The program proposal must be submitted to the Degree Progress Officer before the end of the first quarter of graduate study (second quarter for Honors Cooperative Program students); a final revised version is due at the beginning of the final quarter of study, prior to degree conferral. Detailed requirements and instructions are available at the EE Grad Handbook (http://ee.stanford.edu/gradhandbook/) website. All requirements for a master's degree must be completed within three years after the student's first term of enrollment in the master's program (five years for Honors Cooperative Program students).

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career

may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Master of Science with Distinction in Research

A student who wishes to pursue the M.S. in EE with distinction in research must first identify a faculty advisor who agrees to supervise and support the research work. The research adviser must be a member of the Academic Council and must hold an appointment in Electrical Engineering. The student and principal advisor must also identify another faculty member, who need not be in the Department of Electrical Engineering, to serve as a secondary advisor and reader for the research report. In addition, the student must complete the following requirements beyond those for the regular M.S. in EE degree:

1. *Research Experience*—The program must include significant research experience at the level of a half-time commitment over the course of three academic quarters. In any given quarter, the half-time research commitment may be satisfied by:
   a. A 50 percent appointment to a departmentally supported research assistantship
   b. 6 units of independent study (EE 300 or EE 391)
   c. A prorated combination of the two (such as a 25 percent research assistantship supplemented by 3 units of independent study)
   d. An equivalent research experience while fully supported on a Stanford-funded or externally funded fellowship. Student and research advisor must document the planned research-experience before the quarter starts and its completion at the end. Note: Fellowship must provide full support at the 10-unit tuition level, and allow the student to pursue degree-related research in addition to his/her fulltime course enrollment. This research must be carried out under the direction of the primary or secondary advisor.
2. *Supervised Writing and Research*—In addition to the research experience outlined in the previous requirement, students must enroll in at least 3 units of independent research (EE 300 or EE 391) under the direction of their primary or secondary advisor. These units should be closely related to the research described in the first requirement, but focused more directly on the preparation of the research report described in the next section. The writing and research units described in parts (1) and (2) may be counted toward the 45 units required for the degree.
3. All independent study units (EE 300 or EE 391) must be taken for letter grades, except for classes taken in Spring 2019-2020, and a GPA of 3.0 (B) or better must be maintained.
4. *Research Report*—Students must complete a significant report describing their research and its conclusions. The research report represents work that is publishable in a journal or at a high-quality conference, although it is presumably longer and more expansive in scope than a typical conference paper. A copy of the research report must be submitted to the student services office in the department three weeks before the beginning of the examination period in the student's final quarter. Both the primary and secondary advisor must approve the research report before the distinction-in-research designation can be conferred.

Joint Electrical Engineering and Law Degree (M.S./J.D.)

The Department of Electrical Engineering and the School of Law offer a joint degree program leading to an M.S. degree in EE combined with a J.D. degree. The J.D./M.S. program is designed for students who wish to prepare themselves for careers that involve both Law and Electrical Engineering.

Students interested in this joint degree program must apply to and gain admission separately from the Department of Electrical Engineering and the School of Law, and as an additional step, secure consent from both academic units to pursue both degrees simultaneously. Interest in the program should be noted on a student's application to each academic unit. A student currently enrolled in either the Department of Electrical Engineering or the School of Law may apply for admission to the other academic unit and for joint degree status after commencing study in that unit.

Joint Electrical Engineering and Master's in Business Administration Degree (M.S./M.B.A.)

The Department of Electrical Engineering and the Graduate School of Business offer a joint degree program leading to an M.S. degree in EE combined with an M.B.A. degree. The joint program offers students an opportunity to develop advanced technical and managerial skills in preparation for careers in existing and new technology ventures.

Admission to the joint M.S./M.B.A. program requires that students apply and be accepted independently to both the Electrical Engineering Department at the School of Engineering and the Graduate School of Business. Students may apply concurrently, or elect to begin their course of study in EE and apply to the GSB during their first year.

See the EE Graduate Handbook (https://stanford.box.com/s/dhubl4fllfcpuj49zn1k9b8py57l97bp/) for more information about the joint degree programs.

Doctor of Philosophy in Electrical Engineering

The University requirements for the Ph.D. degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

Admission to a graduate program does not imply that the student is a candidate for the Ph.D. degree. Advancement to candidacy requires superior academic achievement, satisfactory performance on a qualifying examination, and sponsorship by two faculty members. Enrollment in EE 391, Special Studies, is recommended as a means for getting acquainted with a faculty member who might be willing to serve as the dissertation advisor.

Students admitted to the Ph.D. program must sign up to take the department qualifying examination (https://ee.stanford.edu/academics/graduate-degree-progress/quals/). Students are required to pass the qualifying exam prior to the end of Winter quarter of their second year of study. Students who have never taken the qualifying examination or have not passed the qualifying exam will be dismissed from the Ph.D. program for failure to progress. Such students may be allowed to complete a master's degree in Electrical Engineering instead.

Upon completion of the qualifying examination and after securing agreement by two faculty members to serve as dissertation advisor and second reader, the student files an Application for Candidacy for Doctoral Degree. The dissertation advisor must be a member of the Academic Council. One of the two faculty members must either have a full or joint appointment in the Electrical Engineering department. Students are required to advance to candidacy prior to the end of their second year in the graduate program. Students who do not advance to candidacy by the end of their second year will be dismissed from the Ph.D. program for failure to progress. Such students may be allowed to complete a master's degree in Electrical Engineering instead.

Only after receiving department approval of the Application for Candidacy does the student become a candidate for the Ph.D. degree.

For complete requirements and additional information, see the department's web site (https://ee.stanford.edu/academics/graduate-degree-progress/).

Financial Assistance

The department awards a limited number of fellowships, teaching and course assistantships, and research assistantships to incoming graduate students. Applying for financial assistance is part of the admission application.

Ph.D. Minor in Electrical Engineering

For a minor in Electrical Engineering, students must fulfill the M.S. degree depth requirement, complete at least 20 units of lecture course work at the 200-level or higher in Electrical Engineering courses (of which 15 units must be letter-graded, except for courses taken in Spring 2019-2020), and have the Application for Ph.D. Minor approved by the EE department and the major department. A grade point average of at least 3.35 on these courses is required.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The new EE COVID-19 grading policy for this year with respect to the Satisfactory (S) and Credit (CR) grades counting toward the EE program requirements are stated below:

1. Students will be able to take courses with Satisfactory/Credit (S/CR) grades to count toward the EE degree requirements for all undergraduate degree programs. This policy is valid in all six quarters from Spring Quarter 2019-20 through Summer Quarter 2020-21.
2. The new S/CR grading policy does not apply to students pursuing the EE minor. The requirements for the EE minor has not changed, and all courses, except for courses taken in Spring 2019-20, must be taken for a letter grade.
3. Students in the EE B.S. Honors Program are required to take all courses, except for courses taken in Spring 2019-20, for a letter grade in order to count them toward the EE major. There is no EE COVID-19 exception for the EE-BSH program for AY 2020-21. For further information, see the "EE Undergraduate Honors Program requirements (p. 760)" section of this bulletin.
4. Students taking courses with S/CR grades while the letter grade option is available should consider the impact of S/CR grades on their future applications for admission to graduate/professional school, fellowships, or employment. Therefore, students should select their grade option carefully when enrolling in a course.
5. When a course is offered for an optional letter/CR-NC grading basis, students are encouraged to take that course for a letter grade when they feel comfortable in doing so.

Graduate Degree Requirements

Grading

The new EE COVID-19 grading policy for this year with respect to the Satisfactory (S) and Credit (CR) grades counting toward the EE program requirements are stated below:

1. Students will be able to take courses with Satisfactory/Credit (S/CR) grades to count toward the EE degree requirements for all graduate degree programs. This policy is valid in all six quarters from Spring Quarter 2019-20 through Summer Quarter 2020-21.
2. The new S/CR grading policy does not apply to students pursuing the EE Ph.D. Minor. The requirements for the EE Ph.D. Minor has not changed, and all courses, except for courses taken in Spring 2019-20, must be taken for a letter grade.
3. Students taking courses with S/CR grades while the letter grade option is available should consider the impact of S/CR grades on their future applications for admission to graduate/professional school, fellowships, or employment. Therefore, students should select their grade option carefully when enrolling in a course.
4. When a course is offered for an optional letter/CR-NC grading basis, students are encouraged to take that course for a letter grade when they feel comfortable in doing so.

Graduate Advising Expectations

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Master's Students

The Department of Electrical Engineering is committed to providing academic advising in support of M.S. students’ education and professional development. When most effective, this advising relationship entails collaborative engagement by both the advisor and the advisee. As a best practice, advising expectations should be discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism, respect, and integrity. They should also be responsive to one another in a timely manner.

At the start of graduate study, each student is assigned a master’s program advisor: a member of faculty who provides guidance in course selection and in exploring academic opportunities and professional pathways. Students are encouraged to meet with the program advisor during the first quarter to go over their proposed master’s plan. Usually, the same faculty member serves as program advisor for the duration of master’s study. If a student wishes to change their program advisor, they may contact the Degree Progress Officer to initiate the formal process of changing advisor.

In addition to the program advisor, the Electrical Engineering Graduate Student Teaching Advisor is a peer advisor who is available to advise students on the aspects of course selection and academic opportunities on campus and off campus.

The department’s student services office is also an important part of the master’s advising team. They inform students and advisors about university and department requirements, procedures, and opportunities, and they maintain the official records of advising assignments and approvals. Their contact information can be found on the department's Graduate Degree Progress (https://ee.stanford.edu/academics/graduate-degree-progress/) website.

Finally, graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program. For more information, see the Electrical Engineering Department Graduate Handbook (https://stanford.app.box.com/v/EE-Graduate-Handbook/) (pdf).

Ph.D. Students

The Department of Electrical Engineering is committed to providing academic advising in support of doctoral student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the advisor and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism, respect, and integrity. They should also be responsive to one another in a timely manner.

Faculty advisors guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways. The department's Graduate Handbook provides information and suggested timelines for different stages of the doctoral program. For more information, see the department's Graduate Degree Progress (https://ee.stanford.edu/academics/graduate-degree-progress/) website.

Ph.D. students are initially assigned a program advisor on the basis of the interests expressed in their application. This faculty member provides initial guidance in course selection, in exploring academic opportunities and professional pathways, and in identifying doctoral research opportunities. The department does not require formal lab rotations, but students are encouraged to consider exploring research activities in two or three labs during their first academic year.

Students identify their doctoral research/thesis advisor, pass the qualifying exam, and advance to candidacy prior to the end of the second year of study. The research supervisor assumes primary responsibility for the future direction of the student, taking on the roles previously filled by the program advisor, and ultimately direct the student's dissertation. Most students find an advisor from among the primary faculty members of the department. However, the research advisor may be a faculty member from another Stanford department who is familiar with supervising doctoral students and able to provide both advising and funding for the duration of the doctoral program. When the research advisor is from outside the department, the student still has the same program advisor from the primary faculty, to provide guidance on departmental requirements and opportunities.

The faculty Associate Chair of Graduate Education is available during the academic year by email and during office hours. The department's student services office is also an important part of the doctoral advising team: they inform students and advisors about university and department requirements, procedures, and opportunities, and they maintain the official records of advising assignments and approvals. Students are encouraged to talk with their doctoral program advisor, the Graduate Student Teaching Advisor, and the Degree Progress Officer from the student services office as they consider advisor selection, or for guidance in working with their advisor(s).

The department's doctoral students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program. For more information, see the Electrical Engineering Department Graduate Handbook (https://stanford.app.box.com/v/EE-Graduate-Handbook/) (pdf).

Faculty

Emeriti: (Professors) Clayton W. Bates, John Cioffi*, Donald C. Cox, Michael J. Flynn, James F. Gibbons, Andrea G. Goldsmith, Joseph W. Goodman, Robert M. Gray, James Harris, Stephen E. Harris, Martin E. Hellman, Umran S. Inan*, Thomas Kailath*, Gregory T.A. Kovacs*, Marc Levoy, Albert Macovski, Malcolm M. McWhorter, Teresa Meng, R. Fabian W. Pease, Leonard Tyler, Robert L. White, Bernard Widrow, Bruce A. Wooley, Yoshihisa Yamamoto; (*Associate Professors*) John T. Gill III, Bruce B. Lusignan; *(Professors, Research)* Antony Fraser-Smith*, C. Robert Helms, Leonid Kazovsky, Ingolf Lindau*, David Luckham, Yoshio Nishi, Arogyaswami J. Paulraj

(**Recalled to active duty*)

Chair: Stephen P. Boyd

Associate Chairs: John Pauly *(Undergraduate Education),* Brad Osgood *(Graduate Education),* Howard Zebker *(Admissions)*

Academic Affairs Committee Chair: Joseph M. Kahn

Director of Graduate Studies: Brad Osgood

Professors: Nicholas Bambos, Kwabena Boahen, Dan Boneh, Stephen P. Boyd, Robert W. Dutton, Abbas El Gamal, Shanhui Fan, Bernd Girod, Patrick Hanrahan, John L. Hennessy, Lambertus Hesselink, Mark A. Horowitz, Roger T. Howe, Joseph M. Kahn, Christoforos E. Kozyrakis, Sanjay Lall, Thomas H. Lee, Nick McKeown, David A. B. Miller, Subhasish Mitra, Andrea Montanari, Boris Murmann, Dwight G. Nishimura, Oyekunle Olukotun, Brad G. Osgood, John M. Pauly, James D. Plummer, Eric Pop, Balaji Prabhakar, Mendel Rosenblum, Krishna Saraswat, Krishna V. Shenoy, H. Tom Soh, Olav Solgaard, Fouad A. Tobagi, David Tse, Benjamin Van Roy, Jelena Vuckovic, Shan X. Wang, Tsachy Weissman, Jennifer Widom, H. S. Philip Wong, S. Simon Wong, Howard Zebker

Associate Professors: Amin Arbabian, Srabanti Chowdhury, Dawson Engler, Sachin Katti, Philip Levis, Ayfer Ozgur Aydin, Ada Poon, Juan Rivas-Davila

Assistant Professors: Daniel Congreve, John Duchi, Jonathan Fan, Chelsea Finn, Mert Pilanci, Priyanka Raina, Dorsa Sadigh, Caroline Trippel, Gordon Wetzstein, Mary Wootters

Professors (Research): William J. Dally, Butrus Khuri-Yakub, Piero Pianetta

Courtesy Professors: Maneesh Agrawala, Stacey Bent, Kim Butts-Pauly, Emmanuel Candes, E.J. Chichilnisky, Amir Dembo, David L. Dill, Gary Glover, Peter Glynn, Leonidas Guibas, Brian Hargreaves, Tony Heinz, Ramesh Johari, Oussama Khatib, Monica S. Lam, Craig Levin, John C. Mitchell, Sandy Napel, John Ousterhout, Daniel Palanker, Norbert Pelc, Amin Saberi, Julius Smith, Dan Spielman, Brian Wandell, Lei Xing, Yinyu Ye

Courtesy Associate Professors: Mohsen Bayati, Sigrid Close, Adam de la Zerda, Surya Ganguli, Hanlee Ji, Jin Hyung Lee, Marco Pavone, Ram Rajagopal, Debbie Senesky, Kawin Setsompop, Kuang Xu

Courtesy Assistant Professors: Grace Gao, Paul Nuyujukian, Simona Onori, Dustin Schroeder, Adam Wang, Keith Winstein, Serena Yeung, Matei Zaharia, James Zou

Lecturers: Dennis Allison, Zain Asgar, Raul Camposano, Jonathan Candelaria, Andrea Di Blas, Antun Domic, Abbas Emami-Naeini, Leslie Field, J. Andrew Freeman, Patrick Groeneveld, David Obershaw, Dan O'Neill, David Stork

Adjunct Professors: Sherif Ahmed, Ahmad Bahai, Rick Bahr, Fred M. Gibbons, Dimitry Gorinevsky, Bob S. Hu, Waguih Ishak, Theodore Kamins, Ali Keshavarzi, David Leeson, Narasimha Madihally, Georgios Michelogiannakis, Fernando Mujica, Reza Nasiri Mahalati, John Provine,

Stephen Ryu, Ronald Schafer, Ashok Srivastava, David Sussillo, John Wenstrand

Visiting Associate Professors: Shuo Cao, Ron Dabora

Visiting Assistant Professor: Tamay Aykut

Courses

EE 14N. Things about Stuff. 3 Units.
Preference to freshmen. The stories behind disruptive inventions such as the telegraph, telephone, wireless, television, transistor, and chip are as important as the inventions themselves, for they elucidate broadly applicable scientific principles. Focus is on studying consumer devices; projects include building batteries, energy conversion devices and semiconductors from pocket change. Students may propose topics and projects of interest to them. The trajectory of the course is determined in large part by the students themselves.

EE 15N. The Art and Science of Engineering Design. 3 Units.
The goal of this seminar is to introduce freshmen to the design process associated with an engineering project. The seminar will consist of a series of lectures. The first part of each lecture will focus on the different design aspects of an engineering project, including formation of the design team, developing a project statement, generating design ideas and specifications, finalizing the design, and reporting the outcome. Students will form teams to follow these procedures in designing a term project of their choice over the quarter. The second part of each lecture will consist of outside speakers, including founders of some of the most exciting companies in Silicon Valley, who will share their experiences about engineering design. On-site visits to Silicon Valley companies to showcase their design processes will also be part of the course. The seminar serves three purposes: (1) it introduces students to the design process of turning an idea into a final design, (2) it presents the different functions that people play in a project, and (3) it gives students a chance to consider what role in a project would be best suited to their interests and skills.

EE 17N. Engineering the Micro and Nano Worlds: From Chips to Genes. 3 Units.
Preference to freshmen. The first part is hands-on micro- and nano-fabrication including the Stanford Nanofabrication Facility (SNF) and the Stanford Nanocharacterization Laboratory (SNL) and field trips to local companies and other research centers to illustrate the many applications; these include semiconductor integrated circuits ('chips'), DNA microarrays, microfluidic bio-sensors and microelectromechanical systems (MEMS). The second part is to create, design, propose and execute a project. Most of the grade will be based on the project. By the end of the course you will, of course, be able to read critically a New York Times article on nanotechnology. More importantly you will have experienced the challenge (and fun) of designing, carrying out and presenting your own experimental project. As a result you will be better equipped to choose your major. This course can complement (and differs from) the seminars offered by Profs Philip Wong and Hari Manoharan in that it emphasizes laboratory work and an experimental student-designed project. Prerequisites: high-school physics.

EE 21N. What is Nanotechnology?. 3 Units.
Nanotechnology is an often used word and it means many things to different people. Scientists and Engineers have some notion of what nanotechnology is, societal perception may be entirely different. In this course, we start with the classic paper by Richard Feynman ("There's Plenty of Room at the Bottom"), which laid down the challenge to the nanotechnologists. Then we discuss two classic books that offer a glimpse of what nanotechnology is: Engines of Creation: The Coming Era of Nanotechnology by Eric Drexler, and Prey by Michael Crichton. Drexler's thesis sparked the imagination of what nano machinery might do, whereas Crichton's popular novel channeled the public's attention to this subject by portraying a disastrous scenario of a technology gone astray. We will use the scientific knowledge to analyze the assumptions and predictions of these classic works. We will draw upon the latest research advances to illustrate the possibilities and impossibilities of nanotechnology.

EE 23N. Imaging: From the Atom to the Universe. 3 Units.
Preference to freshmen. Forms of imaging including human and animal vision systems, atomic force microscope, microscope, digital camera, holography and three-dimensional imaging, telescope, synthetic aperture radar imaging, nuclear magnetic imaging, sonar and gravitational wave imaging, and the Hubble Space telescope. Physical principles and exposure to real imaging devices and systems.

EE 25N. Science of Information. 4 Units.
We live in the Information Age, but what is information, anyway? In 1948, Claude Shannon published a seminal paper formalizing our modern notion of information. Through lectures and lab visits, we'll learn how information can be measured and represented, why bits are the universal currency for information exchange, and how these ideas led to smartphones, the Internet, and more. We will get a glimpse of information elements in other domains, including neural codes of the brain, cryptographic codes, genetic code, quantum information, and even entertainment. As a final project, students will create podcast episodes on one of the topics explored in the course.

EE 26N. The Wireless World, and the Data You Leak. 3 Units.
The world is increasingly based on wireless communication. Cell phones and WiFi are the most visible examples. Others are key fobs, water meters, gas and electric meters, garage door openers, baby monitors, and the list continues to expand. All of these produce RF signals you can detect and often decode. This seminar will explore how much information you broadcast throughout your day, and how it can easily be received and decoded using inexpensive hardware and public domain software. You will be able to explain why different information services use different frequencies, why they encode the information the way they do, and what security risks they present.

EE 42. Introduction to Electromagnetics and Its Applications. 5 Units.
Electricity and magnetism and its essential role in modern electrical engineering devices and systems, such as sensors, displays, DVD players, and optical communication systems. The topics that will be covered include electrostatics, magnetostatics, Maxwell's equations, one-dimensional wave equation, electromagnetic waves, transmission lines, and one-dimensional resonators. Pre-requisites: none.
Same as: ENGR 42

EE 46. Engineering For Good: Contributing to Saving the World and Having Fun Doing It. 3 Units.
Projects that provide immediate and positive impact on the world. Focus is on global health and sustainable development by learning from experts in these fields. Students work on real-world projects with help from members of NGOs and social entrepreneurial companies as part of the hand-on learning experience. Prerequisite: ENGR 21 or ENGR 40M or EE 122A or CS 106B or consent of instructor.

EE 60N. Man versus Nature: Coping with Disasters Using Space Technology. 4 Units.
Preference to freshman. Natural hazards, earthquakes, volcanoes, floods, hurricanes, and fires, and how they affect people and society; great disasters such as asteroid impacts that periodically obliterate many species of life. Scientific issues, political and social consequences, costs of disaster mitigation, and how scientific knowledge affects policy. How spaceborne imaging technology makes it possible to respond quickly and mitigate consequences; how it is applied to natural disasters; and remote sensing data manipulation and analysis. GER:DB-EngrAppSci.
Same as: GEOPHYS 60N

EE 64SI. Mechanical Prototyping for Electrical Engineers. 2 Units.
This course will give non-mechanical engineers experience designing mechanical assemblies specifically for manufacture by readily accessible tools, such as 3-D printers and laser cutters. It will also teach students to debug their own mechanical designs, and interface them with other components (such as store-bought parts). By the end of the quarter students will feel comfortable independently designing and manufacturing simple assemblies to serve useful functions in their lives.

EE 65. Modern Physics for Engineers. 4 Units.
This course introduces the core ideas of modern physics that enable applications ranging from solar energy and efficient lighting to the modern electronic and optical devices and nanotechnologies that sense, process, store, communicate and display all our information. Though the ideas have broad impact, the course is widely accessible to engineering and science students with only basic linear algebra and calculus through simple ordinary differential equations as mathematics background. Topics include the quantum mechanics of electrons and photons (Schrödinger's equation, atoms, electrons, energy levels and energy bands; absorption and emission of photons; quantum confinement in nanostructures), the statistical mechanics of particles (entropy, the Boltzmann factor, thermal distributions), the thermodynamics of light (thermal radiation, limits to light concentration, spontaneous and stimulated emission), and the physics of information (Maxwell¿s demon, reversibility, entropy and noise in physics and information theory). Pre-requisite: Physics 41. Pre- or co-requisite: Math 53 or CME 102.

EE 76. Information Science and Engineering. 4 Units.
What is information? How can we measure and efficiently represent it? How can we reliably communicate and store it over media prone to noise and errors? How can we make sound decisions based on partial and noisy information? This course introduces the basic mathematics required to formulate and answer these questions, as well as some of the principles and techniques in the design of modern information, communication, and decision-making systems. Students will also get a glimpse of ways in which these principles manifest in domains ranging from the neural codes of the brain, through the genetic code, to the structure of human language.

EE 100. The Electrical Engineering Profession. 1 Unit.
Lectures/discussions on topics of importance to the electrical engineering professional. Continuing education, professional societies, intellectual property and patents, ethics, entrepreneurial engineering, and engineering management.

EE 101A. Circuits I. 4 Units.
Introduction to circuit modeling and analysis. Topics include creating the models of typical components in electronic circuits and simplifying non-linear models for restricted ranges of operation (small signal model); and using network theory to solve linear and non-linear circuits under static and dynamic operations. Prerequisite: ENGR40 or ENGR40M is strongly recommended.

EE 101B. Circuits II. 4 Units.
Continuation of EE101A. Introduction to circuit design for modern electronic systems. Modeling and analysis of analog gain stages, frequency response, feedback. Filtering and analog to digital conversion. Fundamentals of circuit simulation. Prerequisites: EE101A, EE102A. Recommended: CME102.

EE 102A. Signal Processing and Linear Systems I. 4 Units.
Concepts and tools for continuous- and discrete-time signal and system analysis with applications in signal processing, communications, and control. Mathematical representation of signals and systems. Linearity and time invariance. System impulse and step responses. System frequency response. Frequency-domain representations: Fourier series and Fourier transforms. Filtering and signal distortion. Time/frequency sampling and interpolation. Continuous-discrete-time signal conversion and quantization. Discrete-time signal processing. Prerequisite: MATH 53 or CME 102.

EE 102B. Signal Processing and Linear Systems II. 4 Units.
Continuation of EE 102A. Concepts and tools for continuous- and discrete-time signal and system analysis with applications in communications, signal processing and control. Analog and digital modulation and demodulation. Sampling, reconstruction, decimation and interpolation. Finite impulse response filter design. Discrete Fourier transforms, applications in convolution and spectral analysis. Laplace transforms, applications in circuits and feedback control. Z transforms, applications in infinite impulse response filter design. Prerequisite: EE 102A.

EE 104. Introduction to Machine Learning. 3-5 Units.
Introduction to machine learning. Formulation of supervised and unsupervised learning problems. Regression and classification. Data standardization and feature engineering. Loss function selection and its effect on learning. Regularization and its role in controlling complexity. Validation and overfitting. Robustness to outliers. Simple numerical implementation. Experiments on data from a wide variety of engineering and other disciplines. Undergraduate students should enroll for 5 units, and graduate students should enroll for 3 units. Prerequisites: ENGR 108; EE 178 or CS 109; CS106A or equivalent.
Same as: CME 107

EE 107. Embedded Networked Systems. 3 Units.
Networked embedded systems are often hidden from our view, but they are a key component that enables our modern society. Embedded systems bridge our physical world with powerful digital measurement and control systems. Applications of today's embedded systems range from stabilization in drones authentication in credit cards, and even temperature control in toasters. In this class, students will learn about how to build an networked embedded system from the ground up. The lectures will focus on the key enabling components of embedded systems, including: Clocks, GPIO, Interrupts, Busses, Amplifiers, Regulators, Power supplies, ADC/DAC, DMA, and Storage. The goal of the class is to familiarize the students with these components such that they can build their own embedded systems in devices. Prerequisites: EE 102A or ENGR 40M.

EE 108. Digital System Design. 4 Units.
Digital circuit, logic, and system design. Digital representation of information. CMOS logic circuits. Combinational logic design. Logic building blocks, idioms, and structured design. Sequential logic design and timing analysis. Clocks and synchronization. Finite state machines. Microcode control. Digital system design. Control and datapath partitioning. Lab. *In Autumn, enrollment preference is given to EE majors. Any EE majors who must enroll in Autumn are invited to contact the instructor. Formerly EE 108A.

EE 109. Digital Systems Design Lab. 4 Units.
The design of integrated digital systems encompassing both customized software and hardware. Software/hardware design tradeoffs. Algorithm design for pipelining and parallelism. System latency and throughput tradeoffs. FPGA optimization techniques. Integration with external systems and smart devices. Firmware configuration and embedded system considerations. Enrollment limited to 25; preference to graduating seniors. Prerequisites: 108B, and CS 106B or X.

EE 114. Fundamentals of Analog Integrated Circuit Design. 3-4 Units.
Analysis and simulation of elementary transistor stages, current mirrors, supply- and temperature-independent bias, and reference circuits. Overview of integrated circuit technologies, circuit components, component variations and practical design paradigms. Differential circuits, frequency response, and feedback will also be covered. Performance evaluation using computer-aided design tools. Undergraduates must take EE 114 for 4 units. Prerequisite: 101B. GER:DB-EngrAppSci.
Same as: EE 214A

EE 116. Semiconductor Devices for Energy and Electronics. 3 Units.
The underpinnings of modern technology are the transistor (circuits), the capacitor (memory), and the solar cell (energy). EE 116 introduces the physics of their operation, their historical origins (including Nobel prize breakthroughs), and how they can be optimized for future applications. The class covers physical principles of semiconductors, including silicon and new material discoveries, quantum effects, band theory, operating principles, and device equations. Recommended (but not required) co-requisite: EE 65 or equivalent.

EE 118. Introduction to Mechatronics. 4 Units.
Technologies involved in mechatronics (intelligent electro-mechanical systems), and techniques to apply this technology to mecatronic system design. Topics include: electronics (A/D, D/A converters, op-amps, filters, power devices); software program design, event-driven programming; hardware and DC stepper motors, solenoids, and robust sensing. Large, open-ended team project. Prerequisites: ENGR 40, CS 106, or equivalents.
Same as: ME 210

EE 124. Introduction to Neuroelectrical Engineering. 3 Units.
Fundamental properties of electrical activity in neurons, technology for measuring and altering neural activity, and operating principles of modern neurological and neural prosthetic medical systems. Topics: action potential generation and propagation, neuro-MEMS and measurement systems, experimental design and statistical data analysis, information encoding and decoding, clinical diagnostic systems, and fully-implantable neural prosthetic systems design. Prerequisite: EE 101A and EE 102A.

EE 133. Analog Communications Design Laboratory. 3-4 Units.
Design, testing, and applications of Radio Frequency (RF) electronics: Amplitude Modulation (AM), Frequency Modulation (FM) and concepts of Software Define Radio (SDR) systems. Practical aspects of circuit implementations are developed; labs involve building and characterization of subsystems as well as integration of a complete radio system and a final project. Total enrollment limited to 25 students, undergraduate and graduate levels. Prerequisite: EE101B. Undergraduate students enroll in EE133 for 4 units and Graduate students enroll in EE233 for 3 units. Recommended: EE114/214A.
Same as: EE 233

EE 134. Introduction to Photonics. 4 Units.
Photonics, optical components, and fiber optics. Conceptual and mathematical tools for design and analysis of optical communication, sensor and imaging systems. Experimental characterization of semiconductor lasers, optical fibers, photodetectors, receiver circuitry, fiber optic links, optical amplifiers, and optical sensors. Class project on confocal microscopy or other method of sensing or analyzing biometric data. Laboratory experiments. Prerequisite: EE 102A and one of the following: EE 42, Physics 43, or Physics 63.

EE 142. Engineering Electromagnetics. 3 Units.
Introduction to electromagnetism and Maxwell's equations in static and dynamic regimes. Electrostatics and magnetostatics: Gauss's, Coulomb's, Faraday's, Ampere's, Biot-Savart's laws. Electric and magnetic potentials. Boundary conditions. Electric and magnetic field energy. Electrodynamics: Wave equation; Electromagnetic waves; Phasor form of Maxwell's equations.nSolution of the wave equation in 1D free space: Wavelength, wave-vector, forward and backward propagating plane waves.Poynting's theorem. Propagation in lossy media, skin depth. Reflection and refraction at planar boundaries, total internal reflection. Solutions of wave equation for various 1D-3D problems: Electromagnetic resonators, waveguides periodic media, transmission lines. Formerly EE 141. Pre-requisites: Phys 43 or EE 42, CME 100, CME 102.

EE 153. Power Electronics. 3-4 Units.
Addressing the energy challenges of today and the environmental challenges of the future will require efficient energy conversion techniques. This course will discuss the circuits used to efficiently convert ac power to dc power, dc power from one voltage level to another, and dc power to ac power. The components used in these circuits (e.g., diodes, transistors, capacitors, inductors) will also be covered in detail to highlight their behavior in a practical implementation. A lab will be held with the class where students will obtain hands on experience with power electronic circuits. For WIM credit, students must enroll in EE 153 for 4 units. No exceptions. Formerly EE 292J. Prerequisite: EE 101B.
Same as: EE 253

EE 155. Green Electronics. 4 Units.
Many green technologies including hybrid cars, photovoltaic energy systems, efficient power supplies, and energy-conserving control systems have at their heart intelligent, high-power electronics. This course examines this technology and uses green-tech examples to teach the engineering principles of modeling, optimization, analysis, simulation, and design. Topics include power converter topologies, periodic steady-state analysis, control, motors and drives, photovol-taic systems, and design of magnetic components. The course involves a hands-on laboratory and a substantial final project. Formerly EE 152. Required: EE101B, EE102A, EE108. Recommended: ENGR40 or EE122A.
Same as: EE 255

EE 157. Electric Motors for Renewable Energy, Robotics, and Electric Vehicles. 3 Units.
An introduction to electric motors and the principles of electromechanical energy conversion. Students will learn about, design, and build an electric motor system, choosing from one of three application areas: renewable energy (wind turbines), robotics (drones and precision manufacturing), or electric vehicles (cars, ships, and airplanes). Topics covered include ac and dc rotating machines, power electronics inverters and drives, and control techniques. Prerequisite: EE 42, Physics 43, ENGR 40M or equivalent.

EE 168. Introduction to Digital Image Processing. 3-4 Units.
Computer processing of digital 2-D and 3-D data, combining theoretical material with implementation of computer algorithms. Topics: properties of digital images, design of display systems and algorithms, time and frequency representations, filters, image formation and enhancement, imaging systems, perspective, morphing, and animation applications. Instructional computer lab exercises implement practical algorithms. Final project consists of computer animations incorporating techniques learned in class. For WIM credit, students must enroll for 4 units. No exceptions. Prerequisite: Matlab programming.

EE 169. Introduction to Bioimaging. 3 Units.
Bioimaging is important for both clinical medicine, and medical research. This course will provide a introduction to several of the major imaging modalities, using a signal processing perspective. The course will start with an introduction to multi-dimensional Fourier transforms, and image quality metrics. It will then study projection imaging systems (projection X-Ray), backprojection based systems (CT, PET, and SPECT), systems that use beam forming (ultrasound), and systems that use Fourier encoding (MRI). Prerequisites: EE102A, EE102B.

EE 178. Probabilistic Systems Analysis. 3-4 Units.
Introduction to probability and its role in modeling and analyzing real world phenomena and systems, including topics in statistics, machine learning, and statistical signal processing. Elements of probability, conditional probability, Bayes rule, independence. Discrete and continuous random variables. Signal detection. Functions of random variables. Expectation; mean, variance and covariance, linear MSE estimation. Conditional expectation; iterated expectation, MSE estimation, quantization and clustering. Parameter estimation. Classification. Sample averages. Inequalities and limit theorems. Confidence intervals. Prerequisites: Calculus at the level of MATH 51, CME 100 or equivalent and basic knowledge of computing at the level of CS106A.

EE 179. Analog and Digital Communication Systems. 3 Units.
This course covers the fundamental principles underlying the analysis, design and optimization of analog and digital communication systems. Design examples will be taken from the most prevalent communication systems today: cell phones, Wifi, radio and TV broadcasting, satellites, and computer networks. Analysis techniques based on Fourier transforms and energy/power spectral density will be developed. Mathematical models for random variables and random (noise) signals will be presented, which are used to characterize filtering and modulation of random noise. These techniques will then be used to design analog (AM and FM) and digital (PSK and FSK) communication systems and determine their performance over channels with noise and interference. Prerequisite: 102A.

EE 180. Digital Systems Architecture. 4 Units.
The design of processor-based digital systems. Instruction sets, addressing modes, data types. Assembly language programming, low-level data structures, introduction to operating systems and compilers. Processor microarchitecture, microprogramming, pipelining. Memory systems and caches. Input/output, interrupts, buses and DMA. System design implementation alternatives, software/hardware tradeoffs. Labs involve the design of processor subsystems and processor-based embedded systems. Formerly EE 108B. Prerequisite: one of CS107 or CS 107E (required) and EE108 (recommended but not required).

EE 185. Interactive Light Sculpture Project. 3 Units.
Design, prototype, build, refine, program, and install a large interactive light sculpture in the Packard Building to celebrate the 125th anniversary of the EE department. Students may take the course for 1, 2, or 3 quarters; each quarter focuses on a different phase of the project. Topics covered include energy budgeting, communication, enclosure design, scalability, timing, circuit design, structural design, and safety. Prerequisite: ENGR 40M, or an introductory EE or CS course in circuits or programming.

EE 185A. Engineering a Smart Object - Intro to Systems & Fabrication. 3 Units.
EE 185A/B/C is a full-year sequence that teaches all of the concepts, knowledge, skills, and techniques to engineer all aspects of a smart object. Students learn to specify and analyze designs precisely, such that the first version of the object constructed works exactly as expected. This first course focuses on building an object to specification. Students will learn and use modern fabrication methods including machine tools (milling machine, lathe, etc.), laser cutters, and 3D printers to demonstrate their ability to build it right the first time. Course prerequisites: Physics 43 (or equivalent) and ENGR 40M or instructor approval.

EE 185B. Engineering a Smart Object - Specifications and Embedded Design. 3 Units.
EE 185A/B/C is a full-year sequence that teaches all of the concepts, knowledge, skills, and techniques to engineer all aspects of a smart object. This second course focuses on understanding the art of specification by writing a specification and fabricating to someone else is written specification. We will also explore embedded system design and the impact of design decisions by redesigning the electronics from EE 185A to meet low power specifications. Students will learn about power, energy, micro controllers, low-level software and how, in embedded systems, electronic hardware, mechanical design, and software are coupled. Course prerequisites: EE 185A as well as CS107, CS107E or instructor approval.

EE 185C. Engineering a Smart Object - Adding connectivity and Putting it ALL together. 3 Units.
EE 185A/B/C is a full-year sequence that teaches all of the concepts, knowledge, skills, and techniques to engineer all aspects of a smart object. In this third course, the students bring everything they have learned in EE 185 A/B to bear by engineering a simple smart object of their choosing. We will add an essential ingredient of a Smart Object - connectivity and learn about how this effects system design. During this Quarter, each student will write a precise specification, create and analyze their design to a degree such that it is certain it will work as intended the first time they build it. They will also fabricate and demonstrate their Smart Object by the end of the Quarter. Course prerequisites: EE 185B or instructor approval.

EE 190. Special Studies or Projects in Electrical Engineering. 1-15 Unit.
Independent work under the direction of a faculty member. Individual or team activities involve lab experimentation, design of devices or systems, or directed reading. Course may be repeated for credit.

EE 191. Special Studies and Reports in Electrical Engineering. 1-15 Unit.
Independent work under the direction of a faculty member given for a letter grade only. If a letter grade given on the basis of required written report or examination is not appropriate, enroll in 190. Course may be repeated for credit.

EE 191A. Special Studies and Reports in Electrical Engineering. 1 Unit.
EE191A is part of the Accelerated Calculus for Engineers program. Independent work under the direction of a faculty member given for a letter grade only. EE 191A counts as a Math one unit seminar course: it is this unit that constitutes the ACE program.

EE 191W. Special Studies and Reports in Electrical Engineering. 3-10 Units.
WIM-version of EE 191. For EE students using special studies (e.g., honors project, independent research project) to satisfy the writing-in-major requirement. A written report that has gone through revision with an adviser is required. An adviser from the Technical Communication Program is recommended.
Same as: WIM

EE 192T. Project Lab: Video and Audio Technology for Live Theater in the Age of COVID. 3 Units.
This class is part of a multi-disciplinary collaboration between researchers in the CS, EE, and TAPS departments to design and develop a system to host a live theatrical production that will take place over the Internet in the winter quarter. The performing arts have been greatly affected by a transition to theater over Zoom and its competitors, none of which are great at delivering low-latency audio to actors, or high-quality audio and video to the audience, or feedback from the audience back to actors. These are big technical challenges. During the fall, we'll build a system that improves on current systems in certain areas: audio quality and latency over spotty Internet connections, video quality and realistic composited scenes with multiple actors, audience feedback, and perhaps digital puppetry. Students will learn to be part of a deadline-driven software development effort working to meet the needs of a theater director and creative specialists -- while communicating the effect of resource limits and constraints to a nontechnical audience. This is an experimental hands-on laboratory class, and our direction may shift as the creative needs of the theatrical production evolve. Based on the success of class projects and subsequent needs, some students may be invited to continue in the winter term with a research appointment (for pay or credit) to operate the system you have built and instruct actors and creative professionals how to work with the system through rehearsals and the final performance before spring break. Prerequisites: CS110 or EE102A. Recommended: familiarity with Linux, C++, and Git.
Same as: CS 349T

EE 195. Electrical Engineering Instruction. 1-3 Unit.
Students receive training from faculty or graduate student mentors to prepare them to assist in instruction of Electrical Engineering courses. The specific training and units of credit received are to be defined in consultation with one of the official instructors of EE 195. Note that University regulations prohibit students from being paid for the training while receiving academic credit for it. Enrollment limited.

EE 203. The Entrepreneurial Engineer. 1 Unit.
Seminar. For prospective entrepreneurs with an engineering background. Contributions made to the business world by engineering graduates. Speakers include Stanford and other engineering and M.B.A. graduates who have founded large and small companies in nearby communities. Contributions from EE faculty and other departments including Law, Business, and MS&E.May be repeated for credit.

EE 205. Product Management for Electrical Engineers and Computer Scientists. 3 Units.
Successful products are the highest impact contribution anyone can make in product development. Students will learn to build successful products using fundamental concepts in Product Management. These include understanding customers, their job to be done, Identifying new product opportunities, and defining what to build that is technically feasible, valuable to the customer, and easy to use The course has two components, Product Management Project with corporate partners, and case-based classroom discussion of PM concepts and application. Prerequisite: Students must be currently enrolled in a MS or PhD engineering degree program.

EE 207. Neuromorphics: Brains in Silicon. 3 Units.
(Formerly EE 304) Neuromorphic systems run perceptual, cognitive and motor tasks in real-time on a network of highly interconnected nonlinear units. To maximize density and minimize energy, these units--like the brain's neurons--are heterogeneous and stochastic. The first half of the course covers learning algorithms that automatically synthesize network configurations to perform a desired computation on a given heterogeneous neural substrate. The second half of the course surveys system-on-a-chip architectures that efficiently realize highly interconnected networks and mixed analog-digital circuit designs that implement area and energy-efficient nonlinear units. Prerequisites: EE102A is required.
Same as: BIOE 313

EE 212. Integrated Circuit Fabrication Processes. 3 Units.
For students interested in the physical bases and practical methods of silicon VLSI chip fabrication, or the impact of technology on device and circuit design, or intending to pursue doctoral research involving the use of Stanford's Nanofabrication laboratory. Process simulators illustrate concepts. Topics: principles of integrated circuit fabrication processes, physical and chemical models for crystal growth, oxidation, ion implantation, etching, deposition, lithography, and back-end processing. Required for 410.

EE 214A. Fundamentals of Analog Integrated Circuit Design. 3-4 Units.
Analysis and simulation of elementary transistor stages, current mirrors, supply- and temperature-independent bias, and reference circuits. Overview of integrated circuit technologies, circuit components, component variations and practical design paradigms. Differential circuits, frequency response, and feedback will also be covered. Performance evaluation using computer-aided design tools. Undergraduates must take EE 114 for 4 units. Prerequisite: 101B. GER:DB-EngrAppSci.
Same as: EE 114

EE 214B. Advanced Integrated Circuit Design. 3 Units.
Analysis and design of analog integrated circuits in advanced MOS and bipolar technologies. Device operation and compact modeling in support of circuit simulations needed for design. Emphasis on quantitative evaluations of performance using hand calculations and circuit simulations; intuitive approaches to design. Analytical and approximate treatments of noise and distortion; analysis and design of feedback circuits. Design of archetypal analog blocks for networking and communications such as broadband gain stages and transimpedance amplifiers. Prerequisites: EE114/214A.

EE 216. Principles and Models of Semiconductor Devices. 3 Units.
Carrier generation, transport, recombination, and storage in semiconductors. Physical principles of operation of the p-n junction, heterojunction, metal semiconductor contact, bipolar junction transistor, MOS capacitor, MOS and junction field-effect transistors, and related optoelectronic devices such as CCDs, solar cells, LEDs, and detectors. First-order device models that reflect physical principles and are useful for integrated-circuit analysis and design. Prerequisite: 116 or equivalent.

EE 218. Power Semiconductor Devices and Technology. 3 Units.
This course starts by covering the device physics and technology of current silicon power semiconductor devices including power MOSFETs, IGBTs, and Thyristors. Wide bandgap materials, especially GaN and SiC are potential replacements for Si power devices because of their fundamentally better properties. This course explores what is possible in these new materials, and what the remaining challenges are for wide bandgap materials to find widespread market acceptance in power applications. Future clean, renewable energy systems and high efficiency power control systems will critically depend on the higher performance devices possible in these new materials. Prerequisites: EE 116 or equivalent.

EE 222. Applied Quantum Mechanics I. 3 Units.
Emphasis is on applications in modern devices and systems. Topics include: Schrödinger's equation, eigenfunctions and eigenvalues, solutions of simple problems including quantum wells and tunneling, quantum harmonic oscillator, coherent states, operator approach to quantum mechanics, Dirac notation, angular momentum, hydrogen atom, calculation techniques including matrix diagonalization, perturbation theory, variational method, and time-dependent perturbation theory with applications to optical absorption, nonlinear optical coefficients, and Fermi's golden rule. Prerequisites: MATH 52 and 53, EE 65 or PHYSICS 65 (or PHYSICS 43 and 45).
Same as: MATSCI 201

EE 223. Applied Quantum Mechanics II. 3 Units.
Continuation of 222, including more advanced topics: quantum mechanics of crystalline materials, methods for one-dimensional problems, spin, systems of identical particles (bosons and fermions), introductory quantum optics (electromagnetic field quantization, coherent states), fermion annihilation and creation operators, interaction of different kinds of particles (spontaneous emission, optical absorption, and stimulated emission). Quantum information and interpretation of quantum mechanics. Other topics in electronics, optoelectronics, optics, and quantum information science. Prerequisite: 222.

EE 225. Biochips and Medical Imaging. 3 Units.
The course covers state-of-the-art and emerging bio-sensors, bio-chips, imaging modalities, and nano-therapies which will be studied in the context of human physiology including the nervous system, circulatory system and immune system. Medical diagnostics will be divided into bio-chips (in-vitro diagnostics) and medical and molecular imaging (in-vivo imaging). In-depth discussion on cancer and cardiovascular diseases and the role of diagnostics and nano-therapies.
Same as: MATSCI 225, SBIO 225

EE 233. Analog Communications Design Laboratory. 3-4 Units.
Design, testing, and applications of Radio Frequency (RF) electronics: Amplitude Modulation (AM), Frequency Modulation (FM) and concepts of Software Define Radio (SDR) systems. Practical aspects of circuit implementations are developed; labs involve building and characterization of subsystems as well as integration of a complete radio system and a final project. Total enrollment limited to 25 students, undergraduate and graduate levels. Prerequisite: EE101B. Undergraduate students enroll in EE133 for 4 units and Graduate students enroll in EE233 for 3 units. Recommended: EE114/214A.
Same as: EE 133

EE 234. Photonics Laboratory. 3 Units.
Photonics and fiber optics with a focus on communication and sensing. Experimental characterization of semiconductor lasers, optical fibers, photodetectors, receiver circuitry, fiber optic links, optical amplifiers, and optical sensors and photonic crystals. Prerequisite: EE 236A (recommended).

EE 235. Analytical Methods in Biotechnology. 3 Units.
This course provides fundamental principles underlying important analytical techniques used in modern biotechnology. The course comprises of lectures and hands-on laboratory experiments. Students will learn the core principles for designing, implementing and analyzing central experimental methods including polymerase chain reaction (PCR), electrophoresis, immunoassays, and high-throughput sequencing. The overall goal of the course is to enable engineering students with little or no background in molecular biology to transition into research in the field of biomedicine.

EE 236A. Modern Optics. 3 Units.
Geometrical optics; lens analysis and design, aberrations, optical instruments, radiometry. ray matrices. Wave nature of light; polarization, plane waves at interfaces and in media with varying refractive index, diffraction, Fourier Optics, Gaussian beams. Interference; single-beam interferometers (Fabry-Perot), multiple-beam interferometers (Michelson, Mach-Zehnder). Prerequisites: EE 142 or familiarity with electromagnetism and plane waves.

EE 236AL. Modern Optics - Laboratory. 1 Unit.
The Laboratory Course allows students to work hands-on with optical equipment to conduct five experiments that compliment the lecture course. Examples are Gaussian Beams and Resonators, Interferometers, and Diffraction.

EE 236B. Guided Waves. 3 Units.
Maxwell's equations, constitutive relations. Kramers-Kronig relations. Modes in waveguides: slab, rectangular, circular. Photonic crystals, surface plasmon modes. General properties of waveguide modes: orthogonality, phase and group indices, group velocity dispersion. Chirped pulse propagation in dispersive media and its connection to Gaussian beam propagation. Time lens. Waveguide technologies: glass, silicon, III-V semiconductor, metallic. Waveguide devices: fibers, lasers, modulators, arrayed waveguide gratings. Scattering matrix description of passive optical devices, and constraints from energy conservation, time-reversal symmetry and reciprocity. Mode coupling, directional couplers, distributed-feedback structures. Resonators from scattering matrix and input-output perspective. Micro-ring resonators. Prerequisites: EE 236A and EE 242 or familiarity with differential form of Maxwell's equations.

EE 236C. Lasers. 3 Units.
Atomic systems, spontaneous emission, stimulated emission, amplification. Three- and four-level systems, rate equations, pumping schemes. Laser principles, conditions for steady-state oscillation. Transverse and longitudinal mode control and tuning. Exemplary laser systems: gas (HeNe), solid state (Nd:YAG, Ti:sapphire) and semiconductors. Elements of laser dynamics and noise. Formerly EE231. Prerequisites: EE 236B and familiarity with modern physics and semiconductor physics. Recommended: EE 216 and EE 223 (either may be taken concurrently).

EE 237. Solar Energy Conversion. 3 Units.
This course will be an introduction to solar photovoltaics. No prior photovoltaics knowledge is required. Class lectures will be supplemented by guest lectures from distinguished engineers, entrepreneurs and venture capitalists actively engaged in solar industry. Past guest speakers include Richard Swanson (CEO, SunPower), Benjamin Cook (Managing Partner at NextPower Capital) and Shahin Farshchi (Partner, Lux Capital). Topics Include: Economics of solar energy. Solar energy policy. Solar cell device physics: electrical and optical. Different generations of photovoltaic technology: crystalline silicon, thin film, multi-junction solar cells. Perovskite and silicon tandem cells. Advanced energy conversion concepts like photon up-conversion, quantum dot solar cells. Solar system issues including module assembly, inverters, micro-inverters and microgrid. No prior photovoltaics knowledge is required. Recommended: EE116, EE216 or equivalent.

EE 238. Introduction to Fourier Optics. 3 Units.
Fourier analysis applied to optical imaging. Theoretical topics include Fourier transform and angular spectrum to describe diffraction, Fourier transforming properties of lenses, image formation with coherent and incoherent light and aberrations. Application topics will cover image deconvolution/reconstruction, amplitude and phase pupil engineering, computational adaptive optics, and others motivated by student interest. Prerequisites: familiarity with Fourier transform and analysis, EE 102 and EE 142 or equivalent.

EE 242. Electromagnetic Waves. 3 Units.
This course will provide an advanced treatment of electromagnetic waves in free space and media. The first part of the course will cover reflection, refraction, resonators, and waveguides. The second part will cover general concepts in finite-difference time-domain (FDTD) computation, and students will be introduced to commercial FDTD software. The third part will cover potentials, Green's functions, far-field radiation, near-field radiation, and antennas. The fourth part will focus on an analysis of EM waves in matter. In lieu of a final exam, students will perform a quantitative group project based on a technical paper or research idea. This course will serve as a foundation for other specialized 200 and 300-level optics courses. Prerequisites: EE 142 or PHYSICS 120.

EE 243. Semiconductor Optoelectronic Devices. 3 Units.
Semiconductor physics and optical processes in semiconductors. Operating principles and practical device features of semiconductor optoelectronic materials and heterostructures. Devices include: optical detectors (p-i-n, avalanche, and MSM); light emitting diodes; electroabsorptive modulators (Franz-Keldysh and QCSE), electrorefractive (directional couplers, Mach-Zehnder), switches (SEEDs); and lasers (waveguide and vertical cavity surface emitting). Prerequisites: semiconductor devices and solid state physics such as EE 216 or equivalent.

EE 247. Introduction to Optical Fiber Communications. 3 Units.
Fibers: single- and multi-mode, attenuation, modal dispersion, group-velocity dispersion, polarization-mode dispersion. Nonlinear effects in fibers: Raman, Brillouin, Kerr. Self- and cross-phase modulation, four-wave mixing. Sources: light-emitting diodes, laser diodes, transverse and longitudinal mode control, modulation, chirp, linewidth, intensity noise. Modulators: electro-optic, electro-absorption. Photodiodes: p-i-n, avalanche, responsivity, capacitance, transit time. Receivers: high-impedance, transimpedance, bandwidth, noise. Digital intensity modulation formats: non-return-to-zero, return-to-zero. Receiver performance: Q factor, bit-error ratio, sensitivity, quantum limit. Sensitivity degradations: extinction ratio, intensity noise, jitter, dispersion. Wavelength-division multiplexing. System architectures: local-area, access, metropolitan-area, long-haul. Prerequisites: EE 102A and EE 142.

EE 251. High-Frequency Circuit Design Laboratory. 3 Units.
Students will study the theory of operation of instruments such as the time-domain reflectometer, sampling oscilloscope and vector network analyzer. They will build on that theoretical foundation by designing, constructing and characterizing numerous wireless building blocks in the upper-UHF range (e.g., up to about 500MHz), in a running series of laboratory exercises that conclude in a final project. Examples include impedance-matching and coupling structures, filters, narrowband and broadband amplifiers, mixers/modulators, and voltage-controlled oscillators. Prerequisite: EE 114 or EE 214A.

EE 252. Antennas. 3 Units.
This course aims to cover the theory, simulation, and hands-on experiment in antenna design. Topics include: basic parameters to describe the performance and characteristics of an antenna, link budget analyses, solving the fields from a Hertizian dipole, duality, equivalence principle, reciprocity, linear wire antenna, circular loop antenna, antenna array, slot and patch antennas, helical antennas, wideband antennas, size reduction techniques, wideband small antennas, and circularly polarized (CP) small antennas. Students will learn to use a commercial electromagnetic stimulator in lab sessions. A final project is designed to solve a research antenna design problem in biomedical area or wireless communications. Prerequisite: EE 142 or Physics 120 or equivalent. Enrollment capacity limited to 25 students.

EE 253. Power Electronics. 3-4 Units.
Addressing the energy challenges of today and the environmental challenges of the future will require efficient energy conversion techniques. This course will discuss the circuits used to efficiently convert ac power to dc power, dc power from one voltage level to another, and dc power to ac power. The components used in these circuits (e.g., diodes, transistors, capacitors, inductors) will also be covered in detail to highlight their behavior in a practical implementation. A lab will be held with the class where students will obtain hands on experience with power electronic circuits. For WIM credit, students must enroll in EE 153 for 4 units. No exceptions. Formerly EE 292J. Prerequisite: EE 101B.
Same as: EE 153

EE 254. Advanced Topics in Power Electronics. 3 Units.
In this course, we will study the practical issues related to the practical design of power electronic converters. We will also explore the trade-offs involved in selecting among the different circuits used to convert ac to dc, dc to ac and back to dc over a wide range of power levels suitable for different applications. In Advanced Topics in Power Electronic, as a multidisciplinary field, we will discuss power electronics circuits, extraction of transfer functions in Continuous and discontinuous conduction mode, voltage and current control of power converters, design of input/output filters to meet Electro Magnetic Interference specifications, layout of power electronics circuits and put this knowledge in a very practical context. Prerequisites: EE 153/253.

EE 255. Green Electronics. 4 Units.
Many green technologies including hybrid cars, photovoltaic energy systems, efficient power supplies, and energy-conserving control systems have at their heart intelligent, high-power electronics. This course examines this technology and uses green-tech examples to teach the engineering principles of modeling, optimization, analysis, simulation, and design. Topics include power converter topologies, periodic steady-state analysis, control, motors and drives, photovol-taic systems, and design of magnetic components. The course involves a hands-on laboratory and a substantial final project. Formerly EE 152. Required: EE101B, EE102A, EE108. Recommended: ENGR40 or EE122A.
Same as: EE 155

EE 256. Numerical Electromagnetics. 3 Units.
Principles and applications of numerical techniques for solving practical problems of electromagnetics. Finite-difference time-domain (FDTD) method and finite-difference frequency-domain (FDFD) method for solving Maxwell's equations. Numerical analysis of stability. Perfectly matched layer (PML) absorbing boundaries. Total-field/scattered-field (TF/SF) method. Waveguide mode analysis. Bloch boundary conditions. The course requires programming and the use of MATLAB or other equivalent tools. Prerequisite: EE 242 or equivalent.

EE 260A. Principles of Robot Autonomy I. 3-5 Units.
Basic principles for endowing mobile autonomous robots with perception, planning, and decision-making capabilities. Algorithmic approaches for robot perception, localization, and simultaneous localization and mapping; control of non-linear systems, learning-based control, and robot motion planning; introduction to methodologies for reasoning under uncertainty, e.g., (partially observable) Markov decision processes. Extensive use of the Robot Operating System (ROS) for demonstrations and hands-on activities. Prerequisites: CS 106A or equivalent, CME 100 or equivalent (for linear algebra), and CME 106 or equivalent (for probability theory).
Same as: AA 174A, AA 274A, CS 237A

EE 260B. Principles of Robot Autonomy II. 3-4 Units.
This course teaches advanced principles for endowing mobile autonomous robots with capabilities to autonomously learn new skills and to physically interact with the environment and with humans. It also provides an overview of different robot system architectures. Concepts that will be covered in the course are: Reinforcement Learning and its relationship to optimal control, contact and dynamics models for prehensile and non-prehensile robot manipulation, imitation learning and human intent inference, as well as different system architectures and their verification. Students will earn the theoretical foundations for these concepts and implement them on mobile manipulation platforms. In homeworks, the Robot Operating System (ROS) will be used extensively for demonstrations and hands-on activities. Prerequisites: CS106A or equivalent, CME 100 or equivalent (for linear algebra), CME 106 or equivalent (for probability theory), and AA 171/274.
Same as: AA 174B, AA 274B, CS 237B

EE 261. The Fourier Transform and Its Applications. 3 Units.
The Fourier transform as a tool for solving physical problems. Fourier series, the Fourier transform of continuous and discrete signals and its properties. The Dirac delta, distributions, and generalized transforms. Convolutions and correlations and applications; probability distributions, sampling theory, filters, and analysis of linear systems. The discrete Fourier transform and the FFT algorithm. Multidimensional Fourier transform and use in imaging. Further applications to optics, crystallography. Emphasis is on relating the theoretical principles to solving practical engineering and science problems. Prerequisites: Math through ODEs, basic linear algebra, Comfort with sums and discrete signals, Fourier series at the level of 102A.

EE 262. Three-Dimensional Imaging. 3 Units.
Multidimensional time and frequency representations, generalization of Fourier transform methods to non-Cartesian coordinate systems, Hankel and Abel transforms, line integrals, impulses and sampling, reconstruction tomography, imaging radar. The projection-slice and layergram reconstruction methods as developed in radio interferometry. Radar imaging and backprojection algorithms for 3- and 4-D imaging. In weekly labs students create software to form images using these techniques with actual data. Final project consists of design, analysis and simulation of an advanced imaging system. Prerequisites: None required, but recommend EE103, EE261, EE278, some inverse method concepts such as from Geophys281.
Same as: GEOPHYS 264

EE 263. Introduction to Linear Dynamical Systems. 3 Units.
Applied linear algebra and linear dynamical systems with applications to circuits, signal processing, communications, and control systems. Topics: least-squares approximations of over-determined equations, and least-norm solutions of underdetermined equations. Symmetric matrices, matrix norm, and singular-value decomposition. Eigenvalues, left and right eigenvectors, with dynamical interpretation. Matrix exponential, stability, and asymptotic behavior. Multi-input/multi-output systems, impulse and step matrices; convolution and transfer-matrix descriptions. Control, reachability, and state transfer; observability and least-squares state estimation. Prerequisites: Linear algebra and matrices as in ENGR 108 or MATH 104; ordinary differential equations and Laplace transforms as in EE 102B or CME 102.
Same as: CME 263

EE 264. Digital Signal Processing. 3-4 Units.
Digital signal processing (DSP) techniques and design of DSP applications. Topics include: discrete-time random signals; sampling and multi-rate systems; oversampling and quantization in A-to-D conversion; properties of LTI systems; quantization in fixed-point implementations of filters; digital filter design; discrete Fourier Transform and FFT; spectrum analysis using the DFT; parametric signal modeling and adaptive filtering. The course also covers applications of DSP in areas such as speech, audio and communication systems. The optional lab section (Section 02) provides a hands-on opportunity to explore the application of DSP theory to practical real-time applications in an embedded processing platform. See ee264.stanford.edu for more information. Register in Section 02 to take the lab. Undergraduate students taking the lab should register for 4 units to meet the EE design requirement. The optional lab section is not available to remote SCPD students. Prerequisites: EE 102A and EE 102B or equivalent, basic programming skills (Matlab and C++).

EE 264W. Digital Signal Processing. 5 Units.
Writing in the Major (WIM) version of the 4-unit EE 264 theory + lab course. Digital signal processing (DSP) techniques and design of DSP applications. Topics include: discrete-time random signals; sampling and multi-rate systems; oversampling and quantization in A-to-D conversion; properties of LTI systems; quantization in fixed-point implementations of filters; digital filter design; discrete Fourier Transform and FFT; spectrum analysis using the DFT; parametric signal modeling and adaptive filtering. The course also covers applications of DSP in areas such as speech, audio and communication systems. The lab component provides a hands-on opportunity to explore the application of DSP theory to practical real-time applications in an embedded processing platform. See ee264.stanford.edu for more information. Prerequisites: EE 102A and EE 102B or equivalent, basic programming skills (Matlab and C++).
Same as: WIM

EE 266. Introduction to Stochastic Control with Applications. 3 Units.
Focuses on conceptual foundation and algorithmic methodology of Dynamic Programming and Stochastic Control with applications to engineering, operations research, management science and other fields. Elaborates on the concept of probing, learning and control of stochastic systems, and addresses the practical application of the concept and methodology through the use of approximations. Prerequisites: 201, 221, or equivalents.
Same as: MS&E 251

EE 267. Virtual Reality. 3-4 Units.
OpenGL, real-time rendering, 3D display systems, display optics & electronics, IMUs and sensors, tracking, haptics, rendering pipeline, multimodal human perception and depth perception, stereo rendering, presence. Emphasis on VR technology. Hands-on programming assignments. The 3-unit version requires a final programming assignment in which you create your own virtual environment. The 4-unit version requires a final course project and written report in lieu of the final assignment. Prerequisites: Strong programming skills, ENGR 108 or equivalent. Helpful: basic computer graphics / OpenGL.

EE 267W. Virtual Reality. 5 Units.
Writing in the Major (WIM) version of the 4-unit EE 267 theory + lab/project course. This course also meets the EE design requirement. Topics include: OpenGL, real-time rendering, 3D display systems, display optics & electronics, IMUs and sensors, tracking, haptics, rendering pipeline, multimodal human perception and depth perception, stereo rendering, presence. Emphasis on VR technology. Hands-on programming assignments. The 5-unit WIM version requires everything the 4-unit version does, i.e. a final course project and written report in lieu of the final assignment. The 5-unit WIM version additional requires participation in 2 writing in the major workshops, and weekly writing assignments. Prerequisites: Strong programming skills, ENGR 108 or equivalent. Helpful: basic computer graphics / OpenGL.
Same as: WIM

EE 269. Signal Processing for Machine Learning. 3 Units.
This course will introduce you to fundamental signal processing concepts and tools needed to apply machine learning to discrete signals. You will learn about commonly used techniques for capturing, processing, manipulating, learning and classifying signals. The topics include: mathematical models for discrete-time signals, vector spaces, Fourier analysis, time-frequency analysis, Z-transforms and filters, signal classification and prediction, basic image processing, compressed sensing and deep learning. This class will culminate in a final project. Prerequisites: EE 102A and EE 102B or equivalent, basic programming skills (Matlab). ENGR 108 and EE 178 are recommended.

EE 270. Large Scale Matrix Computation, Optimization and Learning. 3 Units.
Massive data sets are now common to many different fields of research and practice. Classical numerical linear algebra can be prohibitively costly in many modern problems. This course will explore the theory and practice of randomized matrix computation and optimization for large-scale problems to address challenges in modern massive data sets. Applications in machine learning, statistics, signal processing and data mining will be surveyed. Prerequisites: familiarity with linear algebra (ENGR 108 or equivalent), basic probability and statistics (EE 178 or equivalent), basic programming skills.

EE 271. Introduction to VLSI Systems. 3 Units.
Provides a quick introduction to MOS transistors and IC fabrication and then creates abstractions to allow you to create and reason about complex digital systems. It uses a switch resistor model of a transistor, uses it to model gates, and then shows how gates and physical layout can be synthesized from Verilog or SystemVerilog descriptions. Most of the class will be spent on providing techniques to create designs that can be validated, are low power, provide good performance, and can be completed in finite time. Prerequisites: 101A, 108A and 108B; familiarity with transistors, logic design, Verilog and digital system organization.

EE 272A. Design Projects in VLSI Systems I. 3-4 Units.
This course will introduce you to mixed signal design and the electronic design automation (EDA) tools used for it. Working in teams, you will create a chip with a digital deep neural network (DNN) accelerator and a small analog block using a modern design flow and EDA tools. The project involves writing a synthesizable C++ and a Verilog model of your chip, creating a testing/debug strategy for your chip, wrapping custom layout to fit into a standard cell system, using synthesis and place and route tools to create the layout of your chip, and understanding all the weird stuff you need to do to tape-out a chip. Useful for anyone who will build a chip in their Ph.D. Pre-requisites: EE271 and experience in digital/analog circuit design.

EE 272B. Design Projects in VLSI Systems II. 3-4 Units.
This is a follow on course to EE272A. While in EE272A you learn the EDA tool flow and design a pre-specified digital neural network accelerator and an analog block, in EE272B you will leverage your knowledge from EE272A and design and fabricate your own digital/analog/mixed-signal chip. This is a completely project-based course where, working in teams, you will propose your own mixed-signal chip, write a Verilog or a synthesizable C++ model of your chip, create a testing/debug strategy for your chip, wrap custom layout to fit into a standard cell system, use synthesis and place and route tools to create the layout of your chip, perform physical verification of your chip and finally tape it out. Useful for anyone who will build a chip in their Ph.D. Pre-requisites: EE271, EE272A and experience in digital/analog circuit design.

EE 273. Digital Systems Engineering. 3 Units.
Electrical issues in the design of high-performance digital systems, including signaling, timing, synchronization, noise, and power distribution. High-speed signaling methods; noise in digital systems, its effect on signaling, and methods for noise reduction; timing conventions; timing noise (skew and jitter), its effect on systems, and methods for mitigating timing noise; synchronization issues and synchronizer design; clock and power distribution problems and techniques; impact of electrical issues on system architecture and design. Prerequisites: EE101A and EE108A. Recommended: EE114/214A.

EE 276. Information Theory. 3 Units.
(Formerly EE 376A.) Project-based course about how to measure, represent, and communicate information effectively. Why bits have become the universal currency for information exchange. How information theory bears on the design and operation of modern-day systems such as smartphones and the Internet. The role of entropy and mutual information in data compression, communication, and inference. Practical compressors and error correcting codes. The information theoretic way of thinking. Relations and applications to probability, statistics, machine learning, biological and artificial neural networks, genomics, quantum information, and blockchains. Prerequisite: a first undergraduate course in probability.
Same as: STATS 376A

EE 277. Reinforcement Learning: Behaviors and Applications. 3 Units.
Reinforcement learning addresses the design of agents that improve decisions while operating within complex and uncertain environments. This course covers principled and scalable approaches to realizing a range of intelligent learning behaviors. Topics include environment models, planning, abstraction, prediction, credit assignment, exploration, and generalization. Motivating examples will be drawn from web services, control, finance, and communications. Prerequisites: EE278 or MS&E 221, EE104 or CS229, CS106A.

EE 278. Introduction to Statistical Signal Processing. 3 Units.
Review of basic probability and random variables. Random vectors and processes; convergence and limit theorems; IID, independent increment, Markov, and Gaussian random processes; stationary random processes; autocorrelation and power spectral density; mean square error estimation, detection, and linear estimation. Formerly EE 278B. Prerequisites: EE178 and linear systems and Fourier transforms at the level of EE102A,B or EE261.

EE 279. Introduction to Digital Communication. 3 Units.
Digital communication is a rather unique field in engineering in which theoretical ideas have had an extraordinary impact on the design of actual systems. The course provides a basic understanding of the analysis and design of digital communication systems, building on various ideas from probability theory, stochastic processes, linear algebra and Fourier analysis. Topics include: detection and probability of error for binary and M-ary signals (PAM, QAM, PSK), receiver design and sufficient statistics, controlling the spectrum and the Nyquist criterion, bandpass communication and up/down conversion, design trade-offs: rate, bandwidth, power and error probability, coding and decoding (block codes, convolutional coding and Viterbi decoding). Prerequisites: 179 or 261, and 178 or 278.

EE 282. Computer Systems Architecture. 3 Units.
Course focuses on how to build modern computing systems, namely notebooks, smartphones, and data centers, covering primarily their hardware architecture and certain system software aspects. For each system class, we cover the system architecture, processor technology, advanced memory hierarchy and I/O organization, power and energy management, and reliability. We will also cover topics such as interactions with system software, virtualization, solid state storage, and security. The programming assignments allow students to explore performance/energy tradeoffs when using heterogeneous hardware resources on smartphone devices. Prerequisite: EE108B. Recommended: CS 140.

EE 284. Introduction to Computer Networks. 3 Units.
Structure and components of computer networks; functions and services; packet switching; layered architectures; OSI reference model; physical layer; data link layer; error control; window flow control; media access control protocols used in local area networks (Ethernet, Token Ring, FDDI) and satellite networks; network layer (datagram service, virtual circuit service, routing, congestion control, Internet Protocol); transport layer (UDP, TCP); application layer.

EE 284A. Introduction to Internet of Things. 3 Units.
Internet of Things (IoT) origin, vision and definition. Application domains, use case scenarios and value propositions. Functional blocks of IoT systems: devices, communications, services, management, security, and application. Architectural reference model and design methodology. IoT Devices: sensors, actuators and embedded systems. Communications aspects of IoT systems: Internet infrastructure; wireless local area networks; radio access networks; wireless personal area networks; wireless sensor networks; wireless communication in vehicular environments; 5G. Current IoT frameworks and underlying architectures. Data storage and analytics. Web services. IoT system management tools. Security aspects of IoT systems. Open issues.

EE 285. Embedded Systems Workshop. 3 Units.
Project-centric building hardware and software for embedded computing systems. Students work on an existing project of their own or join one of these projects. Syllabus topics will be determined by the needs of the enrolled students and projects. Examples of topics include: interrupts and concurrent programming, deterministic timing and synchronization, state-based programming models, filters, frequency response, and high-frequency signals, low power operation, system and PCB design, security, and networked communication. Prerequisite: CS107 (or equivalent). Same as: CS 241

EE 290A. Curricular Practical Training for Electrical Engineers. 1 Unit.
For EE majors who need work experience as part of their program of study. Final report required. Prerequisites: for 290B, EE MS and PhD students who have received a Satisfactory ("S") grade in EE290A; for 290C, EE PhD degree candidacy and an "S" grade in EE 290B; for 290D, EE PhD degree candidacy, an "S" grade in EE 290C and instructor consent.

EE 290B. Curricular Practical Training for Electrical Engineers. 1 Unit.
For EE majors who need work experience as part of their program of study. Final report required. Prerequisites: for 290B, EE MS and PhD students who have received a Satisfactory ("S") grade in EE290A; for 290C, EE PhD degree candidacy and an "S" grade in EE 290B; for 290D, EE PhD degree candidacy, an "S" grade in EE 290C and instructor consent.

EE 290C. Curricular Practical Training for Electrical Engineers. 1 Unit.
For EE majors who need work experience as part of their program of study. Final report required. Prerequisites: for 290B, EE MS and PhD students who have received a Satisfactory ("S") grade in EE290A; for 290C, EE PhD degree candidacy and an "S" grade in EE 290B; for 290D, EE PhD degree candidacy, an "S" grade in EE 290C and instructor consent.

EE 290D. Curricular Practical Training for Electrical Engineers. 1 Unit.
For EE majors who need work experience as part of their program of study. Final report required. Prerequisites: for 290B, EE MS and PhD students who have received a Satisfactory ("S") grade in EE290A; for 290C, EE PhD degree candidacy and an "S" grade in EE 290B; for 290D, EE PhD degree candidacy, an "S" grade in EE 290C and instructor consent.

EE 290E. Curricular Practical Training for Electrical Engineers. 1 Unit.
For EE majors who need work experience as part of their program of study. Final report required. Prerequisites: for 290B, EE MS and PhD students who have received a Satisfactory ("S") grade in EE290A; for 290C, EE PhD degree candidacy and an "S" grade in EE 290B; for 290D, EE PhD degree candidacy, an "S" grade in EE 290C and instructor consent; for 290E, EE PhD degree candidacy, an "S" grade in EE 290D and instructor consent.

EE 290F. Curricular Practical Training for Electrical Engineers. 1 Unit.
For EE majors who need work experience as part of their program of study. Final report required. Prerequisites: EE PhD degree candidacy, an "S" grade in EE 290E and instructor consent.

EE 290G. Curricular Practical Training for Electrical Engineers. 1 Unit.
For EE majors who need work experience as part of their program of study. Final report required. Prerequisites: EE PhD degree candidacy, an "S" grade in EE 290F and instructor consent.

EE 292A. Electronic Design Automation (EDA) and Machine Learning Hardware. 3 Units.
The class teaches cutting-edge optimization and analysis algorithms for the design of complex digital integrated circuits and their use in designing machine learning hardware. It provides working knowledge of the key technologies in Electronic Design Automation (EDA), focusing on synthesis, placement and routing algorithms that perform the major transformations between levels of abstraction and get a design ready to be fabricated. As an example, the design of a convolutional neural network (CNN) for basic image recognition illustrates the interaction between hardware and software for machine learning. It will be implemented on a state-of-the-art FPGA board. Prerequisite: EE 108.

EE 292C. Chemical Vapor Deposition and Epitaxy for Integrated Circuits and Nanostructures. 1 Unit.
Fundamental aspects of CVD are initially considered, first focusing on processes occurring in the gas phase and then on those occurring on the surface. Qualitative understanding is emphasized, with minimal use of equations. Adding energy both thermally and by using a plasma is discussed; atomic-layer deposition is briefly considered. Examples of CVD equipment are examined. The second portion of the tutorial examines layers deposited by CVD. The focus is on group IV semiconductors ¿ especially epitaxial and heteroepitaxial deposition, in which the crystal structure of the depositing layer is related to that of the substrate. Polycrystalline silicon and the IC interconnect system are then discussed. Finally, the use of high-density plasmas for rapid gap filling is contrasted with alternative CVD dielectric deposition processes.

EE 292D. Machine Learning on Embedded Systems. 3 Units.
This is a project-based class where students will learn how to develop machine learning models for execution in resource constrained environments such as embedded systems. In this class students will learn about techniques to optimize machine learning models and deploy them on a device such as a Arduino, Raspberry PI, Jetson, or Edge TPUs. The class has a significant project component. Prerequisites: CS 107(required), CS 229 (recommended), CS 230 (recommended).

EE 292E. Seminar Series for Image Systems Engineering. 1 Unit.
Seminar. For engineering students interested in camera and display engineering, computer vision, and computational imaging. Speakers include Stanford faculty and research scientists as well as industry professionals, mostly from consumer electronics companies.

EE 292F. Image Processing of Fine Art. 3 Units.
This course presents the application of rigorous digital image processing to problems in visualization and understanding of fine paintings, drawings, and other two-dimensional artworks. It builds upon a wealth of techniques but modifies and applies them to cases of interest to the technical art community. Such techniques include transforms such as DCT and wavelets, color quantization, blind source (image) separation, edge detection, super-resolution, visual style learning and transfer, digital in-painting, color transforms, level-set analysis, estimation of region statistics, Affine image transforms, and many others. Students will perform several projects which will involve coding, mathematical/statistical analysis, and explaining the relevance of the work to art scholarship.

EE 292H. Engineering, Entrepreneurship & Climate Change. 1 Unit.
The purpose of this seminar series course is to help students and professionals develop the tools to apply the engineering and entrepreneurial mindset to problems that stem from climate change, in order to consider and evaluate possible stabilizing, remedial and adaptive approaches. This course is not a crash course on climate change or policy. Instead we will focus on learning about and discussing the climate problems that seem most tractable to these approaches. Each week Dr. Field and/or a guest speaker will lead a short warm-up discussion/activity and then deliver a talk in his/her area of expertise. We will wrap up with small-group and full-class discussions of related challenges/opportunities and possible engineering-oriented solutions. Class members are asked to do background reading before each class, to submit a question before each lecture, and to do in-class brainstorming. May be repeated for credit.

EE 292I. Insanely Great Products: How do they get built?. 1 Unit.
Great products emerge from a sometimes conflict-laden process of collaboration between different functions within companies. This Seminar seeks to demystify this process via case-studies of successful products and companies. Engineering management and businesspeople will share their experiences in discussion with students. Previous companies profiled: Apple, Intel, Facebook, and Genentech -- to name a few. Previous guests include: Jon Rubinstein (NeXT, Apple, Palm), Diane Greene (VMware), and Ted Hoff (Intel). Pre-requisites: None.

EE 292N. Seminars in Wireless Frontiers. 1 Unit.
This course aims to raise the interest of senior undergraduate students and junior graduate students to the area of wireless from communication, gesture detection, power delivery to radar applications. It serves as an introduction to wireless through a series of seminars with invited speakers from both industry and academia.

EE 292T. SmartGrids and Advanced Power Systems Seminar. 1-2 Unit.
A series of seminar and lectures focused on power engineering. Renowned researchers from universities and national labs will deliver bi-weekly seminars on the state of the art of power system engineering. Seminar topics may include: power system analysis and simulation, control and stability, new market mechanisms, computation challenges and solutions, detection and estimation, and the role of communications in the grid. The instructors will cover relevant background materials in the in-between weeks. The seminars are planned to continue throughout the next academic year, so the course may be repeated for credit.
Same as: CEE 272T

EE 292X. Battery Systems for Transportation and Grid Services. 1-3 Unit.
Driven by high-capacity battery systems, electrification is transforming mobility solutions and the grid that powers them. This course provides an introduction to battery systems for transportation and grid services: cell technologies, topology selection, thermal and aging management, safety monitoring, AC and DC charging, and operation control/optimization. Invited experts introduce students to the state of the heart of each topic. The course is aimed at mezzanine and graduate levels students who wish to design battery systems, model them from data, integrate them into applications, or just learn about them. It can be taken for 1 unit (Credit/no Credit) for attending seminars, or for 3 units (letter grade only) for also doing an optional project. Prerequisites: No prerequisites needed for taking the course for 1 unit. Relevant background in selected project area is recommended, for example, CEE 272R for grid applications; EE 253 for AC or DC charging and battery controller design; CEE 322, CS 229 or EE 104 for data-based projects.
Same as: CEE 292X

EE 293. Energy storage and conversion: Solar Cells, Fuel Cells, Batteries and Supercapacitors. 3 Units.
This course provides an introduction and engineering exposure to energy storage and conversion systems and will cover the basic physics, chemistry and electrochemistry of solar cells, fuel cells, batteries and supercapacitors, state of the art of such technologies and recent developments. The course will also cover experimental methods and modeling tools for simulation and optimization aimed at characterizing efficiency and performance issues. Prerequisites: Equivalent coursework in thermodynamics, electronic properties, chemical principles, electricity, and magnetism.
Same as: ENERGY 293

EE 293B. Fundamentals of Energy Processes. 3 Units.
For seniors and graduate students. Covers scientific and engineering fundamentals of renewable energy processes involving heat. Thermodynamics, heat engines, solar thermal, geothermal, biomass. Recommended: MATH 19-21; PHYSICS 41, 43, 45.
Same as: ENERGY 293B

EE 300. Master's Thesis and Thesis Research. 1-15 Unit.
Independent work under the direction of a department faculty. Written thesis required for final letter grade. The continuing grade 'N' is given in quarters prior to thesis submission. See 390 if a letter grade is not appropriate. Course may be repeated for credit.

EE 301. Introductory Research Seminar in Electrical Engineering. 1 Unit.
The EE 301 seminar course is offered each Autumn Quarter primarily for incoming EE PhD students. All students and faculty in the Department are welcome to attend. EE faculty members present seminars on their research, giving new PhD students an overview of research opportunities across the Department.

EE 303. Autonomous Implantable Systems. 3 Units.
Integrating electronics with sensing, stimulation, and locomotion capabilities into the body will allow us to restore or enhance physiological functions. In order to be able to insert these electronics into the body, energy source is a major obstacle. This course focuses on the analysis and design of wirelessly powered catheter-deliverable electronics. Emphases will be on the interaction between human and electromagnetic fields in order to transfer power to the embedded electronics via electromagnetic fields, power harvesting circuitry, electrical-tissue interface, and sensing and actuating frontend designs.

EE 308. Advanced Circuit Techniques. 3 Units.
Design of advanced analog circuits at the system level, including switching power converters, amplitude-stabilized and frequency-stabilized oscillators, voltage references and regulators, power amplifiers and buffers, sample-and-hold circuits, and application-specific op-amp compensation. Approaches for finding creative design solutions to problems with difficult specifications and hard requirements. Emphasis on feedback circuit techniques, design-oriented thinking, and hands-on experience with modern analog building blocks. Several designs will be built and evaluated, along with associated laboratory projects. Prerequisite: EE 251 or EE 314A.

EE 309A. Semiconductor Memory Devices and Circuit Design. 3 Units.
The functionality and performance of ULSI systems are increasingly dependent upon the characteristics of the memory subsystem. This course introduces students to various semiconductor memory devices: SRAM, DRAM and FLASH, that are used in today's memory subsystems. The course will cover various aspects of semiconductor memories, including basic operation principles, device design considerations, device scaling, device fabrication, memory array architecture, and addressing and readout circuits. The course will also introduce students to recent research in near- and in-memory computing using these memory technologies. The next course is this series is EE 309B, which talks about emerging non-volatile memory devices and circuit design. Pre-requisite: EE 216. Preferred: EE 316.

EE 309B. Emerging Non-Volatile Memory Devices and Circuit Design. 3 Units.
The functionality and performance of ULSI systems are increasingly dependent upon the characteristics of the memory subsystem. This course starts off where EE 309A leaves, and introduces students to various emerging non-volatile memory devices: metal oxide resistive switching memory (RRAM), nanoconductive bridge memory (CBRAM), phase change memory (PCM), magnetic tunnel junction memory, spin-transfer-torque random access memory (MRAM, STT-RAM), ferroelectric memory (FRAM) and ferroelectric transistor (FeFET). For each of these memories, the course will cover basic operation principles, device design considerations, device scaling, device fabrication, memory array architecture, and addressing and readout circuits. The course will also introduce students to recent in-memory computing research using these memory technologies. Pre-requisite: EE 216. Preferred: EE 316, EE 309A.

EE 310. SystemX: Ubiquitous Sensing, Computing and Communication Seminar. 1 Unit.
This is a seminar course with invited speakers. Sponsored by Stanford's SystemX Alliance, the talks will cover emerging topics in contemporary hardware/software systems design. Special focus will be given to the key building blocks of sensors, processing elements and wired/wireless communications, as well as their foundations in semiconductor technology, SoC construction, and physical assembly as informed by the SystemX Focus Areas. The seminar will draw upon distinguished engineering speakers from both industry and academia who are involved at all levels of the technology stack and the applications that are now becoming possible. May be repeat for credit.

EE 311. Advanced Integrated Circuits Technology. 3 Units.
What are the practical and fundamental limits to the evolution of the technology of modern MOS devices and interconnects? How are modern devices and circuits fabricated and what future changes are likely? Advanced techniques and models of MOS devices and back-end (interconnect and contact) processing. What are future device structures and materials to maintain progress in integrated electronics? MOS front-end and back-end process integration. Prerequisites: EE 216 or equivalent. Recommended: EE 212.

EE 312. Integrated Circuit Fabrication Laboratory. 3-4 Units.
Formerly EE 410. Fabrication, simulation, and testing of a submicron CMOS process. Practical aspects of IC fabrication including silicon wafer cleaning, photolithography, etching, oxidation, diffusion, ion implantation, chemical vapor deposition, physical sputtering, and electrical testing. Students also simulate the CMOS process using process simulator TSUPREM4 of the structures and electrical parameters that should result from the process flow. Taught in the Stanford Nanofabrication Facility (SNF). Preference to students pursuing doctoral research program requiring SNF facilities. Enrollment limited to 20. Prerequisites: EE 212, EE 216, or consent of instructor.

EE 314A. RF Integrated Circuit Design. 3 Units.
Design of RF integrated circuits for communications systems, primarily in CMOS. Topics: the design of matching networks and low-noise amplifiers at RF, mixers, modulators, and demodulators; review of classical control concepts necessary for oscillator design including PLLs and PLL-based frequency synthesizers. Design of low phase noise oscillators. Design of high-efficiency (e.g., class E, F) RF power amplifiers, coupling networks. Behavior and modeling of passive and active components at RF. Narrowband and broadband amplifiers; noise and distortion measures and mitigation methods. Overview of transceiver architectures. Prerequisite: EE214B.

EE 315. Analog-Digital Interface Circuits. 3 Units.
Analysis and design of circuits and circuit architectures for signal conditioning and data conversion. Fundamental circuit elements such as operational transconductance amplifiers, active filters, sampling circuits, switched capacitor stages and voltage comparators. Sensor interfaces for micro-electromechanical and biomedical applications. Nyquist and oversampling A/D and D/A converters. Prerequisite: EE 214B.

EE 316. Advanced VLSI Devices. 3 Units.
In modern VLSI technologies, device electrical characteristics are sensitive to structural details and therefore to fabrication techniques. How are advanced VLSI devices designed and what future changes are likely? What are the implications for device electrical performance caused by fabrication techniques? Physical models for nanometer scale structures, control of electrical characteristics (threshold voltage, short channel effects, ballistic transport) in small structures, and alternative device structures for VLSI. Prerequisites: 216 or equivalent. Recommended: EE 212.

EE 317. Special Topics on Wide Bandgap Materials and Devices. 3 Units.
Wide-bandgap (WBG) semiconductors present a pathway to push the limits of efficiency in optoelectronics and electronics enabling significant energy savings, offering new and compact architecture, and more functionality. We will first study the examples set by GaN and SiC in lighting, radiofrequency and power applications, then use it to explore new materials like Ga2O3, AlN and diamond to understand their potential to drive the future semiconductor industry. The term papers will include a short project that may require simulation to conduct device design and analysis. Prerequisites: EE 216 or EE 218.

EE 320. Nanoelectronics. 3 Units.
This course covers the device physics and operation principles of nanoelectric devices, with a focus on devices for energy-efficient computation. Topics covered include devices based on new nanomaterials such as carbon nanotubes, semiconductor nanowires, and 2D layered materials such as graphene; non-FET based devices such as nanoelectromechanical (NEM) relay, single electron transistors (SET) and resonant tunneling diodes (RTD); as well as FET-based devices such as tunnel FET. Devices targeted for both logic and memory applications are covered. Prerequisites: Undergraduate device physics, EE222, EE216, EE316. Recommended courses: EE223, EE228, EE311.

EE 323. Energy in Electronics. 3 Units.
EE 323 examines energy in modern nanoelectronics, from fundamentals to systems. Fundamental topics include energy storage and transfer via electrons and phonons, ballistic limits of current and heat, meso- to macroscale mobility and thermal conductivity. Applied topics include power in nanoscale devices (1D nanotubes and nanowires, 2D materials, 3D silicon CMOS, resistive memory and interconnects), circuit leakage, temperature measurements, thermoelectric energy conversion, and thermal challenges in densely integrated systems. Basic knowledge of semiconductors, transistors, and Matlab (or similar) are recommended.

EE 327. Properties of Semiconductor Materials. 3 Units.
Modern semiconductor devices and integrated circuits are based on unique energy band, carrier transport, and optical properties of semiconductor materials. How to choose these properties for operation of semiconductor devices. Emphasis is on quantum mechanical foundations of the properties of solids, energy bandgap engineering, semi-classical transport theory, semi-conductor statistics, carrier scattering, electro-magneto transport effects, high field ballistic transport, Boltzmann transport equation, quantum mechanical transitions, optical absorption, and radiative and non-radiative recombination that are the foundations of modern transistors and optoelectronic devices. Prerequisites: EE216 or equivalent.

EE 329. The Electronic Structure of Surfaces and Interfaces. 3 Units.
Physical concepts and phenomena for surface science techniques probing the electronic and chemical structure of surfaces, interfaces and nanomaterials. Microscopic and atomic models of microstructures; applications including semiconductor device technology, catalysis and energy. Physical processes of UV and X-ray photoemission spectroscopy, Auger electron spectroscopy, surface EXAFS, low energy electron diffraction, electron/photon stimulated ion desorption, scanning tunneling spectroscopy, ion scattering, energy loss spectroscopy and related imaging methods; and experimental aspects of these surface science techniques. Prerequisites: PHYSICS 70 and MATSCI 199/209, or consent of instructor.
Same as: PHOTON 329

EE 332. Laser Dynamics. 3 Units.
Dynamic and transient effects in lasers including spiking, Q-switching, mode locking, frequency modulation, frequency and spatial mode competition, linear and nonlinear pulse propagation, pulse shaping. Formerly EE 232. Prerequisite: 236C.

EE 336. Nanophotonics. 3 Units.
Recent developments in micro- and nanophotonic materials and devices. Basic concepts of photonic crystals. Integrated photonic circuits. Photonic crystal fibers. Superprism effects. Optical properties of metallic nanostructures. Sub-wavelength phenomena and plasmonic excitations. Meta-materials. Prerequisite: Electromagnetic theory at the level of 242.
Same as: MATSCI 346

EE 340. Optical Micro- and Nano-Cavities. 3 Units.
Optical micro- and nano-cavities and their device applications. Types of optical cavities (microdisks, microspheres, photonic crystal cavities, plasmonic cavities), and their electromagnetic properties, design, and fabrication techniques. Cavity quantum electrodynamics: strong and weak-coupling regime, Purcell factor, spontaneous emission control. Applications of optical cavities, including low-threshold lasers, optical modulators, quantum information processing devices, and bio-chemical sensors. Prerequisites: Advanced undergraduate or basic graduate level knowledge of electromagnetics, quantum.

EE 346. Introduction to Nonlinear Optics. 3 Units.
Wave propagation in anisotropic, nonlinear, and time-varying media. Microscopic and macroscopic description of electric-dipole susceptibilities. Free and forced waves; phase matching; slowly varying envelope approximation; dispersion, diffraction, space-time analogy. Harmonic generation; frequency conversion; parametric amplification and oscillation; electro-optic light modulation. Raman and Brillouin scattering; nonlinear processes in optical fibers. Prerequisites: 242, 236C.

EE 347. Optical Methods in Engineering Science. 3 Units.
Design and understanding of modern optical systems. Topics: geometrical optics; aberration theory; systems layout; applications such as microscopes, telescopes, optical processors. Computer ray tracing program as a design tool. Prerequisite: 236A or equivalent.

EE 348. Advanced Optical Fiber Communications. 3 Units.
Optical amplifiers: gain, saturation, noise. Semiconductor amplifiers. Erbium-doped fiber amplifiers. System applications: preamplified receiver performance, amplifier chains. Raman amplifiers, lumped vs. distributed amplification. Group-velocity dispersion management: dispersion-compensating fibers, filters, gratings. Interaction of dispersion and nonlinearity, dispersion maps. Multichannel systems. Wavelength-division multiplexing components: filters, multiplexers. WDM systems, crosstalk. Time, subcarrier, code and polarization-division multiplexing. Comparison of modulation techniques: differential phase-shift keying, phase-shift keying, quadrature-amplitude modulation. Comparison of detection techniques: noncoherent, differentially coherent, coherent. Prerequisite: 247.

EE 349. Advanced Topics in Nano-Optics and Plasmonics. 3 Units.
Electromagnetic phenomena at the nanoscale. Dipolar interactions between emitters and nanostructures, weak and strong coupling, surface plasmon polaritons and localized plasmons, electromagnetic field enhancements, and near-field coupling between metallic nanostructures. Numerical tools will be taught and used to simulate nano-optical phenomena. Prerequisite: EE 242 or equivalent.

EE 355. Imaging Radar and Applications. 3 Units.
Radar remote sensing, radar image characteristics, viewing geometry, range coding, synthetic aperture processing, correlation, range migration, range/Doppler algorithms, wave domain algorithms, polar algorithm, polarimetric processing, interferometric measurements. Applications: surfafe deformation, polarimetry and target discrimination, topographic mapping surface displacements, velocities of ice fields. Prerequisites: EE261. Recommended: EE254, EE278, EE279.
Same as: GEOPHYS 265

EE 356A. Resonant Converters. 3 Units.
Miniaturization of efficient power converters remain a challenge in power electronics whose goal is improving energy use and reducing waste. In this course, we will study the design of Resonant converters which are capable of operating at higher frequencies than their 'hard-switch' counterparts. Resonant converter are found in high performance applications where high control bandwidth and high power density are required. We will also explore practical design issues and trade off in selecting converter topologies in high performance applications. Prerequisites: EE153/EE253.

EE 356B. Magnetics Design in Power Electronics. 3 Units.
Inductors and transformers are ubiquitous components in any power electronics system. They are components that offer great design flexibility, provide electrical isolation and can reduce semiconductor stresses, but they often dominate the size and cost of a power converter and are notoriously difficult to miniaturize. In this class we will discuss the design and modeling of magnetic components, which are essential tasks in the development of high performance converters and study advanced applications. Prerequisites: EE153/EE253.

EE 359. Wireless Communications. 3-4 Units.
This course will cover advanced topics in wireless communications as well as current wireless system design. Topics include: an overview of current and future wireless systems; wireless channel models including path loss, shadowing, and statistical multipath channel models; fundamental capacity limits of wireless channels; digital modulation and its performance in fading and under intersymbol interference; techniques to combat fading including adaptive modulation and diversity; multiple antenna (MIMO) techniques to increase capacity and diversity, intersymbol interference including equalization, multicarrier modulation (OFDM), and spread spectrum; and multiuser system design, including multiple access techniques. Course is 3 units but can be taken for 4 units with an optional term project. Prerequisite: 279 or instructor consent.

EE 364A. Convex Optimization I. 3 Units.
Convex sets, functions, and optimization problems. The basics of convex analysis and theory of convex programming: optimality conditions, duality theory, theorems of alternative, and applications. Least-squares, linear and quadratic programs, semidefinite programming, and geometric programming. Numerical algorithms for smooth and equality constrained problems; interior-point methods for inequality constrained problems. Applications to signal processing, communications, control, analog and digital circuit design, computational geometry, statistics, machine learning, and mechanical engineering. Prerequisite: linear algebra such as EE263, basic probability.
Same as: CME 364A

EE 364B. Convex Optimization II. 3 Units.
Continuation of 364A. Subgradient, cutting-plane, and ellipsoid methods. Decentralized convex optimization via primal and dual decomposition. Monotone operators and proximal methods; alternating direction method of multipliers. Exploiting problem structure in implementation. Convex relaxations of hard problems. Global optimization via branch and bound. Robust and stochastic optimization. Applications in areas such as control, circuit design, signal processing, and communications. Course requirements include project. Prerequisite: 364A.
Same as: CME 364B

EE 367. Computational Imaging and Display. 3 Units.
Spawned by rapid advances in optical fabrication and digital processing power, a new generation of imaging technology is emerging: computational cameras at the convergence of applied mathematics, optics, and high-performance computing. Similar trends are observed for modern displays pushing the boundaries of resolution, contrast, 3D capabilities, and immersive experiences through the co-design of optics, electronics, and computation. This course serves as an introduction to the emerging field of computational imaging and displays. Students will learn to master bits and photons.
Same as: CS 448I

EE 368. Digital Image Processing. 3 Units.
Image sampling and quantization color, point operations, segmentation, morphological image processing, linear image filtering and correlation, image transforms, eigenimages, multiresolution image processing, noise reduction and restoration, feature extraction and recognition tasks, image registration. Emphasis is on the general principles of image processing. Students learn to apply material by implementing and investigating image processing algorithms in Matlab and optionally on Android mobile devices. Term project. Recommended: EE261, EE278.
Same as: CS 232

EE 369A. Medical Imaging Systems I. 3 Units.
Imaging internal structures within the body using high-energy radiation studied from a systems viewpoint. Modalities covered: x-ray, computed tomography, and nuclear medicine. Analysis of existing and proposed systems in terms of resolution, frequency response, detection sensitivity, noise, and potential for improved diagnosis. Prerequisite: EE 261.

EE 369B. Medical Imaging Systems II. 3 Units.
Imaging internal structures within the body using magnetic resonance studied from a systems viewpoint. Analysis of magnetic resonance imaging systems including physics, Fourier properties of image formation, effects of system imperfections, image contrast, and noise. Prerequisite: EE 261.

EE 369C. Medical Image Reconstruction. 3 Units.
Reconstruction problems from medical imaging, including magnetic resonance imaging (MRI), computed tomography (CT), and positron emission tomography (PET). Problems include reconstruction from non-uniform frequency domain data, automatic deblurring, phase unwrapping, reconstruction from incomplete data, and reconstruction from projections. Prerequisite: 369B.

EE 371. Advanced VLSI Circuit Design. 3 Units.
Design of high-performance digital systems, the things that cause them to fail, and how to avoid these problems. Topics will focus on current issues including: wiring resistance and how to deal with it, power and Gnd noise and regulation, clock (or asynchronous) system design and how to minimize clocking overhead, high-speed I/O design, energy minimization including leakage control, and structuring your Verilog code to result in high-performance, low energy systems. Extensive use of modern CAD tools. Prerequisites: EE 213 and EE 271, or consent of instructor.

EE 372. Data Science for High Throughput Sequencing. 3 Units.
Extraordinary advances in sequencing technology in the past decade have revolutionized biology and medicine. Many high-throughput sequencing based assays have been designed to make various biological measurements of interest. This course explores the various computational and data science problems that arises from processing, managing and performing predictive analytics on this high throughput sequencing data. Specific problems we will study include genome assembly, haplotype phasing, RNA-Seq assembly, RNA-Seq quantification, single cell RNA-seq analysis, multi-omics analysis,nand genome compression. We attack these problems through a combination of tools from information theory, combinatorial algorithms, machine learning and signal processing. Through this course, the student will also get familiar with various software tools developed for the analysis of real sequencing data. Prerequisites: Basic knowledge of probability at the level of EE 178. Some programming experience.

EE 373A. Adaptive Signal Processing. 3 Units.
Learning algorithms for adaptive digital filters. Self-optimization. Wiener filter theory. Quadratic performance functions, their eigenvectors and eigenvalues. Speed of convergence. Asymptotic performance versus convergence rate. Applications of adaptive filters to statistical prediction, process modeling, adaptive noise canceling, adaptive antenna arrays, adaptive inverse control, and equalization and echo canceling in modems. Artificial neural networks. Cognitive memory/human and machine. Natural and artificial synapses. Hebbian learning. The Hebbian-LMS algorithm. Theoretical and experimental research projects in adaptive filter theory, communications, audio systems, and neural networks. Biomedical research projects, supervised jointly by EE and Medical School faculty. Recommended: EE263, EE264, EE278.

EE 374. Internet-Scale Consensus in the Blockchain Era. 3 Units.
Consensus protocols are at the core of distributed systems to enable nodes to agree on a common record of history. Traditional consensus protocols are designed for the closed setting where nodes are permissioned and fixed. Blockchains were invented by Nakamoto in 2008 to achieve consensus in the open permissionless setting at Internet-scale, where nodes can freely join and leave the network. Existing blockchains like Bitcoin and Ethereum have an excellent track record in operating securely in such a challenging environment but suffer from several significant drawbacks. This course studies recently proposed solutions to resolve these drawbacks and achieve: 1) throughput scalability; 2) fast confirmation; 3) finality and accountability; 4) energy efficiency and decentralization. It can be taken on a stand alone basis or as a follow-up to CS 251. Prerequisite: EE 178, CS 109 or equivalent. http://web.stanford.edu/class/ee374.

EE 375. Mathematical problems in Machine Learning. 3 Units.
Mathematical tools to understand modern machine learning systems. Generalization in machine learning, the classical view: uniform convergence, Radamacher complexity. Generalization from stability. Implicit (algorithmic) regularization. Infinite-dimensional models: reproducing kernel Hilbert spaces. Random features approximations to kernel methods. Connections to neural networks, and neural tangent kernel. Nonparametric regression. Asymptotic behavior of wide neural networks. Properties of convolutionalnnetworks. Prerequisites: EE364A or equivalent; Stat310A or equivalent.

EE 376B. Topics in Information Theory and Its Applications. 3 Units.
Information theory establishes the fundamental limits on compression and communication over networks. The tools of information theory have also found applications in many other fields, including probability and statistics, computer science and physics. The course will cover selected topics from these applications, including communication networks, through regular lectures and student projects. Prerequisites: EE276 (Formerly EE376A).
Same as: STATS 376B

EE 376C. Universal Schemes in Information Theory. 3 Units.
Universal schemes for lossless and lossy compression, channel coding and decoding, prediction, denoising, and filtering. Characterization of performance limitations in the stochastic settting: entropy rate, rate-distortion function, channel capacity, Bayes envelope for prediction, denoising, and filtering. Lempel-Ziv lossless compression, and Lempel-Ziv based schemes for lossy compression, channel coding, prediction, and filtering. Discrete universal denoising. Compression-based approach to denoising. The compound decision problem. Prerequisites: EE276 (Formerly EE376A).

EE 376D. Wireless Information Theory. 3 Units.
Information theory forms the basis for the design of all modern day communication systems. The original theory was primarily point-to-point, studying how fast information can flow across an isolated noisy communication channel. Until recently, there has been only limited success in extending the theory to a network of interacting nodes. Progress has been made in the past decade driven by engineering interest in wireless networks. The course provides a unified overview of this recent progress made in information theory of wireless networks. Starting with an overview of the capacity of fading and multiple-antenna wireless channels, we aim to answer questions such as: What is the optimal way for users to cooperate and exchange information in a wireless network? How much benefit can optimal cooperation provide over traditional communication architectures? How can cooperation help to deal with interference between multiple wireless transmissions? Prerequisites: EE276 (Formerly EE376A).

EE 377. Information Theory and Statistics. 3 Units.
Information theoretic techniques in probability and statistics. Fano, Assouad,nand Le Cam methods for optimality guarantees in estimation. Large deviationsnand concentration inequalities (Sanov's theorem, hypothesis testing, thenentropy method, concentration of measure). Approximation of (Bayes) optimalnprocedures, surrogate risks, f-divergences. Penalized estimators and minimumndescription length. Online game playing, gambling, no-regret learning. Prerequisites: EE 276 (or equivalent) or STATS 300A.
Same as: STATS 311

EE 378A. Statistical Signal Processing. 3 Units.
Basic concepts of statistical decision theory; Bayes decision theory; HMMs and their state estimation (Forward--backward), Kalman as special case, approximate state estimation (particle filtering, Extended Kalman Filter), unknown parameters; Inference under logarithmic loss, mutual information as a fundamental measure of statistical relevance, properties of mutual information: data processing, chain rules. Directed information. Prediction under logarithmic loss; Context Tree Weighting algorithm; Sequential decision making in general: prediction under general loss functions, causal estimation, estimation of directed information. Non-sequential inference via sequential probability assignments. Universal denoising; Denoising from a decision theoretic perspective: nonparametric function estimation, wavelet shrinkage, density estimation; Estimation of mutual information on large alphabets with applications such as boosting the Chow-Liu algorithm. Estimation of the total variation distance, estimate the fundamental limit is easier than to achieve the fundamental limit; Peetre¿s K-functional and bias analysis: bias correction using jackknife, bootstrap, and Taylor series; Nonparametric functional estimation. Prerequisites: Familiarity with probability theory and linear algebra at the undergraduate level.

EE 378B. Inference, Estimation, and Information Processing. 3 Units.
Techniques and models for signal, data and information processing, with emphasis on incomplete data, non-ordered index sets and robust low-complexity methods. Linear models; regularization and shrinkage; dimensionality reduction; streaming algorithms; sketching; clustering, search in high dimension; low-rank models; principal component analysis. Applications include: positioning from pairwise distances; distributed sensing; measurement/traffic monitoring in networks; finding communities/clusters in networks; recommendation systems; inverse problems. Prerequisites: EE278 and EE263 or equivalent. Recommended but not required: EE378A.

EE 379. Digital Communication. 3 Units.
Modulation: linear, differential and orthogonal methods; signal spaces; power spectra; bandwidth requirements. Detection: maximum likelihood and maximum a posteriori probability principles; sufficient statistics; correlation and matched-filter receivers; coherent, differentially coherent and noncoherent methods; error probabilities; comparison of modulation and detection methods. Intersymbol interference: single-carrier channel model; Nyquist requirement; whitened matched filter; maximum likelihood sequence detection; Viterbi algorithm; linear equalization; decision-feedback equalization. Multi-carrier modulation: orthogonal frequency-division multiplexing; capacity of parallel Gaussian channels; comparison of single- and multi-carrier techniques. Prerequisite: EE102B and EE278 (or equivalents). EE279 is helpful but not required.

EE 380. Colloquium on Computer Systems. 1 Unit.
Live presentations of current research in the design, implementation, analysis, and applications of computer systems. Topics range over a wide range and are different every quarter. Topics may include fundamental science, mathematics, cryptography, device physics, integrated circuits, computer architecture, programming, programming languages, optimization, applications, simulation, graphics, social implications, venture capital, patent and copyright law, networks, computer security, and other topics of related to computer systems. May be repeated for credit.

EE 382A. Parallel Processors Beyond Multicore Processing. 3 Units.
Formerly EE392Q. The current parallel computing research emphasizes multi-cores, but there are alterna-tive array processors with significant potential. This hands-on course focuses on SIMD (Single-Instruction, Multiple-Data) massively parallel processors. Topics: Flynn's Taxonomy, parallel architectures, Kestrel architecture and simulator, principles of SIMD programming, parallel sorting with sorting networks, string comparison with dynamic programming (edit distance, Smith-Waterman), arbitrary-precision operations with fixed-point numbers, reductions, vector and matrix multiplication, image processing algo-rithms, asynchronous algorithms on SIMD ("SIMD Phase Programming Model"), Man-delbrot set, analysis of parallel performance.

EE 382C. Interconnection Networks. 3 Units.
The architecture and design of interconnection networks used to communicate from processor to memory, from processor to processor, and in switches and routers. Topics: network topology, routing methods, flow control, router microarchitecture, and performance analysis. Enrollment limited to 30. Prerequisite: 282.

EE 384A. Internet Routing Protocols and Standards. 3 Units.
Local area networks addressing and switching; IEEE 802.1 bridging protocols (transparent bridging, virtual LANs). Internet routing protocols: interior gateways (RIP, OSPF) and exterior gateways (BGP); multicast routing; multiprotocol label switching (MPLS). Routing in mobile networks: Mobile IP, Mobile Ad Hoc Networks (MANET), Wireless Mesh Networks. Prerequisite: EE 284 or CS 144.

EE 384C. Wireless Local and Wide Area Networks. 3 Units.
Characteristics of wireless communication: multipath, noise, and interference. Communications techniques: spread-spectrum, CDMA, and OFDM. IEEE 802.11 physical layer specifications: FHSS, DSSS, IEEE 802.11b (CCK), and 802.11a/g (OFDM). IEEE 802.11 media access control protocols: carrier sense multiple access with collision avoidance (CSMA/CA), point coordination function (PCF), IEEE802.11e for differentiated services. IEEE 802.11 network architecture: ad hoc and infrastructure modes, access point functionality. Management functions: synchronization, power management and association. IEEE 802.11s Mesh Networks. IEEE 802.16 (WiMAX) network architecture and protocols: Physical Layer (OFDMA) and Media Access Control Layer. Current research papers in the open literature. Prerequisite: EE 284 or CS 244A.

EE 384E. Networked Wireless Systems. 3 Units.
Design and implementation of wireless networks and mobile systems. The course will commence with a short retrospective of wireless communication and initially touch on some of the fundamental physical layer properties of various wireless communication technologies. The focus will then shift to design of media access control and routing layers for various wireless systems. The course will also examine adaptations necessary at transport and higher layers to cope with node mobility and error-prone nature of the wireless medium. Finally, it will conclude with a brief overview of other related issues including emerging wireless/mobile applications. Prerequisites: EE 284.

EE 384S. Performance Engineering of Computer Systems & Networks. 3 Units.
Modeling and control methodologies for high-performance network engineering, including: Markov chains and stochastic modeling, queueing networks and congestion management, dynamic programming and task/processor scheduling, network dimensioning and optimization, and simulation methods. Applications for design of high-performance architectures for wireline/wireless networks and the Internet, including: traffic modeling, admission and congestion control, quality of service support, power control in wireless networks, packet scheduling in switches, video streaming over wireless links, and virus/worm propagation dynamics and countermeasures. Enrollment limited to 30. Prerequisites: basic networking technologies and probability.

EE 385A. Robust and Testable Systems Seminar. 1-4 Unit.
Student/faculty discussions of research problems in the design of reliable digital systems. Areas: fault-tolerant systems, design for testability, production testing, and system reliability. Emphasis is on student presentations and Ph.D. thesis research. May be repeated for credit. Prerequisite: consent of instructor.

EE 387. Algebraic Error Correcting Codes. 3 Units.
Introduction to the theory of error correcting codes, emphasizing algebraic constructions, and diverse applications throughout computer science and engineering. Topics include basic bounds on error correcting codes; Reed-Solomon and Reed-Muller codes; list-decoding, list-recovery and locality. Applications may include communication, storage, complexity theory, pseudorandomness, cryptography, streaming algorithms, group testing, and compressed sensing. Prerequisites: Linear algebra, basic probability (at the level of, say, CS109, CME106 or EE178) and "mathematical maturity" (students will be asked to write proofs). Familiarity with finite fields will be helpful but not required.
Same as: CS 250

EE 388. Modern Coding Theory. 3 Units.
Tools for analysis and optimization of iterative coding systems. LDPC, turbo and, RA codes. Optimized ensembles, message passing algorithms, density evolution, and analytic techniques. Prerequisite: EE 276.

EE 390. Special Studies or Projects in Electrical Engineering. 1-15 Unit.
Independent work under the direction of a faculty member. Individual or team activities may involve lab experimentation, design of devices or systems, or directed reading. May be repeated for credit.

EE 391. Special Studies and Reports in Electrical Engineering. 1-15 Unit.
Independent work under the direction of a faculty member; written report or written examination required. Letter grade given on the basis of the report; if not appropriate, student should enroll in 390. May be repeated for credit.

EE 392AA. Multi-Dimensional Data Transmission. 3 Units.
EE 392AA focuses on state-of-the-art data communication systems that use multiple dimensions (parallel antennas, wires, links), including the latest versions of 5G, Wi-Fi, G.MGfast wireline, DOCSIS 3.1, and other systems that stress fundamental transmission limits. Topics include system design, particularly physical-layer modulation/coding for analysis and optimization for specific channels. Included are all vectored designs (MIMO, massive MIMO, SIMO, MISO) and methods to design and adapt both transmitter and receiver to variable channels. This course is approved for satisfying the MSEE Depth Sequence on Communication and Networking. Prerequisites: EE 278, EE 279, EE 379 or instructor consent.

EE 392B. Industrial AI. 1 Unit.
The seminar features guest lectures from the industry. The Industrial AI (I-AI) computing applications are at the center of on-going digital transformation. Known as the Fourth Industrial Revolution, or Industry 4.0, this is a multi-trillion-dollar transformation of economy. The I-AI is related to Internet of Things (IoT), where 'things' include man-made systems and business processes: industrial, transportation, operations and support, and supply chains. I-AI applications are mission critical with large cost of error compared to AI apps for the Internet of People. The lecturers from technology (e.g., computing) companies, consultancies, AI vendors, OEMs, and end users of the I-AI will discuss business and 'big picture' technical issues. Example vertical industries are energy, transportation, oil and gas, data centers, and manufacturing.

EE 392E. VLSI Signal Processing Architectures. 3 Units.
DSP architecture design. Study of architecture techniques in energy-area-performance space, design methodology based on a data-flow graph model that leads to hardware implementation. High-level transformations: pipelining, retiming, folding, systolic array design, complexity reduction in convolution and parallel digital filters. Bit-level arithmetic: carry-save and redundant arithmetic. Applications to implementation of communications receivers and machine learning systems. Prerequisites: EE 102B and EE 108; Recommended: EE 264 and EE 271.

EE 392I. Seminar on Trends in Computing and Communications. 1 Unit.
Lectures series and invited talks on current trends in computing and communications, and ongoing initiatives for research and open innovation. This year's focus on evolving cloud computing architectures and their impact on the enterprise; big data trends and rise of the third platform; software as a service; wireless and cellular network architectures; mobility and mobile data proliferation; open mobile platforms (e.g. Android); multi-homed mobile networking, associated data communication and mobile resource trade-offs, and system implementation in smartphones and Android devices.

EE 392K. Self-Programming Networks. 3 Units.
This is an advanced topics course on building autonomous networks using data and techniques from machine learning. It covers two major application areas: Cloud Computing Systems and Mobile Wireless Networks. The course introduces the architecture of Self-Programming Networks for sensing, inferring, learning and control, consisting of (i) a "reflex layer" for inferring at line rate and at scale, and (ii) a "deliberate layer" for efficient resource scheduling and network control. Various sensing and inference algorithms for deriving insights and alerts from the sensed data will be discussed. Methods for synchronizing clocks across a large data center and using this to reconstruct the fine details of network performance (queue-depths, link utilizations and buffer and link compositions) in near real-time will be presented. Similarly, methods for inferring available bandwidth in dynamic mobile networks and using it to drive different application optimizations will be presented. Students will learn the use of neural networks and learning techniques (a) to accelerate inference and control algorithms, (b) for "workload fingerprinting", (c) for predicting wireless link capacities, and (d) for scheduling resources. Finally, the principles of creating an interactive database for detecting anomalies, raising alerts, and serving insights to the user will be discussed. The course involves a team-based project.

EE 392T. Seminar in Chip Test and Debug. 1 Unit.
Seminars by industry professionals in digital IC manufacturing test and silicon debug. Topics include yield and binsplit modeling, defect types and detection, debug hardware, physical analysis, and design for test/debug circuits. Case studies of silicon failures. Prerequisite: basic digital IC design (271 or 371).

EE 400. Thesis and Thesis Research. 1-15 Unit.
Limited to candidates for the degree of Engineer or Ph.D.May be repeated for credit.

EE 402A. Topics in International Technology Management. 1 Unit.
Theme for Autumn 2020 is "Digital transformation among new and traditional industries in Asia." Distinguished guest speakers and panels from industry discuss approaches in Asia to data-driven business models, influencer marketing, DevOps for new AI solutions, data privacy and security, new value chain relationships, etc. See syllabus for specific requirements, which may differ from those of other seminars at Stanford.
Same as: EALC 402A, EASTASN 402A

EE 402T. Entrepreneurship in Asian High Tech Industries. 1 Unit.
Distinctive patterns and challenges of entrepreneurship in Asia; update of business and technology issues in the creation and growth of start-up companies in major Asian economies. Distinguished speakers from industry, government, and academia.
Same as: EALC 402T, EASTASN 402T

EE 469B. RF Pulse Design for Magnetic Resonance Imaging. 3 Units.
Magnetic resonance imaging (MRI) and spectroscopy (MRS) based on the use of radio frequency pulses to manipulate magnetization. Analysis and design of major types of RF pulses in one and multiple dimensions, analysis and design of sequences of RF pulses for fast imaging, and use of RF pulses for the creation of image contrast in MRI. Prerequisite: 369B.

EE 801. TGR Project. 0 Units.
May be repeated for credit.

EE 802. TGR Dissertation. 0 Units.
May be repeated for credit.

INSTITUTE FOR COMPUTATIONAL AND MATHEMATICAL ENGINEERING

Courses offered by the Institute for Computational and Mathematical Engineering are listed under the subject code CME on the (http://explorecourses.stanford.edu/search;jsessionid=14DE1634FEFCBE32542A001C07860506/?view=catalog&catalog=&page=0&q=CME&filter-catalognumber-CME=on&filter-coursestatus-Active=on)*Stanford Bulletin's* ExploreCourses web site.

ICME is a degree granting (M.S./Ph.D.) interdisciplinary institute at the intersection of mathematics, computing, engineering and applied sciences. ICME was founded in 2004, building upon the Scientific Computing and Computational Mathematics Program (est. 1989).

At ICME, we design state-of-the-art mathematical and computational models, methods, and algorithms for engineering and science applications. The program collaborates closely with engineers and scientists in academia and industry to develop improved computational approaches and advance disciplinary fields. In particular, it leverages Stanford's strength in engineering applications in the physical, biological, mathematical, and information sciences, and has established connections with nearly 20 departments across five schools at Stanford.

The program identifies research areas that would benefit from a multidisciplinary approach in which computational mathematics plays a critical role. This multidisciplinary intellectual environment is a core strength of ICME, with interaction among students and faculty with diverse backgrounds and expertise. Students and faculty are active in many research areas: aerodynamics and space applications, fluid dynamics, protein folding, data science including machine learning and recommender systems, ocean dynamics, climate modeling, reservoir engineering, computer graphics, financial mathematics, and many more.

The program trains students and scholars from across Stanford in mathematical modeling, scientific computing, and advanced computational algorithms at the undergraduate and graduate levels. Courses typically provide strong theoretical foundations for the solution of real world problems and numerical computations to facilitate application of mathematical techniques and theories. Training offered includes matrix computations, computational probability and combinatorial optimization, optimization, stochastics, numerical solution of partial differential equations, parallel computer algorithms, and new computing paradigms, amongst others.

ICME offers service courses for undergraduates and graduate students to fulfill departmental requirements, core courses for master's and doctoral students in Computational and Mathematical Engineering, and specialized electives in various application areas.

The ICME master's program offers both specialized and general tracks. Currently, the program is offering specialized tracks in Computational Geosciences, Data Science, Imaging Science, and Mathematical and Computational Finance.

Graduate Programs in Computational and Mathematical Engineering

University regulations governing the M.S. and Ph.D. degrees are described in the “Graduate Degrees (p. 65)” section of this bulletin.

Learning Outcomes (Graduate)

The purpose of the master’s program is to provide students with the knowledge and skills necessary for a professional career or doctoral studies. This is done through coursework in mathematical modeling, scientific computing, advanced computational algorithms, and a set of courses from a specific area of application or field. The latter includes computational geoscience, data sciences, imaging sciences, mathematical and computational finance and other interdisciplinary areas that combine advanced mathematics with the classical physical sciences or with challenging interdisciplinary problems emerging within disciplines such as business, biology, medicine, and information.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research. Through course work and guided research, the program prepares students to make original contributions in Computational and Mathematical Engineering and related fields.

Master of Science in Computational and Mathematical Engineering

The University’s basic requirements for the M.S. degree are discussed in the "Graduate Degrees (p. 65)" section of this bulletin. The following are specific departmental requirements.

The master's degree in Computational and Mathematical Engineering is intended as a terminal professional degree and does not lead to the Ph.D. program. While there is a M.S. to Ph.D. option, students interested in the doctoral program are strongly encouraged to apply directly to the Ph.D. program.

Admission

Prospective applicants should consult the Graduate Admissions (https://studentaffairs.stanford.edu/gradadmissions/) and the ICME admissions web pages (https://icme.stanford.edu/admissions/) for complete information on admission requirements and deadlines.

Applications to the M.S. program and all supporting documents must be submitted and received online by January 12, 2021, the deadline published on the ICME admissions web page (https://icme.stanford.edu/admissions/deadlines/).

See below for information on the M.S. to Ph.D. program petition process (p. 782).

Prerequisites

Fundamental courses in mathematics and computing may be needed as prerequisites for other courses in the program. Check the prerequisites of each required course. Recommended preparatory courses include advanced undergraduate level courses in linear algebra, probability, differential equations, stochastics, and numerical methods and proficiency in programming.

Financial Assistance

The department awards a limited number of fellowships, course assistantships, and research assistantships to incoming graduate students. Most course assistantships and research assistantships are awarded to students in the doctoral program in ICME. If there is an insufficient number of Ph.D. students to staff all course and research assistantship positions available, these positions may be open to master’s students. However, master’s students are not guaranteed financial assistance.

Coterminal Master's Program

Stanford undergraduates who want to apply for the coterminal master's degree must submit their application no later than eight weeks before the

start of the proposed admit quarter. The application must give evidence that the student possesses a potential for strong academic performance at the graduate level. Graduate Record Examination (GRE) General Test scores are required for application review. A student is eligible to apply for admission once the following conditions have been met:

- completion of six non-Summer quarters at Stanford or two non-Summer quarters at Stanford for transfer students
- completion of 120 units toward graduation (UTG) as shown on the undergraduate transcript, including transfer, Advanced Placement exam, and other external test credit
- declaration of an undergraduate major

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken two quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to the graduate career. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Requirements for the Master of Science in Computational and Mathematical Engineering

The master's program consists of 45 units of course work taken at Stanford. No thesis is required; however, students may become involved in research projects during the master's program. Although there is no specific background requirement, significant exposure to mathematics and engineering course work is necessary for successful completion of the program.

There are five tracks in the master's program:

- General CME
- Computational Geosciences
- Data Science
- Imaging Science
- Mathematical and Computational Finance

General CME Track

This track is designed for students interested in studying and developing computational tools in those aspects of applied mathematics central to modeling in the physical and engineering sciences. The curriculum consists of core computational and mathematical engineering courses and programming course work, extensive breadth and depth electives, and seminars. Core courses provide instruction in mathematical and computational tools applicable to a wide range of scientific, industrial and engineering disciplines and augment breadth and depth electives of one's choosing. The programming requirement ensures proficiency in scientific computing and professional computing skills. Seminars highlight emerging research in engineering and sciences.

Requirements

A candidate is required to complete a program of 45 units of courses numbered 200 or above. Courses below 200 level require special approval from the program office. At least 36 of these must be graded units, passed with a grade point average (GPA) of 3.0 (B) or better.

Requirement 1: Foundational (12 units)

Students must demonstrate foundational knowledge in the field by completing four of the six core courses. Courses in this area must be taken for letter grades.

		Units
CME 302	Numerical Linear Algebra	3
CME 303	Partial Differential Equations of Applied Mathematics	3
CME 305	Discrete Mathematics and Algorithms	3
CME 306	Numerical Solution of Partial Differential Equations	3
CME 307	Optimization	3
or CME 364A	Convex Optimization I	
CME 308	Stochastic Methods in Engineering	3
or CME 298	Basic Probability and Stochastic Processes with Engineering Applications	

Requirement 2: Programming (3 units)

To ensure that students have a strong foundation in programming, three units of advanced scientific programming for letter grade at the level of CME 212 is required. Programming proficiency at the level of CME 211 is a hard prerequisite; CME 211 can be applied towards the elective requirement.

		Units
CME 211	Software Development for Scientists and Engineers (*can only be counted as an elective)	3
CME 212	Advanced Software Development for Scientists and Engineers	3

Requirement 3: Breadth Electives (18 units)

18 units of general electives to demonstrate breadth of knowledge in technical areas. The elective course list represents automatically accepted electives within the program. However, electives are not limited to the list below, and the list is expanded on a continuing basis. The elective part of the ICME program is meant to be broad and inclusive of relevant courses of comparable rigor to ICME courses. It is recommended that the selected courses include offerings from (at least) two engineering departments, in addition to CME course work. Courses outside this list can be accepted as electives subject to approval by the student's program adviser. Six units of independent research can be used to fulfill this requirement with prior approval.

		Units
Aeronautics and Astronautics		
AA 214C	Numerical Computation of Viscous Flow	3
AA 218	Introduction to Symmetry Analysis	3
Computational and Mathematical Engineering		
CME 215A/215B	Advanced Computational Fluid Dynamics	3
CME 263	Introduction to Linear Dynamical Systems	3
CME 279	Computational Biology: Structure and Organization of Biomolecules and Cells	3

CME 342	Parallel Methods in Numerical Analysis	3
CME 364A	Convex Optimization I	3
CME 371	Computational Biology in Four Dimensions	3
Computer Science		
CS 221	Artificial Intelligence: Principles and Techniques	3-4
CS 228	Probabilistic Graphical Models: Principles and Techniques	3-4
CS 229	Machine Learning	3-4
CS 255	Introduction to Cryptography	3
CS 261	Optimization and Algorithmic Paradigms	3
CS 340	Topics in Computer Systems	3-4
CS 348A	Computer Graphics: Geometric Modeling & Processing	3-4
Electrical Engineering		
EE 223	Applied Quantum Mechanics II	3
EE 256	Numerical Electromagnetics	3
Management Science and Engineering		
MS&E 220	Probabilistic Analysis	3-4
MS&E 221	Stochastic Modeling	3
MS&E 223	Simulation	3
MS&E 226	Fundamentals of Data Science: Prediction, Inference, Causality	3
MS&E 251	Introduction to Stochastic Control with Applications	3
MS&E 310	Linear Programming	3
MS&E 316	Discrete Mathematics and Algorithms	3
MS&E 321	Stochastic Systems	3
MS&E 322	Stochastic Calculus and Control	3
Mathematics		
MATH 136	Stochastic Processes	3
MATH 171	Fundamental Concepts of Analysis	3
MATH 221B	Mathematical Methods of Imaging	3
MATH 236	Introduction to Stochastic Differential Equations	3
MATH 238	Mathematical Finance	3
Mechanical Engineering		
ME 335A/335B/335C	Finite Element Analysis	3
ME 346B	Introduction to Molecular Simulations	3
ME 408	Spectral Methods in Computational Physics	3
ME 469	Computational Methods in Fluid Mechanics	3
Statistics		
STATS 208	Bootstrap, Cross-Validation, and Sample Re-use	3
STATS 217	Introduction to Stochastic Processes I	3
STATS 219	Stochastic Processes	3
STATS 250	Mathematical Finance	3
STATS 305A	Applied Statistics I	3
STATS 310A/310B/310C	Theory of Probability I	3
STATS 362	Topic: Monte Carlo	3
Other		
CEE 281	Mechanics and Finite Elements	3
CEE 362G	Imaging with Incomplete Information	3-4
ECON 293	Machine Learning and Causal Inference	3
ENGR 209A	Analysis and Control of Nonlinear Systems	3

Requirement 4: Specialized Electives (9 units)

Nine units of focused graduate application electives approved by the program adviser, in the areas of engineering, mathematics, physical, biological, information, and other quantitative sciences. These courses should be foundational depth courses relevant to the student's professional development and research interests.

Requirement 5: Seminar (3 units)

One seminar unit must come from CME 500; two units are up to the student's choice of ICME graduate seminars or other approved seminars. Additional seminar units may not be counted towards the 45-unit requirement.

Computational Geosciences Track

The Computational Geosciences (CompGeo) track is designed for students interested in the skills and knowledge required to develop efficient and robust numerical solutions to Earth Science problems using high-performance computing. The CompGeo curriculum is based on four fundamental areas: modern programming methods for Science and Engineering, applied mathematics with an emphasis on numerical methods, algorithms and architectures for high-performance computing and computationally oriented Earth Sciences courses. Earth Sciences/computational project courses give practice in applying methodologies and concepts. CompGeo students are required to complete general and focused application electives (Requirements 3 and 4) from the approved list of courses from the Computational Geosciences program. All other requirements remain the same as set forth above.

Note: Students interested in pursuing the ICME M.S. in the Computational Geosciences (CompGeo) track are encouraged to contact the Computational Geosciences program director before applying.

Students are required to take 45 units of course work, and research credits to earn a master's degree in Computational Geosciences track. The course work follows the requirements of the ICME M.S. degree as above with additional restrictions placed on the general and focused electives.

Requirement 1: Foundational (12 units)

Identical to the general CME master's track requirement; see above.

Requirement 2: Programming (3 units)

To ensure that students have a strong foundation in programming, three units of advanced scientific programming for letter grade at the level of CME 212 is required. Programming proficiency at the level of CME 211 is a hard prerequisite; CME 211 can be applied towards the elective requirement.

		Units
CME 211	Software Development for Scientists and Engineers (*can only be used as an elective)	3
CME 212	Advanced Software Development for Scientists and Engineers	3
GEOPHYS 257	Introduction to Computational Earth Sciences	2-4

Requirement 3: Breadth Electives in Geosciences (18 units)

18 units of general electives to demonstrate breadth of knowledge in technical area. Courses are currently offered but are not limited to the following specific areas of the School of Earth Sciences:

1. Reservoir Simulation
2. Geophysical Imaging
3. Tectonophysics/Geomechanics

4. Climate/Atmosphere/Ocean
5. Ecology/Geobiology.

The Earth Science courses, offered in EESS, ERE, GES, and Geophysics, are selected based on the area of the student's interest and their research/thesis work, along with the advice and consent of the student's adviser. Students are encouraged to choose a range of courses in order to guarantee breadth of knowledge in Earth Sciences. A maximum of one non-computationally-oriented course can be counted towards the master's degree requirements. Following is a list of recommended courses (grouped by area) that can be taken to fulfill the Geosciences course requirement.

		Units
Environmental/Climate/Hydrogeology		
ESS 220	Physical Hydrogeology	4
ESS 221	Contaminant Hydrogeology and Reactive Transport	3
ESS 246B	Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation	3
CEE 262A	Hydrodynamics	3-4
CEE 262B	Transport and Mixing in Surface Water Flows	3-4
CEE 262C	Coastal Ocean Modeling	3
CEE 263A	Air Pollution Modeling	3-4
CEE 361	Turbulence Modeling for Environmental Fluid Mechanics	2-4
Geophysical Imaging		
EE 256	Numerical Electromagnetics	3
GEOPHYS 210	Basic Earth Imaging	2-3
GEOPHYS 211	Environmental Soundings Image Estimation	3
GEOPHYS 280	3-D Seismic Imaging	2-3
GEOPHYS 287	Earthquake Seismology	3-5
General Computational/Mathematical Geoscineces		
CEE 362G	Imaging with Incomplete Information	3-4
CHEM 275	Advanced Physical Chemistry - Single Molecules and Light	3
CME 372	Applied Fourier Analysis and Elements of Modern Signal Processing	3
CME 321B	Mathematical Methods of Imaging	3
ESS 211	Fundamentals of Modeling	3-5
ENERGY 291	Optimization of Energy Systems	3-4
ME 335A	Finite Element Analysis	3
ME 346B	Introduction to Molecular Simulations	3
ME 361	Turbulence	3
ME 469	Computational Methods in Fluid Mechanics	3
Reservoir Simulation/Fluid Flow		
ENERGY 223	Reservoir Simulation	3-4
ENERGY 224	Advanced Reservoir Simulation	3
Subsurface/Reservoir Characterization		
ENERGY 241	Seismic Reservoir Characterization	3-4
GEOPHYS 202	Reservoir Geomechanics	3
GEOPHYS 260	Rock Physics for Reservoir Characterization	3
Structural/Tectonophysics/Geomechanics		
GEOPHYS 220	Ice, Water, Fire	3-5
GEOPHYS 288A	Crustal Deformation	3-5
GEOPHYS 288B	Crustal Deformation	3-5
GEOPHYS 290	Tectonophysics	3

Requirement 4: Practical Component (9 units)

9 units of focused research in computational geosciences. Students are required to either complete a Research Project or an Internship as described below.

		Units
Internship and/or Research Project, enrolling in a course such as:		
EARTH 400	Directed Research	3
EARTH 401	Curricular Practical Training	1

Research Project

Students who plan to apply to the Ph.D. program need to take 9 units of research. Students will work with the CompGeo program director to find an appropriate adviser and research topic and then enroll in EARTH 400 Directed Research (or a similar SES research course). The successful outcome of a Research Project can be:

1. an oral presentation at an international meeting requiring an extended abstract
2. a publication submission in a peer reviewed journal.
3. a written report

Internship

As an alternative to the Research Project, students have the option of an internship which is recommended for those students interested in a terminal degree. The individual student is responsible for securing and organizing the internship and is required to obtain a faculty adviser and submit a written report on the internship project. Credit for the internship will be obtained through EARTHSCI 401: Curricular Practical Training (1 unit) and in this case only 8 units of research are required.

Requirement 5: Seminar (3 units)

Three units of ICME graduate seminars or other approved seminars. Additional seminar units may not be counted towards the 45-unit requirement. One of the required seminars for CompGeo must be a seminar course chosen in concert with the student's academic adviser among the seminars offered by the the School of Earth, Energy and Environmental Sciences.

Data Science Track

The Data Science track develops strong mathematical, statistical, computational and programming skills through the foundational and programming requirements. In addition, it provides a fundamental data science education through general and focused electives requirement from courses in data sciences and related areas. DS track covers both computational data science and machine learning but can be tailored to be more focused on one of the two areas by taking more credits in that concentration (requirement 3 or 4). Course choices are limited to predefined courses from the data sciences and related courses group for requirements 1-5.

Requirement 1: Mathematical and Statistical Foundations (15 units)

Students must demonstrate foundational knowledge in the field by completing the following courses. Courses in this area must be taken for letter grades.

		Units
CME 302	Numerical Linear Algebra	3
CME 308	Stochastic Methods in Engineering	3
STATS 200	Introduction to Statistical Inference	3
or STATS 300A	Theory of Statistics I	
STATS 203	Introduction to Regression Models and Analysis of Variance	3
or STATS 305A	Applied Statistics I	

STATS 315A	Modern Applied Statistics: Learning	3
or CS/STATS 229	Machine Learning	

Requirement 2: Experimentation (3 units)

Experimental method and causal considerations are fundamental to data science. The course chosen from this area must be taken for letter grades.

STATS 263	Design of Experiments	3
ECON 271	Intermediate Econometrics II (3 units only)	2-5
or MS&E 327	Topics in Causal Inference	

*If both courses are taken, the additional 3 units can count towards the "Machine Learning Methods and Applications" requirement below.

Requirement 3: Scientific Computing (6-12 units)

To ensure that students have a strong foundation in programming, 3 units of scientific software development (CME212) and 3 units from scientific computing foundations and methods for letter grades is required. CME offers a placement test that can be used to directly enroll in CME 212. Students who pass this placement test are not required to take CME 211. Students can choose to take up to six additional units from this group of courses.

*Students must take 6 units from Requirement 3 and 6 units from Requirement 4, with an additional 6 units from either Requirement 3 or 4, for a total of 18 units in the two areas. The additional 6 units may be taken for a non-letter grade.

		Units
Software Development; take 3 units		
CME 211	Software Development for Scientists and Engineers	3
CME 212	Advanced Software Development for Scientists and Engineers	3
Scientific Computing Foundations and Methods; take 3 units		
CME 213	Introduction to parallel computing using MPI, openMP, and CUDA (Scientific Computing Foundations and Methods; take 3 units)	3
CME 305	Discrete Mathematics and Algorithms	3
CME 307	Optimization	3
CME 323	Distributed Algorithms and Optimization	3
CME 364A	Convex Optimization I	3
CS 246	Mining Massive Data Sets	3-4

Requirement 4: Machine Learning Methods and Applications (6-12 units)

Six units of coursework from this area is required and should be taken for letter grades. Students can also choose to take up to six additional units from this group of courses.

*Students must take 6 units from Requirement 3 and 6 units from Requirement 4, with an additional 6 units from either Requirement 3 or 4, for a total of 18 units in the two areas. The additional 6 units may be taken for a non-letter grade.

Courses in this area must be taken for letter grades.

STATS 231		
STATS 315B	Modern Applied Statistics: Data Mining	3
CS 221	Artificial Intelligence: Principles and Techniques	3-4
CS 224N	Natural Language Processing with Deep Learning	3-4
CS 230	Deep Learning	3-4
CS 231N	Convolutional Neural Networks for Visual Recognition	3-4
CS 234	Reinforcement Learning	3
CS 236	Deep Generative Models	3

Requirement 5: Practical component (3 units)

Students are required to take 3 units of practical component that may include any combination of:

- Analytics Accelerator(CME 217)
- Master's Research(CME 291): a research project, supervised by a faculty member and approved by the adviser; should be taken for letter grade only. The research project should be computational in nature. Students should submit a one-page proposal, supported by the faculty member, to ICME student services for approval at least one quarter before.
- Other courses that have a strong hands-on and practical component, such as STATS 390 Consulting Workshop up to 1unit.

Additional Units

Students must take 6 units of additional electives from graduate-level engineering and science courses (a maximum of 3units of research including practical component or seminar) for a total of 45 units to earn the degree.

Imaging Science Track

The Imaging Science track is designed for students interested in the skills and knowledge required to develop efficient and robust computational tools for imaging science. The curriculum is based on four fundamental areas: mathematical models and analysis for imaging sciences and inverse problems, tools and techniques from modern imaging sciences from medicine, biology, physics/chemistry, and earth science, algorithms in numerical methods and scientific computing and high performance computing skills and architecture oriented towards imaging sciences.

The course work follows the requirements of the general master's degree in the core course requirement. The general and focused elective requirements (requirements 3 and 4 below) are limited to approved courses listed below. Programming requirement (requirement 2) is extended to 6 units and includes course work in advanced scientific programming and high performance computing.

Requirement 1: Foundational (12 units)

Identical to the general ICME master's program; see above.

Requirement 2: Programming (6 units)

To ensure that students have a strong foundation in programming, three units of advanced scientific programming for letter grade at the level of CME 212 and three units of parallel computing for letter grade are required. Programming proficiency at the level of CME 211 is a hard prerequisite for CME 212; CME 211 can be applied towards the elective requirement.

		Units
CME 211	Software Development for Scientists and Engineers (*can only be used as an elective)	3
Advanced Scientific Programming; take 3 units		
CME 212	Advanced Software Development for Scientists and Engineers	3
CME 214	Software Design in Modern Fortran for Scientists and Engineers	3

Parallel /HPCComputing; take 3 units		
CME 213	Introduction to parallel computing using MPI, openMP, and CUDA	3
CME 323	Distributed Algorithms and Optimization	3
CME 342	Parallel Methods in Numerical Analysis	3
GEOPHYS 257	Introduction to Computational Earth Sciences	2-4

Requirement 3: Imaging Sciences electives (18 units)

Imaging Sciences electives should demonstrate breadth of knowledge in the technical area. The elective course list is defined. Courses outside this list can be accepted as electives subject to approval by the student's program adviser. Six units of independent research can be used to fulfill this requirement with prior approval.

		Units
Take 18 units of the following:		
APPPHYS 232	Advanced Imaging Lab in Biophysics	4
BIOE 220	Introduction to Imaging and Image-based Human Anatomy	3
CEE 362G	Imaging with Incomplete Information	3-4
CME 279	Computational Biology: Structure and Organization of Biomolecules and Cells	3
CME 371	Computational Biology in Four Dimensions	3
CS 231N	Convolutional Neural Networks for Visual Recognition	3-4
CS 237A	Principles of Robot Autonomy I	3-4
EARTHSYS 242	Remote Sensing of Land	4
EE 236A	Modern Optics	3
EE 262	Three-Dimensional Imaging	3
EE 355	Imaging Radar and Applications	3
EE 367	Computational Imaging and Display	3
EE 368	Digital Image Processing	3
EE 369A	Medical Imaging Systems I	3
EE 369B	Medical Imaging Systems II	3
EE 369C	Medical Image Reconstruction	3
GEOPHYS 210	Basic Earth Imaging	2-3
GEOPHYS 211	Environmental Soundings Image Estimation	3
GEOPHYS 280	3-D Seismic Imaging	2-3
MATH 221B	Mathematical Methods of Imaging	3
MATH 262	Applied Fourier Analysis and Elements of Modern Signal Processing	3
PSYCH 204A	Human Neuroimaging Methods	3

Requirement 4: Specialized electives (6 units)

6 units of focused graduate application electives, approved by the ICME graduate adviser, in the areas of engineering, mathematics, physical, biological, information, and other quantitative sciences. These courses should be foundational depth courses relevant to the student's professional development and research interests.

Requirement 5: Seminar (3 units)

One seminar unit must come from CME 500; two units are up to the student's choice of ICME graduate seminars or other approved seminars. Additional seminar units may not be counted towards the 45-unit requirement.

Mathematical and Computational Finance Track

The Mathematical & Computational Finance (MCF) track is an interdisciplinary program that provides education in applied and computational mathematics, statistics, and financial applications for individuals with strong mathematical skills. Upon successful completion of the MCF track in the ICME master's program, students will be prepared to assume positions in the financial industry as data and information scientists, quantitative strategists, risk managers, regulators, financial technologists, or to continue on to advanced graduate work in applied mathematics, statistics, finance, and other disciplines.

The Institute for Computational and Mathematical Engineering, in close cooperation with Mathematics, Management Science and Engineering and Statistics provides many of the basic courses.

Requirement 1: Foundational (9 units)

Students must demonstrate foundational knowledge in the field by completing the following core courses. Courses in this area must be taken for letter grades.

		Units
CME 302	Numerical Linear Algebra	3
or CME 303	Partial Differential Equations of Applied Mathematics	
or CME 305	Discrete Mathematics and Algorithms	
CME 307	Optimization	3
or CME 364A	Convex Optimization I	
CME 308	Stochastic Methods in Engineering	3
or MATH 236	Introduction to Stochastic Differential Equations	

Requirement 2: Programming (6-9 units)

To ensure that students have a strong foundation in programming, six units of advanced programming for letter grade at the level of CME 212 and three units of parallel computing for letter grade are required. Programming proficiency at the level of CME 211 is a hard prerequisite for CME 212.

		Units
Advanced Scientific Programming; take 3-6 units		
CME 211	Software Development for Scientists and Engineers	3
CME 212	Advanced Software Development for Scientists and Engineers	3
CME 214	Software Design in Modern Fortran for Scientists and Engineers	3
Parallel/HPC Computing; take 3 units		
CME 213	Introduction to parallel computing using MPI, openMP, and CUDA	3
CME 323	Distributed Algorithms and Optimization	3
CME 342	Parallel Methods in Numerical Analysis	3
CS 149	Parallel Computing	3-4
CS 315B	Parallel Computing Research Project	3
CS 316	Advanced Multi-Core Systems	3

Requirement 3: Finance electives (9 units)

Choose three courses from the following list. Courses outside this list can be accepted as electives subject to approval by the student's program adviser.

		Units
Financial Mathematics		
MATH 238	Mathematical Finance	3

Financial Markets		
FINANCE 320	Debt Markets	3
FINANCE 620	Financial Markets I	3
FINANCE 622	Dynamic Asset Pricing Theory	4
Other		
CS 251	Cryptocurrencies and blockchain technologies	3
MS&E 245B	Advanced Investment Science	3
MS&E 347	Credit Risk: Modeling and Management	3
MS&E 348	Optimization of Uncertainty and Applications in Finance	3
MS&E 349	Financial Statistics	3
STATS 240	Statistical Methods in Finance	3
STATS 241	Data-driven Financial Econometrics	3
STATS 244	Quantitative Trading: Algorithms, Data, and Optimization	2-4

Requirement 4: Data Science electives (12 units)

Data Science electives should demonstrate breadth of knowledge in the technical area. Courses outside this list can be accepted as electives subject to approval by the student's program adviser.

		Units
Statistical Modeling		
STATS 200	Introduction to Statistical Inference	3
STATS 203	Introduction to Regression Models and Analysis of Variance	3
STATS 205	Introduction to Nonparametric Statistics	3
STATS 206	Applied Multivariate Analysis	3
STATS 207	Introduction to Time Series Analysis	3
STATS 270	A Course in Bayesian Statistics	3
STATS 285	Massive Computational Experiments, Painlessly	2
STATS 290	Computing for Data Science	3
STATS 305A	Applied Statistics I	3
STATS 305B	Applied Statistics II: Generalized Linear Models, Survival Analysis, and Exponential Families	3
STATS 305C	Applied Statistics III	3
STATS 361	Causal Inference	3
Learning		
CME 241	Reinforcement Learning for Stochastic Control Problems in Finance	3
CS 224N	Natural Language Processing with Deep Learning	3-4
CS 230	Deep Learning	3-4
CS 246	Mining Massive Data Sets	3-4
EE 277	Reinforcement Learning: Behaviors and Applications	3
MS&E 338	Reinforcement Learning: Frontiers	3
STATS 315A	Modern Applied Statistics: Learning	3
STATS 315B	Modern Applied Statistics: Data Mining	3
Other		
MS&E 349	Financial Statistics	3
STATS 240	Statistical Methods in Finance	3
STATS 241	Data-driven Financial Econometrics	3

Requirement 5: Practical component (6 units)

Students are required to take six units of practical and project courses ONLY from the courses listed below.

		Units
CS 349F	Technology for Financial Systems	1
CME 241	Reinforcement Learning for Stochastic Control Problems in Finance	3
CME 291	Master's Research	1-6
MS&E 246	Financial Risk Analytics	3
MS&E 448	Big Financial Data and Algorithmic Trading	3

Petition Process for Transfer from M.S. to Ph.D. Degree Program

Students admitted to ICME graduate programs are enrolled specifically either into the terminal M.S. or the Ph.D. program. Admission to the Ph.D. program is required for a student to be eligible to work towards the Ph.D. degree.

A student in the terminal M.S. program may petition to be admitted to the Ph.D. program by filing an M.S. to Ph.D. petition form. Petition must include (1) a one-page statement of purpose explaining why the student wishes to transfer to the Ph.D. program, (2) the most recent unofficial transcript, and (3) two letters of recommendation from members of the Stanford faculty, including one from the student's potential research adviser and at least one from an ICME faculty member belonging to the Academic Council. The M.S. to Ph.D. petition to transfer must be submitted to the student services office before the end of the spring quarter of the first year in the M.S. program.

Students who wish to submit a petition to add the Ph.D. degree, should plan to complete 18 units of the ICME core classes (CME 302, 303, 305, 306, 307, 308) for letter grade and pass the ICME qualifying exam before the beginning of their second year. If the petition is approved, all the other requirements of the Ph.D. program described in the bulletin apply, i.e. filing for candidacy, securing a PhD advisor, satisfactory degree progress and degree completion.

Transferring to the Ph.D. program is a competitive process and only highly qualified M.S. students may be admitted. Student's original application to the graduate program as well as the materials provided for the transfer petition are reviewed. Students must adhere to requirements for the terminal M.S. degree, and plan to confer the M.S. degree in the event that the Ph.D. petition to transfer is not approved.

M.S. to Ph.D. option requirements:

- Have a cumulative GPA of 3.5 or higher.
- Earn B+ plus or higher grade on all six core courses in the first year.
- Pass all six topics of the qualifying exam before the beginning of the second year.
- Complete a minimum of six units of research rotations in years one and two. CME 291 can be taken for three units at a time for credit/no credit.
- Identify and align with a doctoral dissertation adviser before the end of winter quarter of second year who will act as research supervisor and provide funding through the completion of the program.
- Submit a petition to the ICME Ph.D. admissions committee before the end of winter quarter of second year; transfer to the Ph.D. program subject to committee approval.

Doctor of Philosophy in Computational and Mathematical Engineering

The University's basic requirements for the Ph.D. degree are outlined in the "Graduate Degrees" (p. 65) section of this bulletin.

Applications to the Ph.D. program and all required supporting documents must be received by December 1, 2020. See Graduate Admissions

(http://gradadmissions.stanford.edu) for information and application materials. See the institute's admissions site (https://icme.stanford.edu/admissions/) for additional details. Applicants should take the Graduate Record Examination by October of the academic year in which the application is submitted.

ICME offers direct admission to the Ph.D. program. Admission does not imply that the student is a candidate for the Ph.D. degree. Advancement to candidacy requires superior academic achievement, satisfactory performance on the qualifying exam, and sponsorship by a faculty member.

The requirements seek to balance research activities and coursework.

Requirements

1. Filing for candidacy (before the end of the second year):
   a. Complete 18 units of the ICME core classes (CME 302, CME 303, CME 305, CME 306, CME 307, CME 308) for letter grade and pass the ICME qualifying exam before the beginning of the second year.
   b. Complete three units of the programming class (CME 212); programming proficiency at the level of CME 211 is a hard prerequisite. Students can place out of CME 211. These classes should be taken for letter grade.
   c. Maintain a grade point average of 3.5 or higher.
   d. Complete a minimum of six units of research rotations in years one and two (can be with same faculty adviser). CME 400 can be taken for three units at a time for credit/no credit.
   e. Complete three units of seminars: one unit must come from CME 300.
   f. Submit the Ph.D. candidacy form: University policy requires that all doctoral students declare candidacy by the end of the sixth quarter in residence, excluding summers. However, after completing the integrated first year coursework, passing qualifying exam, and aligning with a permanent adviser, a student is eligible to file for candidacy prior to the sixth quarter. The candidacy form serves as a "contract" between the department and the student. Candidacy expires five years from the date of submission of the candidacy form, rounded to the end of the quarter. In special cases, the department may extend a student's candidacy, but is under no obligation to do so.
2. Progress toward the degree:
   a. Complete nine units of specialized depth electives – to be agreed on with the graduate research adviser. These are intended to provide foundational knowledge of the selected research field and exposure to relevant applications. The specialized depth component of the ICME program is meant to be broad and inclusive of relevant courses of comparable rigor to ICME core courses.
   b. Complete three units of advanced programming classes (CME 213, CME 323, CS 315B, etc.).
   c. Complete nine units of computational breadth electives – advanced graduate level courses with computational content.
   d. Complete at least 60 units of thesis research (CME 400).
   e. File the dissertation Reading Committee Form and a succinct research proposal (approved by your adviser) by the end of the third year in the program
   f. Organize a “Green Light” meeting with the committee members no less than six months prior to the expected defense. This meeting should be completed in the autumn quarter of the fifth year in the program or six months before scheduling oral exams if program is expected to be completed earlier. In this meeting, a final dissertation proposal will be reviewed and discussed, and the student will present a "draft Ph.D. thesis outline" indicating status of prior work and plans for additional work. The presentation should not be a "practice thesis defense presentation", but rather should be a chapter-by-chapter review of the status of completion of each part of the expected Ph.D. thesis. A month-by-month schedule for the time remaining until the Ph.D. Defense should be presented at this meeting. The purpose of this Green Light meeting is to make sure that the entire reading committee is familiar with the plans for the completed Ph.D. thesis, and is comfortable with the proposed content and the schedule.
3. Degree Completion:

   a. Complete a minimum of 135 units of residency at Stanford.

   b. The student must pass a University oral examination in the form of a defense of the dissertation. This is typically held after all or a substantial portion of the dissertation research has been completed.

   c. The student is expected to demonstrate the ability to present scholarly material orally in the dissertation defense.

Some Additional details:

- ICME Qualifying Exam: exams involving material covered in the core courses are held in June and September. Students need to pass all six exams and each exam can be attempted twice prior to the beginning of the second year in the program.
- ICME Research Rotations: research rotations must be arranged by each student on a topic of their interest; the objective is to secure commitment from a faculty member to become the Ph.D. research adviser. ICME will gather information on potential research topics and faculty with open positions by the beginning of the academic year. The CME 300 seminars will be organized to introduce research opportunities, faculty members and current ICME Ph.D. students. Furthermore, contact information of prior ICME students and faculty advisers will be made available.
- ICME Research Presentations: a one-day research forum will be organized in the fall quarter for the students to present the research outcomes of the rotations to faculty and students. Presentation at the forum is a requirement to file for candidacy.
- Mentoring and Monitoring: incoming Ph.D. students are assigned an academic adviser from among the ICME affiliated faculty who can provide help and advice and act as a point of contact for general inquires. The ICME Director and the student services office are also available for consultation. Students enrolled in the Ph.D. program are considered to be in good standing if they have submitted the candidacy form before the end of the second year at Stanford. After that, academic progress towards the degree is routinely overseen by the research adviser. Every year, over the summer, the ICME Director reviews all students' progress with regard to units, course work and research progress. All research advisers are solicited for their evaluation. Each student receives a program progress report based on these sources of information.
- Master's in ICME: This program does not automatically satisfy the requirement for the Master's degree in ICME. However, ICME Ph.D. students may choose to obtain a Master's degree in addition to their Ph.D. by fulfilling the Master's course requirements as described in the Bulletin.

Specialized Elective List

See requirement 2a above.

		Units
CEE 362G	Imaging with Incomplete Information	3-4
CME 279	Computational Biology: Structure and Organization of Biomolecules and Cells	3
CME 364B	Convex Optimization II	3
CME 371	Computational Biology in Four Dimensions	3

CS 348A	Computer Graphics: Geometric Modeling & Processing	3-4
EE 368	Digital Image Processing	3
MATH 205A	Real Analysis	3
MATH 215A	Algebraic Topology	3
MATH 221A	Mathematical Methods of Imaging	3
MATH 221B	Mathematical Methods of Imaging	3
MATH 227	Partial Differential Equations and Diffusion Processes	3
MATH 236	Introduction to Stochastic Differential Equations	3
MATH 238	Mathematical Finance	3
ME 335A/335B/335C	Finite Element Analysis	3
ME 346B	Introduction to Molecular Simulations	3
ME 351A/351B	Fluid Mechanics	3
ME 361	Turbulence	3
ME 408	Spectral Methods in Computational Physics	3
ME 469	Computational Methods in Fluid Mechanics	3
MS&E 319	Approximation Algorithms	3
STATS 305A	Applied Statistics I	3
STATS 305B	Applied Statistics II: Generalized Linear Models, Survival Analysis, and Exponential Families	3
STATS 305C	Applied Statistics III	3
STATS 318	Modern Markov Chains	3
STATS 366	Modern Statistics for Modern Biology	3

Ph.D. Minor in Computational and Mathematical Engineering

For a minor in Computational and Mathematical Engineering (CME), a doctoral candidate must complete 21 units of approved graduate level courses. These should include three ICME core courses and three ICME graduate electives at the 300 level or above and a programming course at the level of CME 212 or higher. All courses must be taken for a letter grade and passed with a grade of 'B' or better. Elective courses cannot be cross listed with the student's primary department. Minor programs should be developed in close discussion between the student and the student's primary Ph.D. adviser.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

The Institute for Computational and Mathematical Engineering counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory), which are normally offered for a letter grade, towards satisfaction of graduate degree requirements that otherwise require a letter grade.

Other Graduate Policies

ICME encourages students planning to take Ph.D. qualifying exams to take all core courses for a letter grade. Graduate students should carefully consider their options before taking a large number of major courses with a CR/NC grading option as this may impact employment opportunities, fellowship applications, or further graduate school admissions. Students are encouraged to contact their program adviser or the ICME Student Services Office for additional assistance regarding grading options for the 2020-21 academic year.

Master's Student Advising

The Institute for Computational and Mathematical Engineering (ICME) is committed to providing academic advising in support of our master's students' education and professional development. When most effective, this advising relationship entails collaborative engagement by both the adviser and the advisee. As a best practice, advising expectations should be discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

At the start of graduate study, each student is assigned a master's program adviser, a member of our faculty who will provide guidance in course selection, exploring academic opportunities, and professional pathways. Typically, the same faculty member serves as program adviser for the duration of a master's study. Advisers are assigned during New Student Orientation at the beginning of autumn quarter. The first meeting between the program adviser and student should occur in the first quarter of the first year to discuss the student's goals and objectives. Students are expected to initiate the meeting with the adviser and complete the Master's Degree Program Proposal before the final study list deadline of the first quarter in the program. Subsequent meetings with the adviser are strongly encouraged as need arises. Students are required to get approval from advisers for changes to the course plan on file before the changed courses are taken.

In addition, the Director of ICME meets all the new master's students during the ICME New Student Orientation at the start of the first year and is available during the academic year by email and during office hours. The Director also schedules open advising meetings every quarter. In addition to the individual advisers, ICME also provides scholarly and professional development opportunities that address skills relevant to both industrial and academic careers.

ICME also conducts an annual review of all students' progress. The Director, in conjunction with ICME Student Services, may initiate a meeting with any student deemed to be in academic distress.

The ICME Student Services team is also an important part of the master's advising team. They inform students and advisers about the University and department requirements, procedures, opportunities, and maintain the official records of adviser assignments and course approvals.

Finally, graduate students are active contributors to the advising relationship and we urge them to proactively seek academic and professional guidance and take responsibility for informing themselves about policies and degree requirements for their graduate program. We therefore expect students to read regular communications from the Registrar's office and ICME Student Services regarding upcoming academic deadlines and policy updates, and to be responsible for complying with the University and program requirements.

A statement of the University policy on graduate advising is posted under "Graduate Advising (p. 80)" section of this Bulletin.

Ph.D. Student Advising

ICME is committed to providing academic advising in support of our Ph.D. students' education and professional development. When most effective, this advising relationship entails collaborative engagement by both the adviser and the advisee. As a best practice, advising expectations should be discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

The program adviser initially guides students in key areas such as course selection, navigating policies and degree requirements, developing of teaching pedagogy, identifying doctoral research opportunities and exploring academic opportunities and professional pathways. The Director of ICME serves as the program adviser for all incoming Ph.D. students. The program adviser meets with all the doctoral students during the New Student Orientation at the start of the first year and is available during the academic year by email and during office hours. The program adviser or research adviser/Co-Adviser in conjunction with ICME Student Services may initiate a meeting with any student deemed to be in academic or research distress.

In addition to the individual advisers, ICME also provides scholarly and professional development opportunities, including a teaching training program and workshops that address skills relevant to both industrial and academic careers.

Students are required to declare candidacy with a doctoral research adviser by the end of their second year in the program. ICME students can align with faculty across the University who are well versed in supervising research, mentoring doctoral students, and providing funding for the duration of the program. This research supervisor supersedes the program adviser in assuming primary responsibility for advising and mentoring the student. When the research adviser is from outside our department, the student will also identify a doctoral research Co-Adviser from ICME affiliated faculty to provide guidance on departmental requirements, core coursework, and opportunities. We encourage students to decide on their thesis committee within one year after start of candidacy in order to avail themselves of advice from multiple faculty members on the reading committee.

ICME also conducts an annual review of all students' progress on milestones and research. Research input is solicited and an individual progress report spelling out the forthcoming milestones and any remedial action needed to maintain status is compiled.

The ICME Student Services team is also an important part of the doctoral advising team. They inform students and advisers about the University and department requirements, procedures, opportunities, and they maintain the official records of adviser assignments and course approvals. Students are encouraged to talk with the program adviser and the Student Services office as they consider courses.

Finally, our doctoral students are active contributors to the advising relationship and we urge them to proactively seek academic and professional guidance and take responsibility for informing themselves of policies and degree requirements for their graduate program. We therefore expect students to read regular communications from the Registrar's office and ICME Student Services regarding upcoming academic deadlines and policy updates, and to be responsible for complying with the University and program requirements.

A statement of University policy on graduate advising is posted under "Graduate Advising (p. 80)" section of this bulletin.

Emeriti: (Professors) Gunnar Carlsson (Mathematics), Jerry Harris (Geophysics), Antony Jameson (Aeronautics and Astronautics), Walter Murray (Management Science and Engineering), Arogyaswami Paulraj (Electrical Engineering), Peter Pinsky (Mechanical Engineering), Michael Saunders (Management Science and Engineering)

Director: Gianluca Iaccarino (Mechanical Engineering)

Director of Graduate Studies: Eric Darve (Mechanical Engineering)

Professors: Juan Alonso (Aeronautics and Astronautics), Biondo Biondi (Geophysics), Stephen Boyd (Electrical Engineering), Carlos D. Bustamante (Biomedical Data Science, Genetics), Emmanuel Candes (Mathematics, Statistics), Eric Darve (Mechanical Engineering), Persi Diaconis (Mathematics, Statistics), David Donoho (Statistics), Charbel Farhat (Aeronautics and Astronautics, Mechanical Engineering), Ronald Fedkiw (Computer Science), Oliver Fringer (Civil and Environmental Engineering), Margot Gerritsen (Energy Resources Engineering), Kay Giesecke (Management Science and Engineering), Peter Glynn (Management Science and Engineering), Ashish Goel (Management Science and Engineering), Leonidas Guibas (Computer Science), Pat Hanrahan (Computer Science, Electrical Engineering), Trevor Hastie (Mathematics, Statistics), Gianluca Iaccarino (Mechanical Engineering), Doug James (Computer Science), Ramesh Johari (Management Science and Engineering), Peter Kitanidis (Civil and Environmental Engineering), Tze Leung Lai (Statistics), Sanjiva Lele (Mechanical Engineering, Aeronautics and Astronautics), Parviz Moin (Mechanical Engineering), Brad Osgood (Electrical Engineering), George Papanicolaou (Mathematics), Noah Rosenberg (Biology), Lenya Ryzhik (Mathematics), Amin Saberi (Management Science and Engineering), Eric Shaqfeh (Chemical Engineering, Mechanical Engineering), Daniel Tartakovsky (Energy Resources Engineering), Jonathan Taylor (Statistics), Hamdi Tchelepi (Energy Resources Engineering), Benjamin Van Roy (Management Science and Engineering, Electrical Engineering), Andras Vasy (Mathematics), Lawrence Wein (Graduate School of Business), Wing Wong (Statistics), Yinyu Ye (Management Science and Engineering), Lexing Ying (Mathematics, Institute for Computational and Mathematical Engineering)

Associate Professors: Ron Dror (CS, Institute for Computational and Mathematical Engineering), Eric Dunham (Geophysics), Adrian Lew (Mechanical Engineering), Ali Mani (Mechanical Engineering), Alison Marsden (Pediatrics, Bioengineering), Marco Pavone (Aeronautics and Astronautics), Andrew Spakowitz (Chemical Engineering)

Assistant Professors: Aaron Daniel Sidford (Management Science and Engineering), Jenny Suckale (Geophysics), Johan Ugander (Management Science and Engineering), Mary Wootters (Computer Science)

Senior Lecturer: Vadim Khayms

Lecturer: Hung Le, Ashwin Rao, Andreas Santucci

Academic Staff: Reza Bosagh-Zadeh, Kari Hanson

Courses of interest to students in the department may include:

		Units
CEE 262A	Hydrodynamics	3-4
CEE 262B	Transport and Mixing in Surface Water Flows	3-4
CEE 263A	Air Pollution Modeling	3-4
CEE 263B	Numerical Weather Prediction	3-4
CEE 362	Numerical Modeling of Subsurface Processes	3-4
CEE 362G	Imaging with Incomplete Information	3-4
CS 221	Artificial Intelligence: Principles and Techniques	3-4
CS 228	Probabilistic Graphical Models: Principles and Techniques	3-4
CS 229	Machine Learning	3-4

CS 232	Digital Image Processing	3
CS 261	Optimization and Algorithmic Paradigms	3
CS 268	Geometric Algorithms	3
CS 348A	Computer Graphics: Geometric Modeling & Processing	3
EE 256	Numerical Electromagnetics	3
EE 368	Digital Image Processing	3
ENERGY 223	Reservoir Simulation	3-4
ENERGY 224	Advanced Reservoir Simulation	3
ENERGY 241	Seismic Reservoir Characterization	3-4
ENERGY 281	Applied Mathematics in Reservoir Engineering	3
GEOPHYS 190	Near-Surface Geophysics: Imaging Groundwater Systems	3
GEOPHYS 202	Reservoir Geomechanics	3
GEOPHYS 210	Basic Earth Imaging	2-3
GEOPHYS 211	Environmental Soundings Image Estimation	3
GEOPHYS 240	Borehole Seismic Modeling and Imaging	3
GEOPHYS 257	Introduction to Computational Earth Sciences	1-4
GEOPHYS 260	Rock Physics for Reservoir Characterization	3
GEOPHYS 262	Rock Physics	3
GEOPHYS 280	3-D Seismic Imaging	2-3
GEOPHYS 281	Geophysical Inverse Problems	3
GEOPHYS 287	Earthquake Seismology	3-5
GEOPHYS 288A	Crustal Deformation	3-5
GEOPHYS 288B	Crustal Deformation	3-5
GEOPHYS 290	Tectonophysics	3
MATH 136	Stochastic Processes	3
MATH 205A	Real Analysis	3
MATH 215A	Algebraic Topology	3
MATH 236	Introduction to Stochastic Differential Equations	3
MATH 238	Mathematical Finance	3
ME 335A	Finite Element Analysis	3
ME 335B	Finite Element Analysis	3
ME 335C	Finite Element Analysis	3
ME 346B	Introduction to Molecular Simulations	3
ME 351A	Fluid Mechanics	3
ME 351B	Fluid Mechanics	3
ME 361	Turbulence	3
ME 408	Spectral Methods in Computational Physics	3
ME 469	Computational Methods in Fluid Mechanics	3
STATS 219	Stochastic Processes	3
STATS 250	Mathematical Finance	3
STATS 310A	Theory of Probability I	3
STATS 310B	Theory of Probability II	3
STATS 310C	Theory of Probability III	3
STATS 318	Modern Markov Chains	3
ENERGY 274		3

Courses

CME 10A. Explorations in Calculus. 1 Unit.
In this course, we will explore the big ideas of calculus, through open, visual, and creative mathematics tasks. Students will be invited to think about what calculus is all about and why it matters. This course will benefit all students ¿ whether or not you have taken a calculus class. Students will work collaboratively in problem solving through a supportive community of mathematics learners. This course has three goals ¿ to give you a different mathematics experience that could reshape your relationship with mathematics, to provide you with a basis for success in future courses at Stanford, and to teach you the important ideas that pervade calculus. As a community, we will cultivate the positive ideas and mindsets that shape productive learning.

CME 100. Vector Calculus for Engineers. 5 Units.
Computation and visualization using MATLAB. Differential vector calculus: vector-valued functions, analytic geometry in space, functions of several variables, partial derivatives, gradient, linearization, unconstrained maxima and minima, Lagrange multipliers and applications to trajectory simulation, least squares, and numerical optimization. Introduction to linear algebra: matrix operations, systems of algebraic equations with applications to coordinate transformations and equilibrium problems. Integral vector calculus: multiple integrals in Cartesian, cylindrical, and spherical coordinates, line integrals, scalar potential, surface integrals, Green's, divergence, and Stokes' theorems. Numerous examples and applications drawn from classical mechanics, fluid dynamics and electromagnetism. Prerequisites: knowledge of single-variable calculus equivalent to the content of Math 19-21 (e.g., 5 on Calc BC, 4 on Calc BC with Math 21, 5 on Calc AB with Math 21). Placement diagnostic (recommendation non-binding) at: https://exploredegrees.stanford.edu/undergraduatedegreesandprograms/#aptext.
Same as: ENGR 154

CME 100A. Vector Calculus for Engineers, ACE. 6 Units.
Students attend CME100/ENGR154 lectures with additional recitation sessions; two to four hours per week, emphasizing engineering mathematical applications and collaboration methods. Enrollment by department permission only. Prerequisite: must be enrolled in the regular CME100-01 or 02. Application at: https://engineering.stanford.edu/students/programs/engineering-diversity-programs/additional-calculus-engineers.

CME 102. Ordinary Differential Equations for Engineers. 5 Units.
Analytical and numerical methods for solving ordinary differential equations arising in engineering applications are presented. For analytical methods students learn to solve linear and non-linear first order ODEs; linear second order ODEs; and Laplace transforms. Numerical methods using MATLAB programming tool kit are also introduced to solve various types of ODEs including: first and second order ODEs, higher order ODEs, systems of ODEs, initial and boundary value problems, finite differences, and multi-step methods. This also includes accuracy and linear stability analyses of various numerical algorithms which are essential tools for the modern engineer. This class is foundational for professional careers in engineering and as a preparation for more advanced classes at the undergraduate and graduate levels. Prerequisites: knowledge of single-variable calculus equivalent to the content of Math 19-21 (e.g., 5 on Calc BC, 4 on Calc BC with Math 21, 5 on Calc AB with Math 21). Placement diagnostic (recommendation non-binding) at: https://exploredegrees.stanford.edu/undergraduatedegreesandprograms/#aptext.
Same as: ENGR 155A

CME 102A. Ordinary Differential Equations for Engineers, ACE. 6 Units.
Students attend CME102/ENGR155A lectures with additional recitation sessions; two to four hours per week, emphasizing engineering mathematical applications and collaboration methods. Prerequisite: students must be enrolled in the regular section (CME102) prior to submitting application at:nhttps://engineering.stanford.edu/students/programs/engineering-diversity-programs/additional-calculus-engineers.

CME 104. Linear Algebra and Partial Differential Equations for Engineers. 5 Units.
Linear algebra: systems of algebraic equations, Gaussian elimination, undetermined and overdetermined systems, coupled systems of ordinary differential equations, LU factorization, eigensystem analysis, normal modes. Linear independence, vector spaces, subspaces and basis. Numerical analysis applied to structural equilibrium problems, electrical networks, and dynamic systems. Fourier series with applications, partial differential equations arising in science and engineering, analytical solutions of partial differential equations. Applications in heat and mass transport, mechanical vibration and acoustic waves, transmission lines, and fluid mechanics. Numerical methods for solution of partial differential equations: iterative techniques, stability and convergence, time advancement, implicit methods, von Neumann stability analysis. Examples and applications drawn from a variety of engineering fields. Prerequisite: CME102/ENGR155A.
Same as: ENGR 155B

CME 104A. Linear Algebra and Partial Differential Equations for Engineers, ACE. 6 Units.
Students attend CME104/ENGR155B lectures with additional recitation sessions; two to four hours per week, emphasizing engineering mathematical applications and collaboration methods. Prerequisite: students must be enrolled in the regular section (CME104) prior to submitting application at: https://engineering.stanford.edu/students/programs/engineering-diversity-programs/additional-calculus-engineers.

CME 106. Introduction to Probability and Statistics for Engineers. 4 Units.
Probability: random variables, independence, and conditional probability; discrete and continuous distributions, moments, distributions of several random variables. Numerical simulation using Monte Carlo techniques. Topics in mathematical statistics: random sampling, point estimation, confidence intervals, hypothesis testing, non-parametric tests, regression and correlation analyses. Numerous applications in engineering, manufacturing, reliability and quality assurance, medicine, biology, and other fields. Prerequisite: CME100/ENGR154 or Math 51 or 52.
Same as: ENGR 155C

CME 107. Introduction to Machine Learning. 3-5 Units.
Introduction to machine learning. Formulation of supervised and unsupervised learning problems. Regression and classification. Data standardization and feature engineering. Loss function selection and its effect on learning. Regularization and its role in controlling complexity. Validation and overfitting. Robustness to outliers. Simple numerical implementation. Experiments on data from a wide variety of engineering and other disciplines. Undergraduate students should enroll for 5 units, and graduate students should enroll for 3 units. Prerequisites: ENGR 108; EE 178 or CS 109; CS106A or equivalent.
Same as: EE 104

CME 108. Introduction to Scientific Computing. 3 Units.
Introduction to Scientific Computing Numerical computation for mathematical, computational, physical sciences and engineering: error analysis, floating-point arithmetic, nonlinear equations, numerical solution of systems of algebraic equations, banded matrices, least squares, unconstrained optimization, polynomial interpolation, numerical differentiation and integration, numerical solution of ordinary differential equations, truncation error, numerical stability for time dependent problems and stiffness. Implementation of numerical methods in MATLAB programming assignments. Prerequisites: MATH 51, 52, 53; prior programming experience (MATLAB or other language at level of CS 106A or higher).
Same as: MATH 114

CME 151A. Interactive Data Visualization in D3. 1 Unit.
This four-week short course introduces D3, a powerful tool for creating interactive data visualizations on the web (d3js.org). The class is geared toward scientists and engineers who want to better communicate their personal projects and research through visualizations on the web. The class will cover the basics of D3: inputting data, creating scales and axes, and adding transitions and interactivity, as well as some of the most used libraries: stack, cluster and force layouts. The class will be based on short workshops and a final project. A background in programming methodology at the level of CS106A is assumed. The course will make use of Javascript, experience is recommended but not necessary.

CME 187. Mathematical Population Biology. 3 Units.
Mathematical models in population biology, in biological areas including demography, ecology, epidemiology, evolution, and genetics. Mathematical approaches include techniques in areas such as combinatorics, differential equations, dynamical systems, linear algebra, probability, and stochastic processes. Math 50 or 60 series is required, and at least two of (Bio 81, Bio 82, Bio 85) are strongly recommended.
Same as: BIO 187

CME 192. Introduction to MATLAB. 1 Unit.
This short course runs for the first four weeks/eight lectures of the quarter and is offered each quarter during the academic year. It is highly recommended for students with no prior programming experience who are expected to use MATLAB in math, science, or engineering courses. It will consist of interactive lectures and application-based assignments.nThe goal of the short course is to make students fluent in MATLAB and to provide familiarity with its wide array of features. The course covers an introduction of basic programming concepts, data structures, and control/flow; and an introduction to scientific computing in MATLAB, scripts, functions, visualization, simulation, efficient algorithm implementation, toolboxes, and more.

CME 193. Introduction to Scientific Python. 1 Unit.
This short course runs for the first four weeks of the quarter. It is recommended for students who are familiar with programming at least at the level of CS106A and want to translate their programming knowledge to Python with the goal of becoming proficient in the scientific computing and data science stack. Lectures will be interactive with a focus on real world applications of scientific computing. Technologies covered include Numpy, SciPy, Pandas, Scikit-learn, and others. Topics will be chosen from Linear Algebra, Optimization, Machine Learning, and Data Science. Prior knowledge of programming will be assumed, and some familiarity with Python is helpful, but not mandatory.

CME 195. Introduction to R. 1 Unit.
This short course runs for four weeks and is offered in fall and spring. It is recommended for students who want to use R in statistics, science or engineering courses, and for students who want to learn the basics of data science with R. The goal of the short course is to familiarize students with some of the most important R tools for data analysis. Lectures will focus on learning by example and assignments will be application-driven. No prior programming experience is assumed.
Same as: STATS 195

CME 197. Human-Centered Design Methods in Data Science. 1 Unit.
In today's society, the most pressing data science problems we face exist in a complex sociotechnical ecosystem and cannot be solved using the numbers alone. In this five-week short course, students will learn how to apply human-centered design methods to solve data science problems and how to pair traditional data with a diversity of other types of data to redefine problems and gain innovative insight. The course will focus on empathy-based frameworks to analyze data, problem definition and redefinition, and ideation. Additional skills in critique and storytelling will also be covered. Classes will be highly interactive and team-based. This course will offer skills in support of the teams working toward the Big Earth Hackathon Wildland Fire challenge (CEE 265H, EARTH 165H, EARTH 265H).
Same as: EARTH 197

CME 200. Linear Algebra with Application to Engineering Computations. 3 Units.
Computer based solution of systems of algebraic equations obtained from engineering problems and eigen-system analysis, Gaussian elimination, effect of round-off error, operation counts, banded matrices arising from discretization of differential equations, ill-conditioned matrices, matrix theory, least square solution of unsolvable systems, solution of non-linear algebraic equations, eigenvalues and eigenvectors, similar matrices, unitary and Hermitian matrices, positive definiteness, Cayley-Hamilton theory and function of a matrix and iterative methods. Prerequisite: familiarity with computer programming, and MATH51.
Same as: ME 300A

CME 204. Partial Differential Equations in Engineering. 3 Units.
Geometric interpretation of partial differential equation (PDE) characteristics; solution of first order PDEs and classification of second-order PDEs; self-similarity; separation of variables as applied to parabolic, hyperbolic, and elliptic PDEs; special functions; eigenfunction expansions; the method of characteristics. If time permits, Fourier integrals and transforms, Laplace transforms. Prerequisite: CME 200/ME 300A, equivalent, or consent of instructor.
Same as: ME 300B

CME 206. Introduction to Numerical Methods for Engineering. 3 Units.
Numerical methods from a user's point of view. Lagrange interpolation, splines. Integration: trapezoid, Romberg, Gauss, adaptive quadrature; numerical solution of ordinary differential equations: explicit and implicit methods, multistep methods, Runge-Kutta and predictor-corrector methods, boundary value problems, eigenvalue problems; systems of differential equations, stiffness. Emphasis is on analysis of numerical methods for accuracy, stability, and convergence. Introduction to numerical solutions of partial differential equations; Von Neumann stability analysis; alternating direction implicit methods and nonlinear equations. Prerequisites: CME 200/ME 300A, CME 204/ME 300B.
Same as: ME 300C

CME 209. Mathematical Modeling of Biological Systems. 3 Units.
The course covers mathematical and computational techniques needed to solve advanced problems encountered in applied bioengineering. Fundamental concepts are presented in the context of their application to biological and physiological problems including cancer, cardiovascular disease, infectious disease, and systems biology. Topics include Taylor's Series expansions, parameter estimation, regression, nonlinear equations, linear systems, optimization, numerical differentiation and integration, stochastic methods, ordinary differential equations and Fourier series. Python, Matlab and other software will be used for weekly assignments and projects.nPrerequisites: Math 51, 52, 53; prior programming experience (Matlab or other language at level of CS 106a or higher).
Same as: BIOE 209

CME 211. Software Development for Scientists and Engineers. 3 Units.
Basic usage of the Python and C/C++ programming languages are introduced and used to solve representative computational problems from various science and engineering disciplines. Software design principles including time and space complexity analysis, data structures, object-oriented design, decomposition, encapsulation, and modularity are emphasized. Usage of campus wide Linux compute resources: login, file system navigation, editing files, compiling and linking, file transfer, etc. Versioning and revision control, software build utilities, and the LaTeX typesetting software are introduced and used to help complete programming assignments. Prerequisite: introductory programming course equivalent to CS 106A or instructor consent.

CME 212. Advanced Software Development for Scientists and Engineers. 3 Units.
Advanced topics in software development, debugging, and performance optimization are covered. The capabilities and usage of common libraries and frameworks such as BLAS, LAPACK, FFT, PETSc, and MKL/ACML are reviewed. Computer representation of integer and floating point numbers, and interoperability between C/C++ and Fortran is described. More advanced software engineering topics including: representing data in files, signals, unit and regression testing, and build automation. The use of debugging tools including static analysis, gdb, and Valgrind are introduced. An introduction to computer architecture covering processors, memory hierarchy, storage, and networking provides a foundation for understanding software performance. Profiles generated using gprof and perf are used to help guide the performance optimization process. Computational problems from various science and engineering disciplines will be used in assignments. Prerequisites: CME 200 / ME 300A and CME 211.

CME 213. Introduction to parallel computing using MPI, openMP, and CUDA. 3 Units.
This class will give hands-on experience with programming multicore processors, graphics processing units (GPU), and parallel computers. The focus will be on the message passing interface (MPI, parallel clusters) and the compute unified device architecture (CUDA, GPU). Topics will include multithreaded programs, GPU computing, computer cluster programming, C++ threads, OpenMP, CUDA, and MPI. Pre-requisites include C++, templates, debugging, UNIX, makefile, numerical algorithms (differential equations, linear algebra).
Same as: ME 339

CME 214. Software Design in Modern Fortran for Scientists and Engineers. 3 Units.
This course introduces software design and development in modern Fortran. Course covers the functional, object-oriented-, and parallel programming features introduced in the Fortran 95, 2003, and 2008 standards, respectively, in the context of numerical approximations to ordinary and partial differential equations; introduces object-oriented design and design schematics based on the Unified Modeling Language (UML) structure, behavior, and interaction diagrams; cover the basic use of several open-source tools for software building, testing, documentation generation, and revision control. Recommended: Familiarity with programming in Fortran 90, basic numerical analysis and linear algebra, or instructor approval.
Same as: EARTH 214

CME 215A. Advanced Computational Fluid Dynamics. 3 Units.
High resolution schemes for capturing shock waves and contact discontinuities; upwinding and artificial diffusion; LED and TVD concepts; alternative flow splittings; numerical shock structure. Discretization of Euler and Navier Stokes equations on unstructured meshes; the relationship between finite volume and finite element methods. Time discretization; explicit and implicit schemes; acceleration of steady state calculations; residual averaging; math grid preconditioning. Automatic design; inverse problems and aerodynamic shape optimization via adjoint methods. Pre- or corequisite: 214B or equivalent.
Same as: AA 215A

CME 215B. Advanced Computational Fluid Dynamics. 3 Units.
High resolution schemes for capturing shock waves and contact discontinuities; upwinding and artificial diffusion; LED and TVD concepts; alternative flow splittings; numerical shock structure. Discretization of Euler and Navier Stokes equations on unstructured meshes; the relationship between finite volume and finite element methods. Time discretization; explicit and implicit schemes; acceleration of steady state calculations; residual averaging; math grid preconditioning. Automatic design; inverse problems and aerodynamic shape optimization via adjoint methods. Pre- or corequisite: 214B or equivalent.
Same as: AA 215B

CME 216. Machine Learning for Computational Engineering.. 3 Units.
Linear and kernel support vector machines, deep learning, deep neural networks, generative adversarial networks, physics-based machine learning, forward and reverse mode automatic differentiation, optimization algorithms for machine learning, TensorFlow, PyTorch.
Same as: ME 343

CME 217. Analytics Accelerator. 1-3 Unit.
This is a multidisciplinary graduate level course designed to give students hands-on experience working in teams through real-world project-based research and experiential classroom activities. Students work in dynamic teams with the support of course faculty and mentors, researching preselected topics focused on COVID-19 during fall 2020 with the option to continue into winter 2021. Students apply a computational and data analytics lens and will use design thinking methodology. The course exposes students to ethics, emotional intelligence, unintended consequences of their work and team building supported by relevant lectures on data science and med/bio topics. Pre-requisites: none.nThe course application generally opens 5-6 weeks before registration for each quarter. If you missed the application for the quarter, please submit your application anyway to be added to the waitlist and to receive information regarding upcoming quarters. https://forms.gle/oLtUe7dMKGy8bb2Z9.
Same as: BIODS 217

CME 232. Introduction to Computational Mechanics. 3 Units.
Provides an introductory overview of modern computational methods for problems arising primarily in mechanics of solids and is intended for students from various engineering disciplines. The course reviews the basic theory of linear solid mechanics and introduces students to the important concept of variational forms, including the principle of minimum potential energy and the principles of virtual work. Specific model problems that will be considered include deformation of bars, beams and membranes, plates, and problems in plane elasticity (plane stress, plane strain, axisymmetric elasticity). The variational forms of these problems are used as the starting point for developing the finite element method (FEM) and boundary element method (BEM) approaches providing an important connection between mechanics and computational methods.
Same as: ME 332

CME 241. Reinforcement Learning for Stochastic Control Problems in Finance. 3 Units.
This course will explore a few problems in Mathematical Finance through the lens of Stochastic Control, such as Portfolio Management, Derivatives Pricing/Hedging and Order Execution. For each of these problems, we formulate a suitable Markov Decision Process (MDP), develop Dynamic Programming (DP) solutions, and explore Reinforcement Learning (RL) algorithms. The course emphasizes the theory of DP/RL as well as modeling the practical nuances of these finance problems, and strengthening the understanding through plenty of coding exercises of the methods. No pre-requisite coursework expected, but a foundation in undergraduate Probability, basic familiarity with Finance, and Python coding skills are required. Dynamic Programming or Reinforcement Learning background not required.
Same as: MS&E 346

CME 243. Risk Analytics and Management in Finance and Insurance. 2-4 Units.
Market risk and credit risk, credit markets. Back testing, stress testing and Monte Carlo methods. Logistic regression, generalized linear models and generalized mixed models. Loan prepayment and default as competing risks. Survival and hazard functions, correlated default intensities, frailty and contagion. Risk surveillance, early warning and adaptive control methodologies. Banking and bank regulation, asset and liability management. Prerequisite: STATS 240 or equivalent.
Same as: STATS 243

CME 245. Topics in Mathematical and Computational Finance. 1 Unit.
Description: Current topics for enrolled students in the MCF program: This course is an introduction to computational, statistical, and optimizations methods and their application to financial markets. Class will consist of lectures and real-time problem solving. Topics: Python & R programming, interest rates, Black-Scholes model, financial time series, capital asset pricing model (CAPM), options, optimization methods, and machine learning algorithms. Appropriate for anyone with a technical and solid applied math background interested in honing skills in quantitative finance. Prerequisite: basic statistics and exposure to programming.Can be repeated up to three times.

CME 249. Using Design for Effective Data Analysis. 1 Unit.
Teams of students use techniques in applied and computational mathematics to tackle problems with real world data sets. Application of design methodology adapted for data analysis will be emphasized; leverage design thinking to come up with efficient and effective data driven insights; explore design thinking methodology in small group setting.;apply design thinking to a specific data centric problem and make professional group presentation of the results. Limited enrollment. Prerequisites: CME100/102/104 or equivalents, or instructor consent. Recommended:CME106/108 and familiarity with programming at the level of CME 192/193.

CME 250. Introduction to Machine Learning. 1 Unit.
A Short course presenting the principles behind when, why, and how to apply modern machine learning algorithms. We will discuss a framework for reasoning about when to apply various machine learning techniques, emphasizing questions of over-fitting/under-fitting, regularization, interpretability, supervised/unsupervised methods, and handling of missing data. The principles behind various algorithms–the why and how of using them–will be discussed, while some mathematical detail underlying the algorithms–including proofs–will not be discussed. Unsupervised machine learning algorithms presented will include k-means clustering, principal component analysis (PCA), and independent component analysis (ICA). Supervised machine learning algorithms presented will include support vector machines (SVM), classification and regression trees (CART), boosting, bagging, and random forests. Imputation, the lasso, and cross-validation concepts will also be covered. The R programming language will be used for examples, though students need not have prior exposure to R. Prerequisite: undergraduate-level linear algebra and statistics; basic programming experience (R/Matlab/Python).

CME 250A. Machine Learning on Big Data. 1 Unit.
A short course presenting the application of machine learning methods to large datasets.Topics include: brief review of the common issues of machine learning, such as, memorizing/overfitting vs learning, test/train splits, feature engineering, domain knowledge, fast/simple/dumb learners vs slow/complex/smart learners; moving your model from your laptop into a production environment using Python (scikit) or R on small data (laptop sized) at first; building math clusters using the open source H2O product to tackle Big Data, and finally to some model building on terabyte sized datasets. Prereqresites: basic knowledge of statistics, matrix algebra, and unix-like operating systems; basic file and text manipulation skills with unix tools: pipes, cut, paste, grep, awk, sed, sort, zip; programming skill at the level of CME211 or CS106A.

CME 250Q. Introduction to Quantum Computing and Quantum Algorithms. 1 Unit.
This course will cover the basic formalism of quantum states and quantum measurements, and introduce the circuit model of quantum computation. Basic results such as the Solovay-Kitaev theorem, no-cloning theorem, quantum entanglement and Bell's inequality will be discussed followed by the quantum Fourier transform (QFT) and quantum phase estimation (QPE), and cover some of its important applications such as the celebrated Shor's algorithm for integer factorization (other applications will be mentioned but not discussed in detail), Grover's algorithm for quantum search is covered next, and lower bounds for query complexity in this context; some basic concepts of quantum error correction and quantum entropy, distance between quantum states, subadditivity and strong subadditivity of von Neumann quantum entropy will also be covered. Time permitting, we will discuss some advanced algorithms such as the HHL algorithm for matrix inversion, VQE (variational quantum eigensolver) and the QAOA algorithm for optimization. Requires programming in Python, where the goal will be to familiarize the students to available software for quantum algorithm development, existing libraries, and also run some simple programs on a real quantum computer. Prerequisites: Linear algebra at the level of CME 200 / MATH 104, basic knowledge of group theory, and programming in Python. Additionally, some knowledge of real analysis will be helpful.

CME 251. Geometric and Topological Data Analysis. 3 Units.
Mathematical and computational tools for the analysis of data with geometric content, such images, videos, 3D scans, GPS traces -- as well as for other data embedded into geometric spaces. Global and local geometry descriptors allowing for various kinds of invariances. The rudiments of computational topology and persistent homology on sampled spaces. Clustering and other unsupervised techniques. Spectral methods for graph data. Linear and non-linear dimensionality reduction techniques. Alignment, matching, and map computation between geometric data sets. Function spaces and functional maps. Networks of data sets and joint analysis for segmentation and labeling. Deep learning on irregular geometric data. Prerequisites: discrete algorithms at the level of CS161; linear algebra at the level of Math51 or CME103.
Same as: CS 233

CME 253. Introduction to GPU Computing and CUDA. 1 Unit.
Covers the fundamentals of accelerating applications with GPUs (Graphics Processing Units); GPU programming with CUDA and OpenACC, debugging, thrust/CUB, profiling, optimization, debugging, and other CUDA tools. Libraries to easily accelerate compute code will be presented and deployment on larger systems will be addressed, including multi-GPU environments. Several practical examples will be detailed, including deep learning. Pre-requiste: knowledge of C/C++ at the level of CME211 or CS106b.

CME 257. Advanced Topics in Scientific Computing with Julia. 1 Unit.
This course will rapidly introduce students to the Julia programming language, with the goal of giving students the knowledge and experience necessary to navigate the language and package ecosystem while using Julia for their own scientific computing needs. The course will begin with learning the basics of Julia, and then introduce students to git version control and package development. Additional topics include: common packages, parallelism, interfacing with shared object libraries, and aspects of Julia's implementation (e.g. core numerical linear algebra). Lectures will be interactive, with an emphasis on collaboration and learning by example. Prerequisites: Data structures at the level of CS106B, experience with one or more scientific computing languages (e.g. Python, Matlab, or R), and some familiarity with the Unix shell. No prior experience with Julia or git is required.

CME 262. Imaging with Incomplete Information. 3-4 Units.
Statistical and computational methods for inferring images from incomplete data. Bayesian inference methods are used to combine data and quantify uncertainty in the estimate. Fast linear algebra tools are used to solve problems with many pixels and many observations. Applications from several fields but mainly in earth sciences. Prerequisites: Linear algebra and probability theory.
Same as: CEE 362G

CME 263. Introduction to Linear Dynamical Systems. 3 Units.
Applied linear algebra and linear dynamical systems with applications to circuits, signal processing, communications, and control systems. Topics: least-squares approximations of over-determined equations, and least-norm solutions of underdetermined equations. Symmetric matrices, matrix norm, and singular-value decomposition. Eigenvalues, left and right eigenvectors, with dynamical interpretation. Matrix exponential, stability, and asymptotic behavior. Multi-input/multi-output systems, impulse and step matrices; convolution and transfer-matrix descriptions. Control, reachability, and state transfer; observability and least-squares state estimation. Prerequisites: Linear algebra and matrices as in ENGR 108 or MATH 104; ordinary differential equations and Laplace transforms as in EE 102B or CME 102.
Same as: EE 263

CME 279. Computational Biology: Structure and Organization of Biomolecules and Cells. 3 Units.
Computational techniques for investigating and designing the three-dimensional structure and dynamics of biomolecules and cells. These computational methods play an increasingly important role in drug discovery, medicine, bioengineering, and molecular biology. Course topics include protein structure prediction, protein design, drug screening, molecular simulation, cellular-level simulation, image analysis for microscopy, and methods for solving structures from crystallography and electron microscopy data. Prerequisites: elementary programming background (CS 106A or equivalent) and an introductory course in biology or biochemistry.
Same as: BIOE 279, BIOMEDIN 279, BIOPHYS 279, CS 279

CME 285. Computational Modeling in the Cardiovascular System. 3 Units.
This course introduces computational modeling methods for cardiovascular blood flow and physiology. Topics in this course include analytical and computational methods for solutions of flow in deformable vessels, one-dimensional equations of blood flow, cardiovascular anatomy, lumped parameter models, vascular trees, scaling laws, biomechanics of the circulatory system, and 3D patient specific modeling with finite elements; course will provide an overview of the diagnosis and treatment of adult and congenital cardiovascular diseases and review recent research in the literature in a journal club format. Students will use SimVascular software to do clinically-oriented projects in patient specific blood flow simulations. Pre-requisites: CME102, ME133 and CME192.
Same as: BIOE 285, ME 285

CME 291. Master's Research. 1-6 Unit.
Students require faculty sponsor. (Staff).

CME 292. Advanced MATLAB for Scientific Computing. 1 Unit.
Short course running first four weeks of the quarter (8 lectures) with interactive online lectures and application based assignment. Students will access the lectures and assignments on https://suclass.stanford.edu. Students will be introduced to advanced MATLAB features, syntaxes, and toolboxes not traditionally found in introductory courses. Material will be reinforced with in-class examples, demos, and homework assignment involving topics from scientific computing. MATLAB topics will be drawn from: advanced graphics (2D/3D plotting, graphics handles, publication quality graphics, animation), MATLAB tools (debugger, profiler), code optimization (vectorization, memory management), object-oriented programming, compiled MATLAB (MEX files and MATLAB coder), interfacing with external programs, toolboxes (optimization, parallel computing, symbolic math, PDEs). Scientific computing topics will include: numerical linear algebra, numerical optimization, ODEs, and PDEs.

CME 298. Basic Probability and Stochastic Processes with Engineering Applications. 3 Units.
Calculus of random variables and their distributions with applications. Review of limit theorems of probability and their application to statistical estimation and basic Monte Carlo methods. Introduction to Markov chains, random walks, Brownian motion and basic stochastic differential equations with emphasis on applications from economics, physics and engineering, such as filtering and control. Prerequisites: exposure to basic probability.
Same as: MATH 158

CME 300. First Year Seminar Series. 1 Unit.
Required for first-year ICME Ph.D. students; recommended for first-year ICME M.S. students. Presentations about research at Stanford by faculty and researchers from Engineering, H&S, and organizations external to Stanford. May be repeated for credit.

CME 302. Numerical Linear Algebra. 3 Units.
Solution of linear systems, accuracy, stability, LU, Cholesky, QR, least squares problems, singular value decomposition, eigenvalue computation, iterative methods, Krylov subspace, Lanczos and Arnoldi processes, conjugate gradient, GMRES, direct methods for sparse matrices. Prerequisites: CME 108, MATH 114, MATH 104.

CME 303. Partial Differential Equations of Applied Mathematics. 3 Units.
First-order partial differential equations; method of characteristics; weak solutions; elliptic, parabolic, and hyperbolic equations; Fourier transform; Fourier series; and eigenvalue problems. Prerequisite: Basic coursework in multivariable calculus and ordinary differential equations, and some prior experience with a proof-based treatment of the material as in Math 171 or Math 61CM.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.
Same as: MATH 220

CME 305. Discrete Mathematics and Algorithms. 3 Units.
Topics: Basic Algebraic Graph Theory, Matroids and Minimum Spanning Trees, Submodularity and Maximum Flow, NP-Hardness, Approximation Algorithms, Randomized Algorithms, The Probabilistic Method, and Spectral Sparsification using Effective Resistances. Topics will be illustrated with applications from Distributed Computing, Machine Learning, and large-scale Optimization. Prerequisites: CS 261 is highly recommended, although not required.
Same as: MS&E 316

CME 306. Numerical Solution of Partial Differential Equations. 3 Units.
Hyperbolic partial differential equations: stability, convergence and qualitative properties; nonlinear hyperbolic equations and systems; combined solution methods from elliptic, parabolic, and hyperbolic problems. Examples include: Burger's equation, Euler equations for compressible flow, Navier-Stokes equations for incompressible flow. Prerequisites: MATH 220 or CME 302.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.
Same as: MATH 226

CME 307. Optimization. 3 Units.
Applications, theories, and algorithms for finite-dimensional linear and nonlinear optimization problems with continuous variables. Elements of convex analysis, first- and second-order optimality conditions, sensitivity and duality. Algorithms for unconstrained optimization, and linearly and nonlinearly constrained problems. Modern applications in communication, game theory, auction, and economics. Prerequisites: MATH 113, 115, or equivalent.
Same as: MS&E 311

CME 308. Stochastic Methods in Engineering. 3 Units.
The basic limit theorems of probability theory and their application to maximum likelihood estimation. Basic Monte Carlo methods and importance sampling. Markov chains and processes, random walks, basic ergodic theory and its application to parameter estimation. Discrete time stochastic control and Bayesian filtering. Diffusion approximations, Brownian motion and an introduction to stochastic differential equations. Examples and problems from various applied areas. Prerequisites: exposure to probability and background in analysis.
Same as: MATH 228, MS&E 324

CME 309. Randomized Algorithms and Probabilistic Analysis. 3 Units.
Randomness pervades the natural processes around us, from the formation of networks, to genetic recombination, to quantum physics. Randomness is also a powerful tool that can be leveraged to create algorithms and data structures which, in many cases, are more efficient and simpler than their deterministic counterparts. This course covers the key tools of probabilistic analysis, and application of these tools to understand the behaviors of random processes and algorithms. Emphasis is on theoretical foundations, though we will apply this theory broadly, discussing applications in machine learning and data analysis, networking, and systems. Topics include tail bounds, the probabilistic method, Markov chains, and martingales, with applications to analyzing random graphs, metric embeddings, random walks, and a host of powerful and elegant randomized algorithms. Prerequisites: CS 161 and STAT 116, or equivalents and instructor consent.
Same as: CS 265

CME 321A. Mathematical Methods of Imaging. 3 Units.
Image denoising and deblurring with optimization and partial differential equations methods. Imaging functionals based on total variation and l-1 minimization. Fast algorithms and their implementation.
Same as: MATH 221A

CME 321B. Mathematical Methods of Imaging. 3 Units.
Array imaging using Kirchhoff migration and beamforming, resolution theory for broad and narrow band array imaging in homogeneous media, topics in high-frequency, variable background imaging with velocity estimation, interferometric imaging methods, the role of noise and inhomogeneities, and variational problems that arise in optimizing the performance of array imaging algorithms.
Same as: MATH 221B

CME 322. Spectral Methods in Computational Physics. 3 Units.
Data analysis, spectra and correlations, sampling theorem, nonperiodic data, and windowing; spectral methods for numerical solution of partial differential equations; accuracy and computational cost; fast Fourier transform, Galerkin, collocation, and Tau methods; spectral and pseudospectral methods based on Fourier series and eigenfunctions of singular Sturm-Liouville problems; Chebyshev, Legendre, and Laguerre representations; convergence of eigenfunction expansions; discontinuities and Gibbs phenomenon; aliasing errors and control; efficient implementation of spectral methods; spectral methods for complicated domains; time differencing and numerical stability.
Same as: ME 408

CME 323. Distributed Algorithms and Optimization. 3 Units.
The emergence of clusters of commodity machines with parallel processing units has brought with it a slew of new algorithms and tools. Many fields such as Machine Learning and Optimization have adapted their algorithms to handle such clusters. Topics include distributed and parallel algorithms for: Optimization, Numerical Linear Algebra, Machine Learning, Graph analysis, Streaming algorithms, and other problems that are challenging to scale on a commodity cluster. The class will focus on analyzing parallel and distributed programs, with some implementation using Apache Spark and TensorFlow. Recommended prerequisites: Discrete math at the level of CS 161 and programming at the level of CS 106A.

CME 328. Advanced Topics in Partial Differential Equations. 3 Units.
Contents change each time and is taught as a topics course, most likely by a faculty member visiting from another institution. May be repeated for credit. Topic in 2012-13: numerical solution of time-dependent partial differential equations is a fundamental tool for modeling and prediction in many areas of science and engineering. In this course we explore the stability, accuracy, efficiency, and appropriateness of specialized temporal integration strategies for different classes of partial differential equations including stiff problems and fully implicit methods, operator splitting and semi-implicit methods, extrapolation methods, multirate time integration, multi-physics problems, symplectic integration, and temporal parallelism. Prerequisites: recommended CME303 and 306 or with instructor's consent.

CME 330. Applied Mathematics in the Chemical and Biological Sciences. 3 Units.
Mathematical solution methods via applied problems including chemical reaction sequences, mass and heat transfer in chemical reactors, quantum mechanics, fluid mechanics of reacting systems, and chromatography. Topics include generalized vector space theory, linear operator theory with eigenvalue methods, phase plane methods, perturbation theory (regular and singular), solution of parabolic and elliptic partial differential equations, and transform methods (Laplace and Fourier). Prerequisites: CME 102/ENGR 155A and CME 104/ENGR 155B, or equivalents.
Same as: CHEMENG 300

CME 335. Advanced Topics in Numerical Linear Algebra. 3 Units.
Possible topics: Classical and modern (e.g., focused on provable communication minimization) algorithms for executing dense and sparse-direct factorizations in high-performance, distributed-memory environments; distributed dense eigensolvers, dense and sparse-direct triangular solvers, and sparse matrix-vector multiplication; unified analysis of distributed Interior Point Methods for symmetric cones via algorithms for distributing Jordan algebras over products of second-order cones and Hermitian matrices. May be repeated for credit. Prerequisites: CME 302 and CME 304 (or equivalents).

CME 342. Parallel Methods in Numerical Analysis. 3 Units.
Emphasis is on techniques for obtaining maximum parallelism in numerical algorithms, especially those occurring when solving matrix problems, partial differential equations, and the subsequent mapping onto the computer. Implementation issues on parallel computers. Topics: parallel architecture, programming models (MPI, GPU Computing with CUDA ¿ quick review), matrix computations, FFT, fast multiple methods, domain decomposition, graph partitioning, discrete algorithms. Prerequisites: 302 or 200 (ME 300A), 213 or equivalent, or consent of instructor. Recommended: differential equations and knowledge of a high-level programming language such as C or C++ (F90/95 also allowable).

CME 345. Model Reduction. 3 Units.
Model reduction is an indispensable tool for computational-based design and optimization, statistical analysis, embedded computing, and real-time optimal control. This course presents the basic mathematical theory for projection-based model reduction. Topics include: notions of linear dynamical systems and projection; projection-based model reduction; error analysis; proper orthogonal decomposition; Hankel operator and balancing of a linear dynamical system; balanced truncation method: modal truncation and other reduction methods for linear oscillators; model reduction via moment matching methods based on Krylov subspaces; introduction to model reduction of parametric systems and notions of nonlinear model reduction. Course material is complemented by a balanced set of theoretical, algorithmic and Matlab computer programming assignments. Prerequisites: CME 200 or equivalent, CME 263 or equivalent and basic numerical methods for ODEs.

CME 364A. Convex Optimization I. 3 Units.
Convex sets, functions, and optimization problems. The basics of convex analysis and theory of convex programming: optimality conditions, duality theory, theorems of alternative, and applications. Least-squares, linear and quadratic programs, semidefinite programming, and geometric programming. Numerical algorithms for smooth and equality constrained problems; interior-point methods for inequality constrained problems. Applications to signal processing, communications, control, analog and digital circuit design, computational geometry, statistics, machine learning, and mechanical engineering. Prerequisite: linear algebra such as EE263, basic probability.
Same as: EE 364A

CME 364B. Convex Optimization II. 3 Units.
Continuation of 364A. Subgradient, cutting-plane, and ellipsoid methods. Decentralized convex optimization via primal and dual decomposition. Monotone operators and proximal methods; alternating direction method of multipliers. Exploiting problem structure in implementation. Convex relaxations of hard problems. Global optimization via branch and bound. Robust and stochastic optimization. Applications in areas such as control, circuit design, signal processing, and communications. Course requirements include project. Prerequisite: 364A.
Same as: EE 364B

CME 371. Computational Biology in Four Dimensions. 3 Units.
Cutting-edge research on computational techniques for investigating and designing the three-dimensional structure and dynamics of biomolecules, cells, and everything in between. These techniques, which draw on approaches ranging from physics-based simulation to machine learning, play an increasingly important role in drug discovery, medicine, bioengineering, and molecular biology. Course is devoted primarily to reading, presentation, discussion, and critique of papers describing important recent research developments. Prerequisite: CS 106A or equivalent, and an introductory course in biology or biochemistry. Recommended: some experience in mathematical modeling (does not need to be a formal course).
Same as: BIOMEDIN 371, BIOPHYS 371, CS 371

CME 372. Applied Fourier Analysis and Elements of Modern Signal Processing. 3 Units.
Introduction to the mathematics of the Fourier transform and how it arises in a number of imaging problems. Mathematical topics include the Fourier transform, the Plancherel theorem, Fourier series, the Shannon sampling theorem, the discrete Fourier transform, and the spectral representation of stationary stochastic processes. Computational topics include fast Fourier transforms (FFT) and nonuniform FFTs. Applications include Fourier imaging (the theory of diffraction, computed tomography, and magnetic resonance imaging) and the theory of compressive sensing. NOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.
Same as: MATH 262

CME 375. Advanced Topics in Convex Optimization. 3 Units.
Modern developments in convex optimization: semidefinite programming; novel and efficient first-order algorithms for smooth and nonsmooth convex optimization. Emphasis on numerical methods suitable for large scale problems arising in science and engineering. Prerequisites: convex optimization (EE 364), linear algebra (Math 104), numerical linear algebra (CME 302); background in probability, statistics, real analysis and numerical optimization.
Same as: MATH 301

CME 390. Curricular Practical Training. 1 Unit.
Educational opportunities in high technology research and development labs in applied mathematics. Qualified ICME students engage in internship work and integrate that work into their academic program. Students register during the quarter they are employed and complete a research report outlining their work activity, problems investigated, results, and follow-on projects they expect to perform. May be repeated three times for credit.

CME 390A. Curricular Practical Training. 1 Unit.
Educational opportunities in high technology research and development labs in applied mathematics. Qualified ICME Ph.D. students engage in internship work and integrate that work into their academic program. Students register during the quarter they are employed and complete a research report outlining their work activity, problems investigated, results, and follow-on projects they expect to perform.

CME 399. Special Research Topics in Computational and Mathematical Engineering. 1-15 Unit.
Graduate-level research work not related to report, thesis, or dissertation. May be repeated for credit.

CME 400. Ph.D. Research. 1-15 Unit.
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CME 444. Computational Consulting. 1-3 Unit.
Advice by graduate students under supervision of ICME faculty. Weekly briefings with faculty adviser and associated faculty to discuss ongoing consultancy projects and evaluate solutions. May be repeated for credit.

CME 500. Departmental Seminar. 1 Unit.
This seminar series in winter quarter will explore how ICME coursework and research is applied in various organizations around the world. It will feature speakers from ICME affiliate companies and ICME alumni giving technical talks on their use of computational math in their current roles. May be repeated for credit.

CME 801. TGR Project. 0 Units.
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CME 802. TGR Dissertation. 0 Units.
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MANAGEMENT SCIENCE AND ENGINEERING

Courses offered by the Department of Management Science and Engineering are listed under the subject code MS&E on the (https://explorecourses.stanford.edu/search/?view=catalog&academicYear=&page=0&q=MS%26E&filter-departmentcode-MS%26E=on&filter-coursestatus-Active=on&filter-term-Autumn=on)*Stanford Bulletin's* ExploreCourses web site.

The Department of Management Science and Engineering leads at the interface of engineering, business, and public policy. The department's mission is, through education and research, to advance the design, management, operation, and interaction of technological, economic, and social systems. The department's engineering research strength is integrated with its educational program at the undergraduate, master's, and doctoral levels: graduates of the program are trained as engineers and future leaders in technology, policy, and industry. Research and teaching activities are complemented by an outreach program that encourages the transfer of ideas to the environment of Silicon Valley and beyond.

Management Science and Engineering (MS&E) provides programs of education and research by integrating three basic strengths:

1. depth in conceptual and analytical foundations
2. comprehensive coverage of functional areas of application
3. interaction with other Stanford departments, Silicon Valley industry, and organizations throughout the world.

The analytical and conceptual foundations include decision and risk analysis, dynamic systems, economics, optimization, organizational science, and stochastic systems. The functional areas of application include entrepreneurship, finance, information, marketing, organizational behavior, policy, production, and strategy. Close associations with other engineering departments and with industry enrich the programs by providing opportunities to apply MS&E methods to important problems and by motivating new theoretical developments from practical experience. MS&E's programs also provide a basis for contributing to other areas such as biotechnology, defense policy, environmental policy, information systems, and telecommunications.

Mission of the Undergraduate Program in Management Science and Engineering

The mission of the undergraduate program in Management Science and Engineering is to provide students with the fundamentals of engineering systems analysis so that they are able to plan, design, and implement complex economic and technical management systems. The program builds on foundational courses in calculus and linear algebra. Students complete core courses in mathematical modeling, systems analysis, organization theory, optimization, probability, statistics, ethics, accounting, computer science, and economics, leading to a capstone senior project. To personalize their exploration, students select additional courses from different application areas of the department, with greater emphasis in one of them. The major prepares students for a variety of career paths, including investment banking, management consulting, facilities and process management, or for graduate school in industrial engineering, operations research, business, economics, law, medicine, or public policy.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to be able:

1. to apply knowledge of mathematics, social science, and engineering;
2. to design and conduct experiments;
3. to design a system and components to meet desired needs;
4. to identify, formulate, and solve engineering problems;
5. to use techniques, skills, and modern engineering tools necessary for engineering practice;
6. to function on multidisciplinary teams;
7. to communicate effectively;
8. to recognize the need for and demonstrate an ability to engage in life-long learning;
9. to obtain the background necessary for admission to top graduate engineering or professional programs;
10. to understand professional and ethical responsibility;
11. to obtain the broad education necessary to understand the impact of engineering solutions in a global and societal context; and
12. to obtain a knowledge of contemporary issues pertinent to the field of management science and engineering.

Graduate Programs in Management Science and Engineering

MS&E offers programs leading to the degrees of Master of Science and Doctor of Philosophy. The department also offers a coterminal B.S./M.S. degree, a dual master's degree in cooperation with each of the other departments in the School of Engineering, and joint master's degrees with the School of Law and the Public Policy Program.

For University coterminal degree program rules and University application forms, see the Registrar's coterminal degrees web site (http://studentaffairs.stanford.edu/registrar/publications/#Coterm).

Applicants for admission as graduate students in MS&E are required to submit the results of the verbal reasoning, quantitative reasoning, and analytical writing sections of the Graduate Record Examination General Test (GRE). The deadline for application to the doctoral program is December 3, 2019, and the deadline for application to the master's program is January 14, 2020.

Except in unusual circumstances, admission is limited to the Autumn Quarter because courses are arranged sequentially with basic courses and prerequisites offered early in the academic year.

Assistantships and Fellowships

A limited number of fellowships and assistantships are awarded each year. Applicants admitted to the doctoral program, who have indicated on their application that they would like to be considered for financial aid, are automatically considered for these assistantships and fellowships. New and returning master's students may apply for course assistantships each quarter, but priority is given to MS&E doctoral students.

Information about loan programs and need-based aid for U.S. citizens and permanent residents can be obtained from the Financial Aid Office.

Learning Outcomes (Graduate)

The M.S. prepares engineers for a lifelong career addressing the critical technical and managerial needs of private and public organizations. The program emphasizes developing analytic abilities, making better decisions, developing and executing strategies while also leading people who innovate. Unlike an M.B.A., our master's program addresses the technical as well as the behavioral challenges of running organizations

and complex systems. We emphasize quantitative analytic skills and an entrepreneurial spirit.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research. Through course work and guided research, the program prepares students to make original contributions in Management Science and Engineering and related fields.

Careers in MS&E

MS&E students are candidates for careers in consulting, product and project management, financial analysis, and work in policy arenas. A significant number join or found start-ups. Many have become leaders in technology-based businesses which have an increasing need for analytically oriented people who understand both business and technology. Other graduates make careers tackling the problems faced by local, national, and international governments by developing new healthcare systems, new energy systems and a more sustainable environment. The major problems of the day demand an ability to integrate the technical, social and economic ways of thinking. This is precisely what the department educates its students to do.

Bachelor of Science in Management Science and Engineering

The program leading to the B.S. degree in Management Science and Engineering (MS&E) is outlined in the School of Engineering section of this bulletin; more information is contained in the School of Engineering's *Handbook for Undergraduate Engineering Programs*. Students are encouraged to plan their academic programs as early as possible, ideally in the freshman or sophomore year. Students should not wait until they are declaring a major to consult with the department's student services staff. This is particularly important for students who would like to study overseas or pursue another major or minor.

The undergraduate curriculum in Management Science and Engineering provides students training in the fundamentals of engineering systems analysis to prepare them to plan, design, and implement complex economic and technological management systems where a scientific or engineering background is necessary or desirable. The major prepares students for a variety of career paths, including investment banking, management consulting, facilities and process management, or for graduate school in industrial engineering, operations research, business, economics, law, medicine, or public policy.

The educational objectives of the undergraduate degree program are:

- *Principles and Skills*—provide students with a basic understanding of management science and engineering principles, including analytical problem solving and communications skills.
- *Preparation for Practice*—prepare students for practice in a field that sees rapid changes in tools, problems, and opportunities.
- *Preparation for Continued Growth*—prepare students for graduate study and self development over an entire career.
- *Preparation for Service*—develop in students the awareness, background, and skills necessary to become responsible citizens, employees, and leaders.

See also the department's undergraduate Learning Outcomes (p.) for additional learning objectives.

Students interested in a minor should see the Minor tab in this section.

MS&E also participates with the departments of Computer Science, Mathematics, and Statistics in a program leading to a B.S. in Mathematical and Computational Science. See the "Mathematical and Computational Science (p. 1794)" section of this bulletin.

Core

The program builds on foundational courses in calculus and linear algebra. The department core includes courses in mathematical modeling, systems analysis, organization theory, optimization, probability, statistics, ethics, accounting, computer science, and economics, leading to a capstone senior project. Through the core, students in the program are exposed to the breadth of faculty interests and prepared to study different areas of application of the department's methodologies.

Areas

The major is designed to allow a student to explore all three areas of the department in greater depth.

1. *Finance and Decision:* focuses on the design and analysis of financial and strategic plans.
2. *Operations and Analytics:* focuses on algorithms, theory, and the design and analysis of manufacturing, production, and service systems.
3. *Organizations, Technology, and Policy:* focuses on understanding, design, and analysis of organizations and public policy, particularly technology-based issues.

Management Science and Engineering (MS&E)

Completion of the undergraduate program in Management Science and Engineering leads to the conferral of the Bachelor of Science in Management Science and Engineering.

Requirements

		Units
Mathematics and Science		**43**
Up to ten units of AP/IB Calculus, MATH 19, 20, and/or 21. [1]		10
All required; see SoE Basic Requirements 1 and 2		22
CME 100	Vector Calculus for Engineers	
or MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
ENGR 108	Introduction to Matrix Methods (formerly CME 103)	
MS&E 120	Introduction to Probability	
MS&E 121	Introduction to Stochastic Modeling	
MS&E 125	Introduction to Applied Statistics	
Select two of the following: [2]		8
CHEM 31B	Chemical Principles II	
CHEM 33	Structure and Reactivity of Organic Molecules	
PHYSICS 41	Mechanics	
or PHYSICS 21	Mechanics, Fluids, and Heat	
PHYSICS 43	Electricity and Magnetism	
or PHYSICS 23	Electricity, Magnetism, and Optics	
BIO 81	Introduction to Ecology	
BIO 82	Genetics	
BIO 83	Biochemistry & Molecular Biology	
BIO 84	Physiology	
BIO 85	Evolution	
BIO 86	Cell Biology	
Math, Science, or Statistics Elective from SoE approved lists. [3]		3
Technology in Society [4]		**3**
Select one of the following; see SoE Basic Requirement 4		
AA 252	Techniques of Failure Analysis	
BIOE 131	Ethics in Bioengineering	

COMM 120W	The Rise of Digital Culture	
CS 181	Computers, Ethics, and Public Policy	
CS 182	Ethics, Public Policy, and Technological Change	
ENGR 117	Expanding Engineering Limits: Culture, Diversity, and Equity	
ENGR 148	Principled Entrepreneurial Decisions	
ME 267	Ethics and Equity in Transportation Systems	
MS&E 193	Technology and National Security: Past, Present, and Future	
POLISCI 114S	International Security in a Changing World	
STS 1	The Public Life of Science and Technology	
Engineering Fundamentals [5]		**12**
Three required; see SoE Basic Requirement 3		
CS 106A	Programming Methodology [6]	
MS&E 111	Introduction to Optimization	
or MS&E 111X	Introduction to Optimization (Accelerated)	
Select one of the following:		
ENGR 10	Introduction to Engineering Analysis	
ENGR 14	Intro to Solid Mechanics	
ENGR 15	Dynamics	
ENGR 20	Introduction to Chemical Engineering	
ENGR 21	Engineering of Systems	
ENGR 40A	Introductory Electronics	
ENGR 40M	An Intro to Making: What is EE	
ENGR 42	Introduction to Electromagnetics and Its Applications	
ENGR 50	Introduction to Materials Science, Nanotechnology Emphasis	
ENGR 50E	Introduction to Materials Science, Energy Emphasis	
ENGR 50M	Introduction to Materials Science, Biomaterials Emphasis	
ENGR 80	Introduction to Bioengineering (Engineering Living Matter)	
ENGR 90	Environmental Science and Technology	
Engineering Depth [5]		**52**
Core Courses (all six required)		28
CS 106B	Programming Abstractions	
ECON 1	Principles of Economics	
ECON 50	Economic Analysis I	
MS&E 108	Senior Project (WIM)	
MS&E 140	Accounting for Managers and Entrepreneurs	
MS&E 180	Organizations: Theory and Management	
Area Courses (eight required; see below)		24

Depth Areas

Choose eight courses; four courses from a primary area and two courses from each of the other two areas.

Finance and Decision Area	
Students choosing F&D as their primary area must take at least two of ECON 51 (or MS&E 241), MS&E 145 (or 245A), and MS&E 152 (or 252).	
Introductory (no prerequisites)	
ECON 143	Finance, Corporations, and Society
MS&E 152	Introduction to Decision Analysis
Intermediate (has prerequisites and/or appropriate for juniors and seniors)	
MS&E 145	Introduction to Finance and Investment
MS&E 146	Corporate Financial Management
MS&E 252	Decision Analysis I: Foundations of Decision Analysis
Advanced (intended primarily for graduate students, but may be taken by advanced undergraduates)	
MS&E 241	Economic Analysis
MS&E 245A	Investment Science
MS&E 245B	Advanced Investment Science
MS&E 246	Financial Risk Analytics
MS&E 250A	Engineering Risk Analysis
MS&E 250B	Project Course in Engineering Risk Analysis
Operations and Analytics Area	
Students choosing O&A as their primary area may also include one of CS 161, CS 229, or STATS 202 in their selections.	
Methods	
MS&E 112	Mathematical Programming and Combinatorial Optimization
MS&E 135	Networks
MS&E 213	Introduction to Optimization Theory
MS&E 223	Simulation
MS&E 226	Fundamentals of Data Science: Prediction, Inference, Causality
MS&E 231	Introduction to Computational Social Science
MS&E 251	Introduction to Stochastic Control with Applications
Applications	
MS&E 130	Information Networks and Services
MS&E 230	Incentives and Algorithms
MS&E 232	Introduction to Game Theory
MS&E 232H	Introduction to Game Theory
MS&E 234	Data Privacy and Ethics
MS&E 235	Network Structure and Epidemics
MS&E 260	Introduction to Operations Management
MS&E 263	Healthcare Operations Management
MS&E 267	Service Operations and the Design of Marketplaces
MS&E 330	Law, Order, & Algorithms
MS&E 463	Healthcare Systems Design
Organizations, Technology, and Policy Area	
Introductory (no prerequisites)	
ENGR 148	Principled Entrepreneurial Decisions
MS&E 193	Technology and National Security: Past, Present, and Future
Advanced (has prerequisites and/or appropriate for juniors and seniors)	
BIOE 177	Inventing the Future
ENGR 145	Technology Entrepreneurship
MS&E 175	Innovation, Creativity, and Change
MS&E 182A	Leading Organizational Change
MS&E 182B	Leading Organizational Change II
MS&E 184	Future of Work: Issues in Organizational Learning and Design
MS&E 185	Global Work
MS&E 188	Organizing for Good

MS&E 243	Energy and Environmental Policy Analysis
MS&E 292	Health Policy Modeling

1 Students without AP/IB mathematics credit, who skip MATH 19, 20, and/or 21, may petition to waive up to 10 units of math.

2 AP/IB credit for Chemistry and Physics may be used.

3 Electives must come from the School of Engineering approved list or PSYCH 50 Introduction to Cognitive Neuroscience, may not repeat material from any other requirement, and may not be used to also satisfy an engineering fundamentals or depth requirement. AP/IB credit for Chemistry and Physics may be used if not used above.

4 A course may only be counted towards one requirement; courses used to satisfy the TiS requirement may not be used to also satisfy a depth area requirement.

5 Engineering fundamentals plus engineering depth must total a minimum of 60 units. Recommended engineering fundamentals are E25B, E25E, E40A, E40M, and E80. MS&E majors may not use E60, or E70B as engineering fundamentals.

6 Students may petition to waive CS 106A Programming Methodology after completion of CS 106B Programming Abstraction, and/or ECON 1 Principles of Economics after completion of ECON 50 Economic Analysis I.

7 All courses taken for the major must be taken for a letter grade. Minimum combined GPA for all courses in Engineering Topics (Engineering Fundamentals and Depth courses) is 2.0.

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

Management Science and Engineering (MS&E) Minor

The following courses are required to fulfill the minor requirements:

		Units
Prerequisites (two courses; letter-graded or CR/NC)		
CME 100	Vector Calculus for Engineers	5
or MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
CS 106A	Programming Methodology	5
Minor requirements (seven courses; all letter-graded)		
MS&E 111	Introduction to Optimization	3-4
or MS&E 111X	Introduction to Optimization (Accelerated)	
MS&E 120	Introduction to Probability [1]	4
MS&E 121	Introduction to Stochastic Modeling	4
MS&E 125	Introduction to Applied Statistics	4
MS&E 180	Organizations: Theory and Management	4
Electives (select any two 100- or 200-level MS&E courses)		6
Recommended courses		
In addition to the required prerequisite and minor courses, it is recommended that students also take the following courses.		
ECON 50	Economic Analysis I	5
MS&E 140	Accounting for Managers and Entrepreneurs (may be used as one of the required electives above)	3-4

1 Students completing a calculus-based probability course such as CS 109 or STATS 116 for their major, may substitute another MS&E course for MS&E 120.

Coterminal Program in Management Science and Engineering

This program allows Stanford undergraduates an opportunity to work simultaneously toward a B.S. in Management Science and Engineering or another quantitative major, and an M.S. in Management Science and Engineering.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Master of Science in Management Science and Engineering

The M.S. degree programs require a minimum of 45 units beyond the equivalent of a B.S. degree at Stanford. All programs represent substantial progress in the major field beyond the bachelor's degree.

University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

The master's in Management Science and Engineering prepares engineers for a lifelong career addressing the technical and managerial needs of private and public organizations. The program emphasizes developing analytic abilities, making better decisions, and developing and executing strategies while also leading people who innovate. Unlike an M.B.A., the department's master's program addresses the technical as well as the behavioral challenges of running organizations and complex systems, emphasizing quantitative analytic skills and an entrepreneurial spirit.

MS&E students know math, engineering, as well as behavioral science. They can conduct experiments to design better systems, organizations and work processes. They understand how to analyze data to solve real world problems. They can develop mathematical and computational models to inform action. They know how to surface and examine unarticulated assumptions and root causes. These students can communicate effectively in the team environments found in so many contemporary organizations.

MS&E master's students have breadth as well as depth. All are required to develop competence in optimization and analytics, organizations and

decisions, and probability. In addition every student pursues a specialty in one of seven areas:

1. *Financial Analytics:* Students who concentrate in Financial Analytics are prepared for careers requiring analytical rigor and the ability to innovate around market challenges. Example career paths include financial services, risk management, investment management, financial technology and data processing, financial regulation and policy, exchanges and clearing houses, and auditing and compliance. The concentration combines the in-depth study of quantitative techniques with practical, hands-on business problem solving. Students learn to use mathematical models and quantitative tools to solve complex problems in finance practice. The concentration exploits the intellectual ties between finance, operations research, computer science, and engineering. It offers a high level of flexibility and a range of elective courses that allow students to tailor the program to their specific career goals. Required courses immerse students in quantitative methods and deepen their understanding of finance fundamentals. Projects courses feature practical, data-driven team projects and case studies, fostering group learning and interaction with peers.
2. *Operations and Analytics:* The Operations and Analytics track prepares students in the fundamentals and applications that are critical to careers in fields ranging from operations management in the service, healthcare, production, manufacturing, computer, telecommunications, and banking industries, to modern Silicon Valley information technology and data analytics. The program emphasizes a balance between the technical rigor of methodologies with lasting value and insightful modern applications and design challenges in a variety of established and emerging industries and operations environments. It offers a portfolio of courses in probabilistic modeling, optimization, simulation, algorithms, data science, networks, markets, and corresponding applications.
3. *Technology and Engineering Management:* Students who concentrate in Technology and Engineering Management are prepared for careers including product and project management, management consulting, and entrepreneurship. They acquire skills to manage technical organizations, foster innovation, and deal with rapidly evolving technologies and dynamic markets. Specialized coursework is flexible, allowing students to explore and gain depth and understanding of technical organizations to develop a culture of successful innovation and entrepreneurship, along with methods for decision making under uncertainty, financial analysis, and strategic planning.
4. *Computational Social Science:* The Computational Social Science track teaches students how to apply rigorous statistical and computational methods to address problems in economics, sociology, political science, and beyond. The program prepares students for a diverse set of career paths in data science, information technology, and policy analysis. The core coursework covers fundamental statistical concepts, large-scale computation, and network analysis. Through electives, students can explore topics such as experimental design, algorithmic economics, and machine learning.
5. *Decision and Risk Analysis:* Students who specialize in Decision and Risk Analysis are prepared for careers including management consulting, policy analysis, and risk management, applying engineering systems analysis to tackle complex economic and technical management problems in the private and public sectors. They acquire the skills to identify and develop opportunities in uncertain situations while recognizing and hedging the downside risks. Specialized course work includes the mathematical foundations for modeling in dynamic uncertain environments to value and manage uncertain opportunities and risks, applications to public policy, and an opportunity to work on a client project under faculty guidance.
6. *Energy and Environment:* The Energy and Environment track is designed for students interested in energy and environmental issues from the perspectives of public policy, non-governmental organizations, or corporations. This track includes core courses in economic analysis, energy resources, and energy/environmental policy analysis; and an individually designed concentration, typically emphasizing policy, strategy, or technology. Seminars provide insights into current corporate strategy, public policy, and research community developments. Energy/environmental project courses give practice in applying methodologies and concepts.
7. *Health Systems Modeling:* The Health Systems Modeling track is designed for students interested in healthcare operations and policy. The courses in this track emphasize the application of mathematical and economic analysis to problems in public health policy and the design and operation of healthcare services.

The master's degree is designed to be a terminal degree program with a professional focus. The M.S. degree can be earned in one academic year (three academic quarters) of full-time work, although most students choose to complete the program in five academic quarters, or eighteen months, and work as an intern in the Summer Quarter.

Background Requirements

Students are expected to have completed both MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications , or an equivalent multivariable differential calculus course, and CS 106A Programming Methodology, or an equivalent general programming course, before beginning graduate study. These courses do not count toward degree requirements.

Degree Requirements

Students must take a minimum of 45 course units as follows:

- Three core courses (9-12 units)
- Four to six courses in a primary or specialized concentration, not duplicating core courses (12-24 units)
- One project course or two integrated project courses (0-8 units)
- Elective courses (1-24 units; see restrictions below)

Core Courses (three courses required)

Optimization and Analytics (select one)

		Units
MS&E 211	Introduction to Optimization	
or MS&E 211X	Introduction to Optimization (Accelerated)	
or MS&E 213	Introduction to Optimization Theory	
MS&E 226	Fundamentals of Data Science: Prediction, Inference, Causality	
Relevant 200 or 300 level MS&E course in optimization (e.g. 310 or 311) or analytics if a comparable introductory course in optimization or analytics has already been completed.		

Organizations and Decisions (select one)

		Units
MS&E 252	Decision Analysis I: Foundations of Decision Analysis	
MS&E 270	Strategy in Technology-Based Companies	
MS&E 280	Organizational Behavior: Evidence in Action	
Relevant 200 or 300 level MS&E course in organizations or decisions if a comparable introductory course in organizations or decisions has already been completed.		

Probability (select one)

		Units
MS&E 220	Probabilistic Analysis	
MS&E 221	Stochastic Modeling	

Relevant 200 or 300 level MS&E course in probability or stochastics (e.g. 321 or 324) if a comparable introductory course in probability or stochastics has already been completed.

Primary Concentrations

Computational Social Science (four courses required)

		Units
Select four courses, with at least one from each of the three areas below.		
Statistics (select at least one)		
MS&E 226	Fundamentals of Data Science: Prediction, Inference, Causality	
MS&E 327	Topics in Causal Inference	
STATS 202	Data Mining and Analysis	
STATS 203	Introduction to Regression Models and Analysis of Variance	
STATS 305A	Applied Statistics I	
STATS 315A	Modern Applied Statistics: Learning	
STATS 315B	Modern Applied Statistics: Data Mining	
Computation (select at least one)		
MS&E 230	Incentives and Algorithms	
MS&E 231	Introduction to Computational Social Science	
CS 224N	Natural Language Processing with Deep Learning	
CS 229	Machine Learning	
CS 246	Mining Massive Data Sets	
STATS 290	Computing for Data Science	
Social Data (select at least one)		
MS&E 232	Introduction to Game Theory	
MS&E 232H	Introduction to Game Theory	
MS&E 234	Data Privacy and Ethics	
MS&E 235	Network Structure and Epidemics	
MS&E 241	Economic Analysis	
MS&E 270	Strategy in Technology-Based Companies	
MS&E 280	Organizational Behavior: Evidence in Action	
MS&E 284	Designing Modern Work Organizations	
MS&E 334	Topics in Social Data	
CS 224W	Machine Learning with Graphs	
ECON 291	Social and Economic Networks	
SOC 369	Social Network Methods	
Recommended Elective Courses		
MS&E 366	Market Design and Resource Allocation in Non-Profit Settings	
COMM 382	Big Data and Causal Inference	
CS 124	From Languages to Information	
CS 147	Introduction to Human-Computer Interaction Design	
CS 224S	Spoken Language Processing	
CS 448B	Data Visualization	
ECON 202N	Microeconomics I For Non-Economics PhDs students	
EDUC 288	Organizational Analysis	
LINGUIST 278	Programming for Linguists	
POLISCI 355C	Causal Inference for Social Science	
POLISCI 452	Machine Learning with Application to Text as Data	
PSYCH 212	Classic and contemporary social psychology research	
PSYCH 238	Wise Interventions	
PSYCH 265	Social Psychology and Social Change	
SOC 214	Economic Sociology	
SOC 218	Social Movements and Collective Action	
SOC 220	Interpersonal Relations	
SOC 224B	Relational Sociology	
SOC 262	The Social Regulation of Markets	
SOC 270	Classics of Modern Social Theory	
STATS 209B	Applications of Causal Inference Methods	
STATS 263	Design of Experiments	
STATS 285	Massive Computational Experiments, Painlessly	

Financial Analytics Concentration (five courses required)

		Units
Financial Theory and Modeling (select one):		
MS&E 245A	Investment Science	
MS&E 245B	Advanced Investment Science	
MS&E 246	Financial Risk Analytics	
Optimization and Analytics (select whichever of optimization or analytics wasn't taken for core):		
MS&E 211	Introduction to Optimization	
or MS&E 211X	Introduction to Optimization (Accelerated)	
or MS&E 213	Introduction to Optimization Theory	
or MS&E 310	Linear Programming	
or MS&E 311	Optimization	
MS&E 226	Fundamentals of Data Science: Prediction, Inference, Causality	
Quantitative Methods and Financial Applications (select three):		
MS&E 223	Simulation	
MS&E 245B	Advanced Investment Science (if not used above)	
MS&E 246	Financial Risk Analytics (if not used above)	
MS&E 249	Corporate Financial Management	
MS&E 322	Stochastic Calculus and Control	
MS&E 346	Reinforcement Learning for Stochastic Control Problems in Finance	
MS&E 347	Credit Risk: Modeling and Management	
MS&E 348	Optimization of Uncertainty and Applications in Finance	
MS&E 349	Financial Statistics	
MS&E 448	Big Financial Data and Algorithmic Trading	
STATS 207	Introduction to Time Series Analysis	
STATS 240	Statistical Methods in Finance	
STATS 241	Data-driven Financial Econometrics	

Operations and Analytics Concentration (four courses required)

		Units
Required Courses		
MS&E 211X	Introduction to Optimization (Accelerated) (whichever of optimization or analytics wasn't taken for core)	
or MS&E 213	Introduction to Optimization Theory	
or MS&E 310	Linear Programming	

or MS&E 311	Optimization
or MS&E 226	Fundamentals of Data Science: Prediction, Inference, Causality
MS&E 221	Stochastic Modeling (any of the following courses may be substituted only if 221 or an equivalent has been taken)
or MS&E 223	Simulation
or MS&E 251	Introduction to Stochastic Control with Applications
or MS&E 321	Stochastic Systems
or MS&E 324	Stochastic Methods in Engineering
or MS&E 338	Reinforcement Learning: Frontiers
or MS&E 351	Dynamic Programming and Stochastic Control
MS&E 212	Mathematical Programming and Combinatorial Optimization
or MS&E 232	Introduction to Game Theory
or MS&E 232H	Introduction to Game Theory
or MS&E 251	Introduction to Stochastic Control with Applications
MS&E 260	Introduction to Operations Management
or MS&E 263	Healthcare Operations Management
or MS&E 267	Service Operations and the Design of Marketplaces
Recommended Elective Courses:	
MS&E 230	Incentives and Algorithms
MS&E 231	Introduction to Computational Social Science
MS&E 234	Data Privacy and Ethics
MS&E 235	Network Structure and Epidemics
MS&E 241	Economic Analysis
MS&E 243	Energy and Environmental Policy Analysis
MS&E 245A	Investment Science
MS&E 250A	Engineering Risk Analysis
MS&E 252	Decision Analysis I: Foundations of Decision Analysis
MS&E 292	Health Policy Modeling

Technology and Engineering Management Concentration (four courses required)

Courses for Core and Concentration must cover each of the three sub-areas below.

		Units
Organizations and Strategy (select at least one):		
MS&E 265	Introduction to Product Management	
MS&E 270	Strategy in Technology-Based Companies	
MS&E 274	Dynamic Entrepreneurial Strategy	
MS&E 278	Patent Law and Strategy for Innovators and Entrepreneurs	
MS&E 280	Organizational Behavior: Evidence in Action	
MS&E 284	Designing Modern Work Organizations	
Entrepreneurship and Innovation (select at least one):		
MS&E 256	Technology Assessment and Regulation of Medical Devices	
MS&E 270	Strategy in Technology-Based Companies	
MS&E 271	Global Entrepreneurial Marketing	
MS&E 272	Entrepreneurship without Borders	
MS&E 273	Venture Creation for the Real Economy	
or CEE 246	Venture Creation for the Real Economy	
MS&E 275	Intelligent Growth in Startups	
MS&E 276	Entrepreneurial Management and Finance	
MS&E 293	Technology and National Security: Past, Present, and Future	
ENGR 245	The Lean LaunchPad: Getting Your Lean Startup Off the Ground	
or MS&E 297	"Hacking for Defense": Solving National Security issues with the Lean Launchpad	
ENGR 248	Principled Entrepreneurial Decisions	
Finance and Decisions (select at least one):		
MS&E 240	Accounting for Managers and Entrepreneurs	
MS&E 241	Economic Analysis	
MS&E 245A	Investment Science	
MS&E 245B	Advanced Investment Science	
MS&E 246	Financial Risk Analytics	
MS&E 249	Corporate Financial Management	
MS&E 250A	Engineering Risk Analysis	
MS&E 250B	Project Course in Engineering Risk Analysis	
MS&E 252	Decision Analysis I: Foundations of Decision Analysis	
MS&E 254	The Ethical Analyst	
MS&E 355	Influence Diagrams and Probabilistics Networks	

Specialized Concentrations (must have approval of the academic adviser)

Decision and Risk Analysis Concentration (four courses required)

		Units
Core Courses are restricted as follows:		
MS&E 211	Introduction to Optimization	
or MS&E 211X	Introduction to Optimization (Accelerated)	
or MS&E 213	Introduction to Optimization Theory	
MS&E 221	Stochastic Modeling	
MS&E 252	Decision Analysis I: Foundations of Decision Analysis	
Required Courses (select two):		
MS&E 241	Economic Analysis	
MS&E 250A	Engineering Risk Analysis	
MS&E 251	Introduction to Stochastic Control with Applications	
or EE 263	Introduction to Linear Dynamical Systems	
MS&E 355	Influence Diagrams and Probabilistics Networks	
Policy Course (select one):		
MS&E 243	Energy and Environmental Policy Analysis	
MS&E 292	Health Policy Modeling	
MS&E 293	Technology and National Security: Past, Present, and Future	
Project Course (select one):		
MS&E 250B	Project Course in Engineering Risk Analysis	
MS&E 297	"Hacking for Defense": Solving National Security issues with the Lean Launchpad	

Energy and Environment Concentration (six courses required)

		Units
Required Courses:		
MS&E 241	Economic Analysis	
MS&E 243	Energy and Environmental Policy Analysis	
CEE 207A	Understanding Energy	
or CEE 273S	Electricity Economics	
or ENERGY 291	Optimization of Energy Systems	
Three additional courses from energy, policy, or strategy areas below.		
Policy:		
MS&E 292	Health Policy Modeling	
MS&E 293	Technology and National Security: Past, Present, and Future	
MS&E 394	Advanced Methods in Modeling for Climate and Energy Policy	
ECON 251	Natural Resource and Energy Economics	
Strategy:		
MS&E 270	Strategy in Technology-Based Companies	
MS&E 271	Global Entrepreneurial Marketing	
MS&E 272	Entrepreneurship without Borders	
MS&E 273	Venture Creation for the Real Economy	
MS&E 274	Dynamic Entrepreneurial Strategy	
MS&E 275	Intelligent Growth in Startups	
MS&E 276	Entrepreneurial Management and Finance	
MS&E 278	Patent Law and Strategy for Innovators and Entrepreneurs	
Energy:		
ENERGY 102	Fundamentals of Renewable Power	
ENERGY 104	Sustainable Energy for 9 Billion	
ME 370A	Energy Systems I: Thermodynamics	
ME 370B	Energy Systems II: Modeling and Advanced Concepts	
PHYSICS 240	Introduction to the Physics of Energy	
PHYSICS 241	Introduction to Nuclear Energy	
Recommended Seminars:		
MS&E 441	Policy and Economics Research Roundtable	
MS&E 472	Entrepreneurial Thought Leaders' Seminar	
ECON 341	Public Economics and Environmental Economics Seminar	
ENERGY 301	The Energy Seminar	
Recommended Elective Courses:		
MS&E 201	Dynamic Systems	
MS&E 211	Introduction to Optimization	
or MS&E 211X	Introduction to Optimization (Accelerated)	
or MS&E 213	Introduction to Optimization Theory	
MS&E 251	Introduction to Stochastic Control with Applications	
ECON 206	World Food Economy	
ECON 209	Economic, Legal, and Political Analysis of Climate-Change Policy	
ECON 250	Environmental Economics	
ECON 270	Intermediate Econometrics I	
ECON 278	Behavioral and Experimental Economics I	
ENVRES 222	Climate Law and Policy	
or ENVRES 226	Energy Law	
MGTECON 603	Econometric Methods I	
PUBLPOL 353A	Science and Technology Policy	

Health Systems Modeling and Policy Concentration (four courses required)

		Units
Required Courses (select four)		
MS&E 263	Healthcare Operations Management	
MS&E 292	Health Policy Modeling	
MS&E 463	Healthcare Systems Design	
HRP 263	Advanced Decision Science Methods and Modeling in Health	
HRP 392	Analysis of Costs, Risks, and Benefits of Health Care	
Recommended Elective Courses:		
MS&E 256	Technology Assessment and Regulation of Medical Devices	
HRP 256	Economics of Health and Medical Care	
HRP 391	Health Law: Finance and Insurance	

Projects (may duplicate Core and/or Concentration courses)

Select one project course or two integrated project courses.

		Units
Project Courses		
MS&E 250B	Project Course in Engineering Risk Analysis	3
MS&E 348	Optimization of Uncertainty and Applications in Finance	3
MS&E 448	Big Financial Data and Algorithmic Trading	3
MS&E 463	Healthcare Systems Design	3-4
Integrated Project Courses		
ENGR 248	Principled Entrepreneurial Decisions	3
MS&E 201	Dynamic Systems	3
MS&E 226	Fundamentals of Data Science: Prediction, Inference, Causality	3
MS&E 243	Energy and Environmental Policy Analysis	3
MS&E 245A	Investment Science	3-4
MS&E 245B	Advanced Investment Science	3
MS&E 246	Financial Risk Analytics	3
MS&E 252	Decision Analysis I: Foundations of Decision Analysis	3-4
MS&E 256	Technology Assessment and Regulation of Medical Devices	3
MS&E 260	Introduction to Operations Management	3
MS&E 265	Introduction to Product Management	3
MS&E 270	Strategy in Technology-Based Companies	3-4
MS&E 271	Global Entrepreneurial Marketing	3-4
MS&E 272	Entrepreneurship without Borders	3-4
MS&E 274	Dynamic Entrepreneurial Strategy	3
MS&E 275	Intelligent Growth in Startups	3
MS&E 280	Organizational Behavior: Evidence in Action	3-4
MS&E 284	Designing Modern Work Organizations	3
MS&E 311	Optimization	3
MS&E 338	Reinforcement Learning: Frontiers	3
MS&E 347	Credit Risk: Modeling and Management	3
MS&E 349	Financial Statistics	3

MS&E 355	Influence Diagrams and Probabilistics Networks	3

Additional Requirements

1. At least 45 units must be in courses numbered 100 and above.
2. The degree program must be completed with a grade point average (GPA) of 3.0 or higher.
3. At least 27 units must be in courses numbered 200 and above in MS&E, taken for a letter grade and a minimum of two units each.
4. At least 36 letter-graded units must be in MS&E or closely related fields. Closely related fields include any department in the School of Engineering, mathematics, statistics, economics, sociology, or business.
5. A maximum of 4 units of directed or individual study units may count toward the letter-grade requirement.
6. All courses used to satisfy core, concentration, or project requirements must be taken for a letter grade.
7. A maximum of three units of 1-unit courses such as seminars, colloquia, workshops, in any department, including MS&E 208A, B, C, and D Practical Training, and MS&E 208E Part-Time Practical Training.
8. A maximum of 18 non-degree option (NDO) units through the Stanford Center for Professional Development (SCPD).
9. Courses taken in Health and Human Performance (e.g. Athletics, Club Sports, Kinesiology, Leadership Innovations, Lifeworks, Outdoor Education, Physical Education, and Wellness Education) may not be applied toward the degree.

Professional Education

The Stanford Center for Professional Development (SCPD) provides opportunities for employees of some local and remote companies to take courses at Stanford.

The Honors Cooperative Program (HCP) provides opportunities for fully employed working professionals to earn an M.S. degree, over a longer period, by taking one or two courses per academic quarter. Some courses are only offered on campus; HCP students may attend those courses at Stanford to meet the degree requirements. It is possible to complete this program as a remote HCP student although the remote offerings are limited. Students must apply for a degree program through the standard application process, and must meet the standard application deadlines.

The non-degree option (NDO) program allows industry students with the opportunity to take Stanford graduate courses on a part-time basis without having to be formally admitted to a degree program. NDO students enroll as distance learners where up to 18 units of graduate credit earned may later be applied toward a degree program (if admitted). Students who have completed an undergraduate degree with a minimum of a 3.0 grade point average, may apply to take MS&E courses online each quarter through the Stanford Center for Professional Development. Completion of multivariable calculus and linear algebra is required for most MS&E courses and graduate certificates. For additional information about the NDO application process and deadlines, see the SCPD web site (http://scpd.stanford.edu/non-degree-option-program/), or contact SCPD at (650) 725-3000.

Certificate

The department offers a certificate program within the framework of the NDO program. A certificate can be obtained by completing three MS&E core courses, plus one MS&E elective course for a total of four courses. For further information, see http://scpd.stanford.edu/programs/graduate-certificates.

Dual Master's Degree Program

The dual degree program enables a small group of graduate students to obtain two master's degrees simultaneously. Students complete the course requirements for each department. A total of 90 units is required to complete the dual master's degree.

Admission

For the dual degree, admission to two departments is required, but is coordinated by designated members of both admissions committees who make recommendations to the committees of their respective departments. Students may apply to only one department initially. After the first quarter at Stanford, students may apply to be admitted to the second department.

Advising

Every student in the dual degree program has one adviser in each department.

Joint MS&E and Law Degrees

The School of Law and the Department of Management Science and Engineering offer joint degree programs leading to a J.D. degree and an M.S. degree in MS&E, or to a J.D. and Ph.D. in MS&E. These programs are designed for students who wish to prepare themselves for careers in areas relating to both law and to the decision making, policy making, and problem solving knowledge and skills developed in the MS&E program. Students interested in either joint degree program must apply and gain admission separately to the School of Law and the Department of Management Science and Engineering and, as an additional step, must secure consent from both academic units to pursue degrees in those units as part of a joint degree program. Interest in either joint degree program should be noted on the student's admission applications and may be considered by the admission committee of each program. Alternatively, an enrolled student in either the Law School or MS&E may apply for admission to the other program and for joint degree status in both academic units after commencing study in either program.

Joint degree students may elect to begin their course of study in either the School of Law or MS&E. Students are assigned to a joint program committee composed of at least one faculty member from Law and one from MS&E. This committee plans the student's program jointly with the student. Students must be enrolled full time in the Law School for the first year of law studies, and it is recommended that students devote exclusively one Autumn Quarter to the MS&E M.S. program to initiate their MS&E work. After that time, enrollment may be in MS&E or Law, and students may choose courses from either program regardless of where enrolled. A candidate in the joint J.D./Ph.D. program should spend a substantial amount of full time residency in MS&E. Students must satisfy the requirements for both the J.D. and the M.S. or Ph.D. degrees as specified in this bulletin or by the School of Law. The Law School may approve courses from MS&E or courses in the student's MS&E program from outside of the Department of Management Science and Engineering that may count toward the J.D. degree, and MS&E may approve courses from the Law School that may count toward the M.S. or Ph.D. degree in MS&E. In either case, approval may consist of a list applicable to all joint degree students or may be tailored to each individual student's program. The lists may differ depending on whether the student is pursuing an M.S. or a Ph.D. in MS&E.

In the case of a J.D./M.S. program, no more than 45 units of approved courses may be counted toward both degrees. In the case of a J.D./Ph.D. program, no more than 54 units of approved courses may be counted toward both degrees. In either case, no more than 36 units of courses that originate outside the Law School may count toward the law degree. To the extent that courses under this joint degree program originate outside the Law School but count toward the law degree, the law credits permitted under Section 17(1) of the Law School Regulations are reduced

on a unit-per-unit basis, but not below zero. The maximum number of law school credits that may be counted toward the M.S. in MS&E is the greater of: (a) 18 units in the case of the M.S., or (b) the maximum number of hours from courses outside the department that an M.S. candidate in MS&E is permitted to count toward the applicable degree under general departmental guidelines or under departmental rules that apply in the case of a particular student.

Tuition and financial aid arrangements are normally through the school in which the student is then enrolled.

Joint MS&E and Master of Public Policy Degree

M.S. MS&E students who wish to apply their analytical and management skills to the field of public policy can simultaneously pursue a master degree in MS&E and a master degree in Public Policy. The MPP is a two-year degree program, but M.S. MS&E students who pursue the joint program can earn both degrees in a minimum of two years, depending on prior preparation and elective choices, by counting up to 45 quarter units of course work toward both degrees. After admission to the Department of Management Science and Engineering, incoming or current M.S. students request that their application file be forwarded to the MPP program director for review.

Students in the joint program normally will spend most of their first year taking MS&E core courses. The second year is typically devoted to the MPP core, concentration, and practicum. The joint degree requires 90 quarter units. Tuition for the first year of study is paid at the Graduate Engineering rate, the remaining time at the graduate rate.

Doctor of Philosophy in Management Science and Engineering

University requirements for the Ph.D. degree are described in the "Graduate Degrees" section of this bulletin.

The Ph.D. degree in MS&E is intended for students primarily interested in a career of research and teaching, or high-level technical work in universities, industry, or government. The program requires three years of full-time graduate study, at least two years of which must be at Stanford. Typically, however, students take four to five years after entering the program to complete all Ph.D. requirements. The Ph.D. is organized around the expectation that the students acquire a certain breadth across all areas of the department, and depth in one of them. The current areas are:

- Computational Social Science
- Decision Analysis and Risk Analysis
- Energy and Environment
- Quantitative Finance
- Health Systems Modeling and Policy
- National Security Policy
- Operations Management
- Optimization and Stochastics
- Organizations
- Strategy, Innovation, and Entrepreneurship

Doctoral students are required to take a number of courses, both to pass a qualifying exam in one of these areas, and to complete a dissertation based on research which must make an original contribution to knowledge.

Each student admitted to the Ph.D. program must satisfy a breadth requirement and pass a qualification procedure. The purpose of the qualification procedure is to assess the student's command of the field and to evaluate his or her potential to complete a high-quality dissertation in a timely manner. The student must complete specified course work in one of the areas of the department.

The qualification decision is based on the student's course work and grade point average (GPA), on the one or two preliminary papers prepared by the student with close guidance from two faculty members, at least one of whom must be an MS&E faculty member, the student's performance in an area examination or defense of the written paper(s), and an overall assessment by the faculty of the student's ability to conduct high-quality Ph.D. research. Considering this evidence, the department faculty vote on advancing the student to candidacy in the department at large. The Ph.D. requires a minimum of 135 units, up to 45 units of which may be transferred from another graduate program.

All courses used to satisfy breadth and depth requirements must be taken for a letter grade, if the letter graded option is available. Prior to candidacy, at least 3 units of work must be taken with each of four Stanford faculty members. Finally, the student must pass a University oral examination and complete a Ph.D. dissertation. During the course of the Ph.D. program, students who do not have a master's degree are strongly encouraged to complete one, either in MS&E or in another Stanford department.

Breadth Requirement

All first year students are required to attend and participate in MS&E 302 Fundamental Concepts in Management Science and Engineering, which meets in the Autumn Quarter.

Each course session is devoted to a specific MS&E Ph.D. research area. At a given session several advanced Ph.D. students in that area make carefully prepared presentations designed for first-year doctoral students regardless of area. The presentations are devoted to: (a) illuminating how people in the area being explored that day think about and approach problems, and (b) illustrating what can and cannot be done when addressing problems by deploying the knowledge, perspectives, and skills acquired by those who specialize in the area in question.

Faculty in the focal area of the week comment on the student presentations. The rest of the session is devoted to questions posed and comments made by the first year Ph.D. students.

During the last two weeks of the quarter, groups of first year students make presentations on how they would approach a problem drawing on two or more of the perspectives to which they have been exposed earlier in the class.

Attendance is mandatory and performance is assessed on the basis of the quality of the students' presentations and class participation

Qualification Procedure Requirements

The qualification procedure is based on depth in an area of the student's choice and preparation for dissertation research. The qualification process must be completed by the end of the month of May of the student's second year of graduate study in the department. The performance of all doctoral students is reviewed every year at a department faculty meeting at the end of May or beginning of June. Ph.D. qualification decisions are made at that time and individual feedback is provided.

The Ph.D. qualification requirements comprise these elements:

1. *Courses and GPA:* Students must complete the depth requirements of one of the areas of the MS&E department. (The Ph.D. area course requirements are below).
   All courses used to satisfy depth requirements must be taken for a letter grade, if the letter graded option is available. Course substitutions may be approved by the doctoral program adviser or the MS&E dissertation adviser on the candidacy form or on a request for graduate course waiver/substitution form. A student must maintain

a GPA of at least 3.4 in the set of all courses taken by the student within the department. The GPA is computed on the basis of the nominal number of units for which each course is offered.

2. *Paper(s):* A student may choose between two options. The first option involves one paper supervised by a primary faculty adviser and a second faculty reader. This paper should be written in two quarters. The second option involves two shorter sequential tutorials, with two different faculty advisers. Each tutorial should be completed in one quarter. In both options, the student chooses the faculty adviser(s)/reader with the faculty members' consent. There must be two faculty members, at least one of whom must be an MS&E faculty member, supervising and evaluating this requirement for advancement to candidacy. The paper/tutorials must be completed before the Spring Quarter of the student's second year of graduate study in the department if the student's qualifying exam is during the Spring Quarter, and before the end of May of that year otherwise.
3. *Area Qualification:* In addition, during the second year, a student must pass an examination in one of the areas of the MS&E department, or defense of the written paper(s). The student chooses the area/program in which to take the examination. This area examination is written, oral, or both, at the discretion of the area faculty administering the exam. Most areas offer the qualifying exam only once per year, which may be early in the second year.

Degree Progress and Student Responsibility

Each doctoral student's progress is reviewed annually by the MS&E faculty. Typically, this occurs at a faculty meeting at the end of Spring Quarter, and an appropriate email notification is sent over the summer to the student and their adviser. It shall be the responsibility of the student to initiate each required step in completing the Ph.D. program.

1. To maintain good standing in the degree program, first-year students must:
   a. complete 30 units, including MS&E 302 and doctoral courses taught by faculty in their research area;
   b. develop relationships with faculty members who can potentially serve as dissertation adviser or reading committee member. A faculty member is more likely to accept the responsibility of supervising the research of a student whom he or she knows fairly well than a student whose abilities, initiative, and originality the faculty member knows less well. It is recommended that students participate in research rotations with MS&E and related faculty to facilitate the development of these relationships.
2. To maintain good standing in the degree program second-year students must:
   a. submit a candidacy form signed by at least one MS&E faculty member with whom they have or will complete research rotations, tutorials, or papers, and listing the course requirements agreed upon by both the student and the program adviser;
   b. complete at least two one-quarter research rotations or tutorials, or one two-quarter research rotation, tutorial, or research paper, continuing to develop relationships with faculty members who might serve as dissertation adviser or reading committee member;
   c. complete 30 units, including most, if not all, of the required courses listed on the candidacy form;
   d. pass an area qualifying exam;
   e. be advanced to candidacy by the faculty.
3. To maintain good standing in the degree program, third-year students must:
   a. submit a progress form listing the dissertation topic and signed by the dissertation adviser (if the dissertation adviser is not an MS&E faculty member, the form must also be signed by an MS&E faculty member who agrees to be on the student's reading committee, as well as the student's point of contact within the department);
   b. complete 30 units, including any remaining depth courses.
4. To maintain good standing in the degree program, fourth-year students must:
   a. select a reading committee (a dissertation adviser and two readers) with at least one member from the student's major department, and submit the reading committee form signed by each member on the reading committee;
   b. make satisfactory progress on their dissertation as determined by their dissertation adviser;
   c. if the student has not transferred any previous graduate units to Stanford, complete 30 dissertation units.
5. To maintain good standing in the degree program beyond the fourth year, students must make satisfactory progress on their dissertation as determined by their dissertation adviser and approved by the faculty. Indeed, the dissertation adviser will have to present the case to (and seek approval for good standing of the student from) the faculty in the annual faculty meeting for student review. It should be noted that each student inherently has to pass the oral examination (see below) and submit their dissertation before their candidacy expires.

Additionally, to remain in good standing, and to remain eligible for funding, students must perform well in all assistantship positions.

Any special cases, for a student to remain in good standing based on extenuating circumstances, must be presented to and approved by the whole faculty.

Oral Examination

As administered in this department, the University oral examination is a defense of the dissertation; however, the candidate should be prepared to answer any question raised by any members of the Academic Council who choose to be present. The examining committee consists of the three members of the reading committee as well as a fourth faculty member and an orals chair. The chair must be an Academic Council member and may not be affiliated with either the Department of Management Science and Engineering nor any department in which the student's adviser has a regular appointment; emeriti professors are eligible to serve as an orals chair. It is the responsibility of the student's adviser to find an appropriate orals chair. The University oral examination may be scheduled after the dissertation reading committee has given tentative approval to the dissertation.

The student must be enrolled in the quarter of their oral examination. Students should schedule three hours for the oral examination, which usually consists of a 45-minute public presentation, followed by closed-session questioning of the examinee by the committee, and committee deliberation. The student needs to reserve a room, and meet with the student services manager to complete the oral examination schedule and pick up other paper work. This paperwork, along with an abstract, needs to be delivered to the orals chair at least one week prior to the oral examination.

Course Requirements

Computational Social Science

The Computational Social Science track teaches students how to apply rigorous statistical and computational methods to address problems in economics, sociology, political science and beyond. The core course work covers fundamental statistical concepts, large-scale computation, and network analysis. Through electives, students can explore topics such as experimental design, algorithmic economics, and machine learning.

Select four courses, with at least one from each of the three areas below.

Statistics (select at least one)

MS&E 226	Fundamentals of Data Science: Prediction, Inference, Causality
MS&E 327	Topics in Causal Inference
STATS 202	Data Mining and Analysis
STATS 203	Introduction to Regression Models and Analysis of Variance
STATS 305A	Applied Statistics I
STATS 315A	Modern Applied Statistics: Learning
STATS 315B	Modern Applied Statistics: Data Mining
Computation (select at least one)	
MS&E 230	Incentives and Algorithms
MS&E 231	Introduction to Computational Social Science
CS 224N	Natural Language Processing with Deep Learning
CS 229	Machine Learning
CS 246	Mining Massive Data Sets
STATS 290	Computing for Data Science
Social Data (select at least one)	
MS&E 232	Introduction to Game Theory
MS&E 232H	Introduction to Game Theory
MS&E 234	Data Privacy and Ethics
MS&E 235	Network Structure and Epidemics
MS&E 241	Economic Analysis
MS&E 270	Strategy in Technology-Based Companies
MS&E 280	Organizational Behavior: Evidence in Action
MS&E 284	Designing Modern Work Organizations
MS&E 334	Topics in Social Data
CS 224W	Machine Learning with Graphs
ECON 291	Social and Economic Networks
SOC 369	Social Network Methods
Recommended:	
MS&E 366	Market Design and Resource Allocation in Non-Profit Settings
COMM 382	Big Data and Causal Inference
CS 124	From Languages to Information
CS 147	Introduction to Human-Computer Interaction Design
CS 224S	Spoken Language Processing
CS 448B	Data Visualization
ECON 202N	Microeconomics I For Non-Economics PhDs students
EDUC 288	Organizational Analysis
LINGUIST 278	Programming for Linguists
POLISCI 355C	Causal Inference for Social Science
POLISCI 452	Machine Learning with Application to Text as Data
PSYCH 212	Classic and contemporary social psychology research
PSYCH 238	Wise Interventions
PSYCH 265	Social Psychology and Social Change
SOC 214	Economic Sociology
SOC 218	Social Movements and Collective Action
SOC 220	Interpersonal Relations
SOC 224B	Relational Sociology
SOC 262	The Social Regulation of Markets
SOC 270	Classics of Modern Social Theory
STATS 209B	Applications of Causal Inference Methods
STATS 263	Design of Experiments
STATS 285	Massive Computational Experiments, Painlessly

Computational Social Science Qualifying Procedure

The student does two quarter-length tutorials with CSS faculty. At the end of these tutorials, the student must make a 45-minute presentation of one of their tutorials to a committee of three CSS faculty members. The student can do both tutorials with the same faculty member, in which case the presentation can be of the two tutorials together, and another committee member must be kept informed of the student's progress on a regular basis during the two quarters. The presentation should take place in the Spring Quarter of the student's second year, or earlier. The presentation must include original research or promising directions towards original research. During this presentation, the student must also provide the name of their chosen focus area, and the list of courses that the student has completed and intends to complete in the core as well as in the chosen focus area. The committee then makes a recommendation to the CSS area and the MS&E department regarding qualification of the student for the Ph.D. program in CSS.

Decision Analysis and Risk Analysis

Prerequisites:	
CS 106A	Programming Methodology
CME 100	Vector Calculus for Engineers
ENGR 108	Introduction to Matrix Methods (formerly CME 103)
Required:	
MS&E 201	Dynamic Systems
or EE 263	Introduction to Linear Dynamical Systems
MS&E 211	Introduction to Optimization
or MS&E 211X	Introduction to Optimization (Accelerated)
or MS&E 213	Introduction to Optimization Theory
or MS&E 311	Optimization
MS&E 220	Probabilistic Analysis
MS&E 221	Stochastic Modeling
or STATS 217	Introduction to Stochastic Processes I
MS&E 223	Simulation
MS&E 241	Economic Analysis
MS&E 250A	Engineering Risk Analysis
MS&E 250B	Project Course in Engineering Risk Analysis
MS&E 251	Introduction to Stochastic Control with Applications
or MS&E 351	Dynamic Programming and Stochastic Control
MS&E 252	Decision Analysis I: Foundations of Decision Analysis
MS&E 352	Decision Analysis II: Professional Decision Analysis
MS&E 353	Decision Analysis III: Frontiers of Decision Analysis
MS&E 355	Influence Diagrams and Probabilistics Networks
Recommended:	
MS&E 245A	Investment Science
MS&E 254	The Ethical Analyst
MS&E 270	Strategy in Technology-Based Companies
MS&E 280	Organizational Behavior: Evidence in Action
MS&E 321	Stochastic Systems
or STATS 218	Introduction to Stochastic Processes II
CS 228	Probabilistic Graphical Models: Principles and Techniques

CS 270	Modeling Biomedical Systems
ECON 286	Game Theory and Economic Applications
ECON 290	Multiperson Decision Theory
STATS 200	Introduction to Statistical Inference
or STATS 202	Data Mining and Analysis
or ECON 271	Intermediate Econometrics II

Quantitative Finance

The finance area focuses on the quantitative and statistical study of financial risks, institutions, markets, and technology. Students take courses in probability, statistics, optimization, finance, economics, and computational mathematics as well as a variety of other courses. Recent dissertation topics include studies of machine learning methods for risk management; systemic financial risk; algorithmic trading; optimal order execution; large-scale portfolio optimization; mortgage markets; and statistical testing of financial models. Ph.D. students in the area typically are affiliated with the Center for Financial and Risk Analytics (CFRA).

Prerequisites (may be waived based on prior coursework)

Mathematics	
MATH 113	Linear Algebra and Matrix Theory
MATH 115	Functions of a Real Variable
or MATH 171	Fundamental Concepts of Analysis
Probability	
MS&E 220	Probabilistic Analysis
or STATS 116	Theory of Probability
MS&E 221	Stochastic Modeling
Statistics	
STATS 110	Statistical Methods in Engineering and the Physical Sciences
Programming	
CS 106A	Programming Methodology
Economics	
MS&E 241	Economic Analysis
or ECON 50	Economic Analysis I
Required Core Courses	
Optimization	
MS&E 211	Introduction to Optimization
or MS&E 211X	Introduction to Optimization (Accelerated)
or MS&E 213	Introduction to Optimization Theory
or MS&E 310	Linear Programming
or MS&E 311	Optimization
Stochastics	
MS&E 321	Stochastic Systems
or MS&E 322	Stochastic Calculus and Control
Statistics	
STATS 200	Introduction to Statistical Inference
or STATS 305A	Applied Statistics I
or STATS 315A	Modern Applied Statistics: Learning
Numerical Methods	
MS&E 223	Simulation
or CME 200	Linear Algebra with Application to Engineering Computations
or CME 206	Introduction to Numerical Methods for Engineering
Strongly Recommended	
STATS 300A	Theory of Statistics I
STATS 310A	Theory of Probability I
Elective Courses (select at least 4)	
MS&E 245A	Investment Science
MS&E 245B	Advanced Investment Science
MS&E 246	Financial Risk Analytics
MS&E 347	Credit Risk: Modeling and Management
MS&E 348	Optimization of Uncertainty and Applications in Finance
MS&E 349	Financial Statistics
ECON 236	Financial Economics I
ECON 237	Financial Economics II
ECON 273	Advanced Econometrics I
ECON 274	Advanced Econometrics II
FINANCE 625	Empirical Asset Pricing
MATH 238	Mathematical Finance
STATS 240	Statistical Methods in Finance
STATS 243	Risk Analytics and Management in Finance and Insurance
STATS 315B	Modern Applied Statistics: Data Mining

Students should discuss their course schedule with their dissertation advisers. Other courses in MS&E, Economics, Finance, Scientific Computing, or Statistics at the MS&E 300-level (or comparable in other departments) may be chosen after consulting with the dissertation adviser.

Quantitative Finance Qualifying Procedure

In addition to beginning an appropriate course program, students must pass two quarters of tutorial and an oral examination to obtain qualification. The tutorials emphasize basic research skills. The oral examination emphasizes command of basic concepts as represented in the required courses as well as the modeling of practical situations.

Energy and Environment Policy (see Policy and Strategy)

Health Policy (see Policy and Strategy)

National Security Policy (see Decision Analysis and Risk Analysis)

Operations Management

Foundation courses (may be waived based on prior coursework):

MS&E 211	Introduction to Optimization
or MS&E 211X	Introduction to Optimization (Accelerated)
or MS&E 213	Introduction to Optimization Theory
MS&E 241	Economic Analysis
or ECON 202N	Microeconomics I For Non-Economics PhDs students
MS&E 260	Introduction to Operations Management

Methodology courses (all):

MS&E 221	Stochastic Modeling
or STATS 217	Introduction to Stochastic Processes I
MS&E 223	Simulation
or STATS 362	Topic: Monte Carlo
MS&E 251	Introduction to Stochastic Control with Applications
or MS&E 351	Dynamic Programming and Stochastic Control
MS&E 311	Optimization
or EE 364A	Convex Optimization I
MS&E 321	Stochastic Systems

OM research courses (any four):

MS&E 365	Mechanism and Market Design

Faculty-approved GSB OIT Ph.D. courses (about six are offered every two years).

Optimization and Stochastics

Prerequisites:

MS&E 220	Probabilistic Analysis

or STATS 116	Theory of Probability
MS&E 221	Stochastic Modeling
or STATS 217	Introduction to Stochastic Processes I
MS&E 241	Economic Analysis
or ECON 50	Economic Analysis I
CS 106A	Programming Methodology
MATH 113	Linear Algebra and Matrix Theory
MATH 115	Functions of a Real Variable
or MATH 171	Fundamental Concepts of Analysis
Strongly Recommended:	
CME 108	Introduction to Scientific Computing
STATS 200	Introduction to Statistical Inference
STATS 203	Introduction to Regression Models and Analysis of Variance
Core (four courses):	
MS&E 310	Linear Programming
MS&E 321	Stochastic Systems
Two of the following four courses:	
MS&E 311	Optimization
MS&E 316	Discrete Mathematics and Algorithms
MS&E 337	Network Structure and Epidemics
STATS 310A	Theory of Probability I
Three to four courses in some coherent area of specialization.	

In addition to the four core courses, students should take at least four 3-4 unit courses in some coherent area of specialization. The area of specialization may be methodological; examples include (but are not limited to) optimization, stochastic systems, stochastic control, algorithms, economic analysis, statistical inference, scientific computing, etc. The area of specialization could also have a significant modeling and application component, such as (but not limited to) information services, telecommunications, financial engineering, supply chains, health care, energy, etc. Independent of the choice of specialization, students are encouraged to take a range of courses covering methodology, modeling, and applications. Any MS&E courses satisfying this requirement must be at the 300-level, while courses outside MS&E must be at a comparable level. Students are expected to earn a letter grade of A- or better in all courses counted for the requirements. A student's plan for completing these requirements must be discussed with and approved by their faculty adviser by the beginning of Autumn Quarter of their second year.

Optimization and Stochastics Qualifying Procedure

Students take the area qualifying exam at the beginning of their second year of study. The qualifying exam consists of two written exams: one in Optimization and one in Stochastic Systems. The first exam covers the material in MS&E 310 and related prerequisites. The second exam covers the material in MS&E 321 and related prerequisites.

The student does two quarter-length tutorials with Optimization and Stochastics faculty (or affiliated faculty). A written report approved by the supervising faculty member is required on each tutorial. In addition, at the end of the second year, students are expected to make a 30-minute presentation to the broader Optimization and Stochastics faculty. The presentation must include original research or promising directions towards original research. The student can do both tutorials with the same faculty member; in this case a single written report is sufficient, and the presentation can be of the two tutorials together.

Organizations, Strategy, Innovation, and Entrepreneurship

Foundation in Organizational Behavior (five courses):	
MS&E 389	Seminar on Organizational Theory
Plus three of the following, which must include at least one 37x course and one 38x course:	
MS&E 370	Current Topics in Strategy, Innovation and Entrepreneurship
MS&E 371	Innovation and Strategic Change
MS&E 372	Entrepreneurship Doctoral Research Seminar
MS&E 376	Strategy Doctoral Research Seminar
MS&E 384	Groups and Teams
Statistics and Research Methods (examples; three courses required)	
MS&E 231	Introduction to Computational Social Science
PSYCH 252	Statistical Methods for Behavioral and Social Sciences
SOC 381	Sociological Methodology I: Introduction
SOC 382	Sociological Methodology II: Principles of Regression Analysis
SOC 383	Sociological Methodology III: Models for Discrete Outcomes
SOC 384	New Models and Methods in the Social Sciences

In their first two years in the Ph.D. program, all students are expected to work with faculty on research. To ensure an early start, all students must work at least 25% of their time in their first year as a research assistant with a faculty member. Students on fellowships can earn course credit for the work. With approval from the students' adviser, one quarter of the requirement may be fulfilled by working as a Course Assistant (CA).

Ph.D. students in organizational behavior must take 3 courses in statistics and research methods. Two of these courses must be statistics courses.

Ph.D. students are required to take a minimum of 2 advanced-content courses chosen with input from their adviser.

Students are expected to complete a yearly plan, of no more than two typed pages in length, detailing the student's plans for the next year in terms of education (e.g., courses and seminars), research (e.g., RAships), and teaching (e.g., TAships). This plan should be provided to the students' academic adviser for review no later than May 15 each calendar year.

Policy and Strategy

The Policy and Strategy (P&S) Area addresses policy and strategy questions in a variety of organizational and societal settings. In order to approach interdisciplinary research questions in application domains as diverse as energy, environment, health, information technology, innovation, and government regulation, P&S faculty members rely on a broad range of analytical and empirical tools, such as decision analysis, optimization and operations research methods, formal economic modeling, econometrics, case studies, and simulation. After having been exposed to foundational knowledge of economics, strategy, and organizational theory, doctoral students in the P&S Area can select from a variety of courses to deepen their understanding of the specific application domains. The P&S Area's mission is to provide a first-class learning and research environment preparing doctoral students for careers at research universities, government institutions, and in the private sector.

Foundation in Policy and Strategy (three):	
MS&E 241	Economic Analysis
MS&E 376	Strategy Doctoral Research Seminar
or MS&E 390	Doctoral Research Seminar in Health Systems Modeling
or MS&E 391	Doctoral Research Seminar in Energy-Environmental Systems Modeling and Analysis

Statistics and Research Methods (three):	
MS&E 201	Dynamic Systems
MS&E 211	Introduction to Optimization
or MS&E 211X	Introduction to Optimization (Accelerated)
or MS&E 213	Introduction to Optimization Theory
MS&E 212	Mathematical Programming and Combinatorial Optimization
MS&E 221	Stochastic Modeling
MS&E 223	Simulation
MS&E 352	Decision Analysis II: Professional Decision Analysis
PSYCH 252	Statistical Methods for Behavioral and Social Sciences
SOC 383	Sociological Methodology III: Models for Discrete Outcomes
SOC 384	New Models and Methods in the Social Sciences
The student must select a program of four or more electives including disciplinary depth courses that reflects his or her interests and this approved by the Policy and Strategy faculty. The following are a number of sample programs:	
Sample Program: Modeling Emphasis	
Research Methods	
MS&E 201	Dynamic Systems
MS&E 252	Decision Analysis I: Foundations of Decision Analysis
MS&E 311	Optimization
MS&E 321	Stochastic Systems
Domain Depth	
MS&E 292	Health Policy Modeling
HRP 392	Analysis of Costs, Risks, and Benefits of Health Care
Two of the following:	
MS&E 263	Healthcare Operations Management
MS&E 463	Healthcare Systems Design
HRP 256	Economics of Health and Medical Care
HRP 263	Advanced Decision Science Methods and Modeling in Health
Sample Program: Economics Emphasis	
Research Methods	
ECON 282	Contracts, Information, and Incentives
ECON 286	Game Theory and Economic Applications
Domain Depth	
ECON 257	Industrial Organization 1
ECON 285	Matching and Market Design
Sample Program: Strategy Emphasis	
Research Methods	
MS&E 408	Directed Reading and Research (Methods Apprenticeship)
SOC 369	Social Network Methods
Domain Depth	
MS&E 371	Innovation and Strategic Change
MS&E 376	Strategy Doctoral Research Seminar
SOC 314	Economic Sociology
Sample Program: Risk Analysis Emphasis	
Research Methods	
MS&E 250A	Engineering Risk Analysis
MS&E 251	Introduction to Stochastic Control with Applications
MS&E 252	Decision Analysis I: Foundations of Decision Analysis
MS&E 355	Influence Diagrams and Probabilistics Networks
Domain Depth	
MS&E 250B	Project Course in Engineering Risk Analysis
MS&E 353	Decision Analysis III: Frontiers of Decision Analysis

Students are expected to complete a yearly plan, of no more than two typed pages in length, detailing the student's plans for the next year in terms of education (e.g., courses and seminars), research (e.g., RAships), and teaching (e.g., TAships). This plan should be provided to the students' academic adviser for review no later than May 15 each calendar year.

Policy and Strategy Qualifying Procedure
Advancement to Ph.D. candidacy is determined at the end of the student's second year of studies, based on the following three components:

1. the student's overall grade point average in the program (a GPA of 3.5 or higher is required);
2. a second-year research paper that is written by the student under the supervision of a faculty member, and that is presented to examining faculty members in the second year;
3. a written and an oral qualifying examination taken by the student in the spring quarter of the second year.

Ph.D. Minor in Management Science and Engineering

Students pursuing a Ph.D. in another department who wish to receive a Ph.D. minor in Management Science and Engineering should consult the MS&E student services office. A minor in MS&E may be obtained by completing 20 units of approved graduate-level MS&E courses, of which at least 6 units must be at the 300-level. Courses approved for the minor must form a coherent program, and include a breadth of courses from across the department. The program must include a minimum of 16 letter-graded units, and a minimum grade point average of 3.3 must be achieved in these courses.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of Management Science and Engineering counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory), which are normally offered for a letter grade, towards

satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Graduate Degree Requirements

Grading

The Department of Management Science and Engineering counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory), which are normally offered for a letter grade, towards satisfaction of graduate degree requirements that otherwise require a letter grade.

Graduate Advising Expectations

The Department of Management Science and Engineering is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Every student is assigned a faculty program adviser based on their stated area within the department. Faculty program advisers guide all students in key areas such as selecting courses, navigating policies and degree requirements, and exploring academic opportunities and professional pathways. Faculty program advisers additionally guide doctoral students in designing and conducting research, and development of teaching pedagogy. Faculty program advisers and students meet regularly, and the faculty program adviser may initiate a meeting with any student deemed to be in academic or research distress.

Doctoral students are encouraged to explore research activities in several research groups/labs during their first academic year, and to declare candidacy with a faculty dissertation adviser by the end of their second year in the program. Students may align with faculty across the department. This faculty dissertation adviser supersedes the faculty program adviser in assuming primary responsibility for advising and mentoring the student. When the faculty dissertation adviser is from outside our department, the student must also identify a faculty research adviser from MS&E to provide guidance on departmental requirements, core coursework, and opportunities. We encourage students to decide on their thesis committee within one year after start of candidacy in order to avail themselves of advice from multiple faculty members on the reading committee. MS&E conducts an annual review of all doctoral students' progress on degree progress milestones and research. Research input is solicited and an individual progress report spelling out the forthcoming milestones and any remedial action needed to maintain status is sent to the student via email.

Master students are encouraged to explore courses from across the department, and with multiple MS&E faculty members. Students may request a new adviser from MS&E Student Services staff as their interests clarify. Master's students are encouraged to meet with their adviser on a regular basis, to discuss their program goals and objectives, course selection, career goals, and academic and industry opportunities.

The MS&E student services staff are also an important part of the advising team. They inform students and advisers about University and department requirements, procedures, opportunities, and maintain the official records of adviser assignments and course approvals. Students are encouraged to talk with both the faculty program adviser and the student services office as they consider courses.

Students are active contributors to the advising relationship and we urge them to proactively seek academic and professional guidance and take responsibility for informing themselves of policies and degree requirements for their graduate program. We therefore expect students to read regular communication from the Registrar's office and Student Services regarding upcoming academic deadlines and policy updates, and to be responsible for complying with the university and program requirements.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Emeriti: (Professors) James L. Adams, Stephen R. Barley, Richard W. Cottle, B. Curtis Eaves, Warren H. Hausman, Frederick S. Hillier, Ronald A. Howard, Donald L. Iglehart, David G. Luenberger, Michael M. May, William J. Perry, David A. Thompson; *(Associate Professor)* Samuel S. Chiu; *(Professors, Research)* Siegfried S. Hecker, Walter Murray, Michael A. Saunders; *(Professor, Teaching)* Robert E. McGinn

Chair: Pamela J. Hinds

Director of Graduate Studies: Riitta Katila

Director of Undergraduate Studies: Ross D. Shachter

Professors: Nicholas Bambos, Jose Blanchet, Margaret L. Brandeau, Kathleen M. Eisenhardt, Kay Giesecke, Peter W. Glynn, Ashish Goel, Pamela J. Hinds, Ramesh Johari, Riitta Katila, M. Elisabeth Paté-Cornell, Amin Saberi, Robert I. Sutton, James L. Sweeney, Benjamin Van Roy, Yinyu Ye

Associate Professors: Itai Ashlagi, Charles E. Eesley, Ross D. Shachter, Edison T. S. Tse

Assistant Professors: Guillaume W. Basse, Sharad Goel, Irene Y. Lo, Markus Pelger, Aaron Sidford, Johan Ugander, Melissa A. Valentine

Professor (Research): John P. Weyant

Professor (Teaching): Thomas H. Byers

Professor of the Practice: Tina L. Seelig

Courtesy Professors: Stephen P. Boyd, Paul Milgrom, Douglas K. Owens, Alvin Roth

Courses

MS&E 20. Discrete Probability Concepts And Models. 4 Units. Fundamental concepts and tools for the analysis of problems under uncertainty, focusing on structuring, model building, and analysis. Examples from legal, social, medical, and physical problems. Topics include axioms of probability, probability trees, belief networks, random variables, conditioning, and expectation. The course is fast-paced, but it has no prerequisites.

MS&E 33N. How We Decide: Social Choice in the Age of Algorithms. 4 Units.
The digital revolution arrived with the promise of improving human life, including through its ability to transform the way in which we make social decisions. But one of the most common critiques today is that unstructured interactions in social media and online platforms have actually set us back by spreading fake news, amplifying polarization, and failing to aggregate our diverse views and opinions into collective choices that move our society forward. nnHow should social decisions be made in the age of algorithms? We will approach this question through the lens of social choice theory, and connect this theory from economics and political science to the potential design of algorithms that aggregate our diverse preferences and information. We will review various systems of preference and information aggregation in small groups as well as large societies, including voting systems, bargaining protocols, and methods of deliberation. We will also describe decision making problems that arise in modern applications, such as distributed systems like blockchains and Wikipedia, as well as applications of topical interest such as the assignment of children to schools, the design of congressional districts, and the direct involvement of communities in participatory budgeting. nnA key objective of the class will be to get students to think about how social choice theory can be applied to real-life problems through the design of algorithms. There are no prerequisites, but students should come prepared to use high school level mathematics and deductive reasoning.
Same as: POLISCI 33N

MS&E 52. Introduction to Decision Making. 3-4 Units.
How to ensure focus, discipline, and passion when making important decisions. Comprehensive examples illustrate Decision Analysis fundamentals. Consulting case studies highlight practical solutions for real decisions. Topics: declaring when and how to make a decision, framing and structuring the decision basis, defining values and preferences, creating alternative strategies, assessing unbiased probabilistic judgments, developing appropriate risk/reward and portfolio models, evaluating doable strategies across the range of uncertain future scenarios, analyzing relevant sensitivities, determining the value of additional information, and addressing the qualitative aspects of communication and commitment to implementation. Required for all students are three problem sets, three in-class exams, and a take-home final exam. Students taking the course for 4 units of credit must also complete and present a team project that analyzes a decision currently being made by an organization of their choice. Not intended for MS&E majors.

MS&E 73SI. ASES Entrepreneurship Bootcamp. 1 Unit.
Practicum designed to introduce freshmen and sophomores to design thinking and entrepreneurship. Students learn how to conduct user interviews, identifynmarket opportunities, find product-market fit, and develop pitch decks. Concludes with a fast-paced problem-solving session and a 'demo day'-style pitch event, in which students pitch their projects to Silicon Valley venture capitalists (VCs), entrepreneurs, and investors. Students interact with highly experienced speakers, gain mentorship from upperclassmen and VCs, and develop a worldwide entrepreneurship network, both in and out of Silicon Valley. No background knowledge or experience is necessary, only willingness to work hard, get your hands dirty, and learn. Limited enrollment. Application required: https://tinyurl.com/bootcamp2021.

MS&E 79SI. Values and Principles in the Workplace: PEAK Fellows. 1 Unit.
Extension of the PEAK Fellows program. Serves as an opportunity for students to explore what it means to create and work for principled, entrepreneurial businesses. Through readings and peer-led discussions, students will definentheir personal set of values and principles to serve as a guide in shaping future teams and workplaces. Prerequisite: admission to PEAK Fellows Program. See https://stvp.stanford.edu/peak-fellows.

MS&E 92. Introduction to Health Policy Modeling. 3 Units.
The application of mathematical models to problems in health policy. Estimating the benefits, harms, costs, and uncertainties of a health policy or intervention. Understanding concepts of cost-effectiveness analysis. Developing decision models that capture the tradeoffs between policy alternatives. Examples include disease screening, prevention, and treatment, combating the opioid epidemic, and protecting the blood supply. As a course project, students will develop a simple decision model to evaluate a current health policy problem.

MS&E 92Q. International Environmental Policy. 3 Units.
Preference to sophomores. Science, economics, and politics of international environmental policy. Current negotiations on global climate change, including actors and potential solutions. Sources include briefing materials used in international negotiations and the U.S. Congress.

MS&E 108. Senior Project. 5 Units.
Restricted to MS&E majors in their senior year. Students carry out a major project in groups of four, applying techniques and concepts learned in the major. Project work includes problem identification and definition, data collection and synthesis, modeling, development of feasible solutions, and presentation of results. Service Learning Course (certified by Haas Center). Satisfies the WIM requirement for MS&E majors.

MS&E 111. Introduction to Optimization. 3-4 Units.
Formulation and computational analysis of linear, quadratic, and other convex optimization problems. Applications in machine learning, operations, marketing, finance, and economics. Prerequisite: CME 100 or MATH 51.
Same as: ENGR 62, MS&E 211

MS&E 111X. Introduction to Optimization (Accelerated). 3-4 Units.
Optimization theory and modeling. The role of prices, duality, optimality conditions, and algorithms in finding and recognizing solutions. Perspectives: problem formulation, analytical theory, computational methods, and recent applications in engineering, finance, and economics. Theories: finite dimensional derivatives, convexity, optimality, duality, and sensitivity. Methods: simplex and interior-point, gradient, Newton, and barrier. Prerequisite: CME 100 or MATH 51 or equivalent.
Same as: ENGR 62X, MS&E 211X

MS&E 112. Mathematical Programming and Combinatorial Optimization. 3 Units.
Combinatorial and mathematical programming (integer and non-linear) techniques for optimization. Topics: linear program duality and LP solvers; integer programming; combinatorial optimization problems on networks including minimum spanning trees, shortest paths, and network flows; matching and assignment problems; dynamic programming; linear approximations to convex programs; NP-completeness. Hands-on exercises. Prerequisites: basic concepts in linear algebra, probability theory, CS 106A or X.
Same as: MS&E 212

MS&E 120. Introduction to Probability. 4 Units.
Probability is the foundation behind many important disciplines including statistics, machine learning, risk analysis, stochastic modeling and optimization. This course provides an in-depth undergraduate-level introduction to fundamental ideas and tools of probability. Topics include: the foundations (sample spaces, random variables, probability distributions, conditioning, independence, expectation, variance), a systematic study of the most important univariate and multivariate distributions (Normal, Multivariate Normal, Binomial, Poisson, etc...), as well as a peek at some limit theorems (basic law of large numbers and central limit theorem) and, time permitting, some elementary markov chain theory. Prerequisite: CME 100 or MATH 51.

MS&E 121. Introduction to Stochastic Modeling. 4 Units.
Stochastic processes and models in operations research. Discrete and continuous time parameter Markov chains. Queuing theory, inventory theory, simulation. Prerequisite: 120, 125, or equivalents.

MS&E 125. Introduction to Applied Statistics. 4 Units.
An increasing amount of data is now generated in a variety of disciplines, ranging from finance and economics, to the natural and social sciences. Making use of this information, however, requires both statistical tools and an understanding of how the substantive scientific questions should drive the analysis. In this hands-on course, we learn to explore and analyze real-world datasets. We cover techniques for summarizing and describing data, methods for statistical inference, and principles for effectively communicating results. Prerequisite: 120, CS 106A, or equivalents.

MS&E 130. Information Networks and Services. 3 Units.
Architecture of the Internet and performance engineering of computer systems and networks. Switching, routing and shortest path algorithms. Congestion management and queueing networks. Peer-to-peer networking. Wireless and mobile networking. Information service engineering and management. Search engines and recommendation systems. Reputation systems and social networking technologies. Security and trust. Information markets. Select special topics and case studies. Prerequisites: 111, 120, and CS 106A.

MS&E 135. Networks. 3 Units.
This course provides an introduction to how networks underly our social, technological, and natural worlds, with an emphasis on developing intuitions for broadly applicable concepts in network analysis. The course will include: an introduction to graph theory and graph concepts; social networks; information networks; the aggregate behavior of markets and crowds; network dynamics; information diffusion; the implications of popular concepts such as "six degrees of separation", the "friendship paradox", and the "wisdom of crowds".

MS&E 140. Accounting for Managers and Entrepreneurs. 3-4 Units.
Non-majors and minors who have taken or are taking elementary accounting should not enroll. Introduction to accounting concepts and the operating characteristics of accounting systems. The principles of financial and cost accounting, design of accounting systems, techniques of analysis, and cost control. Interpretation and use of accounting information for decision making. Designed for the user of accounting information and not as an introduction to a professional accounting career. Enrollment limited. Admission by order of enrollment.
Same as: MS&E 240

MS&E 145. Introduction to Finance and Investment. 4 Units.
Introduction to modern quantitative finance and investments. The course focuses on the basic principles underlying financial decision making which are applicable to all forms of investment: stocks, bonds, real estate, corporate finance, etc., and how they are applied in practice. Topics: interest rates; evaluating investments: present value and internal rate of return; fixed-income markets: bonds, yield, duration, portfolio immunization; term structure of interest rates; measuring risk: volatility, value at risk, conditional value at risk; designing optimal security portfolios; the capital asset pricing model, arbitrage pricing theory. Group projects involving financial market data. No prior knowledge of finance required. Prerequisite: basic preparation in probability, statistics, and optimization.

MS&E 146. Corporate Financial Management. 3-4 Units.
Key functions of finance in both large and small companies, and the core concepts and key analytic tools that provide their foundation. Making financing decisions, evaluating investments, and managing cashflow, profitability and risk. Designing performance metrics to effectively measure and align the activities of functional groups and individuals within the firm. Structuring relationships with key customers, partners and suppliers. Prerequisite: 145, 245A, or equivalent.
Same as: MS&E 249

MS&E 148. Ethics of Finance. 2 Units.
Explores the ethical reasoning needed to make banking, insurance and financial services safer, fairer and more positively impactful. Weighs tradeoffs in how money is created, privileging some, under-privileging others, using market mechanisms for transforming and trading financial risk, return, maturity and asset types. Technology is changing banks, financial markets, insurance and money. Like technology for medicine, finance is being rebuilt as machine learned code, algorithmic investment rules and regulatory monitoring. Risk models can be built to detect fraud and ethical lapses, or to open doors for them. Investment valuation models can optimize short term or long term returns, by optimizing or ignoring environmental and social impacts. Transparency or opacity can be the norm. Transforming finance through engineering requires finding, applying and evolving codes of professional conduct to make sure that engineers use their skills within legal and ethical norms. Daily, financial engineers focus on two horizons: on the floor, we stand on the bare minimum standards of conduct, and on the ceiling, we aim for higher ethical goals that generate discoveries celebrated though individual fulfillment and TED Talks. Stanford engineers, computer scientists, data scientists, mathematicians and other professionals are building systems for lending, investment and portfolio management decisions that determine future economic and social growth. This course uses the case method to preview intersecting codes of conduct, legal hurdles and ethical impact opportunities, and creates as a safe academic setting for seeing career-limiting ethical stop signs (red lights) and previewing ¿what¿s my life all about¿ events, as unexpected threats or surprising ah-ha moments. Guest speakers will highlight real life situations, lawsuits and other events where ethics of financial engineering was a predominant theme, stumbling block or humanitarian opportunity.

MS&E 149. Hedge Fund Management. 1-2 Unit.
Introduction to hedge fund management. Students actively manage the $1MM Stanford Kudla Fund employing Equity Long/Short, Macro and Quantitative Investment Strategies. Modeled after a hedge fund partnership culture, participation involves significant time commitment, passion for investing, and uncommon teamwork and communication skills. Open to advanced undergraduate and graduate students with continuing participation expectation. Limited to 12 students. Enrollment by application and permission of Instructor.May be repeat for credit.

MS&E 152. Introduction to Decision Analysis. 3-4 Units.
How to make good decisions in a complex, dynamic, and uncertain world. People often make decisions that on close examination they regard as wrong. Decision analysis uses a structured conversation based on actional thought to obtain clarity of action in a wide variety of domains. Topics: distinctions, possibilities and probabilities, relevance, value of information and experimentation, relevance and decision diagrams, risk attitude. Prerequisites: high school algebra and basic spreadsheet skills.

MS&E 175. Innovation, Creativity, and Change. 3-4 Units.
Problem solving in organizations; creativity and innovation skills; thinking tools; creative organizations, teams, individuals, and communities. Limited enrollment.

MS&E 178. The Spirit of Entrepreneurship. 2 Units.
Is there more to entrepreneurship than inventing the better mouse trap? This course uses the speakers from the Entrepreneurial Thought Leader seminar (MS&E472) to drive research and discussion about what makes an entrepreneur successful. Topics include venture financing, business models, and interpersonal dynamics in the startup environment. Students meet before and after MS&E 472 to prepare for and debrief after the sessions. Enrollment limited to 60 students. Application available at first class session.

MS&E 180. Organizations: Theory and Management. 4 Units.
For undergraduates only; preference to MS&E majors. Classical and contemporary organization theory; the behavior of individuals, groups, and organizations. Limited enrollment. Students must attend and complete an application at the first class session.

MS&E 182A. Leading Organizational Change. 4 Units.
This course blends lecture, case discussions, readings about pertinent research, and hands-on projects to learn about what leaders and senior teams can do to bring about broad-based change in complex organizations. Topics include the role of the CEO and the senior team, organizational growth and scaling, organizational culture, organizational design, and innovation. The course focuses in particular on the causes and cures for dysfunctional organizational friction, and the related question what organizations ought to make difficult or impossible to do. Limited enrollment. For juniors and seniors, with preference given to students who have taken MS&E 180.

MS&E 182B. Leading Organizational Change II. 4 Units.
Project-based course for students who wish to explore focused intellectual topics or applied questions pertinent to leading organizational change. Work is done in groups of three to five students that are formed prior to the start of class. Prerequisite: 182A or permission of instructor.

MS&E 184. Future of Work: Issues in Organizational Learning and Design. 4 Units.
The nature of work is changing, with consequences for how we structure jobs, careers, teams, organizations, and labor markets. This class teaches analytical tools from organizational behavior, social psychology, and socially distributed cognition to empower students to analyze and understand the changes and their consequences. Enrollment Limited. Prerequisite: 180.

MS&E 185. Global Work. 4 Units.
Issues, challenges, and opportunities facing workers, teams, and organizations working across national boundaries. Topics include geographic distance, time zones, language and cultural differences, technologies to support distant collaboration, team dynamics, and corporate strategy. Limited enrollment. Recommended: 180.

MS&E 188. Organizing for Good. 4 Units.
Grand challenges of our time will demand entirely new ways of thinking about when, how, and under what conditions organizations are "doing good" and what effects that has. Focus is on the role of organizations in society, the ways that organizations can "do good," the challenges organizations face in attempting to "do good", limitations to current ways of organizing, alternative ways to organize and lead organizations that are "good," and the role and responsibilities of individuals in organizations. Students will reflect on and refine their own values and purpose to identify ways in which they can ¿do good.¿ This course has been designated as a Cardinal Course by the Haas Center for Public Service.

MS&E 193. Technology and National Security: Past, Present, and Future. 3-4 Units.
Explores the relation between technology, war, and national security policy from early history to modern day, focusing on current U.S. national security challenges and the role that technology plays in shaping our understanding and response to these challenges. Topics include the interplay between technology and modes of warfare; dominant and emerging technologies such as nuclear weapons, cyber, sensors, stealth, and biological; security challenges to the U.S.; and the U.S. response and adaptation to new technologies of military significance.
Same as: INTLPOL 256, MS&E 293

MS&E 201. Dynamic Systems. 3 Units.
Dynamic System: Provides a solid foundation in understanding and modeling the dynamics of change. Differential equations are used as a mathematical language to facilitate discussions on dynamic phenomena. Develop mathematical tools to analyze the dynamic models, and use such tools to think about and manage the dynamics of change. The course covers the notions of equilibrium, stability, growth and limit cycle of dynamic systems and discussed in terms of examples in product market penetration, business competition, ecology and spread of epidemics. The course gives an introduction to Catastrophe Theory, which provides a mathematical model for certain discontinuous phenomena like the crash of the stock market and the extinction of species. The course concludes with optimal control theory and differential games. Optimal economic growth model and optimal dynamic pricing are used to illustrate how the optimal control theory is applied to economic modeling analysis and business application. A platform competition model is used to illustrate how different games can be used to do dynamic competitive analysis. Required a project in dynamic system modeling. Pre-requisite: calculus and linear algebra.

MS&E 202. Topics in Management Science and Engineering. 1 Unit.
Topics in Management Science and Engineering. Restricted to MS&E MS students.

MS&E 208A. Practical Training. 1 Unit.
MS&E students obtain employment in a relevant industrial or research activity to enhance professional experience, consistent with the degree program they are pursuing. Students submit a statement showing relevance to degree program along with offer letter to the Student Services Office before the start of the quarter, and a 2-3 page final report documenting the work done and relevance to degree program at the conclusion of the quarter. Students may take each course once. To receive a permission code to enroll, please submit this form: https://forms.gle/bFtMtwJMyaCJRhkf8 with statement and offer letter.

MS&E 208B. Practical Training. 1 Unit.
MS&E students obtain employment in a relevant industrial or research activity to enhance professional experience, consistent with the degree program they are pursuing. Students submit a statement showing relevance to degree program along with offer letter to the Student Services Office before the start of the quarter, and a 2-3 page final report documenting the work done and relevance to degree program at the conclusion of the quarter. Students may take each course once. To receive a permission code to enroll, please submit this form: https://forms.gle/bFtMtwJMyaCJRhkf8 with statement and offer letter.

MS&E 208C. Practical Training. 1 Unit.
MS&E students obtain employment in a relevant industrial or research activity to enhance professional experience, consistent with the degree program they are pursuing. Students submit a statement showing relevance to degree program along with offer letter to the Student Services Office before the start of the quarter, and a 2-3 page final report documenting the work done and relevance to degree program at the conclusion of the quarter. Students may take each course once. To receive a permission code to enroll, please submit this form: https://forms.gle/bFtMtwJMyaCJRhkf8 with statement and offer letter.

MS&E 208D. Practical Training. 1 Unit.
MS&E students obtain employment in a relevant industrial or research activity to enhance professional experience, consistent with the degree program they are pursuing. Students submit a statement showing relevance to degree program along with offer letter to the Student Services Office before the start of the quarter, and a 2-3 page final report documenting the work done and relevance to degree program at the conclusion of the quarter. Students may take each course once. To receive a permission code to enroll, please submit this form: https://forms.gle/bFtMtwJMyaCJRhkf8 with statement and offer letter.

MS&E 208E. Part-Time Practical Training. 1 Unit.
MS&E students obtain employment in a relevant industrial or research activity to enhance professional experience, consistent with the degree program they are pursuing. Students submit a statement showing relevance to degree program along with offer letter to the Student Services Office before the start of the quarter, and a 2-3 page final report documenting the work done and relevance to degree program at the conclusion of the quarter. Course may be repeated for credit. To receive a permission code to enroll, please submit this form: https://forms.gle/bFtMtwJMyaCJRhkf8 with statement and offer letter.

MS&E 211. Introduction to Optimization. 3-4 Units.
Formulation and computational analysis of linear, quadratic, and other convex optimization problems. Applications in machine learning, operations, marketing, finance, and economics. Prerequisite: CME 100 or MATH 51.
Same as: ENGR 62, MS&E 111

MS&E 211X. Introduction to Optimization (Accelerated). 3-4 Units.
Optimization theory and modeling. The role of prices, duality, optimality conditions, and algorithms in finding and recognizing solutions. Perspectives: problem formulation, analytical theory, computational methods, and recent applications in engineering, finance, and economics. Theories: finite dimensional derivatives, convexity, optimality, duality, and sensitivity. Methods: simplex and interior-point, gradient, Newton, and barrier. Prerequisite: CME 100 or MATH 51 or equivalent.
Same as: ENGR 62X, MS&E 111X

MS&E 212. Mathematical Programming and Combinatorial Optimization. 3 Units.
Combinatorial and mathematical programming (integer and non-linear) techniques for optimization. Topics: linear program duality and LP solvers; integer programming; combinatorial optimization problems on networks including minimum spanning trees, shortest paths, and network flows; matching and assignment problems; dynamic programming; linear approximations to convex programs; NP-completeness. Hands-on exercises. Prerequisites: basic concepts in linear algebra, probability theory, CS 106A or X.
Same as: MS&E 112

MS&E 213. Introduction to Optimization Theory. 3 Units.
Introduction of core algorithmic techniques and proof strategies that underlie the best known provable guarantees for minimizing high dimensional convex functions. Focus on broad canonical optimization problems and survey results for efficiently solving them, ultimately providing the theoretical foundation for further study in optimization. In particular, focus will be on first-order methods for both smooth and non-smooth convex function minimization as well as methods for structured convex function minimization, discussing algorithms such as gradient descent, accelerated gradient descent, mirror descent, Newton's method, interior point methods, and more. Prerequisite: multivariable calculus and linear algebra.
Same as: CS 269O

MS&E 220. Probabilistic Analysis. 3-4 Units.
Concepts and tools for the analysis of problems under uncertainty, focusing on structuring, model building, and analysis. Examples from legal, social, medical, and physical problems. Topics include axioms of probability, probability trees, random variables, distributions, conditioning, expectation, change of variables, and limit theorems. Prerequisite: multivariable calculus and some linear algebra.

MS&E 221. Stochastic Modeling. 3 Units.
Focus is on time-dependent random phenomena. Topics: discrete and continuous time Markov chains, renewal processes, queueing theory, and applications. Emphasis is on building a framework to formulate and analyze probabilistic systems. Prerequisite: 220 or equivalent, or consent of instructor.

MS&E 223. Simulation. 3 Units.
Discrete-event systems, generation of uniform and non-uniform random numbers, Monte Carlo methods, programming techniques for simulation, statistical analysis of simulation output, efficiency-improvement techniques, decision making using simulation, applications to systems in computer science, engineering, finance, and operations research. Prerequisites: working knowledge of a programming language such as C, C++, Java, Python, or FORTRAN; calculus-base probability; and basic statistical methods.

MS&E 226. Fundamentals of Data Science: Prediction, Inference, Causality. 3 Units.
This course is about understanding "small data": these are datasets that allow interaction, visualization, exploration, and analysis on a local machine. The material provides an introduction to applied data analysis, with an emphasis on providing a conceptual framework for thinking about data from both statistical and machine learning perspectives. Topics will be drawn from the following list, depending on time constraints and class interest: approaches to data analysis: statistics (frequentist, Bayesian) and machine learning; binary classification; regression; bootstrapping; causal inference and experimental design; multiple hypothesis testing. Class lectures will be supplemented by data-driven problem sets and a project. Prerequisites: CME 100 or MATH 51; 120, 220 or STATS 116; experience with R at the level of CME/STATS 195 or equivalent.

MS&E 230. Incentives and Algorithms. 3 Units.
Many policies and algorithms interact with many self-interested agents. Provides students methodology and vocabulary to analyze and design such problems. Provides foundations of basic economics and game theoretic concepts and will apply them to a variety of real world applications. Topics: equilibrium analysis, auction design, matching markets, social choice, externalities and network design. Applications: matching marketplaces (NRMP, Upwork, college admissions), dynamic pricing in ride-sharing, advertising mechanisms, reputation systems, platform design, kidney exchange and organ allocations, food banks. Relation to MS&E 232: while 232 provides an extensive introduction to game theory, this course focuses on designing the "rules of the game" to achieve good economic outcomes and will cover only a few basic topics from MS&E 232, including more on application and algorithmic design. Prerequisites: basic mathematical maturity at the level of Math 51, and probability at the level of MS&E 120, 220 or EE 178.

MS&E 231. Introduction to Computational Social Science. 3 Units.
With a vast amount of data now collected on our online and offline actions -- from what we buy, to where we travel, to who we interact with -- we have an unprecedented opportunity to study complex social systems. This opportunity, however, comes with scientific, engineering, and ethical challenges. In this hands-on course, we develop ideas from computer science and statistics to address problems in sociology, economics, political science, and beyond. We cover techniques for collecting and parsing data, methods for large-scale machine learning, and principles for effectively communicating results. To see how these techniques are applied in practice, we discuss recent research findings in a variety of areas. Prerequisites: introductory course in applied statistics, and experience coding in R, Python, or another high-level language.
Same as: SOC 278

MS&E 232. Introduction to Game Theory. 3 Units.
Examines foundations of strategic environments with a focus on game theoretic analysis. Provides a solid background to game theory as well as topics in behavioral game theory and the design of marketplaces. Introduction to analytic tools to model and analyze strategic interactions as well as engineer the incentives and rules in marketplaces to obtain desired outcomes. Technical material includes non-cooperative and cooperative games, behavioral game theory, equilibrium analysis, repeated games, social choice, mechanism and auction design, and matching markets. Exposure to a wide range of applications. Lectures, presentations, and discussion. Prerequisites: basic mathematical maturity at the level of Math 51, and probability at the level of MS&E 120 or EE 178.

MS&E 232H. Introduction to Game Theory. 3 Units.
Introduction to Game Theory (Accelerate).
Same as: Accelerate

MS&E 234. Data Privacy and Ethics. 3 Units.
This course engages with ethical challenges in the modern practice of data science. The three main focuses are data privacy, personalization and targeting algorithms, and online experimentation. The focus on privacy raises both practical and theoretical considerations. As part of the module on experimentation, students are required to complete the Stanford IRB training for social and behavioral research. The course assumes a strong technical familiarity with the practice of machine learning and and data science. Recommended: 221, 226, CS 161, or equivalents.

MS&E 235. Network Structure and Epidemics. 3 Units.
Explores the underlying network structure of social, economic, and technological world using techniques from graph theory and economics, as well as machine learning and data analysis. Prerequisite: 226, CME 195, or equivalents. Recommended: 212.
Same as: MS&E 337

MS&E 240. Accounting for Managers and Entrepreneurs. 3-4 Units.
Non-majors and minors who have taken or are taking elementary accounting should not enroll. Introduction to accounting concepts and the operating characteristics of accounting systems. The principles of financial and cost accounting, design of accounting systems, techniques of analysis, and cost control. Interpretation and use of accounting information for decision making. Designed for the user of accounting information and not as an introduction to a professional accounting career. Enrollment limited. Admission by order of enrollment.
Same as: MS&E 140

MS&E 241. Economic Analysis. 3-4 Units.
Principal methods of economic analysis of the production activities of firms, including production technologies, cost and profit, and perfect and imperfect competition; individual choice, including preferences and demand; and the market-based system, including price formation, efficiency, and welfare. Practical applications of the methods presented. Recommended: 211, ECON 50.

MS&E 243. Energy and Environmental Policy Analysis. 3 Units.
Concepts, methods, and applications. Energy/environmental policy issues such as automobile fuel economy regulation, global climate change, research and development policy, and environmental benefit assessment. Group project. Prerequisite: MS&E 241 or ECON 50, 51.

MS&E 245A. Investment Science. 3-4 Units.
Basic concepts of modern quantitative finance and investments. Focus is on the financial theory and empirical evidence that are useful for investment decisions. Topics: basic interest rates; evaluating investments: present value and internal rate of return; fixed-income markets: bonds, yield, duration, portfolio immunization; term structure of interest rates; measuring risk: volatility and value at risk; designing optimal portfolios; risk-return tradeoff: capital asset pricing model and extensions. No prior knowledge of finance is required. Concepts are applied in a stock market simulation with real data. Prerequisite: basic preparation in probability, statistics, and optimization.

MS&E 245B. Advanced Investment Science. 3 Units.
Formerly MS&E 342. Topics: forwards and futures contracts, continuous and discrete time models of stock price behavior, geometric Brownian motion, Ito's lemma, basic options theory, Black-Scholes equation, advanced options techniques, models and applications of stochastic interest rate processes, and optimal portfolio growth. Computational issues and general theory. Teams work on independent projects. Prerequisite: 245A.

MS&E 246. Financial Risk Analytics. 3 Units.
Practical introduction to financial risk analytics. The focus is on data-driven modeling, computation, and statistical estimation of credit and market risks. Case studies based on real data will be emphasized throughout the course. Topics include mortgage risk, asset-backed securities, commercial lending, consumer delinquencies, online lending, derivatives risk. Tools from machine learning and statistics will be developed. Data sources will be discussed. The course is intended to enable students to design and implement risk analytics tools in practice. Prerequisites: MS&E 245A or similar, some background in probability and statistics, working knowledge of R, Matlab, or similar computational/ statistical package.

MS&E 249. Corporate Financial Management. 3-4 Units.
Key functions of finance in both large and small companies, and the core concepts and key analytic tools that provide their foundation. Making financing decisions, evaluating investments, and managing cashflow, profitability and risk. Designing performance metrics to effectively measure and align the activities of functional groups and individuals within the firm. Structuring relationships with key customers, partners and suppliers. Prerequisite: 145, 245A, or equivalent.
Same as: MS&E 146

MS&E 250A. Engineering Risk Analysis. 3 Units.
The techniques of analysis of engineering systems for risk management decisions involving trade-offs (technical, human, environmental aspects). Elements of decision analysis; probabilistic risk analysis (fault trees, event trees, systems dynamics); economic analysis of failure consequences (human safety and long-term economic discounting); and case studies such as space systems, nuclear power plants, and medical systems. Public and private sectors. Prerequisites: probability, decision analysis, stochastic processes, and convex optimization.

MS&E 250B. Project Course in Engineering Risk Analysis. 3 Units.
Students, individually or in groups, choose, define, formulate, and resolve a real risk management problem, preferably from a local firm or institution. Oral presentation and report required. Scope of the project is adapted to the number of students involved. Three phases: risk assessment, communication, and management. Emphasis is on the use of probability for the treatment of uncertainties and sensitivity to problem boundaries. Limited enrollment. Prerequisites: MS&E 250A and consent of instructor.

MS&E 251. Introduction to Stochastic Control with Applications. 3 Units.
Focuses on conceptual foundation and algorithmic methodology of Dynamic Programming and Stochastic Control with applications to engineering, operations research, management science and other fields. Elaborates on the concept of probing, learning and control of stochastic systems, and addresses the practical application of the concept and methodology through the use of approximations. Prerequisites: 201, 221, or equivalents.
Same as: EE 266

MS&E 252. Decision Analysis I: Foundations of Decision Analysis. 3-4 Units.
Coherent approach to decision making, using the metaphor of developing a structured conversation having desirable properties, and producing actional thought that leads to clarity of action. Socratic instruction; computational problem sessions. Emphasis is on creation of distinctions, representation of uncertainty by probability, development of alternatives, specification of preference, and the role of these elements in creating a normative approach to decisions. Information gathering opportunities in terms of a value measure. Relevance and decision diagrams to represent inference and decision. Principles are applied to decisions in business, technology, law, and medicine. Prerequisite: 220 or equivalent.

MS&E 254. The Ethical Analyst. 1-3 Unit.
The ethical responsibility for consequences of professional analysts who use technical knowledge in support of any individual, organization, or government. The means to form ethical judgments; questioning the desirability of physical coercion and deception as a means to reach any end. Human action and relations in society in the light of previous thought, and research on the desired form of social interactions. Attitudes toward ethical dilemmas through an explicit personal code.

MS&E 256. Technology Assessment and Regulation of Medical Devices. 3 Units.
Regulatory approval and reimbursement for new health technologies are critical success factors for product commercialization. This course explores the regulatory and payer environment in the U.S. and abroad, as well as common methods of health technology assessment. Students will learn frameworks to identify factors relevant to the adoption of new health technologies, and the management of those factors in the design and development phases of bringing a product to market through case studies, guest speakers from government (FDA) and industry, and a course project.
Same as: BIOE 256

MS&E 256A. Technology Assessment and Regulation of Medical Devices. 1 Unit.
Regulatory approval and reimbursement for new medical technologies as a key component of product commercialization. The regulatory and payer environment in the U.S. and abroad, and common methods of health technology assessment. Framework to identify factors relevant to adoption of new medical devices, and the management of those factors in the design and development phases. Case studies; guest speakers from government (FDA) and industry.

MS&E 260. Introduction to Operations Management. 3 Units.
Operations management focuses on the effective planning, scheduling, and control of manufacturing and service entities. This course introduces students to a broad range of key issues in operations management. Topics include determination of optimal facility location, production planning, optimal timing and sizing of capacity expansion, and inventory control. Prerequisites: basic knowledge of Excel spreadsheets, probability.

MS&E 263. Healthcare Operations Management. 3 Units.
US health care spending is approximately 18% of GDP, growing rapidly, and driven in large part by prices and waste rather than quality and access. New approaches for improving health care delivery are urgently needed. This class focuses on the use of analytical tools to support efficient health care delivery. Topics include case studies on capacity planning, resource allocation, and scheduling. Methods include queueing, optimization, and simulation. Prerequisites: basic knowledge of Excel, probability, and optimization. For students in the Schools of Medicine, Business, and Law the course includes a variant of the curriculum with less emphasis on the technical material.
Same as: PEDS 263

MS&E 265. Introduction to Product Management. 3 Units.
Product Managers define a product's functional requirements and lead cross functional teams responsible for development, launch, and ongoing improvement. Uses a learning-by-doing approach covering the following topics: changing role of a PM at different stages of the product life cycle; techniques to understand customer needs and validate demand; user experience design and testing; role of detailed product specifications; waterfall and agile methods of software development. Group projects involve the specification of a technology product though the skills taught are useful for a variety of product roles. No prior knowledge of design, engineering, or computer science required. Limited enrollment. Application deadlines: September 20, 2019 (for fall enrollment) and January 3, 2020 (for winter enrollment).

MS&E 267. Service Operations and the Design of Marketplaces. 3 Units.
The service sector accounts for approximately 80% of GDP and employment in the US. It is therefore imperative to develop efficient and effective operations of services. The management of service operations can require quite different constraints and objectives than manufacturing operations. The course examines both traditional and new approaches for achieving operational competitiveness in service businesses including (online) marketplaces. Topics include the service concept and operations strategy, the design of effective service delivery systems, capacity management, queuing, quality, revenue management as well as concepts from the design of marketplaces such as matching, congestion and auctions.

MS&E 270. Strategy in Technology-Based Companies. 3-4 Units.
For graduate students only. Introduction to the basic concepts of strategy, with emphasis on high technology firms. Topics: competitive positioning, resource-based perspectives, co-opetition and standards setting, and complexity/evolutionary perspectives. Limited enrollment. Students must attendnand complete an application at the first class session.

MS&E 271. Global Entrepreneurial Marketing. 3-4 Units.
Introduces core marketing concepts to bring a new product or service to market and build for its success. Geared to both entrepreneurs and intrapreneurs alike who have a passion for innovation. Course themes include: Identifying markets and opportunities, defining the offering and customer experience, creating demand, generating revenue, and measuring success. The team-based final focuses on developing a go-to-market strategy based on concepts from the course. Learn about managing self, building culture and teams, strategically think about your contribution as entrepreneur or intrapreuneur to an organization, community or society at large. Highly experiential and project based. Limited enrollment.

MS&E 272. Entrepreneurship without Borders. 3-4 Units.
How and why does access to entrepreneurial opportunities vary by geographic borders, racial/gender borders, or other barriers created by where or who you are? What kinds of inequalities are created by limited access to capital or education and what role does entrepreneurship play in upward mobility in societies globally? What are the unique issues involved in creating a successful startup in Europe, Latin America, Africa, China or India? What is entrepreneurial leadership in a venture that spans country borders? Is Silicon Valley-style entrepreneurship possible in other places? How does an entrepreneur act differently when creating a company in a less-developed institutional environment? Learn through forming teams, a mentor-guided startup project focused on developing students' startups in international markets, case studies, research on the unequal access to wealth creation and innovation via entrepreneurship, while also networking with top entrepreneurs and venture capitalists who work across borders.

MS&E 273. Venture Creation for the Real Economy. 3-4 Units.
CEE 246 is a unique course geared toward developing entrepreneurial businesses (both start-ups and internal ventures). This team, project-based class teaches students how to exploit emerging materials science, engineering and IT technologies to radically apply innovation to the real economy e.g., new products and services that produce real economic value for society as well as for the entrepreneurs. Areas of focus include: Sustainable Buildings and Infrastructure, Digital Cities and Communities, Clean Energy, Transportation and Logistics, Advanced Manufacturing, Digital Health Care, and Education. nnWith one-on-one support from seasoned industry mentors and influential guest speakers, the course guides students through the three key elements of new venture creation: identifying opportunities, developing business plans, and determining funding sources. The class culminates with business presentations to industry experts, VCs and other investors. The goal is to equip students with the knowledge and network to create impactful business ideas, many of which have been launched from this class. To apply for this limited enrollment course, students must submit the following application: https://forms.gle/nNCnX3kty56Wbo986.
Same as: CEE 246

MS&E 274. Dynamic Entrepreneurial Strategy. 3 Units.
Dynamic Entrepreneurial Strategy: Primarily for graduate students. How entrepreneurial strategy focuses on creating structural change or responding to change induced externally. Grabber-holder dynamics as an analytical framework for developing entrepreneurial strategy to increase success in creating and shaping the diffusion of new technology or product innovation dynamics. Topics: First mover versus follower advantage in an emerging market; latecomer advantage and strategy in a mature market; strategy to break through stagnation; and strategy to turn danger into opportunity. Modeling, case studies, and term project.

MS&E 275. Intelligent Growth in Startups. 3 Units.
Explore the foundational and strategic elements needed for startups to be designed for "venture scale" at inception. Themes include controversial and disruptive insights, competitive analysis, network effects, organizational design, and capital deployment. Case studies, expert guests, and experiential learning projects will be used. Primarily for graduate students. Limited enrollment. Admission by application. Recommended: basic accounting.

MS&E 276. Entrepreneurial Management and Finance. 3 Units.
For graduate students only, with a preference for engineering and science majors. Emphasis on managing high-growth, early-stage enterprises, especially those with innovation-based products and services. Students work in teams to develop skills and approaches necessary to becoming effective entrepreneurial leaders and managers. Topics include assessing risk, understanding business models, analyzing key operational metrics, modeling cash flow and capital requirements, evaluating sources of financing, structuring and negotiating investments, managing organizational culture and incentives, managing the interplay between ownership and growth, and handling adversity and failure. Limited enrollment. Admission by application. Prerequisite: basic accounting.

MS&E 277A. Entrepreneurial Leadership. 3 Units.
This course sequence is part of the Accel Leadership Program which accepts 24 technically-minded students from across Stanford. The program focuses on how to lead entrepreneurial ventures, with a focus on startup strategy, organizational structure, securing resources, operating models, and how to build an effective team. There will be skill-building workshops as well as living case studies with startup founders. Each student will be on a team that will tackle a real world business problem for a high growth venture and present their findings to the class. The selection process will run during Fall quarter 2020, and applications will be available at https://stvp.stanford.edu/students.

MS&E 277B. Entrepreneurial Leadership. 3 Units.
This course sequence is part of the Accel Leadership Program which accepts 24 technically-minded students from across Stanford. The program focuses on how to lead entrepreneurial ventures, with a focus on startup strategy, organizational structure, securing resources, operating models, and how to build an effective team. There will be skill-building workshops as well as living case studies with startup founders. Each student will be on a team that will tackle a real world business problem for a high growth venture and present their findings to the class. The selection process will run during Fall quarter 2020, and applications will be available at https://stvp.stanford.edu/students.

MS&E 278. Patent Law and Strategy for Innovators and Entrepreneurs. 2-3 Units.
This course teaches the essentials for a startup to build a valuable patent portfolio and avoid a patent infringement lawsuit. Jeffrey Schox, who is the top recommended patent attorney for Y Combinator, built the patent portfolio for Twilio (IPO), Cruise ($1B acquisition), and 300 startups that have collectively raised over $3B in venture capital. This course is equally applicable to EE, CS, and Bioengineering students. For those students who are interested in a career in Patent Law, please note that this course is a prerequisite for ME238 Patent Prosecution.
Same as: ME 208

MS&E 280. Organizational Behavior: Evidence in Action. 3-4 Units.
Organization theory; concepts and functions of management; behavior of the individual, work group, and organization. Emphasis is on cases and related discussion. Enrollment limited.

MS&E 284. Designing Modern Work Organizations. 3 Units.
This practice-based experiential lab course is geared toward MS&E masters students. Students will master the concepts of organizational design, with an emphasis on applying them to modern challenges (technology, growth, globalization, and the modern workforce). Students will also gain mastery of skills necessary for success in today's workplace (working in teams, communicating verbally, presenting project work). Guest speakers from industry will present real-world challenges related to class concepts. Students will complete a quarter-long project designing and managing an actual online organization.

MS&E 292. Health Policy Modeling. 3 Units.
Primarily for master's students; also open to undergraduates and doctoral students. The application of mathematical, statistical, economic, and systems models to problems in health policy. Areas include: disease screening, prevention, and treatment; assessment of new technologies; bioterrorism response; and drug control policies.

MS&E 293. Technology and National Security: Past, Present, and Future. 3-4 Units.
Explores the relation between technology, war, and national security policy from early history to modern day, focusing on current U.S. national security challenges and the role that technology plays in shaping our understanding and response to these challenges. Topics include the interplay between technology and modes of warfare; dominant and emerging technologies such as nuclear weapons, cyber, sensors, stealth, and biological; security challenges to the U.S.; and the U.S. response and adaptation to new technologies of military significance.
Same as: INTLPOL 256, MS&E 193

MS&E 296. Technology, Innovation and Modern War: Keeping America's Edge in an Era of Great Power Competition. 4 Units.
This course explores how technology advances in areas like Cyber, Space, AI, Machine Learning, and Autonomy will create new types of military systems that will be deployed in modern conflicts, and the new operational concepts, organization and strategies that will emerge from these technologies. The course develops an appreciation that innovation in military systems throughout history has followed a repeatable pattern: technology innovation > new weapons > experimentation with new weapons/operational concepts > pushback from incumbents > first use of new operational concepts. Students will apply course concepts and learning to identify opportunities for the U.S. to maintain its technological edge and compete more effectively in this era of great power rivalry. The course builds on concepts presented in MS&E 193/293: Technology and National Security and provides a strong foundation for MS&E 297: Hacking for Defense.
Same as: INTLPOL 340

MS&E 297. "Hacking for Defense": Solving National Security issues with the Lean Launchpad. 3-4 Units.
In a crisis, national security initiatives move at the speed of a startup yet in peacetime they default to decades-long acquisition and procurement cycles. Startups operate with continual speed and urgency 24/7. Over the last few years they've learned how to be not only fast, but extremely efficient with resources and time using lean startup methodologies. In this class student teams will take actual national security problems and learn how to apply lean startup principles, ("business model canvas," "customer development," and "agile engineering) to discover and validate customer needs and to continually build iterative prototypes to test whether they understood the problem and solution. Teams take a hands-on approach requiring close engagement with actual military, Department of Defense and other government agency end-users. Team applications required in February, see hacking4defense.stanford.edu. Limited enrollment.

MS&E 301. Dissertation Research. 1-10 Unit.
Prerequisite: doctoral candidacy.

MS&E 302. Fundamental Concepts in Management Science and Engineering. 1 Unit.
Each course session will be devoted to a specific MS&E PhD research area. Advanced students will make presentations designed for first-year doctoral students regardless of area. The presentations will be devoted to: illuminating how people in the area being explored that day think about and approach problems, and illustrating what can and cannot be done when addressing problems by deploying the knowledge, perspectives, and skills acquired by those who specialize in the area in question. Area faculty will attend and participate. During the last two weeks of the quarter groups of first year students will make presentations on how they would approach a problem drawing on two or more of the perspectives to which they have been exposed earlier in the class. Attendance is mandatory and performance will be assessed on the basis of the quality of the students¿ presentations and class participation. Restricted to first year MS&E PhD students.

MS&E 310. Linear Programming. 3 Units.
Formulation of standard linear programming models. Theory of polyhedral convex sets, linear inequalities, alternative theorems, and duality. Variants of the simplex method and the state of art interior-point algorithms. Sensitivity analyses, economic interpretations, and primal-dual methods. Relaxations of harder optimization problems and recent convex conic linear programs. Applications include game equilibrium facility location. Prerequisite: MATH 113 or consent of instructor.

MS&E 311. Optimization. 3 Units.
Applications, theories, and algorithms for finite-dimensional linear and nonlinear optimization problems with continuous variables. Elements of convex analysis, first- and second-order optimality conditions, sensitivity and duality. Algorithms for unconstrained optimization, and linearly and nonlinearly constrained problems. Modern applications in communication, game theory, auction, and economics. Prerequisites: MATH 113, 115, or equivalent.
Same as: CME 307

MS&E 313. Almost Linear Time Graph Algorithms. 3 Units.
Over the past decade there has been an explosion in activity in designing new provably efficient fast graph algorithms. Leveraging techniques from disparate areas of computer science and optimization researchers have made great strides on improving upon the best known running times for fundamental optimization problems on graphs, in many cases breaking long-standing barriers to efficient algorithm design. In this course we will survey these results and cover the key algorithmic tools they leverage to achieve these breakthroughs. Possible topics include but are not limited to, spectral graph theory, sparsification, oblivious routing, local partitioning, Laplacian system solving, and maximum flow. Prerequisites: calculus and linear algebra.
Same as: CS 269G

MS&E 315. Advanced Optimization Theory. 3 Units.
Advanced optimization methods, algorithmic techniques, and proof strategies for obtaining provably efficient methods for minimizing high dimensional continuous functions. Focus on solving broad canonical optimization and obtaining start-of-the-art running times for both general oracle-based optimization problems as well as structured problems. Topics vary year to year based on interest. Possible topics include (but are not limited to) critical point computation of non-convex functions, linear system solving, eigenvector computation, finite sum optimization, linear system solving, principle component analysis, interior point methods, linear programming, semi-definite programming, and cutting-plane methods. Prerequisite: MS&E 213 or equivalent.

MS&E 316. Discrete Mathematics and Algorithms. 3 Units.
Topics: Basic Algebraic Graph Theory, Matroids and Minimum Spanning Trees, Submodularity and Maximum Flow, NP-Hardness, Approximation Algorithms, Randomized Algorithms, The Probabilistic Method, and Spectral Sparsification using Effective Resistances. Topics will be illustrated with applications from Distributed Computing, Machine Learning, and large-scale Optimization. Prerequisites: CS 261 is highly recommended, although not required.
Same as: CME 305

MS&E 319. Approximation Algorithms. 3 Units.
The theory of matching with its roots in the work of mathematical giants like Euler and Kirchhoff has played a central and catalytic role in combinatorial optimization for decades. More recently, the growth of online marketplaces for allocating advertisements, rides, or other goods and services has led to new interest and progress in this area. The course starts with classic results characterizing matchings in bipartite and general graphs and explores connections with algebraic graph theory, permanent, Pfaffian and counting and sampling matchings. Those results are complemented with models and algorithms developed for modern applications in market design, online advertising, and ride sharing. May be repeated for credit. Prerequisite: 212, CS 261, or equivalent.

MS&E 321. Stochastic Systems. 3 Units.
Topics in stochastic processes, emphasizing applications. Markov chains in discrete and continuous time; Markov processes in general state space; Lyapunov functions; regenerative process theory; renewal theory; martingales, Brownian motion, and diffusion processes. Application to queueing theory, storage theory, reliability, and finance. Prerequisites: 221 or STATS 217; MATH 113, 115. (Glynn).

MS&E 322. Stochastic Calculus and Control. 3 Units.
Ito integral, existence and uniqueness of solutions of stochastic differential equations (SDEs), diffusion approximations, numerical solutions of SDEs, controlled diffusions and the Hamilton-Jacobi-Bellman equation, and statistical inference of SDEs. Applications to finance and queueing theory. Prerequisites: 221 or STATS 217: MATH 113, 115.

MS&E 323. Stochastic Simulation. 3 Units.
Emphasis is on the theoretical foundations of simulation methodology. Generation of uniform and non-uniform random variables. Discrete-event simulation and generalized semi-Markov processes. Output analysis (autoregressive, regenerative, spectral, and stationary times series methods). Variance reduction techniques (antithetic variables, common random numbers, control variables, discrete-time, conversion, importance sampling). Stochastic optimization (likelihood ratio method, perturbation analysis, stochastic approximation). Simulation in a parallel environment. Prerequisite: MS&E 221 or equivalent.

MS&E 324. Stochastic Methods in Engineering. 3 Units.
The basic limit theorems of probability theory and their application to maximum likelihood estimation. Basic Monte Carlo methods and importance sampling. Markov chains and processes, random walks, basic ergodic theory and its application to parameter estimation. Discrete time stochastic control and Bayesian filtering. Diffusion approximations, Brownian motion and an introduction to stochastic differential equations. Examples and problems from various applied areas. Prerequisites: exposure to probability and background in analysis.
Same as: CME 308, MATH 228

MS&E 325. Optimal Transport in Operations Research, Statistics, and Economics. 3 Units.
Current stochastic models, motivated by a wide range of applications in engineering, business, and science, as well as the design and analysis of associated computational methods for performance analysis and control of such stochastic systems.

MS&E 326. Advanced Topics in Game Theory with Engineering Applications. 3 Units.
Advanced Topics in Game Theory with Engineering Applications.

MS&E 327. Topics in Causal Inference. 3 Units.
This course introduces the fundamental ideas and methods in causal inference, and surveys a broad range of problems and applications. Emphasis will be on framing causal problems and identifying causal effects in both randomized experiments and observational studies. Topics will include: the potential outcomes framework; randomization-based inference and covariate adjustment; matching, and IPW; instrumental variables, regression discontinuity and synthetic ncontrols. Examples and applications will be taken from the fields of education, political science, economics, public health and digital marketing.
Same as: STATS 209A

MS&E 330. Law, Order, & Algorithms. 3 Units.
Human decision making is increasingly being displaced by predictive algorithms. Judges sentence defendants based on statistical risk scores; regulators take enforcement actions based on predicted violations; advertisers target materials based on demographic attributes; and employers evaluate applicants and employees based on machine-learned models. One concern with the rise of such algorithmic decision making is that it may replicate or exacerbate human bias. This course surveys the legal and ethical principles for assessing the equity of algorithms, describes statistical techniques for designing fair systems, and considers how anti-discrimination law and the design of algorithms may need to evolve to account for machine bias. Concepts will be developed in part through guided in-class coding exercises. Admission is by consent of instructor and is limited to 20 students. To enroll in the class, please complete the course application by March 20, available at: https://5harad.com/mse330/. Grading is based on response papers, class participation, and a final project. Prerequisite: CS 106A or equivalent knowledge of coding.
Same as: CS 209, CSRE 230, SOC 279

MS&E 332. Security and Risk in Computer Networks. 3 Units.
Risk management of large scale computing and networking systems with respect to security, data integrity, performance collapse, and service disruption. Qualitative and analytical basis for assessment, modeling, control, and mitigation of network risks. Stochastic risk models. Contact process. Random fields on networks. Virus and worm propagation dynamics and containment. Denial of service attacks. Intruder detection technologies. Distributed network attacks and countermeasures. Disaster recovery networks. Network protection services and resource placement. Autonomic self-defending networks. Economics of risk management. Emphasis is on analytics and quantitative methods.

MS&E 334. Topics in Social Data. 3 Units.
This course provides a in-depth survey of methods research for the analysis of large-scale social and behavioral data. There will be a particular focus on recent developments in discrete choice theory and preference learning. Connections will be made to graph-theoretic investigations common in the study of social networks. Topics will include random utility models, item-response theory, rank aggregation, centrality and ranking on graphs, and random graphs. The course is intended for Ph.D. students, but masters students interested in research topics are welcome. Recommended: 221, 226, CS161, or equivalents.

MS&E 335. Queueing and Scheduling in Processing Networks. 3 Units.
Advanced stochastic modeling and control of systems involving queueing and scheduling operations. Stability analysis of queueing systems. Key results on single queues and queueing networks. Controlled queueing systems. Dynamic routing and scheduling in processing networks. Applications to modeling, analysis and performance engineering of computing systems, communication networks, flexible manufacturing, and service systems. Prerequisite: 221 or equivalent.

MS&E 336. Computational Social Choice. 3 Units.
An in-depth treatment of algorithmic and game-theoretic issues in social choice. Topics include common voting rules and impossibility results; ordinal vs cardinal voting; market approaches to large scale decision making; voting in complex elections, including multi-winner elections and participatory budgeting; protocols for large scale negotiation and deliberation; fairness in societal decision making;nalgorithmic approaches to governance of modern distributed systems such as blockchains and community-mediated social networks; opinion dynamics and polarization. Prerequisites: algorithms at the level of 212 or CS 161, probability at the level of 221, and basic game theory, or consent of instructor.
Same as: CS 366

MS&E 337. Network Structure and Epidemics. 3 Units.
Explores the underlying network structure of social, economic, and technological world using techniques from graph theory and economics, as well as machine learning and data analysis. Prerequisite: 226, CME 195, or equivalents. Recommended: 212.
Same as: MS&E 235

MS&E 338. Reinforcement Learning: Frontiers. 3 Units.
This class covers subjects of contemporary research contributing to the design of reinforcement learning agents that can operate effectively across a broad range of environments. Topics include exploration, generalization, credit assignment, and state and temporal abstraction. An important component of the class is a research project aimed at understanding a focused issue in reinforcement learning. Can be repeated for credit. Prerequisites: 226, CS 234, or EE 277, and experience with mathematical proofs.

MS&E 346. Reinforcement Learning for Stochastic Control Problems in Finance. 3 Units.
This course will explore a few problems in Mathematical Finance through the lens of Stochastic Control, such as Portfolio Management, Derivatives Pricing/Hedging and Order Execution. For each of these problems, we formulate a suitable Markov Decision Process (MDP), develop Dynamic Programming (DP) solutions, and explore Reinforcement Learning (RL) algorithms. The course emphasizes the theory of DP/RL as well as modeling the practical nuances of these finance problems, and strengthening the understanding through plenty of coding exercises of the methods. No pre-requisite coursework expected, but a foundation in undergraduate Probability, basic familiarity with Finance, and Python coding skills are required. Dynamic Programming or Reinforcement Learning background not required.
Same as: CME 241

MS&E 347. Credit Risk: Modeling and Management. 3 Units.
Credit risk modeling, valuation, and hedging emphasizing underlying economic, probabilistic, and statistical concepts. Point processes and their compensators. Structural, incomplete information and reduced form approaches. Single name products: corporate bonds, equity, equity options, credit and equity default swaps, forwards and swaptions. Multiname modeling: index and tranche swaps and options, collateralized debt obligations. Implementation, calibration and testing of models. Industry and market practice. Data and implementation driven group projects that focus on problems in the financial industry.

MS&E 348. Optimization of Uncertainty and Applications in Finance. 3 Units.
How to make optimal decisions in the presence of uncertainty, solution techniques for large-scale systems resulting from decision problems under uncertainty, and applications in finance. Decision trees, utility, two-stage and multi-stage decision problems, approaches to stochastic programming, model formulation; large-scale systems, Benders and Dantzig-Wolfe decomposition, Monte Carlo sampling and variance reduction techniques, risk management, portfolio optimization, asset-liability management, mortgage finance. Projects involving the practical application of optimization under uncertainty to financial planning.

MS&E 349. Financial Statistics. 3 Units.
Topics in financial statistics with focus on current research: Time-series modeling, volatility modeling, high-frequency statistics, large-dimensional factor modeling and estimation of continuous-time processes. Prerequisites: 220, 226 or STATS 200, 221 or STATS 217, 245A, or equivalents.

MS&E 350. Fundamental and Current Topics in Engineering Risk Analysis. 3 Units.
Limited to doctoral students and advanced master students. Literature in the fields of engineering risk assessment and management. New methods and topics, emphasizing probabilistic methods and decision analysis. Applications to risk management problems involving the technical, economic, and organizational aspects of engineering system safety. Possible topics: treatment of uncertainties, learning from near misses, and use of expert opinions.

MS&E 351. Dynamic Programming and Stochastic Control. 3 Units.
Markov population decision chains in discrete and continuous time. Risk posture. Present value and Cesaro overtaking optimality. Optimal stopping. Successive approximation, policy improvement, and linear programming methods. Team decisions and stochastic programs; quadratic costs and certainty equivalents. Maximum principle. Controlled diffusions. Examples from inventory, overbooking, options, investment, queues, reliability, quality, capacity, transportation. MATLAB. Prerequisites: MATH 113, 115; Markov chains; linear programming.

MS&E 352. Decision Analysis II: Professional Decision Analysis. 3-4 Units.
How to organize the decision conversation, the role of the decision analysis cycle and the model sequence, assessing the quality of decisions, framing decisions, the decision hierarchy, strategy tables for alternative development, creating spare and effective decision diagrams, biases in assessment, knowledge maps, uncertainty about probability. Sensitivity analysis, approximations, value of revelation, joint information, options, flexibility, bidding, assessing and using corporate risk attitude, risk sharing and scaling, and decisions involving health and safety. See 353 for continuation. Prerequisite: 252.

MS&E 353. Decision Analysis III: Frontiers of Decision Analysis. 3 Units.
The concept of decision composite; probabilistic insurance and other challenges to the normative approach; the relationship of decision analysis to classical inference and data analysis procedures; the likelihood and exchangeability principles; inference, decision, and experimentation using conjugate distributions; developing a risk attitude based on general properties; alternative decision aiding practices such as analytic hierarchy and fuzzy approaches. Student presentations on current research. Goal is to prepare doctoral students for research. Prerequisite: 352.

MS&E 355. Influence Diagrams and Probabilistics Networks. 3 Units.
Network representations for reasoning under uncertainty: influence diagrams, belief networks, and Markov networks. Structuring and assessment of decision problems under uncertainty. Learning from evidence. Conditional independence and requisite information. Node reductions. Belief propagation and revision. Simulation. Linear-quadratic-Gaussian decision models and Kalman filters. Dynamic processes. Bayesian meta-analysis. Prerequisites: 220, 252, or equivalents, or consent of instructor.

MS&E 365. Mechanism and Market Design. 3 Units.
Primarily for doctoral students. Focus on quantitative models dealing with sustainability and related to operations management. Prerequisite: consent of instructor. May be repeated for credit.
Same as: ECON 287

MS&E 366. Market Design and Resource Allocation in Non-Profit Settings. 3 Units.
Survey of recent research on market design and resource allocation with a focus on under-explored domains in non-profit settings. Will start with classic results in allocation, matching and social choice, and discuss them in the context of relevant objectives such as social welfare and equity. Will then draw on techniques from operations research and economics to explore the design of resource allocation platforms in emerging applications including housing, humanitarian logistics, volunteer coordination, food allocation, conservation and sustainability, and informal markets in the developing world. Prerequisite: consent of instructor; background material will be covered throughout the course as necessary. May be repeated for credit.

MS&E 370. Current Topics in Strategy, Innovation and Entrepreneurship. 1 Unit.
This course will cover focused exploration of contemporary readings and classics as relevant in strategy, innovation and entrepreneurship such as platforms, ecosystems, institutional logics, and strategic "games" in nascent markets. The course will include both content and methods discussions, including theory-building from multiple cases. PhD students only. Prerequisite: Consent of instructor.

MS&E 371. Innovation and Strategic Change. 1-3 Unit.
Doctoral research seminar, limited to Ph.D. students. Current research on innovation strategy. Topics: scientific discovery, innovation search, organizational learning, evolutionary approaches, and incremental and radical change. Topics change yearly. Recommended: course in statistics or research methods.

MS&E 372. Entrepreneurship Doctoral Research Seminar. 1-3 Unit.
Classic and current research on entrepreneurship. In this class, we will focus on questions of how entrepreneurship may exacerbate or alleviate inequalities in society across race/ethnicity, gender and class. How do institutional environments shape who engages in entrepreneurship and how successful they become? We will read literature from economics, sociology and strategy/management that has theoretically and empirically examined the phenomenon of entrepreneurship. Limited enrollment, restricted to PhD students. Prerequisites: SOC 363 or equivalent, and permission of instructor.

MS&E 376. Strategy Doctoral Research Seminar. 1-3 Unit.
Classic and current research on business and corporate strategy. Limited enrollment, restricted to PhD students. Course may be repeated for credit.

MS&E 379. Social Data Analysis. 3 Units.
Applied introduction to good empirical research and causal inference for social scientists and others analyzing social data. Designed to provide an introduction to some of the most commonly used quantitative techniques for causal inference in social data including: survey design and inference, regression and propensity score matching, instrumental variables, differences-in-differences, regression discontinuity designs, standard errors, and the analysis of big data. Applications: organizations, entrepreneurship, public policy, innovation, economics, online education, visual representations, communication, critique and design of figures, graphs. Does not explicitly cover social network structure or machine learning as these topics are well-covered elsewhere. Students work in groups and individually to design and carry out a small research project based on the use of analytics, large data sets, or other digital innovations related to business or other organizations. Students become acquainted with a variety of approaches to research design, and are helped to develop their own research projects. Course prioritizes a thorough substantively grounded understanding of assumptions over mathematical proofs and derivations. Aimed at PhD students, but open by permission to Master's students and to students in other Stanford programs with relevant coursework or experience in analytics and statistics.

MS&E 380. Doctoral Research Seminar in Organizations. 3 Units.
Limited to Ph.D. students. Topics from current published literature and working papers. Content varies. Prerequisite: consent of instructor.

MS&E 384. Groups and Teams. 3 Units.
Research on groups and teams in organizations from the perspective of organizational behavior and social psychology. Topics include group effectiveness, norms, group composition, diversity, conflict, group dynamics, temporal issues in groups, geographically distributed teams, and intergroup relations.

MS&E 387. Design of Field Research Methods. 3 Units.
Field research involves collecting original data (qualitative and/or quantitative) in field sites. This course combines informal lecture and discussion with practical exercises to build specific skills for conducting field research in organizations. Readings include books and papers about research methodology and articles that provide exemplars of field research. Specific topics covered include: the role of theory in field research, variance versus process models, collecting and analyzing different kinds of data (observation, interview, survey), levels of analysis, construct development and validity, blending qualitative and quantitative data (in a paper, a study, or a career), and writing up field research for publication. Students will develop intuition about the contingent relationship between the nature of the research question and the field research methods used to answer it as a foundation for conducting original field research.

MS&E 388. Contemporary Themes in Work and Organization Studies. 3 Units.
Doctoral research seminar, limited to Ph.D. students. Current meso-level field research on organizational behavior, especially work and coordination. Topics: work design, job design, roles, teams, organizational change and learning, knowledge management, performance. Focus on understanding theory development and research design in contemporary field research. Topics change yearly. Recommended: course in statistics or research methods.

MS&E 389. Seminar on Organizational Theory. 5 Units.
The social science literature on organizations assessed through consideration of the major theoretical traditions and lines of research predominant in the field. For PhD students only.
Same as: EDUC 375A, SOC 363A

MS&E 390. Doctoral Research Seminar in Health Systems Modeling. 1-3 Unit.
Restricted to PhD students, or by consent of instructor. Doctoral research seminar covering current topics in health policy, health systems modeling, and health innovation. May be repeated for credit.

MS&E 391. Doctoral Research Seminar in Energy-Environmental Systems Modeling and Analysis. 1-3 Unit.
Restricted to PhD students, or by consent of instructor. Doctoral research seminar covering current topics in energy and environmental modeling and analysis. Current emphasis on approaches to incorporation of uncertainty and technology dynamics into complex systems models. May be repeated for credit.

MS&E 394. Advanced Methods in Modeling for Climate and Energy Policy. 3 Units.
Design and application of computational models and techniques for assessing climate and energy policy, and for predicting the impacts of climate change. Topics include 1) best practices in research design, model design and selection; 2) types of models available, taxonomy, core concepts, and limitations; 3) interpreting and presenting model results; and 4) advanced topics and recent literature, e.g. representing uncertainty, technological change, distributional change, and cross-sectoral climate impacts. Prerequisites: MS&E 241, MS&E 211, or equivalents.

MS&E 408. Directed Reading and Research. 1-15 Unit.
Directed reading and research on a subject of mutual interest to student and faculty member. Available to undergraduate, master, and doctoral students. Student must clarify deliverables, units, and grading basis with faculty member before applicable deadlines. Prerequisite: consent of instructor.

MS&E 441. Policy and Economics Research Roundtable. 1 Unit.
Research in progress or contemplated in policy and economics areas. Emphasis depends on research interests of participants, but is likely to include energy, environment, transportation, or technology policy and analysis. May be repeated for credit.
Same as: PERR

MS&E 448. Big Financial Data and Algorithmic Trading. 3 Units.
Project course emphasizing the connection between data, models, and reality. Vast amounts of high volume, high frequency observations of financial quotes, orders and transactions are now available, and poses a unique set of challenges. This type of data will be used as the empirical basis for modeling and testing various ideas within the umbrella of algorithmic trading and quantitative modeling related to the dynamics and micro-structure of financial markets. Due to the fact that it is near impossible to perform experiments in finance, there is a need for empirical inference and intuition, any model should also be justified in terms of plausibility that goes beyond pure econometric and data mining approaches. Introductory lectures, followed by real-world type projects to get a hands-on experience with realistic challenges and hone skills needed in the work place. Work in groups on selected projects that will entail obtaining and cleaning the raw data and becoming familiar with techniques and challenges in handling big data sets. Develop a framework for modeling and testing (in computer languages such as Python, C++ , Matlab and R) and prepare presentations to present to the class. Example projects include optimal order execution, developing a market making algorithm, design of an intra-day trading strategy, and modeling the dynamics of the bid and ask. Prerequisites: MS&E 211, 245A, 245B, or equivalents, some exposure to statistics and programming. Enrollment limited. Admission by application; details at first class.

MS&E 449. Buy-Side Investing. 1-2 Unit.
In-class lectures and guest speakers who work in the Buy-Side to explore the synergies amongst the various players¿ roles, risk appetites, and investment time and return horizons. We aim to see the forest and the different species of trees growing in the forest known as the Buy-Side, so as to develop a perspective as financial engineers for how the ecosystem functions, what risks it digests, how it generates capital at what rate and amount for the Sell-Side, and how impacts in the real economy are reflected - or should be reflected - in the culture and risk models adopted by the Buy-Side participants.

MS&E 454. Decision Analysis Seminar. 1 Unit.
Current research and related topics presented by doctoral students and invited speakers. May be repeated for credit. Prerequisite: 252.

MS&E 463. Healthcare Systems Design. 3-4 Units.
Students work on projects to analyze and design various aspects of healthcare delivery including hospital patient flow, clinical risk prediction, physician networks, clinical outcomes, reimbursement incentives, and community health. Students work in small teams under the supervision of the course instructor and partners at the Lucille Packard Children's Hospital, the Stanford Hospital, and other regional healthcare providers. Prerequisite: 263 and a mandatory meeting during the preceding Winter quarter to choose projects.
Same as: PEDS 463

MS&E 472. Entrepreneurial Thought Leaders' Seminar. 1 Unit.
Learn about entrepreneurship, innovation, culture, startups and strategy from a diverse lineup of accomplished leaders and entrepreneurs in venture capital, technology, education, philanthropy and more. Open to all Stanford students. Required weekly assignment. May be repeated for credit.

MS&E 489. d.Leadership: Leading Disruptive Innovation. 3-4 Units.
d.Leadership is a course that teaches the coaching and leadership skills needed to drive good design process in groups. d.leaders will work on real projects driving design projects within organizations and gain real world skills as they experiment with their leadership style. Take this course if you are inspired by past design classes and want skills to lead design projects beyond Stanford. Preference given to students who have taken other Design Group or d.school classes. Admission by application. See dschool.stanford.edu/classes for more information.
Same as: ME 368

MS&E 494. The Energy Seminar. 1 Unit.
Interdisciplinary exploration of current energy challenges and opportunities, with talks by faculty, visitors, and students. May be repeated for credit.
Same as: CEE 301, ENERGY 301

MS&E 495. Sustainable Energy Interdisciplinary Graduate Seminar. 1 Unit.
Graduate students will present their ongoing research to an audience of faculty and graduate students with a diversity of disciplinary perspectives regarding sustainable energy.
Same as: CEE 372, ENERGY 309

MS&E 802. TGR Dissertation. 0 Units.
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MATERIALS SCIENCE AND ENGINEERING

Courses offered by the Department of Materials Science and Engineering are listed under the subject code MATSCI on the *Stanford Bulletin's* ExploreCourses (http://explorecourses.stanford.edu/browse/) web site.

The Department of Materials Science and Engineering is concerned with the relation between the structure and properties of materials, factors that control the internal structure of solids, and processes for altering their structure and properties, particularly at the nanoscale.

Mission of the Undergraduate Program in Materials Science and Engineering

The mission of the undergraduate program in Materials Science and Engineering is to provide students with a strong foundation in materials science and engineering with emphasis on the fundamental scientific and engineering principles which underlie the knowledge and implementation of material structure, processing, properties, and performance of all classes of materials used in engineering systems. Courses in the program develop students' knowledge of modern materials science and engineering, teach them to apply this knowledge analytically to create effective and novel solutions to practical problems, and develop their communication skills and ability to work collaboratively. The program prepares students for careers in industry and for further study in graduate school.

The B.S. in Materials Science and Engineering provides training for the materials engineer and also preparatory training for graduate work in materials science. Capable undergraduates are encouraged to take at least one year of graduate study to extend their course work through the coterminal degree program which leads to an M.S. in Materials Science and Engineering. Coterminal degree programs are encouraged both for undergraduate majors in Materials Science and Engineering and for undergraduate majors in related disciplines.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate the ability to:

1. Apply the knowledge of mathematics, science, and engineering to assess and synthesize scientific evidence, concepts, theories, and experimental data relating to the natural or physical world.
2. Extend students' knowledge of the natural or physical world beyond that obtained from secondary education by refining their powers of scientific observation, the essential process by which data is gained for subsequent analysis.
3. Design and conduct experiments, as well as understand and utilize the scientific method in formulating hypotheses and designing experiments to test hypotheses.
4. Function on multidisciplinary teams, while communicating effectively.
5. Identify, formulate, and solve engineering issues by applying conceptual thinking to solve certain problems, bypassing calculations or rote learning and relying on the fundamental meaning behind laws of nature.
6. Understand professional and ethical responsibility.
7. Understand the impact of engineering solutions in a global, economic, environmental, and societal context.
8. Demonstrate a working knowledge of contemporary issues.
9. Recognize the need for, and engage in, lifelong learning.
10. Apply the techniques, skills, and modern engineering tools necessary for engineering practice.
11. Transition from engineering concepts and theory to real engineering applications and understanding the distinction between scientific evidence and theory, inductive and deductive reasoning, and understanding the role of each in scientific inquiry.

Graduate Programs in Materials Science Engineering

Graduate programs lead to the degrees of Master of Science, Engineer, and Doctor of Philosophy. Graduate students can specialize in any of the areas of materials science and engineering.

Learning Outcomes (Graduate)

The purpose of the master's program is to provide students with the knowledge and skills necessary for a professional career or doctoral studies. This is done through course and laboratory work in solid state fundamentals and materials engineering, and further course work in a technical depth area which may include a master's Research Report. Typical depth areas include nanocharacterization, electronic and photonic materials, energy materials, nano and biomaterials.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research. Through course work and guided research, the program prepares students to make original contributions in Materials Science and Engineering and related fields.

Facilities

The department is located in the William F. Durand Building, with extensive facilities in the Jack A. McCullough Building and the Gordon and Betty Moore Materials Research Building. These buildings house offices for the chair, majority of the faculty, administrative and technical staff, graduate students as well as lecture and seminar rooms. The research facilities are equipped to conduct electrical measurements, mechanical testing of bulk and thin film materials, fracture and fatigue of advanced materials, metallography, optical, scanning, transmission electron microscopy, atomic force microscopy, UHV sputter deposition, vacuum annealing treatments, wet chemistry, and x-ray diffraction.

The McCullough/Moore Complex is also the home for the Center for Magnetic Nanotechnology (CMN (https://nanomag.stanford.edu/)), Stanford Nanocharacterization Laboratory (SNL) and Nanoscale Prototyping Laboratory (NPL (http://npl-web.stanford.edu/); joint facility with Mechanical Engineering in Building 530).

Depending on the needs of their programs, students and faculty also conduct research in a number of other departments and independent laboratories. Chief among these are the Stanford Nanofabrication Facility (SNF (http://snf.stanford.edu/)), Geballe Laboratory for Advanced Materials (GLAM (http://stanford.edu/group/glam/)), and Stanford Synchrotron Radiation Laboratory (SSRL (http://www-ssrl.slac.stanford.edu/)).

The Stanford Nanofabrication Facility (SNF) is a laboratory joining government and industrially funded research on microelectronic materials, devices, and systems. It houses a 10,000 sq. ft., class 100 clean room for Si and GaAs integrated circuit fabrication, a large number of electronic test, materials analysis, and computer facilities, and office space for faculty, staff, and students. In addition, the Center for Integrated Systems (CIS (http://cis.stanford.edu/)) provides start-up research funds and maintains a fellow-mentor program with industry.

Bachelor of Science in Materials Science and Engineering (MSE/MATSCI)

Completion of the undergraduate program in Materials Science and Engineering leads to the conferral of the Bachelor of Science in Materials Science and Engineering.

Mission of the Undergraduate Program in Materials Science and Engineering

The mission of the undergraduate program in Materials Science and Engineering is to provide students with a strong foundation in materials science and engineering with emphasis on the fundamental scientific and engineering principles which underlie the knowledge and implementation of material structure, processing, properties, and performance of all classes of materials used in engineering systems. Courses in the program develop students' knowledge of modern materials science and engineering, teach them to apply this knowledge analytically to create effective and novel solutions to practical problems, and develop their communication skills and ability to work collaboratively. The program prepares students for careers in industry and for further study in graduate school.

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2. Extend students' knowledge of the natural or physical world beyond that obtained from secondary education by refining their powers of scientific observation, the essential process by which data is gained for subsequent analysis.
3. Design and conduct experiments, as well as understand and utilize the scientific method in formulating hypotheses and designing experiments to test hypotheses.
4. Function on multidisciplinary teams, while communicating effectively.
5. Identify, formulate, and solve engineering issues by applying conceptual thinking to solve certain problems, bypassing calculations or rote learning and relying on the fundamental meaning behind laws of nature.
6. Understand professional and ethical responsibility.
7. Understand the impact of engineering solutions in a global, economic, environmental, and societal context.
8. Demonstrate a working knowledge of contemporary issues.
9. Recognize the need for, and engage in, lifelong learning.
10. Apply the techniques, skills, and modern engineering tools necessary for engineering practice.
11. Transition from engineering concepts and theory to real engineering applications and understanding the distinction between scientific evidence and theory, inductive and deductive reasoning, and understanding the role of each in scientific inquiry.

Degree Requirements

		Units
Mathematics		
20 units minimum		
Select one of the following:		5
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
CME 100/ ENGR 154	Vector Calculus for Engineers	
Select one of the following:		5
MATH 52	Integral Calculus of Several Variables	
CME 104/ ENGR 155B	Linear Algebra and Partial Differential Equations for Engineers	
Select one of the following:		5
MATH 53	Ordinary Differential Equations with Linear Algebra	
CME 102/ ENGR 155A	Ordinary Differential Equations for Engineers	
One additional course [1]		5
Science		
20 units minimum		
Must include a full year (15 units) of calculus-based physics or chemistry, with one quarter of study (5 units) in the other subject. [2]		20
Technology in Society		
One course minimum [3]		3-5
Engineering Fundamentals		
Two courses minimum		
Select one of the following:		4
ENGR 50	Introduction to Materials Science, Nanotechnology Emphasis [4]	
ENGR 50E	Introduction to Materials Science, Energy Emphasis [4]	
ENGR 50M	Introduction to Materials Science, Biomaterials Emphasis [4]	
At least one additional courses [4]		3-5
Department Requirements: MSE Fundamentals, Depth & Focus Areas		
Materials Science Fundamentals: All of the following courses:		16
MATSCI 142	Quantum Mechanics of Nanoscale Materials	
MATSCI 143	Materials Structure and Characterization	
MATSCI 144	Thermodynamic Evaluation of Green Energy Technologies	
MATSCI 145	Kinetics of Materials Synthesis	
Two of the following courses:		8
MATSCI 151	Microstructure and Mechanical Properties	
MATSCI 152	Electronic Materials Engineering	
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution	
MATSCI 158	Soft Matter in Biomedical Devices, Microelectronics, and Everyday Life	
MATSCI 190	Organic and Biological Materials	
MATSCI 192	Materials Chemistry	
MATSCI 193	Atomic Arrangements in Solids	
MATSCI 194	Thermodynamics and Phase Equilibria	

MATSCI 195	Waves and Diffraction in Solids	
MATSCI 196	Defects in Crystalline Solids	
MATSCI 197	Rate Processes in Materials	
MATSCI 198	Mechanical Properties of Materials	
MATSCI 199	Electronic and Optical Properties of Solids	
Materials Science & Engineering Depth		**16**
Four laboratory courses for Sixteen units; Four units must be WIM		
MATSCI 160	Nanomaterials Laboratory	
MATSCI 161	Energy Materials Laboratory (WIM)	
MATSCI 162	X-Ray Diffraction Laboratory	
MATSCI 163	Mechanical Behavior Laboratory	
MATSCI 164	Electronic and Photonic Materials and Devices Laboratory (WIM)	
MATSCI 165	Nanoscale Materials Physics Computation Laboratory	
MATSCI 166	Data Science and Machine Learning Approaches in Chemical and Materials Engineering	
Focus Area Options [5, 6]		13
Total Units		103-107

1 See a list of approved math courses at ughb.stanford.edu (https://ughb.stanford.edu/courses-and-planning/approved-courses/). AP/IB Credit (https://ughb.stanford.edu/petitions/ap-credit/) may also be used to meet the 20 units minimum, but cannot replace the three required courses.

2 See a list of approved science courses at ughb.stanford.edu (https://ughb.stanford.edu/courses-and-planning/approved-courses/). AP/IB Credit (https://ughb.stanford.edu/petitions/ap-credit/)may also be used to meet the 20 units minimum in some cases; see the AP chart in the Bulletin or check with the School of Engineering in 135 Huang Engineering Center.

3 See a list of approved Technology in Society courses at ughb.stanford.edu (https://ughb.stanford.edu/courses-and-planning/approved-courses/). Course chosen must be on the approved list the year taken.

4 See a list of approved Engineering Fundamentals Courses at ugh.stanford.edu. Course chosen must be on the approved list the year taken.

5 Focus Area Options: 13 units from one of the following Focus Area Options below. If the focus area contains only 12 units, but the combined unit total in major (SoE Fundamentals, MSE Fundamentals, MSE Depth and the Focus Area) is at 60 or more, it will be allowed and no petition is necessary.

6 The self-defined focus area option requires additional approval; program deviation forms for this option can be found on the MSE website (https://mse.stanford.edu/student-resources/forms/undergraduate/).

7 A course may only be counted towards one requirement; it may not be double-counted. For the 2020-2021 academic year, all courses taken for the major may be taken for either a letter grade (if offered by the instructor) or for CR and count towards degree requirements. Minimum Combined GPA for all courses in Engineering Topics (Engineering Fundamentals and Depth courses) is 2.0.

Focus Area Options (Four courses for a minimum of 13 units; select from one of the ten Focus Areas.)

Bioengineering		
BIOE 80	Introduction to Bioengineering (Engineering Living Matter)	
BIOE 220	Introduction to Imaging and Image-based Human Anatomy	
BIOE 260	Tissue Engineering	
BIOE 281	Biomechanics of Movement	
BIOE 381	Orthopaedic Bioengineering	
MATSCI 158	Soft Matter in Biomedical Devices, Microelectronics, and Everyday Life	
MATSCI 190	Organic and Biological Materials	
MATSCI 225	Biochips and Medical Imaging	
MATSCI 380	Nano-Biotechnology	
MATSCI 381	Biomaterials in Regenerative Medicine	
MATSCI 384	Materials Advances for Neurotechnology: Materials Meet the Mind	
Chemical Engineering		
CHEM 171	Foundations of Physical Chemistry	
CHEMENG 130		
CHEMENG 140	Micro and Nanoscale Fabrication Engineering	
CHEMENG 150	Biochemical Engineering	
MATSCI 158	Soft Matter in Biomedical Devices, Microelectronics, and Everyday Life	
Chemistry		
CHEM 151	Inorganic Chemistry I	
CHEM 153	Inorganic Chemistry II	
CHEM 171	Foundations of Physical Chemistry	
CHEM 173	Physical Chemistry II	
CHEM 175	Physical Chemistry III	
CHEM 181	Biochemistry I	
CHEM 183	Biochemistry II	
CHEM 185	Biophysical Chemistry	
Electronics & Photonics		
EE 101A	Circuits I	
EE 101B	Circuits II	
EE 102A	Signal Processing and Linear Systems I	
EE 102B	Signal Processing and Linear Systems II	
EE 116	Semiconductor Devices for Energy and Electronics	
EE 134	Introduction to Photonics	
EE 142	Engineering Electromagnetics (Formerly EE 141)	
EE 155	Green Electronics	
ME 210	Introduction to Mechatronics	
MATSCI 343	Organic Semiconductors for Electronics and Photonics	
MATSCI 346	Nanophotonics	
Energy Technology		
EE 293B	Fundamentals of Energy Processes	
EE 155	Green Electronics	
CEE 107A	Understanding Energy	
EE 293B	Fundamentals of Energy Processes	
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution	
MATSCI 302	Solar Cells	
MATSCI 303	Principles, Materials and Devices of Batteries	
ME 262	Physics of Wind Energy	
Materials Characterization Techniques		
MATSCI 320	Nanocharacterization of Materials	

MATSCI 321	Transmission Electron Microscopy
MATSCI 322	Transmission Electron Microscopy Laboratory
MATSCI 323	Thin Film and Interface Microanalysis
MATSCI 326	X-Ray Science and Techniques
CHEMENG 345	Fundamentals and Applications of Spectroscopy
BIO 232	Advanced Imaging Lab in Biophysics
APPPHYS 201	Electrons and Photons (PHOTON 201)
Mechanical Behavior & Design	
AA 240	Analysis of Structures
AA 256	Mechanics of Composites
MATSCI 198	Mechanical Properties of Materials
MATSCI 241	Mechanical Behavior of Nanomaterials
MATSCI 358	Fracture and Fatigue of Materials and Thin Film Structures
ME 80	Mechanics of Materials
or CEE 101A	Mechanics of Materials
ME 203	Design and Manufacturing
Nanoscience	
ENGR 240	Introduction to Micro and Nano Electromechanical Systems
MATSCI 241	Mechanical Behavior of Nanomaterials
MATSCI 316	Nanoscale Science, Engineering, and Technology
MATSCI 320	Nanocharacterization of Materials
MATSCI 346	Nanophotonics
MATSCI 347	Magnetic materials in nanotechnology, sensing, and energy
MATSCI 380	Nano-Biotechnology
Physics	
PHYSICS 70	Foundations of Modern Physics
PHYSICS 110	Advanced Mechanics
PHYSICS 120	Intermediate Electricity and Magnetism I
PHYSICS 121	Intermediate Electricity and Magnetism II
PHYSICS 130	Quantum Mechanics I
PHYSICS 131	Quantum Mechanics II
PHYSICS 134	Advanced Topics in Quantum Mechanics
PHYSICS 170	Thermodynamics, Kinetic Theory, and Statistical Mechanics I
PHYSICS 171	Thermodynamics, Kinetic Theory, and Statistical Mechanics II
PHYSICS 172	Solid State Physics
Self-Defined Option	
Petition for a self-defined cohesive program. [7]	

For additional information and sample, programs see the Handbook for Undergraduate Engineering Programs (http://ughb.stanford.edu).

Honors Program

The Materials Science and Engineering honors program offers an opportunity for undergraduate Materials Science and Engineering majors with a GPA of 3.5 or higher to pursue independent research at an advanced level, supported by a faculty advisor and graduate student mentors. The main requirements are as follows:

1. Application to the honors program (must be pre-approved by faculty advisor)
2. Enrollment in MATSCI 150 Undergraduate Research and participation in an independent research project over three sequential full quarters
3. Completion of a faculty-approved thesis
4. Participation in either a poster or oral presentation of thesis work at a Stanford Symposium/event or, at your faculty advisor's discretion, in a comparable public event.

Since this requires three full quarters of research in addition to a final written thesis and presentation following completion of the work, students must apply to the program no less than four quarters prior to their planned graduation date. Materials Science and Engineering majors pursuing a typical four-year graduation timeline should meet with student services no later than the Winter Quarter of their junior year to receive information on the application process.

All requirements for the honors program are in addition to the normal undergraduate program requirements.

To apply to the MATSCI Honors program

- Have an overall GPA of 3.5 or higher (as calculated on the unofficial transcript) prior to application.
- Seek out a faculty research advisor and agree on a proposed research topic. If the research advisor is not a member of the MSE faculty or not a member of the School of Engineering Academic Council, students must have a second advisor who fulfills these requirements.
- Compose a brief (less than 1 page) summary of proposed research, including a proposed title, and submit along with unofficial transcript and signed application/faculty endorsement (https://mse.stanford.edu/student-resources/forms/undergraduate/).
- Submit application to MATSCI student services (Durand 113) at least four quarters prior to planned graduation.

To complete the MATSCI Honors program

- Overall GPA of 3.5 or higher (as calculated on the unofficial transcript) at graduation.
- Complete at least three quarters of research with a minimum of 9 units of MATSCI 150 (students may petition out of unit requirement with faculty adviser approval). All quarters must focus on the same topic. Maintain the same faculty adviser throughout, if possible.
- Present either a poster or oral presentation of thesis work at a Stanford event or, at the faculty advisor's discretion, in a comparable public event.
- Submit final drafts of an honors thesis to two faculty readers (one must be your research advisor, and one must be an MSE faculty member/SoE Academic Council member) at least one quarter prior to graduation. Both must approve the thesis by completing the signature page (https://mse.stanford.edu/student-resources/forms/undergraduate/).
- Submit to MATSCI student services (Durand 113) one copy of the honors thesis and signed signature page (in electronic or physical form) at least one quarter prior to graduation.

Materials Science and Engineering (MATSCI) Minor

A minor in Materials Science and Engineering allows interested students to explore the role of materials in modern technology and to gain an understanding of the fundamental processes that govern materials behavior.

The following courses fulfill the minor requirements:

		Units
Engineering Fundamentals		
Select one of the following:		4
ENGR 50	Introduction to Materials Science, Nanotechnology Emphasis	

ENGR 50E	Introduction to Materials Science, Energy Emphasis	
ENGR 50M	Introduction to Materials Science, Biomaterials Emphasis	
Materials Science Fundamentals and Engineering Depth		
Select six of the following:		24
MATSCI 142	Quantum Mechanics of Nanoscale Materials	
MATSCI 143	Materials Structure and Characterization	
MATSCI 144	Thermodynamic Evaluation of Green Energy Technologies	
MATSCI 145	Kinetics of Materials Synthesis	
MATSCI 151	Microstructure and Mechanical Properties	
MATSCI 152	Electronic Materials Engineering	
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution	
MATSCI 158	Soft Matter in Biomedical Devices, Microelectronics, and Everyday Life	
MATSCI 160	Nanomaterials Laboratory	
MATSCI 161	Energy Materials Laboratory	
MATSCI 162	X-Ray Diffraction Laboratory	
MATSCI 163	Mechanical Behavior Laboratory	
MATSCI 164	Electronic and Photonic Materials and Devices Laboratory	
MATSCI 165	Nanoscale Materials Physics Computation Laboratory	
MATSCI 190	Organic and Biological Materials	
MATSCI 192	Materials Chemistry	
MATSCI 193	Atomic Arrangements in Solids	
MATSCI 194	Thermodynamics and Phase Equilibria	
MATSCI 195	Waves and Diffraction in Solids	
MATSCI 196	Defects in Crystalline Solids	
MATSCI 197	Rate Processes in Materials	
MATSCI 198	Mechanical Properties of Materials	
MATSCI 199	Electronic and Optical Properties of Solids	
Total Units		28

Master of Science in Materials Science Engineering

The University's basic requirements for the M.S. degree are discussed in the "Graduate Degrees (p. 65)" section of this bulletin. The following are specific departmental requirements.

The Department of Materials Science and Engineering requires a minimum of 45 units for a master's degree to be taken in residence at Stanford. A Master's Program Proposal (https://mse.stanford.edu/student-resources/forms/masters/) form should be filled out, signed by the student's academic adviser, and submitted to the department's student services manager by the end of the student's first quarter of study. Final revisions to the master's program proposal must be submitted no later than one academic quarter prior to the quarter of expected degree conferral. Stanford Materials Science undergraduates who are pursuing or who plan to pursue a Coterminal M.S. degree may have more flexibility in their programs and should consult with their academic advisers regarding appropriate core course and elective choices. The GRE (Graduate Record Examination) is required for admission to the M.S. program.

Degree requirements are as follows:

1. A minimum of 30 units of Materials Science and Engineering (MATSCI) course work, including core and lab courses specified below, all taken for a letter grade. Research units, one-unit seminars, MATSCI 299 Practical Training and courses in other departments (i.e., where students cannot enroll in a class with a MATSCI subject code) cannot be counted for this requirement.
2. Of these 30 units Materials Science requirements, students must include a or b.
   a. three classes from MATSCI 201-210 core courses and three MATSCI 171, 172, 173, 174, 175 laboratory courses. One laboratory requirement may be fulfilled by taking a lab course from another engineering department.

		Units
Select three of the following core courses:		
MATSCI 201	Applied Quantum Mechanics I	3
MATSCI 202	Materials Chemistry	3
MATSCI 203	Atomic Arrangements in Solids	3
MATSCI 204	Thermodynamics and Phase Equilibria	3
MATSCI 205	Waves and Diffraction in Solids	3
MATSCI 206	Defects in Crystalline Solids	3
MATSCI 207	Rate Processes in Materials	3
MATSCI 208	Mechanical Properties of Materials	3
MATSCI 209	Electronic and Optical Properties of Solids	3
MATSCI 210	Organic and Biological Materials	3
Total core course units		**9**
Select three of the following lab courses:		
MATSCI 170	Nanomaterials Laboratory	4
MATSCI 171	Energy Materials Laboratory	3
MATSCI 172	X-Ray Diffraction Laboratory	3
MATSCI 173	Mechanical Behavior Laboratory	3
MATSCI 174	Electronic and Photonic Materials and Devices Laboratory	3
MATSCI 175	Nanoscale Materials Physics Computation Laboratory	3
One laboratory requirment may be fulfilled by taking lab courses from another engineering dept.		
Total lab course units		**9**
TOTAL		**18**

   b. four classes from MATSCI 201-210 core courses and two MATSCI 171, 172, 173, 174, 175 laboratory courses. One laboratory requirement may be fulfilled by taking a lab course from another engineering department.

		Units
Select four of the following core courses:		
MATSCI 201	Applied Quantum Mechanics I	3
MATSCI 202	Materials Chemistry	3
MATSCI 203	Atomic Arrangements in Solids	3
MATSCI 204	Thermodynamics and Phase Equilibria	3
MATSCI 205	Waves and Diffraction in Solids	3
MATSCI 206	Defects in Crystalline Solids	3
MATSCI 207	Rate Processes in Materials	3
MATSCI 208	Mechanical Properties of Materials	3
MATSCI 209	Electronic and Optical Properties of Solids	3
MATSCI 210	Organic and Biological Materials	3
Total core course units		**12**
Select two of the following lab courses:		
MATSCI 171	Energy Materials Laboratory	3

MATSCI 172	X-Ray Diffraction Laboratory	3
MATSCI 173	Mechanical Behavior Laboratory	3
MATSCI 174	Electronic and Photonic Materials and Devices Laboratory	3
MATSCI 175	Nanoscale Materials Physics Computation Laboratory	3
One laboratory requirment may be fulfilled by taking lab courses from another engineering dept.		
Total lab course units		**6**
TOTAL		**18**

3. 15 units of approved course electives to result in a technically cohesive program. Of the 15 units of elective courses:
   a. 12 units must be taken for a letter grade (except for those submitting a M.S. thesis report).
   b. a maximum of three units may be seminars.
   c. if writing a master's thesis report, a minimum of 6 and a maximum of 15 units of MATSCI 200 Master's Research may be counted. Master's research units may be counted only if writing a M.S. thesis report. The final version of the thesis report must be signed off by two faculty and submitted to student services manager by last day of classes of the graduation quarter. See student services manager for details and approval.
   d. a maximum of three units may be undergraduate units, but not courses below the 100 level offering.
   e. a maximum of five units may be used for a foreign language course (not including any remedial English or courses in the student's native language if other than English). Students must plan to enroll in an upper level designation of a foreign language course offering.
   f. the combination of seminar, undergraduate, and language units may not exceed six units total.
   g. the combination of research, seminar, undergraduate, and language units may not exceed 15 units total.
   h. activity units may not be counted toward M.S. degree.
4. A minimum grade point average (GPA) of 2.75 for degree course work.

All proposed degree programs are subject to approval by student's academic adviser, and department's student services manager, who has responsibility for assuring that each proposal is a technically cohesive program. The M.S. degree is expected to be completed within two years during the University's candidacy period for completion of a master's degree.

Master's Thesis Report

Students wishing to take this option must consult with a MATSCI faculty member initially. Out of the 45 units M.S. degree requirements, 6-15 units may be taken in Materials Science Master's research by enrolling in MATSCI 200. Students using 15 units of research toward the degree must participate in a more complex and demanding research project than those using lesser units.

The M.S. thesis report must be approved and signed off by two faculty members. In general, one is student's research adviser, if adviser is a non MATSCI faculty member, a second MATSCI faculty is required to sign off on the thesis report. Consult with student services manager about faculty criteria, and requirements. Three copies of M.S. thesis report in final format should be submitted to two faculty advisers, and the department. The report is not an official University thesis but is intended to demonstrate to the department and faculty student's ability to conduct and report a directed research.

As a general guide line, a 6-9 units of master's research is a normal load for most students. The report should reflect the number of units taken. For instance, 3-4 laboratory reports are required for a 3-unit laboratory course. Accordingly, the level expected for 9 units of research would be at least equivalent to three such courses.

Students are advised to submit their thesis draft to faculty adviser readers by the end of fifth week of the quarter in which the units are to be assigned to allow time for faculty comments and revisions. A collated final version of the thesis report should be submitted to faculty and student services manager by last day of classes of student's graduation quarter. The appropriate grade for satisfactory progress in the research project prior to submission of the final report is 'N' (continuing); the 'S' (Satisfactory) final grade is given only when the report is fully approved and signed off by both faculty members.

In cases where students decide to pursue research after the initial program submission deadline, they should submit a revised M.S. Program Proposal at least two quarters before the degree is granted. The total combined units of Materials Science research units, seminars, language courses, and undergraduate courses cannot exceed 15. If a master's thesis report is not submitted, units in MATSCI 200 Master's Research cannot be applied to the department's requirement of 45 units for the conferral of the master's degree.

Honors Cooperative Program

Some of the department's graduate students participate in the Honors Cooperative Program (HCP), which makes it possible for academically qualified engineers and scientists in industry to be part-time graduate students in Materials Science while continuing professional employment. Prospective HCP students follow the same admissions process and must meet the same admissions requirements as full-time graduate students. For information regarding the Honors Cooperative Program, see Graduate Programs in the "School of Engineering (p. 505)" section of this bulletin.

Petition Process for Transfer from M.S. to Ph.D. Degree Program

Students admitted to graduate programs are admitted specifically into either the terminal M.S. or the Ph.D. program. A student admitted to the terminal M.S. program should not assume admission to the Ph.D. program. Admission to the Ph.D. program is required for a student to be eligible to work towards the Ph.D. degree.

A student in the terminal M.S. program may petition to be admitted to the Ph.D. program by filing an M.S. to Ph.D petition form. Petition must include a one-page statement of purpose explaining why the student wishes to transfer to the Ph.D. program, most recent unofficial transcript, and two letters of recommendation from members of the Stanford faculty, including one from the student's prospective research adviser and at least one from a Materials Science faculty member belonging to the Academic Council. The M.S. to Ph.D. petition to transfer should be submitted to the student services manager by June of the first year in the M.S. program. Students who wish to submit a petition to the Ph.D. degree, should plan to complete at least six of the MATSCI 200 series (including MATSCI 203 Atomic Arrangements in Solids, MATSCI 204 Thermodynamics and Phase Equilibria, MATSCI 207 Rate Processes in Materials) core courses during their first year of admission. A grade point average (GPA) of 3.5 or better in the core courses is requirement.

Transferring to the Ph.D. program is a competitive process and only highly qualified M.S. students may be admitted. Student's original application to the graduate program as well as the materials provided for the transfer petition are reviewed. Students must adhere to requirements for the terminal M.S. degree, and plan to confer the M.S. degree in the event that the Ph.D. petition to transfer is not approved.

Coterminal Master of Science Program in Materials Science and Engineering

Stanford undergraduates who wish to continue their studies for the Master of Science degree in Materials Science and Engineering through the Coterminal program may apply for admission after they have earned 120 units toward graduation (UTG) as shown on the undergraduate unofficial transcript. Applicants must submit their application no later than eight weeks before the start of the proposed admit quarter. The application must give evidence that student possesses a potential for strong academic performance at the graduate level. Scores from the Graduate Record Examination (GRE) General Test must be reported before action can be taken on an application.

Materials science is a highly integrated and interdisciplinary subject, therefore students of any engineering or science undergraduate major are encouraged to apply.

Information and other requirements pertaining to the Coterminal program in Materials Science and Engineering may be obtained from the department's student services manager.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Engineer in Materials Science Engineering

The University's basic requirements for the degree of Engineer are outlined in the "Graduate Degrees" section of this bulletin.

A student wishing to enter the Engineer program must have completed the requirements of the M.S. in Materials Science and Engineering, and must file a petition requesting admission to the program, stating the type of research to be done and the proposed supervising professor. Once approved, the Application for Candidacy must be submitted to the department's student services manager by the end of the second quarter in the Engineer program. Final changes in the Application for Candidacy form must be submitted no later than one academic quarter prior to degree conferral.

The 90-unit program must include 9 units of graduate courses in Materials Science with a MATSCI subject code (no research units, seminars, colloquia, and MATSCI 400 Participation in Materials Science Teaching, Participation in Teaching) beyond the requirements for the M.S. degree, and additional research or other units to meet the 90-unit University minimum requirement. A grade point average (GPA) of 3.0 must be maintained for all degree course work taken at Stanford.

The Engineer thesis must be approved and signed off by two Academic Council faculty members, one must be a MATSCI faculty member.

Doctor of Philosophy in Materials Science Engineering

The University's basic requirements for the Ph.D. degree are outlined in the "Graduate Degrees (p. 65)" section of this bulletin. The GRE (Graduate Record Examination) is required for admission to the Ph.D. program.

The Ph.D. degree is awarded after the completion of a minimum of 135 units of graduate work as well as satisfactory completion of any additional University requirements. Degree requirements for the department are as follows:

		Units
Core Courses [1]		**30**
MATSCI 201	Applied Quantum Mechanics I	3
MATSCI 202	Materials Chemistry	3
MATSCI 203	Atomic Arrangements in Solids	3
MATSCI 204	Thermodynamics and Phase Equilibria	3
MATSCI 205	Waves and Diffraction in Solids	3
MATSCI 206	Defects in Crystalline Solids	3
MATSCI 207	Rate Processes in Materials	3
MATSCI 208	Mechanical Properties of Materials	3
MATSCI 209	Electronic and Optical Properties of Solids	3
MATSCI 210	Organic and Biological Materials	3
Five Elective Graduate Technical Courses [2]		**15**
Materials Science Colloquia [3]		**3**
MATSCI 230	Materials Science Colloquium (Autumn Quarter)	1
MATSCI 230	Materials Science Colloquium (Winter Quarter)	1
MATSCI 230	Materials Science Colloquium (Spring Quarter)	1
Research & Electives		**87**
75 Units of MATSCI 300: Ph.D. Research		75
12 Units of Electives [4]		12

1. At least six of these courses must be taken during the first year (including MATSCI 203 Atomic Arrangements in Solids, MATSCI 204 Thermodynamics and Phase Equilibria, and MATSCI 207 Rate Processes in Materials) . All core courses must be completed for a letter grade, and taken during the first two years in the program.
2. Elective technical courses must be in areas related directly to student's research interest in Materials Science and Engineering, and may not include MATSCI 230 Materials Science Colloquium, MATSCI 299 Practical Training, MATSCI 300 Ph.D. Research or MATSCI 400 Participation in Materials Science Teaching. All courses must be completed for a letter grade.
3. Materials Science & Engineering Ph.D. students are required to take MATSCI 230 Materials Science Colloquium during each quarter of their first year. Attendance is required, roll is taken, and more than two absences results to an automatic "No Pass" grade.
4. May include other engineering courses, or MATSCI 400 Participation in Materials Science Teaching or a maximum of 3 units MATSCI 299 Practical Training

- Students must consult with their academic adviser on Ph.D. course selection planning. For students with a non-MATSCI research adviser, the MATSCI academic/co-adviser must also approve the list of proposed courses. Any proposed deviations from the requirements can only be considered by petition.
- Ph.D. students are required to apply for and have conferred a MATSCI M.S. degree normally by the end of their third year of studies. A Graduate Program Authorization Petition (in Axess) and an M.S. Program Proposal (https://mse.stanford.edu/student-resources/forms/masters/) must be submitted after taking the Ph.D. qualifying examination.
- A departmental oral qualifying examination must be passed by the end of January of the second year. A grade point average (GPA) of 3.5 in core courses MATSCI 201-210 is required for admission to the Ph.D. qualifying examination. Students who have passed the Ph.D. qualifying examination are required to complete the Application for Candidacy to the Ph.D.degree by June of the second year after passing the qualifying examination. Final changes in the Application for Candidacy form must be submitted no later than one academic quarter prior to the Terminal Graduate Registration (TGR) Status.
- Maintain a cumulative GPA of 3.0 in all courses taken at Stanford.
- Students must present the results of their research dissertation at the University Ph.D. oral defense examination.
- Current students subject to either this set of requirements or a prior set must obtain the approval of their adviser before filing a revised program sheet, and should as far as possible adhere to the intent of the new requirements.
- Students may refer the list of "Advanced Specialty Courses and Cognate Courses" provided below as guidelines for their selection of technical elective units. As noted above, academic adviser approval is required.
- At least 90 units must be taken in residence at Stanford. Students entering with an M.S. degree in Materials Science from another university may request to transfer up to 45 units of equivalent work toward the total of 135 Ph.D. degree requirement units.
- Students may propose a petition for exemption from a required core course if they have taken a similar course in the past. To petition, a student must consult and obtain academic and/or research adviser approval, and consent of the instructor of the proposed core course. To assess a student's level of knowledge, the instructor may provide an oral or written examination on the subject matter. The student must pass the examination in order to be exempt from core course requirement. If the petition is approved, the student is required to complete the waived number of units by taking other relevant upper level MATSCI courses.

Advanced Specialty Courses

		Units
Biomaterials		
CHEMENG 310	Microhydrodynamics	3
CHEMENG 355	Advanced Biochemical Engineering	3
ME 381	Orthopaedic Bioengineering	3
ME 457	Fluid Flow in Microdevices	3
MATSCI 225	Biochips and Medical Imaging	3
MATSCI 380	Nano-Biotechnology	3
MATSCI 381	Biomaterials in Regenerative Medicine	3
Electronic Materials Processing		
EE 212	Integrated Circuit Fabrication Processes	3
EE 216	Principles and Models of Semiconductor Devices	3
EE 311	Advanced Integrated Circuits Technology	3
EE 316	Advanced VLSI Devices	3
EE 312	Integrated Circuit Fabrication Laboratory	3-4
MATSCI 312	New Methods in Thin Film Synthesis	3
Materials Characterization		
CHEMENG 345	Fundamentals and Applications of Spectroscopy	3
EE 329	The Electronic Structure of Surfaces and Interfaces	3
MATSCI 312	New Methods in Thin Film Synthesis	3
MATSCI 320	Nanocharacterization of Materials	3
MATSCI 321	Transmission Electron Microscopy	3
MATSCI 322	Transmission Electron Microscopy Laboratory	3
MATSCI 323	Thin Film and Interface Microanalysis	3
MATSCI 326	X-Ray Science and Techniques	3
Mechanical Behavior of Solids		
AA 252	Techniques of Failure Analysis	3
AA 256	Mechanics of Composites	3
MATSCI 251	Microstructure and Mechanical Properties	3-4
MATSCI 358	Fracture and Fatigue of Materials and Thin Film Structures	3
ME 335A	Finite Element Analysis	3
ME 335B	Finite Element Analysis	3
ME 335C	Finite Element Analysis	3
ME 340	Mechanics - Elasticity and Inelasticity	3
ME 345	Fatigue Design and Analysis	3
Physics of Solids and Computation		
APPPHYS 272	Solid State Physics	3
APPPHYS 273	Solid State Physics II	3
EE 222	Applied Quantum Mechanics I	3
EE 223	Applied Quantum Mechanics II	3
EE 327	Properties of Semiconductor Materials	3
EE 329	The Electronic Structure of Surfaces and Interfaces	3
MATSCI 331	Atom-based computational methods for materials	3
MATSCI 343	Organic Semiconductors for Electronics and Photonics	3
MATSCI 347	Magnetic materials in nanotechnology, sensing, and energy	3
Soft Materials		
CHEMENG 310	Microhydrodynamics	3
MATSCI 343	Organic Semiconductors for Electronics and Photonics	3
ME 455	Complex Fluids and Non-Newtonian Flows	3

Ph.D. Minor in Materials Science and Engineering

The University's basic requirements for the Ph.D. minor are outlined in the "Graduate Degrees (p. 67)" section of this bulletin. A minor requires 20 units of graduate work of quality and depth at the 200-level or higher in the Materials Science and Engineering course offering. Courses must be taken for a letter grade. The proposed list of courses must be approved by department's advanced degree committee. Individual programs must be submitted to the student services manager at least one quarter prior to the quarter of the degree conferral. None of the units taken for the Ph.D. minor may overlap with any M.S. degree units.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional

Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of Materials Science and Engineering counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Undergraduates who are unable to enroll in certain courses, such as laboratory courses, WIM courses, or other specific major requirements, should contact the MatSci Student Services Office to facilitate an alternative course plan. In some cases, students may be able to substitute a major requirement with an alternative course in the department. Program deviations will be handled on a case by case basis. Any requests must be initiated by the student by emailing msestudentservices@stanford.edu.

Other Undergraduate Policies

Students are strongly encouraged to request a CR/NC grading option well in advance of the change of grading basis deadline (Friday of Week 8 of each quarter) and must notify their instructor of any grading basis changes as soon as they occur. Additionally, students should carefully consider their options before taking a large number of major courses with a CR/NC grading option as this may impact employment opportunities, fellowship applications, or graduate school admissions. Students are encouraged to reach out to the Director of Undergraduate Studies, Dr. Rajan Kumar, for additional assistance regarding grading options for the 2020-21 academic year.

Graduate Degree Requirements

Grading

The Department of Materials Science and Engineering counts all non-core courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'C-' or better level.

All Materials Science and Engineering graduate-level core courses must be taken for letter-grade. These courses are MATSCI 201-214. All other courses at the graduate level may be taken for letter grade or CR/NC.

Other Graduate Policies

Graduate students should carefully consider their options before taking a large number of major courses with a CR/NC grading option, as this may impact employment opportunities, fellowship applications, or further graduate school admissions. Students are encouraged to reach out to the MatSci Ph.D. Advising Team or the MatSci Student Services Office for additional assistance regarding grading options for the 2020-21 academic year.

Graduate Advising Expectations

The Department of Materials Science and Engineering is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

M.S. Advising

The Department of Materials Science and Engineering (MSE) is committed to providing academic advising in support of its M.S. students’ education and professional development. When most effective, this advising relationship entails collaborative engagement by both the adviser and the advisee. As a best practice, advising expectations should be discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

At the start of graduate study, each student is assigned a master’s program adviser, a member of department faculty who provides guidance in course selection and in exploring academic opportunities and professional pathways. Usually, the same faculty member serves as program adviser for the duration of master’s study, but the handbook does describe a process for formal adviser changes.

The MSE Graduate Handbook (https://mse.stanford.edu/student-resources/) provides information and suggested timelines for advising meetings; however, ideally, the program adviser and student meet at least three times during the student’s two-year degree. The first meeting between program adviser and student should occur once in Autumn Quarter of the first year to discuss the student’s goals and objectives. Student and program adviser meet again in Spring Quarter to discuss the student’s course plans and goals for the next academic year. The last meeting should be at the start of the quarter before the student’s final quarter of study, and the program adviser and student review the student’s coursework taken and the final quarter of study courses the student intends to take. It is expected that the student initiates these meetings.

In addition, the faculty Director of Graduate Studies (DGS) meets all the master’s students during the MSE Orientation at the start of the first year and is available during the academic year by email and during office hours.The DGS or program adviser may initiate a meeting with any student they feel could be in academic distress.

The MSE student services team is also an important part of the master’s advising team. They inform students and advisers about University and department requirements, procedures, and opportunities, and maintain the official records of advising assignments and approvals.

Finally, the department believes that graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing

themselves of policies and degree requirements for their graduate program. As such, it expects students to read the monthly MSE Updates newsletter, which provides deadlines, web links, and other valuable information on graduate degree progress.

Ph.D. Advising

The Department of Materials Science and Engineering (MSE) is committed to providing academic advising in support of its Ph.D. students' education and professional development. When most effective, this advising relationship entails collaborative engagement by both the adviser and the advisee. As a best practice, advising expectations should be discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways. The MSE Graduate Handbook (https://mse.stanford.edu/student-resources/) provides information and suggested timelines for advising meetings in the different stages of the doctoral program, and this timeline is reviewed in the MSE Orientation held at the start of a student's doctoral program and at the annual MSE Graduate Updates meeting.

Ph.D. students are initially assigned a doctoral program adviser based on the interests expressed in their application. This faculty member provides initial guidance in course selection, assists students in exploring academic opportunities and professional pathways, and aids in identifying doctoral research opportunities. MSE does not require formal lab rotations, but students are strongly encouraged to explore research activities in two or three labs during their first academic year.

Students identify their doctoral research adviser prior to the end of February of their first year of study. The research supervisor assumes primary responsibility for the future direction of the student, taking on the roles previously filled by the program adviser, and ultimately directs the student's dissertation. Most students find an adviser from among the primary faculty members of the department. However, the research adviser may be a faculty member from another Stanford department who is familiar with supervising doctoral students and able to provide both research advising and funding for the duration of the doctoral program. When the research adviser is from outside the department, the student must also identify a department co-adviser from the department's primary faculty to provide guidance on departmental requirements, core coursework, and opportunities.

The faculty Director of Graduate Studies (DGS) meets with all the doctoral students during the MSE Orientation at the start of the first year and is available during the academic year by email and during office hours. The DGS or research adviser/co-adviser may initiate a meeting with any student they feel could be in academic or research distress.

The MSE student services team is also an important part of the doctoral advising team: they inform students and advisers about University and department requirements, procedures, and opportunities, and they maintain the official records of advising assignments and approvals. Students are encouraged to talk with the DGS and the student services office as they consider adviser selection, or for guidance in working with their adviser(s). Student services can discuss how a student can change program/research adviser(s), declare their Dissertation Reading Committee/Oral Exam Committee, and process for filing important paperwork.

The department's doctoral students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program. As such the department expects students to read the monthly MSE Updates newsletter which provides deadlines, web links, and other valuable information on graduate degree progress.

Chair: Alberto Salleo

Director of Graduate Studies: Alberto Salleo

Director of Undergraduate Studies: Nicholas A. Melosh

Associate Chair: Shan Xiang Wang

Professors: Mark L. Brongersma, Bruce M. Clemens, Yi Cui, Reinhold H. Dauskardt, Thomas Devereaux, Persis S. Drell, Paul C. McIntyre, Nicholas A. Melosh, Friedrich B. Prinz, Alberto Salleo, Robert Sinclair, Shan X. Wang

Associate Professors: William Chueh, Jennifer A. Dionne, Sarah C. Heilshorn, Aaron M. Lindenberg, Evan J. Reed, Andrew Spakowitz

Assistant Professors: Eric Appel, Felipe da Jornada, Guosong Hong, Andrew Mannix, Kunal Mukherjee

Courtesy Professors: Raag Airan, Zhenan Bao, Stacey F. Bent, Wei Cai, Matteo Cargnello, Christopher Chidsey, Ian R. Fisher, Curtis W. Frank, David Goldhaber-Gordon, Kenneth Goodson, Sanjiv Sam Gambhir, Wendy Gu, Geoffrey C. Gurtner, Michael T. Longaker, Arunava Majumdar, James D. Plummer, Eric Pop, Krishna Saraswat, Jonathan Stebbins, Yuri Suzuki, Peter Yang, Xiaolin Zheng

Lecturers: Ann Marshall, Arturas Vailionis

Adjunct Professors: Khalil Amine, Geraud Dubois, Annika Enejder, Turgut Gur, Bryce Meredig, Hendrik Ohldag

Emeriti: (Professors) David M. Barnett, Clayton W. Bates Jr., Arthur Bienenstock, John C. Bravman, Richard H. Bube, Theodore H. Geballe, Robert A. Huggins, William D. Nix, John C. Shyne, William A. Tiller, Robert L. White, Robert S. Feigelson *(Professor, Research)*

Cognate Courses

		Units
AA 252	Techniques of Failure Analysis	3
AA 256	Mechanics of Composites	3
APPPHYS 270	Magnetism and Long Range Order in Solids	3
APPPHYS 272	Solid State Physics	3
APPPHYS 273	Solid State Physics II	3
CHEMENG 310	Microhydrodynamics	3
CHEMENG 345	Fundamentals and Applications of Spectroscopy	3
CHEMENG 355	Advanced Biochemical Engineering	3
EE 212	Integrated Circuit Fabrication Processes	3
EE 216	Principles and Models of Semiconductor Devices	3
EE 222	Applied Quantum Mechanics I	3
EE 223	Applied Quantum Mechanics II	3
EE 311	Advanced Integrated Circuits Technology	3
EE 312	Integrated Circuit Fabrication Laboratory	3-4
EE 316	Advanced VLSI Devices	3
EE 327	Properties of Semiconductor Materials	3
EE 329	The Electronic Structure of Surfaces and Interfaces	3
ENGR 50	Introduction to Materials Science, Nanotechnology Emphasis	4
ENGR 50E	Introduction to Materials Science, Energy Emphasis	4

ENGR 50M	Introduction to Materials Science, Biomaterials Emphasis	4
ME 329	Mechanical Analysis in Design	3
ME 335A	Finite Element Analysis	3
ME 335B	Finite Element Analysis	3
ME 335C	Finite Element Analysis	3
ME 345	Fatigue Design and Analysis	3
ME 381	Orthopaedic Bioengineering	3
ME 455	Complex Fluids and Non-Newtonian Flows	3
ME 457	Fluid Flow in Microdevices	3
PHYSICS 230	Graduate Quantum Mechanics I	3
PHYSICS 231	Graduate Quantum Mechanics II	3

Courses

MATSCI 10. Materials Matter. 1 Unit.
All facets of engineering rely on materials to develop modern devices and solve the greatest technological challenges in society today. In this introductory 1-unit course, students will learn about the field of Materials Science and Engineering and its broad applications in research and industry. Students who are interested in careers in energy and sustainability, biomaterials and regenerative medicine, or engineering matter at the atomic scale for electronics and nanotechnology will be able to have an early window into the work done in these areas through this course. Each week, students will listen to talks from invited guest speakers and discover the wide variety of career opportunities and areas of focus offered through Materials Science and Engineering. Additionally, students will have the opportunity to develop networks with Stanford alumni and current students in our department. This course is open to all undergraduates and does not have any pre-requisites.

MATSCI 31. Chemical Principles: From Molecules to Solids. 5 Units.
A one-quarter course for students who have taken chemistry previously. This course will introduce the basic chemical principles that dictate how and why reactions occur and the structure and properties of important molecules and extended solids that make up our world. As the Central Science, a knowledge of chemistry provides a deep understanding of concepts in fields ranging from materials, environmental science, and engineering to pharmacology and metabolism. Discussions of molecular structure will describe bonding models including Lewis structures, resonance, crystal-field theory, and molecular-orbital theory. We will reveal the chemistry of materials of different dimensionality, with emphasis on symmetry, bonding, and electronic structure of molecules and solids. We will also discuss the kinetics and thermodynamics that govern reactivity and dictate solubility and acid-base equilibria. A two-hour weekly laboratory section accompanies the course to introduce laboratory techniques and reiterate lecture concepts through hands-on activities. Specific discussions will include the structure, properties, and applications of molecules used in medicine, perovskites used in solar cells, and the dramatically different properties of materials with the same composition (for example: diamond, graphite, graphene). There will be three lectures, one two-hour laboratory session, and an optional 80-minute problem solving session each week. The course will assume familiarity with stoichiometry, unit conversions, and gas laws. All students who are interested in taking general chemistry at Stanford must take the Autumn 2020 General Chemistry Placement Test before Autumn quarter begins, regardless of chemistry background. Generally students earning an AP chemistry score of 4 or higher place into 31M. Students earning an AP score of 5 are also welcome to take the Autumn 2020 Chemistry 33 Placement Test to see if Chem33 is a more appropriate placement. Same as: MATSCI 31.
Same as: CHEM 31M

MATSCI 81N. Bioengineering Materials to Heal the Body. 3 Units.
Preference to freshmen. Real-world examples of materials developed for tissue engineering and regenerative medicine therapies. How scientists and engineers design new materials for surgeons to use in replacing body parts such as damaged heart or spinal cord tissue. How cells interact with implanted materials. Students identify a clinically important disease or injury that requires a better material, proposed research approaches to the problem, and debate possible engineering solutions.

MATSCI 82N. Science of the Impossible. 3 Units.
Imagine a world where cancer is cured with light, objects can be made invisible, and teleportation is allowed through space and time. The future once envisioned by science fiction writers is now becoming a reality, thanks to advances in materials science and engineering. This seminar will explore 'impossible' technologies - those that have shaped our past and those that promise to revolutionize the future. Attention will be given to both the science and the societal impact of these technologies. We will begin by investigating breakthroughs from the 20th century that seemed impossible in the early 1900s, such as the invention of integrated circuits and the discovery of chemotherapy. We will then discuss the scientific breakthroughs that enabled modern 'impossible' science, such as photodynamic cancer therapeutics, invisibility, and psychokinesis through advanced mind-machine interfaces. Lastly, we will explore technologies currently perceived as completely impossible and brainstorm the breakthroughs needed to make such science fiction a reality. The course will include introductory lectures and in-depth conversations based on readings. Students will also be given the opportunity to lead class discussions on a relevant 'impossible science' topic of their choosing.

MATSCI 83N. Great Inventions That Matter. 3 Units.
This introductory seminar starts by illuminating on the general aspects of creativity, invention, and patenting in engineering and medicine, and how Stanford University is one of the world's foremost engines of innovation. We then take a deep dive into some great technological inventions which are still playing an essential role in our everyday lives, such as fiber amplifier, digital compass, computer memory, HIV detector, personal genome machine, cancer cell sorting, brain imaging, and mind reading. The stories and underlying materials and technologies behind each invention, including a few examples by Stanford faculty and student inventors, are highlighted and discussed. A special lecture focuses on the public policy on intellectual properties (IP) and the resources at Stanford Office of Technology Licensing (OTL). Each student will have an opportunity to present on a great invention from Stanford (or elsewhere), or to write a (mock) patent disclosure of his/her own ideas.

MATSCI 85N. Health Fab: Making Stuff for Life. 3 Units.
Semiconductor-based chip technology is all around us; in our phones, computers, and cars. However, not all capabilities developed for silicon processing are directed towards computers and mobile devices. A new field has emerged using these fabrication and patterning techniques for medical devices, health monitoring, and human-machine interfaces. We can now create chips that flow not electrons, but liquids, taking samples and performing analyses. These liquid based functions can be integrated together with silicon electronic devices for sensing, control, or manipulation. FitBits and Apple Watches are examples of the first generation of 'wearable' electronics, while more advanced devices that incorporate both liquid based sensors and electronics are on their way.nnIn this class, we will learn some fundamentals of device fabrication for biomedical purposes, take you inside the Stanford NanoFabrication Facility (SNF), and create microfluidic devices. We will cover what is possible with current microfabrication techniques, including direct-write lithography, laser cutting, three-dimensional two photon patterning, polymer deposition and metal patterning. Students will learn how to design, fabricate, and test microfluidic and biomedically related devices. In addition to teaching and hands-on training in microfluidic fabrication, the class will include four team-based projects, each with a different device goal. These projects requirements will be submitted by leading research groups at Stanford, providing up-to-date and real world challenges. Each team will work together to identify specific device needs, invent solutions, and built prototype devices. At the end of the course each team will present its designs to the sponsoring research program and describe how they met the required objectives. No prior experience with device fabrication is needed.

MATSCI 90Q. Resilience, Transformation, and Equilibrium: the Science of Materials. 3-4 Units.
In this course, we will explore the fundamentals of the kinetics of materials while relating them to different phenomena that we observe in our everyday lives. We will study the mechanisms and processes by which materials obtain the mechanical, electronic, and other properties that make them so useful to us. How can we cool water below freezing and keep it from turning into ice? Why is it that ice cream that has been in the freezer for too long does not taste as good? What are crystal defects and why do they help create some of the most useful (semiconductors) and beautiful (gemstones) things we have? This introductory seminar is open to all students, and prior exposure to chemistry, physics, or calculus is NOT required.

MATSCI 100. Undergraduate Independent Study. 1-3 Unit.
Independent study in materials science under supervision of a faculty member.

MATSCI 142. Quantum Mechanics of Nanoscale Materials. 4 Units.
Introduction to quantum mechanics and its application to the properties of materials. No prior background beyond a working knowledge of calculus and high school physics is presumed. Topics include: The Schrodinger equation and applications to understanding of the properties of quantum dots, semiconductor heterostructures, nanowires, and bulk solids. Tunneling processes and applications to nanoscale devices; the scanning tunneling microscope, and quantum cascade lasers. Simple models for the electronic properties and band structure of materials including semiconductors, insulators and metals and applications to semiconductor devices. Time-dependent perturbation theory and interaction of light with materials with applications to laser technology. Recommended: ENGR 50 or equivalent introductory materials science course. (Formerly 157).

MATSCI 143. Materials Structure and Characterization. 4 Units.
Students will study the theory and application of characterization techniques used to examine the structure of materials at the nanoscale. Students will learn to classify the structure of materials such as semiconductors, ceramics, metals, and nanotubes according to the principles of crystallography. Methods used widely in academic and industrial research, including X-ray diffraction and electron microscopy, will be demonstrated along with their application to the analysis of nanostructures. Prerequisites: E-50 or equivalent introductory materials science course. (Formerly 153).

MATSCI 144. Thermodynamic Evaluation of Green Energy Technologies. 4 Units.
Understand the thermodynamics and efficiency limits of modern green technologies such as carbon dioxide capture from air, fuel cells, batteries, and solar-thermal power. Recommended: ENGR 50 or equivalent introductory materials science course. (Formerly 154).

MATSCI 145. Kinetics of Materials Synthesis. 4 Units.
The science of synthesis of nanometer scale materials. Examples including solution phase synthesis of nanoparticles, the vapor-liquid-solid approach to growing nanowires, formation of mesoporous materials from block-copolymer solutions, and formation of photonic crystals. Relationship of the synthesis phenomena to the materials science driving forces and kinetic mechanisms. Materials science concepts including capillarity, Gibbs free energy, phase diagrams, and driving forces. Prerequisites: MatSci 144. (Formerly 155).

MATSCI 150. Undergraduate Research. 3-6 Units.
Participation in a research project.

MATSCI 151. Microstructure and Mechanical Properties. 3-4 Units.
Primarily for students without a materials background. Mechanical properties and their dependence on microstructure in a range of engineering materials. Elementary deformation and fracture concepts, strengthening and toughening strategies in metals and ceramics. Topics: dislocation theory, mechanisms of hardening and toughening, fracture, fatigue, and high-temperature creep. Undergraduates register in 151 for 4 units; graduates register for 251 in 3 units.
Same as: MATSCI 251

MATSCI 152. Electronic Materials Engineering. 4 Units.
Materials science and engineering for electronic device applications. Kinetic molecular theory and thermally activated processes; band structure; electrical conductivity of metals and semiconductors; intrinsic and extrinsic semiconductors; elementary p-n junction theory; operating principles of light emitting diodes, solar cells, thermoelectric coolers, and transistors. Semiconductor processing including crystal growth, ion implantation, thin film deposition, etching, lithography, and nanomaterials synthesis.

MATSCI 156. Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution. 3-4 Units.
Operating principles and applications of emerging technological solutions to the energy demands of the world. The scale of global energy usage and requirements for possible solutions. Basic physics and chemistry of solar cells, fuel cells, and batteries. Performance issues, including economics, from the ideal device to the installed system. The promise of materials research for providing next generation solutions. Undergraduates register in 156 for 4 units; graduates register in 256 for 3 units. Prerequisites: MATSCI 145 and 152 or equivalent coursework in thermodynamics and electronic properties.

MATSCI 158. Soft Matter in Biomedical Devices, Microelectronics, and Everyday Life. 4 Units.
The relationships between molecular structure, morphology, and the unique physical, chemical, and mechanical behavior of polymers and other types of soft matter are discussed. Topics include methods for preparing synthetic polymers and examination of how enthalpy and entropy determine conformation, solubility, mechanical behavior, microphase separation, crystallinity, glass transitions, elasticity, and linear viscoelasticity. Case studies covering polymers in biomedical devices and microelectronics will be covered. Recommended: ENGR 50 and Chem 31A or equivalent.
Same as: BIOE 158

MATSCI 159Q. Japanese Companies and Japanese Society. 3 Units.
Preference to sophomores. The structure of a Japanese company from the point of view of Japanese society. Visiting researchers from Japanese companies give presentations on their research enterprise. The Japanese research ethic. The home campus equivalent of a Kyoto SCTI course.
Same as: ENGR 159Q

MATSCI 160. Nanomaterials Laboratory. 3-4 Units.
This course is designed for students interested in exploring the cutting edge of nanoscience and nanotechnology. Students will learn several fundamental concepts related to nanomaterials synthesis and characterization that are commonly used in research and industrial settings. Students will also investigate several applications of nanomaterials through a series of assessments, including self-assembled monolayers, nanowire photovoltaics, and nanoparticles for drug delivery and biomarker screening. In lieu of traditional labs, students will attend weekly discussion sections aimed at priming students to think like a materials engineer. Through these discussions, students will explore how to design an effective experiment, how to identify research gaps, and how to write an effective grant proposal. Enrollment limited to 24. Prerequisites: ENGR 50. Contact instructor for more details. Undergraduates register for 160 for 4 units, Graduates register for 170 for 3 units.
Same as: MATSCI 170

MATSCI 161. Energy Materials Laboratory. 3-4 Units.
From early church architecture through modern housing, windows are passages of energy and matter in the forms of light, sound and air. By letting in heat during the summer and releasing it in winter, windows can place huge demands on air conditioning and heating systems, thereby increasing energy consumption and raising greenhouse gas levels in the atmosphere. Latest advances in materials science have enabled precise and on-demand control of electromagnetic radiation through `smart¿ dynamic windows with photochromic and electrochromic materials that change color and optical density in response to light radiance and electrical potential. In this course, we will spend the whole quarter on a project to make and characterize dynamic windows based on one of the electrochromic material systems, the reversible electroplating of metal alloys. There will be an emphasis in this course on characterization methods such as scanning electron microscopy, x-ray photoelectron spectroscopy, optical spectroscopy, four-point probe measurements of conductivity and electrochemical measurements (cyclic voltammetry). The course will finish with students giving presentations on the prospects of using dynamic windows and generic radiation control in cars, homes, commercial buildings or airplanes. Undergraduates register for 161 for 4 units; graduates register for 171 for 3 units.
Same as: MATSCI 171

MATSCI 162. X-Ray Diffraction Laboratory. 3-4 Units.
Experimental x-ray diffraction techniques for microstructural analysis of materials, emphasizing powder and single-crystal techniques. Diffraction from epitaxial and polycrystalline thin films, multilayers, and amorphorous materials using medium and high resolution configurations. Determination of phase purity, crystallinity, relaxation, stress, and texture in the materials. Advanced experimental x-ray diffraction techniques: reciprocal lattice mapping, reflectivity, and grazing incidence diffraction. Enrollment limited to 20. Undergraduates register for 162 for 4 units; graduates register for 172 for 3 units. Prerequisites: MATSCI 143 or equivalent course in materials characterization.
Same as: MATSCI 172, PHOTON 172

MATSCI 163. Mechanical Behavior Laboratory. 3-4 Units.
Technologically relevant experimental techniques for the study of the mechanical behavior of engineering materials in bulk and thin film form, including tension testing, nanoindentation, and wafer curvature stress analysis. Metallic and polymeric systems. In addition to regularly scheduled lecture (M/W), this course includes a three-hour lab session every other week (T/W/Th). Register for lecture section in addition to one lab section. Undergraduates register for 163 in 4 units; graduates register in 173 for 3 units.
Same as: MATSCI 173

MATSCI 164. Electronic and Photonic Materials and Devices Laboratory. 3-4 Units.
Lab course. Current electronic and photonic materials and devices. Device physics and micro-fabrication techniques. Students design, fabricate, and perform physical characterization on the devices they have fabricated. Established techniques and materials such as photolithography, metal evaporation, and Si technology; and novel ones such as soft lithography and organic semiconductors. Prerequisite: MATSCI 152 or 199 or consent of instructor. Undergraduates register in 164 for 4 units; graduates register in 174 for 3 units. Students are required to sign up for lecture and one lab section.
Same as: MATSCI 174

MATSCI 165. Nanoscale Materials Physics Computation Laboratory. 3-4 Units.
Computational exploration of fundamental topics in materials science using Java-based computation and visualization tools. Emphasis is on the atomic-scale origins of macroscopic materials phenomena. Simulation methods include molecular dynamics and Monte Carlo with applications in thermodynamics, kinetics, and topics in statistical mechanics. Undergraduates register for 165 for 4 units; graduates register for 175 for 3 units. Prerequisites: Undergraduate physics and MATSCI 144 or equivalent coursework in thermodynamics. MATSCI 145 recommended.
Same as: MATSCI 175

MATSCI 166. Data Science and Machine Learning Approaches in Chemical and Materials Engineering. 3 Units.
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Same as: CHEMENG 177, CHEMENG 277, MATSCI 176

MATSCI 170. Nanomaterials Laboratory. 3-4 Units.
This course is designed for students interested in exploring the cutting edge of nanoscience and nanotechnology. Students will learn several fundamental concepts related to nanomaterials synthesis and characterization that are commonly used in research and industrial settings. Students will also investigate several applications of nanomaterials through a series of assessments, including self-assembled monolayers, nanowire photovoltaics, and nanoparticles for drug delivery and biomarker screening. In lieu of traditional labs, students will attend weekly discussion sections aimed at priming students to think like a materials engineer. Through these discussions, students will explore how to design an effective experiment, how to identify research gaps, and how to write an effective grant proposal. Enrollment limited to 24. Prerequisites: ENGR 50. Contact instructor for more details. Undergraduates register for 160 for 4 units, Graduates register for 170 for 3 units.
Same as: MATSCI 160

MATSCI 171. Energy Materials Laboratory. 3-4 Units.
From early church architecture through modern housing, windows are passages of energy and matter in the forms of light, sound and air. By letting in heat during the summer and releasing it in winter, windows can place huge demands on air conditioning and heating systems, thereby increasing energy consumption and raising greenhouse gas levels in the atmosphere. Latest advances in materials science have enabled precise and on-demand control of electromagnetic radiation through `smart¿ dynamic windows with photochromic and electrochromic materials that change color and optical density in response to light radiance and electrical potential. In this course, we will spend the whole quarter on a project to make and characterize dynamic windows based on one of the electrochromic material systems, the reversible electroplating of metal alloys. There will be an emphasis in this course on characterization methods such as scanning electron microscopy, x-ray photoelectron spectroscopy, optical spectroscopy, four-point probe measurements of conductivity and electrochemical measurements (cyclic voltammetry). The course will finish with students giving presentations on the prospects of using dynamic windows and generic radiation control in cars, homes, commercial buildings or airplanes. Undergraduates register for 161 for 4 units; graduates register for 171 for 3 units.
Same as: MATSCI 161

MATSCI 172. X-Ray Diffraction Laboratory. 3-4 Units.
Experimental x-ray diffraction techniques for microstructural analysis of materials, emphasizing powder and single-crystal techniques. Diffraction from epitaxial and polycrystalline thin films, multilayers, and amorphorous materials using medium and high resolution configurations. Determination of phase purity, crystallinity, relaxation, stress, and texture in the materials. Advanced experimental x-ray diffraction techniques: reciprocal lattice mapping, reflectivity, and grazing incidence diffraction. Enrollment limited to 20. Undergraduates register for 162 for 4 units; graduates register for 172 for 3 units. Prerequisites: MATSCI 143 or equivalent course in materials characterization.
Same as: MATSCI 162, PHOTON 172

MATSCI 173. Mechanical Behavior Laboratory. 3-4 Units.
Technologically relevant experimental techniques for the study of the mechanical behavior of engineering materials in bulk and thin film form, including tension testing, nanoindentation, and wafer curvature stress analysis. Metallic and polymeric systems. In addition to regularly scheduled lecture (M/W), this course includes a three-hour lab session every other week (T/W/Th). Register for lecture section in addition to one lab section. Undergraduates register for 163 in 4 units; graduates register in 173 for 3 units.
Same as: MATSCI 163

MATSCI 174. Electronic and Photonic Materials and Devices Laboratory. 3-4 Units.
Lab course. Current electronic and photonic materials and devices. Device physics and micro-fabrication techniques. Students design, fabricate, and perform physical characterization on the devices they have fabricated. Established techniques and materials such as photolithography, metal evaporation, and Si technology; and novel ones such as soft lithography and organic semiconductors. Prerequisite: MATSCI 152 or 199 or consent of instructor. Undergraduates register in 164 for 4 units; graduates register in 174 for 3 units. Students are required to sign up for lecture and one lab section.
Same as: MATSCI 164

MATSCI 175. Nanoscale Materials Physics Computation Laboratory. 3-4 Units.
Computational exploration of fundamental topics in materials science using Java-based computation and visualization tools. Emphasis is on the atomic-scale origins of macroscopic materials phenomena. Simulation methods include molecular dynamics and Monte Carlo with applications in thermodynamics, kinetics, and topics in statistical mechanics. Undergraduates register for 165 for 4 units; graduates register for 175 for 3 units. Prerequisites: Undergraduate physics and MATSCI 144 or equivalent coursework in thermodynamics. MATSCI 145 recommended.
Same as: MATSCI 165

MATSCI 176. Data Science and Machine Learning Approaches in Chemical and Materials Engineering. 3 Units.
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Same as: CHEMENG 177, CHEMENG 277, MATSCI 166

MATSCI 190. Organic and Biological Materials. 3-4 Units.
Unique physical and chemical properties of organic materials and their uses. The relationship between structure and physical properties, and techniques to determine chemical structure and molecular ordering. Examples include liquid crystals, dendrimers, carbon nanotubes, hydrogels, and biopolymers such as lipids, protein, and DNA. Prerequisite: Thermodynamics and ENGR 50 or equivalent. Undergraduates register for 190 for 4 units; graduates register for 210 for 3 units.
Same as: MATSCI 210

MATSCI 192. Materials Chemistry. 3-4 Units.
An introduction to the fundamental physical chemical principles underlying materials properties. Beginning from basic quantum chemistry, students will learn how the electronic configuration of molecules and solids impacts their structure, stability/reactivity, and spectra. Topics for the course include molecular symmetry, molecular orbital theory, solid-state chemistry, coordination compounds, and nanomaterials chemistry. Using both classroom lectures and journal discussions, students will gain an understanding of and be well-positioned to contribute to the frontiers of materials chemistry, ranging from solar-fuel generation to next-generation cancer treatments. Undergraduates register in 192 for 4 units; graduates register in 202 for 3 units.
Same as: MATSCI 202

MATSCI 193. Atomic Arrangements in Solids. 3-4 Units.
Atomic arrangements in perfect and imperfect solids, especially important metals, ceramics, and semiconductors. Elements of formal crystallography, including development of point groups and space groups. Undergraduates register in 193 for 4 units; graduates register in 203 for 3 units.
Same as: MATSCI 203

MATSCI 194. Thermodynamics and Phase Equilibria. 3-4 Units.
The principles of heterogeneous equilibria and their application to phase diagrams. Thermodynamics of solutions; chemical reactions; non-stoichiometry in compounds; first order phase transitions and metastability; thermodynamics of surfaces, elastic solids, dielectrics, and magnetic solids. Undergraduates register for 194 for 4 units; graduates register for 204 for 3 units.

MATSCI 195. Waves and Diffraction in Solids. 3-4 Units.
The elementary principals of x-ray, vibrational, and electron waves in solids. Basic wave behavior including Fourier analysis, interference, diffraction, and polarization. Examples of wave systems, including electromagnetic waves from Maxwell's equations. Diffracted intensity in reciprocal space and experimental techniques such as electron and x-ray diffraction. Lattice vibrations in solids, including vibrational modes, dispersion relationship, density of states, and thermal properties. Free electron model. Basic quantum mechanics and statistical mechanics including Fermi-Dirac and Bose-Einstein statistics. Prerequisite: MATSCI 193/203 or consent of instructor. Undergraduates register for 195 for 4 units; graduates register for 205 for 3 units.
Same as: MATSCI 205, PHOTON 205

MATSCI 196. Defects in Crystalline Solids. 3-4 Units.
Thermodynamic and kinetic behaviors of 0-D (point), 1-D (line), and 2-D (interface and surface) defects in crystalline solids. Influences of these defects on the macroscopic ionic, electronic, and catalytic properties of materials, such as batteries, fuel cells, catalysts, and memory-storage devices. Prerequisite: MATSCI 193/203. Undergraduates register for 196 for 4 units; graduates register for 206 for 3 units.
Same as: MATSCI 206

MATSCI 197. Rate Processes in Materials. 3-4 Units.
Diffusion and phase transformations in solids. Diffusion topics: Fick's laws, atomic theory of diffusion, and diffusion in alloys. Phase transformation topics: nucleation, growth, diffusional transformations, spinodal decomposition, and interface phenomena. Material builds on the mathematical, thermodynamic, and statistical mechanical foundations in the prerequisites. Prerequisites: MATSCI 194/204. Undergraduates register for 197 for 4 units; graduates register for 207 for 3 units.
Same as: MATSCI 207

MATSCI 198. Mechanical Properties of Materials. 3-4 Units.
Introduction to the mechanical behavior of solids, emphasizing the relationships between microstructure and mechanical properties. Elastic, anelastic, and plastic properties of materials. The relations between stress, strain, strain rate, and temperature for plastically deformable solids. Application of dislocation theory to strengthening mechanisms in crystalline solids. The phenomena of creep, fracture, and fatigue and their controlling mechanisms. Prerequisites: MATSCI 193/203. Undergraduates register for 198 for 4 units; graduates register for 208 for 3 units.
Same as: MATSCI 208

MATSCI 199. Electronic and Optical Properties of Solids. 3-4 Units.
The concepts of electronic energy bands and transports applied to metals, semiconductors, and insulators. The behavior of electronic and optical devices including p-n junctions, MOS-capacitors, MOSFETs, optical waveguides, quantum-well lasers, light amplifiers, and metallo-dielectric light guides. Emphasis is on relationships between structure and physical properties. Elementary quantum and statistical mechanics concepts are used. Prerequisite: MATSCI 195/205 or equivalent. Undergraduates register for 199 for 4 units; graduates register for 209 for 3 units.
Same as: MATSCI 209

MATSCI 200. Master's Research. 1-15 Unit.
Participation in a research project.

MATSCI 201. Applied Quantum Mechanics I. 3 Units.
Emphasis is on applications in modern devices and systems. Topics include: Schrödinger's equation, eigenfunctions and eigenvalues, solutions of simple problems including quantum wells and tunneling, quantum harmonic oscillator, coherent states, operator approach to quantum mechanics, Dirac notation, angular momentum, hydrogen atom, calculation techniques including matrix diagonalization, perturbation theory, variational method, and time-dependent perturbation theory with applications to optical absorption, nonlinear optical coefficients, and Fermi's golden rule. Prerequisites: MATH 52 and 53, EE 65 or PHYSICS 65 (or PHYSICS 43 and 45).
Same as: EE 222

MATSCI 202. Materials Chemistry. 3-4 Units.
An introduction to the fundamental physical chemical principles underlying materials properties. Beginning from basic quantum chemistry, students will learn how the electronic configuration of molecules and solids impacts their structure, stability/reactivity, and spectra. Topics for the course include molecular symmetry, molecular orbital theory, solid-state chemistry, coordination compounds, and nanomaterials chemistry. Using both classroom lectures and journal discussions, students will gain an understanding of and be well-positioned to contribute to the frontiers of materials chemistry, ranging from solar-fuel generation to next-generation cancer treatments. Undergraduates register in 192 for 4 units; graduates register in 202 for 3 units.
Same as: MATSCI 192

MATSCI 203. Atomic Arrangements in Solids. 3-4 Units.
Atomic arrangements in perfect and imperfect solids, especially important metals, ceramics, and semiconductors. Elements of formal crystallography, including development of point groups and space groups. Undergraduates register in 193 for 4 units; graduates register in 203 for 3 units.
Same as: MATSCI 193

MATSCI 204. Thermodynamics and Phase Equilibria. 3 Units.
The principles of heterogeneous equilibria and their application to phase diagrams. Thermodynamics of solutions; chemical reactions; non-stoichiometry in compounds; first order phase transitions and metastability; thermodynamics of surfaces, elastic solids, dielectrics, and magnetic solids.Offered online for grad students in summer quarter, while an in-person course for grads and undergrads will be available in winter quarter 2019.

MATSCI 205. Waves and Diffraction in Solids. 3-4 Units.
The elementary principals of x-ray, vibrational, and electron waves in solids. Basic wave behavior including Fourier analysis, interference, diffraction, and polarization. Examples of wave systems, including electromagnetic waves from Maxwell's equations. Diffracted intensity in reciprocal space and experimental techniques such as electron and x-ray diffraction. Lattice vibrations in solids, including vibrational modes, dispersion relationship, density of states, and thermal properties. Free electron model. Basic quantum mechanics and statistical mechanics including Fermi-Dirac and Bose-Einstein statistics. Prerequisite: MATSCI 193/203 or consent of instructor. Undergraduates register for 195 for 4 units; graduates register for 205 for 3 units.
Same as: MATSCI 195, PHOTON 205

MATSCI 206. Defects in Crystalline Solids. 3-4 Units.
Thermodynamic and kinetic behaviors of 0-D (point), 1-D (line), and 2-D (interface and surface) defects in crystalline solids. Influences of these defects on the macroscopic ionic, electronic, and catalytic properties of materials, such as batteries, fuel cells, catalysts, and memory-storage devices. Prerequisite: MATSCI 193/203. Undergraduates register for 196 for 4 units; graduates register for 206 for 3 units.
Same as: MATSCI 196

MATSCI 207. Rate Processes in Materials. 3-4 Units.
Diffusion and phase transformations in solids. Diffusion topics: Fick's laws, atomic theory of diffusion, and diffusion in alloys. Phase transformation topics: nucleation, growth, diffusional transformations, spinodal decomposition, and interface phenomena. Material builds on the mathematical, thermodynamic, and statistical mechanical foundations in the prerequisites. Prerequisites: MATSCI 194/204. Undergraduates register for 197 for 4 units; graduates register for 207 for 3 units.
Same as: MATSCI 197

MATSCI 208. Mechanical Properties of Materials. 3-4 Units.
Introduction to the mechanical behavior of solids, emphasizing the relationships between microstructure and mechanical properties. Elastic, anelastic, and plastic properties of materials. The relations between stress, strain, strain rate, and temperature for plastically deformable solids. Application of dislocation theory to strengthening mechanisms in crystalline solids. The phenomena of creep, fracture, and fatigue and their controlling mechanisms. Prerequisites: MATSCI 193/203. Undergraduates register for 198 for 4 units; graduates register for 208 for 3 units.
Same as: MATSCI 198

MATSCI 209. Electronic and Optical Properties of Solids. 3-4 Units.
The concepts of electronic energy bands and transports applied to metals, semiconductors, and insulators. The behavior of electronic and optical devices including p-n junctions, MOS-capacitors, MOSFETs, optical waveguides, quantum-well lasers, light amplifiers, and metallo-dielectric light guides. Emphasis is on relationships between structure and physical properties. Elementary quantum and statistical mechanics concepts are used. Prerequisite: MATSCI 195/205 or equivalent. Undergraduates register for 199 for 4 units; graduates register for 209 for 3 units.
Same as: MATSCI 199

MATSCI 210. Organic and Biological Materials. 3-4 Units.
Unique physical and chemical properties of organic materials and their uses. The relationship between structure and physical properties, and techniques to determine chemical structure and molecular ordering. Examples include liquid crystals, dendrimers, carbon nanotubes, hydrogels, and biopolymers such as lipids, protein, and DNA. Prerequisite: Thermodynamics and ENGR 50 or equivalent. Undergraduates register for 190 for 4 units; graduates register for 210 for 3 units.
Same as: MATSCI 190

MATSCI 213. Microstructure in Materials. 3 Units.
Introduction to fundamental aspects of microstructure in materials that underpin their properties. Evolution of material morphology due to capillary and mechanical forces: surface evolution, coarsening, creep, and sintering. Phase transformations covering nucleation, spinodal and order-disorder transformations. Growth of phases, solidification and precipitation. Surveying technologically relevant morphological and phase transformations in metals, ceramics, and soft materials. Prerequisites: MATSCI 194/204 and 197/207 or equivalent.

MATSCI 214. Structure and Bonding. 3 Units.
Chemical foundations of materials science concerning structure and bonding from a physical and solid-state chemistry perspective. Topics include quantum chemistry; molecular structure, symmetry, and spectroscopy; bonding in molecular orbital, crystal field, and ligand field theories; coordination compounds; chemistry of solid-state metallic, covalent, and ionic materials; introductory defect chemistry; and links to the electronic, optical, and magnetic properties of solid state, polymer, and nanoscale materials.

MATSCI 225. Biochips and Medical Imaging. 3 Units.
The course covers state-of-the-art and emerging bio-sensors, bio-chips, imaging modalities, and nano-therapies which will be studied in the context of human physiology including the nervous system, circulatory system and immune system. Medical diagnostics will be divided into bio-chips (in-vitro diagnostics) and medical and molecular imaging (in-vivo imaging). In-depth discussion on cancer and cardiovascular diseases and the role of diagnostics and nano-therapies.
Same as: EE 225, SBIO 225

MATSCI 230. Materials Science Colloquium. 1 Unit.
May be repeated for credit.

MATSCI 241. Mechanical Behavior of Nanomaterials. 3 Units.
Mechanical behavior of the following nanoscale solids: 2D materials (metal thin films, graphene), 1D materials (nanowires, carbon nanotubes), and 0D materials (metallic nanoparticles, quantum dots). This course will cover elasticity, plasticity and fracture in nanomaterials, defect-scarce nanomaterials, deformation near free surfaces, coupled optoelectronic and mechanical properties (e.g. piezoelectric nanowires, quantum dots), and nanomechanical measurement techniques. Prerequisites: Mechanics of Materials (ME80) or equivalent.
Same as: ME 241

MATSCI 250. Introduction to Materials Science, Biomaterials Emphasis. 3 Units.
Topics include: the relationship between atomic structure and macroscopic properties of man-made and natural materials; mechanical and thermodynamic behavior of surgical implants including alloys, ceramics, and polymers; and materials selection for biotechnology applications such as contact lenses, artificial joints, and cardiovascular stents. No prerequisite.
Same as: ONLINE ONLY

MATSCI 251. Microstructure and Mechanical Properties. 3-4 Units.
Primarily for students without a materials background. Mechanical properties and their dependence on microstructure in a range of engineering materials. Elementary deformation and fracture concepts, strengthening and toughening strategies in metals and ceramics. Topics: dislocation theory, mechanisms of hardening and toughening, fracture, fatigue, and high-temperature creep. Undergraduates register in 151 for 4 units; graduates register for 251 in 3 units.
Same as: MATSCI 151

MATSCI 256. Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution. 3-4 Units.
Operating principles and applications of emerging technological solutions to the energy demands of the world. The scale of global energy usage and requirements for possible solutions. Basic physics and chemistry of solar cells, fuel cells, and batteries. Performance issues, including economics, from the ideal device to the installed system. The promise of materials research for providing next generation solutions.

MATSCI 299. Practical Training. 1 Unit.
Educational opportunities in high-technology research and development labs in industry. Qualified graduate students engage in internship work and integrate that work into their academic program. Following the internship, students complete a research report outlining their work activity, problems investigated, key results, and any follow-on projects they expect to perform. Student is responsible for arranging own employment. See department student services manager before enrolling.

MATSCI 300. Ph.D. Research. 1-15 Unit.
Participation in a research project.

MATSCI 301. Engineering Energy Policy Change. 2 Units.
Public policy and economic decisions profoundly affect all aspects of the energy ecosystem, including its supply, distribution, storage and utilization. These decisions can also influence the pace and focus of innovation of new technologies, including through government-funded research and development programs or regulatory efforts. This course will equip graduate students, who have strong science and engineering backgrounds, with a basic ability to understand and shape the ideation and implementation of sound energy and, related economic, policy. Building on case studies of both aspirational and reactive U.S. energy policy-making, students will design their own policy proposals for new, ambitious and achievable moonshot goals that advance a sustainable and prosperous future. In particular, students will choose a moonshot goal designed to reduce U.S. (and/or global) transportation-related emissions. These proposals may focus on specific mobility technologies (e.g., new zero-GHG liquid fuels), lead to transformation of mobility systems (e.g., integration of wide-scale automation into the transportation sector), or reduce emissions in another way altogether (e.g., moving manufacturing closer to consumption through 3-d printing). Students will also be introduced to gunshot scenarios, moments of energy crisis that require robust response and can create openings for dramatic change to the energy ecosystem.

MATSCI 302. Solar Cells. 3 Units.
In the last 15 years, the solar power market has grown in size by 100 times while solar modules prices have fallen by 20 times. Unsubsidized, solar power projects now compete favorably against fossil fuels in many countries and is on track to be the largest energy provider in the future. How did this happen? nnIn MatSci 302 we will take a comprehensive look at solar cells starting from the underlying device physics that are relevant to all photovoltaic cell technologies. We will then look at the undisputed king (silicon based solar cells); how do they work today and how will they develop in the future. Finally, we will look at why past challengers have failed and how future challengers can succeed. This class will be co-taught by Brian and Craig, who graduated from the Material Science PhD program in 2011 and then started PLANT PV, a startup that developed a solar technology from idea to protoype and then full implementation on production lines in China. The lecturers routinely visit manufacturing facilities in Asia and work closely with engineering staff at the largest solar cell makers in the world to implement their technology into production lines.

MATSCI 303. Principles, Materials and Devices of Batteries. 3 Units.
Thermodynamics and electrochemistry for batteries. Emphasis on lithium ion batteries, but also different types including lead acid, nickel metal hydride, metal air, sodium sulfur and redox flow. Battery electrode materials, electrolytes, separators, additives and electrode-electrolyte interface. Electrochemical techniques; advanced battery materials with nanotechnology; battery device structure. Prerequisites: undergraduate chemistry.

MATSCI 310. Statistical Mechanics for Materials & Materials Chemistry. 3-4 Units.
This course will cover how thermodynamics evolves from statistical mechanics, with a specific emphasis placed on quantum materials. It will cover distributions for quantum particles, diffusion and aggregation, and a basic discussion of characterizing phase transitions. If time permits, selected topics in quantum information theory will be discussed. Undergraduates register for 4 units; graduates register for 3 units.

MATSCI 312. New Methods in Thin Film Synthesis. 3 Units.
Materials base for engineering new classes of coatings and devices. Techniques to grow thin films at atomic scale and to fabricate multilayers/superlattices at nanoscale. Vacuum growth techniques including evaporation, molecular beam epitaxy (MBE), sputtering, ion beam assisted deposition, laser ablation, chemical vapor deposition (CVD), and electroplating. Future direction of material synthesis such as nanocluster deposition and nanoparticles self-assembly. Relationships between deposition parameters and film properties. Applications of thin film synthesis in microelectronics, nanotechnology, and biology. SCPD offering.

MATSCI 316. Nanoscale Science, Engineering, and Technology. 3 Units.
This course covers important aspects of nanotechnology in nanomaterials synthesis and fabrication, novel property at the nanoscale, tools and applications: a variety of nanostructures including nanocrystal, nanowire, carbon nanotube, graphene, nanoporous material, block copolymer, and self-assembled monolayer; nanofabrication techniques developed over the past 20 years; thermodynamic, electronic and optical property; applications in solar cells, batteries, biosensors and electronics. Other nanotechnology topics may be explored through a group project. SCPD offering.

MATSCI 320. Nanocharacterization of Materials. 3 Units.
Current methods of directly examining the microstructure of materials. Topics: optical microscopy, scanning electron and focused ion beam microscopy, field ion microscopy, transmission electron microscopy, scanning probe microscopy, and microanalytical surface science methods. Emphasis is on the electron-optical techniques. Recommended: 193/203.

MATSCI 321. Transmission Electron Microscopy. 3 Units.
Image formation and interpretation. The contrast phenomena associated with perfect and imperfect crystals from a physical point of view and from a formal treatment of electron diffraction theory. The importance of electron diffraction to systematic analysis and recent imaging developments. Recommended: 193/203, 195/205, or equivalent.

MATSCI 322. Transmission Electron Microscopy Laboratory. 3 Units.
Practical techniques in transmission electron microscopy (TEM): topics include microscope operation and alignment, diffraction modes and analysis, bright-field/dark-field imaging, high resolution and aberration corrected imaging, scanning TEM (STEM) imaging, x-ray energy dispersive spectrometry (EDS) and electron energy loss spectrometry (EELS) for compositional analysis and mapping. Prerequisite: 321, consent of instructor. Enrollment limited to 12.

MATSCI 323. Thin Film and Interface Microanalysis. 3 Units.
The science and technology of microanalytical techniques will be discussed. We consider ways to characterize the structural, compositional, morphological, electronic, optical, mechanical, and magnetic properties of surfaces and interfaces. We will talk about different types of surface analytical techniques that rely on the use of electrons, photons, ions, and sharp tips to learn about different aspects about surfaces. We also discuss strategies on how to combine such techniques to gain a more complete and quantitative picture of a surface. We will also describe the inner workings and design of the hardware involved in analyzing surfaces.n*Prerequisite: some prior exposure to atomic and electronic structure of solids.

MATSCI 326. X-Ray Science and Techniques. 3 Units.
This course provides an introduction to how x-rays interact with matter and how x-ray techniques can be used for developing new understanding of the properties of materials. Course topics include diffraction from ordered and disordered materials, x-ray absorption/emission spectroscopy, photoemission, and coherent scattering. Sources including synchrotrons and x-ray lasers and an introduction to time-resolved techniques. This course includes a parallel laboratory effort in which students will have an opportunity to carry out experiments at the Stanford Synchrotron Radiation Lightsource at the SLAC National Accelerator Laboratory.
Same as: PHOTON 326

MATSCI 331. Atom-based computational methods for materials. 3 Units.
Introduction to atom-based computational methods for materials with emphasis on quantum methods. Topics include density functional theory, tight-binding and empirical approaches. Computation of optical, electronic, phonon properties. Bulk materials, interfaces, nanostructures. Molecular dynamics. Prerequisites - undergraduate quantum mechanics.

MATSCI 341. Quantum Theory of Electronic and Optical Excitations in Materials. 3 Units.
Introduction to the fundamentals of solid-state physics and materials science, with emphasis in electronic and optical excitation processes. We will develop quantum formalisms to understand concepts including: elementary excitations in materials, crystal symmetry and Bloch¿s theorem, electronic bandstructure and methods to compute it (including tight-binding and density-functional theory), linear response theory, dielectric functions, as well as electronic transitions and optical properties of solids. We apply these methods to understand the electronic and optical properties of real materials, including bulk metals, semiconductors, and 2D materials.

MATSCI 343. Organic Semiconductors for Electronics and Photonics. 3 Units.
The science of organic semiconductors and their use in electronic and photonic devices. Topics: methods for fabricating thin films and devices; relationship between chemical structure and molecular packing on properties such as band gap, charge carrier mobility and luminescence efficiency; doping; field-effect transistors; light-emitting diodes; lasers; biosensors; photodetectors and photovoltaic cells.

MATSCI 346. Nanophotonics. 3 Units.
Recent developments in micro- and nanophotonic materials and devices. Basic concepts of photonic crystals. Integrated photonic circuits. Photonic crystal fibers. Superprism effects. Optical properties of metallic nanostructures. Sub-wavelength phenomena and plasmonic excitations. Meta-materials. Prerequisite: Electromagnetic theory at the level of 242.
Same as: EE 336

MATSCI 347. Magnetic materials in nanotechnology, sensing, and energy. 3 Units.
This course will teach the fundamentals of magnetism, magnetic mateirals, and magnetic nanostructures and their myriad of applications in nanotechnology, sensing, energy and related areas. The scope of the course include: atomic origins of magnetic moments, magnetic exchange and ferromagnetism, types of magnetic order, magnetic anisotropy, domains, domain walls, hysteresis loops, hard and soft magnetic materials, demagnetization factors, magnetic nanoparticles and nanostructures, spintronics, and multiferroics. The key applications include electromagnet and permanent magnet, magnetic inductors, magnetic sensors, magnetic memory, hard disk drives, energy generation and harvesting, biomagnetism, etc. Prerequisites: College level electricity and magnetism course or equivalent.

MATSCI 358. Fracture and Fatigue of Materials and Thin Film Structures. 3 Units.
Linear-elastic and elastic-plastic fracture mechanics from a materials science perspective, emphasizing microstructure and the micromechanisms of fracture. Plane strain fracture toughness and resistance curve behavior. Mechanisms of failure associated with cohesion and adhesion in bulk materials, composites, and thin film structures. Fracture mechanics approaches to toughening and subcritical crack-growth processes, with examples and applications involving cyclic fatigue and environmentally assisted subcritical crack growth. Prerequisite: 151/251, 198/208, or equivalent. SCPD offering.
Same as: ME 258

MATSCI 380. Nano-Biotechnology. 3 Units.
Literature based. Principles that make nanoscale materials unique, applications to biology, and how biological systems can create nanomaterials. Molecular sensing, drug delivery, bio-inspired synthesis, self-assembling systems, and nanomaterial based therapies. Interactions at the nanoscale. Applications and opportunities for new technology.

MATSCI 381. Biomaterials in Regenerative Medicine. 3 Units.
Materials design and engineering for regenerative medicine. How materials interact with cells through their micro- and nanostructure, mechanical properties, degradation characteristics, surface chemistry, and biochemistry. Examples include novel materials for drug and gene delivery, materials for stem cell proliferation and differentiation, and tissue engineering scaffolds. Prerequisites: undergraduate chemistry, and cell/molecular biology or biochemistry.
Same as: BIOE 361

MATSCI 384. Materials Advances for Neurotechnology: Materials Meet the Mind. 3 Units.
The dichotomy between the material world and the mental world has driven the curiosity of scientists to explore the wonders of the brain, as well as motivated the continued innovations of novel technologies based on advances in materials science and engineering to understand the brain. This course introduces the basic principles of materials design and fabrication for probing the inner workings of the brain, discusses the fundamental challenges of state-of-the-art neurotechnologies, and explores the latest breakthroughs in materials-assisted neuroengineering. The course will cover the following topics: fundamentals of electrophysiology of the nervous system, mechanical and biochemical requirements of neural interfacing materials, materials for electrical neural interfaces (tungsten/carbon electrodes, Utah/Michigan/ECoG electrode arrays), materials for optical neural interfaces (optical fibers/waveguides for optogenetics, microprisms/GRIN lenses for fluorescence imaging of neural activity), and materials for biochemical neural interfaces (implantable microfluidic probes, neurotrophic scaffolds). Students will be able to speak the languages of both materials science and neuroengineering and acquire the knowledge and skills to understand and address pressing neuroscience challenges with materials advances. This course will include lectures, student discussions/presentations and guest lectures given by pioneers in related fields at Stanford and other schools/companies in the local area. nPrerequisite: undergraduate physics and chemistry; MATSCI 152, 158, 164, 190 or equivalents are recommended but not required prior to taking this course.

MATSCI 385. Biomaterials for Drug Delivery. 3 Units.
Fundamental concepts in engineering materials for drug delivery. The human body is a highly interconnected network of different tissues and there are all sorts of barriers to getting pharmaceutical drugs to the right place at the right time. Topics include drug delivery mechanisms (passive, targeted), therapeutic modalities and mechanisms of action, engineering principles of controlled release and quantitative understanding of drug transport, chemical and physical characteristics of delivery molecules and assemblies, significance of biodistribution and pharmacokinetic models, toxicity of biomaterials and drugs, and immune responses.
Same as: BIOE 385

MATSCI 399. Graduate Independent Study. 1-10 Unit.
Under supervision of a faculty member.

MATSCI 400. Participation in Materials Science Teaching. 1-3 Unit.
May be repeated for credit.

MATSCI 801. TGR Project for MS Students. 0 Units.
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MATSCI 802. TGR Dissertation for Ph.D Students. 0 Units.
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MECHANICAL ENGINEERING

Courses offered by the Department of Mechanical Engineering are listed under the subject code ME on the *Stanford Bulletin's* ExploreCourses web site.

The programs in the Department of Mechanical Engineering (ME) emphasize a mix of applied mechanics, biomechanical engineering, computer simulations, design, and energy science and technology. Since mechanical engineering is a broad discipline, the undergraduate program can be a springboard for graduate study in business, law, medicine, political science, and other professions where understanding technology is important. Both undergraduate and graduate programs provide technical background for work in biomechanical engineering, environmental pollution control, ocean engineering, transportation, and other multidisciplinary problems that concern society. In all programs, emphasis is placed on developing systematic procedures for analysis, creating innovative solutions to complex problems, communication of work and ideas, practical and human-centered and aesthetic aspects in design, and responsible use of technology.

Mission of the Undergraduate Program in Mechanical Engineering

The mission of the undergraduate program in Mechanical Engineering is to provide students with a balance of intellectual and practical experiences that enable them to address a variety of societal needs. The curriculum encompasses elements from a wide array of disciplines built around the themes of biomechanical engineering, computational engineering, design, energy, materials, and multiscale engineering. Course work may include mechatronics, computational simulation, solid and fluid dynamics, microelectromechanical systems, biomechanical engineering, energy science and technology, propulsion, sensing and control, nano- and micro-mechanics, and design. The program prepares students for entry-level work as mechanical engineers and for graduate studies in either an engineering discipline or another field where a broad engineering background is useful.

Learning Objectives (Undergraduate)

These outcomes are operationalized through learning objectives, which students are expected to demonstrate:

1. Graduates of the program will have the scientific and technical background for successful careers in diverse organizations.
2. Graduates of the program will be leaders, and effective communicators, both in the profession and in the community.
3. Graduates of the program will be motivated and equipped to successfully pursue postgraduate study whether in engineering, or in other fields.
4. Graduates of the program will have a professional and ethical approach to their careers with a strong awareness of the social contexts in which they work.

Learning Outcomes (Graduate)

The purpose of the master's program is to provide students with the knowledge and skills necessary for a professional career or doctoral studies. This is done through course work providing depth in one area of specialization and breadth in complementary areas. Areas of specialization range from automatic controls, energy systems, fluid mechanics, heat transfer, and solid mechanics to biomechanical engineering, MEMS, and design.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research. Through course work and guided research, the program prepares students to make original contributions in Mechanical Engineering and related fields.

Graduate Programs in Mechanical Engineering

Admission and Financial Assistance

Mechanical engineering is a varied profession, ranging from primarily aesthetic aspects of design to highly technical scientific research. Disciplinary areas of interest to mechanical engineers include biomechanics, energy conversion, fluid mechanics, materials, nuclear reactor engineering, propulsion, rigid and elastic body mechanics, systems engineering, scientific computing, thermodynamics, robotics, and controls, to name a few. Our graduate programs provide advanced depth and breadth in the field.

Graduate degree programs and admission

- Master of Science (M.S.) in Mechanical Engineering
- Master of Science (M.S.) in Engineering — Design Impact
- Doctor of Philosophy (Ph.D.) in Mechanical Engineering

To be eligible for admission to graduate study to the department, a student must have a B.S. degree in engineering, physics, or a comparable science program. M.S. and Ph.D. applications must be received by the first Tuesday in December, and admitted students must matriculate in the following Autumn. In rare circumstances, with the support of an ME faculty member who is a potential Ph.D. adviser, Ph.D. applications from students who have completed or are currently in an M.S. program are reviewed for Winter or Spring Quarter start. In addition, M.S. applicants eligible for the Honors Cooperative Program (on-campus courses required for Mechanical Engineering) can apply in Autumn, Winter, or Spring quarters.

Additional degree programs available to currently enrolled students

- Master of Science (M.S.) in Engineering — Biomechanical Engineering
- Master of Science (M.S.) in Engineering — Individually Designed Major
- Engineer in Mechanical Engineering

For additional information about these programs, see the Mechanical Engineering Department Graduate Handbook.

Financial Assistance

The department annually awards, on a competitive basis, a limited number of fellowships, teaching assistantships, and research assistantships to incoming graduate students. For M.S. students, limited financial aid in the form of fellowships and short-term research assistantships are provided at the time of admission, and course assistantships can sometimes be arranged with individual course instructors after admission. All Ph.D. students receive financial support for the duration of their program, given satisfactory degree progress.

Post-Master's Degree Programs

The department offers two post-master's degrees: Engineer and Doctor of Philosophy. Post-master's research generally requires some evidence that a student has research potential before a faculty member agrees to supervision and a research assistantship appointment. It is most efficient to carry out preliminary research during the M.S. degree program, if interested in a post-master's degree.

Departmental Groups

The department has five groups: Biomechanical Engineering; Design; Flow Physics and Computation; Mechanics and Computation; and Thermosciences. Each maintains its own labs, shops, and offices.

The Biomechanical Engineering (BME) Group has teaching and research activities which focus primarily on musculoskeletal biomechanics, neuromuscular biomechanics, cardiovascular biomechanics, and rehabilitation engineering. Research in other areas including hearing, ocean, plant, and vision biomechanics exists in collaboration with associated faculty in biology, engineering, and medicine. The group has strong research interactions with the Mechanics and Computation and the Design groups, and the departments of Neurology, Radiology, and Surgery in the School of Medicine.

The Design Group is devoted to the imaginative application of science, technology, and art to the conception, visualization, creation, analysis and realization of useful devices, products, and objects. Courses and research focus on topics such as bio-inspired design, kinematics, haptics, applied finite elements, micro-electricalmechanical systems (MEMS), medical devices, fatigue and fracture mechanics, dynamics and simulation, rehabilitation, optimization, high-speed devices, product design, vehicle dynamics, experimental mechanics, robotics, creativity, idea visualization, computer-aided design, manufacturing technology, design analysis, and engineering education.

The Flow Physics and Computational Engineering Group (FPCE) The Flow Physics and Computational Engineering Group (FPCE) blends research on flow physics and modeling with algorithm development, scientific computing, and numerical database construction. FPCE is contributing new theories, models and computational tools for accurate engineering design analysis and control of complex flows (including multi phase flows, micro-fluidics, chemical reactions, acoustics, plasmas, interactions with electromagnetic waves and other phenomena) in aerodynamics, propulsion and power systems, materials processing, electronics cooling, environmental engineering, and other areas. A significant emphasis of research is on modeling and analysis of physical phenomena in engineering systems.

The Mechanics and Computational Group covers biomechanics, continuum mechanics, dynamics, experimental and computational mechanics, finite element analysis, fluid dynamics, fracture mechanics, micromechanics, nanotechnology, and simulation based design. Qualified students can work as research project assistants, engaging in thesis research in association with the faculty director and fellow students. Projects include analysis, synthesis, and control of systems; biomechanics; flow dynamics of liquids and gases; fracture and micro-mechanics, vibrations, and nonlinear dynamics; and original theoretical, computational, and experimental investigations in the strength and deformability of elastic and inelastic elements of machines and structures.

The Thermosciences Group conducts experimental and analytical research on both fundamental and applied topics in the general area of thermal and fluid systems. Research strengths include high Reynolds number flows, microfluidics, combustion and reacting flows, multiphase flow and combustion, plasma sciences, gas physics and chemistry, laser diagnostics, microscale heat transfer, convective heat transfer, and energy systems. Research motivation comes from applications including air-breathing and space propulsion, bioanalytical systems, pollution control, electronics fabrication and cooling, stationary and mobile energy systems, biomedical systems, and materials processing. Emphasis is on fundamental experiments leading towards advances in modeling, optimization, and control of complex systems.

Facilities

The department groups maintain modern laboratories that support undergraduate and graduate instruction and graduate research work. A partial listing can be found below. More information is available at the department's Labs and Centers (http://me.stanford.edu/research/labs-and-centers/) website.

The d'Arbeloff Undergraduate Research and Teaching Lab supports undergraduate research and teaching in the Mechanical Engineering Department. In this unique facility, the department holds undergraduate project-based classes, and offers its students the opportunity to build and collaborate.

The Structures and Composites Laboratory, a joint activity with the Department of Aeronautics and Astronautics, studies structures made of fiber-reinforced composite materials. Equipment for fabricating structural elements includes autoclave, filament winder, and presses. X-ray, ultrasound, and an electron microscope are available for nondestructive testing. The lab also has environmental chambers, a high speed impactor, and mechanical testers. Lab projects include designing composite structures, developing novel manufacturing processes, and evaluating environmental effects on composites.

Experimental facilities are available through the interdepartmental Structures and Solid Mechanics Research Laboratory, which includes an electrohydraulic materials testing system, a vehicle crash simulator, and a shake table for earthquake engineering and related studies, together with highly sophisticated auxiliary instrumentation. Facilities to study the micromechanics of fracture areas are available in the Micromechanics/Fracture Laboratory, and include a computer-controlled materials testing system, a long distance microscope, an atomic force microscope, and other instrumentation. Additional facilities for evaluation of materials are available through the Center for Materials Research, Center for Integrated Circuits, and the Ginzton Laboratory. Laboratories for biological experimentation are accessible through the School of Medicine. Individual accommodation is available for the work of each research student.

Major experimental and computational laboratories engaged in bioengineering work are located in the Biomechanical Engineering Group. Other Biomechanical Engineering Group activities and resources are associated with the Rehabilitation Research and Development Center of the Veterans Administration Palo Alto Health Care System. This major national research center has computational and prototyping facilities. In addition, the Rehabilitation Research and Development Center houses the Electrophysiology Laboratory, Experimental Mechanics Laboratory, Human Motor Control Laboratory, Rehabilitation Device Design Laboratory, and Skeletal Biomechanics Laboratory. These facilities support graduate course work as well as Ph.D. student research activities.

Computational and experimental work is also conducted in various facilities throughout the School of Engineering and the School of Medicine, particularly the Advanced Biomaterials Testing Laboratory of the Department of Materials Science and Engineering, the Orthopaedic Research Laboratory in the Department of Functional Restoration, and the Vascular Research Laboratory in the Department of Surgery. In collaboration with the School of Medicine, facilities throughout the Stanford Medical Center and the Veterans Administration Palo Alto Health Care System conduct biological and clinical work.

The Design Group has facilities for lab work in experimental stress analysis. Design Group students also have access to the Stanford NanoFabrication Facility (SNF) and characterization facilities at the Stanford Nano Shared Facilities (SNSF).

The Automotive Innovation Facility houses the Volkswagen Automotive Innovation Lab (VAIL) which provides a state-of-the-art vehicle research facility and community space where interdisciplinary teams work on projects that move vehicle technology forward by focusing on human-centered mobiling solutions. High-profile Stanford projects accommodated in the building include research on drive-by-wire and drive assistance systems, and the interaction of drivers with vehicles (via the full–scale driving simulator).

The Design Group also maintains the Product Realization Laboratory (PRL), a multi-site teaching facility offering students integrated experiences in market definition, product design, and prototype manufacturing. The PRL provides coaching, design manufacturing

tools, and networking opportunities to students interested in product development. The PRL's Room 36 offerings include laser cutters, 3D printers, sewing machines, and equipment for work with electronics and hotwire foam cutting, The ME 310 Design Project Laboratory has facilities for CAD, assembly, and testing of original designs by master's students in the engineering design program. The Smart Product Design Laboratory supports microprocessor application projects.

The Center for Design Research (CDR) is a unique doctoral-level research community that studies the dynamics of science, engineering, management, and design teams in academic and worldly settings internationally. This closely knit group studies human/machine interactions from both technology and human performance points of view: why did the robot (autonomous car; surgical robot; instructor) do that? Why is the team doing that? Smart technical systems are never smart enough at the interface with humans and the human environment. Stanford courses, especially ME 310, often serve as laboratories for the researchers. The CDR collaborates closely with other disciplines and laboratories, especially Computer Science (AI, big data), the behavioral sciences (VR, AR), and the School of Medicine (haptics, neurosciences, fMRI, fNIRS).

The Nanoscale Prototyping Laboratory addresses fundamental issues on energy conversion and storage at the nanoscale. It employs a wide range of nano-fabrication technologies to build prototype fuel cells and capacitors with induced topological electronic states. It tests these concepts and novel material structures with the help of atomic layer deposition, scanning tunneling microscopy, impedance spectroscopy and other technologies. In addition, it uses atomic scale modeling to gain insights into the nature of charge separation and recombination processes.

The Design Group also maintains The Loft, in which students in the Design Impact Program develop graduate thesis projects.

The Flow Physics and Computation Group has a 32 processor Origin 2000, 48-node and 85-node Linux cluster with high performance interconnection and an array of powerful workstations for graphics and data analysis. Several software packages are available, including all the major commercial CFD codes. FPC is strongly allied with the Center for Turbulence Research (CTR), a research consortium between Stanford and NASA, and the Center for Integrated Turbulence Simulations (CITS), which is supported by the Department of Energy (DOE) under its Accelerated Strategic Computing Initiative (ASCI). The Center for Turbulence Research has direct access to major national computing facilities located at the nearby NASA-Ames Research Center, including massively parallel super computers. The Center for Integrated Turbulence Simulations has access to DOE's vast supercomputer resources. The intellectual atmosphere of the Flow Physics and Computation Group is greatly enhanced by the interactions among CTR's and CITS's postdoctoral researchers and distinguished visiting scientists.

The Mechanics and Computation Group has a Computational Mechanics Laboratory that provides an integrated computational environment for research and research-related education in computational mechanics and scientific computing. The laboratory houses Silicon Graphics, Sun, and HP workstations and servers, including an 8-processor SGI Origin2000 and a 16-processor networked cluster of Intel-architecture workstations for parallel and distributed computing solutions of computationally intensive problems. Software is available on the laboratory machines, including commercial packages for engineering analysis, parametric geometry and meshing, and computational mathematics. The laboratory supports basic research in computational mechanics as well as the development of related applications such as simulation-based design technology.

The Thermosciences Group has four major laboratory facilities. The Heat Transfer and Turbulence Mechanics Laboratory concentrates on fundamental research aimed at understanding and improved prediction of turbulent flows and high performance energy conversion systems. The laboratory includes two general-purpose wind tunnels, a pressurized high Reynolds number tunnel, two supersonic cascade flow facilities, three specialized boundary layer wind tunnels, and several other flow facilities. Extensive diagnostic equipment is available, including multiple particle-image velocimetry and laser-Doppler anemometry systems.

The High Temperature Gas Dynamics Laboratory includes research on sensors, plasma sciences, cool and biomass combustion and gas pollutant formation, and reactive and non-reactive gas dynamics. Research facilities include diagnostic devices for combustion gases, a spray combustion facility, laboratory combustors including a coal combustion facility and supersonic combustion facilities, several advanced laser systems, a variety of plasma facilities, a pulsed detonation facility, and four shock tubes and tunnels. The Thermosciences Group and the Design Group share the Microscale Thermal and Mechanical Characterization laboratory (MTMC). MTMC is dedicated to the measurement of thermal and mechanical properties in thin-film systems, including microfabricated sensors and actuators and integrated circuits, and features a nanosecond scanning laser thermometry facility, a laser interferometer, a near-field optical microscope, and an atomic force microscope. The activities at MTMC are closely linked to those at the Heat Transfer Teaching Laboratory (HTTL), where undergraduate and master's students use high-resolution probe stations to study thermal phenomena in integrated circuits and thermally-actuated microvalves. HTTL also provides macroscopic experiments in convection and radiative exchange.

The Energy Systems Laboratory is a teaching and research facility dedicated to the study of energy conversion systems. The lab includes three dynamometers for engine testing, a computer-controlled variable engine valve controller, a fuel-cell experimental station, a small rocket testing facility, and a small jet engine thrust stand.

The Guidance and Control Laboratory, a joint activity of the Department of Aeronautics and Astronautics and the Department of Mechanical Engineering, specializes in construction of electromechanical systems and instrumentation, particularly where high precision is a factor. Work ranges from robotics for manufacturing to feedback control of fuel injection systems for automotive emission control. The faculty and staff work in close cooperation with both the Design and Thermosciences Groups on device development projects of mutual interest.

Many computation facilities are available to department students. Three of the department's labs are equipped with super-minicomputers. Numerous smaller minicomputers and microcomputers are used in the research and teaching laboratories.

Library facilities at Stanford beyond the general library include Engineering, Mathematics, and Physics department libraries.

Mechanical Engineering Course Catalog Numbering System

The department uses the following course numbering system:

Number	Level
001-099	Freshman and Sophomore
100-199	Junior and Senior
200-299	Advanced Undergraduate and Beginning Graduate
300-399	Graduate
400-499	Advanced Graduate
500	Ph.D. Thesis

Bachelor of Science in Mechanical Engineering

The mission of the undergraduate program in Mechanical Engineering is to provide students with a balance of theoretical and practical experiences that enable them to address a variety of societal needs, from more efficient engines and new forms of mobility, to greater access to medical and health services in developing countries. The curriculum encompasses elements from a wide range of disciplines built around the themes of computational engineering, design, energy, materials, mechanics and dynamic systems, consistently considering these topics in their larger societal and professional context. Course work may include mechatronics, computational simulation, solid mechanics, fluid dynamics, electromechanical systems, biomechanical engineering, energy science and technology, sensing and control, and design. The Program prepares students for entry-level work as mechanical engineers and for graduate studies in either an engineering discipline or other fields where a broad engineering background is useful.

Grade Requirements

To be recommended by the department for a B.S. in Mechanical Engineering, a student must achieve the minimum grade point average (GPA) set by the School of Engineering (2.0 in engineering fundamentals and mechanical engineering depth).

Students interested in the minor should see the "Minor in Mechanical Engineering" section of this bulletin.

Mechanical Engineering (ME)

Completion of the undergraduate program in Mechanical Engineering leads to the conferral of the Bachelor of Science in Mechanical Engineering.

Mission of the Undergraduate Program in Mechanical Engineering

The mission of the undergraduate program in Mechanical Engineering is to provide students with a balance of theoretical and practical experiences that enable them to address a variety of societal needs. The curriculum encompasses elements from a wide range of disciplines built around the themes of biomedicine, computational engineering, design, energy, and multiscale engineering. Course work may include mechatronics, computational simulation, solid and fluid dynamics, microelectromechanical systems, biomechanical engineering, energy science and technology, propulsion, sensing and control, nano- and micro- mechanics, and design. The program prepares students for entry-level work as mechanical engineers and for graduate studies in either an engineering discipline or other fields where a broad engineering background is useful.

Core Requirements

		Units
Mathematics		
24 units minimum; see Basic Requirement 1 [1]		
CME 102/ENGR 155A	Ordinary Differential Equations for Engineers	5
or MATH 53	Ordinary Differential Equations with Linear Algebra	
Select one of the following:		3-5
CME 106/ ENGR 155C	Introduction to Probability and Statistics for Engineers	
STATS 110	Statistical Methods in Engineering and the Physical Sciences	
STATS 116	Theory of Probability	
Plus additional courses to total min. 24		
Science		
20 units minimum; see Basic Requirement 2 [1]		
Plus addtional required courses [1]		
CHEM 31M	Chemical Principles: From Molecules to Solids	5
Technology in Society		
One course required; TIS courses should be selected from AA 252, BIOE 131, COMM 120W, CS 181, ENGR 131, HUMBIO 174, ME 267, or MSE 193.		3-5
Engineering Fundamentals		
Two courses minimum; see Basic Requirement 3		
ENGR 14	Intro to Solid Mechanics	3
CS 106A	Programming Methodology	5
or CS 106B	Programming Abstractions	
Engineering Core		
Minimum of 68 Engineering Science and Design ABET units; see Basic Requirement 5		
ME 1	Introduction to Mechanical Engineering	3
ENGR 15	Dynamics	3
ME 80	Mechanics of Materials	3
ME 30	Engineering Thermodynamics	3
ME 70	Introductory Fluids Engineering	3
ME 102	Foundations of Product Realization	3
ME 103	Product Realization: Design and Making	4
ME 104	Mechanical Systems Design	4
ME 131	Heat Transfer	4
ME 123	Computational Engineering	4
ME 170A	Mechanical Engineering Design- Integrating Context with Engineering [2,3]	4
ME 170B	Mechanical Engineering Design: Integrating Context with Engineering [2,3]	4

Core Concentrations and Concentration Electives

In addition to completing core requirements, students must choose one of the concentrations paths below. In addition to their concentration specific 3-courses, students select 2-3 additional courses such that the combination adds up to a minimum of 18 units. One of these additional courses must be from technical electives associated with the student's selected concentration. The other 1-2 courses could come from either technical electives from the student's selected concentration or any other concentration and its associated technical electives. Up to 3 units of ME 191 Engineering Problems and Experimental Investigation may be petitioned to count as technical elective.

For students choosing the Materials and Structures concentration path, in addition to the 2 concentration-specific courses, students must select at least 2 courses from the Materials and Structures electives, in addition to courses from other concentrations, as technical electives.

		Units
Dynamic Systems and Controls Concentration		
ME 161	Dynamic Systems, Vibrations and Control	3
ENGR 105	Feedback Control Design	3
Pick one of:		
ME 227	Vehicle Dynamics and Control	3
ME 327	Design and Control of Haptic Systems (not offered AY21)	3
Dynamic Systems and Controls Electives		
ENGR 205	Introduction to Control Design Techniques	3
ME 210	Introduction to Mechatronics (not offered AY21)	4

ME 220	Introduction to Sensors	4
ME 331A	Advanced Dynamics & Computation (not offered AY21)	3
ME 485	Modeling and Simulation of Human Movement	3
Pick one, if not used in concentration already:		
ME 227	Vehicle Dynamics and Control	3
ME 327	Design and Control of Haptic Systems (not offered AY21)	3

		Units
Materials and Structures Concentration		
ME 149	Mechanical Measurements	3
ME 152	Material Behaviors and Failure Prediction	3
Materials and Structures Electives		
(2 M&S electives required for students in M&S concentration)		
AA 240	Analysis of Structures	3
MATSCI 198	Mechanical Properties of Materials	3-4
ME 234	Introduction to Neuromechanics (not offered AY21)	3
ME 241	Mechanical Behavior of Nanomaterials (not offered AY21)	3
ME 281	Biomechanics of Movement	3
ME 283	Introduction to Biomechanics and Mechanobiology (not offered AY21)	3
ME 287	Mechanics of Biological Tissues (not offered AY21)	4
ME 331A	Advanced Dynamics & Computation (not offered AY21)	3
ME 335A	Finite Element Analysis	3
ME 338	Continuum Mechanics	3
ME 339	Introduction to parallel computing using MPI, openMP, and CUDA	3
ME 345	Fatigue Design and Analysis	3
ME 348	Experimental Stress Analysis	3

		Units
Product Realization Concentration		
ME 127	Design for Additive Manufacturing	3
ME 128	Computer-Aided Product Realization	3
ME 129	Manufacturing Processes and Design (offered AY 19-20)	3
Product Realization Electives		
ENGR 110	Perspectives in Assistive Technology (ENGR 110)	1-2
ENGR 240	Introduction to Micro and Nano Electromechanical Systems	3
ME 181	Deliverables: A Mechanical Engineering Design Practicum	3
CME 106	Introduction to Probability and Statistics for Engineers	4
ME 210	Introduction to Mechatronics (not offered AY21)	4
ME 263	The Chair	3-4
or ME 298	Silversmithing and Design	
ME 309	(not offered AY21)	3
ME 324	Precision Engineering	4

		Units
Thermo, Fluids, and Heat Transfer Concentration		
ME 149	Mechanical Measurements	3
ME 132	Intermediate Thermodynamics	4
ME 133	Intermediate Fluid Mechanics	3
Thermo, Fluids, and Heat Transfer Electives		
ME 257	Gas-Turbine Design Analysis (not offered AY21)	3
ME 351A	Fluid Mechanics	3
ME 351B	Fluid Mechanics	3
ME 352B	Fundamentals of Heat Conduction (not offered AY21)	3
ME 352C	Convective Heat Transfer (not offered AY21)	3
ME 352D	Nanoscale heat, mass and charge transport	3
ME 362A	Physical Gas Dynamics	3
ME 370A	Energy Systems I: Thermodynamics	3
ME 370B	Energy Systems II: Modeling and Advanced Concepts	4
ME 371	Combustion Fundamentals	3
AA 283	Aircraft and Rocket Propulsion	3

1 Math and science must total 45 units.
- Math: 24 units required and must include a course in differential equations (CME 102 Ordinary Differential Equations for Engineers or MATH 53 Ordinary Differential Equations with Linear Algebra; one of these required) and calculus-based Statistics (CME 106 Introduction to Probability and Statistics for Engineers or STATS 110 Statistical Methods in Engineering and the Physical Sciences or STATS 116 is required.
- Science: 20 units minimum and requires courses in calculus-based Physics and Chemistry, with at least a full year (3 courses) in one or the other. CHEM 31A Chemical Principles I/CHEM 31B Chemical Principles II are considered one course because they cover the same material as CHEM 31M but at a slower pace. CHEM 31M is recommended.

2 ME 170A and ME 170B fulfill the WIM requirement. In AY 2020-21, the same grading basis applies to both ME 170A and ME 170B, and cannot be changed after week 8 of enrollment in ME 170A.

3 ME 170A (http://exploredegrees.stanford.edu/search/?P=ME%20170A) and ME 170B (http://exploredegrees.stanford.edu/search/?P=ME%20170B) are a two quarter Capstone Design Sequence and must be taken in consecutive quarters.

4 A course may only be counted towards one requirement; it may not be double-counted. All courses taken for the major must be taken for a letter grade if that option is offered by the instructor. Minimum combined GPA for all courses in Engineering Topics (Engineering Fundamentals and Depth courses) is 2.0.

For additional information and sample programs see the Handbook for Undergraduate Engineering Programs (UGHB) (http://ughb.stanford.edu).

BSME 1.0 Notes

Those students (primarily seniors) who are completing BSME 1.0 from AY 2017-2018 or earlier should refer to bulletins from the academic year that corresponds with their program sheet.

Honors Program in Mechanical Engineering

The Department of Mechanical Engineering offers a program leading to a B.S. in Mechanical Engineering with honors. This program offers a unique opportunity for qualified undergraduate engineering majors to conduct independent study and research at an advanced level with a faculty mentor.

Mechanical Engineering majors who have a grade point average (GPA) of 3.5 or higher in the major may apply for the honors program. Students who meet the eligibility requirement and wish to be considered for the honors program must submit a written application to the Mechanical Engineering student services office no later than the second week of Autumn Quarter in the senior year. The application to enter the program can be obtained from the ME student services office, and must contain a one-page statement describing the research topic and include an unofficial Stanford transcript. In addition, the application must be approved by a Mechanical Engineering faculty member who agrees to serve as the thesis adviser for the project. Thesis advisers must be members of Stanford's Academic Council.

In order to receive departmental honors, students admitted to the program must:

1. Maintain the 3.5 GPA required for admission to the honors program.
2. Submit a completed thesis draft to the adviser by the 3rd week of the quarter they intend to confer. Further revisions and final endorsement by the adviser are to be finished by week 6, when two bound copies are to be submitted to the Mechanical Engineering student services office.
3. Present the thesis at the Mechanical Engineering Poster Session held in mid-April. If the poster session is not offered or the student does not confer in the spring, an alternative presentation will be approved on a case by case basis with advisor and UGCC chair approval.

Note: Students may not use work completed towards an honors degree to satisfy the B.S. in ME course requirements.

Mechanical Engineering (ME) Minor

The following courses fulfill the minor requirements:

		Units
General Minor *		
ENGR 14	Intro to Solid Mechanics	3
ENGR 15	Dynamics	3
ME 1	Introduction to Mechanical Engineering	3
ME 30	Engineering Thermodynamics	3
ME 70	Introductory Fluids Engineering	3
Plus two of the following:		
ME 80	Mechanics of Materials	3
ME 102	Foundations of Product Realization	3
ME 131	Heat Transfer	4
ME 161	Dynamic Systems, Vibrations and Control	3
Total Units: 21		
Thermosciences Minor **		
ENGR 14	Intro to Solid Mechanics	3
ME 30	Engineering Thermodynamics	3
ME 70	Introductory Fluids Engineering	3
ME 131	Heat Transfer	4
ME 132	Intermediate Thermodynamics	4
ME 133	Intermediate Fluid Mechanics (offered SPR 18-19; more information to come)	3
ME 149	Mechanical Measurements	3
Total units: 23		
Mechanical Design Minor ***		
ENGR 14	Intro to Solid Mechanics	3
ME 80	Mechanics of Materials	3
ME 1	Introduction to Mechanical Engineering	3
ME 102	Foundations of Product Realization	3
ME 103	Product Realization: Design and Making	4
ME 104	Mechanical Systems Design	4
Plus one of the following:		
ME 127	Design for Additive Manufacturing	3
ME 128	Computer-Aided Product Realization	3-4
ME 129	Manufacturing Processes and Design	3
ME 210	Introduction to Mechatronics	4
ME 220	Introduction to Sensors	3-4
Total units: 23		

* This minor aims to expose students to the breadth of ME in terms of topics and analytic and design activities. Prerequisites: MATH 19 Calculus, MATH 20 Calculus, MATH 21 Calculus, and PHYSICS 41 Mechanics or PHYSICS 41E Mechanics, Concepts, Calculations, and Context.

** Prerequisites: MATH 19 Calculus, MATH 20 Calculus, MATH 21 Calculus , MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications (or CME 100 Vector Calculus for Engineers) and PHYSICS 41 Mechanics or PHYSICS 41E Mechanics, Concepts, Calculations, and Context.

*** This minor aims to expose students to design activities supported by analysis. Prerequisites: MATH 19 Calculus, MATH 20 Calculus, MATH 21 Calculus,PHYSICS 42 Classical Mechanics Laboratory, and PHYSICS 41 Mechanics or PHYSICS 41E Mechanics, Concepts, Calculations, and Context.

On this page: Coterminal M.S. in Mechanical Engineering (p. 851) • M.S. in Mechanical Engineering (p. 852) • M.S. in Engineering (no field designation) (p. 852) • M.S. in Engineering, Biomechanical Engineering (p. 854) • M.S. in Engineering, Design Impact (p. 855) • Degree of Engineer in Mechanical Engineering (p. 855)

Coterminal Master of Science Program in Mechanical Engineering

Stanford undergraduates who wish to continue their studies for the master of science degree in the coterminal program must have earned a minimum of 120 units towards graduation. This includes allowable Advanced Placement (AP) and transfer credit.

Applicants must submit the Coterminal Online Application (https://applyweb.com/stanterm/) no later than the quarter prior to the expected completion of their undergraduate degree. This is normally Winter Quarter (mid January) prior to Spring Quarter graduation. The application must provide evidence of potential for strong academic performance as a graduate student. The Mechanical Engineering department graduate admissions committee makes decisions on each application. Typically, a GPA of at least 3.5 in engineering, science, and math is expected. Undergraduate coursework should demonstrate adequate preparation for pursuing graduate level study in Mechanical Engineering, which typically includes mathematics through ordinary differential equations (CME102 or Math 53), programming (e.g., CS106A) and several 100+ level engineering courses.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer

of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

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Master of Science in Mechanical Engineering

The basic University requirements for the M.S. degree are discussed in the "Graduate Degrees (p. 65)" section of this bulletin.

The master's program consists of 45 units of course work taken at Stanford. No thesis is required, although many students become involved in research projects during the master's program, particularly to explore their interests in working towards a Ph.D. degree. Students whose undergraduate backgrounds are entirely devoid of some of the major subject disciplines of engineering (for example, applied mechanics, applied thermodynamics, fluid mechanics, ordinary differential equations) may need to take some undergraduate courses to fill obvious gaps and prepare themselves to take graduate courses in these areas.

Such students may require more than three quarters to fulfill the master's degree requirements, as the makeup courses may only be used as unrestricted electives (see item 4 below) in the M.S. degree program. However, it is not the policy to require fulfillment of mechanical engineering B.S. degree requirements to obtain an M.S. degree.

Mechanical Engineering

The master's degree program requires 45 units of course work taken as a graduate student at Stanford. No thesis is required. However, students who want some research experience during the master's program may participate in research or independent study through ME 391 Engineering Problems.

Candidates for the M.S. in Mechanical Engineering are expected to have the approval of the faculty; they must maintain a minimum grade point average (GPA) of 3.0 in the 45 units presented for fulfillment of degree requirements (exclusive of independent study courses). All courses used to fulfill mathematics, depth, breadth, approved electives, and lab studies must be taken for a letter grade (excluding seminars, independent study, and courses for which a letter grade is not an option for any student).

Students falling below a GPA of 2.5 at the end of 20 units may be disqualified from further registration. Students failing to meet the complete degree requirements at the end of 60 units of graduate registration are disqualified from further registration. Courses used to fulfill deficiencies arising from inadequate undergraduate preparation for mechanical engineering graduate work may not be applied to the 45 units required for completion of the MS degree.

Students are encouraged to refer to the most recent *Mechanical Engineering Graduate Student Handbook* provided by the student services office.

Degree requirements

1. *Mathematical Fundamentals:* Two math courses covering two different areas out of: partial differential equations, linear algebra, numerical analysis, and statistics. One area covered by each class must be listed on the MS program sheet. The following courses automatically satisfy the requirement in the indicated area(s):

ME 300A/CME 200	Linear Algebra with Application to Engineering Computations	Linear Algebra
ME 300B/CME 204	Partial Differential Equations in Engineering	Partial Differential Equations
ME 300C/CME 206	Introduction to Numerical Methods for Engineering	Numerical Analysis
CME 302	Numerical Linear Algebra	Linear Algebra, Numerical Analysis
ME 408	Spectral Methods in Computational Physics	Numeric Analysis
ME 470/CEE 362A	Uncertainty Quantification (Not offered AY21)	Numerical Analysis, Statistics
EE 261	The Fourier Transform and Its Applications	Linear Algebra, Numerical Analysis
EE/CME 263	Introduction to Linear Dynamical Systems	Linear Algebra
CME/EE 364A	Convex Optimization I	Linear Algebra, Numerical Analysis
CME 106/ ENGR 155C	Introduction to Probability and Statistics for Engineers	Statistics
AA 222/CS 361	Engineering Design Optimization	Linear Algebra, Numerical Analysis
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	Linear Algebra, Numerical Analysis
STATS/CS 229	Machine Learning	Linear Algebra, Statistics
STATS 200	Introduction to Statistical Inference	Statistics
MS&E 226	Fundamentals of Data Science: Prediction, Inference, Causality	Statistics

The Mathematical Fundamentals requirement excludes programming classes such as CS 106A/CS 106B/CS 106X, CME 211, CME 212, CME 213, CME 214, and CME 292. Likewise, MATH or CME courses that address applications of mathematics but are not primarily focused on mathematical fundamentals (e.g., MATH 275, CME 285) are excluded. These classes can be placed in the approved electives category. Other MATH and CME courses with catalog numbers greater than 200 that focus on one or more of the four required areas, such that at least two different areas are covered, can be approved by advisors. Students with questions about their math curriculum covering two different areas should check the course descriptions and consult with their advisor.

2. *Depth in Mechanical Engineering:* Depth refers to a cluster of courses with thematic and/or technical continuity that enables a student to study a part of mechanical engineering in more depth, with more

focus, and over a period of time. A depth cluster or area typically is made up of 9 units (2-3 courses). These courses have been approved by the faculty as providing depth in specific areas as well as a significant component of applications of the material in the context of engineering synthesis. The depth areas are outlined in the *Depth and Breadth Areas for the MSME Degree* section Below.

3. *Breadth in Mechanical Engineering:* "Breadth" refers to graduate level ME courses outside of the student's depth area. The intent is for students to engage in course work in areas of mechanical engineering outside of the depth to broaden understanding and competency in a wider range of topics. Two courses are required from the list of eligible breadth courses described under each depth area outlined in the *Depth and Breadth Areas for the MSME Degree* section below.
4. *Sufficient Mechanical Engineering Course Work:* Students must take a minimum of 24 units of coursework in mechanical engineering topics. For the purposes of determining mechanical engineering topics, any course on approved lists for the math requirement, depth requirement, and breadth requirement counts towards these units. In addition, any graduate level course with an ME course number is considered a mechanical engineering topic. Research (independent study) units cannot count towards the 24 units of ME coursework.
5. *Approved Electives:* Additional graduate (numbered 200+) engineering, math, and science courses bring the total number of units to at least 39. All of these units must be approved by the student's advisor. Graduate engineering, math, and science courses are normally approved. 100-level CS courses that satisfy the M.S. in Computer Science program are also allowed. Of these 39 units, no more than 6 units may come from independent study (ME 391 and ME 392) and no more than 3 units may come from seminars. A student planning to continue for a Ph.D. should have a discussion with the academic advisor about taking ME 391 or ME 392 during the master's program. ME 491 and ME 492 may not be included in approved electives. Students may use one of the following courses as an approved elective, without petition: CS 106A, CS 106B, CS 106X, CS 107. Approved electives must be taken for a letter grade unless grades are not an option (e.g., seminars and ME 391 and ME 392), and except those taken during Spring 2020 and academic year 2020-21. Students participating in ME 391 or ME 392 should make the necessary arrangements with a member of the faculty. In addition, the faculty member and the student should determine the number of units for the course. ME 391 and ME3 92 may only be taken on a satisfactory/no credit (S/NC) grading basis. If a student takes an independent study in a different department, the grading option should be credit/no credit.
6. *Unrestricted Electives:* These courses bring the total number of units submitted for the M.S. degree to 45. Students are strongly encouraged to take these units outside of engineering, mathematics, or the sciences. Students should consult their advisor for recommendations on course loads and on ways to use the unrestricted electives to make a manageable program. Unrestricted electives must be level 100+ and may be taken credit/no credit.
7. *Laboratory Requirement:* Within the courses satisfying the requirements above, there must be at least one graduate-level course with a laboratory component. Courses which satisfy this requirement are:

		Units
ME 203	Design and Manufacturing	4
ME 210	Introduction to Mechatronics	4
ME 218A	Smart Product Design Fundamentals	4-5
ME 218B	Smart Product Design Applications	4-5
ME 218C	Smart Product Design Practice	5
ME 218D	Smart Product Design: Projects	3-4
ME 220	Introduction to Sensors	4
ME 227	Vehicle Dynamics and Control	3
ME 287	Mechanics of Biological Tissues (not offered 2020-21)	4
ME 310A	Global Engineering Design Thinking, Innovation, and Entrepreneurship	4
ME 310B	Global Engineering Design Thinking, Innovation, and Entrepreneurship	4
ME 310C	Global Engineering Design Thinking, Innovation, and Entrepreneurship	4
ME 318	Computer-Aided Product Creation	4
ME 324	Precision Engineering	4
ME 327	Design and Control of Haptic Systems (not offered 2020-21)	3
ME 328	Medical Robotics	3
ME 348	Experimental Stress Analysis	3
ME 354	Experimental Methods in Fluid Mechanics (Not offered AY21)	4
ME 367	Optical Diagnostics and Spectroscopy Laboratory	4
ME 391	Engineering Problems	1-10
ME 392	Experimental Investigation of Engineering Problems	1-10
ME 398	Ph.D. Research Rotation	1-4
And similar directed study/research courses offered by faculty in other departments will satisfy this requirement if 3 units are taken for work involving laboratory experiments.		
AA 274B/ CS 237B/ EE260B	Principles of Robot Autonomy II	3-4
CS 225A	Experimental Robotics	3

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Depth and Breadth Areas for the MSME Degree

Depth - Select one area as your specialty

Breadth - Select two courses (6 units) from area(s) outside your depth, as noted in each depth area description. They can come from the same area or two different areas.

1. Automatic Controls

(any three of the following):		
AA 203	Optimal and Learning-based Control	3
AA 212	Advanced Feedback Control Design	3
EE 266	Introduction to Stochastic Control with Applications	3
ENGR 105	Feedback Control Design	3
ENGR 205	Introduction to Control Design Techniques	3
ENGR 209A	Analysis and Control of Nonlinear Systems	3

Breadth: If depth is Automatic Controls, select any two courses (6 units) from one or two of the other areas. If depth is other than Automatic Controls, select any course(s) from the list above, or CS333 (Algorithms for Interactive Robotics).

2. Biomechanical Engineering

Three courses totaling at least 9 units are required, and must include at least two Foundational Courses.		
Foundational Courses		
ME 244	Mechanotransduction in Cells and Tissues	3
ME 281	Biomechanics of Movement (Not offered AY21)	3
ME 283	Introduction to Biomechanics and Mechanobiology (Not offered AY21)	3

ME 287	Mechanics of Biological Tissues (Not offered AY21)	4
ME 337	Mechanics of Growth	3
System-Specific Courses		
ME 234	Introduction to Neuromechanics (Not offered AY21)	3
ME 285	Computational Modeling in the Cardiovascular System	3
ME 328	Medical Robotics	3
ME 380	Current Topics in Exoskeleton and Prosthesis Research	3
ME 381	Orthopaedic Bioengineering	3
ME 485	Modeling and Simulation of Human Movement	3
Breadth: If depth is Biomechanical Engineering, select any two courses (6 units) from one or two of the other areas. If depth is other than Biomechanical Engineering, select any course(s) from the list above.		

Master of Science in Engineering (no field designation)

As described in the "School of Engineering (p. 551)" section of this bulletin, each department in the school may sponsor students in a more general degree, the M.S. in Engineering. Sponsorship by the Department of Mechanical Engineering (ME) requires:

1. filing a petition for admission to the program by no later than the day before instruction begins.
2. that the center of gravity of the proposed program lies in ME.
3. No more than 18 units used for the proposed program may have been previously completed.
4. The program must include at least 9 units of graduate-level work in the department other than ME 300A,B,C, seminars, and independent study.
5. The petition must be accompanied by a statement explaining the program objectives and how it is coherent, contains depth, and fulfills a well-defined career objective.

The grade requirements are the same as for the M.S. in Mechanical Engineering.

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Master of Science in Engineering, Biomechanical Engineering

The Master of Science in Engineering: Biomechanical Engineering (MSE:BME) promotes the integration of engineering mechanics and design with the life sciences. Applicants are expected to have an additional exposure to biology and/or bioengineering in their undergraduate studies. Students planning for subsequent medical school studies are advised to contact Stanford's Premedical Advising Office in Sweet Hall.

Students wishing to pursue this program must complete the Graduate Program Authorization form and get approval from the Student Services Office. This form serves to officially add the field to the student's record. This form must be filled out electronically on Axess. The Mechanical Engineering Department does not have a coterminal Biomechanical Engineering Master's program.

Degree Requirements

All courses except unrestricted electives must be taken for a letter grade unless letter grades are not an option. A minimum cumulative GPA of 3.0 is required for degree conferral.

1. Mathematical competence (min 6 units) in two of the following areas: partial differential equations, linear algebra, complex variables, or numerical analysis, as demonstrated by completion of two appropriate courses from the following list: ME300A, ME300B, ME300C, MATH106, MATH109, MATH113, MATH131P, STATS110 or ENGR155C, CME108, CME302. Students who have completed comparable graduate-level courses as an undergraduate, and who can demonstrate their competence to the satisfaction of the instructors of the Stanford courses, may be waived via petition from this requirement by their advisor and the Student Services Office. The approved equivalent courses should be placed in the "approved electives" category of the program proposal.
2. Graduate Level Engineering Courses (minimum 21 units), consisting of:
   a. Biomechanical engineering restricted electives (9 units) to be chosen from:

		Units
ME 234	Introduction to Neuromechanics (Not offered AY21)	3
ME 244	Mechanotransduction in Cells and Tissues	3
ME 281	Biomechanics of Movement	3
ME 283	Introduction to Biomechanics and Mechanobiology (Not offered AY21)	3
ME 285	Computational Modeling in the Cardiovascular System	3
ME 287	Mechanics of Biological Tissues (Not offered AY21)	4
ME 328	Medical Robotics (Not offered AY21)	3
ME 337	Mechanics of Growth (Not offered AY21)	3
ME 380	Current Topics in Exoskeleton and Prosthesis Research (Not offered AY21)	3
ME 381	Orthopaedic Bioengineering	3
ME 485	Modeling and Simulation of Human Movement	3

   b. Specialty in engineering (9-12 units): A set of three or four graduate level courses in engineering mechanics, materials, controls, or design (excluding bioengineering courses) selected to provide depth in one area. Comparable specialty sets composed of graduate engineering courses outside the Mechanical Engineering Department can be used with the approval of the student's advisor.
   c. Graduate engineering electives (to bring the total number of graduate level engineering units to at least 21. These electives must contribute to a cohesive degree program, and be approved by the student's advisor. No units may come from bioengineering courses, mathematics courses, or seminars.
3. Life science approved electives (minimum 6 units): Undergraduate or graduate biological/medical science/chemistry courses which contribute to a cohesive program.
4. Biomechanical Research Symposium (ME 389).
5. General approved electives (to bring the total number of units to 39): These courses must be approved by the student's advisor. Graduate level engineering, math, physical science courses and upper division undergraduate or graduate life science courses are normally approved.

6. Unrestricted electives (to bring the total number of units to 45): Students without undergraduate biology are encouraged to use some of these unrestricted units to strengthen their biology background. Students should consult their advisor for recommendations on course loads and on ways to use the unrestricted electives to create a manageable program.

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Master of Science in Engineering, Design Impact

The Master's Program in Design Impact is project-driven, highly immersive, and based on design thinking, the human-centered design process pioneered at Stanford. We teach the process, mindsets and skills needed to lead high-impact design teams. In our work on products, services, systems, and experiences, empathy is our guiding principle. Students completing the two-year program will earn a Master's of Science in Engineering degree with a concentration in Design Impact (MSE-Design Impact).

The Master's Program in Design Impact is a distinct degree from the MS Mechanical Engineering discipline with a separate application process. You can learn more about the application procedure by navigating to the "How to Apply" page at http://designimpact.stanford.edu/.

Degree Requirements

Candidates for the Design Impact Engineering master's degree are expected to have the approval to graduate from the faculty and a minimum GPA of 3.0 on the 53 units completed in the program.

All required classes and electives must be taken for a letter grade unless:

1. The class is not offered for a letter grade, or
2. Prior approval has been granted to take a class CR/NC in the form of a signed petition filed and approved before the class begins.

In the first year, students take all their classes together as a cohort. In the second year, students will continue to work together in the year-long "Design Impact" course (ME316A, B, C: Design Master's Project), each selecting to work on a project related to one of the two Impact themes. This sequence of classes will be the culmination of their educational experience and launch them into their individual careers as designers.

The student selects electives in the second year with their advisor. The electives are of two types: focused on building a deep learning in the student's chosen Impact theme area and expanding the student's skill set and design toolkit. Students may choose elective courses at the 100 level or higher, in consultation with their advisor, from any of the Schools at the University to fulfill their elective requirement. Electives must be selected to fulfill education and career objectives and be related to their selected theme area within the Design Impact program. The advisor must sign off on a program sheet containing proposed electives prior to the students committing to taking them.

		Units
ME 313	Human Values and Innovation in Design	3
ME 203	Design and Manufacturing [1]	4
ME 277	Graduate Design Research Techniques	3-4
CS 106A	Programming Methodology [2]	3
or higher numbered CS course		
ME 391	Engineering Problems [3]	3
ME 311	Leading Design Teams [4]	3
CS 247A	Design for Artificial Intelligence (or any CS 247 series course, including CS247B, CS247G, CS247I, CS247S)	3 or 4
or CS 347	Human-Computer Interaction: Foundations and Frontiers	
DESINST 215	The Design of Data	3
or CS 448B	Data Visualization	
(Dependent on course selected) Business Considerations in Design [5]		3
ME 316A	Design Impact Master's Project I [6]	2-4
ME 316B	Design Impact Master's Project II [6]	2-4
ME 316C	Design Impact Master's Project III [6]	2-4
ME 391	Engineering Problems [7]	1 or 2
Approved Elective Units [8]		12

1. ME 203 Design and Manufacturing should be completed in the first year, Autumn Quarter of the degree program.
2. CS 106A is for students who have had limited exposure to computer programming and want to start at the introductory level. Students who have already had an introduction to computer science, or who have professional programming experience, should consult with their advisor on the best-fit computer science class; it must have a higher number than 106. Taking a higher-level CS course does not require a petition.
3. ME391 (3 units) will focus on Design Analytics with Lecturer Mark Schar. This is to be completed in the Winter quarter of the student's first year of studies.
4. May substitute with ME 368 d.Leadership: Leading Disruptive Innovation .
5. A course that teaches Business Considerations in Design will be selected by the student in consultation with their advisor. Options include MS&E 140 , ACCT 317 Managerial Accounting: Performance Measurement, Compensation, and Governance, or courses offered by the Stanford Graduate School of Business.
6. ME 316A, B & C are taken sequentially for three quarters during the second year. Students may take ONE of ME316 A, B, or C at reduced units of 2 or 3 in order to allow for a larger-unit elective. Only one quarter may be taken at reduced units, and total units for the quarter must be at least 8. This does not require a petition.
7. ME391 (1 or 2 units) will focus on individual Portfolio Design with each student. This is to be completed during the student's second year of students.
8. Students may choose elective courses at the 100 level or higher, in consultation with their advisor, from any of the Schools at the University to fulfill their elective requirement. Electives must be selected to fulfill education and career objectives and be related to their selected theme area within the Design Impact program. The advisor must sign off on a program sheet containing proposed electives prior to the students committing to taking them.

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Degree of Engineer in Mechanical Engineering

The basic University requirements for the degree of Engineer are discussed in the "Graduate Degrees (p. 65)" section of this bulletin.

This degree requires an additional year of study beyond the M.S. degree and includes a research thesis. The program is designed for students who wish to do professional engineering work upon graduation and who want to engage in more specialized study than is afforded by the master's degree alone.

Admission standards are substantially the same as indicated under the master's degree. However, since thesis supervision is required and the availability of thesis supervisors is limited, admission is not

granted until the student has personally engaged a faculty member to supervise a research project. This most often involves a paid research assistantship awarded by individual faculty members (usually from the funds of sponsored research projects under their direction). Thus, individual arrangement between student and faculty is necessary. Students studying for the M.S. degree at Stanford who wish to continue to the Engineer degree ordinarily make such arrangements during the M.S. degree program. Students holding master's degrees from other universities are invited to apply and may be admitted providing they are sufficiently well qualified and have made thesis supervision and financial aid arrangements.

Department requirements for the degree include a thesis; up to 18 units of credit are allowed for thesis work (ME 400 Thesis). In addition to the thesis, 27 units of approved advanced course work in mathematics, science, and engineering are expected beyond the requirements for the M.S. degree; the choice of courses is subject to approval of the adviser. Students who have not fulfilled the Stanford M.S. degree requirements are required to do so, with allowance for approximate equivalence of courses taken elsewhere; up to 45 units may be transferable. A total of 90 units is required for degree conferral.

Candidates for the degree must have faculty approval and have a minimum grade point average (GPA) of 3.0 for all courses (exclusive of thesis credit and other independent study courses) taken beyond those required for the master's degree.

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Doctor of Philosophy in Mechanical Engineering

The University's basic requirements for the Ph.D. degree are outlined in the "Graduate Degrees (p. 65)" section of this bulletin.

The Ph.D. degree is intended primarily for students who desire a career in research, advanced development, or teaching; for this type of work, a broad background in mathematics and the engineering sciences, together with intensive study and research experience in a specialized area, are the necessary requisites.

In special situations, Academic Council members who are not members of the department's faculty may serve as the principal dissertation adviser when approved by the department. In such cases, a member of the department faculty must serve as program adviser and as a member of the reading committee, and agree to accept responsibility that department procedures are followed and standards maintained.

Prior to being formally admitted to candidacy for the Ph.D. degree, the student must demonstrate knowledge of engineering fundamentals by passing a qualifying examination. The academic level and subject matter of the examination correspond approximately to the master's program in Mechanical Engineering. Typically, the exam is taken in the second year of a students Ph.D. program. The student is required to have a minimum graduate Stanford GPA of 3.5 to be eligible for the exam (grades from independent study courses are not included in the GPA calculation). More information on the qualifying examination process can be found in the ME Graduate Student Handbook, provided online by the student services office.

Ph.D. candidates must complete a minimum of 21 units (taken for a letter grade) of approved formal course work (excluding research, directed study, and seminars) in advanced study in engineering, math and sciences. In addition to this 21 unit requirement, all Ph.D. candidates should participate each quarter in one of the following (or equivalent) seminars:

		Units
ME 389	Biomechanical Research Symposium	1
ME 395	Seminar in Solid Mechanics	1
ME 397	Design Research Theory and Methodology Seminar	1-3
AA 297	Seminar in Guidance, Navigation, and Control	1
ENGR 298	Seminar in Fluid Mechanics	1
ENGR 311A/311B	Women's Perspectives	1

The department has a breadth requirement for the Ph.D. degree. This may be satisfied either by a formal minor in another department (generally 20 units) or by at least 9 units of course work (outside of the primary research topic) which are approved by the principal dissertation adviser. If a minor is taken, 9 units from the minor requirements can be counted towards the depth requirement.

The Ph.D. dissertation normally represents at least one full year of research work and must be a substantial contribution to the field. Students may register for course credit for dissertation work (ME 500) to help fulfill University academic unit requirements, but there is no minimum limit on registered dissertation units, as long as students are registered in at least 8 units (10 is recommended) per quarter prior to TGR. Candidates should note that only completed course units are counted toward the requirement, so ungraded courses or courses with an "N" grade must be cleared before going TGR. Questions should be directed to the department Student Services office.

The final University oral examination (dissertation defense) is conducted by a committee consisting of a chair from another department and four faculty members of the department or departments with related interests. Usually, the committee includes the candidate's adviser, reading committee members, plus two more faculty. The examination consists of two parts. The first is open to the public and is scheduled as a seminar talk, usually for one of the regular meetings of a seminar series. The second is conducted in private and covers subjects closely related to the dissertation topic.

Ph.D. Minor in Mechanical Engineering

Students who wish a Ph.D. minor in ME should consult with the ME student services office. A minor in ME may be obtained by completing 20 units of approved graduate-level ME courses. Courses approved for the minor must form a coherent program and must be chosen from those satisfying requirement 2 for the M.S. in Mechanical Engineering.

See the *Mechanical Engineering Graduate Student Handbook* produced by the Mechanical Engineering student services office for more information.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of Mechanical Engineering counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that normally require a letter grade.

Other Undergraduate Policies

The Department of Mechanical Engineering encourages students to take courses for letter grades when possible in order to have complete records for use when seeking future opportunities, including employment in industry and students seeking to apply for graduate studies. Per University policy, students can change grading basis through the end of Week 8 in all four quarters this year. Students are encouraged to reach out directly to Degree Progress Officer Priscilla Chan <priscillachan@stanford.edu > for questions about petitions, especially in situations related to COVID-19 policies and grading basis.

Graduate Degree Requirements

Grading

For the *Master of Science in Mechanical Engineering (MSME)* program, the Department of Mechanical Engineering will count courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) that satisfy the Math Fundamentals and Approved Electives requirements. Letter grades are still required for courses taken in academic year 2020-21 that satisfy the Depth and Breadth requirements. Per our previous policy, courses taken in Spring 2020 with an 'S' (satisfactory) are counted towards satisfaction of all graduate degree requirements (including Depth and Breadth) that otherwise require a letter grade. In addition, the laboratory requirement for the M.S. program is cancelled for students enrolled in the MS program during academic academic yearear 2020-21.

For the *Master of Science in Engineering, field designation: Biomechanical Engineering* program, the department will count courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) that satisfy the Mathematical Competence, Graduate Engineering Electives, Life Science Approved Electives, and General Approved Electives requirements. Letter grades are still required for courses taken in academic year 2020-21 that satisfy the Biomechanical Engineering Restricted Electives and Specialty in Engineering requirements. Per our previous policy, courses taken in Spring 2020 with an 'S' (satisfactory) are counted towards satisfaction of all graduate degree requirements (including Biomechanical Engineering Restricted Electives and Specialty in Engineering) that otherwise require a letter grade.

For the *Master of Science in Engineering, field designation: Design Impact* program, the department will count all courses taken in Spring 2020 and academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) toward program requirements.

For the *Master of Science in Engineering, no field designation*, the department requires that a minimum of 9 units of graduate level work in the Department of Mechanical Engineering be taken for a letter grade. Outside of those 9 units, we will count all courses taken in Spring 2020 and academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) toward program requirements.

For the *Ph.D. in Mechanical Engineering (PhDME) program*, the Department of Mechanical Engineering will count up to 11 units of courses taken in Spring 2020 and academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) that satisfy the requirements of the 21 units of approved courses in advanced study beyond the MS degree. The department is awaiting University guidance on online vs. in-person qualifying exams during academic year 2020-21. The 3.5 minimum GPA for taking the qualifying exam still applies; if necessary, Ph.D. advisors can submit a request for GPA waiver at the time of the student's application to take the qualifying exam.

For the *Degree of Engineer* program, the Department of Mechanical Engineering will count up to 11 units of courses taken in Spring 2020 and academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) that satisfy the requirements of the 27 units of approved coursework beyond the MS degree.

Other Graduate Policies

The Department of Mechanical Engineering encourages students to take courses for letter grades when possible in order to have complete records for use when seeking future opportunities, including employment in industry and faculty jobs, M.S. students seeking to join Ph.D. programs, and Ph.D. students preparing to take the qualifying exam. Per University policy, students can change grading basis through the end of Week 8 in all four quarters this year. Students are encouraged to reach out directly to the Director of Graduate Studies, Allison Okamura <aokamura@stanford.edu>, for questions about petitions, especially in situations related to COVID-19 policies and grading basis.

Graduate Advising Expectations

The Department of Mechanical Engineering (ME) is committed to providing academic advising in support of graduate student scholarly and professional development. This advising relationship is most effective when it entails collaborative and sustained engagement between the advisor and the advisee. As a best practice, the advisor/advisee relationship and expectations of both sides should be periodically discussed and reviewed to ensure mutual understanding. All advisors and the advisee are expected to maintain professionalism and integrity.

Faculty advisors guide graduate students in key areas of their academic career. An academic advisor helps guide student selection of courses and provides help in navigating polices and degree requirements. In the case of faculty advising teaching assistants, the relationship should include help with development of teaching pedagogy and practice. If the advisor also serves as the primary research advisor, then the advising is much more extensive and also includes research training, design, execution, and career planning (see also Ph.D. section below).

In all cases, graduate students should be active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program (including reading the ME Department's Graduate Student Handbook). Graduate students conducting research should also strive to understand the method and goals of the research and the project's contribution to the pertinent field.

The faculty Director of Graduate Studies (DGS) meets with all master's and doctoral students at the start of their first year, and is available year-round via email and by appointment. The department's Student Services Office is also an important part of the advising team; they inform students and advisors about university and department requirements, procedures, and opportunities, and maintain the official records of advising assignments. Students are encouraged to talk with staff of the Student Services Office, including the DGS, as they consider advisor selection, or for advice in working with their advisor(s). Another excellent resource for students is the ME Graduate Student Committee, a student-run group which organizes social, academic, and community events for the graduate student population in the ME Department.

Master of Science

At the start of graduate study in the master's program, each student is assigned an advisor: a member of the who provides guidance in course selection and in exploring academic opportunities and professional pathways. The graduate student handbook provides a summary of program requirements. Although there is no set rule for meeting

frequency, academic advisor and student should meet about once per quarter, particularly during the first few quarters of the student's time at Stanford. Usually, the same faculty member serves as program advisor for the duration of master's study, but a student can seek a change of advisor by contacting the Student Services Office and/or the ME faculty with whom they seek an advisor/student relationship.

Ph.D. and Engineer Degrees

The ME Department provides academic advising in support of doctoral student scholarly and professional development. A successful advisor/advisee relationship is particularly important for students seeking a Ph.D. in the department. The material in this section is also applicable to students seeking the Degree of Engineer.

In addition to the goals listed above for all advisor/advisee relationships, the Ph.D. advisor provides advice and guidance on developing research skills, choosing classes that helps with the student's research, identifying and planning research projects, dissemination/publishing of the research, and exploring academic opportunities and professional pathways. The Ph.D. advisor serves as an intellectual and professional mentor to the Ph.D. student. In some cases, a Ph.D. student may be advised by two or more advisors. In these cases, the various roles and goals of each of these individuals should be made very clear to all involved. For example, the co-advisors in such arrangements should strive to coordinate and provide non-conflicting advice to the student and the advisee should work to improve and facilitate communication with the two advisors and provide feedback to and from their advisors.

In the ME department, Ph.D. students can be admitted to be advised by a specified faculty member, or admitted with a fellowship associated with the research rotation program. For the latter, the student is initially assigned a program advisor by the department. This faculty member provides initial guidance in course selection, in exploring academic opportunities and professional pathways, and in identifying doctoral research opportunities. Students are required to perform rotations until a Ph.D. research advisor is identified, and they are strongly encouraged to explore research activities with two or three different faculty members during their first academic year. All Ph.D. students seeking a Ph.D. research advisor are encouraged to very proactively seek out, meet with, and discuss possibilities for Ph.D. advisors. Ideally, these discussions should include possible research projects and the possibility for and sources of sustained research funding.

Ph.D. students must identify their doctoral research/thesis advisor (and vice versa) prior to the end of the first year of study. Ideally, this should happen with the first 9 to 10 months. The research supervisor assumes primary responsibility for the future direction of the student, taking on the roles previously filled by the program advisor as well as the aforementioned research-related advice, and ultimately directing the student's dissertation. Most ME Ph.D. students find an advisor from among the primary faculty members of the department. However, the research advisor may be a qualified faculty member from another Stanford department who is able to provide both advising and funding for the duration of the doctoral program. When the research advisor is from outside the department, the student must also identify a program advisor, called a co-advisor, from the primary ME faculty, to provide guidance on departmental requirements and opportunities. The co-advisor is also a member of the student's dissertation reading committee.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Emeriti: (Professors) James L. Adams, Thomas P. Andriacchi, David M. Barnett, Peter Bradshaw, Brian J. Cantwell, Dennis R. Carter, Daniel B. DeBra, Robert H. Eustis, Thomas J. R. Hughes, James P. Johnston, Thomas R. Kane, William M. Kays, Joseph B. Keller, Charles H. Kruger, Robert H. McKim, Robert J. Moffat, M. Godfrey Mungal, J. David Powell, Charles R. Steele*, Douglass J. Wilde; *(Professors, Research)* Richard M. Christensen, Sidney A. Self, Kenneth J. Waldron*, Felix E. Zajac

Chair: Ellen Kuhl

Director of Graduate Studies: Allison Okamura

Director of Undergraduate Studies: Mark Cappelli

Group Chairs: Mark R. Cutkosky & Sheri D. Sheppard (Design), Marc Levenston (Biomechanical Engineering), Gianluca Iaccarino & Parviz Moin (Flow Physics and Computational Engineering), Wei Cai (Mechanics and Computation), Christopher F. Edwards (Thermosciences)

Professors: Craig T. Bowman, Mark A. Cappelli, Mark R. Cutkosky, John Dabiri, Scott L. Delp, John K. Eaton, Christopher F. Edwards, Charbel Farhat, J. Christian Gerdes, Kenneth E. Goodson, Ronald K. Hanson, Gianluca Iaccarino, David M. Kelley, Thomas W. Kenny, Ellen Kuhl, Larry J. Leifer, Sanjiva K. Lele, Arun Majumdar, Reginald E. Mitchell, Parviz Moin, Drew V. Nelson, Allison M. Okamura, Peter M. Pinsky, Friedrich B. Prinz, Beth L. Pruitt, Bernard Roth, Juan G. Santiago, Eric S. G. Shaqfeh, Sheri D. Sheppard, Hai Wang

Associate Professors: Wei Cai, Steve Collins, Eric F. Darve, W. Matthias Ihme, Marc E. Levenston, Adrian J. Lew, Ali Mani, Xiaolin Zheng

Assistant Professors: Ovijit Chaudhuri, Sean Follmer, Wendy Gu, David Lentink, Erin MacDonald, Sindy K.-Y. Tang

Professor (Teaching): David W. Beach

Courtesy Professors: Oussama Khatib, Paul Yock

Courtesy Associate Professor: Nicholas Giori, Christian Linder

Courtesy Assistant Professor: David Camarillo, Roseanna Zia

Senior Lecturers: Vadim Khayms, J. Craig Milroy

Adjunct Professors: Mehdi Asheghi, Michael R. Barry, William R. Burnett, J. Edward Carryer, Rainer J. Fasching, Shannon Gilmartin, John A. Howard, Barry M. Katz, Paul Mitiguy, Gary O'Brien, Dev Patnaik, Paul Saffo III, George Toye

* Recalled to active duty.

Cognate Courses

		Units
CS 106A	Programming Methodology	3-5
CS 223A	Introduction to Robotics	3
ENGR 14	Intro to Solid Mechanics	3
ENGR 15	Dynamics	3
ENGR 40		
ENGR 105	Feedback Control Design	3
ENGR 205	Introduction to Control Design Techniques	3
ENGR 209A	Analysis and Control of Nonlinear Systems	3
ENGR 240	Introduction to Micro and Nano Electromechanical Systems	3
ENGR 341	Micro/Nano Systems Design and Fabrication	3-5

Overseas Studies Courses in Mechanical Engineering

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or

program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

	Units
explorecourses:OSP me	

Courses

ME 1. Introduction to Mechanical Engineering. 3 Units.
This course is intended to be the starting point for Mechanical Engineering majors. It will cover the concepts, engineering methods, and common tools used by mechanical engineers while introducing the students to a few interesting devices. We will discuss how each device was conceived, design challenges that arose, application of analytical tools to the design, and production methods. Main class sections will include lectures, demonstrations, and in-class group exercises. Lab sections will develop specific skills in freehand sketching and computational modeling of engineering systems. Prerequisites: Physics: Mechanics, and first quarter Calculus.

ME 2. Experimental Problem Solving for Engineers. 1 Unit.
Are you curious about how to solve problems and test your designs & creations? This 1-unit course helps students learn how to solve problems using scientific experiments, by designing and implementing a series of simple but scientific experiments in a weekly one-hour class. Join us to break candy, mix coffee, and have fun finding out how to use testing to solve legitimate engineering problems, while learning how to design fair, useful tests for your own projects.

ME 14AX. Design for Silver and Bronze. 2 Units.
This class aims to provide a synthesis of design and technique in metalworking. When using precious metals (silver and bronze) the scale of the works naturally becomes much smaller than other design endeavors. This intimate size allows for attention to detail and refinement not common or often considered in other areas of design. The method involves creating a piece out of wax, and going through a process to achieve that piece in metal. All projects will center on this process. Students will complete complete three projects, a quick-start ring, a client design theme project and a belt.nnSara and Amanda have been teaching ME298: Silversmithing in Design at Stanford for 17 years, they are full time designers at RedStart Design, LLC and also Lecturers in Design in the Mechanical Engineering Department.

ME 15AX. Voluminous Design. 2 Units.
This class aims to provide a synthesis of design and technique in metalworking. When using precious metals (silver and bronze) the scale of the works naturally becomes much smaller than other design endeavors. This intimate size allows for attention to detail and refinement not common or often considered in other areas of design. The method involves creating a piece out of wax, and going through a process to achieve that piece in metal. All projects will center on this process. Students will complete complete three projects, a quick-start ring, a client design theme project and a belt. Sara and Amanda have been teaching ME298: Silversmithing in Design at Stanford for 17 years, they are full time designers at RedStart Design, LLC and also Lecturers in Design in the Mechanical Engineering Department.

ME 17. The Science of Flames. 3 Units.
This course is about what causes flames to look like they do and about what causes them to propagate. The physical and chemical phenomena that govern behaviors of flames will constitute the topics for discussion. The basic principles that govern flame phenomena include the conservation of mass, the first law of thermodynamics, and the momentum principle. Since flame processes are controlled by the rates of chemical reactions, these basic principles will be applied when account is made for the chemical transformations that occur when reactant bonds are broken and new bonds are formed, producing combustion products. In essence, this course serves as an introduction to combustion science.

ME 20N. Haptics: Engineering Touch. 3 Units.
Students in this class will learn how to build, program, and control haptic devices, which are mechatronic devices that allow users to feel virtual or remote environments. In the process, students will gain an appreciation for the capabilities and limitations of human touch, develop an intuitive connection between equations that describe physical interactions and how they feel, and gain practical interdisciplinary engineering skills related to robotics, mechanical engineering, electrical engineering, bioengineering, and computer science. In-class laboratories will give students hands-on experience in assembling mechanical systems, making circuits, programming Arduino microcontrollers, testing their haptic creations, and using Stanford¿s student prototyping facilities. The final project for this class will involve creating a novel haptic device that could be used to enhance human interaction with computers, mobile devices, or remote-controlled robots.

ME 22N. Smart Robots in our Mix: Collaborating in High Tech Environments of Tomorrow. 3 Units.
This course invites students to explore rules of engagement in a global digitally interconnected world they will create with the robots in their society. The material will be taught in the context of ubiquitous integrated technology that will be part of their future reality. Human-robot interactions will be an integral part of future diverse teams. Students will explore what form will this interaction take as an emerging element of tomorrow's society, be it medical implanted technology or the implications of military use of robots and social media in future society. Students will learn to foster their creative confidence to explore collaboration by differences for social innovation in a digitally networked world.

ME 23N. Soft Robots for Humanity. 3 Units.
While traditional robotic manipulators are constructed from rigid links and simple joints, a new generation of robotic devices are soft, using flexible, deformable materials. Students in this class will get hands-on experience building soft robots using various materials, actuators, and programming to create robots that perform different tasks. Through this process, students will gain an appreciation for the capabilities and limitations of bio-inspired systems, use design thinking to create novel robotic solutions, and gain practical interdisciplinary engineering skills.

ME 30. Engineering Thermodynamics. 3 Units.
The basic principles of thermodynamics are introduced in this course. Concepts of energy and entropy from elementary considerations of the microscopic nature of matter are discussed. The principles are applied in thermodynamic analyses directed towards understanding the performances of engineering systems. Methods and problems cover socially responsible economic generation and utilization of energy in central power generation plants, solar systems, refrigeration devices, and automobile, jet and gas-turbine engines.

ME 35SI. Designing Moonshots. 2 Units.
This seminar will bring a small group of motivated students across Stanford's many disciplines in an education experiment in human-centered design and rapid prototyping. Through immersion in intimate conversations with thought leaders and student-led user interviews surrounding some of the most pressing global issues, students will learn to identify unique areas of need and assess the domain-specific landscapes for innovating moonshot projects. Students will apply design, prototyping, and user research in a series of interactive team projects aimed at formulating tangible solutions.

ME 47. Press Play: Interactive Device Design. 4-5 Units.
This course provides an introduction to the human-centered and technical workings behind interactive devices ranging from cell phones and video controllers to household appliances and smart cars. This is a hands-on, lab-based course; there will be no midterm or final. Course topics include electronics prototyping, interface prototyping, sensors and actuators, microcontroller development, physical prototyping and user testing. For the final project, students will build a working MP3 player prototype of their own design, using embedded microcontrollers, digital audio decoders, component sensors and other electronic hardware. Prior experience in programming, such as CS106A (or equivalent) or electronics, such as ENG40A (or equivalent) preferred. Students must attend the first class.

ME 70. Introductory Fluids Engineering. 3 Units.
Elements of fluid mechanics as applied to engineering problems. Equations of motion for incompressible flow. Hydrostatics. Control volume laws for mass, momentum, and energy. Bernoulli equation. Differential equations of fluid flow. Euler equations. Dimensional analysis and similarity. Internal flows. Introductory external boundary layer flows. Introductory lift and drag. ENGR14 and ME30 required.

ME 80. Mechanics of Materials. 3 Units.
Mechanics of materials and deformation of structural members. Topics include stress and deformation analysis under axial loading, torsion and bending, column buckling and pressure vessels. Introduction to stress transformation and multiaxial loading. Prerequisite: ENGR 14.

ME 101. Visual Thinking. 4 Units.
ME101 is at the foundation class for all designers and creative people at Stanford. It teaches you how to access your creativity through a series of projects, all of which have been redesigned so that they can be accomplished in an online learning environment. Visual thinking, a powerful adjunct to other problem solving modalities, is developed and exercised in the context of solving some fun and challenging design problems. Along the way, the class expands you access to your imagination, helps you see more clearly with the "mind's eye:¿, and learn how to do rapid visualization and prototyping. The emphasis on basic creativity, learning to build in the 3D world, and fluent and flexible idea production.

ME 102. Foundations of Product Realization. 3 Units.
Students develop the language and toolset to transform design concepts into tangible models/prototypes that cultivate the emergence of mechanical aptitude. Visual communication tools such as sketching, orthographic projection, and 2D/3D design software are introduced in the context of design and prototyping assignments. Due to COVID-19 restrictions during AY20-21, in-person use of the Product Realization Lab may be limited or not permitted. Lab kits will be sent to enrolled students to support exploration of prototyping and mechanical design techniques that will be practiced during synchronous lectures and coaching sessions. Project documentation, reflection, and presentations are opportunities for students to find their design voice and practice sharing it with others. Prerequisite: ME 1 or ME 101 or consent of instructor.

ME 103. Product Realization: Design and Making. 4 Units.
ME103 will be taught entirely on line. While this has the obvious disadvantage of no physical PR access, we experimented with a recreated version of the course this past spring quarter. On line ME103 delivered excellent educational value. Student response was very positive. The course was a mix of published weekly recorded lectures, small group coaching sessions, a newly developed library of "Technical Notes", and kits of tools and materials given to each student for the purpose of rapid prototyping. We increased emphasis on CAD with good support for Fusion 360 as well as Solid Works. We increased emphasis on manufacturing processes including a redesign of projects assuming scaled manufacturing.

ME 103D. Engineering Drawing and Design. 1 Unit.
Designed to accompany 203. The fundamentals of engineering drawing including orthographic projection, dimensioning, sectioning, exploded and auxiliary views, assembly drawings, and SolidWorks. Homework drawings are of parts fabricated by the student in the lab. Assignments in 203 supported by material in 103D and sequenced on the assumption that the student is enrolled in both courses simultaneously.

ME 104. Mechanical Systems Design. 4 Units.
How to design mechanical systems through iterative application of intuition, brainstorming, analysis, computation and prototype testing. Design of custom mechanical components, selection of common machine elements, and selection of electric motors and transmission elements to meet performance, efficiency and reliability goals. Emphasis on high-performance systems. Independent and team-based design projects. Prerequisites: PHYSICS 41; ENGR 14; ME 80; ME 102; ME 103 or 203. Must have PRL pass. Must attend lecture. Recommended: ENGR 15; CS 106A; ME 128 or ME 318. ME104: We are excited about our new plan for ME 104, and we think students will have a great experience even under these conditions. We'll be changing up the lecture elements of the course, switching to asynchronous videos and small synchronous coaching groups. We *will* have hands-on projects, switching from two larger projects with on-campus fabrication to several smaller projects built at home using the personal 3D printers students in these courses will receive and an ME104-specific kit we'll send out. Some of these changes might even improve the course over the long run . We hope students will come build with us! It should be fun. Steve Collins, stevecollins@stanford.edu.

ME 104B. Designing Your Life. 2 Units.
This course applies the mindsets and innovation principles of design thinking to the "wicked problem" of designing your life and vocation. The course introduces design thinking processes through application: students practice awareness and empathy, define areas of life and work on which hey want to work, ideate about ways to move forward, try small prototypes, and test their assumptions. The course is highly interactive. The course will include brief readings, writing, reflections, and in-class exercises. Expect to practice ideation and prototyping methodologies, decision making practices and to participate in hands on activities in pairs, trios, and small groups. Also includes roleplaying, assigned conversations with off campus professionals, guest speakers, and individual mentoring and coaching. It will conclude with creation of 3 versions of the next 5 years and prototype ideas to begin making those futures a reality. Open to juniors, seniors and 5th year coterms, all majors. All enrolled and waitlisted students should attend class on day 1 for admission. Additional course information at http://www.designingyourlife.org.

ME 104S. Designing Your Stanford. 2 Units.
DYS uses a Design Thinking approach to help Freshmen and Sophomores learn practical tools and ideas to make the most of their Stanford experience. Topics include the purpose of college, major selection, educational and vocational wayfinding, and innovating college outcomes, explored through the design thinking process. This seminar class incorporates small group discussion, in-class activities, field exercises, personal reflection, and individual coaching. Expect ideation tools, storytelling practices, prototyping to discover more about yourself and possible paths forward. The course concludes with creation of multiple versions of what college might look like and how to make those ideas reality. All enrolled and waitlisted students should attend class on day 1 for admission. Additional course information at http://www.designingyourstanford.org.
Same as: EDUC 118S

ME 105. Designing for Impact. 3 Units.
This course will introduce the design thinking process and skills, and explore unique challenges of solving problems and initiating action for public good. Design skills such as need-finding, insight development, and prototyping will be learned through hands-on project work with a community partner and a particular emphasis on the elements required to be effective in the social sector. This is a Cardinal Course certified by the Haas Center for Public Service. ME101 recommended.

ME 110. Design Sketching. 2 Units.
Design Visualization, offers students a unique opportunity to acquire a new (visual) language over the span of one short quarter. nnnImagine a process whereby you can close your eyes, and, after a few short weeks, leveraging established Design Principles, open them, and imagine/draw virtually anything that comes to mind.... this is our pledge to you, independent of your previous sketching experience.nnnThis course melds basics with Industrial Design discipline (which creates the aesthetic, experience of products and services), dividing it into two parts; the ability to representationally draw in three-dimensions, while exploring the nuances of form & materials. ME110 initially focuses on the first component, building the structural foundation for perspective drawing, then introducing basic lighting and shading theory to 'complete the picture'. Analysis gives way to individual choice, as confidence builds. nnnWhile we express & explore solutions with traditional analog medium (pens, paper, etc.;-- supplied!), we bridge 'the digital divide', expressing final projects in several media choices, stirring in portfolio & professional advice enroute.

ME 110B. Digital Design Principles and Applications. 2 Units.
Building upon foundation design principles, project-based individual / group exploration and critique facilitates a self-guided learning process, where analytical problem-solving approaches are cultivated through real-time implementation in digital tools. A series of diverse projects are brought together in conjunction with related student project portfolio development. Class Prerequisites: Students must have completed ME110 with high levels of understanding, engagement. May be repeat for credit.

ME 115A. Introduction to Human Values in Design. 3 Units.
An intensive project-based class that introduces the central philosophy of the product design program. Students learn how to use the lens of human needs to innovate at the intersection of technical factors (feasibility), business factors (viability), and human values (desirability). Students work toward mastery of the human-centered design methodology through several real-world, team-based projects. Students gain fluency in designing solutions ranging from physical products, to digital interfaces, to services and experiences. Students are immersed in building their individual and team capacities around core design process and methods, and emerge with a strong foundation in needfinding, synthesis, ideation, rapid prototyping, user testing, iteration, and storytelling.

ME 115B. Product Design Methods. 4 Units.
This course will introduce the basic concepts of human factors and demonstrate the importance of understanding and considering human capabilities and limits in product and system design. This will include an overview of both cognitive and physical human characteristics, methods to analyze human factors constraints, and design methods for prototyping and evaluating the usability of physical products and systems. In this course individual- and team-based design projects are used to emphasize the integration between human factors analysis and evaluation, authoring design requirements and translating these to both physical products and systems.Prerequisites: ME101, ME115A, ME110. Strongly recommended: ME102, Psych 1.

ME 115C. Designing Your Business. 3 Units.
Designing Your Business: introduces business concepts and personal capabilities to designers critical to the development, launch, and success of new products and services in for-profit and social enterprises. Functionally, students will learn to build the business case for new products, including skills such as market sizing, cost estimation, P&L modeling, and raising capital. In addition, business functions such as marketing, growth, and product management and the role of designers in businesses will be explored through class visitors and case studies. Projects culminating in a final presentation to persuade industry experts will develop teamwork and individual effectiveness in putting all the skills together to persuade and mobilize resources through live presentations, written communications, and videos.

ME 120. History and Ethics of Design. 3 Units.
Those who do not learn from history are doomed to repeat it. In this class we will examine the history of design, the challenges that designers over the ages have had to face and the ethical questions that have arisen from those choices. This class will explore a non-traditional view of design, looking at both the sung and unsung figures of history and question the choices they made, up to and including recent events in the Silicon Valley. This is a project class, so we will be making design works in response to the questions we unearth together.

ME 123. Computational Engineering. 4 Units.
The design of wind turbines, biomedical devices, jet engines, electronic units, and almost every other engineering system, require the analysis of its flow and thermal characteristics to ensure optimal performance and safety. The continuing growth ofcomputer power and the emergence of general-purpose engineering software has fostered the use of computational analysis as a complement to experimental testing. Virtual prototyping is a staple of modern engineering practice. This course is an introduction to Computational Engineering using commercial analysis codes, covering both theory and applications. Assuming limited knowledge of computational methods, the course starts with introductory training on the software, using a nnseries of lectures and hands-on tutorials. We utilize the ANSYS software suite, which is used across a variety of engineering fields. Herein, the emphasis is on geometry modeling, mesh generation, solution strategy and post-processing for diverse applications. Using classical flow/thermal problems, the course develops the essential concepts of Verification and Validation for engineering simulations, nnproviding the basis for assessing the accuracy of the results. Advanced concepts such as the use of turbulence models, user programming and automation for design are also introduced. The course is concluded by a project, in which the students apply the software to solve a industry-inspired problem.

ME 124. Visual Expressions. 3 Units.
A hands-on exploration of the elements and principles of 2D and 3D design common to all the visual arts. Through a mix of theory, analysis, and practice the student will develop his/her ability to interpret visual content and produce effective imagery. Limited enrollment, attendance at first class required.

ME 125. Visual Frontiers. 3 Units.
The student will learn how to use graphic design to communicate online, in person, and through printed matter. Fundamentals of visual communications will be applied to branding exercises, typographic studies, color explorations, drawing exercises, use of photography, and use of grid and layout systems.

ME 127. Design for Additive Manufacturing. 3 Units.
Design for Additive Manufacturing (DfAM) combines the fields of Design for Manufacturability (DfM) and Additive Manufacturing (AM). ME127 will introduce the capabilities and limitations of various AM technologies and apply the principles of DfM in order to design models fit for printing. Students will use Computer Aided Design (CAD) software to create models and run simulations of their designs. Topics include: design for rapid prototyping, material selection, post-processing and finishing, CAD simulation, algorithmic modeling, additive tooling and fixtures, and additive manufacturing at scale. Prerequisite: ME102, ME80, or consent of instructor.

ME 128. Computer-Aided Product Realization. 3-4 Units.
ME128 Computer Aided Product Realization and ME318 Computer Aided Product Creation will continue to be taught contiguously through asynchronous lectures and online synchronous office hours, coaching, and feedback sessions. The one difference is that ME318 students will be brought into the PRL to learn and use the Lab's four Haas VF2 CNC machines during structured labs. For this reason undergrads will not be allowed to enroll in ME318. Students in both classes will be creating designs and subsequent code right up to the point of operating the machine. Our experience from Spring Quarter is that students will receive 85% of the knowledge they normally acquire during an on-campus quarter and we will be adding additional content to bring 100% equivalency to both courses.

ME 129. Manufacturing Processes and Design. 3 Units.
ME129 is intended for mechanical engineering juniors who have elected the Product Realization Concentration.nnnME129 will be taught on-line through Zoom and Canvas resources. There will be weekly, recorded presentations, recorded virtual manufacturing field trips, and sessions devoted to coaching, presentation, and discussion. Students will acquire professional level information and experience with properties of materials and manufacturing processes. We will offer information about, and encourage discussion of, environmental sustainability as a unifying theme throughout. Prerequisite: ME102 and ME103, or consent of instructor.

ME 131. Heat Transfer. 4 Units.
The principles of heat transfer by conduction, convection, and radiation with examples from the engineering of practical devices and systems. Topics include transient and steady conduction, conduction by extended surfaces, boundary layer theory for forced and natural convection, boiling, heat exchangers, and graybody radiative exchange. Prerequisites: ME70, ME30 (formerly listed at ENGR30). Recommended: intermediate calculus, ordinary differential equations.This course was formerly ME131A. Students who have already taken ME131A should not enroll in this course.

ME 131B. Fluid Mechanics: Compressible Flow and Turbomachinery. 4 Units.
Engineering applications involving compressible flow: aircraft and rocket propulsion, power generation; application of mass, momentum, energy and entropy balance to compressible flows; variable area isentropic flow, normal shock waves, adiabatic flow with friction, flow with heat addition. Operation of flow systems: the propulsion system. Turbomachinery: pumps, compressors, turbines. Angular momentum analysis of turbomachine performance, centrifugal and axial flow machines, effect of blade geometry, dimensionless performance of turbomachines; hydraulic turbines; steam turbines; wind turbines. Compressible flow turbomachinery: the aircraft engine. Prerequisites: 70, ENGR 30.

ME 132. Intermediate Thermodynamics. 4 Units.
A second course in engineering thermodynamics. Review of first and second laws, and the state principle. Extension of property treatment to mixtures. Chemical thermodynamics including chemical equilibrium, combustion, and understanding of chemical potential as a driving force. Elementary electrochemical thermodynamics. Coursework includes both theoretical and applied aspects. Applications include modeling and experiments of propulsion systems (turbojet) and electricity generation (PEM fuel cell). Matlab is used for quantitative modeling of complex energy systems with real properties and performance metrics. Prerequisites: ME30 required, ME70 suggested, ME131 desirable.

ME 133. Intermediate Fluid Mechanics. 3 Units.
This course expands on the introduction to fluid mechanics provided by ME70. Topics include the conservation equations and finite volume approaches to flow quantification; engineering applications of the Navier-Stokes equations for viscous fluid flows; flow instability and transition to turbulence, and basic concepts in turbulent flows, including Reynolds averaging; boundary layers, including the governing equations, the integral method, thermal transport, and boundary layer separation; fundamentals of computational fluid dynamics (CFD); basic ideas of one-dimensional compressible flows.

ME 139. Educating Young STEM Thinkers. 3-5 Units.
The course introduces students to the design thinking process, the national conversations about the future of STEM careers, and opportunities to work with middle school students and K-12 teachers in STEM-based after-school activities and intercession camps. The course is both theory and practice focused. The purpose is twofold; to provide reflection and mentoring opportunities for students to learn about pathways to STEM careers and to introduce mentoring opportunities with young STEM thinkers.
Same as: EDUC 239, ME 231

ME 140. Advanced Thermal Systems. 5 Units.
Capstone course. Thermal analysis and engineering emphasizing integrating heat transfer, fluid mechanics, and thermodynamics into a unified approach to treating complex systems. Mixtures, humidity, chemical and phase equilibrium, and availability. Labs apply principles through hands-on experience with a turbojet engine, PEM fuel cell, and hybrid solid/oxygen rocket motor. Use of MATLAB as a computational tool. Prerequisites: ENGR 30, ME 70, and 131A,B.

ME 141. Alternative Energy Systems. 5 Units.
Capstone course. Energy analysis, diagnostics and engineering of selected alternative energy systems with an integrated thermodynamic, heat transfer, and fluid mechanic approach. Mixtures, transport, reactions, electrochemical processes and photovoltaic effects. Labs apply principles through hands-on experience with selected alternative energy systems and their components. Use of MATLAB as an analysis tool.

ME 149. Mechanical Measurements. 3 Units.
The Mechanical Measurement experiments course introduces undergraduates to modern experimental methods in solid mechanics, fluid mechanics, and thermal sciences. A key feature of several of the experiments will be the integration of solid mechanics, fluid mechanics, and heat transfer principles, so that students gain an appreciation for the interplay among these disciplines in real-world problems.

ME 151. Introduction to Computational Mechanics. 4 Units.
In modern engineering design of structural systems, computer analysis is often used at every stage, from initial prototyping through final design. This course will introduce students to computational modeling and prototyping applied to solids and structures. The course reviews the basic theory of linear solid mechanics, introduces the finite element method for numerical modeling of mechanics-based problems, and provides practical experience in computer modeling using a commercial finite element code.

ME 152. Material Behaviors and Failure Prediction. 3 Units.
Exploration of mechanical behaviors of natural and engineered materials. Topics include anisotropic, elastoplastic and viscoelastic behaviors, fatigue and multiaxial failure criteria. Applications to biological materials and materials with natural or induced microstructures (e.g., through additive manufacturing). Prerequisite: ME80 or CEE101A.

ME 161. Dynamic Systems, Vibrations and Control. 3 Units.
Modeling, analysis, and measurement of mechanical and electromechanical dynamic systems. Closed form solutions of ordinary differential equations governing the behavior of single and multiple-degree-of-freedom systems. Stability, forcing, resonance, and control system design. Prerequisites: Ordinary differential equations (CME 102 or MATH 53), linear algebra (CME 104 or MATH 53) and dynamics (E 15) are recommended.

ME 170A. Mechanical Engineering Design- Integrating Context with Engineering. 4 Units.
First course of two-quarter capstone sequence. Working in project teams, design and develop an engineering system addressing a real-world problem in theme area of pressing societal need. Learn and utilize industry development process: first quarter focuses on establishing requirements and narrowing to top concept. Second quarter emphasizes implementation and testing. Learn and apply professional communication skills, assess ethics. Students must also enroll in ME170b; completion of 170b required to earn grade in 170a. Course sequence fulfills ME WIM requirement. Prerequisites: ENGR15, ME80, ME104 (112), ME131, ME123/151. (Cardinal Course certified by the Haas Center).

ME 170B. Mechanical Engineering Design: Integrating Context with Engineering. 4 Units.
Second course of two-quarter capstone sequence. Working in project teams, design and develop an engineering system addressing a real-world problem in theme area of pressing societal need. Learn and utilize industry development process: first quarter focuses on establishing requirements and narrowing to top concept. Second quarter emphasizes implementation and testing. Learn and apply professional communication skills, assess ethics. Students must have completed ME170a; completion of 170b required to earn grade in 170a. Course sequence fulfills ME WIM requirement. Prerequisites: ENGR15, ME80, ME112, ME131, ME123/151. (Cardinal Course certified by the Haas Center).

ME 177. Global Engineers' Education. 3 Units.
A project based course for those who would like to use their engineering backgrounds to address real world challenges faced by underserved communities globally. In direct collaboration with an underserved community from a rural village in India, students will develop engineering solutions to the challenge of sanitation and hygiene. Focus will be on working with the community rather than for them. Concepts covered will include designing with what designers care about at the center, articulating and realizing individual and community aspirations, ethics of engaging with underserved communities, and methodology of working sustainably with an underserved community.

ME 181. Deliverables: A Mechanical Engineering Design Practicum. 3 Units.
This course empowers you with the design process and confidence needed to tackle mechanical design challenges similar to those seen in industry. We will cover valuable design, manufacturing, assembly, and machine design content which you will apply to the weekly projects. These projects are simplified yet representative versions of typical mechanical design challenges seen in industry. You will submit authentic deliverables, such as cad models and technical drawings, and present those deliverables live in a ¿design review¿ format. With frequent feedback, reflection, revision, and repetition, you will refine these professional skills. By successfully completing this course you will bridge the gap between the lessons learned in school and the professional capabilities expected to be an effective engineer in industry. This course will be taught fully online AY21 Autumn Quarter. .

ME 182. Electric Transportation. 3 Units.
Transportation accounts for nearly one-third of American energy use and greenhouse gas emissions and three-quarters of American oil consumption. It has crucial impacts on climate change, air pollution, resource depletion, and national security. Students wishing to address these issues reconsider how we move, finding sustainable transportation solutions. An introduction to the issue, covering the past and present of transportation and its impacts; examining alternative fuel proposals; and digging deeper into the most promising option: battery electric vehicles. Energy requirements of air, ground, and maritime transportation; design of electric motors, power control systems, drive trains, and batteries; and technologies for generating renewable energy. Students will also have a fun opportunity for a hands-on experience with an electric car. Prerequisites: Introduction to calculus and Physics AP or elementary mechanics.

ME 191. Engineering Problems and Experimental Investigation. 1-5 Unit.
Directed study and research for undergraduates on a subject of mutual interest to student and staff member. Student must find faculty sponsor and have approval of adviser.

ME 191H. Honors Research. 1-5 Unit.
Student must find faculty honors adviser and apply for admission to the honors program.nn (Staff).

ME 195A. Food, Design & Technology. 1 Unit.
Food has been a great source of inspiration for many entrepreneurs and designers. In Silicon Valley, the number of food design solutions has increased tremendously. The goal of this course is to expose students to the landscape of food innovation and design. We will look at food in two different lenses--design and technology. In the first half of the course, students will learn the design thinking process through food. In the next half, students will explore various applications of the design thinking methodology in the real world. Students will do so by actively asking questions, participating in discussions, and engaging in hands-on activities led by industry leaders and experts. Weekly readings will be assigned.

ME 199A. Practical Training. 1 Unit.
For undergraduate students. Educational opportunities in high technology research and development labs in industry. Students engage in internship work and integrate that work into their academic program. Following internship work, students complete a research report outlining work activity, problems investigated, key results, and follow-up projects they expect to perform. Meets the requirements for curricular practical training for students on F-1 visas. Student is responsible for arranging own internship/employment and faculty sponsorship. Register under faculty sponsor's section number. All paperwork must be completed by student and faculty sponsor, as the Student Services Office does not sponsor CPT. Students are allowed only two quarters of CPT per degree program. Course may be repeated twice.

ME 203. Design and Manufacturing. 4 Units.
ME203 is intended for any graduate students who may want the opportunity to design and prototype a project of meaning to them. Undergraduate mechanical engineering and product design students should register for ME103.nnnME 203 will be taught on line through ZOOM and Canvas resources. Depending on evolving COVID-19 regulations, students may enjoy limited access to Product Realization Laboratory structured laboratory activities. The course will be organized in two chapters over 10 weeks. Chapter One, DESIGN, will commence with brainstorming, and conclude with a full product design presentation for the creation of a single unit including CAD models, Bill of Materials, and Operations Sequence. Chapter Two, MANUFACURING will commence with redesign for large scale manufacturing and end with a Manufacturing Design Plan including a Design for Manufacturability, a Bill of Materials, a recommendation for Manufacturing Processes, and a Unit Marginal Manufacturing Cost Estimate.

ME 206A. Design for Extreme Affordability. 4 Units.
Design for Extreme Affordability (fondly called Extreme) is a two-quarter course offered by the d.school through the School of Engineering and the Graduate School of Business. This multidisciplinary project-based experience creates an enabling environment in which students learn to design products and services that will change the lives of the world's poorest citizens. Students work directly with course partners on real world problems, the culmination of which is actual implementation and real impact. Topics include design thinking, product and service design, rapid prototype engineering and testing, business modelling, social entrepreneurship, team dynamics, impact measurement, operations planning and ethics. Possibility to travel overseas during spring break. Previous projects include d.light, Driptech, Earthenable, Embrace, the Lotus Pump, MiracleBrace, Noora Health and Sanku. Periodic design reviews; Final course presentation and expo; industry and adviser interaction. Limited enrollment via application. Must sign up for ME206A and ME206B. See extreme.stanford.edu.

ME 206B. Design for Extreme Affordability. 4 Units.
Design for Extreme Affordability (fondly called Extreme) is a two-quarter course offered by the d.school through the School of Engineering and the Graduate School of Business. This multidisciplinary project-based experience creates an enabling environment in which students learn to design products and services that will change the lives of the world's poorest citizens. Students work directly with course partners on real world problems, the culmination of which is actual implementation and real impact. Topics include design thinking, product and service design, rapid prototype engineering and testing, business modelling, social entrepreneurship, team dynamics, impact measurement, operations planning and ethics. Possibility to travel overseas during spring break. Previous projects include d.light, Driptech, Earthenable, Embrace, the Lotus Pump, MiracleBrace, Noora Health and Sanku. Periodic design reviews; Final course presentation and expo; industry and adviser interaction. Limited enrollment via application. Must sign up for ME206A and ME206B. See extreme.stanford.edu.

ME 207. Movie Design. 2 Units.
Learn the ins and outs of high-speed filmmaking in the digital age; writing, directing, shooting, and editing. We¿ll do it through a rapid prototyping approach to filmmaking. Whether you have tons of experience or none, you¿ll leave with new tactics that will up your storytelling, filmmaking, and design chops simultaneously. These techniques are useful whether you plan to move to Hollywood or create a video for the web.nn Project-based: students will design, write, shoot, edit, and screen a short film in the span of one week. It¿s going to be quick but intense, kind of like cross-fit for your storytelling and video creating muscles. You¿ll sweat a bit, but you¿ll feel confident afterwards. Students should be prepared to spend significant amount of out of class work-time creating movies: for one week + one weekend, see "Notes" for specific dates. Admission by application. See dschool.stanford.edu/classes for more information.

ME 208. Patent Law and Strategy for Innovators and Entrepreneurs. 2-3 Units.
This course teaches the essentials for a startup to build a valuable patent portfolio and avoid a patent infringement lawsuit. Jeffrey Schox, who is the top recommended patent attorney for Y Combinator, built the patent portfolio for Twilio (IPO), Cruise ($1B acquisition), and 300 startups that have collectively raised over $3B in venture capital. This course is equally applicable to EE, CS, and Bioengineering students. For those students who are interested in a career in Patent Law, please note that this course is a prerequisite for ME238 Patent Prosecution.
Same as: MS&E 278

ME 209. Imperfections in Crystalline Solids. 3 Units.
To develop a basic quantitative understanding of the behavior of point, line and planar defects in crystalline solids. Particular attention is focused on those defects that control the thermodynamic, structural and mechanical properties of crystalline materials.

ME 210. Introduction to Mechatronics. 4 Units.
Technologies involved in mechatronics (intelligent electro-mechanical systems), and techniques to apply this technology to mecatronic system design. Topics include: electronics (A/D, D/A converters, op-amps, filters, power devices); software program design, event-driven programming; hardware and DC stepper motors, solenoids, and robust sensing. Large, open-ended team project. Prerequisites: ENGR 40, CS 106, or equivalents.
Same as: EE 118

ME 211. Psychology of Design: Experience and Thinking about Thinking in Design. 2 Units.
In this class, you will go through various design activities with a specific focus on your thinking, perception, and feelings. This will be a ten-week intensive course on practicing and experiencing your (self-)awareness through observing, assessing, documenting, and reflecting on your modes of thinking and related activities in specific environments.The course aims to help you develop your own strategies to be more in control of your thoughts, feelings, motivations, and actions.

ME 215C. Analytical Product Design. 4 Units.
Analytical design experience for consumer product. Integration of models of engineering function, manufacturing costs, and market conditions. Introduction to modeling micro economics, market models, and consumer surveying as applied in product design. Introduction to consumer product cost modeling. Draw from other coursework to build engineering function model. Student teams build and link these models in an optimization framework to maximize profitability. Build prototypes for engineering function and form expression.
Same as: APD

ME 216A. Advanced Product Design: Needfinding. 4 Units.
Human needs that lead to the conceptualization of future products, environments, systems, and services. Field work in public and private settings; appraisal of personal values; readings on social ethnographic issues; and needfinding for a corporate client. Emphasis is on developing the flexible thinking skills that enable the designer to navigate the future. Prerequisites for undergraduates: ME115A, ME115B and ME203, or consent of the instructor. AY21 only, concurrent enrollment in 216B is required for Product Design majors.

ME 216B. Advanced Product Design: Implementation 1. 4 Units.
Team-based capstone project using knowledge, methodology, and skills obtained in the Product Design major. Students implement an original design concept and present it to a professional jury. AY21 only, concurrent enrollment in 216A is required.

ME 216C. Advanced Product Design: Implementation 2. 4 Units.
Implementation II is a continuation of ME216B. Students will complete the development process and make their product 'real in the world' in ways that are appropriate to the type of product being developed. Prerequisite: 216A and ME216B.

ME 216M. Introduction to the Design of Smart Products. 3-4 Units.
This course will focus on the technical mechatronic skills as well as the human factors and interaction design considerations required for the design of smart products and devices. Students will learn techniques for rapid prototyping of smart devices, best practices for physical interaction design, fundamentals of affordances and signifiers, and interaction across networked devices. Students will be introduced to design guidelines for integrating electrical components such as PCBs into mechanical assemblies and consider the physical form of devices, not just as enclosures but also as a central component of the smart product. Prerequisites include: CS106A and E40 highly recommended, or instructor approval.
Same as: CS 377N

ME 218A. Smart Product Design Fundamentals. 4-5 Units.
Lecture/Lab. First in the team design project series on programmable electromechanical systems design. Topics: transistors as switches, basic digital circuits, C language features for embedded software, register level programming, input/output ports and user I/O, hardware abstraction layers, software design, event driven programming, state machines, state charts. Programming of the embedded system is done in C. Students must have a computer (Win10 or OSX) on which they can install the tools used in the classes and a workspace to complete the lab assignments (in case the lab is closed due to COVID). Lab fee. Limited Enrollment, must attend first lecture session. Prerequisite: You should have had a programming course taught in C, C++ or Java and an introductory course in circuit analysis prior to enrolling in ME218a. Loaner test instruments will be provided in the event that the lab is closed due to COVID.

ME 218B. Smart Product Design Applications. 4-5 Units.
Lecture/lab. Second in team design project series on programmable electromechanical systems design. Topics: More microcontroller hardware subsystems: timer systems, PWM, interrupts; analog circuits, operational amplifiers, comparators, signal conditioning, interfacing to sensors, actuator characteristics and interfacing, noise, and power supplies. Lab fee. Limited enrollment. Prerequisite: 218A or passing the smart product design fundamentals proficiency examination.

ME 218C. Smart Product Design Practice. 5 Units.
Lecture/lab. Third in the series on programmable electromechanical systems design. Topics: inter-processor communication, communication protocols, system design with multiple microprocessors, architecture and assembly language programming for the PIC microcontroller, controlling the embedded software tool chain, A/D and D/A techniques. Team project. Lab fee. Limited enrollment. Prerequisite: 218B.

ME 218D. Smart Product Design: Projects. 3-4 Units.
Lecture/lab. Industrially sponsored project is the culmination of the Smart Product Design sequence. Student teams take on an industrial project requiring application and extension of knowledge gained in the prior three quarters, including prototyping of a final solution with hardware, software, and professional documentation and presentation. Lectures extend the students' knowledge of electronic and software design, and electronic manufacturing techniques. Topics: chip level design of microprocessor systems, real time operating systems, alternate microprocessor architectures, and PCB layout and fabrication. Prerequisite: 218C.

ME 219. The Magic of Materials and Manufacturing. 3 Units.
ME219 is intended for students who anticipate imagining and creating new products and who are interested in how to make the leap from making one to making many. Through a combination of lectures, weekly factory field trips, and multimedia presentations the class will help students acquire foundational professional experience with materials and materiality, manufacturing processes, and the business systems inside factories. We hope to instill in students a deep and life-long love of materials and manufacturing in order to make great products and tell a good story about each one. This class assumes basic knowledge of materials and manufacturing processes which result from taking ENGR 50, ME203, or equivalent course or life experience.nnnME219 will be taught on-line through Zoom and Canvas resources. There may be limited Product Realization Lab access depending on changing COVID-19 regulations. Regardless, students will each receive a kit consisting of tools and consumer products suitable for product deconstruction.

ME 220. Introduction to Sensors. 4 Units.
Sensors are widely used in scientific research and as an integral part of commercial products and automated systems. The basic principles for sensing displacement, force, pressure, acceleration, temperature, optical radiation, nuclear radiation, and other physical parameters. Performance, cost, and operating requirements of available sensors. Elementary electronic circuits which are typically used with sensors. Lecture demonstration of a representative sensor from each category elucidates operating principles and typical performance. Lab experiments with off-the-shelf devices. Recommended Pre-requisites or equivalent knowledge: Physics 43 electromagnetism, Physics 41 mechanics, Math 53 Taylor series approximation, 2nd order Ordinary Diff Eqns, ENGR40A/ Engr40 or ME210, i.e. some exposure to building basic circuits.

ME 225. Scaling Your Vision. 3 Units.
Scaling Your Vision is intended for design and engineering oriented students who anticipate or have an interest in launching products. Where the cousin of this class, ME219, is an overview of fabrication and factory systems, this course explores how to go from vision to reality, and from parts to products. We'll explore the systems that enable us to design and produce high-quality products, at scale, at reasonable prices, including quality systems, supply chains, and different ways of conveying intent to factories. Students will acquire a professional foundation in the business of manufacturing through readings, in-class discussion, and roughly one-a-week team projects.

ME 227. Vehicle Dynamics and Control. 3 Units.
The application of dynamics, kinematics, and control theory to the analysis and design of ground vehicle behavior. Simplified models of ride, handling, and braking, their role in developing intuition, and limitations in engineering design. Suspension design fundamentals. Performance and safety enhancement through automatic control systems. In-car laboratory assignments for model validation and kinesthetic understanding of dynamics. Limited enrollment. Prerequisites: ENGR 105, consent of instructor.

ME 228. The Future of Mechanical Engineering. 1 Unit.
This seminar series provides an overview of current and emerging research topics in mechanical engineering and its application to engineering and scientific problems. The seminar is targeted at senior mechanical engineering undergraduates and mechanical engineering graduate students. Presenters will be selected external speakers who feature exciting and cutting-edge research of mechanical engineering.

ME 231. Educating Young STEM Thinkers. 3-5 Units.
The course introduces students to the design thinking process, the national conversations about the future of STEM careers, and opportunities to work with middle school students and K-12 teachers in STEM-based after-school activities and intercession camps. The course is both theory and practice focused. The purpose is twofold; to provide reflection and mentoring opportunities for students to learn about pathways to STEM careers and to introduce mentoring opportunities with young STEM thinkers.
Same as: EDUC 239, ME 139

ME 232. Additive Manufacturing- From Fundamentals to Applications. 3 Units.
Additive manufacturing (AM) is an emerging technique for direct conversion of 3D computer aided designs into physical objects using a variety of approaches. AM technologies are simple and flexible processes that allow for the creation of very complex and customizable 3D objects in just a few process steps. This lecture gives an overview of available processes and current research in additive manufacturing. Students will get to know how AM can change the way we prototype and manufacture products in the future.

ME 233. Data-driven modeling of COVID-19. 3 Units.
How to design computational tools to understand the dynamics of the COVID-19 pandemic. Emphasis on mathematical epidemiology, infectious disease models, concepts of effective reproduction number and herd immunity, network modeling, outbreak dynamics and outbreak control, Bayesian methods, model calibration and validation, prediction and uncertaintly quantification; Projects on statistic or mechanistic modeling of COVID-19.

ME 234. Introduction to Neuromechanics. 3 Units.
Understanding the role of mechanics in brain development, physiology, and pathology. Mechanics of brain cells: neurons, mechanobiology, mechanotransduction. Mechanics of brain tissue: experimental testing, constitutive modeling, computational modeling. Mechanics of brain development: gyrification, cortical folding, axon elongation, lissencephaly, polymicrogyria. Mechanics of traumatic brain injury: high impact loading, neural injury. Mechanics of brain tumors, brain cancer, tumor growth, altered cytoskeletal mechanics. Mechanics of neurological disorders: autism, dementia, schizophrenia. Mechanics of brain surgery.

ME 235. Biotransport Phenomena. 3 Units.
The efficient transport of energy, mass, and momentum is essential to the normal function of living systems. Changes in these processes often result in pathological conditions. Transport phenomena are also critical to the design of instrumentation and devices for medical applications and biotechnology. The course aims to provide an introduction to the integrated study of transport processes and their biological applications. It covers the fundamental driving forces for transport in biological systems and the biophysics across a range of length scales from molecules, cells, tissues, organs to whole organisms. Topics covered include chemical gradients, electrical interactions, fluid flow and mass transport.

ME 236. Tales to Design Cars By. 1-3 Unit.
Students learn to tell personal narratives and prototype connections between popular and historic media using the automobile. Explores the meaning and impact of personal and preserved car histories. Storytelling techniques serve to make sense of car experiences through engineering design principles and social learning, Replay memories, examine engagement and understand user interviews, to design for the mobility experience of the future. This course celebrates car fascination, and leads the student through finding and telling a car story through the REVS photographic archives, ethnographic research, interviews, and diverse individual and collaborative narrative methods-verbal, non-verbal, and film. Methods draw from socio-cognitive psychology design thinking, and fine art; applied to car storytelling. Course culminates in a final story presentation and showcase. Restricted to co-term and graduate students. Class Size limited to 18.

ME 238. Patent Prosecution. 2-3 Units.
The course follows the patent application process through the important stages: inventor interviews, patentability analysis, drafting claims, drafting a specification, filing a patent application, and responding to an office action. The subject matter and practical instruction relevant to each stage are addressed in the context of current rules and case law. The course includes four written assignments: an invention capture, a claim set, a full patent application, and an Office Action response.Pre-requisites: Law 326 (IP.Patents), Law 409 (Intro IP), ME 208, or MS&E 278.

ME 241. Mechanical Behavior of Nanomaterials. 3 Units.
Mechanical behavior of the following nanoscale solids: 2D materials (metal thin films, graphene), 1D materials (nanowires, carbon nanotubes), and 0D materials (metallic nanoparticles, quantum dots). This course will cover elasticity, plasticity and fracture in nanomaterials, defect-scarce nanomaterials, deformation near free surfaces, coupled optoelectronic and mechanical properties (e.g. piezoelectric nanowires, quantum dots), and nanomechanical measurement techniques. Prerequisites: Mechanics of Materials (ME80) or equivalent.
Same as: MATSCI 241

ME 242B. Mechanical Vibrations. 3 Units.
For M.S.-level graduate students. Covers the vibrations of discrete systems and continuous structures. Introduction to the computational dynamics of linear engineering systems. Review of analytical dynamics of discrete systems; undamped and damped vibrations of N-degree-of-freedom systems; continuous systems; approximation of continuous systems by displacement methods; solution methods for the Eigenvalue problem; direct time-integration methods. Prerequisites: AA 242A or equivalent (recommended but not required); basic knowledge of linear algebra and ODEs; no prior knowledge of structural dynamics is assumed.
Same as: AA 242B

ME 243. Designing Emotion: for Reactive Car Interfaces. 1-3 Unit.
Students learn to define emotions as physiology, expression, and private experience using the automobile and shared space. Explores the meaning and impact of personal and user car experience. Reflective, narrative, and socio-cognitive techniques serve to make sense of mobility experiences; replay memories; examine engagement; understand user interviews. This course celebrates car fascination and leads the student through finding and telling the car experience through discussion, ethnographic research, interviews, and diverse individual and collaborative narrative methods-verbal, non-verbal, and in car experiences. Methods draw from socio-cognitive psychology, design thinking, and fine art, and are applied to the car or mobility experience. Course culminates in a final individual narrative presentation and group project demonstration. Class size limited to 18.

ME 244. Mechanotransduction in Cells and Tissues. 3 Units.
Mechanical cues play a critical role in development, normal functioning of cells and tissues, and various diseases. This course will cover what is known about cellular mechanotransduction, or the processes by which living cells sense and respond to physical cues such as physiological forces or mechanical properties of the tissue microenvironment. Experimental techniques and current areas of active investigation will be highlighted. This class is for graduate students only.
Same as: BIOE 283, BIOPHYS 244

ME 246. Demand Modeling for Transportation. 1 Unit.
Predicting human behavior in the future is key to the success of businesses and policies, whether it's predicting how many new products will be sold next year, or how many people will want to cross a bridge next month. This seminar explores key strategies that demand planners use to predict the future, from travel surveys, observational data and interventions. Students will learn basic techniques, considerations when implementing them, and hear from practitioners applying demand modeling in transportation-specific roles.

ME 250. Internal Combustion Engines. 1-5 Unit.
Internal combustion engines including conventional and turbocharged spark ignition, and diesel engines. Lectures: basic engine cycles, engine components, methods of analysis of engine performance, pollutant emissions, and methods of engine testing. Lab involves hands-on experience with engines and test hardware. Limited enrollment. Prerequisites: 140.

ME 257. Gas-Turbine Design Analysis. 3 Units.
This course is concerned with the design analysis of gas-turbine engines. After reviewing essential concepts of thermo- and aerodynamics, we consider a turbofan gas-turbine engine that is representative of a business aircraft. We will first conduct a performance analysis to match the engine design with aircraft performance requirements. This is followed by examining individual engine components, including compressor, combustor, turbines, and nozzles, thereby increase the level of physical description. Aspects of modern engine concepts, environmental impacts, and advanced engine-analysis methods will be discussed. Students will have the opportunity to develop a simulation code to perform a basic design analysis of a turbofan engine. Course Prerequisites: ENGR 30, ME 70, ME 131B, CME 100.
Same as: ME 357

ME 258. Fracture and Fatigue of Materials and Thin Film Structures. 3 Units.
Linear-elastic and elastic-plastic fracture mechanics from a materials science perspective, emphasizing microstructure and the micromechanisms of fracture. Plane strain fracture toughness and resistance curve behavior. Mechanisms of failure associated with cohesion and adhesion in bulk materials, composites, and thin film structures. Fracture mechanics approaches to toughening and subcritical crack-growth processes, with examples and applications involving cyclic fatigue and environmentally assisted subcritical crack growth. Prerequisite: 151/251, 198/208, or equivalent. SCPD offering.
Same as: MATSCI 358

ME 262. Physics of Wind Energy. 3 Units.
Formerly CEE 261. An introduction to the analysis and modeling of wind energy resources and their extraction. Topics include the physical origins of atmospheric winds; vertical profiles of wind speed and turbulence over land and sea; the wind energy spectrum and its modification by natural topography and built environments; theoretical limits on wind energy extraction by wind turbines and wind farms; modeling of wind turbine aerodynamics and wind farm performance. Final project will focus on development of a new wind energy technology concept. Prerequisites: CEE 262A or ME 351A.
Same as: CEE 261B, ENERGY 262

ME 263. The Chair. 4 Units.
Students design and fabricate a highly refined chair. The process is informed and supported by historical reference, anthropometrics, form studies, user testing, material investigations, and workshops in wood steam-bending, plywood forming, metal tube bending, TIG & MIG welding, upholstery & sewing. Due to COVID-19 restrictions during AY20-21, in-person use of the Product Realization Lab may be limited or not permitted. In this case class will consist of asynchronous lectures and online coaching meetings and office hours. Prerequisite: ME203 or consent of instructor. May be repeated for credit.

ME 265. Technology Licensing and Commercialization. 3 Units.
Course focuses on how to bridge the gap between creation and commercialization with new ideas, inventions, and technology (not limited to mechanical engineering). Comprehensive introduction to patents, copyrights, trademarks, and trade secrets. Covers business strategies and legal aspects of determining what can be owned and licensed, how to determine commercial value, and what agreements and other paperwork is necessary. Discussion includes aspects of Contract and Intellectual Property law as well as provisions of license agreements, NDAs, and their negotiation. All materials provided including many sample documents.

ME 267. Ethics and Equity in Transportation Systems. 3 Units.
Transportation is a crucial element of human life. It enables communication with others, provides access to employment / economic opportunity, and transports goods upon which we depend. However, transportation also generates negative impacts: pollution, noise, energy consumption and risk to human life. Because of its enormous capability to affect our lives, transportation is one of the most highly regulated businesses in the world. These regulations are designed to promote social welfare, improve access, and protect vulnerable populations. This course examines the origins and impacts of transportation policy and regulation: who benefits, who bears the cost, and how social and individual objectives are achieved.

ME 268. Robotics, AI and Design of Future Education. 1 Unit.
The seminar will feature guest lectures from industry and academia to discuss the state of the affairs in the field of Robotics, Artificial Intelligence (AI), and how that will impact the future Education. The time of robotics/AI are upon us. Within the next 10 to 20 years, many jobs will be replaced by robots/AI. We will cover hot topics in Robotics, AI, how we prepare students for the rise of Robotics/AI, how we Re-design and Re-invent our education to adapt to the new era.
Same as: EDUC 468

ME 270A. The Changing Energy Landscape in Europe. 3 Units.
Students will learn about the most daunting challenge of our times: Global Climate Change. This course will offer insights at the interface between environmental challenges, environmental policy, economics, and technology in Europe. Not surprisingly, nations differ in their response to the challenge. Recognizing there is no simple and unique answer to the overarching challenge, students will begin to better understand that vested interests may slow down rapid, but inevitable environmental action. Open to senior undergrads and all graduate levels.

ME 277. Graduate Design Research Techniques. 3-4 Units.
Students from different backgrounds work on real-world design challenges. The Design Thinking process with emphasis on: ethnographic techniques, needfinding, framing and concept generation. The Design Thinking process as a lens to explore ways to better understand people and their culture. Cultural differences as a source of design inspiration, with the understanding that design itself is a culturally embedded practice.

ME 281. Biomechanics of Movement. 3 Units.
Experimental techniques to study human and animal movement including motion capture systems, EMG, force plates, medical imaging, and animation. The mechanical properties of muscle and tendon, and quantitative analysis of musculoskeletal geometry. Projects and demonstrations emphasize applications of mechanics in sports, orthopedics, and rehabilitation.
Same as: BIOE 281

ME 283. Introduction to Biomechanics and Mechanobiology. 3 Units.
Introduction to the mechanical analysis of tissues (biomechanics), and how mechanical cues play a role in regulating tissue development, adaptation, regeneration, and aging (mechanobiology). Topics include tissue viscoelasticity, cardiovascular biomechanics, blood rheology, interstitial flow, bone mechanics, muscle contraction and mechanics, and mechanobiology of the musculoskeletal system. Undergraduates should have taken ME70 and ME80, or equivalent courses.

ME 285. Computational Modeling in the Cardiovascular System. 3 Units.
This course introduces computational modeling methods for cardiovascular blood flow and physiology. Topics in this course include analytical and computational methods for solutions of flow in deformable vessels, one-dimensional equations of blood flow, cardiovascular anatomy, lumped parameter models, vascular trees, scaling laws, biomechanics of the circulatory system, and 3D patient specific modeling with finite elements; course will provide an overview of the diagnosis and treatment of adult and congenital cardiovascular diseases and review recent research in the literature in a journal club format. Students will use SimVascular software to do clinically-oriented projects in patient specific blood flow simulations. Pre-requisites: CME102, ME133 and CME192.
Same as: BIOE 285, CME 285

ME 287. Mechanics of Biological Tissues. 4 Units.
Introduction to the mechanical behaviors of biological tissues in health and disease. Overview of experimental approaches to evaluating tissue properties and mathematical constitutive models. Elastic behaviors of hard tissues, nonlinear elastic and viscoelastic models for soft tissues.

ME 296. Survey of Mechanical Engineering. 1 Unit.
Introduces students to a variety of topics relevant for graduate study in mechanical engineering, includng technical topics representing the breadth of the field, modern tools and techniques, future directions in research and development, and the roles of diversity and innovation. Students will work with the instructor to develop an individualized plan to attend relevant seminars, and meet biweekly as a group to present and discuss findings. Attendance and active participation is required for group meetings.

ME 297. Forecasting for Innovators: Exponential Technologies, Tools and Social Transformation. 3 Units.
This class will employ a suite of quantitative and qualitative foresight methods to understand the future of exponential technologies and their impact. This year, we will develop an integrated forecast of the COVID-19 pandemic¿s long-term trajectory, explore its implications and working as teams translate our insights into innovation opportunities. Specifically, students will develop a long-range forecast, learning and applying a variety of methodologies including scenario planning, cross-impact analysis, expert judgement elicitation and design thinking tools.

ME 298. Silversmithing and Design. 3-4 Units.
Skills involved in working with precious metals at a small scale. The course gives equal attention to design and the techniques involved in investment casting. Winter '21 ME298 will be taught as an online-only course, with no in person teaching. However deliverable items will be exchanged at a pickup/drop off location at the PRL at several times during the quarter.

ME 299A. Practical Training. 1 Unit.
For master's students. Educational opportunities in high technology research and development labs in industry. Students engage in internship work and integrate that work into their academic program. Following internship work, students complete a research report outlining work activity, problems investigated, key results, and follow-up projects they expect to perform. Meets the requirements for curricular practical training for students on F-1 visas. Student is responsible for arranging own internship/employment and faculty sponsorship. Register under faculty sponsor's section number. All paperwork must be completed by student and faculty sponsor, as the Student Services Office does not sponsor CPT. Students are allowed only two quarters of CPT per degree program. Course may be repeated twice.

ME 299B. Practical Training. 1 Unit.
For Ph.D. students. Educational opportunities in high technology research and development labs in industry. Students engage in internship work and integrate that work into their academic program. Following internship work, students complete a research report outlining work activity, problems investigated, key results, and follow-up projects they expect to perform. Meets the requirements for curricular practical training for students on F-1 visas. Student is responsible for arranging own internship/employment and faculty sponsorship. Register under faculty sponsor's section number. All paperwork must be completed by student and faculty sponsor, as the student services office does not sponsor CPT. Students are allowed only two quarters of CPT per degree program. Course may be repeated twice.

ME 300A. Linear Algebra with Application to Engineering Computations. 3 Units.
Computer based solution of systems of algebraic equations obtained from engineering problems and eigen-system analysis, Gaussian elimination, effect of round-off error, operation counts, banded matrices arising from discretization of differential equations, ill-conditioned matrices, matrix theory, least square solution of unsolvable systems, solution of non-linear algebraic equations, eigenvalues and eigenvectors, similar matrices, unitary and Hermitian matrices, positive definiteness, Cayley-Hamilton theory and function of a matrix and iterative methods. Prerequisite: familiarity with computer programming, and MATH51.
Same as: CME 200

ME 300B. Partial Differential Equations in Engineering. 3 Units.
Geometric interpretation of partial differential equation (PDE) characteristics; solution of first order PDEs and classification of second-order PDEs; self-similarity; separation of variables as applied to parabolic, hyperbolic, and elliptic PDEs; special functions; eigenfunction expansions; the method of characteristics. If time permits, Fourier integrals and transforms, Laplace transforms. Prerequisite: CME 200/ME 300A, equivalent, or consent of instructor.
Same as: CME 204

ME 300C. Introduction to Numerical Methods for Engineering. 3 Units.
Numerical methods from a user's point of view. Lagrange interpolation, splines. Integration: trapezoid, Romberg, Gauss, adaptive quadrature; numerical solution of ordinary differential equations: explicit and implicit methods, multistep methods, Runge-Kutta and predictor-corrector methods, boundary value problems, eigenvalue problems; systems of differential equations, stiffness. Emphasis is on analysis of numerical methods for accuracy, stability, and convergence. Introduction to numerical solutions of partial differential equations; Von Neumann stability analysis; alternating direction implicit methods and nonlinear equations. Prerequisites: CME 200/ME 300A, CME 204/ME 300B.
Same as: CME 206

ME 301. LaunchPad:Design and Launch your Product or Service. 4 Units.
This is an intense course in product design and development offered to graduate students only (no exceptions). In just ten weeks, we will apply principles of design thinking to the real-life challenge of imagining, prototyping, testing and iterating, building, pricing, marketing, distributing and selling your product or service. You will work hard on both sides of your brain. You will experience the joy of success and the (passing) pain of failure along the way. This course is an excellent chance to practice design thinking in a demanding, fast-paced, results-oriented group with support from faculty and industry leaders. This course may change your life. We will treat each team and idea as a real start-up, so the work will be intense. If you do not have a passionate and overwhelming urge to start a business or launch a product or service, this class will not be a fit. Refer to this website for up-to-date class and office hours information: https://www.launchpad.stanford.edu/.

ME 302B. The Future of the Automobile- Driver Assistance and Automated Driving. 1 Unit.
This course provides a holistic overview over the field of vehicle automation. The course starts with the history of vehicle automation and then introduces key terminology and taxonomy. Guest lecturers present the legal and policy aspects of vehicle automation both on the federal and state level. Then, the state of the art in vehicle automation is provided. This includes sensor and actuator technology as well as the driver assistance technology in cars today. Finally, the technology currently being developed for future highly and fully automated vehicles is described, including a high-level introduction of the software and algorithms used as well as HMI and system aspects. Students are asking to work in groups on a current topic related to vehicle automation and present their findings in the final two classes in a short presentation.

ME 302C. The Future of the Automobile- Mobility Entrepreneurship. 1 Unit.
The objective of this course is to develop an understanding for the requirements that go into the design of a highly complex yet easy-to-use product, i.e. the automobile. Students will learn about very different interdisciplinary aspects that characterize the automobile and personal mobility. This is part of a multi-quarter seminar series, which build on one another but can be taken independently. This quarter, students will learn from 10 different founders / C-level executives about how they built their mobility startup to change the world of transportation. Previous classes included speakers from Tesla, Lyft, Pearl Auto, Turo, Nauto. In hearing these founder stories, students will get an insight not only into the world of entrepreneurship but also the multidisciplinary nature of the transportation industry. The course consists of 50-minute discussions with founders, with students encouraged to participate and ask questions of the founders. To obtain credit, students must attend 8 out of 10 classes including the first class.

ME 304D. Designing Your Life. 1 Unit.
The course employs a design thinking approach to help fellows develop a point of view about their life and career. The course focuses on an introduction to design thinking, the integration of work and worldview, and practices that support vocation formation. Includes seminar-style discussions, role-playing, short writing assignments, guest speakers, and individual mentoring and coaching. Open to DCI (Distinguished Career Institute) Fellows only. Additional course information at http://www.designingyourlife.org.

ME 306A. Engineering Design Theory in Practice. 3 Units.
What is high performance in design? How could you improve your performance as a designer? Theories and frameworks from research into engineering design and design thinking are translated into action for developing insights into your design behavior and to develop strategies to improve design performance. Focus on performance in four aspects of design thinking: design as social activity, cognitive activity, physical activity and learning activity. Practice of effective team behaviors for concept generation, decision-making, and conflict-handling. Cognitive strategies from design as problem-solving, design as reflection-in-action, and C-K Theory. Prototyping performance improvements through media cascade and boundary object frameworks. Application of Perception-Action framework for improving self-learning in design. Students engage in multiple projects and a lab component.

ME 306B. Engineering-Design Capital-Formation Theory in Practice. 1-3 Unit.
Engineers, Scientists, Entrepreneurs, and Investors tasked with the intentional creation and delivery of new knowledge, products, services, and experiences to large markets need an understanding of the capital formation process. Students will learn frameworks and theories underlying design thinking for capital formation. Four perspectives will be considered ¿ design as cognitive agility, design as social alignment, design as reflective awareness, and design as multiphase flow. Students will practice high performance team behaviors for capital formation, and they will engage in multiple projects to apply theories to practical situations.

ME 308. Carbon Dioxide and Methane Removal, Utilization, and Sequestration. 1 Unit.
This is a seminar on carbon dioxide and methane removal, utilization, and sequestration options, and their role in decarbonizing the global energy system. This course will cover topics including the global carbon balance, utilizing atmospheric carbon in engineered solutions, recycling and sequestering fossil-based carbon, and enhancing natural carbon sinks. The multidisciplinary lectures and discussions will cover elements of technology, economics, policy and social acceptance, and will be led by a series of guest lecturers. Short group project on carbon solutions. Same as: EARTHSYS 308, ENERGY 308, ENVRES 295, ESS 308

ME 310A. Global Engineering Design Thinking, Innovation, and Entrepreneurship. 4 Units.
The ME310ABC sequence immerses students in a real-world, globally distributed engineering design experience in the spirit of a Silicon Valley start-up teaching them to manage the chaos and ambiguity inherent in professional design .nTeams of 3-4 Stanford graduate students partner with a similar team at an international university to work on industry-funded design challenges to deliver breakthrough innovation prototypes (http://expe.stanford.edu). Designnchallenges are typically at the HUMAN INTERFACE to Robots, AI, Internet of Things, Autonomous vehicles, and Smart Cities. In ME310A you will learn HUMAN-CENTRIC Design-Thinking with the guidance of a teaching team that includesn3 faculty, expert industry coaches, and academic staff. Your team will explore the problem & solutions spaces using strategic-foresight, design thinking, team-dynamics-management, rapid prototyping, and human-centric problem reframing.

ME 310B. Global Engineering Design Thinking, Innovation, and Entrepreneurship. 4 Units.
ME310B builds on the experience of ME310A. You will learn engineering design-creativity focused on RE-EXPLORING the Problem and Solution spaces using strategic-foresight, design thinking, team-dynamics-management, rapid prototyping, and human-centric problem/solution RE-FRAMING. Your will collaborate with academic partners to create and present end-of-quarter deliverables as you continue working towards the final prototype deliverables duennin June (http://expe.stanford.edu). You are expected to take the ME310ABC sequence. You team members will receive the same grade for ABC. Prerequisite: ME310A.

ME 310C. Global Engineering Design Thinking, Innovation, and Entrepreneurship. 4 Units.
ME310C builds on ME310AB . You will learn to apply pre-production manufacturing techniques dedicated to making your ideas real and testing them with real users to demonstrate serious credibility. Collaborate with academic partners to create and present end-of-quarter deliverables. In June, teams present their results to the world at the Stanford Design EXPErience, a celebratory symposium and exposition where industry liaisons, Silicon Valley professionals, and others converge to explore the final product prototypes. You are expected to take the ME310ABCnnsequence. Your team members will receive the same grade for ABC. Prerequisite: ME310B.

ME 311. Leading Design Teams. 3 Units.
This class teaches students how to be an effective design team leader using the construct of a multifunction new product development (NPD) team and conceptually places students as the leader of a NPD team - the Product Manager. Topics include leadership self-awareness, a review of various leadership styles and skills in diagnosing team dynamics. The understanding and motivation of non-design engineering members of an NPD team (i.e., Sales, Marketing, Finance, HR) will be explored. Classroom activity will include interactive discussion of case studies, hands-on practice of skills, simulations, outside speakers and team presentations. Homework will include case study and source material reading, weekly reflection journals and outside research. A summary presentation of a leadership exemplar will serve as the final exam.

ME 312. Communication in Design. 3 Units.
Communication of design information, ideas, and concepts is central to successful design projects. In this course you will learn about various forms of communication and when/how to apply them in the design process. Topics covered include: structuring communication, selecting key points to communicate, communicating technical information to a non-technical audience. Approaches include: videography, presentations, public speaking. Visual approaches: sketching, storyboarding, journey maps, figures and charts. This course does not cover within-team communication.

ME 313. Human Values and Innovation in Design. 3 Units.
Introduction to the philosophy and practice of the Design Impact program. Hands-on design projects are used as vehicles for learning design thinking's tools and methodology. The relationships among technical, human, aesthetic, and business concerns, and drawing, prototyping, and story-telling a will be explored. The focus is on design thinking process and mindsets including: empathy, point of view, ideation, prototyping and testing. For master's students in the Design Impact program only. For a general introduction to design thinking, see ME 377: Design Thinking Studio, taught Autumn and Winter quarters.

ME 315. The Designer in Society. 3 Units.
This class focuses on individuals and their psychological wellbeing. The class delves into how students perceive themselves and their work, and how they might use design thinking to lead a more creative and committed life. As a participant you read parts of a different book each week and then engage in exercises designed to unlock learnings. In addition, there are two self-selected term projects dealing with eliminating a problem from your life and doing something you have never done before. Apply the first day during class. Attendance at the first session is mandatory.

ME 316A. Design Impact Master's Project I. 2-4 Units.
ME316A, also known as the Idea to Impact class is a Fall/Winter class and a two-quarter commitment is required. The class is a deep dive in design thinking that uses student-led projects to teach design process and methods, based on the themes of Empathic Autonomy in Healthcare, and Empowering Power in Energy. Students will learn the methodologies of design thinking by bringing a product, service, or user-experience design to fruition/impact in the real world, through the market, with corporate partners, or as a research project. Students apply to Idea to Impact in the Summer, and teams are formed after interviews and applications are reviewed. Prerequisite: Graduate student standing.

ME 316B. Design Impact Master's Project II. 2-4 Units.
This is a continuation of ME316A, also known as the Idea to Impact class. The class is a deep dive in design thinking that uses student-led projects to teach design process and methods, based on the themes of Empathic Autonomy in Healthcare, and Empowering Power in Energy. Students will learn the methodologies of design thinking by bringing a product, service, or user-experience design to fruition/impact in the real world in the real world, through the market, with corporate partners, or as a research project. Winter quarter concentrates on building a proof of concept of the project. Prerequisite: Graduate student standing.

ME 316C. Design Impact Master's Project III. 2-4 Units.
For graduate Design Impact students, and select students by application, who have completed ME316A & B. Students, under the supervision of the design faculty, spend the quarter documenting their Idea to Impact projects, implementing them in the world with their partners, or writing up their research.

ME 318. Computer-Aided Product Creation. 3-4 Units.
Design course focusing on an integrated suite of computer tools: rapid prototyping, solid modeling, computer-aided machining, and computer numerical control manufacturing. Students choose, design, and manufacture individual products, emphasizing individual design process and computer design tools. Structured lab experiences build a basic CAD/CAM/CNC proficiency. Due to COVID-19 restrictions during AY20-21, in-person use of the Product Realization Lab may be limited or not permitted. In this case class will consist of asynchronous lectures and online coaching meetings and office hours. Limited enrollment. Prerequisite: ME103 or equivalent and consent of instructor. Prerequisite: ME 203 or consent of instructor.

ME 319. Topics in Multi-Limbed Manipulation. 3 Units.
Course covers fundamental topics in manipulation with fingers or locomotion with multiple legs. Starting topics include: mobility, manipulability, contact kinematics, force closure, nonholonomic constraints. We branch into topics based on student interest such as automated grasp choice, quasistatic sliding manipulation, locomotion with friction or adhesion. Students will have one or two readings each week and will meet with instructor to prepare leading the discussion and developing exercises for the next week. Exercises can be numerical or symbolic.

ME 320. Introduction to Robotics. 3 Units.
Robotics foundations in modeling, design, planning, and control. Class covers relevant results from geometry, kinematics, statics, dynamics, motion planning, and control, providing the basic methodologies and tools in robotics research and applications. Concepts and models are illustrated through physical robot platforms, interactive robot simulations, and video segments relevant to historical research developments or to emerging application areas in the field. Recommended: matrix algebra. Same as: CS 223A

ME 321. Optofluidics: Interplay of Light and Fluids at the Micro and Nanoscale. 3 Units.
Many optical systems in biology have sophisticated designs with functions that conventional optics cannot achieve: no synthetic materials, for example, can provide the camouflage capability exhibited by some animals. This course overviews recent efforts--some inspired by examples in biology--in using fluids, soft materials and nanostructures to create new functions in optics. Topics include electrowetting lenses, electronic inks, colloidal photonic crystals, bioinspired optical nanostructures, nanophotonic biosensors, lens-less optofluidic microscopes. The use of optics to control fluids is also discussed: optoelectronic tweezers, particle trapping and transport, microrheology, optofluidic sorters, fabrication and self-assembly of novel micro and nanostructures.

ME 322. Kinematic Synthesis of Mechanisms. 3 Units.
The rational design of linkages. Techniques to determine linkage proportions to fulfill design requirements using analytical, graphical, and computer based methods.

ME 324. Precision Engineering. 4 Units.
ME324 is designed for MS candidates who have an interest in, and some experience with, mechanical design and manufacturing. Advances in engineering are often enabled by increased precision in design and manufacturing. A common misconception is that increased precision can only be achieved through extremely tight tolerances and wildly expensive components. The principles of precision engineering lead to better engineering solutions even when very high accuracy is not involved. We will explore metrology tools, concepts in accuracy, kinematic design, flexures and alignment solutions, geometric dimensioning and tolerancing, materials selection, and optical alignments.nnnME324 will be taught on-line through Zoom and Canvas resources. There will be weekly, recorded presentations, and small group coaching and presentation of work sessions.

ME 325. Making Multiples: Injection Molding. 3 Units.
Design course focusing on the process of injection molding as a prototyping and manufacturing tool. Coursework will include creating and evaluating initial design concepts, detailed part design, mold design, mold manufacturing, molding parts, and testing and evaluating the results. Students will work primarily on individually selected projects, using each project as a tool to continue developing and exercising individual design process. Lectures and field trips will provide students with context for their work in the Stanford Product Realization Lab. Prerequisite: ME318 or consent of instructors.

ME 327. Design and Control of Haptic Systems. 3 Units.
Study of the design and control of haptic systems, which provide touch feedback to human users interacting with virtual environments and teleoperated robots. Focus is on device modeling (kinematics and dynamics), synthesis and analysis of control systems, design and implementation, and human interaction with haptic systems. Coursework includes homework/laboratory assignments and a hands-on project. Directed toward undergraduate and graduate students in engineering and computer science. Prerequisites: dynamic systems, feedback controls, and MATLAB programming.

ME 328. Medical Robotics. 3 Units.
Study of the design and control of robots for medical applications. Focus is on robotics in surgery and interventional radiology, with introduction to other healthcare robots. Delivery is through instructor lectures and weekly guest speakers. Coursework includes homework and laboratory assignments, an exam, and a research-oriented project. Directed toward graduate students and advanced undergraduates in engineering and computer science; no medical background required. Prerequisites: dynamic systems and MATLAB programming. Suggested experience with C/C++ programming, feedback control design, and linear systems. Cannot be taken concurrently with CS 571.

ME 329. Mechanical Analysis in Design. 3 Units.
This project based course will cover the application of engineering analysis methods learned in the Mechanics and Finite Element series to real world problems involving the mechanical analysis of a proposed device or process. Students work in teams, and each team has the goal of solving a problem defined jointly with a sponsoring company or research group. Each team will be mentored by a faculty mentor and a mentor from the sponsoring organization. The students will gain experience in the formation of project teams; interdisciplinary communication skills; intellectual property; and project management. Course has limited enrollment.

ME 330. Advanced Kinematics. 3 Units.
Kinematics from mathematical viewpoints. Introduction to algebraic geometry of point, line, and plane elements. Emphasis is on basic theories which have potential application to mechanical linkages, computational geometry, and robotics.

ME 331A. Advanced Dynamics & Computation. 3 Units.
Newton, Euler, momentum, and road-map methods and computational tools for 3-D force and motion analysis of multibody systems. Power, work, and energy. Numerical solutions (e.g., MATLAB, etc.) of nonlinear algebraic and differential equations governing the static and dynamic behavior of multiple degree of freedom systems.

ME 331B. Advanced Dynamics, Simulation & Control. 3 Units.
Advanced methods and computational tools for the efficient formulation of equations of motion for multibody systems. D'Alembert principle. Power, work, and energy. Kane's and Lagrange's method. Computed torque control. Systems with constraints. Quaternions. Numerical solutions (e.g., MATLAB, etc.) of nonlinear algebraic and differential equations governing the behavior of multiple degree of freedom systems. Team-based computational multi-body lab project (inclusion of feed-forward control optional).

ME 332. Introduction to Computational Mechanics. 3 Units.
Provides an introductory overview of modern computational methods for problems arising primarily in mechanics of solids and is intended for students from various engineering disciplines. The course reviews the basic theory of linear solid mechanics and introduces students to the important concept of variational forms, including the principle of minimum potential energy and the principles of virtual work. Specific model problems that will be considered include deformation of bars, beams and membranes, plates, and problems in plane elasticity (plane stress, plane strain, axisymmetric elasticity). The variational forms of these problems are used as the starting point for developing the finite element method (FEM) and boundary element method (BEM) approaches providing an important connection between mechanics and computational methods.
Same as: CME 232

ME 333. Mechanics - Fundamentals and Variational Methods. 3 Units.
The goal of the class is to introduce the foundations of the calculus of variations and its application to obtaining the equations of motion of mechanical systems, beginning with systems of particles, and progressing towards one-dimensional continuum system, to finish with three-dimensional continuum systems. In particular, the basics of tensor algebra and calculus are introduced, and utilized to obtain the linear elasticity equations. The equations that describe the deformation of reduced-order structural models, such as beams and plates, are obtained through the proper imposition of kinematic constraints on the variational principle.

ME 334. Advanced Dynamics, Controls and System Identification. 3 Units.
Modeling and analysis of dynamical systems. This class will cover reference frames and coordinate systems, kinematics and constraints, mass distribution, virtual work, D'Alembert's principle, Lagrange and Hamiltonian equations of motion. We will then consider select topics in controls including: dynamical system stability, feedback linearization, system observability and controllability, and system identification methods. Students will learn and apply these concepts through homework and projects that involve the simulation of dynamical systems. Prerequisites: ENGR15 or equivalent, Recommended: Linear Algebra (EE 263, Math 113, CME 302 or equivalent), Partial Differential Equations (Math 131P or equivalent). This course will be online only in AY21.

ME 335A. Finite Element Analysis. 3 Units.
Fundamental concepts and techniques of primal finite element methods. Method of weighted residuals, Galerkin's method and variational equations. Linear eliptic boundary value problems in one, two and three space dimensions; applications in structural, solid and fluid mechanics and heat transfer. Properties of standard element families and numerically integrated elements. Implementation of the finite element method using Matlab, assembly of equations, and element routines. Lagrange multiplier and penalty methods for treatment of constraints. The mathematical theory of finite elements.

ME 335B. Finite Element Analysis. 3 Units.
Finite element methods for linear dynamic analysis. Eigenvalue, parabolic, and hyperbolic problems. Mathematical properties of semi-discrete (t-continuous) Galerkin approximations. Modal decomposition and direct spectral truncation techniques. Stability, consistency, convergence, and accuracy of ordinary differential equation solvers. Asymptotic stability, over-shoot, and conservation laws for discrete algorithms. Mass reduction. Applications in heat conduction, structural vibrations, and elastic wave propagation. Computer implementation of finite element methods in linear dynamics. Implicit, explicit, and implicit-explicit algorithms and code architectures.

ME 335C. Finite Element Analysis. 3 Units.
Newton's method for nonlinear problems; convergence, limit points and bifurcation; consistent linearization of nonlinear variational forms by directional derivative; tangent operator and residual vector; variational formulation and finite element discretization of nonlinear boundary value problems (e.g. nonlinear heat equation, nonlinear elasticity); enhancements of Newton's method: line-search techniques, quasi-Newton and arc-length methods.

ME 336. Discontinuous Galerkin Methods for Fluid-Flow Simulations. 3 Units.
This course is designed to provide an introduction to discontinuous Galerkin (DG) methods and related high-order discontinuous solution techniques for solving partial differential equations with application to fluid flows. The course covers mathematical and theoretical concepts of the DG-methods and connections to finite-element and finite-volume methods. Computational aspects on the discretization, stabilization methods, flux-evaluations, and integration techniques will be discussed. Problems and examples will be drawn from advection-reaction-diffusion equations, non-linear Euler and Navier-Stokes systems, and related fluid-dynamics problems. As part of a series of homework assignments and projects, students will develop their own DG-method for solving the compressible flow equations in complex two-dimensional geometries.

ME 337. Mechanics of Growth. 3 Units.
Growth is a distinguishing feature of all living things. This course introduces the concept of living systems through the lens of mechanics. We discuss the basic continuum theory for living systems including the kinematics, balance equations, and constitutive equations and the computational modeling of growth phenomena including growing plants, remodeling bone, healing wounds, growing tumors, atherosclerosis, expanding skin, failing hearts, developing brains, and the effects of high performance training.

ME 338. Continuum Mechanics. 3 Units.
Introduction to vectors and tensors: kinematics, deformation, forces, and stress concept of continua; balance principles; aspects of objectivity; hyperelastic materials; thermodynamics of materials; variational principles. Prerequisite: CEE 291 or equivalent.

ME 339. Introduction to parallel computing using MPI, openMP, and CUDA. 3 Units.
This class will give hands-on experience with programming multicore processors, graphics processing units (GPU), and parallel computers. The focus will be on the message passing interface (MPI, parallel clusters) and the compute unified device architecture (CUDA, GPU). Topics will include multithreaded programs, GPU computing, computer cluster programming, C++ threads, OpenMP, CUDA, and MPI. Pre-requisites include C++, templates, debugging, UNIX, makefile, numerical algorithms (differential equations, linear algebra).
Same as: CME 213

ME 340. Mechanics - Elasticity and Inelasticity. 3 Units.
Introduction to the theories of elasticity, plasticity and fracture and their applications. Elasticity: Definition of stress, strain, and elastic energy; equilibrium and compatibility conditions; and formulation of boundary value problems. Stress function approach to solve 2D elasticity problems and Greenâs function approach in 3D. Applications to contact and crack. Plasticity: Yield surface, associative flow rule, strain hardening models, crystal plasticity models. Applications to plastic bending, torsion and pressure vessels. Fracture: Linear elastic fracture mechanics, J-integral, Dugdale-Barrenblatt crack model. Applications to brittle fracture and fatigue crack growth. Computer programming in Matlab is used to aid analytic derivation and numerical solutions.

ME 341. Design Experiments. 3 Units.
Design experiments to learn about the relationship between users and products, with an emphasis on quantitative output that is tested with statistics. Students will be exposed to all components of the experimental design process: research proposition, literature review, detailed hypotheses, method selection, experimental instruments, subject selection, pilot studies, analysis approaches, reporting results, and discussing conclusions. Students will receive human subjects training and complete the IRB certificate. Possible experiment design tools include in-person observation and interviews, web surveys, and eye-tracking.

ME 341X. Statistics for Design Experiments. 1 Unit.
Feedback from users is fundamental to good design. Often this feedback is collected in the form of a survey, resulting in data requiring both analysis and synthesis. Course content will be delivered via live and on-line video lectures, with group classroom time dedicated to completing the lab assignments. You will learn the specific skills necessary to design, launch and collect data using an online survey tool (Qualtrics), how to analyze the results using R for Statistical Computing, and to create simple graphical representations of statistical data. This course is designed to complement ME341 ¿ Design Experiments although enrollment in ME341 is not a prerequisite for this course. One-unit credit requires completion of an analysis project using data collected as part of this class. Auditors welcome.

ME 342A. Mechanobiology and Biofabrication Methods. 3 Units.
Cell mechanobiology topics including cell structure, mechanical models, and chemo-mechanical signaling. Review and apply methods for controlling and analyzing the biomechanics of cells using traction force microscopy, AFM, micropatterning and cell stimulation. Practice and theory for the design and application of methods for quantitative cell mechanobiology.
Same as: BIOE 342A, BIOPHYS 342A

ME 343. Machine Learning for Computational Engineering.. 3 Units.
Linear and kernel support vector machines, deep learning, deep neural networks, generative adversarial networks, physics-based machine learning, forward and reverse mode automatic differentiation, optimization algorithms for machine learning, TensorFlow, PyTorch.
Same as: CME 216

ME 344. Introduction to High Performance Computing. 3 Units.
ME 344 is an introductory course on High Performance Computing Systems, providing a solid foundation in parallel computer architectures, cluster operating systems, and resource management. This course will discuss fundamentals of what comprises an HPC cluster, and how we can take advantage of such systems to solve large-scale problems in wide ranging applications like computational fluid dynamics, image processing, machine learning and analytics. Students will take advantage of Open HPC, Intel Parallel Studio, Environment Modules, and cloud-based architectures via lectures, live tutorials, and laboratory work on their own HPC Clusters. This year includes building an HPC Cluster via remote installation of physical hardware, configuring and optimizing a high-speed Infiniband network, and an introduction to parallel programming and high performance python. Students will complete the course with a project using their own clusters to interrogate and model a COVID-19 dataset. There are no prerequisites for computer programming languages. Many of the tasks involve scripting languages. Knowledge of bash and python are helpful to get the most out of the course. Group work and collaboration on projects is allowed and encouraged.

ME 344S. HPC-AI Summer Seminar Series. 1 Unit.
How will high performance computing and artificial intelligence change the way you live, work and learn? What skill sets will you need in the future? The HPC-AI Summer Seminar Series, presented by the Stanford High Performance Computing Center and the HPC-AI Advisory Council, combines thought leadership and practical insights with topics of great societal importance and responsibility¿from applications, tools and techniques to delving into emerging trends and technologies. These experts and influencers who are shaping our HPC and AI future will share their vision and will address audience questions. The overarching theme this year is the potential influence and impact of HPC and AI to battle COVID-19. Students of all academic backgrounds and interests are encouraged to register for this 1-unit course. No prerequisites required. Register early.

ME 345. Fatigue Design and Analysis. 3 Units.
The mechanism and occurrences of fatigue of materials. Methods for predicting fatigue life and for protecting against premature fatigue failure. Use of elastic stress and elastic-plastic strain analyses to predict crack initiation life. Use of linear elastic fracture mechanics to predict crack propagation life. Effects of stress concentrations, manufacturing processes, load sequence, irregular loading, multi-axial loading. Subject is treated from the viewpoints of the engineer seeking up-to-date methods of life prediction and the researcher interested in improving understanding of fatigue behavior. Prerequisite: undergraduate mechanics of materials.

ME 346A. Introduction to Statistical Mechanics. 3 Units.
The main purpose of this course is to provide students with enough statistical mechanics background to the Molecular Simulations classes (ME 346B,C), including the fundamental concepts such as ensemble, entropy, and free energy, etc. The main theme of this course is how the laws at the macroscale (thermodynamics) can be obtained by analyzing the spontaneous fluctuations at the microscale (dynamics of molecules). Topics include thermodynamics, probability theory, information entropy, statistical ensembles, phase transition and phase equilibrium. Recommended: PHYSICS 110 or equivalent.

ME 346B. Introduction to Molecular Simulations. 3 Units.
Algorithms of molecular simulations and underlying theories. Molecular dynamics, time integrators, modeling thermodynamic ensembles (NPT, NVT), free energy, constraints. Monte Carlo simulations, parallel tempering. Stochastic equations, Langevin and Brownian dynamics. Applications in solids, liquids, and biomolecules (proteins). Programming in Matlab.

ME 346C. Advanced Techniques for Molecular Simulations. 3 Units.
Advanced methods for computer simulations of solids and molecules. Methods for long-range force calculation, including Ewald methods and fast multipole method. Methods for free energy calculation, such as thermodynamic integration. Methods for predicting rates of rare events (e.g. nucleation), including nudged elastic band method and umbrella sampling method. Students will work on projects in teams.

ME 347. Waves in Solids and Fluids. 3 Units.
Wave propagation and sources in elastic solids and compressible fluids; body, surface, and interface waves in homogeneous and plane layered media; dispersion, phase and group velocities; reflection and transmission; near-field, far-field, and static limits; effects of gravity, surface and internal gravity waves; Fourier methods and solutions in the time and frequency domains; Green's functions; reciprocity; adjoint methods and full-waveform inversion; point and line sources, finite sources, moving sources and directivity effects; multipole expansions; source representation in solids using transformation strain; application to earthquakes, volcanoes, and tsunamis. Prerequisites: Graduate-level background in continuum mechanics.
Same as: GEOPHYS 238

ME 348. Experimental Stress Analysis. 3 Units.
Theory and applications of photoelasticity, strain sensors, and holographic interferometry. Comparison of test results with theoretical predictions of stress and strain. Discussion of of other methods (optical fiber strain sensors,digital image correlation, thermoelasticity, Moire interferometry, residual stress determination). nnSix labs plus mini-project. Prerequisite: undergraduate mechanics of materials.nnLimited enrollment. In AY21, classes will be online. Labs will be done via online means as well.

ME 351A. Fluid Mechanics. 3 Units.
Exact and approximate analysis of fluid flow covering kinematics, global and differential equations of mass, momentum, and energy conservation. Forces and stresses in fluids. Euler¿s equations and the Bernoulli theorem applied to inviscid flows. Vorticity dynamics. Topics in irrotational flow: stream function and velocity potential for exact and approximate solutions; superposition of solutions; complex potential function; circulation and lift. Some boundary layer concepts.

ME 351B. Fluid Mechanics. 3 Units.
Laminar viscous fluid flow. Governing equations, boundary conditions, and constitutive laws. Exact solutions for parallel flows. Creeping flow limit, lubrication theory, and boundary layer theory including free-shear layers and approximate methods of solution; boundary layer separation. Introduction to stability theory and transition to turbulence, and turbulent boundary layers. Prerequisite: 351A.

ME 352A. Radiative Heat Transfer. 3 Units.
The fundamentals of thermal radiation heat transfer; blackbody radiation laws; radiative properties of non-black surfaces; analysis of radiative exchange between surfaces and in enclosures; combined radiation, conduction, and convection; radiative transfer in absorbing, emitting, and scattering media. Advanced material for students with interests in heat transfer, as applied in high-temperature energy conversion systems. Take 352B,C for depth in heat transfer. Prerequisites: graduate standing and undergraduate course in heat transfer. Recommended: computer skills.

ME 352B. Fundamentals of Heat Conduction. 3 Units.
Physical description of heat conduction in solids, liquids, and gases. The heat diffusion equation and its solution using analytical and numerical techniques. Data and microscopic models for the thermal conductivity of solids, liquids, and gases, and for the thermal resistance at solid-solid and solid-liquid boundaries. Introduction to the kinetic theory of heat transport, focusing on applications for composite materials, semiconductor devices, micromachined sensors and actuators, and rarefied gases. Prerequisite: consent of instructor.

ME 352C. Convective Heat Transfer. 3 Units.
Prediction of heat and mass transfer rates based on analytical and numerical solutions of the governing partial differential equations. Heat transfer in fully developed pipe and channel flow, pipe entrance flow, laminar boundary layers, and turbulent boundary layers. Superposition methods for handling non-uniform wall boundary conditions. Approximate models for turbulent flows. Comparison of exact and approximate analyses to modern experimental results. General introduction to heat transfer in complex flows. Prerequisite: 351A or equivalent.

ME 352D. Nanoscale heat, mass and charge transport. 3 Units.
Fundamentals of heat, mass and charge transport in solids, liquids and gases. Emphasis on the origins of the properties of matter. Translation of scientific understanding to design and predict the behavior of novel engineering devices and systems that span semiconductors, biotechnology, energy and the environment.

ME 354. Experimental Methods in Fluid Mechanics. 4-5 Units.
Experimental methods associated with the interfacing of laboratory instruments, experimental control, sampling strategies, data analysis, and introductory image processing. Instrumentation including point-wise anemometers and particle image tracking systems. Lab. Prerequisites: previous experience with computer programming and consent of instructor. Limited enrollment.

ME 355. Compressible Flow. 3 Units.
Topics include quasi-one-dimensional isentropic flow in variable area ducts, normal shock waves, oblique shock and expansion waves, flow in ducts with friction and heat transfer, unsteady one-dimensional flow, and steady two-dimensional supersonic flow.

ME 356. Hypersonic Aerothermodynamics. 3 Units.
History of hypersonic flight technology. Inviscid hypersonic flows. Rankine-Hugoniot shock-jump relations at high Mach numbers. Newtonian approximation. Small-disturbance equations for hypersonic aerodynamics. Mach-number independence. Hypersonic similarity. Hypersonic boundary layers and viscous interactions. Aerodynamic heating. Self-similar solutions and analogies. Shock-shock interactions and shock-interference heating. Reentry aerothermodynamics. Effects of the entropy layer. Ablation shields. Thermodynamic and chemical nonequilibrium effects in hypersonics. Transition in hypersonic boundary layers. Effects of incident shock waves. Modern computational developments in hypersonics. Engineering applications of hypersonics in aeronautics and astronautics.

ME 357. Gas-Turbine Design Analysis. 3 Units.
This course is concerned with the design analysis of gas-turbine engines. After reviewing essential concepts of thermo- and aerodynamics, we consider a turbofan gas-turbine engine that is representative of a business aircraft. We will first conduct a performance analysis to match the engine design with aircraft performance requirements. This is followed by examining individual engine components, including compressor, combustor, turbines, and nozzles, thereby increase the level of physical description. Aspects of modern engine concepts, environmental impacts, and advanced engine-analysis methods will be discussed. Students will have the opportunity to develop a simulation code to perform a basic design analysis of a turbofan engine. Course Prerequisites: ENGR 30, ME 70, ME 131B, CME 100.
Same as: ME 257

ME 360. Physics of Microfluidics. 3 Units.
Survey of the physics underlying a wide range of microfluidic devices. Course will review basic, simple principles around fluid flow; convective heat and mass transfer; flows of bubbles, drops, and particles; Brownian particles; Taylor dispersion; capillarity; electrokinetics; mixing; jetting; and chemical reactions. Applications of these systems include molecular diagnostics, genetic and proteomic analysis, single-cell analysis, chemical detection, microelectronics cooling, and studies of basic physics and chemistry. We will review recent scientific literature with a goal of deducing simplified explanations, scaling arguments, and back-of-the-envelope approximations of the relevant physics and device performance.

ME 361. Turbulence. 3 Units.
The nature of turbulent flows, statistical and spectral description of turbulence, coherent structures, spatial and temporal scales of turbulent flows. Averaging, two-point correlations and governing equations. Reynolds averaged equations and stresses. Free shear flows, turbulent jet, turbulent kinetic energy and kinetic energy dissipation, and kinetic energy budget. Kolmogorov's hypothesis and energy spectrum. Wall bounded flows, viscous scales, and law of the wall. Turbulence closure modeling for Reynolds averaged Navier Stokes equations. Direct and large eddy simulation of turbulent flows. Subgrid scale modeling. ME300B recommended.

ME 362A. Physical Gas Dynamics. 3 Units.
Concepts and techniques for description of high-temperature and chemically reacting gases from a molecular point of view. Introductory kinetic theory, chemical thermodynamics, and statistical mechanics as applied to properties of gases and gas mixtures. Transport and thermodynamic properties, law of mass action, and equilibrium chemical composition. Maxwellian and Boltzmann distributions of velocity and molecular energy. Examples and applications from areas of current interest such as combustion and materials processing.

ME 362B. Nonequilibrium Processes in High-Temperature Gases. 3 Units.
Chemical kinetics and energy transfer in high-temperature gases. Collision theory, transition state theory, and unimolecular reaction theory. Prerequisie: 362A or consent of instructor.

ME 362C. Rarefied and Ionized Gases. 3 Units.
Compressible, viscous, rarefied, and ionized gas flow models derived from kinetic theory, quantum mechanics, and statistical mechanics. Equilibrium properties and non-equilibrium processes via collisions and radiation. Monte Carlo collision models for non-equilibrium gas dynamics and partially ionized plasmas. Prerequisite: undergraduate courses in fluid mechanics and thermodynamics, ME 362A recommended but not required.
Same as: AA 205

ME 363. Partially Ionized Plasmas and Gas Discharges. 3 Units.
Introduction to partially ionized gases and the nature of gas discharges. Topics: the fundamentals of plasma physics emphasizing collisional and radiative processes, electron and ion transport, ohmic dissipation, oscillations and waves, interaction of electromagnetic waves with plasmas. Applications: plasma diagnostics, plasma propulsion and materials processing. Prerequisite: 362A or consent of instructor.

ME 364. Optical Diagnostics and Spectroscopy. 3 Units.
The spectroscopy of gases and laser-based diagnostic techniques for measurements of species concentrations, temperature, density, and other flow field properties. Topics: electronic, vibrational, and rotational transitions; spectral lineshapes and broadening mechanisms; absorption, fluorescence, Rayleigh and Raman scattering methods; collisional quenching. Prerequisite: 362A or equivalent.

ME 365. Making Multiples: Sand Casting. 4 Units.
ME 365 is a product realization based course integrating designing and making with a focus on a scaled manufacturing process, sand casting. It's graduates will develop technical knowledge regarding design principles, tooling design and creation, mold making, and process parameters. This goal will be achieved by a sequence of three hands-on design and manufacturing projects, supported by lectures, curricular materials, and structured laboratories, and portfolio generation. Prerequisites: ME203, ME318, OR consent of instructor.

ME 367. Optical Diagnostics and Spectroscopy Laboratory. 4 Units.
Principles, procedures, and instrumentation associated with optical measurements in gases and plasmas. Absorption, fluorescence and emission, and light-scattering methods. Measurements of temperature, species concentration, and molecular properties. Lab. Enrollment limited to 16. Prerequisite: 362A or 364.

ME 368. d.Leadership: Leading Disruptive Innovation. 3-4 Units.
d.Leadership is a course that teaches the coaching and leadership skills needed to drive good design process in groups. d.leaders will work on real projects driving design projects within organizations and gain real world skills as they experiment with their leadership style. Take this course if you are inspired by past design classes and want skills to lead design projects beyond Stanford. Preference given to students who have taken other Design Group or d.school classes. Admission by application. See dschool.stanford.edu/classes for more information.
Same as: MS&E 489

ME 368A. Biodesign Innovation: Needs Finding and Concept Creation. 4 Units.
In this two-quarter course series (BIOE 374A/B, MED 272A/B, ME 368A/B, OIT 384/5), multidisciplinary student teams identify real-world unmet healthcare needs, invent new health technologies to address them, and plan for their implementation into patient care. During the first quarter (winter), students select and characterize an important unmet healthcare problem, validate it through primary interviews and secondary research, and then brainstorm and screen initial technology-based solutions. In the second quarter (spring), teams select a lead solution and move it toward the market through prototyping, technical re-risking, strategies to address healthcare-specific requirements (regulation, reimbursement), and business planning. Final presentations in winter and spring are made to a panel of prominent health technology experts and/or investors. Class sessions include faculty-led instruction and case studies, coaching sessions by industry specialists, expert guest lecturers, and interactive team meetings. Enrollment is by application only, and students are required to participate in both quarters of the course. Visit http://biodesign.stanford.edu/programs/stanford-courses/biodesign-innovation.html to access the application, examples of past projects, and student testimonials. More information about Stanford Biodesign, which has led to the creation of 50 venture-backed healthcare companies and has helped hundreds of student launch health technology careers, can be found at http://biodesign.stanford.edu/.
Same as: BIOE 374A, MED 272A

ME 368B. Biodesign Innovation: Concept Development and Implementation. 4 Units.
In this two-quarter course series (BIOE 374A/B, MED 272A/B, ME 368A/B, OIT 384/5), multidisciplinary student teams identify real-world unmet healthcare needs, invent new health technologies to address them, and plan for their implementation into patient care. During the first quarter (winter), students select and characterize an important unmet healthcare problem, validate it through primary interviews and secondary research, and then brainstorm and screen initial technology-based solutions. In the second quarter (spring), teams select a lead solution and move it toward the market through prototyping, technical re-risking, strategies to address healthcare-specific requirements (regulation, reimbursement), and business planning. Final presentations in winter and spring are made to a panel of prominent health technology experts and/or investors. Class sessions include faculty-led instruction and case studies, coaching sessions by industry specialists, expert guest lecturers, and interactive team meetings. Enrollment is by application only, and students are required to participate in both quarters of the course. Visit http://biodesign.stanford.edu/programs/stanford-courses/biodesign-innovation.html to access the application, examples of past projects, and student testimonials. More information about Stanford Biodesign, which has led to the creation of 50 venture-backed healthcare companies and has helped hundreds of student launch health technology careers, can be found at http://biodesign.stanford.edu/.
Same as: BIOE 374B, MED 272B

ME 370A. Energy Systems I: Thermodynamics. 3 Units.
Thermodynamic analysis of energy systems emphasizing systematic methodology for and application of basic principles to generate quantitative understanding. Exergy, mixtures, reacting systems, phase equilibrium, chemical exergy, and modern computational methods for analysis. Prerequisites: undergraduate engineering thermodynamics and computer skills such as Matlab.

ME 370B. Energy Systems II: Modeling and Advanced Concepts. 4 Units.
Development of quantitative device models for complex energy systems, including fuel cells, reformers, combustion engines, and electrolyzers, using thermodynamic and transport analysis. Student groups work on energy systems to develop conceptual understanding, and high-level, quantitative and refined models. Advanced topics in thermodynamics and special topics associated with devices under study. Prerequisite: 370A.

ME 370C. Energy Systems III: Projects. 3-5 Units.
Refinement and calibration of energy system models generated in ME 370B carrying the models to maturity and completion. Integration of device models into a larger model of energy systems. Prerequisites: 370A,B, consent of instructor.

ME 371. Combustion Fundamentals. 3 Units.
Heat of reaction, adiabatic flame temperature, and chemical composition of products of combustion; kinetics of combustion and pollutant formation reactions; conservation equations for multi-component reacting flows; propagation of laminar premixed flames and detonations. Prerequisite: 362A or 370A, or consent of instructor.

ME 372. Combustion Applications. 3 Units.
The role of chemical and physical processes in combustion; ignition, flammability, and quenching of combustible gas mixtures; premixed turbulent flames; laminar and turbulent diffusion flames; combustion of fuel droplets and sprays. Prerequisite: 371.

ME 373. Nanomaterials Synthesis and Applications for Mechanical Engineers. 3 Units.
This course provides an introduction to both combustion synthesis of functional nanomaterials and nanotechnology. The first part of the course will introduce basic principles, synthesis/fabrication techniques and application of nanoscience and nanotechnology. The second part of the course will discuss combustion synthesis of nanostructures in zero-, one-two- and three- dimensions, their characterization methods, physical and chemical properties, and applications in energy conversion systems.

ME 374. Dynamics and Kinetics of Nanoparticles. 3 Units.
Part 1: Thermodynamics, transport theories and properties, aerosol dynamics and reaction kinetics of nanoparticles in fluids. Nucleation, gas kinetic theory of nanoparticles, the Smoluchowski equation, gas-surface reactions, diffusion, thermophoresis, conservation equations and useful solutions. Part 2: Introduction to soot formation, nanoparticles in reacting flows, particle transport and kinetics in flames, atmospheric heterogenous reactions, and nanocatalysis.

ME 377. Design Thinking Studio. 4 Units.
Design Thinking Studio is an immersive introduction to design thinking. You will engage in the real world with your heart, hands and mind to learn and apply the tools and attitudes of design. The class is project-based and emphasizes adopting new behaviors of work. Fieldwork and collaboration with teammates are required and are a critical component of the class. Application required, see dschool.stanford.edu/classes for more information.

ME 378. Tell, Make, Engage: Action Stories for Entrepreneuring. 1-3 Unit.
Individual storytelling action and reflective observations gives the course an evolving framework of evaluative methods, from engineering design; socio cognitive psychology; and art that are formed and reformed by collaborative development within the class. Stories attached to an idea, a discovery or starting up something new, are considered through iterative narrative work, storytelling as rapid prototyping and small group challenges. This course will use qualitative and quantitative methods for story engagement, assessment, and class determined research projects with practice exercises, artifacts, short papers and presentations. Graduate and Co-Term students from all programs welcome. Class size limited to 21.

ME 380. Current Topics in Exoskeleton and Prosthesis Research. 3 Units.
This discussion-based course introduces graduate students to current topics in prosthetic limb and exoskeleton research. We will review and discuss landmark studies and recent advances using the published literature. Topics include: clinical presentations of persons with disabilities; commercially available devices and their limitations; the design of advanced assistive devices; algorithmic techniques for patient-specific device optimization; state of the art in hardware, sensing and control of assistive devices; and assessment of device efficacy using biomechanical and psychophysical measurements. Students will analyze and discuss the literature and give presentations on research papers. Prerequisites: Graduate standing and permission of the instructor.

ME 381. Orthopaedic Bioengineering. 3 Units.
Engineering approaches applied to the musculoskeletal system in the context of surgical and medical care. Fundamental anatomy and physiology. Material and structural characteristics of hard and soft connective tissues and organ systems, and the role of mechanics in normal development and pathogenesis. Engineering methods used in the evaluation and planning of orthopaedic procedures, surgery, and devices. Open to graduate students and undergraduate seniors.
Same as: BIOE 381

ME 387. Soft Tissue Mechanics. 3 Units.
Structure/function relationships and mechanical properties of soft tissues, including nonlinear elasticity, viscoelasticity, and poroelasticity.

ME 389. Biomechanical Research Symposium. 1 Unit.
Guest speakers present contemporary research on experimental and theoretical aspects of biomechanical engineering and bioengineering. May be repeated for credit.

ME 390A. High Temperature Gasdynamics Laboratory Research Project Seminar. 1 Unit.
Review of work in a particular research program and presentations of other related work.

ME 391. Engineering Problems. 1-10 Unit.
Directed study for graduate engineering students on subjects of mutual interest to student and staff member. May be used to prepare for experimental research during a later quarter under 392. Faculty sponsor required.

ME 392. Experimental Investigation of Engineering Problems. 1-10 Unit.
Graduate engineering students undertake experimental investigation under guidance of staff member. Previous work under 391 may be required to provide background for experimental program. Faculty sponsor required.

ME 395. Seminar in Solid Mechanics. 1 Unit.
Required of Ph.D. candidates in solid mechanics. Guest speakers present research topics related to mechanics theory, computational methods, and applications in science and engineering. May be repeated for credit.

ME 397. Design Research Theory and Methodology Seminar. 1-3 Unit.
What do designers do when they do design? How can their performance be improved? ME 397 is a participatory graduate seminar where students create, examine, discuss, and evaluate aspects of these questions. Topics change each quarter, and include design methodology, innovation, human factors, interaction design (robots, agents, devices, cars), computer mediated work, and policy implications. May be repeated for credit.

ME 398. Ph.D. Research Rotation. 1-4 Unit.
Directed research experience for first-year Mechanical Engineering Ph.D. students with faculty sponsors. The student is responsible for arranging the faculty sponsor and registering under the faculty sponsor's section number. Course may be repeated up to four times in the first year. A different faculty sponsor must be selected each time.

ME 400. Thesis. 2-15 Units.
Investigation of some engineering problems. Required of Engineer degree candidates.
Same as: Engineer Degree

ME 406. Turbulence Physics and Modeling Using Numerical Simulation Data. 2 Units.
Prerequisite: consent of instructor.

ME 408. Spectral Methods in Computational Physics. 3 Units.
Data analysis, spectra and correlations, sampling theorem, nonperiodic data, and windowing; spectral methods for numerical solution of partial differential equations; accuracy and computational cost; fast Fourier transform, Galerkin, collocation, and Tau methods; spectral and pseudospectral methods based on Fourier series and eigenfunctions of singular Sturm-Liouville problems; Chebyshev, Legendre, and Laguerre representations; convergence of eigenfunction expansions; discontinuities and Gibbs phenomenon; aliasing errors and control; efficient implementation of spectral methods; spectral methods for complicated domains; time differencing and numerical stability.
Same as: CME 322

ME 410A. Introductory Foresight and Technological Innovation. 3 Units.
Learn to develop long-range, technology-based innovations (5+ years based on industry). This course offers an intensive, hands-on approach using multiple engineering foresight strategies and tools. Model disruptive opportunities and create far-to-near development plans. Three quarter sequence.

ME 410B. Introductory Foresight and Technological Innovation. 3 Units.
Continuation of ME410A. Students will continue developing their invention, integrate additional engineering foresight, and develop an intrinsic innovation mindset. Ongoing discussion of industry examples and contemporary events demonstrate foresight principals and engineering leadership in action.

ME 410C. Introductory Foresight and Technological Innovation. 3 Units.
Continuation of ME410B. Students will continue developing their invention, integrate additional engineering foresight, and develop an intrinsic innovation mindset. Ongoing discussion of industry examples and contemporary events demonstrate foresight principals and engineering leadership in action.

ME 414. Solid State Physics for Mechanical Engineering Experiments. 3 Units.
Introductory overview of principles of statistical mechanics, quantum mechanics and solid-state physics. Provides graduate Mechanical Engineering students with the understanding needed to work on devices or technologies which rely on solid-state physics. (Alternate years).

ME 420. Applied Electrochemistry at Micro- and Nanoscale. 3 Units.
Applied electrochemistry with a focus on energy conversion and storage. Basic concepts of thermodynamics, electrochemistry, and first principal calculations are presented, of which today's fundamentals of electrochemical energy conversion/storage are built. Conventional as well as advanced Li battery concepts/systems and their applications will be a main subject area. intercalation and conversion cathode and anode material families will be introduced and electrochemical function/challenges for energy storage of these materials will be highlighted. Conventional electrolyte materials such as carbonate based liquid electrolyte system and advanced solid-state material will be a topic in class.

ME 421. European Entrepreneurship and Innovation Thought Leaders Seminar. 1 Unit.
Lessons from real-world experiences and challenges in European startups, corporations, universities, non-profit research institutes and venture finance organizations. Speakers include entrepreneurs, leaders from global technology companies, university researchers, venture capitalists, legal experts, senior policy makers and other guests from selected European countries and regions. Geographic scope encompasses Ireland to Russia, and Scandinavia to the Mediterranean region. Enrollment open to undergraduates and graduates in any school or department at Stanford.

ME 421X. Designing Innovation & Entrepreneurship Ecosystems and Institutions: Europe v Silicon Valley. 3-4 Units.
For centuries, Europe has stood at the heart of Western science, engineering,nnindustry/university traditions and institutions. Today, however, Continental Europennhas become a follower in large swaths of the global tech industry. The goal of thisnncourse is to develop students critical thinking skills and understanding of innovationnnand entrepreneurship ecosystems in Europe and Silicon Valley, and of the broadernnethnographic, social, historical and cultural context in which science, engineering,nnmanufacturing, information technology and design occur. Students learn by activelynnparticipating in discussions, asking questions, through directed projects, and engaging with industry leaders and academic experts. Weekly readings are assigned.

ME 429. COMMERCIAL MEMS DEVICE DESIGN. 3 Units.
This course will provide insight into designing MEMS based devices for use in commercial/consumer and automotive sensor applications. Topics to be covered in this MEMS sensor design course will include electromechanical modeling/simulation, compensation for cross-wafer and wafer-to-wafer fabrication variations in a high volume semiconductor manufacturing facility, design for extreme environments (drop shock, temperature, etc.), and some discussion of the unique challenges with respect to consumer and automotive sensor markets. Student teams will develop a MEMS sensor/transducer design (capacitive 3-axis accelerometer), electro-mechanical system model (Matlab based), fabrication process flow with manufacturing analysis (Excel based) in response to a provided design specification sheet.

ME 451A. Advanced Fluid Mechanics Multiphase Flows. 3 Units.
Single particle and multi-particle fluid flow phenomena, mass, momentum and heat transfer, characteristic time and length scales, non-dimensional groups; collection of dispersed-phase elements: instantaneous and averaged descriptions for multiphase flow, Eulerian-Eulerian and Lagrangian-Eulerian statistical representations, mixture theories; models for drag, heat and mass transfer; dilute to dense two-phase flow, granular flows; computer simulation approaches for multiphase flows, emerging research topics. Prerequisites: graduate level fluid mechanics and engineering mathematics, and undergraduate engineering mechanics and thermodynamics.

ME 451B. Advanced Fluid Mechanics - Flow Instabilities. 3 Units.
Waves in fluids: surface waves, internal waves, inertial and acoustic waves, dispersion and group velocity, wave trains, transport due to waves, propagation in slowly varying medium, wave steepening, solitons and solitary waves, shock waves. Instability of fluid motion: dynamical systems, bifurcations, Kelvin-Helmholtz instability, Rayleigh-Benard convection, energy method, global stability, linear stability of parallel flows, necessary and sufficient conditions for stability, viscosity as a destabilizing factor, convective and absolute instability. Focus is on flow instabilities. Prerequisites: graduate courses in compressible and viscous flow.

ME 451C. Advanced Fluid Mechanics - Compressible Turbulence. 3 Units.
Conservation equations. Thermodynamics of ideal gases. Isentropic flows. Crocco-Vazsonyi¿s equation, creation and destruction of vorticity by compressibility effects. Acoustics and generation of sound by turbulence. Shock waves. Kovasznay's modal decomposition of compressible flow, linear and nonlinear modal interactions, interaction of turbulence with shock waves. Turbulent Mach number. Shocklets. Energetics of compressible turbulence, effects of compressibility on homogeneous turbulence, free-shear flows and turbulent boundary layers. Van Driest transformation, recovery temperature, and shock/boundary layer interaction. Strong Reynolds analogy. Subgrid-scale modeling for compressible turbulence. Hypervelocity flows. Prerequisites: Familiarity with compressible laminar flows (ME 355) and incompressible turbulence (ME 361), or consent of the instructor.

ME 451D. Microhydrodynamics. 3 Units.
Transport phenomena on small-length scales appropriate to applications in microfluidics, complex fluids, and biology. The basic equations of mass, momentum, and energy, derived for incompressible fluids and simplified to the slow-flow limit. Topics: solution techniques utilizing expansions of harmonic and Green's functions; singularity solutions; flows involving rigid particles and fluid droplets; applications to suspensions; lubrication theory for flows in confined geometries; slender body theory; and capillarity and wetting. Prerequisites: 120A,B, 300, or equivalents.
Same as: CHEMENG 310

ME 455. Complex Fluids and Non-Newtonian Flows. 3 Units.
Definition of a complex liquid and microrheology. Division of complex fluids into suspensions, solutions, and melts. Suspensions as colloidal and non-colloidal. Extra stress and relation to the stresslet. Suspension rheology including Brownian and non-Brownian fibers. Microhydrodynamics and the Fokker-Planck equation. Linear viscoelasticity and the weak flow limit. Polymer solutions including single mode (dumbbell) and multimode models. Nonlinear viscoelasticity. Intermolecular effects in nondilute solutions and melts and the concept of reptation. Prerequisites: low Reynolds number hydrodynamics or consent of instructor.
Same as: CHEMENG 462

ME 457. Fluid Flow in Microdevices. 3 Units.
Physico-chemical hydrodynamics. Creeping flow, electric double layers, and electrochemical transport such as Nernst-Planck equation; hydrodynamics of solutions of charged and uncharged particles. Device applications include microsystems that perform capillary electrophoresis, drug dispension, and hybridization assays. Emphasis is on bioanalytical applications where electrophoresis, electro-osmosis, and diffusion are important. Prerequisite: consent of instructor.

ME 458. Advanced Topics in Electrokinetics. 3-5 Units.
Electrokinetic theory and electrokinetic separation assays. Electroneutrality approximation and weak electrolyte electrophoresis theory. Capillary zone electrophoresis, field amplified sample stacking, isoelectric focusing, and isotachophoresis. Introduction to general electrohydrodynamics (EHD) theory including the leaky dielectric concept, the Ohmic model formulation, and electrokinetic flow instabilities. Prerequisite: ME 457.

ME 461. Advanced Topics in Turbulence. 3 Units.
Turbulence phenomenology; statistical description and the equations governing the mean flow; fluctuations and their energetics; turbulence closure problem, two-equation turbulence models, and second moment closures; non-local effect of pressure; rapid distortion analysis and effect of shear and compression on turbulence; effect of body forces on turbulent flows; buoyancy-generated turbulence; suppression of turbulence by stratification; turbulent flows of variable density; effect of rotation on homogeneous turbulence; turbulent flows with strong vortices. Prerequisites: 351B and 361A, or consent of instructor.

ME 463. Advanced Topics in Plasma Science and Engineering. 3 Units.
Research areas such as plasma diagnostics, plasma transport, waves and instabilities, and engineering applications.

ME 469. Computational Methods in Fluid Mechanics. 3 Units.
The last two decades have seen the widespread use of Computational Fluid Dynamics (CFD) for analysis and design of thermal-fluids systems in a wide variety of engineering fields. Numerical methods used in CFD have reached a high degree of sophistication and accuracy. The objective of this course is to introduce ¿classical¿ approaches and algorithms used for the numerical simulations of incompressible flows. In addition, some of the more recent developments are described, in particular as they pertain to unstructured meshes and parallel computers. An in-depth analysis of the procedures required to certify numerical codes and results will conclude the course.

ME 470. Uncertainty Quantification. 3 Units.
Uncertainty is an unavoidable component of engineering practice and decision making. Representing a lack of knowledge, uncertainty stymies our attempts to draw scientific conclusions, and to confidently design engineering solutions. Failing to account for uncertainty can lead to false discoveries, while inaccurate assessment of uncertainties can lead to overbuilt engineering designs. Overcoming these issues requires identifying, quantifying, and managing uncertainties through a combination of technical skills and an appropriate mindset. This class will introduce modern techniques for quantifying and propagating uncertainty and current challenges. Emphasis will be on applying techniques in genuine applications, through assignments, case studies, and student-defined projects. Prerequisite: Basic probability and statistics at the level of CME 106 or equivalent.
Same as: CEE 362A

ME 471. Turbulent Combustion. 3 Units.
Basis of turbulent combustion models. Assumption of scale separation between turbulence and combustion, resulting in Reynolds number independence of combustion models. Level-set approach for premixed combustion. Different regimes of premixed turbulent combustion with either kinematic or diffusive flow/chemistry interaction leading to different scaling laws and unified expression for turbulent velocity in both regimes. Models for non-premixed turbulent combustion based on mixture fraction concept. Analytical predictions for flame length of turbulent jets and NOx formation. Partially premixed combustion. Analytical scaling for lift-off heights of lifted diffusion.

ME 485. Modeling and Simulation of Human Movement. 3 Units.
Direct experience with the computational tools used to create simulations of human movement. Lecture/labs on animation of movement; kinematic models of joints; forward dynamic simulation; computational models of muscles, tendons, and ligaments; creation of models from medical images; control of dynamic simulations; collision detection and contact models. Prerequisite: 281, 331A,B, or equivalent.
Same as: BIOE 485

ME 491. Ph.D. Teaching Experience. 3 Units.
Required of Ph.D. students. May be repeated for credit.

ME 492. Mechanical Engineering Teaching Assistance Training. 1 Unit.
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ME 500. Thesis. 1-15 Unit.

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Same as: Ph.D.

ME 571. Surgical Robotics Seminar. 1 Unit.

Surgical robots developed and implemented clinically on varying scales. Seminar goal is to expose students from engineering, medicine, and business to guest lecturers from academia and industry. Engineering and clinical aspects connected to design and use of surgical robots, varying in degree of complexity and procedural role. May be repeated for credit.

Same as: CS 571

ME 801. TGR Project. 0 Units.

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ME 802. TGR Dissertation. 0 Units.

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SCHOOL OF HUMANITIES AND SCIENCES

The largest of Stanford's seven schools, the School of Humanities and Sciences is the center of the University's liberal arts education. Through exposure to the humanities and arts, undergraduate and graduate students consider the ethical, aesthetic, and intellectual dimensions of the human experience, past and present, and are thereby prepared to make thoughtful and imaginative contributions to the culture of the future. Through the study of social, political, and economic events, they acquire theories and techniques for the analysis of specific societal issues, as well as general cross-cultural perspectives on the human condition. And through exposure to the methods and discoveries of mathematics and the sciences, they become well-informed participants and leaders in today's increasingly technological societies.

The School of Humanities and Sciences is comprised of academic departments, which are organized into three clusters, each with its own distinct character.

- Humanities and Arts
  - Art and Art History
  - Classics
  - Division of Literatures, Cultures, and Languages
    - Comparative Literature
    - French and Italian
    - German Studies
    - Iberian and Latin American Cultures
    - Slavic Languages and Literatures
  - East Asian Languages and Cultures
  - English
  - History
  - Linguistics
  - Music
  - Philosophy
  - Religious Studies
  - Theater and Performance Studies
- Social Sciences
  - Anthropology
  - Communication
  - Economics
  - Political Science
  - Psychology
  - Sociology
- Natural Sciences
  - Applied Physics
  - Biology (including Hopkins Marine Station)
  - Chemistry
  - Mathematics
  - Physics
  - Statistics

The school also includes interdisciplinary degree programs that bridge traditionally disparate fields in the humanities and sciences: African and African American Studies; African Studies; American Studies; Archaeology; Arts; Biophysics; Comparative Studies in Race and Ethnicity; East Asian Studies; Ethics in Society; Feminist, Gender, and Sexuality Studies; Global Studies; Human Biology; Human Rights; Humanities; International Policy; International Relations; Latin American Studies; Mathematical and Computational Science; Modern Thought and Literature; Public Policy; Russian, East European, and Eurasian Studies; Science, Technology, and Society; Symbolic Systems; and Urban Studies.

In addition, the school has diverse programs and research centers that do not currently grant degrees. For more information about the School of Humanities and Sciences and a complete listing of research centers and programs, see the School's web site.

Prospective applicants and candidates for the degree of Bachelor of Arts, Bachelor of Science, Bachelor of Arts and Sciences, Master of Arts, Master of Fine Arts, Master of Public Policy, Master of Science, Doctor of Musical Arts, or Doctor of Philosophy should consult the relevant department or program for detailed information about application procedures and degree requirements.

Faculty

Dean: Debra Satz

Senior Associate Deans: Ran Abramitzky, R. Lanier Anderson, Peter F. Michelson, Mary Beth Mudgett

Senior Associate Dean for Finance and Administration: Stephen Olson

Associate Dean for Faculty Affairs: Tina Kass

Associate Dean for Graduate and Undergraduate Studies: Susan J. Weersing

Assistant Dean of Academic and Curriculum Support: Laura Schlosberg

Assistant Dean of Diversity and Inclusion: Steven Lee

Assistant Dean of Graduate Financial Support and Academic Systems: Dan King

Graduate Diversity Recruitment Officer: Joseph L. Brown

Department Chairs: Cécile Alduy (Division of Literatures, Cultures, and Languages), B. Douglas Bernheim (Economics), Steven Boxer (Chemistry), Martha Cyret (Biology), Mark Denny (Hopkins Marine Station), Martin Fejer (Applied Physics), James Hamilton (Communication), Thomas Hansen (Anthropology), Paul Harrison (Religious Studies), Stephen Hinton (Music), Shamit Kachru (Physics), Krista Lawlor (Philosophy), Hayan Lee (East Asian Languages and Cultures), Rafe Mazzeo (Mathematics), Alexander Nemerov (Art and Art History), Art Owen (Statistics), Grant Parker (Classics), Christopher Potts (Linguistics), Michael Rosenfeld (Sociology), Matthew Smith (Theater and Performance Studies), Michael Tomz (Political Science), Blakey Vermeule (English), Anthony Wagner (Psychology), Caroline Winterer (History).

AFRICAN AND AFRICAN AMERICAN STUDIES

Undergraduate Program in African and African American Studies

The Program in African and African American Studies (AAAS), established in 1969, was the first ethnic studies program developed at Stanford University and the first African and African American Studies program at a private institution in the United States. AAAS promotes an understanding of how history informs the present and inspires an engagement with the past in order to collectively dream a more just and equitable future. The AAAS program provides an interdisciplinary introduction to the study of peoples of African descent as a central component of American culture, offering a course of study that promotes research across disciplinary and departmental boundaries, as well as providing research training and community service-learning opportunities for undergraduates. The program emphasizes rigorous and creative scholarship and research, and fosters close academic advising with a faculty advisor, the AAAS Associate Director, and the Director. The program's faculty, staff, and students value the interrelated nature of the personal and the political and aim to create a community that allows for intellectual and personal flourishing.

Mission Statement for the Undergraduate Program in African and African American Studies

The mission of the undergraduate program in African and African American Studies is to provide students with an interdisciplinary introduction to the study of people of African descent as a central component of American culture. Courses in the major promote research across disciplinary and departmental boundaries as well as provide students with research training and community service learning opportunities. Courses of study are drawn from anthropology, art, art history, economics, education, drama, history, languages, linguistics, literature, music, philosophy, political science, psychology, religion, and sociology, among others. The program provides an intellectual background for students considering graduate school or professional careers.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the program's undergraduate program. Students are expected to demonstrate:

1. an interdisciplinary understanding of scholarship related to the African diaspora and Africa, drawing on interdisciplinary course work and each student's individualized concentration.
2. the ability to identify and critically assess different disciplinary, methodological, and interpretive approaches to the study of African Americans, Africans, and/or people of the African diaspora.
3. an understanding of comparative approaches to race.
4. skills in disciplinary methods necessary for their study.
5. the ability to express their interpretive and analytical arguments in clear, effective prose.

Bachelor of Arts in African and African American Studies

The Program of African and African American Studies offers a Bachelor of Arts in African and African American Studies. Eligible students may also pursue a Bachelor of Arts with Honors (p. 892). The department also offers a minor in African and African American Studies (p. 893).

Degree Requirements

To declare the major, students must email AAAS Student Services Officer Crystal Todoroff <ctod@stanford.edu>.

All core courses taken for the major must be taken for a letter grade.

Course Requirements

		Units
Introductory Course		**5**
Select one of the following:		
AFRICAAM 43	Introduction to English III: Introduction to African American Literature	
AFRICAAM 105	Black Matters: Introduction to Black Studies	
Social Science Course		**5**
Select one Social Science course from the AAAS approved course list. See table below.		
Humanities Course		**5**
Select one Humanities course from the AAAS approved course list. See table below.		
African Studies Course		**5**
Select one African Studies course from the AAAS approved course list. See table below.		
Senior Seminar		**5**
Writing in the Major (WIM)		
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar (WIM)	
Core and Related Courses		**35**
35 units of AAAS core and related courses At least 10 of the 35 units must be core courses, which are defined as courses that are primarily focused on Africa, African American Studies, the Caribbean, or the African Diaspora.		
See course lists below.		
Total Units		**60**

Social Science Courses

		Units
AFRICAAM 19	Studies in Music, Media, and Popular Culture: The Soul Tradition in African American Music	3-4
AFRICAAM 21	African American Vernacular English	3-5
AFRICAAM 31	RealTalk: Intimate Discussions about the African Diaspora	1
AFRICAAM 32	The 5th Element: Hip Hop Knowledge, Pedagogy, and Social Justice	1-5
AFRICAAM 36	REPRESENT! Covering Race, Culture, and Identity In The Arts through Writing, Media, and Transmedia.	5
AFRICAAM 41	Genes and Identity	4
AFRICAAM 48Q	South Africa: Contested Transitions	4
AFRICAAM 75E	Black Cinema	2
AFRICAAM 101F	Race & Technology	1-2

AFRICAAM 106	Race, Ethnicity, and Linguistic Diversity in Classrooms: Sociocultural Theory and Practices	3-5
AFRICAAM 107C	The Black Mediterranean: Greece, Rome and Antiquity	4-5
AFRICAAM 112	Urban Education	3-5
AFRICAAM 116	Education, Race, and Inequality in African American History, 1880-1990	3-5
AFRICAAM 122E	Art in the Streets: Identity in Murals, Site-specific works, and Interventions in Public Spaces	4
AFRICAAM 123	Great Works of the African American Tradition	5
AFRICAAM 130	Community-based Research As Tool for Social Change:Discourses of Equity in Communities & Classrooms	3-5
AFRICAAM 146A	African Politics	4-5
AFRICAAM 154	Black Feminist Theory	5
AFRICAAM 158	Black Queer Theory	5
AFRICAAM 165	Identity and Academic Achievement	3
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AFRICAAM 200Y	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 200Z	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 233A	Counseling Theories and Interventions from a Multicultural Perspective	3-5
AFRICAAM 245	Understanding Racial and Ethnic Identity Development	3-5
AFRICAST 111	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 112	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AFRICAST 135	Designing Research-Based Interventions to Solve Global Health Problems	3-4
AFRICAST 142	Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice	3-5
AFRICAST 151	AIDS in Africa	3
AFRICAST 195	Shifting Frames	1-2
AFRICAST 199	Independent Study or Directed Reading	1-5
AFRICAST 211	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 212	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AFRICAST 224	Memory and Heritage In South Africa Syllabus	1
AFRICAST 235	Designing Research-Based Interventions to Solve Global Health Problems	3-4
AFRICAST 299	Independent Study or Directed Reading	1-10
AMSTUD 15	Global Flows: The Globalization of Hip Hop Art, Culture, and Politics	1-2
AMSTUD 121Z	Political Power in American Cities	5
AMSTUD 164C	From Freedom to Freedom Now: African American History, 1865-1965	5
AMSTUD 201	History of Education in the United States	3-5
AMSTUD 214	The American 1960s: Thought, Protest, and Culture	5
AMSTUD 226	Race and Racism in American Politics	5
ANTHRO 27N	Ethnicity and Violence: Anthropological Perspectives	3-5
ANTHRO 32	Theories in Race and Ethnicity: A Comparative Perspective	5
ANTHRO 138	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise	5
EDUC 12SC	Hip Hop as a Universal Language	2
FEMGEN 154	Black Feminist Theory	5
HISTORY 11W	Service-Learning Workshop on Issues of Education Equity	1
HISTORY 45B	Africa in the 20th Century	3
HISTORY 47	History of South Africa	3
HISTORY 48Q	South Africa: Contested Transitions	4
HISTORY 146	History of Humanitarian Aid in sub-Saharan Africa	4-5
HISTORY 267E	Martin Luther King, Jr. - His Life, Ideas, and Legacy	4-5
HUMBIO 121E	Ethnicity and Medicine	1-3
LINGUIST 152	Sociolinguistics and Pidgin Creole Studies	2-4
LINGUIST 156	Language, Gender, & Sexuality	4
LINGUIST 252	Sociolinguistics and Pidgin Creole Studies	2-4
LINGUIST 255B	Sociolinguistics Classics and Community Studies	3-5
MUSIC 147J	Studies in Music, Media, and Popular Culture: The Soul Tradition in African American Music	3-4
POLISCI 11N	The Rwandan Genocide	3
POLISCI 146A	African Politics	4-5
PSYCH 75	Introduction to Cultural Psychology	5
PSYCH 183	SPARQ Lab	2-3
SOC 46N	Race, Ethnic, and National Identities: Imagined Communities	3
SOC 135	Poverty, Inequality, and Social Policy in the United States	3-4
SOC 140	Introduction to Social Stratification	3

Humanities Courses

		Units
AFRICAAM 18A	Jazz History: Ragtime to Bebop, 1900-1940	3
AFRICAAM 18B	Jazz History: Bebop to Present, 1940-Present	3
AFRICAAM 20A	Jazz Theory	3
AFRICAAM 30	The Egyptians	3-5
AFRICAAM 31	RealTalk: Intimate Discussions about the African Diaspora	1
AFRICAAM 43	Introduction to English III: Introduction to African American Literature	3-5
AFRICAAM 45	Dance Improvisation from Freestyle to Hip Hop	1-2
AFRICAAM 47	History of South Africa	3
AFRICAAM 50B	Nineteenth Century America	3
AFRICAAM 64C	From Freedom to Freedom Now!: African American History, 1865-1965	3
AFRICAAM 105	Black Matters: Introduction to Black Studies	5
AFRICAAM 122E	Art in the Streets: Identity in Murals, Site-specific works, and Interventions in Public Spaces	4
AFRICAAM 127A	Can't Stop Won't Stop: A History Of The Hip-Hop Arts	2-4

AFRICAAM 133	Literature and Society in Africa and the Caribbean	4
AFRICAAM 145A	Poetics and Politics of Caribbean Women's Literature	5
AFRICAAM 145B	Africa in the 20th Century	5
AFRICAAM 147	History of South Africa	5
AFRICAAM 150B	Nineteenth Century America	5
AFRICAAM 156	Performing History: Race, Politics, and Staging the Plays of August Wilson	4
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AFRICAAM 200Y	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 200Z	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 261E	Mixed Race Literature in the U.S. and South Africa	5
AFRICAAM 262D	African American Poetics	5
AFRICAAM 267E	Martin Luther King, Jr. - His Life, Ideas, and Legacy	4-5
AFRICAST 127	African Art and Politics, c. 1900 - Present	4
AFRICAST 199	Independent Study or Directed Reading	1-5
AFRICAST 299	Independent Study or Directed Reading	1-10
AMSTUD 51Q	Comparative Fictions of Ethnicity	4
AMSTUD 150B	Nineteenth Century America	5
AMSTUD 178	Ethnicity and Dissent in United States Art and Literature	4
AMSTUD 261E	Mixed Race Literature in the U.S. and South Africa	5
AMSTUD 262C	African American Literature and the Retreat of Jim Crow	5
AMSTUD 262D	African American Poetics	5
ARTHIST 127A	African Art and Politics, c. 1900 - Present	4
ARTHIST 178	Ethnicity and Dissent in United States Art and Literature	4
ARTHIST 192B	Art of the African Diaspora	4
COMPLIT 51Q	Comparative Fictions of Ethnicity	4
COMPLIT 149	The Laboring of Diaspora & Border Literary Cultures	3-5
DANCE 30	Contemporary Choreography: Chocolate Heads Performance Project	2
DANCE 45	Dance Improvisation from Freestyle to Hip Hop	1-2
DANCE 58	Hip Hop I: Introduction to Hip Hop	1
DANCE 108	Hip Hop Choreography: Hip Hop Meets Broadway	1
HISTORY 50C	The United States in the Twentieth Century	3
HISTORY 74S	Sounds of the Century: Popular Music and the United States in the 20th Century	5
HISTORY 106A	Global Human Geography: Asia and Africa	5
HISTORY 150C	The United States in the Twentieth Century	5
HISTORY 255E	Education, Race, and Inequality in African American History, 1880-1990	3-5
LAWGEN 112N	Law and Inequality	3
RELIGST 246	Constructing Race and Religion in America	4-5
TAPS 32	The 5th Element: Hip Hop Knowledge, Pedagogy, and Social Justice	1-5
TAPS 176S	Finding Meaning in Life's Struggles: Narrative Ways of Healing	5

African Studies Courses

		Units
AFRICAAM 30	The Egyptians	3-5
AFRICAAM 31	RealTalk: Intimate Discussions about the African Diaspora	1
AFRICAAM 47	History of South Africa	3
AFRICAAM 48Q	South Africa: Contested Transitions	4
AFRICAAM 111	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AFRICAAM 133	Literature and Society in Africa and the Caribbean	4
AFRICAAM 145B	Africa in the 20th Century	5
AFRICAAM 146A	African Politics	4-5
AFRICAAM 147	History of South Africa	5
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AFRICAAM 200Y	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 200Z	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 261E	Mixed Race Literature in the U.S. and South Africa	5
AFRICAST 111	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 112	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AFRICAST 127	African Art and Politics, c. 1900 - Present	4
AFRICAST 135	Designing Research-Based Interventions to Solve Global Health Problems	3-4
AFRICAST 142	Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice	3-5
AFRICAST 151	AIDS in Africa	3
AFRICAST 195	Shifting Frames	1-2
AFRICAST 199	Independent Study or Directed Reading	1-5
AFRICAST 211	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 212	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AFRICAST 224	Memory and Heritage In South Africa Syllabus	1
AFRICAST 235	Designing Research-Based Interventions to Solve Global Health Problems	3-4
AFRICAST 299	Independent Study or Directed Reading	1-10
AMSTUD 261E	Mixed Race Literature in the U.S. and South Africa	5
ANTHRO 27N	Ethnicity and Violence: Anthropological Perspectives	3-5
ARTHIST 127A	African Art and Politics, c. 1900 - Present	4
ARTHIST 192B	Art of the African Diaspora	4
HISTORY 45B	Africa in the 20th Century	3
HISTORY 47	History of South Africa	3
HISTORY 48Q	South Africa: Contested Transitions	4
HISTORY 50A	Colonial and Revolutionary America	3
HISTORY 106A	Global Human Geography: Asia and Africa	5
HISTORY 145B	Africa in the 20th Century	5
HISTORY 146	History of Humanitarian Aid in sub-Saharan Africa	4-5
HISTORY 147	History of South Africa	5
HISTORY 245G	Law and Colonialism in Africa	4-5

LINGUIST 252	Sociolinguistics and Pidgin Creole Studies	2-4
POLISCI 11N	The Rwandan Genocide	3
POLISCI 146A	African Politics	4-5

Core and Related Courses

The student must take 35 units of AAAS core (https://explorecourses.stanford.edu/search/?q=AAAS%3A%3Acore&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-coursestatus-Active=on) and related (https://explorecourses.stanford.edu/search/?q=AAAS%3A%3Arelated&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-coursestatus-Active=on) courses. At least 10 of the 35 units must be core courses (https://explorecourses.stanford.edu/search/?q=AAAS%3A%3Acore&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-coursestatus-Active=on), which are defined as courses that are primarily focused on Africa (https://explorecourses.stanford.edu/search/?q=AAAS%3A%3Aafrica&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-coursestatus-Active=on), African American Studies (https://explorecourses.stanford.edu/search/?q=AAAS%3A%3Aafrican_american&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-coursestatus-Active=on), the Caribbean (https://explorecourses.stanford.edu/search/?q=AAAS%3A%3Acaribbean+&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-coursestatus-Active=on), or the African Diaspora (https://explorecourses.stanford.edu/search/?q=AAAS%3A%3Adiaspora&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-coursestatus-Active=on).

		Units
Core Courses		
Africa		
AFRICAAM 30	The Egyptians	3-5
AFRICAAM 31	RealTalk: Intimate Discussions about the African Diaspora	1
AFRICAAM 47	History of South Africa	3
AFRICAAM 48Q	South Africa: Contested Transitions	4
AFRICAAM 111	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AFRICAAM 133	Literature and Society in Africa and the Caribbean	4
AFRICAAM 145B	Africa in the 20th Century	5
AFRICAAM 146A	African Politics	4-5
AFRICAAM 147	History of South Africa	5
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AFRICAAM 200Y	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 200Z	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 261E	Mixed Race Literature in the U.S. and South Africa	5
AFRICAST 111	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 112	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AFRICAST 127	African Art and Politics, c. 1900 - Present	4
AFRICAST 135	Designing Research-Based Interventions to Solve Global Health Problems	3-4
AFRICAST 142	Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice	3-5
AFRICAST 151	AIDS in Africa	3
AFRICAST 195	Shifting Frames	1-2
AFRICAST 199	Independent Study or Directed Reading	1-5
AFRICAST 211	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 212	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AFRICAST 224	Memory and Heritage In South Africa Syllabus	1
AFRICAST 235	Designing Research-Based Interventions to Solve Global Health Problems	3-4
AFRICAST 299	Independent Study or Directed Reading	1-10
AMSTUD 261E	Mixed Race Literature in the U.S. and South Africa	5
ANTHRO 27N	Ethnicity and Violence: Anthropological Perspectives	3-5
ARTHIST 127A	African Art and Politics, c. 1900 - Present	4
ARTHIST 192B	Art of the African Diaspora	4
HISTORY 45B	Africa in the 20th Century	3
HISTORY 47	History of South Africa	3
HISTORY 48Q	South Africa: Contested Transitions	4
HISTORY 50A	Colonial and Revolutionary America	3
HISTORY 106A	Global Human Geography: Asia and Africa	5
HISTORY 145B	Africa in the 20th Century	5
HISTORY 146	History of Humanitarian Aid in sub-Saharan Africa	4-5
HISTORY 147	History of South Africa	5
HISTORY 245G	Law and Colonialism in Africa	4-5
LINGUIST 252	Sociolinguistics and Pidgin Creole Studies	2-4
POLISCI 11N	The Rwandan Genocide	3
POLISCI 146A	African Politics	4-5
African American Studies		
AFRICAAM 18A	Jazz History: Ragtime to Bebop, 1900-1940	3
AFRICAAM 18B	Jazz History: Bebop to Present, 1940-Present	3
AFRICAAM 19	Studies in Music, Media, and Popular Culture: The Soul Tradition in African American Music	3-4
AFRICAAM 20A	Jazz Theory	3
AFRICAAM 21	African American Vernacular English	3-5
AFRICAAM 31	RealTalk: Intimate Discussions about the African Diaspora	1
AFRICAAM 43	Introduction to English III: Introduction to African American Literature	3-5
AFRICAAM 50B	Nineteenth Century America	3
AFRICAAM 64C	From Freedom to Freedom Now!: African American History, 1865-1965	3
AFRICAAM 75E	Black Cinema	2
AFRICAAM 105	Black Matters: Introduction to Black Studies	5
AFRICAAM 116	Education, Race, and Inequality in African American History, 1880-1990	3-5
AFRICAAM 123	Great Works of the African American Tradition	5

AFRICAAM 150B	Nineteenth Century America	5
AFRICAAM 154	Black Feminist Theory	5
AFRICAAM 156	Performing History: Race, Politics, and Staging the Plays of August Wilson	4
AFRICAAM 158	Black Queer Theory	5
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AFRICAAM 200Y	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 200Z	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 245	Understanding Racial and Ethnic Identity Development	3-5
AFRICAAM 262D	African American Poetics	5
AFRICAAM 267E	Martin Luther King, Jr. - His Life, Ideas, and Legacy	4-5
AFRICAST 142	Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice	3-5
AMSTUD 15	Global Flows: The Globalization of Hip Hop Art, Culture, and Politics	1-2
AMSTUD 51Q	Comparative Fictions of Ethnicity	4
AMSTUD 164C	From Freedom to Freedom Now: African American History, 1865-1965	5
AMSTUD 201	History of Education in the United States	3-5
AMSTUD 214	The American 1960s: Thought, Protest, and Culture	5
AMSTUD 226	Race and Racism in American Politics	5
AMSTUD 261E	Mixed Race Literature in the U.S. and South Africa	5
AMSTUD 262C	African American Literature and the Retreat of Jim Crow	5
AMSTUD 262D	African American Poetics	5
ANTHRO 32	Theories in Race and Ethnicity: A Comparative Perspective	5
ARTHIST 178	Ethnicity and Dissent in United States Art and Literature	4
DANCE 45	Dance Improvisation from Freestyle to Hip Hop	1-2
EDUC 193C	Psychological Well-Being On Campus: Perspectives Of The Black Diaspora	1
EDUC 216	Education, Race, and Inequality in African American History, 1880-1990	3-5
HISTORY 11W	Service-Learning Workshop on Issues of Education Equity	1
HISTORY 50A	Colonial and Revolutionary America	3
HISTORY 50B	Nineteenth Century America	3
HISTORY 50C	The United States in the Twentieth Century	3
HISTORY 74S	Sounds of the Century: Popular Music and the United States in the 20th Century	5
HISTORY 150B	Nineteenth Century America	5
HISTORY 150C	The United States in the Twentieth Century	5
HISTORY 164C	From Freedom to Freedom Now: African American History, 1865-1965	5
HISTORY 167A	Martin Luther King, Jr. and the Global Freedom Struggle	3-5
HISTORY 255E	Education, Race, and Inequality in African American History, 1880-1990	3-5
HISTORY 267E	Martin Luther King, Jr. - His Life, Ideas, and Legacy	4-5
HUMBIO 121E	Ethnicity and Medicine	1-3
HUMBIO 122S	Social Class, Race, Ethnicity, and Health	4
LINGUIST 65	African American Vernacular English	3-5
LINGUIST 152	Sociolinguistics and Pidgin Creole Studies	2-4
LINGUIST 252	Sociolinguistics and Pidgin Creole Studies	2-4
LINGUIST 265	African American Vernacular English	3-5
MUSIC 20A	Jazz Theory	3
MUSIC 147J	Studies in Music, Media, and Popular Culture: The Soul Tradition in African American Music	3-4
POLISCI 121L	Racial-Ethnic Politics in US	5
POLISCI 226	Race and Racism in American Politics	5
PSYCH 183	SPARQ Lab	2-3
PSYCH 215	Mind, Culture, and Society	3
PUBLPOL 121L	Racial-Ethnic Politics in US	5
SOC 45Q	Understanding Race and Ethnicity in American Society	4
SOC 145	Race and Ethnic Relations in the USA	4
SOC 149	The Urban Underclass	4
TAPS 32	The 5th Element: Hip Hop Knowledge, Pedagogy, and Social Justice	1-5
TAPS 176S	Finding Meaning in Life's Struggles: Narrative Ways of Healing	5
URBANST 112	The Urban Underclass	4
Caribbean		
AFRICAAM 31	RealTalk: Intimate Discussions about the African Diaspora	1
AFRICAAM 145A	Poetics and Politics of Caribbean Women's Literature	5
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
ARTHIST 192B	Art of the African Diaspora	4
LINGUIST 152	Sociolinguistics and Pidgin Creole Studies	2-4
LINGUIST 252	Sociolinguistics and Pidgin Creole Studies	2-4
African Diaspora		
AFRICAAM 21	African American Vernacular English	3-5
AFRICAAM 31	RealTalk: Intimate Discussions about the African Diaspora	1
AFRICAAM 133	Literature and Society in Africa and the Caribbean	4
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AMSTUD 261E	Mixed Race Literature in the U.S. and South Africa	5
ANTHRO 27N	Ethnicity and Violence: Anthropological Perspectives	3-5
ANTHRO 32	Theories in Race and Ethnicity: A Comparative Perspective	5
ANTHRO 138	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise	5
ARTHIST 127A	African Art and Politics, c. 1900 - Present	4
ARTHIST 192B	Art of the African Diaspora	4
COMPLIT 149	The Laboring of Diaspora & Border Literary Cultures	3-5
HISTORY 48Q	South Africa: Contested Transitions	4
HISTORY 50A	Colonial and Revolutionary America	3
HISTORY 106A	Global Human Geography: Asia and Africa	5

LINGUIST 152	Sociolinguistics and Pidgin Creole Studies	2-4
Related Courses		
AFRICAAM 18A	Jazz History: Ragtime to Bebop, 1900-1940	3
AFRICAAM 18B	Jazz History: Bebop to Present, 1940-Present	3
AFRICAAM 20A	Jazz Theory	3
AFRICAAM 28	Health Impact of Sexual Assault and Relationship Abuse across the Lifecourse	1-3
AFRICAAM 31	RealTalk: Intimate Discussions about the African Diaspora	1
AFRICAAM 36	REPRESENT! Covering Race, Culture, and Identity In The Arts through Writing, Media, and Transmedia.	5
AFRICAAM 37	Contemporary Choreography: Chocolate Heads Performance Project	2
AFRICAAM 41	Genes and Identity	4
AFRICAAM 45	Dance Improvisation from Freestyle to Hip Hop	1-2
AFRICAAM 52N	Mixed-Race Politics and Culture	3
AFRICAAM 100	Grassroots Community Organizing: Building Power for Collective Liberation	3-5
AFRICAAM 101F	Race & Technology	1-2
AFRICAAM 106	Race, Ethnicity, and Linguistic Diversity in Classrooms: Sociocultural Theory and Practices	3-5
AFRICAAM 107C	The Black Mediterranean: Greece, Rome and Antiquity	4-5
AFRICAAM 111	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AFRICAAM 112	Urban Education	3-5
AFRICAAM 122E	Art in the Streets: Identity in Murals, Site-specific works, and Interventions in Public Spaces	4
AFRICAAM 127A	Can't Stop Won't Stop: A History Of The Hip-Hop Arts	2-4
AFRICAAM 130	Community-based Research As Tool for Social Change:Discourses of Equity in Communities & Classrooms	3-5
AFRICAAM 132	Social Class, Race, Ethnicity, and Health	4
AFRICAAM 133	Literature and Society in Africa and the Caribbean	4
AFRICAAM 145A	Poetics and Politics of Caribbean Women's Literature	5
AFRICAAM 145B	Africa in the 20th Century	5
AFRICAAM 146A	African Politics	4-5
AFRICAAM 150B	Nineteenth Century America	5
AFRICAAM 154	Black Feminist Theory	5
AFRICAAM 157P	Solidarity and Racial Justice	4-5
AFRICAAM 158	Black Queer Theory	5
AFRICAAM 159	James Baldwin & Twentieth Century Literature	5
AFRICAAM 165	Identity and Academic Achievement	3
AFRICAAM 176B	Documentary Fictions	4
AFRICAAM 189	Black Life and Death in the Neoliberal Era	5
AFRICAAM 192	History of Sexual Violence in America	4-5
AFRICAAM 194	Topics in Writing & Rhetoric: Contemporary Black Rhetorics: Black Twitter and Black Digital Cultures	4
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AFRICAAM 233A	Counseling Theories and Interventions from a Multicultural Perspective	3-5
AFRICAAM 261E	Mixed Race Literature in the U.S. and South Africa	5
AMELANG 108A	Third-Year Swahili, First Quarter	4
AMSTUD 15	Global Flows: The Globalization of Hip Hop Art, Culture, and Politics	1-2
AMSTUD 51Q	Comparative Fictions of Ethnicity	4
AMSTUD 121Z	Political Power in American Cities	5
AMSTUD 150B	Nineteenth Century America	5
AMSTUD 164C	From Freedom to Freedom Now: African American History, 1865-1965	5
AMSTUD 178	Ethnicity and Dissent in United States Art and Literature	4
AMSTUD 201	History of Education in the United States	3-5
AMSTUD 214	The American 1960s: Thought, Protest, and Culture	5
AMSTUD 226	Race and Racism in American Politics	5
ANTHRO 27N	Ethnicity and Violence: Anthropological Perspectives	3-5
ANTHRO 32	Theories in Race and Ethnicity: A Comparative Perspective	5
ANTHRO 138	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise	5
ANTHRO 238	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise	5
ARTHIST 192B	Art of the African Diaspora	4
COMPLIT 51Q	Comparative Fictions of Ethnicity	4
COMPLIT 149	The Laboring of Diaspora & Border Literary Cultures	3-5
CSRE 127A	Can't Stop Won't Stop: A History Of The Hip-Hop Arts	2-4
CSRE 144	Transforming Self and Systems: Crossing Borders of Race, Nation, Gender, Sexuality, and Class	5
DANCE 30	Contemporary Choreography: Chocolate Heads Performance Project	2
DANCE 45	Dance Improvisation from Freestyle to Hip Hop	1-2
DANCE 58	Hip Hop I: Introduction to Hip Hop	1
DANCE 108	Hip Hop Choreography: Hip Hop Meets Broadway	1
EDUC 12SC	Hip Hop as a Universal Language	2
EDUC 103B	Race, Ethnicity, and Linguistic Diversity in Classrooms: Sociocultural Theory and Practices	3-5
EDUC 165	History of Higher Education in the U.S.	3-5
EDUC 193C	Psychological Well-Being On Campus: Perspectives Of The Black Diaspora	1
EDUC 201	History of Education in the United States	3-5
EDUC 216	Education, Race, and Inequality in African American History, 1880-1990	3-5
EDUC 232	Culture, Learning, and Poverty	2-3
EDUC 243	Writing Across Languages and Cultures: Research in Writing and Writing Instruction	3-5
EDUC 245	Understanding Racial and Ethnic Identity Development	3-5

EDUC 322	Community-based Research As Tool for Social Change:Discourses of Equity in Communities & Classrooms	3-5
FEMGEN 154	Black Feminist Theory	5
HISTORY 11W	Service-Learning Workshop on Issues of Education Equity	1
HISTORY 50A	Colonial and Revolutionary America	3
HISTORY 50B	Nineteenth Century America	3
HISTORY 50C	The United States in the Twentieth Century	3
HISTORY 74S	Sounds of the Century: Popular Music and the United States in the 20th Century	5
HISTORY 106A	Global Human Geography: Asia and Africa	5
HISTORY 146	History of Humanitarian Aid in sub-Saharan Africa	4-5
HISTORY 147	History of South Africa	5
HISTORY 150B	Nineteenth Century America	5
HISTORY 150C	The United States in the Twentieth Century	5
HISTORY 167A	Martin Luther King, Jr. and the Global Freedom Struggle	3-5
HISTORY 255E	Education, Race, and Inequality in African American History, 1880-1990	3-5
HUMBIO 121E	Ethnicity and Medicine	1-3
HUMBIO 122S	Social Class, Race, Ethnicity, and Health	4
LAWGEN 112N	Law and Inequality	3
LINGUIST 65	African American Vernacular English	3-5
LINGUIST 156	Language, Gender, & Sexuality	4
LINGUIST 251	Sociolinguistic Field Methods	3-5
LINGUIST 255B	Sociolinguistics Classics and Community Studies	3-5
LINGUIST 265	African American Vernacular English	3-5
MUSIC 18A	Jazz History: Ragtime to Bebop, 1900-1940	3
MUSIC 18B	Jazz History: Bebop to Present, 1940-Present	3
MUSIC 20A	Jazz Theory	3
POLISCI 11N	The Rwandan Genocide	3
POLISCI 28N	The Changing Nature of Racial Identity in American Politics	3
POLISCI 121L	Racial-Ethnic Politics in US	5
POLISCI 226	Race and Racism in American Politics	5
PSYCH 75	Introduction to Cultural Psychology	5
PSYCH 150	Race and Crime	3
PSYCH 150B	Race and Crime Practicum	2-4
PSYCH 183	SPARQ Lab	2-3
PSYCH 215	Mind, Culture, and Society	3
PUBLPOL 121L	Racial-Ethnic Politics in US	5
RELIGST 246	Constructing Race and Religion in America	4-5
SOC 14N	Inequality in American Society	4
SOC 15N	The Transformation of Socialist Societies	3
SOC 45Q	Understanding Race and Ethnicity in American Society	4
SOC 46N	Race, Ethnic, and National Identities: Imagined Communities	3
SOC 118	Social Movements and Collective Action	4
SOC 119	Understanding Large-Scale Societal Change: The Case of the 1960s	5
SOC 135	Poverty, Inequality, and Social Policy in the United States	3-4
SOC 140	Introduction to Social Stratification	3
SOC 142	Sociology of Gender	3
SOC 145	Race and Ethnic Relations in the USA	4
SOC 155	The Changing American Family	4
TAPS 156	Performing History: Race, Politics, and Staging the Plays of August Wilson	4
TAPS 176S	Finding Meaning in Life's Struggles: Narrative Ways of Healing	5
URBANST 112	The Urban Underclass	4
URBANST 123	Designing Research for Social Justice: Writing a Community-Based Research Proposal	3-5

Thematic Emphasis

AAAS majors select a thematic emphasis which allows students to customize their curriculum and synthesize coursework taken across various departments and programs into a coherent focus. Emphases offered include:

The thematic emphasis is not declared in Axess and is not printed on the transcript or diploma.

Arts and Cultural Expression in Identity, Diversity and Aesthetics (IDA)

Students interested in this emphasis should contact the AAAS undergraduate program office.

This thematic emphasis focuses on disciplines that engage literature, performance studies, art and visual culture, cultural theory, etc. This is also the emphasis for students concentrating in Identity, Diversity, and Aesthetics with the Institute for Diversity in the Arts. These students will complete a Creative Honors Thesis.

Students may find the following courses useful in fulfilling requirements in the Arts & Cultural Expression emphasis.

		Units
AFRICAAM 3E	Michelle Obama in American Culture	1
AFRICAAM 5I	Hamilton: An American Musical	1
AFRICAAM 10A	Introduction to Identity, Diversity, and Aesthetics: Arts, Culture, and Pedagogy	1
AFRICAAM 19	Studies in Music, Media, and Popular Culture: The Soul Tradition in African American Music	3-4
AFRICAAM 21	African American Vernacular English	3-5
AFRICAAM 32	The 5th Element: Hip Hop Knowledge, Pedagogy, and Social Justice	1-5
AFRICAAM 36	REPRESENT! Covering Race, Culture, and Identity In The Arts through Writing, Media, and Transmedia.	5
AFRICAAM 37	Contemporary Choreography: Chocolate Heads Performance Project	2
AFRICAAM 43	Introduction to English III: Introduction to African American Literature	3-5
AFRICAAM 45	Dance Improvisation from Freestyle to Hip Hop	1-2
AFRICAAM 71	Introduction to Capoeira: An African Brazilian Art Form	1
AFRICAAM 75E	Black Cinema	2
AFRICAAM 94	Public Space in Iran: Murals, Graffiti, Performance	3-4
AFRICAAM 117J	Race, Gender, and Sexuality in Contemporary American Film	4-5

AFRICAAM 122E	Art in the Streets: Identity in Murals, Site-specific works, and Interventions in Public Spaces	4
AFRICAAM 127A	Can't Stop Won't Stop: A History Of The Hip-Hop Arts	2-4
AFRICAAM 128	Roots Modern Experience - Mixed Level	1
AFRICAAM 154G	Black Magic: Ethnicity, Race, and Identity in Performance Cultures	3-4
AFRICAAM 156	Performing History: Race, Politics, and Staging the Plays of August Wilson	4
AFRICAAM 159	James Baldwin & Twentieth Century Literature	5
AFRICAAM 160J	Conjure Art 101: Performances of Ritual, Spirituality and Decolonial Black Feminist Magic	2
AFRICAAM 176B	Documentary Fictions	4
AFRICAAM 189	Black Life and Death in the Neoliberal Era	5
AFRICAAM 194	Topics in Writing & Rhetoric: Contemporary Black Rhetorics: Black Twitter and Black Digital Cultures	4
AFRICAAM 194A	Topics in Writing & Rhetoric: Freedom's Mixtape: DJing Contemporary African American Rhetorics	4
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200N	Funkentelechy: Technologies, Social Justice and Black Vernacular Cultures	5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AFRICAAM 258	Black Feminist Theater and Theory	4
AFRICAAM 262D	African American Poetics	5
AFRICAST 127	African Art and Politics, c. 1900 - Present	4
AMSTUD 3E	Michelle Obama in American Culture	1
AMSTUD 5I	Hamilton: An American Musical	1
AMSTUD 12A	Introduction to English III: Introduction to African American Literature	3-5
AMSTUD 15	Global Flows: The Globalization of Hip Hop Art, Culture, and Politics	1-2
AMSTUD 51Q	Comparative Fictions of Ethnicity	4
AMSTUD 91A	Asian American Autobiography/W	3-5
AMSTUD 117	Race, Gender, and Sexuality in Contemporary American Film	4-5
AMSTUD 151	Migration and Diaspora in American Art, 1800-Present	4
AMSTUD 178	Ethnicity and Dissent in United States Art and Literature	4
AMSTUD 186D	Asian American Art: 1850-Present	4
AMSTUD 197	Dance in Prison: The Arts, Juvenile Justice, and Rehabilitation in America	3
AMSTUD 261	Personal Narratives in Feminist, Gender, and Sexuality Studies	4-5
AMSTUD 262D	African American Poetics	5
ANTHRO 320A	Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations	3-5
ARTHIST 127A	African Art and Politics, c. 1900 - Present	4
ARTHIST 151	Migration and Diaspora in American Art, 1800-Present	4
ARTHIST 178	Ethnicity and Dissent in United States Art and Literature	4
ARTHIST 186B	Asian American Art: 1850-Present	4
ARTHIST 192B	Art of the African Diaspora	4
ARTHIST 193	Jacob Lawrence's Twentieth Century: African American Art and Culture	5
ARTHIST 221E	Peripheral Dreams: The Art and Literature of Miró, Dalí, and other Surrealists in Catalonia	3-5
ARTHIST 246N	Pacific Dreams: Art in California	3
ARTHIST 351	Migration and Diaspora in American Art, 1800-Present	4
ARTSTUDI 270	Advanced Photography Seminar	4
ASNAMST 31N	Behind the Big Drums: Exploring Taiko	3
ASNAMST 91A	Asian American Autobiography/W	3-5
ASNAMST 117D	Race, Gender, and Sexuality in Contemporary American Film	4-5
ASNAMST 144	Transforming Self and Systems: Crossing Borders of Race, Nation, Gender, Sexuality, and Class	5
ASNAMST 151D	Migration and Diaspora in American Art, 1800-Present	4
ASNAMST 157	An Introduction to Asian American Literature: The Short Story	3
ASNAMST 174S	When Half is Whole: Developing Synergistic Identities and Mestiza Consciousness	5
ASNAMST 186B	Asian American Art: 1850-Present	4
CHILATST 21	Visual Storytelling in Community: The Casa Zapata Mural Archive & History Project	3
CHILATST 109	GENTE: An incubator for transforming national narratives	5
COMPLIT 51Q	Comparative Fictions of Ethnicity	4
COMPLIT 55N	Black Panther, Hamilton, Díaz, and Other Wondrous Lives	3-5
COMPLIT 133A	Literature and Society in Africa and the Caribbean	4
COMPLIT 149	The Laboring of Diaspora & Border Literary Cultures	3-5
COMPLIT 348	US-Mexico Border Fictions: Writing La Frontera, Tearing Down the Wall	3-5
CSRE 3E	Michelle Obama in American Culture	1
CSRE 5I	Hamilton: An American Musical	1
CSRE 10A	Introduction to Identity, Diversity, and Aesthetics: Arts, Culture, and Pedagogy	1
CSRE 10AY	Pacific Standard Time LA/LA creative projects in a Celebration Beyond Borders	1-2
CSRE 21	African American Vernacular English	3-5
CSRE 44	Living Free: Embodying Healing and Creativity in The Era of Racial Justice Movements	1-4
CSRE 47Q	Heartfulness: Mindfulness, Compassion, and Responsibility	3
CSRE 51Q	Comparative Fictions of Ethnicity	4
CSRE 55N	Black Panther, Hamilton, Díaz, and Other Wondrous Lives	3-5
CSRE 61	Introduction to Dance Studies: Dancing Across Stages, Clubs, Screens, and Borders	3-4
CSRE 78	Art + Community: Division, Resilience & Reconciliation	1-5
CSRE 82G	Making Palestine Visible	3-5
CSRE 91D	Asian American Autobiography/W	3-5
CSRE 95I	Space, Public Discourse and Revolutionary Practices	3-4
CSRE 117D	Race, Gender, and Sexuality in Contemporary American Film	4-5

CSRE 123A	American Indians and the Cinema	5
CSRE 127A	Can't Stop Won't Stop: A History Of The Hip-Hop Arts	2-4
CSRE 141E	Counterstory in Literature and Education	3
CSRE 144	Transforming Self and Systems: Crossing Borders of Race, Nation, Gender, Sexuality, and Class	5
CSRE 149	The Laboring of Diaspora & Border Literary Cultures	3-5
CSRE 151D	Migration and Diaspora in American Art, 1800-Present	4
CSRE 153D	Creative Research for Artists	1-2
CSRE 154D	Black Magic: Ethnicity, Race, and Identity in Performance Cultures	3-4
CSRE 156T	Performing History: Race, Politics, and Staging the Plays of August Wilson	4
CSRE 157A	Performing Arabs and Others in Theory and Practice	4
CSRE 160J	Conjure Art 101: Performances of Ritual, Spirituality and Decolonial Black Feminist Magic	2
CSRE 160M	Introduction to Representations of the Middle East in Dance, Performance, & Popular Culture	3-4
CSRE 174S	When Half is Whole: Developing Synergistic Identities and Mestiza Consciousness	5
CSRE 188Q	Imagining Women: Writers in Print and in Person	4-5
CSRE 194KT	Topics in Writing & Rhetoric: The Last Hopi On Earth: The Rhetoric of Entertainment Inequity	4
CSRE 201D	Public Art Interventions in Social & Cultural Spaces	4-5
CSRE 221D	Crafting Challenging Conversations in a Conflicted World	3
CSRE 258	Black Feminist Theater and Theory	4
CSRE 385	Race, Ethnicity, and Language: Pedagogical Possibilities	3-4
CSRE 389A	Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations	3-5
DANCE 1	Contemporary Modern I: Liquid Flow	1
DANCE 2	Introduction to Dance & Movement: Afro Flows	1
DANCE 30	Contemporary Choreography: Chocolate Heads Performance Project	2
DANCE 45	Dance Improvisation from Freestyle to Hip Hop	1-2
DANCE 71	Introduction to Capoeira: An African Brazilian Art Form	1
DANCE 102	Musical Theater Dance Styles	1
DANCE 106I	Stanford Dance Community: Inter-Style Choreography Workshop	1-2
DANCE 108	Hip Hop Choreography: Hip Hop Meets Broadway	1
DANCE 118	Developing Creativity In Dance	1
DANCE 128	Roots Modern Experience - Mixed Level	1
DANCE 153D	Creative Research for Artists	1-2
DANCE 160J	Conjure Art 101: Performances of Ritual, Spirituality and Decolonial Black Feminist Magic	2
DANCE 160M	Introduction to Representations of the Middle East in Dance, Performance, & Popular Culture	3-4
DANCE 161D	Introduction to Dance Studies: Dancing Across Stages, Clubs, Screens, and Borders	3-4
DANCE 197	Dance in Prison: The Arts, Juvenile Justice, and Rehabilitation in America	3
EARTHSYS 95	Liberation Through Land: Organic Gardening and Racial Justice	2
EDUC 12SC	Hip Hop as a Universal Language	2
EDUC 141	Counterstory in Literature and Education	3
EDUC 341	Counterstory in Literature and Education	3
EDUC 389A	Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations	3-5
EDUC 389C	Race, Ethnicity, and Language: Pedagogical Possibilities	3-4
ENGLISH 12A	Introduction to English III: Introduction to African American Literature	3-5
ENGLISH 91A	Asian American Autobiography/W	3-5
ENGLISH 159	James Baldwin & Twentieth Century Literature	5
FEMGEN 3E	Michelle Obama in American Culture	1
FEMGEN 12SI	Beyond the Athlete: Intersection of Diversity, Storytelling, and Athletics	1-2
FEMGEN 13N	Women Making Music	3
FEMGEN 21T	StoryCraft: Sexuality, Intimacy & Relationships	2
FEMGEN 97	Bow Down: Queer Hip-Hop Pedagogy	3
FEMGEN 113X	Feminist Poetry in the U.S., 1973-2017	3-5
FEMGEN 117F	Race, Gender, and Sexuality in Contemporary American Film	4-5
FEMGEN 133	Transgender Performance and Performativity	4
FEMGEN 144X	Transforming Self and Systems: Crossing Borders of Race, Nation, Gender, Sexuality, and Class	5
FEMGEN 154G	Black Magic: Ethnicity, Race, and Identity in Performance Cultures	3-4
FEMGEN 159	James Baldwin & Twentieth Century Literature	5
FEMGEN 160M	Introduction to Representations of the Middle East in Dance, Performance, & Popular Culture	3-4
FEMGEN 205	Songs of Love and War: Gender, Crusade, Politics	3-5
FEMGEN 258X	Black Feminist Theater and Theory	4
FEMGEN 261	Personal Narratives in Feminist, Gender, and Sexuality Studies	4-5
FEMGEN 314	Performing Identities	4
FEMGEN 361	Personal Narratives in Feminist, Gender, and Sexuality Studies	4-5
FILMSTUD 100C	History of World Cinema III, 1960-Present	3-5
FILMSTUD 132A	Indian Cinema	5
FILMSTUD 213	Theories of Melodrama	5
FILMSTUD 300C	History of World Cinema III, 1960-Present	3-5
FILMSTUD 332A	Indian Cinema	5
FILMSTUD 413	Theories of Melodrama	5
FRENCH 205	Songs of Love and War: Gender, Crusade, Politics	3-5
GLOBAL 145	Space, Public Discourse and Revolutionary Practices	3-4

HISTORY 3E	Michelle Obama in American Culture	1
HISTORY 3G	Hamilton: An American Musical	1
HISTORY 74S	Sounds of the Century: Popular Music and the United States in the 20th Century	5
HISTORY 82G	Making Palestine Visible	3-5
HISTORY 182G	Making Palestine Visible	3-5
ILAC 149	The Laboring of Diaspora & Border Literary Cultures	3-5
ILAC 281E	Peripheral Dreams: The Art and Literature of Miró, Dalí, and other Surrealists in Catalonia	3-5
ILAC 348	US-Mexico Border Fictions: Writing La Frontera, Tearing Down the Wall	3-5
LIFE 124	Counterstory in Literature and Education	3
LINGUIST 65	African American Vernacular English	3-5
LINGUIST 253	Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations	3-5
MUSIC 4SI	Interactive Introduction to North American Taiko	1
MUSIC 14N	Women Making Music	3
MUSIC 31N	Behind the Big Drums: Exploring Taiko	3
MUSIC 184E	Musical Theater Dance Styles	1
NATIVEAM 221	Crafting Challenging Conversations in a Conflicted World	3
PWR 1WI	Writing & Rhetoric 1: By Any Means Necessary: The Rhetoric of Black Radical Movements	4
PWR 2JC	Writing & Rhetoric 2: Walk(s) of Shame: The Rhetoric of Respectability	4
PWR 194AB	Topics in Writing & Rhetoric: Freedom's Mixtape: DJing Contemporary African American Rhetorics	4
PWR 194ABA	Topics in Writing & Rhetoric: Contemporary Black Rhetorics: Prince	2-3
PWR 194AJ	Topics in Writing & Rhetoric: Contemporary Black Rhetorics: Black Twitter and Black Digital Cultures	4
PWR 194KT	Topics in Writing & Rhetoric: The Last Hopi On Earth: The Rhetoric of Entertainment Inequity	4
STS 200N	Funkentelechy: Technologies, Social Justice and Black Vernacular Cultures	5
TAPS 20N	Prisons and Performance	3
TAPS 21T	StoryCraft: Sexuality, Intimacy & Relationships	2
TAPS 32	The 5th Element: Hip Hop Knowledge, Pedagogy, and Social Justice	1-5
TAPS 133T	Transgender Performance and Performativity	4
TAPS 154G	Black Magic: Ethnicity, Race, and Identity in Performance Cultures	3-4
TAPS 156	Performing History: Race, Politics, and Staging the Plays of August Wilson	4
TAPS 157P	Performing Arabs and Others in Theory and Practice	4
TAPS 160M	Introduction to Representations of the Middle East in Dance, Performance, & Popular Culture	3-4
TAPS 161D	Introduction to Dance Studies: Dancing Across Stages, Clubs, Screens, and Borders	3-4
TAPS 176S	Finding Meaning in Life's Struggles: Narrative Ways of Healing	5
TAPS 197	Dance in Prison: The Arts, Juvenile Justice, and Rehabilitation in America	3
TAPS 257P	Performing Arabs and Others in Theory and Practice	4
TAPS 258	Black Feminist Theater and Theory	4
TAPS 314	Performing Identities	4
TAPS 356	Performing History: Race, Politics, and Staging the Plays of August Wilson	4
WELLNESS 180	The Flourishing Activist: Mindfully Being the Revolution	1-2

Education, Policy, and Reform

Students in the African and African American Studies major can choose an emphasis in Education. The Thematic Emphasis in Education is designed to explore the history, policy, and practice in education to understand how issues of race, ethnicity, socioeconomic status, culture, and language shape educational opportunity. The goal of the emphasis is to develop an understanding of the core issues facing educators and policy makers so that students may learn how they can contribute to the social and political discourse surrounding issues of education and opportunity policy. It also explores issues related to education and education policy, linguistics, psychology, sociology, anthropology, etc.

Students may find the following courses useful in fulfilling requirements in the Education, Policy, and Reform emphasis.

AFRICAAM 31	RealTalk: Intimate Discussions about the African Diaspora	1
AFRICAAM 32	The 5th Element: Hip Hop Knowledge, Pedagogy, and Social Justice	1-5
AFRICAAM 106	Race, Ethnicity, and Linguistic Diversity in Classrooms: Sociocultural Theory and Practices	3-5
AFRICAAM 112	Urban Education	3-5
AFRICAAM 116	Education, Race, and Inequality in African American History, 1880-1990	3-5
AFRICAAM 130	Community-based Research As Tool for Social Change:Discourses of Equity in Communities & Classrooms	3-5
AFRICAAM 165	Identity and Academic Achievement	3
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AFRICAAM 200Y	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 200Z	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 233A	Counseling Theories and Interventions from a Multicultural Perspective	3-5
AFRICAAM 267E	Martin Luther King, Jr. - His Life, Ideas, and Legacy	4-5
AFRICAST 111	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 112	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AFRICAST 135	Designing Research-Based Interventions to Solve Global Health Problems	3-4
AFRICAST 211	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 212	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AMSTUD 164C	From Freedom to Freedom Now: African American History, 1865-1965	5

AMSTUD 201	History of Education in the United States	3-5
AMSTUD 226	Race and Racism in American Politics	5
EDUC 12SC	Hip Hop as a Universal Language	2
EDUC 103B	Race, Ethnicity, and Linguistic Diversity in Classrooms: Sociocultural Theory and Practices	3-5
EDUC 165	History of Higher Education in the U.S.	3-5
EDUC 193C	Psychological Well-Being On Campus: Perspectives Of The Black Diaspora	1
EDUC 201	History of Education in the United States	3-5
EDUC 216	Education, Race, and Inequality in African American History, 1880-1990	3-5
EDUC 232	Culture, Learning, and Poverty	2-3
EDUC 243	Writing Across Languages and Cultures: Research in Writing and Writing Instruction	3-5
EDUC 245	Understanding Racial and Ethnic Identity Development	3-5
EDUC 322	Community-based Research As Tool for Social Change:Discourses of Equity in Communities & Classrooms	3-5
HISTORY 11W	Service-Learning Workshop on Issues of Education Equity	1
HISTORY 255E	Education, Race, and Inequality in African American History, 1880-1990	3-5
LINGUIST 65	African American Vernacular English	3-5
LINGUIST 152	Sociolinguistics and Pidgin Creole Studies	2-4
LINGUIST 252	Sociolinguistics and Pidgin Creole Studies	2-4
LINGUIST 265	African American Vernacular English	3-5
SOC 135	Poverty, Inequality, and Social Policy in the United States	3-4
TAPS 32	The 5th Element: Hip Hop Knowledge, Pedagogy, and Social Justice	1-5

Historical Inquiry

Students in the African and African American Studies major can choose an emphasis in Historical Inquiry. This emphasis exposes students to historical and historiographical views of the black experience in US and transnational contexts.

Students may find the following courses useful in fulfilling requirements in the Historical Inquiry emphasis.

AFRICAAM 18A	Jazz History: Ragtime to Bebop, 1900-1940	3
AFRICAAM 18B	Jazz History: Bebop to Present, 1940-Present	3
AFRICAAM 30	The Egyptians	3-5
AFRICAAM 50B	Nineteenth Century America	3
AFRICAAM 64C	From Freedom to Freedom Now!: African American History, 1865-1965	3
AFRICAAM 105	Black Matters: Introduction to Black Studies	5
AFRICAAM 107C	The Black Mediterranean: Greece, Rome and Antiquity	4-5
AFRICAAM 116	Education, Race, and Inequality in African American History, 1880-1990	3-5
AFRICAAM 145B	Africa in the 20th Century	5
AFRICAAM 150B	Nineteenth Century America	5
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AFRICAAM 262D	African American Poetics	5
AFRICAAM 267E	Martin Luther King, Jr. - His Life, Ideas, and Legacy	4-5
AMSTUD 164C	From Freedom to Freedom Now: African American History, 1865-1965	5
AMSTUD 261E	Mixed Race Literature in the U.S. and South Africa	5
AMSTUD 262C	African American Literature and the Retreat of Jim Crow	5
EDUC 216	Education, Race, and Inequality in African American History, 1880-1990	3-5
HISTORY 45B	Africa in the 20th Century	3
HISTORY 50A	Colonial and Revolutionary America	3
HISTORY 50B	Nineteenth Century America	3
HISTORY 50C	The United States in the Twentieth Century	3
HISTORY 145B	Africa in the 20th Century	5
HISTORY 147	History of South Africa	5
HISTORY 150B	Nineteenth Century America	5
HISTORY 164C	From Freedom to Freedom Now: African American History, 1865-1965	5
HISTORY 167A	Martin Luther King, Jr. and the Global Freedom Struggle	3-5
HISTORY 245G	Law and Colonialism in Africa	4-5
HISTORY 255E	Education, Race, and Inequality in African American History, 1880-1990	3-5
HISTORY 267E	Martin Luther King, Jr. - His Life, Ideas, and Legacy	4-5
MUSIC 18A	Jazz History: Ragtime to Bebop, 1900-1940	3
MUSIC 18B	Jazz History: Bebop to Present, 1940-Present	3
SOC 119	Understanding Large-Scale Societal Change: The Case of the 1960s	5

Identity and Intersectionality

This multi-disciplinary thematic emphasis exposes students to fields that attend to questions of identity and analysis drawn from gender and sexuality studies, critical ethnic studies, religious studies, etc.

Students may find the following courses useful in fulfilling requirements in the Identity and Intersectionality emphasis.

AFRICAAM 64C	From Freedom to Freedom Now!: African American History, 1865-1965	3
AFRICAAM 154	Black Feminist Theory	5
AFRICAAM 156	Performing History: Race, Politics, and Staging the Plays of August Wilson	4
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AFRICAAM 245	Understanding Racial and Ethnic Identity Development	3-5
AFRICAST 111	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 211	Education for All? The Global and Local in Public Policy Making in Africa	3-5
ARTHIST 178	Ethnicity and Dissent in United States Art and Literature	4
EDUC 232	Culture, Learning, and Poverty	2-3
EDUC 245	Understanding Racial and Ethnic Identity Development	3-5
HISTORY 47	History of South Africa	3
HISTORY 50A	Colonial and Revolutionary America	3

HISTORY 164C	From Freedom to Freedom Now: African American History, 1865-1965	5
HUMBIO 122S	Social Class, Race, Ethnicity, and Health	4
PSYCH 183	SPARQ Lab	2-3
SOC 45Q	Understanding Race and Ethnicity in American Society	4
SOC 135	Poverty, Inequality, and Social Policy in the United States	3-4
SOC 140	Introduction to Social Stratification	3
SOC 149	The Urban Underclass	4
URBANST 112	The Urban Underclass	4

Media, Science, and Technology

This thematic emphasis focuses on disciplines that engage journalism and communications, digital studies, environmental studies, biotechnology, and science, technology, and society, etc.

Students may find the following courses useful in fulfilling requirements in the Media, Science, and Technology emphasis.

AFRICAAM 21	African American Vernacular English	3-5
AFRICAAM 31	RealTalk: Intimate Discussions about the African Diaspora	1
AFRICAAM 133	Literature and Society in Africa and the Caribbean	4
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AMSTUD 261E	Mixed Race Literature in the U.S. and South Africa	5
ANTHRO 27N	Ethnicity and Violence: Anthropological Perspectives	3-5
ANTHRO 32	Theories in Race and Ethnicity: A Comparative Perspective	5
ANTHRO 138	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise	5
ARTHIST 127A	African Art and Politics, c. 1900 - Present	4
ARTHIST 192B	Art of the African Diaspora	4
COMPLIT 149	The Laboring of Diaspora & Border Literary Cultures	3-5
HISTORY 48Q	South Africa: Contested Transitions	4
HISTORY 50A	Colonial and Revolutionary America	3
HISTORY 106A	Global Human Geography: Asia and Africa	5
LINGUIST 152	Sociolinguistics and Pidgin Creole Studies	2-4

Politics and Law

This emphasis exposes students to inquiry and major topics in disciplines like public policy, government, and international relations.

Students may find the following courses useful in fulfilling requirements in the Politics and Law emphasis.

		Units
AFRICAAM 18A	Jazz History: Ragtime to Bebop, 1900-1940	3
AFRICAAM 18B	Jazz History: Bebop to Present, 1940-Present	3
AFRICAAM 19	Studies in Music, Media, and Popular Culture: The Soul Tradition in African American Music	3-4
AFRICAAM 20A	Jazz Theory	3
AFRICAAM 21	African American Vernacular English	3-5
AFRICAAM 31	RealTalk: Intimate Discussions about the African Diaspora	1
AFRICAAM 43	Introduction to English III: Introduction to African American Literature	3-5
AFRICAAM 50B	Nineteenth Century America	3
AFRICAAM 64C	From Freedom to Freedom Now!: African American History, 1865-1965	3
AFRICAAM 75E	Black Cinema	2
AFRICAAM 105	Black Matters: Introduction to Black Studies	5
AFRICAAM 116	Education, Race, and Inequality in African American History, 1880-1990	3-5
AFRICAAM 123	Great Works of the African American Tradition	5
AFRICAAM 150B	Nineteenth Century America	5
AFRICAAM 154	Black Feminist Theory	5
AFRICAAM 156	Performing History: Race, Politics, and Staging the Plays of August Wilson	4
AFRICAAM 158	Black Queer Theory	5
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AFRICAAM 200Y	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 200Z	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 245	Understanding Racial and Ethnic Identity Development	3-5
AFRICAAM 262D	African American Poetics	5
AFRICAAM 267E	Martin Luther King, Jr. - His Life, Ideas, and Legacy	4-5
AFRICAST 142	Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice	3-5
AMSTUD 15	Global Flows: The Globalization of Hip Hop Art, Culture, and Politics	1-2
AMSTUD 51Q	Comparative Fictions of Ethnicity	4
AMSTUD 164C	From Freedom to Freedom Now: African American History, 1865-1965	5
AMSTUD 201	History of Education in the United States	3-5
AMSTUD 214	The American 1960s: Thought, Protest, and Culture	5
AMSTUD 226	Race and Racism in American Politics	5
AMSTUD 261E	Mixed Race Literature in the U.S. and South Africa	5
AMSTUD 262C	African American Literature and the Retreat of Jim Crow	5
AMSTUD 262D	African American Poetics	5
ANTHRO 32	Theories in Race and Ethnicity: A Comparative Perspective	5
ARTHIST 178	Ethnicity and Dissent in United States Art and Literature	4
DANCE 45	Dance Improvisation from Freestyle to Hip Hop	1-2
EDUC 193C	Psychological Well-Being On Campus: Perspectives Of The Black Diaspora	1
EDUC 216	Education, Race, and Inequality in African American History, 1880-1990	3-5
HISTORY 11W	Service-Learning Workshop on Issues of Education Equity	1
HISTORY 50A	Colonial and Revolutionary America	3
HISTORY 50B	Nineteenth Century America	3

HISTORY 50C	The United States in the Twentieth Century	3
HISTORY 74S	Sounds of the Century: Popular Music and the United States in the 20th Century	5
HISTORY 150B	Nineteenth Century America	5
HISTORY 150C	The United States in the Twentieth Century	5
HISTORY 164C	From Freedom to Freedom Now: African American History, 1865-1965	5
HISTORY 167A	Martin Luther King, Jr. and the Global Freedom Struggle	3-5
HISTORY 255E	Education, Race, and Inequality in African American History, 1880-1990	3-5
HISTORY 267E	Martin Luther King, Jr. - His Life, Ideas, and Legacy	4-5
HUMBIO 121E	Ethnicity and Medicine	1-3
HUMBIO 122S	Social Class, Race, Ethnicity, and Health	4
LINGUIST 65	African American Vernacular English	3-5
LINGUIST 152	Sociolinguistics and Pidgin Creole Studies	2-4
LINGUIST 252	Sociolinguistics and Pidgin Creole Studies	2-4
LINGUIST 265	African American Vernacular English	3-5
MUSIC 20A	Jazz Theory	3
MUSIC 147J	Studies in Music, Media, and Popular Culture: The Soul Tradition in African American Music	3-4
POLISCI 121L	Racial-Ethnic Politics in US	5
POLISCI 226	Race and Racism in American Politics	5
PSYCH 183	SPARQ Lab	2-3
PSYCH 215	Mind, Culture, and Society	3
PUBLPOL 121L	Racial-Ethnic Politics in US	5
SOC 45Q	Understanding Race and Ethnicity in American Society	4
SOC 145	Race and Ethnic Relations in the USA	4
SOC 149	The Urban Underclass	4
TAPS 32	The 5th Element: Hip Hop Knowledge, Pedagogy, and Social Justice	1-5
TAPS 176S	Finding Meaning in Life's Struggles: Narrative Ways of Healing	5
URBANST 112	The Urban Underclass	4

Social Impact and Entrepreneurship

This thematic emphasis focuses on practice and the study of justice ideologies, social movements, social entrepreneurship, and community-based research, etc.

Students may find the following courses useful in fulfilling requirements in the Social Impact and Entrepreneurship emphasis.

AFRICAAM 31	RealTalk: Intimate Discussions about the African Diaspora	1
AFRICAAM 43	Introduction to English III: Introduction to African American Literature	3-5
AFRICAAM 145A	Poetics and Politics of Caribbean Women's Literature	5
AFRICAAM 154	Black Feminist Theory	5
AFRICAAM 158	Black Queer Theory	5
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AFRICAAM 245	Understanding Racial and Ethnic Identity Development	3-5
AMSTUD 178	Ethnicity and Dissent in United States Art and Literature	4
AMSTUD 201	History of Education in the United States	3-5
ARTHIST 178	Ethnicity and Dissent in United States Art and Literature	4
CSRE 144	Transforming Self and Systems: Crossing Borders of Race, Nation, Gender, Sexuality, and Class	5
EDUC 245	Understanding Racial and Ethnic Identity Development	3-5
FEMGEN 154	Black Feminist Theory	5
HISTORY 74S	Sounds of the Century: Popular Music and the United States in the 20th Century	5
HISTORY 145B	Africa in the 20th Century	5
LINGUIST 156	Language, Gender, & Sexuality	4
PSYCH 183	SPARQ Lab	2-3
SOC 140	Introduction to Social Stratification	3
SOC 142	Sociology of Gender	3

Additional Information

Senior Seminar

Research and writing of the senior honors thesis or senior paper is under the supervision of a faculty project advisor. All majors in the IDP in AAAS, even those who opt to write honors theses in other departments and programs, must enroll in AFRICAAM 200X Honors Thesis and Senior Thesis Seminar, offered in Autumn Quarter. The course takes students through the process of researching an honors thesis, including conceptualization, development of prospectus, development of theses, research, analysis, and finally the process of drafting and writing. This course meets the Writing in the Major requirement (WIM).

Directed Reading and Research

Directed reading and research allows students to focus on a special topic of interest. In organizing a reading or research plan, the student consults with the director of the major and one or more faculty members specializing in the area or discipline.

Courses that fulfill directed reading and research requirements:

		Units
AFRICAAM 195	Independent Study	5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5

Honors Program

The honors program offers an opportunity to do independent research for a senior thesis. It is open to majors who have maintained a grade point average (GPA) of at least 3.5 in the major and 3.3 overall. The honors thesis is intended to enable students to synthesize skills to produce a document or project demonstrating a measure of competence in their specialty.

The honors program begins with a proposal describing the project that is approved by the faculty advisor and AAAS directors. Students are required to identify both a faculty advisor and a second reader for the thesis project. The faculty advisor for the honors thesis must be an academic council faculty member and affiliated faculty of the student's major.

Honors students must enroll in AFRICAAM 200X Honors Thesis and Senior Thesis Seminar which fulfills the program's WIM requirement, during Autumn Quarter of the senior year and may take up to an additional 10 units of honors work (AFRICAAM 200Y Honors Thesis and Senior Thesis Research and AFRICAAM 200Z Honors Thesis and Senior Thesis Research) to be distributed across Winter and Spring quarters of senior year to continue their access to peer and faculty support as they

write their theses. Students must complete their theses with a grade of 'B +' to receive honors in AAAS.

In May of the senior year, honors students are afforded an opportunity to present their research formally. Prizes for best undergraduate honors thesis are awarded annually by the Program in African and African American Studies.

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Minor in African and African American Studies

To declare the minor, students must email AAAS Student Services Officer Crystal Todoroff <ctod@stanford.edu>.

Students who minor in AAAS complete a minimum of 30 units of approved courses. The minor allows students access to key faculty and partners of AAAS. Students who minor work closely with the AAAS associate director, and the AAAS director in developing a coherent understanding within their minor that reflects their scholarly interests in the field.

Degree Requirements

		Units
Introductory Course		**5**
Select one of the following:		
AFRICAAM 43	Introduction to English III: Introduction to African American Literature	
AFRICAAM 105	Black Matters: Introduction to Black Studies	
Social Science Course		**5**
Select one Social Science course from the AAAS approved course list. See table below.		
Humanities Course		**5**
Select one Humanities course from the AAAS approved course list. See table below.		
Cognate Courses		**15**
Complete 15 units from the Cognate Courses approved list. See table below.		
Total Units		30

Social Science Courses

		Units
AFRICAAM 19	Studies in Music, Media, and Popular Culture: The Soul Tradition in African American Music	3-4
AFRICAAM 21	African American Vernacular English	3-5
AFRICAAM 31	RealTalk: Intimate Discussions about the African Diaspora	1
AFRICAAM 32	The 5th Element: Hip Hop Knowledge, Pedagogy, and Social Justice	1-5
AFRICAAM 36	REPRESENT! Covering Race, Culture, and Identity In The Arts through Writing, Media, and Transmedia.	5
AFRICAAM 41	Genes and Identity	4
AFRICAAM 48Q	South Africa: Contested Transitions	4
AFRICAAM 75E	Black Cinema	2
AFRICAAM 101F	Race & Technology	1-2
AFRICAAM 106	Race, Ethnicity, and Linguistic Diversity in Classrooms: Sociocultural Theory and Practices	3-5
AFRICAAM 107C	The Black Mediterranean: Greece, Rome and Antiquity	4-5
AFRICAAM 112	Urban Education	3-5
AFRICAAM 116	Education, Race, and Inequality in African American History, 1880-1990	3-5
AFRICAAM 122E	Art in the Streets: Identity in Murals, Site-specific works, and Interventions in Public Spaces	4
AFRICAAM 123	Great Works of the African American Tradition	5
AFRICAAM 130	Community-based Research As Tool for Social Change:Discourses of Equity in Communities & Classrooms	3-5
AFRICAAM 146A	African Politics	4-5
AFRICAAM 154	Black Feminist Theory	5
AFRICAAM 158	Black Queer Theory	5
AFRICAAM 165	Identity and Academic Achievement	3
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AFRICAAM 200Y	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 200Z	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 233A	Counseling Theories and Interventions from a Multicultural Perspective	3-5
AFRICAAM 245	Understanding Racial and Ethnic Identity Development	3-5
AFRICAST 111	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 112	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AFRICAST 135	Designing Research-Based Interventions to Solve Global Health Problems	3-4
AFRICAST 142	Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice	3-5
AFRICAST 151	AIDS in Africa	3
AFRICAST 195	Shifting Frames	1-2
AFRICAST 199	Independent Study or Directed Reading	1-5
AFRICAST 211	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 212	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AFRICAST 224	Memory and Heritage In South Africa Syllabus	1
AFRICAST 235	Designing Research-Based Interventions to Solve Global Health Problems	3-4
AFRICAST 299	Independent Study or Directed Reading	1-10
AMSTUD 15	Global Flows: The Globalization of Hip Hop Art, Culture, and Politics	1-2
AMSTUD 121Z	Political Power in American Cities	5
AMSTUD 164C	From Freedom to Freedom Now: African American History, 1865-1965	5
AMSTUD 201	History of Education in the United States	3-5
AMSTUD 214	The American 1960s: Thought, Protest, and Culture	5
AMSTUD 226	Race and Racism in American Politics	5
ANTHRO 27N	Ethnicity and Violence: Anthropological Perspectives	3-5
ANTHRO 32	Theories in Race and Ethnicity: A Comparative Perspective	5

ANTHRO 138	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise	5
EDUC 12SC	Hip Hop as a Universal Language	2
FEMGEN 154	Black Feminist Theory	5
HISTORY 11W	Service-Learning Workshop on Issues of Education Equity	1
HISTORY 45B	Africa in the 20th Century	3
HISTORY 47	History of South Africa	3
HISTORY 48Q	South Africa: Contested Transitions	4
HISTORY 146	History of Humanitarian Aid in sub-Saharan Africa	4-5
HISTORY 267E	Martin Luther King, Jr. - His Life, Ideas, and Legacy	4-5
HUMBIO 121E	Ethnicity and Medicine	1-3
LINGUIST 152	Sociolinguistics and Pidgin Creole Studies	2-4
LINGUIST 156	Language, Gender, & Sexuality	4
LINGUIST 252	Sociolinguistics and Pidgin Creole Studies	2-4
LINGUIST 255B	Sociolinguistics Classics and Community Studies	3-5
MUSIC 147J	Studies in Music, Media, and Popular Culture: The Soul Tradition in African American Music	3-4
POLISCI 11N	The Rwandan Genocide	3
POLISCI 146A	African Politics	4-5
PSYCH 75	Introduction to Cultural Psychology	5
PSYCH 183	SPARQ Lab	2-3
SOC 46N	Race, Ethnic, and National Identities: Imagined Communities	3
SOC 135	Poverty, Inequality, and Social Policy in the United States	3-4
SOC 140	Introduction to Social Stratification	3

Humanities Courses

		Units
AFRICAAM 18A	Jazz History: Ragtime to Bebop, 1900-1940	3
AFRICAAM 18B	Jazz History: Bebop to Present, 1940-Present	3
AFRICAAM 20A	Jazz Theory	3
AFRICAAM 30	The Egyptians	3-5
AFRICAAM 31	RealTalk: Intimate Discussions about the African Diaspora	1
AFRICAAM 43	Introduction to English III: Introduction to African American Literature	3-5
AFRICAAM 45	Dance Improvisation from Freestyle to Hip Hop	1-2
AFRICAAM 47	History of South Africa	3
AFRICAAM 50B	Nineteenth Century America	3
AFRICAAM 64C	From Freedom to Freedom Now!: African American History, 1865-1965	3
AFRICAAM 105	Black Matters: Introduction to Black Studies	5
AFRICAAM 122E	Art in the Streets: Identity in Murals, Site-specific works, and Interventions in Public Spaces	4
AFRICAAM 127A	Can't Stop Won't Stop: A History Of The Hip-Hop Arts	2-4
AFRICAAM 133	Literature and Society in Africa and the Caribbean	4
AFRICAAM 145A	Poetics and Politics of Caribbean Women's Literature	5
AFRICAAM 145B	Africa in the 20th Century	5
AFRICAAM 147	History of South Africa	5
AFRICAAM 150B	Nineteenth Century America	5
AFRICAAM 156	Performing History: Race, Politics, and Staging the Plays of August Wilson	4
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AFRICAAM 200Y	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 200Z	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 261E	Mixed Race Literature in the U.S. and South Africa	5
AFRICAAM 262D	African American Poetics	5
AFRICAAM 267E	Martin Luther King, Jr. - His Life, Ideas, and Legacy	4-5
AFRICAST 127	African Art and Politics, c. 1900 - Present	4
AFRICAST 199	Independent Study or Directed Reading	1-5
AFRICAST 299	Independent Study or Directed Reading	1-10
AMSTUD 51Q	Comparative Fictions of Ethnicity	4
AMSTUD 150B	Nineteenth Century America	5
AMSTUD 178	Ethnicity and Dissent in United States Art and Literature	4
AMSTUD 261E	Mixed Race Literature in the U.S. and South Africa	5
AMSTUD 262C	African American Literature and the Retreat of Jim Crow	5
AMSTUD 262D	African American Poetics	5
ARTHIST 127A	African Art and Politics, c. 1900 - Present	4
ARTHIST 178	Ethnicity and Dissent in United States Art and Literature	4
ARTHIST 192B	Art of the African Diaspora	4
COMPLIT 51Q	Comparative Fictions of Ethnicity	4
COMPLIT 149	The Laboring of Diaspora & Border Literary Cultures	3-5
DANCE 30	Contemporary Choreography: Chocolate Heads Performance Project	2
DANCE 45	Dance Improvisation from Freestyle to Hip Hop	1-2
DANCE 58	Hip Hop I: Introduction to Hip Hop	1
DANCE 108	Hip Hop Choreography: Hip Hop Meets Broadway	1
HISTORY 50C	The United States in the Twentieth Century	3
HISTORY 74S	Sounds of the Century: Popular Music and the United States in the 20th Century	5
HISTORY 106A	Global Human Geography: Asia and Africa	5
HISTORY 150C	The United States in the Twentieth Century	5
HISTORY 255E	Education, Race, and Inequality in African American History, 1880-1990	3-5
LAWGEN 112N	Law and Inequality	3
RELIGST 246	Constructing Race and Religion in America	4-5
TAPS 32	The 5th Element: Hip Hop Knowledge, Pedagogy, and Social Justice	1-5
TAPS 176S	Finding Meaning in Life's Struggles: Narrative Ways of Healing	5

Cognate Courses

Cognate courses must be from AAAS core (https://explorecourses.stanford.edu/search/?view=catalog&filter-

coursestatus-Active=on&page=0&catalog=&academicYear=&q=AAAS%3A%3Acore&collapse=) or related (https://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=&q=AAAS%3A%3Arelated&collapse=) courses.

		Units
Core Courses		
Africa		
AFRICAAM 30	The Egyptians	3-5
AFRICAAM 31	RealTalk: Intimate Discussions about the African Diaspora	1
AFRICAAM 47	History of South Africa	3
AFRICAAM 48Q	South Africa: Contested Transitions	4
AFRICAAM 111	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AFRICAAM 133	Literature and Society in Africa and the Caribbean	4
AFRICAAM 145B	Africa in the 20th Century	5
AFRICAAM 146A	African Politics	4-5
AFRICAAM 147	History of South Africa	5
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AFRICAAM 200Y	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 200Z	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 261E	Mixed Race Literature in the U.S. and South Africa	5
AFRICAST 111	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 112	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AFRICAST 127	African Art and Politics, c. 1900 - Present	4
AFRICAST 135	Designing Research-Based Interventions to Solve Global Health Problems	3-4
AFRICAST 142	Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice	3-5
AFRICAST 151	AIDS in Africa	3
AFRICAST 195	Shifting Frames	1-2
AFRICAST 199	Independent Study or Directed Reading	1-5
AFRICAST 211	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 212	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AFRICAST 224	Memory and Heritage In South Africa Syllabus	1
AFRICAST 235	Designing Research-Based Interventions to Solve Global Health Problems	3-4
AFRICAST 299	Independent Study or Directed Reading	1-10
AMSTUD 261E	Mixed Race Literature in the U.S. and South Africa	5
ANTHRO 27N	Ethnicity and Violence: Anthropological Perspectives	3-5
ARTHIST 127A	African Art and Politics, c. 1900 - Present	4
ARTHIST 192B	Art of the African Diaspora	4
HISTORY 45B	Africa in the 20th Century	3
HISTORY 47	History of South Africa	3
HISTORY 48Q	South Africa: Contested Transitions	4
HISTORY 50A	Colonial and Revolutionary America	3
HISTORY 106A	Global Human Geography: Asia and Africa	5
HISTORY 145B	Africa in the 20th Century	5
HISTORY 146	History of Humanitarian Aid in sub-Saharan Africa	4-5
HISTORY 147	History of South Africa	5
HISTORY 245G	Law and Colonialism in Africa	4-5
LINGUIST 252	Sociolinguistics and Pidgin Creole Studies	2-4
POLISCI 11N	The Rwandan Genocide	3
POLISCI 146A	African Politics	4-5
African American Studies		
AFRICAAM 18A	Jazz History: Ragtime to Bebop, 1900-1940	3
AFRICAAM 18B	Jazz History: Bebop to Present, 1940-Present	3
AFRICAAM 19	Studies in Music, Media, and Popular Culture: The Soul Tradition in African American Music	3-4
AFRICAAM 20A	Jazz Theory	3
AFRICAAM 21	African American Vernacular English	3-5
AFRICAAM 31	RealTalk: Intimate Discussions about the African Diaspora	1
AFRICAAM 43	Introduction to English III: Introduction to African American Literature	3-5
AFRICAAM 50B	Nineteenth Century America	3
AFRICAAM 64C	From Freedom to Freedom Now!: African American History, 1865-1965	3
AFRICAAM 75E	Black Cinema	2
AFRICAAM 105	Black Matters: Introduction to Black Studies	5
AFRICAAM 116	Education, Race, and Inequality in African American History, 1880-1990	3-5
AFRICAAM 123	Great Works of the African American Tradition	5
AFRICAAM 150B	Nineteenth Century America	5
AFRICAAM 154	Black Feminist Theory	5
AFRICAAM 156	Performing History: Race, Politics, and Staging the Plays of August Wilson	4
AFRICAAM 158	Black Queer Theory	5
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AFRICAAM 200Y	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 200Z	Honors Thesis and Senior Thesis Research	3-5
AFRICAAM 245	Understanding Racial and Ethnic Identity Development	3-5
AFRICAAM 262D	African American Poetics	5
AFRICAAM 267E	Martin Luther King, Jr. - His Life, Ideas, and Legacy	4-5
AFRICAST 142	Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice	3-5
AMSTUD 15	Global Flows: The Globalization of Hip Hop Art, Culture, and Politics	1-2
AMSTUD 51Q	Comparative Fictions of Ethnicity	4
AMSTUD 164C	From Freedom to Freedom Now: African American History, 1865-1965	5
AMSTUD 201	History of Education in the United States	3-5
AMSTUD 214	The American 1960s: Thought, Protest, and Culture	5
AMSTUD 226	Race and Racism in American Politics	5

AMSTUD 261E	Mixed Race Literature in the U.S. and South Africa	5
AMSTUD 262C	African American Literature and the Retreat of Jim Crow	5
AMSTUD 262D	African American Poetics	5
ANTHRO 32	Theories in Race and Ethnicity: A Comparative Perspective	5
ARTHIST 178	Ethnicity and Dissent in United States Art and Literature	4
DANCE 45	Dance Improvisation from Freestyle to Hip Hop	1-2
EDUC 193C	Psychological Well-Being On Campus: Perspectives Of The Black Diaspora	1
EDUC 216	Education, Race, and Inequality in African American History, 1880-1990	3-5
HISTORY 11W	Service-Learning Workshop on Issues of Education Equity	1
HISTORY 50A	Colonial and Revolutionary America	3
HISTORY 50B	Nineteenth Century America	3
HISTORY 50C	The United States in the Twentieth Century	3
HISTORY 74S	Sounds of the Century: Popular Music and the United States in the 20th Century	5
HISTORY 150B	Nineteenth Century America	5
HISTORY 150C	The United States in the Twentieth Century	5
HISTORY 164C	From Freedom to Freedom Now: African American History, 1865-1965	5
HISTORY 167A	Martin Luther King, Jr. and the Global Freedom Struggle	3-5
HISTORY 255E	Education, Race, and Inequality in African American History, 1880-1990	3-5
HISTORY 267E	Martin Luther King, Jr. - His Life, Ideas, and Legacy	4-5
HUMBIO 121E	Ethnicity and Medicine	1-3
HUMBIO 122S	Social Class, Race, Ethnicity, and Health	4
LINGUIST 65	African American Vernacular English	3-5
LINGUIST 152	Sociolinguistics and Pidgin Creole Studies	2-4
LINGUIST 252	Sociolinguistics and Pidgin Creole Studies	2-4
LINGUIST 265	African American Vernacular English	3-5
MUSIC 20A	Jazz Theory	3
MUSIC 147J	Studies in Music, Media, and Popular Culture: The Soul Tradition in African American Music	3-4
POLISCI 121L	Racial-Ethnic Politics in US	5
POLISCI 226	Race and Racism in American Politics	5
PSYCH 183	SPARQ Lab	2-3
PSYCH 215	Mind, Culture, and Society	3
PUBLPOL 121L	Racial-Ethnic Politics in US	5
SOC 45Q	Understanding Race and Ethnicity in American Society	4
SOC 145	Race and Ethnic Relations in the USA	4
SOC 149	The Urban Underclass	4
TAPS 32	The 5th Element: Hip Hop Knowledge, Pedagogy, and Social Justice	1-5
TAPS 176S	Finding Meaning in Life's Struggles: Narrative Ways of Healing	5
URBANST 112	The Urban Underclass	4
Caribbean		
AFRICAAM 31	RealTalk: Intimate Discussions about the African Diaspora	1
AFRICAAM 145A	Poetics and Politics of Caribbean Women's Literature	5
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
ARTHIST 192B	Art of the African Diaspora	4
LINGUIST 152	Sociolinguistics and Pidgin Creole Studies	2-4
LINGUIST 252	Sociolinguistics and Pidgin Creole Studies	2-4
African Diaspora		
AFRICAAM 21	African American Vernacular English	3-5
AFRICAAM 31	RealTalk: Intimate Discussions about the African Diaspora	1
AFRICAAM 133	Literature and Society in Africa and the Caribbean	4
AFRICAAM 195	Independent Study	2-5
AFRICAAM 199	Honors Project	1-5
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AMSTUD 261E	Mixed Race Literature in the U.S. and South Africa	5
ANTHRO 27N	Ethnicity and Violence: Anthropological Perspectives	3-5
ANTHRO 32	Theories in Race and Ethnicity: A Comparative Perspective	5
ANTHRO 138	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise	5
ARTHIST 127A	African Art and Politics, c. 1900 - Present	4
ARTHIST 192B	Art of the African Diaspora	4
COMPLIT 149	The Laboring of Diaspora & Border Literary Cultures	3-5
HISTORY 48Q	South Africa: Contested Transitions	4
HISTORY 50A	Colonial and Revolutionary America	3
HISTORY 106A	Global Human Geography: Asia and Africa	5
LINGUIST 152	Sociolinguistics and Pidgin Creole Studies	2-4
Related Courses		
AFRICAAM 18A	Jazz History: Ragtime to Bebop, 1900-1940	3
AFRICAAM 18B	Jazz History: Bebop to Present, 1940-Present	3
AFRICAAM 20A	Jazz Theory	3
AFRICAAM 28	Health Impact of Sexual Assault and Relationship Abuse across the Lifecourse	1-3
AFRICAAM 31	RealTalk: Intimate Discussions about the African Diaspora	1
AFRICAAM 36	REPRESENT! Covering Race, Culture, and Identity In The Arts through Writing, Media, and Transmedia.	5
AFRICAAM 37	Contemporary Choreography: Chocolate Heads Performance Project	2
AFRICAAM 41	Genes and Identity	4
AFRICAAM 45	Dance Improvisation from Freestyle to Hip Hop	1-2
AFRICAAM 52N	Mixed-Race Politics and Culture	3
AFRICAAM 100	Grassroots Community Organizing: Building Power for Collective Liberation	3-5
AFRICAAM 101F	Race & Technology	1-2
AFRICAAM 106	Race, Ethnicity, and Linguistic Diversity in Classrooms: Sociocultural Theory and Practices	3-5
AFRICAAM 107C	The Black Mediterranean: Greece, Rome and Antiquity	4-5

AFRICAAM 111	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AFRICAAM 112	Urban Education	3-5
AFRICAAM 122E	Art in the Streets: Identity in Murals, Site-specific works, and Interventions in Public Spaces	4
AFRICAAM 127A	Can't Stop Won't Stop: A History Of The Hip-Hop Arts	2-4
AFRICAAM 130	Community-based Research As Tool for Social Change:Discourses of Equity in Communities & Classrooms	3-5
AFRICAAM 132	Social Class, Race, Ethnicity, and Health	4
AFRICAAM 133	Literature and Society in Africa and the Caribbean	4
AFRICAAM 145A	Poetics and Politics of Caribbean Women's Literature	5
AFRICAAM 145B	Africa in the 20th Century	5
AFRICAAM 146A	African Politics	4-5
AFRICAAM 150B	Nineteenth Century America	5
AFRICAAM 154	Black Feminist Theory	5
AFRICAAM 157P	Solidarity and Racial Justice	4-5
AFRICAAM 158	Black Queer Theory	5
AFRICAAM 159	James Baldwin & Twentieth Century Literature	5
AFRICAAM 165	Identity and Academic Achievement	3
AFRICAAM 176B	Documentary Fictions	4
AFRICAAM 189	Black Life and Death in the Neoliberal Era	5
AFRICAAM 192	History of Sexual Violence in America	4-5
AFRICAAM 194	Topics in Writing & Rhetoric: Contemporary Black Rhetorics: Black Twitter and Black Digital Cultures	4
AFRICAAM 200X	Honors Thesis and Senior Thesis Seminar	5
AFRICAAM 233A	Counseling Theories and Interventions from a Multicultural Perspective	3-5
AFRICAAM 261E	Mixed Race Literature in the U.S. and South Africa	5
AMELANG 108A	Third-Year Swahili, First Quarter	4
AMSTUD 15	Global Flows: The Globalization of Hip Hop Art, Culture, and Politics	1-2
AMSTUD 51Q	Comparative Fictions of Ethnicity	4
AMSTUD 121Z	Political Power in American Cities	5
AMSTUD 150B	Nineteenth Century America	5
AMSTUD 164C	From Freedom to Freedom Now: African American History, 1865-1965	5
AMSTUD 178	Ethnicity and Dissent in United States Art and Literature	4
AMSTUD 201	History of Education in the United States	3-5
AMSTUD 214	The American 1960s: Thought, Protest, and Culture	5
AMSTUD 226	Race and Racism in American Politics	5
ANTHRO 27N	Ethnicity and Violence: Anthropological Perspectives	3-5
ANTHRO 32	Theories in Race and Ethnicity: A Comparative Perspective	5
ANTHRO 138	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise	5
ANTHRO 238	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise	5
ARTHIST 192B	Art of the African Diaspora	4
COMPLIT 51Q	Comparative Fictions of Ethnicity	4
COMPLIT 149	The Laboring of Diaspora & Border Literary Cultures	3-5
CSRE 127A	Can't Stop Won't Stop: A History Of The Hip-Hop Arts	2-4
CSRE 144	Transforming Self and Systems: Crossing Borders of Race, Nation, Gender, Sexuality, and Class	5
DANCE 30	Contemporary Choreography: Chocolate Heads Performance Project	2
DANCE 45	Dance Improvisation from Freestyle to Hip Hop	1-2
DANCE 58	Hip Hop I: Introduction to Hip Hop	1
DANCE 108	Hip Hop Choreography: Hip Hop Meets Broadway	1
EDUC 12SC	Hip Hop as a Universal Language	2
EDUC 103B	Race, Ethnicity, and Linguistic Diversity in Classrooms: Sociocultural Theory and Practices	3-5
EDUC 165	History of Higher Education in the U.S.	3-5
EDUC 193C	Psychological Well-Being On Campus: Perspectives Of The Black Diaspora	1
EDUC 201	History of Education in the United States	3-5
EDUC 216	Education, Race, and Inequality in African American History, 1880-1990	3-5
EDUC 232	Culture, Learning, and Poverty	2-3
EDUC 243	Writing Across Languages and Cultures: Research in Writing and Writing Instruction	3-5
EDUC 245	Understanding Racial and Ethnic Identity Development	3-5
EDUC 322	Community-based Research As Tool for Social Change:Discourses of Equity in Communities & Classrooms	3-5
FEMGEN 154	Black Feminist Theory	5
HISTORY 11W	Service-Learning Workshop on Issues of Education Equity	1
HISTORY 50A	Colonial and Revolutionary America	3
HISTORY 50B	Nineteenth Century America	3
HISTORY 50C	The United States in the Twentieth Century	3
HISTORY 74S	Sounds of the Century: Popular Music and the United States in the 20th Century	5
HISTORY 106A	Global Human Geography: Asia and Africa	5
HISTORY 146	History of Humanitarian Aid in sub-Saharan Africa	4-5
HISTORY 147	History of South Africa	5
HISTORY 150B	Nineteenth Century America	5
HISTORY 150C	The United States in the Twentieth Century	5
HISTORY 167A	Martin Luther King, Jr. and the Global Freedom Struggle	3-5
HISTORY 255E	Education, Race, and Inequality in African American History, 1880-1990	3-5
HUMBIO 121E	Ethnicity and Medicine	1-3
HUMBIO 122S	Social Class, Race, Ethnicity, and Health	4
LAWGEN 112N	Law and Inequality	3
LINGUIST 65	African American Vernacular English	3-5
LINGUIST 156	Language, Gender, & Sexuality	4
LINGUIST 251	Sociolinguistic Field Methods	3-5
LINGUIST 255B	Sociolinguistics Classics and Community Studies	3-5

LINGUIST 265	African American Vernacular English	3-5
MUSIC 18A	Jazz History: Ragtime to Bebop, 1900-1940	3
MUSIC 18B	Jazz History: Bebop to Present, 1940-Present	3
MUSIC 20A	Jazz Theory	3
POLISCI 11N	The Rwandan Genocide	3
POLISCI 28N	The Changing Nature of Racial Identity in American Politics	3
POLISCI 121L	Racial-Ethnic Politics in US	5
POLISCI 226	Race and Racism in American Politics	5
PSYCH 75	Introduction to Cultural Psychology	5
PSYCH 150	Race and Crime	3
PSYCH 150B	Race and Crime Practicum	2-4
PSYCH 183	SPARQ Lab	2-3
PSYCH 215	Mind, Culture, and Society	3
PUBLPOL 121L	Racial-Ethnic Politics in US	5
RELIGST 246	Constructing Race and Religion in America	4-5
SOC 14N	Inequality in American Society	4
SOC 15N	The Transformation of Socialist Societies	3
SOC 45Q	Understanding Race and Ethnicity in American Society	4
SOC 46N	Race, Ethnic, and National Identities: Imagined Communities	3
SOC 118	Social Movements and Collective Action	4
SOC 119	Understanding Large-Scale Societal Change: The Case of the 1960s	5
SOC 135	Poverty, Inequality, and Social Policy in the United States	3-4
SOC 140	Introduction to Social Stratification	3
SOC 142	Sociology of Gender	3
SOC 145	Race and Ethnic Relations in the USA	4
SOC 155	The Changing American Family	4
TAPS 156	Performing History: Race, Politics, and Staging the Plays of August Wilson	4
TAPS 176S	Finding Meaning in Life's Struggles: Narrative Ways of Healing	5
URBANST 112	The Urban Underclass	4
URBANST 123	Designing Research for Social Justice: Writing a Community-Based Research Proposal	3-5

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

African & African American Studies counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Director: Arnetha Ball (Education)

Associate Director: Katie Dieter

Advisory Committee: Arnetha Ball (Education), Adam Banks (Education), Ralph Richard Banks (Law), Jonathan Calm (Art & Art History), Matthew Clair (Sociology), Rosalind Conerly (Director, Black Community Services Center),Jan Barker-Alexander (Assistant Vice Provost of Student Affairs & Centers for Equity, Community, and Leadership & Offices of First Generation/Low Income Programs), Jennifer Brody (Drama), Bryan Anthony Brown (Education), James Campbell (History), Clayborne Carson (History), Michele Elam (English), James Ferguson (Anthropology), Allyson Hobbs, (History), A-lan Holt (Director, Institute of Diversity in the Arts), Vaughn Rasberry (English), John R. Rickford (Linguistics), Aileen Robinson (Theater and Performance Studies), Joel Samoff (African Studies)

Affiliated Faculty: R. Lanier Anderson (Philosophy), Arnetha Ball (Education), Adam Banks (Education), Ralph Richard Banks (Law), Jennifer Brody (Drama), Bryan Anthony Brown (Education), Joel Cabrita (History), Albert Camarillo (History), James Campbell (History), Clayborne Carson (History), Gordon Chang (History), Wanda Corn (Art and Art History, emerita), David Degusta (Anthropology), Sandra Drake (Emerita), Jennifer Eberhardt (Psychology), Paulla Ebron (Anthropology), Michele Elam (English), James Ferguson (Anthropology), Aleta Hayes (Drama), Allyson Hobbs (History), Hakeem Jefferson (Political Science), Terry Karl (Political Science), Anthony Kramer (Drama), Teresa LaFromboise (Education), Brian Lowery (Graduate School of Business), Lisa Malkki (Anthropology), Hazel Markus (Psychology), Barbaro Martinez-Ruiz (Art and Art History), Paula Moya (English), Elisabeth Mudimbe-Boyi (French and Comparative Literature), Susan Olzak (Sociology), David Palumbo-Liu (Comparative Literature), Arnold Rampersad (English), Vaughn Rasberry (English), John R. Rickford (Linguistics), Richard Roberts (History), Aileen Robinson (Theater & Perfomance Studies), Sonia Rocha (Sociology), Michael Rosenfeld (Sociology), José David Saldívar (English), Ramón Saldívar (English), Rose Salseda (Art History), Joel Samoff (African Studies), Gary Segura (Political Science), Paul Sniderman (Political Science), Forrest Stuart (Sociology), Ewart Thomas (Psychology), Jeane Tsai (Psychology), Jeremy Weinstein (Political Science), Bryan Wolf (American Art and Culture), Yvonne Yarbo-Bejarno (Spanish and Portuguese), Grant Parker (Classics), Alvan Ikoku (Comparative Literature and Medicine), Lauren Davenport (Political Science) Jonathan Calm (Art & Art History), Ato Quayson (English)

Overseas Studies Courses in African and African American Studies

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

African & African American Studies has a special relationship with Capetown. Students who choose to travel to Capetown will receive full unit count towards the AAAS major. Students have also chosen to study abroad in other offered programs. We encourage majors and minors to contact AAAS Student Services Officer, Crystal Todoroff, and the BOSP office for more information.

Courses

AFRICAAM 3E. Michelle Obama in American Culture. 1 Unit.
Never before has the United States had a First Lady like Michelle Obama. During her eight years in the White House, Michelle Obama transformed traditional meanings of womanhood, marriage, motherhood, and style and created new possibilities for what it means to be strong and what it means to be beautiful. No First Lady has ever been so scrutinized but also so beloved: from her J. Crew dresses to her Let's Move campaign, from her vegetable gardens to her chiseled arms, and from her powerful speeches to her casual and always authentic personality. This class examines the impact on American culture of the most popular First Lady in American history.
Same as: AMSTUD 3E, CSRE 3E, FEMGEN 3E, HISTORY 3E

AFRICAAM 4. The Sociology of Music. 3-5 Units.
This course examines music¿its production, its consumption, and it contested role in society¿from a distinctly sociological lens. Why do we prefer certain songs, artists, and musical genres over others? How do we ¿use¿ music to signal group membership and create social categories like class, race, ethnicity, and gender? How does music perpetuate, but also challenge, broader inequalities? Why do some songs become hits? What effects are technology and digital media having on the ways we experience and think about music? Course readings and lectures will explore the various answers to these questions by introducing students to key sociological concepts and ideas. Class time will be spent moving between core theories, listening sessions, discussion of current musical events, and an interrogation of students¿ own musical experiences. Students will undertake a number of short research and writing assignments that call on them to make sociological sense of music in their own lives, in the lives of others, and in society at large.
Same as: CSRE 4, SOC 4

AFRICAAM 5I. Hamilton: An American Musical. 1 Unit.
"Hamilton" is one the most popular and most celebrated musicals in American history. It has received 11 Tony Awards, including best musical, and 16 Tony nominations, the most nominations in Broadway history. It won the Pulitzer Prize and a Grammy Award. The musical draws on the language and rhythms of hip-hop and R & B, genres that are underrepresented in the musical theater tradition. "Hamilton" has redefined the American musical, particularly in terms of sound, casting, and storytelling. What explains the deep cultural impact and acclaim for this play?n nThis interdisciplinary course examines Alexander Hamilton and his world as well as Hamilton: An American Musical through a series of lectures from faculty in History, Theater and Performance Studies, English, Music, and Writing and Rhetoric.
Same as: AMSTUD 5I, CSRE 5I, HISTORY 3G

AFRICAAM 10A. Introduction to Identity, Diversity, and Aesthetics: Arts, Culture, and Pedagogy. 1 Unit.
This weekly lecture series introduces students to the study of identity, diversity, and aesthetics through the work of leading artists and scholars affiliated with the Institute for Diversity in the Arts (IDA). This year's course highlights the educational impact of arts and culture. How can arts and culture help to advance pedagogies of liberation? Among other things, we will examine hip-hop education and how it illuminates ideas around culturally relevant and culturally sustaining pedagogies, indigenous knowledges, embodied knowledges, hip-hop feminisms, and community engaged research. We will look at case studies from East Palo Alto, CA and Cape Town, South Africa.
Same as: CSRE 10A

AFRICAAM 18A. Jazz History: Ragtime to Bebop, 1900-1940. 3 Units.
From the beginning of jazz to the war years.
Same as: MUSIC 18A

AFRICAAM 18B. Jazz History: Bebop to Present, 1940-Present. 3 Units.
Modern jazz styles from Bebop to the current scene. Emphasis is on the significant artists of each style.
Same as: MUSIC 18B

AFRICAAM 19. Studies in Music, Media, and Popular Culture: The Soul Tradition in African American Music. 3-4 Units.
1960s and 70s Black music, including rhythm and blues, Motown, Southern soul, funk, Philadelphia soul, and disco. Its origins in blues, gospel, and jazz to its influence on today's r&b, hip hop, and dance music. Soul's cultural influence and global reach; its interaction with politics, racism, gender, place, technology, and the economy. Synchronous and asynchronous remote learning, with class discussions, small-group activities, guest presenters, and opportunities for activism. Pre-/co-requisite (for music majors): MUSIC 22. (WIM at 4 units only.).
Same as: AMSTUD 147J, CSRE 147J, MUSIC 147J, MUSIC 247J

AFRICAAM 20A. Jazz Theory. 3 Units.
Introduces the language and sounds of jazz through listening, analysis, and compositional exercises. Students apply the fundamentals of music theory to the study of jazz. Prerequisite: 19 or consent of instructor.
Same as: MUSIC 20A

AFRICAAM 21. African American Vernacular English. 3-5 Units.
Vocabulary, pronunciation and grammatical features of the systematic and vibrant vernacular English [AAVE] spoken by African Americans in the US, its historical relation to British dialects, and to English creoles spoken on the S. Carolina Sea Islands (Gullah), in the Caribbean, and in W. Africa. The course will also explore the role of AAVE in the Living Arts of African Americans, as exemplified by writers, preachers, comedians and actors, singers, toasters and rappers, and its connections with challenges that AAVE speakers face in the classroom and courtroom. Service Learning Course (certified by Haas Center). UNITS: 3-5 units. Most students should register for 4 units. Students willing and able to tutor an AAVE speaking child in East Palo Alto and write an additional paper about the experience may register for 5 units, but should consult the instructor first. Students who, for exceptional reasons, need a reduced course load, may request a reduction to 3 units, but more of their course grade will come from exams, and they will be excluded from group participation in the popular AAVE Happenin at the end of the course.
Same as: CSRE 21, LINGUIST 65, LINGUIST 265

AFRICAAM 28. Health Impact of Sexual Assault and Relationship Abuse across the Lifecourse. 1-3 Unit.
(Human Biology students must enroll in HUMBIO 28 or AFRICAAM 28. Med/Grad students should enroll in SOMGEN 237 for 1-3 units.) An overview of the acute and chronic physical and psychological health impact of sexual abuse through the perspective of survivors of childhood, adolescent, young and middle adult, and elder abuse, including special populations such as pregnant women, military and veterans, prison inmates, individuals with mental or physical impairments. Also addresses: race/ethnicity, gender identity, sexual orientation, and other demographic and societal factors, including issues specific to college culture. Professionals with expertise in sexual assault present behavioral and prevention efforts such as bystander intervention training, medical screening, counseling and other interventions to manage the emotional trauma of abuse. Undergraduates must enroll for 3 units.To receive a letter grade in any listing, students must enroll for 3 units. This course must be taken for a letter grade and a minimum of 3 units to be eligible for Ways credit.
Same as: FEMGEN 237, HUMBIO 28, SOMGEN 237

AFRICAAM 30. The Egyptians. 3-5 Units.
This course traces the emergence and development of the distinctive cultural world of the ancient Egyptians over nearly 4,000 years. Through archaeological and textual evidence, we will investigate the social structures, religious beliefs, and expressive traditions that framed life and death in this extraordinary region. Students with or without prior background are equally encouraged.
Same as: CLASSICS 82, HISTORY 48, HISTORY 148

AFRICAAM 31. RealTalk: Intimate Discussions about the African Diaspora. 1 Unit.
Students to engage in an intellectual discussion about the African Diaspora with leading faculty at Stanford across departments including Education, Linguistics, Sociology, History, Political Science, English, and Theater & Performance Studies. Several lunches with guest speakers. This course will meet in the Program for African & African American Studies Office in Building 360 Room 362B (Main Quad). This course is limited to Freshman and Sophomore enrollment.

AFRICAAM 32. The 5th Element: Hip Hop Knowledge, Pedagogy, and Social Justice. 1-5 Unit.
This course-series brings together leading scholars with critically-acclaimed artists, local teachers, youth, and community organizations to consider the complex relationships between culture, knowledge, pedagogy and social justice. Participants will examine the cultural meaning of knowledge as "the 5th element" of Hip Hop Culture (in addition to MCing, DJing, graffiti, and dance) and how educators and cultural workers have leveraged this knowledge for social justice. Overall, participants will gain a strong theoretical knowledge of culturally relevant and culturally sustaining pedagogies and learn to apply this knowledge by engaging with guest artists, teachers, youth, and community youth arts organizations.
Same as: AMSTUD 32, CSRE 32A, EDUC 32, EDUC 432, TAPS 32

AFRICAAM 36. REPRESENT! Covering Race, Culture, and Identity In The Arts through Writing, Media, and Transmedia.. 5 Units.
Probably since the first audience formed for the first chalk scrawls in a cave, there have been storytellers to narrate that caveperson's art and life, and critics to troll that caveperson's choice and usage of color. And so it goes. This course is an exploration into how to cover race, culture, and identity in the arts in journalism, such as print, web, video, radio, and podcasting. It is also an arts journalism practicum. During the quarter, we will be working toward creating work that is publishable in various venues and outlets. In this course, we will be discussing exemplary arts writers and their works and interrogating critical questions around race, identity, representation, and ethics. Experienced journalists, editors, and experts from different platforms and backgrounds will also be imparting important skills and training that will help you to navigate today's working media and transmedia environments. Those who enroll in the class will be expected to produce quality content (e.g. articles, blog posts, video reports, podcasts) for media outlets. Some travel outside of class may be required for additional reporting and training. This seminar class will be By Instructor Approval Only. Please submit an application by February 22 at 11:59pm. Starred items are required. The app is available at: http://bit.ly/RepresentClass36 Those selected for this class will be informed by March 2nd so that they may enroll in the course. Please do not apply for the course if you are unsure about completing it. If you have any questions, you may email the instructor at: jeffc410@stanford.edu.
Same as: CSRE 36

AFRICAAM 37. Contemporary Choreography: Chocolate Heads Performance Project. 2 Units.
The Chocolate Heads Movement Band attracts dancers and beginner movers from diverse dance styles and cultures (Hip-Hop to Contemporary, Skateboarding to Wushu). Students participate in the dance-making/remix process, alongside storytellers, musicians, visual artists, and filmmakers, to co-design a multimedia production. Autumn 2020, we will pioneer the ¿visceral in the virtual¿ to create a gestural portrait of a brilliant artistic community. Where are you in the world? Imagine moving through a sensorial landscape while traveling in place. What personal passion will drive your exploration? Audition: Tuesday (9/15) during class. Callbacks and Alternate Audition: Thursday (9/17), with instructor permission. Dancers, interdisciplinarians, and artists of all stripes are encouraged to contact the instructor, ahayes1@stanford.edu.
Same as: DANCE 30

AFRICAAM 39. Long Live Our 4Bil. Year Old Mother: Black Feminist Praxis, Indigenous Resistance, Queer Possibility. 1-4 Unit.
How can art facilitate a culture that values women, mothers, transfolks, caregivers, girls? How can black, indigenous, and people of color frameworks help us reckon with oppressive systems that threaten safety and survival for marginalized people and the lands that sustain us? How can these questions reveal the brilliant and inventive forms of survival that precede and transcend harmful systems toward a world of possibility? Each week, this course will call on artists, scholars, and organizers of color who clarify the urgency and interconnection of issues from patriarchal violence to environmental degradation; criminalization to legacies of settler colonialism. These same thinkers will also speak to the imaginative, everyday knowledge and creative healing practices that our forebears have used for millennia to give vision and rise to true transformation.
Same as: CSRE 39, FEMGEN 39, NATIVEAM 39

AFRICAAM 40SI. Possessive Investment in Whiteness. 1-2 Unit.
An approachable but nuanced way of developing a notion of the construction and maintenance of whiteness in the United States. By focusing on George Lipsitz's book, the class works to challenge and refine the ideas of white privilege and race in the history and contemporary United States. By focusing on the single text, with some outside supplementary material, the course does not contend that Lipsitz is providing the only truth, but the class looks to complicate his notions and expand them with personal and outside understandings. May be repeated for credit.

AFRICAAM 41. Genes and Identity. 4 Units.
In recent decades genes have increasingly become endowed with the cultural power to explain many aspects of human life: physical traits, diseases, behaviors, ancestral histories, and identity. In this course we will explore a deepening societal intrigue with genetic accounts of personal identity and political meaning. Students will engage with varied interdisciplinary sources that range from legal cases to scientific articles, medical ethics guidelines, films, and anthropological works (ethnographies). We will explore several case studies where the use of DNA markers (as proof of heritage, disease risk, or legal standing) has spawned cultural movements that are biosocial in nature. Throughout we will look at how new social movements are organized around gene-based definitions of personhood, health, and legal truth. Several examples include political analyses of citizenship and belonging. On this count we will discuss issues of African ancestry testing as evidence in slavery reparations cases, revisit debates on whether Black Freedman should be allowed into the Cherokee and Seminole Nations, and hear arguments on whether people with genetic links to Jewish groups should have a right of return to Israel. We will also examine the ways genetic knowledge may shape different health politics at the individual and societal level. On this count we will do close readings of how personal genomics testing companies operate, we will investigate how health disparities funding as well as orphan disease research take on new valences when re-framed in genetic terms, and we will see how new articulations of global health priorities are emerging through genetic research in places like Africa. Finally we will explore social implications of forensic uses of DNA. Here we will examine civil liberties concerns about genetic familial searching in forensic databases that disproportionately target specific minority groups as criminal suspects, and inquire into the use of DNA to generate digital mugshots of suspects that re-introduce genetic concepts of race.
Same as: ANTHRO 41, CSRE 41A

AFRICAAM 42. Clothing and Black Expressive Culture in African American History. 3-5 Units.
This course will examine the long tradition of Black expressive culture through clothing practices. We will specifically focus on the material history of how clothing has been used to refashion and retain Black identities from slavery to the millennial era. More than simply clothing people, Black fashion and dress challenged proscribed race, sex, and gendered notions of self. In the course we will examine scholars whose research on Black sartorial practices centers the narratives of marginalized cultural workers, privileging their voices to illuminate the archive of images and objects. Whether of working-class upbringing, activist and political participants, Black bourgeoisie, or one who aspires to a particular lifestyle, African American clothing culture represents an instance of Black signifyin¿ (a spectrum of Black performance styles and expressive culture) that rewrites everyday sartorial practices to reimagine the Black subject.To do this we will apply concepts emerging out of Black performance theory and visual culture, history, and cultural studies.

AFRICAAM 43. Introduction to English III: Introduction to African American Literature. 3-5 Units.
In his bold study, What Was African American Literature?, Kenneth Warren defines African American literature as a late nineteenth- to mid-twentieth-century response to the nation's Jim Crow segregated order. But in the aftermath of the Jim Crow era and the Civil Rights movement, can critics still speak, coherently, of "African American literature"? And how does this political conception of African American literary production compare with accounts grounded in black language and culture? Taking up Warren's intervention, this course will explore African American literature from its earliest manifestations in the spirituals and slave narratives to texts composed at the height of desegregation and decolonization struggles at mid-century and beyond. English majors must take this class for 5 units.
Same as: AMSTUD 12A, ENGLISH 12A

AFRICAAM 44. Post-Civil Right Black America. 3-5 Units.
This course will examine sites of cultural production and resistance of Black America in the post-civil rights era in the United States. It will introduce students to the rhetorical problems, constraints, and possibilities of contemporary Black America through analysis of historical and social trends. We will take a cultural studies approach to texts that emerged from Black struggles and contributions to American society. Though there will be attention given to roots of Black America before emancipation, our primary concern will be with 20th and 21st century African American life and culture. nnTo do this, we will draw from a broad range of scholarship and theory including African American history, studies in race and gender, performance theory, and visual and media studies. The texts we will read and screen are there to assist us in understanding how race and sex are produced and position Blacks within systems of inequality.

AFRICAAM 45. Dance Improvisation from Freestyle to Hip Hop. 1-2 Unit.
This class is an arena for physical and artistic exploration to fire the imagination of dance improvisers, cultivate sensation and perception within and without studio practice and to promote interactive intelligence.nStudents will learn to harness and transform habitual movement patterns and dance trainings as resources for new ways of moving: expand their awareness of being a part of a bigger picture, while being attentive to everything all at once: and to use visual, aural and kinesthetic responses to convert those impulses into artistic material. Class will be accompanied by live and recorded music and include weekly jam sessions. Open to students from all dance, movement, athletic backgrounds and skill levels. Beginners welcome.
Same as: DANCE 45

AFRICAAM 47. History of South Africa. 3 Units.
(Same as HISTORY 147. History majors and others taking 5 units, register for 147.) Introduction, focusing particularly on the modern era. Topics include: precolonial African societies; European colonization; the impact of the mineral revolution; the evolution of African and Afrikaner nationalism; the rise and fall of the apartheid state; the politics of post-apartheid transformation; and the AIDS crisis.
Same as: CSRE 74, HISTORY 47

AFRICAAM 48Q. South Africa: Contested Transitions. 4 Units.
Preference to sophomores. The inauguration of Nelson Mandela as president in May 1994 marked the end of an era and a way of life for South Africa. The changes have been dramatic, yet the legacies of racism and inequality persist. Focus: overlapping and sharply contested transitions. Who advocates and opposes change? Why? What are their historical and social roots and strategies? How do people reconstruct their society? Historical and current sources, including films, novels, and the Internet.
Same as: HISTORY 48Q

AFRICAAM 49S. African Futures: Nationalism, Pan-Africanism, and Beyond. 5 Units.
This course examines decolonization and its aftermath in sub-Saharan Africa. With a "wind of change" sweeping the continent, how did Africans imagine their futures together? From W.E.B. Du Bois to Black Panther, this course will engage in historical readings of political essays, speeches, film, and literature to consider how Africans envisioned their communities beyond empire. Topics will include a variety of projects for African unity, from experiments with Pan-Africanism, to religious revivalism, to Afrofuturist art and aesthetics.
Same as: HISTORY 49S

AFRICAAM 50B. Nineteenth Century America. 3 Units.
(Same as HISTORY 150B. History majors and others taking 5 units, register in 150B.) Territorial expansion, social change, and economic transformation. The causes and consequences of the Civil War. Topics include: urbanization and the market revolution; slavery and the Old South; sectional conflict; successes and failures of Reconstruction; and late 19th-century society and culture.
Same as: CSRE 50S, HISTORY 50B

AFRICAAM 50C. The United States in the Twentieth Century. 3 Units.
(Same as HISTORY 150C. History majors and others taking 5 units, register for 150C.) 100 years ago, women and most African-Americans couldn't vote; automobiles were rare and computers didn't exist; and the U.S. was a minor power in a world dominated by European empires. This course surveys politics, culture, and social movements to answer the question: How did we get from there to here? Two historical research "labs" or archival sessions focus on the Great Depression in the 1930s and radical and conservative students movements of the 1960s. Suitable for non-majors and majors alike.
Same as: HISTORY 50C

AFRICAAM 51A. Race in Science. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Fall quarter focuses on science. What is the science of race and racism? How does race affect scientific work? Weekly guest speakers will address such issues as the psychology and anthropology of race and racism; how race, language, and culture affect education; race in environmental science and environmental justice; the science of reducing police violence; and the role of race in genomic research. Talks will take a variety of forms, from panel discussions to interviews and lectures. Weekly assignments: read a related article and participate in an online discussion.
Same as: CEE 151A, COMM 51A, CSRE 51A, HUMBIO 71A, STS 51A

AFRICAAM 51B. Race in Technology. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Winter quarter focuses on technology. How do race and racism affect the design and social impact of technology, broadly defined? Can new or different technology help to reduce racial bias? Invited speakers will address the role of race in such issues as energy infrastructure, nuclear arms control, algorithmic accountability, machine learning, artificial intelligence, and synthetic biology. Talks will take a variety of forms, ranging from panel discussions to interviews and lectures. Weekly assignments: read a related article and participate in an online discussion.
Same as: BIOE 91B, CEE 151B, COMM 51B, CSRE 51B, HUMBIO 71B, STS 51B

AFRICAAM 51C. Race in Medicine. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Spring quarter focuses on medicine. How do race and racism affect medical research and medical care? What accounts for health disparities among racial groups? What are the history, ethics, legal, and social issues surrounding racialized medical experiments and treatments? Invited speakers will address these and other issues. Talks will take a variety of forms: conversations, interviews, panels, and others. Weekly assignments: read a related article and participate in an online discussion.
Same as: BIOE 91C, CEE 151C, CSRE 51C, HUMBIO 71C, STS 51C

AFRICAAM 52N. Mixed-Race Politics and Culture. 3 Units.
Today, almost one-third of Americans identify with a racial/ethnic minority group, and more than 9 million Americans identify with multiple races. What are the implications of such diversity for American politics and culture? In this course, we approach issues of race from an interdisciplinary perspective, employing research in the social sciences and humanities to assess how race shapes perceptions of identity as well as political behavior in 21st century U.S. We will examine issues surrounding the role of multiculturalism, immigration, acculturation, racial representation and racial prejudice in American society. Topics we will explore include the political and social formation of "race"; racial representation in the media, arts, and popular culture; the rise and decline of the "one-drop rule" and its effect on political and cultural attachments; the politicization of Census categories and the rise of the Multiracial Movement.
Same as: ENGLISH 52N

AFRICAAM 54Q. African American Women's Lives. 3-4 Units.
Preference to sophomores. African American women have been placed on the periphery of many historical documents. This course will encourage students to think critically about historical sources and to use creative and rigorous historical methods to recover African American women¿s experiences. Drawing largely on primary sources such as letters, personal journals, literature and film, this course explores the everyday lives of African American women in 19th- and 20th-century America. We will begin in our present moment with a discussion of Michelle Obama and then we will look back on the lives and times of a wide range of African American women including: Charlotte Forten Grimké, a 19th-century reformer and teacher; Nella Larsen, a Harlem Renaissance novelist; Josephine Baker, the expatriate entertainer and singer; and Ida B. Wells and Ella Baker, two luminaries of civil rights activism. We will examine the struggles of African American women to define their own lives and improve the social, economic, political and cultural conditions of black communities. Topics will include women¿s enslavement and freedom, kinship and family relations, institution and community building, violence, labor and leisure, changing gender roles, consumer and beauty culture, social activism, and the politics of sexuality.
Same as: AMSTUD 54Q, FEMGEN 54Q, HISTORY 54Q

AFRICAAM 55F. The Civil War and Reconstruction Era, 1830 to 1877. 3-5 Units.
(History 55F is 3 units; History 155F is 5 units.)This course explores the causes, course, and consequences of the American Civil War. The Civil War profoundly impacted American life at national, sectional, and constitutional levels, and radically challenged categories of race and citizenship. Topics covered include: the crisis of union and disunion in an expanding republic; slavery, race, and emancipation as national problems and personal experiences; the horrors of total war for individuals and society; and the challenges--social and political--of Reconstruction.
Same as: AMSTUD 55F, AMSTUD 155F, HISTORY 55F, HISTORY 155F

AFRICAAM 58A. Egypt in the Age of Heresy. 3-5 Units.
Perhaps the most controversial era in ancient Egyptian history, the Amarna period (c.1350-1334 BCE) was marked by great sociocultural transformation, notably the introduction of a new 'religion' (often considered the world's first form of monotheism), the construction of a new royal city, and radical departures in artistic and architectural styles. This course will introduce archaeological and textual sources of ancient Egypt, investigating topics such as theological promotion, projections of power, social structure, urban design, interregional diplomacy, and historical legacy during the inception, height, and aftermath of this highly enigmatic period. Students with or without prior background are equally encouraged.
Same as: AFRICAST 58, ARCHLGY 58, CLASSICS 58

AFRICAAM 58Q. American Landscapes of Segregation. 3-4 Units.
This course examines various landscapes of segregation in U.S. history from 19th century reconstruction and settler expansion through the contemporary U.S. security state. Each week we consider different histories of segregation including native reservation and boarding school stories, Jim Crow and post-World War II urban/suburban segregation, school integration and bussing, and the rise of the carceral state. We will ask: How have Americans moved through space with different degrees of freedom and constraint over time, and how has that shaped what it has meant to be an American in different ways for different groups? How has access to land, property, consumer, recreational and educational spaces and resources been regulated by categories of race, gender, sexuality, colonial subjectivity, immigrant status and class? To gain a better sense of our local history, we will also consider how structures of segregation have historically mapped the Bay Area. Sources include primary and secondary historic texts, feature and documentary films, photography, and poetry.
Same as: AMSTUD 58Q, HISTORY 58Q

AFRICAAM 62Q. A Comparative Exploration of Higher Education in Jamaica (Anglo-Caribbean) and South Africa. 3-5 Units.
How do developing (former colonized) nations feature in global conversations on the purpose of higher education in the Twenty-first Century and beyond? In this project-based seminar students will examine higher education systems in South Africa, and the Caribbean ¿ special emphasis on Jamaica. Together, we engage and explore fundamental questions such as: Is higher education purely a private good or a public good with private benefits? Are universities simply a means of social mobility in developing countries? What role does higher education play in the attainment of national development goals? How has student activism as evidenced by movements like #RhodesMustFall, #FeesMustFall in South Africa, and The Rodney Riots at the University of the West Indies (UWI) in Jamaica reshaped the higher education landscape and the national discourse.

AFRICAAM 64C. From Freedom to Freedom Now!: African American History, 1865-1965. 3 Units.
(Same as HISTORY 164C. History majors and others taking 5 units, register for 164C.) Explores the working lives, social worlds, political ideologies and cultural expressions of African Americans from emancipation to the early civil rights era. Topics include: the transition from slavery to freedom, family life, work, culture, leisure patterns, resistance, migration and social activism. Draws largely on primary sources including autobiographies, memoirs, letters, personal journals, newspaper articles, pamphlets, speeches, literature, film and music.

AFRICAAM 68D. American Prophet: The Inner Life and Global Vision of Martin Luther King, Jr.. 3-5 Units.
Martin Luther King, Jr., was the 20th-century's best-known African-American leader, but the religious roots of his charismatic leadership are far less widely known. The documents assembled and published by Stanford's King Research and Education Institute provide the source materials for this exploration of King's swift rise to international prominence as an articulate advocate of global peace and justice.
Same as: AMSTUD 168D, CSRE 68, HISTORY 68D, HISTORY 168D

AFRICAAM 69. Black Studies Matter. 3-5 Units.
This interdisciplinary course will introduce students to ten foundational texts in Black Studies, including classic works by Toni Morrison, James Baldwin, Lorraine Hansberry, C. L. R. James, W. E. B. DuBois, and Audre Lorde. The discussions will connect these texts to contemporary conversations about Black feminism, Black politics, mass incarceration, policing, and Black life in America in the twenty-first century. We welcome a wide range of students to enroll in this class: undergraduates and graduate students and members of the larger Stanford community who would like to gain a deeper understanding of Black Studies. This class is particularly urgent in our current moment. Taken together, the selected readings will provide critical historical and cultural context to grasp the meanings of our own tumultuous times. n nThis course draws on primary sources that reveal the centrality of Black Studies to understanding our world and the major themes that animate our lives: history, identity, memory, gender, sexuality, belonging, exclusion, and the varied responses and forms of resistance to four hundred years of racial oppression. These texts invite students to delve deeply into the lived experiences of African Americans across time periods, class positions, sexual orientations, and geographic locations. The lectures and discussions are led by faculty in African and African American Studies (AAAS), Comparative Studies in Race and Ethnicity (CSRE), History, Theater and Performance Studies, English, and Philosophy.
Same as: AFRICAAM 269

AFRICAAM 71. Introduction to Capoeira: An African Brazilian Art Form. 1 Unit.
Capoeira is an African Brazilian art form that incorporates, dance, music, self-defense and acrobatics. Created by enslaved Africans in Brazil who used this form as a tool for liberation and survival, it has since become a popular art form practiced around the world. In this course students will learn basic movements for both Capoeira Angola and Capoeira Regional, and the history of this rich and physically rigorous art form. Students will learn basic acrobatic skills, be introduced to Capoeira songs, and learn to play rhythms on the drum, pandeiro (tambourine), and the Berimbau -- a single stringed bow instrument. This course will be physically rigorous and fun! No previous experience necessary.
Same as: DANCE 71

AFRICAAM 75E. Black Cinema. 2 Units.
How filmmakers represent historical and cultural issues in Black cinema.

AFRICAAM 76B. The Social Life of Neighborhoods. 3-5 Units.
How do neighborhoods come to be? How and why do they change? What is the role of power, money, race, immigration, segregation, culture, government, and other forces? In this course, students will interrogate these questions using literatures from sociology, geography, and political science, along with archival, observational, interview, and cartographic (GIS) methods. Students will work in small groups to create content (e.g., images, audio, and video) for a self-guided ¿neighborhood tour,¿ which will be added to a mobile app and/or website.
Same as: CSRE 176B, SOC 176, SOC 276, URBANST 179

AFRICAAM 78. Art + Community: Division, Resilience & Reconciliation. 1-5 Unit.
Violence and trauma isolates and segregates us. Part of the healing process must be about coming back into community. Freedom is meaningful only insofar as it lifts all, especially those who have been done the most harm. In times of violence and polarization, art can heal and brings people together. In this course, we will explore how we make and sustain community, especially in the face of threats from within and without. We will do this especially through examining how artists and culture workers of color develop and advance practices that build mutuality, criticality, renewal, trust, and joy in the face of ongoing racial injustice and cultural inequity.
Same as: CSRE 78

AFRICAAM 80Q. Race and Gender in Silicon Valley. 3 Units.
Join us as we go behind the scenes of some of the big headlines about trouble in Silicon Valley. We'll start with the basic questions like who decides who gets to see themselves as "a computer person," and how do early childhood and educational experiences shape our perceptions of our relationship to technology? Then we'll see how those questions are fundamental to a wide variety of recent events from #metoo in tech companies, to the ways the under-representation of women and people of color in tech companies impacts the kinds of products that Silicon Valley brings to market. We'll see how data and the coming age of AI raise the stakes on these questions of identity and technology. How can we ensure that AI technology will help reduce bias in human decision-making in areas from marketing to criminal justice, rather than amplify it?.
Same as: CS 80Q

AFRICAAM 92BP. Contemporary Black Poetry and Poetics. 5 Units.
In this poetry workshop, students will write and read closely, exploring various aspects of poetic craft, including imagery, metaphor and simile, line, stanza, music, rhythm, diction, and tone. The course reading will focus on the rich diversity of contemporary poetry from the global Black diaspora, with a special emphasis on poetry that investigates the intersections of race, cultural identity, nationhood, gender, and sexuality. Note: No prior knowledge of Black poetry and poetics is required. First priority to undergrads. Students must attend the first class meeting to retain their roster spot.
Same as: ENGLISH 92BP

AFRICAAM 93. Research Methods in Africana Studies. 3-5 Units.
This course introduces research methodologies in Africana Studies. Under the guidance of the Research Fellow in the African and African American Studies Program, students will study the methods that Africana scholars, artists, and activists employ to design and execute research on Africana phenomena. The class will include lectures, close readings of texts, research assignments, and lively discussions. The course materials will feature both foundational and contemporary texts in the field of Black Studies. Our engagement with Africana research methodologies will pose critical questions about interdisciplinary research and cross-disciplinary perspectives with careful attention to intersectionality, cultural competence, and ethics in research. The class will also discuss how Africana thinkers challenge conventional modes of knowledge production and, in so doing, offer critiques and contributions that advance the methodologies of related disciplines. Students will leave the course better prepared to take on the senior thesis capstone project.
Same as: AFRICAAM 293

AFRICAAM 94. Public Space in Iran: Murals, Graffiti, Performance. 3-4 Units.
This course examines the history and traditions of artistic engagement in public space in Iran. It offers a unique glimpse into Iran's contemporary art and visual culture through the investigation of public art practices and cultural expression, as well as older traditions of performing arts such as Parde-khani and Ta zieh. The course will be held in conjunction with the Stanford symposium, Art, Social Space and Public Discourse in Iran.

AFRICAAM 95. Liberation Through Land: Organic Gardening and Racial Justice. 2 Units.
Through field trips, practical work and readings, this course provides students with the tools to begin cultivating a relationship to land that focuses on direct engagement with sustainable gardening, from seed to harvest. The course will take place on the O'Donohue Family Stanford Educational Farm, where students will be given the opportunity to learn how to sow seeds, prepare garden beds, amend soils, build compost, and take care of plants. The history of forced farm labor in the U.S., from slavery to low-wage migrant labor, means that many people of color encounter agricultural spaces as sites of trauma and oppression. In this course we will explore the potential for revisiting a narrative of peaceful relation to land and crop that existed long before the trauma occurred, acknowledging the beautiful history of POC coexistence with land. Since this is a practical course, there will be a strong emphasis on participation. Application available at https://goo.gl/forms/cbYX3gSGdrHgHBJH3; deadline to apply is September 18, 2018, at midnight. The course is co-sponsored by the Institute for Diversity in the Arts (IDA) and the Earth Systems Program.
Same as: CSRE 95, EARTHSYS 95

AFRICAAM 100. Grassroots Community Organizing: Building Power for Collective Liberation. 3-5 Units.
Taught by long-time community organizer, Beatriz Herrera. This course explores the theory, practice and history of grassroots community organizing as a method for developing community power to promoting social justice. We will develop skills for 1-on-1 relational meetings, media messaging, fundraising strategies, power structure analysis, and strategies organizing across racial/ethnic difference. And we will contextualize these through the theories and practices developed in the racial, gender, queer, environmental, immigrant, housing and economic justice movements to better understand how organizing has been used to engage communities in the process of social change. Through this class, students will gain the hard skills and analytical tools needed to successfully organize campaigns and movements that work to address complex systems of power, privilege, and oppression. As a Community-Engaged Learning course, students will work directly with community organizations on campaigns to address community needs, deepen their knowledge of theory and history through hands-on practice, and develop a critical analysis of inequality at the structural and interpersonal levels. Placements with community organizations are limited. Enrollment will be determined on the first day through a simple application process. Students will have the option to continue the course for a second quarter in the Winter, where they will execute a campaign either on campus or in collaboration with their community partner.
Same as: CSRE 100, FEMGEN 100X, URBANST 108

AFRICAAM 101F. Race & Technology. 1-2 Unit.
The program in African & African American Studies will be offering a weekly lecture series to expose and introduce underrepresented groups to the world of technology by creating a space where the idea of starting can lead to a "Start Up". The AAAS "Race & Technology" course endeavors to de-code the language of technology creation, how to build a team, problem solving, pitching an idea, leveraging the work of all disciplines in creating an entrepreneurship mindset. nnnScholars and industry people will cover topics such as the digital divide, women in technology, and social media.
Same as: AFRICAAM 201F

AFRICAAM 101Q. Black & White Race Relations in American Fiction & Film. 3-5 Units.
Movies and the fiction that inspires them; power dynamics behind production including historical events, artistic vision, politics, and racial stereotypes. What images of black and white does Hollywood produce to forge a national identity? How do films promote equality between the races? What is lost or gained in film adaptations of books? NOTE: Students must attend the first day; admission to the class will be determined based on an in class essay.
Same as: AMSTUD 42Q, CSRE 41Q

AFRICAAM 102B. Art and Social Criticism. 5 Units.
Visual artists have long been in the forefront of social criticism in America. Since the 1960s, various visual strategies have helped emergent progressive political movements articulate and represent complex social issues. Which artists and particular art works/projects have become key anchors for discourses on racism, sexism, economic and social inequality, immigrant rights and climate change? We will learn about a spectrum of political art designed to raise social awareness, spark social change and rouse protest. The Art Workers Coalition's agit-prop opposing the Vietnam War and ACT-UP's emblematic signs and symbols during the AIDS/HIV crisis of the 1980s galvanized a generation into action. Works such as Judy Chicago's The Dinner Party (1979), Fred Wilson's Mining the Museum (1992), and Glenn Ligon's paintings appropriating fragments from African-American literature all raised awareness by excavating historical evidence of the long legacy resisting marginalization. For three decades feminist artists Adrian Piper, Barbara Kruger and the Guerilla Girls have combined institutional critique and direct address into a provocative form of criticality. Recent art for social justice is reaching ever broadening publics by redrawing the role of artist and audience exemplified by the democratization of poster making and internet campaigns of Occupy and the Movement for Black Lives. We will also consider the collective aesthetic activisms in the Post-Occupy era including Global Ultra Luxury Faction, Climate Justice art projects, and the visual culture of Trump era mass protests. Why are each of these examples successful as influential and enduring markers of social criticism? What have these socially responsive practices contributed to our understanding of American history?.
Same as: AMSTUD 102, ARTHIST 162B, CSRE 102A, FEMGEN 102

AFRICAAM 105. Black Matters: Introduction to Black Studies. 5 Units.
This course situates the study of Black lives, known interchangeably as African American Studies, Black Studies, Africana Studies, or African Diaspora Studies, within the context of ongoing struggles against anti-Black racism. We will explore the founding principles and purposes of the field, the evolution of its imperatives, its key debates, and the lives and missions of its progenitors and practitioners. In doing so we will survey, broadly and deeply, the diverse historical, political, social, cultural, and economic experiences and expressions of the African Diaspora.

AFRICAAM 106. Race, Ethnicity, and Linguistic Diversity in Classrooms: Sociocultural Theory and Practices. 3-5 Units.
Focus is on classrooms with students from diverse racial, ethnic and linguistic backgrounds. Studies, writing, and media representation of urban and diverse school settings; implications for transforming teaching and learning. Issues related to developing teachers with attitudes, dispositions, and skills necessary to teach diverse students.
Same as: CSRE 103B, EDUC 103B, EDUC 337

AFRICAAM 106I. Stanford Dance Community: Inter-Style Choreography Workshop. 1-2 Unit.
Designed for adventurous dancers, choreographers and student dance team leaders across Stanford campus. Students will explore a multiplicity of dance styles presented both by peer choreographers, as well as professionals in the field, to create a community of dancers who want to experiment and innovate within their form. The emphasis of the class is on individual growth as a dancer and dance maker through exposure to new and unfamiliar styles. Student dance team leaders and dancers with a strong interest in both choreography and learning different forms are highly encouraged to attend. Interested participants encouraged but not required to contact instructor, Aleta Hayes: ahayes1@stanford.edu. Course will consist of weekly choreography master classes taught by peers, composition intensives facilitated by the instructor, and guest professional master classes, not represented by the class participants.
Same as: DANCE 106I

AFRICAAM 107C. The Black Mediterranean: Greece, Rome and Antiquity. 4-5 Units.
Explore problems of race and ethnicity as viable criteria in studying ancient societies and consider the question, What is the Mediterranean?, in relation to premodern evidence. Investigate the role of blackness as a marker of ethnicity; the demography of slavery and its roles in forming social identities; and environmental determinism as a factor in ethnic and racial thinking. Consider Greek and Roman perspectives and behavior, and their impact on later theories of race and ethnicity as well as the Mediterranean as a whole.
Same as: CSRE 107

AFRICAAM 111. AIDS, Literacy, and Land: Foreign Aid and Development in Africa. 3-5 Units.
Foreign aid can help Africa, say the advocates. Certainly not, say the critics. Is foreign aid a solution? or a problem? Should there be more aid, less aid, or none at all? Africa has developed imaginative and innovative approaches in many sectors. At the same time, many African countries have become increasingly dependent on foreign aid. How do foreign aid and local initiatives intersect? We will examine several contentious issues in contemporary Africa, exploring roots, contested analyses, and proposed solutions, examining foreign aid and the aid relationship. As African communities and countries work to shape their future, what are the foreign roles, and what are their consequences?.
Same as: AFRICAST 112, AFRICAST 212

AFRICAAM 112. Urban Education. 3-5 Units.
(Graduate students register for EDUC 212 or SOC 229X). Combination of social science and historical perspectives trace the major developments, contexts, tensions, challenges, and policy issues of urban education.
Same as: CSRE 112X, EDUC 112, EDUC 212, SOC 129X, SOC 229X

AFRICAAM 112B. African Literature: From Chinua Achebe to Afrofuturism. 3-5 Units.
This course will be an exploration of the major writers and diverse literary traditions of the African continent. We will examine various elements (genre, form, orality, etc.) across a variety of political, social, and literary categories (colonial/postcolonial, modernism/postmodernism, gender, class, literary history, religion, etc.). We will also address issues such as African literature and its relationship to world literature and the question of language and of translation. Writers to be discussed will include Chinua Achebe, Wole Soyinka, Tsitsi Dangarembga, Fiston Mwanza Mujila, Kamel Daoud, Tayeb Salih, and NoViolet Bulawayo, among others.nThe class will be structured around the close-reading of passages from individual texts with an attempt to relate the details derived from the reading process to larger areas of significance within the field. Students should make sure to bring their texts to class with them and must be prepared to contribute to class discussions.
Same as: ENGLISH 112B

AFRICAAM 113V. Freedom in Chains: Black Slavery in the Atlantic, 1400s-1800s. 3-5 Units.
This course will focus on the history of slavery in the British, French, Spanish, Portuguese and Dutch Atlantic world(s), from the late 1400s to the 1800s. Its main focus will be on the experiences of enslaved Africans and their descendants. Between the sixteenth and nineteenth centuries, the Europeans forcibly embarked over 10 million Africans to the Americas. Drawing on methodologies used by historians, archaeologists and anthropologists, the course will reconstruct the daily lives and the socio-economic, cultural and political histories of these captives. We will seek to hear their voices by investigating a variety of historical testimonies and recent scholarship. The course will examine slavery in the context of broader trends in Atlantic World studies, a field that has grown considerably in recent years, providing new ways of understanding historical developments across national boundaries. We will seek to identify commonalities and differences across time periods and regions and the reasons for those differences. Covered topics will include slave ship voyages, labor, agency, the creation of new identities (creolization), religion, race, gender, resistance, legacies, and memory.
Same as: AFRICAST 113V, CSRE 113V, HISTORY 205D

AFRICAAM 114C. America Never was America to me: Race and Equity in US Public Schools. 1 Unit.
This cross-disciplinary course will use the 10-part docu-series "America to Me" to discuss the complexities of race and equity in US schools. The series follows a year in the life of a racially diverse, well-resourced high school outside Chicago, providing an in-depth look at the effects of race, equity, culture and privilege on educational opportunities, and offers insights into the teenage search for personal identity in today's climate. Two of the people featured in the series will be a part of the class, and after screening each episode, a Stanford professor will give a short talk inspired by the content of that episode. The talks will span several disciplines and theoretical perspectives, including Critical Race Theory, History, Psychology, Youth Development, Film Studies, Linguistics, and Teacher Education. Following each talk, students will engage in critical discussion around race and equity in education. Episode 10 will air during Final Exam week, but there will be no final exam.
Same as: CSRE 114C, EDUC 114C, EDUC 314C

AFRICAAM 116. Education, Race, and Inequality in African American History, 1880-1990. 3-5 Units.
Seminar. The relationship among race, power, inequality, and education from the 1880s to the 1990s. How schools have constructed race, the politics of school desegregation, and ties between education and the late 20th-century urban crisis.
Same as: AMSTUD 216, CSRE 216X, EDUC 216, HISTORY 255E

AFRICAAM 117J. Race, Gender, and Sexuality in Contemporary American Film. 4-5 Units.
This course introduces students to the theoretical and analytical frameworks necessary to critically understand constructions of race, gender, and sexuality in contemporary American film. Through a sustained engagement with a range of independent and Hollywood films produced since 2000, students analyze the ways that cinematic representations have both reflected and constructed dominant notions of race, gender, and sexuality in the United States. Utilizing an intersectional framework that sees race, gender, and sexuality as always defined by one another, the course examines the ways that dominant notions of difference have been maintained and contested through film in the United States. Readings include work by Michael Omi & Howard Winant, Patricia Hill Collins, Jodi Melamed, Stuart Hall, Lisa Duggan and bell hooks. Films to be discussed include Moonlight, Mosquita y Mari, Kumu Hina, Hustlers, and Crazy Rich Asians. To enroll in the course, please fill out the following form: https://forms.gle/RKqURW6niyB1LRyEA.
Same as: AMSTUD 117, ASNAMST 117D, CSRE 117D, FEMGEN 117F

AFRICAAM 118X. Critical Family History: Narratives of Identity and Difference. 4 Units.
This course examines family history as a site for understanding identity, power, and social difference in American society. Focusing in particular on the intersections of race, gender, and sexuality, we approach the family as an archive through which we might write alternative histories to the ones that dominate the national historical consciousness. To do this, we examine memoirs, oral histories, and first-person documentaries as historical texts that can be used to foreground marginalized historical voices. Students will then be asked to apply course readings and theories to their own family histories as a means of better understanding issues of identity and difference.
Same as: AMSTUD 118, ASNAMST 118S, CSRE 118S

AFRICAAM 119. Novel Perspectives on South Africa. 2-3 Units.
21st-century South Africa continues its literary effervescence. In this class we'll sample some recent novels and related writings to tease out the issues shaping the country (and to some degree the continent) at present. Is `South African literature' a meaningful category today? What are the most significant features we can identify in new writings and how do they relate to contemporary social dynamics? The course will appeal to anyone interested in present-day Cape Town or Johannesburg, including students who have spent a term in BOSP-Cape Town or plan to do so in future. Both undergraduate and graduate students are welcome. 2-3 units. Course may be repeated for credit.nn nnAll students will write short analyses from the prescribed texts. Students taking the course for three units will write an extended essay on a topic agreed with the instructor.
Same as: AFRICAAM 219, AFRICAST 119, AFRICAST 219, CSRE 119

AFRICAAM 121N. How to Make a Racist. 3 Units.
How does a child, born without beliefs or expectations about race, grow up to be racist? To address this complicated question, this seminar will introduce you to some of the psychological theories on the development of racial stereotyping, prejudice, and discrimination. Together, these theories highlight how cognitive, social, and motivational factors contribute to racist thinking. We will engage thoughtfully and critically with each topic through reflection and discussion. Occasionally, I will supplement the discussion and class activities with a brief lecture, in order to highlight the central issues, concepts, and relevant findings. We will share our own experiences, perspectives, and insights, and together, we will explore how racist thinking takes root. Come to class with an open mind, a willingness to be vulnerable, and a desire to learn from and with your peers. Students with diverse opinions and perspectives are encouraged to enroll.
Same as: CSRE 21N, PSYCH 21N

AFRICAAM 122E. Art in the Streets: Identity in Murals, Site-specific works, and Interventions in Public Spaces. 4 Units.
This class will introduce students to both historical and contemporary public art practices and the expression of race and identity through murals, graffiti, site-specific works and performative interventions in public spaces. Involving lectures, guest speakers, field trips, and hands-on art practice, students will be expected to produce both an individual and group piece as a final project.
Same as: CSRE 122E

AFRICAAM 122F. Histories of Race in Science and Medicine at Home and Abroad. 4 Units.
This course has as its primary objective, the historical study of the intersection of race, science and medicine in the US and abroad with an emphasis on Africa and its Diasporas in the US. By drawing on literature from history, science and technology studies, sociology and other related disciplines, the course will consider the sociological and cultural concept of race and its usefulness as an analytical category. The course will explore how the study of race became its own ¿science¿ in the late-Enlightenment era, the history of eugenics--a science of race aimed at the ostensible betterment of the overall population through the systematic killing or "letting die" of humanity¿s "undesirable" parts, discuss how the ideology of pseudo-scientific racism underpinned the health policies of the French and British Empires in Africa, explore the fraught relationship between race and medicine in the US, discuss how biological notions of race have quietly slipped back into scientific projects in the 21st century and explore how various social justice advocates and scholars have resisted the scientific racisms of the present and future and/or proposed new paths towards a more equitable and accessible science.
Same as: AFRICAST 122F, CSRE 122F, HISTORY 248D

AFRICAAM 123. Great Works of the African American Tradition. 5 Units.
Foundational African and African American scholarly figures and their work from the 19th century to the present. Historical, political, and scholarly context. Dialogues distinctive to African American culture. May be repeated for credit.

AFRICAAM 124F. The Mothership Connection: Black Science Fiction Across Media. 4 Units.
As science fiction becomes the lingua franca of American popular culture and race takes center stage in our contemporary social and political discourses, the works of black SF creators offer a number of powerful conceptual tools for thinking about race, and particularly for exploring the experience and effects of the African diaspora. This course will consider how black authors, artists, musicians, and filmmakers have responded to or engaged the transmedia genre of SF, as well as the role that race plays in the history of science fiction. What is Afrofuturism, and is it distinct from black science fiction? How does black SF relate to other speculative genres and aesthetics (horror, fantasy, new age, psychedelia, etc.)? Is there something inherently science fictional about the Afro-diasporic experience? How do typical SF tropes - robots, spaceships, technology, the apocalypse, the posthuman - change when considered in the aftermath of the Miiddle Passage and chattel slavery?.
Same as: CSRE 124F

AFRICAAM 127A. Can't Stop Won't Stop: A History Of The Hip-Hop Arts. 2-4 Units.
This course explores the history and development of the hip-hop arts movement, from its precursor movements in music, dance, visual arts, literature, and folk and street cultures to its rise as a neighborhood subculture in the Bronx in the early 1970s through its local, regional and global expansion and development. Hip-hop aesthetics, structures, and politics will be explored within the context of the movement's rise as a post-multicultural form in an era of neoliberal globalization. (This course must be taken for a letter grade and a minimum of 3 units to satisfy a Ways requirement.).
Same as: CSRE 127A

AFRICAAM 128. Roots Modern Experience - Mixed Level. 1 Unit.
In this course students will be introduced to a series of Afro-contemporary dance warm ups and dance combinations that are drawn from a broad range of modern dance techniques, somatic practices and dance traditions of the African diaspora with a particular focus on Afro Brazilian, Afro Cuban and Haitian dance forms. Our study of these dance disciplines will inform the movement vocabulary, technical training, class discussions, and choreography we experience in this course. Students will learn more about the dances and rhythms for the Orishas of Brazil and Cuba, and the Loa of Haiti with an additional focus on other African diaspora dance forms such as, Cuban Haitian, Palo, Samba and Samba-Reggae. Dance combinations will consist of dynamic movement patterns that condition the body for strength, flexibility, endurance, musicality and coordination. Through this approach to our warm ups and class choreography, we will deepen our analysis and understanding of how African diaspora movement traditions are inherently embedded in many expressions of the broadly termed form known as contemporary dance.
Same as: DANCE 128

AFRICAAM 130. Community-based Research As Tool for Social Change:Discourses of Equity in Communities & Classrooms. 3-5 Units.
Issues and strategies for studying oral and written discourse as a means for understanding classrooms, students, and teachers, and teaching and learning in educational contexts. The forms and functions of oral and written language in the classroom, emphasizing teacher-student and peer interaction, and student-produced texts. Individual projects utilize discourse analytic techniques.
Same as: CSRE 130, EDUC 123, EDUC 322

AFRICAAM 132. Social Class, Race, Ethnicity, and Health. 4 Units.
Examines health disparities in the U.S., looking at the patterns of those disparities and their root causes. Explores the intersection of lower social class and ethnic minority status in affecting health status and access to health care. Compares social and biological conceptualizations of race and ethnicity. Upper division course with preference given to upperclassmen. Prerequisite: Human Biology Core or Biology Foundations.
Same as: CSRE 122S, HUMBIO 122S

AFRICAAM 133. Literature and Society in Africa and the Caribbean. 4 Units.
This course explores texts and films from Francophone Africa and the Caribbean in the 20th and 21st centuries. The course will explore the connections between Sub-Saharan Africa, the Maghreb and the Caribbean through both foundational and contemporary works while considering their engagement with the historical and political contexts in which they were produced. This course will also serve to improve students' speaking and writing skills in French while sharpening their knowledge of the linguistic and conceptual tools needed to conduct literary analysis. The diverse topics discussed in the course will include national and cultural identity, race and class, gender and sexuality, orality and textuality, transnationalism and migration, colonialism and decolonization, history and memory, and the politics of language. Readings include the works of writers and filmmakers such as Djibril Tamsir Niane, Léopold Senghor, Aimé Césaire, Albert Memmi, Patrick Chamoiseau, Leonora Miano, Leila Slimani, Dani Laferrière and Ousmane Sembène. Taught in French. Students are highly encouraged to complete FRENLANG 124 or to successfully test above this level through the Language Center. This course fulfills the Writing in the Major (WIM) requirement.
Same as: AFRICAST 132, COMPLIT 133A, COMPLIT 233A, CSRE 133E, FRENCH 133, JEWISHST 143

AFRICAAM 136B. White Identity Politics. 3-5 Units.
Pundits proclaim that the 2016 Presidential election marks the rise of white identity politics in the United States. Drawing from the field of whiteness studies and from contemporary writings that push whiteness studies in new directions, this upper-level seminar asks, does white identity politics exist? How is a concept like white identity to be understood in relation to white nationalism, white supremacy, white privilege, and whiteness? We will survey the field of whiteness studies, scholarship on the intersection of race, class, and geography, and writings on whiteness in the United States by contemporary public thinkers, to critically interrogate the terms used to describe whiteness and white identities. Students will consider the perils and possibilities of different political practices, including abolishing whiteness or coming to terms with white identity. What is the future of whiteness? n*Enrolled students will be contacted regarding the location of the course.
Same as: ANTHRO 136B, CSRE 136

AFRICAAM 137. Black Political Struggle Across the Americas. 3-5 Units.
This course orients students to the intersections between Anthropology and Black Studies through a survey of select ethnographic, historical, literary, and cinematographic materials based on Black political mobilizations across Latin America and the Caribbean. Organized by themes, the course pairs anthropological scholarship on Black political mobilizations against racialized violence and dispossession with critical Black Studies theoretical texts this scholarship is in conversation with. These pairings center what contemporary Black political struggle across the Americas teaches us about Black suffering, police terror, the problems of neoliberal multiculturalism, and the potential of transnational connections. Through case studies from Jamaica, Puerto Rico, Dominican Republic, Nicaragua, Colombia, and Brazil, we ask: How have understanding the conditions of life of Black communities in the Americas contributed to and/or challenged broader theorizations of the State, violence, rights, and recognition? How do contemporary mobilizations and political imaginations of Black communities push the modern nation-state into crisis through demands for Black life? And how do these struggles theorize the time and space of the conditions of Black life through transnational politics?.
Same as: ANTHRO 107

AFRICAAM 139. Black Feminist Epistemology and Analytics. 5 Units.
Building from the foundational canon of black feminist theory and praxis, this seminar will explore more recent advances in black feminist epistemologies and modes of analysis. Students will engage black feminist conceptions of the human and the self; love and relationality in precarious conditions; speculative queer, sexual, and body politics; aesthetics and cultural theory; and contemporary proposals for radical freedom and social transformation. We will consider how black feminist theory not only engages, builds on, critiques, and transforms other schools of thought, but also produces its own systems of reason and interpretation.
Same as: FEMGEN 154E

AFRICAAM 140N. Visible Bodies: Black Female Authors and the Politics of Publishing in Africa. 4 Units.
Where are the African female writers of the twentieth century and the present day? This Introductory Seminar addresses the critical problem of the marginalization of black female authors within established canons of modern African literature. We will explore, analyse and interrogate the reasons why, and the ways in which, women-authored bodies of work from this period continue to be lost, misplaced, forgotten, and ignored by a male-dominated and largely European/white publishing industry in the context of colonialism, apartheid and globalization. nnYou will be introduced to key twentieth-century and more contemporary female authors from Africa, some of them published but many more unpublished or out-of-print. The class will look at the challenges these female authors faced in publishing, including how they navigated a hostile publishing industry and a lack of funding and intellectual support for black writers, especially female writers. nnWe will also examine the strategies these writers used to mitigate their apparent marginality, including looking at how women self-published, how they used newspapers as publication venues, how they have increasingly turned to digital platforms, and how many sought international publishing networks outside of the African continent. As one of the primary assessments for the seminar, you will be asked to conceptualize and design an in-depth and imaginative pitch for a new publishing platform that specializes in African female authors. nnYou will also have the opportunity for in-depth engagement (both in class and in one-on-one mentor sessions) with a range of leading pioneers in the field of publishing and literature in Africa. Figures like Ainehi Edoro (founder of Brittle Paper) and Zukiswa Wanner (prize-winning author of The Madams and Men of the South), amongst others, will be guests to our Zoom classroom. One of our industry specialists will meet with you to offer detailed feedback on your proposal for your imagined publishing platform. nnYou can expect a roughly 50/50 division between synchronous and asynchronous learning, as well as plenty of opportunity to collaborate with peers in smaller settings.
Same as: AFRICAST 51N, ENGLISH 54N, HISTORY 41N

AFRICAAM 141X. Activism and Intersectionality. 3-4 Units.
How are contemporary U.S. social movements shaped by the intersections of race, class, gender, and sexuality? This course explores the emergence, dynamics, tactics, and targets of social movements. Readings include empirical and theoretical social movement texts, including deep dives into Black, White, and Chicana feminisms; the KKK; and queer/LGBT movements. We will explore how social movement emergence and persistence is related to participants¿ identities and experiences with inequality; how the dynamics, targets, and tactics of mobilized participants are shaped by race, class, gender, and/or sexuality; and how social movement scholars have addressed the intersectional nature of inequality, identity, and community.
Same as: CSRE 141X, FEMGEN 141, SOC 153

AFRICAAM 143. Black Divinities: Race, God, and Nation in the Photography of Deana Lawson. 5 Units.
In recent years the Brooklyn-based photographer Deana Lawson (born 1979) has become rightly famous for her rapturous yet grounded large-sized photographs of everyday black people--those she meets in her neighborhood, as well as on her travels to Brazil, Jamaica, and the Congo. In this seminar we will look closely at Lawson's photographs, considering how she gains her subjects' trust, how she uses props and locations, how she explores her own feelings and the legacies and possibilities of being black.
Same as: ARTHIST 243

AFRICAAM 144. Living Free: Embodying Healing and Creativity in The Era of Racial Justice Movements. 1-4 Unit.
What does it mean to live free? It is often said that the one demand for the Movement for Black Lives is to "stop killing us." This demand has led Black artists, thinkers, organizers, and healers to envision work and embody practices that resist the subjugation and erasure of their bodies. This surge of creativity has impacted and intersected with work happening in queer and trans communities and in many other communities of color, including indigenous movements for safe and clean water, student protests against campus racism, the undocumented movement, prison abolition among others. This justice based work urges us to interrupt systems of violence with systems of healing that recover traditions, invent new modalities, and connect to survival practices developed by many generations of people in community.nnIn this course we will bring together leading artists, thinkers, organizers, and healers to envision work and embody practices that resist the subjugation and erasure of their bodies, land, and natural resources. In this course we ask: what does it mean to embody health? How can we shift frameworks of pathology into frameworks of wholeness? What practices can we develop, recover, and share that help us create systems that support and value equity, healing and creativity for communities most at risk? And finally, how can we all live free?.
Same as: CSRE 44

AFRICAAM 145A. Poetics and Politics of Caribbean Women's Literature. 5 Units.
Mid 20th-century to the present. How historical, economic, and political conditions in Haiti, Cuba, Jamaica, Antigua, and Guadeloupe affected women. How Francophone, Anglophone, and Hispanophone women novelists, poets, and short story writers respond to similar issues and pose related questions. Caribbean literary identity within a multicultural and diasporic context; the place of the oral in the written feminine text; family and sexuality; translation of European master texts; history, memory, and myth; and responses to slave history, colonialism, neocolonialism, and globalization.

AFRICAAM 145B. Africa in the 20th Century. 5 Units.
(Same as HISTORY 45B. Students taking 5 units, register for 145B.) The challenges facing Africans from when the continent fell under colonial rule until independence. Case studies of colonialism and its impact on African men and women drawn from West, Central, and Southern Africa. Novels, plays, polemics, and autobiographies written by Africans.
Same as: HISTORY 145B

AFRICAAM 146A. African Politics. 4-5 Units.
Africa has lagged the rest of the developing world in terms of economic development, the establishment of social order, and the consolidation of democracy. This course seeks to identify the historical and political sources accounting for this lag, and to provide extensive case study and statistical material to understand what sustains it, and how it might be overcome.
Same as: POLISCI 146A

AFRICAAM 146D. New Keywords in African Sound. 3-4 Units.
This course identifies and considers new keywords for the study of contemporary African music and sound. Each week we will foster discussion around a keyword and a constellation of case studies. The sonic practices we will encounter range from South African house music to Ghanaian honk horns; from Congolese rumba bands to Tunisian trance singers; from listening to the radio in a Tanzanian homestead to making hip hop music videos on the Kenyan coast. By exploring the unexpected interconnections between contemporary African musical communities, we will discuss new keywords arising in current scholarship, including technologies like the amplifier and the hard drive, spaces like the studio and the city, and analytics like pleasure and hotness. We will also engage with established concepts for the study of postcolonial African cultures, including nationalism, cosmopolitanism, globalization, diaspora, and Pan-Africanism. This is a seminar-based course open to graduate students, upper level undergraduate students, and other students with consent of the instructor. Proficiency in music is not required. WIM at 4 units only.
Same as: AFRICAST 146M, CSRE 146D, MUSIC 146M, MUSIC 246M

AFRICAAM 147. History of South Africa. 5 Units.
(Same as HISTORY 47. History majors and others taking 5 units, register for 147.) Introduction, focusing particularly on the modern era. Topics include: precolonial African societies; European colonization; the impact of the mineral revolution; the evolution of African and Afrikaner nationalism; the rise and fall of the apartheid state; the politics of post-apartheid transformation; and the AIDS crisis.
Same as: CSRE 174, HISTORY 147

AFRICAAM 150B. Nineteenth Century America. 5 Units.
(Same as HISTORY 50B. History majors and others taking 5 units, register for 150B.) Territorial expansion, social change, and economic transformation. The causes and consequences of the Civil War. Topics include: urbanization and the market revolution; slavery and the Old South; sectional conflict; successes and failures of Reconstruction; and late 19th-century society and culture.
Same as: AMSTUD 150B, CSRE 150S, HISTORY 150B

AFRICAAM 150C. The United States in the Twentieth Century. 5 Units.
(Same as HISTORY 50C. History majors and others taking 5 units, register for 150C.) 100 years ago, women and most African-Americans couldn't vote; automobiles were rare and computers didn't exist; and the U.S. was a minor power in a world dominated by European empires. This course surveys politics, culture, and social movements to answer the question: How did we get from there to here? Two historical research "labs" or archival sessions focus on the Great Depression in the 1930s and radical and conservative students movements of the 1960s. Suitable for non-majors and majors alike.
Same as: AMSTUD 150C, HISTORY 150C

AFRICAAM 153P. Black Artistry: Performance in the Black Diaspora. 4 Units.
Charting a course from colonial America to contemporary London, this course explores the long history of Black performance throughout an Atlantic diaspora. Defining performance as "forms of cultural staging," from Thomas DeFrantz and Anita Gonzalez's Black Performance Theory, this course takes up scripted plays, live theatre, devised works, performance art, and cinematic performance in its survey of the field. We will engage with theorists, performer, artists, and revolutionaries such as Ignatius Sancho, Maria Stewart, William Wells Brown, Zora Neale Hurston, Derek Walcott, Danai Gurira, and Yvonne Orji. We will address questions around Black identity, history, time, and futurity, as well as other essential strategies Black performers have engaged in their performance making. The course includes essential methodological readings for Black Studies as well as formational writings in Black performance theory and theatre studies. Students will establish a foothold in both AAAS (theory & methodology) and in performance history (plays and performances). As a WIM course, students will gain expertise in devising, drafting, and revising written essays.
Same as: CSRE 153P, TAPS 153P, TAPS 353P

AFRICAAM 154. Black Feminist Theory. 5 Units.
This course will examine black feminist theoretical traditions, marking black women's analytic interventions into sexual and pleasure politics, reproduction, citizenship, power, violence, agency, art, representation, and questions of the body. Exploring concepts like intersectionality, matrices of violence, the politics of respectability, womanism, and other contours of a black feminist liberation politic, we will look to black feminist scholars, activists, and artists from the 19th century to today.
Same as: FEMGEN 154

AFRICAAM 154G. Black Magic: Ethnicity, Race, and Identity in Performance Cultures. 3-4 Units.
In 2013, CaShawn Thompson devised a Twitter hashtag, #blackgirlmagic, to celebrate the beauty and intelligence of black women. Twitter users quickly adopted the slogan, using the hashtag to celebrate everyday moments of beauty, accomplishment, and magic. The slogan offered a contemporary iteration of an historical alignment: namely, the concept of "magic" with both Black people as well as "blackness." This course explores the legacy of Black magic--and black magic--through performance texts including plays, poetry, films, and novels. We will investigate the creation of magical worlds, the discursive alignment of magic with blackness, and the contemporary manifestation of a historical phenomenon. We will cover, through lecture and discussion, the history of black magic representation as well as the relationship between magic and religion. Our goal will be to understand the impact and history of discursive alignments: what relationship does "black magic" have to and for "black bodies"? How do we understand a history of performance practice as being caught up in complicated legacies of suspicion, celebration, self-definition? The course will give participants a grounding in black performance texts, plays, and theoretical writings. *This course will also satisfy the TAPS department WIM requirement.*.
Same as: CSRE 154D, FEMGEN 154G, TAPS 154G

AFRICAAM 156. Performing History: Race, Politics, and Staging the Plays of August Wilson. 4 Units.
This course purposefully and explicitly mixes theory and practice. Students will read and discuss the plays of August Wilson, the most celebrated and most produced contemporary American playwright, that comprise his 20th Century History Cycle. Class stages scenes from each of these plays, culminating in a final showcase of longer scenes from his work as a final project.
Same as: CSRE 156T, TAPS 156, TAPS 356

AFRICAAM 157P. Solidarity and Racial Justice. 4-5 Units.
Is multiracial solidarity necessary to overcome oppression that disproportionately affects certain communities of color? What is frontline leadership and what role should people play if they are not part of frontline communities? In this course we will critically examine practices of solidarity and allyship in movements for collective liberation. Through analysis of historical and contemporary movements, as well as participation in movement work, we will see how movements have built multiracial solidarity to address issues that are important to the liberation of all. We will also see how racial justice intersects with other identities and issues. This course is for students that want to learn how to practice solidarity, whether to be better allies or to work more effectively with allies. There will be a community engaged learning option for this course. Students who choose to participate in this option will either work with Stanford's DGen Office or a community organization that is explicitly devoted to multiracial movement-building.
Same as: AMSTUD 157P, CSRE 157P, FEMGEN 157P

AFRICAAM 158. Black Queer Theory. 5 Units.
This course takes a multifaceted approach to black queer theory, not only taking up black theories of gender and queer sexuality, but queer theoretical interrogations of blackness and race. The course will also examine some of the important ways that black queer theory reads and is intersected with issues like affect, epistemology, space and geography, power and subjectivity, religion, economy, the body, and the law, asking questions like: How have scholars critiqued the very language of queer and the ways it works as a signifier of white marginality? What are the different spaces we can find queer black relationality, eroticism, and kinship? How do we negotiate issues like trans*misogyny or tensions around gender and sexuality in the context of race? Throughout the course, students will become versed in foundational and emerging black queer theory as we engage scholars like Sharon Holland, Cathy Cohen, Hortense Spillers, Marlon B. Ross, Aliyyah Abdur-Rahman, Barbara Smith, Roderick Ferguson, Robert Reid-Pharr, E. Patrick Johnson, and many others. Students will also gain practice applying black queer theory as an interpretive lens for contemporary social issues and cultural production including film, music, art, and performance.
Same as: FEMGEN 158

AFRICAAM 159. James Baldwin & Twentieth Century Literature. 5 Units.
Black, gay and gifted, Baldwin was hailed as a "spokesman for the race", although he personally, and controversially, eschewed titles and classifications of all kinds. This course examines his classic novels and essays as well his exciting work across many lesser-examined domains - poetry, music, theatre, sermon, photo-text, children's literature, public media, comedy and artistic collaboration. Placing his work in context with other writers of the 20C (Faulkner, Wright,Morrison) and capitalizing on a resurgence of interest in the writer (NYC just dedicated a year of celebration of Baldwin and there are 2 new journals dedicated to study of Baldwin), the course seeks to capture the power and influence of Baldwin's work during the Civil Rights era as well as his relevance in the "post-race" transnational 21st century, when his prescient questioning of the boundaries of race, sex, love, leadership and country assume new urgency.nNOTE: Enrollment by department consent. To apply, please email Prof. Elam (melam@stanford.edu) with your name, year, major, and one sentence about why you would like to take this class.
Same as: ENGLISH 159, FEMGEN 159

AFRICAAM 160J. Conjure Art 101: Performances of Ritual, Spirituality and Decolonial Black Feminist Magic. 2 Units.
Conjure Art is a movement and embodied practice course looking at the work and techniques of artists of color who utilize spirituality and ritual practices in their art making and performance work to evoke social change. In this course we will discuss the work of artists who bring spiritual ritual in their art making while addressing issues of spiritual accountability and cultural appropriation. Throughout the quarter we will welcome guest artists who make work along these lines, while exploring movement, writing, singing and visual art making. This class will culminate in a performance ritual co-created by students and instructor.
Same as: CSRE 160J, DANCE 160J

AFRICAAM 164A. Race and Performance. 3-5 Units.
How does race function in performance and dare we say ¿live and in living color?¿ How does one deconstruct discrimination at its roots?n nFrom a perspective of global solidarity and recognition of shared plight among BIPOC communities, we will read and perform plays that represent material and psychological conditions under a common supremacist regime. Where and when possible, we will host a member of the creative team of some plays in our class for a live discussion. Assigned materials include works by Lin-Manuel Miranda, Amiri Baraka, Young Jean Lee, Ayad Akhtar, Susan Lori Parks, David Henry Hwang, Betty Shamieh, Jeremy O. Harris, and Christopher Demos Brown.n nThis class offers undergraduate students a discussion that does not center whiteness, but takes power, history, culture, philosophy, and hierarchy as core points of debate. In the first two weeks, we will establish the common terms of the discussion about stereotypes, representation, and historical claims, but then we will quickly move toward an advanced conversation about effective discourse and activism through art, performance, and cultural production. In this class, we assume that colonialism, slavery, white supremacy, and oppressive contemporary state apparatuses are real, undeniable, and manifest. Since our starting point is clear, our central question is not about recognizing or delineating the issues, but rather, it is a debate about how to identify the target of our criticism in order to counter oppression effectively and dismantle long-standing structures.n nNot all BIPOC communities are represented in this syllabus, as such claim of inclusion in a single quarter would be tokenistic and disingenuous. Instead, we will aspire to understand and negotiate some of the complexities related to race in several communities locally in the U.S. and beyond.
Same as: CSRE 164A, CSRE 364A, TAPS 164

AFRICAAM 165. Identity and Academic Achievement. 3 Units.
How do social identities affect how people experience academic interactions? How can learning environments be better structured to support the success of all students? In this class, we will explore how a variety of identities such as race, gender, social class, and athletic participation can affect academic achievement, with the goal of identifying concrete strategies to make learning environments at Stanford and similar universities more inclusive. Readings will draw from psychology, sociology, education, and popular press. This class is a seminar format.
Same as: CSRE 165, PSYCH 165

AFRICAAM 169A. Race and Ethnicity in Urban California. 4-5 Units.
The course is part of an ongoing research project that examines the consequences of longterm social, economic, and political changes in ethnic and race relations in in urban California. The required readings, discussions, and service learning component all provide a platform for students to explore important issues, past and present, affecting California municipalities undergoing rapid demographic transformation.
Same as: AMSTUD 169, CSRE 260, URBANST 169

AFRICAAM 169B. Introduction to Intersectionality. 4 Units.
"Intersectionality" is so popular, it's almost impossible to avoid: it was added to the Merriam-Webster dictionary in 2017, it was painted on signs at the Women's Marches, and it guides modern day social movement organizers. But what does intersectionality mean? What can intersectionality offer And what does it mean for research and social movements to be truly intersectional? The aim of this course is to provide students with an understanding of the concept of intersectionality. First, we will delve into the works (chiefly from Black feminist scholars) that provide the foundation for today's concept of intersectionality. We will then explore, compare, and critique sociological research that applies (or fails to apply) an intersectional lens to its objects of study. Finally, we will investigate the use of intersectionality in social movements and outside academia. Throughout the course, we will prioritize reading, evaluating, and questioning sociological theory and research.
Same as: FEMGEN 169, SOC 169

AFRICAAM 170A. Undoing Racism: The People's Institute for Survival and Beyond. 1-4 Unit.
The fabric of racism is inextricably woven and constructed into the founding principles of the United States. Racism was done and it can be undone through effective anti-racist organizing with, and in accountability to the communities most impacted by racism. The People's Institute believes that effective community and institutional change happens when those who serve as agents of transformation understand the foundations of race and racism and how they continually function as a barrier to community self-determination and self-sufficiency.nnThis course focuses on understanding what racism is, where it comes from, how it functions, why it persists and how it can be undone. The classes, led by organizers of the People's Institute, guest artists and scholars, utilize a systematic approach that emphasizes learning from history, developing leadership, maintaining accountability to communities, creating networks, undoing internalized racial oppression and understanding the role of organizational gate keeping as a mechanism for perpetuating racism.
Same as: CSRE 170A

AFRICAAM 176B. Documentary Fictions. 4 Units.
More and more of our best fiction, plays, and comics are being created out of documentary practices such as in-depth interviewing, oral histories, and reporting. Novels like Dave Egger¿s What is the What and plays like Anna Deavere Smith¿s Let Me Down Easy act as both witnesses and translators of people¿s direct experience and push art into social activism in new ways. This course takes a close look at a diverse range of these contemporary works and explores how to adopt their research and aesthetic strategies for work of your own. We start with a brief look back at the recent origins of this trend and look at excerpts from forerunners such as Richard Wright, Truman Capote, and Bertolt Brecht. We then turn to the rise of documentary fictions in the last few decades and read works by Eggers, Adam Johnson, G.B. Tran, Maria Hummel, and Daniel Alarcon and watch performances by the Tectonic Theater Project and Elevator Repair Service. Students write one analytic essay and then conduct or study interviews to design a work of their own. The course will feature class visits by a number of our authors and a special half-day workshop with Smith.

AFRICAAM 179A. Crime and Punishment in America. 4-5 Units.
This course provides a comprehensive introduction to the way crime has been defined and punished in the United States. Recent social movements such as the Movement for Black Lives have drawn attention to the problem of mass incarceration and officer-involved shootings of people of color. These movements have underscored the centrality of the criminal justice system in defining citizenship, race, and democracy in America. How did our country get here? This course provides a social scientific perspective on America¿s past and present approach to crime and punishment. Readings and discussions focus on racism in policing, court processing, and incarceration; the social construction of crime and violence; punishment among the privileged; the collateral consequences of punishment in poor communities of color; and normative debates about social justice, racial justice, and reforming the criminal justice system. Students will learn to gather their own knowledge and contribute to normative debates through a field report assignment and an op-ed writing assignment.
Same as: CSRE 179A, SOC 179A, SOC 279A

AFRICAAM 179D. Empire and Revolution: Joseph Conrad and Ng¿g¿ wa Thiong'o. 5 Units.
This class juxtaposes the works of two landmark experimental novelists: Joseph Conrad, one of the first major modernist writers of the early 20th century; and Ng¿g¿ wa Thiong'o, the first East African novelist published in English and a leading voice of political activism in Kenya. Novels will include, among others, Conrad's *Under Western Eyes* and *Nostromo*; Ng¿g¿ wa Thiong'o's *A Grain of Wheat* and *Petals of Blood.*.

AFRICAAM 180S. The Black Music 1980s: Turntables, Beat Machines and DJ Scholarship. 3 Units.
This course focuses on the regional rhythms and aesthetic trends of Black popular music of the Americas in the 1980s, a period of Black cultural production largely ignored by the academy. Students will investigate how technology, economic shifts, AIDS, and the War on Drugs impacted communities who produced, created, and danced to music in the face of hostile political terrain. Students will develop and employ careful listening practices that encompass the study of sampling, digging through crates of vinyl, analyzing album cover art, and closely reading liner notes. The musical forms we will cover range from New Jack Swing to Quiet Storm Music to Synthesizer Soul. Figures we will study include nontraditional scholars and practitioners, artists, activists, music journalists, and cultural critics. Finally, students will map the digital movement of music, people, and ideas through post-human platforms such as computer-based home recording studios, portable sound systems, beat-making equipment, keytars, turntables, and sampling machines.
Same as: CSRE 180S

AFRICAAM 185. Racial Inequality across the Lifespan. 3 Units.
Imagine two children, one Black and one White, born on the same day and in the same country. By adulthood, these two will likely have had two remarkably different social experiences (e.g., the Black child will have received less education, income, health, and years to live). Why? Students in this course will tackle this complicated question from a psychological perspective. Together, we will examine how thinking, feeling, and behaving in ways that perpetuate stereotypes, prejudice, and discrimination contribute to racial inequality across the lifespan. The course will be conducted as a seminar, such that much of what you learn will be through group discussions, activities, and readings. A critical component of this class will be to practice writing about psychological research and social issues for the general audience. That is, students will write weekly opinion pieces that address and explain a particular area of inequality to a non-scientific audience.
Same as: CSRE 185C, PSYCH 185

AFRICAAM 188. Who We Be: Art, Images & Race in Post-Civil Rights America. 2-4 Units.
Over the past half-century, the U.S. has seen profound demographic and cultural change. But racial progress still seems distant. After the faith of the civil rights movement, the fervor of multiculturalism, and even the brief euphoria of a post-racial moment, we remain a nation divided. Resegregation is the norm. The culture wars flare as hot as ever.nnThis course takes a close examination of visual culture¿particularly images, works, and ideas in the contemporary arts, justice movements, and popular culture¿to discuss North American demographic and cultural change and cultural politics over the past half-century. From the Watts uprising to the #BlackLivesMatter movement, from multiculturalism through hip-hop to post-identity art, we will deeply explore the questions: How do Americans see race now? Do we see each other any more clearly than before?.
Same as: ARTHIST 154B, CSRE 88

AFRICAAM 189. Black Life and Death in the Neoliberal Era. 5 Units.
Professor Robin Kelley will teach this course. Of course, this is a history/genealogy of how we got to this place - precarity, mass incarceration, privatization and (re)dispossession of black lives, and the movements that erupted ¿ all since the early 1970s. It is as much an intellectual history as it is a political and cultural one since I will circle back to the roots of "neoliberal thinking¿ in 18th and 19th century liberalism, colonialism, imperialism, social Darwinism in the so-called ¿Gilded Age. ¿ Will also touch on the rise of social democracy and its recasting of ¿liberal¿ as the welfare state, the ascendance of military Keynesianism, and Hayek¿s and Milton Freidman¿s Cold War resuscitation and revision of 19th century liberalism. Much of our reading and discussion will examine the global economic crisis of the 1970s, and the subsequent restructuring of the political economy, the state, and culture (not limited to the U.S. but looking at the ¿Third World¿ or Global South¿issues of debt, austerity and structural adjustment policies, environmental destruction, and military intervention. But the main focus is on how neoliberalism assaulted most black lives while enriching a handful of others; how is spawned a level of state violence that sometimes feels unprecedented and against which many movements emerged.

AFRICAAM 190. Race and Immigration. 4-5 Units.
In the contemporary United States, supposedly race-neutral immigration laws have racially-unequal consequences. Immigrants from Mexico, Central America, and the Middle East are central to ongoing debates about who's includable, and who's excludable, from American society. These present-day dynamics mirror the historical forms of exclusion imposed on immigrants from places as diverse as China, Eastern Europe, Ireland, Italy, Japan, and much of Africa. These groups' varied experiences of exclusion underscore the long-time encoding of race into U.S. immigration policy and practice. Readings and discussions center on how immigration law has become racialized in its construction and in its enforcement over the last 150 years.
Same as: CSRE 189, SOC 189, SOC 289

AFRICAAM 191B. African American Art. 5 Units.
This course explores major art and political movements, such as the Harlem Renaissance, the Black Arts Movement, and #BlackLivesMatter, that have informed and were inspired by African American artists. Students will read pivotal texts written by Black artists, historians, philosophers and activists; consider how artists have contended with issues of identity, race, gender, and sexuality; and learn about galleries, collections, and organizations founded to support the field. Attendance on the first day of class is a requirement for enrollment.
Same as: ARTHIST 191, CSRE 191

AFRICAAM 192. History of Sexual Violence in America. 4-5 Units.
This undergraduate/graduate colloquium explores the history of sexual violence in America, with particular attention to the intersections of gender and race in the construction of rape. We discuss the changing definitions of sexual violence in law and in cultural representations from early settlement through the late-twentieth century, including slavery, wartime and prison rape, the history of lynching and anti-lynching movements, and feminist responses to sexual violence. In addition to introducing students to the literature on sexual violence, the course attempts to teach critical skills in the analysis of secondary and primary historical texts. Students write short weekly reading responses and a final paper; no final exam; fifth unit research or CEL options.nnLimited enrollment, permission of instructor required. Submit application form and indicate interest in CEL option. Priority admission to History, FGSS, CSRE, AFRICAAM, and AMSTUD declared majors and minors. (Cardinal Course certified by the Haas Center).
Same as: AMSTUD 258, CSRE 192E, FEMGEN 258, FEMGEN 358, HISTORY 258, HISTORY 358

AFRICAAM 194. Topics in Writing & Rhetoric: Contemporary Black Rhetorics: Black Twitter and Black Digital Cultures. 4 Units.
Does not fulfill NSC requirement. This course will examine Black engagements with digital culture as sites for community building, social action and individual and collective identity formation. By studying phenomena like #BlackTwitter, memes, Vine, selfie culture, blogging, "social watching," and more, we will explore how Black technology use addresses questions like identity performance and expression, hyper visibility and invisibility of Black lives, Black feminisms, misogynoir and Black women/femme leadership in social movements, the roles and influence of Black Queer cultures online, and social activism and movements in online spaces. nnFrom #YouOKSis, #BlackLivesMatter and #AfroLatinidad to the Clapback, roasts and "reads," we will work from the serious to the silly, from individuals to collectives, from activism to everyday life, and from distinct Black cultures to diasporic connections and exchange. Participants in the course will create a social media autobiography, a "read/ing" of a Black cultural practice or phenomenon online, host an online discussion, and prepare a pitch for a longer research project they might pursue as a thesis or an ongoing study. Bring your GIFs, memes, and emoji, and a willingness to be in community both online and off for this new course! Prerequisite: first level of the writing requirement or equivalent transfer credit. For topics, see https://undergrad.stanford.edu/programs/pwr/courses/advanced-pwr-courses.
Same as: PWR 194AJ

AFRICAAM 194A. Topics in Writing & Rhetoric: Freedom's Mixtape: DJing Contemporary African American Rhetorics. 4 Units.
Black music in all its genres, styles and eras has always been about freedom and transformation. About both Black people and the whole society. About the US Black experience, the African continent and the diaspora. These musical forms and the social movements they reflect and help shape are therefore central to the study of African American rhetoric. From overtly translating the ideas of social movements for mass audiences, to capturing the mood of a moment or move, to reflecting and influencing the aesthetics and styles that attend public discourse, to simply being a space where debates get worked out in community, music in Black traditions are as important a space of engagement as political speeches, sermons, websites, or even #BlackTwitter. This course will use Black music and its relationship to both social movements and everyday dialogue and debate to introduce study in African American Rhetoric as a field of study.
Same as: PWR 194AB

AFRICAAM 195. Independent Study. 2-5 Units.
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AFRICAAM 196. Dancing Black: Embodying the African Diaspora in the United States and the Caribbean. 4 Units.
What does it mean to dance black? How can studying comparative dance practices across the United States and the Caribbean expose continuities and differences in African diaspora experience? How can we draw strategies from black performance to inform our current movements for social change? This class will explore how dance and writing about performance have shaped notions of what it means to identify or be marked as an African diaspora subject. From the ring shouts of captive Africans to the 20th-century concert dance stage, from New York queer ballroom culture to Tiktok fads, this class will expose students to both historical and ethnographic methods for using dance to study the formation of black community in the New World. Looking beyond the surface of skin, we¿ll explore how race is experienced in muscle and flesh, and how black performers have historically taken advantage of or disavowed racialized ideas of how they can/should move. We will read theories of diaspora, queer of color critique and black feminist theory, and performance theory. We will search for the common questions and conversations about embodiment, the spectator¿s gaze, and black belonging that run through all three disciplines. Students will be required to do some movement research (through accessible, at-home dance practice), write weekly journals, and complete short essay projects. Students develop will skills for writing, speaking, and making performance to explore the intersections between race, sexuality, and dance.
Same as: DANCE 196, TAPS 196, TAPS 396

AFRICAAM 199. Honors Project. 1-5 Unit.
May be repeated for credit. Prerequisite: consent of instructor.

AFRICAAM 199X. Preparation for Senior Thesis. 2-3 Units.
This course is designed for juniors (majors, minors, and those seeking Interdisciplinary Honors in CSRE or FGSS) who intend to write a senior thesis in one of the CSRE Family of Programs or FGSS Interdisciplinary Honors. The course offers resources and strategies for putting together a significant and original senior thesis. Topics to be covered include: getting funding; finding an advisor; navigating the institutional review board; formulating an appropriate question; and finding the right data/medium/texts.
Same as: ANTHRO 189X, CSRE 199, FEMGEN 199X

AFRICAAM 200N. Funkentelechy: Technologies, Social Justice and Black Vernacular Cultures. 5 Units.
From texts to techne, from artifacts to discourses on science and technology, this course is an examination of how Black people in this society have engaged with the mutually consitutive relationships that endure between humans and technologies. We will focus on these engagements in vernacular cultural spaces, from storytelling traditions to music and move to ways academic and aesthetic movements have imagined these relationships. Finally, we will consider the implications for work with technologies in both school and community contexts for work in the pursuit of social and racial justice.
Same as: EDUC 314, STS 200N

AFRICAAM 200X. Honors Thesis and Senior Thesis Seminar. 5 Units.
Required for seniors. Weekly colloquia with AAAS Director and Associate Director to assist with refinement of research topic, advisor support, literature review, research, and thesis writing. Readings include foundational and cutting-edge scholarship in the interdisciplinary fields of African and African American studies and comparative race studies. Readings assist students situate their individual research interests and project within the larger. Students may also enroll in AFRICAAM 200Y in Winter and AFRICAAM 200Z in Spring for additional research units (up to 10 units total).

AFRICAAM 200Y. Honors Thesis and Senior Thesis Research. 3-5 Units.
Winter. Required for students writing an Honors Thesis. Optional for Students writing a Senior Thesis.

AFRICAAM 200Z. Honors Thesis and Senior Thesis Research. 3-5 Units.
Spring. Required for students writing an Honors Thesis. Optional for Students writing a Senior Thesis.

AFRICAAM 201F. Race & Technology. 1-2 Unit.
The program in African & African American Studies will be offering a weekly lecture series to expose and introduce underrepresented groups to the world of technology by creating a space where the idea of starting can lead to a "Start Up". The AAAS "Race & Technology" course endeavors to de-code the language of technology creation, how to build a team, problem solving, pitching an idea, leveraging the work of all disciplines in creating an entrepreneurship mindset. nnnScholars and industry people will cover topics such as the digital divide, women in technology, and social media.
Same as: AFRICAAM 101F

AFRICAAM 204. Race, Colonialism, and Climate Justice in the Caribbean. 3-5 Units.
Caribbean nations and territories remain on the frontlines of climate change despite being minor contributors to global warming. How has the history of environmental racism, colonialism, and environmental justice movements shaped our understanding of blackness and the environment in the Caribbean archipelago? In the face of the climate crisis, this course examines the role that (neo)coloniality plays in constructing precarious subjectivities. Environmental disasters¿namely, the 2010 Earthquake in Haiti, the 2017 Hurricanes Irma and Maria in the U.S. and British Virgin Islands, Puerto Rico, and Dominica, and the 2019 Hurricane Dorian in the Bahamas¿breathe new life into fervent conversations about precarity, dependency, disaster capitalism, anti-Blackness, colonial oversight, neoliberalism, and debt. Students will participate in these critical conversations and gain a deeper understanding of imperial and colonial histories and the intersections of decolonial, racial, and environmental politics.

AFRICAAM 205. Art as Activism. 1 Unit.
Art is a form of revolution and reflection. From literary and performing arts to murals and large scale conceptual sculptures- artists have often created a pathway for society to engage in a dialogue on the complicated nuances of social justice issues around the globe. Especially in 2020, we are grappling globally with a myriad of inequities and limited spaces to reflect, engage and act on them - this course will give interested students the opportunity to learn from revolutionary artists, reflect on their own role as designers/students in society and agency to build their own spaces for creating dialogue. nnAdmission by application. Visit dschool.stanford.edu/classes for more information.
Same as: DESINST 205

AFRICAAM 205K. The Age of Revolution: America, France, and Haiti. 4-5 Units.
(History 205K is an undergraduate course offered for 5 units; History 305K is a graduate course offered for 4-5 units.) This course examines the "Age of Revolution," spanning the 18th and 19th centuries. Primarily, this course will focus on the American, French, and Haitian Revolutions (which overthrew both French and white planter rule). Taken together, these events reshaped definitions of citizenship, property, and government. But could republican principles-- color-blind in rhetoric-- be so in fact? Could nations be both republican and pro-slavery? Studying a wide range of primary materials, this course will explore the problem of revolution in an age of empires, globalization, and slavery.
Same as: HISTORY 205K, HISTORY 305K

AFRICAAM 209. On the Run: Fugitivity in the Early Black Atlantic. 3-5 Units.
Fugitivity is being taken up more and more as a conceptual framework for thinking about possibilities for Black social life despite pervasive anti-Blackness, capture, confinement, exclusion, arrest, alienation, and social death. The fugitive, a word stemming from the Latin root ¿fug, ¿ ¿to flee,¿ provides a figure of thought for reflection on the strategies and expressions of Black resistance, creativity, perseverance, and sociability in an anti-Black world. Fugitivity describes both the quotidian and extraordinary ways Black people transgress the border between freedom and unfreedom. It means creating, through the transgression of defiant movement, alternative possibilities for life outside of domination and suffering.n nGrounded in this context, this course examines the histories of enslaved flight, truancy, everyday refusal, and marronage in slaveholding Latin America, the Caribbean, and the United States. Maroons and their communities, or communities of those some would call ¿runaway slaves,¿ were an ever-present feature of slaveholding societies throughout the Americas. Everywhere they existed, from Brazil to Jamaica, from Virginia to Suriname, or from Mexico to Haiti, they proved the indomitable spirit of African descendants and the great failures of white domination and the institution of slavery. Throughout the course, we will look closely at the demographic, economic, and geographic opportunities for enslaved mobility and resistance that shaped the formation of the Atlantic world. The central focus will be an analysis of the historical impact of Black fugitivity across the Americas from 1502 to 1865.

AFRICAAM 211. Education for All? The Global and Local in Public Policy Making in Africa. 3-5 Units.
Policy making in Africa and the intersection of policy processes and their political and economic dimensions. The failure to implement agreements by international institutions, national governments, and nongovernmental organizations to promote education. Case studies of crowded and poorly equipped schools, overburdened and underprepared teachers, and underfunded education systems.
Same as: AFRICAST 111, AFRICAST 211

AFRICAAM 218. Musics and Appropriation Throughout the World. 3 Units.
This course critically examines musical practices and appropriation through the amplification of intersectionality. We consider musics globally through recourse to ethnomusicological literature and critical race theories. Our approach begins from an understanding that the social and political contexts where musics are created, disseminated, and consumed inform disparate interpretations and meanings of music, as well as its sounds. Our goal is to shape our ears to hear the effects of slavery, colonialism, capitalism, nationalism, class, gender difference, militarism, and activism. We interrogate the process of appropriating musics throughout the world by making the power structures that shape privileges and exclusions audible.
Same as: CSRE 118D, MUSIC 118

AFRICAAM 219. Novel Perspectives on South Africa. 2-3 Units.
21st-century South Africa continues its literary effervescence. In this class we'll sample some recent novels and related writings to tease out the issues shaping the country (and to some degree the continent) at present. Is `South African literature' a meaningful category today? What are the most significant features we can identify in new writings and how do they relate to contemporary social dynamics? The course will appeal to anyone interested in present-day Cape Town or Johannesburg, including students who have spent a term in BOSP-Cape Town or plan to do so in future. Both undergraduate and graduate students are welcome. 2-3 units. Course may be repeated for credit.nn nnAll students will write short analyses from the prescribed texts. Students taking the course for three units will write an extended essay on a topic agreed with the instructor.
Same as: AFRICAAM 119, AFRICAST 119, AFRICAST 219, CSRE 119

AFRICAAM 225. Designing Courageous Conversations For Impact. 4 Units.
In this class, we will explore complex concepts of systemic and interpersonal oppression and racism, understand how these concepts manifest on our campus and in our communities, then design and prototype meaningful interventions for impact.nnWe will stand on the shoulders of giants who have come before us while also blazing entirely new trails of our own discovery. Our communities are relying on us to leverage the momentum of this moment, our voices, and our unique skill sets to deconstruct systems of oppression and racism; let¿s stock our collective toolbox, together.
Same as: DESINST 225

AFRICAAM 230. Designing Black and Brown Spaces. 1 Unit.
Explore the creation of black/brown spaces within activism, technology, education, and design. How do we make space for Black and brown genius? In this class you will explore how to use our collective talents to build spaces for us, by us. You'll hear from the best and brightest in design, music, activism, technology and education who will share how they translate, navigate and advocate for the inclusion of Black and brown voices in the halls of power. You'll join other students to explore the myriad of ways Black and brown creators are building for themselves space within existing institutions (and imagining new ones altogether). You'll use these new skills and design thinking to develop a space of your own. Admission by application. Visit https://dschool.stanford.edu/classes for more information.
Same as: DESINST 230

AFRICAAM 230A. Digital Civil Society. 3 Units.
Digital technologies are changing the way members of the civil society come together to change the world. The 'civil society' includes social movements, grassroots activism, philanthropists, unions, nonprofits, NGOs, charities, and cooperatives, among others. Their mission is to effect important social and political transformations to bring about what they see as a better world. But their work and strategies are subject to significant changes in the digital era. The course will analyze the opportunities and challenges digital technologies present for associational life, free expression, privacy, and collective action. We will cover a wide range of key themes, including digital rights advocacy and racial justice, community-owned networks and de-colonial design, activist resistance to surveillance technologies, algorithmic bias, Black Twitter, and digital misinformation, micro-targeting and voter suppression. The course is global in scope (we will read authors and study cases from America, Europe, Asia, and Africa), taught by a multidisciplinary team (history, communication, computational social science, education), and is committed to a syllabus centering on the scholarship, expertise, and voices of marginalized communities.No prerequisite.
Same as: COMM 230A, CSRE 230A

AFRICAAM 233A. Counseling Theories and Interventions from a Multicultural Perspective. 3-5 Units.
In an era of globalization characterized by widespread migration and cultural contacts, professionals face a unique challenge: How does one practice successfully when working with clients/students from so many different backgrounds? This course focuses upon the need to examine, conceptualize, and work with individuals according to the multiple ways in which they identify themselves. It will systematically examine multicultural counseling concepts, issues, and research. Literature on counselor and client characteristics such as social status or race/ethnicity and their effects on the counseling process and outcome will be reviewed. Issues in consultation with culturally and linguistically diverse parents and students and work with migrant children and their families are but a few of the topics covered in this course.
Same as: CSRE 233A, EDUC 233A

AFRICAAM 236. Constructing Race and Religion in America. 4-5 Units.
This seminar focuses on the interrelationships between social constructions of race and social interpretations of religion in America. How have assumptions about race shaped religious worldviews? How have religious beliefs shaped racial attitudes? How have ideas about religion and race contributed to notions of what it means to be "American"? We will look at primary and secondary sources and at the historical development of ideas and practices over time.
Same as: AMSTUD 246, CSRE 246, HISTORY 256G, HISTORY 356G, RELIGST 246, RELIGST 346

AFRICAAM 236B. Casablanca - Algiers - Tunis : Cities on the Edge. 3-5 Units.
Casablanca, Algiers and Tunis embody three territories, real and imaginary, which never cease to challenge the preconceptions of travelers setting sight on their shores. In this class, we will explore the myriad ways in which these cities of North Africa, on the edge of Europe and of Africa, have been narrated in literature, cinema, and popular culture. Home to Muslims, Christians, and Jews, they are an ebullient laboratory of social, political, religious, and cultural issues, global and local, between the nineteenth and twenty-first centuries. We will look at mass images of these cities, from films to maps, novels to photographs, sketching a new vision of these magnets as places where power, social rituals, legacies of the Ottoman and French colonial pasts, and the influence of the global economy collude and collide. Special focus on class, gender, and race.
Same as: COMPLIT 236A, CSRE 140S, FRENCH 236, FRENCH 336, HISTORY 245C, URBANST 140F

AFRICAAM 238J. The European Scramble for Africa: Origins and Debates. 4-5 Units.
Why and how did Europeans claim control of 70% of African in the late nineteenth century? Students will engage with historiographical debates ranging from the national (e.g. British) to the topical (e.g. international law). Students will interrogate some of the primary sources on which debaters have rested their arguments. Key discussions include: the British occupation of Egypt; the autonomy of French colonial policy; the mystery of Germany¿s colonial entry; and, not least, the notorious Berlin Conference of 1884-1885.
Same as: HISTORY 238J, HISTORY 338J

AFRICAAM 241. Race, Justice, and Integration. 3 Units.
Recent philosophical research on injustice, race, and the ideal of racial integration.
Same as: EDUC 241, PHIL 142, PHIL 242

AFRICAAM 241A. Gentrification. 5 Units.
Neighborhoods in the Bay Area and around the world are undergoing a transformation known as gentrification. Middle- and upper-income people are moving into what were once low-income areas, and housing costs are on the rise. Tensions between newcomers and old timers, who are often separated by race, ethnicity, or sexual orientation, can erupt; high rents may force long-time residents to leave. In this class we will move beyond simplistic media depictions to explore the complex history, nature, causes and consequences of this process. Students will learn through readings, films, class discussions, and engagement with a local community organization. (Cardinal Course certified by the Haas Center).
Same as: CSRE 141, URBANST 141

AFRICAAM 245. Understanding Racial and Ethnic Identity Development. 3-5 Units.
This seminar will explore the impact and relative salience of racial/ethnic identity on select issues including: discrimination, social justice, mental health and academic performance. Theoretical perspectives on identity development will be reviewed, along with research on other social identity variables, such as social class, gender and regional identifications. New areas within this field such as the complexity of multiracial identity status and intersectional invisibility will also be discussed. Though the class will be rooted in psychology and psychological models of identity formation, no prior exposure to psychology is assumed and other disciplines-including cultural studies, feminist studies, and literature-will be incorporated into the course materials. Students will work with community partners to better understand the nuances of racial and ethnic identity development in different contexts. (Cardinal Course certified by the Haas Center).
Same as: CSRE 245, EDUC 245, PSYCH 245A

AFRICAAM 250J. Baldwin and Hansberry: The Myriad Meanings of Love. 4 Units.
This course looks at major dramatic works by James Baldwin and Lorraine Hansberry. Both of these queer black writers had prophetic things to say about the world-historical significance of major dramas on the 20th Century including civil rights, revolution, gender, colonialism, racism, sexism, war, nationalism and as well as aesthetics and politics.
Same as: AMSTUD 250J, CSRE 250J, FEMGEN 250J, TAPS 250J

AFRICAAM 251J. The End of American Slavery, 1776-1865. 4-5 Units.
How did the institution of American slavery come to an end? The story is more complex than most people know. This course examines the rival forces that fostered slavery's simultaneous contraction in the North and expansion in the South between 1776 and 1861. It also illuminates, in detail, the final tortuous path to abolition during the Civil War. Throughout, the course introduces a diverse collection of historical figures, including seemingly paradoxical ones, such as slaveholding southerners who professed opposition to slavery and non-slaveholding northerners who acted in ways that preserved it. Historical attitudes toward race are a central integrative theme.
Same as: AMSTUD 251J, HISTORY 251J, HISTORY 351J

AFRICAAM 252C. The Old South: Culture, Society, and Slavery. 5 Units.
This course explores the political, social, and cultural history of the antebellum American South, with an emphasis on the history of African-American slavery. Topics include race and race making, slave community and resistance, gender and reproduction, class and immigration, commodity capitalism, technology, disease and climate, indigenous Southerners, white southern honor culture, the Civil War, and the region's place in national mythmaking and memory.
Same as: CSRE 252C, HISTORY 252C

AFRICAAM 253. Caring Labor in the United States. 3-5 Units.
Who cares for America's children, elderly, and infirm? How is the structure of these labor forces influenced by ideologies of race, gender, and class? Beginning with theories of reproductive and caring labor, we examine the history of coerced and enslaved care and then caring as free labor. We will look at housework, child care, nursing, and elder care, among others, and will also examine how activists, policy makers, and workers have imagined new ways of performing and valuing care.
Same as: FEMGEN 253L, HISTORY 253L

AFRICAAM 256E. The American Civil War: The Lived Experience. 5 Units.
What was it like to live in the United States during the Civil War? This course uses the lenses of racial/ethnic identity, gender, class, and geography (among others) to explore the breadth of human experience during this singular moment in American history. It illuminates the varied ways in which Americans, in the Union states and the Confederate states, struggled to move forward and to find meaning in the face of unprecedented division and destruction.
Same as: AMSTUD 256E, HISTORY 256E

AFRICAAM 258. Black Feminist Theater and Theory. 4 Units.
From the rave reviews garnered by Angelina Weld Grimke's lynching play, Rachel to recent work by Lynn Nottage on Rwanda, black women playwrights have addressed key issues in modern culture and politics. We will analyze and perform work written by black women in the U.S., Britain and the Caribbean in the 20th and 21st centuries. Topics include: sexuality, surrealism, colonialism, freedom, violence, colorism, love, history, community and more. Playwrights include: Angelina Grimke, Lorriane Hansberry, Winsome Pinnock, Adrienne Kennedy, Suzan- Lori Parks, Ntzoke Shange, Pearl Cleage, Sarah Jones, Anna DeVeare Smith, Alice Childress, Lydia Diamond and Zora Neale Hurston.).
Same as: CSRE 258, FEMGEN 258X, TAPS 258

AFRICAAM 261E. Mixed Race Literature in the U.S. and South Africa. 5 Units.
As scholar Werner Sollors recently suggested, novels, poems, stories about interracial contacts and mixed race constitute ¿an orphan literature belonging to no clear ethnic or national tradition.¿ Yet the theme of mixed race is at the center of many national self-definitions, even in our U.S. post-Civil Rights and South Africa¿s post-Apartheid era. This course examines aesthetic engagements with mixed race politics in these trans- and post-national dialogues, beginning in the 1700s and focusing on the 20th and 21st centuries.
Same as: AMSTUD 261E

AFRICAAM 262C. African American Literature and the Retreat of Jim Crow. 5 Units.
After the unprecedented carnage of WWII, the postwar era witnessed the slow decline of the segregated Jim Crow order and the onset of landmark civil rights legislation. What role did African American literature and culture play in this historical process? What does this shift in racial theory and praxis mean for black literary production, a tradition constituted by the experience of slavery and racial oppression? Focus on these questions against the backdrop of contemporaneous developments: the onset of the Cold War, decolonization and the formation of the Third World, and the emergence of the "new liberalism.".
Same as: AMSTUD 262C, CSRE 262C

AFRICAAM 262D. African American Poetics. 5 Units.
Examination of African American poetic expressive forms from the 1700s to the 2000s, considering the central role of the genre--from sonnets to spoken word, from blues poetry to new media performance--in defining an evolving literary tradition and cultural identity.
Same as: AMSTUD 262D

AFRICAAM 267E. Martin Luther King, Jr. - His Life, Ideas, and Legacy. 4-5 Units.
Using the unique documentary resources and publications of Stanford's King Research and Education Institute, this course will provide a general introduction to King's life, visionary ideas, and historical significance. In addition to lectures and discussions, the course will include presentations of documentaries such as Eyes on the Prize. Students will be expected to read the required texts, participate in class discussions, and submit a research paper or an audio-visual project developed in consultation with the professor.
Same as: AMSTUD 267E, HISTORY 267E

AFRICAAM 268. Black Temporality. 5 Units.
Futurity, progress, futurism, and history have become contested ideas within the valence of Black life. This course examines both the speculative imagination and the aspirational and pessimistic stakes of temporality within the Black diaspora. While Afrofuturism often privileges outer space and science fiction as its premier site and grammar, this course seeks to magnify other articulations of Blackness and time that may fall out of its purview. In so doing, this course considers how past and current socio-political movements (e.g., Haitian Revolution and Black Lives Matter), memory, reparations, and geography have informed critical race theory, philosophy, and Black expressive arts.

AFRICAAM 269. Black Studies Matter. 3-5 Units.
This interdisciplinary course will introduce students to ten foundational texts in Black Studies, including classic works by Toni Morrison, James Baldwin, Lorraine Hansberry, C. L. R. James, W. E. B. DuBois, and Audre Lorde. The discussions will connect these texts to contemporary conversations about Black feminism, Black politics, mass incarceration, policing, and Black life in America in the twenty-first century. We welcome a wide range of students to enroll in this class: undergraduates and graduate students and members of the larger Stanford community who would like to gain a deeper understanding of Black Studies. This class is particularly urgent in our current moment. Taken together, the selected readings will provide critical historical and cultural context to grasp the meanings of our own tumultuous times. n nThis course draws on primary sources that reveal the centrality of Black Studies to understanding our world and the major themes that animate our lives: history, identity, memory, gender, sexuality, belonging, exclusion, and the varied responses and forms of resistance to four hundred years of racial oppression. These texts invite students to delve deeply into the lived experiences of African Americans across time periods, class positions, sexual orientations, and geographic locations. The lectures and discussions are led by faculty in African and African American Studies (AAAS), Comparative Studies in Race and Ethnicity (CSRE), History, Theater and Performance Studies, English, and Philosophy.
Same as: AFRICAAM 69

AFRICAAM 280. Designing (Ourselves) for Racial Justice. 2 Units.
Education systems in this country are not serving all students equally. This course is for students who wish to revolutionize the way we understand and provide for safe learning environments. In this course, students and instructors will explore opportunities for increasing equity in education by working with a diverse array of real world experts and completing design challenges that have the potential to positively impact the lives of students in this country. nnApplication required, see dschool.stanford.edu/classes for more information.
Same as: DESINST 280

AFRICAAM 286. The Psychology of Racial Inequality. 3 Units.
Our topic is the psychology of racial inequality - thinking, feeling, and behaving in ways that contribute to racial stereotyping, prejudice, and discrimination, and how these processes in turn maintain and perpetuate inequality between racial groups. We will examine how these processes unfold at both the individual and the institutional levels. Throughout this course, you will familiarize yourself with the psychological perspectives, methods, and findings that help explain racial inequality, and we will explore ways to promote racial equality. The course will be conducted as a seminar, but most of what you learn will be through the readings and discussions. That is, this course is minimally didactic; the goal is to have you engage thoughtfully with the issues and readings spurred in part by sharing perspectives, confusions, and insights through writing and discussion. Each student will facilitate at least one class session by providing an introductory framework for the readings (~10-minute presentation with handouts that overviews the concepts, issues, and controversies). Together, we will broaden our knowledge base on the subject and explain, from a psychological perspective, the pervasiveness of racial inequality. Prerequisites: PSYCH 1 and PSYCH 10.
Same as: CSRE 186, PSYCH 186, PSYCH 286

AFRICAAM 291. Riot!: Visualizing Civil Unrest in the 20th and 21st Centuries. 5 Units.
This course explores the visual legacy of civil unrest in the United States. Focusing on the 1965 Watts Rebellion, the 1992 Los Angeles Riots, and the 2014 Ferguson Uprising, students will closely examine photographs, television broadcasts, newspapers, magazines, and film and video representations of unrest. In addition, students will visually analyze the works of artists who have responded to the instances of police brutality and/or challenged the systemic racism, xenophobia, and anti-black violence leading to and surrounding these events.nnNOTE: Instructor consent required for undergraduate students. Please contact the instructor for permission to enroll.
Same as: AFRICAAM 491, ARTHIST 291, ARTHIST 491

AFRICAAM 293. Research Methods in Africana Studies. 3-5 Units.
This course introduces research methodologies in Africana Studies. Under the guidance of the Research Fellow in the African and African American Studies Program, students will study the methods that Africana scholars, artists, and activists employ to design and execute research on Africana phenomena. The class will include lectures, close readings of texts, research assignments, and lively discussions. The course materials will feature both foundational and contemporary texts in the field of Black Studies. Our engagement with Africana research methodologies will pose critical questions about interdisciplinary research and cross-disciplinary perspectives with careful attention to intersectionality, cultural competence, and ethics in research. The class will also discuss how Africana thinkers challenge conventional modes of knowledge production and, in so doing, offer critiques and contributions that advance the methodologies of related disciplines. Students will leave the course better prepared to take on the senior thesis capstone project.
Same as: AFRICAAM 93

AFRICAAM 389C. Race, Ethnicity, and Language: Pedagogical Possibilities. 3-4 Units.
This seminar explores the intersections of language and race/racism/racialization in the public schooling experiences of students of color. We will briefly trace the historical emergence of the related fields of sociolinguistics and linguistic anthropology, explore how each of these scholarly traditions approaches the study of language, and identify key points of overlap and tension between the two fields before considering recent examples of inter-disciplinary scholarship on language and race in urban schools. Issues to be addressed include language variation and change, language and identity, bilingualism and multilingualism, language ideologies, and classroom discourse. We will pay particular attention to the implications of relevant literature for teaching and learning in urban classrooms.
Same as: CSRE 385, EDUC 389C

AFRICAAM 428. Intersectional Justice in Education Policy and Practice. 3-5 Units.
This 3-5-unit, graduate course is designed to explore intersectionality as a "method and a disposition, a heuristic and an analytic tool" (Carbado, Crenshaw, Mays, & Tomlinson, 2013, p. 11). To do this we explore the intellectual lineage of intersectional thought from its Black Feminist roots and trace it through its use today in education research. Within these tracings, we will delve into the (mis)uses, contestations, and iterations of intersectionality in theory and empirical research. At the heart of this course is an examination of how perceptions of and beliefs about a myriad of intertwining inequities conspire to create vectors of oppressions that land in multiply¿marginalized students' lives through the macrosociolpolitcal to the microinteractional. It interrogates the foundational ideological assumptions around culture, difference, deficit, and dis/ability in which education has traditionally been rooted. Students in the course will analyze the lineage and processes of intersectionality to understand how students at the intersections of multiple oppressions experience education within communities of practice that enact, reproduce, and resist policies and practices through their daily activities.
Same as: EDUC 428

AFRICAAM 491. Riot!: Visualizing Civil Unrest in the 20th and 21st Centuries. 5 Units.
This course explores the visual legacy of civil unrest in the United States. Focusing on the 1965 Watts Rebellion, the 1992 Los Angeles Riots, and the 2014 Ferguson Uprising, students will closely examine photographs, television broadcasts, newspapers, magazines, and film and video representations of unrest. In addition, students will visually analyze the works of artists who have responded to the instances of police brutality and/or challenged the systemic racism, xenophobia, and anti-black violence leading to and surrounding these events.nnNOTE: Instructor consent required for undergraduate students. Please contact the instructor for permission to enroll.
Same as: AFRICAAM 291, ARTHIST 291, ARTHIST 491

AFRICAN STUDIES

Courses offered by the Center for African Studies (CAS) are listed under the subject code AFRICAST on the Stanford Bulletin's ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=AFRICAST&filter-catalognumber-AFRICAST=on).

The Center for African Studies coordinates an interdisciplinary minor in African Studies for undergraduates. The program seeks to enrich understanding of the interactions among the social, economic, cultural, historical, linguistic, genetic, geopolitical, ecological, and biomedical factors that shape and have shaped African societies.

Courses in African Studies are offered by departments and programs throughout the University. Each year CAS sponsors a range of seminars and workshops to demonstrate to advanced undergraduates and graduate students how topics of current interest in African Studies are approached from different disciplinary perspectives.

Course offerings in African languages are also coordinated by the Center for African Studies. Along with regular courses in several levels of Arabic and Swahili, the center arranges with the African and Middle Eastern Languages and Literatures Program in the Stanford Language Center to offer instruction in other African languages; in recent years, it has offered courses in Afrikaans, Amharic, Igbo, Kinyarwanda, Twi, and Yoruba.

Graduate Study in African Studies

For those who wish to specialize in Africa at the graduate level, African Studies can be designated a field of concentration within the master's and doctoral programs of some academic departments. Students in such departments as Anthropology (p. 947), History (p. 1549), Political Science (p. 1938), and Sociology (p. 2099), and in the School of Education (p. 460), may declare African Studies as the area of specialization for their master's and Ph.D. thesis work. Some other departments, programs, and institutes such as the International Comparative Education Program (p. 462) also permit students to specialize in African Studies.

Undergraduate Programs in African Studies

Undergraduates may choose an African Studies focus in the form of a minor or concentration:

1. A minor in Global Studies with African Studies Specialization offers students the ability to combine a focus on Africa with their major in any other discipline. This offers the students a strong regional specialization. For requirements see the "Minor" tab on this page.
2. A major in a traditionally defined academic department such as Anthropology (p. 947), History (p. 1550), or Political Science (p. 1938) affords ample opportunity to enroll in courses outside the major, leaving the student free to pursue the interdisciplinary study of Africa.
3. Interdepartmental majors, such as African and African American Studies (p. 880) or International Relations (p. 1691), offer coordinated and comprehensive interdisciplinary course sequences, which permit a concentration in African Studies.

Certificate in African Studies

Students may apply for a certificate in African Studies. Requirements for the certificate are the same as for the minor in Global Studies with African Studies Specialization; however, students may double-count courses applied to their major or graduate studies in fulfillment of the certificate requirements. The certificate in African Studies is issued by the Center for African Studies and does not appear on any University record, including the student's transcript. For more information and an application, contact the center (http://africanstudies.stanford.edu).

COVID-19-Related Degree Requirement Changes

For information on how the Global Studies with African Studies Specialization minor requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 1520)" in the "Stanford Global Studies" section of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

Minor in Global Studies with African Studies Specialization

The minor in Global Studies, African Studies specialization, offers students the opportunity to complement their major course of study with an in-depth, interdisciplinary exploration of the cultures, histories, politics, religions, and societies of Africa.

Students from any major interested in applying for admission to this minor program should consult the minor adviser at the Center for African Studies. Students declare the minor and the African Studies specialization in Axess (http://axess.stanford.edu) (see below for detailed instructions).

Students consult with their minor adviser to develop individual programs. The minor is especially well-suited for undergraduates who plan to make service, research, or study abroad in Africa as part of their Stanford experience.

Declaring the Global Studies Minor with African Studies Specialization

To declare the Global Studies minor with African Studies specialization, students must:

1. Set up an appointment with Laura Hubbard, <lhubbard@stanford.edu>, Associate Director for the Center for African Studies.
2. Declare the Global Studies minor and subplan in Axess (http://axess.stanford.edu).

Learning Outcomes

The SGS minor specialization in African Studies enables students to:

1. develop critical knowledge and skills in African Studies
2. organize their interest in Africa into a coherent course of study through directed mentorship and participation in intellectual community.
3. prepare for research, study, or service in Africa

Upon completion of requirements, final certification of the minor is made by the Center for African Studies. The minor and the specialization appear on the transcript but they do not appear on the diploma.

Requirements

A total of 28 units which include the following:

1. GLOBAL 101 Critical Issues in Global Affairs (3 units)
2. A minimum of 25 units of Africa-related courses. Students may not double-count courses for completing major and minor requirements. Coursework must be letter-graded, except where letter grades are not offered.

3. At least one quarter's exposure to a sub-Saharan African language. The Center for African Studies (p. 918) and the Special Languages Program of the Language Center (p. 1722) can arrange instruction in any of several languages spoken in West, East, Central, and Southern Africa.
4. One entry level course that covers more than one region of Africa.
5. A designated focus of study, either disciplinary or regional, through a three course concentration developed with the minor adviser.
6. Students may work with the subplan advisor to develop a capstone project to count towards the unit fulfillment of the minor. Projects may include (but are not limited to):

1. Research with units through directed reading under the supervision of the subplan advisor.

- Research may take place at Stanford or during a relevant study abroad program, and options may include regional fieldwork, creative arts projects, short films, etc.

2. Advanced language study beyond the subplan minimum requirement with units through directed reading under the supervision of the subplan advisor.

- Intensive language training may take place at Stanford, off-campus, or overseas.

Students may propose other projects related to their subplan.

Course List

For a representative, rather than comprehensive, list of courses that count towards the minor, see the Related Courses (p. 1520) tab in this section of the Bulletin. Other courses may also fulfill the requirements; students should consult their African Studies minor adviser concerning which courses might fulfill minor requirements.

Related Courses

Below is a sample of AFRICAST and related courses that may be counted toward the minor. Other courses may also fulfill the requirements; consult your African Studies minor adviser concerning the applicability of other courses to the minor.

		Units
African Studies Courses		
AFRICAST 111	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 112	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AFRICAST 113V	Freedom in Chains: Black Slavery in the Atlantic, 1400s-1800s	3-5
AFRICAST 132	Literature and Society in Africa and the Caribbean	4
AFRICAST 135	Designing Research-Based Interventions to Solve Global Health Problems	3-4
AFRICAST 142	Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice	3-5
AFRICAST 195	Shifting Frames	1-2
AFRICAST 300	Contemporary Issues in African Studies	1
Related Courses		
AFRICAST 114N	Desert Biogeography of Namibia Prefield Seminar	3
AFRICAST 119	Novel Perspectives on South Africa	2-3
AFRICAST 122F	Histories of Race in Science and Medicine at Home and Abroad	4
AFRICAST 199	Independent Study or Directed Reading	1-5
AFRICAST 220E	Renaissance Africa	3-5
AFRICAST 235	Designing Research-Based Interventions to Solve Global Health Problems	3-4
AFRICAST 249	Bodies, Technologies, and Natures in Africa	4-5
ANTHRO 1	Introduction to Cultural and Social Anthropology	3-5
ANTHRO 41	Genes and Identity	4
COMPLIT 121	Poems, Poetry, Worlds	5
ECON 118	Development Economics	5
HISTORY 47	History of South Africa	3
HISTORY 48	The Egyptians	3-5
HISTORY 48Q	South Africa: Contested Transitions	4
HISTORY 106A	Global Human Geography: Asia and Africa	5
HISTORY 145B	Africa in the 20th Century	5
HISTORY 146	History of Humanitarian Aid in sub-Saharan Africa	4-5
HISTORY 238J	The European Scramble for Africa: Origins and Debates	4-5
OSPCPTWN 30	Introduction to Contemporary Issues in South Africa	2
OSPCPTWN 36	The Archaeology of Southern African Hunter Gatherers	4
OSPCPTWN 38	Genocide: African Experiences in Comparative Perspective	3-5
OSPCPTWN 55	Arts of Change	3
OSPCPTWN 67	ICT4D: An Introduction to the Use of ICTs for Development	3
OSPCPTWN 78	Postcolonial Modernist Art Movements in Africa	3
POLISCI 11N	The Rwandan Genocide	3
POLISCI 114D	Democracy, Development, and the Rule of Law	3-5
POLISCI 146A	African Politics	4-5
SURG 150	Politics, Culture, and Economics of Global Surgery	1-4
THINK 42	Thinking Through Africa: Perspectives on Health, Wealth, and Well-Being	4

Emeriti: David B. Abernethy, Ellen Jo Baron, John Baugh, Joan Bresnan, Joel Samoff, Susan Cashion, Sandra E. Drake, Peter Egbert, James. L. Gibbs, Jr., William B. Gould, Bruce F. Johnston, William R. Leben, Bruce Lusignan, Elisabeth Mudimbe-Boyi, Mary Polan, Hans N. Weiler, Sylvia Wynter, Jean-Marie Apostolidès, Joel Beinin, Shelley Goldman, Terry Lynn Karl, John Rickford

Director: Joel Cabrita

Professors: Michele Barry (Medicine), John Boothroyd (Microbiology and Immunology), James T. Campbell (History), Martin Carnoy (Education), William H. Durham (Anthropology), James Fearon (Political Science), James Ferguson (Anthropology), Gabrielle Hecht (History), Richard Klein (Anthropology), David Laitin (Political Science), Yvonne Maldonado (Pediatrics), Lynn Meskell (Anthropology), Julie Parsonnet (Medicine and Health Research and Policy), Richard Roberts (History) Oliver Fringer (Civil and Environmental Engineering) Liisa Malkki (Anthropology), Pascaline Dupas (Economics), Ato Quayson (English)

Associate Professors: Vincent Barletta (Comparative Literature and Iberian and Latin American Cultures), Alexandria B. Boehm (Civil and Environmental Engineering), Jenna Davis (Civil and Environmental Engineering), Paulla A. Ebron (Anthropology), Duana Fullwiley (Anthropology), Grant Parker (Classics), Jeremy Weinstein (Political

Science), Eran Bendavid (General Internal Medicine), Katherine Casey (Political Economy), Vaughn Rasberry (English),

Assistant Professors: Steven Press (History), Krish Seetah (Anthropology), Joel Cabrita (History), Fatoumata Seck (French and Italian)

Professor (Research): David Katzenstein (School of Medicine)

Professor (Teaching): Robert Siegel (Microbiology and Immunology)

Associate Professor (Clinical): Brian Blackburn (Infectious Diseases), Daryn Reicherter (Psychiatry and Behavioral Sciences), Hugh Brent Solvason (Psychiatry and Behavioral Sciences)

Senior Lecturers: Khalil Barhoum (African and Middle Eastern Languages)

Lecturers: Byron Bland (Law), Jonathan Greenberg (Law), Samuel Mukoma (African and Middle Eastern Languages), Ramzi Salti (African and Middle Eastern Languages) Samuel Nkansah (Twi), Adeyinka Fashonkun (Yoroba), Gladys Ajelo (Igbo), Issayas Tesfamarian (Amharic)

Consulting Professors: Anne Firth-Murray (Human Biology), Joel Samoff (Center for African Studies)

Curators: Karen Fung (African Collection Curator, Green Library), Regina Roberts (Bibliographer, Green Library)

Senior Research Fellows: Coit Blacker (Freeman Spogli Institute), Larry Diamond (Freeman Spogli Institute, Hoover Institution), Marcel Fafchamps (Freeman Spogli Institute), Stephen Stedman (Freeman Spogli Institute, Center for International Security and Cooperation)

Overseas Studies Courses in African Studies

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPCPTWN 36	The Archaeology of Southern African Hunter Gatherers	4
OSPCPTWN 38	Genocide: African Experiences in Comparative Perspective	3-5
OSPCPTWN 45	Transitional Justice and Transformation Debates in South Africa	4
OSPCPTWN 55	Arts of Change	3
OSPCPTWN 67	ICT4D: An Introduction to the Use of ICTs for Development	3

Courses

AFRICAST 51N. Visible Bodies: Black Female Authors and the Politics of Publishing in Africa. 4 Units.
Where are the African female writers of the twentieth century and the present day? This Introductory Seminar addresses the critical problem of the marginalization of black female authors within established canons of modern African literature. We will explore, analyse and interrogate the reasons why, and the ways in which, women-authored bodies of work from this period continue to be lost, misplaced, forgotten, and ignored by a male-dominated and largely European/white publishing industry in the context of colonialism, apartheid and globalization. nnYou will be introduced to key twentieth-century and more contemporary female authors from Africa, some of them published but many more unpublished or out-of-print. The class will look at the challenges these female authors faced in publishing, including how they navigated a hostile publishing industry and a lack of funding and intellectual support for black writers, especially female writers. nnWe will also examine the strategies these writers used to mitigate their apparent marginality, including looking at how women self-published, how they used newspapers as publication venues, how they have increasingly turned to digital platforms, and how many sought international publishing networks outside of the African continent. As one of the primary assessments for the seminar, you will be asked to conceptualize and design an in-depth and imaginative pitch for a new publishing platform that specializes in African female authors. nnYou will also have the opportunity for in-depth engagement (both in class and in one-on-one mentor sessions) with a range of leading pioneers in the field of publishing and literature in Africa. Figures like Ainehi Edoro (founder of Brittle Paper) and Zukiswa Wanner (prize-winning author of The Madams and Men of the South), amongst others, will be guests to our Zoom classroom. One of our industry specialists will meet with you to offer detailed feedback on your proposal for your imagined publishing platform. nnYou can expect a roughly 50/50 division between synchronous and asynchronous learning, as well as plenty of opportunity to collaborate with peers in smaller settings.
Same as: AFRICAAM 140N, ENGLISH 54N, HISTORY 41N

AFRICAST 58. Egypt in the Age of Heresy. 3-5 Units.
Perhaps the most controversial era in ancient Egyptian history, the Amarna period (c.1350-1334 BCE) was marked by great sociocultural transformation, notably the introduction of a new 'religion' (often considered the world's first form of monotheism), the construction of a new royal city, and radical departures in artistic and architectural styles. This course will introduce archaeological and textual sources of ancient Egypt, investigating topics such as theological promotion, projections of power, social structure, urban design, interregional diplomacy, and historical legacy during the inception, height, and aftermath of this highly enigmatic period. Students with or without prior background are equally encouraged.
Same as: AFRICAAM 58A, ARCHLGY 58, CLASSICS 58

AFRICAST 90. Black Earth Rising: Law and Society in Postcolonial Africa. 5 Units.
Is the International Criminal Court a neocolonial institution? Should African art in Western museums be returned? Why have anti-homosexuality laws emerged in many African countries? This course engages these questions, and more, to explore how Africans have grappled with the legacies of colonialism through law since independence. Reading court documents, listening to witness testimonies, analyzing legal codes, and watching cultural commentaries¿including hit TV series Black Earth Rising¿students will examine the histories of legal conflict in Africa and their implications for the present and future of African societies. This course fulfills the Social Inquiry and Engaging Diversity Ways requirements.
Same as: HISTORY 47S

AFRICAST 111. Education for All? The Global and Local in Public Policy Making in Africa. 3-5 Units.
Policy making in Africa and the intersection of policy processes and their political and economic dimensions. The failure to implement agreements by international institutions, national governments, and nongovernmental organizations to promote education. Case studies of crowded and poorly equipped schools, overburdened and underprepared teachers, and underfunded education systems.
Same as: AFRICAAM 211, AFRICAST 211

AFRICAST 112. AIDS, Literacy, and Land: Foreign Aid and Development in Africa. 3-5 Units.
Foreign aid can help Africa, say the advocates. Certainly not, say the critics. Is foreign aid a solution? or a problem? Should there be more aid, less aid, or none at all? Africa has developed imaginative and innovative approaches in many sectors. At the same time, many African countries have become increasingly dependent on foreign aid. How do foreign aid and local initiatives intersect? We will examine several contentious issues in contemporary Africa, exploring roots, contested analyses, and proposed solutions, examining foreign aid and the aid relationship. As African communities and countries work to shape their future, what are the foreign roles, and what are their consequences?.
Same as: AFRICAAM 111, AFRICAST 212

AFRICAST 113V. Freedom in Chains: Black Slavery in the Atlantic, 1400s-1800s. 3-5 Units.
This course will focus on the history of slavery in the British, French, Spanish, Portuguese and Dutch Atlantic world(s), from the late 1400s to the 1800s. Its main focus will be on the experiences of enslaved Africans and their descendants. Between the sixteenth and nineteenth centuries, the Europeans forcibly embarked over 10 million Africans to the Americas. Drawing on methodologies used by historians, archaeologists and anthropologists, the course will reconstruct the daily lives and the socio-economic, cultural and political histories of these captives. We will seek to hear their voices by investigating a variety of historical testimonies and recent scholarship. The course will examine slavery in the context of broader trends in Atlantic World studies, a field that has grown considerably in recent years, providing new ways of understanding historical developments across national boundaries. We will seek to identify commonalities and differences across time periods and regions and the reasons for those differences. Covered topics will include slave ship voyages, labor, agency, the creation of new identities (creolization), religion, race, gender, resistance, legacies, and memory.
Same as: AFRICAAM 113V, CSRE 113V, HISTORY 205D

AFRICAST 114N. Desert Biogeography of Namibia Prefield Seminar. 3 Units.
Desert environments make up a third of the land areas on Earth, ranging from the hottest to the coldest environments. Aridity leads to the development of unique adaptations among the organisms that inhabit them. Climate change and other processes of desertification as well as increasing human demand for habitable and cultivatable areas have resulting in increasing need to better understand these systems. Namibia is a model system for studying these processes and includes the Sossuvlei (Sand Sea) World Heritable Site. This seminar will prepare students for their overseas field experience in Namibia. The seminar will provide an introduction to desert biogeography and culture, using Namibia as a case study. During the seminar, students will each give two presentations on aspects of desert biogeography and ecology, specific organisms and their adaptations to arid environments, cultural adaptations of indigenous peoples and immigrants, ecological threats and conservation efforts, and/or national and international policy towards deserts. Additional assignments include a comprehensive dossier and a final exam. Students will also carry out background research for the presentations they will be giving during the field seminar where access to the internet and to other scholarly resources will be limited. In addition, we will cover logistics, health and safety, cultural sensitivity, geography, and politics. We will deal with post-field issues such as reverse culture shock, and ways in which participants can consolidate and build up their abroad experiences after they return to campus.
Same as: EARTHSYS 115N

AFRICAST 119. Novel Perspectives on South Africa. 2-3 Units.
21st-century South Africa continues its literary effervescence. In this class we'll sample some recent novels and related writings to tease out the issues shaping the country (and to some degree the continent) at present. Is `South African literature' a meaningful category today? What are the most significant features we can identify in new writings and how do they relate to contemporary social dynamics? The course will appeal to anyone interested in present-day Cape Town or Johannesburg, including students who have spent a term in BOSP-Cape Town or plan to do so in future. Both undergraduate and graduate students are welcome. 2-3 units. Course may be repeated for credit.nn nnAll students will write short analyses from the prescribed texts. Students taking the course for three units will write an extended essay on a topic agreed with the instructor.
Same as: AFRICAAM 119, AFRICAAM 219, AFRICAST 219, CSRE 119

AFRICAST 122F. Histories of Race in Science and Medicine at Home and Abroad. 4 Units.
This course has as its primary objective, the historical study of the intersection of race, science and medicine in the US and abroad with an emphasis on Africa and its Diasporas in the US. By drawing on literature from history, science and technology studies, sociology and other related disciplines, the course will consider the sociological and cultural concept of race and its usefulness as an analytical category. The course will explore how the study of race became its own ¿science¿ in the late-Enlightenment era, the history of eugenics--a science of race aimed at the ostensible betterment of the overall population through the systematic killing or "letting die" of humanity¿s "undesirable" parts, discuss how the ideology of pseudo-scientific racism underpinned the health policies of the French and British Empires in Africa, explore the fraught relationship between race and medicine in the US, discuss how biological notions of race have quietly slipped back into scientific projects in the 21st century and explore how various social justice advocates and scholars have resisted the scientific racisms of the present and future and/or proposed new paths towards a more equitable and accessible science.
Same as: AFRICAAM 122F, CSRE 122F, HISTORY 248D

AFRICAST 127. African Art and Politics, c. 1900 - Present. 4 Units.
This course explores the relationship between art and politics in twentieth century Africa. Artistic production and consumption is considered in the context of various major political shifts, from the experience of colonialism to the struggle against Apartheid. Each week we will look closely at different works of art and examine how artists and designers responded to such challenges as independence, modernization and globalization. We will look at painting, sculpture, religious art, public and performance art, photography and film. How western perceptions and understanding of African art have shifted, and how museums have framed African art throughout the twentieth century will remain important points of discussion throughout the course.
Same as: ARTHIST 127A

AFRICAST 132. Literature and Society in Africa and the Caribbean. 4 Units.
This course explores texts and films from Francophone Africa and the Caribbean in the 20th and 21st centuries. The course will explore the connections between Sub-Saharan Africa, the Maghreb and the Caribbean through both foundational and contemporary works while considering their engagement with the historical and political contexts in which they were produced. This course will also serve to improve students' speaking and writing skills in French while sharpening their knowledge of the linguistic and conceptual tools needed to conduct literary analysis. The diverse topics discussed in the course will include national and cultural identity, race and class, gender and sexuality, orality and textuality, transnationalism and migration, colonialism and decolonization, history and memory, and the politics of language. Readings include the works of writers and filmmakers such as Djibril Tamsir Niane, Léopold Senghor, Aimé Césaire, Albert Memmi, Patrick Chamoiseau, Leonora Miano, Leila Slimani, Dani Laferrière and Ousmane Sembène. Taught in French. Students are highly encouraged to complete FRENLANG 124 or to successfully test above this level through the Language Center. This course fulfills the Writing in the Major (WIM) requirement.
Same as: AFRICAAM 133, COMPLIT 133A, COMPLIT 233A, CSRE 133E, FRENCH 133, JEWISHST 143

AFRICAST 135. Designing Research-Based Interventions to Solve Global Health Problems. 3-4 Units.
The excitement around social innovation and entrepreneurship has spawned numerous startups focused on tackling world problems, particularly in the fields of education and health. The best social ventures are launched with careful consideration paid to research, design, and efficacy. This course offers students insights into understanding how to effectively develop, evaluate, and scale social ventures. Using TeachAids (an award-winning nonprofit educational technology social venture used in 82 countries) as a primary case study, students will be given an in-depth look into how the entity was founded and scaled globally. Guest speakers will include world-class experts and entrepreneurs in Philanthropy, Medicine, Communications, Education, and Technology. Open to both undergraduate and graduate students.
Same as: AFRICAST 235, EDUC 135, EDUC 335, EPI 235, HUMBIO 26, MED 235

AFRICAST 142. Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice. 3-5 Units.
This seminar is part of a broader program on Social Entrepreneurship at CDDRL in partnership with the Haas Center for Public Service. It will use practice to better inform theory. Working with three visiting social entrepreneurs from developing and developed country contexts students will use case studies of successful and failed social change strategies to explore relationships between social entrepreneurship, gender, democracy, development and justice. It interrogates current definitions of democracy and development and explores how they can become more inclusive of marginalized populations. This is a service learning class in which students will learn by working on projects that support the social entrepreneurs' efforts to promote social change. Students should register for either 3 OR 5 units only. Students enrolled in the full 5 units will have a service-learning component along with the course. Students enrolled for 3 units will not complete the service-learning component. Limited enrollment. Attendance at the first class is mandatory in order to participate in service learning.
Same as: AFRICAST 242, CSRE 142C, INTNLREL 142

AFRICAST 146M. New Keywords in African Sound. 3-4 Units.
This course identifies and considers new keywords for the study of contemporary African music and sound. Each week we will foster discussion around a keyword and a constellation of case studies. The sonic practices we will encounter range from South African house music to Ghanaian honk horns; from Congolese rumba bands to Tunisian trance singers; from listening to the radio in a Tanzanian homestead to making hip hop music videos on the Kenyan coast. By exploring the unexpected interconnections between contemporary African musical communities, we will discuss new keywords arising in current scholarship, including technologies like the amplifier and the hard drive, spaces like the studio and the city, and analytics like pleasure and hotness. We will also engage with established concepts for the study of postcolonial African cultures, including nationalism, cosmopolitanism, globalization, diaspora, and Pan-Africanism. This is a seminar-based course open to graduate students, upper level undergraduate students, and other students with consent of the instructor. Proficiency in music is not required. WIM at 4 units only.
Same as: AFRICAAM 146D, CSRE 146D, MUSIC 146M, MUSIC 246M

AFRICAST 151. AIDS in Africa. 3 Units.
Medical, social, and political aspects of the HIV epidemic in sub-Saharan Africa including: biology, transmission, diagnosis,and treatment of HIV; mother-to-child transmission and breastfeeding; vaccines; community and activist responses to the HIV epidemic; economics of HIV treatment; governance and health; ethics in research and program implementation.

AFRICAST 195. Shifting Frames. 1-2 Unit.
This is a student driven, dialogue based, and intellectual community focused course. We will explore and challenge the taken-for-granted framing of key African issues and debates. Engagement with discussion leaders drawing on their own research and case studies from across the African continent will guide us across shifting terrain. This course centers the scholarship and voices of African students. Topics include: Afropolitanism, Brain Drain/ Gain, Education, Leadership, Global Health, AI Application in Africa, Economic Development, Industrial Policy, LGBTQI Rights, Gender and Sexuality.

AFRICAST 199. Independent Study or Directed Reading. 1-5 Unit.
May be repeated for credit.

AFRICAST 211. Education for All? The Global and Local in Public Policy Making in Africa. 3-5 Units.
Policy making in Africa and the intersection of policy processes and their political and economic dimensions. The failure to implement agreements by international institutions, national governments, and nongovernmental organizations to promote education. Case studies of crowded and poorly equipped schools, overburdened and underprepared teachers, and underfunded education systems.
Same as: AFRICAAM 211, AFRICAST 111

AFRICAST 212. AIDS, Literacy, and Land: Foreign Aid and Development in Africa. 3-5 Units.
Foreign aid can help Africa, say the advocates. Certainly not, say the critics. Is foreign aid a solution? or a problem? Should there be more aid, less aid, or none at all? Africa has developed imaginative and innovative approaches in many sectors. At the same time, many African countries have become increasingly dependent on foreign aid. How do foreign aid and local initiatives intersect? We will examine several contentious issues in contemporary Africa, exploring roots, contested analyses, and proposed solutions, examining foreign aid and the aid relationship. As African communities and countries work to shape their future, what are the foreign roles, and what are their consequences?.
Same as: AFRICAAM 111, AFRICAST 112

AFRICAST 219. Novel Perspectives on South Africa. 2-3 Units.
21st-century South Africa continues its literary effervescence. In this class we'll sample some recent novels and related writings to tease out the issues shaping the country (and to some degree the continent) at present. Is `South African literature' a meaningful category today? What are the most significant features we can identify in new writings and how do they relate to contemporary social dynamics? The course will appeal to anyone interested in present-day Cape Town or Johannesburg, including students who have spent a term in BOSP-Cape Town or plan to do so in future. Both undergraduate and graduate students are welcome. 2-3 units. Course may be repeated for credit.nn nnAll students will write short analyses from the prescribed texts. Students taking the course for three units will write an extended essay on a topic agreed with the instructor.
Same as: AFRICAAM 119, AFRICAAM 219, AFRICAST 119, CSRE 119

AFRICAST 220E. Renaissance Africa. 3-5 Units.
Literature and Portuguese expansion into Africa during the sixteenth century. Emphasis on forms of exchange between Portuguese and Africans in Morocco, Angola/Congo, South Africa, the Swahili Coast, and Ethiopia. Readings in Portuguese and English. Taught in English.
Same as: COMPLIT 220, ILAC 220E, ILAC 320E

AFRICAST 224. Memory and Heritage In South Africa Syllabus. 1 Unit.
The focus of this course is to provide a forum in which students examine the role of memory and heritage in South Africa. The course will include visiting speakers, discussion and other activities. The complex relationship between memory and heritage in South Africa will provide the basis for a series of broad conversations about citizenship, national reconciliation, memorialization, justice, modernity and heritage ethics.

AFRICAST 235. Designing Research-Based Interventions to Solve Global Health Problems. 3-4 Units.
The excitement around social innovation and entrepreneurship has spawned numerous startups focused on tackling world problems, particularly in the fields of education and health. The best social ventures are launched with careful consideration paid to research, design, and efficacy. This course offers students insights into understanding how to effectively develop, evaluate, and scale social ventures. Using TeachAids (an award-winning nonprofit educational technology social venture used in 82 countries) as a primary case study, students will be given an in-depth look into how the entity was founded and scaled globally. Guest speakers will include world-class experts and entrepreneurs in Philanthropy, Medicine, Communications, Education, and Technology. Open to both undergraduate and graduate students.
Same as: AFRICAST 135, EDUC 135, EDUC 335, EPI 235, HUMBIO 26, MED 235

AFRICAST 242. Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice. 3-5 Units.
This seminar is part of a broader program on Social Entrepreneurship at CDDRL in partnership with the Haas Center for Public Service. It will use practice to better inform theory. Working with three visiting social entrepreneurs from developing and developed country contexts students will use case studies of successful and failed social change strategies to explore relationships between social entrepreneurship, gender, democracy, development and justice. It interrogates current definitions of democracy and development and explores how they can become more inclusive of marginalized populations. This is a service learning class in which students will learn by working on projects that support the social entrepreneurs' efforts to promote social change. Students should register for either 3 OR 5 units only. Students enrolled in the full 5 units will have a service-learning component along with the course. Students enrolled for 3 units will not complete the service-learning component. Limited enrollment. Attendance at the first class is mandatory in order to participate in service learning.
Same as: AFRICAST 142, CSRE 142C, INTNLREL 142

AFRICAST 248. Religion, Radicalization and Media in Africa since 1945. 4-5 Units.
What are the paths to religious radicalization, and what role have media- new and old- played in these conversion journeys? We examine how Pentecostal Christians and Reformist Muslims in countries such as South Africa, Nigeria, Sudan, and Ethiopia have used multiple media forms- newspapers, cell phones, TV, radio, and the internet- to gain new converts, contest the authority of colonial and post-colonial states, construct transnational communities, and position themselves as key political players.
Same as: AFRICAST 348, HISTORY 248, HISTORY 348, RELIGST 230X, RELIGST 330X

AFRICAST 249. Bodies, Technologies, and Natures in Africa. 4-5 Units.
This interdisciplinary course explores how modern African histories, bodies, and natures have been entangled with technological activities. Viewing Africans as experts and innovators, we consider how technologies have mediated, represented, or performed power in African societies. Topics include infrastructure, extraction, medicine, weapons, communications, sanitation, and more. Themes woven through the course include citizenship, mobility, labor, bricolage, in/formal economies, and technopolitical geographies, among others. Readings draw from history, anthropology, geography, and social/cultural theory.
Same as: ANTHRO 348B, HISTORY 349

AFRICAST 299. Independent Study or Directed Reading. 1-10 Unit.
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AFRICAST 300. Contemporary Issues in African Studies. 1 Unit.
Guest scholars present analyses of major African themes and topics. Brief response papers required. May be repeated for credit.

AFRICAST 302. Research Workshop. 1 Unit.
Required for African Studies master's students. Student presentations.

AFRICAST 303E. Infrastructure & Power in the Global South. 4-5 Units.
In the last decade, the field of infrastructure studies has entered into conversation with area studies, post/colonial studies, and other scholarship on the "Global South." These intersections have produced dramatic new understandings of what "infrastructures" are, and how to analyze them as conduits of social and political power. This course offers a graduate-level introduction to this recent scholarship, drawing primarily on works from history, anthropology, geography, and architecture.
Same as: ANTHRO 303E, HISTORY 303E

AFRICAST 348. Religion, Radicalization and Media in Africa since 1945. 4-5 Units.
What are the paths to religious radicalization, and what role have media- new and old- played in these conversion journeys? We examine how Pentecostal Christians and Reformist Muslims in countries such as South Africa, Nigeria, Sudan, and Ethiopia have used multiple media forms- newspapers, cell phones, TV, radio, and the internet- to gain new converts, contest the authority of colonial and post-colonial states, construct transnational communities, and position themselves as key political players.
Same as: AFRICAST 248, HISTORY 248, HISTORY 348, RELIGST 230X, RELIGST 330X

AFRICAST 801. TGR Project. 0 Units.
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AMERICAN STUDIES

Courses offered by American Studies Program are listed under the subject code AMSTUD on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=AMSTUD&filter-catalognumber-AMSTUD=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=AMSTUD&filter-catalognumber-AMSTUD=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=AMSTUD&filter-catalognumber-AMSTUD=on).

Mission of the Undergraduate Program in American Studies

The mission of the undergraduate program in American Studies is to provide students with a broad understanding of American culture and society. Building on a foundation of courses in history and institutions, literature and the arts, and race and ethnicity, students learn to analyze and interpret America's past and present, forging fresh and creative syntheses along the way. The program is an interdisciplinary major and, beyond the core requirements of the major, students may define and pursue their own interests from fields such as history, literature, art, communication, theater, African American studies, feminist, gender & sexuality studies, economics, anthropology, religious studies, Chicana/o-Latina/o studies, law, sociology, education, Native American studies, music, and film. The program is designed to provide students majoring in American Studies with excellent preparation for further study in graduate or professional schools as well as careers in government, business, journalism, entertainment, public service, the arts, and other fields.

Learning Outcomes (Undergraduate)

The program expects undergraduate majors to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the undergraduate program. Students are expected to demonstrate:

1. ability to think about American culture and society in sophisticated, interdisciplinary, historically-informed ways, drawing on coursework in: history and institutions; literature, art, and culture; comparative race and ethnicity; and each student's individualized thematic focus
2. ability to identify and critically to assess different disciplinary, methodological, and interpretive approaches to the study of Americans and their past
3. ability to produce their own persuasive, nuanced, fact-based interpretations reflecting a close critical reading and analysis of relevant primary or secondary sources
4. ability to express their interpretive and analytical arguments in clear, effective prose.
5. ability to listen actively and to contribute to productive intellectual discussion in class

Bachelor of Arts in American Studies

The Program in American Studies offers a Bachelor of Arts in American Studies. Eligible students may also pursue a Bachelor of Arts with Honors (p. 928). The department also offers a minor in American Studies (p. 928).

The core requirements illustrate how different disciplines approach the study and interpretation of American life and include three courses in each of two main areas: history and institutions; and literature, culture, and the arts. One additional course in comparative race and ethnicity is also required. The required gateway seminar, AMSTUD 160 Perspectives on American Identity, explores the tensions between commonality and difference from a variety of disciplinary perspectives.

Beyond the core requirements of the major, American Studies expects students to define and pursue their own interests in interpreting dimensions of American life. Accordingly, each student designs a thematic concentration of at least five courses drawn from fields such as history, literature, art, communication, theater, political science, African American studies, feminist, gender, and sexuality studies, economics, anthropology, religious studies, Chicana/o-Latina/o studies, law, sociology, education, Native American studies, music, and film. At least one of the five courses in a student's thematic concentration should be an approved advanced seminar. With program approval, students may conclude the major with an honors research project during their senior year.

Whether defined broadly or narrowly, the thematic focus or concentration should examine its subject from the vantage of multiple disciplines. Examples of concentrations include: race and the law in America; gender in American culture and society; technology in American life and thought; health policy in America; art and culture in 19th-century America; education in America; nature and the environment in American culture; politics and the media; religion in American life; borders and boundaries in American culture; the artist in American society; and civil rights in America.

How to Declare the Major

To be approved as a major, students must meet with the Director or a program coordinator to review their study plan prior to declaring in Axess.

Degree Requirements

Completion of the major thus normally requires 13 courses (totaling at least 60 units), all of which must be taken for a letter grade. Not all courses are offered each year; students should consult ExploreCourses (http://explorecourses.stanford.edu/) for scheduling information for the current academic year.

Course Requirements

		Units
1. Gateway Seminar and WIM Course		
AMSTUD 160	Perspectives on American Identity (WIM course for American Studies)	5
2. History and Institutions		
Majors are required to complete three courses in American History and Institutions.		
AMSTUD/HISTORY 150A	Colonial and Revolutionary America	5
AMSTUD/HISTORY 150B	Nineteenth Century America	5
Select one of the following:		3-5
AMSTUD 41Q	Madwomen and Madmen: Gender and the History of Mental Illness in the U.S.	
AMSTUD 91	Exploring American Religious History	
AMSTUD 104	America at Play: A History of Leisure in the United States	
AMSTUD 107	Introduction to Feminist, Gender, and Sexuality Studies	
AMSTUD 116		
AMSTUD 117N	The Fourth "R": Religion and American Schools	
AMSTUD 121Z	Political Power in American Cities	

AMSTUD 123X	Introduction to American Politics and Policy: The Good, The Bad, and The Ugly	
AMSTUD 124A	The American West	
AMSTUD 125	Perspectives on American Journalism	
AMSTUD 130A	In Sickness and In Health: Medicine and Society in the United States: 1800-Present	
AMSTUD 135	Deliberative Democracy and its Critics	
AMSTUD 137	The Dialogue of Democracy	
AMSTUD/ HISTORY 150C	The United States in the Twentieth Century	
AMSTUD 155	The White Supremacist Constitution: American Constitutional History	
AMSTUD 156H	Women and Medicine in US History: Women as Patients, Healers and Doctors	
AMSTUD 157	(not offered this year)	
AMSTUD 164C	From Freedom to Freedom Now: African American History, 1865-1965	
AMSTUD 179/ POLISCI 122	Introduction to American Law	
AMSTUD 201	History of Education in the United States	
AMSTUD 216	Education, Race, and Inequality in African American History, 1880-1990	
AMSTUD 251	(not offered this year)	
AMSTUD 255D	(not offered this year)	
AMSTUD 275B	(not offered this year)	
AMSTUD 279X	American Jewish History: Learning to be Jewish in America	
AMSTUD 293	Church, State, & Schools: Issues in Education & Religion	

3. Literature, Culture, and the Arts

Majors are required to take a minimum of three courses in literature, culture, and the arts, broadly understood.

At least one course focusing on the period before the Civil War, normally:

AMSTUD 150/ ENGLISH 11B	Introduction to English II: American Literature and Culture to 1855	5

Select two of the following, including at least one course outside of literature that emphasizes art, drama, film, music, translation studies, or culture from a different disciplinary or interpretive perspective. 6-10

AMSTUD 1B	Media, Culture, and Society
AMSTUD 48N	The American Songbook and Love Poetry
AMSTUD 12A	Introduction to English III: Introduction to African American Literature
AMSTUD 53N	African American Autobiography
AMSTUD 57Q	10 American Photographs
AMSTUD/ ENGLISH 68N	Mark Twain and American Culture
AMSTUD 75N	American Short Stories
AMSTUD 102	Art and Social Criticism
AMSTUD 103S	Introduction to American Art
AMSTUD 105Q	Law and Popular Culture
AMSTUD 115	Asian American Film and Popular Culture
AMSTUD 117	Race, Gender, and Sexuality in Contemporary American Film
AMSTUD 119	Science Fiction: Cyborgs & Human Simulacra in the Cinema
AMSTUD 120/ COMM 120W	The Rise of Digital Culture
AMSTUD 123D	American Literature, 1855 to World War I
AMSTUD 124A	The American West
AMSTUD 125	Perspectives on American Journalism
AMSTUD 125C	The Lost Generation: American literature between the World Wars
AMSTUD 127	American Style and the Rhetoric of Fashion
AMSTUD 128	Representing Fashion
AMSTUD 129	Animation and the Animated Film
AMSTUD 132	American Art and Culture, 1528-1910
AMSTUD 133	Technology and American Visual Culture
AMSTUD 134C	The Western: Imagining the West in Fiction and Film
AMSTUD 139B	American Women Writers, 1850-1920
AMSTUD 143A	American Architecture
AMSTUD 143M	
AMSTUD 143X	Starstuff: Space and the American Imagination
AMSTUD 145D	Jewish American Literature and Film
AMSTUD 146A	
AMSTUD 150J	
AMSTUD 151	Migration and Diaspora in American Art, 1800-Present
AMSTUD 151F	
AMSTUD 152C	The JFK Era and American Literature
AMSTUD 153	Warhol's World
AMSTUD 155C	Abstract Expressionism: Painting/Modern/ America
AMSTUD 159X	American Photographs, 1839-1971: A Cultural History
AMSTUD 163	Queer America
AMSTUD 183	Re- Imagining American Borders
AMSTUD 220B	Being John Wayne
AMSTUD 226X/ EDUC 226	Curating Experience: Representation in and beyond Museums
AMSTUD 250J	Baldwin and Hansberry: The Myriad Meanings of Love
AMSTUD 262C	African American Literature and the Retreat of Jim Crow
THINK 31	Race in American Memory

4. Comparative Race and Ethnicity

Majors are required to take one course that focuses on the comparative study of race and ethnicity rather than a single racial or ethnic group. 3-5

Choose one from the following list:

AMSTUD 12A	Introduction to English III: Introduction to African American Literature
AMSTUD 51Q	Comparative Fictions of Ethnicity
AMSTUD 53N	African American Autobiography
AMSTUD 58Q	American Landscapes of Segregation
AMSTUD 101	(no longer offered)
AMSTUD 115	Asian American Film and Popular Culture
AMSTUD 117	Race, Gender, and Sexuality in Contemporary American Film
AMSTUD 135X	(no longer offered)
AMSTUD 143M	
AMSTUD 152K	
AMSTUD 157P	Solidarity and Racial Justice
AMSTUD 157X	Language as Political Tool: Feminist and LGBTQ Movements and Impacts

AMSTUD 178	Ethnicity and Dissent in United States Art and Literature	
AMSTUD/CSRE 183	Re- Imagining American Borders	
AMSTUD 216	Education, Race, and Inequality in African American History, 1880-1990	
AMSTUD 226	Race and Racism in American Politics	
AMSTUD 246	Constructing Race and Religion in America	
AMSTUD 255D	(not offered this year)	
AMSTUD 262C	African American Literature and the Retreat of Jim Crow	
SOC 149	The Urban Underclass	
THINK 31	Race in American Memory	
5. Concentration and Capstone Seminar		**3-5**
Students must design a thematic concentration of at least five courses, with the help of faculty advisors. The courses, taken together, must give the student in-depth knowledge and understanding of a coherent topic in American cultures, history, and institutions.		
See course list below.		
Total Units		**60**

Concentration and Capstone Seminar

Students must design a thematic concentration of at least five courses, with the help of faculty advisors. The courses, taken together, must give the student in-depth knowledge and understanding of a coherent topic in American cultures, history, and institutions. Thematic concentrations should be approved by the end of the registration period of the Autumn Quarter of the junior year, if at all possible. Sample thematic concentrations and courses that allow a student to explore them are available in the American Studies Office in Building 460.

At least one of the courses in the concentration must be an advanced seminar (approved by the advisor) designated as the capstone seminar and must require a substantial research paper. This paper must be filed with the program office prior to degree conferral. An honors project, or an independent study course with a faculty member culminating in a research paper, may also fulfill this requirement with the Director's approval.

Students may choose, but are not limited to, selections for their thematic concentrations from the following list of suggested courses:

		Units
AFRICAAM 105	Black Matters: Introduction to Black Studies	5
ANTHRO 82	Medical Anthropology	5
ARTHIST 176		4
CHILATST 14N	Growing Up Bilingual	3
CHILATST 125S	Chicano/Latino Politics	5
CHILATST 201B	The Undocumented Migration Project Exhibition at Stanford	3
COMM 116	Journalism Law	5
COMM 125	Perspectives on American Journalism	5
COMM 162	Campaigns, Voting, Media, and Elections	5
CSRE 45Q	Understanding Race and Ethnicity in American Society	4
CSRE 103B	Race, Ethnicity, and Linguistic Diversity in Classrooms: Sociocultural Theory and Practices	3-5
CSRE 245	Understanding Racial and Ethnic Identity Development	3-5
ECON 155	Environmental Economics and Policy	5
ECON 157	Imperfect Competition	5
EDUC 102	Examining Social Structures, Power, and Educational Access	2-4
EDUC 216	Education, Race, and Inequality in African American History, 1880-1990	3-5
EDUC 277	Education of Immigrant Students: Psychological Perspectives	4
HISTORY 60N	Revolutionaries and Founders	3
HISTORY 64		5
HISTORY 166B	Immigration Debates in America, Past and Present	3-5
HUMBIO 120	Health Care in America: An Introduction to U.S. Health Policy	4
HUMBIO 120A	American Health Policy	3
HUMBIO 121E	Ethnicity and Medicine	1-3
HUMBIO 122S	Social Class, Race, Ethnicity, and Health	4
HUMBIO 123	(not offered this year)	3-4
HUMBIO 125	Current Topics and Controversies in Women's Health	2-3
HUMBIO 166	Food and Society: Exploring Eating Behaviors in Social, Environmental, and Policy Context	4
INTNLREL 140C	The U.S., U.N. Peacekeeping, and Humanitarian War	5
MUSIC 8A	Rock, Sex, and Rebellion	3
MUSIC 18A	Jazz History: Ragtime to Bebop, 1900-1940	3
MUSIC 18B	Jazz History: Bebop to Present, 1940-Present	3
MUSIC 34N	Performing America: The Broadway Musical	3
MUSIC 147K	Studies in Music, Media, and Popular Culture: Music and Urban Film	3-4
NATIVEAM 103S	Gender in Native American Societies	5
NATIVEAM 115	Introduction to Native American History	5
NATIVEAM 240	Psychology and American Indian/Alaska Native Mental Health	3-5
POLISCI 110X	America and the World Economy	5
POLISCI 118P	U.S. Relations with Iran	5
POLISCI 120B	Campaigns, Voting, Media, and Elections	5
POLISCI 120C	American Political Institutions in Uncertain Times	5
POLISCI 121	Political Power in American Cities	5
POLISCI 213S	(no longer offered)	5
POLISCI 225C	Fixing US Politics: Political Reform in Principle and Practice	5
PUBLPOL 101	Introduction to American Politics and Policy: The Good, The Bad, and The Ugly	5
PUBLPOL 132	The Politics of Policy Making	3
PUBLPOL 135	Regional Politics and Decision Making in Silicon Valley and the Greater Bay Area	4
PUBLPOL 154	Politics and Policy in California	5
PUBLPOL 156	Health Care Policy and Reform	5
SOC 135	Poverty, Inequality, and Social Policy in the United States	3-4
SOC 118	Social Movements and Collective Action	4
SOC 142	Sociology of Gender	3
URBANST 161		5

Honors Program

To graduate with honors, American Studies majors must complete a senior thesis and have an overall grade point average of at least 3.5 in the major, or demonstrated academic competence.

Students applying must secure a thesis advisor, a Stanford faculty member who is willing and available to direct the thesis project through the ensuing year. Having a confirmed thesis advisor is required for final approval to pursue an honors project. Students also need to secure a second reader for the honors thesis no later than the start of Winter Quarter of senior year.

Along with the application form signed by the thesis advisor, a 3-5 page proposal describing the thesis project and including a preliminary bibliography is due to the program office by June 1 of Spring Quarter of the student's junior year. The program may approve the application and proposal or request that the student resubmit with revisions.

Students pursuing honors must enroll in AMSTUD 199A, AMSTUD 199B, and AMSTUD 199C American Studies Honors Seminar during the Autumn, Winter, and Spring quarters of their senior year, respectively. They must also enroll in AMSTUD 250 Senior Research with their thesis advisor during the senior year. The total units between AMSTUD 199A/B/C and AMSTUD 250 should equal 10-15. These units are in addition to the 60 units required for the major and must be taken for a letter grade. For students pursuing honors during the 2020-21 Academic Year, please work with our honors program coordinator, Elizabeth Kessler, regarding flexibility in meeting honors program requirements due to student leaves of absence.

		Units
Students pursuing honors must enroll in:		10-15
AMSTUD 199A	American Studies Honors Seminar (Autumn Quarter)	
AMSTUD 199B	American Studies Honors Seminar (Winter Quarter)	
AMSTUD 199C	American Studies Honors Seminar (Spring Quarter)	
AMSTUD 250	Senior Research	
Total Units		**10-15**

The finished essay is due in mid-May (typically May 15) of the senior year. The senior honors experience culminates in Honors Thesis Presentations in May of senior year.

Honors info sessions are offered during Winter and Spring quarters of junior year. Students interested in honors are encouraged to attend. More information about American Studies honors is available from the program office.

Minor in American Studies

To earn a minor in American Studies, students must complete at least 28 units of course work in the program. Because students may not count courses for both a major and a minor, the specific courses that are used for an American Studies minor depend on the courses that are used to satisfy the major requirement.

A student must take the following:

		Units
AMSTUD 160	Perspectives on American Identity (The gateway seminar)	5
at least 2 courses from category 2 (History and Institutions)		6-10
at least 2 courses from category 3 (Literature, Culture and the Arts)		6-10
at least 1 course from category 4 (Comparative Race and Ethnicity)		3-5

If the units for these requirements do not total 28, the student must take additional coursework, appropriate to American Studies and approved by the Director or one of the Program Coordinators, to meet the minimum unit requirement. Courses used to satisfy all units taken for the minor must be taken for a letter grade.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

American Studies counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Other Undergraduate Policies

The American Studies Honors Program will consider flexibility in meeting program requirements on a case-by-case basis.

Director: Shelley Fisher Fishkin (Spring; on leave Autumn, Winter)

Acting Director: Judith Richardson (Autumn, Winter)

Director of Undergraduate Studies: Judith Richardson

Program Coordinators: Elizabeth Kessler, Judith Richardson

Lecturers: William Gow

Committee in Charge: Shelley Fisher Fishkin (English, chair, Spring), Judith Richardson (English, chair, Autumn and Winter), Jennifer DeVere Brody (Drama), Scott Bukatman (Art and Art History), Bruce Cain (Political Science), James T. Campbell (History), Gordon H. Chang (History), Michele B. Elam (English), James Fishkin (Communication, and by courtesy, Political Science), Estelle Freedman (History), Jonathan Gienapp (History), William Gow (American Studies), Allyson Hobbs (History), Gavin Jones (English), Ari Kelman (Education), Elizabeth Kessler (American Studies), Charles Kronengold (Music), Marci Kwon (Art and Art History), Kathryn Gin Lum (Religious Studies), Doug McAdam (Sociology), Richard Meyer (Art and Art History), Ana Minian (History), Paula Moya (English), Clayton Nall (Political Science), Alexander Nemerov (Art and Art History), Kathryn Olivarius (History), Vaughn Rasberry (English), Ramón Saldívar (English, Comparative Literature), Fred Turner (Communication), Sam Wineburg (Education), Caroline Winterer (History), Gavin Wright (Economics), Amy Beth Zegart (Hoover Senior Fellow)

Courses

AMSTUD 1B. Media, Culture, and Society. 5 Units.
The institutions and practices of mass media, including television, film, radio, and digital media, and their role in shaping culture and social life. The media's shifting relationships to politics, commerce, and identity.
Same as: COMM 1B

AMSTUD 3E. Michelle Obama in American Culture. 1 Unit.
Never before has the United States had a First Lady like Michelle Obama. During her eight years in the White House, Michelle Obama transformed traditional meanings of womanhood, marriage, motherhood, and style and created new possibilities for what it means to be strong and what it means to be beautiful. No First Lady has ever been so scrutinized but also so beloved: from her J. Crew dresses to her Let's Move campaign, from her vegetable gardens to her chiseled arms, and from her powerful speeches to her casual and always authentic personality. This class examines the impact on American culture of the most popular First Lady in American history.
Same as: AFRICAAM 3E, CSRE 3E, FEMGEN 3E, HISTORY 3E

AMSTUD 5I. Hamilton: An American Musical. 1 Unit.
"Hamilton" is one the most popular and most celebrated musicals in American history. It has received 11 Tony Awards, including best musical, and 16 Tony nominations, the most nominations in Broadway history. It won the Pulitzer Prize and a Grammy Award. The musical draws on the language and rhythms of hip-hop and R & B, genres that are underrepresented in the musical theater tradition. "Hamilton" has redefined the American musical, particularly in terms of sound, casting, and storytelling. What explains the deep cultural impact and acclaim for this play?n nThis interdisciplinary course examines Alexander Hamilton and his world as well as Hamilton: An American Musical through a series of lectures from faculty in History, Theater and Performance Studies, English, Music, and Writing and Rhetoric.
Same as: AFRICAAM 5I, CSRE 5I, HISTORY 3G

AMSTUD 10Q. Dystopian California: Imagining the Golden State in Disaster and Science Fiction Film. 3 Units.
Dystopian California examines the ways the Golden State has been popularly imagined both historically as the Land of Promise and more recently as the land of apocalypse in science fiction and disaster films. Through this lens, we¿ll be exploring anxieties articulated through images of natural disaster, environmental degradation, urbanization and urban decay, invasion (both viral and ¿alien¿), societal collapse, overpopulation, and nuclear holocaust ¿ as well as the tenacity of the human spirit. We¿ll be discussing conceptions of survival and the ways these films both articulate societal fears and help to neutralize them. More broadly we will discuss how these films metaphorically address, through the loss of innocence, the possibility of establishing a truly Utopian California ¿ the Golden Land of Opportunity promised to us ¿ that had been unattainable or lost in the melee of postmodernity.

AMSTUD 12A. Introduction to English III: Introduction to African American Literature. 3-5 Units.
In his bold study, What Was African American Literature?, Kenneth Warren defines African American literature as a late nineteenth- to mid-twentieth-century response to the nation's Jim Crow segregated order. But in the aftermath of the Jim Crow era and the Civil Rights movement, can critics still speak, coherently, of "African American literature"? And how does this political conception of African American literary production compare with accounts grounded in black language and culture? Taking up Warren's intervention, this course will explore African American literature from its earliest manifestations in the spirituals and slave narratives to texts composed at the height of desegregation and decolonization struggles at mid-century and beyond. English majors must take this class for 5 units.
Same as: AFRICAAM 43, ENGLISH 12A

AMSTUD 15. Global Flows: The Globalization of Hip Hop Art, Culture, and Politics. 1-2 Unit.
This course consists of film screenings, dialogues, and performances that examine and engage Hip Hop Cultures and artists from around the world. We will explore diverse scenes and artists, from the formation of new musical genres such as hiplife in Ghana, to the impact of the first Hip Hop concert in Morocco, to comparative investigations of race and citizenship in Japan, Cuba, Palestine, France, and the United States (including Black, Mexican and Arab-Americans).

AMSTUD 27Q. Fashion and Photography. 3 Units.
Preference to sophomores. Seminar on the history of 20th and 21st century fashion photographs, with a focus on American examples. Topics include: the relationship of fashion and photography to modernity; interplay between mass consumption and luxury; intersection of art and commerce; the role of designers, photographers, editors, and models; studio v. street photography; and the place of mass media, alternative magazines, and online publications. Photographers covered: Edward Steichen, Louise Dahl-Wolfe, Richard Avedon, Irving Penn, Steven Meisel, and others. Readings on American culture, film, photography, and fashion.

AMSTUD 32. The 5th Element: Hip Hop Knowledge, Pedagogy, and Social Justice. 1-5 Unit.
This course-series brings together leading scholars with critically-acclaimed artists, local teachers, youth, and community organizations to consider the complex relationships between culture, knowledge, pedagogy and social justice. Participants will examine the cultural meaning of knowledge as "the 5th element" of Hip Hop Culture (in addition to MCing, DJing, graffiti, and dance) and how educators and cultural workers have leveraged this knowledge for social justice. Overall, participants will gain a strong theoretical knowledge of culturally relevant and culturally sustaining pedagogies and learn to apply this knowledge by engaging with guest artists, teachers, youth, and community youth arts organizations.
Same as: AFRICAAM 32, CSRE 32A, EDUC 32, EDUC 432, TAPS 32

AMSTUD 41N. Family Drama: American Plays about Families. 3 Units.
Focus on great dramas about family life (Albee, Kushner, Shephard, Vogel, Kron, Nottage, Parks). Communication in writing and speaking about conflict central to learning in this class.
Same as: ENGLISH 41N, TAPS 40N

AMSTUD 41Q. Madwomen and Madmen: Gender and the History of Mental Illness in the U.S.. 3 Units.
This seminar explores the ways that gender and historical context shaped the experience and treatment of mental illness in U.S. history. What is the relationship between historically constructed ideas of femininity and masculinity and madness? Why have women been the witches and hysterics of the past, while men experienced neurasthenia and schizoid conditions? Why have there historically been more women than men among the mentally ill? How has the emotional and psychological suffering of women differed from that of men, and how has it changed over time? Among the sources we use to explore these questions are memoirs and films such as The Three Faces of Eve and One Flew Over the Cuckoos Nest. By contrasting the changing ways women and men experienced mental illness and were treated in the past, this seminar will elucidate the historically embedded nature of medical ideas, diagnoses and treatments.
Same as: FEMGEN 41Q

AMSTUD 42Q. Black & White Race Relations in American Fiction & Film. 3-5 Units.
Movies and the fiction that inspires them; power dynamics behind production including historical events, artistic vision, politics, and racial stereotypes. What images of black and white does Hollywood produce to forge a national identity? How do films promote equality between the races? What is lost or gained in film adaptations of books? NOTE: Students must attend the first day; admission to the class will be determined based on an in class essay.
Same as: AFRICAAM 101Q, CSRE 41Q

AMSTUD 43Q. Body Politics: Health Activism in Modern America. 3-5 Units.
¿Medicare for All¿ has become a rallying cry for those calling for reform of the American health care system. But this slogan is only the most recent political expression of the conviction that health care ought to be a right and not a privilege, part of an ongoing project to expand access to health care to all Americans. This course will examine key moments in the history of health care reform movements in the twentieth-century United States, considering the successes and failures of advocates, activists, and reformers who have sought to transform the medical system and secure equal access to care. Among the topics we will consider as we move through the century are proposals for a national health insurance program; the fight against racial discrimination in public health and medicine; the women¿s health movement; the disability rights movement; and efforts of AIDS activists to reshape the production of biomedical knowledge. Students will work throughout the quarter on a research-based project on a topic of interest to them, culminating in a final paper and presentation.

AMSTUD 43X. Starstuff: Space and the American Imagination. 3 Units.
(Same as AMSTUD 143X. Students who wish to take it for 5 units, register for AMSTUD 143X.) Course on the history of twentieth and twenty-first century American images of space and how they shape conceptions of the universe. Covers representations made by scientists and artists, as well as scientific fiction films, TV, and other forms of popular visual culture. Topics will include the importance of aesthetics to understandings of the cosmos; the influence of media and technology on representations; the social, political, and historical context of the images; and the ways representations of space influence notions of American national identity and of cosmic citizenship.

AMSTUD 44Q. Self-Made: Culture, Identity, and Histories of Reinvention in America. 3-5 Units.
From Ben Franklin to Oprah, Americans have triumphantly reinvented their identities, and used these transformations to demonstrate their ingenuity and grit. But the history of personal reinvention in America is far more complicated. In this course we will study the lives of individuals who adopted new identities in response to restrictive political and social conditions. How did these people construct their new identities, and what cultural influences did they use to do so? What did they gain in the process of assuming new identities, and what did they lose?nnCase studies from the 19th and 20th centuries include Ellen and William Craft, an enslaved couple who escaped bondage by pretending that Ellen was already free, and a young African-American musician named John Roland Redd, who found fame as the turban-wearing television host ¿Korla Pandit.¿ Crossing seemingly fixed cultural divisions (race, gender, sexuality, citizenship), these individuals raise compelling questions about the larger political stakes of self-reinvention. How did acts of self-reinvention challenge inequality and oppression? What kinds of systems could not be dismantled through self-reinvention?.

AMSTUD 48N. The American Songbook and Love Poetry. 3 Units.
A study of performances (Billie Holiday, Frank Sinatra etc) of songs by classic American composers (Porter, Rogers and Hart, Cohen).

AMSTUD 51Q. Comparative Fictions of Ethnicity. 4 Units.
We may "know" "who" we "are," but we are, after all, social creatures. How does our sense of self interact with those around us? How does literature provide a particular medium for not only self expression, but also for meditations on what goes into the construction of "the Self"? After all, don't we tell stories in response to the question, "who are you"? Besides a list of nouns and names and attributes, we give our lives flesh and blood in telling how we process the world. Our course focuses in particular on this question--Does this universal issue ("who am I") become skewed differently when we add a qualifier before it, like "ethnic"? Note: To be eligible for WAYS credit, you must take course for a Letter Grade.
Same as: COMPLIT 51Q, CSRE 51Q

AMSTUD 53N. African American Autobiography. 3 Units.
Since the publication of slave narratives in the eighteenth century, the genre of autobiography has occupied a unique position in the history of African American literary expression. By studying classic autobiographical narratives by black writers, this course will explore questions about racial inequality and democracy, the individual and society, and writing and freedom, among other topics.

AMSTUD 54Q. African American Women's Lives. 3-4 Units.
Preference to sophomores. African American women have been placed on the periphery of many historical documents. This course will encourage students to think critically about historical sources and to use creative and rigorous historical methods to recover African American women¿s experiences. Drawing largely on primary sources such as letters, personal journals, literature and film, this course explores the everyday lives of African American women in 19th- and 20th-century America. We will begin in our present moment with a discussion of Michelle Obama and then we will look back on the lives and times of a wide range of African American women including: Charlotte Forten Grimké, a 19th-century reformer and teacher; Nella Larsen, a Harlem Renaissance novelist; Josephine Baker, the expatriate entertainer and singer; and Ida B. Wells and Ella Baker, two luminaries of civil rights activism. We will examine the struggles of African American women to define their own lives and improve the social, economic, political and cultural conditions of black communities. Topics will include women¿s enslavement and freedom, kinship and family relations, institution and community building, violence, labor and leisure, changing gender roles, consumer and beauty culture, social activism, and the politics of sexuality.
Same as: AFRICAAM 54Q, FEMGEN 54Q, HISTORY 54Q

AMSTUD 55F. The Civil War and Reconstruction Era, 1830 to 1877. 3-5 Units.
(History 55F is 3 units; History 155F is 5 units.)This course explores the causes, course, and consequences of the American Civil War. The Civil War profoundly impacted American life at national, sectional, and constitutional levels, and radically challenged categories of race and citizenship. Topics covered include: the crisis of union and disunion in an expanding republic; slavery, race, and emancipation as national problems and personal experiences; the horrors of total war for individuals and society; and the challenges--social and political--of Reconstruction.
Same as: AFRICAAM 55F, AMSTUD 155F, HISTORY 55F, HISTORY 155F

AMSTUD 57Q. 10 American Photographs. 3 Units.
Preference to sophomores. "The humor, the sadness, the EVERYTHING-ness and American-ness of these pictures!" wrote Jack Kerouac of photographer Robert Frank's iconic collection, The Americans. This seminar takes Kerouac's enthusiasm and applies it to ten American photographs, a new one each week. Examples span the medium's history and were taken as art, science, commerce, journalism, or personal mementos. Close study of the photo of the week will address how it looks and why; its history, from initial responses to later reception; and its relationship to the larger American visual and cultural context. Also under discussion: What story does this set of pictures tell about Americanness? What might another set of photos convey?.
Same as: ARTHIST 57Q

AMSTUD 58Q. American Landscapes of Segregation. 3-4 Units.
This course examines various landscapes of segregation in U.S. history from 19th century reconstruction and settler expansion through the contemporary U.S. security state. Each week we consider different histories of segregation including native reservation and boarding school stories, Jim Crow and post-World War II urban/suburban segregation, school integration and bussing, and the rise of the carceral state. We will ask: How have Americans moved through space with different degrees of freedom and constraint over time, and how has that shaped what it has meant to be an American in different ways for different groups? How has access to land, property, consumer, recreational and educational spaces and resources been regulated by categories of race, gender, sexuality, colonial subjectivity, immigrant status and class? To gain a better sense of our local history, we will also consider how structures of segregation have historically mapped the Bay Area. Sources include primary and secondary historic texts, feature and documentary films, photography, and poetry.
Same as: AFRICAAM 58Q, HISTORY 58Q

AMSTUD 63N. The Feminist Critique: The History and Politics of Gender Equality. 3-4 Units.
This course explores the long history of ideas about gender and equality. Each week we read, dissect, compare, and critique a set of primary historical documents (political and literary) from around the world, moving from the 15th century to the present. We tease out changing arguments about education, the body, sexuality, violence, labor, politics, and the very meaning of gender, and we place feminist critics within national and global political contexts.
Same as: CSRE 63N, FEMGEN 63N, HISTORY 63N

AMSTUD 66. Ten Ways to Study Cars. 1 Unit.
This class is a lunch seminar on the car and auto-mobility in twentieth-century America. We will talk about cars with a guest each week from one of ten disciplines; and topics will range from design and mechanics, to film and literature, the mapping of the United States, a gas dependent economy, social mobility, car collectability, and the history of the driver¿s license. Guests from Design and the Stanford Revs Digital Archive will also attend. Once a week TBD at Noon. Manzanita Seminar Room. Limited Enrollment. Sophomore Priority. One Unit.

AMSTUD 68N. Mark Twain and American Culture. 4 Units.
Preference to freshmen. Mark Twain defined the rhythms of our prose and the contours of our moral map. He recognized our extravagant promise and stunning failures, our comic foibles and tragic flaws. He is viewed as the most American of American authors--and as one of the most universal. How does his work illuminate his society's (and our society's) responses to such issues as race, gender, technology, heredity vs. environment, religion, education, art, imperialism, animal welfare, and what it means to be "American"?.

AMSTUD 73. Mexican Migration to the United States. 3-5 Units.
(History 73 is 3 units; History 173 is 5 units.) This course is an introduction to the history of Mexican migration to the United States. Barraged with anti-immigrant rhetoric and calls for bigger walls and more restrictive laws, few people in the United States truly understand the historical trends that shape migratory processes, or the multifaceted role played by both US officials and employers in encouraging Mexicans to migrate north. Moreover, few have actually heard the voices and perspectives of migrants themselves. This course seeks to provide students with the opportunity to place migrants' experiences in dialogue with migratory laws as well as the knowledge to embed current understandings of Latin American migration in their meaningful historical context.
Same as: CHILATST 173, HISTORY 73, HISTORY 173

AMSTUD 75N. American Short Stories. 3 Units.
How and why did the short story take root and flourish in an American context? Early works of classic American literature read alongside stories by women and minority writers, stretching from the early nineteenth century to the contemporary period.

AMSTUD 89. Race, Ethnicity, and Electoral Politics. 4 Units.
This course explores the role that racial and ethnic politics play in American political campaigns and elections. This will include readings that explore the power of ethnoracial voting blocs (e.g. the Black vote and the Latino vote), as well as the challenges and advantages of candidates that are people of color. We will discuss how changing demographics are changing the political landscape, and how candidates and political parties are responding to those changes. This will include, of course, significant attention to ongoing battles at the national (e.g. Trump v. Clinton), state (e.g. Kamala Harris v. Loretta Sanchez), and local levels, most often in California but in other geographic areas as well. We will also explore historic candidacies and elections (e.g. Jesse Jackson) and political parties (e.g. La Raza Unida party) that help put the 2016 races into perspective.
Same as: CSRE 89

AMSTUD 91. Exploring American Religious History. 4 Units.
This course will trace how contemporary beliefs and practices connect to historical trends in the American religious landscape.
Same as: CSRE 91, HISTORY 260K, RELIGST 91

AMSTUD 91A. Asian American Autobiography/W. 3-5 Units.
This is a dual purpose class: a writing workshop in which you will generate autobiographical vignettes/essays as well as a reading seminar featuring prose from a wide range of contemporary Asian-American writers. Some of the many questions we will consider are: What exactly is Asian-American memoir? Are there salient subjects and tropes that define the literature? And in what ways do our writerly interactions both resistant and assimilative with a predominantly non-Asian context in turn recreate that context? We'll be working/experimenting with various modes of telling, including personal essay, the epistolary form, verse, and even fictional scenarios. First priority to undergrads. Students must attend the first class meeting to retain their roster spot.
Same as: ASNAMST 91A, CSRE 91D, ENGLISH 91A

AMSTUD 92. Food in America. 3 Units.
This course examines the history and culture of food in the United States, exploring topics that have fueled debates about what Americans should eat over the last hundred years. We will examine the rise of restaurant cuisine and celebrity chefs; of the nation¿s concern about the obesity epidemic and its long-standing obsession with fitness and the quantified self; and controversies about diet politics, fast food, food processing, and the importance of the iconic `home cooked meal. Sources include historic cookbooks, food writing, food literature, advertisements, and film. Course activities include guest lectures and a visit to the Stanford teaching kitchen.

AMSTUD 93. Food and Popular Culture. 3 Units.
This course introduces students to the social history, political economy and aesthetics of eating in America, paying particular attention to representations of food in popular culture over the last hundred years. Though firmly grounded in American Studies, an interdisciplinary perspective draws from the material and methods of anthropology, cultural studies, art history, and history. Topics include the California citrus industry, competitive eating, food art, utopias, and edible landscapes. Students will actively engage with primary sources including cookbooks, paintings and art installations, diet books, TV shows, film, and advertisements.

AMSTUD 94. Topics in Food Studies. 3 Units.
This course examines food in the United States over the last hundred years as it relates to the broad themes of nature, disease, technology, and labor. Though firmly grounded in American Studies, an interdisciplinary perspective draws from the material and methods of anthropology, cultural studies, art history, and history. Specific topics include diet-related disease, tipping and the subminimum wage, the concept of agrarian democracy, supermarkets, and food preservation. Creative assignments include writing a menu, conducting a food observation, and reviewing a restaurant. Students will actively engage with paintings, sculpture, film, advertisements, restaurant reviews, commercials, and music videos.

AMSTUD 95. Consumer Culture. 3 Units.
This course will examine consumerism in the United States, first focusing on the rise of advertising, mass market goods, catalogues, and department stores at the turn of the 20th century. We will then examine post-WWII suburbia and the rise of the "good life" and the ensuing backlash in 1960s counterculture anti-consumerist movements. Our topics will include the annual no-shopping day, back to nature movements, urban homesteading, thrift, slow food activism, and the efforts to resist mass production in food, clothing, and housing. Sources include novels, films, magazines, music, and advertisements.

AMSTUD 96. Signal to Noise: The Sounds of American Culture. 3 Units.
Inundated by images and associated with the meteoric rise of such media as film and photography, the past century has long been considered a predominantly visual era. Yet, sound offers alternative sensory platforms for understanding American culture and history. ¿Sound history,¿ as Jonathan Sterne writes, ¿indexes changes in human nature and the human body ¿ in life and in death.¿ Similarly, transformations in American landscapes, from its cities to its national parks, can be heard as well as seen. In this course, we will explore the intertwined histories of sound, society, and space, asking how developments in auditory media have engaged with broader American culture. Through a study of history, film, literature, music, and other media, we will look at the relationship between sound and cultural change, as well as evolving attitudes towards diverse human bodies and identities.

AMSTUD 100. Introduction to Asian American Studies. 4 Units.
What is meant by the term Asian American? How have representations of Asian Americans influenced concepts of US citizenship and belonging? What are the social and political origins of the Asian American community? This course provides a critical introduction to the interdisciplinary field of Asian American studies. Drawing on historical, creative, and scholarly texts, the course examines the history and possibilities of Asian American community. To do this, we place the Asian American experience within a transnational context, paying particular attention to the ways that Asian American lives have been shaped by the legacies of US wars in Asia and by the history of US racism. In the process, we examine the role that representations of Asian Americans have played in shaping the boundaries of US citizenship and belonging. Throughout the course, we utilize our discussions of Asian American racialization and community formation to think critically about the social and political ramifications that the designation Asian American entails.
Same as: ASNAMST 100

AMSTUD 102. Art and Social Criticism. 5 Units.
Visual artists have long been in the forefront of social criticism in America. Since the 1960s, various visual strategies have helped emergent progressive political movements articulate and represent complex social issues. Which artists and particular art works/projects have become key anchors for discourses on racism, sexism, economic and social inequality, immigrant rights and climate change? We will learn about a spectrum of political art designed to raise social awareness, spark social change and rouse protest. The Art Workers Coalition's agit-prop opposing the Vietnam War and ACT-UP's emblematic signs and symbols during the AIDS/HIV crisis of the 1980s galvanized a generation into action. Works such as Judy Chicago's The Dinner Party (1979), Fred Wilson's Mining the Museum (1992), and Glenn Ligon's paintings appropriating fragments from African-American literature all raised awareness by excavating historical evidence of the long legacy resisting marginalization. For three decades feminist artists Adrian Piper, Barbara Kruger and the Guerilla Girls have combined institutional critique and direct address into a provocative form of criticality. Recent art for social justice is reaching ever broadening publics by redrawing the role of artist and audience exemplified by the democratization of poster making and internet campaigns of Occupy and the Movement for Black Lives. We will also consider the collective aesthetic activisms in the Post-Occupy era including Global Ultra Luxury Faction, Climate Justice art projects, and the visual culture of Trump era mass protests. Why are each of these examples successful as influential and enduring markers of social criticism? What have these socially responsive practices contributed to our understanding of American history?.
Same as: AFRICAAM 102B, ARTHIST 162B, CSRE 102A, FEMGEN 102

AMSTUD 103S. Introduction to American Art. 3 Units.
How do images tell stories about the people who made them and the places they depict? How can we encounter the histories of America in works of art and why should we care about encountering them? This course will explore such questions by surveying some of the most compelling paintings, sculptures, films, photographs, prints, and decorative arts produced in the United States from the Colonial period to our present moment. In class lectures and discussions, our goal will be to articulate how pictures from the past shape and construct our sense of American history. Works by important artists such as Jackson Pollock, Andy Warhol, Jean-Michel Basquiat, Kara Walker, John Singer Sargent, Winslow Homer, Georgia O'Keeffe, and Jacob Lawrence, among others, will help students to understand and express how Images have power, and how art continues to matter today.
Same as: ARTHIST 103S

AMSTUD 104. America at Play: A History of Leisure in the United States. 5 Units.
What we call "free time" is actually the product of multiple constraints, from economics and gender roles, to trends, moral strictures, and more. This course studies leisure to explore American culture from the late 19th century to the present. We consider, for instance, how new forms of entertainment, such as movies and iPods, altered notions of community and ideals of personal expression. For historical context, the class draws upon popular and critical sources, conversations with guests, and hands-on activities.

AMSTUD 105Q. Law and Popular Culture. 3 Units.
(Same as AMSTUD 105Q) This seminar focuses on the interface between two important subjects: law and popular culture. Before class, students will see a series of films or television shows relating to law, lawyers, and the legal system. There is also a weekly homework assignment based on materials in the assigned text and the assigned film or TV show. We will discuss the pop culture treatment of subjects such as the adversary system, good and bad lawyers, female and gay lawyers, the work life of lawyers, legal education, ethical issues, the jury system, and criminal and civil justice. The seminar discussions will draw on film theory and film-making technique to deepen understanding of the interrelationship between law and popular culture. The discussions will illuminate the ways in which pop culture products both reflect and change social views about law and lawyers. The assigned text is Michael Asimow & Shannon Mader, "Law & Popular Culture: A Course Book" (Peter Lang, 2d edition, 2013).
Same as: LAWGEN 105Q

AMSTUD 105R. Religion and War in America. 4 Units.
Scholars have devoted much attention to wars in American history, but have not agreed as to whether religion was a major cause or simply a cover for political, economic, and other motives. We will compare interpretations that leave religion out, with those that take it into account. We will also look at the impact of war on the religious lives of ordinary Americans. We will examine both secondary as well as primary sources, beginning with King Philip's War in the 17th century, and ending with the "War on Terror" in the present day.
Same as: CSRE 105, HISTORY 254D, HISTORY 354D, RELIGST 105

AMSTUD 106. Spectacular Trials: Sex, Race and Violence in Modern American Culture. 5 Units.
This course will use the phenomenon of the spectacular trial as a framework for exploring the intersections of sex, race, and violence in the formation of modern American culture. Beginning in the late nineteenth century and continuing through the 1990s, we will focus our inquiry on a number of notorious cases, some associated with familiar names¿the ¿Scottsboro Boys,¿ Emmett Till, O.J. Simpson¿others involving once-infamous actors¿like Joan Little and Inez Garcia¿whose ordeals have receded into historical memory, considering a range of questions arising from this thematic nexus. For instance, in what ways are sexual transgressions racialized and gendered? What are the practical and theoretical ramifications of the seemingly inextricable conjunction of sex and violence in legal and popular discourse? And what insights might such spectacles afford when broached as an arena in which sexual meanings, identities, and practices are refracted and ultimately constructed? We will also examine the role of the pertinent professions in the evolution of these events, in particular how the interplay of law, medicine, psychiatry, and forensic science helped define the shifting boundaries of legality, and how print, radio, and television journalism operated not only in sensationalizing, but also in reflecting, modeling, and shaping prevailing attitudes and behaviors. Our study of this vital facet of our ¿society of the spectacle¿ will draw on a series of compelling secondary readings complemented by a diverse array of primary sources¿from contemporaneous pamphlets and newspaper accounts to photographs, letters, trial testimony, and psychological commentary¿that will enable class members to evaluate the strengths and weaknesses of different textual genres, experiment with alternative methods of fashioning historical interpretations, and contemplate the ways history might be employed to illuminate the persistent problems of racial bias, reflexive sexualization, and the packaging of trials as mass entertainment in the present day.
Same as: CSRE 66

AMSTUD 106A. A.I.: Artificial Intelligence in Fiction. 5 Units.
From self-driving cars to bots that alter democratic elections, artificial intelligence is growing increasingly powerful and prevalent in our everyday lives. Literature has long been speculating about the techno-utopia¿and catastrophe¿that A.I. could usher in. Indeed, literature itself presents us with a kind of A.I. in the many characters that speak and think in its pages. But how do we classify an intelligence as ¿artificial¿ or not? Is there a clear boundary that demarcates bodies from machines? What, if anything, separates the ¿genre¿ of technology from that of literature? What classifies literature as ¿science fiction,¿ ¿scientific,¿ ¿futuristic,¿ ¿psychological,¿ or ¿dystopian¿? And can technology or literature ever overcome the ultimate division between all intelligences¿the problem of other minds? This course consists in curated multi-genre combinations of literature, philosophy, film, and television that explore what makes someone¿or something¿a person in our world today. Special events will include celebrating the current bicentennial of Mary Shelley¿s Frankenstein (1818) in Stanford Special Collections; a possible visit to Stanford¿s A.I. Laboratory; and chatting with the ELIZA chatbot.

AMSTUD 107. Introduction to Feminist, Gender, and Sexuality Studies. 4-5 Units.
Introduction to interdisciplinary approaches to gender, sexuality, queer, trans and feminist studies. Topics include the emergence of sexuality studies in the academy, social justice and new subjects, science and technology, art and activism, history, film and memory, the documentation and performance of difference, and relevant socio-economic and political formations such as work and the family. Students learn to think critically about race, gender, and sexuality from local and global perspectives.
Same as: CSRE 108, FEMGEN 101, TAPS 108

AMSTUD 108. Race and the Law: Historical and Contemporary Perspectives. 5 Units.
When Obama began his presidential tenure in 2009, many commentators declared the U.S. a truly colorblind society, a place where race (read: non-whiteness) no longer served as an impediment to individual and group aspirations, indeed had become so insignificant as to be practically invisible. In late fall 2014,in the aftermath of the police-involved killings of Eric Garner, Michael Brown, and Tamir Rice, society is confronted with a radically different social and political landscape. Yet events like these, while doubtless underscoring the fallaciousness of the equalitarian narrative, are regrettably commonplace. What, if anything, occurred during the intervening years that might explain the apparent displacement of hope by despair? With the advent of the Black Lives Matte movement, the persistence of bias and discrimination against people of color, particularly at the interface of African American males and law enforcement authorities, has attained a place of prominence on the public agenda, presenting a significant opportunity for citizen-activists, legislators, and policymakers to combine forces to effectuate meaningful change. To take advantage of this moment, it is imperative to understand the origins and development of the entrenched structural inequalities manifest in contemporary America. What role have law and legal institutions played in hindering and facilitating the promise of equality for all citizens? How far are we from realizing that vaunted democratic aspiration? This course offers participants an opportunity to systematically engage with recent events in Baltimore, Ferguson, and elsewhere in an historically informed manner that foregrounds questions of race, citizenship, and law. Against the backdrop of the achievements of the Civil Rights Movement, it considers such topics as the rise of urban ghettos and the use of segregationist practices like redlining and steering in helping to sustain them; resegregation in the late 20th-early 21st century; differential arrest and sentencing patterns; and, crucially, the extraordinary growth of the American carceral state.
Same as: CSRE 81

AMSTUD 109Q. American Road Trips. 4 Units.
"Nothing behind me, everything ahead of me, as is ever so on the road." --Jack Kerouac, On the Road, 1957. From Jack Kerouac's On the Road to Cheryl Strayed's Wild, this course explores epic road trips of the twentieth century. Travel is a fundamental social and cultural practice through which Americans have constructed ideas about the self, the nation, the past, and the future. The open road, as it is often called, offered excitement, great adventure, and the space for family bonding and memory making. But the footloose and fancy-free nature of travel that Jack Kerouac celebrated was available to some travelers but not to all. Engaging historical and literary texts, film, autobiography, memoir, photography, and music, we will consider the ways that travel and road trips have been represented in American culture. This course examines the following questions: How did men and women experience travel differently? How did the motivations for travel change over time? What role did race, ethnicity, class, relationships, and sexuality play in these trips? Students will work together to plan a road trip of their own which the class will take during the quarter.
Same as: HISTORY 69Q

AMSTUD 110D. War and Peace in American Foreign Policy. 3-5 Units.
The causes of war in American foreign policy. Issues: international and domestic sources of war and peace; war and the American political system; war, intervention, and peace making in the post-Cold War period. Political Science majors taking this course to fulfill the WIM requirement should enroll in POLISCI 110D for 5 units. International Relations majors taking this course should enroll in INTNLREL 110D for 5 units. SCPD students should enroll for 3 units.
Same as: INTNLREL 110D, POLISCI 110D, POLISCI 110Y

AMSTUD 111. Reproductive Politics in the United States and Abroad. 3-5 Units.
Course description: This course examines the issues and debates surrounding women's reproduction in the United States and beyond. It pays special attention to how knowledge and technology travel across national/cultural borders and how women's reproductive functions are deeply connected to international politics and events abroad. Topics include: birth control, population control, abortion, sex education, sex trafficking, genetic counseling, assisted reproductive technologies, midwifery, breastfeeding, menstruation, and reproductive hazards.
Same as: FEMGEN 111

AMSTUD 111Q. Recording Race and Religion in America. 5 Units.
This course will explore the relationship between race and religion, as manifest in America¿s aural cultures. From Gospel and Avant Garde jazz to Contemporary Christian Music and hip hop, we will listen in on the ways in which music has served as a powerful mode of organizing, constructing, transcending and complicating ideas about religion and race in America. Focusing on a select playlist, this course will expand our critical vocabularies and enable us to hear American culture differently.

AMSTUD 114Q. Visions of the 1960s. 5 Units.
Preference to sophomores. Introduction to the ideas, sensibility, and, to a lesser degree, the politics of the American 60s. Topics: the early 60s vision of a beloved community; varieties of racial, generational, and feminist dissent; the meaning of the counterculture; and current interpretive perspectives on the 60s. Film, music, and articles and books.

AMSTUD 114X. Reading Comics. 4 Units.
The modern medium of comics, a history that spans 150 years. The flexibility of the medium encountered through the genres of humorous and dramatic comic strips, superheroes, undergrounds, independents, journalism, and autobiography. Innovative creators including McCay, Kirby, Barry, Ware, and critical writings including McCloud, Eisner, Groenstee. Topics include text/image relations, panel-to-panel relations, the page, caricature, sequence, seriality, comics in the context of the fine arts, and relations to other media.
Same as: FILMSTUD 114, FILMSTUD 314

AMSTUD 115. Asian American Film and Popular Culture. 4 Units.
Tracing the evolution of Asian American cultural representations from the silent film era through the first generation of Asian American YouTube stars, this course examines the economic, political, and cultural influence of Asian American screen images on U.S. society. Through a focus on both mainstream and independent productions, we discuss the work of Asian American actors, audience members, media producers, consumers, and activists. Possible films and TV shows to be discussed include The Cheat (1915), Shanghai Express (1932), Flower Drum Song (1961), Chan is Missing (1983) Fall of the I Hotel (1983), Who Killed Vincent Chin? (1989), Sa-I-Gu, (1992), Saving Face (2004) Crazy Rich Asians (2018), To All the Boys I've Loved Before (2018), TV episodes of the Mindy Project, and work by early Asian American YouTube stars including Michelle Phan, HappySlip, and KevJumba.
Same as: ASNAMST 115, COMPLIT 159

AMSTUD 117. Race, Gender, and Sexuality in Contemporary American Film. 4-5 Units.
This course introduces students to the theoretical and analytical frameworks necessary to critically understand constructions of race, gender, and sexuality in contemporary American film. Through a sustained engagement with a range of independent and Hollywood films produced since 2000, students analyze the ways that cinematic representations have both reflected and constructed dominant notions of race, gender, and sexuality in the United States. Utilizing an intersectional framework that sees race, gender, and sexuality as always defined by one another, the course examines the ways that dominant notions of difference have been maintained and contested through film in the United States. Readings include work by Michael Omi & Howard Winant, Patricia Hill Collins, Jodi Melamed, Stuart Hall, Lisa Duggan and bell hooks. Films to be discussed include Moonlight, Mosquita y Mari, Kumu Hina, Hustlers, and Crazy Rich Asians. To enroll in the course, please fill out the following form: https://forms.gle/RKqURW6niyB1LRyEA.
Same as: AFRICAAM 117J, ASNAMST 117D, CSRE 117D, FEMGEN 117F

AMSTUD 117N. The Fourth "R": Religion and American Schools. 4 Units.
In this seminar, we will engage with historical, legal, and sociological texts, in order to trace the complicated relationship between church and state as it has played out in and around questions of education. Deciding what belongs in schools, what does not, whose interests are served in the process, and what the Constitution will allow are just some of the questions that will guide us. Through close readings of text and critical writing, we will develop alternative narratives about church-state issues that can make sense of everything from prayer in schools to civic education. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.
Same as: EDUC 117N, RELIGST 13N

AMSTUD 117R. Christianity, Race, and Gender in 21st-century America. 4 Units.
As the largest religion practiced in the United States, Christianity not only shapes the private lives of a large number of Americans but also plays an important role in public discourse, policies, and debates. This course investigates Christianity's place on the shifting religious landscape in America, with special attention to present-day movements for racial and gender justice in the era of Black Lives Matter and #MeToo. Students explore reasons for declining numbers of Christians in the United States, the polarization of Christian conservatives and religious "nones," and Christian constructions of social relations. How do Christian beliefs and practices shape attitudes about race and gender roles? How is contemporary Christianity acting as a force for as well as a barrier to social justice? This course assumes no background in the study of religion, race, or gender and is open to practitioners of all faiths or none.
Same as: RELIGST 117

AMSTUD 118. Critical Family History: Narratives of Identity and Difference. 4 Units.
This course examines family history as a site for understanding identity, power, and social difference in American society. Focusing in particular on the intersections of race, gender, and sexuality, we approach the family as an archive through which we might write alternative histories to the ones that dominate the national historical consciousness. To do this, we examine memoirs, oral histories, and first-person documentaries as historical texts that can be used to foreground marginalized historical voices. Students will then be asked to apply course readings and theories to their own family histories as a means of better understanding issues of identity and difference.
Same as: AFRICAAM 118X, ASNAMST 118S, CSRE 118S

AMSTUD 119. Science Fiction: Cyborgs & Human Simulacra in the Cinema. 4 Units.
The human simulacrum has a long history in mythology, fairy tales and children¿s stories, as well as in the genres of horror and science fiction. This course explores synthetic human narratives in the cinema. Stories of artificially created life, living statues, automata, body snatchers, robots, cyborgs and electronic simulations all direct our attention to our assumed definitions of the human.The fantasies and anxieties that undergird these stories engage with such issues as labor, gender, sexuality, death, emotion, rationality, embodiment, consumerism, reproductive technologies, and power relations. Attention will also be given the relation of cinema¿s human simulacra to changing cinematic technologies. Films will include Metropolis, Pinocchio, Robocop, Bride of Frankenstein, The Golem, A.I., My Fair Lady, Her, Blade Runner, and the HBO iteration of Westworld. Readings will include essays, as well as some fiction and possibly comics.
Same as: FILMSTUD 119, FILMSTUD 319

AMSTUD 120. The Rise of Digital Culture. 4-5 Units.
From Snapchat to artificial intelligence, digital systems are reshaping our jobs, our democracies, our love lives, and even what it means to be human. But where did these media come from? And what kind of culture are they creating? To answer these questions, this course explores the entwined development of digital technologies and post-industrial ways of living and working from the Cold War to the present. Topics will include the historical origins of digital media, cultural contexts of their deployment and use, and the influence of digital media on conceptions of self, community, and state. Priority to juniors, seniors, and graduate students.
Same as: COMM 120W, COMM 220

AMSTUD 120B. Superhero Theory. 3-5 Units.
With their fantastic powers, mutable bodies, multiple identities, complicated histories, and visual dynamism, the American superhero has been a rich vehicle for fantasies (and anxieties) for 80+ years across multiple media: comics, film, animation, TV, games, toys, apparel. This course centers upon the body of the superhero as it incarnates allegories of race, queerness, hybridity, sexuality, gendered stereotypes/fluidity, politics, vigilantism, masculinity, and monstrosity. They also embody a technological history that encompasses industrial, atomic, electronic, bio-genetic, and digital.
Same as: ARTHIST 120, ARTHIST 320, FILMSTUD 120, FILMSTUD 320

AMSTUD 121Z. Political Power in American Cities. 5 Units.
The major actors, institutions, processes, and policies of sub-state government in the U.S., emphasizing city general-purpose governments through a comparative examination of historical and contemporary politics. Issues related to federalism, representation, voting, race, poverty, housing, and finances. Political Science majors taking this course to fulfill the WIM requirement should enroll in POLISCI 121.
Same as: POLISCI 121, PUBLPOL 133, URBANST 111

AMSTUD 122D. Free Speech and Inclusion on Campus. 3 Units.
How do we balance norms of inclusion and respect with norms of free speech? This seminar course utilizes readings from sociology, political science, and legal/ethical reasoning to elucidate the larger structures and ideals that are at stake in the debates over what kind of speech is tolerable, or more normatively speaking, desirable, at colleges and universities. The expected learning outcomes are: a greater understanding of the free speech's role in American society and democracy, how America's position on free speech compares to other countries, and how speech restriction and liberties can reveal larger patterns in social structure and agency. Finally, key skills students will develop are learning how to identify common ethical frameworks that academic and popular authors use and how to analyze the origins of and changes in social institutions and social structures.
Same as: SOC 122D

AMSTUD 123D. American Literature, 1855 to World War I. 5 Units.
A survey of American writers from Whitman to T.S. Eliot, including Emily Dickinson, Mark Twain, Stephen Crane, Frank Norris, Kate Chopin, Theodore Dreiser, and Henry James. Topics include the tension between romance and realism, the impact of naturalism and modernism, as well as race, gender, and the literary evolution of the American language.

AMSTUD 123G. Mark Twain: A Fresh Look at an Icon and Iconoclast, 100 Years after His Death. 3-5 Units.
The vitality and versatility of a writer who has been called America's Rabelais, Cervantes, Homer, Tolstoy, and Shakespeare. Journalism, travel books, fiction, drama, and sketches by Mark Twain; how Twain engaged such issues as personal and national identity, satire and social justice, imperialism, race and racism, gender, performance, travel, and technology. What are Twain's legacies in 2010, the centennial of his death, the 175th anniversary of his birth, and the 125th anniversary of his most celebrated novel? Guests include actor Hal Holbrook.

AMSTUD 123X. Introduction to American Politics and Policy: The Good, The Bad, and The Ugly. 4-5 Units.
This is a course about American politics, which means this is a course about individuals, identities, and institutions. How do Americans come to think andnreason about politics? What is the role that identities play in affecting the political judgments that individuals make? How do our political institutionsnrespond to the demands of a diverse public that disagrees about issues related to race and justice, income and wealth inequality, climate change, gunncontrol, reproductive rights, the power of the executive, and the role that government ought to play in the lives of the governed? And how do we makensense of this seemingly peculiar contemporary moment in American politics? These are not easy questions, but they are ones for which political sciencenprovides a useful foundation to guide our inquiry. The objective of this course is to introduce students to various concepts and theoretical frameworks thatnhelp us understand the messiness and complexity of American politics. In addition to classroom lectures and discussion sections, students will benrequired to apply concepts and theoretical frameworks to contemporary issues in American politics. Undergraduate Public Policy students are required to enroll in this class for 5 units.
Same as: POLISCI 102, PUBLPOL 101, PUBLPOL 201

AMSTUD 124. Cultures of the U.S.-Mexico Borderlands. 3-5 Units.
Cultures of the U.S.-Mexico Borderlands: Since becoming president, Donald Trump has deported more than a million migrants and started building a multi-billion-dollar border wall. Although some of Trump¿s actions have seemed anomalous, they have all relied on and reaffirmed longstanding legacies of settler colonialism and racial capitalism. In this seminar, we will look at these legacies through the eyes of the Natives, Latinxs, whites, and others who have lived in the U.S.-Mexico borderlands. Within the confines of literature, we will read novelists like Willa Cather, essayists like Valeria Luiselli, and poets like Simon Ortiz (Acoma Pueblo). Meanwhile, across the more capacious category of culture, we will engage with promoters who encouraged whites to claim homesteads, periodistas who emboldened Latinxs to protect pueblos, and leaders who helped Natives fight for sovereignty. By blending literary studies and ethnic studies, we will gain a thorough grasp of the territories that have taken shape since the U.S.-Mexico War (1846¿48), especially the ones that we currently call Arizona, California, New Mexico, and Texas. From these concrete contexts, we will ask and answer more abstract questions: What are borders¿are they physical boundaries, or are they psychosocial conditions? Similarly, what are nations¿are they stable and homogeneous groups, or are they flexible and diverse communities? Ultimately, what are human beings¿can they be branded as illegal aliens, or do they have inalienable rights? During the quarter, we will work through these questions both collectively and individually: to enrich our in-class discussions, each five-unit student will complete a four- to five-page reading of a single source, a six- to eight-page paper on several sources, and a multimedia borderlands map.
Same as: CHILATST 124C, ENGLISH 124C

AMSTUD 124A. The American West. 5 Units.
The American West is characterized by frontier mythology, vast distances, marked aridity, and unique political and economic characteristics. This course integrates several disciplinary perspectives into a comprehensive examination of Western North America: its history, physical geography, climate, literature, art, film, institutions, politics, demography, economy, and continuing policy challenges. Students examine themes fundamental to understanding the region: time, space, water, peoples, and boom and bust cycles.
Same as: ARTHIST 152, ENGLISH 124, HISTORY 151, POLISCI 124A

AMSTUD 124B. European and North African Visions of the American West. 3-5 Units.
This course is an interdisciplinary investigation of the rewriting of the American West in the Mediterranean context through the transnational lenses of filmmakers and artists of diverse religious and ethnic backgrounds, through primarily cinema, but also graphic novels, novels, and murals. How do these films and novels adopt and adapt the Western genre? How do these artistic endeavors tell us about the enduring aura and stereotypes of the American West mythology? Films: Jacques Audiard, The Sisters Brothers, Sergio Leone, The Good, the Bad and the Ugly, David Oelhoffen, Far From Men, Karl May, Winnetou, Michel Hazanavicius, The Artist, Agnès Varda, Mur murs. Special guest: photographer/street artist JR. Readings: Mark Twain, Joan Didion, Romain Gary.

AMSTUD 125. Perspectives on American Journalism. 4-5 Units.
An examination of American journalism, focusing on how news is produced, distributed, and financially supported. Emphasis on current media controversies and puzzles, and on designing innovations in discovering and telling stories. (Graduate students register for COMM 225.).
Same as: COMM 125, COMM 225

AMSTUD 125C. The Lost Generation: American literature between the World Wars. 5 Units.
An exploration of American literature between the World Wars, with a focus on themes such as expatriation, trauma, technology, race, modernism; writers include Gertrude Stein, Sherwood Anderson, F. Scott Fitzgerald, Ernest Hemingway, Langston Hughes, Jean Toomer, William Faulkner, Richard Wright, John Steinbeck, John Dos Passos.

AMSTUD 127. American Style and the Rhetoric of Fashion. 4 Units.
Focus on the visual culture of fashion, especially in an American context. Topics include: the representation of fashion in different visual media (prints, photographs, films, window displays, and digital images); the relationship of fashion to its historical context and American culture; the interplay between fashion and other modes of discourse, in particular art, but also performance, music, economics; and the use of fashion as an expression of social status, identity, and other attributes of the wearer. Texts by Thorstein Veblen, Roland Barthes, Dick Hebdige, and other theorists of fashion.
Same as: ARTHIST 165B, FILMSTUD 165B

AMSTUD 128. Representing Fashion. 4 Units.
Course on the representation of fashion in the 20th and 21st century, with focus on American fashion photography. Topics include: history of fashion illustration, fashion photography, and fashion films; intersection of art and commerce; role of designers, photographers, editors, and models; studio v. street photography; the place of mass media, alternative magazines, and online publications; and use of media, photography, and design theory for interpretation of fashion representations. Illustrators and artists include Lepape, Erte, Avedon, Penn, Klein, Newton, Sherman, and Leibovitz.
Same as: ARTHIST 166

AMSTUD 129. Animation and the Animated Film. 3-5 Units.
The fantasy of an image coming to life is ancient, but not until the cinema was this fantasy actualized. The history of the movies begins with optical toys, and contemporary cinema is dominated by films that rely on computer animation. This course considers the underlying fantasies of animation in art and lit, its phenomenologies, its relation to the uncanny, its status as a pure cinema, and its place in film theory. Different modes of production and style to be explored include realist animation, abstract animation; animistic animation; animated drawings, objects, and puppets; CGI, motion capture, and live/animation hybrids.
Same as: FILMSTUD 129, FILMSTUD 329

AMSTUD 130A. In Sickness and In Health: Medicine and Society in the United States: 1800-Present. 3-5 Units.
Explores the history of medical institutions, ideas and practices in the United States from the early nineteenth century to the present. How are ideas of illness and health historically rooted and socially constructed? How did scientific and medical discoveries lead to the rise of scientific medicine, and how were these innovations adopted within the American cultural landscape? Topics include the transformation of therapeutics and technologies, medicine and the scientific ideal in the U.S., gender and race and medicine, the history of public health, and the professionalization and specialization of American medical practice.

AMSTUD 131. Food and American Culture. 5 Units.
This course introduces students to the cultural history, politics, and aesthetics of eating in America, exploring topics that have fueled debates about what Americans should eat over the last hundred years. Discussions of American cuisine will lead directly into larger concepts of American identity, culture, and politics. We will ask questions such as: What role does food play in national identity? Have restaurants shaped American social life? What is modern American cuisine? nnCourse goals include fluency in the key terminology and theoretical frameworks of American Studies and a deep historical understanding of our contemporary food system. Students will actively engage with primary sources, including nutrition manuals, advertisements, cookbooks, restaurant menus, and paintings.

AMSTUD 132. American Art and Culture, 1528-1910. 4 Units.
The visual arts and literature of the U.S. from the beginnings of European exploration to the Civil War. Focus is on questions of power and its relation to culture from early Spanish exploration to the rise of the middle classes. Cabeza de Vaca, Benjamin Franklin, John Singleton Copley, Phillis Wheatley, Charles Willson Peale, Emerson, Hudson River School, American Genre painters, Melville, Hawthorne and others.
Same as: ARTHIST 132, ARTHIST 332

AMSTUD 133. Technology and American Visual Culture. 4 Units.
An exploration of the dynamic relationship between technology and the ways we see and represent the world, with a focus on American visual culture from the 19th century through the present. We study the history of different tools from telescopes and microscopes to digital detectors that have changed and enhanced our visual capabilities; the way technological shifts, such as the introduction of electric lights or train travel, have shaped our visual imagination and aesthetic sensibilities; and how technology has inspired or responded to visual art. Special attention is paid to how different media, such as photography, cinema, and computer screens, translate the visual experience into a representation; the automation of vision; and the intersection of technology with notions of time and space.
Same as: FILMSTUD 133B

AMSTUD 134C. The Western: Imagining the West in Fiction and Film. 3-5 Units.
The Wild West: a mythical place seared deep into the American imagination. Its familiar tropes lone riders on horseback, desert sunsets, saloon fights, train robberies echo through countless Western stories, novels, films, radio programs, and television series. Both formulaic and flexible, the Western has endured as a popular genre in American culture for more than a century, embodying and responding to many of the nation's broader anxieties surrounding its colonial history, its notions of masculinity and gender roles, its fascination with guns and violence, and its ideals of self-reliance and individualism. In this class we'll examine the Western genre through a selection of its central works in fiction and film, from the first dime novel Western, Ann S. Stephens Malaeska (1860), to Cormac McCarthy¿s acclaimed Blood Meridian (1985); and from the first silent film Western, Edwin S. Porter's The Great Train Robbery (1903), to the mid-century Hollywood films of John Ford, to Maggie Greenwald¿s feminist Western, The Ballad of Little Jo (1993). Along the way we'll examine the Western as both a literary form and a cultural phenomenon, probing the history of its enduring appeal as a genre. How do these novels and films construct, adapt, and subvert the form and expectations of the Western, and how do they both perpetuate and challenge the broader cultural problems of their, and our, time? Finally, as Californians and inheritors of the nation's westward expansion, what does the Western tell us about national myths of the West, and the place in which we live?.

AMSTUD 135. Deliberative Democracy and its Critics. 3-5 Units.
This course examines the theory and practice of deliberative democracy and engages both in a dialogue with critics. Can a democracy which emphasizes people thinking and talking together on the basis of good information be made practical in the modern age? What kinds of distortions arise when people try to discuss politics or policy together? The course draws on ideas of deliberation from Madison and Mill to Rawls and Habermas as well as criticisms from the jury literature, from the psychology of group processes and from the most recent normative and empirical literature on deliberative forums. Deliberative Polling, its applications, defenders and critics, both normative and empirical, will provide a key case for discussion.
Same as: COMM 135, COMM 235, COMM 335, ETHICSOC 135F, POLISCI 234P, POLISCI 334P

AMSTUD 136X. Indigenous Peoples and Environmental Change in the North American Wes. 5 Units.
This course explores the dynamic relationships between indigenous communities and the continuously changing environmental landscapes of the North American West from before European contact to the present. In particular, it examines how specific indigenous communities of the region have navigated and adapted their relationship with the natural world amidst the challenges of colonialism, globalization, climate change, and an increasing national dependency on the natural resources of the North American West.

AMSTUD 137. The Dialogue of Democracy. 4-5 Units.
All forms of democracy require some kind of communication so people can be aware of issues and make decisions. This course looks at competing visions of what democracy should be and different notions of the role of dialogue in a democracy. Is it just campaigning or does it include deliberation? Small scale discussions or sound bites on television? Or social media? What is the role of technology in changing our democratic practices, to mobilize, to persuade, to solve public problems? This course will include readings from political theory about democratic ideals - from the American founders to J.S. Mill and the Progressives to Joseph Schumpeter and modern writers skeptical of the public will. It will also include contemporary examinations of the media and the internet to see how those practices are changing and how the ideals can or cannot be realized.
Same as: COMM 137W, COMM 237, POLISCI 232T, POLISCI 332T

AMSTUD 139B. American Women Writers, 1850-1920. 3-5 Units.
This course traces the ways in which female writers negotiated a series of literary, social, and intellectual movements, from abolitionism and sentimentalism in the nineteenth century to Progressivism and avant-garde modernism in the twentieth. Authors include Harriet Beecher Stowe, Harriet Jacobs, Rebecca Harding Davis, Emily Dickinson, Kate Chopin, Edith Wharton, Gertrude Stein, Willa Cather, and Charlotte Perkins Gilman.
Same as: ENGLISH 139B, FEMGEN 139B

AMSTUD 140. Stand Up Comedy and the "Great American Joke" Since 1945. 5 Units.
Development of American Stand Up Comedy in the context of social and cultural eruptions after 1945, including the Borscht Belt, the Chitlin¿ Circuit, the Cold War, censorship battles, Civil Rights and other social movements of the 60s and beyond. The artistry of stories, monologues, jokes, impersonations, persona, social satire, scatology, obscenity, riffs, rants, shtick, and more by such artists as Lenny Bruce, Dick Gregory, Richard Pryor, George Carlin, Margaret Cho, Sarah Silverman, Jon Stewart, Stephen Colbert, as well as precursors such as Mark Twain, minstrelsy and vaudeville and related films, TV shows, poems and other manifestations of similar sensibilities and techniques.
Same as: CSRE 140C

AMSTUD 141F. Short Story to Big Screen. 3-5 Units.
This course will study the adaptation from short stories to films, with a particular eye toward the form and structure of each media and their relationship to each other. Students will read a variety of 20th and 21st century stories and watch their adaptations (including ¿Rashomon" and ¿Brokeback Mountain,¿), as well as write a short screenplay adaptation and a short critical essay on a story/film of their choosing.

AMSTUD 142. The Literature of the Americas. 5 Units.
A wide-ranging overview of the literatures of the Americas inncomparative perspective, emphasizing continuities and crises that are common to North American, Central American, and South American literatures as well as the distinctive national and cultural elements of a diverse array of primary works. Topics include the definitions of such concepts as empire and colonialism, the encounters between worldviews of European and indigenous peoples, the emergence of creole and racially mixed populations, slavery, the New World voice, myths of America as paradise or utopia, the coming of modernism, twentieth-century avant-gardes, and distinctive modern episodes--the Harlem Renaissance, the Beats, magic realism, Noigandres--in unaccustomed conversation with each other.
Same as: COMPLIT 142, CSRE 142, ENGLISH 172E

AMSTUD 143A. American Architecture. 4 Units.
A historically based understanding of what defines American architecture. What makes American architecture American, beginning with indigenous structures of pre-Columbian America. Materials, structure, and form in the changing American context. How these ideas are being transformed in today's globalized world.
Same as: ARTHIST 143A, ARTHIST 343A, CEE 32R

AMSTUD 143X. Starstuff: Space and the American Imagination. 5 Units.
Course on the history of twentieth and twenty-first century American images of space and how they shape conceptions of the universe. Covers representations made by scientists and artists, as well as scientific fiction films, TV, and other forms of popular visual culture. Topics will include the importance of aesthetics to understandings of the cosmos; the influence of media and technology on representations; the social, political, and historical context of the images; and the ways representations of space influence notions of American national identity and of cosmic citizenship.
Same as: ARTHIST 264B, FILMSTUD 264B

AMSTUD 145. Silicon Valley. 5 Units.
Silicon Valley. The site and source of vibrant economic growth and technological innovation. A disruptive force in social, economic, and political systems. An interface between technology and academia, with the the quirky influence of the counterculture in the background. A surprisingly agile cultural behemoth that has reshaped human relationships and hierarchies of all sorts. A brotopia built on the preferences and predilections of rich, geeky white guys. A location with perpetually sunny skies and easy access to beaches and mountains. nnThis seminar will unpack the myths surrounding Silicon Valley by exploring the people, places, industries, and ideas that have shaped it from post-WWII to the present. It takes an interdisciplinary approach to the subject and considers region's history and development; the products of Silicon Valley, from computers and circuit boards to search algorithms and social networks; and Silicon Valley's depictions in photography, film, television, and literature.

AMSTUD 145D. Jewish American Literature and Film. 5 Units.
From its inception, Jewish-American literature has taken as its subject as well as its context the idea of Jewishness itself. Jewish culture is a diasporic one, and for this reason the concept of Jewishness differs from country to country and across time. What stays remarkably similar, though, is Jewish self-perception and relatedly Jewish literary style. This is as true for the first-generation immigrant writers like Isaac Bashevis Singer and Anzia Yezierska who came to the United States from abroad as it is for their second-generation children born in the United States, and the children of those children. In this course, we will consider the difficulties of displacement for the emigrant generation and their efforts to sustain their cultural integrity in the multicultural American environment. We'll also examine the often comic revolt of their American-born children and grandchildren against their (grand-)parents nostalgia and failure to assimilate. Only by considering these transnational roots can one understand the particularity of the Jewish-American novel in relation to mainstream and minority American literatures. In investigating the link between American Jewish writers and their literary progenitors, we will draw largely but not exclusively from Russia and the countries of Eastern Europe.
Same as: ENGLISH 145D, JEWISHST 155D, REES 145D

AMSTUD 145J. The Jewish-American Novel: Diaspora, Privilege, Anxiety, Comedy. 4-5 Units.
Jews are sometimes referred to as 'the people of the book.' Would Portnoy's Complaint count as a book that constitutes Jewish-American peoplehood? What about Fear of Flying? This seminar introduces students to influential Jewish-American novels (and some short stories and film) from the late nineteenth century to the present day. These works return time and again to questions of diaspora, race, queer social belonging, and the duty to a Jewish past, mythical or real. Through close readings of short stories and novels coupled with secondary readings about Jewish-American history and culture, we will explore how American Jewishness is constructed differently in changing historical climates. What makes a text Jewish? What do we mean by Jewish humor and Jewish seriousness? How do Jewish formulations of gender and power respond to Jews' entrance into the white American mainstream? As we read, we'll think through and elaborate on models of ethnicity, privilege, sexuality, and American pluralism. Authors include Cahan, Yezierska, Singer, Roth, Bellow, Malamud, Ozick, Mailer, Jong, and Englander.
Same as: ENGLISH 145J, JEWISHST 155J

AMSTUD 145M. Culture Wars: Art and Social Conflict in the USA, 1890-1950. 4 Units.
This course examines social conflicts and political controversies in American culture through the lens of visual art and photography. We consider how visual images both reflect and participate in the social and political life of the nation and how the terms of citizenship have been represented¿and, at times, contested¿by artists throughout the first half of the 20th century. The class explores the relation between American art and the body politic by focusing on issues of poverty, war, censorship, consumerism, class identity, and racial division.
Same as: ARTHIST 145, ARTHIST 345, FEMGEN 145

AMSTUD 146C. Hemingway, Hurston, Faulkner, and Fitzgerald. 3-5 Units.
While Hemingway and Fitzgerald were flirting with the expatriate avant-garde in Europe, Hurston and Faulkner were performing anthropological field-work in the local cultures of the American South. Focus on the tremendous diversity of concerns and styles of four writers who marked America's coming-of-age as a literary nation with their multifarious experiments in representing the regional and the global, the racial and the cosmopolitan, the macho and the feminist, the decadent and the impoverished.
Same as: ENGLISH 146C

AMSTUD 147J. Studies in Music, Media, and Popular Culture: The Soul Tradition in African American Music. 3-4 Units.
1960s and 70s Black music, including rhythm and blues, Motown, Southern soul, funk, Philadelphia soul, and disco. Its origins in blues, gospel, and jazz to its influence on today's r&b, hip hop, and dance music. Soul's cultural influence and global reach; its interaction with politics, racism, gender, place, technology, and the economy. Synchronous and asynchronous remote learning, with class discussions, small-group activities, guest presenters, and opportunities for activism. Pre-/co-requisite (for music majors): MUSIC 22. (WIM at 4 units only.).
Same as: AFRICAAM 19, CSRE 147J, MUSIC 147J, MUSIC 247J

AMSTUD 148. Los Angeles: A Cultural History. 4 Units.
This course traces a cultural history of Los Angeles from the early twentieth century to the present. Approaching popular representations of Los Angeles as our primary source, we discuss the ways that diverse groups of Angelenos have represented their city on the big and small screens, in the press, in the theater, in music, and in popular fiction. We focus in particular on the ways that conceptions of race and gender have informed representations of the city. Possible topics include: fashion and racial violence in the Zoot Suit Riots of the Second World War, Disneyland as a suburban fantasy, cinematic representations of Native American life in Bunker Hill in the 1961 film The Exiles, the independent black cinema of the Los Angeles Rebellion, the Anna Deaver Smith play Twilight Los Angeles about the civil unrest that gripped the city in 1992, and the 2019 film Once Upon a Time¿in Hollywood.
Same as: CSRE 148R

AMSTUD 150. Introduction to English II: American Literature and Culture to 1855. 5 Units.
(Formerly English 23/123). A survey of early American writings, including sermons, poetry, captivity and slave narratives, essays, autobiography, and fiction, from the colonial era to the eve of the Civil War.
Same as: ENGLISH 11B

AMSTUD 150A. Colonial and Revolutionary America. 5 Units.
(HISTORY 50A is 3 units. HISTORY 150A is 5 units) This course surveys early American history from the onset of English colonization of North America in the late sixteenth century through the American Revolution and the creation of the United States in the late eighteenth. It situates the origins and the development of colonial American society as its peoples themselves experienced it, within the wider histories of the North American continent and the Atlantic basin. It considers the diversity of peoples and empires that made up these worlds as well as the complex movement of goods, peoples, and ideas that defined them. The British North American colonies were just one interrelated part of this wider complex. Yet out of that interconnected Atlantic world, those particular colonies produced a revolution for national independence that had a far-reaching impact on the world. The course, accordingly, explores the origins of this revolutionary movement and the nation state that it wrought, one that would rapidly ascend to hemispheric and then global prominence.
Same as: HISTORY 150A

AMSTUD 150B. Nineteenth Century America. 5 Units.
(Same as HISTORY 50B. History majors and others taking 5 units, register for 150B.) Territorial expansion, social change, and economic transformation. The causes and consequences of the Civil War. Topics include: urbanization and the market revolution; slavery and the Old South; sectional conflict; successes and failures of Reconstruction; and late 19th-century society and culture.
Same as: AFRICAAM 150B, CSRE 150S, HISTORY 150B

AMSTUD 150C. The United States in the Twentieth Century. 5 Units.
(Same as HISTORY 50C. History majors and others taking 5 units, register for 150C.) 100 years ago, women and most African-Americans couldn't vote; automobiles were rare and computers didn't exist; and the U.S. was a minor power in a world dominated by European empires. This course surveys politics, culture, and social movements to answer the question: How did we get from there to here? Two historical research "labs" or archival sessions focus on the Great Depression in the 1930s and radical and conservative students movements of the 1960s. Suitable for non-majors and majors alike.
Same as: AFRICAAM 150C, HISTORY 150C

AMSTUD 150X. From Gold Rush to Google Bus: History of San Francisco. 4 Units.
This class will examine the history of San Francisco from Native American and colonial settlement through the present. Focus is on social, environmental, and political history, with the theme of power in the city. Topics include Native Americans, the Gold Rush, immigration and nativism, railroads and robber barons, earthquake and fire, progressive reform and unionism, gender, race and civil rights, sexuality and politics, counterculture, redevelopment and gentrification. Students write final project in collaboration with ShapingSF, a participatory community history project documenting and archiving overlooked stories and memories of San Francisco. (Cardinal Course certified by the Haas Center).
Same as: HISTORY 252E, URBANST 150

AMSTUD 151. Migration and Diaspora in American Art, 1800-Present. 4 Units.
This lecture course explores American art through the lens of immigration, exile, and diaspora. We will examine a wide range of work by immigrant artists and craftsmen, paying special attention to issues of race and ethnicity, assimilation, displacement, and political turmoil. Artists considered include Emmanuel Leutze, Thomas Cole, Joseph Stella, Chiura Obata, Willem de Kooning, Mona Hatoum, and Julie Mehretu, among many others. How do works of art reflect and help shape cultural and individual imaginaries of home and belonging?.
Same as: ARTHIST 151, ARTHIST 351, ASNAMST 151D, CSRE 151D

AMSTUD 152A. "Mutually Assured Destruction": American Culture and the Cold War. 5 Units.
The temperature of the early Cold War years via readings of Soviet and U.S. propaganda; documentary film and film noir; fiction by Bellow, Ellison, O¿Connor, and Mailer; social theory by Arendt, the New York Intellectuals, and the Frankfurt School; and political texts such as Kennan¿s *Sources of Soviet Conduct,* the ¿Truman Doctrine¿ speech, and the National Security Council Report 68. Major themes include the discourse of totalitarianism, MacCarthyism, strategies of containment, the nuclear threat, the figure of the ¿outsider¿ and the counterculture, and the cultural shift from sociological to psychological idioms.

AMSTUD 152C. The JFK Era and American Literature. 5 Units.
Few U.S. presidents have exerted so great a fascination on the national¿and global¿post-World War II imagination as John F. Kennedy. As the 2013¿s semi-centennial anniversary of Kennedy¿s assassination attests, the production of films, television and multimedia programs, biographies, conspiracy theories, academic studies, and literary texts about the iconic JFK and his fabled, thousand-day presidency continues unabated. In this course, we will explore the attention Kennedy has drawn from writers and filmmakers in texts by Norman Mailer, Don DeLillo, Mario Vargas Llosa, and others.

AMSTUD 153. Warhol's World. 5 Units.
Andy Warhol's art has never before been more widely exhibited, published, or licensed for commercial use, product design, and publication than it is today. For all Warhol's promiscuous visibility and global cachet at the current moment, there is much we have yet to learn about his work and the conditions of its making. This course considers the wide world of Warhol's art and life, including his commercial work of the 1950s, Pop art and films of the 1960s, and celebrity portraiture of the 1970s and 80s. Of particular interest throughout will be Warhol's photography as it reflects his interest in wealth and celebrity on the one hand and on the everyday life of everyday people on the other. The course will include multiple visits to Contact Warhol: Photography without End, an exhibition co-curated by Prof. Meyer on view throughout the quarter at the Cantor Arts Center.
Same as: ARTHIST 153, ARTHIST 353, FEMGEN 153, TAPS 153W, TAPS 353W

AMSTUD 154. American Intellectual and Cultural History to the Civil War. 5 Units.
(Same as HISTORY 54. History majors and others taking 5 units, register for 154.) How Americans considered problems such as slavery, imperialism, and sectionalism. Topics include: the political legacies of revolution; biological ideas of race; the Second Great Awakening; science before Darwin; reform movements and utopianism; the rise of abolitionism and proslavery thought; phrenology and theories of human sexuality; and varieties of feminism. Sources include texts and images.
Same as: HISTORY 154

AMSTUD 154X. The American Civil War: A Visual History. 4 Units.
A painting of men charging across a field, a photograph of dead bodies in a ditch, a fragment of metal, a sliver of bone, and a brass button: how do we make sense of the visual record of the American Civil War (1861-65)? From the Capitol Dome to a skeleton dug up in a highway project a hundred years after the last battle, the course will consider the strange and scattered remnants of a famous era. Drawing on the poetry of Walt Whitman, Emily Dickinson, and Herman Melville, the paintings of Winslow Homer, the photographs of Alexander Gardner, and the oratory of Abraham Lincoln, the course will examine what cannot be portrayed: the trauma of war.
Same as: ARTHIST 154, ARTHIST 354

AMSTUD 155. The White Supremacist Constitution: American Constitutional History. 5 Units.
This course addresses U.S. constitutional history from the post-Civil War Reconstruction period through the mid-20th century. Because of the breadth of the subject matter, the view will necessarily be partial. In particular we will take as our focus the way the Constitution has provided a point of political mobilization for social movements challenging economic and social inequality. Topics covered include: Civil War Reconstruction and restoration; the rise of corporate capitalism and efforts to constrain it; Progressive Era regulation; the New Deal challenge to federalism and the anti-New Deal backlash; government spending; WWII and the Japanese Internment; the Civil Rights Era, and the War on Poverty. Readings will include both legal and historical materials with a focus on the relationship between law and society. Elements used in grading: Class Participation, Attendance, Written Assignments, Final Paper. Paper extensions will be granted with instructor permission. No automatic grading penalty for late papers. Cross-listed with the Law School (LAW 7008),.
Same as: HISTORY 155

AMSTUD 155C. Abstract Expressionism: Painting/Modern/America. 4 Units.
The course will focus on American abstract painting from the 1930s to the 1960s, emphasizing the works of art at the Anderson Collection at Stanford. We will focus on looking closely at pictures by Jackson Pollock, Mark Rothko, Willem de Kooning, and other renowned abstract painters, developing skills of speaking and writing about these works of art. We will also place these pictures in their mid-20th century context: World War II and the Cold War; Hollywood and popular culture generally; Beat literature; and locations such as New York and San Francisco.
Same as: ARTHIST 155C

AMSTUD 155F. The Civil War and Reconstruction Era, 1830 to 1877. 3-5 Units.
(History 55F is 3 units; History 155F is 5 units.)This course explores the causes, course, and consequences of the American Civil War. The Civil War profoundly impacted American life at national, sectional, and constitutional levels, and radically challenged categories of race and citizenship. Topics covered include: the crisis of union and disunion in an expanding republic; slavery, race, and emancipation as national problems and personal experiences; the horrors of total war for individuals and society; and the challenges--social and political--of Reconstruction.
Same as: AFRICAAM 55F, AMSTUD 55F, HISTORY 55F, HISTORY 155F

AMSTUD 156H. Women and Medicine in US History: Women as Patients, Healers and Doctors. 5 Units.
This course explores ideas about women's bodies in sickness and health, as well as women's encounters with lay and professional healers in the United States from the eighteenth century to the present. We begin with healthy women and explore ideas about women's life cycle in the past, including women's sexuality, the history of birth control, abortion, childbirth, and aging. We then turn to the history of women healers including midwives, lay physicians, professional physicians and nurses. Finally, we examine women's illnesses and their treatment as well as the lives of women with disabilities in the past. We will examine differences in women's experience with medicine on the basis of race, ethnicity, sexuality and class. We will relate this history to issues in contemporary medicine, and consider the efforts of women to gain control of their bodies and health care throughout US history.
Same as: FEMGEN 156H

AMSTUD 157P. Solidarity and Racial Justice. 4-5 Units.
Is multiracial solidarity necessary to overcome oppression that disproportionately affects certain communities of color? What is frontline leadership and what role should people play if they are not part of frontline communities? In this course we will critically examine practices of solidarity and allyship in movements for collective liberation. Through analysis of historical and contemporary movements, as well as participation in movement work, we will see how movements have built multiracial solidarity to address issues that are important to the liberation of all. We will also see how racial justice intersects with other identities and issues. This course is for students that want to learn how to practice solidarity, whether to be better allies or to work more effectively with allies. There will be a community engaged learning option for this course. Students who choose to participate in this option will either work with Stanford's DGen Office or a community organization that is explicitly devoted to multiracial movement-building.
Same as: AFRICAAM 157P, CSRE 157P, FEMGEN 157P

AMSTUD 157X. Language as Political Tool: Feminist and LGBTQ Movements and Impacts. 3-5 Units.
How does a social or political movement gain traction? For example, how did 20th-century movements of the disenfranchised, such as the Civil Rights movement, LGBTQ movements, or feminist movements, gain a voice and eventually enact change? In the mediascape of today, where everyone with access to a computer could have a voice, how does a movement change the national conversation? How do written and verbal choices of the movements impact their success and outreach to supporters? In this course, students will write and revise their own arguments in order to best understand the rhetorical potential in these movements¿ choices and to consider how those rhetorical moves are incorporated into political discourse. We'll examine the role of rhetoric, the use of argument to persuade, in social movements working toward social justice, party platforms, and public policy.
Same as: FEMGEN 157, FEMGEN 257

AMSTUD 159B. American Photography Since 1960. 5 Units.
Since the publication of Robert Frank's THE AMERICANS (1958), many distinguished American photographers have emerged, creating a density and power of expression that arguably rivals and even surpasses the extraordinary achievements of earlier photographers in this country. Garry Winogrand's street photography, Diane Arbus's portraits, Ralph Eugene Meatyard's grotesque masks, Danny Lyon's impassioned social outsiders, William Eggleston's deadpan sidewalks and suburban tables, and on to photographers of our moment--these are just a few of the topics the course will cover. Careful attention to individual pictures; careful consideration of what it is to be an artist, and a critic.
Same as: ARTHIST 159B, ARTHIST 359B

AMSTUD 159X. American Photographs, 1839-1971: A Cultural History. 4 Units.
This course concentrates on many important American photographers, from the era of daguerreotypes to near the end of the pre-digital era. We study photographs of the Civil War, western exploration, artistic subjects, urban and rural poverty, skyscrapers, crime, fashion, national parks, and social protest, among other topics. Among the photographers we study: Carleton Watkins, Eadweard Muybridge, Walker Evans, Dorothea Lange, Garry Winogrand, and Diane Arbus. Emphasis on developing students' abilities to discuss and write about photography; to see it.
Same as: ARTHIST 159, ARTHIST 359

AMSTUD 160. Perspectives on American Identity. 5 Units.
Required for American Studies majors. In this seminar we trace diverse and changing interpretations of American identity by exploring autobiographical, literary, and/or visual texts from the 18th through the 20th century in conversation with sociological, political, and historical accounts. *Fulfills Writing In the Major Requirement for American Studies Majors*.
Same as: ENGLISH 165

AMSTUD 161. The Politics of Sex: Work, Family, and Citizenship in Modern American Women's History. 3-5 Units.
This course explores the transition from Victorian to modern American womanhood by asking how Native, European, African, Mexican, and Asian American women navigated the changing sexual, economic, and political landscapes of the twentieth century. Through secondary readings, primary sources, films, music, and literature we explore the opportunities and boundaries on groups of women in the context of historical events that included immigration, urbanization, wartime, depression, the Cold War, as well as recurrent feminist and conservative political movements.
Same as: CSRE 162, FEMGEN 161, HISTORY 61, HISTORY 161

AMSTUD 163. Queer America. 4 Units.
This class explores queer art, photography and politics in the United States since 1930. Our approach will be grounded in close attention to the history and visual representation of sexual minorities in particular historical moments and social contexts. We will consider the cultural and political effects of World War II, the Cold War, the civil rights movement, psychedelics, hippie culture and sexual liberation, lesbian separatism, the AIDS crisis, and marriage equality.
Same as: ARTHIST 163, FEMGEN 163

AMSTUD 164C. From Freedom to Freedom Now: African American History, 1865-1965. 5 Units.
(Same as HISTORY 64C. History majors and others taking 5 units, register for 164C.) Explores the working lives, social worlds, political ideologies and cultural expressions of African Americans from emancipation to the early civil rights era. Topics include: the transition from slavery to freedom, family life, work, culture, leisure patterns, resistance, migration and social activism. Draws largely on primary sources including autobiographies, memoirs, letters, personal journals, newspaper articles, pamphlets, speeches, literature, film and music.
Same as: HISTORY 164C

AMSTUD 165. History of Higher Education in the U.S.. 3-5 Units.
Major periods of evolution, particularly since the mid-19th century. Premise: insights into contemporary higher education can be obtained through its antecedents, particularly regarding issues of governance, mission, access, curriculum, and the changing organization of colleges and universities.
Same as: EDUC 165, EDUC 265, HISTORY 158C

AMSTUD 168D. American Prophet: The Inner Life and Global Vision of Martin Luther King, Jr.. 3-5 Units.
Martin Luther King, Jr., was the 20th-century's best-known African-American leader, but the religious roots of his charismatic leadership are far less widely known. The documents assembled and published by Stanford's King Research and Education Institute provide the source materials for this exploration of King's swift rise to international prominence as an articulate advocate of global peace and justice.
Same as: AFRICAAM 68D, CSRE 68, HISTORY 68D, HISTORY 168D

AMSTUD 169. Race and Ethnicity in Urban California. 4-5 Units.
The course is part of an ongoing research project that examines the consequences of longterm social, economic, and political changes in ethnic and race relations in in urban California. The required readings, discussions, and service learning component all provide a platform for students to explore important issues, past and present, affecting California municipalities undergoing rapid demographic transformation.
Same as: AFRICAAM 169A, CSRE 260, URBANST 169

AMSTUD 176B. Documentary Fictions. 4 Units.
More and more of the best American fiction, plays, and even comics are being created out of documentary practices such as in-depth interviewing, oral histories, and reporting. Novels like Dave Eggers' What is the What, plays like Anna Deavere Smith's Twilight: Los Angeles, and narrative journalism like Rebecca Skloot's The Immortal Life of Henrietta Lacks, all act as both witnesses and translators of people's direct experience and push art into social activism in new ways. In this course students will examine the research methods, artistic craft, and ethics of these rich, genre-bending works and then create documentary fictions of their own. Readings will include works by Truman Capote, Dave Eggers, and Lisa Taddeo, as well as Katherine Boo, author of the award-winning Behind the Beautiful Forevers, who will visit the class. No prior creative writing or journalism experience required. Note: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

AMSTUD 178. Ethnicity and Dissent in United States Art and Literature. 4 Units.
The role of the visual arts of the U.S. in the construction and contesting of racial, class, and gender hierarchies. Focus is on artists and writers from the 18th century to 1990s. How power, domination, and resistance work historically. Topics include: minstrelsy and the invention of race; mass culture and postmodernity; hegemony and language; memory and desire; and the borderlands.
Same as: ARTHIST 178, ARTHIST 378

AMSTUD 179. Introduction to American Law. 3-5 Units.
For undergraduates. The structure of the American legal system including the courts; American legal culture; the legal profession and its social role; the scope and reach of the legal system; the background and impact of legal regulation; criminal justice; civil rights and civil liberties; and the relationship between the American legal system and American society in general.
Same as: POLISCI 122, PUBLPOL 302A

AMSTUD 183. Re- Imagining American Borders. 5 Units.
In this third volatile and violent year of the Trump presidency, American borders of all kinds seem to be dangerously tight. This is seen in the literal horror of immigrant detention centers filled with hungry, sick children taken from parents, ongoing mass incarceration and police attacks on young black and brown men and gendered violence targeting trans Americans and pro-choice movements. Additionally urban and rural antagonisms and constant social media anger with a kind of newly brutal linguistic framing are all underscoring a vision of an America of intractable difference. The hopeful transformation from the 2018 elections, which is having enormous reverberations in the present 2020 presidential campaigns, is interestingly also based in a discourse of difference. This course investigates sources of these borderlines and most crucially how novelists, filmmakers, poets, visual artists and essayists perceive racial, ethnic, gender, religious, sexual orientation and class borders in this country as they may re-imagine difference possibly via Vijay Prashad's polyculturalism or Gloria Anzaldùa's borderlands. Texts include those of Ta-Nehisi Coates, Boots Riley, Dee Rees, Ryan Coogler, Nelly Rosario, Janice Lobo Sapigao, Layli Long Soldier, Naomi Shihab Nye, Edwidge Danticat, Sherman Alexie, Shailja Patel, Kara Walker, and the podcast Ear Hustle, narratives created and produced from inside San Quentin, along with Shane Bauer's undercover expose of an American prison. Course guests will include actors and writers from the acclaimed web series, The North Pole, showing parts of the new second season of biting, humorous stories of gentrification, racism and immigration issues in West Oakland. And the Bay Area founder of the only women-run, inclusive mosque in the US, Rabi¿a Keeble, will speak with us about an American Islam with a Muslim community that embraces difference. Course work includes active discussion, journal entries, one comparative analytical essay and a creative final project/with analytical paper examining personal or community identities.
Same as: CSRE 183, FEMGEN 183

AMSTUD 185. American Studies Internship. 1-3 Unit.
Restricted to declared majors. Practical experience working in a field related to American Studies for six to ten weeks. Students make internship arrangements with a company or agency, under the guidance of a sponsoring faculty member, and with the consent of the director or a program coordinator of American Studies. Required paper focused on a topic related to the internship and the student's studies. May be repeated for credit.

AMSTUD 186A. American Hauntings. 5 Units.
Cultural, psychological, social, and political dynamics of haunting in American literature, from the early national period to the late 20th century. Sources include ghost stories and other instances of supernatural, emotional, or mental intervention. Authors include Charles Brockden Brown, Washington Irving, Edgar Allan Poe, Nathaniel Hawthorne, Louisa May Alcott, Charlotte Perkins Gilman, Charles Chesnutt, Henry James, Edith Wharton, Toni Morrison, and Stephen King.

AMSTUD 186B. American Song in the 20th Century and after. 3-4 Units.
Critical and creative exploration of song in the Americas. About twenty-five key examples will guide discussion of the interactions between words, music, performance and culture. Weekly listening, reading and assignments will be organized around central themes: love, sex and romance; war and politics; labor and money; place; identity; society and everyday life. Genres include art song; blues, gospel, jazz and country; pop, soul, rock and hip-hop; bossa nova, nueva canción and salsa; electronic and experimental. Takehome and in-class assignments will include critical and creative writing, and music composition, production and performance; final projects may emphasize any of the above.
Same as: MUSIC 186B, MUSIC 286B

AMSTUD 186D. Asian American Art: 1850-Present. 4 Units.
What does it mean, and what has it meant historically, to be "Asian American" in the United States? This lecture course explores this question through the example of artists, craftspeople, and laborers of Asian descent. We will consider their work alongside the art, visual culture, and literature of the United States. Key themes will include the history of immigration law; questions of home and belonging; art, activism, and community; interethnic solidarity; and gender and queerness. Artists and authors will include Isamu Noguchi, Grace Lee Boggs, Nam June Paik, Yoko Ono, Theresa Hak Kyung Cha, Grace Lee Boggs, Zarina, Carlos Villa, Takashi Murakami, Anne Cheng, Lisa Lowe, among many others. In addition to learning the history of Asian Americans and reading key texts in Asian American studies, this course will also teach the foundational skills of close looking and primary source research.
Same as: ARTHIST 186B, ASNAMST 186B

AMSTUD 195. Individual Work. 1-5 Unit.
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AMSTUD 197. Dance in Prison: The Arts, Juvenile Justice, and Rehabilitation in America. 3 Units.
This class uses the lens of performance, and particularly dance, to explore the aesthetic, cultural, historical, and legal issues in the lives of incarcerated youth. In the process students gain an understanding of incarceration and its cultural dimensions. Class readings and discussions foreground the legal and social contexts surrounding prisons in the U.S., Particular attention will be paid to the nexus of art, community, and social action, and how dance might be used to study the performing arts effects on self-construction, perception, experiences of embodiment, and social control for incarcerated teenagers. The class includes guest speakers who bring important perspectives on criminal justice including returned citizens, a juvenile justice attorney, a restorative conferencing facilitator and a dancer who teaches women in prison to be their own dance instructors.
Same as: DANCE 197, TAPS 197

AMSTUD 199A. American Studies Honors Seminar. 1 Unit.
*Enrollment Required for American Studies Honors students in their senior year.

AMSTUD 199B. American Studies Honors Seminar. 1 Unit.
*Required for all American Studies honors students.

AMSTUD 199C. American Studies Honors Seminar. 1 Unit.
*Required for American Studies honors students.

AMSTUD 200J. Doing Oral History. 5 Units.
Students explore exemplary historical works based on oral histories and develop a range of practical skills while completing their own interviews. Topics include oral history and narrative theory, interview techniques, transcript preparation, and digital archiving. Students also learn how to analyze interviews using both qualitative and quantitative methods, practice writing history using oral evidence, and experiment with digital humanities approaches for disseminating oral history, including the Stanford Oral History Text Analysis Project. This course forms part of the "Doing History" series: rigorous undergraduate colloquia that introduce the practice of history within a particular field or thematic area.
Same as: HISTORY 200J

AMSTUD 200R. Doing Community History: Asian Americans and the Pandemic. 5 Units.
Students utilize a community-engaged oral history methodology to produce short video documentaries focused on Asian Americans in the Covid-19 pandemic. In producing these collaborative digital history projects, students learn to evaluate the ways social power influences historical documentation at various levels including the making of sources, the construction of archives, and the telling of historical narratives. We ask: how have race and racism, ethnicity and community, gender and class, shaped the ways that the pandemic has influenced the lives of Asian Americans? To what extent have Asian American experiences with the pandemic been shaped by the recent global protests for racial justice and Black liberation? In studying the pandemic and its relationship to histories of race and racism, how should we understand the place of Asian Americans?.
Same as: ASNAMST 201, HISTORY 200R

AMSTUD 201. History of Education in the United States. 3-5 Units.
How education came to its current forms and functions, from the colonial experience to the present. Focus is on the 19th-century invention of the common school system, 20th-century emergence of progressive education reform, and the developments since WW II. The role of gender and race, the development of the high school and university, and school organization, curriculum, and teaching. Class meetings will typically end around 1:50pm.
Same as: EDUC 201, HISTORY 258B

AMSTUD 214. The American 1960s: Thought, Protest, and Culture. 5 Units.
The meaning of the American 60s emphasizing ideas, culture, protest, and the new sensibility that emerged. Topics: black protest, the new left, the counterculture, feminism, the new literature and journalism of the 60s, the role of the media in shaping dissent, and the legacy of 60s protest. Interpretive materials from film, music, articles, and books.

AMSTUD 215. Understanding Jews. 1-2 Unit.
This discussion-based course will give students an opportunity to explore the constellation of religious, ethnic, national, cultural, artistic, spiritual, and political forces that shape Jewish life in the 21st century. Drawing on historical documents, classical texts, and contemporary events, this course will give students from any background an opportunity to ask hard questions, deepen their own understandings, and challenge their conceptions of what makes Jewish life ¿Jewish.¿ No matter where you went for Sunday school ¿ church, synagogue, the woods, or nowhere at all ¿ this course is a chance to question what you know, and interrogate how you came to know what you know about Jews, Judaism, and Jewish culture.
Same as: JEWISHST 215

AMSTUD 216. Education, Race, and Inequality in African American History, 1880-1990. 3-5 Units.
Seminar. The relationship among race, power, inequality, and education from the 1880s to the 1990s. How schools have constructed race, the politics of school desegregation, and ties between education and the late 20th-century urban crisis.
Same as: AFRICAAM 116, CSRE 216X, EDUC 216, HISTORY 255E

AMSTUD 218. Islam, Race and Revolution: A Pan-American Approach. 3-5 Units.
Taking a pan-American approach to the study of religious traditions, this upper-level course traces the history of the critical intersection between race, religion and revolution among Muslims from the turn of the nineteenth century until the present day. Moving from the Atlantic Revolutions of the late eighteenth and early nineteenth centuries, to the United States, to the decolonizing Third World, and then finally to the contemporary Middle East, this class will emphasize that Islam and race together have been used by many groups in order to challenge existing power structures, agitate for change, and more than occasionally, transform the social, cultural and governmental structures comprising their worlds. Moreover, although this class is concentrated upon religious formations in the Americas, students will explore global events throughout the Muslim world in order to examine how global politics contribute to religious formations, solidarities and identities. At the conclusion of this course, students will be expected to write a 10-15 page research paper, and a topic will be chosen in consultation with the instructor. Students will also be expected to write weekly reflection papers, which will serve to facilitate class discussion. Undergraduates register for 200-level for 5 units. Graduate students register for 300-level for 3-5 units.
Same as: CSRE 218, RELIGST 218, RELIGST 318

AMSTUD 220B. Being John Wayne. 5 Units.
John Wayne's imposing corporeality and easy comportment combined to create an icon of masculinity, the American West, and America itself. Focus is on the films that contributed most to the establishment, maturation, and deconstruction of the iconography and mythology of the John Wayne character. The western and war film as genres; the crisis of and performance of masculinity in postwar culture; gender and sexuality in American national identity; relations among individualism, community, and the state; the Western and national memory; and patriotism and the Vietnam War.
Same as: FILMSTUD 220, TAPS 220A

AMSTUD 224. Nature, Race, and Indigeneity in the U.S. Imagination. 3-5 Units.
Nature is one of the weirdest words in the English language¿it can refer to human trait (it is in her nature), a nonhuman environment (we walked in nature, a divine power (mother nature), or a biological process (¿nature calls¿). Despite¿and indeed, because of¿these ambiguities, nature has played pivotal roles in the territory that has come to be known as the United States. In various guises, nature has inspired pilgrims, pioneers, and tourists. At the same time, nature has staged struggles between settlers and Natives, whites and racialized peoples, upper classes and working classes. As both a cultural construct and a material reality, therefore, nature has brought us together and torn us apart. In this seminar, we will learn how Natives, Latinxs, Blacks, whites, and other ethno-racial groups have depicted and dwelled in the U.S. By engaging with a variety of media¿from literature and visual art to law and public policy¿we will recover conflicting ideas of nature. And by reading in the environmental humanities¿including history, anthropology, and literary criticism¿we will discover how these ideas have impacted human and more-than-human worlds. While our inquiries will take us from prehistory to the present, they will converge on the future; now that we are destroying our ecosystems, extinguishing our fellow species, and transforming our atmosphere, we will ask, is there still such a thing as nature?.
Same as: ENGLISH 224B

AMSTUD 226. Race and Racism in American Politics. 5 Units.
Topics include the historical conceptualization of race; whether and how racial animus reveals itself and the forms it might take; its role in the creation and maintenance of economic stratification; its effect on contemporary U.S. partisan and electoral politics; and policy making consequences.
Same as: CSRE 226, POLISCI 226, POLISCI 326

AMSTUD 226X. Curating Experience: Representation in and beyond Museums. 2-4 Units.
In an age when some 50% of museum visitors only "visit" museums online and when digital technologies have broken open archival access, anyone can be a curator, a critic, an historian, an archivist. In this context, how do museums create experiences that teach visitors about who they are and about the world around them? What are the politics of representation that shape learning in these environments? Using an experimental instructional approach, students will reconsider and redefine what it means to curate experience. (This course must be taken for a minimum of 3 units to satisfy a Ways requirement.).
Same as: CSRE 226X, EDUC 226

AMSTUD 231X. Learning Religion: How People Acquire Religious Commitments. 4 Units.
This course will examine how people learn religion outside of school, and in conversation with popular cultural texts and practices. Taking a broad social-constructivist approach to the variety of ways people learn, this course will explore how people assemble ideas about faith, identity, community, and practice, and how those ideas inform individual, communal and global notions of religion. Much of this work takes place in formal educational environments including missionary and parochial schools, Muslim madrasas or Jewish yeshivot. However, even more takes place outside of school, as people develop skills and strategies in conversation with broader social trends. This course takes an interdisciplinary approach to questions that lie at the intersection of religion, popular culture, and education. May be repeat for credit.
Same as: EDUC 231, JEWISHST 291X, RELIGST 231X

AMSTUD 236. Interfaith Dialogue on Campus: Religion, Diversity, and Higher Education. 2-5 Units.
How are we to talk across religious and spiritual differences? What is the purpose of such dialogues? What do we hope to gain from them? How do such dialogues take shape on college campuses, and what do they indicate about how students cultivate spiritual, political, and civic commitments? This course will explore these questions and others through seminar discussions, fieldwork, and writing that will examine the concepts, assumptions, and principles that shape how we think about interfaith dialogue.
Same as: CSRE 136A, EDUC 436, RELIGST 336X

AMSTUD 240A. Pre-Honors Seminar. 1-5 Unit.
Methods, interpretations, and issues pertinent to honors work in American Studies. Open to juniors interested in honors.

AMSTUD 240Y. The Yiddish Story. 3-5 Units.
The Yiddish language is associated with jokes, folktales, and miracle legends, as well as modern stories. This class traces the development of Yiddish literature through these short oral and written forms, following Jewish writers out of the East European market town to cities in the Soviet Union, Israel, and especially the United States. We conclude with stories written in other languages about Yiddish writers. Readings include Sholem Aleichem, I. L. Peretz, Isaac Bashevis Singer, Esther Singer-Kreitman, Cynthia Ozick, and Dina Rubina. Readings in English; optional discussion section for students who read Yiddish.
Same as: JEWISHST 240

AMSTUD 244. The Visual Culture of the American Home Front, 1941-1945. 5 Units.
How does home front of WWII look now? What sort of meanings appear with the vantage of more than sixty years' distance? Examining Hollywood films from those years -films made during the war but mostly not directly about the war - the seminar focuses on developing students' abilities to write emotion-based criticism and history. Weekly short papers, each one in response to a film screening, are required. Among the films screened: Shadow of a Doubt, Gaslight, I Walked with a Zombie, The Best Years of Our Lives.
Same as: ARTHIST 244

AMSTUD 246. Constructing Race and Religion in America. 4-5 Units.
This seminar focuses on the interrelationships between social constructions of race and social interpretations of religion in America. How have assumptions about race shaped religious worldviews? How have religious beliefs shaped racial attitudes? How have ideas about religion and race contributed to notions of what it means to be "American"? We will look at primary and secondary sources and at the historical development of ideas and practices over time.
Same as: AFRICAAM 236, CSRE 246, HISTORY 256G, HISTORY 356G, RELIGST 246, RELIGST 346

AMSTUD 246B. Pop Art. 5 Units.
A new course on the history and meaning of Pop art in the United States and abroad. The course will feature close study of paintings, photographs, and prints at the Cantor Art Center. The course will be given in the Denning Family Resource Room, located in The Anderson Collection building. If you have any questions regarding the location, please contact Linda Esquivel at lindae@stanford.edu.
Same as: ARTHIST 246B

AMSTUD 250. Senior Research. 1-15 Unit.
Research and writing of senior honors thesis under the supervision of a faculty member. The final grade for the thesis is assigned by the chair based on the evaluations of the primary thesis adviser and a second reader appointed by the program. Prerequisite: consent of chair.

AMSTUD 250J. Baldwin and Hansberry: The Myriad Meanings of Love. 4 Units.
This course looks at major dramatic works by James Baldwin and Lorraine Hansberry. Both of these queer black writers had prophetic things to say about the world-historical significance of major dramas on the 20th Century including civil rights, revolution, gender, colonialism, racism, sexism, war, nationalism and as well as aesthetics and politics.
Same as: AFRICAAM 250J, CSRE 250J, FEMGEN 250J, TAPS 250J

AMSTUD 251C. The American Enlightenment. 5 Units.
The eighteenth century saw the rise of many exciting new political, religious, and scientific theories about human happiness, perfectibility, and progress that today we call "the Enlightenment." Most people associate the Enlightenment with Europe, but in this course we will explore the many ways in which the specific conditions of eighteenth-century North America --such as slavery, the presence of large numbers of indigenous peoples, a colonial political context, and even local animals, rocks, and plants--also shaped the major questions and conversations of the people who strove to become "enlightened." We'll also explore how American Enlightenment ideas have profoundly shaped the way Americans think today about everything from politics to science to race. The class is structured as lecture and discussion, with deep reading in primary sources from the seventeenth and eighteenth centuries.
Same as: HISTORY 251C

AMSTUD 251J. The End of American Slavery, 1776-1865. 4-5 Units.
How did the institution of American slavery come to an end? The story is more complex than most people know. This course examines the rival forces that fostered slavery's simultaneous contraction in the North and expansion in the South between 1776 and 1861. It also illuminates, in detail, the final tortuous path to abolition during the Civil War. Throughout, the course introduces a diverse collection of historical figures, including seemingly paradoxical ones, such as slaveholding southerners who professed opposition to slavery and non-slaveholding northerners who acted in ways that preserved it. Historical attitudes toward race are a central integrative theme.
Same as: AFRICAAM 251J, HISTORY 251J, HISTORY 351J

AMSTUD 256A. Horror Comics. 5 Units.
This seminar will explore the vast array of horror comics. How does horror work in comics, as distinct from prose and cinema? How and why are non-moving images scary? The different narrational strategies of short stories, self-contained works, and continuing series will be explored, as will American, Japanese, and European approaches. Special attention will be given to Frankenstein, in novel, film, illustration, and comics. Example of such sub-genres as literary horror, horrific superheroes, cosmic (Lovecraftian) horror, ecological horror, as well as the horrors of bodies, sexuality, and adolescence will be encountered.nnStudents will read many comics, some comics theory, and will do an in-class presentation on a comic or topic of their choosing. The course is a seminar, so discussion will be continuous and required. Enrollment limited.
Same as: FILMSTUD 256

AMSTUD 256E. The American Civil War: The Lived Experience. 5 Units.
What was it like to live in the United States during the Civil War? This course uses the lenses of racial/ethnic identity, gender, class, and geography (among others) to explore the breadth of human experience during this singular moment in American history. It illuminates the varied ways in which Americans, in the Union states and the Confederate states, struggled to move forward and to find meaning in the face of unprecedented division and destruction.
Same as: AFRICAAM 256E, HISTORY 256E

AMSTUD 258. History of Sexual Violence in America. 4-5 Units.
This undergraduate/graduate colloquium explores the history of sexual violence in America, with particular attention to the intersections of gender and race in the construction of rape. We discuss the changing definitions of sexual violence in law and in cultural representations from early settlement through the late-twentieth century, including slavery, wartime and prison rape, the history of lynching and anti-lynching movements, and feminist responses to sexual violence. In addition to introducing students to the literature on sexual violence, the course attempts to teach critical skills in the analysis of secondary and primary historical texts. Students write short weekly reading responses and a final paper; no final exam; fifth unit research or CEL options.nnLimited enrollment, permission of instructor required. Submit application form and indicate interest in CEL option. Priority admission to History, FGSS, CSRE, AFRICAAM, and AMSTUD declared majors and minors. (Cardinal Course certified by the Haas Center).
Same as: AFRICAAM 192, CSRE 192E, FEMGEN 258, FEMGEN 358, HISTORY 258, HISTORY 358

AMSTUD 260. Disability, Gender, and Identity: Women's Personal Experiences. 5 Units.
This course explores visible and invisible disabilities, focusing on issues of gender and identity in the personal experiences of women. The course emphasizes psychological as well as physical health, the diversity of disability experiences, self-labeling, caretaking, stigma and passing, and social and political aspects. Disabilities covered include blindness, multiple sclerosis, diabetes, arthritis, emotional and learning disabilities, and conditions requiring wheelchairs and other forms of assistance. The readings draw from the disability studies literature and emphasize women's personal narratives in sociological perspective. Note: Instructor Consent Required.
Same as: FEMGEN 260, FEMGEN 360

AMSTUD 261. Personal Narratives in Feminist, Gender, and Sexuality Studies. 4-5 Units.
This course explores the contribution of personal narratives to knowledge in the field of feminist, gender, and sexuality studies. Each week, students do extensive readings of exemplary personal narratives that have contributed in substance and method to the field and that have opened up new areas of inquiry. These narratives deal especially with issues of individual and group identity; gender, sexuality, racial and ethnic diversity; and disability. Students select a topic of special interest to them to focus their readings and guide individual research during the quarter. The approach of the course is feminist, ethnographic, and welcoming of a variety of approaches to personal narrative. Instructor consent required; students apply at the first class meeting.
Same as: FEMGEN 261, FEMGEN 361

AMSTUD 261A. Geography, Time, and Trauma in Asian American Literature. 5 Units.
The notion that homes can be stable locations for cultural, racial, ethnic, and similarly situated identity categories. Tthe possibility that there really is no place like home for Asian American subjects. How geography, landscape, and time situate traumas within fictional Asian American narratives.
Same as: ASNAMST 187

AMSTUD 261E. Mixed Race Literature in the U.S. and South Africa. 5 Units.
As scholar Werner Sollors recently suggested, novels, poems, stories about interracial contacts and mixed race constitute ¿an orphan literature belonging to no clear ethnic or national tradition.¿ Yet the theme of mixed race is at the center of many national self-definitions, even in our U.S. post-Civil Rights and South Africa¿s post-Apartheid era. This course examines aesthetic engagements with mixed race politics in these trans- and post-national dialogues, beginning in the 1700s and focusing on the 20th and 21st centuries.
Same as: AFRICAAM 261E

AMSTUD 261W. Introduction to Asian American History. 5 Units.
This course provides an introduction to the field of Asian American history. Tracing this history between the arrival of the first wave of Asian immigrants to the US in the mid-nineteenth century and the present, we foreground the voices and personal histories of seemingly everyday Asian Americans. In the process, the course disrupts totalizing national historical narratives that center the US nation-state and its political leaders as the primary agents of historical change.
Same as: ASNAMST 261, HISTORY 261E

AMSTUD 262C. African American Literature and the Retreat of Jim Crow. 5 Units.
After the unprecedented carnage of WWII, the postwar era witnessed the slow decline of the segregated Jim Crow order and the onset of landmark civil rights legislation. What role did African American literature and culture play in this historical process? What does this shift in racial theory and praxis mean for black literary production, a tradition constituted by the experience of slavery and racial oppression? Focus on these questions against the backdrop of contemporaneous developments: the onset of the Cold War, decolonization and the formation of the Third World, and the emergence of the "new liberalism.".
Same as: AFRICAAM 262C, CSRE 262C

AMSTUD 262D. African American Poetics. 5 Units.
Examination of African American poetic expressive forms from the 1700s to the 2000s, considering the central role of the genre--from sonnets to spoken word, from blues poetry to new media performance--in defining an evolving literary tradition and cultural identity.
Same as: AFRICAAM 262D

AMSTUD 264. History of Prisons and Immigration Detention. 4-5 Units.
This course will explore the history of the growing prison and immigration detention systems in the United States. They will pay particular attention to how they developed and how they affect different populations.
Same as: CSRE 264, HISTORY 264, HISTORY 364

AMSTUD 267E. Martin Luther King, Jr. - His Life, Ideas, and Legacy. 4-5 Units.
Using the unique documentary resources and publications of Stanford's King Research and Education Institute, this course will provide a general introduction to King's life, visionary ideas, and historical significance. In addition to lectures and discussions, the course will include presentations of documentaries such as Eyes on the Prize. Students will be expected to read the required texts, participate in class discussions, and submit a research paper or an audio-visual project developed in consultation with the professor.
Same as: AFRICAAM 267E, HISTORY 267E

AMSTUD 271. Mexicans in the United States. 5 Units.
This course explores the lives and experiences of Mexicans living in the United States, from 1848 to the present. Themes and topics include: the legacies of colonialism, the Mexican-American War, transnational migration, the effects of economic stratification, race and racialization, and the impact of sexual and gender ideologies on the lives of Mexicans residing north of the border.
Same as: CHILATST 171, CSRE 171H, HISTORY 271

AMSTUD 279X. American Jewish History: Learning to be Jewish in America. 2-4 Units.
This course will be a seminar in American Jewish History through the lens of education. It will address both the relationship between Jews and American educational systems, as well as the history of Jewish education in America. Plotting the course along these two axes will provide a productive matrix for a focused examination of the American Jewish experience. History students must take course for at least 3 units.
Same as: EDUC 279, HISTORY 288D, JEWISHST 297X, RELIGST 279X

AMSTUD 281. Asian Religions in America; Asian American Religions. 4 Units.
This course will analyze both the reception in America of Asian religions (i.e. of Buddhism in the 19th century), and the development in America of Asian American religious traditions.
Same as: ASNAMST 281, RELIGST 281, RELIGST 381

AMSTUD 290. Movies and Methods: Contemporary Black Filmmakers. 5 Units.
Despite the systemic inequalities of the Hollywood system, there is a robust, stylistically diverse cohort of African-American writer/directors at work, including Barry Jenkins, Ava DuVernay, and Ryan Coogler. Jenkins' films (Moonlight, If Beale Street Could Talk), are aesthetically lush, intimate, and understated. DuVernay (When They See Us) foregrounds racial history and injustice in her feature films, television, and documentary work. Coogler followed his realist Fruitvale Station with two powerful genre films with black protagonists (Creed, Black Panther - this last the highest-grossing film by a black director).
Same as: FILMSTUD 290, FILMSTUD 490

AMSTUD 293. Church, State, & Schools: Issues in Education & Religion. 4 Units.
This course will examine interactions between religion and education, focusing on both formal and experiential sites in which people and communities explore, articulate, encounter, and perform religious ideologies and identities. The class will focus on different religious traditions and their encounters the institutions and structures of education in American culture, both in the United States and as it manifests in American culture transnationally.
Same as: EDUC 293, RELIGST 234X

ANTHROPOLOGY

Courses offered by the Department of Anthropology are listed under the subject code ANTHRO on the *Stanford Bulletin's* ExploreCourses web site.

Mission of the Department of Anthropology

The courses offered by the Department of Anthropology are designed to: provide undergraduates with instruction in anthropology; provide undergraduate majors in Anthropology with a program of work leading to the bachelor's degree; and prepare graduate candidates for advanced degrees in Anthropology. Anthropology is devoted to the study of human beings and human societies as they exist across time and space. It is distinct from other social sciences in that it gives central attention to the full time span of human history, and to the full range of human societies and cultures, including those located in historically marginalized parts of the world. It is therefore especially attuned to questions of social, cultural, and biological diversity, to issues of power, identity, and inequality, and to understanding the dynamic processes of social, historical, ecological, and biological change over time. Education in Anthropology provides excellent preparation for living in a multicultural and globally-interconnected world, and helps to equip students for careers in fields including law, medicine, business, public service, research, ecological sustainability, and resource management. Students may pursue degrees in Anthropology at the bachelor's, master's, and doctoral levels.

The Department of Anthropology offers a wide range of approaches to the topics and area studies within the field, including archaeology, ecology, environmental anthropology, evolution, linguistics, medical anthropology, political economy, science and technology studies, and sociocultural anthropology. Methodologies for the study of micro- and macro-social processes are taught through the use of qualitative and quantitative approaches. The department provides students with excellent training in theory and methods to enable them to pursue graduate study in any of the above mentioned subfields of Anthropology.

Undergraduate Programs in Anthropology

- Bachelor of Arts (B.A.)
- Anthropology Minor

In addition to gaining an excellent foundation for graduate research and study, students majoring in Anthropology can pursue careers in government, international business, international development agencies, international education, law, mass media, nonprofit organizations, and public policy.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the degree program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. develop confidence and expertise in oral and written communication and persuasive argumentation
2. identify and engage analytical, conceptual, and real-world problems and make appropriate inferences
3. understand and critically evaluate core knowledge within Anthropology and allied disciplines
4. learn the methods and significance of ethnography as a research approach and method
5. appreciate the relevance of anthropological research to social, political, and economic debates

Graduate Programs in Anthropology

Graduate training in Anthropology at Stanford is designed for students who seek the Doctoral (Ph.D.) degree, and for students who seek the Master of Arts (M.A.) degree only.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in Anthropology and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses in the primary field, as well as related areas, and through experience with independent work, area specialization and field research.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in Anthropology. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of Anthropology and to interpret and present the results of such research.

Field School and Research Opportunities in Anthropology

Students majoring in Anthropology are encouraged to develop field research projects under the supervision of a department faculty member. The department offers research grants to support individually-designed and other summer field research in Anthropology. The department research grants may be used to support field research as a supplement to other field research grants such as the UAR research grants. The department also offers opportunities to participate in faculty-led research projects.

The department's summer research opportunities, include: Franz Boas summer scholars programs and Michelle Z. Rosaldo Summer Field Research Grant program. *Note*: Required courses for the Franz Boas summer scholars program and the Michelle Z. Rosaldo grant program include:

		Units
ANTHRO 93	Prefield Research Seminar	5
or ANTHRO 93B	Prefield Research Seminar: Non-Majors	
ANTHRO 94	Postfield Research Seminar	5

For more information about research opportunities and deadlines, see the department's web site.

Bachelor of Arts in Anthropology

The Department of Anthropology offers a Bachelor of Arts in Anthropology. Eligible students may also pursue a Bachelor of Arts with Honors. (p. 950) The department also offers a minor in Anthropology (p. 950).

Undergraduate training in the Department of Anthropology is designed for students who seek the Bachelor of Arts (B.A.) degree, only. Students may declare a major in Anthropology and earn the B.A. degree by completing the requirements below. The department also offers a minor in Anthropology. The Anthropology B.A. degree program usually requires at least five quarters of enrollment. Students interested in majoring in Anthropology should apply in Axess for the major by the time junior status is achieved at 85 units. Students are encouraged to work closely with a faculty advisor to develop a coherent plan of study.

To declare a major in Anthropology, apply in Axess for the B.A. in Anthropology and contact the department's undergraduate student services officer to prepare the Major Form and Checklist (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthropology_major_form.pdf) and to request a faculty

advisor assignment. Meet with the assigned faculty advisor for approval of the department Major Form and Checklist (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthropology_major_form.pdf) and submit the required forms to the undergraduate student services officer.

Degree Requirements

The B.A. degree in Anthropology may be earned by fulfilling the following requirements:

1. A faculty advisor appointed in the department. A faculty advisor will be assigned by the Undergraduate Committee based on the students chosen emphasis. Undergraduate Anthropology (ANTHRO) majors should plan to meet with their faculty advisor at least once each quarter.
2. A program of 65 units, passed with an overall minimum grade point average of 'C':
   - of the 65 units, 50 units must be in courses with the ANTHRO subject code. 15 may be approved from related areas of study, overseas studies, and/or transfer units.
     - *Note:* any related, overseas studies, or transfer units must be approved by the faculty advisor and by petition to the Undergraduate Committee: submit a faculty advisor approved Undergraduate Program/Course Petition form (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthro_petition_form.pdf) to the undergraduate student services officer for final review by the Undergraduate Committee.
   - of the 65 units, at least 20 units with a minimum grade of 'C' must be in courses with the ANTHRO subject code numbered 100 or above and taught by Anthropology faculty.
   - no more than 10 units of directed reading-style course work may be counted towards the 50 units required for the major in the ANTHRO subject code.
   - no more than 10 units may be taken for a satisfactory/no credit grade: 5 units in ANTHRO courses, and 5 in related or transfer units.
3. A minimum grade of 'B' in the ANTHRO Theory course (ANTHRO 90B Theory of Cultural and Social Anthropology). This should be taken within a year of declaring the major or before the end of the junior year.
4. A minimum grade of 'B' in the ANTHRO Writing in the Major (WIM) course. This can be fulfilled by completing the ANTHRO Theory course (ANTHRO 90B Theory of Cultural and Social Anthropology), and should be taken within a year of declaring the Major or before the end of the junior year.
5. A minimum grade of 'B' in the ANTHRO Methods course (ANTHRO 91 Method and Evidence in Anthropology). This should be taken within a year of declaring the major or before the end of the junior year.
6. Students must enroll in the senior Capstone course, (ANTHRO 193 Anthropology Capstone: Contemporary Debates in Anthropology) during their senior year.
7. An approved plan of study which includes an emphasis chosen from the list below. Students must complete a minimum of 20 units in their chosen emphasis of which 10 units must be numbered 100 or above.
   - Cultural and Social Anthropology
   - Environmental Anthropology
   - Medical Anthropology
   - Self-Designed Emphasis (with faculty advisor and undergraduate committee approval by submitting Undergraduate Program/Course Petition form (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthro_petition_form.pdf), only)
8. Competence in a foreign language beyond the first-year level. Such competence is usually demonstrated by completing a 5 unit course at the second-year level with a minimum grade of 'B-'.
   - Students must submit the Language Committee Petition form (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthrograduatelanguagecommitteepetition_0.pdf)to fulfill the requirement. The requirement may also be met by special examination administered through the Language Center.
     - Up to 5 units from a second-year language course can count towards the "Related ANTHRO" category of the major requirements.
9. At least five quarters of enrollment in the major. Each candidate for the B.A. in Anthropology should declare a major by the first day of the second quarter of the third year of study.

Advising

Advising is an important component of the Anthropology major. Students are encouraged to work closely with their major advisor throughout their pursuit of the B.A. degree. Advising milestones for the major include the following:

1. In the quarter in which the major is declared, students meet with their assigned faculty advisor, create a rigorous plan of study based on topical breadth, obtain advisor approval of an Anthropology emphasis as part of the plan of study, and obtain the major advisor's signature on the Major Form and Checklist (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthropology_major_form.pdf).
2. Undergraduate Anthropology majors should plan to meet with their major faculty advisor at least once each quarter before the final study list deadline. Any revisions to the initial checklist must be approved by the faculty advisor.
3. Undergraduate Anthropology majors must submit an updated and approved Major Form and Checklist (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthropology_major_form.pdf) to the undergraduate student services officer in the quarter before graduating.

Required Courses

1. Writing in the Major course

Undergraduate majors can fulfill the Writing in the major course requirement for the B.A. in Anthropology by taking the ANTHRO theory course, ANTHRO 90B Theory of Cultural and Social Anthropology.

2. Theory course

The following course fulfills the ANTHRO undergraduate major theory course requirement for all emphases:

		Units
ANTHRO 90B	Theory of Cultural and Social Anthropology	5

3. Methods course

The following course fulfills the ANTHRO undergraduate major methods course requirement for all emphases:

		Units
ANTHRO 91	Method and Evidence in Anthropology	5

4. Capstone Course

The following course fulfills the ANTHRO undergraduate major capstone course requirement for all emphases:

		Units
ANTHRO 193	Anthropology Capstone: Contemporary Debates in Anthropology	5

Department Courses

Students should complete a minimum of 20 units from the courses listed below within their chosen emphases; 10 of these units must be numbered 100, or above. Departmental courses may fulfill the requirements for more than one emphasis. For

example: with approval, an Archaeology course may fulfill a course needed to meet a course requirement in the Medical Anthropology emphasis. Undergraduates may also petition to the undergraduate committee for a self-designed emphasis in the Anthropology major by submitting the Undergraduate Program/Course Petition Form (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthro_petition_form.pdf).

		Units
Cultural & Society Anthropology Courses		
ANTHRO 1	Introduction to Cultural and Social Anthropology	5
ANTHRO 39	Sense of Place	3
ANTHRO 34	Animals and Us	5
ANTHRO 42	Megacities	5
ANTHRO 90B	Theory of Cultural and Social Anthropology	5
ANTHRO 91	Method and Evidence in Anthropology	5
ANTHRO 106	Incas and their Ancestors: Peruvian Archaeology	3-5
ANTHRO 126	Urban Culture in Global Perspective	5
Medical Anthropology Courses		
ANTHRO 82	Medical Anthropology	5
ANTHRO 138	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise	5
ANTHRO 154	Anthropology of Drugs: Experience, Capitalism, Modernity	5
ANTHRO 175	Human Skeletal Anatomy	5
ANTHRO 176	Cultures, Minds, and Medicine	1
ANTHRO 182N	Smoke and Mirrors in Global Health	3
ANTHRO 186	Culture and Madness: Anthropological and Psychiatric Approaches to Mental Illness	5
Environmental Anthropology Courses		
ANTHRO 166	Political Ecology of Tropical Land Use: Conservation, Natural Resource Extraction, and Agribusiness	3-5
Senior Courses		
ANTHRO 95B	Independent Study for Honors or Senior Paper Writing	1-5
ANTHRO 193	Anthropology Capstone: Contemporary Debates in Anthropology	5
Senior Paper/Honors & Research Courses		
ANTHRO 92A	Undergraduate Research Proposal Writing Workshop	2-3
ANTHRO 92B	Undergraduate Research Proposal Writing Workshop	2-3
ANTHRO 93	Prefield Research Seminar	5
ANTHRO 93B	Prefield Research Seminar: Non-Majors	5
ANTHRO 94	Postfield Research Seminar	5
ANTHRO 95	Research in Anthropology	1-10
ANTHRO 96	Directed Individual Study	1-10
ANTHRO 97	Internship in Anthropology	1-10

Emphasis Courses

The following course listing includes courses taught by the Anthropology faculty in Archaeology. These courses may be considered towards the published emphasis requirements in the Anthropology bachelors degree with the following emphases in the Anthropology major: cultural and social, environmental, medical, and self-designed.

Archaeology Courses

		Units
ANTHRO 3	Introduction to Archaeology	3-5
ANTHRO 34	Animals and Us	5
ANTHRO 91A	Archaeological Methods	5
ANTHRO 98B	(No longer offered)	3-5
ANTHRO 106	Incas and their Ancestors: Peruvian Archaeology	3-5
ANTHRO 108E	(No longer offered)	3
ANTHRO 113B	(No longer offered)	5
ANTHRO 115	The Social life of Human Bones	3-5
ANTHRO 118	(No longer offered)	4
ANTHRO 119	Zooarchaeology: An Introduction to Faunal Remains	5
ANTHRO 134	(No longer offered)	5

Plan of Study (example)

Please see the example Plan of Study grid below designed for an Anthropology major beginning junior year (from 85 units). This sample course schedule details the courses needed to satisfy the requirements for the Culture & Society emphasis.

Junior	Units			
	Autumn	Winter	Spring	
Method and Evidence in Anthropology (ANTHRO 91)	5			
Undergraduate Research Proposal Writing Workshop (ANTHRO 92A)	2-3			
(ANTHRO 178A) (No longer offered)	5			
Megacities (ANTHRO 42)	5			
Undergraduate Research Proposal Writing Workshop (ANTHRO 92B)			2-3	
Introduction to Cultural and Social Anthropology (ANTHRO 1)			5	
Theory of Cultural and Social Anthropology (ANTHRO 90B)			5	
(ANTHRO 15) (No longer offered)			3	
Prefield Research Seminar (ANTHRO 93)				5
(ANTHRO 98F) (No longer offered)				1-3
(ANTHRO 136) (No longer offered)				5
Medical Anthropology (ANTHRO 82)				5
Year Total:	17-18	15-16		16-18

Senior	Units			
	Autumn	Winter	Spring	
Urban Culture in Global Perspective (ANTHRO 126)	5			
Senior and Master's Paper Writing Workshop (ANTHRO 199)	1-2			
Postfield Research Seminar (ANTHRO 94)	5			
Anthropology Capstone: Contemporary Debates in Anthropology (ANTHRO 193)	5			
(ANTHRO 152) (No longer offered)			5	
(ANTHRO 139) (No longer offered)			5	
Senior and Master's Paper Writing Workshop (ANTHRO 199)			1-2	
Independent Study for Honors or Senior Paper Writing (ANTHRO 95B)				1-5
(ANTHRO 149) (No longer offered)				5
Year Total:	16-17	11-12		6-10
Total Units in Sequence:				81-91

Course selections may vary depending on the students chosen emphasis. The number of units needed to satisfy the Anthropology major requirements may also vary depending on the student's current undergraduate status and units accomplished previously before declaration of the Anthropology major.

Research Courses

Courses listed are recommended for students writing a research paper in the major.

		Units
ANTHRO 92A	Undergraduate Research Proposal Writing Workshop	2-3
ANTHRO 93B	Prefield Research Seminar: Non-Majors	5
ANTHRO 93	Prefield Research Seminar	5
ANTHRO 94	Postfield Research Seminar	5
ANTHRO 95	Research in Anthropology	1-10
ANTHRO 199	Senior and Master's Paper Writing Workshop	1-2
Total Units		19-30

Senior Courses

		Units
ANTHRO 95B	Independent Study for Honors or Senior Paper Writing	1-5
ANTHRO 193	Anthropology Capstone: Contemporary Debates in Anthropology	5

Senior Paper

The senior paper program in Anthropology provides majors with the opportunity to conduct original research under the guidance of an Anthropology faculty member. All Anthropology majors are encouraged to write a senior paper. Interested Anthropology majors of junior standing may apply to the senior paper program by submitting a Senior Paper Application (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthro_senior_paper_application_form.doc_.pdf), (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/2017-2018_senior_paper_application_form.doc_.pdf) including a research topic/title of the proposed senior paper project, a two page abstract/proposal, and a letter of reference from their faculty advisor to the undergraduate student services officer on or by February 15 in the junior year. Enrollment in ANTHRO 95 Research in Anthropology is recommended during Autumn and Winter quarters of the senior year. Students must enroll in ANTHRO 95B Independent Study for Honors or Senior Paper Writing in the final quarter of the undergraduate degree program before graduating. The senior paper is submitted in the final quarter before graduation. For more information, see the undergraduate student services officer.

Honors Program

The honors program in Anthropology provides eligible Anthropology majors with an opportunity to conduct original ethnographic, field, laboratory, or library-based research under the guidance of an Anthropology faculty member. All Anthropology majors are urged to consider applying to the Honors Program in Anthropology. Interested Anthropology majors of junior standing may apply for admission to the honors program by applying first in Axess, submitting an Honors Program Application and Checklist (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthropology_honors_application_and_checklist.pdf), including a research topic/title of the proposed honors project, a two page abstract/proposal, a transcript, and a letter of reference from the faculty or honors advisor, to the undergraduate student services officer on or by February 15 in the junior year.

Department majors are eligible to apply for honors candidacy with a 3.4 GPA in the major, a 3.0 GPA in overall course work, and with no more than one incomplete listed on the transcript at the time of application. Students interested in the honors program are encouraged to apply for Summer Quarter research funding through the Department of Anthropology, Undergraduate Advising and Research, and area studies centers. In most cases, honors students apply for such funding early in the junior year. This process requires advanced planning as the Spring Quarter research deadline falls before the honors application due date.

Students must enroll in ANTHRO 95B Independent Study for Honors or Senior Paper Writing in the final quarter of the undergraduate degree program and earn a grade of 'B+' or better to graduate with honors. Students must submit a penultimate draft of their honors thesis to the honors advisor (first reader) and second reader by the last day of Spring Quarter examination period. Students must submit the final draft of their honors thesis to their honors advisor (first reader) and second reader, electronically or printed, no later than May 5 of Spring Quarter of senior year. The Honors advisor and the second reader must review and approve the final draft submission to confirm satisfactory completion of the honors paper and approved honors status. A final copy of the honors paper must be submitted to the undergraduate student services officer no later than the published Spring Quarter course withdrawal deadline. If ineligible for honors status, students must withdraw their request to graduate with honors via Axess. For more information, see the undergraduate student services officer.

Minor in Anthropology

To declare a minor in Anthropology, apply in Axess and contact the department's undergraduate student services officer to prepare the Minor Form and Checklist (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthropology_minor_form.docx_.pdf) and request a faculty advisor assignment. Also, meet with the assigned faculty advisor for approval of the department Major Form and Checklist (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthropology_minor_form.docx_.pdf) and submit the required forms to the undergraduate student services officer. Students must apply in Axess for the undergraduate minor in Anthropology by the last day of the quarter at least two quarters before degree conferral.

Requirements for the minor in Anthropology include the following:

1. A faculty advisor appointed in the Department of Anthropology.
2. A program of 30 units, with a minimum grade of 'C':
   - Of the 30 units, a minimum of 10 units must be taken from the chosen ANTHRO emphasis.
   - Of the 30 units, a minimum of 15 units must be ANTHRO courses numbered 100 or above.
   - Of the 30 units, 10 units may be approved from related areas of study, overseas studies, and transfer units.
     - *Note:* any related, overseas studies, or transfer units must be approved by the faculty advisor and by petition to the Undergraduate Committee: submit a faculty advisor approved Undergraduate Program/Course Petition form (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthro_petition_form.pdf) to the undergraduate student services officer for final review by the Undergraduate Committee.
   - No more than 5 units of directed reading-style course work may be counted towards the minor and may only be included among the 10 related units permitted for the minor.
   - No more than 5 units may be taken for a satisfactory/no credit grade.
3. A course of study chosen from an Anthropology emphasis listed below and approved by the faculty advisor:
   - Cultural and Social Anthropology
   - Environmental Anthropology
   - Medical Anthropology
   - Self-designed Emphasis (with faculty advisor and undergraduate committee approval, only)

4. At least two quarters of enrollment in the minor. Each candidate for the minor in Anthropology should declare by the last day of the quarter at least two quarters before the quarter of degree conferral.

Advising milestones for the minor include the following:

1. In the quarter in which the minor is declared, the student must meet with his or her assigned advisor, create a rigorous course of study based on topical breadth, and obtain advisor approval for the checklist.
2. Any revisions to the initial checklist must be approved by the faculty advisor.
3. Undergraduate Anthropology minors must submit an updated minor checklist and planning form to the undergraduate student services officer in the quarter before graduating.

Coterminal Master's Degrees in Anthropology

Graduate enrollment at Stanford University for three consecutive quarters of full tuition for at least 45 units is usually required of all candidates for the coterminal M.A. degree. Coterminal M.A. students must matriculate in the M.A. graduate program for a minimum of two quarters (excluding the Summer Quarter) with Anthropology faculty advising and supervision.

M.A. students in Anthropology must take a minimum of 45 units of Anthropology course work beyond the undergraduate degree with an overall minimum grade point average of 3.0. Coterminal M.A. students may transfer units from the two quarters previous to the graduate admit quarter. For the master's degree, all courses must be at or above the 100 level, and at least 23 of the required 45 units must be taken at either the ANTHRO 200- or 300-level.

The M.A. program usually requires more than one year of study. However, full-time students entering the program with appropriate background should complete the M.A. degree program within three consecutive quarters after the student's first quarter of master's-level enrollment.

The University allows no transfer units into the master's program. To provide a meaningful master's program within one year, advance planning of course work with a faculty advisor is required. Requirements for the coterminal M.A. program must be completed within three years.

It is recommended by this department that a student who accepts an offer of admission to the Anthropology coterminal master's program, defer their undergraduate bachelor's conferral until the graduate M.A degree requirements have been completed. The student can then request to graduate in both the bachelor's and master's degrees simultaneously. Students are advised to consult the undergraduate student services officer.

Admission to the Coterminal Master's Degree Program

The deadline for graduate applications to the coterminal M.A. degree program in Anthropology is December 1, 2020. Stanford University undergraduate majors are eligible to apply for the coterminal M.A. degree program if they have a 3.4 GPA in their department major, a 3.0 GPA in overall course work, and have no more than one incomplete listed on the transcript at the time of application. Successful applicants to the M.A. program may enter only in the following Autumn Quarter. However, the department may consider a request for early deferral of admission in the Spring Quarter by petition. Coterminal M.A. degree applicants are not required to submit their Graduate Record Examination scores.

Applicants must submit the following:

1. Online Application for Admission to Coterminal Master's Program
2. Preliminary Program Proposal, Coterminal Degree Program
3. Coterminal Course Approval form
4. Two Letters of Recommendation. Letters of recommendation must be accompanied by signed Recommendation Form.
5. All relevant transcripts
6. A 2-3 page, singled-spaced Statement of Purpose
   a. For further information on how to write a personal statement please contact your faculty recommenders. You may also contact current graduate students in Anthropology.
   b. For tips on writing Statement of Purpose and Personal Statement Essays, see available resources at the Hume Center for Writing and Speaking (https://undergrad.stanford.edu/tutoring-support/hume-center/).
7. Writing Sample in English: A 10-12 page paper giving evidence of both writing ability and the capacity for research, analysis, and original thought at the graduate level, and demonstrating the ability to use theory in relation to evidence. If your writing sample is longer than 10-12 pages, please indicate which 10-12 pages should be reviewed by the admissions committee.

See the department's web site for additional information.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken two quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to the graduate career. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Degree Options

Students may pursue one of two possible department tracks in the coterminal Anthropology M.A. degree program. The tracks are:

- Archaeology
- Culture and Society

The tracks are not declarable in Axess.

Master of Arts in Anthropology

University requirements for the terminal M.A. are described in the "Graduate Degrees (p. 65)" section of this bulletin.

The Department of Anthropology offers the terminal M.A. degree to the following:

1. Graduate applicants who apply from outside the University for admission to the terminal M.A. program in Anthropology.

2. Stanford graduate students, taking advanced degrees in other departments or schools at Stanford, who are admitted to the terminal M.A. program in Anthropology.
3. Anthropology Ph.D. students at Stanford University who fulfill the M.A. degree requirements on the way to the Ph.D. degree.

Graduate applicants who apply from outside the University and whose ultimate goal is the Ph.D. degree should apply directly to the Ph.D. degree program. Applicants who are offered admission to the terminal Masters degree program may not transfer to the Ph.D. degree program; they must reapply on the same basis as other Ph.D. applicants and in competition with the Ph.D. applicants.

Current graduate applicants who are taking an advanced degree in other departments or schools at Stanford apply for admission to the M.A. in Anthropology (on the way to another graduate degree program) by submitting the Intention to Apply to the Anthropology M.A. for current Stanford Graduate Students form (https://anthropology.stanford.edu/department/forms-and-documents/graduate-forms-and-references/) and the University Registrar's Graduate Authorization Petition (submitted via Axess) by December 1, 2020. If approved, an applicant usually matriculates in the M.A. beginning in the following Spring Quarter, or in the following Autumn Quarter.

Anthropology Ph.D. students choosing to take the M.A. in Anthropology on the way to the Ph.D. are governed by separate requirements described in the Anthropology Ph.D. Guide (https://anthropology.stanford.edu/department/forms-and-documents/graduate-forms-and-references/).

Graduate enrollment at Stanford University for three consecutive quarters of full tuition for at least 45 units is required of all candidates for the terminal master's degree. M.A. students in Anthropology must take a minimum of 45 units of course work with an overall minimum grade point average of 3.0. For the Masters degree, all courses must be at or above the 100 level, and, at least 23 of the required 45 units must be taken at either the ANTHRO 200 or 300-level.

The M.A. program may require more than one year of study. However, full-time students entering the program with appropriate background should complete the M.A. degree program within three consecutive calendar quarters after the student's first quarter of master's-level enrollment. The University allows no transfer units into the master's program. To provide a meaningful master's program within one year, advance planning of course work with a faculty advisor is required. Requirements for the terminal master's program must be completed within three years.

For further information about the Department's M.A. degree program requirements, please consult the Department webpages.

Admission to the Master's Degree Program

The deadline for graduate applications to the M.A. degree program in Anthropology is December 1, 2020. Successful applicants to the M.A. program may enter only in the following Autumn Quarter. Additional terminal M.A. degree program application procedures are required by the Department. The GRE test scores are not required by the department for admission to the MA degree program in Anthropology. Please consult the Department webpages.

No financial support is available to students enrolled for the M.A. degree.

Degree Requirements

Requirements for the coterminal and terminal master's degree program include the following:

1. A faculty advisor appointed in the Department of Anthropology.
2. A program of 45 units, taken at the 100 level or higher with a minimum grade of 'B'. *Note:* At least 23 of the 45 units must be taken at the 200/300 level.
   - of the 45 units, no more than 15 units may be approved from related areas of study or overseas studies.
   - of the 45 units, no more than 10 units of directed reading-style course work may be counted towards the degree.
   - of the 45 units, no more than 5 units may be taken for a satisfactory/no credit grade.
3. A minimum grade of 'B' in one graduate-level ANTHRO Theory course from the chosen track. Please note that ANTHRO theory courses are usually considered as department review courses.
4. A minimum grade of 'B' in one graduate-level ANTHRO Methods course from the chosen track. Please note that ANTHRO methods courses are not considered as department review courses. [Student's seeking to fulfill the Department's requirement for methods training may petition the graduate committee for an alternate way (i.e. other course or training) to fulfill the Department methods requirement].
5. A minimum grade of 'B' in four ANTHRO Review courses from the chosen track, listed at the 200-level or higher, taught by Anthropology faculty, and taken as a five unit course.
6. A self-designed plan of study chosen from one of the following Anthropology tracks; the tracks are not declarable in Axess.:
   - Archaeology
   - Culture and Society
7. Submission of an approved First-year Ph.D., Ph.D. Minor, or M.A. plan of study form (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthro_firstyearphdphdminorormaplanofstudyform2020.pdf) and an approved First-year Ph.D., Ph.D. Minor, or M.A. graduate report of degree progress form (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthro_firstyearphdphdminorormareportofdegreeprogressform.pdf), inclusive of a field research, laboratory research or library-based paper proposal, by the last day of the first quarter of the Master's degree program.
8. Submission of an approved Program proposal for a Masters degree form (https://stanford.app.box.com/v/progpropma/) by the last day of the first quarter of the Master's degree program.
9. Presentation of the Master's research project at the Department's Master's (Honors) paper presentation event in Spring Quarter, optional.
10. Submission of the Master's paper reviewed by two faculty members (advisor and reader). For the Culture and Society track, the paper can be a field research or library-based research paper. For the Archaeology track, the paper can also be a laboratory research paper. For both Tracks, Masters students are required to enroll in the directed reading-style course ANTHRO 441 Master's Project in the final quarter of the M.A. degree program, and earn a grade of 'B', or better.

Required Courses

		Units
Archaeology Track, Required Theory (Review) Course		
ANTHRO 303	Introduction to Archaeological Theory	5
Culture and Society Track, Required Theory (Review) Courses		
ANTHRO 301	History of Anthropological Theory, Culture and Society	5
-or-		
ANTHRO 301A	Foundations of Social Theory	5
-or-		
ANTHRO 300	Reading Theory Through Ethnography	5

		Units
Archaeology Track, Required Methods Course		
ANTHRO 307	Archaeological Methods	5
Culture and Society Track, Required Methods Course		
ANTHRO 306	Anthropological Research Methods	5
or comparable approved course at the 200 level or greater		

		Units
Required Course (All Tracks)		
ANTHRO 441	Master's Project	1-5

Recommended Courses

For both tracks, attendance at the Departmental colloquium each quarter is recommended for all Master's students. Students may enroll in the following course for additional units.

		Units
ANTHRO 444	Anthropology Colloquium	1
ANTHRO 445	Anthropology Brown Bag Series	1

Doctor of Philosophy in Anthropology

University requirements for the Ph.D. are described in the "Graduate Degrees (p. 65)" section of this bulletin.

Admission

The deadline for graduate application to the Ph.D. degree program is December 1, 2020. Successful applicants for the Ph.D. program may enter only in Autumn Quarter. It is the Department of Anthropology's policy not to defer graduate admission. The GRE test scores are not required by the department for admission to the Ph.D. degree program in Anthropology. Additional department application requirements and procedures are required. Please consult the department Graduate Admissions webpage (https://anthropology.stanford.edu/graduate-program/graduate-admission/).

Financial Support

The Department of Anthropology endeavors to provide additional financial support (through fellowships, and teaching and research assistantships) to all students who maintain satisfactory degree progress in years one through five of the Ph.D. program. San Francisco Bay Area residency during the Autumn, Winter, and Spring Quarters in academic cohort years one through five is required for eligibility to receive department funding. For a statement on residency in the 2020-2021 academic year and COVID19, please see the Department COVID-19 Policies (p. 957) section of the Bulletin. Beginning in the 2020-2021 academic year, Ph.D. students are eligible to receive 4 quarters of University funding support during the Autumn, Winter, Spring and Summer Quarters in cohort year one through five of the Ph.D. degree program. Funding is given based on the department evaluation of individual student time to degree progress.

Degree Progress

First-year students who have not obtained a graduate degree previous to entering the Ph.D. program and who have not obtained extramural funding previous to entering the Ph.D. program, are required to submit one extramural funding application to a funding agency (i.e. NSF GRFP, or other similar funding support) supporting graduate doctoral training (for example, funding support for graduate training during the first three years of the Ph.D. degree program) by the first day of finals week in the Autumn Quarter of the first year. First-year students who have graduate work or a graduate degree previous to entering the Ph.D. or who are foreign national students may be ineligible to submit a funding application for graduate training. In this circumstance, first-year students are required to draft a funding proposal equivalent to the NSF GRFP for submission to the first-year faculty mentor by the first day of finals week in the Autumn Quarter of the first year.

Ph.D. students may apply to the Department for Exceptional pre-dissertation Summer Quarter research funding support in cohort years one through three. These funds can be approved for research in addition to the standard Summer Quarter funding support. Exceptional Summer Quarter research funding can be requested by submitting the Application for Summer Quarter Funding Support in the First, Second, or Third Year of the Ph.D form (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthroapplicationforsummerquarterfundingsupport1.pdf).

To confirm eligibility for the standard Summer Quarter funding in the First year, Ph.D. students submit the First-year Ph.D., Ph.D. minor, or M.A. Report of Degree Progress (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthro_firstyearphdphdminorormareportofdegreeprogressform.pdf) form (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthro_firstyearphdphdminorormareportofdegreeprogressform.pdf), inclusive of an approved pre-dissertation research proposal, on or by May 15 in the Spring Quarter of the first year confirming eligibility for standard Summer Quarter funding support.

To confirm eligibility for the standard Summer Quarter funding in the Second year, Ph.D. students submit the Second Year Ph.D. Report of Degree Progress and Evaluation of Candidacy form (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthrosecondyeardegree_progressandcandidacyeligibilityform.pdf), inclusive of an approved pre-dissertation research proposal, confirmation of the teaching plan and/or one full time quarterly teaching assistant assignment, and advancement to candidacy by the end of spring quarter in the second year.

To confirm eligibility for standard Summer Quarter funding in the Third year, Ph.D. students submit the Third Year Ph.D. Report of Qualifying Examination Status and Associated Oral Component Meeting Status form (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthrothirdyearphdreportqualifyingexaminationstatus_0.pdf) and the Third Year Ph.D. Dissertation Proposal Meeting form (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthrodissertationproposal.pdf), inclusive of successful completion of the department qualifying examinations and the oral component meeting, and approval of the dissertation proposal by the dissertation reading committee.

To confirm eligibility for standard Summer Quarter funding in the Fourth year, Ph.D. students submit the Fourth-year graduate report of degree progress form (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthrofourthyeardegreeprogressform.pdf) on or by May 15th in the Spring Quarter of the fourth year detailing information on completion of dissertation research and confirmation of Bay Area residency. For a statement on residency in the 2020-2021 academic year and COVID19, please see the Department COVID-19 Policies (p. 957) section of the Bulletin.

To confirm eligibility for standard Summer Quarter funding in the Fifth year, Ph.D. students submit the Fifth-year Dissertation Writer's Report on Time to Degree Completion form (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthrodissertationwritersreportontimetodegreecompletionform.pdf) on or by May 15th in the Spring Quarter of the fifth year detailing information on dissertation writing, grant application, confirmation of Bay Area residency. For a statement on residency in the 2020-2021 academic year and COVID19, please see the Department COVID-19 Policies (p. 957) section of the Bulletin.

A department offer of Sixth-year teaching affiliateship is dependent on the availability of funds and circulation of a call for teaching affiliates in the fifth year of the Ph.D. Assignments may be given at the discretion

of the curriculum committee. Confirmation of Bay Area residency is required. For a statement on residency in the 2020-2021 academic year and COVID19, please see the Department COVID-19 Policies (p. 957) section of the Bulletin.

Program

The Ph.D. in Anthropology allows the student to develop a flexible program reflecting special research interests, under the supervision of a faculty committee, chosen by the student. Students are encouraged to plan for completion of all work for the Ph.D. in five years. Matriculation in the Ph.D. is full-time only. In order to be eligible for department and intramural support, students must reside locally through the Autumn, Winter and Spring Quarters of academic years one through five. For a statement on residency in the 2020-2021 academic year and COVID19, please see the Department COVID-19 Policies (p. 957) section of the Bulletin. The University oral examination may be scheduled in the fifth year or beyond depending upon a student's time to degree completion. Ph.D. students in Anthropology must complete a minimum of 135 quarter units with a minimum grade point average (GPA) of 3.0 (B). The maximum allowable number of transfer units is 45.

Degree Options

Students may pursue one of two different tracks in the Anthropology Ph.D. degree program. The tracks are not declarable in Axess and do not appear on the transcript or the diploma. The tracks are:

- Archaeology
- Culture and Society

Degree Requirements

For students who matriculate beginning 2020-2021, the requirements for the doctoral degree program include the following:

1. Students must submit the First-year Ph.D., Ph.D. minor, or M.A. plan of study (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthro_firstyearphdphdminorormaplanofstudyform.pdf) form detailing intended course enrollment, milestone accomplishment, and teaching assistant assignment to be completed at the beginning of each year in the Ph.D. program . The First-year Ph.D., Ph.D. minor, or M.A. plan of study (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthro_firstyearphdphdminorormaplanofstudyform.pdf) form should be submitted by the first day of Autumn Quarter. This form also confirms the student's chosen track in Archaeology or in Culture and Society.
2. Students must pass six graduate level ANTHRO subject code department review courses, with a minimum grade of 'B+', appropriate for the student's chosen track, within the first two years of the degree program. For a statement on grading in the 2020-2021 academic year and COVID19, please see the Department COVID-19 Policies (p. 957) section of the Bulletin. Department review courses are usually those seminar-style courses, usually given at the 300-level, and taught by tenure-line Anthropology faculty who are appointed in the department.
3. In the first year of the program:
   a. pass with a minimum grade of 'B+' the theory course(s) as required for the chosen track in Archaeology or Culture and Society:

		Units
Archaeology Track, Required Theory (Review) Course		
ANTHRO 303	Introduction to Archaeological Theory	5
Culture and Society Track, Required Theory (Review) Courses		
ANTHRO 300	Reading Theory Through Ethnography	5
ANTHRO 301	History of Anthropological Theory, Culture and Society	5
ANTHRO 301A	Foundations of Social Theory	5

   b. pass with a minimum grade of 'B+' one or more methods courses as required for the chosen track in Archaeology:

		Units
Archaeology Track, Required Methods Course		
ANTHRO 307	Archaeological Methods	5

(may be taken in either the first or second year of the PhD program)

   c. complete at least 50 units by the end of Spring Quarter in the first year (i.e. suggested enrollment minimum of 16-18 units enrolled in each quarter during the Autumn, Winter, and Spring Quarters; and, 3 units enrolled, only, in the Summer Quarter).
   d. as scheduled by the Department, attend the Department ethics workshop for review of ethics in Anthropology. Confirm attendance and participation in the department review of ethics workshop on or by May 15th in Spring Quarter of the first year.
   e. enroll in ANTHRO 310G Introduction to Graduate Studies during Autumn Quarter (all tracks).
   f. Culture and Society track students, only, enroll in ANTHRO 311G Introduction to Culture and Society Graduate Studies in Anthropology during Winter and Spring quarters for 1-2 units (no more than 5 units total over two quarters).
   g. attend the Department colloquial series each quarter (required). Enrollment in ANTHRO 444 Anthropology Colloquium is optional.
   h. attend the Department brown bag series each quarter (strongly encouraged). Enrollment in ANTHRO 445 Anthropology Brown Bag Series is optional.
   i. submit the First-year Ph.D., Ph.D. minor, or M.A. graduate report of degree progress (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthro_firstyearphdphdminorormareportofdegreeprogressform.pdf) form inclusive of the research proposal by May 15th in Spring Quarter of the first year. Receive final approval for the pre-dissertation research proposal by the first day of finals week in Spring Quarter.
   j. submit at least one extramural funding application within the first year (deadlines are usually early Autumn Quarter and advanced planning is required). If ineligible to submit an extramural funding proposal due to previous graduate work, nationality, or other, submit a draft proposal in the style of a National Science Foundation (NSF) Graduate Research Fellowship Program (GRFP) to the faculty adviser.
   k. complete the appropriate CITI tutorial for non-medical human subjects, and, either submit a non-medical human subjects protocol, based on the pre-dissertation research proposal, to the Institutional Review Board before departing for Summer Quarter field research in the first year, or confirm approval for exempt status. Alternatively, a notice of determination may be confirmed with the Institutional Review Board for a pilot study proposal that does not require protocol submission.
   l. complete the appropriate CITI tutorial for Responsible Conduct of Research on or by May 15 in Spring Quarter.
   m. Optional: upon completion of the above requirements, and with recommendation from the faculty advisor and department chair, request the Master's degree 'on the way to the Ph.D.' by the first day of finals week in Spring Quarter, or during any other registered quarter following this time, if desired. To initiate this request for the Masters degree, submit the Graduate Authorization Petition (https://registrar.stanford.edu/students/graduate-degree-progress/graduate-program-authorization-petition/) form via Axess and submit the Program Proposal for a Masters degree

(https://stanford.app.box.com/v/progpropma/) form to the student service officer.

n. In the second year:
   i. pass with a minimum grade of 'B+' the methods course(s) appropriate for the chosen track in Archaeology or Culture and Society:

		Units
Archaeology Track, Required Methods Course		
ANTHRO 307	Archaeological Methods	5
Culture and Society Track, Required Methods Course		
ANTHRO 306	Anthropological Research Methods	5

   ii. pass with a minimum grade of 'B+' the proposal writing course appropriate for the chosen track in Archaeology or Culture and Society:

		Units
Archaeology Track, Required Proposal Writing Course		
ANTHRO 308A	Proposal Writing Seminar in Archaeology	5
Culture and Society Track, Required Proposal Writing Course		
ANTHRO 308	Proposal Writing Seminar in Cultural and Social Anthropology	5

   iii. for both tracks, submit the pre-dissertation proposal by the first day of finals week in Spring Quarter. Receive approval for the draft proposal of the second year summer pre-dissertation research before departing for field research.
   iv. complete at least 45 units of course work in the second year and a total of at least 45 units overall including the Summer Quarter (i.e. suggested enrollment minimum of 16-18 units enrolled in each quarter during the Autumn, Winter, and Spring Quarters; and, 3 units enrolled, only, in the Summer Quarter). Students must have completed a total of 95 units overall by the end of the second year.
   v. pass with a minimum grade of 'B+' any remaining ANTHRO subject code review courses to complete the six review course requirement. For a statement on grading in the 2020-2021 academic year and COVID19, please see the Department COVID-19 Policies (p. 957) section of the Bulletin.
   vi. as scheduled by the Department, attend the teaching assistant training workshop (usually scheduled during or after the week before the first day of Autumn Quarter).
   vii. complete one quarterly teaching assistant assignment in the second year.
   viii. submit the Second-year graduate report of degree progress and candidacy eligibility (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthrosecondyeardegree_progressandcandidacyeligibilityform.pdf) form, with the final draft of the research proposal, in Spring Quarter. The date for submission of the final draft of the research proposal in Spring quarter will be determined by the faculty instructor for the required proposal writing course for either the Archaeology track or the Culture and Society track.
   ix. by the first day of finals week in Winter Quarter, confirm the qualifying examination committee adviser for each examination committee (i.e. one committee for AREA and one committee for TOPIC) by submitting an email message to the faculty adviser confirming this information.
   x. by the first day of finals week in Winter Quarter, submit the Language Committee Petition (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthrograduatelanguagecommitteepetition.pdf) form representing satisfactory completion of the department's graduate language requirement for oral and reading proficiency of a language necessary for successful scholarship in a chosen the field of study.
   xi. by the first day of finals week in the Winter quarter, submit the Application for Candidacy for the Doctoral Degree (in Anthropology) (https://stanford.app.box.com/v/appcanddoct/) form. Advancement to candidacy is based on faculty review and approval of the pre-dissertation research proposal, demonstrating the ability to conduct independent research, analysis and interpretation, as well on degree progress. The candidacy form should be submitted no later than May 15th in Spring Quarter of the second year. The date for submission of the final draft of the research proposal in Spring quarter will be determined by the faculty instructor for the required proposal writing course for either Archaeology and for Culture and Society. Failure to advance to candidacy may result in the dismissal of the student from the Ph.D. degree program.
   xii. In order to qualify for department application for exceptional research funding in the Summer Quarter of the second year, students are required to submit at least two intramural, pre-dissertation research funding proposals for second year Summer Quarter research funding support.

4. In the third year, complete the following:
   a. by the last day of the third week of Autumn Quarter, confirm the committee reader for each of the qualifying examination committees (i.e. one committee for AREA and one committee for TOPIC) by submitting the Third-year Report of Qualifying Examination and Associated Oral Component Meeting Status (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthrothirdyearphdreportqualifyingexaminationstatus.pdf) form.
   b. Submit three dissertation research funding proposals to the faculty adviser for approval by the first day of finals week in the Autumn quarter. Submit an approved extramural funding proposal to at least three funding agencies by the end of the Summer Quarter in the third year.
   c. by the first day of finals week in Autumn Quarter, submit the Third-year Dissertation Proposal Meeting (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthrodissertationproposal.pdf) form confirming the committee.
   d. During Winter or Spring Quarters in the third year, enroll in and pass the following directed reading-style courses: ANTHRO 401A Qualifying Examination: Topic and ANTHRO 401B Qualifying Examination: Area, under the section of the ANTHRO faculty adviser for each. Enrollment for each course should be made in the quarter in which the qualifying examination has been scheduled.

		Units
ANTHRO 401A	Qualifying Examination: Topic	1-5
ANTHRO 401B	Qualifying Examination: Area	1-5

1. a. by the last day of third week in Winter Quarter, submit the updated Third-year Report of Qualifying Examination and Associated Oral Component Meeting Status (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthrothirdyearphdreportqualifyingexaminationstatus.pdf) form reaffirming the committee members, and confirming the exam dates, preliminary qualifying bibliographies, and the proposed question set for each examination.
   b. by the last day of finals week in Winter Quarter, complete the qualifying examinations for area and for topic (two separate examinations to be scheduled one week apart), inclusive of the final bibliographies.

c. by the last day of the second week in Spring Quarter, submit a draft of the dissertation proposal to the dissertation reading committee.
d. by the last day of the second week in Spring Quarter, confirm a scheduled meeting with the qualifying examination committee/dissertation reading committee members for the oral component of the qualifying examinations and for review and approval of the dissertation proposal.
e. on or by May 15th in Spring quarter, meet with the qualifying examination/dissertation reading committee members to review the dissertation proposal, inclusive of the oral component of the qualifying examinations.
f. by the first day of finals week in Spring Quarter, submit the Third-year dissertation proposal meeting and approval (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthrodissertationproposal.pdf) form.
g. before departing for field research, receive approval for the non-medical human subjects protocol from the Institutional Review Board.
h. meet with faculty adviser and dissertation reading committee members to review comments for the dissertation proposal and complete a pre-field check out meeting with the student services officer before departing for field research in the Summer Quarter.
i. In order to qualify for standard Summer Quarter funding, full-time research, based on the approved dissertation research proposal, should start no later than the final study list deadline in the Summer Quarter of the third year.

2. In the fourth year, complete the following requirements:
   a. if necessary, successfully complete a third of three possible attempts to re-write/re-take the qualifying examinations for area and topic no later than the last day of Autumn Quarter in fourth year, following the Spring quarter of the third year.
   b. by the final study list deadline in the Autumn, Winter and Spring Quarters, submit a Fourth-year Graduate Report of Degree Progress (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthrofourthyeardegreeprogressform.pdf) form (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthrofourthyeardegreeprogressform.pdf).
   c. to establish eligibility for fifth-year funding support and by the first day of Summer Quarter, students completing approved dissertation research must submit a Fourth-year graduate report of degree progress (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthrofourthyeardegreeprogressform.pdf) form (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthrofourthyeardegreeprogressform.pdf).
   d. submit one or more funding proposals to support the Summer Quarter of the fourth year (strongly encouraged).
3. In the fifth year, complete the following requirements:
   a. during the fifth year and after returning from approved dissertation research, confirm Bay Area residency to be eligible for fifth year dissertation writing funds. Eligibility for Department support is based on dissertation writing seminar attendance as well as on Bay Area residency (the Bay Area is defined as Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, or Sonoma counties).
   b. as scheduled by the Department, attend the teaching assistant training workshop (usually scheduled during or after the week before the first day of Autumn Quarter).
   c. Although, students are encouraged to complete three or more teaching assistant assignments, at the minimum, students should have completed the second of two teaching assistant assignments by the end of the Fifth year, if not completed earlier.
   d. Culture and Society Track students, only, attend a minimum of four of five class meetings during Autumn, Winter, Spring Quarters in the fifth year of ANTHRO 400 Cultural and Social Dissertation Writers Seminar (required of Culture and Society track, only; and, recommended for the Archaeology track). In each quarter and for both tracks, chapter drafts of the dissertation must be handed in to the dissertation reading committee for review.
   e. submit the Fifth-year Dissertation Writer's Report of Time to Degree Completion (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthrodissertationwritersreportontimetodegreecompletionform.pdf) form by the last day of finals week in the Spring Quarter.
   f. fifth year students who have not secured funding support from the beginning of the Autumn Quarter of the Sixth year through the end of Summer Quarter in the Sixth year, should submit one or more funding proposals for dissertation writing funding support.
4. In either the fifth year or in the sixth plus year and beyond, complete the following requirements:
   a. submit a draft of the dissertation by the last day of the first week of the quarter preceding the quarter in which the University oral examination (dissertation defense) will be scheduled; and, in which the dissertation is to be submitted in partial fulfillment of degree milestone requirements. Obtain approval for final draft status of the dissertation using the Fifth-year Dissertation Defense Checklist and Final Draft Approval (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthrodissertationdefenseapprovalandchecklistform.pdf) form.
   b. confirm all requirements for the degree will be completed before candidacy expires. The initial period of Candidacy is given for five calendar years. All requests for extension must be filed by the student before the conclusion of the program's time limit, using the Application for Extension of Candidacy or Master's Program (https://stanford.app.box.com/appcandextens/) form (https://stanford.app.box.com/appcandextens/)
   c. at least four weeks prior to a proposed date for the University oral examination, submit the University Oral Examination form (https://stanford.app.box.com/v/doc-orals/) and a final draft of the dissertation to the student services officer.
   d. pass the University oral examination, including an oral presentation, held at the beginning of the oral examination period (approximately 30 minutes for the public presentation with a 15 minute public discussion period), and preceded by closed session with the oral examination committee members, only. Once the University oral examination has been passed, submission of the final draft of the dissertation to the University Registrar and the subsequent conferral of the doctoral degree in Anthropology may take place.

Required Courses

Archaeology Track

		Units
ANTHRO 303	Introduction to Archaeological Theory	5
ANTHRO 307	Archaeological Methods	5
ANTHRO 310G	Introduction to Graduate Studies	2
ANTHRO 308A	Proposal Writing Seminar in Archaeology	5
Total Units		17

Culture and Society Track

		Units
ANTHRO 300	Reading Theory Through Ethnography	5
ANTHRO 301	History of Anthropological Theory, Culture and Society	5
ANTHRO 301A	Foundations of Social Theory	5
ANTHRO 306	Anthropological Research Methods	5
ANTHRO 308	Proposal Writing Seminar in Cultural and Social Anthropology	5
ANTHRO 310G	Introduction to Graduate Studies	2

ANTHRO 311G	Introduction to Culture and Society Graduate Studies in Anthropology	2
Total Units		29

Recommended Courses

For both tracks, quarterly attendance (during the Autumn, Winter, and Spring Quarters) in the Department of Anthropology colloquium is recommended for all graduate students and required for all current first-year and second-year cohort Ph.D. students. Students may enroll in the following course for additional units.

		Units
ANTHRO 444	Anthropology Colloquium	1
ANTHRO 445	Anthropology Brown Bag Series	1

Ph.D. Minor in Anthropology

University requirements for the Ph.D. Minor are described in the Graduate Degrees section of this Bulletin.

To request the Ph.D. Minor in Anthropology, apply using the Request for Ph.D. minor in Anthropology (https://anthropology.stanford.edu/department/forms-and-documents/graduate-forms-and-references/) form at least three quarters before terminal graduate registration status is confirmed with the following materials: the University Application for Ph.D. Minor (https://stanford.app.box.com/v/app-phd-minor/) form (https://stanford.app.box.com/v/app-phd-minor/), an approved (pre)dissertation proposal, confirmation of qualifying status in the Ph.D. degree home Department, confirmation of Doctoral candidacy in the Ph.D. degree home Department, proposed dates for the University oral examination and the dissertation defense, and a recommendation for consideration of the Anthropology Ph.D. minor request written by the Ph.D. minor Anthropology advisor. Once approved, a HelpSU ticket to the University Registrar requesting the addition of the Ph.D. minor to the student's academic career will be submitted by the Anthropology Ph.D. minor student services officer.

The requirements for a Ph.D. Minor in Anthropology include the following:

1. Complete 30 units of ANTHRO subject code courses at the 300 level. The courses dedicated to the Ph.D. minor must be successfully completed with a minimum (GPA) of 3.0 (B). Directed Individual Study units are not approved for the Ph.D. minor in Anthropology.
2. Request a faculty member within the Department of Anthropology who provides written consent to serve as the advisor for the Ph.D. minor and serve on the student's oral examination and dissertation reading committees.
3. With the faculty advisor, determine a coherent plan and submit the First-year Ph.D., Ph.D. minor, or M.A. Student Plan of Study (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthro_firstyearphdphdminorormaplanofstudyform.pdf) form (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthro_firstyearphdphdminorormaplanofstudyform.pdf).
4. Pass with a minimum grade of 'B+' three Department of Anthropology theory courses, and one Department of Anthropology graduate course in geographical or theoretical area, for a total of four Department review courses.

For additional information regarding the Ph.D. minor in Anthropology, consult the department webpages.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of Anthropology counts courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade, with the exception of the following degree course requirements:

- ANTHRO 95B Independent Study for Honors or Senior Paper Writing. The work completed must be equivalent to a grade of 'B+' or better. If the work produced is not above the 'B+' level but is sufficient to earn a grade of 'CR' the student would receive the units of credit but will not receive honors.
- ANTHRO 90B Theory of Cultural and Social Anthropology and ANTHRO 91 Method and Evidence in Anthropology. The work completed must be equivalent to a grade of 'B' or better. If the work produced is not above the 'B' level but is sufficient to earn a grade of 'CR' the student would receive the units of credit but will not full the degree requirement.

Courses taken in which the student received a grade of 'CR' or 'S' will not be applied towards undergraduate major limits on 'CR/NC' units.

Other Undergraduate Policies

If a student has difficulty completing an undergraduate degree requirement due to the COVID-19 pandemic, (e.g., study abroad requirement, a laboratory research requirement), the student should consult with the Director of Undergraduate Studies or the Student Services Officer to identify academic options to fulfill degree requirements.

Graduate Degree Requirements

Grading

The Department of Anthropology counts all courses taken in the academic year 2020-21 with a letter grade of ‘CR’ (Credit) or ‘S’ (Satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade based on the information below.

The department has adopted new grading policies for academic year 2020-21. All Anthropology graduate students, like all other Stanford students, may choose to take any course for 'CR' (credit) rather than a grade. In addition, when it comes to required 300-level departmental review courses, a local policy has been established for doctoral students who opt to take departmental review courses for 'CR' rather than a letter grade:

1. Faculty will communicate to students who opt for the 'CR/NC' grading basis at the start of any departmental review course that a key evaluative threshold will be whether they complete work comparable to what in a regular year would be 'B+' or above in quality.
2. Faculty teaching a review course will generate a brief text at the end of the quarter evaluating the work of any of our doctoral students enrolled in that class for 'CR'.

3. Students taking a review course on a CR/NC grading basis may take an Incomplete for the course if by the end of the quarter they are not on track to clear the threshold outlined in (1) above.

Other Graduate Policies

If a student has difficulty completing a graduate degree requirement due to the COVID-19 pandemic (e.g., language and area studies, field research), the student should consult with the Director of Graduate Studies or the Student Services Officer to identify academic options to fulfill degree requirements.

Although San Francisco Bay Area residency is usually required for cohort years one through five (defined as Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, or Sonoma counties) during Autumn, Winter, and Spring quarters, this requirement has been suspended during the Autumn Quarter 2020 and until further notice is given regarding the residency requirement in a future quarter due to COVID-19.

Graduate Advising Expectations

The Department of Anthropology is committed to providing academic advising supporting graduate student scholarly and professional development. When most effective, this advising entails collaborative and sustained engagement by both the advisor and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity. The department strongly encourages Ph.D. students to work with a variety of faculty throughout their degree program at Stanford. This expectation begins with entering Ph.D. students as they are encouraged to meet with a number of faculty including those who work outside of a Ph.D. student's area of geographic/topical foci. This 'big tent' style of advising includes a wide variety of faculty members, both within the department and outside of the department.

Entering first-year Ph.D. students are assigned a first-year Ph.D. faculty mentor. This faculty mentor serves as guide by evaluating the student's academic and research training, providing guidance developing a (pre)dissertation proposal, make referrals, writing letters of recommendation, and reminding students of their academic and administrative responsibilities. Entering master's students are assigned a primary faculty advisor.

At the end of the first year and no later than the end of the Autumn Quarter in the second year, Ph.D. students are expected to select a primary faculty advisor: someone who will thereafter serve as a guide and sounding board in numerous ways, such as when it comes to selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

In Autumn Quarter of the Third-year and in close consultation with the primary faculty advisor, Ph.D. students confirm faculty readers for the Qualifying Examination Committees. Beginning in the Winter Quarter of the Third-year and in close consultation with the primary faculty advisor, Ph.D. students confirm the Dissertation Reading Committee members.

Graduate students should be active contributors to advising relationships, proactively seeking academic and professional guidance and taking responsibility for informing themselves of academic policies and degree requirements for their graduate program. More on this is described in the Department's "Best Practice Reference for Academic Advising: Guidelines for Graduate Students and Faculty (https://anthropology.stanford.edu/sites/g/files/sbiybj9346/f/anthrobestpracticeguidelinesforgraduatestudentadvising.pdf)."

For a statement of University policy on professional conduct, see the "Guidelines for Addressing Graduate Student Professional Conduct (https://exploredegrees.stanford.edu/graduatedegrees/#degreeprogresstext)" section of this bulletin.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Faculty

Emeriti: (Professors) Harumi Befu, George A. Collier, Jane F. Collier, Carol Delaney, William H. Durham, Charles O. Frake, James L. Gibbs, Raymond McDermott, Jr., Renato I. Rosaldo, John W. Rick

Chair: Thomas B. Hansen

Director of Graduate Studies: Matthew Kohrman

Director of Undergraduate Studies: Miyako Inoue

Professors: Lisa Curran, James Ferguson, Thomas Blom Hansen, Ian Hodder, S. Lochlann Jain, Liisa Malkki, Richard G. Klein, Tanya Luhrmann, Sylvia J. Yanagisako

Associate Professors: Andrew Bauer, Paulla Ebron, Duana Fullwiley, Angela Garcia, Miyako Inoue, Matthew Kohrman, Krish Seetah, Kabir Tambar, Sharika Thiranagama, Barbara Voss

Assistant Professors: Serkan Yolocan

Courtesy Professors: Jonathan Daniel Rosa, Penelope Eckert, Ray McDermott

Lecturer: Claudia Engel

Courtesy Senior Lecturer: Michael V. Wilcox

Affiliated Faculty: Gabrielle Hecht, Li Liu, Richard White

Postdoctoral Fellows: Maira Hayat

Teaching Affiliates: Grace Alexandrino Ocana, Paul Christians, Elix Colon, Samuel Maull

Overseas Studies Courses in Anthropology

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPCPTWN 36	The Archaeology of Southern African Hunter Gatherers	4
OSPCPTWN 78	Postcolonial Modernist Art Movements in Africa	3
OSPFLOR 47	Faith, Science, and the Classical Tradition in Renaissance Florence	4
OSPHONGK 23	China Under Mao	4
OSPHONGK 24	Urban China	4

OSPKYOTO 41	Queer Culture and Life in Japan	4
OSPOXFRD 93	Collecting the World	4-5

Courses

ANTHRO 1. Introduction to Cultural and Social Anthropology. 3-5 Units.
This course introduces basic anthropological concepts and presents the discipline's distinctive perspective on society and culture. The power of this perspective is illustrated by exploring vividly-written ethnographic cases that show how anthropological approaches illuminate contemporary social and political issues in a range of different cultural sites.
Same as: ANTHRO 201

ANTHRO 1S. Introduction to Cultural and Social Anthropology. 3-5 Units.
This course introduces basic anthropological concepts and presents the discipline's distinctive perspective on society and culture. The power of this perspective is illustrated by exploring vividly-written ethnographic cases that show how anthropological approaches illuminate contemporary social and political issues in a range of different cultural sites.
Same as: ANTHRO 101S

ANTHRO 3. Introduction to Archaeology. 3-5 Units.
Aims, methods, and data in the study of human society's development from early hunters through late prehistoric civilizations. Archaeological sites and remains characteristic of the stages of cultural development for selected geographic areas, emphasizing methods of data collection and analysis appropriate to each.
Same as: ARCHLGY 1

ANTHRO 12. Anthropology and Art. 5 Units.
Modernity. How the concept of art appears timeless and commonsensical in the West, and with what social consequences. Historicizing the emergence of art. Modernist uses of primitive, child art, asylum, and outsider art.

ANTHRO 16. Native Americans in the 21st Century: Encounters, Identity, and Sovereignty in Contemporary America. 5 Units.
What does it mean to be a Native American in the 21st century? Beyond traditional portrayals of military conquests, cultural collapse, and assimilation, the relationships between Native Americans and American society. Focus is on three themes leading to in-class moot court trials: colonial encounters and colonizing discourses; frontiers and boundaries; and sovereignty of self and nation. Topics include gender in native communities, American Indian law, readings by native authors, and Indians in film and popular culture.
Same as: ARCHLGY 16, NATIVEAM 16

ANTHRO 18. Peopling of the Globe: Changing Patterns of Land Use and Consumption Over the Last 50,000 Years. 3-5 Units.
Fossil, genetic and archaeological evidence suggest that modern humans began to disperse out of Africa about 50,000 years ago. Subsequently, humans have colonized every major landmass on earth. This class introduces students to the data and issues regarding human dispersal, migration and colonization of continents and islands around the world. We explore problems related to the timing and cause of colonizing events, and investigate questions about changing patterns of land use, demography and consumption. Students are introduced to critical relationships between prehistoric population changes and our contemporary environmental crisis.
Same as: ARCHLGY 12, EARTHSYS 21

ANTHRO 23B. Race and the War on Drugs: Long Roots and Other Futures. 3-5 Units.
Current discussions of the war on drugs reference Richard Nixon's 1971 declaration as a starting point. This class will encourage students instead to see the war on drugs beyond seemingly self-evident margins and imaginaries. In this course, we will explore the racialized and gendered history of coca and cocaine in the Americas, and follow the war on drugs as it targets different aspects of drug production and consumption within and beyond the borders of the United States. In examining how drugs and drug policies have been used as tools of discrimination and exploitation from colonialism through to present systems of mass incarceration, we will analyze racialization as it is constructed and experienced through time and imposed onto nations and bodies. Readings and discussion will emphasize Black and Latinx feminist theories, critical race theory, and decoloniality, drawing on anthropological and interdisciplinary scholarship while incorporating other forms of writing (prose, fiction, poetry) and media (graphic novels, visual art, film clips, documentaries). Students will learn to interrogate the longstanding racialized and gendered roots of the drug war and explore critical calls towards other futures.
Same as: CSRE 23

ANTHRO 27N. Ethnicity and Violence: Anthropological Perspectives. 3-5 Units.
Ethnicity is one of the most compelling and most modern ways in which people - in the midst of considerable global and local uncertainty - all across the world imagine and narrate themselves. This seminar will take an anthropological look at both the modernity and the compulsions of ethnic allegiance, and, why struggles over ethnic identity are so frequently violent. Our questions will be both historical; how, why and when did people come to think of themselves as possessing different ethnic identities - and contemporary; how are these identities lived, understood, narrated, and transformed and what is the consequence of such ethnicisation. nWe follow this through anthropological perspectives which ask persistently how people themselves locally narrate and act upon their experiences and histories. Through this we will approach some of the really big and yet everyday questions that many of us around the world face: how do we relate to ourselves and to those we define as others; and how do we live through and after profound violence? The seminar will take these larger questions through a global perspective focusing on cases from Rwanda and Burundi, India, Sri Lanka, Northern Ireland, Guatemala, and the countries of Former Yugoslavia among others. These cases cover a broad canvas of issues from questions of historicity, racial purity, cultural holism, and relations to the state, to contests over religious community, indigeneity, minority identities, globalization, gender, and generation.

ANTHRO 30N. Does Science Have Culture?. 3-5 Units.
In this course students will engage with the anthropology of science and medicine to explore the how cultural norms shape scientific understandings. Through a series of diverse global case studies, seminar participants will assess how historical conditions yield political possibilities that inflect discoveries. Lastly, students will probe how cultural understandings of nature, human difference and national esteem influence how scientific facts come to cohere as reflections of the societies in which they emerge.

ANTHRO 31Q. The Big Shift. 4 Units.
Is the middle class shrinking? How do people who live at the extremes of American society- the super rich, the working poor and those who live on the margins, imagine and experience "the good life"? How do we understand phenomena such as gang cultures, addiction and the realignment of white consciousness? This class uses the methods and modes of ethnographic study in an examination of American culture. Ethnographic materials range from an examination of the new American wealth boom of the last 20 years (Richistan by Robert Frank) to the extreme and deadlynworld of the invisible underclass of homeless addicts on the streets of San Francisco (Righteous Dopefiend by Phillipe Bourgois and Jeff Schonberg). The experiences of Hispanic immigrants and the struggle to escape gang life in Los Angeles are highlighted in the story of Homeboy Industries a job creation program initiated by a priest working in LA's most deadly neighborhoods (G-Dog and the Homeboys by Celeste Fremon). Finally in Searching for Whitopia: an improbable journeyninto the heart of White America, Rich Benjamin explores the creation on ethnic enclaves (whitopias) as fear over immigration and the shrinking white majority redefine race consciousnessnin the 21st century. Each of these narratives provides a window into the various ways in which Americans approach the subjects of wealth and the good life, poverty and the underclass, and thenconstruction of class, race, and gender in American society. Students will not be required to have any previous knowledge, just curiosity and an open mind.
Same as: CSRE 30Q

ANTHRO 32. Theories in Race and Ethnicity: A Comparative Perspective. 5 Units.
This undergraduate course employs an anthropological and historical perspective to introduce students to ideas and concepts of race and ethnicity that emerged primarily in Europe and the United States in the eighteenth and nineteenth centuries and that continue to shape contemporary racial attitudes, interactions, and inequalities. Ideas about race and ethnicity forged outside the U.S. and case studies from other nations are presented to broaden students' understanding and to overcome the limitations of an exclusive focus on the U.S. This course is geared to sophomores and juniors who have already taken at least one course on race and ethnicity, anthropology, African American Studies, Asian American Studies, Chicana/o Studies, Jewish Studies or Native American Studies.
Same as: CSRE 32

ANTHRO 34. Animals and Us. 5 Units.
The human-animal relationship is dynamic, all encompassing and durable. Without exception, all socio-cultural groups have evidenced complex interactions with the animals around them, both domesticated and wild. However, the individual circumstances of these interactions are hugely complicated, and involve much more than direct human-animal contact, going far beyond this to incorporate social, ecological and spiritual contexts.n This course delves into this complexity, covering the gamut of social roles played by animals, as well as the methods and approaches to studying these, both traditional and scientific. While the notion of `animals as social actors is well acknowledged, their use as proxies for human autecology (the relationship between a species and its environment) is also increasingly recognized as a viable mechanism for understanding our cultural and economic past. It will piece together the breadth of human-animal relationships using a wide geographic range of case studies.
Same as: ARCHLGY 34

ANTHRO 39. Sense of Place. 3 Units.
This course examines the life of places as shaped by environmental events and projects aimed towards rural or urban development. Drawing methodological insights from anthropology, cultural geography and environmental studies, we examine the forces that generate place problems for humans and nonhumans. Each encounter with place and displacement sets up a particular issue for us to grapple with: How would we address issues created by natural disasters, the seizure of land through legal means that fall under eminent domain or gentrification projects? Through a critical dialogue with interdisciplinary fields that inform the readings, the seminar aims to bring theoretical and methodological insights to inform our practical suggestions for how to address placeness and displaceness at different scales.

ANTHRO 41. Genes and Identity. 4 Units.
In recent decades genes have increasingly become endowed with the cultural power to explain many aspects of human life: physical traits, diseases, behaviors, ancestral histories, and identity. In this course we will explore a deepening societal intrigue with genetic accounts of personal identity and political meaning. Students will engage with varied interdisciplinary sources that range from legal cases to scientific articles, medical ethics guidelines, films, and anthropological works (ethnographies). We will explore several case studies where the use of DNA markers (as proof of heritage, disease risk, or legal standing) has spawned cultural movements that are biosocial in nature. Throughout we will look at how new social movements are organized around gene-based definitions of personhood, health, and legal truth. Several examples include political analyses of citizenship and belonging. On this count we will discuss issues of African ancestry testing as evidence in slavery reparations cases, revisit debates on whether Black Freedman should be allowed into the Cherokee and Seminole Nations, and hear arguments on whether people with genetic links to Jewish groups should have a right of return to Israel. We will also examine the ways genetic knowledge may shape different health politics at the individual and societal level. On this count we will do close readings of how personal genomics testing companies operate, we will investigate how health disparities funding as well as orphan disease research take on new valences when re-framed in genetic terms, and we will see how new articulations of global health priorities are emerging through genetic research in places like Africa. Finally we will explore social implications of forensic uses of DNA. Here we will examine civil liberties concerns about genetic familial searching in forensic databases that disproportionately target specific minority groups as criminal suspects, and inquire into the use of DNA to generate digital mugshots of suspects that re-introduce genetic concepts of race.
Same as: AFRICAAM 41, CSRE 41A

ANTHRO 42. Megacities. 5 Units.
In this course we will examine the meaning, processes, and challenges of urbanization. Through a series of targeted readings across history and geography and through the study of varied means of representation (anthropology, literature, cartography, film, etc), the class will analyze the ways in which urban forms have come into being and created, met, and/or ignored challenges such as disease, water, transport, religious and class conflict, colonialism, labor, and trade. Students will read anthropology in conjunction with other disciplines (literature, urban planning, public health, architecture, and economics) to learn the ways in which ethnographies of immigration, urban poverty, class disparity, economic development and indicators, noise, and transportation substantively augment our understandings of how people live within globalization.
Same as: ARTHIST 242B, LIFE 142, URBANST 142

ANTHRO 60N. Digging for Answers: 5 Big Questions of Our Time. 3-5 Units.
The aim in this course is to explore the archaeological evidence for long-term change with regard to 5 major questions of our time: Where do we come from? Has inequality increased? Have we become more violent? Why do we have so much stuff? What is the relationship between humans and climate change? You will be introduced to recent publications for class debate, and will also be introduced to the ways in which archaeologists use evidence in order to explore the 5 themes. We will go to Stanford¿s archaeological collections so that you can have hands-on experience of artifacts and will be able to problem solve using data from the instructor¿s own excavations. We will also visit labs (archaeological and genomic for example), local museums and local archaeological excavations.
Same as: ARCHLGY 60N

ANTHRO 78A. Disruption and Diffusion: The Archaeology of Innovation. 3-5 Units.
This undergraduate seminar uses engagement with canonical archaeological topics and questions about the emergence of civilization to introduce students to critical perspectives on the nature of novelty, progress, and modernity. The first weeks of the course will be spent learning about archaeological hypotheses and debates on early human innovation (e.g. urban development, agriculture). Later weeks will focus on developing a robust theoretical framework through which to better understand and interrogate claims about the origin of innovation.
Same as: ARCHLGY 78

ANTHRO 80A. Heritage and Human Rights. 3-5 Units.
What does archaeology have to say about human rights? Is there a right to cultural heritage? How can archaeology and heritage help protect rights¿or encroach upon them? Themes we will address in this course include the archaeological investigation of human rights topics; the right to heritage; conflicts of different rights regimes in heritage contexts; and ethical considerations about rights during research and heritage management. These questions will take us to cases as diverse as forensic investigation of the disappeared in Argentina, the archaeology of homelessness in the U.K., the destruction of heritage as cultural genocide in Bosnia and the Middle East, and the rights of indigenous groups in Australia and the U.S. to control cultural heritage.
Same as: ARCHLGY 80

ANTHRO 82. Medical Anthropology. 5 Units.
Emphasis is on how health, illness, and healing are understood, experienced, and constructed in social, cultural, and historical contexts. Topics: biopower and body politics, gender and reproductive technologies, illness experiences, medical diversity and social suffering, and the interface between medicine and science.
Same as: ANTHRO 282, HUMBIO 176A

ANTHRO 82P. The Literature of Psychosis. 3-5 Units.
One of the great gifts of literature is its ability to give us insight into the internal worlds of others. This is particularly true of that state clinicians call "psychosis." But psychosis is a complex concept. It can be terrifying and devastating for patients and families, and yet shares characteristics with other, less pathological states, such as mysticism and creativity. How then can we begin to make sense of it? In this course, we will examine the first-hand experience of psychosis. We will approach it from multiple perspectives, including clinical descriptions, works of art, and texts by writers ranging from Shakespeare, to the science fiction writer Philip K. Dick, to patients attempting to describe their experience. This class is not only for students thinking of careers in medicine, psychology or anthropology, but also readers and writers interested exploring extraordinary texts. There are no prerequisites necessary; all that is needed is a love of language and a curiosity about the secrets of other minds.
Same as: HUMBIO 162L, PSYC 82, PSYC 282

ANTHRO 89. Undergraduate Reading Group. 1-5 Unit.
Undergraduate student reading group on a thematic topic of interest.
Sections: All faculty.

ANTHRO 90B. Theory of Cultural and Social Anthropology. 5 Units.
Preference to Anthropology majors. Anthropological interpretations of other societies contain assumptions about Western societies. How underlying assumptions and implicit categories have influenced the presentation of data in major anthropological monographs. Emphasis is on Karl Marx, Emile Durkheim, Max Weber, and anthropological analyses of non-Western societies. Priority given to ANTHRO majors.

ANTHRO 91. Method and Evidence in Anthropology. 5 Units.
This course provides a broad introduction to various ways of designing anthropological questions and associated methods for collecting evidence and supporting arguments. We review the inherent links between how a question is framed, the types of evidence that can address the question, and way that data are collected. Research activities such as interviewing, participant observation, quantitative observation, archival investigation, ecological survey, linguistic methodology, tracking extended cases, and demographic methods are reviewed. Various faculty and specialists will be brought in to discuss how they use different types of evidence and methods for supporting arguments in anthropology.

ANTHRO 91A. Archaeological Methods. 5 Units.
Methodological issues related to the investigation of archaeological sites and objects. Aims and techniques of archaeologists including: location and excavation of sites; dating of places and objects; analysis of artifacts and technology and the study of ancient people, plants, and animals. How these methods are employed to answer the discipline's larger research questions.
Same as: ARCHLGY 102

ANTHRO 92A. Undergraduate Research Proposal Writing Workshop. 2-3 Units.
Practicum. Students develop independent research projects and write research proposals. How to formulate a research question; how to integrate theory and field site; and step-by-step proposal writing.

ANTHRO 92B. Undergraduate Research Proposal Writing Workshop. 2-3 Units.
Practicum. Students develop independent research projects and write research proposals. How to formulate a research question; how to integrate theory and field site; and step-by-step proposal writing.

ANTHRO 93. Prefield Research Seminar. 5 Units.
For Anthropology majors only; non-majors register for 93B. Preparation for anthropological field research in other societies and the U.S. Data collection techniques include participant observation, interviewing, surveys, sampling procedures, life histories, ethnohistory, and the use of documentary materials. Strategies of successful entry into the community, research ethics, interpersonal dynamics, and the reflexive aspects of fieldwork. Prerequisites: two ANTHRO courses or consent of instructor.

ANTHRO 93B. Prefield Research Seminar: Non-Majors. 5 Units.
Preparation for anthropological field research in other societies and the U.S. Data collection techniques include participant observation, interviewing, surveys, sampling procedures, life histories, ethnohistory, and the use of documentary materials. Strategies for successful entry into the community, research ethics, interpersonal dynamics, and the reflexive aspects of fieldwork. Service Learning Course (certified by Haas Center).

ANTHRO 94. Postfield Research Seminar. 5 Units.
Goal is to produce an ethnographic report based on original field research gathered during summer fieldwork, emphasizing writing and revising as steps in analysis and composition. Students critique classmates' work and revise their own writing in light of others' comments. Ethical issues in fieldwork and ethnographic writing, setting research write-up concerns within broader contexts.

ANTHRO 95. Research in Anthropology. 1-10 Unit.
Independent research conducted under faculty supervision, normally taken junior or senior year in pursuit of a senior paper or an honors project. May be repeated for credit.

ANTHRO 95B. Independent Study for Honors or Senior Paper Writing. 1-5 Unit.
Required of Anthropology honors or senior paper candidates. Taken in the final quarter before handing in the final draft of the Honors or Senior Paper and graduating. This independent study supports work on the honors and senior papers for students with an approved honors or senior paper application in Anthropology. Prerequisite: consent of Anthropology faculty advisor.nnTerms: Aut, Win, Spr, Sum Units: 1-5nn(not repeatable for credit).

ANTHRO 96. Directed Individual Study. 1-10 Unit.
Prerequisite: consent of instructor.

ANTHRO 97. Internship in Anthropology. 1-10 Unit.
Opportunity for students to pursue their specialization in an institutional setting such as a laboratory, clinic, research institute, or government agency. May be repeated for credit. Service Learning Course (certified by Haas Center).

ANTHRO 98C. Digital Methods in Anthropology. 3-5 Units.
The course provides an introduction to a broad range of digital tools and techniques for anthropological research. It is geared towards those interested in exploring such methodologies for their research and wanting to add hands-on experience with state-of-the-art digital tools to their skill set. Students will learn to work with some of the most common tools used to collect and manage digital data, and to perform various types of analysis and visualization.nUndergraduate students register for 3-5 Units, Graduate students can register for 3-5 units.
Same as: ANTHRO 298C

ANTHRO 100D. Chavin de Huantar Research |Seminar. 3-5 Units.
Archaeological analytical techniques appropriate for data recovered during archaeological fieldwork in Chavin de Huantar, Peru. Open to all interested students; fieldwork participants are expected to take the course. Students work on data from the previous field season to produce synthetic written reports, focusing on specific methodological issues.
Same as: ARCHLGY 100D

ANTHRO 101A. Archaeology as a Profession. 5 Units.
Academic, contract, government, field, laboratory, museum, and heritage aspects of the profession.
Same as: ARCHLGY 107A

ANTHRO 101S. Introduction to Cultural and Social Anthropology. 3-5 Units.
This course introduces basic anthropological concepts and presents the discipline's distinctive perspective on society and culture. The power of this perspective is illustrated by exploring vividly-written ethnographic cases that show how anthropological approaches illuminate contemporary social and political issues in a range of different cultural sites.
Same as: ANTHRO 1S

ANTHRO 103. The Archaeology of Climate. 3 Units.
This course reviews the long-term relationships between human societies and Earth's climatic systems. It provides a critical review of how archaeologists have approached climate change through various case studies and historical paradigms (e.g., societal `collapse,¿ resilience, historical ecology) and also addresses feedbacks between past human land use and global climate change, including current debates about the onset of the Anthropocene.
Same as: ARCHLGY 106

ANTHRO 106. Incas and their Ancestors: Peruvian Archaeology. 3-5 Units.
The development of high civilizations in Andean S. America from hunter-gatherer origins to the powerful, expansive Inca empire. The contrasting ecologies of coast, sierra, and jungle areas of early Peruvian societies from 12,000 to 2,000 B.C.E. The domestication of indigenous plants which provided the economic foundation for monumental cities, ceramics, and textiles. Cultural evolution, and why and how major transformations occurred.
Same as: ANTHRO 206A, ARCHLGY 102B

ANTHRO 107. Black Political Struggle Across the Americas. 3-5 Units.
This course orients students to the intersections between Anthropology and Black Studies through a survey of select ethnographic, historical, literary, and cinematographic materials based on Black political mobilizations across Latin America and the Caribbean. Organized by themes, the course pairs anthropological scholarship on Black political mobilizations against racialized violence and dispossession with critical Black Studies theoretical texts this scholarship is in conversation with. These pairings center what contemporary Black political struggle across the Americas teaches us about Black suffering, police terror, the problems of neoliberal multiculturalism, and the potential of transnational connections. Through case studies from Jamaica, Puerto Rico, Dominican Republic, Nicaragua, Colombia, and Brazil, we ask: How have understanding the conditions of life of Black communities in the Americas contributed to and/or challenged broader theorizations of the State, violence, rights, and recognition? How do contemporary mobilizations and political imaginations of Black communities push the modern nation-state into crisis through demands for Black life? And how do these struggles theorize the time and space of the conditions of Black life through transnational politics?.
Same as: AFRICAAM 137

ANTHRO 108B. Gender in the Arab and Middle Eastern City. 5 Units.
What are the components of gendered experience in the city, and how are these shaped by history and culture? How do meanings attributed to Islam and the Middle East obscure the specificity of women¿s and men¿s lives in Muslim-majority cities? This course explores gender norms and gendered experience in the major cities of Arab-majority countries, Iran and Turkey. Assigned historical and sociological readings contextualize feminism in these countries. Established and recent anthropological publications address modernity, mobility, reproduction, consumption, and social movements within urban contexts. Students will engage with some of the key figures shaping debates about gender, class, and Islam in countries of the region typically referenced as North Africa and the Middle East (MENA). They will also evaluate regional media addressing concerns about gender in light of the historical content of the course and related political concepts.
Same as: FEMGEN 108B, URBANST 108B

ANTHRO 109A. Archaeology of the Modern World. 3-5 Units.
Historical archaeology, also called the archaeology of the modern world, investigates the material culture and spatial history of the past five centures. As a discipline, historical archaeology has been characterized by (1) a methodological conjunction between history and archaeology; (2) a topical focus on the ¿three Cs¿: colonization, captivity, and capitalism ¿ forces which arguably are constitutive of the modern world; and (3) an epistemological priority to recovering the perspectives of ¿people without history.¿ Each of these three trends is widely debated yet they continue to profoundly shape the field. This seminar provides an in-depth examination of the emergence and development of this historical archaeology, with a focus on current issues in theory and method. For undergraduates, the prerequisite is Anthro 3 or consent of instructor.
Same as: ANTHRO 209A, ARCHLGY 109A

ANTHRO 110. Environmental Archaeology. 5 Units.
This course investigates the field of environmental archaeology. Its goals are twofold: 1) to critically consider the intellectual histories of environmental archaeology, and, 2) to survey the various techniques and methods by which archaeologists assess historical environmental conditions through material proxies. The course will include lab activities.
Same as: ANTHRO 210, ARCHLGY 110

ANTHRO 110B. Examining Ethnographies. 5 Units.
Eight or nine important ethnographies, including their construction, their impact, and their faults and virtues.
Same as: ANTHRO 210B

ANTHRO 111. Archaeology of Gender and Sexuality. 5 Units.
How archaeologists study sex, sexuality, and gender through the material remains left behind by past cultures and communities. Theoretical and methodological issues; case studies from prehistoric and historic archaeology.
Same as: ARCHLGY 129, FEMGEN 119

ANTHRO 111C. Muwekma: Landscape Archaeology and the Narratives of California Natives. 3-5 Units.
This course explores the unique history of San Francisco Bay Area tribes with particular attention to Muwekma Ohlone- the descendent community associated with the landscape surrounding and including Stanford University. The story of Muwekma provides a window into the history of California Indians from prehistory to Spanish exploration and colonization, the role of Missionaries and the controversial legacy of Junipero Serra, Indigenous rebellions throughout California, citizenship and land title during the 19th century, the historical role of anthropology and archaeology in shaping policy and recognition of Muwekma, and the fight for acknowledgement of Muwekma as a federally recognized tribe. We will visit local sites associated with this history and participate in field surveys of the landscape of Muwekma.
Same as: ARCHLGY 111B, NATIVEAM 111B

ANTHRO 112A. Archaeology of Human Rights. 5 Units.
This introductory seminar provides a critical vantage point about human rights discourse from an archaeological perspective. The seminar is organized around four main questions: (1) Is cultural heritage a human right? (2) What are archaeologists learning about how the material and temporal dimensions of power and resistance? (3) How is archaeological evidence being used in investigations of human rights violations? (4) Can research about the past shape the politics of the present? Topics to be discussed include archaeological research on mass internment, colonialism, enslavement and coerced labor, ethnic cleansing, homelessness, gender discrimination, indigenous rights, and environmental justice.
Same as: URBANST 147

ANTHRO 113. Culture and Epigenetics: Towards A Non-Darwinian Synthesis. 4-5 Units.
The course examines the impact of new research in epigenetics on our understanding of long-term cultural change. The course examines the various attempts that have been made over recent decades to find a synthesis between cultural and biological evolution. These approaches, often termed neo-Darwinian, include memes, dual inheritance theory, theories of cultural selection and transmission, niche construction theory and macro-evolutionary approaches. Research in all these areas will be examined, with particular reference to explanations for the origins of agriculture, but also including other transformations, and critiqued. New research in epigenetics offers an alternative non-Darwinian evolutionary perspective that avoids many of the problems and pitfalls in the neo-Darwinian approaches. Cultural evolution comes to be viewed as cumulative, directional and Lamarckian, since heritable epigenetic variation can underlie evolutionary change. Epigenetics opens the way for human cultural entanglements to become the drivers for evolutionary change, thus allowing the full range of social processes studied in the social and cultural sciences to take their place in the study and analysis of long-term change.
Same as: ANTHRO 213, ARCHLGY 113

ANTHRO 114. Rights and Ethics in Heritage. 5 Units.
Heritage is a human thing: made by people and mobilized for their own purposes, it has a range of effects on communities. This course focuses on the human dimension of heritage with special attention to questions of rights and ethics. Where can we locate the intersections of heritage and rights? How do communities and governing structures negotiate control over and participation in heritage, and with what impacts on people? Which ethical challenges arise and how have archaeologists, heritage managers, museums, legislators, community leaders, and others approached these issues?nnThe first half of this seminar course focuses on the theoretical and contextual basis for these discussions. We will address topics such as cultural ownership and participation as well as the global and governing contexts within which heritage is mobilized. Building on this, the second half examines cases in which different rights, needs, and goals come into conflict: museum practice, public memory, upheaval stemming from violence or disaster, and the ethics of the material world itself. Throughout, we will highlight heritage in relation to communities, rights, and responsibilities, all while thinking through ethical modes of heritage research and practice.
Same as: ANTHRO 214, ARCHLGY 114

ANTHRO 115. The Social life of Human Bones. 3-5 Units.
Skeletal remains serve a primary function of support and protection for the human body. However, beyond this, they have played a range of social roles once an individual is deceased. The processes associated with excarnation, interment, exhumation and reburial all speak to the place that the body, and its parts, play in our cultural as well as physical landscape.n This course builds on introductory courses in human skeletal anatomy by adding the social dynamics that govern the way humans treat other humans once they have died. It draws on anthropological, biological and archaeological research, with case studies spanning a broad chronological and spatial framework to provide students with an overview of social practice as it relates to the human body.
Same as: ANTHRO 215, ARCHLGY 115

ANTHRO 116. Data Analysis for Quantitative Research. 5 Units.
An introduction to numeric methods in Anthropology and related fields employing the Data Desk statistics package to test hypotheses and to explore data. Examples chosen from the instructor's research and other relevant projects. No statistical background is necessary, but a working knowledge of algebra is important. Topics covered include: Frequency Distributions; Measures of Central Tendency, Dispersion, and Variability; Probability and Probability Distributions; Statistical Inference, Comparisons of Sample Means and Standard Deviations; Analysis of Variance; Contingency Tables, Comparisons of Frequencies; Correlation and Regression; Principal Components Analysis; Discriminant Analysis; and Cluster Analysis. Grading based on take-home problem sets.
Same as: ANTHRO 216

ANTHRO 116B. Anthropology of the Environment. 5 Units.
This seminar interrogates the history of anthropology's approach to the environment, beginning with early functionalist, structuralist, and Marxist accounts of human-environment relationships. It builds towards more recent developments in the field, focusing on nonhuman and relational ontologies as well as current projects on the intersections of nature, capital, politics, and landscape histories. At the end of this class, students will be familiar with the intellectual histories of environmental anthropology and contemporary debates and tensions around questions of ethics, agency, environment, and historical causality.
Same as: ANTHRO 216B

ANTHRO 117C. Global Heritage: Conflict, Reconciliation, and Diplomacy. 3-5 Units.
Archaeological studies from the 1990s framed cultural heritage as a resource that created attachments to place and to the past as a means to buttress national and cultural identities. But heritage can no longer be viewed as simply a marker of a singular, national identity. As a global era ushers in new regimes of heritage management, heritage becomes embroiled in a multitude of interactions whether acting as a fulcrum of transnational governance or functioning at the crux of community empowered utilizations and initiatives.nnThis course will trace what happens to heritage as it has been drawn into a world of global interactions while also maintaining more local forms of attachment. The class will address three themes (conflict, reconciliation, and diplomacy), all of which result from the multi-scalar relations that emerge from heritage financing, management, and preservation in a transnational arena. While the class will discuss cases that include both tangible and intangible heritage, the focus of the course will center around tangible elements of the past, including heritage sites and archaeological artifacts. Combining readings from the field of international relations, archaeology, and heritage studies, the class will question if and how heritage can be used in local settings while also producing international exchanges.
Same as: ARCHLGY 105

ANTHRO 118C. Heritage Development in the Global South. 3-5 Units.
Heritage is a site of both promise and contestation in the Global South. These nations use it for a wide range of purposes: Peru¿s thriving tourism sector rests on a basis of heritage attractions, South Africa negotiates a post-apartheid identity through heritage, and India places increasing numbers of sites on the World Heritage List. Outlining different modes of heritage production and interpretation, this class investigates heritage regimes on scales ranging from local communities and national governance to international recognition. We will examine the role of heritage in building communities and identity; the place of heritage within economic development; the efforts of Global South countries to negotiate the legacies of colonialism and global inequality through managing their pasts; and the deployment of heritage as part of international power struggles within worldwide structures like UNESCO. Drawing on anthropology, heritage studies, and archaeology, students will gain a deeper understanding of how heritage is used by Global South countries to produce identity, support development, domesticate the past, and build the future.
Same as: ARCHLGY 116

ANTHRO 119. Zooarchaeology: An Introduction to Faunal Remains. 5 Units.
As regularly noted, whether historic or pre-historic, animal bones are often the most commonly occurring artefacts on archaeological sites. As bioarchaeological samples, they offer the archaeologist an insight into food culture, provisioning, trade and the social aspects of human-animal interactions. The course will be taught through both practical and lecture sessions: the `hands-on¿ component is an essential complement to the lectures. The lectures will offer grounding in the main methodological approaches developed, as well as provide case-studies to illustrate where and how the methods have been applied. The practical session will walk students through the skeletal anatomy of a range of species. It will guide students on the identification of different parts of the animal, how to age / sex individuals, as well as recognize taphonomic indicators and what these mean to reconstructing post-depositional modifications.
Same as: ANTHRO 219, ARCHLGY 119

ANTHRO 119B. Tech Ethics and Ethnography: the human in human-computer interaction. 3-5 Units.
Do machines have culture? How do engineers write themselves into their products? Can we better anticipate the unexpected and unwanted consequences of technologies?nnTaking as its point of departure the discipline of Human-Computer Interaction (HCI), which examines the design and use of computer technology, this course shifts the focus to the humans creating and utilizing the technology. It invites us to think about computer science and social science together and learn how ethnographic methods can be utilized for ethical thinking and design in technology. This course will combine rigorous theoretical thinking with hands-on in-the-field research. Students will devise and engage in their own ethnographic research projects. This course will be of interest to students from a wide range of disciplines, including: computer science, engineering, medicine, anthropology, sociology, and the humanities. Our aim is to have a truly interdisciplinary and open-ended discussion about one of the most pressing social issues of our time, while giving students skills-based training in qualitative methods.

ANTHRO 120. Bioethics and Ancient DNA. 3-5 Units.
The first ancient human genome was sequenced just 10 years ago. From a single genome in 2010 to what has been hailed as a `scientific revolution¿ today, the field of paleogenomics has expanded rapidly. 10 years on we will explore how the field is grappling with emerging issues related to ethical and responsible research, including sampling practices, collaborative community partnerships, and accessibility of research findings to the broader public. How have researchers successfully leveraged multiple voices, perspectives, and priorities engaged with ancient DNA to explore the human past? What are the possibilities of engagement beyond the practical and project-based level? How do these new alliances formed around paleogenomics inform the ethics of sampling, participation, and interpretation? In this course, we will thoughtfully and critically engage with aDNA research in the present to envision possible futures for the field.
Same as: ANTHRO 220, ARCHLGY 120A

ANTHRO 121B. Vital Infrastructures: The Foundations of Modern Life. 5 Units.
Infrastructure describes the material grids that exist beneath society, economy and culture: the foundation upon which everyday life rests and depends. While meant to remain invisible, out of sight and out of mind, diverse infrastructures have become lightning rods for political protest and demands for justice, rights, and a good life. From anti-dam activism in India, to campaigns for clean drinking water in South Africa, to transportation networks in urban Bolivia, and to the energy networks of the United States, infrastructure reveals the connections and disconnections of the globalized world. Taking an anthropological perspective, this course asks: why has infrastructure taken on vital importance to the modern nation-state? What do infrastructural histories reveal about the vital political ideals like freedom, development, equality, and nature? When does infrastructure take on a life of its own, undermining even the best laid plans? What happens when infrastructures fail? Through multi-disciplinary readings and exploratory assignments, this course challenges students see the world beneath their feet in new ways and to trace the material connections that define and sustain modern life itself.

ANTHRO 123B. Government of Water and Crisis: Corporations, States and the Environment. 3-5 Units.
As the Flint, Michigan water situation began to attract attention and condemnation, Michigan State Representative, Sheldon Neeley, describing the 200 troops on the ground and the Red Cross distributing water bottles, said that the Governor had ¿turned an American city into a Third World country [¿] it¿s terrible what he¿s done [¿] no fresh water. ¿ Then at the first Congressional hearing, the Chairman of the House Oversight & Government Reform Committee, Jason Chaffetz, said, ¿This is the United States of America ¿ this isn't supposed to happen here. We are not some Third World country.¿nnWhat is a `third world problem¿? And is the `water problem¿ the same across the world? This course examines how water is governed in a time that is increasingly seen as one of crisis. We will examine how crises are imagined, constructed, sought to be averted, and the governance regimes they give rise to. And how does water, whether as natural resource, public good, a human right, or commodity, determine the contours of such regimes? We will focus mostly on ethnographies, but also examine texts produced by government bodies and aid and environmental organizations, as well as case law. The course will show what anthropology can contribute to the conversation on state and corporate bureaucracies, and their relation with water.

ANTHRO 123C. "Third World Problems?" Environmental Anthropology and the Intersectionality of Justice. 3-4 Units.
As the Flint, Michigan water situation began to attract attention and condemnation, Michigan State Representative, Sheldon Neeley, describing the troops on the ground and the Red Cross distributing water bottles, said that the Governor had "turned an American city into a Third World country [...] it's terrible what he's done [...] no fresh water. Then, at a Congressional hearing, the Chairman of the House Oversight & Government Reform Committee said, "This is the United States of America - this isn't supposed to happen here. We are not some Third World country."nWhat is a "third world problem?" This introductory environmental anthropology course examines how such imaginaries materialize in development programmes and literature, and bespeak charged geopolitical and racial histories; and invites reflection on what futures for working in common they enable/constrain. We will examine how crises are imagined and constructed, and the governance regimes they give rise to. How does water - as natural resource, public good, human right, need, or commodity - determine the contours of such regimes? We will also study chronic, quieter environmental problems and the responses they (do not) generate. Working through a variety of writing genres - ethnographies, policy literature, and legal and corporate publicity material - will enable students to appreciate what anthropology can contribute to the conversation on environmental justice, and state and corporate bureaucracies and their mandates. The course draws on examples from a wide range of settings. The course is offered as an introduction to environmental anthropology and takes students through key themes - infrastructure, race, class, privatization, justice, violence - by focusing on water. It requires no background in anthropology.
Same as: CSRE 123C

ANTHRO 126. Urban Culture in Global Perspective. 5 Units.
Core course for Urban Studies majors. A majority of the world's population now live in urban areas and most of the rapid urbanization has taken place in mega-cities outside the Western world. This course explores urban cultures, identities, spatial practices and forms of urban power and imagination in Asia, Africa and Latin America.nParticipants will be introduced to a global history of urban development that demonstrates how the legacies of colonialism, modernization theory and global race thinking have shaped urban designs and urban life in most of the world. Students will also be introduced to interpretative and qualitative approaches to urban life that affords an understanding of important, if unquantifiable, vectors of urban life: stereotypes, fear, identity formations, utopia, social segregation and aspirations.
Same as: URBANST 114

ANTHRO 127C. Anthropology of Sport and the Body. 3-5 Units.
What is sport? Fun? Big money? A tool for freedom... or control? nnThis course will use the work of anthropology and critical studies to probe what exactly sport is, and how it shapes the body. We will begin by looking at various ways in which social theorists have proposed studying sport, and then use these theoretical frameworks to examine contemporary sport, from individual practice to global spectacle. We will probe the social nature of sport- how it molds bodies, makes players, enraptures audiences. We will ask questions like: Is sport good? What do the Olympics Games aim to achieve? Should NCAA players be paid? In doing so we will examine the underlying social and political assumptions that undergird what we have come to think of as sport today.nnAs we think through how contemporary theorists of our time have theorized sport, we too will use their tools to form our own analyses of sport as a social and political powerhouse.nnWe will look also at how sport has historically been used as a technique of both control and resistance across the world. We will read several anthropologists' work on sport across a variety of cultures, particularly as it relates to nineteenth century European colonialism.nnWe will conclude the course with a sustained discussion of the Olympic Games, using the tools we have studied to think through this massive spectacle of global import.nnThis course is ideally suited for anyone interested in how sport can be examined as a form of culture and social exchange and, more broadly, how theory can be used to break open contemporary culture.

ANTHRO 127D. HERITAGE POLITICS. 3-5 Units.
Heritage is a matter of the heart and not the brain, David Lowenthal once said. It does not seek to explore the past, but to domesticate it and enlist it for present causes. From the drafting of the first royal decrees on ancient monuments in the 17th century, political interests have had a hand in deciding which traditions, monuments and sites best represent and best serve the needs of the nation. The sum of these domestication efforts, the laws, institutions and practices established to protect and manage heritage, is what we call heritage governance. In this seminar you will learn about the politics of 21st century heritage governance at national and international level. Students will become familiar with key conventions and learn about the functioning of heritage institutions. We will also examine the hidden practices and current political developments that impact heritage governance: how UNESCO heritage sites become bargaining tools in international relations, how EU heritage policies are negotiated in the corridors of Brussels, and how the current re-nationalization of Western politics can affect what we come to know as our common past.
Same as: ARCHLGY 127, ARCHLGY 227

ANTHRO 128. Visual Studies. 5 Units.
Drawing on anthropology, art history, cultural studies, and other fields, this course explores how and why one might want to think critically about the politics of visuality, social imagination, the politics of making and consuming images and things, iconophonia and iconophilia, the classification of people and things into ¿artists¿ and ¿art¿, and cultural production more generally.

ANTHRO 129C. A Deep Dive Into the Indian Ocean: From Prehistory to the Modern Day. 5 Units.
The Indian Ocean has formed an enduring connection between three continents, countless small islands and a multitude of cultural and ethnic groups and has become the focus of increasing interest in this geographically vast and culturally diverse region. This course explores a range of topics and issues, from the nature and dynamics of colonization and cultural development as a way of understanding the human experience in this part of the world, to topics such as religion, disease, and heritage The course guides studies in the many ways in which research in the Indian Ocean has a direct impact on our ability to compare developments in the Atlantic and Pacific.
Same as: ANTHRO 229C

ANTHRO 130D. Spatial Approaches to Social Science. 5 Units.
This multidisciplinary course combines different approaches to how GIS and spatial tools can be applied in social science research. We take a collaborative, project oriented approach to bring together technical expertise and substantive applications from several social science disciplines. The course aims to integrate tools, methods, and current debates in social science research and will enable students to engage in critical spatial research and a multidisciplinary dialogue around geographic space.
Same as: ANTHRO 230D, POLISCI 241S, URBANST 124

ANTHRO 131A. The Use and Abuse of Prehistory. 3-5 Units.
To borrow Glyn Daniel¿s phrase, the ¿Idea of Prehistory,¿ invokes notions of deep time, human origins, and mysterious monuments. While the origins of prehistoric research in the 19th century were connected to the emerging sciences of geology, evolution, and archaeology, they were just as intertwined with nation-state building, colonialism, and race science. This course examines the development of prehistory through a thematic and critical lens. How have Western conceptualizations of time and writing affected the definition and study of prehistory? What are some of the colonial legacies in both research agendas and museum collections? Do new methods always provide new answers? What role has gender played in prehistoric interpretation? Drawing from case studies in the Mediterranean, the Americas, Europe, and Africa, we will explore various archaeological approaches to prehistory from the late 19th century to the present, as well as how the idea of prehistory itself has evolved, expanded, or been abandoned altogether.
Same as: ARCHLGY 131, CLASSICS 138

ANTHRO 132. Religion and Politics in the Muslim World. 5 Units.
This course provides an ethnographic examination of religion and politics in the Muslim world. What is the role of Islam in the political life of modern Muslim societies? Conversely, how do modern political powers shape and constrain the terms of religious life? This course takes an anthropological perspective on the study of Islam: our investigations will not focus on the origins of scriptures and doctrines but rather on the use of religious texts and signs in social context and on the political significance of ritual and bodily practices. A major aim of the course is provide students with analytical resources for thinking critically about the history and politics of modern Muslim societies, with a particular focus on issues of religious authority, gender and sexuality, and the politics of secularism.

ANTHRO 132C. Technology and Inequality. 4-5 Units.
In this advanced interdisciplinary seminar we will examine the ways that technologies aimed to make human lives better (healthier, freer, more connected, and informed) often also harbor the potential to exacerbate social inequalities. Drawing from readings in the social sciences on power and ethics, we will pay special attention to issues of wealth, race, ethnicity, sex, gender, globalization and humanitarianism.
Same as: CSRE 132C

ANTHRO 132D. Thinking Technology: Anthropological Perspectives. 3 Units.
What role does technology play in society, and vice-versa? This course considers the question from an anthropological perspective, pairing different conceptual models of social-technical relations (Social Constructivism, Actor-Network Theory, Cyborg Anthropology) with real world examples. Through such technologies as factory machines, trains, Bakelite, slot machines, computers, missiles, and PET scanners, students will gain insights both on how the social suffuses the mundane objects around us, and how technologies have radically redefined how we see the world.

ANTHRO 133. Masculinity: Technologies and Cultures of Gender. 4 Units.
What is masculinity? How are masculinities invested with power and meaning in cultural contexts? How is anthropological attention to them informed by and extending inquiry across the academy in spheres such as culture studies, political theory, gender studies, history, and science and technology studies? Limited enrollment.
Same as: ANTHRO 233, FEMGEN 133M

ANTHRO 134A. Whose Ghost in the Machine? Cultures, Politics and Morals of Artificial Intelligence. 3 Units.
This course seeks to divert attention away from bleak fantasies of an impending AI apocalypse that would be unleashed by ¿the blind and irresponsible advent of oppressively dehumanizing technology¿ and instead highlight the oppressive ¿human¿ elements that structure how AI is imagined, researched, designed, produced and utilized. The aim of the course is to analyze how culture at large influences the development of AI and how, or to what extent, AI reproduces political and moral structures of human societies.nnWhat makes us, and even Silicon Valley tycoons, become afraid of science-fictional fantasies of nonhuman villains to wipe the human race, while we easily shrug off rampant racism or sexism that is reproduced and reinforced by ¿algorithms of oppression¿? What kind of political and cultural elements influence the mostly invisible political economy of how AI, machine learning and deep learning is designed, produced and utilized as a commodity by some of the most powerful corporations in contemporary global economy? In short, how does human culture at large configure within the scientific and technological research into and development of non-human intelligence?nnAnthropology has a long history of researching about human-technology interaction and often joins forces with History of Science and Science and Technology Studies. In that spirit, we will cover a wide array of literature on the historical development of academic research on cognitive science, philosophy of mind, consciousness, machine learning, deep learning, cybernetics and robotics. However, the primary aim of the course is to offer a meta-perspective on the ¿cultural aspects¿ of how these topics have been studied and practiced by entrepreneurs, research scientists, engineers, philosophers and futurists, and not the disciplinary knowledge generated by research on these topics.nnApart from ethnographic and historic researches about how AI is studied and produced, we will utilize works by theoretical cultural critics, historians and philosophers, like Bruno Latour, Donna Haraway, Michel Foucault, as well as Gilbert Ryle, Daniel Dennett and David Chalmers. Furthermore, we will heavily rely on cultural images, fantasies and narratives about artificial intelligence in literature, arts and cinema. To that effect, we will watch a wide array of movies and will interactively analyze these cultural works in class, asking to what extent they represent actual research into and development of AI.

ANTHRO 135B. Waste Politics: Contesting Toxicity, Value, and Power. 3 Units.
Waste is increasingly central as an object and medium of political contestation in the contemporary world, from struggles over garbage, labor, and dignity in Senegal; to explosive remnants of war acting as rogue infrastructure in the Korean demilitarized zone. In response, waste has also become a productive concept in the environmental humanities and humanistic social sciences. In this course we will read a selection of foundational texts focused on waste, many of which draw on case studies from different parts of the world. The case of China will be emphasized, however, since China has emerged in the last few decades as a center not only of global industrial production, but also for processing the world¿s waste, contesting pollution, and fighting for environmental justice. By pairing key theoretical texts with texts dealing with waste-related issues in China and elsewhere, we will ultimately ask how contemporary global waste politics disrupts western understandings of waste, recycling, value, and more.
Same as: ANTHRO 235B, EARTHSYS 135B

ANTHRO 135C. Moving Worlds: Anthropology of Mobility and Travel. 5 Units.
This course looks at human mobility from an anthropological perspective. We will read texts that ethnographically explore the experiences of refugees, labor migrants, tourists and seafarers, among others. In particular, we will look at the intersection of physical mobility and social mobility, as people often move in order to improve their life, to increase safety or economic security, or to gain social capital. However, the mobility perspective has also been criticized for depoliticizing and celebrating movement without critical attention to its socio-political and economic context. While mobility as a term points to the ability to move, human migration is at least as often characterized by restrictions and obstacles to movement, such as borders. We will think critically about the deep inequalities that exist in terms of why and how people move, and who are able to mobilize resources to move.

ANTHRO 136B. White Identity Politics. 3-5 Units.
Pundits proclaim that the 2016 Presidential election marks the rise of white identity politics in the United States. Drawing from the field of whiteness studies and from contemporary writings that push whiteness studies in new directions, this upper-level seminar asks, does white identity politics exist? How is a concept like white identity to be understood in relation to white nationalism, white supremacy, white privilege, and whiteness? We will survey the field of whiteness studies, scholarship on the intersection of race, class, and geography, and writings on whiteness in the United States by contemporary public thinkers, to critically interrogate the terms used to describe whiteness and white identities. Students will consider the perils and possibilities of different political practices, including abolishing whiteness or coming to terms with white identity. What is the future of whiteness? n*Enrolled students will be contacted regarding the location of the course.
Same as: AFRICAAM 136B, CSRE 136

ANTHRO 137. The Politics of Humanitarianism. 5 Units.
What does it mean to want to help, to organize humanitarian aid, in times of crisis? At first glance, the impulse to help issue generis a good one. Helping is surely preferable to indifference and inaction. This does not mean that humanitarian interventions entail no ethical or political stakes or that they are beyond engaged critique. We need to critique precisely that which we value, and to ask some hard questions, among them these: What are the differences among humanitarianism, charity, and philanthropy? What of social obligations and solidarities? How does the neoliberal world order currently create structural inequalities that ensure the reproduction of poverty and violence? How does the current order of things resemble or differ from the colonial world order? This course examines the history of humanitarian sensibilities and the emergence of organized action in the ¿cause of humanity¿. In the early years of humanitarian intervention, political neutrality was a key principle; it has now come under ever greater analytical and political scrutiny. We will examine the reasons for the politicization and militarization of aid -- be it humanitarian aid in natural disasters or political crises; development programs in the impoverished south (¿the Third World¿), or peace-keeping. We will end with a critical exploration of the concept of human rights, humanity, and personhood. The overall methodological aim of the course is to demonstrate what insights an ethnographic approach to the politics, ethics, and aesthetics of humanitarianism can offer.
Same as: ANTHRO 237

ANTHRO 137A. Traditional Medicine in the Modern World. 3 Units.
This class considers "traditional medicine" in contemporary times. We will survey major systems of traditional medicine while considering their broader social, cultural, and political contexts. The class will study the symbolic uses of traditional medicine, the role of traditional medicines in early modern medical knowledge, the place of indigenous knowledge in bioprospecting, health-seeking behavior and medical pluralism, and the WHO's approach to traditional medicine and how it has affected government health policies. The class emphasizes a critical approach to the concepts of tradition and modernity, and an understanding of traditional medicine as a changing, flexible, and globalized category of healing.

ANTHRO 137D. Political Exhumations. Killing Sites Research in Comparative Perspective. 3-5 Units.
The course discusses the politics and practices of exhumation of individual and mass graves. The problem of exhumations will be considered as a distinct socio-political phenomenon characteristic of contemporary times and related to transitional justice. The course will offer analysis of case studies of political exhumations of victims of the Dirty War in Argentina, ethnic cleansing in former Yugoslavia, the Holocaust, communist violence in Poland, the Rwandan genocide, and the Spanish Civil War. The course will make use of new interpretations of genocide studies, research of mass graves, such as environmental and forensic approaches.
Same as: ARCHLGY 137, ARCHLGY 237, DLCL 237, REES 237

ANTHRO 138. Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise. 5 Units.
This course will explore historical as well as current market transformations of medical ethics in different global contexts. We will examine various aspects of the research enterprise, its knowledge-generating and life-saving goals, as well as the societal, cultural, and political influences that make medical research a site of brokering in need of oversight and emergent ethics.nThis seminar will provide students with tools to explore and critically assess the various technical, social, and ethical positions of researchers, as well as the role of the state, the media, and certain publics in shaping scientific research agendas. We will also examine how structural violence, poverty, global standing, and issues of citizenship also influence issues of consent and just science and medicine.
Same as: ANTHRO 238, CSRE 138

ANTHRO 139C. Anthropology of Global Health. 5 Units.
Global health has been the contested realm of theoretical debates and praxis in medical anthropology. Rationalities behind global health projects reflected the predominant mode of envisioning health in specific historical moments.nn· In this course, we will first assess the ways in which memories, materiality and institutions of the colonial past persist in the field of global health in Africa.nn· Secondly, we will explore how early medical anthropologists participated in international health projects in order to facilitate implementation of the Western biomedicine in developing countries by investigating cultural barriers under the post-war regime of international development in the efforts of controlling malaria and HIV/AIDS in Latin America. nn· Thirdly, we will examine achievements and limitations of subsequent critical medical anthropologists¿ shift of the focus of analysis on global health from culture to structure, larger political economic conditions that produced vast health inequalities around the world, including World Bank policies under the Cold War and neoliberal reforms that increased the prevalence of TB and other diseases in post-socialist contexts nn· Finally, we will question previous anthropological discourses on global health and propose potential insights by understanding moral imaginations of contemporary global health participants such as WHO or Gates Foundation and humanitarian medicine such as MSF, and continuities and discontinuities of colonial and developmental past in current global health movement.

ANTHRO 140C. Mobilizing Nature. 3 Units.
From Brazil's Landless Worker's Movement (MST) to Water Wars of Cochabamba to Standing Rock, these moments of protest have turned into movements. This seminar will examine how theoretical framings of movements have shifted from claims about political rights to environmental ones. We will address two overarching questions: How are notions of ethnicity, gender, and class constructed in relation to the environment? And how do people understand these relationships in such a way that motivates them to mobilize? Students will explore what kinds of ecological claims are being made, who is making, how, and who benefits from them. The objective is to ultimately understand how movements not only reflect, but also (re)shape political and social practices around the environment.

ANTHRO 142B. Anthropology of the Internet. 5 Units.
This course provides students with an introduction to anthropological approaches to the Internet as an object, and site, of study. Special attention is paid to the ways in which online media are changing the practices and materiality of politics. By reading recently published ethnographic analyses alongside classic anthropological and social theory texts students will come to a better understanding of the co-constitution of the Internet and contemporary social and political life.nnThough many Internet phenomena and websites are celebrated and discussed for their novelty, the questions and issues they present resonate with topics of longstanding anthropological concern. Each week of the course will be dedicated to bringing established anthropological frameworks to bear on a different aspect of the sociality and materiality of the net. How, for example, can anthropological theorizations of citizenship and publics help us make sense of ¿fake news¿ and ¿Twitter revolutions¿? How can Anderson¿s work on the role of the printing press in the emergence of the nation help us understand the ways in which blogs and online discussion boards facilitate transnational ¿imagined communities¿?.

ANTHRO 143. Title Social Change in Contemporary China: Modernity and the Middle Kingdom. 4-5 Units.
Over the last twenty years, residents of the People¿s Republic of China have experienced dramatic changes in nearly every facet of life. This undergraduate seminar introduces students to contemporary China through an examination of various types of social transformation. We will analyze how PRC residents of different backgrounds are confronting such processes as economic liberalization, migration, kinship transformation, sexual commodification, media proliferation, industrialization, and transnationalism? Priority is placed on reading, discussing and assessing research that uses qualitative methods and that situates political economy in dialogue with lived experience.
Same as: ANTHRO 243

ANTHRO 144. Art and the Repair of the Self. 3-5 Units.
Engaging the body/mind and its senses in the making of images and things has long been considered to have potentially great therapeutic significance. This course is a close examination of making as a form of therapy, as a form of communication, and, vitally, as a form of knowing. As such, it suggests new, analytically powerful possibilities for anthropological practice.
Same as: ANTHRO 244

ANTHRO 147B. World Heritage in Global Conflict. 5 Units.
Heritage is always political, it is typically said. Such a statement might refer to the everyday politics of local stakeholder interests on one end of the spectrum, or the volatile politics of destruction and erasure of heritage during conflict, on the other. If heritage is always political then one might expect that the workings of World Heritage might be especially fraught given the international dimension. In particular, the intergovernmental system of UNESCO World Heritage must navigate the inherent tension between state sovereignty and nationalist interests and the wider concerns of a universal regime. The World Heritage List has over 1000 properties has many such contentious examples, including sites in Iraq, Mali, Syria, Crimea, Palestine and Cambodia. As an organization UNESCO was born of war with an explicit mission to end global conflict and help the world rebuild materially and morally, but has found it¿s own history increasingly entwined with that of international politics and violence.
Same as: ANTHRO 247B, ARCHLGY 147B

ANTHRO 148. Health, Politics, and Culture of Modern China. 4-5 Units.
One of the most generative regions for medical anthropology inquiry in recent years has been Asia. This seminar is designed to introduce upper division undergraduates and graduate students to the methodological hurdles, representational challenges, and intellectual rewards of investigating the intersections of health, politics, and culture in contemporary China.
Same as: ANTHRO 248, CHINA 155A, CHINA 255A

ANTHRO 150. The Ordinary: The History of a Concept. 5 Units.
The ordinary has today acquired something like a cultic status in contemporary culture. `Ordinary¿ citizens are the touchstone and essence of political democracy; the holy grail of effective marketing, the byword for earthy ethical judgment. In social science, the ordinary has blended in with the `normal¿ and the statistical mean. In Anthropology, ordinary life has all but replaced `cultural practice¿ as the epistemic gold standard of evidence. But this was not always so, and the ordinary has many, varied and contradictory meanings across the world.nThis course will (a) trace the historical emergence of the ordinary as a central ideological and metaphysical concept in modern thought and practice; (b) trace how the ordinary and the everyday have acquired unprecedented authority in anthropology; (3) trace the varies meanings and connotations of `the ordinary¿ in different socio-historical contexts from Asia, Africa and Euro-America.nThe literature will consist of ethnographies, and works of philosophical and historical scholarship.
Same as: ANTHRO 250

ANTHRO 150B. Fire: Social and Ecological Contexts of Conflagration. 3 Units.
Over 1 million acres burned from California wildland fires in 2018, yet conservative estimates suggest that four times as many acres burned annually in California preceding European colonialism. In this course we will explore how climate, land management, urban development, and human social institutions contribute to contrasts in wild and prescribed (intentional anthropogenic) fire patterns worldwide. We will investigate the socio-ecological values and harms associated with different fire and land-use policies and practices, ranging from Indigenous and small-scale contexts, conservation projects, and large-scale fire suppression efforts.
Same as: EARTHSYS 150B

ANTHRO 151D. Art/Design/Craft. 3-5 Units.
Key texts from art theory, design theory, and recent work in craft theory will be set in conversation with anthropological understandings of cultural production and creative expression in order to explore why art, design, and craft have so long been differently valued. Examines why ¿art¿ is associated with ¿vision¿, intellect, and creative expression, while ¿craft¿ is associated with ¿mere¿ skill, manual labor, and domesticity. Contemporary social and political implications are explored.

ANTHRO 152A. Urban Poverty and Inequality in Contemporary China. 5 Units.
Experiences of poverty and inequality and their relationship to gender, space development, post-socialism, and globalization. How processes of class-making in China's cities are bound up with transformations in the country's sociopolitcal landscape.

ANTHRO 153. Asylum: Knowledge, Politics, and Population. 3-5 Units.
This course draws from ethnography, social theory, media and literature to examines the place of the asylum in the constitution of knowledge, politics, and populations. An ancient juridical concept, asylum has been used to describe a fundamental political right, medical and penal institutions, as well as emergent spaces of care and safety. As such, thus course invites students to think of critical issues associated with asylum, including: illness, trauma, violence, immigration, displacement, human rights, sanctuary, and testimony.
Same as: CSRE 153C

ANTHRO 154. Anthropology of Drugs: Experience, Capitalism, Modernity. 5 Units.
This course examines the significant role ¿drugs¿ play in shaping expressions of the self and social life; in the management populations, and in the production of markets and inequality. It engages these themes through cultural representations of drugs and drug use, analyses of scientific discourse, and social theory. Topics include: the social construction of the licit and illicit; the shifting boundaries of deviance, disease and pleasure; and the relationship between local markets and global wars.
Same as: ANTHRO 254B, CSRE 154

ANTHRO 154C. Animism, Gaia, and Alternative Approaches to the Environment. 3-5 Units.
Indigenous knowledges have been traditionally treated as a field of research for anthropologists and as mistaken epistemologies, i.e., un-scientific and irrational folklore. However, within the framework of environmental humanities, current interest in non-anthropocentric approaches and epistemic injustice, animism emerged as a critique of modern epistemology and an alternative to the Western worldview. Treating native thought as an equivalent to Western knowledge will be presented as a (potentially) decolonizing and liberating practice. This course may be of interest to anthropology, archaeology and literature students working in the fields of ecocriticism and the environmental humanities/social sciences, students interested in the Anthropocene, geologic/mineral, bio-, eco- and geosocial collectives, symbiotic life-forms and non-human agencies. The course is designed as a research seminar for students interested in theory of the humanities and social sciences and simultaneously helping students to develop their individual projects and thesis.
Same as: ANTHRO 254C, ARCHLGY 154, ARCHLGY 254, DLCL 254, REES 254

ANTHRO 155. Ideologies and Practices of Creativity. 3-5 Units.
'Creativity' has long been a charged cultural, political, and philosophical concept. It has been an intersectional structuring/disciplining concept in many areas of social life (art, craft professions, education, the creation of cultural capital and class formation, the naturalization of inequality under capitalism, colonialism, imperialism, etc.). The consequences of its deployment have been far-reaching.

ANTHRO 156. Japanese Anthropology. 5 Units.
This is an advanced reading seminar in the field of Japanses Anthropology. nIt will explore the historical development of the field and the contemporary issues and topics taken up by scholars of Japanese anthropology. Prior knowledge of Japanese language, history, and, society is required.
Same as: ANTHRO 256

ANTHRO 157. Japanese Popular Culture. 3 Units.
This seminar focuses on the intersection between politics and popular culture in contemporary Japan. It will survey a range of social and political implications of practices of popular culture. Topics include J-pop, manga, anime, and other popular visual cultures, as well as social media. Students will be introduced to theories of popular culture in general, and a variety of contemporary anthropological studies on Japanese popular culture in particular. Prior knowledge of cultural anthropology is required.
Same as: ANTHRO 257

ANTHRO 158. The Anthropology of Social Class. 5 Units.
Course introduces social theory concepts and paradigms for the understanding of class. It then extends and revises those concepts and paradigms by considering anthropological approaches in different cultural and historical settings that consider the entanglements of class with other social hierarchies, especially race, caste, and ideas of "civilization" and "development".
Same as: ANTHRO 258

ANTHRO 159C. Ecological Humanities. 3 Units.
What sort of topics, research questions, approaches, theories and concepts lead to an integration of various kinds of knowledges? Ecological Humanities provides a conceptual platform for a merger of humanities and social sciences with earth and life sciences, soil science and forensic sciences. The course will discuss such selected topics as the Anthropocene, geologic/mineral and exhumed subjects/personae, bio- and geosocial collectives, symbiotic life-forms, non-human agencies, and forensic landscapes as examples of this merger.
Same as: ANTHRO 259C, DLCL 259C, REES 259C

ANTHRO 166. Political Ecology of Tropical Land Use: Conservation, Natural Resource Extraction, and Agribusiness. 3-5 Units.
Seminar. The state, private sector, development agencies, and NGOs in development and conservation of tropical land use. Focus is on the socioeconomic and political drivers of resource extraction and agricultural production. Case studies used to examine the local-to-global context from many disciplines. Are maps and analyses used for gain, visibility, accountability, or contested terrain? How are power dynamics, land use history, state-private sector collusion, and neoliberal policies valued? What are the local and extra-local responses?.
Same as: ANTHRO 266

ANTHRO 166A. Semiotics for Ethnography. 3 Units.
This workshop-style seminar introduces students to core theories and concepts in linguistic and semiotic anthropology. Examining current theoretical innovations in this field of study, the course explores the multivalent relationships between language and political authority, discourse and technology, and speech and material infrastructures. Emphasis is placed on how semiotic approaches provide tools for ethnographic analysis, and students will learn how to use semiotic concepts for their own research projects.
Same as: ANTHRO 266A

ANTHRO 171. The Biology and Evolution of Language. 4-5 Units.
Lecture course surveying the biology, linguistic functions, and evolution of the organs of speech and speech centers in the brain, language in animals and humans, the evolution of language itself, and the roles of innateness vs. culture in language. Suitable both for general education and as preparation for further studies in anthropology, biology, linguistics, medicine, psychology, and speech & language therapy. Anthropology concentration: CS, EE. No prerequisites.
Same as: ANTHRO 271

ANTHRO 175. Human Skeletal Anatomy. 5 Units.
Study of the human skeleton (a. k. a. human osteology), as it bears on other disciplines, including medicine, forensics, archaeology, and paleoanthropology (human evolution). Basic bone biology, anatomy, and development, emphasizing hands-on examination and identification of human skeletal parts, their implications for determining an individual's age, sex, geographic origin, and health status, and for the evolutionary history of our species. Three hours of lecture and at least three hours of supervised and independent study in the lab each week.
Same as: ANTHRO 275, BIO 174, BIO 274, HUMBIO 180

ANTHRO 176. Cultures, Minds, and Medicine. 1 Unit.
This workshop aims to bring together scholars from the social sciences, humanities, medicine and bio-science and technology to explore the ways that health and illness are made through complex social forces. We aim for informal, interactive sessions, full of debate and good will. Dates of meetings will be listed in the notes section in the time schedule.
Same as: ANTHRO 276

ANTHRO 178B. History of Medicine. 3-5 Units.
This seminar course will examine medical successes and failures to better understand the politics, economics, and sociality of medicine as a practice and a culture. Examples will be drawn from technical developments such as vaccines; methodological innovations such as randomized control trials; and the study of specific diseases such as yellow fever, cancer, hepatitis, and HIV/AIDS.

ANTHRO 179B. Culture of Disease: The Social History of Vaccines. 5 Units.
This course will detail the history and develop of vaccines, specifically examining critical issues such as personal choice v. public health, the use of experimental subjects, population-wide medical trials, and the use of animal tissues in vaccine development.

ANTHRO 181. Religion and Science in the Amazon and Elsewhere. 5 Units.
The conversion of native peoples to Christianity, especially Evangelical Christianity, is today a global phenomenon. This course looks to understand the reasons for religious conversion and its consequence in the everyday and ritual practices of Amazonians and their traditional practice of shamanism. We then turn to a question seldom addressed in the literature on conversion: the relationship between religion and science. We will explore the way conversion to Christianity produces changes in conceptions of the world and the person similar to those produced by access to scientific knowledge, which occurs primarily through schooling.
Same as: ANTHRO 281, RELIGST 270X, RELIGST 370X

ANTHRO 182N. Smoke and Mirrors in Global Health. 3 Units.
A few years ago, health experts began calling out tobacco as engendering a global health crisis, categorizing the cigarette as the world's greatest weapon of mass destruction. A "global health crisis"? What merits that title if not tobacco use? A hundred million people were killed by tobacco in the 20th century, and ten times that number ¿ a billion people ¿ are predicted to die prematurely from exposure to cigarette smoke over the next hundred years. How has tobacconcome to be labeled a global health crisis over the last decade and what has been the political response? From whence does activism and ongoing complacency regarding tobacco arise? How are they created in different cultural contexts?nnThis course aims to provide students conceptual tools to tackle two specific thought projects: (1) to understand how institutional actors compete to define a situation in the world today as a problem of global health, and (2) to understand the sociocultural means by which something highly dangerous to health such as the cigarette is made both politically contentious and inert. On both fronts, special attention will be given to the ways global health activism and complacency unfold in the U.S. and China.

ANTHRO 183A. Sex, Money, and Power: An Approach Through Feminist Anthropology. 3 Units.
What are the sexual politics of labor and capital? How is the global economy shaped by sex, love, and intimacy? This course will examine intimacy--gender, sexuality, kinship, and care-- as a lense for understanding and interrogating socio-political and economic systems from an anthropological perspective. By refusing the categorical separation of the private or domestic realm from the realm of politics, this course will critically interrogate the naturalization of particular intimate configurations (like the family, romantic couple, and domestic labor) in global contexts of colonialism, (neo)liberalism, and global capitalism. It will explore how domains of seemingly ¿private¿ sentiment and personal relations are connected to liberal and illiberal forms of power, inequality, exploitation and control, as well as to processes of incorporation, citizenship, and care. Finally, through selected ethnographic texts, this course will also look at the intimate as staging ground for social resistance, political refusal, economic ingenuity, and creativity.
Same as: FEMGEN 183A

ANTHRO 184A. Vital Curse: Oil As Culture. 3 Units.
Rapidly-evolving technology draws increasing amounts of petroleum from the ground, while wars and friendly agreements move it around the globe, all to occasionally-disastrous result. Pronounced environmental concerns such as fracking, pipelines, plastics, climate change are nearly synonymous with the petroleum industry. And yet, oil is integral to meeting basic human needs like food and water, and integral to meeting modern desires for mobility, energy, and consumer-products on demand. This class approaches the modern world¿s increasingly-reluctant reliance on oil¿from extraction to consumption with problems included¿as a complex cultural practice to be analyzed using anthropology, geography, and environmental studies.

ANTHRO 186. Culture and Madness: Anthropological and Psychiatric Approaches to Mental Illness. 3-5 Units.
Unusual mental phenomena have existed throughout history and across cultures. Taught by an anthropologist and psychiatrist, this course explores how different societies construct the notions of "madness": What are the boundaries between "normal" and "abnormal", reason and unreason, mind and body, diversity and disease? Optional: The course will be taught in conjunction with an optional two-unit discussion section.
Same as: ANTHRO 286, HUMBIO 146, PSYC 286

ANTHRO 186B. Culture and Madness: Anthropological and Psychiatric Approaches to Mental Illness. 3-5 Units.
Unusual mental phenomenon have existed throughout history and across cultures. Taught by an anthropologist and psychiatrist, this course explores how different societies construct the notions of "madness": What are the boundaries between "normal" and "abnormal", reason and unreason, mind and body, diversity and disease? The course will be taught in conjunction with a two unit engaged learning component which will place students in relevant settings.
Same as: ANTHRO 286B

ANTHRO 188. Matter and Mattering: Transdisciplinary Thinking about Things. 4-5 Units.
Things sit at the nexus of cross-cutting heterogeneous processes; tracing the entanglements of any prominent thing or class of things demands a transdisciplinary approach that recruits expertise from the natural sciences, social sciences and humanities. For example, carbon is a key factor in global warming for reasons that are as much socio-historical as bio-physical, and we could not begin to sketch the full significance of carbon without considering such diverse frames of reference. Our growing appreciation in the social sciences and humanities of the agency, polyvalence and catalytic role of things has given rise to The New Materialist and Post-Humanist movements, which in turn raise questions about intra-action and observational perspective that are echoed in the modern physical and life sciences. In this class we will explore these theoretical convergences in considering themes such as `things-in-themselves¿, networks and open systems, assemblages and entanglements. We will also examine specific examples such as oil, metal (guns), dams, viruses, electricity, mushrooms; each thing will be explored both in terms of its social and ethical entanglements and in terms of its material properties and affordances. There will also be hands-on encounters with objects in labs and a couple of local field trips. The key question throughout will be `why and how does matter matter in society today?.
Same as: ANTHRO 288, APPPHYS 188, ARCHLGY 188

ANTHRO 189X. Preparation for Senior Thesis. 2-3 Units.
This course is designed for juniors (majors, minors, and those seeking Interdisciplinary Honors in CSRE or FGSS) who intend to write a senior thesis in one of the CSRE Family of Programs or FGSS Interdisciplinary Honors. The course offers resources and strategies for putting together a significant and original senior thesis. Topics to be covered include: getting funding; finding an advisor; navigating the institutional review board; formulating an appropriate question; and finding the right data/medium/texts.
Same as: AFRICAAM 199X, CSRE 199, FEMGEN 199X

ANTHRO 193. Anthropology Capstone: Contemporary Debates in Anthropology. 5 Units.
Do you know what an anthropological perspective is? Can you describe some of the key assumptions and questions within the discipline? nA major in Anthropology is composed of many specialized courses in different tracks, different emphases and seemingly a never-ending multiplication of perspectives and ethnographies. However, Anthropology is also an ongoing intellectual conversation with foundational questions, some of longstanding and some new. These foundational questions have stimulated different responses and answers and thus have also led to constant renewal of the discipline in the midst of profound disagreement. In this Anthropology Capstone course students across tracks and emphases will address some of the critical debates that have been central to the discipline as it has developed. We will feature three debate questions in the class. Preparation for each debate will be through class discussion of critical readings as well as extra-mural reading and preparation with one¿s debating partners.

ANTHRO 196. Anthropology of Socialism. 3-5 Units.
This course offers an anthropological perspective on ideas and practices of socialism, past and present. It is concerned both with the anthropological study of ¿actually-existing socialism¿ and with both classical and contemporary conceptions of what socialism is, or could be.

ANTHRO 199. Senior and Master's Paper Writing Workshop. 1-2 Unit.
Techniques of interpreting data, organizing bibliographic materials, writing, editing and revising. Preparation of papers for conferences and publications in anthropology. Seniors register for 199; master's students register for 299.
Same as: ANTHRO 299

ANTHRO 201. Introduction to Cultural and Social Anthropology. 3-5 Units.
This course introduces basic anthropological concepts and presents the discipline's distinctive perspective on society and culture. The power of this perspective is illustrated by exploring vividly-written ethnographic cases that show how anthropological approaches illuminate contemporary social and political issues in a range of different cultural sites.
Same as: ANTHRO 1

ANTHRO 206A. Incas and their Ancestors: Peruvian Archaeology. 3-5 Units.
The development of high civilizations in Andean S. America from hunter-gatherer origins to the powerful, expansive Inca empire. The contrasting ecologies of coast, sierra, and jungle areas of early Peruvian societies from 12,000 to 2,000 B.C.E. The domestication of indigenous plants which provided the economic foundation for monumental cities, ceramics, and textiles. Cultural evolution, and why and how major transformations occurred.
Same as: ANTHRO 106, ARCHLGY 102B

ANTHRO 209A. Archaeology of the Modern World. 3-5 Units.
Historical archaeology, also called the archaeology of the modern world, investigates the material culture and spatial history of the past five centures. As a discipline, historical archaeology has been characterized by (1) a methodological conjunction between history and archaeology; (2) a topical focus on the ¿three Cs¿: colonization, captivity, and capitalism ¿ forces which arguably are constitutive of the modern world; and (3) an epistemological priority to recovering the perspectives of ¿people without history.¿ Each of these three trends is widely debated yet they continue to profoundly shape the field. This seminar provides an in-depth examination of the emergence and development of this historical archaeology, with a focus on current issues in theory and method. For undergraduates, the prerequisite is Anthro 3 or consent of instructor.
Same as: ANTHRO 109A, ARCHLGY 109A

ANTHRO 210. Environmental Archaeology. 5 Units.
This course investigates the field of environmental archaeology. Its goals are twofold: 1) to critically consider the intellectual histories of environmental archaeology, and, 2) to survey the various techniques and methods by which archaeologists assess historical environmental conditions through material proxies. The course will include lab activities.
Same as: ANTHRO 110, ARCHLGY 110

ANTHRO 210B. Examining Ethnographies. 5 Units.
Eight or nine important ethnographies, including their construction, their impact, and their faults and virtues.
Same as: ANTHRO 110B

ANTHRO 212B. Biology, Culture and Social Justice in Latin America: Perspectives from Forensic Anthropology. 5 Units.
This course will only take place in the first 5 weeks of the quarter.nnAs forensic anthropologists, we are routinely asked to make identifications of unknown human remains and provide courtroom testimony. Latin America has become a nexus for social justice work, as we respond to the humanitarian crisis along the U.S.-México Border. To improve identification methods of the undocumented dead, we must understand the diversity in Latinx people and adopt best scientific practices.
This course provides a cross-disciplinary, bio-cultural approach to Latin American variation and training in applied methods of forensic anthropology. Explore how tools of biological and cultural anthropology are used jointly in human rights investigation and social justice advancement. Discover the breadth of Latinx diversity and how historical, geographic, and socio-cultural factors shape this variation. Gain hands-on experience in case analysis, using skeletal, genetic, and recovery context information to estimate key parameters of identity. Use case studies to contextualize this work through an intersectional lens that attends to the living families and the applicable historical, geo-political and socio-cultural conditions.
Same as: CHILATST 212, CSRE 212

ANTHRO 213. Culture and Epigenetics: Towards A Non-Darwinian Synthesis. 4-5 Units.
The course examines the impact of new research in epigenetics on our understanding of long-term cultural change. The course examines the various attempts that have been made over recent decades to find a synthesis between cultural and biological evolution. These approaches, often termed neo-Darwinian, include memes, dual inheritance theory, theories of cultural selection and transmission, niche construction theory and macro-evolutionary approaches. Research in all these areas will be examined, with particular reference to explanations for the origins of agriculture, but also including other transformations, and critiqued. New research in epigenetics offers an alternative non-Darwinian evolutionary perspective that avoids many of the problems and pitfalls in the neo-Darwinian approaches. Cultural evolution comes to be viewed as cumulative, directional and Lamarckian, since heritable epigenetic variation can underlie evolutionary change. Epigenetics opens the way for human cultural entanglements to become the drivers for evolutionary change, thus allowing the full range of social processes studied in the social and cultural sciences to take their place in the study and analysis of long-term change.
Same as: ANTHRO 113, ARCHLGY 113

ANTHRO 214. Rights and Ethics in Heritage. 5 Units.
Heritage is a human thing: made by people and mobilized for their own purposes, it has a range of effects on communities. This course focuses on the human dimension of heritage with special attention to questions of rights and ethics. Where can we locate the intersections of heritage and rights? How do communities and governing structures negotiate control over and participation in heritage, and with what impacts on people? Which ethical challenges arise and how have archaeologists, heritage managers, museums, legislators, community leaders, and others approached these issues?nnThe first half of this seminar course focuses on the theoretical and contextual basis for these discussions. We will address topics such as cultural ownership and participation as well as the global and governing contexts within which heritage is mobilized. Building on this, the second half examines cases in which different rights, needs, and goals come into conflict: museum practice, public memory, upheaval stemming from violence or disaster, and the ethics of the material world itself. Throughout, we will highlight heritage in relation to communities, rights, and responsibilities, all while thinking through ethical modes of heritage research and practice.
Same as: ANTHRO 114, ARCHLGY 114

ANTHRO 215. The Social life of Human Bones. 3-5 Units.
Skeletal remains serve a primary function of support and protection for the human body. However, beyond this, they have played a range of social roles once an individual is deceased. The processes associated with excarnation, interment, exhumation and reburial all speak to the place that the body, and its parts, play in our cultural as well as physical landscape.n This course builds on introductory courses in human skeletal anatomy by adding the social dynamics that govern the way humans treat other humans once they have died. It draws on anthropological, biological and archaeological research, with case studies spanning a broad chronological and spatial framework to provide students with an overview of social practice as it relates to the human body.
Same as: ANTHRO 115, ARCHLGY 115

ANTHRO 216. Data Analysis for Quantitative Research. 5 Units.
An introduction to numeric methods in Anthropology and related fields employing the Data Desk statistics package to test hypotheses and to explore data. Examples chosen from the instructor's research and other relevant projects. No statistical background is necessary, but a working knowledge of algebra is important. Topics covered include: Frequency Distributions; Measures of Central Tendency, Dispersion, and Variability; Probability and Probability Distributions; Statistical Inference, Comparisons of Sample Means and Standard Deviations; Analysis of Variance; Contingency Tables, Comparisons of Frequencies; Correlation and Regression; Principal Components Analysis; Discriminant Analysis; and Cluster Analysis. Grading based on take-home problem sets.
Same as: ANTHRO 116

ANTHRO 216B. Anthropology of the Environment. 5 Units.
This seminar interrogates the history of anthropology's approach to the environment, beginning with early functionalist, structuralist, and Marxist accounts of human-environment relationships. It builds towards more recent developments in the field, focusing on nonhuman and relational ontologies as well as current projects on the intersections of nature, capital, politics, and landscape histories. At the end of this class, students will be familiar with the intellectual histories of environmental anthropology and contemporary debates and tensions around questions of ethics, agency, environment, and historical causality.
Same as: ANTHRO 116B

ANTHRO 217. Archaeologies of Religion: Belief, Ritual and Tradition. 3-5 Units.
Talking about religion and its place in modern life, inevitably appears to rest on evaluations of what religion was in the past. `Antiquated beliefs', `medieval hidebound ritual', `blind prejudice', `cultic devotion', and the constraints of tradition upon personal freedom --- such judgments abound and come readily to our minds and roll off our tongues. But what do we know of premodern religion?nIn this course we will learn more about religion, past and present, by engaging with different archaeological approaches to religion. We will start by reviewing key anthropological debates over what religion is and how (and why) it might be defined. We will pause to ask ourselves: Is religion principally immaterial or profoundly material? Is it a matter of private belief or public life? What can material remains teach us of `religion' in the past and about ourselves? We shall engage with the following debates: How has the origin of religion been understood? What is ritual and how is it studied archaeologically? How do these relate to belief? Based on these explorations we will ask: is it more valuable to try to define religion, to study its evolutionary, symbolic or performative aspects or to ask what it is that `religion' does?.

ANTHRO 219. Zooarchaeology: An Introduction to Faunal Remains. 5 Units.
As regularly noted, whether historic or pre-historic, animal bones are often the most commonly occurring artefacts on archaeological sites. As bioarchaeological samples, they offer the archaeologist an insight into food culture, provisioning, trade and the social aspects of human-animal interactions. The course will be taught through both practical and lecture sessions: the `hands-on¿ component is an essential complement to the lectures. The lectures will offer grounding in the main methodological approaches developed, as well as provide case-studies to illustrate where and how the methods have been applied. The practical session will walk students through the skeletal anatomy of a range of species. It will guide students on the identification of different parts of the animal, how to age / sex individuals, as well as recognize taphonomic indicators and what these mean to reconstructing post-depositional modifications.
Same as: ANTHRO 119, ARCHLGY 119

ANTHRO 220. Bioethics and Ancient DNA. 3-5 Units.
The first ancient human genome was sequenced just 10 years ago. From a single genome in 2010 to what has been hailed as a `scientific revolution¿ today, the field of paleogenomics has expanded rapidly. 10 years on we will explore how the field is grappling with emerging issues related to ethical and responsible research, including sampling practices, collaborative community partnerships, and accessibility of research findings to the broader public. How have researchers successfully leveraged multiple voices, perspectives, and priorities engaged with ancient DNA to explore the human past? What are the possibilities of engagement beyond the practical and project-based level? How do these new alliances formed around paleogenomics inform the ethics of sampling, participation, and interpretation? In this course, we will thoughtfully and critically engage with aDNA research in the present to envision possible futures for the field.
Same as: ANTHRO 120, ARCHLGY 120A

ANTHRO 223. Ethical Life with Strangers: Sociality and Civility. 5 Units.
How do we deal with strangers in different parts of the world. What is a stranger? And to whom? Many theorists suggest that dealing with anonymous strangers is central to norms of sociality and civility. For the thinker Georg Simmel, the stranger is less concerned with norms of civility, and more with the promise of urban life, a category ripe for marginalization but also an illustration of the possibilities of ambiguous and multi-faceted life with others that reckons not only with our connections with others but our secrets. Others suggest that questions of empathy and ethics are concerned with how ¿others¿ are imagined and interacted with. However, is social life an encounter with strangers in a simple sense? Surely what it is to be a friend, enemy or a stranger is socially and historically produced? Who are the same and who are the others? Is anybody an ¿other¿ by virtue of not being oneself? What is the public and what is the private in different places, in different interactions? What is the difference between distant others, and those who are others to each other whose histories are intertwined? This class examines these questions and the complex issues around how heterogenous individuals and communities live together, by emphasizing the historical stratifications of race, class, caste, gender that comprise the stakes in any-one meeting in any space, but especially in certain spaces. We will read ethnographies and histories that teach us the ways in which structures of power, colonialism and often as a corollary exclusion and fear structure how and who meets each other, AND, also emphasize the ways in which social life can be exhilarating, complex, violent, contingent and transformative.

ANTHRO 229C. A Deep Dive Into the Indian Ocean: From Prehistory to the Modern Day. 5 Units.
The Indian Ocean has formed an enduring connection between three continents, countless small islands and a multitude of cultural and ethnic groups and has become the focus of increasing interest in this geographically vast and culturally diverse region. This course explores a range of topics and issues, from the nature and dynamics of colonization and cultural development as a way of understanding the human experience in this part of the world, to topics such as religion, disease, and heritage The course guides studies in the many ways in which research in the Indian Ocean has a direct impact on our ability to compare developments in the Atlantic and Pacific.
Same as: ANTHRO 129C

ANTHRO 230D. Spatial Approaches to Social Science. 5 Units.
This multidisciplinary course combines different approaches to how GIS and spatial tools can be applied in social science research. We take a collaborative, project oriented approach to bring together technical expertise and substantive applications from several social science disciplines. The course aims to integrate tools, methods, and current debates in social science research and will enable students to engage in critical spatial research and a multidisciplinary dialogue around geographic space.
Same as: ANTHRO 130D, POLISCI 241S, URBANST 124

ANTHRO 233. Masculinity: Technologies and Cultures of Gender. 4 Units.
What is masculinity? How are masculinities invested with power and meaning in cultural contexts? How is anthropological attention to them informed by and extending inquiry across the academy in spheres such as culture studies, political theory, gender studies, history, and science and technology studies? Limited enrollment.
Same as: ANTHRO 133, FEMGEN 133M

ANTHRO 235B. Waste Politics: Contesting Toxicity, Value, and Power. 3 Units.
Waste is increasingly central as an object and medium of political contestation in the contemporary world, from struggles over garbage, labor, and dignity in Senegal; to explosive remnants of war acting as rogue infrastructure in the Korean demilitarized zone. In response, waste has also become a productive concept in the environmental humanities and humanistic social sciences. In this course we will read a selection of foundational texts focused on waste, many of which draw on case studies from different parts of the world. The case of China will be emphasized, however, since China has emerged in the last few decades as a center not only of global industrial production, but also for processing the world¿s waste, contesting pollution, and fighting for environmental justice. By pairing key theoretical texts with texts dealing with waste-related issues in China and elsewhere, we will ultimately ask how contemporary global waste politics disrupts western understandings of waste, recycling, value, and more.
Same as: ANTHRO 135B, EARTHSYS 135B

ANTHRO 237. The Politics of Humanitarianism. 5 Units.
What does it mean to want to help, to organize humanitarian aid, in times of crisis? At first glance, the impulse to help issue generis a good one. Helping is surely preferable to indifference and inaction. This does not mean that humanitarian interventions entail no ethical or political stakes or that they are beyond engaged critique. We need to critique precisely that which we value, and to ask some hard questions, among them these: What are the differences among humanitarianism, charity, and philanthropy? What of social obligations and solidarities? How does the neoliberal world order currently create structural inequalities that ensure the reproduction of poverty and violence? How does the current order of things resemble or differ from the colonial world order? This course examines the history of humanitarian sensibilities and the emergence of organized action in the ¿cause of humanity¿. In the early years of humanitarian intervention, political neutrality was a key principle; it has now come under ever greater analytical and political scrutiny. We will examine the reasons for the politicization and militarization of aid -- be it humanitarian aid in natural disasters or political crises; development programs in the impoverished south (¿the Third World¿), or peace-keeping. We will end with a critical exploration of the concept of human rights, humanity, and personhood. The overall methodological aim of the course is to demonstrate what insights an ethnographic approach to the politics, ethics, and aesthetics of humanitarianism can offer.
Same as: ANTHRO 137

ANTHRO 238. Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise. 5 Units.
This course will explore historical as well as current market transformations of medical ethics in different global contexts. We will examine various aspects of the research enterprise, its knowledge-generating and life-saving goals, as well as the societal, cultural, and political influences that make medical research a site of brokering in need of oversight and emergent ethics.nThis seminar will provide students with tools to explore and critically assess the various technical, social, and ethical positions of researchers, as well as the role of the state, the media, and certain publics in shaping scientific research agendas. We will also examine how structural violence, poverty, global standing, and issues of citizenship also influence issues of consent and just science and medicine.
Same as: ANTHRO 138, CSRE 138

ANTHRO 243. Title Social Change in Contemporary China: Modernity and the Middle Kingdom. 4-5 Units.
Over the last twenty years, residents of the People¿s Republic of China have experienced dramatic changes in nearly every facet of life. This undergraduate seminar introduces students to contemporary China through an examination of various types of social transformation. We will analyze how PRC residents of different backgrounds are confronting such processes as economic liberalization, migration, kinship transformation, sexual commodification, media proliferation, industrialization, and transnationalism? Priority is placed on reading, discussing and assessing research that uses qualitative methods and that situates political economy in dialogue with lived experience.
Same as: ANTHRO 143

ANTHRO 244. Art and the Repair of the Self. 3-5 Units.
Engaging the body/mind and its senses in the making of images and things has long been considered to have potentially great therapeutic significance. This course is a close examination of making as a form of therapy, as a form of communication, and, vitally, as a form of knowing. As such, it suggests new, analytically powerful possibilities for anthropological practice.
Same as: ANTHRO 144

ANTHRO 247B. World Heritage in Global Conflict. 5 Units.
Heritage is always political, it is typically said. Such a statement might refer to the everyday politics of local stakeholder interests on one end of the spectrum, or the volatile politics of destruction and erasure of heritage during conflict, on the other. If heritage is always political then one might expect that the workings of World Heritage might be especially fraught given the international dimension. In particular, the intergovernmental system of UNESCO World Heritage must navigate the inherent tension between state sovereignty and nationalist interests and the wider concerns of a universal regime. The World Heritage List has over 1000 properties has many such contentious examples, including sites in Iraq, Mali, Syria, Crimea, Palestine and Cambodia. As an organization UNESCO was born of war with an explicit mission to end global conflict and help the world rebuild materially and morally, but has found it¿s own history increasingly entwined with that of international politics and violence.
Same as: ANTHRO 147B, ARCHLGY 147B

ANTHRO 248. Health, Politics, and Culture of Modern China. 4-5 Units.
One of the most generative regions for medical anthropology inquiry in recent years has been Asia. This seminar is designed to introduce upper division undergraduates and graduate students to the methodological hurdles, representational challenges, and intellectual rewards of investigating the intersections of health, politics, and culture in contemporary China.
Same as: ANTHRO 148, CHINA 155A, CHINA 255A

ANTHRO 250. The Ordinary: The History of a Concept. 5 Units.
The ordinary has today acquired something like a cultic status in contemporary culture. `Ordinary¿ citizens are the touchstone and essence of political democracy; the holy grail of effective marketing, the byword for earthy ethical judgment. In social science, the ordinary has blended in with the `normal¿ and the statistical mean. In Anthropology, ordinary life has all but replaced `cultural practice¿ as the epistemic gold standard of evidence. But this was not always so, and the ordinary has many, varied and contradictory meanings across the world.nThis course will (a) trace the historical emergence of the ordinary as a central ideological and metaphysical concept in modern thought and practice; (b) trace how the ordinary and the everyday have acquired unprecedented authority in anthropology; (3) trace the varies meanings and connotations of `the ordinary¿ in different socio-historical contexts from Asia, Africa and Euro-America.nThe literature will consist of ethnographies, and works of philosophical and historical scholarship.
Same as: ANTHRO 150

ANTHRO 254B. Anthropology of Drugs: Experience, Capitalism, Modernity. 5 Units.
This course examines the significant role ¿drugs¿ play in shaping expressions of the self and social life; in the management populations, and in the production of markets and inequality. It engages these themes through cultural representations of drugs and drug use, analyses of scientific discourse, and social theory. Topics include: the social construction of the licit and illicit; the shifting boundaries of deviance, disease and pleasure; and the relationship between local markets and global wars.
Same as: ANTHRO 154, CSRE 154

ANTHRO 254C. Animism, Gaia, and Alternative Approaches to the Environment. 3-5 Units.
Indigenous knowledges have been traditionally treated as a field of research for anthropologists and as mistaken epistemologies, i.e., un-scientific and irrational folklore. However, within the framework of environmental humanities, current interest in non-anthropocentric approaches and epistemic injustice, animism emerged as a critique of modern epistemology and an alternative to the Western worldview. Treating native thought as an equivalent to Western knowledge will be presented as a (potentially) decolonizing and liberating practice. This course may be of interest to anthropology, archaeology and literature students working in the fields of ecocriticism and the environmental humanities/social sciences, students interested in the Anthropocene, geologic/mineral, bio-, eco- and geosocial collectives, symbiotic life-forms and non-human agencies. The course is designed as a research seminar for students interested in theory of the humanities and social sciences and simultaneously helping students to develop their individual projects and thesis.
Same as: ANTHRO 154C, ARCHLGY 154, ARCHLGY 254, DLCL 254, REES 254

ANTHRO 256. Japanese Anthropology. 5 Units.
This is an advanced reading seminar in the field of Japanses Anthropology. nIt will explore the historical development of the field and the contemporary issues and topics taken up by scholars of Japanese anthropology. Prior knowledge of Japanese language, history, and, society is required.
Same as: ANTHRO 156

ANTHRO 257. Japanese Popular Culture. 3 Units.
This seminar focuses on the intersection between politics and popular culture in contemporary Japan. It will survey a range of social and political implications of practices of popular culture. Topics include J-pop, manga, anime, and other popular visual cultures, as well as social media. Students will be introduced to theories of popular culture in general, and a variety of contemporary anthropological studies on Japanese popular culture in particular. Prior knowledge of cultural anthropology is required.
Same as: ANTHRO 157

ANTHRO 258. The Anthropology of Social Class. 5 Units.
Course introduces social theory concepts and paradigms for the understanding of class. It then extends and revises those concepts and paradigms by considering anthropological approaches in different cultural and historical settings that consider the entanglements of class with other social hierarchies, especially race, caste, and ideas of "civilization" and "development".
Same as: ANTHRO 158

ANTHRO 259C. Ecological Humanities. 3 Units.
What sort of topics, research questions, approaches, theories and concepts lead to an integration of various kinds of knowledges? Ecological Humanities provides a conceptual platform for a merger of humanities and social sciences with earth and life sciences, soil science and forensic sciences. The course will discuss such selected topics as the Anthropocene, geologic/mineral and exhumed subjects/personae, bio- and geosocial collectives, symbiotic life-forms, non-human agencies, and forensic landscapes as examples of this merger.
Same as: ANTHRO 159C, DLCL 259C, REES 259C

ANTHRO 266. Political Ecology of Tropical Land Use: Conservation, Natural Resource Extraction, and Agribusiness. 3-5 Units.
Seminar. The state, private sector, development agencies, and NGOs in development and conservation of tropical land use. Focus is on the socioeconomic and political drivers of resource extraction and agricultural production. Case studies used to examine the local-to-global context from many disciplines. Are maps and analyses used for gain, visibility, accountability, or contested terrain? How are power dynamics, land use history, state-private sector collusion, and neoliberal policies valued? What are the local and extra-local responses?.
Same as: ANTHRO 166

ANTHRO 266A. Semiotics for Ethnography. 3 Units.
This workshop-style seminar introduces students to core theories and concepts in linguistic and semiotic anthropology. Examining current theoretical innovations in this field of study, the course explores the multivalent relationships between language and political authority, discourse and technology, and speech and material infrastructures. Emphasis is placed on how semiotic approaches provide tools for ethnographic analysis, and students will learn how to use semiotic concepts for their own research projects.
Same as: ANTHRO 166A

ANTHRO 271. The Biology and Evolution of Language. 4-5 Units.
Lecture course surveying the biology, linguistic functions, and evolution of the organs of speech and speech centers in the brain, language in animals and humans, the evolution of language itself, and the roles of innateness vs. culture in language. Suitable both for general education and as preparation for further studies in anthropology, biology, linguistics, medicine, psychology, and speech & language therapy. Anthropology concentration: CS, EE. No prerequisites.
Same as: ANTHRO 171

ANTHRO 275. Human Skeletal Anatomy. 5 Units.
Study of the human skeleton (a. k. a. human osteology), as it bears on other disciplines, including medicine, forensics, archaeology, and paleoanthropology (human evolution). Basic bone biology, anatomy, and development, emphasizing hands-on examination and identification of human skeletal parts, their implications for determining an individual's age, sex, geographic origin, and health status, and for the evolutionary history of our species. Three hours of lecture and at least three hours of supervised and independent study in the lab each week.
Same as: ANTHRO 175, BIO 174, BIO 274, HUMBIO 180

ANTHRO 276. Cultures, Minds, and Medicine. 1 Unit.
This workshop aims to bring together scholars from the social sciences, humanities, medicine and bio-science and technology to explore the ways that health and illness are made through complex social forces. We aim for informal, interactive sessions, full of debate and good will. Dates of meetings will be listed in the notes section in the time schedule.
Same as: ANTHRO 176

ANTHRO 281. Religion and Science in the Amazon and Elsewhere. 5 Units.
The conversion of native peoples to Christianity, especially Evangelical Christianity, is today a global phenomenon. This course looks to understand the reasons for religious conversion and its consequence in the everyday and ritual practices of Amazonians and their traditional practice of shamanism. We then turn to a question seldom addressed in the literature on conversion: the relationship between religion and science. We will explore the way conversion to Christianity produces changes in conceptions of the world and the person similar to those produced by access to scientific knowledge, which occurs primarily through schooling.
Same as: ANTHRO 181, RELIGST 270X, RELIGST 370X

ANTHRO 282. Medical Anthropology. 5 Units.
Emphasis is on how health, illness, and healing are understood, experienced, and constructed in social, cultural, and historical contexts. Topics: biopower and body politics, gender and reproductive technologies, illness experiences, medical diversity and social suffering, and the interface between medicine and science.
Same as: ANTHRO 82, HUMBIO 176A

ANTHRO 286. Culture and Madness: Anthropological and Psychiatric Approaches to Mental Illness. 3-5 Units.
Unusual mental phenomena have existed throughout history and across cultures. Taught by an anthropologist and psychiatrist, this course explores how different societies construct the notions of "madness": What are the boundaries between "normal" and "abnormal", reason and unreason, mind and body, diversity and disease? Optional: The course will be taught in conjunction with an optional two-unit discussion section.
Same as: ANTHRO 186, HUMBIO 146, PSYC 286

ANTHRO 286B. Culture and Madness: Anthropological and Psychiatric Approaches to Mental Illness. 3-5 Units.
Unusual mental phenomenon have existed throughout history and across cultures. Taught by an anthropologist and psychiatrist, this course explores how different societies construct the notions of "madness": What are the boundaries between "normal" and "abnormal", reason and unreason, mind and body, diversity and disease? The course will be taught in conjunction with a two unit engaged learning component which will place students in relevant settings.
Same as: ANTHRO 186B

ANTHRO 288. Matter and Mattering: Transdisciplinary Thinking about Things. 4-5 Units.
Things sit at the nexus of cross-cutting heterogeneous processes; tracing the entanglements of any prominent thing or class of things demands a transdisciplinary approach that recruits expertise from the natural sciences, social sciences and humanities. For example, carbon is a key factor in global warming for reasons that are as much socio-historical as bio-physical, and we could not begin to sketch the full significance of carbon without considering such diverse frames of reference. Our growing appreciation in the social sciences and humanities of the agency, polyvalence and catalytic role of things has given rise to The New Materialist and Post-Humanist movements, which in turn raise questions about intra-action and observational perspective that are echoed in the modern physical and life sciences. In this class we will explore these theoretical convergences in considering themes such as `things-in-themselves¿, networks and open systems, assemblages and entanglements. We will also examine specific examples such as oil, metal (guns), dams, viruses, electricity, mushrooms; each thing will be explored both in terms of its social and ethical entanglements and in terms of its material properties and affordances. There will also be hands-on encounters with objects in labs and a couple of local field trips. The key question throughout will be `why and how does matter matter in society today?.
Same as: ANTHRO 188, APPPHYS 188, ARCHLGY 188

ANTHRO 298C. Digital Methods in Anthropology. 3-5 Units.
The course provides an introduction to a broad range of digital tools and techniques for anthropological research. It is geared towards those interested in exploring such methodologies for their research and wanting to add hands-on experience with state-of-the-art digital tools to their skill set. Students will learn to work with some of the most common tools used to collect and manage digital data, and to perform various types of analysis and visualization.nUndergraduate students register for 3-5 Units, Graduate students can register for 3-5 units.
Same as: ANTHRO 98C

ANTHRO 299. Senior and Master's Paper Writing Workshop. 1-2 Unit.
Techniques of interpreting data, organizing bibliographic materials, writing, editing and revising. Preparation of papers for conferences and publications in anthropology. Seniors register for 199; master's students register for 299.
Same as: ANTHRO 199

ANTHRO 300. Reading Theory Through Ethnography. 5 Units.
Required of and restricted to first-year ANTHRO Ph.D. students. Focus is on contemporary ethnography and related cultural and social theories generated by texts. Topics include agency, resistance, and identity formation, and discourse analysis. Prerequisite: consent of instructor.

ANTHRO 301. History of Anthropological Theory, Culture and Society. 5 Units.
Required of Anthropology Ph.D. students. The history of cultural and social anthropology in relation to historical and national contexts and key theoretical and methodological issues as these inform contemporary theory and practices of the discipline. Enrollment limited to 15. Prerequisite: consent of instructor.

ANTHRO 301A. Foundations of Social Theory. 5 Units.
The purpose of this course is to introduce key themes in social theory - the social, the modern subject, reason, autonomy, civility, interests, exchange, morality, life, the senses - through a reading of classic texts from Descartes up to psychoanalysis and phenomenology. nnEach section has original texts, commentaries, and background readings that place these texts in their deeper historical setting. Many of these commentaries trace how practical theories of 'lower' or minor selves - the subject people of the colonies, slaves, and other - were integral to the very development of ideas of the modern, autonomous and reasonable self in the western world. Prerequisite, by instructor consent.

ANTHRO 302A. Technopolitics: Materiality, Power, Theory. 4-5 Units.
This graduate readings seminar provides a lively introduction to some of the major themes and issues in the field of Science and Technology Studies (STS). How do technologies and material assemblages perform power? How are their designs and uses shaped by social, cultural, and political dynamics? How do they shape those dynamics? The course draws on an interdisciplinary body of literature in humanities and social science, mixing theoretical material with more empirically oriented studies, and classics with new scholarship.
Same as: HISTORY 302

ANTHRO 303. Introduction to Archaeological Theory. 5 Units.
The history of archaeological thought emphasizing recent debates. Evolutionary theories, behavioral archaeology, processual and cognitive archaeology, and approaches termed feminist and post-processual archaeology in the context of wider debate in adjacent disciplines. The application and integration of theory on archaeological problems and issues. Prerequisite: consent of instructor.

ANTHRO 303E. Infrastructure & Power in the Global South. 4-5 Units.
In the last decade, the field of infrastructure studies has entered into conversation with area studies, post/colonial studies, and other scholarship on the "Global South." These intersections have produced dramatic new understandings of what "infrastructures" are, and how to analyze them as conduits of social and political power. This course offers a graduate-level introduction to this recent scholarship, drawing primarily on works from history, anthropology, geography, and architecture.
Same as: AFRICAST 303E, HISTORY 303E

ANTHRO 306. Anthropological Research Methods. 5 Units.
Required of ANTHRO Ph.D. students; open to all graduate students. Research methods and modes of evidence building in ethnographic research. Prerequisite: consent of instructor.

ANTHRO 307. Archaeological Methods. 5 Units.
Methodological aspects of field and laboratory practice from traditional archaeological methods to the latest interdisciplinary analytical techniques. The nature of archaeological data and inference; interpretive potential of these techniques. Prerequisite: consent of instructor.

ANTHRO 308. Proposal Writing Seminar in Cultural and Social Anthropology. 5 Units.
Required of second-year Ph.D. students in the culture and society track. The conceptualization of dissertation research problems, the theories behind them, and the methods for exploring them. Participants draft a research prospectus suitable for a dissertation proposal and research grant applications. Limited enrollment. Prerequisite: consent of instructor.

ANTHRO 308A. Proposal Writing Seminar in Archaeology. 5 Units.
Required of second-year Ph.D. students in the archaeology track. The conceptualization of dissertation research problems, the theories behind them, and the methods for exploring them. Participants draft a research prospectus suitable for a dissertation proposal and research grant applications. Limited enrollment. Prerequisite: consent of instructor.

ANTHRO 308B. Interdisciplinary Research Proposals: Effective Presentation, Skills, and Styles. 5 Units.
This seminar examines the diverse skills, methods, and styles required for the development and production of interdisciplinary dissertation and grant proposals. Topical focus centers primarily on proposals with both social science and natural science elements. Proposals may include a diverse suite of methods and analyses. Throughout this course, we critique examples, assess writing styles and presentation, evaluate budgets, assess data management plans, examine tables and figures, and discuss reviews and evaluations of research proposals. Students are expected to be either in the early stages of writing their dissertation proposal or preparing applications for grants and fellowships. Prerequisite: consent of instructor.

ANTHRO 310C. Intersections. 5 Units.
Themes of materiality and visuality, aesthetic and other forms of cultural production, and the meanings of creativity and convention. Ethnographic and archaeological material and case studies from worldwide cultural contexts. Prerequisite: consent of instructor.

ANTHRO 310G. Introduction to Graduate Studies. 2 Units.
Required graduate seminar. The history of anthropological theory and key theoretical and methodological issues of the discipline. Prerequisite: consent of instructor.

ANTHRO 311G. Introduction to Culture and Society Graduate Studies in Anthropology. 2 Units.
Required graduate seminar for CS track. The history of anthropological theory and key theoretical and methodological issues in cultural anthropology. Prerequistes: this course is open only to Ph.D. students in anthropology or by permission of the instructor.

ANTHRO 312. Time Travel: Pasts, Places, and Possibilities. 5 Units.
Is the past dead or alive? Where do we find it? What possibilities emerge when we encounter it? This course explores how people think and live with history in the present, how different places can harbor different times, and how movement between them can create the effect of time travel. By combining anthropological and historical approaches to time and temporality, students will learn how to build temporally capacious perspectives that transcend and unsettle commonplace divisions such as medieval-modern, colonial-postcolonial, and imperial-national.

ANTHRO 319. South Asia: History, People, Politics. 5 Units.
The South Asian subcontinent (comprising of India, Pakistan, Bangladesh, Nepal, Bhutan and Sri Lanka) is one of the most diverse and densely populated regions in the world and increasingly prominent in new global political and cultural economies. South Asia has also provided the inspiration for cutting edge theories about the colonial state, postcolonial studies, democracy, popular culture, and religious conflict. The course will provide an overview of major historical events and social trends in contemporary South Asia and focus on themes such as gender, religion, caste, migration and movement, new technologies, the urban and rural, the state, and new forms of consumption among others.Thus, the course will give students historically and theoretically informed perspectives on contemporary South Asia, as well as how to apply insights learned to larger debates within the political and social sciences. Prerequisite: consent of instructor.

ANTHRO 320A. Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations. 3-5 Units.
Language, as a cultural resource for shaping our identities, is central to the concepts of race and ethnicity. This seminar explores the linguistic construction of race and ethnicity across a wide variety of contexts and communities. We begin with an examination of the concepts of race and ethnicity and what it means to be "doing race," both as scholarship and as part of our everyday lives. Throughout the course, we will take a comparative perspective and highlight how different racial/ethnic formations (Asian, Black, Latino, Native American, White, etc.) participate in similar, yet different, ways of drawing racial and ethnic distinctions. The seminar will draw heavily on scholarship in (linguistic) anthropology, sociolinguistics and education. We will explore how we talk and don't talk about race, how we both position ourselves and are positioned by others, how the way we talk can have real consequences on the trajectory of our lives, and how, despite this, we all participate in maintaining racial and ethnic hierarchies and inequality more generally, particularly in schools. Same as: CSRE 389A, EDUC 389A, LINGUIST 253

ANTHRO 322. From Biopolitics to Necropolitics and Beyond. 5 Units.
This seminar examines scholarship produced and informed by Michel Foucault and Giorgio Agamben, particularly as relating to biopolitics, governmentality, subjectification, and death. Focus is given to how anthropology and related disciplines have been applying, challenging, and extending these areas of thought in order to address contemporary predicaments. Prerequisite: consent of instructor.

ANTHRO 323. Graduate Seminar in Economic Anthropology. 5 Units.
Classical and contemporary anthropological perspectives on topics such as money, markets and exchange; capitalist and non-capitalist modes of production; class and socio-economic differentiation; globalization and neoliberalism; and the social and cultural construction of the object, "the economy". Prerequisite: consent of instructor.

ANTHRO 324. Political Anthropology. 5 Units.
An anthropological approach to politics through bringing anthropological ways of thinking and modes of analysis to bear on key presuppositions of modern Western political thought. Ideas of rights, the individual, society, liberty, democracy, equality, and solidarity; ethnographic accounts used to identify the limits of conventional analytical approaches and to document the forms of politics that such approaches either ignore or misunderstand. Prerequisite: consent of instructor.

ANTHRO 326. Postcolonial and Indigenous Archaeologies. 5 Units.
The role of postcolonial and Indigenous archaeologies as emergeant disciplinary activities within contemporary society. Community based archaeologies; the roles of oral history, landscape, and memory; archaeology as political action; and history in archaeological projects. The emergence of Indigenous archaeology within N. America in relation to limitations imposed by processual or new archaeology; and NAGPRA, Kennewick, essentialism, and terminal narratives within this context. Prerequisite: consent of instructor.

ANTHRO 330A. The Archive: Form, Practice, Thought. 5 Units.
This seminar offers a wide-ranging exploration of the `archive.' Drawing from ethnography, social theory, philosophy, photography and literature, we will examine the archive's diverse material, narratological and structural dimensions, its epistemological, political and representational functions, processes of archivisation and recuperation, and related domains of experience, memory, absence and loss. Prerequisite: consent of instructor.

ANTHRO 331. Populism. 5 Units.
This course examines the concept of populism. Course readings include works in political theory and recent ethnographies. We will ask how these texts reframe core problems in anthropology, including the affective dimensions of social life, relations of friend and enemy, and theories of language and signification.

ANTHRO 332. Anthropology of Ethics. 5 Units.
Recent decades have witnessed what some scholars have termed an ethical turn in anthropology. This course explores the emergence of this field of study, asking the following questions: What has motivated a renewed anthropological interest in the subject of ethics? How has a focus on ethics enabled the development of new theoretical currents in the discipline? To what extent have anthropological studies of ethics provided new understandings of traditional topics, concerning social hierarchy, power relations, embodiment, and subject-formation?.

ANTHRO 337. VOICES. 5 Units.
This course takes an anthropological perspective on psychotic voices, voices of resistance (mad and sane), voices of authority, voices of spirit, the sense of communication from another seen or unseen. We end with the writer's voice and how students can cultivate their own voice. We read first person examples and a range of theory, including Bakhtin, Lacan, Willy Apollon, Piaget and Vygotsky, and Elyn Saks, Zora Neale Hurston, Zadie Smith and EB White. Texts may shift depending on student input.nPrerequisite: Instructor approval.

ANTHRO 338B. History and Memory. 5 Units.
How are history and memory important in the making of collective and public memory? This seminar draws together an interdisciplinary collection of readings with an aim to provide a foundation for seminar participants¿ projects, both historical and contemporary projects. We will explore critiques of the practice of gathering material, i.e., archival and oral histories as well as delve into experimental forms that combine improvisational approaches to history and critique in an effort to develop a methodological tool kit that allows for a push beyond established projects.

ANTHRO 339. Anthropology of Religion. 5 Units.
This course presents classic and contemporary work on the anthropology of religion: Durkheim Elementary Forms of the Religious Life; Levy-Bruhl; Primitive Mentality; Douglas Purity and Danger; Evans Pritchard Nuer Religion; and recent ethnographies/scholarly work by Robbins, Keane, Keller, Boyer, Barrett, and others. Prerequisite: consent of instructor. Same as: RELIGST 343X

ANTHRO 340A. Fit: The Anthropology of Sports, Medicine, and Debility. 5 Units.
Sport has long been a domain in which everyday people, medical professionals and political authorities have interfaced with the making of institutional definitions and social norms regarding fitness and debility. This course will challenge students to reflect on that interface through consideration of recent research findings within sociocultural anthropology and allied fields.

ANTHRO 341. Entitlement: Kinship, Property and Inheritance. 5 Units.
This graduate seminar explores anthropological approaches to property, kinship and inheritance. It approaches property and kinship as social relations among people and as such call for analyses of the dynamic and unstable processes through which they are constituted, reproduced, and changed over time. Rather than accept conventional distinctions between tangible and intangible property, private and public property, nature and commodities, this course scrutinizes the cultural and social processes through which these categories themselves are constructed and along with them relations of inequality, entitlement, and difference. It investigates the ways in which people (both individuals and communities) are constituted in relation to their claims on things. At a time when new forms and claims of property are increasingly asserted and challenged in a variety of contexts, an understanding of the different bases upon which property rights can be claimed and upon which they can be distinguished from other types of social obligation is a central component of anthropological analyses of the production of new inequalities and differentiations globally.

ANTHRO 342B. Cultural Heritage in Global Perspective. 5 Units.
This seminar will explore the ideas surrounding the theories, discourses, and practices surrounding cultural heritage. Heritage has become inscribed in the planning of urban and rural landscapes, designed as tourist destinations, and considered a universal good in global cosmopolitan society. But it would be well to ask: what kind of "culture" has been labeled as heritage? What kind of organizations, economics, and politics are necessary to sustain it? How are these put in place? By whom? For whom? How can we study this global phenomenon? Over the course of the quarter, students will engage with readings that discuss how cultural heritage is communicated to the public, the relationship between academic critique and pragmatic social engagement, and methodologies for research about heritage. nn Pre-requisite by instructor consent.

ANTHRO 345. New Visions in Medical Anthropology. 5 Units.
Recent experimental histories of the field. Emphasis is on how, working within anthropology's classic format, the ethnographic monograph, authors have innovatively responded to the challenges of representing amorphous, unspoken, and often violent relationships between the body and social change. The authors' expository techniques, and how they engage and extend theoretical debate. How to assess works within medical anthropology and its allied fields. Prerequisite: consent of instructor.

ANTHRO 345A. Race and Power: The Making of Human Difference in History, Biology and Capital. 5 Units.
This course examines how race is made. We will pay close attention to how people engage with material, economic, scientific, and cultural forces to articulate human group difference as a given, and even natural. In this seminar, we will look at the reality of race as a literally constructed phenomenon, where historical, colonial, bodily, market, penal, and humanitarian constituent elements both circulate and sediment racial understandings. To focus our readings and discussions we will divide this vast terrain into three units: race and the colonial encounter, race and biopower, and race in systems of capital accumulation.

ANTHRO 347B. World Heritage in Global Conflict. 5 Units.
Heritage is always political, it is typically said. Such a statement might refer to the everyday politics of local stakeholder interests on one end of the spectrum, or the volatile politics of destruction and erasure of heritage during conflict, on the other. If heritage is always political then one might expect that the workings of World Heritage might be especially fraught given the international dimension. In particular, the intergovernmental system of UNESCO World Heritage must navigate the inherent tension between state sovereignty and nationalist interests and the wider concerns of a universal regime. The World Heritage List has over 1000 properties has many such contentious examples, including sites in Iraq, Mali, Syria, Crimea, Palestine and Cambodia. As an organization UNESCO was born of war with an explicit mission to end global conflict and help the world rebuild materially and morally, but has found it¿s own history increasingly entwined with that of international politics and violence.

ANTHRO 348A. Health, Politics, and Culture of Modern China. 5 Units.
One of the most generative regions for medical anthropology inquiry in recent years has been Asia. This seminar is designed to introduce upper division undergraduates and graduate students to the methodological hurdles, representational challenges, and intellectual rewards of investigating the intersections of health, politics, and culture in contemporary China.

ANTHRO 348B. Bodies, Technologies, and Natures in Africa. 4-5 Units.
This interdisciplinary course explores how modern African histories, bodies, and natures have been entangled with technological activities. Viewing Africans as experts and innovators, we consider how technologies have mediated, represented, or performed power in African societies. Topics include infrastructure, extraction, medicine, weapons, communications, sanitation, and more. Themes woven through the course include citizenship, mobility, labor, bricolage, in/formal economies, and technopolitical geographies, among others. Readings draw from history, anthropology, geography, and social/cultural theory.
Same as: AFRICAST 249, HISTORY 349

ANTHRO 349. Anthropology of Capitalism. 5 Units.
This advanced graduate seminar explores capitalism as an historically-situated and culturally-mediated articulation of practices rather than as an economic system or social structure governed by an internal logic. It draws on poststructural theories of culture, society and subjectivity to investigate the processes through which diverse capitalist practices are produced. Prerequisite: Graduate standing in Anthropology or permission of the instructor. Previous graduate level coursework in cultural anthropology, social theory or cultural studies is required. No auditing is permitted. Enrollment limited to 12.

ANTHRO 350A. Writing as Intervention: Science, Medicine, and Ethics in Today's World. 5 Units.
In this course we will explore contemporary issues of culture and power rooted in science, medicine, technology and futurist proposals to better the human condition with technological fixes. We will investigate anthropological and ethnographic-based theories and methods to propose alternative ethical solutions. These readings will be rooted in examining global stratification, economic metrics of progress, and the routinization of human degradation ranging from norms around sexual power, labor exploits, privacy infringements, data sharing, and automation.nnThe course will be structured as a writing workshop with frequent, short writing assignments to be shared with others in the course. The workshop format will facilitate the course goal of each student producing at least one publishable op-ed, article or other product of intervention at the end of the quarter.

ANTHRO 351D. Ideologies and Practices of Creativity. 5 Units.
The still-robust Romantic conception of creativity as the attribute of a specific, 'gifted', individual continues to have extraordinary social and political power as an ideological apparatus that shapes and disciplines conduct, aspirations, and subjectivities. This course is a critical anthropological exploration of the following questions: How and why has a deep, naturalized individualism long been foundational to both ideals and practices of creativity? How is it raced and gendered? How have people been rethinking relational, collaborative creative practice?.

ANTHRO 356A. The Universal and the Vernacular. The Global Life of Concepts and Social Forms. 5 Units.
Mapping and understanding vernacular concepts and terminologies has always been central to the anthropological quest to understand societies from `a native point of view'. This has often been accompanied by a critique of universalist and Euro-centric assumptions in the social sciences and in social theory. As a result, the convention has become to treat the `universal¿ (ideas, frames, institutions) as external, often imposed by colonial powers, while the `vernacular¿ conventionally is seen as local and authentic, and the proper site of anthropology.nThis course seeks to rethink this spatial and historical distinction between the universal and the vernacular. Instead we ask: how, and when, do concepts, or practices, become embedded in a vernacular world? Reversely, instead of assuming that universals all originate in Euro-America, we ask: how do concepts and practices become both global and universal? We will trace how impactful ideologies, social forms and institutions have travelled in time to become perceived as elements of vernacular cultures. nDrawing on ethnographic and historical examples across the world, each week will trace the universal and vernacular lives of important concepts such as: `tradition¿, `the individual¿, `community¿, `the people¿; `humanity¿, `dignity¿; `equality¿, `sacrifice¿, `cosmopolitanism¿, `civility¿.

ANTHRO 360A. Archival Research for Social Science: A Practicuum. 5 Units.
Since the 1980s, the necessity of historicizing cultural and social formations has become established as integral to anthropological research. Every ethnography and dissertation has historical sections, derived primarily from secondary sources, commentaries within other ethnographies and published historical work. Most students attempt to conduct archival research in local or national archives alongside ethnographic fieldwork, most often in an ad hoc manner, collecting and analyzing archival material on a trial and error basis. This class is conceived as a practicum that addresses students who need to and want to do archival research as part of their anthropological and sociological fieldwork, but find themselves at a loss for how to think about, begin, and, do archival work.nnThe base layer of the class is methodological and practical: students will be engaged in the practical activities of becoming acquainted with archives, developing archival research questions, learning techniques of recording, coding, and thinking historically. The second layer will be conceptual. Students will be reading and discussing concepts of the archive, reading and analyzing different styles of historical ethnographies, and thinking about how to organize and conceptualize cultural categories historically.nnStudents will be asked to conduct archival research at the archives available at Stanford Libraries and the Hoover Institution archives and write a research paper based on this archival work. We will have weekly meetings divided into two sessions. The first half will discuss set readings and intellectual concern. In the second half, we will discuss methodological concerns, problems encountered in the archives and bounce ideas off each other. We will also have regular guest speakers who will give talks and answer questions, intellectual and methodological about archival research.

ANTHRO 361. Life and Death in Contemporary Latin America: An Anthropological Inquiry. 5 Units.
This seminar explores life and death in contemporary Latin America. We will address anthropological understanding of the role of colonialism, migration, violence, urbanization, democratic transition and neoliberalism as they configure the experience of, and threshold between, vital and deadly processes. nnThis is not a standard survey course, covering the region as a whole however. Instead, we will critically engage several recent ethnographies that explore, for example: the politics and practices of memory; border thinking and living; the political economy of death and desire; state violence and social movements; the relationship between the laboring city and body. We will supplement ethnographies with contemporary Latin American critical theory, film, and literary texts. Prerequisite: consent of instructor.

ANTHRO 362. Visual Activism and Social Justice. 5 Units.
Anthropology and the academy more generally have long valued text, language, and cognition more highly than the image, visuality, and the imagination. Yet, contemporary political movements and strategies for social justice and transformation vividly demonstrate why effective social research needs to study both.

ANTHRO 363. Queer Anthropology. 2 Units.
Feminist and queer theory have profoundly rethought epistemologies as well as methodologies. This graduate seminar will explore the relationship between feminist and queer theory and the new directions proposed by queer anthropology in socio-cultural anthropology and archaeology. In addition, the seminar will discuss the challenges that looking at queer studies from anthropology and archaeology can bring from questions of race, global inequalities, misrecognitions as well as specific historical and cultural genealogies which offer more than simply adding diversity to questions already raised within queer studies. Students will acquire both conceptual and methodological skills. nThis year-long graduate seminar adopts a workshop-like format over the entire 2018-2019 academic year. We will meet for eleven (three hour) meetings over three quarters (4 meetings in Autumn, 3 meetings in Winter, and 4 meetings in Spring. Students are required to enroll in all three quarters. Pre-requisite: instructor consent.

ANTHRO 364A. EcoGroup: Problems in Ecological and Evolutionary Anthropology. 2-5 Units.
Seminar; restricted to graduate students. Topics vary with instructor. How to ask appropriate questions, how to derive research hypotheses from theory, how to design methodologies for testing hypotheses, and how to present results by reading and critiquing key contemporary papers in the field. Ph.D. students enrolling in this course to fulfill the department review course requirement must enroll in 5 units. Graduate students enrolling in this course to participate in a topical forum may enroll in 2 units. Course may be repeated for 2 units. Prerequisites: by consent of instructor.

ANTHRO 365A. Emancipation: Theories and Experiences. 5 Units.
Concepts of emancipation have been treated in a wide variety of historical, political, regional and social perspectives. In the US, emancipation and post emancipation societies are primarily understood around histories of enslavement. In the class, while taking inspiration and also covering work on enslavement and emancipation, we will endeavor to discuss theories, ideas and experiences that have been understood as potentially emancipatory from a globally and historically wide-ranging set of ideas. Issues of race, caste, class and gender are axiomatic themes within the class.nEmancipation has frequently been understood as an emancipation from oppression and an impetus towards a form of freedom or new order. While theoretically this is formally understood and discussed, often with historical examples that use experiences to illustrate failures or successes, in this class we will try to understand the texture of practices as the primary means by which ideas about emancipation circulate, imagined, are discussed, are disappointed and so on. We will try and see what an anthropological and historically textured discussion can bring to theoretical discussions of emancipation. We will examine theoretical, historical, sociological and anthropological writings on emancipation, freedom, enslavement and servitude, political mobilization and revolution. Fundamentally this course tries to get students to think globally about multiple and different systems of persisting and enduring oppression and inequality through an emphasis on political thought, political imaginations and concrete political organizations and movements. Prerequisite: consent of instructor.

ANTHRO 366. Material Semiotics. 5 Units.
This seminar will focus on the emerging body of literature on the materiality of the production, circulation, and mediation of paperwork as constituitive of modern forms of governance. We will discuss specific genres of paperworks¿notes, memos, files, documents, as well as archives and other mnemonic technologies¿both as cultural practices and reflexive objects, and examine how they produce modern social epistemologies of accountability, evidence, the fact, and truth in the fields of law, business, and public administration, as well as in civil society generally. Readings will include works by Max Weber, Bruno Latour, Jacques Derrida, Michel Foucault, Cornelia Vismann, Ann Stoler, and others. Prerequisite: graduate standing or consent of instructor.

ANTHRO 366W. Semiotics for Ethnography. 1 Unit.
This workshop-style seminar will introduce students to a range of semiotic and linguistic anthropological approaches and tools for ethnographic analysis. A group of (linguistic) anthropologists from other universities will be invited to offer workshops, through which students will learn 1. how to teach semiotics in anthropology courses and 2. how to use semiotic concepts for their own research projects.
Same as: EDUC 366W

ANTHRO 367. The Anthropology of Science: Global Politics and Laboratory Life. 5 Units.
Science and technology are important cultural products that often dramatically reorganize various aspects of human life. In this course we will explore how recent innovations in the life sciences and biomedicine may reconfigure crucial elements of social institutions, lend new structures to identity politics, and often change the way we interact with and conceive of nature. We will examine these issues in various global settings to explore how everyday politics shape politics of life in different locales.

ANTHRO 368A. Time and Temporality. 5 Units.
This course explores the social and political organization of time. Anthropology has long been critical of the narratives of progress that are embedded in concepts of modern politics, such as development, citizenship, secularism, and sovereignty. How do social actors respond to the perceived failures of such narratives? How do they re-articulate historical pasts to political futures in the aftermath of modernization? In this course we will read studies that examine lived experiences of the passing of time. How is memory linked to anticipation? How is consciousness of the past structured by expectations of a future to come? We will pay particular attention to the material aspects of these temporal relations, including their social, economic, and infrastructural conditions. Drawing from current debates in anthropology, queer theory, and post-colonial studies, we will critically interrogate theories of ruination, crisis, hope, and utopia.

ANTHRO 371. Living and Dying in the Contemporary World. 5 Units.
This seminar explores how biological, political and social conditions transform and conjoin experiences of living and dying in the world today. Engaging contemporary ethnographies and social theory, we will examine how life and death, the natural and the social, the individual and the collective, are braided together in ways that challenge conclusions about what constitutes care, community, health, rights, and violence, among other issues. We will also reflect on whether and how the braiding together of these domains leaves room for the recognition of their singularity. Thus, an abiding question for this seminar is the relation of history to the present. Prerequisite: consent of instructor.

ANTHRO 372. Urban Ecologies. 5 Units.
At the intersections of urbanism and environmental studies, political ecology, postcolonial theory and the new materialism, new fields are in formation. This seminar explores scholarship that connects cities with countrysides rough questions of resources and infrastructures. We will consider questions id inequality access and community as well as unexpected urban ecologies.

ANTHRO 373. Things: An Archaeology of the Relationships Between Humans and Things. 5 Units.
This course examines a variety of approaches that claim to explore the relationships between humans and things. Some of the approaches include Marx and material culture studies; Heidegger; cognitive and phenomenological; Actor Network Theory. But there is a need also to examine behavioral and ecological and Darwinian approaches. Many of these approaches do not adequately deal with the physicality of things as objects and there is a need to seek a way to incorporate such aspects of things into social theory. Prerequisite: graduate standing or consent of instructor.

ANTHRO 374. Archaeology of Colonialism/Postcolonialisms. 5 Units.
Advanced graduate seminar focused on the archaeology of colonial and postcolonial contexts, both prehistoric and historic. Emphasis on intersections between archaeological research and and subaltern, postcolonial, and transnational feminist/queer theory. Prerequisite: consent of instructor.

ANTHRO 376. Archaeology: The Emergence of a Discipline. 5 Units.
This course explores the key thinkers and practitioners who have founded the discipline of archaeology. Reaching back into the nineteenth century, the course examines in depth the key figures, their preoccupations and projects that shaped the way that archaeology grew through the 20th and into the 21st century. Global in scope, the emphasis will be on field projects and practical problems that stimulated the intellectual development of archaeology as an independent discipline closely tied to geology, history, anthropology, and the natural sciences. Prerequisite: consent of instructor.

ANTHRO 378. Dynamics of Coupled Human-Natural Systems. 5 Units.
This is a graduate research seminar on the interdisciplinary approach to the study of the dynamics of what is known as "coupled human-natural systems." We will take a critical perspective on such systems, asking to what extent the idea of coupling of discrete subsystems is intellectually profitable and what defines a "human" vs. a "natural" system? We will explore concepts such as coupling, nonlinearity, threshold behavior, feedback, complexity, resilience, and catastrophes. Case studies will be drawn from the literature on human ecology, population dynamics, disease ecology, and social dynamics. Emphasis will be on developing a working knowledge of mathematical and computational models of coupled systems embedded within a rigorous empirical framework of biosocial data collection.

ANTHRO 378A. History of Vaccines. 5 Units.
This graduate seminar will examine the history of vaccine development focusing on technical, political, zoonotic, and ethical issues. Readings will be drawn from history, anthropology, literature, and biology. Prerequisite: consent of instructor.

ANTHRO 378B. Culture, Mind and Emotion : Anthropological and Psychological Approaches. 3-5 Units.
How does culture shape the experience of thinking and feeling, the way humans relate to the world and to others? This graduate level course, taught by a psychologist who studies emotion (Jeanne Tsai) and an anthropologist who studies mind (Tanya Marie Luhrmann), explores the way that living in social worlds deeply shapes what seem to be basic processes. We explore what we know about the cultural variations in emotional experience, and about the effect of different representations of minds. We also what can be learned about the way culture shapes experience through different methods.

ANTHRO 379. Empathy Lab. 5 Units.
This lab-based class examines the ways in which various disciplines and art forms conceive of, and tell stories about, the experiences and stories of others. With permission of instructor.

ANTHRO 381. Archaeology of Violence. 5 Units.
This advanced graduate seminar reflects on archaeological research on violence in relation to readings in philosophy, political anthropology, cultural studies, and gender and ethnic studies. While some forensic approaches are discussed, the emphasis is more on structural and collective violence and the role of violence in the formation of the archaeological record.

ANTHRO 382J. Disasters in Middle Eastern History. 4-5 Units.
(History 282J is an undergraduate course offered for 5 units; History 382J is a graduate course offered for 4-5 units.) This course explores the history of disasters in the Middle East from the early modern period to the mid-20th-century. We will trace the evolving meanings of disasters and misfortunes by focusing on critical moments -- plagues, fires, earthquakes, wars -- to examine how people have responded to these events, labeled them, and devised strategies to live with or forget them. The course readings follow the evolution of policies and norms together with the articulation of new forms of knowledge and expertise in the wake of catastrophe. Additionally, particular attention will be paid to how modern conceptions of disaster relate to older understandings of apocalypse, as well as to various strands of "disaster reformism," when rethinking tragedy and time helped assert radical agendas for reforming political, economic, social, communal, racial, and gender relations while remodeling social science and intellectual life. The course focuses on various trajectories of disaster thinking in Arabic, Turkish, Greek, Armenian, and Hebrew.
Same as: HISTORY 382J

ANTHRO 385. Captivity. 3 Units.
The premise for this course is that anthropology, as well as other domains of social inquiry, have unacknowledged and unredeemed debts to captivity as structure, experience, and event, from the penal colony to the slave plantation. This course is an attempt to begin to think about those debts through readings in anthropology, history, and philosophy. By instructor consent.

ANTHRO 391. Subjectivity. 5 Units.
This seminar considers subjectivity as a central category of social, cultural, psychological, historical and political analysis. Through a critical and collaborative examination of ethnographic works and psychoanalytic theory, we will identify the processes by which subjectivities are produced, explore subjectivity as a locus of social change, and examine how emerging subjectivities remake social worlds. Some of the questions this seminar will pose include: what is the relation between subjectivity and subjection? How to account for the effects of the social in terms of subject formation without succumbing to social determinism? What else is the subject other than the outcome of a complex constellation of discursive, material, institutional, and historical factors?.

ANTHRO 398B. Race, Ethnicity, and Language: Writing Race, Ethnicity, and Language in Ethnography. 3-4 Units.
This methods seminar focuses on developing ethnographic strategies for representing race, ethnicity, and language in writing without reproducing the stereotypes surrounding these categories and practices. In addition to reading various ethnographies, students conduct their own ethnographic research to test out the authors' contrasting approaches to data collection, analysis, and representation. The goal is for students to develop a rich ethnographic toolkit that will allow them to effectively represent the (re)production and (trans)formation of racial, ethnic, and linguistic phenomena.
Same as: EDUC 389B, LINGUIST 254

ANTHRO 400. Cultural and Social Dissertation Writers Seminar. 1-3 Unit.
Required of fifth-year Ph.D. students returning from dissertation field research and in the process of writing dissertations and preparing for professional employment. Prerequisite: consent of instructor.

ANTHRO 401A. Qualifying Examination: Topic. 1-5 Unit.
Required of second- and third-year Ph.D. students writing the qualifying paper or the qualifying written examination. May be repeat for credit.

ANTHRO 401B. Qualifying Examination: Area. 1-5 Unit.
Required of second- and third-year Ph.D. students writing the qualifying paper or the qualifying written examination. May be repeated for credit one time.

ANTHRO 402D. Materialities of Power, Part I. 4-5 Units.
How is power made material? And how do material things--objects, commodities, technologies, and infrastructures --reflect, change, consolidate, or distribute power? This research seminar is aimed at PhD students in history, anthropology, and STS who are working on such questions. All geographic specialties welcome. A small amount of common reading will launch the course, whose main goal is to guide students towards producing a research paper draft that's close to submission-ready for a journal. Along the way, we'll also address practical topics, including how to pick and submit to a journal, how to present a paper, and more.
Same as: HISTORY 403A

ANTHRO 402F. Materialities of Power, Part II. 4-5 Units.
How is power made material? And how do material things --objects, commodities, technologies, and infrastructures--reflect, change, consolidate, or distribute power? This research seminar is aimed at PhD students in history, anthropology, and STS who are working on such questions. All geographic specialties welcome. A small amount of common reading will launch the course, whose main goal is to guide students towards producing a research paper draft that's close to submission-ready for a journal. Along the way, we'll also address practical topics, including how to pick and submit to a journal, how to present a paper, and more.
Same as: HISTORY 403B

ANTHRO 403. Independent Study for Masters Paper Writing. 1-5 Unit.
Required of Anthropology Master's candidates. Taken in the final quarter before handing in the final draft of the Master's Paper and graduating. This independent study supports work on the Master's papers for student admitted to the coterminal or terminal Masters degree programs in Anthropology. Prerequisite: consent of Masters paper advisor.

ANTHRO 440. Graduate Teaching. 1-5 Unit.
Supervised experience teaching in Anthropology.

ANTHRO 441. Master's Project. 1-5 Unit.
Supervised work for terminal and coterminal master's students writing the master's project in the final quarter of the degree program.

ANTHRO 442. Reading Group. 1-3 Unit.
Graduate student reading group on a thematic topic of interest.nIntended for first or second-year cohort PhD students.nSections: Liisa Malkki, Sylvia Yanagisako, Thomas Hansen, Paulla Ebron, andnMiyako Inoue.

ANTHRO 444. Anthropology Colloquium. 1 Unit.
Department Colloquia Lecture Series. Lectures presented on a variety of anthropological topics. Colloquium is intended for the Department of Anthropology's under graduate majors and graduate students. May be repeated for credit.

ANTHRO 445. Anthropology Brown Bag Series. 1 Unit.
Current topics and trends in cultural/social anthropology, archaeology, and environmental and ecological anthropology. Enrollment in this noon-time series is restricted to the Department of Anthropology Master¿s students and First and Second-year PhD students.

ANTHRO 450. Research Apprenticeship. 1-15 Unit.
Supervised work on a research project with an individual faculty member. May be repeated for credit.

ANTHRO 451. Directed Individual Study. 1-15 Unit.
Supervised work for a qualifying paper, examination, or project with an individual faculty member.

ANTHRO 452. Graduate Internship. 1-10 Unit.
Provides graduate students with the opportunity to pursue their area of specialization in an institutional setting such as a laboratory, clinic, research institute, or government agency.

ANTHRO 801. TGR Project. 0 Units.
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ANTHRO 802. TGR Dissertation. 0 Units.
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APPLIED PHYSICS

Courses offered by the Department of Applied Physics are listed under the subject code APPPHYS on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=APPPHYS&filter-catalognumber-APPPHYS=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=APPPHYS&filter-catalognumber-APPPHYS=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=APPPHYS&filter-catalognumber-APPPHYS=on).

The Department of Applied Physics offers qualified students with backgrounds in physics or engineering the opportunity to do graduate course work and research in the physics relevant to technical applications and natural phenomena. These areas include accelerator physics, biophysics, condensed matter physics, nanostructured materials, quantum electronics and photonics, quantum optics and quantum information, space science and astrophysics, synchrotron radiation and applications.

Student research is supervised by the faculty members and also by various members of other departments such as Biology, Chemistry, Electrical Engineering, Materials Science and Engineering, Physics, the SLAC National Accelerator Laboratory, and faculty of the Medical School who are engaged in related research fields.

Research activities are carried out in laboratories including the Geballe Laboratory for Advanced Materials (GLAM), the Edward L. Ginzton Laboratory (GINZTON), the Hansen Experimental Physics Laboratory (HEPL), the SLAC National Accelerator Laboratory, the Center for Probing the Nanoscale, and the Stanford Institute for Materials and Energy Science (SIMES).

The number of graduate students admitted to Applied Physics is limited. Applications to the Master of Science and Ph.D. programs should be received by December 15, 2020. M.S. and PhD. students normally enter the department the following Autumn Quarter. Joint applicants for the Knight-Hennessy Scholars Program (http://knight-hennessy.stanford.edu/) must submit their Knight-Hennessy Scholars application by October 14, 2020 by 1:00pm Pacific Time and Applied Physics application by December 15, 2020. The general and subject GREs are optional for both the Ph.D. and master's programs. Applicants may submit scores, but they are not required.

Graduate Programs in Applied Physics

The Department of Applied Physics offers three types of advanced degrees:

- the Doctor of Philosophy
- the coterminal Master of Science in Applied and Engineering Physics
- the Master of Science in Applied Physics, either as a terminal degree or an en route degree to the Ph.D. for students already enrolled in the Applied Physics Ph.D. program.

Admission requirements for graduate work in the Master of Science and Ph.D. programs in Applied Physics include a bachelor's degree in Physics or an equivalent engineering degree. Students entering the program from an engineering curriculum should expect to spend at least an additional quarter of study acquiring the background to meet the requirements for the M.S. and Ph.D. degrees in Applied Physics.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in Applied Physics and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in Applied Physics. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of Applied Physics and to interpret and present the results of such research.

The department offers an M.S. in Applied Physics as well as a coterminal M.S. in Applied Physics available, upon application and acceptance, to Stanford undergraduates. Both programs are described below.

Master of Science in Applied Physics

The University's basic requirements for the master's degree are discussed in the "Graduate Degrees (p. 65)" section of this bulletin. The minimum requirements for the degree are 45 units, of which at least 39 units must be graduate-level courses in applied physics, engineering, mathematics, and physics. The deadline for 2021-22 admissions is December 15, 2020. The required program consists of the following:

		Units
Advanced Mechanics		**3**
Select one of the following:		
PHYSICS 210	Advanced Mechanics	
PHYSICS 211	Continuum Mechanics	
Electrodynamics		**3**
Select one of the following:		
APPPHYS 201	Electrons and Photons	
PHYSICS 220	Classical Electrodynamics	
Quantum Mechanics		**6**
Select two of the following:		
APPPHYS 203	Atoms, Fields and Photons	
APPPHYS 204	Quantum Materials	
EE 222	Applied Quantum Mechanics I	
EE 223	Applied Quantum Mechanics II	
PHYSICS 230	Graduate Quantum Mechanics I	
PHYSICS 231	Graduate Quantum Mechanics II	
PHYSICS 234	Advanced Topics in Quantum Mechanics	
PHYSICS 330	Quantum Field Theory I	
PHYSICS 331	Quantum Field Theory II	
PHYSICS 332	Quantum Field Theory III	
Directed Studies		
APPPHYS 290	Directed Studies in Applied Physics	
1-unit Seminar Courses		
Examples of suitable courses include		
EE 222	Applied Quantum Mechanics I	3
EE 223	Applied Quantum Mechanics II	3
EE 236A	Modern Optics	3
EE 236C	Lasers	3
EE 332	Laser Dynamics	3
EE 346	Introduction to Nonlinear Optics	3
PHYSICS 372	Condensed Matter Theory I	3
PHYSICS 373	Condensed Matter Theory II	3

1. Courses in Physics and Mathematics to overcome deficiencies, if any, in undergraduate preparation.
2. Basic graduate courses (letter grade required):
   - 33 units of additional advanced courses in science and/or engineering. May be any combination of APPPHYS 290 Directed Studies in Applied Physics, any 1-unit course, and regular courses. At least 18 of these 33 units must be taken for a letter grade. 15 of these 18 units must be at the 200-level or above. Only 6 units below the 200-level are permitted without approval by the Applied Physics Graduate Study Committee.
3. A final overall grade point average (GPA) of 3.0 (B) is required for courses used to fulfill degree requirements.

There are no department nor University examinations. There is no thesis component. If a student is admitted to the M.S. program only, but later wishes to change to the Ph.D. program, the student must re-apply through the admissions portal.

Coterminal Master of Science in Applied and Engineering Physics

Stanford undergraduates, regardless of undergraduate major, who are interested in a M.S. degree at the intersection of applied physics and engineering may choose to apply for the coterminal Master of Science program in Applied and Engineering Physics. The program is designed to be completed in the fifth year at Stanford. Students with accelerated undergraduate programs may be able to complete their B.S. and coterminal M.S. in four years.

Application and Admission

Undergraduates must be admitted to the program and enrolled as a graduate student for at least one quarter prior to B.S. conferral. Applications are due on the last day of class of the Spring Quarter (June 10, 2020) for Autumn 2020 matriculation and at least four weeks before the last day of class in the previous quarter for Winter or Spring matriculation (October 20, 2020 for Winter matriculation, February 19, 2021 for Spring matriculation, and June 4, 2021 for Autumn 2021 matriculation). All application materials must be submitted directly to the Applied Physics department office by the deadlines. To apply for admission to the Applied and Engineering Physics coterminal M.S. program, students must submit the coterminal application which consists of the following:

- Application for Admission to Coterminal Master's Program (https://registrar.stanford.edu/students/coterminal-degree-programs/applying-coterm/)
- Statement of Purpose
- Unofficial Transcript
- Two Letters of Recommendation from members of the Stanford faculty

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken three quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to the graduate career. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Program Requirements

Coterminal M.S. students are required to take 45 units of course work during their graduate career. Of these 45 units, the following are required.

		Units
Four Breadth Courses (required)		
APPPHYS 201	Electrons and Photons	4
APPPHYS 203	Atoms, Fields and Photons	4
APPPHYS 204	Quantum Materials	4
APPPHYS 205	Introduction to Biophysics	4
Three Engineering Depth Courses		**9**
At least one must be at the 300 level and the other courses must be at the 200 level or above to provide depth in one area. To be approved by the Applied Physics academic adviser.		
One Laboratory or Methods Course		**3-4**
APPPHYS 207	Laboratory Electronics	
APPPHYS 208	Laboratory Electronics	
APPPHYS 215	Numerical Methods for Physicists and Engineers	
APPPHYS 217	Estimation and Control Methods for Applied Physics (by arrangement with the instructor)	
APPPHYS 232	Advanced Imaging Lab in Biophysics	
EE 234	Photonics Laboratory	
EE 251	High-Frequency Circuit Design Laboratory	
EE 312	Integrated Circuit Fabrication Laboratory	
ENGR 341	Micro/Nano Systems Design and Fabrication	
ENGR 342	MEMS Laboratory II	
MATSCI 322	Transmission Electron Microscopy Laboratory	
MATSCI 331	Atom-based computational methods for materials	
Seminar [1]		**3**
Examples of suitable seminars include:		
APPPHYS 470	Condensed Matter Seminar	
APPPHYS 483	Optics and Electronics Seminar	
BIOPHYS 250	Seminar in Biophysics	
EE 380	Colloquium on Computer Systems	
MATSCI 230	Materials Science Colloquium	
Approved Technical Electives [2]		**6-12**
6 units minimum that brings up the total units to 45		
Total Units		**45**

[1] The seminar requirement can be fulfilled by either (i) taking one formal seminar course for credit each term, and/or (ii) enrolling in APPPHYS 290 and attending a minimum of eight informal talks or formal research seminars during each of the three terms. Students enrolling in APPPHYS 290 must submit with their final M.S. program proposal a list of the eight talks/seminars with a paragraph describing the content, signed by their academic adviser.

[2] These include APPPHYS, CS, CME, EE, ME, BIOE, MATSCI, PHYSICS courses (see http://www.stanford.edu/dept/app-physics/cgi-bin/academic-programs/) as well as those courses that are formally approved by the Applied Physics Graduate Studies Committee through petition.

Any request for a course transfer from the undergraduate career is subject to approval of the undergraduate and graduate departments.

Doctor of Philosophy in Applied Physics

The University's basic requirements for the Ph.D. including residency, dissertation, and examinations are discussed in the "Graduate Degrees (p. 65)" section of this bulletin. The deadline for the 2021-22 admissions is December 15, 2020. Joint applicants for the Knight-Hennessy Scholars Program (http://knight-hennessy.stanford.edu/) must submit their Knight-Hennessy Scholars application by October 14, 2020 by 1:00pm Pacific Time and Applied Physics application by December 15, 2020. The program leading to a Ph.D. in Applied Physics consists of course work, research, qualifying for Ph.D. candidacy, a research progress report, a University oral examination, and a dissertation as follows:

1. *Course Work:*

		Units
Statistical Physics		**3-4**
Select one of the following: [1]		
APPPHYS 217	Estimation and Control Methods for Applied Physics (by arrangement with the instructor)	
APPPHYS 223	Stochastic and Nonlinear Dynamics	
PHYSICS 212	Statistical Mechanics	
Electrodynamics [1]		**3-4**
Select one of the following: [1]		
APPPHYS 201	Electrons and Photons	
PHYSICS 220	Classical Electrodynamics	
Quantum Mechanics		**3**
Select one of the following: [1]		
APPPHYS 203	Atoms, Fields and Photons	
APPPHYS 204	Quantum Materials	
EE 222	Applied Quantum Mechanics I	
EE 223	Applied Quantum Mechanics II	
PHYSICS 230	Graduate Quantum Mechanics I	
PHYSICS 231	Graduate Quantum Mechanics II	
PHYSICS 234	Advanced Topics in Quantum Mechanics	
PHYSICS 330	Quantum Field Theory I	
PHYSICS 331	Quantum Field Theory II	
PHYSICS 332	Quantum Field Theory III	
Laboratory		**3-4**
Select one of the following: [2]		
APPPHYS 207	Laboratory Electronics	
APPPHYS 208	Laboratory Electronics	
APPPHYS 232	Advanced Imaging Lab in Biophysics	
BIOE 370	Microfluidic Device Laboratory	
EE 234	Photonics Laboratory	
EE 235	Analytical Methods in Biotechnology	
EE 312	Integrated Circuit Fabrication Laboratory	
MATSCI 171	Energy Materials Laboratory	
MATSCI 172	X-Ray Diffraction Laboratory	
MATSCI 173	Mechanical Behavior Laboratory	
PHYSICS 301	Astrophysics Laboratory	

[1] Additional courses to fulfill this requirement are being reviewed by the department curriculum committee and will be added here when they have been approved.

[2] Students who took APPPHYS 304 or APPPHYS 305 in previous years may also count these courses towards this requirement.

   a. Courses in Physics and Mathematics to overcome deficiencies, if any, in undergraduate preparation.
   b. *Basic graduate courses:* These requirements may be totally or partly satisfied with equivalent courses taken elsewhere, pending the approval of the graduate study committee. Letter grades required for all courses.
   c. 18 units of additional advanced courses in science and/or engineering. At least one course in each of two areas other than those of the student's research specialization is required. Only 3 units at the 300 or above level may be taken on a satisfactory/no credit basis. Units from APPPHYS 290, APPPHYS 390, and any 1-unit courses do not count towards this requirement. Examples of suitable courses include:

		Units
EE 222	Applied Quantum Mechanics I	3
EE 223	Applied Quantum Mechanics II	3
EE 236A	Modern Optics	3
EE 236C	Lasers	3
EE 332	Laser Dynamics	3
EE 346	Introduction to Nonlinear Optics	3
PHYSICS 372	Condensed Matter Theory I	3
PHYSICS 373	Condensed Matter Theory II	3

   d. Additional units of courses as needed to meet the minimum residency requirement of 135. Directed study and research units as well as 1-unit seminar courses can be included.
   e. A final average overall grade point average (GPA) of 3.0 (B) is required for courses used to fulfill degree requirements.
   f. Students are normally expected to complete the specified course requirements by the end of their third year of graduate study.
2. *Research:* may be conducted in a science/engineering field under the supervision of a member of the Applied Physics faculty or appropriate faculty from other departments. If the primary adviser is from a department other than Applied Physics, the student must appoint a co-adviser from the Applied Physics department.
3. *Ph.D. Candidacy:* satisfactory progress in academic and research work, together with passing the Ph.D. candidacy qualifying examination, qualifies the student to apply for Ph.D. candidacy, and must be completed before the third year of graduate registration. The examination consists of a seminar on a suitable subject delivered by the student before a committee consisting of the chair (who is from the graduate studies committee), a faculty member from outside the department chosen by the student, and the third member is from the AP faculty (courtesy appointment is okay).
4. *Research Progress Report:* normally before the end of the Winter Quarter of the fourth year of enrollment in graduate study at Stanford, the student arranges to give an oral research progress report, which could be last up to two hours.

5. *University Ph.D. Oral Examination*: consists of a public seminar in defense of the dissertation, followed by private questioning of the candidate by the University examining committee.
6. *Dissertation:* must be approved and signed by the Ph.D. reading committee.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

The Department of Applied Physics counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B' or better level.

Graduate Advising Expectations

The Department of Applied Physics is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the advisor and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity.

In addition, the Faculty Candidacy Chair, Professor Philip Bucksbaum, is available for consultation during the academic year by email and during office hours. The Applied Physics student services office is also an important part of the advising team. Staff in the office inform students and advisors about University and department requirements, procedures, and opportunities, and maintain the official records of advising assignments and approvals.

Faculty advisors guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Master of Science Advising

At the start of graduate study, each student is assigned a master's program advisor: a member of our faculty who provides guidance in course selection, course planning, and in exploring short and long term academic opportunities and professional pathways. The program advisor serves as the first resource for consultation and advice about a student's academic program. Usually, the same faculty member serves as program advisor for the duration of master's study. In rare instances, a formal advisor change request may be considered. See the Applied Physics student services office for additional information on this process.

Ph.D. Advising

Academic advisors are assigned to incoming first year students by the graduate study committee based on their interest of studies. Faculty academic advisors guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways. Each individual program, designed by the student in consultation with the academic advisor, should represent a strong and cohesive program reflecting the student's major field of interest. Based on the research interest, students and research advisors mutually agree to work on the research together and establish a collaborative relationship. When the research advisor is from outside the Applied Physics department, the student must also identify a co-advisor from departmental primary faculty to provide guidance on departmental requirements and opportunities.

Emeriti: (Professors) Malcolm R. Beasley, Arthur Bienenstock, Sebastian Doniach, Alexander L. Fetter, Theodore H. Geballe, Stephen E. Harris, Walter A. Harrison, Peter A. Sturrock, Yoshihisa Yamamoto; (Professors, Research) Helmut Wiedemann, Herman Winick; (Courtesy) Douglas D. Osheroff

Chair: Martin M. Fejer

Chair of Graduate Studies Committee: Philip H. Bucksbaum

Professors: Steven M. Block, Philip H. Bucksbaum, Robert L. Byer, Martin M. Fejer, Daniel S. Fisher, Ian R. Fisher, Tony F. Heinz, Harold Y. Hwang, Aharon Kapitulnik, Mark A. Kasevich, Young S. Lee, Hideo Mabuchi, Kathryn A. Moler, Vahé Petrosian, Stephen R. Quake, Zhi-Xun Shen, Yuri Suzuki

Associate Professors: Benjamin L. Lev, David A. Reis, Mark J. Schnitzer

Assistant Professors: Surya Ganguli, Amir H. Safavi-Naeini, Benjamin Good

Professor (Research): Michel J-F. Digonnet

Courtesy Professors: Mark L. Brongersma, Bruce M. Clemens, Shanhui Fan, David Goldhaber-Gordon, James S. Harris, Lambertus Hesselink, David A. B. Miller, W. E. Moerner, Jelena Vuckovic

Courtesy Associate Professors: Willliam J. Greenleaf, Zhirong Huang, Andrew J. Spakowitz

Adjunct Professors: Thomas M. Baer, Raymond G. Beausoleil, John D. Fox, Richard M. Martin

Courses

APPPHYS 61. Science as a Creative Process. 4 Units.
What is the process of science, and why does creativity matter? We'll delve deeply into the applicability of science in addressing a vast range of real-world problems. This course is designed to teach the scientific method as it's actually practiced by working scientists. It will cover how to ask a well-posed question, how to design a good experiment, how to collect and interpret quantitative data, how to recover from error, and how to communicate findings. Facts matter! Course topics will include experimental design, statistics and statistical significance, formulating appropriate controls, modeling, peer review, and more. The course will incorporate a significant hands-on component featuring device fabrication, testing, and measurement. Among other "Dorm Science" activities, we'll be distributing Arduino microcontroller kits and electronic sensors, then use these items, along with other materials, to complete a variety of group and individual projects outside the classroom. The final course assignment will be to develop and write a scientific grant proposal to test a student-selected myth or scientific controversy. Although helpful, no prior experience with electronics or computer programming is required. Recommended for freshmen.
Same as: BIO 61

APPPHYS 77N. Functional Materials and Devices. 3 Units.
Preference to freshmen. Exploration via case studies how functional materials have been developed and incorporated into modern devices. Particular emphasis is on magnetic and dielectric materials and devices. Recommended: high school physics course including electricity and magnetism.

APPPHYS 79N. Energy Options for the 21st Century. 3 Units.
Preference to frosh. Choices for meeting the future energy needs of the U.S. and the world. Basic physics of energy sources, technologies that might be employed, and related public policy issues. Trade-offs and societal impacts of different energy sources. Policy options for making rational choices for a sustainable world energy economy.

APPPHYS 100. The Questions of Clay: Craft, Creativity and Scientific Process. 5 Units.
Students will create individual studio portfolios of ceramic work and pursue technical investigations of clay properties and the firing process using modern scientific equipment. Emphasis on development of creative process; parallels between science and traditional craft; integration of creative expression with scientific method and analysis. Prior ceramics experience desirable but not necessary. Limited enrollment. Prerequisites: any level of background in physics, Instructor permission.
Same as: ARTSINST 100

APPPHYS 100B. The Questions of Cloth: Weaving, Pattern Complexity and Structures of Fabric. 4 Units.
Students will learn to weave on a table loom while examining textile structures from historic, artistic and scientific perspectives. Emphasis on analyzing patterns and structures generated by weaving, with elementary introductions to information-scientific notions of algorithmic complexity, image compression, and source coding. This class is primarily intended for non-STEM majors with little or no prior experience in working with textiles. Limited enrollment. Prerequisites: Instructor permission.
Same as: ARTSINST 100B

APPPHYS 100Q. INDIGO. 3 Units.
Preference to sophomores. Indigo as a plant, biomolecule, dye, ancient craft material, and organic semiconductor; the interest of natural dyes for both biomimetic engineering and indigenous artistic practices. Students will plant and tend an indigo crop, harvest and process indigo leaves for dyestuffs, and dye textiles using an organic vat process. Lectures, readings and discussions will focus on the biochemistry and physics of indigo dye, traditional indigo textile arts, environmental impacts of industrial-scale indigo dyeing of denim, roles of indigo in upcycling, craft-washing, and the aesthetics of indigo in western and non-western cultural frames.

APPPHYS 188. Matter and Mattering: Transdisciplinary Thinking about Things. 4-5 Units.
Things sit at the nexus of cross-cutting heterogeneous processes; tracing the entanglements of any prominent thing or class of things demands a transdisciplinary approach that recruits expertise from the natural sciences, social sciences and humanities. For example, carbon is a key factor in global warming for reasons that are as much socio-historical as bio-physical, and we could not begin to sketch the full significance of carbon without considering such diverse frames of reference. Our growing appreciation in the social sciences and humanities of the agency, polyvalence and catalytic role of things has given rise to The New Materialist and Post-Humanist movements, which in turn raise questions about intra-action and observational perspective that are echoed in the modern physical and life sciences. In this class we will explore these theoretical convergences in considering themes such as `things-in-themselves¿, networks and open systems, assemblages and entanglements. We will also examine specific examples such as oil, metal (guns), dams, viruses, electricity, mushrooms; each thing will be explored both in terms of its social and ethical entanglements and in terms of its material properties and affordances. There will also be hands-on encounters with objects in labs and a couple of local field trips. The key question throughout will be `why and how does matter matter in society today?.
Same as: ANTHRO 188, ANTHRO 288, ARCHLGY 188

APPPHYS 189. Physical Analysis of Artworks. 3 Units.
Students explore the use of Stanford Nano Shared Facilities (SNSF) for physical analysis of material samples of interest for art conservation, technical art history and archaeology. Weekly SNSF demonstrations will be supplemented by lectures on intellectual context by Stanford faculty/staff and conservators from the Fine Arts Museums of San Francisco (FAMSF). Students will complete the SNSF training sequence for electron microscopy and undertake analysis projects derived from ongoing conservation efforts at FAMSF.".

APPPHYS 201. Electrons and Photons. 4 Units.
Applied Physics Core course appropriate for graduate students and advanced undergraduate students with prior knowledge of elementary quantum mechanics, electricity and magnetism, and special relativity. Interaction of electrons with intense electromagnetic fields from microwaves to x- ray, including electron accelerators, x-ray lasers and synchrotron light sources, attosecond laser-atom interactions, and x-ray matter interactions. Mechanisms of radiation, free-electron lasing, and advanced techniques for generating ultrashort brilliant pulses. Characterization of electronic properties of advanced materials, prospects for single-molecule structure determination using x-ray lasers, and imaging attosecond molecular dynamics.
Same as: PHOTON 201

APPPHYS 203. Atoms, Fields and Photons. 4 Units.
Applied Physics Core course appropriate for graduate students and advanced undergraduate students with prior knowledge of elementary quantum mechanics, electricity and magnetism, and ordinary differential equations. Structure of single- and multi-electron atoms and molecules, and cold collisions. Phenomenology and quantitative modeling of atoms in strong fields, with modern applications. Introduction to quantum optical theory of atom-photon interactions, including quantum trajectory theory, mechanical effects of light on atoms, and fundamentals of laser spectroscopy and coherent control.

APPPHYS 204. Quantum Materials. 4 Units.
Applied Physics Core course appropriate for graduate students and advanced undergraduate students with prior knowledge of elementary quantum mechanics. Introduction to materials and topics of current interest. Topics include superconductivity, magnetism, charge and spin density waves, frustration, classical and quantum phase transitions, multiferroics, and interfaces. Prerequisite: elementary course in quantum mechanics.

APPPHYS 205. Introduction to Biophysics. 3-4 Units.
Core course appropriate for advanced undergraduate students and graduate students with prior knowledge of calculus and a college physics course. Introduction to how physical principles offer insights into modern biology, with regard to the structural, dynamical, and functional organization of biological systems. Topics include the roles of free energy, diffusion, electromotive forces, non-equilibrium dynamics, and information in fundamental biological processes.
Same as: BIO 126, BIO 226

APPPHYS 207. Laboratory Electronics. 4 Units.
Lecture/lab emphasizing analog and digital electronics for lab research. RC and diode circuits. Transistors. Feedback and operational amplifiers. Active filters and circuits. Pulsed circuits, voltage regulators, and power circuits. Precision circuits, low-noise measurement, and noise reduction techniques. Circuit simulation tools. Analog signal processing techniques and modulation/demodulation. Principles of synchronous detection and applications of lock-in amplifiers. Common laboratory measurements and techniques illustrated via topical applications. Prerequisites: undergraduate device and circuit exposure.

APPPHYS 208. Laboratory Electronics. 4 Units.
Lecture/lab emphasizing analog and digital electronics for lab research. Continuation of APPPHYS 207 with emphasis on applications of digital techniques. Combinatorial and synchronous digital circuits. Design using programmable logic. Analog/digital conversion. Microprocessors and real time programming, concepts and methods of digital signal processing techniques. Current lab interface protocols. Techniques commonly used for lab measurements. Development of student lab projects during the last three weeks. Prerequisites: undergraduate device and circuit exposure. Recommended: previous enrollment in APPPHYS 207.

APPPHYS 215. Numerical Methods for Physicists and Engineers. 4 Units.
Fundamentals of numerical methods applied to physical systems. Derivatives and integrals; interpolation; quadrature; FFT; singular value decomposition; optimization; linear and nonlinear least squares fitting; error estimation; deterministic and stochastic differential equations; Monte Carlo methods. Lectures will be accompanied by guided project work enabling each student to make rapid progress on a project of relevance to their interests.

APPPHYS 217. Estimation and Control Methods for Applied Physics. 4 Units.
Recursive filtering, parameter estimation, and feedback control methods based on linear and nonlinear state-space modeling. Topics in: dynamical systems theory; practical overview of stochastic differential equations; model reduction; and tradeoffs among performance, complexity, and robustness. Numerical implementations in MATLAB. Contemporary applications in systems biology and quantum precision measurement. Prerequisites: linear algebra and ordinary differential equations.

APPPHYS 219. Solid State Physics Problems in Energy Technology. 3 Units.
Technology issues for a secure energy future; role of solid state physics in energy technologies. Topics include the physics principles behind future technologies related to solar energy and solar cells, solid state lighting, superconductivity, solid state fuel cells and batteries, electrical energy storage, materials under extreme condition, nanomaterials.

APPPHYS 222. Principles of X-ray Scattering. 4 Units.
Provides a fundamental understanding of x-ray scattering and diffraction. Combines pedagogy with modern experimental methods for obtaining atomic-scale structural information on synchrotron and free-electon laser-based facilities. Topics include Fourier transforms, reciprocal space; scattering in the first Born approximation, comparison of x-ray, neutron and electron interactions with matter, kinematic theory of diffraction; dynamical theory of diffraction from perfect crystals, crystal optics, diffuse scattering from imperfect crystals, inelastic x-ray scattering in time and space, x-ray photon correlation spectroscopy. Laboratory experiments at the Stanford Synchrotron Radiation Lightsource.
Same as: PHOTON 222

APPPHYS 223. Stochastic and Nonlinear Dynamics. 3 Units.
Theoretical analysis of dynamical processes: dynamical systems, stochastic processes, and spatiotemporal dynamics. Motivations and applications from biology and physics. Emphasis is on methods including qualitative approaches, asymptotics, and multiple scale analysis. Prerequisites: ordinary and partial differential equations, complex analysis, and probability or statistical physics.
Same as: BIO 223, BIOE 213, PHYSICS 223

APPPHYS 225. Probability and Quantum Mechanics. 3 Units.
Structure of quantum theory emphasizing states, measurements, and probabilistic modeling. Generalized quantum measurement theory; parallels between classical and quantum probability; conditional expectation in the Schrödinger and Heisenberg pictures; covariance with respect to symmetry groups; reference frames and super-selection rules. Classical versus quantum correlations; nonlocal aspects of quantum probability; axiomatic approaches to interpretation. Prerequisites: undergraduate quantum mechanics, linear algebra, and basic probability and statistics.

APPPHYS 228. Quantum Hardware. 4 Units.
Review of the basics of quantum information. Quantum optics: photon counting, detection, and amplification. Quantum noise in parametric processes. Quantum sensing: standard quantum limits, squeezed light, and spin squeezing. Gaussian quantum information. Quantum theory of electric circuits, electromagnetic components, and nanomechanical devices. Integrated quantum systems: superconductivity and Josephson qubits, measurement-based quantum computing with photons, spin qubits, topological systems. Prerequisites: PHYSICS 134/234 and APPPHYS 203.

APPPHYS 232. Advanced Imaging Lab in Biophysics. 4 Units.
Laboratory and lectures. Advanced microscopy and imaging, emphasizing hands-on experience with state-of-the-art techniques. Students construct and operate working apparatus. Topics include microscope optics, Koehler illumination, contrast-generating mechanisms (bright/dark field, fluorescence, phase contrast, differential interference contrast), and resolution limits. Laboratory topics vary by year, but include single-molecule fluorescence, fluorescence resonance energy transfer, confocal microscopy, two-photon microscopy, microendoscopy, and optical trapping. Limited enrollment. Recommended: basic physics, basic cell biology, and consent of instructor.
Same as: BIO 132, BIO 232, BIOPHYS 232, GENE 232

APPPHYS 236. Biology by the Numbers. 3 Units.
For PhD students and advanced undergraduates. Students will develop skills in quantitative reasoning over a wide range of biological problems. Topics: biological size scales ranging from proteins to ecosystems; biological times time scales ranging from enzymatic catalysis and DNA replication to evolution; biological energy, motion and force from molecular to organismic scales; mechanisms of environmental sensing ranging from bacterial chemotaxis to vision.
Same as: BIOC 236

APPPHYS 237. Quantitative Evolutionary Dynamics and Genomics. 3 Units.
The genomics revolution has fueled a renewed push to model evolutionary processes in quantitative terms. This course will provide an introduction to quantitative evolutionary modeling through the lens of statistical physics. Topics will range from the foundations of theoretical population genetics to experimental evolution of laboratory microbes. Course work will involve a mixture of pencil-and-paper math, writing basic computer simulations, and downloading and manipulating DNA sequence data from published datasets. This course is intended for upper level physics and math students with no biology background, as well as biology students who are comfortable with differential equations and probability.
Same as: BIO 251

APPPHYS 270. Magnetism and Long Range Order in Solids. 3 Units.
Cooperative effects in solids. Topics include the origin of magnetism in solids, crystal electric field effects and anisotropy, exchange, phase transitions and long-range order, ferromagnetism, antiferromagnetism, metamagnetism, density waves and superconductivity. Emphasis is on archetypal materials. Prerequisite: PHYSICS 172 or MATSCI 209, or equivalent introductory condensed matter physics course.

APPPHYS 272. Solid State Physics. 3 Units.
Introduction to the properties of solids. Crystal structures and bonding in materials. Momentum-space analysis and diffraction probes. Lattice dynamics, phonon theory and measurements, thermal properties. Electronic structure theory, classical and quantum; free, nearly-free, and tight-binding limits. Electron dynamics and basic transport properties; quantum oscillations. Properties and applications of semiconductors. Reduced-dimensional systems. Undergraduates should register for PHYSICS 172 and graduate students for APPPHYS 272. Prerequisites: PHYSICS 170 and PHYSICS 171, or equivalents.
Same as: PHYSICS 172

APPPHYS 273. Solid State Physics II. 3 Units.
Introduction to the many-body aspects of crystalline solids. Second quantization of phonons, anharmonic effects, polaritons, and scattering theory. Second quantization of Fermi fields. Electrons in the Hartree-Fock and random phase approximation; electron screening and plasmons. Magnetic exchange interactions. Electron-phonon interaction in ionic/covalent semiconductors and metals; effective attractive electron-electron interactions, Cooper pairing, and BCS description of the superconducting state. Prerequisite: APPPHYS 272 or PHYSICS 172.

APPPHYS 280. Phenomenology of Superconductors. 3 Units.
Phenomenology of superconductivity viewed as a macroscopic quantum phenomenon. Topics include the superconducting pair wave function, London and Ginzburg-Landau theories, the Josephson effect, type I type II superconductivity, and the response of superconductors to currents, magnetic fields, and RF electromagnetic radiation. Introduction to thermal fluctuation effects in superconductors and quantum superconductivity.

APPPHYS 282. Quantum Gases. 3 Units.
Introduction to the physics of quantum gases and their use in quantum simulation and computation. Topics in modern atomic physics and quantum optics will be covered, including laser cooling and trapping, ultracold collisions, optical lattices, ion traps, cavity QED, quantum phase transitions in quantum gases and lattices, BEC and quantum degenerate Fermi gases, 1D and 2D quantum gases, dipolar gases, and quantum nonequilibrium dynamics and phase transitions. Prerequisites: undergraduate quantum and statistical mechanics courses. Applied Physics 203 strongly recommended but not required.
Same as: PHYSICS 182, PHYSICS 282

APPPHYS 290. Directed Studies in Applied Physics. 1-15 Unit.
Special studies under the direction of a faculty member for which academic credit may properly be allowed. May include lab work or directed reading.

APPPHYS 291. Practical Training. 1-3 Unit.
Opportunity for practical training in industrial labs. Arranged by student with research adviser's approval. Summary of activities required.

APPPHYS 293. Theoretical Neuroscience. 3 Units.
Survey of advances in the theory of neural networks, mainly (but not solely) focused on results of relevance to theoretical neuroscience.Synthesizing a variety of recent advances that potentially constitute the outlines of a theory for understanding when a given neural network architecture will work well on various classes of modern recognition and classification tasks, both from a representational expressivity and a learning efficiency point of view. Discussion of results in the neurally-plausible approximation of back propagation, theory of spiking neural networks, the relationship between network and task dimensionality, and network state coarse-graining. Exploration of estimation theory for various typical methods of mapping neural network models to neuroscience data, surveying and analyzing recent approaches from both sensory and motor areas in a variety of species. Prerequisites: calculus, linear algebra, and basic probability theory, or consent of instructor.
Same as: PSYCH 242

APPPHYS 294. Cellular Biophysics. 3 Units.
Physical biology of dynamical and mechanical processes in cells. Emphasis is on qualitative understanding of biological functions through quantitative analysis and simple mathematical models. Sensory transduction, signaling, adaptation, switches, molecular motors, actin and microtubules, motility, and circadian clocks. Prerequisites: differential equations and introductory statistical mechanics.
Same as: BIO 294, BIOPHYS 294

APPPHYS 302. Experimental Techniques in Condensed Matter Physics. 3 Units.
Cryogenics; low signal measurements and noise analysis; data collection and analysis; examples of current experiments. Prerequisites: PHYSICS 170, PHYSICS 171, and PHYSICS 172, or equivalents.

APPPHYS 315. Methods in Computational Biology. 3 Units.
Methods of bioinformatics and biomolecular modeling from the standpoint of biophysical chemistry. Methods of genome analysis; cluster analysis, phylogenetic trees, microarrays; protein, RNA and DNA structure and dynamics, structural and functional homology; protein-protein interactions and cellular networks; molecular dynamics methods using massively parallel algorithms.
Same as: BIOPHYS 315

APPPHYS 322. Advanced Topics in x-ray scattering. 3 Units.
This course covers advanced topics in x-ray scattering including: diffuse scattering from static and dynamic disorder such as from defects or phonons; inelastic methods such as x-ray Raman and Compton scattering for measuring electronic structure and elementary excitations; and inelastic scattering in the time and frequency domain. Course combines lectures on basic principles with a review of foundational and current literature. May be repeat for credit.
Same as: PHOTON 322

APPPHYS 324. Introduction to Accelerator Physics. 3 Units.
Physics of particle beams in linear and circular accelerators. Transverse and longitudinal beam dynamics, equilibrium emittances in electron storage rings, high-brightness electron sources, RF acceleration and emittance preservation, bunch compression and associated collective effects, accelerator physics design for x-ray FELs, advanced accelerator concepts.

APPPHYS 325. Synchrotron Radiation and Free Electron Lasers: Principles and Applications.. 3 Units.
Synchrotron radiation sources for scientific exploration, and x-ray FELs for studies of ultrafast processes at the atomic scale. Fundamental concepts in electron and photon beams, bending magnet and undulator radiation, one-dimensional and three-dimensional FEL theory and simulations, self-amplified spontaneous emission, seeding and other improvement schemes, x-ray methodology, techniques and instrumentation for the study of ultrafast phenomena. Includes selected laboratory tours of the Linac Coherent Light Source and/or Stanford Synchrotron Radiation Lightsource at SLAC. Prerequisite: graduate-level electrodynamics, or consent of instructor.
Same as: PHOTON 325

APPPHYS 345. Advanced Numerical Methods for Data Analysis and Simulation. 3 Units.
Gaussian and unit sphere quadrature, singular value decomposition and principal component analysis, Krylov methods, non-linear fitting and super-resolution, independent component analysis, 3d reconstruction, "shrink-wrap", hidden Markov methods, support vector machines, simulated annealing, molecular dynamics and parallel tempering, Markov state methods, Monte Carlo methods for constrained systems.

APPPHYS 376. Literature of Cavity QED and Cavity Optomechanics. 3 Units.
Cavity quantum electrodynamics and optomechanics in modern quantum optics, photonics and quantum engineering. Review of basic concepts and survey of key literature in seminar format. May be repeat for credit.

APPPHYS 383. Introduction to Atomic Processes. 3 Units.
Atomic spectroscopy, matrix elements using the Coulomb approximation, summary of Racah algebra, oscillator and line strengths, Einstein A coefficients. Radiative processes, Hamiltonian for two- and three-state systems, single- and multi-photon processes, linear and nonlinear susceptibilities, density matrix, brightness, detailed balance, and electromagnetically induced transparency. Inelastic collisions in the impact approximation, interaction potentials, Landau-Zener formulation. Continuum processes, Saha equilibrium, autoionization, and recombination.

APPPHYS 384. Advanced Topics in AMO Physics. 3 Units.
This course will develop the subject of Strong-Field QED. Topics to be covered include: The structure of the quantum vacuum;relativistic laser-vacuum interactions;linear and non-linear Compton and Breit-Wheeler pair-production processes;vacuum polarization and vacuum tunneling; the radiation reaction problem in strong fields;applications in astrophysics and cosmology. The course will also cover experimental methods, including petawatt lasers with focused intensities sufficient to destabilize the vacuum. Prerequisites: familiarity with quantum mechanics, electrodynamics, and special relativity.

APPPHYS 390. Dissertation Research. 1-15 Unit.
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APPPHYS 392. Topics in Molecular Biophysics: Biophysics of Functional RNA (BIOPHYS 392). 3 Units.
Survey of methods used to relate RNA sequences to the structure and function of transcribed RNA molecules. Computation of contributions of the counter-ion cloud to the dependence of free energy on conformation of the folded RNA. The relation of structure to function of ribozymes, riboswitches, and the formation of ribosomal proteins.
Same as: BIOPHYS 392

APPPHYS 393. Biophysics of Solvation. 3 Units.
Statistical mechanics of water-protein or water-DNA (or RNA) interactions; effects of coulomb forces on molecular hydration shells and ion clouds; limitations of the Poisson-Boltzmann equations; DNA collapse, DNA-protein interactions; structure-function relationships in ion channels.
Same as: BIOPHYS 393

APPPHYS 453A. Collective Instabilities in Accelerators. 3 Units.
A beam in an accelerator can become unstable if its intensity is too high. Topics include the physical mechanism causing these instabilities; establishing the framework by introducing the concepts of wakefield and impedance; various instability mechanisms with a special emphasis on the underlying physical principles; new types of instabilities encountered in modern high performance accelerators such as the fast ion and the electron cloud instabilities. Course may be repeated when a different course is offered as a Special Topics.
Same as: PHOTON 453A

APPPHYS 470. Condensed Matter Seminar. 1 Unit.
Current research and literature; offered by faculty, students, and outside specialists. May be repeated for credit.

APPPHYS 483. Optics and Electronics Seminar. 1 Unit.
Current research topics in lasers, quantum electronics, optics, and photonics by faculty, students, and invited outside speakers. May be repeated for credit.

APPPHYS 802. TGR PhD Dissertation. 0 Units.
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ARCHAEOLOGY

Courses offered by the Archaeology Program are listed under the subject code ARCHLGY on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=ARCHLGY&filter-catalognumber-ARCHLGY=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=ARCHLGY&filter-catalognumber-ARCHLGY=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=ARCHLGY&filter-catalognumber-ARCHLGY=on).

Archaeology is the study of the past through its material remains that survive into the present. Archaeology is a discipline that offers direct access to the experiences of a wide range of people in numerous cultures across the globe. Increasingly, archaeology bridges past and present societies through the study of the human heritage and its role in contemporary societies. Stanford's Archaeology Program provides students with an interdisciplinary approach to the material remains of past societies, drawing in equal parts on the humanities, social sciences, and natural sciences.

The Archaeology curriculum draws on faculty from a wide range of University departments and schools. To complete the requirements for the major, students must take courses from the offerings of the program and from the listings of other University departments. The program culminates in a Bachelor of Arts (B.A.) in Archaeology.

Mission of the Undergraduate Program in Archaeology

The mission of the undergraduate program in Archaeology is to provide students with a broad and rigorous introduction to the analysis of the material culture of past societies, drawing on the questions and methods of the humanities, social sciences, and natural sciences. Students in the major learn to relate these analyses to the practice of archaeology in the contemporary world. The program seeks to help each student achieve a high level of understanding through concentrated study of a particular research area. Courses in the major complete a comprehensive curriculum that draws on faculty from a wide range of University departments and programs. Archaeology majors are well prepared for advanced training in professional schools such as education, law, and journalism and, depending upon their choice of upper-division course, graduate programs in the humanities, social sciences, and natural sciences.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to:

1. demonstrate an understanding of core knowledge of the history of thought and basic theoretical foundations in archaeology.
2. write clearly and persuasively, communicating ideas about archaeology to multiple audiences and different communities, from the scholarly and to the general public in a variety of formats.
3. learn about the development of archaeology as a discipline and the major trends that have influenced thinking and writing about archaeology today.
4. demonstrate their mastery of the broad historical and theoretical trends in the field through critique of research within archaeology.

Bachelor of Arts in Archaeology

The Department of Archaeology offers a Bachelor of Arts in Archaeology. Eligible students may also pursue a Bachelor of Arts with Honors (p. 993). The department also offers a minor in Archaeology (p. 993).

Suggested Preparation for the Major

All majors must complete 65 units with an overall minimum grade of 'C', which must form a coherent program of study and be approved by the student's faculty advisor and the program director.

Students who plan to pursue graduate work in Archaeology should be aware of the admission requirements of the particular departments to which they intend to apply. These vary greatly. Early planning is advisable to guarantee completion of major and graduate school requirements.

How to Declare the Major

To declare a major in Archaeology, students should apply for the B.A. in Archaeology on Axess and contact the student services officer who provides an application form, answers initial questions, and helps the student choose a faculty advisor. Students should declare by the beginning of their junior year.

Degree Requirements

The B.A. in Archaeology requires a minimum of 65 units in the major, with an overall minimum grade of 'C', and no more than 10 units may be taken for pass/no pass credit. The major requirements are divided among four components. A course may only be used once to fulfill a component.

Quantitative skills and computing ability are indispensable to archaeologists. To fulfill the analytical methods and skills requirements, students must take one statistics course, and may choose to fulfill the remainder of the unit requirements with a variety of courses on archaeological skills and methods.

Archaeological skills include archaeological formation processes, botanical analysis, cartography, ceramic analysis, dating methods, faunal analysis, geographic information systems, geology, geophysics, genetics, osteology, remote sensing, soil chemistry, and statistics.

With the approval of the instructor and Archaeology director, undergraduates may fulfill part of this requirement from graduate-level courses (typically courses with catalog numbers of 200 or higher).

Course Requirements

		Units
1. Core Courses [1]		**20**
Must be taken for a letter grade (minimum passing grade of 'B')		
ARCHLGY 1	Introduction to Archaeology (Gateway)	5
ARCHLGY 102	Archaeological Methods (Intermediate)	5
ARCHLGY 103	History of Archaeological Thought (Intermediate)	5
ARCHLGY 107A	Archaeology as a Profession	5
2. Analytical Methods and Skills		**15**
Complete one of the following:		
PSYCH 10/ STATS 60	Introduction to Statistical Methods: Precalculus	
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	

Fulfill the remainder of your methods and skills requirements by choosing from the following courses:

ARCHLGY 21Q	Eight Great Archaeological Sites in Europe	
ARCHLGY 86	Digital Methods for Archaeology and Anthropology	
ARCHLGY 115	The Social life of Human Bones	
ARCHLGY 119	Zooarchaeology: An Introduction to Faunal Remains	
ARCHLGY 124	Archaeology of Food: production, consumption and ritual	
ARCHLGY 125	Archaeological Field Survey Methods	
ARCHLGY 126	Archaeobotany	
ARCHLGY 134	Museum Cultures: Material Representation in the Past and Present	
ANTHRO 175	Human Skeletal Anatomy	
ARCHLGY 104	Digital Methods in Archaeology	
3. Theory [2]		**10**
Topics include archaeological, art-historical, sociocultural, historical, and material culture theory. With the approval of the instructor, undergraduates may fulfill part of this requirement from graduate-level courses (typically courses with catalog numbers of 200 or higher).		
Complete at least 10 units of the following:		
ANTHRO 34	Animals and Us	
ANTHRO 90B	Theory of Cultural and Social Anthropology	
ANTHRO 113	Culture and Epigenetics: Towards A Non-Darwinian Synthesis	
ARCHLGY 151	Ten Things: An Archaeology of Design	
ARCHLGY 156	Design of Cities	
ARCHLGY 130	Senior research seminar for Archaeology majors and minors	
4. Electives		**20**
Courses are arranged around a regional or thematic focus, and therefore, may appear more than once. Students have the option of taking courses around a theme or concentration, and are encouraged to do so by consulting with their faculty adviser(s) to design a course plan.		
Courses other than those on this list can be used to fulfill this requirement with prior approval of the student's faculty adviser and program director. With the approval of instructor, undergraduates may fulfill part of this requirement from graduate-level courses, typically courses numbered 200 or higher.		
Complete any of the courses listed below:		
World Archaeology: Mediterranean		
ARCHLGY 81	Introduction to Roman Archaeology	
ARCHLGY 83	Pots, People, and Press: Greek Archaeology in the Media	
ARCHLGY 96	The Secret Lives of Statues from Ancient Egypt to Confederate Monuments	
ARCHLGY 118	Engineering the Roman Empire	
ARCHLGY 145	Sailing the Wine-Dark Sea: Maritime Archaeology of the Ancient Mediterranean	
ARCHLGY 165	Roman Gladiators	
CLASSICS 52	Introduction to Roman Archaeology	
World Archaeology: Americas		
ARCHLGY 84	Incas, Spaniards, and Africans: Archaeology of the Kingdom of Peru	
ARCHLGY 102B	Incas and their Ancestors: Peruvian Archaeology	
World Archaeology: Asia		
ARCHLGY 111	Emergence of Chinese Civilization from Caves to Palaces	
ARCHLGY 135	Constructing National History in East Asian Archaeology	
Heritage		
ARCHLGY 95	Monumental Pasts: Cultural Heritage and Politics	
ARCHLGY 135	Constructing National History in East Asian Archaeology	
ARCHLGY 173	Heritage Institutions Inside Out: The Power of Bureaucracies	
Urbanism and Cities		
ARCHLGY 156	Design of Cities	3-5
5. Archaeological Fieldwork		
Students must take part in a Stanford Archaeology Center field project directed by a Stanford faculty member, and enroll in any coursework that is required for participation in the field project. Projects are typically offered during summer months and funding may be provided. In 2019, field schools were located in: Peru, Bosnia, and Italy. The response to COVID-19 may impact field school offerings in 2021.		
6. Collateral Language Requirement		
All Archaeology majors must demonstrate competence in a foreign language beyond the first-year level. Students can meet this requirement by completing a course beyond the first-year level with a grade of 'B' or better, and are encouraged to choose a language that has relevance to their archaeological region or topic of interest. Students may petition to take an introductory-level course in a second language to fulfill this requirement by demonstrating the connection between the language(s) and their research interest(s).		
7. Research and Independent Study		
Students may count up to 5 units of research and independent study toward the Archaeology major.		
Including but not limited to:		
ARCHLGY 190	Archaeology Directed Reading/Independent Study	
ARCHLGY 195	Independent Study/Research	
ARCHLGY 199	Honors Independent Study	
Total Units		**65**

1 ARCHLGY 1 Introduction to Archaeology is recommended as a first course. Many upper-level courses in Archaeology require this course as a prerequisite. Students should normally take the capstone course in their final year of course work in the major.

2 As a note, ARCHLGY 130 Senior research seminar for Archaeology majors and minors is offered to students in their final year of study as either a stand-alone course on designing research projects and writing, or as a touchpoint for students who are launching the writing phase of their honors thesis.

Related Courses

Archaeology is an interdisciplinary program. Students should meet with their advisor about degree requirements and the applicability of courses from other University departments to the Archaeology major or minor. Applicable courses are commonly found in Anthropology (ANTHRO), Classics (CLASSICS), and East Asian Languages and Cultures (EALC), but are not limited to these departments. Students should consult their advisor and the program director for course approvals.

Additional Information

Overseas Studies Courses in Archaeology

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu/) web site or the Bing Overseas Studies

(http://bosp.stanford.edu/) web site. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

Honors Program

The honors program in Archaeology gives qualified majors the chance to work closely with faculty on an individual research project culminating in an honors thesis. Students may begin honors research from a number of starting points, including topics introduced in the core or upper-division courses, independent interests, research on artifacts in Stanford's collections, or fieldwork experiences.

Interested Archaeology majors of junior standing may apply for admission by submitting an honors application form, including a 4-5 page statement of the project, a transcript, and a letter of recommendation from the faculty member supervising the honors thesis to the student services specialist, no later than the end of the fourth week of the Spring Quarter. Archaeology majors are eligible to apply for honors candidacy. The thesis is due in early May of the senior year and is read by the candidate's advisor and a second reader appointed by the undergraduate committee.

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Minor in Archaeology

A minor in Archaeology provides an introduction to the study of the material cultures of past societies. It can complement many majors, including but not limited to Anthropology, Applied Physics, Art and Art History, Classics, Earth Systems, Geological and Environmental Sciences, History, Engineering, and Religious Studies.fie

Students must complete the declaration process, including the planning form submission and Axess registration, by the last day of the quarter, two quarters prior to degree conferral; for example, by the last day of Autumn Quarter if Spring graduation is the intended quarter of graduation.

Degree Requirements

To minor in Archaeology, students must complete at least 27 units of relevant course work, including:

		Units
1. Core Program [1]		**10**
Complete the following:		
ARCHLGY 1	Introduction to Archaeology (Gateway Course, Required)	5
Complete one of the following:		
ARCHLGY 103	History of Archaeological Thought	
ARCHLGY 107A	Archaeology as a Profession	
2. Archaeological Skills		**2-5**
Archaeological skills include dating methods, faunal analysis, botanical analysis, ceramic analysis, geology, geophysics, soil chemistry, remote sensing, osteology, genetics, statistics, cartography, and geographic information systems.		
Complete 2-5 units from the following:		
PSYCH 10	Introduction to Statistical Methods: Precalculus	
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	
ARCHLGY 21Q	Eight Great Archaeological Sites in Europe	
ARCHLGY 86	Digital Methods for Archaeology and Anthropology	
ARCHLGY 115	The Social life of Human Bones	
ARCHLGY 119	Zooarchaeology: An Introduction to Faunal Remains	
ARCHLGY 124	Archaeology of Food: production, consumption and ritual	
ARCHLGY 125	Archaeological Field Survey Methods	
ARCHLGY 126	Archaeobotany	
ARCHLGY 134	Museum Cultures: Material Representation in the Past and Present	
ANTHRO 175	Human Skeletal Anatomy	
ARCHLGY 104	Digital Methods in Archaeology	
3. Theory		**5**
Topics include archaeological, art historical, sociocultural, historical, and material culture theory.		
Complete 5 units from the following:		
ANTHRO 34	Animals and Us	
ANTHRO 90B	Theory of Cultural and Social Anthropology	
ANTHRO 113	Culture and Epigenetics: Towards A Non-Darwinian Synthesis	
ARCHLGY 151	Ten Things: An Archaeology of Design	
ARCHLGY 156	Design of Cities	
ARCHLGY 130	Senior research seminar for Archaeology majors and minors	
4. Electives		**10**
Students have the option of taking courses around a theme or concentration, and are encouraged to do so by consulting their faculty advisers to design a course plan.		
Complete 10 units from the following:		
World Archaeology: Mediterranean		
ARCHLGY 96	The Secret Lives of Statues from Ancient Egypt to Confederate Monuments	
ARCHLGY 118	Engineering the Roman Empire	
ARCHLGY 145	Sailing the Wine-Dark Sea: Maritime Archaeology of the Ancient Mediterranean	
ARCHLGY 165	Roman Gladiators	
CLASSICS 52	Introduction to Roman Archaeology	
World Archaeology: Americas		
ARCHLGY 84	Incas, Spaniards, and Africans: Archaeology of the Kingdom of Peru	
ARCHLGY 102B	Incas and their Ancestors: Peruvian Archaeology	
ARCHLGY 111B	Muwekma: Landscape Archaeology and the Narratives of California Natives	
ARCHLGY 83	Pots, People, and Press: Greek Archaeology in the Media	
World Archaeology: Asia		
ARCHLGY 111	Emergence of Chinese Civilization from Caves to Palaces	
ARCHLGY 135	Constructing National History in East Asian Archaeology	
Heritage		
ARCHLGY 95	Monumental Pasts: Cultural Heritage and Politics	
ARCHLGY 135	Constructing National History in East Asian Archaeology	
ARCHLGY 173	Heritage Institutions Inside Out: The Power of Bureaucracies	
Urbanism and Cities		
ARCHLGY 156	Design of Cities	3-5
Total Units		**27**

[1] ARCHLGY 1 Introduction to Archaeology is recommended as a first course, and many of the upper-level courses in Archaeology require this course as a prerequisite. Students have the option to take ARCHLGY 103 History of Archaeological Thought or ARCHLGY 107A Archaeology as a Profession to fulfill the rest of the 10 unit core requirement for the minor.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Archaeology Center counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade. The Archaeology Center still requires that any students who pursue an honors thesis complete their thesis with a 'B+' or higher to earn the honors distinction.

Director: Ian Hodder (Anthropology)

Director of Undergraduate Studies: Ian Hodder (Anthropology)

Department Faculty:

Professors: Ian Hodder (Anthropology), Li Liu (East Asian Languages and Cultures, on leave 2019-20), Lynn Meskell (Anthropology), Ian Morris (Classics), Michael Shanks (Classics)

Associate Professors: Giovanna Ceserani (Classics), Jody Maxmin (Art and Art History, Classics), John Rick (Anthropology, emeritus), Jennifer Trimble (Classics), Barbara Voss (Anthropology)

Assistant Professors: Andrew Bauer (Anthropology), Justin Leidwanger (Classics), Krish Seetah (Anthropology)

Academic Staff: Christina Hodge (Academic Curator & Collections Manager), Laura Jones (Campus Archaeologist)

Postdoctoral Fellows: Jiajing Wang, Elisabeth Niklasson, Brendan Weaver, Megan Rhodes Victor

Affiliated Faculty:

Professors: Rob Dunbar (Earth Sciences), Mark Lewis (Chinese Culture, Religious Studies), J. Moldowan (Geological and Environmental Sciences), Amos Nur (Earth Sciences), Peter Vitousek (Earth System Science)

Associate Professors: Paulla Ebron (Anthropology), James A. Fox (Anthropology, Iberian and Latin American Cultures, Linguistics, on leave A), Grant Parker (Classics)

Overseas Studies Courses in Archaeology

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPCPTWN 16		2
OSPCPTWN 36	The Archaeology of Southern African Hunter Gatherers	4
OSPAUSTL 40	Australian Studies: History, Society and Culture Down Under	3

Courses

ARCHLGY 1. Introduction to Archaeology. 3-5 Units.
Aims, methods, and data in the study of human society's development from early hunters through late prehistoric civilizations. Archaeological sites and remains characteristic of the stages of cultural development for selected geographic areas, emphasizing methods of data collection and analysis appropriate to each.
Same as: ANTHRO 3

ARCHLGY 12. Peopling of the Globe: Changing Patterns of Land Use and Consumption Over the Last 50,000 Years. 3-5 Units.
Fossil, genetic and archaeological evidence suggest that modern humans began to disperse out of Africa about 50,000 years ago. Subsequently, humans have colonized every major landmass on earth. This class introduces students to the data and issues regarding human dispersal, migration and colonization of continents and islands around the world. We explore problems related to the timing and cause of colonizing events, and investigate questions about changing patterns of land use, demography and consumption. Students are introduced to critical relationships between prehistoric population changes and our contemporary environmental crisis.
Same as: ANTHRO 18, EARTHSYS 21

ARCHLGY 16. Native Americans in the 21st Century: Encounters, Identity, and Sovereignty in Contemporary America. 5 Units.
What does it mean to be a Native American in the 21st century? Beyond traditional portrayals of military conquests, cultural collapse, and assimilation, the relationships between Native Americans and American society. Focus is on three themes leading to in-class moot court trials: colonial encounters and colonizing discourses; frontiers and boundaries; and sovereignty of self and nation. Topics include gender in native communities, American Indian law, readings by native authors, and Indians in film and popular culture.
Same as: ANTHRO 16, NATIVEAM 16

ARCHLGY 21Q. Eight Great Archaeological Sites in Europe. 3-5 Units.
Preference to sophomores. Focus is on excavation, features and finds, arguments over interpretation, and the place of each site in understanding the archaeological history of Europe. Goal is to introduce the latest archaeological and anthropological thought, and raise key questions about ancient society. The archaeological perspective foregrounds interdisciplinary study: geophysics articulated with art history, source criticism with analytic modeling, statistics interpretation. A web site with resources about each site, including plans, photographs, video, and publications, is the basis for exploring.
Same as: CLASSICS 21Q

ARCHLGY 34. Animals and Us. 5 Units.
The human-animal relationship is dynamic, all encompassing and durable. Without exception, all socio-cultural groups have evidenced complex interactions with the animals around them, both domesticated and wild. However, the individual circumstances of these interactions are hugely complicated, and involve much more than direct human-animal contact, going far beyond this to incorporate social, ecological and spiritual contexts.n This course delves into this complexity, covering the gamut of social roles played by animals, as well as the methods and approaches to studying these, both traditional and scientific. While the notion of `animals as social actors is well acknowledged, their use as proxies for human autecology (the relationship between a species and its environment) is also increasingly recognized as a viable mechanism for understanding our cultural and economic past. It will piece together the breadth of human-animal relationships using a wide geographic range of case studies.
Same as: ANTHRO 34

ARCHLGY 43N. The Archaeological Imagination. 3 Units.
More than excavating ancient sites and managing collections of old things, Archaeology is a way of experiencing the world: imagining past lives through ruins and remains; telling the story of a prehistoric village through the remains of the site and its artifacts; dealing with the return of childhood memories; designing a museum for a community. The archaeological imagination is a creative capacity mobilized when we experience traces and vestiges of the past, when we gather, classify, conserve and restore, when we work with such remains to deliver stories, reconstructions, accounts, explanations, or whatever. This class will explore such a wide archaeological perspective in novels, poetry, fantasy literature, the arts, movies, online gaming, and through some key debates in contemporary archaeology about human origins, the spread of urban life, the rise and fall of ancient empires.
Same as: CLASSICS 43N

ARCHLGY 47. Introduction to Digital Archaeology. 4 Units.
While the tools of Digital Archaeology frequently change, using digital tools has been part of the discipline for decades. These tools and approaches provide new forms of research, visualization, and outreach to archaeological investigations. This course is designed to introduce students of archaeology to the digital research methods useful to the discipline, and provide them with hands-on experience in three types of digital method: digital mapping, visualization, and 3D modeling. The goal of the course is for students to learn about the state of digital archaeology, to become familiar with common methods, and become aware of the resources available for research.
Same as: CLASSICS 57

ARCHLGY 54N. Archaeology in the Digital Age. 3 Units.
Like so many fields, archaeology is being transformed by new opportunities and challenges of technologies inconceivable only a generation ago: online tourist photographs are assisting replication of an arch destroyed by terrorists, detailed scans reveal how tools were manufactured and used 2000 years ago, and excavated remains historically texture lost worlds for games like Assassin¿s Creed. These artifacts and sites allow us to recreate human pasts in different ways, but only if we can make the most of every partial clue that archaeology uncovers. How do approaches like laser scanning and digital modeling help us maximize archaeological documentation and analysis? How will 3D visualization bring archaeological finds to the public in more innovative, immersive, and democratic ways than ever before? How can we put the past into the hands of a global community anywhere and at any time through interactive digital reconstructions and physical replicas? Can 4D approaches integrating time help us understand ancient social processes through digital approaches? What ethical questions of practice, ownership, and display arise as archaeology confronts each of these new opportunities? How do such developments force us to reexamine the complex ways in which technologies are changing our relationship with the human past? This seminar bridges the theoretical and the practical, allowing students to develop hands-on projects¿using 3D analysis of objects on campus¿that ask fundamental questions about how artifacts worked in the past, how they speak in the present, and how new digital tools can transform their voices in the future. Trips to collections on campus and in the area, as well as visits from diverse experts in the field and case studies from the instructor¿s own excavation (a Roman shipwreck of marble architectural materials) allow engagement with emerging technological approaches to the archaeological record.

ARCHLGY 58. Egypt in the Age of Heresy. 3-5 Units.
Perhaps the most controversial era in ancient Egyptian history, the Amarna period (c.1350-1334 BCE) was marked by great sociocultural transformation, notably the introduction of a new 'religion' (often considered the world's first form of monotheism), the construction of a new royal city, and radical departures in artistic and architectural styles. This course will introduce archaeological and textual sources of ancient Egypt, investigating topics such as theological promotion, projections of power, social structure, urban design, interregional diplomacy, and historical legacy during the inception, height, and aftermath of this highly enigmatic period. Students with or without prior background are equally encouraged.
Same as: AFRICAAM 58A, AFRICAST 58, CLASSICS 58

ARCHLGY 60N. Digging for Answers: 5 Big Questions of Our Time. 3-5 Units.
The aim in this course is to explore the archaeological evidence for long-term change with regard to 5 major questions of our time: Where do we come from? Has inequality increased? Have we become more violent? Why do we have so much stuff? What is the relationship between humans and climate change? You will be introduced to recent publications for class debate, and will also be introduced to the ways in which archaeologists use evidence in order to explore the 5 themes. We will go to Stanford¿s archaeological collections so that you can have hands-on experience of artifacts and will be able to problem solve using data from the instructor¿s own excavations. We will also visit labs (archaeological and genomic for example), local museums and local archaeological excavations.
Same as: ANTHRO 60N

ARCHLGY 75Q. Mad Dogs and Englishmen: Archaeology and the Modern History of the Ancient Near East. 3 Units.
The decades between the early-nineteenth and mid-twentieth centuries saw substantial change in the region Europeans referred to as the Near East, characterized by the decline of the Ottoman empire, the disarray of World War I, and the establishment of modern national borders. You will learn to analyze, interpret, and critically evaluate archaeological data and the ways in which that data is used to construct an historical narrative. Readings include ancient texts in translation; archaeological field records and reports; travelogues, personal letters and autobiographies; and scholarly articles on the art and archaeology of the Near East.

ARCHLGY 78. Disruption and Diffusion: The Archaeology of Innovation. 3-5 Units.
This undergraduate seminar uses engagement with canonical archaeological topics and questions about the emergence of civilization to introduce students to critical perspectives on the nature of novelty, progress, and modernity. The first weeks of the course will be spent learning about archaeological hypotheses and debates on early human innovation (e.g. urban development, agriculture). Later weeks will focus on developing a robust theoretical framework through which to better understand and interrogate claims about the origin of innovation.
Same as: ANTHRO 78A

ARCHLGY 79. Mediterranean Archaeology Today: Heritage, Ethics, and Practice in a Changing World. 3-5 Units.
While archaeology engages with material remains from the past, it is embedded in and inseparable from contemporary practice. This seminar discusses a wide range of ethical dilemmas raised by archaeology in the 21st century. It aims to develop an acquaintance with legal and ethical codes as well as disciplinary practices that relate to cultural heritage, with a strong focus on the ancient Mediterranean world. Such issues will be approached primarily through discussion and debate of current case studies including: ownership and destruction of cultural property, colonialism and decolonization, ethical responsibilities in scientific practice, and cultural, nationalistic, religious, and popular uses of heritage. By the end of the term, students should be able to apply critical reasoning to a variety of ethical issues related to heritage of the Mediterranean world and beyond, and to articulate (in oral and written form) responses to current controversial topics about the human past.

ARCHLGY 80. Heritage and Human Rights. 3-5 Units.
What does archaeology have to say about human rights? Is there a right to cultural heritage? How can archaeology and heritage help protect rights¿or encroach upon them? Themes we will address in this course include the archaeological investigation of human rights topics; the right to heritage; conflicts of different rights regimes in heritage contexts; and ethical considerations about rights during research and heritage management. These questions will take us to cases as diverse as forensic investigation of the disappeared in Argentina, the archaeology of homelessness in the U.K., the destruction of heritage as cultural genocide in Bosnia and the Middle East, and the rights of indigenous groups in Australia and the U.S. to control cultural heritage.
Same as: ANTHRO 80A

ARCHLGY 81. Introduction to Roman Archaeology. 3-5 Units.
(Formerly CLASSART 81.) This course will introduce you to the material culture of the ancient Roman world, from spectacular imperial monuments in the city of Rome to cities and roads around the Mediterranean, from overarching environmental concerns to individual human burials, from elite houses and army forts to the the lives of slaves, freedmen and gladiators. Key themes will be change and continuity over time; the material, spatial and visual workings of power; how Roman society was materially changed by its conquests and how conquered peoples responded materially to Roman rule.
Same as: CLASSICS 52

ARCHLGY 83. Pots, People, and Press: Greek Archaeology in the Media. 3-5 Units.
Archaeological discovery has long captured the popular imagination, and the media undoubtedly plays a crucial role in this phenomenon. In the case of Greek archaeology, much of this imagination has been intertwined with the legacies of ancient Greek culture(s) in the construction of modern identities and ideologies, including the concept of ¿Western Civilization.¿ This course explores the intersections between academic research, media narratives, and the social, political, and cultural context of Greek archaeology from the 19th century to the present. Through a diachronic range of case studies, we will engage with a selection of media accounts and representations, alongside scholarly work and commentaries. In doing so, the class will more broadly examine issues surrounding archaeological evidence and interpretation, narrative formation, the reception and appropriation of the past, conceptualizations of race and ethnicity, nationalism and archaeology, and cultural heritage management. No prior knowledge of Greek archaeology is required.
Same as: CLASSICS 93

ARCHLGY 84. Incas, Spaniards, and Africans: Archaeology of the Kingdom of Peru. 3-5 Units.
Students are introduced to Andean archaeology from the rise of the Inca empire through the Spanish colonial period. We will explore archaeological evidence for the development of late pre-Hispanic societies in western South America, the Spanish conquest, and the origins of key Spanish colonial institutions in the Andean region: the Church, coerced indigenous labor, and African slavery. Central to this course is an archaeological interrogation of the underpinnings and legacies of colonialism, race, and capitalism in the region. Students will also consider the material culture of daily life and those living on the social margins, both in pre-Hispanic societies and under Spanish rule.

ARCHLGY 86. Digital Methods for Archaeology and Anthropology. 3-5 Units.
Digital tools can be a powerful way of collecting, analyzing and presenting data in social-cultural anthropology and archaeology. This survey course is designed for students from all backgrounds interested in developing practical skills in computational methods, no previous computational experience is required. Over the span of four 2.5 week units, we will develop foundational skills for 1) text processing, 2) geospatial analysis (e.g GIS), 3) bioinformatics and paleogenetics, and 4) data visualization. Each unit will take a deep dive into the way these approaches have been used in anthropology in published case studies. This will be complemented by digital lab activities (suitable for remote or in-person learning) to develop skills and complete an independent project of your choosing with the tools learned in this course. The goal is to set you up with digital tools that are useful to you in academic, journalistic, and other related endeavors.

ARCHLGY 92. Introduction to Greek Art and Archaeology. 5 Units.
This course will introduce students to the art and archaeology of Greece and the Greek world from the Neolithic through Early Roman periods. By integrating both historical and current approaches to the archaeology of Greece, this course aims to supplement the typical chronological narrative of the development of Greek material culture with various thematic explorations (e.g. nationalism in archaeology, social complexity, postcolonial approaches), as well as to critically evaluate mechanisms of interpretation in Greek archaeology over time.
Same as: CLASSICS 92

ARCHLGY 95. Monumental Pasts: Cultural Heritage and Politics. 3-5 Units.
What is heritage? Who decides what and how pasts matter? Our pasts loom monumental in multiple senses. At the intersection of archaeology and anthropology, the emerging discipline of heritage is often described as the politics of the past. What people choose to take from their histories varies and is often contested. Heritage shapes and is shaped by power. This course introduces contemporary themes and debates in cultural heritage. Together we'll develop a critical stance toward dominant perspectives to understand how pasts are used, erased, reclaimed, and mobilized in the present, for the future. In doing so we'll think through concepts such as materiality, intangibility, monumentality, value, memory, identity, community, nationalism, and universality. Our case studies will range from contemporary debates over Jim Crow era monuments in the USA, to UNESCO World Heritage List politics, and the development of community identities. We will also reflect on heritage at a personal scale and its relationship to belonging. Course materials will include readings and media from around the globe. Students will participate through seminar discussions, proposing and presenting topics of their choice, regular journal entries, and a choice of final project¿podcast, paper, or exhibition plan.

ARCHLGY 96. The Secret Lives of Statues from Ancient Egypt to Confederate Monuments. 3-5 Units.
Statues, human-shaped sculptures, walk a fine line between being inert matter and living entities. Throughout human existence, humans have recognized that statues are not alive even as they understand that statues are capable of becoming potent allies or enemies. They are capable of engendering profound emotional responses, embodying potent ideas, and co-opting the past in service of the present. However, the same materiality that endows statues with these exceptional capacities also makes them vulnerable to humans intent on acquiring otherwise-expensive materials cheaply, commiting sectarian violence by proxy, and obliterating the material manifestations of others¿ memories.nnIn this course, we will study sixteen (groups of) statues thematically. To do this, we will draw on a wide variety of disciplines, including archaeology, art history, history, law, media studies, museum studies, and religious studies, to articulate how people in diverse places and times have revered and reviled statues precisely because they are uncanny objects that seem to have an all-too-human kind of agency. In so doing, we will gain appreciation for and insight into how and why the statues in our own lives are significant.
Same as: ARTHIST 104A, CLASSICS 96

ARCHLGY 97. Archaeology Internship. 1-10 Unit.
Opportunity for students to pursue their specialization in an institutional setting such as a laboratory, clinic, research institute, museums or government agency. May be repeated for credit. Prior instructor consent needed.

ARCHLGY 100D. Chavin de Huantar Research |Seminar. 3-5 Units.
Archaeological analytical techniques appropriate for data recovered during archaeological fieldwork in Chavin de Huantar, Peru. Open to all interested students; fieldwork participants are expected to take the course. Students work on data from the previous field season to produce synthetic written reports, focusing on specific methodological issues.
Same as: ANTHRO 100D

ARCHLGY 102. Archaeological Methods. 5 Units.
Methodological issues related to the investigation of archaeological sites and objects. Aims and techniques of archaeologists including: location and excavation of sites; dating of places and objects; analysis of artifacts and technology and the study of ancient people, plants, and animals. How these methods are employed to answer the discipline's larger research questions.
Same as: ANTHRO 91A

ARCHLGY 102B. Incas and their Ancestors: Peruvian Archaeology. 3-5 Units.
The development of high civilizations in Andean S. America from hunter-gatherer origins to the powerful, expansive Inca empire. The contrasting ecologies of coast, sierra, and jungle areas of early Peruvian societies from 12,000 to 2,000 B.C.E. The domestication of indigenous plants which provided the economic foundation for monumental cities, ceramics, and textiles. Cultural evolution, and why and how major transformations occurred.
Same as: ANTHRO 106, ANTHRO 206A

ARCHLGY 103. History of Archaeological Thought. 5 Units.
Introduction to the history of archaeology and the forms that the discipline takes today, emphasizing developments and debates over the past five decades. Historical overview of culture, historical, processual and post-processual archaeology, and topics that illustrate the differences and similarities in these theoretical approaches.
Same as: CLASSICS 170

ARCHLGY 104. Digital Methods in Archaeology. 3-5 Units.
Archaeologists have long adapted and incorporated available digital tools into their methodological toolkits. The recent explosion in computing power and availability has led to a proliferation of digital apparatus in archaeology and sparked dynamic theoretical and methodological discussions within the discipline. This course provides an overview of digital tools and methods utilized by archaeologists through all stages of research.

ARCHLGY 105. Global Heritage: Conflict, Reconciliation, and Diplomacy. 3-5 Units.
Archaeological studies from the 1990s framed cultural heritage as a resource that created attachments to place and to the past as a means to buttress national and cultural identities. But heritage can no longer be viewed as simply a marker of a singular, national identity. As a global era ushers in new regimes of heritage management, heritage becomes embroiled in a multitude of interactions whether acting as a fulcrum of transnational governance or functioning at the crux of community empowered utilizations and initiatives.nnThis course will trace what happens to heritage as it has been drawn into a world of global interactions while also maintaining more local forms of attachment. The class will address three themes (conflict, reconciliation, and diplomacy), all of which result from the multi-scalar relations that emerge from heritage financing, management, and preservation in a transnational arena. While the class will discuss cases that include both tangible and intangible heritage, the focus of the course will center around tangible elements of the past, including heritage sites and archaeological artifacts. Combining readings from the field of international relations, archaeology, and heritage studies, the class will question if and how heritage can be used in local settings while also producing international exchanges.
Same as: ANTHRO 117C

ARCHLGY 106. The Archaeology of Climate. 3 Units.
This course reviews the long-term relationships between human societies and Earth's climatic systems. It provides a critical review of how archaeologists have approached climate change through various case studies and historical paradigms (e.g., societal `collapse,¿ resilience, historical ecology) and also addresses feedbacks between past human land use and global climate change, including current debates about the onset of the Anthropocene.
Same as: ANTHRO 103

ARCHLGY 107A. Archaeology as a Profession. 5 Units.
Academic, contract, government, field, laboratory, museum, and heritage aspects of the profession.
Same as: ANTHRO 101A

ARCHLGY 108. Ancient DNA and the Human Past. 3-5 Units.
The rapidly growing field of paleogenomics has brought together researchers from a wide variety of fields and perspectives in the social and natural sciences. This survey course is designed for students from all backgrounds interested in developing practical skills in ancient DNA methods, contextual research, analysis and interpretation. We will also focus on exploring and discussing ethics in the field and the implications of the growing interest of public audiences with ancient DNA (such as the 23andMe direct-to-consumer genetic test for Neanderthal ancestry). Throughout the course, we will also explore a variety of related topics by taking a deep dive into the archaeology context and analytical approaches of published case studies. For a final project, you will explore a site, topic or study of your choosing with the tools learned in this course and evaluate the potential for ancient DNA to uncover new findings there.

ARCHLGY 109. Religions of Ancient Eurasia. 3-5 Units.
This course will explore archaeological evidence for the ritual and religions of Ancient Eurasia, including Greco-Roman polytheism, early Christianity, and early Buddhism. Each week, we will discuss the most significant themes, methods, and approaches that archaeologists are now using to study religious beliefs and rituals. Examples will focus on the everyday social, material, and symbolic aspects of religion. The course will also consider the role of archaeological heritage in religious conflicts today and the ethical dilemmas of archaeology in the 21st century.
Same as: CLASSICS 165

ARCHLGY 109A. Archaeology of the Modern World. 3-5 Units.
Historical archaeology, also called the archaeology of the modern world, investigates the material culture and spatial history of the past five centures. As a discipline, historical archaeology has been characterized by (1) a methodological conjunction between history and archaeology; (2) a topical focus on the ¿three Cs¿: colonization, captivity, and capitalism ¿ forces which arguably are constitutive of the modern world; and (3) an epistemological priority to recovering the perspectives of ¿people without history.¿ Each of these three trends is widely debated yet they continue to profoundly shape the field. This seminar provides an in-depth examination of the emergence and development of this historical archaeology, with a focus on current issues in theory and method. For undergraduates, the prerequisite is Anthro 3 or consent of instructor.
Same as: ANTHRO 109A, ANTHRO 209A

ARCHLGY 110. Environmental Archaeology. 5 Units.
This course investigates the field of environmental archaeology. Its goals are twofold: 1) to critically consider the intellectual histories of environmental archaeology, and, 2) to survey the various techniques and methods by which archaeologists assess historical environmental conditions through material proxies. The course will include lab activities.
Same as: ANTHRO 110, ANTHRO 210

ARCHLGY 111. Emergence of Chinese Civilization from Caves to Palaces. 3-4 Units.
Introduces processes of cultural evolution from the Paleolithic to the Three Dynasties in China. By examining archaeological remains, ancient inscriptions, and traditional texts, four major topics will be discussed: origins of modern humans, beginnings of agriculture, development of social stratification, and emergence of states and urbanism.
Same as: CHINA 176, CHINA 276

ARCHLGY 111B. Muwekma: Landscape Archaeology and the Narratives of California Natives. 3-5 Units.
This course explores the unique history of San Francisco Bay Area tribes with particular attention to Muwekma Ohlone- the descendent community associated with the landscape surrounding and including Stanford University. The story of Muwekma provides a window into the history of California Indians from prehistory to Spanish exploration and colonization, the role of Missionaries and the controversial legacy of Junipero Serra, Indigenous rebellions throughout California, citizenship and land title during the 19th century, the historical role of anthropology and archaeology in shaping policy and recognition of Muwekma, and the fight for acknowledgement of Muwekma as a federally recognized tribe. We will visit local sites associated with this history and participate in field surveys of the landscape of Muwekma.
Same as: ANTHRO 111C, NATIVEAM 111B

ARCHLGY 113. Culture and Epigenetics: Towards A Non-Darwinian Synthesis. 4-5 Units.
The course examines the impact of new research in epigenetics on our understanding of long-term cultural change. The course examines the various attempts that have been made over recent decades to find a synthesis between cultural and biological evolution. These approaches, often termed neo-Darwinian, include memes, dual inheritance theory, theories of cultural selection and transmission, niche construction theory and macro-evolutionary approaches. Research in all these areas will be examined, with particular reference to explanations for the origins of agriculture, but also including other transformations, and critiqued. New research in epigenetics offers an alternative non-Darwinian evolutionary perspective that avoids many of the problems and pitfalls in the neo-Darwinian approaches. Cultural evolution comes to be viewed as cumulative, directional and Lamarckian, since heritable epigenetic variation can underlie evolutionary change. Epigenetics opens the way for human cultural entanglements to become the drivers for evolutionary change, thus allowing the full range of social processes studied in the social and cultural sciences to take their place in the study and analysis of long-term change.
Same as: ANTHRO 113, ANTHRO 213

ARCHLGY 114. Rights and Ethics in Heritage. 5 Units.
Heritage is a human thing: made by people and mobilized for their own purposes, it has a range of effects on communities. This course focuses on the human dimension of heritage with special attention to questions of rights and ethics. Where can we locate the intersections of heritage and rights? How do communities and governing structures negotiate control over and participation in heritage, and with what impacts on people? Which ethical challenges arise and how have archaeologists, heritage managers, museums, legislators, community leaders, and others approached these issues?nnThe first half of this seminar course focuses on the theoretical and contextual basis for these discussions. We will address topics such as cultural ownership and participation as well as the global and governing contexts within which heritage is mobilized. Building on this, the second half examines cases in which different rights, needs, and goals come into conflict: museum practice, public memory, upheaval stemming from violence or disaster, and the ethics of the material world itself. Throughout, we will highlight heritage in relation to communities, rights, and responsibilities, all while thinking through ethical modes of heritage research and practice.
Same as: ANTHRO 114, ANTHRO 214

ARCHLGY 115. The Social life of Human Bones. 3-5 Units.
Skeletal remains serve a primary function of support and protection for the human body. However, beyond this, they have played a range of social roles once an individual is deceased. The processes associated with excarnation, interment, exhumation and reburial all speak to the place that the body, and its parts, play in our cultural as well as physical landscape.n This course builds on introductory courses in human skeletal anatomy by adding the social dynamics that govern the way humans treat other humans once they have died. It draws on anthropological, biological and archaeological research, with case studies spanning a broad chronological and spatial framework to provide students with an overview of social practice as it relates to the human body.
Same as: ANTHRO 115, ANTHRO 215

ARCHLGY 116. Heritage Development in the Global South. 3-5 Units.
Heritage is a site of both promise and contestation in the Global South. These nations use it for a wide range of purposes: Peru¿s thriving tourism sector rests on a basis of heritage attractions, South Africa negotiates a post-apartheid identity through heritage, and India places increasing numbers of sites on the World Heritage List. Outlining different modes of heritage production and interpretation, this class investigates heritage regimes on scales ranging from local communities and national governance to international recognition. We will examine the role of heritage in building communities and identity; the place of heritage within economic development; the efforts of Global South countries to negotiate the legacies of colonialism and global inequality through managing their pasts; and the deployment of heritage as part of international power struggles within worldwide structures like UNESCO. Drawing on anthropology, heritage studies, and archaeology, students will gain a deeper understanding of how heritage is used by Global South countries to produce identity, support development, domesticate the past, and build the future.
Same as: ANTHRO 118C

ARCHLGY 118. Engineering the Roman Empire. 3-5 Units.
Enter the mind, the drafting room, and the building site of the Roman architects and engineers whose monumental projects impressed ancient and modern spectators alike. This class explores the interrelated aesthetics and mechanics of construction that led to one of the most extensive building programs undertaken by a pre-modern state. Through case studies ranging from columns, domes and obelisks to road networks, machines and landscape modification, we investigate the materials, methods, and knowledge behind Roman innovation, and the role of designed space in communicating imperial identity.
Same as: CLASSICS 168

ARCHLGY 119. Zooarchaeology: An Introduction to Faunal Remains. 5 Units.
As regularly noted, whether historic or pre-historic, animal bones are often the most commonly occurring artefacts on archaeological sites. As bioarchaeological samples, they offer the archaeologist an insight into food culture, provisioning, trade and the social aspects of human-animal interactions. The course will be taught through both practical and lecture sessions: the `hands-on¿ component is an essential complement to the lectures. The lectures will offer grounding in the main methodological approaches developed, as well as provide case-studies to illustrate where and how the methods have been applied. The practical session will walk students through the skeletal anatomy of a range of species. It will guide students on the identification of different parts of the animal, how to age / sex individuals, as well as recognize taphonomic indicators and what these mean to reconstructing post-depositional modifications.
Same as: ANTHRO 119, ANTHRO 219

ARCHLGY 120A. Bioethics and Ancient DNA. 3-5 Units.
The first ancient human genome was sequenced just 10 years ago. From a single genome in 2010 to what has been hailed as a `scientific revolution¿ today, the field of paleogenomics has expanded rapidly. 10 years on we will explore how the field is grappling with emerging issues related to ethical and responsible research, including sampling practices, collaborative community partnerships, and accessibility of research findings to the broader public. How have researchers successfully leveraged multiple voices, perspectives, and priorities engaged with ancient DNA to explore the human past? What are the possibilities of engagement beyond the practical and project-based level? How do these new alliances formed around paleogenomics inform the ethics of sampling, participation, and interpretation? In this course, we will thoughtfully and critically engage with aDNA research in the present to envision possible futures for the field.
Same as: ANTHRO 120, ANTHRO 220

ARCHLGY 124. Archaeology of Food: production, consumption and ritual. 3-5 Units.
This course explores many aspects of food in human history from an archaeological perspective. We will discuss how the origins of agriculture helped to transform human society; how food and feasting played a prominent role in the emergence of social hierarchies and the development of civilization; and how various foodways influenced particular cultures. We will also conduct experimental studies to understand how certain methods of food procurement, preparation, and consumption can be recovered archaeologically.
Same as: ARCHLGY 224

ARCHLGY 125. Archaeological Field Survey Methods. 3 Units.
Practicum applying a variety of survey techniques to discover, map, and record archaeological sites. Basic cartographic skills for archaeologists and an introduction to GIS tools, GPS instruments, and geophysical techniques. Participants should be able to walk 3 - 4 miles over uneven terrain or make special arrangements with the instructor for transportation.
Same as: ARCHLGY 225, ASNAMST 125A

ARCHLGY 126. Archaeobotany. 5 Units.
Archaeobotany, also known as paleoethnobotany, is the study of the interrelationships of plants and humans through the archaeological record. Knowledge and understanding of Archaeobotany sufficient to interpret, evaluate, and understand archaeobotanical data. Dominant approaches in the study of archaeobotanical remains: plant macro-remains, pollen, phytoliths, and starch grains in the identification of diet and environmental reconstruction.
Same as: ARCHLGY 226

ARCHLGY 127. HERITAGE POLITICS. 3-5 Units.
Heritage is a matter of the heart and not the brain, David Lowenthal once said. It does not seek to explore the past, but to domesticate it and enlist it for present causes. From the drafting of the first royal decrees on ancient monuments in the 17th century, political interests have had a hand in deciding which traditions, monuments and sites best represent and best serve the needs of the nation. The sum of these domestication efforts, the laws, institutions and practices established to protect and manage heritage, is what we call heritage governance. In this seminar you will learn about the politics of 21st century heritage governance at national and international level. Students will become familiar with key conventions and learn about the functioning of heritage institutions. We will also examine the hidden practices and current political developments that impact heritage governance: how UNESCO heritage sites become bargaining tools in international relations, how EU heritage policies are negotiated in the corridors of Brussels, and how the current re-nationalization of Western politics can affect what we come to know as our common past.
Same as: ANTHRO 127D, ARCHLGY 227

ARCHLGY 128. Europe Before the Romans: Early Complex Societies. 3-5 Units.
This course will provide a broad introduction to theories of change in early complex societies and polities. Over the course of the quarter, we will examine a series of hotly debated theoretical frameworks. From the beginning, you will develop a case study for your final research paper using an appropriate theoretical framework. The course will look at a series of global case studies but will focus specifically on western Europe¿s protohistoric Iron Age (c.800¿100BCE), a period of technological innovation, rich art and cultural expression, rapidly growing connectivity and trade, alongside rapid social and political change.
Same as: CLASSICS 128

ARCHLGY 129. Archaeology of Gender and Sexuality. 5 Units.
How archaeologists study sex, sexuality, and gender through the material remains left behind by past cultures and communities. Theoretical and methodological issues; case studies from prehistoric and historic archaeology.
Same as: ANTHRO 111, FEMGEN 119

ARCHLGY 130. Senior research seminar for Archaeology majors and minors. 3-5 Units.
The aim of this research seminar is to provide an opportunity for students to experience and participate in research projects that bring together various aspects of the archaeology courses taken during the student's time at Stanford. The research projects will be tailored to the specific interests of the individual students involved and will involve individualized and independent research. In some cases the projects will grow out of Honors Theses, or out of fieldwork or internships undertaken. The projects will be individually supervised by the faculty teacher and will be designed to incorporate theory, method as well as particular information from particular regions and time periods. The projects will involve independent problem solving and writing up of results.

ARCHLGY 131. The Use and Abuse of Prehistory. 3-5 Units.
To borrow Glyn Daniel¿s phrase, the ¿Idea of Prehistory,¿ invokes notions of deep time, human origins, and mysterious monuments. While the origins of prehistoric research in the 19th century were connected to the emerging sciences of geology, evolution, and archaeology, they were just as intertwined with nation-state building, colonialism, and race science. This course examines the development of prehistory through a thematic and critical lens. How have Western conceptualizations of time and writing affected the definition and study of prehistory? What are some of the colonial legacies in both research agendas and museum collections? Do new methods always provide new answers? What role has gender played in prehistoric interpretation? Drawing from case studies in the Mediterranean, the Americas, Europe, and Africa, we will explore various archaeological approaches to prehistory from the late 19th century to the present, as well as how the idea of prehistory itself has evolved, expanded, or been abandoned altogether.
Same as: ANTHRO 131A, CLASSICS 138

ARCHLGY 134. Museum Cultures: Material Representation in the Past and Present. 3-5 Units.
Students will open the "black box" of museums to consider the past and present roles of institutional collections, culminating in a student-curated exhibition. Today, museums assert their relevance as dynamic spaces for debate and learning. Colonialism and restitution, the politics of representation, human/object relationships, and changing frameworks of authority make museum work widely significant and consistently challenging. Through thinking-in-practice, this course reflexively explores "museum cultures": representations of self and other within museums and institutional cultures of the museum world itself.n3 credits (no final project) or 5 credits (final project). May be repeat for credit.
Same as: ARCHLGY 234, ARTHIST 284B

ARCHLGY 135. Constructing National History in East Asian Archaeology. 3-5 Units.
Archaeological studies in contemporary East Asia share a common concern, to contribute to building a national narrative and cultural identity. This course focuses on case studies from China, Korea, and Japan, examining the influence of particular social-political contexts, such as nationalism, on the practice of archaeology in modern times.
Same as: ARCHLGY 235, CHINA 175, CHINA 275

ARCHLGY 137. Political Exhumations. Killing Sites Research in Comparative Perspective. 3-5 Units.
The course discusses the politics and practices of exhumation of individual and mass graves. The problem of exhumations will be considered as a distinct socio-political phenomenon characteristic of contemporary times and related to transitional justice. The course will offer analysis of case studies of political exhumations of victims of the Dirty War in Argentina, ethnic cleansing in former Yugoslavia, the Holocaust, communist violence in Poland, the Rwandan genocide, and the Spanish Civil War. The course will make use of new interpretations of genocide studies, research of mass graves, such as environmental and forensic approaches.
Same as: ANTHRO 137D, ARCHLGY 237, DLCL 237, REES 237

ARCHLGY 143. Classical Archaeology Today: Ethical Issues of Excavation, Ownership, and Display. 3-5 Units.
(Formerly CLASSART 143.) While Classical archaeology engages with material remains from the Greco-Roman past, it is embedded within and inseparable from contemporary practice. Through an examination of case studies, legal statutes, professional codes, and disciplinary practices, this seminar discusses ethical dilemmas raised by Classical archaeology in the 21st century. We will focus on broad issues ranging from ownership, looting, reconstruction, and collecting to nationalism, religion, tourism, and media, with an eye toward defining ethical ¿best practices¿ for Classical archaeology.

ARCHLGY 145. Sailing the Wine-Dark Sea: Maritime Archaeology of the Ancient Mediterranean. 3-5 Units.
Why do we care about shipwrecks? What can sunken sites and abandoned ports tell us about our past? Focusing primarily on the archaeological record of shipwrecks and harbors, along with literary evidence and contemporary theory, this course examines how and why ancient mariners ventured across the "wine-dark seas" of the Mediterranean for travel, warfare, pilgrimage, and especially commerce. We will explore interdisciplinary approaches to the development of maritime contacts and communication from the Bronze Age through the end of Roman era. At the same time, we will engage with practical techniques of maritime archaeology, which allows us to explore the material record first hand.
Same as: CLASSICS 154

ARCHLGY 147B. World Heritage in Global Conflict. 5 Units.
Heritage is always political, it is typically said. Such a statement might refer to the everyday politics of local stakeholder interests on one end of the spectrum, or the volatile politics of destruction and erasure of heritage during conflict, on the other. If heritage is always political then one might expect that the workings of World Heritage might be especially fraught given the international dimension. In particular, the intergovernmental system of UNESCO World Heritage must navigate the inherent tension between state sovereignty and nationalist interests and the wider concerns of a universal regime. The World Heritage List has over 1000 properties has many such contentious examples, including sites in Iraq, Mali, Syria, Crimea, Palestine and Cambodia. As an organization UNESCO was born of war with an explicit mission to end global conflict and help the world rebuild materially and morally, but has found it¿s own history increasingly entwined with that of international politics and violence.
Same as: ANTHRO 147B, ANTHRO 247B

ARCHLGY 148. Ceramic Analysis for Archaeologists. 3-5 Units.
The analysis and interpretation of ceramic remains allow archaeologists to accomplish varied ends: establish a time scale, document interconnections between different areas, and suggest what activities were carried out at particular sites. The techniques and theories used to bridge the gap between the recovery of ceramics and their interpretation within archaeological contexts is the focus of this seminar.
Same as: ARCHLGY 248

ARCHLGY 151. Ten Things: An Archaeology of Design. 3 Units.
Connections among science, technology, society and culture by examining the design of a prehistoric hand axe, Egyptian pyramid, ancient Greek perfume jar, medieval castle, Wedgewood teapot, Edison's electric light bulb, computer mouse, Sony Walkman, supersonic aircraft, and BMW Mini. Interdisciplinary perspectives include archaeology, cultural anthropology, science studies, history and sociology of technology, cognitive science, and evolutionary psychology.
Same as: CLASSICS 151

ARCHLGY 154. Animism, Gaia, and Alternative Approaches to the Environment. 3-5 Units.
Indigenous knowledges have been traditionally treated as a field of research for anthropologists and as mistaken epistemologies, i.e., un-scientific and irrational folklore. However, within the framework of environmental humanities, current interest in non-anthropocentric approaches and epistemic injustice, animism emerged as a critique of modern epistemology and an alternative to the Western worldview. Treating native thought as an equivalent to Western knowledge will be presented as a (potentially) decolonizing and liberating practice. This course may be of interest to anthropology, archaeology and literature students working in the fields of ecocriticism and the environmental humanities/social sciences, students interested in the Anthropocene, geologic/mineral, bio-, eco- and geosocial collectives, symbiotic life-forms and non-human agencies. The course is designed as a research seminar for students interested in theory of the humanities and social sciences and simultaneously helping students to develop their individual projects and thesis.
Same as: ANTHRO 154C, ANTHRO 254C, ARCHLGY 254, DLCL 254, REES 254

ARCHLGY 156. Design of Cities. 3-5 Units.
Long-term, comparative and archaeological view of urban planning and design. Cities are the fastest changing components of the human landscape and are challenging our relationships with nature. They are the historical loci of innovation and change, are cultural hotspots, and present a tremendous challenge through growth, industrial development, the consumption of goods and materials. We will unpack such topics by tracking the genealogy of qualities of life in the ancient Near Eastern city states and those of Graeco-Roman antiquity, with reference also to prehistoric built environments and cities in the Indus Valley and through the Americas. The class takes an explicitly human-centered view of urban design and one that emphasizes long term processes.
Same as: CLASSICS 156, CLASSICS 256

ARCHLGY 165. Roman Gladiators. 3-5 Units.
In modern America, gladiators are powerful representatives of ancient Rome (Spartacus, Gladiator). In the Roman world, gladiators were mostly slaves and reviled, barred from certain positions in society and doomed to short and dangerous lives. A first goal of this course is to analyze Roman society not from the top down, from the perspective of politicians, generals and the literary elite, but from the bottom up, from the perspective of gladiators and the ordinary people in the stands. A second goal is to learn how work with very different kinds of evidence: bone injuries, ancient weapons, gladiator burials, laws, graffiti written by gladiators or their fans, visual images of gladiatorial combats, and the intricate architecture and social control of the amphitheater. A final goal is to think critically about modern ideas of Roman ¿bloodthirst.¿ Are these ideas justified, given the ancient evidence?.

ARCHLGY 166. The Body in Roman Art. 4-5 Units.
(Formerly CLASSART 105.) Ancient and modern ideas about the body as ideal and site of lived experience. Themes include representation, portrayal, power, metamorphosis, and replication. Works that exemplify Roman ideas of heroism and power versus works portraying nude women, erotic youth, preserved corpses, and suffering enemies. Recommended: background in ancient Mediterranean art, archaeology, history, or literature. May be repeated for credit.
Same as: CLASSICS 166

ARCHLGY 169. Archaeology of Britannia. 3-4 Units.
Life in the Roman Empire: this course is a broad introduction to the archaeology of one of the best known provinces of the empire.
Same as: CLASSICS 169

ARCHLGY 173. Heritage Institutions Inside Out: The Power of Bureaucracies. 5 Units.
Anyone interested in how objects, places and customs become heritage should be interested in bureaucracies. Given that dealing with bureaucratic procedures often cause something of an allergic reaction among people, heritage researchers included, it is perhaps no wonder that they have long been neglected as acts of heritage-making; considered less attractive research subjects than archaeological field ventures, World Heritage sites and grass root heritage communities. Yet it is precisely in the everyday practices of regional, national and international bureaucracies in the administrative tasks, paper shuffling and decisions taken across shiny tables that much of the power to define, select and configure the values of heritage lie. nThe main task of this course is to introduce bureaucracies as agents in sustaining and producing heritage regimes, and to discuss how to go about the study of such institutions. Drawing on the research of an emergent group of scholars dealing with UNESCO, the European Union, international corporations and national governments, the first set of seminars will explore the logics of Western bureaucracy and discuss specific examples relating to heritage. The second set of seminars will discuss some methods and analytical approaches to studying heritage bureaucracies, particularly ethnography and Actor Network Theory. Leaning on contemporary research in political anthropology, the points and pitfalls of document analysis, participant observation and interviewing will be covered, as will the challenges of analyzing such knowledge and turning it into academic text.

ARCHLGY 188. Matter and Mattering: Transdisciplinary Thinking about Things. 4-5 Units.
Things sit at the nexus of cross-cutting heterogeneous processes; tracing the entanglements of any prominent thing or class of things demands a transdisciplinary approach that recruits expertise from the natural sciences, social sciences and humanities. For example, carbon is a key factor in global warming for reasons that are as much socio-historical as bio-physical, and we could not begin to sketch the full significance of carbon without considering such diverse frames of reference. Our growing appreciation in the social sciences and humanities of the agency, polyvalence and catalytic role of things has given rise to The New Materialist and Post-Humanist movements, which in turn raise questions about intra-action and observational perspective that are echoed in the modern physical and life sciences. In this class we will explore these theoretical convergences in considering themes such as `things-in-themselves¿, networks and open systems, assemblages and entanglements. We will also examine specific examples such as oil, metal (guns), dams, viruses, electricity, mushrooms; each thing will be explored both in terms of its social and ethical entanglements and in terms of its material properties and affordances. There will also be hands-on encounters with objects in labs and a couple of local field trips. The key question throughout will be `why and how does matter matter in society today?.
Same as: ANTHRO 188, ANTHRO 288, APPPHYS 188

ARCHLGY 190. Archaeology Directed Reading/Independent Study. 1-5 Unit.
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ARCHLGY 195. Independent Study/Research. 1-5 Unit.
Students conducting independent study and or research with archaeology faculty members.

ARCHLGY 199. Honors Independent Study. 5-6 Units.
Independent study with honors faculty adviser.

ARCHLGY 222. Pottery Analysis for Archaeologists: The Social and Material Dimensions of Ceramic Containers. 5 Units.
Due to the dominance of pottery in the archaeological record for the past 10,000 years, its analysis has attracted a great deal of research attention, making it imperative that all archaeologists have at least a working knowledge of ceramics. This course provides classroom and laboratory perspectives for understanding the information about ancient society, economy, and culture that can be plausibly derived from pottery and the visual, structural, and compositional methods that best help obtain that information.

ARCHLGY 224. Archaeology of Food: production, consumption and ritual. 3-5 Units.
This course explores many aspects of food in human history from an archaeological perspective. We will discuss how the origins of agriculture helped to transform human society; how food and feasting played a prominent role in the emergence of social hierarchies and the development of civilization; and how various foodways influenced particular cultures. We will also conduct experimental studies to understand how certain methods of food procurement, preparation, and consumption can be recovered archaeologically.
Same as: ARCHLGY 124

ARCHLGY 225. Archaeological Field Survey Methods. 3 Units.
Practicum applying a variety of survey techniques to discover, map, and record archaeological sites. Basic cartographic skills for archaeologists and an introduction to GIS tools, GPS instruments, and geophysical techniques. Participants should be able to walk 3 - 4 miles over uneven terrain or make special arrangements with the instructor for transportation.
Same as: ARCHLGY 125, ASNAMST 125A

ARCHLGY 226. Archaeobotany. 5 Units.
Archaeobotany, also known as paleoethnobotany, is the study of the interrelationships of plants and humans through the archaeological record. Knowledge and understanding of Archaeobotany sufficient to interpret, evaluate, and understand archaeobotanical data. Dominant approaches in the study of archaeobotanical remains: plant macro-remains, pollen, phytoliths, and starch grains in the identification of diet and environmental reconstruction.
Same as: ARCHLGY 126

ARCHLGY 227. HERITAGE POLITICS. 3-5 Units.
Heritage is a matter of the heart and not the brain, David Lowenthal once said. It does not seek to explore the past, but to domesticate it and enlist it for present causes. From the drafting of the first royal decrees on ancient monuments in the 17th century, political interests have had a hand in deciding which traditions, monuments and sites best represent and best serve the needs of the nation. The sum of these domestication efforts, the laws, institutions and practices established to protect and manage heritage, is what we call heritage governance. In this seminar you will learn about the politics of 21st century heritage governance at national and international level. Students will become familiar with key conventions and learn about the functioning of heritage institutions. We will also examine the hidden practices and current political developments that impact heritage governance: how UNESCO heritage sites become bargaining tools in international relations, how EU heritage policies are negotiated in the corridors of Brussels, and how the current re-nationalization of Western politics can affect what we come to know as our common past.
Same as: ANTHRO 127D, ARCHLGY 127

ARCHLGY 233. EXPERIMENTAL ARCHAEOLOGY. 3-5 Units.
This course is designed for graduate students who are interested in experimental study in archaeology. We will discuss the current issues in the discipline, particularly related to archaeological research on food and foodways. We will conduct experimental study and laboratory analyses to investigate ancient human behavior in food fermentation. The archaeological methods include analyses of use-wear on stone tools and various microbotanical remains (starch, phytoliths, fibers, fungi, etc.) on artifacts.

ARCHLGY 234. Museum Cultures: Material Representation in the Past and Present. 3-5 Units.
Students will open the "black box" of museums to consider the past and present roles of institutional collections, culminating in a student-curated exhibition. Today, museums assert their relevance as dynamic spaces for debate and learning. Colonialism and restitution, the politics of representation, human/object relationships, and changing frameworks of authority make museum work widely significant and consistently challenging. Through thinking-in-practice, this course reflexively explores "museum cultures": representations of self and other within museums and institutional cultures of the museum world itself.n3 credits (no final project) or 5 credits (final project). May be repeat for credit.
Same as: ARCHLGY 134, ARTHIST 284B

ARCHLGY 235. Constructing National History in East Asian Archaeology. 3-5 Units.
Archaeological studies in contemporary East Asia share a common concern, to contribute to building a national narrative and cultural identity. This course focuses on case studies from China, Korea, and Japan, examining the influence of particular social-political contexts, such as nationalism, on the practice of archaeology in modern times.
Same as: ARCHLGY 135, CHINA 175, CHINA 275

ARCHLGY 237. Political Exhumations. Killing Sites Research in Comparative Perspective. 3-5 Units.
The course discusses the politics and practices of exhumation of individual and mass graves. The problem of exhumations will be considered as a distinct socio-political phenomenon characteristic of contemporary times and related to transitional justice. The course will offer analysis of case studies of political exhumations of victims of the Dirty War in Argentina, ethnic cleansing in former Yugoslavia, the Holocaust, communist violence in Poland, the Rwandan genocide, and the Spanish Civil War. The course will make use of new interpretations of genocide studies, research of mass graves, such as environmental and forensic approaches.
Same as: ANTHRO 137D, ARCHLGY 137, DLCL 237, REES 237

ARCHLGY 248. Ceramic Analysis for Archaeologists. 3-5 Units.
The analysis and interpretation of ceramic remains allow archaeologists to accomplish varied ends: establish a time scale, document interconnections between different areas, and suggest what activities were carried out at particular sites. The techniques and theories used to bridge the gap between the recovery of ceramics and their interpretation within archaeological contexts is the focus of this seminar.
Same as: ARCHLGY 148

ARCHLGY 254. Animism, Gaia, and Alternative Approaches to the Environment. 3-5 Units.
Indigenous knowledges have been traditionally treated as a field of research for anthropologists and as mistaken epistemologies, i.e., un-scientific and irrational folklore. However, within the framework of environmental humanities, current interest in non-anthropocentric approaches and epistemic injustice, animism emerged as a critique of modern epistemology and an alternative to the Western worldview. Treating native thought as an equivalent to Western knowledge will be presented as a (potentially) decolonizing and liberating practice. This course may be of interest to anthropology, archaeology and literature students working in the fields of ecocriticism and the environmental humanities/social sciences, students interested in the Anthropocene, geologic/mineral, bio-, eco- and geosocial collectives, symbiotic life-forms and non-human agencies. The course is designed as a research seminar for students interested in theory of the humanities and social sciences and simultaneously helping students to develop their individual projects and thesis.
Same as: ANTHRO 154C, ANTHRO 254C, ARCHLGY 154, DLCL 254, REES 254

ARCHLGY 299. INDEPENDENT STUDY/RESEARCH. 1-5 Unit.
nnINDEPENDENT STUDY/RESEARCH.

ARCHLGY 307. Historical Archaeology of Race and Class in the Americas. 3-5 Units.
The history of ¿race¿ in the Americas is one intimately tied to the formation of typologies of human bodies at work and the political, economic, and health disparities made manifest from imposed difference. This seminar is divided into three themes: How have historical archaeologists approached the issues of inequality, racialization, and class in the Americas? How do we as archaeological professionals recognize the legacies of racial and class inequities within our own disciplinary praxis? And, how can we mobilize public and activist archaeologies to solve real-world problems? Rooted in an examination of traditional scholarship and emergent themes, such as the production of ¿whiteness,¿ biopolitics, and indigenous archaeologies, this seminar explores the idea that archaeology can develop tools to address inequities in the Americas. This course also has a built-in quarter-long digital public archaeology ¿lab,¿ making use of local assemblages from the Stanford Archaeology Collection.

ARCHLGY 319. Archaeological Theory: Graeco-Roman Antiquity. 3-5 Units.
The ways that archaeology is a medium of understanding Classical antiquity. We will selectively and deeply review themes in archaeological theory as they inform the academic study of Graeco-Roman antiquity. The aim is not to acquire comprehensive coverage of contemporary archaeological theory, but to focus on concepts, methodologies and practices that have a strong connection with agendas in contemporary Classics, and to explore interdisciplinary links through social and cultural theory and critique, performance studies, science studies (including the history and sociology of technology), design studies and approaches to material culture.

ARCHLGY 327. Doing Business in Classical Antiquity: Mediterranean Exchange. 3-5 Units.
Exchange was everywhere in the Mediterranean, from the individual household to the state. Yet the specific models by which goods changed hands were as varied as the ideas and values that moved alongside them. This seminar will explore theoretical approaches to commercial and non-commercial exchange, drawing primarily on the crucial but uneven bodies of archaeological evidence and historical sources in an effort to investigate the simple but hardly straightforward question of how business was undertaken in the Greco-Roman world.
Same as: CLASSICS 352

ARCHLGY 335. Models in Archaeology. 3-5 Units.
(Formerly CLASSART 335.) This seminar explores how we can use archaeological sources to build models of Graeco-Roman antiquity. A model is defined as a systematic and schematic representation of the way the ancient world worked, and particularly by using social and cultural theory. We will take in classic works of Marx and Weber, as well as contemporary approaches. A key objective is for class members to connect this most important aspect of social science to their own research project.

ARCHLGY 342. Archaeology of Roman Slavery. 3-5 Units.
The archaeological study of Roman slavery has been severely limited by a focus on identifying the traces of slaves in the material record. This seminar explores a range of newer and more broadly conceived approaches to understanding slavery and slaves' experiences, including spatial analysis, bioarchaeology, epigraphy, visual imagery, and comparative archaeologies of slavery. Students will learn about the current state of research, work with different kinds of evidence and a range of methodologies, and develop original research projects of their own.

ARCHLGY 353. Archaeology: Post-Humanist Agendas. 3-5 Units.
How do people and their artifacts connect? Just what is the subject of archaeological history? A seminar reviewing the latest materialist approaches in archaeology and heritage studies.
Same as: CLASSICS 353

ARCHLGY 355. Landscape & Archaeology. 3-5 Units.
TBD.
Same as: CLASSICS 355

ARCHLGY 356. Mediterranean Regionalism. 3-5 Units.
The ancient world enjoys scholarly traditions of both grand pan-Mediterranean narratives and focused studies of the individual landscapes and peoples who comprise them. Within archaeology, these latter explorations generally rely on expedient geographical designations, modern political boundaries, or survey areas as focused ¿regions¿ for discussion. Defining and interrogating the regions created and experienced by ancient peoples and assembling these into a coherent larger ancient picture proves far more difficult. This seminar explores the varied forms of ancient regionalisms¿from archaeological (architecture, ceramics, coinage, sculpture, etc.) to social (language, religion, etc.)¿and tools for investigating such patterns of human interaction.
Same as: CLASSICS 356

ARCHLGY 367. Mediterranean Networks. 3-5 Units.
The the ancient Mediterranean was highly interconnected is common knowledge, and the idea of integration has become a defining factory in current approaches to Greco-Roman cultural identities. Yet how connectivity functiond, and how we should effectively analyze it, are less well understood. This seminar highlights emerging network approaches--both broad theoretical network paradigms and specific network science methodologies--as conceptual tools for archaeological and historical investigations of cultural interaction (economic, religious, artistic, colonial, etc.) across the Mediterranean world.

ARCHLGY 376. Methods, Theories, and Practice in Chinese Archaeology. 2-5 Units.
This course is designed for graduate students who are interested in Chinese archaeology. We will discuss the current issues in the discipline, particularly related to archaeological research on food and foodways. We will conduct experimental study and laboratory analyses to investigate ancient human behavior in food procurement, preparation, and consumption. The archaeological methods include analyses of use-wear on stone tools and various microbotanical remains (starch, phytoliths, etc.) on artifacts.
Same as: CHINA 376

ART AND ART HISTORY

Courses offered by the Department of Art & Art History are listed on the Stanford Bulletin's ExploreCourses web site under the subject codes ARTHIST (Art History) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=ARTHIST&filter-catalognumber-ARTHIST=on), ARTSTUDI (Art Practice) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=ARTSTUDI&filter-catalognumber-ARTSTUDI=on), FILMSTUD (Film Studies) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=FILMSTUD&filter-catalognumber-FILMSTUD=on), and FILMPROD (Film Practice) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=FILMPROD&filter-catalognumber-FILMPROD=on).

Mission of the Department of Art and Art History

The department offers courses of study in:

1. Art History
2. Art Practice (studio)
3. Film and Media Studies
4. Film Production

leading to the following degrees: B.A. degree in Art History; B.A. degree in Art Practice; B.A. degree in Film and Media Studies; M.F.A. degree in Art Practice; M.F.A. degree in Documentary Film and Video; Ph.D. degree in Art History.

The undergraduate program is designed to help students think critically about the visual arts and visual culture. Courses focus on the meaning of images and media, and their historical development, roles in society, and relationships to disciplines such as literature, music, and philosophy. Work performed in the classroom, studio, and screening room is designed to develop a student's powers of perception, capacity for visual analysis, and knowledge of technical processes.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program.

Students in historical studies are expected to demonstrate:

1. knowledge and awareness of art and/or film terminology and concepts;
2. ability to develop effective and nuanced lines of interpretation;
3. improved critical thinking skills using primary and secondary source materials;
4. improvement in analytical writing skills and close reading skills;
5. ability to form and validate their own and others' opinions through knowledge of artistic movements and sociohistorical events.

Students in creative art are expected to demonstrate:

1. enhanced awareness of the role of art in intellectual and cultural life;
2. problem solving skills to organize, analyze and interpret visual information;
3. mastery of techniques and materials of a discipline with awareness of historical and current practices;
4. selection of materials, processes, form, and content to achieve poetic and expressive relationships to artistic media;
5. ability to apply critical analysis to the student's own work and the work of others;
6. effective techniques for the preparation and presentation of work consistent with professional practices in the field.

Learning Outcomes (Graduate)

The purpose of the master's programs is to further develop knowledge and skills in Art and Art History and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

The Ph.D. is conferred upon candidates in Art History (including Film and Media Studies) who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in their respective disciplines. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to knowledge in their fields and to interpret and present the results of their research.

Iris and and B. Gerald Cantor Center For Visual Arts

The Cantor Arts Center at Stanford University is a major resource for the department. The Cantor presents art from around the world in 24 galleries: from Africa to the Americas to Asia, and from ancient to contemporary periods. The Cantor offers changing selections from its 30,000-object collection; the Rodin Sculpture Garden; special exhibitions; and a variety of educational programs. Through collaborations with the teaching program, student internships, and student activities, the Cantor provides a rich resource for Stanford students.

Art History

Undergraduate Program in Art History

The discipline of Art History teaches students how to analyze and interpret works of fine art (paintings, drawings, prints, and sculpture), photography and moving image media (film, video, television, and digital art), material culture (ritual objects, fashion, advertisements, and the decorative, applied, and industrial arts), and the built environment (architecture, urbanism, and design). The department takes it as axiomatic that the skills of visual literacy and analysis are not innate but may be acquired through training and practice. Objects of study are drawn from the cultures of Africa, Asia, the Americas, from the Middle East; from Western, Central, and Eastern Europe; and from antiquity to the present.

Art History is a historical discipline that seeks to reintegrate the work of art into the original context of its making and reception, foregrounding its significant status as both historical document and act of social communication. At the same time, Art History seeks to understand the ways in which the work of art transcends the historical moment of its production, taking on different meanings in later historical periods, including the present. As part of their visual training, students of Art History become proficient in cultural analysis and historical interpretation. Art History thus envisions itself as uniquely well positioned to train students from a variety of disciplines in the light of the dramatic visual turn that has gripped the humanities and the sciences over the course of the last decade, with more and more disciplines becoming vitally interested in visual forms and modes of communication.

Graduate Program in Art History

The doctoral program in Art History at Stanford is relatively small, and affords the graduate student the opportunity to work intensively with individual members of the faculty. The Doctor of Philosophy degree is taken in a particular field, supported by a background in the general history of art. Doctoral candidates also undertake collateral studies in other graduate departments or in one of the University's interdisciplinary programs.

Art Practice (Studio)

Undergraduate Program in Art Practice (Studio)

The Art Practice program offers production-based courses founded on the concepts, skills and cultural viewpoints that characterize contemporary art practice. The goal is to educate students, both majors and minors, in the craft, culture, and theory of current fine art practices to prepare them for successful careers as artists. The art practice program is designed to develop in-depth skills in more than one area of the visual arts. It emphasizes the expressive potential of an integration of media, often via a cross-disciplinary, interactive path. Through collaboration and connections with scientists, engineers, and humanities scholars, the program addresses a breadth of topical and artistic concerns central to a vital undergraduate education.

Graduate Program in Painting, Sculpture, New Genres, and Photography

The program provides a demanding course of study designed to challenge advanced students. Participants are chosen for the program on the basis of work that indicates high artistic individuality, achievement, and promise. Candidates should embody the intellectual curiosity and broad interests appropriate to, and best served by, work and study within the University context.

Film and Media Studies

Undergraduate Program in Film and Media Studies

The Bachelor of Arts in Film and Media Studies provides an introduction to film aesthetics, history, national cinematic traditions, modes of production in narrative, documentary, and experimental films, the incorporation of moving image media by contemporary artists, and the proliferation of new forms of digital media. The program is designed to develop the critical vocabulary and intellectual framework for understanding the role of cinema and related media within broad cultural and historical concepts.

Graduate Program in Documentary Film and Video

The Master of Fine Arts program in documentary production provides a historical, theoretical, and critical framework within which students master the conceptual and practical skills for producing nonfiction film and video. The M.F.A. is a terminal degree program with a two-year, full-time curriculum representing a synthesis of film praxis and film and media history, theory, and criticism. Courses provide an intellectual and theoretical framework within which students' creative work is developed. Students proceed through the program as a cohort. The program does not permit leaves of absence.

The M.F.A. degree is designed to prepare graduate students for professional careers in film, video, and digital media. Graduates are qualified to teach at the university level. The philosophy of the program is predicated on a paradigm of independent media that values artistic expression, social awareness, and an articulated perspective. Students become conversant with the documentary tradition as well as with alternative media and new directions in documentary. Training in documentary production is combined with the development of research skills in film criticism and analysis. Electives in film studies, art history, and studio art provide an intellectual and theoretical framework within which creative work is realized. The parallel focus on production and studies prepares students for an academic position that may require teaching both film studies and production.

Art and Art History Department Course Catalog Numbering System

The first digit of the ARTHIST and FILMSTUD course number indicates its general level of sophistication.

Digit	Area
001-099	Introductory
100-199	Undergraduate level lectures
200-299	Undergraduate seminars/individual work
300-399	Graduate level lectures
400-599	Graduate seminars/individual work

Art History

Digit	Area
001-099	Introductory
100-104	Ancient
105-109	Medieval
110-119	Renaissance
120-139	Early Modern
140-159	Modern
160-179	Contemporary
180-189	Asia
190-195	Africa and the Americas
200-299	Seminars and Colloquia
410-499	Historical Studies
500-599	Critical Studies
600-699	Graduate Research

Art Practice (Studio)

Digit	Area
001-099	Courses for Non-Major (Lower Level)
100-199	Lower Level Undergraduate Courses
200-299	Upper Level Undergraduate Courses
300-399	Graduate Seminars

Film and Media Studies

Digit	Area
004-103	Introductory
111-118	Genre
130-139	National Cinemas
140-149	Aesthetics
150-159	Other
220-299	Undergraduate Seminars
400-660	Graduate Seminars

Film Production

Digit	Area
001-199	Undergraduate Courses
300-399	Graduate Courses
400-499	Graduate Courses for MFA Doc Film Students Only

Bachelor of Arts in Art History

The Department of Art and Art History offers: a Bachelor of Arts in Art History (p. 1006) • a Bachelor of Arts in Art Practice (Studio) (p. 1008) • a Bachelor of Arts in Film and Media Studies (p. 1010). The department also offers a minors (p. 1013) in Art History (p. 1013), Art Practice (Studio) (p. 1013), and Film and Media Studies (p. 1014).

Suggested Preparation for the Major

Students considering a major in art history should take either ARTHIST 1A Decolonizing the Western Canon: Introduction to Art and Architecture from Prehistory to Medieval or ARTHIST 1B How to Look at Art and Why: An Introduction to the History of Western Painting, during their freshman or sophomore year.

How to Declare the Major

Students who wish to major in Art History must meet with the Student Services Specialist. At that time, the student selects a faculty advisor, declares the major on Axess, and selects a concentration.

Concentrations

Concentrations within the major are approved by the student's major advisor; they are not declared on Axess and they do not appear on the transcript nor on the diploma. Concentrations include:

- Topical concentrations: art and gender; art, politics, race, and ethnicity; art, science, and technology; urban studies
- Genre concentrations: architecture; painting; sculpture; film studies; prints and media; decorative arts and material culture
- Historical and national concentrations: ancient and medieval; Renaissance and early modern; modern and contemporary; America; Africa; Asia; the Americas
- Interdisciplinary concentrations: art and literature; art and history; art and religion; art and economics; art and medicine (with advisor consent a maximum of two concentration courses may be taken outside the department).

Degree Requirements

All undergraduate majors complete a minimum of 65 units (15 courses that carry 4 or 5 units each). Courses must be taken for a letter grade.

Completing a full year of ITALIC or SLE can count as an Art History elective.

Majors are required to attend an orientation session presented by the professional staff of the Art and Architecture Library, which introduces the tools of research and reference available on campus or through the Internet. This requirement should be completed no later than the quarter following the major declaration.

Eligible students may also pursue a Bachelor of Arts in Art History with Honors (p. 1007).

Required Courses

Courses may not be offered every year and are subject to change. Consult an academic advisor if a course is not listed below.

1. Core Courses (20 units)

Complete four core courses.

2. Foundation Courses (20 units)

In order that students acquire a broad overview of different historical periods and different geographic regions, majors must take five Art History lecture courses, one from each of the following five categories.

3. Seminar Courses for Majors (10 units)

Writing in the Major (5 units): ARTHIST 294 Writing and the Visual: The Art of Art Writing. This course is designed for Art History majors in their junior year, equipping them with the scholarly tools necessary for writing about art in a variety of contexts as they progress through the major. This course fulfills the requirements of Writing in the Major (WIM).

Capstone Junior Seminar (5 units): ARTHIST 296 Junior Seminar: Methods & Historiography of Art History. This course is designed to introduce majors to methods and theories underlying the practice of Art History. The seminar is offered annually, typically during Autumn Quarter.

4. Seminar Requirement (5 units)

The student needs one additional seminar course within his or her area of concentration.

5. Area of Concentration (8-10 units)

The department encourages students to pursue their interests by designing an area of concentration tailored to their own intellectual concerns. This area of concentration provides the student with an in-depth understanding of a coherent topic in Art History and consists of three Art History courses: one must be a seminar, and two of the three courses must be in a single field or concentration constructed by the student in consultation with his or her faculty advisor. Students must submit an area of concentration form, signed by their faculty advisor, by the Winter Quarter of the junior year.

6. Art Practice Course (4 units)

Majors are required to complete at least one introductory Art Practice course.

		Units
1. Core Courses		**20**
Select four of the following:		
ARTHIST 1A	Decolonizing the Western Canon: Introduction to Art and Architecture from Prehistory to Medieval	
ARTHIST 1B	How to Look at Art and Why: An Introduction to the History of Western Painting	
ARTHIST 2	Asian Arts and Cultures	
ARTHIST 3	Introduction to World Architecture	
FILMSTUD 4	Introduction to Film Study: French Cinema in Focus	
2. Foundation Courses		**20**
Take one course from each of the following categories:		
Ancient and Medieval		
Select one of the following:		
ARTHIST 100N	The Artist in Ancient Greek Society (meets WAY A-II)	
ARTHIST 101	Introduction to Greek Art I: The Archaic Period (meets WAY A-II)	
ARTHIST 102	Introduction to Greek Art II: The Classical Period (meets WAY A-II)	
ARTHIST 105B	Medieval Journeys: Introduction through the Art and Architecture	
ARTHIST 106	Byzantine Art and Architecture, 300-1453 C.E.	
Renaissance and Early Modern		
Select one of the following:		
ARTHIST 142A	The Architecture of Thought: Artists and Thinkers Design for Themselves	
Modern, Contemporary, and the U.S		
Select one of the following:		

ARTHIST 118A	Space, Public Discourse and Revolutionary Practices	
ARTHIST 143A	American Architecture	
ARTHIST 144B	Modern Design from the Eiffel Tower to Yves Saint Laurent	
ARTHIST 146	American Dream, American Nightmare: A History of the United States in Art and Literature	
ARTHIST 147	Modernism and Modernity	
ARTHIST 151	Migration and Diaspora in American Art, 1800-Present	
ARTHIST 156A	Warhol: Painting, Photography, Performance	
ARTHIST 160		
ARTHIST 176		
ARTHIST 186B	Asian American Art: 1850-Present	
ARTHIST 191	African American Art	
ARTHIST 194	U.S. Latinx Art	
Asia, Africa, and the Americas		
Select one of the following:		
ARTHIST 182B	Cultures in Competition: Arts of Song-Era China	
ARTHIST 185	Arts of China in the Early Modern World, 1550-1800	
ARTHIST 188B	From Shanghai Modern to Global Contemporary: Frontiers of Modern Chinese Art	
Film & Media Studies		
Select one of the following:		
FILMSTUD 4	Introduction to Film Study: French Cinema in Focus (meets WAY A-II; cannot be double-counted if taken as core course)	
FILMSTUD 6	Introduction to Media	
FILMSTUD 100B	History of World Cinema II: Currents in Francophone Film, 1970-present (meets WAY A-II)	
FILMSTUD 100C	History of World Cinema III, 1960-Present (meets WAY A-II)	
FILMSTUD 101	Close Cinematic Analysis (meets WAY A-II)	
FILMSTUD 102	Theories of the Moving Image (meets WAY A-II)	
FILMSTUD 115	Documentary Issues and Traditions	
3. Seminar Courses for Majors		
Take each of the following		
Writing in the Major (WIM)		
ARTHIST 294	Writing and the Visual: The Art of Art Writing	5
Capstone Junior Seminar		
ARTHIST 296	Junior Seminar: Methods & Historiography of Art History	5
4. Seminar Requirement		**5**
One additional seminar course within the area of concentration		
ARTHIST 193	Jacob Lawrence's Twentieth Century: African American Art and Culture	
ARTHIST 203	Artists, Athletes, Courtesans and Crooks	
ARTHIST 208	Hagia Sophia	
ARTHIST 208B	The Art of Medieval Spain: Muslims, Christians, Jews	
ARTHIST 210	Giotto	
ARTHIST 211		
ARTHIST 215C	What is Contemporary Art?	
ARTHIST 217B	Architectural Design Theory	
ARTHIST 243B	Photography and Time	
ARTHIST 245	Art, Business & the Law	
ARTHIST 278	Introduction to Curating	
5. Area of Concentration		**8-10**
Take two courses chosen in consulation with the advisor		
6. Art Practice Course		**4**
Complete at least one introductory Art Practice course.		
Total Units		67-69

Other Information

Overseas Study or Study Abroad

Students can take a maximum of two courses (10 units) away from Stanford; this includes transfer courses from other universities and Stanford Overseas Studies. A student must meet with his or her advisor and with the Student Services Specialist before planning an overseas campus program.

Honors Program in Art History

The purpose of the honors program is to extend and deepen work done in Art History classes. The honors thesis topic typically emerges out of prior course work; it should be focused and have clear parameters. Ordinarily, an honors thesis is not an exploration of an area that the student has never studied before.

Admission to the Honor Program

The minimum requirement for admission to the honors program is an overall GPA of 3.5, and at least 3.5 in Art History courses. Students must complete at least five Art History courses at Stanford by the end of their junior year, and four must be completed by the end of Winter Quarter; with the advisor's approval, two of these courses may be taken at an overseas campus or Stanford in Washington. Students interested in pursuing honors should consult a potential thesis advisor on the Art History faculty during the Autumn Quarter of junior year. Thesis advisors must be in residence during Autumn Quarter of the student's senior year, and it is recommended that they be in residence throughout the senior year. Students considering honors should contact the Director of the Honors Program in their junior year as soon as they begin to think about writing an honors thesis. Those wishing to do so must announce their intention to write an honors thesis by submitting an intent form signed by their thesis advisor (who need not be the student's academic advisor) by February 1 of their junior year.

Submission of the Thesis Proposal Package

Candidates for the honors program must submit a five-page (double-spaced) thesis proposal, including bibliography and illustrations, and one completed paper that demonstrates the student's ability to conceptualize and write cogently about art historical issues. The deadline for submitting the complete package to the department's Student Services Specialist is the third week of Spring Quarter of the candidate's junior year. Upon approval by a majority of the faculty at its regular meeting in early May, the candidate is accepted into the honors program.

Research and Writing of the Honors Thesis

Once admitted to the honors program, students work with the director of the honors program and their thesis advisor to define the scope of study, establish a research and writing timetable, and enlist one other faculty member, ideally but not necessarily in the Department of Art and Art History, to serve as a second reader. The summer between junior and senior years is usually devoted to refining the topic and pursuing any off-campus research. Students are encouraged to apply for VPUE research

grants (https://undergrad.stanford.edu/opportunities/research/) to help finance trips or expenses related to research for their honors thesis.

During their senior year, students must register for 10 units of ARTHIST 297 Honors Thesis Writing, 5 units of which may count towards the student's concentration in Art History. Students are required to register for 2-5 units each quarter during their senior year, for a total of 10 units.

Submission and Approval of the Honors Thesis

With the guidance of the director of the honors program, students and thesis advisors should plan their work so that a complete, final manuscript is submitted to the thesis advisor and the second reader by the beginning of the seventh week of the student's final quarter at Stanford. The thesis advisor assigns a letter grade; both the advisor and the second reader must approve the honors thesis in order to qualify the student to graduate with honors.

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Bachelor of Arts in Art Practice (Studio)

The Department of Art and Art History offers: a Bachelor of Arts in Art History (p. 1006) • a Bachelor of Arts in Art Practice (Studio) (p. 1008) • a Bachelor of Arts in Film and Media Studies (p. 1010). The department also offers a minors (p. 1013) in Art History (p. 1013), Art Practice (Studio) (p. 1013), and Film and Media Studies (p. 1014).

How to Declare the Major

To declare the major, students must meet with the Student Services Specialist. At that time the student selects a faculty advisor. Art Practice majors are required to meet with both their advisor and the Student Services Specialist during the first two weeks of each quarter to have course work approved and make certain they are meeting degree requirements. Majors are required to attend an orientation session presented by the professional staff of the Art and Architecture Library, which introduces the tools of research and reference available on campus or through the Internet, as well as familiarizing students with artists' resources and the department's artist book collection. This requirement should be completed no later than the quarter following the major declaration.

Students may apply for the Honors Program in Art Practice during their junior year; for details, see the "Honors (p. 1007)" section below.

Transfer Credit Evaluation

Upon declaring an Art Practice major, a student transferring from another school must have his or her work evaluated by the Director of Undergraduate Studies (DUS) in Art Practice. A maximum of 10 transfer units may be applied toward the minimum 65 total units required for the major. A student wishing to have more than 10 units applied toward the major must submit a petition to the Director of Undergraduate Studies in Art Practice and then have their work reviewed by a studio committee.

Degree Requirements

All undergraduate majors complete a minimum of 65 units including six lower level courses, six upper level courses, and four art history courses, including the WIM course ARTHIST 294 Writing and the Visual: The Art of Art Writing.

All courses must be taken for a letter grade and must be passed with a letter grade of 'C' or better.

Students are encouraged to move through the requirements for the major in the sequence outlined. Students are exposed to a range of practices early in their development in order to have a good basis of comparison if they choose to focus on a particular medium. This sequence of courses also broadens the students' skills and enables them to combine materials and methods. In all courses, students are expected to pass mid-term and final reviews and critiques of their work.

Students are required to take upper level ARTSTUDI 230 Interdisciplinary Art Survey in their junior year and ARTSTUDI 249 Advanced Undergraduate Seminar in their senior year.

University units earned by placement tests or advanced placement work in secondary school are not counted within the 65 units.

The studio requirements are divided into lower level (introductory, 100 level) and upper level (advanced, 200 level) course work. At the lower level, students focus on exploring various mediums and building a strong foundation in contemporary art. Upper level courses are designed to stretch the student's understanding of materials, techniques, site, and social relevance. Experimental and challenging in nature, these courses cross area boundaries.

Completing a full year of ITALIC can count towards either one Art History elective or one lower level Art Practice course. Independent study supervised by a member of the permanent faculty is also available to the advanced student.

Most art practice courses are studio-based. Enrolled students are typically required to purchase their own supplies or materials depending on the medium of the class, and the scale of individual student work.

Course Requirements

Courses may not be offered every year and are subject to change. Consult an academic advisor if a course is not listed above.

		Units
1. Lower Level Courses		**24**
Select six of the following:		
ARTSTUDI 19N	An Artist's Life: Diverse Voices and Changing Contexts	
ARTSTUDI 130	Interactive Art: Making it with Arduino	
ARTSTUDI 131	Sound Art I	
ARTSTUDI 136	The Portable Studio	
ARTSTUDI 140	Drawing I	
ARTSTUDI 141	Plein Air Painting	
ARTSTUDI 145	Painting I	
ARTSTUDI 147	Art Book Object	
ARTSTUDI 148	Monotype	
ARTSTUDI 148A	Introduction to Lithography	
ARTSTUDI 148B	Introduction to Printmaking	
ARTSTUDI 148P	The Hybrid Print	
ARTSTUDI 150N	Queer Sculpture	
ARTSTUDI 151	Sculpture I	
ARTSTUDI 155	Social Sculpture	
ARTSTUDI 160	Intro to Digital / Physical Design	
ARTSTUDI 161	Constructing Color	
ARTSTUDI 162	Embodied Interfaces	
ARTSTUDI 163	Drawing with Code	
ARTSTUDI 164	Design in Public Places	
ARTSTUDI 165	Social Media and Performative Practices	
ARTSTUDI 166	Sculptural Screens / Malleable Media	
ARTSTUDI 167	Introduction to Animation	
ARTSTUDI 168	Data as Material	
ARTSTUDI 169	Virtual Reality: the possibility and peril of immersive artwork	
ARTSTUDI 170	Photography I: Black and White	
ARTSTUDI 171	Introduction to Photography	

ARTSTUDI 173E	Cell Phone Photography	
ARTSTUDI 174B	Creativity in the Age of Facebook: Making Art for and from Networks	
ARTSTUDI 175	Sound Installation	
ARTSTUDI 176	Time Shifts	
ARTSTUDI 177	Video Art	
ARTSTUDI 178	Art and Electronics	
ARTSTUDI 179	Digital Art I	
ARTSTUDI 181	From Dissection to Monster	
ARTSTUDI 182	Queered Tech and Speculative Design	
ARTSTUDI 184	Art and Environmental Engagement	
ARTSTUDI 185	Interactive Storytelling	
2. Upper Level Courses		
Required Courses		
ARTSTUDI 230	Interdisciplinary Art Survey (take in junior year)	4
ARTSTUDI 249	Advanced Undergraduate Seminar (take in senior year)	4
Select four optional courses from the following list:		16
ARTSTUDI 233	Let's Make a Monster: Critical Making	
ARTSTUDI 236	Future Media, Media Archaeologies	
ARTSTUDI 239	Intermedia Workshop	
ARTSTUDI 240	Drawing II	
ARTSTUDI 241A	Drawing from Life	
ARTSTUDI 242	Drawing and Creative Writing	
ARTSTUDI 245	Painting II	
ARTSTUDI 247	Collage	
ARTSTUDI 247A	Art Book Object	
ARTSTUDI 252	Sculpture II	
ARTSTUDI 254	Kinetic Sculpture	
ARTSTUDI 256	Advanced Installation	
ARTSTUDI 258	Resisting Monuments at the End of the World	
ARTSTUDI 264	Advanced Interaction Design	
ARTSTUDI 266	Sculptural Screens / Malleable Media	
ARTSTUDI 267	Emerging Technology Studio	
ARTSTUDI 270	Advanced Photography Seminar	
ARTSTUDI 271	The View Camera	
ARTSTUDI 275	Photography II: Digital	
ARTSTUDI 276	The Photographic Book	
ARTSTUDI 277	Intermediate Photography Seminar	
ARTSTUDI 277A	Video Art II	
ARTSTUDI 278	Photography II: Black and White	
ARTSTUDI 284	Art and Biology	
ARTSTUDI 288	Intermediate Photography: Documentary	
3. Art History Courses		
Required		
ARTHIST 294	Writing and the Visual: The Art of Art Writing	5
Three other art history courses, one must be from the modern art series.		12-15
One Film & Media Studies course may satisfy an Art History elective. One alternative Art History elective may be taken outside the department, such as an art history class offered by the Institute for Diversity in the Arts, in consultation with the major advisor.		
Total Units		65-68

Other Information

Overseas Study or Study Abroad

Students can take a maximum of two courses (10 units) away from Stanford; this includes transfer courses from other universities and Stanford Overseas Studies. A student must meet with his or her advisor and with the Student Services Specialist before planning an overseas campus program.

Honors Program in Art Practice

The purpose of the honors program is to extend and deepen work done in Art Practice classes. The honors thesis exhibition topic typically emerges out of prior course work. Ordinarily, an honors thesis exhibition is not an exploration of an area that the student has never studied before. Completion of the program is noted on the diploma and on the transcript

Admission to the Honors Program

The honors program is open to art practice majors only. The minimum requirement for admission to the honors program is an overall GPA of 3.5, and at least 3.5 in Art Practice courses. Students must complete at least five Art Practice courses at Stanford by the end of their junior year, and four must be completed by the end of Winter Quarter. With advisor approval, two of these courses may be taken at an overseas campus.

Students interested in pursuing honors should consult a potential thesis advisor on the Art Practice faculty during the Autumn Quarter of junior year. Thesis advisors must be in residence during Autumn Quarter of the student's senior year. Students considering honors should contact the Director of the Honors Program in their junior year. Those wishing to do so must announce their intention to write an honors thesis exhibition proposal by submitting an intent form signed by their thesis advisor, who need not be the student's academic advisor, by March 1 of their junior year.

Submission of the Thesis Proposal Package

The thesis proposal package must include:

1. A two-page Honors Thesis Exhibition Project Proposal description of the artwork/project, including an outline of research and goals signed by the thesis advisor.
2. Artwork Samples: 10 JPEGS of recent work (scaled to 8"x 10", no larger than 1MB each) or 5 minutes of video/audio clips. If video/audio work only is submitted, it may consist of up to 15 minutes of clips. Upload via Slideroom application.
3. Artwork Sample Descriptions: List each artwork and descriptions of submitted artwork (title, date, medium, dimensions, length if applicable, explanation if needed). Upload via Slideroom application.
4. Course plan for senior year and copy of academic transcript.

Research and Writing of the Honors Thesis

Once admitted to the honors program, students work with the director of the honors program and their thesis advisor to define the scope of study, establish a research and artwork completion timetable, and enlist one other faculty member, ideally but not necessarily on the Art Practice faculty, to serve as a second reader. The summer between junior and senior years is usually devoted to refining the topic and pursuing any off-campus research. Students are encouraged to apply for UAR research grants (https://undergrad.stanford.edu/opportunities/research/get-funded/apply-uar-student-grants/) to help finance trips or expenses related to research for their honors thesis.

During their senior year, students must register for 6 units of ARTSTUDI 297 Honors Thesis Exhibition and 4 units of ARTSTUDI 297S AP HONORS SEMINAR, for a total of 10 units. Students are required to enroll in 2 units of ARTSTUDI 297 and 1-2 units of ARTSTUDI 297S each

quarter (Autumn, Winter, and Spring). Up to 4 units may count towards one of the six upper level courses required for the major.

Submission and Approval of the Honors Thesis

With the guidance of the director of the honors program, students and thesis advisors should plan their work so that a complete art exhibition is installed in the first three weeks of Spring Quarter of their senior year with the Exhibitions Manager for the Department of Art and Art History. The student arranges a meeting with the advisors while the exhibition is on display. The thesis advisor assigns a letter grade; both the main advisor and the second advisor must approve the honors thesis in order to qualify the student to graduate with honors.

Bachelor of Arts in Film and Media Studies

The Department of Art and Art History offers: a Bachelor of Arts in Art History (p. 1006) • a Bachelor of Arts in Art Practice (Studio) (p. 1008) • a Bachelor of Arts in Film and Media Studies (p. 1010). The department also offers a minors (p. 1013) in Art History (p. 1013), Art Practice (Studio) (p. 1013), and Film and Media Studies (p. 1014).

Students who declared Film and Media Studies major prior to the academic year 2018-19 should refer to a previous edition of the Bulletin (http://exploredegrees.stanford.edu/archive/#text) for requirements or contact their department major advisor with specific questions.

Suggested Preparation for the Major

Students considering a major in film and media studies should take FILMSTUD 4 Introduction to Film Study: French Cinema in Focus , and are encouraged to take either ARTHIST 1A Decolonizing the Western Canon: Introduction to Art and Architecture from Prehistory to Medieval or ARTHIST 1B How to Look at Art and Why: An Introduction to the History of Western Painting, during their freshman or sophomore year. These courses anchor the major through exposure to film language, genre, and visual and narrative structures. Majors are required to take one course in the fundamentals of film and video production.

Suggested or Recommended Courses (all of which meet major requirements)

		Units
ARTHIST 1A	Decolonizing the Western Canon: Introduction to Art and Architecture from Prehistory to Medieval (meets WAY A-II and ED)	5
ARTHIST 1B	How to Look at Art and Why: An Introduction to the History of Western Painting (meets WAY A-II)	5
FILMSTUD 4	Introduction to Film Study: French Cinema in Focus (meets WAY A-II)	5
FILMSTUD 101	Close Cinematic Analysis (meets WAY A-II)	4

How to Declare the Major

Students who wish to declare the Film and Media Studies major must meet with the Student Services Specialist. At that time, the student selects a faculty advisor in consultation with the Student Services Specialist and FMS faculty, declares the major on Axess, and selects a concentration. Majors are required to attend an orientation session, presented by the professional staff of the Art and Architecture Library, which introduces the tools of research and reference available on campus or through the Internet. This requirement should be completed no later than the quarter following the major declaration.

Concentrations

Concentrations within the major are approved by the student's major advisor and are not declared on Axess; they do not appear on the transcript nor on the diploma. Concentrations include:

- Culture and Criticism
- Screenwriting

Degree Requirements

A student declaring a major in Film and Media Studies must complete 61 units of coursework as detailed below. All courses must be taken for a letter grade. Students must declare their concentration by Winter Quarter of their junior year.

All courses for the major must be taken for a letter grade.

Course Requirements

Courses may not be offered every year and are subject to change. Consult an academic advisor if a course is not listed below.

		Units
Required Courses		
Foundation:		
Choose one of the following:		5
ARTHIST 1A	Decolonizing the Western Canon: Introduction to Art and Architecture from Prehistory to Medieval (meets WAY A-II and ED)	
ARTHIST 1B	How to Look at Art and Why: An Introduction to the History of Western Painting (meets WAY A-II)	
ARTHIST Elective		
FILMSTUD 4	Introduction to Film Study: French Cinema in Focus (meets WAY A-II)	5
FILMSTUD 6	Introduction to Media	5
Core:		
FILMSTUD 100A	History of World Cinema I, 1895-1929	4
FILMSTUD 100B	History of World Cinema II: Currents in Francophone Film, 1970-present (meets WAY A-II)	4
FILMSTUD 101	Close Cinematic Analysis (WIM Course, meets WAY A-II)	4
FILMSTUD 102	Theories of the Moving Image (meets WAY A-II)	4
Capstone (see below for details):		
FILMSTUD 290	Movies and Methods: Contemporary Black Filmmakers	5
Studio (one of the following):		
FILMPROD 114	Introduction to Film and Video Production (meets WAY CE)	5
FILMSTUD Equivalent, when offered		
Concentration Electives		**20**
Five elective courses around one of the two concentrations: Culture and Criticism or Screenwriting. Each elective should be taken for a minimum of 4 units. One of five may be a production-oriented course (FILMPROD) other than FILMPROD 114. For the Screenwriting concentration, at least one out of five must be a FILMSTUD course.		
FILMSTUD 107N	Documentary Film: Telling it Like it Is?	
FILMSTUD 115	Documentary Issues and Traditions	
FILMSTUD 119	Science Fiction: Cyborgs & Human Simulacra in the Cinema	

FILMSTUD 120	Superhero Theory
FILMSTUD 125	Horror Film
FILMSTUD 127	Monster Movies: Frankenstein & Film
FILMSTUD 129	Animation and the Animated Film
FILMSTUD 132A	Indian Cinema
FILMSTUD 135	Around the World in Ten Films
FILMSTUD 211N	Childish Enthusiasms and Perishable Manias
FILMSTUD 232	Chinese Cinema
FILMSTUD 233	Let's Make a Monster: Critical Making
FILMSTUD 245B	History and Politics in Russian and Eastern European Cinema
FILMSTUD 256	Horror Comics
FILMSTUD 259	Game Studies
FILMPROD 101	Screen Writing I: Visual Writing
FILMPROD 101T	Writing the Television Pilot
FILMPROD 103	Adaptation
FILMPROD 104	Screenwriting II: Intermediate Screenwriting
FILMPROD 105	Script Analysis
FILMSTUD 410A	Documentary Perspectives I: Politics of the Subject
COMM 1B	Media, Culture, and Society
Total Units	61

Capstone Experience

FILMSTUD 290, required for all majors in their senior year. This course is also open as an elective, with instructor approval, to students who are not seniors. The Senior Seminar provides majors with an opportunity to synthesize their previous work in Film and Media Studies and work in an advanced setting with a faculty member.

Other Information

Overseas Study or Study Abroad

Students can take a maximum of two courses (10 units) away from Stanford; this includes transfer courses from other universities and Stanford Overseas Studies. A student must meet with their advisor and with the Student Services Specialist before planning an overseas campus program.

Crosslisted Courses

For courses crosslisted between Film and Media Studies and another Stanford department or program, FMS majors should enroll for the FILMSTUD course listing.

Honors Program in Film and Media Studies

The purpose of the honors program is to extend and deepen work done in Film and Media Studies classes. The honors thesis topic typically emerges out of prior coursework; it should be focused and have clear parameters. Ordinarily, an honors thesis is not an exploration of an area that the student has never studied before.

Admission to the Program

The minimum requirement for admission to the honors program is an overall GPA of 3.5, and at least 3.5 in Film and Media Studies courses. Students must complete at least five Film and Media Studies courses at Stanford by the end of their junior year, and four must be completed by the end of Winter Quarter; with the advisor's approval, two of these courses may be taken at an overseas campus. Students interested in pursuing honors should consult a potential thesis advisor on the Film and Media Studies faculty during the Autumn Quarter of junior year. Thesis advisors must be in residence during Autumn Quarter of the student's senior year, and it is highly recommended that they be in residence throughout the senior year. Students considering honors should contact the director of the honors program in their junior year as soon as they begin to think about writing an honors thesis. Those wishing to do so must announce their intention to write an honors thesis by submitting an intent form signed by their thesis advisor (who need not be the student's academic advisor) by February 1 of their junior year.

Submission of the Thesis Proposal Package

Candidates for the honors program must submit a five-page (double-spaced) thesis proposal, including bibliography, a tentative schedule for research and writing, and one completed paper that demonstrates the student's ability to conceptualize and write cogently about film or media. The deadline for submitting the complete package to the department's Student Services Specialist is March 1 of the candidate's junior year. Upon approval by a majority of the faculty at its regular meeting in early May, the candidate is accepted into the honors program.

Research and Writing of the Honors Thesis

Once admitted to the honors program, students work with the director of the honors program and their thesis advisor to define the scope of study, establish a research and writing timetable, and enlist one other faculty member, ideally but not necessarily in the Department of Art and Art History, to serve as a second reader. The summer between junior and senior years is usually devoted to refining the topic and pursuing any off-campus research. Students are encouraged to apply for UAR research grants to help finance trips or expenses related to research for their honors thesis.

During their senior year, students are strongly encouraged to enroll in the Bing Honors College meeting the two weeks before Autumn Quarter. They must also register for 10 units of FILMSTUD 297 Honors Thesis Writing, 5 units of which may count towards the student's concentration in Film and Media Studies. Students are required to register for two to five units each quarter during their senior year, for a total of ten units.

Submission and Approval of the Honors Thesis

With the guidance of the director of the honors program, students and thesis advisors should plan their work so that a complete, final manuscript is submitted to the thesis advisor and the second reader by April 1. The thesis advisor assigns a letter grade; both the advisor and the second reader must approve the honors thesis in order to qualify the student to graduate with honors.

Required Course

		Units
FILMSTUD 297	Honors Thesis Writing	2-5

The joint major program (JMP) was discontinued at the end of the academic year 2018-19. Students may no longer declare this program. All students with declared joint majors are permitted to complete their degree; faculty and departments are committed to providing the necessary advising support.

See the "Joint Major Program (p. 33)" section of this bulletin for a description of University requirements for the JMP. See also the Undergraduate Advising and Research JMP (https://majors.stanford.edu/more-ways-explore/joint-majors-csx/) web site and its associated FAQs.

Students completing the JMP receive a B.A.S. (Bachelor of Arts and Science).

Joint Major Program in Art Practice and Computer Science

Art Practice Major Requirements in the Joint Major Program

See the "Computer Science Joint Major Program (p. 714)" section of this bulletin for details on Computer Science requirements.

Students majoring in the Art Practice and Computer Science joint major program must complete five lower level courses and six upper level courses in art practice, and four art history courses, including the WIM course. Students in the JMP are excused from completing one lower level course, reducing the required unit count of the Art Practice major from 65 to 61 units. All courses comprising the major must be taken for a letter grade.

Most art practice courses are studio-based. Enrolled students are typically required to purchase their own supplies or materials depending on the medium of the class, and the scale of individual student work.

Students majoring in the joint major program in Art Practice and Computer Science must complete the modified degree requirements for Art Practice by completing the following:

1. Five lower level courses (20 units)
   a.

		Units
ARTSTUDI 130	Interactive Art: Making it with Arduino	4
ARTSTUDI 131	Sound Art I	4
ARTSTUDI 136	The Portable Studio	4
ARTSTUDI 140	Drawing I	4
ARTSTUDI 141	Plein Air Painting	4
ARTSTUDI 145	Painting I	4
ARTSTUDI 147	Art Book Object	4
ARTSTUDI 148	Monotype	4
ARTSTUDI 148A	Introduction to Lithography	4
ARTSTUDI 148B	Introduction to Printmaking	4
ARTSTUDI 148P	The Hybrid Print	4
ARTSTUDI 150Q	Queer Sculpture	4
ARTSTUDI 151	Sculpture I	4
ARTSTUDI 155	Social Sculpture	4
ARTSTUDI 156Q	Installation Art in Time and Space	4
ARTSTUDI 160	Intro to Digital / Physical Design	3-4
ARTSTUDI 162	Embodied Interfaces	4
ARTSTUDI 163	Drawing with Code	4
ARTSTUDI 164	Design in Public Places	4
ARTSTUDI 165	Social Media and Performative Practices	4
ARTSTUDI 167	Introduction to Animation	3-4
ARTSTUDI 168	Data as Material	4
ARTSTUDI 170	Photography I: Black and White	4
ARTSTUDI 171	Introduction to Photography	4
ARTSTUDI 173E	Cell Phone Photography	4
ARTSTUDI 174B	Creativity in the Age of Facebook: Making Art for and from Networks	4
ARTSTUDI 176	Time Shifts	4
ARTSTUDI 177	Video Art	4
ARTSTUDI 178	Art and Electronics	4
ARTSTUDI 179	Digital Art I	4
ARTSTUDI 181	From Dissection to Monster	4
ARTSTUDI 184	Art and Environmental Engagement	4

2. Six upper level courses (24 units) including:
   a. ARTSTUDI 230 Interdisciplinary Art Survey (4 units) is a required course which focuses on direct experiences of multidisciplinary art and art practices
   b. ARTSTUDI 249 Advanced Undergraduate Seminar ; majors must take this course for 4 units.
3. Students select four optional courses from the following list
   a.

		Units
ARTSTUDI 233	Let's Make a Monster: Critical Making	5
ARTSTUDI 236	Future Media, Media Archaeologies	3-4
ARTSTUDI 239	Intermedia Workshop	3-4
ARTSTUDI 240	Drawing II	4
ARTSTUDI 245	Painting II	4
ARTSTUDI 247	Collage	4
ARTSTUDI 252	Sculpture II	4
ARTSTUDI 254	Kinetic Sculpture	3-4
ARTSTUDI 264	Advanced Interaction Design	4
ARTSTUDI 266	Sculptural Screens / Malleable Media	4
ARTSTUDI 267	Emerging Technology Studio	4
ARTSTUDI 270	Advanced Photography Seminar	4
ARTSTUDI 271	The View Camera	4
ARTSTUDI 275	Photography II: Digital	4
ARTSTUDI 276	The Photographic Book	4
ARTSTUDI 277	Intermediate Photography Seminar	4
ARTSTUDI 277A	Video Art II	4
ARTSTUDI 278	Photography II: Black and White	4
ARTSTUDI 284	Art and Biology	4
ARTSTUDI 288	Intermediate Photography: Documentary	4

4. Four Art History courses (17-20 units)
   a. ARTHIST 294 Writing and the Visual: The Art of Art Writing (5 units)
   b. Three other Art History courses, one must be from the modern art series. One Film and Media Studies course may satisfy an Art History elective.
5. Senior Capstone Project

*Courses may not be offered every year and are subject to change. Consult an academic adviser if a course is not listed above.

The senior seminar (4 units) in conjunction with the computer science capstone course (3-5 units) enables students to produce a creative and in-depth senior capstone project that highlights the integration of the two disciplines. An adviser from each program guides and assesses the project throughout the academic year. The completed project is included in the Senior Exhibit.

Example capstone projects might include an interactive installation that combines various sensors with computer graphic techniques, a screen based artwork that requires sophisticated data visualization, a sculpture involving new forms of projection mapping, or a social media artwork integrating a new type of mobile application. These works would qualify as effective contemporary artworks, and also illustrate unique command of and innovations within the field of computer science.

Dropping a Joint Major Program

To drop the joint major, students must submit the Declaration or Change of Undergraduate Major, Minor, Honors, or Degree Program (https://stanford.box.com/change-UG-program/). Students may also consult the Student Services Center (http://studentservicescenter.stanford.edu/) with questions concerning dropping the joint major.

Transcript and Diploma

Students completing a joint major graduate with a B.A.S. degree. The two majors are identified on one diploma separated by a hyphen. There will be a notation indicating that the student has completed a "Joint Major." The two majors are identified on the transcript with a notation indicating that the student has completed a "Joint Major."

This page has information on the department's: Minor in Art History (p. 1013) • Minor in Art Practice (Studio) (p. 1013) • Minor in Film and Media Studies (p. 1014)

Minor in Art History

How to Declare the Minor

Upon declaring the minor, students must select a faculty advisor with whom they plan their course of study and electives. A proposed course of study must be approved by the advisor and placed in the student's departmental file.

Minors are required to attend an orientation session, presented by the professional staff of the Art and Architecture Library, which introduces the tools of research and reference available on campus or through the Internet. This requirement should be completed no later than the quarter following the minor declaration.

Degree Requirements

A student declaring a minor in Art History must complete 25 units of course work in one of the following four tracks: Open, Modern, Asian, or Architecture.

Courses must be taken for a letter grade. Only one class may be taken for credit outside of the Stanford campus; this includes courses taken in the Overseas Studies Program.

Course Requirements

A student with a minor in Art History must complete six Art History courses for a total of 25 units.

		Units
Open Track		
Select one of the following:		5
ARTHIST 1A	Decolonizing the Western Canon: Introduction to Art and Architecture from Prehistory to Medieval	
ARTHIST 1B	How to Look at Art and Why: An Introduction to the History of Western Painting	
Plus five Art History lecture courses or seminars in any field.		20
Modern Track		
Select one of the following:		5
ARTHIST 1A	Decolonizing the Western Canon: Introduction to Art and Architecture from Prehistory to Medieval	
ARTHIST 1B	How to Look at Art and Why: An Introduction to the History of Western Painting	
Plus five Art History lecture courses or seminars in any aspect of 19th- to 20th-century art.		20
Asian Track		
ARTHIST 2	Asian Arts and Cultures	5
Plus five Art History lecture courses or seminars in Asian Art (ARTHIST 1A OR ARTHIST 1B may be one of the five courses).		20
Architecture Track		
ARTHIST 3	Introduction to World Architecture	5
Plus five Art History lecture courses or seminars in Architectural History (ARTHIST 1A OR ARTHIST 1B may be one of the five courses).		20
Total Units for Any Track		**25**

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Minor in Art Practice (Studio)

How to Declare the Minor

Upon declaring the minor, students must select a faculty advisor to have the course work approved and to make certain they are meeting degree requirements.

Minors are required to attend an orientation session, presented by the professional staff of the Art and Architecture Library, which introduces the tools of research and reference available on campus or through the internet. This requirement should be completed no later than the quarter following the minor declaration.

Degree Requirements

A student declaring a minor in Art Practice must complete 36 units of Art Practice and Art History course work.

Courses must be taken for a letter grade. Only one class may be taken for credit outside of the Stanford campus; this includes courses taken in the Overseas Studies Program.

Most art practice courses are studio-based. Enrolled students are typically required to purchase their own supplies or materials depending on the medium of the class, and the scale of individual student work.

Course Requirements

Courses may not be offered every year and are subject to change. Consult an academic advisor if a course is not listed below.

Three lower level courses (100 number courses) for a total of 12 units:

		Units
Lower Level Courses		
Select three lower level courses (100 number courses) for a total of 12 units		12
ARTSTUDI 19N	An Artist's Life: Diverse Voices and Changing Contexts	
ARTSTUDI 130	Interactive Art: Making it with Arduino (meets WAY CE)	
ARTSTUDI 131	Sound Art I (meets WAY CE)	
ARTSTUDI 136	The Portable Studio	
ARTSTUDI 140	Drawing I (meets WAY CE)	
ARTSTUDI 141	Plein Air Painting	
ARTSTUDI 145	Painting I (meets WAY CE)	
ARTSTUDI 147	Art Book Object	
ARTSTUDI 148	Monotype	
ARTSTUDI 148A	Introduction to Lithography	
ARTSTUDI 148B	Introduction to Printmaking (meets WAY CE)	
ARTSTUDI 148P	The Hybrid Print	
ARTSTUDI 150N	Queer Sculpture	
ARTSTUDI 151	Sculpture I (meets WAY CE)	
ARTSTUDI 155	Social Sculpture	
ARTSTUDI 160	Intro to Digital / Physical Design (meets WAY CE)	
ARTSTUDI 161	Constructing Color	
ARTSTUDI 162	Embodied Interfaces	

ARTSTUDI 163	Drawing with Code	
ARTSTUDI 164	Design in Public Places	
ARTSTUDI 165	Social Media and Performative Practices	
ARTSTUDI 166	Sculptural Screens / Malleable Media	
ARTSTUDI 167	Introduction to Animation	
ARTSTUDI 168	Data as Material	
ARTSTUDI 169	Virtual Reality: the possibility and peril of immersive artwork	
ARTSTUDI 170	Photography I: Black and White (meets WAY CE)	
ARTSTUDI 171	Introduction to Photography	
ARTSTUDI 173E	Cell Phone Photography (meets WAY CE)	
ARTSTUDI 174B	Creativity in the Age of Facebook: Making Art for and from Networks (meets WAY CE)	
ARTSTUDI 175	Sound Installation	
ARTSTUDI 176	Time Shifts	
ARTSTUDI 177	Video Art (meets WAY CE)	
ARTSTUDI 178	Art and Electronics (meets WAY CE)	
ARTSTUDI 179	Digital Art I (meets WAY CE)	
ARTSTUDI 181	From Dissection to Monster	
ARTSTUDI 182	Queered Tech and Speculative Design	
ARTSTUDI 184	Art and Environmental Engagement	
ARTSTUDI 185	Interactive Storytelling	
Upper Level Courses		
Select three upper level courses (100 number courses) for a total of 12 units		
Required Course		
ARTSTUDI 230	Interdisciplinary Art Survey	4
Select two of the following		8
ARTSTUDI 233	Let's Make a Monster: Critical Making	
ARTSTUDI 236	Future Media, Media Archaeologies	
ARTSTUDI 239	Intermedia Workshop	
ARTSTUDI 240	Drawing II	
ARTSTUDI 241A	Drawing from Life	
ARTSTUDI 242	Drawing and Creative Writing	
ARTSTUDI 245	Painting II	
ARTSTUDI 247A	Art Book Object	
ARTSTUDI 252	Sculpture II	
ARTSTUDI 254	Kinetic Sculpture	
ARTSTUDI 256	Advanced Installation	
ARTSTUDI 258	Resisting Monuments at the End of the World	
ARTSTUDI 264	Advanced Interaction Design	
ARTSTUDI 266	Sculptural Screens / Malleable Media	
ARTSTUDI 267	Emerging Technology Studio	
ARTSTUDI 270	Advanced Photography Seminar	
ARTSTUDI 271	The View Camera	
ARTSTUDI 275	Photography II: Digital	
ARTSTUDI 276	The Photographic Book	
ARTSTUDI 277	Intermediate Photography Seminar	
ARTSTUDI 277A	Video Art II	
ARTSTUDI 278	Photography II: Black and White	
ARTSTUDI 284	Art and Biology	
Art History Courses		
Three Art History Courses for a total of 12 units		
Select one of the following:		5
ARTHIST 1A	Decolonizing the Western Canon: Introduction to Art and Architecture from Prehistory to Medieval	
ARTHIST 1B	How to Look at Art and Why: An Introduction to the History of Western Painting	
Two other art history courses		
One art history course from the modern art series		4
One other art history course		3
Total Units		36

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Minor in Film and Media Studies

How to Declare the Minor

Upon declaring the minor, students select an advisor with whom they plan their course of study and electives. A proposed course of study must be approved by the advisor and placed in the student's departmental file.

Minors are required to attend an orientation session presented by the professional staff of the Art & Architecture Library, which introduces the many tools of research and reference available on campus or through the Internet. This requirement should be completed no later than the quarter following the minor declaration.

Degree Requirements

A minor in Film and Media Studies requires 29 units and consists of four core courses and three elective courses for a total of seven courses. All courses must be taken for a letter grade.

The deadline for students to declare their minor is no later than the last day of the quarter, three quarters before degree conferral. For example, a student graduating in June must declare the minor no later than the last day of autumn quarter of their senior year.

Upon declaring the minor, a proposed course of study must be submitted to the Student Services Specialist and approved by the advisor. All students must attend an orientation session presented by the Art & Architecture Library, to be completed no later than one quarter following the declaration.

Course Requirements

Courses may not be offered every year and are subject to change. Consult an academic advisor if a course is not listed below.

Courses that use film and media to simply illustrate a cultural topic may not be considered. Only courses that center on film and media and use the methods of film and media study may be used towards completion of the minor.

Only one class may be taken for credit outside the Stanford campus, including Stanford Overseas Studies programs. For courses crosslisted between Film and Media Studies and another Stanford department or program, FMS minors should enroll for the FILMSTUD course listing.

Elective Courses for the Minor

Three elective courses. No more than one elective can be chosen from courses in another department and only if it is approved by the Film and Media Studies coordinator and core faculty for its stress on methods of film analysis. Electives may include courses in national cinemas, film genres, experimental and documentary film, or film theory.

		Units
Required Courses		
FILMSTUD 4	Introduction to Film Study: French Cinema in Focus (meets WAY A-II)	5

FILMSTUD 6	Introduction to Media	3-5
FILMSTUD 102	Theories of the Moving Image (meets WAY A-II)	4
Select one of the following:		4
FILMSTUD 100A	History of World Cinema I, 1895-1929	
FILMSTUD 100B	History of World Cinema II: Currents in Francophone Film, 1970-present (meets WAY A-II)	
Elective Courses		
Up to two Film Production courses may count towards completion of the minor. Art Practice courses may not be used towards the requirements. Various Film and Media Studies courses may meet the elective requirement in any given year. If you have a question regarding a specific course, please contact the Student Services Specialist.		
Select three courses		12-15
FILMSTUD 101	Close Cinematic Analysis	
FILMSTUD 107N	Documentary Film: Telling it Like it Is?	
FILMSTUD 115	Documentary Issues and Traditions	
FILMSTUD 119	Science Fiction: Cyborgs & Human Simulacra in the Cinema	
FILMSTUD 120	Superhero Theory	
FILMSTUD 125	Horror Film	
FILMSTUD 127	Monster Movies: Frankenstein & Film	
FILMSTUD 129	Animation and the Animated Film	
FILMSTUD 132A	Indian Cinema	
FILMSTUD 135	Around the World in Ten Films	
FILMSTUD 233	Let's Make a Monster: Critical Making	
FILMSTUD 245B	History and Politics in Russian and Eastern European Cinema	
FILMSTUD 256	Horror Comics	
FILMSTUD 259	Game Studies	
FILMSTUD 410A	Documentary Perspectives I: Politics of the Subject	
FILMSTUD 411	Childish Enthusiasms, Perishable Manias	
FILMPROD 101	Screen Writing I: Visual Writing	
FILMPROD 101T	Writing the Television Pilot	
FILMPROD 103	Adaptation	
FILMPROD 104	Screenwriting II: Intermediate Screenwriting	
FILMPROD 105	Script Analysis	
FILMPROD 114	Introduction to Film and Video Production	
COMM 1B	Media, Culture, and Society	
Total Units		28-33

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Master of Arts in Art History

University requirements for the M.A. are described in the "Graduate Degrees (p. 65)" section of this bulletin.

Admission

The Master of Arts in Art History is only available to doctoral students in Art and Art History, as a step toward fulfilling requirements for the Ph.D.

Degree Requirements

Units

Completing a total of at least 45 units of graduate work at Stanford in the history of art in courses at the 200 level and above, including a seminar in art historiography/visual theory.

Languages

Reading knowledge of at least one foreign language, preferably German, French, or Italian. Students in Chinese and Japanese art are ordinarily expected to demonstrate reading competence in modern and classical Chinese or Japanese, depending on the student's area of focus. Final determination of which foreign languages fulfill the requirement is made in consultation with the student's primary adviser.

Papers

Submission of one paper from among those written during the year that demonstrates depth of research and capacity to build an argument. The paper should be perfected under the supervision of a member of the department faculty.

Area Coverage

Demonstration to the faculty, by course work and/or examination, that the student has adequate knowledge of the major areas of the history of art represented in the department curriculum.

Master of Fine Arts in Art Practice (Studio)

University requirements for the M.F.A. are described in the "Graduate Degrees (p. 65)" section of this bulletin.

Admission

The applicant must have a B.A., B.F.A, or B.S. from an accredited school. It is expected that the applicant will have a strong background in art practice, either an undergraduate degree or at least three years of independent studio practice. Students accepted to the program are admitted for the beginning of the following Autumn Quarter. No applicants for mid-year entrance are considered.

Portfolio Specifications—See the department's Graduate Admission (https://art.stanford.edu/academics/graduate-programs/masters-program/how-apply/) web site for portfolio requirements.

Fields of Study or Degree Options

Fields of study for the M.F.A. degree are offered in Painting, Sculpture, New Genres, and Photography. These fields of study are not declared on Axess; they are not printed on the transcript or the diploma.

Degree Requirements

Residency

Completing a minimum of two years (six academic quarters) of graduate work in residence at Stanford.

Units

The student must complete 48 units of study. Students must discuss their programs of study with their academic adviser and the department's student services manager to ensure that an appropriate program of study is chosen.

Seminar Requirement

Six quarters (36 units), which includes one (Spring) or two weekly seminars (Autumn and Winter) and Studio Practice, as well as an individual tutorial with a selected member of the faculty; all seminars must be taken for a letter grade.

		Units
First Year Seminar Requirements		
ARTSTUDI 342A	MFA: Object Seminar (2 units per quarter-Autumn and Winter)	4
ARTSTUDI 342B	MFA: Concept Seminar (2 units per quarter-Autumn and Winter)	4
ARTSTUDI 342C	M.F.A Seminar	2
ARTSTUDI 342	MFA Project: Tutorial (1 unit per quarter)	3
Second-Year Seminar Requirements		
ARTSTUDI 342A	MFA: Object Seminar (4 units per quarter-Autumn and Winter)	8
ARTSTUDI 342B	MFA: Concept Seminar (4 units per quarter-Autumn and Winter)	8
ARTSTUDI 342C	M.F.A Seminar	2
ARTSTUDI 342	MFA Project: Tutorial (1 unit per quarter)	3

Elective Requirement

Three courses of academic electives (12 units) are required in the first year. These courses can be chosen from a large variety of disciplines in consultation with the Director of Graduate Studies (DGS). All electives must be approved by the DGS prior to enrollment.

Faculty Reviews

The student is expected to pass four formal academic reviews conducted by the faculty. The purpose of these reviews is to evaluate development and to assess the progress of the student.

- At the end of the first quarter, any student judged to be making inadequate progress is placed on probation and requires an additional review at the end of the second quarter.
- At the end of the third quarter, at which time recommendation to proceed to the second year is determined.
- At the start of the fifth quarter. If the review is not satisfactory the student is placed on probation and an additional review is scheduled at the end of the fifth quarter.
- At the time of the M.F.A. exhibition.

Thesis

The thesis consists of two portions: an exhibition at the end of the final quarter, and a written paper addressing the development of work completed over the two-year period at Stanford, to be completed during the fifth quarter. Both the written portion and participation in the M.F.A. exhibition at the end of the year are required.

Graduate Student Teaching

Regardless of their source of funding, students are required to assist with the department's teaching program for a minimum of eight hours per week over the period of six quarters; the particulars of this assignment are at the department's discretion.

Graduate students may propose to solo teach an undergraduate art class in their second year, subject to faculty and department approval.

The department reserves the right to make use of graduate paintings, sculptures, and photographs in exhibitions serving the interests of the graduate program.

Graduate students must remain in residence at Stanford for the duration (six academic quarters) of the program.

Master of Fine Arts in Documentary Film

University requirements for the M.F.A. are described in the "Graduate Degrees (http://www.stanford.edu/dept/registrar/bulletin/4901.htm)" section of this bulletin.

Admission

The program requires residency for two consecutive years. The admissions committee seeks applicants who have some work experience beyond their undergraduate years and can articulate why they want to learn documentary film production. The committee looks for evidence of the likelihood of success in a rigorous academic program that emphasizes creative work. The conceptual and technical skills required for documentary work are sufficiently different from fictional narrative to make the Stanford program inappropriate for students interested in narrative filmmaking. The program does not allow for deferred admission or a mid-year enrollment.

Portfolio

The department requires a film or video work for which the applicant has had creative control. The sample work must be well labeled and accompanied by a brief synopsis, running time of the clips, the circumstances of production, and the applicant's role. Total running time for the work sample should not exceed 15 minutes and may consist of more than one project. Work on which the applicant had only a production assistant role is not appropriate for submission. Student work, however, is appropriate for consideration. Applicants who have had only minimal film or video production experience should submit an example of their best creative work in any medium.

Portfolio Specifications—See the department's Graduate Admission (https://art.stanford.edu/academics/graduate-programs/mfa-documentary-film-and-video/mfa-documentary-film-and-video-admissions/) web site for portfolio requirements.

Fields of Study or Degree Options

Fields of study for the M.F.A. degree are offered in Documentary Film.

Degree Requirements

Residency

Completing two years (six quarters) of graduate work in residence at Stanford.

Units

A minimum of 62 units is required for the M.F.A. degree. In the production core, students are required to conceptualize and visualize their ideas in a series of writing and producing courses that focus on documentary story structure. These courses are taken in tandem with project-based production courses that provide training in the technical and conceptual aspects of cinematography, sound recording, and editing. Discussion of form and content is a signature component of the writing and production courses. The production core is complemented by a series of required film studies courses in documentary plus elective courses in the history, aesthetics, ideology, and theory of all genres of moving image media. All courses, except for FILMPROD core courses, must be taken for a letter grade.

M.F.A. Thesis Project

In the second year of the program, each student produces a 15-20 minute documentary that constitutes the thesis project. In FILMPROD 405 Producing Practicum: The Non-Fiction Film, students research and develop their project and write a proposal for submission. A project may not begin production until the written proposal has been approved. Most of the production and post-production occurs (in Winter and Spring quarters) in FILMPROD 406A and FILMPROD 406B.

Required Courses

1. Core Production courses; core courses must be taken in sequence:

		Units
FILMPROD 400	Film/Video Writing and Directing	3
FILMPROD 401	Nonfiction Film Production	3

FILMPROD 402	Digital Video	4
FILMPROD 403	Advanced Documentary Directing	3
FILMPROD 404	Advanced Video Production	3
FILMPROD 405	Producing Practicum: The Non-Fiction Film	4
FILMPROD 406A	Documentary M.F.A. Thesis Seminar I	5
FILMPROD 406B	Documentary M.F.A.Thesis Seminar II	5

2. Core Film Studies courses:

		Units
FILMSTUD 410A	Documentary Perspectives I: Politics of the Subject	4
FILMSTUD 410B	Documentary Perspectives II	4

3. Electives (to be chosen in consultation with the student's adviser):

	Units
Art History—one course	4
Studio Art —one course	4
Film Studies—three courses	12
Choice Elective—one course	4

Doctor of Philosophy in Art History

University requirements for the Ph.D. are described in the "Graduate Degrees (p. 65)" section of this bulletin. An expanded explanation of department requirements is given in the Art History Graduate Student Handbook.

Admission

In addition to University requirements, the department requires as part of the application a research paper of approximately 15-20 pages, preferably in or near the student's field of primary interest and demonstrating the student's capacity to pursue independent investigation of an art historical problem. All applicants must have been awarded a B.A., B.F.A., or B.S. from an accredited university.

Degree Requirements

To be eligible for the doctoral degree, the student must complete a minimum of three years of full-time graduate work in Art History, at least two years of which must be in residence at Stanford. Doctoral students must complete a minimum of 135 units. Of these 135, the student must complete at least 100 units of graduate course work at the 200 level or above, including all required courses, with a minimum of 62 units in Art History lecture courses and seminars. All courses must be taken for a letter grade. Students entering the program with an M.A. degree from another institution may petition to apply up to 45 units toward the Ph.D. degree.

1. **Collateral Studies**
   The student is required to take at least three courses in relevant fields of study outside the department (e.g., anthropology, classics, history, literature, philosophy, or feminist, gender, and sexuality studies), determined in consultation with department advisers. These courses are intended to strengthen the student's interdisciplinary study of art history.
2. **Distribution Requirements**
   There are seven areas of distribution: 1) Pre-Modern (Ancient & Medieval), 2) Early Modern (Renaissance/Baroque), 3) 18th Century & 19th Century, 4) Modern/Contemporary, 5) Film and Media Studies, 6) Non-Western: Asia, Africa & Oceana, 7) Architectural History.
   Students must take at least one course in each of five different areas outside of the student's area of concentration. Fulfilling the distribution requirement with graduate seminars is highly recommended. If students have entered the Stanford program with an M.A., they may transfer courses taken at the graduate level to fulfill up to two areas of the distribution requirement.
3. **Language Requirement**
   Students in Western Art must demonstrate reading knowledge of two foreign languages. Students in Asian Art are required to demonstrate competence in one Asian language (equivalent to three years of study) and at least one year of study in a second (which may be a classical version of Chinese or Japanese). One of the language requirements should be satisfied by the end of the first year while the second should be fulfilled by the end of the second year. Students entering with an M.A. should already have satisfied one language requirement prior to admission. Foreign language requirements for the Ph.D. are fulfilled by taking the reading examination given each quarter by the various language departments.
4. **Graduate Student Teaching**
   As a required part of their training, Ph.D. students must participate in the department's teaching program.
   a. Students are required to take ARTHIST 405A Graduate Pedagogy.
   b. Students are required to serve as a teaching assistant for a minimum of four quarters. Further opportunities for teaching may be available.
   c. At least one quarter assignment must be in a course from the following list:
      i.

		Units
ARTHIST 1A	Decolonizing the Western Canon: Introduction to Art and Architecture from Prehistory to Medieval	5
ARTHIST 1B	How to Look at Art and Why: An Introduction to the History of Western Painting	5
ARTHIST 2	Asian Arts and Cultures	5
ARTHIST 3	Introduction to World Architecture	5
FILMSTUD 4	Introduction to Film Study: French Cinema in Focus	5

5. **Admission to Candidacy**
   A graduate student's progress is formally reviewed by the faculty at the end of Spring Quarter of the second year in the context of admission to candidacy. The applicant for candidacy must assemble a candidacy file showing that he/she has completed department qualifying procedures and apply for candidacy at the beginning of Spring Quarter of the second year (those entering the program with an M.A. may apply for candidacy earlier in the second year). All students must be admitted to candidacy by the end of their second year. This is contingent upon the completion of all language requirements, distribution requirements, 45 units of course work (as further detailed in the department's Graduate Handbook), and the University's requirements for candidacy as described in the "Candidacy (http://exploredegrees.stanford.edu/graduatedegrees/#doctoraltext)" section of this bulletin. The graduate student does not become a formal candidate for the Ph.D. degree until he/she has satisfied these requirements and been accepted as a candidate by the department faculty. Failure to advance to candidacy may result in the dismissal of the student from the program.
6. **The Qualifying Exam**
   The qualifying exam, ideally to be taken in the Winter Quarter of the student's third year of Ph.D. study, consists of a written and an oral component. These parts of the exam are administered on separate days during the same week, with the written part taking place first. Both parts of the exam are graded on a system of High Pass/Pass/Fail. If a student fails one or both parts of the exam, the student is allowed to retake that portion or portions of the exam that s/he has failed. For a detailed account of the format of the written and oral exams, see the graduate student handbook for the Department of Art

and Art History. To prepare for the exam, students must enroll in up to two 5-unit exam preparation courses (ARTHIST 620), one per quarter.

		Units
ARTHIST 620	Qualifying Examination Preparation	5

7. **Dissertation Colloquium**
   a. Each student participates in a Colloquium with her/his dissertation committee in May or June of the third year. Faculty on leave or away from campus are expected to Skype in for the meeting. At least two weeks prior to that meeting, the student submits an approximately 5-page paper (an early draft of the prospectus) that the committee reads in preparation for the meeting.
   b. The purpose of the meeting is to give the student guidance and momentum going into a summer of dissertation-proposal writing—a summer in which the student may be participating in a dissertation-writing workshop offered by the department.
8. **Dissertation and Oral Defense Requirements**
   a. *Reading Committee:* After passing the Qualifying Exam, each student is responsible for the formation of a dissertation reading committee consisting of a principal adviser, who chairs the reading committee, and two other readers. Normally, both readers are drawn from the department faculty; however, it is possible for one of the readers to be drawn from outside the department. Additionally, a student may choose to invite a fourth reader, from within or outside the department. A faculty member from another university must be approved by the principal adviser in advance of an invitation to join the committee.
   b. *Dissertation Proposal:*
9. By the beginning of Autumn Quarter in the fourth year, students should have identified a dissertation subject and written a proposal of approximately 15 pages in consultation with their principal adviser.
10. To prepare the proposal, students may take one 5-unit independent study course:
11.

		Units
ARTHIST 640	Dissertation Proposal Preparation	5

12. The student must submit the dissertation proposal previously approved by the members of her/his dissertation reading committee for the consideration of the full Art History faculty at least two weeks prior to the October or November faculty meetings in the student's fourth year.
13. In the event that a proposal is not approved, the faculty establishes conditions for its resubmission and reconsideration at a later date.

c. *Dissertation:*

- There is a required review by the Ph.D. Committee (via Skype or in person) of the first chapter completed. The timing of this review should be determined in consultation with the principal adviser.
- The dissertation must be completed within five years of the date of the student's admission to candidacy for the Ph.D. degree. A candidate requesting more than five years must apply for an extension of candidacy.
- The final draft of the dissertation must be in all the readers' hands at least four weeks before the date of the oral defense.

d. Oral Defense Examinations: The oral defense consists primarily of a presentation and critical discussion of the dissertation but may range, at the committee's discretion, over a wider field. The student is expected to describe dissertation research methods and findings at some length and to answer all questions and criticisms put by members of the examining committee. At the end of the defense, the committee votes to pass or fail the student on the defense. In the case of failure on the defense, the examiners may establish criteria for reconsideration of a resubmitted dissertation. If the defense is passed, the committee may make recommendations for changes in the dissertation manuscript before it is submitted to the University as the final requirement for the granting of the Ph.D. degree in the History of Art. After these changes have been incorporated, the manuscript is given a final review and approval by the student's principal adviser.

Ph.D. Minor in Art History

For a minor in Art History, a candidate is required to complete 24 units of graduate-level Art History courses (300 level or above); all courses must be taken for a letter grade.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Art & Art History department counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Graduate Degree Requirements

Grading

The Art & Art History department has not changed its policy concerning 'CR' (credit) or 'S' (satisfactory) grades in degree requirements requiring a letter grade for academic year 2020-21.

Graduate Advising Expectations

The Department of Art and Art History is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking

responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Emeriti: (Professors) Kristina Branch, Wanda M. Corn, David Hannah, Joel Leivick, Suzanne Lewis, Michael Marrinan, Dwight C. Miller, Kristine Samuelson, Paul V. Turner, Bryan Wolf

Chair: Alexander Nemerov

Area Director for Art History: Richard Vinograd

Area Director for Film and Media Studies: Pavle Levi

Area Director for Art Practice: Enrique Chagoya

Director of Undergraduate Studies in Art History: Jody Maxmin

Director of Undergraduate Studies in Art Practice: Xiaoze Xie

Director of Undergraduate Studies in Film and Media Studies: Scott Bukatman

Director of Graduate Studies in Art History: Richard Meyer

Director of Graduate Studies in Art Practice: Paul DeMarinis

Director of Graduate Studies in Documentary Film: Jamie Meltzer

Director of Honors Program: Adam Tobin

Professors: Scott Bukatman (Film and Media Studies), Enrique Chagoya (Art Practice), Paul DeMarinis (Art Practice), Jan Krawitz (Documentary Film), Pavle Levi (Film and Media Studies), Richard Meyer (Art History), Alexander Nemerov (Art History), Bissera Pentcheva (Art History), Nancy J. Troy (Art History), Richard Vinograd (Art History), Gail Wight (Art Practice), Xiaoze Xie (Art Practice)

Associate Professors: Terry Berlier (Art Practice), Shane Denson (Film and Media Studies), Jean Ma (Film and Media Studies), Jody Maxmin (Art History), Jamie Meltzer (Documentary Film), Karla Oeler (Film and Media Studies), Camille Utterback (Art Practice)

Assistant Professors: Fabio Barry (Art History), Jonathan Calm (Art Practice), Usha Iyer (Film and Media Studies), Srdan Keca (Documentary Film), Marci Kwon (Art History), Emanuele Lugli (Art History), Rose Salseda (Art History)

Senior Lecturer: Adam Tobin (Film and Media Studies)

Lecturers: Jamil Hellu (Art Practice), Dionne Lee (Art Practice), Jenny Odell (Art Practice), Sarah Peck (Art Practice), Christine Seror (Art Practice), Anja Ulfeldt (Art Practice)

Overseas Studies Courses in Art History

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPBER 17	Split Images: A Century of Cinema	3-4
OSPBER 60	Cityscape as History: Architecture and Urban Design in Berlin	5
OSPFLOR 34	The Virgin Mother, Goddess of Beauty, Grand Duchess, and the Lady: Women in Florentine Art	4
OSPFLOR 48	Sharing Beauty in Florence: Collectors, Collections and the Shaping of the Western Museum Tradition	4
OSPFLOR 54	High Renaissance and Mannerism: the Great Italian Masters of the 15th and 16th Centuries	4
OSPFLOR 58	Space as History: Social Vision and Urban Change	4
OSPFLOR 111Y	From Giotto to Michelangelo: The Birth and Flowering of Renaissance Art in Florence	4
OSPFLOR 115Y	Building the Cathedral and the Town Hall: Constructing and Deconstructing Symbols of a Civilization	4
OSPKYOTO 58	A Journey into the Buddhist Visual Arts of Japan	4
OSPMADRD 45	Women in Art: Case Study in the Madrid Museums	4
OSPMADRD 80	Word, Image and Power	4
OSPOXFRD 93	Collecting the World	4-5
OSPPARIS 54	The Artist's World: The Workshop, Patronage and Public in 19th and 20th Century France	4
OSPPARIS 72	The Ceilings of Paris	4
OSPPARIS 92	Building Paris: Its History, Architecture, and Urban Design	4

Overseas Studies Courses in Art Practice

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPFLOR 41	The Florentine Sketchbook: A Visual Arts Practicum	4
OSPFLOR 55	Academy of Fine Arts: Studio Art	1-5
OSPFLOR 71	A Studio with a View: Drawing, Painting and Informing your Aesthetic in Florence	4
OSPMADRD 46	Drawing with Four Spanish Masters: Goya, Velazquez, Picasso and Dali	4
OSPPARIS 42	EAP. Drawing with Live Models	2

OSPPARIS 43	EAP. Painting and Use of Color	2
OSPPARIS 44	EAP. Analytical Drawing and Graphic Art	2

Overseas Studies Courses in Film and Media Studies

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPBER 17	Split Images: A Century of Cinema	3-4
OSPFLOR 11	Film, Food and the Italian Identity	4
OSPFLOR 49	On-Screen Battles: Filmic Portrayals of Fascism and World War II	5
OSPFLOR 67	The Celluloid Gaze: Gender, Identity and Sexuality in Cinema	4
OSPHONGK 26	East Asian Film Genres in a Globalizing World	4

Art History Courses

ARTHIST 1A. Decolonizing the Western Canon: Introduction to Art and Architecture from Prehistory to Medieval. 5 Units.
Traditional Art History viewed the Renaissance as its pinnacle; it privileged linear perspective and lifelikeness and measured other traditions against this standard, neglecting art from the Near East, Egypt, the Middle Ages, or Islam. This course will disrupt this colonizing vision by conceptualizing artworks as "methexis" (participation, liveliness, or enactment) as opposed to mimesis (imitation or lifelikeness). We will study the development of the Western canon and its systematic eradication of difference through a renewed understanding of what an artwork is.
Same as: CLASSICS 56

ARTHIST 1B. How to Look at Art and Why: An Introduction to the History of Western Painting. 5 Units.
This course explores the relation of art to life¿how and why works of art, even from hundreds of years ago, matter in a person¿s life. It trains students to find the words to share their thoughts about art with their peers, friends, and family. Some fundamental questions the course considers: How do we get beyond the idea that the study and making of art are elite, ¿privileged¿ activities apart from the real world? How do we develop a sense of discernment¿of deciding for ourselves which artists matter, and which don¿t¿without being a snob? How can works of art teach us to feel the wonder of being alive and our deep debt to the past, to the dead? Focusing on painters such as Michelangelo, Rembrandt, Goya, Manet, Morisot, and Charlotte Salomon, this course will pursue these questions with the aim of challenging and encouraging students to develop their own ways of thinking and feeling¿generously and ethically¿about the past and the present. Sections will focus on original works of art at the Cantor Arts Center. No prerequisites required.

ARTHIST 2. Asian Arts and Cultures. 5 Units.
An exploration of the visual arts of East and South Asia from ancient to modern times, in their social, religious, literary and political contexts. Analysis of major monuments of painting, sculpture and architecture will be organized around themes that include ritual and funerary arts, Buddhist art and architecture across Asia, landscape and narrative painting, culture and authority in court arts, and urban arts in the early modern world.
Same as: JAPAN 60

ARTHIST 3. Introduction to World Architecture. 5 Units.
This course offers an expansive and wide-ranging introduction to architecture and urban design from the earliest human constructions to the mid-20th century. The examples range from the Americas to Europe, the Middle East, South and East Asia. The diverse technologies and materialities of building are addressed throughout and an overriding concern is to understand architecture as a sensible manifestation of particular cultures, whether societies or individuals. To the same ends, student writing assignments will involve the analysis of local space, whether a room or a building, and then the built environment at large.
Same as: CLASSICS 54

ARTHIST 36. Dangerous Ideas. 1 Unit.
Ideas matter. Concepts such as revolution, tradition, and hell have inspired social movements, shaped political systems, and dramatically influenced the lives of individuals. Others, like immigration, universal basic income, and youth play an important role in contemporary debates in the United States. All of these ideas are contested, and they have a real power to change lives, for better and for worse. In this one-unit class we will examine these "dangerous" ideas. Each week, a faculty member from a different department in the humanities and arts will explore a concept that has shaped human experience across time and space. Some weeks will have short reading assignments, but you are not required to purchase any materials.
Same as: COMPLIT 36A, EALC 36, ENGLISH 71, ETHICSOC 36X, FRENCH 36, HISTORY 3D, MUSIC 36H, PHIL 36, POLISCI 70, RELIGST 36X, SLAVIC 36

ARTHIST 57Q. 10 American Photographs. 3 Units.
Preference to sophomores. "The humor, the sadness, the EVERYTHING-ness and American-ness of these pictures!" wrote Jack Kerouac of photographer Robert Frank's iconic collection, The Americans. This seminar takes Kerouac's enthusiasm and applies it to ten American photographs, a new one each week. Examples span the medium's history and were taken as art, science, commerce, journalism, or personal mementos. Close study of the photo of the week will address how it looks and why; its history, from initial responses to later reception; and its relationship to the larger American visual and cultural context. Also under discussion: What story does this set of pictures tell about Americanness? What might another set of photos convey?.
Same as: AMSTUD 57Q

ARTHIST 80N. The Portrait: Identities in Question. 3 Units.
Most of us hold libraries of hundreds or thousands of ¿portraits¿ ¿ more or less instantly available posed images of ourselves and others. For most of human history, before the development of portable and digital cameras, portraiture was a much rarer and more deliberate social act and cultural practice, involving special materials and techniques, encounters with expert portraitists or photographers, and established settings for display. What almost all portraits, of whatever time or cultural place, have in common are presentations of social identities, roles, or persona, as well as a potential fascination and power that may be based in our neurological capacities for facial recognition and ¿mind-reading¿ through facial expressions. n This introductory seminar will explore many aspects of this basically simple category of thing ¿ images of particular persons. Our point of departure will be from the history of art, focusing on portrait sculptures, paintings, and photographs from many eras and cultures, some of which are among the most studied and discussed of all artistic monuments. We will consider techniques and approaches of portrait making, including the conventions that underlie seemingly realistic portraits, posing, the portrait situation, and portrait genres. Our primary focus will be on the multiple purposes of portraiture, from commemoration, political glorification, and self-fashioning to making claims of social status, cultural role, and personal identity. We will also discuss the changing status of portraiture under modern states of social dislocation, technological change, and psychoanalytic interrogation, and in postmodern conditions of multi-mediated realities and distributed subjectivities. Along the way, we will see that our understandings of portraiture benefits from the approaches and insights of many fields ¿ political and social history, anthropology, neuroscience, and literary studies among others.

ARTHIST 100N. The Artist in Ancient Greek Society. 3 Units.
Given the importance of art to all aspects of their lives, the Greeks had reason to respect their artists. Yet potters, painters and even sculptors possessed little social standing. Why did the Greeks value the work of craftsmen but not the men themselves? Why did Herodotus dismiss those who worked with their hands as "mechanics?" What prompted Homer to claim that "there is no greater glory for a man than what he achieves with his own hands," provided that he was throwing a discus and not a vase on a wheel? Painted pottery was essential to the religious and secular lives of the Greeks. Libations to the gods and to the dead required vessels from which to pour them. Economic prosperity depended on the export of wine and oil in durable clay containers. At home, depictions of gods and heroes on vases reinforced Greek values and helped parents to educate their children. Vases depicting Dionysian excess were produced for elite symposia, from which those who potted and painted them were excluded. Sculptors were less lowly but still regarded as "mechanics," with soft bodies and soft minds (Xenophon), "indifferent to higher things" (Plutarch). The seminar addresses such issues as we work to acknowledge our own privilege and biases. Students will read and discuss texts, write response papers and present slide lectures on aspects of the artist's profession.
Same as: CLASSICS 18N

ARTHIST 101. Introduction to Greek Art I: The Archaic Period. 4 Units.
The class considers the development of Greek art from 1000-480 and poses the question, how Greek was Greek art? In the beginning, as Greece emerges from 200 years of Dark Ages, their art is cautious, conservative and more abstract than life-like, closer to Calder than Michelangelo. While Homer describes the rippling muscles (and egos) of Bronze Age heroes, his fellow painters and sculptors prefer abstraction. This changes in the 7th century, when travel to and trade with the Near East transform Greek culture. What had been an insular society becomes cosmopolitan, enriched by the sophisticated artistic traditions of lands beyond the Aegean "frog pond." Imported Near Eastern bronzes and ivories awaken Greek artists to a wider range of subjects, techniques and ambitions. Later in the century, Greeks in Egypt learn to quarry and carve hard stone from Egyptian masters. Throughout the 6th century, Greek artists absorb what they had borrowed, compete with one another, defy their teachers, test the tolerance of the gods and eventually produce works of art that speak with a Greek accent. By the end of the archaic period, images of gods and mortals bear little trace of alien influence or imprint, yet without the contributions of Egypt and the Near East, Greek art as we know it would have been unthinkable.
Same as: CLASSICS 161

ARTHIST 102. Introduction to Greek Art II: The Classical Period. 4 Units.
The class begins with the art, architecture and political ideals of Periclean Athens, from the emergence of the city as the political and cultural center of Greece in 450 to its defeat in the Peloponnesian War in 404. It then considers how the Athenians (shell-shocked from war and three outbreaks of plague) and the rest of 4th century Greece rebuild their lives and the monuments that define them. Earlier 5th century traditions endure, with subtle changes, in the work of sculptors such as Kephisodotos. Less subtle are the outlook and output of his son Praxiteles. In collaboration with Phryne, his muse and mistress, Praxiteles challenged the canons and constraints of the past with the first female nude in the history of Greek sculpture. His gender-bending gods and men were equally audacious, their shiny surfaces reflecting Plato's discussion of Eros and androgyny. Scopas was also a man of his time, but pursued different interests. Drawn to the interior lives of men and woman, his tormented Trojan War heroes and victims are still scarred by memories of the Peloponnesian War, and a world away from the serene faces of the Parthenon. His Maenad, who has left this world for another, belongs to the same years as Euripides' Bacchae and, at the same time, anticipates the torsion and turbulence of Bernini and the Italian Baroque. The history and visual culture of these years remind us that we are not alone, that the Greeks grappled as we do with the inevitability and consequences of war, disease and inner daemons.
Same as: CLASSICS 162

ARTHIST 103S. Introduction to American Art. 3 Units.
How do images tell stories about the people who made them and the places they depict? How can we encounter the histories of America in works of art and why should we care about encountering them? This course will explore such questions by surveying some of the most compelling paintings, sculptures, films, photographs, prints, and decorative arts produced in the United States from the Colonial period to our present moment. In class lectures and discussions, our goal will be to articulate how pictures from the past shape and construct our sense of American history. Works by important artists such as Jackson Pollock, Andy Warhol, Jean-Michel Basquiat, Kara Walker, John Singer Sargent, Winslow Homer, Georgia O'Keeffe, and Jacob Lawrence, among others, will help students to understand and express how Images have power, and how art continues to matter today.
Same as: AMSTUD 103S

ARTHIST 104A. The Secret Lives of Statues from Ancient Egypt to Confederate Monuments. 3-5 Units.
Statues, human-shaped sculptures, walk a fine line between being inert matter and living entities. Throughout human existence, humans have recognized that statues are not alive even as they understand that statues are capable of becoming potent allies or enemies. They are capable of engendering profound emotional responses, embodying potent ideas, and co-opting the past in service of the present. However, the same materiality that endows statues with these exceptional capacities also makes them vulnerable to humans intent on acquiring otherwise-expensive materials cheaply, commiting sectarian violence by proxy, and obliterating the material manifestations of others¿ memories.nnIn this course, we will study sixteen (groups of) statues thematically. To do this, we will draw on a wide variety of disciplines, including archaeology, art history, history, law, media studies, museum studies, and religious studies, to articulate how people in diverse places and times have revered and reviled statues precisely because they are uncanny objects that seem to have an all-too-human kind of agency. In so doing, we will gain appreciation for and insight into how and why the statues in our own lives are significant.
Same as: ARCHLGY 96, CLASSICS 96

ARTHIST 105B. Medieval Journeys: Introduction through the Art and Architecture. 5 Units.
The course explores the experience and imagination of medieval journeys through an interdisciplinary, cross-cultural, and skills-based approaches. As a foundations class, this survey of medieval culture engages in particular the art and architecture of the period. The Middle Ages is presented as a network of global economies, fueled by a desire for natural resources, access to luxury goods and holy sites. We will study a large geographical area encompassing the British Isles, Europe, the Mediterranean, Central Asia, India, and East Africa and trace the connectivity of these lands in economic, political, religious, and artistic terms from the fourth to the fourteenth century C.E. The students will have two lectures and one discussion session per week. Depending on the size of the class, it is possible that a graduate student TA will run the discussion session. Our goal is to give a skills-oriented approach to the Middle Ages and to engage students in creative projects that will satisfy either the Ways-Creative Expression requirement or Ways-Engaging Difference. NOTE: for AY 2018-19 HISTORY 115D Europe in the Middle Ages, 300-1500 counts for DLCL 123.
Same as: ARTHIST 305B, DLCL 123

ARTHIST 106. Byzantine Art and Architecture, 300-1453 C.E.. 5 Units.
This course explores the art and architecture of the Eastern Mediterranean: Constantinople, Jerusalem, Alexandria, Antioch, Damascus, Thessaloniki, and Palermo, 4th-15th centuries. Applying an innovative approach, we will probe questions of phenomenology and aesthetics, focusing our discussion on the performance and appearance of spaces and objects in the changing diurnal light, in the glitter of mosaics and in the mirror reflection and translucency of marble.
Same as: ARTHIST 306, CLASSICS 171

ARTHIST 108. Virginity and Power: Mary in the Middle Ages. 4 Units.
The most influential female figure in Christianity whose state cult was connected with the idea of empire. The production and control of images and relics of the Virgin and the development of urban processions and court ceremonies though which political power was legitimized in papal Rome, Byzantium, Carolingian and Ottonian Germany, Tuscany, Gothic France, and Russia.
Same as: ARTHIST 308

ARTHIST 110. French Painting from Watteau to Monet. 3-5 Units.
This course offers a survey of painting in France from 1700 to around 1900. It introduces major artists, artworks, and the concepts used by contemporary observers and later art historians to make sense of this extraordinarily rich period. Overarching themes discussed in the class will include the dueling legacies of coloristic virtuosity and classical formalism, new ways of representing visual perception, the opposing artistic effects of absorption and theatricality, the rise and fall of official arts institutions, and the participation of artists and artworks in political upheaval and social change. The course ends with an interrogation of the concept of modernity and its emergence out of dialogue and conflict with artists of the past. Students will learn and practice formal analysis of paintings, as well as interpretations stressing historical context.
Same as: ARTHIST 310, FRENCH 110, FRENCH 310

ARTHIST 111. Introduction to Italian Renaissance, 1420-1580. 4 Units.
New techniques of pictorial illusionism and the influence of the humanist revival of antiquity in the reformulation of the pictorial arts in 15th-century Italy. How different Italian regions developed characteristic artistic cultures through mutual interaction and competition.
Same as: ARTHIST 311

ARTHIST 112. EARLY EUR ART. 0-60 Units.
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ARTHIST 114. Mystical Naturalism: Van Eyck, Dürer, and the Northern Renaissance. 4 Units.
A survey of the major innovations in Northern European painting ca. 1400-1600, in light of the social status of the artist between city and court. In the early fifteenth century painters began to render an idealized world down to its smallest details in ways that engaged new devotional practices. Later Hieronymus Bosch would identify the painter¿s imagination with the bizarre and grotesque. In response to Renaissance humanism, some painters introduced classical mythology and allegorical subjects in their works, and many traveled south to absorb Italianate pictorial styles. We will be visiting art museums in San Francisco and Stanford. May be repeat for credit.
Same as: ARTHIST 314

ARTHIST 114A. The Dome: From the Pantheon to the Millennium. 4-5 Units.
This course traces the history of the dome over two millennia, from temples to the gods to Temples of the State, and from cosmic archetype to architectural fetish. The narrative interweaves the themes of the dome as image of the Cosmos, religious icon, national landmark, and political monument. It examines the dome not only as a venue for structural innovation, but also metaphysical geometry and transcendent illusionism.nIndividual case studies will familiarize you with major architects from Hadrian to Richard Rogers and historical milestones from the Dome of the Rock to the Capitol in Washington DC. May be repeat for credit.
Same as: ARTHIST 314A, CLASSICS 121, CLASSICS 221

ARTHIST 115. The Italian Renaissance, or the Art of Success. 3-5 Units.
How come that, even if you have never set foot in Italy, you have heard of Leonardo, Michelangelo, and Raphael? What made them so incredibly famous, back then as well as today? This course examines the shooting of those, and other, artists to fame. It provides in-depth analyses of their innovative drawing practices and the making of masterpieces, taking you through a virtual journey across some of the greatest European and American collections. At the same time, this course also offers a study of the mechanics of success, how opportunities are created and reputations managed, and what role art plays in the construction of class and in today's national politics.".
Same as: ARTHIST 315

ARTHIST 116N. Making Sense of the World: Art, Medicine, and Science in Venice. 3 Units.
In 1500 Venice was the place you wanted to be. It wasn't just the capital of the world: it was also its scientific center. This course explores the conversation between the arts and the sciences in Renaissance Venice, and, thanks to remote teaching, it will do so from Venice! Students will discover the oldest anatomical theatre and many of Venice's arresting paintings to reflect on the blurred distinction between art and science, questioning if such a divide makes sense today.

ARTHIST 117. Picturing the Papacy, 1300-1850. 4 Units.
Popes deployed art and architecture to glorify their dual spiritual and temporal authority, being both Christ's vicars on earth and rulers of state. After the return of the papacy from Avignon, Rome underwent numerous campaigns of renovation that staged a continuity between the pontiffs and the ancient Roman emperors. Patronage of art and architecture became important tools in the fight against Protestantism. Artists include Botticelli, Michelangelo, Caravaggio, and Bernini.
Same as: ARTHIST 317

ARTHIST 118. Titian, Veronese, Tintoretto. 4 Units.
The course addresses the ways in which Venetian painters of the sixteenth century redefined paradigms of color, design, and invention. Themes to be examined include civic piety, new kinds of mythological painting, the intersection between naturalism and eroticism, and the relationship between art and rituals of church and statecraft.
Same as: ARTHIST 318

ARTHIST 118A. Space, Public Discourse and Revolutionary Practices. 3-4 Units.
This course examines the mediums of public art that have been voices of social change, protestnand expressions of community desire. It will offer a unique glimpse into Iran¿sncontemporary art and visual culture through the investigation of public art practices such asngraffiti and street art, as well as older traditions of Naghali and Iranian Coffeehouse Painting.nnBeginning Iranian case studies will be expanded in comparison with global examples that spannprojects that include Insite (San Diego/Tijuana), Project Row Houses (Houston, TX) the DMZnProject (Korea), Munster Skulpture Projects (Germany), among others. Students will alsonexamine the infrastructural conditions of public art, such as civic, public, and private funding,nrelationships with local communities, and the life of these projects as they move in and out ofnthe artworld. This encompassing view anchors a legacy of Iranian cultural contributions in largerntrajectories of art history, contemporary art, and community arts practice. Guest artists,ncurators, and researchers with site visits included. Students will propose either new public artnproposals, exhibitions, or research to provoke their own ideas while engaging the ever changingnstate of public discourse in these case studies.
Same as: CSRE 95I, GLOBAL 145

ARTHIST 118N. Pagan Mythology and the Making of Modern Europe. 3 Units.
Once a religion looses its claim to truth it enters the sphere of the mythic. From the fifteenth through the seventeenth century, European artists turned to the legends and poetry of Greco-Roman paganism for pictorial subjects. What roles could Venus and Mars, Mercury and Minerva play in a Christian culture? Artists and humanists had different answers to this question. As relics from the past the stories of the ancient gods could serve as the prehistory of worldly and religious institutions and hence legitimize them. Or pagan myth, because of its alien nature, could convey fantasies of the body, which could not be articulated otherwise. Among the artists who explored creatively the ancient legends were Donatello, Botticelli, Michelangelo, Raphael, Velazquez, Rubens, Rembrandt, Bernini, and Poussin. Next to ancient authors such as Homer and Ovid we shall be reading excerpts from the humanists Dante, Boccaccio, Petrarch, and Vasari as we explore word/image relationships. The seminar includes excursions to the Cantor Arts Center at Stanford University to look at Old Master prints from the museum¿s storage, not normally on display, and we shall study paintings and sculptures with mythological subjects in the Legion of Honor, the Fine Arts Museum of San Francisco.

ARTHIST 119. Love at First Sight: Visual Desire, Attraction, and the Pleasures of Art. 3-5 Units.
Why do dating sites rely on photographs? Why do we believe that love is above all a visual force? How is pleasure, even erotic pleasure, achieved through looking? While the psychology of impressions offers some answers, this course uncovers the ways poets, songwriters, and especially artists have explored myths and promoted ideas about the coupling of love and seeing. Week by week, we will be reflecting on love as political critique, social disruption, and magical force. And we will do so by examining some of the most iconic works of art, from Dante's writings on lovesickness to Caravaggio's Narcissus, studying the ways that objects have shifted from keepsakes to targets of our cares. While exploring the visual roots and evolutions of what has become one of life's fundamental drives, this course offers a passionate survey of European art from Giotto's kiss to Fragonard's swing that elicits stimulating questions about the sensorial nature of desire and the human struggle to control emotions.
Same as: ARTHIST 319, FRENCH 149, FRENCH 349, ITALIAN 149, ITALIAN 349

ARTHIST 120. Superhero Theory. 3-5 Units.
With their fantastic powers, mutable bodies, multiple identities, complicated histories, and visual dynamism, the American superhero has been a rich vehicle for fantasies (and anxieties) for 80+ years across multiple media: comics, film, animation, TV, games, toys, apparel. This course centers upon the body of the superhero as it incarnates allegories of race, queerness, hybridity, sexuality, gendered stereotypes/fluidity, politics, vigilantism, masculinity, and monstrosity. They also embody a technological history that encompasses industrial, atomic, electronic, bio-genetic, and digital.
Same as: AMSTUD 120B, ARTHIST 320, FILMSTUD 120, FILMSTUD 320

ARTHIST 123N. Thinking about Visual Attention : from Balzac to Facebook. 3 Units.
Writing in 1829, the French author Honoré de Balzac celebrated the acute visual attention of the flâneur, a character he closely associates with modern life: "To flâne is to take pleasure, to collect flashes of wit, to admire sublime scenes of unhappiness, of love, of joy as well as graceful or grotesque portraits, to thrust one's attention into the depths of a thousand lives." In July 2012 the Huffington Report pointed to a fact of modern life: "On city streets, in suburban parking lots and in shopping centers, there is usually someone strolling while talking on a phone, texting with his head down, listening to music, or playing a video game. The problem isn't as widely discussed as distracted driving, but the danger is real." These two very different ways of circulating in urban space suggest that a major shift in how we humans relate to our environment has occurred over the course of nearly two centuries--especially in the densely populated spaces of modern cities. Where the great spectacle of urban life was a marvel of the nineteenth century, today's inhabitants want mainly to block it out by insulating themselves in a cocoon of favorite music or personal conversation, whether by voice or text, that they risk stepping into traffic, colliding with lightposts, or bumping into others similarly self-absorbed. This seminar proposes to think about the hows and whys of that important shift from the unique perspective of art history, a field of study especially attuned to the limits and exigencies of visual acuity. We will explore the topic across a range of media, from daguerreotypes to stereoscopes, from paintings to films, from television screen to the hand-held displays of our smartphones.

ARTHIST 124. The Age of Naturalism, Painting in Europe1830-1874. 4 Units.
Survey of European painting from the heyday of Romanticism to the first Impressionist exhibition. Lectures and readings focus on the tensions between traditional forms and ambitions of history painting and the challenge of "modern" subjects drawn from contemporary life. Attention to the impact of painting in the open-air, and the effect of new imaging technologies- notably lithography and photography - to provide "popular" alternatives to the hand-wrought character and elitist appeal of "high art" cultural forms.
Same as: ARTHIST 324

ARTHIST 127A. African Art and Politics, c. 1900 - Present. 4 Units.
This course explores the relationship between art and politics in twentieth century Africa. Artistic production and consumption is considered in the context of various major political shifts, from the experience of colonialism to the struggle against Apartheid. Each week we will look closely at different works of art and examine how artists and designers responded to such challenges as independence, modernization and globalization. We will look at painting, sculpture, religious art, public and performance art, photography and film. How western perceptions and understanding of African art have shifted, and how museums have framed African art throughout the twentieth century will remain important points of discussion throughout the course.
Same as: AFRICAST 127

ARTHIST 132. American Art and Culture, 1528-1910. 4 Units.
The visual arts and literature of the U.S. from the beginnings of European exploration to the Civil War. Focus is on questions of power and its relation to culture from early Spanish exploration to the rise of the middle classes. Cabeza de Vaca, Benjamin Franklin, John Singleton Copley, Phillis Wheatley, Charles Willson Peale, Emerson, Hudson River School, American Genre painters, Melville, Hawthorne and others.
Same as: AMSTUD 132, ARTHIST 332

ARTHIST 135. William Blake: A Literary and Visual Exploration of the Illuminated Poetry. 5 Units.
An introduction to the illuminated world of William Blake¿poet, prophet, revolutionary, and visionary artist. The course will address Blake's visual iconography, belief system and ideology, unique mythology, and method of relief etching that allowed him to make every illuminated book a unique work of art, among them, The Songs of Innocence and Experience; The Marriage of Heaven and Hell; The Book of Thel; Visions of the Daughters of Albion; The Book of Urizen; America a Prophecy; and Europe a Prophecy.

ARTHIST 140N. Couture Culture: Fashion, Art & Modernism from Manet to Mondrian. 3-4 Units.
This course examines the ways in which fashion has figured in the construction of modern experience and how it has been represented in the visual arts, primarily in Europe and the United States between about 1850 and 1965. Alongside the emergence of haute couture, the rise of the ready-to-wear industry during this period coincided with the consolidation of the department store; these institutions contributed to the development of a culture of consumption and display that continues to shape our lives today. Manet, Degas and other Impressionist painters were sensitive the nuances of fashion, which they, like Baudelaire, saw as an aspect of modernity indispensable to their art. Clothing was no less significant in the context of the Russian revolution, when Alexander Rodchenko, for example, outfitted himself in a home-made version of workers' overalls in order to reinforce his identification with factory laborers and thereby to suggest the breaking down of class distinctions. The course also explores the significance of fashion for an abstract painter like Piet Mondrian, but, more to the point, we look at how Mondrian's work was appropriated to the world of fashion by Yves Saint-Laurent, who assured that Mondrian's signature geometric style would become instantly recognizable and eventually function as a hugely popular brand. The circuits through which we can trace the historical trajectory of fashion will illuminate its importance for understanding many facets of modern culture.

ARTHIST 141. Modern and Contemporary World Architecture: A Cultural History in Twenty Five Buildings. 4 Units.
This survey course is a guided tour of twenty five case studies from the last hundred years; interrogates how architecture responds to the aesthetic, technological, political, and cultural issues of the societies they belong to, all over the world.
Same as: CEE 32X

ARTHIST 142. Architecture Since 1900. 4 Units.
Art 142 is an introduction to the history of architecture since 1900 and how it has shaped and been shaped by its cultural contexts. The class also investigates the essential relationship between built form and theory during this period.
Same as: CEE 32G

ARTHIST 142A. The Architecture of Thought: Artists and Thinkers Design for Themselves. 3-5 Units.
This course investigates houses, hideaways, and studios that artists and thinkers have designed for themselves with varying degrees of self-consciousness, from subconscious images of the self to knowing stages for the contemplative life. Case studies range from antiquity to the present, from the studio-house of Peter Paul Rubens to that of Kurt Schwitters; from the house-museum of Sir John Soane to the Vittoriale of Gabriele D'Annunzio; from the philosophical dwelling of the Emperor Hadrian to that of Ludwig Wittgenstein.
Same as: ARTHIST 342A

ARTHIST 143A. American Architecture. 4 Units.
A historically based understanding of what defines American architecture. What makes American architecture American, beginning with indigenous structures of pre-Columbian America. Materials, structure, and form in the changing American context. How these ideas are being transformed in today's globalized world.
Same as: AMSTUD 143A, ARTHIST 343A, CEE 32R

ARTHIST 144. On Looking: Art, Obscenity, and the Ethics of Spectatorship. 4 Units.
This course considers the ethics of looking at art, photography, and other forms of visual representation that have been declared obscene or indecent, whether by religious authorities, government officials, community representatives, or legal opinions. What are the ethical stakes of looking at such materials? And what are the ethical implications of looking away and insisting that others do so as well? nnThe creation of vanguard art since the late 19th-century has often been linked to the concept of transgression. Is it, we will ask, the modern artist's responsibility to challenge accepted standards of representation and the protocols of looking? If so, how are we, as viewers and students of art, to distinguish between legitimate art and unfit obscenity?.

ARTHIST 144B. Modern Design from the Eiffel Tower to Yves Saint Laurent. 4 Units.
Iconic episodes in the history of modern European and American design, including production, consumption, circulation and display -- from iron architecture of the department store and the universal exhibition to the branding practices of Andy Warhol and Yves Saint Laurent.
Same as: ARTHIST 344B

ARTHIST 145. Culture Wars: Art and Social Conflict in the USA, 1890-1950. 4 Units.
This course examines social conflicts and political controversies in American culture through the lens of visual art and photography. We consider how visual images both reflect and participate in the social and political life of the nation and how the terms of citizenship have been represented¿and, at times, contested¿by artists throughout the first half of the 20th century. The class explores the relation between American art and the body politic by focusing on issues of poverty, war, censorship, consumerism, class identity, and racial division.
Same as: AMSTUD 145M, ARTHIST 345, FEMGEN 145

ARTHIST 146. American Dream, American Nightmare: A History of the United States in Art and Literature. 4 Units.
Studying the American past, a person could despair or dream or both. In this course, we will move chronologically from the Revolutionary War to the present to consider artists and writers--some famous, some obscure--who've portrayed hope, who've portrayed anger and grief, who've taken it upon themselves to make contact with life as they've experienced and imagined it. Throughout, we will treat art and literature not as an illustration of facts, and not as a solution to social problems, but as a touchstone to who Americans have been and who they might become.

ARTHIST 146X. What is Contemporary Art, and Where Did it Come From?. 3 Units.
"Contemporary art challenges us to question our assumptions," wrote philanthropist and collector Eli Broad. "It asks us to think beyond the limits of conventional wisdom." This course aims to introduce both the difficulties and the great rewards presented by Contemporary Art (1970 to the present). Examining the historical foundations of Contemporary Art in the 18th, 19th, and 20th centuries, we will learn about the century's most game-changing art practices and movements such as cubism, abstract expressionism, conceptual art, and performance art. Working from the assumption that art in its moment of production was always contemporary, the course will organize content through various thematic lenses such as "portraiture and vision", "the photographic", and "the hand and the mind." Lectures occur both as traditional classroom sessions as well as on-site sessions at Stanford University's public sculpture collection, the Cantor Art Center, and the Anderson Collection, emphasizing close and direct engagement with artworks. Drawing on these experiences and on close readings of key texts, assignments will range from short essays to online curation to gallery talks. Students will develop and enhance their critical visual literacy and ability to grapple with the unknown through skills of creative synthesis, identifying patterns across time and space, and exercising conceptual and visual analysis. Broadly, the goals of the class are to understand the present through the past, to demystify the often confusing nature of contemporary art, and to question why art matters and how.

ARTHIST 147. Modernism and Modernity. 4 Units.
This course focuses on European and American art and visual culture between the mid-nineteenth and the mid-twentieth centuries. We will begin and end in Paris, exploring visual expressions of modernism as they were shaped by industrialization and urban renewal, the fantasies and realities of Orientalism and colonial exploitation, changing gender expectations, racial difference, and world war. Encompassing a wide range of media, the course explores modernism as a compelling dream of utopian possibilities challenged by the conditions of social life in the context of diversity and difference.
Same as: ARTHIST 347

ARTHIST 148. Art and the First Amendment: Testing the Limits of Expression. 5 Units.
This course will take place in Washington D.C.
Same as: SIW 148

ARTHIST 149S. Art After the A-bomb: American and European Art, 1945-1989. 4 Units.
This course surveys the major movements, figures, and themes in American and European art during the Cold War, from the drop of the A-bomb in 1945 to the fall of the Berlin Wall in 1989. It examines the formative relationship between art and politics in this explosive period. We will consider the changed role of the avant-garde after the catastrophes of World War II; the use and abuse of modern art as propaganda; spectacular postwar affluence and the rise of the culture industry; multimedia, intermedia, and the invention of new communications technologies; the burgeoning military-industrial complex and the Vietnam War; the revolutionary efforts of second-wave feminism, sexual liberation, and the counterculture; and the charged debates of the ¿culture wars¿ and the crisis of representation in the 1980s. What was art¿s social, cultural, and political function in the recent past¿and how is this role instructive in the present? Topics include Abstract Expressionism, Color Field Painting, Neo-Dada, Pop, Op, Fluxus, Happenings, Minimalism, Conceptualism, Performance, Institutional Critique, Process Art, Systems Art, Earth Art, Video Art, and theories of modernism and postmodernism. We will visit the Cantor Arts Center to view original works.

ARTHIST 151. Migration and Diaspora in American Art, 1800-Present. 4 Units.
This lecture course explores American art through the lens of immigration, exile, and diaspora. We will examine a wide range of work by immigrant artists and craftsmen, paying special attention to issues of race and ethnicity, assimilation, displacement, and political turmoil. Artists considered include Emmanuel Leutze, Thomas Cole, Joseph Stella, Chiura Obata, Willem de Kooning, Mona Hatoum, and Julie Mehretu, among many others. How do works of art reflect and help shape cultural and individual imaginaries of home and belonging?.
Same as: AMSTUD 151, ARTHIST 351, ASNAMST 151D, CSRE 151D

ARTHIST 152. The American West. 5 Units.
The American West is characterized by frontier mythology, vast distances, marked aridity, and unique political and economic characteristics. This course integrates several disciplinary perspectives into a comprehensive examination of Western North America: its history, physical geography, climate, literature, art, film, institutions, politics, demography, economy, and continuing policy challenges. Students examine themes fundamental to understanding the region: time, space, water, peoples, and boom and bust cycles.
Same as: AMSTUD 124A, ENGLISH 124, HISTORY 151, POLISCI 124A

ARTHIST 153. Warhol's World. 5 Units.
Andy Warhol's art has never before been more widely exhibited, published, or licensed for commercial use, product design, and publication than it is today. For all Warhol's promiscuous visibility and global cachet at the current moment, there is much we have yet to learn about his work and the conditions of its making. This course considers the wide world of Warhol's art and life, including his commercial work of the 1950s, Pop art and films of the 1960s, and celebrity portraiture of the 1970s and 80s. Of particular interest throughout will be Warhol's photography as it reflects his interest in wealth and celebrity on the one hand and on the everyday life of everyday people on the other. The course will include multiple visits to Contact Warhol: Photography without End, an exhibition co-curated by Prof. Meyer on view throughout the quarter at the Cantor Arts Center.
Same as: AMSTUD 153, ARTHIST 353, FEMGEN 153, TAPS 153W, TAPS 353W

ARTHIST 154. The American Civil War: A Visual History. 4 Units.
A painting of men charging across a field, a photograph of dead bodies in a ditch, a fragment of metal, a sliver of bone, and a brass button: how do we make sense of the visual record of the American Civil War (1861-65)? From the Capitol Dome to a skeleton dug up in a highway project a hundred years after the last battle, the course will consider the strange and scattered remnants of a famous era. Drawing on the poetry of Walt Whitman, Emily Dickinson, and Herman Melville, the paintings of Winslow Homer, the photographs of Alexander Gardner, and the oratory of Abraham Lincoln, the course will examine what cannot be portrayed: the trauma of war.
Same as: AMSTUD 154X, ARTHIST 354

ARTHIST 154B. Who We Be: Art, Images & Race in Post-Civil Rights America. 2-4 Units.
Over the past half-century, the U.S. has seen profound demographic and cultural change. But racial progress still seems distant. After the faith of the civil rights movement, the fervor of multiculturalism, and even the brief euphoria of a post-racial moment, we remain a nation divided. Resegregation is the norm. The culture wars flare as hot as ever.nnThis course takes a close examination of visual culture¿particularly images, works, and ideas in the contemporary arts, justice movements, and popular culture¿to discuss North American demographic and cultural change and cultural politics over the past half-century. From the Watts uprising to the #BlackLivesMatter movement, from multiculturalism through hip-hop to post-identity art, we will deeply explore the questions: How do Americans see race now? Do we see each other any more clearly than before?.
Same as: AFRICAAM 188, CSRE 88

ARTHIST 154C. American Art Since 1776. 3 Units.
How have artworks and artifacts shaped life and culture in the United States? This course considers a variety of objects, from canonical eighteenth-century paintings to decorative art, children's books, outsider art, and other creative expressions often overlooked in traditional surveys. How do art historians come to know such objects and, importantly, the past with them? How might we understand the historical implications of visual and material culture and share them in our writing? Close and creative looking, methodologies from art history and material culture studies, and an engagement with the wider visual, material, and literary worlds of these years will help us explore these and other questions. A final paper produced in stages throughout the term will afford students an opportunity to produce a six-page art historical essay of their own on an artwork or artifact of their choosing, preferably in a local collection. What might these objects and their study reveal to us about our history, present, and future?.

ARTHIST 155C. Abstract Expressionism: Painting/Modern/America. 4 Units.
The course will focus on American abstract painting from the 1930s to the 1960s, emphasizing the works of art at the Anderson Collection at Stanford. We will focus on looking closely at pictures by Jackson Pollock, Mark Rothko, Willem de Kooning, and other renowned abstract painters, developing skills of speaking and writing about these works of art. We will also place these pictures in their mid-20th century context: World War II and the Cold War; Hollywood and popular culture generally; Beat literature; and locations such as New York and San Francisco.
Same as: AMSTUD 155C

ARTHIST 156. American and European Art, 1945-1968. 4 Units.
Examines the pivotal figures, movements, themes and practices of art in the United States and Europe, from the conclusion of World War 2 to the end of the 1960s. Emphasis is on the changed nature of the avant-garde after the catastrophic events of midcentury. Topics include: modern art, ideology and the Cold War; the rise of consumer society and the "Society of the Spectacle"; concepts of medium specificity; the impact of new media and technologies on postwar art making; the role of the artist as worker and activist. Movements include: Abstract Expressionism, Art Informel, Pop, minimalism, process, performance conceptual art. An introductory art history course is recommended.
Same as: ARTHIST 356

ARTHIST 156A. Warhol: Painting, Photography, Performance. 4 Units.
This course focuses on the career of Andy Warhol as a means to consider the broader history of American art and culture since 1950. It examines little-studied aspects of Warhol¿s visual production (e.g. his career as a commercial artist in the 1950s and his everyday photographs of the 1970s and 1980s) alongside his now-canonical Pop paintings of the 1960s. Warhol?s critical and scholarly reception will be scrutinized in detail, as will published interviews of and writings by the artist. Finally, we will consider Warhol¿s legacy and wide-ranging influence on American culture in the decades since his death in 1987.
Same as: ARTHIST 356A, TAPS 156A, TAPS 356A

ARTHIST 156N. Art and the Power of Place: Site, Location, Environment. 3 Units.
Many iconic works in the history of art draw their power and significance from the place in which they are sited or installed. The cave paintings of Altamira, Spain; Michelangelo's Sistine Chapel and the monumental "earthworks" made in the deserts of the American Southwest during the 1960s are just a few examples showcasing the important relationship between art and place. In this seminar we will explore how works of art throughout history create a sense of place; and how place, in turn, changes the interpretation of works of art. We will learn how to analyze works of art in terms of their immediate contexts and surroundings, whether temples, museums, spaces of the city or unexpected environments, charting the historical meanings of place in the process. We will look at a range of examples throughout time, from prehistory to the present day. A critical feature of the seminar will be to consider works of art outside the classroom, on both the Stanford campus and beyond. Possible field trips include visits to Alcatraz Prison (where the famous Chinese artist, Ai Weiwei, will install a new work in the fall of 2014).

ARTHIST 157A. Histories of Photography. 4 Units.
This course investigates multiple histories of photography. It begins in early nineteenth-century Europe with the origins of the medium and ends in the United States on September 11, 2001, a day that demonstrated the limits of photographic seeing. Rather than stabilizing any single trajectory of technological iterations, the course is more interested in considering the ¿work¿ performed by photography. Through historical case studies, it considers how `to photograph¿ is to order and to construct the world; to incite action and to persuade; to describe and to document; to record and to censor; to wound; to heal.
Same as: ARTHIST 357A

ARTHIST 157B. Picture This: A History of Photography from the Civil War to the Selfie. 4 Units.
TBA.

ARTHIST 158S. Iconography to Instagram: A History of Images and Information. 3 Units.
This class will survey how artists, designers and cultures have historically used images as a means to organize and communicate information. How do representations convey meaning in a manner different from language? What do visual conventions reveal about the cultures and technologies that shape them? How and why might artists and viewers subvert the legibility of images? To address these questions, this course proceeds by way of close visual analysis of key works, while exploring their historical, technological, social and artistic contexts. nn Topics to be explored include: iconography and interpretation; the relationship between maps and painting; the importance of printmaking to the Renaissance and the Scientific Revolution; the visual culture of the newspaper as reflected in (and satirized by) Cubist and Dadaist art; the political impact of photography (illustrated by a visit to an exhibition of Lewis Hine¿s photographs at the Cantor Center for Visual Arts); the rhetorical conventions of television news and advertising. Later weeks will address representational norms which have emerged in the wake of digital technology: multi-screen displays, Powerpoint and interactive infographics, concluding with a discussion around the data-gathering functions of social media platforms such as Instagram. Ultimately, students will learn the fundamentals of visual communication across media and history, but will also reflect on art¿s enduring ability to transcend and resist a purely informational role in culture.

ARTHIST 159. American Photographs, 1839-1971: A Cultural History. 4 Units.
This course concentrates on many important American photographers, from the era of daguerreotypes to near the end of the pre-digital era. We study photographs of the Civil War, western exploration, artistic subjects, urban and rural poverty, skyscrapers, crime, fashion, national parks, and social protest, among other topics. Among the photographers we study: Carleton Watkins, Eadweard Muybridge, Walker Evans, Dorothea Lange, Garry Winogrand, and Diane Arbus. Emphasis on developing students' abilities to discuss and write about photography; to see it.
Same as: AMSTUD 159X, ARTHIST 359

ARTHIST 159B. American Photography Since 1960. 5 Units.
Since the publication of Robert Frank's THE AMERICANS (1958), many distinguished American photographers have emerged, creating a density and power of expression that arguably rivals and even surpasses the extraordinary achievements of earlier photographers in this country. Garry Winogrand's street photography, Diane Arbus's portraits, Ralph Eugene Meatyard's grotesque masks, Danny Lyon's impassioned social outsiders, William Eggleston's deadpan sidewalks and suburban tables, and on to photographers of our moment--these are just a few of the topics the course will cover. Careful attention to individual pictures; careful consideration of what it is to be an artist, and a critic.
Same as: AMSTUD 159B, ARTHIST 359B

ARTHIST 162. Visual Arts Cuba (1959 - 2015). 3-5 Units.
The evolution of culture in post-1959 Cuba, with a strong focus on visual arts in all media and film will be introduced in this course. Historical examples will be discussed through lectures, readings and the presentation of audiovisual material. Students will develop their research, critical thinking, and writing through assignments, discussions, and the completion of a final paper. This is a discussion-heavy course, so come prepared to read, write and talk.
Same as: ARTHIST 362

ARTHIST 162B. Art and Social Criticism. 5 Units.
Visual artists have long been in the forefront of social criticism in America. Since the 1960s, various visual strategies have helped emergent progressive political movements articulate and represent complex social issues. Which artists and particular art works/projects have become key anchors for discourses on racism, sexism, economic and social inequality, immigrant rights and climate change? We will learn about a spectrum of political art designed to raise social awareness, spark social change and rouse protest. The Art Workers Coalition's agit-prop opposing the Vietnam War and ACT-UP's emblematic signs and symbols during the AIDS/HIV crisis of the 1980s galvanized a generation into action. Works such as Judy Chicago's The Dinner Party (1979), Fred Wilson's Mining the Museum (1992), and Glenn Ligon's paintings appropriating fragments from African-American literature all raised awareness by excavating historical evidence of the long legacy resisting marginalization. For three decades feminist artists Adrian Piper, Barbara Kruger and the Guerilla Girls have combined institutional critique and direct address into a provocative form of criticality. Recent art for social justice is reaching ever broadening publics by redrawing the role of artist and audience exemplified by the democratization of poster making and internet campaigns of Occupy and the Movement for Black Lives. We will also consider the collective aesthetic activisms in the Post-Occupy era including Global Ultra Luxury Faction, Climate Justice art projects, and the visual culture of Trump era mass protests. Why are each of these examples successful as influential and enduring markers of social criticism? What have these socially responsive practices contributed to our understanding of American history?.
Same as: AFRICAAM 102B, AMSTUD 102, CSRE 102A, FEMGEN 102

ARTHIST 163. Queer America. 4 Units.
This class explores queer art, photography and politics in the United States since 1930. Our approach will be grounded in close attention to the history and visual representation of sexual minorities in particular historical moments and social contexts. We will consider the cultural and political effects of World War II, the Cold War, the civil rights movement, psychedelics, hippie culture and sexual liberation, lesbian separatism, the AIDS crisis, and marriage equality.
Same as: AMSTUD 163, FEMGEN 163

ARTHIST 164A. Technology and the Visual Imagination. 4 Units.
An exploration of the dynamic relationship between technology and the ways we see and represent the world. The course examines technologies from the Renaissance through the present day, from telescopes and microscopes to digital detectors, that have changed and enhanced our visual capabilities as well as shaped how we imagine the world. We also consider how these technologies influenced and inspired the work of artists. Special attention is paid to how different technologies such as linear perspective, photography, cinema, and computer screens translate the visual experience into a representation; the automation of vision; and the intersection of technology with conceptions of time and space.
Same as: ARTHIST 364A, FILMSTUD 164A, FILMSTUD 364A

ARTHIST 165A. Fashion Shows: From Lady Godiva to Lady Gaga. 4 Units.
The complex and interdependent relationship between fashion and art. Topics include: the ways in which artists have used fashion in different art forms as a means to convey social status, identity, and other attributes of the wearer; the interplay between fashion designers and various art movements, especially in the 20th century; the place of prints, photography, and the Internet in fashion, in particular how different media shape how clothes are seen and perceived. Texts by Thorstein Veblen, Roland Barthes, Dick Hebdige, and other theorists of fashion.
Same as: ARTHIST 365A, FILMSTUD 165A, FILMSTUD 365A

ARTHIST 165B. American Style and the Rhetoric of Fashion. 4 Units.
Focus on the visual culture of fashion, especially in an American context. Topics include: the representation of fashion in different visual media (prints, photographs, films, window displays, and digital images); the relationship of fashion to its historical context and American culture; the interplay between fashion and other modes of discourse, in particular art, but also performance, music, economics; and the use of fashion as an expression of social status, identity, and other attributes of the wearer. Texts by Thorstein Veblen, Roland Barthes, Dick Hebdige, and other theorists of fashion.
Same as: AMSTUD 127, FILMSTUD 165B

ARTHIST 166. Representing Fashion. 4 Units.
Course on the representation of fashion in the 20th and 21st century, with focus on American fashion photography. Topics include: history of fashion illustration, fashion photography, and fashion films; intersection of art and commerce; role of designers, photographers, editors, and models; studio v. street photography; the place of mass media, alternative magazines, and online publications; and use of media, photography, and design theory for interpretation of fashion representations. Illustrators and artists include Lepape, Erte, Avedon, Penn, Klein, Newton, Sherman, and Leibovitz.
Same as: AMSTUD 128

ARTHIST 167. Beyond the Fuzzy-Techie Divide: Art, Science, Technology. 4 Units.
Although art and science are often characterized as "two cultures" with limited common interests or language, they share an endeavor: gaining insight into our world. They even rely on common tools to make discoveries and visually represent their conclusions. To clarify and interrogate points of similarity and difference, each week¿s theme (time, earth, cosmos, body) explores the efforts of artists and scientists to understand and represent it and the role of technology in these efforts. Focus on contemporary examples.
Same as: ARTHIST 367, FILMSTUD 167B, FILMSTUD 367B

ARTHIST 168A. A.I.-Activism-Art. 3-5 Units.
Lecture/studio course exploring arts and humanities scholarship and practice engaging with, and generated by, emerging emerging and exponential technologies. Our course will explore intersections of art and artificial intelligence with an emphasis on social impact and racial justice. Open to all undergraduates.
Same as: CSRE 106A, ENGLISH 106A

ARTHIST 173. Issues in Contemporary Art. 4 Units.
Major figures, themes, and movements of contemporary art from the 80s to the present. Readings on the neo-avant garde; postmodernism; art and identity politics; new media and technology; globalization and participatory aesthetics. Prerequisite: ARTHIST 155, or equivalent with consent of instructor.
Same as: ARTHIST 373

ARTHIST 173N. Race, Gender, and Sexuality in Contemporary Art. 3 Units.
From Pop to postmodernism, contemporary art in the United States has often taken up issues of race, gender, and sexuality. In this seminar, we will study how artists from the 1960s to the present have drawn upon a wide range of media (including painting, photography, sculpture, performance, video, and the internet) to address racial injustice, gender inequity, and the surveillance of sexuality. Guest speakers will include contemporary artists confronting these issues in our current, highly charged moment.

ARTHIST 178. Ethnicity and Dissent in United States Art and Literature. 4 Units.
The role of the visual arts of the U.S. in the construction and contesting of racial, class, and gender hierarchies. Focus is on artists and writers from the 18th century to 1990s. How power, domination, and resistance work historically. Topics include: minstrelsy and the invention of race; mass culture and postmodernity; hegemony and language; memory and desire; and the borderlands.
Same as: AMSTUD 178, ARTHIST 378

ARTHIST 181. Pacific Dreams: Art in California. 3-4 Units.
This lecture course will explore the rich and diverse history of art made in California, with special focus on the interchanges between the fine arts and subcultural expression. From the Carleton Watkins' exquisite mammoth plate photographs of Yosemite to the cool sci-fi experiments of Light and Space artists such as James Turrell; from the feminist experiments of Judy Chicago to the black magic of Betye Saar's ritualistic objects, artists have explored California's landscape, history, and diverse population in myriad ways. Topics of study will include art in San Francisco Chinatown; Hollywood and contemporary performance; psychedelia and the counterculture; Afrofuturism; and glam, punk rock, and hardcore in Los Angeles. Special attention will be paid to issues of immigration, race, and ethnicity in California.

ARTHIST 182B. Cultures in Competition: Arts of Song-Era China. 4 Units.
The Song dynasty (mid-10th to late 13th c.) was a period of extraordinary diversity and technical accomplishment in Chinese painting, ceramics, calligraphy, architecture and sculpture. Artistic developments emerged within a context of economic dynamism, urban growth, and competition in dynastic, political, cultural and social arenas ¿ as between Chinese and formerly nomadic neighboring regimes, or between reformers and conservatives. This course will consider major themes and topics in Song art history, including innovations in architectural and ceramic technologies; developments in landscape painting and theory; the rise of educated artists; official arts and ideologies of Song, Liao and Jin court regimes; new roles for women as patrons and cultural participants; and Chan and popular Buddhist imagery.
Same as: ARTHIST 382B

ARTHIST 183. Theatre of the World: Contemporary Chinese Art. 4 Units.
This course examines the intense and profound changes in Chinese Art from the end of Cultural Revolution to the first decades of the twenty-first century. Multiple course meetings will take place in the San Francisco Museum of Modern Art, where the exhibition Art and China after 1989: Theater of the World will be on view. We will explore how artists express their ways of grappling with the social, political, economic, and personal issues through art. Major topics include cultural multiplicity, global challenge, consumerism, site specificity, and deconstructing and reconstructing of identities, among others. Our discussions will constantly incorporate factors of China's domestic context, global network, and artists' individual connections in order for students to understand the rich and complex dynamics of Chinese contemporary art.
Same as: ARTHIST 383

ARTHIST 183N. Making Paradises on the Silk Road: Buddhist Arts of the Dunhuang Grottoes. 3 Units.
The cave temples of Dunhuang in far northwest China are the greatest repository of Chinese and Central Asian Buddhist arts from the medieval period of 5th to 14th centuries. This seminar will focus on caves that will be exhibited as full-scale replicas as part of the Getty Malibu Museum's International Dunhuang exhibition, which we will visit in a seminar field trip to Los Angeles. We will explore the spatial arrangement of sculptures and wall paintings, the imagery of Pure Land paradise scenes and narrative story cycles, and the embodied experience of movement around the caves. Through readings, discussions, VR simulation viewings, and exhibition visits we will also explore varied approaches to understanding the patronage, artistic styles, production techniques, devotional practices, and significance of these sacred spaces.

ARTHIST 184. Aristocrats, Warriors, Sex Workers, and Barbarians: Lived Life in Early Modern Japanese Painting. 4 Units.
Changes marking the transition from medieval to early modern Japanese society that generated a revolution in visual culture, as exemplified in subjects deemed fit for representation; how commoners joined elites in pictorializing their world, catalyzed by interactions with the Dutch.
Same as: ARTHIST 384, JAPAN 184, JAPAN 284

ARTHIST 185. Arts of China in the Early Modern World, 1550-1800. 4 Units.
The dynamic period of late Ming and early Qing dynasty China, roughly 1500-1800 CE, was marked by political crisis and conquest, but also by China's participation in global systems of trade and knowledge exchanges involving porcelain, illustrated books, garden designs and systems of perspectival representation. Topics will include Innovations in urban centers of painting and print culture, politically inflected painting, and cultural syncretism in court painting and garden design.
Same as: ARTHIST 385

ARTHIST 186B. Asian American Art: 1850-Present. 4 Units.
What does it mean, and what has it meant historically, to be "Asian American" in the United States? This lecture course explores this question through the example of artists, craftspeople, and laborers of Asian descent. We will consider their work alongside the art, visual culture, and literature of the United States. Key themes will include the history of immigration law; questions of home and belonging; art, activism, and community; interethnic solidarity; and gender and queerness. Artists and authors will include Isamu Noguchi, Grace Lee Boggs, Nam June Paik, Yoko Ono, Theresa Hak Kyung Cha, Grace Lee Boggs, Zarina, Carlos Villa, Takashi Murakami, Anne Cheng, Lisa Lowe, among many others. In addition to learning the history of Asian Americans and reading key texts in Asian American studies, this course will also teach the foundational skills of close looking and primary source research.
Same as: AMSTUD 186D, ASNAMST 186B

ARTHIST 187. Arts of War and Peace: Late Medieval and Early Modern Japan, 1500-1868. 4 Units.
Narratives of conflict, pacification, orthodoxy, nostalgia, and novelty through visual culture during the change of episteme from late medieval to early modern, 16th through early 19th centuries. The rhetorical messages of castles, teahouses, gardens, ceramics, paintings, and prints; the influence of Dutch and Chinese visuality; transformation in the roles of art and artist; tensions between the old and the new leading to the modernization of Japan.
Same as: ARTHIST 387, JAPAN 185, JAPAN 285

ARTHIST 188A. The History of Modern and Contemporary Japanese and Chinese Architecture and Urbanism. 4 Units.
The recent rapid urbanization and architectural transformation of Asia; focus is on the architecture of Japan and China since the mid-19th century. History of forms, theories, and styles that serve as the foundation for today's buildings and cityscapes. How Eastern and Western ideas of modernism have merged or diverged and how these forces continue to shape the future of Japanese and Chinese architecture and urban form.
Same as: ARTHIST 388A

ARTHIST 188B. From Shanghai Modern to Global Contemporary: Frontiers of Modern Chinese Art. 4 Units.
Chinese artistic developments in an era of revolution and modernization, from Shanghai Modern and New National Painting though the politicized art of the Cultural Revolution and post-Mao era re-entry into international arenas.
Same as: ARTHIST 388B

ARTHIST 189C. Global Currents: Early Modern Art Enterprises, Economies, and Imaginaries. 4 Units.
Episodes of global artistic exchange from the 16th to 19th centuries involving commodities (porcelains and textiles), technologies (printmaking, perspective, and cartography), and imaginaries (Chinoiserie, East Asian Occidenteries, Orientalism, Japonisme). The role of enterprises, institutions, and power relations in artistic economies, from the Portuguese Empire, Jesuit mission networks and East India Companies to imperialist systems.
Same as: ARTHIST 389C

ARTHIST 190A. Indigenous Cultural Heritage: Protection, Practice, Repatriation. 3 Units.
This interdisciplinary seminar explores pressing questions relating to the protection, practice and repatriation of the cultural heritage of Indigenous peoples from North America and beyond. Using an innovative combination of in-class lectures and videos of interviews with renowned experts, including Indigenous leaders, scholars, artists and performers and museum professionals from around the world, this seminar will explore and problematize, among other subjects: the impact of colonialism, urbanization and other political, legal, economic, religious and cultural forces on understandings and definitions of "indigenous" and "cultural heritage"; the development of international law relating to Indigenous peoples¿ cultural rights; international, domestic, and tribal heritage protection and repatriation laws/initiatives including the 2007 United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), the 1990 US Native American Graves Protection and Repatriation Act (NAGPRA), and others; past and present Western museum practices and guidelines relating to display, preservation, provenance research and repatriation of indigenous cultural material; the meaning of repatriation to Indigenous peoples and other stakeholders; and resolving repatriation disputes, including by alternative dispute resolution (ADR) processes. While case studies will relate primarily to Indigenous peoples of North America, comparisons will be drawn with the situation of Indigenous peoples in other regions, such as Oceania and Russia. Each week students will brainstorm actionable ideas for amending/supplementing current frameworks in order to give force to the cultural rights enumerated in UNDRIP. The overall seminar experience will involve discussions of lectures and video content, assigned readings, quizzes, a class visit to the Cantor Center Native Americas collection, and visits to our classroom by experts. Elements used in grading: class participation, attendance and a final project (one-day take-home exam; or research paper or film project with instructor's consent).
Same as: ARTHIST 490A, PUBLPOL 190, PUBLPOL 290

ARTHIST 191. African American Art. 5 Units.
This course explores major art and political movements, such as the Harlem Renaissance, the Black Arts Movement, and #BlackLivesMatter, that have informed and were inspired by African American artists. Students will read pivotal texts written by Black artists, historians, philosophers and activists; consider how artists have contended with issues of identity, race, gender, and sexuality; and learn about galleries, collections, and organizations founded to support the field. Attendance on the first day of class is a requirement for enrollment.
Same as: AFRICAAM 191B, CSRE 191

ARTHIST 192B. Art of the African Diaspora. 4 Units.
This introduction to the art of the African Diaspora uses art and visual culture as means to explore the history and impact of the global spread of African peoples from slavery until the present day. Lectures and discussions will examine a range of artistic practices from street festivals and Afro-Caribbean religious traditions to the work of studio-trained artists of international repute.

ARTHIST 193. Jacob Lawrence's Twentieth Century: African American Art and Culture. 5 Units.
This course explores African American art and culture through the lens of the Cantor Arts Center's rich holdings of work by Jacob Lawrence (1917-2000). Our approach will combine close looking with attention to Lawrence's cultural, political, and social contexts. Using Lawrence as starting point, we also will consider the work of African American artists such as Charles Alston, Norman Lewis, Aaron Douglas, Betye Saar, and Kara Walker in relation to historical events including the Harlem Renaissance, the Great Depression, World War II, and the Civil Rights Movement. Key themes include the interactions of art, music, and film; the history of radical black thought; as well as issues of curatorial display and conservation.
Same as: CSRE 193

ARTHIST 194. U.S. Latinx Art. 5 Units.
This course surveys art made by Latinas/os/xs who have lived and worked in the United States since the 1700s, including Chicanos, Nuyoricans, and other Black, Brown, and Indigenous artists. While exploring the diversity of Latinx art, students will consider artists' relationships to identity, race, ethnicity, gender, and sexuality. Students will also study how artists have responded to and challenged discrimination, institutional exclusion, and national debates through their work. Attendance on the first day of class is a requirement for enrollment.
Same as: CHILATST 195, CSRE 195

ARTHIST 202. Inherent Vice. 5 Units.
Taught jointly by an art historian and a senior conservator, this research seminar focuses on selected objects (mostly) of modern and contemporary art many in Stanford collections -- that pose significant condition and/or conservation challenges for long term maintenance and display. Together we will examine the objects in the conservation lab and/or the gallery; students will then confer with appropriate museum staff, consult relevant curatorial and conservation files, research and debate potential treatments, and write up reports of their findings. Issues of aesthetics, ethics and other problems bearing on the material longevity of art will be explored together in class discussions as a foundation for thinking about the preservation and exhibition of works of art.
Same as: ARTHIST 402

ARTHIST 203. Artists, Athletes, Courtesans and Crooks. 5 Units.
The seminar examines a range of topics devoted to the makers of Greek art and artifacts, the men and women who used them in life and the afterlife, and the miscreants - from Lord Elgin to contemporary tomb-looters and dealers - whose deeds have damaged, deracinated and desecrated temples, sculptures and grave goods. Readings include ancient texts in translation, books and articles by classicists and art historians, legal texts and lively page-turners. Students will discuss weekly readings, give brief slide lectures and a final presentation on a topic of their choice, which need not be confined to the ancient Mediterranean.
Same as: CLASSICS 163

ARTHIST 203A. Philosophies Behind Architecture: The Work of Antoni Gaudí as a Response to Modernity.. 3-5 Units.
The emergence of modern and contemporary Architecture in the West is intimately linked to the background culture that spread across the intellectual centers of Europe and the US between early nineteenth century and the Second World War. Catalan architect Antoni Gaudí (1852-1926) is a major representative of a style of architecture that asks and answers the questions posed by modernity and industrialization with an attitude of resistance. The purpose of this course is to pair these two perspectives: first, an exploration of the history of the most influential movements in Architecture and Interior Design since 1850 and the philosophies and historical events that explain their impact. Second, an elucidation of the originality and relevance of Antoni Gaudí in light of this international context. The course will combine texts by Marx, Smith, Nietzsche, Benjamin, Emerson, Walt Whitman, or Nelson Goodman with those of Cerdà, William Morris, or Adolf Loos, so as to shed light on the most representative buildings and interiors of the period: from the 1851 Crystal Palace of London to the state of La Sagrada Família in 1926, the year Gaudí died. The poles of this history will be represented by industrialization on one side, and autographic craftsmanship on the other. In particular, we will disentangle the tension between creativity and uniformization and their influence in the building of an entire artistic sensibility and culture, in architecture as in politics.
Same as: ILAC 203

ARTHIST 206. The Alchemy of Art: Substance and Transformation in Artistic Practice. 3 Units.
This seminar considers materiality and processes of material transformation as core elements of artistic practice and the history of making, largely from Sumer (3rd Millennium BCE) until the Early Modern period (18th Century in the West), but with several modern comparisons. Major points of focus will include pre-modern perceptions of the elemental properties of materials as matter, the reflexive relationship between materials and imagination, and the diverse ways in which societies have associated specific substances with social and cultural values. Humanistic perspectives on such issues are augmented by complementary insights from the physical sciences, and references are made to current ideas regarding material agency, affordances, and the imperfect separability of nature and culture. Indeed, a central question underlying all the readings is how to distinguish natural from synthetic: where does nature end and art begin, or maybe where does nature stop?.
Same as: ARTHIST 406

ARTHIST 207. The Resurrected Body: Animacy in Medieval Art. 5 Units.
This course explores the relationship of spirit and matter in medieval art and architecture, more specifically how the changing appearance of objects and spaces evokes the presence of the metaphysical as glitter, reverberation, and shadow. We will engage objects and monuments across the Mediterranean, studying the way they were staged in order to produce the perception of liveliness. The phenomenology of liveliness will be tied to the development of the theology of resurrection of the body.
Same as: ARTHIST 407

ARTHIST 207A. Bodies that Remain: Art and Death in the Middle Ages. 3-5 Units.
This seminar investigates medieval attitudes towards dead bodies through the material culture of death, from the cult of relics, to tomb sculpture, to monumental architecture. The place of death in Jewish, Christian, and Muslim communities in medieval Europe will be analyzed by putting these works of art in conversation with texts dealing with death as both biological event and powerful symbol.

ARTHIST 207C. Phenomenology and Aesthetics in Medieval Art. 5 Units.
This course explores the phenomenal aspects of the medieval image and space such as glitter, shadow, smoke, reverberation and how these presence effects were conceptualized in medieval culture as animation. Focus is on a select group of monuments as well as engagement with medieval objects at the Cantor Art Museum and the facsimiles of medieval manuscripts kept at the Art Library and Special Collections. Among the monuments we will study are the Alhambra in Spain, the Apocalypse MSS, the Cantigas of Alfonso X, the Byzantine Joshua Roll, the Homiles of the Monk Kokkinobaphos, the Ashburnhamensis Pentateuch, and the Rossano Gospels.
Same as: ARTHIST 407C

ARTHIST 207D. Race and Ethnicity in Premodern Europe. 3-5 Units.
How do historians, art historians, and literary historians of premodern Europe shape their research and their teaching around questions of race? How do current debates on race theory shape our perception of the past and deepen historical inquiry? This graduate colloquium focuses on the most recent publications on race in medieval and early modern studies to reflect on such questions while examining the challenges that race studies put on historical definitions, research methodologies, as well as teaching institutions.
Same as: ARTHIST 407D, HISTORY 215B, HISTORY 315B

ARTHIST 208. Hagia Sophia. 5 Units.
This seminar uncovers the aesthetic principles and spiritual operations at work in Hagia Sophia, the church dedicated to Holy Wisdom in Constantinople. Rather than a static and inert structure, the Great Church emerges as a material body that comes to life when the morning or evening light resurrects the glitter of its gold mosaics and when the singing of human voices activates the reverberant and enveloping sound of its vast interior. Drawing on art and architectural history, liturgy, musicology, and acoustics, this course explores the Byzantine paradigm of animation arguing that it is manifested in the visual and sonic mirroring, in the chiastic structure of the psalmody, and in the prosody of the sung poetry. Together these elements orchestrate a multi-sensory experience that has the potential to destabilize the divide between real and oneiric, placing the faithful in a space in between terrestrial and celestial. A short film on aesthetics and samples of Byzantine chant digitally imprinted with the acoustics of Hagia Sophia are developed as integral segments of this research; they offer a chance for the student to transcend the limits of textual analysis and experience the temporal dimension of this process of animation of the inert.
Same as: ARTHIST 408, CLASSICS 173, CLASSICS 273

ARTHIST 208B. The Art of Medieval Spain: Muslims, Christians, Jews. 5 Units.
The seminar reveals the religious and ethnic hybridity of the art medieval Spain, where the lives, material cultures, and artistic practices of Muslims, Christians, and Jews were more intertwined than any other region of the medieval world. We work thematically rather than strictly chronologically in order to build a model of engagement with medieval art in which the movement of ideas and objects between the three major religions is in itself a focus of study.
Same as: ARTHIST 408B

ARTHIST 209C. Theories of the Image: Byzantium, Islam and the Latin West. 5 Units.
This seminar explores the role of images in the three major powers of the medieval Mediterranean: the Umayyads, the Carolingians, and the Byzantines. For each the definition of an image- sura, imago, or eikon respectively-became an important means of establishing religious identity and a fault-line between distinct cultural traditions. This course troubles the identification of image with figural representation and presents instead a performative paradigm where chant or recitation are treated as images. As such, students will be able to see the connections between medieval image theory and contemporary art practices such as installation.
Same as: ARTHIST 409, CLASSICS 158, CLASSICS 258, REES 409

ARTHIST 210. Giotto. 5 Units.
Often hailed as ¿the father of western painting,¿ Giotto was seen as a revolutionary figure even in his own day. We will begin with Giotto¿s critical reception, his artistic predecessors and contemporaries, and his work for patrons ranging from the Franciscan order to the king of Naples. We will most closely examine Giotto¿s masterpiece, the frescoes of the Arena Chapel in Padua, and consider topics including Giotto¿s figural realism, the layered readings of the program, its use of visual rhetoric, and issues of gender, sexuality, and ethnicity.
Same as: ARTHIST 410B

ARTHIST 212. Renaissance Florence, 1440-1540. 5 Units.
Notions of cultural superiority in light of changes in Florentine society as it went from being a republic to a duchy ruled by the Medici. Artists and architects such as Donatello, Brunelleschi, Botticelli, Michelangelo, and Pontormo praised as having revived the arts and returned them to a level of ancient splendor. The role of the sacred in daily life and uses of the pagan past for poetic and scholarly expressions and as vehicles for contemporary experience.

ARTHIST 213. Renaissance Print Culture: Art in the Cantor Arts Center. 5 Units.
The seminar takes place in the Cantor Arts Center and provides a unique opportunity to study original works of art from the museum's storage. Beginning in the fifteenth century new techniques of reproduction changed the pictorial culture of Europe. Some engravings called attention to the engraver's virtuosity, and the private nature of the medium was explored for erotic imagery. By the sixteenth century printed images were used for political and religious propaganda during the societal upheavals.

ARTHIST 215C. What is Contemporary Art?. 5 Units.
This course focuses on the production, criticism, and curating of contemporary art. Through a series of required readings, intensive class discussions, class trips, and first-hand encounters with art objects and exhibitions, we will investigate current understandings of contemporary art. We will also consider the history of contemporary art by looking at how art of the past was understood in its own moment, when it was new and now.

ARTHIST 216. Collecting for the Cantor. 3 Units.
Students in this course will conduct the necessary art historical and collections research to select a work of art on paper for acquisition by the Cantor Arts Center. Readings and discussions will consider the history of collecting, as well as cultural, ethical, logistical, and economic questions involved in collection building. Prerequisite: one Art History course.

ARTHIST 217. Architecture, Mysticism, and Myth. 5 Units.
This course examines global origin myths for architecture, for example cosmic symbolism (e.g. the Mandala/dome), and the magic of technologies (e.g. the "petrification" of the wooden hut in permanent architecture). Examples range from Ethiopian rockcut churches, to the Parthenon, to the Ise Grand Shrine, to Fire Temples, and Navajo lodges. The course concludes with the modern mythology of industrialisation and the mechanised building.
Same as: ARTHIST 417

ARTHIST 217B. Architectural Design Theory. 5 Units.
This seminar focuses on the key themes, histories, and methods of architectural theory -- a form of architectural practice that establishes the aims and philosophies of architecture. Architectural theory is primarily written, but it also incorporates drawing, photography, film, and other media. nnOne of the distinctive features of modern and contemporary architecture is its pronounced use of theory to articulate its aims. One might argue that modern architecture is modern because of its incorporation of theory. This course focuses on those early-modern, modern, and late-modern writings that have been and remain entangled with contemporary architectural thought and design practice. nnRather than examine the development of modern architectural theory chronologically, it is explored architectural through thematic topics. These themes enable the student to understand how certain architectural theoretical concepts endure, are transformed, and can be furthered through his/her own explorations.nCEE 32B is a crosslisting of ARTHIST 217B/417B.
Same as: ARTHIST 417B

ARTHIST 218A. Michelangelo: Gateway to Early Modern Italy. 3-5 Units.
Revered as one of the greatest artists in history, Michelangelo Buonarroti's extraordinarily long and prodigious existence (1475-1564) spanned the Renaissance and the Reformation in Italy. The celebrity artist left behind not only sculptures, paintings, drawings, and architectural designs, but also an abundantly rich and heterogeneous collection of artifacts, including direct and indirect correspondence (approximately 1400 letters), an eclectic assortment of personal notes, documents and contracts, and 302 poems and 41 poetic fragments. This course will explore the life and production of Michelangelo in relation to those of his contemporaries. Using the biography of the artist as a thread, this interdisciplinary course will draw on a range of critical methodologies and approaches to investigate the civilization and culture of Italy in the fifteenth and sixteenth centuries. Course themes will follow key tensions that defined the period and that found expression in Michelangelo: physical-spiritual, classical-Christian, tradition-innovation, individual-collective.
Same as: ARTHIST 418A, ITALIAN 237, ITALIAN 337

ARTHIST 219. Caravaggio, Vermeer, and the Life of Paintings. 5 Units.
Focusing on great paintings by seventeenth-century European painters--Caravaggio's Medusa, Vermeer's Girl with the Pearl Earring, Rembrandt's Self-Portraits, and many others--this seminar will consider how and why artists these artists strove to overcome the boundary between representation and the real and make the world "present" to the viewer. Reading authors such as George Steiner and Jacques Derrida, we will develop a definition of the word "presence" and consider the various critiques of it.nnNOTE: This seminar is for undergraduates only.

ARTHIST 221E. Peripheral Dreams: The Art and Literature of Miró, Dalí, and other Surrealists in Catalonia. 3-5 Units.
Why was Salvador Dalí fascinated with the architecture of Gaudí? Why did André Breton, Paul Éluard and Federico García Lorca visit Barcelona? Moreover, why did Catalonia become such an important cradle for Surrealism? Why is the (Catalan) landscape such a relevant presence in the work of Miró and Dalí? Through a critical analysis and discussion of selected works of art and literature, this seminar focuses and follows the trajectories of Miró and Dalí, from Barcelona to Paris to New York, and explores the role of their Catalan background as a potentially essential factor in their own contributions to Surrealism and the reception of their work. The course will provide the materials and guide the student to conduct research on a specific work(s) of art, architecture, literature or cinema either by Miró, Dalí or one of his peers in relation to their cultural, social and political context. The course is intended for graduate students in Iberian and Comparative Literature, Art History, Cultural Studies, and related fields. Taught in English by Jordi Falgàs i Casanovas.
Same as: ILAC 281E

ARTHIST 223. Living in the Material World: Imagination and Agency. 5 Units.
This seminar deals with the materials that artists have chosen in art and construction from antiquity to the early modern era. The particular focus is upon pre-modern perceptions of the inherent properties of materials, from amber and ivory to marble and granite, as well as the diverse ways in which societies have associated particular substances with social and cultural values. Particular emphasis is laid upon the architectural use of materials.
Same as: ARTHIST 423

ARTHIST 224. Architecture as Performance from Antiquity to the Enlightenment. 5 Units.
This seminar examines the nature of architectural representation in the western tradition, from antiquity until the 18th century. It considers the ancient theatre as an icon of representation and the afterlife of the stage building as a model for western architecture, including ephemera. It concludes a distinction between the theatrical and the more recent concept of the theatrical.
Same as: ARTHIST 424

ARTHIST 224N. The Popular Culture of Abstract Art. 3 Units.
Is abstract art inherently elitist? Or gendered? How does it differ from (mere) decoration? Is there a chasm that necessarily separates abstract and popular art? Can you think of examples in which those categories might overlap? This course is designed to deconstruct the boundaries that tend to make abstract art seem remote and difficult to understand, while pop(ular) art typically seems fun and accessible. How can we complicate these clichés to construct a more compelling narrative of modern art?n nSeminar participants will have many opportunities to see and study original works at Stanford's Cantor Arts Center and the Anderson Collection, as well as a trip to SFMOMA. Artists studied include Georges Braque, Constantin Brancusi, Marcel Duchamp, Piet Mondrian, Andy Warhol, Roy Lichtenstein, and Jackson Pollock.

ARTHIST 226. New Landscapes of China: Ecologies, Media, Imaginaries. 4-5 Units.
An exploration of new forms of landscape art in China's contemporary era, 1980s-present. Studies of new media platforms for landscape related imagery, imagined landscapes, and expanded concepts of landscape in an era of heightened ecological consciousness.
Same as: ARTHIST 426

ARTHIST 229D. Topophilia: Place in Japanese Visual Culture through 19th Century. 5 Units.
Attachments to "place" and "home" are hard-wired into the biology of humans and animals alike, although such attachments vary according to specific times, cultures, and states of mind. Can we speak of a "Japanese sense of place" and if so, what is distinctive about it? Seminar explores religious visions and ritual fields; narratives of itinerancy; cityscapes; topographic taxonomies. Knowledge of Japanese culture is beneficial but not mandatory.
Same as: JAPANGEN 229

ARTHIST 230B. Image and Text in Chinese Painting. 3-5 Units.
An examination of many types of interactions between images and texts in Chinese painting. These include poetic lines inscribed on paintings (as response or as a theme given to the artist to paint), paintings that emulate or transform ancient poetic couplets, or illustrate poetic and literary narratives, and calligraphic inscriptions. Attention will be given both to comparative perspectives and to the special aesthetic and intellectual consequences that the conjunction of the literary and visual modes give to Chinese artistic expression. [Undergraduate enrollment with consent of one of the instructors].
Same as: ARTHIST 430B, CHINA 230, CHINA 430

ARTHIST 238C. Art and the Market. 3-5 Units.
This course examines the relationship between art and the market, from the château-builders of the French Renaissance to avant-garde painters in the nineteenth-century Salon des Refusés. Using examples drawn from France, this course explores the relationship between artists and patrons, the changing status of artists in society, patterns of shifting taste, and the effects of museums on making and collecting art. Students will read a mixture of historical texts about art and artists, fictional works depicting the process of artistic creation, and theoretical analyses of the politics embedded in artworks. They will engage in sustained analysis of individual artworks, as well as the market structures in which such artworks were produced and bought. The course will be taught in English, with the option of readings in French for departmental majors.
Same as: FRENCH 238

ARTHIST 240. Millennium Approaches: The Art of the 1990s. 3-5 Units.
This seminar will examine the art historical legacy of the 1990s, the decade of Bill Clinton, Beavis and Butthead, and Y2K. By placing art in conversation with music, popular culture, and political events, we will explore the dark underbelly of the decade's facade of sunny optimism. Key topics will include the the end of the Cold War, multiculturalism, American interventionism, the AIDS crisis, and early internet culture. Artists covered will include Felix Gonzalez-Torres, Kim Gordon, Mike Kelly, the Young British Artists, Gregg Bordowitz, Lorna Simpson, Zoe Leonard, Byron Kim, and Glenn Ligon. What is the relationship between art, popular culture, and history? How did the 1990s help shape our current culture?.
Same as: ARTHIST 440

ARTHIST 242B. Megacities. 5 Units.
In this course we will examine the meaning, processes, and challenges of urbanization. Through a series of targeted readings across history and geography and through the study of varied means of representation (anthropology, literature, cartography, film, etc), the class will analyze the ways in which urban forms have come into being and created, met, and/or ignored challenges such as disease, water, transport, religious and class conflict, colonialism, labor, and trade. Students will read anthropology in conjunction with other disciplines (literature, urban planning, public health, architecture, and economics) to learn the ways in which ethnographies of immigration, urban poverty, class disparity, economic development and indicators, noise, and transportation substantively augment our understandings of how people live within globalization.
Same as: ANTHRO 42, LIFE 142, URBANST 142

ARTHIST 243. Black Divinities: Race, God, and Nation in the Photography of Deana Lawson. 5 Units.
In recent years the Brooklyn-based photographer Deana Lawson (born 1979) has become rightly famous for her rapturous yet grounded large-sized photographs of everyday black people--those she meets in her neighborhood, as well as on her travels to Brazil, Jamaica, and the Congo. In this seminar we will look closely at Lawson's photographs, considering how she gains her subjects' trust, how she uses props and locations, how she explores her own feelings and the legacies and possibilities of being black.
Same as: AFRICAAM 143

ARTHIST 243B. Photography and Time. 5 Units.
This course examines the relationship between photography and temporality from the nineteenth century until the present day. We will study how the new medium interacted with other nineteenth-century technologies to produce a mechanized and standardized time, as well as attempts to use photography to destabilize such objective temporalities. In the twentieth century, we consider the dominant theorization of photography as an art that addresses time, history, and memory through study of critical texts by Benjamin, Barthes, and Bazin, among others. The course concludes by interrogating the applicability of these analogue theories to contemporary photographic practices. Attention to the technical labor of making photographs and the materiality of photographs in the archive will be central to the course, enabled by visits to the Cantor and Special Collections.

ARTHIST 243C. The Art of Travel. 5 Units.
This undergraduate seminar explores a variety of objects upon which we see the marks of makers smitten and/or stymied by new technologies of transportation ¿ objects about the steamship, the railroad, the automobile, the airplane, the space shuttle, the internet. Among many types of material culture, the course considers scrimshaw, album quilts, maps, paintings, photographs, city plans, hood ornaments, and advertisements from the early Republic to the present. How do objects mark geographic movement, and the social relationships forged in the process? What do these marks tell us about how we, as contemporary viewers, experience the world?.

ARTHIST 243N. Beyond Words: Early Books and the Design of the Reading Experience. 3 Units.
Copiously drawing from the Stanford Archives, this seminar will study the revolutionary design of the first printed books to ask questions about the nature of reading and the commodification of culture. Besides being trained in typography and printing techniques, the students will explore early modern books as multi-layered objects in which texts, images, cutouts, colors, and a multitude of materials constructed new frameworks for attention and fantasies while contributing to the globalization of media.

ARTHIST 244. The Visual Culture of the American Home Front, 1941-1945. 5 Units.
How does home front of WWII look now? What sort of meanings appear with the vantage of more than sixty years' distance? Examining Hollywood films from those years -films made during the war but mostly not directly about the war - the seminar focuses on developing students' abilities to write emotion-based criticism and history. Weekly short papers, each one in response to a film screening, are required. Among the films screened: Shadow of a Doubt, Gaslight, I Walked with a Zombie, The Best Years of Our Lives.
Same as: AMSTUD 244

ARTHIST 245. Art, Business & the Law. 4 Units.
This course examines art at the intersection of business and the law from a number of different angles, focusing on how the issues raised by particular case studies, whether legal, ethical and/or financial, impact our understanding of how works of art circulate, are received, evaluated and acquire different meanings in given social contexts. Topics include the design, construction and contested signification of selected war memorials; the rights involved in the display and desecration of the American flag; censorship of sexually charged images; how the value of art is appraised; institutional critique and the art museum, among others.
Same as: SIW 245

ARTHIST 246A. California Dreaming: West Coast Art and Visual Culture, 1848 - present. 5 Units.
This seminar examines art, photography, and other forms of cultural production (e.g. film, advertisements, postcards) in and about California from the middle of the 19th century to the present. It approaches California as a contested political, historical and geographical site and as a series of images and alternative "lifestyles." How have artists pictured the state's diverse landscapes, both natural and commercial, as well as its complex history of labor, immigration, ethnicity, tourism, and social division?.

ARTHIST 246B. Pop Art. 5 Units.
A new course on the history and meaning of Pop art in the United States and abroad. The course will feature close study of paintings, photographs, and prints at the Cantor Art Center. The course will be given in the Denning Family Resource Room, located in The Anderson Collection building. If you have any questions regarding the location, please contact Linda Esquivel at lindae@stanford.edu.
Same as: AMSTUD 246B

ARTHIST 246N. Pacific Dreams: Art in California. 3 Units.
This course will explore the rich history of art in California from 1850-present. From Chiura Obata¿s exquisite views of Yosemite to ASCO¿s urgent political performances in the streets of Los Angeles, artists have engaged California¿s landscape, history, and diverse populations in myriad ways. Topics of study will include art in San Francisco Chinatown, Hollywood and contemporary art, psychedelia and the counterculture, African American performance and Afrofuturism, and punk rock in Los Angeles. Special attention will be paid to issues of immigration, race, and ethnicity in California. The course will include multiple museum visits and trips to important artistic sites in the Bay Area.

ARTHIST 248A. Architecture & Gender. 4 Units.
This advanced seminar introduces students to the seemingly inconspicuous relation between architecture and gender. The course studies how modern societies create easily, controlled docile spaces, thus pursuing the absent bodies of its members - be it through symbolic or material means. This troubled history of the powers of architecture to neglect sexuality and impose strict gender roles is analyzed in class discussions through recent feminist and queer theoretical approaches and tested on case studies.
Same as: CEE 32Y

ARTHIST 248B. Architecture, Urbanism, and Visual Culture in Early Modern Rome. 5 Units.
This seminar investigates architecture in Rome, from Michelangelo to Piranesi. It examines the origins of modern urbanism; the piazza as ceremonial theater; the water network and fountain displays; palace design inside and out; religious institutions, from convents to confraternities; church design inside and out; the devotional and illusionistic space of the family chapel; festival architecture; light symbolism and geometry; the use of new materials and technologies; the relationship of early modern architecture to painting and sculpture; and the question of a unity of the arts.

ARTHIST 252. Transatlantic American Art. 5 Units.
This is an American art history course from a transatlantic perspective, considering the ties between the United States and England from the colonial era to World War I, a period in which both nations underwent a similar trajectory of industrialization, urbanization, democratization, and expansionism/imperialism. We will explore the ways in which American attitudes towards England oscillated between anxious emulation and proud repudiation, as the ideas of ¿British culture¿ and ¿Englishness¿ became catalysts for national self-definition and touchstones for gendered and racialized metaphors of national vigor or decline. We will also examine how American artists received aesthetic conventions and artistic genres from Britain, and how the geography of the American landscape and questions of national character and taste challenged these traditions.

ARTHIST 252A. Art and Power: From Royal Spectacle to Revolutionary Ritual. 3-5 Units.
From the Palace of Versailles to grand operas to Jacques-Louis David's portraits of revolutionary martyrs, rarely have the arts been so powerfully mobilized by the State as in early modern France. This course examines how the arts were used from Louis XIV to the Revolution in order to broadcast political authority across Europe. We will also consider the resistance to such attempts to elicit shock-and-awe through artistic patronage. By studying music, architecture, garden design, the visual arts, and theater together, students will gain a new perspective on works of art in their political contexts. But we will also examine the libelous pamphlets and satirical cartoons that turned the monarchy¿s grandeur against itself, ending the course with an examination of the new artistic regime of the French Revolution. The course will be taught in English with the option of French readings for departmental majors.
Same as: FRENCH 252

ARTHIST 255. Hidden Histories: Art and Misrepresentation. 5 Units.
What happens when art functions as a decoy, taking us away from stories that it refuses to tell? We will explore three modern artists who grapple, in unpredictable ways, with the historical events that have shaped them: Philip Guston and the Holocaust; Martin Puryear and the Civil Rights movement; and South African artist William Kentridge and apartheid. When appropriate, we will look at objects at the Cantor Art Center (Stanford) as well as museums in the Bay Area. The course will provide the foundation for an exhibition at the Cantor Arts Center and the Yale University Art Gallery in 2016.

ARTHIST 256. What Was Photography?. 4 Units.
Digital imaging has largely replaced darkroom work over the past quarter century, yet analog practices still dominate theories of photography. Working closely with the Capital Group Foundation Collection at the Cantor, this class will explore how those theories relate to vintage photographic prints and whether they are still relevant to the photography being produced today. Students will select one photographer within the Collection and create a set of writings that help contemporary viewers see these mid-century American artists through diverse contemporary perspectives.
Same as: ARTHIST 456

ARTHIST 262. Office of Metropolitan Architecture: Workshop of the New. 4-5 Units.
This seminar investigates all aspects of the work of the Office of Metropolitan Architecture (OMA) and its leader Rem Koolhaas. Topics for class research and inquiry include but are not be limited to: Koolhaas's early work at the Architectural Association and the founding of OMA, the publications of OMA and their style of presentation and theoretical foundations, the importance of AMO, and the architects who have left OMA and founded their own practices and how these differ from OMA. Each student completes an in-depth research paper and an in-class presentation.

ARTHIST 263B. The View through the Windshield: Cars and the American Landscape. 4 Units.
Both cars and the landscape are fundamental to American identity. This seminar will consider the relationship between them: how they have shaped each other, how one mediates the experience of the other, and how American artists such as Ansel Adams, Edward Hopper, and Ed Ruscha have represented both. We will discuss the relationship between nature and technology; the aesthetics of highways and parkways; the phenomenology of driving and road trips; maps and way finding; and the future of cars, mapping, and the landscape.

ARTHIST 264A. Picturing the Cosmos. 5 Units.
This seminar explores the place of images in how we understand and imagine the universe. The course draws on art, science, and popular culture, and pays particular attention to the ways they inform each other. Examples include: star maps, science fiction films, appropriated astronomical images, and telescopic views of stars, planets, and nebulae. Using these representations as well as accompanying readings we will discuss the importance of aesthetics for conceptions of the cosmos; the influence of technology on representations; strategies for representing concepts that exceed the limits of human vision; and the ways that views of the universe reflect and shape their cultural context. Open to undergraduates and graduates.

ARTHIST 264B. Starstuff: Space and the American Imagination. 5 Units.
Course on the history of twentieth and twenty-first century American images of space and how they shape conceptions of the universe. Covers representations made by scientists and artists, as well as scientific fiction films, TV, and other forms of popular visual culture. Topics will include the importance of aesthetics to understandings of the cosmos; the influence of media and technology on representations; the social, political, and historical context of the images; and the ways representations of space influence notions of American national identity and of cosmic citizenship.
Same as: AMSTUD 143X, FILMSTUD 264B

ARTHIST 265A. Word and Image. 3-5 Units.
What impact do images have on our reading of a text? How do words influence our understanding of images or our reading of pictures? What makes a visual interpretation of written words or a verbal rendering of an image successful? These questions will guide our investigation of the manifold connections between words and images in this course on intermediality and the relations and interrelations between writing and art from classical antiquity to the present. Readings and discussions will include such topics as the life and afterlife in word and image of Ovid's "Metamorphoses," Dante's "Divine Comedy," Ludovico Ariosto's "Orlando Furioso," and John Milton's "Paradise Lost;" the writings and creative production of poet-artists Michelangelo Buonarroti, William Blake, and Dante Gabriel Rossetti; innovations in and correspondences between literature and art in the modern period, from symbolism in the nineteenth century through the flourishing of European avant-garde movements in the twentieth century.
Same as: ARTHIST 465A, COMPLIT 225, ITALIAN 265, ITALIAN 365

ARTHIST 268. Encountering Contemporary Chinese Painting: Media and Themes. 5 Units.
Two spring quarter exhibitions -- oil paintings and drawings by Zeng Fanzhi at the Anderson Collection, and Ink Worlds with works by two dozen major ink painters, calligraphers and video essayists at the Cantor -- convey part of the diversity of contemporary Chinese art practice. This seminar will explore media and techniques, artistic careers and strategies, and questions of cultural identity, history, place, language and the visionary presented by these artists and exhibitions.
Same as: ARTHIST 468

ARTHIST 273. Visual Culture of the Arctic. 5 Units.
In what ways does contemporary art address the slowly unfolding catastrophes of melting ice and thawing permafrost in the Arctic due to climate change? How might contemporary art and experimental cinema help us come to grips with the emotional disturbance of living amidst the deep-seated changes that are happening in our environment? These are the key questions this course attempts to answer.nThe first part of the class attempts to outline the complex history of Arctic visual and cultural representations through an interdisciplinary lens. The second part focuses on the more recent artistic and cinematic responses to climate change in the arctic. For their final projects, students will be able to combine analytical writing with creative projects that could take the form of photography, installation art, web-based art, fiction, video or poetry.
Same as: FILMSTUD 273

ARTHIST 273N. What is Contemporary Art?. 3 Units.
This course focuses on the production, criticism, and curating of contemporary art. Through a series of required readings, intensive class discussions, class trips, and first-hand encounters with art objects and exhibitions, we will investigate current understandings of contemporary art. We will also consider the history of contemporary art by looking at how art of the past was understood in its own moment, when it was new and now.

ARTHIST 278. Introduction to Curating. 5 Units.
Gain hands-on curatorial experience at the Cantor Arts Center by developing an exhibition in the Oceanic gallery about the Global Southn(the Indian Ocean region). Explore and debate strategies for presenting diverse art forms, conduct research, prepare wall texts and labels, and participate in designing the exhibition space in collaboration with fellow students, faculty, and Cantor staff members.

ARTHIST 280B. The World of Chen Hongshou (1598-1652). 5 Units.
Planned to coincide with a special international exhibition at the Berkeley Art Museum of works by the seventeenth century figure painter and print designer Chen Hongshou (1598-1652), this seminar will explore his art and cultural environment. Along with close study of his original paintings, we will study his connections with printmaking and publishing, fiction and drama culture, and his literary, social and patronage networks.
Same as: ARTHIST 480B

ARTHIST 281. Chinese Portraiture. 4 Units.
Exploration of recent studies of Chinese portraiture, with a focus on modern and contemporary eras. Portrait practices in treaty port cities; photographic portraits, portraits and modernity; political portraits in public arenas, self-erasure in contemporary portraiture, women's self-portraits, and experimental video portraits will be among the potential topics of discussion.
Same as: ARTHIST 481

ARTHIST 283. Chinese Buddhist Painting: Visions and Practices. 5 Units.
This course explores how Chinese Buddhist art adapts to changes in the religious visions, imagination, and practices of Buddhism in China. It focuses primarily on Buddhist paintings but will occasionally include other types of artistic devices, such as space for display, architectural design, and sculpture, to reach a better understanding of the viewing and the religious experiences. Striving beyond the discussion of style and iconography, we will broaden our pursuits by incorporating various issues such as the domestication of a foreign religion, the relationship between Buddhist literature and images, fusion with popular literature, social connections among eminent monks, scholars and artists, and political use of Buddhist images.
Same as: ARTHIST 483

ARTHIST 284B. Museum Cultures: Material Representation in the Past and Present. 3-5 Units.
Students will open the "black box" of museums to consider the past and present roles of institutional collections, culminating in a student-curated exhibition. Today, museums assert their relevance as dynamic spaces for debate and learning. Colonialism and restitution, the politics of representation, human/object relationships, and changing frameworks of authority make museum work widely significant and consistently challenging. Through thinking-in-practice, this course reflexively explores "museum cultures": representations of self and other within museums and institutional cultures of the museum world itself.n3 credits (no final project) or 5 credits (final project). May be repeat for credit.
Same as: ARCHLGY 134, ARCHLGY 234

ARTHIST 287. Pictures of the Floating World: Images from Japanese Popular Culture. 5 Units.
Printed objects produced during the Edo period (1600-1868), including the Ukiyo-e (pictures of the floating world) and lesser-studied genres such as printed books (ehon) and popular broadsheets (kawaraban). How a society constructs itself through images. The borders of the acceptable and censorship; theatricality, spectacle, and slippage; the construction of play, set in conflict against the dominant neo-Confucian ideology of fixed social roles.
Same as: ARTHIST 487X, JAPAN 287

ARTHIST 287A. The Japanese Tea Ceremony: The History, Aesthetics, and Politics Behind a National Pastime. 5 Units.
The Japanese tea ceremony, the ultimate premodern multimedia phenomenon, integrates architecture, garden design, ceramics, painting, calligraphy, and other treasured objects into a choreographed ritual wherein host, objects, and guests perform designated roles on a tiny stage sometimes only six feet square.. In addition to its much-touted aesthetic and philosophical aspects, the practice of tea includes inevitable political and rhetorical dimensions. This course traces the evolution of tea practice from its inception within the milieu of courtier diversions, Zen monasteries, and warrior villas, through its various permutations into the 20th century, where it was manipulated by the emerging industrialist class for different-but ultimately similar-ends.
Same as: JAPAN 188, JAPAN 288

ARTHIST 288B. The Enduring Passion for Ink: Contemporary Chinese Ink Painting. 5 Units.
Contemporary Chinese ink painters are exploring new ground. They push the limits of the medium, creating installations and performances, mixing ink with other media, and advancing age-tested brushstrokes and compositions. The recent flurry of exhibitions attests to contemporary ink painting¿s increasing importance. nnThis seminar introduces major figures (Xu Bing, Liu Dan, Zheng Chongbin, Li Huasheng, etc.) and movements in contemporary Chinese ink art. Emphasis is placed on improving writing abilities and on in-class reports and discussion. Topics for discussion include readings, individual works of art, and broad issues in contemporary art. Prerequisite: courses in Art History and/or Studio Art OR permission of instructor. open to undergraduates and graduates.

ARTHIST 289A. Making the Masterpiece in Song Dynasty China. 5 Units.
Studies of canon formation involving Song Dynasty (10-13th c.) Chinese works of painting, calligraphy, ceramics, and architecture. The roles of early art writing and criticism; collecting histories; art historical theory; / copying, imitation, and reproductive practices; period and regional taste; and modern museological and art historical discourses in identifying and constructing a canon of Song masterworks.
Same as: ARTHIST 489A

ARTHIST 290. Curricular Practical Training. 1-3 Unit.
CPT course required for international students completing degree.

ARTHIST 291. Riot!: Visualizing Civil Unrest in the 20th and 21st Centuries. 5 Units.
This course explores the visual legacy of civil unrest in the United States. Focusing on the 1965 Watts Rebellion, the 1992 Los Angeles Riots, and the 2014 Ferguson Uprising, students will closely examine photographs, television broadcasts, newspapers, magazines, and film and video representations of unrest. In addition, students will visually analyze the works of artists who have responded to the instances of police brutality and/or challenged the systemic racism, xenophobia, and anti-black violence leading to and surrounding these events.nnNOTE: Instructor consent required for undergraduate students. Please contact the instructor for permission to enroll.
Same as: AFRICAAM 291, AFRICAAM 491, ARTHIST 491

ARTHIST 292. Romancing the Stone: Crystal Media from Babylon to Superman. 3-5 Units.
This seminar investigates the importance of rock crystal and its imitations as material, medium, and metaphor from antiquity until modernity. The objects examined include rings, reliquaries, lenses, and the Crystal Aesthetic in early twentieth-century architecture and even Superman's Fortress of Solitude. The texts range from Pliny to Arabic Poetry to Romance Literature to modern manifestos.
Same as: ARTHIST 492, FRENCH 292, FRENCH 392

ARTHIST 294. Writing and the Visual: The Art of Art Writing. 5 Units.
This course, Writing the Visual: The Art of Art Writing, will explore the relationship between writing and visual art, which has been theorized as everything from an act of translation and interpretation to one of collaboration or competition. Oscar Wilde even suggested that, "criticism is itself an art." Students will study these varied approaches to art writing and put them into practice by responding to artworks seen in person around the Bay Area, with the goal of publishing a print journal of student writing at the end of the quarter. Through direct engagement with these writerly modes, students will also develop a personal stance on writing about art, championing one form of art writing in a scholarly essay.

ARTHIST 295. Visual Arts Internship. 1-5 Unit.
Professional experience in a field related to the Visual Arts for six to ten weeks. Internships may include work for galleries, museums, art centers, and art publications. Students arrange the internship, provide a confirmation letter from the hosting institution, and must receive consent from the faculty coordinator to enroll in units. To supplement the internship students maintain a journal. Evaluations from the student and the supervisor, together with the journal, are submitted at the end of the internship. Restricted to declared majors and minors. May be repeated for credit.

ARTHIST 296. Junior Seminar: Methods & Historiography of Art History. 5 Units.
Historiography and methodology. Through a series of case studies, this course introduces a range of influential critical perspectives in art history as a discipline and a practice. The goal is to stimulate thinking about what it means to explore the history of art today, to expose and examine our assumptions, expectations and predilections as we undertake to learn and write about works of art, their meanings and their status in the world.

ARTHIST 297. Honors Thesis Writing. 2-5 Units.
May be repeated for credit.

ARTHIST 298. Individual Work: Art History. 1-5 Unit.
Prerequisite: student must have taken a course with the instructor and/or completed relevant introductory course(s). Instructor consent and completion of the Independent Study Form are required prior to enrollment. All necessary forms and payment are required by the end of Week 2 of each quarter. Please contact the Undergraduate Coordinator in McMurtry 108 for more information. May be repeated for credit.

ARTHIST 302B. Coffee, Sugar, and Chocolate: Commodities and Consumption in World History, 1200-1800. 4-5 Units.
Many of the basic commodities that we consider staples of everyday life became part of an increasingly interconnected world of trade, goods, and consumption between 1200 and 1800. This seminar offers an introduction to the material culture of the late medieval and early modern world, with an emphasis on the role of European trade and empires in these developments. We will examine recent work on the circulation, use, and consumption of things, starting with the age of the medieval merchant, and followed by the era of the Columbian exchange in the Americas that was also the world of the Renaissance collector, the Ottoman patron, and the Ming connoisseur. This seminar will explore the material horizons of an increasingly interconnected world, with the rise of the Dutch East India Company and other trading societies, and the emergence of the Atlantic economy. It concludes by exploring classic debates about the "birth" of consumer society in the eighteenth century. How did the meaning of things and people's relationships to them change over these centuries? What can we learn about the past by studying things?.
Same as: HISTORY 202B, HISTORY 302B

ARTHIST 305B. Medieval Journeys: Introduction through the Art and Architecture. 5 Units.
The course explores the experience and imagination of medieval journeys through an interdisciplinary, cross-cultural, and skills-based approaches. As a foundations class, this survey of medieval culture engages in particular the art and architecture of the period. The Middle Ages is presented as a network of global economies, fueled by a desire for natural resources, access to luxury goods and holy sites. We will study a large geographical area encompassing the British Isles, Europe, the Mediterranean, Central Asia, India, and East Africa and trace the connectivity of these lands in economic, political, religious, and artistic terms from the fourth to the fourteenth century C.E. The students will have two lectures and one discussion session per week. Depending on the size of the class, it is possible that a graduate student TA will run the discussion session. Our goal is to give a skills-oriented approach to the Middle Ages and to engage students in creative projects that will satisfy either the Ways-Creative Expression requirement or Ways-Engaging Difference. NOTE: for AY 2018-19 HISTORY 115D Europe in the Middle Ages, 300-1500 counts for DLCL 123.
Same as: ARTHIST 105B, DLCL 123

ARTHIST 306. Byzantine Art and Architecture, 300-1453 C.E.. 5 Units.
This course explores the art and architecture of the Eastern Mediterranean: Constantinople, Jerusalem, Alexandria, Antioch, Damascus, Thessaloniki, and Palermo, 4th-15th centuries. Applying an innovative approach, we will probe questions of phenomenology and aesthetics, focusing our discussion on the performance and appearance of spaces and objects in the changing diurnal light, in the glitter of mosaics and in the mirror reflection and translucency of marble.
Same as: ARTHIST 106, CLASSICS 171

ARTHIST 308. Virginity and Power: Mary in the Middle Ages. 4 Units.
The most influential female figure in Christianity whose state cult was connected with the idea of empire. The production and control of images and relics of the Virgin and the development of urban processions and court ceremonies though which political power was legitimized in papal Rome, Byzantium, Carolingian and Ottonian Germany, Tuscany, Gothic France, and Russia.
Same as: ARTHIST 108

ARTHIST 310. French Painting from Watteau to Monet. 3-5 Units.
This course offers a survey of painting in France from 1700 to around 1900. It introduces major artists, artworks, and the concepts used by contemporary observers and later art historians to make sense of this extraordinarily rich period. Overarching themes discussed in the class will include the dueling legacies of coloristic virtuosity and classical formalism, new ways of representing visual perception, the opposing artistic effects of absorption and theatricality, the rise and fall of official arts institutions, and the participation of artists and artworks in political upheaval and social change. The course ends with an interrogation of the concept of modernity and its emergence out of dialogue and conflict with artists of the past. Students will learn and practice formal analysis of paintings, as well as interpretations stressing historical context.
Same as: ARTHIST 110, FRENCH 110, FRENCH 310

ARTHIST 311. Introduction to Italian Renaissance, 1420-1580. 4 Units.
New techniques of pictorial illusionism and the influence of the humanist revival of antiquity in the reformulation of the pictorial arts in 15th-century Italy. How different Italian regions developed characteristic artistic cultures through mutual interaction and competition.
Same as: ARTHIST 111

ARTHIST 314. Mystical Naturalism: Van Eyck, Dürer, and the Northern Renaissance. 4 Units.
A survey of the major innovations in Northern European painting ca. 1400-1600, in light of the social status of the artist between city and court. In the early fifteenth century painters began to render an idealized world down to its smallest details in ways that engaged new devotional practices. Later Hieronymus Bosch would identify the painter¿s imagination with the bizarre and grotesque. In response to Renaissance humanism, some painters introduced classical mythology and allegorical subjects in their works, and many traveled south to absorb Italianate pictorial styles. We will be visiting art museums in San Francisco and Stanford. May be repeat for credit.
Same as: ARTHIST 114

ARTHIST 314A. The Dome: From the Pantheon to the Millennium. 4-5 Units.
This course traces the history of the dome over two millennia, from temples to the gods to Temples of the State, and from cosmic archetype to architectural fetish. The narrative interweaves the themes of the dome as image of the Cosmos, religious icon, national landmark, and political monument. It examines the dome not only as a venue for structural innovation, but also metaphysical geometry and transcendent illusionism.nIndividual case studies will familiarize you with major architects from Hadrian to Richard Rogers and historical milestones from the Dome of the Rock to the Capitol in Washington DC. May be repeat for credit.
Same as: ARTHIST 114A, CLASSICS 121, CLASSICS 221

ARTHIST 315. The Italian Renaissance, or the Art of Success. 3-5 Units.
How come that, even if you have never set foot in Italy, you have heard of Leonardo, Michelangelo, and Raphael? What made them so incredibly famous, back then as well as today? This course examines the shooting of those, and other, artists to fame. It provides in-depth analyses of their innovative drawing practices and the making of masterpieces, taking you through a virtual journey across some of the greatest European and American collections. At the same time, this course also offers a study of the mechanics of success, how opportunities are created and reputations managed, and what role art plays in the construction of class and in today's national politics.".
Same as: ARTHIST 115

ARTHIST 317. Picturing the Papacy, 1300-1850. 4 Units.
Popes deployed art and architecture to glorify their dual spiritual and temporal authority, being both Christ's vicars on earth and rulers of state. After the return of the papacy from Avignon, Rome underwent numerous campaigns of renovation that staged a continuity between the pontiffs and the ancient Roman emperors. Patronage of art and architecture became important tools in the fight against Protestantism. Artists include Botticelli, Michelangelo, Caravaggio, and Bernini.
Same as: ARTHIST 117

ARTHIST 318. Titian, Veronese, Tintoretto. 4 Units.
The course addresses the ways in which Venetian painters of the sixteenth century redefined paradigms of color, design, and invention. Themes to be examined include civic piety, new kinds of mythological painting, the intersection between naturalism and eroticism, and the relationship between art and rituals of church and statecraft.
Same as: ARTHIST 118

ARTHIST 319. Love at First Sight: Visual Desire, Attraction, and the Pleasures of Art. 3-5 Units.
Why do dating sites rely on photographs? Why do we believe that love is above all a visual force? How is pleasure, even erotic pleasure, achieved through looking? While the psychology of impressions offers some answers, this course uncovers the ways poets, songwriters, and especially artists have explored myths and promoted ideas about the coupling of love and seeing. Week by week, we will be reflecting on love as political critique, social disruption, and magical force. And we will do so by examining some of the most iconic works of art, from Dante's writings on lovesickness to Caravaggio's Narcissus, studying the ways that objects have shifted from keepsakes to targets of our cares. While exploring the visual roots and evolutions of what has become one of life's fundamental drives, this course offers a passionate survey of European art from Giotto's kiss to Fragonard's swing that elicits stimulating questions about the sensorial nature of desire and the human struggle to control emotions.
Same as: ARTHIST 119, FRENCH 149, FRENCH 349, ITALIAN 149, ITALIAN 349

ARTHIST 320. Superhero Theory. 3-5 Units.
With their fantastic powers, mutable bodies, multiple identities, complicated histories, and visual dynamism, the American superhero has been a rich vehicle for fantasies (and anxieties) for 80+ years across multiple media: comics, film, animation, TV, games, toys, apparel. This course centers upon the body of the superhero as it incarnates allegories of race, queerness, hybridity, sexuality, gendered stereotypes/fluidity, politics, vigilantism, masculinity, and monstrosity. They also embody a technological history that encompasses industrial, atomic, electronic, bio-genetic, and digital.
Same as: AMSTUD 120B, ARTHIST 120, FILMSTUD 120, FILMSTUD 320

ARTHIST 324. The Age of Naturalism, Painting in Europe1830-1874. 4 Units.
Survey of European painting from the heyday of Romanticism to the first Impressionist exhibition. Lectures and readings focus on the tensions between traditional forms and ambitions of history painting and the challenge of "modern" subjects drawn from contemporary life. Attention to the impact of painting in the open-air, and the effect of new imaging technologies- notably lithography and photography - to provide "popular" alternatives to the hand-wrought character and elitist appeal of "high art" cultural forms.
Same as: ARTHIST 124

ARTHIST 332. American Art and Culture, 1528-1910. 4 Units.
The visual arts and literature of the U.S. from the beginnings of European exploration to the Civil War. Focus is on questions of power and its relation to culture from early Spanish exploration to the rise of the middle classes. Cabeza de Vaca, Benjamin Franklin, John Singleton Copley, Phillis Wheatley, Charles Willson Peale, Emerson, Hudson River School, American Genre painters, Melville, Hawthorne and others.
Same as: AMSTUD 132, ARTHIST 132

ARTHIST 342A. The Architecture of Thought: Artists and Thinkers Design for Themselves. 3-5 Units.
This course investigates houses, hideaways, and studios that artists and thinkers have designed for themselves with varying degrees of self-consciousness, from subconscious images of the self to knowing stages for the contemplative life. Case studies range from antiquity to the present, from the studio-house of Peter Paul Rubens to that of Kurt Schwitters; from the house-museum of Sir John Soane to the Vittoriale of Gabriele D'Annunzio; from the philosophical dwelling of the Emperor Hadrian to that of Ludwig Wittgenstein.
Same as: ARTHIST 142A

ARTHIST 343A. American Architecture. 4 Units.
A historically based understanding of what defines American architecture. What makes American architecture American, beginning with indigenous structures of pre-Columbian America. Materials, structure, and form in the changing American context. How these ideas are being transformed in today's globalized world.
Same as: AMSTUD 143A, ARTHIST 143A, CEE 32R

ARTHIST 344B. Modern Design from the Eiffel Tower to Yves Saint Laurent. 4 Units.
Iconic episodes in the history of modern European and American design, including production, consumption, circulation and display -- from iron architecture of the department store and the universal exhibition to the branding practices of Andy Warhol and Yves Saint Laurent.
Same as: ARTHIST 144B

ARTHIST 345. Culture Wars: Art and Social Conflict in the USA, 1890-1950. 4 Units.
This course examines social conflicts and political controversies in American culture through the lens of visual art and photography. We consider how visual images both reflect and participate in the social and political life of the nation and how the terms of citizenship have been represented¿and, at times, contested¿by artists throughout the first half of the 20th century. The class explores the relation between American art and the body politic by focusing on issues of poverty, war, censorship, consumerism, class identity, and racial division.
Same as: AMSTUD 145M, ARTHIST 145, FEMGEN 145

ARTHIST 347. Modernism and Modernity. 4 Units.
This course focuses on European and American art and visual culture between the mid-nineteenth and the mid-twentieth centuries. We will begin and end in Paris, exploring visual expressions of modernism as they were shaped by industrialization and urban renewal, the fantasies and realities of Orientalism and colonial exploitation, changing gender expectations, racial difference, and world war. Encompassing a wide range of media, the course explores modernism as a compelling dream of utopian possibilities challenged by the conditions of social life in the context of diversity and difference.
Same as: ARTHIST 147

ARTHIST 351. Migration and Diaspora in American Art, 1800-Present. 4 Units.
This lecture course explores American art through the lens of immigration, exile, and diaspora. We will examine a wide range of work by immigrant artists and craftsmen, paying special attention to issues of race and ethnicity, assimilation, displacement, and political turmoil. Artists considered include Emmanuel Leutze, Thomas Cole, Joseph Stella, Chiura Obata, Willem de Kooning, Mona Hatoum, and Julie Mehretu, among many others. How do works of art reflect and help shape cultural and individual imaginaries of home and belonging?.
Same as: AMSTUD 151, ARTHIST 151, ASNAMST 151D, CSRE 151D

ARTHIST 353. Warhol's World. 5 Units.
Andy Warhol's art has never before been more widely exhibited, published, or licensed for commercial use, product design, and publication than it is today. For all Warhol's promiscuous visibility and global cachet at the current moment, there is much we have yet to learn about his work and the conditions of its making. This course considers the wide world of Warhol's art and life, including his commercial work of the 1950s, Pop art and films of the 1960s, and celebrity portraiture of the 1970s and 80s. Of particular interest throughout will be Warhol's photography as it reflects his interest in wealth and celebrity on the one hand and on the everyday life of everyday people on the other. The course will include multiple visits to Contact Warhol: Photography without End, an exhibition co-curated by Prof. Meyer on view throughout the quarter at the Cantor Arts Center.
Same as: AMSTUD 153, ARTHIST 153, FEMGEN 153, TAPS 153W, TAPS 353W

ARTHIST 354. The American Civil War: A Visual History. 4 Units.
A painting of men charging across a field, a photograph of dead bodies in a ditch, a fragment of metal, a sliver of bone, and a brass button: how do we make sense of the visual record of the American Civil War (1861-65)? From the Capitol Dome to a skeleton dug up in a highway project a hundred years after the last battle, the course will consider the strange and scattered remnants of a famous era. Drawing on the poetry of Walt Whitman, Emily Dickinson, and Herman Melville, the paintings of Winslow Homer, the photographs of Alexander Gardner, and the oratory of Abraham Lincoln, the course will examine what cannot be portrayed: the trauma of war.
Same as: AMSTUD 154X, ARTHIST 154

ARTHIST 356. American and European Art, 1945-1968. 4 Units.
Examines the pivotal figures, movements, themes and practices of art in the United States and Europe, from the conclusion of World War 2 to the end of the 1960s. Emphasis is on the changed nature of the avant-garde after the catastrophic events of midcentury. Topics include: modern art, ideology and the Cold War; the rise of consumer society and the "Society of the Spectacle"; concepts of medium specificity; the impact of new media and technologies on postwar art making; the role of the artist as worker and activist. Movements include: Abstract Expressionism, Art Informel, Pop, minimalism, process, performance conceptual art. An introductory art history course is recommended.
Same as: ARTHIST 156

ARTHIST 356A. Warhol: Painting, Photography, Performance. 4 Units.
This course focuses on the career of Andy Warhol as a means to consider the broader history of American art and culture since 1950. It examines little-studied aspects of Warhol¿s visual production (e.g. his career as a commercial artist in the 1950s and his everyday photographs of the 1970s and 1980s) alongside his now-canonical Pop paintings of the 1960s. Warhol?s critical and scholarly reception will be scrutinized in detail, as will published interviews of and writings by the artist. Finally, we will consider Warhol¿s legacy and wide-ranging influence on American culture in the decades since his death in 1987.
Same as: ARTHIST 156A, TAPS 156A, TAPS 356A

ARTHIST 357A. Histories of Photography. 4 Units.
This course investigates multiple histories of photography. It begins in early nineteenth-century Europe with the origins of the medium and ends in the United States on September 11, 2001, a day that demonstrated the limits of photographic seeing. Rather than stabilizing any single trajectory of technological iterations, the course is more interested in considering the ¿work¿ performed by photography. Through historical case studies, it considers how `to photograph¿ is to order and to construct the world; to incite action and to persuade; to describe and to document; to record and to censor; to wound; to heal.
Same as: ARTHIST 157A

ARTHIST 359. American Photographs, 1839-1971: A Cultural History. 4 Units.
This course concentrates on many important American photographers, from the era of daguerreotypes to near the end of the pre-digital era. We study photographs of the Civil War, western exploration, artistic subjects, urban and rural poverty, skyscrapers, crime, fashion, national parks, and social protest, among other topics. Among the photographers we study: Carleton Watkins, Eadweard Muybridge, Walker Evans, Dorothea Lange, Garry Winogrand, and Diane Arbus. Emphasis on developing students' abilities to discuss and write about photography; to see it.
Same as: AMSTUD 159X, ARTHIST 159

ARTHIST 359B. American Photography Since 1960. 5 Units.
Since the publication of Robert Frank's THE AMERICANS (1958), many distinguished American photographers have emerged, creating a density and power of expression that arguably rivals and even surpasses the extraordinary achievements of earlier photographers in this country. Garry Winogrand's street photography, Diane Arbus's portraits, Ralph Eugene Meatyard's grotesque masks, Danny Lyon's impassioned social outsiders, William Eggleston's deadpan sidewalks and suburban tables, and on to photographers of our moment--these are just a few of the topics the course will cover. Careful attention to individual pictures; careful consideration of what it is to be an artist, and a critic.
Same as: AMSTUD 159B, ARTHIST 159B

ARTHIST 362. Visual Arts Cuba (1959 - 2015). 3-5 Units.
The evolution of culture in post-1959 Cuba, with a strong focus on visual arts in all media and film will be introduced in this course. Historical examples will be discussed through lectures, readings and the presentation of audiovisual material. Students will develop their research, critical thinking, and writing through assignments, discussions, and the completion of a final paper. This is a discussion-heavy course, so come prepared to read, write and talk.
Same as: ARTHIST 162

ARTHIST 364A. Technology and the Visual Imagination. 4 Units.
An exploration of the dynamic relationship between technology and the ways we see and represent the world. The course examines technologies from the Renaissance through the present day, from telescopes and microscopes to digital detectors, that have changed and enhanced our visual capabilities as well as shaped how we imagine the world. We also consider how these technologies influenced and inspired the work of artists. Special attention is paid to how different technologies such as linear perspective, photography, cinema, and computer screens translate the visual experience into a representation; the automation of vision; and the intersection of technology with conceptions of time and space.
Same as: ARTHIST 164A, FILMSTUD 164A, FILMSTUD 364A

ARTHIST 365A. Fashion Shows: From Lady Godiva to Lady Gaga. 4 Units.
The complex and interdependent relationship between fashion and art. Topics include: the ways in which artists have used fashion in different art forms as a means to convey social status, identity, and other attributes of the wearer; the interplay between fashion designers and various art movements, especially in the 20th century; the place of prints, photography, and the Internet in fashion, in particular how different media shape how clothes are seen and perceived. Texts by Thorstein Veblen, Roland Barthes, Dick Hebdige, and other theorists of fashion.
Same as: ARTHIST 165A, FILMSTUD 165A, FILMSTUD 365A

ARTHIST 367. Beyond the Fuzzy-Techie Divide: Art, Science, Technology. 4 Units.
Although art and science are often characterized as "two cultures" with limited common interests or language, they share an endeavor: gaining insight into our world. They even rely on common tools to make discoveries and visually represent their conclusions. To clarify and interrogate points of similarity and difference, each week¿s theme (time, earth, cosmos, body) explores the efforts of artists and scientists to understand and represent it and the role of technology in these efforts. Focus on contemporary examples.
Same as: ARTHIST 167, FILMSTUD 167B, FILMSTUD 367B

ARTHIST 373. Issues in Contemporary Art. 4 Units.
Major figures, themes, and movements of contemporary art from the 80s to the present. Readings on the neo-avant garde; postmodernism; art and identity politics; new media and technology; globalization and participatory aesthetics. Prerequisite: ARTHIST 155, or equivalent with consent of instructor.
Same as: ARTHIST 173

ARTHIST 378. Ethnicity and Dissent in United States Art and Literature. 4 Units.
The role of the visual arts of the U.S. in the construction and contesting of racial, class, and gender hierarchies. Focus is on artists and writers from the 18th century to 1990s. How power, domination, and resistance work historically. Topics include: minstrelsy and the invention of race; mass culture and postmodernity; hegemony and language; memory and desire; and the borderlands.
Same as: AMSTUD 178, ARTHIST 178

ARTHIST 382B. Cultures in Competition: Arts of Song-Era China. 4 Units.
The Song dynasty (mid-10th to late 13th c.) was a period of extraordinary diversity and technical accomplishment in Chinese painting, ceramics, calligraphy, architecture and sculpture. Artistic developments emerged within a context of economic dynamism, urban growth, and competition in dynastic, political, cultural and social arenas ¿ as between Chinese and formerly nomadic neighboring regimes, or between reformers and conservatives. This course will consider major themes and topics in Song art history, including innovations in architectural and ceramic technologies; developments in landscape painting and theory; the rise of educated artists; official arts and ideologies of Song, Liao and Jin court regimes; new roles for women as patrons and cultural participants; and Chan and popular Buddhist imagery.
Same as: ARTHIST 182B

ARTHIST 383. Theatre of the World: Contemporary Chinese Art. 4 Units.
This course examines the intense and profound changes in Chinese Art from the end of Cultural Revolution to the first decades of the twenty-first century. Multiple course meetings will take place in the San Francisco Museum of Modern Art, where the exhibition Art and China after 1989: Theater of the World will be on view. We will explore how artists express their ways of grappling with the social, political, economic, and personal issues through art. Major topics include cultural multiplicity, global challenge, consumerism, site specificity, and deconstructing and reconstructing of identities, among others. Our discussions will constantly incorporate factors of China's domestic context, global network, and artists' individual connections in order for students to understand the rich and complex dynamics of Chinese contemporary art.
Same as: ARTHIST 183

ARTHIST 384. Aristocrats, Warriors, Sex Workers, and Barbarians: Lived Life in Early Modern Japanese Painting. 4 Units.
Changes marking the transition from medieval to early modern Japanese society that generated a revolution in visual culture, as exemplified in subjects deemed fit for representation; how commoners joined elites in pictorializing their world, catalyzed by interactions with the Dutch.
Same as: ARTHIST 184, JAPAN 184, JAPAN 284

ARTHIST 385. Arts of China in the Early Modern World, 1550-1800. 4 Units.
The dynamic period of late Ming and early Qing dynasty China, roughly 1500-1800 CE, was marked by political crisis and conquest, but also by China's participation in global systems of trade and knowledge exchanges involving porcelain, illustrated books, garden designs and systems of perspectival representation. Topics will include Innovations in urban centers of painting and print culture, politically inflected painting, and cultural syncretism in court painting and garden design.
Same as: ARTHIST 185

ARTHIST 387. Arts of War and Peace: Late Medieval and Early Modern Japan, 1500-1868. 4 Units.
Narratives of conflict, pacification, orthodoxy, nostalgia, and novelty through visual culture during the change of episteme from late medieval to early modern, 16th through early 19th centuries. The rhetorical messages of castles, teahouses, gardens, ceramics, paintings, and prints; the influence of Dutch and Chinese visuality; transformation in the roles of art and artist; tensions between the old and the new leading to the modernization of Japan.
Same as: ARTHIST 187, JAPAN 185, JAPAN 285

ARTHIST 388A. The History of Modern and Contemporary Japanese and Chinese Architecture and Urbanism. 4 Units.
The recent rapid urbanization and architectural transformation of Asia; focus is on the architecture of Japan and China since the mid-19th century. History of forms, theories, and styles that serve as the foundation for today's buildings and cityscapes. How Eastern and Western ideas of modernism have merged or diverged and how these forces continue to shape the future of Japanese and Chinese architecture and urban form.
Same as: ARTHIST 188A

ARTHIST 388B. From Shanghai Modern to Global Contemporary: Frontiers of Modern Chinese Art. 4 Units.
Chinese artistic developments in an era of revolution and modernization, from Shanghai Modern and New National Painting though the politicized art of the Cultural Revolution and post-Mao era re-entry into international arenas.
Same as: ARTHIST 188B

ARTHIST 389C. Global Currents: Early Modern Art Enterprises, Economies, and Imaginaries. 4 Units.
Episodes of global artistic exchange from the 16th to 19th centuries involving commodities (porcelains and textiles), technologies (printmaking, perspective, and cartography), and imaginaries (Chinoiserie, East Asian Occidenteries, Orientalism, Japonisme). The role of enterprises, institutions, and power relations in artistic economies, from the Portuguese Empire, Jesuit mission networks and East India Companies to imperialist systems.
Same as: ARTHIST 189C

ARTHIST 401. World War Two: Place, Loss, History. 5 Units.
A consideration of how the Second World War still goes on today in the form of haunted absences and vivid representations. Studying literature and art in detail, the seminar will center on some of the places where those absences and representations gather: Portbou, Pearl Harbor, Auschwitz, Guadalcanal, London, Berlin, Hamburg, Rome, Omaha Beach, Peleliu, Monte Cassino, Hollywood. Writers and artists include: James Jones, Georges Didi-Huberman, Walter Benjamin, Eduardo Cadava, W.G. Sebald, Rachel Whiteread, Ingeborg Bachman, Wis¿awa Szymborska, Eugene Sledge, Hans Erich Nossack, Jorie Graham, Gerhard Richter, Dani Karavan, Tom Lea, W. Eugene Smith, Val Lewton, and Terrence Malick.
Same as: GERMAN 343

ARTHIST 402. Inherent Vice. 5 Units.
Taught jointly by an art historian and a senior conservator, this research seminar focuses on selected objects (mostly) of modern and contemporary art many in Stanford collections -- that pose significant condition and/or conservation challenges for long term maintenance and display. Together we will examine the objects in the conservation lab and/or the gallery; students will then confer with appropriate museum staff, consult relevant curatorial and conservation files, research and debate potential treatments, and write up reports of their findings. Issues of aesthetics, ethics and other problems bearing on the material longevity of art will be explored together in class discussions as a foundation for thinking about the preservation and exhibition of works of art.
Same as: ARTHIST 202

ARTHIST 405. Art, Ekphrasis, and Music in Byzantium and Islam. 5 Units.
Focus is on the interrelation of art, architecture, verbal description, poetry, and music, including the singing of psalms and recitation of the Qur'an. How ekphrasis, the style of writing vividly intended to transform the listeners into spectators, structures the perception of and response to artistic production be it an art object, building, or a musical performance. The role of ekphrasis in animating the inanimate and the importance of breath and spirit, which become manifest in visual, acoustic, olfactory, and gustatory terms. Religious and courtly settings: Hagia Sophia, the Great Palace of Constantinople, the Dome of the Rock, the palaces of Baghdad and Samarra, the mosque at Cordoba, Medinat al-Zahra and the Alhambra. Greek and Arabic writers on ekphrasis in translation, juxtaposing the medieval material to the ancient theories of ekphrasis and modern scholarship.
Same as: CLASSICS 376

ARTHIST 405A. Graduate Pedagogy. 2 Units.
This course is designed for graduate students in Art History and Film Studies preparing to work as teaching assistants in the Department of Art and Art History. The seminar will focus on a range of theoretical and practical concerns pertaining to the successful conceptualization, organization, and execution of class lectures and discussion sections. Students will be exposed to a variety of perspectives and strategies related to quality teaching at the college level.

ARTHIST 406. The Alchemy of Art: Substance and Transformation in Artistic Practice. 3 Units.
This seminar considers materiality and processes of material transformation as core elements of artistic practice and the history of making, largely from Sumer (3rd Millennium BCE) until the Early Modern period (18th Century in the West), but with several modern comparisons. Major points of focus will include pre-modern perceptions of the elemental properties of materials as matter, the reflexive relationship between materials and imagination, and the diverse ways in which societies have associated specific substances with social and cultural values. Humanistic perspectives on such issues are augmented by complementary insights from the physical sciences, and references are made to current ideas regarding material agency, affordances, and the imperfect separability of nature and culture. Indeed, a central question underlying all the readings is how to distinguish natural from synthetic: where does nature end and art begin, or maybe where does nature stop?.
Same as: ARTHIST 206

ARTHIST 407. The Resurrected Body: Animacy in Medieval Art. 5 Units.
This course explores the relationship of spirit and matter in medieval art and architecture, more specifically how the changing appearance of objects and spaces evokes the presence of the metaphysical as glitter, reverberation, and shadow. We will engage objects and monuments across the Mediterranean, studying the way they were staged in order to produce the perception of liveliness. The phenomenology of liveliness will be tied to the development of the theology of resurrection of the body.
Same as: ARTHIST 207

ARTHIST 407C. Phenomenology and Aesthetics in Medieval Art. 5 Units.
This course explores the phenomenal aspects of the medieval image and space such as glitter, shadow, smoke, reverberation and how these presence effects were conceptualized in medieval culture as animation. Focus is on a select group of monuments as well as engagement with medieval objects at the Cantor Art Museum and the facsimiles of medieval manuscripts kept at the Art Library and Special Collections. Among the monuments we will study are the Alhambra in Spain, the Apocalypse MSS, the Cantigas of Alfonso X, the Byzantine Joshua Roll, the Homiles of the Monk Kokkinobaphos, the Ashburnhamensis Pentateuch, and the Rossano Gospels.
Same as: ARTHIST 207C

ARTHIST 407D. Race and Ethnicity in Premodern Europe. 3-5 Units.
How do historians, art historians, and literary historians of premodern Europe shape their research and their teaching around questions of race? How do current debates on race theory shape our perception of the past and deepen historical inquiry? This graduate colloquium focuses on the most recent publications on race in medieval and early modern studies to reflect on such questions while examining the challenges that race studies put on historical definitions, research methodologies, as well as teaching institutions.
Same as: ARTHIST 207D, HISTORY 215B, HISTORY 315B

ARTHIST 408. Hagia Sophia. 5 Units.
This seminar uncovers the aesthetic principles and spiritual operations at work in Hagia Sophia, the church dedicated to Holy Wisdom in Constantinople. Rather than a static and inert structure, the Great Church emerges as a material body that comes to life when the morning or evening light resurrects the glitter of its gold mosaics and when the singing of human voices activates the reverberant and enveloping sound of its vast interior. Drawing on art and architectural history, liturgy, musicology, and acoustics, this course explores the Byzantine paradigm of animation arguing that it is manifested in the visual and sonic mirroring, in the chiastic structure of the psalmody, and in the prosody of the sung poetry. Together these elements orchestrate a multi-sensory experience that has the potential to destabilize the divide between real and oneiric, placing the faithful in a space in between terrestrial and celestial. A short film on aesthetics and samples of Byzantine chant digitally imprinted with the acoustics of Hagia Sophia are developed as integral segments of this research; they offer a chance for the student to transcend the limits of textual analysis and experience the temporal dimension of this process of animation of the inert.
Same as: ARTHIST 208, CLASSICS 173, CLASSICS 273

ARTHIST 408B. The Art of Medieval Spain: Muslims, Christians, Jews. 5 Units.
The seminar reveals the religious and ethnic hybridity of the art medieval Spain, where the lives, material cultures, and artistic practices of Muslims, Christians, and Jews were more intertwined than any other region of the medieval world. We work thematically rather than strictly chronologically in order to build a model of engagement with medieval art in which the movement of ideas and objects between the three major religions is in itself a focus of study.
Same as: ARTHIST 208B

ARTHIST 408C. Architecture, Acoustics and Ritual in Byzantium. 1-3 Unit.
Onassis Seminar "Icons of Sound: Architecture, Acoustics and Ritual in Byzantium". This year-long seminar explores the creation and operations of sacred space in Byzantium by focusing on the intersection of architecture, acoustics, music, and ritual. Through the support of the Onassis Foundation (USA), nine leading scholars in the field share their research and conduct the discussion of their pre-circulated papers. The goal is to develop a new interpretive framework for the study of religious experience and assemble the research tools needed for work in this interdisciplinary field.nnNOTE: This course is only offered on the graduate level and undergraduates would be admitted by request (sending a letter expressing interest to the instructor and specifying what other courses in music or art history has prepared them to tackle this subject) and special permission only.
Same as: MUSIC 408C, REES 408C, RELIGST 308C

ARTHIST 409. Theories of the Image: Byzantium, Islam and the Latin West. 5 Units.
This seminar explores the role of images in the three major powers of the medieval Mediterranean: the Umayyads, the Carolingians, and the Byzantines. For each the definition of an image- sura, imago, or eikon respectively-became an important means of establishing religious identity and a fault-line between distinct cultural traditions. This course troubles the identification of image with figural representation and presents instead a performative paradigm where chant or recitation are treated as images. As such, students will be able to see the connections between medieval image theory and contemporary art practices such as installation.
Same as: ARTHIST 209C, CLASSICS 158, CLASSICS 258, REES 409

ARTHIST 409A. Image, Icon, Idol: Theories and Practices in Byzantium, Islam, and the Latin West. 5 Units.
This course explores the phenomenon of iconoclasm, iconophobia, and aniconism as markers of a vast and profound cultural transformation of the Mediterranean in the period from the seventh to the ninth centuries. As the Arabs established the Umayyad caliphate in the seventh century, quickly conquering Holy Land, Egypt, and advancing all the way to Spain, they perpetrated an identity crisis in the region. By the seventh century three large political entities formed in the Mediterranean ¿ the Umayyads, the Carolingians, and the Byzantines ¿ each competed for legitimacy; all three emerged from the ashes of Late Antique culture, yet each tried to carve out an identity out of this common foundation. In this parting of the ways, the three cultures took among others the issue of what constituted an image and what role it played in devotion. Eik¿n, imago, ¿ura became the basis on which to built differences and accuse the other political players of idolatry.

ARTHIST 410. The Masters: Raphael. 3-5 Units.
Five hundred years after Raphael mysteriously died (April 6, 1520), this seminar reflects on his contributions to the arts. Raphael's art is often defined as a negation of death. He painted eternal myths, unearthly saints, and timeless beauties. His sketches served as exemplars and the very paragon of drawing for hundreds of years. So much so that art historians have done little more than admire his art. How come Raphael has resisted criticism for half a millennium? What does his unremitting fame tell us about the state of art history? While studying eight of Raphael's masterpieces in depth, this course also reflects on the shortcomings and potentials of art history as a critical discipline. [Undergraduate enrollment with consent of one of the instructors].

ARTHIST 410B. Giotto. 5 Units.
Often hailed as ¿the father of western painting,¿ Giotto was seen as a revolutionary figure even in his own day. We will begin with Giotto¿s critical reception, his artistic predecessors and contemporaries, and his work for patrons ranging from the Franciscan order to the king of Naples. We will most closely examine Giotto¿s masterpiece, the frescoes of the Arena Chapel in Padua, and consider topics including Giotto¿s figural realism, the layered readings of the program, its use of visual rhetoric, and issues of gender, sexuality, and ethnicity.
Same as: ARTHIST 210

ARTHIST 411. Childish Enthusiasms, Perishable Manias. 5 Units.
Universities are sites of gravitas, but what of levitas -- a lighter, more playful category? Does intellectually credible work depend upon a â¿¿critical distanceâ¿ between scholar and object of study? Can we take something seriously without imposing a seriousness that it may not possess (or want)? How to retain (or recover) the intensely pleasurable relation to objects that we were allowed when younger? The seminar is predicated upon the proposition that effective scholarship need not suck the joy from the world.
Same as: FILMSTUD 411

ARTHIST 413. Michelangelo. 5 Units.
Michelangelo's long career in light of recent scholarship. Topics include the status of the cult image, the paragon between poetry and the pictorial arts, painting and questions of literary genre, and Counter Reformation reactions to his art.

ARTHIST 415. Baroque: 1900-2000. 5 Units.
The seminar, which is largely methodological and historiographic, problematizes issues of periodization. The course examines different approaches to the question of "what is baroque," from Alois Riegl and Erwin Panofsky to Michel Foucault, Svetlana Alpers and Giovanni Careri.

ARTHIST 416. Bernini and Baroque Rome. 5 Units.
This seminar examines the career of Gianlorenzo Bernini (1598-1680), sculptor, architect, painter, stage designer and playwright, the premier artist of the popes. It will examine his cultural, political and religious milieu and lay particular emphasis on the theoretical relations between the arts that his oeuvre is seen to embody. In the process it will also review the genre of artistic biography, the historiography of the baroque and the myths of dynamism, theatricality, eroticism (and others) always associated with the period, and Bernini's work in particular. Limited to PhD students in Art History and Film Studies, and advanced undergraduates with permission of instructor.

ARTHIST 416A. Michelangelo Architect. 5 Units.
The architecture of Michelangelo Buonarroti (1475-1564), "Father and Master of all the Arts," redefined the possibilities of architectural expression for generations. This course considers his civic, ecclesiastic, and palatial works. It proceeds from his beginnings in Medicean Florence to his fulfillment in Papal Rome. It examines the anxiety of influence following his death and his enduring legacy in modernism. Topics include: Michelangelo's debt to Classical and Early Renaissance prototypes; his transformation of the canon; the iterative sketch as disegno; architecture and the body; the queering of architectural language; sketch, scale, and materiality; Modernism and Michelangelo. The historiography of Michelangelo has predominantly favored studies in painting and sculpture. Our focus on architecture encourages students to test new ideas and alternative approaches to his work.
Same as: CEE 33A, ITALIAN 216

ARTHIST 417. Architecture, Mysticism, and Myth. 5 Units.
This course examines global origin myths for architecture, for example cosmic symbolism (e.g. the Mandala/dome), and the magic of technologies (e.g. the "petrification" of the wooden hut in permanent architecture). Examples range from Ethiopian rockcut churches, to the Parthenon, to the Ise Grand Shrine, to Fire Temples, and Navajo lodges. The course concludes with the modern mythology of industrialisation and the mechanised building.
Same as: ARTHIST 217

ARTHIST 417B. Architectural Design Theory. 5 Units.
This seminar focuses on the key themes, histories, and methods of architectural theory -- a form of architectural practice that establishes the aims and philosophies of architecture. Architectural theory is primarily written, but it also incorporates drawing, photography, film, and other media. nnOne of the distinctive features of modern and contemporary architecture is its pronounced use of theory to articulate its aims. One might argue that modern architecture is modern because of its incorporation of theory. This course focuses on those early-modern, modern, and late-modern writings that have been and remain entangled with contemporary architectural thought and design practice. nnRather than examine the development of modern architectural theory chronologically, it is explored architectural through thematic topics. These themes enable the student to understand how certain architectural theoretical concepts endure, are transformed, and can be furthered through his/her own explorations.nCEE 32B is a crosslisting of ARTHIST 217B/417B.
Same as: ARTHIST 217B

ARTHIST 418A. Michelangelo: Gateway to Early Modern Italy. 3-5 Units.
Revered as one of the greatest artists in history, Michelangelo Buonarroti's extraordinarily long and prodigious existence (1475-1564) spanned the Renaissance and the Reformation in Italy. The celebrity artist left behind not only sculptures, paintings, drawings, and architectural designs, but also an abundantly rich and heterogeneous collection of artifacts, including direct and indirect correspondence (approximately 1400 letters), an eclectic assortment of personal notes, documents and contracts, and 302 poems and 41 poetic fragments. This course will explore the life and production of Michelangelo in relation to those of his contemporaries. Using the biography of the artist as a thread, this interdisciplinary course will draw on a range of critical methodologies and approaches to investigate the civilization and culture of Italy in the fifteenth and sixteenth centuries. Course themes will follow key tensions that defined the period and that found expression in Michelangelo: physical-spiritual, classical-Christian, tradition-innovation, individual-collective.
Same as: ARTHIST 218A, ITALIAN 237, ITALIAN 337

ARTHIST 419. The Poetics of Softness. 5 Units.
This seminar probes the meaning of softness in the theory and practice of early modern Southern European art. As this seminar will investigate, softness is intrinsically tied to the creative process, to the challenges of visualization and art making. What does it mean for a sculptor to depict fingers digging into marble flesh? How did the painter rise to the challenge of depicting subtle forms - clouds, atmosphere, the beating pulse, hair and animal fur? Why were some of the first histories of art relayed as the progression from hard to soft forms? Through the investigation of the concepts and artworks of artists such as Leonardo, Giorgione, Raphael, Correggio, and Bernini, this seminar will explore softness as an aesthetic category. Materiality, enlivenment, perfection and imperfection in art theory, old-age style, and the ekphrastic tradition will be topics of particular interest. Participants are invited to pursue research papers in their fields of specialty.

ARTHIST 420. Art and Invisibility: The Dissemblance of Labour.. 3-5 Units.
Labor has been at the center of political and philosophical analyses from Jean-Jacques Rousseau to Simone Weil. While uncovering essential stages in the conceptualization of labor--is labor work? How does it differ from process?--this course reframes the question of the nature of labor and artmaking in relation to invisibility. How come entire stages of production have disappeared from history? How have patrons, builders, and artists managed to erase their presence from their artifacts? To what extent do art historical narratives still pursue ideologies of exclusion or, at least, of carelessness when they get to who did what? By pairing specific case studies from the eleventh to the twentieth centuries with select passages from A-list thinkers of labor (Agamben, Arendt, Aristotle), this course offers both a history of a troublesome concept and a series of opportunities to rethink the agendas of a discipline that has often turned a blind eye to specific aspects of making. Interdisciplinary in spirit--we focus on select groups of paintings, buildings, organizations, and co-operations--the course also serves as an occasion for introspective analyses, thus helping future researchers to re-think the ways they work and the political motives of their investigations.

ARTHIST 421. Art and Visual Culture in Europe: The 1920s and 30s. 5 Units.
This seminar focuses attention on European art institutions, exhibitions, journals, and movements, most of which intersected with one another across national borders during the interwar period, including Cubism, De Stijl, Purism, Art Deco, the Bauhaus, and Surrealism. Media include painting, architecture, photography, film, fashion and (graphic) design. We will examine period sources in Stanford library special collections and visit the permanent collection at SFMOMA.

ARTHIST 422. Reception and Literacy in Roman Art. 5 Units.
(Formerly CLASSART 322.) Beyond a focus on artists and patrons: how Roman art was seen and understood by its contemporary viewers. Themes include memory, performance, gender, replication, and constructions of space. Goal is to draft a differentiated model of viewing and literacy, with attention to collective experience, hierarchy, access, and subversion.
Same as: CLASSICS 373

ARTHIST 423. Living in the Material World: Imagination and Agency. 5 Units.
This seminar deals with the materials that artists have chosen in art and construction from antiquity to the early modern era. The particular focus is upon pre-modern perceptions of the inherent properties of materials, from amber and ivory to marble and granite, as well as the diverse ways in which societies have associated particular substances with social and cultural values. Particular emphasis is laid upon the architectural use of materials.
Same as: ARTHIST 223

ARTHIST 423B. Art That Moves: Affect, Kinesis, Mobility, 1300-1700. 5 Units.
The early modern artist who imbues his subjects with movement is praised by his critics above all others, for he can do what is impossible: give life to dead matter. Movement is sometimes suggested, a trick of the eye that leads the spectator to anticipate a moment just about to unfold. Other times, the artist is said to conjure a living figure, whose flesh trembles with breath and a beating pulse. This seminar explores these and other examples of movement, instances that negotiate the relationship between depicted and actual movement with the emotion it stirs (affect). We will also study movement¿s relation to narrative and descriptive language (history and ekphrasis), and art¿s ability to move through time (Warburg¿s Pathosformel) and space (artworks and artists that travel). A study of movement uncovers multiple contradictions and possibilities in the history of art.

ARTHIST 424. Architecture as Performance from Antiquity to the Enlightenment. 5 Units.
This seminar examines the nature of architectural representation in the western tradition, from antiquity until the 18th century. It considers the ancient theatre as an icon of representation and the afterlife of the stage building as a model for western architecture, including ephemera. It concludes a distinction between the theatrical and the more recent concept of the theatrical.
Same as: ARTHIST 224

ARTHIST 426. New Landscapes of China: Ecologies, Media, Imaginaries. 4-5 Units.
An exploration of new forms of landscape art in China's contemporary era, 1980s-present. Studies of new media platforms for landscape related imagery, imagined landscapes, and expanded concepts of landscape in an era of heightened ecological consciousness.
Same as: ARTHIST 226

ARTHIST 429. Vienna and Hamburg : Readings in the Science of Art History. 5 Units.
The place of art history in a university curriculum was established in Europe only during the course of the nineteenth century, and only after demonstrating that its methods are rigorous and that its goals have little to do with subjective connoisseurship or personal taste. The ambition was to develop a properly ¿scientific¿ [wissenschaftlich] practice able to claim legitimacy among the traditional disciplines of university study and research. Two German-speaking centers were critical to this development : the Institute for Austrian Historical Research in Vienna and the Warburg Library for the Science of Culture at the University of Hamburg. The best-known author of the first is Alois Riegl, while the second counts Aby Warburg, Erwin Panofsky, and Ernst Cassirer among its members. Recent books on both centers, and the availability of texts in English by others of each group now make it possible to revisit their debates about ¿scientific¿ art history that shaped the field as we know it today. This seminar will read closely a selection of these texts with the aim of understanding more fully our own intellectual history and its impact upon discussions concerning the place of our discipline within the humanities today.

ARTHIST 430. Cinema and Ideology. 5 Units.
The relationship between cinema and ideology from theoretical and historical perspectives, emphasizing Marxist and psychoanalytic approaches. The practice of political filmmaking, and the cinema as an audiovisual apparatus and socio-cultural institution. Topics include: dialectics; revolutionary aesthetics; language and power; commodity fetishism; and nationalism. Filmmakers include Dziga Vertov, Jean-Luc Godard, Bruce Conner, and Marco Ferreri. Theoretical writers include Karl Marx, Sergei Eisenstein, and Slavoj Zizek. Prerequisite: consent of instructor.
Same as: FILMSTUD 430

ARTHIST 430B. Image and Text in Chinese Painting. 3-5 Units.
An examination of many types of interactions between images and texts in Chinese painting. These include poetic lines inscribed on paintings (as response or as a theme given to the artist to paint), paintings that emulate or transform ancient poetic couplets, or illustrate poetic and literary narratives, and calligraphic inscriptions. Attention will be given both to comparative perspectives and to the special aesthetic and intellectual consequences that the conjunction of the literary and visual modes give to Chinese artistic expression. [Undergraduate enrollment with consent of one of the instructors].
Same as: ARTHIST 230B, CHINA 230, CHINA 430

ARTHIST 432. Rethinking American Art. 5 Units.
A re-examination of American art of the 18th and 19th centuries, focusing on works in the collection of the de Young Museum, San Francisco. The class will meet weekly at the de Young, where we will be joined by Professor Margaretta Lovell and students from the University of California, Berkeley. Each student will pursue an in-depth study of a single work in the Museum's superb American collections, using documents of social and cultural history. We will pay particular attention to recent scholarship, questions of genre (landscape, portrait, still life and images of everyday life), and the "biography of objects" (the way works of art shift in context and interpretation over time).nGraduate seminar open to advanced undergraduates with the instructor¿s approval.

ARTHIST 440. Millennium Approaches: The Art of the 1990s. 3-5 Units.
This seminar will examine the art historical legacy of the 1990s, the decade of Bill Clinton, Beavis and Butthead, and Y2K. By placing art in conversation with music, popular culture, and political events, we will explore the dark underbelly of the decade's facade of sunny optimism. Key topics will include the the end of the Cold War, multiculturalism, American interventionism, the AIDS crisis, and early internet culture. Artists covered will include Felix Gonzalez-Torres, Kim Gordon, Mike Kelly, the Young British Artists, Gregg Bordowitz, Lorna Simpson, Zoe Leonard, Byron Kim, and Glenn Ligon. What is the relationship between art, popular culture, and history? How did the 1990s help shape our current culture?.
Same as: ARTHIST 240

ARTHIST 440A. The Art Market. 5 Units.
This seminar is designed to examine aspects of the art market in the current moment and since the mid 19th century. Participants will have an opportunity to engage with problems and perspectives that, until recently, have generally been overlooked or marginalized in narratives of the history of art. Each week, students will write a response to the readings to be shared in advance of the class meeting, and each week, discussion will be initiated by a different student. In individual research projects culminating in a seminar paper, students will be encouraged to focus on how the art market may have impacted the production, reception, and/or circulation of a work or works by a particular artist. .

ARTHIST 441. Overlooked/Understudied. 5 Units.
This seminar focuses on overlooked artists and understudied artworks in the U.S. from the late 19th century to the present. Rather than reclaiming marginality for its own sake, we will consider how the practice of looking at the overlooked art changes familiar narratives of canonical art.

ARTHIST 442. Art History in the First Person. 5 Units.
Course Description: This seminar considers the use of the first person voice in a wide range of writings about art, from fiction to criticism to scholarship. Insofar as graduate students have typically been discouraged from using the first person voice in their scholarly work, we will question the benefits and drawbacks of doing so in particular cases. To what ends have different writers put the first person voice and how do they integrate it with others strategies of written expression? How might we distinguish among different forms of speaking from the position of ¿I¿ in art-historical writing? What kind of ¿I¿ is at stake¿personal, professional, intellectual, imaginary, or otherwise?nnRequirements: Students will be required to attend all seminar meetings and participate actively in discussion. They will submit two types of writing assignments: The first, which each student will prepare on a rotating basis, will be a 2-page response to a selected reading that will serve to launch discussion of that text in seminar. The second, longer paper (12-15 pages) will involve original research on a selected object or exhibition and the writing of a paper that adopts the first person voice to some degree or explains its necessary rejection.

ARTHIST 443. Networks: A Visual History. 3-5 Units.
Networks are maps for thinking. They illustrate connections while shaping mental journeys, transforming our self-reflexivity along the way. In this course, we will study the metamorphoses of networks, from medieval genealogies to Renaissance cartographic systems and from modern mnemotechnic diagrams to today's visualizations of brain connectivity to ask questions about the politics of connectivity, the deceptions of graphic simplicity, and the capacity of infographics to turn into art.

ARTHIST 445. What's not American about American Art?. 5 Units.
This seminar focuses on American art as a history of migration (of people but also of visual objects) across national and continental boundaries. We examine trans-Atlantic and trans-Pacific dialogues and consider how anxieties about foreigners, immigrants, and political dissidents shaped American art and culture at particular moments in the 20th century. In the second half of the course, we consider a series of museum exhibitions that repositioned American art as a history of social conflict and exclusion.

ARTHIST 448. The Body in Film and other Media. 5 Units.
In this seminar, we will consider the body on screen as well as the body before the screen i.e. the spectator but also the profilmic body of the actor to examine corporeal performance and reception. The dancing body, the comic body, dead and live bodies, the monstrous body, the body in pain, the virtual body all raise questions about embodiment, liveness, and performance. We will read the body in audiovisual culture through an engagement with affect theory, focusing on the labor of performance, the construction of stardom, spatial and temporal configurations of the performing body, and the production of affect and sensation in the spectating body. Through a discussion of make-up, fashion, the labor of producing the idealized star body from the meat-and-bones body of the actor, or body genres where the spectator's body is beside itself with sexual pleasure, fear and terror, or overpowering sadness, we will inquire into ideologies of discipline and desire that undergird mediatized bodies. nnNo prior engagement with film studies is required. Students are encouraged to write seminar papers that build on current research interests.nnNOTE: Instructor consent required for undergraduate students (only seniors may enroll). Please contact the instructor for permission to enroll if you're an undergraduate senior.
Same as: FILMSTUD 448

ARTHIST 450. Art in the Age of Precarity. 5 Units.
Art and precarity in the age of neoliberalism. How artists and critics engage questions of immaterial labor, human capital, structural racism, environmental crisis, the anthropocene and other current issues in their work. The question of art as activism and social practice relative to such themes. Enrollment contingent upon permission of instructor; permission numbers will be provided by staff upon professor's approval.

ARTHIST 452. Ghosts. 5 Units.
Is history a form of ghost story? Historians summon the past--making it live in the present. Even the most empirical history is a kind of necromancy: the historian conjures the past, making it appear before our eyes. Tables and figures and other statistical data, no less than other other objective information, flutter in front of the reader like other sorts of ectoplasm in the crystal ball. In this course we will consider ghost stories and ghost paintings for what they reveal about the historian's occult craft. We will devote special attention to Stanford's campus as a haunted place, and students will write their final papers on some ghostly aspect of the university.

ARTHIST 453. Reading Walter Benjamin. 5 Units.
Few cultural critics are so often cited by scholars in the humanities as Walter Benjamin. The impact of his writings has been decisive to some of the most influential art historians of recent memory, although usually based on a small number of texts (the Kunstwerk essay, the writings on photography, the flâneur, and cinema). Literary historians have turned to somewhat different studies with great profit, notably his writings on Baudelaire, translation, and German tragic drama. The publication of Benjamin¿s entire oeuvre in English has made his work more accessible to a broad range of scholars with diverse interests; one direction emerging from this familiarity is a deeper awareness of his commitment to materialist history. With the palpable collapse of ¿social art history¿ amongst younger art historians, dispersed ambitions of where ¿visual studies¿ might lead, and the return to aesthetic meditations derived from protracted analyses of single works, it may be the time to re-read Benjamin with an eye towards understanding his ambitions for a ¿materialist history.¿ That is the objective of this seminar : we will read deeply in Benjamin¿s writings, configure some ideas of what history meant to him, and attempt to export some of those practices to our current art-historical projects.

ARTHIST 454. The Image in Question : French theory after Foucault. 5 Units.
TBD.

ARTHIST 456. What Was Photography?. 4 Units.
Digital imaging has largely replaced darkroom work over the past quarter century, yet analog practices still dominate theories of photography. Working closely with the Capital Group Foundation Collection at the Cantor, this class will explore how those theories relate to vintage photographic prints and whether they are still relevant to the photography being produced today. Students will select one photographer within the Collection and create a set of writings that help contemporary viewers see these mid-century American artists through diverse contemporary perspectives.
Same as: ARTHIST 256

ARTHIST 457. Abstract Expressionism. 5 Units.
Coinciding with the opening of the Anderson Collection in the fall of 2014, this seminar considers the expanded field of Abstract Expressionism relative to both domestic and international cultural politics. Topics: Modernism and existentialism; transnational avant-gardes; interdisciplinary approaches to the visual image at mid-century; the ideologies of formalism and autonomous art; cold war aesthetics. Pollock. de Kooning, Guston, Newman, Rothko, Still, Gorky others. Close readings of Greenberg, Rosenberg and critics associated with Partisan Review and little magazines. Enrollment limited by application only; Phd students only with preference to Art History.

ARTHIST 458. Warhol and After. 5 Units.
This seminar focuses on the wide-ranging career of Andy Warhol as a means to consider the broader history of American art and culture since 1950. It examines little-studied aspects of Warhol¿s visual production (e.g. his career as a commercial artist in the 1950s, his everyday photographs of the 1970s and 1980s) as well as now-canonical Pop paintings of the early-to-mid 1960s. Warhol¿s critical and scholarly reception will be scrutinized in detail, as will published interviews of and writings by the artist. Finally, we will consider Warhol¿s legacy and influence on American art in the decades since his death in 1987.

ARTHIST 460. Meta-Pictures. 5 Units.
What happens to a painting or a photograph when it depicts another representation inside itself? Either as a window or as a literal other picture, or even in the portrayal of a shadow cast by a tree (itself a kind of representation), works of art change their nature, expanding their claims on our imagination, when they portray these "other worlds" that both consolidate and destroy the main picture they inhabit. Focusing on Victor Stoichita's The Self-Aware Image (1997), among other texts, we will discuss Renaissance and Baroque painting primarily but with ample room for students to write final papers on meta-pictures from many eras and places.

ARTHIST 461. The American Civil War: An Experiential History. 5 Units.
Can one write a history of lived experience, of ephemeral states that never were represented? Can one look at representations of paintings, photographs, and literature to see where these ephemeral states might be trapped, or might otherwise be pictured? Feeling that the real war did not get in the books (for the most part), the course examines those books and other representations and so many things that never attained so exalted a form to look at the war anew. Methodological readings as well as readings about the Civil War.

ARTHIST 462. The Sense of Place in American Art. 5 Units.
The course will focus on places in American art, literature, and material culture--how places are imagined; how they are conceived in opposition to the pure flow of forgettable experience; how what happens in a place somehow remains.

ARTHIST 463. Grad Seminar: American - Ekphrasis. 5 Units.
Description is a prime skill for an art historian. How to make a reader (or listener) see a work, whether it is illustrated or not, is arguably the most fundamental and important task and pleasure in this discipline. How to make a world--both for oneself and for one's audience--is the larger purpose of such imagistic writing. Considering historical and more recent examples of ekphrasis, the course will concentrate on works of art in the Cantor Arts Center, requiring each student to select a work that will become the basis for a quarter-long writing project.

ARTHIST 464. American Art and Anthropology. 5 Units.
This graduate seminar will address the intertwined histories of American art and anthropology from 1850-1950. During this period, the discipline of anthropology underwent a fundamental shift from a preoccupation with scientific racism to an emphasis on cultural pluralism. How did anthropology¿s transforming conception of ¿culture¿ inflect interethnic artistic exchange and the emergence of American modernism? Key subjects of inquiry will include racial objectification, the colonial gaze, ¿outsider¿ art, documentary and ethnographic film, and cultural appropriation.

ARTHIST 465. Media Technology Theory. 3-5 Units.
This course surveys major theoretical approaches to the study of media technologies, including Frankfurt School critical theory, media archaeology, actor network theory, science and technology studies, platform studies and theories of critical making. By the end of the course, students should have a rich familiarity with the literature in this area, as well as with exemplary empirical studies conducted within each tradition. Preference to Ph.D. students in Communication and Art and Art History. Consent of instructor required for non-PhD students.
Same as: COMM 384, FILMSTUD 465A

ARTHIST 465A. Word and Image. 3-5 Units.
What impact do images have on our reading of a text? How do words influence our understanding of images or our reading of pictures? What makes a visual interpretation of written words or a verbal rendering of an image successful? These questions will guide our investigation of the manifold connections between words and images in this course on intermediality and the relations and interrelations between writing and art from classical antiquity to the present. Readings and discussions will include such topics as the life and afterlife in word and image of Ovid's "Metamorphoses," Dante's "Divine Comedy," Ludovico Ariosto's "Orlando Furioso," and John Milton's "Paradise Lost;" the writings and creative production of poet-artists Michelangelo Buonarroti, William Blake, and Dante Gabriel Rossetti; innovations in and correspondences between literature and art in the modern period, from symbolism in the nineteenth century through the flourishing of European avant-garde movements in the twentieth century.
Same as: ARTHIST 265A, COMPLIT 225, ITALIAN 265, ITALIAN 365

ARTHIST 466. Queer America. 5 Units.
This class explores queer art, photography and politics in the United States since 1930. Our approach will be grounded in close attention to the history and visual representation of sexual minorities in particular historical moments and social contexts. We will consider the cultural and political effects of World War II, the Cold War, the civil rights movement, psychedelics, hippie culture and sexual liberation, lesbian separatism, the AIDS crisis, and marriage equality.
Same as: FEMGEN 466

ARTHIST 467. Cubism: Theory, Practice, & History. 5 Units.
This course explores historiography and method in the history of art through a consideration of the multiple constructions of French Cubism as a complex of styles, a set of theoretical problems, and a historical phenomenon. We will explore how issues raised by, and about, Cubism have been articulated in recent literature on the subject. Prerequisite: this course is open only to graduate students or by permission of the instructor.

ARTHIST 468. Encountering Contemporary Chinese Painting: Media and Themes. 5 Units.
Two spring quarter exhibitions -- oil paintings and drawings by Zeng Fanzhi at the Anderson Collection, and Ink Worlds with works by two dozen major ink painters, calligraphers and video essayists at the Cantor -- convey part of the diversity of contemporary Chinese art practice. This seminar will explore media and techniques, artistic careers and strategies, and questions of cultural identity, history, place, language and the visionary presented by these artists and exhibitions.
Same as: ARTHIST 268

ARTHIST 470. Globalization and Contemporary Art. 5 Units.
Enrollment restricted to graduate students. Globalization as the most important paradigm for the production, circulation, and reception of contemporary art since the 1990s. The expanding terrain of the art world; biennial culture; new economies of scale and the art market along with its critique in the discourses of empire and multitudes. Debates on the thematics of hybridity; post-Fordism; the flat world and capital flows; exteriority and site specificity; and new models of collectivism in recent art.

ARTHIST 471. Art & Fashion. 5 Units.
This course will engage the interface between art and fashion through the lens of a Cantor Arts Center 2018 exhibition: The Art of the Brand: Mondrian, Saint Laurent and Pop Art in America. Students will write essays on objects in the exhibition for publication in the accompanying catalogue and for wall texts. The course explores the concept of branding as a means to organize new thinking about the relationship between classic modernism, fashion, and the ways in which pop artists (Lichtenstein, Segal, Warhol, Wesselmann) dealt with abstraction and figuration, originality and reproduction, elite and mass culture, in the process reinventing Mondrian¿s style as a brand that brings Warhol¿s Campbell¿s treatment of soup cans to mind.

ARTHIST 472. Mellon Curating Course. 5 Units.
This course focuses on the production, criticism, and curating of art. It encompasses both the study of curatorial work and the organization of an exhibition at the Cantor. Through a series of required readings, intensive class discussions, class trips, guest lectures, and first-hand encounters with art objects and exhibitions, we will investigate the history and contemporary practice of curating. Our work together will culminate in an exhibition at the Cantor organized by class members in close consultation with Cantor staff. The show will open in late fall 2015-16 and will be on view for approximately 12-15 weeks. Students are expected to enroll in both the Spring 2014-15 and Fall 2015-16 quarters. For graduate students only and with the approval of the faculty. Course will be co-taught by Richard Meyer and Connie Wolf.

ARTHIST 473. Couture Culture. 5 Units.
This seminar examines the relationship between art, fashion and representation in Europe and the United States at key moments between 1860 and the present. Beginning with Baudelaire, Impressionism, the rise of the department store and the emergence of haute couture, we will look at what might be described as the love/hate relationship between art and fashion that has been a recurring feature of modern and contemporary art, design and architecture, culminating in the spectacular fashion exhibitions mounted at the Guggenheim, Metropolitan, Victoria & Albert and other major art museums in recent years. Students will pursue related research projects of their choice. NOTE: Instructor consent required for undergraduate students. Please contact the instructor for permission to enroll.

ARTHIST 474A. Uncanny Lives: Encounters with the Humanoid. 5 Units.
From murderous dolls to evil doppelgängers, humanoid doubles haunt the Western cultural imagination. Beginning with an in-depth look at the contested concept of the "uncanny", the seminar traces the history of anxiety about non-human humans in the West. An interdisciplinary inquiry, this course draws its sources from art, film, literature, psychology, and science.

ARTHIST 475. Media Cultures of the Cold War. 3-5 Units.
The intersection of politics, aesthetics, and new media technologies in the U.S. between the end of WW II and the fall of the Berlin Wall. Topics include the aesthetics of thinking the unthinkable in the wake of the atom bomb; abstract expressionism and 'modern man' discourse; game theory, cybernetics, and new models of art making; the rise of television, intermedia, and the counterculture; and the continuing influence of the early cold war on contemporary media aesthetics. Readings from primary and secondary sources in art history, communication, and critical theory.
Same as: COMM 386

ARTHIST 477. Folk, Outsider, Self-Taught. 5 Units.
This seminar will consider the subject of self-taught artists, who form a shadow history of American art. We will examine their work and reception by fine artists and institutions in the United States, looking specifically at how they aligned with, departed from, or helped define received art historical narratives. Special attention will be paid to issues of collecting and display, the shifting terms used to designate "self-taught," and theoretical and ethical concerns raised by the study of self-taught artists. Key themes will include theories of the archive, race, spirituality and enchantment, and disability. How might study of self-taught artists transform our understanding of canonical art historical movements? How does self-taught art challenge what it means to write about, research, and encounter objects in the world?.

ARTHIST 477A. An Other Art: Creativity and Neurodiversity. 4 Units.
From its initial institutional recognition in the first decades of the 20th century, there were repeated attempts to bring creative work of the mentally ill within the fold of art: from pioneering psychiatric work informed by psychoanalysis, to its exaltation by French Surrealists, to Art Brut, to the budding industry of Outsider Art. Still, created outside of art institutions this kind of art is an expression of an inner necessity of artists, and not of their skills and professional savvy. Regardless of the level of recognition, creations of neuro-diverse people remain on distant margins not only of art institutions, but of the society. As such, this art marks the limits of the social as conceived in western contemporary culture. In this seminar, we will explore neuro-diversity in different art forms, from visual works, to music, to performance, all the way to the works that escape categorization, such as the spatial aesthetics of the homeless. Through the seminar, we will pay special attention to the social position of this, most vulnerable of all forms of artistic production: the stigma attached to madness, neglect of neuro diverse people, and social, political, and economic challenges related to (de)institutionalization of the mentally ill in the United States.
Same as: TAPS 340

ARTHIST 478. Problems in the History of Collecting, Circulation and Display. 5 Units.
This graduate seminar involves intensive study of art collecting, circulation and display through the lens of one of the principal institutions of art history: the museum. It will include a site visit to the Solomon R. Guggenheim Museum to gain a comprehensive view of this complex institution as a basis for seminar-related research and writing. Limited to PhD students in Art History and Film Studies, or by permission of the instructor.

ARTHIST 479. The Days: On the Writing of Specific Dates in History. 5 Units.
What is the value of writing a whole essay or dissertation or book on a specific date in history? What does such an approach reveal and obscure? What challenges does it place on the *writer* of history? Exploring a series of case histories in weekly meetings, the seminar will also ask that each student write a paper on a specific date, evoking that one day on the calendar as a moment of unforgettable importance.

ARTHIST 480B. The World of Chen Hongshou (1598-1652). 5 Units.
Planned to coincide with a special international exhibition at the Berkeley Art Museum of works by the seventeenth century figure painter and print designer Chen Hongshou (1598-1652), this seminar will explore his art and cultural environment. Along with close study of his original paintings, we will study his connections with printmaking and publishing, fiction and drama culture, and his literary, social and patronage networks.
Same as: ARTHIST 280B

ARTHIST 481. Chinese Portraiture. 4 Units.
Exploration of recent studies of Chinese portraiture, with a focus on modern and contemporary eras. Portrait practices in treaty port cities; photographic portraits, portraits and modernity; political portraits in public arenas, self-erasure in contemporary portraiture, women's self-portraits, and experimental video portraits will be among the potential topics of discussion.
Same as: ARTHIST 281

ARTHIST 482A. Approaching Dunhuang: Methods and Debates. 5 Units.
This seminar will explore recent scholarly approaches to the visual arts of the Buddhist cave shrine complex at Dunhuang in northwest China between the 5th and 9th c. CE. Topics will include real and virtual spatiality of the cave shrines; questions of function (ritual, memorial, meditative, visualization); textual and doctrinal relationships of images and spaces; patronage and political contexts; production techniques; narrative and paradise iconographies; icons and illustrations. The seminar group will visit the concurrent major Dunhuang exhibition at the Getty Museum in Los Angeles and focus especially on banner paintings, sculptures, and replica cave shrines (275, 285, 320) represented in the exhibition.

ARTHIST 483. Chinese Buddhist Painting: Visions and Practices. 5 Units.
This course explores how Chinese Buddhist art adapts to changes in the religious visions, imagination, and practices of Buddhism in China. It focuses primarily on Buddhist paintings but will occasionally include other types of artistic devices, such as space for display, architectural design, and sculpture, to reach a better understanding of the viewing and the religious experiences. Striving beyond the discussion of style and iconography, we will broaden our pursuits by incorporating various issues such as the domestication of a foreign religion, the relationship between Buddhist literature and images, fusion with popular literature, social connections among eminent monks, scholars and artists, and political use of Buddhist images.
Same as: ARTHIST 283

ARTHIST 485. The Situation of the Artist in Traditional Japan. 5 Units.
Topics may include: workshop production such as that of the Kano and Tosa families; the meaning of the signature on objects including ceramics and tea wares; the folk arts movement; craft guilds; ghost painters in China; individualism versus product standardization; and the role of lineage. How works of art were commissioned; institutions supporting artists; how makers purveyed their goods; how artists were recognized by society; the relationship between patrons¿ desires and artists¿ modes of production.
Same as: JAPANGEN 220

ARTHIST 485A. Exhibiting East Asian Art. 1-5 Unit.
This seminar will explore the history, conceptual approaches, design, and practicalities of museum-based exhibitions of East Asian art. Through readings, field trips, and site-based exercises the seminar will look to inform the planned reinstallation of the Cantor Center's East Asian galleries. Open to graduate and undergraduate students with interests in art history, museology, design, and cultural representation. Permission of the instructor required.

ARTHIST 486A. Exhibition Seminar: Contemporary Chinese Calligraphy and Painting. 5 Units.
This two-quarter seminar will be a planning workshop for an upcoming exhibition of contemporary Chinese ink painting at the Cantor Center for Visual Arts. Drawn from a major private collection, objects in the exhibition will represent leading artists and trends in contemporary Chinese ink painting, printmaking, and calligraphy. Seminar participants will be involved in all aspects of the project, from conceptualizing exhibition themes, researching artists and works, object selection and exhibition design to writing labels, wall texts, and essays for a planned accompanying publication. Limited enrollment; prior consent of instructor required. May be repeat for credit.

ARTHIST 487X. Pictures of the Floating World: Images from Japanese Popular Culture. 5 Units.
Printed objects produced during the Edo period (1600-1868), including the Ukiyo-e (pictures of the floating world) and lesser-studied genres such as printed books (ehon) and popular broadsheets (kawaraban). How a society constructs itself through images. The borders of the acceptable and censorship; theatricality, spectacle, and slippage; the construction of play, set in conflict against the dominant neo-Confucian ideology of fixed social roles.
Same as: ARTHIST 287, JAPAN 287

ARTHIST 489. Connoisseurship Studies of Chinese Painting, Calligraphy, and Seals. 5 Units.
This course focuses on taking connoisseurship out of the classroom and into the collecting world. With many classes being held at the Asian Art Museum and private collections in the Bay Area, students will learn not only what the role connoisseurship plays in the current art landscape, but how a museum works. Combines case studies in the field, reading material, eyes-on experience, and discussion, this class will address the topics of utilizing resources, conducting research, cultivating collectors, building collections, and curating exhibitions through the lens of connoisseurship.

ARTHIST 489A. Making the Masterpiece in Song Dynasty China. 5 Units.
Studies of canon formation involving Song Dynasty (10-13th c.) Chinese works of painting, calligraphy, ceramics, and architecture. The roles of early art writing and criticism; collecting histories; art historical theory; / copying, imitation, and reproductive practices; period and regional taste; and modern museological and art historical discourses in identifying and constructing a canon of Song masterworks.
Same as: ARTHIST 289A

ARTHIST 490. Curatorial Activism in the Arts of Africa. 5 Units.
Enrollment restricted to graduate students and advanced undergraduates. What is contemporary in African art and how does one curate the contemporary in and through African art? The course examines curatorial practices and activist projects. Topics include redefining museum exhibitions and collections of African art at the Cantor Arts Center and museums around the world; breaking away from stereotypical representations of the arts and cultures of Africa; controversial issues and dilemmas; curatorial activities directed toward cultural, social, and political activism; strategic modes of display and design; subjectivity vs. objectivity; and fostering critical dialogues about the arts and cultures of Africa.

ARTHIST 490A. Indigenous Cultural Heritage: Protection, Practice, Repatriation. 3 Units.
This interdisciplinary seminar explores pressing questions relating to the protection, practice and repatriation of the cultural heritage of Indigenous peoples from North America and beyond. Using an innovative combination of in-class lectures and videos of interviews with renowned experts, including Indigenous leaders, scholars, artists and performers and museum professionals from around the world, this seminar will explore and problematize, among other subjects: the impact of colonialism, urbanization and other political, legal, economic, religious and cultural forces on understandings and definitions of "indigenous" and "cultural heritage"; the development of international law relating to Indigenous peoples¿ cultural rights; international, domestic, and tribal heritage protection and repatriation laws/initiatives including the 2007 United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), the 1990 US Native American Graves Protection and Repatriation Act (NAGPRA), and others; past and present Western museum practices and guidelines relating to display, preservation, provenance research and repatriation of indigenous cultural material; the meaning of repatriation to Indigenous peoples and other stakeholders; and resolving repatriation disputes, including by alternative dispute resolution (ADR) processes. While case studies will relate primarily to Indigenous peoples of North America, comparisons will be drawn with the situation of Indigenous peoples in other regions, such as Oceania and Russia. Each week students will brainstorm actionable ideas for amending/supplementing current frameworks in order to give force to the cultural rights enumerated in UNDRIP. The overall seminar experience will involve discussions of lectures and video content, assigned readings, quizzes, a class visit to the Cantor Center Native Americas collection, and visits to our classroom by experts. Elements used in grading: class participation, attendance and a final project (one-day take-home exam; or research paper or film project with instructor's consent).
Same as: ARTHIST 190A, PUBLPOL 190, PUBLPOL 290

ARTHIST 491. Riot!: Visualizing Civil Unrest in the 20th and 21st Centuries. 5 Units.
This course explores the visual legacy of civil unrest in the United States. Focusing on the 1965 Watts Rebellion, the 1992 Los Angeles Riots, and the 2014 Ferguson Uprising, students will closely examine photographs, television broadcasts, newspapers, magazines, and film and video representations of unrest. In addition, students will visually analyze the works of artists who have responded to the instances of police brutality and/or challenged the systemic racism, xenophobia, and anti-black violence leading to and surrounding these events.nnNOTE: Instructor consent required for undergraduate students. Please contact the instructor for permission to enroll.
Same as: AFRICAAM 291, AFRICAAM 491, ARTHIST 291

ARTHIST 492. Romancing the Stone: Crystal Media from Babylon to Superman. 3-5 Units.
This seminar investigates the importance of rock crystal and its imitations as material, medium, and metaphor from antiquity until modernity. The objects examined include rings, reliquaries, lenses, and the Crystal Aesthetic in early twentieth-century architecture and even Superman's Fortress of Solitude. The texts range from Pliny to Arabic Poetry to Romance Literature to modern manifestos.
Same as: ARTHIST 292, FRENCH 292, FRENCH 392

ARTHIST 493. The Art of Punk: Sound, Aesthetics and Performance. 5 Units.
This seminar explores the sonic and visual aesthetics of punk rock since the 1970s. While studying music, videos, zines, and album covers, students will examine the convergence of art with politics among artists, such as Lydia Lunch, Vaginal Davis, and Shizu Saldamando, and bands, including Crass, the Plasmatics, and Los Illegals, as well as punk subgenres, like No Wave, Riot Grrrl, and Queercore. Likewise, students will consider how issues of identity, race, gender and sexuality informed artists and their work.
Same as: CSRE 393

ARTHIST 494. Complicating Minimal Art: Race, Gender, and Sexuality. 5 Units.
In this seminar, students will uncover the sociopolitical complexities of Minimalism, a movement and style of art defined by pared-down geometric forms that emerged in the 1950s and continues to be popular today. Through a critical engagement with Minimalism's art historical narrative and art world controversies, students will consider the influence of key historical events on artists and their work, such as the Civil Rights Movement, Vietnam War, and AIDS Epidemic, as well as issues of race, gender, and sexuality. In the process, students will recover the contributions people of color, women, and queer artists have made to Minimal art.
Same as: CSRE 394

ARTHIST 497. American Mystics. 5 Units.
This seminar will consider the role of mysticism in American art and culture. Long denigrated as irrational or escapist, mysticism in fact offers a site from which to investigate and challenge entrenched assumptions of linear time, historical positivism, hierarchies of taste, and rationality that remain the epistemic grounding of art history. Topics covered will include Transcendentalism¿s debt to Buddhism; the Aesthetic Movement; Aleister Crowley, Kenneth Anger, and occultism; Rastafarianism; Afrofuturism; psychedelia, drugs, and the counterculture, among many others. Readings will include work by Max Weber; Theodor Adorno; Sylvia Wynter; Toni Morrison; Marcel Mauss; and Ashon Crawley. Special attention will be paid to issues of race, ethnicity, and decolonizing methodologies.

ARTHIST 502. Methods and Debates. 5 Units.
This course introduces graduate students to a range of interpretive methods within art history and visual culture studies. In addition to scrutinizing multiple schools of thought and critical debates within the field, the seminar pays particular attention to the style and strategies of writing taken up by individual critics and scholars. How ¿ and to whom ¿ does the art historian¿s voice speak in different moments, visual contexts, and interpretive communities?.

ARTHIST 600. Art History Bibliography and Library Methods. 1 Unit.
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ARTHIST 600A. Art History Proseminar. 1 Unit.
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ARTHIST 610. Teaching Praxis. 1-5 Unit.
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ARTHIST 620. Qualifying Examination Preparation. 5 Units.
For Art History Ph.D. candidates. Prerequisite: consent of instructor.

ARTHIST 640. Dissertation Proposal Preparation. 5 Units.
(Staff).

ARTHIST 650. Dissertation Research. 5 Units.
(Staff).

ARTHIST 660. Independent Study. 1-15 Unit.
For graduate students only. Approved independent research projects with individual faculty members.

ARTHIST 660E. Extended Seminar. 4 Units.
May be repeated for credit. (Staff).

ARTHIST 670. Dissertation Seminar. 3-5 Units.
For graduate students writing and researching dissertations and dissertation proposals. How to define research projects, write grant proposals, and organize book-length projects.

ARTHIST 680. Curricular Practical Training. 1-3 Unit.
CPT course required for international students completing degree. Prerequisite: Art History Ph.D. candidate.

ARTHIST 802. TGR Dissertation. 0 Units.
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Art Studio Courses

ARTSTUDI 10A. Digital Workshop for Artists. 1 Unit.
This one-unit pass/fail introductory workshop class is designed for students who are new to working with code and electronics, and will give them the technical background necessary to feel comfortable in digital studio classes such as Embodied Interfaces (162), Drawing with Code (163), Making it With Arduino (130), and other Emerging Media courses. By teaching introductory electronics and programming concepts in a step-by-step, hands-on manner with a focus on creative practice, this workshop class provides an accessible introduction to using electronics in students' own artistic endeavors. Students will learn to program LED strips, read sensors with Arduino, start to code in Processing, and become familiar with methods for connecting all three. Through guided tutorials and creative exploration in class, students will learn a basic skillset for creative practice using electronics and software interfaces, with a focus on skills students can use in their work in future classes. No technical experience required.

ARTSTUDI 11A. Drawing: Means & Alternate Means. 2 Units.
The first half of the quarter students explore more traditional ways of drawing(still life,models,etc..) to develop a hand/eye relationship. The class will focus on seeing and documenting what is in front of them. The second half of the quarter expands into using alternative means of mark making to deconstruct and re-construct ideas learned in the first half of the quarter. String, tape, body parts and shadows are all fair game. This will be a lively class. The students are graded on their attendance, participation, weekly assignments and one final assignment consisting of two finished works, one being traditional, the other experimental.

ARTSTUDI 17A. Black and White Darkroom. 2 Units.
A beginning black & white darkroom photography class with an emphasis on project conceptualization and the utilization of local environments. Students in addition to learning photography basics, will complete a cohesive, short body(s) of work. Students work collectively to realize a group exhibition. Theme and title of the exhibition are chosen at the beginning of the quarter and projects will be developed within its framework.

ARTSTUDI 19N. An Artist's Life: Diverse Voices and Changing Contexts. 4 Units.
This course is designed for students considering an Art Practice minor or major. In this course, students gain confidence and experience connecting to their artistic voices as we explore the myriad possible career paths artists take to build sustainable careers. The course consists of a series of studio projects, each centered around a different artist whose career and art practice we study. The example artists will be primarily artists of color, or artists from communities which are underrepresented in the art world, with practices and careers ranging from the conventional to the more unusual. The goal of these artist selections is to model the possibilities of an art career for students who do not easily see themselves well represented in the mainstream art world, while also broadening all students¿ understanding of the many different methods for making work and practicing as an artist today.

ARTSTUDI 122A. Expressive Techniques in Multimedia Installation And Live Art. 4 Units.
The course focus on multimedia installation and live performances. The theme of the course will be an offshoot of the campus wide celebration of the 200th year anniversary of the ¿Frankenstein¿ novel written by Mary Shelly. For the course the issues of advance medical science in the areas of artificial life forms, stem cell research, biological ethical questions, fictional and non fictional approaches and mythical creation stories will be included. Students will obtain an understanding of alternative ways to speak to issues using various art forms.
Same as: TAPS 122A

ARTSTUDI 130. Interactive Art: Making it with Arduino. 4 Units.
Students use electronics and software to create kinetic and interactive elements in artwork. No prior knowledge of electronics or software is required. Students learn to program the Arduino, a small easy-to-use microprocessor control unit (see http://www.arduino.cc/). Learn to connect various sensors such as light, motion, sound and touch and use them to control software. Learn to interface actuators like motors, lights and solenoids to create movement. Learn to connect the Arduino to theMAX/MSP/Jitter programming environment to create media-intensive video and audio environments. Explore the social dimensions of electronic art. (lower level).
Same as: ARTSTUDI 231A

ARTSTUDI 131. Sound Art I. 4 Units.
Acoustic, digital and analog approaches to sound art. Familiarization with techniques of listening, recording, digital processing and production. Required listening and readings in the history and contemporary practice of sound art. (lower level).
Same as: MUSIC 154A

ARTSTUDI 136. The Portable Studio. 4 Units.
With a decrease in available real estate and an increase in virtual real estate via the Internet and new technologies, contemporary artists are developing new means of creative production that do not necessarily require the use of a traditional art studio. This interdisciplinary course follows this line of thought and will function as a means to explore systems of art-making through nomadic practices outside of the traditional art studio. The overall goal of this course is to challenge students to think differently about the nature of studio practice, where they will explore themes of public versus private, and physical versus virtual space through the creation of time-based artwork. By way of lectures, readings, and class assignments students will be introduced to sound, video, social practice, and performance art that will be developed and presented though unconventional means with an emphasis on site. No previous experience required.

ARTSTUDI 139. Portraiture and Facial Anatomy for Artists. 4 Units.
Focus is on the art of portraiture and underlying structures of the face, fundamental anatomical elements such as the skull and muscles of facial expressions, and the intersections between human anatomy and art. Studio sessions incorporate plastic models, dry bones, cadaveric specimens, and live models. Encourages use of proper anatomical terminology for describing structures and their relationships.
Same as: SURG 241

ARTSTUDI 140. Drawing I. 4 Units.
Functional anatomy and perspective as they apply to problems of drawing the form in space. Individual and group instruction as students work from still life set-ups, nature, and the model. Emphasis is on the development of critical skills and perceptual drawing techniques for those with little or no previous experience with pastels, inks, charcoal, conte, and pencil. Lectures alternate with studio work. (lower level).

ARTSTUDI 140A. Drawing from Observation. 2 Units.
This introductory course will provide students a technical foundation on how to accurately translate information from the eye to the hand. Line, value, and form will be employed to render a range of materials, surfaces, and objects. As the quarter progresses, students will create drawings that distort or juxtapose elements, views, or multiple scenes inside and outside the classroom. Through personal invention, the narrative elements of time and affect will be explored. Historical precedents will be discussed, giving attention to one-point and two-point perspective, Cubism, as well as other traditions and methods of organizing pictorial space. Materials will include graphite pencil, charcoal, and ink wash. All artworks will be made over the span of the class period times.

ARTSTUDI 141. Plein Air Painting. 4 Units.
Plein Air (Outdoor) Painting is a wonderful way to build skills, explore your relationship to site, and unlock your voice and hand. We will paint at different locations on and off-campus, learning a variety of painting techniques in changing weather and light. This class is great for both true beginners and advanced students. Basic painting skills are incorporated throughout the quarter, with advanced options at each stage. Acrylic paint is versatile and fast-drying; we will use it to get a range of effects from washy watercolor, blended oil effects, and building the surface sculpturally, painting on different surfaces. As we move, we will consider the elements of site and the materiality of paint: water, earth, architecture and the nuance of human gesture. History and memory are parsed in both the visible and hidden worlds around us. On-site paintings are not touched after class; rather they exist as an ephemeral moments in time. Three outside projects allow each person to paint at their own pace, and spend more time developing ideas and skills. In this class, process is privileged and ¿failure¿ is embraced. Adventure is our priority; weather is our co-creator. Final projects will be based on individual concepts, allowing each person to stretch creatively and develop their own voice.

ARTSTUDI 141A. Drawing from Life. 2-4 Units.
The subject of this course is Life as we know it, and artists at all levels will learn to communicate their questions, concerns, and perspectives on paper. The drawing process empowers students to express themselves in their already unique visual languages, while the objects will be testimonies to their personal, cultural, spiritual, and revolutionary experiences. We begin by developing or refining students' fundamental techniques through indoor and outdoor observational drawing. Our focus shifts toward representational and conceptual strategies for storytelling that reference students¿ archives, popularized content, literature, historical references and more. Through drawing, we discuss and examine a diverse range of contemporary art to address the legacy of visual art. All preparation must be done between class meetings, and all artworks will be made during class to maximize the studio art-making experience.
Same as: ARTSTUDI 241A

ARTSTUDI 141S. Drawing Outdoors. 3 Units.
In this introductory class, we take drawing out into the world, exploring different environments, techniques, and approaches as we go. The fundamental nuts-and-bolts of basic drawing techniques: light logic, depicting depth and drawing the figure, are integrated into each environment. From the Stanford campus: its cafe's, architecture and landscaping, to redwoods and water, to more urban settings, drawings will range from high-speed gestures to longer, more contemplative work. Through pen, graphite, charcoal, ink, watercolor/gouache and mixed media, we explore dichotomous relationships, as well as those in seemingly perfect harmony. We move from the inanimate to animate, figure and architecture, motion and stillness, to the micro and macro, considering how even the smallest patch of earth may be as monumental as Hoover Tower. Both beginning and advanced students are welcome. Summer.

ARTSTUDI 142. Mixed-Media Drawing: Art & Aesthetics of Social Media. 2 Units.
Why do we ¿like¿ the images we do on social media platforms? Do we only respond to images which pique our emotions, beliefs, and desires? Or do specific design elements in these images influence our preferences? This course challenges you to observe patterns in your social media ¿liking¿ habits and critique the formal and conceptual properties of social media¿s visual landscape. In this class you will learn to ¿see¿ digital content differently by using social media to make your own physical artworks. We will develop mixed media drawing techniques rooted in the principles of design and art history for responding to our observations. Class projects will be experienced on personal devices and in exhibition spaces.

ARTSTUDI 142A. A Deep Dive in Artmaking During the Time of Covid-19. 2 Units.
In this hands-on course, we produce a body of work that responds to key concepts examined in contemporary art with a specific emphasis on the impact of artmaking due to Covid-19. During this historical moment, we explore alternative possibilities of the artmaking process, geared to adjust to implementations of shelter in place, social distancing, and the reduction of resources. This course provides the opportunity to experiment with unconventional art media and develop new methods of engaging with each other and the community.

ARTSTUDI 144. PRINTMAKING AND ACTIVISM. 3 Units.
Hands-on studio course that introduces students to a variety of printmaking techniques, while exploring printed matter's role in activism in both history and in current events. This course introduces students to printmaking and graphic art techniques as tools for political activism, and explores how students can print as a tool in dialogue towards social change. Prior printmaking experience is helpful not necessary for this course.

ARTSTUDI 144B. Eye for Color: Interaction of Color. 2 Units.
This course will explore different types of color phenomenon through cutting and arranging colored paper and mixing paint. The goal of the course is to enhance sensitivity to color relationships. There is no such thing as a bad color or a good color, it is all relative to context. Students in this course will gain the ability to recognize and identify different types of color phenomena that exist in art and nature. The development of observation and articulation when dealing with color comes from experience, trial and error, and in doing so, one develops an individual eye for color.

ARTSTUDI 145. Painting I. 4 Units.
Introduction to techniques, materials, and vocabulary in oil painting. Still life, landscape, and figure used as subject matter. Emphasis is on painting and drawing from life. (lower level).

ARTSTUDI 145B. Painting for Non-Majors: Painting With the Figure. 2 Units.
This class will deal with the figure as it is represented in two dimensional form, within the general context of painting, accounting not only for the figure, but also the painting as a whole. A variety of historical and contemporary approaches to painting the figure will be introduced, and then explored through the application of acrylic paint. Students will work from a variety of sources including, but not limited to: digital media, occasional live and inanimate models, still life, and photographs. Emphasis will be laid on a comprehensive approach to composition that deals with the human figure, representationally, abstractly, and freely - without the requirement of prior experience in art.

ARTSTUDI 145C. Introduction to Abstraction. 2 Units.
This studio course will provide an introduction to abstract and non-objective painting and sculpture. Through a series of prompts and exercises, students will strengthen their understanding of composition, color, line, form, and material. Studio-based projects will draw upon the history of abstraction, as well as incorporate found objects and imagery to ground exploration in the immediate environment. As a class, we will consider the contemporary relevance of abstract and non-objective artworks. What does it mean to create a work of art today that is not figuratively legible? How is such work otherwise legible? Through technical exercises developed by Walter Gropius and Joseph Albers of the Bauhaus, students will develop foundational skills in composition and color theory. Experimentation, intuitive decision making, and developing one's own approach will be encouraged throughout.

ARTSTUDI 146. Photoshop and Painting. 2 Units.
This is a focused introduction to still life painting and Photoshop. Students will learn to indicate simple form with a single light source and then learn to paint form lights, various forms, and cast shadows. Students will also gain an understanding of warm and cool colors. Emphasis is on composition, cropping, overlapping and placement in the picture plane. Students will also learn the basics of photoshop and how it can be used as an aesthetic tool to benefit students work.

ARTSTUDI 146B. Art of Reclamation. 2 Units.
This course explores reclamation, the rich process of claiming something back or reasserting a right. Through the layering of different materials to create compositions of text and image, this course will explore what the art of reclamation means at an individual, group, and community level. Can mixed media art spark intersectional dialogue? How does combining disparate materials communicate radical messages to others? Through group discussions, readings, writing sessions, and critiques we will explore the topics of the body, race, gender, and land as they relate to art practice. Students will be encouraged to experiment with two and three-dimensional approaches to four main projects. Demonstrations will consist of collage, stenciling, and image making via paint, ink, and charcoal.

ARTSTUDI 147. Art Book Object. 4 Units.
This mixed introductory and upper level studio course explores contemporary aesthetic interpretations of the book as an art object. Students learn to use both traditional and digital tools and techniques for creating artists' books, and integrate those into final works of art. The course familiarizes students with basic bookbinding processes and forms, as well as various modes of printing and production that facilitate limited artist editions. In addition to making books, we view numerous artists' books in the Bowes Art & Architecture Library collection as well as the collection of the instructor, and meet with practicing artists and book makers. Students create a number of small books, each focused on a particular process but using content of their choice. Upper level students propose and create a more fully evolved final project involving at least one bookbinding process independently researched in consultation with the instructor.
Same as: ARTSTUDI 247A

ARTSTUDI 147S. DRAWING AND PAINTING. 3 Units.
The introductory course teaches the basic tools of drawing and oil painting. We will take advantage of Stanford's beautiful campus to draw and paint outside along with studio work and slide discussions in the classroom. Exercises begin with gestural mark-making, moving through linear perspective and tonal studies using a variety of media from graphite and charcoal to bamboo brush and ink. The introduction to oil painting explores the ways we build layers up to a finished work. Students will enter painting through color theory, strategies of abstract painting, and exposure to influential painters. Each student will acquire familiarity with foundational techniques and materials while developing their personal voice in assigned projects. No previous painting or drawing experience is necessary. Options will be provided for advanced students.

ARTSTUDI 148. Monotype. 4 Units.
Introduction to printmaking using monotype, a graphic art medium used by such artists as Blake, Degas, Gauguin, and Pendergast. May be repeated for credit. Prerequisite: 140. (lower level). May be repeated 2 times for total of 8 units.

ARTSTUDI 148A. Introduction to Lithography. 4 Units.
The classic technique of printing from limestones and metal plates. Students will learn techniques to draw and etch their imagery onto the stone/plate. The prints will be created in numbered editions. Students will have the opportunity to work in color on a variety of sizes. There will be visits to the campus museum print collection.

ARTSTUDI 148B. Introduction to Printmaking. 4 Units.
Techniques such as monotype, monoprint, photocopy transfers, linocut and woodcut, intaglio etching. Demonstrations of these techniques. Field trips to local print collections or print exhibitions. (lower level).

ARTSTUDI 148P. The Hybrid Print. 4 Units.
This class explores experimental printmaking methods where digital and traditional practices collide. It focuses on the interchange between conventional and new methods of printmaking, and possibilities for the print beyond paper and the flat picture plane in contemporary art. Techniques will be demonstrated in class, and students will pursue projects using these techniques, developing their own conceptual interests. We will explore digital processes using large format printers, as well as digitally augmented traditional printmaking methods such as monoprints, collographs, woodblock and linocut, aided by dye sublimation, vinyl cutting, and 3-d printing. Students will have access to a wide array of both digital and traditional tools, and will develop projects using a combination of methods, resulting in a body of work. Discussions will address the expansive nature of contemporary fine art printmaking.
Same as: ARTSTUDI 248P

ARTSTUDI 149. Fiber and Wearable Art. 2 Units.
In this project-based studio course, students will investigate how wearable art is situated in the conversations around contemporary art. Particular attention will be directed to how artists confront ideas around the body, gender identity, performance, and experimental costumes. Final projects will be contextualized through final photo or video documentation. Students will examine the way materiality and craft can inform concept and will have the opportunity to use a variety of machinery to think about their projects. No sewing experience necessary.

ARTSTUDI 150. Sculpture: Votives, Totems and Sanctuaries. 4 Units.
The focus of this course is to discover how meaning is inscribed into the objects and places we make. Using three forms both ancient and contemporary¿ the votive, the totem and the sanctuary¿we will consider a variety of cultural precedents made with spiritual and/or religious intensions. Students will research the origins and philosophies of chosen examples, glean formal terms, such as size, scale, composition, color and materiality and create new works with both personal and cultural meanings.

ARTSTUDI 150N. Queer Sculpture. 3 Units.
Outlaw sensibilities, self-made kinships, chosen lineages, utopic futurity, exilic commitment, and rage at institutions that police the borders of the normal these are among the attitudes that make up queer in its contemporary usage. -David J. Getsy. nnnThis hands-on studio based course explores queer as a form of art production. Artists and thinkers use queer to signal defiance to the mainstream and an embrace of difference, uniqueness and self-determination. To be intolerable is to demand that the normal, the natural and the common be challenged. To do this is not to demand inclusion, but rather to refuse to accept any operations of exclusion and erasure that make up the normal and posit compulsory sameness. Queer Sculpture is also about the strategic effort to appropriate and subvert conventional art practices and tactics that may involve everything from shifts in the content of a work and its targeted audience to the methods by which it is produced and its formal properties. The political imperatives of a queer or queered position will shape thematic investigations of practices related to utopic futurity, anti-assimilationist practices, failure, abstraction, the archive, camp, drag and alternative families. Classes will require reading, discussing, and making. Students will produce artwork for critiques and participate in discussions of the readings. The course includes guest artists and fieldtrips to local LGBTQ archives.

ARTSTUDI 150Q. Queer Sculpture. 4 Units.
Outlaw sensibilities, self-made kinships, chosen lineages, utopic futurity, exilic commitment, and rage at institutions that police the borders of the normal these are among the attitudes that make up queer in its contemporary usage. David J. GetsynnThis hands on studio based course explores queer as a form of art production. Artists and thinkers use queer to signal defiance to the mainstream and an embrace of difference, uniqueness and self-determination. To be intolerable is to demand that the normal, the natural and the common be challenged. To do this is not to demand inclusion, but rather to refuse to accept any operations of exclusion and erasure that make up the normal and posit compulsory sameness. Queer Sculpture is also about the strategic effort to appropriate and subvert conventional art practices and tactics that may involve everything from shifts in the content of a work and its targeted audience to the methods by which it is produced and its formal properties. The political imperatives of a queer or queered position will shape thematic investigations of practices related to utopic futurity, anti-assimilationist practices, failure, abstraction, the archive, camp, drag and alternative families. Classes will require reading, discussing, and making. Students will produce artwork for critiques and participate in discussions of the readings. The course includes guest artists and fieldtrips to local LGBTQ archives.

ARTSTUDI 151. Sculpture I. 4 Units.
Traditional and non-traditional approaches to sculpture production through working with materials including wood, metal, and plaster. Conceptual and technical skills, and safe and appropriate use of tools and materials. Impact of material and technique upon form and content; the physical and expressive possibilities of diverse materials. Historical and contemporary forming methods provide a theoretical basis for studio work. Field trips; guest lecturers.

ARTSTUDI 152. Soft Sculpture. 2 Units.
Textiles lend themselves to be formed and constructed to fit around three-dimensional objects and become a skin to the object within. They can hold materials inside of them, produce imagery, and divide space. This sculpture course investigates fibers and their ability to transform forms and space. Students learn sewing techniques, upholstery techniques, and how to make sewing patterns to create sculptures. Through projects and workshops, students consider the relationships of textiles to the human figure, interior and exterior settings, and traditions in craft.

ARTSTUDI 153. Ecology of Materials. 4 Units.
Studio-based sculpture course. Materials used in sculpture and environmental concerns surrounding them. Artists concerned with environmental impact and the interconnection of art with other fields. The impact of material and technique upon form and content; understanding the physical and expressive possibilities of diverse materials. Conceptual and technical considerations. Group discussions, critiques, readings, video presentations, a field trip to a local artist-in-residence program, and visiting lecturers. (lower level).

ARTSTUDI 154X. TBD. 2 Units.
TBD.

ARTSTUDI 155. Social Sculpture. 4 Units.
This course investigates the immediacy of the body as material and sculpture in order to investigate private and social spaces. Actions are often used to understand or question the function and psychological aspects of a space and are documented for the perpetuation of these ideas. Throughout the quarter we will investigate the body as material and develop site specific performances enacted for: Private/Domestic and Public Space; Constructed Space & Physical Space; ecological systems; and generate both Individual & Collaborative based Actions, Interventions, & Events.".
Same as: TAPS 155

ARTSTUDI 156Q. Installation Art in Time and Space. 4 Units.
This hands on studio based sculpture course focuses on developing concepts, and creating a site-specific installation art project.
This class will addresses the impact of material and technique upon form and content; therefore understanding the physical and expressive possibilities of diverse materials. Conceptual and technical considerations will be addressed. Students will learn traditional building techniques as needed (wood shop, metal shop, mold making, found object) as well as anti-object techniques. Students will make 3-4 projects that will culminate in a final site-specific installation. We will look at contemporary artists working in the field of installation art. Group discussions, critiques, readings, video presentations, field trips and visiting artists will augment the class. Installation Art is based on the merger of Space and Time and on a relationship between the artist and the visitor. Utilizing your interests and abilities in a variety of subjects and media, you will create environments that immerse the viewer in a sensory/ intellectual/ emotional experience. The material and methods you use can range from everyday objects, to highly personalized forms, from appropriated sounds to surveillance video, from large wall drawings to interactive switches for the participant to manipulate. The class will consist of demonstrations of art skills particularly useful in installation (sculptural, video, audio, interactive media, etc), presentations by the professor, research and reports and journal entries, and weekly critique. Installation Art is a pervasive, varied, global practice for art-making that acts as a gathering place for expression in all media addressing all subjects in a wide range of styles by broad grouping of artists.".

ARTSTUDI 158. Hybrid Sculpture. 4 Units.
Study of concepts, aesthetics, procedures and practice of sculpting on the computer with 3D modeling tools for generation of form, environment and or character as related to your conceptual ideas. Relate traditional sculpture principles of form, material, site and utilize 3D modeling to virtually give rise to an installation or sculpture. Includes output to 2D and 3D rapid prototyping printers, laser cutters, and CNC router. Conceptual and technical skills, and safe and appropriate use of tools and materials. Impact of material and technique upon form and content; the physical and expressive possibilities of diverse materials. Historical and contemporary forming methods provide a theoretical basis for studio work. Field trips; guest lecturers.

ARTSTUDI 160. Intro to Digital / Physical Design. 3-4 Units.
Contemporary production processes ¿ both manufacturing and media processes often span the digital and the physical. 3D Depth cameras can scan real world models or movements, which can be manipulated or adjusted digitally, then re-output to the physical world via a myriad of 2D and 3D printing and laser cutting technologies. Crowd sourced information is uploaded to social media, which in turn guides our physical meeting places. Google street-view maps our physical world, and augmented reality displays overlay it. How as artists or designers to we grapple with and use this digital / physical permeability to create new experiences and meaning for our current time? This introductory studio course explores various tool sets as well as artists working across these genres. This course is a good baseline exploration for anyone interested in designing or making art with emerging contemporary tools.

ARTSTUDI 160X. Tele-Reality: Live-Streaming Art. 2 Units.
This course examines the field of live-feed media through the lens of art practice, exploring previous experiments and the potential of the medium. Using social media outlets and user-to-user communication platforms¿such as Youtube, FaceTime, Twitch, Instagram, and closed-circuit cameras¿students will create moments for captive audiences using displacement as a medium. By nature, live streaming is a fleeting digital performance that combines television, theater, and film practices with internet platforms and physical venues to present single performances or series of performances, pre-recorded footage, or improvisational scenes. nnLive-streaming opens an opportunity for borderless expression, to express social change, to share non-mainstream messages, and allows access to massive communication to diverse voices and perspectives.

ARTSTUDI 161. Constructing Color. 4 Units.
This hands-on introductory level studio art class addresses color through traditional, digital, and experimental mediums. Students learn to compose and communicate via color, experimenting with light, paint, pigments, dye, code, context, and culture. In addition to exploring color as a powerful tool, students build personal palettes and learn to use color as an essential component in conceptualizing a work of art. Students create numerous short color experiments, a personal reference notebook, and a final work of art in any medium, using processes explored in class.

ARTSTUDI 162. Embodied Interfaces. 4 Units.
Our computers, phones and devices see us predominantly as fingers and eyes staring at screens. What would happen if our technology acknowledged more of our rich physical presence and capabilities in its design? How have artists and designers used different sensing technologies to account for more of our embodied selves in their works? In this studio course we explore various sensing technologies and design artworks that engage our whole selves. Interfaces explored range from the practical to the poetic. Sensors may involve flex sensors, heat sensors, microphones and simple camera tracking technology. We analyze different tools for their appropriateness for different tasks and extend them through our designs.

ARTSTUDI 163. Drawing with Code. 4 Units.
This studio course will engage coding practices as drawing tools. What makes a good algorithmic composition? How do we craft rule-sets and parameters to shape an interesting work? What changes if we conceive of still outputs, ongoing processes, or interactive processes as the "finished" work? We will look at the history of algorithmic drawing, including analog precedents like Sol LeWitt and other conceptual artists, along with current pioneers like John Simon Jr., Casey Reas, and LIA. Outputs will involve prints as well as screen-based works. Some basic coding experience is helpful, but not required. Assignments are based on conceptual principals that students can engage with at different coding skill levels. This is a good way for non CS students to explore coding practices as well as for CS students to hone their skills. We will work primarily in the free Processing software for our explorations.
Same as: ARTSINST 142

ARTSTUDI 164. Design in Public Places. 4 Units.
How does our design of public spaces and elements of our built environment influence and control people's movements and expressions in these spaces? Can re-designing a trashcan or a stairway change how people throw away their trash or use the stairs? What are the principles of democracy, surveillance, or personal expression at stake in our current shared spaces? How have artists and designers used their skills to question or re-direct people's behavior in these public spheres, or in other spheres of shared cultural heritage? Strategies include re-designing components of the built environment, but also other strategies of intervention, tactical media and reality hacking.

ARTSTUDI 165. Social Media and Performative Practices. 4 Units.
How can social media, mobile applications, or other more traditional media be used to engage people in new social situations? Could you design an app that gets people to talk with strangers (Miranda July), or a poster that causes a revolt in an office space (Packard Jennings), or a truck that changes how people think about nursing mothers (Jill Miller)? What about platforms that encourage political dialog or social changes? This studio course examines how contemporary artists and designers engage people in a process of social dialog, critique and political change through the existing media and non-traditional art practices.nnWith the constant development of new apps and social media platforms and the pressure from society of everyone having an online presence, the class will investigate and focus specifically on how these tools can be used as a resource to create and present artworks creatively. The students in this class will be introduced to a variety of artwork examples and study different artist¿s approach to media, technically as well as conceptually. Experimentation is highly emphasized throughout this course, as the goal is for the students to create and produce works that uses social media in new ways to tell stories, connect with, mystify or surprise the audience.nnA selection of software such as Photoshop, Premiere Pro, After Affects, and other tools will be introduced in class that will assist the students in producing work for the required assignments.

ARTSTUDI 166. Sculptural Screens / Malleable Media. 4 Units.
In this mixed intro and upper level studio course, students will experiment with video and computational outputs embedded in physical scenarios. What new physical formats are made possible by contemporary screen and projection-mapping technologies? How can we make expressive use of LCD screens, pico projectors, i-pad arrays, and LEDs? The class will address the screen as sculptural medium by examining established artists like Nam June Paik, Michael Snow, Tony Oursler, and Pippilotti Rist, as well as exploring emerging contemporary artists tackling this medium. Prerequisites to take the class at the 266 upper level include one of the following: Intro to Digital/Physical Design, Embodied Interfaces, Media Archaeologies, Making it with Arduino, Digital Art 1, Electronic Art or permission of instructor. The intro level 166 course can be taken with no prerequisites.
Same as: ARTSTUDI 266

ARTSTUDI 167. Introduction to Animation. 3-4 Units.
Projects in animation techniques including flipbook, cutout/collage, stop-motion such as claymation, pixilation, and puppet animation, rotoscoping, and time-lapse. Films. Computers used as post-production tools, but course does not cover computer-generated animation. (lower level).

ARTSTUDI 168. Data as Material. 4 Units.
How can data be used as material in art and design projects? Beyond straight-forward ideas of data-visualization, this studio course investigates how we construct meaning from sets of information, and how the construction of those sets determines the meaning itself. This course also investigates different display aesthetics and how this is also a strategy for generating meaning. Artists studied include those who use various forms of personal, public, and social data as part of their practice. Historical examples from conceptual artists and other genres are considered along with contemporary artists working with data in digital or hybrid digital/physical formats.

ARTSTUDI 169. Virtual Reality: the possibility and peril of immersive artwork. 4 Units.
How can we use virtual reality systems to create powerful, beautiful and socially engaged artworks? Is it possible to use technically sophisticated (and sometimes frustrating) tools to share our unique personal visions? What can working in virtual reality teach us about our embodied reality and sense of presence? How might we question the hype and techno-utopianism surrounding VR, by using the medium itself? What is left out of the current conversation around VR that you would like to explore? nnIn this introductory studio art course, students will learn to create artworks using virtual reality systems. We will use the HTC Vive, Oculus Rift, and Daydream VR headsets, as well as more accessible phone-based augmented reality systems to explore this medium. Through lectures and research presentations, we will familiarize ourselves with the artistic history of VR - from foundational works from the 1990¿s through current examples - in order to inform our own work. nnStudents will become familiar with the fundamental studio art practice of analyzing and critiquing their own and others¿ projects. Learning to analyze artwork in turn helps students create works with more emotional and conceptual impact. nnWhile there are no official prerequisites for this course, familiarity with any kind of scripting language or coding environment will be helpful as Unity will be used as the main authoring environment.

ARTSTUDI 170. Photography I: Black and White. 4 Units.
Through film and dark room instruction, students learn to use a SLR 35-mm camera and to operate manual settings (focus, aperture, shutter speed). They develop an awareness of light and its various properties and possibilities. Students become familiar with black and white darkroom techniques creating contact sheets and to evaluating prints, make corrections and re-print. They acquire essential knowledge of historical and contemporary black and white art photography, including standards of quality and image sequencing. They get a basic sense of aesthetics and of the critical discourse that exists around the cultural significance of images.

ARTSTUDI 171. Introduction to Photography. 4 Units.
This is an introductory course in photography that explores lens-based practices and the imperative of visual literacy in today¿s world. The history of photography starts now, in a context of image-making that proceeds all around us with unprecedented immediacy and proliferation. We cover fundamental principles of camera operation, composition and image editing. Through digital instruction, students learn to use DSLR or Mirrorless cameras and to operate manual settings (focus, aperture, shutter speed, ISO, color temp/white balance). They learn basic file management as well as the use of Adobe Lightroom software. Students acquire an essential knowledge of contemporary art photography, including standards of quality and image sequencing. They get a basic sense of aesthetics and of the critical discourse that exists around the cultural significance of images. Students provide their own DSLR or mirrorless camera.

ARTSTUDI 171S. Photography I: Digital. 3 Units.
Through digital instruction, students learn to use a DSLR camera and to operate manual settings (focus, aperture, shutter speed, ISO, color temp/white balance). They become familiar with basic scanning techniques (appropriated images, not negatives) on a flatbed scanner, and basic digital printing (in color). They learn basic file management as well as the use of Adobe Lightroom software. They are taught to operate 17"-wide Epson digital printers, to print digital proof sheets, and to evaluate prints, correct files and re-print. Students acquire an essential knowledge of contemporary art photography, including standards of quality and image sequencing. They get a basic sense of aesthetics and of the critical discourse that exists around the cultural significance of images.

ARTSTUDI 172. Art and Teratology. 4 Units.
This studio course looks at the relationships between biology and art, particularly as they relate to the topic of "monsters". Rather than addressing the ways in which art has assisted the biological sciences (as in medical illustration), we'll focus on the ways in which biology has influenced the art-making practice. Course material will address our changing conceptions of biology and the monstrous, and the ways in which artists engage these cultural shifts. Students are responsible for creating art works that address these themes and others that emerge from class discussions and presentations, in any medium of their choosing.

ARTSTUDI 173A. Introductory Photography: Blue. 4 Units.
This introductory course into photography invites students to experience, reflect on and be inspired by images of blue. They will create work using the process of cyanotyping, the low-cost photographic printing technique of a century ago that now functions as an Instagram filter. Using these blue-prints as a touchstone, we will explore blue as a physical, natural, artistic and spiritual manifestation. Students provide their own cell phone camera of choice, and software will be provided.

ARTSTUDI 173E. Cell Phone Photography. 4 Units.
The course combines the critical analysis of cell phone photography with the creation of photographic art works that explore this specific medium's experimental, social and documentary potential. The increasing ubiquity of cell phone photography has had a widespread impact on the practice of photography as an art form. We will consider and discuss the ways in which the platforms of cell phone photography (Instagram, Snapchat) are democratizing image-making and transforming notions of authorship and subjectivity to an unprecedented extent, but also how the use of new technological tools help expand notions of creativity and aesthetic standards.

ARTSTUDI 173S. Cell Phone Photography. 3 Units.
The course combines the critical analysis of cell phone photography with the creation of photographic art works that explore this specific medium's experimental, social and documentary potential. The increasing ubiquity of cell phone photography has had a widespread impact on the practice of photography as an art form. We will consider and discuss the ways in which the platforms of cell phone photography (Instagram, Snapchat) are democratizing image-making and transforming notions of authorship and subjectivity to an unprecedented extent, but also how the use of new technological tools help expand notions of creativity and aesthetic standards.

ARTSTUDI 173X. Photo. 2 Units.
TBD.

ARTSTUDI 174. Interdisciplinary Animation. 2 Units.
There is no medium or form of study that animation cannot touch and expand ¿ it is interdisciplinary. At its core, animation enables the practitioner to find inherent life in materials and thereby transform them. Structured in-class experiments cover foundational animation techniques and expand previously held definitions of animation. Regular screenings introduce students to a wide array of animation practice. Students will work experimentally to find and open their own doorway into animation, creating a personal project.

ARTSTUDI 174B. Creativity in the Age of Facebook: Making Art for and from Networks. 4 Units.
This class explores the history, practice and technique of creating art on and for the internet. Discussions, projects and readings focus on the ways in which internet art embodies changing ideas about artistic creation, technology, and interactivity as a way of blurring the line between artist and audience. Setting recent work against the backdrop of earlier moments in contemporary art (found object art, photomontage), this course also situates internet art in the pre-internet tradition of finding new perspectives on, and meanings in, overfamiliar or banal media surroundings. In collaborative and individual projects, students will create visual compositions on online platforms such as NewHive and explore social media interventions, Twitter experiments, crowdsourced work, collections of online found imagery, supercuts, GIFs, and "choose your own adventure"- style online storytelling.

ARTSTUDI 175. Sound Installation. 4 Units.
This class will cover creative, historical and theoretical aspects of sited artworks based in sound. We will create, install and critique new works that use sound with special attention the ways that sound intersects with time, space and architecture. Attention will be given both to sound as immaterial signal and to sound in its relation to visual environments and objects. The class is intended for artists, composers and others who want to explore the spatial, social and aesthetic dimensions of sound. Assigned readings will cover sound practices in the contexts of art, music, sound studies and anthropology. Experience in sound recording or production, signal processing and spatialization, or installation are valuable but not required. Curiosity and attention to sounds are.
Same as: MUSIC 192F

ARTSTUDI 176. Time Shifts. 4 Units.
In this course, we examine how both individual perceptions and artistic representations of time have historically shifted with changes in technology. What are the current possibilities to extend/re-imagine how we represent time using digital tools? How do these possibilities, in turn, re-inform traditional media? This is a conceptual and experimental class with a studio focus. Examples are mainly from an art context, but include interaction design, information visualization, and scientific illustration of time-based events and processes. Students should have previous experience with a set of digital tools - Photoshop, FinalCutPro, AfterEffects, or a programming language that will allow you to digitally manipulate images. Assignments include exercises using traditional media, and digitally based projects. Occasional writing assignments also required.

ARTSTUDI 177. Video Art. 4 Units.
Video holds the ability to bear witness and reconstruct realities of space and time. In this class we study the development of the medium in the 1970s and how artists have since used it as an experimental apparatus. Projects involve creating short video works through narrative, performative, and abstracted approaches. This class explores conceptual possibilities of recording and editing video by utilizing camera technique, lighting, sound design, found footage, and nonlinear digital editing. (lower level).

ARTSTUDI 178. Art and Electronics. 4 Units.
Analog electronics and their use in art. Basic circuits for creating mobile, illuminated, and responsive works of art. Topics: soldering; construction of basic circuits; elementary electronics theory; and contemporary electronic art. (lower level).

ARTSTUDI 179. Digital Art I. 4 Units.
Contemporary electronic art focusing on digital media. Students create works exploring two- and three-dimensional, and time-based uses of the computer in fine art. History and theoretical underpinnings. Common discourse and informative resources for material and inspiration. Topics: imaging and sound software, web art, and rethinking the comptuer as interface and object. (lower level).

ARTSTUDI 181. From Dissection to Monster. 4 Units.
The focus of this class is to create an artwork that explores the relationship between creators and the `monsters¿ they create. The course explores the role of the artist as an innovator, experimenter, inventor, entrepreneur, and creative researcher. Students will perform a robust dissection and mapping of a modern technology and then emerge an artwork incorporating the constituent parts and informed by the dissection. n nAlmost anything that we create can become monstrous. One hopes for the best, but never knows just how it might play out. The story of humankind is partially a history of the twists and turns posited by technological innovation. The complex relationship between intention and context sometimes converge in mysterious and unpredictable ways resulting inn corruption in creative strategies, machines, architecture, designs and creative expression. n nThee class is inspired by the classic Gothic literature, Frankenstein, by Marry Shelly., a tragic story about Victor Frankenstein¿s failure to accept responsibility for the consequences of bringing new life into the world.

ARTSTUDI 182. Queered Tech and Speculative Design. 4 Units.
What does it mean to `queer¿ something? Expanding this term's meaning beyond gender and sexuality, `to queer¿ is to question, challenge, subvert, and reimagine social norms and structures of power. In this course, we build from queer theory to consider invisible assumptions and biases in everyday objects, then design technologies that propose new ways of being. For example: What would a clock look like if it were designed for a world without capitalist notions of productivity? Students will create three electronic artworks using Arduino micro-controllers, sensors, light, motors, and sound. Tutorials will provide fundamental instruction in electronics and programming. This is an introductory art course with no prerequisites.

ARTSTUDI 182B. Conceptual Art. 2 Units.
Through experience-based exercises this class will build upon students understanding of conceptual art. Student will be guided in the exploration of their ideas beginning with the parameters set by the camera and later by specific place(s) and space(s) in and around campus. Throughout the quarter students will learn to process and poetically interpret their ideas as well time, space, the self and current sociopolitical issues in a manner that best suites each idea. In class activities will address curiosities to invoke a deeper investigation of each student's relationship to art and/or their individual field of study. This seminar will include a survey of art historical examples to help stimulate ideas, discussions and activities. Visiting artists as well as off-campus studio visits will further inform the course.

ARTSTUDI 183. Sports in Contemporary Art. 4 Units.
Sport and Art are generally viewed as the polar opposites. You are either interested in art or sport. You can't be both.nThis course examines and questions this generalization and begins with a historical overview of artworks and artists, who uses sport, physical activity, and games as inspiration in their work.nWhether in the form of figurative representations of athletes, to inventing new games, and experiments in order to create artworks that comments on issues as broad as identity, race, gender as well as provoke audience participation through interactive installations and other playful strategies.nBesides from the historical overview and examples presented in the class, the students will be given 4 different assignments, which will allow the students to explore the concept of art in sport and vice versa and produce their own projects in response. The course is interdisciplinary in its form, but students will be introduced to a variety of disciplines and media such as Digital Video and Photography, Performance, Sculpture, and Installation Art.nOne of the goals of this course is to demonstrate the many commonalities between art and sport and to encourage a dialogue about this topic as well as bring the two seemingly divergents more together.nSome artist that will be discussed are:nDavid Hammons, Collier Schorr, Paul Pfeiffer, Anne Imhof, Camille Henrot, Gabriel Orozco, Allora & Calzadilla, Chi Kai-Yuan, Hank Willis Thomas, Ana Soler, Jørgen Leth, Cassils and Lee Walton to mention a few.

ARTSTUDI 184. Art and Environmental Engagement. 4 Units.
The aim of this course is to use the tools of art as a means to actively engage with the natural world. Students will be required to go beyond surface representations and dig deep with their work to uncover conceptual, ecological and historical meaning. Whether the focus is on a plant, animal, mineral, or an ecological system, students will be encouraged to investigate and interact with their subjects. Scientists who experiment in the field will be brought in to discuss their research and working processes. Collaborations are welcome. We will examine the work by artists, from past to present, who address the environment in a critical way. Students will work on creative projects with the goal to open new avenues of dialogue between culture and nature.

ARTSTUDI 185. Interactive Storytelling. 4 Units.
This course explores strategies for crafting interactive stories. It takes students from story-teller to game designer to book maker. Through a series of narrative exercises, readings, lectures, and technical demos; students create a story-based game and a companion printed risograph zine. The story's visual and spatial structure are authored using Twine, a free online tool that lets anyone new to programming create their own interactive games in a web page. The zine will act as a guide for building the storyworld and an archive for the concepts being explored.

ARTSTUDI 230. Interdisciplinary Art Survey. 4 Units.
This course is designed to develop diversity of concepts and strategies within the student's artistic practice. The course includes a survey of artists using different media taught in the department's studio program such as painting, drawing, video and digital art, printmaking, photography, and sculpture. This seminar-style class seeks to expand the artistic practice outside of traditional media boundaries and focuses on the translation of concepts across various media. Art Practice majors and minors only. (upper level).

ARTSTUDI 231A. Interactive Art: Making it with Arduino. 4 Units.
Students use electronics and software to create kinetic and interactive elements in artwork. No prior knowledge of electronics or software is required. Students learn to program the Arduino, a small easy-to-use microprocessor control unit (see http://www.arduino.cc/). Learn to connect various sensors such as light, motion, sound and touch and use them to control software. Learn to interface actuators like motors, lights and solenoids to create movement. Learn to connect the Arduino to theMAX/MSP/Jitter programming environment to create media-intensive video and audio environments. Explore the social dimensions of electronic art. (lower level).
Same as: ARTSTUDI 130

ARTSTUDI 233. Let's Make a Monster: Critical Making. 5 Units.
Ever since Frankenstein unleashed his monster onto the world in Mary Shelley¿s novel from 1818, the notion of ¿technology-out-of-control¿ has been a constant worry of modern societies, plaguing more optimistic visions of progress and innovation with fears that modern machines harbor potentials that, once set in motion, can no longer be tamed by their human makers. In this characteristically modern myth, the act of making ¿ and especially technological making ¿ gives rise to monsters. As a cautionary tale, we are therefore entreated to look before we leap, to go slow and think critically about the possible consequences of invention before we attempt to make something radically new. However, this means of approaching the issue of human-technological relations implies a fundamental opposition between thinking and making, suggesting a split between cognition as the specifically human capacity for reflection versus a causal determinism-without-reflection that characterizes the machinic or the technical. Nevertheless, recent media theory questions this dichotomy by asserting that technologies are inseparable from humans¿ abilities to think and to act in the world, while artistic practices undo the thinking/making split more directly and materially, by taking materials ¿ including technologies ¿ as the very medium of their critical engagement with the world. Drawing on impulses from both media theory and art practice, ¿critical making¿ names a counterpart to ¿critical thinking¿ ¿ one that utilizes technologies to think about humans¿ constitutive entanglements with technology, while recognizing that insight often comes from errors, glitches, malfunctions, or even monsters. Co-taught by a practicing artist and a media theorist, this course will engage students in hands-on critical practices involving both theories and technologies. Let¿s make a monster!.
Same as: FILMSTUD 233, FILMSTUD 433

ARTSTUDI 236. Future Media, Media Archaeologies. 3-4 Units.
Hand-on. Media technologies from origins to the recent past. Students create artworks based on Victorian era discoveries and inventions, early developments in electronic media, and orphaned technologies. Research, rediscover, invent, and create devices of wonder and impossible objects. Readings in history and theory. How and what media technologies mediate.
Same as: MUSIC 236

ARTSTUDI 239. Intermedia Workshop. 3-4 Units.
Students develop and produce intermedia works. Musical and visual approaches to the conceptualisation and shaping of time-based art. Exploration of sound and image relationship. Study of a wide spectrum of audiovisual practices including experimental animation, video art, dance, performance, non-narrative forms, interactive art and installation art. Focus on works that use music/sound and image as equal partners. Limited enrollment. Prerequisites: consent of instructors, and one of FILMPROD 114, ARTSTUDI 131, 138, 167, 177, 179, or MUSIC 123, or equivalent. May be repeated for credit.
Same as: MUSIC 155, MUSIC 255

ARTSTUDI 240. Drawing II. 4 Units.
Intermediate/advanced. Observation, invention, and construction. Development of conceptual and material strategies, with attention to process and purpose. May be repeated for credit. Prerequisite: 140 or consent of instructor. (upper level).

ARTSTUDI 241A. Drawing from Life. 2-4 Units.
The subject of this course is Life as we know it, and artists at all levels will learn to communicate their questions, concerns, and perspectives on paper. The drawing process empowers students to express themselves in their already unique visual languages, while the objects will be testimonies to their personal, cultural, spiritual, and revolutionary experiences. We begin by developing or refining students' fundamental techniques through indoor and outdoor observational drawing. Our focus shifts toward representational and conceptual strategies for storytelling that reference students¿ archives, popularized content, literature, historical references and more. Through drawing, we discuss and examine a diverse range of contemporary art to address the legacy of visual art. All preparation must be done between class meetings, and all artworks will be made during class to maximize the studio art-making experience.
Same as: ARTSTUDI 141A

ARTSTUDI 242. Drawing and Creative Writing. 4 Units.
This class integrates drawing and the written word through a mix of hands-on drawing studio time and writing workshops. We will create drawings that integrate text and create texts inspired by drawings. We will also study and take inspiration from literature and art that plays with images and the written word. In the process, we will come up with experiments for what to do with images and words, for how to poach them, cross-pollinate them, orchestrate them, distill them, resist them or unflatten them.nPrerequisite: Drawing 1 or permission of instructor.

ARTSTUDI 243. Anatomy for Artists. 3 Units.
Lectures highlight the intersections and influences between human anatomy and art. Studio sessions provide an opportunity for students to immerse in anatomically inspired studio projects. Drawing, mixed media, and some painting mediums will be used during the studio sessions. Plastic models, dry bones, cadaveric specimens, and live models will be used for the studio sessions. Class time includes art instruction, creation and feedback. May be repeated for credit. Honing individual style is encouraged; both beginning and advanced students are welcome.
Same as: SURG 243

ARTSTUDI 244. Advance Figure Drawing. 4 Units.
Figurative depiction is explored across a wide range of media and techniques. Throughout the quarter, artist and figure are explored as subject/object, metaphor, player, and director. Beginning with traditional approaches across various media (graphite and charcoal, ink/brush, soft and oil pastels, mixed media), we move into various methods of distortion. Using both live models and our own bodies, performance and depictive strategies are employed to create work which examines identity and power relationships. In the final two weeks, we have two live models working together. Work will excise/reassemble found and staged images, juxtaposing figures, creating tension and implied narratives in space. Four outside projects push skills and concept, amplifying each artist¿s hand and voice.nnPrerequisite: Drawing 1 or instructor approval.

ARTSTUDI 245. Painting II. 4 Units.
Symbolic, narrative, and representational self-portraits. Introduction to the pictorial strategies, painting methods, and psychological imperatives of Dürer, Rembrandt, Cézanne, Kahlo, Beckmann, Schiele, and Munch. Students paint from life, memory, reproductions, and objects of personal significance to create a world in which they describe themselves. May be repeated for credit. Prerequisites: 140, 145, or consent of instructor. (upper level).

ARTSTUDI 246. Individual Work: Drawing and Painting. 1-5 Unit.
Prerequisite: student must have taken a course with the instructor and/or completed relevant introductory studio course(s). Instructor consent and completion of the Independent Study Form are required prior to enrollment. All necessary forms are required by the end of Week 2 of each quarter. Please contact the Student Services Specialist in McMurtry 108 for more information. May be repeated for credit.

ARTSTUDI 247. Collage. 4 Units.
Collage has influenced painting and drawing practices, as well as film and photography through juxtaposition, scale shifts, and reappropriation of the found image. Although many iconic works in this medium date to the 20th century, this course focuses on collage as a vibrant, contemporary form. nnLectures on artists using collage with new vigor. Studio component focused on experimentation and exploration. Student work is encouraged to speak to personal, aesthetic, or political concerns, using findings from magazines, advertisements, internet, and other sources. Working with Photoshop, scans and with print, we will use collage elements to create new and stunning compositions of contemporary life.nnPrerequisites: 140, 145, or consent of instructor. (upper level). May be repeated for credit.

ARTSTUDI 247A. Art Book Object. 4 Units.
This mixed introductory and upper level studio course explores contemporary aesthetic interpretations of the book as an art object. Students learn to use both traditional and digital tools and techniques for creating artists' books, and integrate those into final works of art. The course familiarizes students with basic bookbinding processes and forms, as well as various modes of printing and production that facilitate limited artist editions. In addition to making books, we view numerous artists' books in the Bowes Art & Architecture Library collection as well as the collection of the instructor, and meet with practicing artists and book makers. Students create a number of small books, each focused on a particular process but using content of their choice. Upper level students propose and create a more fully evolved final project involving at least one bookbinding process independently researched in consultation with the instructor.
Same as: ARTSTUDI 147

ARTSTUDI 248P. The Hybrid Print. 4 Units.
This class explores experimental printmaking methods where digital and traditional practices collide. It focuses on the interchange between conventional and new methods of printmaking, and possibilities for the print beyond paper and the flat picture plane in contemporary art. Techniques will be demonstrated in class, and students will pursue projects using these techniques, developing their own conceptual interests. We will explore digital processes using large format printers, as well as digitally augmented traditional printmaking methods such as monoprints, collographs, woodblock and linocut, aided by dye sublimation, vinyl cutting, and 3-d printing. Students will have access to a wide array of both digital and traditional tools, and will develop projects using a combination of methods, resulting in a body of work. Discussions will address the expansive nature of contemporary fine art printmaking.
Same as: ARTSTUDI 148P

ARTSTUDI 249. Advanced Undergraduate Seminar. 3-4 Units.
This course aims to prepare senior Art Practice majors for future artistic careers by developing rigorous practice and critical research and presentation skills. Class engagement includes informal discussions, written reflections, and critiques with professionals in the field. Students will create meaningful work for the Senior Art Exhibition and generate further opportunities for themselves in project funding, residencies, exhibitions, commissions, and graduate education.nnCourse for Art Practice majors only. Art Practice minors may interview for possible inclusion. (upper level).

ARTSTUDI 250. Individual Work: Sculpture. 1-5 Unit.
Prerequisite: student must have taken a course with the instructor and/or completed relevant introductory studio course(s). Instructor consent and completion of the Independent Study Form are required prior to enrollment. All necessary forms are required by the end of Week 2 of each quarter. Please contact the Student Services Specialist in McMurtry 108 for more information. May be repeated for credit.

ARTSTUDI 252. Sculpture II. 4 Units.
Builds upon 151. Installation and non-studio pieces. Impact of material and technique upon form and content; the physical and expressive possibilities of diverse materials. Historical and contemporary forming methods provide a theoretical basis for the studio work. Field trips; guest lecturers. (upper level).

ARTSTUDI 254. Kinetic Sculpture. 3-4 Units.
This course is focused on developing a practical, hands on understanding of kinetic mechanisms applied to objects and materials in sculpture and installation. Class time will take the form of lectures and technical demos, and hands-on labs where you will be exposed to different strategies for making movement in the physical world. Topics investigated include Rube Goldberg machines, devices of wonder, interactivity, audience experience and participation.

ARTSTUDI 255. Sonic Crossroads. 4 Units.
Through the history of music, sound art, acoustic ecology, literature, film, visual arts and performance, this course will examine the territory where sound meets space, sight, symbol, ritual, activism, self consciousness and language. Students will engage in conversations, experiments and exercises that will enhance their awareness of the sonic phenomena and the ¿time canvas¿ as a space of creation and communication.

ARTSTUDI 256. Advanced Installation. 4 Units.
This hands on studio based sculpture course focuses on developing concepts, and creating a site-specific installation art project.
This class will addresses the impact of material and technique upon form and content; therefore understanding the physical and expressive possibilities of diverse materials. Conceptual and technical considerations will be addressed. Students will learn traditional building techniques as needed (wood shop, metal shop, mold making, found object) as well as anti-object techniques. Students will make 3-4 projects that will culminate in a final site-specific installation. We will look at contemporary artists working in the field of installation art. Group discussions, critiques, readings, video presentations, field trips and visiting artists will augment the class. Installation Art is based on the merger of Space and Time and on a relationship between the artist and the visitor. Utilizing your interests and abilities in a variety of subjects and media, you will create environments that immerse the viewer in a sensory/ intellectual/ emotional experience. The material and methods you use can range from everyday objects, to highly personalized forms, from appropriated sounds to surveillance video, from large wall drawings to interactive switches for the participant to manipulate. The class will consist of demonstrations of art skills particularly useful in installation (sculptural, video, audio, interactive media, etc), presentations by the professor, research and reports and journal entries, and weekly critique. Installation Art is a pervasive, varied, global practice for art-making that acts as a gathering place for expression in all media addressing all subjects in a wide range of styles by broad grouping of artists.".

ARTSTUDI 256V. Vital Signs: Performance in the 21st Century. 1 Unit.
The first decade and a half of the 21st century have been transformative for performance art. On the one hand, it brought an unprecedented cultural acceptance of this art form, which is now featured in most prestigious museums and art festivals; on the other, the most recent generation of performance artists is showing a great awareness of the historicity and complexity of this form. In this class, we will try to recognize and investigate these and other prominent features of performance art produced since the turn of the millennium. We will use as our primary case studies performances that will be featured in the series Vital Signs: Contemporary Performance Art Series, hosted by TAPS in 2017-2018. The primary objective of the series is to highlight and showcase underrepresented performance forms such as experimental performance art, durational art, and body art, among others, by artists from communities that remain invisible or underrepresented in mainstream performing arts. The series is curated by the Los Angeles-based artist Cassils, who has been listed by the Huffington Post as 'one of ten transgender artists who are changing the landscape of contemporary art' and has achieved international recognition for a rigorous engagement with the body as a form of social sculpture. Cassils's curatorial vision is to present established performance artists alongside emerging artists. Each quarter, a pair of artists will visit Stanford for two days (Thursday-Friday). On day one of their visit they will offer a workshop or a public performance, and on the second day they will engage in a public dialogue. The class will meet each quarter for three weeks: before, during, and after the artists' visit. This way, the students will have an opportunity to prepare for the visit, engage with the visiting artists, and reflect on their work. They will receive their grades upon completion of the class, in the spring of 2018.
Same as: TAPS 156V, TAPS 256V

ARTSTUDI 257. Advanced Sculpture Seminar. 1-5 Unit.
Students engage in professional sculpture (studio) practices that prepare them to apply and extend the skills, methods and techniques they have learned in previous courses, including technical and conceptual skills in woodworking, metal working, mold making, and other sculptural production. These practices involve working collaboratively, taking on short-term projects, handling an increased sculpture work flow, actively participating in regular critiques, and contributing to and showing work in a small final exhibition. Students refine their aesthetic, tap the interdisciplinary network of influences they have built, and work independently to become adept at presenting their ideas and building a portfolio to show the art they have produced to potential clients in a 'real world' professional context. Anyone interested in taking this class should apply with a project in mind that they aim to develop over the length of the course. Since these projects will require a considerable amount of independent work outside class time, students should submit a 1-to-2-page description outlining what they want to focus on and a portfolio featuring some images of work they have already created in that realm. Upon careful evaluation, students with the strongest proposals will be selected. This course may be repeated for credit.

ARTSTUDI 258. Resisting Monuments at the End of the World. 4 Units.
This hands-on contemporary art class explores falling monuments and rising memorials around the world. Departing from individualistic hero narratives of traditional monuments we address collective agency and new forms of shared power. Students make models and sculptures of reimagined anti-monuments through weekly assignments. Classes require reading, discussing, making artwork for critiques, and include lectures, artist examples, and guest artists.

ARTSTUDI 261. Individual Work: Emerging Practices in Design & Technology. 1-5 Unit.
Prerequisite: student must have taken a course with the instructor and/or completed relevant introductory studio course(s). Instructor consent and completion of the Independent Study Form are required prior to enrollment. All necessary forms are required by the end of Week 2 of each quarter. Please contact the Student Services Specialist in McMurtry 108 for more information. May be repeated for credit.

ARTSTUDI 262. Performing with Digital Media. 4 Units.
This interdisciplinary studio course will explore time-based media through the practice of live visual performance with an emphasis on digital means of production. Through a series of individual and collaborative assignments, students will learn to utilize software and sensors as a means of controlling and manipulating moving imagery in a performative context. Art historical references of animation, video art, installation, and audio/visual performance will guide conceptual frameworks for class instruction, lectures, and projects. No previous experience is required.

ARTSTUDI 264. Advanced Interaction Design. 4 Units.
This upper level studio course will continue and create a sustained investigation into designed interactivity in real space. Students will create interactive installations, or public interventions using sensors or other computational devices. Prerequisites include one of the following - Embodied Interfaces, Media Archaeologies, Making it with Arduino, Digital Art 1, Electronic Art or permission of instructor.

ARTSTUDI 266. Sculptural Screens / Malleable Media. 4 Units.
In this mixed intro and upper level studio course, students will experiment with video and computational outputs embedded in physical scenarios. What new physical formats are made possible by contemporary screen and projection-mapping technologies? How can we make expressive use of LCD screens, pico projectors, i-pad arrays, and LEDs? The class will address the screen as sculptural medium by examining established artists like Nam June Paik, Michael Snow, Tony Oursler, and Pippilotti Rist, as well as exploring emerging contemporary artists tackling this medium. Prerequisites to take the class at the 266 upper level include one of the following: Intro to Digital/Physical Design, Embodied Interfaces, Media Archaeologies, Making it with Arduino, Digital Art 1, Electronic Art or permission of instructor. The intro level 166 course can be taken with no prerequisites.
Same as: ARTSTUDI 166

ARTSTUDI 267. Emerging Technology Studio. 4 Units.
This course is an upper level studio course featuring a different guest artist each year whose artwork makes use of emerging technologies. Course material will be based on the guest artist's area of expertise. Past examples include artists whose work focuses on Data Visualization, Live Digital Performance and Virtual Reality. Prerequisites are determined by the subject matter, and course enrollment is decided by the instructor on the first day of class. Please attend the first class for admission. For spring 2020, Emerging Technology Studio will be taught by Veronica Graham (www.vagraham.com) on the topic of ¿World Building - inside and outside of Virtual Reality¿. Each week the course will focus on a different aspect of building a world, with an emphasis on crafting narratives that connect the virtual environment with a physical space. Veronica Graham is a new media artist and printmaker whose work spans comics, sculpture, and VR artworks. Inspired by today's rapidly changing environment, she sees her art practice as a form of world building. Each of her works is the creation of place or artifact, calling attention to how fiction is woven into our reality.

ARTSTUDI 270. Advanced Photography Seminar. 4 Units.
Students interested in taking this class should apply with a project proposal they aim to develop over the length of the course. Since these projects require a considerable amount of independent work outside of class time, each student must submit a 1-to-2-page description outlining the subject they want to focus on, and a portfolio featuring some images of work they have already created in that realm. Upon careful evaluation, students with the strongest proposals will be selected. At the beginning of the course, all students will be provided with the necessary equipment and tools of support needed to execute their projects. The culmination of the course will be a carefully prepared final showing of work through different media - exhibition, print, virtual format - that each require their own specific lay-out and mode of presentation. This course may be repeated for credit.nnPrerequisite: ARTSTUDI 277 or equivalent.

ARTSTUDI 270A. CREATING EXPERIMENTAL CINEMA. 4 Units.
This course is dedicated to creating at the crossroads of art and cinema. This experimental video art course will address practical filmmaking, taking as its baseline assumption the notion that experimentation is crucial to overcoming encrusted social, aesthetic, intellectual, and ideological norms. Over the course of the quarter, students will build familiarity with the the myriad components of cinematic creation, including directing, editing, camera operation, lighting, sound design, After Effects and color grading. They will create cinematic video informed by viewing and discussion of key works from the history of experimental cinema.No prerequisite required.

ARTSTUDI 271. The View Camera. 4 Units.
Students will learn how to use large-format 4x5 view cameras, and explore the ways in which large-format photography enables the creation of exceptionally clear images on a par with digital imaging. They will develop sheet film and print black-and-white images in analog format. To connect the camera to contemporary digital practices students will learn to scan and digitally print from their negatives. Specific attention will be given to mastering perspective control and in-camera manipulation of the image. From a historical point of view, the course will analyze and discuss images created with view cameras by a wide range of artists from the early days of photography to the present. Students will put their skills into practice and pursue their own aesthetic by producing a portfolio of images. Prerequisite: ARTSTUDI 170, ARTSTUDI 171, or equivalent.

ARTSTUDI 271A. Intermediate Photography: Home as Studio Space. 4 Units.
This course investigates ideas of home as a creative art studio space. Students are encouraged to actively engage with various modes of conceptual experimentation by considering home as a site for creative liberation instead of confinement. Considering the current social order regarding shelter-in-place and lockdown protocols, students will move beyond exercises of observing and seeing to purposely engage in acts of photographic creation. While taking full advantage of what is available at home, students will be asked to respond to the current moment by following a range of photographic assignments. This is an intermediate course in photography, with an ongoing emphasis on operating manual camera settings (focus, aperture, shutter speed, ISO, color temp/ white balance). Students continue to work with Lightroom as a file management system, are introduced to Photoshop, and focus on the importance of photo editing/selection and sequencing.nnPrerequisite: ARTSTUDI 170 or ARTSTUDI 171 or ARTSTUDI 173E or equivalent.

ARTSTUDI 271B. Intermediate Photography: Composite and Time. 4 Units.
This course introduces students to the use of several techniques and methodologies that combine multiple images into a single composite photograph. Students develop skills to pre-visualize and plan the work they envision through high definition range capture, panoramic stitching, and focus stacking. They explore the nature and concept of Time in photographic imagery through various techniques, such as creating more than one timescale into an image, `recreating¿ one time in another, building the representation of time into a work, and visualizing passing time in the process of making work. This is an intermediate course in photography, with an ongoing emphasis on operating manual camera settings (focus, aperture, shutter speed, ISO, color temp/ white balance). Students continue to work with Lightroom as a file management system, are introduced to Photoshop, and focus on the importance of photo editing/selection and sequencing. Prerequisite: ARTSTUDI 170 or ARTSTUDI 171 or ARTSTUDI 173E or equivalent.

ARTSTUDI 271C. Intermediate Photography: Performance. 4 Units.
This course introduces students to the role performance can play in a lens-based practice, centered in the belief that art can be defined through gesture as well as object. We study the work of various prominent artists to gauge their influence and to deepen our understanding of the ways in which photography can constitute performance as a conceptual exercise. Assignments and projects guide us to consider the relationship between body and lens, action and documentation, motion and stillness. This is an intermediate course in photography, with an ongoing emphasis on operating manual camera settings (focus, aperture, shutter speed, ISO, color temp/ white balance). Students continue to work with Lightroom as a file management system, are introduced to Photoshop, and focus on the importance of photo editing/selection and sequencing. Prerequisite: ARTSTUDI 170 or ARTSTUDI 171 or ARTSTUDI 173E or equivalent.

ARTSTUDI 271D. Intermediate Photography: Constructed Image. 4 Units.
This course begins with the idea that all photographs are constructed. Students explore conceptual photographic practices through the frame of images as constructs, examining the various choices and expanded practices involved in the process of creating a photograph. Students are introduced to contemporary topics, historical positions, and examinations of various studio practices. Students examine different means of constructing representations of reality, building images and building spaces, within systems of making. This is an intermediate course in photography, with an ongoing emphasis on operating manual camera settings (focus, aperture, shutter speed, ISO, color temp/ white balance). Students continue to work with Lightroom as a file management system, are introduced to Photoshop, and focus on the importance of photo editing/selection and sequencing. Prerequisite: ARTSTUDI 170 or ARTSTUDI 171 or ARTSTUDI 173E or equivalent.

ARTSTUDI 271E. Intermediate Photography: New Landscapes. 4 Units.
This course investigates notions of landscape photography by expanding upon its traditional, geography-based paradigm of pictorial beauty. Students explore how the perception and representation of landscapes relate to physical and cognitive mapping, as well as engagements with myth and memory, in order to visualize how we experience and imagine the spaces that extend around us. They develop technical processes that allow them to intervene in landscapes, such as altering their appearance within the camera in post-production, manipulating the construction of existing places, or building installations in public spaces. This is an intermediate course in photography, with an ongoing emphasis on operating manual camera settings (focus, aperture, shutter speed, ISO, color temp/ white balance). Students continue to work with Lightroom as a file management system, are introduced to Photoshop, and focus on the importance of photo editing/selection and sequencing. Prerequisite: ARTSTUDI 170 or ARTSTUDI 171 or ARTSTUDI 173E or equivalent.

ARTSTUDI 272. Individual Work: Photography. 1-5 Unit.
Prerequisite: student must have taken a course with the instructor and/or completed relevant introductory studio course(s). Instructor consent and completion of the Independent Study Form are required prior to enrollment. All necessary forms are required by the end of Week 2 of each quarter. Please contact the Student Services Specialist in McMurtry 108 for more information. May be repeated for credit.

ARTSTUDI 273. Individual Work: Experimental Media. 1-5 Unit.
Prerequisite: student must have taken a course with the instructor and/or completed relevant introductory studio course(s). Instructor consent and completion of the Independent Study Form are required prior to enrollment. All necessary forms are required by the end of Week 2 of each quarter. Please contact the Student Services Specialist in McMurtry 108 for more information. May be repeated for credit.

ARTSTUDI 275. Photography II: Digital. 4 Units.
Students continue to use DLSR cameras, with an ongoing emphasis on operating manual settings (focus, aperture, shutter speed, ISO, color temp/ white balance). They are taught intermediate-level digital printing (in color) using large-format printers. They continue to work with Lightroom as a file management system and are introduced to Photoshop. Students gain a deeper insight into and stronger grasp of practices in contemporary digital photography, with a continuing focus on the importance of photo editing/selection and sequencing, as well as questions around the conceptual and practical implications and limits of photographic images. Prerequisite: ARTSTUDI 171 or equivalent. May be repeat for credit.

ARTSTUDI 276. The Photographic Book. 4 Units.
This course explores the historical development and artistic potential of photography books. Students will learn about book structures, signatures, binding styles, printing methods and publication platforms (from conventional print to web-based). They will focus on how to group and sequence photographic images to produce a coherent, thematically organized body of work, and examine the creative possibilities of integrating image and text. Students will have access to numerous campus resources to do research and develop ideas, including the extensive photo book collections of the Bowes Art & Architecture Library and the Cantor Museum. They will have to execute a photographic project of their own design and produce a hand-made book. Prerequisite: ARTSTUDI 170, ARTSTUDI 171, or equivalent.

ARTSTUDI 277. Intermediate Photography Seminar. 4 Units.
Students engage in professional photographic practices that prepare them to apply and expand upon the skills, methods and techniques they have learned in previous courses. They explore different themes in photography and take an in-depth look at the creative process of artists whose visions are based on the development of projects and bodies of work over an extended period of time. Students learn to refine their aesthetic over time by developing three such projects of their own, which involve significant independent work and active participation in critiques, with the goal of becoming adept at presenting their ideas and building a portfolio to show their work in a professional context. Students provide their own photographic equipment, will be provided with software and introduced to tools of support that will help them to more effectively execute their projects. This course may be repeated for credit.nnPrerequisite: Students should have taken at least three 200 level Intermediate Photography Topics Classes prior to enrolling in this Seminar or equivalent.

ARTSTUDI 277A. Video Art II. 4 Units.
Video, criticism, and contemporary media theory investigating the time image. Students create experimental video works, addressing the integration of video with traditional art media such as sculpture and painting. Non-linearity made possible by Internet and DVD-based video. No prerequisite required.

ARTSTUDI 278. Photography II: Black and White. 4 Units.
Students are introduced to and provided with medium-format film cameras, which they learn to use with an ongoing emphasis on operating manual settings (focus, aperture, shutter speed). Students are introduced to metering for film using hand-held light meters in a further study of light. They hone their printing skills and learn finer printing techniques using fiber-based paper. They also explore the full range of black and film stocks and get to experiment with alternative techniques like pinhole photography, photograms and Holga cameras. Students gain a deeper insight into and stronger grasp of practices in contemporary black and white photography, with a continuing focus on the importance of photo editing/selection and sequencing, as well as questions around the conceptual and practical implications and limits of photographic images. Prerequisite: ARTSTUDI 170 or equivalent.

ARTSTUDI 279. Photo III B/W. 4 Units.
TBD.

ARTSTUDI 284. Art and Biology. 4 Units.
The relationship between biology and art. Rather than how art has assisted the biological sciences as in medical illustration, focus is on how biology has influenced art making practice. New technologies and experimental directions, historical shifts in artists' relationship to the living world, the effects of research methods on the development of theory, and changing conceptions of biology and life. Projects address these themes and others that emerge from class discussions and presentations. (upper level).

ARTSTUDI 286. Intermediate Photography: Portraiture. 4 Units.
This course explores contemporary practices of portrait photography, examining its history and discourse on representations of race, gender, class, and sexuality. We look at the complexities of portraiture in terms of skill sets and processes, aesthetics and styles, ideology and identity, while engaging with such dualities as private/public, professional/amateur, and traditional/innovative. At a time when pictures are being produced and disseminated in unprecedented proliferation, we look into the pursuit of constructing meaning beyond pose and persona. This is an intermediate course in photography, with an ongoing emphasis on operating manual camera settings (focus, aperture, shutter speed, ISO, color temp/ white balance). Students continue to work with Lightroom as a file management system, are introduced to Photoshop, and focus on the importance of photo editing/selection and sequencing. Prerequisite: ARTSTUDI 170 or ARTSTUDI 171 or ARTSTUDI 173E or equivalent.

ARTSTUDI 287. Animation II. 4 Units.
This course expands upon techniques and storytelling methods learned in Animation I. We continue to survey the field of independent animation primarily through short films and other social digital platforms. As our media consumption is increasingly comprised of videos ranging from a few seconds to 'longer' formats such as 10 minutes, the ability to generate and manipulate sound, image, and time for personal expression is more relevant than ever. This interdisciplinary knowledge is to be expanded upon over a lifetime in settings such as the artist¿s studio and applied fields such as AR/VR and user interfaces. Projects will concentrate on visual style (abstract to representational), storytelling, and personal expression. Emphasis will be placed on storyboarding to produce cohesive visual statements. Experimentation strongly encouraged. This is NOT an Anime class.

ARTSTUDI 288. Intermediate Photography: Documentary. 4 Units.
The documentary image has constituted a keystone of the photographic medium since the earliest days of its existence. In this class, we approach documentary photography from a contemporary perspective and in a context of active engagement with the world we inhabit. What do the ethics and aesthetics of documenting reality involve in an era when the instant representation of ourselves and our environment has become routine daily procedure? How can today's visual documentarian meet the challenge of creating work that meaningfully and critically relates to the complex global issues and struggles defining the current historical moment? This is an intermediate course in photography, with an ongoing emphasis on operating manual camera settings (focus, aperture, shutter speed, ISO, color temp/ white balance). Students continue to work with Lightroom as a file management system, are introduced to Photoshop, and focus on the importance of photo editing/selection and sequencing. Prerequisite: ARTSTUDI 170 or ARTSTUDI 171 or ARTSTUDI 173E or equivalent.

ARTSTUDI 290. Curricular Practical Training. 1-3 Unit.
CPT course required for international students completing degree.

ARTSTUDI 295. Visual Arts Internship. 1-4 Unit.
Professional experience in a field related to the Visual Arts for six to ten weeks. Internships may include work for galleries, museums, art centers, and art publications. Students arrange the internship, provide a confirmation letter from the hosting institution, and must receive consent from the faculty coordinator to enroll in units. To supplement the internship students maintain a journal. Evaluations from the student and the supervisor, together with the journal, are submitted at the end of the internship. Restricted to declared majors and minors. May be repeated for credit.

ARTSTUDI 297. Honors Thesis Exhibition. 2 Units.
May be repeated for credit.

ARTSTUDI 297S. AP HONORS SEMINAR. 1-2 Unit.
Led by the Director of Undergraduate Studies in Art Practice, the Honors Seminar provides students the opportunity to create projects for the honors exhibition and complete the written thesis under the guidance of faculty advisors, and assisted with MFA mentors as well as guest critiques from art world professionals. It is geared towards developing a professional practice in the field of fine art.

ARTSTUDI 310A. Directed Reading: Studio. 1-15 Unit.
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ARTSTUDI 310B. Directed Reading: Studio. 1-15 Unit.
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ARTSTUDI 310C. Directed Reading: Studio. 1-15 Unit.
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ARTSTUDI 342. MFA Project: Tutorial. 1-15 Unit.
Students construct an individual tutorial with an instructor selected from the studio art faculty, including visiting artists. The student must take tutorials with at least three different faculty members during the six-quarter program. Prior approval of advisor is required.

ARTSTUDI 342A. MFA: Object Seminar. 1-15 Unit.
Weekly seminars, studio practice, and individual tutorials. Student work is critiqued on issues of identity, presentation, and the development of coherent critical language. May be repeated for credit. Restricted to M.F.A. studio students only.

ARTSTUDI 342B. MFA: Concept Seminar. 1-15 Unit.
Weekly seminars, studio practice, and individual tutorials. Modes of conceptualization to broaden the base of cognitive and generative processes. May be repeated for credit. Restricted to M.F.A. studio students only.

ARTSTUDI 342C. M.F.A Seminar. 1-15 Unit.
Professional practices; preparation of documentation; exhibition and presentation. Restricted to M.F.A. studio students only. May be repeat for credit total units allowed 45 and total completion 6.

ARTSTUDI 350A. Art & Design I: History and Theory. 3 Units.
This two part graduate level course is required for all first year JPD students (both MFA and ME students), and open to all MFA Art Practice students. The first quarter of the course is a seminar, which focuses on the history of design practices and theories in a broad range of fields including design, art, and architecture. We will examine how well known concepts such as "The Bauhaus", "the designer", "Design Thinking", and metaphors such as "workshop", "school", "laboratory", "studio", or "post-studio" arise, and how they shape the artist or designer's work in a particular cultural context. Through reading, writing, and discussion, students will attempt to define their current position within a historical context and chart their future vision. The course may involve guest lectures and visits to various collections and archives.

ARTSTUDI 350B. Art & Design II: Personal Practice. 3 Units.
This two part graduate level course is required for all first year JPD students (both MFA and ME students), and open to all MFA Art Practice students. The second quarter of the course is a studio class, which examines our personal relationships to various creative processes (technical, procedural, and conceptual). Our goal is to gain new insights into our creative processes and find new possibilities within our available working methods. We will investigate issues such as constraint, iteration, collaboration, delegation, daily practice, and tools. Assignments such as "handmade-readymade-fablab" will challenge students to work with various processes and conceptual frameworks within single projects. The course will include four major projects, many minor studio exercises, readings, and discussion.

ARTSTUDI 360A. Design Masters Project I. 4 Units.
This two part graduate level seminar and studio course is required for second year JPD MFA students, and open to second year JPD ME students and all MFA art practice students. The first quarter of this course examines artists as contextually engaged problem solvers and provocateurs. What strategies have artists used to draw attention to, and drive change regarding issues they care about? How is art used to change habits, shift the directions of cultural discussions, and make the invisible visible? We will study artists and designers who use innovative techniques to these ends such as Merle Ukeles, Krzysztof Wodiczko, Eduardo Kac, Jon Rubin, Amy Franceschini, Alfredo Jaar, Stamen Design (cab spotting), and Rebar. In addition to readings and discussions, students will create and critique a series of four studio projects that engage participants to rethink a specific site or situation.

ARTSTUDI 360B. Design Masters Project II. 4 Units.
This two part graduate level seminar and studio course is required for second year JPD MFA students, and open to second year JPD ME students and all MFA art practice students. In this second quarter of the course, students will refine and expand one of their assignments from Sites/Situations I to create a completed site-specific installation, intervention, or product/object, which provokes discussion or change in our community. Works will be realized at various sites around campus, or in the community at large. Issues such as budget, public safety and code will be addressed. Time will be allotted for documentation, critique, and assessment of these projects.

ARTSTUDI 360C. Master's Project: Design. 2-4 Units.
Students enroll concurrently in ME 316. Over the course of the year, students create and present two master's theses involving the synthesis of aesthetics and technological concerns in the service of human need and possibility.

ARTSTUDI 361. MFA First Year Seminar: Context. 1-15 Unit.
tbd.

ARTSTUDI 390. Curricular Practical Training. 1-3 Unit.
CPT course required for international students completing degree.

ARTSTUDI 801. TGR Project. 0 Units.
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Film Production Courses

FILMPROD 101. Screen Writing I: Visual Writing. 5 Units.
A writing workshop that is an exploration of visual storytelling. Beginning with visual literacy, the class progresses from basic cinematic techniques through scene exercises to revisions and ultimately to connecting scenes in order to build sequences of script pages. Open to all majors; may substitute for ENGL 190F prerequisite for FP104.

FILMPROD 101T. Writing the Television Pilot. 5 Units.
A writing workshop in which students are introduced to the basic structures and genre of television pilots and to writing within the screenwriting/television writing form. Students will develop, outline, and workshop their own original pilot episode and series bible. Serves as a prerequisite for FP104 Intermediate Screenwriting. Enrollment by decision of instructor. nnStudents interested in applying need to email Adam Tobin (adtobin@stanford.edu) by the end of fall quarter for a link to the course application.

FILMPROD 103. Adaptation. 4 Units.
A close analysis of film adaptation, using various source materials to examine the demands form makes on content and the creative choices made in adaptation to film. Source materials will include plays, fiction, biography, history, graphic novels, and reference to video games and amusement park rides. A weekly film screening is a requirement of the course.

FILMPROD 104. Screenwriting II: Intermediate Screenwriting. 5 Units.
Priority to Film and Media Studies majors and minors, and seniors. Craft, form, and approaches to writing for the screen. Students will write, workshop and rewrite the first act of a feature screenplay and create rough outline material for the rest of the film. Prerequisites: FP101, FP101T or ENGL190F and consent of the instructor.

FILMPROD 105. Script Analysis. 4 Units.
Analysis of screenplay, film, and television from the writer's perspective, with focus on ideation, structure, and dramatic tension in narrative features. Sources include screenplays and screenings.
Same as: FILMPROD 305

FILMPROD 106. Image and Sound: Filmmaking for the Digital Age. 3 Units.
Despite the rise of emerging forms like two-minute YouTube videos, six second Vines, or interactive storytelling modules, many core principles of visual storytelling remain unchanged. In this hands-on film production class students will learn a broad set of filmmaking fundamentals (basic history, theory, and practice) and will apply them creating film projects using tools such as iPhones, consumer cameras and FCPX.

FILMPROD 106S. Image and Sound: Filmmaking for the Digital Age. 3 Units.
Despite the rise of emerging forms like two-minute YouTube videos, six second Vines, or interactive storytelling modules, many core principles of visual storytelling remain unchanged. In this hands-on film production class students will learn a broad set of filmmaking fundamentals (basic history, theory, and practice) and will apply them creating film projects using tools such as iPhones, consumer cameras and FCPX.

FILMPROD 110. Screen Writing III: Advanced Screenwriting. 5 Units.
Advanced writing workshop in which students develop and complete a feature-length screenplay. Prerequisites: FP101 Screenwriting and approval of the instructor. Enrollment is limited.

FILMPROD 114. Introduction to Film and Video Production. 5 Units.
Hands-on. Techniques of film and video making including conceptualization, visualization, story structure, cinematography, sound recording, and editing. Enrollment limited to 12 students. Priority to junior/senior Film & Media Studies majors.Admission determined on the first day of class.

FILMPROD 115. Immersive Cinema: Experiments in Virtual Reality. 4 Units.
In this exploratory workshop, students will use a variety of tools (360 video/ VR cameras and binaural sound design, digital video, and traditional sound recorders) to tell immersive "stories". Students will use the conceptual framework of experimental cinema and documentary film to inform their work, while also pushing toward a new artistic language in the still-emerging form of VR storytelling. Over the course of the quarter, students will work in teams to create a series of short immersive pieces with an emphasis on experimentation. The class has no prerequisites and is open to all students.

FILMPROD 116. Script to Screen. 5 Units.
Script to Screen is a hybrid writing/production course that guides students through a series of narrative film exercises. Students will write and workshop scripts for short fiction films, and then, by filming them, learn to apply the fundamentals of digital video production. Initial classwork will include visual writing exercises, DSLR cinematography instruction, script work, and basic fiction film production and post-production. Priority goes to film studies majors.nnStudents interested in applying need to email Professor Meltzer (jmelt@stanford.edu) by the end of fall quarter for a link to the course application.

FILMPROD 117. Advanced Video Production. 5 Units.
This course introduces the fundamentals of digital video production. Special emphasis is placed on the development of interview and observational sync-sound filming techniques. Students acquire hands-on experience in shooting, sound recording, lighting, and editing. Critiques of creative work emphasizes the conceptual, aesthetic, and technical aspects of digital video production. Prerequisite: Filmprod 114 or Filmprod 10AX.

FILMPROD 121. New York Films. 5 Units.
This course will be taught at Stanford in New York in winter quarter.

FILMPROD 148. Archival Cinema: Excavating the Future. 4 Units.
This course examines the practices of appropriation of archival material in cinema, and the problems of representation inherent to them. The practical component consists of a series of creative assignments in which students are asked to use archival material, including some from Stanford's collections, to produce short moving image pieces.
Same as: FILMPROD 348, FILMSTUD 148, FILMSTUD 348

FILMPROD 305. Script Analysis. 4 Units.
Analysis of screenplay, film, and television from the writer's perspective, with focus on ideation, structure, and dramatic tension in narrative features. Sources include screenplays and screenings.
Same as: FILMPROD 105

FILMPROD 348. Archival Cinema: Excavating the Future. 4 Units.
This course examines the practices of appropriation of archival material in cinema, and the problems of representation inherent to them. The practical component consists of a series of creative assignments in which students are asked to use archival material, including some from Stanford's collections, to produce short moving image pieces.
Same as: FILMPROD 148, FILMSTUD 148, FILMSTUD 348

FILMPROD 400. Film/Video Writing and Directing. 3 Units.
Restricted to M.F.A. documentary students. Emphasis is on the development of the research, conceptualization, visualization, and preproduction skills required for nonfiction filmmaking. Prerequisite: consent of instructor.

FILMPROD 401. Nonfiction Film Production. 3 Units.
Restricted to M.F.A documentary students. 16mm production techniques and concepts. Multiple short exercises and a final project with multitrack sound design. Enrollment limited to students in MFA Documentary Film Program. Prerequisite: consent of instructor.

FILMPROD 402. Digital Video. 4 Units.
Restricted to M.F.A. documentary students. Fundamentals of digital storytelling. Working with small format cameras, interviewing techniques, and nonlinear editing skills. Prerequisite: consent of instructor.

FILMPROD 403. Advanced Documentary Directing. 3 Units.
Restricted to M.F.A. documentary students. Further examination of structure, emphasizing writing and directing nonfiction film. Prerequisite: consent of instructor.

FILMPROD 404. Advanced Video Production. 3 Units.
Restricted to M.F.A. documentary students. Techniques of visual storytelling and observational shooting. Final quarter of professional training in documentary video production. Prerequisite: consent of instructor.

FILMPROD 405. Producing Practicum: The Non-Fiction Film. 4 Units.
Restricted to M.F.A. documentary students. Advanced producing principles through the preproduction of the M.F.A. thesis project, including development of a professional film proposal. Practical training in fundraising. Prerequisite: consent of instructor.

FILMPROD 406A. Documentary M.F.A. Thesis Seminar I. 5 Units.
Restricted to M.F.A. documentary students. Production of film or video project. Focus is on shooting strategies, ethical challenges, and practical production issues. Prerequisite: consent of instructor.

FILMPROD 406B. Documentary M.F.A.Thesis Seminar II. 5 Units.
Restricted to M.F.A. documentary students. Editing and post-production of film or video project. Emphasis is on aesthetic choices (structure, narration, music), distribution, contracts, and audience. Prerequisite: consent of instructor.

FILMPROD 408. CULTURE/CINEMA/SENSATION. 5 Units.
This course brings together a critical introduction to works of ethnographic film (i.e. films concerned primarily with the representation of culture) and a selective exploration of works of avant-garde film (i.e. films concerned with, among other dimensions, the possibilities of cinema) in order to consider the conceptual and aesthetic foundations/ provocations of sensory ethnography, a neologism for an approach to cinema that seeks the new, the open-ended, the corporeal, the sensorial, and the affective.

FILMPROD 801. TGR Project. 0 Units.
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Film Studies Courses

FILMSTUD 4. Introduction to Film Study: French Cinema in Focus. 5 Units.
This course provides an introduction to film through the lens of French national cinema. We study the historical formation of the moving image in France (and beyond); from its humble beginnings as a novel attraction, to its rise as a major medium in its own right, appreciated for both its commercial and artistic appeal. We examine the work of a number of influential auteurs and key periods in the development of French national cinema: including the work of early masters Jean Vigo and Jean Renoir, members of the French New Wave Jean-Luc Godard and Agnès Varda, as well as contemporary filmmakers Mathieu Kassovitz and Olivier Assayas. In addition to undertaking a historical overview of French cinema, this course familiarizes students with a variety of approaches to the analysis of film style and form: mise-en-scène, cinematography, editing, sound, performance, etc. While no prior knowledge of French cinema or film analysis is required, a willingness to engage deeply and critically with film is fundamental.

FILMSTUD 4S. Language of Film. 3 Units.
This course familiarizes students with various elements of film language (cinematography, editing, sound, etc.) and introduces them to a range of approaches to cinematic analysis (authorship, genre, close formal reading, socio-historical considerations). Different types of films (narrative, documentary, and experimental) will be surveyed. Classical narrative cinema will be compared with alternative modes of story-telling.

FILMSTUD 6. Introduction to Media. 3-5 Units.
What is a medium? This course starts from the assumption that the answer to this question is not as obvious as it might at first appear. Clearly, we know some media when we see them: radio, film, and television are in many ways paradigmatic media of the twentieth century. But what about the computational, networked media of the twenty-first century? Are these still media in the same sense, or has the nature of media changed with the emergence of digital technologies? And what, for that matter, about pre-technical media? Is painting a medium in the same sense that oil or acrylic are media, or in the sense that we speak of mixed media? Is language a medium? Are numbers? Is the body?
As we shall see, the question of what a medium is raises a number of other questions of a theoretical or even philosophical nature. How is our experience of the world affected or shaped by media? Are knowledge and perception possible apart from media, or are they always mediated by the apparatuses, instruments, or assemblages of media? What is the relation between the forms and the contents of media, and how does this relation bear on questions of aesthetics, science, technology, or politics? The lecture-based course addresses these and other questions and seeks in this way to introduce a way of thinking about media that goes beyond taken-for-granted ideas and assumptions, and that has a potentially transformative effect on a wide range of theoretical and practical interests.nnFilm & Media Studies majors and minors must enroll for 5 units.
Same as: FILMSTUD 306

FILMSTUD 6B. Media and Visual Culture. 5 Units.
TBA.

FILMSTUD 7. Introduction to Television Studies. 5 Units.
Television is arguably the most influential and ubiquitous mass medium of the last half century. Because of its familiarity and popularity, it is also often the medium most overlooked, dismissed, and maligned. Drawing from the history of television and of television scholarship, this course builds a theoretical framework for understanding this pivotal cultural form. Course covers interdisciplinary approaches to studying TV texts, TV audiences, and TV industries, including questions of the boundaries of television (from independent and avant-garde video to convergence). In the process students develop methodological tools as critical television viewers.

FILMSTUD 50Q. The Video Essay: Writing with Video about Film and Media. 3 Units.
In this course, we will explore what it means to write with video, and we will learn to make effective and engaging video essays about historical and contemporary audiovisual media. Specifically, we will examine formal, aesthetic, and rhetorical strategies for communicating in the medium of video, and we will conduct a series of hands-on exercises utilizing digital video editing software to construct arguments, analyses, and interpretations of film and other media (including television, video games, and online media). Compared with traditional, text-based engagements, the video essay offers a remarkably direct mode of communicating critical and analytical ideas. In this medium, authors no longer struggle to describe audiovisual contents in words that can never do justice to the rich array of details that are immediately apparent to spectators eyes and ears; instead, video essayists can simply show their viewers what they want them to see. This does not mean, however, that it is any easier to write effectively with video than it is to compose an essay with pen and paper. Similar types of expository and argumentative planning are involved in both forms, while the new technology introduces its own characteristic challenges and choices, including decisions about the spatial and temporal organization and transformation of audiovisual materials, the addition of onscreen text, voiceover commentary, and visual effects. By taking a hands-on approach, we will develop our skills with editing software such as Adobe Premiere Pro and Apple's Final Cut Pro while also cultivating our awareness of the formal and narrative techniques employed in films and other moving-image media. Through weekly assignments and group critique sessions, we will learn to express ourselves more effectively and creatively in audiovisual media. As a culmination of our efforts, we will assemble a group exhibition of our best video essays for public display on campus.nnNo previous experience is required, but a willingness to learn new technologies (in particular, video editing software) is important.

FILMSTUD 100A. History of World Cinema I, 1895-1929. 4 Units.
This course begins at the end of the nineteenth century, when the purpose of cinema was questioned and debated, film grammar was just being invented, distribution and exhibition were haphazard, and writers internationally were registering surprise and wonder at the new medium. It ends with modernist masterpieces of the 1920s, subtle (and still relevant) critical debates about the aesthetics and politics of film, and the development of viable sound technologies. What could film have become and did not? How did storytelling come to dominate the development of the new medium? How and why did various national cinemas develop distinctive stylesâ¿¿classical Hollywood, French Impressionism, German Expressionism, Russian montageâ¿¿that shape screen arts to this day? How did influential critics understand cinema and the ways it could reflect and effect social change? To explore these questions you will work mainly with primary textsâ¿¿the films themselves, and criticism written contemporaneously with them. Lectures will help you place these filmic and critical texts within a larger narrative about the first thirty-five years of cinema.
Same as: FILMSTUD 300A

FILMSTUD 100B. History of World Cinema II: Currents in Francophone Film, 1970-present. 4 Units.
This course surveys developments in global French-language cinema since 1970, a period marked by a radical reconsideration of national identity, social and sexual politics, and collective memory. Special attention is given to an international roster of francophone films and filmmakers outside of France, from Quebec to Martinique, Belgium to Senegal. Directors like Mati Diop, Euzha Palcy, Chantal Akerman, Abderrahmane Sissako, and Xavier Dolan offer new and shifting currents with which to rethink a decolonized national cinema, sociopolitical turmoil, and the role of the contemporary film viewer.

FILMSTUD 100C. History of World Cinema III, 1960-Present. 3-5 Units.
This course will provide an overview of cinema from around the world since 1960, highlighting the cultural, political, and economic forces that have shaped various film movements over the last six decades. We will study some key film movements and national cinemas towards developing a historical appreciation of a variety of commercial and art film traditions. Through an exploration of films from Europe, Africa, Asia, and Latin America, we shall examine the industrial histories of non-Hollywood film production and exhibition practices that produce the particular cinematic cultures of each region.
Same as: FILMSTUD 300C

FILMSTUD 101. Close Cinematic Analysis. 3-4 Units.
The close analysis of film, with an emphasis on sound, music, and audio-visuality. Films from various historical periods, national cinemas, directors, and genres. Prerequisite: FILMSTUD 4 or equivalent. Recommended: ARTHIST 1 or FILMSTUD 102. Course can be repeated twice for a max of 8 units. This course fulfills the WIM requirement for Film and Media Studies majors.
Same as: FILMSTUD 301

FILMSTUD 102. Theories of the Moving Image. 4 Units.
What makes the moving image unique in its capacity for telling stories, influencing thoughts, and stirring emotions? What are the potentials and risks of cinema's affective power? This course looks at concepts developed by filmmakers, film critics, and philosophers to explain affinities between mind and moving image, to envision cinema¿s promise, and to identify its limitations. We will read a range of authors, some classic, some contemporary, including André Bazin, Laura Mulvey, and D. A. Miller. Films will include classics such as Julie Dash's Daughters of the Dust (1991) and recent releases such as Hirokazu Koreeda's Shoplifters (2018). Students will learn to speak and write confidently about influential theories and methods in the field of film and media studies. They will learn to formulate research questions that are in dialogue with vital concepts. Through close analysis, they will assess how theories of film and media speak, or fail to speak, to their own experience. And ideally, students will venture to engage in theoretical speculation of their own.
Same as: FILMSTUD 302

FILMSTUD 103S. Anima to Anime. 3 Units.
From Anima to Anime is an introductory level course designed to familiarize students with key concepts and issues surrounding animated media in East Asian. It is by no means an exhaustive survey of the region¿s national animation traditions, be that of Japan, Korea, or Greater China. Rather, this course takes an emphatically transnational approach arguing that animation serves as an important site where national forms, traditional materials, and techniques converge with powerful currents of internationalism and modernism. We will thus look to pay close attention to the way shared cultural, aesthetic, and technological norms participate in the ongoing definition of a ¿regional¿ animated media in East Asia. In addition, we will look at how East Asian animation has given rise to significant global trends, including developments in mass media communication, franchising, adaptation, youth culture, consumption and fandom, as well as modes of play and mediated self-expression.

FILMSTUD 104. Introduction to the Movies- How Movies Are Developed, Produced, Marketed and Exhibited. 4 Units.
How are movies created? How are scripts developed and selected for production? How are films actually made and marketed? How are they shown in various media? Who decides what in all of these processes and what information do the decision-makers rely on?nnThis course will follow the life cycle of a movie, from its inception as an idea, article, book, etc., to its release in theaters and other media as a finished product. Guest speakers will discuss the evolution of the film industry, creative development of scripts, how deals are structured to acquire intellectual property, film finance, and how movies are physically produced and then marketed, distributed and exhibited in theaters and in other media. We will use two films as case studies ¿ The Chronicles of Narnia ¿ Voyage of the Dawn Treader and Chasing Mavericks.
Same as: FILMSTUD 304

FILMSTUD 105. The Films of Ernst Lubitsch. 4 Units.
Ernst Lubitsch was: a stage actor in Berlin; a comic actor in early German cinema; Germany's most profitable director in the early 1920s; a director of subtle silent comedies in Hollywood in the later `20s; an innovative director of sound musicals and comedies in the 1930s; head of production for Paramount Pictures; and one of the few directors whose name and likeness were familiar to audiences across America, one famed for what became known as The Lubitsch Touch. The course considers Lubitsch in all these contexts. Charts intersections with collaborators, genre conventions, sexuality and censorship, and studio control. Lubitsch's style depends on performance, so attention will be given to film acting as he came to shape it.
Same as: FILMSTUD 305

FILMSTUD 107N. Documentary Film: Telling it Like it Is?. 3 Units.
Documentary films have become a "lingua franca," thanks to ubiquitous streaming services and our devotion to screen time. Offering compelling stories, intriguing "characters," and a lingering resonance, they often function as a Rorschach test that elicits divergent responses. This course decodes the narrative technique, point of view, authorship, and aesthetic approach of nonfiction films that explore scintillating and provocative subject matter. The student develops "visual literacy" skills as we interrogate the inferred relationship between documentary, objectivity, and "truth." In this seminar-style class, we peel back the veneer of the films we watch, examining both form and content.

FILMSTUD 110. Science Fiction Cinema. 4 Units.
Science fiction film's sense of wonder depends upon the development and revelation of new ways of seeing. The American science fiction film emphasizes the fundamental activity of human perception, its relation to bodily experience and the exploration of other worlds, new cities, and other modes of being, in such new technological spaces as the cyberspaces of the information age. It is perhaps the Hollywood genre most directly concerned with the essence of cinema itself.
Same as: FILMSTUD 310

FILMSTUD 110N. Darkness in Light: The Filmic Imagination of Horror. 3 Units.
Preference to freshmen. From its beginnings, the cinema evinced an affinity with the phantom realm of specters, ghosts, and supernatural beings. Not only does horror have deep and diverse roots in the international history of film; it emerges as a trope of film itself, as a medium of shadows, dematerialized presence, life drained of substance. Overview of filmic imaginations of horror with a focus on the U.S., Europe, and Japan. Theories of horror, from the fantastic to the uncanny; unpacking these in light of key moments in the genre's development. The merits of vampires versus zombies. Ongoing debates through the lens of horror about cinematic representation, from Andre Bazin's idea of the mummy complex to Linda Williams' thesis of body genres to Jeffrey Sconce's notion of haunted media. Introduction to film analysis and interpretation; no prior experience in film studies required. Required weekly screening.

FILMSTUD 112. Women in French Cinema: 1958-. 3-5 Units.
Women as objects and subjects of the voyeuristic gaze inherent to cinema. The myth of the feminine idol in French films in historical and cultural context since the New Wave until now. The mythology of stars as the imaginary vehicle that helped France to change from traditional society to modern, culturally mixed nation. The evolution of female characters, roles, actresses, directors in the film industry. Filmmakers include Vadim, Buñuel, Truffaut, Varda, Chabrol, Colline Serreau, Tonie Marshall. Discussion in English; films in French with English subtitles.
Same as: FEMGEN 192, FRENCH 192

FILMSTUD 114. Reading Comics. 4 Units.
The modern medium of comics, a history that spans 150 years. The flexibility of the medium encountered through the genres of humorous and dramatic comic strips, superheroes, undergrounds, independents, journalism, and autobiography. Innovative creators including McCay, Kirby, Barry, Ware, and critical writings including McCloud, Eisner, Groenstee. Topics include text/image relations, panel-to-panel relations, the page, caricature, sequence, seriality, comics in the context of the fine arts, and relations to other media.
Same as: AMSTUD 114X, FILMSTUD 314

FILMSTUD 114S. Introduction to Comic Studies. 3 Units.
The modern medium of comics, a history that spans 150 years. The flexibility of the medium encountered through the genres of humorous and dramatic comic strips, superheroes, undergrounds, independents, journalism, and autobiography. Innovative creators including McCay, Kirby, Barry, Ware, and critical writings including McCloud, Eisner, Groenstee. Topics include text/image relations, panel-to-panel relations, the page, caricature, sequence, seriality, comics in the context of the fine arts, and relations to other media.

FILMSTUD 115. Documentary Issues and Traditions. 4 Units.
Issues include objectivity/subjectivity, ethics, censorship, representation, reflexivity, responsibility to the audience, and authorial voice. Parallel focus on form and content.
Same as: FILMSTUD 315

FILMSTUD 116. International Documentary. 4 Units.
Historical, aesthetic, and formal developments of documentary through nonfiction films in Europe, Asia, Latin America, and Africa.
Same as: FILMSTUD 316

FILMSTUD 117. Media and Message: The Experience of Informatoin. 4 Units.
We live in an information age, and information comes to us through various media. But different media embody information differently, and are experienced differently. How do these differences impact the ways we come to understand the world and our place in it? One example: Photography, cinema, and console games all attempt to communicate the experience of war, but each does so in its own way -- a Robert Capa photograph of the moment when a soldier is shot is different from the sensory and narrative immersion of Saving Private Ryan, which is different from the interactive experience of Call of Duty. Following Marshall McLuhan's dictum that "the medium is the message," this course will examine the ways that different media present, organize, and structure information as forms that are "read" or experienced. The course will consider such historical media as illuminated books, print, painting, and photography, and such recent forms as cinema, television, comics, presentation software, and interactive and computational media. Readings will be drawn from across disciplines, and will include McLuhan, Sontag, Merleau-Ponty, Goffman, Jenkins, Hayles, and others. Fiction, film screenings, and comics reading will also be part of the course.

FILMSTUD 119. Science Fiction: Cyborgs & Human Simulacra in the Cinema. 4 Units.
The human simulacrum has a long history in mythology, fairy tales and children¿s stories, as well as in the genres of horror and science fiction. This course explores synthetic human narratives in the cinema. Stories of artificially created life, living statues, automata, body snatchers, robots, cyborgs and electronic simulations all direct our attention to our assumed definitions of the human.The fantasies and anxieties that undergird these stories engage with such issues as labor, gender, sexuality, death, emotion, rationality, embodiment, consumerism, reproductive technologies, and power relations. Attention will also be given the relation of cinema¿s human simulacra to changing cinematic technologies. Films will include Metropolis, Pinocchio, Robocop, Bride of Frankenstein, The Golem, A.I., My Fair Lady, Her, Blade Runner, and the HBO iteration of Westworld. Readings will include essays, as well as some fiction and possibly comics.
Same as: AMSTUD 119, FILMSTUD 319

FILMSTUD 120. Superhero Theory. 3-5 Units.
With their fantastic powers, mutable bodies, multiple identities, complicated histories, and visual dynamism, the American superhero has been a rich vehicle for fantasies (and anxieties) for 80+ years across multiple media: comics, film, animation, TV, games, toys, apparel. This course centers upon the body of the superhero as it incarnates allegories of race, queerness, hybridity, sexuality, gendered stereotypes/fluidity, politics, vigilantism, masculinity, and monstrosity. They also embody a technological history that encompasses industrial, atomic, electronic, bio-genetic, and digital.
Same as: AMSTUD 120B, ARTHIST 120, ARTHIST 320, FILMSTUD 320

FILMSTUD 125. Horror Film. 3-4 Units.
From its beginnings, the cinema evinced an affinity with the phantom realm of specters, ghosts, and supernatural beings. Not only does horror have deep and diverse roots in the international history of film; it emerges as a trope of film itself, as a medium of shadows, dematerialized presence, life drained of substance. Overview of filmic imaginations of horror with a focus on the U.S., Europe, and Japan. Theories of horror, from the fantastic to the uncanny; unpacking these in light of key moments in the genre's development. The merits of vampires versus zombies. Ongoing debates through the lens of horror about cinematic representation, from Linda Williams' thesis of body genres to Jeffrey Sconce's notion of haunted media.

FILMSTUD 127. Monster Movies: Frankenstein & Film. 4 Units.
When Mary Shelley bid [her] hideous progeny go forth and prosper in the 1831 introduction to the revised edition of her novel, she could scarcely have imagined how successful her tale would be in reproducing itself. It is estimated that over 200 film adaptations of Frankenstein have been produced, spanning from Thomas Edison's 1910 single-reel silent film to digitally-enhanced CGI spectacles like Van Helsing (2004) and I, Frankenstein (2014). The films seldom fail to say something about the social settings in which they were produced, and quite often they comment reflexively on the medium of film itself. The monsters depicted can thus be interrogated in terms of the social-semiotic processes by which certain subjectivities and bodies are constituted as the normative ideals of humanity while others are excluded as aberrations. On the other hand, the films offer a register of the historically contingent relations between humans and their technologies not least among them, the relation of the spectator to the cinematic medium and apparatus. nIn this lecture-based course, we shall therefore investigate monstrosity on a number of levels: from the social level at which people are defined on the basis of gender, race, class, or disability in relation to privileged forms of embodiment and subjectivity, all the way up to the technological level at which human beings are arguably being reconfigured at present into cyborgs or human-technological hybrids. We will approach these and other questions by way of a selection of Frankenstein films, which we will view, read about, and discuss in detail. It will be important, though, that we not lose sight of the filmic nature of our texts; one objective of the course should therefore be a better understanding of the formal properties of the medium of film how things are depicted, not just what is thematized.

FILMSTUD 129. Animation and the Animated Film. 3-5 Units.
The fantasy of an image coming to life is ancient, but not until the cinema was this fantasy actualized. The history of the movies begins with optical toys, and contemporary cinema is dominated by films that rely on computer animation. This course considers the underlying fantasies of animation in art and lit, its phenomenologies, its relation to the uncanny, its status as a pure cinema, and its place in film theory. Different modes of production and style to be explored include realist animation, abstract animation; animistic animation; animated drawings, objects, and puppets; CGI, motion capture, and live/animation hybrids.
Same as: AMSTUD 129, FILMSTUD 329

FILMSTUD 132A. Indian Cinema. 5 Units.
This course will provide an overview of cinema from India, the world's largest producer of films. We will trace the history of Indian cinema from the silent era, through the studio period, to state-funded art filmmaking to the contemporary production of Bollywood films as well as the more unconventional multiplex cinema. We will examine narrative conventions, stylistic techniques, and film production and consumption practices in popular Hindi language films from the Bombay film industry as well as commercial and art films in other languages. This outline of different cinematic modes will throw light on the social, political, and economic transformations in the nation-state over the last century.
Same as: FILMSTUD 332A

FILMSTUD 133. Contemporary Chinese Auteurs. 4 Units.
New film cultures and movements in Taiwan, Hong Kong, and mainland China in the 80s. Key directors including Jia Zhangke, Wu Wenguang, Tsai Ming-liang, Hou Hsiao-hsien, Wong Kar-wai, Ann Hui. Topics include national cinema in the age of globalization, the evolving parameters of art cinema, and authorship.
Same as: FILMSTUD 333

FILMSTUD 133B. Technology and American Visual Culture. 4 Units.
An exploration of the dynamic relationship between technology and the ways we see and represent the world, with a focus on American visual culture from the 19th century through the present. We study the history of different tools from telescopes and microscopes to digital detectors that have changed and enhanced our visual capabilities; the way technological shifts, such as the introduction of electric lights or train travel, have shaped our visual imagination and aesthetic sensibilities; and how technology has inspired or responded to visual art. Special attention is paid to how different media, such as photography, cinema, and computer screens, translate the visual experience into a representation; the automation of vision; and the intersection of technology with notions of time and space.
Same as: AMSTUD 133

FILMSTUD 134. The Art Cinema of India. 5 Units.
India is the world's largest producer of films, and Bollywood is currently its most visible cinematic product on the festival circuit as well as university curricula. This course, probably the first of its kind in the American academic setting, will focus instead on the various art cinemas of India. From the well-known Satyajit Ray to his important contemporaries, Ritwik Ghatak and Mrinal Sen, from the social realist New Wave cinemas of the 70s and 80s to contemporary indie films, we will engage with the history of the "parallel cinema" movement. Considering the relationship of Indian art cinema to Third Cinema and to European art cinema will bring attention to transnational networks and exhibition circuits. The course will engage with scholarship on art cinema more broadly to understand how films are categorized as such through narrative, form, audience, auteurism, funding, censorship, and relationship to the nation-state.
Same as: FILMSTUD 334

FILMSTUD 135. Around the World in Ten Films. 3-4 Units.
This is an introductory-level course about the cinema as a global language. We will undertake a comparative study of select historical and contemporary aspects of international cinema, and explore a range of themes pertaining to the social, cultural, and political diversity of the world. A cross-regional thematic emphasis and inter-textual methods of narrative and aesthetic analysis, will ground our discussion of films from Italy, Japan, United States, India, China, France, Brazil, Nigeria, Russia, Iran, Mexico, and a number of other countries. Particular emphasis will be placed on the multi-cultural character and the regional specificities of the cinema as a "universal language" and an inclusive "relational network."nnThere are no prerequisites for this class. It is open to all students; non-majors welcome.
Same as: FILMSTUD 335, GLOBAL 135

FILMSTUD 136. Gender and Sexuality in Chinese Cinema. 4 Units.
Representations of gender and sexuality in the cinemas of China, Taiwan, and Hong Kong, covering key periods and genres such as the golden age of Shanghai film, Hong Kong action pictures, opera films, post-socialist art films, and new queer cinema. Historical and contemporary perspectives on cinematic constructions of femininity, masculinity, and sexuality as they relate to issues of nationalism, modernity, globalization, and feminist and queer politics. Weekly screening required.
Same as: FILMSTUD 336

FILMSTUD 137. Love in the Time of Cinema. 3-5 Units.
Romantic coupling is at the heart of mainstream film narratives around the world. Through a range of film cultures, we will examine cinematic intimacies and our own mediated understandings of love and conjugality formed in dialog with film and other media. We will consider genres, infrastructures, social activities (for example, the drive-in theater, the movie date, the Bollywood wedding musical, 90s queer cinema), and examine film romance in relation to queerness, migration, old age, disability, and body politics more broadly.
Same as: FILMSTUD 337, GLOBAL 110, GLOBAL 211

FILMSTUD 140. Film Aesthetics: Editing. 4 Units.
Practical and theoretical approaches to editing and montage. The role of editing in film meaning, and cognitive and emotional impact on the viewer. Developments in the history and theory of cinema including continuity system, Soviet montage, French new wave, postwar and American avant garde. Aesthetic functions, spectatorial effects, and ideological implications of montage. Film makers include Eisenstein, Godard, and Conner.
Same as: FILMSTUD 340

FILMSTUD 145. Politics and Aesthetics in East European Cinema. 4 Units.
From 1945 to the mid-80s, emphasizing Polish, Hungarian, Czech, Slovak, and Yugoslav contexts. The relationship between art and politics; postwar establishment of film industries; and emergence of national film movements such as the Polish school, Czech new wave, and new Yugoslav film. Thematic and aesthetic preoccupations of filmmakers such as Wajda, Jancso, Forman, and Kusturica.
Same as: FILMSTUD 345

FILMSTUD 146. Art Animation. 2-4 Units.
While anime has spread around the world, Japanese art animators have been busy developing a parallel tradition, built from a more personal, experimental, and idiosyncratic approach to the medium. Looking closely at key works from major artists in the field, this course explores art animation from a variety of perspectives: animation scene; philosophical attempts to account for animated movement; and art animation's unique perspective on Japanese culture.
Same as: JAPAN 152, JAPAN 252

FILMSTUD 147. Iberian and Latin American Experimental Cinemas, 1960s to the Present. 4 Units.
This class will offer a panorama of Iberian and Latin American experimental film cultures from the 1960 to the present. We will focus on developments and formations mainly in Mexico, Brasil, Argentina, and Spain, but will cast side glances at Bolivia, Peru, Cuba, Paraguay and Uruguay. Among our main thematic interests will be the representation of the body and sexuality; abstraction; politics; the reading of history; personal subgenres (the essay and the diary film); and collage and appropriation. Readings will range from general theoretical statements on experimental film aesthetics to specific historical and critical excavations of experimental film by contemporary critics and historians.
Same as: FILMSTUD 347

FILMSTUD 148. Archival Cinema: Excavating the Future. 4 Units.
This course examines the practices of appropriation of archival material in cinema, and the problems of representation inherent to them. The practical component consists of a series of creative assignments in which students are asked to use archival material, including some from Stanford's collections, to produce short moving image pieces.
Same as: FILMPROD 148, FILMPROD 348, FILMSTUD 348

FILMSTUD 150. Cinema and the City. 4 Units.
Utopian built environments of vast perceptual and experiential richness in the cinema and city. Changing understandings of urban space in film. The cinematic city as an arena of social control, social liberation, collective memory, and complex experience. Films from international narrative traditions, industrial films, experimental cinema, documentaries, and musical sequences. Recommended: 4 or equivalent.
Same as: FILMSTUD 350

FILMSTUD 151. Experimental Cinema Workshop. 5 Units.
This is a hands-on course situated at the intersection of theory and practice of sound and image. Select readings in film, video, and digital media theory, as well as screenings and class discussions, will pave the way for a number of thematically focused practical exercises in ¿analytic audio-vision.¿nnTopics and individual and group assignments will vary from quarter to quarter. Combining creative expression and aesthetic/interpretive inquiry, the class has no prerequisites and is open to all students.
Same as: FILMSTUD 351

FILMSTUD 152. Hollywood/Bollywood: The Musical Two Ways. 3-5 Units.
A comparative approach to the musical as Hollywood genre and as fundamental mode in Bollywood (where even horror movies have song-and-dance sequences!). The pleasurable interplay among song, dance, and screen directs us to the interplay of cultural identities (regional, racial, gendered, sexual). Through cinematic travels between America and India, we will examine how the utopian, liberatory energies of musical numbers - physical, emotional, aesthetic, and social - illuminate relations of narrative and spectacle, stardom and performance, gender and space, color and sound.
Same as: FILMSTUD 352

FILMSTUD 157. Film Noir from Bogart to Mulholland Drive. 4 Units.
Why did prosperous mid-20th-century America produce a dark cinema of hard-boiled characters, gritty urban settings, stark high-contrast lighting, and convoluted plots? Key examples and the recent legacy of film noir: 40s and 50s Hollywood movies featuring anti-heroes, femmes fatales, shattered dreams, violence, and a heaviness of mood. Film noir's influences included pulp fiction; B-movie production-budgets; changes in Hollywood genres; left-populist aesthetic movements; a visual style imported by European émigré directors; innovations in camera and film technology; changes in gender roles; combat fatigue; and anxieties about the economy, communism and crime. Directors, writers, cinematographers and actors. Film viewings, readings and analyses.
Same as: FILMSTUD 357

FILMSTUD 164A. Technology and the Visual Imagination. 4 Units.
An exploration of the dynamic relationship between technology and the ways we see and represent the world. The course examines technologies from the Renaissance through the present day, from telescopes and microscopes to digital detectors, that have changed and enhanced our visual capabilities as well as shaped how we imagine the world. We also consider how these technologies influenced and inspired the work of artists. Special attention is paid to how different technologies such as linear perspective, photography, cinema, and computer screens translate the visual experience into a representation; the automation of vision; and the intersection of technology with conceptions of time and space.
Same as: ARTHIST 164A, ARTHIST 364A, FILMSTUD 364A

FILMSTUD 165A. Fashion Shows: From Lady Godiva to Lady Gaga. 4 Units.
The complex and interdependent relationship between fashion and art. Topics include: the ways in which artists have used fashion in different art forms as a means to convey social status, identity, and other attributes of the wearer; the interplay between fashion designers and various art movements, especially in the 20th century; the place of prints, photography, and the Internet in fashion, in particular how different media shape how clothes are seen and perceived. Texts by Thorstein Veblen, Roland Barthes, Dick Hebdige, and other theorists of fashion.
Same as: ARTHIST 165A, ARTHIST 365A, FILMSTUD 365A

FILMSTUD 165B. American Style and the Rhetoric of Fashion. 4 Units.
Focus on the visual culture of fashion, especially in an American context. Topics include: the representation of fashion in different visual media (prints, photographs, films, window displays, and digital images); the relationship of fashion to its historical context and American culture; the interplay between fashion and other modes of discourse, in particular art, but also performance, music, economics; and the use of fashion as an expression of social status, identity, and other attributes of the wearer. Texts by Thorstein Veblen, Roland Barthes, Dick Hebdige, and other theorists of fashion.
Same as: AMSTUD 127, ARTHIST 165B

FILMSTUD 167B. Beyond the Fuzzy-Techie Divide: Art, Science, Technology. 4 Units.
Although art and science are often characterized as "two cultures" with limited common interests or language, they share an endeavor: gaining insight into our world. They even rely on common tools to make discoveries and visually represent their conclusions. To clarify and interrogate points of similarity and difference, each week¿s theme (time, earth, cosmos, body) explores the efforts of artists and scientists to understand and represent it and the role of technology in these efforts. Focus on contemporary examples.
Same as: ARTHIST 167, ARTHIST 367, FILMSTUD 367B

FILMSTUD 173. Digital and Interactive Media. 3-5 Units.
This course introduces a variety of ways of thinking about digital and interactive media. As examples, we will think about the impact of algorithmic processes on cinema and other moving-image media; we will consider the relation of narrative to interactivity in video games and related forms; and we will look carefully at the perceptual and embodied relations of human users to computational systems of various sorts. Engaging with a wide range of historical and contemporary media forms (including those used for entertainment, artistic expression, social interaction, politics, work, play, and other things in between), this course hopes to illuminate the transformative roles that digital and interactive media play in our lives.

FILMSTUD 178. Film and History of Latin American Revolutions and Counterrevolutions. 3-5 Units.
Note: Students who have completed HISTORY 78N or 78Q should not enroll in this course. In this course we will watch and critique films made about Latin America's 20th century revolutions focusing on the Cuban, Chilean and Mexican revolutions. We will analyze the films as both social and political commentaries and as aesthetic and cultural works, alongside archivally-based histories of these revolutions.
Same as: HISTORY 78, HISTORY 178, ILAC 178

FILMSTUD 210A. Documentary Perspectives I: Politics of the Subject. 4 Units.
Historical, political, aesthetic, and formal developments of documentary film. Subjectivity, ethics, censorship, representation, reflexivity, responsibility to the audience, and authorial voice. Prerequisite: consent of instructor.
Same as: FILMSTUD 410A

FILMSTUD 211N. Childish Enthusiasms and Perishable Manias. 3 Units.
This course has a simple premise: Effective scholarship need not suck the joy from the world. G. K. Chesterton once wrote that 'it is the duty of every poet, and even of every critic, to dance in respectful imitation of the child.' What could it mean to do scholarship that respects a child's playful and exploratory engagement with the world? Such questions will be filtered through such 'unserious' media as amusement parks, comics, cartoons, musicals, and kidlit.

FILMSTUD 212. Masculinity and Violence in American Cinema. 5 Units.
By the end of this course you should be able closely to analyze genre films in a historically and theoretically informed manner. Using select male genres (Westerns, boxing films, crime films) as a prism, we will look at the way film form (plot, mise-en-scene, cinematography, editing, genre) has inspired, and resisted, key theoretical and critical approaches such as feminist film theory, gender studies, and ideological analysis. In lecture, we will also devote time to such topics as writing a strong thesis statement, using multiple discipline-specific search engines for research, and writing abstracts/conference-paper proposals.

FILMSTUD 213. Theories of Melodrama. 5 Units.
Commonly derided for being over the top, with films in this mode put down as weepies, tear-jerkers, and women's films, melodrama as a genre and a cinematic mode has been reclaimed by feminist-queer-film scholars as providing a powerful site of ideological struggle and sustained engagement with individual and social subjection and suffering. Melodrama, a transgeneric mode of emotional dramaturgy, centered around body and community, delay and chance, realism and excess, affords radical critiques of discourses of gender, sexuality, race, class, and nation. We will consider melodrama's careful calibration of sensation and affect through its employment of cinematic form (color, music, editing etc.), and sweeping performative gestures. Through an analysis of films from Europe, Asia, Africa, Latin America, by auteurs such as Douglas Sirk, Ritwik Ghatak, Wong Kar-wai, Rainer Werner Fassbinder, and Pedro Almodovar, among others, we will study global and transnational flows in the adoption of the politics and aesthetics of the melodramatic mode. The seminar is conceived to be interdisciplinary and participants are encouraged to work with texts from disciplines other than film studies as well, including theatre, visual arts, music, dance, literature etc.
Same as: FILMSTUD 413

FILMSTUD 215. Post-Cinema. 3-5 Units.
In this seminar, we will try to come to terms with twenty-first century motion pictures by thinking through a variety of concepts and theoretical approaches designed to explain their relations and differences from the cinema of the previous century. We will consider the impact of digital technologies on film, think about the cultural contexts and aesthetic practices of contemporary motion pictures, and try to understand the experiential dimensions of spectatorship in today's altered viewing conditions.nnIn addition to viewing a wide range of recent and contemporary films, we will also engage more directly and materially with post-cinematic moving images: we will experiment with scholarly and experimental uses of non-linear video editing for the purposes of film analysis, cinemetrics, and a variety of academic and creative responses to post-cinematic media.nnThe course addresses key issues in recent film and media theory and, especially in its hands-on components, encourages experimentation with methods of digital humanities, computational media art, and other creative practices.
Same as: FILMSTUD 415

FILMSTUD 216. The Films of Robert Altman. 4 Units.
A collaborative consideration of Robert Altman¿s prolific and varied work as a director. The course will examine well-known films such as the narratively and stylistically innovative Nashville, creative genre revisions such as McCabe and Mrs. Miller, The Long Goodbye, and Gosford Park; and the culturally iconic M.A.S.H. We will also pay close attention to less famous work such as Secret Honor, and Buffalo Bill and the Indians, or Sitting Bull¿s History Lesson with the aim of describing and assessing a complex oeuvre. There will be a course bibliography, but required reading will be relatively light to make time for both careful and extensive viewing.
Same as: FILMSTUD 416

FILMSTUD 220. Being John Wayne. 5 Units.
John Wayne's imposing corporeality and easy comportment combined to create an icon of masculinity, the American West, and America itself. Focus is on the films that contributed most to the establishment, maturation, and deconstruction of the iconography and mythology of the John Wayne character. The western and war film as genres; the crisis of and performance of masculinity in postwar culture; gender and sexuality in American national identity; relations among individualism, community, and the state; the Western and national memory; and patriotism and the Vietnam War.
Same as: AMSTUD 220B, TAPS 220A

FILMSTUD 221. Out of Order. 4 Units.
This course explores the rise of nonlinear approaches to storytelling in global narrative cinema in the second half of the twentieth century. We will begin with Rashomon and end somewhere around Inception, also considering examples from Hong Kong, Senegal, France, and Mexico. Readings will touch on film analysis, history and politics, and narrative theory.

FILMSTUD 223. How to Watch TV. 3-5 Units.
¿How to watch TV¿ may seem like the most obvious thing in the world. Yet when we look at the historical development of television as a technological, social, and cultural form, we find that people have engaged with it in a variety of different ways. There is not, in other words, a single right way to watch TV. This is because television itself has undergone transformations on all of these levels: Technologically, changes such as those from black-and-white to color, analog to digital, standard to high-definition, and broadcast to cable to interactive all play a role in changing our relation to what ¿television¿ is. Socially, changes in television¿s integration in corporate and industrial structures, its mediation of political realities, and its ability to reflect and shape our interactions with one another all play a role in transforming who ¿we¿ as viewers are. And culturally, varieties of programming including live broadcasting, prerecorded content, and on-demand streaming of news, movies, sit-coms, and prestige dramas series all indicate differences and distinctions in what it means to ¿watch¿ TV. In this course, we will engage with these and other aspects of television as a medium in order to rethink not only how but why we watch TV.

FILMSTUD 224. Films of Stanley Kubrick. 4-5 Units.
This seminar will explore the cinema of Stanley Kubrick, a widely acclaimed film auteur known for works such as 2001: A Space Odyssey, A Clockwork Orange, and Barry Lyndon. The seminar will focus on close analysis of practically all of Kubrick's films, from a variety of methodological perspectives (authorship, formal/stylistic analysis, book-to-screen adaptation, and more.nnNOTE: Instructor's permission required before the first day of class.
Same as: FILMSTUD 424

FILMSTUD 232. Chinese Cinema. 5 Units.
This course surveys a range of critical perspectives and debates on Chinese cinema. It is organized on the basis of weekly topics, such as genre, historiography, gender, modernity, and the idea of national cinema. Consent of instructor required.
Same as: FILMSTUD 432

FILMSTUD 233. Let's Make a Monster: Critical Making. 5 Units.
Ever since Frankenstein unleashed his monster onto the world in Mary Shelley¿s novel from 1818, the notion of ¿technology-out-of-control¿ has been a constant worry of modern societies, plaguing more optimistic visions of progress and innovation with fears that modern machines harbor potentials that, once set in motion, can no longer be tamed by their human makers. In this characteristically modern myth, the act of making ¿ and especially technological making ¿ gives rise to monsters. As a cautionary tale, we are therefore entreated to look before we leap, to go slow and think critically about the possible consequences of invention before we attempt to make something radically new. However, this means of approaching the issue of human-technological relations implies a fundamental opposition between thinking and making, suggesting a split between cognition as the specifically human capacity for reflection versus a causal determinism-without-reflection that characterizes the machinic or the technical. Nevertheless, recent media theory questions this dichotomy by asserting that technologies are inseparable from humans¿ abilities to think and to act in the world, while artistic practices undo the thinking/making split more directly and materially, by taking materials ¿ including technologies ¿ as the very medium of their critical engagement with the world. Drawing on impulses from both media theory and art practice, ¿critical making¿ names a counterpart to ¿critical thinking¿ ¿ one that utilizes technologies to think about humans¿ constitutive entanglements with technology, while recognizing that insight often comes from errors, glitches, malfunctions, or even monsters. Co-taught by a practicing artist and a media theorist, this course will engage students in hands-on critical practices involving both theories and technologies. Let¿s make a monster!.
Same as: ARTSTUDI 233, FILMSTUD 433

FILMSTUD 245B. History and Politics in Russian and Eastern European Cinema. 5 Units.
From 1945 to the mid-80s, emphasizing Polish, Hungarian, Czech, Slovak, and Yugoslav contexts. The relationship between art and politics; postwar establishment of film industries; and emergence of national film movements such as the Polish school, Czech new wave, and new Yugoslav film. Thematic and aesthetic preoccupations of filmmakers such as Wajda, Jancso, Forman, and Kusturica. Permission of instructor required prior to the first day of classes.
Same as: FILMSTUD 445B, REES 301B

FILMSTUD 249. Eye of the Beholder: Subjective Cinema. 5 Units.
This course proposes to look at how even the most seemingly objective films are shaped by a subjective eye. An eye which is molded by gender, race, culture and class - all of which influence the entire film-making process and experience from how something is framed to how it is cut and and how it is perceived it. How we look at something, for how long we look at it and in what context we are shown something is as important as what we are looking at. Similarly the subjective eye of the viewer shapes how he or she understands and interprets the film. Whether the viewer is an insider or outsider to the subject completely changes expectations and reactions to the film. So then what are we really talking about when we talk about documentary films? What makes a documentary a documentary? Why is such a categorization valuable? necessary? useful? nThe course will combine analysis of films, theoretical texts, and some practical ¿production" exercises.
Same as: FILMSTUD 449

FILMSTUD 251. Media in Transition. 5 Units.
In a culture obsessed with new media, we are bombarded with hype about the present as a revolutionary phase of convergence. But everything old was once new, and pioneering media of the past also had to negotiate existing technologies, ideologies, and fantasies. This seminar is organized around case studies of transitional media moments from the long 20th century, including proto-cinema, ham radio, early television, hypertext, and digital film. In exploring the material and discursive aspects of remediation through theoretical, historical, and media archaeological readings, we will ask: what is a medium and how do they emerge and evolve.

FILMSTUD 252. Currents in Media Theory. 5 Units.
This seminar explores a set of currents in media theory (and related fields), which we will seek to navigate together as a group. We will focus on approaches, discourses, conversations, and paradigms that seek to explain the mediations, modulations, and triangulations of our experience within a changing landscape of technological, social, political, and other forces. Special attention will be given to contemporary works of theory and/or works that are enjoying a renewed contemporary reception.
Same as: FILMSTUD 452

FILMSTUD 253. Aesthetics and Phenomenology. 3-5 Units.
This course explores central topics in aesthetics where aesthetics is understood both in the narrow sense of the philosophy of art and aesthetic judgment, and in a broader sense as it relates to questions of perception, sensation, and various modes of embodied experience. We will engage with both classical and contemporary works in aesthetic theory, while special emphasis will be placed on phenomenological approaches to art and aesthetic experience across a range of media and/or mediums (including painting, sculpture, film, and digital media). nnPhD students in the Art History program may take the class to fulfill degree requirements in Modern/Contemporary Art or Film & Media Studies, depending on the topic of their seminar paper.
Same as: FILMSTUD 453

FILMSTUD 256. Horror Comics. 5 Units.
This seminar will explore the vast array of horror comics. How does horror work in comics, as distinct from prose and cinema? How and why are non-moving images scary? The different narrational strategies of short stories, self-contained works, and continuing series will be explored, as will American, Japanese, and European approaches. Special attention will be given to Frankenstein, in novel, film, illustration, and comics. Example of such sub-genres as literary horror, horrific superheroes, cosmic (Lovecraftian) horror, ecological horror, as well as the horrors of bodies, sexuality, and adolescence will be encountered.nnStudents will read many comics, some comics theory, and will do an in-class presentation on a comic or topic of their choosing. The course is a seminar, so discussion will be continuous and required. Enrollment limited.
Same as: AMSTUD 256A

FILMSTUD 259. Game Studies. 5 Units.
This course aims to introduce students to the emerging, interdisciplinary field of game studies. We will investigate what games (including but not limited to digital games) are, why we play them, and what the functions of this activity might be. The bulk of the course will be devoted specifically to digital games, which we will approach from a variety of perspectives: from historical, cultural, industrial/commercial, media-theoretical, and formal (narratological/ludological) perspectives, among others. Thus, we will seek to understand the contexts in which video games emerged and evolved, the settings in which they have been played, and the discourses and practices that have determined their place in social and cultural life. In addition, we will ask difficult questions about the mediality of digital games: What is the relation of digital to non-digital games? Are they both games in the same sense, or do digital media redefine what games are or can be? How do digital games relate to other (digital as well as non-digital) non-game media, such as film, television, print fiction, or non-game computer applications? Of course, to engage meaningfully with these questions at all will require us to investigate theories of mediality (including inter- and transmediality) more generally. Finally, though, we will be interested in the formal and experiential parameters that define (different types of) digital games in particular. What does it feel like to play (various) digital games? What are the relations between storytelling and the activity of gameplaying in them? What is the relation between these aspects and the underlying mechanics of digital games, as embodied in hardware and software? What is the role of the human body? Because these questions can only be approached on the basis of personal experience, students will be expected to spend some time playing digital games and reflecting critically on their gameplay.
Same as: FILMSTUD 459

FILMSTUD 264B. Starstuff: Space and the American Imagination. 5 Units.
Course on the history of twentieth and twenty-first century American images of space and how they shape conceptions of the universe. Covers representations made by scientists and artists, as well as scientific fiction films, TV, and other forms of popular visual culture. Topics will include the importance of aesthetics to understandings of the cosmos; the influence of media and technology on representations; the social, political, and historical context of the images; and the ways representations of space influence notions of American national identity and of cosmic citizenship.
Same as: AMSTUD 143X, ARTHIST 264B

FILMSTUD 273. Visual Culture of the Arctic. 5 Units.
In what ways does contemporary art address the slowly unfolding catastrophes of melting ice and thawing permafrost in the Arctic due to climate change? How might contemporary art and experimental cinema help us come to grips with the emotional disturbance of living amidst the deep-seated changes that are happening in our environment? These are the key questions this course attempts to answer.nThe first part of the class attempts to outline the complex history of Arctic visual and cultural representations through an interdisciplinary lens. The second part focuses on the more recent artistic and cinematic responses to climate change in the arctic. For their final projects, students will be able to combine analytical writing with creative projects that could take the form of photography, installation art, web-based art, fiction, video or poetry.
Same as: ARTHIST 273

FILMSTUD 280. Curricular Practical Training. 1-5 Unit.
CPT course required for international students completing degree. Students must obtain a new I-20 with CPT authorization prior to the employment start date. Professional experience in a field related to the cinematic arts (film, television, media) for six to ten weeks. Internships may include work for production companies, producers, studios, networks, films, television series, directors, screenwriters, non-profit organizations, academic publications and related workplaces. Students arrange the internship, provide a confirmation letter from the hosting institution, and must receive consent from the faculty coordinator to enroll in units. Students submit three self-assessments, and evaluations from the student and the supervisor are submitted at the end of the internship. Restricted to declared majors and minors. May be repeated for credit.

FILMSTUD 281. Contemporary Asian Filmmakers. 4 Units.
Films and moving image works by contemporary filmmakers from Asia, including Hou Hsiao-hsien, Tsai Ming-liang, and Apichatpong Weerasethakul. Topics include explorations of national and local histories, aesthetics of slowness and duration, and crossings between the movie theater and the gallery.
Same as: FILMSTUD 481

FILMSTUD 290. Movies and Methods: Contemporary Black Filmmakers. 5 Units.
Despite the systemic inequalities of the Hollywood system, there is a robust, stylistically diverse cohort of African-American writer/directors at work, including Barry Jenkins, Ava DuVernay, and Ryan Coogler. Jenkins' films (Moonlight, If Beale Street Could Talk), are aesthetically lush, intimate, and understated. DuVernay (When They See Us) foregrounds racial history and injustice in her feature films, television, and documentary work. Coogler followed his realist Fruitvale Station with two powerful genre films with black protagonists (Creed, Black Panther - this last the highest-grossing film by a black director).
Same as: AMSTUD 290, FILMSTUD 490

FILMSTUD 295. Films & Media Studies Internship. 1-5 Unit.
Professional experience in a field related to the cinematic arts (film, television, media) for six to ten weeks. Internships may include work for production companies, producers, studios, networks, films, television series, directors, screenwriters, non-profit organizations, academic publications and related workplaces. Students arrange the internship, provide a confirmation letter from the hosting institution, and must receive consent from the faculty coordinator to enroll in units. Students submit weekly self-assessments, and evaluations from the student and the supervisor are submitted at the end of the internship. Summer internships may be credited in fall quarter. Restricted to declared majors and minors. May be repeated for credit.

FILMSTUD 297. Honors Thesis Writing. 2-5 Units.
May be repeated for credit.

FILMSTUD 299. Independent Study: Film and Media Studies. 1-5 Unit.
Prerequisite: student must have taken a course with the instructor and/or completed relevant introductory course(s). Instructor consent and completion of the Independent Study Form are required prior to enrollment. All necessary forms and payment are required by the end of Week 2 of each quarter. Please contact the Undergraduate Coordinator in McMurtry 108 for more information. May be repeated for credit.

FILMSTUD 300A. History of World Cinema I, 1895-1929. 4 Units.
This course begins at the end of the nineteenth century, when the purpose of cinema was questioned and debated, film grammar was just being invented, distribution and exhibition were haphazard, and writers internationally were registering surprise and wonder at the new medium. It ends with modernist masterpieces of the 1920s, subtle (and still relevant) critical debates about the aesthetics and politics of film, and the development of viable sound technologies. What could film have become and did not? How did storytelling come to dominate the development of the new medium? How and why did various national cinemas develop distinctive stylesâ¿¿classical Hollywood, French Impressionism, German Expressionism, Russian montageâ¿¿that shape screen arts to this day? How did influential critics understand cinema and the ways it could reflect and effect social change? To explore these questions you will work mainly with primary textsâ¿¿the films themselves, and criticism written contemporaneously with them. Lectures will help you place these filmic and critical texts within a larger narrative about the first thirty-five years of cinema.
Same as: FILMSTUD 100A

FILMSTUD 300C. History of World Cinema III, 1960-Present. 3-5 Units.
This course will provide an overview of cinema from around the world since 1960, highlighting the cultural, political, and economic forces that have shaped various film movements over the last six decades. We will study some key film movements and national cinemas towards developing a historical appreciation of a variety of commercial and art film traditions. Through an exploration of films from Europe, Africa, Asia, and Latin America, we shall examine the industrial histories of non-Hollywood film production and exhibition practices that produce the particular cinematic cultures of each region.
Same as: FILMSTUD 100C

FILMSTUD 301. Close Cinematic Analysis. 3-4 Units.
The close analysis of film, with an emphasis on sound, music, and audio-visuality. Films from various historical periods, national cinemas, directors, and genres. Prerequisite: FILMSTUD 4 or equivalent. Recommended: ARTHIST 1 or FILMSTUD 102. Course can be repeated twice for a max of 8 units. This course fulfills the WIM requirement for Film and Media Studies majors.
Same as: FILMSTUD 101

FILMSTUD 302. Theories of the Moving Image. 4 Units.
What makes the moving image unique in its capacity for telling stories, influencing thoughts, and stirring emotions? What are the potentials and risks of cinema's affective power? This course looks at concepts developed by filmmakers, film critics, and philosophers to explain affinities between mind and moving image, to envision cinema¿s promise, and to identify its limitations. We will read a range of authors, some classic, some contemporary, including André Bazin, Laura Mulvey, and D. A. Miller. Films will include classics such as Julie Dash's Daughters of the Dust (1991) and recent releases such as Hirokazu Koreeda's Shoplifters (2018). Students will learn to speak and write confidently about influential theories and methods in the field of film and media studies. They will learn to formulate research questions that are in dialogue with vital concepts. Through close analysis, they will assess how theories of film and media speak, or fail to speak, to their own experience. And ideally, students will venture to engage in theoretical speculation of their own.
Same as: FILMSTUD 102

FILMSTUD 304. Introduction to the Movies- How Movies Are Developed, Produced, Marketed and Exhibited. 4 Units.
How are movies created? How are scripts developed and selected for production? How are films actually made and marketed? How are they shown in various media? Who decides what in all of these processes and what information do the decision-makers rely on?nnThis course will follow the life cycle of a movie, from its inception as an idea, article, book, etc., to its release in theaters and other media as a finished product. Guest speakers will discuss the evolution of the film industry, creative development of scripts, how deals are structured to acquire intellectual property, film finance, and how movies are physically produced and then marketed, distributed and exhibited in theaters and in other media. We will use two films as case studies ¿ The Chronicles of Narnia ¿ Voyage of the Dawn Treader and Chasing Mavericks.
Same as: FILMSTUD 104

FILMSTUD 305. The Films of Ernst Lubitsch. 4 Units.
Ernst Lubitsch was: a stage actor in Berlin; a comic actor in early German cinema; Germany's most profitable director in the early 1920s; a director of subtle silent comedies in Hollywood in the later `20s; an innovative director of sound musicals and comedies in the 1930s; head of production for Paramount Pictures; and one of the few directors whose name and likeness were familiar to audiences across America, one famed for what became known as The Lubitsch Touch. The course considers Lubitsch in all these contexts. Charts intersections with collaborators, genre conventions, sexuality and censorship, and studio control. Lubitsch's style depends on performance, so attention will be given to film acting as he came to shape it.
Same as: FILMSTUD 105

FILMSTUD 306. Introduction to Media. 3-5 Units.
What is a medium? This course starts from the assumption that the answer to this question is not as obvious as it might at first appear. Clearly, we know some media when we see them: radio, film, and television are in many ways paradigmatic media of the twentieth century. But what about the computational, networked media of the twenty-first century? Are these still media in the same sense, or has the nature of media changed with the emergence of digital technologies? And what, for that matter, about pre-technical media? Is painting a medium in the same sense that oil or acrylic are media, or in the sense that we speak of mixed media? Is language a medium? Are numbers? Is the body? As we shall see, the question of what a medium is raises a number of other questions of a theoretical or even philosophical nature. How is our experience of the world affected or shaped by media? Are knowledge and perception possible apart from media, or are they always mediated by the apparatuses, instruments, or assemblages of media? What is the relation between the forms and the contents of media, and how does this relation bear on questions of aesthetics, science, technology, or politics? The lecture-based course addresses these and other questions and seeks in this way to introduce a way of thinking about media that goes beyond taken-for-granted ideas and assumptions, and that has a potentially transformative effect on a wide range of theoretical and practical interests.nnFilm & Media Studies majors and minors must enroll for 5 units.
Same as: FILMSTUD 6

FILMSTUD 310. Science Fiction Cinema. 4 Units.
Science fiction film's sense of wonder depends upon the development and revelation of new ways of seeing. The American science fiction film emphasizes the fundamental activity of human perception, its relation to bodily experience and the exploration of other worlds, new cities, and other modes of being, in such new technological spaces as the cyberspaces of the information age. It is perhaps the Hollywood genre most directly concerned with the essence of cinema itself.
Same as: FILMSTUD 110

FILMSTUD 314. Reading Comics. 4 Units.
The modern medium of comics, a history that spans 150 years. The flexibility of the medium encountered through the genres of humorous and dramatic comic strips, superheroes, undergrounds, independents, journalism, and autobiography. Innovative creators including McCay, Kirby, Barry, Ware, and critical writings including McCloud, Eisner, Groenstee. Topics include text/image relations, panel-to-panel relations, the page, caricature, sequence, seriality, comics in the context of the fine arts, and relations to other media.
Same as: AMSTUD 114X, FILMSTUD 114

FILMSTUD 315. Documentary Issues and Traditions. 4 Units.
Issues include objectivity/subjectivity, ethics, censorship, representation, reflexivity, responsibility to the audience, and authorial voice. Parallel focus on form and content.
Same as: FILMSTUD 115

FILMSTUD 316. International Documentary. 4 Units.
Historical, aesthetic, and formal developments of documentary through nonfiction films in Europe, Asia, Latin America, and Africa.
Same as: FILMSTUD 116

FILMSTUD 319. Science Fiction: Cyborgs & Human Simulacra in the Cinema. 4 Units.
The human simulacrum has a long history in mythology, fairy tales and children¿s stories, as well as in the genres of horror and science fiction. This course explores synthetic human narratives in the cinema. Stories of artificially created life, living statues, automata, body snatchers, robots, cyborgs and electronic simulations all direct our attention to our assumed definitions of the human.The fantasies and anxieties that undergird these stories engage with such issues as labor, gender, sexuality, death, emotion, rationality, embodiment, consumerism, reproductive technologies, and power relations. Attention will also be given the relation of cinema¿s human simulacra to changing cinematic technologies. Films will include Metropolis, Pinocchio, Robocop, Bride of Frankenstein, The Golem, A.I., My Fair Lady, Her, Blade Runner, and the HBO iteration of Westworld. Readings will include essays, as well as some fiction and possibly comics.
Same as: AMSTUD 119, FILMSTUD 119

FILMSTUD 320. Superhero Theory. 3-5 Units.
With their fantastic powers, mutable bodies, multiple identities, complicated histories, and visual dynamism, the American superhero has been a rich vehicle for fantasies (and anxieties) for 80+ years across multiple media: comics, film, animation, TV, games, toys, apparel. This course centers upon the body of the superhero as it incarnates allegories of race, queerness, hybridity, sexuality, gendered stereotypes/fluidity, politics, vigilantism, masculinity, and monstrosity. They also embody a technological history that encompasses industrial, atomic, electronic, bio-genetic, and digital.
Same as: AMSTUD 120B, ARTHIST 120, ARTHIST 320, FILMSTUD 120

FILMSTUD 329. Animation and the Animated Film. 3-5 Units.
The fantasy of an image coming to life is ancient, but not until the cinema was this fantasy actualized. The history of the movies begins with optical toys, and contemporary cinema is dominated by films that rely on computer animation. This course considers the underlying fantasies of animation in art and lit, its phenomenologies, its relation to the uncanny, its status as a pure cinema, and its place in film theory. Different modes of production and style to be explored include realist animation, abstract animation; animistic animation; animated drawings, objects, and puppets; CGI, motion capture, and live/animation hybrids.
Same as: AMSTUD 129, FILMSTUD 129

FILMSTUD 332. East Asian Cinema. 4 Units.
Social, historical, and aesthetic dimensions of the cinemas of Japan, Hong Kong, Taiwan, mainland China, and Korea. Topics such as nation and gender, form and genre, and local and transnational conditions of practice and reception. Screenings include popular and art films from the silent to contemporary eras, including, Zhang Yimou, Wong Kar-wai, Hou Hsiao-hsien, Ozu Yasujiro, Kurosawa Akira, and Im Kwon-taek.

FILMSTUD 332A. Indian Cinema. 5 Units.
This course will provide an overview of cinema from India, the world's largest producer of films. We will trace the history of Indian cinema from the silent era, through the studio period, to state-funded art filmmaking to the contemporary production of Bollywood films as well as the more unconventional multiplex cinema. We will examine narrative conventions, stylistic techniques, and film production and consumption practices in popular Hindi language films from the Bombay film industry as well as commercial and art films in other languages. This outline of different cinematic modes will throw light on the social, political, and economic transformations in the nation-state over the last century.
Same as: FILMSTUD 132A

FILMSTUD 333. Contemporary Chinese Auteurs. 4 Units.
New film cultures and movements in Taiwan, Hong Kong, and mainland China in the 80s. Key directors including Jia Zhangke, Wu Wenguang, Tsai Ming-liang, Hou Hsiao-hsien, Wong Kar-wai, Ann Hui. Topics include national cinema in the age of globalization, the evolving parameters of art cinema, and authorship.
Same as: FILMSTUD 133

FILMSTUD 334. The Art Cinema of India. 5 Units.
India is the world's largest producer of films, and Bollywood is currently its most visible cinematic product on the festival circuit as well as university curricula. This course, probably the first of its kind in the American academic setting, will focus instead on the various art cinemas of India. From the well-known Satyajit Ray to his important contemporaries, Ritwik Ghatak and Mrinal Sen, from the social realist New Wave cinemas of the 70s and 80s to contemporary indie films, we will engage with the history of the "parallel cinema" movement. Considering the relationship of Indian art cinema to Third Cinema and to European art cinema will bring attention to transnational networks and exhibition circuits. The course will engage with scholarship on art cinema more broadly to understand how films are categorized as such through narrative, form, audience, auteurism, funding, censorship, and relationship to the nation-state.
Same as: FILMSTUD 134

FILMSTUD 335. Around the World in Ten Films. 3-4 Units.
This is an introductory-level course about the cinema as a global language. We will undertake a comparative study of select historical and contemporary aspects of international cinema, and explore a range of themes pertaining to the social, cultural, and political diversity of the world. A cross-regional thematic emphasis and inter-textual methods of narrative and aesthetic analysis, will ground our discussion of films from Italy, Japan, United States, India, China, France, Brazil, Nigeria, Russia, Iran, Mexico, and a number of other countries. Particular emphasis will be placed on the multi-cultural character and the regional specificities of the cinema as a "universal language" and an inclusive "relational network."nnThere are no prerequisites for this class. It is open to all students; non-majors welcome.
Same as: FILMSTUD 135, GLOBAL 135

FILMSTUD 336. Gender and Sexuality in Chinese Cinema. 4 Units.
Representations of gender and sexuality in the cinemas of China, Taiwan, and Hong Kong, covering key periods and genres such as the golden age of Shanghai film, Hong Kong action pictures, opera films, post-socialist art films, and new queer cinema. Historical and contemporary perspectives on cinematic constructions of femininity, masculinity, and sexuality as they relate to issues of nationalism, modernity, globalization, and feminist and queer politics. Weekly screening required.
Same as: FILMSTUD 136

FILMSTUD 337. Love in the Time of Cinema. 3-5 Units.
Romantic coupling is at the heart of mainstream film narratives around the world. Through a range of film cultures, we will examine cinematic intimacies and our own mediated understandings of love and conjugality formed in dialog with film and other media. We will consider genres, infrastructures, social activities (for example, the drive-in theater, the movie date, the Bollywood wedding musical, 90s queer cinema), and examine film romance in relation to queerness, migration, old age, disability, and body politics more broadly.
Same as: FILMSTUD 137, GLOBAL 110, GLOBAL 211

FILMSTUD 340. Film Aesthetics: Editing. 4 Units.
Practical and theoretical approaches to editing and montage. The role of editing in film meaning, and cognitive and emotional impact on the viewer. Developments in the history and theory of cinema including continuity system, Soviet montage, French new wave, postwar and American avant garde. Aesthetic functions, spectatorial effects, and ideological implications of montage. Film makers include Eisenstein, Godard, and Conner.
Same as: FILMSTUD 140

FILMSTUD 345. Politics and Aesthetics in East European Cinema. 4 Units.
From 1945 to the mid-80s, emphasizing Polish, Hungarian, Czech, Slovak, and Yugoslav contexts. The relationship between art and politics; postwar establishment of film industries; and emergence of national film movements such as the Polish school, Czech new wave, and new Yugoslav film. Thematic and aesthetic preoccupations of filmmakers such as Wajda, Jancso, Forman, and Kusturica.
Same as: FILMSTUD 145

FILMSTUD 347. Iberian and Latin American Experimental Cinemas, 1960s to the Present. 4 Units.
This class will offer a panorama of Iberian and Latin American experimental film cultures from the 1960 to the present. We will focus on developments and formations mainly in Mexico, Brasil, Argentina, and Spain, but will cast side glances at Bolivia, Peru, Cuba, Paraguay and Uruguay. Among our main thematic interests will be the representation of the body and sexuality; abstraction; politics; the reading of history; personal subgenres (the essay and the diary film); and collage and appropriation. Readings will range from general theoretical statements on experimental film aesthetics to specific historical and critical excavations of experimental film by contemporary critics and historians.
Same as: FILMSTUD 147

FILMSTUD 348. Archival Cinema: Excavating the Future. 4 Units.
This course examines the practices of appropriation of archival material in cinema, and the problems of representation inherent to them. The practical component consists of a series of creative assignments in which students are asked to use archival material, including some from Stanford's collections, to produce short moving image pieces.
Same as: FILMPROD 148, FILMPROD 348, FILMSTUD 148

FILMSTUD 350. Cinema and the City. 4 Units.
Utopian built environments of vast perceptual and experiential richness in the cinema and city. Changing understandings of urban space in film. The cinematic city as an arena of social control, social liberation, collective memory, and complex experience. Films from international narrative traditions, industrial films, experimental cinema, documentaries, and musical sequences. Recommended: 4 or equivalent.
Same as: FILMSTUD 150

FILMSTUD 351. Experimental Cinema Workshop. 5 Units.
This is a hands-on course situated at the intersection of theory and practice of sound and image. Select readings in film, video, and digital media theory, as well as screenings and class discussions, will pave the way for a number of thematically focused practical exercises in ¿analytic audio-vision.¿nnTopics and individual and group assignments will vary from quarter to quarter. Combining creative expression and aesthetic/interpretive inquiry, the class has no prerequisites and is open to all students.
Same as: FILMSTUD 151

FILMSTUD 352. Hollywood/Bollywood: The Musical Two Ways. 3-5 Units.
A comparative approach to the musical as Hollywood genre and as fundamental mode in Bollywood (where even horror movies have song-and-dance sequences!). The pleasurable interplay among song, dance, and screen directs us to the interplay of cultural identities (regional, racial, gendered, sexual). Through cinematic travels between America and India, we will examine how the utopian, liberatory energies of musical numbers - physical, emotional, aesthetic, and social - illuminate relations of narrative and spectacle, stardom and performance, gender and space, color and sound.
Same as: FILMSTUD 152

FILMSTUD 355. Comics and the City. 4 Units.
Urban history and life informs the history, stories, structures and aesthetics of the comics, coinciding with the emergence of the modern metropolis in America and Europe and is rooted in the same industrial, commercial, and social transformations. Comics and cartoons were fixtures of urbane humor publications of the 19th century and became a valued fixture of the American newspaper in the very earliest part of the 20th. The characters in early comic strips were often denizens of the urban world, whether immigrants fresh off the boat or the nouveau riche. Many strips were grounded in quotidian urban experience. Later comics use the city as setting, aesthetic, and metaphor. The mean streets of Jacques Tardi's noirish cities abut the rather sunnier and shinier example of Superman's Metropolis. Science fiction comics and manga give us the impacted and often destructed cities of the future. The graphic novel adaptation of Paul Auster's City of Glass maps the grid pattern of the comics page onto the gridded streets of Manhattan. Chris Ware's Building Stories series uses one apartment building to follow the myriad and sometimes intersecting lines found therein. Assigned readings include many comics alongside urban and comics scholarship. Artists to be considered include Outcault, Swinnerton, McCay, Eisner, Katchor, Tatsumi, Doucet, Tardi, Otomo. Hergé, Mazzuchelli, Chaykin, Miller, Ware, Pekar, Crumb, Gloeckner.

FILMSTUD 357. Film Noir from Bogart to Mulholland Drive. 4 Units.
Why did prosperous mid-20th-century America produce a dark cinema of hard-boiled characters, gritty urban settings, stark high-contrast lighting, and convoluted plots? Key examples and the recent legacy of film noir. 40s and 50s Hollywood movies featuring anti-heroes, femmes fatales, shattered dreams, violence, and a heaviness of mood. Film noir's influences included pulp fiction; B-movie production-budgets; changes in Hollywood genres; left-populist aesthetic movements; a visual style imported by European émigré directors; innovations in camera and film technology; changes in gender roles; combat fatigue; and anxieties about the economy, communism and crime. Directors, writers, cinematographers and actors. Film viewings, readings and analyses.
Same as: FILMSTUD 157

FILMSTUD 364A. Technology and the Visual Imagination. 4 Units.
An exploration of the dynamic relationship between technology and the ways we see and represent the world. The course examines technologies from the Renaissance through the present day, from telescopes and microscopes to digital detectors, that have changed and enhanced our visual capabilities as well as shaped how we imagine the world. We also consider how these technologies influenced and inspired the work of artists. Special attention is paid to how different technologies such as linear perspective, photography, cinema, and computer screens translate the visual experience into a representation; the automation of vision; and the intersection of technology with conceptions of time and space.
Same as: ARTHIST 164A, ARTHIST 364A, FILMSTUD 164A

FILMSTUD 365A. Fashion Shows: From Lady Godiva to Lady Gaga. 4 Units.
The complex and interdependent relationship between fashion and art. Topics include: the ways in which artists have used fashion in different art forms as a means to convey social status, identity, and other attributes of the wearer; the interplay between fashion designers and various art movements, especially in the 20th century; the place of prints, photography, and the Internet in fashion, in particular how different media shape how clothes are seen and perceived. Texts by Thorstein Veblen, Roland Barthes, Dick Hebdige, and other theorists of fashion.
Same as: ARTHIST 165A, ARTHIST 365A, FILMSTUD 165A

FILMSTUD 367B. Beyond the Fuzzy-Techie Divide: Art, Science, Technology. 4 Units.
Although art and science are often characterized as "two cultures" with limited common interests or language, they share an endeavor: gaining insight into our world. They even rely on common tools to make discoveries and visually represent their conclusions. To clarify and interrogate points of similarity and difference, each week¿s theme (time, earth, cosmos, body) explores the efforts of artists and scientists to understand and represent it and the role of technology in these efforts. Focus on contemporary examples.
Same as: ARTHIST 167, ARTHIST 367, FILMSTUD 167B

FILMSTUD 402. FRANKFURT SCHOOL Media & Study. 5 Units.
Formal, historical, and cultural issues in the study of film. Classical narrative cinema compared with alternative narrative structures, documentary films, and experimental cinematic forms. Issues of cinematic language and visual perception, and representations of gender, ethnicity, and sexuality. Aesthetic and conceptual analytic skills with relevance to cinema.

FILMSTUD 404. Postwar American Avant Garde Cinema. 5 Units.
History and theory of post-WW II American independent and experimental film. Emphasis is on issues of audiovisual form, structure, and medium specificity. Films and writings include Maya Deren, Stan Brakhage, Michael Snow, and Hollis Frampton.

FILMSTUD 406. Montage. 5 Units.
Graduate seminar in film aesthetics. Theoretical and practical approaches to editing/montage. Stylistic, semiotic, epistemological, and ideological functions of montage considered in film-historical contexts including: development of the continuity system of editing; flourishing of the Soviet montage school; and achievements of the post-war new waves. Filmmakers include D. W. Griffith, Sergei Eisenstein, Jean-Luc Godard, and Dusan Makavejev.

FILMSTUD 408. Attention. 5 Units.
Throughout the twentieth century, cinema has been theorized as a machine that molds the senses and produces new forms of attention. This course delves into debates about the impact of audio-visual media on a history of attention, from the rise of reproductive technologies (bringing concerns about the replacement of contemplation by distraction) to the contemporary landscape (where reactions to a perceived crisis of attention are front and center). Readings will draw from not just film studies, but also art history, music, and literature. Assignments will emphasize presentations that expand the range of case studies and exercise in reflecting on the conditions of the attention we pay as scholars and critics. Permission of instructor required.

FILMSTUD 410A. Documentary Perspectives I: Politics of the Subject. 4 Units.
Historical, political, aesthetic, and formal developments of documentary film. Subjectivity, ethics, censorship, representation, reflexivity, responsibility to the audience, and authorial voice. Prerequisite: consent of instructor.
Same as: FILMSTUD 210A

FILMSTUD 410B. Documentary Perspectives II. 4 Units.
Restricted to M.F.A. documentary film students. Continuation of 410A. Topics in nonfiction media. Presentations and screenings by guest filmmakers. Prerequisite: consent of instructor.

FILMSTUD 411. Childish Enthusiasms, Perishable Manias. 5 Units.
Universities are sites of gravitas, but what of levitas -- a lighter, more playful category? Does intellectually credible work depend upon a â¿¿critical distanceâ¿ between scholar and object of study? Can we take something seriously without imposing a seriousness that it may not possess (or want)? How to retain (or recover) the intensely pleasurable relation to objects that we were allowed when younger? The seminar is predicated upon the proposition that effective scholarship need not suck the joy from the world.
Same as: ARTHIST 411

FILMSTUD 413. Theories of Melodrama. 5 Units.
Commonly derided for being over the top, with films in this mode put down as weepies, tear-jerkers, and women's films, melodrama as a genre and a cinematic mode has been reclaimed by feminist-queer-film scholars as providing a powerful site of ideological struggle and sustained engagement with individual and social subjection and suffering. Melodrama, a transgeneric mode of emotional dramaturgy, centered around body and community, delay and chance, realism and excess, affords radical critiques of discourses of gender, sexuality, race, class, and nation. We will consider melodrama's careful calibration of sensation and affect through its employment of cinematic form (color, music, editing etc.), and sweeping performative gestures. Through an analysis of films from Europe, Asia, Africa, Latin America, by auteurs such as Douglas Sirk, Ritwik Ghatak, Wong Kar-wai, Rainer Werner Fassbinder, and Pedro Almodovar, among others, we will study global and transnational flows in the adoption of the politics and aesthetics of the melodramatic mode. The seminar is conceived to be interdisciplinary and participants are encouraged to work with texts from disciplines other than film studies as well, including theatre, visual arts, music, dance, literature etc.
Same as: FILMSTUD 213

FILMSTUD 414. Methods and Theories in Film and Media Studies. 5 Units.
This seminar offers an overview of methods in film and media studies. It covers key debates and interventions that have shaped the field, such as the paradigm of classical cinema, historical reception studies, genre and authorship, political modernism, psychoanalytic theories of spectatorship, senses and aesthetics, and industry history. In exploring how these different approaches have expanded the discipline, students will gain a sense of the methodological stakes of their own research.

FILMSTUD 415. Post-Cinema. 3-5 Units.
In this seminar, we will try to come to terms with twenty-first century motion pictures by thinking through a variety of concepts and theoretical approaches designed to explain their relations and differences from the cinema of the previous century. We will consider the impact of digital technologies on film, think about the cultural contexts and aesthetic practices of contemporary motion pictures, and try to understand the experiential dimensions of spectatorship in today's altered viewing conditions.nnIn addition to viewing a wide range of recent and contemporary films, we will also engage more directly and materially with post-cinematic moving images: we will experiment with scholarly and experimental uses of non-linear video editing for the purposes of film analysis, cinemetrics, and a variety of academic and creative responses to post-cinematic media.nnThe course addresses key issues in recent film and media theory and, especially in its hands-on components, encourages experimentation with methods of digital humanities, computational media art, and other creative practices.
Same as: FILMSTUD 215

FILMSTUD 416. The Films of Robert Altman. 4 Units.
A collaborative consideration of Robert Altman¿s prolific and varied work as a director. The course will examine well-known films such as the narratively and stylistically innovative Nashville, creative genre revisions such as McCabe and Mrs. Miller, The Long Goodbye, and Gosford Park; and the culturally iconic M.A.S.H. We will also pay close attention to less famous work such as Secret Honor, and Buffalo Bill and the Indians, or Sitting Bull¿s History Lesson with the aim of describing and assessing a complex oeuvre. There will be a course bibliography, but required reading will be relatively light to make time for both careful and extensive viewing.
Same as: FILMSTUD 216

FILMSTUD 423. Seriality. 5 Units.
In this seminar, we will think about serial forms and serialization processes across a range of media and investigate their relations to our aesthetic experiences, media-technological apparatuses, and sociocultural formations. We will focus especially on the popular, commercial forms of seriality that have emerged since the nineteenth century and dominated large sections of popular culture in the forms of serialized novels, film and radio serials, and television series. But this investigation will be relevant as well for the study of high art, or art forms situated outside the realm of the popular. This is true not only for movements, like Pop Art, that engage explicitly with popular culture, but also for a wide range of artistic practices that are affected or informed by industrial processes and utilize for their expressive or aesthetic purposes the formal techniques of seriality. Ultimately, we may inquire whether there is a deeper relation between seriality and mediality more generally whether media rely for their conceptual definition or practical efficacy upon a serial interplay between repetition and variation. On the other hand, however, we will attend also to the possible differences between industrial, pre-industrial, and digital forms of serialization and think about the role of seriality in media-historical shifts and transformations.nThe course seeks to illuminate forms and phenomena that are central to our cultural and aesthetic experience of the world. In addition to engaging with a wide range of readings and viewings assigned by the instructor, participants are invited to contribute actively to the courses comparative focus with materials, projects, and presentations of their own.

FILMSTUD 424. Films of Stanley Kubrick. 4-5 Units.
This seminar will explore the cinema of Stanley Kubrick, a widely acclaimed film auteur known for works such as 2001: A Space Odyssey, A Clockwork Orange, and Barry Lyndon. The seminar will focus on close analysis of practically all of Kubrick's films, from a variety of methodological perspectives (authorship, formal/stylistic analysis, book-to-screen adaptation, and more.nnNOTE: Instructor's permission required before the first day of class.
Same as: FILMSTUD 224

FILMSTUD 430. Cinema and Ideology. 5 Units.
The relationship between cinema and ideology from theoretical and historical perspectives, emphasizing Marxist and psychoanalytic approaches. The practice of political filmmaking, and the cinema as an audiovisual apparatus and socio-cultural institution. Topics include: dialectics; revolutionary aesthetics; language and power; commodity fetishism; and nationalism. Filmmakers include Dziga Vertov, Jean-Luc Godard, Bruce Conner, and Marco Ferreri. Theoretical writers include Karl Marx, Sergei Eisenstein, and Slavoj Zizek. Prerequisite: consent of instructor.
Same as: ARTHIST 430

FILMSTUD 432. Chinese Cinema. 5 Units.
This course surveys a range of critical perspectives and debates on Chinese cinema. It is organized on the basis of weekly topics, such as genre, historiography, gender, modernity, and the idea of national cinema. Consent of instructor required.
Same as: FILMSTUD 232

FILMSTUD 433. Let's Make a Monster: Critical Making. 5 Units.
Ever since Frankenstein unleashed his monster onto the world in Mary Shelley¿s novel from 1818, the notion of ¿technology-out-of-control¿ has been a constant worry of modern societies, plaguing more optimistic visions of progress and innovation with fears that modern machines harbor potentials that, once set in motion, can no longer be tamed by their human makers. In this characteristically modern myth, the act of making ¿ and especially technological making ¿ gives rise to monsters. As a cautionary tale, we are therefore entreated to look before we leap, to go slow and think critically about the possible consequences of invention before we attempt to make something radically new. However, this means of approaching the issue of human-technological relations implies a fundamental opposition between thinking and making, suggesting a split between cognition as the specifically human capacity for reflection versus a causal determinism-without-reflection that characterizes the machinic or the technical. Nevertheless, recent media theory questions this dichotomy by asserting that technologies are inseparable from humans¿ abilities to think and to act in the world, while artistic practices undo the thinking/making split more directly and materially, by taking materials ¿ including technologies ¿ as the very medium of their critical engagement with the world. Drawing on impulses from both media theory and art practice, ¿critical making¿ names a counterpart to ¿critical thinking¿ ¿ one that utilizes technologies to think about humans¿ constitutive entanglements with technology, while recognizing that insight often comes from errors, glitches, malfunctions, or even monsters. Co-taught by a practicing artist and a media theorist, this course will engage students in hands-on critical practices involving both theories and technologies. Let¿s make a monster!.
Same as: ARTSTUDI 233, FILMSTUD 233

FILMSTUD 436. Chinese Cinema. 5 Units.
Course surveys a range of critical perspectives and debates on Chinese cinema. It is organized on the basis of weekly topics, such as genre, historiography, gender, modernity, and the idea of national cinema. Consent of instructor required.

FILMSTUD 440. Sound Technology. 5 Units.
Development of sound technology and reproduction in context of modernity, with some emphasis on the crossings of sound and image in the history and theory of technological reproduction. Topics include phonography, recording, and mass culture (Adorno, Sterne, Thompson, Lastra); cinematic sound and music (Chion, Altman, Gorbman); filmic and compositional practices in the American avant-garde (Joseph, Kahn); acoustic ecology (Schafer). Weekly screenings or listenings.

FILMSTUD 442. Hollywood Musical. 5 Units.
Physical, emotional, aesthetic, and social liberation mark this most colorful of film genres. Musicals are a place for staging issues of identity, including the impact of African American and Jewish culture, and issues of gay reception and interpretation. Attention to technologies of sound and color, the relation to vaudeville and Broadway, and ethnic and aesthetic diversity. Musicals as the epitome of filmic illusionism and the Hollywood studio system; the implications of their seduction of audiences; the meaning of spectacle, the centrality of performance. Busby Berkeley, Fred Astaire, Judy Garland, Bob Fosse, Stanley Donen, Gene Kelly, Vincente Minnelli.

FILMSTUD 445B. History and Politics in Russian and Eastern European Cinema. 5 Units.
From 1945 to the mid-80s, emphasizing Polish, Hungarian, Czech, Slovak, and Yugoslav contexts. The relationship between art and politics; postwar establishment of film industries; and emergence of national film movements such as the Polish school, Czech new wave, and new Yugoslav film. Thematic and aesthetic preoccupations of filmmakers such as Wajda, Jancso, Forman, and Kusturica. Permission of instructor required prior to the first day of classes.
Same as: FILMSTUD 245B, REES 301B

FILMSTUD 448. The Body in Film and other Media. 5 Units.
In this seminar, we will consider the body on screen as well as the body before the screen i.e. the spectator but also the profilmic body of the actor to examine corporeal performance and reception. The dancing body, the comic body, dead and live bodies, the monstrous body, the body in pain, the virtual body all raise questions about embodiment, liveness, and performance. We will read the body in audiovisual culture through an engagement with affect theory, focusing on the labor of performance, the construction of stardom, spatial and temporal configurations of the performing body, and the production of affect and sensation in the spectating body. Through a discussion of make-up, fashion, the labor of producing the idealized star body from the meat-and-bones body of the actor, or body genres where the spectator's body is beside itself with sexual pleasure, fear and terror, or overpowering sadness, we will inquire into ideologies of discipline and desire that undergird mediatized bodies. nnNo prior engagement with film studies is required. Students are encouraged to write seminar papers that build on current research interests.nnNOTE: Instructor consent required for undergraduate students (only seniors may enroll). Please contact the instructor for permission to enroll if you're an undergraduate senior.
Same as: ARTHIST 448

FILMSTUD 449. Eye of the Beholder: Subjective Cinema. 5 Units.
This course proposes to look at how even the most seemingly objective films are shaped by a subjective eye. An eye which is molded by gender, race, culture and class - all of which influence the entire film-making process and experience from how something is framed to how it is cut and and how it is perceived it. How we look at something, for how long we look at it and in what context we are shown something is as important as what we are looking at. Similarly the subjective eye of the viewer shapes how he or she understands and interprets the film. Whether the viewer is an insider or outsider to the subject completely changes expectations and reactions to the film. So then what are we really talking about when we talk about documentary films? What makes a documentary a documentary? Why is such a categorization valuable? necessary? useful? nThe course will combine analysis of films, theoretical texts, and some practical ¿production" exercises.
Same as: FILMSTUD 249

FILMSTUD 450. Screened Thought. 5 Units.
This seminar considers the varied ways film represents thought. What forms of thinking do films enable and forestall? How do particular films, and film genres, activate or elide characters' cognition, interiority, self-consciousness, reflection, etc.? How do formal techniques such as point-of-view, superimposition, flashbacks, framing, and voiceover change the image of thought that cinema inherits from philosophy, literature and other artistic traditions? We'll consider these questions through a range of films and film theory as well as critical and philosophical texts.

FILMSTUD 452. Currents in Media Theory. 5 Units.
This seminar explores a set of currents in media theory (and related fields), which we will seek to navigate together as a group. We will focus on approaches, discourses, conversations, and paradigms that seek to explain the mediations, modulations, and triangulations of our experience within a changing landscape of technological, social, political, and other forces. Special attention will be given to contemporary works of theory and/or works that are enjoying a renewed contemporary reception.
Same as: FILMSTUD 252

FILMSTUD 453. Aesthetics and Phenomenology. 3-5 Units.
This course explores central topics in aesthetics where aesthetics is understood both in the narrow sense of the philosophy of art and aesthetic judgment, and in a broader sense as it relates to questions of perception, sensation, and various modes of embodied experience. We will engage with both classical and contemporary works in aesthetic theory, while special emphasis will be placed on phenomenological approaches to art and aesthetic experience across a range of media and/or mediums (including painting, sculpture, film, and digital media). nnPhD students in the Art History program may take the class to fulfill degree requirements in Modern/Contemporary Art or Film & Media Studies, depending on the topic of their seminar paper.
Same as: FILMSTUD 253

FILMSTUD 458. The Face on Film. 5 Units.
The seminar will discuss the workings of the face: as privileged object of representation, as figure of subjectivity, as mode and ethic of address, through film theory and practice. How has the cinema responded to the mythic and iconic charge of the face, to the portrait's exploration of model and likeness, identity and identification, the revelatory and masking play of expression, the symbolic and social registers informing the human countenance? At this intersection of archaic desires and contemporary anxieties, the face will serve as our medium by which to reconsider, in the cinematic arena, some of the oldest questions on the image. Among the filmmakers and writers who will inform our discussion are Aumont, Balázs, Barthes, Bazin, Bresson, Doane, Dreyer, Epstein, Hitchcock, Koerner, Kuleshov, Warhol, and others.

FILMSTUD 459. Game Studies. 5 Units.
This course aims to introduce students to the emerging, interdisciplinary field of game studies. We will investigate what games (including but not limited to digital games) are, why we play them, and what the functions of this activity might be. The bulk of the course will be devoted specifically to digital games, which we will approach from a variety of perspectives: from historical, cultural, industrial/commercial, media-theoretical, and formal (narratological/ludological) perspectives, among others. Thus, we will seek to understand the contexts in which video games emerged and evolved, the settings in which they have been played, and the discourses and practices that have determined their place in social and cultural life. In addition, we will ask difficult questions about the mediality of digital games: What is the relation of digital to non-digital games? Are they both games in the same sense, or do digital media redefine what games are or can be? How do digital games relate to other (digital as well as non-digital) non-game media, such as film, television, print fiction, or non-game computer applications? Of course, to engage meaningfully with these questions at all will require us to investigate theories of mediality (including inter- and transmediality) more generally. Finally, though, we will be interested in the formal and experiential parameters that define (different types of) digital games in particular. What does it feel like to play (various) digital games? What are the relations between storytelling and the activity of gameplaying in them? What is the relation between these aspects and the underlying mechanics of digital games, as embodied in hardware and software? What is the role of the human body? Because these questions can only be approached on the basis of personal experience, students will be expected to spend some time playing digital games and reflecting critically on their gameplay.
Same as: FILMSTUD 259

FILMSTUD 465. Post War American Avant-Garde Film. 5 Units.
Permission of instructor required for enrollment.

FILMSTUD 465A. Media Technology Theory. 3-5 Units.
This course surveys major theoretical approaches to the study of media technologies, including Frankfurt School critical theory, media archaeology, actor network theory, science and technology studies, platform studies and theories of critical making. By the end of the course, students should have a rich familiarity with the literature in this area, as well as with exemplary empirical studies conducted within each tradition. Preference to Ph.D. students in Communication and Art and Art History. Consent of instructor required for non-PhD students.
Same as: ARTHIST 465, COMM 384

FILMSTUD 481. Contemporary Asian Filmmakers. 4 Units.
Films and moving image works by contemporary filmmakers from Asia, including Hou Hsiao-hsien, Tsai Ming-liang, and Apichatpong Weerasethakul. Topics include explorations of national and local histories, aesthetics of slowness and duration, and crossings between the movie theater and the gallery.
Same as: FILMSTUD 281

FILMSTUD 490. Movies and Methods: Contemporary Black Filmmakers. 5 Units.
Despite the systemic inequalities of the Hollywood system, there is a robust, stylistically diverse cohort of African-American writer/directors at work, including Barry Jenkins, Ava DuVernay, and Ryan Coogler. Jenkins' films (Moonlight, If Beale Street Could Talk), are aesthetically lush, intimate, and understated. DuVernay (When They See Us) foregrounds racial history and injustice in her feature films, television, and documentary work. Coogler followed his realist Fruitvale Station with two powerful genre films with black protagonists (Creed, Black Panther - this last the highest-grossing film by a black director).
Same as: AMSTUD 290, FILMSTUD 290

FILMSTUD 620. Area Core Examination Preparation. 5 Units.
For Art History Ph.D. candidates. Prerequisite: consent of instructor.

FILMSTUD 660. Independent Study. 1-15 Unit.
For graduate students only. Approved independent research projects with individual faculty members.

FILMSTUD 660E. Extended Seminar. 4 Units.
May be repeated for credit. (Staff).

FILMSTUD 680. Curricular Practical Training. 1-3 Unit.
CPT course required for international students completing degree.

ARTS INSTITUTE

The Stanford Arts Institute offers interdisciplinary arts curricula and research programs, drawing on the wide-ranging intellectual resources of Stanford University. The Institute forges arts connections across the University; presents arts events; incubates new arts projects; and supports artists and cultural groups across campus. Since its founding in 2006, the Stanford Arts Institute has been a catalyst helping the Stanford arts community to grow, experiment, and advance art thinking and making.

Courses offered by the Stanford Arts Institute are listed under the subject code ARTSINST (http://explorecourses.stanford.edu/search/?q=ARTSINST&view=catalog&page=0&academicYear=&collapse=&filter-catalognumber-ARTSINST=on&filter-coursestatus-Active=on&filter-departmentcode-ARTSINST=on&filter-catalognumber-ARTSINST=on) on the Stanford Bulletin's ExploreCourses web site.

Honors in the Arts

Web site: https://arts.stanford.edu/for-students/academics/honors-in-the-arts/ (https://arts.stanford.edu/for-students/academics/capstone-in-the-arts/)

Information concerning the 2021-22 program will be available on February 15, 2021.

The Stanford Arts Institute offers an interdisciplinary Honors in the Arts program, for interested undergraduates in any major. The program supports collaborative or individual projects that combine the critical and creative imaginations. Projects must be completed in one year. All students will work with mentors and also participate in a weekly workshop.

Honors in the Arts can be completed in addition to honors work in a student's home department or alongside another capstone program, such as the Senior Reflection in Biology (http://web.stanford.edu/~suemcc/TSR/).

Admission

Students must have an overall GPA of 3.4 or higher. Students with demonstrated strengths relevant to the program may petition the GPA requirement at the time of application.

To qualify for admission, students must identify three courses, at least two of which must be completed by the end of the third year, that have provided the necessary foundation for the capstone project. The Creativity Course Guide (https://arts.stanford.edu/for-students/creativity-course-guide/) and the Interdisciplinary Course Guide (https://arts.stanford.edu/for-students/interdisciplinary-course-guide/) include courses that provide an introduction to the study of the arts disciplines as well as incorporating the arts in an interdisciplinary context.

Students interested in pursuing Honors in the Arts apply in the spring of their junior year. Students should visit the Honors in the Arts website (https://arts.stanford.edu/for-students/academics/capstone-in-the-arts/) or contact the program manager for more information.

How to Apply

Admission to the program is competitive. Students apply for entry into the program during the Spring Quarter of their junior year.

Eligibility requirements include:

- Stanford senior during the academic year following the Spring Quarter application.
- A minimum overall GPA of 3.4 is normally required. However, applicants can submit a GPA petition if needed.
- Completion of previous courses and/or creative projects that have prepared the student to execute an interdisciplinary capstone project.

Application materials include:

- Honors project proposal which addresses the following:
  a. the concept for the interdisciplinary capstone project or research
  b. a description of the student's background in the disciplines to be drawn upon for the project
  c. why the project cannot be completed in your major department
  d. a statement of the relevance of Honors in the Arts to the student's education both at Stanford and beyond
- Unofficial transcript
- A completed Faculty Reference Form (provided in the application)
- Portfolio of relevant work. The details for the portfolio vary depending on a student's main medium of expression. If the following limits present a significant obstacle, please contact Devin Garnick (dgarnick@stanford.edu):
  - Creative writers should submit work that best exemplifies their strengths as a writer. Most writers submit about 12 pages of prose, 5-7 poems, or a short scene from a play, depending on the proposed project.
  - Artists working in visual, audio, or other forms of visual or digital media should submit work that most exemplifies their strengths in the relevant form. The committee accepts the following: up to 5 images (compiled in a single pdf file), 5 minutes of video or audio, pdfs, and linked external media (such as YouTube, Vimeo, and SoundCloud).

See the Honors in the Arts website (https://arts.stanford.edu/for-students/academics/capstone-in-the-arts/) for additional information on applying to the program.

Preparation for Honors in the Arts

To qualify for admission, students must identify three courses, at least two of which must be completed by the end of the third year, that have provided the necessary foundation for the capstone project. The Creativity Course Guide (https://arts.stanford.edu/for-students/creativity-course-guide/) and the Interdisciplinary Course Guide (https://arts.stanford.edu/for-students/interdisciplinary-course-guide/) include courses that provide an introduction to the study of the arts disciplines as well as incorporating the arts in an interdisciplinary context.

Requirements

Students admitted to the program are required to take the following sequence of courses (6-15 units total) during their senior year:

- Autumn Quarter, Senior Year: ARTSINST 200A Honors in the Arts Workshop (2-5 units)
- Winter Quarter, Senior Year: ARTSINST 200B Honors in the Arts Workshop (2-5 units)
- Spring Quarter, Senior Year: ARTSINST 200C Honors in the Arts Workshop (2-5 units)

In addition to the above courses, students admitted to the program are required to take the following courses or actions prior to their senior year:

- Prior to Spring Quarter, junior year: Two preparatory courses for interdisciplinary study (4-8 units)
- Prior to Spring Quarter, junior year, or concurrent with Autumn Quarter of senior year: One further preparatory course for interdisciplinary study (2-4 units)
- Spring Quarter, junior year: Apply for admission to Honors in the Arts
- Spring Quarter, junior year: Confirm preparatory courses with honors program director

Each Spring, students present their honors projects during a public symposium.

To receive Honors in the Arts, students must fulfill all the requirements and receive an 'A-' or higher on their capstone project.

Requirements and further information can be found on the Honors in the Arts website (https://arts.stanford.edu/for-students/academics/capstone-in-the-arts/).

Honors Projects

All accepted projects are eligible for modest financial support for materials needed to complete the project.

Through a yearlong process, students develop a capstone project that goes beyond the traditional boundaries of their major.

- Honors projects are typically creative projects involving an arts practice element. Honors projects may also be scholarly research projects involving a multidisciplinary approach.
- Students can apply with an individual or team-based project. For team-based projects (2-5 students per team), applicants must delineate what expertise each student brings to the project.
- Students must receive at least an 'A-' on the capstone project. Students who receive a grade of less than an 'A-' but greater than 'NP' receive credit for the workshops but do not receive honors.
- Mentors: Each student works closely with a graduate student mentor or a lecturer to develop and shape the capstone project. Students in the program are responsible for setting up regular meetings with their mentor throughout the academic year. The workshop class also allows for weekly progress reports and strategies for advancing the work.

Requirements and further information can be found here on the Honors in the Arts (https://arts.stanford.edu/for-students/academics/honors-in-the-arts/) website.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Stanford Arts Institute counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade. The Stanford Arts Institute recommends all Honors in the Arts students in the Honors in the Arts program enroll for a letter grade, as this provides clear feedback to students on their work.

Other Undergraduate Policies

For the 2020-21 academic year, the Honors in the Arts program requires students to enroll in all three (3) workshops offered (ARTSINST 200A, ARTSINST 200B, ARTSINST 200C). Exceptions can be made for students who take a leave of absence for one quarter in the 2020-21 academic year. In this case, students will need to get explicit permission from the program director and the course lecturer before the start of the school year. Students who are granted this exception must enroll in two (2) of the three (3) workshops offered.

All Arts Immersion trips have been cancelled during the 2020-21 academic year due to travel restrictions related to COVID-19. Please visit the Arts Immersion (https://arts.stanford.edu/for-students/academics/arts-immersion/) website for updates.

Arts Immersions

New York City Arts Immersion

The Stanford Arts Institute offers an Arts Immersion trip to New York City during Spring Break.

Students travel with Stanford faculty and Arts Institute staff for a week-long engagement with the arts, meeting institutional leaders, policy makers, and arts practitioners. On past trips, students have visited museums, galleries, concert halls; they have seen dance rehearsals, opera, and a Broadway show; and they have had the chance to meet with alumni in the arts. In the Spring Quarter class ARTSINST 11Q Art in the Metropolis, students revisit their immersion experience by reading critical literature and participating in rigorous discussion.

See the Arts Immersion (https://arts.stanford.edu/for-students/academics/arts-immersion/) website and subscribe to the Arts Update (https://arts.stanford.edu/for-students/artsupdate/) for more information and updates.

Admission

Applications are welcomed from all undergraduate class years. Before applying, students should be aware that they must enroll in and attend the Spring Quarter course: ARTSINST 11Q/TAPS 11Q Art in the Metropolis.

	Units
ARTSINST/TAPS 11Q Art in the Metropolis (required)	3

Visit the Arts Immersion (https://arts.stanford.edu/for-students/academics/arts-immersion/) website to submit a complete application.

Chair: Jisha Menon

Director of Undergraduate Studies: Jisha Menon

Courses

ARTSINST 11Q. Art in the Metropolis. 3 Units.
This seminar is offered in conjunction with the annual "Arts Immersion" trip to New York that takes place over the spring break and is organized by the Stanford Arts Institute (SAI). Participation in the trip is a requirement for taking part in the seminar (and vice versa). The trip is designed to provide a group of students with the opportunity to immerse themselves in the cultural life of New York City guided by faculty and SAI staff. Students will experience a broad range and variety of art forms (visual arts, theater, opera, dance, etc.) and will meet with prominent arts administrators and practitioners, some of whom are Stanford alumni. For further details and updates about the trip, see https://arts.stanford.edu/for-students/academics/arts-immersion/new-york/.
Same as: ENGLISH 11Q, MUSIC 11Q, TAPS 11Q

ARTSINST 100. The Questions of Clay: Craft, Creativity and Scientific Process. 5 Units.
Students will create individual studio portfolios of ceramic work and pursue technical investigations of clay properties and the firing process using modern scientific equipment. Emphasis on development of creative process; parallels between science and traditional craft; integration of creative expression with scientific method and analysis. Prior ceramics experience desirable but not necessary. Limited enrollment. Prerequisites: any level of background in physics, Instructor permission.
Same as: APPPHYS 100

ARTSINST 100B. The Questions of Cloth: Weaving, Pattern Complexity and Structures of Fabric. 4 Units.
Students will learn to weave on a table loom while examining textile structures from historic, artistic and scientific perspectives. Emphasis on analyzing patterns and structures generated by weaving, with elementary introductions to information-scientific notions of algorithmic complexity, image compression, and source coding. This class is primarily intended for non-STEM majors with little or no prior experience in working with textiles. Limited enrollment. Prerequisites: Instructor permission.
Same as: APPPHYS 100B

ARTSINST 141. Network Performance Practice. 2-4 Units.
JackTrip software, developed at Stanford, provides the means for ultra-low-latency, uncompressed sound transmission for live music-making. Remote ensemble rehearsals, coaching, music lessons, jamming and concert broadcasting during the COVID-19 pandemic are making use of the technology. The open-source project has developed rapidly in the past 6 months, especially in its ability to support large ensembles of home-to-home connections. The course will cover recent features, history and theory of JackTrip and engage in a series of practical, participatory performance sessions. Students will learn the software and related network and audio principles with a focus on intuition building and ear training. Course participants will work from home and be able to use CCRMA facilities remotely. The course can be audited or coordinated with another course.
Same as: MUSIC 153A

ARTSINST 141B. Internet Ensemble Tech Force. 1 Unit.
This course inaugurates an Internet Ensemble Tech Force which is needed urgently worldwide and locally to support music ensembles going online. Calling it urgent is not an exaggeration. We can provide a valuable service and that's the purpose of the course. Course participants will quickly come up to speed on low-latency audio collaboration technology and will then pair with ensembles interested in using it. Ensemble rehearsals, coaching and concert broadcasting are planned for the quarter. 153B participants will work from home and be able to use CCRMA facilities remotely. The course can be audited or coordinated with another course. Let's help make group playing possible during this public health challenge.
Same as: MUSIC 153B

ARTSINST 142. Drawing with Code. 4 Units.
This studio course will engage coding practices as drawing tools. What makes a good algorithmic composition? How do we craft rule-sets and parameters to shape an interesting work? What changes if we conceive of still outputs, ongoing processes, or interactive processes as the "finished" work? We will look at the history of algorithmic drawing, including analog precedents like Sol LeWitt and other conceptual artists, along with current pioneers like John Simon Jr., Casey Reas, and LIA. Outputs will involve prints as well as screen-based works. Some basic coding experience is helpful, but not required. Assignments are based on conceptual principals that students can engage with at different coding skill levels. This is a good way for non CS students to explore coding practices as well as for CS students to hone their skills. We will work primarily in the free Processing software for our explorations.
Same as: ARTSTUDI 163

ARTSINST 150. The Changing World of Popular Music. 2 Units.
This course will cover changes in the business, economics, and practices of the popular music industry. It will provide a brief historical overview of the industry and its business models. The majority of the course will focus on the industry as it works today and on forces that are causing it to change rapidly. The course will feature guest artists and executives with current experience in the field, as well as project-based assignments designed to give students hands-on experience. Topics will include: economics and business models of commercial music business, music production, music distribution, marketing, leadership in the music industry and artist management.
Same as: MUSIC 150P

ARTSINST 150G. Performing Race, Gender, and Sexuality. 4 Units.
In this theory and practice-based course, students will examine performances by and scholarly texts about artists who critically and mindfully engage race, gender, and sexuality. Students will cultivate their skills as artist-scholars through written assignments and the creation of performances in response to the assigned material. Attendance and written reflection about a live performance event on campus are required. Students will also learn various meditation practices as tools for making and critiquing performance, in both our seminar discussions and performance workshops. We will approach mindfulness as method and theory in our own practice, as well as in relation to the works studied. We will also consider the ethics and current debates concerning the mindfulness industry. Examples of artists studied include James Luna, Nao Bustamante, Renee Cox, William Pope.L, Cassils, boychild, Curious, Adrian Piper, Xandra Ibarra, Valérie Reding, Guillermo Gomez-Peña, and Ana Mendieta.
Same as: CSRE 150G, CSRE 350G, FEMGEN 150G, LIFE 150G, TAPS 150G

ARTSINST 197. Industry Immersion: Film and Media. 1 Unit.
This course is designed to give students the opportunity to immerse themselves in the exciting and ever-changing TV and Film industries. The entertainment industry as a whole is facing issues and trends surrounding inclusivity and equity, the democratization of content development, and evolving revenue and distribution models. This course will introduce and explore these topics via readings, lectures, workshops and projects. Eight weeks of the course will include visits to our class by influential industry professionals who will share information about their company and current role, and their perspectives on one or more of the topics above. In addition to the lecture, each class will include a workshop element drawn from everyday efforts to address these issues. Guest lecturers will have a range of experience and viewpoints of the changing landscape of the industry. The course will be 10 weeks long. Priority will be given to Sophomores, Juniors and Seniors interested in careers in TV and Film. Credit will be based on attendance, class participation, assignments and a final presentation.

ARTSINST 197B. Industry Immersion: Fashion. 2 Units.
This course is designed to give students the opportunity to immerse themselves in the expanding and evolving fashion industry. Currently the three most relevant issues and trends impacting the fashion industry are designing for diverse audiences, sustainable practices, and the impact of technology. nnThis course will introduce and explore these topics via readings, lectures, workshops and projects. Six weeks of the course will include visits to our class by influential industry professionals who will share information about their company and current role, and their perspectives on one or more of the topics above. In addition to the lecture, each class will include a workshop element drawn from everyday efforts to address these issues. Guest lecturers will have a range of experience and viewpoints of the changing landscape. Credit will be based on attendance, class participation, assignments and a final presentation.

ARTSINST 199. Independent Study. 1-5 Unit.
May be repeated for credit.

ARTSINST 200A. Honors in the Arts Workshop. 2-5 Units.
First in a three-quarter series required of all Honors in the Arts participants. Students initiate and develop interdisciplinary creative projects with the support of peers and mentors in a small, workshop format. Required enrollment in 200 A,B,C.

ARTSINST 200B. Honors in the Arts Workshop. 2-5 Units.
Second in a three-quarter series required of all Honors in the Arts participants. Students initiate and develop interdisciplinary creative projects with the support of peers and mentors in a small, workshop format. Required enrollment in 200 A,B,C.

ARTSINST 200C. Honors in the Arts Workshop. 2-5 Units.
Third in a three-quarter series required of all Honors in the Arts participants. Students initiate and develop interdisciplinary creative projects with the support of peers and mentors in a small, workshop format. Required enrollment in 200 A,B,C.

ASTRONOMY

Astronomy courses are offered primarily through the Physics department, with subject code PHYSICS (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=PHYSICS&filter-catalognumber-PHYSICS=on) on the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=PHYSICS&filter-catalognumber-PHYSICS=on) website.

Although Stanford University does not have a degree program in astronomy or astrophysics, teaching and research in various branches of these disciplines are ongoing activities in the departments of Applied Physics, Physics, SLAC National Accelerator Laboratory, and Hansen Experimental Physics Laboratory (HEPL).

For the convenience of students interested in astronomy, astrophysics, and cosmology, a course program for undergraduate and graduate study is listed in the "Astronomy Cognate Courses (p. 1084)" section of this bulletin. The list includes introductory courses for the student who wishes to be informed about the fields of astronomy without the need for prerequisites beyond high school algebra and physics. Courses in astronomy numbered below 100 are designed to serve this group of students. Astronomy courses numbered 100-199 serve the student interested in an initial scientific study of astronomy. The courses numbered 200 and above are for graduate students and advanced undergraduates, subject to prior approval by the course instructor.

Undergraduate Programs in Astronomy

The University does not offer a separate undergraduate major in Astronomy. Students who intend to pursue graduate study in astronomy or space science are encouraged to major in physics, following the advanced sequence if possible, or in electrical engineering if the student has a strongly developed interest in radioscience. The course descriptions for these basic studies are listed under the appropriate department sections of this bulletin. Students desiring guidance in developing an astronomy-oriented course of study should contact the chair of the Astronomy Program Committee. The following courses are suitable for undergraduates and are recommended to students considering advanced study in astronomy or astrophysics:

		Units
PHYSICS 100	Introduction to Observational Astrophysics	4
PHYSICS 160	Introduction to Stellar and Galactic Astrophysics	3
PHYSICS 161	Introduction to Cosmology and Extragalactic Astrophysics	3
Students planning study in astronomy beyond the B.S. are urged to take:		
PHYSICS 262	General Relativity	3

The above-mentioned courses are required for physics majors who choose the curriculum with a concentration in astrophysics (see the "Physics (p. 1917)" section of this bulletin).

Stanford Student Observatory

The student observatory, located in the hills to the west of the campus, is equipped with a 24-inch and other small reflecting telescopes. It is used for instruction of the observation-oriented courses, PHYSICS 50 Astronomy Laboratory and Observational Astronomy and PHYSICS 100 Introduction to Observational Astrophysics.

The Department of Physics offers a minor in Physics with a concentration in Astronomy.

Minor in Physics with Concentration in Astronomy

Students wishing to pursue advanced work in astrophysical sciences should major in Physics (p. 1919) and concentrate in astrophysics. However, students outside of Physics with a general interest in astronomy may organize their studies by completing one of the following Physics minor concentration programs.

Students who take the 20, 40, or 60 series at Stanford in support of their major may count those units towards the minor.

An undergraduate Physics minor with a concentration in Astronomy requires the following courses:

Non-Technical

For students whose majors do not require the PHYSICS 40 or 60 series:

		Units
PHYSICS 21	Mechanics, Fluids, and Heat	4
PHYSICS 23	Electricity, Magnetism, and Optics	4
PHYSICS 25 & PHYSICS 26	Modern Physics and Modern Physics Laboratory	5
PHYSICS 50	Astronomy Laboratory and Observational Astronomy	3-4
or PHYSICS 100	Introduction to Observational Astrophysics	
Select two of the following:		6
PHYSICS 15	Stars and Planets in a Habitable Universe	
PHYSICS 16	The Origin and Development of the Cosmos	
PHYSICS 17	Black Holes and Extreme Astrophysics	
Total Units		22-23

Technical

For students whose majors require the PHYSICS 40 or 60 series:

		Units
Select one of the following Series:		14-17
Series A		
PHYSICS 41	Mechanics	
PHYSICS 43	Electricity and Magnetism	
PHYSICS 45 & PHYSICS 46	Light and Heat and Light and Heat Laboratory	
PHYSICS 70	Foundations of Modern Physics	
Series B		
PHYSICS 61	Mechanics and Special Relativity	
PHYSICS 63	Electricity, Magnetism, and Waves	
PHYSICS 65	Quantum and Thermal Physics	
PHYSICS 67	Introduction to Laboratory Physics	
And take the following three courses:		
PHYSICS 100	Introduction to Observational Astrophysics	4
PHYSICS 160	Introduction to Stellar and Galactic Astrophysics	3
PHYSICS 161	Introduction to Cosmology and Extragalactic Astrophysics	3
Total Units		24-27

Students are also encouraged to take the electricity and magnetism/optics lab of the appropriate PHYSICS series , PHYSICS 24 , PHYSICS 44 or PHYSICS 64 for 1 additional unit.

Graduate Programs in Astronomy

Graduate programs in astronomy and astrophysics and related topics are carried out primarily in the Department of Physics but also the departments of Applied Physics and Electrical Engineering. Students should consult the course listings, degree requirements, and research programs of these departments for more detailed information.

Graduate research opportunities are available in many areas of theoretical and observational astronomy. For further information, see the Kavli Institute of Particle Astrophysics and Cosmolog (http://kipac.stanford.edu)y website.

		Units
Students planning to conduct research in astrophysics but lacking a background in astrophysics and/or gravitation should take 2-3 appropriate courses from the following list:		
PHYSICS 260	Introduction to Stellar and Galactic Astrophysics	3
PHYSICS 261	Introduction to Cosmology and Extragalactic Astrophysics	3
PHYSICS 262	General Relativity	3
All students planning to conduct research in astronomy and astrophysics are strongly encouraged to take:		
PHYSICS 301	Astrophysics Laboratory (not offered 2020-2021)	3
PHYSICS 360	Modern Astrophysics	3
PHYSICS 361	Cosmology and Extragalactic Astrophysics (not offered 2020-21)	3
In addition, astrophysics students should consider these courses as appropriate to their thesis topic:		
PHYSICS 269	Neutrinos in Astrophysics and Cosmology	3
PHYSICS 362	The Early Universe (not offered 2020-21)	3
PHYSICS 364	Gravitational Radiation, Black Holes and Neutron Stars (not offered 2020-2021)	3
PHYSICS 366	Statistical Methods in Astrophysics	2
PHYSICS 367	Special Topics in Astrophysics: Structure Formation and nGalaxy Formation	2

Each year a number of "special topics" course are offered. Refer to courses in the PHYSICS 360 range for more details. Students interested in research programs in space physics involving spacecraft studies of the planets, their satellites, and their near-space environments should see the "Center for Space Science and Astrophysics (p. 2516)" section of this bulletin.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of Physics counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Astronomy Cognate Courses

Elementary Lectures

The following courses provide a descriptive knowledge of astronomical objects and astrophysics. PHYSICS 15, PHYSICS 16, and PHYSICS 17 are for students not majoring in the sciences and are taught in different quarters by different instructors, and may be taken individually or in any order.

		Units
PHYSICS 15	Stars and Planets in a Habitable Universe	3
PHYSICS 16	The Origin and Development of the Cosmos	3
PHYSICS 17	Black Holes and Extreme Astrophysics	3

Observatory

The following courses allow students to use the on-campus Stanford Student Observatory, and are intended to familiarize students with observational methods and analysis of astronomical data. PHYSICS 50 is for general students, while PHYSICS 100 involves more advanced observations and is intended for students with a college level background in physics.

		Units
PHYSICS 50	Astronomy Laboratory and Observational Astronomy	3
PHYSICS 100	Introduction to Observational Astrophysics	4

Advanced Undergraduate

The following courses are for students with a more advanced knowledge of basic physics and mathematics, and form the core courses for a concentration in astrophysics for Physics majors.

		Units
PHYSICS 160	Introduction to Stellar and Galactic Astrophysics	3
PHYSICS 161	Introduction to Cosmology and Extragalactic Astrophysics	3

Graduate

		Units
PHYSICS 260	Introduction to Stellar and Galactic Astrophysics	3
PHYSICS 261	Introduction to Cosmology and Extragalactic Astrophysics	3
PHYSICS 262	General Relativity	3
PHYSICS 269	Neutrinos in Astrophysics and Cosmology	3
PHYSICS 301	Astrophysics Laboratory (Not offered 2020-21)	3
PHYSICS 312	Basic Plasma Physics (Not offered 2020-21)	3
PHYSICS 361	Cosmology and Extragalactic Astrophysics (Not offered 2020-21)	3
PHYSICS 362	The Early Universe (Not offered 2020-21)	3
PHYSICS 366	Statistical Methods in Astrophysics	2

PHYSICS 368	Computational Cosmology and Astrophysics (Not Offered 2020-21)	2

Emeriti: (Professors) Peter A. Sturrock, G. Leonard Tyler, Robert V. Wagoner

Professors: Tom Abel (Physics, SLAC), Steve Allen (Physics, SLAC), Roger Blandford (Physics, SLAC), Pat Burchat (Physics), Blas Cabrera (Physics), Sarah Church (Physics), Kent Irwin (Physics, SLAC), Steven Kahn (Physics, SLAC), Chao-Lin Kuo (Physics, SLAC), Bruce Macintosh (Physics), Peter Michelson (Physics), Vahé Petrosian (Physics, Applied Physics), Roger W. Romani (Physics), Risa Wechsler (Physics, SLAC)

Professor (Research): Philip H. Scherrer (Physics)

BIOLOGY

Courses offered by the Department of Biology are listed under the subject code BIO on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIO&filter-catalognumber-BIO=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIO&filter-catalognumber-BIO=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIO&filter-catalognumber-BIO=on).

The department provides:

- a major program leading to the B.S. degree
- a minor program
- a coterminal program leading to the M.S. degree
- a doctoral program leading to the Ph.D. degree, and
- courses designed for the non-major.

Mission of the Undergraduate Program in Biology

The mission of the undergraduate program in Biology is to provide students with in-depth knowledge in the discipline, from molecular biology to ecology. Students in the program learn to think and analyze information critically, to draw connections among the different areas of biology, and to communicate their ideas effectively to the scientific community. The major exposes students to the scientific process through a set of core courses and electives from a range of subdisciplines. The Biology major serves as preparation for professional careers, including medicine, dentistry, veterinary sciences, teaching, consulting, research, and field studies.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. the ability to use discipline-specific tools and content knowledge to analyze and interpret scientific data, to evaluate the significance of the data, and to articulate conclusions supportable by the data.
2. the ability, independently and collaboratively, to formulate testable scientific hypotheses and to design approaches to obtain data to test the respective hypotheses.
3. the ability to communicate content understanding and research outcomes effectively using various media.

Mission of the Graduate Program in Biology

For graduate-level students, the department offers resources and experience learning from and working with world-renowned faculty involved in research on ecology, neurobiology, population biology, plant and animal physiology, biochemistry, immunology, cell and developmental biology, genetics, and molecular biology.

The M.S. degree program offers general or specialized study to individuals seeking biologically oriented course work, and to undergraduate science majors wishing to increase or update their science background or obtain advanced research experience.

The training for a Ph.D. in Biology is focused on learning skills required to be a successful research scientist and teacher, including how to ask important questions and then devise and carry out experiments to answer these questions. Students work closely with an established advisor and meet regularly with a committee of faculty members to ensure that they understand the importance of diverse perspectives on experimental questions and approaches. Students learn how to evaluate critically pertinent original literature in order to stay abreast of scientific progress in their areas of interest. They also learn how to make professional presentations, write manuscripts for publication, and become effective teachers.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in Biology and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in Biology. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of Biology and to interpret and present the results of such research.

Facilities

The offices, labs, and personnel of the Department of Biology are located in the Anne T. and Robert M. Bass Biology Research, Gilbert Biological Sciences, James H. Clark Center, ChEM-H and the Wu Tsai Neurosciences Institute, and Jerry Yang and Akiko Yamazaki Environment and Energy (Y2E2) buildings. Along with the Carnegie Institution of Washington all are on the main campus. Jasper Ridge Biological Preserve (JRBP) is located near Stanford University's campus in the eastern foothills of the Santa Cruz Mountains. Hopkins Marine Station is on Monterey Bay in Pacific Grove.

Jasper Ridge Biological Preserve encompasses geologic, topographic, and biotic diversity within its 1,189 acres and provides a natural laboratory for researchers from around the world, educational experiences for students and docent-led visitors, and refuge for native plants and animals. See the JRBP (http://jrbp.stanford.edu) web site.

Hopkins Marine Station, located 90 miles from the main University campus in Pacific Grove, was founded in 1892 as the first marine laboratory on the west coast of North America. For more information, including courses taught at Hopkins Marine Station with the subject code BIOHOPK, see the "Hopkins Marine Station" section of this bulletin.

The Robin Li and Melissa Ma Science Library (http://library.stanford.edu/libraries/science/about/), located in the Sapp Center for Science Teaching and Learning, supports research and teaching for the Department of Biology and other related disciplines. A specialized library is maintained at Hopkins Marine Station.

Biology Course Numbering System

The department uses the following course numbering system:

Number	Level
000-099	Introductory and Foundations
100-199	Undergraduate
200-299	Advanced Undergraduate, Coterminal and PhD
300+	PhD

Bachelor of Science in Biology

The undergraduate major in Biology can serve as a stepping-stone for a wide variety of career opportunities. For students planning to attend

medical, dental, or veterinary school, or graduate school in biological and applied sciences, the biology major provides a strong foundation in the basic life sciences. This foundation of knowledge, plus laboratory experience, also prepares students well for research and technical positions in universities, government, and industry.

While a major in Biology provides an excellent background for these technical careers, it can also serve as a valuable and satisfying focus of a liberal arts education for those not planning careers in science-related fields. An understanding of basic biological principles is of increasing importance in today's world. A knowledgeable and concerned citizenry is the best guarantee that these issues will be resolved most effectively. Finally, an understanding of the processes of life can heighten our perception and appreciation of the world around us, in terms of its beauty, variety, and uniqueness.

How to Declare a Major in Biology

Each undergraduate interested in the Biology major is required to select a department faculty advisor as part of the major declaration process.

Advising

Members of the Biology faculty are available for advising on such academic matters as choice of courses, research, suggested readings, and career plans. The student services office maintains a current list of faculty advisors, advising availability, and research interests.

The student services staff and BioBridge (https://biology.stanford.edu/academics/undergraduate-program/advising/biobridge-peer-advising/), the department's peer advising group, are prepared to answer questions on administrative matters, such as requirements for the major, approved out-of-department electives, transfer course evaluations, and petition procedures. This office also distributes the department's Bachelor of Science Handbook (https://biology.stanford.edu/academics/undergraduate-program/forms/), which delineates policies and requirements, as well as other department forms and informational handouts.

Degree Requirements

Candidates for the general Biology B.S. degree must complete the following requirements, which ranges from 88-102 total units. There is also an option to add honors to the major, regardless of whether a student wishes to complete the general major or a specific field of study. Honors requirements are explained in detail in the "Honors (https://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/biology/#honorstext)" tab. Requirements for specific fields of study are explained in the Fields of Study (p. 1088) section below.

Course Requirements

Students with a field of study should consult their advisor for courses in Foundations, Foundational Breadth and Electives.

		Units
Introductory		**4**
Complete one course from (see Departmental website for current Introductory Seminars and THINK options to substitute for BIO 60-series courses):		
BIO 60	Problem solving in infectious disease	
BIO 61	Science as a Creative Process	
BIO 62	Microbiology Experiments	
Foundational		
BIO 81	Introduction to Ecology	
or BIOHOPK 81	Introduction to Ecology	
or BIOHOPK 175N	Marine Science and Conservation in a Changing World	
BIO 82	Genetics	
BIO 83	Biochemistry & Molecular Biology	
BIO 84	Physiology	
BIO 85	Evolution	
BIO 86	Cell Biology	
Foundational Lab		
BIO 45	Introduction to Laboratory Research in Cell and Molecular Biology	
BIO 46	Introduction to Research in Ecology and Evolutionary Biology	
or BIO 47	Introduction to Research in Ecology and Evolutionary Biology	
or BIOHOPK 47	Introduction to Research in Ecology and Ecological Physiology	
or BIOHOPK 175N	Marine Science and Conservation in a Changing World	
Foundational Breadth		**33-47**
Chemistry		
(One course from this section may be taken credit/no credit)		
The following CHEM courses are required:		
CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	
or CHEM 31M	Chemical Principles: From Molecules to Solids	
CHEM 33	Structure and Reactivity of Organic Molecules	
CHEM 121	Understanding the Natural and Unnatural World through Chemistry	
Mathematics		
Select one of the following options:		5-10
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications (or beyond)	
CME 100	Vector Calculus for Engineers	
Physics		
Select one of the following Series:		
PHYSICS 20 Series		
PHYSICS 21	Mechanics, Fluids, and Heat	
PHYSICS 22	Mechanics, Fluids, and Heat Laboratory	
PHYSICS 23	Electricity, Magnetism, and Optics	
PHYSICS 24	Electricity, Magnetism, and Optics Laboratory	
PHYSICS 40 Series		
PHYSICS 41	Mechanics	
PHYSICS 43	Electricity and Magnetism	
PHYSICS 45	Light and Heat	
Statistics		
Select one of the following courses:		
BIO/STATS 141	Biostatistics [1]	
BIOHOPK 174H	Experimental Design and Probability [1]	
STATS 60	Introduction to Statistical Methods: Precalculus	
Electives		**23**
See addtional information for how to complete electives.		
Writing In the Major (WIM)		
Complete one course from:		
BIO 46	Introduction to Research in Ecology and Evolutionary Biology	

BIO 47	Introduction to Research in Ecology and Evolutionary Biology	
BIO 168	Explorations in Stem Cell Biology	
BIO 196A	Biology Senior Reflection	
BIO 199W	Senior Honors Thesis: How to Effectively Write About Scientific Research	
BIOHOPK 47	Introduction to Research in Ecology and Ecological Physiology	
BIOHOPK 175H	Marine Science and Conservation in a Changing World	
Total Units		65-84

[1] If taken to fulfill the foundational breadth requirement, these courses do not count toward the 23 elective unit requirement.

Fields of Study

In addition to the undergraduate general major, the department offers the following seven fields of study for students wishing to concentrate their studies in particular areas of biology. These fields of study are declared on Axess at the time of the major declaration; they appear on both the transcript and on the diploma.

Biochemistry and Biophysics

Candidates for the Biochemistry and Biophysics field of study must complete the following, as well WIM requirement above, for a total ranging from 90-102 units:

Foundational Courses

(must be taken for a letter grade):

		Units
All of the following:		16
BIO 82	Genetics	
BIO 83	Biochemistry & Molecular Biology	
BIO 84	Physiology	
BIO 86	Cell Biology	
Select 1 of the following:		4
BIO 81	Introduction to Ecology	
or BIOHOPK 81	Introduction to Ecology	
or BIOHOPK 175H	Marine Science and Conservation in a Changing World	
BIO 85	Evolution	

Required Foundational Breadth Courses

(One course from this section may be taken credit/no credit):

		Units
Chemistry		
The following CHEM courses are required:		
CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	5-10
or CHEM 31M	Chemical Principles: From Molecules to Solids	
CHEM 33	Structure and Reactivity of Organic Molecules	5
CHEM 121	Understanding the Natural and Unnatural World through Chemistry	5
Mathematics		
Select one of the following options:		5-10
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications (or beyond)	
CME 100	Vector Calculus for Engineers	
Physics		
PHYSICS 40 Series		12
PHYSICS 41	Mechanics	
PHYSICS 43	Electricity and Magnetism	
PHYSICS 45	Light and Heat	
Statistics		
Select one of the following courses:		3-5
BIO/STATS 141	Biostatistics [1]	
BIOHOPK 174H	Experimental Design and Probability [1]	
STATS 60	Introduction to Statistical Methods: Precalculus	
Total Units		35-47

[1] If taken to fulfill the foundational breadth requirement, these courses do not count toward the 23 elective unit requirement.

Electives

23 units required. Students must take the 3 required courses listed, as well as three courses in Biochemistry and Biophysics from the approved list. The remainder of the 23 units of electives may be any BIO or BIOHOPK course at the 100-level or above, or from the list of approved out-of-department electives. Up to 6 units of teaching and research are allowed. Only one course can be taken credit/no credit.

		Units
3 Required Courses:		
CHEM 141	The Chemical Principles of Life I	4
CHEM 143	The Chemical Principles of Life II	4
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	5
or CME 100	Vector Calculus for Engineers	
Select three of the following:		9-13
APPPHYS 236	Biology by the Numbers	
APPPHYS 294	Cellular Biophysics	
BIO 126	Introduction to Biophysics	
BIO 132	Advanced Imaging Lab in Biophysics	
BIO 152	Imaging: Biological Light Microscopy	
BIO 154	Molecular and Cellular Neurobiology	
BIO 214	Advanced Cell Biology	
BIOE 101	Systems Biology	
BIOE 103	Systems Physiology and Design	
BIOE 220	Introduction to Imaging and Image-based Human Anatomy	
BIOE 231	Protein Engineering	
BIOE 241	Biological Macromolecules	
BIOMEDIN 210	Modeling Biomedical Systems	
BIOPHYS 241	Biological Macromolecules	
BIOPHYS 242	Methods in Molecular Biophysics	
CHEM 183	Biochemistry II	
CHEM 184	Biological Chemistry Laboratory	
CHEM 185	Biophysical Chemistry	
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	
CSB 210	Cell Signaling	
CSB 220	Chemistry of Biological Processes	
EE 236A	Modern Optics	

MCP 256	How Cells Work: Energetics, Compartments, and Coupling in Cell Biology	
PHYSICS 105	Intermediate Physics Laboratory I: Analog Electronics	
STATS 191	Introduction to Applied Statistics	

Computational Biology

Candidates for the Computational Biology field of study must complete the following, as well as the WIM requirement above, for a total ranging from 90-102 units:

Required Foundational Breadth Courses

(One course from this section may be taken credit/no credit):

		Units
Chemistry		
The following CHEM courses are required:		
CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	5-10
or CHEM 31M	Chemical Principles: From Molecules to Solids	
CHEM 33	Structure and Reactivity of Organic Molecules	5
Mathematics		
CHEM 121	Understanding the Natural and Unnatural World through Chemistry	5
Select one of the following options:		5-10
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications (or beyond)	
CME 100	Vector Calculus for Engineers	
Physics		
Select one of the following Series:		10-12
PHYSICS 20 Series		
PHYSICS 21	Mechanics, Fluids, and Heat	
PHYSICS 22	Mechanics, Fluids, and Heat Laboratory	
PHYSICS 23	Electricity, Magnetism, and Optics	
PHYSICS 24	Electricity, Magnetism, and Optics Laboratory	
PHYSICS 40 Series		
PHYSICS 41	Mechanics	
PHYSICS 43	Electricity and Magnetism	
PHYSICS 45	Light and Heat	
Statistics		
The following course is required:		5
BIO/STATS 141	Biostatistics [1]	
Total Units		35-47

[1] If taken to fulfill the foundational breadth requirement, this course cannot count toward the 23 elective unit requirement.

Electives

23 units required. Students must take the 2 required courses listed, as well as three courses in Computational Biology from the approved list. The remainder of the 23 units of electives may be any BIO or BIOHOPK course at the 100-level or above, or from the list of approved out-of-department electives. Up to 6 units of teaching and research are allowed. Only one course can be taken credit/no credit.

		Units
2 Required Courses:		
CS 106A	Programming Methodology	3-5
or CS 106B	Programming Abstractions	
or CS 106X	Programming Abstractions	
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	5
or CME 100	Vector Calculus for Engineers	
Select three of the following:		9-13
APPPHYS 315	Methods in Computational Biology	
BIO 126	Introduction to Biophysics	
BIO 182	Modeling Cultural Evolution	
BIO 183	Theoretical Population Genetics	
BIO 268	Statistical and Machine Learning Methods for Genomics	
BIODS 215	Topics in Biomedical Data Science: Large-scale inference	
BIOE 101	Systems Biology	
BIOE 103	Systems Physiology and Design	
BIOE 212	Introduction to Biomedical Informatics Research Methodology	
BIOMEDIN 215	Data Science for Medicine	
BIOMEDIN 217	Translational Bioinformatics	
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	
CS 270	Modeling Biomedical Systems	
CS 271	Artificial Intelligence in Healthcare	
CS 272	Introduction to Biomedical Informatics Research Methodology	
CS 273A	The Human Genome Source Code	
CS 273B	Deep Learning in Genomics and Biomedicine	
CS 273C	Cloud Computing for Biology and Healthcare	
CS 274	Representations and Algorithms for Computational Molecular Biology	
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	
GENE 211	Genomics	
IMMUNOL 206	Introduction to Applied Computational Tools in Immunology	
IMMUNOL 207	Essential Methods in Computational and Systems Immunology	
STATS 215	Statistical Models in Biology	

Ecology and Evolution

Candidates for the Ecology and Evolution field of study must complete the following, as well as the WIM requirement above, for a total ranging from 88-102 units:

Foundational Courses

(must be taken for a letter grade):

		Units
All of the following:		12
BIO 81	Introduction to Ecology	
or BIOHOPK 81	Introduction to Ecology	
or BIOHOPK 175	Marine Science and Conservation in a Changing World	

BIO 82	Genetics	
BIO 85	Evolution	
Select 2 of the following:		8
BIO 83	Biochemistry & Molecular Biology	
BIO 84	Physiology	
BIO 86	Cell Biology	

Electives

23 units required. Students must take five courses in Ecology and Evolution from the approved list. The remainder of the 23 units of electives may be any BIO or BIOHOPK course at the 100-level or above, or from the list of approved out-of-department electives. Up to 6 units of teaching and research are allowed. Only one course can be taken credit/no credit.

		Units
Select 5 of the following:		15-23
BIO 105A	Ecology and Natural History of Jasper Ridge Biological Preserve	
BIO 105B	Ecology and Natural History of Jasper Ridge Biological Preserve	
BIO 113	Fundamentals of Molecular Evolution	
BIO 116	Ecology of the Hawaiian Islands	
BIO 117	Biology and Global Change	
BIO 121	ORNITHOLOGY	
BIO 129	Fundamentals and Frontiers in Plant Biology	
BIO 130	Ecosystems of California	
BIO 138	Ecosystem Services: Frontiers in the Science of Valuing Nature	
BIO 140	The Science of Extreme Life of the Sea	
BIO 144	Conservation Biology: A Latin American Perspective	
BIO 145	Ecology and Evolution of Animal Behavior	
BIO 147	Ecosystem Ecology and Biogeochemistry	
BIO 150	Human Behavioral Biology	
BIO 161	Organismal Biology Lab	
BIO 172	Ecological Dynamics: Theory and Applications	
BIO 174	Human Skeletal Anatomy	
BIO 176	The Developmental Basis of Animal Body Plan Evolution	
BIO 178	Microbiology Literature	
BIO 182	Modeling Cultural Evolution	
BIO 183	Theoretical Population Genetics	
BIO 221	ORNITHOLOGY	
BIO 227	Foundations of Community Ecology	
BIOHOPK 161H	Invertebrate Zoology	
BIOHOPK 163H	Oceanic Biology	
BIOHOPK 173H	Marine Conservation Biology	
BIOHOPK 174H	Experimental Design and Probability	
BIOHOPK 182H	Stanford at Sea	
BIOHOPK 187H	Sensory Ecology	
BIOHOPK 268H	Disease Ecology: from parasites evolution to the socio-economic impacts of pathogens on nations	
EARTHSYS 128	Evolution of Terrestrial Ecosystems	
EARTHSYS 142	Remote Sensing of Land	
EARTHSYS 144	Fundamentals of Geographic Information Science (GIS)	
EARTHSYS 158	Geomicrobiology	
OSPAUSTL 10	Coral Reef Ecosystems	

1 Only 6 units can be counted from BIOHOPK 182H.

2 OSPAUSTL 10, 28, 32 count as 2 units each for a total of 6 units toward electives.

Marine Biology

Candidates for the Marine Biology field of study must complete the following, as well as the WIM requirement above, for a total ranging from 88-102 units:

Foundational Courses

(must be taken for a letter grade):

		Units
All of the following:		12
BIO 81	Introduction to Ecology	
or BIOHOPK 81	Introduction to Ecology	
or BIOHOPK 175	Marine Science and Conservation in a Changing World	
BIO 82	Genetics	
BIO 85	Evolution	
Select 2 of the following:		8
BIO 83	Biochemistry & Molecular Biology	
BIO 84	Physiology	
BIO 86	Cell Biology	

Electives

23 units required. Students must take five courses in Marine Biology from the approved list. The remainder of the 23 units of electives may be any BIO or BIOHOPK course at the 100-level or above, or from the list of approved out-of-department electives. Up to 6 units of teaching and research are allowed. Only one course can be taken credit/no credit.

		Units
Select 5 of the following:		15-23
BIO 116	Ecology of the Hawaiian Islands	
BIO 136	Macroevolution	
BIO 153	Cellular Neuroscience: Cell Signaling and Behavior	
BIOHOPK 150H	Ecological Mechanics	
BIOHOPK 173H	Marine Conservation Biology	
BIOHOPK 177H	Dynamics and Management of Marine Populations	
BIOHOPK 179H	Physiological Ecology of Marine Megafauna	
BIOHOPK 182H	Stanford at Sea	
BIOHOPK 185H	Ecology and Conservation of Kelp Forest Communities	
BIOHOPK 187H	Sensory Ecology	
EARTHSYS 117	Earth Sciences of the Hawaiian Islands	
EARTHSYS 118	Heritage, Environment, and Sovereignty in Hawaii	
OSPAUSTL 10	Coral Reef Ecosystems	

1 Only 6 units can be counted from BIOHOPK 182H.

2 OSPAUSTL 10, 28, 32 count as 2 units each for a total of 6 units toward electives. Together, these courses count as two courses toward the Marine Biology requirement.

Microbes and Immunity

Candidates for the Microbes and Immunity field of study must complete the following, as well as the WIM requirement above, for a total ranging from 88-102 units:

Electives

23 units required. Students must take the 3 required courses listed, as well as two courses in Microbiology and Immunology from the approved list. The remainder of the 23 units of electives may be any BIO or BIOHOPK course at the 100-level or above, or from the list of approved out-of-department electives. Up to 6 units of teaching and research are allowed. Only one course can be taken credit/no credit.

		Units
3 Required Courses:		
BIO 178	Microbiology Literature (offered in 2019-20)	3
or		
MI 185		
CHEM 141	The Chemical Principles of Life I	4
CHEM 143	The Chemical Principles of Life II	4
Select two of the following:		4-8
BIO 119	Evolution of Marine Ecosystems	
BIO 120	Prokaryotic Biology - A Quantitative Approach	
BIO 132	Advanced Imaging Lab in Biophysics	
BIO 177	Plant Microbe Interaction	
BIO 178	Microbiology Literature	
BIO 180	Microbial Physiology	
BIO 230	Molecular and Cellular Immunology	
BIOHOPK 274	Hopkins Microbiology Course	
CEE 177	Aquatic Chemistry and Biology	
CEE 274A	Environmental Microbiology I	
CEE 274B	Microbial Bioenergy Systems	
CEE 274D	Pathogens and Disinfection	
CEE 274P	Environmental Health Microbiology Lab	
EARTHSYS 158	Geomicrobiology	
IMMUNOL 201	Advanced Immunology I	
IMMUNOL 202	Advanced Immunology II	
IMMUNOL 206	Introduction to Applied Computational Tools in Immunology	
IMMUNOL 209	Translational Immunology	
IMMUNOL 275	Tumor Immunology	
IMMUNOL 286	Neuroimmunity	
MI 185		
MI 210	Advanced Pathogenesis of Bacteria, Viruses, and Eukaryotic Parasites	

Molecular, Cellular, and Developmental Biology

Candidates for the Molecular, Cellular, and Developmental Biology field of study must complete the following, as well as the WIM requirement above, for a total ranging from 88-102 units:

Foundational Courses

(must be taken for a letter grade):

		Units
All of the following:		16
BIO 82	Genetics	
BIO 83	Biochemistry & Molecular Biology	
BIO 84	Physiology	
BIO 86	Cell Biology	
Select 1 of the following:		4
BIO 81	Introduction to Ecology	
or BIOHOPK 81	Introduction to Ecology	
or BIOHOPK 175N	Marine Science and Conservation in a Changing World	
BIO 85	Evolution	

Electives

23 units required. Students must take the 3 required courses listed, as well as two courses in Molecular, Cellular, and Developmental Biology from the approved list. The remainder of the 23 units of electives may be any BIO or BIOHOPK course at the 100-level or above, or from the list of approved out-of-department electives. Up to 6 units of teaching and research are allowed. Only one course can be taken credit/no credit.

		Units
3 Required Courses:		
BIO 158	Developmental Neurobiology	4
or BIO 160	Developmental Biology	
CHEM 141	The Chemical Principles of Life I	4
CHEM 143	The Chemical Principles of Life II	4
Select two of the following:		5-10
BIO 110	The Chromatin-Regulated Genome	
BIO 124	Topics in Cancer Biology	
BIO 154	Molecular and Cellular Neurobiology	
BIO 158	Developmental Neurobiology	
BIO 160	Developmental Biology	
BIO 168	Explorations in Stem Cell Biology	
BIO 171	Principles of Cell Cycle Control	
BIO 177	Plant Microbe Interaction	
BIOE 101	Systems Biology	
BIOE 283	Mechanotransduction in Cells and Tissues	
BIOHOPK 155H	Developmental Biology and Evolution	
BIOPHYS 242	Methods in Molecular Biophysics	
CBIO 243	Principles of Cancer Systems Biology	
CS 273A	The Human Genome Source Code	
CS 273B	Deep Learning in Genomics and Biomedicine	
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	
CSB 210	Cell Signaling	
DBIO 210	Developmental Biology	
GENE 211	Genomics	
GENE 235	C. Elegans Genetics	
NBIO 258	Information and Signaling Mechanisms in Neurons and Circuits	
STEMREM 201A	Stem Cells and Human Development: From Embryo to Cell Lineage Determination	
STEMREM 202	Stem Cells and Translational Medicine	

Neurobiology

Candidates for the Neurobiology field of study must complete the following, as well as the WIM requirement above, for a total ranging from 88-102 units:

Foundational Courses

(must be taken for a letter grade):

		Units
All of the following:		16
BIO 82	Genetics	
BIO 83	Biochemistry & Molecular Biology	
BIO 84	Physiology	
BIO 86	Cell Biology	
Select 1 of the following:		4
BIO 81	Introduction to Ecology	
or BIOHOPK 81	Introduction to Ecology	
or BIOHOPK 175H	Marine Science and Conservation in a Changing World	
BIO 85	Evolution	

Electives

23 units required. Students must take the 5 required courses listed. The remainder of the 23 units of electives may be any BIO or BIOHOPK course at the 100-level or above, or from the list of approved out-of-department electives. Up to 6 units of teaching and research are allowed. Only one course can be taken credit/no credit.

		Units
5 Required Courses:		
BIO 149	The Neurobiology of Sleep	4-6
or BIO 150	Human Behavioral Biology	
or NBIO 206	The Nervous System	
BIO 154	Molecular and Cellular Neurobiology	4
BIO 158	Developmental Neurobiology	4
CHEM 141	The Chemical Principles of Life I	4
CHEM 143	The Chemical Principles of Life II	4

Additional Information

Electives

23 units required, distributed as follows:

- Biology (BIO) or Hopkins Marine Station (BIOHOPK) courses numbered 100 or above.
- Approved out-of-department electives (https://drive.google.com/file/d/11dF9EHqjeWCweNzA6IkfHdtm4LNHl6o_/view/?usp=sharing) (list also available in the student services office).
- One course applied toward the elective unit requirement may be taken CR/NC.
- BIO 168, BIO 196A, and BIO 199W can also count toward the elective requirement.
- No more than 6 units from any combination of these courses may be applied toward the total number of elective units:

		Units
BIO 196A	Biology Senior Reflection	3
BIO 196B	Biology Senior Reflection	3
BIO 196C	Biology Senior Reflection	3
BIO 198	Directed Reading in Biology	1-15
BIO 198X	Out-of-Department Directed Reading	1-15
BIO 199	Advanced Research Laboratory in Experimental Biology	1-15
BIO 199W	Senior Honors Thesis: How to Effectively Write About Scientific Research	3
BIO 199X	Out-of-Department Advanced Research Laboratory in Experimental Biology	1-15
BIO 290	Teaching Practicum in Biology	1-5
BIO 291	Development and Teaching of Core Experimental Laboratories	1-2
BIO 296	Teaching and Learning in Biology	1
BIOHOPK 198H	Directed Instruction or Reading	1-15
BIOHOPK 199H	Undergraduate Research	1-15
BIOHOPK 290H	Teaching Practicum in Biology	1-15

Typical Schedule for a Four-Year Program

First Year	Units		
	Autumn	Winter	Spring
Chemical Principles I (CHEM 31A)		5	
Calculus (MATH 19)		3	
Freshman requirements, seminars, or WAYS		8	
Chemical Principles II (CHEM 31B)			5
Calculus (MATH 20)			3
Problem solving in infectious disease (BIO 60)			4
Freshman requirements, seminars, or WAYS			4
Structure and Reactivity of Organic Molecules (CHEM 33)			5
Calculus (MATH 21)			4
Introduction to Statistical Methods: Precalculus (STATS 60)			5
Freshman requirements, seminars, or WAYS			4
Year Total:		16	16 18

Second Year	Units		
	Autumn	Winter	Spring
Genetics (BIO 82)		4	
WAYS, PWR		8	
Understanding the Natural and Unnatural World through Chemistry (CHEM 121)		5	
Biochemistry & Molecular Biology (BIO 83)			4
Physiology (BIO 84)			4
Introduction to Laboratory Research in Cell and Molecular Biology (BIO 45)			4
WAYS			4
Cell Biology (BIO 86)			4
Introduction to Research in Ecology and Evolutionary Biology (BIO 47)			4
WAYS			3
Biology Electives			3
Year Total:		17	16 14

Third Year	Units		
	Autumn	Winter	Spring
Abroad			
Evolution (BIO 85)			4
Electives			4
WAYS			4
Electives			7
Year Total:			12 7

Fourth Year	Units		
	Autumn	Winter	Spring
Electives		3	
Mechanics, Fluids, and Heat (PHYSICS 21)		4	
Mechanics, Fluids, and Heat Laboratory (PHYSICS 22)		1	
Electives			3
Electricity, Magnetism, and Optics (PHYSICS 23)			4
Electricity, Magnetism, and Optics Laboratory (PHYSICS 24)			1
Electives			3
Year Total:		8	8 3

Total Units in Sequence: 135

[1] This schedule varies slightly if the student takes CHEM 31M in place of CHEM 31A & CHEM 31B.

[2] The schedule varies slightly depending on which 5 Bio Foundations courses the student chooses to take, and if any of them will be taken at Hopkins Marine Station.

Honors

To graduate with departmental honors, a student must conduct an independent research project typically over the course of at least one year; projects are started no later than Autumn or Winter Quarter of the junior year. Research must be done in a Biology Department lab or a lab in another department for which the student has obtained prior approval. Administrative steps include:

1. Submit an approved honors proposal to the department's student services office two quarters prior to graduation. For instance, students graduating Spring Quarter must submit petitions no later than Autumn Quarter of the same academic year.
2. Complete at least 10 units of an approved research project in from the same lab. Students conducting research in a lab outside of the department of Biology must submit an Out of Department Research Petition (https://biology.stanford.edu/academics/undergraduate-research/research/) either before they start their research, or if research was started prior to declaring the Biology major, as soon as their major declaration is approved. Only research units from BIO or BIOHOPK are counted toward the 10 unit requirement:

		Units
BIO 199	Advanced Research Laboratory in Experimental Biology	1-15
BIO 199X	Out-of-Department Advanced Research Laboratory in Experimental Biology	1-15
BIOHOPK 199H	Undergraduate Research	1-15

3. Obtain at least a 3.0 (B) grade point average (GPA) in all Biology major requirements taken at Stanford (foundational, breadth, and elective courses). Grades earned from these teaching and research are not computed into this GPA:

		Units
BIO 198	Directed Reading in Biology	1-15
BIO 198X	Out-of-Department Directed Reading	1-15
BIO 199	Advanced Research Laboratory in Experimental Biology	1-15
BIO 199X	Out-of-Department Advanced Research Laboratory in Experimental Biology	1-15
BIO 290	Teaching Practicum in Biology	1-5
BIO 291	Development and Teaching of Core Experimental Laboratories	1-2
BIO 296	Teaching and Learning in Biology	1
BIOHOPK 199H	Undergraduate Research	1-15
BIOHOPK 290H	Teaching Practicum in Biology	1-15

4. If graduating in Spring, participate in the annual Achauer Undergraduate Biology Honors Symposium by presenting a poster or giving an oral presentation. The symposium is typically held at the end of May. Students graduating in Autumn, Winter, or Summer Quarter must produce a poster in the quarter in which they graduate to be displayed at the symposium, however their attendance is optional.
5. Complete and, by the published deadline within the quarter graduation is expected, submit online an honors thesis approved by at least two readers. At least one reader must be from the faculty of the Department of Biology, and both readers must be Academic Council members. The title page of the honors thesis must include student name, thesis title, name and department of research sponsor, and name and department of second reader. Students must submit this page with original ink signatures to the student services office by the published deadline for the quarter in which graduation is expected.

Further information on the honors program is available on the Honors Program and Undergraduate Research in Biology (https://biology.stanford.edu/academics/undergraduate-program/honors-program/) web site.

Fields of Study

In addition to the undergraduate general major, the department offers the following seven fields of study for students wishing to concentrate their studies in particular areas of biology:

1. Biochemistry and Biophysics
2. Computational Biology
3. Ecology and Evolution
4. Marine Biology
5. Microbes and Immunity
6. Molecular, Cellular, and Developmental Biology
7. Neurobiology

These fields of study are declared on Axess at the time of the major declaration; they appear on both the transcript and on the diploma.

Writing in the Major for the B.S. Degree in Biology with a Field of Study

Students must take one of the following courses to fulfill the Writing in the Major requirement in Biology:

		Units
BIO 46	Introduction to Research in Ecology and Evolutionary Biology	
BIO 47	Introduction to Research in Ecology and Evolutionary Biology	
BIO 168	Explorations in Stem Cell Biology	
BIO 196A	Biology Senior Reflection	
BIO 199W	Senior Honors Thesis: How to Effectively Write About Scientific Research	
BIOHOPK 47	Introduction to Research in Ecology and Ecological Physiology	
BIOHOPK 175H	Marine Science and Conservation in a Changing World	

Note: BIO 168, BIO 196A,and BIO 199W can also count toward the elective requirement.

Biochemistry and Biophysics

Candidates for the Biochemistry and Biophysics field of study must complete the following, as well WIM requirement above, for a total ranging from 90-102 units:

Introductory Course

(must be taken for a letter grade; see Departmental (https://biology.stanford.edu/academics/undergraduate-program/biology-undergraduate-major/)website for current Introductory Seminars and THINK options to substitute for BIO 60-series courses):

		Units
Select one of the following:		4
BIO 60	Problem solving in infectious disease	

BIO 61	Science as a Creative Process
BIO 62	Microbiology Experiments

Foundational Courses

(must be taken for a letter grade):

		Units
All of the following:		16
BIO 82	Genetics	
BIO 83	Biochemistry & Molecular Biology	
BIO 84	Physiology	
BIO 86	Cell Biology	
Select 1 of the following:		4
BIO 81	Introduction to Ecology	
or BIOHOPK 81	Introduction to Ecology	
or BIOHOPK 175H	Marine Science and Conservation in a Changing World	
BIO 85	Evolution	

Foundational Lab Courses

		Units
Two Courses Required:		
BIO 45	Introduction to Laboratory Research in Cell and Molecular Biology	4
BIO 46	Introduction to Research in Ecology and Evolutionary Biology	4-5
or BIO 47	Introduction to Research in Ecology and Evolutionary Biology	
or BIOHOPK 47	Introduction to Research in Ecology and Ecological Physiology	
or BIOHOPK 175H	Marine Science and Conservation in a Changing World	

Required Foundational Breadth Courses

(One course from this section may be taken credit/no credit):

		Units
Chemistry		
The following CHEM courses are required:		
CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	5-10
or CHEM 31M	Chemical Principles: From Molecules to Solids	
CHEM 33	Structure and Reactivity of Organic Molecules	5
CHEM 121	Understanding the Natural and Unnatural World through Chemistry	5
Mathematics		
Select one of the following options:		5-10
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications (or beyond)	
CME 100	Vector Calculus for Engineers	
Physics		
PHYSICS 40 Series		12
PHYSICS 41	Mechanics	
PHYSICS 43	Electricity and Magnetism	
PHYSICS 45	Light and Heat	
Statistics		
Select one of the following courses:		3-5
BIO/STATS 141	Biostatistics [1]	
BIOHOPK 174H	Experimental Design and Probability [1]	
STATS 60	Introduction to Statistical Methods: Precalculus	
Total Units		35-47

[1] If taken to fulfill the foundational breadth requirement, these courses do not count toward the 23 elective unit requirement.

Electives

23 units required. Students must take the 3 required courses listed, as well as three courses in Biochemistry and Biophysics from the approved list. The remainder of the 23 units of electives may be any BIO or BIOHOPK course at the 100-level or above, or from the list of approved out-of-department electives. Up to 6 units of teaching and research are allowed. Only one course can be taken credit/no credit.

		Units
3 Required Courses:		
CHEM 141	The Chemical Principles of Life I	4
CHEM 143	The Chemical Principles of Life II	4
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	5
or CME 100	Vector Calculus for Engineers	
Select three of the following:		9-13
APPPHYS 236	Biology by the Numbers	
APPPHYS 294	Cellular Biophysics	
BIO 126	Introduction to Biophysics	
BIO 132	Advanced Imaging Lab in Biophysics	
BIO 152	Imaging: Biological Light Microscopy	
BIO 154	Molecular and Cellular Neurobiology	
BIO 214	Advanced Cell Biology	
BIOE 101	Systems Biology	
BIOE 103	Systems Physiology and Design	
BIOE 220	Introduction to Imaging and Image-based Human Anatomy	
BIOE 231	Protein Engineering	
BIOE 241	Biological Macromolecules	
BIOMEDIN 210	Modeling Biomedical Systems	
BIOPHYS 241	Biological Macromolecules	
BIOPHYS 242	Methods in Molecular Biophysics	
CHEM 183	Biochemistry II	
CHEM 184	Biological Chemistry Laboratory	
CHEM 185	Biophysical Chemistry	
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	
CSB 210	Cell Signaling	
CSB 220	Chemistry of Biological Processes	
EE 236A	Modern Optics	
MCP 256	How Cells Work: Energetics, Compartments, and Coupling in Cell Biology	
PHYSICS 105	Intermediate Physics Laboratory I: Analog Electronics	
STATS 191	Introduction to Applied Statistics	

Computational Biology

Candidates for the Computational Biology field of study must complete the following, as well as the WIM requirement above, for a total ranging from 90-102 units:

Introductory Course

(must be taken for a letter grade; see Departmental (https://biology.stanford.edu/academics/undergraduate-program/biology-undergraduate-major/)website for current Introductory Seminars and THINK options to substitute for BIO 60-series courses):

		Units
Select one of the following:		4
BIO 60	Problem solving in infectious disease	
BIO 61	Science as a Creative Process	
BIO 62	Microbiology Experiments	

Foundational Courses

(must be taken for a letter grade):

		Units
Select 5 of the following:		20
BIO 81	Introduction to Ecology	
or BIOHOPK 81	Introduction to Ecology	
or BIOHOPK 175	Marine Science and Conservation in a Changing World	
BIO 82	Genetics	
BIO 83	Biochemistry & Molecular Biology	
BIO 84	Physiology	
BIO 85	Evolution	
BIO 86	Cell Biology	

Foundational Lab Courses

		Units
Two Courses Required:		
BIO 45	Introduction to Laboratory Research in Cell and Molecular Biology	4
BIO 46	Introduction to Research in Ecology and Evolutionary Biology	4-5
or BIO 47	Introduction to Research in Ecology and Evolutionary Biology	
or BIOHOPK 47	Introduction to Research in Ecology and Ecological Physiology	
or BIOHOPK 175H	Marine Science and Conservation in a Changing World	

Required Foundational Breadth Courses

(One course from this section may be taken credit/no credit):

		Units
Chemistry		
The following CHEM courses are required:		
CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	5-10
or CHEM 31M	Chemical Principles: From Molecules to Solids	
CHEM 33	Structure and Reactivity of Organic Molecules	5
Mathematics		
CHEM 121	Understanding the Natural and Unnatural World through Chemistry	5
Select one of the following options:		5-10
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications (or beyond)	
CME 100	Vector Calculus for Engineers	
Physics		
Select one of the following Series:		10-12
PHYSICS 20 Series		
PHYSICS 21	Mechanics, Fluids, and Heat	
PHYSICS 22	Mechanics, Fluids, and Heat Laboratory	
PHYSICS 23	Electricity, Magnetism, and Optics	
PHYSICS 24	Electricity, Magnetism, and Optics Laboratory	
PHYSICS 40 Series		
PHYSICS 41	Mechanics	
PHYSICS 43	Electricity and Magnetism	
PHYSICS 45	Light and Heat	
Statistics		
The following course is required:		5
BIO/STATS 141	Biostatistics [1]	
Total Units		35-47

[1] If taken to fulfill the foundational breadth requirement, this course cannot count toward the 23 elective unit requirement.

Electives

23 units required. Students must take the 2 required courses listed, as well as three courses in Computational Biology from the approved list. The remainder of the 23 units of electives may be any BIO or BIOHOPK course at the 100-level or above, or from the list of approved out-of-department electives. Up to 6 units of teaching and research are allowed. Only one course can be taken credit/no credit.

		Units
2 Required Courses:		
CS 106A	Programming Methodology	3-5
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	5
or CME 100	Vector Calculus for Engineers	
Select three of the following:		9-13
APPPHYS 315	Methods in Computational Biology	
BIO 126	Introduction to Biophysics	
BIO 182	Modeling Cultural Evolution	
BIO 183	Theoretical Population Genetics	
BIO 268	Statistical and Machine Learning Methods for Genomics	
BIODS 215	Topics in Biomedical Data Science: Large-scale inference	
BIOE 101	Systems Biology	
BIOE 103	Systems Physiology and Design	
BIOE 212	Introduction to Biomedical Informatics Research Methodology	
BIOMEDIN 215	Data Science for Medicine	
BIOMEDIN 217	Translational Bioinformatics	
CS 235	Computational Methods for Biomedical Image Analysis and Interpretation	
CS 270	Modeling Biomedical Systems	
CS 271	Artificial Intelligence in Healthcare	

CS 272	Introduction to Biomedical Informatics Research Methodology
CS 273A	The Human Genome Source Code
CS 273B	Deep Learning in Genomics and Biomedicine
CS 273C	Cloud Computing for Biology and Healthcare
CS 274	Representations and Algorithms for Computational Molecular Biology
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells
GENE 211	Genomics
IMMUNOL 206	Introduction to Applied Computational Tools in Immunology
IMMUNOL 207	Essential Methods in Computational and Systems Immunology
STATS 215	Statistical Models in Biology

Ecology and Evolution

Candidates for the Ecology and Evolution field of study must complete the following, as well as the WIM requirement above, for a total ranging from 88-102 units:

Introductory Course

(must be taken for a letter grade; see Departmental (https://biology.stanford.edu/academics/undergraduate-program/biology-undergraduate-major/)website for current Introductory Seminars and THINK options to substitute for BIO 60-series courses):

		Units
Select one of the following:		4
BIO 60	Problem solving in infectious disease	
BIO 61	Science as a Creative Process	
BIO 62	Microbiology Experiments	

Foundational Courses

(must be taken for a letter grade):

		Units
All of the following:		12
BIO 81	Introduction to Ecology	
or BIOHOPK 81	Introduction to Ecology	
or BIOHOPK 175	Marine Science and Conservation in a Changing World	
BIO 82	Genetics	
BIO 85	Evolution	
Select 2 of the following:		8
BIO 83	Biochemistry & Molecular Biology	
BIO 84	Physiology	
BIO 86	Cell Biology	

Foundational Lab Courses

		Units
Two Courses Required:		
BIO 45	Introduction to Laboratory Research in Cell and Molecular Biology	4
BIO 46	Introduction to Research in Ecology and Evolutionary Biology	4-5
or BIO 47	Introduction to Research in Ecology and Evolutionary Biology	
or BIOHOPK 47	Introduction to Research in Ecology and Ecological Physiology	
or BIOHOPK 175H	Marine Science and Conservation in a Changing World	

Required Foundational Breadth Courses

(One course from this section may be taken credit/no credit):

		Units
Chemistry		
The following CHEM courses are required:		
CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	5-10
or CHEM 31M	Chemical Principles: From Molecules to Solids	
CHEM 33	Structure and Reactivity of Organic Molecules	5
CHEM 121	Understanding the Natural and Unnatural World through Chemistry	5
Mathematics		
Select one of the following options:		5-10
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications (or beyond)	
CME 100	Vector Calculus for Engineers	
Physics		
Select one of the following Series:		10-12
PHYSICS 20 Series		
PHYSICS 21	Mechanics, Fluids, and Heat	
PHYSICS 22	Mechanics, Fluids, and Heat Laboratory	
PHYSICS 23	Electricity, Magnetism, and Optics	
PHYSICS 24	Electricity, Magnetism, and Optics Laboratory	
PHYSICS 40 Series		
PHYSICS 41	Mechanics	
PHYSICS 43	Electricity and Magnetism	
PHYSICS 45	Light and Heat	
Statistics		
Select one of the following courses:		3-5
BIO/STATS 141	Biostatistics [1]	
BIOHOPK 174H	Experimental Design and Probability [1]	
STATS 60	Introduction to Statistical Methods: Precalculus	
Total Units		33-47

[1] If taken to fulfill the foundational breadth requirement, these courses do not count toward the 23 elective unit requirement.

Electives

23 units required. Students must take five courses in Ecology and Evolution from the approved list. The remainder of the 23 units of electives may be any BIO or BIOHOPK course at the 100-level or above, or from the list of approved out-of-department electives. Up to 6 units of teaching and research are allowed. Only one course can be taken credit/no credit.

		Units
Select 5 of the following:		15-23
BIO 105A	Ecology and Natural History of Jasper Ridge Biological Preserve	

BIO 105B	Ecology and Natural History of Jasper Ridge Biological Preserve
BIO 113	Fundamentals of Molecular Evolution
BIO 116	Ecology of the Hawaiian Islands
BIO 117	Biology and Global Change
BIO 121	ORNITHOLOGY
BIO 129	Fundamentals and Frontiers in Plant Biology
BIO 130	Ecosystems of California
BIO 138	Ecosystem Services: Frontiers in the Science of Valuing Nature
BIO 140	The Science of Extreme Life of the Sea
BIO 144	Conservation Biology: A Latin American Perspective
BIO 145	Ecology and Evolution of Animal Behavior
BIO 147	Ecosystem Ecology and Biogeochemistry
BIO 150	Human Behavioral Biology
BIO 161	Organismal Biology Lab
BIO 172	Ecological Dynamics: Theory and Applications
BIO 174	Human Skeletal Anatomy
BIO 176	The Developmental Basis of Animal Body Plan Evolution
BIO 178	Microbiology Literature
BIO 182	Modeling Cultural Evolution
BIO 183	Theoretical Population Genetics
BIO 221	ORNITHOLOGY
BIO 227	Foundations of Community Ecology
BIOHOPK 161H	Invertebrate Zoology
BIOHOPK 163H	Oceanic Biology
BIOHOPK 173H	Marine Conservation Biology
BIOHOPK 174H	Experimental Design and Probability
BIOHOPK 182H	Stanford at Sea
BIOHOPK 187H	Sensory Ecology
BIOHOPK 268H	Disease Ecology: from parasites evolution to the socio-economic impacts of pathogens on nations
EARTHSYS 128	Evolution of Terrestrial Ecosystems
EARTHSYS 142	Remote Sensing of Land
EARTHSYS 144	Fundamentals of Geographic Information Science (GIS)
EARTHSYS 158	Geomicrobiology
OSPAUSTL 10	Coral Reef Ecosystems

[1] Only 6 units can be counted from BIOHOPK 182H.

[2] OSPAUSTL 10, 28, 32 count as 2 units each for a total of 6 units toward electives.

Marine Biology

Candidates for the Marine Biology field of study must complete the following, as well as the WIM requirement above, for a total ranging from 88-102 units:

Introductory Course

(must be taken for a letter grade; see Departmental (https://biology.stanford.edu/academics/undergraduate-program/biology-undergraduate-major/)website for current Introductory Seminars and THINK options to substitute for BIO 60-series courses):

		Units
Select one of the following:		4
BIO 60	Problem solving in infectious disease	
BIO 61	Science as a Creative Process	
BIO 62	Microbiology Experiments	

Foundational Courses

(must be taken for a letter grade):

		Units
All of the following:		12
BIO 81	Introduction to Ecology	
or BIOHOPK 81	Introduction to Ecology	
or BIOHOPK 175	Marine Science and Conservation in a Changing World	
BIO 82	Genetics	
BIO 85	Evolution	
Select 2 of the following:		8
BIO 83	Biochemistry & Molecular Biology	
BIO 84	Physiology	
BIO 86	Cell Biology	

Foundational Lab Courses

		Units
Two Courses Required:		
BIO 45	Introduction to Laboratory Research in Cell and Molecular Biology	4
BIO 46	Introduction to Research in Ecology and Evolutionary Biology	4-5
or BIO 47	Introduction to Research in Ecology and Evolutionary Biology	
or BIOHOPK 47	Introduction to Research in Ecology and Ecological Physiology	
or BIOHOPK 175H	Marine Science and Conservation in a Changing World	

Required Foundational Breadth Courses

(One course from this section may be taken credit/no credit):

		Units
Chemistry		
The following CHEM courses are required:		
CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	5-10
or CHEM 31M	Chemical Principles: From Molecules to Solids	
CHEM 33	Structure and Reactivity of Organic Molecules	5
CHEM 121	Understanding the Natural and Unnatural World through Chemistry	5
Mathematics		
Select one of the following options:		5-10
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications (or beyond)	
CME 100	Vector Calculus for Engineers	
Physics		
Select one of the following Series:		10-12
PHYSICS 20 Series		
PHYSICS 21	Mechanics, Fluids, and Heat	

PHYSICS 22	Mechanics, Fluids, and Heat Laboratory	
PHYSICS 23	Electricity, Magnetism, and Optics	
PHYSICS 24	Electricity, Magnetism, and Optics Laboratory	
PHYSICS 40 Series		
PHYSICS 41	Mechanics	
PHYSICS 43	Electricity and Magnetism	
PHYSICS 45	Light and Heat	
Statistics		
Select one of the following courses:		3-5
BIO/STATS 141	Biostatistics [1]	
BIOHOPK 174H	Experimental Design and Probability [1]	
STATS 60	Introduction to Statistical Methods: Precalculus	
Total Units		33-47

[1] If taken to fulfill the foundational breadth requirement, these courses do not count toward the 23 elective unit requirement.

Electives

23 units required. Students must take five courses in Marine Biology from the approved list. The remainder of the 23 units of electives may be any BIO or BIOHOPK course at the 100-level or above, or from the list of approved out-of-department electives. Up to 6 units of teaching and research are allowed. Only one course can be taken credit/no credit.

		Units
Select 5 of the following:		15-23
BIO 116	Ecology of the Hawaiian Islands	
BIO 136	Macroevolution	
BIO 153	Cellular Neuroscience: Cell Signaling and Behavior	
BIOHOPK 150H	Ecological Mechanics	
BIOHOPK 173H	Marine Conservation Biology	
BIOHOPK 177H	Dynamics and Management of Marine Populations	
BIOHOPK 179H	Physiological Ecology of Marine Megafauna	
BIOHOPK 182H	Stanford at Sea	
BIOHOPK 185H	Ecology and Conservation of Kelp Forest Communities	
BIOHOPK 187H	Sensory Ecology	
EARTHSYS 117	Earth Sciences of the Hawaiian Islands	
EARTHSYS 118	Heritage, Environment, and Sovereignty in Hawaii	
OSPAUSTL 10	Coral Reef Ecosystems	

[1] Only 6 units can be counted from BIOHOPK 182H.

[2] OSPAUSTL 10, 28, 32 count as 2 units each for a total of 6 units toward electives. Together, these courses count as two courses toward the Marine Biology requirement.

Microbes and Immunity

Candidates for the Microbes and Immunity field of study must complete the following, as well as the WIM requirement above, for a total ranging from 88-102 units:

Introductory Course

(must be taken for a letter grade; see Departmental (https://biology.stanford.edu/academics/undergraduate-program/biology-undergraduate-major/)website for current Introductory Seminars and THINK options to substitute for BIO 60-series courses):

		Units
Select one of the following:		4
BIO 60	Problem solving in infectious disease	
BIO 61	Science as a Creative Process	
BIO 62	Microbiology Experiments	

Foundational Courses

(must be taken for a letter grade):

		Units
Select 5 of the following:		20
BIO 81	Introduction to Ecology	
or BIOHOPK 81	Introduction to Ecology	
or BIOHOPK 175	Marine Science and Conservation in a Changing World	
BIO 82	Genetics	
BIO 83	Biochemistry & Molecular Biology	
BIO 84	Physiology	
or BIOHOPK 84	Physiology	
BIO 85	Evolution	
or BIOHOPK 85	Evolution	
BIO 86	Cell Biology	

Foundational Lab Courses

		Units
Two Courses Required:		
BIO 45	Introduction to Laboratory Research in Cell and Molecular Biology	4
BIO 46	Introduction to Research in Ecology and Evolutionary Biology	4-5
or BIO 47	Introduction to Research in Ecology and Evolutionary Biology	
or BIOHOPK 47	Introduction to Research in Ecology and Ecological Physiology	
or BIOHOPK 175H	Marine Science and Conservation in a Changing World	

Required Foundational Breadth Courses

(One course from this section may be taken credit/no credit):

		Units
Chemistry		
The following CHEM courses are required:		
CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	5-10
or CHEM 31M	Chemical Principles: From Molecules to Solids	
CHEM 33	Structure and Reactivity of Organic Molecules	5
CHEM 121	Understanding the Natural and Unnatural World through Chemistry	5
Mathematics		
Select one of the following options:		5-10
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications (or beyond)	
CME 100	Vector Calculus for Engineers	

Physics		
Select one of the following Series:		10-12
PHYSICS 20 Series		
PHYSICS 21	Mechanics, Fluids, and Heat	
PHYSICS 22	Mechanics, Fluids, and Heat Laboratory	
PHYSICS 23	Electricity, Magnetism, and Optics	
PHYSICS 24	Electricity, Magnetism, and Optics Laboratory	
PHYSICS 40 Series		
PHYSICS 41	Mechanics	
PHYSICS 43	Electricity and Magnetism	
PHYSICS 45	Light and Heat	
Statistics		
Select one of the following courses:		3-5
BIO/STATS 141	Biostatistics [1]	
BIOHOPK 174H	Experimental Design and Probability [1]	
STATS 60	Introduction to Statistical Methods: Precalculus	
Total Units		33-47

[1] If taken to fulfill the foundational breadth requirement, these courses do not count toward the 23 elective unit requirement.

Electives

23 units required. Students must take the 3 required courses listed, as well as two courses in Microbiology and Immunology from the approved list. The remainder of the 23 units of electives may be any BIO or BIOHOPK course at the 100-level or above, or from the list of approved out-of-department electives. Up to 6 units of teaching and research are allowed. Only one course can be taken credit/no credit.

		Units
3 Required Courses:		
BIO 178	Microbiology Literature	3
or		
MI 185		
CHEM 141	The Chemical Principles of Life I	4
CHEM 143	The Chemical Principles of Life II	4
Select two of the following:		4-8
BIO 119	Evolution of Marine Ecosystems	
BIO 120	Prokaryotic Biology - A Quantitative Approach	
BIO 132	Advanced Imaging Lab in Biophysics	
BIO 177	Plant Microbe Interaction	
BIO 178	Microbiology Literature	
BIO 180	Microbial Physiology	
BIO 230	Molecular and Cellular Immunology	
BIOHOPK 274	Hopkins Microbiology Course	
CEE 177	Aquatic Chemistry and Biology	
CEE 274A	Environmental Microbiology I	
CEE 274B	Microbial Bioenergy Systems	
CEE 274D	Pathogens and Disinfection	
CEE 274P	Environmental Health Microbiology Lab	
EARTHSYS 158	Geomicrobiology	
IMMUNOL 201	Advanced Immunology I	
IMMUNOL 202	Advanced Immunology II	
IMMUNOL 206	Introduction to Applied Computational Tools in Immunology	
IMMUNOL 209	Translational Immunology	
IMMUNOL 275	Tumor Immunology	
IMMUNOL 286	Neuroimmunity	
MI 185		
MI 210	Advanced Pathogenesis of Bacteria, Viruses, and Eukaryotic Parasites	

Molecular, Cellular, and Developmental Biology

Candidates for the Molecular, Cellular, and Developmental Biology field of study must complete the following, as well as the WIM requirement above, for a total ranging from 88-102 units:

Introductory Course

(must be taken for a letter grade; see Departmental (https://biology.stanford.edu/academics/undergraduate-program/biology-undergraduate-major/)website for current Introductory Seminars and THINK options to substitute for BIO 60-series courses):

		Units
Select one of the following:		4
BIO 60	Problem solving in infectious disease	
BIO 61	Science as a Creative Process	
BIO 62	Microbiology Experiments	

Foundational Courses

(must be taken for a letter grade):

		Units
All of the following:		16
BIO 82	Genetics	
BIO 83	Biochemistry & Molecular Biology	
BIO 84	Physiology	
BIO 86	Cell Biology	
Select 1 of the following:		4
BIO 81	Introduction to Ecology	
or BIOHOPK 81	Introduction to Ecology	
or BIOHOPK 175H	Marine Science and Conservation in a Changing World	
BIO 85	Evolution	

Foundational Lab Courses

		Units
Two Courses Required:		
BIO 45	Introduction to Laboratory Research in Cell and Molecular Biology	4
BIO 46	Introduction to Research in Ecology and Evolutionary Biology	4-5
or BIO 47	Introduction to Research in Ecology and Evolutionary Biology	
or BIOHOPK 47	Introduction to Research in Ecology and Ecological Physiology	
or BIOHOPK 175H	Marine Science and Conservation in a Changing World	

Required Foundational Breadth Courses

(One course from this section may be taken credit/no credit):

		Units
Chemistry		
The following CHEM courses are required:		

CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	5-10
or CHEM 31M	Chemical Principles: From Molecules to Solids	
CHEM 33	Structure and Reactivity of Organic Molecules	5
CHEM 121	Understanding the Natural and Unnatural World through Chemistry	5
Mathematics		
Select one of the following options:		5-10
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications (or beyond)	
CME 100	Vector Calculus for Engineers	
Physics		
Select one of the following Series:		10-12
PHYSICS 20 Series		
PHYSICS 21	Mechanics, Fluids, and Heat	
PHYSICS 22	Mechanics, Fluids, and Heat Laboratory	
PHYSICS 23	Electricity, Magnetism, and Optics	
PHYSICS 24	Electricity, Magnetism, and Optics Laboratory	
PHYSICS 40 Series		
PHYSICS 41	Mechanics	
PHYSICS 43	Electricity and Magnetism	
PHYSICS 45	Light and Heat	
Statistics		
Select one of the following courses:		3-5
BIO/STATS 141	Biostatistics [1]	
BIOHOPK 174H	Experimental Design and Probability [1]	
STATS 60	Introduction to Statistical Methods: Precalculus	
Total Units		33-47

[1] If taken to fulfill the foundational breadth requirement, these courses do not count toward the 23 elective unit requirement.

Electives

23 units required. Students must take the 3 required courses listed, as well as two courses in Molecular, Cellular, and Developmental Biology from the approved list. The remainder of the 23 units of electives may be any BIO or BIOHOPK course at the 100-level or above, or from the list of approved out-of-department electives. Up to 6 units of teaching and research are allowed. Only one course can be taken credit/no credit.

		Units
3 Required Courses:		
BIO 158	Developmental Neurobiology	4
or BIO 160	Developmental Biology	
CHEM 141	The Chemical Principles of Life I	4
CHEM 143	The Chemical Principles of Life II	4
Select two of the following:		5-10
BIO 110	The Chromatin-Regulated Genome	
BIO 124	Topics in Cancer Biology	
BIO 154	Molecular and Cellular Neurobiology	
BIO 158	Developmental Neurobiology	
BIO 160	Developmental Biology	
BIO 168	Explorations in Stem Cell Biology	
BIO 171	Principles of Cell Cycle Control	
BIO 177	Plant Microbe Interaction	
BIOE 101	Systems Biology	
BIOE 283	Mechanotransduction in Cells and Tissues	
BIOHOPK 155H	Developmental Biology and Evolution	
BIOPHYS 242	Methods in Molecular Biophysics	
CBIO 243	Principles of Cancer Systems Biology	
CS 273A	The Human Genome Source Code	
CS 273B	Deep Learning in Genomics and Biomedicine	
CS 279	Computational Biology: Structure and Organization of Biomolecules and Cells	
CSB 210	Cell Signaling	
DBIO 210	Developmental Biology	
GENE 211	Genomics	
GENE 235	C. Elegans Genetics	
NBIO 258	Information and Signaling Mechanisms in Neurons and Circuits	
STEMREM 201A	Stem Cells and Human Development: From Embryo to Cell Lineage Determination	
STEMREM 202	Stem Cells and Translational Medicine	

Neurobiology

Candidates for the Neurobiology field of study must complete the following, as well as the WIM requirement above, for a total ranging from 88-102 units:

Introductory Course

(must be taken for a letter grade; see Departmental (https://biology.stanford.edu/academics/undergraduate-program/biology-undergraduate-major/)website for current Introductory Seminars and THINK options to substitute for BIO 60-series courses):

		Units
Select one of the following:		4
BIO 60	Problem solving in infectious disease	
BIO 61	Science as a Creative Process	
BIO 62	Microbiology Experiments	

Foundational Courses

(must be taken for a letter grade):

		Units
All of the following:		16
BIO 82	Genetics	
BIO 83	Biochemistry & Molecular Biology	
BIO 84	Physiology	
BIO 86	Cell Biology	
Select 1 of the following:		4
BIO 81	Introduction to Ecology	
or BIOHOPK 81	Introduction to Ecology	
or BIOHOPK 175N	Marine Science and Conservation in a Changing World	
BIO 85	Evolution	

Foundational Lab Courses

		Units
Two Courses Required:		
BIO 45	Introduction to Laboratory Research in Cell and Molecular Biology	4

BIO 46	Introduction to Research in Ecology and Evolutionary Biology	4-5
or BIO 47	Introduction to Research in Ecology and Evolutionary Biology	
or BIOHOPK 47	Introduction to Research in Ecology and Ecological Physiology	
or BIOHOPK 175H	Marine Science and Conservation in a Changing World	

Required Foundational Breadth Courses

(One course from this section may be taken credit/no credit):

		Units
Chemistry		
The following CHEM courses are required:		
CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II	5-10
or CHEM 31M	Chemical Principles: From Molecules to Solids	
CHEM 33	Structure and Reactivity of Organic Molecules	5
CHEM 121	Understanding the Natural and Unnatural World through Chemistry	5
Mathematics		
Select one of the following options:		5-10
MATH 19 & MATH 20 & MATH 21	Calculus and Calculus and Calculus	
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications (or beyond)	
CME 100	Vector Calculus for Engineers	
Physics		
Select one of the following Series:		10-12
PHYSICS 20 Series		
PHYSICS 21	Mechanics, Fluids, and Heat	
PHYSICS 22	Mechanics, Fluids, and Heat Laboratory	
PHYSICS 23	Electricity, Magnetism, and Optics	
PHYSICS 24	Electricity, Magnetism, and Optics Laboratory	
PHYSICS 40 Series		
PHYSICS 41	Mechanics	
PHYSICS 43	Electricity and Magnetism	
PHYSICS 45	Light and Heat	
Statistics		
Select one of the following courses:		3-5
BIO/STATS 141	Biostatistics [1]	
BIOHOPK 174H	Experimental Design and Probability [1]	
STATS 60	Introduction to Statistical Methods: Precalculus	
Total Units		33-47

[1] If taken to fulfill the foundational breadth requirement, these courses do not count toward the 23 elective unit requirement.

Electives

23 units required. Students must take the 5 required courses listed. The remainder of the 23 units of electives may be any BIO or BIOHOPK course at the 100-level or above, or from the list of approved out-of-department electives. Up to 6 units of teaching and research are allowed. Only one course can be taken credit/no credit.

		Units
5 Required Courses:		
BIO 149	The Neurobiology of Sleep	4-6
or BIO 150	Human Behavioral Biology	
or BIO 161	Organismal Biology Lab	
or NBIO 206	The Nervous System	
BIO 158	Developmental Neurobiology	4
or BIO 204	Neuroplasticity: From Synapses to Behavior	
BIO 126	Introduction to Biophysics	3-4
or BIO 154	Molecular and Cellular Neurobiology	
or BIO 267	Molecular Mechanisms of Neurodegenerative Disease	
CHEM 141	The Chemical Principles of Life I	4
CHEM 143	The Chemical Principles of Life II	4

Hopkins Marine Station

For additional information, see the "Biology, Hopkins Marine Station (p. 1124)" section of this bulletin or the Hopkins Marine Station web site (http://hopkins.stanford.edu).

Courses offered by the Department of Biology are listed under the subject code BIOHOPK on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIOHOPK&filter-catalognumber-BIOHOPK=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIO&filter-catalognumber-BIO=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIO&filter-catalognumber-BIO=on).

Summer Program at Hopkins Marine Station

The summer program is open to advanced undergraduate, graduate students, and postdoctoral students, and to teachers whose biological backgrounds, teaching, or research activities can benefit from a summer's study of marine life. Applications, deadlines, and further information are available at http://hopkins.stanford.edu.

Courses

Courses at Hopkins Marine Station can satisfy many requirements, from Ways to major and minor requirements in departments housed in the Schools of Engineering, Humanities and Sciences, and Earth Sciences. Students are encouraged to check with their department's student services office to see which courses at Hopkins may be used to fulfill major or minor requirements.

Students may go to Hopkins as early as Spring Quarter in the sophomore year, and can also go in the junior and/or senior year to take elective courses. The following Hopkins Marine Station courses may be used toward the Biology degree requirements:

Foundations and Foundational Labs

		Units
BIOHOPK 81	Introduction to Ecology	4
BIOHOPK 47	Introduction to Research in Ecology and Ecological Physiology	5
BIOHOPK 175H	Marine Science and Conservation in a Changing World	16

Electives

		Units
BIOHOPK 150H	Ecological Mechanics	3
BIOHOPK 152H	Physiology of Global Change	2

BIOHOPK 153H	Current Topics and Concepts in Quantitative Fish Dynamics and Fisheries Management	1
BIOHOPK 154H	Animal Diversity: An Introduction to Evolution of Animal Form and Function from Larvae to Adults	7
BIOHOPK 155H	Developmental Biology and Evolution	4
BIOHOPK 156H	Hands-On Neurobiology: Structure, Function and Development	6
BIOHOPK 160H	Developmental Biology in the Ocean: Diverse Embryonic & Larval Strategies of marine invertebrates	5-8
BIOHOPK 161H	Invertebrate Zoology	5
BIOHOPK 162H	Comparative Animal Physiology	5
BIOHOPK 163H	Oceanic Biology	4
BIOHOPK 165H	The Extreme Life of the Sea	3
BIOHOPK 166H	Molecular Ecology	5
BIOHOPK 167H	Nerve, Muscle, and Synapse	5
BIOHOPK 168H	Disease Ecology: from parasites evolution to the socio-economic impacts of pathogens on nations	3
BIOHOPK 173H	Marine Conservation Biology	4
BIOHOPK 173HA	Marine Conservation Biology - Seminar and Discussion Only	1-2
BIOHOPK 174H	Experimental Design and Probability	3
BIOHOPK 177H	Dynamics and Management of Marine Populations	4
BIOHOPK 179H	Physiological Ecology of Marine Megafauna	3
BIOHOPK 181H	Physiology of Global Change	2
BIOHOPK 182H	Stanford at Sea (only 6 units may count towards the major)	16
BIOHOPK 184H	Holistic Biology (only 6 units may count towards the major)	16
BIOHOPK 185H	Ecology and Conservation of Kelp Forest Communities	5
BIOHOPK 187H	Sensory Ecology	4
BIOHOPK 264H	POPULATION GENOMICS	1-2
BIOHOPK 274	Hopkins Microbiology Course	9-12

Research and/or Teaching (maximum 6 units combined)

		Units
BIOHOPK 198H	Directed Instruction or Reading	1-15
BIOHOPK 199H	Undergraduate Research	1-15
BIOHOPK 290H	Teaching Practicum in Biology	1-15
BIOHOPK 300H	Research	1-15

See Biology degree requirements above for further information. Many of the Hopkins Marine Station courses may be used to fulfill department major requirements.

Minor in Biology

Students interested in the minor in Biology must declare the minor and submit their course plan online via Axess no later than two quarters prior to the student's intended quarter of degree conferral. The Biology minor requires a minimum of six courses meeting the following criteria:

- All courses must be taken for a letter grade.
- All courses must be worth or approved for 3 or more units.
- At least 3 courses must be taken at the 100-level or higher. The only courses below 100 that are allowable are BIO/BIOHOPK courses at the 60- and 80- level, and OSPAUSTL 10, 28, or 32. Note: OSPAUSTL 10, 28, 32 together count as 2 courses toward the minor.
- Courses used to fulfill the minor may not be used to fulfill any other department degree requirements (minor or major).
- Stanford Introductory Seminars may not be used to fulfill the minor requirements.
- All courses must be chosen from the offerings of the Department of Biology or the Hopkins Marine Station, or from the list of a (https://stanford.box.com/v/OODEMinor/)pproved out-of-department electives for the minor (https://drive.google.com/file/d/1c1ZypomL3W-M9I3a5kf2kfdPbPWysZOw/view/?usp=sharing). Any approved out of department elective must be approved for at least 3 units.
- At least two courses from the Biology Foundations must be taken:

		Units
BIO 81	Introduction to Ecology	4
or BIOHOPK 81	Introduction to Ecology	
or BIOHOPK 175H	Marine Science and Conservation in a Changing World	
BIO 82	Genetics	4
BIO 83	Biochemistry & Molecular Biology	4
BIO 84	Physiology	4
BIO 85	Evolution	4
BIO 86	Cell Biology	4

- A third Bio Foundations course may be taken OR students may take one introductory Biology course from the following list:

		Units
BIO 60	Problem solving in infectious disease	4
BIO 61	Science as a Creative Process	4
BIO 62	Microbiology Experiments	4

- The Biology Core Laboratory courses do not count towards the minor:

		Units
BIO 45	Introduction to Laboratory Research in Cell and Molecular Biology	4
BIO 46	Introduction to Research in Ecology and Evolutionary Biology	4
BIO 47	Introduction to Research in Ecology and Evolutionary Biology	4
BIOHOPK 47	Introduction to Research in Ecology and Ecological Physiology	5
BIOHOPK 175H	Marine Science and Conservation in a Changing World	16

- If taken for at least 3 units, independent research conducted in a Biology lab may count as 1 course. Note: Research done in a non-Biology lab cannot be counted toward the minor. Directed reading, either in department or out of the department, also cannot count toward the minor.

		Units
BIO 199	Advanced Research Laboratory in Experimental Biology	1-15
BIOHOPK 199H	Undergraduate Research	1-15
Not allowable:		
BIO 198	Directed Reading in Biology	
BIO 198X	Out-of-Department Directed Reading	
BIO 199X	Out-of-Department Advanced Research Laboratory in Experimental Biology	

Master of Science in Biology

For information on the University's basic requirements for the M.S. degree, see the "Graduate Degrees (p. 65)" section of this bulletin. Students considering this degree option should meet with staff in the student services office prior to applying.

The M.S. degree program offers general or specialized study to individuals seeking biologically oriented course work and to undergraduate science majors wishing to increase or update their science background or obtain advanced research experience. Students who have majored in related fields are eligible to apply, but course work equivalent to the preparation of a Stanford B.S. in Biology may be required in addition to the general requirements. This includes course work in biology, chemistry, physics and mathematics. The M.S. program does not have an M.S. with thesis option.

Admissions

The department only accepts M.S. program applications from matriculated Stanford students:

1. undergraduates wishing to pursue a coterminal M.S. degree.
2. graduate students from other Stanford programs wishing to pursue an M.S. degree.
3. current Biology Ph.D. students wishing to discontinue the Ph.D. program with an M.S. degree.

Undergraduates must apply in Autumn Quarter to begin the program in Spring Quarter or in Spring Quarter to begin the program the following Autumn or Winter Quarter. Graduate students may apply by the third week of any academic quarter.

Required application materials

1. Completed Coterminal Online Application (https://applyweb.com/stanterm/)
2. A statement of purpose which explains why the student wishes to enter the program and what the student plans to accomplish while in the program. The statement should also supply information about the student's science capabilities if his or her undergraduate academic record does not accurately reflect them.
3. Unofficial Stanford transcript.
4. Two letters of recommendation, preferably from Biology faculty members in this department. If two such letters are not available, letters from faculty familiar with the student's ability to succeed in a graduate science curriculum are acceptable.
5. Application fee: an application fee is charged to all students regardless of outcome; application fee is applied directly to students' accounts.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken three quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to the graduate career. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements. Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

General Requirements

The M.S. program consists of Department of Biology and/or Hopkins Marine Station course work, approved out-of-department electives, and foundational breadth courses totaling at least 45 units at or above the 100-level (with the exception of BIO 196 A, B, & C), distributed as follows:

1. A minimum of 23 of the 45 units must be courses designated primarily for graduate students.
2. A minimum of 36 units must be chosen from the offerings in the Department of Biology (BIO) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIO&filter-catalognumber-BIO=on), Hopkins Marine Station (BIOHOPK) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&page=0&catalog=&q=biohopk&collapse=), the list of approved out-of-department electives (https://stanford.app.box.com/v/out-of-department-electives/), research, teaching and/or foundational breadth courses.

		Units
BIO 198	Directed Reading in Biology	1-15
BIO 198X	Out-of-Department Directed Reading	1-15
BIO 290	Teaching Practicum in Biology	1-5
BIO 291	Development and Teaching of Core Experimental Laboratories	1-2
BIO 300	Graduate Research	1-10
BIO 300X	Out-of-Department Graduate Research	1-10
BIOHOPK 198H	Directed Instruction or Reading	1-15
BIOHOPK 290H	Teaching Practicum in Biology	1-15
BIOHOPK 300H	Research	1-15

   a. a maximum of 18 units may be a combination of Biology research, directed reading and/or teaching:
   b. a maximum of 9 units may be foundational breadth courses in chemistry, mathematics, statistics, computer science, and/or physics beyond the level required for the undergraduate degree in Biology and at least at the 100-level.
3. No more than 9 units may be other Stanford course work relevant to a student's professional development. Students are required to petition for courses that fall into this category using the General Petition form (https://stanford.app.box.com/v/general-petition/).

Each candidate designs a coherent program of study in consultation with her or his department advisor. Although there are no specific courses required, program proposals must adhere to department parameters.

In addition to the unit requirements outlined above, students must adhere to the following:

1. A program proposal, signed by the student's advisor and approved by the chair of the M.S. committee, must be filed by the third week of the first quarter of enrollment. A revised program proposal is required to be filed whenever there are changes to a student's previously approved program proposal.
2. Students may take only 6 units CR/NC.
3. Students must maintain a GPA of 3.0 or higher.

4. Students must receive a grade of 'B-' or better in all courses taken for the degree.

Students not meeting these minimum requirements are subject to departmental academic review and/or dismissal.

The department's Master of Science Handbook (listed on the department website (https://biology.stanford.edu/academics/coterminal-masters-program/forms/)) has additional information about the program, University policy, and the department.

Doctor of Philosophy in Biology

For information on the University's basic requirements for the Ph.D. degree, see the "Graduate Degrees (p. 65)" section of this bulletin. The training for a Ph.D. in Biology is focused on learning skills required for being a successful research scientist and teacher, including how to ask important questions and then devise and carry out experiments to answer these questions. Students work closely with an established adviser and meet regularly with a committee of faculty members to ensure that they understand the importance of diverse perspectives on experimental questions and approaches. Students learn how to evaluate critically pertinent original literature in order to stay abreast of scientific progress in their areas of interest. They also learn how to make professional presentations, write manuscripts for publication, and become effective teachers.

Admissions

Students seeking entrance to graduate study in Biology ordinarily should have the equivalent of an undergraduate major in Biology at Stanford. However, students from other disciplines, particularly the physical sciences, are also encouraged to apply. Such students are advised at the time of initial registration on how they should complete background training during the first year of graduate study. In addition to the usual basic undergraduate courses in biology, it is recommended that preparation for graduate work include courses in chemistry through organic chemistry, general physics, and mathematics through calculus.

Application, Admission, and Financial Aid

Prospective graduate students must apply via Stanford's online graduate application (http://gradadmissions.stanford.edu/).

The training for a Ph.D. in Biology is focused on helping students achieve their goals of being a successful research scientist and teacher, at the highest level. Students work closely with an established adviser and meet regularly with a committee of faculty members to facilitate their progress. The Biology Ph.D. program is part of the larger Biosciences (https://biosciences.stanford.edu/) community of Ph.D. programs at Stanford, which includes Ph.D. programs in Stanford School of Medicine.

There are three tracks within the Biology Ph.D. program: 1) Cellular, Molecular and Organismal Biology, 2) Ecology and Evolution, and 3) Hopkins Marine Station. All are focused on excellence in research and teaching in their respective areas; where there are differences between the tracks, they are indicated in the links below.

Applicants are not required to take the Graduate Record Examination (GRE) general test nor the GRE subject test, but applicants who have taken either of these exams may choose to report their scores.

Admission to the Ph.D. program is competitive and in recent years it has been possible to offer admission to approximately 9-10 percent of the applicants.

Applicants who are eligible should apply for nationally competitive predoctoral fellowships, especially those offered by the National Science Foundation.

Admitted students are typically offered financial support in the form of Stanford Graduate Fellowships, research assistantships, NIH traineeships or biology fellowships.

General Requirements

All students must be enrolled in exactly 10 units during autumn, winter, spring and summer quarters until reaching Terminal Graduate Registration (TGR) status and are required to pass all courses in which they are enrolled. Students must earn a grade of 'B-' or better in all courses applicable to the degree that are taken for a letter grade.Satisfactory completion of each year's general and track specific requirements listed below is required for satisfactory progress towards the degree. Students not making satisfactory degree progress are subject to departmental academic review and/or dismissal.

1. **First year advising**
   Each entering student meets with their Biology First Year Facilitator (BFF) within the first two weeks of Autumn Quarter, Winter Quarter, Spring Quarter. Students in the Eco/Evo track must also meet with their first-year advising committee during this time. The committee reviews the student's previous academic work and current goals and advises the student on a program of Stanford courses, some of which may be required and others recommended. Completion of the core curriculum listed below under "Track Specific Requirements" is required of all students.
2. **Ethics**
   Students must take a course on the ethical conduct of research. One of the two following courses should be taken in the first year of the program:

		Units
MED 255	The Responsible Conduct of Research (Required for all CMOB students)	1
OR		
BIO 313	Ethics in the Anthropocene (BIO 313 is intended for Ecology/Evolution and Hopkins students only.)	1

3. **Teaching**
   Teaching experience and training are part of the graduate curriculum. Each student assists in teaching one course in
   a. the intro/foundational level (BIO 40s, 60s, and 80s level courses).
      Note: Hopkins students complete at least one TA requirement on campus during the first year. Any remaining TA requirements can be completed at Hopkins.

		Units
BIO 45	Introduction to Laboratory Research in Cell and Molecular Biology (Formerly 44X)	4
BIO 46	Introduction to Research in Ecology and Evolutionary Biology (Formerly 44Y)	4
BIO 47	Introduction to Research in Ecology and Evolutionary Biology (Formerly 44Y)	4
BIO 60	Problem solving in infectious disease	4
BIO 61	Science as a Creative Process	4
BIO 62	Microbiology Experiments	4
BIO 81	Introduction to Ecology	4
BIOHOPK 81	Introduction to Ecology	4
BIO 82	Genetics	4
BIO 83	Biochemistry & Molecular Biology	4
BIO 84	Physiology	4
BIOHOPK 84	Physiology	4
BIO 85	Evolution	4

BIOHOPK 85	Evolution	4
BIO 86	Cell Biology	4

b. and a second course that can be either an intro/foundational course or other Biology or Hopkins Marine Station course.

c. The opportunities to gain teaching experience and training in specific courses are assigned using the departmental matching system during the Spring and Summer quarters prior to the next academic year.

4. **Seminars**
Graduate seminars devoted to current literature and research in particular fields of biology are an important means of attaining professional perspective and competence. Seminars are presented under individual course listings or are announced by the various research groups. Topics of current biological interest are presented by speakers from Stanford and other institutions. During the first year of study, graduate students are required to attend seminars and make one formal seminar presentation which must be evaluated by a minimum of two Biology faculty members.
5. **Fellowship application**
All eligible first year students must apply for a National Science Foundation (NSF) Graduate Research Fellowship.
6. **Advisor/lab selection**
By June 1, each first-year student is required to have selected a lab in which to perform dissertation research and to have been accepted by the faculty member in charge.
7. **Qualifying exam and admission to candidacy**
During the second year, students are required to write a dissertation proposal which is evaluated by a committee of faculty (the dissertation proposal committee) in an oral presentation. Track-specific deadlines are listed below. All students must be admitted to candidacy by the end of their second year. This is contingent upon satisfactory completion of course work, all first and second year requirements, the dissertation proposal and the University's requirements for candidacy outlined in the "Candidacy (p. 67)" section of this bulletin; additional details may also be found in the Biology Ph.D. Handbook (https://stanford.box.com/v/PhDHandbook/). If a student does not meet the requirements for admission to candidacy by the end of the second year, the student is subject to dismissal from the Ph.D. program.
8. **Committee meetings**
Students must meet regularly with their advising committees. For more details, see the Biology Ph.D. Handbook (https://stanford.box.com/v/PhDHandbook/).
9. **Individual Development Plan meetings**
Students must meet once a year with their adviser by August 1 of that academic year. For more details, see the Biology Ph.D. Handbook (https://stanford.box.com/v/PhDHandbook/).
10. **Publishable manuscript**
Each student must complete one publishable manuscript (paper) for which s/he is the major contributor.
11. **Residency requirement**
Graduate students are expected to maintain a significant physical presence on campus unless the degree program has granted an exception, for example to conduct field work (GAP 3.1.1 (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-1/page-3-1-1/)). Unless permission is granted by the department (for example, for field work) enrolled graduate students must maintain a significant physical presence on campus throughout each quarter a student is enrolled. A minimum of 135 units of graduate registration is required of each candidate at the time of graduation.
12. **Doctoral dissertation**
A substantial draft of the dissertation must be submitted to the student's oral examination committee at least one month before the oral exam is scheduled to take place. The dissertation must be presented to an oral examination committee (p. 67) comprised of at least five faculty members. In addition, the final written dissertation must be approved by the student's reading committee (p. 67) (a minimum of three approved faculty), and submitted to the Registrar's Office. Upon completion of this final requirement, a student is eligible for conferral of the degree.

Track Specific Requirements

In addition to the general requirements listed above, students must also complete requirements within their concentration. Written petitions for exemptions to core curriculum and lab rotation requirements are considered by the advising committee and the chair of the graduate studies committee. Approval is contingent upon special circumstances and is not routinely granted.

Cellular, Molecular, and Organismal Biology (CMOB)

1. Courses: Students are required to take the following courses prior to Spring Quarter of the 4th year, except for the required first year courses as noted:

		Units
BIOS 200	Foundations in Experimental Biology (must be taken Autumn quarter of the first year)	5
BIO 301	Frontiers in Biology (satisfies first-year seminar requirement; must be taken Autumn quarter of first year)	1-3
One additional course in each of the four scientific areas decided upon by the student and the advising committee [1]		
1. Cell Biology		
2. Biology of Molecules		
3. Genetics/Genomics		
4. Quantitative Methods		

2. Lab Rotations*:* First-year students are required to do their first rotation in the lab of a Department of Biology faculty member for at least five weeks. The total rotation time in labs of Department of Biology faculty must be at least ten weeks. Students are encouraged to do at least two rotations in the Department of Biology.
3. Two-part qualifying exam: Each student must pass the exam in their second year.
   a. *Dissertation proposal:* During Autumn Quarter of the second year, the student must prepare a written dissertation proposal that outlines the student's projected dissertation research, including an expert assessment of the current literature; deadline is November 1.
   b. *Oral examination:* Held after submission of the written proposal to the dissertation proposal committee. It is an evaluation of the student's ability to summarize the field of study, generate a working hypothesis, develop a degree plan that could be completed in 3-4 years, understand the logic of experimental design, develop a decision tree based on (all) possible results of experiments and draw conclusions and adapt hypotheses depending on results. Deadline is November 15.
4. Seminar Presentation: The seminar requirement is fulfilled by presenting a minimum of a 30-minute talk. The student must arrange for at least two faculty members from the Department of Biology to attend the seminar and evaluate the presentation. Evaluation consists of meeting with each faculty member within one week following the seminar to obtain comments. If the faculty members approve the presentation, they sign the form at this time. In some cases, they may require an additional talk before signing. The

Seminar Evaluation form must be submitted to the student services office no later than June 1 of year three in the program.

[1] Up to two of these courses may be "mini courses" in the Biosciences (BIOS).

Ecology and Evolution

1. Courses: Students are required to take the following courses in their first year:

		Units
BIO 302	Current Topics and Concepts in Population Biology, Ecology, and Evolution	1
BIO 303	Current Topics and Concepts in Population Biology, Ecology, and Evolution	1
BIO 304	Current Topics and Concepts in Population Biology, Ecology, and Evolution	1
Students specializing in ecology and evolution may be required to take additional courses as advised by committee.		

2. Lab Rotations: EcoEvo Ph.D. students may rotate with and select as the primary Ph.D. adviser any faculty member with a primary appointment in one of the Biosciences Home Programs. While rotations are not required in order to choose the primary adviser, they are certainly possible. Many students collaborate with faculty in addition to their primary adviser in order to increase breadth and depth. This is usually accomplished with the advice and encouragement of the primary Ph.D. adviser.
3. First-year paper*:* The paper should be read, commented upon and agreed to as satisfactory by two EcoEvo faculty by June 1. This can be satisfied in a number of ways which all involve new writing, undertaken since entering the Stanford program. These may include:
   a. A new draft research manuscript (a previously published paper is not acceptable).
   b. Some other piece of new writing, such as a review paper from a course, or an initial literature review of a potential thesis topic. In this case the paper should ordinarily be not less than 10 double-spaced pages in usual sized font, and not more than 10 single spaced pages, plus references. It should be written in the style of a standard scientific paper.
4. Two-part qualifying exam: Each student must pass the exam in their second year.
   a. *Dissertation proposal:* During Spring Quarter of the second year, the student must prepare a written dissertation proposal that outlines the student's projected dissertation research, including an expert assessment of the current literature; deadline is June 1.
   b. *Oral examination:* Held after submission of the written proposal to the dissertation proposal committee. The student should prepare a presentation of the goals of the thesis, typically including preliminary data, models, etc. as appropriate which are relevant to at least the first goal, and should be prepared thereafter to discuss questions raised by the committee in professional scientific depth. Deadline is June 15.

Students are strongly encouraged to speak directly with their adviser and committee if they have specific questions or concerns regarding the format and content of the written proposal and/or procedures for the oral examination

Hopkins Marine Station

1. Courses: Students are required to take the following courses prior to Spring Quarter of the fourth year, except for the required first year courses as noted:

		Units
Seminar series (student should make selection in consultation with their advisor)		
BIO 301	Frontiers in Biology	1-3
OR		
BIO 302	Current Topics and Concepts in Population Biology, Ecology, and Evolution	1
BIO 303	Current Topics and Concepts in Population Biology, Ecology, and Evolution	1
BIO 304	Current Topics and Concepts in Population Biology, Ecology, and Evolution	1
Two additional Hopkins Marine Station courses (BIOHOPK). These may include BIOS mini courses offered at Hopkins.		
Students may also be required to take a set of courses to be determined by the advising committee.		

2. Lab Rotations: As with all students in the Biology Department, Hopkins Ph.D. students may rotate with and select as the primary Ph.D. adviser any faculty member with a primary appointment in one of the Biosciences home programs. In order to increase breadth and depth, many Hopkins students rotate through labs on main campus during their first year before moving to Hopkins, and continue to collaborate with faculty in addition to their primary adviser at Hopkins. This is usually accomplished with the advice and encouragement of the primary Ph.D. adviser.
3. First-Year Paper: The paper should be read, commented upon and agreed to as satisfactory by two faculty by June 1. This paper should be a step toward the development of a dissertation proposal and may consist of an analysis of new data or a literature review and synthesis. This can be satisfied in a number of ways that all involve new writing, undertaken since entering the Stanford program. These may include:
   a. A new draft research manuscript; a previously published paper is not acceptable because it may have received much editorial modification in the review process.
   b. Some other piece of new writing, such as a review paper from a course, or an initial literature review of a potential thesis topic. In this case the paper should ordinarily be not less than 10 or more than 20 double-spaced pages in usual sized font, plus references. It should be written in the style of a standard scientific paper.
4. Two-part qualifying exam: Each student must pass the exam in their second year. Students at Hopkins have the option of following the process of either the CMOB or Eco/Evo tracks (see above).
5. Graduate Student Symposium: All second- and fourth-year students are required to present at an annual student symposium (typically in February).
   a. Second-Year Students: The first half of the symposium gives second-year graduate students a forum to present plans for their graduate work. Because each student's research is different, there is no one-size-fits-all plan for these talks. But in general, these 20 minute presentations are meant to answer the questions: "What broad area of marine biology am I pursuing for my Ph.D.? What is known about this now? What am I planning broadly to contribute? What preliminary or initial data do I have?"
   b. Fourth-Year Students: The presentation for fourth-year students comes in two parts:
      i. Each student prepares a written overview of their doctoral research, including progress to date and plans for the final thesis. The document should be single spaced, 11-point (or larger) font, and should not exceed 3 pages (including figures and tables, but excluding references). In addition to this research overview, each student submits an up-to-date CV,

and the research overview and CV should be submitted no later than one week before the symposium date. This deadline gives a panel of judges time to review the documents prior to the symposium. Please combine the research statement and CV into a single PDF file, and email it to both the director and associate director.

ii. In the second half of the symposium, each fourth-year student presents to the judges and a general audience a 20-minute report on their Ph.D. research. Along with the written research overview, this is intended to give each student a chance to pull together their data and analyses to date, lay out initial conclusions, and explore what they mean in the context of their overall research interests and goals. As with the research overviews, these talks give students a chance to concentrate on what progress they have made along the complex path of their Ph.D., and what they are particularly excited about. Laying out plans for finishing the thesis should be a part of these talks, but should not be the main topic.

iii. After the symposium, the judges meet to choose the most outstanding combination of research statement and oral presentation. This student receives the Lederberg Award.

Note: Written petitions for exemptions to requirements are considered by a student's Advising Committee and the Graduate Studies Committee Chair. Approval is contingent on special circumstances and is not routinely granted.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of Biology counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Graduate Degree Requirements

Grading

The Department of Biology counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Other Graduate Policies

Students entering the program during the 2020-21 academic year are allowed to rotate in a non-Biology department lab during their first rotation.

Graduate Advising Expectations

The Department of Biology is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the advisor and the advisee.

All first-year Biology graduate students have an assigned a Biology First-Year Facilitator (BFF). Faculty mentorship in the BFF program is focused on helping students integrate into the department culture through non-judgmental advocacy. BFFs support students as they manage their lab rotations and chose appropriate coursework. Emphasis is placed on cultivating a supportive relationship between faculty and student during what is often a stressful period of transition. The student services office (SSO) and the Director of Graduate Studies (DGS) have primary responsibility for ensuring students fulfill departmental requirements (coursework, TAships) and submit the appropriate forms on time.

Course Advising Workshops are organized to assist students in the selection of classes for the next quarter. The workshop consists of student, faculty, and SSO representatives who can advise on appropriate coursework to take. Students and faculty establish a course of study, taking into consideration: (1) area of specialization; (2) training in accessory areas such as language, math, physical sciences and computer science; and (3) breadth in biology.

Graduate students are expected to select a thesis advisor before the end of the first year of the program. Students are encouraged to work collaboratively with their advisors to establish a dissertation project and form a Dissertation Reading Committee. Advancement to doctoral candidacy is expected to occur during the second year of the program.

Thesis advisers are expected to meet with graduate students at least once each year to discuss and help develop the students' Individual Development Plans (IDP). Additionally, advisers and students should meet on a regular basis throughout the year to discuss the student's professional development in key areas such as selecting courses, designing and conducting research, developing teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship. They should proactively seek academic and professional guidance and take responsibility for informing themselves of policies and degree requirements for the Biology Ph.D. program.

As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity.

Academic progress and student completion of program requirements and milestones are monitored by the program director and staff, and are discussed by faculty at an annual meeting devoted to assessing graduate student progress. A detailed description of the program's requirements, milestones, and advising expectations are listed in the Biology Ph.D. Student Handbook, found on the program web site.

The Director of Graduate Studies (DGS) is available during office hours and by appointment. In addition, each Autumn the DGS meets with each cohort of graduate students to discuss what aspects of the Ph.D. program areas warrant improvement. Together with the DGS, the Graduate Studies Committee acts as a mechanism to address these concerns and update advising policies. The committee is formed from faculty and student representatives of CMOB, EcoEvo, and Hopkins tracks.

Additionally, the program adheres to the advising guidelines and responsibilities listed by the Office of the Vice Provost for Graduate Education (https://vpge.stanford.edu/academic-guidance/advising-

mentoring/) (VPGE) and in the Graduate Academic Policies (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/page-3-3-1/) (GAP).

Emeriti Professors: Paul R. Ehrlich, David Epel, Philip C. Hanawalt, Patricia P. Jones, Donald Kennedy, Harold A. Mooney, W. James Nelson, Peter Ray, Joan Roughgarden, Robert D. Simoni, George N. Somero, Ward B. Watt, Norman K. Wessells, Dow O. Woodward

Emeritus Professor (Teaching): Carol L. Boggs

Chair: Martha S. Cyert

Director of Graduate Studies: Jose R. Dinneny

Director of Undergraduate Studies: Tadashi Fukami

Professors: Dominique Bergmann, Barbara A. Block, Steven M. Block, Larry B. Crowder, Martha S. Cyert, Gretchen C. Daily, Giulio De Leo, Mark W. Denny, Rodolfo Dirzo, Marcus W. Feldman, Russell D. Fernald, Christopher B. Field, Judith Frydman, William F. Gilly, Deborah M. Gordon, Or Gozani, Elizabeth A. Hadly, H. Craig Heller, Christine Jacobs-Wagner, Richard G. Klein, Ron R. Kopito, Sharon R. Long, Liqun Luo, Susan K. McConnell, Fiorenza Micheli, Mary Beth Mudgett, Stephen R. Palumbi, Dmitri Petrov, Jonathan Pritchard, Noah A. Rosenberg, Robert M. Sapolsky, Mark J. Schnitzer, Carla J. Shatz, Kang Shen, Michael A. Simon, Tim P. Stearns, Marc Tessier-Lavigne, Stuart H. Thompson, Alice Ting, Shripad Tuljapurkar, Peter Vitousek, Virginia Walbot

Professor (Research): Anthony Barnosky

Associate Professors: Xiaoke Chen, Jose R. Dinneny, Hunter B. Fraser, Tadashi Fukami, Christopher Lowe, Ashby Morrison, Kabir Peay, M. Kristy Red-Horse, Jan M. Skotheim

Associate Professor (Research): Mary Hynes

Assistant Professors: Jonas B. Cremer, Scott J. Dixon, Jessica L. Feldman, Jeremy A. Goldbogen, Erin Mordecai, Lauren O'Connell, Molly Schumer

Courtesy Emeritus Professor: Kathryn Barton

Courtesy Professors: Joseph Berry, Devaki Bhaya, Carlos D. Bustamante, Daniel Fisher, Arthur R. Grossman, Joseph S. Lipsick, Alfred Spormann, Irving Weissman

Courtesy Associate Professors: David Ehrhardt, Jonathan Payne, Sue Rhee, Zhiyong Wang

Courtesy Assistant Professor: Paula V. Welander

Lecturers: Daria Hekmat-Scafe, Jamie Imam, Waheeda Khalfan, Shyamala D. Malladi, Jesse E. D. Miller, Andrew Todhunter,

Librarian: Michael Newman

Overseas Studies Courses in Biology

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
BIO 121	ORNITHOLOGY	2
BIOE 103	Systems Physiology and Design	4
OSPAUSTL 10	Coral Reef Ecosystems	3
OSPAUSTL 28	Terrestrial Ecology and Conservation	3
OSPAUSTL 32	Coastal Ecosystems	3

Courses

BIO 2N. Ecology and Evolution of Infectious Disease in a Changing World. 3 Units.
This seminar will explore the ways in which anthropogenic change, climate change, habitat destruction, land use change, and species invasions effects the ecology and evolution of infectious diseases. Topics will include infectious diseases of humans, wildlife, livestock, and crops, effects of disease on threatened species, disease spillover, emerging diseases, and the role of disease in natural systems. Course will be taught through a combination of popular and scientific readings, discussion, and lecture. .

BIO 3. Frontiers in Marine Biology. 1 Unit.
An introduction to contemporary research in marine biology, including ecology, conservation biology, environmental toxicology, behavior, biomechanics, evolution, neurobiology, and molecular biology. Emphasis is on new discoveries and the technologies used to make them. Weekly lectures by faculty from the Hopkins Marine Station.

BIO 3N. Views of a Changing Sea: Literature & Science. 3 Units.
The state of a changing world ocean, particularly in the eastern Pacific, will be examined through historical and contemporary fiction, non-fiction and scientific publications. Issues will include harvest and mariculture fisheries, land-sea interactions and oceanic climate change in both surface and deep waters.

BIO 6N. Ocean Conservation: Pathways to Solutions. 3 Units.
We will learn how to design pathways to solutions by integrating social sciences and governance into our case studies. We will address both conventional (fisheries management, reducing the impacts of global shipping, marine protected areas) and emerging research and management approaches (marine spatial planning, dynamic ocean management, environmental DNA). Oceans are facing long-term challenges, like overfishing and pollution that we know how to solve, and emerging challenges, like climate change and ocean plastics, for which solutions are more elusive. Ultimately to achieve long-term sustainability, solutions have to work for both people and the planet. These puzzles offer challenging complex systems problems that will require our best interdisciplinary thinking to solve.

BIO 7N. Conservation Photography. 3 Units.
Introduction to the field of conservation photography and the strategic use of visual communication in addressing issues concerning the environment and conservation. Students will be introduced to basic digital photography, digital image processing, and the theory and application of photographic techniques. Case studies of conservation issues will be examined through photographs and multimedia platforms including images, video, and audio. Lectures, tutorials, demonstrations, and optional field trips will culminate in the production of individual and group projects.

BIO 7SL. Introduction to Biology Lab. 2 Units.
Optional laboratory to be taken with BIO7S. Introduction to basic biological laboratory techniques, including microscopy, identification of biomolecules, assaying enzyme activity, genetic manipulation of microorganisms, assaying the effects of gene mutation on protein function, and using PCR to genotype organisms.

BIO 8N. Human Origins. 3 Units.
A survey of the anatomical and behavioral evidence for human evolution and of the increasingly important information from molecular genetics. Emphasis on the split between the human and chimpanzee lines 6-7 million years ago, the appearance of the australopiths by 4.1 million years ago, the emergence of the genus Homo about 2.5 million years ago, the spread of Homo from Africa 1.7-1.6 million years ago, the subsequent divergence of Homo into different species on different continents, and the expansion of fully modern humans (Homo sapiens) from Africa about 50,000 years ago to replace the Neanderthals and other non-modern Eurasians.

BIO 8S. Introduction to Human Physiology. 4 Units.
Normal functioning and pathophysiology of major organ systems: nervous, respiratory, cardiovascular, renal, digestive, and endocrine. Additional topics include integrative physiology, clinical case studies, and applications in genomics-based personalized medicine.

BIO 10N. Using Physics to Explain Biology: Mechanistic Approaches to Plankton Ecology. 3 Units.
People often think of physics and biology as entirely separate scientific pursuits, but in fact the two can be productively combined. All plants and animals live in a physical environment, and the laws of physics that govern that environment often determine how organisms function and interact. In this seminar, we will explore the confluence of physics and biology through an in-depth look at how phytoplankton and zooplankton -- the small algae and animals that form the base of the oceans' food web -- are affected by the physical properties of their watery world. You will be amazed by our ability to explain the ecology of these organisms, and how important that ecology is to life on earth.

BIO 12N. Sensory Ecology of Marine Animals. 3 Units.
Animals living in the oceans experience a highly varied range of environmental stimuli. An aquatic lifestyle requires an equally rich range of sensory adaptations, including some that are totally foreign to us. In this course we will examine sensory system in marine animals from both an environmental and behavioral perspective and from the point of view of neuroscience and information systems engineering.

BIO 16. Conservation Storytelling: Pre-course for BOSP South Africa. 1 Unit.
Limited to students admitted to the BOSP South Africa overseas seminar. Through 5 workshop meetings, students will develop and pitch story ideas, form teams in which a writer and a photographer agree to collaborate on a story, and conduct background research prior to departing for South Africa.

BIO 16N. Island Ecology. 3 Units.
Preference to freshmen. How ecologists think about the world. Focus is on the Hawaiian Islands: origin, geology, climate, evolution and ecology of flora and fauna, and ecosystems. The reasons for the concentration of threatened and endangered species in Hawaii, the scientific basis for their protection and recovery. How knowledge of island ecosystems can contribute to ecology and conservation biology on continents.

BIO 19S. Science of Covid-19. 4 Units.
This course is designed to help students apply knowledge from an introductory high school biology course to problems related to Covid-19. We will examine how the virus SARS-CoV-2 attacks the human body, how the immune system responds, how testing works, and how this information can be used to design drugs and vaccines to halt the spread of the virus. There has been an explosion of research papers and many claims in the media about the virus. We will evaluate the claims critically and explore the underlying science by reading a few selected papers.

BIO 24N. Visions of Paradise: Garden Design. 3 Units.
Through literature readings and field trips to local gardens learn the principles and esthetics of classic garden designs: Italian Renaissance, botanical teaching, Japanese, English cottage, and others. Design a personal vision of paradise with details of species, visual and scent impact, water features, and hardscape. Open your eyes to a new appreciation of the world of plants and learn some physiology and genetics that explains the specific properties of individual species.

BIO 25Q. Cystic fibrosis: from medical conundrum to precision medicine success story. 3 Units.
The class will explore cystic fibrosis (CF), the most prevalent fatal genetic disease in the US, as a scientific and medical whodunit. Through reading and discussion of medical and scientific literature, we will tackle questions that include: how was life expectancy with CF increased from weeks to decades without understanding the disease mechanism? Why is the disease so prevalent? Is there an advantage to being a carrier? Is CF a single disease or a continuum of physiological variation ¿or- what is a disease? How did research into CF lead to discovery of the underlying cause of most other genetic diseases as well?nnThrough critical reading of the scientific and medical literature, class discussion, field trips and meetings with genetic counselors, caregivers, patients, physicians and researchers, we will work to build a deep understanding of this disease, from the biochemical basis to the current controversies over pathogenic mechanisms, treatment strategies and the ethics and economics of genetic testing and astronomical drug costs.

BIO 27S. Evolution: From DNA to Dinosaurs. 3 Units.
This course centers on the fundamental idea of evolution, which impacts fields as disparate as genetics to paleontology. You will learn about the history of evolutionary thought, including Darwin¿s idea of evolution by natural selection, and explore evolutionary timescales both small and large. Topics include population genetics, genomics, molecular evolution, evolutionary forces, formation of new species, evolutionary divergences in the history of life, and evidence of evolution, including patterns from DNA and the fossil record.

BIO 28S. Molecular Genetics and Biotechnology. 3 Units.
This course covers the fundamentals of molecular genetics, including principles of how genes work, how gene expression is regulated in both prokaryotes and eukaryotes, and how signals are passed from cells to cells that are far away. We will also explore key advances in biotechnology, including cloning, sequencing, and next-generation sequencing, and discuss case studies involving cancer, Huntington¿s Disease, and more.

BIO 30. Ecology for Everyone. 4 Units.
Ecology is the science of interactions and the changes they generate. This project-based course links individual behavior, population growth, species interactions, and ecosystem function. Introduction to measurement, observation, experimental design and hypothesis testing in field projects. The goal is to learn to think analytically about everyday ecological processes, including those that you participate in, which involve bacteria, fungi, plants, animals and humans. The course uses basic statistics to analyze data; there are no math prerequisites except arithmetic. Open to everyone, including those who may be headed for more advanced courses in ecology and environmental science. The online version will meet synchronously and involve preparation outside of class for interactive discussions during class time. We will organize field projects that you can do wherever you are. Projects begin in the first week of the quarter. For questions please contact Prof. Gordon at dmgordon@stanford.edu.

BIO 35N. Climate change ecology: Is it too late?. 3 Units.
This Introductory Seminar will explore the consequences of climate change on ecological communities, focusing on two emerging concepts: "disequilibrium," which emphasizes that it can take long time for communities to respond to climate change because of species interactions, and "historical contingency," which proposes that the order in which species invade and disappear as communities re-assemble in response to climate change will determine which species will persist. The seminar will involve lecture, discussion, writing, and visit to Jasper Ridge Biological Preserve.

BIO 45. Introduction to Laboratory Research in Cell and Molecular Biology. 4 Units.
Investigate yeast strains that are engineered to express the human tumor suppressor protein, p53, and use modern molecular methods to identify the functional consequences of p53 mutations isolated from tumor cells. Learn about the protein's role as Guardian of the Genome through lectures and by reading and discussing journal articles. Use molecular visualization programs to examine the structure of normal and mutant p53 proteins. Learn about the assays used to study the ability of mutant p53 to direct expression of several reporter genes. During guided reflection, investigate further and identify what could be wrong with the p53 mutants you have been studying. Learn how to ask a question, test a hypothesis, conduct experiments and analyze data, and present your findings through a team oral presentation, as well as a scientific poster. Although there are no pre-requisites to enroll in this class, it will be helpful if you have already taken or are concurrently enrolled in the appropriate Biology Foundation classes (or HumBio core classes). Additionally, it will also be helpful if you have already taken CHEM 31M, or 31A & B.

BIO 46. Introduction to Research in Ecology and Evolutionary Biology. 4 Units.
The goal of this course is to develop an understanding of how to conduct biological research, using topics in Ecology as practical examples. This includes the complete scientific process: assessing background literature, generating testable hypotheses, learning techniques for data collection, analyzing data using appropriate statistical methods, and writing and sharing results. To build these skills, this course focuses on the microorganisms associated with lichen epiphytes and their interactions with air pollution and other environmental variables. Students, working in teams, develop novel research hypotheses and execute the necessary experiments and measurements to test these hypotheses. Because the course will be online this year, we will analyze data collected in previous years rather than conducting field and lab experiments in person. In addition, students will learn how to manipulate, visualize, and analyze data in R. The capstone of the course is a research paper in the style of a peer-reviewed journal article, as well as an educational video designed for a general audience that communicates research findings. IMPORTANT NOTE: Students who require BIO 46 to satisfy the WIM requirement for the Biology major MUST take this course for a letter grade (except in 2020-21).

BIO 47. Introduction to Research in Ecology and Evolutionary Biology. 4 Units.
The goal of this course is to develop an understanding of how to conduct biological research, using a topic in Ecology, Evolutionary Biology, and Plant Biology as a practical example. This includes the complete scientific process: assessing background literature, generating testable hypotheses, learning techniques for field- and lab-based data collection, analyzing data using appropriate statistical methods, and finally writing and sharing results. To build these skills, this course will focus on nectar microbes at Stanford's nearby Jasper Ridge Biological Preserve. Students, working in teams, will develop novel research hypotheses, design the necessary experiments and measurements to test these hypotheses. The capstone of the course will be an oral defense of students' findings, as well as a research paper written in the style of a peer-reviewed journal article. Students will use data collected both in the lab and at Jasper Ridge Biological Preserve. Although there are no pre-requisites to enroll in the class, it will be helpful if you have already taken BIO 81 or relevant HumBio core class. nNote: Satisfies WIM (if taken for a letter grade) in Biology.

BIO 50S. Introduction to Cancer Biology. 3 Units.
Introduction to the molecular basis of cancer. This course will examine the biological processes that are disrupted in cancer, such as DNA repair, cell cycle control and signaling pathways, as well as the science behind some current treatments. Prerequisites: general biology.

BIO 51S. The Gene: The History and Science of our Genetic Code. 3 Units.
This discussion-based course will use the novel ¿The gene¿ by Siddhartha Mukherjee and other selected readings to explore the science behind our genetic code. We will cover topics such as regulation of gene expression, inheritance, genetic testing, manipulation of the genome, and the relationship between genetics and identity. Prerequisites: Instructor consent, AP Biology Recommended.

BIO 52. I, Scientist: Diversity Improves the Scientific Practice. 1 Unit.
Disciplinary priorities, research agendas, and innovations are determined by the diversity of participants and problem-solving is more successful with a broad range of approaches. Using case studies in scientific research, we propose to use these insights to help our students learn why a diverse scientific community leads to better discovery and improves the relevance of science to society. Our premise is that a diverse set of perspectives will impact not only how we learn science, but how we do science.
Same as: CSRE 52H

BIO 53. Conservation Photography. 3 Units.
Introduction to the field of conservation photography and the strategic use of visual communication in addressing issues concerning the environment and conservation. Students will be introduced to basic digital photography, digital image processing, and the theory and application of photographic techniques. Case studies of conservation issues will be examined through photographs and multimedia platforms including images, video, and audio. Lectures, tutorials, demonstrations, and optional field trips will culminate in the production of individual and group projects. This course is identical to Bio 7N, so students enrolled in the former should not take this course. Open to undergraduates and graduate students. Students must have access to a DSLR camera and lenses - we can accept up to 20 students who can share 10 course-provided cameras and lenses, by application. Application for camera use: https://forms.gle/1yAD3my8GoDseXw59.

BIO 57. THE STATE OF HUMANS AND THE PLANET. 4 Units.
How does human well-being affect their environment and the reverse? The goals of this course are to examine ways of measuring human and environmental well-being, their main interactions now and in the next several decades, and to identify challenges and gaps in our knowledge.

BIO 60. Problem solving in infectious disease. 4 Units.
Why is Lyme disease spreading? How does HIV become drug resistant? How do other animals affect our disease risk? In BIO 60 students will examine actual case studies to experience how different scientific approaches are used to battle infectious disease. They will evaluate information presented in the popular media and the scientific literature, and will directly participate in the scientific process through hands-on collection, documentation and analyses of authentic scientific data. Students will cultivate their scientific curiosity by discovering the natural world with a Foldscope, the `origami paper microscope¿ (https://microcosmos.foldscope.com). Students will build critical thinking skills by creating hypotheses, and designing experiments that pertain to problems in infectious disease. Students will work in teams to expand their thinking and will practice communicating science to different audiences.

BIO 61. Science as a Creative Process. 4 Units.
What is the process of science, and why does creativity matter? We'll delve deeply into the applicability of science in addressing a vast range of real-world problems. This course is designed to teach the scientific method as it's actually practiced by working scientists. It will cover how to ask a well-posed question, how to design a good experiment, how to collect and interpret quantitative data, how to recover from error, and how to communicate findings. Facts matter! Course topics will include experimental design, statistics and statistical significance, formulating appropriate controls, modeling, peer review, and more. The course will incorporate a significant hands-on component featuring device fabrication, testing, and measurement. Among other "Dorm Science" activities, we'll be distributing Arduino microcontroller kits and electronic sensors, then use these items, along with other materials, to complete a variety of group and individual projects outside the classroom. The final course assignment will be to develop and write a scientific grant proposal to test a student-selected myth or scientific controversy. Although helpful, no prior experience with electronics or computer programming is required. Recommended for freshmen.
Same as: APPPHYS 61

BIO 62. Microbiology Experiments. 4 Units.
Micro-X is an on-ramp course in which we explore classic to modern bacteriology experiments with a focus on design and logic. Bacterial biochemistry, structure, metabolism, and genetics are covered in lecture. The lab includes microbial culture, microscopic examination, and bacteriophage discovery and characterization. Enrollment limited; application required. Apply at https://forms.gle/x37kwXvJxvQmN1sA6 by December 3rd to get preference for enrollment.

BIO 81. Introduction to Ecology. 4 Units.
This course will introduce you to the first principles of the science of ecology, the study of interactions between organisms and their environment. Prerequisites: None.

BIO 82. Genetics. 4 Units.
The focus of the course is on the basic mechanisms underlying the transmission of genetic information and on the use of genetic analysis to study biological and medical questions. Major topics will include: (1) the use of existing genetic variation in humans and other species to identify genes that play an important role in determining traits and disease-susceptibility, (2) the analysis of mutations in model organisms and their use in the investigation of biological processes and questions and (3) using genetic information for diagnosis and the potential for genetic manipulations to treat disease. Prerequisites: None, but BIO 83 is recommended. For 2021, Live Zoom lectures will be recorded and posted on Canvas for students with conflicts. Attendance at a discussion section held once a week is mandatory. For logistical questions about the course, please contact Waheeda Khalfan (wkhalfan@stanford.edu).

BIO 83. Biochemistry & Molecular Biology. 4 Units.
Introduction to the molecular and biochemical basis of life. Lecture topics include the structure and function of proteins, nucleic acids, lipids and carbohydrates, energy metabolism, signal transduction, epigenetics and DNA repair. The course will also consider how defects in these processes cause disease. Prerequisites: None.

BIO 84. Physiology. 4 Units.
The focus of Physiology is on understanding how organisms tackle the physical challenges of life on Earth. This course will provide an overview of animal and plant physiology and teach an understanding of how organisms maintain homeostasis, respond to environmental cues and coordinate behaviors across multiples tissues and organ systems. We will examine the structure and function of organs and organ systems and how those systems are controlled and regulated to maintain homeostasis. Control and regulation requires information as does the ability to respond to environmental stimuli, so we will give special consideration to hormonal and neural information systems. We will also be concerned with the interactions and integration of the activities of the different organ systems we study. Prerequisites: none. For 2021, Live Zoom lectures will be recorded and posted on Canvas for students with conflicts. Attendance at a discussion section held once a week is mandatory. There will be no exams in the course. For logistical questions about the course, please contact Waheeda Khalfan (wkhalfan@stanford.edu).

BIO 85. Evolution. 4 Units.
Understanding evolution is key to understanding the diversity of life on earth. We will be focusing on the fundamental principles of evolutionary biology from natural and sexual selection to the formation of new species. To understand these concepts we will delve into the mechanisms that underlie them. The course will also link these fundamental processes to important contemporary evolutionary topics such as the evolution of behavior, life history evolution, and human evolution. Prerequisites: BIO 60 or 61 or 62 or equivalent; recommended: BIO 82, or permission of instructor.

BIO 86. Cell Biology. 4 Units.
This course will focus on the basic structures inside cells and how they execute cellular functions. Topics include organelles, membrane trafficking, the cytoskeleton, cell division, and signal transduction. Classic and recent primary literature will be incorporated into lectures with an emphasis on state of the art experimental approaches. Prerequisites: BIO 83 is highly recommended.

BIO 89SI. Evolutionary Medicine. 2 Units.
Why are body systems prone to disease? This course will explore theories about the evolutionary basis of diseases, including cancer, diabetes, and psychiatric disease. Students with a background in genetics, physiology, and evolution will synthesize these fields to better understand human health and disease. The course will involve readings from and discussions about the primary literature.

BIO 102. Ecosystem Ecology and Biogeochemistry. 3 Units.
An introduction to ecosystem ecology and terrestrial biogeochemistry. This course will focus on the dynamics of carbon and other biologically essential elements in the Earth System, on spatial scales from local to global.

BIO 103. HUMAN AND PLANET HEALTH. 2 Units.
Two of the biggest challenges humanity has to face - promoting human health and halting environmental degradation ¿ are strongly linked. The emerging field of Planetary Health recognizes these inter-linkages and promotes creative, interdisciplinary solutions that protect human health and the health of the ecosystems on which we depend. Through a series of lectures and case-study discussions, students will develop an in-depth understanding of the ¿Planetary Health¿ concept, its foundation, goals, priority areas of action, methods of investigation, and the most relevant immediate challenges.
Same as: BIO 203

BIO 104. Advance Molecular Biology: Epigenetics and Proteostasis. 5 Units.
Molecular mechanisms that govern the replication, recombination, and expression of eukaryotic genomes. Topics: DNA replication, DNA recombination, gene transcription, RNA splicing, regulation of gene expression, protein synthesis, and protein folding. Prerequisite: Biology core or BIO 83 (BIO 82 and 86 are strongly recommended).
Same as: BIO 200

BIO 105A. Ecology and Natural History of Jasper Ridge Biological Preserve. 4 Units.
Ecology and Natural History of Jasper Ridge Biological Preserve an upper-division course, aims to help student learn ecology and natural history using a ¿living laboratory¿, the Jasper Ridge Preserve. The course¿s central goal is that, as a community of learning, we examine ¿via introductory discussions, followed by hands-on experiences in the field¿ the scientific basis of: ecological research, archaeology, edaphology, geology, hydrology, species interactions, land management, and multidisciplinary environmental education. The 10 sessions that compose the academic program are led by the instructors, faculty (world-experts on the themes of each session), and JRBP staff. In addition, this class trains students to become JRBP Docents that therefore join the Jasper Ridge education affiliates community. nnAfter completing this course and as new affiliates of Jasper Ridge, participants will be able to lead research-focused educational tours, assist with classes and research, and attend continuing education activities available to members of the JRBP community.
Same as: EARTHSYS 105A

BIO 105B. Ecology and Natural History of Jasper Ridge Biological Preserve. 4 Units.
Ecology and Natural History of Jasper Ridge Biological Preserve an upper-division course, aims to help student learn ecology and natural history using a ¿living laboratory¿, the Jasper Ridge Preserve. The course¿s central goal is that, as a community of learning, we examine ¿via introductory discussions, followed by hands-on experiences in the field¿ the scientific basis of: ecological research, archaeology, edaphology, geology, hydrology, species interactions, land management, and multidisciplinary environmental education. The 10 sessions that compose the academic program are led by the instructors, faculty (world-experts on the themes of each session), and JRBP staff. In addition, this class trains students to become JRBP Docents that therefore join the Jasper Ridge education affiliates community. nnAfter completing this course and as new affiliates of Jasper Ridge, participants will be able to lead research-focused educational tours, assist with classes and research, and attend continuing education activities available to members of the JRBP community.
Same as: EARTHSYS 105B

BIO 109A. Building Blocks for Chronic Disease. 3 Units.
Researchers have come a long way in developing therapies for chronic disease but a gap remains between current solutions and the ability to address the disease in full. This course provides an overview to the underlying biology of many of these diseases and how they may connect to each other. A "think outside of the box" approach to drug discovery is needed to bridge such a gap in solutions, and this course teaches the building blocks for that approach. Could Legoland provide the answer? This is a guest lecture series with original contributions from prominent thought leaders in academia and industry. Interaction between students and guest lecturers is expected. Students with a major, minor or coterm in Biology: 109A/209A or 109B/209B may count toward degree program but not both.
Same as: BIOC 109A, BIOC 209A, HUMBIO 158

BIO 109B. Advances in Therapeutic Development: Neuronal Signaling and Immunology. 3 Units.
This is a seminar course focused on teaching students about novel research and applications in the fields of neuroscience and immunology. The course will cover topics that range from the neuronal pathways in opioid addiction and the mechanics of pain, to advances in immunotherapy. Students will engage with diverse material from leading neuroscience and cancer immunotherapy experts in the Bay Area. Guest lecturers will visit from both academia and neighboring pharmaceutical/biotechnology companies. Active participation is required. Prerequisite: Biology or Human Biology core. Students with a major, minor or coterm in Biology: 109A/209A or 109B/209B may count toward degree program, but not both.
Same as: BIOC 109B

BIO 110. The Chromatin-Regulated Genome. 3 Units.
Maintenance of the genome is a prerequisite for life. In eukaryotes, all DNA-templated processes are tightly connected to chromatin structure and function. This course will explore epigenetic and chromatin regulation of cellular processes related to aging, cancer, stem cell pluripotency, metabolic homeostasis, and development. Course material integrates current literature with a foundational review of histone modifications and nucleosome composition in epigenetic inheritance, transcription, replication, cell division and DNA damage responses. Prerequisite: BIO 41 or BIO 83 or consent of instructor.
Same as: BIO 210

BIO 112. Human Physiology. 4 Units.
Human physiology will be examined by organ systems: cardiovascular, respiratory, renal, gastrointestinal and endocrine. Molecular and cell biology and signaling principles that underlie organ development, pathophysiology and opportunities for regenerative medicine are discussed, as well as integrative control mechanisms and fetal development. Prerequisite: Human Biology core or Biology Foundations or equivalent or consent of instructor.
Same as: HUMBIO 133

BIO 113. Fundamentals of Molecular Evolution. 4 Units.
The inference of key molecular evolutionary processes from DNA and protein sequences. Topics include random genetic drift, coalescent models, effects and tests of natural selection, combined effects of linkage and natural selection, codon bias and genome evolution. Prerequisites: Biology core or BIO 82, 85 or graduate standing in any department, and consent of instructor.
Same as: BIO 244

BIO 114. bioBUDS (Building Up Developing Scientists): Science In & Beyond the Lab. 2 Units.
Your unique knowledge, experiences, and goals to enhance our collective understanding of life around us. BUDS aims to expand the idea of what it means to be a scientist and aid in the process of becoming community-driven scientists in and beyond the lab. We will spotlight graduate students and associations from historically underrepresented groups for their perspectives on research and broader STEM careers. All journal clubs and workshops are open to all students regardless of department affiliation, experience-level, or field.

BIO 115. The Hidden Kingdom - Evolution, Ecology and Diversity of Fungi. 4 Units.
Fungi are critical, yet often hidden, components of the biosphere. They regulate decomposition, are primary partners in plant symbiosis and strongly impact agriculture and economics. Students will explore the fascinating world of fungal biology, ecology and evolution via lecture, lab, field exercises and Saturday field trips that will provide traditional and molecular experiences in the collection, analysis and industrial use of diverse fungi. Students will chose an environmental niche, collect and identify resident fungi, and hypothesize about their community relationship. Prerequisite: BIO 81, 85 recommended.
Same as: BIO 239

BIO 116. Ecology of the Hawaiian Islands. 4 Units.
Terrestrial and marine ecology and conservation biology of the Hawaiian Archipelago. Taught in the field in Hawaii as part of quarter-long sequence of courses including Earth Sciences and Anthropology. Topics include ecological succession, plant-soil interactions, conservation biology, biological invasions and ecosystem consequences, and coral reef ecology. Restricted to students accepted into the Earth Systems of Hawaii Program.
Same as: EARTHSYS 116

BIO 117. Biology and Global Change. 4 Units.
The biological causes and consequences of anthropogenic and natural changes in the atmosphere, oceans, and terrestrial and freshwater ecosystems. Topics: glacial cycles and marine circulation, greenhouse gases and climate change, tropical deforestation and species extinctions, and human population growth and resource use. Prerequisite: Biology or Human Biology core or BIO 81 or graduate standing.
Same as: EARTHSYS 111, EARTHSYS 217, ESS 111

BIO 119. Evolution of Marine Ecosystems. 3-4 Units.
Life originally evolved in the ocean. When, why, and how did the major transitions occur in the history of marine life? What triggered the rapid evolution and diversification of animals in the Cambrian, after more than 3.5 billion years of Earth's history? What caused Earth's major mass extinction events? How do ancient extinction events compare to current threats to marine ecosystems? How has the evolution of primary producers impacted animals, and how has animal evolution impacted primary producers? In this course, we will review the latest evidence regarding these major questions in the history of marine ecosystems. We will develop familiarity with the most common groups of marine animal fossils. We will also conduct original analyses of paleontological data, developing skills both in the framing and testing of scientific hypotheses and in data analysis and presentation.
Same as: EARTHSYS 122, GEOLSCI 123, GEOLSCI 223B

BIO 120. Prokaryotic Biology - A Quantitative Approach. 3 Units.
To live, microbes have to successfully coordinate various cellular processes, in line with available resources and what environmental conditions demand. This course introduces quantitative advances in understanding this coordination and their consequences across scales: from molecular biology via growth to population dynamics and ecology. Dry lab sessions complement lectures to introduce computational approaches. Python based analysis tools will be introduced. Prerequisite: MATH 51 or MATH 19, 20,21. Recommended: microbiology (e.g. BIO 62 or 162) and molecular biology/biochemistry/genetics courses (e.g. BIO 82 or 83) and basic familiarity with coding.
Same as: BIO 220

BIO 121. ORNITHOLOGY. 2 Units.
Advanced undergraduate survey of ornithology, introducing students to the biology of birds and giving them to tools to use birds as model systems for research. Topics will include avian evolution, physiology, adaptations, behavior, and ecology. Focus throughout on identification of California birds and applications to current bird conservation issues. Course will include lectures and a field component which will expose students to standard avian research techniques such as mistnetting, banding, and point count surveys. Prerequisite: BIO 81 or BIO 105 or instructor approval.
Same as: BIO 221

BIO 124. Topics in Cancer Biology. 3 Units.
This discussion-based course will explore the scientific tools used to study the molecular and genetic basis of cancer and to develop treatments for this disease. Topics covered may include cancer models, traditional and targeted cancer therapies, and the development of resistance to treatment. Students will develop skills in critical reading of primary research articles and will also complete a final project. Prerequisites: Human Biology core or BIO 82, 83, 86, or with permission of instructor.

BIO 126. Introduction to Biophysics. 3-4 Units.
Core course appropriate for advanced undergraduate students and graduate students with prior knowledge of calculus and a college physics course. Introduction to how physical principles offer insights into modern biology, with regard to the structural, dynamical, and functional organization of biological systems. Topics include the roles of free energy, diffusion, electromotive forces, non-equilibrium dynamics, and information in fundamental biological processes.
Same as: APPPHYS 205, BIO 226

BIO 129. Fundamentals and Frontiers in Plant Biology. 3 Units.
This course will serve as a primer for all levels of graduate, co-term, and upper-level undergraduates interested in learning about the fundamental aspects of plant biology, the latest advances in tools, techniques, and theories that link basic science with translational science and applications for solving major societal challenges of today and tomorrow. In addition, this course will serve to introduce the breadth of plant research on campus and help solidify a cohort of students interested in plant biology.
Same as: BIO 229

BIO 130. Ecosystems of California. 4 Units.
California is home to a huge diversity of ecosystem types and processes. This course provides an introduction to the natural history, systematics, and ecosystem ecology of California ecosystems, based on a combination of lectures, student-led projects, and weekend field trips. Ecosystems to be explored will range from coasts to mountains and from desert to wetlands. Requirements include three essays and participation in three field trips (of six options).
Same as: EARTHSYS 130A

BIO 132. Advanced Imaging Lab in Biophysics. 4 Units.
Laboratory and lectures. Advanced microscopy and imaging, emphasizing hands-on experience with state-of-the-art techniques. Students construct and operate working apparatus. Topics include microscope optics, Koehler illumination, contrast-generating mechanisms (bright/dark field, fluorescence, phase contrast, differential interference contrast), and resolution limits. Laboratory topics vary by year, but include single-molecule fluorescence, fluorescence resonance energy transfer, confocal microscopy, two-photon microscopy, microendoscopy, and optical trapping. Limited enrollment. Recommended: basic physics, basic cell biology, and consent of instructor.
Same as: APPPHYS 232, BIO 232, BIOPHYS 232, GENE 232

BIO 134. Molecular and cellular analysis of human cancer cell lines. 4 Units.
This laboratory course will use cultured mammalian cells to study whether drug treatment can restore function to mutant versions of the tumor suppressor p53. Students will perform a variety of cellular and molecular techniques, including RT-PCR and immunofluorescence, to test certain abilities of their mutant in the presence and absence of the drug. The project will culminate with student-designed experiments testing a functional aspect of p53 and presentation of the results for both expert and lay audiences. Strongly suggested prerequisite: BIO 45, BIO 82, 83, 86.

BIO 135. Neuroethology. 3 Units.
Neuroethology is the study of the neural basis of animal behavior. We will explore the neural mechanisms of natural behaviors in a diverse set of organisms. Topics include molecular mechanisms of nervous system function, predator-prey interactions, social behavior, and other complex behaviors like learning and memory, navigation, and communication. Assessment includes group oral presentations of scientific papers, weekly homework prompts that lead into a mini grant proposal, and scientific writing and communication with the broader public on a neuroethological topic. Prerequisites: BIO 84.
Same as: BIO 235

BIO 136. Macroevolution. 3 Units.
The course will focus on the macroevolution of animals. We will be exploring how paleobiology and developmental biology/genomics have contributed to our understanding of the origins of animals, and how patterns of evolution and extinction have shaped the diversity of animal forms we observe today.
Same as: BIO 236, GEOLSCI 136, GEOLSCI 236

BIO 137. Plant Genetics. 3-4 Units.
Gene analysis, mutagenesis, transposable elements; developmental genetics of flowering and embryo development; biochemical genetics of plant metabolism; scientific and societal lessons from transgenic plants. Prerequisite: Biology core or consent of instructor. Satisfies WIM in Biology.

BIO 138. Ecosystem Services: Frontiers in the Science of Valuing Nature. 3 Units.
This course explores the science of valuing nature, beginning with its historical origins and then a primary focus on its recent development and frontiers. The principal aim of the course is to enable new research and real-world applications of InVEST (Integrated Valuation of Ecosystem Services and Tradeoffs) tools and approaches. We will discuss the interconnections between people and nature and key research frontiers, such as in the realms of biodiversity, resilience, human health, poverty alleviation, and sustainable development. The science we¿ll explore is in the service of decisions, and we will use examples from real life to illustrate why this science is so critical to informing why, where, how, and how much people need nature. Prerequisite. Basic to intermediate GIS skills are required (including working with raster, vector and tabular data; loading and editing rasters, shapefiles, and tables into a GIS; understanding coordinate systems; and performing basic raster math).
Same as: BIO 238, EARTHSYS 139, EARTHSYS 239

BIO 140. The Science of Extreme Life of the Sea. 3 Units.
Covers the way marine animals and plants live in extreme environments by examining morphological, ecological, and genetic adaptations to low temperature, high heat, deep water, etc. We also cover extreme lifestyles such as fast swimming, small and large body size, and novel reproductive systems. Lecture material is punctuated with a series of tutorials on narrative writing skills in science, especially creative non-fiction, memoirs, braided essays and short fiction. The goal is to integrate quantitative thinking about the life sciences with creative writing that brings facts to life. Prerequisites: core courses in biology, creative writing, environmental sciences or engineering. Two lectures back to back on Tuesdays with a Writing Intermezzo between.

BIO 141. Biostatistics. 5 Units.
Introductory statistical methods for biological data: describing data (numerical and graphical summaries); introduction to probability; and statistical inference (hypothesis tests and confidence intervals). Intermediate statistical methods: comparing groups (analysis of variance); analyzing associations (linear and logistic regression); and methods for categorical data (contingency tables and odds ratio). Course content integrated with statistical computing in R.
Same as: STATS 141

BIO 142. Molecular Geomicrobiology Laboratory. 3-4 Units.
In this course, students will be studying the biosynthesis of cyclic lipid biomarkers, molecules that are produced by modern microbes that can be preserved in rocks that are over a billion years old and which geologist use as molecular fossils. Students will be tasked with identifying potential biomarker lipid synthesis genes in environmental genomic databases, expressing those genes in a model bacterial expression system in the lab, and then analyzing the lipid products that are produced. The overall goal is for students to experience the scientific research process including generating hypotheses, testing these hypotheses in laboratory experiments, and communicating their results through a publication style paper. Prerequisites: BIO83 and CHEM 121 or permission of the instructor.
Same as: EARTHSYS 143, ESS 143, ESS 243

BIO 144. Conservation Biology: A Latin American Perspective. 3 Units.
Principles and application of the science of preserving biological diversity. Conceptually, this course is designed to explore the major components relevant to the conservation of biodiversity, as exemplified by the Latin American region. The conceptual frameworks and principles, however, should be generally applicable, and provide insights for all regions of the world. All students will be expected to conduct a literature research exercise leading to a written report, addressing a topic of their choosing, derived from any of the themes discussed in class. Prerequisite: BIO 101 or BIO 43 or HUMBIO 2A or BIO 81 and 84 or consent of instructor.
Same as: BIO 234, HUMBIO 112

BIO 145. Ecology and Evolution of Animal Behavior. 3 Units.
Ecological and evolutionary perspectives on animal behavior, with an emphasis on social and collective behavior. This is a project-based course in a lecture/seminar format. Seminars will be based on discussion of journal articles. Independent research projects on the behavior of animals on campus. Prerequisites: Biology or Human Biology core or BIO 81 and 85 or consent of instructor; Biology/ES 30. Recommended: statistics.
Same as: BIO 245

BIO 146. Genes and Disease. 3 Units.
Students in this course will uncover key principles of genetics and molecular biology through investigation of case studies of human disease and novel therapeutic approaches in development. This course will require close reading and discussion of primary literature and will emphasize and support the development of critical skills in scientific communication. Students will utilize a variety of mediums to convey scientific information to a range of audiences in a series of projects completed during the quarter. Prerequisites: BIO 82, 83 and 86 or equivalent.

BIO 147. Ecosystem Ecology and Biogeochemistry. 3 Units.
An introduction to ecosystem ecology and terrestrial biogeochemistry. This course will focus on the dynamics of carbon and other biologically essential elements in the Earth System, on spatial scales from local to global. Prerequisites: Biology 117, Earth Systems 111, or graduate standing.
Same as: BIO 240, EARTHSYS 147, EARTHSYS 247

BIO 148. Evolution of Terrestrial Ecosystems. 4 Units.
The what, when, where, and how do we know it regarding life on land through time. Fossil plants, fungi, invertebrates, and vertebrates (yes, dinosaurs) are all covered, including how all of those components interact with each other and with changing climates, continental drift, atmospheric composition, and environmental perturbations like glaciation and mass extinction. The course involves both lecture and lab components. Graduate students registering at the 200-level are expected to write a term paper, but can opt out of some labs where appropriate.
Same as: BIO 228, EARTHSYS 128, GEOLSCI 128, GEOLSCI 228

BIO 149. The Neurobiology of Sleep. 4 Units.
The neurochemistry and neurophysiology of changes in brain activity and conscious awareness associated with changes in the sleep/wake state. Behavioral and neurobiological phenomena including sleep regulation, sleep homeostasis, circadian rhythms, sleep disorders, sleep function, and the molecular biology of sleep. nnPreference to seniors and graduate students. nnEnrollment limited to 16.
Same as: BIO 249, HUMBIO 161

BIO 150. Human Behavioral Biology. 5 Units.
Multidisciplinary. How to approach complex normal and abnormal behaviors through biology. How to integrate disciplines including sociobiology, ethology, neuroscience, and endocrinology to examine behaviors such as aggression, sexual behavior, language use, and mental illness.
Same as: HUMBIO 160

BIO 151. Mechanisms of Neuron Death. 3 Units.
For undergraduates with backgrounds in neuroscience. Cell and molecular biology of neuron death during neurological disease. Topics: the amyloid diseases (Alzheimer's), prion diseases (kuru and Creutzfeldt-Jakob), oxygen radical diseases (Parkinson's and ALS), triplet repeat diseases (Huntington's), and AIDS-related dementia. Assessment based on in-class participation and short weekly papers. Enrollment limited to 15; application required. Apply at https://forms.gle/UE8EcQi3jS6do31a7 by 4:30pm on Wednesday, September 9, 2020.

BIO 152. Imaging: Biological Light Microscopy. 3 Units.
This intensive laboratory and discussion course will provide participants with the theoretical and practical knowledge to utilize emerging imaging technologies based on light microscopy. Topics include microscope optics, resolution limits, Köhler illumination, confocal fluorescence, two-photon, TIRF, FRET, photobleaching, super-resolution (SIM, STED, STORM/PALM), tissue clearing/CLARITY/light-sheet microscopy, and live-cell imaging. Applications include using fluorescent probes to analyze subcellular localization and live cell-translocation dynamics. We will be using a flipped classroom for the course in that students will watch iBiology lectures before class, and class time will be used for engaging in extensive discussion. Lab portion involves extensive in-class use of microscopes in the CSIF and NMS core microscopy facilities.
Same as: MCP 222

BIO 153. Cellular Neuroscience: Cell Signaling and Behavior. 4 Units.
Neural interactions underlying behavior. Prerequisites: PSYCH 1 or basic biology.
Same as: PSYCH 120

BIO 154. Molecular and Cellular Neurobiology. 4 Units.
For advanced undergraduate students. Cellular and molecular mechanisms in the organization and functions of the nervous system. Topics: wiring of the neuronal circuit, synapse structure and synaptic transmission, signal transduction in the nervous system, sensory systems, molecular basis of behavior including learning and memory, molecular pathogenesis of neurological diseases. Highly recommended: BioCore or BIO 82, 83, 86, or consent of instructor.

BIO 155. Cell and Developmental Biology of Plants. 3 Units.
In this course we will learn how plants are built at different organizational scales from the cell, tissue, organ and organ system level. We will also learn about the experimental methods used to study plants at these different organizational levels and how to interpret and evaluate experiments that use such methods. Broadly relevant skills that will be cultivated in the course include: evaluating primarily literature, identifying gaps in knowledge, formulating research questions and designing new experimental strategies. Prerequisites: BIO 80 series.
Same as: BIO 255

BIO 156. California Wildfires: Forest Fire Ecology, Management, and Policy. 3 Units.
Widespread wildfires have become an annual occurrence throughout California with massive implications for both the natural world and human society. The impacts of these fires are likely to grow with further climate change and land-use intensification. This class will take an interdisciplinary perspective on forest fires including the physiological, environmental, and social implications of the fires themselves, as well as the result of wildfire policy on nature and human beings, with a particular focus on equity of impacts across class and racial lines.

BIO 158. Developmental Neurobiology. 4 Units.
For advanced undergraduates and coterminal students. The principles of nervous system development from the molecular control of patterning, cell-cell interactions, and trophic factors to the level of neural systems and the role of experience in influencing brain structure and function. Topics: neural induction and patterning cell lineage, neurogenesis, neuronal migration, axonal pathfinding, synapse elimination, the role of activity, critical periods, and the development of behavior. Prerequisites: BIO 82, 83, 84, 86.
Same as: BIO 258

BIO 160. Developmental Biology. 4 Units.
This course will cover the molecular mechanisms underlying the generation of diverse cell types and tissues during embryonic and post-embryonic animal development. Topics include the role of cell-cell communication in controlling developmental decisions, the organization and patterning of large groups of cells via morphogen signaling, the specification of individual cell types, and the role of stem cells in development. The course emphasizes the experimental logic and methods of research in developmental biology and includes discussions of research papers.

BIO 161. Organismal Biology Lab. 4 Units.
This laboratory is a genuine research experience course where students contribute to original research in a field of organismal biology. This year, the course will focus on the physiology of chemical defenses in poisonous amphibians through three modules. In the first module focusing on chemistry, students will work with metabolomics data to interpret and visualize chemical signatures of poison frog defense. In the second module focusing on physiology, students will learn to analyze gene expression differences in various tissues from RNA sequencing data. In the third module focusing on ecology, students will learn to analyze animal diet and foraging strategies through metabarcoding. Finally, students will integrate these datasets together for an organismal perspective on chemical defenses. Students will work collaboratively to analyze data and will learn to communicate their findings clearly through oral and written formats.

BIO 162. Mechanisms of Tissue Regeneration. 3 Units.
Many organisms possess a remarkable ability to repair and regenerate damaged organs and tissues. This course will explore the cellular and developmental mechanisms used to achieve regeneration. Students will learn the basic developmental and cellular mechanisms underlying the original formation of organs during normal development and how these mechanisms are modified during the regenerative process. The course will also consider how our expanding knowledge of regeneration mechanisms could be used to promote medically useful regeneration in humans. The course will involve extensive reading and analysis of primary literature. Prerequisites: BIO 86 and BIO160 or by consent of instructor.

BIO 168. Explorations in Stem Cell Biology. 3 Units.
A discussion-based course for advanced undergraduates. The purpose of this course is to introduce students to key topics in stem cell biology and foster the development of strong scientific writing skills. We will review and discuss some landmark and current primary literature in the stem cell field. Topics will include embryonic and adult stem cells, cellular reprogramming and stem cells in disease and regenerative medicine. Students will present a current research paper in their preferred stem cell topic area and compose a novel research proposal. Prerequisites: Biology or Human Biology core or BIO 82, 83, 86. Satisfies WIM in Biology.

BIO 171. Principles of Cell Cycle Control. 3 Units.
Genetic analysis of the key regulatory circuits governing the control of cell division. Illustration of key principles that can be generalized to other synthetic and natural biological circuits. Focus on tractable model organisms; growth control; irreversible biochemical switches; chromosome duplication; mitosis; DNA damage checkpoints; MAPK pathway-cell cycle interface; oncogenesis. Analysis of classic and current primary literature.
Same as: BIO 271, CSB 271

BIO 172. Ecological Dynamics: Theory and Applications. 4 Units.
Structured population models with age and phenotypic variation. Integral population models, model fitting and dynamics. Fitness and dynamic heterogeneity. Examples from natural populations (sheep, roe deer, plants, birds). Graduate students will be responsible for additional problem sets. Prerequisites: calculus and linear algebra.
Same as: BIO 272

BIO 173. Chemical Biology. 3 Units.
Chemical biology is an integrative discipline that seeks to apply chemical tools and approaches to understand biology. This course will introduce students to various methods and approaches used in this field, with an emphasis on the use of natural products and synthetic small molecules as probes of biological function. Specific examples will be used to illustrate the ramifications of chemical biology with molecular, cell and developmental biology. The interaction between disease and drug discovery will be considered in detail. Prerequisites: BIO 83, and BIO 82 and/or BIO 84.

BIO 174. Human Skeletal Anatomy. 5 Units.
Study of the human skeleton (a. k. a. human osteology), as it bears on other disciplines, including medicine, forensics, archaeology, and paleoanthropology (human evolution). Basic bone biology, anatomy, and development, emphasizing hands-on examination and identification of human skeletal parts, their implications for determining an individual's age, sex, geographic origin, and health status, and for the evolutionary history of our species. Three hours of lecture and at least three hours of supervised and independent study in the lab each week.
Same as: ANTHRO 175, ANTHRO 275, BIO 274, HUMBIO 180

BIO 175. Collective Behavior and Distributed Intelligence. 3 Units.
This course will explore possibilities for student research projects based on presentations of faculty research. We will cover a broad range of topics within the general area of collective behavior, both natural and artificial. Students will build on faculty presentations to develop proposals for future projects.
Same as: SYMSYS 275

BIO 176. The Developmental Basis of Animal Body Plan Evolution. 4 Units.
Animals are grouped into phyla with defined organizational characteristics such as multicellularity, axis organization, and nervous system organization, as well as morphological novelties such as eyes, limbs and segments. This course explores the developmental and molecular origins of there animal innovations. Offered alternate years. Prerequisites: None.
Same as: BIO 276

BIO 177. Plant Microbe Interaction. 3 Units.
Molecular basis of plant symbiosis and pathogenesis. Topics include mechanisms of recognition and signaling between microbes and plant hosts, with examples such as the role of small molecules, secreted peptides, and signal transduction pathways in symbiotic or pathogenic interactions. Readings include landmark papers together with readings in the contemporary literature. Prerequisites: Biology core and two or more upper division courses in genetics, molecular biology, or biochemistry. Recommended: plant genetics or plant biochemistry.
Same as: BIO 277

BIO 178. Microbiology Literature. 3 Units.
For advanced undergraduates and first-year graduate students. Critical reading of the research literature in prokaryotic genetics and molecular biology, with particular applications to the study of major human pathogens. Classic and foundational papers in pathogenesis, genetics, and molecular biology; recent literature on bacterial pathogens such as Salmonella, Vibrio, and/or Yersinia. Diverse experimental approaches: biochemistry, genomics, pathogenesis, and cell biology. Prerequisites: Declared Biology majors must have taken BIO 82 (Genetics) and BIO 83 (Biochemistry). Enrollment for undergraduates is limited to Biology majors in junior or senior year. Co-term or Ph.D. students in basic life sciences departments such as Biology, Bioengineering, and Genetics may also enroll in BIO 278. Apply at https://forms.gle/4NTtcBdWYMqRFvGc9.
Same as: BIO 278

BIO 179. Integrated Valuation of Ecosystem Services and Tradeoffs. 1-3 Unit.
This course explores the science of valuing nature, through two interwoven pathways. One is biophysical, focused on human dependence and impacts on Earth¿s life-support systems. If well managed, lands, waters, and biodiversity yield a flow of vital benefits that sustain and fulfill human life. A wild bee buzzes through a farm, pollinating vegetables as it goes. Nearby, wetlands remove chemicals from the farm¿s runoff, protecting a source of drinking water. In parklands at a city¿s edge, kids play and adults walk and talk, their exposure to nature promoting physical activity and improved mental health. The trees help maintain a favorable climate, locally and globally. We¿ll develop a framework and practical tools for quantifying this stream of benefits from nature to people.nThe second pathway is social, economic, and philosophical, weaving through concepts of well-being, human development, and conservation ¿ and the ethics and effects of their pursuit. We will look back, ahead into the future, and inward, taking a global view and considering diverse cultural perspectives. Our discussions will be situated in the context of the COVID-19 pandemic, movements for racial justice and socioeconomic equity, and efforts to enable people and nature to thrive in cities and countries worldwide.nAll of the science we¿ll explore is in service of decisions. We will dive into real-world examples to see how science can inform why, where, how, and how much people need nature. We will learn the basics of the InVEST tools (for Integrated Valuation of Ecosystem Services and Tradeoffs) to quantify benefits of nature, the equitability in access to these benefits, and the transformation of policy, finance, management, and practice to sustain and enhance them. nThe course is intended for diverse, advanced students, with interests in research and in moving from science to action for a more just and sustainable world. The instructors aim to provide an enjoyable and productive opportunity to connect ¿ remotely and yet with a lot of heart as well as intellectual drive and commitment, bringing empathy, flexibility and hopefully some humor to the day-to-day challenges we are all facing in different difficult ways. Prerequisite: Basic to intermediate GIS (Geographic Information Systems) skills are necessary. We will help with these, but not teach GIS specifically in class. Basic skills include, for example: working with raster, vector and tabular data; loading rasters, shapefiles, and tables into a GIS; changing the symbology of rasters and shapefiles in your chosen GIS; editing raster and shapefile attribute tables; understanding coordinate systems and how to re-project layers; looking at individual raster cell values; and performing basic raster math.
Same as: BIO 279

BIO 180. Microbial Physiology. 3 Units.
Introduction to the physiology of microbes including cellular structure, transcription and translation, growth and metabolism, mechanisms for stress resistance and the formation of microbial communities. These topics will be covered in relation to the evolution of early life on Earth, ancient ecosystems, and the interpretation of the rock record. Recommended: introductory biology and chemistry.
Same as: EARTHSYS 255, ESS 255, GEOLSCI 233A

BIO 182. Modeling Cultural Evolution. 3 Units.
Seminar. Quantitative models for the evolution of socially transmitted traits. Rates of change of learned traits in populations and patterns of cultural diversity as a function of innovation and cultural transmission. Learning in constant and changing environments. Possible avenues for gene-culture coevolution.
Same as: BIO 282

BIO 183. Theoretical Population Genetics. 3 Units.
Models in population genetics and evolution. Selection, random drift, gene linkage, migration, and inbreeding, and their influence on the evolution of gene frequencies and chromosome structure. Models are related to DNA sequence evolution. Prerequisites: calculus and linear algebra, or consent of instructor.
Same as: BIO 283

BIO 187. Mathematical Population Biology. 3 Units.
Mathematical models in population biology, in biological areas including demography, ecology, epidemiology, evolution, and genetics. Mathematical approaches include techniques in areas such as combinatorics, differential equations, dynamical systems, linear algebra, probability, and stochastic processes. Math 50 or 60 series is required, and at least two of (Bio 81, Bio 82, Bio 85) are strongly recommended.
Same as: CME 187

BIO 193. Interdisciplinary Approaches to Human Health Research. 1 Unit.
For undergraduate students participating in the Stanford ChEM-H Undergraduate Scholars Program. This course will expose students to interdisciplinary research questions and approaches that span chemistry, engineering, biology, and medicine. Focus is on the development and practice of scientific reading, writing, and presentation skills intended to complement hands-on laboratory research. Students will read scientific articles, write research proposals, make posters, and give presentations.
Same as: BIOE 193, CHEM 193, CHEMENG 193

BIO 196A. Biology Senior Reflection. 3 Units.
Capstone course series for seniors. Creative, self-reflective and scientifically relevant projects conceived, produced and exhibited over the course of three quarters. Explore scientific content of personal interest through creative forms including but not limited to writing, music, fine arts, performing arts, photography, film or new media. A written essay on the creative process and scientific significance of the selected topic will accompany the creative work. Completed projects may be included in a creative portfolio. Required enrollment in 196A,B,C. Satisfies WIM in Biology. May be repeat for credit.

BIO 196B. Biology Senior Reflection. 3 Units.
Capstone course series for seniors. Creative, self-reflective and scientifically relevant projects conceived, produced and exhibited over the course of three quarters. Explore scientific content of personal interest through creative forms including but not limited to writing, music, fine arts, performing arts, photography, film or new media. A written essay on the creative process and scientific significance of the selected topic will accompany the creative work. Completed projects may be included in a creative portfolio. Required enrollment in 196A,B,C. May be repeat for credit.

BIO 196C. Biology Senior Reflection. 3 Units.
Capstone course series for seniors. Creative, self-reflective and scientifically relevant projects conceived, produced and exhibited over the course of three quarters. Explore scientific content of personal interest through creative forms including but not limited to writing, music, fine arts, performing arts, photography, film or new media. A written essay on the creative process and scientific significance of the selected topic will accompany the creative work. Completed projects may be included in a creative portfolio. Required enrollment in 196A,B,C. May be repeat for credit.

BIO 198. Directed Reading in Biology. 1-15 Unit.
Individually arranged under the supervision of members of the faculty.

BIO 198X. Out-of-Department Directed Reading. 1-15 Unit.
Individually arranged under the supervision of members of the faculty. Credit for work arranged with out-of-department faculty is restricted to Biology majors and requires department approval. See https://biology.stanford.edu/academics/undergraduate-research/directed-reading for information and petitions. May be repeated for credit.

BIO 199. Advanced Research Laboratory in Experimental Biology. 1-15 Unit.
Individual research taken by arrangement with in-department instructors. See http://biohonors.stanford.edu for information on research sponsors, units, and credit for summer research. May be repeated for credit.

BIO 199W. Senior Honors Thesis: How to Effectively Write About Scientific Research. 3 Units.
The goal of this class is to train students in effective scientific communication. It is designed to serve students working on their senior honors research to help facilitate the completion of their honors thesis. Topics covered will include elevator pitches, creating and improving the sections of the thesis, oral presentations and posters in the context of students¿ individual research projects. Emphasis will be on building and practicing the skills for 1) completing your thesis, poster and presentations and 2) gaining a conceptual understanding of effective scientific writing and communication that will be applicable more broadly. Satisfies the WIM requirement in Biology.

BIO 199X. Out-of-Department Advanced Research Laboratory in Experimental Biology. 1-15 Unit.
Individual research by arrangement with out-of-department instructors. Credit for 199X is restricted to declared Biology majors and requires department approval. See https://biology.stanford.edu/academics/undergraduate-research/research for information on research sponsors, units, petitions, deadlines, credit for summer research, and out-of-Stanford research. May be repeated for credit.

BIO 200. Advance Molecular Biology: Epigenetics and Proteostasis. 5 Units.
Molecular mechanisms that govern the replication, recombination, and expression of eukaryotic genomes. Topics: DNA replication, DNA recombination, gene transcription, RNA splicing, regulation of gene expression, protein synthesis, and protein folding. Prerequisite: Biology core or BIO 83 (BIO 82 and 86 are strongly recommended).
Same as: BIO 104

BIO 202. Ecological Statistics. 3 Units.
Intended for graduate students (and advanced undergraduates in special circumstances with consent of instructors) in biology and related environmental sciences, this course is an introduction to statistical methods for ecological data analysis, using the programming language R. The course will have lectures, discussions, and independent research projects using the students¿ own data or simulated or publicly available data.

BIO 203. HUMAN AND PLANET HEALTH. 2 Units.
Two of the biggest challenges humanity has to face - promoting human health and halting environmental degradation ¿ are strongly linked. The emerging field of Planetary Health recognizes these inter-linkages and promotes creative, interdisciplinary solutions that protect human health and the health of the ecosystems on which we depend. Through a series of lectures and case-study discussions, students will develop an in-depth understanding of the ¿Planetary Health¿ concept, its foundation, goals, priority areas of action, methods of investigation, and the most relevant immediate challenges.
Same as: BIO 103

BIO 204. Neuroplasticity: From Synapses to Behavior. 3 Units.
This course will focus on neuroplasticity from a broad perspective, from molecular cellular mechanism to its involvement in behavior and diseases. Emphasis will be on: a) molecular and cellular mechanisms underlying various forms of neuroplasticity; b) the neuroplasticity during brain development; c) the neuroplasticity in adult brain with respect to learning and memory; and d) maladaptive neuroplasticity in neurodegenerative disease and drug addiction. This course is designed for Ph.D. students from both the Biology and Neuroscience programs. Open to advanced undergraduates by consent of instructor.

BIO 208. Spanish in Science/Science in Spanish. 2 Units.
For graduate and undergraduate students interested in the natural sciences and the Spanish language. Students will acquire the ability to communicate in Spanish using scientific language and will enhance their ability to read scientific literature written in Spanish. Emphasis on the development of science in Spanish-speaking countries or regions. Course is conducted in Spanish and intended for students pursuing degrees in the sciences, particularly disciplines such as ecology, environmental science, sustainability, resource management, anthropology, and archeology.
Same as: EARTHSYS 207, LATINAM 207

BIO 210. The Chromatin-Regulated Genome. 3 Units.
Maintenance of the genome is a prerequisite for life. In eukaryotes, all DNA-templated processes are tightly connected to chromatin structure and function. This course will explore epigenetic and chromatin regulation of cellular processes related to aging, cancer, stem cell pluripotency, metabolic homeostasis, and development. Course material integrates current literature with a foundational review of histone modifications and nucleosome composition in epigenetic inheritance, transcription, replication, cell division and DNA damage responses. Prerequisite: BIO 41 or BIO 83 or consent of instructor.
Same as: BIO 110

BIO 211. Proteostasis: From Basic Principles to Aging and Neurodegeneration. 3 Units.
The control of cellular protein homeostasis, also called Proteostasis, is emerging as the central cellular process controlling the stability, function and quality control of the proteome and central to our understanding of a vast range of diseases. The proteostasis machinery maintains the function of destabilized and mutant proteins; assists the degradation of damaged and aggregated proteins and monitors the health of the proteome, adjusting it in response to environmental or metabolic stresses. Proteostasis disfunction is linked to diseases ranging from neurodegeneration to aging.nThis class will introduce students to the exciting cutting edge discoveries in this field through presentations by leaders in the field and discussions of primary literature illustrating how understanding proteostasis can be leveraged to understand fundamental biological processes, such as evolution and aging and to ameliorate a wide range of diseases.

BIO 214. Advanced Cell Biology. 4 Units.
For Ph.D. students. Taught from the current literature on cell structure, function, and dynamics. Topics include complex cell phenomena such as cell division, apoptosis, signaling, compartmentalization, transport and trafficking, motility and adhesion, and differentiation. Weekly reading of current papers from the primary literature. Advanced undergraduates may participate with the permission of the Course Director.
Same as: BIOC 224, MCP 221

BIO 220. Prokaryotic Biology - A Quantitative Approach. 3 Units.
To live, microbes have to successfully coordinate various cellular processes, in line with available resources and what environmental conditions demand. This course introduces quantitative advances in understanding this coordination and their consequences across scales: from molecular biology via growth to population dynamics and ecology. Dry lab sessions complement lectures to introduce computational approaches. Python based analysis tools will be introduced. Prerequisite: MATH 51 or MATH 19, 20,21. Recommended: microbiology (e.g. BIO 62 or 162) and molecular biology/biochemistry/genetics courses (e.g. BIO 82 or 83) and basic familiarity with coding.
Same as: BIO 120

BIO 221. ORNITHOLOGY. 2 Units.
Advanced undergraduate survey of ornithology, introducing students to the biology of birds and giving them to tools to use birds as model systems for research. Topics will include avian evolution, physiology, adaptations, behavior, and ecology. Focus throughout on identification of California birds and applications to current bird conservation issues. Course will include lectures and a field component which will expose students to standard avian research techniques such as mistnetting, banding, and point count surveys. Prerequisite: BIO 81 or BIO 105 or instructor approval.
Same as: BIO 121

BIO 222. Exploring Neural Circuits. 3 Units.
Seminar. The logic of how neural circuits control behavior; how neural circuits are assembled during development and modified by experience. Emphasis is on primary literature. Topics include: neurons as information processing units; simple and complex circuits underlying sensory information processing and motor control; and development and plasticity of neural circuits. Advanced undergraduates and graduate students with background in physical science, engineering, and biology may apply to enroll. Enrollment is by application only. Recommended: background in neuroscience.

BIO 223. Stochastic and Nonlinear Dynamics. 3 Units.
Theoretical analysis of dynamical processes: dynamical systems, stochastic processes, and spatiotemporal dynamics. Motivations and applications from biology and physics. Emphasis is on methods including qualitative approaches, asymptotics, and multiple scale analysis. Prerequisites: ordinary and partial differential equations, complex analysis, and probability or statistical physics.
Same as: APPPHYS 223, BIOE 213, PHYSICS 223

BIO 226. Introduction to Biophysics. 3-4 Units.
Core course appropriate for advanced undergraduate students and graduate students with prior knowledge of calculus and a college physics course. Introduction to how physical principles offer insights into modern biology, with regard to the structural, dynamical, and functional organization of biological systems. Topics include the roles of free energy, diffusion, electromotive forces, non-equilibrium dynamics, and information in fundamental biological processes.
Same as: APPPHYS 205, BIO 126

BIO 227. Foundations of Community Ecology. 3 Units.
Discussion of classic papers in community ecology (Forbes, Clements, Gleason, Grinnell, Lindeman, Preston, Elton, Hutchinson, May, MacArthur, Odum, Connell, Paine, Tilman, etc.) and contemporary papers on related topics, to develop historical perspectives to understand current issues and identify future directions. Prerequisite for undergraduates: consent of instructor.

BIO 228. Evolution of Terrestrial Ecosystems. 4 Units.
The what, when, where, and how do we know it regarding life on land through time. Fossil plants, fungi, invertebrates, and vertebrates (yes, dinosaurs) are all covered, including how all of those components interact with each other and with changing climates, continental drift, atmospheric composition, and environmental perturbations like glaciation and mass extinction. The course involves both lecture and lab components. Graduate students registering at the 200-level are expected to write a term paper, but can opt out of some labs where appropriate.
Same as: BIO 148, EARTHSYS 128, GEOLSCI 128, GEOLSCI 228

BIO 229. Fundamentals and Frontiers in Plant Biology. 3 Units.
This course will serve as a primer for all levels of graduate, co-term, and upper-level undergraduates interested in learning about the fundamental aspects of plant biology, the latest advances in tools, techniques, and theories that link basic science with translational science and applications for solving major societal challenges of today and tomorrow. In addition, this course will serve to introduce the breadth of plant research on campus and help solidify a cohort of students interested in plant biology.
Same as: BIO 129

BIO 230. Molecular and Cellular Immunology. 4 Units.
Mechanisms of immune responses in health and disease. Innate and adaptive immunity; development of the immune system; molecular biology, structure, and function of antibodies and T-cell receptors; cellular basis and regulation of immune responses; infectious diseases and vaccines; allergy, inflammation, and autoimmunity. COVID-19 will be featured as a major example. Lectures and discussion in class and in sections. For upper class undergraduate and graduate students who have not had an introductory immunology course. Prerequisites for undergraduates: Biology Core, Human Biology Core, or BIO 83 and 86, or consent of instructor. For graduate students: College-level molecular biology, biochemistry, and cell biology, or consent of instructor.

BIO 230A. Molecular and Cellular Immunology Literature Review. 1 Unit.
Special discussion section for graduate students. Supplement to BIO 230. Pre- or corequisite: BIO 230 or other introductory immunology course.

BIO 231. Structural Equation Modeling for Ecologists. 1 Unit.
We will focus on learning to use structural equation modeling (SEM) as a technique for ecological inference. Class will include short lectures, paper discussions, and SEM coding workshops in R. Meetings will generally last only 60 minutes.

BIO 232. Advanced Imaging Lab in Biophysics. 4 Units.
Laboratory and lectures. Advanced microscopy and imaging, emphasizing hands-on experience with state-of-the-art techniques. Students construct and operate working apparatus. Topics include microscope optics, Koehler illumination, contrast-generating mechanisms (bright/dark field, fluorescence, phase contrast, differential interference contrast), and resolution limits. Laboratory topics vary by year, but include single-molecule fluorescence, fluorescence resonance energy transfer, confocal microscopy, two-photon microscopy, microendoscopy, and optical trapping. Limited enrollment. Recommended: basic physics, basic cell biology, and consent of instructor.
Same as: APPPHYS 232, BIO 132, BIOPHYS 232, GENE 232

BIO 234. Conservation Biology: A Latin American Perspective. 3 Units.
Principles and application of the science of preserving biological diversity. Conceptually, this course is designed to explore the major components relevant to the conservation of biodiversity, as exemplified by the Latin American region. The conceptual frameworks and principles, however, should be generally applicable, and provide insights for all regions of the world. All students will be expected to conduct a literature research exercise leading to a written report, addressing a topic of their choosing, derived from any of the themes discussed in class. Prerequisite: BIO 101 or BIO 43 or HUMBIO 2A or BIO 81 and 84 or consent of instructor.
Same as: BIO 144, HUMBIO 112

BIO 235. Neuroethology. 3 Units.
Neuroethology is the study of the neural basis of animal behavior. We will explore the neural mechanisms of natural behaviors in a diverse set of organisms. Topics include molecular mechanisms of nervous system function, predator-prey interactions, social behavior, and other complex behaviors like learning and memory, navigation, and communication. Assessment includes group oral presentations of scientific papers, weekly homework prompts that lead into a mini grant proposal, and scientific writing and communication with the broader public on a neuroethological topic. Prerequisites: BIO 84.
Same as: BIO 135

BIO 236. Macroevolution. 3 Units.
The course will focus on the macroevolution of animals. We will be exploring how paleobiology and developmental biology/genomics have contributed to our understanding of the origins of animals, and how patterns of evolution and extinction have shaped the diversity of animal forms we observe today.
Same as: BIO 136, GEOLSCI 136, GEOLSCI 236

BIO 238. Ecosystem Services: Frontiers in the Science of Valuing Nature. 3 Units.
This course explores the science of valuing nature, beginning with its historical origins and then a primary focus on its recent development and frontiers. The principal aim of the course is to enable new research and real-world applications of InVEST (Integrated Valuation of Ecosystem Services and Tradeoffs) tools and approaches. We will discuss the interconnections between people and nature and key research frontiers, such as in the realms of biodiversity, resilience, human health, poverty alleviation, and sustainable development. The science we¿ll explore is in the service of decisions, and we will use examples from real life to illustrate why this science is so critical to informing why, where, how, and how much people need nature. Prerequisite. Basic to intermediate GIS skills are required (including working with raster, vector and tabular data; loading and editing rasters, shapefiles, and tables into a GIS; understanding coordinate systems; and performing basic raster math).
Same as: BIO 138, EARTHSYS 139, EARTHSYS 239

BIO 239. The Hidden Kingdom - Evolution, Ecology and Diversity of Fungi. 4 Units.
Fungi are critical, yet often hidden, components of the biosphere. They regulate decomposition, are primary partners in plant symbiosis and strongly impact agriculture and economics. Students will explore the fascinating world of fungal biology, ecology and evolution via lecture, lab, field exercises and Saturday field trips that will provide traditional and molecular experiences in the collection, analysis and industrial use of diverse fungi. Students will chose an environmental niche, collect and identify resident fungi, and hypothesize about their community relationship. Prerequisite: BIO 81, 85 recommended.
Same as: BIO 115

BIO 240. Ecosystem Ecology and Biogeochemistry. 3 Units.
An introduction to ecosystem ecology and terrestrial biogeochemistry. This course will focus on the dynamics of carbon and other biologically essential elements in the Earth System, on spatial scales from local to global. Prerequisites: Biology 117, Earth Systems 111, or graduate standing.
Same as: BIO 147, EARTHSYS 147, EARTHSYS 247

BIO 244. Fundamentals of Molecular Evolution. 4 Units.
The inference of key molecular evolutionary processes from DNA and protein sequences. Topics include random genetic drift, coalescent models, effects and tests of natural selection, combined effects of linkage and natural selection, codon bias and genome evolution. Prerequisites: Biology core or BIO 82, 85 or graduate standing in any department, and consent of instructor.
Same as: BIO 113

BIO 245. Ecology and Evolution of Animal Behavior. 3 Units.
Ecological and evolutionary perspectives on animal behavior, with an emphasis on social and collective behavior. This is a project-based course in a lecture/seminar format. Seminars will be based on discussion of journal articles. Independent research projects on the behavior of animals on campus. Prerequisites: Biology or Human Biology core or BIO 81 and 85 or consent of instructor; Biology/ES 30. Recommended: statistics.
Same as: BIO 145

BIO 247. Genomic approaches to the study of human disease. 3 Units.
This course will cover a range of genetic and genomic approaches to studying human phenotypic variation and disease. We will discuss the genetic basis of Mendelian and complex diseases, as well as clinical applications including prenatal testing, and pediatric and cancer diagnostics. The course will include lectures as well as critical reading and discussion of the primary literature. Prerequisite: BIO 82 or equivalent. Open to advanced undergraduate students.
Same as: GENE 247

BIO 249. The Neurobiology of Sleep. 4 Units.
The neurochemistry and neurophysiology of changes in brain activity and conscious awareness associated with changes in the sleep/wake state. Behavioral and neurobiological phenomena including sleep regulation, sleep homeostasis, circadian rhythms, sleep disorders, sleep function, and the molecular biology of sleep. nnPreference to seniors and graduate students. nnEnrollment limited to 16.
Same as: BIO 149, HUMBIO 161

BIO 251. Quantitative Evolutionary Dynamics and Genomics. 3 Units.
The genomics revolution has fueled a renewed push to model evolutionary processes in quantitative terms. This course will provide an introduction to quantitative evolutionary modeling through the lens of statistical physics. Topics will range from the foundations of theoretical population genetics to experimental evolution of laboratory microbes. Course work will involve a mixture of pencil-and-paper math, writing basic computer simulations, and downloading and manipulating DNA sequence data from published datasets. This course is intended for upper level physics and math students with no biology background, as well as biology students who are comfortable with differential equations and probability.
Same as: APPPHYS 237

BIO 254. Molecular and Cellular Neurobiology. 3-5 Units.
For graduate students. Includes lectures for BIO 154. Cellular and molecular mechanisms in the organization and functions of the nervous system. Topics: wiring of the neuronal circuit, synapse structure and synaptic transmission, signal transduction in the nervous system, sensory systems, molecular basis of behavior including learning and memory, molecular pathogenesis of neurological diseases.
Same as: NBIO 254

BIO 255. Cell and Developmental Biology of Plants. 3 Units.
In this course we will learn how plants are built at different organizational scales from the cell, tissue, organ and organ system level. We will also learn about the experimental methods used to study plants at these different organizational levels and how to interpret and evaluate experiments that use such methods. Broadly relevant skills that will be cultivated in the course include: evaluating primarily literature, identifying gaps in knowledge, formulating research questions and designing new experimental strategies. Prerequisites: BIO 80 series.
Same as: BIO 155

BIO 258. Developmental Neurobiology. 4 Units.
For advanced undergraduates and coterminal students. The principles of nervous system development from the molecular control of patterning, cell-cell interactions, and trophic factors to the level of neural systems and the role of experience in influencing brain structure and function. Topics: neural induction and patterning cell lineage, neurogenesis, neuronal migration, axonal pathfinding, synapse elimination, the role of activity, critical periods, and the development of behavior. Prerequisites: BIO 82, 83, 84, 86.
Same as: BIO 158

BIO 267. Molecular Mechanisms of Neurodegenerative Disease. 4 Units.
The epidemic of neurodegenerative disorders such as Alzheimer's and Parkinson's disease occasioned by an aging human population. Genetic, molecular, and cellular mechanisms. Clinical aspects through case presentations.nnnThis class is open to both graduate and undergraduate students, but requires sufficient backgrounds in college level genetics, cell biology and biochemistry. Undergraduates who are interested are required to contact the course director first.
Same as: GENE 267, NENS 267

BIO 268. Statistical and Machine Learning Methods for Genomics. 3 Units.
Introduction to statistical and computational methods for genomics. Sample topics include: expectation maximization, hidden Markov model, Markov chain Monte Carlo, ensemble learning, probabilistic graphical models, kernel methods and other modern machine learning paradigms. Rationales and techniques illustrated with existing implementations used in population genetics, disease association, and functional regulatory genomics studies. Instruction includes lectures and discussion of readings from primary literature. Homework and projects require implementing some of the algorithms and using existing toolkits for analysis of genomic datasets.
Same as: BIOMEDIN 245, CS 373, STATS 345

BIO 271. Principles of Cell Cycle Control. 3 Units.
Genetic analysis of the key regulatory circuits governing the control of cell division. Illustration of key principles that can be generalized to other synthetic and natural biological circuits. Focus on tractable model organisms; growth control; irreversible biochemical switches; chromosome duplication; mitosis; DNA damage checkpoints; MAPK pathway-cell cycle interface; oncogenesis. Analysis of classic and current primary literature.
Same as: BIO 171, CSB 271

BIO 272. Ecological Dynamics: Theory and Applications. 4 Units.
Structured population models with age and phenotypic variation. Integral population models, model fitting and dynamics. Fitness and dynamic heterogeneity. Examples from natural populations (sheep, roe deer, plants, birds). Graduate students will be responsible for additional problem sets. Prerequisites: calculus and linear algebra.
Same as: BIO 172

BIO 273A. Environmental Microbiology I. 3 Units.
Basics of microbiology and biochemistry. The biochemical and biophysical principles of biochemical reactions, energetics, and mechanisms of energy conservation. Diversity of microbial catabolism, flow of organic matter in nature: the carbon cycle, and biogeochemical cycles. Bacterial physiology, phylogeny, and the ecology of microbes in soil and marine sediments, bacterial adhesion, and biofilm formation. Microbes in the degradation of pollutants. Prerequisites: CHEM 33,CHEM 121 (formerly CHEM 35), and BIOSCI 83, CHEMENG 181, or equivalents.
Same as: CEE 274A, CHEMENG 174, CHEMENG 274

BIO 273B. Microbial Bioenergy Systems. 3 Units.
Introduction to microbial metabolic pathways and to the pathway logic with a special focus on microbial bioenergy systems. The first part of the course emphasizes the metabolic and biochemical principles of pathways, whereas the second part is more specifically directed toward using this knowledge to understand existing systems and to design innovative microbial bioenergy systems for biofuel, biorefinery, and environmental applications. There also is an emphasis on the implications of rerouting of energy and reducing equivalents for the fitness and ecology of the organism. Prerequisites: CHEMENG 174 or 181 and organic chemistry, or equivalents.
Same as: CEE 274B, CHEMENG 456

BIO 274. Human Skeletal Anatomy. 5 Units.
Study of the human skeleton (a. k. a. human osteology), as it bears on other disciplines, including medicine, forensics, archaeology, and paleoanthropology (human evolution). Basic bone biology, anatomy, and development, emphasizing hands-on examination and identification of human skeletal parts, their implications for determining an individual's age, sex, geographic origin, and health status, and for the evolutionary history of our species. Three hours of lecture and at least three hours of supervised and independent study in the lab each week.
Same as: ANTHRO 175, ANTHRO 275, BIO 174, HUMBIO 180

BIO 274S. Hopkins Microbiology Course. 3-12 Units.
(Formerly GES 274S.) Four-week, intensive. The interplay between molecular, physiological, ecological, evolutionary, and geochemical processes that constitute, cause, and maintain microbial diversity. How to isolate key microorganisms driving marine biological and geochemical diversity, interpret culture-independent molecular characterization of microbial species, and predict causes and consequences. Laboratory component: what constitutes physiological and metabolic microbial diversity; how evolutionary and ecological processes diversify individual cells into physiologically heterogeneous populations; and the principles of interactions between individuals, their population, and other biological entities in a dynamically changing microbial ecosystem. Prerequisites: CEE 274A and CEE 274B, or equivalents.
Same as: BIOHOPK 274, CEE 274S, ESS 253S

BIO 276. The Developmental Basis of Animal Body Plan Evolution. 4 Units.
Animals are grouped into phyla with defined organizational characteristics such as multicellularity, axis organization, and nervous system organization, as well as morphological novelties such as eyes, limbs and segments. This course explores the developmental and molecular origins of there animal innovations. Offered alternate years. Prerequisites: None.
Same as: BIO 176

BIO 277. Plant Microbe Interaction. 3 Units.
Molecular basis of plant symbiosis and pathogenesis. Topics include mechanisms of recognition and signaling between microbes and plant hosts, with examples such as the role of small molecules, secreted peptides, and signal transduction pathways in symbiotic or pathogenic interactions. Readings include landmark papers together with readings in the contemporary literature. Prerequisites: Biology core and two or more upper division courses in genetics, molecular biology, or biochemistry. Recommended: plant genetics or plant biochemistry.
Same as: BIO 177

BIO 278. Microbiology Literature. 3 Units.
For advanced undergraduates and first-year graduate students. Critical reading of the research literature in prokaryotic genetics and molecular biology, with particular applications to the study of major human pathogens. Classic and foundational papers in pathogenesis, genetics, and molecular biology; recent literature on bacterial pathogens such as Salmonella, Vibrio, and/or Yersinia. Diverse experimental approaches: biochemistry, genomics, pathogenesis, and cell biology. Prerequisites: Declared Biology majors must have taken BIO 82 (Genetics) and BIO 83 (Biochemistry). Enrollment for undergraduates is limited to Biology majors in junior or senior year. Co-term or Ph.D. students in basic life sciences departments such as Biology, Bioengineering, and Genetics may also enroll in BIO 278. Apply at https://forms.gle/4NTtcBdWYMqRFvGc9.
Same as: BIO 178

BIO 279. Integrated Valuation of Ecosystem Services and Tradeoffs. 1-3 Unit.
This course explores the science of valuing nature, through two interwoven pathways. One is biophysical, focused on human dependence and impacts on Earth¿s life-support systems. If well managed, lands, waters, and biodiversity yield a flow of vital benefits that sustain and fulfill human life. A wild bee buzzes through a farm, pollinating vegetables as it goes. Nearby, wetlands remove chemicals from the farm¿s runoff, protecting a source of drinking water. In parklands at a city¿s edge, kids play and adults walk and talk, their exposure to nature promoting physical activity and improved mental health. The trees help maintain a favorable climate, locally and globally. We¿ll develop a framework and practical tools for quantifying this stream of benefits from nature to people.nThe second pathway is social, economic, and philosophical, weaving through concepts of well-being, human development, and conservation ¿ and the ethics and effects of their pursuit. We will look back, ahead into the future, and inward, taking a global view and considering diverse cultural perspectives. Our discussions will be situated in the context of the COVID-19 pandemic, movements for racial justice and socioeconomic equity, and efforts to enable people and nature to thrive in cities and countries worldwide.nAll of the science we¿ll explore is in service of decisions. We will dive into real-world examples to see how science can inform why, where, how, and how much people need nature. We will learn the basics of the InVEST tools (for Integrated Valuation of Ecosystem Services and Tradeoffs) to quantify benefits of nature, the equitability in access to these benefits, and the transformation of policy, finance, management, and practice to sustain and enhance them. nThe course is intended for diverse, advanced students, with interests in research and in moving from science to action for a more just and sustainable world. The instructors aim to provide an enjoyable and productive opportunity to connect ¿ remotely and yet with a lot of heart as well as intellectual drive and commitment, bringing empathy, flexibility and hopefully some humor to the day-to-day challenges we are all facing in different difficult ways. Prerequisite: Basic to intermediate GIS (Geographic Information Systems) skills are necessary. We will help with these, but not teach GIS specifically in class. Basic skills include, for example: working with raster, vector and tabular data; loading rasters, shapefiles, and tables into a GIS; changing the symbology of rasters and shapefiles in your chosen GIS; editing raster and shapefile attribute tables; understanding coordinate systems and how to re-project layers; looking at individual raster cell values; and performing basic raster math.
Same as: BIO 179

BIO 282. Modeling Cultural Evolution. 3 Units.
Seminar. Quantitative models for the evolution of socially transmitted traits. Rates of change of learned traits in populations and patterns of cultural diversity as a function of innovation and cultural transmission. Learning in constant and changing environments. Possible avenues for gene-culture coevolution.
Same as: BIO 182

BIO 283. Theoretical Population Genetics. 3 Units.
Models in population genetics and evolution. Selection, random drift, gene linkage, migration, and inbreeding, and their influence on the evolution of gene frequencies and chromosome structure. Models are related to DNA sequence evolution. Prerequisites: calculus and linear algebra, or consent of instructor.
Same as: BIO 183

BIO 287A. Advanced Topics in Mathematical Evolutionary Biology. 3 Units.
Focused examination of specific topics in mathematical evolutionary biology. Course themes may include: mathematical properties of statistics used in human population genetics, mathematics of evolutionary trees, and the intersection of population genetics and phylogenetics.

BIO 290. Teaching Practicum in Biology. 1-5 Unit.
Open to upper-division undergraduates and graduate students. Practical, supervised teaching experience in a biology lab or lecture course. Training often includes attending lectures, initiating and planning discussion sections, and assisting in the preparation course materials. May be repeated for credit.nPrerequisite: consent of instructor.

BIO 291. Development and Teaching of Core Experimental Laboratories. 1-2 Unit.
Development and Teaching of Core Experimental LaboratoriesnPreparation for teaching the core experimental lab courses (45 and 47). Emphasis is on practicing the lab, speaking, and writing skills. Taken simultaneously while teaching (for BIO 45) or during the previous quarter (for teaching BIO 47). May be repeated for credit. Meeting times TBD.

BIO 292. Curricular Practical Training. 1 Unit.
This course is required for international students who are participating in professional internships in organizations (e.g. research institutes, education, medicine, business, policy) with a focus in the biological sciences. Students will be engaged in on-the-job training under the guidance of experienced, on-site supervisors. This course meets the requirements for curricular practical training (CPT) for students with F-1D/S status. Prior to the internship, students are required to submit a concise report detailing the proposed project and work activities. After the internship, students are required to submit a summary of the work completed, skills learned, and reflection of the professional growth gained as a result of the internship. This course may be repeated for credit. Prerequisite: Qualified offer of employment and consent of advisor.

BIO 294. Cellular Biophysics. 3 Units.
Physical biology of dynamical and mechanical processes in cells. Emphasis is on qualitative understanding of biological functions through quantitative analysis and simple mathematical models. Sensory transduction, signaling, adaptation, switches, molecular motors, actin and microtubules, motility, and circadian clocks. Prerequisites: differential equations and introductory statistical mechanics.
Same as: APPPHYS 294, BIOPHYS 294

BIO 296. Teaching and Learning in Biology. 1 Unit.
This course provides students teaching in the Department of Biology with basic training, support, and professional development in their teaching roles. Topics include student engagement, assessment, feedback and more. Should be taken concurrently with the first teaching position.

BIO 299. Biology PhD Lab Rotation. 1-10 Unit.
Limited to first year Biology PhD students. Lab rotations with Biosciences faculty.

BIO 300. Graduate Research. 1-10 Unit.
For graduate students only. Individual research by arrangement with in-department instructors.

BIO 300X. Out-of-Department Graduate Research. 1-10 Unit.
Individual research by arrangement with out-of-department instructors. Master's students: credit for work arranged with out-of-department instructors is restricted to Biology students and requires approved department petition. See http://biohonors.stanford.edu for more information. May be repeated for credit.

BIO 301. Frontiers in Biology. 1-3 Unit.
Limited to and required of first-year Ph.D. students in molecular, cellular, and developmental biology. Current research in molecular, cellular, and developmental biology emphasizing primary research literature. Held in conjunction with the department's Monday seminar series. Students and faculty meet weekly before the seminar for a student presentation and discussion of upcoming papers.

BIO 302. Current Topics and Concepts in Population Biology, Ecology, and Evolution. 1 Unit.
Required of first-year PhD students in population biology, and ecology and evolution. Major conceptual issues and developing topics. This course isnnopen only to Biology PhD students and is not open to auditors.".

BIO 303. Current Topics and Concepts in Population Biology, Ecology, and Evolution. 1 Unit.
Required of first-year PhD students in population biology, and ecology and evolution. Major conceptual issues and developing topics. This course isnnopen only to Biology PhD students and is not open to auditors.".

BIO 304. Current Topics and Concepts in Population Biology, Ecology, and Evolution. 1 Unit.
Required of first-year PhD students in population biology, and ecology and evolution. Major conceptual issues and developing topics. This course isnnopen only to Biology PhD students and is not open to auditors.

BIO 305. Managing Your PhD. 1 Unit.
The course will focus on 5 themes for effectively managing your PhD: professionalism, scholarship, well-being, community-engagement and career development. We will meet every other week and have an active discussion-based class meeting for 2 hours. At the end of the quarter students and instructors will co-organize a departmental half-day workshop on a particular topic relevant to the topics covered in the class.

BIO 313. Ethics in the Anthropocene. 1 Unit.
Today, in the Anthropocene, humankind impacts the environment on a massive scale, with severe outcomes for species, ecosystems, and landscapes. The consequences of this impact raise many ethical questions, with new dilemmas forcing us to consider new moral values and re-consider old ones. In this course, we will become acquainted with environmental and conservation ethics and philosophy, and acquire the toolkit of concepts and ideas that will allow us to tackle the current environmental ethical debates. We will explore the role of ethics in the environmental and conservation sciences by discussing the philosophical foundations for moral values in the Anthropocene, as well as by examining practical current-day issues, such as reintroductions, invasive species and conservation advocacy.

BIO 329. Matrix Methods for Dynamic Models and Data Analysis. 1 Unit.
Types of matrices in dynamic & stochastic models, covariances, rectangular data, networks. Spectral theorem, asymptotics, stability theory, Nonnegative matrices, ergodicity, Markov chains. Hermitian, covariance, SVD. Perturbation theory. Random matrix products, Lyapunov exponents. Open to Ph.D. students in Biology. Prerequisites: Calculus (AP level) required. Some knowledge of linear algebra, R, preferred.

BIO 330. Stochastic Methods for Simulation, Dynamics and Data Analysis. 1 Unit.
Markov chains: ergodicity, CLT, passage times, absorption. Simulation: random numbers, chains. Poisson processes: applications and simulation. Time series models. MCMC essentials. Open to Ph.D. students in Biology. Prerequisites: Calculus (AP level) and basic linear algebra required. Facility with linear algebra, R, preferred.

BIO 332. Evolutionary Genomics. 2 Units.
We will read classic and modern papers relevant to evolutionary genomics, and discuss. We will cover a broad range of topics, methods, and species.

BIO 342. Plant Biology Seminar. 1-3 Unit.
Topics in plant biology presented at a weekly seminar. Topics announced at the beginning of each quarter. Current literature. May be repeated for credit. See https://dpb.carnegiescience.edu/events.

BIO 346. Advanced Seminar in Microbial Molecular Biology. 1 Unit.
Enrollment limited to PhD students associated with departmental research groups in genetics or molecular biology.
Same as: CSB 346, GENE 346

BIO 355. Coral Reefs of the Western Pacific: Interdisciplinary Perspectives, Emerging Crises, and Solutions. 1 Unit.
This new graduate-level course focusses on the complex interplay of biology, physics, chemistry, and human activities that both promotes and limits the development of coral reefs. We will examine the ecology of these biodiverse systems as well as the service they provide in terms of rapid nutrient recycling, coastal protection, and maintenance of large populations of fish. New advances in our understanding of coral reefs will be highlighted, including the role of climate variability and micro- and mesoscale fluid flow in controlling reef growth and persistence, the physiology, genomics, and physics underpinning thermal resilience in corals, contributing and mitigating factors involved in the current decline of coral reefs, ocean acidification, fishing, reef-scale trophic modeling, ecological interactions and trophic cascades, and reefs as part of complex seascapes and linkages with other marine ecosystems. The course will conclude with an analysis of science to policy case studies and future opportunities. The faculty leaders collectively have over 100 years of field experience working in coral reefs of the Pacific and despite our forced online teaching and learning format will endeavor to bring the coral reef field experience to life for this class.
Same as: BIOHOPK 355, CEE 363I, ESS 355

BIO 380. Career Exploration and Planning. 1 Unit.
Thinking about and planning for life beyond graduate school is one of the most anxiety-provoking activities students face. In this course, students will share their personal stories and dilemmas about career decisions, discuss various career options with a PhD in life sciences, and learn to design their own path. There will be three career panels with invited guests from various career tracks, including research, teaching, administration, industry, startup, investment, law, journalism, policy, and more. Open to Biology PhD students in year 3 or beyond. The class will meet at Carnegie Institution for Science's conference room building 600, located at 260 Panama St, Stanford, CA 94305.

BIO 383. Seminar in Population Genetics. 1-3 Unit.
Literature review, research, and current problems in the theory and practice of population genetics and molecular evolution. May be repeated for credit. Prerequisite: consent of instructor.

BIO 384. Theoretical Ecology. 1-3 Unit.
Recent and classical research papers in ecology, and presentation of work in progress by participants. Prerequisite: consent of instructor.

BIO 386. Conservation and Population Genomics. 1 Unit.
This once a week reading and discussion group will focus on adaptive capacity: how fast and how well species, populations and individual organisms react to climate change. A rapid change in environment imposes strong changes in ecological communities. Phenotypic plasticity can change physiology or morphology, patterns of natural selection can alter gene frequencies, demographic changes can shift species ranges, changes in species interactions can change communities in species composition. This seminar will explore what we know about adaptive capacity of different communities and different species. How fast can adaptation happen? How much can adaptation `solve¿ the problems generated by climate change? How do we measure adaptive capacity? We will pull readings from the literature and structure this topic into sections. Students will present their own or published work on adaptive capacity to provide examples and frame questions. At the end, we will design an international zoom symposium to highlight, define and articulate the role that adaptive capacity can play in managing and protecting complex ecosystems in the face of climate change.

BIO 459. Frontiers in Interdisciplinary Biosciences. 1 Unit.
Students register through their affiliated department; otherwise register for CHEMENG 459. For specialists and non-specialists. Sponsored by the Stanford BioX Program. Three seminars per quarter address scientific and technical themes related to interdisciplinary approaches in bioengineering, medicine, and the chemical, physical, and biological sciences. Leading investigators from Stanford and the world present breakthroughs and endeavors that cut across core disciplines. Pre-seminars introduce basic concepts and background for non-experts. Registered students attend all pre-seminars; others welcome. See http://biox.stanford.edu/courses/459.html. Recommended: basic mathematics, biology, chemistry, and physics.
Same as: BIOC 459, BIOE 459, CHEM 459, CHEMENG 459, PSYCH 459

BIO 802. TGR Dissertation. 0 Units.
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BIOLOGY, HOPKINS MARINE STATION

Courses offered by the Hopkins Marine Station are listed under the subject code BIOHOPK on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIOHOPK&filter-catalognumber-BIOHOPK=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIO&filter-catalognumber-BIO=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIO&filter-catalognumber-BIO=on).

The Hopkins Marine Station, located 90 miles from the main University campus in Pacific Grove, was founded in 1892 as the first marine laboratory on the west coast of North America. The modern laboratory facilities on the 11-acre campus on Cabrillo Point house nine faculty, all members of the Department of Biology. The Miller Library has a collection of literature in marine science. The Hopkins faculty offers undergraduate and graduate courses in biology which focus on the marine realm and involve topics including oceanography, environmental and comparative physiology, molecular evolution, biomechanics, cellular biology, conservation biology, and neurobiology and behavior. Most courses have laboratory sections that exploit the potential of working with readily available marine plants and animals. Small class sizes encourage close student-faculty interactions. Undergraduates have opportunities to carry out research projects with Hopkins faculty during the academic year or summer months.

Courses at Hopkins Marine Station can satisfy many requirements, from Ways to major and minor requirements in departments housed in the Schools of Engineering, Humanities and Sciences, and Earth, Evergy, and Environmental Sciences. Students are encouraged to check with their department's student services office to see which courses at Hopkins may be used to fulfill major or minor requirements.

Summer Program at Hopkins Marine Station

The summer program is open to advanced undergraduate, graduate students, and postdoctoral students, and to teachers whose biological backgrounds, teaching, or research activities can benefit from a summer's study of marine life. Applications, deadlines, and further information are available at the Hopkins Marine Station (http://hopkins.stanford.edu) web site.

Emeriti Professors: David Epel, George N. Somero

Director: Mark W. Denny

Professors: Barbara A. Block, Larry Crowder, Giulio De Leo, Mark W. Denny, William F. Gilly, Fiorenza Micheli, Stephen R. Palumbi, Stuart H. Thompson

Associate Professor: Christopher Lowe

Assistant Professor: Jeremy A. Goldbogen

Lecturer: Robin Elahi

Courses

BIOHOPK 14. Bio-logging and Bio-telemetry. 3 Units.
Bio-logging is a rapidly growing discipline that includes diverse fields such as consumer electronics, medicine, and marine biology. The use of animal-attached digital tags is a powerful approach to study the movement and ecology of individuals over a wide range of temporal and spatial scales. This course is an introduction to bio-logging methods and analysis. Using whales as a model system, students will learn how use multi-sensor tags to study behavioral biomechanics.

BIOHOPK 43. Plant Biology, Evolution, and Ecology. 5 Units.
Introduction to biology in a marine context. Principles of plant biology: physiology, structure, diversity. Principles of evolution: macro and microevolution, population genetics. Ecology: the principles governing the distribution and abundance of organisms; population, community, and ecosystem ecology. Equivalent to BIO 43. Corequisite: BIOHOPK 47.

BIOHOPK 47. Introduction to Research in Ecology and Ecological Physiology. 5 Units.
This course is a field-based inquiry into rocky intertidal shores that introducesnstudents to ecology and environmental physiology and the research methods used to study them. Students will learn how to detect patterns quantitatively in nature through appropriate sampling methods & statistical analysis. Following exploration of appropriate background material in class and through exploration of the scientific literature, students will learn how to formulate testable hypotheses regarding the underlying causes of the patterns they discern. A variety of different aspects of ecology and physiology will be investigated cooperatively by the students during the quarter, culminating in development of an individual final paper in the form of a research proposal based on data collected during the course. The course will provide a broad conceptual introduction to the underlying biological principles that influence adaptation to the planet¿s dynamic habitats, as well as inquiry-based experience in how to explore and understand complex systems in nature. nThis course fulfills the same laboratory requirement as BIO 47. Satisfies WIM in Biology.

BIOHOPK 81. Introduction to Ecology. 4 Units.
The course is designed to provide background on key concepts in ecology, familiarize students with key ecological processes and ecosystems, and the methods used in ecological studies. The course will further build students' skills in critical scientific thinking, reading the literature, and scientific communication. A major goal of the course is to train students to ask questions in ecology, and to design, conduct and report studies addressing these questions. Thus, emphasis is also placed, in additional to general ecological concepts, on field observations, experimental design, and the analysis, interpretation and presentation of ecological data (through computer laboratories, written assignments and presentations). Written assignments, presentations and discussions are designed to provide experience in organizing and presenting information and to expose students to multiple perspectives on ecological processes and their applications.nThis course fulfills the same requirement as BIO 81.
Same as: BIOHOPK 183H

BIOHOPK 84. Physiology. 4 Units.
This course will examine basic physiological systems of vertebrate and invertebrate animals, including nerve and muscle, heart and circulation, kidney and osmoregulation, metabolism, and thermoregulation. nThis course fulfills the same requirement as BIO 84.

BIOHOPK 85. Evolution. 4 Units.
Principles of micro- and macro-evolution from molecular genetics to the development of biological diversity. Adaptation, divergence and natural selection in the past and in contemporary ecological settings. Evolution of humans and human-caused evolution. Emphasis on major body plans in the sea and ocean examples of major evolutionary processes.nThis course fulfills the same requirements as BIO 85.

BIOHOPK 140H. Statistical Modeling. 3 Units.
(Graduate students register for 240H.) Introduction to applied statistical modeling in a Bayesian framework. Topics will include probability, regression, model comparison, and hierarchical modeling. We will take a hands-on, computational approach (R, Stan) to gain intuition so that students can later design their own inferential models. Prerequisites for this course include introductory statistics and some calculus or linear algebra, as well as previous exposure to scientific computing. Open to graduate students; undergraduate students may enroll with consent of instructor.
Same as: BIOHOPK 240H

BIOHOPK 142H. Historical Ecology of Marine Invertebrates. 5 Units.
This course is an exploration of the local invertebrate fauna at Hopkins Marine Station, through the lens of a long-term monitoring study initiated by Hewatt in 1931. During week 1, lectures will provide an overview of the major phyla represented on rocky intertidal shores. In the laboratory, students will focus on species identification. These skills will be put to use in week 2, when we will quantify patterns of invertebrate biodiversity along the Hewatt transect. During week 3, students will investigate a relevant taxonomic or quantitative problem. This course will meet 12-5pm, Monday-Friday. January 13-31, 2020. Open to graduate students; undergraduate students may enroll with consent of instructor.
Same as: BIOHOPK 242H

BIOHOPK 143H. Quantitative methods for marine ecology and conservation. 4 Units.
The goal of this course is to learn the foundations of ecological modelling with a specific (but not exclusive) focus on marine conservation and sustainable exploitation of renewable resources. Students will be introduced to a range of methods ¿ from basic to advanced ¿to characterize population structure, conduct demographic analyses, estimate extinction risk, identify temporal trends and spatial patterns, quantify the effect of environmental determinants and anthropogenic pressures on the dynamics of marine populations, describe the potential for adaptation to climate change. This course will emphasize learning by doing, and will rely heavily on practical computer laboratories, in R and/or Phyton, based on data from our own research activities or peer reviewed publications. Students with a background knowledge of statistics, programming and calculus will be most welcome.
Same as: BIOHOPK 243H, CEE 164H, CEE 264H

BIOHOPK 150H. Ecological Mechanics. 3 Units.
(Graduate students register for 250H.) The principles of life's physical interactions. We will explore basic physics. fluid mechanics, thermal dynamics, and materials science to see how the principles of these fields can be used to investigate ecology at levels from the individual to the community. Topics include: diffusion, boundary layers, fluid-dynamic forces, locomotion, heat-budget models, fracture mechanics, adhesion, beam theory, the statistics of extremes, and the theory of self-organization. Open to students from all backgrounds. Some familiarity with basic physics and calculus advantageous but not necessary.
Same as: BIOHOPK 250H

BIOHOPK 152H. Physiology of Global Change. 2 Units.
(Graduate students register for 252H.) Global change is leading to significant alterations in several environmental factors, including temperature, ocean acidity and oxygen availability. This course focuses on: (i) how these environmental changes lead to physiological stress and (ii) how, and to what extent, are organisms able to adapt through short-term acclimatization and evolutionary adaptation to cope with these stresses. A major focus of the class is to link changes in species' distribution patterns with underlying physiological mechanics that establish environmental optima and tolerance limits.
Same as: BIOHOPK 252H

BIOHOPK 153H. Current Topics and Concepts in Quantitative Fish Dynamics and Fisheries Management. 1 Unit.
(Graduate students register for 253H) The course will focus on extensive reading of seminal and reference papers published in the literature in the last decade on modeling population biology, community dynamics and fishery management in the marine environment. Basic knowledge of population dynamics is welcome. The goal is to develop an appreciation on both traditional and cutting-edge modeling approaches to study the dynamics and management of marine populations subjected to natural or anthropogenic shocks and pressures.
Same as: BIOHOPK 253H

BIOHOPK 154H. Animal Diversity: An Introduction to Evolution of Animal Form and Function from Larvae to Adults. 7 Units.
Survey of invertebrate diversity, emphasizing form and function of both adult and larval life history stages. Focuses on how morphology, life histories, and development contribute to current views of the evolutionary diversification of multicellular animals. Labs are a hands-on exploration of animal diversity using local marine species as examples, as well as techniques of obtaining, handling, and maintaining larvae from early development through settlement. Lectures, labs, plus field trips. Satisfies Central Menu Area 3 for Bio majors. Prerequisite: Biology core or consent of instructors.
Same as: BIOHOPK 254H

BIOHOPK 155H. Developmental Biology and Evolution. 4 Units.
(Graduate students register for 255) This course focusses on how animals form their basic body plans; from the formation of their germ layers; ectoderm, endoderm and mesoderm, to how they are organized along the main developmental axes; the anteroposterior and dorsoventral axes. The course will focus in part on the molecular mechanisms that underlie these developmental decisions from work carried out in established developmental model species. However, we will also explore the current understanding of how these mechanisms evolved from new insights from emerging models representing a broad range of animal phyla. The setting at Hopkins Marine Station will allow us to carry out experiments from animals collected in the field, and the course will involve a substantial lab component to complement concepts and approaches presented in lecture. nPre-requisites : Biocore or by permission of instructor.
Same as: BIOHOPK 255H

BIOHOPK 156H. Hands-On Neurobiology: Structure, Function and Development. 6 Units.
This laboratory course will examine neural and neuromuscular systems at a cellular level in selected vertebrate and invertebrate taxa using anatomical, physiological and molecular approaches. Intracellular dye injections and confocal microscopy will be used to visualize neuronal structure. Ca-imaging will permit functional analysis of living neurons. Electrical recording methods will be used to explore principles of excitability, synaptic transmission, sensory pathways and neural integration. Development of neural systems will be studied using molecular visualization methods. Work in the lab will be supplemented with informal lectures and discussions, and results of the labs will be reviewed weekly. Two 4-hour afternoon lab sessions per week.
Same as: BIOHOPK 256H

BIOHOPK 157H. Creative Writing & Science: The Artful Interpreter. 5 Units.
What role does creativity play in the life of a scientist? How has science inspired great literature? How do you write accessibly and expressively about things like whales, DNA or cancer? This course usually begins with a field trip to Hopkins Marine Station where Stanford labs buzz with activity alongside barking seals and crashing waves. While we won't be able to visit Monterey Bay this quarter, the spirit of interdisciplinary exchange will not be lost, and students will be encouraged to get outside and engage with their local environments. As historian Jill Lepore writes of Rachel Carson: ¿She could not have written Silent Spring if she hadn't, for decades, scrambled down rocks, rolled up her pant legs, and waded into tide pools, thinking about how one thing can change another...¿n nAs a small workshop course writing process and the study of literary craft form the foundation of our work together. For inspiration we will read nonfiction by scientists who write for wide audiences and literary giants who draw from science. Students will explore the intersection between creative expression and scientific curiosity, completing three short essays and offering supportive peer feedback throughout the quarter. This course is open to all undergraduates. Note: Students must attend the first class meeting to retain their roster spot.
Same as: BIOHOPK 257H, ENGLISH 157H

BIOHOPK 158H. Science Meets Literature on the Monterey Peninsula. 5 Units.
(Graduate students register for 258H.) This course will consider the remarkable nexus of scientific research and literature that developed on the Monterey Peninsula in the first half of the 20th century and how the two areas of creativity influenced each other. The period of focus begins with the 1932 association of John and Carol Steinbeck, Ed Ricketts, and Joseph Campbell, all of whom were highly influenced by the Carmel poet, Robinson Jeffers ¿ and ends with the novels Cannery Row (1945) and Sweet Thursday (1954). An indisputable high-tide mark, Sea of Cortez: A Leisurely of Travel and Research (1941) will be considered in detail. Weekend field trips will include intertidal exploration, a tour of the Jeffers Tor House in Carmel, and whale watching on Monterey Bay.
Same as: BIOHOPK 258H, ENGLISH 158H

BIOHOPK 159H. Molecular Ecology Lab. 1 Unit.
Graduate students register for 259H. This course will allow students to learn lab approaches to analyzing DNA to answer questions in parentage, population biology, and species identification. Students will spend 2-3 hours each week in the lab extracting DNA, analyzing sequences, and testing hypotheses. Molecular projects will interface with local research projects and course content.
Same as: BIOHOPK 259H

BIOHOPK 160H. Developmental Biology in the Ocean: Diverse Embryonic & Larval Strategies of marine invertebrates. 5-8 Units.
(Graduate students register for 261H). Lab course is designed to introduce students to the diversity in the early developmental strategies of marine invertebrates and how an understanding of these microscopic life histories is key to understanding the evolutionary diversification of phyla and the distribution of their more familiar adults. Emphasis is on hands-on collection, spawning, observation and manipulation of embryos and their larvae.
Same as: BIOHOPK 260H

BIOHOPK 161H. Invertebrate Zoology. 5 Units.
(Graduate students register for 261H.) Survey of invertebrate diversity emphasizing form and function in a phylogenetic framework. Morphological diversity, life histories, physiology, and ecology of the major invertebrate groups, concentrating on local marine forms as examples. Current views on the phylogenetic relationships and evolution of the invertebrates. Lectures, lab, plus field trips.
Same as: BIOHOPK 261H

BIOHOPK 162H. Comparative Animal Physiology. 5 Units.
(Graduate students register for 262H.) How animals work. Topics: physiology of respiration, circulation, energy metabolism, thermal regulation, osmotic regulation, muscle physiology, and locomotion. Evolutionary and ecological physiology. Lectures, lab, and field research. An option to combine the course work with a more intensive research focus, with more units, is available. Satisfies Central Menu Area 3 for Bio majors. Prerequisite: Consent of instructor.
Same as: BIOHOPK 262H

BIOHOPK 163H. Oceanic Biology. 4 Units.
(Graduate students register for 263H.) How the physics and chemistry of the oceanic environment affect marine plants and animals. Topics: seawater and ocean circulation, separation of light and nutrients in the two-layered ocean, oceanic food webs and trophic interactions, oceanic environments, biogeography, and global change. Lectures, discussion, and field trips. Satisfies Central Menu Area 4 for Bio majors. Recommended: PHYSICS 21 or 51, CHEM 31, or consent of instructor.
Same as: BIOHOPK 263H

BIOHOPK 165H. The Extreme Life of the Sea. 3 Units.
(Graduate students register for 265H). Lecture course that explores the way marine species live in extreme ocean habitats. We will cover the deepest, hottest, coldest, and shallowest habitats and the biggest, fastest, most fecund, oldest and smallest species. We will focus on the molecular, physiological and ecological adaptations that allow species to thrive in these unusual environments.
Same as: BIOHOPK 265H

BIOHOPK 166H. Molecular Ecology. 5 Units.
(Graduate students register for 266H.) How modern technologies in gene sequencing, detection of nuclear nucleotide polymorphisms, and other approaches are used to gather data on genetic variation that allow measurement of population structure, infer demographic histories, inform conservation efforts, and advance understanding of the ecology of diverse types of organisms.
Same as: BIOHOPK 266H

BIOHOPK 167H. Nerve, Muscle, and Synapse. 5 Units.
(Graduate students register for 267H.) Fundamental aspects of membrane excitability, nerve conduction, synaptic transmission, and excitation-contraction coupling. Emphasis is on biophysical, molecular, and cellular level analyses of these processes in vertebrate and invertebrate systems. Labs on intra- and extracellular recording and patch clamp techniques. Lectures, discussions, and labs. Satisfies Central Menu Area 3 for Bio majors Prerequisites: PHYSICS 23, 28, 43, or equivalent; CHEM 31, calculus; or consent of instructor.
Same as: BIOHOPK 267H

BIOHOPK 168H. Disease Ecology: from parasites evolution to the socio-economic impacts of pathogens on nations. 3 Units.
(Graduate students register for 268H.) Course will lead participants on a journey through the dynamics of infectious diseases that will start at the smallest level from within-host parasite dynamics and will progressively scale up to parasite evolution, disease ecology, public health policies, disease driven poverty traps and the socio-economic impact of infectious diseases on nations. The course will be organized around case studies, including among the others, schistosomiasis, malaria, cholera and sleeping sickness. Participants will have the opportunity to develop a capstone project.
Same as: BIOHOPK 268H

BIOHOPK 173H. Marine Conservation Biology. 4 Units.
(Graduate students register for 273H.). Introduction to the key concepts of ecology and policy relevant to marine conservation issues at the population to ecosystems level. Focus on the origin and maintenance of biodiversity and conservation applications from both the biology and policy perspectives (for example, endangered species, captive breeding, reserve design, habitat fragmentation, ecosystem restoration/rehabilitation). Also includes emerging approaches such as ecosystem based management, ocean planning, and coupled social-ecological systems. The course will include lectures, readings and discussions of primary literature, and attendance at seminars with visiting scholars. Prerequisite: introductory biology; suggested: a policy and/or introductory ecology course.
Same as: BIOHOPK 273H

BIOHOPK 173HA. Marine Conservation Biology - Seminar and Discussion Only. 1-2 Unit.
(Graduate students register for 273HA.). Introduction to the key concepts of ecology and policy relevant to marine conservation issues at the population to ecosystems level. Focus on the origin and maintenance of biodiversity and conservation applications from both the biology and policy perspectives (for example, endangered species, captive breeding, reserve design, habitat fragmentation, ecosystem restoration/rehabilitation). Also includes emerging approaches such as ecosystem based management, ocean planning, and coupled social-ecological systems. The course will include lectures, readings and discussions of primary literature, and attendance at seminars with visiting scholars. Prerequisite: introductory biology; suggested: a policy and/or introductory ecology course.nStudents should enroll in this course if they are only joining the seminar and discussion. Students who will engage in the full course should enroll in BIOHOPK 173H/273H.
Same as: BIOHOPK 273HA

BIOHOPK 174H. Experimental Design and Probability. 3 Units.
(Graduate students register for 274H.) Variability is an integral part of biology. Introduction to probability and its use in designing experiments to address biological problems. Focus is on experimental design and the use of linear models in testing hypotheses (e.g., analysis of variance, regression). Students will use R to explore and analyze locally relevant biological datasets. No programming or statistical background is assumed. Prerequisite: consent of instructor.
Same as: BIOHOPK 274H

BIOHOPK 175H. Marine Science and Conservation in a Changing World. 16 Units.
Graduate students register for 275H. This hands-on, experiential course provides a broad foundation in marine science, and explores emerging opportunities for innovation in the study of life in the sea. Students are resident at Stanfords Hopkins Marine Station in Pacific Grove (90 miles south of main campus) where the diverse organisms and environments of Monterey Bay provide the focus for the course. Class meets daily with lectures, discussions, labs, and field work throughout the day. Three linked concentrations¿each 3 weeks long¿are taught sequentially to address (1) the extraordinary diversity of marine organisms and habitats, (2) the physiology and behavior of marine animals, and (3) the principles of marine ecology. Connecting these concentrations is a weekly seminar-based discussion of topics in marine conservation. This design permits deep concentration on each subject, and places emphasis on discussion, group dialog, individual exploration, and experiential learning. In the final week of the quarter, students complete an individual capstone project of their choosing. For the Biology major, this course fulfills the same requirements as BIO 47 and BIO 81. Satisfies WIM in Biology.
Same as: BIOHOPK 275H

BIOHOPK 177H. Dynamics and Management of Marine Populations. 4 Units.
(Graduate students register for 277H.) Course examines the ecological factors and processes that control natural and harvested marine populations. Course emphasizes mathematical models as tools to assess the dynamics of populations and to derive projections of their demographic fate under different management scenarios. Course objectives will be met by a combination of theoretical lectures, assigned readings and class discussions, case study analysis and interactive computer sessions.
Same as: BIOHOPK 277H

BIOHOPK 179H. Physiological Ecology of Marine Megafauna. 3 Units.
(Graduate students register for 279H.) The ocean is home to the largest animals of all-time. How, when, and why did gigantism evolve in different taxa? What are the consequences of large body size? This course will focus on how biological processes scale with body size, with an emphasis on oceanic megafauna including marine mammals, birds, fishes, and reptiles. In particular, the course will explore the functional mechanisms that generate the scaling relationships for physiological and ecological traits, such as metabolism, ecosystem function and body size evolution. Students will also be introduced to state-of-the-art technologies used to student marine megafauna in some of the most logistically challenging habitats on earth.
Same as: BIOHOPK 279H

BIOHOPK 181H. Physiology of Global Change. 2 Units.
(Graduate students register for 281H.) Global change is leading to significant alterations in several environmental factors, including temperature, ocean acidity and oxygen availability. This course focuses on: (i) how these environmental changes lead to physiological stress and (ii) how, and to what extent, are organisms able to adapt through short-term acclimatization and evolutionary adaptation to cope with these stresses. A major focus of the class is to link changes in species' distribution patterns with underlying physiological mechanics that establish environmental optima and tolerance limits.
Same as: BIOHOPK 281H

BIOHOPK 182H. Stanford at Sea. 16 Units.
(Graduate students register for 323H.) Five weeks of marine science including oceanography, marine physiology, policy, maritime studies, conservation, and nautical science at Hopkins Marine Station, followed by five weeks at sea aboard a sailing research vessel in the Pacific Ocean. Shore component comprised of three multidisciplinary courses meeting daily and continuing aboard ship. Students develop an independent research project plan while ashore, and carry out the research at sea. In collaboration with the Sea Education Association of Woods Hole, MA. Only 6 units may count towards the Biology major. 2020-21 academic year offering of this course is dependent on COVID-19 regulations.
Same as: BIOHOPK 323H, EARTHSYS 323, ESS 323

BIOHOPK 183H. Introduction to Ecology. 4 Units.
The course is designed to provide background on key concepts in ecology, familiarize students with key ecological processes and ecosystems, and the methods used in ecological studies. The course will further build students' skills in critical scientific thinking, reading the literature, and scientific communication. A major goal of the course is to train students to ask questions in ecology, and to design, conduct and report studies addressing these questions. Thus, emphasis is also placed, in additional to general ecological concepts, on field observations, experimental design, and the analysis, interpretation and presentation of ecological data (through computer laboratories, written assignments and presentations). Written assignments, presentations and discussions are designed to provide experience in organizing and presenting information and to expose students to multiple perspectives on ecological processes and their applications.nThis course fulfills the same requirement as BIO 81.
Same as: BIOHOPK 81

BIOHOPK 184H. Holistic Biology. 16 Units.
(Graduate students register for 284H.) For majors and non-majors. Complexity in natural systems is examined from complementary points of view, including scientific, historical, philosophical and literary. Lectures and discussions will focus on the writings of Ed Ricketts and John Steinbeck, poetry of Robinson Jeffers and on historical and contemporary works concerning marine and fresh-water systems, resource management and climate change. A group project with individual contributions will be carried out and presented at a symposium. This course will involve a significant amount of creative writing, and it satisfies the Writing in Major requirement for Biology. It is open to all majors and classes. Only 6 units may count towards the Biology major.
Same as: BIOHOPK 284H

BIOHOPK 185H. Ecology and Conservation of Kelp Forest Communities. 5 Units.
(Graduate students register for 285H.) Five week course. Daily lectures, labs, and scuba dives focused on scientific diving and quantitative ecological methods in kelp forests.. Topics include identification and natural history of resident organisms, ecological processes, and subtidal field techniques. Class projects contribute to long-term monitoring at Hopkins Marine Station. It is recommended (but not required) that students complete the Stanford Scientific Diver Training session, typically offered prior to the start of the course. Prerequisites: consent of instructor; rescue scuba certification and scuba equipment.
Same as: BIOHOPK 285H

BIOHOPK 187H. Sensory Ecology. 4 Units.
(Graduate students register for 287H.) Topics: the ways animals receive, filter, and process information gleaned from the environment, sensory receptor mechanisms, neural processing, specialization to life underwater, communication within and between species, importance of behavior to ecosystem structure and dynamics, impact of acoustic and light pollution on marine animals. Emphasis is on the current scientific literature. The laboratory portion of the class explores sensory mechanisms using neurobiological methods and methods of experimental animal behavior.
Same as: BIOHOPK 287H

BIOHOPK 198H. Directed Instruction or Reading. 1-15 Unit.
May be taken as a prelude to research and may also involve participation in a lab or research group seminar and/or library research. Credit for work arranged with out-of-department instructors restricted to Biology majors and requires department approval. May be repeated for credit. (Staff).

BIOHOPK 199H. Undergraduate Research. 1-15 Unit.
Qualified undergraduates undertake individual work in the fields listed under 300H. Arrangements must be made by consultation or correspondence.

BIOHOPK 234H. Topics in Comparative and Environmental Physiology. 1 Unit.
Seminar and discussion focused on current topics and research at the interface of physiology and ecology.

BIOHOPK 240H. Statistical Modeling. 3 Units.
(Graduate students register for 240H.) Introduction to applied statistical modeling in a Bayesian framework. Topics will include probability, regression, model comparison, and hierarchical modeling. We will take a hands-on, computational approach (R, Stan) to gain intuition so that students can later design their own inferential models. Prerequisites for this course include introductory statistics and some calculus or linear algebra, as well as previous exposure to scientific computing. Open to graduate students; undergraduate students may enroll with consent of instructor.
Same as: BIOHOPK 140H

BIOHOPK 242H. Historical Ecology of Marine Invertebrates. 5 Units.
This course is an exploration of the local invertebrate fauna at Hopkins Marine Station, through the lens of a long-term monitoring study initiated by Hewatt in 1931. During week 1, lectures will provide an overview of the major phyla represented on rocky intertidal shores. In the laboratory, students will focus on species identification. These skills will be put to use in week 2, when we will quantify patterns of invertebrate biodiversity along the Hewatt transect. During week 3, students will investigate a relevant taxonomic or quantitative problem. This course will meet 12-5pm, Monday-Friday. January 13-31, 2020. Open to graduate students; undergraduate students may enroll with consent of instructor.
Same as: BIOHOPK 142H

BIOHOPK 243H. Quantitative methods for marine ecology and conservation. 4 Units.
The goal of this course is to learn the foundations of ecological modelling with a specific (but not exclusive) focus on marine conservation and sustainable exploitation of renewable resources. Students will be introduced to a range of methods ¿ from basic to advanced ¿to characterize population structure, conduct demographic analyses, estimate extinction risk, identify temporal trends and spatial patterns, quantify the effect of environmental determinants and anthropogenic pressures on the dynamics of marine populations, describe the potential for adaptation to climate change. This course will emphasize learning by doing, and will rely heavily on practical computer laboratories, in R and/or Phyton, based on data from our own research activities or peer reviewed publications. Students with a background knowledge of statistics, programming and calculus will be most welcome.
Same as: BIOHOPK 143H, CEE 164H, CEE 264H

BIOHOPK 250H. Ecological Mechanics. 3 Units.
(Graduate students register for 250H.) The principles of life's physical interactions. We will explore basic physics. fluid mechanics, thermal dynamics, and materials science to see how the principles of these fields can be used to investigate ecology at levels from the individual to the community. Topics include: diffusion, boundary layers, fluid-dynamic forces, locomotion, heat-budget models, fracture mechanics, adhesion, beam theory, the statistics of extremes, and the theory of self-organization. Open to students from all backgrounds. Some familiarity with basic physics and calculus advantageous but not necessary.
Same as: BIOHOPK 150H

BIOHOPK 252H. Physiology of Global Change. 2 Units.
(Graduate students register for 252H.) Global change is leading to significant alterations in several environmental factors, including temperature, ocean acidity and oxygen availability. This course focuses on: (i) how these environmental changes lead to physiological stress and (ii) how, and to what extent, are organisms able to adapt through short-term acclimatization and evolutionary adaptation to cope with these stresses. A major focus of the class is to link changes in species' distribution patterns with underlying physiological mechanics that establish environmental optima and tolerance limits.
Same as: BIOHOPK 152H

BIOHOPK 253H. Current Topics and Concepts in Quantitative Fish Dynamics and Fisheries Management. 1 Unit.
(Graduate students register for 253H) The course will focus on extensive reading of seminal and reference papers published in the literature in the last decade on modeling population biology, community dynamics and fishery management in the marine environment. Basic knowledge of population dynamics is welcome. The goal is to develop an appreciation on both traditional and cutting-edge modeling approaches to study the dynamics and management of marine populations subjected to natural or anthropogenic shocks and pressures.
Same as: BIOHOPK 153H

BIOHOPK 254H. Animal Diversity: An Introduction to Evolution of Animal Form and Function from Larvae to Adults. 7 Units.
Survey of invertebrate diversity, emphasizing form and function of both adult and larval life history stages. Focuses on how morphology, life histories, and development contribute to current views of the evolutionary diversification of multicellular animals. Labs are a hands-on exploration of animal diversity using local marine species as examples, as well as techniques of obtaining, handling, and maintaining larvae from early development through settlement. Lectures, labs, plus field trips. Satisfies Central Menu Area 3 for Bio majors. Prerequisite: Biology core or consent of instructors.
Same as: BIOHOPK 154H

BIOHOPK 255H. Developmental Biology and Evolution. 4 Units.
(Graduate students register for 255) This course focusses on how animals form their basic body plans; from the formation of their germ layers; ectoderm, endoderm and mesoderm, to how they are organized along the main developmental axes; the anteroposterior and dorsoventral axes. The course will focus in part on the molecular mechanisms that underlie these developmental decisions from work carried out in established developmental model species. However, we will also explore the current understanding of how these mechanisms evolved from new insights from emerging models representing a broad range of animal phyla. The setting at Hopkins Marine Station will allow us to carry out experiments from animals collected in the field, and the course will involve a substantial lab component to complement concepts and approaches presented in lecture. nPre-requisites : Biocore or by permission of instructor.
Same as: BIOHOPK 155H

BIOHOPK 256H. Hands-On Neurobiology: Structure, Function and Development. 6 Units.
This laboratory course will examine neural and neuromuscular systems at a cellular level in selected vertebrate and invertebrate taxa using anatomical, physiological and molecular approaches. Intracellular dye injections and confocal microscopy will be used to visualize neuronal structure. Ca-imaging will permit functional analysis of living neurons. Electrical recording methods will be used to explore principles of excitability, synaptic transmission, sensory pathways and neural integration. Development of neural systems will be studied using molecular visualization methods. Work in the lab will be supplemented with informal lectures and discussions, and results of the labs will be reviewed weekly. Two 4-hour afternoon lab sessions per week.
Same as: BIOHOPK 156H

BIOHOPK 257H. Creative Writing & Science: The Artful Interpreter. 5 Units.
What role does creativity play in the life of a scientist? How has science inspired great literature? How do you write accessibly and expressively about things like whales, DNA or cancer? This course usually begins with a field trip to Hopkins Marine Station where Stanford labs buzz with activity alongside barking seals and crashing waves. While we won't be able to visit Monterey Bay this quarter, the spirit of interdisciplinary exchange will not be lost, and students will be encouraged to get outside and engage with their local environments. As historian Jill Lepore writes of Rachel Carson: ¿She could not have written Silent Spring if she hadn't, for decades, scrambled down rocks, rolled up her pant legs, and waded into tide pools, thinking about how one thing can change another...¿n nAs a small workshop course writing process and the study of literary craft form the foundation of our work together. For inspiration we will read nonfiction by scientists who write for wide audiences and literary giants who draw from science. Students will explore the intersection between creative expression and scientific curiosity, completing three short essays and offering supportive peer feedback throughout the quarter. This course is open to all undergraduates. Note: Students must attend the first class meeting to retain their roster spot.
Same as: BIOHOPK 157H, ENGLISH 157H

BIOHOPK 258H. Science Meets Literature on the Monterey Peninsula. 5 Units.
(Graduate students register for 258H.) This course will consider the remarkable nexus of scientific research and literature that developed on the Monterey Peninsula in the first half of the 20th century and how the two areas of creativity influenced each other. The period of focus begins with the 1932 association of John and Carol Steinbeck, Ed Ricketts, and Joseph Campbell, all of whom were highly influenced by the Carmel poet, Robinson Jeffers ¿ and ends with the novels Cannery Row (1945) and Sweet Thursday (1954). An indisputable high-tide mark, Sea of Cortez: A Leisurely of Travel and Research (1941) will be considered in detail. Weekend field trips will include intertidal exploration, a tour of the Jeffers Tor House in Carmel, and whale watching on Monterey Bay.
Same as: BIOHOPK 158H, ENGLISH 158H

BIOHOPK 259H. Molecular Ecology Lab. 1 Unit.
Graduate students register for 259H. This course will allow students to learn lab approaches to analyzing DNA to answer questions in parentage, population biology, and species identification. Students will spend 2-3 hours each week in the lab extracting DNA, analyzing sequences, and testing hypotheses. Molecular projects will interface with local research projects and course content.
Same as: BIOHOPK 159H

BIOHOPK 260H. Developmental Biology in the Ocean: Diverse Embryonic & Larval Strategies of marine invertebrates. 5-8 Units.
(Graduate students register for 261H). Lab course is designed to introduce students to the diversity in the early developmental strategies of marine invertebrates and how an understanding of these microscopic life histories is key to understanding the evolutionary diversification of phyla and the distribution of their more familiar adults. Emphasis is on hands-on collection, spawning, observation and manipulation of embryos and their larvae.
Same as: BIOHOPK 160H

BIOHOPK 261H. Invertebrate Zoology. 5 Units.
(Graduate students register for 261H.) Survey of invertebrate diversity emphasizing form and function in a phylogenetic framework. Morphological diversity, life histories, physiology, and ecology of the major invertebrate groups, concentrating on local marine forms as examples. Current views on the phylogenetic relationships and evolution of the invertebrates. Lectures, lab, plus field trips.
Same as: BIOHOPK 161H

BIOHOPK 262H. Comparative Animal Physiology. 5 Units.
(Graduate students register for 262H.) How animals work. Topics: physiology of respiration, circulation, energy metabolism, thermal regulation, osmotic regulation, muscle physiology, and locomotion. Evolutionary and ecological physiology. Lectures, lab, and field research. An option to combine the course work with a more intensive research focus, with more units, is available. Satisfies Central Menu Area 3 for Bio majors. Prerequisite: Consent of instructor.
Same as: BIOHOPK 162H

BIOHOPK 263H. Oceanic Biology. 4 Units.
(Graduate students register for 263H.) How the physics and chemistry of the oceanic environment affect marine plants and animals. Topics: seawater and ocean circulation, separation of light and nutrients in the two-layered ocean, oceanic food webs and trophic interactions, oceanic environments, biogeography, and global change. Lectures, discussion, and field trips. Satisfies Central Menu Area 4 for Bio majors. Recommended: PHYSICS 21 or 51, CHEM 31, or consent of instructor.
Same as: BIOHOPK 163H

BIOHOPK 264H. POPULATION GENOMICS. 1-2 Unit.
Introduces students to the analysis of single nucleotide polymorphism data from next generation sequencing projects. Computer analysis, hypothesis testing, and projects based on existing data sets will be pursued.

BIOHOPK 265H. The Extreme Life of the Sea. 3 Units.
(Graduate students register for 265H). Lecture course that explores the way marine species live in extreme ocean habitats. We will cover the deepest, hottest, coldest, and shallowest habitats and the biggest, fastest, most fecund, oldest and smallest species. We will focus on the molecular, physiological and ecological adaptations that allow species to thrive in these unusual environments.
Same as: BIOHOPK 165H

BIOHOPK 266H. Molecular Ecology. 5 Units.
(Graduate students register for 266H.) How modern technologies in gene sequencing, detection of nuclear nucleotide polymorphisms, and other approaches are used to gather data on genetic variation that allow measurement of population structure, infer demographic histories, inform conservation efforts, and advance understanding of the ecology of diverse types of organisms.
Same as: BIOHOPK 166H

BIOHOPK 267H. Nerve, Muscle, and Synapse. 5 Units.
(Graduate students register for 267H.) Fundamental aspects of membrane excitability, nerve conduction, synaptic transmission, and excitation-contraction coupling. Emphasis is on biophysical, molecular, and cellular level analyses of these processes in vertebrate and invertebrate systems. Labs on intra- and extracellular recording and patch clamp techniques. Lectures, discussions, and labs. Satisfies Central Menu Area 3 for Bio majors Prerequisites: PHYSICS 23, 28, 43, or equivalent; CHEM 31, calculus; or consent of instructor.
Same as: BIOHOPK 167H

BIOHOPK 268H. Disease Ecology: from parasites evolution to the socio-economic impacts of pathogens on nations. 3 Units.
(Graduate students register for 268H.) Course will lead participants on a journey through the dynamics of infectious diseases that will start at the smallest level from within-host parasite dynamics and will progressively scale up to parasite evolution, disease ecology, public health policies, disease driven poverty traps and the socio-economic impact of infectious diseases on nations. The course will be organized around case studies, including among the others, schistosomiasis, malaria, cholera and sleeping sickness. Participants will have the opportunity to develop a capstone project.
Same as: BIOHOPK 168H

BIOHOPK 273H. Marine Conservation Biology. 4 Units.
(Graduate students register for 273H.). Introduction to the key concepts of ecology and policy relevant to marine conservation issues at the population to ecosystems level. Focus on the origin and maintenance of biodiversity and conservation applications from both the biology and policy perspectives (for example, endangered species, captive breeding, reserve design, habitat fragmentation, ecosystem restoration/rehabilitation). Also includes emerging approaches such as ecosystem based management, ocean planning, and coupled social-ecological systems. The course will include lectures, readings and discussions of primary literature, and attendance at seminars with visiting scholars. Prerequisite: introductory biology; suggested: a policy and/or introductory ecology course.
Same as: BIOHOPK 173H

BIOHOPK 273HA. Marine Conservation Biology - Seminar and Discussion Only. 1-2 Unit.
(Graduate students register for 273HA.). Introduction to the key concepts of ecology and policy relevant to marine conservation issues at the population to ecosystems level. Focus on the origin and maintenance of biodiversity and conservation applications from both the biology and policy perspectives (for example, endangered species, captive breeding, reserve design, habitat fragmentation, ecosystem restoration/rehabilitation). Also includes emerging approaches such as ecosystem based management, ocean planning, and coupled social-ecological systems. The course will include lectures, readings and discussions of primary literature, and attendance at seminars with visiting scholars. Prerequisite: introductory biology; suggested: a policy and/or introductory ecology course.nStudents should enroll in this course if they are only joining the seminar and discussion. Students who will engage in the full course should enroll in BIOHOPK 173H/273H.
Same as: BIOHOPK 173HA

BIOHOPK 274. Hopkins Microbiology Course. 3-12 Units.
(Formerly GES 274S.) Four-week, intensive. The interplay between molecular, physiological, ecological, evolutionary, and geochemical processes that constitute, cause, and maintain microbial diversity. How to isolate key microorganisms driving marine biological and geochemical diversity, interpret culture-independent molecular characterization of microbial species, and predict causes and consequences. Laboratory component: what constitutes physiological and metabolic microbial diversity; how evolutionary and ecological processes diversify individual cells into physiologically heterogeneous populations; and the principles of interactions between individuals, their population, and other biological entities in a dynamically changing microbial ecosystem. Prerequisites: CEE 274A and CEE 274B, or equivalents.
Same as: BIO 274S, CEE 274S, ESS 253S

BIOHOPK 274H. Experimental Design and Probability. 3 Units.
(Graduate students register for 274H.) Variability is an integral part of biology. Introduction to probability and its use in designing experiments to address biological problems. Focus is on experimental design and the use of linear models in testing hypotheses (e.g., analysis of variance, regression). Students will use R to explore and analyze locally relevant biological datasets. No programming or statistical background is assumed. Prerequisite: consent of instructor.
Same as: BIOHOPK 174H

BIOHOPK 275H. Marine Science and Conservation in a Changing World. 16 Units.
Graduate students register for 275H. This hands-on, experiential course provides a broad foundation in marine science, and explores emerging opportunities for innovation in the study of life in the sea. Students are resident at Stanfords Hopkins Marine Station in Pacific Grove (90 miles south of main campus) where the diverse organisms and environments of Monterey Bay provide the focus for the course. Class meets daily with lectures, discussions, labs, and field work throughout the day. Three linked concentrations¿each 3 weeks long¿are taught sequentially to address (1) the extraordinary diversity of marine organisms and habitats, (2) the physiology and behavior of marine animals, and (3) the principles of marine ecology. Connecting these concentrations is a weekly seminar-based discussion of topics in marine conservation. This design permits deep concentration on each subject, and places emphasis on discussion, group dialog, individual exploration, and experiential learning. In the final week of the quarter, students complete an individual capstone project of their choosing. For the Biology major, this course fulfills the same requirements as BIO 47 and BIO 81. Satisfies WIM in Biology.
Same as: BIOHOPK 175H

BIOHOPK 276H. Estimates and Errors: The Theory of Scientific Measurement. 3 Units.
Measurement plays a fundamental role in science, but many biologists have no formal training in what it means to measure something. Errors are inevitable in any measurement. Which are inherent, and which can be controlled? How do errors propagate? How can you decide which data to reject? When are uncertainties normal? In this course we will work our way into the theory of measurement, covering some topics that overlap with inferential statistics (but from a new and perhaps more intuitive perspective), and extending beyond those basics to include spectral analysis and the dangers of measurement in the digital realm.

BIOHOPK 277H. Dynamics and Management of Marine Populations. 4 Units.
(Graduate students register for 277H.) Course examines the ecological factors and processes that control natural and harvested marine populations. Course emphasizes mathematical models as tools to assess the dynamics of populations and to derive projections of their demographic fate under different management scenarios. Course objectives will be met by a combination of theoretical lectures, assigned readings and class discussions, case study analysis and interactive computer sessions.
Same as: BIOHOPK 177H

BIOHOPK 279H. Physiological Ecology of Marine Megafauna. 3 Units.
(Graduate students register for 279H.) The ocean is home to the largest animals of all-time. How, when, and why did gigantism evolve in different taxa? What are the consequences of large body size? This course will focus on how biological processes scale with body size, with an emphasis on oceanic megafauna including marine mammals, birds, fishes, and reptiles. In particular, the course will explore the functional mechanisms that generate the scaling relationships for physiological and ecological traits, such as metabolism, ecosystem function and body size evolution. Students will also be introduced to state-of-the-art technologies used to student marine megafauna in some of the most logistically challenging habitats on earth.
Same as: BIOHOPK 179H

BIOHOPK 280. Short Course on Ocean Policy. 3 Units.
The course will introduce graduate students in the natural and social sciences to ocean policy and governance in the US at national, regional, state, and local levels. Together with leaders in ocean science and policy, students will examine pressing issues in ocean sustainability from natural science, social science, and legal and policy perspectives, with an emphasis on the role of science in the policy and governance processes. Students will learn and apply practical skills in communication, leadership and interdisciplinary problem-solving through participation in a group project, interactive discussions and simulations, and field trips. Prerequisite: consent of instructor and by application due in winter.

BIOHOPK 281H. Physiology of Global Change. 2 Units.
(Graduate students register for 281H.) Global change is leading to significant alterations in several environmental factors, including temperature, ocean acidity and oxygen availability. This course focuses on: (i) how these environmental changes lead to physiological stress and (ii) how, and to what extent, are organisms able to adapt through short-term acclimatization and evolutionary adaptation to cope with these stresses. A major focus of the class is to link changes in species' distribution patterns with underlying physiological mechanics that establish environmental optima and tolerance limits.
Same as: BIOHOPK 181H

BIOHOPK 284H. Holistic Biology. 16 Units.
(Graduate students register for 284H.) For majors and non-majors. Complexity in natural systems is examined from complementary points of view, including scientific, historical, philosophical and literary. Lectures and discussions will focus on the writings of Ed Ricketts and John Steinbeck, poetry of Robinson Jeffers and on historical and contemporary works concerning marine and fresh-water systems, resource management and climate change. A group project with individual contributions will be carried out and presented at a symposium. This course will involve a significant amount of creative writing, and it satisfies the Writing in Major requirement for Biology. It is open to all majors and classes. Only 6 units may count towards the Biology major.
Same as: BIOHOPK 184H

BIOHOPK 285H. Ecology and Conservation of Kelp Forest Communities. 5 Units.
(Graduate students register for 285H.) Five week course. Daily lectures, labs, and scuba dives focused on scientific diving and quantitative ecological methods in kelp forests.. Topics include identification and natural history of resident organisms, ecological processes, and subtidal field techniques. Class projects contribute to long-term monitoring at Hopkins Marine Station. It is recommended (but not required) that students complete the Stanford Scientific Diver Training session, typically offered prior to the start of the course. Prerequisites: consent of instructor; rescue scuba certification and scuba equipment.
Same as: BIOHOPK 185H

BIOHOPK 287H. Sensory Ecology. 4 Units.
(Graduate students register for 287H.) Topics: the ways animals receive, filter, and process information gleaned from the environment, sensory receptor mechanisms, neural processing, specialization to life underwater, communication within and between species, importance of behavior to ecosystem structure and dynamics, impact of acoustic and light pollution on marine animals. Emphasis is on the current scientific literature. The laboratory portion of the class explores sensory mechanisms using neurobiological methods and methods of experimental animal behavior.
Same as: BIOHOPK 187H

BIOHOPK 290H. Teaching Practicum in Biology. 1-15 Unit.
Open to upper-division undergraduates and graduate students. Practical supervised teaching experience in a biology or lecture course. Training often includes attending lectures, initiating and planning discussion sections, and assisting in the preparation of course materials. May be repeated for credit. Prerequisite: consent of instructor.

BIOHOPK 291H. Teaching of Stanford at Sea. 10 Units.
Only open to graduate students who are teaching assistants for Stanford at Sea. Provides practical experience in teaching field oceanography and marine biology. Serving as an assistant in a lecture course (five weeks) is coupled with acting as a laboratory teaching assistant on board an oceanographic research vessel during a five-week research cruise with the Stanford at Sea course. Prerequisite: consent of instructor.

BIOHOPK 299H. Advanced Topics in Marine Conservation. 2 Units.
Graduate students only. Topics will change from year to year but will include such topics as sustainable fisheries, protected areas, ocean planning, social-ecological systems, dynamic management, sustainable seafood, and impacts of climate change.

BIOHOPK 300H. Research. 1-15 Unit.
Graduate study involving original work undertaken with staff in the fields indicated. B. Block: Comparative Vertebrate Physiology (biomechanics, metabolic physiology and phylogeny of pelagic fishes, evolution of endothermy); L. Crowder: Marine ecology, fisheries, bycatch, integrating science and policy, marine conservation; G. De Leo: Population dynamics and management, wildlife diseases, environmental policies and sustainable development; M. Denny: Biomechanics (the mechanical properties of biological materials and their consequences for animal size, shape, and performance); W. Gilly: Neurobiology (analysis of giant axon systems in marine invertebrates from molecular to behavioral levels); J. Goldbogen: Physiological and Behavioral Ecology (functional morphology and biomechanics of marine organisms): C. Lowe: Evolution of Development (origin of chordates, early evolution of body plans); F. Micheli: Marine Ecology (species interactions and community ecology, scale-dependent aspects of community organization, marine conservation and design of multi-species marine protected areas, behavioral ecology); S. Palumbi: Molecular Evolution (mechanisms of speciation, genetic differentiations of populations, use of molecular tools in conservation biology, design of marine protected areas); S. Thompson: Neurobiology (neuronal control of behavior and mechanisms of ion permeation, signal transduction, calcium homeostasis, and neutrotransmission);.

BIOHOPK 315H. Career Development for Graduate Students. 2 Units.
The course will cover multiple skills required to succeed in graduate school and beyond, including fund raising, publishing, selecting career options, job application and negotiation, and teaching, through lectures, group discussions, and practical excercises.

BIOHOPK 320H. Physical Biology. 3 Units.
Physics, mathematics, and biology are often studies as separate subjects. In this two-week intensive course we will attempt to bring them together in a dynamic combination of lectures and hands on projects. We will draw on the diverse flora and fauna of Monterey Bay for our experimental organisms, and will take advantage of the facilities at Hopkins Marine Station to explore questions at levels ranging from molecules to ecological communities.

BIOHOPK 323H. Stanford at Sea. 16 Units.
(Graduate students register for 323H.) Five weeks of marine science including oceanography, marine physiology, policy, maritime studies, conservation, and nautical science at Hopkins Marine Station, followed by five weeks at sea aboard a sailing research vessel in the Pacific Ocean. Shore component comprised of three multidisciplinary courses meeting daily and continuing aboard ship. Students develop an independent research project plan while ashore, and carry out the research at sea. In collaboration with the Sea Education Association of Woods Hole, MA. Only 6 units may count towards the Biology major. 2020-21 academic year offering of this course is dependent on COVID-19 regulations.
Same as: BIOHOPK 182H, EARTHSYS 323, ESS 323

BIOHOPK 330H. Scientific Writing. 2 Units.
This writer's seminar will workshop the elements of good scientific writing by focusing on a paper's Introduction. We will chart the elements of an effective Introduction, designed for different audiences and types of scientific journals. The course will provide participants with the chance to craft an Introduction to a current paper or proposal and have it evaluated in light of the ideal structure we define.

BIOHOPK 355. Coral Reefs of the Western Pacific: Interdisciplinary Perspectives, Emerging Crises, and Solutions. 1 Unit.
This new graduate-level course focusses on the complex interplay of biology, physics, chemistry, and human activities that both promotes and limits the development of coral reefs. We will examine the ecology of these biodiverse systems as well as the service they provide in terms of rapid nutrient recycling, coastal protection, and maintenance of large populations of fish. New advances in our understanding of coral reefs will be highlighted, including the role of climate variability and micro- and mesoscale fluid flow in controlling reef growth and persistence, the physiology, genomics, and physics underpinning thermal resilience in corals, contributing and mitigating factors involved in the current decline of coral reefs, ocean acidification, fishing, reef-scale trophic modeling, ecological interactions and trophic cascades, and reefs as part of complex seascapes and linkages with other marine ecosystems. The course will conclude with an analysis of science to policy case studies and future opportunities. The faculty leaders collectively have over 100 years of field experience working in coral reefs of the Pacific and despite our forced online teaching and learning format will endeavor to bring the coral reef field experience to life for this class.
Same as: BIO 355, CEE 363I, ESS 355

BIOHOPK 801H. TGR Project. 0 Units.
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BIOHOPK 802H. TGR Dissertation. 0 Units.
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BIOPHYSICS

Courses offered by the Biophysics Program are listed under the subject code BIOPHYS (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIOPHYS&filter-catalognumber-BIOPHYS=on) on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIOPHYS&filter-catalognumber-BIOPHYS=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIOPHYS&filter-catalognumber-BIOPHYS=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIOPHYS&filter-catalognumber-BIOPHYS=on).

The Biophysics Program offers instruction and research opportunities leading to the Ph.D. in Biophysics. Students admitted to the program may perform their graduate research in any appropriate department.

The Stanford Biophysics Program is an interdisciplinary, interdepartmental training program leading to the Ph.D. Degree in biophysics. The program centers on understanding biological function in terms of physical and chemical principles. The Program comprises faculty from 16 departments in the Schools of Humanities and Sciences, Medicine, Engineering, and the Stanford Synchrotron Radiation Laboratory. Research in the Program involves two overlapping branches of biophysics: the application of physical and chemical principles and methods to solving biological problems, and the development of new methods.

The Biophysics Program aims to train students in quantitative approaches to biological problems, while also developing their perspective in choosing forefront biological problems. A balanced academic program is tailored to the diverse backgrounds of the students. The program requires graduate-level coursework in physical and biological sciences, participation in seminar series, and most importantly achievement of a high level of proficiency in independent research.

Learning Outcomes (Graduate)

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in Biophysics. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of Biophysics and to interpret and present the results of such research.

Graduate Program in Biophysics

For information on the University's basic requirements for the Ph.D. degree, see the "Graduate Degrees (http://exploredegrees.stanford.edu/graduatedegrees/)" section of this bulletin.

Admissions

A small number of qualified applicants are admitted to the program each year. Applicants should present strong undergraduate backgrounds in the physical sciences and mathematics. The graduate course program, beyond the stated requirements, is worked out for each student individually with the help of appropriate advisers from the Committee on Biophysics. GRE general score is not required and GRE subject score is optional.

The recommendations for applying to the Ph.D. Program in Biophysics include:

		Units
CHEM 123	Organic Polyfunctional Compounds	3
CHEM 171	Foundations of Physical Chemistry	4
CHEM 173	Physical Chemistry II	3
CHEM 175	Physical Chemistry III	3
BIOC 200	Applied Biochemistry	2

Course Requirements

Ph.D. students in the Program in Biophysics are required to complete the following course requirements:

		Units
BIOPHYS 241	Biological Macromolecules	3-5
or BIOE 300A	Molecular and Cellular Bioengineering	
BIOPHYS 242	Methods in Molecular Biophysics (offered every other year)	3
BIOPHYS 250	Seminar in Biophysics	1
MED 255	The Responsible Conduct of Research	1
and 4 graduate-level courses in physical or biological science, with		
at least 1 course in physical science		
at least 1 course in literature-based biological science		

Lab Rotation and Settlement

During the first year of graduate school in Biophysics, students are encouraged to complete a minimum two quarters of rotations in any faculty labs of their choice, a third rotation is allowed if necessary. Once the students finish their rotations, they make an official decision on which faculty's lab to settle in. If the faculty is not part of Biophysics, then the student needs to have an additional co-advising faculty member on their committee who is in Biophysics. Once the student settles in a lab, s/he is required to complete the first Individual Development Plan (IDP) and begin forming the reading committee.

Individual Development Plan (IDP)

In light of the benefits to trainee development and the likelihood that the IDP program will be a factor in NIH funding decisions, the Committee on Graduate Admissions and Policy (CGAP) has adopted a new policy requiring all Biosciences Ph.D. candidates and their mentors in the Schools of Medicine and H&S to create and discuss the Individual Development Plan (IDP) (https://biosciences.stanford.edu/current/idp/) on an annual basis.

1. Complete the first IDP meeting with the adviser within 30 days of joining the thesis lab.
2. IDP meetings are required annually, in addition to and separate from thesis committee meetings (see below).

Reading Committee

See the "Degree-Specific Requirements (Doctoral Degrees) (p. 67)" section of this bulletin for University rules concerning doctoral degrees. See GAP 4.8 (http://gap.stanford.edu/4-8.html), for further details on the Doctoral Dissertation Reading Committee.

Once a student have chosen a research adviser and begun thesis-related research, s/he is required to select a reading committee. The student's reading committee should be in place no later than Autumn Quarter of the third year in the program. The individuals selected by the student serve as an advising and consultative group for the duration of their graduate studies. They evaluate the student's dissertation proposal and constitute the core of their the defense committee. Students should consult with their research adviser on the selection of their reading committee.

The doctoral dissertation reading committee consists of the principal dissertation adviser and, typically, two other readers. The doctoral dissertation reading committee must have at least three members and may not have more than five members. All members of the reading committee approve the dissertation. At least one member must be from the student's major department. Normally, all committee members are members of the Stanford University Academic Council or are emeritus Academic Council members.

The reading committee, as proposed by the student and agreed to by the prospective members, is endorsed by the chair of the major department on this Doctoral Dissertation Reading Committee form (https://stanford.app.box.com/docdiss-reading-committee-form/). The student's department chair may, in some cases, approve the appointment of a reader who is not a current or emeritus member of the Academic Council (via the Petition for Non-Academic Council Doctoral Committee Members form (https://stanford.app.box.com/doc-ctte-non-acad-council/)), if that person is particularly well qualified to consult on the dissertation topic and holds a Ph.D. or equivalent foreign degree). All examiners must hold a Ph.D. degree (or foreign equivalent). Former Stanford Academic Council members and non-Academic Council members may thus on occasion serve on a reading committee.

Any member of the Academic Council may serve as the principal dissertation adviser. If former Academic Council members, emeritus Academic Council members, or non-Academic Council members are to serve as the principal dissertation adviser, the appointment of a co-adviser who is currently on the Academic Council is required. This is to ensure representation for the student in the department by someone playing a major adviser role in completion of the dissertation. However, a co-adviser is not required during the first two years following retirement for emeritus Academic Council members who are recalled to active service. If the reading committee has four or five members, at least three members (comprising the majority) must be current or emeritus members of the Academic Council.

Qualifying Exam

Once students enter their third year of graduate studies, they are required to arrange a meeting with their committee to present to them a proposed thesis related research project (dissertation proposal). The meeting is called the qualifying exam, and should be completed no later than the end of Autumn Quarter of the student's third year. In anticipation of the exam, the student should prepare an approximately 10-page summary of their proposed research and/or any progress they have made at that time. The precise format (e.g., inclusion of a timeline, methods section, etc.) is flexible, and naturally can conform to the particular style of papers or proposals coming from their thesis lab. The main goal of the written portion is to briefly summarize the student's progress so far and carefully plan out their future thesis research plans with committee feedback and advice.

At the meeting, the student should be prepared to make a 30-45 minute presentation of their research where they discuss their results to date and propose further experiments. Audiovisual aids are not required, but may be useful if available. After completing the qualifying exam, students need to arrange annual thesis committee meetings with their committee members to review academic progress each year. Completing the qualifying exam serves to meet the student's first thesis committee meeting requirement. The thesis committee meetings should be completed once a year during the student's 3rd and 4th years, and twice a year past their fifth year and above.

Candidacy

Admission to candidacy for the doctoral degree is granted by the major department following a student's successful completion of qualifying procedures. Students are expected to be admitted to candidacy by the end of the second year of doctoral study. Candidacy is valid for five years, subject to satisfactory academic progress.

Terminal Graduate Registration (TGR)

Doctoral students who have been admitted to candidacy, completed all required courses and degree requirements other than the University oral exam and dissertation, completed 135 units or 10.5 quarters of residency (if under the old residency policy), and submitted a Doctoral Dissertation Reading Committee form, may request Terminal Graduate Registration (TGR) status to complete their dissertations. Students with more than one active graduate degree program must complete residency units between all active/completed degree programs in order to apply for TGR status. See the "Residency Policy for Graduate Students (p. 72)" section of this bulletin for additional information.

Dissertation/Oral Exam

The student must prepare a dissertation proposal defining the research to be undertaken, including methods of procedure. This proposal should be submitted by Autumn Quarter of the third year, and it must be approved by a committee of at least three members, including the principal research adviser, and at least one member from the Biophysics Program. The candidate must defend the dissertation proposal in an oral examination. The dissertation reading committee normally evolves from the dissertation proposal review committee.
The student must present a Ph.D. dissertation as the result of independent investigation that expresses a contribution to knowledge in the field of biophysics. The student must pass the University oral exam, taken only after the student has substantially completed the dissertation research. The examination is preceded by a public seminar in which the research is presented by the candidate.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

The Program of Biophysics counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B-' or better level.

Graduate Advising Expectations

Academic advising by our faculty is a critical component of our graduate students' education. The Biophysics Program is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. Both the adviser and the advisee are expected to maintain professionalism and integrity.

All matriculating students are assigned the program director as a faculty adviser to help them design their academic program. Before advancing to candidacy for the degree, students are expected to identify a group of at least three thesis advisers (also known as the dissertation reading committee), including a primary thesis adviser. The thesis advisers are selected by the student on the basis of expertise relevant to the thesis project, after undertaking two to three rotations of approximately one quarter in length each.

Thesis advisers meet with students at least once each year to discuss students' Individual Development Plan(s) (IDPs). Additionally, students should meet with their adviser(s) on a regular basis throughout each year for guidance in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

Academic progress and student completion of program requirements and milestones are monitored by the program staff and director, and are discussed at meetings of the executive committee.

Requirements and milestones, as well as more detailed descriptions of the program's expectations of advisers and students, are listed in the Student Handbook, found on the program website (http://med.stanford.edu/biophysics.html).

Additionally, the program adheres to the advising guidelines and responsibilities listed by the Office of the Vice Provost for Graduate Education (https://vpge.stanford.edu/academic-guidance/advising-mentoring/) and in the Graduate Academic Policies (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/page-3-3-1/).

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Director of Graduate Studies:

- KC Huang (Bioengineering)

Emeritus:

- Philip C. Hanawalt (Biology, Dermatology)
- Harden M. McConnell (Chemistry)
- Stephen J. Smith (Molecular & Cellular Physiology)
- Norbert Pelc (Bioengineering, Radiology)

Professors:

- Russ Altman (Bioengineering, Genetics, Medicine - Biomedical Informatics)
- Manuel Amieva (Microbiology & Immunology, Pediatrics)
- Steve M. Block (Applied Physics, Biology)
- Steven Boxer (Chemistry)
- Anne Brunet (Genetics)
- Axel Brunger (Molecular & Cellular Physiology)
- Wah Chiu (Bioengineering)
- Gilbert Chu (Oncology, Biochemistry)
- Steven Chu (Physics, Molecular & Cellular Physiology)
- Jennifer Cochran (Bioengineering)
- Bianxiao Cui (Chemistry)
- Hongjie Dai (Chemistry)
- Mark Davis (Microbiology & Immunology)
- Sebastian Doniach (Physics, Applied Physics)
- James Ferrell (Chemical & Systems Biology, Biochemistry)
- Daniel Fisher (Applied Physics)
- Judith Frydman (Biology, Genetics)
- Chris Garcia (Molecular & Cellular Physiology, Structural Biology)
- Gary H. Glover (Radiology)
- Miriam Goodman (Molecular & Cellular Physiology)
- Daniel Herschlag (Biochemistry)
- Keith O. Hodgson (Chemistry)
- KC Huang (Bioengineering)
- Theodore Jardetzky (Structural Biology)
- Shamit Kachru (Physics)
- Peter S. Kim (Biochemistry)
- Brian Kobilka (Molecular & Cellular Physiology)
- Eric Kool (Chemistry)
- Ron Kopito (Biology)
- Roger D. Kornberg (Structural Biology)
- Craig Levin (Radiology)
- Michael Levitt (Structural Biology)
- Richard Lewis (Molecular & Cellular Physiology)
- Sharon Long (Biology)
- Crystal Mackall (Pediatrics, Medicine)
- Todd Martinez (Chemistry)
- Tobias Meyer (Chemical & Systems Biology)
- W. E. Moerner (Chemistry)
- Vijay Pande (Chemistry)
- Joseph D. Puglisi (Structural Biology)
- Stephen Quake (Bioengineering, Applied Physics)
- Jianghong Rao (Radiology)
- Mark Schnitzer (Biology, Applied Physics)
- Jan Skotheim (Biology)
- Edward I. Solomon (Chemistry)
- James A. Spudich (Biochemistry)
- Alice Y. Ting (Genetics)
- Shreyas Vasanawala (Radiology)
- Anthony Wagner (Psychology)
- Soichi Wakatsuki (Photon Science, Structural Biology)
- Thomas Wandless (Chemical & Systems Biology)
- William I. Weis (Structural Biology, Molecular & Cellular Physiology)
- Richard Zare (Chemistry)

Associate Professors:

- Annelise Barron (Bioengineering)
- Zev Bryant (Bioengineering)
- David Camarillo (Bioengineering)
- Jose R. Dinneny (Biology)
- Lynette Cegelski (Chemistry)
- Rhiju Das (Biochemistry)
- Adam de la Zerda (Structural Biology)
- Ron Dror (Computer Science)
- Alexander Dunn (Chemical Engineering)
- William Greenleaf (Genetics)
- Pehr Harbury (Biochemistry)
- Michael Kapiloff (Ophthalmology)
- Jin Billy Li (Genetics)

- Jan Liphardt (Bioengineering)
- Merritt Maduke (Molecular & Cellular Physiology)
- Ashby Morrison (Biology)Mo
- Manu Prakash (Bioengineering)
- Andrew Spakowitz (Chemical Engineering)
- Sindy Tang (Mechanical Engineering)

Assistant Professors:

- Monther Abu-Remaileh (Chemical Engineering)
- Raag Airan (Radiology)
- Lacramioara Bintu (Bioengineering)
- Alistair Boettiger (Developmental Biology)
- Onn Brandman (Biochemistry)
- Ovijit Chaudhuri (Mechanical Engineering)
- Gheorghe Chistol (Chemical & Systems Biology)
- Shaul Druckmann (Neurobiology, Psychiatry & Behavioral Sciences)
- Liang Feng (Molecular & Cellular Physiology)
- Polly Fordyce (Genetics)
- Xiaojing Gao (Chemical Engineering)
- Olivier Gevaert (Biomedical Informatics, Biomedical Data Science)
- Benjamin Good (Applied Physics)
- Keren Haroush (Neurobiology)
- Possu Huang (Bioengineering)
- Anshul Kundaje (Genetics, Computer Science)
- Lingyin Li (Biochemistry)
- Jonathan Long (Pathology)
- Julia Palacios (Biomedical Data Sciences, Statistics)
- Johannes Reiter (Radiology, Biomedical Data Science)
- Grant M. Rotskoff (Chemistry)
- Manish Saggar (Psychiatry & Behavioral Sciences)
- Julia Salzman (Biochemistry)
- Mary Teruel (Chemical & Systems Biology)
- Bo Wang (Bioengineering)
- Roseanna Zia (Chemical Engineering)
- Brad Zuchero (Neurosurgery)

Courses

BIOPHYS 196. INTERACTIVE MEDIA AND GAMES. 1 Unit.
Interactive media and games increasingly pervade and shape our society. In addition to their dominant roles in entertainment, video games play growing roles in education, arts, and science. This seminar series brings together a diverse set of experts to provide interdisciplinary perspectives on these media regarding their history, technologies, scholarly research, industry, artistic value, and potential future.
Same as: BIOE 196, CS 544

BIOPHYS 227. Functional MRI Methods. 3 Units.
Basics of functional magnetic resonance neuroimaging, including data acquisition, analysis, and experimental design. Journal club sections. Cognitive neuroscience and clinical applications. Prerequisites: basic physics, mathematics; neuroscience recommended.
Same as: BIOE 227, RAD 227

BIOPHYS 232. Advanced Imaging Lab in Biophysics. 4 Units.
Laboratory and lectures. Advanced microscopy and imaging, emphasizing hands-on experience with state-of-the-art techniques. Students construct and operate working apparatus. Topics include microscope optics, Koehler illumination, contrast-generating mechanisms (bright/dark field, fluorescence, phase contrast, differential interference contrast), and resolution limits. Laboratory topics vary by year, but include single-molecule fluorescence, fluorescence resonance energy transfer, confocal microscopy, two-photon microscopy, microendoscopy, and optical trapping. Limited enrollment. Recommended: basic physics, basic cell biology, and consent of instructor.
Same as: APPPHYS 232, BIO 132, BIO 232, GENE 232

BIOPHYS 241. Biological Macromolecules. 3-5 Units.
The physical and chemical basis of macromolecular function. Topics include: forces that stabilize macromolecular structure and their complexes; thermodynamics and statistical mechanics of macromolecular folding, binding, and allostery; diffusional processes; kinetics of enzymatic processes; the relationship of these principles to practical application in experimental design and interpretation. The class emphasizes interactive learning, and is divided among lectures, in-class group problem solving, and discussion of current and classical literature. Enrollment limited to 30. Prerequisites: Background in biochemistry and physical chemistry recommended but material available for those with deficiency in these areas; undergraduates with consent of instructor only.
Same as: BIOC 241, BIOE 241, SBIO 241

BIOPHYS 242. Methods in Molecular Biophysics. 3 Units.
Experimental methods in molecular biophysics from theoretical and practical standpoints. Emphasis is on X-ray diffraction, electron microscopy, nuclear magnetic resonance, and fluorescence spectcroscopy. Prerequisite: physical chemistry or consent of instructor.
Same as: SBIO 242

BIOPHYS 244. Mechanotransduction in Cells and Tissues. 3 Units.
Mechanical cues play a critical role in development, normal functioning of cells and tissues, and various diseases. This course will cover what is known about cellular mechanotransduction, or the processes by which living cells sense and respond to physical cues such as physiological forces or mechanical properties of the tissue microenvironment. Experimental techniques and current areas of active investigation will be highlighted. This class is for graduate students only.
Same as: BIOE 283, ME 244

BIOPHYS 250. Seminar in Biophysics. 1 Unit.
Required of Biophysics graduate students. Presentation of current research projects and results by faculty in the Biophysics program. May be repeated for credit. BIOPHYS 250 is a seminar course intended only for first year Biophysics and Structural Biology graduate students, to help them decide on which faculty labs they want to settle in.

BIOPHYS 279. Computational Biology: Structure and Organization of Biomolecules and Cells. 3 Units.
Computational techniques for investigating and designing the three-dimensional structure and dynamics of biomolecules and cells. These computational methods play an increasingly important role in drug discovery, medicine, bioengineering, and molecular biology. Course topics include protein structure prediction, protein design, drug screening, molecular simulation, cellular-level simulation, image analysis for microscopy, and methods for solving structures from crystallography and electron microscopy data. Prerequisites: elementary programming background (CS 106A or equivalent) and an introductory course in biology or biochemistry.
Same as: BIOE 279, BIOMEDIN 279, CME 279, CS 279

BIOPHYS 294. Cellular Biophysics. 3 Units.
Physical biology of dynamical and mechanical processes in cells. Emphasis is on qualitative understanding of biological functions through quantitative analysis and simple mathematical models. Sensory transduction, signaling, adaptation, switches, molecular motors, actin and microtubules, motility, and circadian clocks. Prerequisites: differential equations and introductory statistical mechanics.
Same as: APPPHYS 294, BIO 294

BIOPHYS 297. Bio-Inorganic Chemistry. 3 Units.
(Formerly Chem 297) Overview of metal sites in biology. Metalloproteins as elaborated inorganic complexes, their basic coordination chemistry and bonding, unique features of the protein ligand, and the physical methods used to study active sites. Active site structures are correlated with function (election transfer; dioxygen binding, activation and reduction to water). Prerequisites: Chem 153 and Chem 173, or equivalents.
Same as: CHEM 257

BIOPHYS 300. Graduate Research. 1-18 Unit.
Investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

BIOPHYS 311. Biophysics of Multi-cellular Systems and Amorphous Computing. 2-3 Units.
Provides an interdisciplinary perspective on the design, emergent behavior, and functionality of multi-cellular biological systems such as embryos, biofilms, and artificial tissues and their conceptual relationship to amorphous computers. Students discuss relevant literature and introduced to and apply pertinent mathematical and biophysical modeling approaches to various aspect multi-cellular systems, furthermore carry out real biology experiments over the web. Specific topics include: (Morphogen) gradients; reaction-diffusion systems (Turing patterns); visco-elastic aspects and forces in tissues; morphogenesis; coordinated gene expression, genetic oscillators and synchrony; genetic networks; self-organization, noise, robustness, and evolvability; game theory; emergent behavior; criticality; symmetries; scaling; fractals; agent based modeling. The course is geared towards a broadly interested graduate and advanced undergraduates audience such as from bio / applied physics, computer science, developmental and systems biology, and bio / tissue / mechanical / electrical engineering. Prerequisites: Previous knowledge in one programming language - ideally Matlab - is recommended; undergraduate students benefit from BIOE 42, or equivalent.
Same as: BIOE 211, BIOE 311, DBIO 211

BIOPHYS 315. Methods in Computational Biology. 3 Units.
Methods of bioinformatics and biomolecular modeling from the standpoint of biophysical chemistry. Methods of genome analysis; cluster analysis, phylogenetic trees, microarrays; protein, RNA and DNA structure and dynamics, structural and functional homology; protein-protein interactions and cellular networks; molecular dynamics methods using massively parallel algorithms.
Same as: APPPHYS 315

BIOPHYS 342A. Mechanobiology and Biofabrication Methods. 3 Units.
Cell mechanobiology topics including cell structure, mechanical models, and chemo-mechanical signaling. Review and apply methods for controlling and analyzing the biomechanics of cells using traction force microscopy, AFM, micropatterning and cell stimulation. Practice and theory for the design and application of methods for quantitative cell mechanobiology.
Same as: BIOE 342A, ME 342A

BIOPHYS 371. Computational Biology in Four Dimensions. 3 Units.
Cutting-edge research on computational techniques for investigating and designing the three-dimensional structure and dynamics of biomolecules, cells, and everything in between. These techniques, which draw on approaches ranging from physics-based simulation to machine learning, play an increasingly important role in drug discovery, medicine, bioengineering, and molecular biology. Course is devoted primarily to reading, presentation, discussion, and critique of papers describing important recent research developments. Prerequisite: CS 106A or equivalent, and an introductory course in biology or biochemistry. Recommended: some experience in mathematical modeling (does not need to be a formal course).
Same as: BIOMEDIN 371, CME 371, CS 371

BIOPHYS 392. Topics in Molecular Biophysics: Biophysics of Functional RNA (BIOPHYS 392). 3 Units.
Survey of methods used to relate RNA sequences to the structure and function of transcribed RNA molecules. Computation of contributions of the counter-ion cloud to the dependence of free energy on conformation of the folded RNA. The relation of structure to function of ribozymes, riboswitches, and the formation of ribosomal proteins.
Same as: APPPHYS 392

BIOPHYS 393. Biophysics of Solvation. 3 Units.
Statistical mechanics of water-protein or water-DNA (or RNA) interactions; effects of coulomb forces on molecular hydration shells and ion clouds; limitations of the Poisson-Boltzmann equations; DNA collapse, DNA-protein interactions; structure-function relationships in ion channels.
Same as: APPPHYS 393

BIOPHYS 399. Directed Reading in Biophysics. 1-18 Unit.
Prerequisite: consent of instructor.

BIOPHYS 801. TGR Project. 0 Units.
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BIOPHYS 802. TGR Dissertation. 0 Units.
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CHEMISTRY

Courses offered by the Department are listed under the subject code CHEM on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=CHEM&filter-catalognumber-CHEM=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=CHEM&filter-catalognumber-CHEM=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=CHEM&filter-catalognumber-CHEM=on).

For further information about the Department of Chemistry, see the department's web site (https://chemistry.stanford.edu/).

Chemistry is about the nature of matter, how to make it, how to measure it, how to model it. In that sense chemistry really matters; it is essential to explaining all the real world. It holds the key to making new drugs, creating new materials, and understanding and controlling material properties of all sorts. It is no wonder then that chemistry is called the "Central Science." Traditionally, it is divided into subdisciplines, such as organic, inorganic, physical, biological, theoretical, and analytical, but these distinctions blur as it is increasingly appreciated how all of science, let alone chemistry, is interconnected.

A deeper understanding of chemistry enables students to participate in research and studies involving biotechnology, nanotechnology, catalysis, human health, materials, earth and environmental sciences, and more. Together, faculty, postdoctoral scholars, graduate and undergraduate students actively work side by side developing new probes of biological molecules, modeling protein folding and reactivity, manipulating carbon nanotubes, developing new oxidation and polymerization catalysts, and synthesizing organic molecules to probe ion-channels. The overarching theme of these pursuits is a focus at the atomic and molecular levels, whether this concerns probing the electronic structure and reactivity of molecules as small as dihydrogen or synthesizing large polymer assemblies. The ability to synthesize new molecules and materials and to modify existing biological structures allows the properties of complex systems to be analyzed and harnessed with huge benefit to both the scientific community and society at large.

Undergraduate Program

Mission

The mission of the undergraduate program in Chemistry is to provide students with foundational knowledge in the subdisciplines of chemistry as well as depth in one or more advanced areas, including cutting-edge research. Introductory course work allows students to gain hands-on experience with chemical phenomena, gather data, and propose models and explanations for their observations, thus participating in the scientific process from the start. In advanced labs and lectures, students build an in-depth knowledge of the molecular principles of chemistry empowering them to become molecular engineers comfortable with the methodologies necessary to solve complex problems and effectively articulate their ideas to the scientific community. Ultimately the analytical thinking and problem solving skills developed within the chemistry major make students successful candidates for a wide range of careers in chemistry and beyond, including engineering, teaching, consulting, medicine, law, science writing, and science policy.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to:

1. demonstrate the knowledge and skills required to solve problems in the synthesis, measurement, and modeling of chemical systems.
2. apply this set of chemical knowledge and skills to analyze scientific data, evaluate and interpret its significance, and articulate conclusions supportable by the data.
3. be able to construct a scientific hypothesis and devise appropriate experiments to test and evaluate this hypothesis.
4. communicate scientific research effectively in written and spoken form.

Placement Test for First-Year Undergraduates

All students who are interested in taking general chemistry at Stanford must take the Autumn 2020 General Chemistry Placement Test before Autumn quarter begins, regardless of chemistry background. See How To Choose Your First Class (https://chemistry.stanford.edu/academics/undergraduate-program/how-choose-your-first-class/) for further details on the Placement Test.

Graduate Program

The University's basic requirements for the M.S. and Ph.D. degrees are discussed in the "Graduate Degrees (p. 65)" section of this bulletin.

GRE Admissions Requirement

The general GRE and subject test in Chemistry are optional for 2020, but strongly recommended as part of the admissions application for the Ph.D. in Chemistry.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in Chemistry and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in the field of chemistry. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of chemistry and to interpret and present the results of such research.

Fellowships and Scholarships

In addition to University and school fellowships and scholarships open to properly qualified students, there are several department fellowships in chemistry awarded based on merit. Teaching assistantships and research assistantships are provided to eligible graduate students. Teaching assistantships beyond the required quarters are available for those interested. Graduate fellowships, scholarships, and teaching assistantships are administered through the Department of Chemistry student services office.

Teaching Credentials

The requirements for certification to teach chemistry in the secondary schools of California may be ascertained by consulting the section on credentials under the "Graduate School of Education, Masters, Stanford Teacher Education Program (STEP) (p. 462)" section of this bulletin and the credential administrator of the School of Education.

Chemical Physics

Students with an exceptionally strong background in physics and mathematics may, with special arrangement, pursue a program of studies in chemical physics.

Bachelor of Science in Chemistry

The Department of Chemistry offers a Bachelor of Science in Chemistry. Eligible students may also pursue a Bachelor of Science with Honors (p. 1141). The department also offers a minor in Chemistry (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/chemistry/schoolofhumanitiesandsciences/chemistry/#minortext).

The Bachelor of Science in Chemistry is listed as the official major on the transcript and on the diploma. Students may elect to pursue an unofficial concentration in Biological Chemistry. This unofficial concentration is not listed on the transcript nor on the diploma.

Degree Requirements

Additional information on the undergraduate program can be found on the Department of Chemistry website under Academics beginning with the section on the major for the B.S. Degree (https://chemistry.stanford.edu/academics/undergraduate-program/major/).

All degree courses must be taken for a letter grade.

Course Requirements

Students entering (i.e., matriculating) Stanford in Autumn 2019 and later are required to complete CS 106A Programming Methodology prior to CHEM 131 and CHEM 171. MATH 53 is not a requirement for students who entered Stanford in Autumn 2019 and later.

Lab Courses

For those entering the program above CHEM 33, the short course CHEM 100 Chemical Laboratory and Safety Skills is required; this course is only offered the second week of Autumn Quarter (not offered or required in AY 2020-21).

Lab courses have a mandatory, non-refundable fee. Students must obtain a department-approved lab coat and safety glasses. The department makes these available for purchase at the lowest possible price during the first few days of each quarter.

Traditional Chemistry Concentration

Requirements for students who entered Stanford in Autumn 2020 and later. For more senior students, consult the Bulletin (http://exploredegrees.stanford.edu/archive/#text) matching the year of matriculation (i.e., starting at) Stanford.

		Units
Introductory Courses		
Select one of the following:		5-10
CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II (5 units each)	
CHEM 31M	Chemical Principles: From Molecules to Solids (5 units)	5
CHEM 33	Structure and Reactivity of Organic Molecules	5
Foundational Courses		
CHEM 121	Understanding the Natural and Unnatural World through Chemistry	5
CHEM 131	Instrumental Analysis Principles and Practice	5
CHEM 151	Inorganic Chemistry I	4
CHEM 171	Foundations of Physical Chemistry	4
CS 106A	Programming Methodology	5
MATH 19	Calculus	3
MATH 20	Calculus	3
MATH 21	Calculus	4
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	5
PHYSICS 41	Mechanics	4
PHYSICS 42	Classical Mechanics Laboratory	1
PHYSICS 43	Electricity and Magnetism	4
PHYSICS 44	Electricity and Magnetism Lab	1
Advanced Courses		
CHEM 123	Organic Polyfunctional Compounds	3
CHEM 124	Organic Chemistry Laboratory	3
CHEM 126	Synthesis Laboratory	3
CHEM 153	Inorganic Chemistry II	3
CHEM 173	Physical Chemistry II	3
CHEM 174	Electrochemical Measurements Lab	3
CHEM 175	Physical Chemistry III	3
CHEM 176	Spectroscopy Laboratory	3
Total Units		87-92

Biological Chemistry Concentration

Requirements for students entering Stanford Autumn 2019 and later. For more senior students, consult the Bulletin (http://exploredegrees.stanford.edu/archive/#text) matching the year of matriculation (i.e., starting at) Stanford. The graduate-level elective course requirement has been dropped for all students.

		Units
Introductory Courses		
Select one of the following:		5-10
CHEM 31A & CHEM 31B	Chemical Principles I and Chemical Principles II (5 units each)	
CHEM 31M	Chemical Principles: From Molecules to Solids	5
CHEM 33	Structure and Reactivity of Organic Molecules	5
Foundational Courses		
CHEM 121	Understanding the Natural and Unnatural World through Chemistry	5
CHEM 131	Instrumental Analysis Principles and Practice	5
CHEM 151	Inorganic Chemistry I	4
CHEM 171	Foundations of Physical Chemistry	4
CHEM 181	Biochemistry I	4
Select one of the following BIO courses:		4
BIO 82	Genetics (4 units)	
BIO 84	Physiology (4 units)	
BIO 86	Cell Biology (4 units)	
CS 106A	Programming Methodology	5
MATH 19	Calculus	3
MATH 20	Calculus	3
MATH 21	Calculus	4
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	5
PHYSICS 41	Mechanics	4
PHYSICS 42	Classical Mechanics Laboratory	1
PHYSICS 43	Electricity and Magnetism	4
PHYSICS 44	Electricity and Magnetism Lab	1
Advanced Courses		
CHEM 123	Organic Polyfunctional Compounds	3
CHEM 124	Organic Chemistry Laboratory	3
CHEM 126	Synthesis Laboratory	3

CHEM 173	Physical Chemistry II	3
CHEM 176	Spectroscopy Laboratory	3
CHEM 183	Biochemistry II	3
CHEM 184	Biological Chemistry Laboratory	3
CHEM 185	Biophysical Chemistry	3
Total Units		95-100

Additional Information

Chemistry Major Schedule

Below are possible schedules for students entering Stanford in Autumn 2019 and later wanting to complete the traditional concentration and the biological chemistry concentration, each followed by an accelerated schedule.

Schedule for Traditional Chemistry Concentration

First Year	Units		
	Autumn	Winter	Spring
Chemical Principles I (CHEM 31A)		5	
Calculus (MATH 19)		3	
Chemical Principles II (CHEM 31B)			5
Calculus (MATH 20)			3
Programming Methodology (CS 106A)			5
Structure and Reactivity of Organic Molecules (CHEM 33)			5
Calculus (MATH 21)			4
Year Total:		8	13 9

Second Year	Units		
	Autumn	Winter	Spring
Understanding the Natural and Unnatural World through Chemistry (CHEM 121)		5	
Linear Algebra, Multivariable Calculus, and Modern Applications (MATH 51)		5	
Inorganic Chemistry I (CHEM 151)			4
Mechanics (PHYSICS 41)			4
Classical Mechanics Laboratory (PHYSICS 42)			1
Instrumental Analysis Principles and Practice (CHEM 131)			5
Foundations of Physical Chemistry (CHEM 171)			4
Year Total:		10	9 9

Third Year	Units		
	Autumn	Winter	Spring
Organic Polyfunctional Compounds (CHEM 123)		3	
Organic Chemistry Laboratory (CHEM 124)		3	
Synthesis Laboratory (CHEM 126)			3
Electricity and Magnetism (PHYSICS 43)			4
Electricity and Magnetism Lab (PHYSICS 44)			1
Year Total:		6	3 5

Fourth Year	Units		
	Autumn	Winter	Spring
Physical Chemistry II (CHEM 173)		3	
Electrochemical Measurements Lab (CHEM 174)		3	
Physical Chemistry III (CHEM 175)			3
Spectroscopy Laboratory (CHEM 176)			3
Inorganic Chemistry II (CHEM 153)			3
Year Total:		6	6 3

Total Units in Sequence: 87

Accelerated Schedule for the Traditional Chemistry Concentration

First Year	Units		
	Autumn	Winter	Spring
Chemical Principles: From Molecules to Solids (CHEM 31M)		5	
Programming Methodology (CS 106A)		5	
Structure and Reactivity of Organic Molecules (CHEM 33)			5
Mechanics (PHYSICS 41)			4
Classical Mechanics Laboratory (PHYSICS 42)			1
Understanding the Natural and Unnatural World through Chemistry (CHEM 121)			5
Electricity and Magnetism (PHYSICS 43)			4
Electricity and Magnetism Lab (PHYSICS 44)			1
Year Total:		10	10 10

Second Year	Units		
	Autumn	Winter	Spring
Organic Polyfunctional Compounds (CHEM 123)		3	
Organic Chemistry Laboratory (CHEM 124)		3	
Linear Algebra, Multivariable Calculus, and Modern Applications (MATH 51)		5	
Synthesis Laboratory (CHEM 126)			3
Inorganic Chemistry I (CHEM 151)			4
Instrumental Analysis Principles and Practice (CHEM 131)			5
Foundations of Physical Chemistry (CHEM 171)			4
Year Total:		11	7 9

Third Year	Units		
	Autumn	Winter	Spring
Physical Chemistry II (CHEM 173)		3	
Electrochemical Measurements Lab (CHEM 174)		3	
Physical Chemistry III (CHEM 175)			3
Spectroscopy Laboratory (CHEM 176)			3
Inorganic Chemistry II (CHEM 153)			3
Year Total:		6	6 3

Total Units in Sequence: 72

Schedule for Biological Chemistry Concentration

First Year	Units		
	Autumn	Winter	Spring
Chemical Principles I (CHEM 31A)		5	
Calculus (MATH 19)		3	
Chemical Principles II (CHEM 31B)			5
Calculus (MATH 20)			3
Programming Methodology (CS 106A)			5
Structure and Reactivity of Organic Molecules (CHEM 33)			5
Calculus (MATH 21)			4
Year Total:		8	13 9

Second Year	Units		
	Autumn	Winter	Spring
Understanding the Natural and Unnatural World through Chemistry (CHEM 121)		5	
Linear Algebra, Multivariable Calculus, and Modern Applications (MATH 51)		5	
Inorganic Chemistry I (CHEM 151)			4
Mechanics (PHYSICS 41)			4
Classical Mechanics Laboratory (PHYSICS 42)			1
Instrumental Analysis Principles and Practice (CHEM 131)			5
Foundations of Physical Chemistry (CHEM 171)			4
Year Total:		10	9 9

Third Year	Units		
	Autumn	Winter	Spring
Biochemistry I (CHEM 181)		4	
Organic Polyfunctional Compounds (CHEM 123)		3	
Organic Chemistry Laboratory (CHEM 124)		3	
Synthesis Laboratory (CHEM 126)			3
Biochemistry II (CHEM 183)			3
Physiology (BIO 84)			4
Biological Chemistry Laboratory (CHEM 184)			3
Electricity and Magnetism (PHYSICS 43)			4
Electricity and Magnetism Lab (PHYSICS 44)			1
Year Total:		10	10	8

Fourth Year	Units		
	Autumn	Winter	Spring
Physical Chemistry II (CHEM 173)		3	
Spectroscopy Laboratory (CHEM 176)			3
Biophysical Chemistry (CHEM 185)			3
Year Total:		3	3	3

Total Units in Sequence:	95

Accelerated Schedule for the Biological Chemistry Concentration

First Year	Units		
	Autumn	Winter	Spring
Chemical Principles: From Molecules to Solids (CHEM 31M)		5	
Programming Methodology (CS 106A)		5	
Structure and Reactivity of Organic Molecules (CHEM 33)			5
Mechanics (PHYSICS 41)			4
Classical Mechanics Laboratory (PHYSICS 42)			1
Understanding the Natural and Unnatural World through Chemistry (CHEM 121)			5
Electricity and Magnetism (PHYSICS 43)			4
Electricity and Magnetism Lab (PHYSICS 44)			1
Year Total:		10	10	10

Second Year	Units		
	Autumn	Winter	Spring
Organic Polyfunctional Compounds (CHEM 123)		3	
Organic Chemistry Laboratory (CHEM 124)		3	
Linear Algebra, Multivariable Calculus, and Modern Applications (MATH 51)		5	
Inorganic Chemistry I (CHEM 151)			4
Synthesis Laboratory (CHEM 126)			3
Physiology (BIO 84)			4
Instrumental Analysis Principles and Practice (CHEM 131)			5
Foundations of Physical Chemistry (CHEM 171)			4
Year Total:		11	11	9

Third Year	Units		
	Autumn	Winter	Spring
Physical Chemistry II (CHEM 173)		3	
Biochemistry I (CHEM 181)		4	
Spectroscopy Laboratory (CHEM 176)			3
Biochemistry II (CHEM 183)			3
Biological Chemistry Laboratory (CHEM 184)			3
Biophysical Chemistry (CHEM 185)			3
Year Total:		7	6	6

Total Units in Sequence:	80

Related Courses

Courses offered by other departments that may be of interest to Chemistry majors include:

		Units
BIO 82	Genetics	4
BIO 84	Physiology	4
BIO 86	Cell Biology	4
CHEMENG 20	Introduction to Chemical Engineering	4
CHEMENG 100	Chemical Process Modeling, Dynamics, and Control	3
CHEMENG 110B	Multi-Component and Multi-Phase Thermodynamics	3
CHEMENG 120A	Fluid Mechanics	4
CHEMENG 120B	Energy and Mass Transport	4
CS 106B	Programming Abstractions	3-5
CHEMENG 130A	Microkinetics - Molecular Principles of Chemical Kinetics	3
ENGR 50	Introduction to Materials Science, Nanotechnology Emphasis	4
MATH 106	Functions of a Complex Variable	3
MATH 109	Applied Group Theory	3
MATH 113	Linear Algebra and Matrix Theory	3
MATH 131P	Partial Differential Equations	3
MATSCI 151	Microstructure and Mechanical Properties	4
PHYSICS 110	Advanced Mechanics	4
STATS 110	Statistical Methods in Engineering and the Physical Sciences	5
STATS 116	Theory of Probability	4

Honors Program

A bachelor's degree in Chemistry with honors is available to those students interested in chemical research. Admission to the honors program requires a grade point average (GPA) of 3.3 in science courses and an overall GPA of 3.0 in all University courses. Beyond the standard B.S. course requirements for each track, 9 units of research credit and 9 units of course work need to be completed during the junior and senior academic years. A thesis, approved by the honors advisor, must be completed during the senior year. The thesis must be submitted to the research advisor, at least one week before the end of regular classes in Spring Quarter, and must be completed by May 15 to be considered for the Firestone award. The use of a single course for multiple requirements for honors, major, minor, or coterminal requirements is not allowed. Students who wish to be admitted to the honors program should register with the Student Services Manager in Spring Quarter of their junior year.

CHEM 190 Advanced Undergraduate Research research units towards honors may be completed, after being accepted into the program, in any laboratory within Chemistry or with courtesy faculty in Chemistry. Other chemical research can be approved through a formal petitioning of the Undergraduate Studies Committee. At least 3 units must be completed during the senior year. Participation in a summer research program in an academic setting between junior and senior years may be used in lieu of 3 units of CHEM 190 Advanced Undergraduate Research. For each quarter, a progress report reflecting the units undertaken is required. This report must be signed by the honors advisor, and filed in the department student services office before the last day of finals in the quarter during which the research is performed.

The 9 units of course work for honors must be completed from courses approved by the Undergraduate Studies Committee and taken for a letter

grade. At least six of these units need to be taken from the following CHEM courses:

		Units
CHEM 153	Inorganic Chemistry II	3
CHEM 174	Electrochemical Measurements Lab	3
CHEM 175	Physical Chemistry III	3
CHEM 181	Biochemistry I	4
CHEM 183	Biochemistry II	3
CHEM 184	Biological Chemistry Laboratory	3
CHEM 185	Biophysical Chemistry	3
CHEM 221	Advanced Organic Chemistry I	3
CHEM 223	Advanced Organic Chemistry II	3
CHEM 225	Advanced Organic Chemistry III (not offered in AY2020-21)	3
CHEM 232	Applications of NMR Spectroscopy	3
CHEM 251	Advanced Inorganic Chemistry	3
CHEM 253	Fundamentals of Inorganic Chemistry (not offered in AY2020-21)	3
CHEM 255	Advanced Inorganic Chemistry (not offered in AY2020-21)	3
CHEM 257	Bio-Inorganic Chemistry (not offered in AY2020-21)	3
CHEM 261	Computational Chemistry (not offered in AY2020-21)	3
CHEM 271	Advanced Physical Chemistry	3
CHEM 273	Advanced Physical Chemistry	3
CHEM 275	Advanced Physical Chemistry - Single Molecules and Light	3
CHEM 277	Materials Chemistry and Physics (not offered in AY2020-21)	3
CHEM 281	Therapeutic Science at the Chemistry - Biology Interface	3
CHEM 283	Synthesis and Analysis at the Chemistry-Biology Interface	3
CHEM 289	Concepts and Applications in Chemical Biology	3

Minor in Chemistry

Courses required for a minor must be taken for a letter grade and all courses below are required:

		Units
CHEM 33	Structure and Reactivity of Organic Molecules	5
CHEM 121	Understanding the Natural and Unnatural World through Chemistry	5
CHEM 123	Organic Polyfunctional Compounds	3
CHEM 124	Organic Chemistry Laboratory	3
CHEM 131	Instrumental Analysis Principles and Practice	5
CHEM 151	Inorganic Chemistry I	4
CHEM 171	Foundations of Physical Chemistry	4
Total Units		29

Master of Science in Chemistry

The Master of Science is available only to current Ph.D. students or as part of a coterminal program. Applicants for the M.S. degree in Chemistry are required to complete, in addition to the requirements for the bachelor's degree, a minimum of 45 graduate-level units and a M.S. thesis. Of the 45 units, approximately two-thirds must be in the department and must include at least 12 units of graduate level lecture courses exclusive of the thesis.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken three quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to the graduate career. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

		Units
Of the 12 units, at least 6 units must be from:		
CHEM 221	Advanced Organic Chemistry I	3
CHEM 223	Advanced Organic Chemistry II	3
CHEM 225	Advanced Organic Chemistry III	3
CHEM 232	Applications of NMR Spectroscopy	3
CHEM 251	Advanced Inorganic Chemistry	3
CHEM 253	Fundamentals of Inorganic Chemistry	3
CHEM 255	Advanced Inorganic Chemistry	3
CHEM 257	Bio-Inorganic Chemistry	3
CHEM 261	Computational Chemistry	3
CHEM 271	Advanced Physical Chemistry	3
CHEM 273	Advanced Physical Chemistry	3
CHEM 275	Advanced Physical Chemistry - Single Molecules and Light	3
CHEM 277	Materials Chemistry and Physics	3
CHEM 281	Therapeutic Science at the Chemistry - Biology Interface	3
CHEM 283	Synthesis and Analysis at the Chemistry-Biology Interface	3
CHEM 285	Biophysical Chemistry	3

Doctor of Philosophy in Chemistry

Process to Candidacy

Graduate students are eligible to become formal candidates for the Ph.D. degree after taking the department placement examinations, satisfactory completion of most of the formal lecture course requirements, and satisfactory progress on a dissertation research project determined by passing a progress report with one's thesis committee. There is no foreign language requirement for the Ph.D. degree. Admission to

candidacy for the Ph.D. degree must be done before July of the second year of graduate registration.

Placement Examinations

Each new graduate student must take placement examinations upon entrance. These consist of three written examinations of two hours each in the fields of inorganic, organic, and physical chemistry, and cover such material as ordinarily is given in a rigorous one-year undergraduate course in each of these subjects. Students concentrating in biophysical chemistry or chemical physics must take examinations in biophysical or chemical physics, physical chemistry, and organic or inorganic chemistry. Students concentrating in chemical biology must take examinations in biophysical, organic chemistry, and physical chemistry or inorganic chemistry. All placement examinations are given the week before instruction begins in Autumn Quarter, and must be taken at that time. Each new graduate student meets with a member of the graduate study committee to define a program of courses based on results of the placement examinations.

General Requirements

After taking the departmental placement examinations, students select a research advisor by interviewing members of the Chemistry faculty. An Application to Start Research form is submitted to the Department as research begins under the supervision of the advisor. All students in good standing are required to start research by the end of February, during Winter Quarter of the first year of graduate registration.

Candidates for the Ph.D. degree are required to participate continually in the department colloquium (CHEM 300 Department Colloquium) and in the division seminar of the major subject (CHEM 329 Organic Chemistry Seminar, CHEM 359 Inorganic Chemistry Seminar, or CHEM 379 Physical Chemistry Seminar).

Candidates for advanced degrees must have a minimum grade point average (GPA) of 3.0 for all Chemistry lecture courses as well as for all courses taken during graduate study. Required courses must be taken for a letter grade. Most course work ends in the second year of studies, and students will then focus on full-time dissertation research.

Students may major in organic, chemical biology, physical, biophysical, chemical physics, or inorganic chemistry. All graduate students are required to take six graduate-level lecture courses (course numbers greater than 199) of at least 3 units each in chemistry or related disciplines (e.g., biochemistry, electrical engineering, mathematics, chemical engineering, chemical and systems biology, physics, materials science), to be selected in consultation with their research advisor and the Graduate Study Committee. All six courses must be taken for a letter grade. At least three of the six courses must be taken within the Chemistry Department. A minimum of four courses should be completed by the end of the first year.

Course Requirements for entering classes beginning with 2018-19

		Units
All students must complete:		
CHEM 211A	Research Progress in Chemistry (in the second year)	1
CHEM 211B	Chemistry Research Seminar Presentation (in the third year)	1
CHEM 211C	Chemistry Research Proposal (in the fourth year)	1
Students majoring in physical or biophysical chemistry or chemical physics must also complete:		
CHEM 271	Advanced Physical Chemistry (in the first year)	3
CHEM 273	Advanced Physical Chemistry (in the first year)	3

Course Requirements for entering classes prior to 2018-19

Requirements for students who entered Stanford prior to 2018-19, please consult the Bulletin (http://exploredegrees.stanford.edu/archive/#text) matching the year of matriculation (i.e., starting at) Stanford.

Continuous enrollment in CHEM 301 Research in Chemistry is expected after the student has chosen a research supervisor.

Post-Candidacy

Before candidates may request scheduling of the University oral examination, clearance must be obtained from the dissertation advisor and an academic review meeting made with the Student Services Manager for the Department of Chemistry.

During the period in which a dissertation is being read by members of the faculty, candidates must be available for personal consultation until the dissertation has received final department approval.

Ph.D. Minor in Chemistry

Candidates for the Ph.D. degree in other departments who wish to obtain a minor in chemistry must complete, with a GPA of 3.0 or higher, 20 graduate-level units in Chemistry including four lecture courses of at least three units each.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Chemistry Undergraduate Program has changed its policy concerning 'CR' (credit) and 'S' (satisfactory) grades in degree requirements. The program will accept letter, 'CR', or 'S' grades for all major and minor course work for academic year 2020-21.

Graduate Degree Requirements

Grading

The Department of Chemistry has not changed its policy concerning 'CR' (credit) or 'S' (satisfactory) grades in graduate degree requirements requiring a letter grade for academic year 2020-21.

Graduate Advising Expectations

The Department of Chemistry is committed to providing academic advising in support of graduate student scholarly and professional development. This advising relationship entails collaborative and

sustained engagement with mutual respect by both the advisor and advisee.

1. The advisor is expected to meet at least monthly with the graduate student to discuss on-going research.
2. There should be a yearly independent development plan (IDP) meeting between the graduate student and advisor. Topics include research progress, expectations for completion of Ph.D., areas for both the student and advisor to improve in their joint research effort.
3. A research advisor should provide timely feedback on manuscripts and thesis chapters.
4. Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.
5. If there is a significant issue concerning the graduate student's progress in research, the advisor must communicate this to the student and to the Graduate Studies Committee in writing. This feedback should include the issues, what needs to be done to overcome these issues, and by when.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin. Academic advising by Stanford faculty is a critical component of all graduate students' education and additional resources can be found in the Policies and Best Practices for Advising Relationships at Stanford (http://stanford.box.com/shared/static/73oj7zqvy9h0fezqf310onbuunv91nyl.pdf) and the Guidelines for Faculty-Student Advising at Stanford (https://stanford.box.com/shared/static/mespm59bcanq03o4pppu7r4n9p4sb6t6.pdf).

Emeriti: (Professors) Hans C. Andersen, John I. Brauman, James P. Collman, Wray H. Huestis, Robert Pecora, Barry M. Trost

Chair: Steven G. Boxer

Vice Chair: T. Daniel P. Stack

Director of Graduate Studies: Edward I. Solomon

Director of Undergraduate Studies: Christopher E. D. Chidsey

Professors: Steven G. Boxer, Carolyn R. Bertozzi, James K. Chen, Bianxiao Cui, Hongjie Dai, Justin Du Bois, Michael D. Fayer, Keith O. Hodgson, Chaitan Khosla, Eric T. Kool, Todd J. Martínez, W. E. Moerner, Edward I. Solomon, Robert M. Waymouth, Paul A. Wender, Richard N. Zare

Associate Professors: Noah Z. Burns, Lynette Cegelski, Christopher E. D. Chidsey, Matthew Kanan, Hemamala Karunadasa, Thomas E. Markland, T. Daniel P. Stack, Yan Xia

Assistant Professors: Steven M. Banik (start date 1/1/2021), Laura Dassama, Fang Liu, Grant Rotskoff

Courtesy Professors: Zhenan Bao, Stacey F. Bent, Yi Cui, Kelly Gaffney, Jianghong Rao, Andrew Spakowitz, Alice Y. Ting

Adjunct Professors: Christopher Walsh

Lecturers: Megan K. Brennan, Jennifer Schwartz Poehlmann, Kevin Sibucao

Courses

CHEM 10. Exploring Research and Problem Solving Across the Sciences. 1 Unit.
Development and practice of critical problem solving and study skills using a wide variety of scientific examples that illustrate the broad yet integrated nature of current research. Students will build a problem solving tool-kit and apply chemical and mathematical concepts to solve problems related to energy, climate change, water resources, medicine, and food & nutrition. Note: course offered in August prior to start of fall quarter, and only Leland Scholar Program participants will register.

CHEM 25N. Science in the News. 3 Units.
Preference to freshmen. Possible topics include: diseases such as avian flu, HIV, and malaria; environmental issues such as climate change, atmospheric pollution, and human population; energy sources in the future; evolution; stem cell research; nanotechnology; and drug development. Focus is on the scientific basis for these topics as a basis for intelligent discussion of societal and political implications. Sources include the popular media and scientific media for the nonspecialist, especially those available on the web.

CHEM 29N. Chemistry in the Kitchen. 3 Units.
This course examines the chemistry relevant to food and drink preparation, both in homes and in restaurants, which makes what we consume more pleasurable. Good cooking is more often considered an art rather than a science, but a small bit of understanding goes a long way to make the preparation and consumption of food and drink more enjoyable. The intention is to have demonstrations and tastings as a part of every class meeting. We will examine some rather familiar items in this course: eggs, dairy products, meats, breads, vegetables, pastries, and carbonated beverages. We shall playfully explore the chemistry that turns food into meals. A high-school chemistry background is assumed; bring to class a good appetite and a healthy curiosity.

CHEM 31A. Chemical Principles I. 5 Units.
31A is the first course in a two-quarter sequence designed to provide a robust foundation in key chemical principles for students with limited background in chemistry. The course engages students in group problem-solving activities throughout the class periods to deepen their ability to analyze and solve chemical problems. Students will also participate in weekly labs that will apply and expand upon class content. Due to social distancing guidelines, labs will be held over live Zoom. Students can opt-in to receive an at home lab kit that will allow them to conduct low-risk portions of the labs from their location. TAs will demonstrate and guide students through hands-on portions, as well as supplement with further in-depth video labs, virtual simulations, and problem solving practice. n31A will provide practice developing conceptual models that can explain qualitatively and quantitatively a wide range of chemical phenomena and will be immediately applied to real world challenges. Students practice dimensional analysis, stoichiometry, and molecular naming that enables them to write chemical reactions, quantify reaction yield, and calculate empirical and molecular formulas. Using these skills, students estimate carbon efficiency of fossil fuels and identify unknowns in forensic analysis. Stoichiometry is reinforced through study of gases and their properties, through which students calculate the pressure exerted on a deep-sea diver. Students examine atomic and molecular structure by quantifying interactions among nuclei, electrons, atoms and molecules and explain trends in reactivity, such as why potassium metal catches fire in water. They explore how these interactions determine the structures and properties of pure substances, mixtures, proteins, and even DNA using three conceptual models for bonding: Lewis Dot, VSEPR, and Molecular Orbital Theory. They investigate the types and amounts of energy changes that accompany these interactions, phase changes, and chemical reactions, such as measuring the caloric content of food and dissecting an instant hand warmer. By the end of the course, students will be prepared to explore chemical reactivity in greater depth in 31B. nAll students who are interested in taking general chemistry at Stanford must take the Autumn 2020 General Chemistry Placement Test before Autumn quarter begins, regardless of chemistry background. Students with no AP/IB background are given enrollment priority in the 31A/B sequence.

CHEM 31B. Chemical Principles II. 5 Units.
Chem 31B is the second course in this two-quarter sequence, therefore only students who have completed Chem 31A may enroll in 31B. As with 31A, students will continue to engage in group problem-solving activities throughout class and participate in weekly laboratory activities. Labs and write-ups will allow students to more deeply explore and observe the different facets of chemical reactivity, including rates (kinetics), energetics (thermodynamics), and reversibility (equilibrium) of reactions. Through experimentation and discussion, students will determine what forces influence the rate of chemical reactions and learn how this can be applied to enzyme reactivity. Students will quantify chemical concentrations during a reaction, and predict the direction in which a reaction will shift in order to achieve equilibrium, including solubility equilibria. They will use these methods to estimate the possible levels of lead and other toxic metals in drinking water. Special emphasis will be placed on acid/base equilibria , allowing students to explore the role of buffers and antacids in our bodies, as well as ocean acidification and the impact on coral reefs. Students will then bring together concepts from both kinetics and equilibrium, in a deeper discussion of thermodynamics, to understand what ultimately influences the spontaneity of a reaction. Students will build a relationship between free energy, temperature, and equilibrium constants to be able to calculate the free energy of a reaction and understand how processes in our body are coupled to harness excess free energy to do useful work. Finally we will explore how we harness work from redox reactions, building both voltaic cells (i.e. batteries) and electrolytic cells in lab, and using reduction potentials to predict spontaneity and potential of a given reaction. We will look at the applications of redox chemistry in electric and fuel cell vehicles. The course's particular emphasis on understanding the driving forces of a reaction, especially the influence of thermodynamics versus kinetics, will prepare students for further study of predicting organic chemical reactivity and equilibria from structure in Chem 33. Prerequisite: Chem 31A.

CHEM 31M. Chemical Principles: From Molecules to Solids. 5 Units.
A one-quarter course for students who have taken chemistry previously. This course will introduce the basic chemical principles that dictate how and why reactions occur and the structure and properties of important molecules and extended solids that make up our world. As the Central Science, a knowledge of chemistry provides a deep understanding of concepts in fields ranging from materials, environmental science, and engineering to pharmacology and metabolism. Discussions of molecular structure will describe bonding models including Lewis structures, resonance, crystal-field theory, and molecular-orbital theory. We will reveal the chemistry of materials of different dimensionality, with emphasis on symmetry, bonding, and electronic structure of molecules and solids. We will also discuss the kinetics and thermodynamics that govern reactivity and dictate solubility and acid-base equilibria. A two-hour weekly laboratory section accompanies the course to introduce laboratory techniques and reiterate lecture concepts through hands-on activities. Specific discussions will include the structure, properties, and applications of molecules used in medicine, perovskites used in solar cells, and the dramatically different properties of materials with the same composition (for example: diamond, graphite, graphene). There will be three lectures, one two-hour laboratory session, and an optional 80-minute problem solving session each week. The course will assume familiarity with stoichiometry, unit conversions, and gas laws. All students who are interested in taking general chemistry at Stanford must take the Autumn 2020 General Chemistry Placement Test before Autumn quarter begins, regardless of chemistry background. Generally students earning an AP chemistry score of 4 or higher place into 31M. Students earning an AP score of 5 are also welcome to take the Autumn 2020 Chemistry 33 Placement Test to see if Chem33 is a more appropriate placement. Same as: MATSCI 31.
Same as: MATSCI 31

CHEM 33. Structure and Reactivity of Organic Molecules. 5 Units.
An introduction to organic chemistry, the molecular foundation to understanding of life, medicine, imaging, energy, and material science. Students will learn structural and bonding models of organic molecules that provide insights into chemical, physical, and reactivity properties, in addition to their biological activities, collectively contributing to the molecularization and thus advancement of many science disciplines. Combining these models with kinetic and thermodynamic analyses allows molecular conversions to be rationalized. Translation of this knowledge to more complex systems enables the synthesis of novel molecules or materials that can positively impact our science, society and environment. A two-hour weekly lab section accompanies the course to introduce the techniques of separation and identification of organic compounds. Prerequisite: CHEM 31B or CHEM 31M.

CHEM 90. Directed Instruction/Reading. 1-2 Unit.
Undergraduates pursue a reading program under supervision of a faculty member in Chemistry; may also involve participation in lab. Prerequisites: superior work in CHEM 31A, 31B, 31M, 31X, or 33; and consent of instructor.

CHEM 91. Exploring Chemical Research at Stanford. 1 Unit.
Preference to freshmen and sophomores. Department faculty describe their cutting-edge research and its applications.

CHEM 100. Chemical Laboratory and Safety Skills. 1 Unit.
(Not offered in AY 2020-21) This short course is only held in the second week of Autumn quarter. It provides training in basic chemical laboratory procedures and chemical safety to fulfill the safety training requirement for CHEM 121 and more advanced laboratory courses. Includes on-line and in-lab training. Successful completion of all course components required for credit. Prerequisite: introductory organic chemistry.

CHEM 121. Understanding the Natural and Unnatural World through Chemistry. 5 Units.
Students enrolled in this course will appreciate the transformative power of molecular science on the modern world and how foundational knowledge of chemistry enables profound discoveries in biological, pharmaceutical, agrochemical, engineering, energy, and materials science research. This course integrates the lessons of CHEM 31 and CHEM 33 through an examination of the structure-function properties of carbon-based molecules. Specific emphasis is given to the chemistry of carbonyl- and amine-derived compounds, polyfunctionalized molecules, reaction kinetics and thermodynamics, mechanistic arrow-pushing, and retrosynthetic analysis. Students will be empowered with a conceptual understanding of chemical reactivity, physical organic chemistry, and the logic of chemical synthesis. The singular nature of molecular design and synthesis to make available functional molecules and materials will be revealed. A three-hour lab section provides hands on experience with modern chemical methods for preparative and analytical chemistry. Prerequisite CHEM 33 or co-requisite CHEM 100 (not required in AY 2020-21).

CHEM 123. Organic Polyfunctional Compounds. 3 Units.
Analysis of molecular symmetry and spectroscopy, aromaticity, aromatic reactivity, heterocyclic chemistry, chemistry of peptides and DNA. Prerequisite: CHEM 121.

CHEM 124. Organic Chemistry Laboratory. 3 Units.
This is a laboratory course that serves as a stepping stone toward independent research in organic chemistry. Through several 1-2 step syntheses, this course trains students on basic organic laboratory techniques on purification of products, including extraction, distillation, recrystallization, thin layer chromatography, and column chromatography, as well as characterization of product structures using IR, GC-MS, and NMR spectroscopy. This course reviews MS, IR, and 1H and 13C NMR spectroscopy knowledge from Chem 33 and 121 with an emphasis on the practical interpretation of spectra, so that students can become independent in using these techniques to identify the purity and structures of organic compounds.nPrerequisite: Chem 121. Corequisite: Chem 123.

CHEM 126. Synthesis Laboratory. 3 Units.
This is a laboratory course that will provide a true experience of what it is like to perform research in synthetic organic chemistry. Emphasis will be on proper reaction setup, reaction monitoring, and complete characterization of final products using chromatographic and spectroscopic methods. Students will be utilizing modern electronic notebooks to prepare for and document their experiments. Concludes with an individual synthesis project. Prerequisites: Chem 124.

CHEM 131. Instrumental Analysis Principles and Practice. 5 Units.
The core objectives of the course will focus upon introducing and providing hands-on practice with analytical separation, spectroscopic identification, and calibrated quantification with strong technical communication (for the Writing-in-the-Major requirement) emphasized throughout the course. Lectures will focus on theory, and laboratory activities will provide hands-on practice with the GC, LC, XPS, ICP, MS, and UV/Vis instruments. Data analysis will be emphasized throughout the course with Python being the primary tool for plotting and computations. Statistical measurements will be introduced to gauge the quality and validity of data. Lectures will be three times a week with a required four-hour laboratory section. The course will conclude with a student-developed project, focusing upon separation and quantification, and a poster presentation. The course should be completed prior to CHEM courses 174,176, or 184. Prerequisite: CHEM 33 or CHEM 100.

CHEM 141. The Chemical Principles of Life I. 4 Units.
This is the first course in a two-quarter sequence (Chem 141/143), which will examine biological science through the lens of chemistry. In this sequence students will gain a qualitative and quantitative understanding of the molecular logic of cellular processes, which include expression and transmission of the genetic code, enzyme kinetics, biosynthesis, energy storage and consumption, membrane transport, and signal transduction. Connections to foundational principles of chemistry will be made through structure-function analyses of biological molecules. Integrated lessons in structural, mechanistic, and physical chemistry will underscore how molecular science and molecular innovation have impacted biology and medicine. Prerequisites: CHEM 121, MATH 21 or equivalent.

CHEM 143. The Chemical Principles of Life II. 4 Units.
(Not offered in AY2020-21) This is the second course in a two-quarter sequence (Chem 141/143), which will continue the discussion of biological science through the lens of chemistry. In this sequence students will gain a qualitative and quantitative understanding of the molecular logic of cellular processes, which include expression and transmission of the genetic code, enzyme kinetics, biosynthesis, energy storage and consumption, membrane transport, and signal transduction. Connections to foundational principles of chemistry will be made through structure-function analyses of biological molecules. Integrated lessons in structural, mechanistic, and physical chemistry will underscore how molecular science and molecular innovation have impacted biology and medicine. Prerequisite: Chem 141.

CHEM 151. Inorganic Chemistry I. 4 Units.
Bonding, stereochemical, and symmetry properties of discrete inorganic molecules are covered along with their mechanisms of ligand and electron exchange. Density function calculations are extensively used in these analyses in computer and problem set exercises. Prerequisites: CHEM 33.

CHEM 153. Inorganic Chemistry II. 3 Units.
The theoretical aspects of inorganic chemistry. Group theory; many-electron atomic theory; molecular orbital theory emphasizing general concepts and group theory; ligand field theory; application of physical methods to predict the geometry, magnetism, and electronic spectra of transition metal complexes. Prerequisites: CHEM 151, 173.

CHEM 155. Advanced Inorganic Chemistry. 3 Units.
Chemical reactions of organotransition metal complexes and their role in homogeneous catalysis. Analogous patterns among reactions of transition metal complexes in lower oxidation states. Physical methods of structure determination. Prerequisite: one year of physical chemistry.
Same as: CHEM 255

CHEM 156. Single-Crystal X-ray Diffraction. 3 Units.
(Formerly 150) Practical X-ray crystallography for small molecule compounds, which will emphasize crystal growth, measurement strategies, structure solution and refinement, and report generation. Example structures will include absolute configuration of organic compounds (with the heaviest atom being oxygen), metal containing complexes, disordered small molecules and twinning. Students will learn how to get from a new compound to a single crystal, and then to a cif-file ready for publication submission. They will gain knowledge of the underlying theory and concepts for each step of structure determination.
Same as: CHEM 256

CHEM 171. Foundations of Physical Chemistry. 4 Units.
Quantum and statistical thermodynamics: obtaining quantum mechanical energy levels and connecting them to thermodynamic properties using statistical mechanics. Emphasis will be on quantum mechanics of ideal systems (e.g. particle in a box, particle in a ring, harmonic oscillator, hydrogen atom) and their connection to and uses in thermodynamics (laws of thermodynamics, properties of gases, chemical equilibria, thermal motion and energy barriers, and rates of chemical reactions). Homeworks and discussion sections will employ the Python programming language for hands-on experience with simulating chemical systems. Prerequisites: CHEM 33; PHYS 41; CS106A; either MATH 51 or CME 100.

CHEM 173. Physical Chemistry II. 3 Units.
Introduction to quantum chemistry: the basic principles of wave mechanics, the harmonic oscillator, the rigid rotator, infrared and microwave spectroscopy, the hydrogen atom, atomic structure, molecular structure, valence theory. Prerequisites: CHEM 171; either MATH 53 or PHYSICS 43; CME 102 and CME 104.

CHEM 174. Electrochemical Measurements Lab. 3 Units.
Introduction to modern electrochemical measurement in a hands-on, laboratory setting. Students assemble and use electrochemical cells including indicator, reference, working and counter electrodes, with macro, micro and ultramicro geometries, salt bridges, ion-selective membranes, electrometers, potentiostats, galvanostats, and stationary and rotated disk electrodes. The later portion of the course will involve a student-generated project to experimentally characterize some electrochemical system. Prerequisites: CHEM 131 (formerly 134) and CHEM 171, MATH 51, PHYSICS 44 or equivalent.
Same as: CHEM 274

CHEM 175. Physical Chemistry III. 3 Units.
Molecular theory of kinetics and statistical mechanics: transport and reactions in gases and liquids, ensembles and the Boltzmann distribution law, partition functions, molecular simulation, structure and dynamics of liquids. Diffusion and activation limited reactions, potential energy surfaces, collision theory and transition-state theory. Prerequisites: CHEM 171, CHEM 173.

CHEM 176. Spectroscopy Laboratory. 3 Units.
Use of spectroscopic instrumentation to obtain familiarity with important types of spectrometers and spectroscopic methods and to apply them to study molecular properties and time dependent processes. Methods include electronic ultraviolet/ visible absorption, fast fluorescence with time correlated single photon counting, Raman and fluorescence microscopy, Fourier transform infrared absorption, and nuclear magnetic resonance. Prerequisite: CHEM 173.

CHEM 181. Biochemistry I. 4 Units.
Structure and function of major classes of biomolecules, including proteins, carbohydrates and lipids. Mechanistic analysis of properties of proteins including catalysis, signal transduction and membrane transport. Students will also learn to critically analyze data from the primary biochemical literature. Satisfies Central Menu Area 1 for Bio majors. Prerequisites: Chem 121 (formerly 35).
Same as: CHEMENG 181, CHEMENG 281

CHEM 183. Biochemistry II. 3 Units.
Focus on metabolic biochemistry: the study of chemical reactions that provide the cell with the energy and raw materials necessary for life. Topics include glycolysis, gluconeogenesis, the citric acid cycle, oxidative phosphorylation, photosynthesis, the pentose phosphate pathway, and the metabolism of glycogen, fatty acids, amino acids, and nucleotides as well as the macromolecular machines that synthesize RNA, DNA, and proteins. Medical relevance is emphasized throughout. Satisfies Central Menu Area 1 for Bio majors. Prerequisite: CHEM 181 or CHEM 141 or CHEMENG 181/281.
Same as: CHEMENG 183, CHEMENG 283

CHEM 184. Biological Chemistry Laboratory. 3 Units.
Modern techniques in biological chemistry including protein purification, characterization of enzyme kinetics, heterologous expression of His-tagged fluorescent proteins, site-directed mutagenesis, and a course-based undergraduate research experience (CURE) module. Prerequisite: CHEM 181.

CHEM 185. Biophysical Chemistry. 3 Units.
Primary literature based seminar/discussion course covering classical and contemporary papers in biophysical chemistry. Topics include (among others): protein structure and stability, folding, single molecule fluorescence and force microscopy, simulations, ion channels, GPCRs, and ribosome structure/function. Course is restricted to undergraduates: required for majors on the Biological Chemistry track, but open to students from the regular track. Prerequisites: Chem 171, Chem 173 and Chem 181.

CHEM 190. Advanced Undergraduate Research. 1-5 Unit.
Limited to undergraduates who have completed Chem 121 (formerly 35) and/or Chem 134, or by special arrangement with a faculty member. May be repeated 8 times for a max of 27 units. Prerequisite: CHEM 121 (formerly 35) or 134. Corequisite: CHEM 300.

CHEM 193. Interdisciplinary Approaches to Human Health Research. 1 Unit.
For undergraduate students participating in the Stanford ChEM-H Undergraduate Scholars Program. This course will expose students to interdisciplinary research questions and approaches that span chemistry, engineering, biology, and medicine. Focus is on the development and practice of scientific reading, writing, and presentation skills intended to complement hands-on laboratory research. Students will read scientific articles, write research proposals, make posters, and give presentations.
Same as: BIO 193, BIOE 193, CHEMENG 193

CHEM 196. Creating and Leading New Ventures in Engineering and Science-based Industries. 3 Units.
Open to seniors and graduate students interested in the creation of new ventures and entrepreneurship in engineering and science intensive industries such as chemical, energy, materials, bioengineering, environmental, clean-tech, pharmaceuticals, medical, and biotechnology. Exploration of the dynamics, complexity, and challenges that define creating new ventures, particularly in industries that require long development times, large investments, integration across a wide range of technical and non-technical disciplines, and the creation and protection of intellectual property. Covers business basics, opportunity viability, creating start-ups, entrepreneurial leadership, and entrepreneurship as a career. Teaching methods include lectures, case studies, guest speakers, and individual and team projects.
Same as: CHEM 296, CHEMENG 196, CHEMENG 296

CHEM 200. Research and Special Advanced Work. 1-15 Unit.
Qualified graduate students undertake research or advanced lab work not covered by listed courses under the direction of a member of the teaching staff.

CHEM 211A. Research Progress in Chemistry. 1 Unit.
Required of all second year Ph.D. students. Students present their research progress and plans in brief written and oral summaries.

CHEM 211B. Chemistry Research Seminar Presentation. 1 Unit.
Required of all third year Ph.D. students. Students present their research project as a seminar.

CHEM 211C. Chemistry Research Proposal. 1 Unit.
Required of all fourth year Ph.D. students. Students formulate, write, and orally defend an original research proposal.

CHEM 221. Advanced Organic Chemistry I. 3 Units.
Physical Organic Chemistry. This course is focused on understanding the important physical principles in organic chemistry, including bonding and structural analysis; molecular interactions; thermodynamics; kinetics; methods to investigate reactive intermediates, reactivity, and elucidate reaction mechanism. Prerequisite: Chem 123 (formerly 131).

CHEM 223. Advanced Organic Chemistry II. 3 Units.
Physical Organic Chemistry. This course is focused on understanding the important physical principles in organic chemistry, including bonding and structural analysis; molecular interactions; thermodynamics; kinetics; methods to investigate reactive intermediates, reactivity, and elucidate reaction mechanism. Prerequisite: Chem 123 (formerly 131).

CHEM 225. Advanced Organic Chemistry III. 3 Units.
Chemistry is driven by one's understanding of structure and mechanism and ones ability to make molecules. This course is intended to address the universal mechanistic and structural foundations of organic chemistry with an emphasis on new synthetic methods, selectivity analysis, computer-based strategies for the design and synthesis of complex molecules, concepts for innovative problems solving and, importantly, how to put these skills together in the generation of impactful ideas and proposals directed at solving problems in science as required for a career in molecular science. Prerequisite: CHEM 223 or consent of instructor.

CHEM 232. Applications of NMR Spectroscopy. 3 Units.
(Formerly 235) The uses of NMR spectroscopy in chemical and biochemical sciences, emphasizing data acquisition for liquid samples and including selection, setup, and processing of standard and advanced experiments.

CHEM 251. Advanced Inorganic Chemistry. 3 Units.
(Formerly Chem 253) Electronic structure and physical properties of transition metal complexes. Ligand field and molecular orbital theories, magnetism and magnetic susceptibility, electron paramagnetic resonance including hyperfine interactions and zero field splitting and electronic absorption spectroscopy including vibrational interactions. Prerequisite: advanced undergrad-level inorganic course (equivalent to CHEM 153).

CHEM 253. Fundamentals of Inorganic Chemistry. 3 Units.
(Formerly Chem 251) Intended for first-year graduate students and advanced undergraduate students, as a review of how basic concepts in inorganic chemistry can be applied to materials of all dimensionalities. Specific topics will include: symmetry (group theory), bonding models (crystal field theory, valence bond theory, molecular orbital theory, and the Bloch theorem) and electronic structure, and properties/reactivity of molecules and extended solids. Prerequisite: introductory undergraduate-level inorganic course (equivalent to CHEM 151).

CHEM 255. Advanced Inorganic Chemistry. 3 Units.
Chemical reactions of organotransition metal complexes and their role in homogeneous catalysis. Analogous patterns among reactions of transition metal complexes in lower oxidation states. Physical methods of structure determination. Prerequisite: one year of physical chemistry.
Same as: CHEM 155

CHEM 256. Single-Crystal X-ray Diffraction. 3 Units.
(Formerly 150) Practical X-ray crystallography for small molecule compounds, which will emphasize crystal growth, measurement strategies, structure solution and refinement, and report generation. Example structures will include absolute configuration of organic compounds (with the heaviest atom being oxygen), metal containing complexes, disordered small molecules and twinning. Students will learn how to get from a new compound to a single crystal, and then to a cif-file ready for publication submission. They will gain knowledge of the underlying theory and concepts for each step of structure determination.
Same as: CHEM 156

CHEM 257. Bio-Inorganic Chemistry. 3 Units.
(Formerly Chem 297) Overview of metal sites in biology. Metalloproteins as elaborated inorganic complexes, their basic coordination chemistry and bonding, unique features of the protein ligand, and the physical methods used to study active sites. Active site structures are correlated with function (election transfer; dioxygen binding, activation and reduction to water). Prerequisites: Chem 153 and Chem 173, or equivalents.
Same as: BIOPHYS 297

CHEM 258C. Research Progress in Inorganic Chemistry. 1 Unit.
Required of all second-, third-, and fourth-year Ph.D. candidates in inorganic chemistry. Students present their research progress in written and oral forms (A); present a seminar in the literature of the field of research (B); and formulate, write, and orally defend a research proposal (C). Second-year students register for A; third-year students register for B; fourth-year students register for C.

CHEM 261. Computational Chemistry. 3 Units.
Introduction to computational chemistry methodology with a focus on interpretation of and applications to experimental research. Project-based and hands-on experience with molecular dynamics simulation, determining reaction pathways, Monte Carlo simulation and modeling, and machine learning for applications in chemistry. Prerequisite: knowledge of undergraduate level quantum mechanics and statistical mechanics at the levels of Chem 173 and Chem 175.

CHEM 271. Advanced Physical Chemistry. 3 Units.
The principles of quantum mechanics. General formulation, mathematical methods, and applications of quantum theory. Different representations of quantum theory, i. e., the Dirac, Schrödinger, matrix, and density matrix methods. Time independent exactly solvable problems and approximate methods including time independent perturbation theory and the variational method. Atomic energy calculations, angular momentum, and introduction to molecular structure methods. Time dependent methods. Time dependent perturbation theory applied to various problems such as absorption and emission of radiation. Time dependent density matrix formalism applied to coherent coupling of radiation fields to molecular systems, e. g., NMR and optical spectroscopy. Prerequisite: Chem. 175 or equivalent course.

CHEM 273. Advanced Physical Chemistry. 3 Units.
Statistical mechanics is a fundamental bridge that links microscopic world of quantum mechanics to macroscopic thermodynamic properties. We discuss the principles and methods of statistical mechanics from the ensemble point of view. Applications include statistical thermodynamics, quantum systems, heat capacities of gases and solids, chemical equilibrium, pair correlation functions in liquids, and phase transitions. Prerequisite: CHEM 271.

CHEM 274. Electrochemical Measurements Lab. 3 Units.
Introduction to modern electrochemical measurement in a hands-on, laboratory setting. Students assemble and use electrochemical cells including indicator, reference, working and counter electrodes, with macro, micro and ultramicro geometries, salt bridges, ion-selective membranes, electrometers, potentiostats, galvanostats, and stationary and rotated disk electrodes. The later portion of the course will involve a student-generated project to experimentally characterize some electrochemical system. Prerequisites: CHEM 131 (formerly 134) and CHEM 171, MATH 51, PHYSICS 44 or equivalent.
Same as: CHEM 174

CHEM 275. Advanced Physical Chemistry - Single Molecules and Light. 3 Units.
Covers optical single-molecule detection, spectroscopy, and imaging for detection of motional dynamics, super-resolution structure beyond the diffraction limit, and nanoscale interactions and orientations mostly in biological materials. May include an in-class laboratory component. Recommended: CHEM 271 or PHYSICS 230 and CHEM 273 or equivalent.

CHEM 277. Materials Chemistry and Physics. 3 Units.
(Not offered in AY2020-21) Topics: structures and symmetries and of solid state crystalline materials, chemical applications of group theory in solids, quantum mechanical electronic band structures of solids, phonons in solids, synthesis methods and characterization techniques for solids including nanostructured materials, selected applications of solid state materials and nanostructures. May be repeated for credit.

CHEM 279. Chemophysical analyses of costs to lower atmospheric concentrations of greenhouse gases. 3 Units.
Many methods have been proposed to reduce future concentration of CO2, CH4 and other greenhouse gases in the atmosphere from stricter emission regulations, to lower carbon energy sources, to more distribution of existing resources over space and time, to atmospheric capture and sequestration of gases already in the atmosphere. All methods would impose costs in some form. What can chemical and physical analyses tell us about the costs of different approaches? In this graduate-level seminar, students will read primary literature examining the chemical and physical challenges and limitations of various approaches and, by rigorous assessment of the theory and data available to date, will seek to estimate a credible range of future costs for each approach. Prerequisite: Previous study of thermodynamics, kinetics and quantum mechanics at the level of Chemistry 171 and 173.

CHEM 280. Single-Molecule Spectroscopy and Imaging. 3 Units.
Theoretical and experimental techniques necessary to achieve single-molecule sensitivity in laser spectroscopy: interaction of radiation with spectroscopic transitions; systematics of signals, noise, and signal-to-noise; modulation and imaging methods; and analysis of fluctuations; applications to modern problems in biophysics, cellular imaging, physical chemistry, single-photon sources, and materials science. Prerequisites: CHEM 271, previous or concurrent enrollment in CHEM 273.

CHEM 281. Therapeutic Science at the Chemistry - Biology Interface. 3 Units.
(Formerly Chem 227) Explores the design and enablement of new medicines that were born from a convergence of concepts and techniques from chemistry and biology. Topics include an overview of the drug development process, design of of small molecule medicines with various modes of action, drug metabolism and pharmacogenomics, biologic medicines including protein- and nucleic acid-based therapeutics, glycoscience and glycomimetic drugs, and cell-based medicines derived from synthetic biology. Prerequisite: undergraduate level organic chemistry and biochemistry as well as familiarity with concepts in cell and molecular biology.

CHEM 283. Synthesis and Analysis at the Chemistry-Biology Interface. 3 Units.
(Formerly 226) Focus on the combined use of organic chemistry and molecular biology to make, manipulate and measure biomacromolecules, with special focus on DNA and RNA. Synthetic and enzymatic methods for design and construction of oligonucleotides and nucleic acids; methods for bioconjugation and labeling; fluorescence tools; intracellular delivery strategies; selection and evolution methods; CRISPR mechanisms. Prerequisite: One year of undergraduate organic chemistry. Completion of a course in molecular biology is strongly recommended.

CHEM 285. Biophysical Chemistry. 3 Units.
Primary literature based seminar/discussion course covering classical and contemporary papers in biophysical chemistry. This is intended to provide an introduction to critical analysis of papers in the literature through intensive discussion and evaluation. Topics include (among others): protein structure and stability, folding, single molecule fluorescence and force microscopy, simulations, ion channels, GPCRs, and ribosome structure/function. Course is limited to 15 students and priority will be given to first year Chemistry graduate students.

CHEM 289. Concepts and Applications in Chemical Biology. 3 Units.
Current topics include chemical genetics, activity-based probes, inducible protein degradation, DNA/RNA chemistry and molecular evolution, protein labeling, carbohydrate engineering, fluorescent proteins and sensors, optochemical/optogenetic methods, mass spectrometry, and genome-editing technologies.
Same as: CSB 260

CHEM 291. Introduction to Nuclear Magnetic Resonance. 3 Units.
Introduction to quantum and classical descriptions of NMR; analysis of pulse sequences and nuclear spin coherences via density matrices and the product operator formalism; NMR spectrometer design; Fourier analysis of time-dependent observable magnetization; NMR relaxation in liquids and solids; NMR strategies for biological problem solving. Prerequisite: Chem 173.

CHEM 296. Creating and Leading New Ventures in Engineering and Science-based Industries. 3 Units.
Open to seniors and graduate students interested in the creation of new ventures and entrepreneurship in engineering and science intensive industries such as chemical, energy, materials, bioengineering, environmental, clean-tech, pharmaceuticals, medical, and biotechnology. Exploration of the dynamics, complexity, and challenges that define creating new ventures, particularly in industries that require long development times, large investments, integration across a wide range of technical and non-technical disciplines, and the creation and protection of intellectual property. Covers business basics, opportunity viability, creating start-ups, entrepreneurial leadership, and entrepreneurship as a career. Teaching methods include lectures, case studies, guest speakers, and individual and team projects.
Same as: CHEM 196, CHEMENG 196, CHEMENG 296

CHEM 299. Teaching of Chemistry. 1-3 Unit.
Required of all teaching assistants in Chemistry. Techniques of teaching chemistry by means of lectures and labs.

CHEM 300. Department Colloquium. 1 Unit.
Required of graduate students. May be repeated for credit.

CHEM 301. Research in Chemistry. 2 Units.
Required of graduate students who have passed the qualifying examination. Open to qualified graduate students with the consent of the major professor. Research seminars and directed reading deal with newly developing areas in chemistry and experimental techniques. May be repeated for credit. Search for adviser name on Axess.

CHEM 321. Topics in Stereochemistry. 3 Units.
Most areas of modern organic chemistry require of an understanding of stereochemical concepts. This course will discuss relevant developments in three central fields of stereochemistry, (1) conformational analysis, with particular emphasis in the influence of stereoelectronic interactions, (2) asymmetric synthesis, with specific applications in the stereoselective synthesis of a- and b-amino acids, and (3) sustainable chemistry and asymmetric organocatalysis. A solid foundation in organic chemistry is expected.

CHEM 329. Organic Chemistry Seminar. 1 Unit.
(Formerly 229) Required of graduate students majoring in organic chemistry. Students giving seminars register for CHEM 231.

CHEM 359. Inorganic Chemistry Seminar. 1 Unit.
(Formerly 259) Required of graduate students majoring in inorganic chemistry.

CHEM 371. Time-dependent statistical mechanics I. 3 Units.
First of a two-quarter sequence on the extension of the principles of statistical thermodynamics to systems away from equilibrium. We will explore the connection between the observable properties of such systems and the properties of their microscopic constituents. It will introduce students to many of the theoretical tools that researchers use to understand different kinds of time-dependent phenomena. The sequence will include coverage of the following topics: Phase space and the Liouville equation; equilibrium time correlation functions (TCFs); simple models of TCFs; linear response theory and transport coefficients; projection operators and generalized equations of motion; functional calculus and the Fokker-Planck, Langevin and generalized Langevin equations; chemical reaction dynamics and the Kramers equation; fluctuation theorems and non-equilibrium work relations; path integrals in the study of stochastic processes. Prerequisites: CHEM 175 or CHEM 273 or equivalent course in equilibrium statistical mechanics.

CHEM 373. Time-dependent statistical mechanics II. 3 Units.
Second of a two-quarter sequence surveying the statistical mechanical principles used in the study of time-dependent phenomena. It will continue to develop the themes introduced in CHEM 371, while illustrating their application to a variety of exactly solvable model systems, with examples drawn from the current research literature. Prerequisite: CHEM 371.

CHEM 379. Physical Chemistry Seminar. 1 Unit.
(Formerly 279) Required of graduate students majoring in physical chemistry. May be repeated for credit.

CHEM 390. Curricular Practical Training for Chemists. 1 Unit.
For Chemistry majors who need work experience as part of their program of study. Confer with Chem student services office for signup.

CHEM 459. Frontiers in Interdisciplinary Biosciences. 1 Unit.
Students register through their affiliated department; otherwise register for CHEMENG 459. For specialists and non-specialists. Sponsored by the Stanford BioX Program. Three seminars per quarter address scientific and technical themes related to interdisciplinary approaches in bioengineering, medicine, and the chemical, physical, and biological sciences. Leading investigators from Stanford and the world present breakthroughs and endeavors that cut across core disciplines. Pre-seminars introduce basic concepts and background for non-experts. Registered students attend all pre-seminars; others welcome. See http://biox.stanford.edu/courses/459.html. Recommended: basic mathematics, biology, chemistry, and physics.
Same as: BIO 459, BIOC 459, BIOE 459, CHEMENG 459, PSYCH 459

CHEM 802. TGR Dissertation. 0 Units.
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CLASSICS

Courses offered by the Department of Classics are listed on the *Stanford Bulletin's* ExploreCourses web site under the subject code CLASSICS (https://explorecourses.stanford.edu/search/?q=CLASSICS&view=catalog&page=0&academicYear=&filter-coursestatus-Active=on&filter-departmentcode-CLASSICS=on&collapse=&filter-catalognumber-CLASSICS=on).

The study of Classics has traditionally centered on the literature and material culture of ancient Greece and Rome, including Greek and Latin language, literature, philosophy, history, art, and archaeology. At Stanford, Classics also explores connections with other ancient cultures and with the modern world, as well as specialized fields such as ancient economics, law, papyrology, and science. The department's faculty approaches Classics from an interdisciplinary perspective that crosses geographical, temporal, and thematic territories. Studying ancient epic poetry can lead to looking at modern cinema afresh; ancient Athenian politics opens new perspectives on modern politics; and the study of Rome presents parallels with other empires just as Latin illuminates the history of English and the Romance languages. In short, Classics at Stanford is an interdisciplinary subject concerned not only with Greek and Roman civilization but also with the interaction of cultures and societies that influenced the ancient Mediterranean basin and continue to influence human society across the globe.

Mission of the Undergraduate Program in Classics

The mission of the undergraduate program in Classics is to provide students with a broad background centered on the literature and material culture of ancient Greece and Rome, including Greek and Latin language, literature, philosophy, history, art, and archaeology. At Stanford, students in the Classics program also explore the connections between ancient cultures and the modern world as well as specialized fields such as ancient economics, law, papyrology, and science. The program's faculty approaches Classics from an interdisciplinary perspective that crosses geographical, temporal and thematic territories. The program is concerned not only with Greek and Roman civilization but also with the interaction of cultures and societies that influenced the ancient Mediterranean basin and continue to influence human society across the globe.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. The ability to develop effective and nuanced lines of interpretation.
2. Critical thinking skills using primary source materials.
3. Facility with the methodologies and presuppositions underlying interpretive positions in secondary literature and in their own work.
4. Well-developed analytical writing skills and close reading skills.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in Classics and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in Classics. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of Classics and to interpret and present the results of such research.

Course Numbering

CLASSICS courses are numbered according to level and area of study.

Digit	Area
001-099	Introductory Courses
100-199	Undergraduate Language, Core, Electives and Independent Study
200-299	Advanced Undergraduate, Coterminal, MA and PhD
300-399	Graduate Seminars and Dissertation Research

Bachelor of Arts in Classics

The Department of Classics offers a Bachelor of Arts in Classics. Eligible students may also pursue a Bachelor of Arts with Honors (p. 1154). The department also offers a minor in Classics (p. 1154).

Suggested Preparation for the Major

Those interested in majoring in Classics are encouraged to declare by spring of sophomore year but are urged to discuss their plans with the Director of Undergraduate Studies as early as possible. Students who choose the Greek and Latin field of study should begin the curriculum as soon as possible because it is difficult to complete the language requirements without an early start; those with no previous knowledge of Latin or Greek should begin study in the freshman year, in a summer program following freshman year, or at the beginning of the sophomore year.

How to Declare the Major

To declare the major, a student must fill out the Declaration of Major on Axess and meet with the Director of Undergraduate Studies in the Department of Classics. At that time, the Director of Undergraduate Studies assists the student to select a department adviser. To build a mentoring relationship, students should meet with their adviser at least once a quarter. At the time of declaration, the student should also meet with the Department of Classics' student services officer. Each student's progress towards fulfillment of the major requirements is recorded in a file kept in the student services officer's office. It is the student's responsibility to work with the adviser and student services officer to keep this file up to date.

Degree Requirements

A letter grade is required for all courses taken for the major. No course receiving a grade lower than 'C' is counted toward fulfilling major requirements. Enrollment in an independent study section (CLASSICS 198 Directed Readings) requires the prior approval of the Director of Undergraduate Studies, and a maximum of three such enrollments for a maximum total of 10 units may be counted toward the major. University credit earned by placement tests or advanced placement work in secondary school is not counted towards any major requirement in the department. Work done at other universities or colleges is subject to department evaluation and the University's transfer credit process. Counting graduate courses or cognate courses towards the major requires advance approval by the Director of Undergraduate Studies. Students are encouraged to meet with the Director of Undergraduate Studies to discuss options for pursuing a period of study in the Mediterranean region (see Study Abroad below).

Course Requirements

The B.A. degree may be earned by fulfilling the requirements for one of the following fields of study (subplans). These fields of study are declared on Axess; they appear on the transcript but not on the diploma.

Subplans

Classical Studies

This major is recommended for students who wish to study classical civilizations in depth but do not wish to study the languages to the extent required by the Greek, Latin or Greek and Latin options described below. It is not suitable for students who wish to do graduate work in Classics or to teach Latin or Greek in high school, as the language work is insufficient for these purposes. Students must complete at least 60 units of approved courses including:

		Units
Writing in the Major (WIM)		**5**
CLASSICS 150	Majors Seminar: The Augustan Age	5
Latin or Greek at the intermediate-level or higher		**10-20**
at least two courses in Latin or Greek at the intermediate-level or higher [1]		10
CLASSICS 11L	Intermediate Latin: Introduction to Literature	
CLASSICS 12L	Intermediate Latin: Cicero and Catullus	
CLASSICS 13L	Intermediate Latin: Vergil	
CLASSICS 101L	Advanced Latin: Livy	
CLASSICS 102L	Advanced Latin: Early Latin	
CLASSICS 103L	Advanced Latin: Lucan's Pharsalia	
CLASSICS 11G	Intermediate Greek: Prose	
CLASSICS 12G	Intermediate Greek: Herodotus	
CLASSICS 13G	Intermediate Greek: Homer	
CLASSICS 101G	Advanced Greek: Plato	
CLASSICS 102G	Advanced Greek: Aeschylus	
CLASSICS 103G	Advanced Greek: Lyric Poetry	
or one course in one of the languages at the intermediate-level or higher, plus the beginning series of the other language [1]		20
CLASSICS 1L	Beginning Latin	
CLASSICS 2L	Beginning Latin	
CLASSICS 3L	Beginning Latin	
CLASSICS 1G	Beginning Greek	
CLASSICS 2G	Beginning Greek	
CLASSICS 3G	Beginning Greek	
Electives		**35-45**
remaining units from your choice of CLASSICS courses [2]		
Total Units		**60**

1. Language courses may be repeated for credit towards the degree only with advance written permission from the Director of Undergraduate Studies. Only listed courses can be used to fulfill the language requirement.
2. ESF 7 Education as Self-Fashioning: The Transformation of the Self/ESF 7A Education as Self-Fashioning: The Transformation of the Self (note that this is the same course) and Autumn Quarter SLE may count toward the major.

Ancient History

Students must complete at least 60 units of approved courses and must satisfy the following requirements:

		Units
Writing in the Major (WIM)		**5**
CLASSICS 150	Majors Seminar: The Augustan Age	5
Core Requirement		**6-10**
Complete any two survey courses in ancient history:		
CLASSICS 81	Ancient Empires: Near East	
CLASSICS 82	The Egyptians	
CLASSICS 83	The Greeks	
CLASSICS 84	The Romans	
Depth Requirement		**33**
Complete at least 33 units of ancient history and civilization courses. [1]		
Breadth Requirements		**12-15**
Complete at least 4 units in each of the following three areas [2]		
1. Archaeology and art; suggested courses include:		4-5
CLASSICS 151	Ten Things: An Archaeology of Design	
CLASSICS 154	Sailing the Wine-Dark Sea: Maritime Archaeology of the Ancient Mediterranean	
CLASSICS 161	Introduction to Greek Art I: The Archaic Period	
CLASSICS 162	Introduction to Greek Art II: The Classical Period	
CLASSICS 163	Artists, Athletes, Courtesans and Crooks	
CLASSICS 168	Engineering the Roman Empire	
2. Comparative ancient civilizations: complete a course on the ancient world outside the Mediterranean and western Asia. Suggested courses include:		4-5
ANTHRO 106	Incas and their Ancestors: Peruvian Archaeology	
ANTHRO 115B		
3. Historical and social theory. Suggested courses include:		4-5
ANTHRO 1	Introduction to Cultural and Social Anthropology	
ANTHRO 90B	Theory of Cultural and Social Anthropology	
SOC 1	Introduction to Sociology	
SOC 140	Introduction to Social Stratification	
SOC 142	Sociology of Gender	
SOC 170	Classics of Modern Social Theory	
HUMBIO 2B	Culture, Evolution, and Society	
Total Units		**60**

1. Latin, Ancient Greek, and IntroSems courses may count toward this requirement if approved by the Director of Undergraduate Studies.
2. The courses chosen must be approved in advance by the Director of Undergraduate Studies and are normally chosen from the list of areas noted.

Greek

Students must complete at least 60 units of approved courses including:

		Units
Writing in the Major (WIM)		**5**
CLASSICS 150	Majors Seminar: The Augustan Age	5
Ancient Greek at the intermediate-level or higher		**31**
At least 31 units of Ancient Greek courses at the intermediate-level or higher. It is recommended that these include CLASSICS 105A/B, though this series should not be taken until students have completed three years of Greek. [1,2]		
CLASSICS 11G	Intermediate Greek: Prose	
CLASSICS 12G	Intermediate Greek: Herodotus	

CLASSICS 13G	Intermediate Greek: Homer	
CLASSICS 101G	Advanced Greek: Plato	
CLASSICS 102G	Advanced Greek: Aeschylus	
CLASSICS 103G	Advanced Greek: Lyric Poetry	
Additional Courses		**9-15**
At least three additional CLASSICS courses from CLASSICS 31-99 or 110-197 [3]		
Electives		**9-15**
Remaining units from your choice of CLASSICS courses (Latin, Biblical Greek, Sanskrit or ancient history recommended).		
Total Units		**60**

1. Language courses may be repeated for credit towards the degree only with advance written permission from the Director of Undergraduate Studies.
2. CLASSICS 6G Biblical Greek or CLASSICS 7G Biblical Greek (not both) may count toward the Ancient Greek intermediate-level language requirement.
3. ESF 7/ESF 7A (note that this is the same course) and Autumn Quarter SLE and/or IntroSems may count toward this requirement. Beginning Greek may count as long as at least 31 units at the intermediate or advance-level are completed

Latin

Students must complete at least 60 units of approved courses including:

		Units
Writing in the Major (WIM)		**5**
CLASSICS 150	Majors Seminar: The Augustan Age	5
Latin at the intermediate-level or higher		**31**
At least 31 units of Latin courses at the intermediate-level or higher. It is recommended that this include CLASSICS 104A/B, though this series should not be taken until students have completed three years of Latin. [1,2]		
CLASSICS 11L	Intermediate Latin: Introduction to Literature	
CLASSICS 12L	Intermediate Latin: Cicero and Catullus	
CLASSICS 13L	Intermediate Latin: Vergil	
CLASSICS 101L	Advanced Latin: Livy	
CLASSICS 102L	Advanced Latin: Early Latin	
CLASSICS 103L	Advanced Latin: Lucan's Pharsalia	
Additional Courses		**9-15**
At least three additional CLASSICS courses from CLASSICS 31-99 or 110-197 [3]		
Electives		**9-15**
Remaining units from your choice of CLASSICS courses (Ancient Greek, Biblical Greek or ancient history recommended)		
Total Units		**60**

1. Language courses may be repeated for credit towards the degree only with advance written permission from the Director of Undergraduate Studies.
2. CLASSICS 6L Latin 400-1700 CE may count toward the Latin intermediate-level language requirement. May be repeated for credit toward the degree with advance written permission from the Director of Undergraduate Studies.
3. ESF 7/ESF 7A (note that this is the same course), Autumn Quarter SLE and/or IntroSems may count toward this requirement. Beginning Latin may count as long as at 31 units at the intermediate or advance-level are completed.

Greek and Latin

Students must complete at least 65 units of approved courses including:

		Units
Writing in the Major (WIM)		**5**
CLASSICS 150	Majors Seminar: The Augustan Age	5
Latin		**30**
At least 30 units of Latin courses at the intermediate-level and higher. [1, 2]		
OR at least 30 units of Latin at the beginning-level and higher, as long as Greek is at the intermediate-level and higher		
CLASSICS 1L	Beginning Latin	
CLASSICS 2L	Beginning Latin	
CLASSICS 3L	Beginning Latin	
CLASSICS 11L	Intermediate Latin: Introduction to Literature	
CLASSICS 12L	Intermediate Latin: Cicero and Catullus	
CLASSICS 13L	Intermediate Latin: Vergil	
CLASSICS 101L	Advanced Latin: Livy	
CLASSICS 102L	Advanced Latin: Early Latin	
CLASSICS 103L	Advanced Latin: Lucan's Pharsalia	
CLASSICS 104A	Latin Syntax I	
CLASSICS 104B	Latin Syntax II	
Greek		**30**
At least 30 units of Ancient Greek courses at the intermediate-level or higher. [1, 2]		
OR at least 30 units of Greek at the beginning-level and higher, as long as Latin is at the intermediate-level and higher		
CLASSICS 1G	Beginning Greek	
CLASSICS 2G	Beginning Greek	
CLASSICS 3G	Beginning Greek	
CLASSICS 11G	Intermediate Greek: Prose	
CLASSICS 12G	Intermediate Greek: Herodotus	
CLASSICS 13G	Intermediate Greek: Homer	
CLASSICS 101G	Advanced Greek: Plato	
CLASSICS 102G	Advanced Greek: Aeschylus	
CLASSICS 103G	Advanced Greek: Lyric Poetry	
CLASSICS 105A	Greek Syntax: Prose Composition	
CLASSICS 105B		
Recommended additional course work in Biblical Greek, Sanskrit or ancient history [3]		
Total Units		**65**

1. Language courses may be repeated for credit towards the degree only with advance written permission from the Director of Undergraduate Studies. CLASSICS 6G Biblical Greek or CLASSICS 7G Biblical Greek (not both) and CLASSICS 6L Latin 400-1700 CE may count as intermediate language levels.
2. It is recommended that this include CLASSICS 104A and CLASSICS 104B (for Latin); and CLASSICS 105A and CLASSICS 105B (for Greek). But this series should not be taken until completion of advanced-level course work in the relevant language.
3. Sanskrit is only allowed if both Greek and Latin requirements are fulfilled with course work at the intermediate-level and above.

Focus

Students may apply a focus in Philosophy and Literature to the Classical Studies, Latin, or Greek subplans. This focus is not declared on Axess and is not printed on the transcript or diploma.

Philosophy and Literature Focus

A focus is not reflected in the transcript or diploma but provides a guided curriculum for those interested in this interdisciplinary study. Students who choose this focus must still complete the Majors' Seminar and language courses required by their chosen track. In addition, all students must take a set of core requirements and breadth requirements as described below.

Core Requirements for all Philosophy and Literature Focuses

		Units
Core Courses		
Complete the following:		
PHIL 81	Philosophy and Literature	5
PHIL 80	Mind, Matter, and Meaning	5
one course in each of the following areas:		
1. Aesthetics, ethics, and social and political philosophy		**3-5**
PHIL 170	Ethical Theory	
PHIL 170D	Trust and Trustworthiness	
2. Philosophy of language, mind, metaphysics, and epistemology		**3-5**
PHIL 180	Metaphysics	
PHIL 180A	Realism, Anti-Realism, Irrealism, Quasi-Realism	
3. History of philosophy (course with subject code PHIL at the 100-level or above)		**3-5**
Classics or Philosophy		**6-10**
Two related courses in Classics or Philosophy. Discuss your course selection in advance with the Director of Undergraduate Studies.		
Capstone Seminar		**3-5**
One capstone seminar. Discuss your course selection in advance with the Director of Undergraduate Studies.		

Breadth Requirements

	Units
Breadth Requirements for Classical Studies: Philosophy and Literature Focus	
one CLASSICS course in ancient history	3-5
one CLASSICS course in art and archaeology	3-5
one CLASSICS course in literature in translation	
one CLASSICS course in philosophy and history of science	3-5
one CLASSICS course in religion/mythology	3-5
Breadth Requirements for Greek: Philosophy and Literature Focus	
one CLASSICS course in ancient history or archaeology	3-5
one CLASSICS course in religion, philosophy, or ancient science	3-5
one CLASSICS course in literature in translation	3-5
Breadth Requirements for Latin: Philosophy and Literature Focus	
one CLASSICS course in ancient history or archaeology	3-5
one CLASSICS course in literature in translation	3-5
one CLASSICS course in religion, philosophy, or ancient science	3-5

Additional Information

Study Abroad

Classics students may travel for several reasons: to complete accredited course work (typically language courses or history surveys) for transfer towards the degree, to participate in archaeological digs of ancient sites, and to perform independent travel-research related to an honors project or independent study. Students considering academic programs sponsored by other institutions are encouraged to review Stanford's policies on transfer credit and to discuss possible programs with the Director of Undergraduate Studies before applying. Students seeking archaeological dig experience should inquire for opportunities through the Classics Department and through the Stanford Archaeology Center (http://archaeology.stanford.edu). Students who would like to construct an independent travel-research project should discuss their goals and itinerary with the Director of Undergraduate Studies.

While Classics-specific course work is not always available through the Bing Overseas Program, students sometimes find Classics faculty at Bing campuses who are willing to provide independent instruction for credit. Pre-approval of courses and independent study syllabi by the Director of Undergraduate Studies is required for credit towards the major or minor.

Some departmental funding is available for summer language programs in the United States, and departmental funds are also available for travel and study in the Mediterranean. Students are encouraged to seek out multiple sources of funding, including offerings from UAR to supplement their departmental applications. After discussing their plans with the Director of Undergraduate Studies, students submit a departmental research grant application that includes expenses, a statement of purpose, and an endorsement by the student's faculty adviser. Limited funding is available each year; preference is shown to majors and students with strong records.

Honors Program

A minimum grade point average (GPA) of 3.6 within the major is required for students to enroll in the honors program. To be considered for honors in Classics, the student must select a professor who can supervise his or her honors thesis. A preliminary proposal, approved by the supervisor, is due April 15 of the junior year, and a final version is due on the first day of classes in Autumn Quarter of the senior year. The proposal must outline the project in detail, list relevant courses that have been taken, and name the supervisor. The department gives approval only if a suitable faculty supervisor is available and if it is satisfied that the student has a sufficient basis of knowledge derived from department course work in the general areas the thesis covers, such as art, Greek, Latin, history, literature, or philosophy. If the proposal is approved, the student may sign up for CLASSICS 199 Undergraduate Thesis: Senior Research during the senior year for a maximum of 6 units per term, up to an overall total of 10 units. These units may be counted towards fulfillment of the student's major requirements if relevant. The final thesis is due in early May of senior year. Honors are awarded only if the essay receives a grade of 'B+' or higher from the supervisor and a second reader, who is chosen by the department. In addition, students must do an honors thesis presentation in early June and graduate with a GPA of 3.6 or higher within the major to receive honors.

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Minor in Classics

The Director of Undergraduate Studies meets with each student who opts for the minor to discuss curriculum choices and assigns the student an adviser in the relevant field. Students are required to work closely with their advisers to create a cohesive curriculum within each area. Students who minor in Classics are required to take CLASSICS 150 Majors Seminar: The Augustan Age, which is writing intensive.

Degree Requirements

Students may choose among four fields of study for the minor in Classics: Classical Languages, Ancient History, Literature and Philosophy, and Classical Studies. These fields of study are not declared in Axess and are not printed on the transcript or diploma.

Classical Languages

Students are required to take a minimum of five courses in Greek or in Latin. In addition to the five required courses, students must take CLASSICS 150 Majors Seminar: The Augustan Age. Students wishing

to combine Greek and Latin may only do so if courses for one of the two languages are all intermediate level or above. Choose from the following courses:

		Units
Required Course		**5**
CLASSICS 150	Majors Seminar: The Augustan Age	5
Classical Languages		**15**
CLASSICS 1L	Beginning Latin	
CLASSICS 2L	Beginning Latin	
CLASSICS 3L	Beginning Latin	
CLASSICS 11L	Intermediate Latin: Introduction to Literature	
CLASSICS 12L	Intermediate Latin: Cicero and Catullus	
CLASSICS 13L	Intermediate Latin: Vergil	
CLASSICS 101L	Advanced Latin: Livy	
CLASSICS 102L	Advanced Latin: Early Latin	
CLASSICS 103L	Advanced Latin: Lucan's Pharsalia	
CLASSICS 1G	Beginning Greek	
CLASSICS 2G	Beginning Greek	
CLASSICS 3G	Beginning Greek	
CLASSICS 11G	Intermediate Greek: Prose	
CLASSICS 12G	Intermediate Greek: Herodotus	
CLASSICS 13G	Intermediate Greek: Homer	
CLASSICS 101G	Advanced Greek: Plato	
CLASSICS 102G	Advanced Greek: Aeschylus	
CLASSICS 103G	Advanced Greek: Lyric Poetry	
Total Units		**20**

Ancient History

Students are required to take a minimum of five courses in history, art history, and archaeology. Courses taken outside of the department may be substituted for one or more of these courses with prior, written approval from the Director of Undergraduate Studies. In addition to the five required courses, students must take CLASSICS 150 Majors Seminar: The Augustan Age. Courses offered in Latin and Greek that focus on historical topics or authors may count toward this minor with prior, written approval from the Director of Undergraduate Studies. Choose from the following courses:

		Units
Required Course		**5**
CLASSICS 150	Majors Seminar: The Augustan Age	5
Ancient History		**15**
CLASSICS 52	Introduction to Roman Archaeology	
CLASSICS 54	Introduction to World Architecture	
CLASSICS 56	Decolonizing the Western Canon: Introduction to Art and Architecture from Prehistory to Medieval	
CLASSICS 81	Ancient Empires: Near East	
CLASSICS 82	The Egyptians	
CLASSICS 83	The Greeks	
CLASSICS 84	The Romans	
CLASSICS 154	Sailing the Wine-Dark Sea: Maritime Archaeology of the Ancient Mediterranean	
CLASSICS 156	Design of Cities	
CLASSICS 158	Theories of the Image: Byzantium, Islam and the Latin West	
CLASSICS 164	Introduction to Greek Art I: The Archaic Period	
CLASSICS 162	Introduction to Greek Art II: The Classical Period	
CLASSICS 163	Artists, Athletes, Courtesans and Crooks	
CLASSICS 168	Engineering the Roman Empire	
CLASSICS 181	Classical Seminar: Origins of Political Thought	
Total Units		**20**

Literature and Philosophy

Students are required to take a minimum of five courses in classical literature or philosophy, including classical science. Courses taken outside of the department (for instance, from the Philosophy department) may be substituted for one or more of these courses with prior, written approval from the Director of Undergraduate Studies. In addition to the five required courses, students must take CLASSICS 150 Majors Seminar: The Augustan Age. Courses offered in Latin and Greek that focus on philosophical or literary topics or authors may count toward the minor. Students may count up to 4 units of ESF 7/7A. Choose from the following courses:

		Units
Required Course		**5**
CLASSICS 150	Majors Seminar: The Augustan Age	5
Literature and Philosophy		**15**
CLASSICS 16N	Sappho: Erotic Poetess of Lesbos	
CLASSICS 42	Philosophy and Literature	
CLASSICS 136	The Greek Invention of Mathematics	
CLASSICS 197	Aristotle's Logic	
CLASSICS 123		
CLASSICS 181	Classical Seminar: Origins of Political Thought	
Total Units		**20**

Classical Studies

Students are required to take a minimum of five courses in Classics (any course with subject code CLASSICS) plus CLASSICS 150 Majors Seminar: The Augustan Age. Students may count up to 4 units of Autumn Quarter SLE and/or 4 units of ESF 7/7A towards the breadth requirement.

Required Course		**5**
CLASSICS 150	Majors Seminar: The Augustan Age	5
Classical Studies		**15**
Students are required to take a minimum of five courses in Classics (any course with subject code CLASSICS)		
Total Units		**20**

Master of Arts in Classics

University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

I. Language and Literature, II. Philosophy Fields of Study

Students who have completed an undergraduate major in Classics (Greek, Latin, or Greek and Latin fields of study) or equivalent may be accepted as candidates for the M.A. degree in Classics and may expect to complete the program in twelve months (usually three quarters of course work plus three months study for the thesis or examination). Students with an undergraduate major in Classics (Ancient History or Classical Studies fields of study) or without an undergraduate major in Classics may also be accepted as candidates, though they may require a

longer period of study before completing the requirements for the degree. These requirements are:

1. A minimum of 25 of the 45 units must be graduate-level courses (generally 200-level or higher, but not always). The remaining units must be at the 100-level or higher.
2. Completion of one Greek language course at the 100 level (if the undergraduate major field of study was Latin) or one Latin language course at the 100 level (if the undergraduate major field of study was Greek). This requirement is waived for students with an undergraduate major in Classics with a field of study in Greek and Latin.
3. Passing a Greek or Latin language examination testing the candidate's ability to translate into English from a selected list of Greek or Latin authors. This exam is a minimum of two hours, requiring a grade of "B" or higher to pass.
4. Completion of the syntax sequence in at least one language. For Latin, this is CLASSICS 204A Latin Syntax I and CLASSICS 204B Latin Syntax II. For Greek, this is CLASSICS 205A Greek Syntax: Prose Composition and CLASSICS 205B .
5. Writing a thesis, or passing of an examination on a particular author or topic, or having written work accepted by the graduate committee as an equivalent. Three completed and satisfactory seminar papers are normally an acceptable equivalent, provided each paper has earned the grade of B+ or higher.
6. Students must pass a modern language reading exam in one of the following languages: German, French or Italian. In exceptional circumstances, the Graduate Studies Committee may permit a different language, e.g., Modern Greek or Russian, to be substituted in keeping with research plans. Students are allowed to use paper and online dictionaries. Exams are offered once a quarter (Autumn, Winter, Spring). Incoming graduates may choose to be tested as early as the Autumn Quarter. The department strongly encourages students to take modern language exams as early as possible in the program. If the first attempt to pass the exam is unsuccessful, the student is allowed to retake the test only once. Failing the second examination means automatic dismissal from the program. A grade of 'B-' or higher is required to pass.
7. Completion and approval of a Program Proposal for a Master's Degree form during the first quarter of enrollment, at least five days prior to the Final Study List deadline.

Candidates for the Ph.D. degree in Classics may also, on the recommendation of the department, become candidates for the M.A. degree. In this case, requirement 5 above is waived provided that the student has completed some work beyond the course requirements listed under requirements 1 and 2 above. Current Stanford graduate students in other degree programs may be considered for the M.A. degree, but must be admitted into the program and must complete all requirements listed above.

III. Classical Archaeology

Students who have completed an undergraduate major in Classics with a Classical Archaeology field of study, or in a closely related field, may be accepted as candidates for the M.A. degree in Classics with a Classical Archaeology field of study, and may expect to complete the program in twelve months (usually three quarters of course work plus three months study for the thesis or examination). Students without an undergraduate major in Classics with a Classical Archaeology field of study may also be accepted as candidates, though they may require a longer period of study before completing the requirements for the degree. These requirements are:

1. A minimum of 25 of the 45 units must be graduate-level courses (generally 200-level or higher, but not always). The remaining units must be at the 100-level or higher.
2. Completion with a grade of 'B' or higher of at least 15 units of graduate-level courses in classical archaeology, in addition to CLASSICS 331 Words and Things in the History of Classical Scholarship. (see 4).
3. Passing a Greek or Latin language examination testing the candidate's ability to translate into English from a selected list of Greek or Latin authors. This exam is a minimum of two hours, requiring a grade of "B" or higher to pass.
4. Completion with a grade of 'B' or higher of CLASSICS 331 Words and Things in the History of Classical Scholarship, or an equivalent course on the history of thought in classical archaeology approved by the Graduate Studies Committee.
5. Writing a thesis, or passing an exam on a particular topic, or having written work accepted by the graduate committee as an equivalent. Three completed and satisfactory seminar papers are normally an acceptable equivalent, provided each paper has earned the grade of B + or higher.
6. Students must pass a modern language reading exam in one of the following languages: German, French or Italian. In exceptional circumstances, the Graduate Studies Committee may permit a different language, e.g., Modern Greek or Russian, to be substituted in keeping with research plans. Students are allowed to use paper and online dictionaries. Exams are offered once a quarter (Autumn, Winter, Spring). Incoming graduates may choose to be tested as early as the Autumn Quarter. The department strongly encourages students to take modern language exams as early as possible in the program. If the first attempt to pass the exam is unsuccessful, the student is allowed to retake the test only once. Failing the second examination means automatic dismissal from the program. A grade of 'B-' or higher is required to pass.
7. Completion and approval of a Program Proposal for a Master's Degree form during the first quarter of enrollment, at least five days prior to the Final Study List deadline.

Candidates for the Ph.D. degree may also, on the recommendation of the department, become candidates for the M.A. degree. In their case, requirement 5 above is waived provided that the student has completed some work beyond the course requirements listed under requirements 1 and 2 above. Current Stanford graduate students in other degree programs may be considered for the M.A. degree, but must be admitted into the program and must complete all requirements listed above.

IV. Ancient History

Students who have completed an undergraduate major in Classics with an Ancient History field of study, or in a closely related field may be accepted as candidates for the M.A. degree in Classics with an Ancient History field of study, and may expect to complete the program in twelve months (usually three quarters of course work plus three months study for the thesis or examination). Students without an undergraduate major in Classics with an Ancient History field of study may also be accepted as candidates, though they may require a longer period of study before completing the requirements for the degree. These requirements are:

1. A minimum of 30 of the 45 units must be graduate-level courses (generally 20-level or higher, but not always) and the remaining 15 units of work must be at the 100-level or higher.
2. Satisfactory completion of 20 units of graduate-level courses in Classics and of 10 units of graduate-level courses in other programs.
3. Satisfactory completion of 15 additional units of courses in either ancient Greek or Latin at the 100-level or higher.
4. Writing a thesis, or passing an exam on a particular topic, or having written work accepted by the Graduate Committee as an equivalent. Three completed and satisfactory seminar papers are normally an acceptable equivalent, provided each paper has earned the grade of B + or higher.

5. Students must pass a modern language reading exam in one of the following languages: German, French or Italian. In exceptional circumstances, the Graduate Studies Committee may permit a different language, e.g., Modern Greek or Russian, to be substituted in keeping with research plans. Students are allowed to use paper and online dictionaries. Exams are offered once a quarter (Autumn, Winter, Spring). Incoming graduates may choose to be tested as early as the Autumn Quarter. The department strongly encourages students to take modern language exams as early as possible in the program. If the first attempt to pass the exam is unsuccessful, the student is allowed to retake the test only once. Failing the second examination means automatic dismissal from the program. A grade of 'B-' or higher is required to pass.
6. Completion and approval of a Program Proposal for a Master's Degree form during the first quarter of enrollment, at least five days prior to the Final Study List deadline.

Candidates for the Ph.D. degree may also (on the recommendation of the department) become candidates for the M.A. degree. In their case, requirement 4 above is waived provided that they have completed some work beyond the course requirements listed under requirements 1 and 2 above. Current Stanford graduate students in other degree programs may be considered for the M.A. degree, but must be admitted into the program and must complete all requirements listed above.

Coterminal Master's Degree in Classics

Stanford students in any undergraduate major who wish to pursue graduate work in Classics may apply for Stanford's coterminal master's program. Students considering a coterm are encouraged to consult with the Director of Undergraduate Studies and the department's student services officer about their plans before filing an application. Applicants must have a minimum GPA of 3.7 in the major, and no Incomplete grades on record. Undergraduate course work in Greek and Latin and one of the required modern languages is normally a prerequisite for graduate-level work.

To apply, students must complete the Coterminal Online Application (https://applyweb.com/stanterm/), submit two letters of recommendation from Classics faculty, an unofficial copy of their undergraduate transcript, a 1-3 page statement of purpose and a 10-15 page writing sample. GRE scores are not required. Applications are due in early January of the intended graduation year for the undergraduate degree; please see the departmental website (http://classics.stanford.edu) for the specific deadline.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Doctor of Philosophy in Classics

University requirements for the Ph.D. are described in the "Graduate Degrees" section of this bulletin. There are four specializations within the Classics Ph.D. program: language and literature; classical archaeology; ancient history; and the joint program in ancient philosophy. These specializations appear on the transcript and the diploma.

I. Language and Literature

Candidates for the Ph.D. degree in Classics with specialization in language and literature must fulfill the following requirements:

1. Complete 135 units of academic credit or equivalent in study beyond the bachelor's degree by the end of Autumn Quarter of the fourth year, including:

		Units
CLASSICS 201L	Latin Core I: Catiline	
CLASSICS 202L	Latin Core II: Age of Nero	
CLASSICS 203L	Latin Core III: History of Literature	
CLASSICS 201G	Survey of Greek Literature: Archaic Greek	
CLASSICS 202G	Survey of Greek Literature: Classical Greek	
CLASSICS 203G	Survey of Greek Literature: Hellenistic and Late Greek	
Three language courses from the options below, including at least one from each language: [1]		
CLASSICS 204A	Latin Syntax I	
CLASSICS 204B	Latin Syntax II	
CLASSICS 205A	Greek Syntax: Prose Composition	
CLASSICS 206A	The Semantics of Grammar I	
CLASSICS 206B	The Semantics of Grammar II	
CLASSICS 210	Latin Prose Composition	
CLASSICS 350	History of Classical Languages: Dialects of Ancient Greek	
Plus twelve graduate seminars, nine of which must be Classics seminars, and one of the remaining three of which must be outside the department. The other two seminars may be in Classics, from other departments (with the graduate director's approval), and/or directed readings. [2,3,4]		

[1] CLASSICS 204A must be combined with CLASSICS 206A to count as one course and CLASSICS 204B must be combined with CLASSICS 206B to count as one course.

[2] No more than two directed readings may be counted towards this requirement.

[3] Classics seminars are sometimes offered for a spread of units (3, 4 or 5).

[4] Special Topics courses (CLASSICS 200G and CLASSICS 200L) do not count for seminar credit. They do not fulfill any degree requirements for Language and Literature track students.

2. Maintain satisfactory progress throughout the degree program. The Classics department sets a higher standard for satisfactory progress than the University minimum requirements. To maintain that standard, students are expected to:
   - Enroll in all four academic quarters as instructed by the Classics Department

- maintain good grades (within the Classics department, this normally means grades in the A range; an accumulation of grades of B+ or lower may indicate problems).
- pass all required exams by the required deadlines
- write a minimum of three seminar papers per year in the first two years
- demonstrate high-quality research and writing
- take no more than one incomplete grade at a time (unless given special permission by the Director of Graduate Studies)
- take incomplete grades only occasionally and finish any incompletes in a timely manner
- demonstrate effective teaching when serving as a Teaching Assistant or Teaching Fellow

Students who fail to maintain satisfactory progress have research travel, conference and discretionary funds withheld until the situation is redressed.

3. Students must apply and be approved to advance to candidacy by the end of Summer Quarter of their second year.
4. Examinations:
   - As soon as students arrive, they must take diagnostic exams in Greek and Latin. Depending on performance, students may be required to enroll in undergraduate language classes in that language to improve their skills to the level required for graduate work.
   - Students must take Greek and Latin translation exams at the end of each core/survey sequence (Spring Quarter of the first and second years). Students are exempted from the final exam in Spring Quarter core/survey in order to prepare for these translations exams. These exams are based on the Greek and Latin reading lists available on the Classics Department (http://classics.stanford.edu) website. Greek Survey and Latin Core courses cover less than half of the material on which the translation exams test, and students need to prepare much of the work on their own. It is possible to take both exams in the first year if the student chooses. However, the student cannot choose to delay the first year exam to take both in the second year. The exam consists of translating four passages from a selection of six to eight passages, and students are allowed three hours. A grade of 'B-' or higher, on every passage, is required to pass. If a student does not attain a 'B-', the exam must be retaken and passed later in the summer before registering for the Autumn Quarter, in order to continue in the program. The exam can only be retaken once.
   - Students must pass two modern language translation exams: (1) German and (2) French or Italian. In exceptional circumstances, the Graduate Studies Committee may permit a different language, e.g., Modern Greek or Russian, to be substituted for (2), in keeping with dissertation research plans. Students are allowed to use paper and online dictionaries. Exams are offered once per quarter in autumn, winter and spring. Incoming graduates may choose to be tested as early as Autumn Quarter of their first year. The department strongly encourages students to take modern language exams as early as possible in the program (at least one modern language by the end of Spring Quarter of the first year), and certainly after any summer language courses they may have taken. Students have two opportunities to pass the modern language examinations. Failing the second opportunity means automatic dismissal from the program. Students are required to pass the first modern language exam by the end of Spring Quarter of the second year, and the second modern language exam by the end of Spring Quarter of the third year, in order to maintain satisfactory progress. A grade of 'B-' or higher is required to pass.
   - Students must take general examinations in Greek literature and Latin literature, and choose two more exams from the following fields: Ancient philosophy, Greek history, Roman history, Greek archaeology and Roman archaeology. A minimum of one general exam must be taken by the first week of the student's second year (generally late Summer or early Autumn Quarter). The remaining exams must be taken by the first week of the student's third year (generally late summer or early Autumn Quarter). Moving the timing of any of the exams, or increasing the number of exams requires prior consultation and approval by the Director of Graduate Studies. All exam choices must be approved by the Director of Graduate Studies in the Spring Quarter prior to the examination. To prepare for the exams, students must take at least one course in each of their chosen exam fields (in the case of ancient philosophy, a seminar or its equivalent) and may also consult with the faculty examiner. Reading lists for each of the exams are posted on the Classics Department website.
   - The University Oral Examination is the defense of the candidate's dissertation. In order to take this exam, a significant portion of the dissertation must be completed and approved by the dissertation adviser(s), the exam committee must have been established and approved by the department chair, and a date and time must have been arranged with the department. The exam consists of a public presentation with a question and answer period, followed by a private examination between the student and the exam committee.
5. During the third year, the candidate, in consultation with the dissertation proposal adviser (often the same as the dissertation adviser) writes a dissertation proposal, which is evaluated by a committee of faculty (dissertation proposal committee). The dissertation proposal defense should take place by the end of Autumn Quarter of the fourth year. If the proposal does not pass, the defense is repeated in the following quarter and must be passed. Failure to pass on the second attempt results in dismissal of the student from the program.
6. Students are required to teach four one-quarter courses under department supervision. This teaching requirement is normally completed during the second and third years of study. Under certain circumstances, summer teaching may satisfy this requirement.

II. Classical Archaeology

Candidates for the Ph.D. degree in Classics with a specialization in classical archaeology must fulfill the requirements following below.

Students are encouraged to enroll in or audit other undergraduate courses that may fill gaps in their undergraduate training. All students are expected to take part in archaeological fieldwork in the classical world areas. At least three consecutive quarters of coursework must be taken at Stanford.

1. Complete 135 units of academic credit or equivalent in study beyond the bachelor's degree by the end of Autumn Quarter of the fourth year, including:

		Units
CLASSICS 331	Words and Things in the History of Classical Scholarship [1]	
At least three graduate (200 or 300) level courses in Latin or Greek literature [2,3]		9-15
CLASSICS 201L	Latin Core I: Catiline	
CLASSICS 202L	Latin Core II: Age of Nero	
CLASSICS 203L	Latin Core III: History of Literature	
CLASSICS 201G	Survey of Greek Literature: Archaic Greek	
CLASSICS 202G	Survey of Greek Literature: Classical Greek	
CLASSICS 203G	Survey of Greek Literature: Hellenistic and Late Greek	

The interdepartmental graduate core sequence in archaeology. The Archaeology Center announces the courses which fulfill this requirement. The core sequence currently comprises a seminar in archaeology theory and a course on archaeological methods.

ANTHRO 303	Introduction to Archaeological Theory	
ANTHRO 307	Archaeological Methods	
At least one further course outside the Classics department. [4]		3-5
At least five graduate seminars in classical archaeology. Suggested courses: [4]		15-25
CLASSICS 360	Ancient Mediterranean Ports	
CLASSICS 369	Mobility and Migration in the Ancient Mediterranean and Beyond	
CLASSICS 370	Topics in Roman Art and Visual Culture	
At least three graduate seminars in ancient history. Suggested courses: [4]		9-15
CLASSICS 381	Classical Seminar: Origins of Political Thought	
CLASSICS 382	High-Stakes Politics: Case Studies in Political Philosophy, Institutions, and Interests	
CLASSICS 393	Ancient inequalities	

1 Must be taken as early as possible in the candidate's Stanford career.

2 Classical Archaeology and History tracks may elect one or more Special Topics courses (CLASSICS 200G and CLASSICS 200L) in lieu of a quarter or quarters of the same language Survey. Literature and Philosophy tracks cannot substitute Special Topics for Survey. Special Topics courses do not count for seminar credit. These courses are repeatable for credit.

3 Students who enter the program with only one ancient language at the level needed for graduate study are strongly encouraged to take additional coursework to reach graduate (200 and above) level in another language.

4 Students may petition to count independent study courses in place of up to two required courses, but no more.

2. Maintain satisfactory progress throughout the degree program. The Classics department sets a higher standard for satisfactory progress than the University minimum requirements. To maintain that standard, students are expected to:

- Enroll in all four academic quarters as instructed by the Classics department
- Maintain good grades (within the Classics department, this normally means grades in the A range; an accumulation of grades of B+ or lower may indicate problems).
- pass all required exams by the required deadlines
- write a *minimum* of three seminar papers per year in the first three years
- demonstrate high-quality research and writing
- take no more than one incomplete grade at a time (unless given special permission by the Director of Graduate Studies)
- take incomplete grades only occasionally and finish any incompletes in a timely manner
- demonstrate effective teaching when serving as a Teaching Assistant or Teaching Fellow

Students who fail to maintain satisfactory progress have research travel, conference and discretionary funds withheld until the situation is redressed.

3. Students must apply and be approved to advance to candidacy by the end of the Summer Quarter of their second year.

4. Examinations:

- As soon as students arrive, they must take diagnostic exams in Greek and Latin. Depending on performance, students may be required to enroll in undergraduate language classes in that language to improve their skills to the level required for graduate work.
- Students must pass two modern language translation exams: (1) German and (2) French or Italian. In exceptional circumstances, the Graduate Studies Committee may permit a different language, e.g., Modern Greek or Russian, to be substituted for (2), in keeping with dissertation research plans. Students are allowed to use paper and online dictionaries. Exams are offered once per quarter in autumn, winter and spring. Incoming graduates may choose to be tested as early as Autumn Quarter of their first year. The department strongly encourages students to take modern language exams as early as possible in the program (at least one modern language by the end of the first year), and certainly after any summer language courses they may have taken. Students have two opportunities to pass the modern language examinations. Failing the second opportunity means automatic dismissal from the program. Students are required to pass the first modern language exam by the end of the second year, and the second modern language exam by the end of the third year, in order to maintain satisfactory progress. A grade of 'B-' or higher is required to pass.
- Students must demonstrate graduate-level competency with an ancient language in one of two ways:

  Option 1: Greek or Latin translation exam. This examination must be taken in Spring Quarter of the first year or Spring Quarter of the second year. A grade of 'B-' or higher on every passage is required to pass. If a student does not meet that standard, the exam must be retaken and passed later in the summer before registering for Autumn Quarter, in order to continue in the program. The exam can only be retaken once.

  Option 2: Students must complete the course and take the final offered at the end of each quarter of Greek Survey or Latin Core. Students must earn a 'B-' or higher on each final to pass.

- Students must take general examinations in Greek archaeology and Roman archaeology, and choose two more exams from the following fields: Ancient philosophy, Greek history, Roman history, Greek literature and Latin literature. A minimum of one general exam must be taken by the first week of the student's second year (generally late Summer or early Autumn Quarter). The remaining exams must be taken by the first week of the student's third year (generally late summer or early Autumn Quarter). Moving the timing of any of the exams, or increasing the number of exams requires prior consultation and approval by the Director of Graduate Studies. All exam choices must be approved by the Director of Graduate Studies in the Spring Quarter prior to the examination. To prepare for the exams, students must take at least one course in each of their chosen exam fields (in the case of ancient philosophy, a seminar or its equivalent) and may also consult with the faculty examiner. Reading lists for each of the exams are posted on the Classics website.
- The University oral examination is the defense of the candidate's dissertation. In order to take this exam, a significant portion of the dissertation must be completed and approved by the dissertation adviser(s), the exam committee must have been established and approved by the department chair, and a date and time must have been arranged with the department. The exam consists of a public presentation with a question and answer period, followed by a private examination between the student and the exam committee.

5. During the third year, the candidate, in consultation with the dissertation proposal adviser (often the same as the dissertation adviser) writes a dissertation proposal, which is evaluated by a committee of faculty (dissertation proposal committee). The dissertation proposal defense should take place by the end of Autumn Quarter of the fourth year. If the proposal does not pass, the defense is repeated in the

following quarter and must be passed. Failure to pass on the second attempt results in dismissal of the student from the program.

6. Students are required to teach four one-quarter courses under department supervision. This teaching requirement is normally completed during the second and third years of study. Under certain circumstances, summer teaching may satisfy this requirement.

III. Ancient History

Candidates for the Ph.D. degree in Classics with specialization in ancient history must fulfill the following requirements:

1. Complete 135 units of academic credit or equivalent in study beyond the bachelor's degree at the end of the Autumn Quarter of the fourth year, including:

HISTORY 304	Approaches to History	
Two proseminars. These introduce students to primary sources of evidence for ancient history that require special training: papyrology, epigraphy, paleography, numismatics, and archaeology. [1,2]		8-10
CLASSICS 213	Proseminar: Documentary Papyrology	
CLASSICS 214	Proseminar: Ancient Numismatics	
CLASSICS 215	Paleography of Medieval and Early Modern Manuscripts	
CLASSICS 216	Advanced Paleography	
CLASSICS 219	Methods and approaches for ancient historians	
Three skills courses relevant to the individual student's chosen research approach. For example, a student could take classes in economics, demography, legal history, or anthropology. Courses can also be used to learn other ancient or modern languages, either by course work or directed reading. [1]		9-15
Ten graduate seminars (200-level or above). At least five of these seminars must be taken in the department. [2,3]		30-50
ANCIENT LANGUAGE COURSEWORK		
Option 1: Students focus more on one ancient language by taking 15 units of the core or survey series (CLASSICS 201L/202L/203L or CLASSICS 201G/202G/203G) and 5 units of the alternate series, plus the Prose Composition courses in the primary ancient language selected: [4,5]		30
CLASSICS 205A	Greek Syntax: Prose Composition	
CLASSICS 210	Latin Prose Composition	
CLASSICS 204A	Latin Syntax I	
CLASSICS 206A	The Semantics of Grammar I	
Option 2: Students emphasize broader linguistic skills. This requires students to take both ancient language series. [4]		30
CLASSICS 201L	Latin Core I: Catiline	
CLASSICS 202L	Latin Core II: Age of Nero	
CLASSICS 203L	Latin Core III: History of Literature	
CLASSICS 201G	Survey of Greek Literature: Archaic Greek	
CLASSICS 202G	Survey of Greek Literature: Classical Greek	
CLASSICS 203G	Survey of Greek Literature: Hellenistic and Late Greek	

1 Students must consult their advisers and the Director of Graduate Studies to determine the appropriate coursework.

2 With the approval of their advisers and graduate director, students may take seminars outside of the department or at another university with which Stanford has an exchange agreement to fulfill this requirement.

3 Two of these seminars may be replaced by directed readings with adviser and graduate director approval.

4 Classical Archaeology and History tracks may elect one or more Special Topics courses (CLASSICS 200G and CLASSICS 200L) in lieu of a quarter or quarters of the same language Survey. Literature and Philosophy tracks cannot substitute Special Topics for Survey. Special Topics courses do not count for seminar credit. These courses are repeatable for credit.

5 Students whose primary ancient language is Latin may select either CLASSICS 210 or CLASSICS 204A + CLASSICS 206A.

2. Maintain satisfactory progress throughout the degree program. The Classics department sets a higher standard for satisfactory progress than the University minimum requirements. To maintain that standard, students are expected to:

- Enroll in all four academic quarters as instructed by the Classics department
- Maintain good grades (within the Classics department, this normally means grades in the A range; an accumulation of grades of B+ or lower may indicate problems).
- pass all required exams by the required deadlines
- write a *minimum* of three seminar papers per year in the first three years
- demonstrate high-quality research and writing
- take no more than one incomplete grade at a time (unless given special permission by the Director of Graduate Studies)
- take incomplete grades only occasionally and finish any incompletes in a timely manner
- demonstrate effective teaching when serving as a Teaching Assistant or Teaching Fellow

Students who fail to maintain satisfactory progress have research travel, conference and discretionary funds withheld until the situation is redressed.

3. Students must apply and be approved to advance to candidacy by the end of Summer Quarter of their second year.

4. Examinations:

- As soon as students arrive, they must take diagnostic exams in Greek and Latin, as well as Greek and Roman history. Depending on performance, students may be required to enroll in undergraduate language classes in that language to improve their skills to the level required for graduate work. The history exams are mainly on narrative history, especially important names, dates, and events. Depending on performance, students may be asked to sit in on the undergraduate history courses and take a directed reading or a graduate survey if offered.
- Students must take the final offered at the end of each quarter of Greek Survey or Latin Core (for Option 1 above) or both Greek Survey and Latin Core (for Option 2 above). Students must earn a 'B-' or higher on each final to pass.
- Students must pass two modern language translation exams: (1) German and (2) French or Italian. In exceptional circumstances, the Graduate Studies Committee may permit a different language, e.g., Modern Greek or Russian, to be substituted for (2), in keeping with dissertation research plans. Students are allowed to use paper and online dictionaries. Exams are offered once per quarter in autumn, winter and spring. Incoming graduates may choose to be tested as early as Autumn Quarter of their first year. The department strongly encourages students to take modern language exams as early as possible in the program (at least one modern language by the end of Spring Quarter of their first year), and certainly after any summer language courses they may have taken. Students have two opportunities to pass the modern language examinations. Failing the second opportunity means automatic dismissal from the program. Students are required to pass the first modern language exam by the

end of Spring Quarter of the second year, and the second modern language exam by the end of Spring Quarter of the third year, in order to maintain satisfactory progress. A grade of 'B-' or higher is required to pass.

- Students must take general examinations in Greek history and Roman history, and choose two more exams from the following fields: Ancient philosophy, Greek archaeology, Roman archaeology, Greek literature and Latin literature. A minimum of one general exam must be taken by the first week of the student's third year (generally late summer or early Autumn Quarter). The remaining exams must be taken by the first week of the student's third year (generally late summer or early Autumn Quarter). Moving the timing of any of the exams, or increasing the number of exams requires prior consultation and approval by the Director of Graduate Studies. All exam choices must be approved by the Director of Graduate Studies in the Spring Quarter prior to the examination. To prepare for the exams, students must take at least one course in each of their chosen exam fields (in the case of ancient philosophy, a seminar or its equivalent) and may also consult with the faculty examiner. Reading lists for each of the exams are posted on the Classics website.
- The University oral examination is the defense of the candidate's dissertation. In order to take this exam, a significant portion of the dissertation must be completed and approved by the dissertation adviser(s), the exam committee must have been established and approved by the department chair, and a date and time must have been arranged with the department. The exam consists of a public presentation with a question and answer period, followed by a private examination between the student and the exam committee.

5. During the third year, the candidate, in consultation with the dissertation proposal adviser (often the same as the dissertation adviser) writes a dissertation proposal, which is evaluated by a committee of faculty (dissertation proposal committee). The dissertation proposal defense should take place by the end of Autumn Quarter of the fourth year. If the proposal does not pass, the defense is repeated in the following quarter and must be passed. Failure to pass on the second attempt results in dismissal of the student from the program.

6. Students are required to teach four one-quarter courses under department supervision. This teaching requirement is normally completed during the second and third years of study. Under certain circumstances, summer teaching may satisfy this requirement.

IV. Joint Program in Ancient Philosophy

This specialization is jointly administered by the departments of Classics and Philosophy and is overseen by a joint committee composed of members of both departments. It provides students with the training, specialist skills, and knowledge needed for research and teaching in ancient philosophy while producing scholars who are fully trained as either philosophers or classicists.

Graduate students admitted by the Classics department receive their Ph.D. from the Classics department. This specialization includes training in ancient and modern philosophy. Each student in the program is advised by a committee consisting of one professor from each department.

1. Candidates for the Ph.D. degree in Classics with specialization in ancient philosophy must fulfill the following requirements:

	Units
Students must take three courses in the Philosophy department [1]	9-15
One course in logic which can be fulfilled at the 100-level or higher	
One course in aesthetics, ethics, or political philosophy (200-level or higher)	
One course in metaphysics, epistemology, philosophy of mind, or philosophy of science.	
At least three courses in ancient philosophy at the 200 level or above, one of which must be in the Philosophy department. [1]	9-15

[1] All courses taken in the Philosophy department count for seminar credit (i.e., as contributing to the 12-seminar requirement in the Language and Literature track in the Classics department).

2. Complete 135 units of academic credit or equivalent in study beyond the bachelor's degree at the end of Autumn Quarter of the fourth year. This includes all the requirements listed for the language and literature specialization in the graduate program in Classics (see above). Students must also take the below courses focusing on philosophy.

3. *Examinations:* The requirements are the same as those listed in the language and literature specialization, except that one of the four areas of general examination must be taken in ancient philosophy in addition to the exams in Greek literature and Latin literature.

4. *Dissertation Proposal:* The requirements are the same as those listed in the language and literature specialization.

5. *Teaching:* The requirements are the same as those listed in the language and literature specialization.

Classics and a Minor Field

The Ph.D. in Classics may be combined with a minor in another field, such as anthropology, history, humanities, or classical linguistics. Requirements for the minor field vary but can include about six graduate-level courses in the field and one written examination, plus a portion of the University oral exam (dissertation defense). Students must consult with the department in which the minor is offered for exact requirements. The following timetable would be typical:

- First Year: coursework, almost entirely in Classics. One translation exam taken in June. One or both modern language exams taken.
- Second Year: coursework, both in Classics and the minor field. Second translation exam completed. French and German exams completed.
- Third Year: coursework, both in Classics and the minor field. General examinations in Classics.
- Fourth Year: remaining coursework, both in Classics and the minor field. General examination in the minor field. Preparation for dissertation.
- Fifth Year: dissertation, University oral examination.

Ph.D. Minor in Classics

For a graduate minor, the department recommends at least 20 units in Latin or Greek at the intermediate-level or above, and at least one course at the graduate (200) level or above. Students interested in this minor must discuss their proposed course plan with the Director of Graduate Studies as well as their Ph.D. department before obtaining Classics department approval.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans,

departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of Classics counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Graduate Degree Requirements

Grading

The Department of Classics has not changed its policy concerning 'CR' (credit) or 'S' (satisfactory) grades in degree requirements requiring a letter grade for academic year 2020-21.

Graduate Advising Expectations

The Department of Classics is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee.

The goal of advising in the graduate program is to help students in selecting courses that best suit their intellectual goals, in designing and conducting research, navigating degree requirements, exploring academic and professional opportunities, and preparing for their post-graduate careers.

Graduate students are expected to be active collaborators in the advising relationship. They are responsible for seeking academic and professional guidance and for informing themselves of policies and degree requirements for the Ph.D. or M.A. program.

An important part of the advisee-advisor relationship is for students to discuss their own expectations for the adviser-advisee relationship with the adviser and revisiting these expectations periodically.

Director of Graduate Studies (DGS)

A Department faculty member serves as the Director of Graduate Studies (DGS). The DGS monitors the degree progress of all M.A. and Ph.D. students, offers advice on meeting Department and University requirements, coordinates Departmental advising and TA assignments, and approves petitions for funding or other needs before submission to the Graduate Committee (see below).

Track Adviser

Ph.D. and M.A. students are admitted to one of four tracks within the Classics Department, each with its own requirements (Archaeology, History, Literature, and Philosophy). Each track also has an individual adviser in the pre-dissertation stage, who advises on track-specific coursework and training in research methodologies, and professional development. Entering students should meet routinely (at least once per quarter) with both the DGS and with the track adviser, who approve a course of study, monitor progress, and provide advice about funding opportunities, strategies for scheduling general and other exams required for degree progress, and to provide support in the event that difficulties arise.

Student Services Officer (SSO)

In addition, the Department’s Student Services Officer serves as the student's primary contact regarding Department and University procedures and can provide information, assistance, and the appropriate forms and procedures for academic and financial matters.

Academic progress and student completion of program requirements and milestones are monitored by the SSO, which is reviewed as necessary by the DGS and are discussed by faculty at an annual meeting devoted to assessing graduate student progress. Students who have made satisfactory academic progress are normally advanced to candidacy at the end of their second year in residency by faculty vote at this annual review meeting.

Graduate Studies Committee

The DGS, the three track advisers (the DGS serves as track adviser for his or her track), and the SSO constitute the Graduate Studies Committee. All requests for funding that fall outside of allowed discretionary spending, extraordinary travel away from campus, petitions for leave of absence, and any disciplinary issues that may arise must be reviewed and, as necessary, approved by the Graduate Studies Committee.

Dissertation Adviser and Reading Committee

In the course of their second year, if not sooner, Ph.D. students choose a faculty member who serves as their dissertation proposal adviser who helps guide the writing of the dissertation. The student and the proposal adviser work together to begin defining a topic and determining what preliminary reading or other work needs to be done. The student must choose the two other faculty members who, with the dissertation proposal adviser, form the dissertation proposal defense committee (typically the Reading Committee). At the time that the student has successfully defended his or her dissertation proposal (normally at the beginning of the fourth year), the dissertation proposal adviser typically assumes the responsibilities of the dissertation adviser. Dissertation advisers and students should meet on a regular basis throughout the year to discuss the student's professional development in key areas such as designing and conducting research, developing teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Students are encouraged to work closely with at least two or three faculty members early in the Ph.D. program to benefit from their various perspectives and to learn which faculty members might be particularly appropriate as their dissertation adviser and other members of their Reading Committee.

Expectations

Ph.D. and M.A. students are expected to meet regularly with their advisers and to keep them informed about their academic progress. To facilitate this, each student must meet with the DGS and the Track Adviser at the beginning of Autumn Quarter and again in Winter Quarter and in early in Spring Quarter during their first two years in the program. DGS and Track Advisers are available at the beginning of each quarter for these meetings.

Once Ph.D. students have successfully defended their dissertation proposals (normally at the beginning of the fourth year in residence) and have completed all of their required teaching assignments, with the consent of their advisers and the Graduate Studies Committee, they may petition to conduct research away from campus for one or more quarters (typically in Greece, Italy, or other regions of the Mediterranean). Students doing so are required to be in regular contact with their dissertation adviser and reading committee. Students must have a written schedule for communicating regularly. In addition, all students must respond promptly to all communications from their advisers and the SSO.

If the dissertation adviser relationship is not conducive to academic progress or is in some other way problematic, the student is responsible for contacting the DGS and/or the SSO and/or the Chair to discuss the issues. The DGS and SSO work with the student to address any concerns; in some instances, this might lead to a change of adviser. Students are

encouraged to voice concerns sooner rather than later, in order for any potential issues to be addressed as early as possible.

Additional Resources

A detailed description of the program's requirements, milestones, and advising expectations are listed in the Classics Ph.D. Handbook found on the program website (https://classics.stanford.edu/requirements-forms/). Additionally, the program adheres to the advising guidelines and responsibilities listed by the Office of the Vice Provost for Graduate Education (https://vpge.stanford.edu/academic-guidance/advising-mentoring/) (VPGE) and in the Graduate Academic Policies (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/page-3-3-1/) (GAP).

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Emeriti (Professors): Marsh H. McCall, Jr., Susan Treggiari

Chair: Grant Parker

Director of Graduate Studies: Susan A. Stephens

Director of Undergraduate Studies: John Klopacz

Professors: David Cohen, Andrew M. Devine, Richard P. Martin, Ian Morris, Reviel Netz, Andrea Nightingale (on leave Winter Quarter), Josiah Ober (on leave Autumn Quarter), Anastasia-Erasmia Peponi, M. Rush Rehm, Richard Saller (on leave Winter and Spring Quarters), Walter Scheidel, Michael Shanks, Susan A. Stephens

Associate Professors: Giovanna Ceserani, Christopher B. Krebs (on leave), Jody Maxmin, Grant Parker, Jennifer Trimble

Assistant Professors: Justin Leidwanger, Hans Bork

Courtesy Professors: Fabio Barry, Chris Bobonich, Alan Code, Charlotte Fonrobert, Ian Hodder, Michael Penn, Bissera Pentcheva, Caroline Winterer, Yiqun Zhou

Lecturers: John Klopacz, Kilian Mallon, John Tennant

Adjunct Lecturer: Maud Gleason

Courses

CLASSICS 1G. Beginning Greek. 5 Units.
No knowledge of Greek is assumed. Vocabulary and syntax of the classical language.

CLASSICS 1L. Beginning Latin. 5 Units.
(Formerly CLASSLAT 1.) Vocabulary and syntax of the classical language. No previous knowledge of Latin is assumed.

CLASSICS 2G. Beginning Greek. 5 Units.
Continuation of CLASSICS 1G. Vocabulary and syntax of the classical language.

CLASSICS 2L. Beginning Latin. 5 Units.
(Formerly CLASSLAT 2.) Vocabulary and syntax of the classical language. Prerequisite: CLASSICS 1L or equivalent placement.

CLASSICS 3G. Beginning Greek. 5 Units.
Vocabulary and syntax of the classical language. Prerequisite: CLASSICS 2G or equivalent placement. CLASSICS 3G fulfills University language requirement.

CLASSICS 3L. Beginning Latin. 5 Units.
Vocabulary and syntax of the classical language. Prerequisite: CLASSICS 2L or equivalent placement. CLASSICS 3L fulfills the University language requirement.

CLASSICS 4L. Intensive Beginning Latin. 12 Units.
Equivalent to a year of beginning Latin (three quarters; CLASSICS 1L, 2L and 3L), this course is designed to teach the fundamentals of the Latin language in eight weeks. We will focus primarily on acquiring the basics of Latin grammar, morphology, and vocabulary and developing basic reading skills. At the end of the course, students should be able to read easy Latin prose and poetry. We will be using Wheelock's Latin textbook and meeting three hours a day, four days a week. Grades will depend on class participation and on performance in weekly quizzes and in a final written exam. Classics majors and minors must take course for letter grade. CLASSICS 4L fulfills the University language requirement.

CLASSICS 6G. Biblical Greek. 3-5 Units.
This is a one term intensive class in Biblical Greek. After quickly learning the basics of the language, we will then dive right into readings from the New Testament and the Septuagint, which is the ancient Greek translation of the Hebrew Bible. No previous knowledge of Greek required. If demand is high for a second term, an additional quarter will be offered in the Spring.
Same as: JEWISHST 5, RELIGST 171A

CLASSICS 6L. Latin 400-1700 CE. 3-5 Units.
Readings in later Latin, drawing on the vast bodies of texts from the late antique, medieval and early modern periods. Each week students will prepare selections in advance of class meetings; class time will be devoted to translation and discussion. Students taking this course will gain exposure to a wide range of later Latin texts; hone translation skills; and develop an awareness of the grammatical and stylistic features of post-classical Latin. The course is aimed both at classical Latinists seeking to broaden their reading experience and at medievalists and early modernists seeking to consolidate their Latin language skills. May be repeat for credit.nnPrior experience in Latin is required, preferably CLASSICS 11L. Equivalent accepted. Classics majors and minors may repeat for credit with advance approval from the Director of Undergraduate Studies. Does not fulfill the language requirement in Classical Studies track.
Same as: CLASSICS 208L, RELIGST 173X

CLASSICS 7G. Biblical Greek. 3-5 Units.
This is a continuation of the Winter Quarter Biblical Greek Course. Pre-requisite: CLASSICS 6G or a similar introductory course in Ancient Greek.
Same as: JEWISHST 5B

CLASSICS 9N. What Didn't Make It into the Bible. 4 Units.
Over two billion people alive today consider the Bible to be sacred scripture. But how did the books that made it into the bible get there in the first place? Who decided what was to be part of the bible and what wasn't? How would history look differently if a given book didn't make the final cut and another one did? Hundreds of ancient Jewish and Christian texts are not included in the Bible. "What Didn't Make It in the Bible" focuses on these excluded writings. We will explore the Dead Sea Scrolls, Gnostic gospels, hear of a five-year-old Jesus throwing temper tantrums while killing (and later resurrecting) his classmates, peruse ancient romance novels, explore the adventures of fallen angels who sired giants (and taught humans about cosmetics), tour heaven and hell, encounter the garden of Eden story told from the perspective of the snake, and learn how the world will end. The course assumes no prior knowledge of Judaism, Christianity, the bible, or ancient history. It is designed for students who are part of faith traditions that consider the bible to be sacred, as well as those who are not. The only prerequisite is an interest in exploring books, groups, and ideas that eventually lost the battles of history and to keep asking the question "why." In critically examining these ancient narratives and the communities that wrote them, you will investigate how religions canonize a scriptural tradition, better appreciate the diversity of early Judaism and Christianity, understand the historical context of these religions, and explore the politics behind what did and did not make it into the bible.
Same as: JEWISHST 4, RELIGST 4

CLASSICS 9R. Humanities Research Intensive. 2 Units.
Everyone knows that scientists do research, but how do you do research in the humanities? This five-day course, taught over spring break, will introduce you to the excitement of humanities research, while preparing you to develop an independent summer project or to work as a research assistant for a Stanford professor. Through hands-on experience with archival materials in Special Collections and the East Asia Library, you will learn how to formulate a solid research question; how to gather the evidence that will help you to answer that question; how to write up research results; how to critique the research of your fellow students; how to deliver your results in a public setting; and how to write an effective grant proposal. Students who complete this course become Humanities Research Intensive Fellows and receive post-program mentorship during spring quarter, ongoing opportunities to engage with faculty and advanced undergraduates, and eligibility to apply for additional funding to support follow-up research. Freshmen and sophomores only. All majors and undeclared students welcome. No prior research experience necessary. Enrollment limited: apply by 11/4/19 at hri-fellows.stanford.edu.
Same as: EALC 9R, ENGLISH 9R, HISTORY 9R

CLASSICS 11G. Intermediate Greek: Prose. 5 Units.
Transition to reading Greek prose. Students will build upon knowledge of morphology and syntax acquired in beginning Greek to develop confidence and proficiency in reading a variety of Greek texts from mythology to selections of classical and biblical prose.

CLASSICS 11L. Intermediate Latin: Introduction to Literature. 5 Units.
Phonology, morphology, semantics, and syntax. Readings in prose and poetry. Analysis of literary language, including rhythm, meter, word order, narrative, and figures of speech.

CLASSICS 12G. Intermediate Greek: Herodotus. 5 Units.
Intensive reading of selections from the Histories, with review of morphology and syntax, aimed at developing familiarity with fundamentals of Greek prose style and appreciation for the artistry of the first fully-extant Greek historical writing. The rest of the Histories will be read in English translation. Each class meeting includes translation of prepared Greek texts, sight reading, discussion, and short lecture or report. Classics majors and minors must take course for letter grade. Classics majors and minors may repeat for credit with advance approval from the Director of Undergraduate Studies.

CLASSICS 12L. Intermediate Latin: Cicero and Catullus. 5 Units.
In this class, you will practice with and reinforce the advanced vocabulary, forms, and syntax of classical Latin you have previously acquired. While the primary emphasis of this course is on developing fluency in reading Latin, you will have opportunities to discuss and research the biographical, political, and literary issues raised by the readings. Classics majors and minors may repeat for credit with advance approval from the Director of Undergraduate Studies.

CLASSICS 12N. Income and wealth inequality from the Stone Age to the present. 4 Units.
Rising inequality is a defining feature of our time. How long has economic inequality existed, and when, how and why has the gap between haves and have-nots widened or narrowed over the course of history? This seminar takes a very long-term view of these questions. It is designed to help you appreciate dynamics and complexities that are often obscured by partisan controversies and short-term perspectives, and to provide solid historical background for a better understanding of a growing societal concern.
Same as: HISTORY 12N

CLASSICS 13G. Intermediate Greek: Homer. 5 Units.
This course serves as an introduction to Homeric Greek and to Homer's Odyssey specifically. We will be reading selections from the Odyssey in the original Greek to develop an understanding of the syntax, vocabulary, and dialect of Homeric Greek. Throughout the class, we will explore key questions and debates within Homeric scholarship. In addition, we will read the whole of the Odyssey in English, which will allow us to broaden our discussions to questions of narrative structure and characterization. Classics majors and minors may repeat for credit with advance approval from the Director of Undergraduate Studies.

CLASSICS 13L. Intermediate Latin: Vergil. 5 Units.
Vocabulary, forms and syntax. Classics majors and minors may repeat for credit with advance approval from the Director of Undergraduate Studies.

CLASSICS 14. Greek and Latin Roots of English. 3 Units.
(Formerly CLASSGEN 9) Goal is to improve vocabulary, comprehension of written English, and standardized test scores through learning the Greek and Latin components of English. Focus is on patterns and processes in the formation of the lexicon. Terminology used in medicine, business, education, law, and humanities; introduction to principles of language history and etymology. Greek or Latin not required.

CLASSICS 14N. Ecology in Philosophy and Literature. 3-5 Units.
What can we do to help the environment? How do our conceptions of the environment affect our actions? In this class, we examine the basic principles of ecological thinking in Western culture. We explore the ways that different writers represent and conceive of the natural world. We also analyze different environmental philosophies. We will address the following questions: What is nature? Who decides what is "natural"? How do humans differ from other animals? Do these differences make us superior beings? How do our eating habits affect the earth? What are the philosophical arguments for vegetarianism and veganism? How have the technologies of television, cell phones, and computers affected our relationship to the natural world? To what extent do we dwell in cyberspace? How does this affect our habitation on earth? How does modern technology inform the way that we think and act in the world? To help us answer these questions, we read nature writers (Edward Abbey, Annie Dillard), philosophers (Descartes, Heidegger), short stories (Kafka, Ursula le Guin), novelists (Conrad, Tournier) and contemporary writers (Peter Singer, Michael Pollan, Elizabeth Kolbert).

CLASSICS 15N. Saints, Warriors, Queens, and Cows. 3 Units.
The literature of medieval Ireland (600-1400 AD) is rich in tales about war and adventure, pagan gods, and otherworld voyages. The sagas of kings and queens sit side by side (sometimes in the same medieval manuscripts) with stories of holy men and women, and exquisite poetry in praise of nature or important persons. We will explore this largely unfamiliar but fascinating world through careful reading of the primary texts, backed up by some secondary works on history, myth, and society. In addition, the influence of early Irish literature on such later writers as W. B. Yeats and Flann O'Brien will be investigated. Readings include heroic stories of Finn and Cú Chulainn; the Cattle Raid of Cooley; the Voyage of Bran; satires; bardic praise-poems; monastic poems; and Sweeney Astray (Buile Shuibhne).

CLASSICS 16N. Sappho: Erotic Poetess of Lesbos. 3 Units.
Preference to freshmen. Sappho's surviving fragments in English; traditions referring to or fantasizing about her disputed life. How her poetry and legend inspired women authors and male poets such as Swinburne, Baudelaire, and Pound. Paintings inspired by Sappho in ancient and modern times, and composers who put her poetry to music.
Same as: FEMGEN 24N

CLASSICS 17N. To Die For: Antigone and Political Dissent. 3 Units.
(Formerly CLASSGEN 6N.) Preference to freshmen. Tensions inherent in the democracy of ancient Athens; how the character of Antigone emerges in later drama, film, and political thought as a figure of resistance against illegitimate authority; and her relevance to contemporary struggles for women's and workers' rights and national liberation. Readings and screenings include versions of *Antigone* by Sophocles, Anouilh, Brecht, Fugard/Kani/Ntshona, Paulin, Glowacki, Gurney, and von Trotta.
Same as: TAPS 12N

CLASSICS 18N. The Artist in Ancient Greek Society. 3 Units.
Given the importance of art to all aspects of their lives, the Greeks had reason to respect their artists. Yet potters, painters and even sculptors possessed little social standing. Why did the Greeks value the work of craftsmen but not the men themselves? Why did Herodotus dismiss those who worked with their hands as "mechanics?" What prompted Homer to claim that "there is no greater glory for a man than what he achieves with his own hands," provided that he was throwing a discus and not a vase on a wheel? Painted pottery was essential to the religious and secular lives of the Greeks. Libations to the gods and to the dead required vessels from which to pour them. Economic prosperity depended on the export of wine and oil in durable clay containers. At home, depictions of gods and heroes on vases reinforced Greek values and helped parents to educate their children. Vases depicting Dionysian excess were produced for elite symposia, from which those who potted and painted them were excluded. Sculptors were less lowly but still regarded as "mechanics," with soft bodies and soft minds (Xenophon), "indifferent to higher things" (Plutarch). The seminar addresses such issues as we work to acknowledge our own privilege and biases. Students will read and discuss texts, write response papers and present slide lectures on aspects of the artist's profession.
Same as: ARTHIST 100N

CLASSICS 19N. Eloquence Personified: How To Speak Like Cicero. 3 Units.
This course is an introduction to Roman rhetoric, Cicero's Rome, and the active practice of speaking well. Participants read a short rhetorical treatise by Cicero, analyze one of his speeches as well as more recent ones by, e.g., Kennedy, Martin Luther King Jr., and Obama, and watch their oratorical performances. During the remainder of the term they practice rhetoric, prepare and deliver in class two (short) speeches, and write an essay.

CLASSICS 20N. Technologies of Civilization: Writing, Number and Money. 3-4 Units.
The technological keys to the growth of civilization that enabled the creation of complex societies and enhanced human cognition. The role of cognition in shaping history and the role of history in shaping cognition. Global perspective, emphasizing the Western tradition and its ancient Greek roots.

CLASSICS 21Q. Eight Great Archaeological Sites in Europe. 3-5 Units.
Preference to sophomores. Focus is on excavation, features and finds, arguments over interpretation, and the place of each site in understanding the archaeological history of Europe. Goal is to introduce the latest archaeological and anthropological thought, and raise key questions about ancient society. The archaeological perspective foregrounds interdisciplinary study: geophysics articulated with art history, source criticism with analytic modeling, statistics interpretation. A web site with resources about each site, including plans, photographs, video, and publications, is the basis for exploring.
Same as: ARCHLGY 21Q

CLASSICS 26N. The Roman Empire: Its Grandeur and Fall. 4 Units.
Preference to freshmen. Explore themes on the Roman Empire and its decline from the 1st through the 5th centuries C.E.. What was the political and military glue that held this diverse, multi-ethnic empire together? What were the bases of wealth and how was it distributed? What were the possibilities and limits of economic growth? How integrated was it in culture and religion? What were the causes and consequences of the conversion to Christianity? Why did the Empire fall in the West? How suitable is the analogy of the U.S. in the 21st century?.
Same as: HISTORY 11N

CLASSICS 28N. Inequality: the Last 100,000 Years. 3 Units.
(Formerly CLASSHIS 13N.) This seminar traces the evolution of resource inequality from the Stone Age to the present. Only this long-term perspective reveals the forces that drive inequality and allows us to address two key questions: what causes inequality, and what factors have been capable of reducing it, at least for a while? We are going to confront challenging arguments: that inequality has been closely tied up with overall economic and human development, and that over the long course of history, war, revolution and pestilence were the most effective equalizers of income and wealth. This class will help you appreciate contexts and complexities that are usually obscured by partisan polemics and short-term thinking. Seminar participants will be directly involved in the instructor's current research project on the history of inequality.
Same as: HISTORY 15N

CLASSICS 29N. Ancient Myth in Modern Poetry. 3 Units.
For millennia, the myths of ancient Greece and Rome have been objects of fascination and tools for exploring humanity's most abiding concerns: self, society, birth, death and the afterlife, the cosmos and the divine. In the 20th and 21st centuries, the power and beauty of these archaic narratives have inspired scores of poets, including such well-known figures as Yeats, Heaney, Eliot, Pound, H.D., Seferis, Rilke, Auden, Mandelshtam and Tsvetaeva. We will delve into this rich poetic heritage, savoring the full range of modern responses, while paying attention to the many meanings of the old stories that they echo or challenge. All readings in English; no prior experience of any sort assumed. Aspiring writers and lovers of mythology welcomed.

CLASSICS 29Q. Questioning the Gods: Religious Thought and Literature in Classical Antiquity. 3 Units.
Ancient Greek and Roman literature and philosophy dealing with theology and ethics. What is a god, and why should gods care about you or me? Do you have a soul, and if so what might happen to it when you die? Should you try to be a good person, and if so, how? Learn viewing fundamental questions like these through the eyes of ancient Greek and Roman thinkers. We will read tragedies and epic poetry, wrestle with the philosophical arguments, and apply forms scientific reasoning developed more than 2,000 years ago. This course offers highly sophisticated perspectives on religious and ethical issues that are still vitally important today, as well as a firm grasp of the culture of classical antiquity and the means it offers of understanding the world and our place in it.

CLASSICS 30N. Making fun of History: Insults, Mockery and Abuse Language in Antiquity. 3 Units.
People have mocked one another for as long as there has been language with which to do it, but insults can be difficult to pin down: a word or phrase may seem mocking to one person but neutral, funny, or even friendly to another. Even praise can be insulting, in some situations. Context is key.nnIn this course we will study abusive speech in the context of ancient Greece and Rome. Primary readings will range from Homer and Aristophanes to Plautus and Seneca, as well asnvernacular sources such as ancient wall-graffiti and curse tablets. Throughout we will usenmodern sources such as film, music, and political speeches for comparison. We will alsonexplore different sociological, anthropological, and linguistic models for understanding thensocial role of insult. Studying the slippery phenomenon of insult reveals a great deal aboutnhuman communication, human nature, and the Classical tradition.nnNo knowledge of Latin, Greek, or Linguistics is assumed or required for this course.

CLASSICS 31. Greek Mythology. 3-5 Units.
The heroic and divine in the literature, mythology, and culture of archaic Greece. Interdisciplinary approach to the study of individuals and society. Illustrated lectures. Readings in translation of Homer, Hesiod, and the poets of lyric and tragedy. Weekly participation in a discussion section is required during regular academic quarters (Aut, Win, Spr).

CLASSICS 34. Ancient Athletics. 3-4 Units.
How the Olympic Games developed and how they were organized. Many other Greek festivals featured sport and dance competitions, including some for women, and showcased the citizen athlete as a civic ideal. Roman athletics in contrast saw the growth of large-scale spectator sports and professional athletes. Some toured like media stars; others regularly risked death in gladiatorial contests and chariot-racing. We will also explore how large-scale games were funded and how they fostered the development of sports medicine. Weekly participation in a discussion section is required; enroll in sections on coursework.

CLASSICS 35. The Good Life: An Introduction to Ancient Greek Ethical Philosophy. 3-5 Units.
The ancient Greeks longed for happiness, but life often led to suffering and anxiety. In ancient Greece, the traditional value system focused on gaining honor, wealth, power, and success¿external goods that could be taken away at any time. The Greek philosophers Socrates, Plato, and Aristotle set forth ethical theories designed to alleviate suffering and anxiety. They rejected the traditional Greek value system, focusing on inner goodness rather than on external rewards. Developing inner goodness was the only way to live a happy and fulfilled life. In this class, we read Greek tragedies by Sophocles and Euripides that represent traditional Greek values. We examine the values, motivation, and choices of tragic characters who faced difficult ethical dilemmas¿choices that led to misery and ruin. What were their tragic flaws? Could they have avoided their fates by adopting a different value system? We also examine the ethical theories of Socrates, Plato, and Aristotle. We analyze their discussions of justice, courage, friendship, love, and self-knowledge. Do these philosophical theories offer a valid way to live a happy life? Can we develop these virtues? If so, how do we do this? Do we need to have these virtues to live a happy life? Do the ancient philosophers offer useful solutions to ethical questions in our own day? Can their philosophies help us to become better and happier people?.

CLASSICS 37. Great Books, Big Ideas from Ancient Greece and Rome. 3 Units.
This course will journey through ancient Greek and Roman literature from Homer to St. Augustine, in constant conversation with the other HumCore travelers in the Ancient Middle East, Africa and South Asia, and Early China. It will introduce participants to some of its fascinating features and big ideas (such as the idea of history); and it will reflect on questions including: What is an honorable life? Who is the Other? How does a society fall apart? Where does human subjectivity fit into a world of matter, cause and effect? Should art serve an exterior purpose? Do we have any duties to the past? This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: DLCL 11, HUMCORE 112

CLASSICS 40. Greek Philosophy. 4 Units.
We shall cover the major developments in Greek philosophical thought, focusing on Plato, Aristotle, and the Hellenistic schools (the Epicureans, the Stoics, and the Skeptics). Topics include epistemology, metaphysics, psychology, ethics and political theory. No prereqs, not repeatable.
Same as: PHIL 100

CLASSICS 41. Herodotus. 4-5 Units.
For Ancient History field of study majors; others by consent of instructor. Close reading technique. Historical background to the Greco-Persian Wars; ancient views of empire, culture, and geography; the wars and their aftermath; ancient ethnography and historiography, including the first narrative of ancient Egypt.

CLASSICS 42. Philosophy and Literature. 3-5 Units.
What, if anything, does reading literature do for our lives? What can literature offer that other forms of writing cannot? Can fictions teach us anything? Can they make people more moral? Why do we take pleasure in tragic stories? This course introduces students to major problems at the intersection of philosophy and literature. It addresses key questions about the value of literature, philosophical puzzles about the nature of fiction and literary language, and ways that philosophy and literature interact. Readings span literature, film, and philosophical theories of art. Authors may include Sophocles, Dickinson, Toni Morrison, Proust, Woolf, Walton, Nietzsche, and Sartre. Students master close reading techniques and philosophical analysis, and write papers combining the two. This is the required gateway course for the Philosophy and Literature major tracks. Majors should register in their home department.
Same as: COMPLIT 181, ENGLISH 81, FRENCH 181, GERMAN 181, ILAC 181, ITALIAN 181, PHIL 81, SLAVIC 181

CLASSICS 43. Exploring the New Testament. 4 Units.
To explore the historical context of the earliest Christians, students will read most of the New Testament as well as many documents that didn't make the final cut. Non-Christian texts, Roman art, and surviving archeological remains will better situate Christianity within the ancient world. Students will read from the Dead Sea Scrolls, explore Gnostic gospels, hear of a five-year-old Jesus throwing divine temper tantrums while killing (and later resurrecting) his classmates, peruse an ancient marriage guide, and engage with recent scholarship in archeology, literary criticism, and history.
Same as: JEWISHST 86, RELIGST 86

CLASSICS 43N. The Archaeological Imagination. 3 Units.
More than excavating ancient sites and managing collections of old things, Archaeology is a way of experiencing the world: imagining past lives through ruins and remains; telling the story of a prehistoric village through the remains of the site and its artifacts; dealing with the return of childhood memories; designing a museum for a community. The archaeological imagination is a creative capacity mobilized when we experience traces and vestiges of the past, when we gather, classify, conserve and restore, when we work with such remains to deliver stories, reconstructions, accounts, explanations, or whatever. This class will explore such a wide archaeological perspective in novels, poetry, fantasy literature, the arts, movies, online gaming, and through some key debates in contemporary archaeology about human origins, the spread of urban life, the rise and fall of ancient empires.
Same as: ARCHLGY 43N

CLASSICS 44. Epic! Life, death, and glory in the Iliad and Odyssey. 4-5 Units.
The two epics attributed to the ancient Greek poet Homer enshrine a vivid world of experience centered on the deeds and misdeeds of warriors and divinities, kings and queens, in the last days and aftermath of the Trojan War. The course examines these remarkable poems in detail, with attention to their political, social, historical and artistic contexts, as well as to their reception in art, literature, film and music over the last two millennia. No prior knowledge of Homer or Greek literature necessary.

CLASSICS 45. Ancients and Moderns: Africa and South Asia in World Literature. 3 Units.
How might we make sense of culturally significant texts and text equivalents? We'll compare different answers to abiding human questions, such as: Where do we come from? Why do origins matter? What role do different media (written, spoken, otherwise performed, or visual) play in conveying a sense of the past from one generation to another? In what ways is our access to such cultural productions framed by colonial histories, with their discrepant experiences and perspectives? Readings include the Ramayana; the Bhagavad-Gita; Chinua Achebe, Things Fall Apart; and Chimamanda Adichie, `The headstrong historian'. This course is part of the Humanities Core sequence.
Same as: HUMCORE 117

CLASSICS 47. Ancient Knowledge, New Frontiers: How the Greek Legacy Became Islamic Science. 3 Units.
What contributions did Arabic and Islamic civilization make to the history of science? This course will read key moments in Greek and Islamic science and philosophy and ask questions about scientific method, philosophy, and religious belief. We will read Ibn Sina (Avicenna), Ibn Haytham, and Baha al-Din al-Amili, among others. What is the scientific method and is it universal across time and place? What is Islamic rationality? What is Greek rationality? Who commits to empiricism and who relies on inherited ideas? This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: COMPLIT 107A, HUMCORE 121

CLASSICS 52. Introduction to Roman Archaeology. 3-5 Units.
(Formerly CLASSART 81.) This course will introduce you to the material culture of the ancient Roman world, from spectacular imperial monuments in the city of Rome to cities and roads around the Mediterranean, from overarching environmental concerns to individual human burials, from elite houses and army forts to the the lives of slaves, freedmen and gladiators. Key themes will be change and continuity over time; the material, spatial and visual workings of power; how Roman society was materially changed by its conquests and how conquered peoples responded materially to Roman rule.
Same as: ARCHLGY 81

CLASSICS 54. Introduction to World Architecture. 5 Units.
This course offers an expansive and wide-ranging introduction to architecture and urban design from the earliest human constructions to the mid-20th century. The examples range from the Americas to Europe, the Middle East, South and East Asia. The diverse technologies and materialities of building are addressed throughout and an overriding concern is to understand architecture as a sensible manifestation of particular cultures, whether societies or individuals. To the same ends, student writing assignments will involve the analysis of local space, whether a room or a building, and then the built environment at large.
Same as: ARTHIST 3

CLASSICS 56. Decolonizing the Western Canon: Introduction to Art and Architecture from Prehistory to Medieval. 5 Units.
Traditional Art History viewed the Renaissance as its pinnacle; it privileged linear perspective and lifelikeness and measured other traditions against this standard, neglecting art from the Near East, Egypt, the Middle Ages, or Islam. This course will disrupt this colonizing vision by conceptualizing artworks as "methexis" (participation, liveliness, or enactment) as opposed to mimesis (imitation or lifelikeness). We will study the development of the Western canon and its systematic eradication of difference through a renewed understanding of what an artwork is.
Same as: ARTHIST 1A

CLASSICS 57. Introduction to Digital Archaeology. 4 Units.
While the tools of Digital Archaeology frequently change, using digital tools has been part of the discipline for decades. These tools and approaches provide new forms of research, visualization, and outreach to archaeological investigations. This course is designed to introduce students of archaeology to the digital research methods useful to the discipline, and provide them with hands-on experience in three types of digital method: digital mapping, visualization, and 3D modeling. The goal of the course is for students to learn about the state of digital archaeology, to become familiar with common methods, and become aware of the resources available for research.
Same as: ARCHLGY 47

CLASSICS 58. Egypt in the Age of Heresy. 3-5 Units.
Perhaps the most controversial era in ancient Egyptian history, the Amarna period (c.1350-1334 BCE) was marked by great sociocultural transformation, notably the introduction of a new 'religion' (often considered the world's first form of monotheism), the construction of a new royal city, and radical departures in artistic and architectural styles. This course will introduce archaeological and textual sources of ancient Egypt, investigating topics such as theological promotion, projections of power, social structure, urban design, interregional diplomacy, and historical legacy during the inception, height, and aftermath of this highly enigmatic period. Students with or without prior background are equally encouraged.
Same as: AFRICAAM 58A, AFRICAST 58, ARCHLGY 58

CLASSICS 60. Reading Aristotle's Ethics: Happiness and the Virtues of Character. 1 Unit.
How should I live? What should I do to live a happy life? And what does happiness have to do with ethics? What might the best human life look like? What kind of friendships contribute to happiness--and to justice? In the Nicomachean Ethics Aristotle offers us a vision of human flourishing that has nurtured thinkers, secular and religious, for thousands of years and continues to shape political and ethical thinking. In this study group we read and reflect upon the first few books of the Ethics, on happiness and the virtues of character, slowly and carefully. Each week you will be expected to read a short, but dense, section of the Ethics, and to share responsibility for asking questions.
Same as: SLE 60

CLASSICS 61. Reading Aristotle's Ethics, Part 2. 1 Unit.
In this course we continue our reading of Aristotle's Nicomachean Ethics, moving from the individual moral virtues to his formative discussion of justice and equity. We then move on to Aristotle's development of the intellectual virtues and their relation to ethics. Much of our attention will be focused on friendship, without which, as Aristotle says, no one would wish to live, and which is central to virtue and happiness. At the same time we strive to develop our capacity for friendship in ourselves, using Aristotle's discussion to help us reflect on our own lives.
Same as: SLE 61

CLASSICS 76. Global History: The Ancient World. 3-5 Units.
World history from the origins of humanity to the Black Death. Focuses on the evolution of complex societies, wealth, violence, hierarchy, and large-scale belief systems.
Same as: HISTORY 1A

CLASSICS 81. Ancient Empires: Near East. 4-5 Units.
Why do imperialists conquer people? Why do some people resist while others collaborate? This course tries to answer these questions by looking at some of the world's earliest empires. The main focus is on the expansion of the Assyrian and Persian Empires between 900 and 300 BC and the consequences for the ancient Jews, Egyptians, and Greeks. The main readings come from the Bible, Herodotus, and Assyrian and Persian royal inscriptions, and the course combines historical and archaeological data with social scientific approaches. Weekly participation in a discussion section is required.
Same as: HISTORY 117

CLASSICS 82. The Egyptians. 3-5 Units.
This course traces the emergence and development of the distinctive cultural world of the ancient Egyptians over nearly 4,000 years. Through archaeological and textual evidence, we will investigate the social structures, religious beliefs, and expressive traditions that framed life and death in this extraordinary region. Students with or without prior background are equally encouraged.
Same as: AFRICAAM 30, HISTORY 48, HISTORY 148

CLASSICS 83. The Greeks. 4-5 Units.
250 years ago, for almost the first time in history, a few societies rejected kings who claimed to know what the gods wanted and began moving toward democracy. Only once before had this happened--in ancient Greece. This course asks how the Greeks did this, and what they can teach us today. It uses texts and archaeology to trace the material and military sides of the story as well as cultural developments, and looks at Greek slavery and misogyny as well as their achievements. Weekly participation in a discussion section is required.
Same as: HISTORY 101

CLASSICS 84. The Romans. 3-5 Units.
How did a tiny village create a huge empire and shape the world, and why did it fail? Roman history, imperialism, politics, social life, economic growth, and religious change. Weekly participation in a discussion section is required; enroll in sections on Coursework.
Same as: HISTORY 102A

CLASSICS 88. Origins of History in Greece and Rome. 4-5 Units.
What¿s the history of `History¿? The first ancient historians wrote about commoners and kings, conquest and power¿those who had it, those who wanted it, those without it. Their powerful ways of recounting the past still resonate today and can be harnessed to tell new stories. We will look at how ancients like Herodotus, Thucydides, Tacitus, and Livy turned stories about the past into compelling narratives of loss, growth and decline¿inventing ¿History¿ as we know it. All readings in English.
Same as: HISTORY 114

CLASSICS 92. Introduction to Greek Art and Archaeology. 5 Units.
This course will introduce students to the art and archaeology of Greece and the Greek world from the Neolithic through Early Roman periods. By integrating both historical and current approaches to the archaeology of Greece, this course aims to supplement the typical chronological narrative of the development of Greek material culture with various thematic explorations (e.g. nationalism in archaeology, social complexity, postcolonial approaches), as well as to critically evaluate mechanisms of interpretation in Greek archaeology over time.
Same as: ARCHLGY 92

CLASSICS 93. Pots, People, and Press: Greek Archaeology in the Media. 3-5 Units.
Archaeological discovery has long captured the popular imagination, and the media undoubtedly plays a crucial role in this phenomenon. In the case of Greek archaeology, much of this imagination has been intertwined with the legacies of ancient Greek culture(s) in the construction of modern identities and ideologies, including the concept of ¿Western Civilization.¿ This course explores the intersections between academic research, media narratives, and the social, political, and cultural context of Greek archaeology from the 19th century to the present. Through a diachronic range of case studies, we will engage with a selection of media accounts and representations, alongside scholarly work and commentaries. In doing so, the class will more broadly examine issues surrounding archaeological evidence and interpretation, narrative formation, the reception and appropriation of the past, conceptualizations of race and ethnicity, nationalism and archaeology, and cultural heritage management. No prior knowledge of Greek archaeology is required.
Same as: ARCHLGY 83

CLASSICS 96. The Secret Lives of Statues from Ancient Egypt to Confederate Monuments. 3-5 Units.
Statues, human-shaped sculptures, walk a fine line between being inert matter and living entities. Throughout human existence, humans have recognized that statues are not alive even as they understand that statues are capable of becoming potent allies or enemies. They are capable of engendering profound emotional responses, embodying potent ideas, and co-opting the past in service of the present. However, the same materiality that endows statues with these exceptional capacities also makes them vulnerable to humans intent on acquiring otherwise-expensive materials cheaply, commiting sectarian violence by proxy, and obliterating the material manifestations of others¿ memories.nnIn this course, we will study sixteen (groups of) statues thematically. To do this, we will draw on a wide variety of disciplines, including archaeology, art history, history, law, media studies, museum studies, and religious studies, to articulate how people in diverse places and times have revered and reviled statues precisely because they are uncanny objects that seem to have an all-too-human kind of agency. In so doing, we will gain appreciation for and insight into how and why the statues in our own lives are significant.
Same as: ARCHLGY 96, ARTHIST 104A

CLASSICS 101G. Advanced Greek: Plato. 3-5 Units.
Selections from Plato's Symposium. Review of Greek grammar and syntax with a view to transitioning students from Intermediate Greek to fluent reading of Attic prose. Special attention as well to 5th-century BC political and social context, history of Greek rhetoric, and introduction to Plato's philosophical system. Classics majors and minors may repeat for credit with advance approval from the Director of Undergraduate Studies.

CLASSICS 101L. Advanced Latin: Livy. 3-5 Units.
Livy's Books I through V recount Rome's greatest characters, myths, and legends from the city's foundation to the sack by the Gauls around 390BCE. This course will examine Livy's account of the early history of Rome; Romulus and Remus, the early kings, the fall of the Tarquins, the founding of the Republic, and the early wars against the Etruscans, Latins, and Celts in Italy. How did Livy make his narrative exciting and instructive to his readers? What virtues and flaws does Livy give to the men and women of the early republic, and why? We will pay close attention to grammar, vocabulary, and improvement of reading fluency. Classics majors and minors must take for a letter grade and may repeat for credit with advance approval from the Director of Undergraduate Studies.

CLASSICS 102G. Advanced Greek: Aeschylus. 3-5 Units.
As the only extant tragedy from Greek antiquity that features characters who explicitly reflect on their black skin color, Aeschylus' Suppliant Women destabilizes a monolithic definition of alterity. In this tragedy, fifty black Egyptian Greek women transform from frightened maidens into astute performers who force their audience to contend with their perceived differences. While reading this ancient Greek tragedy, students will increase their knowledge of Greek grammar and syntax, become familiar with essential aspects of Greek tragedy, and explore Aeschylus' place within the tragic tradition. Classics majors and minors may repeat for credit with advance approval from the Director of Undergraduate Studies.

CLASSICS 102L. Advanced Latin: Early Latin. 3-4 Units.
Most of the literature that we read in Latin is from a relatively late period of the language's history. However, Latin-speaking people wrote sophisticated texts hundreds of years before Cicero and Caesar, although much of this early writing has been lost to history. But not all! In this class we will explore the rich remains of Early Latin, with readings that include archaic inscriptions, early Latin prose from Cato the Elder, selections from the comedies of Plautus and Terence, and fragments from Andronius, Naevius, and Ennius, the first known writers of Latin epic poetry. In parallel, we will also explore the history of the Latin language during this early period, emphasizing the historical developments that distinguish Early Latin from Classical Latin, as well as the historical reasons so much early Latin writing was not preserved. Students should be able to read Latin at an Intermediate-to-Advanced level, but no experience with linguistics, Early Latin, or Roman History is expected or required. Classics majors and minors must take course for letter grade. May be repeated for credit with advance approval from the Director of Undergraduate Studies.
Same as: CLASSICS 209L

CLASSICS 103G. Advanced Greek: Lyric Poetry. 3-5 Units.
Invectives, love songs, drinking songs, elegies, and choral odes from 700-500 B.C.E. Readings include Sappho, Alcaeus, Archilochus, Mimnermus, Alcman, Solon, and Pindar. Classics majors and minors may repeat for credit with advance approval from the Director of Undergraduate Studies. Classics majors and minors must take for a letter grade and may repeat for credit with advance approval from the Director of Undergraduate Studies.

CLASSICS 103L. Advanced Latin: Lucan's Pharsalia. 3-5 Units.
In the year 60 CE, Marcus Annaeus Lucanus was a favorite of of the emperor Nero; five years later he was compelled to end his own life as a participant in the Pisonian conspiracy. In these last years of his life, he wrote the 10 books of his likely incomplete Pharsalia, also known as De Bello Civili. This epic looks back over a century to what the author describes not just a civil wars but as bella plus quam civilia. In this class, we will follow Lucan's epic to the extremes of graphic violence in Latin, pitting Roman against Roman, man against snake, and corpse against witch. We will explore Lucan's masterwork against the landscape of the Neronian era and in comparison with other writing of this so-called silver age of Latin literature. Readings will be in the original Latin with the addition of relevant secondary scholarship. We will review questions of grammar and syntax, rhetorical terms, and historical context as needed. Classics majors and minors must take course for letter grade. May be repeated for credit with advance approval from the Director of Undergraduate Studies.

CLASSICS 104A. Latin Syntax I. 4 Units.
Intensive review of Latin syntax. See CLASSICS 206A/B for supplemental courses. Students should take both syntax and semantics in the same quarters. Prerequisite for undergraduates: three years of Latin. First-year graduate students register for CLASSICS 204A.
Same as: CLASSICS 204A

CLASSICS 104B. Latin Syntax II. 4 Units.
Intensive review of Latin syntax. See CLASSICS 206A/B for supplemental courses. Students should take both syntax and semantics in the same quarters. Prerequisite for undergraduates: three years of Latin. First-year graduate students register for CLASSICS 204B.
Same as: CLASSICS 204B

CLASSICS 105A. Greek Syntax: Prose Composition. 5 Units.
The goal of this course is to provide a thorough review of Greek syntax, reinforced by reading selected short passages of Attic Greek in some detail, in order to develop a much greater command of the language and to increase reading skills as well as an understanding of the stylistic features of the major prose genres.
Same as: CLASSICS 205A

CLASSICS 110. Gods and Humans in Greek Philosophical Thought. 4-5 Units.
We will examine several key aspects of Greek religion: the Greek conception of the gods; how humans got messages from the gods through oracles, divination, and epiphanies; and the festival of the Eleusinian Mysteries. We will read fragments of Heraclitus and Parmenides, and Plato¿ Apology, Republic 6-7, and Phaedrus to investigate these philosophers¿ new conceptions of gods and humans. What kinds of divinities did the philosophers conceive of? How could a human achieve divine wisdom? To what extent did the philosophers use traditional religious ideas? nnAdvanced undergrads may register.

CLASSICS 112. Introduction to Greek Tragedy: Gods, Heroes, Fate, and Justice. 4 Units.
Gods and heroes, fate and free choice, gender conflict, the justice or injustice of the universe: these are just some of the fundamental human issues that we will explore in about ten of the tragedies of Aeschylus, Sophocles, and Euripides.
Same as: TAPS 167

CLASSICS 115. Virtual Italy: Methods for Historical Data Science. 4-5 Units.
Classical Italy attracted thousands of travelers throughout the 1700s. Referring to their journey as the "Grand Tour," travelers pursued intellectual passions, promoted careers, and satisfied wanderlust, all while collecting antiquities to fill museums and estates back home. What can computational approaches tell us about who traveled, where and why? We will read travel accounts; experiment with parsing; and visualize historical data. Final projects to form credited contributions to the Grand Tour Project, a cutting-edge digital platform. No prior programming experience necessary.
Same as: ENGLISH 115, HISTORY 238C, ITALIAN 115

CLASSICS 116. Human Rights in Comparative and Historical Perspective. 3-5 Units.
This course examines core human rights issues and concepts from a comparative and historical perspective. In the beginning part of the course we will focus on current debates about the universality of human rights norms, considering the foundation of the international human rights regime and claims that it is a product of western colonialism, imperialism, or hegemony. We will then discuss a series of issues where the debates about universality are particularly acute: gender inequality and discrimination, sexual violence, child marriage and forced marriage more generally, and other related topics. We will also consider the way in which issues of gender-based violence arise in the context of internal and international conflicts.
Same as: ETHICSOC 106, HUMRTS 106

CLASSICS 118. Slavery, human trafficking, and the moral order: ancient and modern. 3 Units.
Slavery and trafficking in persons in the Greco-Roman world were legal and ubiquitous; today slavery is illegal in most states and regarded as a grave violation of human rights and as a crime against humanity under international law. In recent trends, human trafficking has been re-conceptualized as a form of "modern day slavery. " Despite more than a century since the success of the abolition movement, slavery and trafficking continue in the 21st century on a global scale. The only book for the course is: Peter Garnsey, Ideas of Slavery from Aristotle to Augustine, Cambridge University Press.
Same as: CLASSICS 218, HUMRTS 109

CLASSICS 121. The Dome: From the Pantheon to the Millennium. 4-5 Units.
This course traces the history of the dome over two millennia, from temples to the gods to Temples of the State, and from cosmic archetype to architectural fetish. The narrative interweaves the themes of the dome as image of the Cosmos, religious icon, national landmark, and political monument. It examines the dome not only as a venue for structural innovation, but also metaphysical geometry and transcendent illusionism.nIndividual case studies will familiarize you with major architects from Hadrian to Richard Rogers and historical milestones from the Dome of the Rock to the Capitol in Washington DC. May be repeat for credit.
Same as: ARTHIST 114A, ARTHIST 314A, CLASSICS 221

CLASSICS 124. Ancient and Modern Medicine. 3-4 Units.
Imagine a world where the Universe has a built-in purpose and point. How would this belief impact man's place in nature? Imagine a world where natural substances have "powers." How might this impact diet and pharmacology? Magical vs. scientific healing: a clear divide? Disease and dehumanization: epilepsy, rabies. Physical and mental health: black bile and melancholy. The ethical and scientific assumptions hidden in medical language and imagery. How ancient medicine and modern medicine (especially alternative medicine) illuminate each other.

CLASSICS 125. The Hindu Epics and the Ethics of Dharma. 4 Units.
The two great Hindu Epics, the Mahabharata and Ramayana, offer a sustained reflection on the nature of virtuous living in the face of insoluble ethical dilemmas. Their treatment of the concept of dharma, understood simultaneously as ethical action and the universal order that upholds the cosmos, lies at the heart of both Gandhian non-violent resistance and communalist interreligious conflict. This course will focus on a reading of selections from the Epics in English translation, supplemented with a consideration of how the texts have been interpreted in South Asian literary history and contemporary politics and public life in India.
Same as: RELIGST 123

CLASSICS 126. The archaeology of death. 3-5 Units.
Death is a universal human experience, but one that evokes a wide range of cultural and material responses. Archaeologists have used mortuary and bioarchaeological evidence to try to understand topics as diverse as paleodemography, human health and disease, social structure and inequalities, ritual, and identity and personhood. As such, the archaeology of death has become a locus for lively debates about archaeological interpretation. Furthermore, the study of human remains and mortuary contexts raises a set of complex ethical and political issues. We will explore these themes using a range of archaeological and anthropological case studies from different times and places.

CLASSICS 128. Europe Before the Romans: Early Complex Societies. 3-5 Units.
This course will provide a broad introduction to theories of change in early complex societies and polities. Over the course of the quarter, we will examine a series of hotly debated theoretical frameworks. From the beginning, you will develop a case study for your final research paper using an appropriate theoretical framework. The course will look at a series of global case studies but will focus specifically on western Europe¿s protohistoric Iron Age (c.800¿100BCE), a period of technological innovation, rich art and cultural expression, rapidly growing connectivity and trade, alongside rapid social and political change.
Same as: ARCHLGY 128

CLASSICS 130. The Grandeur of Epic: Poetry, Narrative, and World from Homer to Evolutionary Biology. 3-5 Units.
Explores the mystery and power of epic. This ancient word, which at its root means "what is spoken," first classified certain traditions of archaic Greek poetry, especially Homer's Iliad and Odyssey. It now appears everywhere from slang to contemporary scientific discourse. Though some might dismiss its proliferation as an accident of everyday speech, the course will take the phenomenon of "epic" seriously, asking what it is about this oldest of genres that continues to inspire our collective imagination. Readings will include works of epic as well as theoretical and philosophical works on narrative, religion, and science. We will read substantial selections from the Iliad, Hesiod's poems, the Hebrew Bible, the Gospels, Charles Darwin's On the Origin of Species, J.R.R. Tolkien's Silmarillion, and Ursula K. Le Guin's A Wizard of Earthsea.

CLASSICS 135. Ekphrasis in Antiquity and Beyond. 3-5 Units.
What is "Ekphrasis"? How was it theorized and practiced in antiquity and what is its appeal in the Renaissance and in modern times? Description, interpretation, and the senses; the relationship between the verbal and the visual in antiquity from Homer to Philostratus ; comparison between ancient and modern practices of ekphrasis.

CLASSICS 136. The Greek Invention of Mathematics. 3-5 Units.
How was mathematics invented? A survey of the main creative ideas of ancient Greek mathematics. Among the issues explored are the axiomatic system of Euclid's Elements, the origins of the calculus in Greek measurements of solids and surfaces, and Archimedes' creation of mathematical physics. We will provide proofs of ancient theorems, and also learn how such theorems are even known today thanks to the recovery of ancient manuscripts.

CLASSICS 138. The Use and Abuse of Prehistory. 3-5 Units.
To borrow Glyn Daniel¿s phrase, the ¿Idea of Prehistory,¿ invokes notions of deep time, human origins, and mysterious monuments. While the origins of prehistoric research in the 19th century were connected to the emerging sciences of geology, evolution, and archaeology, they were just as intertwined with nation-state building, colonialism, and race science. This course examines the development of prehistory through a thematic and critical lens. How have Western conceptualizations of time and writing affected the definition and study of prehistory? What are some of the colonial legacies in both research agendas and museum collections? Do new methods always provide new answers? What role has gender played in prehistoric interpretation? Drawing from case studies in the Mediterranean, the Americas, Europe, and Africa, we will explore various archaeological approaches to prehistory from the late 19th century to the present, as well as how the idea of prehistory itself has evolved, expanded, or been abandoned altogether.
Same as: ANTHRO 131A, ARCHLGY 131

CLASSICS 145. Early Christian Gospels. 4 Units.
An exploration of Christian gospels of the first and second century. Emphasis on the variety of images and interpretations of Jesus and the good news, the broader Hellenistic and Jewish contexts of the gospels, the processes of developing and transmitting gospels, and the creation of the canon. Readings include the Gospel of John, the Gospel of Mark, the Gospel of Thomas, the Gospel of Mary and other canonical and non-canonical gospels.
Same as: RELIGST 132D

CLASSICS 150. Majors Seminar: The Augustan Age. 5 Units.
Required of Classics majors and minors in junior or senior year; students contemplating honors should take this course in junior year. Advanced skills course involving close reading, critical thinking, editing, and writing. In-class and take-home writing and revising exercises. Final paper topic may be on any subject related to Classics. Fulfills WIM requirement for Classics. nOut of the ashes of the Roman Republic, Augustus crafted a new, autocratic regime that survived for centuries¿a transformative moment in European history. How did Augustus establish stability after the turmoil and bloodshed of the 1st century BCE? Why did the Augustan Age produce some of the greatest literary and artistic works in European history? This course will examine the political and social revolution engineered by Augustus and explore monumental achievements such as Virgil¿s Aeneid and the Pantheon.

CLASSICS 151. Ten Things: An Archaeology of Design. 3 Units.
Connections among science, technology, society and culture by examining the design of a prehistoric hand axe, Egyptian pyramid, ancient Greek perfume jar, medieval castle, Wedgewood teapot, Edison's electric light bulb, computer mouse, Sony Walkman, supersonic aircraft, and BMW Mini. Interdisciplinary perspectives include archaeology, cultural anthropology, science studies, history and sociology of technology, cognitive science, and evolutionary psychology.
Same as: ARCHLGY 151

CLASSICS 154. Sailing the Wine-Dark Sea: Maritime Archaeology of the Ancient Mediterranean. 3-5 Units.
Why do we care about shipwrecks? What can sunken sites and abandoned ports tell us about our past? Focusing primarily on the archaeological record of shipwrecks and harbors, along with literary evidence and contemporary theory, this course examines how and why ancient mariners ventured across the "wine-dark seas" of the Mediterranean for travel, warfare, pilgrimage, and especially commerce. We will explore interdisciplinary approaches to the development of maritime contacts and communication from the Bronze Age through the end of Roman era. At the same time, we will engage with practical techniques of maritime archaeology, which allows us to explore the material record first hand.
Same as: ARCHLGY 145

CLASSICS 156. Design of Cities. 3-5 Units.
Long-term, comparative and archaeological view of urban planning and design. Cities are the fastest changing components of the human landscape and are challenging our relationships with nature. They are the historical loci of innovation and change, are cultural hotspots, and present a tremendous challenge through growth, industrial development, the consumption of goods and materials. We will unpack such topics by tracking the genealogy of qualities of life in the ancient Near Eastern city states and those of Graeco-Roman antiquity, with reference also to prehistoric built environments and cities in the Indus Valley and through the Americas. The class takes an explicitly human-centered view of urban design and one that emphasizes long term processes.
Same as: ARCHLGY 156, CLASSICS 256

CLASSICS 157. The Archaeology of Cyprus. 3-5 Units.
This seminar course introduces students to the island of Cyprus in the eastern Mediterranean and its archaeology, from the origins of human occupation to the end of antiquity. Readings and discussions of material culture and texts will explore the history and practice of Cypriot archaeology in relation to those of Greece and the Near East. Key themes will include: islands and insularity, continuity vs. change, sex and identity, the rise of the state, regionalism, and imperial conquest. Suitable for both graduate and undergraduate students.
Same as: CLASSICS 257

CLASSICS 158. Theories of the Image: Byzantium, Islam and the Latin West. 5 Units.
This seminar explores the role of images in the three major powers of the medieval Mediterranean: the Umayyads, the Carolingians, and the Byzantines. For each the definition of an image- sura, imago, or eikon respectively-became an important means of establishing religious identity and a fault-line between distinct cultural traditions. This course troubles the identification of image with figural representation and presents instead a performative paradigm where chant or recitation are treated as images. As such, students will be able to see the connections between medieval image theory and contemporary art practices such as installation.
Same as: ARTHIST 209C, ARTHIST 409, CLASSICS 258, REES 409

CLASSICS 159. Appropriations of Greek Art. 4-5 Units.
Upper division seminar. The history of the appropriation of Greek art by Rome, the Renaissance, Lord Elgin, and Manet. Enrollment limited to 6. Prerequisite: ARTHIST 102 or consent of instructor.

CLASSICS 160. Design Thinking for the Creative Humanities. 3-5 Units.
This class introduces Design Thinking to students in the Humanities and Social Sciences. Under a growth mindset of creative exploration and experiment, we will share a tool kit drawn from design thinking and the arts to develop our imaginative capacity to innovate. The standpoint is that creative imagination is not a property of the artistic or design genius but comprises skills and competencies that can be easily learned and adapted to all sorts of circumstances ¿ personal, organizational, business, community.
Same as: CLASSICS 260

CLASSICS 161. Introduction to Greek Art I: The Archaic Period. 4 Units.
The class considers the development of Greek art from 1000-480 and poses the question, how Greek was Greek art? In the beginning, as Greece emerges from 200 years of Dark Ages, their art is cautious, conservative and more abstract than life-like, closer to Calder than Michelangelo. While Homer describes the rippling muscles (and egos) of Bronze Age heroes, his fellow painters and sculptors prefer abstraction. This changes in the 7th century, when travel to and trade with the Near East transform Greek culture. What had been an insular society becomes cosmopolitan, enriched by the sophisticated artistic traditions of lands beyond the Aegean "frog pond." Imported Near Eastern bronzes and ivories awaken Greek artists to a wider range of subjects, techniques and ambitions. Later in the century, Greeks in Egypt learn to quarry and carve hard stone from Egyptian masters. Throughout the 6th century, Greek artists absorb what they had borrowed, compete with one another, defy their teachers, test the tolerance of the gods and eventually produce works of art that speak with a Greek accent. By the end of the archaic period, images of gods and mortals bear little trace of alien influence or imprint, yet without the contributions of Egypt and the Near East, Greek art as we know it would have been unthinkable.
Same as: ARTHIST 101

CLASSICS 162. Introduction to Greek Art II: The Classical Period. 4 Units.
The class begins with the art, architecture and political ideals of Periclean Athens, from the emergence of the city as the political and cultural center of Greece in 450 to its defeat in the Peloponnesian War in 404. It then considers how the Athenians (shell-shocked from war and three outbreaks of plague) and the rest of 4th century Greece rebuild their lives and the monuments that define them. Earlier 5th century traditions endure, with subtle changes, in the work of sculptors such as Kephisodotos. Less subtle are the outlook and output of his son Praxiteles. In collaboration with Phryne, his muse and mistress, Praxiteles challenged the canons and constraints of the past with the first female nude in the history of Greek sculpture. His gender-bending gods and men were equally audacious, their shiny surfaces reflecting Plato's discussion of Eros and androgyny. Scopas was also a man of his time, but pursued different interests. Drawn to the interior lives of men and woman, his tormented Trojan War heroes and victims are still scarred by memories of the Peloponnesian War, and a world away from the serene faces of the Parthenon. His Maenad, who has left this world for another, belongs to the same years as Euripides' Bacchae and, at the same time, anticipates the torsion and turbulence of Bernini and the Italian Baroque. The history and visual culture of these years remind us that we are not alone, that the Greeks grappled as we do with the inevitability and consequences of war, disease and inner daemons.
Same as: ARTHIST 102

CLASSICS 163. Artists, Athletes, Courtesans and Crooks. 5 Units.
The seminar examines a range of topics devoted to the makers of Greek art and artifacts, the men and women who used them in life and the afterlife, and the miscreants - from Lord Elgin to contemporary tomb-looters and dealers - whose deeds have damaged, deracinated and desecrated temples, sculptures and grave goods. Readings include ancient texts in translation, books and articles by classicists and art historians, legal texts and lively page-turners. Students will discuss weekly readings, give brief slide lectures and a final presentation on a topic of their choice, which need not be confined to the ancient Mediterranean.
Same as: ARTHIST 203

CLASSICS 165. Religions of Ancient Eurasia. 3-5 Units.
This course will explore archaeological evidence for the ritual and religions of Ancient Eurasia, including Greco-Roman polytheism, early Christianity, and early Buddhism. Each week, we will discuss the most significant themes, methods, and approaches that archaeologists are now using to study religious beliefs and rituals. Examples will focus on the everyday social, material, and symbolic aspects of religion. The course will also consider the role of archaeological heritage in religious conflicts today and the ethical dilemmas of archaeology in the 21st century.
Same as: ARCHLGY 109

CLASSICS 166. The Body in Roman Art. 4-5 Units.
(Formerly CLASSART 105.) Ancient and modern ideas about the body as ideal and site of lived experience. Themes include representation, portrayal, power, metamorphosis, and replication. Works that exemplify Roman ideas of heroism and power versus works portraying nude women, erotic youth, preserved corpses, and suffering enemies. Recommended: background in ancient Mediterranean art, archaeology, history, or literature. May be repeated for credit.
Same as: ARCHLGY 166

CLASSICS 167. Archaeology of Roman Slavery. 4-5 Units.
The archaeology of Roman slavery embodies a paradox: slavery was ubiquitous in Roman society but did not leave distinct material traces that archaeologists can easily identify. Explore that paradox by examining ancient writings on Roman slavery in conjunction with built spaces, visual images, and artifacts. Discuss more recent slave societies for purposes of comparison and contrast. Learn to analyze different kinds of historical and archaeological evidence, how to reconstruct social and spatial dynamics, and how ancient Roman slavery and society worked.

CLASSICS 168. Engineering the Roman Empire. 3-5 Units.
Enter the mind, the drafting room, and the building site of the Roman architects and engineers whose monumental projects impressed ancient and modern spectators alike. This class explores the interrelated aesthetics and mechanics of construction that led to one of the most extensive building programs undertaken by a pre-modern state. Through case studies ranging from columns, domes and obelisks to road networks, machines and landscape modification, we investigate the materials, methods, and knowledge behind Roman innovation, and the role of designed space in communicating imperial identity.
Same as: ARCHLGY 118

CLASSICS 169. Archaeology of Britannia. 3-4 Units.
Life in the Roman Empire: this course is a broad introduction to the archaeology of one of the best known provinces of the empire.
Same as: ARCHLGY 169

CLASSICS 170. History of Archaeological Thought. 5 Units.
Introduction to the history of archaeology and the forms that the discipline takes today, emphasizing developments and debates over the past five decades. Historical overview of culture, historical, processual and post-processual archaeology, and topics that illustrate the differences and similarities in these theoretical approaches.
Same as: ARCHLGY 103

CLASSICS 171. Byzantine Art and Architecture, 300-1453 C.E.. 5 Units.
This course explores the art and architecture of the Eastern Mediterranean: Constantinople, Jerusalem, Alexandria, Antioch, Damascus, Thessaloniki, and Palermo, 4th-15th centuries. Applying an innovative approach, we will probe questions of phenomenology and aesthetics, focusing our discussion on the performance and appearance of spaces and objects in the changing diurnal light, in the glitter of mosaics and in the mirror reflection and translucency of marble.
Same as: ARTHIST 106, ARTHIST 306

CLASSICS 173. Hagia Sophia. 5 Units.
This seminar uncovers the aesthetic principles and spiritual operations at work in Hagia Sophia, the church dedicated to Holy Wisdom in Constantinople. Rather than a static and inert structure, the Great Church emerges as a material body that comes to life when the morning or evening light resurrects the glitter of its gold mosaics and when the singing of human voices activates the reverberant and enveloping sound of its vast interior. Drawing on art and architectural history, liturgy, musicology, and acoustics, this course explores the Byzantine paradigm of animation arguing that it is manifested in the visual and sonic mirroring, in the chiastic structure of the psalmody, and in the prosody of the sung poetry. Together these elements orchestrate a multi-sensory experience that has the potential to destabilize the divide between real and oneiric, placing the faithful in a space in between terrestrial and celestial. A short film on aesthetics and samples of Byzantine chant digitally imprinted with the acoustics of Hagia Sophia are developed as integral segments of this research; they offer a chance for the student to transcend the limits of textual analysis and experience the temporal dimension of this process of animation of the inert.
Same as: ARTHIST 208, ARTHIST 408, CLASSICS 273

CLASSICS 177. Describing and Identifying Ancient Coins. 3-5 Units.
In numismatics, as in all other disciplines dealing with documentary sources of the ancient world (like epigraphy and papyrology), it is essential to work hands-on with the primary material. This course, an optional accompaniment to the graduate seminar in ancient numismatics, will focus on practical work with ancient coins from the collection at the Cantor Arts Center. students will learn how to describe and identify ancient coins and how to properly catalogue and classify them. A special focus will be on the identification of fakes. Participants will be trained to use the main reference works on ancient coinages in the Frank L. Kovacs library, recently donated to Stanford University.
Same as: CLASSICS 277

CLASSICS 178. Ancient Greek Political Thought. 3-5 Units.
This class traces some of the intellectual roots of modern political thought to authors of classical antiquity, such as Herodotus, Thucydides, Plato, Xenophon, and Aristotle. We will read portions of their work, in translation, as well as discuss the historical background. Topics will include: political duty, citizenship, and leadership; the origins and rise of Athenian direct democracy; the development of Greek law, constitutional change, and responses to civic strife and civil war.

CLASSICS 180. Introduction to Coptic I. 1-5 Unit.
For graduate students and advanced undergraduates. Introductory grammar of Sahidic Coptic. Recommended: knowledge of other ancient languages. Enrollment by permission of instructor.
Same as: CLASSICS 280

CLASSICS 181. Classical Seminar: Origins of Political Thought. 3-5 Units.
Political philosophy in classical antiquity, centered on reading canonical works of Thucydides, Plato, Aristotle against other texts and against the political and historical background. Topics include: interdependence, legitimacy, justice; political obligation, citizenship, and leadership; origins and development of democracy; law, civic strife, and constitutional change.
Same as: CLASSICS 381, ETHICSOC 130A, PHIL 176A, PHIL 276A, POLISCI 230A, POLISCI 330A

CLASSICS 184. Ancient and Modern Slavery. 3-5 Units.
The ancient Greeks and Roman created the largest and most durable slave system in world history. It formed one of the foundations of classical civilization. While cruelty and exploitation were ever-present features, ancient slavery was not race-based and many slaves came to be freed and fully integrated into society. We will investigate this complex institution from a comparative perspective and in the context of the experience of modern colonial slavery.

CLASSICS 185. Reading the Archimedes Palimpsest. 3-5 Units.
In this course we learn to read Medieval Greek manuscripts, concentrating on the most exciting of them all: the Archimedes Palimpsest. We begin by learning the Greek mathematical language, through a brief reading of Euclid. Following that, we learn how to read Euclid from manuscript and, following that, we proceed to read the Archimedes palimpsest itself. Course requires one year of Greek.

CLASSICS 188. Greek Philosophy on Poetry and the Arts. 3-5 Units.
Focus on Plato and Aristotle in English translations; detailed interpretation of both the well-known and the less-known works of the two philosophers on the topic. How their ideas about poetry and the arts were reinterpreted and sometimes misinterpreted by influential modern thinkers. Undergraduate course for juniors and seniors.

CLASSICS 194. Greece and Rome: A new model of antiquity. 3-5 Units.
Join archaeologist Michael Shanks in a tour through more than a thousand years of history, 700 BCE to 450 CE, debunking a host of myths and misconceptions about Graeco-Roman antiquity and offering a fresh view of what was driving the motor of ancient history. Drawing on new approaches that have hardly escaped academic journals and seminar rooms, we will avoid the plot of the well-worn stories and focus on the way the ancient world worked around the key concern of membership ¿ who belonged to civic community and who didn¿t, on what grounds, and with what consequences. The class will take you back to the origins of city life in the Near East, to the princely societies of Bronze Age Europe to show how the scene was set for the success of the city states of the Mediterranean, and how important it is to maintain a big perspective on Greece and Rome. Not afraid to offer critique of orthodoxy, we will share alternative views of familiar and unfamiliar features of antiquity, in the arts and culture, the likes of poetry and portraiture, philosophy and religious institutions, and in politics, including misunderstandings of Athenian democracy and Roman military might. You will come away from the class with a new view of antiquity and why we should still be fascinated by its relevance to today. Advanced undergraduates are welcome to register.

CLASSICS 197. Aristotle's Logic. 3-5 Units.
In this seminar we read through Aristotle's Prior Analytics, paying close attention to the relation between Aristotle's logic to Greek mathematics, and to its place within Aristotle's overall philosophy. Knowledge of Greek is not required. Open to advanced undergraduate students.
Same as: PHIL 347

CLASSICS 198. Directed Readings. 1-15 Unit.
(Formerly CLASSGEN 160.) May be repeated for credit.
Same as: Undergraduate

CLASSICS 199. Undergraduate Thesis: Senior Research. 1-10 Unit.
(Formerly CLASSGEN 199.) May be repeated for credit.

CLASSICS 200G. Special Topics: Greek Magic Texts. 4-5 Units.
This is a graduate level survey of magic and magic practices in Greek literary sources. We will read primary sources discussing magic, witchcraft, erotic spells, and ghosts from Herodotus through Lucian.

CLASSICS 201G. Survey of Greek Literature: Archaic Greek. 3-5 Units.
Required two-year sequence focusing on the origins, development, and interaction of Greek and Latin literature, history, and philosophy. Greek and Latin material taught in alternate years.

CLASSICS 201L. Latin Core I: Catiline. 3-5 Units.
In-depth reading (in selection or parts) of Cicero's Catilinarians, Pro Caelio, letters, the Rhetorica ad Herennium, and Sallust's Bellum Catilinae. In class we'll translate and analyze these texts, reviewing grammatical issues as needed and concentrating on elements of style. One consistent conceptual interest will be in the persona of Catiline. The philological commentaries by A.R. Dyck (In Cat.), R.G. Austin (Pro Cael.), and J.T. Ramsey (BC) will be our guides in our detailed reading. Participants will become familiar with these key literary works, their respective genres, and the significance of rhetoric; they will deepen their understanding of different prose styles; and they will sharpen their Latin translation skills.

CLASSICS 201LA. Survey of Latin Literature: Special Topics. 3-5 Units.
One-year sequence focusing on the origins, development, and interaction of Latin literature, history, and philosophy. Greek and Latin material taught in alternate years. Focus is on translation, textual criticism, genre, the role of Greece in shaping Roman literature, and oral versus written discourse.

CLASSICS 202G. Survey of Greek Literature: Classical Greek. 3-5 Units.
Required two-year sequence focusing on the origins, development, and interaction of Greek and Latin literature, history, and philosophy. Greek and Latin material taught in alternate years.

CLASSICS 202GB. Survey of Greek Literature: Special Topics. 3-5 Units.
Required two-year sequence focusing on the origins, development, and interaction of Greek and Latin literature, history, and philosophy. Greek and Latin material taught in alternate years.

CLASSICS 202L. Latin Core II: Age of Nero. 3-5 Units.
In-depth reading of a major poet or a themed selection of poetry, e.g. Vergil, Horace or Ovid. Courses may be theme-based, e.g. Aeneas in Vergil and Ovid, or genre-based, combining representative selections of epic, elegy or satire from various authors. Goals will be to acquire detailed knowledge of selected literary works and genres, become familiar with key scholarly debates, and sharpen translation skills by focused reading in the same or similar styles. Students will be responsible for an agreed amount of Latin reading each week, with the intention that less proficient readers especially will ramp up over the course of the term towards increased fluency. Most class time should be devoted to Latin translation and stylistic analysis; short tests, examinations and written assignments will reflect these goals. Assessment will be in the form of two midterms plus a final examination, with a view to the Reading List examination.

CLASSICS 203G. Survey of Greek Literature: Hellenistic and Late Greek. 3-5 Units.
Required two-year sequence focusing on the origins, development, and interaction of Greek and Latin literature, history, and philosophy. Greek and Latin material taught in alternate years.

CLASSICS 203L. Latin Core III: History of Literature. 3-5 Units.
Selected coverage of the translation/general reading list, with readings chosen so as to broaden experience beyond Core I-II, and to plac texts from those courses in a broader frame. Overall, this course will help prepare students for translation and general examinations, though naturally it can only gesture in that direction: full preparation is the student's responsibility. Since the aim of Core III will be to place Latin literature in a broader historical context, readings from overviews such as G.B. Conte, Latin Literature: a history and Michael von Albrecht's A History of Roman Literature will be useful. The course will also be wider in scope than Latin Core I-II, and for the sake of efficiency, will be organized by genre, with particular emphasis on Comedy, Satire, and the Novel. Philological commentaries by D. Christenson (Pl. Amph.), S. M. Braund (Juv.), and M. Smith (Petr.) will provide our major reading, along with shorter selections from Terence, Horace, and Apuleius. Course readings will also include some key scholarly works, in order to help students reach a high-level overview of Latin literary history. Limited class time will be devoted to Latin translation and stylistic analysis; discussion will instead emphasize historical developments. Course assessments will include regular writing assignments and several exams, with a view to preparing students for the Latin Literature examination.

CLASSICS 204A. Latin Syntax I. 4 Units.
Intensive review of Latin syntax. See CLASSICS 206A/B for supplemental courses. Students should take both syntax and semantics in the same quarters. Prerequisite for undergraduates: three years of Latin. First-year graduate students register for CLASSICS 204A.
Same as: CLASSICS 104A

CLASSICS 204B. Latin Syntax II. 4 Units.
Intensive review of Latin syntax. See CLASSICS 206A/B for supplemental courses. Students should take both syntax and semantics in the same quarters. Prerequisite for undergraduates: three years of Latin. First-year graduate students register for CLASSICS 204B.
Same as: CLASSICS 104B

CLASSICS 205A. Greek Syntax: Prose Composition. 5 Units.
The goal of this course is to provide a thorough review of Greek syntax, reinforced by reading selected short passages of Attic Greek in some detail, in order to develop a much greater command of the language and to increase reading skills as well as an understanding of the stylistic features of the major prose genres.
Same as: CLASSICS 105A

CLASSICS 206A. The Semantics of Grammar I. 2 Units.
Some theoretical linguistics for Classics students, particularly Latin teachers. Concentrates on the meaning of the inflectional categories. 206A: Sets and functions, Tense, Aspect, Argument Structure, Location. 206B: Quantification, Plurality, Modification, Negation, Modality.

CLASSICS 206B. The Semantics of Grammar II. 2 Units.
Some theoretical linguistics for Classics students, particularly Latin teachers. Concentrates on the meaning of the inflectional categories. 206A: Sets and functions, Tense, Aspect, Argument Structure, Location. 206B: Quantification, Plurality, Modification, Negation, Modality.

CLASSICS 207L. The Pastoral in Post-Classical Literature. 1 Unit.
For modern readers, the words pastoral and bucolic evoke picturesque scenes of pastureland and flocks of sheep an Arcadian paradise first envisaged by the classical poets Theocritus and Virgil. This weekly reading group traces the long legacy of pastoral poetry in post-classical Latin literature, including the works of Dante, Petrarch, Boccaccio, Sannazaro, and Milton. Through the songs of their shepherds, we will rediscover the pastoral landscape as a site of intergenerational conflict between poets from antiquity to the Renaissance. All readings will be done in the original Latin. Prerequisite: at least one full year of Latin or permission of instructor. Course may be taken independently or as an optional extra weekly session of CLASSICS 102L Advanced Latin: Virgil's Eclogues and Georgics (in the latter case, please register for CLASSICS 102L).

CLASSICS 208L. Latin 400-1700 CE. 3-5 Units.
Readings in later Latin, drawing on the vast bodies of texts from the late antique, medieval and early modern periods. Each week students will prepare selections in advance of class meetings; class time will be devoted to translation and discussion. Students taking this course will gain exposure to a wide range of later Latin texts; hone translation skills; and develop an awareness of the grammatical and stylistic features of post-classical Latin. The course is aimed both at classical Latinists seeking to broaden their reading experience and at medievalists and early modernists seeking to consolidate their Latin language skills. May be repeat for credit.nnPrior experience in Latin is required, preferably CLASSICS 11L. Equivalent accepted. Classics majors and minors may repeat for credit with advance approval from the Director of Undergraduate Studies. Does not fulfill the language requirement in Classical Studies track.
Same as: CLASSICS 6L, RELIGST 173X

CLASSICS 209L. Advanced Latin: Early Latin. 3-4 Units.
Most of the literature that we read in Latin is from a relatively late period of the language's history. However, Latin-speaking people wrote sophisticated texts hundreds of years before Cicero and Caesar, although much of this early writing has been lost to history. But not all! In this class we will explore the rich remains of Early Latin, with readings that include archaic inscriptions, early Latin prose from Cato the Elder, selections from the comedies of Plautus and Terence, and fragments from Andronius, Naevius, and Ennius, the first known writers of Latin epic poetry. In parallel, we will also explore the history of the Latin language during this early period, emphasizing the historical developments that distinguish Early Latin from Classical Latin, as well as the historical reasons so much early Latin writing was not preserved. Students should be able to read Latin at an Intermediate-to-Advanced level, but no experience with linguistics, Early Latin, or Roman History is expected or required. Classics majors and minors must take course for letter grade. May be repeated for credit with advance approval from the Director of Undergraduate Studies.
Same as: CLASSICS 102L

CLASSICS 210. Latin Prose Composition. 5 Units.
Latin Prose Composition pursues two goals: to help students consolidate their knowledge of Latin syntax by way of translating English sentences and (short) passages into Ciceronian Latin; and to help them appreciate differences in style by way of imitating the styles of different authors and periods, working within various subject-areas and genres. To these ends we will study selected grammatical problems, read (longer) passages in Latin (for the first half of the term, this reading will largely consist of Cicero¿s Pro Marcello), reserving particular attention for stylistics. Students will have to submit written translations from English into Latin every week; during the term¿s final third, they should expect to be working on longer compositions too (around 150 words in length).

CLASSICS 212. Introduction to Latin Epigraphy. 2-3 Units.
(Formerly CLASSGEN 219.) How to engage with epigraphic evidence through translation and contextualization of inscriptions. The materiality of inscriptions, geographical variation, and current scholarly debates in scholarship. How to use this evidence in research.

CLASSICS 213. Proseminar: Documentary Papyrology. 3-5 Units.
The focus will be on documentary papyrology. Students will be introduced to the basics of the discipline.

CLASSICS 214. Proseminar: Ancient Numismatics. 3-5 Units.
Graduate proseminar. Introductory overview of the heterogeneous coinages of antiquity, from the earliest coins of the Mediterranean to classical and Hellenistic Greek coins, Roman Republican, Imperial and provincial coinages as well as various ancient Oriental coinages. Topics include: numismatic terminology; techniques of coin production in antiquity; numismatic methodology (die studies; hoard studies; metrological analyses); quantifying coin production and ancient financial history; coins vs. other forms of money in antiquity; the study of ancient coinages in the Early Modern world. Students are expected to prepare talks on specific topics to be agreed upon. Required for ancient history graduate students; others by consent of instructor.

CLASSICS 215. Paleography of Medieval and Early Modern Manuscripts. 3-5 Units.
Introductory course in the history of writing and of the book, from the late antique period until the advent of printing. Opportunity to learn to read and interpret medieval manuscripts through hands-on examination of original materials in Special Collections of Stanford Libraries as well as through digital images. Offers critical training in the reading of manuscripts for students from departments as diverse as Classics, History, Philosophy, Religious Studies, English, and the Division of Languages Cultures and Literatures.
Same as: DLCL 209, HISTORY 309G, RELIGST 204

CLASSICS 216. Advanced Paleography. 5 Units.
This course will train students in the transcription and editing of original Medieval and Early Modern textual materials from c. 1000 to 1600, written principally in Latin and English (but other European languages are possible, too). Students will hone their archival skills, learning how to describe, read and present a range of manuscripts and single-leaf documents, before turning their hand to critical interpretation and editing. Students, who must already have experience of working with early archival materials, will focus on the full publication of one individual fragment or document as formal assessment.
Same as: HISTORY 315, RELIGST 329X

CLASSICS 218. Slavery, human trafficking, and the moral order: ancient and modern. 3 Units.
Slavery and trafficking in persons in the Greco-Roman world were legal and ubiquitous; today slavery is illegal in most states and regarded as a grave violation of human rights and as a crime against humanity under international law. In recent trends, human trafficking has been re-conceptualized as a form of "modern day slavery. " Despite more than a century since the success of the abolition movement, slavery and trafficking continue in the 21st century on a global scale. The only book for the course is: Peter Garnsey, Ideas of Slavery from Aristotle to Augustine, Cambridge University Press.
Same as: CLASSICS 118, HUMRTS 109

CLASSICS 219. Methods and approaches for ancient historians. 3-5 Units.
The interests and evidence used by classical historians have evolved over the past 50 years from a discipline based largely on literary texts and interested in political and military history. In recent decades interest have shifted to include a heavier emphasis on economic, social and cultural history encompassing issues of gender, cultural representation and identity, and economic performance. Whereas the traditional historiography of the earlier 20th c largely coincided with our elite male-authored texts, the newer interests require different types of evidence and analytic skills. This proseminar offers a very brief exposure to a wide range of approaches and evidence, including demography, numismatics, material culture, epigraphy, law, and digital tools. The expectation is that you will identify those that you will need for your research and will pursue them in future coursework or summer workshops.

CLASSICS 220. Pedagogy Workshop for Language Teaching. 1 Unit.
The primary goal of the course is to prepare students to teach elementary and secondary languages, both at Stanford and at other institutions. Much of the pedagogical material discussed will be applicable to other kinds of Classics teaching, but language instruction will be the focus. Secondary goals are to prepare students for pedagogy-related questions as they enter the job market, and to introduce pedagogy-facing career options. Course discussions will range broadly from ethical and philosophical questions about pedagogy to practical and logistical issues specific to graduate teaching. Readings, class visits, and in-class demonstrations will inform meeting discussions. The only requirement for enrolled students is full and engaged participation each week.This course is intended for Classics PhD students only.

CLASSICS 221. The Dome: From the Pantheon to the Millennium. 4-5 Units.
This course traces the history of the dome over two millennia, from temples to the gods to Temples of the State, and from cosmic archetype to architectural fetish. The narrative interweaves the themes of the dome as image of the Cosmos, religious icon, national landmark, and political monument. It examines the dome not only as a venue for structural innovation, but also metaphysical geometry and transcendent illusionism.nIndividual case studies will familiarize you with major architects from Hadrian to Richard Rogers and historical milestones from the Dome of the Rock to the Capitol in Washington DC. May be repeat for credit.
Same as: ARTHIST 114A, ARTHIST 314A, CLASSICS 121

CLASSICS 244. Classical Seminar: Rethinking Classics. 4-5 Units.
Literary and philosophical texts from Antiquity (including Homer, the Greek tragedians, Plato, Aristotle, Virgil, and Augustine). In each case, we will examine the cultural contexts in which each text was composed (e.g. political regimes and ideologies; attitudes towards gender and sexuality; hierarchies of class and status; discourses on "barbarians" and resident aliens). We will study various theoretical approaches to these books in an effort to "rethink" these texts in the 21st century.
Same as: DLCL 321

CLASSICS 256. Design of Cities. 3-5 Units.
Long-term, comparative and archaeological view of urban planning and design. Cities are the fastest changing components of the human landscape and are challenging our relationships with nature. They are the historical loci of innovation and change, are cultural hotspots, and present a tremendous challenge through growth, industrial development, the consumption of goods and materials. We will unpack such topics by tracking the genealogy of qualities of life in the ancient Near Eastern city states and those of Graeco-Roman antiquity, with reference also to prehistoric built environments and cities in the Indus Valley and through the Americas. The class takes an explicitly human-centered view of urban design and one that emphasizes long term processes.
Same as: ARCHLGY 156, CLASSICS 156

CLASSICS 257. The Archaeology of Cyprus. 3-5 Units.
This seminar course introduces students to the island of Cyprus in the eastern Mediterranean and its archaeology, from the origins of human occupation to the end of antiquity. Readings and discussions of material culture and texts will explore the history and practice of Cypriot archaeology in relation to those of Greece and the Near East. Key themes will include: islands and insularity, continuity vs. change, sex and identity, the rise of the state, regionalism, and imperial conquest. Suitable for both graduate and undergraduate students.
Same as: CLASSICS 157

CLASSICS 258. Theories of the Image: Byzantium, Islam and the Latin West. 5 Units.
This seminar explores the role of images in the three major powers of the medieval Mediterranean: the Umayyads, the Carolingians, and the Byzantines. For each the definition of an image- sura, imago, or eikon respectively-became an important means of establishing religious identity and a fault-line between distinct cultural traditions. This course troubles the identification of image with figural representation and presents instead a performative paradigm where chant or recitation are treated as images. As such, students will be able to see the connections between medieval image theory and contemporary art practices such as installation.
Same as: ARTHIST 209C, ARTHIST 409, CLASSICS 158, REES 409

CLASSICS 260. Design Thinking for the Creative Humanities. 3-5 Units.
This class introduces Design Thinking to students in the Humanities and Social Sciences. Under a growth mindset of creative exploration and experiment, we will share a tool kit drawn from design thinking and the arts to develop our imaginative capacity to innovate. The standpoint is that creative imagination is not a property of the artistic or design genius but comprises skills and competencies that can be easily learned and adapted to all sorts of circumstances ¿ personal, organizational, business, community.
Same as: CLASSICS 160

CLASSICS 262. Sex and the Early Church. 4 Units.
Sex and the Early Church examines the ways first- through sixth-century Christians addressed questions regarding human sexuality. We will pay particular attention to the relationship between sexuality and issues of gender, culture, power, and resistance. We will read a Roman gynecological manual, an ancient dating guide, the world's first harlequin romance novels, ancient pornography, early Christian martyrdom accounts, stories of female and male saints, instructions for how to best battle demons, visionary accounts, and monastic rules. These will be supplemented by modern scholarship in classics, early Christian studies, gender studies, queer studies, and the history of sexuality. The purpose of our exploration is not simply to better understand ancient views of gender and sexuality. Rather, this investigation of a society whose sexual system often seems so surprising aims to denaturalize many of our own assumptions concerning gender and sexuality. In the process, we will also examine the ways these first centuries of what eventually became the world's largest religious tradition has profoundly affected the sexual norms of our own time. The seminar assumes no prior knowledge of Judaism, Christianity, the bible, or ancient history.
Same as: FEMGEN 262, RELIGST 262, RELIGST 362

CLASSICS 273. Hagia Sophia. 5 Units.
This seminar uncovers the aesthetic principles and spiritual operations at work in Hagia Sophia, the church dedicated to Holy Wisdom in Constantinople. Rather than a static and inert structure, the Great Church emerges as a material body that comes to life when the morning or evening light resurrects the glitter of its gold mosaics and when the singing of human voices activates the reverberant and enveloping sound of its vast interior. Drawing on art and architectural history, liturgy, musicology, and acoustics, this course explores the Byzantine paradigm of animation arguing that it is manifested in the visual and sonic mirroring, in the chiastic structure of the psalmody, and in the prosody of the sung poetry. Together these elements orchestrate a multi-sensory experience that has the potential to destabilize the divide between real and oneiric, placing the faithful in a space in between terrestrial and celestial. A short film on aesthetics and samples of Byzantine chant digitally imprinted with the acoustics of Hagia Sophia are developed as integral segments of this research; they offer a chance for the student to transcend the limits of textual analysis and experience the temporal dimension of this process of animation of the inert.
Same as: ARTHIST 208, ARTHIST 408, CLASSICS 173

CLASSICS 277. Describing and Identifying Ancient Coins. 3-5 Units.
In numismatics, as in all other disciplines dealing with documentary sources of the ancient world (like epigraphy and papyrology), it is essential to work hands-on with the primary material. This course, an optional accompaniment to the graduate seminar in ancient numismatics, will focus on practical work with ancient coins from the collection at the Cantor Arts Center. students will learn how to describe and identify ancient coins and how to properly catalogue and classify them. A special focus will be on the identification of fakes. Participants will be trained to use the main reference works on ancient coinages in the Frank L. Kovacs library, recently donated to Stanford University.
Same as: CLASSICS 177

CLASSICS 280. Introduction to Coptic I. 1-5 Unit.
For graduate students and advanced undergraduates. Introductory grammar of Sahidic Coptic. Recommended: knowledge of other ancient languages. Enrollment by permission of instructor.
Same as: CLASSICS 180

CLASSICS 297. Dissertation Proposal Preparation. 1-10 Unit.
This course is to be taken twice during the third year of the Classics PhD program. It takes the form of a tutorial based on weekly meetings, leading to the writing of the dissertation prospectus. To register, a student obtain permission from the prospective faculty advisor.

CLASSICS 298. Directed Reading in Classics. 1-15 Unit.
This course is offered for students requiring specialized training in an area not covered by existing courses. To register, a student must obtain permission from the Classics Department and the faculty member who is willing to supervise the reading. This course can be repeated for credit, not to exceed 20 units total.
Same as: Graduate Students

CLASSICS 301. Gateways to Classics. 1 Unit.
(Formerly CLASSGEN 300A.) Focus on skills, methodologies and approaches in the study of Classics topics, with attention both to histories of the disciplines and to new developments. Required for first-year Classics graduate students.

CLASSICS 302. Workshop on Teaching in Classics. 1 Unit.
Introduction to pedagogical theories and techniques relevant to careers as Classics instructors. Classics faculty and advanced graduate students will lead sessions on language instruction, class discussions, assignments and feedback, and course design. Participants will read selections from modern scholarship on teaching and learning and engage in hands-on exercises.

CLASSICS 304. Developing a Classics Dissertation Prospectus. 1-3 Unit.
This workshop concentrates on the development process of writing a successful dissertation proposal and clarifies expectations of the defense process. Includes peer reviews of draft proposals with an aim to present provisional proposals by the end of term. Highly recommended for current third-year Classics Ph.D. students.

CLASSICS 311. The Poetics of the Odyssey. 4-5 Units.
An intensive study of the entire poem, with particular attention given to problems of narrative construction, characterization, diction, and themes. Basic knowledge of Homeric language and versemaking is a prerequisite. Reading will cover about 500 lines of Greek each week in addition to secondary readings (several book chapters or articles).

CLASSICS 315. Aristotle and the Object of Mathematical Reasoning. 4 Units.
The concept of definition plays a central role in Aristotle's treatment of both philosophical and scientific inquiry, as well as explanation. A definition is an account of what something is, and some definitions are used to guide causal inquiry whereas others function as explanatory starting points. In this course we will examine texts from his logic, natural science and metaphysics in order to see what the different kinds of definition are, how they obtained, and how they are capture the nature or essence of a definable object. Particular attention will be given to the role of matter in the definition of the form of a natural substance, state, process or activity. For instance, what role does a specification of physiological processes play in the definitions of emotions such as anger? No knowledge of Greek is required. May be repeat for credit.
Same as: PHIL 318

CLASSICS 318. Aristophanes: Comedy, and Democracy. 4-5 Units.
Intensive study of three plays in Greek (Knights, Peace, Ecclesiazusae) and the rest of the corpus in English, with reference to formal features and a focus on how Old Comedy related to the democratic practices of Athens.

CLASSICS 328. Augustine on Memory, Time, and the Self. 3-5 Units.
(Formerly CLASSGEN 336.) This course examines Augustine's "Confessions" as an autobiographical discourse. It investigates his theories of memory and of time and address different theories of the "self." How does memory and the passing of time affect the notion of the self? Does Augustine's "subjective" theory of time offer an identifiable self? Is the self constructed by narratives? We will locate these issues in their cultural context by investigating Christian and pagan discourses and practices in Late Antiquity.

CLASSICS 330. Satire. 3-5 Units.
The concept of "satire" as a social and literary force will be examined with equal attention given to examples in Greek and Latin. Texts to be analyzed include Greek iambos from the 7th century BC to early Byzantine times; selected portions of Old Comedy; Herodas; Lucian; Lucilius; Horace, Ovid, Juvenal, Persius, and Martial. Particular attention will be paid to authorial self-fashioning; limitations on verbal abuse; and ideas of propriety. All texts to be read in the original languages, with supplementary readings in English and on occasion French, German or Italian.

CLASSICS 331. Words and Things in the History of Classical Scholarship. 4-5 Units.
How have scholars used ancient texts and objects since the revival of the classical tradition? How did antiquarians study and depict objects and relate them to texts and reconstructions of the past? What changed and what stayed the same as humanist scholarship gave way to professional archaeologists, historians, and philologists? Focus is on key works in the history of classics, such as Erasmus and Winckelmann, in their scholarly, cultural, and political contexts, and recent critical trends in intellectual history and the history of disciplines.
Same as: HISTORY 303F

CLASSICS 336. Plato on Eros and Beauty. 3-5 Units.
We read Plato's Symposium and Phaedrus; topics: love, beauty, language (oral and written). Graduate seminar, but open to seniors.
Same as: PHIL 306C

CLASSICS 337. The Second Sophistic. 3-5 Units.
The class will introduce students to the most important aspects of the Second Sophistic: linguistic and literary classicism, rhetoric and performance, typical literary forms. Particular emphasis will be on the social and political background of the movement (Greek identity, social distinction, sophists and gender). For students who wish to take the class for 4 or 5 units, part of the readings will be in the original Greek.

CLASSICS 346. Aristotle's Protrepticus and its Background. 2-4 Units.
In this seminar, we shall read Aristotle's Protrepticus. This is an early work of Aristotle that attempts to turn the reader to a philosophic life and it is by far the least read of his works on ethics. It was only recovered in the 19th century and only in the past 15 years or so do we have a reliable text. Thus studies of it are very much underdeveloped. We shall also read as background some other protreptic works by Plato and the rhetorician Isocrates. 2 unit option is only for Philosophy PhD students beyond the second year.
Same as: PHIL 315

CLASSICS 347. Greek Epigram. 4-5 Units.
Greek verse inscriptions first appeared in the 8th century BCE and have been found throughout the Greek speaking Mediterranean. Their popularity continued until the early Byzantine periods. This course will treat the unique dynamics of epigram as a form that migrated from stone to text, the variety of ways in which its narrative potential was exploited within dedicated poetry books, its reception in Roman literature, and its relationships with other genres (especially epic and elegy).

CLASSICS 348. Philodemus: An Epicurean Thinker on Poetry and Music. 3-5 Units.
We will read and discuss Philodemus¿ surviving works on poetry and music as well as the particularly stimulating debates his influential ideas have inspired in classical scholarship over the last decades. An approach to Epicurean aesthetic thought will serve as introduction and background to the seminar.

CLASSICS 349. Classical Aesthetics and the Shaping of Modern Aesthetic Thought. 3-5 Units.
We will focus on the birth of modern aesthetic thought in 18th and 19th-century Europe and how influential thinkers such as Batteux, Baumgarten, Lessing, Kant, Schiller, Schelling, Hegel, and Nietzsche used Greek and Roman literature, art, and philosophy in shaping their divergent ideas about the essence and role of the aesthetic in human perception and culture. Open to senior undergraduate students, please contact instructor.

CLASSICS 350. History of Classical Languages: Dialects of Ancient Greek. 4-5 Units.
An intensive study of the history of ancient Greek through close reading and analysis of selected literary and epigraphic texts. Attention will be paid to developments in phonology and morphology in the light of reconstructed Common Greek and Indo-European forms. Some secondary readings in French and German. No prior experience in comparative-historical linguistics required.

CLASSICS 352. Doing Business in Classical Antiquity: Mediterranean Exchange. 3-5 Units.
Exchange was everywhere in the Mediterranean, from the individual household to the state. Yet the specific models by which goods changed hands were as varied as the ideas and values that moved alongside them. This seminar will explore theoretical approaches to commercial and non-commercial exchange, drawing primarily on the crucial but uneven bodies of archaeological evidence and historical sources in an effort to investigate the simple but hardly straightforward question of how business was undertaken in the Greco-Roman world.
Same as: ARCHLGY 327

CLASSICS 353. Archaeology: Post-Humanist Agendas. 3-5 Units.
How do people and their artifacts connect? Just what is the subject of archaeological history? A seminar reviewing the latest materialist approaches in archaeology and heritage studies.
Same as: ARCHLGY 353

CLASSICS 355. Landscape & Archaeology. 3-5 Units.
TBD.
Same as: ARCHLGY 355

CLASSICS 356. Mediterranean Regionalism. 3-5 Units.
The ancient world enjoys scholarly traditions of both grand pan-Mediterranean narratives and focused studies of the individual landscapes and peoples who comprise them. Within archaeology, these latter explorations generally rely on expedient geographical designations, modern political boundaries, or survey areas as focused ¿regions¿ for discussion. Defining and interrogating the regions created and experienced by ancient peoples and assembling these into a coherent larger ancient picture proves far more difficult. This seminar explores the varied forms of ancient regionalisms¿from archaeological (architecture, ceramics, coinage, sculpture, etc.) to social (language, religion, etc.)¿and tools for investigating such patterns of human interaction.
Same as: ARCHLGY 356

CLASSICS 358. The Archaeology of Ancient Mediterranean Environments. 4-5 Units.
This seminar examines the interplay between classical archaeologists¿ conceptions and analyses of ancient Mediterranean environments. These themes loom large now - during what might be called the ¿environmental turn¿ of the Anthropocene in the humanities and social sciences - and their increasing resonance provides the basis for critical reflection of the discipline¿s past and future trends. Topics will include: environmental determinism, ¿non-human¿ agency, the role of science in archaeological/historical practice, and the compartmentalization of environment/climate as analytic focus.

CLASSICS 360. Ancient Mediterranean Ports. 3-5 Units.
As ¿nodes of density in the matrix of connectivity¿ (Horden and Purcell 2000), ports provided the fundamental infrastructure for interaction on which ancient Mediterranean societies were built. This seminar explores the interrelated cultural and environmental factors behind maritime landscape development, as well as the comparative and complementary roles played by diverse port facilities in the socioeconomic life of local Mediterranean communities, from massive built harbors to unassuming beachside anchorages.

CLASSICS 363. Race in Greco-Roman Antiquity. 3-5 Units.
This course will investigate representations of black people in ancient Greek and Roman antiquity. In addition to interrogating the conflation of the terms "race" and "blackness" as it applies to this time period, students will learn how to critique the interference of racial ideologies in modern scholarship, and they will cross-examine the role that race and cultural imperialism have played in the formation of the current discipline of Classics. Students will be invited to incorporate materials that they deem crucial into this discussion of skin color in Greco-Roman antiquity. Therefore, this course will benefit greatly from those with a broad spectrum of interests related to this topic.
Same as: CSRE 363

CLASSICS 364. Longinus On the Sublime. 3-5 Units.
What is the sublime and what makes this text one of the most influential works of literary criticism, both ancient and modern? Detailed discussion of the text in the context of ancient debates; its reception in early modern and modern times.

CLASSICS 368. Gender, family, and household in ancient Rome. 4-5 Units.
The family and household were the fundamental units of production and reproduction in the Roman empire, embodying values and cultural assumptions about hierarchies of gender and status. This seminar will investigate the norms and assumptions as well as the demographic and economic realities, using literary, legal, and epigraphic evidence. Special attention will be paid to marginal members of the household, such as female and male slaves, freedwomen, and alumni (foster children).

CLASSICS 369. Mobility and Migration in the Ancient Mediterranean and Beyond. 3-5 Units.
Movement is fundamental to the human experience, and few regions and periods were so strongly defined by movement as the ancient Mediterranean. This seminar explores concepts of mobility and migration through their varied material remains, situating the Classical world in dialog with urgent contemporary issues of decolonization, environmental and economic migration, and border regimes. We consider how differing mobilities affected people¿s lives and informed their views of themselves and others, and how politics of mobility played out within Mediterranean connectivity. The nature and experience of past mobilities and migrations, and growing scholarly interest in their complexity, provide a lens through which to detect and interrogate its historical and ongoing impacts.

CLASSICS 370. Topics in Roman Art and Visual Culture. 3-5 Units.
Ancient Roman visual culture both reflected and actively shaped political, social, cultural and economic situations. Artworks, imagery and things seen played roles in constructing experience, intervening in human relationships, representing meaning, and framing possibility in particular ways. This seminar explores some of the most exciting recent work on Roman art and visual culture. Topics may include viewing and reception, materiality and object relations, framing, and others.

CLASSICS 373. Reception and Literacy in Roman Art. 5 Units.
(Formerly CLASSART 322.) Beyond a focus on artists and patrons: how Roman art was seen and understood by its contemporary viewers. Themes include memory, performance, gender, replication, and constructions of space. Goal is to draft a differentiated model of viewing and literacy, with attention to collective experience, hierarchy, access, and subversion.
Same as: ARTHIST 422

CLASSICS 376. Art, Ekphrasis, and Music in Byzantium and Islam. 5 Units.
Focus is on the interrelation of art, architecture, verbal description, poetry, and music, including the singing of psalms and recitation of the Qur'an. How ekphrasis, the style of writing vividly intended to transform the listeners into spectators, structures the perception of and response to artistic production be it an art object, building, or a musical performance. The role of ekphrasis in animating the inanimate and the importance of breath and spirit, which become manifest in visual, acoustic, olfactory, and gustatory terms. Religious and courtly settings: Hagia Sophia, the Great Palace of Constantinople, the Dome of the Rock, the palaces of Baghdad and Samarra, the mosque at Cordoba, Medinat al-Zahra and the Alhambra. Greek and Arabic writers on ekphrasis in translation, juxtaposing the medieval material to the ancient theories of ekphrasis and modern scholarship.
Same as: ARTHIST 405

CLASSICS 378. Ancient Greek Law and Justice. 3-5 Units.
The development and practice of law and legal procedure in the ancient Greek world, emphasizing the well documented case of classical Athens. Constitutional, criminal, and civil law, approached through analysis of actual laws and speeches by litigants in Athenian courtrooms. Review of a growing scholarship juxtaposing Greek law to other prominent legal traditions and exploring the role of law in Greek social relations, economics, and literature, and its relationship to Greek conceptions of justice.
Same as: POLISCI 337L

CLASSICS 380. Ancient Empires. 4-5 Units.
What is an empire? How did they begin? Why have some imperialists been successful, while others failed dismally? Why do some people collaborate with imperialism, while others resist fiercely? This seminar examines the empires of the ancient East Mediterranean between 800 and 300 BC, focusing on two great imperial powers (Assyria, Persia) and three smaller societies on the receiving end of imperial conquest (Israel, Egypt, Greece), and asking why societies that were successful in resisting imperialism often then tried to create empires themselves. The evidence used comes mainly from epigraphy, the Hebrew Bible, and Herodotus. Some background in ancient history and/or comparative politics preferred.

CLASSICS 381. Classical Seminar: Origins of Political Thought. 3-5 Units.
Political philosophy in classical antiquity, centered on reading canonical works of Thucydides, Plato, Aristotle against other texts and against the political and historical background. Topics include: interdependence, legitimacy, justice; political obligation, citizenship, and leadership; origins and development of democracy; law, civic strife, and constitutional change.
Same as: CLASSICS 181, ETHICSOC 130A, PHIL 176A, PHIL 276A, POLISCI 230A, POLISCI 330A

CLASSICS 382. High-Stakes Politics: Case Studies in Political Philosophy, Institutions, and Interests. 3-5 Units.
Normative political theory combined with positive political theory to better explain how major texts may have responded to and influenced changes in formal and informal institutions. Emphasis is on historical periods in which catastrophic institutional failure was a recent memory or a realistic possibility. Case studies include Greek city-states in the classical period and the northern Atlantic community of the 17th and 18th centuries including upheavals in England and the American Revolutionary era.
Same as: POLISCI 231, POLISCI 331

CLASSICS 384A. Ancient Greek Economic Development. 4-5 Units.
(Formerly CLASSHIS 330A.) Drawing on Herodotus and other literary sources, ancient historians have traditionally seen classical Greece as a very poor land. Recent research, however (much of it conducted here at Stanford), suggests that Greece in fact saw substantial economic growth and rising standards of living across the first millennium BCE. This seminar tests the poor Hellas/wealthy Hellas models against literary and archaeological data. We will develop and test hypotheses to explain the rate and pace of economic change in the Greek world.
Same as: POLISCI 430A

CLASSICS 384B. Ancient Greek Economic Development. 1-5 Unit.
(Formerly CLASSHIS 330B.) Drawing on Herodotus and other literary sources, ancient historians have traditionally seen classical Greece as a very poor land. Recent research, however (much of it conducted here at Stanford), suggests that Greece in fact saw substantial economic growth and rising standards of living across the first millennium BCE. This seminar tests the poor Hellas/wealthy Hellas models against literary and archaeological data. We will develop and test hypotheses to explain the rate and pace of economic change in the Greek world.
Same as: POLISCI 430B

CLASSICS 388. Histories of Greece. 3-5 Units.
The first modern historical rewritings of ancient Greece: What made them modern? How did they shape what Greek history is today? Texts and things in the modern recovery of the Greek past; women, colonies, democracy and art as modern subjects of ancient Greek history; modern historiographical methods and theories in their social and cultural contexts; modern historicity and the Greek past. Reading includes ancient historians, Renaissance antiquarians, eighteenth-century Greek histories and Enlightenment writings on ancient Greeks, and current intellectual history scholarship.

CLASSICS 390. Origins of Political Thought. 3-5 Units.
Political philosophy in classical antiquity, focusing on canonical works of Thucydides, Plato, Aristotle, and Cicero. Historical background. Topics include: political obligation, citizenship, and leadership; origins and development of democracy; and law, civic strife, and constitutional change. This course is open to PhD students only. Non-PhD students should enroll in POLISCI 230A/330A (also listed as CLASSICS 181/381, PHIL 176A/276A) Classical Seminar: Origins of Political Thought.
Same as: PHIL 276D, POLISCI 430

CLASSICS 391. Early Empires: Han and Rome. 4-5 Units.
(Formerly CLASSHIS 344.) This course systematically compares the Han Empire and the Roman Empire in order to provide insight into the distinctive features of the empires as a political and social type. Topics examined will include geographic frames, the nature of the ruler, the role of the city, the form and function of military forces, religious aspects, legal codes, structures of kinship, and the relation of these states to the outside world.

CLASSICS 393. Ancient inequalities. 5 Units.
This seminar explores the history and archaeology of socio-economic inequality in the ancient world (broadly defined) from a comparative and transdisciplinary perspective.

CLASSICS 395. The Greeks and the Rational: Deliberation, Strategy, and Choice in Ancient Greek Political Thought. 3-5 Units.
The course explores the role of practical reasoning (instrumental rationality) in the ethical-political works of e.g. Plato and Aristotle, in the historical-political projects of e.g. Herodotus and Thucydides, and in the design of classical Greek institutions. We ask to what degree ancient Greeks shared intuitions concerning the rationality of choice with contemporary decision and game theorists. The Greek tradition recognized the limits of expected utility maximization in predicting or explaining the actual behavior of individuals, groups, and states, and sought to explain divergences from predicted rational behavior. Greek social theorists may, therefore, also have shared some of the intuitions of contemporary behavioral economists. Topics will include individual rationality, rationality of groups and states, the origins of social order, emergence and persistence of monarchical and democratic regimes, conflict and cooperation in interstate relations, competition and cooperation in exchange. Examining the Greek tradition of thought on practical reasoning has some implications for we might think about deliberation and bargaining in contemporary democratic-political, interpersonal-ethical, and interstate contexts. PREREQUISITES: Students in the course are expected to have a background in EITHER classical studies (literature, history, or philosophy), OR Greek political thought (Origins of Political Thought or equivalent) OR in formal/positive political theory. Registration for undergraduates is with permission of instructor (email jober@stanford.edu).
Same as: POLISCI 238R, POLISCI 438R

CLASSICS 396. Humanities+Design: Visualizing the Grand Tour. 4-5 Units.
Study of the eighteenth-century Grand Tour of Italy through visualization tools of the digital age. Critical readings in both visual epistemology and current Grand Tour studies; interrogating the relationship between quantitative and qualitative approaches in digital humanities; what new insights in eighteenth-century British travel to Italy does data visualization offer us? Students will transform traditional texts and documents into digital datasets, developing individual data analysis projects using text mining, data capture and visualization techniques.
Same as: DLCL 396, HISTORY 336E

CLASSICS 399. Dissertation Research in Classics. 1-10 Unit.
This course is elected once a student is ready to begin research for the dissertation, usually shortly after admission to candidacy. To register, a student must obtain permission from the faculty member who is willing to supervise the research.

CLASSICS 801. TGR M.A. Project. 0 Units.
(Formerly CLASSGEN 801.).

CLASSICS 802. TGR Ph.D. Dissertation. 0 Units.
(Formerly CLASSGEN 802.).

COMMUNICATION

Courses offered by the Department of Communication are listed under the subject code COMM on the Stanford Bulletin's ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=COMM&filter-catalognumber-COMM=on).

Stanford's Department of Communication focuses on media in all its forms. The department studies the processes and effects of mass communication: the nature and social role of the various media; their structure, function, and ethics; and their impact on the political system, culture, and society. In this context, it considers not only traditional mass media, such as newspapers, magazines, radio, television, and film, but also information technology, online media, virtual reality, and the Internet. Students are trained as social scientists who can study the media and as potential practitioners in the use of the media in journalism, mass communications, and digital media. The department combines theory and practice and fosters individual research opportunities for its students, employing both quantitative and qualitative approaches.

The Department of Communication engages in research in communication and offers curricula leading to the B.A., M.A., and Ph.D. degrees. The M.A. degree prepares students for a career in journalism. The department also offers current Stanford University undergraduates a coterminal program with an M.A. emphasis in Media Studies. The Ph.D. degree leads to careers in university teaching and research-related specialties.

The John S. Knight Journalism (JSK) Fellowships champions innovators and entrepreneurs from around the world as they reinvent journalism. Each year, the program gives up to 20 fellows the resources to test their ideas for improving the quality of news and information reaching the public, while challenging misinformation and disinformation; holding the powerful accountable; strengthening local news; and fighting bias, intolerance and injustice.

Mission of the Undergraduate Program in Communication

The mission of the undergraduate program in Communication is to expose students to a broad-based understanding of communication theory and research. Students in this major are expected to become familiar with the fundamental concerns, theoretical approaches, and methods of the field, and to acquire advanced knowledge in one or more sub-areas of the discipline. This is accomplished by several levels of study: a core curriculum; intermediate-level electives; and optional internships. Majors also have the opportunity to do advanced research projects. The department is committed to providing students with analytical and critical skills needed for success in graduate programs, professional schools, or immediate career entry.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. an understanding of core knowledge within the discipline of communication.
2. the ability to communicate ideas clearly and persuasively in writing.
3. the ability to analyze a problem and draw correct inferences using qualitative and/or quantitative analysis.
4. the ability to evaluate theory and critique research within the discipline of communication.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in communication and to prepare students for professional careers or doctoral studies. This is achieved through completion of courses in the primary field, as well as related areas, and experience with independent work and specialization.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in communication. Through completion of advanced coursework and rigorous training in research, the doctoral program prepares students to make original contributions to the knowledge of communication and to interpret and present the results of such research.

Admission

Prospective Undergraduates: Applications are available at Undergraduate Admissions (http://admission.stanford.edu).

Prospective Coterminal Students: See the University Registrar's (https://registrar.stanford.edu/students/coterminal-degree-programs/applying-coterm/) web site for information on how to apply.

Prospective Graduate Students: Applications are available online at Graduate Admissions (http://gradadmissions.stanford.edu).

The department requires that applicants to the doctoral program submit verbal, quantitative, and analytic scores from the Graduate Record Examination (GRE). Admission to each graduate degree program is competitive and based on the pool of applicants each year rather than on standard criteria that can be stated in advance. See Communication Department admission procedures and requirements (https://comm.stanford.edu/phd/applications/) for detailed information about admission to the department.

Stanford students who are completing an M.A. degree and who desire entry into the Ph.D. program must file a Graduate Program Authorization Petition (https://registrar.stanford.edu/students/graduate-degree-progress/graduate-program-authorization-petition/) in Axess. Such students are considered alongside all other doctoral applicants.

Bachelor of Arts in Communication

The Department of Communication offers a Bachelor of Arts in Communication. Eligible students may also pursue a Bachelor of Arts with Honors (p. 1183). The department also offers a minor in Communication (p. 1183).

The undergraduate curriculum is intended for liberal arts students who wish to develop an understanding of communication in society, drawing on the perspective of the social sciences. Undergraduates majoring in Communication are expected to become acquainted with the fundamental concerns, theoretical approaches and methods of the field, and to acquire advanced knowledge in one or more of the sub-areas of communication: institutions, processes, and effects.

While the department does not attempt to provide comprehensive practical training at the undergraduate level, the curriculum provides a diverse range of internship opportunities, including professional print journalism, some of which are funded by the department's Rebele Internship Program. The department is committed to providing students with analytical and critical skills for future success in graduate programs, professional schools, or immediate career entry.

Preparation for the Major

Before declaring the major, students must have completed or be concurrently enrolled in one of the following core courses. Completion of any of these courses counts toward major requirements.

		Units
COMM 1	Introduction to Communication	5
or COMM 1B	Media, Culture, and Society	
COMM 106	Communication Research Methods	5
COMM 108	Media Processes and Effects	5

How to Declare the Major in Communication

Students interested in declaring the major should apply via Axess and meet with the student services administrator in Building 120, Room 110A, during scheduled office hours.

Degree Requirements

The major is structured to provide several levels of study: a core curriculum intended to expose students to a broad-based understanding of communication theory and research, and a number of intermediate-level options and electives. Majors also have the opportunity to do advanced research in the form of an honors thesis.

To be recommended for the B.A. degree in Communication, the student must complete at least 60 units (approximately 12 courses) in the department. No more than 10 units of course work outside of the department or transfer credit may be applied to meet department requirements.

Communication majors must receive a letter grade for all Communication courses unless they are offered only for satisfactory/no credit (S/NC), and must maintain a grade point average (GPA) of 2.0 (C) in courses towards the major. Only courses with a grade of 'C-' or above count towards the major. Therefore, majors who receive a grade of 'D+' or below in one of the core courses must repeat the course.

Course Requirements

Core Courses and Statistics Requirement

All undergraduate majors are required to complete a set of core communication courses.

The department also requires completion of or concurrent registration in an introductory statistics course (STATS 60 Introduction to Statistical Methods: Precalculus) when registering for COMM 106 Communication Research Methods in preparation for courses in methodology and advanced courses in communication processes and effects. It is recommended that this be done as soon as possible so as not to prevent registration in a course requiring statistical understanding.

Area Courses

In addition to the core courses and the statistics requirement, undergraduate majors select courses from the two areas described below. Many of the courses require core courses as prerequisites. Majors select a total of four area courses, taking at least one from each area. The Writing in the Major (WIM) course also fulfills one of the area course requirements.

Area I: Communication Processes and Effects

Area I emphasizes the ways in which communication scholars conduct research in, and consider the issues of, human communication. These studies aim to provide expert guidance for social policy makers and media professionals.

Area II: Communication Systems and Institutions

Area II considers the roles and interaction of institutions such as broadcasting, journalism, constitutional law, and business within communication and mass communication contexts.

		Units
Statistics Prerequisite		
Completion of or concurrent enrollment in STATS 60 required when enrolling in COMM 106. STATS 60 does not count towards total required major units.		
STATS 60	Introduction to Statistical Methods: Precalculus	
Core Courses		
Core courses are usually offered only once each year.		
COMM 1	Introduction to Communication	5
or COMM 1B	Media, Culture, and Society	
COMM 106	Communication Research Methods	5
COMM 108	Media Processes and Effects	5
WIM (Writing in the Major) Course: select one of the following		
COMM 104W	Reporting, Writing, and Understanding the News	5
or COMM 120W	The Rise of Digital Culture	
or COMM 137W	The Dialogue of Democracy	
or COMM 142W	Media Economics	
or COMM 143W	Communication Policy and Regulation	
or COMM 177SW	Specialized Writing and Reporting: Sports Journalism	
or COMM 186W	Media, Technology, and the Body	
Area Courses		**15**
Select a total of four courses, at least one from each area.		
Area I: Communication Processes and Effects		
COMM 124	Truth, Trust, and Tech	
COMM 135	Deliberative Democracy and its Critics	
COMM 137W	The Dialogue of Democracy	
COMM 145	Personality and Digital Media	
COMM 162	Campaigns, Voting, Media, and Elections	
COMM 164	The Psychology of Communication About Politics in America	
COMM 166	Virtual People	
COMM 172	Media Psychology	
COMM 326	Advanced Topics in Human Virtual Representation	
Area II: Communication Systems and Institutions		
COMM 104W	Reporting, Writing, and Understanding the News	
COMM 116	Journalism Law	
COMM 120W	The Rise of Digital Culture	
COMM 125	Perspectives on American Journalism	
COMM 142W	Media Economics	
COMM 143W	Communication Policy and Regulation	
COMM 151	The First Amendment: Freedom of Speech and Press	
COMM 152	Constitutional Law	
COMM 153	Political Campaigning in the Internet Age	
COMM 154	The Politics of Algorithms	
COMM 157	Information Control in Authoritarian Regimes	
COMM 158	Censorship and Propaganda	
COMM 177B	Big Local Journalism: a project-based class	
COMM 177I	Investigative Watchdog Reporting	
COMM 177P	Programming in Journalism	
COMM 177SW	Specialized Writing and Reporting: Sports Journalism	

COMM 177T	Building News Applications	
COMM 177Y	Specialized Writing and Reporting: Foreign Correspondence	
COMM 184	Race and Media	
COMM 186W	Media, Technology, and the Body	
Electives		**20-30**
The remainder of the 60 required units may be fulfilled with any elective Communication courses or crosslisted courses in other departments.		
Total Units		**60**

Honors Program

The honors program provides Communication majors the opportunity to undertake a significant program of research in an individual professor/student mentoring relationship. The aim is to guide students through the process of research, analysis, drafting, rethinking, and redrafting, which is essential to excellence in scholarship. Working one-on-one with a faculty advisor, seniors earn 15 Communication units culminating in an honors thesis.

The designation "with honors" is awarded by the Department of Communication to those graduating seniors who, in addition to having completed all requirements for the Communication major:

1. complete an honors thesis;
2. maintain a distinguished GPA in all Communication course work;
3. are recommended by the Communication faculty.

In order to be eligible for the honors program, interested majors complete the following requirements:

1. Achieve a GPA of 3.3 in Communication courses
2. Complete the core communication courses for the Communication major including the statistics requirement
3. Receive a grade of 'B+' or better in COMM 106 Communication Research Methods
4. Select an advisor
5. Submit an application to the department by the end of their junior year. See the department's honors web site to download an application form (https://comm.stanford.edu/mm/2013/02/HonorsApp.pdf).

Students are expected to make steady progress on their honors thesis throughout the year.

A final copy of the honors thesis must be submitted to the thesis advisor for review and grading and a second copy uploaded to the Stanford Digital Repository (https://sdr.stanford.edu) by the end of week eight of Spring Quarter of the student's senior year (exact date to be arranged).

Honors work may be used to fulfill Communication elective credit, but must be completed and a letter grade submitted prior to graduation. A student failing to fulfill all honors requirements may still receive independent study credit for work completed, which may be applied toward fulfilling major requirements.

Minor in Communication

Preparation

Before declaring the minor, students must have completed or be concurrently enrolled in one of the following:

		Units
COMM 1	Introduction to Communication	5
COMM 1B	Media, Culture, and Society	5
COMM 106	Communication Research Methods	5
COMM 108	Media Processes and Effects	5

Students interested in declaring the minor should do so no later than the deadline for their application to graduate by applying via Axess and meeting with the student services administrator in building 120, room 110A.

Program of Study

The minor is structured to provide a foundation for advanced course work in communication through a broad-based understanding of communication theory and research.

Students are required to take 35 units (approximately 7 courses), not counting statistics, to complete the minor. The curriculum consists of three introductory communication core courses that include:

		Units
COMM 1	Introduction to Communication	5
or COMM 1B	Media, Culture, and Society	
COMM 106	Communication Research Methods	5
COMM 108	Media Processes and Effects	5

Core courses are usually offered only once each year. The department also requires completion of -- or concurrent registration in -- an introductory statistics course (STATS 60 Introduction to Statistical Methods: Precalculus) when registering for COMM 106 Communication Research Methods in preparation for courses in methodology and advanced courses in communication processes and effects. It is recommended that this be done as soon as possible so as not to prevent registration in a course requiring statistical understanding. The statistics course does not count toward the 35 units to complete the Communication minor.

In addition to the three core courses and the statistics course, students are required to take one course in each of the two areas as specified below.

The remainder of the 35 required units may be fulfilled with any intermediate-level elective Communication courses or crosslisted courses in other departments. No more than 5 units of course work outside of the department or transfer credit may be applied to meet department requirements. Communication minors must receive a letter grade for all Communication courses unless they are offered only for satisfactory/no credit (S/NC), and must maintain a grade point average (GPA) of 2.0 (C) in courses towards the minor. Only courses with a grade of C- or above count towards the minor. Some courses are not offered every year. Refer to ExploreCourses (http://explorecourses.stanford.edu/) for details.

Area I: Communication Processes and Effects

		Units
Select one of the following:		
COMM 124	Truth, Trust, and Tech	5
COMM 135	Deliberative Democracy and its Critics	3-5
COMM 137W	The Dialogue of Democracy	4-5
COMM 145	Personality and Digital Media	5
COMM 162	Campaigns, Voting, Media, and Elections	5
COMM 164	The Psychology of Communication About Politics in America	5
COMM 166	Virtual People	5
COMM 172	Media Psychology	5
COMM 326	Advanced Topics in Human Virtual Representation	1-5

Area II: Communication Systems/Institutions

		Units
Select one of the following:		
COMM 104W	Reporting, Writing, and Understanding the News	5
COMM 116	Journalism Law	5
COMM 120W	The Rise of Digital Culture	5
COMM 125	Perspectives on American Journalism	5
COMM 142W	Media Economics	5
COMM 143W	Communication Policy and Regulation	5
COMM 151	The First Amendment: Freedom of Speech and Press	5
COMM 152	Constitutional Law	3
COMM 153	Political Campaigning in the Internet Age	3
COMM 154	The Politics of Algorithms	5
COMM 157	Information Control in Authoritarian Regimes	5
COMM 158	Censorship and Propaganda	5
COMM 177B	Big Local Journalism: a project-based class	5
COMM 177I	Investigative Watchdog Reporting	5
COMM 177P	Programming in Journalism	5
COMM 177SW	Specialized Writing and Reporting: Sports Journalism	5
COMM 177T	Building News Applications	5
COMM 177Y	Specialized Writing and Reporting: Foreign Correspondence	5
COMM 184	Race and Media	5
COMM 186W	Media, Technology, and the Body	5

Elective courses
Totaling 10 units.

Master of Arts in Communication — Journalism Subplan

University requirements for the master's degree are described in the "Graduate Degrees (http://www.stanford.edu/dept/registrar/bulletin/4901.htm)" section of this bulletin. Work to fulfill graduate degree requirements must be in courses numbered 100 or above.

The department awards both a terminal and a coterminal M.A. degree in Communication with a subplan in Journalism. The department also offers a coterminal M.A. degree in Communication with a subplan in Media Studies (p.). The subplan prints on the transcript, but not on the diploma.

Stanford Journalism Program

The master's program in Journalism focuses on the knowledge and skills required to report, analyze, and write authoritatively about public issues and digital media. The curriculum combines a sequence of specialized reporting and writing courses with seminars and courses devoted to deepening the students' understanding of the roles and responsibilities of American news media in their coverage of public issues.

The program emphasizes preparation for the practice of journalism and a critical perspective from which to understand it. The program's objective is twofold:

1. to graduate talented reporters and writers to foster public understanding of the significance and consequences of public issues and the debates they engender; and
2. to graduate thoughtful journalists to respond openly and eloquently when called upon to explain and defend the methods and quality of their reporting and writing.

See the program's Mission Statement (https://journalism.stanford.edu/mission/).

Admission to the Terminal Master's Program in Communication

Detailed information on application requirements is available on the Graduate Program in Journalism (https://journalism.stanford.edu/admissions/applications/) website. GRE scores are not required. Application Deadline: December 1, 2020 at 11:59 p.m. Recommenders have until January 4, 2021 to submit their online recommendation letters.

Prospective applicants to the terminal master's program in Communication with a subplan in Journalism must submit the following:

1. Application: see Graduate Admissions (https://gradadmissions.stanford.edu/applying/).
2. Statement of purpose.
3. Three journalistic samples
4. Transcripts
5. Resume
6. Three letters of recommendation
7. TOEFL test scores for non-native speakers of English. Exemptions are granted to applicants who have earned (or will earn, before enrolling at Stanford) a U.S. bachelor's, master's, or doctoral degree from a college or university accredited by a regional accrediting association in the United States, or the international equivalent degree from a university of recognized standing in a country in which all instruction is provided in English.

Admission to the Coterminal Master's Program in Communication

Detailed information on application requirements is available on the Coterminal M.A. in Communication – Journalism Track website. See the Registrar's Office information about coterminal degree programs (https://registrar.stanford.edu/students/coterminal-degree-programs/) and contact the Student Services Manager to discuss your options.

Applicants must submit their application and, if admitted, respond to the offer of admission no later than the quarter prior to the expected completion of their undergraduate degree. Applicants must have declared an undergraduate major and earned a minimum of 120 units toward graduation (UTG) as shown on the undergraduate unofficial transcript (including allowable advanced placement (AP) and transfer credit) and completed at least six academic quarters.

Online applications must be submitted no later than January 27, 2021 to start the program in Spring Quarter 2021-22.

Applicants submit the following:

- Application for Admission to Coterminal Master's Program (https://www.applyweb.com/stanterm/)
- Preliminary program proposal
- Statement of purpose
- Three letters of recommendation and recommendation forms from Stanford professors
- Three samples of journalistic work
- Undergraduate coterm program approval form (available on the eForms portal in Axess)
- A current unofficial Stanford transcript

GRE scores are not required.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Degree Requirements

The M.A. degree in Communication (Journalism) requires a minimum of 45 units. Coterminal Journalism students may count coursework taken after summer of freshman year towards the 45 units of unduplicated work with approval by the Director of the Graduate Program in Journalism.

Except for COMM 289P Journalism Thesis, all courses must be taken for a letter grade unless they are offered only for satisfactory/no credit (S/NC). To remain in good academic standing, students must maintain a grade point average (GPA) of 3.0 or better. Graduation requires a GPA of 3.0 or better.

Course Requirements

The curriculum includes the following required courses, including a master's project class:

		Units
Required Courses		
COMM 216	Journalism Law	4
COMM 225	Perspectives on American Journalism	4
COMM 273D	Public Affairs Data Journalism I	4
COMM 274D	Public Affairs Data Journalism II	4
COMM 275	Multimedia Storytelling: Reporting and Production Using Audio, Still Images, and Video	3-4
COMM 279	News Reporting & Writing Fundamentals	3-4
COMM 289P	Journalism Thesis (see below)	2-4
Two Specialized Reporting Courses		
Take two specialized reporting courses, chosen from a list of about twelve, and three approved electives from among graduate-level courses in the Department of Communication, or from among courses on campus that deal substantively with issues of public importance.		
Total Units		45

Journalism Project

Journalism Thesis (COMM 289P), a requirement for graduation, is intended as an opportunity for students to showcase their talents as writers and reporters. It is also an opportunity to undertake an in-depth critique of an area of journalism in which the author has a special interest. Work on the project usually begins during the second to last quarter and continues through the student's final quarter in the form of the class Journalism Thesis (COMM 289P). Completed master's projects must be submitted to the project advisor no later than the last day of classes in the student's final quarter. The project represents a major commitment of time, research, and writing. Although it is not a requirement that the project be published, it must be judged by a member of the faculty to be of a quality acceptable for publication. At a minimum, the project should demonstrate the rigor and discipline required of good scholarship and good journalism; it should offer ample evidence of students' ability to gather, analyze, and synthesize information in a manner that goes beyond what ordinarily appears in daily news media.

Master of Arts in Communication — Media Studies

University requirements for the master's degree are described in the "Graduate Degrees (http://www.stanford.edu/dept/registrar/bulletin/4901.htm)" section of this bulletin. Work to fulfill graduate degree requirements must be in courses numbered 100 or above.

The department offers a coterminal M.A. degree in Communication with a subplan in Media Studies. The department also awards both a terminal and a coterminal M.A. degree in Communication with a subplan in Journalism (http://exploredegrees.stanford.edu/communication/#maincommunicationtext). The subplan prints on the transcript, but not on the diploma.

The coterminal M.A. Degree Program in Communication (Media Studies) is a small program that permits current Stanford undergraduates to study for a bachelor's and a master's degree simultaneously. The program provides a broad introduction to scholarly literature in mass communication. With early and careful planning, students may be able to complete the coterminal master's degree in Communication by the end of their senior year or within one to two additional quarters. See the Registrar's Office information about coterminal degree programs (https://registrar.stanford.edu/students/coterminal-degree-programs/) and contact the Student Services Manager to discuss your options.

The following majors are some of those that best provide a grounding in a theoretical tradition relevant to the study of communication: communication, computer science, economics, English, history, linguistics, philosophy, political science, psychology, public policy, STS, sociology, and symbolic systems.

Admission

Coterminal Master's Program in Communication — Media Studies

See the Coterminal M.A. in Communication – Media Studies Track (https://comm.stanford.edu/coterminal-masters/media-studies/) website for additional information on application requirements.

Applicants must submit their application and, if admitted, respond to the offer of admission no later than the quarter prior to the expected completion of their undergraduate degree. Applicants must have declared an undergraduate major and earned a minimum of 120 units toward graduation (UTG) as shown on the undergraduate unofficial transcript (including allowable advanced placement (AP) and transfer credit) and completed at least six academic quarters.

A $125 application fee is assessed for each coterminal application. This fee will be added to the student's university bill once the applicant has been admitted and accepted the offer of admission.

Application Deadline: January 27, 2021 at 3:00 p.m to start the program in Spring Quarter 2020-21. Recommenders have until February 1, 2021 to submit their online recommendation letters.

Requirements include:

- Application for Admission to Coterminal Master's Program (https://www.applyweb.com/stanterm/)
- Preliminary program proposal
- Statement of purpose
- Master's project advising confirmation form
- Letters of recommendation from two Stanford professors other than the coterminal advisor
- A written statement from a Communication professor agreeing to act as a graduate advisor
- Undergraduate coterm program approval form (available on the eForms portal in Axess)
- A current unofficial Stanford transcript

GRE scores are not required.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Degree Requirements

Media studies track students must satisfy the following requirements:

1. *Required Units and GPA:* Students must complete a minimum of 45 units in Communication and related areas, including items 2 and 3 below. Courses must be taken for a letter grade if offered. Courses in related areas outside the department must be approved by the student's advisor. A minimum of 36 units must be in the Communication department. No more than two courses (not including the statistics prerequisite) may be at the 100 level. To remain in good academic standing students must maintain a grade point average (GPA) of 3.0 or better. Graduation requires a GPA of 3.0 or better.
2. *Statistics prerequisite:* Completion of a statistics course (typically STATS 160 Introduction to Statistical Methods: Precalculus) is required for admission into the media studies coterminal program. The coterm advisor may approve other statistics courses as a substitute. The department may occasionally admit a coterminal student who has not yet completed this requirement. Such students should plan to take statistics during their first quarter in the program, as this constitutes an important foundation for much of the master's coursework. Units from the statistics course do not count toward the 45 units required for the M.A. in media studies. Students may enroll for the statistics course for either a letter grade or credit.
3. *Core Requirements: S*tudents must complete COMM 206 Communication Research Methods and COMM 208 Media Processes and Effects. COMM 206 and COMM 208 cannot be waived. SOC 280A Foundations of Social Research is accepted as an alternative to COMM 206 with the units counting toward the maximum of nine total units outside of the department. There is no alternative course for COMM 208.
4. *Six Media Studies Courses:* Students must complete a minimum of six additional communication courses concerned with the study of media from the following list. Not all the listed courses are offered every year and the list may be updated from one year to the next.
5. In addition to the core requirements and six media studies courses from the list below, students earn elective credit by completing additional communication courses (including COMM 299 Individual Work) or up to 9 units from non-COMM courses from the pre-approved list or approved by the student's advisor.
6. *The Media Studies M.A. Project:* Students following the media studies track enroll in COMM 290 Media Studies M.A. Project to complete a project over two consecutive quarters that must be preapproved and supervised by the advisor. The completed M.A. project must be submitted to the advisor no later than the last day of classes of the second consecutive quarter.

		Units
Statistics Prerequisite		
Prerequisite units do not count toward the total 45 units required for the degree.		
STATS 160	Introduction to Statistical Methods: Precalculus (see above)	
Core Requirements		
COMM 206	Communication Research Methods	4
or SOC 280A	Foundations of Social Research	
COMM 208	Media Processes and Effects	4
Six Media Studies Courses		
Select six courses from this list		
COMM 216	Journalism Law	4
COMM 220	The Rise of Digital Culture	4
COMM 224	Truth, Trust, and Tech	4
COMM 225	Perspectives on American Journalism	4
COMM 235	Deliberative Democracy and its Critics	3-5
COMM 237	The Dialogue of Democracy	4
COMM 242	Media Economics	4
COMM 243	Communication Policy and Regulation	4
COMM 245	Personality and Digital Media	4
COMM 251	The First Amendment: Freedom of Speech and Press	4
COMM 252	Constitutional Law	3
COMM 253	Political Campaigning in the Internet Age	3
COMM 254	The Politics of Algorithms	4
COMM 257	Information Control in Authoritarian Regimes	4

COMM 258	Censorship and Propaganda	4
COMM 262	Campaigns, Voting, Media, and Elections	4
COMM 264	The Psychology of Communication About Politics in America	4
COMM 266	Virtual People	4
COMM 272	Media Psychology	4
COMM 277B	Big Local Journalism: a project-based class	4
or COMM 277C	Specialized Writing and Reporting: Health and Science Journalism	
or COMM 277D	Specialized Writing and Reporting: Narrative Journalism	
or COMM 277E	Specialized Writing and Reporting: Telling True Stories	
or COMM 277I	Investigative Watchdog Reporting	
or COMM 277P	Programming in Journalism	
or COMM 277S	Specialized Writing and Reporting: Sports Journalism	
or COMM 277T	Building News Applications	
or COMM 277Y	Specialized Writing and Reporting: Foreign Correspondence	
or COMM 271	Moving Pictures: Video Journalism for Mobile and Social Platforms	
or COMM 275	Multimedia Storytelling: Reporting and Production Using Audio, Still Images, and Video	
or COMM 276	Advanced Digital Media Journalism	
or COMM 280	Immersive (VR/AR) Journalism in the Public Sphere	
COMM 284	Race and Media	4
COMM 286	Media, Technology, and the Body	4
COMM 324	Language and Technology	3-5
COMM 326	Advanced Topics in Human Virtual Representation	1-5
COMM 339	Questionnaire Design for Surveys and Laboratory Experiments: Social and Cognitive Perspectives	4
COMM 385	Media as Ways of Knowing	1-5
Elective Credit		
Additional communication courses (including COMM 299 Individual Work) or up to 9 units from non-COMM courses from the pre-approved list or approved by the student's advisor		
Media Studies M.A. Project		
COMM 290	Media Studies M.A. Project	2-4
Total Units		**45**

Doctor of Philosophy in Communication

Admission

Prospective graduate students should see the Office of Graduate Admissions (http://gradadmissions.stanford.edu/) website and the Applications and Financial Aid (https://comm.stanford.edu/phd/applications/)section of the department website for detailed information and application materials. Applicants must take the Graduate Record Examination (GRE) general test administered by the Educational Testing Service (ETS). The Communication Department does not require any GRE subject tests.

Degree Requirements

University requirements for the Ph.D. are described in the "Graduate Degrees (p. 65)" section of this bulletin.

The minimum number of academic units required for the Ph.D. at Stanford is 135, up to 45 of which can be transferred either from a master's degree at the University or from another accredited institution.

The department offers a Ph.D. in Communication, which focuses on theory and research. First-year students are required to complete introductory courses in communication theory and research, research methods, and statistics. These core courses, grounded in the social science literature, emphasize how people respond to media and how media institutions function. In addition, Ph.D. students must complete a minimum of three literature survey courses and related advanced seminars in Communication. Students also take significant course work outside the department in their area of interest. Each student builds a research specialty relating communication to current faculty interests in such areas as ethics, computational journalism, information processing, information technology, law, online communities, politics and voting, and virtual reality. Regardless of the area of specialization, the Ph.D. program is designed primarily for students interested in university research and teaching or other research or analyst positions.

Students must complete the following department requirements for the Ph.D. degree in Communication. Additional information is available in the Degree Requirements and Department Procedures for Ph.D. Students and Ph.D. Advisors (https://comm.stanford.edu/mm/2013/02/comm-phd-procedures.pdf) (pdf).

1. Complete all departmental course requirements listed below with grades of 'B+' or above, with the exception of STATS 160 ('B' minimum) and an advanced methods course ('B-' minimum). Required courses:

		Units
COMM 206	Communication Research Methods	4
COMM 208	Media Processes and Effects	4
COMM 301	Communication Research, Curriculum Development and Pedagogy	1
COMM 311	Theory of Communication	1-5
COMM 314	Ethnographic Methods	1-5
COMM 317	The Philosophy of Social Science	1-5
COMM 318	Quantitative Social Science Research Methods	1-5
STATS 160	Introduction to Statistical Methods: Precalculus	5

One advanced methods course.

2. Pass the general qualifying examinations by the end of the second academic year of study.

3. Apply for candidacy by the end of the first week of the student's sixth quarter.

4. Complete three 200-level courses and the associated 300-level courses with grades of 'B+' or above by the end of the 9th quarter.

5. Complete at least two pre-dissertation research projects (the Major Project and the Minor Project) by the end of the student's 11th academic quarter.

6. Demonstrate proficiency in tools required in the area of research specialization. Identified with the advice of the faculty, such tools may include detailed theoretical knowledge, advanced statistical methods, a foreign language, computer programming, or other technical skills. Pass an Area Examination by the end of the 12th quarter.

7. Teach or assist in teaching at least two courses offered by the Department of Communication, preferably two different courses, at least one of which is ideally a core undergraduate course:

		Units
COMM 1	Introduction to Communication	5
COMM 1B	Media, Culture, and Society	5
COMM 106	Communication Research Methods	5
COMM 108	Media Processes and Effects	5

8. Complete a dissertation proposal and proposal meeting approved by the dissertation committee.

9. Complete a dissertation satisfactory to a reading committee of three or more faculty members in the Department of Communication and one faculty member outside of the Department of Communication.

10. Pass the University oral examination, which is a defense of the dissertation.

Because the multifaceted nature of the department makes it possible for the Ph.D. student to specialize in areas that draw on different related disciplines, the plan of study is individualized and developed between the faculty advisor and the student.

Ph.D. candidacy is valid for five years.

Additional information is available on the Ph.D. program page (https://comm.stanford.edu/phd/) of the department web site.

Ph.D. Minor in Communication

Candidates for the Ph.D. degree in other departments who elect a minor in Communication are required to complete a minimum of 20 units of graduate courses in the Department of Communication, including a total of three theory or research methods courses, and are examined by a representative of the department. A department advisor in consultation with the individual student determines the particular communication theory and methods courses.

Joint Degree Program in Communication with the School of Law

J.D./PH.D.

The Department of Communication and the School of Law offer a joint degree program leading to a J.D. combined with a Ph.D. in Communication.

The J.D./Ph.D. degree program offers students the opportunity to pursue academic, public policy, and private practice careers at the intersection of a variety of cutting edge debates in theory and policy, including: legal and normative First Amendment theories of speech and the press; media and communications economy and policy issues; questions of the relationship between citizens and the state, especially regarding mass surveillance and big data; and cultural and normative questions about the implications of the shift to the digital realm.

Students interested in the joint degree program must apply and gain entrance separately to the School of Law and the Communication Ph.D. program, and, as an additional step, must secure permission from both academic units to pursue degrees in those units as part of a joint degree program. Interest in the joint degree program should be noted on the student's admission applications and may be considered by the admission committee of each program. Alternatively, an enrolled student in either program may apply for admission to the other program and for joint degree status in both academic units after commencing study in either program.

Joint degree students may elect to begin their course of study in either the School of Law or the Communication Ph.D. program. Faculty advisors from each academic unit participate in the planning and supervising of the student's joint program. Students must be enrolled full time in the Law School for the first year of Law School, and are required to be enrolled full time for the first year of the Ph.D. program in Communication. At all other times, enrollment may be in either academic unit, and students may choose courses from either program regardless of where enrolled. Students must satisfy the requirements for both the J.D. and the Ph.D. degrees as specified in this bulletin or by the School of Law. The sequencing and schedules for individual joint degree students may vary substantially depending on the student's background and interests, and on the guidance of faculty advisors from both academic units.

No more than 54 quarter hours of approved courses may be counted toward both degrees, but no more than 36 quarter hours of courses that originate outside the Law School may count toward the Law degree. To the extent that courses under this joint degree program originate outside the Law School but count toward the Law degree, the Law School credits permitted under Section 17(1) of the Law School Regulations are reduced on a unit-per-unit basis, but not below zero. Students must complete 192 quarter units to complete both degrees.

Joint degree students are eligible for the same funding arrangements in both academic units, including scholarships and grants, as students who are not pursuing a joint degree plus one additional quarter of funding from the Communication Ph.D. Program.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of Communication counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Graduate Degree Requirements

Grading

The Department of Communication counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade.

Graduate Advising Expectations

The Department of Communication is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the advisor and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity.

Faculty advisors guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Ph.D. in Communication

Students are assigned a temporary advisor upon admission to the department. By the end of the third quarter of the first year, students confirm in writing that they will remain with or change their advisor. The faculty advisor must be an Academic Council member and a member of the Communication department.

Faculty advisors guide students in key areas such as selecting courses, designing and conducting research, developing teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

It is the responsibility of the student to meet with their advisor at least once per quarter during the academic year to discuss academic standing and graduate degree progress.

In addition, the Director of Graduate Studies is always available to Ph.D. students for consultation.

Requirements and milestones, as well as more detailed descriptions of the program's expectations of advisors and students, are listed in the "Degree Requirements and Department Procedures for Ph.D. Students and Ph.D. Advisors" available on the department website (http://comm.stanford.edu/).

Master's Program in Communication—Journalism Track

Before the start of graduate study, normally during Summer Quarter, each student is assigned an academic advisor: a member of our journalism faculty who provides guidance in course selection, course planning, and exploring short- and long-term career opportunities and professional pathways. The advisor serves as the first resource for consultation and advice about a student's academic program.

The Director of the Graduate Program in Journalism initially serves as the advisor for all coterminal journalism master's students until a final academic advisor is assigned.

In addition, the Director of the Graduate Program in Journalism is always available to journalism master's students for consultation.

Master's Program in Communication—Media Studies Track

To be accepted to the coterminal master's program in Communication, Media Studies track, students must find a professor in the Department of Communication to serve as coterminal advisor.

The coterminal advisor provides extensive guidance on a research project proposed in the student's statement of purpose, helping students go through the process of conceptualization, study planning, data collection, analysis, and writing. The coterminal advisor also assists the student with course selection and course planning and serves as the first resource for consultation and advice about a student's academic program.

In addition, the Director of the Graduate Program in Coterminal Media Studies is always available for consultation.

Emeriti: (Professor) Theodore L. Glasser, Donald F. Roberts; (Professor, Teaching) Marion Lewenstein

Chair: James T. Hamilton

Director, Doctoral Program in Communication: Jeremy Bailenson

Director, John S. Knight Journalism Fellowships: Dawn E. Garcia

Director, Graduate Program in Journalism: James T. Hamilton

Director, Graduate Program in Coterminal Media Studies: Byron Reeves

Director, Undergraduate Studies: Fred Turner

Professors: Jeremy Bailenson, James S. Fishkin, James T. Hamilton, Jeffrey T. Hancock, Shanto Iyengar, Jon Krosnick, Nilam Ram, Byron B. Reeves, Fred Turner

Assistant Professors: Angèle Christin, Gabriella Harari, Xiaochang Li, Jennifer Pan

Courtesy Professors: Nathaniel Persily, Walter Powell

Lorry I. Lokey Visiting Professor in Professional Journalism: Cheryl Phillips, Serdar Tumgoren

Hearst Professionals in Residence: Geralyn Migielicz

Carlos Kelly McClatchy Visiting Lecturer: Janine Zacharia

Lecturers: R.B. Brenner, Gary Pomerantz, James Wheaton

Overseas Studies Courses in Communication

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

Courses

COMM 1. Introduction to Communication. 5 Units.
Our world is being transformed by media technologies that change how we interact with one another and perceived the world around us. These changes are all rooted in communication practices, and their consequences touch on almost all aspects of life. In COMM 1 we will examine the effects of media technologies on psychological life, on industry, and on communities local and global through theorizing and demonstrations and critiques of a wide range of communication products and services.

COMM 1B. Media, Culture, and Society. 5 Units.
The institutions and practices of mass media, including television, film, radio, and digital media, and their role in shaping culture and social life. The media's shifting relationships to politics, commerce, and identity.
Same as: AMSTUD 1B

COMM 18Q. Democracy & Data. 3 Units.
This course explores the entanglement of democracy with data, from the history of the census and opinion polling, to three contemporary challenges associated with the rise of ¿big data¿: surveillance by corporations and states; algorithmic prediction and decision-making; and information disorder in the digital public sphere. Throughout, we will consider how big data and computational technologies might lead us to rethink central concepts in democratic theory, including consent and freedom; property and (self-)ownership; identity and difference; security, privacy, and the commons. Literature will be drawn from a range of disciplines, including science and technology studies, critical information and media studies, and the history of political thought.

COMM 51A. Race in Science. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Fall quarter focuses on science. What is the science of race and racism? How does race affect scientific work? Weekly guest speakers will address such issues as the psychology and anthropology of race and racism; how race, language, and culture affect education; race in environmental science and environmental justice; the science of reducing police violence; and the role of race in genomic research. Talks will take a variety of forms, from panel discussions to interviews and lectures. Weekly assignments: read a related article and participate in an online discussion.
Same as: AFRICAAM 51A, CEE 151A, CSRE 51A, HUMBIO 71A, STS 51A

COMM 51B. Race in Technology. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Winter quarter focuses on technology. How do race and racism affect the design and social impact of technology, broadly defined? Can new or different technology help to reduce racial bias? Invited speakers will address the role of race in such issues as energy infrastructure, nuclear arms control, algorithmic accountability, machine learning, artificial intelligence, and synthetic biology. Talks will take a variety of forms, ranging from panel discussions to interviews and lectures. Weekly assignments: read a related article and participate in an online discussion.
Same as: AFRICAAM 51B, BIOE 91B, CEE 151B, CSRE 51B, HUMBIO 71B, STS 51B

COMM 100S. Introduction to Digital Labor. 3 Units.
Digital technologies have had a profound influence on our economy, the ways we communicate, and the ways in which we work. This course will provide a lens through which to understand digital labor and digital work today. We will explore the ideological and cultural values of Silicon Valley and their role in shaping the new business models of the Internet Age (such as crowdsourcing, the sharing economy, and humans-as-a-service). We will examine the past, present, and future of mechanisms of workplace control (from clocks to algorithmic management) and the implications of the digital turn on spatial and material dimensions of labor. Finally, we will turn our attention toward possible futures of work, given the increasing presence of automation and artificial intelligence in the workplace. By engaging with social scientific analyses and popular media, students will leave the course with a greater appreciation of worker perspectives and challenges in the digital era.

COMM 102S. Technology and Inequality. 3 Units.
This course will provide an introduction to information inequalities arising in the digital era. By working through various literature in media such as media economics and digital divide, we will explore how content personalization via the algorithms could reproduce or amplify long-standing inequalities in race, class, and gender. This course also functions as an introduction to entry-level data science whereby you develop basic programming skills (Python) and apply them to your group project. By the end of the course, you will have developed skills to think critically of technology¿s impact on our democracy and to present evidence-based analysis of your research interests. No prior programming experience is necessary to take this class.

COMM 104W. Reporting, Writing, and Understanding the News. 5 Units.
Techniques of news reporting and writing. The value and role of news in democratic societies. Gateway class to journalism. Prerequisite for all COMM 177/277 classes. Limited enrollment. Preference to COMM majors.

COMM 106. Communication Research Methods. 4-5 Units.
(Graduate students register for COMM 206.) Conceptual and practical concerns underlying commonly used quantitative approaches, including experimental, survey, content analysis, and field research in communication. Pre- or corequisite: STATS 60 or consent of instructor. (Cardinal Course certified by the Haas Center).
Same as: COMM 206

COMM 107S. Media, Culture, and the Politics of Gender. 3 Units.
This course aims to provide a survey of various media and their role in the discursive construction of gender in and through culture. The first three weeks serve as an introduction to the historical and sociopolitical dimensions of gender, its intersection with media, and theoretical approaches to understanding it and political approaches to challenging it. Beginning with historical constructions of the gender binary, Foucault's Herculine Barbin - an unearthed diary of a French hermaphrodite who lived an adolescent life in a Catholic orphanage for girls from about 1860-1870, is reclassified as a man, and commits suicide - provides a provocative look at the historical construction of gender binaries. nnnThe remainder of the course then tackles a range of media and examples of how they portray gender as well as examples of how they may be used to subvert oppressive gender roles or binaries, focusing on: the novel, film, music videos, news, and social media. Far from exhaustive, the readings and the topics covered are to provide a better, broader, but still-limited understanding of how media and culture construct gender, and how this also dramatically impacts the lives of queer and gender nonconforming individuals. For this reason, while the course does deal extensively with notions of masculinity, sexualization and objectification of, or the effects of sexism on, cisgendered women, a heavy focus of the course across many topics is on transgender individuals in media. These individuals, like Herculine in her time, unsettle this simplistic opposition through their very being and representation in public.

COMM 108. Media Processes and Effects. 4-5 Units.
(Graduate students register for COMM 208.) The process of communication theory construction including a survey of social science paradigms and major theories of communication. Recommended: 1 or PSYCH 1.
Same as: COMM 208

COMM 112S. Welcome to Cyberspace: An Introduction to the Internet. 3 Units.
In this introductory-level class we will investigate the Internet as a material technology created in a specific historical and cultural context and explore how its architecture has shaped the ways we work, think, and relate to each other in 2018. First, we will learn what the Internet is, how it works, and why it came to be. Next, by working through a variety of historical and analytical texts, we will examine the reality and mythologies of cyberspace. Key areas of interest include economics, law, and how people use the Internet to connect. Over the course of the quarter, you will gain skills to think critically and analytically about issues related to the Internet in today's world and articulate your own positions on them.

COMM 114S. Propaganda, Misinformation, and Disinformation. 3 Units.
This course will examine the concepts of propaganda, misinformation, and disinformation, primarily in the political sphere. The first part of the course will explore varying definitions of these concepts and how political actors have manipulated information to support their political aims in totalitarian, authoritarian, and democratic contexts. The second part of the course will examine how reliance on digital media has altered the landscape for political manipulation and current efforts to combat these phenomena. In addition to lectures, students will engage in class discussion and group work.

COMM 115S. Introduction to Augmented Reality. 3 Units.
Augmented reality is a medium which allows people to overlay digital objects, people, and information onto the real world. The technology is being developed urgently by most large technology companies including Apple, Google, and Facebook. This course will discuss the social science theories which are relevant to AR, the engineering challenges both in terms of hardware and software, and the potential applications and downsides of the medium.

COMM 116. Journalism Law. 4-5 Units.
(Graduate students register for 216.) Laws and regulation impacting journalists. Topics include libel, privacy, news gathering, protection sources, fair trial and free press, theories of the First Amendment, and broadcast regulation. Prerequisite: Journalism M.A. student or advanced Communication major. Preference for enrollment in COMM 116 will be: Communications Majors and Co-Terms, then Seniors from other disciplines. Total enrollment in COMM 116/216 combined will be limited to 20.
Same as: COMM 216

COMM 120W. The Rise of Digital Culture. 4-5 Units.
From Snapchat to artificial intelligence, digital systems are reshaping our jobs, our democracies, our love lives, and even what it means to be human. But where did these media come from? And what kind of culture are they creating? To answer these questions, this course explores the entwined development of digital technologies and post-industrial ways of living and working from the Cold War to the present. Topics will include the historical origins of digital media, cultural contexts of their deployment and use, and the influence of digital media on conceptions of self, community, and state. Priority to juniors, seniors, and graduate students.
Same as: AMSTUD 120, COMM 220

COMM 124. Truth, Trust, and Tech. 4-5 Units.
Deception is one of the most significant and pervasive social phenomena of our age. Lies range from the trivial to the very serious, including deception between friends and family, in the workplace, and in security and intelligence contexts. At the same time, information and communication technologies have pervaded almost all aspects of human communication, from everyday technologies that support interpersonal interactions to, such as email and instant messaging, to more sophisticated systems that support organization-level interactions. Given the prevalence of both deception and communication technology in our personal and professional lives, an important set of questions have recently emerged about how humans adapt their deceptive practices to new communication and information technologies, including how communication technology affects the practice of lying and the detection of deception, and whether technology can be used to identify deception.
Same as: COMM 224

COMM 125. Perspectives on American Journalism. 4-5 Units.
An examination of American journalism, focusing on how news is produced, distributed, and financially supported. Emphasis on current media controversies and puzzles, and on designing innovations in discovering and telling stories. (Graduate students register for COMM 225.).
Same as: AMSTUD 125, COMM 225

COMM 135. Deliberative Democracy and its Critics. 3-5 Units.
This course examines the theory and practice of deliberative democracy and engages both in a dialogue with critics. Can a democracy which emphasizes people thinking and talking together on the basis of good information be made practical in the modern age? What kinds of distortions arise when people try to discuss politics or policy together? The course draws on ideas of deliberation from Madison and Mill to Rawls and Habermas as well as criticisms from the jury literature, from the psychology of group processes and from the most recent normative and empirical literature on deliberative forums. Deliberative Polling, its applications, defenders and critics, both normative and empirical, will provide a key case for discussion.
Same as: AMSTUD 135, COMM 235, COMM 335, ETHICSOC 135F, POLISCI 234P, POLISCI 334P

COMM 137W. The Dialogue of Democracy. 4-5 Units.
All forms of democracy require some kind of communication so people can be aware of issues and make decisions. This course looks at competing visions of what democracy should be and different notions of the role of dialogue in a democracy. Is it just campaigning or does it include deliberation? Small scale discussions or sound bites on television? Or social media? What is the role of technology in changing our democratic practices, to mobilize, to persuade, to solve public problems? This course will include readings from political theory about democratic ideals - from the American founders to J.S. Mill and the Progressives to Joseph Schumpeter and modern writers skeptical of the public will. It will also include contemporary examinations of the media and the internet to see how those practices are changing and how the ideals can or cannot be realized.
Same as: AMSTUD 137, COMM 237, POLISCI 232T, POLISCI 332T

COMM 138. Deliberative Democracy Practicum: Applying Deliberative Polling. 3-5 Units.
In this course, students will work directly on a real-world deliberative democracy project using the method of Deliberative Polling. Students in this course will work in partnership with the Center for Deliberative Democracy at Stanford, a research center devoted to the research in democracy and public opinion around the world. This unique practicum will allow students to work on an actual Deliberative Polling project on campus. In just one quarter, the students will prepare for, implement, and analyze the results for an Deliberative Polling project. This is a unique opportunity that allows students to take part in the entire process of a deliberative democracy project. Through this practicum, students will learn and apply quantitative and qualitative research methods. Students will explore the underlying challenges and complexities of what it means to actually do community-engaged research in the real world. As such, this course will provide students with skills and experience in research design in deliberative democracy, community and stakeholder engagement, and the practical aspects of working in local communities. This practicum is a collaboration between the Center for Deliberative Democracy and the Haas Center for Public Service. CDD website: http://cdd.stanford.edu; Hass Center website: https://haas.stanford.edu.
Same as: COMM 238

COMM 142W. Media Economics. 4-5 Units.
Uses economics to examine the generation and consumption of information in communication markets. Covers concepts that play a large role in information economics, including public goods, economies of scale, product differentiation, and externalities. Looks at individuals' information demands as consumers, producers, audience members, and voters. Topics include economics of Internet, sustainability of accountability journalism, and marketplace of ideas.
Same as: COMM 242

COMM 143W. Communication Policy and Regulation. 4-5 Units.
Focuses on the development, implementation, and evaluation of policies affecting communication markets. Policy issues include universal service, digital divide, Internet regulation, intellectual property, privacy, television violence, content diversity, media ownership, antitrust, and impact of news on government accountability. Examines political economy of communication policy and the evolution of policies across time.
Same as: COMM 243

COMM 145. Personality and Digital Media. 4-5 Units.
Personality describes people's characteristic patterns of thinking, feeling, and behaving. This course will introduce students to the ways personality is expressed in digital devices (e.g., computers, smartphones) and platforms (e.g., social networks, virtual worlds). Readings and lectures will introduce students to theories of personality, the practice of assessing personality, and the broader societal implications of having mediated personalities. Course assignments will require students to apply the course concepts to explore personality expression in various digitally mediated contexts.
Same as: COMM 245

COMM 148. Conversations on Journalism, Identity, and Social Justice. 1 Unit.
In this one-credit seminar, students will learn from U.S. journalists who are on the front lines of covering social justice and identity at a pivotal time in American history. The speakers will include JSK Community Impact Fellows, diverse journalists who are working to address information gaps in their communities, especially underserved communities of color. Students will be active participants in the conversations and express their thoughts in written reflections. Instructors will be Michael Bolden, R.B. Brenner, and Dawn Garcia.
Same as: COMM 248

COMM 151. The First Amendment: Freedom of Speech and Press. 4-5 Units.
The First Amendment: Freedom of Speech and Press (7084): Introduction to the constitutional protections for freedom of speech, press, and expressive association. All the major Supreme Court cases dealing with issues such as incitement, libel, hate speech, obscenity, commercial speech, and campaign finance. There are no prerequisites, but a basic understanding of American government would be useful. This course is crosslisted in the university and undergraduates are eligible to take it. Elements used in grading: Law students will be evaluated based on class participation and a final exam. Non-law students will be evaluated on class participation, a midterm and final exam, and nonlaw students will participate in a moot court on a hypothetical case. Non-law students will also have an additional one hour discussion section each week led by a teaching assistant. Cross-listed with Communication (COMM 151, COMM 251) and Political Science (POLISCI 125P). nnnClass time will be 11:10-12:40 on Mondays and Wednesdays.
Same as: COMM 251, ETHICSOC 151, POLISCI 125P

COMM 152. Constitutional Law. 3 Units.
This course covers Supreme Court case law concerning governmental powers, equal protection, and certain fundamental rights. The course investigates the constitutional foundation for democratic participation in the United States, covering topics such as the Fourteenth Amendment's protections against discrimination on grounds of race, gender, and other classifications, as well as the individual rights to voting and intimate association, and an introduction to First Amendment rights of free speech and press. Students will be evaluated on class participation, a midterm moot court with both a written and oral component, and a take-home final exam. Lectures will be twice per week and a discussion section once per week.
Same as: COMM 252, POLISCI 126P

COMM 153. Political Campaigning in the Internet Age. 3 Units.
This course will acquaint students with the changing environment for campaigns posed by the rise of the Internet. So much of the traditional way analysts have understood campaigns has revolved around television as the primary mode of campaign communication. The rise of the Internet, nonlinear television programming, and mobile communication enables new forms of campaigning. This course will examine the relevant social science on these topics, while at the same time bringing in guest lecturers from industry, campaigns, and media. Requirements: Students will be required to complete a 25 page research paper on a topic relevant to the course.
Same as: COMM 253

COMM 153A. Policy, Politics and the 2020 Elections: What 2020 Means for Future Campaigns and Elections. 2 Units.
(Same as LAW 7057). This course looks back at the 2020 election campaign and tries to discern lessons and takeaways for future campaigns and elections. It will provide students with a behind-the-scenes understanding of how campaigns work. Each week, we will explore a different topic related to high-profile campaigns -- policy formation, communications, grassroots strategy, digital outreach, campaign finance -- and feature prominent guest speakers who have served and will serve in senior roles on both Democratic and Republican campaigns, including the Trump and Biden teams.
Same as: COMM 253A, POLISCI 72, PUBLPOL 146, PUBLPOL 246

COMM 153B. Free Speech, Democracy and the Internet. 2-3 Units.
Crosslisted with LAW 7082. This course, which will be cotaught by Monika Bickert from Facebook, will cover contemporary challenges to democracy presented by the Internet. Topics will include disinformation, polarization, hate speech, media transformation, election integrity, and legal regulation of internet platforms in the U.S. and abroad. Guest speakers from academia and industry will present on these topics in each class session, followed by a discussion. Students will be responsible for one-page papers each week on the readings and a research paper to be turned in at the fall paper deadline. Students can take the class for either 2 or 3 units, depending on the research paper length. This class is crosslisted in the university and undergraduates are eligible to take it. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper.
Same as: COMM 253B

COMM 154. The Politics of Algorithms. 4-5 Units.
Algorithms have become central actors in today's digital world. In areas as diverse as social media, journalism, education, healthcare, and policing, computing technologies increasingly mediate communication processes. This course will provide an introduction to the social and cultural forces shaping the construction, institutionalization, and uses of algorithms. In so doing, we will explore how algorithms relate to political issues of modernization, power, and inequality. Readings will range from social scientific analyses to media coverage of ongoing controversies relating to Big Data. Students will leave the course with a better appreciation of the broader challenges associated with researching, building, and using algorithms.
Same as: COMM 254, CSRE 154T, SOC 154, SOC 254C

COMM 157. Information Control in Authoritarian Regimes. 4-5 Units.
Does information help autocrats and dictators stay in power? Or does information help topple authoritarian regimes? This course will examine how authoritarian regimes try to control information through surveillance, propaganda, and censorship, what influences the effectiveness of these information control measures, and how changes in technology (Internet, social media, mobile) affect the dynamics of information control.
Same as: COMM 257, COMM 357

COMM 158. Censorship and Propaganda. 4-5 Units.
While the internet and other digital technologies have amplified the voice of ordinary citizens, the power of governments and other large organizations to control and to manipulate information is increasingly apparent. In this course, we will examine censorship and propaganda in the age of the internet and social media. What constitutes censorship and propaganda in the digital age? Who conducts censorship and propaganda, and how? What are the consequences and effects of censorship and propaganda in this era of information proliferation? How have censorship and propaganda changed from previous eras? Students will take a hands-on, project-based approach to exploring these questions.
Same as: COMM 258

COMM 162. Campaigns, Voting, Media, and Elections. 4-5 Units.
This course examines the theory and practice of American campaigns and elections. First, we will attempt to explain the behavior of the key players -- candidates, parties, journalists, and voters -- in terms of the institutional arrangements and political incentives that confront them. Second, we will use current and recent election campaigns as "laboratories" for testing generalizations about campaign strategy and voter behavior. Third, we examine selections from the academic literature dealing with the origins of partisan identity, electoral design, and the immediate effects of campaigns on public opinion, voter turnout, and voter choice. As well, we'll explore issues of electoral reform and their more long-term consequences for governance and the political process.
Same as: COMM 262, POLISCI 120B

COMM 164. The Psychology of Communication About Politics in America. 4-5 Units.
Focus is on how politicians and government learn what Americans want and how the public's preferences shape government action; how surveys measure beliefs, preferences, and experiences; how poll results are criticized and interpreted; how conflict between polls is viewed by the public; how accurate surveys are and when they are accurate; how to conduct survey research to produce accurate measurements; designing questionnaires that people can understand and use comfortably; how question wording can manipulate poll results; corruption in survey research.
Same as: COMM 264, POLISCI 124L, POLISCI 324L, PSYCH 170

COMM 166. Virtual People. 4-5 Units.
(Graduate students register for COMM 266.) The concept of virtual people or digital human representations; methods of constructing and using virtual people; methodological approaches to interactions with and among virtual people; and current applications. Viewpoints including popular culture, literature, film, engineering, behavioral science, computer science, and communication.
Same as: COMM 266

COMM 171. Moving Pictures: Video Journalism for Mobile and Social Platforms. 3-5 Units.
(Graduate students register for 271.) Examine video journalism's crucial role in digital news media across mobile and social media platforms. What are the specific needs of mobile platforms? How is new technology utilized to produce effective video news content? We'll examine case studies and hear from guest speakers about innovations in video journalism. Students produce short video journalism pieces using mobile tools, optimized for viewing on mobile devices. Prerequisite: COMM 104 or prior video journalism experience (contact instructor); Journalism MA student; or instructor's consent.
Same as: COMM 271

COMM 172. Media Psychology. 4-5 Units.
(Graduate students register for COMM 272.) The literature related to psychological processing and the effects of media. Topics: unconscious processing; picture perception; attention and memory; emotion; the physiology of processing media; person perception; pornography; consumer behavior; advanced film and television systems; and differences among reading, watching, and listening.
Same as: COMM 272

COMM 173E. Data Challenge Lab. 3-5 Units.
In this lab, students develop the practical skills of data science by solving a series of increasingly difficult, real problems. Skills developed include: data manipulation, data visualization, exploratory data analysis, and basic modeling. The data challenges each student undertakes are based upon their current skills. Students receive one-on-one coaching and see how expert practitioners solve the same challenges. Limited enrollment; application required. See http://datalab.stanford.edu for more information.
Same as: ENGR 150

COMM 176. Advanced Digital Media Journalism. 4-5 Units.
In-depth reporting and production using audio, images and video. Focus on an in-depth journalism project with appropriate uses of digital media: audio, photography, graphics, and video. Topics include advanced field techniques and approaches (audio, video, still) and emphasis on creating a non-fiction narrative arc in a multimedia piece of 10-12 minutes. Prerequisite: COMM 275 or consent of instructor.
Same as: COMM 276

COMM 177B. Big Local Journalism: a project-based class. 4-5 Units.
This class will tackle data-driven journalism, in collaboration with other academic and journalistic partners.nnThe class is centered around one or more projects rooted in local data-driven journalism but with potential for regional or national journalistic stories and impact. Students work in interdisciplinary teams to negotiate for public records and data, analyze data and report out stories. Some of the work may be published by news organizations or may be used to advance data journalism projects focused on public accountability. Students will gain valuable knowledge and skills in how to negotiate for public records, how to critically analyze data for journalistic purpose and build out reporting and writing skills. Students with a background in journalism (especially data journalism), statistics, computer science, law, or public policy are encouraged to participate. Enrollment is limited. Prerequisite: consent of instructor . May be repeated for credit. (Cardinal Course certified by the Haas Center).
Same as: COMM 277B

COMM 177C. Specialized Writing and Reporting: Health and Science Journalism. 4-5 Units.
Practical, collaborative, writing-intensive advanced journalistic reporting and writing course in the specific practices and standards of health and science journalism. Science and journalism students learn how to identify and write engaging stories about medicine, global health, science, and related environmental issues; how to assess the quality and relevance of science news; how to cover the health and science beats effectively and efficiently; and how to build bridges between the worlds of journalism and science. Instructed Winter Quarter 2019 by Dr. Seema Yasmin, http://www.seemayasmin.com. nnnLimited enrollment: preference to students enrolled in or considering the Earth Systems Master of Arts, Environmental Communication Program and the Graduate Journalism Program. Prerequisite: EarthSys 191/291, COMM 104w, or consent of instructor. Admission by application only, available from dr.yasmin@stanford.edu (Meets Earth Systems WIM requirement.).
Same as: COMM 277C, EARTHSYS 177C, EARTHSYS 277C

COMM 177D. Specialized Writing and Reporting: Narrative Journalism. 4-5 Units.
(Graduate students register for COMM 277D.) How to report, write, edit, and read long-form narrative nonfiction, whether for magazines, news sites or online venues. Tools and templates of story telling such as scenes, characters, dialogue, and narrative arc. How the best long-form narrative stories defy or subvert conventional wisdom and bring fresh light to the human experience through reporting, writing, and moral passion. Prerequisite: 104 or consent of instructor.
Same as: COMM 277D

COMM 177E. Specialized Writing and Reporting: Telling True Stories. 4-5 Units.
Whether covering news, culture or sports, journalism feature writers combine factual reporting with vivid storytelling in a variety of forms – from profiles to essays to narratives. In a course designed as a writer's workshop, students will learn to think, report and write in scenes; to write from the point of view of one or more subjects; to report with a heightened sense of observation; and to focus on the most telling details in a story. Prerequisite: COMM 104W or consent of instructor.
Same as: COMM 277E

COMM 177I. Investigative Watchdog Reporting. 4-5 Units.
Graduate students register for COMM 277I.) Learn how to apply an investigative and data mindset to journalism, from understanding how to background an individual or entity using online databases to compiling or combining disparate sets of information in ways that unveil wrongdoing or mismanagement. Focuses on mining texts, tracking associations, and using visualizations. Stories produced apply investigative techniques to beat reporting, breaking news, and long form journalism. Prerequisite: COMM 104W, or consent of instructor.
Same as: COMM 277I

COMM 177P. Programming in Journalism. 4-5 Units.
This course introduces general purpose programming skills commonly used in the news. Students will gain basic proficiency in the Unix shell and Python programming while practicing skills such as web scraping, acquiring data from public APIs, cleaning and transforming data, and working with spreadsheets and databases. Automation and reproducibility will be important themes in the course. Exercises and projects will focus on helping students understand the nuances of obtaining and preparing data for use in data analysis and web applications for the news. Students must have basic SQL skills for this course.
Same as: COMM 277P

COMM 177SW. Specialized Writing and Reporting: Sports Journalism. 4-5 Units.
(Graduate students register for COMM 277S.) Workshop. An examination of American sports writing from the 1920's Golden Age of Sports to present. Students become practitioners of the sports writing craft in an intensive laboratory. Hones journalistic skills such as specialized reporting, interviewing, deadline writing, creation of video projects, and conceptualizing and developing stories for print and online.
Same as: COMM 277S

COMM 177T. Building News Applications. 4-5 Units.
This course introduces students to the process of building interactive web applications and visualizations for the news. Students will study examples from the news industry and gain proficiency in a range of technical languages, skills and tools: version control, HTML, CSS, Javascript, Python, web protocols, and web hosting and deployment. Class exercises and projects will focus on the use of these technologies to produce applications that tell a story and engage the public. Students must have basic proficiency in Python, SQL and the Unix shell.
Same as: COMM 277T

COMM 177Y. Specialized Writing and Reporting: Foreign Correspondence. 4-5 Units.
(Graduate students register for COMM 277Y.) Study how being a foreign correspondent has evolved and blend new communication tools with clear narrative to tell stories from abroad in a way that engages a diversifying American audience in the digital age. Prerequisite: COMM 104W, COMM 279, or consent of instructor.
Same as: COMM 277Y

COMM 180. Ethics, Public Policy, and Technological Change. 5 Units.
Examination of recent developments in computing technology and platforms through the lenses of philosophy, public policy, social science, and engineering. Course is organized around four main units: algorithmic decision-making and bias; data privacy and civil liberties; artificial intelligence and autonomous systems; and the power of private computing platforms. Each unit considers the promise, perils, rights, and responsibilities at play in technological developments. Prerequisite: CS106A.
Same as: CS 182, ETHICSOC 182, PHIL 82, POLISCI 182, PUBLPOL 182

COMM 184. Race and Media. 4-5 Units.
This course explores the co-construction of media practices and racial identity in the US. We will ask how media have shaped how we think about race. And we will explore the often surprising ways ideas about race have shaped media practices and technologies in turn. The course will draw on contemporary debates as well as historical examples and will cover themes such as representation and visual culture, media industries and audience practices, and racial bias in digital technology.
Same as: COMM 284

COMM 186W. Media, Technology, and the Body. 4-5 Units.
This course considers major themes in the cultural analysis of the body in relation to media technologies. How do media and information technologies shape our understanding of the body and concepts of bodily difference such as race, gender, and disability? We will explore both classic theories and recent scholarship to examine how technologies mediate the body and bodily practices in various domains, from entertainment to engineering, politics to product design.
Same as: COMM 286

COMM 195. Honors Thesis. 5 Units.
Qualifies students to conduct communication research. Student must apply for department honors thesis program during Spring Quarter of junior year.

COMM 199. Individual Work. 1-5 Unit.
For students with high academic standing. May be repeated for credit.

COMM 206. Communication Research Methods. 4-5 Units.
(Graduate students register for COMM 206.) Conceptual and practical concerns underlying commonly used quantitative approaches, including experimental, survey, content analysis, and field research in communication. Pre- or corequisite: STATS 60 or consent of instructor. (Cardinal Course certified by the Haas Center).
Same as: COMM 106

COMM 208. Media Processes and Effects. 4-5 Units.
(Graduate students register for COMM 208.) The process of communication theory construction including a survey of social science paradigms and major theories of communication. Recommended: 1 or PSYCH 1.
Same as: COMM 108

COMM 212. Models of Democracy. 3-5 Units.
Ancient and modern varieties of democracy; debates about their normative and practical strengths and the pathologies to which each is subject. Focus is on participation, deliberation, representation, and elite competition, as values and political processes. Formal institutions, political rhetoric, technological change, and philosophical critique. Models tested by reference to long-term historical natural experiments such as Athens and Rome, recent large-scale political experiments such as the British Columbia Citizens' Assembly, and controlled experiments.
Same as: COMM 312

COMM 216. Journalism Law. 4-5 Units.
(Graduate students register for 216.) Laws and regulation impacting journalists. Topics include libel, privacy, news gathering, protection sources, fair trial and free press, theories of the First Amendment, and broadcast regulation. Prerequisite: Journalism M.A. student or advanced Communication major. Preference for enrollment in COMM 116 will be: Communications Majors and Co-Terms, then Seniors from other disciplines. Total enrollment in COMM 116/216 combined will be limited to 20.
Same as: COMM 116

COMM 220. The Rise of Digital Culture. 4-5 Units.
From Snapchat to artificial intelligence, digital systems are reshaping our jobs, our democracies, our love lives, and even what it means to be human. But where did these media come from? And what kind of culture are they creating? To answer these questions, this course explores the entwined development of digital technologies and post-industrial ways of living and working from the Cold War to the present. Topics will include the historical origins of digital media, cultural contexts of their deployment and use, and the influence of digital media on conceptions of self, community, and state. Priority to juniors, seniors, and graduate students.
Same as: AMSTUD 120, COMM 120W

COMM 224. Truth, Trust, and Tech. 4-5 Units.
Deception is one of the most significant and pervasive social phenomena of our age. Lies range from the trivial to the very serious, including deception between friends and family, in the workplace, and in security and intelligence contexts. At the same time, information and communication technologies have pervaded almost all aspects of human communication, from everyday technologies that support interpersonal interactions to, such as email and instant messaging, to more sophisticated systems that support organization-level interactions. Given the prevalence of both deception and communication technology in our personal and professional lives, an important set of questions have recently emerged about how humans adapt their deceptive practices to new communication and information technologies, including how communication technology affects the practice of lying and the detection of deception, and whether technology can be used to identify deception.
Same as: COMM 124

COMM 225. Perspectives on American Journalism. 4-5 Units.
An examination of American journalism, focusing on how news is produced, distributed, and financially supported. Emphasis on current media controversies and puzzles, and on designing innovations in discovering and telling stories. (Graduate students register for COMM 225.).
Same as: AMSTUD 125, COMM 125

COMM 230A. Digital Civil Society. 3 Units.
Digital technologies are changing the way members of the civil society come together to change the world. The 'civil society' includes social movements, grassroots activism, philanthropists, unions, nonprofits, NGOs, charities, and cooperatives, among others. Their mission is to effect important social and political transformations to bring about what they see as a better world. But their work and strategies are subject to significant changes in the digital era. The course will analyze the opportunities and challenges digital technologies present for associational life, free expression, privacy, and collective action. We will cover a wide range of key themes, including digital rights advocacy and racial justice, community-owned networks and de-colonial design, activist resistance to surveillance technologies, algorithmic bias, Black Twitter, and digital misinformation, micro-targeting and voter suppression. The course is global in scope (we will read authors and study cases from America, Europe, Asia, and Africa), taught by a multidisciplinary team (history, communication, computational social science, education), and is committed to a syllabus centering on the scholarship, expertise, and voices of marginalized communities.No prerequisite.
Same as: AFRICAAM 230A, CSRE 230A

COMM 230B. Digital Civil Society. 3 Units.
Digital technologies have fundamentally changed how people come together to make change in the world, a sphere of action commonly called 'civil society'. How did this happen, what's being done about it, and what does it mean for democratic governance and collective action in the future? This course analyzes the opportunities and challenges technology presents to associational life, free expression, individual privacy, and collective action. Year-long seminar sequence for advanced undergraduates or master's students. Each quarter may be taken independently. Winter Quarter focuses on the 2000s and considers the emergence of social media platforms, the rise of mobile connectivity, institutional shifts in journalism, and major developments in intellectual property, state surveillance, and digital activism.

COMM 230C. Digital Civil Society. 3 Units.
Digital technologies have fundamentally changed how people come together to make change in the world, a sphere of action commonly called 'civil society'. How did this happen, what's being done about it, and what does it mean for democratic governance and collective action in the future? This course analyzes the opportunities and challenges technology presents to associational life, free expression, individual privacy, and collective action. Year-long seminar sequence for advanced undergraduates or master's students. Each quarter may be taken independently. Spring focuses on emergent trends related to democracy and associational life, from the 2010s and into the future. Topics include the Arab Spring, global political propaganda, 'born digital' organizations, the development of electronic governments, and biotechnologies.
Same as: CSRE 230C

COMM 230X. Digital Civil Society +1 Series. 1 Unit.
Speaker series examining the history, theory, legal challenges, policy frameworks and economic choices that have shaped digital networks and technologies, and how those technologies have in turn changed the nature and role of civil society in democracies.

COMM 235. Deliberative Democracy and its Critics. 3-5 Units.
This course examines the theory and practice of deliberative democracy and engages both in a dialogue with critics. Can a democracy which emphasizes people thinking and talking together on the basis of good information be made practical in the modern age? What kinds of distortions arise when people try to discuss politics or policy together? The course draws on ideas of deliberation from Madison and Mill to Rawls and Habermas as well as criticisms from the jury literature, from the psychology of group processes and from the most recent normative and empirical literature on deliberative forums. Deliberative Polling, its applications, defenders and critics, both normative and empirical, will provide a key case for discussion.
Same as: AMSTUD 135, COMM 135, COMM 335, ETHICSOC 135F, POLISCI 234P, POLISCI 334P

COMM 237. The Dialogue of Democracy. 4-5 Units.
All forms of democracy require some kind of communication so people can be aware of issues and make decisions. This course looks at competing visions of what democracy should be and different notions of the role of dialogue in a democracy. Is it just campaigning or does it include deliberation? Small scale discussions or sound bites on television? Or social media? What is the role of technology in changing our democratic practices, to mobilize, to persuade, to solve public problems? This course will include readings from political theory about democratic ideals - from the American founders to J.S. Mill and the Progressives to Joseph Schumpeter and modern writers skeptical of the public will. It will also include contemporary examinations of the media and the internet to see how those practices are changing and how the ideals can or cannot be realized.
Same as: AMSTUD 137, COMM 137W, POLISCI 232T, POLISCI 332T

COMM 238. Deliberative Democracy Practicum: Applying Deliberative Polling. 3-5 Units.
In this course, students will work directly on a real-world deliberative democracy project using the method of Deliberative Polling. Students in this course will work in partnership with the Center for Deliberative Democracy at Stanford, a research center devoted to the research in democracy and public opinion around the world. This unique practicum will allow students to work on an actual Deliberative Polling project on campus. In just one quarter, the students will prepare for, implement, and analyze the results for an Deliberative Polling project. This is a unique opportunity that allows students to take part in the entire process of a deliberative democracy project. Through this practicum, students will learn and apply quantitative and qualitative research methods. Students will explore the underlying challenges and complexities of what it means to actually do community-engaged research in the real world. As such, this course will provide students with skills and experience in research design in deliberative democracy, community and stakeholder engagement, and the practical aspects of working in local communities. This practicum is a collaboration between the Center for Deliberative Democracy and the Haas Center for Public Service. CDD website: http://cdd.stanford.edu; Hass Center website: https://haas.stanford.edu.
Same as: COMM 138

COMM 242. Media Economics. 4-5 Units.
Uses economics to examine the generation and consumption of information in communication markets. Covers concepts that play a large role in information economics, including public goods, economies of scale, product differentiation, and externalities. Looks at individuals' information demands as consumers, producers, audience members, and voters. Topics include economics of Internet, sustainability of accountability journalism, and marketplace of ideas.
Same as: COMM 142W

COMM 243. Communication Policy and Regulation. 4-5 Units.
Focuses on the development, implementation, and evaluation of policies affecting communication markets. Policy issues include universal service, digital divide, Internet regulation, intellectual property, privacy, television violence, content diversity, media ownership, antitrust, and impact of news on government accountability. Examines political economy of communication policy and the evolution of policies across time.
Same as: COMM 143W

COMM 245. Personality and Digital Media. 4-5 Units.
Personality describes people's characteristic patterns of thinking, feeling, and behaving. This course will introduce students to the ways personality is expressed in digital devices (e.g., computers, smartphones) and platforms (e.g., social networks, virtual worlds). Readings and lectures will introduce students to theories of personality, the practice of assessing personality, and the broader societal implications of having mediated personalities. Course assignments will require students to apply the course concepts to explore personality expression in various digitally mediated contexts.
Same as: COMM 145

COMM 248. Conversations on Journalism, Identity, and Social Justice. 1 Unit.
In this one-credit seminar, students will learn from U.S. journalists who are on the front lines of covering social justice and identity at a pivotal time in American history. The speakers will include JSK Community Impact Fellows, diverse journalists who are working to address information gaps in their communities, especially underserved communities of color. Students will be active participants in the conversations and express their thoughts in written reflections. Instructors will be Michael Bolden, R.B. Brenner, and Dawn Garcia.
Same as: COMM 148

COMM 251. The First Amendment: Freedom of Speech and Press. 4-5 Units.
The First Amendment: Freedom of Speech and Press (7084): Introduction to the constitutional protections for freedom of speech, press, and expressive association. All the major Supreme Court cases dealing with issues such as incitement, libel, hate speech, obscenity, commercial speech, and campaign finance. There are no prerequisites, but a basic understanding of American government would be useful. This course is crosslisted in the university and undergraduates are eligible to take it. Elements used in grading: Law students will be evaluated based on class participation and a final exam. Non-law students will be evaluated on class participation, a midterm and final exam, and nonlaw students will participate in a moot court on a hypothetical case. Non-law students will also have an additional one hour discussion section each week led by a teaching assistant. Cross-listed with Communication (COMM 151, COMM 251) and Political Science (POLISCI 125P). nnnClass time will be 11:10-12:40 on Mondays and Wednesdays.
Same as: COMM 151, ETHICSOC 151, POLISCI 125P

COMM 252. Constitutional Law. 3 Units.
This course covers Supreme Court case law concerning governmental powers, equal protection, and certain fundamental rights. The course investigates the constitutional foundation for democratic participation in the United States, covering topics such as the Fourteenth Amendment's protections against discrimination on grounds of race, gender, and other classifications, as well as the individual rights to voting and intimate association, and an introduction to First Amendment rights of free speech and press. Students will be evaluated on class participation, a midterm moot court with both a written and oral component, and a take-home final exam. Lectures will be twice per week and a discussion section once per week.
Same as: COMM 152, POLISCI 126P

COMM 253. Political Campaigning in the Internet Age. 3 Units.
This course will acquaint students with the changing environment for campaigns posed by the rise of the Internet. So much of the traditional way analysts have understood campaigns has revolved around television as the primary mode of campaign communication. The rise of the Internet, nonlinear television programming, and mobile communication enables new forms of campaigning. This course will examine the relevant social science on these topics, while at the same time bringing in guest lecturers from industry, campaigns, and media. Requirements: Students will be required to complete a 25 page research paper on a topic relevant to the course.
Same as: COMM 153

COMM 253A. Policy, Politics and the 2020 Elections: What 2020 Means for Future Campaigns and Elections. 2 Units.
(Same as LAW 7057). This course looks back at the 2020 election campaign and tries to discern lessons and takeaways for future campaigns and elections. It will provide students with a behind-the-scenes understanding of how campaigns work. Each week, we will explore a different topic related to high-profile campaigns -- policy formation, communications, grassroots strategy, digital outreach, campaign finance -- and feature prominent guest speakers who have served and will serve in senior roles on both Democratic and Republican campaigns, including the Trump and Biden teams.
Same as: COMM 153A, POLISCI 72, PUBLPOL 146, PUBLPOL 246

COMM 253B. Free Speech, Democracy and the Internet. 2-3 Units.
Crosslisted with LAW 7082. This course, which will be cotaught by Monika Bickert from Facebook, will cover contemporary challenges to democracy presented by the Internet. Topics will include disinformation, polarization, hate speech, media transformation, election integrity, and legal regulation of internet platforms in the U.S. and abroad. Guest speakers from academia and industry will present on these topics in each class session, followed by a discussion. Students will be responsible for one-page papers each week on the readings and a research paper to be turned in at the fall paper deadline. Students can take the class for either 2 or 3 units, depending on the research paper length. This class is crosslisted in the university and undergraduates are eligible to take it. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper.
Same as: COMM 153B

COMM 254. The Politics of Algorithms. 4-5 Units.
Algorithms have become central actors in today's digital world. In areas as diverse as social media, journalism, education, healthcare, and policing, computing technologies increasingly mediate communication processes. This course will provide an introduction to the social and cultural forces shaping the construction, institutionalization, and uses of algorithms. In so doing, we will explore how algorithms relate to political issues of modernization, power, and inequality. Readings will range from social scientific analyses to media coverage of ongoing controversies relating to Big Data. Students will leave the course with a better appreciation of the broader challenges associated with researching, building, and using algorithms.
Same as: COMM 154, CSRE 154T, SOC 154, SOC 254C

COMM 257. Information Control in Authoritarian Regimes. 4-5 Units.
Does information help autocrats and dictators stay in power? Or does information help topple authoritarian regimes? This course will examine how authoritarian regimes try to control information through surveillance, propaganda, and censorship, what influences the effectiveness of these information control measures, and how changes in technology (Internet, social media, mobile) affect the dynamics of information control.
Same as: COMM 157, COMM 357

COMM 258. Censorship and Propaganda. 4-5 Units.
While the internet and other digital technologies have amplified the voice of ordinary citizens, the power of governments and other large organizations to control and to manipulate information is increasingly apparent. In this course, we will examine censorship and propaganda in the age of the internet and social media. What constitutes censorship and propaganda in the digital age? Who conducts censorship and propaganda, and how? What are the consequences and effects of censorship and propaganda in this era of information proliferation? How have censorship and propaganda changed from previous eras? Students will take a hands-on, project-based approach to exploring these questions.
Same as: COMM 158

COMM 262. Campaigns, Voting, Media, and Elections. 4-5 Units.
This course examines the theory and practice of American campaigns and elections. First, we will attempt to explain the behavior of the key players -- candidates, parties, journalists, and voters -- in terms of the institutional arrangements and political incentives that confront them. Second, we will use current and recent election campaigns as "laboratories" for testing generalizations about campaign strategy and voter behavior. Third, we examine selections from the academic literature dealing with the origins of partisan identity, electoral design, and the immediate effects of campaigns on public opinion, voter turnout, and voter choice. As well, we'll explore issues of electoral reform and their more long-term consequences for governance and the political process.
Same as: COMM 162, POLISCI 120B

COMM 264. The Psychology of Communication About Politics in America. 4-5 Units.
Focus is on how politicians and government learn what Americans want and how the public's preferences shape government action; how surveys measure beliefs, preferences, and experiences; how poll results are criticized and interpreted; how conflict between polls is viewed by the public; how accurate surveys are and when they are accurate; how to conduct survey research to produce accurate measurements; designing questionnaires that people can understand and use comfortably; how question wording can manipulate poll results; corruption in survey research.
Same as: COMM 164, POLISCI 124L, POLISCI 324L, PSYCH 170

COMM 266. Virtual People. 4-5 Units.
(Graduate students register for COMM 266.) The concept of virtual people or digital human representations; methods of constructing and using virtual people; methodological approaches to interactions with and among virtual people; and current applications. Viewpoints including popular culture, literature, film, engineering, behavioral science, computer science, and communication.
Same as: COMM 166

COMM 271. Moving Pictures: Video Journalism for Mobile and Social Platforms. 3-5 Units.
(Graduate students register for 271.) Examine video journalism's crucial role in digital news media across mobile and social media platforms. What are the specific needs of mobile platforms? How is new technology utilized to produce effective video news content? We'll examine case studies and hear from guest speakers about innovations in video journalism. Students produce short video journalism pieces using mobile tools, optimized for viewing on mobile devices. Prerequisite: COMM 104 or prior video journalism experience (contact instructor); Journalism MA student; or instructor's consent.
Same as: COMM 171

COMM 272. Media Psychology. 4-5 Units.
(Graduate students register for COMM 272.) The literature related to psychological processing and the effects of media. Topics: unconscious processing; picture perception; attention and memory; emotion; the physiology of processing media; person perception; pornography; consumer behavior; advanced film and television systems; and differences among reading, watching, and listening.
Same as: COMM 172

COMM 273D. Public Affairs Data Journalism I. 4 Units.
Even before the ubiquity of Internet access and high-powered computers, public accountability reporting relied on the concerted collection of observations and analytical problem-solving. We study the methods, and the data, used to discover leads and conduct in-depth reporting on public affairs, including election finance and safety regulations. Students gain practical experience with the digital tools and techniques of computer-assisted reporting. Prerequisite: Only open to Journalism M.A. students.

COMM 274D. Public Affairs Data Journalism II. 4 Units.
Learn how to find, create and analyze data to tell news stories with public service impact. Uses relational databases, advanced queries, basic statistics, and mapping to analyze data for storytelling. Assignments may include stories, blog posts, and data visualizations, with at least one in-depth project based on data analysis. Prerequisites: COMM 273D or Journalism M.A. student.

COMM 275. Multimedia Storytelling: Reporting and Production Using Audio, Still Images, and Video. 3-4 Units.
Multimedia assignments coordinated with deadline reporting efforts in COMM 273 from traditional news beats using audio, still photography, and video. Use of digital audio recorders and audio production to leverage voice-over narration, interviews, and natural sound; use of digital still cameras and audio to produce audio slideshows; and the combination of these media with video in post-production with Final Cut Pro. Prerequisite: Only open to Journalism M.A. students. Corequisite: COMM 273.

COMM 276. Advanced Digital Media Journalism. 4-5 Units.
In-depth reporting and production using audio, images and video. Focus on an in-depth journalism project with appropriate uses of digital media: audio, photography, graphics, and video. Topics include advanced field techniques and approaches (audio, video, still) and emphasis on creating a non-fiction narrative arc in a multimedia piece of 10-12 minutes. Prerequisite: COMM 275 or consent of instructor.
Same as: COMM 176

COMM 277B. Big Local Journalism: a project-based class. 4-5 Units.
This class will tackle data-driven journalism, in collaboration with other academic and journalistic partners.nnThe class is centered around one or more projects rooted in local data-driven journalism but with potential for regional or national journalistic stories and impact. Students work in interdisciplinary teams to negotiate for public records and data, analyze data and report out stories. Some of the work may be published by news organizations or may be used to advance data journalism projects focused on public accountability. Students will gain valuable knowledge and skills in how to negotiate for public records, how to critically analyze data for journalistic purpose and build out reporting and writing skills. Students with a background in journalism (especially data journalism), statistics, computer science, law, or public policy are encouraged to participate. Enrollment is limited. Prerequisite: consent of instructor . May be repeated for credit. (Cardinal Course certified by the Haas Center).
Same as: COMM 177B

COMM 277C. Specialized Writing and Reporting: Health and Science Journalism. 4-5 Units.
Practical, collaborative, writing-intensive advanced journalistic reporting and writing course in the specific practices and standards of health and science journalism. Science and journalism students learn how to identify and write engaging stories about medicine, global health, science, and related environmental issues; how to assess the quality and relevance of science news; how to cover the health and science beats effectively and efficiently; and how to build bridges between the worlds of journalism and science. Instructed Winter Quarter 2019 by Dr. Seema Yasmin, http://www.seemayasmin.com. nnnLimited enrollment: preference to students enrolled in or considering the Earth Systems Master of Arts, Environmental Communication Program and the Graduate Journalism Program. Prerequisite: EarthSys 191/291, COMM 104w, or consent of instructor. Admission by application only, available from dr.yasmin@stanford.edu (Meets Earth Systems WIM requirement.).
Same as: COMM 177C, EARTHSYS 177C, EARTHSYS 277C

COMM 277D. Specialized Writing and Reporting: Narrative Journalism. 4-5 Units.
(Graduate students register for COMM 277D.) How to report, write, edit, and read long-form narrative nonfiction, whether for magazines, news sites or online venues. Tools and templates of story telling such as scenes, characters, dialogue, and narrative arc. How the best long-form narrative stories defy or subvert conventional wisdom and bring fresh light to the human experience through reporting, writing, and moral passion. Prerequisite: 104 or consent of instructor.
Same as: COMM 177D

COMM 277E. Specialized Writing and Reporting: Telling True Stories. 4-5 Units.
Whether covering news, culture or sports, journalism feature writers combine factual reporting with vivid storytelling in a variety of forms -- from profiles to essays to narratives. In a course designed as a writer's workshop, students will learn to think, report and write in scenes; to write from the point of view of one or more subjects; to report with a heightened sense of observation; and to focus on the most telling details in a story. Prerequisite: COMM 104W or consent of instructor.
Same as: COMM 177E

COMM 277I. Investigative Watchdog Reporting. 4-5 Units.
Graduate students register for COMM 277I.) Learn how to apply an investigative and data mindset to journalism, from understanding how to background an individual or entity using online databases to compiling or combining disparate sets of information in ways that unveil wrongdoing or mismanagement. Focuses on mining texts, tracking associations, and using visualizations. Stories produced apply investigative techniques to beat reporting, breaking news, and long form journalism. Prerequisite: COMM 104W, or consent of instructor.
Same as: COMM 177I

COMM 277P. Programming in Journalism. 4-5 Units.
This course introduces general purpose programming skills commonly used in the news. Students will gain basic proficiency in the Unix shell and Python programming while practicing skills such as web scraping, acquiring data from public APIs, cleaning and transforming data, and working with spreadsheets and databases. Automation and reproducibility will be important themes in the course. Exercises and projects will focus on helping students understand the nuances of obtaining and preparing data for use in data analysis and web applications for the news. Students must have basic SQL skills for this course.
Same as: COMM 177P

COMM 277S. Specialized Writing and Reporting: Sports Journalism. 4-5 Units.
(Graduate students register for COMM 277S.) Workshop. An examination of American sports writing from the 1920's Golden Age of Sports to present. Students become practitioners of the sports writing craft in an intensive laboratory. Hones journalistic skills such as specialized reporting, interviewing, deadline writing, creation of video projects, and conceptualizing and developing stories for print and online.
Same as: COMM 177SW

COMM 277T. Building News Applications. 4-5 Units.
This course introduces students to the process of building interactive web applications and visualizations for the news. Students will study examples from the news industry and gain proficiency in a range of technical languages, skills and tools: version control, HTML, CSS, Javascript, Python, web protocols, and web hosting and deployment. Class exercises and projects will focus on the use of these technologies to produce applications that tell a story and engage the public. Students must have basic proficiency in Python, SQL and the Unix shell.
Same as: COMM 177T

COMM 277Y. Specialized Writing and Reporting: Foreign Correspondence. 4-5 Units.
(Graduate students register for COMM 277Y.) Study how being a foreign correspondent has evolved and blend new communication tools with clear narrative to tell stories from abroad in a way that engages a diversifying American audience in the digital age. Prerequisite: COMM 104W, COMM 279, or consent of instructor.
Same as: COMM 177Y

COMM 279. News Reporting & Writing Fundamentals. 3-4 Units.
Learn beat reporting and writing skills including source development, interviewing, and story structure for news and features. Emphasis on developing news judgment, clear writing skills, and an ability to execute stories on deadline. Exercises and assignments mimic a newsroom. Students pursue local beats with a focus on public issues and complement written pieces with relevant data analyses and multimedia components. Prerequisite: Only open to Journalism M.A. students. Corequisite: COMM 275.

COMM 280. Immersive (VR/AR) Journalism in the Public Sphere. 4 Units.
The immersive space (cinematic VR, virtual reality, and augmented reality) is journalism's newest and most exciting reporting and storytelling tool. We survey best practices and methods in this emerging medium and learn 360-degree video production and postproduction. Teams will illuminate issues and provoke conversation in the public sphere. Prerequisite: Preference to Journalism M.A. students. Please contact instructor for permission number to enroll.

COMM 281. Exploring Computational Journalism. 3 Units.
This project-based course will explore the field of computational journalism, including the use of Data Science, Info Visualization, AI, and emerging technologies to help journalists discover and tell stories, understand their audience, advance free speech, and build trust. Admission by application; please email Serdar Tumgoren at tumgoren@stanford.edu to request application.
Same as: CS 206

COMM 284. Race and Media. 4-5 Units.
This course explores the co-construction of media practices and racial identity in the US. We will ask how media have shaped how we think about race. And we will explore the often surprising ways ideas about race have shaped media practices and technologies in turn. The course will draw on contemporary debates as well as historical examples and will cover themes such as representation and visual culture, media industries and audience practices, and racial bias in digital technology.
Same as: COMM 184

COMM 286. Media, Technology, and the Body. 4-5 Units.
This course considers major themes in the cultural analysis of the body in relation to media technologies. How do media and information technologies shape our understanding of the body and concepts of bodily difference such as race, gender, and disability? We will explore both classic theories and recent scholarship to examine how technologies mediate the body and bodily practices in various domains, from entertainment to engineering, politics to product design.
Same as: COMM 186W

COMM 289P. Journalism Thesis. 2-4 Units.
MA thesis course. Focuses on development of in-depth journalism project, culminating in work of publishable quality.

COMM 290. Media Studies M.A. Project. 1-2 Unit.
Individual research for coterminal Media Studies students.

COMM 299. Individual Work. 1-4 Unit.
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COMM 301. Communication Research, Curriculum Development and Pedagogy. 1 Unit.
Designed to prepare students for teaching and research in the Department of Communication. Students will be trained in developing curriculum and in pedagogical practices, and will also be exposed to the research programs of various faculty members in the department. Required of all Ph.D. students.

COMM 307. Summer Institute in Political Psychology. 3 Units.
Lectures, discussion groups, and workshops addressing many applications of psychology to the analysis of political behavior. Public opinion, international relations, political decision-making, attitudes and beliefs, prejudice, social influence and persuasion, terrorism, news media influence, foreign policy, socialization, social justice.

COMM 308. Graduate Seminar in Political Psychology. 1-3 Unit.
For students interested in research in political science, psychology, or communication. Methodological techniques for studying political attitudes and behaviors. May be repeated for credit.

COMM 311. Theory of Communication. 1-5 Unit.
Basic communication theory for first-year Ph.D. students in the Department of Communication. Introduction to basic writings and concepts in communication research. The goal is an introduction to issues in the field that are common in communication research. First half of the class will emphasize classic literature about field organization, history and theory. Second half will emphasize contemporary theory in areas that students select.

COMM 312. Models of Democracy. 3-5 Units.
Ancient and modern varieties of democracy; debates about their normative and practical strengths and the pathologies to which each is subject. Focus is on participation, deliberation, representation, and elite competition, as values and political processes. Formal institutions, political rhetoric, technological change, and philosophical critique. Models tested by reference to long-term historical natural experiments such as Athens and Rome, recent large-scale political experiments such as the British Columbia Citizens' Assembly, and controlled experiments.
Same as: COMM 212

COMM 314. Ethnographic Methods. 1-5 Unit.
This course offers an introduction to the practice and politics of ethnographic fieldwork. It provides a "how to" of ethnographic research, in which students will conduct an ethnographic project of their own, complemented by weekly readings and discussions. In the process, we will discuss the theory and epistemology of fieldwork, along with the practicalities and politics of fieldwork in different domains. We will examine different stages of ethnographic research (entering the field, conducting and recording fieldwork, exiting the field and writing it up), different methods (observations, interviews, "going along"), as well as distinct styles of ethnographic work (virtual ethnography, organizational ethnography, narrative ethnography, etc.). The course will serve as a participative workshop for students to exchange field notes, share practical advice, and consolidate their research interests. Prerequisite: Must be Communication student, or obtain approval from instructor.
Same as: SOC 319

COMM 317. The Philosophy of Social Science. 1-5 Unit.
Approaches to social science research and their theoretical presuppositions. Readings from the philosophy of the social sciences. Research design, the role of experiments, and quantitative and qualitative research. Cases from communication and related social sciences. Prerequisite: consent of instructor.

COMM 318. Quantitative Social Science Research Methods. 1-5 Unit.
An introduction to a broad range of social science research methods that are widely used in PhD work. Prerequisite: consent of instructor.

COMM 322. Advanced Studies in Behavior and Social Media. 1-5 Unit.
This course will focus on advanced research on social media with an emphasis on interpersonal dynamics. The course will emphasize key theories from psychology and communication that bear on behavior and social media. Students will develop a research project in the course that draws on one of the primary methods from the social media space.

COMM 324. Language and Technology. 3-5 Units.
In this course we develop a model of how language reflects social and psychological dynamics in social media and other technologically-mediated contexts. The course lays out the main stages of analyzing language to understand social dynamics, including using theory to identify key discourse features, feature extraction, and classification and prediction. The course will draw on action-oriented language approaches to understand how people use language (e.g., grounding and joint action models), and then build on this approach to understand how discourse features from natural language can be used to answer questions from a wide range of social science questions, and ultimately, to the design of new technologies. Instructor consent required to enroll.

COMM 326. Advanced Topics in Human Virtual Representation. 1-5 Unit.
Topics include the theoretical construct of person identity, the evolution of that construct given the advent of virtual environments, and methodological approaches to understanding virtual human representation. Prerequisite: PhD student or consent of instructor.

COMM 335. Deliberative Democracy and its Critics. 3-5 Units.
This course examines the theory and practice of deliberative democracy and engages both in a dialogue with critics. Can a democracy which emphasizes people thinking and talking together on the basis of good information be made practical in the modern age? What kinds of distortions arise when people try to discuss politics or policy together? The course draws on ideas of deliberation from Madison and Mill to Rawls and Habermas as well as criticisms from the jury literature, from the psychology of group processes and from the most recent normative and empirical literature on deliberative forums. Deliberative Polling, its applications, defenders and critics, both normative and empirical, will provide a key case for discussion.
Same as: AMSTUD 135, COMM 135, COMM 235, ETHICSOC 135F, POLISCI 234P, POLISCI 334P

COMM 339. Questionnaire Design for Surveys and Laboratory Experiments: Social and Cognitive Perspectives. 4 Units.
The social and psychological processes involved in asking and answering questions via questionnaires for the social sciences; optimizing questionnaire design; open versus closed questions; rating versus ranking; rating scale length and point labeling; acquiescence response bias; don't-know response options; response choice order effects; question order effects; social desirability response bias; attitude and behavior recall; and introspective accounts of the causes of thoughts and actions.
Same as: POLISCI 421K, PSYCH 231

COMM 345. Personality Expression in Digitally Mediated Contexts. 1-5 Unit.
Digital devices (e.g., computers, smartphones, wearables) and platforms (e.g., social media sites, forums, virtual worlds) mediate much of our daily life. Each time we use digital media for communication, information seeking, or entertainment, we leave behind psychologically revealing digital footprints. In this course, we will explore how digital footprints can be used to understand individual differences in thinking, feeling, and behaving. Class activities and assignments will require students to apply the concepts to their own research projects. Course enrollment limited to PhD-level students.

COMM 346. Advanced Topics on Individual Differences in Media Psychology. 3 Units.
This will be a project-based course for graduate students to take a deep dive on a specific topic within media psychology. All topics will share an underlying focus on individual differences. Example topics include: describing individual differences in use of digital devices (e.g., computers, smartphones, wearables) and platforms (e.g., social media, forums, virtual worlds), explaining what may be driving such differences (e.g., psychological factors, contextual factors), applying and developing methodological approaches for understanding and assessing mediated personalities, and exploring applications of psychologically tailoring media to people¿s characteristics and contexts. Students will work collaboratively with the instructor and other students in the course to produce a novel work by the end of the quarter.

COMM 350. New Media and Journalism. 1-5 Unit.
New media technologies are transforming how people create and consume information. In this course, we study journalism as an organized field of practice to examine what digital technologies change -- and what they don't change -- about production, diffusion, and reception of news around the globe. The course will cover topics such as changing professional boundaries in a networked environment; the decentralization of news production with social media platforms; the changes in editorial judgement related to automation; the construction of algorithmic audiences; and the promises and challenges associated with data journalism. Moving beyond simplistic analyses of the internet as a universal explanation for all changes in journalism, this course explores how new technologies interact with existing practices, representations, and institutions.
Same as: SOC 326

COMM 354. Work, Technology, and Communication. 1-5 Unit.
Workplace cultures and professional communities are currently being profoundly reconfigured through digital technologies, algorithmic tools, and online platforms. Many of these developments are recent. Yet previous waves of technological innovation came with comparable effects on work practices, occupational identities, and organizational dynamics. This graduate seminar explores the relationship between work, technology, and communication from a science and technology studies (STS) perspective. The students will read classic studies of workplace cultures as well as recent research on digital labor in order to better understand how work is changing in the twenty-first century.

COMM 357. Information Control in Authoritarian Regimes. 4-5 Units.
Does information help autocrats and dictators stay in power? Or does information help topple authoritarian regimes? This course will examine how authoritarian regimes try to control information through surveillance, propaganda, and censorship, what influences the effectiveness of these information control measures, and how changes in technology (Internet, social media, mobile) affect the dynamics of information control.
Same as: COMM 157, COMM 257

COMM 360G. Political Communication. 3-5 Units.
An overview of research in political communication with particular reference to work on the impact of the mass media on public opinion and voting behavior. Limited to Ph.D. students.
Same as: POLISCI 425

COMM 361. Law of Democracy. 3-5 Units.
Combined with LAW 7036 (formerly Law 577). This course is intended to give students a basic understanding of the themes in the legal regulation of elections and politics. We will cover all the major Supreme Court cases on topics of voting rights, reapportionment/redistricting, ballot access, regulation of political parties, campaign finance, and the 2000 presidential election controversy. The course pays particular attention to competing political philosophies and empirical assumptions that underlie the Court's reasoning while still focusing on the cases as litigation tools used to serve political ends. Elements used in grading: Class participation and one day take home final exam. (POLISCI 327C; LAW 577).
Same as: POLISCI 327C

COMM 362. Topics in Political Communication: Media Bias, Selective Exposure, and Political Polarization. 1-5 Unit.
This course surveys theories of media bias, biased processing of information, and the empirical challenges facing researchers attempting to link changes in the composition of audiences to attitudinal and behavioral outcomes. (Limited to PhD students).
Same as: POLISCI 425S

COMM 365. Advanced Longitudinal and Multivariate Methods in Social Science Research. 1-5 Unit.
This course offers a project-based orientation to methodological issues associated with the analysis of multivariate and/or longitudinal data in the social sciences. General areas to be covered include the manipulation/organization/description of the types of empirical data obtained in social science research, and the application/implementation of multivariate analysis techniques to those data. Students will, through hands-on analysis of their data, acquire experiences in the formulation of research questions and study designs that are appropriately tethered to a variety of advanced analytical methods. Limited to PhD students and consent of instructor.
Same as: PSYCH 289

COMM 372G. Seminar in Psychological Processing. 1-5 Unit.
Limited to Ph.D. students. Advanced topics. Prerequisite: 272 or consent of instructor.

COMM 378. Media and Time. 1-5 Unit.
As media technologies change, they radically restructure our experience of time. This course will bring together readings from media psychology and media history in order to understand this process. Students will explore issues such as the acceleration of everyday life, new modes of screen use, and the transformation of cultural categories such as ¿narrative¿ and ¿the event¿. Ultimately the course aims to help prepare students to consider time in scholarship about media.

COMM 380. Curriculum Practical Training. 1-5 Unit.
Practical experience in the communication industries. Prerequisite: consent of instructor. Meets requirements for Curricular Practical Training for students on F-1 visas. (Staff).

COMM 382. Big Data and Causal Inference. 1-5 Unit.
Massive datasets are increasingly available for research as digital technologies pervade our lives. These data represent new opportunities for social science research, but prominent examples of data science research bear little resemblance to the research designs of social scientific inquiry. In this course, we use machine learning and statistical tools on large-scale datasets to answer social science questions of cause and effect. Familiarity with Python recommended. Enrollment limited to PhD students in COMM or Social Science who have completed or are currently taking graduate quantitative methods sequences in Economics, Political Science, Sociology, or Statistics. Contact ohtammy@stanford.edu for a permission number to enroll (please include a current CV).

COMM 382B. Research Seminar in Computational Social Science. 1-3 Unit.
Technological advances have generated massive datasets available to use for research. Graduate students are increasingly well trained in computational and statistical techniques, but often encounter resistance from publishers and reviewers when applying these techniques. This is a graduate research seminar in which students will carefully read cutting-edge works in computational social science, and discuss in detail their theory, data and empirical methods, and overall scientific contribution. We will consider what makes these works successful, and participants will present in the seminar. Instructor approval required for non-Ph.D. students to enroll. May be repeated for credit.

COMM 384. Media Technology Theory. 3-5 Units.
This course surveys major theoretical approaches to the study of media technologies, including Frankfurt School critical theory, media archaeology, actor network theory, science and technology studies, platform studies and theories of critical making. By the end of the course, students should have a rich familiarity with the literature in this area, as well as with exemplary empirical studies conducted within each tradition. Preference to Ph.D. students in Communication and Art and Art History. Consent of instructor required for non-PhD students.
Same as: ARTHIST 465, FILMSTUD 465A

COMM 385. Media as Ways of Knowing. 1-5 Unit.
How do the tools and techniques of capturing, representing, storing, and transmitting information shape how and what we know? And how might such instruments influence the relationship between epistemic practices and forms social, cultural, and political life? This course will draw on scholarship across the history of science, science and technology studies, and media theory to consider the role media technologies play in how knowledge is produced, circulated, and authorized. Instructor consent required. Limited to PhD students or with consent of instructor.

COMM 386. Media Cultures of the Cold War. 3-5 Units.
The intersection of politics, aesthetics, and new media technologies in the U.S. between the end of WW II and the fall of the Berlin Wall. Topics include the aesthetics of thinking the unthinkable in the wake of the atom bomb; abstract expressionism and 'modern man' discourse; game theory, cybernetics, and new models of art making; the rise of television, intermedia, and the counterculture; and the continuing influence of the early cold war on contemporary media aesthetics. Readings from primary and secondary sources in art history, communication, and critical theory. Same as: ARTHIST 475

COMM 390. Communication Colloquium. 1 Unit.
The Communication Colloquium is a monthly seminar held throughout the academic year, in which leading scholars present their research findings. The Colloquium is intended for PhD students in Communication, and priority will be given to COMM PhD students. Attendance of all sessions is required to receive credit.

COMM 399. Advanced Individual Work. 1-9 Unit.
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COMM 801. TGR Project. 0 Units.
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COMM 802. TGR Dissertation. 0 Units.
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COMPARATIVE LITERATURE

Courses offered by the Department of Comparative Literature are listed under the subject code COMPLIT on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=COMPLIT&filter-catalognumber-COMPLIT=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=COMPLIT&filter-catalognumber-COMPLIT=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=COMPLIT&filter-catalognumber-COMPLIT=on).

The Department of Comparative Literature offers courses in the history and theory of literature through comparative approaches. The department accepts candidates for the degrees of Bachelor of Arts and Doctor of Philosophy. The department is a part of the Division of Literatures, Cultures, and Languages (p. 1298).

The field of Comparative Literature provides students the opportunity to study imaginative literature in a wide array of contexts: historical, formal, theoretical, and more. While other literary disciplines focus on works of literature within national or linguistic traditions, Comparative Literature draws on multiple contexts in order to examine the nature of literary phenomena from around the globe and from different historical moments, while exploring how literature interacts with other elements of culture and society. We study fictional narratives, performance, and poetry as well as cinema, music, and emerging aesthetic media.

Along with the traditional models of comparative literature that compare two or more national literary cultures and examine literary phenomena in light of literary theory, the department encourages study of the relationship between literature and philosophy and the enrichment of literary study with other disciplinary methodologies. Comparative Literature also embraces the study of aspects of literature that overgo national boundaries, such as transnational literary movements or the creative adaptation of particular genres to local cultures. In each case, students emerge from the program with enhanced verbal and writing skills, a command of literary studies, the ability to read analytically and critically, and a more global knowledge of literature.

Mission of the Undergraduate Program in Comparative Literature

The mission of the undergraduate program in Comparative Literature is to develop students' verbal and written communication skills, their ability to read analytically and critically, and their global knowledge of literary cultures and the specific properties of literary texts. The program provides students with the opportunity to study imaginative literature with several methods and a consciousness of methodology.

A Comparative Literature major prepares a student as a reader and interpreter of literature through sophisticated examination of texts and the development of a critical vocabulary with which to discuss them. Along with providing core courses that introduce students to major literary phenomena in a comparative frame, the program of study accommodates the interests of students in areas such as specific regions, historical periods, and interdisciplinary connections between literature and other fields such as philosophy, music, the visual arts, gender and queer theory, and race and ethnicity. Attention to verbal expression and interpretive argument serves students who will proceed into careers requiring strong language and communication skills and cross-cultural knowledge of the world.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. the ability to interpret a literary text in a non-native language or to compare literary texts from different linguistic traditions, which may be read in translation.
2. a self-reflective understanding of the critical process necessary to read and understand texts.
3. skills in writing effectively about literature.
4. skills in oral communication and public speaking about literature.

Graduate Programs in Comparative Literature

The department offers a Doctor of Philosophy and a Ph.D. minor in Comparative Literature.

Learning Outcomes (Graduate)

Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to

1. make original contributions to the knowledge of Comparative Literature and to interpret and present the results of such research,
2. teach literary analysis and interpretation at all levels with broad historical, cultural and linguistic understanding, and
3. apply such analysis, interpretation and understanding to a range of fields and vocations.

Bachelor of Arts in Comparative Literature

The major in Comparative Literature requires students to enroll in a set of core courses offered by the department, to complete electives in the department, and to enroll in additional literature courses, or other courses approved by the Chair of Undergraduate Studies, offered by other departments. This flexibility to combine literature courses from several departments and to address literature from multiple traditions is the hallmark of the Comparative Literature major. Students may count courses which read literature in translation; however, every student, especially those planning to pursue graduate study in Comparative Literature, is strongly encouraged to develop a command of non-native languages.

Declaring the Major

Students declare the major in Comparative Literature through Axess. Students must meet with the Chair of Undergraduate Studies to discuss appropriate courses and options within the major, and to plan the course of study. All Comparative Literature degree programs are administered by the DLCL undergraduate student services office located in Pigott Hall, room 128.

Advising

Upon declaring the major, each student is assigned an advisor by the Chair of Undergraduate Studies. Students should consult with their advisors at least once a quarter. While the Chair monitors progress to completion of the degree, the advisor oversees the student's general intellectual development and offers advice about courses and projects. Students are also encouraged to develop relationships with other faculty members who may act as mentors.

Overseas Campuses and Abroad Programs

The Department of Comparative Literature encourages study abroad, both for increased proficiency in language and the opportunity for

advanced course work. Course work done at campuses other than Stanford is counted toward the major at the discretion of the Chair of Undergraduate Studies and is contingent upon the Office of the University Registrar's approval of transfer credit. To that end, students abroad are advised to save syllabi, notes, papers, and correspondence.

Degree Requirements

All majors in Comparative Literature (including honors) are required to complete the following requirements. All courses applied to the major must be taken for a letter grade, and a grade point average (GPA) of 2.0 or better must be achieved in each core course.

1. COMPLIT 101 What Is Comparative Literature?. This gateway to the major is normally taken by the end of sophomore year. It provides an introduction to literature and its distinctions from other modes of linguistic expression, and a fundamental set of interpretive skills. This course fulfills the Writing in the Major requirement.
2. *Core Courses (5 units each)*
   Students should complete these courses as soon as possible. Each course draws on examples from multiple traditions to explore fundamental issues in its genre.

		Units
COMPLIT 121	Poems, Poetry, Worlds	5
COMPLIT 122	Literature as Performance	5
COMPLIT 123	The Novel and the World	5

3. COMPLIT 199. This senior seminar is designed as a culmination to the course of study while providing reflection on the nature of the discipline. Topics vary.
4. *Electives:* Majors must complete at least 40 units of electives. 15 of the 40 units must be COMPLIT courses (excluding COMPLIT 194). The remaining courses should form a coherent intellectual focus requiring approval from the Chair of Undergraduate Studies and may be drawn from Comparative Literature offerings, from other literature departments, or from other fields of interdisciplinary relevance. Up to 10 units of Thinking Matters or SLE courses may be counted towards the elective requirement.
5. Students whose major concentration involves languages other than their native language(s) are encouraged to receive the Foreign Language Proficiency Notation. Those students who achieve this notation may count up to 15 units of language classes towards their electives in the Comparative Literature Major. The Foreign Language Proficiency Notation is administered by the Stanford Language Center, involves an Oral Proficiency Interview and Writing Proficiency Test, and results in a notation on the student's official Stanford transcript. Students should achieve a minimum rating of Advanced Low (for cognate languages) or Intermediate High (for non-cognate languages) on the Foreign Service Institute/American Council on the Teaching of Foreign Languages proficiency scale. Successful completion of the OPI is required to proceed with the WPT. Students are recommended to take the OPI in or before the Winter of their senior year.
6. Electives are subject to advisor consultation and approval.
7. *Total unit load:* Students must complete course work for a total of at least 65 units.

Comparative Literature and Philosophy Subplan

Undergraduates may major in the Comparative Literature and Philosophy subplan that is declared in Axess and apprears on a student's transcript and diploma. Students in this subplan take courses alongside students from other departments that also have specialized options associated with the program for the study of Philosophical and Literary Thought. Each student in this subplan is assigned an advisor in Comparative Literature, and student schedules and courses of study must be approved in writing by the Chair of Undergraduate Studies of Comparative Literature, and the Chair of Undergraduate Studies of the program. See the Philosophy + Literature @ Stanford (https://philit.stanford.edu/programs/philosophyandliterature.html) website.

A total of 65 units must be completed for this option, including the following requirements:

1. Seven courses taught by Comparative Literature faculty. Of the seven, the following five (5 units each) are required courses:

		Units
COMPLIT 101	What Is Comparative Literature?	5
COMPLIT 121	Poems, Poetry, Worlds	5
COMPLIT 122	Literature as Performance	5
COMPLIT 123	The Novel and the World	5
COMPLIT 199	Senior Seminar	5
The remaining two courses must be instructed by Comparative Literature faculty and approved by the Chair of Undergraduate Studies. Up to five units of SLE may be counted in lieu of one of these two courses.		

2. *Philosophy and Literature Gateway Course* (4 units) COMPLIT 181 Philosophy and Literature. This course should be taken as early as possible in the student's career, normally in the sophomore year.
3. *Philosophy Writing in the Major* (5 units)*:* PHIL 80 Mind, Matter, and Meaning. Prerequisite: introductory Philosophy course.
4. *Aesthetics, Ethics, Political Philosophy* (ca. 4 units): One course from the PHIL 170 series.
5. *Language, Mind, Metaphysics, and Epistemology* (ca. 4 units): One course from the PHIL 180 series.
6. *History of Philosophy (*ca. 8 units)*:* Two courses in the history of philosophy, numbered above PHIL 100. Up to five units of SLE may be counted in lieu of one of these two courses.
7. *Related Courses* (ca. 8 units)*:* Two upper division courses relevant to the study of philosophy and literature as identified by the committee in charge of the program. A list of approved courses may be found on Philosophy and Literature (http://philit.stanford.edu/programs/relevance.html) web site.
8. One course, typically in translation, in a literature distant from that of the student's concentration and offering an outside perspective on that literary tradition.
9. COMPLIT 199 (https://exploredegrees.stanford.edu/search/?P=COMPLIT%20199) Senior Seminar.
10. *Capstone:* Students must do one of the following: (a) take one of the officially-designated Philosophy and Literature capstone seminars listed below, subject to approval in writing by the Chair of Undergraduate Studies of Comparative Literature and by the undergraduate advisor for the literature and philosophy initiative; (b) write an honors thesis on a topic at the intersection of literature and philosophy (see Honors Program for general instructions); or (c) write a 5,000-word paper on a topic of their choosing, serving as the culmination of their work in the field. To make time to write the paper, students must enroll in a 3-unit, letter-grade independent study with a faculty member (or affiliate) in the Philosophy and Literature Focal Group. The paper must involve both philosophy and literature, and the topic must be approved by the faculty member by the add/drop deadline.

		Units
COMPLIT 283A	Modern Notions of 'The Holy'	3-5
PHIL 194W	Capstone Seminar: Imagination in Fiction and Philosophy	4
PHIL 194Z	Capstone: Living a Meaningful Literary Life	4

Other courses found on the Philosophy and Literature web site.

11. *Seminar Paper Requirement:* Students must write at least one seminar paper that is interdisciplinary in nature. This paper brings together material from courses taken in philosophy and literature, and may be an honors paper (see below), an individual research paper (developed through independent work with a faculty member), or a paper integrating materials developed for two separate courses (by arrangement with the two instructors). Though it may draw on previous course work, the paper must be an original composition, 18-20 pages in length. It must be submitted to the Chair of Undergraduate Studies and receive approval no later than the end of Winter Quarter in the fourth year of study.

- Substitutions and transfer credit are not normally permitted for the PHIL 170 series class or the PHIL 180 series class, and are never permitted for PHIL 80, COMPLIT 181, or the capstone seminar.
- Units devoted to acquiring language proficiency are not counted toward the 65-unit requirement.

Honors Program

Students majoring in any DLCL department (i.e., Comparative Literature, French and Italian, German Studies, Iberian and Latin American Cultures, and Slavic Languages and Literatures) who have an overall grade point average (GPA) of 3.3 or above and who maintain a 3.5 (GPA) in their major courses, are eligible to participate in the DLCL's honors program.

Declaring Honors

Prospective honors students must choose a senior thesis adviser from among their home department's regular faculty in their junior year by May 1. During Spring Quarter of the junior year, a student interested in the honors program should consult with the Chair of Undergraduate Studies of their home department to submit a thesis proposal (2-5 pages), DLCL Honors application, and an outline of planned course work for their senior year. When their applications are approved by their home department, students will request honors through Axess.

Honors theses vary considerably in length as a function of their topic, historical scope, and methodology. They may make use of previous work developed in seminars and courses, but display an enhanced comparative or theoretical scope. Quality rather than quantity is the key criterion. Honors theses range from 40 to 90 pages not including bibliography and notes.

Honors students are encouraged to participate in the DLCL program hosted by Bing Honors College. This DLCL Honors College is designed to help students develop their projects and is offered at the end of the summer before senior year. Applications must be submitted through the Bing program. For more information, view the Bing Honors (https://undergrad.stanford.edu/programs/bhc/) web site.

Program Requirements

A minimum of 10 units total, described below, and a completed thesis is required. Honors essays are due to the thesis adviser no later than 5:00 p.m. on May 15, of the terminal year. If an essay is found deserving of a grade of 'A-' or better by the thesis adviser, honors are granted at the time of graduation.

1. Spring Quarter of the junior year (optional): DLCL 189C Honors Thesis Seminar, 2-4 units S/NC, under the primary thesis adviser. Drafting or revision of the thesis proposal. The proposal is reviewed by the Chair of Undergraduate Studies and the Director of the department and will be approved or returned for submission.
2. Autumn Quarter of the senior year (required): DLCL 189A Honors Thesis Seminar, 4 units S/NC, taught by a DLCL appointed faculty member. Course focuses on researching and writing the honors thesis.
3. Winter Quarter of the senior year (required): DLCL 189B Honors Thesis Seminar, 2-4 units S/NC, under the primary thesis adviser. Focus is on writing under guidance of primary adviser.
4. Spring Quarter of the senior year (option; mandatory if not taken during junior year): DLCL 189C Honors Thesis Seminar, 2-4 units S/NC, under the primary thesis adviser. Honors essays are due to the thesis adviser and student services officer no later than 5:00 p.m. on May 15 of the terminal year.
5. Spring Quarter of the senior year (required) DLCL 199 Honors Thesis Oral Presentation, 1 unit S/NC. Enroll with primary thesis adviser.

The honors thesis in the DLCL embodies Stanford's excellence in course work and research. It is simultaneously one element of the student's intellectual legacy and part of the University's official history. The faculty considers the honors thesis to be far more than a final paper; rather, it is the product of solid research that contributes to conversations taking place within a larger scholarly community and representative of the intellectual vitality of the discipline. For all of these reasons, DLCL honors theses will be visible to future scholars researching similar questions through full online access through the Stanford Digital Repository (https://library.stanford.edu/research/stanford-digital-repository/) (SDR) and may be used as course materials for future Stanford honors preparatory courses. For similar purposes, a printed copy may also be kept in DLCL spaces. Students who wish to limit the availability or formats in which the thesis may be shared may do so by filling out the appropriate form with the DLCL student affairs officer.

Minor in Comparative Literature

The undergraduate minor in Comparative Literature represents a condensed (22-unit minimum) version of the major. It is designed for students who are unable to pursue the major but nonetheless seek an opportunity to gain a deeper understanding of literature.

Declaring the Minor

Students declare the minor in Comparative Literature through Axess. Students should meet with the Chair of Undergraduate Studies to discuss appropriate courses and options within the minor, and to plan the course of study. The minor plan is administered through the Division of Literatures, Cultures, and Languages (DLCL) undergraduate student services office in Pigott Hall, room 128.

Requirements

- Plans for the minor are reviewed with the Chair of Undergraduate Studies.
- 22 unit minimum course plan.
- All courses must be taken for a letter grade.
- Courses may not duplicate course work for other major or minor programs.
- Up to 5 units of SLE or Independent Study may count towards one of the four additional Comparative Literature courses with approval from the Chair of Undergraduate Studies.

Courses

Course requirements for the minor in Comparative Literature are:

		Units
COMPLIT 101	What Is Comparative Literature?	5
Select one of the following:		5
COMPLIT 121	Poems, Poetry, Worlds	
COMPLIT 122	Literature as Performance	

COMPLIT 123	The Novel and the World	
At least four other Comparative Literature courses.		12-20

Minor in Modern Languages

The Division of Literatures, Cultures, and Languages offers an undergraduate minor in Modern Languages for students demonstrating competency in two modern languages and literatures. This minor draws on literature and language courses offered in this and other literature departments.See the "Literatures, Cultures, and Languages (p. 1301)" section of this bulletin for requirements.

Doctor of Philosophy in Comparative Literature

University requirements for the Ph.D. are described in the "Graduate Degrees (p. 65)" section of this bulletin.

The Ph.D. program is designed for students whose linguistic background, breadth of interest in literature, and curiosity about the problems of literary scholarship and theory (including the relation of literature to other disciplines) make this program more appropriate to their needs than the Ph.D. in one of the national literatures. Students take courses in at least three literatures (one may be that of the native language), to be studied in the original. The program is designed to encourage familiarity with the major approaches to literary study prevailing today.

Before starting graduate work at Stanford, students should have completed an undergraduate program with a strong background in one literature and some work in a second literature in the original language. Since the program demands an advanced knowledge of two non-native languages and a reading knowledge of a third non-native language, students should at the time of application have an advanced enough knowledge of one of the three to take graduate-level courses in that language when they enter the program. They should be making enough progress in the study of a second language to enable them to take graduate courses in that language not later than the beginning of the second year, and earlier if possible. Language courses at the 100- or 200-level may be taken with approval from the Director of the department or the Chair of Graduate Studies. Applicants are expected to take an intensive course in the third language before entrance.

Students are admitted under a financial plan that attempts to integrate financial support and completion of residence requirements with their training as prospective university teachers. Assuming satisfactory academic progress, fellowship support as a Ph.D. student is for five years.

Application Procedures

Competition for entrance into the program is extremely keen. The program is kept small so that students have as much opportunity as possible to work closely with faculty throughout the period of study. Applicants should review all course and examination requirements, advancement requirements, and teaching obligations carefully before applying to the program. Because of the special nature of comparative literary studies, the statement of purpose included in the application for admission must contain the following information:

1. A detailed description of the applicant's present degree of proficiency in each of the languages studied, indicating the languages in which the applicant is prepared to do graduate work at present and outlining plans to meet additional language requirements of the program.
2. A description of the applicant's area of interest (for instance, theoretical problems, genres, periods) within literary study and the reasons for finding comparative literature more suitable to his or her needs than the study of a single literature. Applicants should also indicate their most likely prospective primary field, including the literatures on which they intend to concentrate.
3. An explanation of how the applicant's undergraduate education has prepared her or him for work in our program. If there are any gaps in the applicant's preparation, a plan to address those gaps should be discussed.
4. The applicant's reasons for wishing to study in the department.

The application itself must also include:

1. The results of the general section of the Graduate Record Examination. These results should be sent to Stanford University, ETS code 4704.
2. A letter of recommendation that focuses on the applicant's language skills, or a current ACTFL Oral Proficiency Interview (OPI) certificate, or a critical paper written in a non-native language.
3. Recommendations from faculty members in at least two of the literatures in which the student proposes to work, if possible.
4. A writing sample that the candidate considers to represent his or her best work, preferably demonstrating a comparative analysis.

For further information see the Graduate Admissions (http://gradadmissions.stanford.edu/) web site.

Degree Requirements

A candidate for the Ph.D. degree must complete three years (nine quarters) of full-time work, or the equivalent, in graduate study beyond the bachelor's degree. The student must take 135 units of graduate work and submit the doctoral dissertation. At least three consecutive quarters of course work must be taken at Stanford.

Languages

Students must present three non-native languages, two of them sufficiently to qualify for graduate courses in these languages and the third sufficiently to demonstrate the ability to read a major author in this language. Two languages are certified by graduate-level course work specified below. Only the third language may be certified by examination. Language preparation must be sufficient to support graduate-level course work in at least one language during the first year and in the second language during the second year. Students must demonstrate a reading knowledge of the third non-native language no later than the beginning of the third year.

Literatures in the same language (such as Spanish and Spanish American) are counted as one. One of the student's three literatures usually is designated as the primary field, the other two as secondary fields, although some students may offer two literatures at the primary level (six or more graduate courses).

Teaching

Whatever their sources of financial support, students are normally expected to undertake a total of five quarters of supervised apprenticeships and teaching at half time. Students must complete those pedagogy courses required by the departments in which they teach.

Minimum Course Requirements

Students are advised that the range and depth of preparation necessary to support superior work on the dissertation, as well as demands in the present professional marketplace for coverage of both traditional and interdisciplinary areas of knowledge, render these requirements as bare minimums.

1. Preparatory Courses

		Units
DLCL 301	The Learning and Teaching of Second Languages	3
DLCL 369	Introduction to the Profession of Literary Studies	1-2

These courses are designed to acculturate first-year students into the intellectual, professional, and pedagogical modes of the discipline. Students who do not intend to teach language at Stanford or after should consult the Chair of Graduate Studies about whether to take DLCL 301 or replace it with another course on pedagogy.

2. A sufficient number of courses (six or more) in the student's primary field to ensure knowledge of the basic works in one national literature from its beginnings to the present.

3. At least four additional complementary courses, with most of the reading in the original, in two different national literatures (i.e., two courses in each literature).

Minimum course requirements must be completed before the student is scheduled to take the University oral examination. These requirements are kept to a minimum so that students have sufficient opportunity to seek out new areas of interest. A course is an offering of 3-5 units. Independent study may take the place of up to two of the required courses, but no more; no undergraduate courses may be counted toward the required 135 credits. Courses should be taken for letter grades when the option is available.

The principal conditions for continued registration of a graduate student are the timely and satisfactory completion of the university, department, and program requirements for the degree, and fulfillment of minimum progress requirements. Failure to meet these requirements results in corrective measures that may include a written warning, academic probation, and/or the possible release from the program.

4. All graduate students, starting with the 2020/21 cohort, must participate in the Comparative Literature Graduate Students Colloquium (CompColl) (students enroll in COMPLIT 397 Graduate Studies Colloquium for 1 unit per quarter). For more information, see the Graduate Handbook 2020-21.

Minimum course requirements must be completed before the student is scheduled to take the University oral examination. These requirements are kept to a minimum so that students have sufficient opportunity to seek out new areas of interest. A course is an offering of 3-5 units. Independent study may take the place of up to two of the required courses, but no more; no undergraduate courses may be counted toward the required 135 credits. Courses should be taken for letter grades when the option is available.

The principal conditions for continued registration of a graduate student are the timely and satisfactory completion of the university, department, and program requirements for the degree, and fulfillment of minimum progress requirements. Failure to meet these requirements results in corrective measures that may include a written warning, academic probation, and/or the possible release from the program.

Examinations

Three examinations are required. The first two are one hour in duration, the third two hours.

1. First One-Hour Examination. The genre examination is administered toward the end of the first year. It is designed to demonstrate the student's knowledge of a substantial number of literary works in a single genre, ranging over several centuries and over at least three national literatures, and the theoretical problems involved in the chosen genre and in the matter of genre in general. Students must focus on poetry, drama, or narrative (including the novel), combining core recommendations from the department with selections from their own areas of concentration. Any student who does not pass the exam has the opportunity to retake it before the end of the same spring quarter. Students who do not pass this exam a second time may be dismissed from the program.
2. Second One-Hour Examination. The theory exam is administered in the autumn quarter of the second year. It is intended to demonstrate the student's knowledge of a particular problem in the history of literary theory and criticism or the ability to develop a particular theoretical position. In either case, this exam should demonstrate wide reading in theoretical and critical texts from a variety of periods. Any student who does not pass the exam has the opportunity to retake the exam the second week of the winter quarter. Students who do not pass this exam a second time may be dismissed from the program.
3. University Oral Examination. This examination is normally taken during the autumn quarter of the third year. It covers a literary period of about a century in three or more literatures with primary emphasis on a single national literature or, in occasional cases, two national literatures. The reading list covers chiefly the major literary works of the period.

More information about the examinations is available in the Department Graduate Handbook.

Dissertation Reading Committee

The doctoral dissertation reading committee consists of the principal dissertation adviser and at least two other readers. The doctoral dissertation reading committee must have no fewer than three and no more than five members. At least one member must be from the student's major department. Normally, all committee members are members of the Stanford University Academic Council or are emeritus Academic Council members. The student's department Director may, in some cases, approve the appointment of a reader who is not a current or emeritus member of the Academic Council, if that person is particularly well qualified to consult on the dissertation topic and holds a Ph.D. or equivalent degree. Former Stanford Academic Council members and non-Academic Council members may thus, on occasion, serve on a reading committee. A non-Academic Council member (including former Academic Council members) may replace only one of three required members of dissertation reading committees. If the reading committee has four or five members, at least three members (comprising the majority) must be current or emeritus members of the Academic Council. For additional information, see the GAP's Policy on Dissertation Reading Committees (https://gap.stanford.edu/handbooks/gap-handbook/chapter-4/subchapter-8/page-4-8-1/). Students should complete and submit the Dissertation Reading Committee form (https://pangea.stanford.edu/sites/default/files/Doc_Diss_Reading_Dtte_form.pdf) upon applying for Terminal Graduate Registration status.

Prospectus Colloquium

The prospectus for the dissertation must be prepared in close consultation with the dissertation adviser during the months preceding the colloquium. It should offer a synthetic overview of the dissertation, describe its methodology and the project's relation to past scholarship on the topic, and lay out a complete plan of the chapters.

The prospectus colloquium normally takes place during the quarter after the University oral examination. It is the student's responsibility to set the date and time of the colloquium in consultation with the members of the dissertation reading committee and the department administrator.

If the outcome is favorable by majority vote of the committee, the student is free to proceed with work on the dissertation. If the proposal is found

to be unsatisfactory by majority vote, the dissertation readers may ask the student to revise the prospectus and hold a second colloquium.

Qualifying Procedures

Candidacy

Admission to candidacy is an important decision by the department based on its overall assessment of a student's ability to complete the Ph.D. program. According to University policy, students are expected to follow department qualifying procedures and apply for candidacy by the end of the second year in residence. In reviewing a student for admission to candidacy, the faculty considers a student's academic progress including but not limited to:

- advanced language proficiency
- course work
- performance on the qualifying (i.e. genre and theory) examinations
- successful completion of teaching assistantships
- completion of at least three units of work with each of four Stanford faculty members

Beyond the successful completion of department prerequisites, admission to candidacy depends on the faculty's evaluation of whether student has the potential to fulfill the requirements of the degree program. Candidacy is determined by faculty vote. Failure to advance to candidacy results in the dismissal of the student from the doctoral program. Candidacy is valid for five years and students are required to maintain active candidacy through conferral of the doctoral degree. All requirements for the degree must be completed before candidacy expires. The department conducts regular reviews of each student's academic performance, both before and after admission to candidacy. Failure to make satisfactory progress to degree may result in dismissal from the doctoral program. Additional information about University candidacy policy is available in the Bulletin (p.) and GAP (http://gap.stanford.edu/4-6.html).

Annual Review

The faculty provides students with timely and constructive feedback on their progress toward the Ph.D. Annual reviews provide a general assessment and identify developing problems that could impede progress. Possible outcomes of the yearly review include:

1. continuation of the student in good standing, or
2. placing the student on probation, with specific guidelines for the period on probation and the steps to be taken in order to be returned to good standing.

For students on probation at this point (or at any other subsequent points), possible outcomes of a review include:

1. restoration to good standing
2. continued probation, again with guidelines for necessary remedial steps
3. termination from the program. Students leaving the program at the end of the first or second year are usually permitted to complete the requirements to receive an M.A. degree, if this does not involve additional residency or financial support.

Ph.D. Minor in Comparative Literature

This minor is designed for students working toward the Ph.D. in the various national literature departments. Students working toward the Ph.D. in English are directed to the program in English and Comparative Literature described among offerings in the Department of English (p. 1384). Students must have:

1. A knowledge of at least two non-native languages:
   a. one non-native language sufficient to qualify for graduate-level courses in that language
   b. the second non-native language sufficient to read a major author in the original language.
2. A minimum of six graduate courses:
   a. three graduate courses must be in the department of the second literature
      i. except for students in the Asian languages, students must choose a second literature outside the department of their major literature.
   b. three graduate courses must be in the Department of Comparative Literature, including:
      i. a seminar in literary theory or criticism
      ii. at least two of the three courses in Comparative Literature should originate in a department other than the one in which the student is completing their degree.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Comparative Literature Department counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Required Courses Policy

In academic year 2020-21, as Stanford operates on a four-quarter system, students may opt not to be enrolled in one of the four quarters of the year. Students may therefore be unable to take a Comparative Literature core class (COMPLIT 101, 121, 122, 123, 199) because they are on leave during the quarter it is offered. In these cases, the Chair of Undergraduate Studies will, in coordination with the student's departmental advisor, suggest appropriate substitute classes and approve one of them.

Graduate Degree Requirements

Grading

The Comparative Literature Department counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade.

Graduate Advising Expectations

The Department of Comparative Literature is committed to providing academic advising in support of graduate student scholarly and professional development. The overall goal of advising, both in the DLCL and the department, is to help graduate students make academic

and career choices wisely, and think ahead, in order to craft a long-term plan for their graduate student career and beyond. When most effective, the advising relationship entails collaborative and sustained engagement by both the advisor and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity. Advising is both an academically invaluable form for the transmission of expertise, as well as a key aspect of creating a strong departmental and Stanford community.

Faculty Advisors

Faculty advisors guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

- Upon enrolling, students plan their work under the direction of the Director of Graduate Studies or a faculty member designated by the program. When the student selects a more specialized advisor, the transition should involve oral or written communication between both advisors and the student concerning the student's progress, goals, and expectations. It is possible for doctoral students to choose two main advisors at the dissertation stage, provided all agree this is academically sound.
- Faculty advisors should meet with assigned students to discuss their selection of courses and to plan from a broader, longer-term perspective, including: discussion of program milestones and a basic timeline; an overview of Department and DLCL offerings beyond courses; student goals and interests and DLCL or Stanford programs that may be relevant; and (for doctoral students) how to transfer previous graduate coursework.
- Faculty advisors and graduate students should meet at least once per quarter to assess the advisee's course of study, performance over the past quarter, and plans for the next quarter, as well as longer term plans. If a student has two advisors, the student should meet at least once per quarter with each advisor and at least once per year with both advisors at the same time.
- For doctoral students, faculty should help their advisees plan for exams, research grant applications, develop research projects, and plan ahead for both the academic job market and the job search beyond academia.
- Faculty advisors should provide feedback about the student's progress to the department during the annual review process. For more information about the annual review, see the Graduate Handbook.

Graduate Students

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

- Upon enrolling, students plan their work under the direction of the Director of Graduate Studies or a faculty member designated by the program. As the student develops a field of expertise, the student chooses a program advisor to replace the Director of Graduate Studies role. The transition should involve oral or written communication between both advisors and the student concerning the student's progress, goals, and expectations.
- Graduate students and faculty advisors should meet at least once per quarter to assess the advisee's course of study, performance over the past quarter, and plans for the next quarter, as well as longer term plans. If a student has two advisors, the student should meet at least once per quarter with each advisor and at least once per year with both advisors at the same time.
- Students should consult with their advisors on all academic matters, including coursework, conference presentations and publications, research travel, and teaching plans.
- Students should provide a thorough self-evaluation each year for the annual review. For more information about the annual review, see the Graduate Handbook.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Faculty in Comparative Literature

Director: Amir Eshel

Director of Graduate Studies: Amir Eshel

Director of Undergraduate Studies: Alexander Key

Professors: Russell Berman (also German Studies), Adrian Daub (also German Studies), Amir Eshel (also German Studies), Roland Greene (also English), Joshua Landy (also French and Italian), Haiyan Lee (also East Asian Languages and Cultures), David Palumbo-Liu (on leave Autumn), Patricia Parker (also English), Joan Ramon Resina (also Iberian and Latin American Cultures), José David Saldívar, Ramón Saldívar (also English, on leave Winter), Ban Wang (also East Asian Languages and Cultures)

Associate Professors: Vincent Barletta (also Iberian and Latin American Cultures), Monika Greenleaf (also Slavic Languages and Literatures), Alexander Key, Indra Levy (also East Asian Languages and Cultures)

Assistant Professors: Marie Huber

Senior Lecturers: Cintia Santana, Vered K. Shemtov

Lecturers: Burcu Karahan, Marie-Pierre Ulloa

Courtesy Professor: Nancy Ruttenburg

Emeriti: (Professors) John Bender (also English), John Freccero, Hans U. Gumbrecht, Elisabeth Mudimbe-Boyi, Mary Pratt

Courses

COMPLIT 10N. Shakespeare and Performance in a Global Context. 3 Units.
Preference to freshmen. The problem of performance including the performance of gender through the plays of Shakespeare. In-class performances by students of scenes from plays. The history of theatrical performance. Sources include filmed versions of plays, and readings on the history of gender, gender performance, and transvestite theater. Note: To be eligible for WAYS credit, you must take the course for a Letter Grade. In AY 2020-21, a 'CR' grade will satisfy the WAYS requirement.

COMPLIT 11Q. Shakespeare, Playing, Gender. 3 Units.
Preference to sophomores. Focus is on several of the best and lesser known plays of Shakespeare, on theatrical and other kinds of playing, and on ambiguities of both gender and playing gender.

COMPLIT 31. Texts that Changed the World from the Ancient Middle East. 3-5 Units.
This course traces the story of the cradle of human civilization. We will begin with the earliest human stories, the Gilgamesh Epic and biblical literature, and follow the path of the development of law, religion, philosophy and literature in the ancient Mediterranean or Middle Eastern world, to the emergence of Jewish and Christian thinking. We will pose questions about how this past continues to inform our present: What stories, myths, and ideas remain foundational to us? How did the stories and myths shape civilizations and form larger communities? How did the earliest stories conceive of human life and the divine? What are the ideas about the order of nature, and the place of human life within that order? How is the relationship between the individual and society constituted? This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: HUMCORE 111, JEWISHST 150, RELIGST 150

COMPLIT 33. Humanities Core: Global Identity, Culture, and Politics from the Middle East. 3 Units.
How do we face the future? What resources do we have? Which power structures hold us back and which empower us? What are our identities at college in the Bay Area? In 1850s Lebanon, Abu Faris Shidyaq faced all these same questions (except the last one; he was a Christian magazine editor). In this course we will engage with claims about identity, culture, and politics that some might say come from the "Middle East" but that we understand as global. Ganzeer's graphic novel is as much for California as it is for Egypt. Ataturk's speech is about power and identity just like Donald Trump is about power and identity. In Turkish novels and in Arabic poetry, the people we engage in this course look to their pasts and our futures. What happens next? This is the third of three courses in the Middle Eastern track. These courses offer an unparalleled opportunity to study Middle Eastern history and culture, past and present. Take all three to experience a year-long intellectual community dedicated to exploring how ideas have shaped our world and future.future.
Same as: DLCL 33, HUMCORE 33

COMPLIT 36A. Dangerous Ideas. 1 Unit.
Ideas matter. Concepts such as revolution, tradition, and hell have inspired social movements, shaped political systems, and dramatically influenced the lives of individuals. Others, like immigration, universal basic income, and youth play an important role in contemporary debates in the United States. All of these ideas are contested, and they have a real power to change lives, for better and for worse. In this one-unit class we will examine these "dangerous" ideas. Each week, a faculty member from a different department in the humanities and arts will explore a concept that has shaped human experience across time and space. Some weeks will have short reading assignments, but you are not required to purchase any materials.
Same as: ARTHIST 36, EALC 36, ENGLISH 71, ETHICSOC 36X, FRENCH 36, HISTORY 3D, MUSIC 36H, PHIL 36, POLISCI 70, RELIGST 36X, SLAVIC 36

COMPLIT 37Q. Zionism and the Novel. 3 Units.
At the end of the nineteenth century, Zionism emerged as a political movement to establish a national homeland for the Jews, eventually leading to the establishment of the State of Israel in 1948. This seminar uses novels to explore the changes in Zionism, the roots of the conflict in the Middle East, and the potentials for the future. We will take a close look at novels by Israelis, both Jewish and Arab, in order to understand multiple perspectives, and we will also consider works by authors from the North America and from Europe. NOTE: To satisfy a WAYS requirement, this course must be taken for at least 3 units. In AY 2020-21, a 'CR' grade will satisfy the WAYS requirement.
Same as: JEWISHST 37Q

COMPLIT 43. Modernity and Novels in the Middle East. 3 Units.
This course will investigate cultural and literary responses to modernity in the Middle East. The intense modernization process that started in mid 19th century and lingers to this day in the region caused Arabic, Persian, and Turkish literary cultures to encounter rapid changes; borders dissolved, new societies and nations were formed, daily life westernized, and new literary forms took over the former models. In order to understand how writers and individuals negotiated between tradition and modernity and how they adapted their traditions into the modern life we will read both canonical and graphic novels comparatively from each language group and focus on the themes of nation, identity, and gender. All readings will be in English translation. This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: HUMCORE 131

COMPLIT 44. Humanities Core: How to be Modern in East Asia. 3-5 Units.
Modern East Asia was almost continuously convulsed by war and revolution in the 19th and 20th centuries. But the everyday experience of modernity was structured more profoundly by the widening gulf between the country and the city, economically, politically, and culturally. This course examines literary and cinematic works from China and Japan that respond to and reflect on the city/country divide, framing it against issues of class, gender, national identity, and ethnicity. It also explores changing ideas about home/hometown, native soil, the folk, roots, migration, enlightenment, civilization, progress, modernization, nationalism, cosmopolitanism, and sustainability. All materials are in English. This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: CHINA 24, HUMCORE 133, JAPAN 24, KOREA 24

COMPLIT 46. Atlantic Folds: Indigeneity and Modernity. 3 Units.
The Atlantic as an infinite doubling of ancient and modern. The Atlantic as an endless, watery cloth of African, American, and European folds, unfolding and refolding through bodies and ideas: blackness, whiteness, nature, nurture, water, blood, cannibal, mother, you, and I. The Atlantic as a concept, a space, a muse, a goddess. The Atlantic as birth and burial. One ocean under God, divisible, with salt enough for all who thirst. Authors include: Paul Gilroy, Gilles Deleuze, Chimamanda Adichie, Eduardo Viveiros de Castro, Davi Kopenawa, Pepetela, Beyoncé, and José Vasconcelos. This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: HUMCORE 135

COMPLIT 51Q. Comparative Fictions of Ethnicity. 4 Units.
We may "know" "who" we "are," but we are, after all, social creatures. How does our sense of self interact with those around us? How does literature provide a particular medium for not only self expression, but also for meditations on what goes into the construction of "the Self"? After all, don't we tell stories in response to the question, "who are you"? Besides a list of nouns and names and attributes, we give our lives flesh and blood in telling how we process the world. Our course focuses in particular on this question--Does this universal issue ("who am I") become skewed differently when we add a qualifier before it, like "ethnic"? Note: To be eligible for WAYS credit, you must take course for a Letter Grade.
Same as: AMSTUD 51Q, CSRE 51Q

COMPLIT 55N. Black Panther, Hamilton, Díaz, and Other Wondrous Lives. 3-5 Units.
This seminar concerns the design and analysis of imaginary (or constructed) worlds for narratives and media such as films, comics, and literary texts. The seminar's primary goal is to help participants understand the creation of better imaginary worlds - ultimately all our efforts should serve that higher purpose. Some of the things we will consider when taking on the analysis of a new world include: What are its primary features - spatial, cultural, biological, fantastic, cosmological? What is the world's ethos (the guiding beliefs or ideals that characterize the world)? What are the precise strategies that are used by the artist to convey the world to us and us to the world? How are our characters connected to the world? And how are we - the viewer or reader or player - connected to the world? Note: This course must be taken for a letter grade to be eligible for WAYS credit. In AY 2020-21, a `CR' grade will satisfy the WAYS requirement.
Same as: CSRE 55N

COMPLIT 57. Human Rights and World Literature. 5 Units.
Human rights may be universal, but each appeal comes from a specific location with its own historical, social, and cultural context. This summer we will turn to literary narratives and films from a wide number of global locations to help us understand human rights; each story taps into fundamental beliefs about justice and ethics, from an eminently human and personal point of view. What does it mean not to have access to water, education, free speech, for example? This course has two components. The first will be a set of readings on the history and ethos of modern human rights. These readings will come from philosophy, history, political theory. The second, and major component is comprised of novels and films that come from different locations in the world, each telling a compelling story. We will come away from this class with a good introduction to human rights history and philosophy and a set of insights into a variety of imaginative perspectives on human rights issues from different global locations. Readings include: Amnesty International, Freedom: Stories Celebrating the Universal Declaration of Human Rights, Andrew Clapham, Human Rights: A Very Short Introduction, James Dawes, That the World May Know, Walter Echo-Hawk, In the Light of Justice, Amitav Ghosh, The Hungry Tide, Bessie Head, The Word for World is Forest, Ursula LeGuin.

COMPLIT 70N. Animal Planet and the Romance of the Species. 3-4 Units.
Preference to freshmen.This course considers a variety of animal characters in Chinese and Western literatures as potent symbols of cultural values and dynamic sites of ethical reasoning. What does pervasive animal imagery tell us about how we relate to the world and our neighbors? How do animals define the frontiers of humanity and mediate notions of civilization and culture? How do culture, institutions, and political economy shape concepts of human rights and animal welfare? And, above all, what does it mean to be human in the pluralistic and planetary 21st century? Note: To be eligible for WAYS credit, you must take course for a Letter Grade.
Same as: CHINA 70N

COMPLIT 89. Investigating Identity Through Filipinx Fiction. 5 Units.
This course is both a reading seminar featuring canonical and contemporary Filipinx authors (including Mia Alvar, Carlos Bulosan, Elaine Castillo, Bienvenido Santos, Lysley Tenorio and José Rizal) and a writing workshop where students generate short stories exploring identity. Rizal's seminal novels Noli Me Tangere and El filibusterismo are ¿the earliest artistic expressions of the Asian colonial experience from the point of view of the oppressed¿ and through his work and the work of other Filipinx authors, we discover how both national and individual identities are not only challenged by adversity, trauma, violence, and war but also forged and strengthened by them. Note: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.
Same as: ASNAMST 90E, ENGLISH 90E

COMPLIT 100. CAPITALS: How Cities Shape Cultures, States, and People. 3-5 Units.
This course takes students on a trip to major capital cities, at different moments in time: Renaissance Florence, Golden Age Madrid, Colonial Mexico City, Enlightenment and Romantic Paris, Existential and Revolutionary St. Petersburg, Roaring Berlin, Modernist Vienna, and bustling Buenos Aires. While exploring each place in a particular historical moment, we will also consider the relations between culture, power, and social life. How does the cultural life of a country intersect with the political activity of a capital? How do large cities shape our everyday experience, our aesthetic preferences, and our sense of history? Why do some cities become cultural capitals? Primary materials for this course will consist of literary, visual, sociological, and historical documents (in translation); authors we will read include Boccaccio, Dante, Sor Juana, Montesquieu, Baudelaire, Gogol, Irmgard Keun, Freud, and Borges. Note: To be eligible for WAYS credit, you must take the course for a Letter Grade.
Same as: DLCL 100, FRENCH 175, GERMAN 175, HISTORY 206E, ILAC 175, ITALIAN 175, URBANST 153

COMPLIT 101. What Is Comparative Literature?. 5 Units.
How can we best talk about literature? What exactly is literature? What is theory? What is comparison? How do these questions fit into our lives? This course is an introduction to Comparative Literature suitable for all students. We will think about poetry, translation, trans feminism (and more), and we will read Maria Lugones, Etel Adnan, Hortense Spillers, and others. This course will be taught online and asynchronously; there will be recorded lectures, the bulk of the discussion will take place in live small groups, and students will submit regular recorded presentations in addition to writing and revising a paper.

COMPLIT 102. Film Series: Understanding Turkey Through Film. 1-2 Unit.
Join us in our quest to understand the great transformation in Turkey and its impact on its people through cinema. Set against the backdrop of the expansion of capitalism and the fundamental cultural, political and social change in the last decade, the movies in this series tell the uneasy stories of individuals whose lives are affected by this disruptive change. By examining the link between the individual experiences and societal change, the films confront issues such as globalization, gender and racial hierarchies, urban transformation, state repression, male domination, and the women's struggle in Turkey. The course consists of 8 Turkish film screenings each of which will be preceded by an introduction by Dr. Alemdaroglu or Dr. Karahan, artistically, historically and politically contextualizing the films, and will be followed by a Zoom discussion and Q&A session led by invited guest scholars of Anthropology, Film Studies, Political Science, Women and Gender Studies or film directors themselves. The students and interested Stanford community will be provided with the streaming links for the movies at the beginning of each week to screen them on their own time, and the discussion sessions will be held on the scheduled class time on Zoom. All films will be in Turkish with English subtitles.
Same as: COMPLIT 302

COMPLIT 104A. Voice, Dissent, Resistance: Antiracist and Antifascist Discourse and Action. 5 Units.
The rise of right-wing movements in the United States and in Europe signal a resurgence of nativist and ethno-nationalist politics that rely heavily on racism to advance fascist politics. This course will explore these phenomena both in terms of their historical development and their present-day appearances. The goal will be to understand how those involved in anti-racist and anti-fascist struggles have invented, created, and practiced discourses and actions that attempt to resist racism and fascism, and to evaluate their merits and weaknesses. Historical, philosophic, journalistic, and creative writings will be the basis of study. This is an experimental course driven by the urgency of recent political events. Students should have open minds and be willing to help shape the course.
Same as: COMPLIT 304

COMPLIT 107A. Ancient Knowledge, New Frontiers: How the Greek Legacy Became Islamic Science. 3 Units.
What contributions did Arabic and Islamic civilization make to the history of science? This course will read key moments in Greek and Islamic science and philosophy and ask questions about scientific method, philosophy, and religious belief. We will read Ibn Sina (Avicenna), Ibn Haytham, and Baha al-Din al-Amili, among others. What is the scientific method and is it universal across time and place? What is Islamic rationality? What is Greek rationality? Who commits to empiricism and who relies on inherited ideas? This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: CLASSICS 47, HUMCORE 121

COMPLIT 111Q. Texts and Contexts: Spanish/English Literary Translation Workshop. 4 Units.
This course introduces students to the theoretical knowledge and practical skills necessary to translate literary texts from Spanish to English and English to Spanish. Students will workshop and revise a translation project throughout the quarter. Topics may include comparative syntaxes, morphologies, and semantic systems; register and tone; audience; the role of translation in the development of languages and cultures; and the ideological and socio-cultural forces that shape translations.
Same as: DLCL 111Q, ILAC 111Q

COMPLIT 115. Vladimir Nabokov: Displacement and the Liberated Eye. 3-5 Units.
How did the triumphant author of "the great American novel" Lolita evolve from the young author writing at white heat for the tiny sad Russian emigration in Berlin? We will read his short stories and the novels The Luzhin Defense, Invitation to a Beheading, Lolita, Lolita the film, and Pale Fire, to see how Nabokov generated his sinister-playful forms as a buoyant answer to the "hypermodern" visual and film culture of pre-WWII Berlin, and then to America's all-pervading postwar "normalcy" in his pathological comic masterpieces Lolita and Pale Fire. Buy texts in translation at the Bookstore; Slavic grad students will supplement with reading and extra sessions in original Russian.
Same as: COMPLIT 315, SLAVIC 156, SLAVIC 356

COMPLIT 118. The Gothic in Literature and Culture. 3-5 Units.
This course introduces students to the major features of Gothic narrative, a form that emerges at the same time as the Enlightenment, and that retains its power into our present. Surveying Gothic novels, as well as novellas and short stories with Gothic elements, we will learn about the defining features of the form and investigate its meaning in the cultural imagination. Gothic narratives, the course will suggest, examine the power of irrational forces in a secular age: forces that range from barbaric human practices, to supernatural activity, to the re-enchantment of modern existence. We will also consider the importance for Gothic authors and readers of the relation among narrative. spectacle and the visual arts. Primary works may include Ann Radcliffe's <e>The Italian, Jane Austen's Northanger Abbey</e>, Victor Hugo's <e>The Hunchback of Notre Dame</e>, E.T.A. Hoffman's <e>The Sandman</e>, Mary Shelly's <e>Frankenstein</e>, and Edgar Allen Poe's <e>The Narrative of Arthur Gordon Pym</e>. We may also do a section on vampires, including Bram Stoker's <e>Dracula</e>, and its remake in film by F.W. Murnau and Werner Herzog. Critical selections by Edmund Burke, Sigmund Freud, Walter Benjamin, Michel Foucault, and Terry Castle, among others.
Same as: ENGLISH 138E

COMPLIT 119. The Turkish Novel. 3-5 Units.
Designed as a survey, this course will examine the modern Turkish novel from the early days of the Republic to the present day. We will examine the aesthetic, political, and social aspects of the Turkish novel by reading major samples of national, historical, philosophical, village, and modernist novels. Discussions will be conducted in English. Students will have an option to read the primary sources in Turkish or in English. Contact Burcu Karahan for meeting time and place.
Same as: COMPLIT 319

COMPLIT 121. Poems, Poetry, Worlds. 5 Units.
What is poetry? How does it speak in many voices to questions of philosophy, history, society, and personal experience? Why does it matter? The reading and interpretation of poetry in crosscultural comparison as experience, invention, form, sound, knowledge, and part of the world. The readings address poetry of several cultures (Brazil, Chile, France, Germany, Greece, Italy, Occitania, Peru) in comparative relation to that of the English-speaking world, and in light of classic and recent theories of poetry.
Same as: DLCL 141

COMPLIT 122. Literature as Performance. 5 Units.
The purpose of this course is to re-embed great dramatic texts in a history and theory of performance, using Bay Area and Stanford productions, audiovisual materials, and your own trans-medial projects to help us reconceive theater off the page, moving in time, space and thought.
Same as: DLCL 142

COMPLIT 123. The Novel and the World. 5 Units.
The European Design of the Novel. The course will trace the development of the modern literary genre par excellence through some of its great milestones from the 17th century to the present. Works by Cervantes, Austen, Flaubert, Dostoevsky, Queirós, Kafka, Woolf, Verga, and Rodoreda.
Same as: DLCL 143

COMPLIT 124C. Napoleon. 3-5 Units.
Who was Napoleon? A fierce patriot or a traitor of the Revolution? A beloved emperor or a merciless dictator? There is not one single or indeed final answer to these questions: in this course we shall learn to make a distinction between the historical figure (his life and actual deeds) and the literary character (how his detractors or enthusiasts represented him). We will explore the multi-faceted representations of Napoleon with a particular focus on his portraits in poems, novels, essays, paintings and sculptures. The syllabus will include readings and excerpts from Balzac, Stendhal, Dumas, Hugo, Thackeray, Tolstoy, Manzoni, Foscolo, Calvino. Taught in English.
Same as: FRENCH 124A

COMPLIT 127B. The Hebrew and Jewish Short Story. 3-5 Units.
Short stories from Israel, the US and Europe including works by Agnon, Kafka, Keret, Castel-Bloom, Kashua, Singer, Benjamin, Freud, biblical myths and more. The class will engage with questions related to the short story as a literary form and the history of the short story. Reading and discussion in English. Optional: special section with readings and discussions in Hebrew. Note: To be eligible for WAYS credit, you must take the course for a Letter Grade. In AY 2020-21, a 'CR' grade will satisfy the WAYS requirement.
Same as: JEWISHST 147B

COMPLIT 128. Literature of the former Yugoslavia. 3-5 Units.
What do Slavoj Zizek, Novak Djokovic, Marina Abramovic, Melania Trump, Emir Kusturica, and the captain of the Croatian national football team have in common? All were born in a country that no longer exists, the Socialist Federal Republic of Yugoslavia (1945-1992). This course will introduce masterpieces of Yugoslav literature and film, examining the social and political complexities of a multicultural society that collapsed into civil war (i.e. Bosnia, Kosovo) in the 1990s. In English with material available in Serbo-Croatian and Slovenian.
Same as: REES 128, SLAVIC 128

COMPLIT 131. Coming of Age in the Middle Ages. 3-5 Units.
It is often said that adolescence is a modern invention, and that people in earlier times expected children to act like adults as soon as they were physically able to do so. But the literature that survives from the European Middle Ages reveals a deep preoccupation with questions of how to form socially-competent individuals. What role did literature play in disseminating norms and models for adult behavior? This course introduces students to a range of works from 1100 to 1500CE that portray the process of becoming an adult or prescribe what it should look like: behavior manuals, treatises, epic narratives, romances, and literary 'letters' from parents to children. Students gain familiarity with a range of historic genres and develop skills in close reading and critical analysis. Readings are in English.

COMPLIT 132A. Nostalgia as a Global Form. 3 Units.
The course will explore the waves of nostalgia that have swept the globe in the past decades. We will look at contemporary expressions of nostalgia across different media, including literature, cinema, art, spoken word, street art and social media. We will examine nostalgic narratives related to a variety of cultural phenomena such as exile, migration, colonialism, globalization and technological advancements. We will focus on case studies from various countries such as Israel, the former Soviet Union, India and the UK, and explore them in their specific cultural context, while also exploring nostalgia as a global trend of Late Modernity. Our readings will be accompanied by fundamental theoretical texts on nostalgia, including writings by Svetlana Boym, Fred Davis, Zygmunt Bauman and others.

COMPLIT 133A. Literature and Society in Africa and the Caribbean. 4 Units.
This course explores texts and films from Francophone Africa and the Caribbean in the 20th and 21st centuries. The course will explore the connections between Sub-Saharan Africa, the Maghreb and the Caribbean through both foundational and contemporary works while considering their engagement with the historical and political contexts in which they were produced. This course will also serve to improve students' speaking and writing skills in French while sharpening their knowledge of the linguistic and conceptual tools needed to conduct literary analysis. The diverse topics discussed in the course will include national and cultural identity, race and class, gender and sexuality, orality and textuality, transnationalism and migration, colonialism and decolonization, history and memory, and the politics of language. Readings include the works of writers and filmmakers such as Djibril Tamsir Niane, Léopold Senghor, Aimé Césaire, Albert Memmi, Patrick Chamoiseau, Leonora Miano, Leila Slimani, Dani Laferrière and Ousmane Sembène. Taught in French. Students are highly encouraged to complete FRENLANG 124 or to successfully test above this level through the Language Center. This course fulfills the Writing in the Major (WIM) requirement.
Same as: AFRICAAM 133, AFRICAST 132, COMPLIT 233A, CSRE 133E, FRENCH 133, JEWISHST 143

COMPLIT 134A. Classics of Persian Literature. 3-5 Units.
Why do poems that were written hundreds of years ago still capture the imagination? How is love configured in the texts of a distant culture? Who sings the tales and who are the heroes? This course offers an introduction to the central works of Persian literature, from the 10th century to the present, across the genres of epic, romance, lyric, and novel. As we become acquainted with texts from a millennium of literary history, we will touch upon questions of performance (music and dance), storytelling, profane and divine love, the nature of spiritual quests, the development of narrative and poetic form, the formal and ethical aspects of translation, and, finally, the meaning of modernity in a non-Western context. Readings include: the Book of Kings by Ferdowsi (d.1020); Layla and Majnun by Nezami (d.1209); The Conference of the Birds by Attar (d.1221); selections from the Masnavi and Divan of Rumi (d.1273); the Rose Garden by Sa`di (d.1292), selections from the Divan of Hafez (d.1390); The Blind Owl by Sadegh Hedayat (d.1951); and selected modern poems. Taught in English.
Same as: COMPLIT 234

COMPLIT 138. Literature and the Brain. 3 Units.
Recent developments in and neuroscience and experimental psychology have transformed the way we think about the operations of the brain. What can we learn from this about the nature and function of literary texts? Can innovative ways of speaking affect ways of thinking? Do creative metaphors draw on embodied cognition? Can fictions strengthen our "theory of mind" capabilities? What role does mental imagery play in the appreciation of descriptions? Does (weak) modularity help explain the mechanism and purpose of self-reflexivity? Can the distinctions among types of memory shed light on what narrative works have to offer?.
Same as: COMPLIT 238, ENGLISH 118, ENGLISH 218, FRENCH 118, FRENCH 218, PSYC 126, PSYCH 118F

COMPLIT 139A. Jaguars and Labyrinths: A Survey of South American Short Fiction. 3-5 Units.
10 South American short stories in 10 weeks. We will read tales of jaguars and octopuses, labyrinthic cities and eerie parks, magicians and mediums, time loops and spatial stretches. Each of the works will offer a unique insight into South American literature, history, and culture. We will focus on 20th and 21st century stories that deal with the future of techno-science, the interaction between Western and indigenous worldviews, the intersection of fiction and reality, the relation between the human and the non-human, and the ecological planetary crisis. Authors include Clarice Lispector, Roberto Bolaño, Jorge Luis Borges, Julio Cortázar, João Guimarães Rosa, Vilém Flusser, and Conceição Evaristo. Taught in English, no previous knowledge of Spanish and Portuguese required. Note: Students with a background in Portuguese and/or Spanish may use this course as a platform to enhance their linguistic proficiency and their close-reading skills in the target languages.
Same as: ILAC 139

COMPLIT 142. The Literature of the Americas. 5 Units.
A wide-ranging overview of the literatures of the Americas inncomparative perspective, emphasizing continuities and crises that are common to North American, Central American, and South American literatures as well as the distinctive national and cultural elements of a diverse array of primary works. Topics include the definitions of such concepts as empire and colonialism, the encounters between worldviews of European and indigenous peoples, the emergence of creole and racially mixed populations, slavery, the New World voice, myths of America as paradise or utopia, the coming of modernism, twentieth-century avant-gardes, and distinctive modern episodes--the Harlem Renaissance, the Beats, magic realism, Noigandres--in unaccustomed conversation with each other.
Same as: AMSTUD 142, CSRE 142, ENGLISH 172E

COMPLIT 142B. Translating Japan, Translating the West. 3-4 Units.
Translation lies at the heart of all intercultural exchange. This course introduces students to the specific ways in which translation has shaped the image of Japan in the West, the image of the West in Japan, and Japan's self-image in the modern period. What texts and concepts were translated by each side, how, and to what effect? No prior knowledge of Japanese language necessary.
Same as: JAPAN 121, JAPAN 221

COMPLIT 145. Reflection on the Other: The Arab Israeli Conflict in Literature and Film. 3-5 Units.
How literary works outside the realm of Western culture struggle with questions such as identity, minority, and the issue of the Other. How the Arab is viewed in Hebrew literature, film and music and how the Jew is viewed in Palestinian works in Hebrew or Arabic (in translation to English). Historical, political, and sociological forces that have contributed to the shaping of these writers' views. Guest lectures about the Jew in Palestinian literature and music. Note: To be eligible for WAYS credit, you must take course for a Letter Grade.
Same as: AMELANG 126, JEWISHST 106

COMPLIT 147. Facts and Fictions: Writing the New World in Early Modernity. 3-5 Units.
How was knowledge about the colonies in America established? What was the role of fiction in this process? This course introduces students to major problems at the intersection of literature and history. It provides students with an overview of historical and fictional writings that shaped the early modern imagination about colonial spaces in Europe and the Americas. Students will look into the process whereby poets and novelists made unfamiliar places more familiar to their European and American audiences, as well as into how historians used myths and fictions to build knowledge about those foreign places and cultures. Readings span fictional prose, histories, epic poems, philosophical writings, engravings and maps. Authors may include St. Teresa, Camões, Cervantes, Inca Garcilaso, Catalina de Erauso, Mendes Pinto, Bacon, Sor Juana, Antonio Vieira, and Margaret Cavendish. Students will practice close reading techniques and historical analysis, writing papers combining the two. Texts will be available in English.
Same as: 1500-1700

COMPLIT 148. Transcultural Perspectives of South-East Asian Music and Arts. 2-4 Units.
This course will explore the links between aspects of South-East Asian cultures and their influence on modern and contemporary Western art and literature, particularly in France; examples of this influence include Claude Debussy (Gamelan music), Jacques Charpentier (Karnatak music), Auguste Rodin (Khmer art) and Antonin Artaud (Balinese theater). In the course of these interdisciplinary analyses - focalized on music and dance but not limited to it - we will confront key notions in relation to transculturality: orientalism, appropriation, auto-ethnography, nostalgia, exoticism and cosmopolitanism. We will also consider transculturality interior to contemporary creation, through the work of contemporary composers such as Tran Kim Ngoc, Chinary Ung and Tôn-Thât Tiêt. Viewings of sculptures, marionette theater, ballet, opera and cinema will also play an integral role. To satisfy a Ways requirement, this course must be taken for at least 3 units. In AY 2020-21, a letter grade or `CR¿ grade satisfies the Ways requirement. WIM credit in Music at 4 units and a letter grade.
Same as: COMPLIT 267, FRENCH 260A, MUSIC 146N, MUSIC 246N

COMPLIT 149. The Laboring of Diaspora & Border Literary Cultures. 3-5 Units.
Focus is given to emergent theories of culture and on comparative literary and cultural studies. How do we treat culture as a social force? How do we go about reading the presence of social contexts within cultural texts? How do ethno-racial writers re-imagine the nation as a site with many "cognitive maps" in which the nation-state is not congruent with cultural identity? How do diaspora and border narratives/texts strive for comparative theoretical scope while remaining rooted in specific local histories. Note: This course must be taken for a letter grade to be eligible for WAYS credit. In AY 2020-21, a "CR" grade will satisfy the WAYS requirement.
Same as: CSRE 149, ILAC 149

COMPLIT 154A. Film & Philosophy. 3 Units.
Issues of authenticity, morality, personal identity, and the value of truth explored through film; philosophical investigation of the filmic medium itself. Screenings to include Blade Runner (Scott), Do The Right Thing (Lee), The Seventh Seal (Bergman), Fight Club (Fincher), La Jetée (Marker), Memento (Nolan), and Eternal Sunshine of the Spotless Mind (Kaufman). Taught in English.
Same as: ENGLISH 154F, FRENCH 154, ITALIAN 154, PHIL 193C, PHIL 293C

COMPLIT 155A. The Mafia in Society, Film, and Fiction. 4 Units.
The mafia has become a global problem through its infiltration of international business, and its model of organized crime has spread all over the world from its origins in Sicily. At the same time, film and fiction remain fascinated by a romantic, heroic vision of the mafia. Compares both Italian and American fantasies of the Mafia to its history and impact on Italian and global culture. Taught in English.
Same as: ITALIAN 155

COMPLIT 159. Asian American Film and Popular Culture. 4 Units.
Tracing the evolution of Asian American cultural representations from the silent film era through the first generation of Asian American YouTube stars, this course examines the economic, political, and cultural influence of Asian American screen images on U.S. society. Through a focus on both mainstream and independent productions, we discuss the work of Asian American actors, audience members, media producers, consumers, and activists. Possible films and TV shows to be discussed include The Cheat (1915), Shanghai Express (1932), Flower Drum Song (1961), Chan is Missing (1983) Fall of the I Hotel (1983), Who Killed Vincent Chin? (1989), Sa-I-Gu, (1992), Saving Face (2004) Crazy Rich Asians (2018), To All the Boys I've Loved Before (2018), TV episodes of the Mindy Project, and work by early Asian American YouTube stars including Michelle Phan, HappySlip, and KevJumba.
Same as: AMSTUD 115, ASNAMST 115

COMPLIT 161E. Narrative and Narrative Theory. 5 Units.
An introduction to stories and storytelling--that is, to narrative. What is narrative? When is narrative fictional and when non-fictional? How is it done, word by word, sentence by sentence? Must it be in prose? Can it be in pictures? How has storytelling changed over time? Focus on various forms, genres, structures, and characteristics of narrative. nEnglish majors must take this class for 5 units.
Same as: ENGLISH 161

COMPLIT 178. Metamorphosis and Desire: Spenser, Marlowe, Shakespeare, Milton. 1-5 Unit.
A recurring motif in the myths of poetry's origins is a metamorphosis provoked by erotic desire, from the nymph Daphne transformed into a laurel tree as she escapes the god Apollo to the bard Orpheus dismembered by impassioned Maenads. This course explores the entanglement of these themes in Renaissance verse across plays by Shakespeare, epic poetry by Spenser and Milton, and narrative poems by Marlowe, Shakespeare, and their contemporaries in continental Europe. We will situate these works amid critical perspectives on desire, love, and gendered subjectivity in early modernity and against the classical background of Ovid's 'Metamorphoses', whose tales of eroticism and transformation shaped so much of Renaissance literary and artistic production.

COMPLIT 179. Rumi: Rhythms of Creation. 3-5 Units.
This course offers a comprehensive introduction to the thought, poetics, and legacy of one of the towering figures of Persian letters, Mawlana Jalal al-Din Rumi (1207-1273). After discussing the literary ancestors (Sana'i, `Attar), we will trace the mystico-philosophical foundations of Rumi's thought through close readings of the lyrical (Divan-e Shams) and narrative poems (Mathnavi-ye ma`navi), the prose works (Fihe ma fihe), and the letters. Literary analyses will be followed by an exploration of music as a structuring principle in Rumi's work and the role of sama` (spiritual audition) as a poetic practice. From there, we will look at the ritual and symbolism of the dervish dance, the foundation of the Mevlevi order, the interconnectedness of space (architecture) and poetic form that is exemplified in the Mevlevi dervish lodges, and the literary and philosophical echoes of Rumi in Ottoman culture, above all Seyh Galip's masterpiece Hüsn ü Ask (1782). The course will be complemented by digressions on Rumi in contemporary Persian and Turkish music, including live musical performances. Open to undergraduates and graduates. Taught in English.
Same as: COMPLIT 249

COMPLIT 181. Philosophy and Literature. 3-5 Units.
What, if anything, does reading literature do for our lives? What can literature offer that other forms of writing cannot? Can fictions teach us anything? Can they make people more moral? Why do we take pleasure in tragic stories? This course introduces students to major problems at the intersection of philosophy and literature. It addresses key questions about the value of literature, philosophical puzzles about the nature of fiction and literary language, and ways that philosophy and literature interact. Readings span literature, film, and philosophical theories of art. Authors may include Sophocles, Dickinson, Toni Morrison, Proust, Woolf, Walton, Nietzsche, and Sartre. Students master close reading techniques and philosophical analysis, and write papers combining the two. This is the required gateway course for the Philosophy and Literature major tracks. Majors should register in their home department.
Same as: CLASSICS 42, ENGLISH 81, FRENCH 181, GERMAN 181, ILAC 181, ITALIAN 181, PHIL 81, SLAVIC 181

COMPLIT 183. Self-Impersonation: Autobiography, Memoir, Fictional Autobiography. 5 Units.
This course will examine the intersecting genres of fiction, autobiography, and memoir. Topics will include the literary construction of selfhood and its constituent categories; the role of language in the development of the self; the relational nature of the self (vis-à-vis the family, "society," nation, God); the cultural status of "individuality"; conceptions of childhood; and the role of individual testimony in our understanding of family, religious and cultural identity. In addition to short theoretical works, authors may include: Marguerite Duras; Elena Ferrante; Sam Shepard; Gertrude Stein; Karl Ove Knausgaard; Marcel Proust; Vladimir Nabokov; Primo Levi; Roland Barthes; and J. M. Coetzee.
Same as: ENGLISH 183E

COMPLIT 184. READING RUMI. 3-5 Units.
Introduction to the work of Mawlana Jalal al-Din Rumi (1207-1273) in the original Persian. Through close readings of the poems and prose texts we will explore the ways in which Rumi's thought informs his poetic language and continues to resonate with us today. Topics to be touched upon in connection with the primary texts include: Islamic philosophy; theories of literature in the Arabo-Persian world; poetic genres in medieval Persian literature; meter, rhyme, and metaphor; and, finally, fundamental questions of translation and translatability. Special emphasis will be placed on understanding Rumi within the historical context. Readings in Persian. Two years of Persian at Stanford or equivalent required. Counts for the Persian track in the MELLAC minor.

COMPLIT 188. In Search of the Holy Grail: Percival's Quest in Medieval Literature. 3-5 Units.
This course focuses on one of the most famous inventions of the Middle Ages: the Holy Grail. The grail - a mysterious vessel with supernatural properties - is first mentioned in Chrétien de Troyes' "Perceval," but the story is soon rewritten by authors who alter the meaning of both the grail and the quest. By reading three different versions, we will explore how they respond differently to major topics in medieval culture and relevant to today: romantic love, family ties, education, moral guilt, and spiritual practice. The texts are: Chrétien de Troyes' "Perceval," Wolfram von Eschenbach's "Parzival," and the anonymous "Queste del Saint Graal." All readings will be available in English.
Same as: COMPLIT 388, GERMAN 188, GERMAN 388

COMPLIT 194. Independent Research. 1-5 Unit.
(Staff).

COMPLIT 199. Senior Seminar. 5 Units.
What is criticism? When we interpret literature today, are we fulfilling the critical vocation? What are the alternatives? We consider the origins of the idea of the critic in nineteenth-century culture, its development in the twentieth century, and its current exponents, revisionists, and dissenters. Senior seminar for Comparative Literature Senior majors only.

COMPLIT 204A. Digital Humanities Across Borders. 3-5 Units.
What if you could take a handwritten manuscript, or a pile of 100 books, and map all the locations that are referenced, or see which characters interact with one another, or how different translators adapted the same novel -- without reading through each text to manually compile those lists? Digital humanities tools and methods make it possible, but most tools and tutorials assume the texts are in English. If you work with text (literature, historical documents, fanfic, tweets, or any other textual material) in languages other than English, DLCL 204 is for you. In 1:1 consultation with the instructor, you'll chart your own path based on the language you're working with, the format of the text, and what questions you'd like to try to answer. No previous programming or other technical experience is required, just a reading knowledge of a language other than English (modern or historical). We'll cover the whole process of using digital tools, from start to finish: text acquisition, text enrichment, and analysis/visualization, all of which have applications in a wide range of job contexts within and beyond academia. You'll also have the chance to hear from scholars who are doing digital humanities work in non-English languages, about their experience working across the technical and linguistic borders within their discipline, and within the broader DH community. While this course will be online and primarily asynchronous, there will be opportunities for students to meet synchronously throughout the quarter in language- and tool-based affinity groups.
Same as: DLCL 204, ENGLISH 204

COMPLIT 207. Why is Climate Change Un-believable? Interdisciplinary Approaches to Environmental Action. 5 Units.
The science is there. The evidence is there. Why do people still refuse to recognize one of the greatest threats to human existence? Why can't, why won't they believe the truth? The time to act is slowly evaporating before our eyes. To answer this question requires an interdisciplinary approach that investigates many of the ways global warming has been analyzed, imagined, represented, and evaluated. Thus we welcome students of any major willing to embark on this common project and to participate fully. We will challenge ourselves to move between and amongst texts that are familiar and those we will bring into the conversation. There will be much that we miss, but we hope this course will at least begin a serious conversation in a unique way. The course will run on two parallel tracks: on the one hand, we will delve into textual representations and arguments; on the other hand, we will attempt to develop a sensibility for how climate change makes itself manifest in the physical world through a series of workshops and site visits in the Bay Area. The first track of this course will center on the discussion of three science fiction novels: The Hungry Tide by Amitav Ghosh, The Three Body Problem by Cixin Liu, and Parable of the Sower by Octavia Butler. The second track of this course is comprised of a series of workshops that aims to develop spatial and material literacy relevant to climate change awareness. It will engage topics such as: scale, atmosphere, measure, material reciprocity, and garbage repurposing. One of the primary goals of this course is to not only understand the problem of climate change, but also how to best act upon it. Thus the required final assignment for this class can be a recommendation for action based on a critical review of the topic of climate change and already existing activism. It can take the form of a paper, a video, an installation art project, a podcast, etc.. But in all cases your work must analytically engage the specific medium of literary expression.

COMPLIT 208. The Cosmopolitan Introvert: Modern Greek Poetry and its Itinerants. 3-5 Units.
Overview of the last century of Greek poetry with emphasis on modernism. Approximately 20 modern Greek poets (starting with Cavafy and Nobel laureates Seferis and Elytis and moving to more modern writers) are read and compared to other major European and American writers. The themes of the cosmopolitan itinerant and of the introvert, often co-existing in the same poet, connect these idiosyncratic voices. The course uses translations and requires no knowledge of Greek but original texts can also be shared with interested students. Note: The course is open to both undergraduate and graduate students.

COMPLIT 210. Poetic Forms. 4 Units.
A comparative discussion of the development and history of major poetic forms, from the Sonnet to Terza Rima and to prose poems. Special attention will be given discussing different rhythms and rhymes, and to translating forms. The readings will include poems by French, Yiddish, English/American and Hebrew writers. Part of the work will include experimenting with writing and/or translating poems that follow the poetic forms that are discussed in class.

COMPLIT 218A. Japanese Performance Traditions. 2-5 Units.
Japanese performance traditions present a distinct challenge to modern Western concepts of gender, performance, self-expression, and even the human body itself. This course introduces the socio-historical underpinnings of these traditions, and invites students to engage in a fundamental questioning of the relationship between performance, gender, and cross-cultural interpretation. This course is designed for students with interests in performance, gender, and media as well as those with an interest in Japan. Genres covered include Noh, Kabuki, Bunraku, and Butoh.
Same as: JAPAN 141, JAPAN 241

COMPLIT 220. Renaissance Africa. 3-5 Units.
Literature and Portuguese expansion into Africa during the sixteenth century. Emphasis on forms of exchange between Portuguese and Africans in Morocco, Angola/Congo, South Africa, the Swahili Coast, and Ethiopia. Readings in Portuguese and English. Taught in English.
Same as: AFRICAST 220E, ILAC 220E, ILAC 320E

COMPLIT 222A. Myth and Modernity. 3-5 Units.
Masters of German 20th- and 21st-Century literature and philosophy as they present aesthetic innovation and confront the challenges of modern technology, social alienation, manmade catastrophes, and imagine the future. Readings include Nietzsche, Freud, Rilke, Musil, Brecht, Kafka, Doeblin, Benjamin, Juenger, Arendt, Musil, Mann, Adorno, Celan, Grass, Bachmann, Bernhardt, Wolf, and Kluge. Taught in English. Note for German Studies grad students: GERMAN 322 will fulfill the grad core requirement since GERMAN 332 is not being offered this year. NOTE: Enrollment requires Professor Eshel's consent. Please contact him directly at eshel@stanford.edu and answer these 2 questions: "Why do you want to take this course?" and "What do you think you can add to the discussion?" Applications will be considered in the order in which they were received. Enrollment is limited to 20 students.
Same as: GERMAN 222, GERMAN 322, JEWISHST 242G, JEWISHST 342

COMPLIT 225. Word and Image. 3-5 Units.
What impact do images have on our reading of a text? How do words influence our understanding of images or our reading of pictures? What makes a visual interpretation of written words or a verbal rendering of an image successful? These questions will guide our investigation of the manifold connections between words and images in this course on intermediality and the relations and interrelations between writing and art from classical antiquity to the present. Readings and discussions will include such topics as the life and afterlife in word and image of Ovid's "Metamorphoses," Dante's "Divine Comedy," Ludovico Ariosto's "Orlando Furioso," and John Milton's "Paradise Lost;" the writings and creative production of poet-artists Michelangelo Buonarroti, William Blake, and Dante Gabriel Rossetti; innovations in and correspondences between literature and art in the modern period, from symbolism in the nineteenth century through the flourishing of European avant-garde movements in the twentieth century.
Same as: ARTHIST 265A, ARTHIST 465A, ITALIAN 265, ITALIAN 365

COMPLIT 228. Critical Translation Studies. 3-5 Units.
Seminal works of translation theory and scholarship from a wide array of disciplinary, regional, linguistic, and historical perspectives. Readings are in English, but students must have at least two years of training or the equivalent in another language, or permission from the instructor. (Important note: Students who wish to count this course toward requirements in the department of East Asian Languages and Cultures must have permission from their EALC advisor.).
Same as: JAPAN 123, JAPAN 223

COMPLIT 229B. Camus. 4-5 Units.
"The admirable conjunction of a man, of an action, and of a work" for Sartre, "the ideal husband of contemporary letters" for Susan Sontag, reading "Camus's fiction as an element in France's methodically constructed political geography of Algeria" for Edward Said, Camus embodies the very French figure of the "intellectuel engagé," or public intellectual. From his birth in 1913 into a poor European family in Algeria to the Nobel Prize in Literature in 1957, from the Mediterranean world to Paris, Camus engaged in the great ethical and political battles of his time, often embracing controversial positions. Through readings and films, we will explore his multiple legacies. Readings from Albert Camus, Jean-Paul Sartre, Assia Djebar, Kamel Daoud, Mouloud Feraoun, Alice Kaplan, Edward Said, Edwidge Danticat. Students will work on their production of written French, in addition to speaking French and reading comprehension. Taught in French. Students are highly encouraged to complete FRENLANG 124 or to successfully test above this level through the Language Center. This course fulfills the Writing in the Major (WIM) requirement.
Same as: CSRE 129, FRENCH 129, HISTORY 235F

COMPLIT 231B. Cultural Hybridity in Central-Eastern Europe. 2-5 Units.
Historically shaped by shifting borders and mixing of various cultures and languages, identities in-between have been in abundance in Central-Eastern Europe. This course offers a comprehensive study of the oeuvre of several major Central-European authors of modernity: the Ukrainian-Russian Nikolai Gogol (1809-1852), the Czech-German-Jewish Franz Kafka (1883-1924), the Austrian-Galician-Jewish Leopold von Sacher-Masoch (1836-1895), the Ukrainian-Galician Olha Kobylyans¿ka (1863-1942), the Russian-German Lou Andreas-Salomé (1861-1937), the Jewish-Polish-Galician Bruno Schulz (1892-1942), and the Polish-Argentinean Witold Gombrowicz (1904-1969). Performing their selves in two or more cultures, these writers were engaged in identity games and produced hybrid texts with which they intervened into the major culture as others. In the course, we will apply post-structuralist and post-colonial concepts such as minor language, heterotopia, in-betweenness, mimicry, indeterminacy, exile, displacement, and transnationalism to the study of the writers oeuvres. We will also master the sociolinguistic analysis of such multi-lingual phenomena as self-translation, code-switching, and calquing and examine various versions of the same text to uncover the palimpsest of hybrid identities.
Same as: SLAVIC 160, SLAVIC 360

COMPLIT 233A. Literature and Society in Africa and the Caribbean. 4 Units.
This course explores texts and films from Francophone Africa and the Caribbean in the 20th and 21st centuries. The course will explore the connections between Sub-Saharan Africa, the Maghreb and the Caribbean through both foundational and contemporary works while considering their engagement with the historical and political contexts in which they were produced. This course will also serve to improve students' speaking and writing skills in French while sharpening their knowledge of the linguistic and conceptual tools needed to conduct literary analysis. The diverse topics discussed in the course will include national and cultural identity, race and class, gender and sexuality, orality and textuality, transnationalism and migration, colonialism and decolonization, history and memory, and the politics of language. Readings include the works of writers and filmmakers such as Djibril Tamsir Niane, Léopold Senghor, Aimé Césaire, Albert Memmi, Patrick Chamoiseau, Leonora Miano, Leila Slimani, Dani Laferrière and Ousmane Sembène. Taught in French. Students are highly encouraged to complete FRENLANG 124 or to successfully test above this level through the Language Center. This course fulfills the Writing in the Major (WIM) requirement.
Same as: AFRICAAM 133, AFRICAST 132, COMPLIT 133A, CSRE 133E, FRENCH 133, JEWISHST 143

COMPLIT 234. Classics of Persian Literature. 3-5 Units.
Why do poems that were written hundreds of years ago still capture the imagination? How is love configured in the texts of a distant culture? Who sings the tales and who are the heroes? This course offers an introduction to the central works of Persian literature, from the 10th century to the present, across the genres of epic, romance, lyric, and novel. As we become acquainted with texts from a millennium of literary history, we will touch upon questions of performance (music and dance), storytelling, profane and divine love, the nature of spiritual quests, the development of narrative and poetic form, the formal and ethical aspects of translation, and, finally, the meaning of modernity in a non-Western context. Readings include: the Book of Kings by Ferdowsi (d.1020); Layla and Majnun by Nezami (d.1209); The Conference of the Birds by Attar (d.1221); selections from the Masnavi and Divan of Rumi (d.1273); the Rose Garden by Sa`di (d.1292), selections from the Divan of Hafez (d.1390); The Blind Owl by Sadegh Hedayat (d.1951); and selected modern poems. Taught in English.
Same as: COMPLIT 134A

COMPLIT 236. Literature and Transgression. 3-5 Units.
Close reading and analysis of erotic-sexual and aesthetic-stylistic transgression in selected works by such authors as Baudelaire, Wilde, Flaubert, Rachilde, Schnitzler, Kafka, Joyce, Barnes, Eliot, Bataille, Burroughs, Thomas Mann, Kathy Acker, as well as in recent digital literature and online communities. Along with understanding the changing cultural, social, and political contexts of what constitutes "transgression" or censorship, students will gain knowledge of influential theories of transgression and conceptual limits by Foucault, Blanchot, and contemporary queer and feminist writers.
Same as: FEMGEN 236

COMPLIT 236A. Casablanca - Algiers - Tunis : Cities on the Edge. 3-5 Units.
Casablanca, Algiers and Tunis embody three territories, real and imaginary, which never cease to challenge the preconceptions of travelers setting sight on their shores. In this class, we will explore the myriad ways in which these cities of North Africa, on the edge of Europe and of Africa, have been narrated in literature, cinema, and popular culture. Home to Muslims, Christians, and Jews, they are an ebullient laboratory of social, political, religious, and cultural issues, global and local, between the nineteenth and twenty-first centuries. We will look at mass images of these cities, from films to maps, novels to photographs, sketching a new vision of these magnets as places where power, social rituals, legacies of the Ottoman and French colonial pasts, and the influence of the global economy collude and collide. Special focus on class, gender, and race.
Same as: AFRICAAM 236B, CSRE 140S, FRENCH 236, FRENCH 336, HISTORY 245C, URBANST 140F

COMPLIT 237. Fascism after Fascism. 3-5 Units.
When World War II ended, most of the states that described themselves as "fascist" ended with it. Nevertheless, fascism haunted postwar democracy as an ever-present threat. The question of what exactly had characterized fascism, and what parts of it persisted within liberal democracies themselves, were continuously and contentiously debated. This question has emerged all the more forcefully in recent years as "illiberal," or "right-wing populist," movements and governments have begun to question the basic premises of liberal democracy. What was fascism, and what would it mean for it to return? This course considers writings by philosophers, historians, journalists and writers, and moves from early anti-fascist writings to critiques of online movements and neo-reactionaries.
Same as: GERMAN 237

COMPLIT 238. Literature and the Brain. 3 Units.
Recent developments in and neuroscience and experimental psychology have transformed the way we think about the operations of the brain. What can we learn from this about the nature and function of literary texts? Can innovative ways of speaking affect ways of thinking? Do creative metaphors draw on embodied cognition? Can fictions strengthen our "theory of mind" capabilities? What role does mental imagery play in the appreciation of descriptions? Does (weak) modularity help explain the mechanism and purpose of self-reflexivity? Can the distinctions among types of memory shed light on what narrative works have to offer?.
Same as: COMPLIT 138, ENGLISH 118, ENGLISH 218, FRENCH 118, FRENCH 218, PSYC 126, PSYCH 118F

COMPLIT 239. Queer Theory. 3-5 Units.
Do we really need a theory in order to be queer? Queer Theory emerged in response to feminist thought, and the study of the history of sexuality, building on their insights, but also uncovering their blind spots. Without Queer Theory, few of the discourses around desire, power and gender identity that we take for granted on college campuses today would exist. Yet there is also a real risk that reality has left the theory behind. In this course, we will try to answer the question: What do we need queer theory for? Do we still need it? And if so, of what kind? The course is designed to introduce students to core texts of queer theory, and to connect them to current debates, be this around trans rights, the representation of homosexuality or the fight against campus sexual assault.
Same as: FEMGEN 239, GERMAN 239

COMPLIT 243. The Age of Beloveds: Inflections of Desire in Persian and Ottoman Literature. 3-5 Units.
This course follows the trajectory of Islamicate love poetry from its emergence in medieval Persian letters to the court of the Ottoman Sultans. Our point of departure will be the emergence of a unique doctrine of love in Persian literature between the 11th and the 14th centuries, from the confluence of courtly, romantic and mystical ideas. Tracing the gradual imbrication of sacred and profane desire, we will study the advice on marital love in early Mirrors for Princes, the exaltation of heterosexual love in romances, the recasting of love in the context of a mystical erotology, and, finally, the enduring legacy of this discourse of love in ghazal poetry. We will then explore the theme of love, oscillating between heterosexual, homoerotic, and mystical in Ottoman lyric poetry by Sufi, Sultan, and woman poets, spreading over four hundred years until the 19th century. In looking at these texts, we will touch upon questions regarding the ideals and realities of love in Persian and Ottoman society, the protean nature and all-encompassing scope of longing in Perso-Ottoman letters, and the metaphysical implications of the hierarchical structure underlying the Persianate codes of love. Open to undergraduates and graduates. Taught in English.

COMPLIT 243A. From Idol to Equal: Changing Images of Love in 20th-Century Persian and Turkish Literature. 3-5 Units.
This course will explore the changing images of love in pivotal works of modern Persian and Turkish literature. Classes will include close readings and discussions of poems, short stories, and plays with particular attention to the constellation of lover/beloved, the theme of romantic love, and the cultural and historical background of these elements. Our starting point will be the adoption of the novel as a form in the late 19th century. From there, we will explore different figurations of love in key texts of the 20th century up to the Islamic Revolution in Iran (1978) and the *coup d'état* in Turkey (1980). Themes will include the end of empire and the demise of the concubine, the portrayal of the homeland as lover, secularization and the lifting of the veil, the figure of the female pioneer, the conflict of western and eastern morals, the prostitute as a new paradigm, the emergence of female writers, and avantgarde conceptions of love. Open to undergraduate and graduate students. All readings and discussions will be in English.

COMPLIT 243B. Advanced Readings in Arabic Literature and Science II. 3-5 Units.
Advanced reading in Arabic literature (adab) and science (`ilm) for graduate students. Open to undergraduates with four years or more of Arabic.

COMPLIT 243G. Advanced Readings in Arabic Literature and Science I. 3-5 Units.
Advanced reading in Arabic literature (adab) and science (`ilm) for graduate students. Open to undergraduates with four years or more of Arabic.

COMPLIT 244. Modern Persian Poetry. 3-5 Units.
Drawing on poems, songs, and films in addition to theoretical texts, this course retraces the struggle for a modern poetic language in Iran from the time of the Constitutional Revolution (1905/6) to the Islamic Revolution (1978/79), and beyond. Topics include: the unresolved relationship between tradition and modernity; poetry as a vehicle of enlightenment and revolution; the quest for a new poetic expression of love; the emerging possibility of a female voice in Persian poetry; the construction of historical memory through literature; responses to the experience of modern alienation; the figure of the poet as dissident; and the subversive force of poetic form itself. Poets to be read are Iraj, Bahar, Nima, Shamlu, Sepehri, Akhavan Sales, Forugh, and Esma'il Kho'i as well as some non-canonical figures. Open to undergraduates and graduates. Taught in English.

COMPLIT 245. Introductory Ottoman Turkish. 1-3 Unit.
This course is an introduction to basic orthographic conventions and grammatical characteristics of Ottoman Turkish through readings in printed material from the 19th and 20th centuries. Selected readings will range from poetry to prose, from state documents, newspaper and journal articles to reference works. Course is open to both undergraduate and graduate students. Prior knowledge of modern Turkish is required (Completion of COMPLIT 248A, COMPLIT 248B Reading Turkish I&II and COMPLIT 248C Advanced Turkish OR AMELANG 184 & 185 First & Second Year Turkish OR a solid knowledge of Turkish grammar.) Please contact the instructor for more information.

COMPLIT 245A. Arabic Cultures/Conversations. 1 Unit.
Arabic Cultures in Conversations. We will meet once a week for an hour to talk in Arabic about poetry, music, and culture.

COMPLIT 248A. Reading Turkish I. 2-4 Units.
Reading Turkish I is an introduction to the structures of the Turkish language necessary for reading. It is designed to develop reading competence in Turkish for graduate students. Undergraduates should consult the instructor before enrolling for the course. Essential grammar, syntax points, vocabulary, and reading skills will be emphasized. This is not a traditional language course that takes an integrated four-skill approach; since the goal is an advanced reading level, the focus is mainly on grammar, reading comprehension, and translation. With full concentration on reading, we will be able to cover advanced material in a short amount of time. The course is conducted in English, but students will be exposed to the sounds of Turkish, and will have the opportunity to practice pronunciation in class. NOTE: COMPLIT 248A Reading Turkish I is followed by COMPLIT 248B Reading Turkish II in the Winter and COMPLIT 248C Advanced Turkish for Research in the Spring.

COMPLIT 248B. Reading Turkish II. 2-4 Units.
This course is the continuation of COMPLIT 248A Reading Turkish I, which served as an introduction to the structures of the Turkish language necessary for reading. It is designed to develop reading competence in Turkish for graduate students. Undergraduates should consult the instructor before enrolling for the course. Essential grammar, syntax points, vocabulary, and reading skills will be emphasized. This is not a traditional language course that takes an integrated four-skill approach; it focuses only on reading, and as a result we will be able to cover advanced material in a short amount of time. This course is conducted in English, but students will be exposed to the sounds of Turkish, and will have the opportunity to practice pronunciation in class. COMPLIT 248B is followed by COMPLIT 248C Advanced Turkish for Research in the Spring.

COMPLIT 248C. Advanced Turkish-English Translation. 2-4 Units.
This course is the continuation of COMPLIT 248A Reading Turkish I and COMPLIT 248B Reading Turkish II. Refining advanced grammar, reading, and translation skills in modern Turkish through intensive reading and translation from a variety of source texts. Emphasis on Turkish cultural, historical, literary, and political texts depending on students' academic interests. Prerequisites COMPLIT 248A & B or prior knowledge of Turkish and consultation with the instructor is necessary.

COMPLIT 249. Rumi: Rhythms of Creation. 3-5 Units.
This course offers a comprehensive introduction to the thought, poetics, and legacy of one of the towering figures of Persian letters, Mawlana Jalal al-Din Rumi (1207-1273). After discussing the literary ancestors (Sana'i, `Attar), we will trace the mystico-philosophical foundations of Rumi's thought through close readings of the lyrical (Divan-e Shams) and narrative poems (Mathnavi-ye ma`navi), the prose works (Fihe ma fihe), and the letters. Literary analyses will be followed by an exploration of music as a structuring principle in Rumi's work and the role of sama` (spiritual audition) as a poetic practice. From there, we will look at the ritual and symbolism of the dervish dance, the foundation of the Mevlevi order, the interconnectedness of space (architecture) and poetic form that is exemplified in the Mevlevi dervish lodges, and the literary and philosophical echoes of Rumi in Ottoman culture, above all Seyh Galip's masterpiece Hüsn ü Ask (1782). The course will be complemented by digressions on Rumi in contemporary Persian and Turkish music, including live musical performances. Open to undergraduates and graduates. Taught in English.
Same as: COMPLIT 179

COMPLIT 249A. The Iranian Cinema: Image and Meaning. 1-3 Unit.
This course will focus on the analysis of ten Iranian films with the view of placing them in discourse on the semiotics of Iranian art and culture. The course will also look at the influence of a wide array of cinematic traditions from European, American, and Asian masters on Iranian cinema. Note: To satisfy a Ways requirement, this course must be taken for at least 3 units. In AY 2020-21, a letter grade or 'CR' grade satisfies the Ways requirement.
Same as: GLOBAL 249A

COMPLIT 249B. Iranian Cinema in Diaspora. 1-3 Unit.
Despite enormous obstacles, immigrant Iranian filmmakers, within a few decades (after the Iranian Revolution), have created a slow but steady stream of films outside Iran. They were originally started by individual spontaneous attempts from different corners of the world and by now we can identify common lines of interest amongst them. There are also major differences between them. These films have never been allowed to be screened inside Iran, and without any support from the global system of production and distribution, as independent and individual attempts, they have enjoyed little attention. Despite all this, Iranian cinema in exile is in no sense any less important than Iranian cinema inside Iran. In this course we will view one such film, made outside Iran, in each class meeting and expect to reach a common consensus in identifying the general patterns within these works and this movement. Questions such as the ones listed below will be addressed in our meetings each week: What changes in aesthetics and point of view of the filmmaker are caused by the change in his or her work environment? Though unwantedly these films are made outside Iran, how related are they to the known (recognized) cinema within Iran? And in fact, to what extent do these films express things that are left unsaid by the cinema within Iran? NOTE: to satisfy a Ways requirement, this course must be taken for at least 3 units. In AY 2020-21, a letter grade or 'CR' grade satisfies the Ways requirement.
Same as: GLOBAL 249B

COMPLIT 249C. Contemporary Iranian Theater. 1-3 Unit.
Today, Iranian plays both in traditional and contemporary styles are staged in theater festivals throughout the world and play their role in forming a universal language of theater which combine the heritages from countries in all five continents. Despite many obstacles, some Iranian plays have been translated into English and some prominent Iranian figures are successful stage directors outside Iran. Forty-six years ago when "Theater in Iran" (a monograph on the history of Iranian plays) by Bahram Beyzaie was first published, it put the then contemporary Iranian theater movement "which was altogether westernizing itself blindly" face to face with a new kind of self-awareness. Hence, today's generation of playwrights and stage directors in Iran, all know something of their theatrical heritage. In this course we will spend some class sessions on the history of theater in Iran and some class meetings will be concentrating on contemporary movements and present day playwrights. Given the dearth of visual documents, an attempt will be made to present a picture of Iranian theater to the student. Students are expected to read the recommended available translated plays of the contemporary Iranian playwrights and participate in classroom discussions. Note: to satisfy a Ways requirement, this course must be taken for at least 3 units. In AY 2020-21, a letter grade or 'CR' grade satisfies the Ways requirement.
Same as: GLOBAL 249C

COMPLIT 252A. Great Arabic Poetry. 3-5 Units.
Introduction to the canon of Arabic poetry from the sixth to the twenty-first century. Imru' al-Qays, al-Mutanabbi, Mahmud Darwish, and more. Readings in Arabic. Two years of Arabic at Stanford or equivalent required. Counts for the Arabic Track in the MELLAC Minor.

COMPLIT 252B. Great Arabic Prose. 3-5 Units.
Introduction to the best Arabic Literature from the 790s to 2016. Al-Jahiz, Naguib Mahfouz, and much more. Readings in Arabic. Two years of Arabic at Stanford or equivalent required. Counts for the Arabic Track in the MELLAC Minor. Note: This course must be taken for a minimum of 3 units and a letter grade to be eligible for WAYS credit.

COMPLIT 257. Simone Weil, Simone de Beauvoir, Hannah Arendt, and Adriana Cavarero. 3-5 Units.
What does it mean to say the personal is the political, or, in the case of Arendt, that the personal is not political, especially if you are a woman? This course explores how Weil, De Beauvoir, Arendt, and Caverero contend with the question of personhood, in its variegated social, political, ethical, and gendered dimensions. Particular attention will be given to a philosophy of social change and personal transformation, and to the enduring relevance of these women's thought to issues of our day. Texts include selections from "Gravity and Grace," "The Second Sex," "The Ethics of Ambiguity," "The Human Condition," "Between Past and Future," "Stately Bodies," and "Relating Narratives.".
Same as: COMPLIT 357A, FEMGEN 257X, FEMGEN 357X, FRENCH 257, FRENCH 357, ITALIAN 257, ITALIAN 357

COMPLIT 258A. Existentialism, from Moral Quest to Novelistic Form. 3-5 Units.
This seminar intends to follow the development of Existentialism from its genesis to its literary expressions in the European postwar. The notions of defining commitment, of moral ambiguity, the project of the self, and the critique of humanism will be studied in selected texts by Kierkegaard, Heidegger, Unamuno, Albert Camus, Jean-Paul Sartre, Simone de Beauvoir, and Joan Sales.
Same as: ILAC 211, ILAC 311

COMPLIT 263. A History of Silence in Literature. 3-5 Units.
An analysis of theological and mystical texts as well as secular works of poetry and prose, from the Middle Ages to the present, exploring both the specific nature and the philosophical implications of silence in literature. Following a historical trajectory, we will first look at silence in medieval thought: as the necessary silence of apophasy in the works of negative theology and as a memory space in accounts of mystical ascension from the Islamic tradition (Bayazid Bastami). After this will come an examination of various moments in more recent literary history: the silence in face of the sublime that pervades the Romantics; the metaphysical uprooting of Büchner's Lenz (1839) that is captured in the paradox of a silence whose screams reach across the horizon; the fragmentation of Hölderlin's late poetry; the crisis of language described in Hofmannsthal's Chandos Letter (1902), prefiguring Wittgenstein; the dissolution of words as a "language of space devoid of dialogue" in Antonin Artaud; the straining away from existence and speech in Beckett's The Unnamable (1953); and, finally, the silence of the breath turn, as an ethical injunction after the Holocaust in Paul Celan. Open to undergraduates and graduates. Taught in English.

COMPLIT 264. Crossing the Atlantic: Race and Identity in the African Diaspora. 3-5 Units.
This course interrogates the relationship between literature, culture, race and identity in the African diaspora. We will analyze racial discourses through literature, and various forms of cultural expression while examining the role of class and gender in these configurations. As we follow the historical and geographical trajectories of people of African descent in different parts of the world, students will explore literary and political movements with the objective of examining how race has been constructed and is performed in different regions of the diaspora. Our readings will take us from Martinique, Guadeloupe, Guyana, France, and Senegal to Cuba, Brazil, Haiti and the Dominican Republic. Topics discussed will include: Race, identity, gender, class, memory, oral tradition, Afro-Caribbean religions, Negrismo, Négritude, Antillanité, Créolité, colonialism, modernity and national belonging. Readings will include the works of: Jean Price-Mars, Léopold Senghor, Aimé Césaire, Léon Damas, Frantz Fanon, Nicolás Guillén, Nancy Morejon, Maryse Condé, Patrick Chamoiseau, Edouard Glissant, among others. Taught in English.
Same as: CSRE 265, FRENCH 264

COMPLIT 264T. Race, Gender, Justice. 4 Units.
The question of justice animates some of the most influential classics and contemporary plays in the dramatic canon. We will examine the relationship between state laws and kinship obligations in Sophocles¿s Antigone. We will trace the transnational circulation of this text and its adaptations in Gambaro¿s Argentinian Antigona Furiosa, and Fugard and Kani¿s South African The Island. We will read Shakespeare¿s Othello and consider questions of racism, misogyny, and intimate partner violence, investigate the reverberations of these themes in the OJ Simpson trial, and explore its afterlife in Toni Morrison¿s Desdemona. We will take up questions of sexual violence via John Patrick Shanley¿s Doubt and Ariel Dorfman¿s Chilean classic, Death and the Maiden. We will examine themes of police brutality and racial vulnerability in Anna Deavere Smith¿s Twilight and Aleshea Harris¿s What to Send Up When it Goes Down. Through close readings of plays, we will explore the inter-articulation of intimacy and violence, intimidation and transgression, vengeance and forgiveness within the context of larger struggles for gender and racial justice. We will read plays in light of contemporary reckonings with the US criminal justice system: the #MeToo movement and the Black Lives Matter movement. While the former appeals to the criminal justice system to restore victims¿ rights, the latter urges a thorough dismantling of the carceral state. How do we understand these divergent responses to augment or abolish punitive structures? This course fulfills the WIM (Writing in the Major) requirement. It provides students with systematic opportunities for developing writing skills in the field of Theatre and Performance Studies. By reading acclaimed playwrights and critical theorists, students learn not only close reading skills, but also practice writing effectively and persuasively for scholars in the field.
Same as: TAPS 264S

COMPLIT 267. Transcultural Perspectives of South-East Asian Music and Arts. 2-4 Units.
This course will explore the links between aspects of South-East Asian cultures and their influence on modern and contemporary Western art and literature, particularly in France; examples of this influence include Claude Debussy (Gamelan music), Jacques Charpentier (Karnatak music), Auguste Rodin (Khmer art) and Antonin Artaud (Balinese theater). In the course of these interdisciplinary analyses - focalized on music and dance but not limited to it - we will confront key notions in relation to transculturality: orientalism, appropriation, auto-ethnography, nostalgia, exoticism and cosmopolitanism. We will also consider transculturality interior to contemporary creation, through the work of contemporary composers such as Tran Kim Ngoc, Chinary Ung and Tôn-Thât Tiêt. Viewings of sculptures, marionette theater, ballet, opera and cinema will also play an integral role. To satisfy a Ways requirement, this course must be taken for at least 3 units. In AY 2020-21, a letter grade or `CR¿ grade satisfies the Ways requirement. WIM credit in Music at 4 units and a letter grade.
Same as: COMPLIT 148, FRENCH 260A, MUSIC 146N, MUSIC 246N

COMPLIT 268. Socialism: Theory, Literature, Practice. 3-5 Units.
The prospect of socialism has circulated in the cultural and political programs of many countries, and socialist programs have informed the real governance structures in some. This course examines some of the theoretical texts that have described socialism as well as critical responses. In addition, the treatment of socialism in literature will be discussed as well as considerations of the outcomes of institutionalized programs. Readings will include texts by authors such as Marx, Lenin, Hayek, Friedman, Koestler, Steinbeck, Wolf, Brauenig, Wright and others.
Same as: GERMAN 268

COMPLIT 281E. Pirandello, Sartre, and Beckett. 3-5 Units.
In this course we will read the main novels and plays of Pirandello, Sartre, and Beckett, with special emphasis on the existentialist themes of their work. Readings include The Late Mattia Pascal, Six Characters in Search of an Author, Henry IV; Nausea, No Exit, "Existentialism is a Humanism"; Molloy, Endgame, Krapp's Last Tape, Waiting for Godot. Taught in English.
Same as: COMPLIT 381E, FRENCH 214, FRENCH 314, ITALIAN 214, ITALIAN 314

COMPLIT 283A. Modern Notions of 'The Holy'. 3-5 Units.
This course explores the question, "What may we call 'holy' in the modern era?" by focusing on key writers and thinkers, who in various ways, and in different times raised this question: Friedrich Hölderlin, Hermann Cohen, Franz Kafka, Martin Heidegger, Martin Buber, Franz Rosenzweig, Else Lasker-Schüler, Walter Benjamin, Ernst Bloch, Hannah Arendt, Margarete Susman, Nelly Sachs, Paul Celan, and Judith Butler.nnThis course will be synchronous-conducted, but will also use an innovative, Stanford-developed, on-line platform called Poetic Thinking. Poetic Thinking allows students to share both their scholarly and creative work with each other. Based on the newest technology and beautifully designed, it will greatly enhance their course experience.
Same as: COMPLIT 383A, GERMAN 283A, GERMAN 383A, RELIGST 283A, RELIGST 383A

COMPLIT 285. Texts and Contexts: French-English Translation. 3-5 Units.
This course introduces students to the ways in which translation has shaped the image of France and the Francophone world. What texts and concepts were translated, how, where, and to what effect? Students will work on a translation project throughout the quarter and translate texts from French to English and English to French. Topics may include the role of translation in the development of cultures; the political dimension of translation, translation in the context of migration, and the socio-cultural frameworks that shape translations. Case studies: Camus, Fanon, Glissant, de Beauvoir, Meddeb, Duras. Prior knowledge of French language required.
Same as: CSRE 285, FRENCH 185, FRENCH 285

COMPLIT 286. Forming the world: Pragmatism and Aesthetics. 3-5 Units.
This course will explore key pragmatist philosophical and theoretical approaches to literature, the visual arts, and music. How are human lives mediated by and through aesthetic experience, in the realm of the private as well as the public. Rather than positing a metaphysical idea of beauty, the thinkers and artists we engage ask how texts and artworks render us sensitive to our multifaceted contingencies, and how we may speak and write about them. Readings and viewings include R. W. Emerson, Friedrich Nietzsche, Emily Dickinson, Martin Heidegger, John Dewey, T. W. Adorno, Hannah Arendt, Richard Rorty, Terrence Malick, J. M. Coetzee, Bruno Latour, Marilynne Robinson, Nancy Fraser, Rita Felski, Tania Bruguera, Yivve Citton, Richard Moose, Cheryl Misak, and Shannon Sullivan, among others.
Same as: GERMAN 286

COMPLIT 290A. Magic, Science, and Religion. 3-5 Units.
With the rise of the human sciences in the later nineteenth century, "magic," "science," and "religion" came to be understood as entirely separate domains, with different versions of truth and divergent methods of inquiry. But how has this division broken down in the past 150 years? How is it, for example, that other people's religion is "merely magic"? How does science still draw on religious categories, in particular to claim the universe is meaningful? How have new forms of magic shaped new age, global culture? We will examine these questions by pairing literary texts with readings from anthropology, history of science, religious studies, and cultural criticism. This course is taught in English.
Same as: COMPLIT 390A, FRENCH 290, FRENCH 390, ITALIAN 290, ITALIAN 390

COMPLIT 302. Film Series: Understanding Turkey Through Film. 1-2 Unit.
Join us in our quest to understand the great transformation in Turkey and its impact on its people through cinema. Set against the backdrop of the expansion of capitalism and the fundamental cultural, political and social change in the last decade, the movies in this series tell the uneasy stories of individuals whose lives are affected by this disruptive change. By examining the link between the individual experiences and societal change, the films confront issues such as globalization, gender and racial hierarchies, urban transformation, state repression, male domination, and the women's struggle in Turkey. The course consists of 8 Turkish film screenings each of which will be preceded by an introduction by Dr. Alemdaroglu or Dr. Karahan, artistically, historically and politically contextualizing the films, and will be followed by a Zoom discussion and Q&A session led by invited guest scholars of Anthropology, Film Studies, Political Science, Women and Gender Studies or film directors themselves. The students and interested Stanford community will be provided with the streaming links for the movies at the beginning of each week to screen them on their own time, and the discussion sessions will be held on the scheduled class time on Zoom. All films will be in Turkish with English subtitles.
Same as: COMPLIT 102

COMPLIT 304. Voice, Dissent, Resistance: Antiracist and Antifascist Discourse and Action. 5 Units.
The rise of right-wing movements in the United States and in Europe signal a resurgence of nativist and ethno-nationalist politics that rely heavily on racism to advance fascist politics. This course will explore these phenomena both in terms of their historical development and their present-day appearances. The goal will be to understand how those involved in anti-racist and anti-fascist struggles have invented, created, and practiced discourses and actions that attempt to resist racism and fascism, and to evaluate their merits and weaknesses. Historical, philosophic, journalistic, and creative writings will be the basis of study. This is an experimental course driven by the urgency of recent political events. Students should have open minds and be willing to help shape the course.
Same as: COMPLIT 104A

COMPLIT 307. Proust and His World. 3-5 Units.
This course is a chance to read together Proust's <e>A la recherche du temps perdu</e>. This seven-volume novel is a stylistic tour de force, a brilliant meditation on defining elements of modernity, and an eccentric meander through art, history and the self. We will look closely at Proust's narrative edifice, and its poetic achievements. We will augment our reading of the novel with secondary selections that enable us to explore the many themes and questions raised by the work, ranging from fashion as a serious mode of modern expression to the phenomenology of memory to the decadence of French culture on the eve of the First World War. We'll look at the importance of Proust for structuralist and post-structuralist critics of the 1960s-1980s, whose paradigms continue to resonate today. We'll also consider together the interest and limits of a single-author course, and the value of absorptive, "slow" reading in our multi-tasking era. Supplementary readings might include selections from Charles Baudelaire, John Ruskin, Henri Bergson, Gérard Genette, Gilles Deleuze, Eve Sedgwick, Maurice Samuels, and Caroline Weber. Reading knowledge of French strongly recommended.
Same as: FRENCH 307A

COMPLIT 315. Vladimir Nabokov: Displacement and the Liberated Eye. 3-5 Units.
How did the triumphant author of "the great American novel" Lolita evolve from the young author writing at white heat for the tiny sad Russian emigration in Berlin? We will read his short stories and the novels The Luzhin Defense, Invitation to a Beheading, Lolita, Lolita the film, and Pale Fire, to see how Nabokov generated his sinister-playful forms as a buoyant answer to the "hypermodern" visual and film culture of pre-WWII Berlin, and then to America's all-pervading postwar "normalcy" in his pathological comic masterpieces Lolita and Pale Fire. Buy texts in translation at the Bookstore; Slavic grad students will supplement with reading and extra sessions in original Russian.
Same as: COMPLIT 115, SLAVIC 156, SLAVIC 356

COMPLIT 316. Scholarship and Activism for Justice. 1 Unit.
In this weekly discussion group we will center on scholarship that addresses issues of social inequity and ways to act for change.

COMPLIT 319. The Turkish Novel. 3-5 Units.
Designed as a survey, this course will examine the modern Turkish novel from the early days of the Republic to the present day. We will examine the aesthetic, political, and social aspects of the Turkish novel by reading major samples of national, historical, philosophical, village, and modernist novels. Discussions will be conducted in English. Students will have an option to read the primary sources in Turkish or in English. Contact Burcu Karahan for meeting time and place.
Same as: COMPLIT 119

COMPLIT 320A. Epic and Empire. 5 Units.
Focus is on Virgil's Aeneid and its influence, tracing the European epic tradition (Ariosto, Tasso, Camoes, Spenser, and Milton) to New World discovery and mercantile expansion in the early modern period.
Same as: ENGLISH 314

COMPLIT 327. Genres of the Novel. 5 Units.
Provides students with an overview of some major genres in the history of the modern novel, along with major theorists in the critical understanding of the form. Novels might include works by Cervantes, Defoe, Lafayette, Radcliffe, Goethe, Scott, Balzac, Melville, and Woolf. Theorists might include Lukacs, Bakhtin, Jameson, Gallagher, Barthes, Kristeva, and Bourdieu. *PLEASE NOTE: Course for graduate students only.*.
Same as: ENGLISH 327, FRENCH 327

COMPLIT 334A. Concepts of Modernity I: Philosophical Foundations. 5 Units.
In the late eighteenth century, Immanuel Kant proclaimed his epoch to be "the genuine age of criticism." He went on to develop the critique of reason, which set the stage for many of the themes and problems that have preoccupied Western thinkers for the last two centuries. This fall quarter survey is intended as an introduction to these themes and problems. The general course layout draws equal parts on Koselleck's practice of "conceptual history" (Begriffsgeschichte) and on Jameson's "cognitive mapping." After consideration of an important, if often under-appreciated precedent (the baroque), we turn our attention to the conceptual triad of subject, reason and critique, followed by that of revolution, utopia and sovereignty. Authors may include Hegel, Marx, Nietzsche, Weber, Freud, Lukács, and others. This course is the first of a two-course sequence. Priority to graduate students in MTL, ILAC, and English.
Same as: ILAC 334A, MTL 334A

COMPLIT 334B. Concepts of Modernity II: Culture, Aesthetics, and Society in the Age of Globalization. 5 Units.
Emphasis on world-system theory, theories of coloniality and power, and aesthetic modernity/postmodernity in their relation to culture broadly understood.
Same as: ENGLISH 334B, MTL 334B

COMPLIT 348. US-Mexico Border Fictions: Writing La Frontera, Tearing Down the Wall. 3-5 Units.
A border is a force of containment that inspires dreams of being overcome, crossed, and cursed; motivates bodies to climb over walls; and threatens physical harm. This graduate seminar places into comparative dialogue a variety of perspectives from Chicana/o and Mexican/Latin American literary studies. Our seminar will examine fiction and cultural productions that range widely, from celebrated Mexican and Chicano/a authors such as Carlos Fuentes (La frontera de cristal), Yuri Herrera (Señales que precederan al fin del mundo), Willivaldo Delgaldillo (La Virgen del Barrio Árabe), Américo Paredes (George Washington Gómez: A Mexico-Texan Novel), Gloria Anzaldúa (Borderlands/La Frontera: The New Mestiza), and Sandra Cisneros (Carmelo: Puro Cuento), among others, to musicians whose contributions to border thinking and culture have not yet been fully appreciated such as Herb Albert, Ely Guerra, Los Tigres del Norte, and Café Tacvba. Last but not least, we will screen and analyze Orson Welles' iconic border films Touch of Evil and Rodrigo Dorfman's Los Sueños de Angélica. Proposing a diverse and geographically expansive view of the US-Mexico border literary and cultural studies, this seminar links the work of these authors and musicians to struggles for land and border-crossing rights, anti-imperialist forms of trans-nationalism, and to the decolonial turn in border thinking or pensamineto fronterizo. It forces us to take into account the ways in which shifts in the nature of global relations affect literary production and negative aesthetics especially in our age of (late) post-industrial capitalism.
Same as: ILAC 348

COMPLIT 353B. Hannah Arendt: Facing Totalitarianism. 3-5 Units.
Like hardly any other thinker of the modern age, Hannah Arendt's thought offers us timeless insights into the fabric of the modern age, especially regarding the perennial danger of totalitarianism. This course offers an in-depth introduction to Arendt's most important works in their various contexts, as well as a consideration of their reverberations in contemporary philosophy and literature. Readings include Arendt's The Origin of Totalitarianism, The Human Condition, Between Past and Future, Men in Dark Times, On Revolution,Eichmann in Jerusalem, and The Life of the Mind, as well as considerations of Hannah Arendt's work by Max Frisch, Jürgen Habermas, Seyla Benhabib, Judith Butler, Giorgio Agamben, and others. Special attention will be given to Arendt's writings on literature with an emphasis on Kafka, Brecht, Auden, Sartre, and Camus. This course will be synchronously conducted, but will also use an innovative, Stanford-developed, online platform called Poetic Thinking. Poetic Thinking allows students to share both their scholarly and creative work with each other. Based on the newest technology and beautifully designed, it greatly enhances their course experience.
Same as: GERMAN 253, GERMAN 353, JEWISHST 243A

COMPLIT 357A. Simone Weil, Simone de Beauvoir, Hannah Arendt, and Adriana Cavarero. 3-5 Units.
What does it mean to say the personal is the political, or, in the case of Arendt, that the personal is not political, especially if you are a woman? This course explores how Weil, De Beauvoir, Arendt, and Caverero contend with the question of personhood, in its variegated social, political, ethical, and gendered dimensions. Particular attention will be given to a philosophy of social change and personal transformation, and to the enduring relevance of these women's thought to issues of our day. Texts include selections from "Gravity and Grace," "The Second Sex," "The Ethics of Ambiguity," "The Human Condition," "Between Past and Future," "Stately Bodies," and "Relating Narratives.".
Same as: COMPLIT 257, FEMGEN 257X, FEMGEN 357X, FRENCH 257, FRENCH 357, ITALIAN 257, ITALIAN 357

COMPLIT 359A. Philosophical Reading Group. 1 Unit.
Discussion of one contemporary or historical text from the Western philosophical tradition per quarter in a group of faculty and graduate students. For admission of new participants, a conversation with Professor Robert Harrison is required. May be repeated for credit. Taught in English.
Same as: FRENCH 395, ITALIAN 395

COMPLIT 368A. Imagining the Oceans. 5 Units.
How has Western culture constructed the world's oceans since the beginning of global ocean exploration? How have imaginative visions of the ocean been shaped by marine science, technology, exploration, commerce and leisure? Primary authors read might include Cook, Banks, Equiano, Ricketts, and Steinbeck; Defoe, Cooper, Verne, Conrad, Woolf and Hemingway; Coleridge, Baudelaire, Moore, Bishop and Walcott. Critical readings include Schmitt, Rediker and Linebaugh, Baucom, Best, Corbin, Auden, Sontag and Heller-Roazen. Films by Sekula, Painlevé and Bigelow. Seminar coordinated with a 2015 Cantor Arts Center public exhibition. Visits to the Cantor; other possible field trips include Hopkins Marine Station and SF Maritime Historical Park. Open to graduate students only.
Same as: ENGLISH 368A, FRENCH 368A

COMPLIT 369. Introduction to the Profession of Literary Studies. 1-2 Unit.
A survey of how literary theory and other methods have been made institutional since the nineteenth century. The readings and conversation are designed for entering Ph.D. students in the national literature departments and comparative literature.
Same as: DLCL 369, FRENCH 369, GERMAN 369, ITALIAN 369

COMPLIT 371. Critical Theory and Ecology: A Cross-Cultural Perspective. 2-5 Units.
This class will bring together aesthetics, politics, and art around ecological questions. We will survey the key themes in ecocritical humanities and critiques of anthropocentrism by reading selected chapters from Literature and the Environment (Timothy Clark). We will move on to the Marxist eco critique of capitalist economy, human alienation from nature, alienated labor as well as Frankfurt school critiques of instrumental rationality. Major readings include The Enemy of Nature (Kovel), Creating an Ecological Society (Magdofff and Williams), chapters from The Robbery of Nature (Foster and Clark), and essays by Adorno and Benjamin. Taking a comparative perspective, we will study Chinese eco-narratives such as Waste Tide (Chen Qiufan) and Unfolding Beijing (Hao Jingfang).nnChinese is not required. PhD students are required to write a term paper of 20-25 pages. MA and undergraduate students will write two essays of 8 pages in response to the questions.n nTexts to be purchased. Literature and the Environment (Timothy Clark); Creating an Ecological Society (Magdofff and Williams); The Robbery of Nature (Foster and Clark). The rest of readings are available on Canvas.
Same as: CHINA 371

COMPLIT 377. Medieval Lyric: How Lyric Moves. 3-5 Units.
Through the study of various vernacular premodern traditions, this graduate level course examines the qualities that make texts "lyric" and place them into conversation with contemporary theories of lyric. The course will situate medieval lyric within the critical discourse of poetics, the Global South, the archive, and anachrony. We will consider the movement of verse within and among various material contexts (song, manuscript, artworks, objects, tombstones). Poets considered: troubadours, trouvères, Galician-Portugese cantigas d'amigo, Stilnovists, Dante, Petrarchan poetry, Jean Renart, Charles d'Orléans, Villon, Pound, Brazilian Concrete Poetry.
Same as: FRENCH 377, ITALIAN 377

COMPLIT 381E. Pirandello, Sartre, and Beckett. 3-5 Units.
In this course we will read the main novels and plays of Pirandello, Sartre, and Beckett, with special emphasis on the existentialist themes of their work. Readings include The Late Mattia Pascal, Six Characters in Search of an Author, Henry IV; Nausea, No Exit, "Existentialism is a Humanism"; Molloy, Endgame, Krapp's Last Tape, Waiting for Godot. Taught in English.
Same as: COMPLIT 281E, FRENCH 214, FRENCH 314, ITALIAN 214, ITALIAN 314

COMPLIT 383A. Modern Notions of 'The Holy'. 3-5 Units.
This course explores the question, "What may we call 'holy' in the modern era?" by focusing on key writers and thinkers, who in various ways, and in different times raised this question: Friedrich Hölderlin, Hermann Cohen, Franz Kafka, Martin Heidegger, Martin Buber, Franz Rosenzweig, Else Lasker-Schüler, Walter Benjamin, Ernst Bloch, Hannah Arendt, Margarete Susman, Nelly Sachs, Paul Celan, and Judith Butler.nnThis course will be synchronous-conducted, but will also use an innovative, Stanford-developed, on-line platform called Poetic Thinking. Poetic Thinking allows students to share both their scholarly and creative work with each other. Based on the newest technology and beautifully designed, it will greatly enhance their course experience.
Same as: COMPLIT 283A, GERMAN 283A, GERMAN 383A, RELIGST 283A, RELIGST 383A

COMPLIT 388. In Search of the Holy Grail: Percival's Quest in Medieval Literature. 3-5 Units.
This course focuses on one of the most famous inventions of the Middle Ages: the Holy Grail. The grail - a mysterious vessel with supernatural properties - is first mentioned in Chrétien de Troyes' "Perceval," but the story is soon rewritten by authors who alter the meaning of both the grail and the quest. By reading three different versions, we will explore how they respond differently to major topics in medieval culture and relevant to today: romantic love, family ties, education, moral guilt, and spiritual practice. The texts are: Chrétien de Troyes' "Perceval," Wolfram von Eschenbach's "Parzival," and the anonymous "Queste del Saint Graal." All readings will be available in English.
Same as: COMPLIT 188, GERMAN 188, GERMAN 388

COMPLIT 390A. Magic, Science, and Religion. 3-5 Units.
With the rise of the human sciences in the later nineteenth century, "magic," "science," and "religion" came to be understood as entirely separate domains, with different versions of truth and divergent methods of inquiry. But how has this division broken down in the past 150 years? How is it, for example, that other people's religion is "merely magic"? How does science still draw on religious categories, in particular to claim the universe is meaningful? How have new forms of magic shaped new age, global culture? We will examine these questions by pairing literary texts with readings from anthropology, history of science, religious studies, and cultural criticism. This course is taught in English.
Same as: COMPLIT 290A, FRENCH 290, FRENCH 390, ITALIAN 290, ITALIAN 390

COMPLIT 397. Graduate Studies Colloquium. 1 Unit.
Colloquium for graduate students in Comparative Literature. Taught in English. May be repeated for credit.

COMPLIT 398L. Literary Lab. 2-5 Units.
Gathering and analyzing data, constructing hypotheses and designing experiments to test them, writing programs [if needed], preparing visuals and texts for articles or conferences. Requires a year-long participation in the activities of the Lab.
Same as: ENGLISH 398L

COMPLIT 399. Individual Work. 1-15 Unit.
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COMPLIT 680. Curricular Practical Training. 1-3 Unit.
CPT course required for international students completing degree.
Prerequisite: Comparative Literature Ph.D. candidate.

COMPLIT 802. TGR Dissertation. 0 Units.
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COMPARATIVE STUDIES IN RACE AND ETHNICITY (CSRE)

Program Overview

The Undergraduate Program in Comparative Studies in Race and Ethnicity is home to five areas of study:

- Asian American Studies (courses listed as ASNAMST (https://explorecourses.stanford.edu/search/?q=ASNAMST&view=catalog&page=0&catalog=71&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&filter-coursestatus-Active=on&collapse=&filter-catalognumber-ASNAMST=on&filter-catalognumber-ASNAMST=on) on ExploreCourses)
- Chicana/o-Latina/o Studies (courses listed as CHILATST (https://explorecourses.stanford.edu/search/?q=CHILATST&view=catalog&page=0&catalog=71&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&filter-coursestatus-Active=on&collapse=) on ExploreCourses)
- Comparative Studies (courses listed as CSRE (https://explorecourses.stanford.edu/search/?q=CSRE&view=catalog&page=0&catalog=71&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&filter-coursestatus-Active=on&collapse=&filter-catalognumber-CSRE=on&filter-catalognumber-CSRE=on) on ExploreCourses)
- Jewish Studies (courses listed as JEWISHST (https://explorecourses.stanford.edu/search/?q=JEWISHST&view=catalog&page=0&catalog=71&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&filter-coursestatus-Active=on&collapse=&filter-catalognumber-JEWISHST=on&filter-catalognumber-JEWISHST=on) on ExploreCourses)
- Native American Studies (courses listed as NATIVEAM (https://explorecourses.stanford.edu/search/?q=NATIVEAM&view=catalog&page=0&catalog=71&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&filter-coursestatus-Active=on&collapse=&filter-catalognumber-NATIVEAM=on&filter-catalognumber-NATIVEAM=on) on ExploreCourses)

Students can pursue a major or minor in any of these five areas, and are encouraged to build their interdisciplinary study around a focus or issue area. Students can then select from more than 150 course options from across many departments and schools to put together a curriculum, in consultation with our staff and faculty. The major requires 60 units of study and a culminating research project (either a senior paper or honors thesis).

Mission of the Undergraduate Program in Comparative Studies in Race and Ethnicity

The Interdepartmental Program in Comparative Studies in Race and Ethnicity (CSRE) is an interdisciplinary program offering students the opportunity to investigate the significance of race and ethnicity in all areas of human life. The program's mission is to educate students to be leaders and produce knowledge for race and justice.

Devoted to a rigorous analysis of race and ethnicity and using a comparative and interdisciplinary approach, CSRE promotes and deepens students' understanding of the multiple meanings of racial and ethnic diversity both in the United States and abroad. The program prepares students for living and working effectively in a multicultural world.

The interdisciplinary and integrated nature of the academic programs means that students take courses from across the university including: anthropology, art, communication, economics, education, history, languages, linguistics, literature, music, philosophy, political science, psychology, religion, sociology, theater and performance, among others.

Bachelor of Arts

In order to earn a B.A. in any of the five CSRE programs, students must complete at least 60 units toward the major.

Minor

In order to earn a minor in any of the five CSRE programs, students must complete at least 30 units toward the minor.

Ph.D. Minor

The Ph.D. minor in Comparative Studies in Race & Ethnicity provides graduate students pursuing Doctoral Degree's broad interdisciplinary knowledge in the field and prepares them to teach courses in the subject. The goal of the program is to bring together graduate students and faculty from different departments, programs, and schools who analyze race and ethnicity in their research.

Learning Outcomes (Undergraduate)

The Program in Comparative Studies in Race and Ethnicity expects undergraduate majors in the program to be able to demonstrate the following learning outcomes:

1. an understanding of interdisciplinary approaches to the knowledge of experiences related to race and ethnicity in the United States;
2. an ability to employ diverse analytical resources and comparative modes of study as tools to frame and address research questions;
3. an ability to critically engage both primary and secondary sources, and properly use both types of evidence in crafting an argument;
4. an ability to actively and critically engage in verbal and/or written discussion of issues;
5. demonstration of analytical writing skills that convey their understanding of the topic;
6. an expanded ability to think critically about issues in political, social, scientific, economic, and cultural life stemming from the diversity of experiences related to race and ethnicity.

Special Programs

CSRE majors have several unique opportunities available to them. The program offers students an opportunity for support of full-time paid summer research internships for those who apply to the Community Based Research Fellowship and complete a self-designed research project in collaboration with a community agency. The Public Policy Institute is a two week, pre-Autumn Quarter seminar that provides exposure to critical public policy issues. The residence-based institute provides room and board and all seminar materials for participants. CSRE also sponsors quarterly luncheons and community programs for all majors and minors, and has a number of service learning courses that couple academic work with work in communities.

Bachelor of Arts in Asian American Studies

Director: Jeanne Tsai (Psychology)

Asian American Studies (AAS) provides an interdisciplinary approach to understanding the historical and current experiences of persons of Asian

ancestry in the United States. In using the term Asian American, the AAS faculty recognize that the term seeks to name a rapidly developing, complex, and heterogeneous population and that there is neither a single Asian American identity nor one community that comprises all Asian Americans. Asian Americans include those with ancestral ties to countries or regions in East Asia, South Asia, Southeast Asia, or the Philippines, among others.

AAS brings together courses that address the artistic, historical, humanistic, political, and social dimensions of Asian Americans and is an appropriate course of study for students interested in a variety of concerns related to Asian Americans, including: artistic and cultural contributions; current social significance; historical experiences; immigration, intellectual, and policy issues; relationships with other social groups; and the construction of the notion of Asian American as it addresses important theoretical and practical issues.

Students should visit the CCSRE website (https://ccsre.stanford.edu/academics/how-declare/) for instructions on how to declare the major.

General Requirements

A total of 60 units of course work are required for the major

1. A minimum grade of 'C-' is required for a student to count a class towards the Core, Major-Core Foundational, and Methods requirements. Additional units toward the major require a minimum 'D-' passing grade.
2. Comparative and Major-Core courses must be taken for the maximum units offered (4 or more) and for letter grade. Methods courses must be taken for a minimum of 3 units and for letter grade.
3. All majors, minors, and interdisciplinary honors students in the CSRE Family of Programs must take Introduction to Comparative Studies in Race and Ethnicity (CSRE 196C).
4. Students may count 2 classes with the Satisfactory/No Credit (SNC) grading basis toward Additional Units.
   - Courses in which Credit/No Credit (CR/NC) is the only grading basis option may always be counted toward the major.
5. All majors are required to take at least one Community Engaged Learning course which must be CSRE, race, and/or ethnicity related.
   - Students may petition courses from outside departments to count, so long as they meet the race and/or ethnicity related requirement.
6. Students may petition up to 5 units of Internship for Public Service (CSRE 198) to count toward the major or minor when the work completed relates directly to race, ethnicity, or area of study. CSRE 198, however, may be repeated multiple times for University credit and the 180 units required to graduate.
7. Students may petition up to 5 units of Directed Reading classes (CSRE 200W) to count toward the major or minor. CSRE related courses offered only as Directed Reading (such as Muwekma House Seminar or ASB Prep courses) may be counted without a petition.
   a. Students must inform the student services coordinator and the Director of CSRE that they intend to petition a Directed Reading class to count toward their major before taking the class, and submit a petition for the class while they are in it.
   b. A syllabus with a series of readings, including themes, set by the instructor and the student must be submitted with the petition.
   c. The Directed Reading must include assignments that go beyond the readings, such as response papers, a final paper, and/or creative project.
   d. Units earned must align with the University's Unit of Credit (p. 87) policy, i.e., 1 unit being equal to 3 hours/week of work. Meetings with the instructor of the Directed Reading may count up to one hour per unit of work per week.
   e. In general, students are discouraged from using Directed Reading units toward their major unit requirement. Petitions are evaluated and approved by the Program Director on a case-by-case basis.
8. Students may major in two CSRE programs; see the "Multiple Majors (p. 32)" section of this bulletin for University rules concerning multiple majors. Such students may not double count courses between programs, with the exception of the course used to fulfill the Methodology requirement. In order to fulfill the WIM requirement, students write two papers during Autumn Quarter of the senior year, enrolling in both CSRE 200X and CSRE 201X.

Course Requirements

1. CSRE Core Courses

Asian American Studies majors must take the 15-unit CSRE core curriculum including Introduction to Comparative Studies in Race and Ethnicity (CSRE 196C), an additional comparative-core course, and a senior seminar taken in Autumn Quarter of their senior year. One major-core course that focuses on a non-Asian ethnic group may be counted toward the 15-unit core requirement.

		Units
ANTHRO 32	Theories in Race and Ethnicity: A Comparative Perspective	5
CSRE 32	Theories in Race and Ethnicity: A Comparative Perspective	5
CSRE 149	The Laboring of Diaspora & Border Literary Cultures	3-5
CSRE 196C	Introduction to Comparative Studies in Race and Ethnicity	5
CSRE 200X	CSRE Senior Seminar	5
CSRE 245	Understanding Racial and Ethnic Identity Development	3-5
CSRE 246	Constructing Race and Religion in America	4-5
CSRE 389A	Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations	3-5
JEWISHST 106	Reflection on the Other: The Arab Israeli Conflict in Literature and Film	3-5
PSYCH 75	Introduction to Cultural Psychology	5

2. Major-Core Course

Majors are required to take one major-core course in Asian American Studies. Students who completed ENGLISH 43C/ENGLISH 143C in a previous year may count this toward their foundational course requirement.

		Units
ASNAMST 100	Introduction to Asian American Studies	5
ASNAMST 186B	Asian American Art: 1850-Present	4

3. Area Study

Majors must complete an additional 35 units of course work from an approved list. One course must have an international dimension, preferably a focus on Asia. The remaining courses must have an Asian American focus and primarily be selected from social science and humanities departments.

4. Language Study (optional)

Students may obtain credit for their study of a related Asian language towards their degree. If students take 15 or more units of an advanced, second-year Asian language relevant to Asian American Studies, they may apply 5 of those units toward their Asian American Studies degree.

5. Research/Methodology Requirement

Majors are required to complete 3-5 units of course work focused on research methods relevant to their disciplinary approach as a student in Asian American Studies. See the Methodology course list on ExploreCourses (https://explorecourses.stanford.edu/search/?q=CSRE%3A%3AMethodology&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-coursestatus-Active=on) for offerings this year.

6. Interdisciplinary Breadth Requirement

To fulfill the Interdisciplinary Breadth Requirement, students should take one 3-5 unit course from the Social Sciences and one 3-5 unit course from the Arts & Humanities that focus on race and ethnicity, especially if the courses are comparative.

- *Arts and Humanities classes include:* Art and Art History, Classics, Division of Literatures, Cultures, and Languages, Comparative Literature, French and Italian, German Studies, Iberian and Latin American Cultures, Slavic Languages and Literatures, East Asian Languages and Cultures, English, History, Linguistics, Music, Philosophy, Religious Studies, and Theater and Performance Studies
- *Social Science classes include:* Anthropology, Communication, Economics, Political Science, Psychology, and Sociology

7. International Dimension

Students in Asian American Studies are required to take one 3-5 unit course that explores issues of race and ethnicity in the context of a nation outside of the United States.

8. Community Engaged Learning Requirement

All students in one of the CSRE majors are required to complete at least one service-learning experience. This requirement may be fulfilled by enrolling in a service-learning course, participating in an identity, race, or ethnicity focused service-learning Alternative Spring Break, participating in the Community Based Research Fellowship program, or enrolling in CSRE 198 Internship for Public Service while completing independent service work. See the Community Engaged Learning course list (https://explorecourses.stanford.edu/search/?q=CSRE%3A%3ACEL&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-coursestatus-Active=on) on ExploreCourses for offerings this year.

9. Senior Paper or Honors Thesis

All Asian American Studies majors must complete a culminating research paper under the supervision of a faculty adviser. All majors take CSRE 200X CSRE Senior Seminar (5 units) which fulfills the program's WIM requirement. Additionally, Honors students must also enroll in CSRE 200Y CSRE Senior Honors Research (1-10 units) and CSRE 200Z CSRE Senior Honors Research (1-5 units) in Winter and Spring quarters to continue to access peer and faculty support as they write their theses. Senior Honors Research (CSRE 200Y and CSRE 200Z) courses cannot count for the 60 units towards your major but do count for the 180 units towards your bachelor's degree. Students must complete their theses with a minimum grade of 'B+' to receive honors in CSRE.

Bachelor of Arts in Chicana/o-Latina/o Studies

Director: Jonathan Rosa (Education)

Chicana/o-Latina/o Studies is an interdisciplinary major focusing on the U.S. population with origins in the countries of Mexico, Latin America, and/or South America. Students who major or minor in Chicana/o-Latina/o Studies have an opportunity to select from courses in the humanities, social sciences, and courses offered by affiliated faculty in the School of Education. The Chicana/o-Latina/o Studies program affords students an opportunity to explore the culture, society, economy, and politics of this important and growing segment of our national population.

Students should visit the CCSRE website (https://ccsre.stanford.edu/academics/how-declare/) for instructions on how to declare the major.

General Requirements

A total of 60 units of course work are required for the major.

1. A minimum grade of 'C-' is required for a student to count a class towards the Core, Major-Core Foundational, and Methods requirements. Additional units toward the major require a minimum 'D-' passing grade.
2. Comparative and Major-Core courses must be taken for the maximum units offered (4 or more) and for letter grade. Methods courses must be taken for a minimum of 3 units and for letter grade.
3. All majors, minors, and interdisciplinary honors students in the CSRE Family of Programs must take Introduction to Comparative Studies in Race and Ethnicity (CSRE 196C).
4. Students may count 2 classes with the Satisfactory/No Credit (SNC) grading basis toward Additional Units.
   - Courses in which Credit/No Credit (CR/NC) is the only grading basis option may always be counted toward the major.
5. All majors are required to take at least one Community Engaged Learning course which must be CSRE, race, and/or ethnicity related.
   - Students may petition courses from outside departments to count, so long as they meet the race and/or ethnicity related requirement.
6. Students may petition up to 5 units of Internship for Public Service (CSRE 198) to count toward the major or minor when the work completed relates directly to race, ethnicity, or area of study. CSRE 198, however, may be repeated multiple times for University credit and the 180 units required to graduate.
7. Students may petition up to 5 units of Directed Reading classes (CSRE 200W) to count toward the major or minor. CSRE related courses offered only as Directed Reading (such as Muwekma House Seminar or ASB Prep courses) may be counted without a petition.
   a. Students must inform the student services coordinator and the Director of CSRE that they intend to petition a Directed Reading class to count toward their major before taking the class, and submit a petition for the class while they are in it.
   b. A syllabus with a series of readings, including themes, set by the instructor and the student must be submitted with the petition.
   c. The Directed Reading must include assignments that go beyond the readings, such as response papers, a final paper, and/or creative project.
   d. Units earned must align with the University's Unit of Credit (p. 87) policy, i.e., 1 unit being equal to 3 hours/week of work. Meetings with the instructor of the Directed Reading may count up to one hour per unit of work per week.
   e. In general, students are discouraged from using Directed Reading units toward their major unit requirement. Petitions are evaluated and approved by the Program Director on a case-by-case basis.
8. Students may major in two CSRE programs; see the "Multiple Majors (p. 32)" section of this bulletin for University rules concerning multiple majors. Such students may not double count courses between programs, with the exception of the course used to fulfill the Methodology requirement. In order to fulfill the WIM requirement, students write two papers during Autumn Quarter of the senior year, enrolling in both CSRE 200X and CSRE 201X.

Course Requirements

1. CSRE Core Curriculum

Chicana/o-Latina/o Studies majors must take the 15-unit CSRE core curriculum including Introduction to Comparative Studies in Race and Ethnicity (CSRE 196C), an additional comparative-core course, and a senior seminar taken in Autumn Quarter of the senior year. One major-core course that focuses on a non-Latino origin group may be counted toward the 15-unit core requirement.

		Units
ANTHRO 32	Theories in Race and Ethnicity: A Comparative Perspective	5
CSRE 32	Theories in Race and Ethnicity: A Comparative Perspective	5
CSRE 149	The Laboring of Diaspora & Border Literary Cultures	3-5
CSRE 196C	Introduction to Comparative Studies in Race and Ethnicity	5
CSRE 200X	CSRE Senior Seminar	5
CSRE 245	Understanding Racial and Ethnic Identity Development	3-5
CSRE 246	Constructing Race and Religion in America	4-5
CSRE 389A	Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations	3-5
JEWISHST 106	Reflection on the Other: The Arab Israeli Conflict in Literature and Film	3-5
PSYCH 75	Introduction to Cultural Psychology	5

2. Major-Core Courses

Majors are required to take one foundational course in Chicana/o-Latina/o Studies. Students who completed CHICANST/SOC 166 in a previous year may count this toward their foundational course requirement.

		Units
CHILATST 180E	Introduction to Chicanx/Latinx Studies	5

3. Chicana/o-Latina/o Focus Courses

Majors must complete an additional 25-32 units of course work from an approved list. Courses must have a Chicanx/Latinx focus and primarily be selected from social science and humanities departments.

4. Language Study (optional)

Students may obtain credit for the study of the Spanish language towards their degree. If students take 15 or more units of advanced, second-year Spanish language relevant to Chicana/o-Latina/o Studies, they may apply 5 of those units toward their Chicana/o-Latina/o Studies degree.

5. Research/Methodology Requirement

Majors are required to complete 3-5 units of coursework focused on research methods relevant to their disciplinary approach as a student in Chicana/o-Latina/o Studies. See the Methodology course list on ExploreCourses (https://explorecourses.stanford.edu/search/?q=CSRE%3A%3AMethodology&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-coursestatus-Active=on) for offerings this year.

6. Interdisciplinary Breadth Requirement

To fulfill the Interdisciplinary Breadth Requirement, students should take one 3-5 unit course from the Social Sciences and one 3-5 unit course from the Arts & Humanities that focus on race and ethnicity, especially if the courses are comparative.

- *Arts and Humanities classes include:* Art and Art History, Classics, Division of Literatures, Cultures, and Languages, Comparative Literature, French and Italian, German Studies, Iberian and Latin American Cultures, Slavic Languages and Literatures, East Asian Languages and Cultures, English, History, Linguistics, Music, Philosophy, Religious Studies, and Theater and Performance Studies
- Social Science classes include: Anthropology, Communication, Economics, Political Science, Psychology, and Sociology

7. Community Engaged Learning Requirement

All students are required to complete at least one service-learning experience. This requirement may be fulfilled by enrolling in a service-learning course, participating in an identity, race, or ethnicity focused service-learning Alternative Spring Break, participating in the Community Summer Research Internship program, or enrolling in CSRE 198 Internship for Public Service while completing independent service work. See the Community Engaged Learning course list (https://explorecourses.stanford.edu/search/?q=CSRE%3A%3ACEL&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-coursestatus-Active=on) on ExploreCourses for offerings this year.

8. Senior Paper or Honors Thesis

All Chicana/o-Latina/o Studies majors must complete a culminating research paper under the supervision of a faculty adviser. All majors take CSRE 200X CSRE Senior Seminar (5 units) which fulfills the program's WIM requirement. Additionally, Honors students must also enroll in CSRE 200Y CSRE Senior Honors Research (1-10 units) and CSRE 200Z CSRE Senior Honors Research (1-5 units) in Winter and Spring quarters to continue to access peer and faculty support as they write their theses. Senior Honors Research (CSRE 200Y and CSRE 200Z) courses cannot count for the 60 units towards your major but do count for the 180 units towards your bachelor's degree. Students must complete their theses with a minimum grade of 'B+' to receive honors in CSRE.

Bachelor of Arts in Comparative Studies in Race and Ethnicity

Director: Vaughn Rasberry (English)

Comparative Studies in Race and Ethnicity does not focus on a particular ethnic group. Rather, a student in consultation with the adviser designs a curriculum in relation to a subplan area of focus (p. 1229) that compares various ethnic groups or explores topics that cut across group experiences in the United States and elsewhere in the world. For example, students may compare groups within the U.S., or compare groups in the U.S. to ethnic groups elsewhere, or study the diaspora of a single group or the sovereignty of indigenous peoples within and across different national contexts. Students in this major are able to take advantage of courses in over 22 fields offered by the affiliated faculty of CSRE.

Students should visit the CCSRE website (https://ccsre.stanford.edu/academics/how-declare/) for instructions on how to declare the major.

General Requirements

A total of 60 units of course work are required for the major.

1. A minimum grade of 'C-' is required for a student to count a class towards the Core, Major-Core Foundational, and Methods requirements. Additional units toward the major require a minimum 'D-' passing grade.

2. Comparative and Major-Core courses must be taken for the maximum units offered (4 or more) and for letter grade. Methods courses must be taken for a minimum of 3 units and for letter grade.
3. All majors, minors, and interdisciplinary honors students in the CSRE Family of Programs must take Introduction to Comparative Studies in Race and Ethnicity (CSRE 196C).
4. Students may count 2 classes with the Satisfactory/No Credit (SNC) grading basis toward Additional Units.
   - Courses in which Credit/No Credit (CR/NC) is the only grading basis option may always be counted toward the major.
5. All majors are required to take at least one Community Engaged Learning course which must be CSRE, race, and/or ethnicity related.
   - Students may petition courses from outside departments to count, so long as they meet the race and/or ethnicity related requirement.
6. Students may petition up to 5 units of Internship for Public Service (CSRE 198) to count toward the major or minor when the work completed relates directly to race, ethnicity, or area of study. CSRE 198, however, may be repeated multiple times for University credit and the 180 units required to graduate.
7. Students may petition up to 5 units of Directed Reading classes (CSRE 200W) to count toward the major or minor. CSRE related courses offered only as Directed Reading (such as Muwekma House Seminar or ASB Prep courses) may be counted without a petition.
   a. Students must inform the student services coordinator and the Director of CSRE that they intend to petition a Directed Reading class to count toward their major before taking the class, and submit a petition for the class while they are in it.
   b. A syllabus with a series of readings, including themes, set by the instructor and the student must be submitted with the petition.
   c. The Directed Reading must include assignments that go beyond the readings, such as response papers, a final paper, and/or creative project.
   d. Units earned must align with the University's Unit of Credit (p. 87) policy, i.e., 1 unit being equal to 3 hours/week of work. Meetings with the instructor of the Directed Reading may count up to one hour per unit of work per week.
   e. In general, students are discouraged from using Directed Reading units toward their major unit requirement. Petitions are evaluated and approved by the Program Director on a case-by-case basis.
8. Students may major in two CSRE programs; see the "Multiple Majors (p. 32)" section of this bulletin for University rules concerning multiple majors. Such students may not double count courses between programs, with the exception of the course used to fulfill the Methodology requirement. In order to fulfill the WIM requirement, students write two papers during Autumn Quarter of the senior year, enrolling in both CSRE 200X and CSRE 201X.

Course Requirements

1. Core Curriculum

All CSRE majors enroll in the 15-unit core curriculum, which consists of Introduction to Comparative Studies in Race and Ethnicity (CSRE 196C), an additional comparative-core course, and a senior seminar taken in Autumn Quarter of the senior year. One major-core course may be counted toward the 15-unit core requirement.

		Units
ANTHRO 32	Theories in Race and Ethnicity: A Comparative Perspective	5
CSRE 32	Theories in Race and Ethnicity: A Comparative Perspective	5
CSRE 149	The Laboring of Diaspora & Border Literary Cultures	3-5
CSRE 196C	Introduction to Comparative Studies in Race and Ethnicity	5
CSRE 200X	CSRE Senior Seminar	5
CSRE 245	Understanding Racial and Ethnic Identity Development	3-5
CSRE 246	Constructing Race and Religion in America	4-5
CSRE 389A	Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations	3-5
JEWISHST 106	Reflection on the Other: The Arab Israeli Conflict in Literature and Film	3-5
PSYCH 75	Introduction to Cultural Psychology	5

2. Subplan Focus Courses

Comparative Studies majors must complete 20-25 units of subplan specific course work toward the major See the Subplans (p. 1229) tab above.

3. CSRE Focus Courses

Comparative Studies majors must complete and additional10-16 units of course work specific to comparative studies in race and ethnicity outside of their subplan.

4. Research/Methodology Requirement

Majors are required to complete 3-5 units of course work focused on research methods relevant to their disciplinary approach as a student in Comparative Studies in Race & Ethnicity. See the Methodology course list on ExploreCourses (https://explorecourses.stanford.edu/search/?q=CSRE%3A%3AMethodology&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-coursestatus-Active=on) for offerings this year.

5. Interdisciplinary Breadth Requirement

To fulfill the Interdisciplinary Breadth Requirement, students should take one 3-5 unit course from the Social Sciences and one 3-5 unit course from the Arts & Humanities that focus on race and ethnicity, especially if the courses are comparative.

- Arts and Humanities classes Include: Art and Art History, Classics, Division of Literatures, Cultures, and Languages, Comparative Literature, French and Italian, German Studies, Iberian and Latin American Cultures, Slavic Languages and Literatures, East Asian Languages and Cultures, English, History, Linguistics, Music, Philosophy, Religious Studies, and Theater and Performance Studies
- Social Science classes Include: Anthropology, Communication, Economics, Political Science, Psychology, and Sociology

6. Community Engaged Learning Requirement

All students in one of the CSRE majors are required to complete at least one service-learning experience. This requirement may be fulfilled by enrolling in a service-learning course, participating in an identity, race, or ethnicity focused service-learning Alternative Spring Break, participating in the Community Summer Research Internship program, or enrolling in CSRE 198 Internship for Public Service while completing independent service work. See the Community Engaged Learning course list (https://explorecourses.stanford.edu/search/?q=CSRE%3A%3ACEL&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-coursestatus-Active=on) on ExploreCourses for offerings this year.

7. Senior Paper or Honors Thesis

All CSRE majors must complete a culminating research paper under the supervision of a faculty adviser. All majors take CSRE 200X CSRE

Senior Seminar (5 units) which fulfills the program's WIM requirement. Additionally, Honors students must also enroll in CSRE 200YCSRE Senior Honors Research (1-10 units) and CSRE 200Z CSRE Senior Honors Research (1-10 units)in Winter and Spring quarters to continue to access peer and faculty support as they write their theses. Senior Honors Research (CSRE 200Y and CSRE 200Z) courses cannot count for the 60 units towards your major but do count for the 180 units towards your bachelor's degree. Students must complete their theses with a minimum grade of 'B+' to receive honors in CSRE.

Overview

Officially declared subplans are available only to students majoring in Comparative Studies in Race & Ethnicity (CSRE).

20-25 units of subplan focused courses must also be taken in order to complete this requirement.

CSRE majors are required to declare a formal subplan, and may have the opportunity to design an individualized subplan if their interests are not already covered by the existing subplans. Subplans are noted on student transcripts and diplomas; individually designed thematic foci will appear as “Self-Designed” on the transcript and diploma. The following are the formal subplans:

Subplan in Education & Inequality

The subplan in Education & Inequality explores history, policy, and practice in education to understand how educational opportunity is shaped by issues of race, ethnicity, and difference. The goal of the subplan is to develop an understanding of the core issues facing educators and policy makers so that students may learn how they can contribute to the social and political discourse surrounding issues of education and opportunity policy in the U.S.

The concentration is declared on Axess; it appears on the transcript and diploma. Students interested in the Education & Inequality subplan should contact the CSRE undergraduate program office.

Students may find the following courses useful in fulfilling requirements in the Education & Inequality subplan:

		Units
AFRICAAM 112	Urban Education	3-5
AFRICAST 111	Education for All? The Global and Local in Public Policy Making in Africa	3-5
CHILATST 131	Raza Youth in Urban Schools: Mis-educating Chicana/o/x and Latina/o/x Communities	3-5
CSRE 11W	Service-Learning Workshop on Issues of Education Equity	1
CSRE 103B	Race, Ethnicity, and Linguistic Diversity in Classrooms: Sociocultural Theory and Practices	3-5
CSRE 216X	Education, Race, and Inequality in African American History, 1880-1990	3-5
CSRE 233A	Counseling Theories and Interventions from a Multicultural Perspective	3-5
CSRE 245	Understanding Racial and Ethnic Identity Development	3-5
EDUC 100B	EAST House Seminar: Current Issues and Debates in Education	1
EDUC 120C	Education and Society	4-5
EDUC 149	Theory and Issues in the Study of Bilingualism	3-5
EDUC 165	History of Higher Education in the U.S.	3-5
EDUC 197	Gender and Education in Global and Comparative Perspectives	3-4
EDUC 277	Education of Immigrant Students: Psychological Perspectives	4
HISTORY 158C	History of Higher Education in the U.S.	3-5
LINGUIST 65	African American Vernacular English	3-5

Subplan in Environmental Justice

The Environmental Justice subplan allows students to expand their awareness of the environment’s significance to various racial and ethnic groups. What is the relationship between certain societies and groups and the environment? What far reaching impacts can the environment have on segments of the population? Water, air, and food are vital necessities impacted by political, economic, and social decisions and actions. Explore the inequalities that affect low-income and communities of color, and work toward just environments for all.

This subplan is declared on Axess, and appears on the transcript or diploma. Students interested in the Environmental Justice subplan should contact the CSRE undergraduate program office.

Students may find the following courses useful in fulfilling requirements for the Environmental Justice subplan:

		Units
ANTHRO 140C	Mobilizing Nature	3
ANTHRO 166	Political Ecology of Tropical Land Use: Conservation, Natural Resource Extraction, and Agribusiness	3-5
BIO 30	Ecology for Everyone	4
CSRE 125E	Shades of Green: Redesigning and Rethinking the Environmental Justice Movements	3-5
EARTHSYS 136	The Ethics of Stewardship	2-3
ECON 155	Environmental Economics and Policy	5
NATIVEAM 111B	Muwekma: Landscape Archaeology and the Narratives of California Natives	3-5

Subplan in Health & Wellness

The subplan in Health & Wellness is designed for students who are seeking an interdisciplinary exploration of health disparities, health access, and health policy. Through course work, students examine how health experiences are influenced by issues of race and ethnicity.

The subplan is declared on Axess, and appears on the transcript and diploma. Students interested in the Health & Wellness subplan should contact the CSRE undergraduate program office.

Students may find the following courses useful in fulfilling requirements in the Health & Wellness subplan:

		Units
ANTHRO 82	Medical Anthropology	5
ANTHRO 138	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise	5
CSRE 41A	Genes and Identity	4
CSRE 138	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise	5
EDUC 340	Psychology and American Indian/Alaska Native Mental Health	3-5
HUMBIO 120	Health Care in America: An Introduction to U.S. Health Policy	4

HUMBIO 121E	Ethnicity and Medicine	1-3
HUMBIO 122S	Social Class, Race, Ethnicity, and Health	4
HUMBIO 128	Community Health Psychology	4
NATIVEAM 240	Psychology and American Indian/Alaska Native Mental Health	3-5
PEDS 150	Social and Environmental Determinants of Health	3
PEDS 222	Beyond Health Care: the effects of social policies on health	3
PEDS 250	Social and Environmental Determinants of Health	3
PSYCH 101	Community Health Psychology	4
PWR 194DH	Topics in Writing and Rhetoric: Empathy, Ethics, and Compassion Meditation	4
AFRICAAM 28	Health Impact of Sexual Assault and Relationship Abuse across the Lifecourse	1-3
ANTHRO 82	Medical Anthropology	5
CHILATST 111	Curander@s, remedios y espiritualidad: Chican@/Latin@ healing practices	3-5
CSRE 41A	Genes and Identity	4
CSRE 94	Topics in Writing and Rhetoric: Empathy, Ethics, and Compassion Meditation	4
CSRE 138	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise	5
CSRE 144	Transforming Self and Systems: Crossing Borders of Race, Nation, Gender, Sexuality, and Class	5
HRP 89Q	Introduction to Cross Cultural Issues in Medicine	3
HUMBIO 120	Health Care in America: An Introduction to U.S. Health Policy	4
HUMBIO 121E	Ethnicity and Medicine	1-3
HUMBIO 122M	Challenges of Human Migration: Health and Health Care of Migrants and Autochthonous Populations	3
HUMBIO 122S	Social Class, Race, Ethnicity, and Health	4
HUMBIO 124C	Global Child Health	3-5
HUMBIO 128	Community Health Psychology	4
LIFE 145	Trauma, healing, and empowerment	3
NATIVEAM 240	Psychology and American Indian/Alaska Native Mental Health	3-5
PEDS 150	Social and Environmental Determinants of Health	3
PEDS 222	Beyond Health Care: the effects of social policies on health	3
SOC 152	The Social Determinants of Health	4

Subplan in Identity Diversity Aesthetics (IDA)

Students in the Comparative Studies in Race and Ethnicity major can choose a subplan focus in Identity Diversity Aesthetics (IDA).The Identity Diversity Aesthetics subplan is designed to explore the intersections of culture, race, the arts, and social transformation. In IDA courses taught by Stanford faculty, lecturers, and distinguished Visiting Artists, students learn how the arts, activism, and the academy interact to produce aesthetic and societal change.

The subplan is declared in Axess, and appears on the transcript and diploma. Students interested in IDA should contact the CSRE undergraduate program office.

Additionally, IDA subplan students must complete a creative senior project during CSRE 200X. Possible senior projects include a stage production, a set of recorded music, an anthology of creative writing, a curated or solo exhibition, or a community arts workshop. Students who elect to write an honors thesis may incorporate their project as the basis for their thesis.

Students may find the following courses useful in fulfilling requirements in the Identity Diversity Aesthetics (IDA) subplan:

		Units
AFRICAAM 3E	Michelle Obama in American Culture	1
AFRICAAM 5I	Hamilton: An American Musical	1
AFRICAAM 10A	Introduction to Identity, Diversity, and Aesthetics: Arts, Culture, and Pedagogy	1
AFRICAAM 21	African American Vernacular English	3-5
AFRICAAM 36	REPRESENT! Covering Race, Culture, and Identity In The Arts through Writing, Media, and Transmedia.	5
AFRICAAM 37	Contemporary Choreography: Chocolate Heads Performance Project	2
AFRICAAM 43	Introduction to English III: Introduction to African American Literature	3-5
AFRICAAM 45	Dance Improvisation from Freestyle to Hip Hop	1-2
AFRICAAM 71	Introduction to Capoeira: An African Brazilian Art Form	1
AFRICAAM 94	Public Space in Iran: Murals, Graffiti, Performance	3-4
AFRICAAM 117J	Race, Gender, and Sexuality in Contemporary American Film	4-5
AFRICAAM 128	Roots Modern Experience - Mixed Level	1
AFRICAAM 154G	Black Magic: Ethnicity, Race, and Identity in Performance Cultures	3-4
AFRICAAM 156	Performing History: Race, Politics, and Staging the Plays of August Wilson	4
AFRICAAM 159	James Baldwin & Twentieth Century Literature	5
AFRICAAM 160J	Conjure Art 101: Performances of Ritual, Spirituality and Decolonial Black Feminist Magic	2
AFRICAAM 188	Who We Be: Art, Images & Race in Post-Civil Rights America	2-4
AFRICAAM 194	Topics in Writing & Rhetoric: Contemporary Black Rhetorics: Black Twitter and Black Digital Cultures	4
AFRICAAM 194A	Topics in Writing & Rhetoric: Freedom's Mixtape: DJing Contemporary African American Rhetorics	4
AFRICAAM 200N	Funkentelechy: Technologies, Social Justice and Black Vernacular Cultures	5
AFRICAAM 258	Black Feminist Theater and Theory	4
AMSTUD 3E	Michelle Obama in American Culture	1
AMSTUD 5I	Hamilton: An American Musical	1
AMSTUD 12A	Introduction to English III: Introduction to African American Literature	3-5
AMSTUD 51Q	Comparative Fictions of Ethnicity	4
AMSTUD 91A	Asian American Autobiography/W	3-5

AMSTUD 117	Race, Gender, and Sexuality in Contemporary American Film	4-5
AMSTUD 151	Migration and Diaspora in American Art, 1800-Present	4
AMSTUD 186D	Asian American Art: 1850-Present	4
AMSTUD 197	Dance in Prison: The Arts, Juvenile Justice, and Rehabilitation in America	3
AMSTUD 261	Personal Narratives in Feminist, Gender, and Sexuality Studies	4-5
ANTHRO 320A	Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations	3-5
ARTHIST 151	Migration and Diaspora in American Art, 1800-Present	4
ARTHIST 186B	Asian American Art: 1850-Present	4
ARTHIST 193	Jacob Lawrence's Twentieth Century: African American Art and Culture	5
ARTHIST 221E	Peripheral Dreams: The Art and Literature of Miró, Dalí, and other Surrealists in Catalonia	3-5
ARTHIST 246N	Pacific Dreams: Art in California	3
ARTHIST 351	Migration and Diaspora in American Art, 1800-Present	4
ARTSTUDI 146B	Art of Reclamation	2
ARTSTUDI 270	Advanced Photography Seminar	4
ASNAMST 31N	Behind the Big Drums: Exploring Taiko	3
ASNAMST 91A	Asian American Autobiography/W	3-5
ASNAMST 117D	Race, Gender, and Sexuality in Contemporary American Film	4-5
ASNAMST 144	Transforming Self and Systems: Crossing Borders of Race, Nation, Gender, Sexuality, and Class	5
ASNAMST 151D	Migration and Diaspora in American Art, 1800-Present	4
ASNAMST 157	An Introduction to Asian American Literature: The Short Story	3
ASNAMST 174S	When Half is Whole: Developing Synergistic Identities and Mestiza Consciousness	5
ASNAMST 186B	Asian American Art: 1850-Present	4
CHILATST 21	Visual Storytelling in Community: The Casa Zapata Mural Archive & History Project	3
CHILATST 109	GENTE: An incubator for transforming national narratives	5
CHILATST 179	Chicano & Chicana Theater: Politics In Performance	4
COMPLIT 51Q	Comparative Fictions of Ethnicity	4
COMPLIT 55N	Black Panther, Hamilton, Díaz, and Other Wondrous Lives	3-5
COMPLIT 133A	Literature and Society in Africa and the Caribbean	4
COMPLIT 149	The Laboring of Diaspora & Border Literary Cultures	3-5
COMPLIT 348	US-Mexico Border Fictions: Writing La Frontera, Tearing Down the Wall	3-5
CSRE 3E	Michelle Obama in American Culture	1
CSRE 5I	Hamilton: An American Musical	1
CSRE 10A	Introduction to Identity, Diversity, and Aesthetics: Arts, Culture, and Pedagogy	1
CSRE 10AY	Pacific Standard Time LA/LA creative projects in a Celebration Beyond Borders	1-2
CSRE 21	African American Vernacular English	3-5
CSRE 44	Living Free: Embodying Healing and Creativity in The Era of Racial Justice Movements	1-4
CSRE 47Q	Heartfulness: Mindfulness, Compassion, and Responsibility	3
CSRE 51Q	Comparative Fictions of Ethnicity	4
CSRE 55N	Black Panther, Hamilton, Díaz, and Other Wondrous Lives	3-5
CSRE 61	Introduction to Dance Studies: Dancing Across Stages, Clubs, Screens, and Borders	3-4
CSRE 78	Art + Community: Division, Resilience & Reconciliation	1-5
CSRE 82G	Making Palestine Visible	3-5
CSRE 91D	Asian American Autobiography/W	3-5
CSRE 95I	Space, Public Discourse and Revolutionary Practices	3-4
CSRE 117D	Race, Gender, and Sexuality in Contemporary American Film	4-5
CSRE 118D	Musics and Appropriation Throughout the World	3
CSRE 122E	Art in the Streets: Identity in Murals, Site-specific works, and Interventions in Public Spaces	4
CSRE 123A	American Indians and the Cinema	5
CSRE 127A	Can't Stop Won't Stop: A History Of The Hip-Hop Arts	2-4
CSRE 141E	Counterstory in Literature and Education	3
CSRE 142	The Literature of the Americas	5
CSRE 144	Transforming Self and Systems: Crossing Borders of Race, Nation, Gender, Sexuality, and Class	5
CSRE 149	The Laboring of Diaspora & Border Literary Cultures	3-5
CSRE 151D	Migration and Diaspora in American Art, 1800-Present	4
CSRE 153D	Creative Research for Artists	1-2
CSRE 154D	Black Magic: Ethnicity, Race, and Identity in Performance Cultures	3-4
CSRE 156T	Performing History: Race, Politics, and Staging the Plays of August Wilson	4
CSRE 157A	Performing Arabs and Others in Theory and Practice	4
CSRE 160J	Conjure Art 101: Performances of Ritual, Spirituality and Decolonial Black Feminist Magic	2
CSRE 160M	Introduction to Representations of the Middle East in Dance, Performance, & Popular Culture	3-4
CSRE 174S	When Half is Whole: Developing Synergistic Identities and Mestiza Consciousness	5
CSRE 188Q	Imagining Women: Writers in Print and in Person	4-5
CSRE 194KT	Topics in Writing & Rhetoric: The Last Hopi On Earth: The Rhetoric of Entertainment Inequity	4
CSRE 201B	The Undocumented Migration Project Exhibition at Stanford	3
CSRE 201D	Public Art Interventions in Social & Cultural Spaces	4-5
CSRE 221D	Crafting Challenging Conversations in a Conflicted World	3
CSRE 258	Black Feminist Theater and Theory	4

CSRE 385	Race, Ethnicity, and Language: Pedagogical Possibilities	3-4
CSRE 389A	Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations	3-5
DANCE 1	Contemporary Modern I: Liquid Flow	1
DANCE 2	Introduction to Dance & Movement: Afro Flows	1
DANCE 30	Contemporary Choreography: Chocolate Heads Performance Project	2
DANCE 45	Dance Improvisation from Freestyle to Hip Hop	1-2
DANCE 71	Introduction to Capoeira: An African Brazilian Art Form	1
DANCE 102	Musical Theater Dance Styles	1
DANCE 106I	Stanford Dance Community: Inter-Style Choreography Workshop	1-2
DANCE 118	Developing Creativity In Dance	1
DANCE 128	Roots Modern Experience - Mixed Level	1
DANCE 153D	Creative Research for Artists	1-2
DANCE 160J	Conjure Art 101: Performances of Ritual, Spirituality and Decolonial Black Feminist Magic	2
DANCE 160M	Introduction to Representations of the Middle East in Dance, Performance, & Popular Culture	3-4
DANCE 161D	Introduction to Dance Studies: Dancing Across Stages, Clubs, Screens, and Borders	3-4
DANCE 197	Dance in Prison: The Arts, Juvenile Justice, and Rehabilitation in America	3
EARTHSYS 95	Liberation Through Land: Organic Gardening and Racial Justice	2
EDUC 141	Counterstory in Literature and Education	3
EDUC 341	Counterstory in Literature and Education	3
EDUC 389A	Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations	3-5
EDUC 389C	Race, Ethnicity, and Language: Pedagogical Possibilities	3-4
ENGLISH 12A	Introduction to English III: Introduction to African American Literature	3-5
ENGLISH 91A	Asian American Autobiography/W	3-5
ENGLISH 92AP	Arab and Arab-American Poetry	5
ENGLISH 159	James Baldwin & Twentieth Century Literature	5
FEMGEN 3E	Michelle Obama in American Culture	1
FEMGEN 12SI	Beyond the Athlete: Intersection of Diversity, Storytelling, and Athletics	1-2
FEMGEN 13N	Women Making Music	3
FEMGEN 21T	StoryCraft: Sexuality, Intimacy & Relationships	2
FEMGEN 97	Bow Down: Queer Hip-Hop Pedagogy	3
FEMGEN 113X	Feminist Poetry in the U.S., 1973-2017	3-5
FEMGEN 117F	Race, Gender, and Sexuality in Contemporary American Film	4-5
FEMGEN 133	Transgender Performance and Performativity	4
FEMGEN 144X	Transforming Self and Systems: Crossing Borders of Race, Nation, Gender, Sexuality, and Class	5
FEMGEN 154G	Black Magic: Ethnicity, Race, and Identity in Performance Cultures	3-4
FEMGEN 159	James Baldwin & Twentieth Century Literature	5
FEMGEN 160M	Introduction to Representations of the Middle East in Dance, Performance, & Popular Culture	3-4
FEMGEN 205	Songs of Love and War: Gender, Crusade, Politics	3-5
FEMGEN 258X	Black Feminist Theater and Theory	4
FEMGEN 261	Personal Narratives in Feminist, Gender, and Sexuality Studies	4-5
FEMGEN 314	Performing Identities	4
FEMGEN 361	Personal Narratives in Feminist, Gender, and Sexuality Studies	4-5
FILMSTUD 100C	History of World Cinema III, 1960-Present	3-5
FILMSTUD 132A	Indian Cinema	5
FILMSTUD 213	Theories of Melodrama	5
FILMSTUD 300C	History of World Cinema III, 1960-Present	3-5
FILMSTUD 332A	Indian Cinema	5
FILMSTUD 413	Theories of Melodrama	5
FRENCH 205	Songs of Love and War: Gender, Crusade, Politics	3-5
GLOBAL 145	Space, Public Discourse and Revolutionary Practices	3-4
HISTORY 3E	Michelle Obama in American Culture	1
HISTORY 3G	Hamilton: An American Musical	1
HISTORY 82G	Making Palestine Visible	3-5
HISTORY 182G	Making Palestine Visible	3-5
ILAC 149	The Laboring of Diaspora & Border Literary Cultures	3-5
ILAC 281E	Peripheral Dreams: The Art and Literature of Miró, Dalí, and other Surrealists in Catalonia	3-5
ILAC 348	US-Mexico Border Fictions: Writing La Frontera, Tearing Down the Wall	3-5
LIFE 124	Counterstory in Literature and Education	3
LINGUIST 65	African American Vernacular English	3-5
LINGUIST 253	Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations	3-5
MUSIC 4SI	Interactive Introduction to North American Taiko	1
MUSIC 14N	Women Making Music	3
MUSIC 31N	Behind the Big Drums: Exploring Taiko	3
MUSIC 37N	Ki ho'alu: The New Renaissance of a Hawaiian Musical Tradition	2
MUSIC 184E	Musical Theater Dance Styles	1
NATIVEAM 221	Crafting Challenging Conversations in a Conflicted World	3
PWR 1WI	Writing & Rhetoric 1: By Any Means Necessary: The Rhetoric of Black Radical Movements	4
PWR 2JC	Writing & Rhetoric 2: Walk(s) of Shame: The Rhetoric of Respectability	4
PWR 194AB	Topics in Writing & Rhetoric: Freedom's Mixtape: DJing Contemporary African American Rhetorics	4
PWR 194ABA	Topics in Writing & Rhetoric: Contemporary Black Rhetorics: Prince	2-3
PWR 194AJ	Topics in Writing & Rhetoric: Contemporary Black Rhetorics: Black Twitter and Black Digital Cultures	4

PWR 194KT	Topics in Writing & Rhetoric: The Last Hopi On Earth: The Rhetoric of Entertainment Inequity	4
STS 200N	Funkentelechy: Technologies, Social Justice and Black Vernacular Cultures	5
TAPS 20N	Prisons and Performance	3
TAPS 21T	StoryCraft: Sexuality, Intimacy & Relationships	2
TAPS 133T	Transgender Performance and Performativity	4
TAPS 154G	Black Magic: Ethnicity, Race, and Identity in Performance Cultures	3-4
TAPS 156	Performing History: Race, Politics, and Staging the Plays of August Wilson	4
TAPS 157P	Performing Arabs and Others in Theory and Practice	4
TAPS 160M	Introduction to Representations of the Middle East in Dance, Performance, & Popular Culture	3-4
TAPS 161D	Introduction to Dance Studies: Dancing Across Stages, Clubs, Screens, and Borders	3-4
TAPS 197	Dance in Prison: The Arts, Juvenile Justice, and Rehabilitation in America	3
TAPS 257P	Performing Arabs and Others in Theory and Practice	4
TAPS 258	Black Feminist Theater and Theory	4
TAPS 314	Performing Identities	4
TAPS 356	Performing History: Race, Politics, and Staging the Plays of August Wilson	4
WELLNESS 180	The Flourishing Activist: Mindfully Being the Revolution	1-2

Subplan in Politics, Policy & Equity

The Politics, Policy & Equity subplan is designed for students who wish to focus on the ways that political institutions, public policy, non-profits and social movements shape and are shaped by race and ethnicity. This subplan allows students the opportunity to examine the ramifications that politics and policy have on society through the lens of race and ethnicity.

The subplan is declared on Axess, and appears on the transcript and diploma. Students interested in the Politics, Policy & Equity subplan should contact the CSRE undergraduate program office.

Students may find the following courses useful in fulfilling requirements in the Politics, Policy & Equity subplan:

		Units
AMSTUD 183	Re- Imagining American Borders	5
COMPLIT 149	The Laboring of Diaspora & Border Literary Cultures	3-5
CSRE 14N	Growing Up Bilingual	3
CSRE 45Q	Understanding Race and Ethnicity in American Society	4
CSRE 108	Introduction to Feminist, Gender, and Sexuality Studies	4-5
CSRE 127A	Can't Stop Won't Stop: A History Of The Hip-Hop Arts	2-4
CSRE 149	The Laboring of Diaspora & Border Literary Cultures	3-5
CSRE 150	Race and Political Sociology	3
CSRE 164	Immigration and the Changing United States	4
CSRE 201B	The Undocumented Migration Project Exhibition at Stanford	3
EDUC 114N	Growing Up Bilingual	3
EDUC 201	History of Education in the United States	3-5
HISTORY 50B	Nineteenth Century America	3
HISTORY 150C	The United States in the Twentieth Century	5
HISTORY 166B	Immigration Debates in America, Past and Present	3-5
POLISCI 120B	Campaigns, Voting, Media, and Elections	4-5
POLISCI 327	Minority Behavior and Representation	5
SOC 135	Poverty, Inequality, and Social Policy in the United States	3-4
SOC 140	Introduction to Social Stratification	3
SOC 150	Race and Political Sociology	3
SOC 155	The Changing American Family	4
SOC 164	Immigration and the Changing United States	4
AFRICAAM 256E	The American Civil War: The Lived Experience	5
ANTHRO 132	Religion and Politics in the Muslim World	5
ASNAMST 110	The Development of the Southeast Asian American Communities: A comparative analysis	3
CHILATST 125S	Chicano/Latino Politics	5
CSRE 1V	A History of Race	1-3
CSRE 109B	Native Nation Building	3
CSRE 133J	WELFARE, WORK AND POVERTY.	3
CSRE 141S	Immigration and Multiculturalism	5
CSRE 141X	Activism and Intersectionality	3-4
CSRE 147A	Race and Ethnicity Around the World	4
CSRE 154T	The Politics of Algorithms	4-5
CSRE 252C	The Old South: Culture, Society, and Slavery	5
ETHICSOC 136R	Introduction to Global Justice	4
HISTORY 50B	Nineteenth Century America	3
HISTORY 150C	The United States in the Twentieth Century	5
POLISCI 120B	Campaigns, Voting, Media, and Elections	4-5
SOC 103A	WELFARE, WORK AND POVERTY.	3
SOC 118	Social Movements and Collective Action	4
SOC 135	Poverty, Inequality, and Social Policy in the United States	3-4
SOC 218	Social Movements and Collective Action	4

Subplan in Race, Gender & Sexuality

The Race, Gender & Sexuality subplan is designed for students who wish to explore the intersections between race, ethnicity, gender and sexuality. This subplan gives students the tools to analyze intersecting aspects of race, gender and sexuality. Students will examine the construction of power systems to better contextualize how certain identities become privileged over others. Students who select this subplan can use courses from a range of departments and programs to come away with a better understanding of how these three kinds of categories shape each other. Drawing from contributions of women of color feminism and queer of color studies, this concentration challenges normative constructions of 'race' and 'ethnicity' by equipping students with analytical tools from feminist theory, queer theory, post-colonial theory, critical race theory, and other critical methods.

The subplan is declared on Axess, and appears on the transcript or diploma. Students interested in Race, Gender & Sexuality should contact the CSRE undergraduate program office.

Students may find the following courses useful in fulfilling requirements in the Race, Gender & Sexuality subplan:

		Units
AMSTUD 106	Spectacular Trials: Sex, Race and Violence in Modern American Culture	5
CSRE 28SI	What is Whiteness? Historical and Contemporary Definitions of White Racial Identity in the U.S.	1-2
CSRE 63N	The Feminist Critique: The History and Politics of Gender Equality	3-4
CSRE 108	Introduction to Feminist, Gender, and Sexuality Studies	4-5
CSRE 162	The Politics of Sex: Work, Family, and Citizenship in Modern American Women's History	3-5
CSRE 183	Re- Imagining American Borders	5
CSRE 192E	History of Sexual Violence in America	4-5
FEMGEN 103	Feminist and Queer Theories and Methods Across the Disciplines	2-5
FEMGEN 188Q	Imagining Women: Writers in Print and in Person	4-5
HISTORY 257C	LGBTQ History of the United States	4-5
LINGUIST 156	Language, Gender, & Sexuality	4
NATIVEAM 103S	Gender in Native American Societies	5
AFRICAAM 28	Health Impact of Sexual Assault and Relationship Abuse across the Lifecourse	1-3
CHINA 115	Sex, Gender, and Power in Modern China	3-5
CSRE 63N	The Feminist Critique: The History and Politics of Gender Equality	3-4
CSRE 103S	Gender in Native American Societies	5
CSRE 108	Introduction to Feminist, Gender, and Sexuality Studies	4-5
CSRE 117	Expanding Engineering Limits: Culture, Diversity, and Equity	3
CSRE 141X	Activism and Intersectionality	3-4
CSRE 162	The Politics of Sex: Work, Family, and Citizenship in Modern American Women's History	3-5
CSRE 174S	When Half is Whole: Developing Synergistic Identities and Mestiza Consciousness	5
CSRE 188Q	Imagining Women: Writers in Print and in Person	4-5
CSRE 192E	History of Sexual Violence in America	4-5
FEMGEN 20Q	Making of the Modern Woman: Robots, Aliens, & the Feminine in Science Fiction	3
FEMGEN 135	Body Politics	1-2
LATINAM 248	Racial and Gender Inequalities in Latin America	3-5
SOC 155	The Changing American Family	4

Subplan in Race, Space & Belonging

The Race, Space & Belonging subplan allows students to examine issues of immigration, citizenship, empire and expansion, gentrification, segregation, urban, suburban, and rural spaces, human rights, public welfare, social justice and law. Students can take courses from a range of departments and programs to delve deeper into the ways in which race and ethnicity intertwine with access to space, nations, and resources.

The subplan is declared on Axess, and appears on the transcript or diploma. Students interested in the Race, Space & Belonging subplan should contact the CSRE undergraduate program office.

Students may find the following courses useful in fulfilling requirements in the Race, Space & Belonging subplan:

		Units
CSRE 260	Race and Ethnicity in Urban California	4-5
PEDS 250	Social and Environmental Determinants of Health	3
SOC 135	Poverty, Inequality, and Social Policy in the United States	3-4
SOC 155	The Changing American Family	4
URBANST 112	The Urban Underclass	4
URBANST 114	Urban Culture in Global Perspective	5
ANTHRO 27N	Ethnicity and Violence: Anthropological Perspectives	3-5
ANTHRO 42	Megacities	5
ASNAMST 110	The Development of the Southeast Asian American Communities: A comparative analysis	3
CSRE 14N	Growing Up Bilingual	3
CSRE 30Q	The Big Shift	4
CSRE 45Q	Understanding Race and Ethnicity in American Society	4
CSRE 141	Gentrification	5
CSRE 141S	Immigration and Multiculturalism	5
CSRE 147A	Race and Ethnicity Around the World	4
CSRE 149	The Laboring of Diaspora & Border Literary Cultures	3-5
CSRE 151D	Migration and Diaspora in American Art, 1800-Present	4
CSRE 156	The Changing American City	4
CSRE 164	Immigration and the Changing United States	4
CSRE 166B	Immigration Debates in America, Past and Present	3-5
CSRE 183	Re- Imagining American Borders	5
CSRE 252C	The Old South: Culture, Society, and Slavery	5
HISTORY 50B	Nineteenth Century America	3
HISTORY 200C	Doing the History of Race and Ethnicity	5
HUMBIO 122M	Challenges of Human Migration: Health and Health Care of Migrants and Autochthonous Populations	3
NATIVEAM 16	Native Americans in the 21st Century: Encounters, Identity, and Sovereignty in Contemporary America	5
POLISCI 141A	Immigration and Multiculturalism	5
SOC 152	The Social Determinants of Health	4
SOC 349	Race, Space, and Stratification	4

Subplan in Technology & Media

Technology's impact on society is large and the technology itself changes rapidly. From type, photographs, film and radio, to social media, artificial intelligence and algorithms, students in this subplan will look at the relationship between technology, media, race and ethnicity and the role technology played and continues to play in our society. What lenses can the study of race and ethnicity provide to engineering, computer science, and other STEM disciplines? How can technology be harnessed to actualize a more just and equitable world?

The concentration is declared on Axess, and it appears on the transcript and diploma. Students interested in the Technology & Media subplan should contact the CSRE undergraduate program office.

Students may find the following courses useful in fulfilling requirements in the Technology & Media subplan:

AFRICAAM 194	Topics in Writing & Rhetoric: Contemporary Black Rhetorics: Black Twitter and Black Digital Cultures	4
AFRICAAM 200N	Funkentelechy: Technologies, Social Justice and Black Vernacular Cultures	5
CHILATST 140	Migration in 21st Century Latin American Film	3-5
CS 106S	Coding for Social Good	1
CSRE 117	Expanding Engineering Limits: Culture, Diversity, and Equity	3
CSRE 154T	The Politics of Algorithms	4-5
ECON 47	Media Markets and Social Good	5
FEMGEN 20Q	Making of the Modern Woman: Robots, Aliens, & the Feminine in Science Fiction	3
HISTORY 1C	Global History: Modern Times	3-5
HISTORY 40	World History of Science	3
HISTORY 194G	Humanities Core: Technology and Media in Modern Japan	3-5
HISTORY 294J	Science, Power, and Knowledge: East Asia to 1900	3-5
INTLPOL 221	Politics of Data: Algorithmic Culture, Big Data, and Information Waste	3-4
MS&E 330	Law, Order, & Algorithms	3
PUBLPOL 147	Ending Poverty with Technology	5
PUBLPOL 148	Ending Poverty with Technology: A Practicum.	5
SOC 154	The Politics of Algorithms	4-5

Self-Designed Subplan

A proposal for a self-designed concentration should include a list of courses, a description of how each course meets the student's educational objectives, and a statement describing the self-designed subplan and how it differs from the subplans already offered. A proposal for a self-designed sublplan must be submitted in conjunction with a student's Major Declaration Proposal to be reviewed by the Undergraduate Program Director.

Students interested in designing their own subplan are strongly encouraged to meet with the Director of CSRE, the Associate Director of Academic Programs at CSRE, and/or the Student Services staff member at CSRE before the end of winter quarter of their sophomore year.

Bachelor of Arts in Jewish Studies

Director: Charlotte Fonrobert (Religious Studies)

The Jewish Studies major provides students with an understanding of Jewish history, language, literature, religion, thought and politics. Jewish culture originated in the ancient Near East and continues today in many different forms across the globe. Drawing from the Humanities, the Social Sciences and from courses offered by affiliated faculty in the School of Education, the Jewish Studies major seeks to help students understand Jewish identity, thought and self-expression within larger historical and social contexts, and to develop their ability to analyze human experience from different disciplinary perspectives.

In addition to the undergraduate major and minor offered through the interdepartmental program in CSRE, the Taube Center for Jewish Studies offers a full range of guest lectures, conferences, and symposia. Graduate students interested in Jewish Studies should see the separate Jewish Studies (p. 1712) section of this bulletin for program information, opportunities, and additional course descriptions.

Students should visit the CCSRE website (https://ccsre.stanford.edu/academics/how-declare/) for instructions on how to declare the major.

General Requirements

A total of 60 units of course work are required for the major.

1. A minimum grade of 'C-' is required for a student to count a class towards the Core, Major-Core Foundational, and Methods requirements. Additional units toward the major require a minimum 'D-' passing grade.
2. Comparative and Major-Core courses must be taken for the maximum units offered (4 or more) and for letter grade. Methods courses must be taken for a minimum of 3 units and for letter grade.
3. All majors, minors, and interdisciplinary honors students in the CSRE Family of Programs must take Introduction to Comparative Studies in Race and Ethnicity (CSRE 196C).
4. Students may count 2 classes with the Satisfactory/No Credit (SNC) grading basis toward Additional Units.
   - Courses in which Credit/No Credit (CR/NC) is the only grading basis option may always be counted toward the major.
5. All majors are required to take at least one Community Engaged Learning course which must be CSRE, race, and/or ethnicity related.
   - Students may petition courses from outside departments to count, so long as they meet the race and/or ethnicity related requirement.
6. Students may petition up to 5 units of Internship for Public Service (CSRE 198) to count toward the major or minor when the work completed relates directly to race, ethnicity, or area of study. CSRE 198, however, may be repeated multiple times for University credit and the 180 units required to graduate.
7. Students may petition up to 5 units of Directed Reading classes (CSRE 200W) to count toward the major or minor. CSRE related courses offered only as Directed Reading (such as Muwekma House Seminar or ASB Prep courses) may be counted without a petition.
   a. Students must inform the student services coordinator and the Director of CSRE that they intend to petition a Directed Reading class to count toward their major before taking the class, and submit a petition for the class while they are in it.
   b. A syllabus with a series of readings, including themes, set by the instructor and the student must be submitted with the petition.
   c. The Directed Reading must include assignments that go beyond the readings, such as response papers, a final paper, and/or creative project.
   d. Units earned must align with the University's Unit of Credit (p. 87) policy, i.e., 1 unit being equal to 3 hours/week of work. Meetings with the instructor of the Directed Reading may count up to one hour per unit of work per week.
   e. In general, students are discouraged from using Directed Reading units toward their major unit requirement. Petitions are evaluated and approved by the Program Director on a case-by-case basis.
8. Students may major in two CSRE programs; see the "Multiple Majors (p. 32)" section of this bulletin for University rules concerning multiple majors. Such students may not double count courses between programs, with the exception of the course used to fulfill the Methodology requirement. In order to fulfill the WIM requirement, students write two papers during Autumn Quarter of the senior year, enrolling in both CSRE 200X and CSRE 201X.

Course Requirements

1. CSRE Core Curriculum

Jewish Studies majors must take the 15-unit CSRE core curriculum including Introduction to Comparative Studies in Race and Ethnicity (CSRE 196C), an additional comparative-core course, and a senior seminar taken in Autumn Quarter of the senior year.

		Units
ANTHRO 32	Theories in Race and Ethnicity: A Comparative Perspective	5
CSRE 32	Theories in Race and Ethnicity: A Comparative Perspective	5
CSRE 149	The Laboring of Diaspora & Border Literary Cultures	3-5
CSRE 196C	Introduction to Comparative Studies in Race and Ethnicity	5
CSRE 200X	CSRE Senior Seminar	5
CSRE 245	Understanding Racial and Ethnic Identity Development	3-5
CSRE 246	Constructing Race and Religion in America	4-5
CSRE 389A	Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations	3-5
JEWISHST 106	Reflection on the Other: The Arab Israeli Conflict in Literature and Film	3-5
PSYCH 75	Introduction to Cultural Psychology	5

2. Major-Core Course

Majors are required to take one major-core course in Jewish Studies.

		Units
JEWISHST 185B	Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV	4-5

3. Jewish Studies Focus Courses

Jewish Studies majors complete 10-20 units of courses that focus on Jewish history, issues, and identity. courses must have a Jewish Studies focus and primarily be selected from social science and humanities departments.

4. Language

One year of Hebrew or another approved Jewish language. Students able to satisfy the first year Hebrew requirement through a proficiency exam are still expected to take an additional year of Hebrew at a higher level or a first year in an additional Jewish language. 12-15 units of language may be counted toward the 60 unit total required for the major.

5. Research/Methodology

Majors are required to complete 3-5 units of coursework focused on research methods relevant to their disciplinary approach as a student in Jewish Studies. See the Methodology course list on ExploreCourses (https://explorecourses.stanford.edu/search/?q=CSRE%3A%3AMethodology&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-coursestatus-Active=on) for offerings this year.

6. Interdisciplinary Breadth Requirement

To fulfill the Interdisciplinary Breadth Requirement, students should take one 3-5 unit course from the Social Sciences and one 3-5 unit course from the Arts & Humanities that focus on race and ethnicity, especially if the courses are comparative.

- Arts and Humanities classes Include: Art and Art History, Classics, Division of Literatures, Cultures, and Languages, Comparative Literature, French and Italian, German Studies, Iberian and Latin American Cultures, Slavic Languages and Literatures, East Asian Languages and Cultures, English, History, Linguistics, Music, Philosophy, Religious Studies, and Theater and Performance Studies
- Social Science classes Include: Anthropology, Communication, Economics, Political Science, Psychology, and Sociology

7. Community Engaged Learning Requirement

All students are required to complete at least one service-learning experience. This requirement may be fulfilled by enrolling in a service-learning course, participating in an identity, race, or ethnicity focused service-learning Alternative Spring Break, participating in the Community Summer Research Internship program, or enrolling in CSRE 198 Internship for Public Service while completing independent service work. See the Community Engaged Learning course list (https://explorecourses.stanford.edu/search/?q=CSRE%3A%3ACEL&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-coursestatus-Active=on) on ExploreCourses for offerings this year.

8. Senior Paper or Honors Thesis

All Jewish Studies majors must complete a culminating research paper under the supervision of a faculty adviser. All majors take CSRE 200X CSRE Senior Seminar (5 units) which fulfills the program's WIM requirement. Additionally, Honors students must also enroll in CSRE 200YCSRE Senior Honors Research (1-10 units) and CSRE 200Z CSRE Senior Honors Research (1-10 units)in Winter and Spring quarters to continue to access peer and faculty support as they write their theses. Senior Honors Research (CSRE 200Y and CSRE 200Z) courses cannot count for the 60 units towards your major but do count for the 180 units towards your bachelor's degree. Students must complete their theses with a minimum grade of 'B+' to receive honors in CSRE.

Bachelor of Arts in Native American Studies

Director: Teresa LaFromboise (Education)

Native American Studies (NAS) provides an intensive approach to understanding the historical and contemporary experiences of Native American people. Attention is paid not only to the special relationship between tribes and the federal government, but to issues across national boundaries, including tribal nations within Canada, and North, Central, and South America. In using the term Native American, the NAS faculty recognize the heterogeneous nature of this population. Native Americans include the Alaska Native population, which comprises Aleuts, Eskimo, and other Native American people residing in Alaska, as well as Native Hawaiian communities.

The purpose of the Native American Studies major and minor is to introduce students to approaches in the academic study of Native American people, history, and culture. Students who major in Native American Studies have the opportunity of doing advanced work in related fields, including literature, sociology, education, and law. All courses in the program promote the discussion of how academic knowledge about Native Americans relates to the historical and contemporary experiences of Native American people and communities.

Students should visit the CCSRE website (https://ccsre.stanford.edu/academics/how-declare/) for instructions on how to declare the major.

General Requirements

A total of 60 units of course work are required for the major.

1. A minimum grade of 'C-' is required for a student to count a class towards the Core, Major-Core Foundational, and Methods requirements. Additional units toward the major require a minimum 'D-' passing grade.
2. Comparative and Major-Core courses must be taken for the maximum units offered (4 or more) and for letter grade. Methods courses must be taken for a minimum of 3 units and for letter grade.
3. All majors, minors, and interdisciplinary honors students in the CSRE Family of Programs must take Introduction to Comparative Studies in Race and Ethnicity (CSRE 196C).
4. Students may count 2 classes with the Satisfactory/No Credit (SNC) grading basis toward Additional Units.
   - Courses in which Credit/No Credit (CR/NC) is the only grading basis option may always be counted toward the major.
5. All majors are required to take at least one Community Engaged Learning course which must be CSRE, race, and/or ethnicity related.
   - Students may petition courses from outside departments to count, so long as they meet the race and/or ethnicity related requirement.
6. Students may petition up to 5 units of Internship for Public Service (CSRE 198) to count toward the major or minor when the work completed relates directly to race, ethnicity, or area of study. CSRE 198, however, may be repeated multiple times for University credit and the 180 units required to graduate.
7. Students may petition up to 5 units of Directed Reading classes (CSRE 200W) to count toward the major or minor. CSRE related courses offered only as Directed Reading (such as Muwekma House Seminar or ASB Prep courses) may be counted without a petition.
   a. Students must inform the student services coordinator and the Director of CSRE that they intend to petition a Directed Reading class to count toward their major before taking the class, and submit a petition for the class while they are in it.
   b. A syllabus with a series of readings, including themes, set by the instructor and the student must be submitted with the petition.
   c. The Directed Reading must include assignments that go beyond the readings, such as response papers, a final paper, and/or creative project.
   d. Units earned must align with the University's Unit of Credit (p. 87) policy, i.e., 1 unit being equal to 3 hours/week of work. Meetings with the instructor of the Directed Reading may count up to one hour per unit of work per week.
   e. In general, students are discouraged from using Directed Reading units toward their major unit requirement. Petitions are evaluated and approved by the Program Director on a case-by-case basis.
8. Students may major in two CSRE programs; see the "Multiple Majors (p. 32)" section of this bulletin for University rules concerning multiple majors. Such students may not double count courses between programs, with the exception of the course used to fulfill the Methodology requirement. In order to fulfill the WIM requirement, students write two papers during Autumn Quarter of the senior year, enrolling in both CSRE 200X and CSRE 201X.

Course Requirements

1. CSRE Core Curriculum

Native American Studies majors must take the 15-unit CSRE core curriculum, including Introduction to Comparative Studies in Race and Ethnicity (CSRE 196C), an additional comparative-core course, and a senior seminar taken in Autumn Quarter of the senior year. One major-core course that focuses on a non-Native American group may be counted toward the 15-unit core requirement.

		Units
ANTHRO 32	Theories in Race and Ethnicity: A Comparative Perspective	5
CSRE 32	Theories in Race and Ethnicity: A Comparative Perspective	5
CSRE 149	The Laboring of Diaspora & Border Literary Cultures	3-5
CSRE 196C	Introduction to Comparative Studies in Race and Ethnicity	5
CSRE 200X	CSRE Senior Seminar	5
CSRE 245	Understanding Racial and Ethnic Identity Development	3-5
CSRE 246	Constructing Race and Religion in America	4-5
CSRE 389A	Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations	3-5
JEWISHST 106	Reflection on the Other: The Arab Israeli Conflict in Literature and Film	3-5
PSYCH 75	Introduction to Cultural Psychology	5

2. Major-Core Courses

Majors are required to take one major-core course in Native American Studies.

		Units
Select one of the following:		
NATIVEAM 138		4
NATIVEAM 139	American Indians in Contemporary Society	4
NATIVEAM 115	Introduction to Native American History	5
NATIVEAM 16	Native Americans in the 21st Century: Encounters, Identity, and Sovereignty in Contemporary America	5

3. Area Study

Majors must complete an additional 25-32 units of course work from an approved list. Courses must have a Native American focus and primarily be selected from social science and humanities departments.

4. Language Study (optional)

Students may obtain credit for their study of a related native language towards their degree. If students take 15 or more units of an advanced, second-year native language, or first year special language course relevant to Native American Studies, they may apply 5 of those units toward their Native American Studies degree.

5. Research/Methodology Requirement

Majors are required to complete 3-5 units of coursework focused on research methods relevant to their disciplinary approach as a student in Native American Studies. See the Methodology course list on ExploreCourses (https://explorecourses.stanford.edu/search/?q=CSRE%3A%3AMethodology&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-coursestatus-Active=on) for offerings this year.

To fulfill the Interdisciplinary Breadth Requirement, students should take one 3-5 unit course from the Social Sciences and one 3-5 unit course from the Arts & Humanities that focus on race and ethnicity, especially if the courses are comparative.

- Arts and Humanities classes Include: Art and Art History, Classics, Division of Literatures, Cultures, and Languages, Comparative Literature, French and Italian, German Studies, Iberian and Latin American Cultures, Slavic Languages and Literatures, East Asian

Languages and Cultures, English, History, Linguistics, Music, Philosophy, Religious Studies, and Theater and Performance Studies
- Social Science classes Include: Anthropology, Communication, Economics, Political Science, Psychology, and Sociology

7. Community Engaged Learning Requirement

All students are required to complete at least one service-learning experience. This requirement may be fulfilled by enrolling in a service-learning course, participating in an identity, race, or ethnicity focused service-learning Alternative Spring Break, participating in the Community Summer Research Internship program, or enrolling in CSRE 198 Internship for Public Service while completing independent service work. See the Community Engaged Learning course list (https://explorecourses.stanford.edu/search/?q=CSRE%3A%3ACEL&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-coursestatus-Active=on) on ExploreCourses for offerings this year.

8. Senior Paper or Honors Thesis

All Native American Studies majors must complete a culminating research paper under the supervision of a faculty adviser. All majors take CSRE 200X CSRE Senior Seminar (5 units) which fulfills the program's WIM requirement. Additionally, Honors students must also enroll in CSRE 200YCSRE Senior Honors Research (1-10 units) and CSRE 200Z CSRE Senior Honors Research (1-10 units)in Winter and Spring quarters to continue to access peer and faculty support as they write their theses. Senior Honors Research (CSRE 200Y and CSRE 200Z) courses cannot count for the 60 units towards your major but do count for the 180 units towards your bachelor's degree. Students must complete their theses with a minimum grade of 'B+' to receive honors in CSRE.

Honors Program in Comparative Studies in Race and Ethnicity

For Majors in Comparative Studies in Race and Ethnicity

The Interdepartmental Program in Comparative Studies in Race and Ethnicity offers a program leading to honors for majors in:

- Asian American Studies
- Chicana/o-Latina/o Studies
- Comparative Studies
- Jewish Studies
- Native American Studies

The honors program offers an opportunity to do independent research for a senior thesis. It is open to majors who have maintained a grade point average (GPA) of at least 3.5 in the major and 3.3 overall. The honors thesis is intended to enable students to synthesize skills to produce a document or project demonstrating a measure of competence in their specialty.

The application for honors must be submitted by the **Third Friday in May** of the students' junior year, but students are encouraged to apply earlier. The application includes a proposal describing the project that is approved by the faculty adviser and director of the undergraduate program. Students are required to identify both a faculty adviser and a second reader for the thesis project. The faculty adviser for the honors thesis must be an academic council faculty member and affiliated faculty of the student's major.

Honors students take CSRE 200X CSRE Senior Seminar, which fulfills the program's WIM requirement, and also enroll in CSRE 200Y CSRE Senior Honors Research and CSRE 200Z CSRE Senior Honors Research, in Winter and Spring quarters to continue to access peer and faculty support as they write their theses. Senior Honors Research (CSRE 200Y and CSRE 200Z) courses cannot count for the 60 units towards your major but do count for the 180 units towards your bachelor's degree. Students must complete their theses with a grade of 'B+' to receive honors in CSRE.

An honors colloquium held near the end of Spring Quarter affords students an opportunity to present their research formally. Prizes for best undergraduate honors thesis are awarded annually by the CSRE Program.

Applications are available in the CSRE Undergraduate Program office and on the program web site. (https://ccsre.stanford.edu/academics/opportunities-undergraduates/honors/)

For Majors in Other Departments

The Interdisciplinary Honors Program for Non-Majors in Comparative Studies in Race and Ethnicity is intended to complement study in any major. Students who participate in the honors program receive their degree from their program of study with departmental honors in Comparative Studies in Race and Ethnicity.

Honors certification will be open to students majoring in any field with a GPA in their chosen major of 3.5 and an overall GPA of 3.3. As a prerequisite, students apply for entry by the Third Friday in May of their junior year, but students are encouraged to apply earlier. During the application process, students outline a plan for course work and design an honors project in consultation with their proposed thesis adviser and the CSRE senior seminar coordinator.

The application describes how the student may fulfill the course requirements for interdisciplinary honors in CSRE and includes a proposal describing the project that is approved by the faculty adviser and director of the undergraduate program. Students are required to identify both a faculty adviser and a second reader for the thesis project. The faculty adviser for the honors thesis must be an academic council faculty member and affiliated faculty of the Center for Comparative Studies in Race and Ethnicity. Applications are available in the CSRE undergraduate program office and on the program web site. (https://ccsre.stanford.edu/academics/opportunities-undergraduates/honors/)

Students pursuing a minor in Asian American Studies, Chicana/o-Latina/o Studies, Comparative Studies in Race and Ethnicity, Jewish Studies or Native American Studies who wish to pursue honors in their area of study, apply through the process for non-majors. Students may use their course work for the minor toward the requirements of the interdisciplinary honors program.

Requirements:

Students applying for the interdisciplinary honors program in CSRE are required to take the following courses:

		Units
CSRE 196C	Introduction to Comparative Studies in Race and Ethnicity	5

And a second course identified as a comparative or major-core course within the CSRE Family of Programs.

Core Courses

		Units
ANTHRO 32	Theories in Race and Ethnicity: A Comparative Perspective	5
CSRE 32	Theories in Race and Ethnicity: A Comparative Perspective	5
CSRE 149	The Laboring of Diaspora & Border Literary Cultures	3-5

CSRE 196C	Introduction to Comparative Studies in Race and Ethnicity	5
CSRE 200X	CSRE Senior Seminar	5
CSRE 245	Understanding Racial and Ethnic Identity Development	3-5
CSRE 246	Constructing Race and Religion in America	4-5
CSRE 389A	Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations	3-5
JEWISHST 106	Reflection on the Other: The Arab Israeli Conflict in Literature and Film	3-5
PSYCH 75	Introduction to Cultural Psychology	5

Major-Core Courses

		Units
AFRICAAM 43	Introduction to English III: Introduction to African American Literature	3-5
AFRICAAM 105	Black Matters: Introduction to Black Studies	5
ASNAMST 186B	Asian American Art: 1850-Present	4
CHILATST 171	Mexicans in the United States	5
CHILATST 173	Mexican Migration to the United States	3-5
CHILATST 180E	Introduction to Chicanx/Latinx Studies	5
JEWISHST 185B	Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV	4-5
NATIVEAM 16	Native Americans in the 21st Century: Encounters, Identity, and Sovereignty in Contemporary America	5
NATIVEAM 115	Introduction to Native American History	5
NATIVEAM 139	American Indians in Contemporary Society	4

These courses must be completed with a grade of 'B+' or better for the honors program.

In addition, students are required to take:

		Units
A core, foundational, thematic, or cognate course related to the topic of the proposal or honors research (selected in consultation with the thesis advisor)		
CSRE 200X	CSRE Senior Seminar	5
CSRE 200Y	CSRE Senior Honors Research (in Winter and Spring quarters)	1-10
CSRE 200Z	CSRE Senior Honors Research (in Winter and Spring quarters)	1-10

Throughout the year, students work with faculty adviser, secondary reader, and the senior seminar coordinator to complete their theses. Students must complete their theses with a minimum grade of 'B+' to receive honors in CSRE.

Asian American Studies Minor

A total of 30 units of approved course work is required for the minor. Introduction to Comparative Studies in Race and Ethnicity (CSRE 196C), at least one Asian American Studies major-core course, and 20 units of Asian American focus courses are needed to fulfill the requirements for the minor. Students should visit the CCSRE website (https://ccsre.stanford.edu/academics/how-declare/) for instructions on how to declare the minor.

Students in Asian American Studies may find the following courses useful in fulfilling course requirements in the major or minor.

1. Comparative-Core Courses (5 units)

		Units
CSRE 196C	Introduction to Comparative Studies in Race and Ethnicity	5

2. Major-Core Courses (5 Units)

Students who completed ASNAMST 159/HISTORY 159 or ENGLISH 43C/143C in previous years may count this toward their Major-Core Course Requirement.

		Units
ARTHIST 186B	Asian American Art: 1850-Present	4
ASNAMST 100	Introduction to Asian American Studies	5

3. Asian American Studies Focus Courses (20 Units)

The rest of the Asian American Studies courses needed to complete the minor are any and all other ASNAMST Classes.

Chicana/o-Latina/o Studies Minor

A total of 30 units of approved course work is required for the minor. Introduction to Comparative Studies in Race and Ethnicity (CSRE 196C), at least one Chicanx/Latinx Studies major-core course, and 20 units of Chicanx/Latinx focus courses are needed to fulfill the requirements for the minor. Students should visit the CCSRE website (https://ccsre.stanford.edu/academics/how-declare/) for instructions on how to declare the minor.

Students in Chicana/o-Latina/o Studies may find the following courses useful in fulfilling course requirements in the major or minor.

1. Comparative-Core Courses (5 Units)

		Units
CSRE 196C	Introduction to Comparative Studies in Race and Ethnicity	5

2. Major-Core Courses (5 Units)

		Units
CHILATST 180E	Introduction to Chicanx/Latinx Studies	5
CHILATST 171	Mexicans in the United States	5

3. Chicana/o-Latina/o Studies Focus Courses (20 Units)

The rest of the Chicana/o-Latina/o Studies courses needed to complete the minor are any and all other CHILATST Classes.

Comparative Studies Minor

A total of 30 units of approved course work is required for the minor. Introduction to Comparative Studies in Race and Ethnicity (CSRE 196C), either one more comparative-core or major-core course, and 20 units of Comparative Studies in Race & Ethnicity focus courses are needed to fulfill the requirements for the minor. Students should visit the CCSRE website (https://ccsre.stanford.edu/academics/how-declare/) for instructions on how to declare the minor.

Students in Comparative Studies may find the following courses useful in fulfilling course requirements in the major or minor.

1. Comparative-Core Courses (5 Units)

		Units
CSRE 196C	Introduction to Comparative Studies in Race and Ethnicity	5

2. Major-Core Courses (5 Units)

		Units
AFRICAAM 43	Introduction to English III: Introduction to African American Literature	3-5
AFRICAAM 105	Black Matters: Introduction to Black Studies	5
ASNAMST 186B	Asian American Art: 1850-Present	4
CHILATST 171	Mexicans in the United States	5
CHILATST 173	Mexican Migration to the United States	3-5
CHILATST 180E	Introduction to Chicanx/Latinx Studies	5
JEWISHST 185B	Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV	4-5
NATIVEAM 16	Native Americans in the 21st Century: Encounters, Identity, and Sovereignty in Contemporary America	5
NATIVEAM 115	Introduction to Native American History	5
NATIVEAM 139	American Indians in Contemporary Society	4

3. Comparative Studies in Race and Ethnicity Focus Courses (20 Units)

The rest of the Comparative Studies in Race and Ethnicity courses needed to complete the minor are any and all other CSRE Classes.

Jewish Studies Minor

Students who wish to minor in Jewish Studies must complete Introduction to Comparative Studies in Race and Ethnicity (CSRE 196C), one Jewish Studies major-core course, at least one quarter of the Hebrew language or another approved Jewish language, and draw remaining courses from an approved list of Jewish Studies courses. A total of 30 units of approved course work is required for the Jewish Studies minor. Students should visit the CCSRE website (https://ccsre.stanford.edu/academics/how-declare/) for instructions on how to declare the minor.

Students in Jewish Studies may find the following courses useful in fulfilling course requirements in the major or minor.

1. Comparative-Core Courses (5 Units)

		Units
CSRE 196C	Introduction to Comparative Studies in Race and Ethnicity	5

2. Major-Core Courses (5 Units)

		Units
explorecourses:CSRE jewishst-foundational		
JEWISHST 185B	Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV	4-5

3. Jewish Studies Focus Courses (20 Units)

The rest of theJewish Studies courses needed to complete the minor are any and all other JEWISHST Classes.

Native American Studies Minor

A total of 30 units of approved course work is required for the minor. Introduction to Comparative Studies in Race and Ethnicity (CSRE 196C), at least one Native American Studies major-core course, and 20 units of Native American focus courses are needed to fulfill the requirements for the minor. Students should visit the CCSRE website (https://ccsre.stanford.edu/academics/how-declare/) for instructions on how to declare the minor.

Students in Native American Studies may find the following courses useful in fulfilling course requirements in the major or minor.

1. Comparative-Core Courses (5 Units)

		Units
CSRE 196C	Introduction to Comparative Studies in Race and Ethnicity	5

2. Major-Core Courses (5 Units)

		Units
NATIVEAM 115	Introduction to Native American History	5
NATIVEAM 16	Native Americans in the 21st Century: Encounters, Identity, and Sovereignty in Contemporary America	5
NATIVEAM 139	American Indians in Contemporary Society	4

3. Native American Studies Focus Courses (20 Units)

The rest of the Native American Studies courses needed to complete the minor are any and all other NATIVEAM Classes.

Directed Reading and Research

Directed reading and research allows students to focus on a special topic of interest. In organizing a reading or research plan, the student consults with the director of the major and one or more faculty members specializing in the area or discipline. Students who want to petition directed reading units to count toward a major or minor should see the guidelines in the requirements for their program of interest.

Courses that fulfill directed reading and research requirements:

		Units
ASNAMST 200R	Directed Research	1-5
ASNAMST 200W	Directed Reading	1-5
CHILATST 200R	Directed Research	1-5
CHILATST 200W	Directed Reading	1-5
CSRE 200R	Directed Research	1-5
CSRE 200W	Directed Reading	1-5
NATIVEAM 200R	Directed Research	1-5
NATIVEAM 200W	Directed Reading	1-5

Ph.D. Minor in Comparative Race and Ethnicity

The Ph.D. minor in Comparative Studies in Race & Ethnicity is sponsored by the Program in Modern Thought and Literature. The minor is administered by the Program in Comparative Studies in Race & Ethnicity.

The purpose of the Ph.D. minor in CSRE is to promote and deepen the understanding of participating Stanford graduate students in the multiple meanings of racial and ethnic diversity in the United States and abroad. The Ph.D. minor takes an interdisciplinary approach to interrogating the ways that race and ethnicity operate in the real world. It also explores the ways that traditional disciplines study individuals, cultures, institutions, and policy with respect to personal and group identity, speaking to how they are shaped by often conflicting social and biological perspectives. Its purpose is, therefore, to provide participating students with the knowledge and conceptual framework needed to continue meaningful work on these subjects.

Unique to the Ph.D. minor in CSRE is the simultaneous focus on student exposure to the models of pedagogy, community engagement, and professional development that instill the valuable practical, life-skills

needed to be a productive member of the university academy or private sectors.

Students who complete all the requirements receive the following notation on their transcript and diploma: Ph.D. Minor in Comparative Studies in Race & Ethnicity.

Students submit an annual progress report listing the courses completed towards the minor and courses planned in future quarters. This form is approved by both the main faculty adviser and the Comparative Studies in Race & Ethnicity faculty adviser. Students meet with their Comparative Studies in Race & Ethnicity faculty adviser to discuss their progress report.

Degree Requirements

Per University requirements, all coursework must be at the 200 level. Units taken for the minor can be counted as part of the overall Ph.D. residency requirement, consisting of 135 units of graduate coursework. They may not be used to also meet the requirements for a master's degree.

To receive the Ph.D. Minor in CSRE, participating graduate students are expected to attain the minimum of 20 units required by University policy. Specifically, students must fulfill the following coursework requirements:

1. CSRE 300 Theory and Methods for Comparative Studies in Race and Ethnicity
2. B. A second Theory course, such as:
   - ANTHRO 320A Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations, crosslisted as CSRE 389A, EDUC 389A, LINGUIST 253
   - CSRE 245 Understanding Racial and Ethnic Identity Development, crosslisted as EDUC 245
   - TAPS 314 Performing Identities
   - EDUC 337 Race, Ethnicity, and Linguistic Diversity in Classrooms: Sociocultural Theory and Practices
   - LAW 7016 Critical Race Theory
   - RELIGST 346 Constructing Race and Religion in America, crosslisted as CSRE 246, HISTORY 356G
   - ENGLISH 381B Theories of Race and Ethnicity
   - SOC 350 Sociology of Race
3. Two electives in graduate-level courses, one of which may be from the student's home department/school. (A list of possible electives will be posted here shortly.)
4. CSRE 301, a three quarter colloquium (1 unit each) focusing on pedagogy, community engagement, and professional development

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

Comparative Studies in Race and Ethnicity counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B-' or better level.

Graduate Degree Requirements

Grading

Comparative Studies in Race and Ethnicity counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B-' or better level.

Asian American Studies

Director: Jeanne Tsai (Psychology)

Affiliated Faculty and Teaching Staff: Gordon Chang (History), Hien Do (Asian American Studies), Marci Kwon (Art History), Kathryn Gin Lum (Religious Studies), Pamela Lee (Art and Art History), Jean Ma (Art and Art History), David Palumbo-Liu (Comparative Literature), Stephen Sano (Music), Stephen Murphy-Shigematsu (Asian American Studies), Anthony Lising Antonio (Education), Linda Uyechi (Music), Barbara Voss (Anthropology), Christine Min Wotipka (Education), Sylvia Yanagisako (Anthropology)

Chicana/o-Latina/o Studies

Director: Jonathan Rosa (Education)

Affiliated Faculty and Teaching Staff: Albert Camarillo (History), Susana Gallardo (Chicana/o-Latina/o Studies), Angela Garcia (Anthropology), Kenji Hakuta (Education), Tomás Jiménez (Sociology), Ramón Martínez (Education), Melissa Michaelson (Chicana/o-Latina/o Studies), Ana Minian (History), Cherríe Moraga (Drama), Paula Moya (English), Amado Padilla (Education), José David Saldívar (Comparative Literature), Ramón Saldívar (English), Gary Segura (Political Science), Guadalupe Valdés (Education), Yvonne Yarbro-Bejarano (Iberian and Latin American Cultures)

Comparative Studies in Race & Ethnicity

Director: Vaughn Rasberry (English)

Core Affiliated Faculty:

- Anthropology: Duana Fullwiley, Angela Garcia, Barbara Voss, Sylvia Yanagisako
- Art & Art History: Jonathan Calm, Marci Kwon
- Comparative Literature: David Palumbo-Liu, José David Saldívar, Alexander Key
- Drama: Jennifer Brody, Harry Elam
- English: Michele Elam, Chang-rae Lee, Paula Moya, Vaughn Rasberry, Ramón Saldívar
- History: Al Camarillo, James Campbell, Gordon Chang, Allyson Hobbs, Ana Minian
- Iberian and Latin American Cultures: Lisa Surwillo, Hector Hoyos
- Linguistics: John Rickford
- Music: Stephen Sano, Charlie Kronengold
- Political Science: Lauren Davenport
- Psychology: Jennifer Eberhardt, Hazel Markus, Jeanne Tsai, Steven Roberts

- Religious Studies: Kathryn Gin Lum, Charlotte Fonrobert
- Sociology: Tomás Jiménez, Matthew Snipp, Aliya Saperstein, Jackelyn Hwang, Matthew Clair, Asad Asad
- Theater & Performance Studies: Jennifer DeVere Brody, Samer Al-Saber
- Taube Center for Jewish Studies: Vered Shemtov
- Graduate School Education: Anthony Antonio, Prudence Carter, Teresa LaFromboise, Guadalupe Valdés, Christine Min Wotipka, Ari Kelman, Jonathan Rosa, Ramón Martínez
- School of Law: Richard Banks, Richard Ford, Joan Petersilia

Affiliated Faculty and Teaching Staff: David Abernethy (Political Science, emeritus), Samer Al-Saber (Theater & Performance Studies), Asad Asad (Sociology), Arnetha Ball (Education), Lucius Barker (Political Science, emeritus), Donald Barr (Pediatrics), Bryan Brown (Education), Cheryl Brown (African and African American Studies), Martin Carnoy (Education), Clayborne Carson (History), Jeff Chang (Comparative Studies in Race and Ethnicity), Matthew Clair (Sociology), Karen Cook (Sociology), Michele Dauber (Law), Linda Darling-Hammond (Education), Carolyn Duffey (American Studies), Jennifer Eberhardt (Psychology), Ala Ebtekar (Comparative Studies in Race and Ethnicity), Paulla Ebron (Anthropology), Penny Eckert (Linguistics), James Ferguson (Anthropology), Shelley Fisher Fishkin (English), James Fishkin (Communication), Estelle Freedman (History), Susana Gallardo (Chicana/o Studies), Gabriel Garcia (Medicine), Kathryn Gin Lum (Religious Studies), Leah Gordon (Education), David Grusky (Sociology), Sean Hanretta (History), Gina Hernandez-Clarke (Comparative Studies in Race and Ethnicity), Miyako Inoue (Anthropology), Shanto Iyengar (Communication), Tomás Jiménez (Sociology), Gavin Jones (English), Terry Karl (Political Science), Pamela Karlan (Law), Matthew Kohrman (Anthropology), Jan Krawitz (Art and Art History), Jon Krosnick (Communication), Charlie Kronengold (Music), Teresa LaFromboise (Education), David Laitin (Political Science), Liisa Malkki (Anthropology), Hazel Markus (Psychology), Ramón Martínez (Education), Ruben Martinéz (Comparative Studies in Race and Ethnicity), Barbaro Martinez-Ruiz (Art and Art History), Douglas McAdam (Sociology), Jisha Menon (Theater and Performance Studies), Ana Minian (History), Elisabeth Mudimbe-Boyi (French and Italian), Thomas S. Mullaney (History), Stephen Murphy-Shigematsu (Asian American Studies), Hilton Obenzinger (American Studies), Susan Olzak (Sociology), Amado Padilla (Education), Arnold Rampersad (English), Vaughn Rasberry (English), Robert Reich (Political Science), Cecilia Ridgeway (Sociology), Richard Roberts (History), Aron Rodrigue (History), Jonathan Rosa (Education), Michael Rosenfeld (Sociology), Joel Samoff (History), Debra Satz (Philosophy), Vered Shemtov (Division of Literatures, Cultures and Languages), C. Matthew Snipp (Sociology), Paul Sniderman (Political Science), Jayashiri Srikantiah (Law), Ewart Thomas (Psychology), Jeanne L. Tsai (Psychology), Linda Uyechi (Music), Gregory Walton (Psychology), Richard White (History), Jeremy Weinstein (Political Science), Michael Wilcox (Anthropology), Bryan Wolf (Art and Art History), Sylvia Yanagisako (Anthropology), Yvonne Yarbro-Bejarano (Iberian and Latin American Cultures), Steven Zipperstein (History)

Teaching Fellows: Kyle Beckham, Maxwell Suechting

Senior Seminar Coordinator: Takuya Sawaoka

Jewish Studies

Director: Charlotte Fonrobert (Religious Studies)

Affiliated Faculty and Teaching Staff: Zachary Baker (Stanford University Libraries), Joel Beinin (History), Jonathan Berger (Music), Arnold Eisen (Religious Studies, emeritus), Amir Eshel (German Studies), John Felstiner (English, emeritus), Shelley Fisher Fishkin (English), Charlotte Fonrobert (Religious Studies), Avner Greif (Economics), Katherine Jolluck (History), Ari Kelman (Education), Jon Levitow (Language Center), Mark Mancall (History, emeritus), Norman Naimark (History), Reviel Netz (Classics), Jack Rakove (History), Aron Rodrigue (History), Noah Rosenberg (Biology), Gabriella Safran (Slavic Languages and Literatures), Vered Karti Shemtov (Language Center, Comparative Literature), Lee Shulman (Education, emeritus), Peter Stansky (History, emeritus), Marie-Pierre Ulloa (French), Amir Weiner (History), Sam Wineburg (Education), Steven Zipperstein (History)

Writer in Residence: Maya Arad

Native American Studies

Director: Teresa LaFromboise (Education)

Affiliated Faculty and Teaching Staff: JoEllen Anderson (Native American Studies), Jared Aldern (Native American Studies), Karen Biestman (Native American Studies), Kenneth Fields (English), Teresa LaFromboise (Education), Samantha Peralto (Language Center), Delphine Red Shirt Shaw (Native American Studies), C. Matthew Snipp (Sociology), Michael Wilcox (Anthropology)

Asian American Studies

Students in Asian American Studies may find the following related courses useful in fulfilling course requirements in the major or minor.

		Units
EDUC 181	Multicultural Issues in Higher Education	4
EDUC 193F	Psychological Well-Being on Campus: Asian American Perspectives	1
HISTORY 166B	Immigration Debates in America, Past and Present	3-5
PSYCH 217	Topics and Methods Related to Culture and Emotion	3-5
ASNAMST 31N	Behind the Big Drums: Exploring Taiko	3
ASNAMST 110	The Development of the Southeast Asian American Communities: A comparative analysis	3
ASNAMST 174S	When Half is Whole: Developing Synergistic Identities and Mestiza Consciousness	5
ASNAMST 186B	Asian American Art: 1850-Present	4

Chicana/o-Latina/o Studies

Students in Chicana/o-Latina/o Studies may find the following related courses useful in fulfilling course requirements in the major or minor.

		Units
EDUC 149	Theory and Issues in the Study of Bilingualism	3-5
EDUC 193B	Peer Counseling in the Chicano/Latino Community	1
EDUC 277	Education of Immigrant Students: Psychological Perspectives	4
HISTORY 166B	Immigration Debates in America, Past and Present	3-5
HISTORY 201	From Confederate Monuments to Wikipedia: The Politics of Remembering the Past	5
ILAC 193	The Cinema of Pedro Almodovar	3-5
POLISCI 327	Minority Behavior and Representation	5
RELIGST 203	Myth, Place, and Ritual in the Study of Religion	3-5
CHILATST 110	Sabias Creadoras y Activistas: Chicana/ Latina Ways of Knowing	4
CHILATST 201B	The Undocumented Migration Project Exhibition at Stanford	3

Comparative Studies in Race and Ethnicity

Students in Comparative Studies in Race and Ethnicity may find the following related courses useful in fulfilling course requirements in the major or minor.

		Units
AFRICAAM 21	African American Vernacular English	3-5
AFRICAAM 37	Contemporary Choreography: Chocolate Heads Performance Project	2
AFRICAAM 43	Introduction to English III: Introduction to African American Literature	3-5
AFRICAAM 47	History of South Africa	3
AFRICAAM 52N	Mixed-Race Politics and Culture	3
AFRICAAM 64C	From Freedom to Freedom Now!: African American History, 1865-1965	3
AFRICAAM 105	Black Matters: Introduction to Black Studies	5
AFRICAAM 132	Social Class, Race, Ethnicity, and Health	4
AFRICAAM 147	History of South Africa	5
AFRICAAM 159	James Baldwin & Twentieth Century Literature	5
AFRICAAM 188	Who We Be: Art, Images & Race in Post-Civil Rights America	2-4
AFRICAAM 194	Topics in Writing & Rhetoric: Contemporary Black Rhetorics: Black Twitter and Black Digital Cultures	4
AFRICAAM 194A	Topics in Writing & Rhetoric: Freedom's Mixtape: DJing Contemporary African American Rhetorics	4
AFRICAAM 241	Race, Justice, and Integration	3
AFRICAAM 256E	The American Civil War: The Lived Experience	5
AFRICAAM 261E	Mixed Race Literature in the U.S. and South Africa	5
AFRICAAM 262D	African American Poetics	5
AFRICAST 119	Novel Perspectives on South Africa	2-3
AFRICAST 211	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 212	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AMSTUD 106	Spectacular Trials: Sex, Race and Violence in Modern American Culture	5
AMSTUD 140	Stand Up Comedy and the "Great American Joke" Since 1945	5
AMSTUD 236	Interfaith Dialogue on Campus: Religion, Diversity, and Higher Education	2-5
ANTHRO 32	Theories in Race and Ethnicity: A Comparative Perspective	5
ANTHRO 82	Medical Anthropology	5
ANTHRO 320A	Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations	3-5
CHILATST 109	GENTE: An incubator for transforming national narratives	5
CHILATST 179	Chicano & Chicana Theater: Politics In Performance	4
CHINA 115	Sex, Gender, and Power in Modern China	3-5
CSRE 1V	A History of Race	1-3
CSRE 10A	Introduction to Identity, Diversity, and Aesthetics: Arts, Culture, and Pedagogy	1
CSRE 47Q	Heartfulness: Mindfulness, Compassion, and Responsibility	3
CSRE 102A	Art and Social Criticism	5
CSRE 108	Introduction to Feminist, Gender, and Sexuality Studies	4-5
CSRE 122S	Social Class, Race, Ethnicity, and Health	4
CSRE 141X	Activism and Intersectionality	3-4
CSRE 151D	Migration and Diaspora in American Art, 1800-Present	4
DANCE 1	Contemporary Modern I: Liquid Flow	1
DANCE 30	Contemporary Choreography: Chocolate Heads Performance Project	2
DANCE 45	Dance Improvisation from Freestyle to Hip Hop	1-2
DANCE 197	Dance in Prison: The Arts, Juvenile Justice, and Rehabilitation in America	3
EDUC 100A	EAST House Seminar: Current Issues and Debates in Education	1
EDUC 100B	EAST House Seminar: Current Issues and Debates in Education	1
EDUC 103B	Race, Ethnicity, and Linguistic Diversity in Classrooms: Sociocultural Theory and Practices	3-5
EDUC 149	Theory and Issues in the Study of Bilingualism	3-5
EDUC 165	History of Higher Education in the U.S.	3-5
EDUC 181	Multicultural Issues in Higher Education	4
EDUC 192D	Interpersonal Learning and Leadership: Working with Ethnically Diverse Communities	2
EDUC 193B	Peer Counseling in the Chicano/Latino Community	1
EDUC 193C	Psychological Well-Being On Campus: Perspectives Of The Black Diaspora	1
EDUC 193F	Psychological Well-Being on Campus: Asian American Perspectives	1
EDUC 193N	Peer Counseling in the Native American Community	1
EDUC 201	History of Education in the United States	3-5
EDUC 232	Culture, Learning, and Poverty	2-3
EDUC 277	Education of Immigrant Students: Psychological Perspectives	4
EDUC 340	Psychology and American Indian/Alaska Native Mental Health	3-5
EDUC 367	Cultural Psychology	3-5
EDUC 381	Multicultural Issues in Higher Education	4
ENGLISH 91A	Asian American Autobiography/W	3-5
ENGLISH 92AP	Arab and Arab-American Poetry	5
FEMGEN 50Q	Life and Death of Words	4
FEMGEN 140D	LGBTQ History of the United States	4-5
FEMGEN 154	Black Feminist Theory	5
FEMGEN 188Q	Imagining Women: Writers in Print and in Person	4-5
HISTORY 48Q	South Africa: Contested Transitions	4
HISTORY 50B	Nineteenth Century America	3
HISTORY 50C	The United States in the Twentieth Century	3
HISTORY 150B	Nineteenth Century America	5
HISTORY 150C	The United States in the Twentieth Century	5
HISTORY 158C	History of Higher Education in the U.S.	3-5
HISTORY 201	From Confederate Monuments to Wikipedia: The Politics of Remembering the Past	5

HISTORY 252C	The Old South: Culture, Society, and Slavery	5
HISTORY 255	Martin Luther King, Jr.: The Social Gospel and the Struggle for Justice	5
HISTORY 255E	Education, Race, and Inequality in African American History, 1880-1990	3-5
HISTORY 257C	LGBTQ History of the United States	4-5
HISTORY 259A	Poverty and Homelessness in America	4-5
HISTORY 261	Race, Gender, and Class in Jim Crow America	5
HUMBIO 120	Health Care in America: An Introduction to U.S. Health Policy	4
HUMBIO 121E	Ethnicity and Medicine	1-3
HUMBIO 122S	Social Class, Race, Ethnicity, and Health	4
ILAC 193	The Cinema of Pedro Almodovar	3-5
JEWISHST 185B	Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV	4-5
JEWISHST 291X	Learning Religion: How People Acquire Religious Commitments	4
LAWGEN 112N	Law and Inequality	3
LINGUIST 65	African American Vernacular English	3-5
LINGUIST 150	Language and Society	3-4
LINGUIST 156	Language, Gender, & Sexuality	4
LINGUIST 265	African American Vernacular English	3-5
MUSIC 37N	Ki ho'alu: The New Renaissance of a Hawaiian Musical Tradition	2
NATIVEAM 111B	Muwekma: Landscape Archaeology and the Narratives of California Natives	3-5
PEDS 150	Social and Environmental Determinants of Health	3
POLISCI 28N	The Changing Nature of Racial Identity in American Politics	3
POLISCI 120B	Campaigns, Voting, Media, and Elections	4-5
POLISCI 121L	Racial-Ethnic Politics in US	5
POLISCI 327	Minority Behavior and Representation	5
PSYCH 75	Introduction to Cultural Psychology	5
PSYCH 101	Community Health Psychology	4
PSYCH 150	Race and Crime	3
PSYCH 183	SPARQ Lab	2-3
PSYCH 215	Mind, Culture, and Society	3
PSYCH 217	Topics and Methods Related to Culture and Emotion	3-5
PWR 194AB	Topics in Writing & Rhetoric: Freedom's Mixtape: DJing Contemporary African American Rhetorics	4
PWR 194DH	Topics in Writing and Rhetoric: Empathy, Ethics, and Compassion Meditation	4
SOC 14N	Inequality in American Society	4
SOC 46N	Race, Ethnic, and National Identities: Imagined Communities	3
SOC 118	Social Movements and Collective Action	4
SOC 119	Understanding Large-Scale Societal Change: The Case of the 1960s	5
SOC 120	Interpersonal Relations	4
SOC 133	Law and Wikinomics: The Economic and Social Organization of the Legal Profession	1-5
SOC 135	Poverty, Inequality, and Social Policy in the United States	3-4
SOC 136	Sociology of Law	4
SOC 140	Introduction to Social Stratification	3
SOC 142	Sociology of Gender	3
SOC 145	Race and Ethnic Relations in the USA	4
SOC 149	The Urban Underclass	4
SOC 154	The Politics of Algorithms	4-5
SOC 155	The Changing American Family	4
SOC 156A	The Changing American City	4
SOC 218	Social Movements and Collective Action	4
TAPS 156	Performing History: Race, Politics, and Staging the Plays of August Wilson	4
TAPS 161D	Introduction to Dance Studies: Dancing Across Stages, Clubs, Screens, and Borders	3-4
URBANST 112	The Urban Underclass	4
URBANST 114	Urban Culture in Global Perspective	5
URBANST 123B	Approaching Research in the Community: Design and Methods	3

Jewish Studies

Students in Jewish Studies may find the following related courses useful in fulfilling course requirements in the major or minor.

JEWISHST 106	Reflection on the Other: The Arab Israeli Conflict in Literature and Film	3-5
JEWISHST 155D	Jewish American Literature and Film	5
JEWISHST 185B	Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV	4-5
JEWISHST 284C	Genocide and Humanitarian Intervention	3

Native American Studies

Students in Native American Studies may find the following related courses useful in fulfilling course requirements in the major or minor.

		Units
EDUC 193N	Peer Counseling in the Native American Community	1
MUSIC 37N	Ki ho'alu: The New Renaissance of a Hawaiian Musical Tradition	2
RELIGST 203	Myth, Place, and Ritual in the Study of Religion	3-5
RELIGST 303	Myth, Place, and Ritual in the Study of Religion	3-5
SPECLANG 189A	First-Year Hawaiian, First Quarter	4
SPECLANG 189B	First-Year Beginning Hawaiian, Second Quarter	4
SPECLANG 189C	First-Year Hawaiian, Third Quarter	4
SPECLANG 247A	First-Year Lakota, First Quarter	4
SPECLANG 247B	First-Year Lakota, Second Quarter	4
SPECLANG 247C	First-Year Lakota, Third Quarter	4

Overseas Studies Courses in Comparative Studies in Race and Ethnicity

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPCPTWN 38	Genocide: African Experiences in Comparative Perspective	3-5
OSPCPTWN 55	Arts of Change	3
OSPMADRD 47	Cultural Relations between Spain and the United States:Historical Perceptions and Influences, 1776-2	4
OSPMADRD 60	Integration into Spanish Society: Service Learning and Professional Opportunities	4
OSPMADRD 74	Islam in Spain and Europe: 1300 Years of Contact	4
OSPMADRD 75	Sefarad: The Jewish Community in Spain	4
OSPSANTG 118X	Artistic Expression in Latin America	5

Asian American Studies Courses

ASNAMST 27SI. Revolution and the Pilipinx Diaspora: Exploring Global Activism in Local Communities. 1-2 Unit.
This course aims to provide students with an opportunity to not only learn about current issues in the local Filipino American community, but also develop their own plans to take action on social justice issues. Through mediums of art and reflection, we will explore themes of diaspora and liberation by focusing on the Filipino experience and the local and vocal histories of activism in the Bay Area. We will be connecting local histories to the current global narrative while also connecting our past to our own identity formation as activists and community leaders. In doing so, we hope to explore the implications of local activism within the greater context of global organizing. The course will expose students to local community leaders and ways in which they can support and plug in to local initiatives.
Same as: CSRE 27SI

ASNAMST 31N. Behind the Big Drums: Exploring Taiko. 3 Units.
Preference to Freshman. Since 1992 generations of Stanford students have heard, seen, and felt the power of taiko, big Japanese drums, at Admit Weekend, NSO, or Baccalaureate. During a time of COVID, this online version of the seminar takes students behind the taiko. Taiko is a relative newcomer to the American music scene. The contemporary ensemble drumming form, or kumidaiko, developed in Japan in the 1950s. The first North American taiko groups emerged from the Japanese American community shortly after and coincided with increased Asian American activism. In the intervening years, taiko has spread into communities in the UK, Europe, Australia, and South America. What drives the power of these drums? In this course, we explore the musical, cultural, historical, and political perspectives of taiko through readings and discussion, conversations with taiko artists, and online taiko lessons. With the taiko as our focal point, we find intersections of Japanese music, Japanese American history, and Asian American activism, and explore relations between performance, cultural expression, community, and identity.
Same as: MUSIC 31N

ASNAMST 52D. Asian American Human Development: Cultural Perspectives on Psychology, Education and Critical Issues. 3 Units.
In this course, we will examine the critical issues in Asian American growth and development with particular attention given to current theoretical and research perspectives within a diverse society. We will consider topics related to their cultural identity, cognitive, and socio-emotional development, engaging in the ethnic discourse on Confucian history and culture, Eastern and Western thought and learning, tiger parenting, gender roles, the model minority stereotype, acculturation and bicultural identity, and mental health. This course uniquely integrates the fields of history, education, psychology, human biology, and ethnic studies as we seek to understand the underlying processes of the Asian American person as an individual and as an effective member of the larger society.
Same as: CSRE 52D

ASNAMST 90E. Investigating Identity Through Filipinx Fiction. 5 Units.
This course is both a reading seminar featuring canonical and contemporary Filipinx authors (including Mia Alvar, Carlos Bulosan, Elaine Castillo, Bienvenido Santos, Lysley Tenorio and José Rizal) and a writing workshop where students generate short stories exploring identity. Rizal's seminal novels Noli Me Tangere and El filibusterismo are ¿the earliest artistic expressions of the Asian colonial experience from the point of view of the oppressed¿ and through his work and the work of other Filipinx authors, we discover how both national and individual identities are not only challenged by adversity, trauma, violence, and war but also forged and strengthened by them. Note: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.
Same as: COMPLIT 89, ENGLISH 90E

ASNAMST 91A. Asian American Autobiography/W. 3-5 Units.
This is a dual purpose class: a writing workshop in which you will generate autobiographical vignettes/essays as well as a reading seminar featuring prose from a wide range of contemporary Asian-American writers. Some of the many questions we will consider are: What exactly is Asian-American memoir? Are there salient subjects and tropes that define the literature? And in what ways do our writerly interactions both resistant and assimilative with a predominantly non-Asian context in turn recreate that context? We'll be working/experimenting with various modes of telling, including personal essay, the epistolary form, verse, and even fictional scenarios. First priority to undergrads. Students must attend the first class meeting to retain their roster spot.
Same as: AMSTUD 91A, CSRE 91D, ENGLISH 91A

ASNAMST 100. Introduction to Asian American Studies. 4 Units.
What is meant by the term Asian American? How have representations of Asian Americans influenced concepts of US citizenship and belonging? What are the social and political origins of the Asian American community? This course provides a critical introduction to the interdisciplinary field of Asian American studies. Drawing on historical, creative, and scholarly texts, the course examines the history and possibilities of Asian American community. To do this, we place the Asian American experience within a transnational context, paying particular attention to the ways that Asian American lives have been shaped by the legacies of US wars in Asia and by the history of US racism. In the process, we examine the role that representations of Asian Americans have played in shaping the boundaries of US citizenship and belonging. Throughout the course, we utilize our discussions of Asian American racialization and community formation to think critically about the social and political ramifications that the designation Asian American entails.
Same as: AMSTUD 100

ASNAMST 107. Asian American Leadership: Controversies, Dilemmas, and Decision-Making Strategies. 3-5 Units.
This course examines the experiences of Asian Americans in a variety of contemporary leadership contexts to identify the complexities of race, gender, class, and ethnicity for both understanding and responding to social relations of power. Through seminar discussion, readings, guest speakers, case studies, and experiential activities, students evaluate situated practices of Asian American leadership in consideration of longstanding themes that have animated the field of Asian American Studies: self- and collective identification, representation and equality, community organizing and advocacy, interracial coalition-building, and minority empowerment. Students explore how Asian American leadership is conceptualized, practiced, and assessed in relation to the following contexts: campus and community activism o f the Asian American movement of the 1960s to the present, institutional settings of employment, electoral politics, the field of Asian American Studies, and public intellectual life. A multidisciplinary approach will draw upon anthropology, psychology, political science, sociology, and Asian American Studies.

ASNAMST 110. The Development of the Southeast Asian American Communities: A comparative analysis. 3 Units.
This course will examine the establishment of the Cambodian, Hmong, and Vietnamese communities in the US. We will focus on the historical events that resulted in their immigration and arrival to the US as well as the similarities and differences in the ways in which they were received. In addition, the course will focus on issues that impacted in the development of these communities focusing on the social, political, and economic processes by which new immigrant groups are incorporated into the American society. The second part of the course will be devoted to analyzing contemporary issues including but not limited to: class status, educational attainment, ethnic identity, racialization, second generation, mass media representation, poverty, and economic mobility.

ASNAMST 115. Asian American Film and Popular Culture. 4 Units.
Tracing the evolution of Asian American cultural representations from the silent film era through the first generation of Asian American YouTube stars, this course examines the economic, political, and cultural influence of Asian American screen images on U.S. society. Through a focus on both mainstream and independent productions, we discuss the work of Asian American actors, audience members, media producers, consumers, and activists. Possible films and TV shows to be discussed include The Cheat (1915), Shanghai Express (1932), Flower Drum Song (1961), Chan is Missing (1983) Fall of the I Hotel (1983), Who Killed Vincent Chin? (1989), Sa-I-Gu, (1992), Saving Face (2004) Crazy Rich Asians (2018), To All the Boys I've Loved Before (2018), TV episodes of the Mindy Project, and work by early Asian American YouTube stars including Michelle Phan, HappySlip, and KevJumba.
Same as: AMSTUD 115, COMPLIT 159

ASNAMST 117D. Race, Gender, and Sexuality in Contemporary American Film. 4-5 Units.
This course introduces students to the theoretical and analytical frameworks necessary to critically understand constructions of race, gender, and sexuality in contemporary American film. Through a sustained engagement with a range of independent and Hollywood films produced since 2000, students analyze the ways that cinematic representations have both reflected and constructed dominant notions of race, gender, and sexuality in the United States. Utilizing an intersectional framework that sees race, gender, and sexuality as always defined by one another, the course examines the ways that dominant notions of difference have been maintained and contested through film in the United States. Readings include work by Michael Omi & Howard Winant, Patricia Hill Collins, Jodi Melamed, Stuart Hall, Lisa Duggan and bell hooks. Films to be discussed include Moonlight, Mosquita y Mari, Kumu Hina, Hustlers, and Crazy Rich Asians. To enroll in the course, please fill out the following form: https://forms.gle/RKqURW6niyB1LRyEA.
Same as: AFRICAAM 117J, AMSTUD 117, CSRE 117D, FEMGEN 117F

ASNAMST 118S. Critical Family History: Narratives of Identity and Difference. 4 Units.
This course examines family history as a site for understanding identity, power, and social difference in American society. Focusing in particular on the intersections of race, gender, and sexuality, we approach the family as an archive through which we might write alternative histories to the ones that dominate the national historical consciousness. To do this, we examine memoirs, oral histories, and first-person documentaries as historical texts that can be used to foreground marginalized historical voices. Students will then be asked to apply course readings and theories to their own family histories as a means of better understanding issues of identity and difference.
Same as: AFRICAAM 118X, AMSTUD 118, CSRE 118S

ASNAMST 123. Asian Americans and Environmental Justice. 3-5 Units.
One central tenet of the environmental justice movement is centering the leadership of frontline communities. Unfortunately, the struggles of Asian Americans on the frontlines of corporate environmental pollution and extraction are less visible and less well-known. In this course, we will explore the Asian American voices that have contributed to the development of the environmental justice movement and the leadership that is shaping the future of this movement.nThis course is designed to provide students with education about the history of the environmental justice movement, the future being envisioned, and the strategies that are needed to get to the vision. It will draw on lectures, readings, guest presentations, case studies, and the instructor's more than 15 years of experience with organizing and social justice campaigns. Students will learn about the principles guiding the environmental justice movement; the vision and framework of how we achieve a just transition to a regenerative economy; the process of organizing and campaign work to advance a community agenda; and skills in collecting, analyzing, and communicating information.
Same as: EARTHSYS 123

ASNAMST 125A. Archaeological Field Survey Methods. 3 Units.
Practicum applying a variety of survey techniques to discover, map, and record archaeological sites. Basic cartographic skills for archaeologists and an introduction to GIS tools, GPS instruments, and geophysical techniques. Participants should be able to walk 3 - 4 miles over uneven terrain or make special arrangements with the instructor for transportation.
Same as: ARCHLGY 125, ARCHLGY 225

ASNAMST 144. Transforming Self and Systems: Crossing Borders of Race, Nation, Gender, Sexuality, and Class. 5 Units.
Exploration of crossing borders within ourselves, and between us and them, based on a belief that understanding the self leads to understanding others. How personal identity struggles have meaning beyond the individual, how self healing can lead to community healing, how the personal is political, and how artistic self expression based in self understanding can address social issues. The tensions of victimization and agency, contemplation and action, humanities and science, embracing knowledge that comes from the heart as well as the mind. Studies are founded in synergistic consciousness as movement toward meaning, balance, connectedness, and wholeness. Engaging these questions through group process, journaling, reading, drama, creative writing, and storytelling. Study is academic and self-reflective, with an emphasis on developing and presenting creative works in various media that express identity development across borders.
Same as: CSRE 144, FEMGEN 144X

ASNAMST 151D. Migration and Diaspora in American Art, 1800-Present. 4 Units.
This lecture course explores American art through the lens of immigration, exile, and diaspora. We will examine a wide range of work by immigrant artists and craftsmen, paying special attention to issues of race and ethnicity, assimilation, displacement, and political turmoil. Artists considered include Emmanuel Leutze, Thomas Cole, Joseph Stella, Chiura Obata, Willem de Kooning, Mona Hatoum, and Julie Mehretu, among many others. How do works of art reflect and help shape cultural and individual imaginaries of home and belonging?.
Same as: AMSTUD 151, ARTHIST 151, ARTHIST 351, CSRE 151D

ASNAMST 157. An Introduction to Asian American Literature: The Short Story. 3 Units.
This course introduces students to Asian American literature and its sociohistorical contexts through close-reading a selection of short stories by writers from various ethnic groups.

ASNAMST 169D. Contemporary Asian American Stories. 5 Units.
This course will examine the aesthetics and politics of contemporary Asian American storytellers, with an emphasis on work produced within the past five years. We will investigate the pressures historically placed on Asian Americans to tell a certain kind of story¿e.g. the immigrant story in a realist mode¿and the ways writers have found to surprise, question, and innovate, moving beyond those boundaries to explore issues of race, sexuality, science, memory, citizenship, and belonging. Course materials will consist of novels, short stories, graphic narrative, and film, and may include work by Ocean Vuong, Mira Jacobs, Gish Jen, Charles Yu, and Adrian Tomine, as well as Lulu Wang¿s 2019 film The Farewell. This seminar will feature both analytical and creative components, and students will be encouraged to produce both kinds of responses to the material.
Same as: ENGLISH 169D

ASNAMST 174S. When Half is Whole: Developing Synergistic Identities and Mestiza Consciousness. 5 Units.
This is an exploration of the ways in which individuals construct whole selves in societies that fragment, label, and bind us in categories and boxes. We examine identities that overcome the destructive dichotomies of ¿us¿ and ¿them, ¿ crossing borders of race, ethnicity, culture, nation, sex, and gender. Our focus is on the development of hybrid and synergistic forms of identity and mestiza consciousness in which the whole is greater than the sum of its parts.
Same as: CSRE 174S

ASNAMST 186B. Asian American Art: 1850-Present. 4 Units.
What does it mean, and what has it meant historically, to be "Asian American" in the United States? This lecture course explores this question through the example of artists, craftspeople, and laborers of Asian descent. We will consider their work alongside the art, visual culture, and literature of the United States. Key themes will include the history of immigration law; questions of home and belonging; art, activism, and community; interethnic solidarity; and gender and queerness. Artists and authors will include Isamu Noguchi, Grace Lee Boggs, Nam June Paik, Yoko Ono, Theresa Hak Kyung Cha, Grace Lee Boggs, Zarina, Carlos Villa, Takashi Murakami, Anne Cheng, Lisa Lowe, among many others. In addition to learning the history of Asian Americans and reading key texts in Asian American studies, this course will also teach the foundational skills of close looking and primary source research.
Same as: AMSTUD 186D, ARTHIST 186B

ASNAMST 187. Geography, Time, and Trauma in Asian American Literature. 5 Units.
The notion that homes can be stable locations for cultural, racial, ethnic, and similarly situated identity categories. Tthe possibility that there really is no place like home for Asian American subjects. How geography, landscape, and time situate traumas within fictional Asian American narratives.
Same as: AMSTUD 261A

ASNAMST 189. The Vietnamese Experience in America. 3 Units.
The purpose of this course to study the experience of the Vietnamese refugees from their exodus after the Vietnam War to their resettlement in America, and to examine larger historical, social, political, and economic processes at work. We will focus on the processes that lead to the formation of this community the variables leading to various locations.

ASNAMST 193F. Psychological Well-Being on Campus: Asian American Perspectives. 1 Unit.
Topics: the Asian family structure, and concepts of identity, ethnicity, culture, and racism in terms of their impact on individual development and the counseling process. Emphasis is on empathic understanding of Asians in America. Group exercises.
Same as: EDUC 193F

ASNAMST 200R. Directed Research. 1-5 Unit.
May be repeated for credit.

ASNAMST 200W. Directed Reading. 1-5 Unit.
(Staff).

ASNAMST 201. Doing Community History: Asian Americans and the Pandemic. 5 Units.
Students utilize a community-engaged oral history methodology to produce short video documentaries focused on Asian Americans in the Covid-19 pandemic. In producing these collaborative digital history projects, students learn to evaluate the ways social power influences historical documentation at various levels including the making of sources, the construction of archives, and the telling of historical narratives. We ask: how have race and racism, ethnicity and community, gender and class, shaped the ways that the pandemic has influenced the lives of Asian Americans? To what extent have Asian American experiences with the pandemic been shaped by the recent global protests for racial justice and Black liberation? In studying the pandemic and its relationship to histories of race and racism, how should we understand the place of Asian Americans?.
Same as: AMSTUD 200R, HISTORY 200R

ASNAMST 261. Introduction to Asian American History. 5 Units.
This course provides an introduction to the field of Asian American history. Tracing this history between the arrival of the first wave of Asian immigrants to the US in the mid-nineteenth century and the present, we foreground the voices and personal histories of seemingly everyday Asian Americans. In the process, the course disrupts totalizing national historical narratives that center the US nation-state and its political leaders as the primary agents of historical change.
Same as: AMSTUD 261W, HISTORY 261E

ASNAMST 281. Asian Religions in America; Asian American Religions. 4 Units.
This course will analyze both the reception in America of Asian religions (i.e. of Buddhism in the 19th century), and the development in America of Asian American religious traditions.
Same as: AMSTUD 281, RELIGST 281, RELIGST 381

ASNAMST 287. Survey of Asian Health Issues. 1 Unit.
In this lecture series, students will explore Asian health topics. Specifically, the chronic disease risk and burden of Asians in the U.S. as a group is considered. Additionally, the necessity of the practice of disaggregation in the study and treatment of Asian Americans is emphasized. Topics will include cardiovascular disease, cancer, population health, precision health, pharmacogenomics and longevity in Asian-Americans. Class format is 30 minute lecture followed by 20 minutes for questions. No required readings. Opportunity to connect with guest speakers for research opportunities. Assignments will include short written reflections on lecture topics. This course is relevant for students interested in basic biology research, epidemiology, and public health policy, or clinical careers in medicine, psychology, or social work. Grading is satisfactory/no credit. All students are welcome, limit 25.
Same as: MED 287

ASNAMST 298. Race, Gender, & Sexuality in Chinese History. 5 Units.
This course examines the diverse ways in which identities--particularly race, ethnicity, gender and sexuality have been understood and experienced in Chinese societies, broadly defined, from the imperial period to the present day. Topics include changes in women's lives and status, racial and ethnic categorizations, homosexuality, prostitution, masculinity, and gender-crossing.
Same as: CSRE 298G, FEMGEN 298C, HISTORY 298C, HISTORY 398C

Chicana/o - Latina/o Studies Courses

CHILATST 1SI. English Language Learner Tutoring and Curriculum Development. 1 Unit.
The principal purpose of this course is to support Habla tutors in developing lesson plans and strategies to implement during their tutoring sessions with English language learners. The course equips students with a foundational understanding of English as a second language, practical experience with developing educational materials for language learning, and a collaborative space to reflect on the tutoring experience.

CHILATST 14N. Growing Up Bilingual. 3 Units.
This course is a Freshman Introductory Seminar that has as its purpose introducing students to the sociolinguistic study of bilingualism by focusing on bilingual communities in this country and on bilingual individuals who use two languages in their everyday lives. Much attention is given to the history, significance, and consequences of language contact in the United States. The course focuses on the experiences of long-term US minority populations as well as that of recent immigrants.
Same as: CSRE 14N, EDUC 114N

CHILATST 21. Visual Storytelling in Community: The Casa Zapata Mural Archive & History Project. 3 Units.
This mural history project was created by Stanford students at Casa Zapata over several years to explore and archive over twenty murals that are painted on the interior and exterior walls of this undergraduate residence in Lucie Stern Hall, Stanford University. The sheer number of painted works, many done with the direct involvement of students in collaboration with professional artists has become one of the largest repositories of visual storytelling through murals on any U.S. college campus. This course will explore the artists, content and methods of creating this treasure of work compiled over 4 decades. Research and programs to exhibit the murals are a critical component to the archive project. Student projects will contribute to efforts to share this body of mural works that has remained largely invisible to the public and critically unexplored at Stanford.

CHILATST 67. Contemporary Chicano & Latino Literature. 4 Units.
What does it mean to be Chicano and Latino in the United States today? And, how have U.S. writers portrayed the evolution of a Latino identity as it has changed from the age of the Civil Rights Movement to the age of Twitter? This class provides students with an overview of 20th and 21st century U.S. Latino/a literature by focusing on American authors writing after the 1960s to the present. We will read a range of writers, including Gloria Anzaldúa, Sandra Cisneros, Héctor Tobar, and Junot Díaz, and examine how these authors grapple with the artistic task of representing the different national cultures and histories (Mexican American, Puerto Rican, etc.) that inform the U.S. Latino experience. Throughout the quarter we will explore how these fictional narratives offer insights into the topics of American identity, immigration, assimilation, class status, Women of Color feminism, gender and sexuality. In addition, we will also consider contemporary representations from film and television, ultimately working toward a comprehensive analysis of how literary genres and popular cultural contribute to the meaning of Latinidad in the U.S.

CHILATST 109. GENTE: An incubator for transforming national narratives. 5 Units.
Nearly 80,000 individuals who identify as Latino or Latina, turn 18 every MONTH in the United States alone.. Yet despite the rapid growth in numbers and a presence on this continent that predates the country itself, Latina/os are still spoken of largely through the lens of immigration, and primarily during the window of election seasons. This course will design, engage, and deliver human centered strategies and relational activations for transforming national narratives while advancing well being. Our core questions include:n - Who defines a people, and who is involved in definition making? n - What are the ways to engage story beyond marketing concepts into a platform for human connection? n - How does one ¿hack¿ a national narrative?n - How do relational activations like pop up dinners and listening parties create personal doorways for transformation that can be scaled without sacrificing quality?nnPlease note, GENTE is more than an identity-based course. It is initiative that designs blueprints for change-making across identities by curating stories, values and common histories of individuals into a shared future of well being.

CHILATST 110. Sabias Creadoras y Activistas: Chicana/Latina Ways of Knowing. 4 Units.
(Open only to Undergraduates.) Chicana feminists have critically challenged masculine nationalist discourse as well as European and North American feminism. Through this course, we examine the diversity in thinking and methodology that defines these discourses from interdisciplinary and cross-cultural perspectives to understand the differential access to power experienced by Chicanas. How intersections of gender, race, class, and sexuality are informed and practiced by everyday lived experiences such as family life, religion/spirituality, education, and work; political/civic engagement is also central to this course.

CHILATST 111. Curander@s, remedios y espiritualidad: Chican@/Latin@ healing practices. 3-5 Units.
Understanding Chican@/Latin@ curandero traditions, remedios, brujeria and spirituality provides insights into the importance of such healing practices in everyday Chican@/Latin@ life. Through this course, we examine curanderismo and folk healing practices from interdisciplinary and cross-cultural perspectives to understand the mestizo and indigenous healing practices of Chican@s/Latin@s. How intersections of gender, race, class, and sexuality inform such practices and traditions is also explored in this course.

CHILATST 112. (Afro)Latinx in Reggaeton & Hip Hop: Blackness, Feminisms, and Performances. 3 Units.
This course surveys Latinx participation in Hip-Hop and Reggaetón, highlighting women artists, the Hispanophone Caribbean, and U.S. urban centers. Students will analyze texts, lyrics, performance, and social issues the music addresses from multiple disciplinary perspectives.

CHILATST 124C. Cultures of the U.S.-Mexico Borderlands. 3-5 Units.
Cultures of the U.S.-Mexico Borderlands: Since becoming president, Donald Trump has deported more than a million migrants and started building a multi-billion-dollar border wall. Although some of Trump¿s actions have seemed anomalous, they have all relied on and reaffirmed longstanding legacies of settler colonialism and racial capitalism. In this seminar, we will look at these legacies through the eyes of the Natives, Latinxs, whites, and others who have lived in the U.S.-Mexico borderlands. Within the confines of literature, we will read novelists like Willa Cather, essayists like Valeria Luiselli, and poets like Simon Ortiz (Acoma Pueblo). Meanwhile, across the more capacious category of culture, we will engage with promoters who encouraged whites to claim homesteads, periodistas who emboldened Latinxs to protect pueblos, and leaders who helped Natives fight for sovereignty. By blending literary studies and ethnic studies, we will gain a thorough grasp of the territories that have taken shape since the U.S.-Mexico War (1846¿48), especially the ones that we currently call Arizona, California, New Mexico, and Texas. From these concrete contexts, we will ask and answer more abstract questions: What are borders¿are they physical boundaries, or are they psychosocial conditions? Similarly, what are nations¿are they stable and homogeneous groups, or are they flexible and diverse communities? Ultimately, what are human beings¿can they be branded as illegal aliens, or do they have inalienable rights? During the quarter, we will work through these questions both collectively and individually: to enrich our in-class discussions, each five-unit student will complete a four- to five-page reading of a single source, a six- to eight-page paper on several sources, and a multimedia borderlands map.
Same as: AMSTUD 124, ENGLISH 124C

CHILATST 125S. Chicano/Latino Politics. 5 Units.
The political position of Latinos and Latinas in the U.S.. Focus is on Mexican Americans, with attention to Cuban Americans, Puerto Ricans, and other groups. The history of each group in the American polity; their political circumstances with respect to the electoral process, the policy process, and government; the extent to which the demographic category Latino is meaningful; and group identity and solidarity among Americans of Latin American ancestry. Topics include immigration, education, affirmative action, language policy, and environmental justice.
Same as: POLISCI 125S

CHILATST 131. Raza Youth in Urban Schools: Mis-educating Chicana/o/x and Latina/o/x Communities. 3-5 Units.
This course focuses on the experiences of Chicana/o/x and Latina/o/x youth in U.S. public schools. We will connect historical patterns with contemporary issues in some of this nation¿s largest urban school districts in order to uncover the ways in which urban schools both reflect and reproduce structural inequalities that marginalize Chicana/o/x and Latina/o/x youth. As we consider the origins and persistence of educational inequalities in relation to longstanding forms of violence, domination, and subordination, we will also highlight histories of activism and resistance, including organized struggles for educational justice in Chicana/o/x and Latina/o/x communities. Issues to be addressed include school (de)segregation, standardized testing, educational tracking, unequal opportunities to learn, deficit perspectives, bilingualism and bilingual education, immigration and undocumented students, ethnic studies curricula, and culturally relevant/responsive/sustaining approaches to pedagogy. This course will invite students to visit and observe in urban school settings, interview key stakeholders (students, parents, teachers, and/or policy makers), and reflect on their own K-12 schooling experiences in relation to course themes.
Same as: EDUC 131

CHILATST 140. Migration in 21st Century Latin American Film. 3-5 Units.
Focus on how images and narratives of migration are depicted in recent Latin American film. It compares migration as it takes place within Latin America to migration from Latin America to Europe and to the U.S. We will analyze these films, and their making, in the global context of an ever-growing tension between "inside" and "outside"; we consider how these films represent or explore precariousness and exclusion; visibility and invisibility; racial and gender dynamics; national and social boundaries; new subjectivities and cultural practices. Films include: Bolivia, Copacabana, La teta asustada, Norteado, Sin nombre, Migración, Ulises, among others. Films in Spanish, with English subtitles. Discussions and assignments in Spanish.
Same as: ILAC 140

CHILATST 148. Inglés Personal: Coaching Everyday Community English. 1-5 Unit.
This course is a 1 to 5 unit service learning course that prepares students to provide direct one-on-one service to adult English language learners in East Palo Alto and other surrounding communities. Students meet with and "coach" an adult learner on a weekly basis. Can be repeated for credit.
Same as: CSRE 148D, EDUC 148

CHILATST 162. Latin/x America in Motion: An Introduction to Dance Studies. 3-4 Units.
This course introduces students to the field of Dance Studies by examining the histories of Latin American and Caribbean dances and their relationship to developing notions of race and nation in the Americas. We will study the historical emergence and transformation of ¿indigeneity,¿ ¿blackness,¿ ¿whiteness,¿ and ¿Latin/@/x¿ and consider how dance practices interacted with these identifications. No prior experience with Dance or Latin America and the Caribbean necessary.
Same as: CSRE 162D, DANCE 162L, TAPS 162L, TAPS 262L

CHILATST 164. Immigration and the Changing United States. 4 Units.
The role of race and ethnicity in immigrant group integration in the U.S. Topics include: theories of integration; racial and ethnic identity formation; racial and ethnic change; immigration policy; intermarriage; hybrid racial and ethnic identities; comparisons between contemporary and historical waves of immigration.
Same as: CSRE 164, SOC 164, SOC 264

CHILATST 166. Mexicans, Mexican Americans, and Chicanos in American Society. 5 Units.
Contemporary sociological issues affecting Mexican-origin people in the U.S. Topics include: the immigrant experience, immigration policy, identity, socioeconomic integration, internal diversity, and theories of incorporation.
Same as: SOC 166, SOC 266

CHILATST 171. Mexicans in the United States. 5 Units.
This course explores the lives and experiences of Mexicans living in the United States, from 1848 to the present. Themes and topics include: the legacies of colonialism, the Mexican-American War, transnational migration, the effects of economic stratification, race and racialization, and the impact of sexual and gender ideologies on the lives of Mexicans residing north of the border.
Same as: AMSTUD 271, CSRE 171H, HISTORY 271

CHILATST 173. Mexican Migration to the United States. 3-5 Units.
(History 73 is 3 units; History 173 is 5 units.) This course is an introduction to the history of Mexican migration to the United States. Barraged with anti-immigrant rhetoric and calls for bigger walls and more restrictive laws, few people in the United States truly understand the historical trends that shape migratory processes, or the multifaceted role played by both US officials and employers in encouraging Mexicans to migrate north. Moreover, few have actually heard the voices and perspectives of migrants themselves. This course seeks to provide students with the opportunity to place migrants' experiences in dialogue with migratory laws as well as the knowledge to embed current understandings of Latin American migration in their meaningful historical context.
Same as: AMSTUD 73, HISTORY 73, HISTORY 173

CHILATST 177A. Well-Being in Immigrant Children & Youth: A Service Learning Course. 4 Units.
This is an interdisciplinary course that will examine the dramatic demographic changes in American society that are challenging the institutions of our country, from health care and education to business and politics. This demographic transformation is occurring first in children and youth, and understanding how social institutions are responding to the needs of immigrant children and youth to support their well-being is the goal of this course.
Same as: CSRE 177E, EDUC 177A, HUMBIO 29A

CHILATST 177B. Well-Being in Immigrant Children & Youth: A Service Learning Course. 4 Units.
This is an interdisciplinary course that will examine the dramatic demographic changes in American society that are challenging the institutions of our country, from health care and education to business and politics. This demographic transformation is occurring first in children and youth, and understanding how social institutions are responding to the needs of immigrant children and youth to support their well-being is the goal of this course.
Same as: CSRE 177F, EDUC 177B

CHILATST 177C. Well-Being in Immigrant Children & Youth: A Service Learning Course. 1-3 Unit.
This is an interdisciplinary course that will examine the dramatic demographic changes in American society that are challenging the institutions of our country, from health care and education to business and politics. This demographic transformation is occurring first in children and youth, and understanding how social institutions are responding to the needs of immigrant children and youth to support their well-being is the goal of this course.
Same as: CSRE 177G, EDUC 177C

CHILATST 179. Chicano & Chicana Theater: Politics In Performance. 4 Units.
This is a practicum course, where the basic tenets and evolving politic and philosophies of Chicano and Latin American liberationist theater are examined through direct engagement with its theatrical forms, including, social protest & agit-prop, myth & ritual, scripting through improvisation, in-depth character and solo work, collective conceptualization and more. The course will culminate in an end-of-the quarter play performance in the Nitery Theater (Old Union) and at a Mission District theater in San Francisco.
Same as: TAPS 379

CHILATST 180E. Introduction to Chicanx/Latinx Studies. 5 Units.
This course draws on intersectional and interdisciplinary approaches to introduce students to the range of issues, experiences, and methodologies that form the foundation of Latina/o/x studies. By considering the relationship between the creation of "Latinx" and "American" identities, students will critically reconsider the borders that constitute the U.S. as a political and cultural formation. The course balances depth and breadth in its study of the variety of perspectives and experiences that come to be associated with U.S. Latinxs. Thus, we will analyze the histories of predominant U.S. Latinx sub-groups, such as Mexicans/Chicanxs and Puerto Ricans, while also incorporating considerations of the ways in which broader populations with ties to Central America, South America, and the Caribbean play crucial roles in constituting U.S. Latinx identities. Topics include the U.S./Mexico border and the borderlands; (im)migration and diaspora; literary and cultural traditions; music and expressive practices; labor and structural inequality; social movements; Latinx urbanism; gender and sexuality; political and economic shifts; and inter- and intra-group relations. Sources include a range of social science and humanities scholarship. This course will meet at Sequoia High School. Transportation will be provided.
Same as: CSRE 180E, EDUC 179E

CHILATST 181. Latino Social Movements. 5 Units.
Social movements are cooperative attempts to change the world. This course reviews historically significant and contemporary political and social movements in Latino communities in the U.S., including the movements of the 1960s and events of the modern era such as the Spring 2006 marches and student walkouts, the 2010 resistance to Arizona¿s SB1070, and ongoing efforts in 2017 related to detention and deportation policies.
Same as: POLISCI 125M

CHILATST 183X. Practicum in English-Spanish School & Community Interpreting. 3-4 Units.
This practicum will assist students in developing a set of skills in English-Spanish interpreting that will prepare them to provide interpretation services in school and community settings. The course will build students' abilities to transfer intended meanings between two or more monolingual individuals of who are physically present in a school or community setting and who must communicate with each other for professional (and personal) purposes.
Same as: EDUC 183, EDUC 257

CHILATST 193B. Peer Counseling in the Chicano/Latino Community. 1 Unit.
Topics: verbal and non-verbal attending and communication skills, open and closed questions, working with feelings, summarization, and integration. Salient counseling issues including Spanish-English code switching in communication, the role of ethnic identity in self-understanding, the relationship of culture to personal development, and Chicana/o student experience in University settings. Individual training, group exercises, role play, and videotape practice.
Same as: EDUC 193B

CHILATST 195. U.S. Latinx Art. 5 Units.
This course surveys art made by Latinas/os/xs who have lived and worked in the United States since the 1700s, including Chicanos, Nuyoricans, and other Black, Brown, and Indigenous artists. While exploring the diversity of Latinx art, students will consider artists' relationships to identity, race, ethnicity, gender, and sexuality. Students will also study how artists have responded to and challenged discrimination, institutional exclusion, and national debates through their work. Attendance on the first day of class is a requirement for enrollment.
Same as: ARTHIST 194, CSRE 195

CHILATST 198. Internship for Public Service. 1-5 Unit.
Students should consult with CCSRE Director of Community Engaged Learning (ddmurray@stanford.edu) to develop or gain approval for an internship that addresses race/ethnicity, public service, and social justice. Students will read a selection of short readings relevant to their placement, write bi-weekly reflections, and meet bi-weekly with the Director of Community Engaged Learning. Units are determined by the number of hours per week at the internship (2 hours/week = 1 unit; 5 hours/week = 2 units; 8 hours/week = 3 units; etc.) Group meetings may be required. May be repeated for credit.
Same as: CSRE 198

CHILATST 200R. Directed Research. 1-5 Unit.
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CHILATST 200W. Directed Reading. 1-5 Unit.
(Staff).

CHILATST 201B. The Undocumented Migration Project Exhibition at Stanford. 3 Units.
Are you an artist seeking a greater purpose for you art? Would you like to gain a sense of history and best practices for engaging your community in creative work? nnHuman Rights policy experts and activists, artists and scholars will participate in this (online via Zoom.us) student & community course on contemporary immigration policy and human rights issues.The course is structured around the ideas of art, activism and scholarship as they intersect with the subject of migration. Often considered distinct fields, we will explore the ways they merge together, and engage in dialogue with an array of guests from a multitude of backgrounds.nn In addition to learning about the Hostile Terrain94 project through tagging the identities of lives of those lost along the Sonoran desert and considering the U.S. policy of prevention through deterrence to crossing the U.S. Mexican Border, this class will explore art making with paper as the primary media. Paper with its material qualities can provide diverse and accessible entryways into the processes of inclusion, recordation, and mass participation. Through the interconnecting of the practical task of filling information onto toe tags to create the exhibition at the Anderson Collection, which documents the human remains of migrants identified for the exhibition (Fall 2020) with creating new objects in paper, the projects in this course will discover and recover identity through articulations of identity in paper.
Same as: CSRE 201B

CHILATST 212. Biology, Culture and Social Justice in Latin America: Perspectives from Forensic Anthropology. 5 Units.
This course will only take place in the first 5 weeks of the quarter.nnAs forensic anthropologists, we are routinely asked to make identifications of unknown human remains and provide courtroom testimony. Latin America has become a nexus for social justice work, as we respond to the humanitarian crisis along the U.S.-México Border. To improve identification methods of the undocumented dead, we must understand the diversity in Latinx people and adopt best scientific practices.
This course provides a cross-disciplinary, bio-cultural approach to Latin American variation and training in applied methods of forensic anthropology. Explore how tools of biological and cultural anthropology are used jointly in human rights investigation and social justice advancement. Discover the breadth of Latinx diversity and how historical, geographic, and socio-cultural factors shape this variation. Gain hands-on experience in case analysis, using skeletal, genetic, and recovery context information to estimate key parameters of identity. Use case studies to contextualize this work through an intersectional lens that attends to the living families and the applicable historical, geo-political and socio-cultural conditions.
Same as: ANTHRO 212B, CSRE 212

CHILATST 274. The History of Mexicans and Mexican Americans. 4-5 Units.
This course will explore the history of Mexican migrants and Mexican Americans from 1848 to the present.
Same as: HISTORY 274C, HISTORY 374C

Compar Stud in Race & Ethnic Courses

CSRE 1A. My Journey: Conversations on Race and Ethnicity. 1 Unit.
This course meets once a week for one hour, over lunch (provided). Students will meet with CSRE faculty who will share their work, their life stories, their reasons for believing that race and ethnicity are of central concern to all members of our society. Diverse fields will be represented: sociology, history, literature, psychology and others.

CSRE 1T. The Public Life of Science and Technology. 4 Units.
The course focuses on key social, cultural, and values issues raised by contemporary scientific and technological developments. The STS interdisciplinary lens helps students develop and apply skills in three areas: (a) Historical analysis of contemporary global affairs (e.g., spread of technologies; responses to climate change); (b) Bioethical reasoning around health issues (e.g., disease management; privacy rights); and (c) The sociological study of knowledge (e.g., intellectual property, science publishing). A discussion section is required. Discussion sections meet once per week immediately after lecture. International time zone students are encouraged to fill out the following Google Form: https://tinyurl.com/STS1-Timezone.
Same as: STS 1

CSRE 1V. A History of Race. 1-3 Unit.
This course will survey the idea of race and its history. We will focus our attention on the construction of the idea of race, and we will trace the ways in which this concept has changed over time. The course will start with a panel discussion on definitions of race in history, and as presented in different academic disciplines today. This discussion will be followed by two lectures tracing histories of race from Antiquity until the twentieth century. The last session will be a roundtable on the continuing role of race in the United States today. Covered topics will include explicit and implicit bias, institutionalized racism, race and criminal justice, equal justice initiatives and protests, racial stratification. The roles of politics, economics, science, religion, and nationalism, as well as the relationships between race, gender, and class will also be discussed. Course must be taken for 3 units to count toward WAYS requirement. This course will meet 5 times, starting MONDAY January 14th, and ending the last day of class Monday, February 25th.

CSRE 3E. Michelle Obama in American Culture. 1 Unit.
Never before has the United States had a First Lady like Michelle Obama. During her eight years in the White House, Michelle Obama transformed traditional meanings of womanhood, marriage, motherhood, and style and created new possibilities for what it means to be strong and what it means to be beautiful. No First Lady has ever been so scrutinized but also so beloved: from her J. Crew dresses to her Let's Move campaign, from her vegetable gardens to her chiseled arms, and from her powerful speeches to her casual and always authentic personality. This class examines the impact on American culture of the most popular First Lady in American history.
Same as: AFRICAAM 3E, AMSTUD 3E, FEMGEN 3E, HISTORY 3E

CSRE 3P. America: Unequal. 4 Units.
It was never imagined "when the U.S. was founded" that the rich would be so rich and the poor so poor. It was never imagined "when the U.S. was founded" that opportunities to get ahead would depend so profoundly on one's family circumstances and other starting conditions. How could this have happened in the "land of opportunity?" What are the effects of such profound inequality? And what, if anything, should be done about it?.
Same as: PUBLPOL 113, SOC 3

CSRE 4. The Sociology of Music. 3-5 Units.
This course examines music¿its production, its consumption, and it contested role in society¿from a distinctly sociological lens. Why do we prefer certain songs, artists, and musical genres over others? How do we ¿use¿ music to signal group membership and create social categories like class, race, ethnicity, and gender? How does music perpetuate, but also challenge, broader inequalities? Why do some songs become hits? What effects are technology and digital media having on the ways we experience and think about music? Course readings and lectures will explore the various answers to these questions by introducing students to key sociological concepts and ideas. Class time will be spent moving between core theories, listening sessions, discussion of current musical events, and an interrogation of students¿ own musical experiences. Students will undertake a number of short research and writing assignments that call on them to make sociological sense of music in their own lives, in the lives of others, and in society at large.
Same as: AFRICAAM 4, SOC 4

CSRE 5C. Human Trafficking: Historical, Legal, and Medical Perspectives. 3 Units.
(Same as History 105C. History majors and others taking 5 units, enroll in 105C.) Interdisciplinary approach to understanding the extent and complexity of the global phenomenon of human trafficking, especially for forced prostitution, labor exploitation, and organ trade, focusing on human rights violations and remedies. Provides a historical context for the development and spread of human trafficking. Analyzes the current international and domestic legal and policy frameworks to combat trafficking and evaluates their practical implementation. Examines the medical, psychological, and public health issues involved. Uses problem-based learning. Required weekly 50-min. discussion section, time TBD. Students interested in service learning should consult with the instructor and will enroll in an additional course.
Same as: FEMGEN 5C, HISTORY 5C, INTNLREL 5C

CSRE 5I. Hamilton: An American Musical. 1 Unit.
"Hamilton" is one the most popular and most celebrated musicals in American history. It has received 11 Tony Awards, including best musical, and 16 Tony nominations, the most nominations in Broadway history. It won the Pulitzer Prize and a Grammy Award. The musical draws on the language and rhythms of hip-hop and R & B, genres that are underrepresented in the musical theater tradition. "Hamilton" has redefined the American musical, particularly in terms of sound, casting, and storytelling. What explains the deep cultural impact and acclaim for this play?n nThis interdisciplinary course examines Alexander Hamilton and his world as well as Hamilton: An American Musical through a series of lectures from faculty in History, Theater and Performance Studies, English, Music, and Writing and Rhetoric.
Same as: AFRICAAM 5I, AMSTUD 5I, HISTORY 3G

CSRE 10A. Introduction to Identity, Diversity, and Aesthetics: Arts, Culture, and Pedagogy. 1 Unit.
This weekly lecture series introduces students to the study of identity, diversity, and aesthetics through the work of leading artists and scholars affiliated with the Institute for Diversity in the Arts (IDA). This year's course highlights the educational impact of arts and culture. How can arts and culture help to advance pedagogies of liberation? Among other things, we will examine hip-hop education and how it illuminates ideas around culturally relevant and culturally sustaining pedagogies, indigenous knowledges, embodied knowledges, hip-hop feminisms, and community engaged research. We will look at case studies from East Palo Alto, CA and Cape Town, South Africa.
Same as: AFRICAAM 10A

CSRE 10AY. Pacific Standard Time LA/LA creative projects in a Celebration Beyond Borders. 1-2 Unit.
Students will have the opportunity to develop written and creative responses to the exploration of the region wide collaboration Pacific Standard Time LA/LA.

CSRE 11SI. Leadership at Stanford. 1 Unit.
This class will explore the role of student government, decision-making and advocacy in a major research university setting such as Stanford. Designed to prepare new student leaders for their legislative responsibilities, the class will incorporate presentations from university stakeholders along with experiential learning exercises and individual class projects. Topics of study include understanding the role and responsibilities of student government in a university setting, institutional change, decision-making, advocacy and conflict resolution. Students will also study ASSU governing documents, effective funding and event planning processes and roles. They will gain awareness of how to understand and engage with a complex and decentralized organization such as Stanford while honing their leadership skills. They will develop a project they wish to pursue as an elected leader and receive mentorship from university administrators.

CSRE 11W. Service-Learning Workshop on Issues of Education Equity. 1 Unit.
Introduces students to a variety of issues at stake in the public education of at-risk high school youth in California. Participants will hear from some of the leading faculty in the School of Education as well as the Departments of Psychology, Sociology, and others, who will share perspectives on the problems and challenges of educating a diverse student body in the state's public school system. The service-learning component of the workshop is a mentoring project (Stanford Students for Educational Equity) with junior class history students from East Palo Alto Academy High School, a Stanford charter school.
Same as: HISTORY 11W

CSRE 12. Community Organizing: People, Power, and Change. 4 Units.
Mobilizing communities for positive social change requires educated leaders equipped with the skills to organize people and power. Organizing can make a difference in addressing major public challenges that demand full engagement of the citizenry, especially those whose voices are not heard unless they organize. Leadership is accepting responsibility to enable others to achieve shared purpose in the face of uncertainty. Organizing is a way to lead by identifying, recruiting and developing more leadership; building community around that leadership; and building power from the resources of that community.

CSRE 13. Digital Humanities and African American History Black History in the Age of the Digital Database. 1 Unit.
The focus of this workshop is on the social and cultural histories and present conditions relating to social movements and the role of leaders and heroes in urban settings. The workshop seeks to foster historical consciousness of past struggles for justice through collective action as well as to introduce students to a diverse range of leaders of contemporary social justice movements. Additionally, as an underpinning concept, the course explores the changing meaning and importance of social and cultural heroes through history, literature, and music. Workshop activities will divided between sessions with guest speakers and classes held to discuss background concepts and material.
Same as: URBANST 103

CSRE 14N. Growing Up Bilingual. 3 Units.
This course is a Freshman Introductory Seminar that has as its purpose introducing students to the sociolinguistic study of bilingualism by focusing on bilingual communities in this country and on bilingual individuals who use two languages in their everyday lives. Much attention is given to the history, significance, and consequences of language contact in the United States. The course focuses on the experiences of long-term US minority populations as well as that of recent immigrants.
Same as: CHILATST 14N, EDUC 114N

CSRE 16A. Dynamic Australia: immigrant and indigenous experiences. 1 Unit.
How did modern Australian society take shape? Within this larger framework, several more focused questions will guide us: What have been the experiences of immigrants, of Aborigines and Torres Strait Islanders, and how have their relations evolved over time? To what degree has Australia been formed by successive waves of immigration? What has been the fate of the Aboriginal peoples? How have intergroup relations evolved since the start of colonialism in the late 18th century? What have been the elements of racial formation, and how have they changed over time? What does it mean to be Australian in the 21st century? How might the creative arts (e.g. music, literature, drama, painting, dance) help us understand Australian identities and intergroup dynamics? As a course project, students will informally interview someone whose life history has involved large-scale displacement, voluntary or otherwise. This is intended as a means of sharpening awareness of migration in history - as articulated at the level of individuals and communities. This course is primarily intended for students enrolled in or waitlisted for the BOSP Summer Seminar in Sydney (June-July 2019), and as such focuses on historical and social milieux. However, all participants will find it a wide-ranging introduction to Australian society and a case study in intergroup dynamics.

CSRE 18. Antiracism and Health Equity: A project-based community service course. 1 Unit.
This class will examine the structural racialized bias in medicine, biomedical research and health care delivery by using short form media to address the dismantling of systemic racist practices. In understanding that inequity is a feature and not a flaw of health status and health care delivery in the United States, students will design and deliver creative, serviceable solutions for community partner-generated problems/issues. This course is designed for human biology students but, all majors are welcome.

CSRE 19N. Everyone Eats: Food, Religion and Culture. 3 Units.
Food is one of the most essential aspects of the human experience. The decisions and choices we make about food define who we have been, who we are now, and who we want to become. In this seminar we will study how food habits have shaped religious traditions, and vice versa, how religious traditions have shaped food ways. Some traditions are centered around food regiments such as the dietary laws, derived from biblical law that shapes Jewish and Christian tradition very differently. Indeed, many religious and ethical thinkers, as well as anthropologists, have interpreted the meanings of the dietary laws very differently. Further, in many religious traditions the killing of animals and consumption of meat is deeply fraught. We will explore the history of food practices and their contemporary impact; the connections between food, religion, and identity; the meanings that religious thinkers and anthropologists have attributed to food habits; as well as the creative translations of religious traditions into contemporary food ethics by various social movements and groups, predominantly in the U.S.
Same as: JEWISHST 19N, RELIGST 19N

CSRE 20N. What counts as "race," and why?. 4 Units.
Preference to freshmen. Seminar discussion of how various institutions in U.S. society employ racial categories, and how race is studied and conceptualized across disciplines. Course introduces perspectives from demography, history, law, genetics, sociology, psychology, and medicine. Students will read original social science research, learn to collect and analyze data from in-depth interviews, and use library resources to conduct legal/archival case studies.
Same as: SOC 20N

CSRE 21. African American Vernacular English. 3-5 Units.
Vocabulary, pronunciation and grammatical features of the systematic and vibrant vernacular English [AAVE] spoken by African Americans in the US, its historical relation to British dialects, and to English creoles spoken on the S. Carolina Sea Islands (Gullah), in the Caribbean, and in W. Africa. The course will also explore the role of AAVE in the Living Arts of African Americans, as exemplified by writers, preachers, comedians and actors, singers, toasters and rappers, and its connections with challenges that AAVE speakers face in the classroom and courtroom. Service Learning Course (certified by Haas Center). UNITS: 3-5 units. Most students should register for 4 units. Students willing and able to tutor an AAVE speaking child in East Palo Alto and write an additional paper about the experience may register for 5 units, but should consult the instructor first. Students who, for exceptional reasons, need a reduced course load, may request a reduction to 3 units, but more of their course grade will come from exams, and they will be excluded from group participation in the popular AAVE Happenin at the end of the course.
Same as: AFRICAAM 21, LINGUIST 65, LINGUIST 265

CSRE 21N. How to Make a Racist. 3 Units.
How does a child, born without beliefs or expectations about race, grow up to be racist? To address this complicated question, this seminar will introduce you to some of the psychological theories on the development of racial stereotyping, prejudice, and discrimination. Together, these theories highlight how cognitive, social, and motivational factors contribute to racist thinking. We will engage thoughtfully and critically with each topic through reflection and discussion. Occasionally, I will supplement the discussion and class activities with a brief lecture, in order to highlight the central issues, concepts, and relevant findings. We will share our own experiences, perspectives, and insights, and together, we will explore how racist thinking takes root. Come to class with an open mind, a willingness to be vulnerable, and a desire to learn from and with your peers. Students with diverse opinions and perspectives are encouraged to enroll.
Same as: AFRICAAM 121N, PSYCH 21N

CSRE 22. Lockdown America: Race and Incarceration in the Land of the Free. 3-5 Units.
This course is about prisons, jails, and the place they hold in American life, drawing heavily from the instructor's experiences of fieldwork in prisons and jails in the San Francisco Bay Area. Prisons and Jails are commonly imagined as isolated places, behind high walls, wire fences, and metal doors. The story ends as the 'bad guy' is sent to prison, after all. The reality is far from this; what happens in and around prison and jails impacts American society, culture, economics, geography, and daily life in myriad ways. This course undertakes to undo many of the myths and misconceptions about incarceration and place the prison back in the American landscape. Using a wide variety of sources of data (news articles, blog posts, essays, academic articles and book chapters, podcasts and documentaries) and prioritizing the voices of incarcerated and formerly incarcerated people, this course encourages students to critically interrogate the terms used to describe and justify mass incarceration. Particular attention will be payed to the role of racial inequality in the perpetuation of incarceration, and the role of incarceration in the perpetuation of racial inequality. As such, there will be no week 'on race' but race will be a constant and consistent element of every week of this course. This course is also designed to improve participants' writing and will involve multiple opportunities for directed feedback to develop participants' prose style and argumentation.

CSRE 22SI. SENSA Labs Social Enterprise Seminar. 1-2 Unit.
As a social entrepreneur, how do you know you¿re solving the right problem? What values, approaches, and strategies differentiate a social enterprise from other startups? What does it take to build a venture that is both socially-minded and profitable? Through engaging with influential speakers, course-long mentors, case studies, and hands-on workshops, students will gain the skills needed to build, pitch, and manage a social venture. Expert Silicon Valley speakers and mentors encourage networking as well as peer to peer learning. The course culminates in Demo Day, an event in which teams pitch their ideas directly to experienced investors. At the end of the course, students will be able to understand the field of social entrepreneurship through the tenets of Sustainability, Impact and Performance, Innovation, and Leadership; apply the theories from the Lean Startup and Social Business Models to an identified need; and measure the impact of a social enterprise and synthesize social entrepreneurship concepts through investor pitching. Limited enrollment. Application required: https://forms.gle/k9NFcETszUqqryjD6.

CSRE 23. Race and the War on Drugs: Long Roots and Other Futures. 3-5 Units.
Current discussions of the war on drugs reference Richard Nixon's 1971 declaration as a starting point. This class will encourage students instead to see the war on drugs beyond seemingly self-evident margins and imaginaries. In this course, we will explore the racialized and gendered history of coca and cocaine in the Americas, and follow the war on drugs as it targets different aspects of drug production and consumption within and beyond the borders of the United States. In examining how drugs and drug policies have been used as tools of discrimination and exploitation from colonialism through to present systems of mass incarceration, we will analyze racialization as it is constructed and experienced through time and imposed onto nations and bodies. Readings and discussion will emphasize Black and Latinx feminist theories, critical race theory, and decoloniality, drawing on anthropological and interdisciplinary scholarship while incorporating other forms of writing (prose, fiction, poetry) and media (graphic novels, visual art, film clips, documentaries). Students will learn to interrogate the longstanding racialized and gendered roots of the drug war and explore critical calls towards other futures.
Same as: ANTHRO 23B

CSRE 24. Race and Environment. 3 Units.
From the moment colonizers began arriving in the space now referred to as the Americas until the moments these words were written and read, coloniality and one its central mechanisms¿race¿have shaped the ways that people think about the spaces in which they live. Western culture¿s belief in the division between nature and culture, between the human and non-human, is rooted in racialized beliefs that guided the settler project¿s goal of converting Indigenous and Black spaces and bodies into reflections of colonial aspirations. We will analyze the processes through which race and space are mutually-constructed, including the racialization of space labelled the ¿environment;¿ and how organizing, research, and activism in relation to the environment can undermine the racial hierarchies that still manifest via the environment.

CSRE 24SI. The Continuity of Abu Nuwas's Homoeroticism in Arab Queer Literary Modernity. 2 Units.
This course will hold space for discussions surrounding the precolonial poetic foundations of Arab Queerness, the continuity of such foundations in its modern literary representations, and he potential Arab Queer futurities that such modern representations move toward. How are representations of homoeroticism in Abu Nuwas's poetry definitive of a pre-colonial Arab Queer identity that is separate from Western definitions of Queerness rooted in the Gay Liberation movement of the 1970s? Do modern literary representations of queerness in Arab literature, even after US sociopolitical imperialism, carry a central understanding of Arab Queerness? How is the earlier explored Pre-Colonial Arab Queerness carried forward in these modern Arab Queer literary representations? Are there differences? How do these literary understandings and analyses inform the greater theoretical discussion of queer past, present, and future? Readings will include poetry by classical Arab-Persian poet Abu Nuwas, and novels by Saleem Haddad, Abdellah Taïa, and Mohammed Abdel Nabi. These works will be discussed within a theoretical framework informed by the works of Joseph Massad, Sara Ahmed, Jose Esteban Muñoz, Eve Sedgwick, and Jaspir Puar.

CSRE 27SI. Revolution and the Pilipinx Diaspora: Exploring Global Activism in Local Communities. 1-2 Unit.
This course aims to provide students with an opportunity to not only learn about current issues in the local Filipino American community, but also develop their own plans to take action on social justice issues. Through mediums of art and reflection, we will explore themes of diaspora and liberation by focusing on the Filipino experience and the local and vocal histories of activism in the Bay Area. We will be connecting local histories to the current global narrative while also connecting our past to our own identity formation as activists and community leaders. In doing so, we hope to explore the implications of local activism within the greater context of global organizing. The course will expose students to local community leaders and ways in which they can support and plug in to local initiatives.
Same as: ASNAMST 27SI

CSRE 28SI. What is Whiteness? Historical and Contemporary Definitions of White Racial Identity in the U.S.. 1-2 Unit.
This course will explore one central question: What does it means to be White, and how has that changed over time and place? From Abigail Fisher to Kreayshawn to the Tsarnaev brothers, we will use narratives and experiences of Whiteness to illuminate historical and contemporary understandings of what it means to be White in 2013. Through this class, students will share their own encounters with Whiteness, and will develop tools and strategies for navigating privileged identities and engaging within Stanford¿s diverse student community.

CSRE 29SI. Migration is Beautiful: Histories, Realities, and Policies of Immigrant Justice. 1 Unit.
In the current political landscape, many political stakeholders have endorsed anti-immigrant policies using inflammatory rhetoric that has disturbed American attitudes toward immigration. This course challenges the underlying assumptions of this discourse. We will begin by analyzing the history of immigration policy and politics in the United States. We will discuss specific issues related to border control, detention, and law enforcement and then delve into the intersections of immigration, criminal justice, health, and education policies. Throughout, we will emphasize the importance of using empirical data and personal narratives when analyzing and participating in the contemporary discourse on immigration-related issues.

CSRE 30N. The Science of Diverse Communities. 3 Units.
This course is an exploration. Most generally, its aim is to identify distinguishing features of good diverse communities and articulate them well enough to offer principles or guidelines for how to design and manage such communities - all with a particular focus on educational communities like schools, universities, academic disciplines, etc., but with the hope that such principles might generalize to other kinds of organizations and the broader society. The readings range from those on the origins of human communities and social identities to those on intergroup trust building. They also aim to embed our discussions in the major diversity issues of the day, or example, what's in the news about campus life. nnnThus the course has a practical purpose: to develop testable ideas for improving the comfort level, fairness and goodness-for-all of identity diverse communities--especially in educational settings. nnnThe course also has a basic science purpose: to explore the psychological significance of community. Is there a psychological need for community? Is there something about a need for community that can't be reduced to other needs, for example, for a gender, racial or sexual-orientation identity? How strong is the need for community against other needs? What kinds of human groupings can satisfy it? In meeting this need, can membership in one community substitute for membership in others? What do people need from communities in order to thrive in them? Do strong diverse communities dampen intergroup biases? Can strong community loyalty mitigate identity tensions within communities? nnnSuch questions, the hope is, will help us develop a more systematic understanding of the challenges and opportunities inherent in diverse human communities.
Same as: EDUC 30N, PSYCH 30N, SOC 179N

CSRE 30Q. The Big Shift. 4 Units.
Is the middle class shrinking? How do people who live at the extremes of American society- the super rich, the working poor and those who live on the margins, imagine and experience "the good life"? How do we understand phenomena such as gang cultures, addiction and the realignment of white consciousness? This class uses the methods and modes of ethnographic study in an examination of American culture. Ethnographic materials range from an examination of the new American wealth boom of the last 20 years (Richistan by Robert Frank) to the extreme and deadlynworld of the invisible underclass of homeless addicts on the streets of San Francisco (Righteous Dopefiend by Phillipe Bourgois and Jeff Schonberg). The experiences of Hispanic immigrants and the struggle to escape gang life in Los Angeles are highlighted in the story of Homeboy Industries a job creation program initiated by a priest working in LA's most deadly neighborhoods (G-Dog and the Homeboys by Celeste Fremon). Finally in Searching for Whitopia: an improbable journeyninto the heart of White America, Rich Benjamin explores the creation on ethnic enclaves (whitopias) as fear over immigration and the shrinking white majority redefine race consciousnessnin the 21st century. Each of these narratives provides a window into the various ways in which Americans approach the subjects of wealth and the good life, poverty and the underclass, and thenconstruction of class, race, and gender in American society. Students will not be required to have any previous knowledge, just curiosity and an open mind.
Same as: ANTHRO 31Q

CSRE 30SI. Housing Justice and Stratification in the Bay Area. 1 Unit.
This is a survey course on relevant topics to local housing justice concerns, including current debates in housing policy and the role of various sectors in shaping the local housing market. This course will prepare participants to both personally engage in service learning and critically engage with actors in housing policy over spring break. n nTo begin, we will explore paradigms of critical community engagement and develop a decolonized framework about the history of the local land. With these underlying philosophies in mind, we will dive into the politics behind ongoing gentrification, the rise of the city and the decline of suburbs in the Bay Area. From there, we will analyze housing policies which have strongly influenced the local housing situation, including national policies such as the Fair Housing Act and East Palo Alto affordability measures.nnTo close, the course will focus on the role of different actors and sectors in affecting change. We will examine possible obligations local technology companies and real estate developers might have in shaping the region¿s housing market. Finally, we will study the notion of housing as a human right and ask whether achieving housing justice would require a formally declared right to affordable and fair housing.

CSRE 31SI. Food + Race. 1 Unit.
If we are what we eat, Food + Race is a class that explores what we eat and how we talk about it. In this student-initiated course, we will look at popular culture and discourse as a gateway to issues like just labour practices and equitable access, cultural authenticity, family histories of im/migration, appropriation and consumerism, and global colonial domination. From The Great British Bake Off to Korean tacos in L.A., we¿ll ask ¿What does food really mean?¿ and ¿What does food really mean to us?¿.

CSRE 32. Theories in Race and Ethnicity: A Comparative Perspective. 5 Units.
This undergraduate course employs an anthropological and historical perspective to introduce students to ideas and concepts of race and ethnicity that emerged primarily in Europe and the United States in the eighteenth and nineteenth centuries and that continue to shape contemporary racial attitudes, interactions, and inequalities. Ideas about race and ethnicity forged outside the U.S. and case studies from other nations are presented to broaden students' understanding and to overcome the limitations of an exclusive focus on the U.S. This course is geared to sophomores and juniors who have already taken at least one course on race and ethnicity, anthropology, African American Studies, Asian American Studies, Chicana/o Studies, Jewish Studies or Native American Studies.
Same as: ANTHRO 32

CSRE 32A. The 5th Element: Hip Hop Knowledge, Pedagogy, and Social Justice. 1-5 Unit.
This course-series brings together leading scholars with critically-acclaimed artists, local teachers, youth, and community organizations to consider the complex relationships between culture, knowledge, pedagogy and social justice. Participants will examine the cultural meaning of knowledge as "the 5th element" of Hip Hop Culture (in addition to MCing, DJing, graffiti, and dance) and how educators and cultural workers have leveraged this knowledge for social justice. Overall, participants will gain a strong theoretical knowledge of culturally relevant and culturally sustaining pedagogies and learn to apply this knowledge by engaging with guest artists, teachers, youth, and community youth arts organizations.
Same as: AFRICAAM 32, AMSTUD 32, EDUC 32, EDUC 432, TAPS 32

CSRE 32SI. Whiteness. 1-2 Unit.
This course provides an introduction to the concept of Whiteness. We will investigate the historical origin of "Whiteness" and "White people," examine some of the institutional and interpersonal privileges associated with Whiteness, and explore contemporary debates about White entitlement, White culture, and White charity. As we are articulating the problem of Whiteness, we will also be exploring strategies and models of "White allyship," and asking the surprisingly difficult questions of: How can White people work for racial justice, and how can people of all races work to disrupt Whiteness and White Supremacy? This class is intended for students of all majors and backgrounds interested in learning about Whiteness.

CSRE 33SI. Examining Access for FLI Students in Higher Education. 1 Unit.
Stanford's past two presidents have steadfastly declared Stanford as a vehicle of upwards mobility and to correct inequalities. Essentially, this means providing sufficient access to students who often are most in need: first-generation and/or low-income (FLI) students. However, what exactly is access? How can we understand different kinds of access in order to improve the holistic quality of education students receive? nnTo answer these questions, we will define access and the forces which shape it, such as economic systems, intersectionality, and the educational pipeline. Next, to better prepare ourselves as advocates for educational improvement, we will examine the historical trend of access at colleges as case studies (Stanford, Berkeley, Foothills, and Brown). Finally, we will ask how accessibility influences how students fare after leaving the educational system.nnUltimately, we will gain analytical and heuristic techniques to pinpoint and advocate for improvements to educational access for FLI students.

CSRE 34SI. The Chicago Gap: Bridging Latinx Youth Education. 1 Unit.
By the year 2050, Latinos will make up a quarter of the United States population, doubling in its current size. Without a doubt, this increase in population is sure to affect American economy and policy. Unfortunately, Latinos seem to be on the slow path to social mobility in the United States, and face many setbacks as a community. More specifically, the Latinx pupil dropout rate is the highest amongst all ethnic groups. While Latinos are enrolling in college at higher rates than ever before they are not graduating with four-year degrees as often as other students. Our course will cover the dynamic linguistic, cultural, and economic themes involved in this discourse. We will reimagine citizenship as it pertains to accessing higher education and discuss tracks and pipelines that have lead Latinx students to different outlets. More specifically, we will cover the impact that location and environment have on a pupil's perception of themselves and their capabilities, while also reflecting on Chicago's history of education and racial segregation.

CSRE 35SI. An Introduction to Labor Organizing on Campus. 1-2 Unit.
Campus Workers are critical to maintaining our university, so how can you support them as a student? What is campus labor organizing and how does it work on a practical level? How can students make a difference in the lives of workers on campus? This class offers an opportunity to gain knowledge of and firsthand experience in campus labor and campus labor organizing. Classes will consist of seeking to understand how race, class, and gender affect laborers experiences at Stanford, as well as how to build an intersectional labor movement.

CSRE 36. REPRESENT! Covering Race, Culture, and Identity In The Arts through Writing, Media, and Transmedia.. 5 Units.
Probably since the first audience formed for the first chalk scrawls in a cave, there have been storytellers to narrate that caveperson's art and life, and critics to troll that caveperson's choice and usage of color. And so it goes. This course is an exploration into how to cover race, culture, and identity in the arts in journalism, such as print, web, video, radio, and podcasting. It is also an arts journalism practicum. During the quarter, we will be working toward creating work that is publishable in various venues and outlets. In this course, we will be discussing exemplary arts writers and their works and interrogating critical questions around race, identity, representation, and ethics. Experienced journalists, editors, and experts from different platforms and backgrounds will also be imparting important skills and training that will help you to navigate today's working media and transmedia environments. Those who enroll in the class will be expected to produce quality content (e.g. articles, blog posts, video reports, podcasts) for media outlets. Some travel outside of class may be required for additional reporting and training. This seminar class will be By Instructor Approval Only. Please submit an application by February 22 at 11:59pm. Starred items are required. The app is available at: http://bit.ly/RepresentClass36 Those selected for this class will be informed by March 2nd so that they may enroll in the course. Please do not apply for the course if you are unsure about completing it. If you have any questions, you may email the instructor at: jeffc410@stanford.edu.
Same as: AFRICAAM 36

CSRE 39. Long Live Our 4Bil. Year Old Mother: Black Feminist Praxis, Indigenous Resistance, Queer Possibility. 1-4 Unit.
How can art facilitate a culture that values women, mothers, transfolks, caregivers, girls? How can black, indigenous, and people of color frameworks help us reckon with oppressive systems that threaten safety and survival for marginalized people and the lands that sustain us? How can these questions reveal the brilliant and inventive forms of survival that precede and transcend harmful systems toward a world of possibility? Each week, this course will call on artists, scholars, and organizers of color who clarify the urgency and interconnection of issues from patriarchal violence to environmental degradation; criminalization to legacies of settler colonialism. These same thinkers will also speak to the imaginative, everyday knowledge and creative healing practices that our forebears have used for millennia to give vision and rise to true transformation.
Same as: AFRICAAM 39, FEMGEN 39, NATIVEAM 39

CSRE 41A. Genes and Identity. 4 Units.
In recent decades genes have increasingly become endowed with the cultural power to explain many aspects of human life: physical traits, diseases, behaviors, ancestral histories, and identity. In this course we will explore a deepening societal intrigue with genetic accounts of personal identity and political meaning. Students will engage with varied interdisciplinary sources that range from legal cases to scientific articles, medical ethics guidelines, films, and anthropological works (ethnographies). We will explore several case studies where the use of DNA markers (as proof of heritage, disease risk, or legal standing) has spawned cultural movements that are biosocial in nature. Throughout we will look at how new social movements are organized around gene-based definitions of personhood, health, and legal truth. Several examples include political analyses of citizenship and belonging. On this count we will discuss issues of African ancestry testing as evidence in slavery reparations cases, revisit debates on whether Black Freedman should be allowed into the Cherokee and Seminole Nations, and hear arguments on whether people with genetic links to Jewish groups should have a right of return to Israel. We will also examine the ways genetic knowledge may shape different health politics at the individual and societal level. On this count we will do close readings of how personal genomics testing companies operate, we will investigate how health disparities funding as well as orphan disease research take on new valences when re-framed in genetic terms, and we will see how new articulations of global health priorities are emerging through genetic research in places like Africa. Finally we will explore social implications of forensic uses of DNA. Here we will examine civil liberties concerns about genetic familial searching in forensic databases that disproportionately target specific minority groups as criminal suspects, and inquire into the use of DNA to generate digital mugshots of suspects that re-introduce genetic concepts of race.
Same as: AFRICAAM 41, ANTHRO 41

CSRE 41Q. Black & White Race Relations in American Fiction & Film. 3-5 Units.
Movies and the fiction that inspires them; power dynamics behind production including historical events, artistic vision, politics, and racial stereotypes. What images of black and white does Hollywood produce to forge a national identity? How do films promote equality between the races? What is lost or gained in film adaptations of books? NOTE: Students must attend the first day; admission to the class will be determined based on an in class essay.
Same as: AFRICAAM 101Q, AMSTUD 42Q

CSRE 44. Living Free: Embodying Healing and Creativity in The Era of Racial Justice Movements. 1-4 Unit.
What does it mean to live free? It is often said that the one demand for the Movement for Black Lives is to "stop killing us." This demand has led Black artists, thinkers, organizers, and healers to envision work and embody practices that resist the subjugation and erasure of their bodies. This surge of creativity has impacted and intersected with work happening in queer and trans communities and in many other communities of color, including indigenous movements for safe and clean water, student protests against campus racism, the undocumented movement, prison abolition among others. This justice based work urges us to interrupt systems of violence with systems of healing that recover traditions, invent new modalities, and connect to survival practices developed by many generations of people in community.nnIn this course we will bring together leading artists, thinkers, organizers, and healers to envision work and embody practices that resist the subjugation and erasure of their bodies, land, and natural resources. In this course we ask: what does it mean to embody health? How can we shift frameworks of pathology into frameworks of wholeness? What practices can we develop, recover, and share that help us create systems that support and value equity, healing and creativity for communities most at risk? And finally, how can we all live free?.
Same as: AFRICAAM 144

CSRE 45Q. Understanding Race and Ethnicity in American Society. 4 Units.
Preference to sophomores. Historical overview of race in America, race and violence, race and socioeconomic well-being, and the future of race relations in America. Enrollment limited to 16.
Same as: SOC 45Q

CSRE 47Q. Heartfulness: Mindfulness, Compassion, and Responsibility. 3 Units.
We practice mindfulness as a way of enhancing well-being, interacting compassionately with others, and engaging in socially responsible actions as global citizens. Contemplation is integrated with social justice through embodied practice, experiential learning, and creative expression. Class activities and assignments include journaling, mindfulness practices, and expressive arts. We build a sense of community through appreciative intelligence, connected knowing, deep listening and storytelling.

CSRE 50Q. Life and Death of Words. 4 Units.
In this course, we explore the world of words: their creation, evolution, borrowing, change, and death. Words are the key to understanding the culture and ideas of a people, and by tracing the biographies of words we are able to discern how the world was, is, and might be perceived and described. We trace how words are formed, and how they change in pronunciation, spelling, meaning, and usage over time. How does a word get into the dictionary? What do words reveal about status, class, region, and race? How is the language of men and women critiqued differently within our society? How does slang evolve? How do languages become endangered or die, and what is lost when they do? We will visit the Facebook Content Strategy Team and learn more about the role words play in shaping our online experiences. Together, the class will collect Stanford language and redesign the digital dictionary of the future. Trigger Warning: Some of the subject matter of this course is sensitive and may cause offense. Please consider this prior to enrolling in the course.
Same as: ENGLISH 50Q, FEMGEN 50Q, NATIVEAM 50Q

CSRE 50S. Nineteenth Century America. 3 Units.
(Same as HISTORY 150B. History majors and others taking 5 units, register in 150B.) Territorial expansion, social change, and economic transformation. The causes and consequences of the Civil War. Topics include: urbanization and the market revolution; slavery and the Old South; sectional conflict; successes and failures of Reconstruction; and late 19th-century society and culture.
Same as: AFRICAAM 50B, HISTORY 50B

CSRE 51A. Race in Science. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Fall quarter focuses on science. What is the science of race and racism? How does race affect scientific work? Weekly guest speakers will address such issues as the psychology and anthropology of race and racism; how race, language, and culture affect education; race in environmental science and environmental justice; the science of reducing police violence; and the role of race in genomic research. Talks will take a variety of forms, from panel discussions to interviews and lectures. Weekly assignments: read a related article and participate in an online discussion.
Same as: AFRICAAM 51A, CEE 151A, COMM 51A, HUMBIO 71A, STS 51A

CSRE 51B. Race in Technology. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Winter quarter focuses on technology. How do race and racism affect the design and social impact of technology, broadly defined? Can new or different technology help to reduce racial bias? Invited speakers will address the role of race in such issues as energy infrastructure, nuclear arms control, algorithmic accountability, machine learning, artificial intelligence, and synthetic biology. Talks will take a variety of forms, ranging from panel discussions to interviews and lectures. Weekly assignments: read a related article and participate in an online discussion.
Same as: AFRICAAM 51B, BIOE 91B, CEE 151B, COMM 51B, HUMBIO 71B, STS 51B

CSRE 51C. Race in Medicine. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Spring quarter focuses on medicine. How do race and racism affect medical research and medical care? What accounts for health disparities among racial groups? What are the history, ethics, legal, and social issues surrounding racialized medical experiments and treatments? Invited speakers will address these and other issues. Talks will take a variety of forms: conversations, interviews, panels, and others. Weekly assignments: read a related article and participate in an online discussion.
Same as: AFRICAAM 51C, BIOE 91C, CEE 151C, HUMBIO 71C, STS 51C

CSRE 51Q. Comparative Fictions of Ethnicity. 4 Units.
We may "know" "who" we "are," but we are, after all, social creatures. How does our sense of self interact with those around us? How does literature provide a particular medium for not only self expression, but also for meditations on what goes into the construction of "the Self"? After all, don't we tell stories in response to the question, "who are you"? Besides a list of nouns and names and attributes, we give our lives flesh and blood in telling how we process the world. Our course focuses in particular on this question--Does this universal issue ("who am I") become skewed differently when we add a qualifier before it, like "ethnic"? Note: To be eligible for WAYS credit, you must take course for a Letter Grade.
Same as: AMSTUD 51Q, COMPLIT 51Q

CSRE 52D. Asian American Human Development: Cultural Perspectives on Psychology, Education and Critical Issues. 3 Units.
In this course, we will examine the critical issues in Asian American growth and development with particular attention given to current theoretical and research perspectives within a diverse society. We will consider topics related to their cultural identity, cognitive, and socio-emotional development, engaging in the ethnic discourse on Confucian history and culture, Eastern and Western thought and learning, tiger parenting, gender roles, the model minority stereotype, acculturation and bicultural identity, and mental health. This course uniquely integrates the fields of history, education, psychology, human biology, and ethnic studies as we seek to understand the underlying processes of the Asian American person as an individual and as an effective member of the larger society.
Same as: ASNAMST 52D

CSRE 52H. I, Scientist: Diversity Improves the Scientific Practice. 1 Unit.
Disciplinary priorities, research agendas, and innovations are determined by the diversity of participants and problem-solving is more successful with a broad range of approaches. Using case studies in scientific research, we propose to use these insights to help our students learn why a diverse scientific community leads to better discovery and improves the relevance of science to society. Our premise is that a diverse set of perspectives will impact not only how we learn science, but how we do science.
Same as: BIO 52

CSRE 55M. MMUF Seminar. 1 Unit.
This seminar is designed to help MMUF honor students in the following ways: (1) developing and refining research paper topics, (2) learning about the various approaches to research and writing, and (3) connecting to Stanford University resources such as the library and faculty. May be repeat for credit.

CSRE 55N. Black Panther, Hamilton, Díaz, and Other Wondrous Lives. 3-5 Units.
This seminar concerns the design and analysis of imaginary (or constructed) worlds for narratives and media such as films, comics, and literary texts. The seminar's primary goal is to help participants understand the creation of better imaginary worlds - ultimately all our efforts should serve that higher purpose. Some of the things we will consider when taking on the analysis of a new world include: What are its primary features - spatial, cultural, biological, fantastic, cosmological? What is the world's ethos (the guiding beliefs or ideals that characterize the world)? What are the precise strategies that are used by the artist to convey the world to us and us to the world? How are our characters connected to the world? And how are we - the viewer or reader or player - connected to the world? Note: This course must be taken for a letter grade to be eligible for WAYS credit. In AY 2020-21, a `CR' grade will satisfy the WAYS requirement.
Same as: COMPLIT 55N

CSRE 61. Introduction to Dance Studies: Dancing Across Stages, Clubs, Screens, and Borders. 3-4 Units.
This introduction to dance studies course explores dance practice and performance as means for producing cultural meaning. Through theoretical and historical texts and viewing live and recorded dance, we will develop tools for analyzing dance and understanding its place in social, cultural, and political structures. This uses dance and choreography as a lens to more deeply understand a wide range of identity and cultural formations, such as gender, race, sexuality, (dis)ability, (trans)nationality, and empire. We will analyze dancing bodies that move across stages, dance clubs, film screens, and border zones. We will examine dance from diverse locales and time periods including ballet, modern and contemporary dance, contact improvisation, folkloric dance, burlesque, street dance, queer club dance, drag performance, music videos, TV dance competitions, and intermedia/new media performance. In addition to providing theoretical and methodological grounding in dance studies, this course develops performance analysis skills and hones the ability to write critically and skillfully about dance. No previous experience in dance is necessary to successfully complete the course.
Same as: DANCE 161D, FEMGEN 161D, TAPS 161D

CSRE 63N. The Feminist Critique: The History and Politics of Gender Equality. 3-4 Units.
This course explores the long history of ideas about gender and equality. Each week we read, dissect, compare, and critique a set of primary historical documents (political and literary) from around the world, moving from the 15th century to the present. We tease out changing arguments about education, the body, sexuality, violence, labor, politics, and the very meaning of gender, and we place feminist critics within national and global political contexts.
Same as: AMSTUD 63N, FEMGEN 63N, HISTORY 63N

CSRE 66. Spectacular Trials: Sex, Race and Violence in Modern American Culture. 5 Units.
This course will use the phenomenon of the spectacular trial as a framework for exploring the intersections of sex, race, and violence in the formation of modern American culture. Beginning in the late nineteenth century and continuing through the 1990s, we will focus our inquiry on a number of notorious cases, some associated with familiar names¿the ¿Scottsboro Boys,¿ Emmett Till, O.J. Simpson¿others involving once-infamous actors¿like Joan Little and Inez Garcia¿whose ordeals have receded into historical memory, considering a range of questions arising from this thematic nexus. For instance, in what ways are sexual transgressions racialized and gendered? What are the practical and theoretical ramifications of the seemingly inextricable conjunction of sex and violence in legal and popular discourse? And what insights might such spectacles afford when broached as an arena in which sexual meanings, identities, and practices are refracted and ultimately constructed? We will also examine the role of the pertinent professions in the evolution of these events, in particular how the interplay of law, medicine, psychiatry, and forensic science helped define the shifting boundaries of legality, and how print, radio, and television journalism operated not only in sensationalizing, but also in reflecting, modeling, and shaping prevailing attitudes and behaviors. Our study of this vital facet of our ¿society of the spectacle¿ will draw on a series of compelling secondary readings complemented by a diverse array of primary sources¿from contemporaneous pamphlets and newspaper accounts to photographs, letters, trial testimony, and psychological commentary¿that will enable class members to evaluate the strengths and weaknesses of different textual genres, experiment with alternative methods of fashioning historical interpretations, and contemplate the ways history might be employed to illuminate the persistent problems of racial bias, reflexive sexualization, and the packaging of trials as mass entertainment in the present day.
Same as: AMSTUD 106

CSRE 68. American Prophet: The Inner Life and Global Vision of Martin Luther King, Jr.. 3-5 Units.
Martin Luther King, Jr., was the 20th-century's best-known African-American leader, but the religious roots of his charismatic leadership are far less widely known. The documents assembled and published by Stanford's King Research and Education Institute provide the source materials for this exploration of King's swift rise to international prominence as an articulate advocate of global peace and justice.
Same as: AFRICAAM 68D, AMSTUD 168D, HISTORY 68D, HISTORY 168D

CSRE 74. History of South Africa. 3 Units.
(Same as HISTORY 147. History majors and others taking 5 units, register for 147.) Introduction, focusing particularly on the modern era. Topics include: precolonial African societies; European colonization; the impact of the mineral revolution; the evolution of African and Afrikaner nationalism; the rise and fall of the apartheid state; the politics of post-apartheid transformation; and the AIDS crisis.
Same as: AFRICAAM 47, HISTORY 47

CSRE 78. Art + Community: Division, Resilience & Reconciliation. 1-5 Unit.
Violence and trauma isolates and segregates us. Part of the healing process must be about coming back into community. Freedom is meaningful only insofar as it lifts all, especially those who have been done the most harm. In times of violence and polarization, art can heal and brings people together. In this course, we will explore how we make and sustain community, especially in the face of threats from within and without. We will do this especially through examining how artists and culture workers of color develop and advance practices that build mutuality, criticality, renewal, trust, and joy in the face of ongoing racial injustice and cultural inequity.
Same as: AFRICAAM 78

CSRE 81. Race and the Law: Historical and Contemporary Perspectives. 5 Units.
When Obama began his presidential tenure in 2009, many commentators declared the U.S. a truly colorblind society, a place where race (read: non-whiteness) no longer served as an impediment to individual and group aspirations, indeed had become so insignificant as to be practically invisible. In late fall 2014,in the aftermath of the police-involved killings of Eric Garner, Michael Brown, and Tamir Rice, society is confronted with a radically different social and political landscape. Yet events like these, while doubtless underscoring the fallaciousness of the equalitarian narrative, are regrettably commonplace. What, if anything, occurred during the intervening years that might explain the apparent displacement of hope by despair? With the advent of the Black Lives Matte movement, the persistence of bias and discrimination against people of color, particularly at the interface of African American males and law enforcement authorities, has attained a place of prominence on the public agenda, presenting a significant opportunity for citizen-activists, legislators, and policymakers to combine forces to effectuate meaningful change. To take advantage of this moment, it is imperative to understand the origins and development of the entrenched structural inequalities manifest in contemporary America. What role have law and legal institutions played in hindering and facilitating the promise of equality for all citizens? How far are we from realizing that vaunted democratic aspiration? This course offers participants an opportunity to systematically engage with recent events in Baltimore, Ferguson, and elsewhere in an historically informed manner that foregrounds questions of race, citizenship, and law. Against the backdrop of the achievements of the Civil Rights Movement, it considers such topics as the rise of urban ghettos and the use of segregationist practices like redlining and steering in helping to sustain them; resegregation in the late 20th-early 21st century; differential arrest and sentencing patterns; and, crucially, the extraordinary growth of the American carceral state.
Same as: AMSTUD 108

CSRE 82G. Making Palestine Visible. 3-5 Units.
Israel-Palestine is one of the most difficult subjects to talk about, in large part because we in the United States do not have much exposure to Palestinian history, culture, and politics in their own terms. This course aims to humanize Palestinians and asks why Palestinian claims to rights are illegible for much of the American public. We begin to answer this question by examining a broad sampling of history, structures of power and law, culture, and contemporary political issues.
Same as: HISTORY 82G, HISTORY 182G

CSRE 85B. Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV. 3 Units.
(HISTORY 85B is 3 units; HISTORY 185B is 5 units.) Who are American Jews as depicted in popular media-- film, television, etc.-- since the Second World War? How are their religion, politics, mores, and practices represented and what ways, if at all, do such portraits reflect historical trends among Jews and society in general? What can be learned from film or tv about Jewish identity, notions of Jewish power and powerlessness, communal cohesiveness and assimilation, sexuality and the wages of intermarriage or race?.
Same as: HISTORY 85B, JEWISHST 85B, REES 85B

CSRE 88. Who We Be: Art, Images & Race in Post-Civil Rights America. 2-4 Units.
Over the past half-century, the U.S. has seen profound demographic and cultural change. But racial progress still seems distant. After the faith of the civil rights movement, the fervor of multiculturalism, and even the brief euphoria of a post-racial moment, we remain a nation divided. Resegregation is the norm. The culture wars flare as hot as ever.nnThis course takes a close examination of visual culture¿particularly images, works, and ideas in the contemporary arts, justice movements, and popular culture¿to discuss North American demographic and cultural change and cultural politics over the past half-century. From the Watts uprising to the #BlackLivesMatter movement, from multiculturalism through hip-hop to post-identity art, we will deeply explore the questions: How do Americans see race now? Do we see each other any more clearly than before?.
Same as: AFRICAAM 188, ARTHIST 154B

CSRE 89. Race, Ethnicity, and Electoral Politics. 4 Units.
This course explores the role that racial and ethnic politics play in American political campaigns and elections. This will include readings that explore the power of ethnoracial voting blocs (e.g. the Black vote and the Latino vote), as well as the challenges and advantages of candidates that are people of color. We will discuss how changing demographics are changing the political landscape, and how candidates and political parties are responding to those changes. This will include, of course, significant attention to ongoing battles at the national (e.g. Trump v. Clinton), state (e.g. Kamala Harris v. Loretta Sanchez), and local levels, most often in California but in other geographic areas as well. We will also explore historic candidacies and elections (e.g. Jesse Jackson) and political parties (e.g. La Raza Unida party) that help put the 2016 races into perspective.
Same as: AMSTUD 89

CSRE 91. Exploring American Religious History. 4 Units.
This course will trace how contemporary beliefs and practices connect to historical trends in the American religious landscape.
Same as: AMSTUD 91, HISTORY 260K, RELIGST 91

CSRE 91D. Asian American Autobiography/W. 3-5 Units.
This is a dual purpose class: a writing workshop in which you will generate autobiographical vignettes/essays as well as a reading seminar featuring prose from a wide range of contemporary Asian-American writers. Some of the many questions we will consider are: What exactly is Asian-American memoir? Are there salient subjects and tropes that define the literature? And in what ways do our writerly interactions both resistant and assimilative with a predominantly non-Asian context in turn recreate that context? We'll be working/experimenting with various modes of telling, including personal essay, the epistolary form, verse, and even fictional scenarios. First priority to undergrads. Students must attend the first class meeting to retain their roster spot.
Same as: AMSTUD 91A, ASNAMST 91A, ENGLISH 91A

CSRE 92D. Arab and Arab-American Poetry. 5 Units.
In this introductory course, students will write and read widely, exploring various aspects of poetic craft, including imagery, metaphor, line, stanza, music, rhythm, diction, and tone. The course will focus primarily on the rich and varied tradition of Arab and Arab-American poets, with a special emphasis on contemporary poets exploring the intersections of cultural identity, nationhood, race, gender, and sexuality. The first half of the course will consist of close reading a selection of poems, while the second half of the course will consist of workshopping student writing. Through peer critique, students respond closely to the work of fellow writers in a supportive workshop. Writers at all levels of experience and comfort with poetry are welcome.nNOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.
Same as: ENGLISH 92AP

CSRE 94. Topics in Writing and Rhetoric: Empathy, Ethics, and Compassion Meditation. 4 Units.
Does not fulfill NSC requirement. In this course, we'll extend this discussion by expanding our thinking about rhetoric as a means of persuasion to consider its relation to empathy-as a mode of listening to and understanding audiences and communities we identify with as well as those whose beliefs and actions can be lethal. We'll also practice compassion medication and empathetic rhetoric to see how these ethical stances affect us individually and investigate the ways they may and may not be scaled to address social justice more broadly. Finally, with the course readings and discussions in mind, you will explore a social justice issue and create an essay, a workshop, campaign or movement strategy, podcast, vlog, infographic, Facebook group, syllabus, etc. to help move us closer to positive change. Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For topics, see https://undergrad.stanford.edu/programs/pwr/courses/advanced-pwr-courses.
Same as: PWR 194DH

CSRE 95. Liberation Through Land: Organic Gardening and Racial Justice. 2 Units.
Through field trips, practical work and readings, this course provides students with the tools to begin cultivating a relationship to land that focuses on direct engagement with sustainable gardening, from seed to harvest. The course will take place on the O'Donohue Family Stanford Educational Farm, where students will be given the opportunity to learn how to sow seeds, prepare garden beds, amend soils, build compost, and take care of plants. The history of forced farm labor in the U.S., from slavery to low-wage migrant labor, means that many people of color encounter agricultural spaces as sites of trauma and oppression. In this course we will explore the potential for revisiting a narrative of peaceful relation to land and crop that existed long before the trauma occurred, acknowledging the beautiful history of POC coexistence with land. Since this is a practical course, there will be a strong emphasis on participation. Application available at https://goo.gl/forms/cbYX3gSGdrHgHBJH3; deadline to apply is September 18, 2018, at midnight. The course is co-sponsored by the Institute for Diversity in the Arts (IDA) and the Earth Systems Program.
Same as: AFRICAAM 95, EARTHSYS 95

CSRE 95I. Space, Public Discourse and Revolutionary Practices. 3-4 Units.
This course examines the mediums of public art that have been voices of social change, protestnand expressions of community desire. It will offer a unique glimpse into Iran¿sncontemporary art and visual culture through the investigation of public art practices such asngraffiti and street art, as well as older traditions of Naghali and Iranian Coffeehouse Painting.nnBeginning Iranian case studies will be expanded in comparison with global examples that spannprojects that include Insite (San Diego/Tijuana), Project Row Houses (Houston, TX) the DMZnProject (Korea), Munster Skulpture Projects (Germany), among others. Students will alsonexamine the infrastructural conditions of public art, such as civic, public, and private funding,nrelationships with local communities, and the life of these projects as they move in and out ofnthe artworld. This encompassing view anchors a legacy of Iranian cultural contributions in largerntrajectories of art history, contemporary art, and community arts practice. Guest artists,ncurators, and researchers with site visits included. Students will propose either new public artnproposals, exhibitions, or research to provoke their own ideas while engaging the ever changingnstate of public discourse in these case studies.
Same as: ARTHIST 118A, GLOBAL 145

CSRE 100. Grassroots Community Organizing: Building Power for Collective Liberation. 3-5 Units.
Taught by long-time community organizer, Beatriz Herrera. This course explores the theory, practice and history of grassroots community organizing as a method for developing community power to promoting social justice. We will develop skills for 1-on-1 relational meetings, media messaging, fundraising strategies, power structure analysis, and strategies organizing across racial/ethnic difference. And we will contextualize these through the theories and practices developed in the racial, gender, queer, environmental, immigrant, housing and economic justice movements to better understand how organizing has been used to engage communities in the process of social change. Through this class, students will gain the hard skills and analytical tools needed to successfully organize campaigns and movements that work to address complex systems of power, privilege, and oppression. As a Community-Engaged Learning course, students will work directly with community organizations on campaigns to address community needs, deepen their knowledge of theory and history through hands-on practice, and develop a critical analysis of inequality at the structural and interpersonal levels. Placements with community organizations are limited. Enrollment will be determined on the first day through a simple application process. Students will have the option to continue the course for a second quarter in the Winter, where they will execute a campaign either on campus or in collaboration with their community partner.
Same as: AFRICAAM 100, FEMGEN 100X, URBANST 108

CSRE 100B. Grassroots Community Organizing Field Work. 1-5 Unit.
Continuation of projects and community engagement from CSRE 100. Prerequisite: completion of CSRE 100.

CSRE 100P. Student and Community Organizing for Social Change. 3 Units.
CSRE 100P is a series of community organizing trainings focused on how to use grassroots techniques as a means of political participation. The course is run in partnership with Stanford in Government (SIG), Associated Students of Stanford University (ASSU), and different campus groups. Students will have the opportunity to hear from top experts in grassroots and community organizing. They will also have the chance to engage directly with the speakers on how their experiences have shaped their approach to and understanding political organizing in the current political environment. This course will meet over six sessions, two Friday sessions and four Saturday sessions. Dates of Saturday Trainings are April 13, May 4, May 11and June 1. Friday sessions are April 5th and June 7th (12:00pm-2:00pm).

CSRE 101P. Student and Community Organizing for Social Change. 3 Units.
This course explores student and community organizing history, theories of practice, as well as models of social change through a mix of guest speakers from social justice groups, theoretical readings and practicum-based work. The major component of this course is participating in an intensive three-day skills-based training that will teach students how to be more strategic in their fight for justice on campus and in the community. The training consists of a series of presentations, exercises, and discussions that teach sets of skills and concepts related to student and community organizing. The course is designed for students with interests in student and community organizing, as well as those considering careers and leadership opportunities in a variety of nonprofit and social justice fields. This is designated as a one-unit course, with a community engaged learning option for two additional units. The dates for the intensive skills-based training will be May 4th-6th. The training is required.

CSRE 102A. Art and Social Criticism. 5 Units.
Visual artists have long been in the forefront of social criticism in America. Since the 1960s, various visual strategies have helped emergent progressive political movements articulate and represent complex social issues. Which artists and particular art works/projects have become key anchors for discourses on racism, sexism, economic and social inequality, immigrant rights and climate change? We will learn about a spectrum of political art designed to raise social awareness, spark social change and rouse protest. The Art Workers Coalition's agit-prop opposing the Vietnam War and ACT-UP's emblematic signs and symbols during the AIDS/HIV crisis of the 1980s galvanized a generation into action. Works such as Judy Chicago's The Dinner Party (1979), Fred Wilson's Mining the Museum (1992), and Glenn Ligon's paintings appropriating fragments from African-American literature all raised awareness by excavating historical evidence of the long legacy resisting marginalization. For three decades feminist artists Adrian Piper, Barbara Kruger and the Guerilla Girls have combined institutional critique and direct address into a provocative form of criticality. Recent art for social justice is reaching ever broadening publics by redrawing the role of artist and audience exemplified by the democratization of poster making and internet campaigns of Occupy and the Movement for Black Lives. We will also consider the collective aesthetic activisms in the Post-Occupy era including Global Ultra Luxury Faction, Climate Justice art projects, and the visual culture of Trump era mass protests. Why are each of these examples successful as influential and enduring markers of social criticism? What have these socially responsive practices contributed to our understanding of American history?.
Same as: AFRICAAM 102B, AMSTUD 102, ARTHIST 162B, FEMGEN 102

CSRE 103. Intergroup Communication. 3 Units.
In an increasingly globalized world, our ability to connect and engage with new audiences is directly correlated with our competence and success in any field How do our intergroup perceptions and reactions influence our skills as communicators? This course uses experiential activities and discussion sections to explore the role of social identity in effective communication. The objective of the course is to examine and challenge our explicit and implicit assumptions about various groups to enhance our ability to successfully communicate across the complex web of identity. NOTE: Please check the Notes section under each quarter to view the current enrollment survey.
Same as: PSYCH 103

CSRE 103B. Race, Ethnicity, and Linguistic Diversity in Classrooms: Sociocultural Theory and Practices. 3-5 Units.
Focus is on classrooms with students from diverse racial, ethnic and linguistic backgrounds. Studies, writing, and media representation of urban and diverse school settings; implications for transforming teaching and learning. Issues related to developing teachers with attitudes, dispositions, and skills necessary to teach diverse students.
Same as: AFRICAAM 106, EDUC 103B, EDUC 337

CSRE 103F. Intergroup Communication Facilitation. 2 Units.
Are you interested in strengthening your skills as a facilitator or section leader? Interested in opening up dialogue around identity within your community or among friends? This course will provide you with facilitation tools and practice, but an equal part of the heart of this class will come from your own reflection on the particular strengths and challenges you may bring to facilitation and how to craft a personal style that works best for you. This reflection process is ongoing, for the instructors as well as the students.
Same as: PSYCH 103F

CSRE 103S. Gender in Native American Societies. 5 Units.
Seminar examines the impact of colonialism on gender roles & gender relations in American Indian communities beginning with the 17th century to the present. Topics include demographic changes; social, political & economic transformations associated with biological & spiritual assaults; the dynamism & diversity of native societies. Sources include history, ethnography, biography, autobiography, the novel & film.
Same as: FEMGEN 103S, NATIVEAM 103S

CSRE 105. Religion and War in America. 4 Units.
Scholars have devoted much attention to wars in American history, but have not agreed as to whether religion was a major cause or simply a cover for political, economic, and other motives. We will compare interpretations that leave religion out, with those that take it into account. We will also look at the impact of war on the religious lives of ordinary Americans. We will examine both secondary as well as primary sources, beginning with King Philip's War in the 17th century, and ending with the "War on Terror" in the present day.
Same as: AMSTUD 105R, HISTORY 254D, HISTORY 354D, RELIGST 105

CSRE 105C. Human Trafficking: Historical, Legal, and Medical Perspectives. 5 Units.
(Same as HISTORY 5C. History majors and others taking 5 units, enroll in 105C.) Interdisciplinary approach to understanding the extent and complexity of the global phenomenon of human trafficking, especially for forced prostitution, labor exploitation, and organ trade, focusing on human rights violations and remedies. Provides a historical context for the development and spread of human trafficking. Analyzes the current international and domestic legal and policy frameworks to combat trafficking and evaluates their practical implementation. Examines the medical, psychological, and public health issues involved. Uses problem-based learning. Required weekly 50-min. discussion section, time TBD. Students interested in service learning should consult with the instructor and will enroll in an additional course.
Same as: FEMGEN 105C, HISTORY 105C, HUMRTS 112, INTNLREL 105C

CSRE 106A. A.I.-Activism-Art. 3-5 Units.
Lecture/studio course exploring arts and humanities scholarship and practice engaging with, and generated by, emerging emerging and exponential technologies. Our course will explore intersections of art and artificial intelligence with an emphasis on social impact and racial justice. Open to all undergraduates.
Same as: ARTHIST 168A, ENGLISH 106A

CSRE 107. The Black Mediterranean: Greece, Rome and Antiquity. 4-5 Units.
Explore problems of race and ethnicity as viable criteria in studying ancient societies and consider the question, What is the Mediterranean?, in relation to premodern evidence. Investigate the role of blackness as a marker of ethnicity; the demography of slavery and its roles in forming social identities; and environmental determinism as a factor in ethnic and racial thinking. Consider Greek and Roman perspectives and behavior, and their impact on later theories of race and ethnicity as well as the Mediterranean as a whole.
Same as: AFRICAAM 107C

CSRE 108. Introduction to Feminist, Gender, and Sexuality Studies. 4-5 Units.
Introduction to interdisciplinary approaches to gender, sexuality, queer, trans and feminist studies. Topics include the emergence of sexuality studies in the academy, social justice and new subjects, science and technology, art and activism, history, film and memory, the documentation and performance of difference, and relevant socio-economic and political formations such as work and the family. Students learn to think critically about race, gender, and sexuality from local and global perspectives.
Same as: AMSTUD 107, FEMGEN 101, TAPS 108

CSRE 108S. American Indian Religious Freedom. 3 Units.
The persistence of tribal spiritual beliefs and practices in light of legal challenges (sacred geography and the 1st Amendment), treatment of the dead and sacred objects (repatriation), consumerism (New Age commodification), and cultural intellectual property protection (trademark, copyright, patent law). Focus is on contemporary issues and cases, analyzed through interdisciplinary scholarship and practical strategies to protect the fundamental liberty of American Indian religious freedom.
Same as: NATIVEAM 108S

CSRE 108X. The Changing Face of America. 4-5 Units.
This upper-division seminar will explore some of the most significant issues related to educational access and equity facing American society in the 21st century. Designed for students with significant leadership potential who have already studied these topics in lecture format, this seminar will focus on in-depth analysis of the impact of race on educational access and a variety of educational reform initiatives. Please submit a brief statement with "EDUC 108" in the subject line that details your reasons for applying and what leadership skills, experience, and perspectives you would contribute to the course to: Ginny Smith (gsmith@law.stanford.edu) and Wilson Tong (wtong@commonsense.org). The deadline is rolling.
Same as: EDUC 108, POLISCI 226A

CSRE 109A. Federal Indian Law. 3 Units.
Cases, legislation, comparative justice models, and historical and cultural material. The interlocking relationships of tribal, federal, and state governments. Emphasis is on economic development, religious freedom, and environmental justice issues in Indian country.
Same as: NATIVEAM 109A

CSRE 109B. Native Nation Building. 3 Units.
The history of competing tribal and Western economic models, and the legal, political, social, and cultural implications for tribal economic development. Case studies include mineral resource extraction, gaming, and cultural tourism. 21st-century strategies for sustainable economic development and protection of political and cultural sovereignty.
Same as: NATIVEAM 109B

CSRE 110P. Mindful Leadership. 1-2 Unit.
An exploration of one's inner life, ways of being in the world, and their expression in how one leads. Addresses the paradoxical task of merely paying attention to enhance our awareness of the socially constructed nature of reality and to feel comfortable to act with simplicity, empathy, and conviction. Through self-reflection, embodied practice, and creative expression through crossing borders students examine us and them. Mindful inquiry in expressed storytelling, collective knowing, appreciative intelligence, and is both scholarly and experiential.
Same as: LEAD 110

CSRE 112X. Urban Education. 3-5 Units.
(Graduate students register for EDUC 212 or SOC 229X). Combination of social science and historical perspectives trace the major developments, contexts, tensions, challenges, and policy issues of urban education.
Same as: AFRICAAM 112, EDUC 112, EDUC 212, SOC 129X, SOC 229X

CSRE 113V. Freedom in Chains: Black Slavery in the Atlantic, 1400s-1800s. 3-5 Units.
This course will focus on the history of slavery in the British, French, Spanish, Portuguese and Dutch Atlantic world(s), from the late 1400s to the 1800s. Its main focus will be on the experiences of enslaved Africans and their descendants. Between the sixteenth and nineteenth centuries, the Europeans forcibly embarked over 10 million Africans to the Americas. Drawing on methodologies used by historians, archaeologists and anthropologists, the course will reconstruct the daily lives and the socio-economic, cultural and political histories of these captives. We will seek to hear their voices by investigating a variety of historical testimonies and recent scholarship. The course will examine slavery in the context of broader trends in Atlantic World studies, a field that has grown considerably in recent years, providing new ways of understanding historical developments across national boundaries. We will seek to identify commonalities and differences across time periods and regions and the reasons for those differences. Covered topics will include slave ship voyages, labor, agency, the creation of new identities (creolization), religion, race, gender, resistance, legacies, and memory.
Same as: AFRICAAM 113V, AFRICAST 113V, HISTORY 205D

CSRE 114C. America Never was America to me: Race and Equity in US Public Schools. 1 Unit.
This cross-disciplinary course will use the 10-part docu-series "America to Me" to discuss the complexities of race and equity in US schools. The series follows a year in the life of a racially diverse, well-resourced high school outside Chicago, providing an in-depth look at the effects of race, equity, culture and privilege on educational opportunities, and offers insights into the teenage search for personal identity in today's climate. Two of the people featured in the series will be a part of the class, and after screening each episode, a Stanford professor will give a short talk inspired by the content of that episode. The talks will span several disciplines and theoretical perspectives, including Critical Race Theory, History, Psychology, Youth Development, Film Studies, Linguistics, and Teacher Education. Following each talk, students will engage in critical discussion around race and equity in education. Episode 10 will air during Final Exam week, but there will be no final exam.
Same as: AFRICAAM 114C, EDUC 114C, EDUC 314C

CSRE 116. Decolonizing the Indigenous Classroom. 3-5 Units.
Using Indigenous and decolonizing perspectives on education, this interdisciplinary course will examine interaction and language in cross-cultural educational situations, including language, literacy and interethnic communication as they relate to Indigenous American classrooms. Special attention will be paid to implications of social, cultural and linguistic diversity for educational practice, along with various strategies for bridging intercultural differences between schools and Native communities.
Same as: CSRE 302, EDUC 186, EDUC 286, NATIVEAM 116

CSRE 117. Expanding Engineering Limits: Culture, Diversity, and Equity. 3 Units.
This course investigates how culture and diversity shape who becomes an engineer, what problems get solved, and the quality of designs, technology, and products. As a course community, we consider how cultural beliefs about race, ethnicity, gender, sexuality, abilities, socioeconomic status, and other intersectional aspects of identity interact with beliefs about engineering, influence diversity in the field, and affect equity in engineering education and practice. We also explore how engineering cultures and environments respond to and change with individual and institutional agency. The course involves weekly presentations by scholars and engineers, readings, short writing assignments, small-group discussion, and hands-on, student-driven projects. Students can enroll in the course for 1 unit (lectures only), or 3 units (lectures+discussion+project). For 1 unit, students should sign up for Section 1 and Credit/No Credit grading, and for 3 units students should sign up for Section 2 and either the C/NC or Grade option.
Same as: CSRE 217, ENGR 117, ENGR 217, FEMGEN 117, FEMGEN 217

CSRE 117D. Race, Gender, and Sexuality in Contemporary American Film. 4-5 Units.
This course introduces students to the theoretical and analytical frameworks necessary to critically understand constructions of race, gender, and sexuality in contemporary American film. Through a sustained engagement with a range of independent and Hollywood films produced since 2000, students analyze the ways that cinematic representations have both reflected and constructed dominant notions of race, gender, and sexuality in the United States. Utilizing an intersectional framework that sees race, gender, and sexuality as always defined by one another, the course examines the ways that dominant notions of difference have been maintained and contested through film in the United States. Readings include work by Michael Omi & Howard Winant, Patricia Hill Collins, Jodi Melamed, Stuart Hall, Lisa Duggan and bell hooks. Films to be discussed include Moonlight, Mosquita y Mari, Kumu Hina, Hustlers, and Crazy Rich Asians. To enroll in the course, please fill out the following form: https://forms.gle/RKqURW6niyB1LRyEA.
Same as: AFRICAAM 117J, AMSTUD 117, ASNAMST 117D, FEMGEN 117F

CSRE 117Q. Queer Arts: Remembering and Imagining Social Change. 4-5 Units.
This interdisciplinary fine arts course is designed to examine the nature of artistic imagination, sources of creativity and the way this work helps shape social change. We will consider the relationship among muses, mentors and models for queer artists engaged in such fields as visual art, music, theatre, film, creative writing and dance. Exploring various cultures, lands and times, we will study the relationship between memory and vision in serious art. We will ask questions about the role of the artist in the academy and the broader social responsibility of the artist. We will locate some of the similarities and differences among artists, engage with different disciplines, and discover what we can learn from one another. This seminar requires the strong voices of all participants. To encourage students to take their ideas and questions beyond the classroom, we will be attending art events (performances, exhibits, readings) individually and in groups.nnThe learning goals include a serious exploration of individual students¿ creativity, a more nuanced appreciation of diverse arts and a stronger understanding of the multifaceted nature of gender, race and class. Students will develop their abilities to write well-argued papers. They will stretch their imaginations in the written and oral assignments. And they will grow more confident as public speakers and seminar participants.
Same as: FEMGEN 117Q

CSRE 117S. History of Native Americans in California. 3-5 Units.
This course examines the political histories and cultural themes of Native Americans in California, 1700s1950s. Throughout the semester we will focus on: demographics, diversity of tribal cultures; regional environmental backgrounds; the Spanish Era and missionization; the Mexican Era and secularization; relations with the United States Government and the State of California, including the gold rush period, statehood, unratified treaties, origin of reservations/rancherias, and other federal policies, e.g., Allotment Act, Indian Reorganization Act and termination.
Same as: HISTORY 250A, NATIVEAM 117S

CSRE 118D. Musics and Appropriation Throughout the World. 3 Units.
This course critically examines musical practices and appropriation through the amplification of intersectionality. We consider musics globally through recourse to ethnomusicological literature and critical race theories. Our approach begins from an understanding that the social and political contexts where musics are created, disseminated, and consumed inform disparate interpretations and meanings of music, as well as its sounds. Our goal is to shape our ears to hear the effects of slavery, colonialism, capitalism, nationalism, class, gender difference, militarism, and activism. We interrogate the process of appropriating musics throughout the world by making the power structures that shape privileges and exclusions audible.
Same as: AFRICAAM 218, MUSIC 118

CSRE 118E. Heritage, Environment, and Sovereignty in Hawaii. 4 Units.
This course explores the cultural, political economic, and environmental status of contemporary Hawaiians. What sorts of sustainable economic and environmental systems did Hawaiians use in prehistory? How was colonization of the Hawaiian Islands informed and shaped by American economic interests and the nascent imperialism of the early 20th centrury? How was sovereignty and Native Hawaiian identity been shaped by these forces? How has tourism and the leisure industry affected the natural environment? This course uses archaeological methods, ethnohistorical sources, and historical analysis in an exploration of contemporary Hawaiian social economic and political life.
Same as: EARTHSYS 118, NATIVEAM 118

CSRE 118S. Critical Family History: Narratives of Identity and Difference. 4 Units.
This course examines family history as a site for understanding identity, power, and social difference in American society. Focusing in particular on the intersections of race, gender, and sexuality, we approach the family as an archive through which we might write alternative histories to the ones that dominate the national historical consciousness. To do this, we examine memoirs, oral histories, and first-person documentaries as historical texts that can be used to foreground marginalized historical voices. Students will then be asked to apply course readings and theories to their own family histories as a means of better understanding issues of identity and difference.
Same as: AFRICAAM 118X, AMSTUD 118, ASNAMST 118S

CSRE 119. Novel Perspectives on South Africa. 2-3 Units.
21st-century South Africa continues its literary effervescence. In this class we'll sample some recent novels and related writings to tease out the issues shaping the country (and to some degree the continent) at present. Is `South African literature' a meaningful category today? What are the most significant features we can identify in new writings and how do they relate to contemporary social dynamics? The course will appeal to anyone interested in present-day Cape Town or Johannesburg, including students who have spent a term in BOSP-Cape Town or plan to do so in future. Both undergraduate and graduate students are welcome. 2-3 units. Course may be repeated for credit.nn nnAll students will write short analyses from the prescribed texts. Students taking the course for three units will write an extended essay on a topic agreed with the instructor.
Same as: AFRICAAM 119, AFRICAAM 219, AFRICAST 119, AFRICAST 219

CSRE 120P. Poverty and Inequality in Israel and the US: A Comparative Approach. 3 Units.
Poverty rates in Israel are high and have been relatively stable in recent decades, with about one fifth of all households (and a third of all children) living below the poverty line. In this class we will learn about poverty and inequality in Israel and we will compare with the US and other countries.nnIn the first few weeks of this class we will review basic theories of poverty and inequality and we will discuss how theories regarding poverty have changed over the years, from the "culture of poverty" to theories of welfare state regimes. We will also learn about various ways of measuring poverty, material hardship, and inequality, and we will review the methods and data used.nnIn the remaining weeks of the class we will turn to substantive topics such as gender, immigration, ethnicity/nationality, welfare policy, age, and health. Within each topic we will survey the debates within contemporary scholarship and we will compare Israel and the US. Examination of these issues will introduce students to some of the challenges that Israeli society faces today.
Same as: JEWISHST 131VP, SOC 120VP

CSRE 121. Discourse of the Colonized: Native American and Indigenous Voices. 5 Units.
Using the assigned texts covering the protest movements in the 20th century to the texts written from the perspective of the colonized at the end of the 20th century, students will engage in discussions on decolonization. Students will be encouraged to critically explore issues of interest through two short papers and a 15-20 minute presentation on the topic of interest relating to decolonization for Native Americans in one longer paper. Approaching research from an Indigenous perspective will be encouraged throughout.
Same as: NATIVEAM 121

CSRE 121L. Racial-Ethnic Politics in US. 5 Units.
Why is contemporary American politics so sharply divided along racial and party lines? Are undocumented immigrants really more likely to commit crimes than U.S. citizens? What makes a political ad "racist?" The U.S. population will be majority-minority by 2050; what does this mean for future electoral outcomes? We will tackle such questions in this course, which examines various issues surrounding the development of political solidarity within racial groups; the politics of immigration, acculturation, and identification; and the influence of race on public opinion, political behavior, the media, and in the criminal justice system. Prior coursework in Economics or Statistics strongly recommended.
Same as: POLISCI 121L, PUBLPOL 121L

CSRE 122B. Reality Television and All Things Basic. 3-5 Units.
In ¿Visual Pleasure and Narrative Cinema¿ (1975), feminist film theorist Laura Mulvey argues that ¿the cinema poses questions of the ways the unconscious (formed by the dominant order) structures ways of seeing and pleasure in looking,¿ (804-805), conceptualizing what has become ubiquitously known as ¿the male gaze.¿ Mulvey's theory of the male gaze in film centers on two processes, the pleasures produced through objectification and those produced through identification. Feminists of color who study the politics of popular media have critiqued as well as expanded on Mulvey's notion of the male gaze, including bell hook's articulation of an oppositional gaze¿a critical gaze¿a possible site of resistance for colonized black people.nnWithin the last two decades, reality television has become a staple of popular culture in the U.S., a key component of the representational politics of audiovisual media. Thinking the processes of objectification and identification more expansively and privileging bell hook¿s formulation of critical spectatorship, what types of pleasures are produced through the addition of the category ¿reality? ¿ How does this relate to our understandings of racialized gender in the U.S.? Is reality television ¿this generation¿s¿ soap opera, a feminized genre of (melo)drama? And does this form of reality simply reproduce the heteronormative order, or can this form of media ever subvert normative prescriptions regarding gender, age, race, class, and sex(uality)?.
Same as: FEMGEN 122

CSRE 122E. Art in the Streets: Identity in Murals, Site-specific works, and Interventions in Public Spaces. 4 Units.
This class will introduce students to both historical and contemporary public art practices and the expression of race and identity through murals, graffiti, site-specific works and performative interventions in public spaces. Involving lectures, guest speakers, field trips, and hands-on art practice, students will be expected to produce both an individual and group piece as a final project.
Same as: AFRICAAM 122E

CSRE 122F. Histories of Race in Science and Medicine at Home and Abroad. 4 Units.
This course has as its primary objective, the historical study of the intersection of race, science and medicine in the US and abroad with an emphasis on Africa and its Diasporas in the US. By drawing on literature from history, science and technology studies, sociology and other related disciplines, the course will consider the sociological and cultural concept of race and its usefulness as an analytical category. The course will explore how the study of race became its own ¿science¿ in the late-Enlightenment era, the history of eugenics--a science of race aimed at the ostensible betterment of the overall population through the systematic killing or "letting die" of humanity¿s "undesirable" parts, discuss how the ideology of pseudo-scientific racism underpinned the health policies of the French and British Empires in Africa, explore the fraught relationship between race and medicine in the US, discuss how biological notions of race have quietly slipped back into scientific projects in the 21st century and explore how various social justice advocates and scholars have resisted the scientific racisms of the present and future and/or proposed new paths towards a more equitable and accessible science.
Same as: AFRICAAM 122F, AFRICAST 122F, HISTORY 248D

CSRE 122S. Social Class, Race, Ethnicity, and Health. 4 Units.
Examines health disparities in the U.S., looking at the patterns of those disparities and their root causes. Explores the intersection of lower social class and ethnic minority status in affecting health status and access to health care. Compares social and biological conceptualizations of race and ethnicity. Upper division course with preference given to upperclassmen. Prerequisite: Human Biology Core or Biology Foundations.
Same as: AFRICAAM 132, HUMBIO 122S

CSRE 123A. American Indians and the Cinema. 5 Units.
Hollywood and the film industry have had a major influence on American society for nearly a century. Initially designed to provide entertainment, the cinema broadened its impact by creating images perceived as real and essentialist. Hollywood's Indians have been the main source of information about who American Indians are and Hollywood has helped shape inaccurate and stereotypical perceptions that continue to exist today. This course looks chronologically at cinematic interpretations and critically examines accurate portrayals of American Indians and of American history.
Same as: NATIVEAM 123A

CSRE 123C. "Third World Problems?" Environmental Anthropology and the Intersectionality of Justice. 3-4 Units.
As the Flint, Michigan water situation began to attract attention and condemnation, Michigan State Representative, Sheldon Neeley, describing the troops on the ground and the Red Cross distributing water bottles, said that the Governor had "turned an American city into a Third World country [...] it's terrible what he's done [...] no fresh water. Then, at a Congressional hearing, the Chairman of the House Oversight & Government Reform Committee said, "This is the United States of America - this isn't supposed to happen here. We are not some Third World country."nWhat is a "third world problem?" This introductory environmental anthropology course examines how such imaginaries materialize in development programmes and literature, and bespeak charged geopolitical and racial histories; and invites reflection on what futures for working in common they enable/constrain. We will examine how crises are imagined and constructed, and the governance regimes they give rise to. How does water - as natural resource, public good, human right, need, or commodity - determine the contours of such regimes? We will also study chronic, quieter environmental problems and the responses they (do not) generate. Working through a variety of writing genres - ethnographies, policy literature, and legal and corporate publicity material - will enable students to appreciate what anthropology can contribute to the conversation on environmental justice, and state and corporate bureaucracies and their mandates. The course draws on examples from a wide range of settings. The course is offered as an introduction to environmental anthropology and takes students through key themes - infrastructure, race, class, privatization, justice, violence - by focusing on water. It requires no background in anthropology.
Same as: ANTHRO 123C

CSRE 123F. Navigating a Multicultural World: Practical recommendations for individuals, groups, & institutions. 4 Units.
The world is becoming increasing multicultural, as groups of different races, ethnicities, ages, genders, and socioeconomic classes are coming into closer and more frequent contact than ever before. With increased cultural contact comes the need to create spaces that are inclusive and culturally sensitive. In addition, individuals must learn to live, work, and communicate in a multicultural world. How can we leverage research from cultural psychology to promote the best possible individual, interpersonal, and institutional outcomes for all groups?nThis course will serve as an introduction on how to create multicultural worlds and individuals.nDrawing heavily on research, this course begins with a review of what culture is and how itninfluences individual thoughts, emotions, and behaviors. We then discuss multiculturalism (e.g.,nwhat is it, what are some costs and benefits) before addressing how to promote optimalnfunctioning in multicultural settings.
Same as: PSYCH 123F

CSRE 124F. The Mothership Connection: Black Science Fiction Across Media. 4 Units.
As science fiction becomes the lingua franca of American popular culture and race takes center stage in our contemporary social and political discourses, the works of black SF creators offer a number of powerful conceptual tools for thinking about race, and particularly for exploring the experience and effects of the African diaspora. This course will consider how black authors, artists, musicians, and filmmakers have responded to or engaged the transmedia genre of SF, as well as the role that race plays in the history of science fiction. What is Afrofuturism, and is it distinct from black science fiction? How does black SF relate to other speculative genres and aesthetics (horror, fantasy, new age, psychedelia, etc.)? Is there something inherently science fictional about the Afro-diasporic experience? How do typical SF tropes - robots, spaceships, technology, the apocalypse, the posthuman - change when considered in the aftermath of the Miiddle Passage and chattel slavery?.
Same as: AFRICAAM 124F

CSRE 125E. Shades of Green: Redesigning and Rethinking the Environmental Justice Movements. 3-5 Units.
Historically, discussions of race, ethnicity, culture, and equity in the environment have been relegated to the environmental justice movement, which often focuses on urban environmental degradation and remains separated from other environmental movements. This course will seek to break out of this limiting discussion. We will explore access to outdoor spaces, definitions of wilderness, who is and isn't included in environmental organizations, gender and the outdoors, how colonialism has influenced ways of knowing, and the future of climate change. The course will also have a design thinking community partnership project. Students will work with partner organizations to problem-solve around issues of access and diversity. We value a diversity of experiences and epistemological beliefs, and therefore undergraduates and graduate students from all disciplines are welcome.
Same as: EARTHSYS 125, EARTHSYS 225, URBANST 125

CSRE 126C. Ethics and Leadership in Public Service. 3-4 Units.
This course explores ethical questions that arise in public service work, as well as leadership theory and skills relevant to public service work. Through readings, discussions, in-class activities, assignments, and guest lectures, students will develop a foundation and vision for a future of ethical and effective service leadership. This course serves as a gateway for interested students to participate in the Haas Center's Public Service Leadership Program.
Same as: EDUC 126A, ETHICSOC 79, URBANST 126A

CSRE 127A. Can't Stop Won't Stop: A History Of The Hip-Hop Arts. 2-4 Units.
This course explores the history and development of the hip-hop arts movement, from its precursor movements in music, dance, visual arts, literature, and folk and street cultures to its rise as a neighborhood subculture in the Bronx in the early 1970s through its local, regional and global expansion and development. Hip-hop aesthetics, structures, and politics will be explored within the context of the movement's rise as a post-multicultural form in an era of neoliberal globalization. (This course must be taken for a letter grade and a minimum of 3 units to satisfy a Ways requirement.).
Same as: AFRICAAM 127A

CSRE 127C. Human in a Time of War. 3-5 Units.
It has often been said that the post-9/11 era has been one of never-ending war for the United States. Privatization and the increasing proliferation of ever more removed technologies of killing have raised questions regarding the disposability of racialized populations targeted for submission or containment. The global, ubiquitous nature of the U.S. military industrial complex has made war synonymous with impunity.nnHowever, racialized populations have arguably been under siege and positioned as disposable since the colonization of the Americas. This course draws upon Alexander Weheliye¿s (2014) challenge to move beyond the particular, querying how racialized, gendered experiences condition more expansive notions of the human. Following Jodi Kim¿s notion of the protracted afterlife of the Cold War as epistemological structure, this course traces the continuities and transformations in constructions of populations as more or less human, from settler colonial conquest to the post-9/11 era. How has racial and gendered violence functioned to determine not only which bodies matter but which lives are legible and which subjects granted the full range of human complexity? Recognizing the ¿layered interconnectedness of political violence, racialization, and the human,¿ this course also engages ¿the existence of alternative modes of life alongside the violence, subjection, exploitation, and racialization that define the modern human¿ (Weheliye, 1-2).
Same as: FEMGEN 127

CSRE 128. What We Want is We: Identity in Visual Arts, Social Engagement, and Civic Propositions. 4 Units.
This studio practicum examines contemporary culture through case studies on visual art, race theory, urban studies, and resistance legacies. This class looks at strategies of socially engaged art practices, community building endeavors, and the complications peculiar to these projects. From these case studies, students will make public art/text/performative experiments and learn research and grant writing approaches for designing long-term political projects. Students will translate their research into grant proposals that will be judged by a professional panel during the final week. Course guests include granting agencies/arts foundations and international artists, curators, city planners, and activists (live/video conferences).

CSRE 129. Camus. 4-5 Units.
"The admirable conjunction of a man, of an action, and of a work" for Sartre, "the ideal husband of contemporary letters" for Susan Sontag, reading "Camus's fiction as an element in France's methodically constructed political geography of Algeria" for Edward Said, Camus embodies the very French figure of the "intellectuel engagé," or public intellectual. From his birth in 1913 into a poor European family in Algeria to the Nobel Prize in Literature in 1957, from the Mediterranean world to Paris, Camus engaged in the great ethical and political battles of his time, often embracing controversial positions. Through readings and films, we will explore his multiple legacies. Readings from Albert Camus, Jean-Paul Sartre, Assia Djebar, Kamel Daoud, Mouloud Feraoun, Alice Kaplan, Edward Said, Edwidge Danticat. Students will work on their production of written French, in addition to speaking French and reading comprehension. Taught in French. Students are highly encouraged to complete FRENLANG 124 or to successfully test above this level through the Language Center. This course fulfills the Writing in the Major (WIM) requirement.
Same as: COMPLIT 229B, FRENCH 129, HISTORY 235F

CSRE 130. Community-based Research As Tool for Social Change:Discourses of Equity in Communities & Classrooms. 3-5 Units.
Issues and strategies for studying oral and written discourse as a means for understanding classrooms, students, and teachers, and teaching and learning in educational contexts. The forms and functions of oral and written language in the classroom, emphasizing teacher-student and peer interaction, and student-produced texts. Individual projects utilize discourse analytic techniques.
Same as: AFRICAAM 130, EDUC 123, EDUC 322

CSRE 132A. Social Inequality in Israel. 3 Units.
Like the US, Israel is a nation of immigrants. Israel additionally shares with the US vast economic, ethnic/racial and gender gaps, which are shaped and are being shaped by the demographic diversity characterizing its society. The course will provide a comparative framework for analyzing social inequality in Israel. We will start by reviewing essential concepts and theories in the study of social stratification. We will then review the main cleavages characterizing Israeli society, while comparing them to gaps in other advances societies and particularly the US. We will focus on class, gender and ethnicity as the main distinctions and will examine their implications for differences in life chances in several domains across the life course. We will conclude with a discussion of possible scenarios for change, which are relevant to both Israel and the US. Throughout the course, we will study critical thinking techniques and will use them for analyzing issues that are central for the analysis of social inequality in Israel and elsewhere.
Same as: JEWISHST 132A, SOC 102A

CSRE 132C. Technology and Inequality. 4-5 Units.
In this advanced interdisciplinary seminar we will examine the ways that technologies aimed to make human lives better (healthier, freer, more connected, and informed) often also harbor the potential to exacerbate social inequalities. Drawing from readings in the social sciences on power and ethics, we will pay special attention to issues of wealth, race, ethnicity, sex, gender, globalization and humanitarianism.
Same as: ANTHRO 132C

CSRE 132J. Sociology of Jewishness. 3-5 Units.
Examines the place of the Jewish people in society throughout various locales and historical periods to understand how interactions among Jews and with other groups have shaped Jewish identities. Topics include modernism, the Holocaust, Israel/nationhood, race/ethnicity, intermarriage, and assimilation. Uses theoretical, empirical, and historical material from multiple social scientific fields of study and explores the study of Judaism from several major sociological lenses.
Same as: JEWISHST 132D, SOC 132J

CSRE 133E. Literature and Society in Africa and the Caribbean. 4 Units.
This course explores texts and films from Francophone Africa and the Caribbean in the 20th and 21st centuries. The course will explore the connections between Sub-Saharan Africa, the Maghreb and the Caribbean through both foundational and contemporary works while considering their engagement with the historical and political contexts in which they were produced. This course will also serve to improve students' speaking and writing skills in French while sharpening their knowledge of the linguistic and conceptual tools needed to conduct literary analysis. The diverse topics discussed in the course will include national and cultural identity, race and class, gender and sexuality, orality and textuality, transnationalism and migration, colonialism and decolonization, history and memory, and the politics of language. Readings include the works of writers and filmmakers such as Djibril Tamsir Niane, Léopold Senghor, Aimé Césaire, Albert Memmi, Patrick Chamoiseau, Leonora Miano, Leila Slimani, Dani Laferrière and Ousmane Sembène. Taught in French. Students are highly encouraged to complete FRENLANG 124 or to successfully test above this level through the Language Center. This course fulfills the Writing in the Major (WIM) requirement.
Same as: AFRICAAM 133, AFRICAST 132, COMPLIT 133A, COMPLIT 233A, FRENCH 133, JEWISHST 143

CSRE 133J. WELFARE, WORK AND POVERTY.. 3 Units.
Early theorists of the welfare state described it as a reaction to the emergence of needs and interests of specific social groups during processes of economic development and change. Later theorists countered that the welfare state does not merely react to social cleavages during times of economic change but rather works to actively shape them, in line with worldviews or the interests of dominant group members. Adopting the latter approach, the goal of this course is to provide the tools and knowledge necessary for a critical evaluation of the social services provided to Israeli citizens and their impact on social and economic inequalities. The course will survey various approaches to the understanding of the goals of the welfare state. A comparative and historical account of the development of the welfare state will be presented, while highlighting recent developments, such as the increase in poverty rates and the aging of the population. During the course, we will examine the diverse needs that are served by the welfare state, as well as major dilemmas associated with the provision of services. Throughout the course, we will study critical thinking techniques and will use them for analyzing issues that are central for the development of social policies in Israel and the US.
Same as: JEWISHST 133A, SOC 103A

CSRE 133P. Ethics and Politics in Public Service. 4 Units.
This course examines ethical and political questions that arise in doing public service work, whether volunteering, service learning, humanitarian endeavors overseas, or public service professions such as medicine and teaching. What motives do people have to engage in public service work? Are self-interested motives troublesome? What is the connection between service work and justice? Should the government or schools require citizens or students to perform service work? Is mandatory service an oxymoron?.
Same as: POLISCI 133Z, PUBLPOL 103Z, URBANST 122Z

CSRE 135P. The Psychology of Diverse Community. 3 Units.
This course is an exploration. Its aim is to identify distinguishing features of good diverse communities and articulate them well enough to offer principles or guidelines for how to design and mange such communities e.g. schools, universities, academic disciplines, etc.
Same as: PSYCH 135

CSRE 136. White Identity Politics. 3-5 Units.
Pundits proclaim that the 2016 Presidential election marks the rise of white identity politics in the United States. Drawing from the field of whiteness studies and from contemporary writings that push whiteness studies in new directions, this upper-level seminar asks, does white identity politics exist? How is a concept like white identity to be understood in relation to white nationalism, white supremacy, white privilege, and whiteness? We will survey the field of whiteness studies, scholarship on the intersection of race, class, and geography, and writings on whiteness in the United States by contemporary public thinkers, to critically interrogate the terms used to describe whiteness and white identities. Students will consider the perils and possibilities of different political practices, including abolishing whiteness or coming to terms with white identity. What is the future of whiteness? n*Enrolled students will be contacted regarding the location of the course.
Same as: AFRICAAM 136B, ANTHRO 136B

CSRE 136A. Interfaith Dialogue on Campus: Religion, Diversity, and Higher Education. 2-5 Units.
How are we to talk across religious and spiritual differences? What is the purpose of such dialogues? What do we hope to gain from them? How do such dialogues take shape on college campuses, and what do they indicate about how students cultivate spiritual, political, and civic commitments? This course will explore these questions and others through seminar discussions, fieldwork, and writing that will examine the concepts, assumptions, and principles that shape how we think about interfaith dialogue.
Same as: AMSTUD 236, EDUC 436, RELIGST 336X

CSRE 136U. The Psychology of Scarcity: Its Implications for Psychological Functioning and Education. 3 Units.
This course brings together several literatures on the psychological, neurological, behavioral and learning impact of scarcities, especially those of money (poverty) time and food. It will identify the known psychological hallmarks of these scarcities and explore their implications for psychological functioning, well-being and education--as well as, how they can be dealt with by individuals and in education.
Same as: PSYCH 136, PSYCH 236A

CSRE 138. Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise. 5 Units.
This course will explore historical as well as current market transformations of medical ethics in different global contexts. We will examine various aspects of the research enterprise, its knowledge-generating and life-saving goals, as well as the societal, cultural, and political influences that make medical research a site of brokering in need of oversight and emergent ethics.nThis seminar will provide students with tools to explore and critically assess the various technical, social, and ethical positions of researchers, as well as the role of the state, the media, and certain publics in shaping scientific research agendas. We will also examine how structural violence, poverty, global standing, and issues of citizenship also influence issues of consent and just science and medicine.
Same as: ANTHRO 138, ANTHRO 238

CSRE 140C. Stand Up Comedy and the "Great American Joke" Since 1945. 5 Units.
Development of American Stand Up Comedy in the context of social and cultural eruptions after 1945, including the Borscht Belt, the Chitlin¿ Circuit, the Cold War, censorship battles, Civil Rights and other social movements of the 60s and beyond. The artistry of stories, monologues, jokes, impersonations, persona, social satire, scatology, obscenity, riffs, rants, shtick, and more by such artists as Lenny Bruce, Dick Gregory, Richard Pryor, George Carlin, Margaret Cho, Sarah Silverman, Jon Stewart, Stephen Colbert, as well as precursors such as Mark Twain, minstrelsy and vaudeville and related films, TV shows, poems and other manifestations of similar sensibilities and techniques.
Same as: AMSTUD 140

CSRE 140S. Casablanca - Algiers - Tunis : Cities on the Edge. 3-5 Units.
Casablanca, Algiers and Tunis embody three territories, real and imaginary, which never cease to challenge the preconceptions of travelers setting sight on their shores. In this class, we will explore the myriad ways in which these cities of North Africa, on the edge of Europe and of Africa, have been narrated in literature, cinema, and popular culture. Home to Muslims, Christians, and Jews, they are an ebullient laboratory of social, political, religious, and cultural issues, global and local, between the nineteenth and twenty-first centuries. We will look at mass images of these cities, from films to maps, novels to photographs, sketching a new vision of these magnets as places where power, social rituals, legacies of the Ottoman and French colonial pasts, and the influence of the global economy collude and collide. Special focus on class, gender, and race.
Same as: AFRICAAM 236B, COMPLIT 236A, FRENCH 236, FRENCH 336, HISTORY 245C, URBANST 140F

CSRE 141. Gentrification. 5 Units.
Neighborhoods in the Bay Area and around the world are undergoing a transformation known as gentrification. Middle- and upper-income people are moving into what were once low-income areas, and housing costs are on the rise. Tensions between newcomers and old timers, who are often separated by race, ethnicity, or sexual orientation, can erupt; high rents may force long-time residents to leave. In this class we will move beyond simplistic media depictions to explore the complex history, nature, causes and consequences of this process. Students will learn through readings, films, class discussions, and engagement with a local community organization. (Cardinal Course certified by the Haas Center).
Same as: AFRICAAM 241A, URBANST 141

CSRE 141E. Counterstory in Literature and Education. 3 Units.
Counterstory is a method developed in critical legal studies that emerges out of the broad "narrative turn" in the humanities and social science. This course explores the value of this turn, especially for marginalized communities, and the use of counterstory as analysis, critique, and self-expression. Using an interdisciplinary approach, we examine counterstory as it has developed in critical theory, critical pedagogy, and critical race theory literatures, and explore it as a framework for liberation, cultural work, and spiritual exploration.
Same as: EDUC 141, EDUC 341, LIFE 124

CSRE 141S. Immigration and Multiculturalism. 5 Units.
What are the economic effects of immigration? Do immigrants assimilate into local culture? What drives native attitudes towards immigrants? Is diversity bad for local economies and societies and which policies work for managing diversity and multiculturalism? We will address these and similar questions by synthesizing the conclusions of a number of empirical studies on immigration and multiculturalism. The emphasis of the course is on the use of research design and statistical techniques that allow us to move beyond correlations and towards causal assessments of the effects of immigration and immigration policy.
Same as: POLISCI 141A

CSRE 141X. Activism and Intersectionality. 3-4 Units.
How are contemporary U.S. social movements shaped by the intersections of race, class, gender, and sexuality? This course explores the emergence, dynamics, tactics, and targets of social movements. Readings include empirical and theoretical social movement texts, including deep dives into Black, White, and Chicana feminisms; the KKK; and queer/LGBT movements. We will explore how social movement emergence and persistence is related to participants¿ identities and experiences with inequality; how the dynamics, targets, and tactics of mobilized participants are shaped by race, class, gender, and/or sexuality; and how social movement scholars have addressed the intersectional nature of inequality, identity, and community.
Same as: AFRICAAM 141X, FEMGEN 141, SOC 153

CSRE 142. The Literature of the Americas. 5 Units.
A wide-ranging overview of the literatures of the Americas inncomparative perspective, emphasizing continuities and crises that are common to North American, Central American, and South American literatures as well as the distinctive national and cultural elements of a diverse array of primary works. Topics include the definitions of such concepts as empire and colonialism, the encounters between worldviews of European and indigenous peoples, the emergence of creole and racially mixed populations, slavery, the New World voice, myths of America as paradise or utopia, the coming of modernism, twentieth-century avant-gardes, and distinctive modern episodes--the Harlem Renaissance, the Beats, magic realism, Noigandres--in unaccustomed conversation with each other.
Same as: AMSTUD 142, COMPLIT 142, ENGLISH 172E

CSRE 142C. Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice. 3-5 Units.
This seminar is part of a broader program on Social Entrepreneurship at CDDRL in partnership with the Haas Center for Public Service. It will use practice to better inform theory. Working with three visiting social entrepreneurs from developing and developed country contexts students will use case studies of successful and failed social change strategies to explore relationships between social entrepreneurship, gender, democracy, development and justice. It interrogates current definitions of democracy and development and explores how they can become more inclusive of marginalized populations. This is a service learning class in which students will learn by working on projects that support the social entrepreneurs' efforts to promote social change. Students should register for either 3 OR 5 units only. Students enrolled in the full 5 units will have a service-learning component along with the course. Students enrolled for 3 units will not complete the service-learning component. Limited enrollment. Attendance at the first class is mandatory in order to participate in service learning.
Same as: AFRICAST 142, AFRICAST 242, INTNLREL 142

CSRE 144. Transforming Self and Systems: Crossing Borders of Race, Nation, Gender, Sexuality, and Class. 5 Units.
Exploration of crossing borders within ourselves, and between us and them, based on a belief that understanding the self leads to understanding others. How personal identity struggles have meaning beyond the individual, how self healing can lead to community healing, how the personal is political, and how artistic self expression based in self understanding can address social issues. The tensions of victimization and agency, contemplation and action, humanities and science, embracing knowledge that comes from the heart as well as the mind. Studies are founded in synergistic consciousness as movement toward meaning, balance, connectedness, and wholeness. Engaging these questions through group process, journaling, reading, drama, creative writing, and storytelling. Study is academic and self-reflective, with an emphasis on developing and presenting creative works in various media that express identity development across borders.
Same as: ASNAMST 144, FEMGEN 144X

CSRE 145. Race and Ethnic Relations in the USA. 4 Units.
(Graduate students register for 245.) Race and ethnic relations in the U.S. and elsewhere. The processes that render ethnic and racial boundary markers, such as skin color, language, and culture, salient in interaction situations. Why only some groups become targets of ethnic attacks. The social dynamics of ethnic hostility and ethnic/racial protest movements.
Same as: SOC 145, SOC 245

CSRE 145H. Trauma, healing, and empowerment. 3 Units.
This course will look at the ways in which humans are affected by the legacy of war, occupation and colonialism through themes of home, displacement, community, roots, identity, and inter-generational trauma. The approach is integrative, including scholarly investigation, embodied practice, and creative approach. This self-reflective process uses narrative, oral and written, as a means of becoming whole and healing personal, historical, and collective wounds.
Same as: LIFE 145

CSRE 146A. Designing Research for Social Justice: Writing a Community-Based Research Proposal. 3-5 Units.
This course will support students in designing and writing a community-engaged research proposal. In contrast to "traditional" forms of research, community-engaged research uses a social justice lens in seeking to apply research to benefit communities most impacted. Community-engaged researchers also aim to challenge the power relationship between "researchers" and "researched" by working side by side with community partners in the design, conceptualization, and actualization of the research process. In this course, students will learn how to write a community-engaged research proposal. This involves forming a successful community partnership, generating meaningful research questions, and selecting means of collecting and analyzing data that best answer your research questions and support community partners. The course will also support students in developing a grounding in the theory and practice of community-engaged research, and to consider the ethical questions and challenges involved. By the end of the course, students should have a complete research proposal that can be used to apply for a number of summer funding opportunities including the Chappell Lougee Scholarship, the Community-Based Research Fellowship, Cardinal Quarter fellowships, and Major Grants. Please note that completion of the course does not guarantee funding-- rather, the course supports you in learning how to write a strong community-engaged research proposal that you can use to apply to any number of fellowships). This course is also useful for students in any academic year who are interested in pursuing community-engaged theses or capstone projects.
Same as: URBANST 123

CSRE 146B. Approaching Research in the Community: Design and Methods. 3 Units.
This course focuses on issues of research design and how to select specific methodological strategies to assure ethical and effective partnership-based research. In this course, students will plan for their own participation in a CBRF project. Topical themes will include best practice strategies for (a) defining and selecting community problems or issues to be addressed, (b) generating relevant and useful research questions, (c) choosing specific means and methods for data collection [e.g., surveys, interviews, focus groups, etc.], (d) storing, organizing and analyzing data, (e) reflecting on and critiquing research findings, and (f) carrying out dissemination in ways that can be expected to enhance community power and advance community development. Students will be provided with opportunities to workshop their respective projects-in-development, (e.g., developing and sharing research questions, data collection instruments, strategies for engaging community constituents as co-researchers, etc.). This is a required course for students participating in the Haas Center for Public Service Community-based Research Fellows Program, but enrollment is open to all Stanford students.
Same as: URBANST 123B

CSRE 146D. New Keywords in African Sound. 3-4 Units.
This course identifies and considers new keywords for the study of contemporary African music and sound. Each week we will foster discussion around a keyword and a constellation of case studies. The sonic practices we will encounter range from South African house music to Ghanaian honk horns; from Congolese rumba bands to Tunisian trance singers; from listening to the radio in a Tanzanian homestead to making hip hop music videos on the Kenyan coast. By exploring the unexpected interconnections between contemporary African musical communities, we will discuss new keywords arising in current scholarship, including technologies like the amplifier and the hard drive, spaces like the studio and the city, and analytics like pleasure and hotness. We will also engage with established concepts for the study of postcolonial African cultures, including nationalism, cosmopolitanism, globalization, diaspora, and Pan-Africanism. This is a seminar-based course open to graduate students, upper level undergraduate students, and other students with consent of the instructor. Proficiency in music is not required. WIM at 4 units only.
Same as: AFRICAAM 146D, AFRICAST 146M, MUSIC 146M, MUSIC 246M

CSRE 147A. Race and Ethnicity Around the World. 4 Units.
(Graduate students register for 247.) How have the definitions, categories, and consequences of race and ethnicity differed across time and place? This course offers a historical and sociological survey of racialized divisions around the globe. Case studies include: affirmative action policies, policies of segregation and ghettoization, countries with genocidal pasts, invisible minorities, and countries that refuse to count their citizens by race at all.
Same as: SOC 147, SOC 247

CSRE 147D. Studies in Music, Media, and Popular Culture: Music and Urban Film. 3-4 Units.
How music and sound work in urban cinema. What happens when music's capacity to transform everyday reality combines with the realism of urban films? Provides an introduction to traditional theories of film music and film sound; considers how new technologies and practices have changed the roles of music in film. Readings discuss film music, realistic cinema, urban musical practices and urban culture. Viewing includes action/adventure, Hindi film, documentary, film noir, hip hop film, the musical, and borderline cases by Jean-Luc Godard, Spike Lee, Wong Kar-Wai and Tsai Ming-Liang. Pre- or corequisite (for music majors): MUSIC 22. (WIM at 4 unit level only.).
Same as: MUSIC 147K, MUSIC 247K

CSRE 147J. Studies in Music, Media, and Popular Culture: The Soul Tradition in African American Music. 3-4 Units.
1960s and 70s Black music, including rhythm and blues, Motown, Southern soul, funk, Philadelphia soul, and disco. Its origins in blues, gospel, and jazz to its influence on today's r&b, hip hop, and dance music. Soul's cultural influence and global reach; its interaction with politics, racism, gender, place, technology, and the economy. Synchronous and asynchronous remote learning, with class discussions, small-group activities, guest presenters, and opportunities for activism. Pre-/co-requisite (for music majors): MUSIC 22. (WIM at 4 units only.).
Same as: AFRICAAM 19, AMSTUD 147J, MUSIC 147J, MUSIC 247J

CSRE 148D. Inglés Personal: Coaching Everyday Community English. 1-5 Unit.
This course is a 1 to 5 unit service learning course that prepares students to provide direct one-on-one service to adult English language learners in East Palo Alto and other surrounding communities. Students meet with and "coach" an adult learner on a weekly basis. Can be repeated for credit.
Same as: CHILATST 148, EDUC 148

CSRE 148P. The Psychology of Bias: Stereotyping, Prejudice, and Discrimination. 3 Units.
From Black Lives Matter to mansplaining, issues of stereotyping, prejudice, and discrimination grab our attention and draw our concern. This course brings together research from social, cognitive, affective, developmental, cultural, and neural perspectives to examine the processes that reflect and perpetuate group biases. Along with these various research perspectives, we will consider perspectives of both privileged and disadvantaged group members. Where do stereotypes come from? Why is race so hard to talk about? Can we be biased without knowing it? How can we reduce prejudice and conflict? We will address these and other questions through lectures, class discussion, and group presentations.
Same as: PSYCH 148S

CSRE 148R. Los Angeles: A Cultural History. 4 Units.
This course traces a cultural history of Los Angeles from the early twentieth century to the present. Approaching popular representations of Los Angeles as our primary source, we discuss the ways that diverse groups of Angelenos have represented their city on the big and small screens, in the press, in the theater, in music, and in popular fiction. We focus in particular on the ways that conceptions of race and gender have informed representations of the city. Possible topics include: fashion and racial violence in the Zoot Suit Riots of the Second World War, Disneyland as a suburban fantasy, cinematic representations of Native American life in Bunker Hill in the 1961 film The Exiles, the independent black cinema of the Los Angeles Rebellion, the Anna Deaver Smith play Twilight Los Angeles about the civil unrest that gripped the city in 1992, and the 2019 film Once Upon a Time¿in Hollywood.
Same as: AMSTUD 148

CSRE 149. The Laboring of Diaspora & Border Literary Cultures. 3-5 Units.
Focus is given to emergent theories of culture and on comparative literary and cultural studies. How do we treat culture as a social force? How do we go about reading the presence of social contexts within cultural texts? How do ethno-racial writers re-imagine the nation as a site with many "cognitive maps" in which the nation-state is not congruent with cultural identity? How do diaspora and border narratives/texts strive for comparative theoretical scope while remaining rooted in specific local histories. Note: This course must be taken for a letter grade to be eligible for WAYS credit. In AY 2020-21, a "CR" grade will satisfy the WAYS requirement.
Same as: COMPLIT 149, ILAC 149

CSRE 149A. The Urban Underclass. 4 Units.
(Graduate students register for 249.) Recent research and theory on the urban underclass, including evidence on the concentration of African Americans in urban ghettos, and the debate surrounding the causes of poverty in urban settings. Ethnic/racial conflict, residential segregation, and changes in the family structure of the urban poor.
Same as: SOC 149, SOC 249, URBANST 112

CSRE 150. Race and Political Sociology. 3 Units.
How race informs the theories and research within political sociology. The state's role in creation and maintenance of racial categories, the ways in which racial identity motivates political actors, how race is used to legitimate policy decisions, comparisons across racial groups. Emphasis on understanding the ways race operates in the political arena.
Same as: SOC 150, SOC 250

CSRE 150A. Race and Crime. 3 Units.
The goal of this course is to examine social psychological perspectives on race, crime, and punishment in the United States. Readings will be drawn not only from psychology, but also from sociology, criminology, economics, and legal studies. We will consider the manner in which social psychological variables may operate at various points in the crimina; justice system- from policing, to sentencing, to imprisonment, to re-entry. Conducted as a seminar. Students interested in participating should attend the first session and complete online application for permission at https://goo.gl/forms/CAut7RKX6MewBIuG3.
Same as: PSYCH 150, PSYCH 259

CSRE 150B. Race and Crime Practicum. 2-4 Units.
This practicum is designed to build on the lessons learned in PSYCH 150 Race & Crime. In this community service learning course, students participate in community partnerships relevant to race and crime, as well as reflection to connect these experiences to research and course content. Interested students should complete an application for permission at: https://goo.gl/forms/CAut7RKX6MewBIuG3. Prerequisite: PSYCH 150 (taken concurrently or previously).
Same as: PSYCH 150B

CSRE 150G. Performing Race, Gender, and Sexuality. 4 Units.
In this theory and practice-based course, students will examine performances by and scholarly texts about artists who critically and mindfully engage race, gender, and sexuality. Students will cultivate their skills as artist-scholars through written assignments and the creation of performances in response to the assigned material. Attendance and written reflection about a live performance event on campus are required. Students will also learn various meditation practices as tools for making and critiquing performance, in both our seminar discussions and performance workshops. We will approach mindfulness as method and theory in our own practice, as well as in relation to the works studied. We will also consider the ethics and current debates concerning the mindfulness industry. Examples of artists studied include James Luna, Nao Bustamante, Renee Cox, William Pope.L, Cassils, boychild, Curious, Adrian Piper, Xandra Ibarra, Valérie Reding, Guillermo Gomez-Peña, and Ana Mendieta.
Same as: ARTSINST 150G, CSRE 350G, FEMGEN 150G, LIFE 150G, TAPS 150G

CSRE 150S. Nineteenth Century America. 5 Units.
(Same as HISTORY 50B. History majors and others taking 5 units, register for 150B.) Territorial expansion, social change, and economic transformation. The causes and consequences of the Civil War. Topics include: urbanization and the market revolution; slavery and the Old South; sectional conflict; successes and failures of Reconstruction; and late 19th-century society and culture.
Same as: AFRICAAM 150B, AMSTUD 150B, HISTORY 150B

CSRE 151D. Migration and Diaspora in American Art, 1800-Present. 4 Units.
This lecture course explores American art through the lens of immigration, exile, and diaspora. We will examine a wide range of work by immigrant artists and craftsmen, paying special attention to issues of race and ethnicity, assimilation, displacement, and political turmoil. Artists considered include Emmanuel Leutze, Thomas Cole, Joseph Stella, Chiura Obata, Willem de Kooning, Mona Hatoum, and Julie Mehretu, among many others. How do works of art reflect and help shape cultural and individual imaginaries of home and belonging?.
Same as: AMSTUD 151, ARTHIST 151, ARTHIST 351, ASNAMST 151D

CSRE 151P. Transpacific Performance. 4 Units.
Building on exciting new work in transpacific studies, this course explores how performance reveals the many ways in which cultures and communities intersect across the diverse and dynamic Pacific Ocean world, covering works from the Americas and Asia, Pacific Islands, and Australia. In an era when the Pacific has emerged as the center of global cultural and financial power, what critical and ethical role does performance play in treating the region's entangled histories, its urgent contemporary issues, and possible futures?.
Same as: TAPS 151P, TAPS 351P

CSRE 152B. Black Music Revealed: Black composers, performers, and themes from the 18th century to the present. 3 Units.
Online seminar on the achievements of Black composers and performers in ragtime, jazz, and classical music, from Chevalier de Saint-Georges, whose music influenced Mozart, and George Bridgetower, for whom Beethoven composed his "Kreutzer" Sonata, to Anthony Davis's opera "The Central Park Five". Students will examine issues of cultural borrowing in operas by Mozart and Verdi, and shows like Showboat and Porgy and Bess. Guest speakers will include composers and performers. Students will work together in groups to produce materials on course topics in coordination with the African American Museum & Library at Oakland. (Cardinal Course certified by the Haas Center).
Same as: MUSIC 152B

CSRE 153C. Asylum: Knowledge, Politics, and Population. 3-5 Units.
This course draws from ethnography, social theory, media and literature to examines the place of the asylum in the constitution of knowledge, politics, and populations. An ancient juridical concept, asylum has been used to describe a fundamental political right, medical and penal institutions, as well as emergent spaces of care and safety. As such, thus course invites students to think of critical issues associated with asylum, including: illness, trauma, violence, immigration, displacement, human rights, sanctuary, and testimony.
Same as: ANTHRO 153

CSRE 153D. Creative Research for Artists. 1-2 Unit.
This generative lab is dedicated to juniors and seniors in Comparative Studies in Race and Ethnicity, African and African American Studies, or related fields in the arts who are pursuing an advanced creative honors thesis or capstone project around questions of identity, diversity and aesthetics. Students sharpen methodologies, get feedback on works in progress, and make formidable connections between their academic and artistic pursuits.
Same as: DANCE 153D

CSRE 153P. Black Artistry: Performance in the Black Diaspora. 4 Units.
Charting a course from colonial America to contemporary London, this course explores the long history of Black performance throughout an Atlantic diaspora. Defining performance as "forms of cultural staging," from Thomas DeFrantz and Anita Gonzalez's Black Performance Theory, this course takes up scripted plays, live theatre, devised works, performance art, and cinematic performance in its survey of the field. We will engage with theorists, performer, artists, and revolutionaries such as Ignatius Sancho, Maria Stewart, William Wells Brown, Zora Neale Hurston, Derek Walcott, Danai Gurira, and Yvonne Orji. We will address questions around Black identity, history, time, and futurity, as well as other essential strategies Black performers have engaged in their performance making. The course includes essential methodological readings for Black Studies as well as formational writings in Black performance theory and theatre studies. Students will establish a foothold in both AAAS (theory & methodology) and in performance history (plays and performances). As a WIM course, students will gain expertise in devising, drafting, and revising written essays.
Same as: AFRICAAM 153P, TAPS 153P, TAPS 353P

CSRE 153Q. Reading and Writing the Gendered Story. 4-5 Units.
Exploration of novels, stories, memoirs and micro-narratives in which gender plays a major role. The texts are by writers of varied genders and sexual orientations as well as varied class, racial and national backgrounds. Written assignments present a mixture of academic and creative options.
Same as: FEMGEN 153Q

CSRE 153R. Before the Model Minority: South Asians in the US. 5 Units.
The model minority myth has been used to create a wedge between Asian and Black people in the United States, and masks the histories and lives of itinerant South Asian traders, laborers, and farmers. Beginning in the 1860s, South Asians (mostly male, and often undocumented) traveled to major ports in the US, such as New York City, New Orleans, and the California coast, where they found working-class jobs and married Puerto Rican, African American, Creole, and Mexican women. Some South Asians were double migrants, first brought to British colonies in the Caribbean and South America through indentured servitude, and later migrated to the United States. Their life stories expand to the racial history of the United States by looking beyond a Black/white binary. nnBy juxtaposing immigrant stories with exclusionary US immigration laws, the course touches upon major themes of migration, capitalism, surveillance, race and racism, multiracial couples and communities, resistance, intersectional activism, borderlands and cities in the US, and the formation of national identity. During the quarter, we will seek to connect experiences in the past with contemporary issues of political culture in the United States to engage with the continuing challenge of locating and attaining self-definition, justice, and social progress in a fraught and divided world.
Same as: HISTORY 253P

CSRE 154. Anthropology of Drugs: Experience, Capitalism, Modernity. 5 Units.
This course examines the significant role ¿drugs¿ play in shaping expressions of the self and social life; in the management populations, and in the production of markets and inequality. It engages these themes through cultural representations of drugs and drug use, analyses of scientific discourse, and social theory. Topics include: the social construction of the licit and illicit; the shifting boundaries of deviance, disease and pleasure; and the relationship between local markets and global wars.
Same as: ANTHRO 154, ANTHRO 254B

CSRE 154C. Shall We Dance? Social Dancing as Political Practice. 3-4 Units.
This seminar investigates social dancing as a political practice, and the dance floor as a place where race, ethnicity, class status, and sexuality are formed and contested. While many students may be familiar with salsa, and can imagine how it produces particular kinds of Latin/a feminities, this course asks students to expand the notion of social dancing beyond partner-dancing spheres. Course materials will focus on dance practices from the late-nineteenth century to present-day, ranging from rural Louisiana dancehalls to NYC nightclubs to Iranian backyards. We will examine how dances become racially coded (e.g., what makes a dance black or Latin@?), and understand how categories such as gender, class, and regionality intersect with such racializations. Students will engage in a range of activities, including reading, viewing films, and participating in occasional movement workshops (no previous dance experience required). Each student¿s final project will require independent, sustained, ethnographic research in a social dance setting of choice (e.g., student dance club, yoga studio, aerobics class, or YouTube).

CSRE 154D. Black Magic: Ethnicity, Race, and Identity in Performance Cultures. 3-4 Units.
In 2013, CaShawn Thompson devised a Twitter hashtag, #blackgirlmagic, to celebrate the beauty and intelligence of black women. Twitter users quickly adopted the slogan, using the hashtag to celebrate everyday moments of beauty, accomplishment, and magic. The slogan offered a contemporary iteration of an historical alignment: namely, the concept of "magic" with both Black people as well as "blackness." This course explores the legacy of Black magic--and black magic--through performance texts including plays, poetry, films, and novels. We will investigate the creation of magical worlds, the discursive alignment of magic with blackness, and the contemporary manifestation of a historical phenomenon. We will cover, through lecture and discussion, the history of black magic representation as well as the relationship between magic and religion. Our goal will be to understand the impact and history of discursive alignments: what relationship does "black magic" have to and for "black bodies"? How do we understand a history of performance practice as being caught up in complicated legacies of suspicion, celebration, self-definition? The course will give participants a grounding in black performance texts, plays, and theoretical writings. *This course will also satisfy the TAPS department WIM requirement.*.
Same as: AFRICAAM 154G, FEMGEN 154G, TAPS 154G

CSRE 154T. The Politics of Algorithms. 4-5 Units.
Algorithms have become central actors in today's digital world. In areas as diverse as social media, journalism, education, healthcare, and policing, computing technologies increasingly mediate communication processes. This course will provide an introduction to the social and cultural forces shaping the construction, institutionalization, and uses of algorithms. In so doing, we will explore how algorithms relate to political issues of modernization, power, and inequality. Readings will range from social scientific analyses to media coverage of ongoing controversies relating to Big Data. Students will leave the course with a better appreciation of the broader challenges associated with researching, building, and using algorithms.
Same as: COMM 154, COMM 254, SOC 154, SOC 254C

CSRE 156. The Changing American City. 4 Units.
After decades of decline, U.S. cities today are undergoing major transformations. Young professionals are flocking to cities instead of fleeing to the suburbs. Massive increases in immigration have transformed the racial and ethnic diversity of cities and their neighborhoods. Public housing projects that once defined the inner city are disappearing, and crime rates have fallen dramatically. Do these changes signal the end of residential segregation and urban inequality? Who do these changes benefit? This course will explore these issues and strategies to address them through readings and discussion, analyzing a changing neighborhood in a major city in the Bay Area in groups (which will include at least one site visit), and studying a changing neighborhood or city of their choice for their final project. The course does not have pre-requisites.
Same as: SOC 156A, SOC 256A, URBANST 156A

CSRE 156T. Performing History: Race, Politics, and Staging the Plays of August Wilson. 4 Units.
This course purposefully and explicitly mixes theory and practice. Students will read and discuss the plays of August Wilson, the most celebrated and most produced contemporary American playwright, that comprise his 20th Century History Cycle. Class stages scenes from each of these plays, culminating in a final showcase of longer scenes from his work as a final project.
Same as: AFRICAAM 156, TAPS 156, TAPS 356

CSRE 156X. Theater of Dissent: Social Movements, Migration, and Revolution in the Americas. 4 Units.
TAPS 156X is an introductory level course that considers how theatre and performance provide a vital platform to examine political dissonance, the mobilities and (im)mobilities that shape transnational migration, and the formation of Latinx/Chicanx identity in the Americas. We will further examine the differences between key terminology in performance, including the notion of Latinidad, by looking at different aesthetic and socio-cultural performance practices and methodologies, re-occuring performance themes, and site-specific performance in the Americas. This course will primarily concentrate on works written in/about the Western Pacific US Southwest, Mexico, Argentina, Peru, Cuba, and Colombia through a variety of theatrical play texts, recorded performances, workshops, and creative projects.

CSRE 157A. Performing Arabs and Others in Theory and Practice. 4 Units.
How deeply must the artist engage to be satisfied with a representation? Is there such a thing as `good representation¿? When must artists persist and when should they resist? In this class, we will dare to make mistakes, challenge formulaic popular critiques and struggle to formulate our personal manifestos on casting. We¿ll let a diverse cast of Arab characters help us in a quarter-long rehearsal of the artist and scholar we wish to be. All course materials are in English, but proficient speakers of Arabic may be given Arabic language texts, if they ask. The majority of the works in our reading list will fit four categories: Orientalist representation, works by Arabs for Arabs, works by non-Arabs for non-Arabs, and works by Arab-Americans. In this class, we learn the theory, practice it, and intelligently attempt to compromise in a deeply flawed and gratifying artform.
Same as: TAPS 157P, TAPS 257P

CSRE 157B. Election 2020. 1 Unit.
(Also LAW 7101). We are living in extraordinary times. The historic convergence of social, economic, and public health challenges has profoundly impacted the lives of millions of Americans. In the midst of great uncertainty, the 2020 US presidential election will be perhaps the most important in our lifetimes. Will Donald J. Trump win reelection amid high unemployment, deep political polarization, and the COVID-19 pandemic that has upended life as we know it? Or will Joe Biden and a team of Democrats prevail? We will assemble a wide range of expert speakers-including preeminent political, business, foreign policy, and academic leaders-to explore these questions (and more) as we seek to cultivate a broad and informed view of this pivotal election.
Same as: EDUC 157

CSRE 157P. Solidarity and Racial Justice. 4-5 Units.
Is multiracial solidarity necessary to overcome oppression that disproportionately affects certain communities of color? What is frontline leadership and what role should people play if they are not part of frontline communities? In this course we will critically examine practices of solidarity and allyship in movements for collective liberation. Through analysis of historical and contemporary movements, as well as participation in movement work, we will see how movements have built multiracial solidarity to address issues that are important to the liberation of all. We will also see how racial justice intersects with other identities and issues. This course is for students that want to learn how to practice solidarity, whether to be better allies or to work more effectively with allies. There will be a community engaged learning option for this course. Students who choose to participate in this option will either work with Stanford's DGen Office or a community organization that is explicitly devoted to multiracial movement-building.
Same as: AFRICAAM 157P, AMSTUD 157P, FEMGEN 157P

CSRE 160J. Conjure Art 101: Performances of Ritual, Spirituality and Decolonial Black Feminist Magic. 2 Units.
Conjure Art is a movement and embodied practice course looking at the work and techniques of artists of color who utilize spirituality and ritual practices in their art making and performance work to evoke social change. In this course we will discuss the work of artists who bring spiritual ritual in their art making while addressing issues of spiritual accountability and cultural appropriation. Throughout the quarter we will welcome guest artists who make work along these lines, while exploring movement, writing, singing and visual art making. This class will culminate in a performance ritual co-created by students and instructor.
Same as: AFRICAAM 160J, DANCE 160J

CSRE 160M. Introduction to Representations of the Middle East in Dance, Performance, & Popular Culture. 3-4 Units.
This course will introduce students to the ways in which the Middle East has been represented and performed by/in the 'West' through dance, performance, and popular culture in both historical and contemporary contexts. A brief look through today's media sources exposes a wide range of racialized and gendered representations of the Middle East that shape the way the world imagines the Middle East to be. As postcolonial theorist Edward Said explains, the framework we call Orientalism establishes the ontological character of the Orient and the Oriental as inherently `Other'. Starting with 19th century colonialism and continuing into the post-9/11 era, this course will trace the Western production, circulation, and consumption of representations of the Middle East as 'Other' in relation to global geopolitics. We will further examine dance forms produced in mid-twentieth century Iran and Egypt, with particular attention to nation-state building and constructions of gender. Finally, we will examine artistic productions and practices from the Middle East and Middle Eastern diasporic communities that respond to colonialism, war, displacement, secularism, and Euro-American Empire. Using dance studies, postcolonial feminist, and critical race theoretical frameworks, we will consider the gender, racial, political, and cultural implications of selected performance works and practices in order to analyze how bodies produce meaning in dance, performance art, theater, film, photography, and new media. Students will engage in multiple modes of learning; the course will include lectures, engaged group discussions, viewing of live and recorded performance, embodied participation in dance practice, student oral presentations, and a variety of writing exercises. Course assignments will culminate in a final research project related to class themes and methods.
Same as: DANCE 160M, FEMGEN 160M, TAPS 160M

CSRE 161P. Entrepreneurship for Social and Racial Equity. 3 Units.
This course is designed to provide students with an introduction to business ownership with a focus on owning and operating businesses within diverse communities with an aim to create social impact for future generations as well as profitability and sustainability models. The course will introduce the beginning elements of creating a business (formation, product, business plan) as well as the additional overlay of social impact and cultural considerations. Types of financing as well as effective pitching will also be covered. Course materials will include instructor presentations, case studies, homework assignments, outside hours at campus ¿labs¿, creation of students¿ own business concept plan and guest lectures from successful entrepreneurs working within Silicon Valley and diverse communities. Resources (financing sources, accelerators and incubators), case studies, role models and guest lecturers will be an integral part of this course which can lead to internship opportunities (the latter via application).
Same as: NATIVEAM 161

CSRE 162. The Politics of Sex: Work, Family, and Citizenship in Modern American Women's History. 3-5 Units.
This course explores the transition from Victorian to modern American womanhood by asking how Native, European, African, Mexican, and Asian American women navigated the changing sexual, economic, and political landscapes of the twentieth century. Through secondary readings, primary sources, films, music, and literature we explore the opportunities and boundaries on groups of women in the context of historical events that included immigration, urbanization, wartime, depression, the Cold War, as well as recurrent feminist and conservative political movements.
Same as: AMSTUD 161, FEMGEN 161, HISTORY 61, HISTORY 161

CSRE 162A. Spirituality and Nonviolent Urban and Social Transformation. 3 Units.
A life of engagement in social transformation is often built on a foundation of spiritual and religious commitments. Case studies of nonviolent social change agents including Rosa Parks in the civil rights movement, César Chávez in the labor movement, and WIlliam Sloane Coffin in the peace movement; the religious and spiritual underpinnings of their commitments. Theory and principles of nonviolence. Films and readings. Service learning component includes placements in organizations engaged in social transformation. Service Learning Course (certified by Haas Center).
Same as: RELIGST 162X, URBANST 126

CSRE 162D. Latin/x America in Motion: An Introduction to Dance Studies. 3-4 Units.
This course introduces students to the field of Dance Studies by examining the histories of Latin American and Caribbean dances and their relationship to developing notions of race and nation in the Americas. We will study the historical emergence and transformation of ¿indigeneity,¿ ¿blackness,¿ ¿whiteness,¿ and ¿Latin/@/x¿ and consider how dance practices interacted with these identifications. No prior experience with Dance or Latin America and the Caribbean necessary.
Same as: CHILATST 162, DANCE 162L, TAPS 162L, TAPS 262L

CSRE 162V. Advanced Research in Black Performing Arts. 1 Unit.
What is the history of Committee for Black Performing Arts (CBPA)? How did it come into being and how do we carry/re-member the legacy forward and into the future? In this course students will engage in the research and archiving process as we dig into the history of CBPA on the eve of its 50th anniversary. Activities will include, digitizing and cataloguing film,video and documents,conducting interviews with former students and professors of CBPA, and guest lecturers with professional archivists.
Same as: DANCE 162V

CSRE 164. Immigration and the Changing United States. 4 Units.
The role of race and ethnicity in immigrant group integration in the U.S. Topics include: theories of integration; racial and ethnic identity formation; racial and ethnic change; immigration policy; intermarriage; hybrid racial and ethnic identities; comparisons between contemporary and historical waves of immigration.
Same as: CHILATST 164, SOC 164, SOC 264

CSRE 164A. Race and Performance. 3-5 Units.
How does race function in performance and dare we say ¿live and in living color?¿ How does one deconstruct discrimination at its roots?n nFrom a perspective of global solidarity and recognition of shared plight among BIPOC communities, we will read and perform plays that represent material and psychological conditions under a common supremacist regime. Where and when possible, we will host a member of the creative team of some plays in our class for a live discussion. Assigned materials include works by Lin-Manuel Miranda, Amiri Baraka, Young Jean Lee, Ayad Akhtar, Susan Lori Parks, David Henry Hwang, Betty Shamieh, Jeremy O. Harris, and Christopher Demos Brown.n nThis class offers undergraduate students a discussion that does not center whiteness, but takes power, history, culture, philosophy, and hierarchy as core points of debate. In the first two weeks, we will establish the common terms of the discussion about stereotypes, representation, and historical claims, but then we will quickly move toward an advanced conversation about effective discourse and activism through art, performance, and cultural production. In this class, we assume that colonialism, slavery, white supremacy, and oppressive contemporary state apparatuses are real, undeniable, and manifest. Since our starting point is clear, our central question is not about recognizing or delineating the issues, but rather, it is a debate about how to identify the target of our criticism in order to counter oppression effectively and dismantle long-standing structures.n nNot all BIPOC communities are represented in this syllabus, as such claim of inclusion in a single quarter would be tokenistic and disingenuous. Instead, we will aspire to understand and negotiate some of the complexities related to race in several communities locally in the U.S. and beyond.
Same as: AFRICAAM 164A, CSRE 364A, TAPS 164

CSRE 165. Identity and Academic Achievement. 3 Units.
How do social identities affect how people experience academic interactions? How can learning environments be better structured to support the success of all students? In this class, we will explore how a variety of identities such as race, gender, social class, and athletic participation can affect academic achievement, with the goal of identifying concrete strategies to make learning environments at Stanford and similar universities more inclusive. Readings will draw from psychology, sociology, education, and popular press. This class is a seminar format.
Same as: AFRICAAM 165, PSYCH 165

CSRE 166B. Immigration Debates in America, Past and Present. 3-5 Units.
Examines the ways in which the immigration of people from around the world and migration within the United States shaped American nation-building and ideas about national identity in the twentieth century. Focuses on how conflicting ideas about race, gender, ethnicity, and citizenship with respect to particular groups led to policies both of exclusion and integration. Part One begins with the ways in which the American views of race and citizenship in the colonial period through the post-Reconstruction Era led to the passage of the Chinese Exclusion Act in 1882 and subsequently to broader exclusions of immigrants from other parts of Asia, Southern and Eastern Europe, and Mexico. Explores how World War II and the Cold War challenged racial ideologies and led to policies of increasing liberalization culminating in the passage of the 1965 Immigration Act, which eliminated quotas based on national origins and opened the door for new waves of immigrants, especially from Asia and Latin America. Part Two considers new immigration patterns after 1965, including those of refugees, and investigates the contemporary debate over immigration and immigration policy in the post 9/11 era as well as inequalities within the system and the impact of foreign policy on exclusions and inclusions.
Same as: HISTORY 166B, HISTORY 366B

CSRE 167C. Wandering in Strange Lands: Science Fiction of the Black Atlantic. 3-5 Units.
African-American culture critic Greg Tate once remarked that ¿Black people live the estrangement that science fiction authors imagine. In light of his observation, this course proposes to look at the black science fiction (SF) tradition from a variety of angles. Some examples: How do black authors use familiar speculative tropes, such as encounters with aliens, to comment on matters of race? What happens when tropes from African-American realist fiction, such as the passing narrative, become science fictionalized? How does the intersection of race and gender affect speculative works by black women? And perhaps the most central question: What do we gain by looking at matters of race through the lens of SF?.

CSRE 170. Introduction to American Indian Literature. 5 Units.
This course provides a general introduction to American Indian literatures, beginning with early translations, including oral literatures and autobiographies, and continuing with contemporary poetry and fiction written by American Indian writers. We will want to pay particular attention to the American Indian writers¿ connections to a specific locale or place. In what ways are the stories and poems evocative of a long-standing relationship to a "home landscape"? What is the nature of the relationship? How is that relationship to place similar to or different from our own? At the same time, we will want to pay attention to the nature and scope of the various representations of American Indians in the texts we examine, and ask how the representations reinforce and/or dispel popular and often stereotypical images of American Indian people. Finally, we will want to be aware of and understand our position as readers, particularly as readers who come from and are constituted by historical, social, political, cultural, and ethnic worlds different from or similar to the worlds we find in the books that we are reading.
Same as: NATIVEAM 170

CSRE 170A. Undoing Racism: The People's Institute for Survival and Beyond. 1-4 Unit.
The fabric of racism is inextricably woven and constructed into the founding principles of the United States. Racism was done and it can be undone through effective anti-racist organizing with, and in accountability to the communities most impacted by racism. The People's Institute believes that effective community and institutional change happens when those who serve as agents of transformation understand the foundations of race and racism and how they continually function as a barrier to community self-determination and self-sufficiency.nnThis course focuses on understanding what racism is, where it comes from, how it functions, why it persists and how it can be undone. The classes, led by organizers of the People's Institute, guest artists and scholars, utilize a systematic approach that emphasizes learning from history, developing leadership, maintaining accountability to communities, creating networks, undoing internalized racial oppression and understanding the role of organizational gate keeping as a mechanism for perpetuating racism.
Same as: AFRICAAM 170A

CSRE 171H. Mexicans in the United States. 5 Units.
This course explores the lives and experiences of Mexicans living in the United States, from 1848 to the present. Themes and topics include: the legacies of colonialism, the Mexican-American War, transnational migration, the effects of economic stratification, race and racialization, and the impact of sexual and gender ideologies on the lives of Mexicans residing north of the border.
Same as: AMSTUD 271, CHILATST 171, HISTORY 271

CSRE 174. History of South Africa. 5 Units.
(Same as HISTORY 47. History majors and others taking 5 units, register for 147.) Introduction, focusing particularly on the modern era. Topics include: precolonial African societies; European colonization; the impact of the mineral revolution; the evolution of African and Afrikaner nationalism; the rise and fall of the apartheid state; the politics of post-apartheid transformation; and the AIDS crisis.
Same as: AFRICAAM 147, HISTORY 147

CSRE 174S. When Half is Whole: Developing Synergistic Identities and Mestiza Consciousness. 5 Units.
This is an exploration of the ways in which individuals construct whole selves in societies that fragment, label, and bind us in categories and boxes. We examine identities that overcome the destructive dichotomies of ¿us¿ and ¿them, ¿ crossing borders of race, ethnicity, culture, nation, sex, and gender. Our focus is on the development of hybrid and synergistic forms of identity and mestiza consciousness in which the whole is greater than the sum of its parts.
Same as: ASNAMST 174S

CSRE 175W. Philosophy of Law: Protest, Punishment, and Racial Justice. 4 Units.
In this course, we will examine some of the central questions in philosophy of law, including: What is law? What gives law its authority? Must we obey the law? If so, when and why? How should we understand and respond to unjust laws? When is civil disobedience morally permissible? Is civil disobedience ever morally required?nWhat is punishment for? What are prisons for? What is the case for reparations?.
Same as: ETHICSOC 175W, PHIL 175W, PHIL 275W

CSRE 176B. The Social Life of Neighborhoods. 3-5 Units.
How do neighborhoods come to be? How and why do they change? What is the role of power, money, race, immigration, segregation, culture, government, and other forces? In this course, students will interrogate these questions using literatures from sociology, geography, and political science, along with archival, observational, interview, and cartographic (GIS) methods. Students will work in small groups to create content (e.g., images, audio, and video) for a self-guided ¿neighborhood tour,¿ which will be added to a mobile app and/or website.
Same as: AFRICAAM 76B, SOC 176, SOC 276, URBANST 179

CSRE 176S. Finding Meaning in Life's Struggles: Narrative Ways of Healing. 5 Units.
We can find meaning in life's struggles through narrative ways of healing. The self-reflective, dynamic process of finding, telling, and living our stories connects us with our whole selves as well as with others. We find our stories through vulnerability and courage; tell them with humility and honesty; and live them authentically and responsibly. Our shared stories will focus on gratitude, acceptance, reconciliation, forgiveness and compassion, empowering us to overcome personal, community, and historical traumas and wounds. In a respectful, caring community we will discover our hidden wholeness by improvising with various experiential and embodied means of finding our stories; telling our stories in diverse ways, including writing, storytelling, music, and art; and living our stories by putting values into action.
Same as: TAPS 176S

CSRE 177E. Well-Being in Immigrant Children & Youth: A Service Learning Course. 4 Units.
This is an interdisciplinary course that will examine the dramatic demographic changes in American society that are challenging the institutions of our country, from health care and education to business and politics. This demographic transformation is occurring first in children and youth, and understanding how social institutions are responding to the needs of immigrant children and youth to support their well-being is the goal of this course.
Same as: CHILATST 177A, EDUC 177A, HUMBIO 29A

CSRE 177F. Well-Being in Immigrant Children & Youth: A Service Learning Course. 4 Units.
This is an interdisciplinary course that will examine the dramatic demographic changes in American society that are challenging the institutions of our country, from health care and education to business and politics. This demographic transformation is occurring first in children and youth, and understanding how social institutions are responding to the needs of immigrant children and youth to support their well-being is the goal of this course.
Same as: CHILATST 177B, EDUC 177B

CSRE 177G. Well-Being in Immigrant Children & Youth: A Service Learning Course. 1-3 Unit.
This is an interdisciplinary course that will examine the dramatic demographic changes in American society that are challenging the institutions of our country, from health care and education to business and politics. This demographic transformation is occurring first in children and youth, and understanding how social institutions are responding to the needs of immigrant children and youth to support their well-being is the goal of this course.
Same as: CHILATST 177C, EDUC 177C

CSRE 177I. Workshop with Young Jean Lee. 2-4 Units.
Instructor Young Jean Lee is a playwright and director who will have two plays premiering on Broadway in 2018-2019. In this workshop, students will help to collaboratively perform, direct, and rewrite the script of one of these plays, which is about the intersection of class and race. The class will involve acting for students who want to act, directing for students who want to direct, and writing for students who want to write. The current character breakdown is as follows: 2 black women, 1 Asian-American woman, 1 Colombian woman, 1 Mexican-American man, 2 black men, 2 white women, 2 white men.
Same as: TAPS 177W, TAPS 277W

CSRE 178. Ethics and Politics of Public Service. 3-5 Units.
Ethical and political questions in public service work, including volunteering, service learning, humanitarian assistance, and public service professions such as medicine and teaching. Motives and outcomes in service work. Connections between service work and justice. Is mandatory service an oxymoron? History of public service in the U.S. Issues in crosscultural service work. Integration with the Haas Center for Public Service to connect service activities and public service aspirations with academic experiences at Stanford.
Same as: ETHICSOC 133, PHIL 175A, PHIL 275A, POLISCI 133, PUBLPOL 103D, URBANST 122

CSRE 178B. Intensive Playwriting. 4 Units.
Intermediate level study of fundamentals of playwriting through an intensive play development process. Course emphasizes visual scripting for the stage and play revision. Script analysis of works by contemporary playwrights may include: Suzan-Lori Parks, Tony Kushner, Adrienne Kennedy, Edward Albee, Maria Irene Fornes and others. Table readings of full length work required by quarter¿s end.
Same as: TAPS 278

CSRE 178P. The Science and Practice of Effective Advocacy. 3-5 Units.
How can purposeful collective action change government policy, business practices and cultural norms? This course will teach students about the components of successful change campaigns and help develop the practical skills to carry out such efforts. The concepts taught will be relevant to both issue advocacy and electoral campaigns, and be evidence-based, drawing on lessons from social psychology, political science, communications, community organizing and social movements. The course will meet twice-a-week for 90 minutes, and class time will combine engaged learning exercises, discussions and lectures. There will be a midterm and final. Students will be able to take the course for 3 or 5 units. Students who take the course for 5 units will participate in an advocacy project with an outside organization during the quarter, attend a related section meeting and write reflections. For 5 unit students, the section meeting is on Tuesdays, from 3:00 to 4:00 p.m.
Same as: PUBLPOL 178, URBANST 178

CSRE 179A. Crime and Punishment in America. 4-5 Units.
This course provides a comprehensive introduction to the way crime has been defined and punished in the United States. Recent social movements such as the Movement for Black Lives have drawn attention to the problem of mass incarceration and officer-involved shootings of people of color. These movements have underscored the centrality of the criminal justice system in defining citizenship, race, and democracy in America. How did our country get here? This course provides a social scientific perspective on America¿s past and present approach to crime and punishment. Readings and discussions focus on racism in policing, court processing, and incarceration; the social construction of crime and violence; punishment among the privileged; the collateral consequences of punishment in poor communities of color; and normative debates about social justice, racial justice, and reforming the criminal justice system. Students will learn to gather their own knowledge and contribute to normative debates through a field report assignment and an op-ed writing assignment.
Same as: AFRICAAM 179A, SOC 179A, SOC 279A

CSRE 179W. Du Bois and Democracy. 4 Units.
In this course, we will work together to develop a detailed and comprehensive understanding of the political philosophy of W. E. B. Du Bois, giving special attention to the development of his democratic theory. We will do so by reading a number of key texts by Du Bois as well as contemporary scholarship from philosophy and cognate fields.
Same as: ETHICSOC 179W, PHIL 179W, PHIL 279W

CSRE 180A. Foundations of Social Research. 4 Units.
Formulating a research question, developing hypotheses, probability and non-probability sampling, developing valid and reliable measures, qualitative and quantitative data, choosing research design and data collection methods, challenges of making causal inference, and criteria for evaluating the quality of social research. Emphasis is on how social research is done, rather than application of different methods. Limited enrollment; preference to Sociology and Urban Studies majors, and Sociology coterms.
Same as: SOC 180A, SOC 280A

CSRE 180B. Introduction to Data Analysis. 4 Units.
Preference to Sociology majors and minors. Enrollment for non-sociologists will open two weeks after winter enrollment begins. Methods for analyzing and evaluating quantitative data in sociological research. Students will be taught how to run and interpret multivariate regressions, how to test hypotheses, and how to read and critique published data analyses.
Same as: SOC 180B, SOC 280B

CSRE 180E. Introduction to Chicanx/Latinx Studies. 5 Units.
This course draws on intersectional and interdisciplinary approaches to introduce students to the range of issues, experiences, and methodologies that form the foundation of Latina/o/x studies. By considering the relationship between the creation of "Latinx" and "American" identities, students will critically reconsider the borders that constitute the U.S. as a political and cultural formation. The course balances depth and breadth in its study of the variety of perspectives and experiences that come to be associated with U.S. Latinxs. Thus, we will analyze the histories of predominant U.S. Latinx sub-groups, such as Mexicans/Chicanxs and Puerto Ricans, while also incorporating considerations of the ways in which broader populations with ties to Central America, South America, and the Caribbean play crucial roles in constituting U.S. Latinx identities. Topics include the U.S./Mexico border and the borderlands; (im)migration and diaspora; literary and cultural traditions; music and expressive practices; labor and structural inequality; social movements; Latinx urbanism; gender and sexuality; political and economic shifts; and inter- and intra-group relations. Sources include a range of social science and humanities scholarship. This course will meet at Sequoia High School. Transportation will be provided.
Same as: CHILATST 180E, EDUC 179E

CSRE 180S. The Black Music 1980s: Turntables, Beat Machines and DJ Scholarship. 3 Units.
This course focuses on the regional rhythms and aesthetic trends of Black popular music of the Americas in the 1980s, a period of Black cultural production largely ignored by the academy. Students will investigate how technology, economic shifts, AIDS, and the War on Drugs impacted communities who produced, created, and danced to music in the face of hostile political terrain. Students will develop and employ careful listening practices that encompass the study of sampling, digging through crates of vinyl, analyzing album cover art, and closely reading liner notes. The musical forms we will cover range from New Jack Swing to Quiet Storm Music to Synthesizer Soul. Figures we will study include nontraditional scholars and practitioners, artists, activists, music journalists, and cultural critics. Finally, students will map the digital movement of music, people, and ideas through post-human platforms such as computer-based home recording studios, portable sound systems, beat-making equipment, keytars, turntables, and sampling machines.
Same as: AFRICAAM 180S

CSRE 181. Multicultural Issues in Higher Education. 4 Units.
The primary social, educational, and political issues that have surfaced in American higher education due to the rapid demographic changes occurring since the early 80s. Research efforts and the policy debates include multicultural communities, the campus racial climate, and student development; affirmative action in college admissions; multiculturalism and the curriculum; and multiculturalism and scholarship.
Same as: EDUC 181, EDUC 381

CSRE 183. Re- Imagining American Borders. 5 Units.
In this third volatile and violent year of the Trump presidency, American borders of all kinds seem to be dangerously tight. This is seen in the literal horror of immigrant detention centers filled with hungry, sick children taken from parents, ongoing mass incarceration and police attacks on young black and brown men and gendered violence targeting trans Americans and pro-choice movements. Additionally urban and rural antagonisms and constant social media anger with a kind of newly brutal linguistic framing are all underscoring a vision of an America of intractable difference. The hopeful transformation from the 2018 elections, which is having enormous reverberations in the present 2020 presidential campaigns, is interestingly also based in a discourse of difference. This course investigates sources of these borderlines and most crucially how novelists, filmmakers, poets, visual artists and essayists perceive racial, ethnic, gender, religious, sexual orientation and class borders in this country as they may re-imagine difference possibly via Vijay Prashad's polyculturalism or Gloria Anzaldùa's borderlands. Texts include those of Ta-Nehisi Coates, Boots Riley, Dee Rees, Ryan Coogler, Nelly Rosario, Janice Lobo Sapigao, Layli Long Soldier, Naomi Shihab Nye, Edwidge Danticat, Sherman Alexie, Shailja Patel, Kara Walker, and the podcast Ear Hustle, narratives created and produced from inside San Quentin, along with Shane Bauer's undercover expose of an American prison. Course guests will include actors and writers from the acclaimed web series, The North Pole, showing parts of the new second season of biting, humorous stories of gentrification, racism and immigration issues in West Oakland. And the Bay Area founder of the only women-run, inclusive mosque in the US, Rabi¿a Keeble, will speak with us about an American Islam with a Muslim community that embraces difference. Course work includes active discussion, journal entries, one comparative analytical essay and a creative final project/with analytical paper examining personal or community identities.
Same as: AMSTUD 183, FEMGEN 183

CSRE 185B. Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV. 4-5 Units.
(HISTORY 185B is 5 units; HISTORY 85B IS 3 units.) Who are American Jews as depicted in popular media -- film, television, etc. -- since the Second World War? How are their religion, politics, mores, and practices represented and what ways, if at all, do such portraits reflect historical trends among Jews and society in general? What can be learned from film or tv about Jewish identity, notions of Jewish power and powerlessness, communal cohesiveness and assimilation, sexuality and the wages of intermarriage or race?.
Same as: HISTORY 185B, HISTORY 385C, JEWISHST 185B, REES 185B, SLAVIC 183

CSRE 185C. Racial Inequality across the Lifespan. 3 Units.
Imagine two children, one Black and one White, born on the same day and in the same country. By adulthood, these two will likely have had two remarkably different social experiences (e.g., the Black child will have received less education, income, health, and years to live). Why? Students in this course will tackle this complicated question from a psychological perspective. Together, we will examine how thinking, feeling, and behaving in ways that perpetuate stereotypes, prejudice, and discrimination contribute to racial inequality across the lifespan. The course will be conducted as a seminar, such that much of what you learn will be through group discussions, activities, and readings. A critical component of this class will be to practice writing about psychological research and social issues for the general audience. That is, students will write weekly opinion pieces that address and explain a particular area of inequality to a non-scientific audience.
Same as: AFRICAAM 185, PSYCH 185

CSRE 186. The Psychology of Racial Inequality. 3 Units.
Our topic is the psychology of racial inequality - thinking, feeling, and behaving in ways that contribute to racial stereotyping, prejudice, and discrimination, and how these processes in turn maintain and perpetuate inequality between racial groups. We will examine how these processes unfold at both the individual and the institutional levels. Throughout this course, you will familiarize yourself with the psychological perspectives, methods, and findings that help explain racial inequality, and we will explore ways to promote racial equality. The course will be conducted as a seminar, but most of what you learn will be through the readings and discussions. That is, this course is minimally didactic; the goal is to have you engage thoughtfully with the issues and readings spurred in part by sharing perspectives, confusions, and insights through writing and discussion. Each student will facilitate at least one class session by providing an introductory framework for the readings (~10-minute presentation with handouts that overviews the concepts, issues, and controversies). Together, we will broaden our knowledge base on the subject and explain, from a psychological perspective, the pervasiveness of racial inequality. Prerequisites: PSYCH 1 and PSYCH 10.
Same as: AFRICAAM 286, PSYCH 186, PSYCH 286

CSRE 188Q. Imagining Women: Writers in Print and in Person. 4-5 Units.
Gender roles, gender relations and sexual identity explored in contemporary literature and conversation with guest authors. Weekly meetings designated for book discussion and meeting with authors. Interest in writing and a curiosity about diverse women's lives would be helpful to students. Students will use such tools as close reading, research, analysis and imagination. Seminar requires strong voice of all participants. Oral presentations, discussion papers, final projects.
Same as: FEMGEN 188Q

CSRE 189. Race and Immigration. 4-5 Units.
In the contemporary United States, supposedly race-neutral immigration laws have racially-unequal consequences. Immigrants from Mexico, Central America, and the Middle East are central to ongoing debates about who's includable, and who's excludable, from American society. These present-day dynamics mirror the historical forms of exclusion imposed on immigrants from places as diverse as China, Eastern Europe, Ireland, Italy, Japan, and much of Africa. These groups' varied experiences of exclusion underscore the long-time encoding of race into U.S. immigration policy and practice. Readings and discussions center on how immigration law has become racialized in its construction and in its enforcement over the last 150 years.
Same as: AFRICAAM 190, SOC 189, SOC 289

CSRE 191. African American Art. 5 Units.
This course explores major art and political movements, such as the Harlem Renaissance, the Black Arts Movement, and #BlackLivesMatter, that have informed and were inspired by African American artists. Students will read pivotal texts written by Black artists, historians, philosophers and activists; consider how artists have contended with issues of identity, race, gender, and sexuality; and learn about galleries, collections, and organizations founded to support the field. Attendance on the first day of class is a requirement for enrollment.
Same as: AFRICAAM 191B, ARTHIST 191

CSRE 192E. History of Sexual Violence in America. 4-5 Units.
This undergraduate/graduate colloquium explores the history of sexual violence in America, with particular attention to the intersections of gender and race in the construction of rape. We discuss the changing definitions of sexual violence in law and in cultural representations from early settlement through the late-twentieth century, including slavery, wartime and prison rape, the history of lynching and anti-lynching movements, and feminist responses to sexual violence. In addition to introducing students to the literature on sexual violence, the course attempts to teach critical skills in the analysis of secondary and primary historical texts. Students write short weekly reading responses and a final paper; no final exam; fifth unit research or CEL options.nnLimited enrollment, permission of instructor required. Submit application form and indicate interest in CEL option. Priority admission to History, FGSS, CSRE, AFRICAAM, and AMSTUD declared majors and minors. (Cardinal Course certified by the Haas Center).
Same as: AFRICAAM 192, AMSTUD 258, FEMGEN 258, FEMGEN 358, HISTORY 258, HISTORY 358

CSRE 193. Jacob Lawrence's Twentieth Century: African American Art and Culture. 5 Units.
This course explores African American art and culture through the lens of the Cantor Arts Center's rich holdings of work by Jacob Lawrence (1917-2000). Our approach will combine close looking with attention to Lawrence's cultural, political, and social contexts. Using Lawrence as starting point, we also will consider the work of African American artists such as Charles Alston, Norman Lewis, Aaron Douglas, Betye Saar, and Kara Walker in relation to historical events including the Harlem Renaissance, the Great Depression, World War II, and the Civil Rights Movement. Key themes include the interactions of art, music, and film; the history of radical black thought; as well as issues of curatorial display and conservation.
Same as: ARTHIST 193

CSRE 194KT. Topics in Writing & Rhetoric: The Last Hopi On Earth: The Rhetoric of Entertainment Inequity. 4 Units.
While #OscarsSoWhite brought attention to the Academy's overwhelmingly White, male membership, the underbelly of the entertainment industry itself is rife with inequitable hiring of not only on-camera and on-stage performers but also directors, writers, and others behind the scenes. While there are several organizations from Racebending.com to the Geena Davis Institute on Gender in Media that seek to usher in more equitable representation, push back against the Industry's disparate employment practices has been documented for more than fifty years with what many argue is not proportionally positive movement. White males still garner almost half of all theatrical and television roles and represent more than 80% of episodic directors while entertainment hubs Los Angeles and New York City are more than 50% people of color and female. What will it take to attain equity in the entertainment industry? Why does it matter? nnIn this course, students will examine rhetorical issues in promoting, defending, and opposing entertainment industry practices - writing and speaking across genres in persuasive response - and ultimately develop a collaborative 5-year strategic plan to usher in equity.n nThis course is part of the PWR advanced elective track in Social and Racial Justice (SRJ). Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For video course description, see https://undergrad.stanford.edu/programs/pwr/courses/advanced-courses/last-hopi-earth-rhetoric-entertainment-inequity.
Same as: PWR 194KT

CSRE 194NCR. Topics in Writing & Rhetoric: Introduction to Cultural Rhetorics. 4 Units.
All cultures have their own ways of communicating and making meaning through a range of situated rhetorical practices. In this gateway course to the Notation in Cultural Rhetorics, you'll explore the diverse contexts in which these practices are made and continue to be made;learn methodologies for examining their rhetorical production across media and modality; and study situated cultural practices and their historical and current developments.
Same as: PWR 194NCR

CSRE 194SS. Topics in Writing & Rhetoric: Making Rhetoric Matter: Human Rights at Home. 4 Units.
'Human rights' often sounds like it needs defending in far-off places: in distant public squares where soldiers menace gatherings of citizens, in dark jails where prisoners are tortured for their politics, in unknown streets where gender inequality has brutal consequences. But Bryan Stevenson, a lawyer fighting for social and racial justice in the jails of Alabama, proposes that we try 'proximity': that we get close to the injustices that are already close to us. This class thus takes human rights as a local issue, focusing on how terms like 'human' and 'rights' are interpreted on our campus and in our neighborhoods, cities, and region. Instead of a traditional human rights policy framework, we'll use the lens of intersectional ethics to explore specific rhetorical issues in gender politics, citizenship, higher education, police brutality, and mass incarceration. We will write, speak, and move across genres, responding to the work of incarcerated artists, creating embodied workshops, 'translating' ideas into new media (does someone you know need an animated video about gender pronouns? Or maybe it's time for a podcast about #PrisonRenaissance?), doing collaborative research, and 'writing back' to our audiences. For course video and full description see: https://undergrad.stanford.edu/programs/pwr/courses/advanced-courses/making-rhetoric-matter-human-rights-home.nnThis course is part of the PWR advanced elective track in Social and Racial Justice (SRJ). Prerequisite: first two levels of the writing requirement or equivalent transfer credit. For topics, see https://undergrad.stanford.edu/programs/pwr/courses/advanced-pwr-courses.
Same as: PWR 194SS

CSRE 195. U.S. Latinx Art. 5 Units.
This course surveys art made by Latinas/os/xs who have lived and worked in the United States since the 1700s, including Chicanos, Nuyoricans, and other Black, Brown, and Indigenous artists. While exploring the diversity of Latinx art, students will consider artists' relationships to identity, race, ethnicity, gender, and sexuality. Students will also study how artists have responded to and challenged discrimination, institutional exclusion, and national debates through their work. Attendance on the first day of class is a requirement for enrollment.
Same as: ARTHIST 194, CHILATST 195

CSRE 196C. Introduction to Comparative Studies in Race and Ethnicity. 5 Units.
How different disciplines approach topics and issues central to the study of ethnic and race relations in the U.S. and elsewhere. Lectures by senior faculty affiliated with CSRE. Discussions led by CSRE teaching fellows. Includes an optional Haas Center for Public Service certified Community Engaged Learning section. In accordance with Stanford virtual learning policies implemented for the Spring Quarter, all community engagement activities for this section will be conducted virtually. Please sign up for section 2 #33285 with Kendra, A. if you are interested in participating in virtual community engagement.
Same as: ENGLISH 172D, PSYCH 155, SOC 146, TAPS 165

CSRE 196D. Introduction to Comparative Studies in Race & Ethnicity: Continuing Community Engagement. 1-5 Unit.
In this continuation of CSRE 196C, students will continue to develop an interactive map that explores race and community in the Bay Area, through the work of local musicians. In collaboration with the SF-based non-profit, PeaceTones, you will interview musicians and contribute to an online map. The working map can be found at bayareamusicmap.weebly.com. Students will complete readings to explore diversity in the arts, specifically focusing on policy and advocacy implications as we develop the map as a tool for this work. Students will also meet as a group every other week for 50 minutes to reflect and discuss the work (we will set a time that works for everyone) and submit bi-weekly reflections of 500 words.

CSRE 198. Internship for Public Service. 1-5 Unit.
Students should consult with CCSRE Director of Community Engaged Learning (ddmurray@stanford.edu) to develop or gain approval for an internship that addresses race/ethnicity, public service, and social justice. Students will read a selection of short readings relevant to their placement, write bi-weekly reflections, and meet bi-weekly with the Director of Community Engaged Learning. Units are determined by the number of hours per week at the internship (2 hours/week = 1 unit; 5 hours/week = 2 units; 8 hours/week = 3 units; etc.) Group meetings may be required. May be repeated for credit.
Same as: CHILATST 198

CSRE 199. Preparation for Senior Thesis. 2-3 Units.
This course is designed for juniors (majors, minors, and those seeking Interdisciplinary Honors in CSRE or FGSS) who intend to write a senior thesis in one of the CSRE Family of Programs or FGSS Interdisciplinary Honors. The course offers resources and strategies for putting together a significant and original senior thesis. Topics to be covered include: getting funding; finding an advisor; navigating the institutional review board; formulating an appropriate question; and finding the right data/medium/texts.
Same as: AFRICAAM 199X, ANTHRO 189X, FEMGEN 199X

CSRE 200R. Directed Research. 1-5 Unit.
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CSRE 200W. Directed Reading. 1-5 Unit.
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CSRE 200X. CSRE Senior Seminar. 5 Units.
Required for CSRE-related students, including those who opt to write honors theses in other departments and programs. Research and the writing of the senior honors thesis or senior paper under the supervision of a faculty project adviser. The process of research including conceptualization, development of prospectus, development of theses, research, analysis, and writing.

CSRE 200Y. CSRE Senior Honors Research. 1-10 Unit.
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CSRE 200Z. CSRE Senior Honors Research. 1-5 Unit.
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CSRE 201B. The Undocumented Migration Project Exhibition at Stanford. 3 Units.
Are you an artist seeking a greater purpose for you art? Would you like to gain a sense of history and best practices for engaging your community in creative work? nnHuman Rights policy experts and activists, artists and scholars will participate in this (online via Zoom.us) student & community course on contemporary immigration policy and human rights issues.The course is structured around the ideas of art, activism and scholarship as they intersect with the subject of migration. Often considered distinct fields, we will explore the ways they merge together, and engage in dialogue with an array of guests from a multitude of backgrounds.nn In addition to learning about the Hostile Terrain94 project through tagging the identities of lives of those lost along the Sonoran desert and considering the U.S. policy of prevention through deterrence to crossing the U.S. Mexican Border, this class will explore art making with paper as the primary media. Paper with its material qualities can provide diverse and accessible entryways into the processes of inclusion, recordation, and mass participation. Through the interconnecting of the practical task of filling information onto toe tags to create the exhibition at the Anderson Collection, which documents the human remains of migrants identified for the exhibition (Fall 2020) with creating new objects in paper, the projects in this course will discover and recover identity through articulations of identity in paper.
Same as: CHILATST 201B

CSRE 201D. Public Art Interventions in Social & Cultural Spaces. 4-5 Units.
This team-taught course brings long-time artists, organizers, and researchers to present a range of strategies for creating public art and cultural productions in various social and cultural spaces. Our exploration of public art engages ideas about social space and public discourse. An approach that finds parallels in the art history lexicon of community-based; social sculpture, and place-making to name a few of the movements identified as other than the fine arts, ours is centered on work made collectively and in social and lived spaces through dialogue and conversation with others.

CSRE 201L. Doing Public History. 5 Units.
Examines history outside the classroom; its role in political/cultural debates in U.S. and abroad. Considers functions, practices, and reception of history in public arena, including museums, memorials, naming of buildings, courtrooms, websites, op-eds. Analyzes controversies arising when historians' work outside the academy challenges the status quo; role funders, interest groups, and the public play in promoting, shaping, or suppressing historical interpretation. Who gets to tell a group's story? What changes can public history enable? Students will engage in public history projects.
Same as: HISTORY 200L

CSRE 201X. Senior Seminar: For students with a second CSRE Family major. 5 Units.
Required for students working to fulfill WIM requirements for a second CSRE Family of Programs major; including those who opt to write honors theses in other departments and programs. Research and the writing of the senior honors thesis or senior paper under the supervision of a faculty project adviser. The process of research including conceptualization, development of prospectus, development of theses, research, analysis, and writing.

CSRE 212. Biology, Culture and Social Justice in Latin America: Perspectives from Forensic Anthropology. 5 Units.
This course will only take place in the first 5 weeks of the quarter.nnAs forensic anthropologists, we are routinely asked to make identifications of unknown human remains and provide courtroom testimony. Latin America has become a nexus for social justice work, as we respond to the humanitarian crisis along the U.S.-México Border. To improve identification methods of the undocumented dead, we must understand the diversity in Latinx people and adopt best scientific practices.
This course provides a cross-disciplinary, bio-cultural approach to Latin American variation and training in applied methods of forensic anthropology. Explore how tools of biological and cultural anthropology are used jointly in human rights investigation and social justice advancement. Discover the breadth of Latinx diversity and how historical, geographic, and socio-cultural factors shape this variation. Gain hands-on experience in case analysis, using skeletal, genetic, and recovery context information to estimate key parameters of identity. Use case studies to contextualize this work through an intersectional lens that attends to the living families and the applicable historical, geo-political and socio-cultural conditions.
Same as: ANTHRO 212B, CHILATST 212

CSRE 216X. Education, Race, and Inequality in African American History, 1880-1990. 3-5 Units.
Seminar. The relationship among race, power, inequality, and education from the 1880s to the 1990s. How schools have constructed race, the politics of school desegregation, and ties between education and the late 20th-century urban crisis.
Same as: AFRICAAM 116, AMSTUD 216, EDUC 216, HISTORY 255E

CSRE 217. Expanding Engineering Limits: Culture, Diversity, and Equity. 3 Units.
This course investigates how culture and diversity shape who becomes an engineer, what problems get solved, and the quality of designs, technology, and products. As a course community, we consider how cultural beliefs about race, ethnicity, gender, sexuality, abilities, socioeconomic status, and other intersectional aspects of identity interact with beliefs about engineering, influence diversity in the field, and affect equity in engineering education and practice. We also explore how engineering cultures and environments respond to and change with individual and institutional agency. The course involves weekly presentations by scholars and engineers, readings, short writing assignments, small-group discussion, and hands-on, student-driven projects. Students can enroll in the course for 1 unit (lectures only), or 3 units (lectures+discussion+project). For 1 unit, students should sign up for Section 1 and Credit/No Credit grading, and for 3 units students should sign up for Section 2 and either the C/NC or Grade option.
Same as: CSRE 117, ENGR 117, ENGR 217, FEMGEN 117, FEMGEN 217

CSRE 218. Islam, Race and Revolution: A Pan-American Approach. 3-5 Units.
Taking a pan-American approach to the study of religious traditions, this upper-level course traces the history of the critical intersection between race, religion and revolution among Muslims from the turn of the nineteenth century until the present day. Moving from the Atlantic Revolutions of the late eighteenth and early nineteenth centuries, to the United States, to the decolonizing Third World, and then finally to the contemporary Middle East, this class will emphasize that Islam and race together have been used by many groups in order to challenge existing power structures, agitate for change, and more than occasionally, transform the social, cultural and governmental structures comprising their worlds. Moreover, although this class is concentrated upon religious formations in the Americas, students will explore global events throughout the Muslim world in order to examine how global politics contribute to religious formations, solidarities and identities. At the conclusion of this course, students will be expected to write a 10-15 page research paper, and a topic will be chosen in consultation with the instructor. Students will also be expected to write weekly reflection papers, which will serve to facilitate class discussion. Undergraduates register for 200-level for 5 units. Graduate students register for 300-level for 3-5 units.
Same as: AMSTUD 218, RELIGST 218, RELIGST 318

CSRE 220. Public Policy Institute. 1-2 Unit.
** This course meets and concludes prior to Autumn Quarter. If you were not a student in this year's PPI, please DO NOT ENROLL. **nnPublic Policy Institute serves to: provide students with information and perspectives on important public policy issues that have particular relevancy to matters of race and ethnicity in American society, past and present; expose students to faculty and other professionals working on public policy-related issues; and provide insight into the legislative process of public policy making at the state and local levels. Students are expected to conduct research necessary to write a policy brief on a particular issue, and makena presentation based on the policy brief. A field trip to Sacramento introduces students to policymakers and current policy matters of importance to marginalized communities in California.

CSRE 221D. Crafting Challenging Conversations in a Conflicted World. 3 Units.
In moments of divisive, time-sensitive conflict and disagreement, interdependent community groups that are we-us oriented often struggle to maintain cohesive relationships. In this interactive, project-based course, participants will dive into the art of designing new products, services, or experiences for conflict. Throughout the course, participants can expect to unpack the fundamentals of design thinking and components of strong listening, leadership, and effective cultural competency. Individual one-on-one conversations as well as indigenous forms of group-interviewing, known as Peacemaking and Ho'oponopono, will be also explored. At the end of the course, students can expect to have created a low-resolution prototype based on qualitative research that answers the question: How might we lead with community-centered approaches, rather than with independent, divisive reactions in moments of conflict?.
Same as: NATIVEAM 221

CSRE 222. The Political Psychology of Intolerance. 5 Units.
This seminar explores the political psychology of intolerance. It focuses on two problems in particular race in America and the challenge of Muslim inclusion in Western Europe. It concentrates on primary research. The readings consist of both classic and contemporary (including on-going) studies of prejudice and politics.
Same as: POLISCI 222

CSRE 223. Building Creative Cultures in Organizations. 4-5 Units.
We will be visiting partner organizations off campus on Wednesdays during class. Therefore, we would strongly encourage students to plan their schedules including extra travel time to and from Stanford. All organizations should be within a 30 minute drive to campus.nn To apply for the class, submit an application: https://docs.google.com/forms/d/e/1FAIpQLSeGrrVae_2PkTXhYRrlhv0AXK8KslTFsvZeMcTlmMgix6LrxA/viewformnn**For more information, check out the course website: https://dschool.stanford.edu/classes/building-creative-culture-in-organizationsnnStudents will spend half of their class time at the d.school and half of their class time at organizations across Silicon Valley, ranging from startups to large enterprises. Through empathy interviews with employees you will learn to identify facilitators and barriers that organizations face when they transition to human-centered and design thinking culture. You will design and test interventions that will help them enhance their creative culture. The course is highly experiential and interdisciplinary. Come ready to unpack the biggest challenges of creative teams, explore interesting companies, connect with engaging thought leaders, and reflect on the future of work.

CSRE 226. Race and Racism in American Politics. 5 Units.
Topics include the historical conceptualization of race; whether and how racial animus reveals itself and the forms it might take; its role in the creation and maintenance of economic stratification; its effect on contemporary U.S. partisan and electoral politics; and policy making consequences.
Same as: AMSTUD 226, POLISCI 226, POLISCI 326

CSRE 226D. The Holocaust: Insights from New Research. 4-5 Units.
Overview of the history of the Holocaust, the genocide of European Jews. Explores its causes, course, consequences, and memory. Addresses the events themselves, as well as the roles of perpetrators and bystanders, dilemmas faced by victims, collaboration of local populations, and the issue of rescue. Considers how the Holocaust was and is remembered and commemorated by victims and participants alike. Uses different kinds of sources: scholarly work, memoirs, diaries, film, and primary documents.
Same as: CSRE 326D, HISTORY 226D, HISTORY 326D, JEWISHST 226E, JEWISHST 326D

CSRE 226X. Curating Experience: Representation in and beyond Museums. 2-4 Units.
In an age when some 50% of museum visitors only "visit" museums online and when digital technologies have broken open archival access, anyone can be a curator, a critic, an historian, an archivist. In this context, how do museums create experiences that teach visitors about who they are and about the world around them? What are the politics of representation that shape learning in these environments? Using an experimental instructional approach, students will reconsider and redefine what it means to curate experience. (This course must be taken for a minimum of 3 units to satisfy a Ways requirement.).
Same as: AMSTUD 226X, EDUC 226

CSRE 227. Juvenile Crime, Juvenile Justice. 3 Units.
Juveniles are accorded special status under the American legal system. This introductory course will examine the historical precedents and philosophical reasons for treating juveniles differently from adults, and review empirical evidence about child development that can illuminate the reasons for their special status within the court system. Students will learn about the distribution of juvenile delinquency and the impact of significant social and institutional influences on delinquency: family, school, peers, and drugs. The course will also provide a detailed overview of the juvenile system, from its beginning to the current state of the institution, which will include a review of police work with juveniles, pretrial procedures, and the juvenile court and corrections systems. Major court rulings that have shaped contemporary juvenile justice will be presented. Finally, the course will consider dispositional options available to Courts, and will identify the most effective in reducing delinquency. By the conclusion of this course, students should have an understanding of the juvenile justice system and how it compares with the adult justice system, what programs work to reduce recidivism, and be cognizant of some of the major legal and policy issues confronting that system today. The course format will combine lecture, group discussions, and guest presentations. Students may also have the opportunity to observe the juvenile justice system first hand by attending a juvenile court session, visiting a correctional facility for adjudicated delinquents, and hearing directly from those who work with high-risk youth on probation or in the community. Written Work. Each student will write four reflection papers, 5-7 pages each (about 1,700 words) over the quarter. Due dates will be listed in the class syllabus. Elements used in grading: Final grades will be based on the four reflection papers (20% each) and class participation (20%). This course is open to 2Ls, and 3Ls in the Law School. Cross-listed with Comparative Studies in Race & Ethnicity (CSRE 227); open to Juniors and Seniors.

CSRE 229. Racial Justice Through Law. 3 Units.
Racial inequality pervades American life. Race related controversies arise with depressing regularity. This, more than half a century after the Supreme Court's landmark decision in Brown v Board of Education, after landmark federal civil rights legislation, and at a time when many Americans profess to be colorblind. This course will examine why and how racial injustice persists, and the role of law in furthering or impeding the cause of racial justice. These questions will be explored across a variety of settings, including criminal justice, college admissions, political participation, primary/secondary education, employment, housing, hate speech, and the formation of family relationships. The class will employ a discussion based approach in which student participation is essential. Elements used in grading: Exam, class participation. Open to Junior and Senior undergraduates. Meets along with LAW 229.

CSRE 230. Law, Order, & Algorithms. 3 Units.
Human decision making is increasingly being displaced by predictive algorithms. Judges sentence defendants based on statistical risk scores; regulators take enforcement actions based on predicted violations; advertisers target materials based on demographic attributes; and employers evaluate applicants and employees based on machine-learned models. One concern with the rise of such algorithmic decision making is that it may replicate or exacerbate human bias. This course surveys the legal and ethical principles for assessing the equity of algorithms, describes statistical techniques for designing fair systems, and considers how anti-discrimination law and the design of algorithms may need to evolve to account for machine bias. Concepts will be developed in part through guided in-class coding exercises. Admission is by consent of instructor and is limited to 20 students. To enroll in the class, please complete the course application by March 20, available at: https://5harad.com/mse330/. Grading is based on response papers, class participation, and a final project. Prerequisite: CS 106A or equivalent knowledge of coding.
Same as: CS 209, MS&E 330, SOC 279

CSRE 230A. Digital Civil Society. 3 Units.
Digital technologies are changing the way members of the civil society come together to change the world. The 'civil society' includes social movements, grassroots activism, philanthropists, unions, nonprofits, NGOs, charities, and cooperatives, among others. Their mission is to effect important social and political transformations to bring about what they see as a better world. But their work and strategies are subject to significant changes in the digital era. The course will analyze the opportunities and challenges digital technologies present for associational life, free expression, privacy, and collective action. We will cover a wide range of key themes, including digital rights advocacy and racial justice, community-owned networks and de-colonial design, activist resistance to surveillance technologies, algorithmic bias, Black Twitter, and digital misinformation, micro-targeting and voter suppression. The course is global in scope (we will read authors and study cases from America, Europe, Asia, and Africa), taught by a multidisciplinary team (history, communication, computational social science, education), and is committed to a syllabus centering on the scholarship, expertise, and voices of marginalized communities.No prerequisite.
Same as: AFRICAAM 230A, COMM 230A

CSRE 230C. Digital Civil Society. 3 Units.
Digital technologies have fundamentally changed how people come together to make change in the world, a sphere of action commonly called 'civil society'. How did this happen, what's being done about it, and what does it mean for democratic governance and collective action in the future? This course analyzes the opportunities and challenges technology presents to associational life, free expression, individual privacy, and collective action. Year-long seminar sequence for advanced undergraduates or master's students. Each quarter may be taken independently. Spring focuses on emergent trends related to democracy and associational life, from the 2010s and into the future. Topics include the Arab Spring, global political propaganda, 'born digital' organizations, the development of electronic governments, and biotechnologies.
Same as: COMM 230C

CSRE 233A. Counseling Theories and Interventions from a Multicultural Perspective. 3-5 Units.
In an era of globalization characterized by widespread migration and cultural contacts, professionals face a unique challenge: How does one practice successfully when working with clients/students from so many different backgrounds? This course focuses upon the need to examine, conceptualize, and work with individuals according to the multiple ways in which they identify themselves. It will systematically examine multicultural counseling concepts, issues, and research. Literature on counselor and client characteristics such as social status or race/ethnicity and their effects on the counseling process and outcome will be reviewed. Issues in consultation with culturally and linguistically diverse parents and students and work with migrant children and their families are but a few of the topics covered in this course.
Same as: AFRICAAM 233A, EDUC 233A

CSRE 243. Writing Across Languages and Cultures: Research in Writing and Writing Instruction. 3-5 Units.
Theoretical perspectives that have dominated the literature on writing research. Reports, articles, and chapters on writing research, theory, and instruction; current and historical perspectives in writing research and research findings relating to teaching and learning in this area.
Same as: EDUC 145, EDUC 243

CSRE 245. Understanding Racial and Ethnic Identity Development. 3-5 Units.
This seminar will explore the impact and relative salience of racial/ethnic identity on select issues including: discrimination, social justice, mental health and academic performance. Theoretical perspectives on identity development will be reviewed, along with research on other social identity variables, such as social class, gender and regional identifications. New areas within this field such as the complexity of multiracial identity status and intersectional invisibility will also be discussed. Though the class will be rooted in psychology and psychological models of identity formation, no prior exposure to psychology is assumed and other disciplines-including cultural studies, feminist studies, and literature-will be incorporated into the course materials. Students will work with community partners to better understand the nuances of racial and ethnic identity development in different contexts. (Cardinal Course certified by the Haas Center).
Same as: AFRICAAM 245, EDUC 245, PSYCH 245A

CSRE 246. Constructing Race and Religion in America. 4-5 Units.
This seminar focuses on the interrelationships between social constructions of race and social interpretations of religion in America. How have assumptions about race shaped religious worldviews? How have religious beliefs shaped racial attitudes? How have ideas about religion and race contributed to notions of what it means to be "American"? We will look at primary and secondary sources and at the historical development of ideas and practices over time.
Same as: AFRICAAM 236, AMSTUD 246, HISTORY 256G, HISTORY 356G, RELIGST 246, RELIGST 346

CSRE 248X. Language, Literacy, and Culture. 3-4 Units.
This field-based Cardinal Course will provide a unique opportunity to combine theory and practice in the study of language, literacy, and culture in educational settings. It is a collaborative partnership between Stanford (through the Haas Center for Public Service) and the Boys and Girls Club of the Peninsula. Stanford students will work directly with children enrolled in the Boys and Girls Club after-school program at a youth center in Redwood City.
Same as: EDUC 248

CSRE 249. The Algerian Wars. 3-5 Units.
From Algiers the White to Algiers the Red, Algiers, the Mecca of the Revolutionaries in the words of Amilcar Cabral, this course offers to study the Algerian Wars since the French conquest of Algeria (1830-) to the Algerian civil war of the 1990s. We will revisit the ways in which the war has been narrated in literature and cinema, popular culture, and political discourse. A special focus will be given to the Algerian War of Independence (1954-1962). The course considers the racial representations of the war in the media, the continuing legacies surrounding the conflict in France, Africa, and the United States, from Che Guevara to the Black Panthers. A key focus will be the transmission of collective memory through transnational lenses, and analyses of commemorative events and movies. nReadings from James Baldwin, Assia Djebar, Albert Camus, Frantz Fanon, Mouloud Feraoun. Movies include "The Battle of Algiers," "Days of Glory," and "Viva Laldjérie." nTaught in English.
Same as: FRENCH 249, HISTORY 239G, JEWISHST 249

CSRE 250J. Baldwin and Hansberry: The Myriad Meanings of Love. 4 Units.
This course looks at major dramatic works by James Baldwin and Lorraine Hansberry. Both of these queer black writers had prophetic things to say about the world-historical significance of major dramas on the 20th Century including civil rights, revolution, gender, colonialism, racism, sexism, war, nationalism and as well as aesthetics and politics.
Same as: AFRICAAM 250J, AMSTUD 250J, FEMGEN 250J, TAPS 250J

CSRE 252C. The Old South: Culture, Society, and Slavery. 5 Units.
This course explores the political, social, and cultural history of the antebellum American South, with an emphasis on the history of African-American slavery. Topics include race and race making, slave community and resistance, gender and reproduction, class and immigration, commodity capitalism, technology, disease and climate, indigenous Southerners, white southern honor culture, the Civil War, and the region's place in national mythmaking and memory.
Same as: AFRICAAM 252C, HISTORY 252C

CSRE 256SI. Race, Class and Global Health. 2 Units.
This course's goal is to critically engage students in the socioeconomic and racial disparities in healthcare outcomes and encourage students to think broadly about the complex relationship between institutions, healthcare providers, socioeconomic status, and race/ethnicity. The topics will center on conceptual issues important for understanding how socioeconomic and minority status can lead to poor health outcomes examining how conscious and unconscious institutional biases affect treatment, care, and access, and addressing proposals for how to reduce disparities in health care. nThe focus of the course is broad. The first three weeks will center on public health issues due to global healthcare trends, including the results of disparities in the United States. These discussions will frame our sessions int he latter sic weeks, which will each consist of a case study of specific cases of disparities and response to such inequities worldwide, from India to Rwanda. nEach class's discussion will be guided by case studies. The readings will come from a variety of sources, including academic journals, more popular journals and magazines, books and government documents. Student will be expected to complete the readings and a reflection in advance of class each week. Each week will additionally include optional readings that will guide additional discussion.

CSRE 258. Black Feminist Theater and Theory. 4 Units.
From the rave reviews garnered by Angelina Weld Grimke's lynching play, Rachel to recent work by Lynn Nottage on Rwanda, black women playwrights have addressed key issues in modern culture and politics. We will analyze and perform work written by black women in the U.S., Britain and the Caribbean in the 20th and 21st centuries. Topics include: sexuality, surrealism, colonialism, freedom, violence, colorism, love, history, community and more. Playwrights include: Angelina Grimke, Lorriane Hansberry, Winsome Pinnock, Adrienne Kennedy, Suzan- Lori Parks, Ntzoke Shange, Pearl Cleage, Sarah Jones, Anna DeVeare Smith, Alice Childress, Lydia Diamond and Zora Neale Hurston.).
Same as: AFRICAAM 258, FEMGEN 258X, TAPS 258

CSRE 260. Race and Ethnicity in Urban California. 4-5 Units.
The course is part of an ongoing research project that examines the consequences of longterm social, economic, and political changes in ethnic and race relations in in urban California. The required readings, discussions, and service learning component all provide a platform for students to explore important issues, past and present, affecting California municipalities undergoing rapid demographic transformation.
Same as: AFRICAAM 169A, AMSTUD 169, URBANST 169

CSRE 262C. African American Literature and the Retreat of Jim Crow. 5 Units.
After the unprecedented carnage of WWII, the postwar era witnessed the slow decline of the segregated Jim Crow order and the onset of landmark civil rights legislation. What role did African American literature and culture play in this historical process? What does this shift in racial theory and praxis mean for black literary production, a tradition constituted by the experience of slavery and racial oppression? Focus on these questions against the backdrop of contemporaneous developments: the onset of the Cold War, decolonization and the formation of the Third World, and the emergence of the "new liberalism.".
Same as: AFRICAAM 262C, AMSTUD 262C

CSRE 264. History of Prisons and Immigration Detention. 4-5 Units.
This course will explore the history of the growing prison and immigration detention systems in the United States. They will pay particular attention to how they developed and how they affect different populations.
Same as: AMSTUD 264, HISTORY 264, HISTORY 364

CSRE 265. Crossing the Atlantic: Race and Identity in the African Diaspora. 3-5 Units.
This course interrogates the relationship between literature, culture, race and identity in the African diaspora. We will analyze racial discourses through literature, and various forms of cultural expression while examining the role of class and gender in these configurations. As we follow the historical and geographical trajectories of people of African descent in different parts of the world, students will explore literary and political movements with the objective of examining how race has been constructed and is performed in different regions of the diaspora. Our readings will take us from Martinique, Guadeloupe, Guyana, France, and Senegal to Cuba, Brazil, Haiti and the Dominican Republic. Topics discussed will include: Race, identity, gender, class, memory, oral tradition, Afro-Caribbean religions, Negrismo, Négritude, Antillanité, Créolité, colonialism, modernity and national belonging. Readings will include the works of: Jean Price-Mars, Léopold Senghor, Aimé Césaire, Léon Damas, Frantz Fanon, Nicolás Guillén, Nancy Morejon, Maryse Condé, Patrick Chamoiseau, Edouard Glissant, among others. Taught in English.
Same as: COMPLIT 264, FRENCH 264

CSRE 285. Texts and Contexts: French-English Translation. 3-5 Units.
This course introduces students to the ways in which translation has shaped the image of France and the Francophone world. What texts and concepts were translated, how, where, and to what effect? Students will work on a translation project throughout the quarter and translate texts from French to English and English to French. Topics may include the role of translation in the development of cultures; the political dimension of translation, translation in the context of migration, and the socio-cultural frameworks that shape translations. Case studies: Camus, Fanon, Glissant, de Beauvoir, Meddeb, Duras. Prior knowledge of French language required.
Same as: COMPLIT 285, FRENCH 185, FRENCH 285

CSRE 291. Urban Schools, Social Policy, and the Gentrifying City. 3-4 Units.
This course is designed to help students develop a more sophisticated understanding of educational inequality in the contemporary U.S. city. This course will survey existing literature about the intersection of gentrification and urban schooling, focusing on policies and practices that gave rise to the current urban condition, theory and research about urban redevelopment, collateral consequences for schools and communities, and how these issues relate to the structure and governance of urban schools as well as to the geography of opportunity more broadly.
Same as: EDUC 390, URBANST 141A

CSRE 292. Education for Liberation: A History of African American Education, 1800 to the Present. 3-5 Units.
This course examines discourses around education and freedom in African American educational thought from the 19th century to the present, using both primary sources and the works of current historians. The course pays particular attention to how the educational philosophies of different African American thinkers reflected their conceptions of what shape freedom might take in the American context, and the tension between educational outlooks that sought inclusion or integration versus those that prized self-determination. We will also be attentive to the ways in which age, gender, geography, class, and color worked to influence the pursuit and achievement of various African American educational visions. This will be a 3-5 credit course and meet as a seminar open both to graduate students and advanced undergraduates.
Same as: EDUC 392

CSRE 298G. Race, Gender, & Sexuality in Chinese History. 5 Units.
This course examines the diverse ways in which identities--particularly race, ethnicity, gender and sexuality have been understood and experienced in Chinese societies, broadly defined, from the imperial period to the present day. Topics include changes in women's lives and status, racial and ethnic categorizations, homosexuality, prostitution, masculinity, and gender-crossing.
Same as: ASNAMST 298, FEMGEN 298C, HISTORY 298C, HISTORY 398C

CSRE 301. Comparative Studies in Race and Ethnicity. 3-5 Units.
an advanced introduction to concepts and debates within the multi-disciplinary field of comparative studies in race and ethnicity.
Same as: ENGLISH 372D

CSRE 302. Decolonizing the Indigenous Classroom. 3-5 Units.
Using Indigenous and decolonizing perspectives on education, this interdisciplinary course will examine interaction and language in cross-cultural educational situations, including language, literacy and interethnic communication as they relate to Indigenous American classrooms. Special attention will be paid to implications of social, cultural and linguistic diversity for educational practice, along with various strategies for bridging intercultural differences between schools and Native communities.
Same as: CSRE 116, EDUC 186, EDUC 286, NATIVEAM 116

CSRE 303. CSRE Graduate Student Workshop Series. 1 Unit.
This course is designed specifically for Graduate Fellows in the Center for Comparative Studies in Race and Ethnicity.

CSRE 326D. The Holocaust: Insights from New Research. 4-5 Units.
Overview of the history of the Holocaust, the genocide of European Jews. Explores its causes, course, consequences, and memory. Addresses the events themselves, as well as the roles of perpetrators and bystanders, dilemmas faced by victims, collaboration of local populations, and the issue of rescue. Considers how the Holocaust was and is remembered and commemorated by victims and participants alike. Uses different kinds of sources: scholarly work, memoirs, diaries, film, and primary documents.
Same as: CSRE 226D, HISTORY 226D, HISTORY 326D, JEWISHST 226E, JEWISHST 326D

CSRE 329. Rethinking Francophone Literature in the 21st Century. 3-5 Units.
This course is a critical examination of literature from the Francophone world of the 20th and 21st centuries. Students will travel through time and space with a selection of novels, poems, essays, and short stories. In this historical and cultural journey through Sub-Saharan Africa, North Africa, the Caribbean, Canada, Vietnam and Mauritius, our objective will be to provide a reassessment of what Francophone studies mean in the 21st century. Topics discussed in the course will include race and representation, national and cultural identity, immigration and nationalism, transnationalism and diaspora, "littérature-monde," the politics of language, postcolonialism and universalism. Readings will include the works of Dani Laferrière, Bessora, Ken Bugul, Alain Mabanckou, Kim Thúy, Ananda Devi, Abdourahman Waberi, Véronique Tadjo and Abdelkebir Khatibi. Taught in French.
Same as: FRENCH 329

CSRE 350G. Performing Race, Gender, and Sexuality. 4 Units.
In this theory and practice-based course, students will examine performances by and scholarly texts about artists who critically and mindfully engage race, gender, and sexuality. Students will cultivate their skills as artist-scholars through written assignments and the creation of performances in response to the assigned material. Attendance and written reflection about a live performance event on campus are required. Students will also learn various meditation practices as tools for making and critiquing performance, in both our seminar discussions and performance workshops. We will approach mindfulness as method and theory in our own practice, as well as in relation to the works studied. We will also consider the ethics and current debates concerning the mindfulness industry. Examples of artists studied include James Luna, Nao Bustamante, Renee Cox, William Pope.L, Cassils, boychild, Curious, Adrian Piper, Xandra Ibarra, Valérie Reding, Guillermo Gomez-Peña, and Ana Mendieta.
Same as: ARTSINST 150G, CSRE 150G, FEMGEN 150G, LIFE 150G, TAPS 150G

CSRE 357. Edward Said, or Scholar vs Empire. 3-4 Units.
How can an intellectual fight forces far larger than a single individual? How can solidarity be an antidote to racism? Why is there no distinction between the local and the global? What is the scholar's role in an alienating political climate? Why are criticism and humanism necessary partners? The author of Orientalism and world-changing frameworks such as Travelling Theory, Permission To Narrate, and Contrapuntal Reading, as well as remarkable texts, such as On Late Style and Representations of the Intellectual, teaches us how criticism can blunt instruments of empire. In this course, students observe the journey of one scholar as he writes between worlds against imperialist supremacy and colonial logic. They'll move from Exile to Indigeneity, Silence to Music, Centers to Margins, Victimhood to Dignity, West to East, Peace to Terror, Theory to Practice, Politics to Knowledge, Religiosity to Secularism, Statehood to Fragmentation, and back.
Same as: ENGLISH 357S, GLOBAL 157, TAPS 157S, TAPS 357S

CSRE 363. Race in Greco-Roman Antiquity. 3-5 Units.
This course will investigate representations of black people in ancient Greek and Roman antiquity. In addition to interrogating the conflation of the terms "race" and "blackness" as it applies to this time period, students will learn how to critique the interference of racial ideologies in modern scholarship, and they will cross-examine the role that race and cultural imperialism have played in the formation of the current discipline of Classics. Students will be invited to incorporate materials that they deem crucial into this discussion of skin color in Greco-Roman antiquity. Therefore, this course will benefit greatly from those with a broad spectrum of interests related to this topic.
Same as: CLASSICS 363

CSRE 364A. Race and Performance. 3-5 Units.
How does race function in performance and dare we say ¿live and in living color?¿ How does one deconstruct discrimination at its roots?n nFrom a perspective of global solidarity and recognition of shared plight among BIPOC communities, we will read and perform plays that represent material and psychological conditions under a common supremacist regime. Where and when possible, we will host a member of the creative team of some plays in our class for a live discussion. Assigned materials include works by Lin-Manuel Miranda, Amiri Baraka, Young Jean Lee, Ayad Akhtar, Susan Lori Parks, David Henry Hwang, Betty Shamieh, Jeremy O. Harris, and Christopher Demos Brown.n nThis class offers undergraduate students a discussion that does not center whiteness, but takes power, history, culture, philosophy, and hierarchy as core points of debate. In the first two weeks, we will establish the common terms of the discussion about stereotypes, representation, and historical claims, but then we will quickly move toward an advanced conversation about effective discourse and activism through art, performance, and cultural production. In this class, we assume that colonialism, slavery, white supremacy, and oppressive contemporary state apparatuses are real, undeniable, and manifest. Since our starting point is clear, our central question is not about recognizing or delineating the issues, but rather, it is a debate about how to identify the target of our criticism in order to counter oppression effectively and dismantle long-standing structures.n nNot all BIPOC communities are represented in this syllabus, as such claim of inclusion in a single quarter would be tokenistic and disingenuous. Instead, we will aspire to understand and negotiate some of the complexities related to race in several communities locally in the U.S. and beyond.
Same as: AFRICAAM 164A, CSRE 164A, TAPS 164

CSRE 371. Representation: Race, Law, and Politics. 2-4 Units.
Graduate seminar. In this course, we will work together to develop a detailed and comprehensive understanding of the concept(s) of political representation. We will do so by examining a number of historical and contemporary theories of political representation developed within philosophy and cognate fields. 2 unit option only for Phil PhDs beyond the second year.
Same as: PHIL 371W

CSRE 385. Race, Ethnicity, and Language: Pedagogical Possibilities. 3-4 Units.
This seminar explores the intersections of language and race/racism/racialization in the public schooling experiences of students of color. We will briefly trace the historical emergence of the related fields of sociolinguistics and linguistic anthropology, explore how each of these scholarly traditions approaches the study of language, and identify key points of overlap and tension between the two fields before considering recent examples of inter-disciplinary scholarship on language and race in urban schools. Issues to be addressed include language variation and change, language and identity, bilingualism and multilingualism, language ideologies, and classroom discourse. We will pay particular attention to the implications of relevant literature for teaching and learning in urban classrooms.
Same as: AFRICAAM 389C, EDUC 389C

CSRE 389A. Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations. 3-5 Units.
Language, as a cultural resource for shaping our identities, is central to the concepts of race and ethnicity. This seminar explores the linguistic construction of race and ethnicity across a wide variety of contexts and communities. We begin with an examination of the concepts of race and ethnicity and what it means to be "doing race," both as scholarship and as part of our everyday lives. Throughout the course, we will take a comparative perspective and highlight how different racial/ethnic formations (Asian, Black, Latino, Native American, White, etc.) participate in similar, yet different, ways of drawing racial and ethnic distinctions. The seminar will draw heavily on scholarship in (linguistic) anthropology, sociolinguistics and education. We will explore how we talk and don't talk about race, how we both position ourselves and are positioned by others, how the way we talk can have real consequences on the trajectory of our lives, and how, despite this, we all participate in maintaining racial and ethnic hierarchies and inequality more generally, particularly in schools.
Same as: ANTHRO 320A, EDUC 389A, LINGUIST 253

CSRE 393. The Art of Punk: Sound, Aesthetics and Performance. 5 Units.
This seminar explores the sonic and visual aesthetics of punk rock since the 1970s. While studying music, videos, zines, and album covers, students will examine the convergence of art with politics among artists, such as Lydia Lunch, Vaginal Davis, and Shizu Saldamando, and bands, including Crass, the Plasmatics, and Los Illegals, as well as punk subgenres, like No Wave, Riot Grrrl, and Queercore. Likewise, students will consider how issues of identity, race, gender and sexuality informed artists and their work.
Same as: ARTHIST 493

CSRE 394. Complicating Minimal Art: Race, Gender, and Sexuality. 5 Units.
In this seminar, students will uncover the sociopolitical complexities of Minimalism, a movement and style of art defined by pared-down geometric forms that emerged in the 1950s and continues to be popular today. Through a critical engagement with Minimalism's art historical narrative and art world controversies, students will consider the influence of key historical events on artists and their work, such as the Civil Rights Movement, Vietnam War, and AIDS Epidemic, as well as issues of race, gender, and sexuality. In the process, students will recover the contributions people of color, women, and queer artists have made to Minimal art.
Same as: ARTHIST 494

CSRE 433. Intersectional Qualitative Approaches. 3-5 Units.
This variable unit, graduate course is designed to explore intersectional analysis because intersectionality is a "method and a disposition, a heuristic and an analytic tool" (Carbado, Crenshaw, Mays, & Tomlinson, 2013, p. 11). This course engages the approaches and analyses possible within an intersectional theoretical framing by examining a wide range of interdisciplinary research methodologies and methods. We will study a myriad of innovative ways of doing intersectional scholarship and given the focus on robust methodological moves, this course will highlight questions of axiology of inquiry, analysis, and representation through an intersectional lens. Our class will investigate and create intersectional conceptual framing for designing and interpreting research. We will explore and develop qualitative or mixed¿methods research data collection, analyses, holistic interpretation, and analytic writing from an intersectional perspective.
Same as: EDUC 433

Jewish Studies Courses

JEWISHST 4. What Didn't Make It into the Bible. 4 Units.
Over two billion people alive today consider the Bible to be sacred scripture. But how did the books that made it into the bible get there in the first place? Who decided what was to be part of the bible and what wasn't? How would history look differently if a given book didn't make the final cut and another one did? Hundreds of ancient Jewish and Christian texts are not included in the Bible. "What Didn't Make It in the Bible" focuses on these excluded writings. We will explore the Dead Sea Scrolls, Gnostic gospels, hear of a five-year-old Jesus throwing temper tantrums while killing (and later resurrecting) his classmates, peruse ancient romance novels, explore the adventures of fallen angels who sired giants (and taught humans about cosmetics), tour heaven and hell, encounter the garden of Eden story told from the perspective of the snake, and learn how the world will end. The course assumes no prior knowledge of Judaism, Christianity, the bible, or ancient history. It is designed for students who are part of faith traditions that consider the bible to be sacred, as well as those who are not. The only prerequisite is an interest in exploring books, groups, and ideas that eventually lost the battles of history and to keep asking the question "why." In critically examining these ancient narratives and the communities that wrote them, you will investigate how religions canonize a scriptural tradition, better appreciate the diversity of early Judaism and Christianity, understand the historical context of these religions, and explore the politics behind what did and did not make it into the bible.
Same as: CLASSICS 9N, RELIGST 4

JEWISHST 4N. A World History of Genocide. 3-5 Units.
Reviews the history of genocide from ancient times until the present. Defines genocide, both in legal and historical terms, and investigates its causes, consequences, and global dimensions. Issues of prevention, punishment, and interdiction. Main periods of concern are the ancient world, Spanish colonial conquest; early modern Asia; settler genocides in America, Australia, and Africa; the Armenian genocide and the Holocaust; genocide in communist societies; and late 20th century genocide.
Same as: HISTORY 4N

JEWISHST 5. Biblical Greek. 3-5 Units.
This is a one term intensive class in Biblical Greek. After quickly learning the basics of the language, we will then dive right into readings from the New Testament and the Septuagint, which is the ancient Greek translation of the Hebrew Bible. No previous knowledge of Greek required. If demand is high for a second term, an additional quarter will be offered in the Spring.
Same as: CLASSICS 6G, RELIGST 171A

JEWISHST 5B. Biblical Greek. 3-5 Units.
This is a continuation of the Winter Quarter Biblical Greek Course. Pre-requisite: CLASSICS 6G or a similar introductory course in Ancient Greek.
Same as: CLASSICS 7G

JEWISHST 5G. Intensive Biblical Greek. 8 Units.
Equivalent to two quarters of Biblical Greek (CLASSICS 6G, 7G). Students will learn the core of New Testament Greek with the goal of learning to accurately translate and read the New Testament. Students will read one-third of the Gospel of John during the course and will be well-prepared to read the Greek New Testament independently after the course. Focus on knowledge of key vocabulary and grammar needed to read the Greek Bible with ease. No previous knowledge of Greek required. Course does not fulfill the Stanford language requirement.
Same as: RELIGST 171X

JEWISHST 18N. Religion and Politics: Comparing Europe to the U.S.. 3-4 Units.
Interdisciplinary and comparative. Historical, political, sociological, and religious studies approaches. The relationship between religion and politics as understood in the U.S. and Europe. How this relationship has become tense both because of the rise of Islam as a public religion in Europe and the rising influence of religious groups in public culture. Different understandings and definitions of the separation of church and state in Western democratic cultures, and differing notions of the public sphere. Case studies to investigate the nature of public conflicts, what issues lead to conflict, and why. Why has the head covering of Muslim women become politicized in Europe? What are the arguments surrounding the Cordoba House, known as the Ground Zero Mosque, and how does this conflict compare to controversies about recent constructions of mosques in Europe? Resources include media, documentaries, and scholarly literature.
Same as: RELIGST 18N

JEWISHST 19N. Everyone Eats: Food, Religion and Culture. 3 Units.
Food is one of the most essential aspects of the human experience. The decisions and choices we make about food define who we have been, who we are now, and who we want to become. In this seminar we will study how food habits have shaped religious traditions, and vice versa, how religious traditions have shaped food ways. Some traditions are centered around food regiments such as the dietary laws, derived from biblical law that shapes Jewish and Christian tradition very differently. Indeed, many religious and ethical thinkers, as well as anthropologists, have interpreted the meanings of the dietary laws very differently. Further, in many religious traditions the killing of animals and consumption of meat is deeply fraught. We will explore the history of food practices and their contemporary impact; the connections between food, religion, and identity; the meanings that religious thinkers and anthropologists have attributed to food habits; as well as the creative translations of religious traditions into contemporary food ethics by various social movements and groups, predominantly in the U.S.
Same as: CSRE 19N, RELIGST 19N

JEWISHST 37Q. Zionism and the Novel. 3 Units.
At the end of the nineteenth century, Zionism emerged as a political movement to establish a national homeland for the Jews, eventually leading to the establishment of the State of Israel in 1948. This seminar uses novels to explore the changes in Zionism, the roots of the conflict in the Middle East, and the potentials for the future. We will take a close look at novels by Israelis, both Jewish and Arab, in order to understand multiple perspectives, and we will also consider works by authors from the North America and from Europe. NOTE: To satisfy a WAYS requirement, this course must be taken for at least 3 units. In AY 2020-21, a 'CR' grade will satisfy the WAYS requirement.
Same as: COMPLIT 37Q

JEWISHST 39S. The Other Side: Ethnography and Travel Writing through Jewish, Christian and Muslim Eyes. 3 Units.
In an age of reality television and social media, we are bombarded with snapshots of the exotic, monstrous, and bizarre. Yet despite their quantity, these images pale in comparison to the qualities of terror, wonder and curiosity that ancient travelers evoked in their encounters with foreign lands and peoples. Early ethnographers, too, painstakingly explored the beliefs and practices of unfamiliar peoples sometimes very close to home. This course surveys their most vivid writings, from ancient Greece to the colonization of the New World, focusing on the relation between fascination with the other and the author's own religious imagination. In particular, it introduces the contributions of Jewish travelers and ethnographers to this history, which has often been written from the standpoint of imperial, ecclesiastical or colonial power. It stresses literary continuities across three general periods (ancient, medieval, and colonial), showing how remarkably consistent patterns of identification spring from diverse encounters.

JEWISHST 53. Exploring Jewish Spirituality. 4 Units.
It was once accepted as fact that Judaism is, at its core, a rational religion devoid of any authentic mystical tradition. But the past century of scholarship has reversed this claim, demonstrating that the spiritual life has been integral to Judaism's vital heart since ancient times. This yearning for a direct immediate experience of God's Presence, a longing to grasp the mysteries of the human soul and know the inner dynamics of the Divine realm, has taken on many different forms across the centuries.
This course will introduce students to the major texts--from theological treatises to poems and incantations--and core ideas of Jewish mysticism and spirituality, tracking their development from the Hebrew Bible to the dawn of modernity. Close attention will be paid to the historical context of these sources, and we will also engage with broader methodological approaches--from phenomenology to philology--regarding the academic study of religion and the comparative consideration of mysticism in particular.
This course assumes no prior background of Judaism or any other religious traditions. All readings will be made available in English. Students are, however, invited to challenge themselves with the "optional/advanced" readings of sources both primary and secondary. Pending interest, students with facility in the original languages (Hebrew or Aramaic) will be given the opportunity to do so.
Same as: RELIGST 53

JEWISHST 85B. Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV. 3 Units.
(HISTORY 85B is 3 units; HISTORY 185B is 5 units.) Who are American Jews as depicted in popular media-- film, television, etc.-- since the Second World War? How are their religion, politics, mores, and practices represented and what ways, if at all, do such portraits reflect historical trends among Jews and society in general? What can be learned from film or tv about Jewish identity, notions of Jewish power and powerlessness, communal cohesiveness and assimilation, sexuality and the wages of intermarriage or race?.
Same as: CSRE 85B, HISTORY 85B, REES 85B

JEWISHST 86. Exploring the New Testament. 4 Units.
To explore the historical context of the earliest Christians, students will read most of the New Testament as well as many documents that didn't make the final cut. Non-Christian texts, Roman art, and surviving archeological remains will better situate Christianity within the ancient world. Students will read from the Dead Sea Scrolls, explore Gnostic gospels, hear of a five-year-old Jesus throwing divine temper tantrums while killing (and later resurrecting) his classmates, peruse an ancient marriage guide, and engage with recent scholarship in archeology, literary criticism, and history.
Same as: CLASSICS 43, RELIGST 86

JEWISHST 86Q. Blood and Money: The Origins of Antisemitism. 4-5 Units.
For over two millennia, Jews and Judaism have been the object of sustained anxieties, fears, and fantasies, which have in turn underpinned repeated outbreaks of violence and persecution. This course will explore the development and impact of antisemitism from Late Antiquity to the Enlightenment, including the emergence of the Blood libel, the association between Jews and moneylending, and the place of Judaism in Christian and Islamic theology. No prior background in history or Jewish studies is necessary. Prerequisite: PWR 1.
Same as: HISTORY 86Q

JEWISHST 101A. First-Year Hebrew, First Quarter. 5 Units.
In the first-year program, students acquire essential Hebrew through abundant opportunities to interact in the language in meaningful ways. The students learn to function appropriately in the language in a variety of social and cultural contexts.
Same as: AMELANG 128A

JEWISHST 101B. First-Year Hebrew, Second Quarter. 5 Units.
Continuation of AMELANG 128A. Prerequisite: Placement Test, AMELANG 128A.
Same as: AMELANG 128B

JEWISHST 101C. First-Year Hebrew, Third Quarter. 5 Units.
Continuation of AMELANG 128B. Prerequisite: Placement Test, AMELANG 128B. Fulfill the University Foreign Language Requirement.
Same as: AMELANG 128C

JEWISHST 102A. Second-Year Hebrew, First Quarter. 4 Units.
Continuation of AMELANG 128C. Sequence integrating culture and language. Emphasis is on proficiency in oral and written discourse including presentational language and socio culturally appropriate discourse in formal and informal, academic, and professional contexts. Prerequisite: Placement Test, First Year Hebrew .
Same as: AMELANG 129A

JEWISHST 102B. Second-Year Hebrew, Second Quarter. 4 Units.
Continuation of AMELANG 129A. Sequence integrating culture and language. Emphasis is on proficiency in oral and written discourse including presentational language and socio culturally appropriate discourse in formal and informal, academic, and professional contexts. Prerequisite: Placement Test, Hebrew 129A.
Same as: AMELANG 129B

JEWISHST 102C. Second-Year Hebrew, Third Quarter. 4 Units.
Continuation of AMELANG 129B. Sequence integrating culture and language. Emphasis is on advanced proficiency in oral and written discourse including presentational language and socio culturally appropriate discourse in formal and informal, academic, and professional contexts. Prerequisite: placement Test, Hebrew129B.
Same as: AMELANG 129C

JEWISHST 103A. Third-Year Hebrew, First Quarter. 3 Units.
Continuation of AMELANG 129C. Prerequisite: Placement Test, AMELANG 129C.
Same as: AMELANG 130A

JEWISHST 104. Hebrew Forum. 1-3 Unit.
Intermediate and advanced level. Biweekly Hebrew discussion on contemporary issues with Israeli guest speakers. Vocabulary enhancement. Focus on exposure to academic Hebrew. May be repeat for credit up to 4 times.
Same as: AMELANG 131A

JEWISHST 104A. First-Year Yiddish, First Quarter. 4 Units.
Reading, writing, and speaking.
Same as: AMELANG 140A

JEWISHST 104B. First-Year Yiddish, Second Quarter. 4 Units.
Continuation of AMELANG 140A. Prerequisite: AMELANG.
Same as: AMELANG 140B

JEWISHST 104C. First-Year Yiddish, Third Quarter. 4 Units.
Continuation of AMELANG 140B. Prerequisite: AMELANG 140B. Fulfills the University Foreign Language Requirement.
Same as: AMELANG 140C

JEWISHST 105. Hebrew Forum. 2-4 Units.
Intermediate and advanced level. Biweekly Hebrew discussion on contemporary issues with Israeli guest speakers. Vocabulary enhancement. Focus on exposure to academic Hebrew. May repeat for credit.
Same as: AMELANG 131B

JEWISHST 106. Reflection on the Other: The Arab Israeli Conflict in Literature and Film. 3-5 Units.
How literary works outside the realm of Western culture struggle with questions such as identity, minority, and the issue of the Other. How the Arab is viewed in Hebrew literature, film and music and how the Jew is viewed in Palestinian works in Hebrew or Arabic (in translation to English). Historical, political, and sociological forces that have contributed to the shaping of these writers' views. Guest lectures about the Jew in Palestinian literature and music. Note: To be eligible for WAYS credit, you must take course for a Letter Grade.
Same as: AMELANG 126, COMPLIT 145

JEWISHST 107A. Biblical Hebrew, First Quarter. 2 Units.
Establish a basic familiarity with the grammar and vocabulary of Biblical Hebrew and will begin developing a facility with the language. Students that are enrolled in this course must also enroll in Beginning Hebrew. This course requires no prior knowledge of Hebrew and will begin with learning the alphabet. By the end of the year, students will be able to translate basic biblical texts, will be familiar with common lexica and reference grammars, and will have sufficient foundational knowledge to enable them to continue expanding their knowledge either in a subsequent course or own their own.
Same as: RELIGST 170A

JEWISHST 107B. Biblical Hebrew, Second Quarter. 2 Units.
Continuation of 170A.

JEWISHST 107C. Biblical Hebrew, Third Quarter. 4 Units.
Continuation of 170B.
Same as: AMELANG 170C

JEWISHST 120. Sex and Gender in Judaism and Christianity. 3 Units.
What role do Jewish and Christian traditions play in shaping understandings of gender differences? Is gender always imagined as dual, male and female? This course explores the variety of ways in which Jewish and Christian traditions - often in conversation with and against each other - have shaped gender identities and sexual politics. We will explore the central role that issues around marriage and reproduction played in this conversation. Perhaps surprisingly, early Jews and Christian also espoused deep interest in writing about 'eunuchs' and 'androgynes,' as they thought about Jewish and Christian ways of being a man or a woman. We will examine the variety of these early conversations, and the contemporary Jewish and Christian discussions of feminist, queer, trans- and intersex based on them.
Same as: FEMGEN 130, RELIGST 130

JEWISHST 123. Muslims, Jews, and Christians: Conflict, Coexistence, and Collaboration. 4 Units.
Relationships between Muslims, Jews, and Christians today are informed by a multitude of complex and often painful histories. These faith traditions emerged out of deep and sustained engagement with one another sharing theological and ethical principles, and revering many of the same figures and there have been many periods of rich and productive interaction. Yet there have also been areas of dissension and conflict, and periods when theological, social, or political disagreement devolved into violence and oppression. In recent times (especially following the Holocaust and the establishment of the modern State of Israel), religious, political, and intellectual leaders of Muslim, Jewish, and Christian communities, in the U.S. and around the world, have recognized the need to forge deeper and more meaningful relationships with one another. Knowledge and understanding of the perspectives that different communities and individuals bring to bear on their entangled past, present, and future are a critical part of efforts to resolve intransigent conflicts and advance mutual interests. This course explores some of the most significant moments of interaction through literature and art, polemic and dialogue that have shaped engagements between Muslims, Jews, and Christians throughout history, and examines both prospects and pitfalls for engagement in the present and future.
Same as: RELIGST 133

JEWISHST 125. Modern Jewish Mysticism: Devotion in a Secular Age. 4 Units.
The twentieth-century was a time of tremendous upheaval and unspeakable tragedy for the Jewish communities of Europe. But the past hundred years were also a period of great renewal for Jewish spirituality, a renaissance that has continued into the present day. Beginning with the writings of the Safed Renaissance, the Sabbateanism, and the Hasidic masters, our course will focus on key thinkers in the 19th and 20th centuries, including: Hillel Zeitlin, Martin Buber, Abraham Isaac Kook, Abraham Joshua Heschel, and Arthur Green. Drawing upon essays, homilies, and poems, we will examine the ways in which their works re-cast and reinterpret the Jewish tradition in answer to the singular questions and challenges modernity. We will mark the development of their thinking against the two World Wars, the Holocaust, and the complex and multi-faceted processes of secularization. We will also consider the theological project of modern Jewish mystics in dialogue with modern Jewish philosophers (such as Hermann Cohen, Franz Rosenzweig, and Emmanuel Levinas) as well as modern philosophers and scholars informed by Christianity (from William James to Charles Taylor). This course argues that the processes of sacralization, of reclaiming a life of mystical devotion, are best understood as a unique response to Jewish modernity rather than a retreat to past modalities of religion. In seeking to prove this point, we will explore writers whose work emerged in and engaged with different social and cultural domains. We will investigate their writings with an eye to issues such as power and identity, and will draw upon their works in charting the intersection of mysticism, literature, language and experience. Throughout our readings, we will keep our eye on the sustained impact of feminism on Jewish mysticism in the second half of the twentieth century. This course is structured as a seminar, and our class discussions will be rooted in the primary sources. It assumes no prior background of Judaism or any other religious traditions. All readings will be made available in English.
Same as: RELIGST 165

JEWISHST 127D. Readings in Talmudic Literature. 1 Unit.
Readings of Talmudic texts. Some knowledge of Hebrew is preferred, but not necessary. The goal of the ongoing workshop is to provide Stanford students with the opportunity to engage in regular Talmud study, and to be introduced to a variety of approaches to studying Talmudic texts and thought.
Same as: JEWISHST 227D, RELIGST 170D

JEWISHST 127E. Readings in Talmudic Literature Advanced. 1 Unit.
Readings of the talmudic texts. Knowledge of Hebrew is required. The ongoing seminar is designed to study the making of the talmudic sugya (unit of discourse), along with classic commentaries. Students will consider some of the recent developments in the academic study of Talmudic literature, introduced by the instructor. The goal of the ongoing seminar is to provide Stanford students and faculty with the opportunity to engage in regular Talmud study, and to be introduced to a variety of approaches to studying Talmudic texts. Meeting time and location TBA. May be repeated for credit.
Same as: JEWISHST 227E, RELIGST 170E

JEWISHST 128. Women and Gender in Early Judaism and Christianity. 4 Units.
Beginning with the Hebrew Bible and New Testament, we will explore female figures in early Jewish and Christian literatures, such as Eve, Ruth, Mary, and Junia. Based on this, we will probe the prescriptions for female comportment in early Judaism and Christianity placing these literary prescriptions in conversation with material evidence related to women, such as for example the Babatha archive. We will analyze the politics of patriarchy in ancient discourse, and examine, among other topics, efforts by Christian clergy to silence female prophets in the second and third centuries CE. The bulk of the course will be devoted to the formative years of both Judaism and Christianity in Late Antiquity. This course assumes no prior knowledge of Judaism, Christianity, the Bible, or ancient history. It is designed for students who are part of faith traditions that consider the Bible to be sacred, as well as those who are not. Ancient readings in this course will be supplemented by modern scholarship in classics, early Christian studies, gender studies, queer studies, and the history of sexuality.
Same as: RELIGST 128

JEWISHST 129. Sacred Words: Jewish Thought and the Question of Language. 4 Units.
Jews have long been referred as the people of the book, but they might better be referred to as the people of the word. Drawing upon texts from the Hebrew Bible to the works of modern Hebrew writers like of Hayyim Nahman Bialik and Amoz Oz, this seminar will chart the development of Jewish thinking on language over the past two millennia. We will explore issues such as: the idea of canonization; oral versus written language; the nature and possibility of translation; the origins of language; notions of negative theology; mystical approaches to the word; the rebirth of Hebrew as a spoken and cultural language; and the limits of language after the Holocaust. This course will also bring Jewish thought into dialogue with contemporary philosophical reflections on issues of language. Modern explorations of language will prove an interesting way of deepening our understanding of the Jewish thinkers on one hand, and enriching contemporary intellectual discourse on the other.
Same as: RELIGST 169

JEWISHST 129A. Milk and Honey, Wine and Blood: Food, Justice, and Ethnic Identity in Jewish Culture. 4 Units.
This course examines Jewish culture and the food practices and traditions that have shaped and continue to shape it. Students learn to prepare a variety of meals while studying about the historical and literary traditions associated with them, such as the dietary `laws¿ and the long history of their interpretation, as well as the cultivation of eating as devotional practice in Jewish mystical traditions. We will explore how regional foods the world over contribute to the formation of distinct Jewish ethnic identities, and how these traditions shape contemporary Jewish food ethics. The course includes guest visits by professional chefs and food writers, and field trips to a local winery.
Same as: RELIGST 129

JEWISHST 130VP. Introduction to Social Demography: A Comparative Approach (Israel & US). 3 Units.
In this class we will learn about Israel's unique demographic structure and we will compare it to the US and other countries. Reading materials include general theories as well as research published in scholarly journals. In the first half of this class we will review basic demographic concepts (mortality, fertility and migration), and we will apply them to the Israeli context, with comparisons between different social groups in Israel and with comparison to the US. We will also review basic demographic theories (theories of population change) and apply them to different countries. nnIn the second half of the class we will focus on demography of the family. We will ask how fertility, marriage and divorce differ for different population groups in Israel and the US, and we will tie family processes to current theories of gender and family change. We will also learn how demographic processes may be related to the reproduction of poverty, and inequality.
Same as: SOC 119VP

JEWISHST 131VP. Poverty and Inequality in Israel and the US: A Comparative Approach. 3 Units.
Poverty rates in Israel are high and have been relatively stable in recent decades, with about one fifth of all households (and a third of all children) living below the poverty line. In this class we will learn about poverty and inequality in Israel and we will compare with the US and other countries.nnIn the first few weeks of this class we will review basic theories of poverty and inequality and we will discuss how theories regarding poverty have changed over the years, from the "culture of poverty" to theories of welfare state regimes. We will also learn about various ways of measuring poverty, material hardship, and inequality, and we will review the methods and data used.nnIn the remaining weeks of the class we will turn to substantive topics such as gender, immigration, ethnicity/nationality, welfare policy, age, and health. Within each topic we will survey the debates within contemporary scholarship and we will compare Israel and the US. Examination of these issues will introduce students to some of the challenges that Israeli society faces today.
Same as: CSRE 120P, SOC 120VP

JEWISHST 132. Between Nation-Building and Liberalization: The Welfare State in Israel. 3 Units.
According to one commentator, the political economy of Israel is characterized by embedded illiberalism. In the context of a national and territorial conflict, the Israeli state fostered comprehensive nation-building projects (such as immigration absorption), via employment and social protection schemes. This course surveys the distinctive development of the Israeli welfare state in comparative perspective, and analyzes its particular politics and outcomes in the form of inclusion but also exclusion of different populations from full citizenship. The course will follow a chronological path from the pre-state crystallization of national welfare institutions to the current neo-liberalization trend that seems to undermine collectivist projects and advance the re-commodification of citizenship. Throughout the course we will discuss issues such as: the role of labor and nationalism in the design of social policy, the production of national, ethnic and gender inequality, and the dynamics of change and continuity following heightened liberalization and internationalization since the 1980s. The course exposes students to key issues of the sociology of the welfare state with particular emphasis on the development and role of the state in a deeply conflicted society, using the Israeli experience. At the conclusion of the course students are expected to understand how welfare state institutions reflect but also reproduce societal schisms and conflicts, and be familiar with central aspects of Israeli politics past and present.
Same as: SOC 102

JEWISHST 132A. Social Inequality in Israel. 3 Units.
Like the US, Israel is a nation of immigrants. Israel additionally shares with the US vast economic, ethnic/racial and gender gaps, which are shaped and are being shaped by the demographic diversity characterizing its society. The course will provide a comparative framework for analyzing social inequality in Israel. We will start by reviewing essential concepts and theories in the study of social stratification. We will then review the main cleavages characterizing Israeli society, while comparing them to gaps in other advances societies and particularly the US. We will focus on class, gender and ethnicity as the main distinctions and will examine their implications for differences in life chances in several domains across the life course. We will conclude with a discussion of possible scenarios for change, which are relevant to both Israel and the US. Throughout the course, we will study critical thinking techniques and will use them for analyzing issues that are central for the analysis of social inequality in Israel and elsewhere.
Same as: CSRE 132A, SOC 102A

JEWISHST 132D. Sociology of Jewishness. 3-5 Units.
Examines the place of the Jewish people in society throughout various locales and historical periods to understand how interactions among Jews and with other groups have shaped Jewish identities. Topics include modernism, the Holocaust, Israel/nationhood, race/ethnicity, intermarriage, and assimilation. Uses theoretical, empirical, and historical material from multiple social scientific fields of study and explores the study of Judaism from several major sociological lenses.
Same as: CSRE 132J, SOC 132J

JEWISHST 132VP. Family and Society: A Comparative Approach (Israel & the US). 3 Units.
Families are changing: Non-marital partnerships such as cohabitation are becoming more common, marriage is delayed and fertility is declining. In this class we will learn about how families are changing in Israel and we will compare with the US and other countries. Reading materials include general theories as well as research published in scholarly journals. nnAfter reviewing general theories and major scholarly debates concerning issues of family change, we will turn to specific family processes and compare Israel, the US and other countries. We will ask how family transitions may differ for different population groups and at different stages of the life course, and we will tie family processes to current theories of gender. nnWe will cover a wide range of topics, from marriage and marital dissolution to cohabitation, LAT and remarriage. We will also discuss changes in women's labor force participation and how it bears on fertility, parenthood and household division of labor. Within each substantive topic we will survey the debates within contemporary scholarship and we will compare Israel and the US.
Same as: SOC 121VP, SOC 221VP

JEWISHST 133. Sociology of Citizenship. 3 Units.
Not only a legal status, citizenship forms a major concern for political sociologists interested in questions of membership, exclusion, redistribution, and struggles over the boundaries of collective identity. Citizenship is in essence membership in a political community that entails rights and duties, and structures a tripartite relationship between the individual, community and state. The institutions of citizenship include formal and bureaucratic rules of eligibility ¿ but also informal institutions such as identity and belonging. Throughout the course, students are exposed to key issues of the sociology of citizenship such as the historically different paths of men, women, minority groups and immigrants into citizenship, the contested development of rights and duties, the regulation of population, as well as insurgency and collective attempts to rearticulate the terms of the ¿contract¿ with the state. Israel, the USA, France and Germany are used as empirical illustrations. At the conclusion of the course students will know how to utilize the analytic framework of citizenship in order to analyze a wide range of political phenomena in contemporary societies.
Same as: SOC 103

JEWISHST 133A. WELFARE, WORK AND POVERTY.. 3 Units.
Early theorists of the welfare state described it as a reaction to the emergence of needs and interests of specific social groups during processes of economic development and change. Later theorists countered that the welfare state does not merely react to social cleavages during times of economic change but rather works to actively shape them, in line with worldviews or the interests of dominant group members. Adopting the latter approach, the goal of this course is to provide the tools and knowledge necessary for a critical evaluation of the social services provided to Israeli citizens and their impact on social and economic inequalities. The course will survey various approaches to the understanding of the goals of the welfare state. A comparative and historical account of the development of the welfare state will be presented, while highlighting recent developments, such as the increase in poverty rates and the aging of the population. During the course, we will examine the diverse needs that are served by the welfare state, as well as major dilemmas associated with the provision of services. Throughout the course, we will study critical thinking techniques and will use them for analyzing issues that are central for the development of social policies in Israel and the US.
Same as: CSRE 133J, SOC 103A

JEWISHST 139. Rereading Judaism in Light of Feminism. 4 Units.
During the past three decades, Jewish feminists have asked new questions of traditional rabbinic texts, Jewish law, history, and religious life and thought. Analysis of the legal and narrative texts, rituals, theology, and community to better understand contemporary Jewish life as influenced by feminism.
Same as: FEMGEN 139

JEWISHST 143. Literature and Society in Africa and the Caribbean. 4 Units.
This course explores texts and films from Francophone Africa and the Caribbean in the 20th and 21st centuries. The course will explore the connections between Sub-Saharan Africa, the Maghreb and the Caribbean through both foundational and contemporary works while considering their engagement with the historical and political contexts in which they were produced. This course will also serve to improve students' speaking and writing skills in French while sharpening their knowledge of the linguistic and conceptual tools needed to conduct literary analysis. The diverse topics discussed in the course will include national and cultural identity, race and class, gender and sexuality, orality and textuality, transnationalism and migration, colonialism and decolonization, history and memory, and the politics of language. Readings include the works of writers and filmmakers such as Djibril Tamsir Niane, Léopold Senghor, Aimé Césaire, Albert Memmi, Patrick Chamoiseau, Leonora Miano, Leila Slimani, Dani Laferrière and Ousmane Sembène. Taught in French. Students are highly encouraged to complete FRENLANG 124 or to successfully test above this level through the Language Center. This course fulfills the Writing in the Major (WIM) requirement.
Same as: AFRICAAM 133, AFRICAST 132, COMPLIT 133A, COMPLIT 233A, CSRE 133E, FRENCH 133

JEWISHST 144B. Poetic Thinking Across Media. 4 Units.
Even before Novalis claimed that the world must be romanticized, thinkers, writers, and artists wanted to perceive the human and natural world poetically. The pre- and post-romantic poetic modes of thinking they created are the subject of this course. Readings include Ecclestias, Zhaozhou Congshen, Montaigne, Nietzsche, Kafka, Benjamin, Arendt, and Sontag. This course will also present poetic thinking in the visual arts–– from the expressionism of Ingmar Bergman to the neo-romanticism of Gerhard Richter.

JEWISHST 147A. The Hebrew Bible in Literature. 3-5 Units.
Close reading of major biblical stories and poems that influenced modern literature written in English and Hebrew. Hebrew texts will be read in translation to English. Each class will include a section from the Hebrew Bible as well as a modern text or film based on the biblical story/poem. Discussion of questions such as: the meaning and function of myths and the influence of the Hebrew Bible on the development of literary styles and genres.
Same as: JEWISHST 347A

JEWISHST 147B. The Hebrew and Jewish Short Story. 3-5 Units.
Short stories from Israel, the US and Europe including works by Agnon, Kafka, Keret, Castel-Bloom, Kashua, Singer, Benjamin, Freud, biblical myths and more. The class will engage with questions related to the short story as a literary form and the history of the short story. Reading and discussion in English. Optional: special section with readings and discussions in Hebrew. Note: To be eligible for WAYS credit, you must take the course for a Letter Grade. In AY 2020-21, a 'CR' grade will satisfy the WAYS requirement.
Same as: COMPLIT 127B

JEWISHST 148. Writing Between Languages: The Case of Eastern European Jewish Literature. 1-5 Unit.
Eastern European Jews spoke and read Hebrew, Yiddish, and their co-territorial languages (Russian, Polish, etc.). In the modern period they developed secular literatures in all of them, and their writing reflected their own multilinguality and evolving language ideologies. We focus on major literary and sociolinguistic texts. Reading and discussion in English; students should have some reading knowledge of at least one relevant language as well. ***This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit***.
Same as: JEWISHST 348, SLAVIC 198, SLAVIC 398

JEWISHST 150. Texts that Changed the World from the Ancient Middle East. 3-5 Units.
This course traces the story of the cradle of human civilization. We will begin with the earliest human stories, the Gilgamesh Epic and biblical literature, and follow the path of the development of law, religion, philosophy and literature in the ancient Mediterranean or Middle Eastern world, to the emergence of Jewish and Christian thinking. We will pose questions about how this past continues to inform our present: What stories, myths, and ideas remain foundational to us? How did the stories and myths shape civilizations and form larger communities? How did the earliest stories conceive of human life and the divine? What are the ideas about the order of nature, and the place of human life within that order? How is the relationship between the individual and society constituted? This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: COMPLIT 31, HUMCORE 111, RELIGST 150

JEWISHST 155D. Jewish American Literature and Film. 5 Units.
From its inception, Jewish-American literature has taken as its subject as well as its context the idea of Jewishness itself. Jewish culture is a diasporic one, and for this reason the concept of Jewishness differs from country to country and across time. What stays remarkably similar, though, is Jewish self-perception and relatedly Jewish literary style. This is as true for the first-generation immigrant writers like Isaac Bashevis Singer and Anzia Yezierska who came to the United States from abroad as it is for their second-generation children born in the United States, and the children of those children. In this course, we will consider the difficulties of displacement for the emigrant generation and their efforts to sustain their cultural integrity in the multicultural American environment. We'll also examine the often comic revolt of their American-born children and grandchildren against their (grand-)parents nostalgia and failure to assimilate. Only by considering these transnational roots can one understand the particularity of the Jewish-American novel in relation to mainstream and minority American literatures. In investigating the link between American Jewish writers and their literary progenitors, we will draw largely but not exclusively from Russia and the countries of Eastern Europe.
Same as: AMSTUD 145D, ENGLISH 145D, REES 145D

JEWISHST 155J. The Jewish-American Novel: Diaspora, Privilege, Anxiety, Comedy. 4-5 Units.
Jews are sometimes referred to as 'the people of the book.' Would Portnoy's Complaint count as a book that constitutes Jewish-American peoplehood? What about Fear of Flying? This seminar introduces students to influential Jewish-American novels (and some short stories and film) from the late nineteenth century to the present day. These works return time and again to questions of diaspora, race, queer social belonging, and the duty to a Jewish past, mythical or real. Through close readings of short stories and novels coupled with secondary readings about Jewish-American history and culture, we will explore how American Jewishness is constructed differently in changing historical climates. What makes a text Jewish? What do we mean by Jewish humor and Jewish seriousness? How do Jewish formulations of gender and power respond to Jews' entrance into the white American mainstream? As we read, we'll think through and elaborate on models of ethnicity, privilege, sexuality, and American pluralism. Authors include Cahan, Yezierska, Singer, Roth, Bellow, Malamud, Ozick, Mailer, Jong, and Englander.
Same as: AMSTUD 145J, ENGLISH 145J

JEWISHST 185B. Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV. 4-5 Units.
(HISTORY 185B is 5 units; HISTORY 85B IS 3 units.) Who are American Jews as depicted in popular media -- film, television, etc. -- since the Second World War? How are their religion, politics, mores, and practices represented and what ways, if at all, do such portraits reflect historical trends among Jews and society in general? What can be learned from film or tv about Jewish identity, notions of Jewish power and powerlessness, communal cohesiveness and assimilation, sexuality and the wages of intermarriage or race?.
Same as: CSRE 185B, HISTORY 185B, HISTORY 385C, REES 185B, SLAVIC 183

JEWISHST 186. Jews in Trump's America and Before. 5 Units.
This class considers the notion of American Jewish exceptionalism through the lens of Trump's America. The social and economic success of American Jewry over the last 350 years is remarkable, yet Jews continue to find their position in American society called into question. This course moves between past and present and will consider key moments in American Jewish life with a particular emphasis on contemporary currents, including post-liberal identity politics, Israel, and the rise of white supremacy.
Same as: HISTORY 286F

JEWISHST 199B. Directed Reading in Yiddish, Second Quarter. 1-5 Unit.
For intermediate or advanced students. May be repeated for credit.

JEWISHST 205. Reading Hebrew, First Quarter. 2-4 Units.
Introduction to Hebrew literature through short stories and poetry by notable Israeli writers. In Hebrew. Prerequisite: one year of Hebrew or equivalent.

JEWISHST 211. Out of Eden: Deportation, Exile, and Expulsion from Antiquity to the Renaissance. 4-5 Units.
This course examines the long pedigree of modern deportations and mass expulsions, from the forced resettlements of the ancient world to the expulsion of Jews from Spain in 1492, and from the outlawry of Saga-era Iceland to the culture of civic exile in Renaissance Italy. The course focuses on Europe and the Mediterranean from antiquity to the early modern period, but students are welcome to venture beyond these geographical and chronological boundaries for their final papers.
Same as: HISTORY 211, HISTORY 311

JEWISHST 215. Understanding Jews. 1-2 Unit.
This discussion-based course will give students an opportunity to explore the constellation of religious, ethnic, national, cultural, artistic, spiritual, and political forces that shape Jewish life in the 21st century. Drawing on historical documents, classical texts, and contemporary events, this course will give students from any background an opportunity to ask hard questions, deepen their own understandings, and challenge their conceptions of what makes Jewish life ¿Jewish.¿ No matter where you went for Sunday school ¿ church, synagogue, the woods, or nowhere at all ¿ this course is a chance to question what you know, and interrogate how you came to know what you know about Jews, Judaism, and Jewish culture.
Same as: AMSTUD 215

JEWISHST 221C. Aramaic Texts. 1-5 Unit.
Readings in Aramaic/Syriac with special focus on grammar and syntax of ancient texts.
Same as: JEWISHST 321C, RELIGST 221C, RELIGST 321C

JEWISHST 221D. Readings in Syriac Literature. 2-5 Units.
In recent years, there has been growing interest in the works of Syriac speaking Christians in antiquity and beyond. This course offers an introduction to the Syriac language, including its script, vocabulary and grammar, and a chance to read from a selection of foundational Syriac Christian texts.
Same as: JEWISHST 321D, RELIGST 221D, RELIGST 321D

JEWISHST 226E. The Holocaust: Insights from New Research. 4-5 Units.
Overview of the history of the Holocaust, the genocide of European Jews. Explores its causes, course, consequences, and memory. Addresses the events themselves, as well as the roles of perpetrators and bystanders, dilemmas faced by victims, collaboration of local populations, and the issue of rescue. Considers how the Holocaust was and is remembered and commemorated by victims and participants alike. Uses different kinds of sources: scholarly work, memoirs, diaries, film, and primary documents.
Same as: CSRE 226D, CSRE 326D, HISTORY 226D, HISTORY 326D, JEWISHST 326D

JEWISHST 227D. Readings in Talmudic Literature. 1 Unit.
Readings of Talmudic texts. Some knowledge of Hebrew is preferred, but not necessary. The goal of the ongoing workshop is to provide Stanford students with the opportunity to engage in regular Talmud study, and to be introduced to a variety of approaches to studying Talmudic texts and thought.
Same as: JEWISHST 127D, RELIGST 170D

JEWISHST 227E. Readings in Talmudic Literature Advanced. 1 Unit.
Readings of the talmudic texts. Knowledge of Hebrew is required. The ongoing seminar is designed to study the making of the talmudic sugya (unit of discourse), along with classic commentaries. Students will consider some of the recent developments in the academic study of Talmudic literature, introduced by the instructor. The goal of the ongoing seminar is to provide Stanford students and faculty with the opportunity to engage in regular Talmud study, and to be introduced to a variety of approaches to studying Talmudic texts. Meeting time and location TBA. May be repeated for credit.
Same as: JEWISHST 127E, RELIGST 170E

JEWISHST 240. The Yiddish Story. 3-5 Units.
The Yiddish language is associated with jokes, folktales, and miracle legends, as well as modern stories. This class traces the development of Yiddish literature through these short oral and written forms, following Jewish writers out of the East European market town to cities in the Soviet Union, Israel, and especially the United States. We conclude with stories written in other languages about Yiddish writers. Readings include Sholem Aleichem, I. L. Peretz, Isaac Bashevis Singer, Esther Singer-Kreitman, Cynthia Ozick, and Dina Rubina. Readings in English; optional discussion section for students who read Yiddish.
Same as: AMSTUD 240Y

JEWISHST 242G. Myth and Modernity. 3-5 Units.
Masters of German 20th- and 21st-Century literature and philosophy as they present aesthetic innovation and confront the challenges of modern technology, social alienation, manmade catastrophes, and imagine the future. Readings include Nietzsche, Freud, Rilke, Musil, Brecht, Kafka, Doeblin, Benjamin, Juenger, Arendt, Musil, Mann, Adorno, Celan, Grass, Bachmann, Bernhardt, Wolf, and Kluge. Taught in English. Note for German Studies grad students: GERMAN 322 will fulfill the grad core requirement since GERMAN 332 is not being offered this year. NOTE: Enrollment requires Professor Eshel's consent. Please contact him directly at eshel@stanford.edu and answer these 2 questions: "Why do you want to take this course?" and "What do you think you can add to the discussion?" Applications will be considered in the order in which they were received. Enrollment is limited to 20 students.
Same as: COMPLIT 222A, GERMAN 222, GERMAN 322, JEWISHST 342

JEWISHST 243A. Hannah Arendt: Facing Totalitarianism. 3-5 Units.
Like hardly any other thinker of the modern age, Hannah Arendt's thought offers us timeless insights into the fabric of the modern age, especially regarding the perennial danger of totalitarianism. This course offers an in-depth introduction to Arendt's most important works in their various contexts, as well as a consideration of their reverberations in contemporary philosophy and literature. Readings include Arendt's The Origin of Totalitarianism, The Human Condition, Between Past and Future, Men in Dark Times, On Revolution,Eichmann in Jerusalem, and The Life of the Mind, as well as considerations of Hannah Arendt's work by Max Frisch, Jürgen Habermas, Seyla Benhabib, Judith Butler, Giorgio Agamben, and others. Special attention will be given to Arendt's writings on literature with an emphasis on Kafka, Brecht, Auden, Sartre, and Camus. This course will be synchronously conducted, but will also use an innovative, Stanford-developed, online platform called Poetic Thinking. Poetic Thinking allows students to share both their scholarly and creative work with each other. Based on the newest technology and beautifully designed, it greatly enhances their course experience.
Same as: COMPLIT 353B, GERMAN 253, GERMAN 353

JEWISHST 249. The Algerian Wars. 3-5 Units.
From Algiers the White to Algiers the Red, Algiers, the Mecca of the Revolutionaries in the words of Amilcar Cabral, this course offers to study the Algerian Wars since the French conquest of Algeria (1830-) to the Algerian civil war of the 1990s. We will revisit the ways in which the war has been narrated in literature and cinema, popular culture, and political discourse. A special focus will be given to the Algerian War of Independence (1954-1962). The course considers the racial representations of the war in the media, the continuing legacies surrounding the conflict in France, Africa, and the United States, from Che Guevara to the Black Panthers. A key focus will be the transmission of collective memory through transnational lenses, and analyses of commemorative events and movies. nReadings from James Baldwin, Assia Djebar, Albert Camus, Frantz Fanon, Mouloud Feraoun. Movies include "The Battle of Algiers," "Days of Glory," and "Viva Laldjérie." nTaught in English.
Same as: CSRE 249, FRENCH 249, HISTORY 239G

JEWISHST 265. Jewish Law: Introduction and Topics. 2 Units.
This course will provide an overview of the field of Jewish Law and will seek to provide a few case studies of topics in Jewish Law. All the readings are in English and this course presupposes no background in Jewish Law. Jewish Law is the world's oldest complex legal systems with distinct and idiosyncratic approaches to family, commercial, ritual and many other areas of law. It also has developed an elaborate "conflicts of law" sub-literature focusing on when should Jewish Law apply and when should some other legal system apply, reflecting the long history of the Jewish community in the diaspora as a minority. In this course, we will consider how Jewish law approaches a number of specific topics and we will ponder as well the proper interaction between Jewish law and secular legal norms, Jewish Law and changes in technology, Jewish law and sovereignty, Jewish Law and Bioethics and Jewish law and Family. Other topics will be added as we all see fit. Students who are interested in making a presentation on an area of their choice are welcome to do so. The course will seek to include an optional supplementary "field trip" to see a rabbinical court in action in California. The Learning Outcomes provided by this court include the following: Students who take this course will: 1. Exhibit knowledge and understanding of key concepts in substantive law, procedural law, and legal thought in Jewish Law. 2. Demonstrate facility with legal analysis and reasoning in the Jewish Legal tradition and will demonstrate the ability to conduct legal research in Jewish Law. After the term begins, students accepted into the course can transfer, with consent of the instructor, from section (01) into section (02), which meets the R requirement. Elements used in grading: Attendance, Class Participation, Final Paper. Cross-listed with the Law School (LAW 5038).

JEWISHST 281K. Departures: Late Ottoman Displacements of Muslims, Christians, and Jews, 1853-1923. 5 Units.
In the late nineteenth and early twentieth centuries, millions of people moved into and out of the Ottoman Empire, sometimes voluntarily and sometimes under extremely violent circumstances. More often than not, they moved in groups that were religiously defined. This course examines how these developments shaped the future of the modern Middle East, Balkans, and beyond. Questions include: How did migration and the idea of the nation shape each other? What does it mean to call a group or a migration "religious"? Why did certain types of diversity become a "problem," in the eyes of the state? What caused these population displacements? What can this topic teach us about today's mass migrations?.
Same as: HISTORY 281K

JEWISHST 282. Circles of Hell: Poland in World War II. 5 Units.
Looks at the experience and representation of Poland's wartime history from the Nazi-Soviet Pact (1939) to the aftermath of Yalta (1945). Examines Nazi and Soviet ideology and practice in Poland, as well as the ways Poles responded, resisted, and survived. Considers wartime relations among Polish citizens, particularly Poles and Jews. In this regard, interrogates the traditional self-characterization of Poles as innocent victims, looking at their relationship to the Holocaust, thus engaging in a passionate debate still raging in Polish society.
Same as: HISTORY 228, HISTORY 328, JEWISHST 382

JEWISHST 282K. The Holocaust and Its Aftermath. 4-5 Units.
This seminar gives an overview over different aspects of the history of the Holocaust and its aftermath and will examine key issues in recent Holocaust historiography and questions of memory and representation. Special emphasis is put on the nature of the historian's task, as viewed through the lens of historians of the Holocaust, as well as to the significance of the Holocaust in history and how it has changed over time. The course will confront students with historiographical texts and historical documents, with photography and film, works of scholarship and art.
Same as: HISTORY 202K, HISTORY 302K, JEWISHST 382K

JEWISHST 284C. Genocide and Humanitarian Intervention. 3 Units.
Open to medical students, graduate students, and undergraduate students. Traces the history of genocide in the 20th century and the question of humanitarian intervention to stop it, a topic that has been especially controversial since the end of the Cold War. The pre-1990s discussion begins with the Armenian genocide during the First World War and includes the Holocaust and Cambodia under the Khmer Rouge in the 1970s. Coverage of genocide and humanitarian intervention since the 1990s includes the wars in Bosnia, Rwanda, Kosovo, the Congo and Sudan.
Same as: HISTORY 224C, HISTORY 324C, JEWISHST 384C, PEDS 224

JEWISHST 285C. The Immigrant in Modern America. 5 Units.
The 2016 presidential election propelled the topic of immigration to the center of public attention. This is not the first time, however, that questions of immigration and what it means to be an American have revealed deep divisions within the U.S. This course explores the reception of immigrants in modern America, including differing views toward immigration; how immigrants help shape ideas about the American nation; and the growth of state bureaucracy and policing apparatus as a response.
Same as: HISTORY 285C

JEWISHST 286D. Yours in Struggle: African Americans and Jews in the 20th Century U.S.. 5 Units.
This colloquium explores the history of African Americans and Jews in 20th century US beginning with Jewish immigration from Eastern Europe and the Great Migration to America's urban centers. It considers the geographical and economic tensions that developed between two minority groups living in close proximity; the appropriation of black culture; Jewish claims to whiteness and performance of blackness; intercommunal relations during the Civil Rights movement; the breakdown of the black-Jewish alliance in the late 1960s; and the lingering ramifications of this shift today.
Same as: HISTORY 286D

JEWISHST 287S. Research Seminar in Ottoman and Middle East History. 4-5 Units.
Student-selected research topics. May be repeated for credit.
Same as: HISTORY 481, JEWISHST 481

JEWISHST 288C. Jews of the Modern Middle East and North Africa. 5 Units.
This course will explore the cultural, social, and political histories of the Jews of the Middle East and North Africa (MENA) from 1860 to present times. The geographic concentration will range from Morocco to Iran, Iraq to Turkey, and everywhere in between. Topics include: Jewish culture and identity in Islamic contexts; the impacts of colonialism, westernization, and nationalism; Jewish-Muslim relations; the racialization of MENA Jews; the Holocaust; the experience and place of MENA Jews in Israel; and "Jews of Color.".
Same as: HISTORY 288C

JEWISHST 291X. Learning Religion: How People Acquire Religious Commitments. 4 Units.
This course will examine how people learn religion outside of school, and in conversation with popular cultural texts and practices. Taking a broad social-constructivist approach to the variety of ways people learn, this course will explore how people assemble ideas about faith, identity, community, and practice, and how those ideas inform individual, communal and global notions of religion. Much of this work takes place in formal educational environments including missionary and parochial schools, Muslim madrasas or Jewish yeshivot. However, even more takes place outside of school, as people develop skills and strategies in conversation with broader social trends. This course takes an interdisciplinary approach to questions that lie at the intersection of religion, popular culture, and education. May be repeat for credit.
Same as: AMSTUD 231X, EDUC 231, RELIGST 231X

JEWISHST 297X. American Jewish History: Learning to be Jewish in America. 2-4 Units.
This course will be a seminar in American Jewish History through the lens of education. It will address both the relationship between Jews and American educational systems, as well as the history of Jewish education in America. Plotting the course along these two axes will provide a productive matrix for a focused examination of the American Jewish experience. History students must take course for at least 3 units.
Same as: AMSTUD 279X, EDUC 279, HISTORY 288D, RELIGST 279X

JEWISHST 299A. Directed Reading in Yiddish, First Quarter. 1-5 Unit.
Directed Reading in Yiddish, First Quarter.

JEWISHST 301. Colloquium on Jews, Judaism, and Jewish Culture. 1 Unit.
An interdisciplinary graduate student colloquium for Stanford graduate students interested in Jewish Studies.

JEWISHST 321C. Aramaic Texts. 1-5 Unit.
Readings in Aramaic/Syriac with special focus on grammar and syntax of ancient texts.
Same as: JEWISHST 221C, RELIGST 221C, RELIGST 321C

JEWISHST 321D. Readings in Syriac Literature. 2-5 Units.
In recent years, there has been growing interest in the works of Syriac speaking Christians in antiquity and beyond. This course offers an introduction to the Syriac language, including its script, vocabulary and grammar, and a chance to read from a selection of foundational Syriac Christian texts.
Same as: JEWISHST 221D, RELIGST 221D, RELIGST 321D

JEWISHST 326D. The Holocaust: Insights from New Research. 4-5 Units.
Overview of the history of the Holocaust, the genocide of European Jews. Explores its causes, course, consequences, and memory. Addresses the events themselves, as well as the roles of perpetrators and bystanders, dilemmas faced by victims, collaboration of local populations, and the issue of rescue. Considers how the Holocaust was and is remembered and commemorated by victims and participants alike. Uses different kinds of sources: scholarly work, memoirs, diaries, film, and primary documents.
Same as: CSRE 226D, CSRE 326D, HISTORY 226D, HISTORY 326D, JEWISHST 226E

JEWISHST 342. Myth and Modernity. 3-5 Units.
Masters of German 20th- and 21st-Century literature and philosophy as they present aesthetic innovation and confront the challenges of modern technology, social alienation, manmade catastrophes, and imagine the future. Readings include Nietzsche, Freud, Rilke, Musil, Brecht, Kafka, Doeblin, Benjamin, Juenger, Arendt, Musil, Mann, Adorno, Celan, Grass, Bachmann, Bernhardt, Wolf, and Kluge. Taught in English. Note for German Studies grad students: GERMAN 322 will fulfill the grad core requirement since GERMAN 332 is not being offered this year. NOTE: Enrollment requires Professor Eshel's consent. Please contact him directly at eshel@stanford.edu and answer these 2 questions: "Why do you want to take this course?" and "What do you think you can add to the discussion?" Applications will be considered in the order in which they were received. Enrollment is limited to 20 students.
Same as: COMPLIT 222A, GERMAN 222, GERMAN 322, JEWISHST 242G

JEWISHST 347A. The Hebrew Bible in Literature. 3-5 Units.
Close reading of major biblical stories and poems that influenced modern literature written in English and Hebrew. Hebrew texts will be read in translation to English. Each class will include a section from the Hebrew Bible as well as a modern text or film based on the biblical story/poem. Discussion of questions such as: the meaning and function of myths and the influence of the Hebrew Bible on the development of literary styles and genres.
Same as: JEWISHST 147A

JEWISHST 348. Writing Between Languages: The Case of Eastern European Jewish Literature. 1-5 Unit.
Eastern European Jews spoke and read Hebrew, Yiddish, and their co-territorial languages (Russian, Polish, etc.). In the modern period they developed secular literatures in all of them, and their writing reflected their own multilinguality and evolving language ideologies. We focus on major literary and sociolinguistic texts. Reading and discussion in English; students should have some reading knowledge of at least one relevant language as well. ***This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit***.
Same as: JEWISHST 148, SLAVIC 198, SLAVIC 398

JEWISHST 382. Circles of Hell: Poland in World War II. 5 Units.
Looks at the experience and representation of Poland's wartime history from the Nazi-Soviet Pact (1939) to the aftermath of Yalta (1945). Examines Nazi and Soviet ideology and practice in Poland, as well as the ways Poles responded, resisted, and survived. Considers wartime relations among Polish citizens, particularly Poles and Jews. In this regard, interrogates the traditional self-characterization of Poles as innocent victims, looking at their relationship to the Holocaust, thus engaging in a passionate debate still raging in Polish society.
Same as: HISTORY 228, HISTORY 328, JEWISHST 282

JEWISHST 382K. The Holocaust and Its Aftermath. 4-5 Units.
This seminar gives an overview over different aspects of the history of the Holocaust and its aftermath and will examine key issues in recent Holocaust historiography and questions of memory and representation. Special emphasis is put on the nature of the historian's task, as viewed through the lens of historians of the Holocaust, as well as to the significance of the Holocaust in history and how it has changed over time. The course will confront students with historiographical texts and historical documents, with photography and film, works of scholarship and art.
Same as: HISTORY 202K, HISTORY 302K, JEWISHST 282K

JEWISHST 384C. Genocide and Humanitarian Intervention. 3 Units.
Open to medical students, graduate students, and undergraduate students. Traces the history of genocide in the 20th century and the question of humanitarian intervention to stop it, a topic that has been especially controversial since the end of the Cold War. The pre-1990s discussion begins with the Armenian genocide during the First World War and includes the Holocaust and Cambodia under the Khmer Rouge in the 1970s. Coverage of genocide and humanitarian intervention since the 1990s includes the wars in Bosnia, Rwanda, Kosovo, the Congo and Sudan.
Same as: HISTORY 224C, HISTORY 324C, JEWISHST 284C, PEDS 224

JEWISHST 385A. Core Colloquium in Jewish History, 17th to 19th Centuries. 4-5 Units.
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Same as: HISTORY 385A

JEWISHST 385B. Graduate Colloquium in Jewish History, 19th-20th Centuries. 4-5 Units.
Instructor consent required.
Same as: HISTORY 385B

JEWISHST 393X. The Education of American Jews. 4 Units.
This course will take an interdisciplinary approach to the question of how American Jews negotiate the desire to retain a unique ethnic sensibility without excluding themselves from American culture more broadly. Students will examine the various ways in which people debate, deliberate, and determine what it means to be an "American Jew". This includes an investigation of how American Jewish relationships to formal and informal educational encounters through school, popular culture, religious ritual, and politics.
Same as: EDUC 313, RELIGST 313X

JEWISHST 481. Research Seminar in Ottoman and Middle East History. 4-5 Units.
Student-selected research topics. May be repeated for credit.
Same as: HISTORY 481, JEWISHST 287S

JEWISHST 486A. Graduate Research Seminar in Jewish History. 4-5 Units.
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Same as: HISTORY 486A

JEWISHST 486B. Graduate Research Seminar in Jewish History. 4-5 Units.
Prerequisite: HISTORY 486A.
Same as: HISTORY 486B

Native American Studies Courses

NATIVEAM 5A. Muwekma House Seminar. 1 Unit.
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NATIVEAM 5B. Muwekma House Seminar. 1 Unit.
Second Quarter of Muwekma House Seminar.

NATIVEAM 14. Indigenous Peoples in Film and Visual Media: Reframing Narratives of Race, Gender and Personhood. 2 Units.
This class explores the multiple valences of Indigenous Peoples within the genre of visual media and film with articular attention to race and gender as reflective and reflexive categories. Using the lenses of, anthropology, postcolonial, Indigenous and Gender Studies this course will examine the ways in which the imagery of indigenous peoples has been woven into Western narratives, appropriated as projections of Western masculinity and in more recent years reclaimed by indigenous filmmakers and documentarians. The format of the class will involve a "flipped classroom" pedagogy, weekly screenings and closely supervised student presentations on topics related to the course. Weekly screenings of films, lectures and discussions will require mandatory attendance at every class meeting and within working groups. Students will develop skills to identify visual media referents, related to contemporary and digital contexts while gaining appreciation for indigenous identity history and sovereignty weekly reflection papers are required. No previous film studies experience is necessary.

NATIVEAM 16. Native Americans in the 21st Century: Encounters, Identity, and Sovereignty in Contemporary America. 5 Units.
What does it mean to be a Native American in the 21st century? Beyond traditional portrayals of military conquests, cultural collapse, and assimilation, the relationships between Native Americans and American society. Focus is on three themes leading to in-class moot court trials: colonial encounters and colonizing discourses; frontiers and boundaries; and sovereignty of self and nation. Topics include gender in native communities, American Indian law, readings by native authors, and Indians in film and popular culture.
Same as: ANTHRO 16, ARCHLGY 16

NATIVEAM 39. Long Live Our 4Bil. Year Old Mother: Black Feminist Praxis, Indigenous Resistance, Queer Possibility. 1-4 Unit.
How can art facilitate a culture that values women, mothers, transfolks, caregivers, girls? How can black, indigenous, and people of color frameworks help us reckon with oppressive systems that threaten safety and survival for marginalized people and the lands that sustain us? How can these questions reveal the brilliant and inventive forms of survival that precede and transcend harmful systems toward a world of possibility? Each week, this course will call on artists, scholars, and organizers of color who clarify the urgency and interconnection of issues from patriarchal violence to environmental degradation; criminalization to legacies of settler colonialism. These same thinkers will also speak to the imaginative, everyday knowledge and creative healing practices that our forebears have used for millennia to give vision and rise to true transformation.
Same as: AFRICAAM 39, CSRE 39, FEMGEN 39

NATIVEAM 50Q. Life and Death of Words. 4 Units.
In this course, we explore the world of words: their creation, evolution, borrowing, change, and death. Words are the key to understanding the culture and ideas of a people, and by tracing the biographies of words we are able to discern how the world was, is, and might be perceived and described. We trace how words are formed, and how they change in pronunciation, spelling, meaning, and usage over time. How does a word get into the dictionary? What do words reveal about status, class, region, and race? How is the language of men and women critiqued differently within our society? How does slang evolve? How do languages become endangered or die, and what is lost when they do? We will visit the Facebook Content Strategy Team and learn more about the role words play in shaping our online experiences. Together, the class will collect Stanford language and redesign the digital dictionary of the future. Trigger Warning: Some of the subject matter of this course is sensitive and may cause offense. Please consider this prior to enrolling in the course.
Same as: CSRE 50Q, ENGLISH 50Q, FEMGEN 50Q

NATIVEAM 57A. Cherokee Language Lab. 1 Unit.
This course is intended for students who have already completed First Year Cherokee and would like to continue their exposure, learning, and understanding of the language.

NATIVEAM 100. Introduction to Native American Studies. 3 Units.
This survey course is designed to expose students to the interdisciplinary content of the major, its evolution, and importantly, the methods through which scholarship and practice are communicated. Specific attention will be given to decolonizing methodologies that historically erased or misrepresented Native people in scholarship. Course readings and discussions emphasize pedagogical models and scholarly works that embrace Indigenous ways of knowing and being, including Storytelling, Traditional Environmental Knowledge, Peacemaking, and the importance of centering a framework in tribal language and culture.

NATIVEAM 103S. Gender in Native American Societies. 5 Units.
Seminar examines the impact of colonialism on gender roles & gender relations in American Indian communities beginning with the 17th century to the present. Topics include demographic changes; social, political & economic transformations associated with biological & spiritual assaults; the dynamism & diversity of native societies. Sources include history, ethnography, biography, autobiography, the novel & film.
Same as: CSRE 103S, FEMGEN 103S

NATIVEAM 108S. American Indian Religious Freedom. 3 Units.
The persistence of tribal spiritual beliefs and practices in light of legal challenges (sacred geography and the 1st Amendment), treatment of the dead and sacred objects (repatriation), consumerism (New Age commodification), and cultural intellectual property protection (trademark, copyright, patent law). Focus is on contemporary issues and cases, analyzed through interdisciplinary scholarship and practical strategies to protect the fundamental liberty of American Indian religious freedom.
Same as: CSRE 108S

NATIVEAM 109A. Federal Indian Law. 3 Units.
Cases, legislation, comparative justice models, and historical and cultural material. The interlocking relationships of tribal, federal, and state governments. Emphasis is on economic development, religious freedom, and environmental justice issues in Indian country.
Same as: CSRE 109A

NATIVEAM 109B. Native Nation Building. 3 Units.
The history of competing tribal and Western economic models, and the legal, political, social, and cultural implications for tribal economic development. Case studies include mineral resource extraction, gaming, and cultural tourism. 21st-century strategies for sustainable economic development and protection of political and cultural sovereignty.
Same as: CSRE 109B

NATIVEAM 111B. Muwekma: Landscape Archaeology and the Narratives of California Natives. 3-5 Units.
This course explores the unique history of San Francisco Bay Area tribes with particular attention to Muwekma Ohlone- the descendent community associated with the landscape surrounding and including Stanford University. The story of Muwekma provides a window into the history of California Indians from prehistory to Spanish exploration and colonization, the role of Missionaries and the controversial legacy of Junipero Serra, Indigenous rebellions throughout California, citizenship and land title during the 19th century, the historical role of anthropology and archaeology in shaping policy and recognition of Muwekma, and the fight for acknowledgement of Muwekma as a federally recognized tribe. We will visit local sites associated with this history and participate in field surveys of the landscape of Muwekma.
Same as: ANTHRO 111C, ARCHLGY 111B

NATIVEAM 115. Introduction to Native American History. 5 Units.
This course incorporates a Native American perspective in the assigned readings and is an introduction to Native American History from contact with Europeans to the present. History, from a Western perspective, is secular and objectively evaluative whereas for most Indigenous peoples, history is a moral endeavor (Walker, Lakota Society 113). A focus in the course is the civil rights era in American history when Native American protest movements were active. Colonization and decolonization, as they historically occurred are an emphasis throughout the course using texts written from the perspective of the colonized at the end of the 20th century in addition to the main text. Students will be encouraged to critically explore issues of interest through two short papers and one longer paper that is summarized in a 15-20 minute presentation on a topic of interest relating to the course.

NATIVEAM 116. Decolonizing the Indigenous Classroom. 3-5 Units.
Using Indigenous and decolonizing perspectives on education, this interdisciplinary course will examine interaction and language in cross-cultural educational situations, including language, literacy and interethnic communication as they relate to Indigenous American classrooms. Special attention will be paid to implications of social, cultural and linguistic diversity for educational practice, along with various strategies for bridging intercultural differences between schools and Native communities.
Same as: CSRE 116, CSRE 302, EDUC 186, EDUC 286

NATIVEAM 117S. History of Native Americans in California. 3-5 Units.
This course examines the political histories and cultural themes of Native Americans in California, 1700s1950s. Throughout the semester we will focus on: demographics, diversity of tribal cultures; regional environmental backgrounds; the Spanish Era and missionization; the Mexican Era and secularization; relations with the United States Government and the State of California, including the gold rush period, statehood, unratified treaties, origin of reservations/rancherias, and other federal policies, e.g., Allotment Act, Indian Reorganization Act and termination.
Same as: CSRE 117S, HISTORY 250A

NATIVEAM 118. Heritage, Environment, and Sovereignty in Hawaii. 4 Units.
This course explores the cultural, political economic, and environmental status of contemporary Hawaiians. What sorts of sustainable economic and environmental systems did Hawaiians use in prehistory? How was colonization of the Hawaiian Islands informed and shaped by American economic interests and the nascent imperialsm of the early 20th centrury? How was sovereignty and Native Hawaiian identity been shaped by these forces? How has tourism and the leisure industry affected the natural environment? This course uses archaeological methods, ethnohistorical sources, and historical analysis in an exploration of contemporary Hawaiian social economic and political life.
Same as: CSRE 118E, EARTHSYS 118

NATIVEAM 119S. The History of Native Americans of California. 5 Units.
How the federal government placed education at the center of its Indian policy in second half of 19th century, subjecting Native Americans to programs designed to erase native cultures and American Indian responses to those programs. Topics include traditional Indian education, role of religious groups, Meriam Report, Navajo-Hopi Rehabilitation Act, Johnson-O'Malley Act, and public schools.
Same as: EDUC 119S, EDUC 429S

NATIVEAM 120. Is Pocahontas a Myth? Native American Women in History. 3-5 Units.
This course will look at notable Native American Women in Native American history starting with Native American oral tradition narratives about important women in specific tribal narratives including origin narratives used in Native American tribal history. Native American history is not required in any national curriculum and as a result, Native American people(s) encounter many stereotypes and false beliefs about indigenous peoples of the United States. This course will focus on the role of women in Native American history including historic narratives in oral tradition as maintained in specific Native American histories (as told from a Native American perspective).

NATIVEAM 121. Discourse of the Colonized: Native American and Indigenous Voices. 5 Units.
Using the assigned texts covering the protest movements in the 20th century to the texts written from the perspective of the colonized at the end of the 20th century, students will engage in discussions on decolonization. Students will be encouraged to critically explore issues of interest through two short papers and a 15-20 minute presentation on the topic of interest relating to decolonization for Native Americans in one longer paper. Approaching research from an Indigenous perspective will be encouraged throughout.
Same as: CSRE 121

NATIVEAM 122. Historiography & Native American Oral Traditions and Narratives. 4 Units.
This course is an introduction to Native American Literature in the United States in a (post) colonial, or decolonized context (in the last seventy years). The readings focus on the complex social and political influences that have shaped Native American literature in the last half of the twentieth century to the present. It is an introduction to nNative American fiction, poetry, drama, nonfiction and autobiography. It draws on the historical (literary sovereignty) and theoretical frameworks (American Indian Literary Nationalism) used by Native American writers in the United States; how trends in Native American writing build on and integrate traditional modes of Native American nstorytelling (oral tradition & the verbal arts). It takes a specific in - depth look at Native American oral tradition. Where the overarching aim of the course is to address the nquestion: How do you define Native American literature? Students will be required to provide their own definition from what they learn about Native American oral tradition and the challenges (historic and otherwise) inherent in a (post) colonial or decolonized world for Native Americans.

NATIVEAM 123A. American Indians and the Cinema. 5 Units.
Hollywood and the film industry have had a major influence on American society for nearly a century. Initially designed to provide entertainment, the cinema broadened its impact by creating images perceived as real and essentialist. Hollywood's Indians have been the main source of information about who American Indians are and Hollywood has helped shape inaccurate and stereotypical perceptions that continue to exist today. This course looks chronologically at cinematic interpretations and critically examines accurate portrayals of American Indians and of American history.
Same as: CSRE 123A

NATIVEAM 126. Mo'olelo Aloha Aina: Hawaiian Perspectives on Storytelling, Land, and Sovereignty. 2 Units.
This course will introduce a wide variety of topics pertaining to the culture and history of the Hawaiian Islands and the aboriginal people of Hawai¿i (k¿naka maoli). Topics will range from Hawaiian perspectives on genealogies, Hawaiian conceptions of land governance, brief overview of Hawaiian Kingdom history, case studies of modern Hawaiian activism, and more. Students will be introduced to surface-level coverage of included topics through a variety of readings and interactive assignments.

NATIVEAM 132. Decolonizing the American Indigenous Classroom. 3-5 Units.
Using Indigenous and decolonizing perspectives on education, this interdisciplinary course will examine interaction and language in cross-cultural educational situations, including language, literacy and interethnic communication as they relate to Indigenous American classrooms. Special attention will be paid to implications of social, cultural and linguistic diversity for educational practice, along with various strategies for bridging intercultural differences between schools and Native communities.

NATIVEAM 139. American Indians in Contemporary Society. 4 Units.
(Graduate students register for 239.) The social position of American Indians in contemporary American society, 1890 to the present. The demographic resurgence of American Indians, changes in social and economic status, ethnic identification and political mobilization, and institutions such as tribal governments and the Bureau of Indian Affairs. Recommended: 138 or a course in American history.
Same as: SOC 139, SOC 239

NATIVEAM 161. Entrepreneurship for Social and Racial Equity. 3 Units.
This course is designed to provide students with an introduction to business ownership with a focus on owning and operating businesses within diverse communities with an aim to create social impact for future generations as well as profitability and sustainability models. The course will introduce the beginning elements of creating a business (formation, product, business plan) as well as the additional overlay of social impact and cultural considerations. Types of financing as well as effective pitching will also be covered. Course materials will include instructor presentations, case studies, homework assignments, outside hours at campus ¿labs¿, creation of students¿ own business concept plan and guest lectures from successful entrepreneurs working within Silicon Valley and diverse communities. Resources (financing sources, accelerators and incubators), case studies, role models and guest lecturers will be an integral part of this course which can lead to internship opportunities (the latter via application).
Same as: CSRE 161P

NATIVEAM 162. Tribal Economic Development and Sustainability. 3-5 Units.
Native Americans, Alaska Natives and Inuit are disproportionately on the forefront of climate change and are being forced to adapt to climate change now. One of the biggest challenges Indigenous Nations face is building sustainable businesses that respect the environment while providing for current and future generations. This course will survey environmental, regulatory, political and financing issues associated with economic development on tribal, Alaska Native and Inuit lands. We will examine Indigenous business success stories as well as an overview of major challenges to building sustainable businesses. We will engage with Indigenous leaders and industry experts to discuss the challenges of building businesses that provide jobs and economic opportunities for Indigenous communities now while also taking into account the responsibilities Indigenous leadership has to future generations.
Same as: EARTHSYS 163

NATIVEAM 170. Introduction to American Indian Literature. 5 Units.
This course provides a general introduction to American Indian literatures, beginning with early translations, including oral literatures and autobiographies, and continuing with contemporary poetry and fiction written by American Indian writers. We will want to pay particular attention to the American Indian writers¿ connections to a specific locale or place. In what ways are the stories and poems evocative of a long-standing relationship to a "home landscape"? What is the nature of the relationship? How is that relationship to place similar to or different from our own? At the same time, we will want to pay attention to the nature and scope of the various representations of American Indians in the texts we examine, and ask how the representations reinforce and/or dispel popular and often stereotypical images of American Indian people. Finally, we will want to be aware of and understand our position as readers, particularly as readers who come from and are constituted by historical, social, political, cultural, and ethnic worlds different from or similar to the worlds we find in the books that we are reading.
Same as: CSRE 170

NATIVEAM 200R. Directed Research. 1-5 Unit.
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NATIVEAM 200W. Directed Reading. 1-5 Unit.
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NATIVEAM 221. Crafting Challenging Conversations in a Conflicted World. 3 Units.
In moments of divisive, time-sensitive conflict and disagreement, interdependent community groups that are we-us oriented often struggle to maintain cohesive relationships. In this interactive, project-based course, participants will dive into the art of designing new products, services, or experiences for conflict. Throughout the course, participants can expect to unpack the fundamentals of design thinking and components of strong listening, leadership, and effective cultural competency. Individual one-on-one conversations as well as indigenous forms of group-interviewing, known as Peacemaking and Ho'oponopono, will be also explored. At the end of the course, students can expect to have created a low-resolution prototype based on qualitative research that answers the question: How might we lead with community-centered approaches, rather than with independent, divisive reactions in moments of conflict?.
Same as: CSRE 221D

NATIVEAM 240. Psychology and American Indian/Alaska Native Mental Health. 3-5 Units.
Western medicine's definition of health as the absence of sickness, disease, or pathology; Native American cultures' definition of health as the beauty of physical, spiritual, emotional, and social things, and sickness as something out of balance. Topics include: historical trauma; spirituality and healing; cultural identity; values and acculturation; and individual, school, and community-based interventions. Prerequisite: experience working with American Indian communities.
Same as: EDUC 340, PSYCH 272

NATIVEAM 255. Native American Identity in the American Imagination: 19th Century to Present. 5 Units.
Because cultural identity is similar to and overlaps with identity politics, this course will examine Native American identity in current culture through American imagination and perspective as to what it is to be Native American today. Historic perspectives from the 19th century to the present will be covered as well.

DIVISION OF LITERATURES, CULTURES, AND LANGUAGES

Courses offered by the Division of Literatures, Cultures, and Languages are listed under the subject code DLCL on the Stanford Bulletin's ExploreCourses web site (https://explorecourses.stanford.edu/search/?view=catalog&catalog=&page=0&q=DLCL&filter-catalognumber-DLCL=on).

The Division of Literatures, Cultures, and Languages consists of:

Five academic departments

- Comparative Literature (p. 1203)
- French and Italian (p. 1463)
- German Studies (p. 1497)
- Iberian and Latin American Cultures (p. 1650)
- Slavic Languages and Literatures (p. 2083)

(p. 2083)Eight focal groups:

- Collaborative Teaching Project
- Humanities Education
- Materia
- PATH+ (Persian, Arabic, Turkish, Hebrew)
- Philosophy and Literature
- Renaissances
- The Contemporary and Workshop in Poetics

And the Language Center (p. 1722), which oversees language instruction at Stanford.

The division brings together scholars and teachers dedicated to the study of literatures, cultures, and languages from humanistic and interdisciplinary perspectives. The departments in the division are distinguished by the quality and versatility of their faculty, a wide variety of approaches to cultural traditions and expressions, and the intense focus on the mastery of languages. This wealth of academic resources, together with small classes and the emphasis on individual advising, creates a superior opportunity for students who wish to be introduced to or develop a deeper understanding of non-English speaking cultures.

The division's departments and the Language Center offer instruction at all levels, including introductory and general courses that do not require knowledge of a language other than English. These courses satisfy a variety of undergraduate requirements and can serve as a basis for developing a minor or a major program in the member departments. The more advanced and specialized courses requiring skills in a particular language are listed under the relevant departments, as are descriptions of the minor and major programs.

Focal Groups

While the five departments in the Division of Literatures, Cultures, and Languages serve common interests in literary and cultural traditions and their languages, the DLCL's Focal Groups bring together faculty members and graduate students who share topics and approaches that range across languages and national literatures. These groups are designed to respond directly to the research interests of the faculty as a community, and reflect long-term commitments by the participants. They are conceived as portals that open from the Division outward to the wider community of literary and humanities scholars at Stanford. The membership may include any member of the Stanford faculty or any Ph.D. student with an interest in the topic. Most Focal Groups include participants from several humanities departments outside the DLCL.

Thus the DLCL is characterized by two axes of intellectual inquiry:

- the departmental axis, which is organized by language, nation, and culture
- the focal axis, which may be organized by genre, period, methodology, or other criteria.

The convergence of the two axes, departments and Focal Groups, locates faculty members and graduate students in at least two intersecting communities. The DLCL believes that this convergence gives institutional form to the intellectual conditions under which many scholars of literature and culture presently work.

Each Focal Group maintains a standing research workshop at which both faculty and graduate student members discuss their work. Several Focal Groups offer formal courses; and all groups are responsible for overseeing research-oriented activities and extracurricular events in the relevant area, including sponsoring conferences, publications, podcasts, and other activities that disseminate the outcomes of their research.

Collaborative Teaching Project

Chair: Laura Wittman (French and Italian)

The Collaborative Teaching Project (CTP) has supported Stanford faculty and graduate students by offering a series of team-taught courses in the humanities, with the goal of preparing graduate students for careers as liberal arts educators. CTP thus facilitates and funds collaborations between one faculty member and 1-2 graduate students in order to co-teach a course. The graduate students and their faculty mentor work together on as many aspects of the course as possible, including syllabus, gathering and choosing materials, preparing assignments, lectures, presentations, class activities, and other in-class events, grading and feedback, evaluation of the course itself, and so on.

Humanities Education

Chair: Russell Berman (Comparative Literature, German Studies)

Faculty Members: Cécile Alduy (French and Italian), Elizabeth Bernhardt (German Studies, Language Center), Eamonn Callan (School of Education), Adrian Daub (German Studies), Thomas Ehrlich (School of Education), Marisa Galvez (French and Italian), Pam Grossman (School of Education), Orrin Robinson (German Studies), Gabriella Safran (Slavic Languages and Literatures), Kathryn Starkey (German Studies), Mitchell Stevens (School of Education), Guadalupe Valdés (School of Education)

Web Site: https://dlcl.stanford.edu/groups/humanities-education-0 (https://dlcl.stanford.edu/groups/humanities-education-0/)

The Focal Group on Humanities Education explores issues concerning teaching and learning in the humanities, including research on student learning, innovation in pedagogy, the role of new technologies in humanities instruction, and professional issues for humanities teachers at all educational levels.

Materia

Chair: Héctor Hoyos (Iberian and Latin American Cultures)

Web Site: https://dlcl.stanford.edu/content/materia-0 (https://dlcl.stanford.edu/content/materia-0/)

MATERIA is a new discursive space on campus for sustained intellectual exchange on a central tendency in contemporary criticism: the decentering of humans as “our object of study.” We are an inclusive, interdisciplinary group that finds in the notion of post-anthropocentrism an umbrella for some of the most interesting debates of recent years. These span not only post-humanism and new materialism, but also animal and object studies.

Persian, Arabic, Turkish, and Hebrew Languages, Literatures, and Cultures (PATH+)

Chair: Alexander Key (Comparative Literature)

PATH+ is a DLCL focal group that is considering the future of Persian, Arabic, Turkish, and Hebrew languages, literatures, and cultures in the DLCL. The PATH+ conversation includes scholars, artists, and intellectuals working in and around these languages, literatures, and cultures from across Stanford and from peer institutions internationally.

Philosophy and Literature

Chairs: R. Lanier Anderson (Philosophy), Joshua Landy (French and Italian)

Faculty Members: Keith Baker (History), John Bender (Comparative Literature, English), Russell Berman (Comparative Literature, German Studies), Alexis Burgess (Philosophy), Martón Dornbach (German Studies), Jean-Pierre Dupuy (French and Italian), Amir Eshel (Comparative Literature, German Studies), Gregory Freidin (Slavic Languages and Literatures), Robert Harrison (French and Italian), David Hills (Philosophy), Héctor Hoyos (Iberian and Latin American Cultures), Michelle Karnes (English), Alexander Key (Comparative Literature), Sianne Ngai (English), Marília Librandi Rocha (Iberian and Latin American Cultures), Joan Ramon Resina (Iberian and Latin American Cultures, Comparative Literature), Nariman Skakov (Slavic Languages and Literatures), Blakey Vermeule (English), Laura Wittman (French and Italian), Lee Yearley (Religious Studies)

Web Site: https://dlcl.stanford.edu/groups/philosophy-and-literature (https://dlcl.stanford.edu/groups/philosophy-and-literature/)

The Focal Group on Philosophy and Literature brings together faculty and students from nine departments to investigate questions in aesthetics and literary theory, philosophically-inflected literary texts, and the form of philosophical writings. Fields of interest include both continental and analytic philosophy, as well as cognitive science, political philosophy, rational choice theory, and related fields. The group offers undergraduate tracks within eight majors, a graduate workshop, and a lecture series.

Renaissances

Chair: Roland Greene (Comparative Literature, English)

Faculty Members: Cécile Alduy (French and Italian), Shahzad Bashir (Religious Studies), Paula Findlen (History), Tamar Herzog (History), Nicholas Jenkins (English), Alexander Key (Comparative Literature), David Lummus (French and Italian), Bissera Pentcheva (Art and Art History), Morten Steen Hansen (Art and Art History).

Web Site: http://dlcl.stanford.edu/groups/renaissances (http://dlcl.stanford.edu/groups/renaissances/)

The Renaissances Group brings together faculty members and students from over a dozen departments at Stanford to consider the present and future of early modern literary studies (a period spanning the fourteenth through the seventeenth centuries). Taking seriously the plural form of the group's name, we seek to explore the early modern period from a wide range of disciplinary, cultural, linguistic, and geographical perspectives.

The Contemporary

Chair: Amir Eshel (Comparative Literature, German Studies)

Web Site: https://dlcl.stanford.edu/content/contemporary (https://dlcl.stanford.edu/content/contemporary/)

The Contemporary focal group examines "the contemporary" with a focus on defining moments such as 1945, 1973, 1989, and 2001. Building upon a 3 year body of work as a DLCL research group, The Contemporary focal group has particularly focused on U.S., European, and Middle Eastern cultural and political forces that characterize our "contemporary." The group employs a comparative and interdisciplinary approach to the hybrid term "contemporary" as it intersects various fields and serves as a heuristic device to understand phenomena in politics, culture, and the arts.

Workshop in Poetics

Chairs: Roland Greene (Comparative Literature, English), Nicholas Jenkins (English)

Faculty Members: Marisa Galvez (French and Italian), Alexander Key (Comparative Literature)

Web Site: http://dlcl.stanford.edu/workshop-poetics-0+ (http://dlcl.stanford.edu/workshop-poetics-0+/)

The Workshop in Poetics Focal Group is concerned with the theoretical and practical dimensions of the reading and criticism of poetry. During the five years of its existence, the Workshop has become a central venue at Stanford enabling participants to share their individual projects in a general conversation outside of disciplinary and national confinements. The two dimensions that the workshop sees as urgent are:

- poetics in its specificity as an arena for theory and interpretive practice.
- historical poetics as a particular set of challenges for the reader and scholar.

The core mission is to offer Stanford graduate students a space to develop and critique their current projects.

Minor in Modern Languages

Academic Advisor: Elizabeth Bernhardt-Kamil

The Division of Literatures, Cultures, and Languages offers an undergraduate minor in Modern Languages that permits students to demonstrate strength in two distinct modern languages and their literatures. The minor draws upon courses housed within the DLCL, East Asian Languages and Cultures, the Stanford Language Center, and the Special Language Program.

Declaring the Minor

Students declare the minor in Modern Languages through Axess. The minor program is administered by the DLCL undergraduate student support office located in Pigott Hall, room 128 and may be contacted at odunlop@stanford.edu. Plans for completing the minor must be approved by through the student support office.

Minor Program

- Students enrolled in the Modern Languages minor must take 6 courses of 3 units or more, for a total of 22 units minimum.
- Students will study two modern languages, Language A and Language B.
  - Language A: two intermediate-level or higher courses, for 8 units minimum, and one literature course of 3-5 units.
  - Language B: two intermediate-level or higher courses, for 8 units minimum, and one literature course of 3-5 units.

Requirements

- Stanford Language Center courses and BOSP language courses must be second-year level or beyond.
- Literature courses from BOSP programs are pre-approved for the minor.
- Literature courses taught by Stanford faculty (Academic Council members) will be approved with permission of the Program Administrator.

- Language courses may not include conversational, oral communication, business, or medical language courses.
- Advanced Placement and transfer credits may not be applied to the minor.
- All courses must be taken for a letter grade.
- Coursework may not duplicate work counted toward other majors or minors. By University policy, no more than 36 units may be required in this minor.

Minor in Middle Eastern Languages, Literatures, and Cultures

Faculty Director: Alexander Key

The undergraduate minor in Middle Eastern Languages, Literatures, and Cultures (MELLAC) has been designed to give students majoring in a variety of departments an opportunity to gain a substantial introduction to Arabic, Hebrew, Persian, Turkish, Middle Eastern, and African languages, and to the cultures and civilizations of the Middle East and Africa.

Declaring the Minor

Contact the faculty director, Alexander Key (akey@stanford.edu), before declaring the minor in Axess. The minor is administered through the DLCL undergraduate student support office in Pigott Hall, room 128.

Minor Program Overview

The minor in Middle Eastern Languages, Literatures, and Cultures (MELLAC) has five tracks. Coursework in each track may not duplicate work counted toward other majors or minors.

Minor in Middle Eastern Languages, Literatures, and Cultures: Arabic Track

The minor track requirements are:

- Minimum of 24 units total for this minor track.
- Completion of six ARABLANG courses at the third and fourth year levels, excluding conversation and colloquial courses. All courses must be taken for a letter grade.
- Up to 5 units of transfer credit may count towards this minor, subject to approval of the faculty director.
- Students must test for proficiency in Arabic through the Language Center by Winter Quarter of their senior year. Students should minimally receive a notation of intermediate-high. Those requiring outside tutoring are advised to seek resources available through the DLCL student services office in Pigott Hall 128, odunlop@gmail.com.
- All courses must be approved by the faculty director.

Minor in Middle Eastern Languages, Literatures, and Cultures: Hebrew Track

The minor track requirements are:

- Minimum of 32 units total for this minor track.
- Minimum of 3 HEBREW language classes. Students may test out of this requirement with the approval of the faculty director.
- Minimum of 20 units of Hebrew literature and culture courses, one of which must be listed in COMPLIT. The Hebrew Forum may count towards this requirement with the approval of the faculty director.
- All courses must be approved by the faculty director.

Minor in Middle Eastern Languages, Literatures, and Cultures: African Languages, Literatures and Cultures Track

Requirements for the minor are:

- Minimum 32 units for this minor track.
- Three AMELANG language classes in an African language.
- All three courses must be in the same language.
- 20 additional units from relevant literature and culture courses, one of these courses must be a COMPLIT course.
- Other relevant courses are listed under AFRICAST.
- The faculty director may approve some upper-level language classes to count towards the 20 additional units.
- All courses must be approved by the faculty director.

Minor in Middle Eastern Languages, Literatures, and Cultures: Persian Track

The minor track requirements are:

- Minimum of 30 units total for this minor track.
- Completion of 20 units of Persian courses listed in AMELANG.
- Completion of 10 units of Persian courses listed in COMPLIT.
- All courses must be approved by the faculty director.

Minor in Middle Eastern Languages, Literatures, and Cultures: Turkish Track

The minor track requirements are:

- Minimum 30 units total for this minor track.
- 15 units of Turkish courses listed in AMELANG.
- 15 units of Turkish courses listed in COMPLIT.
- All courses must be approved by the faculty director.

COVID-19-Related Degree Requirement Changes

For information on how the Minor in Medieval Studies requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 1305)" in the "Division of Literatures, Cultures, and Languages" of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

Minor in Medieval Studies

Faculty Director: Marisa Galvez

The Division of Literatures, Cultures, and Languages offers an undergraduate minor in Medieval Studies. The minor in Medieval Studies:

- provides Stanford students with the historical knowledge and framework through which to view globalism;
- embeds the study of medieval culture in a coherent framework that resonates with contemporary issues of community building, the virtual world and mobility;
- and promotes an innovative cross-disciplinary and skill-based approach to Medieval Studies.

Declaring the Minor

Students should declare the minor in Medieval Studies in Axess. The undergraduate program is administered by the DLCL student services office located in Pigott Hall, room 128.

Requirements

Students in any major field qualify for the minor by meeting the following requirements:

- Students complete 6 courses courses of 3 units or more for a total of 25 units.
- The 6 courses must include an introductory core course taken for 5 units.

		Units
ARTHIST 106	Byzantine Art and Architecture, 300-1453 C.E.	5
DLCL 204	Digital Humanities Across Borders	3-5
HISTORY 115D	Europe in the Middle Ages, 300-1500	3-5

- Electives may be selected from a large number of offerings in a variety of disciplines according to student interests, but they must follow a coherent course of study. This course of study must be approved by the Undergraduate Faculty Director. Courses are relevant to the major in departments across the University including English, East Asian Studies, History, Religious Studies, Music, Comparative Literature, German, French, Italian, Iberian and Latin American Cultures, and Slavic Languages and Literatures, and Classics.
- Up to 5 units may be taken in a medieval language, such as (but not limited to) Old English, Old Norse, Medieval Latin, Old French, Middle High German, Classical Arabic.
- Appropriate courses offered through BOSP may count toward this minor.
- No transfer credit may be used toward the Medieval Studies minor, and course work in this minor may not duplicate work counted toward other majors or minors.
- Advanced placement credit and transfer credit do not apply to this minor.
- All courses must be taken for a letter grade.

Minor in Translation Studies

Faculty Director: Alexander Key

Minor Adviser: Cintia Santana

The Division of Literatures, Cultures, and Languages, in cooperation with East Asian Languages and Cultures and the English Department, teaches undergraduates to develop and apply their foreign language knowledge to the production and analysis of translations. The minor is designed to give students majoring in a variety of fields the tools to consider the practical and theoretical issues brought up by translation as an aesthetic, cultural, and ethical practice.

Declaring the Minor

Students will declare the minor in Axess, and then contact the minor adviser, Cintia Santana (csantana@stanford.edu). The program is administered by the DLCL student services office located in Pigott Hall, room 128.

Requirements

Students must take a minimum of 6 courses for 3 units or more and a minimum of 23 units for a letter grade, in fulfillment of the following requirements:

	Units
1. Prerequisite: Complete or test out of a first-year course in the language of interest.	
2. Core course: At least 4 units in a Translation Studies core course: ENGLISH/DLCL 293 or FRENCH 185 or Comparative Literature 228/ JAPAN 123/223.	4
3. Language study: At least 8 units, second year or beyond (not including conversation/oral communication) and/or relevant literature courses taught in the target language. OSP and transfer units may be considered in consultation with the minor adviser.	8
4. Literature study: At least 7 units in relevant literature courses at the 100-level or above, taught in a DLCL department, East Asian Languages and Cultures, or Classics, and determined in consultation with the minor adviser. For students interested in translation from English into another language, appropriate literature courses in the English department may be substituted.	7
5. Electives: At least 4 units in a creative writing course, or a course that foregrounds translation in departments such as Anthropology, any DLCL department, English, East Asian Languages and Cultures, Classics, Linguistics (e.g., LINGUIST 130A), or Computer Science (e.g., CS 124), determined in consultation with the minor adviser.	4
6. Final Project: Students must also complete a capstone project: a significant translation and/or translation studies project (e.g. 20 pages of prose, 10 poems, or similar appropriate amount to be determined in consultation with the minor adviser). This work may be carried out under the supervision of an instructor in a required course or as an independent study.	
Total Units	23

Minor in Modern Languages

Academic Advisor: Elizabeth Bernhardt-Kamil

The Division of Literatures, Cultures, and Languages offers an undergraduate minor in Modern Languages that permits students to demonstrate strength in two distinct modern languages and their literatures. The minor draws upon courses housed within the DLCL, East Asian Languages and Cultures, the Stanford Language Center, and the Special Language Program.

Declaring the Minor

Students declare the minor in Modern Languages through Axess. The minor program is administered by the DLCL undergraduate student support office located in Pigott Hall, room 128 and may be contacted at odunlop@stanford.edu. Plans for completing the minor must be approved by through the student support office.

Minor Program

- Students enrolled in the Modern Languages minor must take 6 courses of 3 units or more, for a total of 22 units minimum.
- Students will study two modern languages, Language A and Language B.
  - Language A: two intermediate-level or higher courses, for 8 units minimum, and one literature course of 3-5 units.
  - Language B: two intermediate-level or higher courses, for 8 units minimum, and one literature course of 3-5 units.

Requirements

- Stanford Language Center courses and BOSP language courses must be second-year level or beyond.
- Literature courses from BOSP programs are pre-approved for the minor.
- Literature courses taught by Stanford faculty (Academic Council members) will be approved with permission of the Program Administrator.
- Language courses may not include conversational, oral communication, business, or medical language courses.
- Advanced Placement and transfer credits may not be applied to the minor.
- All courses must be taken for a letter grade.
- Coursework may not duplicate work counted toward other majors or minors. By University policy, no more than 36 units may be required in this minor.

Minor in Middle Eastern Languages, Literatures, and Cultures

Faculty Director: Alexander Key

The undergraduate minor in Middle Eastern Languages, Literatures, and Cultures (MELLAC) has been designed to give students majoring in a variety of departments an opportunity to gain a substantial introduction to Arabic, Hebrew, Persian, Turkish, Middle Eastern, and African languages, and to the cultures and civilizations of the Middle East and Africa.

Declaring the Minor

Contact the faculty director, Alexander Key (akey@stanford.edu), before declaring the minor in Axess. The minor is administered through the DLCL undergraduate student support office in Pigott Hall, room 128.

Minor Program Overview

The minor in Middle Eastern Languages, Literatures, and Cultures (MELLAC) has five tracks. Coursework in each track may not duplicate work counted toward other majors or minors.

Minor in Middle Eastern Languages, Literatures, and Cultures: Arabic Track

The minor track requirements are:

- Minimum of 24 units total for this minor track.
- Completion of six ARABLANG courses at the third and fourth year levels, excluding conversation and colloquial courses. All courses must be taken for a letter grade.
- Up to 5 units of transfer credit may count towards this minor, subject to approval of the faculty director.
- Students must test for proficiency in Arabic through the Language Center by Winter Quarter of their senior year. Students should minimally receive a notation of intermediate-high. Those requiring outside tutoring are advised to seek resources available through the DLCL student services office in Pigott Hall 128, odunlop@gmail.com.
- All courses must be approved by the faculty director.

Minor in Middle Eastern Languages, Literatures, and Cultures: Hebrew Track

The minor track requirements are:

- Minimum of 32 units total for this minor track.
- Minimum of 3 HEBREW language classes. Students may test out of this requirement with the approval of the faculty director.
- Minimum of 20 units of Hebrew literature and culture courses, one of which must be listed in COMPLIT. The Hebrew Forum may count towards this requirement with the approval of the faculty director.
- All courses must be approved by the faculty director.

Minor in Middle Eastern Languages, Literatures, and Cultures: African Languages, Literatures and Cultures Track

Requirements for the minor are:

- Minimum 32 units for this minor track.
- Three AMELANG language classes in an African language.
- All three courses must be in the same language.
- 20 additional units from relevant literature and culture courses, one of these courses must be a COMPLIT course.
- Other relevant courses are listed under AFRICAST.
- The faculty director may approve some upper-level language classes to count towards the 20 additional units.
- All courses must be approved by the faculty director.

Minor in Middle Eastern Languages, Literatures, and Cultures: Persian Track

The minor track requirements are:

- Minimum of 30 units total for this minor track.
- Completion of 20 units of Persian courses listed in AMELANG.
- Completion of 10 units of Persian courses listed in COMPLIT.
- All courses must be approved by the faculty director.

Minor in Middle Eastern Languages, Literatures, and Cultures: Turkish Track

The minor track requirements are:

- Minimum 30 units total for this minor track.
- 15 units of Turkish courses listed in AMELANG.
- 15 units of Turkish courses listed in COMPLIT.
- All courses must be approved by the faculty director.

COVID-19-Related Degree Requirement Changes

For information on how the Minor in Medieval Studies requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 1305)" in the "Division of Literatures, Cultures, and Languages" of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

Minor in Medieval Studies

Faculty Director: Marisa Galvez

The Division of Literatures, Cultures, and Languages offers an undergraduate minor in Medieval Studies. The minor in Medieval Studies:

- provides Stanford students with the historical knowledge and framework through which to view globalism;
- embeds the study of medieval culture in a coherent framework that resonates with contemporary issues of community building, the virtual world and mobility;
- and promotes an innovative cross-disciplinary and skill-based approach to Medieval Studies.

Declaring the Minor

Students should declare the minor in Medieval Studies in Axess. The undergraduate program is administered by the DLCL student services office located in Pigott Hall, room 128.

Requirements

Students in any major field qualify for the minor by meeting the following requirements:

- Students complete 6 courses courses of 3 units or more for a total of 25 units.
- The 6 courses must include an introductory core course taken for 5 units.

		Units
ARTHIST 106	Byzantine Art and Architecture, 300-1453 C.E.	5
DLCL 204	Digital Humanities Across Borders	3-5
HISTORY 115D	Europe in the Middle Ages, 300-1500	3-5

- Electives may be selected from a large number of offerings in a variety of disciplines according to student interests, but they must follow a coherent course of study. This course of study must be approved by the Undergraduate Faculty Director. Courses are relevant to the major in departments across the University including English, East Asian Studies, History, Religious Studies, Music, Comparative Literature, German, French, Italian, Iberian and Latin American Cultures, and Slavic Languages and Literatures, and Classics.
- Up to 5 units may be taken in a medieval language, such as (but not limited to) Old English, Old Norse, Medieval Latin, Old French, Middle High German, Classical Arabic.
- Appropriate courses offered through BOSP may count toward this minor.
- No transfer credit may be used toward the Medieval Studies minor, and course work in this minor may not duplicate work counted toward other majors or minors.
- Advanced placement credit and transfer credit do not apply to this minor.
- All courses must be taken for a letter grade.

Minor in Translation Studies

Faculty Director: Alexander Key

Minor Adviser: Cintia Santana

The Division of Literatures, Cultures, and Languages, in cooperation with East Asian Languages and Cultures and the English Department, teaches undergraduates to develop and apply their foreign language knowledge to the production and analysis of translations. The minor is designed to give students majoring in a variety of fields the tools to consider the practical and theoretical issues brought up by translation as an aesthetic, cultural, and ethical practice.

Declaring the Minor

Students will declare the minor in Axess, and then contact the minor adviser, Cintia Santana (csantana@stanford.edu). The program is administered by the DLCL student services office located in Pigott Hall, room 128.

Requirements

Students must take a minimum of 6 courses for 3 units or more and a minimum of 23 units for a letter grade, in fulfillment of the following requirements:

	Units
1. Prerequisite: Complete or test out of a first-year course in the language of interest.	
2. Core course: At least 4 units in a Translation Studies core course: ENGLISH/DLCL 293 or FRENCH 185 or Comparative Literature 228/ JAPAN 123/223.	4
3. Language study: At least 8 units, second year or beyond (not including conversation/oral communication) and/or relevant literature courses taught in the target language. OSP and transfer units may be considered in consultation with the minor adviser.	8
4. Literature study: At least 7 units in relevant literature courses at the 100-level or above, taught in a DLCL department, East Asian Languages and Cultures, or Classics, and determined in consultation with the minor adviser. For students interested in translation from English into another language, appropriate literature courses in the English department may be substituted.	7
5. Electives: At least 4 units in a creative writing course, or a course that foregrounds translation in departments such as Anthropology, any DLCL department, English, East Asian Languages and Cultures, Classics, Linguistics (e.g., LINGUIST 130A), or Computer Science (e.g., CS 124), determined in consultation with the minor adviser.	4
6. Final Project: Students must also complete a capstone project: a significant translation and/or translation studies project (e.g. 20 pages of prose, 10 poems, or similar appropriate amount to be determined in consultation with the minor adviser). This work may be carried out under the supervision of an instructor in a required course or as an independent study.	
Total Units	23

Ph.D. Minor in Philosophy, Literature, and the Arts

Faculty Director: Joshua Landy, French and Italian, and Comparative Literature

Director of Graduate Studies: Adrian Daub, German Studies, and Comparative Literature

Overview

The Ph.D. minor in Philosophy, Literature, and the Arts offers rigorous, structured training for students interested in the interdisciplinary intersection of philosophy with criticism in literature and the arts.

Application and Admission

Students declare the minor after admission to candidacy and before attaining TGR status by submitting an Application for Ph.D. Minor (http://studentaffairs.stanford.edu/sites/default/files/registrar/files/app_phd_minor.pdf) form.

Requirements for the Ph.D. Minor in Philosophy, Literature, and the Arts

All students in the Ph.D. Minor in Philosophy, Literature, and the Arts take:

1. PHIL 333 (https://exploredegrees.stanford.edu/search/?P=PHIL%20333)/DLCL 333 (https://exploredegrees.stanford.edu/search/?P=DLCL%20333) Philosophy, Literature, and the Arts Core Seminar, team taught by faculty from philosophy and from a literature or arts department.

2. Two additional courses at the 200 level or above which are deemed by the Committee in Charge to include material of substantial special relevance to the domain of philosophy, literature, and the arts. A list of approved courses may be found each year at https://philit.stanford.edu/graduates/graduate-special-relevance-courses (https://philit.stanford.edu/graduates/graduate-special-relevance-courses/). At least one of these courses should be offered in a participating department other than the student's major department (e.g., a philosophy course for students in literature and arts departments, a literature or arts course for philosophy students).

3. All students take two graduate-level courses providing a structured program of course work in the student's minor field (such as philosophy for literature and arts students, or literary or arts criticism for philosophy students):

    - Graduate students in Philosophy take two graduate-level courses in a single literature, or in one of the arts.

    - Graduate students in literature or arts departments, including Classics, take two graduate-level courses in Philosophy, at least one of which must be in metaphysics, epistemology, or the philosophies of language, mind, or action (the PHIL 280s series and related upper-level seminars), and at least one of which must be in value theory (understood to include ethics, aesthetics, and political philosophy, the PHIL 270s series and related upper-level seminars)

    - Graduate students in other departments submit a plan of study for approval by the Faculty Director reflecting graduate-level course work that provides a background both within philosophy and within the study of literature or the arts that is substantially equivalent to that achieved by philosophy, literature, or arts students in their minor field. Students are advised that this plan of study may involve more course work than would be needed for students whose major field is in literature, arts, or philosophy departments.

4. If the five required courses do not total 20 units, students may satisfy the 20 unit requirement by taking units of DLCL 222 (https://exploredegrees.stanford.edu/search/?P=DLCL%20222) Philosophy and Literature or by taking additional graduate level courses of special relevance at their discretion and with the agreement of their minor adviser.

Notes:

- Students are encouraged to include a member from the minor field on the University Oral Committee or on another of the general examination committees if that is judged more appropriate by the student's departmental and minor advisers. Students in departments which deploy the University Oral as a dissertation defense are advised that a member from the student's minor field should be involved on the dissertation committee throughout the dissertation writing period.

- Currently-enrolled students (as of August 31, 2017) in the old Ph.D. minor in the Humanities, or in its Philosophy, Literature, and the Arts subplan, have the option to continue under the current Ph.D. minor name or to change to the new Ph.D. minor in Philosophy, Literature, and the Arts. Students were required to make this election by the end of Autumn Quarter 2017-18. New students (as of September 1, 2017) would enroll in the Ph.D. minor in Philosophy, Literature, and the Arts. The subplan is no longer be available for student enrollment as of September 1, 2017.

Ph.D. Minor in Philosophy, Literature, and the Arts

Faculty Director: Joshua Landy, French and Italian, and Comparative Literature

Director of Graduate Studies: Adrian Daub, German Studies, and Comparative Literature

Overview

The Ph.D. minor in Philosophy, Literature, and the Arts offers rigorous, structured training for students interested in the interdisciplinary intersection of philosophy with criticism in literature and the arts.

Application and Admission

Students declare the minor after admission to candidacy and before attaining TGR status by submitting an Application for Ph.D. Minor (http://studentaffairs.stanford.edu/sites/default/files/registrar/files/app_phd_minor.pdf) form.

Requirements for the Ph.D. Minor in Philosophy, Literature, and the Arts

All students in the Ph.D. Minor in Philosophy, Literature, and the Arts take:

1. PHIL 333 (https://exploredegrees.stanford.edu/search/?P=PHIL%20333)/DLCL 333 (https://exploredegrees.stanford.edu/search/?P=DLCL%20333) Philosophy, Literature, and the Arts Core Seminar, team taught by faculty from philosophy and from a literature or arts department.

2. Two additional courses at the 200 level or above which are deemed by the Committee in Charge to include material of substantial special relevance to the domain of philosophy, literature, and the arts. A list of approved courses may be found each year at https://philit.stanford.edu/graduates/graduate-special-relevance-courses (https://philit.stanford.edu/graduates/graduate-special-relevance-courses/). At least one of these courses should be offered in a participating department other than the student's major department (e.g., a philosophy course for students in literature and arts departments, a literature or arts course for philosophy students).

3. All students take two graduate-level courses providing a structured program of course work in the student's minor field (such as philosophy for literature and arts students, or literary or arts criticism for philosophy students):

    - Graduate students in Philosophy take two graduate-level courses in a single literature, or in one of the arts.

    - Graduate students in literature or arts departments, including Classics, take two graduate-level courses in Philosophy, at least one of which must be in metaphysics, epistemology, or the philosophies of language, mind, or action (the PHIL 280s series and related upper-level seminars), and at least one of which must be in value theory (understood to include ethics, aesthetics, and political philosophy, the PHIL 270s series and related upper-level seminars)

    - Graduate students in other departments submit a plan of study for approval by the Faculty Director reflecting graduate-level

course work that provides a background both within philosophy and within the study of literature or the arts that is substantially equivalent to that achieved by philosophy, literature, or arts students in their minor field. Students are advised that this plan of study may involve more course work than would be needed for students whose major field is in literature, arts, or philosophy departments.

4. If the five required courses do not total 20 units, students may satisfy the 20 unit requirement by taking units of DLCL 222 (https://exploredegrees.stanford.edu/search/?P=DLCL%20222) Philosophy and Literature or by taking additional graduate level courses of special relevance at their discretion and with the agreement of their minor adviser.

Notes:

- Students are encouraged to include a member from the minor field on the University Oral Committee or on another of the general examination committees if that is judged more appropriate by the student's departmental and minor advisers. Students in departments which deploy the University Oral as a dissertation defense are advised that a member from the student's minor field should be involved on the dissertation committee throughout the dissertation writing period.
- Currently-enrolled students (as of August 31, 2017) in the old Ph.D. minor in the Humanities, or in its Philosophy, Literature, and the Arts subplan, have the option to continue under the current Ph.D. minor name or to change to the new Ph.D. minor in Philosophy, Literature, and the Arts. Students were required to make this election by the end of Autumn Quarter 2017-18. New students (as of September 1, 2017) would enroll in the Ph.D. minor in Philosophy, Literature, and the Arts. The subplan is no longer be available for student enrollment as of September 1, 2017.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Division of Literatures, Cultures, and Languages minor programs count all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Graduate Degree Requirements

Grading

Doctoral students in the department must take required courses for a letter grade and are expected to earn a grade of 'B' or better in each required course. In other courses, doctoral students are expected to earn a grade of 'B' or better in each course taken for a letter grade in AY 2020-21 that will count towards their degree requirement. Any grade of 'B-' or below is considered to be less than satisfactory. Grades of 'B' or below are reviewed by faculty: while the grade will stand, the student may be required to revise and resubmit the work associated with that course. For courses taken for CR/NC, instructors will be asked to submit written assessment to the student and the department of what would be the equivalent letter grade to allow for review of satisfactory academic achievement by the DGS and department.

Certificate in Language Program Management

Faculty Director: Elizabeth Bernhardt

Programs in contemporary foreign language teaching preparation entail a knowledge base that has grown over the past 30 years, rooted in data from an explosion of linguistic as well as applied linguistic research.

In tandem with the Language Center's primary focus on learning research and theory, which graduate students explore in the teaching preparation program, the Language Program Management certificate focuses on developing the professional leadership and academic skills necessary for a career that includes the coordination and management of language learning.

The program funds summer internships which enable the completion of a certificate in Language Program Management and are intended to help Stanford graduate students prepare themselves for such work in complement to their literary studies. The certificate program is not declared on Axess and does not appear on the transcript or diploma.

Prerequisites

1. Foreign language acquisition: Oral Proficiency Interview (OPI) rating of at least advanced mid
2. Academic and professional development:
    - DLCL 301 The Learning and Teaching of Second Languages
    - Modified Oral Proficiency Interview (MOPI) Assessment workshop (2 days)
    - Limited OPI Tester Certification (average 6 months)
    - Teaching of three first-year language courses through the Language Center

These are generally met by the end of a graduate student's second year in the PhD program. Once meeting these criteria, the student may be admitted to the Program.

Requirements

Upon admission to the program, students must complete the following:

1. DLCL 302 The Learning and Teaching of Second-Language Literatures: a course designed to focus student attention on the development of oral language proficiency through the upper levels and emphasize the need for upper register speaking and writing for literature learning and teaching.
2. OPI workshop (additional 2 days of training at the Advanced and Superior levels): this workshop is the extension of the MOPI. It focuses on upper register performance on the FSI-ACTFL scale. Hosted by either the Language Center, regional workshop, or at the national meeting of the ACTFL.
3. Completion of Writing Proficiency Familiarization workshop (Winter Quarter): Workshop conducted by a certified writing tester and structured in parallel to the MOPI/OPI assessment paradigm.

4. DLCL 303 Language Program Management (Summer Quarter): an administrative internship including, but not limited to, experiences with the following:
    - Shadow faculty and staff in select areas of administration and supervision within the Language Center and DLCL
    - Placement testing and student advisement
    - Technology in teaching and learning
    - Processes for teacher observation and feedback
    - Procedures in staff supervision and human resources
    - Course scheduling, budgeting, staffing, and searches
    - Interface with external programs (e.g., BOSP, Bechtel, VPTL)

Division Chair: Cécile Alduy

Courses

DLCL 11. Great Books, Big Ideas from Ancient Greece and Rome. 3 Units.
This course will journey through ancient Greek and Roman literature from Homer to St. Augustine, in constant conversation with the other HumCore travelers in the Ancient Middle East, Africa and South Asia, and Early China. It will introduce participants to some of its fascinating features and big ideas (such as the idea of history); and it will reflect on questions including: What is an honorable life? Who is the Other? How does a society fall apart? Where does human subjectivity fit into a world of matter, cause and effect? Should art serve an exterior purpose? Do we have any duties to the past? This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: CLASSICS 37, HUMCORE 112

DLCL 12Q. Humanities Core: Great Books, Big Ideas -- Europe, Middle Ages and Renaissance. 3-4 Units.
This three-quarter sequence asks big questions of major texts in the European and American tradition. What is a good life? How should society be organized? Who belongs? How should honor, love, sin, and similar abstractions govern our actions? What duty do we owe to the past and future? The second quarter focuses on the transition from the Middle Ages to Modernity, Europe's re-acquaintance with classical antiquity and its first contacts with the New World. Authors include Dante, Shakespeare, Machiavelli, Cervantes, and Milton. N.B. This is the second of three courses in the European track. These courses offer an unparalleled opportunity to study European history and culture, past and present. Take all three to experience a year-long intellectual community dedicated to exploring how ideas have shaped our world and future. Students who take HUMCORE 11 and HUMCORE 12Q will have preferential admission to HUMCORE 13Q (a WR2 seminar).
Same as: FRENCH 12Q, HUMCORE 12Q, ILAC 12Q

DLCL 13. Humanities Core: Great Books, Big Ideas -- Europe, Modern. 3 Units.
This three-quarter sequence asks big questions of major texts in the European and American tradition. What is a good life? How should society be organized? Who belongs? How should honor, love, sin, and similar abstractions govern our actions? What duty do we owe to the past and future? This third and final quarter focuses on the modern period, from the rise of revolutionary ideas to the experiences of totalitarianism and decolonization in the twentieth century. Authors include Locke, Mary Shelley, Marx, Nietzsche, Freud, Weber, Primo Levi, and Frantz Fanon.
Same as: FRENCH 13, HISTORY 239C, HUMCORE 13, PHIL 13

DLCL 13Q. Humanities Core: Great Books, Big Ideas -- Europe, Modern. 3-4 Units.
This three-quarter sequence asks big questions of major texts in the European and American tradition. What is a good life? How should society be organized? Who belongs? How should honor, love, sin, and similar abstractions govern our actions? What duty do we owe to the past and future? This third and final quarter focuses on the modern period, from the rise of revolutionary ideas to the experiences of totalitarianism and decolonization in the twentieth century. Authors include Locke, Mary Shelley, Marx, Nietzsche, Freud, Weber, Primo Levi, and Frantz Fanon. N.B. This is the third of three courses in the European track. These courses offer an unparalleled opportunity to study European history and culture, past and present. Take all three to experience a year-long intellectual community dedicated to exploring how ideas have shaped our world and future. Students who take HUMCORE 11 and HUMCORE 12Q will have preferential admission to HUMCORE 13Q (a WR2 seminar). **NOTE** This class meets Monday and Wednesday in room 20-22K and Fridays in room 260-113 to attend a lecture along with the other two HUMCORE courses this quarter.
Same as: GERMAN 13Q, HUMCORE 13Q

DLCL 33. Humanities Core: Global Identity, Culture, and Politics from the Middle East. 3 Units.
How do we face the future? What resources do we have? Which power structures hold us back and which empower us? What are our identities at college in the Bay Area? In 1850s Lebanon, Abu Faris Shidyaq faced all these same questions (except the last one; he was a Christian magazine editor). In this course we will engage with claims about identity, culture, and politics that some might say come from the "Middle East" but that we understand as global. Ganzeer's graphic novel is as much for California as it is for Egypt. Ataturk's speech is about power and identity just like Donald Trump is about power and identity. In Turkish novels and in Arabic poetry, the people we engage in this course look to their pasts and our futures. What happens next? This is the third of three courses in the Middle Eastern track. These courses offer an unparalleled opportunity to study Middle Eastern history and culture, past and present. Take all three to experience a year-long intellectual community dedicated to exploring how ideas have shaped our world and future.future.
Same as: COMPLIT 33, HUMCORE 33

DLCL 52. Global Humanities: The Grand Millennium, 800-1800. 3-4 Units.
How should we live? This course explores ethical pathways in European, Islamic, and East Asian traditions: mysticism and rationality, passion and duty, this and other worldly, ambition and peace of mind. They all seem to be pairs of opposites, but as we'll see, some important historical figures managed to follow two or more of them at once. We will read works by successful thinkers, travelers, poets, lovers, and bureaucrats written between 800 and 1900 C.E. We will ask ourselves whether we agree with their choices and judgments about what is a life well lived.
Same as: HISTORY 206D, HUMCORE 52, JAPAN 52

DLCL 100. CAPITALS: How Cities Shape Cultures, States, and People. 3-5 Units.
This course takes students on a trip to major capital cities, at different moments in time: Renaissance Florence, Golden Age Madrid, Colonial Mexico City, Enlightenment and Romantic Paris, Existential and Revolutionary St. Petersburg, Roaring Berlin, Modernist Vienna, and bustling Buenos Aires. While exploring each place in a particular historical moment, we will also consider the relations between culture, power, and social life. How does the cultural life of a country intersect with the political activity of a capital? How do large cities shape our everyday experience, our aesthetic preferences, and our sense of history? Why do some cities become cultural capitals? Primary materials for this course will consist of literary, visual, sociological, and historical documents (in translation); authors we will read include Boccaccio, Dante, Sor Juana, Montesquieu, Baudelaire, Gogol, Irmgard Keun, Freud, and Borges. Note: To be eligible for WAYS credit, you must take the course for a Letter Grade.
Same as: COMPLIT 100, FRENCH 175, GERMAN 175, HISTORY 206E, ILAC 175, ITALIAN 175, URBANST 153

DLCL 101. Translation Matters: Applications in the 21st Century. 1-2 Unit.
For students interested in translation, interpreting, and translationnstudies. The course will highlight guest speakers who apply translation inna variety of professional contexts (e.g. medical, legal, literary, religious contexts, localization, machine-translation).

DLCL 102. 10 Jobs in 10 Weeks: Leveraging Your Liberal Arts Career. 1 Unit.
This interactive course gives students a taste of 10 different career fields over 10 weeks to help students explore and reflect on career interests, values, and goals. Students will also participate in exercises that help them to articulate the core skills humanities, arts, and social sciences students bring to their careers. Each week features alumni from different industries, who share about their work and lead students through an interactive case or project from a typical workday.

DLCL 111Q. Texts and Contexts: Spanish/English Literary Translation Workshop. 4 Units.
This course introduces students to the theoretical knowledge and practical skills necessary to translate literary texts from Spanish to English and English to Spanish. Students will workshop and revise a translation project throughout the quarter. Topics may include comparative syntaxes, morphologies, and semantic systems; register and tone; audience; the role of translation in the development of languages and cultures; and the ideological and socio-cultural forces that shape translations.
Same as: COMPLIT 111Q, ILAC 111Q

DLCL 113Q. Borges and Translation. 3-5 Units.
Borges's creative process and practice as seen through the lens of translation. How do Borges's texts articulate the relationships between reading, writing, and translation? Topics include authorship, fidelity, irreverence, and innovation. Readings will draw on Borges's short stories, translations, and essays. Taught in Spanish. Prerequisite: 100-level course in Spanish or permission of instructor.
Same as: ILAC 113Q

DLCL 121. Performing the Middle Ages. 3-5 Units.
Through an analysis of medieval courtly love, religious, satirical, and Crusade lyrics, we will study the rise of a new subjectivity; the female voice; the roles of poet, audience, and patron; oral and manuscript transmission; and political propaganda. Special attention will be given to performance as a reimagining of self and social identity. Authors include Bertran de Born, Marie de France, Hildegard von Bingen, Walther von der Vogelweide, Dante, and Chaucer. Students will have the opportunity to produce a creative project that brings medieval ideas about performance into dialogue with modern conceptions. Taught in English, all texts in translation. NOTE: for AY 2018-19 FRENCH 166 Food, Text, Music: A Multidisciplinary Lab on the Art of Feasting counts for DLCL 121.

DLCL 122. Medieval Manuscripts, Digital Methodologies. 3-5 Units.
Medieval Studies is entering a phase of digital abundance. In the last seven years, more medieval material has been put online than has ever been available for study at any point in the past. How can we engage with the growing mass of digitized material available to us? How does this sudden access impact the work we do, the types of questions we ask, the connections we make, and the audiences we write for?nnIn this course, we will examine and evaluate digital medieval resources and software that has been created for interacting with those resources. Students will have the opportunity to design and create an innovative project based on medieval primary sources held at Stanford, applying current digital methods in the analysis and presentation of those resources.
Same as: ENGLISH 122

DLCL 123. Medieval Journeys: Introduction through the Art and Architecture. 5 Units.
The course explores the experience and imagination of medieval journeys through an interdisciplinary, cross-cultural, and skills-based approaches. As a foundations class, this survey of medieval culture engages in particular the art and architecture of the period. The Middle Ages is presented as a network of global economies, fueled by a desire for natural resources, access to luxury goods and holy sites. We will study a large geographical area encompassing the British Isles, Europe, the Mediterranean, Central Asia, India, and East Africa and trace the connectivity of these lands in economic, political, religious, and artistic terms from the fourth to the fourteenth century C.E. The students will have two lectures and one discussion session per week. Depending on the size of the class, it is possible that a graduate student TA will run the discussion session. Our goal is to give a skills-oriented approach to the Middle Ages and to engage students in creative projects that will satisfy either the Ways-Creative Expression requirement or Ways-Engaging Difference. NOTE: for AY 2018-19 HISTORY 115D Europe in the Middle Ages, 300-1500 counts for DLCL 123.
Same as: ARTHIST 105B, ARTHIST 305B

DLCL 141. Poems, Poetry, Worlds. 5 Units.
What is poetry? How does it speak in many voices to questions of philosophy, history, society, and personal experience? Why does it matter? The reading and interpretation of poetry in crosscultural comparison as experience, invention, form, sound, knowledge, and part of the world. The readings address poetry of several cultures (Brazil, Chile, France, Germany, Greece, Italy, Occitania, Peru) in comparative relation to that of the English-speaking world, and in light of classic and recent theories of poetry.
Same as: COMPLIT 121

DLCL 142. Literature as Performance. 5 Units.
The purpose of this course is to re-embed great dramatic texts in a history and theory of performance, using Bay Area and Stanford productions, audiovisual materials, and your own trans-medial projects to help us reconceive theater off the page, moving in time, space and thought.
Same as: COMPLIT 122

DLCL 143. The Novel and the World. 5 Units.
The European Design of the Novel. The course will trace the development of the modern literary genre par excellence through some of its great milestones from the 17th century to the present. Works by Cervantes, Austen, Flaubert, Dostoevsky, Queirós, Kafka, Woolf, Verga, and Rodoreda.
Same as: COMPLIT 123

DLCL 144. An Introduction to Persian Literature, an Aesthetic Tradition Over a Millennium Old. 3-4 Units.
This course aims at familiarizing undergraduate/graduate students with some of the most significant classical and modern works of Persian literature, an aesthetic tradition over a millennium old. It requires no prior knowledge of, or familiarity with the canon of Persian literature, as it works through lecture-discussions on the history of Persian literature coupled with close readings and analyses of the best modern translations available in English along with the Persian texts. As such, students with knowledge of four quarters of Persian Language or more are encouraged; however, the requirement is to have one year of Persian Language class. The course will include some discussions of literary history, literary translation and cross-cultural interactions as well as questions of historical trends, literary genres and other areas of interest to comparative literary studies. Students will be encouraged to search and share relevant secondary sources, both online and in print. Students will also be encouraged to explore additional works of their choice and share their findings with other class members. Attendance is an integral part of the course and will play a crucial part in determining active participation. Take-home and midterm tests are designed to ensure that students keep up with the reading and are able to place the literary works in their proper aesthetic, social, and historical contexts. A final term paper on a relevant topic agreed upon between students and the instructor in individual conferences should bring together the result of the lectures, discussions and various readings in a statement of some significance with a scope that will connect more than one work and one period of Persian literature.

DLCL 189A. Honors Thesis Seminar. 4 Units.
For undergraduate majors in DLCL departments; required for honors students. Planning, researching, and writing an honors thesis. Oral presentations and peer workshops. Research and writing methodologies, and larger critical issues in literary studies. NOTE: The professor will send a survey to students that are enrolled to determine the day / time this class will meet.

DLCL 189B. Honors Thesis Seminar. 2-4 Units.
For undergraduate majors in DLCL departments; required for honors students. Planning, researching, and writing an honors thesis. Oral presentations and peer workshops. Research and writing methodologies, and larger critical issues in literary studies.

DLCL 189C. Honors Thesis Seminar. 2-4 Units.
For undergraduate majors in DLCL departments; required for honors students. Planning, researching, and writing an honors thesis. Oral presentations and peer workshops. Research and writing methodologies, and larger critical issues in literary studies.

DLCL 199. Honors Thesis Oral Presentation. 1 Unit.
For undergraduate majors in DLCL departments; required for honors students. Oral presentations and peer workshops. Regular advisory meetings required.

DLCL 203. The Early Printed Book. 1-5 Unit.
This course will focus on the printed book in Europe from the fifteenth through the sixteenth century. An ongoing theme will be the transition from a purely manuscript culture to one in which both manuscript and print thrived. The course will have a bibliographical as well as an historical focus. covering typography, illustration, and the collation of early printed books. Taught in English.

DLCL 204. Digital Humanities Across Borders. 3-5 Units.
What if you could take a handwritten manuscript, or a pile of 100 books, and map all the locations that are referenced, or see which characters interact with one another, or how different translators adapted the same novel -- without reading through each text to manually compile those lists? Digital humanities tools and methods make it possible, but most tools and tutorials assume the texts are in English. If you work with text (literature, historical documents, fanfic, tweets, or any other textual material) in languages other than English, DLCL 204 is for you. In 1:1 consultation with the instructor, you'll chart your own path based on the language you're working with, the format of the text, and what questions you'd like to try to answer. No previous programming or other technical experience is required, just a reading knowledge of a language other than English (modern or historical). We'll cover the whole process of using digital tools, from start to finish: text acquisition, text enrichment, and analysis/visualization, all of which have applications in a wide range of job contexts within and beyond academia. You'll also have the chance to hear from scholars who are doing digital humanities work in non-English languages, about their experience working across the technical and linguistic borders within their discipline, and within the broader DH community. While this course will be online and primarily asynchronous, there will be opportunities for students to meet synchronously throughout the quarter in language- and tool-based affinity groups.
Same as: COMPLIT 204A, ENGLISH 204

DLCL 205. Project Management and Ethical Collaboration for Humanists. 3-5 Units.
What does it look like to manage a collaborative project in a way that's both effective and ethical, taking into account the needs of people as well as the task? This class will cover project management and collaboration as they are practiced in digital humanities, "alt-ac" (alternative academic) jobs, and similar environments outside academia. In addition to readings and discussion, students will participate in a simulation of one year in the life of a digital humanities project (in the style of Dungeons and Dragons and similar role-playing games), with each student playing the role of a member on the project team.
Same as: DLCL 305

DLCL 209. Paleography of Medieval and Early Modern Manuscripts. 3-5 Units.
Introductory course in the history of writing and of the book, from the late antique period until the advent of printing. Opportunity to learn to read and interpret medieval manuscripts through hands-on examination of original materials in Special Collections of Stanford Libraries as well as through digital images. Offers critical training in the reading of manuscripts for students from departments as diverse as Classics, History, Philosophy, Religious Studies, English, and the Division of Languages Cultures and Literatures.
Same as: CLASSICS 215, HISTORY 309G, RELIGST 204

DLCL 219. Collaborative Teaching Project. 1 Unit.
The Collaborative Teaching Project (CTP) has supported Stanford faculty and graduate students by offering a series of team-taught courses in the humanities, with the goal of preparing graduate students for careers as liberal arts educators. CTP thus facilitates and funds collaborations between one faculty member and 1-2 graduate students in order to co-teach a course. The graduate students and their faculty mentor work together on as many aspects of the course as possible, including syllabus, gathering and choosing materials, preparing assignments, lectures, presentations, class activities, and other in-class events, grading and feedback, evaluation of the course itself, and so on.

DLCL 220. Humanities Education. 1 Unit.
Humanities Education explores issues concerning teaching and learning in the humanities, including research on student learning, innovation in pedagogy, the role of new technologies in humanities instruction, and professional issues for humanities teachers at all educational levels.

DLCL 221. Materia. 1 Unit.
Materia is a focal group on post-anthropocentrism, Latin Americanist and otherwise. Building on and expanding the theoretical framework offered by thinkers such as Fernando Ortiz, Bruno Latour, and Jane Bennett, we engage with works of literature and criticism that de-center the human as object of study. To earn the unit, undergraduate and graduate students should attend the workshops held by the focal group, prepare the pre-circulated readings, and actively contribute to discussion throughout the year. The latter can take place during plenary, over office hours with faculty coordinators, or via contributions to the focal group's online platforms. A short quarterly response paper that relates group discussions with the student's ongoing research is recommended. May be repeated for credit.

DLCL 222. Philosophy and Literature. 1 Unit.
The Focal Group in Philosophy and Literature brings together scholars and students from eight departments to investigate questions in aesthetics and literary theory, philosophically-inflected literary texts, and the form of philosophical writings. Fields of interest include both continental and analytic philosophy, as well as cognitive science, political philosophy, rational choice theory, and related fields. Students may sign up for a unit of credit each quarter via DLCL 222. To earn the unit, students must secure written permission in advance from one of the instructors, before the final study list deadline. They must then do one of the following three things: (a) attend an event hosted by the Philosophy and Literature group (including events hosted by the graduate workshop) and write up a reaction paper of 2-5 pages; (b) present a paper of their own to the graduate workshop; (c) agree with one of the DLCL 222 instructors on a reading related to the year's activities, and meet with him/her for a discussion of that reading. Prerequisite for undergraduates: undergraduate students wishing to take DLCL 222 must previously have taken the philosophy and literature gateway course PHIL 81 (CLASSICS 42, COMPLIT 181, ENGLISH 81, FRENCH 181, GERMAN 181, ITALIAN 181, SLAVIC 181) or a class taught by one of the instructors of DLCL 222.

DLCL 223. Renaissances. 1 Unit.
The Renaissances Group brings together faculty members and students from several departments at Stanford to consider the present and future of early modern literary studies (a period spanning the fourteenth through the seventeenth centuries). Taking seriously the plural form of the group's name, we seek to explore the early modern period from a wide range of disciplinary, cultural, linguistic, and geographical perspectives.

DLCL 224. Workshop in Poetics. 1 Unit.
The Workshop in Poetics is concerned with the theoretical and practical dimensions of the reading and criticism of poetry. During the many years of its existence, the Workshop has become a central venue at Stanford enabling participants to share their individual projects in a general conversation outside of disciplinary and national confinements. The two dimensions that the workshop sees as urgent are: poetics in its specificity as an arena for theory and interpretive practice, and historical poetics as a particular set of challenges for the reader and scholar.

DLCL 227. Persian, Arabic, Turkish, and Hebrew Languages, Literatures, and Cultures. 1 Unit.
PATH+ is a DLCL focal group that provides a space for conversations about Persian, Arabic, Turkish, and Hebrew languages, literatures, and cultures in the DLCL. To earn the unit, undergraduate and graduate students should attend the workshops held by the focal group and contribute one substantive response during the quarter. This can come in the form of an individual discussion with one of the two lead faculty, 1,500 words of contribution to the focal group's online platforms, or a presentation to the group itself.

DLCL 229. The Contemporary. 1 Unit.
The Contemporary is a focal group dedicated to the study of recent innovative works in literature and the arts as they touch on social, political, and philosophical concerns of our era. Building on and expanding the theoretical framework offered by thinkers as Hannah Arendt, Paul Rabinow, or Giorgio Agamben, we seek to trace the capacity of the artistic imagination to broaden the vocabulary with which we address contemporary challenges to freedom and to meaningful action. To earn the unit, undergraduate and graduate students should attend the workshops held by the focal group and contribute one substantive response during the year. This can come in the form of an individual discussion with one of the two lead faculty, 1,500 words of contribution to the focal group's online platforms, or a presentation to the group itself. May be repeated for credit.

DLCL 230. Medieval Studies Workshop. 1 Unit.
The Medieval Studies Workshop brings together faculty members and Ph.D. students from several departments to consider interdisciplinary scholarly developments in the field of medieval studies, a period spanning the fifth through the fifteenth century CE. To earn the unit, graduate students should attend the workshops held by the focal group and actively contribute to discussion throughout the year. The latter can take place during plenary or over office hours with faculty leaders. May be repeated for credit.

DLCL 237. Political Exhumations. Killing Sites Research in Comparative Perspective. 3-5 Units.
The course discusses the politics and practices of exhumation of individual and mass graves. The problem of exhumations will be considered as a distinct socio-political phenomenon characteristic of contemporary times and related to transitional justice. The course will offer analysis of case studies of political exhumations of victims of the Dirty War in Argentina, ethnic cleansing in former Yugoslavia, the Holocaust, communist violence in Poland, the Rwandan genocide, and the Spanish Civil War. The course will make use of new interpretations of genocide studies, research of mass graves, such as environmental and forensic approaches.
Same as: ANTHRO 137D, ARCHLGY 137, ARCHLGY 237, REES 237

DLCL 239. Borges and Translation. 3-5 Units.
Borges's creative process and practice as seen through the lens of translation. How do Borges's texts articulate the relationships between reading, writing, and translation? Topics include authorship, fidelity, irreverence, and innovation. Readings will draw on Borges's short stories, translations, and essays. Taught in Spanish. Prerequisite: 100-level course in Spanish or permission of instructor.

DLCL 245. LA ALJAMÍA, ROMÁRABE LANGUAGE. 3-5 Units.
This specific course will offer an overview of Aljamía, language of the Moors, considered an "Islamic variant of Spanish" that serves them to approach respectfully the language of their religious cult-material reality, beyond their day-to-day communication. Students will study a crucial part of the history of medieval and early modern Spain and especially the history of Moors as a community of crypto Muslims.

DLCL 254. Animism, Gaia, and Alternative Approaches to the Environment. 3-5 Units.
Indigenous knowledges have been traditionally treated as a field of research for anthropologists and as mistaken epistemologies, i.e., un-scientific and irrational folklore. However, within the framework of environmental humanities, current interest in non-anthropocentric approaches and epistemic injustice, animism emerged as a critique of modern epistemology and an alternative to the Western worldview. Treating native thought as an equivalent to Western knowledge will be presented as a (potentially) decolonizing and liberating practice. This course may be of interest to anthropology, archaeology and literature students working in the fields of ecocriticism and the environmental humanities/social sciences, students interested in the Anthropocene, geologic/mineral, bio-, eco- and geosocial collectives, symbiotic life-forms and non-human agencies. The course is designed as a research seminar for students interested in theory of the humanities and social sciences and simultaneously helping students to develop their individual projects and thesis.
Same as: ANTHRO 154C, ANTHRO 254C, ARCHLGY 154, ARCHLGY 254, REES 254

DLCL 259C. Ecological Humanities. 3 Units.
What sort of topics, research questions, approaches, theories and concepts lead to an integration of various kinds of knowledges? Ecological Humanities provides a conceptual platform for a merger of humanities and social sciences with earth and life sciences, soil science and forensic sciences. The course will discuss such selected topics as the Anthropocene, geologic/mineral and exhumed subjects/personae, bio- and geosocial collectives, symbiotic life-forms, non-human agencies, and forensic landscapes as examples of this merger.
Same as: ANTHRO 159C, ANTHRO 259C, REES 259C

DLCL 293. Literary Translation. 4 Units.
An overview of translation theories and practices over time. The aesthetic, ethical, and political questions raised by the act and art of translation and how these pertain to the translator's tasks. Discussion of particular translation challenges and the decision processes taken to address these issues. Coursework includes assigned theoretical readings, comparative translations, and the undertaking of an individual translation project.
Same as: ENGLISH 293

DLCL 298. Preparing to Teach English as a Second Language. 3 Units.
This course focuses on practical aspects of teaching English to speakers of other languages. Its primary focus is an overview of the structure of English, which is crucial for effective English language instruction. Students in this course will also have practicum experience including classroom observations, pedagogical text evaluations, and supervised instruction of English language learners.

DLCL 299. DLCL CS+ CAPSTONE. 2 Units.
Only DLCL/CS+ joint majors may enroll in this course.

DLCL 301. The Learning and Teaching of Second Languages. 3 Units.
This course approaches the teaching of second languages from a learning perspective. In other words, it eschews the traditional focus on ¿teaching methods¿ and emphasizes instructional decision-making within the context of learners¿ intellectual and linguistic development. The course is designed to prepare language instructors to teach languages at the beginning and intermediate levels in a variety of university settings to an array of populations.

DLCL 302. The Learning and Teaching of Second-Language Literatures. 1-3 Unit.
This course is a follow-up to The Learning and Teaching of Second Languages (DLCL 301) and is structured to reflect the needs and challenges of students and teachers embarking on courses at the late second-year level and beyond. Participants will focus on a language and literary area within a chosen foreign language. They will interrogate how literature learning assists further language acquisition and how the level of language knowledge facilitates and impedes literary interpretation and reading comprehension. Prerequisite: DLCL 301.

DLCL 303. Language Program Management. 1-3 Unit.
Administrative Internship in Language Program Management. Experiences can include, but are not limited to, the following: Shadow faculty and staff in select areas of administration and supervision within the Language Center and DLCL; Placement testing and student advisement; Technology in teaching and learning; Processes for teacher observation and feedback; Procedures in staff supervision and Human Resources; Course scheduling, budgeting, staffing, and searches; Interface with external programs (e.g. BOSP, Bechtel, CTL).

DLCL 305. Project Management and Ethical Collaboration for Humanists. 3-5 Units.
What does it look like to manage a collaborative project in a way that's both effective and ethical, taking into account the needs of people as well as the task? This class will cover project management and collaboration as they are practiced in digital humanities, "alt-ac" (alternative academic) jobs, and similar environments outside academia. In addition to readings and discussion, students will participate in a simulation of one year in the life of a digital humanities project (in the style of Dungeons and Dragons and similar role-playing games), with each student playing the role of a member on the project team.
Same as: DLCL 205

DLCL 311. Professional Workshop. 1-2 Unit.
Meets regularly throughout the year to discuss issues in the professional study of literature. Topics include the academic job market and the challenges of research and teaching at different types of institutions. Supervised by the graduate affairs committee of the DLCL. May be repeated for credit.

DLCL 312. Pitching and Publishing in Popular Media. 1 Unit.
Most of the time, writing a pitch for a popular outlet just means writing an email. So why be intimidated? This course will outline the procedure for pitching essays and articles to popular media: how to convince an editor, agent, or anyone else that your idea is compelling, relevant, and deliverable. We'll take a holistic approach to self-presentation that includes presenting yourself with confidence, optimizing your social media and web platform, networking effectively, writing excellent queries and pitches, avoiding the slush pile, and perhaps most importantly, persevering through the inevitable self-doubt and rejection.We will focus on distinguishing the language, topics and hooks of popular media writing from those of academic writing, learn how to target and query editors on shortform pieces (personal essays, news stories, etc.), and explore how humanists can effectively self-advocate and get paid for their work.
Same as: ENGLISH 318, FEMGEN 312F

DLCL 321. Classical Seminar: Rethinking Classics. 4-5 Units.
Literary and philosophical texts from Antiquity (including Homer, the Greek tragedians, Plato, Aristotle, Virgil, and Augustine). In each case, we will examine the cultural contexts in which each text was composed (e.g. political regimes and ideologies; attitudes towards gender and sexuality; hierarchies of class and status; discourses on "barbarians" and resident aliens). We will study various theoretical approaches to these books in an effort to "rethink" these texts in the 21st century.
Same as: CLASSICS 244

DLCL 322. Medieval Seminar. 3-5 Units.
The cultural,literary, and artistic evolution of the Middle Ages. The barbarian invasions and the Germanic ethos, the Celtic heritage,and the monastic tradition. Romanesque art and architecture,pilgrimages,and the Crusades. Gothic aesthetics, chivalry and courtly love, scholasticism, and the rise of universities. The late Middle Ages, humanism, and the threshold of the Renaissance. Texts include: Beowulf, Mabinogion, Song of Roland, Chretien de Troyes' Lancelot and Yvain, Dante's Divine Comedy, Boccaccio's Decameron, and Chaucer's Canterbury Tales.nn3-5 units.

DLCL 323. Early Modern Seminar. 3-5 Units.
Explores some of the key texts of European early modernity and the critical paradigms according to which the idea of the "Renaissance" has been formed, analyzed, and questioned since the 19th century. Will aim to provide a broad introduction to Early Modern studies from the point of view of the Italian Renaissance and its reception in different European contexts. Taught in English.

DLCL 325. Modern Seminar. 3-5 Units.
The postmodern condition as post-WWII rupture in Western tradition; moral, political, cultural, and aesthetical dimensions. Sources include literature, philosophy, essays, films, and painting. Authors and artists include: Primo Levi, Hannah Arendt, Alain Resnais, Samuel Beckett, Georges Bataille, Michel Foucault, Theodor Adorno, David Riesman, Georges Perec, Juliet Mitchell, and Francis Bacon.

DLCL 333. Philosophy, Literature, and the Arts Core Seminar. 2-4 Units.
This course serves as the Core Seminar for the PhD Minor in Philosophy, Literature, and the Arts. It introduces students to a wide range of topics at the intersection of philosophy with literary and arts criticism. The seminar is intended for graduate students. It is suitable for theoretically ambitious students of literature and the arts, philosophers with interests in value theory, aesthetics, and topics in language and mind, and other students with strong interest in the psychological importance of engagement with the arts. May be repeated for credit. In this year¿s installment, we focus on how artistic kinds or genres help set the terms on which individual works are experienced, understood, and valued, with special attention to lyric poetry and music.
Same as: ENGLISH 333, MUSIC 332, PHIL 333

DLCL 354A. DLCL Film Series: Rebel With a Cause. 1 Unit.
This quarter's film series will examine the representation of resistance, rebellion, and revolt in international cinema. Starting with Michael Almereyda's biographical drama Experimenter (2015), we will examine Stanley Milgram's studies on complicity, conformity, and resistance in his famous experiments on following instructions to inflict pain. From there we will move to canonical cinematic representations of acts of resistance like Florian Henckel von Donnersmarck's The Lives of Others (2006), Jean-Pierre Melville's Army of Shadows (1969), and Sergei Eisenstein's Battleship Potemkin (1925) to discuss why these films have been canonized as some of the most suspenseful and powerful films of all time. Viewing Marcel Carné's Children of Paradise (1945), filmed during the Nazi Occupation of France, and Victor Erice's The Spirit of the Beehive (1973), filmed during the Franco regime in Spain, will allow us to discuss the ways that cinema itself is used as a tool of resistance. And discussing Walter Salles' Motorcycle Diaries (2004), Francisco Vargas' The Violin (2005), and Quentin Tarantino's Inglourious Basterds (2009) will allow us to explore the ways that resistance in diverse forms from unexpected actors can lead to movements that may or may not change the world. Discussion will focus on analyzing the structures, actors, and acts of resistance, rebellion, and revolt in international film. In particular we will look at who resists and why; how a rebel's identity and social position affects his or her political engagement; and how different forms of resistance can create movements that evolve from grassroots, across governments, and around the globe. In our study of representations of resistance across different schools and cultures of cinema, film technologies, and cinematic history, we will also address the ways that film creates suspense and intrigue, represents cause and effect, and prompts questions of ethics. Screening Schedule: April 4 Experimenter (2015) Michael Almereyda , April 11 Army of Shadows (1969) Jean-Pierre Melville, April 18 Children of Paradise (1946) Marcel Carné , April 25 Battleship Potemkin (1925) Sergei Eisenstein, May 2 The Lives of Others (2006) Florian Henckel von Donnersmarck, May 9 Motorcycle Diaries (2004) Walter Salles, May 16 The Violin (2005) Francisco Vargas, May 23 The Battle of Algiers (1966) Gillo Pontecorvo, June 6 The Spirit of the Beehive (1973) Victor Erice , and June 13 Inglourious Basterds (2009) Quentin Tarantino.

DLCL 369. Introduction to the Profession of Literary Studies. 1-2 Unit.
A survey of how literary theory and other methods have been made institutional since the nineteenth century. The readings and conversation are designed for entering Ph.D. students in the national literature departments and comparative literature.
Same as: COMPLIT 369, FRENCH 369, GERMAN 369, ITALIAN 369

DLCL 396. Humanities+Design: Visualizing the Grand Tour. 4-5 Units.
Study of the eighteenth-century Grand Tour of Italy through visualization tools of the digital age. Critical readings in both visual epistemology and current Grand Tour studies; interrogating the relationship between quantitative and qualitative approaches in digital humanities; what new insights in eighteenth-century British travel to Italy does data visualization offer us? Students will transform traditional texts and documents into digital datasets, developing individual data analysis projects using text mining, data capture and visualization techniques.
Same as: CLASSICS 396, HISTORY 336E

EAST ASIAN LANGUAGES AND CULTURES

Courses offered by the Department of East Asian Languages and Cultures are listed on the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu/) web site under the subject codes:

- CHINA (https://explorecourses.stanford.edu/search/?q=CHINA&view=catalog&page=0&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&filter-coursestatus-Active=on&filter-departmentcode-CHINA=on&collapse=&filter-catalognumber-CHINA=on&filter-catalognumber-CHINA=on)
- JAPAN (https://explorecourses.stanford.edu/search/?q=JAPAN&view=catalog&page=0&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&filter-coursestatus-Active=on&collapse=&filter-catalognumber-JAPAN=on&filter-catalognumber-JAPAN=on)
- KOREA (https://explorecourses.stanford.edu/search/?q=KOREA&view=catalog&page=0&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&filter-coursestatus-Active=on&filter-departmentcode-KOREA=on&collapse=&filter-catalognumber-KOREA=on&filter-catalognumber-KOREA=on)
- EALC (https://explorecourses.stanford.edu/search/?q=EALC&view=catalog&page=0&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&filter-coursestatus-Active=on&filter-departmentcode-EALC=on&collapse=&filter-catalognumber-EALC=on&filter-catalognumber-EALC=on) (East Asian Languages and Cultures)

Language courses are listed on the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu/) web site under:

- CHINLANG (Chinese Language) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=CHINLANG&filter-catalognumber-CHINLANG=on)
- JAPANLNG (Japanese Language) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=JAPANLNG&filter-catalognumber-JAPANLNG=on)
- KORLANG (Korean Language) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=KORLANG&filter-catalognumber-KORLANG=on)

The Department of East Asian Languages and Cultures offers programs for students who wish to engage with the cultures of China, Japan, and Korea as articulated in language, linguistics, literature, film, cultural studies, and visual arts. Students emerge with a sophisticated understanding of culture as a dynamic process embodied in language and other representational media, especially the verbal and visual forms that are central to humanistic study. Department faculty represent a broad range of research interests and specialties, and visiting scholars and postdoctoral fellows from the Stanford Humanities Center, the Andrew W. Mellon Fellowship of Scholars in the Humanities, the Freeman Spogli Institute for International Studies, and the Center for East Asian Studies add to the intellectual vitality of the department.

East Asian Languages and Cultures offers a full range of courses at the undergraduate and graduate levels. Undergraduate courses concentrate on language, literature, and other cultural forms from the earliest times to the present, covering traditional and contemporary topics from Confucian conceptions of self and society to inflections of gender in the twentieth century. Classes emphasize developing powers of critical thinking and expression that will serve students well no matter what their ultimate career goals. Graduate programs offer courses of study involving advanced language training, engagement with primary texts and other materials, literary history, and training in research methodologies and critical approaches.

East Asian language skills provide a foundation for advanced academic training and professional careers in fields such as business, diplomacy, education, and law. The department also offers opportunities for students who choose to double-major or minor in other academic disciplines, including anthropology, art history, economics, education, history, linguistics, philosophy, political science, religious studies, and sociology.

The department accepts candidates for the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy in Chinese and Japanese, and Bachelor of Arts in East Asian Studies. It also offers undergraduate minors and the Ph.D. minor in Chinese or Japanese language and literature.

For information concerning other opportunities for the study about Asian history, societies, and cultures, see the following departments and programs: Anthropology, Art and Art History, Business, Comparative Literature, East Asian Studies, Economics, History, Law, Linguistics, Philosophy, Political Science, Religious Studies, and Sociology.

Undergraduate Mission Statements for East Asian Languages and Cultures

East Asian Studies Major

The mission of the program in East Asian Studies is to enable students to obtain a comprehensive understanding of East Asia broadly conceived, which is the area stretching from Japan through Korea and China to the contiguous areas of the Central Asian landmass. Majors are expected to have a good mastery of an East Asian language and focus on a particular sub-region or a substantive issue involving the region as a whole. The classes emphasize the developing powers of critical thinking and expression, which serve students well no matter what their ultimate career goals in business, government service, academia, or the professions.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. effective and nuanced skills interpreting primary and secondary source materials.
2. a good grasp on their own work of the course material and methodologies in East Asian studies.
3. analytical writing skills and close reading skills.
4. effective oral communication skills.

East Asian Studies, China Subplan Major

The mission of the undergraduate program in Chinese is to expose students to a variety of perspectives in Chinese language, culture, and history by providing them with training in writing and communication, literature, and civilization. The classes emphasize the developing powers of critical thinking and expression, which serve students well no matter what their ultimate career goals in business, government service, academia, or the professions.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. effective and nuanced skills interpreting primary and secondary source materials.
2. a good grasp on their own work of the course material and methodologies in the studies of Chinese.
3. analytical writing skills and close reading skills.
4. effective oral communication skills.

East Asian Studies, Japan Subplan Major

The mission of the undergraduate program in Japanese is to expose students to a variety of perspectives in Japanese language, culture, and history by providing students with training in writing and communication, literature, and civilization. The classes emphasize the developing powers of critical thinking and expression, which serve students well no matter what their ultimate career goals in business, government service, academia, or the professions.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. effective and nuanced skills interpreting primary and secondary source materials.
2. a good grasp on their own work of the course material and methodologies in the studies of Japanese.
3. analytical writing skills and close reading skills.
4. effective oral communication skills.

East Asian Studies, Korea Subplan Major

The mission of the undergraduate program in Korean is to expose students to a variety of perspectives in Korean language, culture, and history by providing students with training in writing and communication, literature, and civilization. The classes emphasize the developing powers of critical thinking and expression, which serve students well no matter what their ultimate career goals in business, government service, academia, or the professions.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. effective and nuanced skills interpreting primary and secondary source materials.
2. a good grasp on their own work of the course material and methodologies in the studies of Korean.
3. analytical writing skills and close reading skills.
4. effective oral communication skills.

Study Abroad

There are several exciting opportunities for Stanford students interested in Japan and China. The Kyoto Consortium for Japanese Studies (KCJS (http://www.kcjs.jp/)), is designed for undergraduates wishing to do advanced work in Japanese language and Japanese studies. The language requirement is two years of Japanese. Students may attend either one or two semesters.

The BOSP Kyoto program (https://undergrad.stanford.edu/programs/bosp/explore/kyoto/) combines an Autumn and/or Spring Quarter of academic study with an optional internship in Japan. Founded in collaboration with the School of Engineering, it provides students with the opportunity to fit language immersion and practical classroom experience into their busy schedules. It also welcomes students in the sciences, social sciences, and humanities. Autumn Quarter participants must have completed JAPANLNG 1 First-Year Japanese Language, Culture, and Communication, First Quarter. Spring Quarter participants must have completed JAPANLNG 2 First-Year Japanese Language, Culture, and Communication, Second Quarter. Preference is given to students with additional language study, as well as those who have taken courses in Japanese literature and culture, or in Japanese linguistics. It is hosted on the Doshisha University campus in the heart of Kyoto. For information about either program in Kyoto, students should contact the Bing Overseas Studies Program office in Sweet Hall.

Undergraduates interested in studying Chinese language, history, culture, and society are encouraged to apply to the BOSP Hong Kong Program (https://undergrad.stanford.edu/programs/bosp/explore/hong-kong/), offered only in the Autumn Quarter. In partnership with the Chinese University of Hong Kong (CUHK), BOSP will welcome its first group of students in Hong Kong during the Autumn Quarter of the 2019-20 academic year. For more information on studying abroad in Hong Kong, contact Lizzy Monroe (lmonroe@stanford.edu; 650-725-6769). There are no prerequisites for the Hong Kong Program. In addition to Mandarin, Stanford students may choose to enroll in "survival" Cantonese and Putonghua elective courses.

The Inter-University Center for Japanese Language Studies (IUC) (https://web.stanford.edu/dept/IUC/cgi-bin/), located in Yokohama, is designed for students who seek the most advanced level of training in Japanese. This program accepts students with high intermediate Japanese language skills who seek Japan-related careers. Students should take note of the Inter-University Program for Chinese Language Studies (IUP) (http://ieas.berkeley.edu/iup/) at Tsinghua University (wbhaas@stanford.edu; +86 18518379420) and the Inter-University Center (IUC) for Japanese Language Studies (http://stanford.edu/dept/IUC/) in Yokohama (iucjapan@stanford.edu; 650-725-1490). Stanford is a member of these consortia. Graduate students interested in the graduate exchange program with the Department of Chinese at Peking University in Beijing should consult the chair of the department early in the academic year.

Currently, Stanford University does not offer a study abroad program for students to study Korean in South Korea. Students interested in opportunities in South Korea should contact Professor Dafna Zur (dzur@stanford.edu) to discuss different Korea language immersion programs offered by other Universities.

Graduate Programs in East Asian Languages and Cultures

Learning Outcomes

The purpose of the master's program is to further develop knowledge and skills in East Asian Languages and Cultures and to prepare students for a professional career or doctoral studies. This is achieved through the completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in East Asian Languages and Cultures. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the

knowledge of East Asian Languages and Cultures and to interpret and present the results of such research.

Admission

All students contemplating application for admission to graduate study must have a creditable undergraduate record. The applicant need not have majored in Chinese or Japanese as an undergraduate but must have had the equivalent of at least three years of training in the language in which he or she intends to specialize, and must also demonstrate a command of English adequate for the pursuit of graduate study. Applicants should not wish merely to acquire or improve language skills, but to pursue study in one of the following fields: Chinese archaeology, Chinese linguistics, Chinese literature, Chinese philosophy, Japanese cultural history, Japanese literature, Japanese linguistics, and Japanese visual culture.

All interested students are required to submit their application via Stanford's Graduate Admissions website (https://gradadmissions.stanford.edu/applying/). EALC requires students to submit official transcripts, writing samples, personal statements, letters of recommendation, and GRE test scores. International students must also submit TOEFL scores. For a full list of requirements, please check the Graduate Admissions website.

Bachelor of Arts

The department offers a Bachelor of Arts degree with the following options:

- Bachelor of Arts in East Asian Studies
- Bachelor of Arts in East Asian Studies, China Subplan (p. 1315)
- Bachelor of Arts in East Asian Studies, Japan Subplan (p.)
- Bachelor of Arts in East Asian Studies, Korea Subplan (p.)

As of September 2016, the department no longer offers the following degrees:

- Bachelor of Arts in Chinese (replaced by Bachelor of Arts in East Asian Studies, China Subplan)
- Bachelor of Arts in Japanese (replaced by Bachelor of Arts in East Asian Studies, Japan Subplan)

Students who previously enrolled in those degrees may choose to complete the major, following the requirements stated in previous Stanford Bulletins (http://exploredegrees.stanford.edu/archive/#text). Check with the department for further clarification.

Bachelor of Arts in East Asian Studies

Majors in East Asian Studies begin or continue the mastery of Chinese, Japanese, or Korean. Within the humanities or social sciences, they may focus on a particular sub-region, for example, Japan; South China, Hong Kong, and Taiwan; or western China and Central Asia; or a substantive issue involving the region as a whole, such as environmental protection, public health, rural development, historiography, cultural expression, or religious beliefs. The major seeks to reduce the complexity of a region to intellectually manageable proportions and illuminate the interrelationships among the various facets of society.

Potential majors should declare by the end of the sophomore year on Axess, and must meet with the student services officer (SSO) or Director of Undergraduate Studies (DUS) to discuss and submit a proposal to complete the East Asian Studies major. The major declaration request will not be approved on Axess until a proposal has been submitted and approved. Majors must complete at least 75 units of course work on China, Japan, and/or Korea in addition to a 3 unit EALC 198 Senior Colloquium. Courses to be credited toward major requirements must be completed with a letter grade of 'C' or better.

The following requirements are in addition to the University's basic requirements for the bachelor's degree (p. 31). Letter grades are mandatory for required courses.

Degree Requirements

I. Language

Proficiency in Chinese, Japanese, or Korean language at the second-year level or above, to be met either by coursework or examination. Students who meet the language proficiency requirement through examination are still expected to: 1) take an additional 15 units of language at a higher level, 2) enroll in literature courses taught in the language, 3) complete another first-year language classes in an another Asian language. No more than 30 units of language courses are counted toward the major.

II. Area Courses

Complete three area courses, one in each category below: Humanities, History, Social Sciences. Courses listed are examples and not exhaustive; if uncertain whether a particular course fits into one of these categories, contact the department to check.

A. Humanities	
CHINA 153	Chinese Bodies, Chinese Selves
JAPAN 124	Manga as Literature
JAPAN 284	Aristocrats, Warriors, Sex Workers, and Barbarians: Lived Life in Early Modern Japanese Painting
KOREA 101N	Kangnam Style: K-pop and the Globalization of Korean Soft Power
KOREA 121	Doing the Right Thing: Ethical Dilemmas in Korean Film
RELIGST 50	Exploring Buddhism
RELIGST 55	Exploring Zen Buddhism
RELIGST 56	Exploring Chinese Religions
B. History	
HISTORY 11SC	How Is a Buddhist
HISTORY 95	Modern Korean History
HISTORY 106A	Global Human Geography: Asia and Africa
HISTORY 195	Modern Korean History
HISTORY 292F	Culture and Religions in Korean History
C. Social Sciences	
EASTASN 217	Health and Healthcare Systems in East Asia
JAPAN 151	Japanese Business Culture and Systems
POLISCI 148	Chinese Politics
SOC 116	Chinese Organizations and Management
SOC 117A	China Under Mao
SOC 167A	Asia-Pacific Transformation

III. Substantive Concentration

Complete four courses with a thematic coherence on East Asia, one of which must be a seminar above the 100-level. Examples include China, Japan, or Korea; or, in recognition of the new subregions which are emerging, South China and Taiwan, or Central Asia. Examples include:

- East Asian religions and philosophies
- Culture and society of modern Japan
- Ethnic identities in East Asia
- Arts and literature in late imperial China
- Foreign policy in East Asia
- Social transformation of modern Korea
- China's political economy

See ExploreCourses under CHINA, EASTASN, JAPAN, KOREA, and EALC or other relevant departments.

IV. Capstone Essay

Submit a final paper - Capstone Essay (~ 7,500 words) or Honors Thesis (~ 15,000 words) and present the research to EALC peers and faculty.

The topic should be built upon the student's thematic interest.

Majors are required to take the Senior Colloquium course in Winter Quarter of the Senior year, and enroll in at least one Senior Research course (CHINA/JAPAN/KOREA 198C or CHINA/JAPAN/KOREA 198H) with their research adviser in the the senior year.

EALC 198	Senior Colloquium
CHINA 198C	Senior Research
JAPAN 198C	Senior Research
KOREA 198C	Senior Research
CHINA 198H	Senior Research
JAPAN 198H	Senior Research
KOREA 198H	Senior Research

A faculty adviser for the capstone essay must be finalized no later than the second week of the Autumn Quarter of senior year.

Senior Capstone and Honors Thesis Presentations will be held in the Spring Quarter; students must present as part of their final project.

V. Overseas Studies

Majors must study abroad for at least one quarter overseas in the country of focus.

If the abroad program is not through the Bing Overseas Studies Program, students should consult with the Dept SSO or DUS prior to studying abroad.

VI. Writing in the Major

An East Asian Studies course that satisfies the University Writing in the Major requirement (WIM) should be completed before beginning the senior capstone essay or honors thesis. Depending on the country of focus students should choose from the following 3 WIM courses:

Students may enroll in multiple WIM courses, but indicate the primary course counted as 'WIM.'

CHINA 111	Literature in 20th-Century China
JAPAN 138	Introduction to Modern Japanese Literature and Culture
KOREA 120	Narratives of Modern and Contemporary Korea

VII. Unit Minimum

The courses taken for the major must add up to at least 78 units, comprised of the 3 unit Senior Colloqium and at least 75 additional units, all taken for a letter grade. Courses must be at least 3 units and taken with a letter grade to be counted towards the degree.

Majors are encouraged to distribute their coursework among at least three disciplines and two subregions in Asia. The subregions need not be traditionally defined.

Bachelor of Arts in East Asian Studies, China Subplan

The Bachelor of Arts in East Asian Studies, China Subplan, offers students the ability to study East Asia with a special focus on Chinese culture and language. The Bachelor of Arts in East Asian Studies, China Subplan, replaced the department's Bachelor of Arts in Chinese. Students currently pursuing the Bachelor of Arts in Chinese may choose to continue his or her plan of study, or opt to complete the Bachelor of Arts in East Asian Studies, China Subplan requirement instead. Note: Once students drop the Bachelor of Arts in Chinese on Axess, they cannot re-enroll/declare under the Bachelor of Arts in Chinese again. Consult the Director of Undergraduate Studies or student services officer for more clarification.

The following requirements are in addition to the University's basic requirements for the bachelor's degree (p. 31). Letter grades are mandatory for required courses. The following courses, as well as their prerequisites, must be completed with a grade point average (GPA) of 2.0 or better.

Degree Requirements

Units

I. Gateway Courses

Students must take two gateway courses appropriate to the East Asian Studies, China Subplan. These Gateway courses should have a focus on East Asian culture ("East Asian Gateway Course Cluster") and/or Chinese culture ("Gateway Course Cluster for the China Subplan").

The courses listed below are examples and not exhaustive. At least one of the two courses chosen must be taught by the department. Students pursuing the EAS-China Subplan major should consult with the DUS or SSO to make sure that courses fit under these categories.

East Asian Gateway Course Cluster

EASTASN 97	The International Relations of Asia since World War II
ECON 124	Economic Development and Challenges of East Asia
HISTORY 92A	The Historical Roots of Modern East Asia
RELIGST 55	Exploring Zen Buddhism
SOC 167A	Asia-Pacific Transformation
THINK 53	Food Talks: The Language of Food

Gateway Course Cluster for China Subplan

CHINA 110	How to Be Modern in China: A Gateway to the World Course
CHINA 168	The Chinese Family
ESF 9	Education as Self-Fashioning: Chinese Traditions of the Self
or ESF 9A	Education as Self-Fashioning: Chinese Traditions of the Self
POLISCI 148	Chinese Politics
RELIGST 56	Exploring Chinese Religions
SOC 116	Chinese Organizations and Management
SOC 117A	China Under Mao

II. Proficiency of the Modern Chinese Language, at the Third-Year Level

Students must be proficient in modern Chinese at Stanford's third-year level. Language assessment exams are offered by the Language Center to determine language proficiency.

Students may select different series (see below) for learning the modern Chinese language, and continue until completion of third-year modern Chinese. Determine the appropriate series after taking the Placement Exam and consulting with a Chinese Language Instructor.

Series A (Non-Heritage Speakers):

CHINLANG 1	First-Year Modern Chinese, First Quarter
CHINLANG 2	First-Year Modern Chinese, Second Quarter
CHINLANG 3	First-Year Modern Chinese, Third Quarter

Series B (Heritage speakers):

CHINLANG 1B	First-Year Modern Chinese for Bilingual Students, First Quarter

CHINLANG 2B	First-Year Modern Chinese for Bilingual Students, Second Quarter
CHINLANG 3B	First-Year Modern Chinese for Bilingual Students, Third Quarter

Series C (Summer Intensive Program):

CHINLANG 5	

III. Classical Chinese

Take one classical Chinese course.

Additional classical Chinese courses taken may fulfill additional culture course requirements (IV-B.)

CHINA 105	Beginning Classical Chinese, First Quarter
CHINA 106	Beginning Classical Chinese, Second Quarter
CHINA 107	Beginning Classical Chinese, Third Quarter

IV. Additional Courses **22-25**

A. Complete Three CHINA courses at the 100 level, one in each of the following areas:

- Pre-modern China
- Modern China
- Chinese linguistics

B. Four additional culture courses, as approved by the DUS or SSO. One of these should be a HISTORY course on China, offered by the Department of History.

C. Fulfill the Writing in the Major (WIM) requirement by taking CHINA 111.

CHINA 111	Literature in 20th-Century China

V. Senior Capstone Essay or Honors Thesis

Winter Quarter, Senior year: Students must enroll in the Senior Colloquium course to work on research and writing methods with DUS to work on their Senior Capstone Essay or Senior Honors Thesis.

EALC 198	Senior Colloquium

Spring Quarter, Senior year: Students enroll in a Senior Research course with their topic adviser. Students may also enroll in Senior Research with their topic adviser in the Fall and/or Winter Quarter(s) the senior year. Students must enroll in at least one Senior Research course with their topic adviser.

CHINA 198C	Senior Research
CHINA 198H	Senior Research

Spring Quarter, Senior year: Students submit and present the final research project to EALC faculty and peers.

Bachelor of Arts in East Asian Studies, Japan Subplan

The Bachelor of Arts in East Asia, Japan Subplan, offers students the ability to study East Asia with a special focus on Japanese culture and language. The Bachelor of Arts in East Asian Studies, Japan Subplan, replaced the department's Bachelor of Arts in Japanese. Students currently pursuing the Bachelor of Arts in Japanese may choose to continue his or her plan of study, or opt to complete the Bachelor of Arts in East Asian Studies, Japan Subplan requirement instead. *Note:* Once students drop the Bachelor of Arts in Japanese on Axess, he or she cannot re-enroll/declare under the Bachelor of Arts in Japanese again. Consult Prof. Yiqun Zhou, Director of Undergraduate Studies, or Ai Tran, EALC's student services officer, for more clarification.

The following requirements are in addition to the University's basic requirements for the bachelor's degree (p. 31). Letter grades are mandatory for required courses. The following courses, as well as their prerequisites, must be completed with a grade point average (GPA) of 2.0 or better:

Degree Requirements

		Units
I. Gateway Courses		**6-10**

Students must take two gateway courses appropriate to the East Asian Studies, Japan Subplan. These Gateway courses should have a focus on East Asian culture ("East Asian Gateway Course Cluster") and/or Japanese culture ("Gateway Course Cluster for the Japan Subplan").

The courses listed below are examples and not exhaustive. At least one of the two courses chosen must be taught by the department. Students pursuing the EAS-Japan Subplan major should consult with the DUS or SSO to make sure that courses fit under these categories.

East Asian Gateway Course Cluster

EASTASN 97	The International Relations of Asia since World War II
ECON 124	Economic Development and Challenges of East Asia
HISTORY 92A	The Historical Roots of Modern East Asia
RELIGST 55	Exploring Zen Buddhism
SOC 167A	Asia-Pacific Transformation
THINK 53	Food Talks: The Language of Food

Gateway Course Cluster for Japan Subplan

JAPAN 82N	Joys and Pains of Growing Up and Older in Japan
JAPAN 110	Romance, Desire, and Sexuality in Modern Japanese Literature
JAPAN 122	Translating Cool: Globalized Popular Culture in Asia
JAPAN 148	Modern Japanese Narratives: Literature and Film
JAPAN 151	Japanese Business Culture and Systems
JAPAN 160	Classical Japanese Literature in Translation
JAPAN 184	Aristocrats, Warriors, Sex Workers, and Barbarians: Lived Life in Early Modern Japanese Painting
JAPAN 186	

II. Proficiency of the Modern Japanese Language, at the Third-Year Level		**45**

Students must be proficient in modern Japanese at Stanford's third-year level. Language assessment exams are offered by the Language Center to determine language proficiency.

After taking the Placement Exam and consulting with a Japanese Language Instructor, enroll in the appropriate courses until the completion of third-year Japanese coursework.

First-year, Modern Japanese:

JAPANLNG 1	First-Year Japanese Language, Culture, and Communication, First Quarter
JAPANLNG 2	First-Year Japanese Language, Culture, and Communication, Second Quarter
JAPANLNG 3	First-Year Japanese Language, Culture, and Communication, Third Quarter

Second-year, Modern Japanese:

JAPANLNG 21	Second-Year Japanese Language, Culture, and Communication, First Quarter
JAPANLNG 22	Second-Year Japanese Language, Culture, and Communication, Second Quarter
JAPANLNG 23	Second-Year Japanese Language, Culture, and Communication, Third Quarter

Third-year, Modern Japanese:

JAPANLNG 101	Third-Year Japanese Language, Culture, and Communication, First Quarter
JAPANLNG 102	Third-Year Japanese Language, Culture, and Communication, Second Quarter
JAPANLNG 103	Third-Year Japanese Language, Culture, and Communication, Third Quarter

III. Additional Courses **25**

A. Complete Three JAPAN courses at the 100-level with one in each of the following areas:

- Pre-modern Japan
- Modern Japan
- Japanese Linguistics

B. Four additional culture courses dealing with Japan primarily at the 100-level, as approved by the DUS or SSO.

C. Fulfill the Writing in the Major (WIM) requirement by taking JAPAN 138.

JAPAN 138	Introduction to Modern Japanese Literature and Culture

IV. Senior Capstone Essay or Honors Thesis

Winter Quarter, Senior year: Students must enroll in the Senior Colloquium course to work on research and writing methods with DUS to work on their Senior Capstone Essay or Senior Honors Thesis.

EALC 198	Senior Colloquium

Spring Quarter, Senior year: Students enroll in a Senior Research course with their topic adviser. Students may also enroll in Senior Research with their topic adviser in the Fall and/or Winter Quarter(s) the senior year. Students must enroll in at least one Senior Research course with their topic adviser.

JAPAN 198C	Senior Research
JAPAN 198H	Senior Research

Spring Quarter, Senior year: Students submit and present the final research project to EALC faculty and peers.

Additional notes:

- Students who complete third-year Japanese at KCJS satisfy the language requirement but are required to take a placement test if they wish to enroll in:
  - JAPANLNG 211 Fourth-Year Japanese, First Quarter
  - JAPANLNG 212 Fourth-Year Japanese, Second Quarter
  - JAPANLNG 213 Fourth-Year Japanese, Third Quarter

These requirements are in addition to the University's basic requirements for the bachelor's degree. Letter grades are mandatory for required courses.

Bachelor of Arts in East Asian Studies, Korean Subplan

The Bachelor of Arts in East Asia, Korean Subplan, offers students the ability to study East Asia with a special focus on Korean culture and language. The following requirements are in addition to the University's basic requirements for the bachelor's degree (p. 31). Letter grades are mandatory for required courses. The following courses, as well as their prerequisites, must be completed with a grade point average (GPA) of 2.0 or better.

Degree Requirements

	Units
I. Gateway Courses	**6-10**

Students must take two gateway courses appropriate to the East Asian Studies, Korea Subplan. These Gateway courses should have a focus on East Asian culture ("East Asian Gateway Course Cluster") and/or Korean culture ("Gateway Course Cluster for the Korea Subplan").

The courses listed below are examples and not exhaustive. At least one of the two courses chosen must be taught by the department. Students pursuing the EAS-Korea Subplan major should consult with the DUS or SSO to make sure that courses fit under these categories.

East Asian Gateway Course Cluster	
THINK 53	Food Talks: The Language of Food
RELIGST 55	Exploring Zen Buddhism
HISTORY 92A	The Historical Roots of Modern East Asia
ECON 124	Economic Development and Challenges of East Asia
SOC 167A	Asia-Pacific Transformation
Gateway Course Cluster for Korea Subplan	
KOREA 122	Translating Cool: Globalized Popular Culture in Asia
KOREA 101N	Kangnam Style: K-pop and the Globalization of Korean Soft Power

II. Three Years of Modern Korean **45**

Students must be proficient in modern Korean at Stanford's third-year level. Language assessment exams are offered by the Language Center to determine language proficiency.

After taking the Placement Exam and consulting with a Korean Language Instructor, enroll in the appropriate courses until the completion of third-year Korean coursework.

First-year modern Korean:	
KORLANG 1	First-Year Korean, First Quarter
KORLANG 2	First-Year Korean, Second Quarter
KORLANG 3	First-Year Korean, Third Quarter
Second-year modern Korean:	
KORLANG 21	Second-Year Korean, First Quarter
KORLANG 22	Second-Year Korean, Second Quarter
KORLANG 23	Second-Year Korean, Third Quarter
Third-year modern Korean:	
KORLANG 101	Third-Year Korean, First Quarter
KORLANG 102	Third-Year Korean, Second Quarter
KORLANG 103	Third-Year Korean, Third Quarter

III. Additional Courses

A. Complete the Writing in the Major (WIM) requirement.

KOREA 120	Narratives of Modern and Contemporary Korea

B. Take six additional culture courses at the 100-level, at least two of six courses must be offered by the department.

IV. Senior Capstone Essay or Honors Thesis **4**

Winter Quarter, Senior year: Students must enroll in the Senior Colloquium course to work on research and writing methods with DUS to work on their Senior Capstone Essay or Senior Honors Thesis.

EALC 198	Senior Colloquium

Spring Quarter, Senior year: Students enroll in a Senior Research course with their topic adviser. Students may also enroll in Senior Research with their topic adviser in the Fall and/or Winter Quarter(s) the senior year. Students must enroll in at least one Senior Research course with their topic adviser.

KOREA 198H	Senior Research
KOREA 198C	Senior Research

Spring Quarter, Senior year: Students submit and present the final research project to EALC faculty and peers.

Honors Program

Majors with an overall grade point average (GPA) of 3.5 may apply for the honors program by submitting a senior thesis proposal to the honors committee during the Winter or Spring Quarter of the junior year. The proposal must include:

- a thesis outline
- a list of all relevant courses the student has taken and plans to take; one advanced-level colloquium or seminar dealing with China is required
- a preliminary reading list including a work or works in Chinese, Japanese, or Korean
- the name of a faculty member who has agreed to act as the honors topic advisor.

Students must discuss the honors project with the DUS and receive approval before conducting honors research. Without approval, students should plan to complete the capstone essay.

If the proposal is approved, research begins in Spring Quarter of the junior year, or by Autumn Quarter at the latest, when the student enrolls in 2-5 units of credit for senior research. In Winter Quarter, students enroll for 2-5 units in Senior Research (CHINA 198H Senior Research, JAPAN 198H Senior Research, or KOREA 198H Senior Research) with the thesis supervisor while writing the thesis, and the finished essay (normally about 15,000 words) is submitted to the committee no later than April 15 of the senior year. Students enroll in the Senior Colloquium, EALC 198 Senior Colloquium, in the senior year to polish and present their theses (instead of writing a capstone essay). Eight to eleven units of credit are granted for honors course work and the finished thesis.

Overseas Studies

Courses approved for the East Asian Languages and Cultures majors which are taught overseas can be found in the "Overseas Studies (p. 217)" section of this Bulletin, or in the Overseas Studies office, Sweet Hall. To find course offerings in for courses, use BOSP's Course Search (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/).

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) web site or the Bing Overseas Studies (http://bosp.stanford.edu) web site. Students should consult with the SSO or DUS for applicability of Overseas Studies courses to a major or minor program.

The department offers: a minor in East Asian Studies; a Minor in East Asian Studies, China Subplan; Minor in East Asian Studies, Japan Subplan; Minor in East Asian Studies, Japanese Language Subplan; and a Minor in East Asian Studies, Korea Subplan. A Minor in Translation Studies is offered by the DLCL.

Minor in East Asian Studies

The goal of the minor in East Asian Studies is to provide the student with a broad background in East Asian culture as a whole, while allowing the student to focus on a geographical or temporal aspect of East Asia. The minor may be designed from the following, for a total of six courses and a minimum of 20 units. All courses for the minor must be taken for a letter grade, a minimum of 3 units, and completed with a GPA of 2.0 or better. Consult with the department to potentially count one of the BOSP courses taught by a Stanford home campus faculty member toward the minor.

	Units
I. Area Courses	**9-15**
Take three courses on East Asia, one in each of the following categories; if uncertain whether a particular course fits into one of these categories; check with the DUS or SSO to confirm whether selected coursework will fulfill category requirement:	
A. History	
B. Humanities	
C. Social Sciences	
II. Additional Courses	**9-15**
A. Complete one undergraduate seminar above the 100-level	
B. Complete two East Asian culture courses, including literature courses but excluding language courses.	

Applications for the minor should be submitted online through Axess. Students must also meet with the student services officer (SSO) or Director of Undergraduate Studies (DUS) to approve the degree program proposal. Students should declare the minor no later than the second quarter of the junior year.

Minor in East Asian Studies, China Subplan

The undergraduate minor in Chinese has been designed to give students majoring in other departments an opportunity to gain a substantial introduction to the Chinese language, as well as an introduction to the culture and civilization of East Asia. The minors consist of a minimum of 20 units from the following requirements. All courses for the minor must be taken for a letter grade, a minimum of 3 units, and completed with a GPA of 2.0 or better. Consult with the department to potentially count one of the BOSP courses taught by a Stanford home campus faculty member toward the minor.

	Units
I. Proficiency in Modern Chinese	**15-30**
Students pursuing the minor must take at least 2 years of modern Chinese, and be at least proficient at Stanford's second-year level. Language assessment exams are offered by the Language Center to determine language proficiency.	
Students who already have a competence at the second-year level may fulfill the language component of the minor by taking three courses in the department using materials in Chinese. These courses may be language courses such as the third-year Chinese language sequence, the fourth-year language sequence, or they may be advanced literature and linguistics courses, depending on the capabilities and interests of the student.	
II. Gateway Courses	**6-10**
Students must take two gateway courses appropriate to the East Asian Studies, China Subplan. These Gateway courses should have a focus on East Asian culture ("East Asian Gateway Course Cluster") and/or Chinese culture ("Gateway Course Cluster for the China Subplan").	
The courses listed below are examples and not exhaustive. At least one of the two courses chosen must be taught by the department. Students pursuing the EAS-China Subplan minor should consult with the DUS or SSO to make sure that courses fit under these categories.	
III. Additional Courses	**9-15**
Complete three 100-level culture courses selected from among the department's offerings in the literature, linguistics, and civilization of the relevant minor area.	

Minor in East Asian Studies, Japan Subplan

The undergraduate minor in Japanese has been designed to give students majoring in other departments an opportunity to gain a substantial introduction to the Japanese language, as well as an introduction to the culture and civilization of East Asia. The minors consist of a minimum of 20 units from the following requirements. All courses for the minor must be taken for a letter grade, a minimum of 3 units, and completed with a GPA of 2.0 or better. Consult with the department to potentially count one of the BOSP courses taught by a Stanford home campus faculty member toward the minor.

	Units
I. Proficiency in Modern Japanese	**15-30**
Students pursuing the minor must take at least 2 years of modern Japanese, and be at least proficient at Stanford's second-year level. Language assessment exams are offered by the Language Center to determine language proficiency.	
Students who already have a competence at the second-year level may fulfill the language component of the minor by taking three courses in the department using materials in Chinese. These courses may be language courses such as the third-year Japanese language sequence, the fourth-year language sequence, or they may be advanced literature and linguistics courses, depending on the capabilities and interests of the student.	
Obtain permission from the SSO or DUS before proceeding.	
II. Two Gateway Courses	**6-10**
Students must take two Gateway courses appropriate to the East Asian Studies, Japan Subplan. These Gateway courses should have a focus on East Asian culture ("East Asian Gateway Course Cluster") and/or Japanee culture ("Gateway Course Cluster for the Japan Subplan").	
At least one of the two courses chosen must be taught by the department. Students pursuing the EAS-Japan Subplan minor should consult with the DUS or SSO to make sure that courses fit under these categories.	
III. Three Japanese content courses	**9-10**
Complete three 100-level culture courses selected from among the department's offerings in the literature, linguistics, and civilization of the relevant minor area.	

Minor in East Asian Studies, Japanese Language Subplan

The undergraduate minor in East Asian Studies, Japanese Language subplan, has been designed to give students majoring in other departments and the opportunity to gain a substantial introduction to the Japanese language, as well as an introduction to the culture and civilization of East Asia. The minors consist of a minimum of 20 units from the following requirements. All courses for the minor must be taken for a letter grade, a minimum of 3 units, and completed with a GPA of 2.0 or better. Consult with the department to potentially count one of the BOSP courses taught by a Stanford home campus faculty member toward the minor.

I. Proficiency of Modern Japanese, at the Fourth-Year level

Proficiency of the modern Japanese language through Stanford's fourth-year level.

Students who place out of fourth-year Japanese (JAPAN 213: Fourth-Year Japanese, Third Quarter) are required to take 3 courses in addition to JAPAN 235: Academic Readings in Japanese.

JAPAN 235	Academic Readings in Japanese I

II. Additional Courses

Students must take two additional JAPAN courses with materials in Japanese. Courses should be at the 100-level or higher.

Minor in East Asian Studies, Korea Subplan

The undergraduate minor in Korean has been designed to give students majoring in other departments an opportunity to gain a substantial introduction to the Korean language, as well as an introduction to the culture and civilizations of East Asia. The minors consist of a minimum of 20 units from the following requirements. All courses for the minor must be taken for a letter grade, a minimum of 3 units, and completed with a GPA of 2.0 or better. Consult with the department to potentially count one of the BOSP courses taught by a Stanford home campus faculty member toward the minor.

	Units
I. Proficiency in modern Korean	**15-30**
Students pursuing the minor must take at least two years of modern Korean, and be at least proficient at Stanford's second-year level. Language assessment exams are offered by the Language Center to determine language proficiency.	
Students who already have a competence at the second-year level may fulfill the language component of the minor by taking three courses in the department using materials in Korean. These courses may be language courses such as the third-year Korean language sequence, the fourth-year language sequence, or they may be advanced literature and linguistics courses, depending on the capabilities and interests of the student.	
Obtain permission from the SSO or DUS before proceeding.	
II. Complete two gateway courses	**6-10**
Students must take two gateway courses appropriate to the East Asian Studies, Korea Subplan. These Gateway courses should have a focus on East Asian culture ("East Asian Gateway Course Cluster") and/or Korean culture ("Gateway Course Cluster for the Korea Subplan").	
The courses listed below are examples and not exhaustive. At least one of the two courses chosen must be taught by the department. Students pursuing the EAS-Korea Subplan minor should consult with the DUS or SSO to make sure that courses fit under these categories.	
III. Additional Courses	
Complete three 100-level culture courses selected from among the department's offerings in the literature, linguistics, and civilization of the relevant minor area. Up to one course can be approved from outside the department with the DUS or SSO approval.	

Minor in Translation Studies

Faculty Director: Alexander Key

Minor Adviser: Cintia Santana

The Division of Literatures, Cultures, and Languages, in cooperation with East Asian Languages and Cultures and the English Department, teaches undergraduates to develop and apply their foreign language knowledge to the production and analysis of translations. The minor is designed to give students majoring in a variety of fields the tools to consider the practical and theoretical issues brought up by translation as an aesthetic, cultural, and ethical practice.

Declaring the Minor

Students will declare the minor in Axess, and then contact the minor adviser, Cintia Santana (csantana@stanford.edu). The program is administered by the DLCL student services office located in Pigott Hall, room 128.

Requirements

Students must take a minimum of 6 courses for 3 units or more and a minimum of 23 units for a letter grade, in fulfillment of the following requirements:

	Units
1. Prerequisite: Complete or test out of a first-year course in the language of interest.	
2. Core course: At least 4 units in a Translation Studies core course: ENGLISH/DLCL 293 or FRENCH 185 or Comparative Literature 228/ JAPAN 123/223.	4
3. Language study: At least 8 units, second year or beyond (not including conversation/oral communication) and/or relevant literature courses taught in the target language. OSP and transfer units may be considered in consultation with the minor adviser.	8
4. Literature study: At least 7 units in relevant literature courses at the 100-level or above, taught in a DLCL department, East Asian Languages and Cultures, or Classics, and determined in consultation with the minor adviser. For students interested in translation from English into another language, appropriate literature courses in the English department may be substituted.	7
5. Electives: At least 4 units in a creative writing course, or a course that foregrounds translation in departments such as Anthropology, any DLCL department, English, East Asian Languages and Cultures, Classics, Linguistics (e.g., LINGUIST 130A), or Computer Science (e.g., CS 124), determined in consultation with the minor adviser.	4
6. Final Project: Students must also complete a capstone project: a significant translation and/or translation studies project (e.g. 20 pages of prose, 10 poems, or similar appropriate amount to be determined in consultation with the minor adviser). This work may be carried out under the supervision of an instructor in a required course or as an independent study.	
Total Units	23

Master of Arts Programs in East Asian Languages and Cultures

1. The department offers a Master of Arts in Chinese (p. 1320), a Master of Arts in Chinese—Archaeology subplan (p. 1321), and a Master of Arts in Japanese (p. 1321). These programs are described below.
2. The normal length of study for the degree is two years.
3. No financial aid is available for those applicants who wish to obtain the M.A. only.
4. Students who wish to spend the first year of graduate study at the Beijing or Yokohama centers must obtain department approval first.
5. Candidates for the degree must be in residence at Stanford in California during the final quarter of registration.
6. A thesis or an annotated translation of a text of suitable literary or historical worth is required for the M.A. degree. Under special circumstances, a paper approved by the graduate advisor may be substituted.
7. The University's basic requirements for the master's degree, including a 45-unit minimum requirement, are given in the "Graduate Degrees (p. 65)" section of this Bulletin. Department requirements are set forth below.

Master of Arts in Chinese

The M.A. program in Chinese is designed for students with strong academic records and an interest in pursuing postgraduate research in Chinese literature, philosophy, or linguistics, but who have not yet acquired the language skills or disciplinary foundation necessary to enter a Ph.D. program. (Note: Students who wish to pursue advanced language training in preparation for post-graduate research in other fields of Chinese studies are referred to the interdisciplinary M.A. program in the Center for East Asian Studies.)

The candidate must finish third-year Chinese, and one course in advanced classical Chinese with a letter grade of 'B' or higher. Placement tests in modern and in classical Chinese will be given for incoming students during orientation week, Autumn Quarter. Those who fail to place into advanced level classical must take beginning classical Chinese. Qualified students may, upon consultation with the graduate advisor, be permitted to certify that they have attained the equivalent level of proficiency by passing examinations.

1. Demonstrate proficiency in both modern and classical Chinese through completion of one of the tracks of third-year Chinese with a letter grade of 'B' or higher :

		Units
CHINLANG 103	Third-Year Modern Chinese, Third Quarter	5
CHINLANG 103B	Third-Year Modern Chinese for Bilingual Students, Third Quarter	3

2. One of three advanced classical Chinese courses:

		Units
CHINA 208	Advanced Classical Chinese: Philosophical Texts	3-5
CHINA 209	Advanced Classical Chinese: Historical Narration	2-5
CHINA 210	Advanced Classical Chinese: Literary Essays	2-5

3. Complete the following for a letter grade of 'B' or higher:

		Units
CHINA 201	Proseminar: Bibliographic and Research Methods in Chinese Studies	3-5

4. Four CHINA courses numbered above 200:

Courses listed are examples and not exhaustive; if uncertain whether a particular course fits into one of these categories, contact the department to check. The following courses are offered this year:

		Units
CHINA 201	Proseminar: Bibliographic and Research Methods in Chinese Studies	3-5
CHINA 205	Beginning Classical Chinese, First Quarter	2-5
CHINA 206	Beginning Classical Chinese, Second Quarter	2-5
CHINA 207	Beginning Classical Chinese, Third Quarter	2-5
CHINA 208	Advanced Classical Chinese: Philosophical Texts	3-5
CHINA 209	Advanced Classical Chinese: Historical Narration	2-5
CHINA 211	Literature in 20th-Century China	4-5
CHINA 215	Sex, Gender, and Power in Modern China	3-5
CHINA 251	Popular Culture and Casino Capitalism in China	3-4
CHINA 253	Chinese Bodies, Chinese Selves	3-5

CHINA 263	Chinese Biographies of Women	3-5
CHINA 274	New Directions in the Study of Poetry and Literati Culture	3-4, 4
CHINA 275	Constructing National History in East Asian Archaeology	3-5
CHINA 340	Chinese Justice: Law, Morality, and Literature	2-5
CHINA 371	Critical Theory and Ecology: A Cross-Cultural Perspective	2-5
CHINA 390	Practicum Internship	1
CHINA 391	Seminar in Chinese Syntax	4

5. Two upper-division or graduate-level courses in fields such as Chinese anthropology, art history, history, philosophy, politics, religious studies, or another relevant field, as approved by the graduate advisor in consultation with the student's individual advisor
6. A master's thesis

		Units
CHINA 299	Master's Thesis or Translation	2-5

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Master of Arts in Chinese, Archaeology Subplan

The M.A. in Chinese, Archaeology subplan, is designed for students with an interest in pursuing postgraduate research in Chinese archaeology who have not yet acquired the language skills or disciplinary foundation necessary to enter a Ph.D. program. The subplan is declared on Axess. Subplans are printed on the transcript and the diploma and are elected via the Declaration or Change to a Field of Study (https://studentaffairs.stanford.edu/sites/default/files/registrar/files/grad-subplan-change.pdf) form.

Degree Requirements

A candidate must:

1. Demonstrate proficiency in both modern and classical Chinese by completing:
   a. third-year Chinese through with a minimum grade of 'B+'.
   b. one of three advanced classical Chinese courses:

		Units
CHINA 275	Constructing National History in East Asian Archaeology	3-5
CHINA 276	Emergence of Chinese Civilization from Caves to Palaces	3-4
CHINA 376	Methods, Theories, and Practice in Chinese Archaeology	2-5

   c. Qualified students may, upon consultation with the graduate advisor, be permitted to certify that they have attained the equivalent level of proficiency by passing examinations or presenting documentary evidence of attendance at a bachelor's institution in which Chinese is the language of instruction. Exemptions may also be granted to students who study prehistoric archaeology. Instead, these students should take required course work relating to archaeology which is offered in the Stanford Archaeology Center. For details students should consult with the supervisor or the graduate advisor.
2. Complete 45 units, including the following four graduate level CHINGEN or ANTHRO subject code courses appropriate to the Chinese Archaeology track. All courses must be passed with a minimum grade of 'B+'.

a.		Units
ANTHRO 303	Introduction to Archaeological Theory	5
ANTHRO 307	Archaeological Methods	5
CHINA 275	Constructing National History in East Asian Archaeology	3-5
CHINA 376	Methods, Theories, and Practice in Chinese Archaeology	2-5

3. Two upper-division or graduate-level courses in fields such as Chinese anthropology, archaeology, art history, history, philosophy, political science and religious studies, as approved by the graduate advisor in consultation with the student's individual advisor.
4. Master's thesis.

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Master of Arts in Japanese

The M.A. program in Japanese is designed for students with strong academic records and an interest in pursuing postgraduate research in Japanese literature, cultural history, or linguistics, but who have not yet acquired the language skills or disciplinary foundation necessary to enter a Ph.D. program. *Note:* Students who wish to pursue advanced language training in preparation for postgraduate research in other fields of Japanese studies are referred to the interdisciplinary M.A. program in the Center for East Asian Studies.

The candidate must:

1. Complete third-year:

		Units
JAPANLNG 101	Third-Year Japanese Language, Culture, and Communication, First Quarter	5
JAPANLNG 102	Third-Year Japanese Language, Culture, and Communication, Second Quarter	5
JAPANLNG 103	Third-Year Japanese Language, Culture, and Communication, Third Quarter	5

2. Complete fourth-year Japanese and classical Japanese with a letter grade of 'B' or higher:

		Units
Fourth-year Japanese		9-15
JAPANLNG 211	Fourth-Year Japanese, First Quarter	
JAPANLNG 212	Fourth-Year Japanese, Second Quarter	
JAPANLNG 213	Fourth-Year Japanese, Third Quarter	
Classical Japanese		5-10
JAPAN 265	Readings in Premodern Japanese	
JAPAN 264	Introduction to Premodern Japanese	

   - *Note:* qualified students may, upon consultation with the graduate advisor, be permitted to certify that they have attained the equivalent level of proficiency by passing examinations.
3. Complete the following with a letter grade of 'B' or higher:
   a. four advisor-approved courses in Japanese literature, culture, or linguistics from among the offerings of the Department of East Asian Languages and Cultures, not including courses taken to fulfill the language requirement.

	Courses listed are examples and not exhaustive; if uncertain whether a particular course fits into one of these categories, contact the department to check.	Units
JAPAN 201	Proseminar: Introduction to Graduate Study in Japanese	2-5
JAPAN 221	Translating Japan, Translating the West	3-4

JAPAN 235	Academic Readings in Japanese I	2-4
JAPAN 238	Introduction to Modern Japanese Literature and Culture	3-5
JAPAN 252	Art Animation	2-4
JAPAN 257	Science, Power, and Knowledge: East Asia to 1900	3-5
JAPAN 265	Readings in Premodern Japanese	2-5
JAPAN 288	The Japanese Tea Ceremony: The History, Aesthetics, and Politics Behind a National Pastime	5
JAPAN 292	Analyzing Japanese Text and Talk	2-4
JAPAN 210	Romance, Desire, and Sexuality in Modern Japanese Literature	3-4
JAPAN 297	Points in Japanese Grammar	2-4

b. Complete JAPAN 201 Proseminar: Introduction to Graduate Study in Japanese (2-5 units). Linguistics students should enroll in JAPAN 279 Research in Japanese Linguistics.
c. Two upper-division or graduate-level courses in fields such as Japanese anthropology, art history, history, philosophy, politics, and religion, as approved by the graduate advisor in consultation with the student's individual advisor.
d. A master's thesis; enroll in JAPAN 299 Master's Thesis or Translation (1-5 units).

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Coterminal Master's in East Asian Studies

Effective Autumn Quarter 2019-20, the department no longer offers a coterminal master's program. Those interested in a coterminal program with an M.A. in East Asian Studies should see the "Center for East Asian Studies (p. 1354)" section of this bulletin.

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Doctor of Philosophy Programs in East Asian Languages and Cultures

The Ph.D. degree is granted in Chinese and Japanese. Candidates for the degree are expected to acquire a thorough familiarity with Chinese or Japanese literature and linguistics, an adequate command of relevant languages, and a comprehensive knowledge of East Asian history, social institutions, and thought. The University's basic requirements for the Ph.D. are given in the "Graduate Degrees (p. 65)" section of this bulletin. Department requirements for each program can be found in the tab menu. The department offers the following programs:

- Ph.D. in Chinese (p. 1322)
- Ph.D. in Chinese, Archaeology Track (p. 1323)
- Ph.D. in Japanese (p. 1324)
- Ph.D. in Japanese, Linguistics Track (p. 1325)

Admission to Candidacy

Candidacy is the most important University milestone on the way to the Ph.D. degree. Admission to candidacy rests both on the fulfillment of department requirements and on an assessment by the department faculty that the student has the potential to successfully complete the Ph.D.

Following University policy (GAP 4.6.1 (https://gap.stanford.edu/handbooks/gap-handbook/chapter-4/subchapter-6/page-4-6-1/)), students are expected to complete the candidacy requirements by Spring Quarter of the second year of graduate study.

If a student goes to the Inter-University Program for Chinese Language Studies (IUP) at Tsinghua University or the Inter-University Center (IUC) for Japanese Language Studies in Yokohama during the first two years of study, the department may consider an extension for admission to candidacy. The timing of the evaluation of a student admitted with an M.A. in East Asian Studies is decided on an individual basis.

Candidacy is a milestone different from the comprehensive exams which are regularly held in the second and third years. Mastery of the field exams is not to be equated with the potential for doing research. Admission to candidacy indicates that the department faculty consider the student qualified to pursue a program of study leading to the Ph.D.

See also the department's EALC Graduate Student Handbook (https://stanford.app.box.com/s/3ibya7piafebb9v9440pcdg0whhlp6us/) (pdf) for additional information on candidacy.

Doctor of Philosophy in Chinese

The Ph.D. program in Chinese is designed to prepare students for a doctoral degree in Chinese literature, philosophy, or linguistics. Applicants must have a minimum of three years of Chinese language study at Stanford or the equivalent to be considered for admission. Ph.D. students complete the M.A., as described in the "Master's (p. 1320)" tab of this section of this bulletin, on the way to advancing to Ph.D. candidacy. Students who have completed an M.A. in Chinese literature or linguistics elsewhere before joining the Ph.D. program may request transfer of a limited number of course credits toward this M.A. requirement, in accordance with University policy for such units transfer (see the "Graduate Residency Transfer Credit (p. 72)" section of this bulletin). The majority of required course work for Ph.D. students demands the ability to read primary and secondary materials in Chinese. All courses must be taken for a letter grade.

Admission to Candidacy

Candidacy is the most important University milestone on the way to the Ph.D. degree. Admission to candidacy rests both on the fulfillment of department requirements and on an assessment by department faculty that the student has the potential to successfully complete the Ph.D.

Following University policy (GAP 4.6.1 (https://gap.stanford.edu/handbooks/gap-handbook/chapter-4/subchapter-6/page-4-6-1/)), students are expected to complete the candidacy requirements by Spring Quarter of the second year of graduate study. See the EALC Doctoral Program Bulletin page (p. 1322) for additional candidacy details.

Requirements

1. Complete the department's requirements for the M.A. in Chinese, including course units and M.A. thesis. These courses must satisfy the following breath requirements:
   a. Three courses with the CHINA subject code numbered above 200. At least one EALC course must be in a field different from the student's primary specialization (e.g., a modern literature course for students specializing in premodern literature, and vice versa, or a course in Japanese or Korean literature).
   b. Two upper-division or graduate-level courses in other fields such as Chinese anthropology, art history, history, philosophy, politics, religious studies, or another relevant field, as approved by the graduate advisor in consultation with the student's individual advisor.
2. Complete two of three advanced classical Chinese Courses. Note: All incoming Chinese M.A. and Ph.D. students must take a placement exam in classical Chinese held during Orientation Week of fall quarter. Those who do not place into the advanced level must take Beginning Classical Chinese.

- CHINA 208 Advanced Classical Chinese: Philosophical Texts
- CHINA 209 Advanced Classical Chinese: Historical Narration
- CHINA 210 Advanced Classical Chinese: Literary Essays

Other Requirements beyond Candidacy

1. Demonstrate proficiency in at least one supporting language (beyond the near-native level required in Chinese and English), to be chosen in consultation with the primary advisor according to the candidate's specific research goals. For this supporting language (typically Japanese, Korean, or a European language), students must be proficient at second-year level at the minimum; a higher level of proficiency may be required depending on the advisor's recommendation. Reading proficiency must be certified through a written examination or an appropriate amount of course work, to be determined on a case-by-case basis.
2. Students in Chinese literature are required to take one linguistics course (CHINA 291 The Structure of Modern Chinese), and linguistics students must take at least one literature course.
3. Complete two relevant seminars at the 300 level (CHINA 200 Directed Reading in Chinese may be substituted for one of these two seminars.)
4. Take at least one EALC course in a field different from the student's primary specialization (e.g., a modern literature course for students specializing in premodern literature, and vice versa, or a course in Japanese or Korean literature).
5. Pass a set of three comprehensive written examinations, one of which tests the candidate's methodological competence in the relevant discipline. The remaining two fields are chosen, with the approval of the graduate advisor in consultation with the student's individual advisor, from the following: archaeology, anthropology, art, Chinese literature, history, Japanese literature, linguistics, philosophy, and religion. With the advisor's approval, a Ph.D. minor in a supporting field may be deemed equivalent to the completion of one of these three examinations.
6. Before advancing to terminal graduate registration (TGR) status, students should submit a dissertation prospectus. The prospectus should be a comprehensive description of the dissertation project and include sections on the project rationale, key research questions, the contribution to the field the dissertation will make, a literature review, a chapter-by-chapter description, a projected timeline, and a bibliography.
7. Demonstrate pedagogical proficiency by serving as a teaching assistant for a minimum of three quarters, and take DLCL 301 The Learning and Teaching of Second Languages.
8. Pass the University Oral Examination. General regulations governing the oral examination are found in the "Graduate Degrees (p. 68)" section of this Bulletin. The candidate is examined on questions related to the dissertation after acceptable parts of it have been completed in draft form.
9. Submit a dissertation demonstrating ability to undertake original research based on primary and secondary materials in Chinese.

Doctor of Philosophy in Chinese, Archaeology Track

To declare the Archaeology track, use the Declaration or Change to a Field of Study (https://stanford.app.box.com/v/grad-subplan-change/) form.

The Archaeology track is not printed on the transcript or diploma.

Admission to Candidacy

Candidacy is the most important University milestone on the way to the Ph.D. degree. Admission to candidacy rests both on the fulfillment of Department requirements and on an assessment by the Department faculty that the student has the potential to successfully complete the Ph.D.

Following University policy (GAP 4.6.1), students are expected to complete the candidacy requirements by the spring quarter of the second year of graduate study.

See the EALC Doctoral Program Bulletin page (p. 1322) for additional candidacy details.

Requirements

1. Complete one of three advanced classical Chinese courses and the requirements for the M.A. Qualified students may, upon consultation with the graduate advisor, be permitted to certify that they have attained the equivalent level of proficiency by passing examinations or presenting documentary evidence. Exemptions may be granted to students who study prehistoric archaeology. Instead, these students should take coursework offered in the Stanford Archaeology Center. Consult with the graduate advisor.

		Units
CHINA 208	Advanced Classical Chinese: Philosophical Texts	3-5
CHINA 209	Advanced Classical Chinese: Historical Narration	2-5
CHINA 210	Advanced Classical Chinese: Literary Essays	2-5

2. Demonstrate proficiency in at least one supporting foreign language (in addition to Chinese and English), or in a laboratory skill, to be chosen in consultation with the primary advisor according to the candidate's specific research goals. Proficiency (in language(s) and/or laboratory skills must be certified through a written examination or an appropriate amount of coursework, to be determined on a case-by-case basis.
3. Six graduate-level CHINA or ANTHRO courses appropriate to the Chinese Archaeology track, as approved by the advisor:

		Units
The following courses are offered this year:		
ANTHRO 303	Introduction to Archaeological Theory	5
ANTHRO 307	Archaeological Methods	5
ANTHRO 308	Proposal Writing Seminar in Cultural and Social Anthropology	5
ANTHRO 311G	Introduction to Culture and Society Graduate Studies in Anthropology	2
ANTHRO 310G	Introduction to Graduate Studies	2
CHINA 275	Constructing National History in East Asian Archaeology	3-5
CHINA 276	Emergence of Chinese Civilization from Caves to Palaces	3-4

4. Serve as a teaching assistant for two quarters and research assistant in an archaeology laboratory for two quarters.
5. Pass qualifying examinations in Chinese archaeology. In order to advance to Terminal Graduate Registration (TGR) status, students must also complete a prospectus defense.
6. Carry out fieldwork related to dissertation research.
7. Pass University oral examination. The candidate is examined on questions related to the dissertation after acceptable parts of it have been completed in draft form.
8. Submit a dissertation demonstrating ability to undertake original research based on primary materials in Chinese or data related to China.

Doctor of Philosophy in Japanese

The Ph.D. program in Japanese is designed to prepare students for a doctoral degree in Japanese literature, cultural history, or linguistics. Applicants must have a minimum of three years of Japanese language study at Stanford or the equivalent to be considered for admission.

On the way to advancing to Ph.D. candidacy, Ph.D. students must complete an M.A. thesis, or with the permission of their primary advisor, an extended seminar paper 25-30 pages in length (not including bibliography).

The majority of required course work for Ph.D. students demands the ability to read primary and secondary materials in Japanese. Advanced standing may be considered for students entering the Ph.D. program who have already completed an M.A. in Japanese literature or linguistics elsewhere only in cases when the level of prior course work and research is deemed equivalent to departmental requirements for the Ph.D.

All courses must be taken for a letter grade. Prior to advancing to Terminal Graduate Registration (TGR) status, graduate students must complete all requirements except passing the University Oral Exam (i.e., dissertation defense), and submitting the final dissertation.

Admission to Candidacy

Candidacy is the most important University milestone on the way to the Ph.D. degree. Admission to candidacy rests both on the fulfillment of Department requirements and on an assessment by the Department faculty that the student has the potential to successfully complete the Ph.D.

Following University policy (GAP 4.6.1), students are expected to complete the candidacy requirements by the spring quarter of the second year of graduate study. Faculty in the Department will perform a holistic review of the student's academic performance, including classwork, teaching assistantships, and the M.A. Thesis.

See the EALC Doctoral Program Bulletin page (p. 1322) for additional candidacy details.

Requirements for the Ph.D. in Japanese Literature

1. Demonstrate proficiency in both modern and classical Japanese language by completing the following courses, or by demonstrating an equivalent level of linguistic attainment by passing the appropriate certifying examinations:

		Units
Fourth-Year Japanese:		
JAPANLNG 213	Fourth-Year Japanese, Third Quarter	2-4
Premodern Japanese:		
JAPAN 264	Introduction to Premodern Japanese	3-5
JAPAN 265	Readings in Premodern Japanese	2-5

2. Demonstrate proficiency in at least one supporting language, to be chosen in consultation with the primary advisor according to the candidate's specific research goals. For the second language, students must be proficient at the second-year level, at the minimum; a higher level of proficiency may be required depending on the advisor's recommendation. Reading proficiency must be certified through a written examination or an appropriate amount of course work, to be determined on a case-by-case basis. When deemed necessary by the student's advisor(s), working knowledge of a third language may also be required. Reading proficiency must be certified through a written examination or an appropriate amount of course work, to be determined on a case-by-case basis. When deemed necessary by the student's advisor(s), working knowledge of a third language may also be required. Students concentrating in classical Japanese literature are normally expected to fulfill this requirement by completing *kanbun,* JAPAN 265 Readings in Premodern Japanese.
3. Complete eight advisor-approved courses numbered above 200 from among the offerings of the Department of East Asian Languages and Cultures. At least four of these eight courses must be advanced seminars numbered above 300. At least one of these eight courses must deal with Japanese linguistics. For students focusing on modern literature, at least two of these eight courses must deal with premodern material, and for students focusing on premodern literature, at least two of the eight courses must deal with modern material.

		Units
JAPAN 201	Proseminar: Introduction to Graduate Study in Japanese	2-5
JAPAN 210	Romance, Desire, and Sexuality in Modern Japanese Literature	3-4
JAPAN 221	Translating Japan, Translating the West	3-4
JAPAN 235	Academic Readings in Japanese I	2-4
JAPAN 238	Introduction to Modern Japanese Literature and Culture	3-4
JAPAN 252	Art Animation	2-4
JAPAN 257	Science, Power, and Knowledge: East Asia to 1900	3-5
JAPAN 258	A Critical and Historical Survey of Classical Japanese Literature	2-5
JAPAN 264	Introduction to Premodern Japanese	3-5
JAPAN 265	Readings in Premodern Japanese	2-5
JAPAN 279	Research in Japanese Linguistics	2-5
JAPAN 288	The Japanese Tea Ceremony: The History, Aesthetics, and Politics Behind a National Pastime	5
JAPAN 292	Analyzing Japanese Text and Talk	2-4
JAPAN 297	Points in Japanese Grammar	2-4
JAPAN 350	Japanese Historical Fiction	3-5
JAPAN 396	Seminar in Modern Japanese Literature	2-5

4. Complete two upper-division or graduate-level courses in two supporting fields, for a total of four courses outside of Japanese literature or linguistics. Supporting fields, to be determined in consultation with the student's primary advisor, may include Japanese anthropology, art, art history, history, philosophy, politics, and religion, Chinese literature, comparative literature, etc.
5. Complete JAPAN 201 Proseminar: Introduction to Graduate Study in Japanese; this course should be taken in the first or second year.
6. Pass a comprehensive qualifying examination that tests the candidate's breadth and depth in the primary field of research and methodological competence in the relevant discipline.
7. Submit and pass a prospectus defense before advancing to Terminal Graduate Registration (TGR) status. Students should work with their primary advisor to identify a topic, and if necessary, additional exam committee members.
8. Demonstrate pedagogical proficiency by serving as a teaching assistant for a minimum of one quarter and taking DLCL 301 The Learning and Teaching of Second Languages (3 units).
9. Pass the University Oral Examination. General regulations governing the oral examination are found in the "Graduate Degrees (http://www.stanford.edu/dept/registrar/bulletin/4901.htm)" section of this Bulletin. The candidate is examined on questions related to the dissertation after acceptable parts of it have been completed in draft form.
10. Submit a dissertation demonstrating ability to undertake original research based on primary and secondary materials in Japanese.

Doctor of Philosophy in Japanese, Linguistics Track

The Ph.D. program in Japanese is designed to prepare students for a doctoral degree in Japanese linguistics. Applicants must have a minimum of three years of Japanese language study at Stanford or the equivalent to be considered for admission. Ph.D. students complete M.A. requirements on the way to advancing to Ph.D. candidacy. The majority of required course work for Ph.D. students demands the ability to read primary and secondary materials in Japanese. Advanced standing may be considered for students entering the Ph.D. program who have already completed an M.A. in Japanese literature or linguistics elsewhere only in cases when the level of prior course work and research is deemed equivalent to departmental requirements for the Ph.D. All courses must be taken for a letter grade. Prior to advancing to terminal graduate registration (TGR) status, graduate students must complete all requirements except passing the University Oral Exam (i.e., dissertation defense) and submitting the final dissertation.

To declare the Linguistics track, use the Declaration or Change to a Field of Study (https://stanford.app.box.com/v/grad-subplan-change/) form.

Before advancing to Terminal Graduate Registration (TGR) status, students must complete all degree requirements below except pass the University oral examination and submit the final dissertation.

Admission to Candidacy

Candidacy is the most important University milestone on the way to the Ph.D. degree. Admission to candidacy rests both on the fulfillment of Department requirements and on an assessment by the Department faculty that the student has the potential to successfully complete the Ph.D.

Following University policy (GAP 4.6.1), students are expected to complete the candidacy requirements by Spring quarter of the second year of graduate study.

See the EALC Doctoral Program Bulletin page (p. 1322) for additional candidacy details.

Doctor of Philosophy in Japanese Linguistics Candidacy Requirements

1. Modern Japanese language proficiency equivalent to the completion of JAPANLNG 213 Fourth-Year Japanese, Third Quarter.
2. Premodern Japanese language proficiency equivalent to the completion of JAPAN 264 Introduction to Premodern Japanese or JAPAN 265 Readings in Premodern Japanese.
3. Start taking courses for one supporting language.
4. Complete JAPAN 279 Research in Japanese Linguistics.
5. Satisfactory ('B+' and above) work in three graduate courses pertaining to linguistics.
6. Submit a plan for the first qualifying paper or the paper itself. Students admitted to the program with an M.A. in the relevant field and an M.A. thesis may convert it to the first qualifying paper and seek approval.
7. Completion of DLCL 301 The Learning and Teaching of Second Languages.
8. Completion of three quarters of teaching assistant requirements.

Requirements for the Ph.D. in Japanese Linguistics

1. Demonstrate proficiency in both modern and classical Japanese language by completing the following courses, or by demonstrating an equivalent level of linguistic attainment by passing the appropriate certifying examinations:

		Units
A. Complete Fourth-Year Japanese sequence		
JAPANLNG 211	Fourth-Year Japanese, First Quarter	3-5
JAPANLNG 212	Fourth-Year Japanese, Second Quarter	3-5
JAPANLNG 213	Fourth-Year Japanese, Third Quarter	2-4
B. Complete one of the pre-modern Japanese sequence:		
JAPAN 264	Introduction to Premodern Japanese	3-5
or		
JAPAN 265	Readings in Premodern Japanese	2-5

2. Demonstrate proficiency in at least one supporting language, to be chosen in consultation with the primary advisor according to the candidate's specific research goals. For the second language, students must be proficient at the second-year level, at the minimum; a higher level of proficiency may be required depending on the recommendation of the student's advisor(s). Reading proficiency must be certified through a written examination or an appropriate amount of course work, to be determined on a case-by-case basis. When deemed necessary by the student's advisor(s), working knowledge of a third language may also be required.
3. Complete six advisor-approved courses numbered above 200 from among the offerings of the Department of East Asian Languages and Cultures. At least one of these six courses must be an advanced seminar numbered above 300. At least one of these six courses must deal with Japanese literature.
4. Complete five upper-division or graduate-level courses in linguistics and other supporting fields. To be determined in consultation with the student's primary advisor, these may include applied linguistics, Chinese linguistics, psychology, education, anthropology, sociology.
5. Complete JAPAN 279 Research in Japanese Linguistics; this course should be taken in the first or second year at Stanford.
6. Submit two qualifying papers presenting original research in two different subfields of linguistics discussing Japanese data. The length of the paper depends on the topic but generally about 25-30 pages, and the quality is expected to be equivalent to a paper presented at a professional conference and/or publishable in the proceedings. The first qualifying papers should be submitted by Winter Quarter of the third year and the second qualifying papers should be submitted by the Winter Quarter of the fourth year. Students are encouraged to start planning and consulting advising faculty members early in the second year.
7. Submit a dissertation proposal (10-15 pages) accompanied by an annotated bibliography pertaining to the topic of the dissertation and have it approved by the dissertation reading committee after an oral presentation. The annotated bibliography is cumulative and should include, but would not be limited to, the references given in the dissertation proposal. The annotation can be a paragraph (or more, if needed) for each reference. This process should be completed by the spring quarter of the fourth year before TGR.
8. Demonstrate pedagogical proficiency by serving as a teaching assistant for a minimum of one quarter and taking DLCL 301 The Learning and Teaching of Second Languages
9. Pass the University oral examination. The candidate is examined on questions related to the dissertation after acceptable parts of it have been completed in draft form.
10. Submit a dissertation demonstrating ability to undertake original research based on primary and secondary materials in Japanese.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies

relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of East Asian Languages and Cultures' major and minor programs will count all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Graduate Degree Requirements

Grading

Doctoral students in the department must take required courses for a letter grade and are expected to earn a grade of 'B' or better in each required course. In other courses, doctoral students are expected to earn a grade of 'B' or better in each course taken for a letter grade in AY 2020-21 that will count towards their degree requirement. Any grade of 'B-' or below is considered to be less than satisfactory. Grades of 'B' or below are reviewed by faculty: while the grade will stand, the student may be required to revise and resubmit the work associated with that course. For courses taken for CR/NC, instructors will be asked to submit written assessment to the student and the department of what would be the equivalent letter grade to allow for review of satisfactory academic achievement by the DGS and department.

Graduate Advising Expectations

The Department of East Asian Languages and Cultures is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the advisor and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity.

Faculty advisors and department staff guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Graduate Student Advising

Effective academic advising is a critical component of a successful graduate degree program. At Stanford, all matriculated graduate students are to be advised by a member of the faculty. The nature of academic advising may differ for different programs, students, and at different stages in a degree program. During your time as a graduate student, you will have access to the department staff (in particular the Student Services Officer), Director of Graduate Studies (EALC generally has two DGS, one for Chinese and Japanese studies), and Department Chair, whom you can refer to for degree progress and policy clarification.

In order to meet the department's advising expectations, each student and their advisor meet must meet at least once per quarter for a holistic, structured discussion of the student's recent progress, short-term plans, and longer-term academic and professional goals and to discuss the steps that the student should take to meet these objectives.

Students are expected to meet regularly with their advisors and to keep them informed about their academic progress. Each student and their advisor should mutually agree on the frequency of these meetings when the advising relation begins and reassess their frequency at the start of every quarter.

Doctoral Students

No later than by the end of the second academic year, the student is assigned a faculty advisor. Until you have completed the University Oral Exam (Dissertation Defense) and graduated, you must meet with your advisor at the beginning of each quarter to discuss the courses you plan to take, as well as other academic matters. Your advisor's suggestions regarding professional issues are especially valuable, as it offers insight into the academic environment beyond your particular intellectual interest. During the quarters before your University Oral Examination (Dissertation Defense), you should decide on a faculty member with whom you want to work most closely and approach that person about becoming your advisor; he or she will serve as your primary advisor until the exam. Once you have passed the University Oral Exam (Dissertation Defense), your primary advisor will be the person you have chosen to direct your dissertation.

Master's Students

No later than by the end of your first academic year, you will be assigned a faculty advisor. Until you have completed your Master's Thesis and graduated, you must meet with your advisor at the beginning of each quarter to discuss the courses you plan to take, as well as other academic matters. Your advisor's suggestions regarding professional issues are especially valuable, as it offers insight into the academic environment beyond your particular intellectual interest.

Emeriti: (Professors) Albert E. Dien, Makoto Ueda, Steven D. Carter; (Associate Professor) Susan Matisoff; (Senior Lecturer) Yin Chuang

Chair: Haiyan Lee

Directors of Graduate Studies: Indra Levy (Japanese), Ban Wang (Chinese)

Directors of Undergraduate Studies: Dafna Zur

Professors: Ronald Egan, Haiyan Lee, Li Liu, Yoshiko Matsumoto, Chao Fen Sun, Melinda Takeuchi (East Asian Languages and Cultures, Art and Art History), Ban Wang (East Asian Languages and Cultures, Comparative Literature)

Associate Professors: Indra Levy (East Asian Languages and Cultures, Comparative Literature), James Reichert, Ariel Stilerman, Yiqun Zhou, Dafna Zur

Consulting Professor: Richard Dasher

Lecturers: Thomas Bartlett, Seungyeon Gabrielle Jung

Chinese-Japanese Area Studies Faculty:

Professors: Gordon Chang (History), Mark E. Lewis (History), Paul Harrison (Religious Studies), John Kieschnick (Religious Studies), Thomas Mullaney (History), Jean Oi (Political Science), David Palumbo-Liu (Comparative Literature), Gi-Wook Shin (Sociology), Matthew Sommer (History), Richard Vinograd (Art and Art History), Andrew Walder

(Sociology), Kären Wigen (History), Lee H. Yearley (Religious Studies), Xueguang Zhou (Sociology)

Associate Professors: Miyako Inoue (Anthropology), Matthew Kohrman (Anthropology), Yumi Moon (History), Jun Uchida (History), Jean Ma (Art and Art History)

Assistant Professors: Phillip Lipscy (Political Science), Marci Kwon (Art and Art History), Michaela Mross (Religious Studies)

Chinese Courses

CHINA 20. Humanities Core: Dao, Virtue, and Nature -- Foundations of East Asian Thought. 3 Units.
This course explores the values and questions posed in the formative period of East Asian civilizations. Notions of a Dao ("Way") are common to Confucianism, Daoism, and Buddhism, but those systems of thought have radically different ideas about what that Dao is and how it might be realized in society and an individual's life. These systems of thought appeared first in China, and eventually spread to Korea and Japan. Each culture developed its own ways of reconciling the competing systems, but in each case the comprehensive structure of values and human ideals differs significantly from those that appeared elsewhere in the ancient world. The course examines East Asian ideas about self-cultivation, harmonious society, rulership, and the relation between human and nature with a view toward expanding our understanding of these issues in human history, and highlighting their legacies in Asian civilizations today. The course features selective readings in classics of Confucian, Daoist, and Buddhist texts that present the foundational tenets of Asian thought. N. B. This is the first of three courses in the Humanities Core, East Asian track. These courses show how history and ideas shape our world and future. Take all three to experience a year-long intellectual community dedicated to the life of the mind.
Same as: HUMCORE 20, JAPAN 20, KOREA 20

CHINA 21. Humanities Core: Love and Betrayal in Asia. 3 Units.
Why are lovers in storybooks East and West always star-crossed? Why do love and death seem to go together? For every Romeo and Juliet, there are dozens of doomed lovers in the Asian literary repertoires, from Genji's string of embittered mistresses, to the Butterfly lovers in early modern China, to the voices of desire in Koryo love songs, to the devoted adolescent cousins in Dream of the Red Chamber, to the media stars of Korean romantic drama, now wildly popular throughout Asia. In this course, we explore how the love story has evolved over centuries of East Asian history, asking along the way what we can learn about Chinese, Japanese, and Korean views of family and community, gender and sexuality, truth and deception, trust and betrayal, ritual and emotion, and freedom and solidarity from canonical and non-canonical works in East Asian literatures. N.B. This is the second of three courses in the East Asian track. These courses offer an unparalleled opportunity to study East Asian history and culture, past and present. Take all three to experience a year-long intellectual community dedicated to exploring how ideas have shaped our world and future.
Same as: HUMCORE 21, JAPAN 21, KOREA 21

CHINA 21Q. Humanities Core: Love and Betrayal in Asia. 3 Units.
Why are lovers in storybooks East and West always star-crossed? Why do love and death seem to go together? For every Romeo and Juliet, there are dozens of doomed lovers in the Asian literary repertoires, from Genji's string of embittered mistresses, to the Butterfly lovers in early modern China, to the voices of desire in Koryo love songs, to the devoted adolescent cousins in Dream of the Red Chamber, to the media stars of Korean romantic drama, now wildly popular throughout Asia. In this course, we explore how the love story has evolved over centuries of East Asian history, asking along the way what we can learn about Chinese, Japanese, and Korean views of family and community, gender and sexuality, truth and deception, trust and betrayal, ritual and emotion, and freedom and solidarity from canonical and non-canonical works in East Asian literatures. N.B. This is the second of three courses in the East Asian track. These courses offer an unparalleled opportunity to study East Asian history and culture, past and present. Take all three to experience a year-long intellectual community dedicated to exploring how ideas have shaped our world and future.
Same as: HUMCORE 21Q, JAPAN 21Q, KOREA 21Q

CHINA 24. Humanities Core: How to be Modern in East Asia. 3-5 Units.
Modern East Asia was almost continuously convulsed by war and revolution in the 19th and 20th centuries. But the everyday experience of modernity was structured more profoundly by the widening gulf between the country and the city, economically, politically, and culturally. This course examines literary and cinematic works from China and Japan that respond to and reflect on the city/country divide, framing it against issues of class, gender, national identity, and ethnicity. It also explores changing ideas about home/hometown, native soil, the folk, roots, migration, enlightenment, civilization, progress, modernization, nationalism, cosmopolitanism, and sustainability. All materials are in English. This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: COMPLIT 44, HUMCORE 133, JAPAN 24, KOREA 24

CHINA 70N. Animal Planet and the Romance of the Species. 3-4 Units.
Preference to freshmen.This course considers a variety of animal characters in Chinese and Western literatures as potent symbols of cultural values and dynamic sites of ethical reasoning. What does pervasive animal imagery tell us about how we relate to the world and our neighbors? How do animals define the frontiers of humanity and mediate notions of civilization and culture? How do culture, institutions, and political economy shape concepts of human rights and animal welfare? And, above all, what does it mean to be human in the pluralistic and planetary 21st century? Note: To be eligible for WAYS credit, you must take course for a Letter Grade.
Same as: COMPLIT 70N

CHINA 91. Introduction to China. 5 Units.
Required for Chinese and Japanese majors. Introduction to Chinese culture in a historical context. Topics include political and socioeconomic institutions, religion, ethics, education, and art and literature.

CHINA 105. Beginning Classical Chinese, First Quarter. 2-5 Units.
The goal is develop students' reading knowledge of classical Chinese, including basic grammar and commonly used vocabulary. Students will also learn concepts and ideas fundamental in Chinese culture involving family, human relationships, governance, learning, life/death, philosophy, etc. through reading canonical classical Chinese texts. Prerequisite: CHINLANG 23 or equivalent.
Same as: CHINA 205

CHINA 106. Beginning Classical Chinese, Second Quarter. 2-5 Units.
Continue to develop students' reading knowledge of classical Chinese, including basic grammar and commonly used vocabulary. Students will learn more concepts and ideas fundamental in Chinese culture involving family, human relationships, governance, learning, life/death, philosophy, etc. through reading canonical classical Chinese texts. Prerequisite: CHINA 105/205 or equivalent.
Same as: CHINA 206

CHINA 107. Beginning Classical Chinese, Third Quarter. 2-5 Units.
Goal is reading knowledge of classical Chinese. Basic grammar and commonly used vocabulary. Students with no background in classical Chinese who are taking 127/207 to satisfy Chinese major requirements must begin with 125/205. Prerequisite: CHINLANG 126/206 or equivalent.
Same as: CHINA 207

CHINA 110. How to Be Modern in China: A Gateway to the World Course. 3-4 Units.
A gateway course on China, with a focus on the politics of everyday life, in the capital city of Beijing. Introduction to the history and politics of modern China. The pleasures, frictions, and challenges of daily living in the penumbra of power in Beijing as reported, represented, and reflected upon in fiction, film, reportage, social commentary, and scholarly writings. Priority to those preparing to participate in BOSP-Beijing Program or returning from the program.

CHINA 111. Literature in 20th-Century China. 4-5 Units.
(Graduate students register for 211.) How modern Chinese culture evolved from tradition to modernity; the century-long drive to build a modern nation state and to carry out social movements and political reforms. How the individual developed modern notions of love, affection, beauty, and moral relations with community and family. Sources include fiction and film clips. WIM course.
Same as: CHINA 211

CHINA 112. Tiananmen Square: History, Literature, Iconography. 3-5 Units.
Multidisciplinary. Literary and artistic representations of this site of political and ideological struggles throughout the 20th century. Tiananmen-themed creative, documentary, and scholarly works that shed light on the dynamics and processes of modern Chinese culture and politics. No knowledge of Chinese required. Repeat for credit.
Same as: CHINA 212

CHINA 112A. Asian Screen Cultures. 3-5 Units.
Asian screen culture, ranging from cinema to online games, has (re)shaped the global and national/regional imaginings of Asia. The Post-Cold War intensification of intra-Asian interactions has precipitated the rise of a Pan-Asian regional identity wherein the nation-state is not yet obsolete. What role does screen culture plays in the border-crossing interplay among languages, ideologies, aesthetics, and affect? How does the converging media of screen culture capture local/global desires and propel the history of transformation of sign systems from the written words to visual moving images in a digital time? How do we understand the aesthetic, storytelling, and politics of Asian screen cultures vis-à-vis its historical and social context? While exploring these transnational and transdisciplinary questions, this course will deal with topical issues of Pan-Asian identity, (trans)nationalism, (un)translatability, commodity fetishism, locality and globality, technophobia, and politics of gender. Students will learn how to think and write about screen cultures of East Asia in particular and of our world of screens in general.
Same as: CHINA 212A, JAPAN 112A, JAPAN 212A, KOREA 112, KOREA 212

CHINA 113. Love, Passion, and Politics in Chinese Film. 4-5 Units.
Focusing on the emotional structure of love and passion in Chinese films, the course will investigate the structures of feelings and moral relations in modern Chinese history from the 1940s till the present. Examining the interplay between private desire, romantic sentiment, family relations, and political passion, we will explore how men and women in China grapple with emotional and social issues in modern transformations. We will consider romantic love, the uplifting of sexuality into political passion, the intertwining of aesthetic experience with politics, nostalgia in the disenchanted modern world, and the tensions between the individual's self-realization and the community's agenda. Students will learn to "read" films as a work of art and understand how film works as expression of desire, impulse, emotional connections, and communal bonding during times of crisis. Course work includes a midterm exam (25%) and a final exam (25%), a weekly 250-300 word reflection on the film of the week (10%), participation and oral presentation in class (10%), and a paper of 5-7 pages to be submitted after the midterm week (30%).nStarting from the second week, film screening will begin 6: 30 pm Monday before classes on Tuesday and Thursday. The course does not encourage private viewing. At least 5 dinners will be provided for movie-screening events.
Same as: CHINA 213

CHINA 115. Sex, Gender, and Power in Modern China. 3-5 Units.
Investigates how sex, gender, and power are entwined in the Chinese experience of modernity. Topics include anti-footbinding campaigns, free love/free sex, women's mobilization in revolution and war, the new Marriage Law of 1950, Mao's iron girls, postsocialist celebrations of sensuality, and emergent queer politics. Readings range from feminist theory to China-focused historiography, ethnography, memoir, biography, fiction, essay, and film. All course materials are in English.
Same as: CHINA 215, FEMGEN 150, FEMGEN 250

CHINA 116. Chinese Cultural Revolution: Performance, Politics, and Aesthetics. 4 Units.
Events, arts, films, and operas of the Chinese Cultural Revolution. Analysis of political passion, aesthetics, and psychology of mass movements. Places the Cultural Revolution in the long-range context of art, social movements, and politics. Chinese language is not required.
Same as: CHINA 216

CHINA 118. Humanities Core: Everybody Eats: The Language, Culture, and Ethics of Food in East Asia. 3 Units.
Many of us have grown up eating "Asian" at home, with friends, on special occasions, or even without full awareness that Asian is what we were eating. This course situates the three major culinary traditions of East Asia--China, Japan, and Korea--in the histories and civilizations of the region, using food as an introduction to their rich repertoires of literature, art, language, philosophy, religion, and culture. It also situates these seemingly timeless gastronomies within local and global flows, social change, and ethical frameworks. Specifically, we will explore the traditional elements of Korean court food, and the transformation of this cuisine as a consequence of the Korean War and South Korea¿s subsequent globalizing economy; the intersection of traditional Japanese food with past and contemporary identities; and the evolution of Chinese cuisine that accompanies shifting attitudes about the environment, health, and well-being. Questions we will ask ourselves during the quarter include, what is "Asian" about Asian cuisine? How has the language of food changed? Is eating, and talking about eating, a gendered experience? How have changing views of the self and community shifted the conversation around the ethics and ecology of meat consumption?.
Same as: HUMCORE 22, JAPAN 118, KOREA 118

CHINA 118A. Food Culture in China: Past and Present. 2-5 Units.
This course situates the culinary traditions of China in the history and civilization of the region, using food as an introduction to its rich repertoires of literature, art, archaeology, language, philosophy, religion, and culture. It also situates these seemingly timeless gastronomies within local and global flows, social change, and ethical frameworks that question the moral imperatives driving these traditions.nStudents majoring or minoring in EALC must take course for 3 or more units.
Same as: CHINA 218A

CHINA 144. Science, Magic, and Religion in Early China. 3-5 Units.
If the categories we use to think about the world are products of particular cultural and historical experiences, what happens when we bring the categories of the modern West to bear on early China? In this seminar, we will examine early Chinese technologies designed to achieve ethical, physical, or political transformation, and technologies designed to interpret signs, in terms of three classical anthropological categories: science, magic, and religion. How may we apply science, magic, and religion to early China, and what problems might we encounter in doing so? What alternative terms do our sources present, and what questions might they allow us to ask? How was knowledge created in early China, and how do our categories shape the knowledge we create about early China?.
Same as: CHINA 244

CHINA 151. Popular Culture and Casino Capitalism in China. 3-4 Units.
Examination of different forms of Chinese popular culture used to gauge or control fate and uncertainty, from geomancy and qigong to ghost culture and mahjong. Ways in which Chinese are incorporating these cultural forms into the informal economy to get rich quick: rotating credit associations, stock market speculation, pyramid schemes, underground lotteries, counterfeiting. Impact of casino capitalism on Chinese culture and social life today.
Same as: CHINA 251

CHINA 151A. Chinese Music Performance. 1-2 Unit.
This class offers a unique opportunity to learn and perform Chinese music in the dynamic setting of Stanford's Chinese Music Ensemble. We will perform traditional Chinese music on a variety of Chinese instruments and study the fascinating history of Chinese music performance practice. Students will also work individually with music coaches. The course will promote an awareness of Chinese musical culture and is open to students of all levels of experience. Anyone with an interest in learning and performing Chinese music on Chinese instruments is welcome to join. Zero unit enrollment option available with instructor permission. May be repeated for credit for 15 total units. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.May be repeat for credit.

CHINA 151B. The Nature of Knowledge: Science and Literature in East Asia. 4-5 Units.
"The Nature of Knowledge" explores the intersections of science and humanities East Asia. It covers a broad geographic area (China, Japan, and Korea) along a long temporal space (14th century - present) to investigate how historical notions about the natural world, the human body, and social order defied, informed, and constructed our current categories of science and humanities. The course will make use of medical, geographic, and cosmological treatises from premodern East Asia, portrayals and uses of science in modern literature, film, and media, as well as theoretical and historical essays on the relationships between literature, science, and society.nnAs part of its exploration of science and the humanities in conjunction, the course addresses how understandings of nature are mediated through techniques of narrative, rhetoric, visualization, and demonstration. In the meantime, it also examines how the emergence of modern disciplinary "science" influenced the development of literary language, tropes, and techniques of subject development. This class will expose the ways that science has been mobilized for various ideological projects and to serve different interests, and will produce insights into contemporary debates about the sciences and humanities.
Same as: CHINA 251B, JAPAN 151B, JAPAN 251B, KOREA 151, KOREA 251

CHINA 152. Gods, Ghosts, and Ancestors: Anthropology of Chinese Folk Religion. 3-5 Units.

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Same as: CHINA 252

CHINA 153. Chinese Bodies, Chinese Selves. 3-5 Units.
Interdisciplinary. The body as a contested site of representational practices, identity politics, cultural values, and social norms. Body images, inscriptions, and practices in relation to health, morality, gender, sexuality, nationalism, consumerism, and global capitalism in China and Taiwan. Sources include anthropological, literary, and historical studies, and fiction and film. No knowledge of Chinese required.
Same as: CHINA 253

CHINA 154. What is Chinese Theater? The Formation of a Tradition. 3-4 Units.
A survey of Chinese drama from its origins to late imperial China. Explores theories of the origins of Chinese drama, contrasting theories with the documented beginnings of theater and its first texts. How traditions turned into "elite theater" in the Ming and Qing dynasties, and how esthetic norms and moral values went into the process of theatrical transformation.
Same as: CHINA 254

CHINA 155. The Culture of Entertainment in China. 3-4 Units.
Sophisticated, organized entertainment in China is evident at least as early as the second century B.C. in the court spectacles described in the early histories and in the depictions of jugglers, dancers and acrobats represented in tomb bas-reliefs. The importance attached to entertainment from ancient times both at court and in society at large is manifest not just in the establishment of imperial institutions such as the Music Bureau, but also in the appearance of large entertainment districts within the cities where people would invest extraordinary amount of resources in the pursuit of pleasure, and in small scale gatherings. The representation of play and pleasure in Chinese culture from a variety of sources (art, history, literature and performance) in different periods of Chinese history. The place of pleasure in Chinese culture, as well as ethical, socio-political and economical concerns. Held in old Knight Bldg., 521 Memorial Way, Rm. 102.
Same as: CHINA 255

CHINA 155A. Health, Politics, and Culture of Modern China. 4-5 Units.
One of the most generative regions for medical anthropology inquiry in recent years has been Asia. This seminar is designed to introduce upper division undergraduates and graduate students to the methodological hurdles, representational challenges, and intellectual rewards of investigating the intersections of health, politics, and culture in contemporary China.
Same as: ANTHRO 148, ANTHRO 248, CHINA 255A

CHINA 155B. Narrative and Storytelling in Premodern China. 4-5 Units.
In premodern China, individuals and groups told stories variously to philosophize and persuade, to commemorate and critique, to educate and entertain, to scandalize and to stimulate. In this class, we will trace the evolution of Chinese narrative storytelling through close readings of some of the most compelling stories in the Chinese tradition, including early philosophical anecdotes and historical accounts, medieval tales and religious performance pieces, and early modern short stories. In the process, we will come to appreciate how Chinese narrative storytelling evolved over time, dwelling on issues such as genre, authorship, textuality, and readership to understand how writers and readers used storytelling to navigate and negotiate the world around them, including issues related to gender and sexuality, social status, and political power.
Same as: CHINA 255B

CHINA 157. Science, Power, and Knowledge: East Asia to 1900. 3-5 Units.
In the early modern period, East Asian societies featured long-established institutions of learning and traditions of knowledge. This course examines the relationship between knowledge and power in East Asia societies prior to 1900. It explores how knowledge production operated in late imperial China (1550-1900), Chos'n Korea (1392-1910), and Tokugawa Japan (1600-1868). Among the themes addressed are: the state's role in patronizing science and knowledge; major intellectual movements; engagement with Western science and religion; East Asian statecraft; and East Asian understandings of space and geography. nTaking a holistic perspective, it places science and technology in 1) a social and cultural context 2) in relation to other bodies and fields of knowledge 3) in comparison to other societies in a similar historical time period. A socially embedded perspective on knowledge and science seeks to appreciate how politics, society, and knowledge are integrated, and in particular how science and knowledge can be both instruments and sites of political power. By exploring these links, the course will also illustrate how our modern disciplinary categories of natural science,social science and the humanities cannot be taken for granted and the areas of knowledge they cover can be deeply intertwined. nnThe course will also address these issues historically and across geographic regions in East Asia and beyond. The comparative lens and frameworks these perspectives can offer will bring an awareness of the diverse traditions of knowledge production in East Asia. Its examination of East Asian encounters with Western paradigms of knowledge throughout the early modern period will also illustrate how communication occurs across cultural, social, and linguistic barriers and how diverse world-views were managed in these encounters. These encounters of knowledge-exchange between Jesuit missionaries, Ming literati, Korean aristocrats, and Japanese doctors also show how cultural identities were constructed, reinforced, and challenged. These identities, expressed through the mastery of knowledge, are essential for understanding how East Asian reckoned with growing pressures to adopt Western industrial technology and military science in the late nineteenth century.
Same as: CHINA 257, HISTORY 294J, JAPAN 157, JAPAN 257, KOREA 157, KOREA 257

CHINA 157S. Tyranny and Resistance: East Asia's Political Culture and Tradition. 3-5 Units.
What is tyranny? When does political power cease to be legitimate and government become tyrannical? And what can individuals do in the face of tyranny? This course will explore East Asia's long political tradition through the problem of tyranny and its resistance. We will cover a wide range of material. We begin with how seminal political thinkers in East Asia, including Warring States philosophers such as Mencius and Han Feizi, understood the boundary between legitimate and illegitimate authority. We will also look at the strategies used by various political actors, including government officials, cultural or social elites, and common people, when they confronted what they perceived to be the unjust exercise political power, whether in the form of despotic monarchs, corrupt authorities, or general misrule. Our discussions will be wide-ranging. We will pay particular attention to how these historical examples from China, Korea, and Japan¿s past have resonated with modern and contemporary political discussions in contemporary East Asian societies.
Same as: JAPAN 157S, KOREA 157S

CHINA 158. Cultural Images in China-US Relations. 3-5 Units.
New interpretation of the history of China-U.S. relations, 1784-2008, using image studies. Attention to people-to-people communication, cultural interaction, and political imagination during different times and power structures. Discussion of change and continuity of cultural images in textual descriptions, visual materials, symbolic and virtual identities in historical context. Understand how people in China and the United States created, presented, interpreted, and remembered cultural images of each other and how these images affected and were affected by their foreign policies and bilateral relations.
Same as: CHINA 258

CHINA 159. Beijing and Shanghai: Twin Cities in Chinese History. 3-5 Units.
This course discusses a story of twin cities ¿ Beijing and Shanghai, from the imperial period to the present day. The historical movement of people, goods, knowledge, thoughts, technology and shifting of political power and cultural authority has closely linked the two cities together. No other two cities in the Chinese map have more communications, interactions, and mutual influences than Beijing and Shanghai. Indeed, geographic localities, ethnic traits, material lives, and foreign contacts have produced distinct cultural landscapes and patterns of urban development of the twin cities, which provide us with a good case of comparative studies. In Beijing and Shanghai, contemporary forces, including migration, industrialization, marketization, decentralization and globalization are transforming the urban societies. Both of them take center stage in China¿s drama of explosive growth and unprecedented changes. They continue to compete and influence each other in many ways.
Same as: CHINA 259

CHINA 159A. Maoism and the Chinese Communist Party. 4 Units.
One of the most significant moments in Chinese history during the twentieth century was the Chinese Communist Party¿s victory on the mainland in 1949. Nevertheless, it remains a puzzle to many people how the CCP unified China and brought an entirely new ideology to such a large population. This course seeks to answer such intensely debated questions through analyzing the CCP¿s origin and its development of Marxism and Leninism in China, CCP¿s rural revolution and land reform, thought reform among CCP members and intellectuals, and most importantly, Mao Zedong¿s writings. This course offers different or even contrasting perspectives on the Chinese Communist Revolution, such as intellectuals within and outside the Party, foreign journalists in China, as well as highest-level CCP leaders.nAll the readings of this course are primary sources produced during Marxist revolutions within and outside China. Part I introduces some of the most influential communist ¿creed¿ written by Karl Marx, Frederick Engels, and Vladimir Lenin. While there is little consensus among scholars to what degree we can call the Chinese communist revolution a Marxist revolution or a Leninist revolution, Marx¿s and Lenin¿s writings remain the guiding principles to many Chinese communist intellectuals. In Part II, Edgar Snow¿s most influential book Red Star Over China offers the most crucial first-hand perspective on the everyday life of key CCP leaders and the history of the early CCP. It is true that Snow¿s book is a highly romanticized version of the CCP¿s history, yet it offers the most vivid description of CCP¿s rural base in Northwest China and details on some of the most important historical events, such as the Long March. This book also provides valuable information on the ordinary people living in the Communist base. In Part III, we will focus entirely on Mao¿s writings and his interaction with other intellectuals from the May-Fourth period to the 1950s. These writings vividly show Mao¿s unique understanding of China¿s peasant problem, inner-Party struggles, and his vision about a new China. In Part IV, through the eyes of Li Zhisui, Mao¿s private doctor, we will examine how Mao¿s decisions changed the fate of China from 1949 to Mao¿s death in 1976. Parts I to IV build the intellectual and historical foundation for students of Chinese Studies to understand and interpret Mao¿s writings and thoughts.".
Same as: CHINA 259A

CHINA 160. Classical Poetry: Reading, Theory, Interpretation. 4 Units.
Introduction to the reading and interpretation of classical Chinese poetry, with attention to the language of poetry, aesthetics, expressive purposes, and social roles. Readings in Chinese. Prerequisite: three years of modern Chinese or equivalent.
Same as: CHINA 260

CHINA 161. Soldiers and Bandits in Chinese Culture. 3-5 Units.
Social roles and literary images of two groups on the margins of traditional Chinese society; historical and comparative perspectives.
Same as: CHINA 261

CHINA 162. Lyrical and Local Prose. 3-5 Units.
Informal and personal prose of Tang and Song dynasties, with special attention to lyrical expression (prose as close alternative to poetry) and local interest (e.g., in travel diaries). These new uses and styles of prose will be compared with more formal expository prose and with poetry written by the same authors, to better understand the distribution of expressive aims and effects. Prerequisite: Classical Chinese or advanced reading knowledge of Chinese.
Same as: CHINA 262

CHINA 163. Chinese Biographies of Women. 3-5 Units.
Generic and historical analysis of the two-millennia long biographical tradition inaugurated by Liu Xiang, ca. 79-8 B.C.E. Chinese women's history, intellectual history, historiography, and literary studies.
Same as: CHINA 263

CHINA 163A. Order, Patterns, and Disorder in Early China. 3 Units.
This course explores the human impulse of order-making and its limits in the specific context of Early China. Since antiquity, the Chinese civilization displayed constant efforts to understand the natural world and human society, to seek patterns from the numerous and the diverse, and to fathom individuals¿ positions in the world and the proper ways to respond to all its complexity. Such attempts manifested in a cosmology with an emphasis on the resonance between the human and the natural realms, the prescription of ideals for behaviors and morals, the persistent pursuit and celebration of refined patterns in expression, and the state¿s construction of order through policies and cultural projects of standardization. Yet, despite the efforts of order and control, there had always been a strong tendency of anarchy, unveiling how much the seemingly prevailing structures could not contain. The course will probe into ancient philosophy, dynastic histories, literature, and arts to trace these efforts of establishing order and their consequences. The materials will also lead us to contemplate the other side of the story: What was left out? What were the restrictions? What if one failed to conform? Were any advantages found in disorder? This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: HUMCORE 113

CHINA 164. Classical Chinese Rituals. 3-5 Units.
Meanings of rituals regarding death, wedding, war, and other activities; historical transformations of classical rituals throughout the premodern period; legacy of the Chinese ritual tradition. Sources include canonical texts.
Same as: CHINA 264

CHINA 166. Chinese Ci Poetry (Song Lyrics). 3-4 Units.
Analysis of the entertainment song ("ci") in 11th and 12th centuries, known for its treatment of romantic love and the affections. How do male writers represent love as experienced by men and by women in entertainment songs? What happens when a woman writes in this form, dominated by male authors? How does the form change from a low-status entertainment genre, widely viewed as frivolous, into a high literary form that excited writers about its new expressive potential? Prerequisite: Advanced reading knowledge of Chinese.
Same as: CHINA 266

CHINA 167. Ghost Stories and Other Strange Tales. 3-4 Units.
Study of the zhiguai tradition, with readings in landmark collections from different dynastic periods (e.g., Tang, Song, Qing). Consideration of the cultural significance as well as the literary qualities of this tradition of storytelling in China. Readings in English.
Same as: CHINA 267

CHINA 168. The Chinese Family. 3-5 Units.
History and literature. Institutional, ritual, affective, and symbolic aspects. Perspectives of gender, class, and social change.
Same as: CHINA 268

CHINA 169. Early Chinese Mythology. 3-5 Units.
The definition of a myth. Major myths of China prior to the rise of Buddhism and Daoism including: tales of the early sage kings such as Yu and the flood; depictions of deities in the underworld; historical myths; tales of immortals in relation to local cults; and tales of the patron deities of crafts.
Same as: CHINA 269

CHINA 170. Chinese Language, Culture, and Society. 2-5 Units.
Functions of languages in Chinese culture and society, origin of the Chinese language, genetic relations with neighboring languages, development of dialects, language contacts, evolution of Chinese writing, language policies in Greater China. Prerequisite: one quarter of Chinese 1 or 1B or equivalent recommended. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.
Same as: CHINA 270

CHINA 171. Love and Revenge. 2-4 Units.
Readings of Tang and Song period stories, anecdotal literature, poetry, and song lyrics on the themes of romantic love, unfaithfulness, and revenge. In a society of parental arranged marriage, romantic love (usually outside marriage) takes on its own special meaning, forms of expression, and dangers.
Same as: CHINA 271

CHINA 172. Female Divinities in China. 3-5 Units.
The role of powerful goddesses, such as the Queen Mother of the West, Guanyin, and Chen Jinggu, in Chinese religion. Imperial history to the present day. What roles goddesses played in the spirit world, how this related to the roles of human women, and why a civilization that excluded women from the public sphere granted them such a major, even dominant place, in the religious sphere. Readings in English-language secondary literature.
Same as: CHINA 272

CHINA 173. Manuscripts, Circulation of Texts, Printing. 3-4 Units.
History of texts before the advent of printing as well as during the early period of printing, focus on Tang and Song periods. Attention to the material existence of texts, their circulation, reading habits before and after printing, the balance between orality and writing, the role of memorization, and rewriting during textual transmission. Readings in English.
Same as: CHINA 273

CHINA 174. New Directions in the Study of Poetry and Literati Culture. 3-4 Units.
Inquiry into new approaches and interpretations of the poetic tradition in China in the context of cultural history. Readings in recent scholarship and criticism that situate poetry in print history, manuscript culture, gender studies, social history, etc. Readings in English. Reading knowledge of Chinese desirable but not required.
Same as: CHINA 274

CHINA 175. Constructing National History in East Asian Archaeology. 3-5 Units.
Archaeological studies in contemporary East Asia share a common concern, to contribute to building a national narrative and cultural identity. This course focuses on case studies from China, Korea, and Japan, examining the influence of particular social-political contexts, such as nationalism, on the practice of archaeology in modern times.
Same as: ARCHLGY 135, ARCHLGY 235, CHINA 275

CHINA 176. Emergence of Chinese Civilization from Caves to Palaces. 3-4 Units.
Introduces processes of cultural evolution from the Paleolithic to the Three Dynasties in China. By examining archaeological remains, ancient inscriptions, and traditional texts, four major topics will be discussed: origins of modern humans, beginnings of agriculture, development of social stratification, and emergence of states and urbanism.
Same as: ARCHLGY 111, CHINA 276

CHINA 178. Lives of Confucius. 3-5 Units.
This course examines the transformation of the images of Confucius (551-479 BCE) from his own time to the present day. Major topics include: Confucius and his rivals / critics, the making of Confucius the "Uncrowned King," his apotheosis as China's cultural symbol and civilization's greatest sage, and twists and turns in his modern fate. Comparisons will be made with the development of images of Socrates, Jesus, and other important cultural figures. NOTE: In order for course to count towards major or minor, undergrads must enroll in a minimum of 3 units or higher.
Same as: CHINA 278

CHINA 183A. China's Dynastic Founders. 3-5 Units.
This course examines the lives of China's dynastic founders, among whom we find the most influential, the most celebrated, the most complicated, and the most controversial rulers in premodern Chinese history. We seek to understand the ideas of leadership and legitimacy, the relationships among statecraft, military might, and moral virtue, and the importance of precedents and exemplars in traditional Chinese political culture. Primary readings are the biographies of the dynastic founders in the official histories, supplemented by the representations of these rulers in other genres of writings.
Same as: CHINA 283

CHINA 191. The Structure of Modern Chinese. 2-4 Units.
Introduce to students the basic grammar of Standard Modern Chinese in comparison to English. Students learn about the logic of the Chinese in communicating ideas and events without grammatical markers like plurality, definiteness, tense, subject/object, etc, as well as common uses of verbs and adjectives that are totally different from those in English. Prerequisite: CHINLANG 3 or equivalent, or consent of instructor.
Same as: CHINA 291

CHINA 192. The History of Chinese. 4 Units.
Focuses on syntactic and semantic changes in Chinese over the last three millennia by using electronic corpus of vernacular texts from different times.
Same as: CHINA 292

CHINA 198C. Senior Research. 1 Unit.
EALC students writing a Senior Capstone Essay who wish to do research with their adviser may enroll in this course for 1 unit, for one quarter. May be repeat for credit.
Same as: Capstone Essay

CHINA 198H. Senior Research. 2-5 Units.
EALC seniors or juniors pursuing honors research should sign up for this course under their faculty adviser for research credit.
Same as: Honors Thesis

CHINA 199. Individual Reading in Chinese. 1-4 Unit.
Asian Language majors only. Prerequisite: CHINLANG 103 or consent of instructor. Units by arrangement.

CHINA 200. Directed Reading in Chinese. 1-12 Unit.
Independent studies under the direction of a faculty member for which academic credit may properly be allowed. Research will require in-person access to archival materials in Hoover Institution, Stanford's East Asia Library, and/or Branner Map Collections. For EALC students; non-EALC students, should seek instructor permission before enrolling in section.

CHINA 201. Proseminar: Bibliographic and Research Methods in Chinese Studies. 3-5 Units.
Bibliographic, pedagogical, and research methods in Chinese studies. Prerequisite: 127/207 or equivalent.

CHINA 205. Beginning Classical Chinese, First Quarter. 2-5 Units.
The goal is develop students' reading knowledge of classical Chinese, including basic grammar and commonly used vocabulary. Students will also learn concepts and ideas fundamental in Chinese culture involving family, human relationships, governance, learning, life/death, philosophy, etc. through reading canonical classical Chinese texts. Prerequisite: CHINLANG 23 or equivalent.
Same as: CHINA 105

CHINA 206. Beginning Classical Chinese, Second Quarter. 2-5 Units.
Continue to develop students' reading knowledge of classical Chinese, including basic grammar and commonly used vocabulary. Students will learn more concepts and ideas fundamental in Chinese culture involving family, human relationships, governance, learning, life/death, philosophy, etc. through reading canonical classical Chinese texts. Prerequisite: CHINA 105/205 or equivalent.
Same as: CHINA 106

CHINA 207. Beginning Classical Chinese, Third Quarter. 2-5 Units.
Goal is reading knowledge of classical Chinese. Basic grammar and commonly used vocabulary. Students with no background in classical Chinese who are taking 127/207 to satisfy Chinese major requirements must begin with 125/205. Prerequisite: CHINLANG 126/206 or equivalent.
Same as: CHINA 107

CHINA 208. Advanced Classical Chinese: Philosophical Texts. 3-5 Units.
Prerequisite: CHINA 207 or equivalent.

CHINA 209. Advanced Classical Chinese: Historical Narration. 2-5 Units.
Students must have taken CHINA 107/207, or have received permission from instructor or department to take this course.

CHINA 210. Advanced Classical Chinese: Literary Essays. 2-5 Units.
Readings and grammatical analyses of literary essays thoughout imperial China. Prerequisite: CHINLIT 127/207 or equivalent.

CHINA 211. Literature in 20th-Century China. 4-5 Units.
(Graduate students register for 211.) How modern Chinese culture evolved from tradition to modernity; the century-long drive to build a modern nation state and to carry out social movements and political reforms. How the individual developed modern notions of love, affection, beauty, and moral relations with community and family. Sources include fiction and film clips. WIM course.
Same as: CHINA 111

CHINA 212. Tiananmen Square: History, Literature, Iconography. 3-5 Units.
Multidisciplinary. Literary and artistic representations of this site of political and ideological struggles throughout the 20th century. Tiananmen-themed creative, documentary, and scholarly works that shed light on the dynamics and processes of modern Chinese culture and politics. No knowledge of Chinese required. Repeat for credit.
Same as: CHINA 112

CHINA 212A. Asian Screen Cultures. 3-5 Units.
Asian screen culture, ranging from cinema to online games, has (re)shaped the global and national/regional imaginings of Asia. The Post-Cold War intensification of intra-Asian interactions has precipitated the rise of a Pan-Asian regional identity wherein the nation-state is not yet obsolete. What role does screen culture plays in the border-crossing interplay among languages, ideologies, aesthetics, and affect? How does the converging media of screen culture capture local/global desires and propel the history of transformation of sign systems from the written words to visual moving images in a digital time? How do we understand the aesthetic, storytelling, and politics of Asian screen cultures vis-à-vis its historical and social context? While exploring these transnational and transdisciplinary questions, this course will deal with topical issues of Pan-Asian identity, (trans)nationalism, (un)translatability, commodity fetishism, locality and globality, technophobia, and politics of gender. Students will learn how to think and write about screen cultures of East Asia in particular and of our world of screens in general.
Same as: CHINA 112A, JAPAN 112A, JAPAN 212A, KOREA 112, KOREA 212

CHINA 213. Love, Passion, and Politics in Chinese Film. 4-5 Units.
Focusing on the emotional structure of love and passion in Chinese films, the course will investigate the structures of feelings and moral relations in modern Chinese history from the 1940s till the present. Examining the interplay between private desire, romantic sentiment, family relations, and political passion, we will explore how men and women in China grapple with emotional and social issues in modern transformations. We will consider romantic love, the uplifting of sexuality into political passion, the intertwining of aesthetic experience with politics, nostalgia in the disenchanted modern world, and the tensions between the individual's self-realization and the community's agenda. Students will learn to "read" films as a work of art and understand how film works as expression of desire, impulse, emotional connections, and communal bonding during times of crisis. Course work includes a midterm exam (25%) and a final exam (25%), a weekly 250-300 word reflection on the film of the week (10%), participation and oral presentation in class (10%), and a paper of 5-7 pages to be submitted after the midterm week (30%).nStarting from the second week, film screening will begin 6: 30 pm Monday before classes on Tuesday and Thursday. The course does not encourage private viewing. At least 5 dinners will be provided for movie-screening events.
Same as: CHINA 113

CHINA 215. Sex, Gender, and Power in Modern China. 3-5 Units.
Investigates how sex, gender, and power are entwined in the Chinese experience of modernity. Topics include anti-footbinding campaigns, free love/free sex, women's mobilization in revolution and war, the new Marriage Law of 1950, Mao's iron girls, postsocialist celebrations of sensuality, and emergent queer politics. Readings range from feminist theory to China-focused historiography, ethnography, memoir, biography, fiction, essay, and film. All course materials are in English.
Same as: CHINA 115, FEMGEN 150, FEMGEN 250

CHINA 216. Chinese Cultural Revolution: Performance, Politics, and Aesthetics. 4 Units.
Events, arts, films, and operas of the Chinese Cultural Revolution. Analysis of political passion, aesthetics, and psychology of mass movements. Places the Cultural Revolution in the long-range context of art, social movements, and politics. Chinese language is not required.
Same as: CHINA 116

CHINA 218A. Food Culture in China: Past and Present. 2-5 Units.
This course situates the culinary traditions of China in the history and civilization of the region, using food as an introduction to its rich repertoires of literature, art, archaeology, language, philosophy, religion, and culture. It also situates these seemingly timeless gastronomies within local and global flows, social change, and ethical frameworks that question the moral imperatives driving these traditions.nStudents majoring or minoring in EALC must take course for 3 or more units.
Same as: CHINA 118A

CHINA 230. Image and Text in Chinese Painting. 3-5 Units.
An examination of many types of interactions between images and texts in Chinese painting. These include poetic lines inscribed on paintings (as response or as a theme given to the artist to paint), paintings that emulate or transform ancient poetic couplets, or illustrate poetic and literary narratives, and calligraphic inscriptions. Attention will be given both to comparative perspectives and to the special aesthetic and intellectual consequences that the conjunction of the literary and visual modes give to Chinese artistic expression. [Undergraduate enrollment with consent of one of the instructors].
Same as: ARTHIST 230B, ARTHIST 430B, CHINA 430

CHINA 244. Science, Magic, and Religion in Early China. 3-5 Units.
If the categories we use to think about the world are products of particular cultural and historical experiences, what happens when we bring the categories of the modern West to bear on early China? In this seminar, we will examine early Chinese technologies designed to achieve ethical, physical, or political transformation, and technologies designed to interpret signs, in terms of three classical anthropological categories: science, magic, and religion. How may we apply science, magic, and religion to early China, and what problems might we encounter in doing so? What alternative terms do our sources present, and what questions might they allow us to ask? How was knowledge created in early China, and how do our categories shape the knowledge we create about early China?.
Same as: CHINA 144

CHINA 251. Popular Culture and Casino Capitalism in China. 3-4 Units.
Examination of different forms of Chinese popular culture used to gauge or control fate and uncertainty, from geomancy and qigong to ghost culture and mahjong. Ways in which Chinese are incorporating these cultural forms into the informal economy to get rich quick: rotating credit associations, stock market speculation, pyramid schemes, underground lotteries, counterfeiting. Impact of casino capitalism on Chinese culture and social life today.
Same as: CHINA 151

CHINA 251B. The Nature of Knowledge: Science and Literature in East Asia. 4-5 Units.
"The Nature of Knowledge" explores the intersections of science and humanities East Asia. It covers a broad geographic area (China, Japan, and Korea) along a long temporal space (14th century - present) to investigate how historical notions about the natural world, the human body, and social order defied, informed, and constructed our current categories of science and humanities. The course will make use of medical, geographic, and cosmological treatises from premodern East Asia, portrayals and uses of science in modern literature, film, and media, as well as theoretical and historical essays on the relationships between literature, science, and society.nnAs part of its exploration of science and the humanities in conjunction, the course addresses how understandings of nature are mediated through techniques of narrative, rhetoric, visualization, and demonstration. In the meantime, it also examines how the emergence of modern disciplinary "science" influenced the development of literary language, tropes, and techniques of subject development. This class will expose the ways that science has been mobilized for various ideological projects and to serve different interests, and will produce insights into contemporary debates about the sciences and humanities.
Same as: CHINA 151B, JAPAN 151B, JAPAN 251B, KOREA 151, KOREA 251

CHINA 252. Gods, Ghosts, and Ancestors: Anthropology of Chinese Folk Religion. 3-5 Units.
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Same as: CHINA 152

CHINA 253. Chinese Bodies, Chinese Selves. 3-5 Units.
Interdisciplinary. The body as a contested site of representational practices, identity politics, cultural values, and social norms. Body images, inscriptions, and practices in relation to health, morality, gender, sexuality, nationalism, consumerism, and global capitalism in China and Taiwan. Sources include anthropological, literary, and historical studies, and fiction and film. No knowledge of Chinese required.
Same as: CHINA 153

CHINA 254. What is Chinese Theater? The Formation of a Tradition. 3-4 Units.
A survey of Chinese drama from its origins to late imperial China. Explores theories of the origins of Chinese drama, contrasting theories with the documented beginnings of theater and its first texts. How traditions turned into "elite theater" in the Ming and Qing dynasties, and how esthetic norms and moral values went into the process of theatrical transformation.
Same as: CHINA 154

CHINA 254A. Shaping the Theater: Two Foundational Plays of Early Chinese Drama. 2-5 Units.
In this class we are going to read the two earliest plays in the Chinese southern dramatic tradition (nanxi) for what they can tell us of the foundation idea of a theater. We will examine Top Graduate Zhang Xie and The Lute, two tales of ambitious families and students, love, betrayal, strained family relations and even attempted murder. We will analyze their structure (music, act division and role organization), as well as the social and moral purpose of drama. Our discussion will focus on what these texts tell us about the purpose of theater, the values it attempts to promote and its social criticism. * Pre-requisite, one year of classical Chinese or equivalent.
Same as: CHINA 354A

CHINA 255. The Culture of Entertainment in China. 3-4 Units.
Sophisticated, organized entertainment in China is evident at least as early as the second century B.C. in the court spectacles described in the early histories and in the depictions of jugglers, dancers and acrobats represented in tomb bas-reliefs. The importance attached to entertainment from ancient times both at court and in society at large is manifest not just in the establishment of imperial institutions such as the Music Bureau, but also in the appearance of large entertainment districts within the cities where people would invest extraordinary amount of resources in the pursuit of pleasure, and in small scale gatherings. The representation of play and pleasure in Chinese culture from a variety of sources (art, history, literature and performance) in different periods of Chinese history. The place of pleasure in Chinese culture, as well as ethical, socio-political and economical concerns. Held in old Knight Bldg., 521 Memorial Way, Rm. 102.
Same as: CHINA 155

CHINA 255A. Health, Politics, and Culture of Modern China. 4-5 Units.
One of the most generative regions for medical anthropology inquiry in recent years has been Asia. This seminar is designed to introduce upper division undergraduates and graduate students to the methodological hurdles, representational challenges, and intellectual rewards of investigating the intersections of health, politics, and culture in contemporary China.
Same as: ANTHRO 148, ANTHRO 248, CHINA 155A

CHINA 255B. Narrative and Storytelling in Premodern China. 4-5 Units.
In premodern China, individuals and groups told stories variously to philosophize and persuade, to commemorate and critique, to educate and entertain, to scandalize and to stimulate. In this class, we will trace the evolution of Chinese narrative storytelling through close readings of some of the most compelling stories in the Chinese tradition, including early philosophical anecdotes and historical accounts, medieval tales and religious performance pieces, and early modern short stories. In the process, we will come to appreciate how Chinese narrative storytelling evolved over time, dwelling on issues such as genre, authorship, textuality, and readership to understand how writers and readers used storytelling to navigate and negotiate the world around them, including issues related to gender and sexuality, social status, and political power.
Same as: CHINA 155B

CHINA 257. Science, Power, and Knowledge: East Asia to 1900. 3-5 Units.
In the early modern period, East Asian societies featured long-established institutions of learning and traditions of knowledge. This course examines the relationship between knowledge and power in East Asia societies prior to 1900. It explores how knowledge production operated in late imperial China (1550-1900), Chos'n Korea (1392-1910), and Tokugawa Japan (1600-1868). Among the themes addressed are: the state's role in patronizing science and knowledge; major intellectual movements; engagement with Western science and religion; East Asian statecraft; and East Asian understandings of space and geography. nTaking a holistic perspective, it places science and technology in 1) a social and cultural context 2) in relation to other bodies and fields of knowledge 3) in comparison to other societies in a similar historical time period. A socially embedded perspective on knowledge and science seeks to appreciate how politics, society, and knowledge are integrated, and in particular how science and knowledge can be both instruments and sites of political power. By exploring these links, the course will also illustrate how our modern disciplinary categories of natural science,social science and the humanities cannot be taken for granted and the areas of knowledge they cover can be deeply intertwined. nnThe course will also address these issues historically and across geographic regions in East Asia and beyond. The comparative lens and frameworks these perspectives can offer will bring an awareness of the diverse traditions of knowledge production in East Asia. Its examination of East Asian encounters with Western paradigms of knowledge throughout the early modern period will also illustrate how communication occurs across cultural, social, and linguistic barriers and how diverse world-views were managed in these encounters. These encounters of knowledge-exchange between Jesuit missionaries, Ming literati, Korean aristocrats, and Japanese doctors also show how cultural identities were constructed, reinforced, and challenged. These identities, expressed through the mastery of knowledge, are essential for understanding how East Asian reckoned with growing pressures to adopt Western industrial technology and military science in the late nineteenth century.
Same as: CHINA 157, HISTORY 294J, JAPAN 157, JAPAN 257, KOREA 157, KOREA 257

CHINA 258. Cultural Images in China-US Relations. 3-5 Units.
New interpretation of the history of China-U.S. relations, 1784-2008, using image studies. Attention to people-to-people communication, cultural interaction, and political imagination during different times and power structures. Discussion of change and continuity of cultural images in textual descriptions, visual materials, symbolic and virtual identities in historical context. Understand how people in China and the United States created, presented, interpreted, and remembered cultural images of each other and how these images affected and were affected by their foreign policies and bilateral relations.
Same as: CHINA 158

CHINA 259. Beijing and Shanghai: Twin Cities in Chinese History. 3-5 Units.
This course discusses a story of twin cities ¿ Beijing and Shanghai, from the imperial period to the present day. The historical movement of people, goods, knowledge, thoughts, technology and shifting of political power and cultural authority has closely linked the two cities together. No other two cities in the Chinese map have more communications, interactions, and mutual influences than Beijing and Shanghai. Indeed, geographic localities, ethnic traits, material lives, and foreign contacts have produced distinct cultural landscapes and patterns of urban development of the twin cities, which provide us with a good case of comparative studies. In Beijing and Shanghai, contemporary forces, including migration, industrialization, marketization, decentralization and globalization are transforming the urban societies. Both of them take center stage in China¿s drama of explosive growth and unprecedented changes. They continue to compete and influence each other in many ways.
Same as: CHINA 159

CHINA 259A. Maoism and the Chinese Communist Party. 4 Units.
One of the most significant moments in Chinese history during the twentieth century was the Chinese Communist Party¿s victory on the mainland in 1949. Nevertheless, it remains a puzzle to many people how the CCP unified China and brought an entirely new ideology to such a large population. This course seeks to answer such intensely debated questions through analyzing the CCP¿s origin and its development of Marxism and Leninism in China, CCP¿s rural revolution and land reform, thought reform among CCP members and intellectuals, and most importantly, Mao Zedong¿s writings. This course offers different or even contrasting perspectives on the Chinese Communist Revolution, such as intellectuals within and outside the Party, foreign journalists in China, as well as highest-level CCP leaders.nAll the readings of this course are primary sources produced during Marxist revolutions within and outside China. Part I introduces some of the most influential communist ¿creed¿ written by Karl Marx, Frederick Engels, and Vladimir Lenin. While there is little consensus among scholars to what degree we can call the Chinese communist revolution a Marxist revolution or a Leninist revolution, Marx¿s and Lenin¿s writings remain the guiding principles to many Chinese communist intellectuals. In Part II, Edgar Snow¿s most influential book Red Star Over China offers the most crucial first-hand perspective on the everyday life of key CCP leaders and the history of the early CCP. It is true that Snow¿s book is a highly romanticized version of the CCP¿s history, yet it offers the most vivid description of CCP¿s rural base in Northwest China and details on some of the most important historical events, such as the Long March. This book also provides valuable information on the ordinary people living in the Communist base. In Part III, we will focus entirely on Mao¿s writings and his interaction with other intellectuals from the May-Fourth period to the 1950s. These writings vividly show Mao¿s unique understanding of China¿s peasant problem, inner-Party struggles, and his vision about a new China. In Part IV, through the eyes of Li Zhisui, Mao¿s private doctor, we will examine how Mao¿s decisions changed the fate of China from 1949 to Mao¿s death in 1976. Parts I to IV build the intellectual and historical foundation for students of Chinese Studies to understand and interpret Mao¿s writings and thoughts.".
Same as: CHINA 159A

CHINA 260. Classical Poetry: Reading, Theory, Interpretation. 4 Units.
Introduction to the reading and interpretation of classical Chinese poetry, with attention to the language of poetry, aesthetics, expressive purposes, and social roles. Readings in Chinese. Prerequisite: three years of modern Chinese or equivalent.
Same as: CHINA 160

CHINA 261. Soldiers and Bandits in Chinese Culture. 3-5 Units.
Social roles and literary images of two groups on the margins of traditional Chinese society; historical and comparative perspectives.
Same as: CHINA 161

CHINA 262. Lyrical and Local Prose. 3-5 Units.
Informal and personal prose of Tang and Song dynasties, with special attention to lyrical expression (prose as close alternative to poetry) and local interest (e.g., in travel diaries). These new uses and styles of prose will be compared with more formal expository prose and with poetry written by the same authors, to better understand the distribution of expressive aims and effects. Prerequisite: Classical Chinese or advanced reading knowledge of Chinese.
Same as: CHINA 162

CHINA 263. Chinese Biographies of Women. 3-5 Units.
Generic and historical analysis of the two-millennia long biographical tradition inaugurated by Liu Xiang, ca. 79-8 B.C.E. Chinese women's history, intellectual history, historiography, and literary studies.
Same as: CHINA 163

CHINA 264. Classical Chinese Rituals. 3-5 Units.
Meanings of rituals regarding death, wedding, war, and other activities; historical transformations of classical rituals throughout the premodern period; legacy of the Chinese ritual tradition. Sources include canonical texts.
Same as: CHINA 164

CHINA 265. Major Figures in Classical Chinese Poetry. 2-5 Units.
This year the course will focus on Su Shi (Su Dongpo), the great 11th century writer. We will look into all the forms he wrote in (3 kinds of poetry, formal prose, informal notes on "things," miracle tales, letters to family and friends, etc.) to get a sense of the range of his interests and expressive outlets. We will also consider the balance between his private life and public persona, the effects that political persecution had on him, and his exploration of the linkage between poetry and the visual arts (painting, calligraphy).
Same as: CHINA 365

CHINA 266. Chinese Ci Poetry (Song Lyrics). 3-4 Units.
Analysis of the entertainment song ("ci") in 11th and 12th centuries, known for its treatment of romantic love and the affections. How do male writers represent love as experienced by men and by women in entertainment songs? What happens when a woman writes in this form, dominated by male authors? How does the form change from a low-status entertainment genre, widely viewed as frivolous, into a high literary form that excited writers about its new expressive potential? Prerequisite: Advanced reading knowledge of Chinese.
Same as: CHINA 166

CHINA 267. Ghost Stories and Other Strange Tales. 3-4 Units.
Study of the zhiguai tradition, with readings in landmark collections from different dynastic periods (e.g., Tang, Song, Qing). Consideration of the cultural significance as well as the literary qualities of this tradition of storytelling in China. Readings in English.
Same as: CHINA 167

CHINA 268. The Chinese Family. 3-5 Units.
History and literature. Institutional, ritual, affective, and symbolic aspects. Perspectives of gender, class, and social change.
Same as: CHINA 168

CHINA 269. Early Chinese Mythology. 3-5 Units.
The definition of a myth. Major myths of China prior to the rise of Buddhism and Daoism including: tales of the early sage kings such as Yu and the flood; depictions of deities in the underworld; historical myths; tales of immortals in relation to local cults; and tales of the patron deities of crafts.
Same as: CHINA 169

CHINA 270. Chinese Language, Culture, and Society. 2-5 Units.
Functions of languages in Chinese culture and society, origin of the Chinese language, genetic relations with neighboring languages, development of dialects, language contacts, evolution of Chinese writing, language policies in Greater China. Prerequisite: one quarter of Chinese 1 or 1B or equivalent recommended. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.
Same as: CHINA 170

CHINA 271. Love and Revenge. 2-4 Units.
Readings of Tang and Song period stories, anecdotal literature, poetry, and song lyrics on the themes of romantic love, unfaithfulness, and revenge. In a society of parental arranged marriage, romantic love (usually outside marriage) takes on its own special meaning, forms of expression, and dangers.
Same as: CHINA 171

CHINA 272. Female Divinities in China. 3-5 Units.
The role of powerful goddesses, such as the Queen Mother of the West, Guanyin, and Chen Jinggu, in Chinese religion. Imperial history to the present day. What roles goddesses played in the spirit world, how this related to the roles of human women, and why a civilization that excluded women from the public sphere granted them such a major, even dominant place, in the religious sphere. Readings in English-language secondary literature.
Same as: CHINA 172

CHINA 273. Manuscripts, Circulation of Texts, Printing. 3-4 Units.
History of texts before the advent of printing as well as during the early period of printing, focus on Tang and Song periods. Attention to the material existence of texts, their circulation, reading habits before and after printing, the balance between orality and writing, the role of memorization, and rewriting during textual transmission. Readings in English.
Same as: CHINA 173

CHINA 274. New Directions in the Study of Poetry and Literati Culture. 3-4 Units.
Inquiry into new approaches and interpretations of the poetic tradition in China in the context of cultural history. Readings in recent scholarship and criticism that situate poetry in print history, manuscript culture, gender studies, social history, etc. Readings in English. Reading knowledge of Chinese desirable but not required.
Same as: CHINA 174

CHINA 275. Constructing National History in East Asian Archaeology. 3-5 Units.
Archaeological studies in contemporary East Asia share a common concern, to contribute to building a national narrative and cultural identity. This course focuses on case studies from China, Korea, and Japan, examining the influence of particular social-political contexts, such as nationalism, on the practice of archaeology in modern times.
Same as: ARCHLGY 135, ARCHLGY 235, CHINA 175

CHINA 276. Emergence of Chinese Civilization from Caves to Palaces. 3-4 Units.
Introduces processes of cultural evolution from the Paleolithic to the Three Dynasties in China. By examining archaeological remains, ancient inscriptions, and traditional texts, four major topics will be discussed: origins of modern humans, beginnings of agriculture, development of social stratification, and emergence of states and urbanism.
Same as: ARCHLGY 111, CHINA 176

CHINA 277. Painting, Poetry, and Calligraphy: Word and Image Studies. 2-5 Units.
This course examines the rich interplay of word and image in Chinese culture. Topics include the coexistence of painting, poem, and calligraphy in a single work of art, paintings inspired by poems and visa versa, the ways calligraphy gets written about, and painting criticism. The course serves as an introduction to field of Chinese word and image studies. It will be co-taught by specialists in Chinese literature and art.
Same as: CHINA 377

CHINA 278. Lives of Confucius. 3-5 Units.
This course examines the transformation of the images of Confucius (551-479 BCE) from his own time to the present day. Major topics include: Confucius and his rivals / critics, the making of Confucius the "Uncrowned King," his apotheosis as China's cultural symbol and civilization's greatest sage, and twists and turns in his modern fate. Comparisons will be made with the development of images of Socrates, Jesus, and other important cultural figures. NOTE: In order for course to count towards major or minor, undergrads must enroll in a minimum of 3 units or higher.
Same as: CHINA 178

CHINA 279. For Love of Country: National Narratives in Chinese Literature and Film. 3-5 Units.
Explores the nation as it is constructed, deconstructed, and continuously contested in novels, short stories, films, and other media from the second half of the 20th century in mainland China and Taiwan. Asks how the trope of the nation and the ideology of nationalism mediate the relationships between politics and aesthetics. Explores the nation's internal fault lines of gender, ethnicity, geography, language, and citizenship.
Same as: CHINA 379

CHINA 283. China's Dynastic Founders. 3-5 Units.
This course examines the lives of China's dynastic founders, among whom we find the most influential, the most celebrated, the most complicated, and the most controversial rulers in premodern Chinese history. We seek to understand the ideas of leadership and legitimacy, the relationships among statecraft, military might, and moral virtue, and the importance of precedents and exemplars in traditional Chinese political culture. Primary readings are the biographies of the dynastic founders in the official histories, supplemented by the representations of these rulers in other genres of writings.
Same as: CHINA 183A

CHINA 288. Modern China Studies: State of the Field. 3-5 Units.
This is a survey course designed to acquaint master¿s and doctoral students in East Asian Studies with the latest English-language scholarship on modern China, broadly defined, across the humanities and interpretive social sciences. Each time the course is offered (once every two or three years), the disciplinary emphasis shifts slightly and the readings are completely different. The course may be taken twice.
Same as: CHINA 388

CHINA 289. The Poetics and Politics of Affect in Modern China. 3-5 Units.
The role of affect in modern Chinese aesthetics and politics. Cultural and social theories of affect (love, hate, fear, grief, ressentiment, rage, sympathy, sincerity, shame, and nostalgia); affective discourses across agenres and media including fiction, poetry, film, journalism, and television; and mass social movements such as protest, uprising, and revolution. Advanced undergraduates requires consent of instructor. Recommended: reading knowledge of Chinese.

CHINA 291. The Structure of Modern Chinese. 2-4 Units.
Introduce to students the basic grammar of Standard Modern Chinese in comparison to English. Students learn about the logic of the Chinese in communicating ideas and events without grammatical markers like plurality, definiteness, tense, subject/object, etc, as well as common uses of verbs and adjectives that are totally different from those in English. Prerequisite: CHINLANG 3 or equivalent, or consent of instructor.
Same as: CHINA 191

CHINA 292. The History of Chinese. 4 Units.
Focuses on syntactic and semantic changes in Chinese over the last three millennia by using electronic corpus of vernacular texts from different times.
Same as: CHINA 192

CHINA 299. Master's Thesis or Translation. 2-5 Units.
A total of 5 units taken in one or more quarters.

CHINA 340. Chinese Justice: Law, Morality, and Literature. 2-5 Units.
This course explores the relationship between law and morality in Chinese literature, culture, and society. Readings include court case romances, crime plays, detective novels, and legal dramas from traditional era and modern and contemporary periods. Prior coursework in Chinese history, civilization, or literature is recommended.

CHINA 354A. Shaping the Theater: Two Foundational Plays of Early Chinese Drama. 2-5 Units.
In this class we are going to read the two earliest plays in the Chinese southern dramatic tradition (nanxi) for what they can tell us of the foundation idea of a theater. We will examine Top Graduate Zhang Xie and The Lute, two tales of ambitious families and students, love, betrayal, strained family relations and even attempted murder. We will analyze their structure (music, act division and role organization), as well as the social and moral purpose of drama. Our discussion will focus on what these texts tell us about the purpose of theater, the values it attempts to promote and its social criticism. * Pre-requisite, one year of classical Chinese or equivalent.
Same as: CHINA 254A

CHINA 365. Major Figures in Classical Chinese Poetry. 2-5 Units.
This year the course will focus on Su Shi (Su Dongpo), the great 11th century writer. We will look into all the forms he wrote in (3 kinds of poetry, formal prose, informal notes on "things," miracle tales, letters to family and friends, etc.) to get a sense of the range of his interests and expressive outlets. We will also consider the balance between his private life and public persona, the effects that political persecution had on him, and his exploration of the linkage between poetry and the visual arts (painting, calligraphy).
Same as: CHINA 265

CHINA 369. Late Imperial Chinese Fiction. 2-5 Units.
Primary works examined include Jin Ping Mei, Xingshi yinyuan zhuan, Hongloumeng, Qilu deng, Rulin waishi, and Ernu yingxiong zhuan. Secondary readings focus on social dimensions of the Chinese novel (ca. 1600-1850), but students may explore other aspects of the texts in their presentations and research papers. Comparisons with the English novel, particularly on the rise of the novel and the advent of modernity.

CHINA 371. Critical Theory and Ecology: A Cross-Cultural Perspective. 2-5 Units.
This class will bring together aesthetics, politics, and art around ecological questions. We will survey the key themes in ecocritical humanities and critiques of anthropocentrism by reading selected chapters from Literature and the Environment (Timothy Clark). We will move on to the Marxist eco critique of capitalist economy, human alienation from nature, alienated labor as well as Frankfurt school critiques of instrumental rationality. Major readings include The Enemy of Nature (Kovel), Creating an Ecological Society (Magdofff and Williams), chapters from The Robbery of Nature (Foster and Clark), and essays by Adorno and Benjamin. Taking a comparative perspective, we will study Chinese eco-narratives such as Waste Tide (Chen Qiufan) and Unfolding Beijing (Hao Jingfang).nnChinese is not required. PhD students are required to write a term paper of 20-25 pages. MA and undergraduate students will write two essays of 8 pages in response to the questions.n nTexts to be purchased. Literature and the Environment (Timothy Clark); Creating an Ecological Society (Magdofff and Williams); The Robbery of Nature (Foster and Clark). The rest of readings are available on Canvas.
Same as: COMPLIT 371

CHINA 376. Methods, Theories, and Practice in Chinese Archaeology. 2-5 Units.
This course is designed for graduate students who are interested in Chinese archaeology. We will discuss the current issues in the discipline, particularly related to archaeological research on food and foodways. We will conduct experimental study and laboratory analyses to investigate ancient human behavior in food procurement, preparation, and consumption. The archaeological methods include analyses of use-wear on stone tools and various microbotanical remains (starch, phytoliths, etc.) on artifacts.
Same as: ARCHLGY 376

CHINA 377. Painting, Poetry, and Calligraphy: Word and Image Studies. 2-5 Units.
This course examines the rich interplay of word and image in Chinese culture. Topics include the coexistence of painting, poem, and calligraphy in a single work of art, paintings inspired by poems and visa versa, the ways calligraphy gets written about, and painting criticism. The course serves as an introduction to field of Chinese word and image studies. It will be co-taught by specialists in Chinese literature and art.
Same as: CHINA 277

CHINA 378. Li Qingzhao. 2-4 Units.
This course examines the writings and reception history of Li Qingzhao (1084-1150s), the most renowned woman writer of imperial China. We will read her song lyrics (ci), the most celebrated form of her writings, as well as several of her poems in the shi form and her various prose writings as well. The singularity of her work as a poet and critic will be brought out through comparison with other writers of her day.nnnAttention will also be given to the complicated reception history of her work, from her own day down through late imperial times and into the twentieth century. This history is inseparable from controversies surrounding her conduct and changing notions of womanly virtue in the Ming-Qing period. The legacy of those notions even in modern representations of Li Qingzhao will also be analyzed.nnnClass meets in Knight Bldg, Rm 102.
Same as: CHINA 278

CHINA 379. For Love of Country: National Narratives in Chinese Literature and Film. 3-5 Units.
Explores the nation as it is constructed, deconstructed, and continuously contested in novels, short stories, films, and other media from the second half of the 20th century in mainland China and Taiwan. Asks how the trope of the nation and the ideology of nationalism mediate the relationships between politics and aesthetics. Explores the nation's internal fault lines of gender, ethnicity, geography, language, and citizenship.
Same as: CHINA 279

CHINA 388. Modern China Studies: State of the Field. 3-5 Units.
This is a survey course designed to acquaint master¿s and doctoral students in East Asian Studies with the latest English-language scholarship on modern China, broadly defined, across the humanities and interpretive social sciences. Each time the course is offered (once every two or three years), the disciplinary emphasis shifts slightly and the readings are completely different. The course may be taken twice.
Same as: CHINA 288

CHINA 390. Practicum Internship. 1 Unit.
On-the-job training under the guidance of experienced, on-site supervisors. Meets the requirements for curricular practical training for students on F-1 visas. Students submit a concise report detailing work activities, problems worked on, and key results. May be repeated for credit.

CHINA 391. Seminar in Chinese Syntax. 4 Units.
May be repeated for credit.

CHINA 393. Frontier Expansion and Ethnic Statecraft in the Qing Empire. 4-5 Units.
The legacy of the Qing dynasty in the territorial boundaries claimed by the People's Republic of China including the frontier zones that lie outside China proper. How the Qing acquired and ruled its frontier territories. Growth and migration of the Han Chinese population. How the dynasty's Manchu rulers managed ethnic difference. Consequences of Qing expansionism and ethnic statecraft for subject peoples and for the dynasty itself. At what point and by what processes did the Qing become China.
Same as: HISTORY 393

CHINA 395. Gender and Sexuality in Chinese History. 4-5 Units.
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Same as: FEMGEN 395J, HISTORY 395J

CHINA 399. Dissertation Research. 1-12 Unit.
Independent studies under the direction of a faculty member for which academic credit may properly be allowed. Research will require some in-person access to archival materials in Hoover Institution, Stanford's East Asia Library, and/or Branner Map Collections. For EALC students; non-EALC students, should seek instructor permission before enrolling in section.

CHINA 430. Image and Text in Chinese Painting. 3-5 Units.
An examination of many types of interactions between images and texts in Chinese painting. These include poetic lines inscribed on paintings (as response or as a theme given to the artist to paint), paintings that emulate or transform ancient poetic couplets, or illustrate poetic and literary narratives, and calligraphic inscriptions. Attention will be given both to comparative perspectives and to the special aesthetic and intellectual consequences that the conjunction of the literary and visual modes give to Chinese artistic expression. [Undergraduate enrollment with consent of one of the instructors].
Same as: ARTHIST 230B, ARTHIST 430B, CHINA 230

CHINA 801. TGR Project. 0 Units.
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CHINA 802. TGR Dissertation. 0 Units.
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East Asian Languages and Cultures Courses

EALC 9R. Humanities Research Intensive. 2 Units.
Everyone knows that scientists do research, but how do you do research in the humanities? This five-day course, taught over spring break, will introduce you to the excitement of humanities research, while preparing you to develop an independent summer project or to work as a research assistant for a Stanford professor. Through hands-on experience with archival materials in Special Collections and the East Asia Library, you will learn how to formulate a solid research question; how to gather the evidence that will help you to answer that question; how to write up research results; how to critique the research of your fellow students; how to deliver your results in a public setting; and how to write an effective grant proposal. Students who complete this course become Humanities Research Intensive Fellows and receive post-program mentorship during spring quarter, ongoing opportunities to engage with faculty and advanced undergraduates, and eligibility to apply for additional funding to support follow-up research. Freshmen and sophomores only. All majors and undeclared students welcome. No prior research experience necessary. Enrollment limited: apply by 11/4/19 at hri-fellows.stanford.edu.
Same as: CLASSICS 9R, ENGLISH 9R, HISTORY 9R

EALC 36. Dangerous Ideas. 1 Unit.
Ideas matter. Concepts such as revolution, tradition, and hell have inspired social movements, shaped political systems, and dramatically influenced the lives of individuals. Others, like immigration, universal basic income, and youth play an important role in contemporary debates in the United States. All of these ideas are contested, and they have a real power to change lives, for better and for worse. In this one-unit class we will examine these "dangerous" ideas. Each week, a faculty member from a different department in the humanities and arts will explore a concept that has shaped human experience across time and space. Some weeks will have short reading assignments, but you are not required to purchase any materials.
Same as: ARTHIST 36, COMPLIT 36A, ENGLISH 71, ETHICSOC 36X, FRENCH 36, HISTORY 3D, MUSIC 36H, PHIL 36, POLISCI 70, RELIGST 36X, SLAVIC 36

EALC 198. Senior Colloquium. 3 Units.
Students research, write, and present a capstone essay or honors thesis. All EALC undergraduate majors must take this course, be it for the senior capstone essay or honors thesis.

EALC 200. Directed Readings in Asian Languages. 1-12 Unit.
For Chinese, Japanese, and Korean literature. Prerequisite: consent of instructor. (Staff).

EALC 200A. International Technology Management Independent Study. 2-5 Units.
Independent work under the direction of a faculty member; written report or written examination required. Letter grade given on the basis of the report; if not appropriate, student should enroll in 390. May be repeated for credit.

EALC 200B. International Technology Management Independent Study. 2-5 Units.
Independent work under the direction of a faculty member; written report or written examination required. Letter grade given on the basis of the report; if not appropriate, student should enroll in 390. May be repeated for credit.

EALC 402A. Topics in International Technology Management. 1 Unit.
Theme for Autumn 2020 is "Digital transformation among new and traditional industries in Asia." Distinguished guest speakers and panels from industry discuss approaches in Asia to data-driven business models, influencer marketing, DevOps for new AI solutions, data privacy and security, new value chain relationships, etc. See syllabus for specific requirements, which may differ from those of other seminars at Stanford.
Same as: EASTASN 402A, EE 402A

EALC 402T. Entrepreneurship in Asian High Tech Industries. 1 Unit.
Distinctive patterns and challenges of entrepreneurship in Asia; update of business and technology issues in the creation and growth of start-up companies in major Asian economies. Distinguished speakers from industry, government, and academia.
Same as: EASTASN 402T, EE 402T

Japanese Courses

JAPAN 20. Humanities Core: Dao, Virtue, and Nature -- Foundations of East Asian Thought. 3 Units.
This course explores the values and questions posed in the formative period of East Asian civilizations. Notions of a Dao ("Way") are common to Confucianism, Daoism, and Buddhism, but those systems of thought have radically different ideas about what that Dao is and how it might be realized in society and an individual's life. These systems of thought appeared first in China, and eventually spread to Korea and Japan. Each culture developed its own ways of reconciling the competing systems, but in each case the comprehensive structure of values and human ideals differs significantly from those that appeared elsewhere in the ancient world. The course examines East Asian ideas about self-cultivation, harmonious society, rulership, and the relation between human and nature with a view toward expanding our understanding of these issues in human history, and highlighting their legacies in Asian civilizations today. The course features selective readings in classics of Confucian, Daoist, and Buddhist texts that present the foundational tenets of Asian thought. N. B. This is the first of three courses in the Humanities Core, East Asian track. These courses show how history and ideas shape our world and future. Take all three to experience a year-long intellectual community dedicated to the life of the mind.
Same as: CHINA 20, HUMCORE 20, KOREA 20

JAPAN 21. Humanities Core: Love and Betrayal in Asia. 3 Units.
Why are lovers in storybooks East and West always star-crossed? Why do love and death seem to go together? For every Romeo and Juliet, there are dozens of doomed lovers in the Asian literary repertoires, from Genji's string of embittered mistresses, to the Butterfly lovers in early modern China, to the voices of desire in Koryo love songs, to the devoted adolescent cousins in Dream of the Red Chamber, to the media stars of Korean romantic drama, now wildly popular throughout Asia. In this course, we explore how the love story has evolved over centuries of East Asian history, asking along the way what we can learn about Chinese, Japanese, and Korean views of family and community, gender and sexuality, truth and deception, trust and betrayal, ritual and emotion, and freedom and solidarity from canonical and non-canonical works in East Asian literatures. N.B. This is the second of three courses in the East Asian track. These courses offer an unparalleled opportunity to study East Asian history and culture, past and present. Take all three to experience a year-long intellectual community dedicated to exploring how ideas have shaped our world and future.
Same as: CHINA 21, HUMCORE 21, KOREA 21

JAPAN 21Q. Humanities Core: Love and Betrayal in Asia. 3 Units.
Why are lovers in storybooks East and West always star-crossed? Why do love and death seem to go together? For every Romeo and Juliet, there are dozens of doomed lovers in the Asian literary repertoires, from Genji's string of embittered mistresses, to the Butterfly lovers in early modern China, to the voices of desire in Koryo love songs, to the devoted adolescent cousins in Dream of the Red Chamber, to the media stars of Korean romantic drama, now wildly popular throughout Asia. In this course, we explore how the love story has evolved over centuries of East Asian history, asking along the way what we can learn about Chinese, Japanese, and Korean views of family and community, gender and sexuality, truth and deception, trust and betrayal, ritual and emotion, and freedom and solidarity from canonical and non-canonical works in East Asian literatures. N.B. This is the second of three courses in the East Asian track. These courses offer an unparalleled opportunity to study East Asian history and culture, past and present. Take all three to experience a year-long intellectual community dedicated to exploring how ideas have shaped our world and future.
Same as: CHINA 21Q, HUMCORE 21Q, KOREA 21Q

JAPAN 24. Humanities Core: How to be Modern in East Asia. 3-5 Units.
Modern East Asia was almost continuously convulsed by war and revolution in the 19th and 20th centuries. But the everyday experience of modernity was structured more profoundly by the widening gulf between the country and the city, economically, politically, and culturally. This course examines literary and cinematic works from China and Japan that respond to and reflect on the city/country divide, framing it against issues of class, gender, national identity, and ethnicity. It also explores changing ideas about home/hometown, native soil, the folk, roots, migration, enlightenment, civilization, progress, modernization, nationalism, cosmopolitanism, and sustainability. All materials are in English. This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: CHINA 24, COMPLIT 44, HUMCORE 133, KOREA 24

JAPAN 52. Global Humanities: The Grand Millennium, 800-1800. 3-4 Units.
How should we live? This course explores ethical pathways in European, Islamic, and East Asian traditions: mysticism and rationality, passion and duty, this and other worldly, ambition and peace of mind. They all seem to be pairs of opposites, but as we'll see, some important historical figures managed to follow two or more of them at once. We will read works by successful thinkers, travelers, poets, lovers, and bureaucrats written between 800 and 1900 C.E. We will ask ourselves whether we agree with their choices and judgments about what is a life well lived.
Same as: DLCL 52, HISTORY 206D, HUMCORE 52

JAPAN 60. Asian Arts and Cultures. 5 Units.
An exploration of the visual arts of East and South Asia from ancient to modern times, in their social, religious, literary and political contexts. Analysis of major monuments of painting, sculpture and architecture will be organized around themes that include ritual and funerary arts, Buddhist art and architecture across Asia, landscape and narrative painting, culture and authority in court arts, and urban arts in the early modern world.
Same as: ARTHIST 2

JAPAN 82N. Joys and Pains of Growing Up and Older in Japan. 3 Units.
What do old and young people share in common? With a focus on Japan, a country with a large long-living population, this seminar spotlights older people's lives as a reflectiion of culture and society, history, and current social and personal changes. Through discussion of multidisciplinary studies on age, analysis of narratives, and films, we will gain a closer understanding of Japanese society and the multiple meanings of growing up and older. Students will also create a short video/audio profile of an older individual, and we will explore cross-cultural comparisons. Held in Knight Bldg. Rm. 201.

JAPAN 95A. Japanese Alternative Spring Break. 1 Unit.
An Alternative Spring Break (ASB) course through Haas Center. Directed reading course, designed by the students. http://viaprograms.org/expand-your-boundaries/social-innovation-design-thinking/design-thinking-for-social-innovation/.

JAPAN 110. Romance, Desire, and Sexuality in Modern Japanese Literature. 3-4 Units.
This class is structured around three motifs: love suicide (as a romantic ideal), female desire, and same-sex sexuality. Over the course of the quarter we will look at how these motifs are treated in the art and entertainment from three different moments of Japanese history: the Edo period (1615-1868), the modern period (1920-65), and the contemporary period (1965-present). We will start by focusing on the most traditional representations of these topics. Subsequently, we will consider how later artists and entertainers revisited the conventional treatments of these motifs, informing them with new meanings and social significance. We will devote particular attention to how this material comments upon issues of gender, sexuality, and human relationships in the context of Japan. Informing our perspective will be feminist and queer theories of reading and interpretation.
Same as: FEMGEN 110J, FEMGEN 210J, JAPAN 210

JAPAN 112A. Asian Screen Cultures. 3-5 Units.
Asian screen culture, ranging from cinema to online games, has (re)shaped the global and national/regional imaginings of Asia. The Post-Cold War intensification of intra-Asian interactions has precipitated the rise of a Pan-Asian regional identity wherein the nation-state is not yet obsolete. What role does screen culture plays in the border-crossing interplay among languages, ideologies, aesthetics, and affect? How does the converging media of screen culture capture local/global desires and propel the history of transformation of sign systems from the written words to visual moving images in a digital time? How do we understand the aesthetic, storytelling, and politics of Asian screen cultures vis-à-vis its historical and social context? While exploring these transnational and transdisciplinary questions, this course will deal with topical issues of Pan-Asian identity, (trans)nationalism, (un)translatability, commodity fetishism, locality and globality, technophobia, and politics of gender. Students will learn how to think and write about screen cultures of East Asia in particular and of our world of screens in general.
Same as: CHINA 112A, CHINA 212A, JAPAN 212A, KOREA 112, KOREA 212

JAPAN 118. Humanities Core: Everybody Eats: The Language, Culture, and Ethics of Food in East Asia. 3 Units.
Many of us have grown up eating "Asian" at home, with friends, on special occasions, or even without full awareness that Asian is what we were eating. This course situates the three major culinary traditions of East Asia--China, Japan, and Korea--in the histories and civilizations of the region, using food as an introduction to their rich repertoires of literature, art, language, philosophy, religion, and culture. It also situates these seemingly timeless gastronomies within local and global flows, social change, and ethical frameworks. Specifically, we will explore the traditional elements of Korean court food, and the transformation of this cuisine as a consequence of the Korean War and South Korea¿s subsequent globalizing economy; the intersection of traditional Japanese food with past and contemporary identities; and the evolution of Chinese cuisine that accompanies shifting attitudes about the environment, health, and well-being. Questions we will ask ourselves during the quarter include, what is "Asian" about Asian cuisine? How has the language of food changed? Is eating, and talking about eating, a gendered experience? How have changing views of the self and community shifted the conversation around the ethics and ecology of meat consumption?.
Same as: CHINA 118, HUMCORE 22, KOREA 118

JAPAN 121. Translating Japan, Translating the West. 3-4 Units.
Translation lies at the heart of all intercultural exchange. This course introduces students to the specific ways in which translation has shaped the image of Japan in the West, the image of the West in Japan, and Japan's self-image in the modern period. What texts and concepts were translated by each side, how, and to what effect? No prior knowledge of Japanese language necessary.
Same as: COMPLIT 142B, JAPAN 221

JAPAN 122. Translating Cool: Globalized Popular Culture in Asia. 3-4 Units.
Did you grow up watching Pokémon and Power Rangers? Have you danced along to "Gangnam Style"? As we become increasingly exposed to Asian popular culture and the Internet facilitates instant access to new media, previous localized forms of entertainment--animated cartoons, comics, video games, music videos, film, and soap operas--have become part of a global staple. However, these cultural forms have emerged not only in their original form with mediation of subtitles. Many have undergone various processes of adaptation and translation so that we no longer recognize that these products had ever originated elsewhere. This course will immerse students in a range of Japanese and Korean cultural phenomena to reveal the spectrum of translation practices across national boundaries. We will inquire into why these cultural forms have such compelling and powerful staying power, contextualize them within their frames of production, and explore the strategies, limitations, and potential of translational practices.nnContact instructor for place. dafnazur@stanford.edunKnight 201.
Same as: JAPAN 222, KOREA 122, KOREA 222

JAPAN 123. Critical Translation Studies. 3-5 Units.
Seminal works of translation theory and scholarship from a wide array of disciplinary, regional, linguistic, and historical perspectives. Readings are in English, but students must have at least two years of training or the equivalent in another language, or permission from the instructor. (Important note: Students who wish to count this course toward requirements in the department of East Asian Languages and Cultures must have permission from their EALC advisor.).
Same as: COMPLIT 228, JAPAN 223

JAPAN 124. Manga as Literature. 3-5 Units.
Analysis of representative manga as narratives that combine verbal and visual elements, with attention to historical and cultural background. Representative manga by Tezuka Osamu, Tatsumi Yoshihiro, Koike Kazuo, Taniguchi Jiro, Natsume Ono, Kono Fumiyo, and others. All readings in English.nnnClass meets in Knight Bldg, Rm 018. Contact instructor (sdcarter@stanford.edu) for place.
Same as: JAPAN 224

JAPAN 125. Tokyo, Kyoto, Osaka and beyond: place in modern Japan. 2-5 Units.
From the culturally distinct urban centers of Tokyo, Kyoto, and Osaka to the sharp contrasts between the southernmost and northernmost parts of Japan, modern Japanese literature and film present rich characterizations of place that have shaped Japanese identities at the national, regional, and local levels. This course focuses attention on how these settings operate in key works of literature and film, with an eye toward developing students' understanding of diversity within modern Japan. FOR UNDERGRADS: This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.
Same as: JAPAN 225

JAPAN 133. Japanese Media Culture. 2-4 Units.
Focuses on the intertwined histories of the postwar Japanese television, anime, music, and video game industries, and how their development intersects with wider trends in Japanese society. We will pay particular attention to questions of affect, labor, and environment in media production, consumption, and style.
Same as: JAPAN 233

JAPAN 138. Introduction to Modern Japanese Literature and Culture. 3-5 Units.
This class introduces key literary texts from Japan¿s modern era (1868-present), locating these works in the larger political, social, and cultural trends of the period. nThe goal of the class is to use literary texts as a point of entry to understand the grand narrative of Japan's journey from its tentative re-entry into the international community in the 1850s, through the cataclysm of the Pacific War, the remarkable prosperity of the bubble years in the 1980s until most recent, post-3/11 catastrophe-evoked Zeitgeist.nnWe will examine a variety of primary texts by such authors as Futabatei Shimei, Higuchi Ichiy¿, Natsume S¿seki, Tanizaki Jun¿ichir¿, Miyamoto Yuriko, Kawabata Yasunari, ¿e Kenzabur¿, Yoshimoto Banana, Tawada Y¿ko, and Yu Miri among others. Each text will be discussed in detail paying attention to its specific character and contextualized within larger political trends (e.g., the modernization program of the Meiji regime, the policies of Japan's wartime government, and postwar Japanese responses to the cold war), social developments (e.g., changing notions of social class, the women's rights movement, the social effects of the postwar economic expansion, ecocriticism), and cultural movements (e.g., literary reform movement of the 1890s, modernism of the 1920s and 30s, postmodernism of the 1980s, and exophony). Students will also be encouraged to think about the ways these texts relate to each other and a variety of issues beyond the Japanese socio-cultural and historical context. nnNo prior knowledge of Japanese is required for this course, although students with sufficient proficiency are welcome to refer to original sources.nPrerequisites: None.
Same as: JAPAN 238

JAPAN 141. Japanese Performance Traditions. 2-5 Units.
Japanese performance traditions present a distinct challenge to modern Western concepts of gender, performance, self-expression, and even the human body itself. This course introduces the socio-historical underpinnings of these traditions, and invites students to engage in a fundamental questioning of the relationship between performance, gender, and cross-cultural interpretation. This course is designed for students with interests in performance, gender, and media as well as those with an interest in Japan. Genres covered include Noh, Kabuki, Bunraku, and Butoh.
Same as: COMPLIT 218A, JAPAN 241

JAPAN 144. Inventing Japan: Traditional Culture in the Modern World. 3-5 Units.
Features of traditional Japanese culture such as temples and shrines, kimono, and cultural practices like the tea ceremony, have played an important role in both domestic and international representations of Japan since the late nineteenth century. In this course students will be introduced to these elements of traditional Japanese culture, while learning to cast a critical eye on the concept of tradition. Themes will include discussion of the gendered nature of tradition in modern Japan and the role played by such traditions in constructing national identity, both in Japan and overseas. We will explore these topics using the theoretical frameworks of invention of tradition and reformatting of tradition. Contact instructor for room. rcorbett@stanford.edu.
Same as: JAPAN 244

JAPAN 148. Modern Japanese Narratives: Literature and Film. 3-5 Units.
Central issues in modern Japanese visual and written narrative. Focus is on competing views of modernity, war, and crises of individual and collective identity and responsibility. Directors and authors include Kurosawa, Mizoguchi, Ozu, Ogai, Akutagawa, Tanizaki, Abe, and Oe.
Same as: JAPAN 248

JAPAN 151. Japanese Business Culture and Systems. 3-5 Units.
Japanese sociocultural dynamics in industrial and corporate structures, negotiating styles, decision making, and crisis management. Practicum on Japan market strategies.
Same as: JAPAN 251

JAPAN 151B. The Nature of Knowledge: Science and Literature in East Asia. 4-5 Units.
"The Nature of Knowledge" explores the intersections of science and humanities East Asia. It covers a broad geographic area (China, Japan, and Korea) along a long temporal space (14th century - present) to investigate how historical notions about the natural world, the human body, and social order defied, informed, and constructed our current categories of science and humanities. The course will make use of medical, geographic, and cosmological treatises from premodern East Asia, portrayals and uses of science in modern literature, film, and media, as well as theoretical and historical essays on the relationships between literature, science, and society.nnAs part of its exploration of science and the humanities in conjunction, the course addresses how understandings of nature are mediated through techniques of narrative, rhetoric, visualization, and demonstration. In the meantime, it also examines how the emergence of modern disciplinary "science" influenced the development of literary language, tropes, and techniques of subject development. This class will expose the ways that science has been mobilized for various ideological projects and to serve different interests, and will produce insights into contemporary debates about the sciences and humanities.
Same as: CHINA 151B, CHINA 251B, JAPAN 251B, KOREA 151, KOREA 251

JAPAN 152. Art Animation. 2-4 Units.
While anime has spread around the world, Japanese art animators have been busy developing a parallel tradition, built from a more personal, experimental, and idiosyncratic approach to the medium. Looking closely at key works from major artists in the field, this course explores art animation from a variety of perspectives: animation scene; philosophical attempts to account for animated movement; and art animation's unique perspective on Japanese culture.
Same as: FILMSTUD 146, JAPAN 252

JAPAN 155. The Vampire in Anime. 3-4 Units.
Analysis of anime where vampires play central roles as characters and/or in plot development. Comparison of character and plot development within anime series and Western vampire literature will be the main focus; attention will also be paid to the development of the vampire as a literary and film character in the West, the conception of the supernatural in Japanese culture, and the points of similarity and difference between the two.
Same as: JAPAN 255

JAPAN 157. Science, Power, and Knowledge: East Asia to 1900. 3-5 Units.
In the early modern period, East Asian societies featured long-established institutions of learning and traditions of knowledge. This course examines the relationship between knowledge and power in East Asia societies prior to 1900. It explores how knowledge production operated in late imperial China (1550-1900), Chos'n Korea (1392-1910), and Tokugawa Japan (1600-1868). Among the themes addressed are: the state's role in patronizing science and knowledge; major intellectual movements; engagement with Western science and religion; East Asian statecraft; and East Asian understandings of space and geography. nTaking a holistic perspective, it places science and technology in 1) a social and cultural context 2) in relation to other bodies and fields of knowledge 3) in comparison to other societies in a similar historical time period. A socially embedded perspective on knowledge and science seeks to appreciate how politics, society, and knowledge are integrated, and in particular how science and knowledge can be both instruments and sites of political power. By exploring these links, the course will also illustrate how our modern disciplinary categories of natural science,social science and the humanities cannot be taken for granted and the areas of knowledge they cover can be deeply intertwined. nnThe course will also address these issues historically and across geographic regions in East Asia and beyond. The comparative lens and frameworks these perspectives can offer will bring an awareness of the diverse traditions of knowledge production in East Asia. Its examination of East Asian encounters with Western paradigms of knowledge throughout the early modern period will also illustrate how communication occurs across cultural, social, and linguistic barriers and how diverse world-views were managed in these encounters. These encounters of knowledge-exchange between Jesuit missionaries, Ming literati, Korean aristocrats, and Japanese doctors also show how cultural identities were constructed, reinforced, and challenged. These identities, expressed through the mastery of knowledge, are essential for understanding how East Asian reckoned with growing pressures to adopt Western industrial technology and military science in the late nineteenth century.
Same as: CHINA 157, CHINA 257, HISTORY 294J, JAPAN 257, KOREA 157, KOREA 257

JAPAN 157S. Tyranny and Resistance: East Asia's Political Culture and Tradition. 3-5 Units.
What is tyranny? When does political power cease to be legitimate and government become tyrannical? And what can individuals do in the face of tyranny? This course will explore East Asia's long political tradition through the problem of tyranny and its resistance. We will cover a wide range of material. We begin with how seminal political thinkers in East Asia, including Warring States philosophers such as Mencius and Han Feizi, understood the boundary between legitimate and illegitimate authority. We will also look at the strategies used by various political actors, including government officials, cultural or social elites, and common people, when they confronted what they perceived to be the unjust exercise political power, whether in the form of despotic monarchs, corrupt authorities, or general misrule. Our discussions will be wide-ranging. We will pay particular attention to how these historical examples from China, Korea, and Japan¿s past have resonated with modern and contemporary political discussions in contemporary East Asian societies.
Same as: CHINA 157S, KOREA 157S

JAPAN 158. A Critical and Historical Survey of Classical Japanese Literature. 2-5 Units.
This course presents a broad survey of classical Japanese literature in English translation, with particular emphasis on prose fiction and poetry. We will make use of multiple, complementary modes of literary criticism, beginning with historicism and formalism, which reflect different assumptions and interpretive priorities. The approach is integrative, with attention paid throughout to the intersections between literature, social and institutional history, and religion. Key questions to be explored include the following: How were the major works of classical Japanese literature understood by readers during the medieval and early-modern periods? How did the current canon of classical Japanese literature arise, and what historical forces shaped its development? How might modern modes of literary criticism help us better approach premodern Japanese literature, and what are their limitations?.
Same as: JAPAN 258

JAPAN 159. The Paranormal in Premodern Japan. 4 Units.
This course will explore the various stories of gods, ghosts, demons, and monsters that appear throughout the Premodern period in Japan. The course will use the concept of the paranormal to explore the ways these beings are depicted as living alongside humanity and that humanity can easily and unknowingly enter into the realm of these beings.
Same as: JAPAN 259

JAPAN 160. Classical Japanese Literature in Translation. 4 Units.
Prose, poetry, and drama from the 10th-19th centuries. Historical, intellectual, and cultural context. Works vary each year. May be repeated for credit with consent of instructor.
Same as: JAPAN 260

JAPAN 161. Japanese Ghosts: The Supernatural in Japanese Art and Entertainment. 4 Units.
The complex meanings of ghosts in Japanese culture. Representations of the supernatural in images, drama, oral narratives, prose, film, comics and animation at different moments in Japanese history.
Same as: JAPAN 261

JAPAN 162. Japanese Poetry and Poetics. 2-4 Units.
Heian through Meiji periods with emphasis on relationships between the social and aesthetic. Works vary each year. This year's genre is the diary. Prerequisites: 246, 247, or equivalent.
Same as: JAPAN 262

JAPAN 163. Japanese Performance Traditions. 3-4 Units.
Major paradigms of gender in Japanese performance traditions from ancient to modern times, covering Noh, Kabuki, Bunraku, and Takarazuka.
Same as: JAPAN 263

JAPAN 163A. Beauty and Renunciation in Japan. 3 Units.
Is it okay to feel pleasure? Should humans choose beauty or renunciation? This is the main controversy of medieval Japan. This course introduces students to the famous literary works that created a world of taste, subtlety, and sensuality. We also read essays that warn against the risks of leading a life of gratification, both in this life and in the afterlife. And we discover together the ways in which these two positions can be not that far from each other. Does love always lead to heartbreak? Is the appreciation of nature compatible with the truths of Buddhism? Is it good to have a family? What kind of house should we build for ourselves? Can fictional stories make us better persons? Each week, during the first class meeting, we will focus on these issues in Japan. During the second class meeting, we will participate in a collaborative conversation with the other students and faculty in Humanities Core classes, about other regions and issues. This course is taught in English.
Same as: HUMCORE 123

JAPAN 164. Introduction to Premodern Japanese. 3-5 Units.
Readings from Heian, Kamakura, Muromachi, and early Edo periods with focus on grammar and reading comprehension. Prerequisite: JAPANLNG 129B or 103, or equivalent.
Same as: JAPAN 264

JAPAN 165. Readings in Premodern Japanese. 2-5 Units.
Edo and Meiji periods with focus on grammar and reading comprehension. May be repeated for credit. Prerequisite: 246 or equivalent.
Same as: JAPAN 265

JAPAN 166. Introduction to Sino-Japanese. 3-5 Units.
Readings in Sino-Japanese (*kambun*) texts of the Heian, Kamakura, and Muromachi periods, with focus on grammar and reading comprehension. Prerequisite: 246 or equivalent.
Same as: JAPAN 266

JAPAN 170. The Tale of Genji and Its Historical Reception. 2-5 Units.
Approaches to the tale including 12th-century allegorical and modern feminist readings. Influence upon other works including poetry, Noh plays, short stories, modern novels, and comic book (manga) retellings. Prerequisite for graduate students: JAPANLNG 129B or 103, or equivalent.nnThis course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.
Same as: JAPAN 270

JAPAN 184. Aristocrats, Warriors, Sex Workers, and Barbarians: Lived Life in Early Modern Japanese Painting. 4 Units.
Changes marking the transition from medieval to early modern Japanese society that generated a revolution in visual culture, as exemplified in subjects deemed fit for representation; how commoners joined elites in pictorializing their world, catalyzed by interactions with the Dutch.
Same as: ARTHIST 184, ARTHIST 384, JAPAN 284

JAPAN 185. Arts of War and Peace: Late Medieval and Early Modern Japan, 1500-1868. 4 Units.
Narratives of conflict, pacification, orthodoxy, nostalgia, and novelty through visual culture during the change of episteme from late medieval to early modern, 16th through early 19th centuries. The rhetorical messages of castles, teahouses, gardens, ceramics, paintings, and prints; the influence of Dutch and Chinese visuality; transformation in the roles of art and artist; tensions between the old and the new leading to the modernization of Japan.
Same as: ARTHIST 187, ARTHIST 387, JAPAN 285

JAPAN 188. The Japanese Tea Ceremony: The History, Aesthetics, and Politics Behind a National Pastime. 5 Units.
The Japanese tea ceremony, the ultimate premodern multimedia phenomenon, integrates architecture, garden design, ceramics, painting, calligraphy, and other treasured objects into a choreographed ritual wherein host, objects, and guests perform designated roles on a tiny stage sometimes only six feet square.. In addition to its much-touted aesthetic and philosophical aspects, the practice of tea includes inevitable political and rhetorical dimensions. This course traces the evolution of tea practice from its inception within the milieu of courtier diversions, Zen monasteries, and warrior villas, through its various permutations into the 20th century, where it was manipulated by the emerging industrialist class for different-but ultimately similar-ends.
Same as: ARTHIST 287A, JAPAN 288

JAPAN 189B. Honors Research. 5 Units.
Open to senior honors students to write thesis.

JAPAN 191. Japanese Pragmatics. 2-4 Units.
The choice of linguistic expressions and our understanding of what is said involve multiple sociocultural, cognitive and discourse factors. Can such pragmatic factors and processes be considered universal to all languages, or are there variations among languages? The course will investigate an array of phenomena observed in Japanese. Through readings and projects, students will deepen their knowledge of Japanese and consider theoretical implications. Prerequisites: one year of Japanese and a course in linguistics, or two years of Japanese, or consent of instructor.
Same as: JAPAN 291

JAPAN 192. Analyzing Japanese Text and Talk. 2-4 Units.
Are there reasons why certain words, phrases, sentences and prosody are chosen by language speakers and writers in specific contexts? What linguistic and extra-linguistic elements give the hearers and readers the impression that certain utterances and passages are friendly, accusatory, officious, humorous, personal, formal, colloquial, etc.? This seminar provides an introduction to different theoretical and analytical approaches to studying language use in context (e.g. pragmatics, sociolinguistics, usage-based grammar, conversational analysis, critical discourse analysis) and an opportunity to critically analyze text and talk. Using the analytical tools acquired through readings and discussions, students will be able to analyze Japanese materials of their selection. The course is designed for graduate students and advanced undergraduate students with interests either (or both) in Japanese linguistics and literature.
Same as: JAPAN 292

JAPAN 193. Acquisition of Japanese as a Second Language. 2-4 Units.
This course provides students with a broad overview of second language acquisition (SLA) research and introduces recent SLA studies on Japanese as a second language (L2). It covers six topics: (1) the evolution of the field, (2) approaches to understanding learner language, (3) current state of knowledge of L2 developmental patterns, (4) theories of L2 learning, (5) factors that affect SLA, and (6) instructed SLA. By reading and discussing exemplary SLA studies on L2 Japanese as well as seminal papers on these topics, students will develop abilities to analyze learner language from multiple perspectives, critically read research reports, and consider implications for L2 teaching.
Same as: JAPAN 293

JAPAN 197. Points in Japanese Grammar. 2-4 Units.
(Formerly JAPANLIT157/257) The course provides practical but in-depth analyses of selected points in Japanese grammar that are often difficult to acquire within the limited hours of language courses. We consider findings from linguistic research, focusing on differences between similar expressions and distinctions that may not be salient in English, with the aim to provide systematic analytical background for more advanced understanding of the language. May be repeat for credit. Prerequisite: JAPANLNG23 or equivalent for JAPAN197; JAPANLNG103 or equivalent for JAPAN297.
Same as: JAPAN 297

JAPAN 198C. Senior Research. 1 Unit.
EALC students writing a Senior Capstone Essay who wish to conduct research with their adviser may enroll in this course for 1 unit, for 1 quarter.
Same as: Capstone Essay

JAPAN 198H. Senior Research. 2-5 Units.
EALC juniors or seniors pursuing honors research should sign up for this course under their faculty adviser for research credit.
Same as: Honors Thesis

JAPAN 199. Individual Reading in Japanese. 1-4 Unit.
Asian Languages majors only. May be repeated for credit. Prerequisites: JAPANLNG 129B or 103, and consent of instructor.

JAPAN 200. Directed Reading in Japanese. 1-12 Unit.
"Independent studies under the direction of a faculty member for which academic credit may properly be allowed. Research will require some in-person access to archival materials in Hoover Institution, Stanford's East Asia Library, and/or Branner Map Collections. For EALC students; non-EALC students, should seek instructor permission before enrolling in section.".

JAPAN 201. Proseminar: Introduction to Graduate Study in Japanese. 2-5 Units.
Bibliographical and research methods. Major trends in literary and cultural theory and critical practice. May be repeated once for credit. Prerequisite: JAPANLNG 103 or 129B, or consent of instructor.

JAPAN 202. Bibliographic and Research Methods in Japanese. 1-3 Unit.
The use of library and online resources for the study of Japanese literature, language, and culture. Prerequisite: JAPANLNG 103 or 129B, or consent of instructor.

JAPAN 203. Teaching Japanese Humanities. 1 Unit.
Prepares graduate students to teach humanities at the undergraduate level. Topics include syllabus development and course design, techniques for generating discussion, effective grading practices, and issues particular to the subject matter.

JAPAN 210. Romance, Desire, and Sexuality in Modern Japanese Literature. 3-4 Units.
This class is structured around three motifs: love suicide (as a romantic ideal), female desire, and same-sex sexuality. Over the course of the quarter we will look at how these motifs are treated in the art and entertainment from three different moments of Japanese history: the Edo period (1615-1868), the modern period (1920-65), and the contemporary period (1965-present). We will start by focusing on the most traditional representations of these topics. Subsequently, we will consider how later artists and entertainers revisited the conventional treatments of these motifs, informing them with new meanings and social significance. We will devote particular attention to how this material comments upon issues of gender, sexuality, and human relationships in the context of Japan. Informing our perspective will be feminist and queer theories of reading and interpretation.
Same as: FEMGEN 110J, FEMGEN 210J, JAPAN 110

JAPAN 212A. Asian Screen Cultures. 3-5 Units.
Asian screen culture, ranging from cinema to online games, has (re)shaped the global and national/regional imaginings of Asia. The Post-Cold War intensification of intra-Asian interactions has precipitated the rise of a Pan-Asian regional identity wherein the nation-state is not yet obsolete. What role does screen culture plays in the border-crossing interplay among languages, ideologies, aesthetics, and affect? How does the converging media of screen culture capture local/global desires and propel the history of transformation of sign systems from the written words to visual moving images in a digital time? How do we understand the aesthetic, storytelling, and politics of Asian screen cultures vis-à-vis its historical and social context? While exploring these transnational and transdisciplinary questions, this course will deal with topical issues of Pan-Asian identity, (trans)nationalism, (un)translatability, commodity fetishism, locality and globality, technophobia, and politics of gender. Students will learn how to think and write about screen cultures of East Asia in particular and of our world of screens in general.
Same as: CHINA 112A, CHINA 212A, JAPAN 112A, KOREA 112, KOREA 212

JAPAN 221. Translating Japan, Translating the West. 3-4 Units.
Translation lies at the heart of all intercultural exchange. This course introduces students to the specific ways in which translation has shaped the image of Japan in the West, the image of the West in Japan, and Japan's self-image in the modern period. What texts and concepts were translated by each side, how, and to what effect? No prior knowledge of Japanese language necessary.
Same as: COMPLIT 142B, JAPAN 121

JAPAN 222. Translating Cool: Globalized Popular Culture in Asia. 3-4 Units.
Did you grow up watching Pokémon and Power Rangers? Have you danced along to "Gangnam Style"? As we become increasingly exposed to Asian popular culture and the Internet facilitates instant access to new media, previous localized forms of entertainment--animated cartoons, comics, video games, music videos, film, and soap operas--have become part of a global staple. However, these cultural forms have emerged not only in their original form with mediation of subtitles. Many have undergone various processes of adaptation and translation so that we no longer recognize that these products had ever originated elsewhere. This course will immerse students in a range of Japanese and Korean cultural phenomena to reveal the spectrum of translation practices across national boundaries. We will inquire into why these cultural forms have such compelling and powerful staying power, contextualize them within their frames of production, and explore the strategies, limitations, and potential of translational practices.nnContact instructor for place. dafnazur@stanford.edunKnight 201.
Same as: JAPAN 122, KOREA 122, KOREA 222

JAPAN 223. Critical Translation Studies. 3-5 Units.
Seminal works of translation theory and scholarship from a wide array of disciplinary, regional, linguistic, and historical perspectives. Readings are in English, but students must have at least two years of training or the equivalent in another language, or permission from the instructor. (Important note: Students who wish to count this course toward requirements in the department of East Asian Languages and Cultures must have permission from their EALC advisor.).
Same as: COMPLIT 228, JAPAN 123

JAPAN 224. Manga as Literature. 3-5 Units.
Analysis of representative manga as narratives that combine verbal and visual elements, with attention to historical and cultural background. Representative manga by Tezuka Osamu, Tatsumi Yoshihiro, Koike Kazuo, Taniguchi Jiro, Natsume Ono, Kono Fumiyo, and others. All readings in English.nnnClass meets in Knight Bldg, Rm 018. Contact instructor (sdcarter@stanford.edu) for place.
Same as: JAPAN 124

JAPAN 225. Tokyo, Kyoto, Osaka and beyond: place in modern Japan. 2-5 Units.
From the culturally distinct urban centers of Tokyo, Kyoto, and Osaka to the sharp contrasts between the southernmost and northernmost parts of Japan, modern Japanese literature and film present rich characterizations of place that have shaped Japanese identities at the national, regional, and local levels. This course focuses attention on how these settings operate in key works of literature and film, with an eye toward developing students' understanding of diversity within modern Japan. FOR UNDERGRADS: This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.
Same as: JAPAN 125

JAPAN 233. Japanese Media Culture. 2-4 Units.
Focuses on the intertwined histories of the postwar Japanese television, anime, music, and video game industries, and how their development intersects with wider trends in Japanese society. We will pay particular attention to questions of affect, labor, and environment in media production, consumption, and style.
Same as: JAPAN 133

JAPAN 235. Academic Readings in Japanese I. 2-4 Units.
Strategies for reading academic writings in Japanese. Readings of scholarly papers and advanced materials in Japanese in students' research areas in the humanities and social sciences. Prerequisites: JAPANLNG 103, 129B, or equivalent; and consent of instructor. May be repeat for credit.

JAPAN 238. Introduction to Modern Japanese Literature and Culture. 3-5 Units.
This class introduces key literary texts from Japan¿s modern era (1868-present), locating these works in the larger political, social, and cultural trends of the period. nThe goal of the class is to use literary texts as a point of entry to understand the grand narrative of Japan's journey from its tentative re-entry into the international community in the 1850s, through the cataclysm of the Pacific War, the remarkable prosperity of the bubble years in the 1980s until most recent, post-3/11 catastrophe-evoked Zeitgeist.nnWe will examine a variety of primary texts by such authors as Futabatei Shimei, Higuchi Ichiy¿, Natsume S¿seki, Tanizaki Jun¿ichir¿, Miyamoto Yuriko, Kawabata Yasunari, ¿e Kenzabur¿, Yoshimoto Banana, Tawada Y¿ko, and Yu Miri among others. Each text will be discussed in detail paying attention to its specific character and contextualized within larger political trends (e.g., the modernization program of the Meiji regime, the policies of Japan's wartime government, and postwar Japanese responses to the cold war), social developments (e.g., changing notions of social class, the women's rights movement, the social effects of the postwar economic expansion, ecocriticism), and cultural movements (e.g., literary reform movement of the 1890s, modernism of the 1920s and 30s, postmodernism of the 1980s, and exophony). Students will also be encouraged to think about the ways these texts relate to each other and a variety of issues beyond the Japanese socio-cultural and historical context. nnNo prior knowledge of Japanese is required for this course, although students with sufficient proficiency are welcome to refer to original sources.nPrerequisites: None.
Same as: JAPAN 138

JAPAN 239. Modern Japanese Short Stories. 2-4 Units.
This course explores the postwar Japanese short story. We will read representative works by major authors, such as Ishikawa Jun, Hayashi Fumiko, Abe Kobe and Murakami Haruki. Attention will be devoted to both accurate reading of the Japanese prose and more general discussion of the literary features of the texts.

JAPAN 241. Japanese Performance Traditions. 2-5 Units.
Japanese performance traditions present a distinct challenge to modern Western concepts of gender, performance, self-expression, and even the human body itself. This course introduces the socio-historical underpinnings of these traditions, and invites students to engage in a fundamental questioning of the relationship between performance, gender, and cross-cultural interpretation. This course is designed for students with interests in performance, gender, and media as well as those with an interest in Japan. Genres covered include Noh, Kabuki, Bunraku, and Butoh.
Same as: COMPLIT 218A, JAPAN 141

JAPAN 244. Inventing Japan: Traditional Culture in the Modern World. 3-5 Units.
Features of traditional Japanese culture such as temples and shrines, kimono, and cultural practices like the tea ceremony, have played an important role in both domestic and international representations of Japan since the late nineteenth century. In this course students will be introduced to these elements of traditional Japanese culture, while learning to cast a critical eye on the concept of tradition. Themes will include discussion of the gendered nature of tradition in modern Japan and the role played by such traditions in constructing national identity, both in Japan and overseas. We will explore these topics using the theoretical frameworks of invention of tradition and reformatting of tradition. Contact instructor for room. rcorbett@stanford.edu.
Same as: JAPAN 144

JAPAN 248. Modern Japanese Narratives: Literature and Film. 3-5 Units.
Central issues in modern Japanese visual and written narrative. Focus is on competing views of modernity, war, and crises of individual and collective identity and responsibility. Directors and authors include Kurosawa, Mizoguchi, Ozu, Ogai, Akutagawa, Tanizaki, Abe, and Oe.
Same as: JAPAN 148

JAPAN 251. Japanese Business Culture and Systems. 3-5 Units.
Japanese sociocultural dynamics in industrial and corporate structures, negotiating styles, decision making, and crisis management. Practicum on Japan market strategies.
Same as: JAPAN 151

JAPAN 251B. The Nature of Knowledge: Science and Literature in East Asia. 4-5 Units.
"The Nature of Knowledge" explores the intersections of science and humanities East Asia. It covers a broad geographic area (China, Japan, and Korea) along a long temporal space (14th century - present) to investigate how historical notions about the natural world, the human body, and social order defied, informed, and constructed our current categories of science and humanities. The course will make use of medical, geographic, and cosmological treatises from premodern East Asia, portrayals and uses of science in modern literature, film, and media, as well as theoretical and historical essays on the relationships between literature, science, and society.nnAs part of its exploration of science and the humanities in conjunction, the course addresses how understandings of nature are mediated through techniques of narrative, rhetoric, visualization, and demonstration. In the meantime, it also examines how the emergence of modern disciplinary "science" influenced the development of literary language, tropes, and techniques of subject development. This class will expose the ways that science has been mobilized for various ideological projects and to serve different interests, and will produce insights into contemporary debates about the sciences and humanities.
Same as: CHINA 151B, CHINA 251B, JAPAN 151B, KOREA 151, KOREA 251

JAPAN 252. Art Animation. 2-4 Units.
While anime has spread around the world, Japanese art animators have been busy developing a parallel tradition, built from a more personal, experimental, and idiosyncratic approach to the medium. Looking closely at key works from major artists in the field, this course explores art animation from a variety of perspectives: animation scene; philosophical attempts to account for animated movement; and art animation's unique perspective on Japanese culture.
Same as: FILMSTUD 146, JAPAN 152

JAPAN 252A. Special Topics in Japanese Literature. 2-5 Units.
For graduate students working with Japanese literature. This course covers a selection of core texts in modern Japanese fiction and current scholarly approaches to literature in relation to 1) censorship, and 2) film. During the second half of the quarter, students will conduct guided research on these topics, to culminate in a final research paper 20-25 pages in length. For the first half of the quarter, class will be conducted entirely in Japanese. Prerequisite: fourth-year Japanese or the equivalent, and permission of the instructors.

JAPAN 253. Japanese Graduate Seminar: Translation Theory & Premodern Literature. 2-5 Units.
Translation Theory & Premodern Literature course.

JAPAN 255. The Vampire in Anime. 3-4 Units.
Analysis of anime where vampires play central roles as characters and/or in plot development. Comparison of character and plot development within anime series and Western vampire literature will be the main focus; attention will also be paid to the development of the vampire as a literary and film character in the West, the conception of the supernatural in Japanese culture, and the points of similarity and difference between the two.
Same as: JAPAN 155

JAPAN 257. Science, Power, and Knowledge: East Asia to 1900. 3-5 Units.
In the early modern period, East Asian societies featured long-established institutions of learning and traditions of knowledge. This course examines the relationship between knowledge and power in East Asia societies prior to 1900. It explores how knowledge production operated in late imperial China (1550-1900), Chos'n Korea (1392-1910), and Tokugawa Japan (1600-1868). Among the themes addressed are: the state's role in patronizing science and knowledge; major intellectual movements; engagement with Western science and religion; East Asian statecraft; and East Asian understandings of space and geography. nTaking a holistic perspective, it places science and technology in 1) a social and cultural context 2) in relation to other bodies and fields of knowledge 3) in comparison to other societies in a similar historical time period. A socially embedded perspective on knowledge and science seeks to appreciate how politics, society, and knowledge are integrated, and in particular how science and knowledge can be both instruments and sites of political power. By exploring these links, the course will also illustrate how our modern disciplinary categories of natural science,social science and the humanities cannot be taken for granted and the areas of knowledge they cover can be deeply intertwined. nnThe course will also address these issues historically and across geographic regions in East Asia and beyond. The comparative lens and frameworks these perspectives can offer will bring an awareness of the diverse traditions of knowledge production in East Asia. Its examination of East Asian encounters with Western paradigms of knowledge throughout the early modern period will also illustrate how communication occurs across cultural, social, and linguistic barriers and how diverse world-views were managed in these encounters. These encounters of knowledge-exchange between Jesuit missionaries, Ming literati, Korean aristocrats, and Japanese doctors also show how cultural identities were constructed, reinforced, and challenged. These identities, expressed through the mastery of knowledge, are essential for understanding how East Asian reckoned with growing pressures to adopt Western industrial technology and military science in the late nineteenth century.
Same as: CHINA 157, CHINA 257, HISTORY 294J, JAPAN 157, KOREA 157, KOREA 257

JAPAN 258. A Critical and Historical Survey of Classical Japanese Literature. 2-5 Units.
This course presents a broad survey of classical Japanese literature in English translation, with particular emphasis on prose fiction and poetry. We will make use of multiple, complementary modes of literary criticism, beginning with historicism and formalism, which reflect different assumptions and interpretive priorities. The approach is integrative, with attention paid throughout to the intersections between literature, social and institutional history, and religion. Key questions to be explored include the following: How were the major works of classical Japanese literature understood by readers during the medieval and early-modern periods? How did the current canon of classical Japanese literature arise, and what historical forces shaped its development? How might modern modes of literary criticism help us better approach premodern Japanese literature, and what are their limitations?.
Same as: JAPAN 158

JAPAN 259. The Paranormal in Premodern Japan. 4 Units.
This course will explore the various stories of gods, ghosts, demons, and monsters that appear throughout the Premodern period in Japan. The course will use the concept of the paranormal to explore the ways these beings are depicted as living alongside humanity and that humanity can easily and unknowingly enter into the realm of these beings.
Same as: JAPAN 159

JAPAN 260. Classical Japanese Literature in Translation. 4 Units.
Prose, poetry, and drama from the 10th-19th centuries. Historical, intellectual, and cultural context. Works vary each year. May be repeated for credit with consent of instructor.
Same as: JAPAN 160

JAPAN 261. Japanese Ghosts: The Supernatural in Japanese Art and Entertainment. 4 Units.
The complex meanings of ghosts in Japanese culture. Representations of the supernatural in images, drama, oral narratives, prose, film, comics and animation at different moments in Japanese history.
Same as: JAPAN 161

JAPAN 262. Japanese Poetry and Poetics. 2-4 Units.
Heian through Meiji periods with emphasis on relationships between the social and aesthetic. Works vary each year. This year's genre is the diary. Prerequisites: 246, 247, or equivalent.
Same as: JAPAN 162

JAPAN 263. Japanese Performance Traditions. 3-4 Units.
Major paradigms of gender in Japanese performance traditions from ancient to modern times, covering Noh, Kabuki, Bunraku, and Takarazuka.
Same as: JAPAN 163

JAPAN 264. Introduction to Premodern Japanese. 3-5 Units.
Readings from Heian, Kamakura, Muromachi, and early Edo periods with focus on grammar and reading comprehension. Prerequisite: JAPANLNG 129B or 103, or equivalent.
Same as: JAPAN 164

JAPAN 265. Readings in Premodern Japanese. 2-5 Units.
Edo and Meiji periods with focus on grammar and reading comprehension. May be repeated for credit. Prerequisite: 246 or equivalent.
Same as: JAPAN 165

JAPAN 266. Introduction to Sino-Japanese. 3-5 Units.
Readings in Sino-Japanese (*kambun*) texts of the Heian, Kamakura, and Muromachi periods, with focus on grammar and reading comprehension. Prerequisite: 246 or equivalent.
Same as: JAPAN 166

JAPAN 270. The Tale of Genji and Its Historical Reception. 2-5 Units.
Approaches to the tale including 12th-century allegorical and modern feminist readings. Influence upon other works including poetry, Noh plays, short stories, modern novels, and comic book (manga) retellings. Prerequisite for graduate students: JAPANLNG 129B or 103, or equivalent.nnThis course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.
Same as: JAPAN 170

JAPAN 279. Research in Japanese Linguistics. 2-5 Units.
This proseminar introduces Japanese linguistics research to graduate students and advanced undergraduate students. Through readings and discussions, students will familiarize themselves with materials and references in both English and Japanese in preparation for conducting research effectively in their own areas of interest in Japanese linguistics. They learn the organization and presentation of research projects and conduct a pilot project in their selected area of interest. May be repeated for credit. Prerequisite: JAPANLNG 103 or consent of instructor.

JAPAN 284. Aristocrats, Warriors, Sex Workers, and Barbarians: Lived Life in Early Modern Japanese Painting. 4 Units.
Changes marking the transition from medieval to early modern Japanese society that generated a revolution in visual culture, as exemplified in subjects deemed fit for representation; how commoners joined elites in pictorializing their world, catalyzed by interactions with the Dutch.
Same as: ARTHIST 184, ARTHIST 384, JAPAN 184

JAPAN 285. Arts of War and Peace: Late Medieval and Early Modern Japan, 1500-1868. 4 Units.
Narratives of conflict, pacification, orthodoxy, nostalgia, and novelty through visual culture during the change of episteme from late medieval to early modern, 16th through early 19th centuries. The rhetorical messages of castles, teahouses, gardens, ceramics, paintings, and prints; the influence of Dutch and Chinese visuality; transformation in the roles of art and artist; tensions between the old and the new leading to the modernization of Japan.
Same as: ARTHIST 187, ARTHIST 387, JAPAN 185

JAPAN 287. Pictures of the Floating World: Images from Japanese Popular Culture. 5 Units.
Printed objects produced during the Edo period (1600-1868), including the Ukiyo-e (pictures of the floating world) and lesser-studied genres such as printed books (ehon) and popular broadsheets (kawaraban). How a society constructs itself through images. The borders of the acceptable and censorship; theatricality, spectacle, and slippage; the construction of play, set in conflict against the dominant neo-Confucian ideology of fixed social roles.
Same as: ARTHIST 287, ARTHIST 487X

JAPAN 288. The Japanese Tea Ceremony: The History, Aesthetics, and Politics Behind a National Pastime. 5 Units.
The Japanese tea ceremony, the ultimate premodern multimedia phenomenon, integrates architecture, garden design, ceramics, painting, calligraphy, and other treasured objects into a choreographed ritual wherein host, objects, and guests perform designated roles on a tiny stage sometimes only six feet square.. In addition to its much-touted aesthetic and philosophical aspects, the practice of tea includes inevitable political and rhetorical dimensions. This course traces the evolution of tea practice from its inception within the milieu of courtier diversions, Zen monasteries, and warrior villas, through its various permutations into the 20th century, where it was manipulated by the emerging industrialist class for different-but ultimately similar-ends.
Same as: ARTHIST 287A, JAPAN 188

JAPAN 291. Japanese Pragmatics. 2-4 Units.
The choice of linguistic expressions and our understanding of what is said involve multiple sociocultural, cognitive and discourse factors. Can such pragmatic factors and processes be considered universal to all languages, or are there variations among languages? The course will investigate an array of phenomena observed in Japanese. Through readings and projects, students will deepen their knowledge of Japanese and consider theoretical implications. Prerequisites: one year of Japanese and a course in linguistics, or two years of Japanese, or consent of instructor.
Same as: JAPAN 191

JAPAN 292. Analyzing Japanese Text and Talk. 2-4 Units.
Are there reasons why certain words, phrases, sentences and prosody are chosen by language speakers and writers in specific contexts? What linguistic and extra-linguistic elements give the hearers and readers the impression that certain utterances and passages are friendly, accusatory, officious, humorous, personal, formal, colloquial, etc.? This seminar provides an introduction to different theoretical and analytical approaches to studying language use in context (e.g. pragmatics, sociolinguistics, usage-based grammar, conversational analysis, critical discourse analysis) and an opportunity to critically analyze text and talk. Using the analytical tools acquired through readings and discussions, students will be able to analyze Japanese materials of their selection. The course is designed for graduate students and advanced undergraduate students with interests either (or both) in Japanese linguistics and literature.
Same as: JAPAN 192

JAPAN 293. Acquisition of Japanese as a Second Language. 2-4 Units.
This course provides students with a broad overview of second language acquisition (SLA) research and introduces recent SLA studies on Japanese as a second language (L2). It covers six topics: (1) the evolution of the field, (2) approaches to understanding learner language, (3) current state of knowledge of L2 developmental patterns, (4) theories of L2 learning, (5) factors that affect SLA, and (6) instructed SLA. By reading and discussing exemplary SLA studies on L2 Japanese as well as seminal papers on these topics, students will develop abilities to analyze learner language from multiple perspectives, critically read research reports, and consider implications for L2 teaching.
Same as: JAPAN 193

JAPAN 296. Modern Japanese Literature. 2-5 Units.
Advanced readings. May be repeated for credit. Prerequisite: JAPANLNG 213. Formerly JAPANLIT 396.

JAPAN 297. Points in Japanese Grammar. 2-4 Units.
(Formerly JAPANLIT157/257) The course provides practical but in-depth analyses of selected points in Japanese grammar that are often difficult to acquire within the limited hours of language courses. We consider findings from linguistic research, focusing on differences between similar expressions and distinctions that may not be salient in English, with the aim to provide systematic analytical background for more advanced understanding of the language. May be repeat for credit. Prerequisite: JAPANLNG23 or equivalent for JAPAN197; JAPANLNG103 or equivalent for JAPAN297.
Same as: JAPAN 197

JAPAN 298. The Theory and Practice of Japanese Literary Translation. 2-5 Units.
Theory and cultural status of translation in modern Japanese and English. Comparative analysis of practical translation strategies. Final project is a literary translation of publishable quality. Prerequisite: fourth-year Japanese or consent of instructor.

JAPAN 299. Master's Thesis or Translation. 1-5 Unit.
A total of 5 units, taken in one or more quarters.nn (Staff).

JAPAN 350. Japanese Historical Fiction. 1-5 Unit.
Authors include Mori Ogai, Akutagawa Ryunosuke, Tanizaki Jun'ichiro, Enchi Fumiko, Shiba Ryotaro, Fujisawa Shuhei, and Hiraiwa Yumie. Genre theory, and historical and cultural context. Works vary each year. May be repeated for credit.

JAPAN 377. Seminar: Structure of Japanese. 2-4 Units.
Linguistic constructions in Japanese. Topics vary annually. In 2009-10, focus is on noun-modifying constructions in Japanese from multiple perspectives including syntax, semantics, pragmatics, and acquisition. Contrasts with similar constructions in other languages. Typological implications. Prerequisites: courses in Japanese linguistics, consent of instructor.

JAPAN 381. Topics in Pragmatics and Discourse Analysis. 2-4 Units.
Naturally occurring discourse (conversational, narrative, or written) and theoretical implications. Discourse of different age groups, expressions of identity and persona, and individual styles. May be repeated for credit.

JAPAN 382. Research Projects in Japanese Linguistics. 2-5 Units.
For advanced graduate students with specific research projects in Japanese linguistics. Consent of instructor required.

JAPAN 389. Seminar in Premodern Japanese Literature. 2-5 Units.
This graduate seminar examines the major texts, genres, and conceptual developments in the field of premodern Japanese literary studies. It combines three approaches: 1) Reading seminar covering texts in the original Japanese in annotated print editions. 2) Review of current scholarly works in English and Japanese. 3) Methodology and bibliography workshop on digital and analog tools available to the researcher. On a rotating basis we will focus on the Ancient and Classical periods, the Medieval period, and the Early Modern period.

JAPAN 395. Early Modern Japanese Literature. 2-4 Units.
May be repeated for credit. Prerequisite: 247.

JAPAN 396. Seminar in Modern Japanese Literature. 2-5 Units.
Works and topics vary each year. May be repeated for credit. Prerequisite: fourth-year Japanese or consent of instructor.

JAPAN 399. Dissertation Research. 1-12 Unit.
For doctoral students in Japanese working on dissertations.

JAPAN 801. TGR Project. 0 Units.
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JAPAN 802. TGR Dissertation. 0 Units.
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Korean Courses

KOREA 20. Humanities Core: Dao, Virtue, and Nature -- Foundations of East Asian Thought. 3 Units.
This course explores the values and questions posed in the formative period of East Asian civilizations. Notions of a Dao ("Way") are common to Confucianism, Daoism, and Buddhism, but those systems of thought have radically different ideas about what that Dao is and how it might be realized in society and an individual's life. These systems of thought appeared first in China, and eventually spread to Korea and Japan. Each culture developed its own ways of reconciling the competing systems, but in each case the comprehensive structure of values and human ideals differs significantly from those that appeared elsewhere in the ancient world. The course examines East Asian ideas about self-cultivation, harmonious society, rulership, and the relation between human and nature with a view toward expanding our understanding of these issues in human history, and highlighting their legacies in Asian civilizations today. The course features selective readings in classics of Confucian, Daoist, and Buddhist texts that present the foundational tenets of Asian thought. N. B. This is the first of three courses in the Humanities Core, East Asian track. These courses show how history and ideas shape our world and future. Take all three to experience a year-long intellectual community dedicated to the life of the mind.
Same as: CHINA 20, HUMCORE 20, JAPAN 20

KOREA 21. Humanities Core: Love and Betrayal in Asia. 3 Units.
Why are lovers in storybooks East and West always star-crossed? Why do love and death seem to go together? For every Romeo and Juliet, there are dozens of doomed lovers in the Asian literary repertoires, from Genji's string of embittered mistresses, to the Butterfly lovers in early modern China, to the voices of desire in Koryo love songs, to the devoted adolescent cousins in Dream of the Red Chamber, to the media stars of Korean romantic drama, now wildly popular throughout Asia. In this course, we explore how the love story has evolved over centuries of East Asian history, asking along the way what we can learn about Chinese, Japanese, and Korean views of family and community, gender and sexuality, truth and deception, trust and betrayal, ritual and emotion, and freedom and solidarity from canonical and non-canonical works in East Asian literatures. N.B. This is the second of three courses in the East Asian track. These courses offer an unparalleled opportunity to study East Asian history and culture, past and present. Take all three to experience a year-long intellectual community dedicated to exploring how ideas have shaped our world and future.
Same as: CHINA 21, HUMCORE 21, JAPAN 21

KOREA 21Q. Humanities Core: Love and Betrayal in Asia. 3 Units.
Why are lovers in storybooks East and West always star-crossed? Why do love and death seem to go together? For every Romeo and Juliet, there are dozens of doomed lovers in the Asian literary repertoires, from Genji's string of embittered mistresses, to the Butterfly lovers in early modern China, to the voices of desire in Koryo love songs, to the devoted adolescent cousins in Dream of the Red Chamber, to the media stars of Korean romantic drama, now wildly popular throughout Asia. In this course, we explore how the love story has evolved over centuries of East Asian history, asking along the way what we can learn about Chinese, Japanese, and Korean views of family and community, gender and sexuality, truth and deception, trust and betrayal, ritual and emotion, and freedom and solidarity from canonical and non-canonical works in East Asian literatures. N.B. This is the second of three courses in the East Asian track. These courses offer an unparalleled opportunity to study East Asian history and culture, past and present. Take all three to experience a year-long intellectual community dedicated to exploring how ideas have shaped our world and future.
Same as: CHINA 21Q, HUMCORE 21Q, JAPAN 21Q

KOREA 24. Humanities Core: How to be Modern in East Asia. 3-5 Units.
Modern East Asia was almost continuously convulsed by war and revolution in the 19th and 20th centuries. But the everyday experience of modernity was structured more profoundly by the widening gulf between the country and the city, economically, politically, and culturally. This course examines literary and cinematic works from China and Japan that respond to and reflect on the city/country divide, framing it against issues of class, gender, national identity, and ethnicity. It also explores changing ideas about home/hometown, native soil, the folk, roots, migration, enlightenment, civilization, progress, modernization, nationalism, cosmopolitanism, and sustainability. All materials are in English. This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: CHINA 24, COMPLIT 44, HUMCORE 133, JAPAN 24

KOREA 101N. Kangnam Style: K-pop and the Globalization of Korean Soft Power. 4 Units.
For over a decade now, South Korea has established itself as a tireless generator of soft power, the popularity of its pop-culture spreading from Asia to the rest of the world. This class will look into the economic engine that moves this "cultural contents" industry, and will examine some of its expressions in the form of K-pop. Class meets in East Asia Library (Lathrop Library), Rm 338.

KOREA 112. Asian Screen Cultures. 3-5 Units.
Asian screen culture, ranging from cinema to online games, has (re)shaped the global and national/regional imaginings of Asia. The Post-Cold War intensification of intra-Asian interactions has precipitated the rise of a Pan-Asian regional identity wherein the nation-state is not yet obsolete. What role does screen culture plays in the border-crossing interplay among languages, ideologies, aesthetics, and affect? How does the converging media of screen culture capture local/global desires and propel the history of transformation of sign systems from the written words to visual moving images in a digital time? How do we understand the aesthetic, storytelling, and politics of Asian screen cultures vis-à-vis its historical and social context? While exploring these transnational and transdisciplinary questions, this course will deal with topical issues of Pan-Asian identity, (trans)nationalism, (un)translatability, commodity fetishism, locality and globality, technophobia, and politics of gender. Students will learn how to think and write about screen cultures of East Asia in particular and of our world of screens in general.
Same as: CHINA 112A, CHINA 212A, JAPAN 112A, JAPAN 212A, KOREA 212

KOREA 118. Humanities Core: Everybody Eats: The Language, Culture, and Ethics of Food in East Asia. 3 Units.
Many of us have grown up eating "Asian" at home, with friends, on special occasions, or even without full awareness that Asian is what we were eating. This course situates the three major culinary traditions of East Asia--China, Japan, and Korea--in the histories and civilizations of the region, using food as an introduction to their rich repertoires of literature, art, language, philosophy, religion, and culture. It also situates these seemingly timeless gastronomies within local and global flows, social change, and ethical frameworks. Specifically, we will explore the traditional elements of Korean court food, and the transformation of this cuisine as a consequence of the Korean War and South Korea¿s subsequent globalizing economy; the intersection of traditional Japanese food with past and contemporary identities; and the evolution of Chinese cuisine that accompanies shifting attitudes about the environment, health, and well-being. Questions we will ask ourselves during the quarter include, what is "Asian" about Asian cuisine? How has the language of food changed? Is eating, and talking about eating, a gendered experience? How have changing views of the self and community shifted the conversation around the ethics and ecology of meat consumption?.
Same as: CHINA 118, HUMCORE 22, JAPAN 118

KOREA 120. Narratives of Modern and Contemporary Korea. 4-5 Units.
This introductory survey will examine the development of South and North Korean literature from the turn of the 20th century until the present. The course will be guided by historical and thematic inquiries as we explore literature in the colonial period, in the period of postwar industrialization, and contemporary literature from the last decade. We will supplement our readings with critical writing about Korea from the fields of cultural studies and the social sciences in order to broaden the terms of our engagement with our primary texts.
Same as: KOREA 220

KOREA 121. Doing the Right Thing: Ethical Dilemmas in Korean Film. 3-4 Units.
Ethics and violence seem to be contradictory terms, yet much of Korean film and literature in the past five decades has demonstrated that they are an intricate and in many ways justifiable part of the fabric of contemporary existence. Film exposes time and again the complex ways in which the supposed vanguards of morality, religious institutions, family, schools, and the state are sites of condoned transgression, wherein spiritual and physical violation is inflicted relentlessly. This class will explore the ways in which questions about Truth and the origins of good and evil are mediated through film in the particular context of the political, social, and economic development of postwar South Korea. Tuesday classes will include a brief introduction followed by a film screening that will last on average for two hours; students that are unable to stay until 5 pm will be required to watch the rest of the film on their own.
Same as: KOREA 221

KOREA 122. Translating Cool: Globalized Popular Culture in Asia. 3-4 Units.
Did you grow up watching Pokémon and Power Rangers? Have you danced along to "Gangnam Style"? As we become increasingly exposed to Asian popular culture and the Internet facilitates instant access to new media, previous localized forms of entertainment--animated cartoons, comics, video games, music videos, film, and soap operas--have become part of a global staple. However, these cultural forms have emerged not only in their original form with mediation of subtitles. Many have undergone various processes of adaptation and translation so that we no longer recognize that these products had ever originated elsewhere. This course will immerse students in a range of Japanese and Korean cultural phenomena to reveal the spectrum of translation practices across national boundaries. We will inquire into why these cultural forms have such compelling and powerful staying power, contextualize them within their frames of production, and explore the strategies, limitations, and potential of translational practices.nnContact instructor for place. dafnazur@stanford.edunKnight 201.
Same as: JAPAN 122, JAPAN 222, KOREA 222

KOREA 130. Intimate Encounters: Reading and Translating Korean Literature. 4-5 Units.
Close analysis of fiction and poetry in original Korean. Discussion of the works in a broader context of Korean literature, history, and current events. Translation of Korean fiction that has not previously been translated; select translations will be considered for publication. Prerequisite: three years of Korean language.
Same as: KOREA 230

KOREA 140. Childhood and Children: Culture in East Asia. 3-5 Units.
Literature for children often reflects society's deepest-held convictions and anxieties, and is therefore a critical site for the examination of what is deemed to be the most imperative knowledge for the young generation. In this respect, the analysis of both texts and visual culture for children, including prose, poetry, folk tales, film, and picture books illuminates prevalent discourses of national identity, family, education and gender. Through an examination of a diverse range of genres and supported by the application of literary theories, students will obtain an understanding, in broad strokes, of the birth of childhood and the emergence of children's literature of China, Korea and Japan from the turn of the century until the present.
Same as: KOREA 240

KOREA 151. The Nature of Knowledge: Science and Literature in East Asia. 4-5 Units.
"The Nature of Knowledge" explores the intersections of science and humanities East Asia. It covers a broad geographic area (China, Japan, and Korea) along a long temporal space (14th century - present) to investigate how historical notions about the natural world, the human body, and social order defied, informed, and constructed our current categories of science and humanities. The course will make use of medical, geographic, and cosmological treatises from premodern East Asia, portrayals and uses of science in modern literature, film, and media, as well as theoretical and historical essays on the relationships between literature, science, and society.nnAs part of its exploration of science and the humanities in conjunction, the course addresses how understandings of nature are mediated through techniques of narrative, rhetoric, visualization, and demonstration. In the meantime, it also examines how the emergence of modern disciplinary "science" influenced the development of literary language, tropes, and techniques of subject development. This class will expose the ways that science has been mobilized for various ideological projects and to serve different interests, and will produce insights into contemporary debates about the sciences and humanities.
Same as: CHINA 151B, CHINA 251B, JAPAN 151B, JAPAN 251B, KOREA 251

KOREA 153. Olympic Spectacles: Tokyo, Seoul, Beijing, and Tokyo. 2-5 Units.
The Olympics is the world¿s largest media spectacle watched by millions of people simultaneously. This course studies the summer Olympic games held in East Asia (Tokyo ¿64, Seoul ¿88, and Beijing ¿08) and the spectacles that the host nations created to celebrate their cultures and heritages as well as their newly gained power and status as modern nations. Nation building and branding, modernization and Westernization, Orientalism and self-Orientalization, urban development and gentrification will be studied among other themes. During the 2021 Tokyo Olympics (July 23 ¿ August 3, 2021), we will watch and discuss the events in real time and compare them with the previous games including the 1940 Tokyo Olympics, which was canceled due to World War II.
Same as: KOREA 253

KOREA 154. From State Propaganda to COVID-19 Contract-Tracing: Korean Media and Culture. 2-5 Units.
South Korean media industry is booming. People all over the world listen to K-pop and watch K-drama¿but where did this global phenomenon begin? What is distinctively ¿Korean¿ about the cultural products that we consume? Is ¿Hallyu¿ or ¿K-Wave¿ truly representative of Korean history or culture? If not, what are people missing and misunderstanding? By surveying the history of Korean media from the early 20th century to the present, this course introduces students to critical issues in media studies and Korean culture, which includes: state control and violence, industrialization and urbanization, democracy and labor movements, gender and sexuality, consumer culture, surveillance, and more.
Same as: KOREA 254

KOREA 157. Science, Power, and Knowledge: East Asia to 1900. 3-5 Units.
In the early modern period, East Asian societies featured long-established institutions of learning and traditions of knowledge. This course examines the relationship between knowledge and power in East Asia societies prior to 1900. It explores how knowledge production operated in late imperial China (1550-1900), Chos'n Korea (1392-1910), and Tokugawa Japan (1600-1868). Among the themes addressed are: the state's role in patronizing science and knowledge; major intellectual movements; engagement with Western science and religion; East Asian statecraft; and East Asian understandings of space and geography. nTaking a holistic perspective, it places science and technology in 1) a social and cultural context 2) in relation to other bodies and fields of knowledge 3) in comparison to other societies in a similar historical time period. A socially embedded perspective on knowledge and science seeks to appreciate how politics, society, and knowledge are integrated, and in particular how science and knowledge can be both instruments and sites of political power. By exploring these links, the course will also illustrate how our modern disciplinary categories of natural science,social science and the humanities cannot be taken for granted and the areas of knowledge they cover can be deeply intertwined. nnThe course will also address these issues historically and across geographic regions in East Asia and beyond. The comparative lens and frameworks these perspectives can offer will bring an awareness of the diverse traditions of knowledge production in East Asia. Its examination of East Asian encounters with Western paradigms of knowledge throughout the early modern period will also illustrate how communication occurs across cultural, social, and linguistic barriers and how diverse world-views were managed in these encounters. These encounters of knowledge-exchange between Jesuit missionaries, Ming literati, Korean aristocrats, and Japanese doctors also show how cultural identities were constructed, reinforced, and challenged. These identities, expressed through the mastery of knowledge, are essential for understanding how East Asian reckoned with growing pressures to adopt Western industrial technology and military science in the late nineteenth century.
Same as: CHINA 157, CHINA 257, HISTORY 294J, JAPAN 157, JAPAN 257, KOREA 257

KOREA 157S. Tyranny and Resistance: East Asia's Political Culture and Tradition. 3-5 Units.
What is tyranny? When does political power cease to be legitimate and government become tyrannical? And what can individuals do in the face of tyranny? This course will explore East Asia's long political tradition through the problem of tyranny and its resistance. We will cover a wide range of material. We begin with how seminal political thinkers in East Asia, including Warring States philosophers such as Mencius and Han Feizi, understood the boundary between legitimate and illegitimate authority. We will also look at the strategies used by various political actors, including government officials, cultural or social elites, and common people, when they confronted what they perceived to be the unjust exercise political power, whether in the form of despotic monarchs, corrupt authorities, or general misrule. Our discussions will be wide-ranging. We will pay particular attention to how these historical examples from China, Korea, and Japan¿s past have resonated with modern and contemporary political discussions in contemporary East Asian societies.
Same as: CHINA 157S, JAPAN 157S

KOREA 158. Korean History and Culture before 1900. 3-5 Units.
This course serves as an introduction to Korean culture, society, and history before the modern period. It begins with a discussion of early Korea and controversies over Korean origins; the bulk of the course will be devoted to the Chos'n period (1392-1910), that from the end of medieval Korea to the modern period. Topics to be covered include: Korean national and ethnic origins, the role of religious and intellectual traditions such as Buddhism and Confucianism, popular and indigenous religious practices, the traditional Korean family and social order, state and society during the Chos'n dynasty, vernacular prose literature, Korean's relations with its neighbors in East Asia, and changing conceptions of Korean identity.nThe course will be conducted through the reading and discussion of primary texts in English translation alongside scholarly research. As such, it will emphasize the interpretation of historical sources, which include personal letters, memoirs, and diaries, traditional histories, diplomatic and political documents, along with religious texts and works of art. Scholarly work will help contextualize these materials, while the class discussions will introduce students to existing scholarly debates about the Korean past. Students will be asked also to examine the premodern past with an eye to contemporary reception. The final project for the class is a film study, where a modern Korean film portraying premodern Korea will be analyzed as a case study of how the past works in public historical memory in contemporary Korea, both North and South. An open-ended research paper is also possible, pending instructor approval.
Same as: HISTORY 291K, HISTORY 391K, KOREA 258

KOREA 198C. Senior Research. 1-3 Unit.
EALC students writing a Senior Capstone Essay who wish to conduct research with their adviser may enroll in this course for 1 unit, for 1 quarter.
Same as: Capstone Essay

KOREA 198H. Senior Research. 2-5 Units.
EALC seniors or juniors pursuing honors research should sign up for this course under their faculty adviser for research credit.
Same as: Honors Thesis

KOREA 200. Directed Readings in Korean. 1-12 Unit.
Directed Reading in Korean Studies, requires instructor consent before enrolling.

KOREA 212. Asian Screen Cultures. 3-5 Units.
Asian screen culture, ranging from cinema to online games, has (re)shaped the global and national/regional imaginings of Asia. The Post-Cold War intensification of intra-Asian interactions has precipitated the rise of a Pan-Asian regional identity wherein the nation-state is not yet obsolete. What role does screen culture plays in the border-crossing interplay among languages, ideologies, aesthetics, and affect? How does the converging media of screen culture capture local/global desires and propel the history of transformation of sign systems from the written words to visual moving images in a digital time? How do we understand the aesthetic, storytelling, and politics of Asian screen cultures vis-à-vis its historical and social context? While exploring these transnational and transdisciplinary questions, this course will deal with topical issues of Pan-Asian identity, (trans)nationalism, (un)translatability, commodity fetishism, locality and globality, technophobia, and politics of gender. Students will learn how to think and write about screen cultures of East Asia in particular and of our world of screens in general.
Same as: CHINA 112A, CHINA 212A, JAPAN 112A, JAPAN 212A, KOREA 112

KOREA 220. Narratives of Modern and Contemporary Korea. 4-5 Units.
This introductory survey will examine the development of South and North Korean literature from the turn of the 20th century until the present. The course will be guided by historical and thematic inquiries as we explore literature in the colonial period, in the period of postwar industrialization, and contemporary literature from the last decade. We will supplement our readings with critical writing about Korea from the fields of cultural studies and the social sciences in order to broaden the terms of our engagement with our primary texts.
Same as: KOREA 120

KOREA 221. Doing the Right Thing: Ethical Dilemmas in Korean Film. 3-4 Units.
Ethics and violence seem to be contradictory terms, yet much of Korean film and literature in the past five decades has demonstrated that they are an intricate and in many ways justifiable part of the fabric of contemporary existence. Film exposes time and again the complex ways in which the supposed vanguards of morality, religious institutions, family, schools, and the state are sites of condoned transgression, wherein spiritual and physical violation is inflicted relentlessly. This class will explore the ways in which questions about Truth and the origins of good and evil are mediated through film in the particular context of the political, social, and economic development of postwar South Korea. Tuesday classes will include a brief introduction followed by a film screening that will last on average for two hours; students that are unable to stay until 5 pm will be required to watch the rest of the film on their own.
Same as: KOREA 121

KOREA 222. Translating Cool: Globalized Popular Culture in Asia. 3-4 Units.
Did you grow up watching Pokémon and Power Rangers? Have you danced along to "Gangnam Style"? As we become increasingly exposed to Asian popular culture and the Internet facilitates instant access to new media, previous localized forms of entertainment--animated cartoons, comics, video games, music videos, film, and soap operas--have become part of a global staple. However, these cultural forms have emerged not only in their original form with mediation of subtitles. Many have undergone various processes of adaptation and translation so that we no longer recognize that these products had ever originated elsewhere. This course will immerse students in a range of Japanese and Korean cultural phenomena to reveal the spectrum of translation practices across national boundaries. We will inquire into why these cultural forms have such compelling and powerful staying power, contextualize them within their frames of production, and explore the strategies, limitations, and potential of translational practices.nnContact instructor for place. dafnazur@stanford.edunKnight 201.
Same as: JAPAN 122, JAPAN 222, KOREA 122

KOREA 230. Intimate Encounters: Reading and Translating Korean Literature. 4-5 Units.
Close analysis of fiction and poetry in original Korean. Discussion of the works in a broader context of Korean literature, history, and current events. Translation of Korean fiction that has not previously been translated; select translations will be considered for publication. Prerequisite: three years of Korean language.
Same as: KOREA 130

KOREA 231. Topics in Korean Literature. 4-5 Units.
This year's graduate seminar in Korean Literature will focus on the period of the 1970s, an era marked as one of political turmoil and censorship. This class will examine essays and works of fiction produced by Korea's preeminent poets and writers to understand how they grappled with the changing forms of social and political life, urbanization and industrialization, and with increasing censorship over creative works. Readings will be in Korean and English.
Same as: 1970's

KOREA 240. Childhood and Children: Culture in East Asia. 3-5 Units.
Literature for children often reflects society's deepest-held convictions and anxieties, and is therefore a critical site for the examination of what is deemed to be the most imperative knowledge for the young generation. In this respect, the analysis of both texts and visual culture for children, including prose, poetry, folk tales, film, and picture books illuminates prevalent discourses of national identity, family, education and gender. Through an examination of a diverse range of genres and supported by the application of literary theories, students will obtain an understanding, in broad strokes, of the birth of childhood and the emergence of children's literature of China, Korea and Japan from the turn of the century until the present.
Same as: KOREA 140

KOREA 250. More Real than Fiction: Perspectives of History and Theory in Modern Korean Literature. 2-5 Units.
The past two decades have brought about a significant reassessment and new theoretical engagements with colonial and postcolonial Korean fiction. Colonial fiction has typically been read in binary terms: modernist/realist, resistant/collaborative, and political/escapist. In the postwar era, fiction has typically been viewed in frameworks that take into account fallouts from state developmentalism and division, the movements of bodies and capital, precarious social dynamics and gender politics. The purpose of this survey seminar is to interrogate the relationship between Korean fiction and the social/political/economic conditions of its production. We will do so by reading novels and short fiction from the last century alongside recent scholarship from both within and outside the Korean studies field. While doing so, we inquire into the efficacy of the area studies/Korean studies paradigm and investigate theoretical frameworks that might be applicable to Korean fiction in different periods. May be repeated for credit.
Same as: KOREA 350

KOREA 251. The Nature of Knowledge: Science and Literature in East Asia. 4-5 Units.
"The Nature of Knowledge" explores the intersections of science and humanities East Asia. It covers a broad geographic area (China, Japan, and Korea) along a long temporal space (14th century - present) to investigate how historical notions about the natural world, the human body, and social order defied, informed, and constructed our current categories of science and humanities. The course will make use of medical, geographic, and cosmological treatises from premodern East Asia, portrayals and uses of science in modern literature, film, and media, as well as theoretical and historical essays on the relationships between literature, science, and society.nnAs part of its exploration of science and the humanities in conjunction, the course addresses how understandings of nature are mediated through techniques of narrative, rhetoric, visualization, and demonstration. In the meantime, it also examines how the emergence of modern disciplinary "science" influenced the development of literary language, tropes, and techniques of subject development. This class will expose the ways that science has been mobilized for various ideological projects and to serve different interests, and will produce insights into contemporary debates about the sciences and humanities.
Same as: CHINA 151B, CHINA 251B, JAPAN 151B, JAPAN 251B, KOREA 151

KOREA 253. Olympic Spectacles: Tokyo, Seoul, Beijing, and Tokyo. 2-5 Units.
The Olympics is the world¿s largest media spectacle watched by millions of people simultaneously. This course studies the summer Olympic games held in East Asia (Tokyo ¿64, Seoul ¿88, and Beijing ¿08) and the spectacles that the host nations created to celebrate their cultures and heritages as well as their newly gained power and status as modern nations. Nation building and branding, modernization and Westernization, Orientalism and self-Orientalization, urban development and gentrification will be studied among other themes. During the 2021 Tokyo Olympics (July 23 ¿ August 3, 2021), we will watch and discuss the events in real time and compare them with the previous games including the 1940 Tokyo Olympics, which was canceled due to World War II.
Same as: KOREA 153

KOREA 254. From State Propaganda to COVID-19 Contract-Tracing: Korean Media and Culture. 2-5 Units.
South Korean media industry is booming. People all over the world listen to K-pop and watch K-drama¿but where did this global phenomenon begin? What is distinctively ¿Korean¿ about the cultural products that we consume? Is ¿Hallyu¿ or ¿K-Wave¿ truly representative of Korean history or culture? If not, what are people missing and misunderstanding? By surveying the history of Korean media from the early 20th century to the present, this course introduces students to critical issues in media studies and Korean culture, which includes: state control and violence, industrialization and urbanization, democracy and labor movements, gender and sexuality, consumer culture, surveillance, and more.
Same as: KOREA 154

KOREA 257. Science, Power, and Knowledge: East Asia to 1900. 3-5 Units.
In the early modern period, East Asian societies featured long-established institutions of learning and traditions of knowledge. This course examines the relationship between knowledge and power in East Asia societies prior to 1900. It explores how knowledge production operated in late imperial China (1550-1900), Chos'n Korea (1392-1910), and Tokugawa Japan (1600-1868). Among the themes addressed are: the state's role in patronizing science and knowledge; major intellectual movements; engagement with Western science and religion; East Asian statecraft; and East Asian understandings of space and geography. nTaking a holistic perspective, it places science and technology in 1) a social and cultural context 2) in relation to other bodies and fields of knowledge 3) in comparison to other societies in a similar historical time period. A socially embedded perspective on knowledge and science seeks to appreciate how politics, society, and knowledge are integrated, and in particular how science and knowledge can be both instruments and sites of political power. By exploring these links, the course will also illustrate how our modern disciplinary categories of natural science,social science and the humanities cannot be taken for granted and the areas of knowledge they cover can be deeply intertwined. nnThe course will also address these issues historically and across geographic regions in East Asia and beyond. The comparative lens and frameworks these perspectives can offer will bring an awareness of the diverse traditions of knowledge production in East Asia. Its examination of East Asian encounters with Western paradigms of knowledge throughout the early modern period will also illustrate how communication occurs across cultural, social, and linguistic barriers and how diverse world-views were managed in these encounters. These encounters of knowledge-exchange between Jesuit missionaries, Ming literati, Korean aristocrats, and Japanese doctors also show how cultural identities were constructed, reinforced, and challenged. These identities, expressed through the mastery of knowledge, are essential for understanding how East Asian reckoned with growing pressures to adopt Western industrial technology and military science in the late nineteenth century.
Same as: CHINA 157, CHINA 257, HISTORY 294J, JAPAN 157, JAPAN 257, KOREA 157

KOREA 258. Korean History and Culture before 1900. 3-5 Units.
This course serves as an introduction to Korean culture, society, and history before the modern period. It begins with a discussion of early Korea and controversies over Korean origins; the bulk of the course will be devoted to the Chos'n period (1392-1910), that from the end of medieval Korea to the modern period. Topics to be covered include: Korean national and ethnic origins, the role of religious and intellectual traditions such as Buddhism and Confucianism, popular and indigenous religious practices, the traditional Korean family and social order, state and society during the Chos'n dynasty, vernacular prose literature, Korean's relations with its neighbors in East Asia, and changing conceptions of Korean identity.nThe course will be conducted through the reading and discussion of primary texts in English translation alongside scholarly research. As such, it will emphasize the interpretation of historical sources, which include personal letters, memoirs, and diaries, traditional histories, diplomatic and political documents, along with religious texts and works of art. Scholarly work will help contextualize these materials, while the class discussions will introduce students to existing scholarly debates about the Korean past. Students will be asked also to examine the premodern past with an eye to contemporary reception. The final project for the class is a film study, where a modern Korean film portraying premodern Korea will be analyzed as a case study of how the past works in public historical memory in contemporary Korea, both North and South. An open-ended research paper is also possible, pending instructor approval.
Same as: HISTORY 291K, HISTORY 391K, KOREA 158

KOREA 350. More Real than Fiction: Perspectives of History and Theory in Modern Korean Literature. 2-5 Units.
The past two decades have brought about a significant reassessment and new theoretical engagements with colonial and postcolonial Korean fiction. Colonial fiction has typically been read in binary terms: modernist/realist, resistant/collaborative, and political/escapist. In the postwar era, fiction has typically been viewed in frameworks that take into account fallouts from state developmentalism and division, the movements of bodies and capital, precarious social dynamics and gender politics. The purpose of this survey seminar is to interrogate the relationship between Korean fiction and the social/political/economic conditions of its production. We will do so by reading novels and short fiction from the last century alongside recent scholarship from both within and outside the Korean studies field. While doing so, we inquire into the efficacy of the area studies/Korean studies paradigm and investigate theoretical frameworks that might be applicable to Korean fiction in different periods. May be repeated for credit.
Same as: KOREA 250

KOREA 355. History and Historiography of "Premodern" Korea. 2-5 Units.
This seminar serves as an orientation to the history of ¿premodern¿ Korea through an examination of its historiography. It interrogates how scholars have situated their research questions within existing historiography and the *problématiques* that emerge from this engagement. Students will therefore read earlier, field-defining scholarship alongside more recent, emerging scholarship as a way to understand the development of premodern Korean history as a field. In particular, the course will critically examine the ¿premodern¿/¿modern¿ distinction and evaluate how questions in search of ¿modernity¿ and narratives of ¿modernization¿ have driven research and debates, whether explicitly or implicitly, on the ¿premodern¿ past. Topics to be covered include identity and nationalism, political and social history, gender and law, foreign relations and diplomacy, and economic and social ¿modernization.¿nnAll required readings in English. Ability to read Korean or another Asian language welcome but not required.

EAST ASIAN STUDIES

Courses offered by the Center for East Asian Studies are listed under the subject code EASTASN (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=EASTASN&filter-catalognumber-EASTASN=on) on the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu/) web site. The EASTASN courses listed on ExploreCourses deal primarily with China, Japan, and Korea. Literature courses are listed with the subject codes of CHINA (http://explorecourses.stanford.edu/search/?q=CHINA&view=catalog&page=0&academicYear=&collapse=&filter-departmentcode-CHINA=on&filter-coursestatus-Active=on&filter-catalognumber-CHINA=on), JAPAN (http://explorecourses.stanford.edu/search/?q=JAPAN&view=catalog&page=0&academicYear=&collapse=&filter-departmentcode-JAPAN=on&filter-coursestatus-Active=on&filter-catalognumber-JAPAN=on), KOREA (http://explorecourses.stanford.edu/search/?q=KOREA&view=catalog&page=0&academicYear=&collapse=&filter-coursestatus-Active=on&filter-departmentcode-KOREA=on&filter-catalognumber-KOREA=on), and EALC (http://explorecourses.stanford.edu/search/?q=EALC&view=catalog&page=0&academicYear=&collapse=&filter-departmentcode-EALC=on&filter-coursestatus-Active=on&filter-catalognumber-EALC=on) in ExploreCourses.

Courses in Chinese, Japanese, and Korean language instruction use the subject codes CHINLANG (http://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=&q=CHINLANG&collapse=), JAPANLNG (http://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=&q=JAPANLNG&collapse=), and KORLANG (http://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=&q=KORLANG&collapse=).

Mission

The Center for East Asian Studies (CEAS) supports teaching and research on East Asia-related topics across all disciplines; disseminates knowledge about East Asia through projects of local, regional, national, and international scope; and serves as the intellectual gathering point for a collaborative and innovative community of scholars and students of East Asia. CEAS works with all schools, departments, research centers, and student groups to facilitate and enhance all aspects of East Asia-related research, teaching, outreach and exchange across the Stanford campus.

CEAS is part of Stanford Global Studies (http://sgs.stanford.edu/) in the School of Humanities and Sciences (http://humsci.stanford.edu/). As an East Asia National Resource Center (NRC), supported by the U.S. Department of Education, CEAS serves to strengthen access to and training in the major languages of East Asia, and to broaden East Asia area studies training across all disciplines.

Many other theoretical and methodological courses within various departments at Stanford are taught by faculty who are East Asian specialists; these courses often have a substantial East Asian component and a list of current applicable courses from outside departments may be found on the "Approved Courses" tab of this bulletin.

Undergraduate Programs in East Asian Studies

Undergraduates interested in East Asia can become involved by attending CEAS events, taking courses in the subject codes listed above, or earning a Minor or Bachelor of Arts degree in East Asian Studies. These undergraduate degrees in East Asian Studies are administered by the Department of East Asian Languages and Cultures (https://ealc.stanford.edu/). Stanford Global Studies (https://sgs.stanford.edu/) offers internship opportunities in East Asia, and the Bing Overseas Study Program (http://bosp.stanford.edu/) offers study abroad opportunities in East Asia.

For language study, CEAS provides undergraduate fellowships for language study in China, Japan, or Korea; students must simultaneously apply to a pre-approved language program abroad. Applications are due in February each year. Deadlines and application information can be found on the CEAS website (https://ceas.stanford.edu/). In addition, undergraduates can obtain a coterminal M.A. degree in East Asian Studies (https://ceas.stanford.edu/academics/how-apply/) while concurrently working on their undergraduate major by applying during the regular admissions cycle no later than their senior year.

Graduate Programs in East Asian Studies

Master's Program

Stanford's interdisciplinary M.A. program in East Asian Studies is designed both for students who plan to complete a Ph.D. but who have not yet decided on the particular discipline in which they prefer to work, and for students who wish to gain a background in East Asian Studies in connection with a career in nonacademic fields such as business, law, education, journalism, or government service. The program permits the student to construct a course of study suited to individual intellectual interests and career needs, and is typically completed in two years; the program may be completed within one year, depending on the course load taken and the amount of foreign language training required. Advanced language students or students who are native speakers of Chinese, Japanese, or Korean can potentially complete the program within one year. Students interested in pursuing professional careers are encouraged to plan for additional training through internships or additional graduate professional programs, in conjunction with obtaining an M.A. in East Asian Studies.

The M.A. program allows students a great deal of flexibility in combining language training, interdisciplinary area studies, and a disciplinary concentration. Students are required to demonstrate third year level proficiency in Chinese, Korean or Japanese, according to their research-area focus (either through coursework at Stanford or testing at the 4th year or higher in Stanford language-placement exams), to enroll in a 1 unit core course in East Asian Studies in autumn quarter of the first year, and to complete at least nine additional graduate-level area studies courses, one of which must be chosen from a prescribed list of courses offered in winter quarter of the first year. Of the nine required content courses, three must be in a single department or in the same thematic focus. An M.A. thesis, usually an expansion of a paper written for a graduate seminar or colloquium, is required.

Learning Outcomes

The purpose of the master's program is to further develop specialized knowledge and skills in East Asian Studies, and to prepare students for a professional career or doctoral studies. This is achieved through the completion of East Asia content courses, language training as necessary, and experience with independent research.

Postdoctoral Programs

The Center for East Asian Studies offers a postdoctoral fellowship in Chinese Studies (https://ceas.stanford.edu/opportunities/chinese-studies-postdoctoral-fellowship/) each year. Postdoctoral fellowships

in other areas are available from campus units including but not limited to the Freeman-Spogli Institute for International Studies (http://fsi.stanford.edu/fellowships/), the Walter H. Shorenstein Asia-Pacific Research Center (http://aparc.fsi.stanford.edu/fellowships/14813/), and the Stanford Humanities Center (http://shc.stanford.edu/fellowships/).

Financial Aid

CEAS offers various types of funding for new and continuing students. See the fellowships page (https://ceas.stanford.edu/opportunities/student-prizes-and-fellowships/) of the CEAS web site for the most up-to-date offerings.

Master of Arts in East Asian Studies

University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

The East Asian Studies master's degree program allows a great deal of flexibility in combining language training, interdisciplinary area studies, and a disciplinary concentration. All new students are assigned preliminary faculty advisers at the start of the school year. Members of the staff and faculty are available for academic and career planning. The M.A. program is typically completed in two years, but students who meet the language requirement upon entry and who complete a rigorous selection of courses may be able to graduate in as little as three quarters. Students are urged to complete the course requirements within that first year (3 quarters) unless their goals and background dictate otherwise.

Applicants must submit scores for the General Test of the Graduate Record Examination, official transcripts and a writing sample along with their online application. Foreign applicants are also required to take the Test of English as a Foreign Language (TOEFL). Applications for admission and financial aid should be made online; see the Graduate Admissions (http://gradadmissions.stanford.edu) web site. The deadline for submitting applications for the 2021-22 academic year is December 1, 2020.

Coterminal Master's Program in East Asian Studies

The center admits a limited number of Stanford undergraduates to work toward a coterminal M.A. degree in East Asian Studies. Applications are accepted once a year during the regular CEAS M.A. application cycle. The deadline for the 2021-22 academic year is December 1, 2020. Students may apply after completing 120 units, but no later than the quarter prior to the expected completion of the undergraduate degree. Applicants are expected to meet the same standards as those seeking admission to the M.A. program, and they must submit the following via the online coterminal application:

- a completed Application for Admission to Coterminal Masters' Program (https://www.applyweb.com/stanterm/)
- a written statement of purpose (https://gradadmissions.stanford.edu/applying/starting-your-application/required-application-documents/statement-purpose/)
- an unofficial Stanford transcript
- three letters of recommendation, at least two of which should be from members of the department of concentration
- first 15 pages of a representative writing sample (such as a seminar paper, term paper, honors thesis, or journal article.)
- copy of scores from the General Test of the Graduate Record Exam (official score should be sent to Stanford's school code 4704)
- a list of courses the applicant intends to take to fulfill degree requirements.

Coterm applications are reviewed along with peer applications by the M.A. Admissions Committee of the Center for East Asian Studies (CEAS).

Students must meet all requirements for both B.A. and M.A. degrees. They must complete a total of 15 full-time quarters or the equivalent, or three full quarters after completing 180 units for a total of 226 units. Coterms are not eligible for University financial aid, but are eligible to apply for Foreign Language and Area Studies (FLAS) (https://ceas.stanford.edu/opportunities/student-prizes-and-fellowships/) and other fellowships administered by CEAS.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken three quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to the graduate career. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Degree Requirements

Language Requirement

Students must complete the equivalent of Stanford's first three full years of language training in Chinese, Japanese, or Korean. Other East Asian languages may be accepted by petition. Students entering the program without any language preparation should complete first- and second-year Chinese, Japanese, or Korean within the first year of residence at Stanford if they intend to graduate within two years (this would necessitate completing a summer language program). All language courses taken at Stanford used toward fulfilling the language requirement must be for letter grades and completed with a grade of 'B' or higher. Conversation classes cannot be used for meeting this requirement, and units from the language courses numbered 1-99 do not count toward the 46 units required for the degree. Language courses numbered 100 and above can be used toward meeting the 46 units minimum for the degree, but cannot be used toward fulfilling the content courses requirement.

The language requirement may be satisfied in part or in full by placing into an appropriate Stanford language class through the language proficiency exam given by the Language Center. Students who fulfill this minimum three-year language requirement before completing other requirements are encouraged to continue language study, or take courses in which Chinese, Japanese, or Korean are used, for the duration of the program.

The language used to meet the language proficiency requirement should match the student's country/region of focus.

Language courses are listed under the following subject codes on the Stanford Bulletin's ExploreCourses web site: CHINLANG (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=CHINLANG&filter-catalognumber-CHINLANG=on), JAPANLNG (http://explorecourses.stanford.edu/CourseSearch/search/?

view=catalog&catalog=&page=0&q=JAPANLNG&filter-catalognumber-JAPANLNG=on), and KORLANG (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=KORLANG&filter-catalognumber-KORLANG=on).

M.A. Thesis Requirement

A master's thesis, representing a substantial piece of original research, should be filed with the center's program office as part of the graduation requirements. With the adviser's approval, the master's thesis requirement may be satisfied by expanding a research paper written for an advanced course, and should have a minimum of 10,000 words in the main body of the thesis (excluding references, citations, appendices, etc.). The M.A. thesis is due at noon on the last day of classes, of the quarter in which the student applies to graduate; see the Academic Calendar (p. 7) for specific dates.

Students are also required to attend, at a minimum, one CEAS Thesis Workshop at least one quarter prior to the quarter in which the student applies to graduate. CEAS Thesis Workshops are offered biannually.

Area Studies and Unit Requirements

Students must complete a minimum total of 46 units for the degree at Stanford, comprised of:

1. 1-unit core course, EASTASN 330 Core Seminar: Issues and Approaches in East Asian Studies
2. At least 9 approved content courses, at least 30 units of which must be at or above the 200 level (at or above 300 level for HISTORY courses) and meeting the following criteria:
   a. Are on the approved East Asian Studies course list (see Approved Courses tab (p. 1357)), or have been approved by petition (maximum 3 petitions)
   b. Taken for a letter grade and completed with a 'B' or higher ('P' or higher in GSB courses and Law courses)
   c. Taken for 3 units or more
   d. Do not count as part of the language requirement
   e. At least three of the nine courses must be either in the same department or within the same thematic focus across several departments (see sample themes below).
   f. Must include one pre-designated course offered in Winter Quarter of the first year. This year's course options are The International Relations of Asia since World War II (EASTASN 297) and The Nature of Knowledge: Science and Literature in East Asia (JAPAN 251B) (also listed as CHINA 251B/KOREA 251).
3. Additional courses as necessary to reach the minimum 46 units for the degree meeting the following criteria:
   a. Taken for a letter grade
   b. At least level 100 or above (above 200 for HISTORY courses)
   c. Must be an academic content course, such as a lecture, seminar, or colloquium (no activity courses, EFS language classes, etc.) Language classes are acceptable if the course number is above level 100 and it is taken for a letter grade.
4. The cumulative grade point average (GPA) for all courses must be 3.0 or higher; grades for the nine content courses must be a 'B' or higher.

Sample Theme 1

		Units
JAPAN 251	Japanese Business Culture and Systems	3-5
LAW 5016	Japanese Law, Society and Economy	3
JAPAN 238	Introduction to Modern Japanese Literature and Culture	3-5

Sample Theme 2

		Units
EASTASN 289K	Korea and the World	3
KOREA 101N	Kangnam Style: K-pop and the Globalization of Korean Soft Power	4
SOC 211	State and Society in Korea	4

Sample Theme 3

		Units
EASTASN 262	Seminar on the Evolution of the Modern Chinese State, 1550-Present	3-5
POLISCI 348	Chinese Politics	5
INTLPOL 246	China's Foreign Policies: Objectives, Instruments, and Impacts	4

Course Petitions and Directed Reading

Some theory-oriented or methodological courses may be used to meet part of the 9 courses requirements, provided that they are demonstrably useful for understanding East Asian problems. A course petition (https://ceas.stanford.edu/academics/undergraduate-program/forms/) and syllabus must be submitted no later than the end of the second week of the quarter in which the course is offered. Students are limited to 3 petitions total. Credit toward the course requirements is not given for courses taken before entering the M.A. program, however students may take courses for exchange credit at the University of California, Berkeley, with the approval of their adviser and the Office of the University Registrar.

Students may choose to enroll in a directed reading course with a faculty member if the current course offerings do not meet a particular research or study need. Directed reading courses are independent study projects a student may undertake with a relevant Stanford faculty member. Once the student has found a faculty member to support his or her studies, the student must inform the student services officer immediately so that the appropriate section can be added for EASTASN 300 Graduate Directed Reading. The limitations for directed reading units are:

1. A maximum of 5 units may apply towards the 46-unit degree requirement.
2. If applying the units to the 9 courses requirement, the student must submit a detailed syllabus approved by their directed reading instructor prior to enrolling in the course and the course must be taken for at least 3 units.
3. It must be taken for a letter grade.

Joint and Dual Degree Programs in East Asian Studies

East Asian Studies and Law

This joint degree program grants an M.A. degree in East Asian Studies and a Doctor of Jurisprudence (J.D.) degree. It is designed to train students interested in a career in teaching, research, or the practice of law related to East Asian legal affairs. Students must apply separately to the East Asian Studies M.A. program and to the Stanford School of Law and be accepted by both. Completing this combined course of study requires approximately four academic years, depending on the student's background and level of training in Chinese, Japanese, or Korean. Up to 45 units of approved courses may be counted towards both degrees. For more information, see the "Joint Degree Programs (http://exploredegrees.stanford.edu/graduatedegrees/#jointdegreestext)" section of this bulletin and the Stanford Law School's web site (http://www.law.stanford.edu/degrees/joint/). Students who have been accepted by both programs should consult with the departments to determine which courses can be double-counted.

East Asian Studies and Education

This dual degree program grants an M.A. degree in East Asian Studies and a secondary school teaching credential in social studies. To be eligible for this program, students should apply to the M.A. program in East Asian Studies and then apply to the Stanford Teacher Education Program during the first year at Stanford. Completing the dual program requires at least two years, including one summer session when beginning the education component of the program. Admissions processes for both programs are completely independent of one another and units from courses can only be applied to one degree or the other, not both.

East Asian Studies and Business

This dual degree program grants an M.A. degree in East Asian Studies and a Master of Business Administration degree. Students must apply separately to the East Asian Studies M.A. program and the Graduate School of Business and be accepted by both. Completing this combined course of study requires approximately three academic years (perhaps including summer sessions), depending on the student's background and level of training in Chinese, Japanese, or Korean language. Admissions processes for both programs are completely independent of each other and units from courses can only be applied to one degree or the other, not both.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

Courses used to complete the nine content course degree requirement for the East Asian Studies M.A. Program must be taken for a letter grade when that option is available. Additional elective units used to reach the overall 46-unit requirement for the program can be taken as pass/no pass, although students are highly encouraged to enroll in the graded option, when available. Courses which offer only a pass/no pass option (grade of 'CR'= credit or 'S'= Satisfactory) may also be counted toward satisfaction of the nine content course requirement in academic year 2020-21, provided they are already included on the East Asian Studies Pre-approved course list, or are approved as a petitioned course.

Graduate Advising Expectations

The Center for East Asian Studies is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, and exploring academic opportunities and professional pathways. Program administrative staff are available for advising students on program policies and degree requirements, as well as course selection.

Graduate students are active contributors to the advising relationship; they should proactively seek academic and professional guidance, take responsibility for informing themselves of policies and degree requirements for their graduate program, and remain aware of all program-specific and University-wide deadlines.

At or before the start of graduate study, normally at the beginning of Autumn Quarter, each student is assigned an adviser: a member of the program's faculty who provides research advice and guidance in course selection and in exploring academic opportunities and professional pathways. Usually, the same faculty member serves as program adviser for the duration of master's study; however, formal adviser change requests are possible in consultation with CEAS staff.

CEAS students are required to meet with their adviser at least twice per quarter and they must submit adviser meeting forms (https://drive.google.com/file/d/1MeDCzND9nK_q-GQ45esEOMo4LsPHF-nD/view/) to the program office as proof. Students are expected to have a discussion with their adviser during or before the first week of each quarter to agree upon the courses that the student plans to take that quarter.

The department's student services office is also an important part of the advising team. It informs students and advisers about University and department requirements, procedures, and opportunities, and it maintains the official records of advising assignments and approvals. In addition, the center lecturer and student services officer meet with all students in Spring Quarter each year, and are available during the academic year by email and during office hours.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin. Academic advising by Stanford faculty is a critical component of all graduate students' education and additional resources can be found in the Policies and Best Practices for Advising Relationships at Stanford (http://stanford.box.com/shared/static/73oj7zqvy9h0fezqf310onbuunv91nyl.pdf) and the Guidelines for Faculty-Student Advising at Stanford (https://stanford.box.com/shared/static/mespm59bcanq03o4pppu7r4n9p4sb6t6.pdf).

Director: Dafna Zur

Director of Graduate Studies: Dafna Zur

Affiliated Faculty and Staff:

Anthropology: Lisa M. Curran, Miyako Inoue, James Holland Jones, Matthew Kohrman, Stephen Murphy-Shigematsu, Barbara Voss, Sylvia J. Yanagisako

Art and Art History: Marci Kwon, Jean Ma, Richard Vinograd, Xiaoze Xie

Biology: Marcus W. Feldman, Peter Vitousek

Business: William Barnett, Charles M. Lee, Hau Lee, Joseph Piotroski, Kenneth Singleton, David W. Brady, Condoleezza Rice

Center for International Security and Cooperation: Chaim Braun

Civil and Environmental Engineering: David Freyberg, Renate Fruchter, Leonard Ortolano

Communication: James Fishkin, Jennifer Pan

Comparative Literature: David Palumbo-Liu

Earth System Science: Page Chamberlain, Eric F. B. Lambin, Rosamond L. Naylor

East Asian Languages and Cultures: Richard Dasher, Ronald Egan, Haiyan Lee, Indra Levy, Li Liu, Yoshiko Matsumoto, James Reichert, Ariel Stilerman, Chao Fen Sun, Ban Wang, Yiqun Zhou, Dafna Zur

East Asian Studies: Alice L. Miller

Education: Anthony L. Antonio, Martin Carnoy, Francisco O. Ramirez, Christine M. Wotipka

Freeman Spogli Institute for International Studies: Michael H. Armacost, Jennifer Choo, Donald K. Emmerson (emeritus), Thomas Fingar, Francis Fukuyama, Yong Suk Lee, Oriana Mastro, Scott D. Rozelle, Daniel C. Sneider, Mark Thurber, Kiyoteru Tsutsui, Li-Tai Xue

Geological Sciences: Stephan A. Graham, Jonathan Payne

Geophysics: Simon L. Klemperer

History: Gordon Chang, Mark E. Lewis, Martin Lewis, Yumi Moon, Thomas Mullaney, Matthew Sommer, Jun Uchida, Kären Wigen, Mikael D. Wolfe

Ho Center for Buddhist Studies: John Kieschnick, Irene H. Lin

Hoover Institution: Jeremy Carl, Larry Diamond, Tai-Chun Kuo, Hsiao-ting Lin, Toshio Nishi, William J. Perry (emeritus)

Law: Jeffrey Ball, Mei Gechlik, Thomas Heller (emeritus), Erik Jenson, Curtis Milhaupt

Linguistics: Daniel Jurafsky

Management Science and Engineering: Siegfried S. Hecker (emeritus), Pamela Hinds, Edison Tse, Yinyu Ye

Music: Jaroslaw Kapuscinski, Joo-Mee Lee, Stephen Sano, Linda Uyechi, Hui Daisy You

Political Science: Jean C. Oi, Terry M. Moe, Yiqing Xu, Barry R. Weingast

Religious Studies: Carl W. Bielefeldt (emeritus), James D. Gentry, Paul M. Harrison, Michaela Mross, Lee H. Yearley

Sociology: Gi-Wook Shin, Andrew Walder, Xueguang Zhou

Stanford Language Center: Marina Chung, Robert Clark, Sik Lee Dennig, Michelle DiBello, Hee-sun Kim, Nina Yuhsun Lin, Momoyo Kubo Lowdermilk, Emiko Yasumoto Magnani, Yasuko Matsumoto, May Miao, Emi Mukai, Momoe Saito Fu, Le Tang, Yoshiko Tomiyama, Huazhi Wang, Hannah Yoon, Hong Zeng, Youping Zhang, Xiaofang Zhou

Approved Content Courses

Because East Asian Studies is an interdisciplinary major, the majority of the courses that apply toward the degree are listed under other departments. In addition to courses listed under the EASTASN subject code, students should check the list below, as well as on the Stanford Bulletin's ExploreCourses site (http://explorecourses.stanford.edu/) for courses in other departments that will meet the degree requirements for East Asian Studies; such departments include (but are not limited to) Anthropology, East Asian Languages and Cultures, History, Political Science, Religious Studies, and Sociology. Not all courses offered by other departments that have East Asia content may be listed below or on the CEAS web site. If there is a course not listed below that has East Asia content, check with the Center for East Asian Studies staff to verify whether or not it can be used to fulfill the degree requirements.

The following course list represents courses that may, with the adviser's approval, be used to fulfill degree requirements (please see the Law School (https://law.stanford.edu/education/courses/non-law-students/) or GSB (http://www.gsb.stanford.edu/nongsbreg/) web sites for instructions on how to enroll in their courses):

China

		Units
ANTHRO 235B	Waste Politics: Contesting Toxicity, Value, and Power	3
ANTHRO 243	Title Social Change in Contemporary China: Modernity and the Middle Kingdom	4-5
ANTHRO 248	Health, Politics, and Culture of Modern China	4-5
ARTHIST 288B	The Enduring Passion for Ink: Contemporary Chinese Ink Painting	5
ARTHIST 289A	Making the Masterpiece in Song Dynasty China	5
ARTHIST 382B	Cultures in Competition: Arts of Song-Era China	4
ARTHIST 383	Theatre of the World: Contemporary Chinese Art	4
ARTHIST 385	Arts of China in the Early Modern World, 1550-1800	4
ARTHIST 388A	The History of Modern and Contemporary Japanese and Chinese Architecture and Urbanism	4
ARTHIST 388B	From Shanghai Modern to Global Contemporary: Frontiers of Modern Chinese Art	4
ARTHIST 426	New Landscapes of China: Ecologies, Media, Imaginaries	4-5
ARTHIST 468	Encountering Contemporary Chinese Painting: Media and Themes	5
ARTHIST 480B	The World of Chen Hongshou (1598-1652)	5
ARTHIST 481	Chinese Portraiture	4
ARTHIST 482A	Approaching Dunhuang: Methods and Debates	5
ARTHIST 483	Chinese Buddhist Painting: Visions and Practices	5
ARTHIST 486A	Exhibition Seminar: Contemporary Chinese Calligraphy and Painting	5
ARTHIST 489	Connoisseurship Studies of Chinese Painting, Calligraphy, and Seals	5
ARTHIST 489A	Making the Masterpiece in Song Dynasty China	5
CHINA 201	Proseminar: Bibliographic and Research Methods in Chinese Studies	3-5
CHINA 205	Beginning Classical Chinese, First Quarter	2-5
CHINA 206	Beginning Classical Chinese, Second Quarter	2-5
CHINA 207	Beginning Classical Chinese, Third Quarter	2-5
CHINA 208	Advanced Classical Chinese: Philosophical Texts	3-5
CHINA 211	Literature in 20th-Century China	4-5
CHINA 212	Tiananmen Square: History, Literature, Iconography	3-5
CHINA 215	Sex, Gender, and Power in Modern China	3-5
CHINA 230	Image and Text in Chinese Painting	3-5
CHINA 251	Popular Culture and Casino Capitalism in China	3-4

CHINA 253	Chinese Bodies, Chinese Selves	3-5
CHINA 255	The Culture of Entertainment in China	3-4
CHINA 255A	Health, Politics, and Culture of Modern China	4-5
CHINA 259	Beijing and Shanghai: Twin Cities in Chinese History	3-5
CHINA 260	Classical Poetry: Reading, Theory, Interpretation	4
CHINA 261	Soldiers and Bandits in Chinese Culture	3-5
CHINA 263	Chinese Biographies of Women	3-5
CHINA 265	Major Figures in Classical Chinese Poetry	2-5
CHINA 266	Chinese Ci Poetry (Song Lyrics)	3-4
CHINA 268	The Chinese Family	3-5
CHINA 270	Chinese Language, Culture, and Society	2-5
CHINA 274	New Directions in the Study of Poetry and Literati Culture	3-4
CHINA 276	Emergence of Chinese Civilization from Caves to Palaces	3-4
CHINA 277	Painting, Poetry, and Calligraphy: Word and Image Studies	2-5
CHINA 278	Lives of Confucius	3-5
CHINA 283	China's Dynastic Founders	3-5
CHINA 288	Modern China Studies: State of the Field	3-5
CHINA 292	The History of Chinese	4
CHINA 340	Chinese Justice: Law, Morality, and Literature	2-5
CHINA 354A	Shaping the Theater: Two Foundational Plays of Early Chinese Drama	2-5
CHINA 369	Late Imperial Chinese Fiction	2-5
CHINA 371	Critical Theory and Ecology: A Cross-Cultural Perspective	2-5
CHINA 376	Methods, Theories, and Practice in Chinese Archaeology	2-5
CHINA 379	For Love of Country: National Narratives in Chinese Literature and Film	3-5
CHINA 393	Frontier Expansion and Ethnic Statecraft in the Qing Empire	4-5
COMM 257	Information Control in Authoritarian Regimes	4-5
COMM 258	Censorship and Propaganda	4-5
COMPLIT 371	Critical Theory and Ecology: A Cross-Cultural Perspective	2-5
CSRE 298G	Race, Gender, & Sexuality in Chinese History	5
EASTASN 262	Seminar on the Evolution of the Modern Chinese State, 1550-Present	3-5
EASTASN 285	The United States, China, & Global Security	2
EASTASN 294	The Rise of China in World Affairs	3-5
ECON 131	The Chinese Economy	4
FEMGEN 250	Sex, Gender, and Power in Modern China	3-5
FILMSTUD 333	Contemporary Chinese Auteurs	4
FILMSTUD 336	Gender and Sexuality in Chinese Cinema	4
FILMSTUD 436	Chinese Cinema	5
FINANCE 377	China's Financial System	3
HISTORY 391B	The City in Imperial China	4-5
HISTORY 391G	Pre-Modern Chinese Warfare	4-5
HISTORY 393	Frontier Expansion and Ethnic Statecraft in the Qing Empire	4-5
HISTORY 395J	Gender and Sexuality in Chinese History	4-5
HISTORY 398C	Race, Gender, & Sexuality in Chinese History	5
HISTORY 398E	Chinese Pop Culture: A History	4-5
HISTORY 496A	Research Seminar in Chinese History	4-5
HISTORY 496B	Research Seminar in Chinese History	4-5
INTLPOL 246	China's Foreign Policies: Objectives, Instruments, and Impacts	4
INTLPOL 371	Policy Practicum: Assessing the Impact of China's Global Infrastructure Spending on Climate Change	2-3
LAW 807O	Policy Practicum: Assessing the Impact of China's Global Infrastructure Spending on Climate Change	2-3
LAW 5001	China Law and Business	3
LAW 5031	Law and Society in Late Imperial China	3
POLISCI 314D	Democracy, Development, and the Rule of Law	3-5
POLISCI 334P	Deliberative Democracy and its Critics	3-5
POLISCI 348	Chinese Politics	3-5
POLISCI 348D	China in the Global Economy	3-5
POLISCI 443S	Political Economy of Reform in China	3-5
POLISCI 443T	Approaches to Chinese Politics	3-5
RELIGST 212	Zhuangzi	5
RELIGST 315A	Chinese Buddhism	3-5
RELIGST 347	Chinese Buddhist Texts	3-5
SOC 207	China After Mao	5
SOC 216	Chinese Organizations and Management	5
SOC 217A	China Under Mao	5
SOC 217B	Chinese Politics and Society	3-5
STRAMGT 579	The Political Economy of China	2
STRAMGT 583	The Challenges in/with China	2

Japan

		Units
ANTHRO 256	Japanese Anthropology	5
ANTHRO 257	Japanese Popular Culture	3
ARTHIST 287	Pictures of the Floating World: Images from Japanese Popular Culture	5
ARTHIST 287A	The Japanese Tea Ceremony: The History, Aesthetics, and Politics Behind a National Pastime	5
ARTHIST 384	Aristocrats, Warriors, Sex Workers, and Barbarians: Lived Life in Early Modern Japanese Painting	4
ARTHIST 387	Arts of War and Peace: Late Medieval and Early Modern Japan, 1500-1868	4
ARTHIST 388A	The History of Modern and Contemporary Japanese and Chinese Architecture and Urbanism	4
ARTHIST 485	The Situation of the Artist in Traditional Japan	5
HISTORY 195C	Modern Japanese History: From Samurai to Pokemon	5
HISTORY 302G	Peoples, Armies and Governments of the Second World War	4-5
HISTORY 392D	Japan in Asia, Asia in Japan	4-5
HISTORY 395B	Readings in Early Modern Japanese History	4-5
HISTORY 396D	Historiography of Modern Japan	4-5
HISTORY 498C	Japanese Imperial Archives, Part 1	4-5
HISTORY 498D	Japanese Imperial Archives, Part 2	4-5

INTLPOL 225	Technology Policy, Innovation, and Startup Ecosystems: Japan and Comparative Perspectives	3
JAPAN 201	Proseminar: Introduction to Graduate Study in Japanese	2-5
JAPAN 210	Romance, Desire, and Sexuality in Modern Japanese Literature	3-4
JAPAN 221	Translating Japan, Translating the West	3-4
JAPAN 223	Critical Translation Studies	3-5
JAPAN 235	Academic Readings in Japanese I	2-4
JAPAN 238	Introduction to Modern Japanese Literature and Culture	3-5
JAPAN 239	Modern Japanese Short Stories	2-4
JAPAN 251	Japanese Business Culture and Systems	3-5
JAPAN 252A	Special Topics in Japanese Literature	2-5
JAPAN 255	The Vampire in Anime	3-4
JAPAN 258	A Critical and Historical Survey of Classical Japanese Literature	2-5
JAPAN 259	The Paranormal in Premodern Japan	4
JAPAN 262	Japanese Poetry and Poetics	2-4
JAPAN 263	Japanese Performance Traditions	3-4
JAPAN 264	Introduction to Premodern Japanese	3-5
JAPAN 265	Readings in Premodern Japanese	2-5
JAPAN 270	The Tale of Genji and Its Historical Reception	2-5
JAPAN 279	Research in Japanese Linguistics	2-5
JAPAN 287	Pictures of the Floating World: Images from Japanese Popular Culture	5
JAPAN 288	The Japanese Tea Ceremony: The History, Aesthetics, and Politics Behind a National Pastime	5
JAPAN 292	Analyzing Japanese Text and Talk	2-4
JAPAN 293	Acquisition of Japanese as a Second Language	2-4
JAPAN 297	Points in Japanese Grammar	2-4
JAPAN 298	The Theory and Practice of Japanese Literary Translation	2-5
JAPAN 350	Japanese Historical Fiction	1-5
JAPAN 389	Seminar in Premodern Japanese Literature	2-5
JAPAN 396	Seminar in Modern Japanese Literature	2-5
LAW 5016	Japanese Law, Society and Economy	3
RELIGST 202A	Monsters, Ghosts and Other Fantastic Beings: The Supernatural and the Mysterious in Japanese Culture	4
RELIGST 253	Recent Research on Japanese Buddhism	3-5
RELIGST 317	The Lotus Sutra in Japanese Buddhism	3-5
RELIGST 358	Readings in Japanese Buddhist Texts	3-5

Korea

		Units
EASTASN 289K	Korea and the World	3
HISTORY 390	North Korea in Historical Perspective	4-5
HISTORY 392D	Japan in Asia, Asia in Japan	4-5
HISTORY 392F	Culture and Religions in Korean History	4-5
HISTORY 498C	Japanese Imperial Archives, Part 1	4-5
HISTORY 498D	Japanese Imperial Archives, Part 2	4-5
KOREA 220	Narratives of Modern and Contemporary Korea	4-5
KOREA 221	Doing the Right Thing: Ethical Dilemmas in Korean Film	3-4
KOREA 230	Intimate Encounters: Reading and Translating Korean Literature	4-5
KOREA 231	Topics in Korean Literature	4-5
KOREA 240	Childhood and Children: Culture in East Asia	3-5
KOREA 250	More Real than Fiction: Perspectives of History and Theory in Modern Korean Literature	2-5
KOREA 254	From State Propaganda to COVID-19 Contract-Tracing: Korean Media and Culture	2-5
KOREA 258	Korean History and Culture before 1900	3-5
SOC 211	State and Society in Korea	4

East Asia

		Units
ARCHLGY 235	Constructing National History in East Asian Archaeology	3-5
ARTHIST 485A	Exhibiting East Asian Art	1-5
CHINA 251B	The Nature of Knowledge: Science and Literature in East Asia	4-5
CHINA 257	Science, Power, and Knowledge: East Asia to 1900	3-5
CHINA 275	Constructing National History in East Asian Archaeology	3-5
EASTASN 217	Health and Healthcare Systems in East Asia	3-5
EASTASN 243	Taiwan's Democratic Evolution	3-5
EASTASN 268	Taiwan Security Issues	3-5
EASTASN 277	Divided Memories & Reconciliation: the formation of wartime historical memory in the Pacific	4
EASTASN 279	Rebalancing Economic Systems in a World Driven by Tech: Quality-of-Life in Socio-Cultural Context	4
EASTASN 297	The International Relations of Asia since World War II	3-5
EDUC 202	Introduction to International and Comparative Education	3
EDUC 306D	World, Societal, and Educational Change: Comparative Perspectives	4-5
FILMSTUD 316	International Documentary	4
FILMSTUD 481	Contemporary Asian Filmmakers	4
HISTORY 294J	Science, Power, and Knowledge: East Asia to 1900	3-5
HISTORY 391	East Asia in the Early Buddhist Age	4-5
HISTORY 392D	Japan in Asia, Asia in Japan	4-5
HISTORY 394D	Manchuria: Cradle of Conflict, Cockpit of Asia	4-5
HISTORY 397	The Cold War and East Asia	5
INTLPOL 224	Economic Development and Challenges of East Asia	3-5
INTLPOL 244	U.S. Policy toward Northeast Asia	4
JAPAN 251B	The Nature of Knowledge: Science and Literature in East Asia	4-5
JAPAN 257	Science, Power, and Knowledge: East Asia to 1900	3-5
KOREA 251	The Nature of Knowledge: Science and Literature in East Asia	4-5

KOREA 253	Olympic Spectacles: Tokyo, Seoul, Beijing, and Tokyo	2-5
KOREA 257	Science, Power, and Knowledge: East Asia to 1900	3-5
MS&E 293	Technology and National Security: Past, Present, and Future	3-4
POLISCI 313R	Political Economy of Financial Crisis	5
RELIGST 139	Religion along the Silk Road	4
RELIGST 314	Seminar in Buddhist Historiography	3-5
RELIGST 356	Readings in Buddhist Tantra: Wheel of Time	3-5
RELIGST 381	Asian Religions in America; Asian American Religions	4
SOC 267A	Asia-Pacific Transformation	4
SOC 309	Nations and Nationalism	3-5
SOC 317B	Chinese Politics and Society	3-5

Courses

EASTASN 77. Divided Memories & Reconciliation: the formation of wartime historical memory in the Pacific. 4 Units.
Divided Memories will examine the formation of historical memory about World War Two in Asia, looking comparatively at the national memories of China, Japan, Korea, and the United States. It will also study efforts at reconciliation in contemporary Asia. The course will look at the role of textbooks, popular culture, with an emphasis on cinema, and elite opinion on the formation of wartime memory. We will study and discuss controversial issues such as war crimes, forced labor, sexual servitude, and the use of atomic weapons. Class will combine lectures with in class discussion, with short essays or papers.
Same as: EASTASN 277

EASTASN 94. The Rise of China in World Affairs. 3-5 Units.
This course examines the impact and implications of the rise of China in contemporary world politics from a historical and international relations perspective. It reviews China's halting progress into the international system, sketches the evolution of PRC foreign policy since 1949, and analyzes China's developmental priorities and domestic political context as they figure into Beijing's interactions with the world. It sketches American policy toward the PRC, and it assesses alternative approaches to dealing with China on such issues as arms and nuclear proliferation, regional security arrangements, international trade and investment, human rights, environmental problems, and the Taiwan and Tibet questions.
Same as: EASTASN 294

EASTASN 97. The International Relations of Asia since World War II. 3-5 Units.
Asian international relations since World War II were dominated by the efforts of the newly independent nation-states of Asia, almost all of which had been colonies before the war, to establish and maintain sovereignty in a context of American and Soviet competition for influence in the region. This course traces the major developments of the period, including the Chinese civil war, the U.S. occupation of Japan, the division of Korea and the Korean War, the South and Southeast Asian independence struggles, the American and Soviet alliance systems, the Vietnam War, the strategic realignments that led to the end of the Cold War in Asia, the emergence of Central Asia, and the legacy of issues that the period has posed for the region today.
Same as: EASTASN 297

EASTASN 117. Health and Healthcare Systems in East Asia. 3-5 Units.
China, Japan, and both Koreas. Healthcare economics as applied to East Asian health policy, including economic development, population aging, infectious disease outbreaks (SARS, avian flu), social health insurance, health service delivery, payment incentives, competition, workforce policy, pharmaceutical industry, and regulation. No prior knowledge of economics or healthcare required.
Same as: EASTASN 217

EASTASN 143. Taiwan's Democratic Evolution. 3-5 Units.
This course is an introduction to the contemporary politics of Taiwan. Once a poor, insecure autocracy, today Taiwan has been transformed into a prosperous and stable liberal democracy, albeit one whose long-term security remains imperiled by the rising power of the People's Republic of China. We will draw on concepts and theories from political science to explore distinct aspects of this ongoing political evolution, including the transition to and consolidation of democracy, origins and trajectory of economic and social development, sources of Taiwanese nationalism, security of the Taiwanese state and its relationship to the PRC and the United States, parties and elections, and public policy processes and challenges.
Same as: EASTASN 243

EASTASN 162. Seminar on the Evolution of the Modern Chinese State, 1550-Present. 3-5 Units.
This seminar will assess the evolving response of the late imperial, early Republican, Nanjing Republic, and the PRC regimes in response to China's changing international setting, to successive revolutions in warfare, and to fundamental economic, social and demographic trends domestically from the 16th century to present. It will assess the capacities of each successive Chinese state to extract resources from society and economy and to mobilize people behind national purposes, to elaborate centralized institutions to pursue national priorities, to marshal military forces for national defense and police forces to sustain domestic order, and to generate popular identities loyal to national authority.
Same as: EASTASN 262

EASTASN 168. Taiwan Security Issues. 3-5 Units.
This course will provide a broad overview of Taiwan's place in the security environment of East Asia, covering the history of US-Taiwan-People's Republic of China relations, Taiwan's ambiguous status in the contemporary inter-state system, cross-Strait trends including the military balance of power and economic integration, the emergence and evolution of "sharp power" threats to Taiwan's security, and domestic politics and the quality of Taiwan's democracy. The course will be offered remotely and integrated with the fall 2020 quarter programming of the Project on Taiwan in the Indo-Pacific at the Hoover Institution. It will feature a combination of guest presentations by outside speakers as part of the PTIP's fall conference agenda, online lectures and discussions led by the instructor, and student presentations. Some course events may be open to the public.
Same as: EASTASN 268

EASTASN 179. Rebalancing Economic Systems in a World Driven by Tech: Quality-of-Life in Socio-Cultural Context. 4 Units.
This course examines the broader consequences of economic models that rely on innovation-driven growth, e.g. increases in social inequality, tension between globalism and isolationism, and tendencies toward authoritarianism. After an overview of the historical outcomes of previous industrial revolutions, we examine how the above trends are exacerbated in the era of digital transformation, comparing different economic systems (e.g. China, India, Japan, and the U.S.) as realized in their socio-political and cultural contexts. We then discuss approaches toward rebalancing existing systems, including metrics for evaluating economic performance and its impact, in order to satisfy the imperatives of social, environmental, and economic sustainability.
Same as: EASTASN 279

EASTASN 189K. Korea and the World. 3 Units.
This course investigates the theoretical and empirical underpinnings of modern Korea. The course offers a rough mix of history, domestic politics, and foreign relations. It also approaches the empirics of Korea through various theoretical lenses ranging from identity to balance of power to alliance theory to sports diplomacy. We will cover a vast expanse of time, ranging from the Kanghwa treaty to Donald Trump and Kim Jong-un. The course divides into four sections. The first is an understanding of the traditional historical and Cold War context of Korea's external relations. The second assesses the drivers of Korea¿s relations with the region, including Japan, the United States, China, and Russia. The next section is a three-week unit on North Korea. The last section investigates the policy priorities and potential pitfalls in Korea's path to unification as well as the implications of a united Korea on the balance of power in East Asia. No previous background on Korea is required.
Same as: EASTASN 289K

EASTASN 217. Health and Healthcare Systems in East Asia. 3-5 Units.
China, Japan, and both Koreas. Healthcare economics as applied to East Asian health policy, including economic development, population aging, infectious disease outbreaks (SARS, avian flu), social health insurance, health service delivery, payment incentives, competition, workforce policy, pharmaceutical industry, and regulation. No prior knowledge of economics or healthcare required.
Same as: EASTASN 117

EASTASN 243. Taiwan's Democratic Evolution. 3-5 Units.
This course is an introduction to the contemporary politics of Taiwan. Once a poor, insecure autocracy, today Taiwan has been transformed into a prosperous and stable liberal democracy, albeit one whose long-term security remains imperiled by the rising power of the People's Republic of China. We will draw on concepts and theories from political science to explore distinct aspects of this ongoing political evolution, including the transition to and consolidation of democracy, origins and trajectory of economic and social development, sources of Taiwanese nationalism, security of the Taiwanese state and its relationship to the PRC and the United States, parties and elections, and public policy processes and challenges.
Same as: EASTASN 143

EASTASN 262. Seminar on the Evolution of the Modern Chinese State, 1550-Present. 3-5 Units.
This seminar will assess the evolving response of the late imperial, early Republican, Nanjing Republic, and the PRC regimes in response to China's changing international setting, to successive revolutions in warfare, and to fundamental economic, social and demographic trends domestically from the 16th century to present. It will assess the capacities of each successive Chinese state to extract resources from society and economy and to mobilize people behind national purposes, to elaborate centralized institutions to pursue national priorities, to marshal military forces for national defense and police forces to sustain domestic order, and to generate popular identities loyal to national authority.
Same as: EASTASN 162

EASTASN 268. Taiwan Security Issues. 3-5 Units.
This course will provide a broad overview of Taiwan's place in the security environment of East Asia, covering the history of US-Taiwan-People's Republic of China relations, Taiwan's ambiguous status in the contemporary inter-state system, cross-Strait trends including the military balance of power and economic integration, the emergence and evolution of "sharp power" threats to Taiwan's security, and domestic politics and the quality of Taiwan's democracy. The course will be offered remotely and integrated with the fall 2020 quarter programming of the Project on Taiwan in the Indo-Pacific at the Hoover Institution. It will feature a combination of guest presentations by outside speakers as part of the PTIP's fall conference agenda, online lectures and discussions led by the instructor, and student presentations. Some course events may be open to the public.
Same as: EASTASN 168

EASTASN 277. Divided Memories & Reconciliation: the formation of wartime historical memory in the Pacific. 4 Units.
Divided Memories will examine the formation of historical memory about World War Two in Asia, looking comparatively at the national memories of China, Japan, Korea, and the United States. It will also study efforts at reconciliation in contemporary Asia. The course will look at the role of textbooks, popular culture, with an emphasis on cinema, and elite opinion on the formation of wartime memory. We will study and discuss controversial issues such as war crimes, forced labor, sexual servitude, and the use of atomic weapons. Class will combine lectures with in class discussion, with short essays or papers.
Same as: EASTASN 77

EASTASN 279. Rebalancing Economic Systems in a World Driven by Tech: Quality-of-Life in Socio-Cultural Context. 4 Units.
This course examines the broader consequences of economic models that rely on innovation-driven growth, e.g. increases in social inequality, tension between globalism and isolationism, and tendencies toward authoritarianism. After an overview of the historical outcomes of previous industrial revolutions, we examine how the above trends are exacerbated in the era of digital transformation, comparing different economic systems (e.g. China, India, Japan, and the U.S.) as realized in their socio-political and cultural contexts. We then discuss approaches toward rebalancing existing systems, including metrics for evaluating economic performance and its impact, in order to satisfy the imperatives of social, environmental, and economic sustainability.
Same as: EASTASN 179

EASTASN 285. The United States, China, & Global Security. 2 Units.
This graduate-level seminar will be taught simultaneously on the campuses of Stanford University and Peking University and will feature a lecture series in which prominent American and Chinese scholars provide presentations that focus on key global security issues. The course content will highlight topics relevant to current U.S.- China relations and their respective roles in Asian and global security. Proposed lecture topics include: an introduction to U.S.- China relations; finance, trade, and investment; cyber security; nonproliferation; maritime security; terrorism; and energy and the environment. Hosted jointly by Stanford University and Peking University, enrollment will be limited to 20 students at each campus and, at Stanford, will be restricted to graduate students and undergraduates with senior standing. Enrollment is competitive, so potential students must complete an application by March 12, 2018 at 5pm: https://web.stanford.edu/dept/CEAS/EASTASN285.fb.
Same as: INTLPOL 285

EASTASN 289K. Korea and the World. 3 Units.
This course investigates the theoretical and empirical underpinnings of modern Korea. The course offers a rough mix of history, domestic politics, and foreign relations. It also approaches the empirics of Korea through various theoretical lenses ranging from identity to balance of power to alliance theory to sports diplomacy. We will cover a vast expanse of time, ranging from the Kanghwa treaty to Donald Trump and Kim Jong-un. The course divides into four sections. The first is an understanding of the traditional historical and Cold War context of Korea's external relations. The second assesses the drivers of Korea¿s relations with the region, including Japan, the United States, China, and Russia. The next section is a three-week unit on North Korea. The last section investigates the policy priorities and potential pitfalls in Korea's path to unification as well as the implications of a united Korea on the balance of power in East Asia. No previous background on Korea is required.
Same as: EASTASN 189K

EASTASN 294. The Rise of China in World Affairs. 3-5 Units.
This course examines the impact and implications of the rise of China in contemporary world politics from a historical and international relations perspective. It reviews China's halting progress into the international system, sketches the evolution of PRC foreign policy since 1949, and analyzes China's developmental priorities and domestic political context as they figure into Beijing's interactions with the world. It sketches American policy toward the PRC, and it assesses alternative approaches to dealing with China on such issues as arms and nuclear proliferation, regional security arrangements, international trade and investment, human rights, environmental problems, and the Taiwan and Tibet questions.
Same as: EASTASN 94

EASTASN 297. The International Relations of Asia since World War II. 3-5 Units.
Asian international relations since World War II were dominated by the efforts of the newly independent nation-states of Asia, almost all of which had been colonies before the war, to establish and maintain sovereignty in a context of American and Soviet competition for influence in the region. This course traces the major developments of the period, including the Chinese civil war, the U.S. occupation of Japan, the division of Korea and the Korean War, the South and Southeast Asian independence struggles, the American and Soviet alliance systems, the Vietnam War, the strategic realignments that led to the end of the Cold War in Asia, the emergence of Central Asia, and the legacy of issues that the period has posed for the region today.
Same as: EASTASN 97

EASTASN 300. Graduate Directed Reading. 1-5 Unit.
Independent studies under the direction of a faculty member for which academic credit may properly be allowed. For East Asian Studies M.A. students only.

EASTASN 301. Graduate Archival Directed Reading. 1 Unit.
Independent studies under the direction of a faculty member for which academic credit may properly be allowed. Research will require in-person access to archival materials in Hoover Institution, Stanford's East Asia Library, and/or Branner Map Collections. For East Asian Studies M.A. students only.

EASTASN 330. Core Seminar: Issues and Approaches in East Asian Studies. 1 Unit.
For East Asian Studies M.A. students only.

EASTASN 390. Practicum Internship. 1 Unit.
On-the-job training under the guidance of experienced, on-site supervisors. Meets the requirements for curricular practical training for students on F-1 visas. Students submit a concise report detailing work activities, problems worked on, and key results. May be repeated for credit. Prerequisite: qualified offer of employment and consent of adviser.

EASTASN 402A. Topics in International Technology Management. 1 Unit.
Theme for Autumn 2020 is "Digital transformation among new and traditional industries in Asia." Distinguished guest speakers and panels from industry discuss approaches in Asia to data-driven business models, influencer marketing, DevOps for new AI solutions, data privacy and security, new value chain relationships, etc. See syllabus for specific requirements, which may differ from those of other seminars at Stanford.
Same as: EALC 402A, EE 402A

EASTASN 402T. Entrepreneurship in Asian High Tech Industries. 1 Unit.
Distinctive patterns and challenges of entrepreneurship in Asia; update of business and technology issues in the creation and growth of start-up companies in major Asian economies. Distinguished speakers from industry, government, and academia.
Same as: EALC 402T, EE 402T

EASTASN 801. TGR Project. 0 Units.
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ECONOMICS

Courses offered by the Department of Economics (http://economics.stanford.edu/) are listed under the subject code ECON on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=ECON&filter-catalognumber-ECON=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=ECON&filter-catalognumber-ECON=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=ECON&filter-catalognumber-ECON=on).

The department's purpose is to acquaint students with the economic aspects of modern society, to familiarize them with techniques for the analysis of contemporary economic problems, and to develop in them an ability to exercise judgment in evaluating public policy. There is training for the general student as well as for those who plan careers as economists in civil service, private enterprise, teaching, or research.

The department's curriculum is an integral part of Stanford's programs in International Relations, Public Policy, and Urban Studies.

The faculty interests and research cover a wide spectrum of topics in most fields of economics, including behavioral economics, comparative institutional analysis, econometrics, economic development, economic history, experimental economics, industrial organization, international trade, labor, macro- and microeconomic theory, mathematical economics, environmental economics, and public finance.

Mission of the Undergraduate Program in Economics

The mission of the undergraduate program in Economics is to acquaint students with the economic aspects of modern society, to familiarize them with techniques for the analysis of contemporary economic problems, and to develop in them an ability to exercise judgment in evaluating public policy. The program introduces students to macro- and microeconomic theory, teaches them to think and write clearly about economic problems and policy issues and to apply the basic tools of economic analysis. The undergraduate major provides an excellent background for those who plan careers in government and private enterprise as well as those pursuing graduate degrees in professional schools or in the field of economics.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. understanding of core knowledge within Economics.
2. ability to analyze a problem and draw correct inferences using qualitative and/or quantitative analysis.
3. ability to write clearly and persuasively and communicate ideas clearly.
4. ability to evaluate theory and critique research within the discipline.

Graduate Programs in Economics

The primary objective of the graduate program is to educate students as research economists. In the process, students also acquire the background and skills necessary for careers as university teachers and as practitioners of economics. The curriculum includes a comprehensive treatment of modern theory and empirical techniques. Currently, 20 to 25 students are admitted each year.

Graduate programs in economics are designed to ensure that students receive a thorough grounding in the methodology of theoretical and empirical economics, while at the same time providing specialized training in a wide variety of subfields and a broad understanding of associated institutional structures. Toward these ends, the program is arranged so that the student has little choice in the curriculum at the outset but considerable latitude later on.

Students admitted to graduate standing in the department are expected to have a strong background in college-level economics, mathematics, and statistics. Preparation ordinarily consists of a college major in economics, a year-long calculus sequence that includes multivariate analysis, a course in linear algebra, and a rigorous course in probability and statistics.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in Economics and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in Economics. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of Economics and and to interpret and present the results of such research.

Fellowships and Assistantships

The department awards a number of fellowships for graduate study. All students whose records justify continuation in the program may be assured support for the second through fifth years in the form of employment as a teaching or research assistant. All first year and a few second or third year students are typically awarded full fellowships, including a stipend and tuition. Second year students who are not on fellowship receive support in their entire second year (and surrounding summers) through a second year RAship. Third and fourth year students typically arrange for RA support directly with a faculty adviser or request TA support through the department. These half-time (20 hours per week) appointments provide a living wage and tuition allowance. Entering students are not eligible for research or teaching assistantships. Students in their final job market year are encouraged to apply for SIEPR dissertation research fellowships.

Bachelor of Arts in Economics

The Department of Economics offers a Bachelor of Arts in Economics. Eligible students may also pursue a Bachelor of Arts with Honors (p. 1365). The department also offers a minor in Economics (p. 1365).

Suggested Preparation for the Major

The total number of units required for the major is 80. Students are encouraged to complete the core courses 1-6 below, as early as possible. Ideally, students should complete the core during the sophomore year, before taking upper division courses. Courses may not be taken before the prerequisites are completed. The required number of field courses is five. There is great flexibility in the choice of electives, including some upper-division math, statistics, and computer science.

How to Declare the Major

- Complete the online Econ Major Declaration form and submit it to the Director of Undergraduate Studies (DUS): Declare the Econ Major (https://docs.google.com/forms/d/e/1FAIpQLSd-

TR9JJglwzJh3hE5v4rZQXSad7SIYlGn255GwvK3ZLrp_3w/viewform/?usp=sf_link)

- When the declaration form is submitted, the DUS reviews the forms and emails the student and the assigned advisor.
- The student then makes an appointment to meet with the advisor to go over the declaration form.
- At the conclusion of the meeting the student requests that the advisor notify the Undergraduate Student Services Officer that the plan is approved.
- The student declares in Axess (https://axess.sahr.stanford.edu/).
- The student makes an appointment to meet with the Student Services Officer, to finalize the major declaration and she approves the declaration in Axess.
- The student must declare by the end of the quarter prior to the quarter of graduation. Students may not declare during Summer Quarter, the last week of Autumn or Winter Quarter or last two weeks of Spring Quarter.

Degree Requirements

The total number of units required for the major is 80. At least 55 of those units must be taken at Stanford in California. All courses counting toward the economics major must be taken for a letter grade and a GPA in the major of 2.0 (C) or better must be achieved.

Students scoring a 5 on both the advanced placement microeconomics and advanced placement macroeconomics exam may petition the Director of Undergraduate Studies to have the ECON 1 Principles of Economics course requirement waived. Students do not receive units credit for placing out of ECON 1 Principles of Economics.

To use transfer credit in partial satisfaction of the requirements, the student must obtain written consent from the department's Director of Undergraduate Study, who establishes the amount of credit to be granted toward the department requirements (see the Information Book for Undergraduate Economics Majors). Students must have completed all Stanford prerequisites for approved transfer credit courses in order to use those courses towards the Economics major. See the department's Transfer Credit web site for additional information.

Course prerequisites are enforced. Students taking courses to satisfy prerequisites in another department or institution must petition for Stanford course substitution or transfer credit approval in order to satisfy course prerequisites.

The time limit for satisfactory completion of a course is one year from the date an incomplete is given, although instructors may set a shorter time limit. Students are responsible for seeing that all grades of 'incomplete' are cleared within the time limit.

Course Requirements

		Units
Core Courses		**30**
ECON 1	Principles of Economics	5
ECON 50	Economic Analysis I (Prerequisites: ECON 1 and MATH 51 (or CME 100 or CME 100A))	5
ECON 51	Economic Analysis II (Prerequisite: ECON 50)	5
ECON 52	Economic Analysis III (Prerequisite: ECON 50)	5
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists (Prerequisite: MATH 20 or equivalent) [1]	5
ECON 102B	Applied Econometrics (Prerequisite: ECON 102A) [2]	5
Field Courses		**25**
Must be taken at Stanford in California.		
Select five of the following:		
ECON 102C	Advanced Topics in Econometrics	5
ECON 102D	Econometric Methods for Public Policy Analysis and Business Decision-Making	5
ECON 111	Money and Banking	5
ECON 112	Financial Markets and Institutions: Recent Developments	5
ECON 118	Development Economics	5
ECON 125	Economic Development, Microfinance, and Social Networks	5
ECON 126	Economics of Health and Medical Care	5
ECON 135	Foundations of Finance [3]	3
or ECON 140	Introduction to Financial Economics	
ECON 136	Market Design	5
ECON 137	Decision Modeling and Information	5
ECON 141	Public Finance and Fiscal Policy	5
ECON 145	Labor Economics	5
ECON 146	Economics of Education	5
ECON 147	The Economics of Labor Markets	5
ECON 149	The Modern Firm in Theory and Practice	5
ECON 155	Environmental Economics and Policy	5
ECON 157	Imperfect Competition	5
ECON 158	Regulatory Economics	5
ECON 160	Game Theory and Economic Applications [4]	5
or ECON 180	Honors Game Theory	
ECON 165	International Finance	5
ECON 166	International Trade	5
ECON 178	Behavioral Economics	5
ECON 179	Experimental Economics	5
ECON 198	Junior Honors Seminar	5
ECON 199D	Honors Thesis Research	1-10
Writing in the Major (WIM) Course		**5**
Must be taken at Stanford in California. This course should be taken only after completing ECON 51 Economic Analysis II and ECON 52 Economic Analysis III, ECON 102B Applied Econometrics, and at least two field courses.		
ECON 101	Economic Policy Seminar	5
Electives [5]		**20**
20 units in addition to the field courses taken; choose from any ECON courses offered for a letter grade.		
Total Units		**80**

1. It is recommended that students satisfy this basic statistics requirement early in their program.
2. Material in ECON 102B Applied Econometrics is used in a number of field courses. Students are advised to take ECON 102B Applied Econometrics early in their program.
3. Students may not count units from both courses towards their major as the courses are too similar in content.
4. Students may not count units from both courses towards their field course requirements as the courses cover similar subject matter.

[5] Up to 10 units of this requirement may be fulfilled by upper-division math, statistics, or computer science (https://economics.stanford.edu/undergraduate/major/) with the approval of the Director of Undergraduate Studies.
A maximum of 10 units of transfer credit or of ECON 139D Directed Reading, may be taken under this section. Suitable transfer credit must be approved in writing by the Director of Undergraduate Studies. Advanced undergraduate majors with strong quantitative preparation may enroll in graduate (200-level) courses with permission of the Director of Undergraduate Studies and the course instructor. Some courses offered by Overseas Studies may be counted towards this requirement. The department does not give credit for internships.

Flexible Tracks

Flexible Tracks listings of economics courses are provided to emphasize the diverse interests of Economics majors. Flexible Tracks do not add major requirements. Flexible Tracks may be examined in the department's Information Book for Economics Majors (http://economics.stanford.edu/undergraduate/). These flexible tracks are not declared in Axess and are not printed on the transcript or diploma. Flexible Tracks are provided for the following areas of emphasis (field courses are in bold):

- Behavioral & Experimental (ECON 13N, 46, **136 (or 182), 137, 160 (or 180)**, **178, 179**)
- Finance (ECON 43, 44, **111, 112, 140, 141,** 143, **165,** 184)
- International & Development (ECON 15N, 46, 106, **118,** 124, **125,** 127**,** 130, 131, 162**, 164, 165, 166**)
- Policy (ESF 1, ECON 11N, 15N, 17N, 19Q, 22N, 23N, 46, 47, **111, 118, 126,** 130, **141, 144, 145, 146, 147,** 150, 154**, 155,** 159)
- Research (ECON **102C, 102D, 136 (or 182), 137, 160 (or 180), 198, 199D, 202, 210**)
- Strategy (ECON 19Q, **136 (or 182), 137, 149, 157, 158, 160 (or 180)**)

Honors Program

The honors program offers an opportunity for independent research, creativity, and achievement. It is designed to encourage a more intensive study of economics than is required for the normal major, with course and research work of exceptional quality. Honors students submit their theses in writing and present them during the Honors Research Symposium during Spring Quarter. The honors program requires:

1. Completing all requirements for the major; plus five additional units, bringing the total to 85 units.
2. Achieving a grade point average (GPA) of at least 3.5 for the required courses of the Economics major (excluding ECON 139D Directed Reading and ECON 199D Honors Thesis Research). See details in the Information Book for Economics Majors.
3. Complete ECON 102B Applied Econometrics and at least two Econ upper division courses most relevant for the proposed topic of the honors thesis by the end of the junior year. (These can be included in the basic 80 units.)
4. Candidates must write an honors thesis in their senior year for at least one unit and up to nine units of credit in their thesis advisor's section of ECON 199D Honors Thesis Research. Additionally, winter registration for one unit of Honors Thesis Research, under the Director of the Honors Program section number is mandatory for all honors students. The thesis must be of very high quality and written under the direction of a member of the department or its affiliated faculty. Units of ECON 199D Honors Thesis Research do not count toward the course work requirements for the basic economics major, or in the computation of the GPA requirement for honors.

Juniors interested in the honors program should contact the honors program director for more information. Prospective candidates for the honors program should submit an application to the director no later than the third Wednesday of Autumn Quarter for Spring Quarter degree conferral. Also required, in the same quarter, is a three-page thesis proposal that must be approved by the thesis advisor.

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Minor in Economics

The minor in Economics has two main goals: to acquaint students with the rudiments of micro- and macroeconomic theory that are required of all majors; and to allow students to build competence in the application of this theory to two fields of economics of their choosing, and the opportunity to specialize further in any one of these fields by taking one additional advanced course in the Department of Economics.

Students must complete their declaration of the minor no later than the last day of the preceding quarter before their degree conferral.

Degree Requirements

At least 20 out of the 35 units for the minor must be taken at Stanford. Students must have completed all Stanford prerequisites for approved transfer credit courses in order to use those courses towards the Economics minor.

No courses receiving Department of Economics credit under the preceding requirements may be taken credit/no credit. The combined total of all units for the minor must equate to the grade point average (GPA) of 2.0 (C) or better.

Course Requirements

		Units
Core Courses		**20**
ECON 1	Principles of Economics	5
ECON 50	Economic Analysis I (Prerequisites: ECON 1 and MATH 51 or CME 100 or CME 100A)	5
ECON 51	Economic Analysis II (Prerequisite: ECON 50)	5
ECON 52	Economic Analysis III (Prerequisite: ECON 50)	5
Field Courses		**10**
Must be taken at Stanford in California		
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	5
ECON 102B	Applied Econometrics	5
ECON 102C	Advanced Topics in Econometrics	5
ECON 102D	Econometric Methods for Public Policy Analysis and Business Decision-Making	5
ECON 111	Money and Banking	5
ECON 112	Financial Markets and Institutions: Recent Developments	5
ECON 118	Development Economics	5
ECON 125	Economic Development, Microfinance, and Social Networks	5
ECON 126	Economics of Health and Medical Care	5
ECON 135	Foundations of Finance [1]	3
or ECON 140	Introduction to Financial Economics	
ECON 136	Market Design [2]	5
or ECON 182		
ECON 137	Decision Modeling and Information [2]	5
or ECON 181		

ECON 141	Public Finance and Fiscal Policy	5
ECON 145	Labor Economics	5
ECON 146	Economics of Education	5
ECON 147	The Economics of Labor Markets	5
ECON 149	The Modern Firm in Theory and Practice	5
ECON 155	Environmental Economics and Policy	5
ECON 157	Imperfect Competition	5
ECON 158	Regulatory Economics	5
ECON 160	Game Theory and Economic Applications [2]	5
or ECON 180	Honors Game Theory	
ECON 164		5
ECON 165	International Finance	5
ECON 166	International Trade	5
ECON 178	Behavioral Economics	5
ECON 179	Experimental Economics	5
ECON 198	Junior Honors Seminar	5
ECON 202	Microeconomics I [3]	2-5
ECON 210	Macroeconomics I [3]	2-5
Electives		**5**
Select from: Any ECON courses offered for letter grades		
Total Units		**35**

1. Students may not count units from both courses towards their minor as the courses are too similar in content.
2. Students may not count units from both courses towards their minor as the courses cover similar subject matter.
3. Students may enroll with permission of the Director of Undergraduate Studies and the course instructor.

Master of Arts in Economics

University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

The Economics department does not offer a terminal M.A. degree. An M.A degree may only be pursued in combination with a doctoral degree from Economics or another department at the University. Students must be currently enrolled in a Ph.D. program at Stanford before adding the Economics M.A. degree. Economics students may, but need not, elect to add this degree in addition to their current Ph.D. degree after they have been enrolled at Stanford for at least one quarter.

Adding the M.A. Degree

While a formal application to the M.A program is not required, current Ph.D. students (including those in the Economics Ph.D. program) must:

1. Submit a Graduate Authorization Petition (https://registrar.stanford.edu/students/graduate-degree-progress/graduate-program-authorization-petition/) via Axess in order to add the M.A. as an additional degree.
   Students must have completed the Stanford requirements for a B.A. in Economics or approximately equivalent training. Since students are required to take some of the same courses as Ph.D. candidates, similar preparation in mathematics and statistics generally is expected before the petition to add the M.A. will be approved.
2. Complete the Master's Program Proposal form (https://stanford.app.box.com/v/progpropma/) and submit it to the Economics Student Services Manager.
3. Apply to graduate (in Axess, before the quarterly deadline) in the quarter you wish to confer the degree. The degree is not conferred automatically.

Degree Requirements

A master's program must satisfy these criteria:

1. Completing, at Stanford, at least 45 units of credit beyond those required for the bachelor's degree, of which at least 40 units must be in the Department of Economics. Students must complete ECON 202 Microeconomics I or ECON 202N Microeconomics I For Non-Economics PhDs students and at least three other 200-level lecture courses. They must receive a grade of 'B-' or better in ECON 202 Microeconomics I or ECON 202N Microeconomics I For Non-Economics PhDs students. Undergraduate courses must be numbered 105 or higher (with the exception of the ECON 102A Introduction to Statistical Methods (Postcalculus) for Social Scientists,ECON 102B Applied Econometrics,ECON 102C Advanced Topics in Econometrics sequence listed below). No seminar courses numbered 300 or above can be counted.
2. Demonstrating competence in empirical methodology by receiving a grade of 'B-' or better in both ECON 270 Intermediate Econometrics I and ECON 271 Intermediate Econometrics II, or by receiving a grade of 'B-' or above in each of ECON 102A Introduction to Statistical Methods (Postcalculus) for Social Scientists, ECON 102B Applied Econometrics, and ECON 102C Advanced Topics in Econometrics.
3. Submitting two term papers (or a thesis of sufficient quality). At least one of these papers must be deemed to represent graduate-level work. Normally, this means that it is written in connection with a 200-level course. A maximum of 5 units of credit can be earned for a directed reading/thesis (ECON 239D, ECON 400, or comparable thesis course in home department) toward the 45-unit degree requirement. In lieu of this paper requirement, students may elect to take two additional 200+ level Economics courses.
4. A grade point average (GPA) of 3.0 must be maintained for all master's level work. All lecture courses must be taken for a letter grade.

Doctor of Philosophy in Economics

University requirements for the Ph.D. are described in the "Graduate Degrees (p. 65)" section of this bulletin.

Students admitted to graduate standing in the department are expected to have a strong background in college-level economics, mathematics, and statistics. Preparation ordinarily consists of a college major in economics, a year-long calculus sequence that includes multivariate analysis, a course in linear algebra, and a rigorous course in probability and statistics. When deemed appropriate, a student may be required to complete the necessary background preparation at Stanford. All students take a common core curriculum at the outset and later branch out into the desired fields of specialization.

Well-prepared students should anticipate spending, with some overlap, approximately two years in course work and another two years in seminars, independent study, and dissertation research. A minimum of 135 completed units is required for the degree. The goal is to complete the program in five years, although some types of research programs may require at least six years to complete. The department has a strong commitment to guiding students through the program expeditiously.

Questions and petitions concerning the program and the admissions process should be addressed to the Director of Graduate Study, who has responsibility for administering the graduate program.

Requirements for the Ph.D.

Specific requirements are best discussed in two stages, the first consisting of requirements for admission to candidacy and the second involving further requirements for earning the degree.

Admission to Candidacy for Ph.D.

A student may apply for admission to candidacy when the following minimal requirements are met:

Graduate Core

1. Successful completion of core sequences in microeconomics, macroeconomics, and econometrics:

		Units
A. Microeconomics		
ECON 202	Microeconomics I	2-5
ECON 203	Microeconomics II	2-5
ECON 204	Microeconomics III	3-5
B. Macroeconomics		
ECON 210	Macroeconomics I	2-5
ECON 211	Macroeconomics II	2-5
ECON 212	Macroeconomics III	3-5
C. Econometrics		
ECON 270	Intermediate Econometrics I	2-5
ECON 271	Intermediate Econometrics II	2-5
ECON 272	Intermediate Econometrics III	3-5

   To pass a sequence, an overall grade of 'B' is required for the sequence, and individual course grades must be 'B-' or better. Petitions to substitute courses or waive out of any core course must be submitted to the Director of Graduate Study at least two weeks before the start of the term.

2. Completing the requirements in two additional advanced fields of specialization from the list below or, if approved in advance by the Director of Graduate Study, in one such field together with a substantial amount of work toward a second field taught in a related department (e.g. GSB Finance). Students may request permission from the Director of Graduate Study to create a field not listed as an advanced field below, such as International Finance or Law & Economics. Requirements for completing a field can usually be satisfied by completing two courses and a paper, although students in some fields may be advised to add a third course, which can then be counted toward the distribution requirement discussed later. A minimum grade average of B is required to pass a field sequence. Individual course grades cannot be less than a B- in order to count for field course credit. Specific requirements for completing each field can be found on the Economics department website (http://economics.stanford.edu/).
3. Completing a candidacy paper, normally written in conjunction with one of the advanced specialty fields selected above. Submission of this paper or another research paper is required by the first day of Autumn Quarter of the third year. Satisfactory presentation of this paper is required in the Autumn quarter third year seminar. It is expected that the student meet, and indeed exceed, the above standards by the end of the first quarter in the third year of residency. When this is not possible for any reason, the Director of Graduate Study should be consulted as early as possible during the third year.

Once it is deemed that the above standards have been met, the student should complete the Application for Candidacy for Degree of Doctor of Philosophy. After a student fulfills the department prerequisites for applying for candidacy and submits their candidacy application form, the faculty votes to determine whether the student has the potential to successfully complete the requirements of the degree program. If approved, candidacy remains valid for five years (although it can be terminated earlier by the department if progress is deficient); it can be renewed or extended beyond this period only under unusual circumstances. Failure to advance to candidacy results in dismissal from the program.

Further Requirements for the Ph.D. Degree

1. *Third Year Seminar:* presentation of an expanded research paper in Spring Quarter of the third year.
2. *Distribution Requirement:* Students must complete four other graduate-level courses meeting the following requirements:
   a. at least one course from the area of economic history, unless history is one of the two fields of specialization.
   b. courses in at least two fields other than the two fields of specialization. Distribution courses cannot be crosslisted in those fields.
   c. with advance approval of the Director of Graduate Study, some of these distribution courses may be drawn from related fields taught in other departments. However, including courses taken to meet either the specialization or distribution requirements, no more than two courses in total may be taken outside the Economics department.
   d. all courses used to fulfill distribution requirements must be passed with a grade of B or better.
3. *Teaching Experience:* Each student must serve as a teaching assistant for at least one quarter. It is strongly recommended that this requirement be satisfied before the fourth year of residence.
4. *Seminar Participation:* Each student is expected to participate in at least two all-year research seminars by the end of the fourth year of residence. Normally, participation in a seminar requires one or more oral presentations and the submission of a research paper (which, however, need not be completely separate from dissertation research). Detailed information on fulfilling the seminar requirements can be found on the Economics department website (http://economics.stanford.edu/).
5. *Ph.D. Dissertation:* The process involves selecting a topic, choosing an appropriate adviser, submitting a prospectus (signed by the adviser) outlining the proposed research, selecting a three-member reading committee (usually all from the Department of Economics, although exceptions can be made under certain circumstances), passing the University oral examination at which these three faculty (and two other members of the Academic Council) ask questions about the completed research, and submitting a final draft of the work signed by all members of the reading committee. The student is advised to initiate this process as early as possible.

Graduate Fields

A. Behavioral and Experimental Economics

To receive credit for this field, students must take the following three courses. Research papers and presentations are requirements of these courses.

		Units
ECON 278	Behavioral and Experimental Economics I	2-5
ECON 279	Behavioral and Experimental Economics II	3-5
ECON 280	Behavioral and Experimental Economics III	3-5

B. Econometric Methods For Causal Inference

To receive credit for the Econometric Methods field, students must complete the two courses from the list below.

		Units
ECON 292	Quantitative Methods for Empirical Research	3-5
ECON 293	Machine Learning and Causal Inference	3
STATS 361	Causal Inference	3

C. Econometrics

A student may satisfy the requirements for the econometrics field by completing the requirements of one of two subfields:

- **C-A: Theoretical Econometrics:**

  To receive credit in the theoretical econometrics subfield, students must complete two courses from:

		Units
ECON 273	Advanced Econometrics I	3-5
ECON 274	Advanced Econometrics II	3-5

- **C-B: Applied Econometrics:**

  To receive credit in the applied econometrics subfield, students must complete ECON 273 and either ECON 275 or ECON 276 or ECON 292 (also known as GSB MGTECON 640). Students must also complete a course (or set of courses) that is empirically oriented. The last requirements must be approved by the Director of Graduate Study in consultation with the instructor of 275, 276 or 292.

		Units
ECON 273	Advanced Econometrics I	3-5
ECON 275	Economics-Based Econometrics	3-5
ECON 276	(not offered this year)	2-5
ECON 292	Quantitative Methods for Empirical Research	3-5

D. Economic Development

To receive credit for this field, students must complete two courses from the following list. Students are required to develop and present a series of research ideas throughout each course. Regular attendance at the Development Economics workshop and the Development student workshop is required.

		Units
ECON 214	Development Economics I	2-5
ECON 215	Development Economics II	2-5
ECON 216	Development Economics III	3-5

E. Economic History/Institutions

Students must complete two courses from the following list and develop a research proposal in each course. Presentation of a research proposal is required at the end of the second year. Regular attendance (at least four quarters) at the economic history workshop is required.

		Units
ECON 226	U.S. Economic History	2-5
ECON 227		2-5
ECON 228		2-5
ECON 229	Topics in Economic History	3-5

F. Environmental, Resource and Energy Economics

To receive credit for this field, students must complete:

		Units
ECON 250	Environmental Economics	2-5
ECON 251	Natural Resource and Energy Economics	2-5

G. Finance

To receive credit for the field, students must complete two courses from list list below. A 20-minute research project proposal is required.

		Units
ECON 236	Financial Economics I	3-5
ECON 237	Financial Economics II	2-5
FINANCE 622	Dynamic Asset Pricing Theory	4
FINANCE 624	Corporate Finance Theory	4
FINANCE 625	Empirical Asset Pricing	3

H. Industrial Organization

To receive credit for the field, students must complete:

		Units
ECON 257	Industrial Organization 1	2-5
ECON 258	Industrial Organization IIA [1]	3-5

1 ECON 251 can substitute for ECON 258 only, as long as the student is not also using ECON 251 to fulfill requirements for the Environmental field.

2 Students who select Industrial Organization as a primary focus are expected to also take ECON 260.

I. International Trade and Finance

To receive credit for this field, students must complete two courses from the list below, but are encouraged to take all three courses. Those interested in an **International Trade** concentration should take, at a minimum, 266 and 268; those interested in an **International Finance** concentration should take, at a minimum, 268 and 269. Students are expected to develop and present a research proposal in each course.

		Units
ECON 266	International Trade I	3-5
ECON 268	International Finance and Exchange Rates	3-5
ECON 269	International Finance and Exchange Rates II	3-5
Students must pass all courses with a grade of B or better. With instructor approval, students can substitute another macroeconomics class for 268 or 269.		

J. Labor Economics

To receive credit for this field, students must complete two courses from:

		Units
ECON 246	Labor Economics I	2-5
ECON 247	Labor Economics II	2-5
ECON 248	Labor Economics III	3-5
Each course requires completion of a term paper. Each course must be passed with a grade of B or better.		

K. Macroeconomics

Requirements for this field are completion of two courses from the list below. Presentation of a research proposal in each course is required. ECON 236 and 237 may not be double-counted towards both the macroeconomics and the finance field.

		Units
ECON 233	Advanced Macroeconomics I	2-5
ECON 234	Advanced Macroeconomics II	2-5
ECON 235	(not offered this year)	2-5
ECON 236	Financial Economics I	3-5
ECON 237	Financial Economics II	2-5

L. Market Design

To receive credit for this field, students must take two from the following and give a research presentation:

		Units
ECON 283	Theory and Practice of Auction Market Design	2-5

ECON 284	Simplicity and Complexity in Economic Theory	3-5
ECON 285	Matching and Market Design	2-5
ECON 287	Mechanism and Market Design	3
ECON 289	Advanced Topics in Game Theory and Information Economics	2-5

M. Microeconomic Theory

To receive credit for this field, students must complete two courses from the following and give a research presentation:

		Units
ECON 282	Contracts, Information, and Incentives	3-5
ECON 286	Game Theory and Economic Applications	3-5
ECON 291	Social and Economic Networks	3-5

N. Political Economy

To receive credit for this field, students must pass the two courses below with grades of B or better. Students may petition to substitute Econ 221 for a comparable course in the political science department.

ECON 220	Political Economy I	3-5
ECON 221	Political Economy II	2-5

O. Public Economics

To receive credit for the field, students must complete the two courses from the list below and develop an original research project. Regular attendance at the Public Economics workshop is required for students in their third year or above to receive credit for the field.

		Units
ECON 241	Public Economics I	2-5
ECON 242	Public Economics II	3-5
ECON 243	Public Economics III	2-5

Ph.D. Minor in Economics

To be recommended for the Ph.D. degree with Economics as a minor subject, a student must qualify in three fields of economics, at least one of which must be in the core economics sequence (Microeconomics, Macroeconomics, Econometrics). The standard of achievement in these fields is the same for minor as for major candidates, including minimum grade requirements, paper submissions and research presentations where appropriate. All courses used for the Ph.D. minor must be taken for a letter grade.

Joint Degree Programs in Economics with the School of Law

J.D./M.A. and J.D./PH.D.

The Department of Economics and the School of Law offer a joint program leading to either a J.D. degree combined with an M.A. degree in Economics, or to a J.D. degree combined with a Ph.D. in Economics.

The J.D./M.A. and J.D./Ph.D. degree programs are designed for students who wish to prepare themselves for careers in areas relating to both law and economics. Students interested in either joint degree program must apply and gain entrance separately to the School of Law and the Department of Economics and, as an additional step, must secure permission from both academic units to pursue degrees in those units as part of a joint degree program. Interest in either joint degree program should be noted on the student's admission applications and may be considered by the admission committee of each program. Alternatively, an enrolled student in either the Law School or the Economics department may apply for admission to the other program and for joint degree status in both academic units after commencing study in either program.

Joint degree students may elect to begin their course of study in either the School of Law or the Department of Economics. Faculty advisers from each academic unit participate in the planning and supervising of the student's joint program. Students must be enrolled full time in the Law School for the first year of law school, and, at some point during the joint program, may be required to devote one or more quarters largely or exclusively to studies in the Economics program regardless of whether enrollment at that time is in the Law School or in the Department of Economics. At all other times, enrollment may be in the graduate school or the Law School, and students may choose courses from either program regardless of where enrolled. Students must satisfy the requirements for both the J.D. and the M.A. or Ph.D. degrees as specified in this bulletin or by the School of Law.

The Law School approves courses from the Economics Department that may count toward the J.D. degree, and the Economics department approves courses from the Law School that may count toward the M.A. or Ph.D. degree in Economics. In either case, approval may consist of a list applicable to all joint degree students or may be tailored to each individual student's program. The list may differ depending on whether the student is pursuing an M.A. or a Ph.D. in Economics.

In the case of a J.D./M.A. program, no more than 45 quarter hours of approved courses may be counted toward both degrees. In the case of a J.D./Ph.D. program, no more than 54 quarter hours of approved courses may be counted toward both degrees. In either case, no more than 36 quarter hours of courses that originate outside the Law School may count toward the Law degree. To the extent that courses under this joint degree program originate outside the Law School but count toward the Law degree, the Law School credits permitted under Section 17(1) of the Law School Regulations shall be reduced on a unit-per-unit basis, but not below zero. The maximum number of Law School credits that may be counted toward the M.A. or the Ph.D. in Economics is the greater of: (a) 5 quarter hours in the case of the M.A. and 10 quarter hours in the case of the Ph.D.; or (b) the maximum number of hours from courses outside of the department that M.A. or Ph.D. candidates in Economics are permitted to count toward the applicable degree under general departmental guidelines or in the case of a particular student's individual program.

Tuition and financial aid arrangements are normally made through the school in which the student is then enrolled.

For more information, see the Law School's Degrees and Joint Degrees (http://www.law.stanford.edu/program/degrees/) web site.

Joint Degree Program in Ph.D. in Economics and Master of Public Policy

The Ph.D./M.P.P. joint degree is designed for students who wish to prepare themselves for careers in areas relating to both policy and economics. Students interested in this degree first apply to the Economics Department, indicating an interest in the joint program. There is one admissions application and one fee. If the decision is made by the department to admit the applicant, the file is then forwarded to the M.P.P. program. An admission decision, based on the information in the Ph.D. application, is made promptly, and the department informs the student of the decision.

Students may also apply to the M.P.P. after having commenced study in the Economics Department at Stanford, by first receiving the consent of the Director of Graduate Studies in Economics and then applying to the Public Policy program.

Students must have a faculty adviser from the Economics Department to assist with the planning and supervising of the joint program. The adviser

is usually chosen from among the department's Public Policy-affiliated faculty.

Tuition and financial aid arrangements are made through the Economics Department.

Requirements for the M.P.P./Ph.D. in Economics

Core M.P.P. curriculum of 45 units

		Units
PUBLPOL 301B	Economic Policy Analysis for Policymakers	4-5
PUBLPOL 302A	Introduction to American Law	3-5
PUBLPOL 302B	Economic Analysis of Law	3
PUBLPOL 304A		3-4
PUBLPOL 305B	Public Policy and Social Psychology: Implications and Applications	4
PUBLPOL 306	Writing and Rhetoric for Policy Audiences	4
PUBLPOL 307		4-5
PUBLPOL 309	Practicum	1-10
PUBLPOL 311	Public Policy Colloquium	1
LAW 7508	Problem Solving and Decision Making for Public Policy and Social Change	4
Total Units		31-45

Other Programs

Other programs leading to dual degrees may be arranged. For example, the Ph.D. in Economics combines with one or two years of study in the School of Law, leading to the nonprofessional Master of Legal Studies (M.L.S.) degree. A dual degree program does not permit counting any courses toward both the Economics and the Law degrees. For more information, see the Law School's Degrees and Joint Degrees (http://www.law.stanford.edu/program/degrees/) web site.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

In academic year 2020-21, the Department of Economics will count courses taken with a grade of 'CR' (credit) towards the satisfaction of its undergraduate degree requirements so long as (i) the number of units taken CR does not exceed 15 and (ii) the CR courses are not ECON 50, ECON 51, ECON 52, ECON 102B, or ECON 199D (Honors Research). In academic year 2020-21, the five aforementioned courses must be taken for a letter grade if they are to count towards the satisfaction of the degree requirements. Apart from the five aforementioned courses, even courses that normally require a letter grade will count towards the degree requirements if they are taken CR.

Graduate Degree Requirements

Grading

The Department of Economics counts all first year (core) courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B-' or better level for each individual course and a 'B' average or better across each field sequence.

For second year+ (field & distribution) courses, a grade of 'CR' (credit) or 'S' (satisfactory) will count towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B' or better level.

Graduate Advising Expectations

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

The Department of Economics is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program. Outlined below are a list of specific responsibilities of the various advising relationships, year by year.

First Year

First-year students are assigned to an adviser in groups of four or five students, so that there are only a handful of first-year advisers. First-year advisers should meet with students early in Autumn Quarter and offer to help with any questions as the year progresses. Including the DGS, Ph.D. administrator, student mentors, study groups, core course instructors, and the first-year seminar series, students have a variety of information sources. The adviser is simply another person to whom the students can turn to for basic and broad advice about the program.

If a first year adviser sees a student struggling academically or personally, please ensure that they are connected to the help that they need, and if unsure of how to help please consult with the DGS.

Second-Year RAship

The second-year RA-ship is an opportunity for students to gain experience with research. The RA-ship is subsidized by the department and averages 15 hours/week (rather than the 20 for standard RAships in later years) for the entire second year (and surrounding summers). Students are advised to ensure that it is as educational as possible. Some students have fellowships and thus do not need RA support, but should still seek advisers and should be given the same attention to ensure that their research is progressing.

Second-Year Paper

The second-year paper is due at the beginning of Autumn Quarter of the third year, and students have to agree with a faculty member to oversee that paper by the end of the Spring Quarter of the second year.

An adviser on a second-year paper should make sure that the student is progressing on the paper during the Summer by setting a timeline and meeting with them at key points. It is essential that this be finished on time so that students can move on to new projects or to further develop it during the third year. Students are encouraged to talk to multiple faculty, but the person who signs their paper should take responsibility. The student also has a responsibility to be seeking advice and communicating regularly with their adviser, both about progress and unexpected setbacks, both of which are inevitable in research. Note that second-year papers can be co-authored with other students and/or faculty.

Third-Year Advising

The third-year seminar helps shepherd students through the transition to dissertation research; however, it is not a substitute for an adviser but rather a complement. Students should clear their slides for their third-year presentations with their advisers before the presentations.

The adviser and student are both responsible for ensuring that they meet regularly and have set a clear a timeline and goals for their research.

At the end of the third year, students meet with the DGS and present a form signed by someone agreeing to advise their dissertation research, and they should have plans for a dissertation and a committee. If a faculty member is advising a student during the third year and does not plan to continue that relationship, the faculty member is responsible for letting the student know early enough so that s/he can find a new adviser going forward. Occasionally, students who are getting substantial advice from more than one person may wish to designate co-primary advisers. This involves a serious commitment in terms of time and attention from all of the primary advisers, and should involve more than window-dressing.

Fourth Year and Beyond

Advisers and students should be meeting regularly and have a clear plan and timeline for completion of a dissertation research and going on the market. The adviser's role includes providing guidance concerning designing, implementing, conducting, writing, presenting, submitting (where, how, etc.), and revising their research. The adviser should meet regularly with the student and inform the DGS if a student is languishing or falling behind in their research.

Advisers should be very clear with students about how their research is progressing and what they need to do to improve. Students are responsible for being broadly engaged, keeping their adviser regularly informed of their progress, and seeking advice from several faculty, attending and participating in conferences, regularly attending seminars, talking with other students, and more generally being regularly involved in research-related activities.

Faculty who are on a student's dissertation committee must discuss the student's job market prospects with him or her well in advance of the job market. It is essential to calibrate students' expectations appropriately. If the student aspires to jobs for which a committee member feels s/he cannot write supportive letters, that faculty must make that fact absolutely clear to the student well in advance. The faculty member must also confer with other committee members to determine whether they are in agreement concerning the student's progress, job market plans, and likely prospects. A dissertation committee member whose assessment of a student is out of line with the rest of the committee has an obligation to make their views known to the committee well before the student enters to job market, and should be willing to withdraw from the committee if it is in the student's best interest. Committee members should therefore compare their assessments, at the latest, by the start of the Autumn Quarter during which the student enters the job market.

Students need to become self-sufficient; most of these aspects of conducting and disseminating research are not learned via courses or readings, but by doing coupled with timely advice. It is the most important, and rewarding, part of the Ph.D. program.

An extensive and detailed guide to the adviser/advisee relationship and responsibilities appears on the department's website (https://economics.stanford.edu/).

Emeriti: (Professors) Takeshi Amemiya, Timothy F. Bresnahan, Paul A. David, Walter Falcon, Victor R. Fuchs, John G. Gurley, Peter J. Hammond, Donald Harris, Anne O. Krueger, Mordecai Kurz, Lawrence J. Lau, Roger G. Noll, John H. Pencavel, Thomas Sargent, John B. Shoven, David A. Starrett, Joseph E. Stiglitz, Gavin Wright

Chair: B. Douglas Bernheim

Vice Chair: Monika Piazzesi

Director of Graduate Studies: Luigi Pistaferri

Director of Undergraduate Studies: Frank Wolak

Professors: Ran Abramitzky, Kyle Bagwell, B. Douglas Bernheim, Nicholas Bloom, Michael Boskin, Mark Duggan, Pascaline Dupas, Liran Einav, Matthew Gentzkow, Lawrence Goulder, Avner Greif, Robert E. Hall, Han Hong, Caroline Hoxby, Guido Imbens, Matthew Jackson, Patrick Kehoe, Pete Klenow, Jonathan Levin, Thomas E. MaCurdy, Neale Mahoney, Paul R. Milgrom, Muriel Niederle, Monika Piazzesi, Luigi Pistaferri, Joseph Romano, Alvin Roth, K. Martin Schneider, Ilya Segal, John B. Taylor, Alessandra Voena, Heidi L. Williams, Frank Wolak

Associate Professors: Gabriel Carroll, Arun Chandrasekhar

Assistant Professors: Adrien Auclert, Luigi Bocola, Ignacio Cuesta, Daniel Fetter, Bradley Larsen, Melanie Morten, Petra Persson, Isaac Sorkin

Lecturers: Marcelo Clerici-Arias, Gopi Shah Goda, Alexander Gould, Ward Hanson, Gregory La Blanc, Chris Makler, Scott McKeon, Mark Tendall, Ramin Toloui

Postdocs: Ravi Jagadeesan, Øvind Schøyen, Colin Sullivan

Courtesy Professors: Anat Admati, Susan Athey, Jay Bhattacharya, Jeremy Bulow, Steve Callander, Darrell Duffie, Marcel Fafchamps, James D. Fearon, Stephen H. Haber, Charles Kolstad, David M. Kreps, Edward Lazear, Rosamond L. Naylor, Peter C. Reiss, Gregory Rosston, Kenneth Singleton, Andrzej Skrzypacz

Courtesy Associate Professors: Jacob Goldin, Saumitra Jha, Grant Miller, Rebecca Diamond

Visiting Assistant Professors: Assaf Romm

Overseas Studies Courses in Economics

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPBER 82	Globalization and Germany	4-5
OSPFLOR 26	Economics of the EU	5
OSPMADRD 54	Contemporary Spanish Economy and the European Union	4
OSPPARIS 91	The Future of Globalization: Economics, Politics and the Environment	5
OSPSANTG 119X	The Chilean Economy: History, International Relations, and Development Strategies	5

Courses

ECON 1. Principles of Economics. 5 Units.
This is an introductory course in economics. We will cover both microeconomics (investigating decisions by individuals and firms) and macroeconomics (examining the economy as a whole). The primary goal is to develop and then build on your understanding of the analytical tools and approaches used by economists. This will help you to interpret economic news and economic data at a much deeper level while also forming your own opinions on economic issues. The course will also provide a strong foundation for those of you who want to continue on with intermediate microeconomics and/or intermediate macroeconomics and possibly beyond.

ECON 1V. Principles of Economics. 5 Units.
The course covers all of economics at a basic level. It stresses the key idea that economics is about making purposeful choice with limited resources and about people interacting with other people as they make these choices. Most of those interactions occur in markets, and the course is mainly about markets, including labor markets and capital markets. We show why free competitive markets can improve people's lives and how they have removed millions from people from poverty, with many more, we hope, to come; we show how monopolies and environmental spillovers cause market failures; we show how to remedy these failures through government policy; and we explain why government failure can also be a problem. The overall goal is to use economics to understand the big issues of the day including economic growth, inequality, crises, and unemployment. The goal of this course is to learn how to use economic analysis to reach reasoned conclusions about the big issues of the day from the workings and benefits of a market economy to the causes of economic growth, financial crises, and unemployment.

ECON 4. Democracy Matters. 1 Unit.
Should the U.S. close its border to immigrants? What are the ramifications of income inequality? How has COVID-19 changed life as we know it? Why are Americans so politically polarized? How can we address racial injustice? As the 2020 election approaches, faculty members from across Stanford will explore and examine some of the biggest challenges facing society today. Each week will be dedicated to a different topic, ranging from health care and the economy to racial injustice and challenges to democracy. Faculty with expertise in philosophy, economics, law, political science, psychology, medicine, history, and more will come together for lively conversations about the issues not only shaping this election season but also the nation and world at large. There will also be a Q&A following the initial discussion. Attendance and supplemental course readings are the only requirements for the course.
Same as: PHIL 30, POLISCI 42, PUBLPOL 4

ECON 5. Frontiers in Economic Research and Policy. 1 Unit.
Interested in exploring how economics is used in professional, policy, and research settings? This course will feature weekly presentations from Stanford faculty and scholars and economists in government, non-profit, and business to demonstrate how economic analysis can be applied to a wide range of practical and policy problems. May be repeated for credit. Pre-requisites: none.

ECON 10. Microcosm of Silicon Valley and Wall Street. 1 Unit.
Seminar in applied economics with focus on the microcosm of Silicon Valley, how growth companies are originated, managed and financed from start-up to IPO. Round-table discussion format. Applicable to those students with an interest in technology company formation, growth and finance including interaction with Wall Street. Enrollment limited to 10 juniors, seniors and co-term students. Application found at https://economics.stanford.edu/academics/undergraduate-program/forms.

ECON 11N. Understanding the Welfare System. 3 Units.
Welfare-reform legislation passed by the federal government in the mid-1990s heralded a dramatic step in the movement that has been termed the devolution revolution, which is again being discussed in the context of healthcare reform. The centerpiece of devolution is the transfer of more responsibilities for antipoverty programs to the states. We will explore the effects of these reforms and the role that devolution plays in the ongoing debates over the designs of programs that make up America's social safety net. In addition to discussing conventional welfare programs (e.g., Medicaid, food stamps, TANF, SSI) and other governmental policies assisting low-income families (EITC, minimum wages), we will examine the trends in governmental spending on anti-poverty programs and how our nation defines poverty and eligibility for income support. We will apply economics principles throughout to understand the effectiveness of America's antipoverty programs and their consequences on the behavior and circumstances of families. Prerequisites: A basic understanding/knowledge of introductory economics is recommended.

ECON 12. Economics of Artificial Intelligence. 1 Unit.
How will artificial intelligence and machine learning reshape the economy? This course examines the prospective impact of AI on jobs, wages, inequality, industrial power, and global competition. We begin by examining the effects of previous technological revolutions (from the Industrial Revolution to the digital age) on living standards, relative power of labor and capital, and organization of economic activity. We then review the tools and methods economists use to analyze the potential consequences of AI and machine learning. We conclude by assessing priorities for government policy, including opportunities for harnessing AI to create a more prosperous and equitable society.

ECON 14. Navigating Financial Crises: From Emerging Markets to COVID-19. 1 Unit.
What causes financial crises? What are the keys to anticipating, preventing, and managing disruptions in the global financial system? This course prepares students to navigate future episodes as policymakers, finance professionals, and citizens by going inside the practical decisions made in an unfolding crisis, from the U.S. government and IMF to the boardroom and trading floor. Students will learn warning signs of distress; market structures that govern crisis dynamics; strategic interactions among the key actors; and lessons learned for creating a more resilient system. Concepts will be applied to real-world experiences in emerging market crises, the U.S. housing and global financial crisis, the European sovereign crisis, and as well the extraordinary fiscal and central bank responses to the COVID-19 crisis.
Same as: PUBLPOL 14

ECON 17N. Energy, the Environment, and the Economy. 3 Units.
Examines the intimate relationship between environmental quality and the production and consumption of energy. Assesses the economics efficiency and political economy implications of a number of current topics in energy and environmental economics. Topics include: the economic theory of exhaustible resources, Greenhouse Gas Emissions (GHG) control (cap and trade mechanisms and carbon fees), GHG emissions offsets, the Strategic Petroleum Reserve (SPR), the "smart" transmission grid for electricity, nuclear energy and nuclear waste, the real cost of renewable energy, natural gas and coal-fired electricity production, the global coal and natural gas markets, Corporate Average Fuel Efficiency (CAFE) and Low-Carbon Fuel Standards (LCFS), Energy Efficiency Investments and Demand Response, and Carbon Capture and Sequestration (CCS). For all topics, there will be reading to explain the economics and engineering behind the topic and class discussion to clarify and elaborate on this interaction. Prerequisite: Econ 1 is recommended.

ECON 19Q. Government by the Numbers. 3 Units.
Spending by federal, state, and local governments accounts for about one-third of U.S. GDP and governments employ more than one-in-seven workers in the U.S. For most U.S. residents, government is represented by a complicated web of federal, state, and local policies. There is an increasingly contentious debate about the proper role of the government and regarding the impact of specific government policies. This debate is rarely grounded in a common set of facts. In this seminar, we will explore how each level of government interacts with U.S. residents through government services, public programs, taxes, and regulations. We will examine financial results for different levels of government while considering the net effects of government intervention on the health and economic well-being of individuals and families. Particular attention will be paid to certain sectors (e.g. education, health care, etc.) and to certain groups (e.g. those in poverty, the elderly, etc.). Along the way we will accumulate a set of metrics to assess the performance of each level of government while highlighting the formidable challenges of such an exercise. Prerequisite: Econ 1.
Same as: PUBLPOL 19Q

ECON 22N. Causes and Consequences of the Rise in Inequality. 3 Units.
In this class we will discuss the economic and institutional causes of the rise in inequality in the US and other countries over the last 40 years. We will also discuss the consequences of inequality in terms of social justice, economic welfare, aggregate economic performance, intergenerational mobility, and the possible implications of inequality for the recent global financial crisis.

ECON 23N. Capitalism, Socialism and Democracy. 3 Units.
We will explore the evolution and current performance of capitalist and socialist economies, their interaction with democracy, and the contemporary debate about the appropriate roles of individual vs. collective rights and responsibilities.

ECON 25N. Public Policy and Personal Finance. 3 Units.
The seminar will provide an introduction and discussion of the impact of public policy on personal finance. Voters regularly rate the economy as one of the most important factors shaping their political views and most of those opinions are focused on their individual bottom lines. In this course we will discuss the rationale for different public policies and how they affect personal financial situations. We will explore personal finance issues such as taxes, loans, charity, insurance, and pensions. Using the context of (hypothetical) personal finance positions, we will discuss the public policy implications of various proposals and how they affect different groups of people, for example: the implications of differential tax rates for different types of income, the promotion of home ownership in the U.S., and policies to care for our aging population. While economic policy will be the focus of much of the course, we will also examine some of the implications of social policies on personal finance as well. There will be weekly readings and several short policy-related writing assignments.
Same as: PUBLPOL 55N

ECON 27N. The Economics of Gender. 3 Units.
This seminar draws on empirical and theoretical insights from multiple fields within economics. The objective is to understand the role of gender in economic decision making, and the changing significance, timing and meaning of work, career and family. We will focus on recent work in experimental economics, and empirical work in the developed world. But at times we will widen the perspective to developing countries and consider historical changes as well.

ECON 43. Introduction to Financial Decision-Making. 5 Units.
The purpose of the class is for you to obtain greater comfort making the major financial decisions your life journey will require. Illustrative examples, case studies, historical and statistical evidence, and some simple analytical tools will be presented. We hope to help students avoid damaging mistakes in the decisions that will determine their financial flexibility and safeguard them against life's uncertainties. Students will learn how to keep more options open and to live with fewer constraints by making sound financial decisions. Topics include making a financial plan and budget, managing money, saving, investing in stocks and other assets, purchasing insurance, taxes and inflation, inheritance, financial markets and financial advisors.

ECON 44. The Modern Financial System. 3 Units.
The purpose of the class is to introduce you to the modern financial system. What are the major financial instruments -- bonds, bank loans and also equity - and how are their prices determined. What are the key financial institutions that lend, provide liquidity and make markets. What role does the government play through regulation, monetary policy and special intervention in crisis time. We'll devote particular attention to the payments system: how do households and firms make payments, how do financial institutions organize these payments, and how could this business change with potential entry of new digital currencies, provided by central banks or the private sector. Prerequisites: Econ 1 is recommended.

ECON 46. Networks and Human Behavior. 5 Units.
Two threads are interwoven: why social and economic networks have special features, and how those features shape power, opinions, opportunities, and behaviors. Some of the topics included are: the different ways in which a person's position in a network determines their influence; which systematic errors people make when forming opinions based on what they learn from others; how financial contagions work and why are they different from the spread of a flu; the role of splits in our social networks in inequality, immobility, and polarization; and how network patterns of trade and globalization have changed international conflict and wars. The course requires analyzing network data, which will be provided. No prerequisite but Econ 102A or equivalent is recommended.

ECON 47. Media Markets and Social Good. 5 Units.
This class will apply tools from economics and related social sciences to study the functioning of media markets and their impact on society. The guiding question will be: when and how do media best serve the social good? Topics will include the economics of two-sided markets, media bias, polarization, social media, fake news, advertising, propaganda, effects of media on children, media and crime, and the role of media in corruption, protests and censorship. The course will give students a non-technical introduction to social science empirical methods, including regression analysis, causal inference, experimental and quasi-experimental methods, and machine learning.

ECON 50. Economic Analysis I. 5 Units.
Individual consumer and firm behavior under perfect competition. The role of markets and prices in a decentralized economy. Monopoly in partial equilibrium. Economic tools developed from multivariable calculus using partial differentiation and techniques for constrained and unconstrained optimization. Prerequisites: Econ 1 or 1V, and Math 51 or Math 51A or CME 100 or CME 100A.

ECON 51. Economic Analysis II. 5 Units.
Neoclassical analysis of general equilibrium, welfare economics, imperfect competition, externalities and public goods, risk and uncertainty, game theory, adverse selection, and moral hazard. Multivariate calculus is used. Prerequisite: ECON 50.

ECON 52. Economic Analysis III. 5 Units.
Long-run economic growth and short-run economic fluctuations. Focus on the macroeconomic tools of government: fiscal policy (spending and taxes) and monetary policy, and their effects on growth, employment, and inflation. Prerequisites: ECON 50.

ECON 78N. Economic Policies of the Presidential Candidates. 3 Units.
In nearly all polls, American voters rank the economy as one of their most important concerns. In the presidential election, much of the debate for voters will be on questions of economic policy. In this course, we will delve deeply into economic policy issues to understand options for government intervention and possible outcomes. We will combine economic analysis with political science methodology to understand efficient and implementable policy proposals.nnSpecific areas of interest will be taxation, budget, entitlement programs, economic regulation and competition policy, trade, demography, income inequality, and monetary policy. The course will incorporate other timely and salient policy issues as they arise during the course of the campaign. n nStudents will be expected to write a short paper and make an oral presentation to the class. A wide range of topics will be acceptable, including those directly related to campaign issues as well as other long-term economic issues facing the country.
Same as: PUBLPOL 78N

ECON 101. Economic Policy Seminar. 5 Units.
Economic policy analysis, writing, and oral presentation. Topics vary with instructor. Limited enrollment. Prerequisites: Econ 51 and 52, 102B, and two field courses. Some sections require additional prerequisites.

ECON 102A. Introduction to Statistical Methods (Postcalculus) for Social Scientists. 5 Units.
Probabilistic modeling and statistical techniques relevant for economics. Concepts include: probability trees, conditional probability, random variables, discrete and continuous distributions, correlation, central limit theorems, point estimation, hypothesis testing and confidence intervals for both one and two populations. Prerequisite: MATH 20 or equivalent.

ECON 102B. Applied Econometrics. 5 Units.
Hypothesis tests and confidence intervals for population variances, chi-squared goodness-of-fit tests, hypothesis tests for independence, simple linear regression model, testing regression parameters, prediction, multiple regression, omitted variable bias, multicollinearity, F-tests, regression with indicator random variables, simultaneous equation models and instrumental variables. Topics vary slightly depending on the quarter. Prerequisites: Econ 102A or equivalent. Recommended: computer experience (course often uses STATA software to run regressions).

ECON 102C. Advanced Topics in Econometrics. 5 Units.
The program evaluation problem. Identifying and estimating the effects of policies on outcomes of interest (e.g., tax rates on labor supply, etc.). Identifying and estimating the effects of human capital on earnings and other labor market outcomes. Topics: Instrumental variables estimation; limited dependent variable models (probit, logit, Tobit models); Panel data techniques (fixed and random effect models, dynamic panel data models); Duration models; Bootstrap and Estimation by Simulation. Prerequisite: Econ 102B.

ECON 102D. Econometric Methods for Public Policy Analysis and Business Decision-Making. 5 Units.
This course focuses on the use of econometric methods in public policy analysis and business decision-making. Building on methods taught in Economics 102A and 102B, additional descriptive, predictive and causal econometric modeling methods will be introduced along with the assumptions required for the validity of each methodology. Methods for designing randomized controlled trials (RCT) and analyzing the resulting data will be discussed. The methods for recovering economically meaningful magnitudes such as price elasticities of demand and other behavioral responses from observational data will be discussed. Both classical econometric methods and modern techniques in machine learning will be employed. The class will be taught using the R programming language. Students will perform both in-class and out-of-class assignments working with actual datasets to address policy-relevant decisions and simulation exercises designed to deepen their knowledge of these methods. Prerequisites: Econ102A, Econ102B.

ECON 106. World Food Economy. 5 Units.
The economics of food production, consumption, and trade. The micro- and macro- determinants of food supply and demand, including the interrelationship among food, income, population, and public-sector decision making. Emphasis on the role of agriculture in poverty alleviation, economic development, and environmental outcomes. Grades based on mid-term exam and group modeling project and presentation. Enrollment is by application only and will be capped at 25, with priority given to upper level undergraduates in Economics and Earth Systems and graduate students (graduate students enroll in 206). Application found at https://economics.stanford.edu/academics/undergraduate-program/forms.
Same as: EARTHSYS 106, EARTHSYS 206, ECON 206, ESS 106, ESS 206

ECON 111. Money and Banking. 5 Units.
The primary course goal is for students to master the logic, intuition and operation of a financial system - money, financial markets (money and capital markets, debt and equity markets, derivatives markets), and financial institutions and intermediaries (the Central Bank, depository institutions, credit unions, pension funds, insurance companies, venture capital firms, investment banks, mutual funds, etc.). In other words, how money/capital change hands between agents over time, directly and through institutions. Material will be both quantitative and qualitative, yet always highly analytical with a focus on active learning - there will be an approximately equal emphasis on solving mathematical finance problems (e.g. bond or option pricing) and on policy analysis (e.g. monetary policy and financial regulation.) Students will not be rewarded for memorizing and regurgitating facts, but rather for demonstrating the ability to reason with difficult problems and situations with which they might not previously be familiar. Prerequisite: Econ 50, 52. Strongly recommended but not required: some familiarity with finance and statistics (e.g. Econ 135 or 140, Econ 102A).

ECON 112. Financial Markets and Institutions: Recent Developments. 5 Units.
The course covers innovations, challenges and proposed changes to the financial system. Topics include new mortgage products, foreclosure rules, securitization, credit ratings, credit derivatives, dealer networks, repo financing, implications for prudential regulation & monetary policy. Emphasis is on quantitative studies of these topics. Prerequisites: Econ 52, Econ 102B.

ECON 118. Development Economics. 5 Units.
The microeconomic problems and policy concerns of less developed countries. Topics include: health and education; risk and insurance; microfinance; agriculture; technology; governance. Emphasis is on economic models and empirical evidence. Prerequisites: ECON 50, ECON 102B.

ECON 124. Economic Development and Challenges of East Asia. 3-5 Units.
(Formerly IPS 224) This course explores East Asia's rapid economic development and the current economic challenges. For the purpose of this course, we will focus on China, Japan, and Korea. The first part of the course examines economic growth in East Asia and the main mechanisms. In this context, we will examine government and industrial policy, international trade, firms and business groups, and human capital. We will discuss the validity of an East Asian model for economic growth. The second part of the course focuses on the current economic challenges confronting these countries, such as, political economy, human capital, inequality, and entrepreneurship and innovation. Readings will come from books, journal articles, reports, news articles, and case studies. Many of the readings will have an empirical component and students will be able to develop their understanding of how empirical evidence is presented in articles. Prerequisites: INTPOL 301B, Polisci150A(355A), Econ 102B or equivalent courses that cover regression analysis.
Same as: INTLPOL 224

ECON 125. Economic Development, Microfinance, and Social Networks. 5 Units.
An introduction to the study of the financial lives of households in less developed countries, focusing on savings, credit, informal insurance, the expansion of microfinance, social learning, public finance/redistribution, and social networks. Prerequisites- Econ 51 or Publpol 51 and Econ 102B.

ECON 126. Economics of Health and Medical Care. 5 Units.
Institutional, theoretical, and empirical analysis of the problems of health and medical care. Topics: demand for medical care and medical insurance; institutions in the health sector; economics of information applied to the market for health insurance and for health care; measurement and valuation of health; competition in health care delivery. Graduate students with research interests should take ECON 249. Prerequisites: ECON 50 and either ECON 102A or STATS 116 or the equivalent. Recommended: ECON 51.
Same as: BIOMEDIN 156, BIOMEDIN 256, HRP 256

ECON 127. Economics of Health Improvement in Developing Countries. 5 Units.
Application of economic paradigms and empirical methods to health improvement in developing countries. Emphasis is on unifying analytic frameworks and evaluation of empirical evidence. How economic views differ from public health, medicine, and epidemiology; analytic paradigms for health and population change; the demand for health; the role of health in international development. Prerequisites: ECON 50 and ECON 102B.
Same as: MED 262

ECON 131. The Chinese Economy. 4 Units.
This is a survey course of the Chinese economy with emphasis on understanding the process of economic reform, transition and development during the past 40 years. It will help students learn the different historical stages of institutional changes, develop an informed perspective on economic and political rationale and the effectiveness of the economic policies that have shaped China's economic emergence, and think critically about the process of economic and social changes. Prerequisite: Econ 1.

ECON 135. Foundations of Finance. 3 Units.
For graduate students and advanced undergraduates. This course teaches the foundations of finance. Topics include internal rate of return and net present value, Black-Scholes option pricing, portfolio diversification and the Capital Asset Pricing Model, relationships between risk and return, market efficiency, and the valuation of derivative securities. Much of the analysis will build on the Arrow-DeBreu state preference model. Next, adverse selection and moral hazard in contracting and the design of auctions will be discussed. Towards the end of the course applied topics such as bank capital regulation, sovereign debt, pension funds, university endowments, and the evaluation of private equity performance and fees will be discussed, depending on time. Prerequisites: MATH 51, ECON 50, ECON 102A, or equivalents; ability to use spreadsheets, and basic probability and statistics concepts including random variables, expected value, variance, covariance, and simple estimation and regression.

ECON 136. Market Design. 5 Units.
Use of economic theory and analysis to design allocation mechanisms and market institutions. Course focuses on three areas: the design of matching algorithms to solve assignment problems, with applications to school choice, entry-level labor markets, and kidney exchanges; the design of auctions to solve general resource allocation problems, with applications to the sale of natural resources, financial assets, radio spectrum, and advertising; and the design of platforms and exchanges, with applications to internet markets. Emphasis on connecting economic theory to practical applications. Students must write term paper.

ECON 137. Decision Modeling and Information. 5 Units.
Effective decision models consider a decision maker's alternatives, information and preferences. The construction of such models in single-party situations with emphasis on the role of information. The course then evolves to two-party decision situations where one party has more information than the other. Models examined include: bidding exercises and the winner's curse, the Akerlof Model and adverse selection, the Principal-Agent model and risk sharing, moral hazard and contract design. Prerequisite: ECON 102A or equivalent. Recommended: Econ 50, Optimization and simulation in Excel.

ECON 139D. Directed Reading. 1-10 Unit.
May be repeated for credit.

ECON 140. Introduction to Financial Economics. 5 Units.
Modern portfolio theory and corporate finance. Topics: present value and discounting, interest rates and yield to maturity, various financial instruments including financial futures, mutual funds, the efficient market theory, basic asset pricing theory, the capital asset pricing model, and models for pricing options and other contingent claims. Use of derivatives for hedging. Prerequisites: ECON 50, ECON 102A.

ECON 141. Public Finance and Fiscal Policy. 5 Units.
What role should and does government play in the economy? What are the effects of government spending, borrowing, and taxation on efficiency, equity and economic stability and growth? The course covers economic, historical and statistical analyses and current policy debates in the U.S. and around the world. Policy topics: Fiscal crises, budget deficits, the national debt and intergenerational equity; tax systems and tax reform; social security and healthcare programs and reforms; transfers to the poor; public goods and externalities; fiscal federalism; public investment and cost-benefit analysis; and the political economy of government decision-making. Prerequisites: ECON 51 (Public Policy majors may take PUBLPOL 51 as a substitute for ECON 51), ECON 52 (can be taken concurrently).
Same as: PUBLPOL 107

ECON 143. Finance, Corporations, and Society. 4 Units.
Both "free market capitalism" and democracy are in crisis around the world. This interdisciplinary course will help you understand the issues by exploring the interactions between the financial system, corporations, governments, and broader society. Topics include basic financial decisions of individuals and corporations, consumer finance (including mortgages, student loans, insurance and savings), financial markets and firms, corporations and their governance, the role of disclosures and regulations, political economy and government institutions, and the role of the media. We will discuss current events and policy debates regularly throughout the course. The approach will be rigorous and analytical but not overly mathematical. Visitors with relevant experience will enrich the discussion.
Same as: INTLPOL 227, POLISCI 127A, PUBLPOL 143

ECON 144. Family and Society. 5 Units.
The family into which a child is born plays a powerful role in determining lifetime opportunities. This course will apply tools from economics and related social sciences to study how the functioning of families is shaped by laws, social insurance, social norms, and technology. Topics will include intergenerational transmission of wealth and health, the importance of the early family environment, partnership formation, cohabitation and marriage, teen pregnancy and contraception, assisted reproduction, Tiger Moms and Helicopter Parenting, and the employment effects of parenthood. In the context of these topics, the course will cover social science empirical methods, including regression analysis, causal inference, and quasi-experimental methods. Throughout the course, we will think critically about the role of the government and how the design of public policy targeting families affect our ability to solve some of the most important social and economic problems of our time. Prerequisites: Econ 50.

ECON 145. Labor Economics. 5 Units.
Analysis and description of labor markets. Determination of employment, hours of work, and wages. Wage differentials. Earnings inequality. Trade unions and worker co-operatives. Historical and international comparisons.. Prerequisites: ECON 51 (Public Policy majors may take PUBLPOL 51 as a substitute for ECON 51), ECON 102B.

ECON 146. Economics of Education. 5 Units.
How a decision to invest in education is affected by factors including ability and family background. Markets for elementary and secondary schooling; topics such as vouchers and charter schools, accountability, expenditure equalization among schools, and the teacher labor market.The market for college education emphasizing how college tuition is determined, and whether students are matched efficiently with colleges. How education affects economic growth, focusing on developing countries. Theory and empirical results. Application of economics from fields such as public economics, labor economics, macroeconomics, and industrial organization. Prerequisites: ECON 50, ECON 102B.

ECON 147. The Economics of Labor Markets. 5 Units.
This course will cover the economics of labor markets. Topics include: determinants of employment and unemployment; job creation and job destruction. The effects of technological change on the labor market. The effects of a universal basic income. There is a final exam. Prerequisites: ECON 51 (Public Policy majors may take PUBLPOL 51 as a substitute for ECON 51), Econ 52, Econ 102B.

ECON 149. The Modern Firm in Theory and Practice. 5 Units.
Examines the empirics on the economics, management and strategy of organizations (e.g. firms). Topics include the organization of firms in US and internationally. Management practices around information systems, target setting and human resources. Focus on management practices in manufacturing, but also analyze retail, hospitals and schools, plus some recent field-experiments in developing countries. Prerequisites: ECON 51 (Public Policy majors may take PUBLPOL 51 as a substitute for ECON 51), ECON 102B.

ECON 150. Economic Policy Analysis. 4-5 Units.
The relationship between microeconomic analysis and public policy making. How economic policy analysis is done and why political leaders regard it as useful but not definitive in making policy decisions. Economic rationales for policy interventions, methods of policy evaluation and the role of benefit-cost analysis, economic models of politics and their application to policy making, and the relationship of income distribution to policy choice. Theoretical foundations of policy making and analysis, and applications to program adoption and implementation. Prerequisites: ECON 50 and ECON 102B. Undergraduate Public Policy students are required to take this class for a letter grade and enroll in this class for five units.
Same as: PUBLPOL 104, PUBLPOL 204

ECON 151. Tackling Big Questions Using Social Data Science. 5 Units.
Big data can help us provide answers to fundamental social questions, from poverty and social mobility, to climate change, migration, and the spread of disease. But making sense of data requires more than just statistical techniques: it calls for models of how humans behave and interact with each other. Social data science combines the analysis of big data with social science theory. We will take a project-oriented, many models-many methods approach: for each topic or question of general interest, we will first introduce simple formal models from across the social sciences to guide our thinking. Then we will collect and analyze the relevant data, applying data science techniques such as machine learning and causal inference. Prerequisites are Econ 102A and 102B.
Same as: POLISCI 151

ECON 152. The Future of Finance. 2 Units.
This 2-credit course will examine vast changes driven by innovation both from within traditional finance and from new ecosystems in fintech among others. Breathtaking advances in financial theory, big data, machine learning, artificial intelligence, computational capability, IoT, payment systems (e.g. blockchain, crypto currencies), new products (e.g. robo advising, digital lending, crowd funding, smart contracts), new trading processes (e.g. algorithmic trading, AI-driven sales & trading), and new markets (e.g. ETFs, zero-cost products), among others are changing not only how financial and non-financial firms conduct business but also how investors and supervisors view the players and the markets. nWe will discuss critical strategy, policy and legal issues, some resolved and others yet to be (e.g. failed business models, cyber challenges, financial warfare, fake news, bias problems, legal standing for cryptos). The course will feature perspectives from guest speakers including top finance executives and Silicon Valley entrepreneurs on up-to-the-minute challenges and opportunities in finance. nWe will discuss slowing global growth against the backdrop of ongoing intervention and wildcards in the capital markets of the U.S., Europe, Hong Kong, Singapore, China, India, Japan, the Middle East and Latin America. We will look forward at strategic opportunities and power players appearing and being dethroned in the markets to discuss who is likely to thrive ¿ and not survive ¿ in the new global financial landscape. nnPrerequisites: If you are an undergraduate wishing to take this course, apply by completing the course application and provide a brief bio here: https://forms.gle/9BGYr8brdYwPS8Cu8.
Same as: ECON 252, PUBLPOL 364

ECON 154. Law and Economics. 4-5 Units.
This course explores the role of law in promoting social well-being (happiness). Law, among its other functions, can serve as a mechanism to harmonize private incentives with cooperative gains, to support an equitable division of those gains, and to deter "cheating" and dystopia. Law is thus essential to civilization. Economic analysis of law focuses on the welfare-enhancing incentive effects of law and its enforcement and on law's role in reducing the risks of cooperation, achieved by fixing expectations of what courts or the state will do in various futures. Specific topics include welfare economics, torts, property, contracts, regulation, process and antitrust. Requires a term paper applying economic analysis to a case, procedure, or law. Prerequisite: ECON 50.
Same as: PUBLPOL 106, PUBLPOL 206

ECON 155. Environmental Economics and Policy. 5 Units.
Economic sources of environmental problems and alternative policies for dealing with them (technology standards, emissions taxes, and marketable pollution permits). Evaluation of policies addressing local air pollution, global climate change, and the use of renewable resources. Connections between population growth, economic output, environmental quality, sustainable development, and human welfare. Prerequisite: ECON 50. May be taken concurrently with consent of the instructor.

ECON 157. Imperfect Competition. 5 Units.
The interaction between firms and consumers in markets that fall outside the benchmark competitive model. How firms acquire and exploit market power. Game theory and information economics to analyze how firms interact strategically. Topics include monopoly, price discrimination, advertising, oligopoly pricing, product differentiation, collusion and cartel behaviour, and anti competitive behavior. Sources include theoretical models, real-world examples, and empirical papers. Prerequisite: ECON 51 (Public Policy majors may take PUBLPOL 51 as a substitute for ECON 51).

ECON 158. Regulatory Economics. 5 Units.
Economics 158 examines public policies for dealing with problems arising in markets in which competitive forces are weak. The focus is on monopolies, oligopolies, cartels, and other environments where market mechanisms are unlikely to produce outcomes that benefit consumers more than the alternatives involving costly government intervention. The two main areas examined are competition policy and economic regulation. Competition policy refers to laws that define certain market behavior as illegal because it is harmful to competition or fails to provide consumer benefits that justify its costs to consumers. Economic regulation refers to policies in which government controls prices and/or decides the terms and conditions under which firms can participate in a market. A growing area of study and policy design is the introduction of market mechanisms into formerly regulated industries such as: telecommunications, electricity, airlines, railroads, postal delivery services and environmental regulation. Cross-listed with Law 1056. Prerequisites: Econ 51 or equivalent.

ECON 159. Economic, Legal, and Political Analysis of Climate-Change Policy. 5 Units.
This course will advance students understanding of economic, legal, and political approaches to avoiding or managing the problem of global climate change. Theoretical contributions as well as empirical analyses will be considered. It will address economic issues, legal constraints, and political challenges associated with various emissions-reduction and adaptation strategies, and it will consider policy efforts at the local, national, and international levels. Specific topics include: interactions among overlapping climate policies, the strengths and weaknesses of alternative policy instruments, trade-offs among alternative policy objectives, and decision making under uncertainty. Prerequisites: Econ 50 or its equivalent.
Same as: EARTHSYS 159, ECON 209, PUBLPOL 159

ECON 160. Game Theory and Economic Applications. 5 Units.
Introduction to game theory and its applications to economics. Topics: strategic and extensive form games, dominant strategies, Nash equilibrium, subgame-perfect equilibrium, and Bayesian equilibrium. The theory is applied to repeated games, voting, auctions, and bargaining with examples from economics and political science. Prerequisites: Working knowledge of calculus and basic probability theory.

ECON 162. Games Developing Nations Play. 3-5 Units.
If, as economists argue, development can make everyone in a society better off, why do leaders fail to pursue policies that promote development? The course uses game theoretic approaches from both economics and political science to address this question. Incentive problems are at the heart of explanations for development failure. Specifically, the course focuses on a series of questions central to the development problem: Why do developing countries have weak and often counterproductive political institutions? Why is violence (civil wars, ethnic conflict, military coups) so prevalent in the developing world, and how does it interact with development? Why do developing economies fail to generate high levels of income and wealth? We study how various kinds of development traps arise, preventing development for most countries. We also explain how some countries have overcome such traps. This approach emphasizes the importance of simultaneous economic and political development as two different facets of the same developmental process. No background in game theory is required.
Same as: POLISCI 247A, POLISCI 347A

ECON 165. International Finance. 5 Units.
We will explore models for analyzing a wide variety of issues in open-economy macroeconomics, such as the balance of payments; the determination of exchange rates; monetary and fiscal policy under flexible and fixed exchange rate regimes; exchange rate crises; sovereign debt crises and the possibility of contagion. Our theoretical framework will structure our examination of important historical episodes and contemporary policy debates; the textbook will be supplemented with readings from recent scholarly articles and mainstream news sources. Active class participation is an important part of the course. Prerequisite: ECON 52.

ECON 166. International Trade. 5 Units.
Explaining patterns of trade among nations; characterizing the sources of comparative advantage in production and the prospect of gains from economies of scale. Enumerating and accounting for the net aggregate gains from trade, and identifying winners and losers from globalization. Analyzing the effects of international labor migration, foreign direct investment, outsourcing, and multinational companies. Strategic trade policy; international trade agreements; labor and environmental implications. We will review relevant theoretical frameworks, examine empirical evidence, and discuss historical and contemporary policy debates as covered in the popular press; active class participation is an important part of the course. Prerequisite: ECON 51 (Public Policy majors may take PUBLPOL 51 as a substitute for ECON 51).

ECON 178. Behavioral Economics. 5 Units.
The field of behavioral economics draws on insights from other disciplines, especially psychology, to enrich our understanding of economic behavior. The course will discuss how people may display systematic behavioral patterns that diverge from the predictions of standard economic models, as well as the ways in which economists incorporate those considerations into their theories, and the implications of those theories for market outcomes and public policies. Prerequisites: ECON 50 and ECON 102A. Econ 51 is recommended.

ECON 179. Experimental Economics. 5 Units.
Methods and major subject areas that have been addressed by laboratory experiments. Focus is on a series of experiments that build on one another. Topics include decision making, two player games, auctions, and market institutions. How experiments are used to learn about preferences and behavior, trust, fairness, and learning. Final presentation of group projects. Prerequisites: ECON 51 (Public Policy majors may take PUBLPOL 51 as a substitute for ECON 51), ECON 102A.

ECON 180. Honors Game Theory. 5 Units.
Rigorous introduction to game theory and applications. Topics include solution concepts for static and dynamic games of complete and incomplete information, signaling games, repeated games, bargaining, and elements of cooperative game theory. Applications mainly from economics, but also political science, biology, and computer science. Prerequisites: Experience with abstract mathematics and willingness to work hard. No background in economics required.

ECON 184. Institutional Investment Management: Theory and Practice. 4 Units.
This course provides an introduction to the theory and practice of institutional investment management including asset allocation and manager selection across public and private equity, absolute return, real assets, and fixed income. The course is taught by the CIO of Stanford's endowment and takes the perspective of an institution with a long-term investment horizon like Stanford. We introduce and apply a framework for assessing investment strategies and investment firms. Students put theory into practice by meeting with leading investors from various asset classes. Enrollment capped at 20. To apply please send a statement of interest and an unofficial transcript to econ184@smc.stanford.edu by December 20, 2019. Prerequisites: Econ 50 and Econ 102A, may be taken concurrently.

ECON 198. Junior Honors Seminar. 5 Units.
For juniors (advanced sophomores will be considered) who expect to write an honors thesis in Economics or Public Policy. Weekly sessions go through the process of selecting a research question, finding relevant bibliography, writing a literature review, introduction, and study design, culminating in the write-up of an honors thesis proposal (prospectus) and the oral presentation of each student's research project. Students also interact with potential advisors, and outline a program of study for their senior year. To apply, complete the application at https://economics.stanford.edu/undergraduate/forms.
Same as: PUBLPOL 197

ECON 199D. Honors Thesis Research. 1-10 Unit.
In-depth study of an appropriate question and completion of a thesis of very high quality. Normally written under the direction of a member of the Department of Economics (or some closely related department). See description of honors program. Register for at least 1 unit for at least one quarter after your honors application is approved. Winter registration for one unit under the supervision of the Director of the Honors Program is mandatory for all honors students.

ECON 202. Microeconomics I. 2-5 Units.
(Non-Economics graduate students register for 202N.) Open to advanced undergraduates with consent of instructors. Theory of the consumer and the implications of constrained maximization; uses of indirect utility and expenditure functions; theory of the producer, profit maximization, and cost minimization; monotone comparative statics; behavior under uncertainty; partial equilibrium analysis and introduction to models of general equilibrium. Limited enrollment. Prerequisite: thorough understanding of the elements of multivariate calculus and linear algebra.

ECON 202N. Microeconomics I For Non-Economics PhDs students. 2-5 Units.
Theory of the consumer and the implications of constrained maximization; uses of indirect utility and expenditure functions; theory of the producer, profit maximization, and cost minimization; behavior under uncertainty; partial equilibrium analysis and introduction to models of general equilibrium; discussion of how assumptions and models stand up to recent developments in empirical and in particular behavioral economics. Prerequisite: understanding of basic calculus and some familiarity with writing basic proofs.

ECON 203. Microeconomics II. 3-5 Units.
(Non-Economics graduate students register for 203N.) Non-cooperative game theory including normal and extensive forms, solution concepts, games with incomplete information, and repeated games. Externalities and public goods. The theory of imperfect competition: static Bertrand and Cournot competition, dynamic oligopoly, entry decisions, entry deterrence, strategic behavior to alter market conditions. Limited enrollment. Prerequisite: ECON 202.

ECON 204. Microeconomics III. 3-5 Units.
Social Choice, including Arrow's theorem, the Gibbard-Satterthwaite theorem, and the Vickrey-Clarke-Groves mechanism. The theory of contracts, emphasizing contractual incompleteness and the problem of moral hazard. Incentive regulation. Competition with imperfect information, including signaling and adverse selection. Competitive equilibrium and the core. Limited enrollment. Non-Econ students need permission of instructor to enroll. Prerequisite: ECON 202 and 203.

ECON 206. World Food Economy. 5 Units.
The economics of food production, consumption, and trade. The micro- and macro- determinants of food supply and demand, including the interrelationship among food, income, population, and public-sector decision making. Emphasis on the role of agriculture in poverty alleviation, economic development, and environmental outcomes. Grades based on mid-term exam and group modeling project and presentation. Enrollment is by application only and will be capped at 25, with priority given to upper level undergraduates in Economics and Earth Systems and graduate students (graduate students enroll in 206). Application found at https://economics.stanford.edu/academics/undergraduate-program/forms.
Same as: EARTHSYS 106, EARTHSYS 206, ECON 106, ESS 106, ESS 206

ECON 209. Economic, Legal, and Political Analysis of Climate-Change Policy. 5 Units.
This course will advance students understanding of economic, legal, and political approaches to avoiding or managing the problem of global climate change. Theoretical contributions as well as empirical analyses will be considered. It will address economic issues, legal constraints, and political challenges associated with various emissions-reduction and adaptation strategies, and it will consider policy efforts at the local, national, and international levels. Specific topics include: interactions among overlapping climate policies, the strengths and weaknesses of alternative policy instruments, trade-offs among alternative policy objectives, and decision making under uncertainty. Prerequisites: Econ 50 or its equivalent.
Same as: EARTHSYS 159, ECON 159, PUBLPOL 159

ECON 210. Macroeconomics I. 2-5 Units.
Dynamic programming applied to a variety of economic problems. These problems will be formulated in discrete or continuous time, with or without uncertainty, with a finite or infinite horizon. There will be weekly problem sets and a take-home final that will require MATLAB programming. Limited enrollment.

ECON 211. Macroeconomics II. 3-5 Units.
Dynamic stochastic general equilibrium models using dynamic programming methods that are solved with MATLAB. Growth models (neoclassical, human capital, technical change) using optimal control theory. Limited enrollment. Prerequisite: ECON 210.

ECON 212. Macroeconomics III. 3-5 Units.
Real business cycle and new Keynesian models: business cycle fluctuations, inflation dynamics, the effects of monetary and fiscal policy, and optimal policy. Models of heterogeneity: search models of the labor market; precautionary savings and general equilibrium with incomplete markets; constrained efficiency; endogenous market incompleteness and recursive contracts; optimal taxation and redistribution. Limited enrollment. Prerequisites: ECON 203, ECON 210, ECON 211.

ECON 214. Development Economics I. 3-5 Units.
This course uses microeconomic theory and empirical analyses to understand barriers to human and economic development in lower income countries, as well as how public policies are formulated and their effectiveness at alleviating poverty. Topics include institutions and governance; human capital accumulation; productivity; inequality; poverty traps. Prerequisites: 202 or 202N, 270.

ECON 215. Development Economics II. 3-5 Units.
This is a course focusing on macro development research. It will cover dynamic models of growth and development, with a focus on migration; technological change; the functioning of financial markets; barriers to agricultural productivity; informal financial systems (savings, credit, and insurance); and public finance in less developed countries. Prerequisites: 202 or 202N, 270.

ECON 216. Development Economics III. 3-5 Units.
This course focuses on savings, credit, informal insurance, the expansion of microfinance, social networks, social learning and technology adoption, public finance and firm organizations. Prerequisite: 202, 203, 204, 210, 211, 212, 270, 271, 272.

ECON 220. Political Economy I. 3-5 Units.
Introduction to empirical and theoretical research in political economy. This course focuses on issues in democracies, while Political Economy II focuses on issues in non-democracies. Topics may include institutional foundations, social choice, electoral competition and candidate positioning, accountability, voter behavior, polarization, media and political communication, redistribution, special interests and lobbying, collective action, immigration, and populism. Prerequisite for Econ PhD students: ECON 202 and 270 or permission of instructors. Prerequisites for Political Science PhD students: POLISCI 450A, POLISCI 450B, and POLISCI 356A.
Same as: POLISCI 460A

ECON 221. Political Economy II. 3-5 Units.
Continuation of ECON 220 / POLISCI 460A. Preparation for advanced research in political economy. This quarter will focus on topics related to culture, institutions, political and economic development, historical evolution, nondemocratic politics, conflict and cooperation. We will cover both empirical and theoretical work. Prerequisite for Political Science PhDnstudents: POLISCI 356A.
Same as: POLISCI 460B

ECON 226. U.S. Economic History. 2-5 Units.
The role of economic history as a distinctive approach to the study of economics, using illustrations from U.S. history. Topics include: historical and institutional foundations of the U.S. rise to world economic preeminence; economic causes and consequences of slavery; the American national system of technology; the Great Depression of the 1930s and the policy response; inequality and intergenerational mobility; the growth of social insurance. Intended for graduate students.

ECON 229. Topics in Economic History. 3-5 Units.
Topics in Economic History: covers topics in Economic History such as the industrial revolution, the demographic transition, the great divergence, the importance of institutions, the diffusion of knowledge, the causes and consequences of income inequality, and immigration over the last two centuries. The course will highlight the roles of economic history in modern economics, the use of economic theory in guiding hypothesis testing, and the construction of new datasets and the execution of empirical analysis. The course is open to PhD students only.

ECON 233. Advanced Macroeconomics I. 2-5 Units.
Topics in the theory and empirics of economic growth. For PhD-level students.

ECON 234. Advanced Macroeconomics II. 3-5 Units.
This is an advanced class on monetary economics. We cover empirical evidence, neoclassical models, recent advances in New Keynesian models, monetary policy with heterogeneous agents and financial frictions, alternative models of price setting and other topics. Students enrolled in MGTECON 612 take the class for 4 units. Students develop a research proposal and present it to the instructors as the final exam. Prerequisite: Satisfaction of the economics department's core macro requirement or consent of the instructors.

ECON 236. Financial Economics I. 3-5 Units.
This course will cover research topics at the boundary between macroeconomics and finance. Topics may include the study of macroeconomic models with financial frictions, conventional and unconventional monetary policy, its transmission mechanism and the term structure of interest rates, sovereign debt crises, search frictions and segmentation in housing markets, (over)leveraging by households, heterogeneous expectations, excess volatility, financial bubbles and crises. Prerequisites: 210, 211, 212.

ECON 237. Financial Economics II. 3-5 Units.
This Ph.D. course will cover research topics at the boundary between macroeconomics and finance. Topics will include the study of macroeconomic models with financial frictions, the term structure of interest rates, conventional and unconventional monetary policy, sovereign debt crises, search frictions and segmentation in housing markets, (over)leveraging by households, heterogeneous expectations, excess volatility, financial bubbles and crises. Student presentations and course paper requirement. Designed for second year PhD students in economics or finance.
Same as: MGTECON 617

ECON 239D. Directed Reading. 1-10 Unit.
May be repeated for credit.

ECON 241. Public Economics I. 2-5 Units.
Design of tax systems, transfers intended to alleviate poverty, the effect of taxes on earnings, fees intended to internalize externalities like pollution, school finance and other forms of fiscal federalism, local public goods such as schools, policy evaluation with behavioral decision makers. Students will learn to apply sophisticated applications of frontier applied econometric techniques including synthetic controls, regression discontinuity, advanced instrumental variables methods. Prerequisites: ECON 202-204, ECON 210, ECON 270, ECON 271, or equivalent with consent of instructor.

ECON 242. Public Economics II. 3-5 Units.
This course will explore the rationale for and economic effects of social insurance programs including but not limited to social security, unemployment insurance, disability insurance, and public health insurance. The course will also include four lectures on behavioral public economics. The focus of these lectures will be on developing a framework for conducting welfare analysis in settings with behavioral consumers, and then on applying that framework to issues in public economics, starting with optimal commodity taxation (including ¿sin taxes¿), followed by policies affecting personal saving, as well as the taxation of earnings (including implications for social insurance). Additional topics covered in the course will include other important areas of government expenditure and regulation such as education, defense procurement, economic stimulus, and environmental regulation. Course will cover both theoretical and empirical evidence and prerequisites are ECON 202-204 and ECON 270-272 or similar with permission of instructor.

ECON 243. Public Economics III. 3-5 Units.
The first part of the course concerns inequality and the design of social insurance. We also explore questions in the intersection of public and family economics such as the unit of taxation, and the interaction between social insurance and intra-family insurance. The second half of the course covers local public policy and urban economics, and includes topics such as spatial equilibrium, placed-based policies and housing policy. Prerequisites: Econ 202, 203, 204, 210, 270, 271, or equivalent with consent of instructor. Recommended: Econ 241.270, 271, or equivalent with consent of instructor. Recommended: Econ 241 and 242.

ECON 244. Market Failures and Public Policy. 3-5 Units.
Market failures are the classic justification for government intervention in private markets. This course will focus on a small number of economically important markets where market failures are thought to be important: credit, health care, innovation, and insurance. For each of these markets, we will discuss theory and evidence on the existence and magnitude of market failures, and theory and evidence on the efficiency of public policy interventions designed to address those market failures. Prerequisites: ECON 202-204, ECON 270, ECON 271, or equivalent with consent of instructor.

ECON 246. Labor Economics I. 2-5 Units.
Topics in current applied microeconomic research including intertemporal labor supply models, public policy, program evaluation, job search, migration, consumption behavior. Student and faculty presentations.

ECON 247. Labor Economics II. 3-5 Units.
Recent topics in applied micro, focusing on papers from top journals (QJE, AER, JPE, Econometrica and REStud) over the last ten years. Broad overview of current topic and techniques in applied-micro research. Topics include inequality, polarization and skill-biased technical change, discrimination, technology adoption and the spread of information, management practices, field experiments, peer effects and academic spillovers. Combination of student and faculty presentations. Additional sessions on general presentations, paper writing and research skills to prepare for job market. Typically also run a class trip to the NBER West-Coast labor meetings at the San Francisco Fed.

ECON 248. Labor Economics III. 3-5 Units.
This course focuses on household decision making, the economics of discrimination, and the economics of migration. We will examine unitary, cooperative and non-cooperative models of the household, the collective model, dynamic extensions of the collective model with frictions. We will then discuss empirical applications of these models to labor supply, retirement behavior, human capital accumulation, division of labor within the family and migration decisions.

ECON 249. Topics in Health Economics I. 3-5 Units.
Course will cover various topics in health economics, from theoretical and empirical perspectives. Topics will include public financing and public policy in health care and health insurance; demand and supply of health insurance and healthcare; physicians' incentives; patient decision-making; competition policy in healthcare markets, intellectual property in the context of pharmaceutical drugs and medical technology; other aspects of interaction between public and private sectors in healthcare and health insurance markets. Key emphasis on recent work and empirical methods and modelling. Prerequisites: Micro and Econometrics first year sequences (or equivalent). Curricular prerequisites (if applicable): First year graduate Microeconomics and Econometrics sequences (or equivalent).
Same as: HRP 249, MED 249

ECON 250. Environmental Economics. 3-5 Units.
Theoretical and empirical analysis of sources of and solutions to environmental problems, with application to local pollution challenges and global environmental issues such as climate change. Topics include: analysis of market failure, choice of environmental policy instruments, integrating environmental and distortionary taxes, environmental policy making under uncertainty, valuing environmental amenities, and measuring /promoting sustainable development.

ECON 251. Natural Resource and Energy Economics. 2-5 Units.
Economic theory and empirical analysis of non-renewable and renewable natural resources, with considerable attention to energy provision and use. Topics include: exhaustible resources; renewable resources; and energy industry market structure, pricing, and performance. Prerequisites: 202, 203, 204, 271, and 272, or equivalents with consent of instructor.

ECON 252. The Future of Finance. 2 Units.
This 2-credit course will examine vast changes driven by innovation both from within traditional finance and from new ecosystems in fintech among others. Breathtaking advances in financial theory, big data, machine learning, artificial intelligence, computational capability, IoT, payment systems (e.g. blockchain, crypto currencies), new products (e.g. robo advising, digital lending, crowd funding, smart contracts), new trading processes (e.g. algorithmic trading, AI-driven sales & trading), and new markets (e.g. ETFs, zero-cost products), among others are changing not only how financial and non-financial firms conduct business but also how investors and supervisors view the players and the markets. nWe will discuss critical strategy, policy and legal issues, some resolved and others yet to be (e.g. failed business models, cyber challenges, financial warfare, fake news, bias problems, legal standing for cryptos). The course will feature perspectives from guest speakers including top finance executives and Silicon Valley entrepreneurs on up-to-the-minute challenges and opportunities in finance. nWe will discuss slowing global growth against the backdrop of ongoing intervention and wildcards in the capital markets of the U.S., Europe, Hong Kong, Singapore, China, India, Japan, the Middle East and Latin America. We will look forward at strategic opportunities and power players appearing and being dethroned in the markets to discuss who is likely to thrive ¿ and not survive ¿ in the new global financial landscape. nnPrerequisites: If you are an undergraduate wishing to take this course, apply by completing the course application and provide a brief bio here: https://forms.gle/9BGYr8brdYwPS8Cu8.
Same as: ECON 152, PUBLPOL 364

ECON 255. Economics of Communication. 2-5 Units.
This course will cover theoretical and empirical work on the provision of information in markets. Likely topics include: theory of strategic communication; persuasion; media; advertising and brands; financial analysis and disclosure; political communication; text analysis using machine learning and natural language processing methods. Prerequisites: Econ 202 and 210 (or equivalent).

ECON 257. Industrial Organization 1. 2-5 Units.
Theoretical and empirical analyses of the determinants of market structure; firm behavior and market efficiency in oligopolies; price discrimination; price dispersion and consumer search; differentiated products; the role of information in markets, including insurance and adverse selection; auctions; collusion and cartel behavior; advertising; entry and market structure; market dynamics; strategic behavior.

ECON 258. Industrial Organization IIA. 3-5 Units.
Topics may include theoretical and empirical analysis of bargaining, dynamic models of entry and investment, models of household borrowing, models of markets with asymmetric information, advertising, brands, and markets for information, and research at the boundaries between IO and neighboring fields such as trade, behavioral economics, and household finance. Prerequisite: Econ 257.

ECON 260. Industrial Organization III. 3-5 Units.
Course combines individual meetings and student presentations, with an aim of initiating dissertation research in industrial organization. Prerequisites: ECON 257, ECON 258. Enrollment by non-Econ PhD students requires instructors' consent.

ECON 266. International Trade I. 3-5 Units.
The first part of this course covers Ricardian, factor-proportions and monopolistic-competition models of international trade. The second part of the course covers commercial policy, with an emphasis on the economics of trade agreements. Students are expected to develop and present a research proposal. Prerequisites: Econ 202 or permission of instructor.

ECON 267. International Trade II. 2-5 Units.
The course will cover quantitative and empirical work in trade, trade policy, and related subjects.

ECON 268. International Finance and Exchange Rates. 3-5 Units.
Benchmark open economy models. Solution methods for macroeconomic models. Analysis and evaluation of quantitative macroeconomic models. Main applications: Sovereign debt and default; Financial crises and sudden stops; Hedging, interest parity relationships, and the determination of exchange rates; Liability dollarization.

ECON 269. International Finance and Exchange Rates II. 3-5 Units.
This is the second half of the international finance sequence. Part I: intertemporal approach to the current account, international real business cycle models, international risk-sharing, gains from financial integration, global imbalances, and exchange rate determination. Part 2: open-economy monetary models and currency unions. Part 3: international finance policy, capital controls and foreign exchange interventions. Part 4: sovereign debt. . Prerequisites:Econ 210, 211, 212 and 268.

ECON 270. Intermediate Econometrics I. 2-5 Units.
Probability, random variables, and distributions; large sample theory; theory of estimation and hypothesis testing. Limited enrollment. Prerequisites: math and probability at the level of Chapter 2, Paul G. Hoel, Introduction to Mathematical Statistics, 5th ed.

ECON 271. Intermediate Econometrics II. 3-5 Units.
Analysis of Randomized Experiments, Linear Regression Model, Instrumental Variables, Methods for Causal Effects. Prerequisite: Econ 270 or MGTECON 603 or permission of instructor.

ECON 272. Intermediate Econometrics III. 3-5 Units.
Simultaneous equation models, nonlinear estimation and testing, linear time series analysis, structural modeling. Prerequisites: Econ 271 or permission of instructor.

ECON 273. Advanced Econometrics I. 3-5 Units.
Possible topics: parametric asymptotic theory. M and Z estimators. General large sample results for maximum likelihood; nonlinear least squares; and nonlinear instrumental variables estimators including the generalized method of moments estimator under general conditions. Model selection test. Consistent model selection criteria. Nonnested hypothesis testing. Markov chain Monte Carlo methods. Nonparametric and semiparametric methods. Quantile Regression methods.

ECON 274. Advanced Econometrics II. 3-5 Units.
(Formerly 273B); Possible topics: nonparametric density estimation and regression analysis; sieve approximation; contiguity; convergence of experiments; cross validation; indirect inference; resampling methods: bootstrap and subsampling; quantile regression; nonstandard asymptotic distribution theory; empirical processes; set identification and inference, large sample efficiency and optimality; multiple hypothesis testing; randomization and permutation tests; inference for dependent data.

ECON 275. Economics-Based Econometrics. 3-5 Units.
This course presents methods for constructing econometric specifications and systems directly based on economic models. One such approach formulates stochastic economic models that give rise to empirically implementable econometric models. The discussion will cover methods for estimating, diagnostic testing, and drawing inferences about the underlying economic primitives, including both parametric and non-parametric identification of economic structures. Applications include models from all fields of empirical microeconomics Industrial Organization, Labor, Public Finance, and Energy and Environmental Economics. Examples include: consumer demand models integrating corner solutions, intertemporal models of household and firm behavior, and dynamic models of single and multi-agent interactions with complete and incomplete information. These include auction markets, oligopolies, regulator-firm interactions, and nonlinear pricing.. The major theme of the course is to present a general framework for economic theory-based empirical research that allows researchers to recover the underlying economic primitives driving observed outcomes of an economic environment. Prerequisites: Econ 202, 203, 204, 270, 271, 272.

ECON 278. Behavioral and Experimental Economics I. 2-5 Units.
This is the first part of a three course sequence (along with Econ 279 & 280-formerly 277) on behavioral and experimental economics. The sequence has two main objectives: 1) examines theories and evidence related to the psychology of economic decision making, 2) Introduces methods of experimental economics, and explores major subject areas (including those not falling within behavioral economics) that have been addressed through laboratory experiments. Focuses on series of experiments that build on one another in an effort to test between competing theoretical frameworks, with the objects of improving the explanatory and predictive performance of standard models, and of providing a foundation for more reliable normative analyses of policy issues. Prerequisites: 204 and 271, or consent of instructor.

ECON 279. Behavioral and Experimental Economics II. 3-5 Units.
This is part of a three course sequence (along with Econ 278 & 280-formerly 277) on behavioral and experimental economics. The sequence has two main objectives: 1) examines theories and evidence related to the psychology of economic decision making, 2) Introduces methods of experimental economics, and explores major subject areas (including those not falling within behavioral economics) that have been addressed through laboratory experiments. Focuses on series of experiments that build on one another in an effort to test between competing theoretical frameworks, with the objects of improving the explanatory and predictive performance of standard models, and of providing a foundation for more reliable normative analyses of policy issues. Prerequisites: 204 and 271, or consent of instructor.

ECON 280. Behavioral and Experimental Economics III. 3-5 Units.
Economics 280 (formerly ECON 277) is a course primarily directed at graduate students in the Economics department writing dissertations with behavioral or experimental components. Economics 280 is the third part of a three course sequence (along with Econ 278 & 279). The first two quarters, which are taught primarily in lecture format, have two main objectives: 1) examining theories and evidence related to the psychology of economic decision making; 2) introducing methods of experimental economics, and exploring major subject areas (including those not falling within behavioral economics) that have been addressed through laboratory experiments. Focuses on series of experiments that build on one another in an effort to test between competing theoretical frameworks, with the objectives of improving the explanatory and predictive performance of standard models, and of providing a foundation for more reliable normative analyses of policy issues. This third quarter is a practicum, focused on students who have taken (at least one of) the first two quarters and who are now preparing an experimental or behavioral study of their own. Prerequisites: Non-Econ Phd students must complete 204 and 271, or have consent of instructor.

ECON 282. Contracts, Information, and Incentives. 3-5 Units.
Basic theories and recent developments in mechanism design and the theory of contracts. Topics include: hidden characteristics and hidden action models with one and many agents, design of mechanisms and markets with limited communication, long-term relationships under commitment and under renegotiation, property rights and theories of the firm.

ECON 283. Theory and Practice of Auction Market Design. 2-5 Units.
This class will focus on several topics in auction market design and related areas. It is an advanced course, intended as a sequel to the more basic market/mechanism/auction design courses offered at the Economics department and the GSB. Students are expected to be familiar with the material in those courses. We will briefly review some basics of auction theory, but the main goal of the class is to bring students closer to doing independent research and introduce them to recent contributions and currently active research areas. Specific topics may include: multi-item and combinatorial auctions; robust auction design; applied auction design with practical applications; matching and pricing on the Internet; radio spectrum auctions; securities markets; commodities; complex procurements. Grading based on presentation, assignment, and term paper.

ECON 284. Simplicity and Complexity in Economic Theory. 3-5 Units.
Technology has enabled the emergence of economic systems of formerly inconceivable complexity. Nevertheless, some technology-related economic problems are so complex that either supercomputers cannot solve them in a reasonable time, or they are too complex for humans to comprehend. Thus, modern economic designs must still be simple enough for humans to understand, and must address computationally complex problems in an efficient fashion. This topics course explores simplicity and complexity in economics, primarily via theoretical models. We will focus on recent advances. Key topics include (but are not limited to) resource allocation in complex environments, communication complexity and information aggregation in markets, robust mechanisms, dynamic matching theory, influence maximization in networks, and the design of simple (user-friendly) mechanisms. Some applications include paired kidney exchange, auctions for electricity and for radio spectrum, ride-sharing platforms, and the diffusion of information. Prerequisites: Econ 203 or equivalent.
Same as: CS 360

ECON 285. Matching and Market Design. 2-5 Units.
This is an introduction to market design, intended mainly for second year PhD students in economics (but also open to other graduate students from around the university and to undergrads who have taken undergrad market design). It will emphasize the combined use of economic theory, experiments, and empirical analysis to analyze and engineer market rules and institutions. In this first quarter we will pay particular attention to matching markets, which are those in which price doesn't do all of the work, and which include some kind of application or selection process. We will also cover some of the basics of auction theory, with a particular emphasis on its connections to matching. In recent years market designers have participated in the design and implementation of a number of marketplaces, and the course will emphasize the relation between theory and practice, for example in the design of labor market clearinghouses for American doctors, school choice programs in a growing number of American cities (including New York and Boston), the allocation of organs for transplantation, online advertising auctions, and the market for transportation. Various forms of market failure will also be discussed. Assignment: One final paper. The objective of the final paper is to study an existing market or an environment with a potential role for a market, describe the relevant market design questions, and evaluate how the current market design works and/or propose improvements on the current design.

ECON 286. Game Theory and Economic Applications. 3-5 Units.
Aims to provide a solid basis in game-theoretic tools and concepts, both for theorists and for students focusing in other fields. Technical material will include solution concepts and refinements, potential games, supermodular games, repeated games, reputation, and bargaining models. The class will also address some foundational issues, such as epistemic and evolutionary modeling.Prerequisite: 203 or consent of instructor.

ECON 287. Mechanism and Market Design. 3 Units.
Primarily for doctoral students. Focus on quantitative models dealing with sustainability and related to operations management. Prerequisite: consent of instructor. May be repeated for credit.
Same as: MS&E 365

ECON 289. Advanced Topics in Game Theory and Information Economics. 2-5 Units.
Topics course covering a variety of game theory topics with emphasis on market design, such as matching theory and auction theory. Final paper required. Prerequisites: ECON 285 or equivalent. ECON 283 recommended.

ECON 290. Multiperson Decision Theory. 3 Units.
Students and faculty review and present recent research papers on basic theories and economic applications of decision theory, game theory and mechanism design. Applications include market design and analyses of incentives and strategic behavior in markets, and selected topics such as auctions, bargaining, contracting, and computation.

ECON 291. Social and Economic Networks. 3-5 Units.
Synthesis of research on social and economic networks by sociologists, economists, computer scientists, physicists, and mathematicians, with an emphasis on modeling. Includes methods for describing and measuring networks, empirical observations about network structure, models of random and strategic network formation, as well as analyses of contagion, diffusion, learning, peer influence, games played on networks, and networked markets.

ECON 292. Quantitative Methods for Empirical Research. 3-5 Units.
This is an advanced course on quantitative methods for empirical research. Students are expected to have taken a course in linear models before. In this course I will discuss modern econometric methods for nonlinear models, including maximum likelihood and generalized method of moments. The emphasis will be on how these methods are used in sophisticated empirical work in social sciences. Special topics include discrete choice models and methods for estimating treatment effects.

ECON 293. Machine Learning and Causal Inference. 3 Units.
This course will cover statistical methods based on the machine learning literature that can be used for causal inference. In economics and the social sciences more broadly, empirical analyses typically estimate the effects of counterfactual policies, such as the effect of implementing a government policy, changing a price, showing advertisements, or introducing new products. This course will review when and how machine learning methods can be used for causal inference, and it will also review recent modifications and extensions to standard methods to adapt them to causal inference and provide statistical theory for hypothesis testing. We consider causal inference methods based on randomized experiments as well as observational studies, including methods such as instrumental variables and those based on longitudinal data. We consider the estimation of average treatment effects as well as personalized policies. Lectures will focus on theoretical developments, while classwork will consist primarily of empirical applications of the methods. Prerequisite: Prior coursework in basic observational study methods for causal inference, including instrumental variables, fixed effects modeling, regression discontinuity designs, etc. Students should be comfortable reading and engaging with empirical research in economics and related fields.

ECON 299. Practical Training. 1-10 Unit.
Students obtain employment in a relevant research or industrial activity to enhance their professional experience consistent with their degree programs. At the start of the quarter, students must submit a one page statement showing the relevance of the employment to the degree program along with an offer letter. Submit this documentation to the Econ professor, who has agreed to the student enrolling in their Econ 299 section. At the end of the quarter, a three page final report must be supplied documenting work done and relevance to degree program. May be repeated for credit.

ECON 300. Third-Year Seminar. 3-10 Units.
Restricted to Economics Ph.D. students. Students present current research. May be repeated for credit.

ECON 310. Macroeconomic Workshop. 1-10 Unit.
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ECON 315. Development Workshop. 1-10 Unit.
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ECON 325. Economic History Workshop. 1-10 Unit.
May be repeated for credit.

ECON 335. Experimental/Behavioral Seminar. 1-10 Unit.
Field seminar in experimental and behavioral economics.

ECON 341. Public Economics and Environmental Economics Seminar. 1-10 Unit.
Issues in measuring and evaluating the economic performance of government tax, expenditure, debt, and regulatory policies; their effects on levels and distribution of income, wealth, and environmental quality; alternative policies and methods of evaluation. Workshop format combines student research, faculty presentations, and guest speakers. Prerequisite: ECON 241 or consent of instructor.

ECON 345. Labor Economics Seminar. 1-10 Unit.
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ECON 354. Law and Economics Seminar. 2-3 Units.
This seminar will examine current research by lawyers and economists on a variety of topics in law and economics. Several sessions of the seminar will consist of an invited speaker, usually from another university, who will discuss his or her current research. Representative of these sessions have been discussions of compensation for government regulations and takings, liability rules for controlling accidents, the definition of markets in antitrust analysis, the role of the government as a controlling shareholder, and optimal drug patent length. Contact the instructor listed for the class to request permission to enroll. Cross-listed with the Law School (Law 7506 and Law 7507).

ECON 355. Industrial Organization Workshop. 1-10 Unit.
Current research in the field by visitors, presentations by students, and discussion of recent papers. Students write an original research paper, make a formal presentation, and lead a structured discussion.

ECON 365. International Trade Workshop. 1-10 Unit.
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ECON 370. Econometrics Workshop. 1-10 Unit.
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ECON 391. Microeconomic Theory Seminar. 1-10 Unit.
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ECON 400. Ph.D. Dissertation. 1-15 Unit.
Pre-TGR dissertation research.(Staff).

ECON 801. TGR Project. 0 Units.
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ECON 802. TGR Dissertation. 0 Units.
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ENGLISH

Courses offered by the Department of English are listed under the subject code ENGLISH on the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=ENGLISH&filter-catalognumber-ENGLISH=on) web site.

Mission of the Department of English

To study English at Stanford is to explore, deeply and rewardingly, the rich legacy of literature written in English, past and present. The department offers a wealth of courses on individual authors, the history of literary genres, literary theory, new media, and creative writing. Given the emphasis on critical thinking and interpretation, the English major is in turn an excellent preparation for many professional fields, including teaching, journalism, law, publishing, medicine, and business. The graduate program features rigorous training in the research and analysis of British, American, and global literary histories and texts, preparing students to produce scholarship of originality and importance, and to teach literature at the highest levels.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. an understanding of major theories, methods, and concepts of literary study and critical analysis.
2. an awareness of how authors and texts develop in relation to their historical contexts.
3. a comprehension of the formal qualities of key literary genres, forms, and styles.
4. an effective style of writing and a powerful use of language.

Bachelor of Arts in English

In the undergraduate program, students explore the traditions of literature in English. Courses emphasize interpretive thinking and creative writing, examining the dynamics of literary and cultural history, the structures of literary form and genre, and the practices of reading, writing, and critical analysis.

Doctor of Philosophy in English

The graduate program features rigorous training in the research and analysis of British, American and Anglophone literary histories and texts, preparing students to produce scholarship of originality and importance, and to teach literature at advanced levels.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in British, American and Anglophone literary histories and texts and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

The Ph.D. is conferred upon candidates who have produced substantial scholarship and demonstrated the ability to conduct independent research and analysis in English. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the discipline of English Literature and present the results of such research.

Other Programs in English

Ph.D. in Modern Thought and Literature

Stanford also offers a Ph.D. degree in Modern Thought and Literature. Under this program, students devote approximately half of their time to a modern literature from the Enlightenment to the present, and the other half to interdisciplinary studies. Interested students should see the "Modern Thought and Literature" section of this bulletin and consult the director of the program.

Creative Writing Fellowships

The Creative Writing Program each year offers five two-year fellowships in poetry and five two-year fellowships in fiction. These are not degree-granting fellowships. Information is available in the Creative Writing office, (650) 725-1208.

Bachelor of Arts in English

The Department of English offers a Bachelor of Arts in English. Eligible students may also pursue a Bachelor of Art with Honors (p. 1387). The department also offers minors in English Literature (p. 1389) , Digital Humanities, and Creative Writing (p. 1390).

The English major is designed to provide students with both an understanding of the development of literatures in English and an appreciation of the variety and richness of literary texts. It offers a rigorous training in interpretive thinking and precise expression.

Suggested Preparation for the Major

Prospective English majors are advised to consider Thinking Matters courses that relate to literature to satisfy a major requirement. Also recommended is any introductory seminar taught by English department faculty through Stanford Introductory Studies.

		Units
Suggested Preparatory Courses for the Major		
See "Degree Requirements" below to determine if and how some of these courses may be counted towards degree requirements.		
Thinking Matters Courses		
THINK 49	Stories Everywhere	4
Introductory Seminars		
ENGLISH 40N	Theatrical Wonders from Shakespeare to Mozart	3
ENGLISH 82N	Thinking about Photographs	3
ENGLISH 14Q	It's the Freakiest Show: David Bowie's Intertextual Imagination	3
ENGLISH 17N	Animal Poems	3-5
ENGLISH 30N	Character	3
ENGLISH 31N	Love and Death	3
ENGLISH 33N	A Way of Life: Historic Journeys to Sacred Place	3
ENGLISH 52N	Mixed-Race Politics and Culture	3
ENGLISH 89N	Literature of Adoption	3
ENGLISH 13Q	Imaginative Realms	3
ENGLISH 16Q	Family Stories	3
ENGLISH 18Q	Writer's Salon	3
ENGLISH 19Q	I Bet You Think You're Funny: Humor Writing Workshop	3
ENGLISH 21Q	Write Like a Poet: From Tradition to Innovation	3
ENGLISH 22Q	Writing Mystical, Spiritual, and Altered Experiences	3

ENGLISH 23Q	First Chapters: Please Allow Me to Introduce My Novel	3
ENGLISH 24Q	Leaving Patriarchy: A Course for All Genders	3
ENGLISH 90Q	Sports Writing	3
ENGLISH 93Q	The American Road Trip	3
ENGLISH 94Q	The Future is Feminine	3

How to Declare the Major in English

Students interested in majoring in English are encouraged to declare during their sophomore year, but no later than the beginning of their junior year. They are urged to discuss their plans with the undergraduate student services officer as early as possible, and to fulfill the core requirements for the major in their freshman and sophomore years.

To declare the major, a student must:

- fill out the Declaration of Major in Axess
- choose a faculty advisor, and
- submit a completed program proposal form approved by your faculty advisor.

Degree Requirements

It is required that a student meet with the advisor at least once per academic year to discuss progress towards degree completion. Quarterly meetings are highly encouraged. It is recommended that a student meet with the advisor at least once per quarter to discuss progress towards degree completion.

Course Requirements

Rules that apply to all English majors irrespective of field of study or degree option

1. Courses can only be counted once, i.e., can only satisfy one requirement.
2. Two of the elective courses may be taken on a credit/no credit basis at the discretion of the instructor.

The total number of units required to graduate for each degree option is specified in the relevant section following. All courses should be taken for 5 units. Irrespective of field of study or degree option, all English majors must complete the following requirements:

		Units
Required Courses (35 units)		
All required courses must be taken for 5 units.		
Historical courses		
One course in the 10 series [1]		5
ENGLISH 10A	Introduction to English I: Mapping Monsters in British Literature, 650-1650	
ENGLISH 10B	Introduction to English I: What Is Literary History?	
ENGLISH 10D	Introduction to English I: Women, Gender, and Sexuality in Early British Literature	
One course in the 11 series [2]		5
ENGLISH 11A	Introduction to English II: From Milton to the Romantics	
ENGLISH 11B	Introduction to English II: American Literature and Culture to 1855	
ENGLISH 11C	Introduction to English II: Revolutionary Energies: Milton and the Transcendentalists	
One course in the 12 series [3]		5
ENGLISH 12A	Introduction to English III: Introduction to African American Literature	
ENGLISH 12B	Introduction to English III: Literature and the Crises of Humanism	
ENGLISH 12C	Introduction to English III: Modern Literature	
Methodology courses		
ENGLISH 160	Poetry and Poetics	
ENGLISH 161	Narrative and Narrative Theory	
Writing in the Major (WIM)		
ENGLISH 5A	WISE: Unfinished Novels	
ENGLISH 5B	WISE: Mental Health and Literature, Mid-century to Present	
ENGLISH 5C	WISE: Revelation and Apocalypse: Literature at the End of the World 1300-2000	
ENGLISH 5D	WISE: Bad Reading: Pleasure and Politics in Literary Value	
ENGLISH 5E	WISE: The Novel of Love	
ENGLISH 5F	WISE: Serial Children's Literature: Lemony Snicket's A Series of Unfortunate Events	
ENGLISH 5G	WISE: Blackness and the American Canon	
ENGLISH 5H	WISE: Dialogue in American Literature	
One pre-1800 historical course		**5**
The following courses offered in 2019-20 fulfill this requirement.		
ENGLISH 115C	Hamlet and the Critics	
ENGLISH 251B	Paradise Lost	
ENGLISH 200C	Introduction to Manuscript Studies	
ENGLISH 201	The Bible and Literature	
ENGLISH 115G	Shakespeare: Five Tragedies	
ENGLISH 115E	Shakespeare and his Contexts: Race, Religion, Sexuality, Gender	
ENGLISH 107B	Literature of the English Revolution	
ENGLISH 237	Before Novels	
ENGLISH 122C	Medieval Fantasy Literature	
ENGLISH 114C	¿Books Promiscuously Read¿: Varieties of Renaissance Experience	
SLE 91	Structured Liberal Education	
SLE 92	Structured Liberal Education	
Fields of Study		**35-50 units**
Each student must choose one of five fields of study. See below for complete information.		
Total Units		55-70

Transfer Credit and Course Equivalency

Students who take a class with substantial Anglophone literary content outside the department may petition for course equivalency to count that course towards the English major, at the discretion of the Director of Undergraduate Studies. Such courses cannot fulfill English literature core requirements; students may not receive course equivalency credit for more than two classes, and students should not take for granted that any particular course will be accepted.

Transfer students only may apply as many as four literature courses taken at approved universities toward the English major. Approval of such courses toward the major and its requirements is at the discretion of the Director of Undergraduate Studies.

Request for transfer credit, including course syllabi and official transcripts, should be submitted to the undergraduate student services

officer, and to the Office of the Registrar's external credit evaluation section. After-the-fact petitions for courses taken outside the department may be refused.

Fields of Study

Because the Department of English recognizes that the needs and interests of literature students vary, it has approved several major programs of study. Each of these has different objectives and requirements; students should consider carefully which program of study corresponds most closely to their personal and intellectual objectives. The department offers the following fields of study for degrees in English.

I. Literature (35 units)

This field of study is not declared in Axess. It does not appear on either the official transcript or the diploma. This program provides for the interests of students who wish to understand the range and historical development of British, American and Anglophone literatures and a variety of critical methods by which their texts can be interpreted. The major emphasizes the study of literary forms and genres and theories of textual analysis. In addition to the degree requirements required of all majors and listed above, students must complete at least 35 additional units of courses consisting of:

- Seven additional approved elective courses, only one of which may be a creative writing course, chosen from among those offered by the Department of English. In place of one of these seven elective courses, students may choose one upper-division course in a foreign literature read in the original language.

II. Literature with Creative Writing Emphasis (40 units)

This field of study (subplan) is printed on the transcript and diploma and is elected in Axess. This program is designed for students who want a sound basic knowledge of the English literary tradition as a whole and at the same time want to develop skills in writing poetry or prose. In addition to the degree requirements required of all majors and listed above, students must complete at least 40 additional units of approved courses, in either the prose or poetry concentration:

Prose Concentration

		Units
ENGLISH 90	Fiction Writing	5
or ENGLISH 91	Creative Nonfiction	
ENGLISH 92	Reading and Writing Poetry (Can be fulfilled with a poetry literature seminar)	5
ENGLISH 146S	Secret Lives of the Short Story	5
ENGLISH 190	Intermediate Fiction Writing (or any 190 series or 191 series)	5
or ENGLISH 191	Intermediate Creative Nonfiction	
4 elective literature courses (One of the courses may be fulfilled with a creative writing workshop).		20
Total Units		40

Poetry Concentration

		Units
ENGLISH 90	Fiction Writing (Can be fulfilled with a prose literature seminar)	5
or ENGLISH 91	Creative Nonfiction	
ENGLISH 92	Reading and Writing Poetry	5
ENGLISH 192	Intermediate Poetry Writing (or any 192 series)	5
One literature course in poetry		5
4 elective literature courses (One of the courses may be fulfilled with a creative writing workshop)		20
Total Units		40

III. Literature and Interdisciplinary Studies (40 units)

This field of study (subplan) is printed on the transcript and diploma and is elected in Axess. This program is intended for students who wish to combine the study of one broadly defined literary topic, period, genre, theme or problem with an interdisciplinary program of courses (generally chosen from one other discipline) relevant to that inquiry. In addition to the degree requirements required of all majors and listed above, students must complete at least 40 additional units of approved courses including:

1. Five elective literature courses chosen from among those offered by the Department of English. Students must select two of these courses in relation to their interdisciplinary focus.
2. Three courses related to the area of inquiry. These courses may be chosen from another department or interdisciplinary program within the School of Humanities and Sciences including (but not limited to) such as African American Studies (http://www.stanford.edu/dept/AAAS/), Anthropology (https://www.stanford.edu/dept/anthropology/cgi-bin/web/), Art and Art History (http://art.stanford.edu/), Classics (http://www.stanford.edu/dept/classics/cgi-bin/web/), Comparative Literature (http://www.stanford.edu/dept/DLCL/cgi-bin/web/dept/complit/), Comparative Studies in Race and Ethnicity (http://ccsre.stanford.edu/), Feminist Studies (http://www.stanford.edu/dept/femstudies/), Human Biology (https://humbio.stanford.edu/), Music (http://music.stanford.edu/Home/), Philosophy (http://philosophy.stanford.edu/), Political Science (http://politicalscience.stanford.edu/), Psychology (http://psychology.stanford.edu/), Religious Studies (http://www.stanford.edu/dept/relstud/), Science, Technology, and Society (http://sts.stanford.edu/), and Sociology (http://sociology.stanford.edu/). These courses should form a coherent program and must be relevant to the focus of the courses chosen by the student to meet the requirement. Each of these courses must be approved in advance by the interdisciplinary program director.
3. In addition, students in this program must complete an interdisciplinary project, in the form of a 15-20 page interdisciplinary paper or its equivalent. This may be completed with ENGLISH 194 Individual Research, ENGLISH 197 Seniors Honors Essay, ENGLISH 198 Individual Work, ENGLISH 199 Senior Independent Essay, or a paper integrating the material in two courses the student is taking in two different disciplines.

The final course plan (in the form of a 1 to 2 paragraph summary of coherent course of study) and interdisciplinary project must be approved by the faculty advisor and the interdisciplinary advisor by the time the student applies to graduate.

IV. Literature and Foreign Language Literature (40 units)

This field of study (subplan) is printed on the transcript and diploma and is elected in Axess. This track provides a focus in British and American literature with additional work in foreign language literature. Current options include: French literature; German literature; Italian literature; or Spanish literature. These subplans appear on the diploma as follows: English & French Literature, English & German Literature, English & Italian Literature, and English & Spanish Literature. In addition to the degree requirements required of all majors and listed above, students must complete at least 40 additional units of approved courses including:

1. Four elective courses chosen from among those offered by the Department of English, one of which may be a creative writing course.
2. A coherent program of four courses in the foreign language literature, read in the original language, approved by the Director

of Undergraduate Studies in English and by the relevant foreign language department.

V. Literature and Philosophy (40-50 units)

This field of study (subplan) is printed on the transcript and diploma and is elected in Axess. Students should meet with the undergraduate director concerning the Literature and Philosophy focus. This track is for students who wish to explore interdisciplinary studies at the intersection of literature and philosophy while acquiring knowledge of the English language literary tradition as a whole. In addition to the degree requirements required of all majors and listed above, students must complete at least 40-50 additional units of approved courses including:

1. PHIL 80 Mind, Matter, and Meaning (WIM): Prerequisite: introductory philosophy course.
2. Gateway course: ENGLISH 81 Philosophy and Literature. This course should be taken as early as possible in the student's career, normally in the sophomore year.
3. Aesthetics, Ethics, Political Philosophy: one course from PHIL 170 Ethical Theory series.
4. Language, Mind, Metaphysics, and Epistemology: one course from PHIL 180 Metaphysics series.
5. History of Philosophy: one course in the history of Philosophy, numbered above PHIL 100 Greek Philosophy.
6. Two upper division courses of special relevance to the study of Philosophy and Literature. Both of these courses must be in the English department. A list of approved courses (http://philit.stanford.edu/programs/relevance.html) is available on the Philosophy and Literature web site.
7. Two additional elective courses in the English department.
8. One capstone seminar (http://philit.stanford.edu/programs/capstone.html) of relevance to the study of Philosophy and Literature.

Additional Information

Advanced Research Options

Individual Research

Students taking 100- or 200-level courses may, with the consent of the instructor, write a follow-up 5-unit paper based on the course material and due no later than the end of the succeeding quarter (register for ENGLISH 194 Individual Research). The research paper is written under the direct supervision of the professor; it must be submitted first in a preliminary draft and subsequently in a final version.

Overseas Studies or Study Abroad

The flexibility of the English major permits students to attend an overseas campus in any quarter, but it is advisable, and in some cases essential, that students spend their senior year at Stanford if they wish to participate in the honors program or in a special in-depth reading course. For more information on Stanford overseas programs, see the "Overseas Studies (p. 217)" section of this bulletin.

Students should consult their advisors and the undergraduate program officer to make sure that they can fulfill the requirements before graduation. The Stanford Program in Oxford usually offers courses which apply toward both University requirements and area requirements for the English major. In either case, students should save the syllabi from their courses if they wish to apply to use them to fulfill an English major requirement.

See the Overseas tab (p. 1395) in this section of the bulletin for courses offered this year.

Overseas Studies Courses in English

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

Capstone: Senior Independent Essay

The senior independent essay gives senior English majors the opportunity to work throughout the year on a sustained piece of critical or scholarly work of around 10,000 words on a topic of their choice, with the close guidance of a faculty advisor. Each student is responsible for finding an advisor, who must approve the proposed topic before the end of the third quarter prior to expected graduation. The senior essay is read and graded by the advisor and one other member of the English faculty. Senior independent essay students register for ENGLISH 199 Senior Independent Essay.

Honors Program

Students wishing to undertake a formal program of advanced literary criticism and scholarship, including the honors seminar and independent research, are invited to apply for the honors program in the Spring Quarter of the junior year. Any outstanding student is encouraged to engage in an honors thesis project.

Admission is selective. Admission is announced in early May based on submission, by April 15 of the junior year, of the senior honors application package including a thesis proposal. Accepted students then submit a revised proposal and bibliography by June 15. Honors students are encouraged to complete before the start of their senior year the three methodology courses that are English major requirements:

		Units
ENGLISH 160	Poetry and Poetics	5
ENGLISH 161	Narrative and Narrative Theory	5
WISE course		
ENGLISH 5A	WISE: Unfinished Novels	
ENGLISH 5B	WISE: Mental Health and Literature, Mid-century to Present	
ENGLISH 5C	WISE: Revelation and Apocalypse: Literature at the End of the World 1300-2000	
ENGLISH 5D	WISE: Bad Reading: Pleasure and Politics in Literary Value	
ENGLISH 5E	WISE: The Novel of Love	
ENGLISH 5F	WISE: Serial Children's Literature: Lemony Snicket's A Series of Unfortunate Events	
ENGLISH 5G	WISE: Blackness and the American Canon	
ENGLISH 5H	WISE: Dialogue in American Literature	

In September before the senior year, students are encouraged to participate in the Bing Honors College. In Autumn Quarter of the senior year, students take a mandatory 5 unit honors seminar (ENGLISH 196A Honors Seminar: Critical Approaches to Literature) on critical approaches

to literature. The senior year seminar is designed to introduce students to the analysis and production of advanced literary scholarship. Students planning on studying abroad in the senior year should privilege Winter Quarter, rather than Autumn.

In Winter and Spring quarters of the senior year, honors students complete the senior honors essay for a total of 10 units under supervision of a faculty advisor.

The deadline for submitting the honors essay is May 6, 2021. Essays that receive a grade of 'A-' or above are awarded honors.

In addition to fulfilling the requirements of the major, students in the honors program must complete 15 units of the following:

		Units
ENGLISH 196A	Honors Seminar: Critical Approaches to Literature	5
ENGLISH 197	Seniors Honors Essay	10
Total Units		15

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Joint Major Program: English and Computer Science

The joint major program (JMP) was discontinued at the end of the academic year 2018-19. Students may no longer declare this program. All students with declared joint majors are permitted to complete their degree; faculty and departments are committed to providing the necessary advising support.

See the "Joint Major Program (p. 33)" section of this bulletin for a description of University requirements for the JMP. See also the Undergraduate Advising and Research JMP (https://majors.stanford.edu/more-ways-explore/joint-majors-csx/) web site and its associated FAQs.

Students completing the JMP receive a B.A.S. (Bachelor of Arts and Science).

English Major Requirements in the Joint Major Program

The joint major is structured to let students thoughtfully explore the intersection of Computer Science and literary studies. Students would ideally declare the program during the sophomore year. Students are required to complete requirements in English and Computer Science. See the "Computer Science Joint Major Progra (p. 714)m (p. 714)" section of this bulletin for details on Computer Science requirements.

The requirements for English are adapted from the English major and are stated in full below. Students in the CS+English JMP are required to complete 58 total units in English compared to 68-80 units which is typically required by the English major. Students in CS+English are not required to take the Writing Intensive Seminar in English (WISE) course. Additionally, students in CS+English only have to fulfill five electives. The University Writing in the Major requirement for students in the CS+English JMP is fulfilled by the Computer Science Writing in the Major requirement. To declare the CS+English JMP, students must complete a program proposal. (https://stanford.box.com/shared/static/h6erjrj75rercs2gua9z8dm4mgnswqru.pdf)

Students are encouraged to compile an ePortfolio of reflections, ideas, and work on the interplay between humanities and computer science.

Integrative Experience

In the senior year, students are required to undertake a capstone project which involves both programming and literary research, and could include work on digital editions, analyses of corpora, the creation of electronic literature, digital representations of literary venues, studies of natural language processing as applied to literary analysis, or any other project that draws integrally on both disciplines. All capstone projects must be approved by both the student's Computer Science advisor and English advisor. This project normally takes one quarter, and should be taken concurrently with the Computer Science capstone requirement. In English, students are required to complete 3 units of ENGLISH 198 Individual Work with a faculty advisor in English as part of the integrative project. In preparation for the Independent Study in English, students must secure an advisor, complete the CS+English Capstone form (https://stanford.box.com/shared/static/hl0zna48liez8u10ulqs.pdf), and submit a written proposal of the project.

Required Core Courses (30 Units)

		Units
Historical courses		
One course in the 10 series [1]		5
ENGLISH 10A	Introduction to English I: Mapping Monsters in British Literature, 650-1650	
ENGLISH 10B	Introduction to English I: What Is Literary History?	
ENGLISH 10D	Introduction to English I: Women, Gender, and Sexuality in Early British Literature	
One course in the 11 series [2]		5
ENGLISH 11A	Introduction to English II: From Milton to the Romantics	
ENGLISH 11B	Introduction to English II: American Literature and Culture to 1855	
One course in the 12 series [3]		5
ENGLISH 12A	Introduction to English III: Introduction to African American Literature	
ENGLISH 12B	Introduction to English III: Literature and the Crises of Humanism	
ENGLISH 12C	Introduction to English III: Modern Literature	
One additional history of literature course [4] [5]		5
Methodology courses		
ENGLISH 160	Poetry and Poetics	5
ENGLISH 161	Narrative and Narrative Theory	5
Total Units		30

[4] In 2019-20 the following courses satisfy the history of literature requirement
- ENGLISH 115C Hamlet and the Critics
- ENGLISH 251B Paradise Lost
- ENGLISH 200C Introduction to Manuscript Studies
- ENGLISH 201 The Bible and Literature
- ENGLISH 115E Shakespeare and his Contexts: Race, Religion, Sexuality, Gender
- ENGLISH 107B Literature of the English Revolution
- ENGLISH 237 Before Novels
- ENGLISH 112C Humanities Core: The Renaissance in Europe
- ENGLISH 114C ¿Books Promiscuously Read¿: Varieties of Renaissance Experience

[5] This requirement may also be fulfilled with the following Thinking Matters or SLE courses:
- ESF 1 Education as Self-Fashioning: The Active, Inquiring, Beautiful Life
- THINK 49 Stories Everywhere
- SLE 91 Structured Liberal Education and SLE 92 Structured Liberal Education

Rules that apply to all English majors irrespective of field of study or degree option:

1. Courses can only be counted once, i.e. can only satisfy one requirement.
2. Two of the elective courses may be taken on a credit/no credit basis at the discretion of the instructor.

Field of Study Electives (25 Units)

Because the Department of English recognizes that the needs and interests of CS+English students vary, it has approved two major programs of study: Literature and Literature with Creative Writing. Each of these has different objectives and requirements; students should consider carefully which program of study corresponds most closely to their personal and intellectual objectives.

I. Literature

This field of study is not declared in Axess. It does not appear on either the official transcript or the diploma. This program provides for the interests of students who wish to understand the range and historical development of British, American and Anglophone literatures and a variety of critical methods by which their texts can be interpreted. The major emphasizes the study of literary forms and genres and theories of textual analysis. In addition to the degree requirements required of all joint majors and listed above, students must complete at least 25 additional units of courses consisting of five additional approved elective courses, only one of which may be a creative writing course, chosen from among those offered by the Department of English. In place of one of these five elective courses, students may choose one upper-division course in a foreign literature read in the original language.

II. Literature with Creative Writing Emphasis

This subplan is printed on the transcript and diploma and is elected in Axess.This program is designed for students who want a sound basic knowledge of the English literary tradition as a whole and at the same time want to develop skills in writing poetry or prose. In addition to the degree requirements required of all joint majors and listed above, students must complete at least 25 additional units of approved courses, in either the prose or poetry concentration:

Prose Concentration –

		Units
ENGLISH 90	Fiction Writing	5
or ENGLISH 91	Creative Nonfiction	
ENGLISH 92	Reading and Writing Poetry	5
ENGLISH 190	Intermediate Fiction Writing (or any 190 series or 191 series)	5
or ENGLISH 191	Intermediate Creative Nonfiction	
ENGLISH 146S	Secret Lives of the Short Story	5
One elective literature course		5
Total Units		25

Poetry Concentration –

		Units
ENGLISH 92	Reading and Writing Poetry	5
ENGLISH 90	Fiction Writing	5
or ENGLISH 91	Creative Nonfiction	
ENGLISH 192	Intermediate Poetry Writing (or any 192 series)	5
One literature course in poetry		5
One elective literature course		5
Total Units		25

Integrative Experience (3 Units)

		Units
ENGLISH 198	Individual Work [1]	3

[1] Students in the CS+English JMP are required to enroll for three units of ENGLISH 198 Individual Work with a faculty adviser in English as part of the integrative project. These units should be completed concurrently with the Computer Science capstone requirement.

Dropping a Joint Major Program

To drop the joint major, students must submit the Declaration or Change of Undergraduate Major, Minor, Honors, or Degree Program (https://stanford.box.com/change-UG-program/). Students may also consult the Student Services Center (http://studentservicescenter.stanford.edu/) with questions concerning dropping the joint major.

Transcript and Diploma

Students completing a joint major graduate with a B.A.S. degree. The two majors are identified on one diploma separated by a hyphen. There will be a notation indicating that the student has completed a "Joint Major." The two majors are identified on the transcript with a notation indicating that the student has completed a "Joint Major."

Minor in English Literature

The minor in English Literature encourages students to specialize in an area of interest. We require students to complete at least one period survey course, and one methodology overview course, to provide the background knowledge and skills to explore their chosen field.

Degree Requirements

In order to graduate with a minor in English, students must complete a total of 25 units of English literature classes:

Required Courses for the Minor

		Units
Historical courses		
Select any one of the following historical courses:		5
ENGLISH 10A	Introduction to English I: Mapping Monsters in British Literature, 650-1650	
ENGLISH 10B	Introduction to English I: What Is Literary History?	
ENGLISH 10D	Introduction to English I: Women, Gender, and Sexuality in Early British Literature	
ENGLISH 11A	Introduction to English II: From Milton to the Romantics	
ENGLISH 11B	Introduction to English II: American Literature and Culture to 1855	
ENGLISH 11C	Introduction to English II: Revolutionary Energies: Milton and the Transcendentalists	
ENGLISH 12A	Introduction to English III: Introduction to African American Literature	
ENGLISH 12B	Introduction to English III: Literature and the Crises of Humanism	
ENGLISH 12C	Introduction to English III: Modern Literature	
Methodology courses		
Select one of the following:		5
ENGLISH 160	Poetry and Poetics	
ENGLISH 161	Narrative and Narrative Theory	
Elective courses		

All classes with an English course number may count towards the minor. Only one course in Creative Writing may count, and only one IntroSem. Any student may petition the Director of Undergraduate Studies to have one course with substantial Anglophone literary content taken outside the department count towards the minor. Students who declared prior to the 2020-21 academic year may fulfill the requirements of this version of the minor or the old one, as they prefer.	15

Minor in Creative Writing (30 units)

The minor in Creative Writing offers a structured environment in which students interested in writing prose or poetry develop their skills while receiving an introduction to literary forms. Students choose a concentration in prose, poetry, or fiction into film.

Degree Requirements

In order to graduate with a minor in Creative Writing, students must complete the following program of six 5-unit courses for a total of 30 units. All courses must be taken for a letter grade. Courses taken abroad or at other institutions may not be counted towards the minor.

Required Courses for the Minor

Students must complete at least 30 units of approved courses, in the prose, poetry or fiction into film concentration:

Prose concentration

		Units
Select one of the following introductory prose courses:		5
Any ENGLISH 90 series		
Any ENGLISH 91 series		
ENGLISH 146S	Secret Lives of the Short Story	5
Any ENGLISH 92 series		5
Select two of the following intermediate or advanced prose courses:		10
any ENGLISH 190 series		
any ENGLISH 191 series		
ENGLISH 290	Advanced Fiction Writing	
ENGLISH 291	Advanced Creative Nonfiction	
One 5 unit elective course in English literature		5
Total Units		30

Poetry concentration

		Units
Any ENGLISH 92 series		5
Select one of the following introductory prose courses:		5
Any ENGLISH 90 series		
Any ENGLISH 91 series		
ENGLISH 160	Poetry and Poetics	5
Select two of the following intermediate or advanced poetry courses:		10
any ENGLISH 192 series		
ENGLISH 292	Advanced Poetry Writing	
One 5 unit elective course in English literature		5
Total Units		30

Fiction into Film concentration

		Units
ENGLISH 90	Fiction Writing	5
ENGLISH 146S	Secret Lives of the Short Story	5
ENGLISH 190F	Fiction into Film	5
Select one of the following intermediate or advanced prose courses:		5
Any ENGLISH 190 series		
ENGLISH 290	Advanced Fiction Writing	
Select one of the following courses:		5
ENGLISH 190SW	Screenwriting Intensive	
ENGLISH 198F	Hoffs-Roach Fiction into Film Tutorial	
One 5 unit elective course in English literature		5
Total Units		30

Minor in Digital Humanities

The minor in Digital Humanities combines humanistic inquiry with digital methods and tools to generate new questions and to foster innovative research. Students will develop critical skills that are applicable within and beyond an academic setting. The minor consists of three clusters: Spatial Humanities, Quantitative Textual Analysis, and Text Technologies. Students may choose to specialize in one of these areas.

- Spatial Humanities ranges from theory (space as a category of analysis) to technical representation/analysis of spatial distribution through algorithms. It can draw upon anthropology, geography, and other disciplines with a tradition of interest in space; meanwhile, it can feed into (for instance) literary studies.
- Quantitative Textual Analysis includes anything that uses computers to quantify formal properties of texts, ranging from word frequencies to chapter divisions to character networks. Genre, authorship, sentiment analysis, "opinion mining" -- all of these can play a role. It intersects with linguistics/NLP; Classics and Cognitive Psychology can also be allies.
- Text Technologies encompasses technologies of communication; social media analysis; database creation, coding, TEI; technologies of publishing and text access; digital curation of virtual exhibitions (which allows us to bring in the arts, digital imaging, etc.).

Degree Requirements

Students must take a minimum of twenty units: at least one core course (5 units), and at least five other courses of at least three units each. Students complete twenty or more units in courses relevant to the major in departments across the university including Anthropology, Art, Communications, Computer Science, East Asian Languages and Cultures, Engineering, English, French, History, Italian, Linguistics, Music, Philosophy, Religious Studies, and Theatre and Performance. These electives are to be determined in consultation with the advisor to the minor (a faculty member in English).

Not all courses are offered every year. For current info please see Explore Courses (https://explorecourses.stanford.edu) or contact the student services team.

Required Courses for the Minor

		Units
Required Introductory Course		
Select one of the following:		5
ENGLISH 184E	Literary Text Mining (Quantitative Textual Analysis concentration)	
At the time of publication, courses for the Digital Humanities minor are still under development. They will be published here as soon as they are available.		
Elective Courses		
Five courses in the chosen concentration		15
Total Units		20

Coterminal Master of Arts in English

Current Stanford undergraduate majors in English who are interested in further postgraduate work may apply for the coterminal M.A. in English. The Admissions Committee also considers applicants from related fields, such as Modern Thought and Literature, Comparative Literature, and American Studies, if they have fulfilled the requirements for the B.A. in English. The committee does, however, give preference to English majors.

Candidates for a coterminal master's degree must fulfill all requirements for the M.A. in English (including the graduate language requirement), as well as general and major requirements for the B.A. in English. No courses used to satisfy the B.A. requirements (either as General Education Requirements or department requirements) may be applied toward the M.A. No courses taken more than two quarters prior to admission to the coterminal master's program may be used to meet the 45-unit University minimum requirement for the master's degree. A minimum GPA of 3.7 in the major is required of those applying for the coterminal master's degree. The department accepts applications once a year; the application deadline is February 1 for admission in the Spring Quarter immediately following. There are no exceptions to this deadline. All application materials are submitted directly to the English Coterminal Online Application (https://applyweb.com/stanterm/). The department does not fund coterminal M.A. students.

Admission Requirements

To apply for admission to the English coterminal M.A. program, students must submit the Coterminal Online Application (https://applyweb.com/stanterm/), which includes the following:

1. A statement of purpose giving the reasons the student wishes to pursue this program and its place in his or her future plans.
2. A writing sample of critical or analytical prose, about 12-25 pages in length.
3. An official undergraduate transcript.
4. Three letters of recommendation from members of the faculty who know the applicant well and who can speak directly to the question of his or her ability to do graduate-level work.
5. Preliminary Master's Program Proposal; this is a form in the application packet. Specify at least 45 units of course work relevant to the degree program.
6. Coterminal Course Approval Form (this form is required only if transferring courses from undergraduate to the graduate program at the time of application; students will be allowed to transfer courses between their undergraduate and graduate careers for a limited time). To be eligible for transfer, courses must have been taken in the two quarters preceding admission to the M.A. program (please note that no courses taken earlier than Autumn quarter of the senior year may count toward the M.A.).

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken two quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to the graduate career. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Degree Requirements

- M.A. candidates must complete with a 3.0 (B) grade point average (GPA) at least nine courses (a minimum of 45 units), at least two of which must be 300-level courses.
- Ordinarily, graduate students enroll in courses numbered 200 and above. They may take no more than two 100-level courses without the consent of the Director of Graduate Studies. No more than two courses may be taken outside the department and these must be pre-approved by the Director of Graduate Studies.
- The master's student may take no more than 5 units of ENGLISH 398 Research Course.
- No creative writing courses may be used to fulfill the requirements.

University requirements for the coterminal M.A. are described in the "Coterminal Bachelor's and Master's Degrees (p. 56)" section of this bulletin. For University coterminal master's degree application forms, see the Registrar's Publications page (https://studentaffairs.stanford.edu/registrar/publications/#Coterm).

Required Courses

	Units
Historical Courses	**20**
Two courses in literature pre-1800	
Two courses in literature post-1800	
Elective Courses	**25**
Five courses from those offered in the English department [1] [2]	
Additional Requirement	
Reading knowledge of a foreign language [3]	
Total Units	45

[1] Five elective courses should represent a mixture of survey and specialized courses chosen to guarantee familiarity with a majority of the works on the qualifying exam reading list for doctoral candidates.

[2] Candidates who can demonstrate unusually strong preparation in the history of English literature may undertake a 40 to 60 page master's thesis. Candidates register for 10 units of ENGLISH 399 Thesis and are required to take only three elective courses.

[3] Reading knowledge of a foreign languages: may be fulfilled in any of the following ways:

- A reading examination given each quarter by the various language departments, except for Latin and Greek.
- For Latin and Greek, an examination given by one of the Department of English faculty.
- Passage with a grade of 'B' or higher of a course in literature numbered 100 or higher in a foreign language department at Stanford.
- Passage of the following, respectively, with a grade of 'B' or higher. FRENLANG 250 Reading French, , GERLANG 250 Reading German, ITALLANG 250 Reading Italian, SPANLANG 250 Reading Spanish.

Coterminal Program with School of Education

Students interested in becoming middle school and high school teachers of English may apply for admission to the coterminal teaching program (CTP) of the Stanford Teacher Education Program (STEP) in the School of Education.

CTP students complete a special curriculum in English language, composition, and literature that combines a full English major with supplemental course work in subjects commonly taught in California public schools and a core program of foundational courses in educational theory and practice. They are then admitted to STEP for a fifth year of pedagogical study and practice teaching. Students who complete the curriculum requirements are able to enter STEP without the necessity of taking either the GRE or the usual subject matter assessment tests.

At the end of five years, CTP students receive a B.A. in English, an M.A. in Education, and a California Secondary Teaching Credential.

Students normally apply to the coterminal teaching program at the end of their sophomore year or at the beginning of their junior year. For complete program details and for information on how to apply, consult the Director of Undergraduate Studies in English or the CTP coordinator in the School of Education.

Doctor of Philosophy in English

Admission

Students with a bachelor's degree in English or a closely related field may apply to pursue graduate work toward an advanced degree in English at Stanford. International students whose first language is not English are also required to take the TOEFL examination (with certain exceptions: see the Office of Graduate Admissions (http://gradadmissions.stanford.edu) web site).

University Degree Requirements

University requirements for the Ph.D. are described in the "Graduate Degrees (http://stanford.edu/dept/registrar/bulletin/4901.htm)" section of this bulletin.

Department Degree Requirements

The following department degree requirements, which apply to students entering the program in Autumn Quarter 2013 and thereafter, deal with such matters as residence, dissertation, and examinations, and are in addition to the University's basic requirements for the doctorate. Students should also consult the most recent edition of the English Ph.D. Handbook.

A candidate for the Ph.D. degree must complete three years (nine quarters) of full-time work, or the equivalent, in graduate study beyond the bachelor's degree. Candidates are required to complete at least 135 units of graduate work in addition to the doctoral dissertation. At least three consecutive quarters of graduate work, and the final course work in the doctoral program, must be taken at Stanford.

A student may count no more than 65 units of non-graded courses toward the 135 course units required for the Ph.D., without the written consent of the Director of Graduate Studies. A student takes at least 70 graded units (normally fourteen courses) of the 135 required total units. 5 of these 70 units may be fulfilled with ENGLISH 398 Research Course or ENGLISH 398R Revision and Development of a Paper. ENGLISH 396L Pedagogy Seminar I does not count toward the 70 graded units. No more than 10 units (normally two courses) may come from 100-level courses

This program is designed to be completed in five years.

One pedagogical seminar and four quarters of supervised teaching constitute the teaching requirement for the Ph.D. Typically a student teaches three times as a teaching assistant in a literature course. For the fourth course, students have the option of applying to design and teach Writing Intensive Seminar in English (WISE) for undergraduate English majors or teaching a fourth quarter as a T.A.

- 1st year: One quarter as T.A. (leading 1-2 discussion sections of undergraduate literature)
- 2nd year: One quarter as T.A. (leading 1-2 discussion sections of undergraduate literature)
- 3rd/4th/5th years: Two quarters of teaching, including the possibility of TAing or teaching WISE.

I. English and American Literature

Students are expected to do course work across the full range of English and American literature. Students are required to fulfill the following requirements. Note: fulfillment of requirements 1, 2, and 3 must be through Stanford courses; students are not excused from these three requirements or granted credit for course work done elsewhere.

1. **Units**

Required Courses:		
ENGLISH 396	Introduction to Graduate Study for Ph.D. Students	5
ENGLISH 396L	Pedagogy Seminar I	2

2. Graduate-level (at least 200-level) course work in English literature before 1700, and English or American literature after 1700 (at least 5 units of each).
3. Graduate-level (at least 200-level) course work in some aspect of literary theory such as courses in literary theory itself, narrative theory, poetics, rhetoric, cultural studies, gender studies (at least 5 units).
4. Students concentrating in British literature are expected to take at least one course (5 units) in American literature; students concentrating in American literature are expected to take at least one course (5 units) in British literature.
5. Of all courses taken, a minimum of six courses for a letter grade must be graduate colloquia and seminars, of which at least three must be graduate seminars. The colloquia and seminars should be from different genres and periods, as approved by the advisor.
6. The remaining units of graded, graduate-level courses and seminars should be distributed according to the advisor's judgment and the candidate's needs.
7. Consent of the Director of Graduate Studies if courses taken outside the Department of English are to count toward the requirement of 70 graded units of course work.
8. An oral qualifying examination based on a reading guide, to be taken at the end of the summer after the first year of graduate work. The final decision as to qualification is made by the graduate studies committee in consideration of the student's overall record for the first year's work in conjunction with performance on the examination. Note: A student coming to the doctoral program who has done graduate work at another university must petition in the first year at Stanford for transfer credit for course work completed elsewhere. The petition should list the courses and grades, and describe the nature and scope of course work, as well as the content, contact hours, and writing requirements. A syllabus must be included. The Director of Graduate Studies considers the petition in conjunction with the student's overall performance.
9. *University Oral Examination*—A University oral examination covering the field of concentration (as defined by the student and the student's advisor). Students take 10 units of an Orals Preparation workshop led by the Director of Graduate Studies in Spring quarter of the second year. The oral examination, based on a reading list established by the

candidate in consultation with his or her advisor, is taken ideally by the end of Autumn Quarter of the third year of graduate study, but no later than the end of the Winter Quarter.

10. *Dissertation*—As early as possible during graduate study, a Ph.D. candidate is expected to find a topic requiring extensive original research and to seek out a member of the department as his or her advisor. The advisor works with the student to select a committee to supervise the dissertation. Candidates should take this crucial step as early in their graduate careers as possible. The committee may well advise extra preparation within or outside the department, and time should be allowed for such work. After the dissertation topic has been approved, the candidate should file a formal reading committee form as prescribed by the University. Once a first chapter has been drafted, the student meets with the full reading committee for a one hour colloquium. The dissertation must be submitted to the advisor as a rough draft, but in substantially final form, at least four weeks before the University deadline in the quarter during which the candidate expects to receive the Ph.D. degree.
11. *Closing Colloquium*—Prior to the submission of the dissertation the student and the dissertation committee holds a closing colloquium designed to look forward toward the next steps; identify the major accomplishments of the dissertation and the major questions/issues/problems that remain; consider possibilities for revision, book or article publication, etc. and to provide some intellectual closure to the dissertation.

II. English and Comparative Literature

The Ph.D. program in English and Comparative Literature is designed for students wishing an extensive knowledge of the literature, thought, and history of England and of at least one foreign country, for one period. Approximately half of the student's course work and reading is devoted to this period, with the remainder of the time given to other periods of English and American literature since 1350.

This degree, administered by the Department of English, is to be distinguished from the Ph.D. in Comparative Literature. The latter program is intended for students unusually well prepared in foreign languages and involves advanced work in three literatures, one of which may be English. Interested students should consult a Department of English advisor, but faculty from Comparative Literature may also provide useful supplementary information.

The requirements are as follows:

1. Knowledge of the basic structure of the English language. This requirement may be met by examination, or by taking 10 units of courses chosen from among those offered in linguistics, English philology, and early and middle English literature. No particular courses are required of all students.
2. Required Courses:

		Units
ENGLISH 396	Introduction to Graduate Study for Ph.D. Students	5
ENGLISH 396L	Pedagogy Seminar I	2

3. A knowledge of one foreign language sufficient to take graduate-level literature courses in a foreign-language department and an advanced reading knowledge of a second language.
4. A minimum of 45 units in the history, thought, and literature of one period, in two or more languages, one of which must be English and one foreign. Students normally include at least two courses in a foreign literature read in the original language and two courses listed under Comparative Literature or Modern Thought and Literature. As many as 20 units of this requirement may be satisfied through courses in reading and research.
5. A minimum of six courses for a letter grade from graduate colloquia and graduate seminars, of which three must be graduate seminars and of which at least four must be in the Department of English. Among these courses, students should take one in literary theory or criticism. These colloquia and seminars should be in different genres and periods as approved by the advisor.
6. An oral qualifying examination: see item 8 under requirements of the Ph.D. program in English Literature. For qualifications in the doctoral program in English and Comparative Literature, candidates are not held responsible for literature before 1350, but instead include on their reading list a selection of works from a foreign literature read in the original language.
7. *University Oral Examination*—A University oral examination covering the field of concentration (as defined by the student and the student's advisor). Students take 10 units of an Orals Preparation workshop led by the Director of Graduate Studies in Spring quarter of the second year. The oral examination, based on a reading list established by the candidate in consultation with his or her advisor, is taken ideally by the end of Autumn Quarter of the third year of graduate study, but no later than the end of the Winter Quarter.
8. *Dissertation*—As early as possible during graduate study, a Ph.D. candidate is expected to find a topic requiring extensive original research and to seek out a member of the department as his or her advisor. The advisor works with the student to select a committee to supervise the dissertation. Candidates should take this crucial step as early in their graduate careers as possible. The committee may well advise extra preparation within or outside the department, and time should be allowed for such work. After the dissertation topic has been approved, the candidate should file a formal reading committee form as prescribed by the University. Once a first chapter has been drafted, the student meets with the full reading committee for a one hour colloquium. The dissertation must be submitted to the advisor as a rough draft, but in substantially final form, at least four weeks before the University deadline in the quarter during which the candidate expects to receive the Ph.D. degree.
9. *Closing Colloquium*—Prior to the submission of the dissertation the student and the dissertation committee holds a closing colloquium designed to look forward toward the next steps; identify the major accomplishments of the dissertation and the major questions/issues/problems that remain; consider possibilities for revision, book or article publication, etc. and to provide some intellectual closure to the dissertation.

Language Requirements

Candidates for the Ph.D. degree (except those in English and Comparative Literature, for whom special language requirements prevail) must demonstrate a reading knowledge of two foreign languages. Candidates in the earlier periods must offer Latin and one of the following languages: French, German, Greek, Italian, or Spanish. In some instances, they may be required to offer a third language. Candidates in the later period (that is, after the Renaissance) must demonstrate a reading knowledge of two languages for which Stanford regularly administers a competency exam. In all cases, the choice of languages offered must have the approval of the candidate's advisor. Any substitution of another language must be approved by the Director of Graduate Studies.

The graduate studies committee does not accept courses taken as an undergraduate in satisfaction of the language requirement for doctoral candidates. For students coming to doctoral work at Stanford from graduate work done elsewhere, satisfaction of a foreign language requirement is determined by the Director of Graduate Studies based on the contact hours, syllabus, reading list, etc. Transfer is not automatic.

The candidate must satisfy one language requirement by the end of the first year (that is, before the qualifying examination), and the other by the end of the third year.

Foreign language requirements for the Ph.D. may be fulfilled in any of the following ways:

1. A reading examination given each quarter by the various language departments, except for Latin and Greek.
2. For Latin and Greek, an examination given by one of the Department of English faculty.
3. Passage with a grade of 'B' or higher of a course in literature numbered 100 or higher in a foreign language department at Stanford. As an alternative for Latin, French, Italian, German, and Spanish, passage of the following, respectively, with a grade of 'B' or higher:

		Units
FRENLANG 250	Reading French	4
GERLANG 250	Reading German	4
ITALLANG 250	Reading Italian	4
SPANLANG 250	Reading Spanish	3

Joint Degree Program with the School of Law (J.D./Ph.D.)

The Department of English and the School of Law offer a joint program leading to a J.D. degree combined with a Ph.D. in English.

This J.D./Ph.D. program is designed to provide an opportunity for students to develop a deep expertise combining study in English with law, providing strong preparation for academic positions in literature departments or law schools as well as outside of academia in the public humanities, law, arts administration, or public policy.

Admission to the J.D./Ph.D. Program

Students interested in the joint degree program must apply and gain entrance separately to the Law School's J.D. program and the Department of English's Ph.D. program. Students must also gain permission from both academic units to pursue the two degrees as part of a joint degree program. Interest in the joint degree program should be noted on the student's admission applications and may be considered by the admission committee of each program. Alternatively, an enrolled student in either the Law School or the English department may apply for admission to the other program and for joint degree status in both academic units.

Joint degree students may elect to begin their course of study in either the School of Law or the Department of English. Students are enrolled full-time in the Law School for the first year of that program, and may be required to be enrolled full-time in the Ph.D. program for one or more quarters, as determined by the English department. At all other times, enrollment may be in either academic unit, and students may choose courses from either program.

Degree Requirements

The Law School approves courses from English that may count toward the J.D. degree, and the English department approves Law School courses that may count toward the Ph.D. in English. Some courses may be approved broadly as countable toward both degrees for all students; other courses may be approved on a case-by-case basis, taking into consideration the particular student's fields of focus and other courses taken.

Faculty advisors from each academic unit participate in planning and supervising each student's joint program. Both units assign at least one faculty member to provide advice and supervision related to the joint degree program.

Students must complete 190 quarter units to complete both degrees. Up to 54 units of approved courses may be counted toward both degrees.

The two academic units have agreed to apply the same tuition agreement that operates for other established J.D./Ph.D. Namely, tuition is exclusive to the School of Law during the joint degree student's first year of the law program and is exclusive to the English department's Ph.D. program during all other quarters. Tuition rates within each academic unit for any given quarter match rates that apply to non-joint-degree students at similar stages of their studies in the unit.

For more information, see the Law School's Degrees and Joint Degrees (http://www.law.stanford.edu/program/degrees/) web site.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of English has not changed its policy concerning 'CR' (credit) or 'S' (satisfactory) grades in degree requirements requiring a letter grade for academic year 2020-21. The department will accept CR/NC classes towards the major for the 20-21 academic year.

Other Undergraduate Policies

If a student has difficulty completing an undergraduate degree requirement due to the COVID-19 pandemic, (e.g., a study abroad requirement, a laboratory research requirement), the student should consult with the Director of Undergraduate Studies to identify academic options to fulfill degree requirements. Creative Writing minors should consult with the Assistant Director.

Graduate Degree Requirements

Grading

As per the policy for the 2020-21 academic year, graduate students have the option of taking a course for a CR/NC or S/NC grading basis. Students may use any graduate-level course graded as CR/NC or S/NC toward the 70 graded units for the PhD program, provided that the grade equivalent in the course taken for CR/NC or S/NC is B+ or higher. This means that a student may receive credit for a course indicating that the letter grade equivalent for their work is a C- or higher, but only courses in which their work is assessed as a B+ or higher (regardless of whether they receive a grade of CR or S) can be counted towards the program requirements.

Graduate Advising Expectations

The Department of English is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the advisor and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity.

Faculty advisors guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Emeriti: (Professors) John B. Bender (English, Comparative Literature), George H. Brown, W. B. Carnochan, W. S. Di Piero, Kenneth W. Fields, Albert J. Gelpi, Barbara C. Gelpi, Shirley Heath, Andrea A. Lunsford, Franco Moretti, Stephen Orgel, Nancy H. Packer, Marjorie G. Perloff, Robert M. Polhemus, Arnold Rampersad, David R. Riggs, Lawrence V. Ryan, Elizabeth C. Traugott, Tobias Wolff; *(Associate Professor)* Sandra Drake; *(Professor, Teaching)* Larry Friedlander; *(Senior Lecturer)* Helen B. Brooks; *(Lecturer)* David MacDonald

Chair: Blakey Vermeule

Director of Graduate Studies: Mark Algee-Hewitt

Director of Undergraduate Studies: Vaughn Rasberry

Director of Creative Writing Program: Patrick Phillips

Professors: Terry Castle, Margaret Cohen (English, Comparative Literature), Michele Elam, Shelley Fisher Fishkin, Denise Gigante, Roland Greene (English, Comparative Literature), Blair Hoxby, Adam Johnson, Gavin Jones, Chang-rae Lee (on leave), Mark McGurl, Paula Moya, Patricia A. Parker (English, Comparative Literature), Peggy Phelan (English, Theater and Performance Studies), Patrick Phillips, Ato Quayson, Nancy Ruttenburg, Ramón Saldívar (English, Comparative Literature, on leave), Elizabeth Tallent, Elaine Treharne (on leave), Blakey Vermeule, Alex Woloch

Associate Professors: Mark Greif, Nicholas Jenkins, Vaughn Rasberry

Assistant Professors: Mark Algee-Hewitt, Michaela Bronstein (on leave), Roanne Kantor, Ivan Lupić, Thomas Owens, Esther Yu

Senior Lecturer: Judith Richardson, Alice Staveley

Courtesy Professors: Joshua Landy, Bernadette Meyler, David Palumbo-Liu, Kathryn Starkey

Lecturers: Molly Antopol, William Brewer, Kai Carlson-Wee, Keith Ekiss, John Evans, Sarah Frisch, Richard Hofmann, Sterling HolyWhiteMountain, Scott Hutchins, Tom Kealey, Mark Labowskie, Sara Michas-Martin, Brittany Perham, Ryan Perry, Edward Porter, Shannon Pufahl, Nina Schloesser Tarano, Michael Sears, Michael Shewmaker, Monica Sok, Shimon Tanaka, Ruchika Tomar, Jennifer Alandy Trahan, Rose Whitmore

Adjunct Professor: Valerie Miner

Visiting Professors: Lan Samantha Chang, Louise Glück, Mat Johnson, Paisley Rekdal

Overseas Studies Courses in English

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPOXFRD 16	Creative Writing and Human Rights	5
OSPSANTG 44	Introduction to Borderlands Literature of the Americas	3-5

Courses

ENGLISH 1D. Dickens Book Club. 1 Unit.
Through the academic year, we will read one Dickens novel, one number a week for 19 weeks, as the Victorians would have done as they read the serialized novel over the course of 19 months. The group gets together once a week for an hour and a half to discuss each number, to look carefully at the pattern that the author is weaving, to guess, as the Victorians would have done, what might be coming next, and to investigate the Victorian world Dickens presents. We look carefully at themes, characters, metaphorical patterns, and scenes that form Dickens' literary world, and spend increasing time evaluating the critique that Dickens levels at Victorian life. The weekly gatherings are casual; the discussion is lively and pointed.

ENGLISH 1G. The Gothic: Transcultural, Multilingual, and Interdisciplinary Approaches to the Genre. 1 Unit.
Description: This course is a research platform for the interdisciplinary and cross-cultural study of the Gothic literary and cinematic genres. We consider the Gothic to have rich traditions whose contributions to Queer and LGBTQ+ studies, cultural theory, political economy, bio-ethics, and techno-science, remain under-explored. By looking at the world from the peripheralized standpoints of the ¿monstrous,¿ the abject, the dark, the uncanny, and the tumultuous, the Gothic offers unique though often overlooked critical insights into modern societies. Students enrolled in this course will participate in research activities and reading discussions oriented towards crafting interdisciplinary Gothic syllabi for the future and a cross-cultural Encyclopedia of the Gothic.

ENGLISH 2. Reading for Justice: A collaboration. 1 Unit.
The video-taped 8 minute and 46 second murder of George Floyd in May 2020, at the height of the Coronavirus pandemic shutdown in the U.S., lit a match on the tinderbox of racial injustice. The callousness with which the murder was carried out, the calm refusal of the policeman kneeling on Floyd¿s neck to heed the horrified objections of witnesses at the scene, and an in-the-bones familiarity for too many of us across the country regarding disproportionate police violence against people of color was finally too much to bear. Only the last in a long list of maiming and murders by state authorities of men, women, and children from racialized communities (African American, Latinx, and Native) across the country, Floyd¿s murder precipitated an anguished outcry for justice by feeling people of all races across the world. Floyd was not the first, and unfortunately he is not the last, to be so abused. The difference now is that many more of us understand that we have to stand up and demand an end to the injustice.nAmid calls to urgent action in support of racial and gender justice, this reading group/course considers literatures in English specifically through the lens of Reading and Teaching for Justice. The goal of this course is to train readers to attend to the perspectives of those whose lives are often denied, dismissed, disregarded, even as we attend to how and why works of literature that exclude such voices who hail from a variety of equity-seeking groups, both within and without the literary texts selected. Reading for Justice requests that as readers we engage deeply with what justice means for us today, and also what it has meant historically.

ENGLISH 5A. WISE: Unfinished Novels. 5 Units.
Few species of writing are more exquisitely uncomfortable than a novel that is not (and never will be) finished. An author dies, or loses interest, or flouts convention: whatever the cause, unfinished novels demand an especially dynamic relationship between reader and text, precipitating either wild flights of imagination or scrupulous detective work, if not both at once. In the nineteenth century, a period obsessed with all things comprehensive and complete, such fragmentariness would have appeared still more challenging, even subversive. Closely reading works by Jane Austen, Edgar Allan Poe, and Charles Dickens, along with select critical interpretations, this course will invite participants to ask: what do unfinished novels reveal to us that finished ones cannot? What peculiar insights do they give us into the processes and pressures of literary production? And what exactly is our role in consuming them?nNote: This Writing-Intensive Seminar in English (WISE) course fulfills WIM for English majors. Non-majors are welcome, space permitting. Enrollment is by permission (contact vbeebe@stanford.edu). For more information go to https://english.stanford.edu/writing-intensive-seminars-english-wise.

ENGLISH 5B. WISE: Mental Health and Literature, Mid-century to Present. 5 Units.
Is there something wrong with us, or with our world? Rising rates of clinical depression and other conditions have rendered mental health a pressing cultural concern, especially for young adults, leading institutions of higher education to expand resources to support student needs. But we have not always thought about mental health the ways we do today. In this course we read landmark literary texts from midcentury to present that both reflect and shape cultural constructions of mental health. From Toni Morrison's The Bluest Eye (1970) to Elizabeth Wurtzel's Prozac Nation (1994)to Ottessa Moshfegh's My Year of Rest and Relaxation (2018), we examine how literature destabilizes would-be binaries between mental health and mental illness. How do intersectional identity factors such as gender, race, and class inform whose mental illness is deemed deserving of treatment and whose is instead criminalized? Honing our critical writing skills by learning to employ the tools of cultural criticism, feminist theory, and critical race studies, we also engage selections from Doris Lessing, Anne Sexton, Sylvia Plath, Ralph Ellison, Richard Wright, Esmé Weijun Wang, and others. Traversing short stories, essays, drama, poetry, memoir, and novels, this timely multi-genre course equips us to historically contextualize and meaningfully respond to the current mental health crisis.nNote: This Writing-Intensive Seminar in English (WISE) course fulfills WIM for English majors. Non-majors are welcome, space permitting. Enrollment is by permission (contact vbeebe@stanford.edu). For more information go to https://english.stanford.edu/writing-intensive-seminars-english-wise.

ENGLISH 5C. WISE: Revelation and Apocalypse: Literature at the End of the World 1300-2000. 5 Units.
Apocalyptic thinking never goes out of fashion, nor does literature that deals with the end times. This course explores two major categories of apocalyptic thinking-- largely defined by religious and medical discourses--and the connection between the two. From Revelation, the last book of the New Testament, to early modern reckonings inspired by fire and plague, to Romantic-era sci-fi by Mary Shelley, to Station Eleven, a 2014 novel which takes place after an apocalyptic flu pandemic, we will read both millenarians and millennials, considering different visions of the end of the world, and what may come after. We'll also ask, what are the stakes--what historical concerns and cultural obsessions are revealed, after all--in these varied prophetic imaginings?nNote: This Writing-Intensive Seminar in English (WISE) course fulfills WIM for English majors. Non-majors are welcome, space permitting. Enrollment is by permission (contact vbeebe@stanford.edu). For more information go to https://english.stanford.edu/writing-intensive-seminars-english-wise.

ENGLISH 5D. WISE: Bad Reading: Pleasure and Politics in Literary Value. 5 Units.
As students of literature, we aspire to be good readers of the texts we encounter. But to see ourselves as good readers is implicitly(perhaps even complicitly)to set ourselves against another form of literary consumption: bad reading, and, by association, bad readers. Yet what makes reading "bad" or "good"? And who decides? The more we look, the less self-evident or definitive the distinction becomes,our footing precipitously dropping away into questions about our own reading practices and how society values them. The precarious label "bad reading" comes into even sharper relief when we consider that the term has long been associated not just with certain modes of reading, but also with certain classes of readers and certain kinds of books, from gory gothic thrillers and racy romances to sci-fi and comics. In this course, we will trace the definitions and stakes of bad reading from the nineteenth century to the present day, through sources ranging from Jane Austen and Virginia Woolf to contemporary think-pieces on young adult literature and race in publishing. Along the way, we will aim both to discover whether bad reading is really so bad after all, and to understand how ideologies of gender, class, and race have shaped our conceptions of literary value.nNote: This Writing-Intensive Seminar in English (WISE) course fulfills WIM for English majors. Non-majors are welcome, space permitting. Enrollment is by permission (contact vbeebe@stanford.edu). For more information go to https://english.stanford.edu/writing-intensive-seminars-english-wise.

ENGLISH 5E. WISE: The Novel of Love. 5 Units.
How do love plots change over time? In this seminar, we will learn to think critically about idealized romantic fantasy as we explore the "novel of love" from its 18th century origins through the 20th century, and into the present, focusing on case study texts by Elizabeth Inchbald, E.M. Forster, and James Baldwin. We will begin by learning about the cultural and socioeconomic conditions associated with the rise of the novel in modern Europe. We will then think about how issues of class, race, gender, sexuality, and mobility transform representations of `love¿ across centuries and continents. Students will also be invited to apply their discoveries to contemporary love stories, including digital and audiovisual forms. Sociological and historical accounts will supplement the literary readings. Writing assignments are structured to build cumulatively towards the final paper, following collaborative rounds of revision and presentation. Developing critical self-awareness through engagement with various critical models, students will be encouraged to experiment with the traditional form of the academic essay.nNote: This Writing-Intensive Seminar in English (WISE) course fulfills WIM for English majors. Non-majors are welcome, space permitting. Enrollment is by permission (contact vbeebe@stanford.edu). For more information go to https://english.stanford.edu/writing-intensive-seminars-english-wise.

ENGLISH 5F. WISE: Serial Children's Literature: Lemony Snicket's A Series of Unfortunate Events. 5 Units.
In this course we will look at Lemony Snicket's A Series of Unfortunate Events as a multi-genre block-busting phenomenon in its own right and as a case study in seriality and children's literature. Reading books 1-13 alongside research on literary markets and adolescent development we'll ask: How do we write about literature that exists simultaneously at the scale of a single novel and a series? What literary and socialpsychological theories help us make meaning of these texts? What audiences, and what needs within those audiences, did the series speak to in its cultural moment? What methods are appropriate for answering what questions? As we explore the world of best-sellers and book deals alongside questions of "appropriateness" and popularity we will engage various methodological angles, including literary critical, digital humanities, and sociological approaches. (No previous experience in sociology or digital humanities is required.) Final research projects may be produced on any text or texts related to course themes.nNote: This Writing-Intensive Seminar in English (WISE) course fulfills WIM for English majors. Non-majors are welcome, space permitting. Enrollment is by permission (contact vbeebe@stanford.edu). For more information go to https://english.stanford.edu/writing-intensive-seminars-english-wise.

ENGLISH 5G. WISE: Blackness and the American Canon. 5 Units.
The Black feminist novelist Toni Morrison once wrote that ¿it only seems that the canon of American literature is `naturally' or `inevitably' `white.' In fact it is studiously so. The impact of this revelation may feel alien to many students of literature today, for whom 'the canon' is little more than a euphemism for the 'Dead White Men' preserved in it, but for Morrison and the generation of intellectuals she belonged to, that recognition was the great cultural struggle of their era. This struggle, now remembered as the 'Canon Wars,' upset every convention of traditional literary scholarship, and set the terms for literary critical practice to this day. This course introduces students to key methods and stakes in 21st century literary research (to be practiced in their own development of a research project) through the Canon Wars and their legacies. Standing loosely in for `canon,' `war,' and `legacy,' we will read three novels together: Edgar Allan Poe's Narrative of Arthur Gordon Pym of Nantucket, Toni Morrison's The Bluest Eye, and Mat Johnson's Pym. Through these novels, students will practice literary criticism and learn about its history, focusing on how the debates of the late 20th century created a framework for centering Blackness in the study of American culture, and cleared space for the emergent field of African American/Black Studies.nNote: This Writing-Intensive Seminar in English (WISE) course fulfills WIM for English majors. Non-majors are welcome, space permitting. Enrollment is by permission (contact vbeebe@stanford.edu). For more information go to https://english.stanford.edu/writing-intensive-seminars-english-wise.

ENGLISH 5H. WISE: Dialogue in American Literature. 5 Units.
What would literature be without conversations between characters? Dialogue is what brings fiction to life. In the words of literary critic Mikhail Bakhtin, 'the speaking person' is what 'makes a novel a novel.' In this course, we explore the crucial role dialogue plays in literature, treating every sentence of narrative fiction as a choice between characters, speech and some other mode of representation. We will pay close attention to both how fiction represents speaking persons and how dialogue interacts with the novel's other discourses. What can the dialogue scene as a formal unit tell us about narrative structure? How does dialogue shape plot? How does it animate character? Who gets to speak for themselves and which voices are passed over or suppressed? To explore these questions of form and politics, we'll read select works of fiction (by authors including Herman Melville, Zora Neale Hurston, and Margaret Millar) in conversation with major works of narrative theory.nNote: This Writing-Intensive Seminar in English (WISE) course fulfills WIM for English majors. Non-majors are welcome, space permitting. Enrollment is by permission (contact vbeebe@stanford.edu). For more information go to https://english.stanford.edu/writing-intensive-seminars-english-wise.

ENGLISH 9CA. American Road Trip. 3 Units.
From Whitman to Kerouac, Alec Soth to Georgia O'Keeffe, the lure of travel has inspired many American artists to pack up their bags and hit the open road. In this Creative Expressions course we will be exploring the art and literature of the great American road trip, including prose, poetry, films, and photography. We will be reading and writing in a variety of genres, workshopping our own stories, and considering the ways in which our personal journeys have come to inform and define our lives. The course includes a number of campus-wide field trips, and an end-of-quarter road trip down the California coast. NOTE: Students must attend the first class meeting to retain their roster spot.

ENGLISH 9CE. Creative Expression in Writing. 3 Units.
Primary focus on giving students a skill set to tap into their own creativity. Opportunities for students to explore their creative strengths, develop a vocabulary with which to discuss their own creativity, and experiment with the craft and adventure of their own writing. Students will come out of the course strengthened in their ability to identify and pursue their own creative interests. For undergrads only. NOTE: For undergraduates only. Students must attend the first class meeting to retain their roster spot.

ENGLISH 9CF. Poetry Into Film. 3 Units.
This course focuses on the intersection between film and poetry. Students will complete three short films based on both published and student-authored poems. From concept to final cut, students will script, storyboard, soundtrack, and visually design each production before filming, editing, and screening their films for class. As such, the course will serve as an introduction to both poetry and digital filmmaking.nNOTE: Students must attend the first class meeting to retain their roster spot.

ENGLISH 9CI. Inspired By Science: A Writing Workshop. 3 Units.
How can your interest in science and the environment be enriched by a regular creative practice? How do you begin to write a poem or essay about the wonders of the natural world or the nuances of climate change? What are the tools and strategies available to creative writers, and how can these techniques be used to communicate complex concepts and research to wide-audiences? We begin to answer these questions by drawing inspiration from the rich tradition of scientists who write and writers who integrate science. Emphasizing writing process over finished product, students maintain journals throughout the quarter, responding to daily prompts that encourage both practice and play. Through open-ended and exploratory writing, along with specific exercises to learn the writer¿s craft students develop a sense of their own style and voice. Note: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 9CP. Poetry Off the Page. 3 Units.
With recent blockbuster films like Patterson and major prizes being awarded to artists like Bob Dylan and Kendrick Lamar, the borders of what constitutes traditional literature are shifting. In this Creative Writing course we will be looking at literature `off the page,¿ in songwriting, spoken word, multi-media, and visual art. We will be workshopping our own creative projects and exploring the boundaries of contemporary literature. Artists we¿ll be looking at include Iron and Wine, Lil Wayne, Allen Ginsberg, Beyonce, David Lynch, Patti Smith, Mark Strand, Anne Carson, Danez Smith, Bon Iver, and Lou Reed.nNOTE: Students must attend the first class meeting to retain their roster spot.

ENGLISH 9CT. Special Topics in Creative Expression. 3 Units.
Focus on a particular topic or process of creative expression. Primary focus on giving students a skill set to tap into their own creativity. Opportunities for students to explore their creative strengths, develop a vocabulary with which to discuss their own creativity, and experiment with the craft and adventure of their own writing. Students will come out of the course strengthened in their ability to identify and pursue their own creative interests. NOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot. May repeat for credit.

ENGLISH 9CV. Creative Expression in Writing. 3 Units.
Online workshop whose primary focus is to give students a skill set to tap into their own creativity. Opportunities for students to explore their creative strengths, develop a vocabulary with which to discuss their own creativity, and experiment with the craft and adventure of their own writing. Students will come out of the course strengthened in their ability to identify and pursue their own creative interests. For undergrads only.

ENGLISH 9CW. Writing and World Literature. 3 Units.
This course is an introduction to reading and writing short fiction and poetry. For inspiration and imitation, students will read models drawn from a diverse body of global literature. In a supportive, discussion-based environment, students will develop their own creativity and experiment with the craft and adventure of their own writing. Students will come out of the course strengthened in their ability to identify and pursue their own creative interests.nNOTE: Students must attend the first class meeting to retain their roster spot.

ENGLISH 9R. Humanities Research Intensive. 2 Units.
Everyone knows that scientists do research, but how do you do research in the humanities? This five-day course, taught over spring break, will introduce you to the excitement of humanities research, while preparing you to develop an independent summer project or to work as a research assistant for a Stanford professor. Through hands-on experience with archival materials in Special Collections and the East Asia Library, you will learn how to formulate a solid research question; how to gather the evidence that will help you to answer that question; how to write up research results; how to critique the research of your fellow students; how to deliver your results in a public setting; and how to write an effective grant proposal. Students who complete this course become Humanities Research Intensive Fellows and receive post-program mentorship during spring quarter, ongoing opportunities to engage with faculty and advanced undergraduates, and eligibility to apply for additional funding to support follow-up research. Freshmen and sophomores only. All majors and undeclared students welcome. No prior research experience necessary. Enrollment limited: apply by 11/4/19 at hri-fellows.stanford.edu.
Same as: CLASSICS 9R, EALC 9R, HISTORY 9R

ENGLISH 9SF. Fight the Future: Speculative Fiction and Social Justice. 3 Units.
Imagining the future has been one of the most important ways humans have assessed their present. In this salon-style seminar we'll focus on modern speculative fiction as social critique, especially of regimes of patriarchy, racism, and capitalism. The first three weeks will be devoted to the work of Margaret Atwood, who will visit the class. The remaining seven weeks will explore other speculative fiction, broadly defined and across era and geography, that also engages with oppression and freedom, sex, love, and other dynamics of power. Guest lecturers will discuss the work of authors such as Octavia Butler, Samuel R. Delany, Franz Kafka, Philip K. Dick, Ursula LeGuin, and others.

ENGLISH 10A. Introduction to English I: Mapping Monsters in British Literature, 650-1650. 5 Units.
Werewolves, dragons, cannibals, witches, sea monsters, faeries, moral monstrosity, madness, the uncanny and the grotesque the monstrous is frightening, fury-filled, unknowable, and seductive. Monsters inhabit the literary imagination and the historic landscape. Monsters live on the margins of society; they are culturally and ideologically fraught; they exhibit sexual, racial, religious, and physical difference. In this course, we shall examine the depiction and meaning of the monster in literature, manuscript images, and maps from England and Wales from about 650CE to 1650CE.

ENGLISH 10B. Introduction to English I: What Is Literary History?. 5 Units.
From the 14th to the 17th centuries, how are literary developments involved with historical events and social conditions? Discussion of how literature works as a force in culture, not only a reflection of other forces. Chaucer¿s General Prologue and Knight¿s Tale; Sir Gawain and the Green Knight; More, Utopia; Wyatt, Sidney, poems; Spenser, The Faerie Queene, Book Two; Shakespeare, King Lear; Donne, Songs and Sonets and Holy Sonnets; Cavendish, Blazing World.

ENGLISH 10D. Introduction to English I: Women, Gender, and Sexuality in Early British Literature. 5 Units.
How were gender and sexuality constructed and depicted a thousand years ago? How was illicit love depicted? How can women¿s silenced voices be heard? In this course, we¿ll examine British poetry, prose, and performance from c.600 to 1600 that challenge preconceptions about early people and culture, literary form and function. The readings will show how issues of voice, positionality, and identity are both fluid and surprising in the pre-modern era. We¿ll study texts written by and about women; texts that center transitional gender and non-binary sexualities; and texts that highlight the tension created by self and society, between being-in-the-world and conventional norms.nnAmong the works we¿ll study (in translation) are Old English and Welsh women¿s lyrics, saints¿ lives, guides for confined religious life, romance in French and Middle English, Chaucer¿s Canterbury Tales, sixteenth-century women¿s poetry and letters, and Renaissance drama.

ENGLISH 11A. Introduction to English II: From Milton to the Romantics. 3-5 Units.
English majors must take class for 5 units. Major moments in English literary history, from John Milton's 'Paradise Lost' to John Keats's 'Hyperion'. The trajectory involves a variety of literary forms, including Augustan satire, the illuminated poetry of William Blake's handcrafted books, the historical novel invented by Sir Walter Scott, the society novel of Jane Austen, and William Wordsworth's epic of psychological and artistic development. Literary texts will be studied in the context of important cultural influences, among them civil war, religious dissent, revolution, commercialization, colonialism, and industrialization.

ENGLISH 11B. Introduction to English II: American Literature and Culture to 1855. 5 Units.
(Formerly English 23/123). A survey of early American writings, including sermons, poetry, captivity and slave narratives, essays, autobiography, and fiction, from the colonial era to the eve of the Civil War.
Same as: AMSTUD 150

ENGLISH 11C. Introduction to English II: Revolutionary Energies: Milton and the Transcendentalists. 5 Units.
This course will study four literary masterpieces in depth: John Milton's Paradise Lost (1667; 1674); Book 4 of Jonathan Swift's Gulliver's Travels (1726); Jane Austen's Persuasion (1817); and Herman Melville's Moby Dick (1851). All of these works are complex and will repay close study. But they also work their way into an ongoing literary conversation in the western world and in that sense serve as touchstones for later writers. We will consider each work not only for its own aesthetic accomplishment but also in sometimes passionate debate with its author's historical circumstances.

ENGLISH 11Q. Art in the Metropolis. 3 Units.
This seminar is offered in conjunction with the annual "Arts Immersion" trip to New York that takes place over the spring break and is organized by the Stanford Arts Institute (SAI). Participation in the trip is a requirement for taking part in the seminar (and vice versa). The trip is designed to provide a group of students with the opportunity to immerse themselves in the cultural life of New York City guided by faculty and SAI staff. Students will experience a broad range and variety of art forms (visual arts, theater, opera, dance, etc.) and will meet with prominent arts administrators and practitioners, some of whom are Stanford alumni. For further details and updates about the trip, see https://arts.stanford.edu/for-students/academics/arts-immersion/new-york/.
Same as: ARTSINST 11Q, MUSIC 11Q, TAPS 11Q

ENGLISH 12A. Introduction to English III: Introduction to African American Literature. 3-5 Units.
In his bold study, What Was African American Literature?, Kenneth Warren defines African American literature as a late nineteenth- to mid-twentieth-century response to the nation's Jim Crow segregated order. But in the aftermath of the Jim Crow era and the Civil Rights movement, can critics still speak, coherently, of "African American literature"? And how does this political conception of African American literary production compare with accounts grounded in black language and culture? Taking up Warren's intervention, this course will explore African American literature from its earliest manifestations in the spirituals and slave narratives to texts composed at the height of desegregation and decolonization struggles at mid-century and beyond. English majors must take this class for 5 units.
Same as: AFRICAAM 43, AMSTUD 12A

ENGLISH 12B. Introduction to English III: Literature and the Crises of Humanism. 5 Units.
Traces the development of British and American literature from 1850 to present in relation to nineteenth and twentieth-century crises of humanism. Starting with the realist novel, we will explore how poetry and fiction challenged and reinforced the exclusion of certain classes of people from full humanity. We will see how modernist writers demolished humanist norms of character and plot, and weigh literature¿s responses to the inhumanities of WWII and totalitarianism. Finally, we will encounter critiques of the humanist legacy from postcolonial and ethnic writers, and from posthuman speculative fiction. Concludes with a discussion of humanism and the ¿humanities¿ today.

ENGLISH 12C. Introduction to English III: Modern Literature. 5 Units.
Survey of the major trends in literary history from 1850 to the present.

ENGLISH 13Q. Imaginative Realms. 3 Units.
This class looks at the tradition of the imagined universe in fiction and poetry. Special topics include magical realism, artificial intelligence, and dystopias. Primary focus on giving students a skill set to tap into their own creativity. Opportunities for students to explore their creative strengths, develop a vocabulary with which to discuss their own creativity, and experiment with the craft and adventure of their own writing. For undergrads only.

ENGLISH 14Q. It's the Freakiest Show: David Bowie's Intertextual Imagination. 4 Units.
David Bowie's career began in the early 60s with a mix of folk, rock, and psychedelia; he then helped define an era with his performance of a gender bending, glam rock alien prior to engaging with German expressionism and minimalist electronic music; in the `80s, he brought a generation to the dance floor with chart topping hits before turning to drum `n bass and industrial music for inspiration; he finished his life as an enigmatic but engaged artist releasing poignant albums until his death. Through these many transitions, Bowie had a constant ¿ he was a voracious reader ¿ a practice that informed his work throughout his life.n nIn this class students will explore the place of literature in the work of musician, actor, and visual artist David Bowie. They will consider how Bowie's work embodies, questions, critiques, and engages with ¿the literary.¿ This course will focus on the relationship between Bowie's artistic output and work by other artists, both canonical and Avant Garde such as Andy Warhol, Iggy Pop, W.B. Yeats, T.S. Elliot, and William Burroughs. It will involve close readings of song lyrics and comparative reading of albums with literary forms such as the novel, poetry, and critical essay. We will also consider how Bowie's music was fueled by and in turn inspires new relationships between music, literature, cinema, and theater.n nThroughout, students will engage with and apply theories of writing, reading, and authorship and will explore questions of time, place, style, gender, and mortality. In addition to written analytical work, students will produce their own creative projects (poem, short story, song, album cover, etc.) in relation to something they find interesting or inspiring in Bowie¿s ouvre. Students will compose in varied modes (speaking, writing, video), in varied situations, and for varied audiences. Doing so, will enable students to explore the interplay between written, oral, and visual forms of communication, learn skills and strategies of oral delivery, and craft messages for both academic and public audiences.

ENGLISH 15Q. Family Trees: The Intergenerational Novel. 3 Units.
The vast majority of novels feature a central protagonist, or a cast of characters whose interactions play out over weeks or months. But some stories overflow our life spans, and cannot be truthfully told without the novelist reaching far back in time. In this Sophomore Seminar, we will consider three novels that seek to tell larger, more ambitious stories that span decades and continents. In the process, we will discuss how novelists build believable worlds, craft memorable characters, keep us engaged as readers, and manage such ambitious projects.

ENGLISH 16Q. Family Stories. 3 Units.
This creative writing workshop will explore the idea of family. We¿ll begin with our questions: How do we conceptualize the word family? How do family histories, stories, mythologies, and languages shape our narratives? What does family have to do with the construction of a self? How can we investigate the self and all of its many contexts in writing? We¿ll consider how we might work from our questions in order to craft work that is meaningful and revealing. Students will have the opportunity to write in both poetry and prose, as well as to develop their own creative cross-genre projects. Along the way, we¿ll discuss elements of craft essential to strong writing: how to turn the self into a speaker; how create the world of a piece through image, detail, and metaphor; how to craft beautiful sentences and lines; how to find a form; and many other topics.

ENGLISH 17N. Animal Poems. 3-5 Units.
Animals have always appealed to the human imagination. This course provides basic a rubric for analyzing a variety of animal poems in order (1) to make you better readers of poetry and (2) to examine some of the most pressing philosophical questions that have been raised in the growing field of animal studies. The animals that concern us here are not allegorical¿the serpent as evil, the fox as cunning, the dove as a figure for love. Rather, they are creatures that, in their stubborn animality, provoke the imagination of the poet.

ENGLISH 17Q. Political Poetry. 3 Units.
This workshop is devoted to reading and creating politically engaged poetry. Students will look closely at the intersection between activism, identity, and form, focusing on 20th and 21st century poets responding to their sociohistorical moment.

ENGLISH 18Q. Writer's Salon. 3 Units.
This course explores from a writer's perspective what it takes to craft a successful novel, short story collection, or book of poetry. You will read three prize-winning books from Bay Area authors, including Creative Writing instructors here at Stanford. Each author will visit our class to talk about their work and the writing process. From week to week, you will complete short writing exercises culminating in a longer story or series of poems that you share with class. For undergrads only.

ENGLISH 19Q. I Bet You Think You're Funny: Humor Writing Workshop. 3 Units.
Nothing is harder than being funny on purpose. We often associate humor with lightness, and sometimes that's appropriate, but humor is inextricably interlinked with pain and anger, and our funniest moments often spring from our deepest wounds. Humor can also allow us a platform for rage and indignation when other forms of rhetoric feel inadequate. This workshop will take students through the techniques and aesthetics of humor writing, in a variety of forms, and the main product of the quarter will be to submit for workshop a sustained piece of humor writing. For undergrads only.

ENGLISH 21Q. Write Like a Poet: From Tradition to Innovation. 3 Units.
In this poetry workshop, we will spend the first half of the quarter reading and writing in traditional forms and the second half innovating from those forms. When discussing poetry, what do we mean when we talk about craft? What is prosody and why is it important? What are the relationships between form and content? What does a modern sonnet look like? We will consider how a writer might honor a tradition without being confined by it. The culmination of the course will be a project in which the student invents (and writes in) a form of their own. All interested students are welcome¿beginners and experts alike.

ENGLISH 22Q. Writing Mystical, Spiritual, and Altered Experiences. 3 Units.
Because mystical, spiritual, and altered states of experience have always been a part of human life, we've always been trying to write about them. While some try to claim these subjects are frivolous, dated, or even dangerous, writers keep coming back to them, including some of the best writers of our time. Lucky for us, the results have been exhilarating. In this class, we'll look at a range of writers and forms to understand how these ancient subjects are handled in the contemporary context, including works by journalists Michael Pollan and Jia Tolentino, Scientists Robin Wall Kimmerer and Oliver Sacks, fiction writers Denis Johnson and Hillary Mantel, and poets Max Ritvo and Christopher Wiman. Most importantly, we'll write our own pieces of questioning, exploration, and awe.

ENGLISH 23Q. First Chapters: Please Allow Me to Introduce My Novel. 3 Units.
In this course we¿ll explore how an effective first chapter immerses us in the voice of the narrator, introduces a series of themes and problems, indicates character desires and fears, and most importantly enchants and inspires its readers. We¿ll write short reaction papers and hold discussions in small and large groups. In the second half of the quarter, students will compose their own first novel chapter of around 8-12 pages, and we¿ll workshop them in class. The final goal is to have a revised first chapter, a short outline for the rest of a book, and an increased knowledge of writing original and irresistible opening chapters.

ENGLISH 24Q. Leaving Patriarchy: A Course for All Genders. 3 Units.
This is a creative writing course for writers of all genders who are interested in thinking about patriarchy and how to resist it. Our course will aim to complicate the idea that men benefit from patriarchy and are its primary enforcers, while the rest of us are simply suffering under it. We'll ask ourselves how patriarchy is bad for ALL of us, and how ALL of us are implicated in its perpetuation. Do we ALL have the reasons and the resources to leave patriarchy--and can we start to leave it right now? We'll read works of scholarship and literature that investigate patriarchy as a human relational problem. We'll write fiction and nonfiction in which we explore the ways patriarchy has shaped us, challenge ourselves to resist its manifestations in our relationships, envision a future without patriarchy, and begin to live that future right now. Most crucially, we will practice creating a space in which all of us can speak without fear of judgment about our experiences of a fraught topic.

ENGLISH 30N. Character. 3 Units.
"I have a dream..." How do loose bits of textual material transform into literary characters of heft and substance? Before reflecting on the "rounded" characters associated with novels and more recent genres of writing, this class will survey a handful of ancient, medieval, and early modern texts to consider alternative models of the literary subject. We will have occasion to consider texts that primarily deploy characters as embodiments of concepts or ideals, and will think critically, too, of historical movements that have formed our taste for literary figures of flesh and blood. A focus on the implied people of texts requires a reckoning with social categories and ethical distinctions more generally. We will thus read throughout with an eye toward the literary and sociopolitical structures that make it possible to perpetuate--if not to realize--the fantasy of knowing others "by the content of their character.".

ENGLISH 31N. Love and Death. 3 Units.
How do we put into words the ineffeable emotions generated by love and grief? How have writers, across centuries and many different literary traditions, sung the praises of a beloved, or lamented the ache of loss? In this hybrid literature and creative writing course, we will alternate between the close-reading of model texts, and generating original poetry and prose written under the influence of literary heroes.

ENGLISH 33N. A Way of Life: Historic Journeys to Sacred Place. 3 Units.
In a world of touchscreens and instant knowledge, going on a journey for the good of the soul might seem weird. But pilgrimage has witnessed a huge resurgence. Why? We'll study the global pilgrimage through its long history, constructing tour guides and maps for visiting the world's most sacred places. From Italy to Japan to India to Saudi Arabia and Britain, these often-spectacular routes inspire and test travelers. What motivates these journeys? What happens once we get there?.

ENGLISH 40N. Theatrical Wonders from Shakespeare to Mozart. 3 Units.
What is the secret of theatrical illusion? How does the theater move us to wonder, sympathetic identification, and reflection? How can the theater help society understand and manage social conflict and historical change? We will ask these questions through a close examination--on the page and on the stage--of dramatic masterpieces by Shakespeare and Mozart. We will attend live performances of Gounod¿s opera Romeo and Juliet and of Mozart¿s opera The Marriage of Figaro. No prior knowledge of music or foreign languages is required; neither is prior experience in theatricals.

ENGLISH 41N. Family Drama: American Plays about Families. 3 Units.
Focus on great dramas about family life (Albee, Kushner, Shephard, Vogel, Kron, Nottage, Parks). Communication in writing and speaking about conflict central to learning in this class.
Same as: AMSTUD 41N, TAPS 40N

ENGLISH 50. HUMANITIES HOUSE WORKSHOP. 1 Unit.
For student-run workshops and research seminars in Ng House / Humanities House. Open to both residents and non-residents. May be repeated for credit. This course code covers several discrete workshops each quarter; sign up for a particular workshop via the Google Form at https://goo.gl/forms/TRU0AogJP3IHyUmr2.

ENGLISH 50A. Character Development: Writing a Script, Creating Engaging Characters. 1 Unit.
Seminar with Writer in Residence John Markus (BA English '78); meets for seven sessions over three weeks in February. Students will work one on one and in small groups with this professional writer and Stanford alum. John has written everything from stand-up to critically-acclaimed network and cable television shows to independent films to, most recently, theatrical plays. This seminar is designed for students who would like to produce a piece of work in three weeks and/or to pursue a writing profession.

ENGLISH 50B. A Humanist's Guide to Art, Community, Design, and the Earth. 1 Unit.
This short, intensive seminar features Humanities Scholar & Artist in Residence Clare Whistler (visiting from England April 15-30) will meet for dialogue, workshop, creation, and improvisation. This workshop will help students to think through methods of humanistic inquiry as ways of integrating meaning and purpose into their lives; it will focus on projects, research, collaborations, walking explorations, and relationships. This course will be of interest to students who would like to maintain humanistic values, make a decent living, find good mentors and collaborators, and create communities that are attentive to their constructed and natural environments. This year's course will center on personal assignments and will focus in particular on the theme of gardens.nnThe course will meet M/W 5-7 PM with optional Friday studio time. The first meeting is Monday, April 15.

ENGLISH 50Q. Life and Death of Words. 4 Units.
In this course, we explore the world of words: their creation, evolution, borrowing, change, and death. Words are the key to understanding the culture and ideas of a people, and by tracing the biographies of words we are able to discern how the world was, is, and might be perceived and described. We trace how words are formed, and how they change in pronunciation, spelling, meaning, and usage over time. How does a word get into the dictionary? What do words reveal about status, class, region, and race? How is the language of men and women critiqued differently within our society? How does slang evolve? How do languages become endangered or die, and what is lost when they do? We will visit the Facebook Content Strategy Team and learn more about the role words play in shaping our online experiences. Together, the class will collect Stanford language and redesign the digital dictionary of the future. Trigger Warning: Some of the subject matter of this course is sensitive and may cause offense. Please consider this prior to enrolling in the course.
Same as: CSRE 50Q, FEMGEN 50Q, NATIVEAM 50Q

ENGLISH 52N. Mixed-Race Politics and Culture. 3 Units.
Today, almost one-third of Americans identify with a racial/ethnic minority group, and more than 9 million Americans identify with multiple races. What are the implications of such diversity for American politics and culture? In this course, we approach issues of race from an interdisciplinary perspective, employing research in the social sciences and humanities to assess how race shapes perceptions of identity as well as political behavior in 21st century U.S. We will examine issues surrounding the role of multiculturalism, immigration, acculturation, racial representation and racial prejudice in American society. Topics we will explore include the political and social formation of "race"; racial representation in the media, arts, and popular culture; the rise and decline of the "one-drop rule" and its effect on political and cultural attachments; the politicization of Census categories and the rise of the Multiracial Movement.
Same as: AFRICAAM 52N

ENGLISH 54N. Visible Bodies: Black Female Authors and the Politics of Publishing in Africa. 4 Units.
Where are the African female writers of the twentieth century and the present day? This Introductory Seminar addresses the critical problem of the marginalization of black female authors within established canons of modern African literature. We will explore, analyse and interrogate the reasons why, and the ways in which, women-authored bodies of work from this period continue to be lost, misplaced, forgotten, and ignored by a male-dominated and largely European/white publishing industry in the context of colonialism, apartheid and globalization. nnYou will be introduced to key twentieth-century and more contemporary female authors from Africa, some of them published but many more unpublished or out-of-print. The class will look at the challenges these female authors faced in publishing, including how they navigated a hostile publishing industry and a lack of funding and intellectual support for black writers, especially female writers. nnWe will also examine the strategies these writers used to mitigate their apparent marginality, including looking at how women self-published, how they used newspapers as publication venues, how they have increasingly turned to digital platforms, and how many sought international publishing networks outside of the African continent. As one of the primary assessments for the seminar, you will be asked to conceptualize and design an in-depth and imaginative pitch for a new publishing platform that specializes in African female authors. nnYou will also have the opportunity for in-depth engagement (both in class and in one-on-one mentor sessions) with a range of leading pioneers in the field of publishing and literature in Africa. Figures like Ainehi Edoro (founder of Brittle Paper) and Zukiswa Wanner (prize-winning author of The Madams and Men of the South), amongst others, will be guests to our Zoom classroom. One of our industry specialists will meet with you to offer detailed feedback on your proposal for your imagined publishing platform. nnYou can expect a roughly 50/50 division between synchronous and asynchronous learning, as well as plenty of opportunity to collaborate with peers in smaller settings.
Same as: AFRICAAM 140N, AFRICAST 51N, HISTORY 41N

ENGLISH 71. Dangerous Ideas. 1 Unit.
Ideas matter. Concepts such as revolution, tradition, and hell have inspired social movements, shaped political systems, and dramatically influenced the lives of individuals. Others, like immigration, universal basic income, and youth play an important role in contemporary debates in the United States. All of these ideas are contested, and they have a real power to change lives, for better and for worse. In this one-unit class we will examine these "dangerous" ideas. Each week, a faculty member from a different department in the humanities and arts will explore a concept that has shaped human experience across time and space. Some weeks will have short reading assignments, but you are not required to purchase any materials.
Same as: ARTHIST 36, COMPLIT 36A, EALC 36, ETHICSOC 36X, FRENCH 36, HISTORY 3D, MUSIC 36H, PHIL 36, POLISCI 70, RELIGST 36X, SLAVIC 36

ENGLISH 81. Philosophy and Literature. 3-5 Units.
What, if anything, does reading literature do for our lives? What can literature offer that other forms of writing cannot? Can fictions teach us anything? Can they make people more moral? Why do we take pleasure in tragic stories? This course introduces students to major problems at the intersection of philosophy and literature. It addresses key questions about the value of literature, philosophical puzzles about the nature of fiction and literary language, and ways that philosophy and literature interact. Readings span literature, film, and philosophical theories of art. Authors may include Sophocles, Dickinson, Toni Morrison, Proust, Woolf, Walton, Nietzsche, and Sartre. Students master close reading techniques and philosophical analysis, and write papers combining the two. This is the required gateway course for the Philosophy and Literature major tracks. Majors should register in their home department.
Same as: CLASSICS 42, COMPLIT 181, FRENCH 181, GERMAN 181, ILAC 181, ITALIAN 181, PHIL 81, SLAVIC 181

ENGLISH 82N. Thinking about Photographs. 3 Units.
The course will begin with a short history of photography since the 19th century; followed by both a hands-on exploration of different types of photographs (possibly using the Cantor Collection) and then a more theoretical discussion of some of the acknowledged classics of photographic writing (Susan Sontag's *On Photography,* Roland Barthes' *Camera lucida*, Linfield's *The Cruel Radiance*.

ENGLISH 83N. City, Space, Literature. 3 Units.
This course presents a literary tour of various cities as a way of thinking about space, representation, and the urban. Using literature and film, the course will explore these from a variety of perspectives. The focus will be thematic rather than chronological, but an attempt will also be made to trace the different ways in which cities have been represented from the late nineteenth century to recent times. Ideas of space, cosmopolitanism, and the urban will be explored through films such as The Bourne Identity and The Lunchbox, as well as in the writings of Arthur Conan Doyle, Walter Mosley, Virginia Woolf, James Joyce, Fiston Mwanza Mujila, Karen Tei Yamashita, and Mohsin Hamid, among others.
Same as: URBANST 83N

ENGLISH 89N. Literature of Adoption. 3 Units.
Why does adoption figure so prominently in western narrative? From Oedipus to Harry Potter, the classical and popular traditions of literature often include stories of displaced children, orphans and adoptees. This course will examine the allure of the adoption narrative, both to authors and to audiences. Issues of transracial adoption will also be discussed and we will be concerned with memoir and documentary film toward the end of the quarter. No previous knowledge of adoption is required.
Same as: TAPS 89N

ENGLISH 90. Fiction Writing. 5 Units.
The elements of fiction writing: narration, description, and dialogue. Students write complete stories and participate in story workshops. May be repeated for credit. Prerequisite: PWR 1 (waived in summer quarter). NOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 90E. Investigating Identity Through Filipinx Fiction. 5 Units.
This course is both a reading seminar featuring canonical and contemporary Filipinx authors (including Mia Alvar, Carlos Bulosan, Elaine Castillo, Bienvenido Santos, Lysley Tenorio and José Rizal) and a writing workshop where students generate short stories exploring identity. Rizal's seminal novels Noli Me Tangere and El filibusterismo are ¿the earliest artistic expressions of the Asian colonial experience from the point of view of the oppressed¿ and through his work and the work of other Filipinx authors, we discover how both national and individual identities are not only challenged by adversity, trauma, violence, and war but also forged and strengthened by them. Note: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.
Same as: ASNAMST 90E, COMPLIT 89

ENGLISH 90H. Humor Writing Workshop. 5 Units.
What makes writing funny? What are we doing when we try to be funny? In this creative writing workshop, you'll exercise your native wit by writing short pieces of humor in a variety of forms. We'll practice writing jokes, parody, satire, sketches, stories, and more, study theories of humor, research practical principles and structures that writers have repeatedly used to make things funny, and enjoy and analyze examples of humor old and new to use as models. In the service of creating and understanding humor, we'll also explore questions about what purposes humor serves, and what relationship humor has with power, culture, and history.

ENGLISH 90M. Queer Stories. 5 Units.
Like other 90 and 91-level courses, 90M will explore basic elements of fiction and nonfiction writing. Students will read a wide variety of stories and essays in order to develop a language for working through the themes, forms, and concerns of the queer prose canon. Students will complete and workshop a piece of writing that in some way draws upon the aesthetics or sensibilities of the work we have read, culled from exercises completed throughout the quarter. This final piece may be a short story, a personal essay, a chapter from a novel or memoir, or a piece that, in the spirit of queerness, blurs or interrogates standard demarcations of genre. The course is open to any and all students, regardless of how they define their gender or sexuality. NOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.
Same as: FEMGEN 90M

ENGLISH 90Q. Sports Writing. 3 Units.
Study and practice of the unique narratives, tropes, images and arguments that creative writers develop when they write about popular sport. From regional fandom to individualist adventuring, boxing and baseball to mascot dancing and table tennis, exceptional creative writers mine from a diversity of leisure activity a rich vein of ¿sports writing¿ in the creative nonfiction genre. In doing so, they demonstrate the creative and formal adaptability required to write with excellence about any subject matter, and under the circumstances of any subjectivity. Discussion of the ways in which writers have framed, and even critiqued, our interest in athletic events, spectatorship, and athletic beauty. Writers include Joyce Carol Oates, Roland Barthes, David James Duncan, Arnold Rampersad, John Updike, Maxine Kumin, Susan Sterling, Ernest Hemingway, Norman Mailer, Dervla Murphy, Haruki Murakami, Don DeLillo, Henry Louis Gates, Jr., Annie Dillard, John McPhee, and Laura Hillenbrand. Close readings of essays on form and sport, as well as book excerpts. Students will engage in class discussions and write short weekly papers, leading to a more comprehensive project at the end of the quarter.

ENGLISH 90V. Fiction Writing. 5 Units.
Online workshop course that explores the ways in which writers of fiction have used language to examine the world, to create compelling characters, and to move readers. We will begin by studying a selection of stories that demonstrate the many techniques writers use to create fictional worlds; we'll use these stories as models for writing exercises and short assignments, leading to a full story draft. We will study figurative language, character and setting development, and dramatic structure, among other elements of story craft. Then, each student will submit a full draft and receive feedback from the instructor and his/her classmates. This course is taught entirely online, but retains the feel of a traditional classroom. Optional synchronous elements such as discussion and virtual office hours provide the student direct interaction with both the instructor and his/her classmates. Feedback on written work ¿ both offered to and given by the student ¿ is essential to the course and creates class rapport.

ENGLISH 90W. Writing and War. 5 Units.
This introductory, five-unit course is designed for all students interested in reading the literature of and studying the expression of military conflict. Bridging the experiences of Veteran and non-Veteran students will be a central aim of the course and will be reflected in enrollment, reading materials, visiting guests and final narrative project.

ENGLISH 91. Creative Nonfiction. 5 Units.
Historical and contemporary as a broad genre including travel and nature writing, memoir, biography, journalism, and the personal essay. Students use creative means to express factual content. May be repeated for credit. Prerequisite: PWR 1 (waived in summer quarter and for SLE students). NOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 91A. Asian American Autobiography/W. 3-5 Units.
This is a dual purpose class: a writing workshop in which you will generate autobiographical vignettes/essays as well as a reading seminar featuring prose from a wide range of contemporary Asian-American writers. Some of the many questions we will consider are: What exactly is Asian-American memoir? Are there salient subjects and tropes that define the literature? And in what ways do our writerly interactions both resistant and assimilative with a predominantly non-Asian context in turn recreate that context? We'll be working/experimenting with various modes of telling, including personal essay, the epistolary form, verse, and even fictional scenarios. First priority to undergrads. Students must attend the first class meeting to retain their roster spot.
Same as: AMSTUD 91A, ASNAMST 91A, CSRE 91D

ENGLISH 91DC. Writing the Memoir. 5 Units.
Open to DCI Fellows and Partners only. In this course, we will practice the art and craft of writing memoir: works of prose inspired by the memory of personal events and history. In our practice, we will look at different strategies for writing with meaning and insight about the events in our lives. We will read a variety of models by published authors who have made sense of the personal alongside the profound: the sad, joyful, simple and complicated stuff of living and being alive. Our learning will be discussion-driven. You should expect to do daily writing in the class, and to write and read widely between our class meetings. We will read, discuss, and imitate excerpts of memoirs by such authors as Augustine, Andrew Solomon, Joyce Carol Oates, Tim O¿Brien, Joan Didion, and Eavan Boland, among many others. At least half of our class time will be devoted to the discussion of participants' work. The course will address issues ranging from how we select and write about events from our personal lives, to the ethical obligations of memoirists, to the ways we can explore new understanding about the past, as well as our own courage and reluctance to share personal writing. Writers at all levels of experience and comfort with creative writing are very welcome.

ENGLISH 91DF. Documentary Fictions. 4 Units.
More and more of the best American fiction, plays, and even comics are being created out of documentary practices such as in-depth interviewing, oral histories, and reporting. Novels like Dave Eggers' What is the What, plays like Anna Deavere Smith's Twilight: Los Angeles, and narrative journalism like Rebecca Skloot's The Immortal Life of Henrietta Lacks, all act as both witnesses and translators of people's direct experience and push art into social activism in new ways. In this course students will examine the research methods, artistic craft, and ethics of these rich, genre-bending works and then create documentary fictions of their own. Readings will include works by Truman Capote, Dave Eggers, and Lisa Taddeo, as well as Katherine Boo, author of the award-winning Behind the Beautiful Forevers, who will visit the class. No prior creative writing or journalism experience required. Note: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 91NW. Nature Writing. 5 Units.
In this course we will be reading some of the most beautiful, magical, vital, dangerous andrevolutionary essays and stories and poems ever written, and, in our own writing about nature, will be joining that lineage that includes writers such as Henry David Thoreau, Ralph Waldo Emerson, Emily Dickinson, John Muir, Wendell Berry, Rachel Carson, Annie Dillard, and many others. Expect to spend lots of time immersed in nature, literally and literarily. Required materials include: pen, notebook, magnifying glass, binoculars, and a good pair of shoes.nNOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 91V. Creative Nonfiction. 5 Units.
Online workshop course. Historical and contemporary as a broad genre including travel and nature writing, memoir, biography, journalism, and the personal essay. Students use creative means to express factual content.

ENGLISH 91VO. Voices of the Land. 5 Units.
Amazing things can happen when a writer decides to push back from their desk and go out into the world in search of stories to tell. The lives of the subjects, as well as the life of the writer, can be changed forever. In this class, we will read and discuss three classic works of documentary journalism, and students will come up with a documentary project of their own. In the process, we will practice skills such as interviewing subjects, notetaking, photography, story structure, and other techniques of documentary journalism.nNOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 92. Reading and Writing Poetry. 5 Units.
Prerequisite: PWR 1. Issues of poetic craft. How elements of form, music, structure, and content work together to create meaning and experience in a poem. May be repeated for credit. NOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 92AP. Arab and Arab-American Poetry. 5 Units.
In this introductory course, students will write and read widely, exploring various aspects of poetic craft, including imagery, metaphor, line, stanza, music, rhythm, diction, and tone. The course will focus primarily on the rich and varied tradition of Arab and Arab-American poets, with a special emphasis on contemporary poets exploring the intersections of cultural identity, nationhood, race, gender, and sexuality. The first half of the course will consist of close reading a selection of poems, while the second half of the course will consist of workshopping student writing. Through peer critique, students respond closely to the work of fellow writers in a supportive workshop. Writers at all levels of experience and comfort with poetry are welcome.nNOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.
Same as: CSRE 92D

ENGLISH 92BP. Contemporary Black Poetry and Poetics. 5 Units.
In this poetry workshop, students will write and read closely, exploring various aspects of poetic craft, including imagery, metaphor and simile, line, stanza, music, rhythm, diction, and tone. The course reading will focus on the rich diversity of contemporary poetry from the global Black diaspora, with a special emphasis on poetry that investigates the intersections of race, cultural identity, nationhood, gender, and sexuality. Note: No prior knowledge of Black poetry and poetics is required. First priority to undergrads. Students must attend the first class meeting to retain their roster spot.
Same as: AFRICAAM 92BP

ENGLISH 92VP. Visual Arts and Poetry. 5 Units.
This creative writing workshop will make use of Stanford's own Cantor Arts Center and Anderson Collection to explore the relationship between poetry and visual art. We'll read poets whose work incorporates painting, drawing, printmaking, photography, film, and ekphrasis, and will engage poetically with art on view at Stanford. Each student will produce a mixed media chapbook by the end of the quarter. Readings will include works by Claudia Rankine, Theresa Hak Kyung Cha, Anne Carson, William Blake, Robin Coste Lewis, Maggie Nelson, Layli Long Soldier, Rainer Maria Rilke, and Etel Adnan. Note: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 93Q. The American Road Trip. 3 Units.
From Whitman to Kerouac, Alec Soth to Georgia O¿Keeffe, the lure of travel has inspired many American artists to pack up their bags and hit the open road. In this course we will be exploring the art and literature of the great American road trip. We will be reading and writing in a variety of genres, workshopping our own personal projects, and considering a wide breadth of narrative approaches. Assignments will range from reading Cormac McCarthy¿s novel, *The Road,* to listening to Bob Dylan¿s album, ¿Highway 61 Revisited.¿ We will be looking at films like *Badlands* and *Thelma and Louise,*¿acquainting ourselves with contemporary photographers, going on a number of campus-wide field trips, and finishing the quarter with an actual road trip down the California coast. Anyone with a sense of adventure is welcome!.

ENGLISH 94. Creative Writing Across Genres. 5 Units.
For minors in creative writing. The forms and conventions of the contemporary short story and poem. How form, technique, and content combine to make stories and poems organic. Prerequisite: 90, 91, or 92.

ENGLISH 94Q. The Future is Feminine. 3 Units.
Gender is one of the great social issues of our time. What does it mean to be female or feminine? How has femininity been defined, performed, punished, or celebrated? Writers are some of our most serious and eloquent investigators of these questions, and in this class we'll read many of our greatest writers on the subject of femininity, as embodied by both men and women, children and adults, protagonists and antagonists. From Virginia Woolf to Ernest Hemingway, from Beloved to Gone Girl (and even "RuPaul's Drag Race"), we'll ask how the feminine is rendered and contested. We'll do so in order to develop a history and a vocabulary of femininity so that we may, in this important time, write our own way in to the conversation. This is first and foremost a creative writing class, and our goals will be to consider in our own work the importance of the feminine across the entire spectrum of gender, sex, and identity. We will also study how we write about femininity, using other writers as models and inspiration. As we engage with these other writers, we will think broadly and bravely, and explore the expressive opportunities inherent in writing. We will explore our own creative practices through readings, prompted exercises, improv, games, collaboration, workshop, and revision, all with an eye toward writing the feminine future.
Same as: FEMGEN 94Q

ENGLISH 106A. A.I.-Activism-Art. 3-5 Units.
Lecture/studio course exploring arts and humanities scholarship and practice engaging with, and generated by, emerging emerging and exponential technologies. Our course will explore intersections of art and artificial intelligence with an emphasis on social impact and racial justice. Open to all undergraduates.
Same as: ARTHIST 168A, CSRE 106A

ENGLISH 106B. Bad Taste. 3-5 Units.
While English classes usually focus on works of art and literature collectively considered good, this class revels in the bad: the embarrassing or disgusting, the artistic failure, the guilty pleasure. With the help of some influential theorists of aesthetic badness, and a selection of ¿bad¿ examples drawn from poetry, fiction, film, and visual art, we will examine the categories¿ugly, kitschy, campy, sappy, problematic, and so on¿that have been and continue to be used to police what is and is not art, and to distinguish ¿good¿ art from ¿bad.¿ We will consider how artistic hierarchies become entangled with other kinds of hierarchies, exploring how ¿bad¿ art both sustains and subverts racial, sexual, and economic power. Why, for example, are the terms ¿rom com¿ and ¿chick flick¿ so often used dismissively? What makes a work of art provocative and avant-garde, rather than offensive¿or simply gross? And when does the ¿merely¿ bad become ¿so-bad-it¿s-good¿? In the final three weeks of the course, the students will be asked to reflect on the terms they themselves use to evaluate and describe cultural products, and to provide categories and case studies from their own experiences as consumers.

ENGLISH 107B. Literature of the English Revolution. 3-5 Units.
At the beginning of the seventeenth century it was possible for English monarchs to invoke a divine right to rule. Within decades, the churn of petitions, printed pamphlets, and newsbooks would overturn bedrock assumptions of sociopolitical continuity, reconstituting the body politic. In addition to reading through the textual agitation that is popular politics, we will likely consider movements of radical democracy and egalitarianism (the Levellers, Diggers) alongside works of lyric poetry (Herrick, Marvell) and political philosophy (Filmer, Locke).

ENGLISH 110A. Books to Bollywood. 3-5 Units.
This course will investigate filmic adaptations of Anglophone literary texts in India. We will study popular films as well as Indian art cinema, alongside their novelistic inspirations, which range from seventeenthÂ-century texts to twentyÂfirst century ones. The course's multimedia approach will require students to interpret novels and films in relation to and in dialogue with one another, analyzing not only the pair of texts but the process of adaptation itself. Doing so will raise cultural questions around globalization, universalism and feminism, as well as generic questions regarding the limitations and strengths of different media to represent different kinds of stories. We will situate all these questions within a larger discussion of the relationship of medium to modernity in India. Students will also gain the terminology and the analytic framework needed to write cogently about the two different media, both on their own and in relation to one another.

ENGLISH 112B. African Literature: From Chinua Achebe to Afrofuturism. 3-5 Units.
This course will be an exploration of the major writers and diverse literary traditions of the African continent. We will examine various elements (genre, form, orality, etc.) across a variety of political, social, and literary categories (colonial/postcolonial, modernism/postmodernism, gender, class, literary history, religion, etc.). We will also address issues such as African literature and its relationship to world literature and the question of language and of translation. Writers to be discussed will include Chinua Achebe, Wole Soyinka, Tsitsi Dangarembga, Fiston Mwanza Mujila, Kamel Daoud, Tayeb Salih, and NoViolet Bulawayo, among others.nThe class will be structured around the close-reading of passages from individual texts with an attempt to relate the details derived from the reading process to larger areas of significance within the field. Students should make sure to bring their texts to class with them and must be prepared to contribute to class discussions.
Same as: AFRICAAM 112B

ENGLISH 112C. Humanities Core: The Renaissance in Europe. 3 Units.
The Renaissance in Europe saw a cultural flowering founded on the achievements of pagan antiquity, a new humanism founded on the conviction that nothing which has ever interested living men and women can wholly lose its vitality, and the foundation of the modern state. We start with those ¿Renaissance men¿ Leonardo Da Vinci, Michelangelo, and Raphael. We then turn to Martin Luther¿s rejection of Papal Rome and his erection of a competing, Protestant ideal. Montaigne and Shakespeare invent our modern sense of subjectivity before our eyes. And Machiavelli and Hobbes create a science of power politics. Each week, during the first class meeting, we will focus on these issues in Europe. During the second class meeting, we will participate in a collaborative conversation with the other students and faculty in Humanities Core classes, about other regions and issues. This course is taught in English . This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: HUMCORE 122

ENGLISH 113. 'The secret of deep human sympathy': Great Victorian Novels. 5 Units.
The Victorian period is often referred to as the Age of the Novel: never before or since did fiction play such a central part in the English literary landscape. Through a close scrutiny of works by Charles Dickens, Charlotte Brontë, George Eliot and Thomas Hardy, this course will probe the formal innovations of four major nineteenth-century writers. Each novel will be tackled through five main approaches: the contexts that informed the work (such as the development of London, evolving attitudes towards criminality, subjectivity, childhood, and biology); the impact of publication methods on the novel (Oliver Twist and Tess of the d¿Urbervilles originally appeared in periodicals as, respectively, a monthly and a weekly serial; Jane Eyre and Adam Bede were first published as three-volume novels); innovations with narrative voice (for example how the novelists make use of third-person omniscient and first-person narration, and how and why they address the reader); the novels¿ stylistic particularities (from their manipulation of imagery to their experimentation with genre); and the major critical debates surrounding them (such as recent discussions concerning the extent to which the Victorian novel consolidated or challenged nineteenth-century values). Throughnour four novels, we will span the Victorian period, from Queen Victoria¿s arrival on the throne to anxieties and experimentations of the fin-de-siècle.

ENGLISH 114C. ¿Books Promiscuously Read¿: Varieties of Renaissance Experience. 3-5 Units.
What is the point of reading? In this course we will begin by exploring the ways in which writers from Antiquity through the Renaissance attempted to answer that crucial question. Keeping in mind that to read a writer is to read a reader, we will examine central topics of the Renaissance (such as rhetoric, statecraft, religion, gender) while thinking about how modes of reading inform the craft of writing. Texts will range from the established classics to the often neglected, so the course will benefit students with all levels of familiarity with the period. Authors may include Aristotle, Cicero, Seneca, St. Augustine, Petrarch, Erasmus, Machiavelli, Udall, Sidney, Shakespeare, Whitney, Lanyer, and Milton.

ENGLISH 115. Virtual Italy: Methods for Historical Data Science. 4-5 Units.
Classical Italy attracted thousands of travelers throughout the 1700s. Referring to their journey as the "Grand Tour," travelers pursued intellectual passions, promoted careers, and satisfied wanderlust, all while collecting antiquities to fill museums and estates back home. What can computational approaches tell us about who traveled, where and why? We will read travel accounts; experiment with parsing; and visualize historical data. Final projects to form credited contributions to the Grand Tour Project, a cutting-edge digital platform. No prior programming experience necessary.
Same as: CLASSICS 115, HISTORY 238C, ITALIAN 115

ENGLISH 115C. Hamlet and the Critics. 3-5 Units.
Focus is on Shakespeare's *Hamlet* as a site of rich critical controversy from the eighteenth century to the present. Aim is to read, discuss, and evaluate different approaches to the play, from biographical, theatrical, and psychological to formalist, materialist, feminist, new historicist, and, most recently, quantitative. The ambition is to see whether there can be great literature without (a) great (deal of) criticism. The challenge is to understand the theory of literature through the study of its criticism.
Same as: TAPS 151C

ENGLISH 115E. Shakespeare and his Contexts: Race, Religion, Sexuality, Gender. 5 Units.
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ENGLISH 115F. Tragedy: Forms and Conflicts. 3-5 Units.
This course introduces students to central questions of tragedy. Why do we find tragic spectacle so compelling, even pleasurable? What role does conflict play in individual selfhood and social formation? And why does tragedy elicit such strong theoretical and philosophical responses? At the same time, the course provides an introduction to literary history through the study of genre. What might connect modern tragedy to ancient Greek drama? How are genres transformed through reading, commentary, and adaptation? The course will be based on close reading and discussion of authors including Sophocles, Seneca, Shakespeare, Calderon, Milton, and Buchner.
Same as: TAPS 115F

ENGLISH 115G. Shakespeare: Five Tragedies. 3-5 Units.
Readings of five plays: Hamlet, Othello, King Lear, Macbeth, and Antony and Cleopatra. We will begin with a brief overview of Shakespeare's life and times and the theatrical conditions he worked within. However, our efforts will be focused primarily on direct engagement with Shakespeare's plays themselves. Sessions will include discussions of Shakespearean tragic language, reading aloud of specific scenes, and exploration of what unites and differentiates these plays. Finally, we will reflect continuously on what makes tragedy such a strange, rich and necessary form, where (as one philosopher wrote) ¿in suffering failure, the loser conquers.¿.

ENGLISH 118. Literature and the Brain. 3 Units.
Recent developments in and neuroscience and experimental psychology have transformed the way we think about the operations of the brain. What can we learn from this about the nature and function of literary texts? Can innovative ways of speaking affect ways of thinking? Do creative metaphors draw on embodied cognition? Can fictions strengthen our "theory of mind" capabilities? What role does mental imagery play in the appreciation of descriptions? Does (weak) modularity help explain the mechanism and purpose of self-reflexivity? Can the distinctions among types of memory shed light on what narrative works have to offer?.
Same as: COMPLIT 138, COMPLIT 238, ENGLISH 218, FRENCH 118, FRENCH 218, PSYC 126, PSYCH 118F

ENGLISH 118A. Illness in Literature. 5 Units.
This class provides an overview of illness narratives in fiction from the 19th century to the present. We will examine how authors use language, plot, and structure to portray illness and even recreate its sensations within the reader. We will also study how domestic arrangements, art, medicine and technology mediate the experience of disease. Our discussion of fiction will be buttressed by theoretical texts about the function (and breakdown) of language when deployed to describe physical and mental suffering. Finally, we will consider the ethics of writing about illness. What does it mean to find beauty in descriptions of pain? What role can literature play in building empathy for experiences we have not (yet) experienced ourselves?.

ENGLISH 122. Medieval Manuscripts, Digital Methodologies. 3-5 Units.
Medieval Studies is entering a phase of digital abundance. In the last seven years, more medieval material has been put online than has ever been available for study at any point in the past. How can we engage with the growing mass of digitized material available to us? How does this sudden access impact the work we do, the types of questions we ask, the connections we make, and the audiences we write for?nnIn this course, we will examine and evaluate digital medieval resources and software that has been created for interacting with those resources. Students will have the opportunity to design and create an innovative project based on medieval primary sources held at Stanford, applying current digital methods in the analysis and presentation of those resources.
Same as: DLCL 122

ENGLISH 122C. Medieval Fantasy Literature. 3-5 Units.
This is a comparative medieval literature course that surveys Anglo-Norman and English romance, English and Norse heroic epic, and Norse and Celtic mythology. What significance and meaning did medieval writers from different times and places see in magic and monsters; what superstitions and beliefs converged in their efforts to represent things ¿from the other side,¿ and what compelled them to do so? We will address such questions by reading the literature against the social, cultural, and religious contexts that shaped medieval life and artistic production. Finally we will turn to the modern era with J. R. R. Tolkien's The Fellowship of the Ring and Kazuo Ishiguro's The Buried Giant, reflecting on how literary medievalism has cultivated the tropes of medieval fantasy to produce works which mediate between an imagined history, sublime fabrication, and contemporary concerns.

ENGLISH 124. The American West. 5 Units.
The American West is characterized by frontier mythology, vast distances, marked aridity, and unique political and economic characteristics. This course integrates several disciplinary perspectives into a comprehensive examination of Western North America: its history, physical geography, climate, literature, art, film, institutions, politics, demography, economy, and continuing policy challenges. Students examine themes fundamental to understanding the region: time, space, water, peoples, and boom and bust cycles.
Same as: AMSTUD 124A, ARTHIST 152, HISTORY 151, POLISCI 124A

ENGLISH 124A. Latinx Literature. 3-5 Units.
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ENGLISH 124C. Cultures of the U.S.-Mexico Borderlands. 3-5 Units.
Cultures of the U.S.-Mexico Borderlands: Since becoming president, Donald Trump has deported more than a million migrants and started building a multi-billion-dollar border wall. Although some of Trump¿s actions have seemed anomalous, they have all relied on and reaffirmed longstanding legacies of settler colonialism and racial capitalism. In this seminar, we will look at these legacies through the eyes of the Natives, Latinxs, whites, and others who have lived in the U.S.-Mexico borderlands. Within the confines of literature, we will read novelists like Willa Cather, essayists like Valeria Luiselli, and poets like Simon Ortiz (Acoma Pueblo). Meanwhile, across the more capacious category of culture, we will engage with promoters who encouraged whites to claim homesteads, periodistas who emboldened Latinxs to protect pueblos, and leaders who helped Natives fight for sovereignty. By blending literary studies and ethnic studies, we will gain a thorough grasp of the territories that have taken shape since the U.S.-Mexico War (1846¿48), especially the ones that we currently call Arizona, California, New Mexico, and Texas. From these concrete contexts, we will ask and answer more abstract questions: What are borders¿are they physical boundaries, or are they psychosocial conditions? Similarly, what are nations¿are they stable and homogeneous groups, or are they flexible and diverse communities? Ultimately, what are human beings¿can they be branded as illegal aliens, or do they have inalienable rights? During the quarter, we will work through these questions both collectively and individually: to enrich our in-class discussions, each five-unit student will complete a four- to five-page reading of a single source, a six- to eight-page paper on several sources, and a multimedia borderlands map.
Same as: AMSTUD 124, CHILATST 124C

ENGLISH 135. What is all this juice and all this joy? Great Victorian Poetry. 5 Units.
In this course we will study the works of major Victorian poets across various genres, including: Tennyson, Browning, Hopkins, Meredith, Rossetti, Arnold, Barrett Browning and Swinburne.nThis course would work well alongside Great Victorian Novels.

ENGLISH 136B. Big Novels. 5 Units.
In this seminar we'll read three conspicuously ambitious nineteenth-century novels: Bleak House (Charles Dickens), The Brothers Karamazov (Fydor Dostoevsky) and Moby Dick (Herman Melville). Why does the nineteenth-century produce these famously big novels? Why tell these particular stories in such extravagant, unprecedented ways? These are famously demanding and rewarding works of art, and the main aim of our seminar will be to closely engage each novel, to read it actively and reflectively, and to plumb its narrative, aesthetic and philosophical complexity.

ENGLISH 137B. We see into the life of things: Forms of Romanticism. 5 Units.
This course will offer a survey of ten major Romantic writers who published between the 1780s and 1820s, and of their innovations in four key genres: poetry, life-writing (including both travel-writing and autobiography), essays, and the novel. These texts variously appeared as strange, absurd, trivial, alarming and even revolutionary to their first readers, and this course will seek to recapture the artistic, imaginative, social, political and philosophical ferment which inspired the Romantics and which they hoped would reanimate and refocus their contemporaries at a time of remarkable socio-political change.

ENGLISH 138E. The Gothic in Literature and Culture. 3-5 Units.
This course introduces students to the major features of Gothic narrative, a form that emerges at the same time as the Enlightenment, and that retains its power into our present. Surveying Gothic novels, as well as novellas and short stories with Gothic elements, we will learn about the defining features of the form and investigate its meaning in the cultural imagination. Gothic narratives, the course will suggest, examine the power of irrational forces in a secular age: forces that range from barbaric human practices, to supernatural activity, to the re-enchantment of modern existence. We will also consider the importance for Gothic authors and readers of the relation among narrative. spectacle and the visual arts. Primary works may include Ann Radcliffe's <e>The Italian, Jane Austen's Northanger Abbey</e>, Victor Hugo's <e>The Hunchback of Notre Dame</e>, E.T.A. Hoffman's <e>The Sandman</e>, Mary Shelly's <e>Frankenstein</e>, and Edgar Allen Poe's <e>The Narrative of Arthur Gordon Pym</e>. We may also do a section on vampires, including Bram Stoker's <e>Dracula</e>, and its remake in film by F.W. Murnau and Werner Herzog. Critical selections by Edmund Burke, Sigmund Freud, Walter Benjamin, Michel Foucault, and Terry Castle, among others.
Same as: COMPLIT 118

ENGLISH 139B. American Women Writers, 1850-1920. 3-5 Units.
This course traces the ways in which female writers negotiated a series of literary, social, and intellectual movements, from abolitionism and sentimentalism in the nineteenth century to Progressivism and avant-garde modernism in the twentieth. Authors include Harriet Beecher Stowe, Harriet Jacobs, Rebecca Harding Davis, Emily Dickinson, Kate Chopin, Edith Wharton, Gertrude Stein, Willa Cather, and Charlotte Perkins Gilman.
Same as: AMSTUD 139B, FEMGEN 139B

ENGLISH 143B. The Problem of Politics in Native Art. 5 Units.
This course will examine the ways in which the politics of tribal sovereignty, decolonization and resistance to American presence and perspective play out in the various artistic mediums Native artists engage. This will include but not be limited to fiction, creative nonfiction, poetry, film and visual art.

ENGLISH 144D. American Arts & The Great Depression. 3-5 Units.
American culture in the 1930s and 40s is easy to dismiss. It can seem too parochial, too patriotic, too escapist. But looking closer we find ¿bold and persistent experimentation¿ in the face of inequality and unrest. How does a photograph respond to want? A novel produce community? A musical call for revolution? In this course we¿ll consider a diverse cast of objects and artists: phototexts by James Agee and Walker Evans, Richard Wright, and Dorothea Lange and Paul Taylor; the films of Busby Berkeley, Charlie Chaplin, Frank Capra, Fred Astaire, and Pere Lorenz; paintings by Grant Wood, Grandma Moses, and Diego Rivera; and the fiction of Tillie Olsen and Nathanael West. We¿ll explore the Federal Arts Projects¿which put thousands to work ¿describing America to Americans¿ in the form of government-funded plays, symphonies, and guidebooks, and were fiercely contested by conservative critics of the New Deal¿and examine their continuing legacy. Students will reflect on primary and secondary readings and digital archives in a series of short papers.

ENGLISH 145D. Jewish American Literature and Film. 5 Units.
From its inception, Jewish-American literature has taken as its subject as well as its context the idea of Jewishness itself. Jewish culture is a diasporic one, and for this reason the concept of Jewishness differs from country to country and across time. What stays remarkably similar, though, is Jewish self-perception and relatedly Jewish literary style. This is as true for the first-generation immigrant writers like Isaac Bashevis Singer and Anzia Yezierska who came to the United States from abroad as it is for their second-generation children born in the United States, and the children of those children. In this course, we will consider the difficulties of displacement for the emigrant generation and their efforts to sustain their cultural integrity in the multicultural American environment. We'll also examine the often comic revolt of their American-born children and grandchildren against their (grand-)parents nostalgia and failure to assimilate. Only by considering these transnational roots can one understand the particularity of the Jewish-American novel in relation to mainstream and minority American literatures. In investigating the link between American Jewish writers and their literary progenitors, we will draw largely but not exclusively from Russia and the countries of Eastern Europe.
Same as: AMSTUD 145D, JEWISHST 155D, REES 145D

ENGLISH 145G. US Fiction 1945 to 2000. 5 Units.
Major works of US fiction since World War II, in social, historical, and aesthetic perspective. Ellison, Bellow, O'Connor, Pynchon, Reed, Morrison, Robinson, DeLillo, Gaitskill.

ENGLISH 145J. The Jewish-American Novel: Diaspora, Privilege, Anxiety, Comedy. 4-5 Units.
Jews are sometimes referred to as 'the people of the book.' Would Portnoy's Complaint count as a book that constitutes Jewish-American peoplehood? What about Fear of Flying? This seminar introduces students to influential Jewish-American novels (and some short stories and film) from the late nineteenth century to the present day. These works return time and again to questions of diaspora, race, queer social belonging, and the duty to a Jewish past, mythical or real. Through close readings of short stories and novels coupled with secondary readings about Jewish-American history and culture, we will explore how American Jewishness is constructed differently in changing historical climates. What makes a text Jewish? What do we mean by Jewish humor and Jewish seriousness? How do Jewish formulations of gender and power respond to Jews' entrance into the white American mainstream? As we read, we'll think through and elaborate on models of ethnicity, privilege, sexuality, and American pluralism. Authors include Cahan, Yezierska, Singer, Roth, Bellow, Malamud, Ozick, Mailer, Jong, and Englander.
Same as: AMSTUD 145J, JEWISHST 155J

ENGLISH 146C. Hemingway, Hurston, Faulkner, and Fitzgerald. 3-5 Units.
While Hemingway and Fitzgerald were flirting with the expatriate avant-garde in Europe, Hurston and Faulkner were performing anthropological field-work in the local cultures of the American South. Focus on the tremendous diversity of concerns and styles of four writers who marked America's coming-of-age as a literary nation with their multifarious experiments in representing the regional and the global, the racial and the cosmopolitan, the macho and the feminist, the decadent and the impoverished.
Same as: AMSTUD 146C

ENGLISH 146S. Secret Lives of the Short Story. 3-5 Units.
An exploration of the Short Story's evolution and variety of voices from its emergence in the 19th century to the present day. Weekly themes include the Detective Story, Immigration, Failure, Science Fiction, and Adolescence. We'll read a range of mostly American writers Edgar Allan Poe, James Baldwin, Raymond Carver, Grace Paley, Alice Sola Kim with an eye to uncovering the historical, cultural, and stylistic secrets of the Short Story, from both a literary criticism and a creative writing viewpoint.

ENGLISH 150A. The Poetic Memory. 3 Units.
In this course, we'll read an array of contemporary poetry traversing personal and public history. As we generate original poetry and prose unearthing our personal narratives, we'll consider how poetry and memory intersect, what it means to explore your life and the past through the poetic lens, how autobiography works in books of poetry, and what "the truth" means when writing about life experiences.

ENGLISH 150B. Poetry and Desire. 5 Units.
A close reading of poems of love, lust, and longing from Sappho to the present. In this seminar, we will consider the erotic impulse as central to lyric, while also understanding poetry as a record of shifting attitudes toward sex and sexuality, love, marriage, and gender. Alongside theories of desire, we will examine the erotic poem¿s relationship with the elegy, the ode, and the political poem. Frequent written assignments, critical and creative, will respond to poems by a range of authors from Shakespeare and Crashaw to Whitman and Cavafy, Lucille Clifton, Louise Glück, and Carl Phillips.

ENGLISH 150C. Reading and Writing Contemporary Environmental Poetry. 3 Units.
In this course, we will learn what it means to write fluidly about oceans and rivers, to write beautifully about mulch, to think creatively about jellyfish, to center the climate catastrophe in verse. Considering the human animal in the fight with and for each other and the Earth, we will explore how the environmental justice movement has been shaped and described by the social justice movement and recent poetic innovations. Through careful reading, critical and creative responses, and both synchronous and asynchronous discussion, we will investigate the changing ways that contemporary environmental poets engage with the greater-than-human world.

ENGLISH 150G. The Woman Poet of the 21st Century. 5 Units.
This class seeks to renew the paradigm of the woman poet: two words that Eavan Boland calls ¿magnetically opposed.¿ What and who is the woman poet in the 21st century? What artifice, myths, forms (such as the domestic poem) have women poets inherited? Students will read poetry by Gwendolyn Brooks, Jos Charles, Layli Long Soldier, Sylvia Plath, Adrienne Rich, Natasha Trethewey, and others; as well as letters and memoirs. This class is driven by discussion based on students' mapping out the various context and expectations that these poets meet, suggest, or defy. Students should expect to write analytical responses and creative pieces that struggle with the context of the current day.

ENGLISH 151H. Wastelands. 5 Units.
Have human beings ruined the world? Was it war, or industry, or consumerism, or something else that did it? Beginning with an in-depth exploration of some of the key works of literary modernism, this class will trace the image of the devastated landscape as it develops over the course of the 20th and 21st centuries, arriving finally at literary representations of the contemporary zombie apocalypse. Authors to include T.S Eliot, Ernest Hemingway, Nathanael West, Willa Cather, Cormac McCarthy, and others.

ENGLISH 154F. Film & Philosophy. 3 Units.
Issues of authenticity, morality, personal identity, and the value of truth explored through film; philosophical investigation of the filmic medium itself. Screenings to include Blade Runner (Scott), Do The Right Thing (Lee), The Seventh Seal (Bergman), Fight Club (Fincher), La Jetée (Marker), Memento (Nolan), and Eternal Sunshine of the Spotless Mind (Kaufman). Taught in English.
Same as: COMPLIT 154A, FRENCH 154, ITALIAN 154, PHIL 193C, PHIL 293C

ENGLISH 157H. Creative Writing & Science: The Artful Interpreter. 5 Units.
What role does creativity play in the life of a scientist? How has science inspired great literature? How do you write accessibly and expressively about things like whales, DNA or cancer? This course usually begins with a field trip to Hopkins Marine Station where Stanford labs buzz with activity alongside barking seals and crashing waves. While we won't be able to visit Monterey Bay this quarter, the spirit of interdisciplinary exchange will not be lost, and students will be encouraged to get outside and engage with their local environments. As historian Jill Lepore writes of Rachel Carson: ¿She could not have written Silent Spring if she hadn't, for decades, scrambled down rocks, rolled up her pant legs, and waded into tide pools, thinking about how one thing can change another...¿n nAs a small workshop course writing process and the study of literary craft form the foundation of our work together. For inspiration we will read nonfiction by scientists who write for wide audiences and literary giants who draw from science. Students will explore the intersection between creative expression and scientific curiosity, completing three short essays and offering supportive peer feedback throughout the quarter. This course is open to all undergraduates. Note: Students must attend the first class meeting to retain their roster spot.
Same as: BIOHOPK 157H, BIOHOPK 257H

ENGLISH 158H. Science Meets Literature on the Monterey Peninsula. 5 Units.
(Graduate students register for 258H.) This course will consider the remarkable nexus of scientific research and literature that developed on the Monterey Peninsula in the first half of the 20th century and how the two areas of creativity influenced each other. The period of focus begins with the 1932 association of John and Carol Steinbeck, Ed Ricketts, and Joseph Campbell, all of whom were highly influenced by the Carmel poet, Robinson Jeffers ¿ and ends with the novels Cannery Row (1945) and Sweet Thursday (1954). An indisputable high-tide mark, Sea of Cortez: A Leisurely of Travel and Research (1941) will be considered in detail. Weekend field trips will include intertidal exploration, a tour of the Jeffers Tor House in Carmel, and whale watching on Monterey Bay.
Same as: BIOHOPK 158H, BIOHOPK 258H

ENGLISH 159. James Baldwin & Twentieth Century Literature. 5 Units.
Black, gay and gifted, Baldwin was hailed as a "spokesman for the race", although he personally, and controversially, eschewed titles and classifications of all kinds. This course examines his classic novels and essays as well his exciting work across many lesser-examined domains - poetry, music, theatre, sermon, photo-text, children's literature, public media, comedy and artistic collaboration. Placing his work in context with other writers of the 20C (Faulkner, Wright,Morrison) and capitalizing on a resurgence of interest in the writer (NYC just dedicated a year of celebration of Baldwin and there are 2 new journals dedicated to study of Baldwin), the course seeks to capture the power and influence of Baldwin's work during the Civil Rights era as well as his relevance in the "post-race" transnational 21st century, when his prescient questioning of the boundaries of race, sex, love, leadership and country assume new urgency.nNOTE: Enrollment by department consent. To apply, please email Prof. Elam (melam@stanford.edu) with your name, year, major, and one sentence about why you would like to take this class.
Same as: AFRICAAM 159, FEMGEN 159

ENGLISH 160. Poetry and Poetics. 5 Units.
Introduction to the reading of poetry, with emphasis on how the sense of poems is shaped through diction, imagery, and technical elements of verse.nEnglish majors must take this class for 5 units.

ENGLISH 161. Narrative and Narrative Theory. 5 Units.
An introduction to stories and storytelling--that is, to narrative. What is narrative? When is narrative fictional and when non-fictional? How is it done, word by word, sentence by sentence? Must it be in prose? Can it be in pictures? How has storytelling changed over time? Focus on various forms, genres, structures, and characteristics of narrative. nEnglish majors must take this class for 5 units.
Same as: COMPLIT 161E

ENGLISH 163F. Shakespeare Now and Then. 5 Units.
In this Introduction to Shakespeare on film, we will study approximately five Shakespearean plays, including *Romeo and Juliet, Much Ado About Nothing*, and *Macbeth*, alongside a selection of their movie adaptations. As well as getting to grips with the plays printed texts, we will investigate how the plays meanings and significations can change radically in performance.

ENGLISH 165. Perspectives on American Identity. 5 Units.
Required for American Studies majors. In this seminar we trace diverse and changing interpretations of American identity by exploring autobiographical, literary, and/or visual texts from the 18th through the 20th century in conversation with sociological, political, and historical accounts. *Fulfills Writing In the Major Requirement for American Studies Majors*.
Same as: AMSTUD 160

ENGLISH 168A. Imagining the Oceans. 5 Units.
How has Western culture constructed the world's oceans since the beginning of global ocean exploration? How have imaginative visions of the ocean been shaped by marine science, technology, exploration, commerce and leisure? Primary authors read might include Cook, Equiano, Ricketts, and Steinbeck; Defoe, Cooper, Melville, Conrad, Woolf, Hemingway and Ghosh; Coleridge, Baudelaire, Moore, Bishop and Walcott. Critical readings include Schmitt, Rediker and Linebaugh, Baucom, Best, Corbin, Auden, Sontag and Heller-Roazen. Possible field trips include the Cantor Arts Center and Hopkins Marine Station.

ENGLISH 169B. Asian-American Literature and Criticism. 5 Units.
This course provides a broad overview of twentieth and twenty-first century Asian-American fiction and memoirs as well as the major critical frameworks that have arisen since the emergence of the Asian-American studies as a formal discipline in the 1960s. We¿ll begin by reading early works such as the Filipino-American writer Carlos Bulosan's 1947 novel America is in the Heart within the context of Cold War America and end with an examination of post-9/11 Asian-American literature, including Ruth Ozeki¿s A Tale for the Time Being and Qais Akbar Omar¿s A Fort of Nine Towers. By comparing the experiences of writers from East, Southeast, and Central Asia, we¿ll aim to arrive at a nuanced understanding of how imperialism, war, immigration, and legal battles have shaped the experiences of Asian-Americans. In addition to our weekly discussions, this seminar will also feature intensive writing tutorials designed to challenge students to produce a work of original scholarship.

ENGLISH 169D. Contemporary Asian American Stories. 5 Units.
This course will examine the aesthetics and politics of contemporary Asian American storytellers, with an emphasis on work produced within the past five years. We will investigate the pressures historically placed on Asian Americans to tell a certain kind of story¿e.g. the immigrant story in a realist mode¿and the ways writers have found to surprise, question, and innovate, moving beyond those boundaries to explore issues of race, sexuality, science, memory, citizenship, and belonging. Course materials will consist of novels, short stories, graphic narrative, and film, and may include work by Ocean Vuong, Mira Jacobs, Gish Jen, Charles Yu, and Adrian Tomine, as well as Lulu Wang¿s 2019 film The Farewell. This seminar will feature both analytical and creative components, and students will be encouraged to produce both kinds of responses to the material.
Same as: ASNAMST 169D

ENGLISH 172C. Cultures of the U.S.-Mexico Borderlands. 3-5 Units.
In recent years, the U.S. has deported millions of migrants and begun work on a multi-billion-dollar border wall. Although these acts have sometimes seemed unprecedented, they have relied on and reaffirmed earlier attempts to manage mobile communities, police environmental boundaries, and define national identities. In this seminar, we will learn how Natives, Latinxs, whites, and other ethno-racial groups have imagined the U.S.-Mexico borderlands. Reading elite aesthetic forms like literature and art alongside pop cultural practices such as newspapers and songs, we will ask and answer a range of questions about this inequitable yet interdependent region: How has the U.S. tried to control Native and Mexican territories? How have conquered people and migrants adapted to and influenced their new homes? How have ethnicity, race, gender, sexuality, and class operated on both sides of the border? These historical questions will lead us to a range of theoretical inquiries: What are borders¿are they physical boundaries, or are they psychosocial conditions? Similarly, what are nations¿are they stable and homogeneous groups, or are they flexible and diverse communities? Ultimately, what are human beings¿can they be branded as illegal aliens, or do they have inalienable rights? While we will wrestle with these questions together, we will also work through them independently. In a world increasingly divided between migrants and citizens, we will use writing as a form of critical reasoning, cross-cultural understanding, and political debate.

ENGLISH 172D. Introduction to Comparative Studies in Race and Ethnicity. 5 Units.
How different disciplines approach topics and issues central to the study of ethnic and race relations in the U.S. and elsewhere. Lectures by senior faculty affiliated with CSRE. Discussions led by CSRE teaching fellows. Includes an optional Haas Center for Public Service certified Community Engaged Learning section. In accordance with Stanford virtual learning policies implemented for the Spring Quarter, all community engagement activities for this section will be conducted virtually. Please sign up for section 2 #33285 with Kendra, A. if you are interested in participating in virtual community engagement.
Same as: CSRE 196C, PSYCH 155, SOC 146, TAPS 165

ENGLISH 172E. The Literature of the Americas. 5 Units.
A wide-ranging overview of the literatures of the Americas inncomparative perspective, emphasizing continuities and crises that are common to North American, Central American, and South American literatures as well as the distinctive national and cultural elements of a diverse array of primary works. Topics include the definitions of such concepts as empire and colonialism, the encounters between worldviews of European and indigenous peoples, the emergence of creole and racially mixed populations, slavery, the New World voice, myths of America as paradise or utopia, the coming of modernism, twentieth-century avant-gardes, and distinctive modern episodes--the Harlem Renaissance, the Beats, magic realism, Noigandres--in unaccustomed conversation with each other.
Same as: AMSTUD 142, COMPLIT 142, CSRE 142

ENGLISH 177B. Contemporary American Short Stories. 3-5 Units.
An exploration of the power and diversity of the American short story ranging from the 1970s to the present day. By examining short stories historically, critically, and¿above all¿as art objects, students will learn how to read, interpret, critique, and enjoy short stories as social, political, and humanist documents. Students will learn techniques to craft their own short stories and their own critical essays in a course that combines creative practice and the art of critical appreciation.

ENGLISH 182E. Photography in Fiction. 5 Units.
Since its invention in the early 19th century, photography has found countless documentary and artistic applications. As an art form, it is not only a medium of its own, but one which has entered into fascinating dialogue with other media, from film to dance. Perhaps nowhere has photography been put to such intriguing multimedia use as in fiction. Since the early 20thcentury, authors as diverse as Virginia Woolf, German novelist W.G. Sebald, and the contemporary Sri-Lankan-Canadian writer Michael Ondaatje, have deployed photographs throughout their texts. In this course, we will look at this literary tradition, exploring the way that text and image enter into a complex dance, at times enhancing narrative, at times troubling it. What can we make of these strange and wonderful hybrids? What place do images have in traditional narratives? What are the ethics of such work in an age in which the technological distinction between truth and fiction is becoming ever more blurred? As we read (and look), we will find ourselves not only drawn into the narratives themselves, but sent beyond them, into questions of history, gender, trauma, and memory.

ENGLISH 182J. "When We Dead Awaken": Breakthroughs in Conceptions of the Gendered Self in Literature and the Arts. 4-5 Units.
Remarkable breakthroughs In conceptions of the gendered self are everywhere evident in literature and the arts, beginning primarily with the Early Modern world and continuing into today. Many of these works inhere in innovations in literary and artistic forms in order to capture and even evoke the strong cognitive, or psychological, dimension of such ¿awakenings.¿ The reader, or viewer, is often challenged to adapt her or his mind to new forms of thought, such as John Donne¿s seventeenth century creation of the Dramatic Monologue, a form popular with modern writers, which requires the reader¿s cognitive ¿presence¿ in order to fill out the dramatic scene. In so doing, the reader often supplies the presence of the female voice and thereby enters into her self-consciousness and inner thoughts. Adrienne Rich, for example, specifically ¿rewrites¿ one of Donne¿s major poems from the female perspective. This can be, in Rich¿s words, an ¿awakening¿ for the active reader, as he or she assumes that often-unspoken female perspective. The course will also explore male conceptions of the self and how such conceptions are often grounded in cultural attitudes imposed on male subjects, which can contribute to gender-bias toward women, a subject often neglected in exploring gendered attitudes, but which is now gaining more study, for example, in Shakespeare¿s ¿Othello.¿ Readings from recent developments in the neurosciences and cognitive studies will be included in our study of artistic forms and how such forms can activate particular mindsets. Writers and artists will include Shakespeare, Michelangelo, John Donne, Virginia Woolf, Adrienne Rich, Gertrude Stein, Picasso, June Wayne, and Edward Albee¿s 1960¿s play, ¿Who¿s Afraid of Virginia Woolf?¿.
Same as: FEMGEN 112, FEMGEN 212

ENGLISH 183E. Self-Impersonation: Autobiography, Memoir, Fictional Autobiography. 5 Units.
This course will examine the intersecting genres of fiction, autobiography, and memoir. Topics will include the literary construction of selfhood and its constituent categories; the role of language in the development of the self; the relational nature of the self (vis-à-vis the family, "society," nation, God); the cultural status of "individuality"; conceptions of childhood; and the role of individual testimony in our understanding of family, religious and cultural identity. In addition to short theoretical works, authors may include: Marguerite Duras; Elena Ferrante; Sam Shepard; Gertrude Stein; Karl Ove Knausgaard; Marcel Proust; Vladimir Nabokov; Primo Levi; Roland Barthes; and J. M. Coetzee.
Same as: COMPLIT 183

ENGLISH 184C. Data and Knowledge in the Humanities. 5 Units.
How do different disciplines understand and use data, and how do skills such as interpretation and critical thought work with data to create knowledge? The introduction of mathematics reshaped disciplines like cosmology and sociology in the past while, in the present, the humanities are facing the same challenges with the emergence of fields such as spatial history and the digital humanities. In this class we will study how the introduction of data has transformed the way that we create knowledge.

ENGLISH 184E. Literary Text Mining. 5 Units.
This course will train students in applied methods for computationally analyzing texts for humanities research. The skills students will gain will include basic programming for textual analysis, applied statistical evaluation of results and the ability to present these results within a formal research paper or presentation. Students in the course will also learn the prerequisite steps of such an analysis including corpus selection and cleaning, metadata collection, and selecting and creating an appropriate visualization for the results.

ENGLISH 185D. Ulysses and Difficulty. 3-5 Units.
James Joyce's Ulysses is widely hailed as a masterpiece of world literature¿¿the most important expression which the present age has found,¿ as T. S. Eliot put it¿yet it is perhaps equally famous for its endless capacity to defeat and frustrate its readers. This course, which is built around a careful reading of Ulysses in its entirety, will tackle the problem of the novel's difficulty head-on. What specific features constitute its difficulty, and what ends do they serve? How do the novel's different modes of difficulty affect how we read and interpret it? And what is at stake, politically and ideologically, in the novel¿s refusal to be easily ¿readable¿? In addition to the primary text, we will devote critical attention to its various reading apparatuses (schemas, annotations, online summaries), along with secondary readings that foreground its interpretive challenges. In the process, we will seek to develop a more refined vocabulary for talking about difficult texts, while also thinking more broadly about the role of difficulty in modernist aesthetics.

ENGLISH 186B. The American Underground: Crime and the Criminal in American Literature. 5 Units.
The literary representation of crime and the criminal from postrevolutionary through contemporary American literature. Topics will include the enigma of the criminal personality; varieties of crime, from those underwritten by religious or ethical principle to those produced by the deformations of bias; the impact on narrative form of the challenge of narrating crime; and the significance attributed to gratuitous crime in the American cultural context.

ENGLISH 187C. The Evolution of the Feminist First-Person Essay, 2000-present. 3-5 Units.
The internet age has coincided with the rise of new and reinvented modes of nonfiction writing by women online. The feminist first-person essay (what simply goes by ¿personal essay¿ in the business) has transformed internet writing formally, politically, and economically. The explosion innpopularity and shareability of this nonfiction subgenre has generated a host of new media and catapulted a new coterie of women writers into prominence. Which authors have exerted the most influence upon this new subgenre, how does the emergence of the first-person essay by women signify a mainstreaming of feminist dialectic, and how has this emergence been received by both a popular readership and the media establishment?nThis discussion-based course will investigate how the growth of the feminist first-person essay has promoted new publications and modes of publication. It will trace the genesis of the online personal essay genre from public journals like LiveJournal, Blogspot, and Tumblr, via its codification in online publications like The Toast, The Rumpus, Gawker, Jezebel, Guernica, The Hairpin, The Awl, and xoJane, to its eventual breakthrough into established newspapers, magazines, and traditionally published memoirs and essay collections.nWe will investigate questions like: How can the rendering of one individual's story benefit the political mandate of the collective? What is the first person¿s effect, and affect, in interspersing an author¿s personal experience, and what feminist potential does it contain? How does the myth of journalistic ¿objectivity¿ conflict with the presentation of the first person, and how has this objectivity myth descended from patriarchal tropes of legitimation? What do the terms ¿confessional¿ and ¿silence-breaking¿ connote? How has social media simultaneously empowered these new modes of public feminist dialogue and also exposed feminist public intellectuals to alarming levels of harassment and abuse? How successfully has the personal essay subgenre acted in de-centering hegemonic identity structures including whiteness, class privilege, and heterosexuality? What role has the feminist first-person essay played in the emergence of heavily digitized political movements including Black Lives Matter and #MeToo? What is ¿trauma porn¿, and how does it interface with the capitalistic structures of the first-person essay economy; what problems arise when capitalism and confessionalism intersect?.
Same as: FEMGEN 187C

ENGLISH 190. Intermediate Fiction Writing. 5 Units.
Intermediate course in the craft and art of fiction writing. Students read a diverse range of short stories and novel excerpts, complete writing exercises, and submit a short and longer story to be workshopped and revised. Prerequisite: 90 or 91. NOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 190D. Dialogue Writing. 5 Units.
Study how dialogue develops character, reveals information, moves plots forward, and creates tension. Use of short story, novels, graphic novels, and films. Students will write many short assignments, one dialogue scene, and one longer story or script (10-20pages). Prerequisite: 90.nNOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 190E. Novel Writing Intensive. 5 Units.
The main requirement for this course is a 50,000 word novel. The course explores elements of novel writing including fictional structure, character creation, scene vs. summary, as well as description, narration, and dialogue. Students will read four to five short novels during the first half of the course and then participate in National Novel Writing Month, an international writing event. Students will additionally write synopses, outlines, character sketches, and search tirelessly for the novel's engine: its voice. Designed for any student who has always wanted to write a novel. Prerequisite: 90 or 91. NOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 190F. Fiction into Film. 5 Units.
Workshop. For screenwriting students. Story craft, structure, and dialogue. Assignments include short scene creation, character development, and a long story. How fictional works are adapted to screenplays, and how each form uses elements of conflict, time, summary, and scene. Prerequisite: 90.nNOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 190G. The Graphic Novel. 5 Units.
Interdisciplinary. Evolution, subject matter, form, conventions, possibilities, and future of the graphic novel genre. Guest lectures. Collaborative creation of a graphic novel by a team of writers, illustrators, and designers. Prerequisite: consent of instructor.

ENGLISH 190HF. Hybrid Forms: Creative Writing Across Genres. 5 Units.
What can we learn about fiction when it's written with the concision of a poem? What can we learn about the elliptical thinking of poetry through an extended essay? What freedoms do certain forms allow and take away? This writing workshop focuses on hybrid forms that cross traditional boundaries of genre. Students will read in a wide variety of models, including flash fiction and prose poetry and longer forms that combine genres. We'll discuss how these pieces challenge our expectations, then respond with our own writing. Weekly exercises will culminate in a longer multi-genre project that your share in workshop. NOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.
Same as: ENGLISH 192HF

ENGLISH 190L. Levinthal Tutorial in Fiction. 5 Units.
Undergraduate writers work individually with visiting Stegner Fellows in fiction. Students design their own curriculum; Stegner Fellows act as writing mentors and advisers. Students will meet once per week with the Stegner Fellow and also four times a quarter in discussions sections with other students and the Levinthal Program Coordinators. Times to be announced upon acceptance. Prerequisites: any course in 90 or 91 series; submitted application and manuscript.

ENGLISH 190LC. Levinthal Tutorial in Graphic Novel/Comics. 5 Units.
Undergraduate writers work individually with visiting Stegner Fellows in graphic novel/comics. Students design their own curriculum; Stegner Fellows act as writing mentors and advisers. Students will meet once per week with the Stegner Fellow and also four times a quarter in discussions sections with other students and the Levinthal Program Coordinators. Times to be announced upon acceptance. Prerequisites: any course in 90, 91, or 92 series; submitted application and manuscript.

ENGLISH 190M. Intermediate Queer Stories. 5 Units.
Intermediate Queer Stories is a workshop class open to any and all students, regardless of how they define their gender or sexuality. The goals of the class are to read widely in the canon of twentieth and twenty-first century queer prose literature, and to create work that draws on the styles, modes, and subjects of these writers. In the second half of the class, students will workshop a longer piece of their own writing that in some way draws upon the aesthetics or sensibilities of the writers we have read. This piece may be a short story, a personal essay, a chapter from a novel or memoir, or a piece that, in the spirit of queerness, blurs or interrogates standard demarcations of genre.

ENGLISH 190NS. Novel Salon. 5 Units.
Who better to discuss a book with than its author? In this course we will immerse ourselves in eight novels and meet with their authors to hear about their drafting, revising, and publishing experiences. We will read as writers¿for inspiration and craft¿and analyze novels for structure, scope, character development, dialogue, setting, style, and theme. We will examine how craft conventions are applied and subverted, while asking, ¿What makes a novel work?¿ Students will write about, discuss, and present the novels we read, participate in Q&A with visiting authors, and complete in-class writing exercises designed to inform and inspire. Note: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 190S. Short Story Salon. 5 Units.
Who better to discuss a book with than its author? In this course we will immerse ourselves in eight short story collections and meet with many of the authors of these collections to hear about their experience drafting, revising, and sending their books out into the world. We will read as writers for inspiration and craft and analyze the collections for structure, character development, dialogue, setting, language, and theme. We will pay particular attention to the range, arrangement, and architecture of the story collection as a whole. How does a collection become greater than the sum of its parts? How does an author manage so many stops and starts? We will write about, discuss, and present the collections we read, participate in Q&A with visiting authors, and complete weekly in-class writing exercises designed to inform and inspire our own writing.

ENGLISH 190SL. Light Through Language: Service Learning Through Creative Writing. 2-5 Units.
This course merges the art of creative writing with service learning in the greater Bay Area. Students travel to St. Basil School in Vallejo three times over the course of the quarter and complete 15 total hours of fieldwork, providing classroom guidance and support to 6th-8th grade Language Arts students. Students will also collaborate and lead short writing activities in the field, developing a vocabulary with which to discuss their own creativity while discovering what it means to be a socially-engaged artist. The course culminates in an on-campus public reading featuring Stanford students and St. Basil students. Note: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 190SW. Screenwriting Intensive. 5 Units.
The main requirement for this course is a full length film script. The course explores elements of screenwriting including beat structure, character creation, scene vs. montage, as well as description and dialogue. Students will read four to five screenplays during the first half of the course and then write a 90-page film script in the second half of the course. Students will additionally write synopses, treatments, character sketches, and beat sheets. Designed for any student who has always wanted to write a screenplay.

ENGLISH 190T. Special Topics in Intermediate Fiction Writing. 5 Units.
Focus on a particular topic or process. Work includes aspects of reading short stories and novels, writing at least 30-50 pages of fiction, and responding to peers' work in workshop. May be repeated for credit. Prerequisite: 91 or 90.

ENGLISH 190V. Reading for Writers. 5 Units.
Taught by the Stein Visiting Fiction Writer. Prerequisite: 90 or 91.

ENGLISH 190W. Contemporary Women Writers. 3-5 Units.
"Every word a woman writes changes the story of the world, revises the official version¿¿is this what sets contemporary women writers apart? How can we understand the relation between the radically unprecedented material such writers explore and ¿the official version¿? What do we find compelling in their challenging of structure, style, chronology, character? Our reading- and writing-intensive seminar will dig into the ways women writers confront, appropriate, subvert, or re-imagine convention, investigating, for example, current debate about the value of ¿dislikable¿ or ¿angry¿ women characters and their impact on readers. While pursuing such issues, you'll write a variety of both essayistic and fictional responses, each of which is designed to complicate and enlarge your creative and critical responsiveness and to spark ideas for your final project. By affirming risk-taking and originality throughout our quarter, seminar conversation will support gains in your close-reading practice and in articulating your views, including respectful dissent, in lively discourse¿in short, skills highly useful in a writer¿s existence. Our texts will come from various genres, including short stories, novels, essays, blog posts, reviews, memoir.
Same as: FEMGEN 190W

ENGLISH 190YA. Young Adult Fiction. 5 Units.
This is an intermediate course on the art and craft of fiction writing in the young adult genre. We will read widely in the genre. The aim of our reading will be to discover principles of craft, at the sentence level and at the narrative level, that generate powerful and enduring fiction. As we read, we will work to develop a writer's definition of YA. What are the differences between great YA and other great literature? What are the best ways to understand quality in a YA text? Within what bounds, stylistic, ethical, and otherwise, are we working as practitioners of the art form? Students will begin a young adult novel and submit pages from their work to the class on a regular basis. We will convene as a workshop to discuss one another's work.nNOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 191. Intermediate Creative Nonfiction. 5 Units.
Continuation of ENGLISH 91. Reading a variety of creative essays, completing short writing exercises, and discussing narrative techniques in class. Students submit a short (2-5 page) and a longer (8-20 page) nonfictional work to be workshopped and revised. Prerequisite ENGLISH 90 or ENGLISH 91. NOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 191DC. DCI Intermediate Memoir Workshop. 5 Units.
English 191DC will provide an intermediate-level course in the art and craft of writing memoir. It will build on those strategies for writing with meaning and insight about the events in our lives that were presented in English 91DC. During the term, we will read texts that broadly innovate within and outside of the formal traditions of the memoir form, finding new and exciting ways to represent personal experience. This section will also serve as the continuing examination and practice of the formal elements of the memoir. During the term, Fellows will write, workshop, present to the class, and revise at least two short pieces, one long pieces, and working drafts of excerpts. All workshops will serve as the springboard for our larger class conversation about theme and craft. During the quarter, we will meet in individual conferences. Throughout the quarter, creative work will be assigned in the form of essays, imitations, and revisions. Critical work will be assigned in the form of planning and leading class discussions, and writing and discussing critiques of colleagues¿ essays. A variety of creative prompts, critical exercises, and assigned readings will foster your understanding and appreciation of the memoir form, as well as your growth as a creative writer. Energetic, committed participation is a must.

ENGLISH 191L. Levinthal Tutorial in Nonfiction. 5 Units.
Undergraduate writers work individually with visiting Stegner Fellows in nonfiction. Students design their own curriculum; Stegner Fellows act as writing mentors and advisers. Students will meet once per week with the Stegner Fellow and also four times a quarter in discussions sections with other students and the Levinthal Program Coordinators. Times to be announced upon acceptance. Prerequisites: any course in 90 or 91 series; submitted application and manuscript.

ENGLISH 191T. Special Topics in Intermediate Creative Nonfiction. 5 Units.
Workshop. Special Topics continuation of 91. Focus is on forms of the essay. Works from across time and nationality for their craft and technique; experimentation with writing exercises. Students read and respond to each other's longer nonfiction projects. May be repeated for credit. Prerequisite: 91 or 90.nNOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 191V. Reading for Creative Non-Fiction Writers. 5 Units.
Taught by the Stein Visiting Writer. Prerequisite English 90 or 91. Permission number required to enroll.nNOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 192. Intermediate Poetry Writing. 5 Units.
Students will examine a diverse range of contemporary poetry. Students write and revise several poems that will develop into a larger poetic project. Prerequisite: 92. NOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 192AP. Intermediate Arab and Arab-American Poetry. 5 Units.
In this course, students will write and read widely, exploring various aspects of poetic craft, including imagery, metaphor, line, stanza, music, rhythm, diction, and tone. The course will focus primarily on the rich and varied tradition of Arab and Arab-American poets, with a special emphasis on contemporary poets exploring the intersections of cultural identity, nationhood, race, gender, and sexuality. The first half of the course will consist of close reading a selection of poems, while the second half of the course will consist of workshopping student writing. Through peer critique, students respond closely to the work of fellow writers in a supportive workshop. NOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 192HF. Hybrid Forms: Creative Writing Across Genres. 5 Units.
What can we learn about fiction when it's written with the concision of a poem? What can we learn about the elliptical thinking of poetry through an extended essay? What freedoms do certain forms allow and take away? This writing workshop focuses on hybrid forms that cross traditional boundaries of genre. Students will read in a wide variety of models, including flash fiction and prose poetry and longer forms that combine genres. We'll discuss how these pieces challenge our expectations, then respond with our own writing. Weekly exercises will culminate in a longer multi-genre project that your share in workshop. NOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.
Same as: ENGLISH 190HF

ENGLISH 192L. Levinthal Tutorial in Poetry. 5 Units.
Undergraduate writers work individually with visiting Stegner Fellows in poetry. Students design their own curriculum; Stegner Fellows act as writing mentors and advisers. Students will meet once per week with the Stegner Fellow and also four times a quarter in discussions sections with other students and the Levinthal Program Coordinators. Times to be announced upon acceptance. Prerequisites: any course in 92 series; submitted application and manuscript.

ENGLISH 192PS. Poetry Salon. 5 Units.
Have you ever wanted to talk to the author after reading a favorite book? In this course, we will read seven collections of poetry and host their poets to discuss the processes behind each collection. We will read deeply (at the level of the poem) and consider widely (the ambition and arrangement of a book) with a focus on craft. Students will also write poems, participate in Q&A with visiting poets, and produce a small chapbook of their own work by the end of the quarter.

ENGLISH 192T. Topics in Intermediate Poetry Writing. 5 Units.
Generation and discussion of student poems. How to recognize a poem's internal structure; how to seek models for work. Students submit portfolio for group critique. May be repeated for credit. Prerequisite: ENGLISH 92.

ENGLISH 192V. The Occasions of Poetry. 5 Units.
Taught by the Mohr Visiting Poet. Prerequisite: 92. By application. Permission number required to enroll.

ENGLISH 194. Individual Research. 5 Units.
See section above on Undergraduate Programs, Opportunities for Advanced Work, Individual Research.

ENGLISH 194C. Curricular Practical Training. 1 Unit.
CPT course required for international students completing degree.

ENGLISH 195T. Oxford Tutorial. 6-7 Units.
This class is being offered in collaboration with the Stanford Program in Oxford, Bing Overseas Studies Program.nnTo greatly enhance the student¿s exposure and understanding of annspecific set of information . In each tutorial a large volume of materialnnwithin the specific subject matter is surveyed and synthesized by thennstudent. The tutorial reading lists are designed to increase students¿nnfamiliarity with key concepts, arguments, and techniques specific to thennfield of study they have chosen.nnTo develop specific learning skills through independent study andnncreative expression. Students are required to spend approximately 19nnhours per week in pursuit of their chosen topic. This study is supervisednnby the tutor and tested in the tutorial, but is also independently designednnand managed by the student. Such experience enables greaternnintellectual independence and confidence. Students are also required tonnproduce creative intellectual work on a weekly basis, most notably in thennform of a 2,000 word tutorial paper, that is scrutinized during the tutorialnnsession. The emphasis on multiple, successive, and productive works ofnnacademic agency increases the student¿s facility in expressing andnndefending sound academic judgements in the field. nnOpen to English majors and pre-approved participants only. Enrollment limited. All students must complete the course application at https://stanford.app.box.com/file/247002216612?s=elbmqjywtpyhdj0qwiopphxb1r49ieif and turn it in to Stephanie Solywoda (solywoda@stanford.edu) and Kimberly Marsh (ksmarsh@stanford.edu) by email. A permission code will be given to admitted students to register for the class.

ENGLISH 196A. Honors Seminar: Critical Approaches to Literature. 5 Units.
Overview of literary-critical methodologies, with a practical emphasis shaped by participants' current honors projects. Restricted to students in the English Honors Program.

ENGLISH 197. Seniors Honors Essay. 1-10 Unit.
In two quarters.

ENGLISH 198. Individual Work. 1-5 Unit.
Undergraduates who wish to study a subject or area not covered by regular courses may, with consent, enroll for individual work under the supervision of a member of the department. 198 may not be used to fulfill departmental area or elective requirements without consent. Group seminars are not appropriate for 198.

ENGLISH 198F. Hoffs-Roach Fiction into Film Tutorial. 2-5 Units.
Up to three undergraduate writers work with Fiction Into Film instructors. Students design their own curriculum, and Instructors act as writing mentors and advisers. Prerequisite: 190F. By application. Submitted manuscript required.

ENGLISH 199. Senior Independent Essay. 1-10 Unit.
Open, with department approval, to seniors majoring in non-Honors English who wish to work throughout the year on a 10,000 word critical or scholarly essay. Applicants submit a sample of their expository prose, proposed topic, and bibliography to the Director of Undergraduate Studies before preregistration in May of the junior year. Each student accepted is responsible for finding a department faculty adviser. May be repeated for credit.

ENGLISH 200C. Introduction to Manuscript Studies. 3-5 Units.
An introduction to manuscript studies as an interdisciplinary field. Students will learn to read original manuscripts from the medieval and Renaissance periods in different scripts, be able to situate them materially, culturally, and intellectually, and will work on final projects focused on specific manuscript objects from the Stanford Special Collections.

ENGLISH 201. The Bible and Literature. 5 Units.
Differences in translations of the Bible into English. Recognizing and interpreting biblical allusion in texts from the medieval to modern periods. Readings from the Bible and from British, Canadian, American, and African American, and African literature in English.

ENGLISH 203. Michel Foucault. 3-5 Units.
This course examines the middle period of the work of the philosopher, historian, and social theorist Michel Foucault. We will study Foucault¿s portrayal of the workings of power in modern societies, on topics of rule, reform, governance, population, psychology, and identity. The course will examine four major works tracing changes in Western Europe from roughly 1680 to 1980: The History of Sexuality, Vol. 1; Discipline and Punish; Security, Territory, Population; and The Birth of Biopolitics. The course considers Foucault as a historian and theorist, not as a literary critic. Some notice will be taken of the implications of his theories for literature, arts, and media, and for the daily life and self-conception of any individual in the late modern United States.

ENGLISH 204. Digital Humanities Across Borders. 3-5 Units.
What if you could take a handwritten manuscript, or a pile of 100 books, and map all the locations that are referenced, or see which characters interact with one another, or how different translators adapted the same novel -- without reading through each text to manually compile those lists? Digital humanities tools and methods make it possible, but most tools and tutorials assume the texts are in English. If you work with text (literature, historical documents, fanfic, tweets, or any other textual material) in languages other than English, DLCL 204 is for you. In 1:1 consultation with the instructor, you'll chart your own path based on the language you're working with, the format of the text, and what questions you'd like to try to answer. No previous programming or other technical experience is required, just a reading knowledge of a language other than English (modern or historical). We'll cover the whole process of using digital tools, from start to finish: text acquisition, text enrichment, and analysis/visualization, all of which have applications in a wide range of job contexts within and beyond academia. You'll also have the chance to hear from scholars who are doing digital humanities work in non-English languages, about their experience working across the technical and linguistic borders within their discipline, and within the broader DH community. While this course will be online and primarily asynchronous, there will be opportunities for students to meet synchronously throughout the quarter in language- and tool-based affinity groups.
Same as: COMPLIT 204A, DLCL 204

ENGLISH 206. Dante and the Romantics. 5 Units.
Dante Alighieri has profoundly influenced literary tradition. The Romantic poets admired Dante¿s capacity to find spiritual redemption in moments of personal crisis, melancholy, and alienation. They drew inspiration from his protomodern blend of lyric and epic, of romance and dream vision, and of allegorical pilgrimage and spiritual autobiography. Prophetic poets like P.B. Shelley and John Keats turned to Dante in their dying attempts at epic. William Blake illustrated The Divine Comedy and adapted the Dantean style of visionary world-making in his own illuminated poetry. T.S. Eliot (a belated Romantic in poems like ¿The Love Song of J. Alfred Prufrock¿) used Dante¿s technique of the dramatic monologue as a vehicle to explore character. This course will focus on The Inferno and its lasting legacy on the poetry of modernity.
Same as: ITALIAN 206

ENGLISH 218. Literature and the Brain. 3 Units.
Recent developments in and neuroscience and experimental psychology have transformed the way we think about the operations of the brain. What can we learn from this about the nature and function of literary texts? Can innovative ways of speaking affect ways of thinking? Do creative metaphors draw on embodied cognition? Can fictions strengthen our "theory of mind" capabilities? What role does mental imagery play in the appreciation of descriptions? Does (weak) modularity help explain the mechanism and purpose of self-reflexivity? Can the distinctions among types of memory shed light on what narrative works have to offer?.
Same as: COMPLIT 138, COMPLIT 238, ENGLISH 118, FRENCH 118, FRENCH 218, PSYC 126, PSYCH 118F

ENGLISH 222. Jane Austen and Virginia Woolf. 3-5 Units.
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ENGLISH 224. Doing Literary History: Orwell in the World. 5 Units.
This course will bring together the disciplines of history and literary studies by looking closely at the work of one major twentieth-century author: the British writer and political polemicist George Orwell. In 1946, Orwell writes, "What I have most wanted to do throughout the past ten years is to make political writing into an art." In these years, Orwell writes about-- and often participates in or witnesses first-hand--a series of major events and crises. These include British imperialism in Burma, urban poverty in Europe, class inequality in England, the conflict between Socialism and Fascism in Spain, and the rise of totalitarianism in the Soviet Union. In engaging all of these events, Orwell experiments with different literary forms, moving between fiction and non-fiction, novel and autobiography, essay and memoir, manifesto and fable, literature and journalism. Few writers demand such sustained and equal attention to text and context: in this course we will move back-and-forth between Orwell's varied writing and the urgent social and political contexts it addresses.
Same as: HISTORY 200K

ENGLISH 224B. Nature, Race, and Indigeneity in the U.S. Imagination. 3-5 Units.
Nature is one of the weirdest words in the English language¿it can refer to human trait (it is in her nature), a nonhuman environment (we walked in nature, a divine power (mother nature), or a biological process (¿nature calls¿). Despite¿and indeed, because of¿these ambiguities, nature has played pivotal roles in the territory that has come to be known as the United States. In various guises, nature has inspired pilgrims, pioneers, and tourists. At the same time, nature has staged struggles between settlers and Natives, whites and racialized peoples, upper classes and working classes. As both a cultural construct and a material reality, therefore, nature has brought us together and torn us apart. In this seminar, we will learn how Natives, Latinxs, Blacks, whites, and other ethno-racial groups have depicted and dwelled in the U.S. By engaging with a variety of media¿from literature and visual art to law and public policy¿we will recover conflicting ideas of nature. And by reading in the environmental humanities¿including history, anthropology, and literary criticism¿we will discover how these ideas have impacted human and more-than-human worlds. While our inquiries will take us from prehistory to the present, they will converge on the future; now that we are destroying our ecosystems, extinguishing our fellow species, and transforming our atmosphere, we will ask, is there still such a thing as nature?.
Same as: AMSTUD 224

ENGLISH 225. Postcolonial Tragedy. 5 Units.
This course will survey debates on literary tragedy from a postcolonial perspective. Theories of tragedy from Aristotle, Martha Nussbaum, Judith Butler, the German Idealists and various others will be explored for viewpoints on tragedy that will in their turn be tested against a number of literary texts from the postcolonial literary tradition. Works by the Greeks, Shakespeare, Chinua Achebe, Wole Soyinka, Gabriel Garcia Márquez, Toni Morrison, Jean Rhys, Arundhati Roy, and Tayeb Salih will be explored for a working definition of postcolonial tragedy.nPlease note that knowledge of Shakespearean tragedy will be taken for granted in this class If you are not already acquainted with Shakespeare you are encouraged to familiarise yourself with Hamlet, Macbeth, King Lear, and Othello before taking the class. Frequent references will be made in class to these and other plays. Familiarity with Greek tragedy will also be useful during the first weeks of the course. Attention will be paid especially to Sophocles' Oedipus Rex and Philoctetes, Aeschylus's Oresteia, and Euripides's Medea.Any kind of familiarity with the Greeks is better than none at all, so please be sure to be at the very least acquainted with their central characters and plotlines.

ENGLISH 237. Before Novels. 5 Units.
What is at stake when we identify ancient, medieval, or early modern works as proto-novelistic, especially when such texts encompass the wondrous, the mystical, the factual, and/or didactic? What do the ¿prosaic¿ dimensions of prose fiction disclose about our conceptions or history, truth, or reality? Readings for this course may include (in English translation where applicable) Lucian, A True History; Kempe, The Book of Margery Kempe; Cervantes, Don Quixote; Nashe, The Unfortunate Traveller; Hooke, Micrographia; Defoe, A Journal of the Plague Year; Austen, Persuasion.

ENGLISH 251. Paradise Lost for Beginners. 3-5 Units.
A reading class for those studying Paradise Lost in its entirety for the first time. A close reading of this very long poem, plus study of pertinent Miltonic prose, as well as historical background and classic interpretive essays.

ENGLISH 251B. Paradise Lost. 5 Units.
A reading class for those studying Paradise Lost in its entirety for the first time. A close reading of this very long poem, plus study of pertinent Miltonic prose, as well as historical background and classic interpretive essays.

ENGLISH 253A. Historical Manuscript in Digital Contexts. 3-5 Units.
How can Digital Humanities technologies help explore the contexts of historical texts? How can the physical make-up of a source be coded and represented? What does a text's spatial dimension tell us? This class will use three DH technologies to explore the different contexts of medieval texts, TEI (Text Encoding Initiative), GIS (Geographic Information Systems) and IIIF (International Image Interoperability Framework). We will examine these through the multilingual tradition of the romance Floris and Blancheflour, as well as the study of online materials in Stanford's Special Collections.

ENGLISH 284H. What is Text?. 3-5 Units.
Words and images, sounds and symbols are transformed into meaning through different media, but how are we to understand the complexity of the messages we encounter daily? We shall explore the ways in which we decipher TEXT through different media (film, book), materials (paper, capacitive touchscreen), tools (pen, recorder, camera), and environment (cinema, bedroom, coffeeshop), and reflect on how we create texts by adaptation into different forms. Students will design their own new versions of well-known texts in this course.

ENGLISH 285. Decolonial Feminist Fiction. 3-5 Units.
Comparative race course focusing on the relationship between thematic content and literary form. By attending to occluded interpretations of the social world through the proliferating perspectives enabled by multifocal narrative structures, decolonial writers amplify the perspectives of marginalized persons in the service of creating a better world. Orange, There There; Evaristo, Girl, Woman, Other; Viramontes, Their Dogs Came with Them; Morrison, A Mercy; Egan, Visit from the Goon Squad; Erdrich, The Plagues of Doves.

ENGLISH 290. Advanced Fiction Writing. 5 Units.
Workshop critique of original short stories or novel. Prerequisites: manuscript, consent of instructor, and 190-level fiction workshop. nNOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.

ENGLISH 291. Advanced Creative Nonfiction. 5 Units.
English 291 takes as its occasion for your creative and critical development an examination of essays and book excerpts in various creative nonfiction subgenres. These essays and excerpts work within traditional and innovative forms to find new and exciting ways to represent personal experience. This course also serves as the continuing examination and practice of creative nonfiction in English 191. You will write, workshop, present to the class, and revise drafts of work. All workshops will serve as the springboard for larger class conversations about theme and craft. A variety of creative prompts, critical exercises, and assigned readings will foster your understanding and appreciation of creative nonfiction, as well as your growth as a creative writer. All prompts will move you toward a culminating project of realizing either an essay to submit for possible publication or a draft book-length synopsis and outline. This course is designed for students who have completed English 191. Students who have completed creative nonfiction writing course elsewhere or who have extensive other writing workshop experience may petition the instructor for enrollment. Energetic, committed participation is a must.

ENGLISH 292. Advanced Poetry Writing. 5 Units.
Focus is on generation and discussion of student poems, and seeking published models for the work.

ENGLISH 293. Literary Translation. 4 Units.
An overview of translation theories and practices over time. The aesthetic, ethical, and political questions raised by the act and art of translation and how these pertain to the translator's tasks. Discussion of particular translation challenges and the decision processes taken to address these issues. Coursework includes assigned theoretical readings, comparative translations, and the undertaking of an individual translation project.
Same as: DLCL 293

ENGLISH 302. Early Modern Prose Fictions. 3-5 Units.
The course considers the English and European prose fictions of the sixteenth and seventeenth centuries--romances, picaresques, pastorals, narratives of social class, and other genres--in the context of Renaissance and present-day theories of fiction. How is narrative form conditioned by social reality, and in turn how does it provide a zone for reflection on that reality in terms different from those of the more codified genres of drama and poetry?.

ENGLISH 305H. Readings in Close Reading. 5 Units.
The difference between reading and reading closely. Is close reading a specific method of literary criticism or theory, or does it describe a sensibility that can accompany any interpretation? Categories and frameworks for this ubiquitous, often undefined critical practice. Different, sometimes competing, traditions of close reading and recent critiques and alternatives. Texts could include Empson, Barthes, Auerbach, T. J. Clark, Adorno, Brooks, de Man, D. A. Miller, Helen Vendler.

ENGLISH 307D. Bringing the Archives to Life. 5 Units.
Introduction to the critical skills required for working in the archives. Students will be taught the core methods for working with archival sources, and will be trained in the transcription, editing, interpretation, and publication of primary textual materials. Our textual materials will be generically varied and chronologically diverse, and we shall move from late medieval to contemporary holdings in Stanford University Library¿s Special Collections, in other archives at Stanford, and in local private holdings.

ENGLISH 308. The Civilizing Process. 3-5 Units.
This course considers historical changes in daily life, as practices and everyday ethics as well as ideas and rhetoric, to conceptualize the large-scale meanings of modernity and modernization, from roughly 1600 to the present. Beginning with a series of major thinkers from the mid-20th century Norbert Elias, Hannah Arendt, Michel Foucault, and Pierre Bourdieu we will assess the compatibility of their accounts of modern changes to domains they call, variously, habitus, interdependence, power, action, work, labor, and life. The first half of the quarter will be devoted to these theories. The second half will consider recent work in literary history, social and cultural history, gender and sexual theory, which has attempted to demarcate and explain a number of revolutions in human practices located in different historical moments and phases of the ongoing modernizing process: an affective revolution, humanitarian revolution, rights revolution, sex-gender and sexual revolutions, towards revolutions, too, of practices concerning nonhuman entities and statistical or aggregated visions of humanity. Though oriented to literary-historical knowledge, reading will be heavily historical and social-scientific; students are expected to absorb and respect the disciplinary and methodological canons of various disciplines, and graduate students from outside literature will be welcomed. This course is for graduate students only.

ENGLISH 310B. The Riddle of the Author. 5 Units.
Even after "the death of the author," the author has proven hard to replace or ignore in literary analysis. The concept remains unsettled but inescapable. This course explores the ways authorship manifests itself within different types of scholarship, ranging from single-author criticism to biography. How do these different modes interpret, and represent, an author? How do they understand the relationship between writer, life and work? Possible authors include Auden, Bishop, Dickens, George Eliot, Ellison, Freud, Hurston, James, Orwell, and Plath.

ENGLISH 313. Performance and Performativity. 5 Units.
Performance theory through topics including: affect/trauma, embodiment, empathy, theatricality/performativity, specularity/visibility, liveness/disappearance, belonging/abjection, and utopias and dystopias. Readings from Schechner, Phelan, Austin, Butler, Conquergood, Roach, Schneider, Silverman, Caruth, Fanon, Moten, Anzaldúa, Agamben, Freud, and Lacan. May be repeated for credit.
Same as: FEMGEN 313, TAPS 313

ENGLISH 314. Epic and Empire. 5 Units.
Focus is on Virgil's Aeneid and its influence, tracing the European epic tradition (Ariosto, Tasso, Camoes, Spenser, and Milton) to New World discovery and mercantile expansion in the early modern period.
Same as: COMPLIT 320A

ENGLISH 316. American Story Cycles. 3-5 Units.
A survey of American literature told through the history of an important, complex, and neglected genre, the short story cycle, ranging from Washington Irving¿s Tales of a Traveller (1824) to William Faulkner's Go Down, Moses (1942). Other authors include Nathaniel Hawthorne, Edgar Allan Poe, Sarah Orne Jewett, Charles Chesnutt, Gertrude Stein, and Sherwood Anderson. The course will introduce students to the patterns of American literary development, its social and cultural contexts, and the major critical/theoretical lenses through which it has been understood. In particular, we will consider the unique formal qualities of the story cycle its liminal status between novel and story collection, its vacillation between unity and multiplicity, connection and disconnection in relation to broader American questions of identity and community.

ENGLISH 318. Pitching and Publishing in Popular Media. 1 Unit.
Most of the time, writing a pitch for a popular outlet just means writing an email. So why be intimidated? This course will outline the procedure for pitching essays and articles to popular media: how to convince an editor, agent, or anyone else that your idea is compelling, relevant, and deliverable. We'll take a holistic approach to self-presentation that includes presenting yourself with confidence, optimizing your social media and web platform, networking effectively, writing excellent queries and pitches, avoiding the slush pile, and perhaps most importantly, persevering through the inevitable self-doubt and rejection.We will focus on distinguishing the language, topics and hooks of popular media writing from those of academic writing, learn how to target and query editors on shortform pieces (personal essays, news stories, etc.), and explore how humanists can effectively self-advocate and get paid for their work.
Same as: DLCL 312, FEMGEN 312F

ENGLISH 318A. Advanced Workshop in Pitching and Publishing for Popular Media. 1 Unit.
Graduate students may self-determine a popular media project¿such as an essay, column/series of essays, podcast, agent query, or book proposal¿to be completed, with consent, under the mentorship of the Graduate Humanities Public Writing Project. Prerequisite: Pitching and Publishing in Popular Media (DLCL 312/ENG 318/FEMGEN 312F), approved project proposal. Students will determine their individual meeting schedule with the instructor, and will also convene for at least one group meeting.
Same as: FEMGEN 312G

ENGLISH 319A. The World, The Globe, The Planet. 5 Units.
This course will introduce graduate students to several competing concepts of world-circulating literatures and methodologies for studying them. As the title suggests, the course introduces students to more established ideas of "World Literature", concepts around "globalization" and its distinction from the World category, as well as ideas of Planetarity, including ecocritical approaches.

ENGLISH 327. Genres of the Novel. 5 Units.
Provides students with an overview of some major genres in the history of the modern novel, along with major theorists in the critical understanding of the form. Novels might include works by Cervantes, Defoe, Lafayette, Radcliffe, Goethe, Scott, Balzac, Melville, and Woolf. Theorists might include Lukacs, Bakhtin, Jameson, Gallagher, Barthes, Kristeva, and Bourdieu. *PLEASE NOTE: Course for graduate students only.*.
Same as: COMPLIT 327, FRENCH 327

ENGLISH 333. Philosophy, Literature, and the Arts Core Seminar. 2-4 Units.
This course serves as the Core Seminar for the PhD Minor in Philosophy, Literature, and the Arts. It introduces students to a wide range of topics at the intersection of philosophy with literary and arts criticism. The seminar is intended for graduate students. It is suitable for theoretically ambitious students of literature and the arts, philosophers with interests in value theory, aesthetics, and topics in language and mind, and other students with strong interest in the psychological importance of engagement with the arts. May be repeated for credit. In this year¿s installment, we focus on how artistic kinds or genres help set the terms on which individual works are experienced, understood, and valued, with special attention to lyric poetry and music.
Same as: DLCL 333, MUSIC 332, PHIL 333

ENGLISH 334B. Concepts of Modernity II: Culture, Aesthetics, and Society in the Age of Globalization. 5 Units.
Emphasis on world-system theory, theories of coloniality and power, and aesthetic modernity/postmodernity in their relation to culture broadly understood.
Same as: COMPLIT 334B, MTL 334B

ENGLISH 350. Law and Literature. 3-4 Units.
After its heyday in the 1970s and 1980s, many wondered whether the law and literature movement would retain vitality. Within the last decade there has, however, been an explosion of energy in the field, which has expanded beyond the boundaries of the literary text narrowly conceived and incorporated a range of other genres and humanistic approaches. Several recent or forthcoming books survey the range of emerging scholarship and the potential for new directions within the field. Using one of these--New Directions in Law and Literature (Oxford, 2017)--as a guide, this course will delve into a variety of topics that law and literature approaches can illuminate. These include, among others, conceptions of sovereignty and non-sovereign collectivities, the construction of the citizen and refugee, competing visions of marriage and its alternatives, law and the rhetorical tradition, and theoretical perspectives on intellectual property. Nearly every session will pair recent scholarship in the field with a literary or artistic work, ranging from Claudia Rankine's Citizen to Shakespeare's Merchant of Venice. Students taking the course for R credit can take the course for either 3 or 4 units, depending on the paper length. This class is limited to 22 students, with an effort made to have students from SLS (16 students will be selected by lottery) and six non-law students by consent of instructor. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper. Cross-listed with the Law School (LAW 3517).

ENGLISH 350D. Constitutional Theory. 4-5 Units.
(Same as LAW 7014.) The guiding question of this course will be how we should think about the role of the U.S. Constitution in American law and American life. In considering this issue, we will address debates about constitutional interpretation (including both originalism and living constitutionalism), the nature and features of constitutional change within the American context, the role of federalism and the separation of powers in the constitutional scheme, and the nature of American constitutionalism as opposed to English and continental European models. We will tackle these debates in the context of some specific contemporary controversies about the Constitution, including: How do the civil rights movement and other social movements impact our understanding of the Constitution?; Does the Constitution reject a European-style inquisitorial process in favor of an Anglo-American vision of due process?; How important is consensus within the Supreme Court to establishing the legitimacy of constitutional meanings?; Why do we have nine Supreme Court justices, and; What is the Constitution, and how much does it include outside of the written document? Throughout we will be contemplating the extent to which our interpretation of the constitution depends on our vision of American democracy and the good society.

ENGLISH 357S. Edward Said, or Scholar vs Empire. 3-4 Units.
How can an intellectual fight forces far larger than a single individual? How can solidarity be an antidote to racism? Why is there no distinction between the local and the global? What is the scholar's role in an alienating political climate? Why are criticism and humanism necessary partners? The author of Orientalism and world-changing frameworks such as Travelling Theory, Permission To Narrate, and Contrapuntal Reading, as well as remarkable texts, such as On Late Style and Representations of the Intellectual, teaches us how criticism can blunt instruments of empire. In this course, students observe the journey of one scholar as he writes between worlds against imperialist supremacy and colonial logic. They'll move from Exile to Indigeneity, Silence to Music, Centers to Margins, Victimhood to Dignity, West to East, Peace to Terror, Theory to Practice, Politics to Knowledge, Religiosity to Secularism, Statehood to Fragmentation, and back.
Same as: CSRE 357, GLOBAL 157, TAPS 157S, TAPS 357S

ENGLISH 362E. Toni Morrison: Modernism, Postmodernism, and World Literature. 5 Units.
This course will take a close look at Toni Morrison's oeuvre to explore question of Modernism, Postmodernism, and World Literature. Texts to be looked at will include The Bluest Eye, Sula, Song of Solomon, Jazz, Paradise, Beloved, Love, and Playing in the Dark, among others.

ENGLISH 363C. Women and Puritanism. 5 Units.
dynamic between popular and established cultural forms, the formation of alternative and minority spiritualities, gender and historical representation, the relation of literary, religious, and political forms, and the advent of sentimentalism.

ENGLISH 368A. Imagining the Oceans. 5 Units.
How has Western culture constructed the world's oceans since the beginning of global ocean exploration? How have imaginative visions of the ocean been shaped by marine science, technology, exploration, commerce and leisure? Primary authors read might include Cook, Banks, Equiano, Ricketts, and Steinbeck; Defoe, Cooper, Verne, Conrad, Woolf and Hemingway; Coleridge, Baudelaire, Moore, Bishop and Walcott. Critical readings include Schmitt, Rediker and Linebaugh, Baucom, Best, Corbin, Auden, Sontag and Heller-Roazen. Films by Sekula, Painlevé and Bigelow. Seminar coordinated with a 2015 Cantor Arts Center public exhibition. Visits to the Cantor; other possible field trips include Hopkins Marine Station and SF Maritime Historical Park. Open to graduate students only.
Same as: COMPLIT 368A, FRENCH 368A

ENGLISH 372D. Comparative Studies in Race and Ethnicity. 3-5 Units.
an advanced introduction to concepts and debates within the multi-disciplinary field of comparative studies in race and ethnicity.
Same as: CSRE 301

ENGLISH 373. Shakespearean Tragedy and Its Critics. 3-5 Units.
A close study of Shakespeare's major tragedies and exemplary criticism from the Restoration to the present.

ENGLISH 375E. The Poetry of Animality: Romantic to Contemporary. 5 Units.
Animals provide poets with an opportunity to stop and pay attention, to reflect upon the difference as well as the mirroring registered in the encounter between human and non-human animals. Incorporating work from the interdisciplinary field of animal studies, this course will explore the poetry of animality: songbirds, swimmers, crawlers, predators, hoverers, hoppers, spinners, burrowers, scavengers, noble wanderers, climbers, slitherers, and all the feline tribe of tiger as represented in poetry from the Romantic period century through the contemporary.

ENGLISH 380A. Pro Seminar. 3 Units.
This is a workshop for students in years four and beyond who are transitioning from grad student to professional life. Topics include: job letters, revising seminar paper into journal article, how to focus dissertation topics. Cross-listed with TAPS.

ENGLISH 381B. Theories of Race and Ethnicity. 5 Units.
This interdisciplinary and reading-intensive course has been designed to familiarize you with the key scholars, as well as the most recent developments, in theorizations of race and ethnicity in literary and cultural studies, performance studies, visual studies, and philosophy. As we work our way through this diverse set of readings, particular attention will be paid to how the various approaches illuminate key issues under current debate: subjectivity, identity, biological difference, racial representation, affect, and political activism.

ENGLISH 388B. Critical Theory: New Direction. 3-5 Units.
A survey of five new(ish) approaches to literature and the visual/performing arts crucial for graduate work. These are: critical race theory, eco-criticism, ethics, sexuality and machine learning.
Same as: TAPS 388B

ENGLISH 390. Graduate Fiction Workshop. 3 Units.
For Stegner fellows in the writing program. May be repeated for credit. Prerequisite: consent of instructor.

ENGLISH 392. Graduate Poetry Workshop. 3 Units.
For Stegner fellows in the writing program. May be repeated for credit. Prerequisite: consent of instructor.

ENGLISH 394. Independent Study. 1-10 Unit.
Preparation for first-year Ph.D. qualifying examination and third year Ph.D. oral exam.

ENGLISH 395. Ad Hoc Graduate Seminar. 1-5 Unit.
Three or more graduate students who wish in the following quarter to study a subject or an area not covered by regular courses and seminars may plan an informal seminar and approach a member of the department to supervise it.

ENGLISH 396. Introduction to Graduate Study for Ph.D. Students. 5 Units.
Required for first-year graduate students in English. The major historical, professional, and methodological approaches to the study of literature in English.

ENGLISH 396L. Pedagogy Seminar I. 2 Units.
Required for first-year Ph.D students in English. Prerequisite for teaching required for Ph.D. students in English, Modern Thought and Literature and Comparative Literature. Preparation for surviving as teaching assistants in undergraduate literature courses. Focus is on leading discussions and grading papers.

ENGLISH 396P. Publication Workshop: The Article. 3-5 Units.
For English Ph.D. candidates only. A practical and theoretical study of the genre of the journal article, with critical reflection on its status as a gateway to academic professionalization and as a highly specialized form of public address. We will be reading articles published over the last decade across a diverse range of journals, focusing on issues surrounding methodology, style, tone, and audience. Participants will work on developing an already polished piece of writing into the form of an article publishable by a peer-reviewed publication. Admission by application in Autumn quarter .

ENGLISH 398. Research Course. 1-18 Unit.
A special subject of investigation under supervision of a member of the department. Thesis work is not registered under this number.

ENGLISH 398L. Literary Lab. 2-5 Units.
Gathering and analyzing data, constructing hypotheses and designing experiments to test them, writing programs [if needed], preparing visuals and texts for articles or conferences. Requires a year-long participation in the activities of the Lab.
Same as: COMPLIT 398L

ENGLISH 398Q. Qualifying Exam Workshop. 10 Units.
Qualifying Exam Workshop for 1st year cohort.

ENGLISH 398R. Revision and Development of a Paper. 4-5 Units.
Students revise and develop a paper under the supervision of a faculty member with a view to possible publication.

ENGLISH 398W. Orals, Publication and Dissertation Workshop. 2 Units.
For third- and fourth-year graduate students in English. Strategies for studying for and passing the oral examination, publishing articles, and for writing and researching dissertations and dissertation proposals. May be repeated for credit.

ENGLISH 399. Thesis. 1-10 Unit.
For M.A. students only. Regular meetings with thesis advisers required.

ENGLISH 802. TGR Dissertation. 0 Units.
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ETHICS IN SOCIETY PROGRAM

The Program in Ethics in Society consists of an interdisciplinary honors program and a minor that are open to undergraduates in all majors.

Mission of the Program in Ethics in Society

The Program in Ethics in Society, which operates under the umbrella of the Bowen H. McCoy Family Center for Ethics in Society, is designed to foster scholarship, teaching, and moral reflection on fundamental issues in personal and public life. The program is grounded in moral and political philosophy, but it extends its concerns across a broad range of traditional disciplinary domains. The program is guided by the idea that ethical thought has application to current social questions and conflicts, and it seeks to encourage moral reflection and practice in areas such as business, technology, international relations, law, medicine, politics, science, and public service.

Ethics in Society Courses

Courses offered by the Program in Ethics in Society are listed under the subject code ETHICSOC on the Stanford Bulletin's ExploreCourses (https://explorecourses.stanford.edu/search/?q=ETHICSOC&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-departmentcode-ETHICSOC=on&filter-catalognumber-ETHICSOC=on&filter-coursestatus-Active=on&filter-catalognumber-ETHICSOC=on) web site. There are many course offerings at Stanford that address moral and political questions, only some of which are crosslisted by the Program in Ethics in Society.

Honors in Ethics in Society

The honors program in Ethics in Society offers undergraduates the opportunity to write a senior honors thesis within a community of interdisciplinary scholars. The course of study combines the analytical rigor of moral and political philosophy with the subject matter of each student's major to develop a sophisticated understanding of problems of social concern. Such problems include: the nature and implications of treating people with equal dignity and respect; the scope of liberty; the legitimacy of government; and the meaning of responsibility. The program poses these issues and others in the context of debates which arise in our common public life. It thus extends moral concern and reflection across disciplines such as medicine, law, economics, political science, sociology, computer science, international relations, and public policy.

Students in the program write honors theses on such topics, employing moral and political philosophy to address practical problems. Previous theses have considered questions such as the just distribution of health care, obligations to future generations, the role of ethical values in education, the moral implications of genetic engineering, and the relationship between gender inequality and the structures of work and family. Students in the program have won scholarships to graduate study including Marshall, Rhodes, and Fulbright fellowships. Others have taken the step from moral analysis to moral commitment, pursuing careers of public service.

The honors program in Ethics in Society is open to majors in every field and must be taken in addition to a department major. Applicants must declare a major before applying to the program. Applicants should have an overall GPA of B+ or higher. Required courses must be taken for a letter grade.

Students interested in pursuing honors in Ethics in Society can apply for early acceptance in spring of their sophomore year or apply at the regular deadline in mid-October of their junior year. Students should contact the program coordinator for more information and to begin the application process.

Requirements

		Units
Core Courses		
ETHICSOC 20	Introduction to Moral Philosophy	4-5
or ETHICSOC 170	Ethical Theory	
ETHICSOC 171	Justice	4-5
ETHICSOC 190	Ethics in Society Honors Seminar	4
Electives		
Two 4- or 5-unit undergraduate courses on a subject approved by the faculty director, designed to support research conducted for or connected to the honors thesis.		8-10
Thesis units spread across Autumn, Winter, and Spring quarters		**10**
ETHICSOC 200A	Ethics in Society Honors Thesis	
ETHICSOC 200B	Ethics in Society Honors Thesis	
ETHICSOC 200C	Ethics in Society Honors Thesis	

Thesis subject must be approved by the honors adviser and students must receive a grade of 'B+' or higher on their thesis to receive honors in Ethics in Society.

Typically, ETHICSOC 20 or ETHICSOC 170 and ETHICSOC 171 are completed before the Winter Quarter of the junior year. The Ethics in Society Honors Seminar (ETHICSOC 190) is offered only in Winter Quarter and must be taken in the junior year. Specialization courses can be completed at any time and courses taken prior to acceptance in the Program can be used to fulfill this requirement.

Students are expected to enroll in 10 units for writing their theses in their senior year (ETHICSOC 200A, ETHICSOC 200B, and EHTICSOC 200C). Up to 5 units may be taken in one quarter.

The honors thesis is generally due the first Monday in May. Students also complete preliminary and final thesis presentations in the senior year and an oral examination after submission of the thesis. To receive honors in Ethics in Society, students must fulfill all requirements, maintain a program GPA of 3.3 and receive a grade of 'B+' or higher on their thesis. Courses taken to fulfill the Ethics in Society honors requirements may be double-counted for any major.

Minor in Ethics in Society

The Ethics in Society minor is open to students in any department who wish to explore moral issues in personal and public life.

Students must declare the minor in Axess no later than the last day of Autumn Quarter of their senior year, although they are advised to declare sooner. Students are invited to discuss the minor with the program's faculty director and prepare a proposal that includes a list of courses planned to fulfill the requirements, and the focus of minor study. The faculty director approves this proposal. Students interested in pursuing a minor in Ethics in Society should contact the program coordinator, Pam Goodman <pgoodman@stanford.edu> for more information and to begin the planning process.

A minor in Ethics in Society requires six courses for a minimum of 25 units. All courses must be taken for a letter grade. Courses credited to either Ethics in Society minor track below may not be double-counted toward major or other minor requirements.*

*Exception: For Ethics and Technology track, majors in the Engineering School may double-count CS 182/CS 182W for their Technology in Society requirement.

General Track

		Units
Foundational Courses		
ETHICSOC 20	Introduction to Moral Philosophy	4-5
or ETHICSOC 170	Ethical Theory	
ETHICSOC/PHIL 171	Justice	4-5
ETHICSOC Electives		
Two ETHICSOC courses at the 100-level or above relating to the theme of the minor. For a complete list of courses, visit the ETHICSOC Courses link on the Ethics in Society webpage.		8-10
University-Wide Electives		
Two courses at the 100-level or above that address moral or political problems, in either theory or practice, relating to the student's chosen focus. These may be further ETHICSOC offerings OR courses with substantial ethical content taken in other departments of the university. The latter requires approval of the program's faculty director.		8-10

Students are encouraged to reflect on the coherence of their coursework, and organize it around a central theme such as environmental ethics, ethics and public policy, ethics and economics, ethics and health care, ethics and race, etc. Ethical Reasoning courses that fit the student's thematic focus may be counted towards the University-wide electives in the minor. Electives are normally taken after completion of the Foundational Courses.

Ethics and Technology Track

		Units
Foundational Courses		
ETHICSOC 20	Introduction to Moral Philosophy	5
or ETHICSOC 171	Justice	
ETHICSOC 182	Ethics, Public Policy, and Technological Change	5
ETHICSOC Elective One ETHICSOC elective at the 100 level or above.		4-5
University-Wide Electives		
Three electives to be selected from a list of undergraduate courses that currently count towards the elective requirement for the Ethics and Technology minor. These courses cover various topics on technology, human values, and social impact from an interdisciplinary perspective. For a complete list of applicable courses, please see the Ethics and Technology link on the Ethics in Society webpage, or click the Ethics & Technology Electives button at the top of this page.		

Ethics and Technology Electives

Students pursuing the Ethics and Technology minor are required to supplement the foundational courses with three additional electives from the list below. These courses cover various topics in technology, human values, and social innovation from an interdisciplinary perspective and are drawn from across the university. The list is updated regularly and students are invited to petition the program director to add a course that is not currently listed and coheres with the aims of the minor.

		Units
ANTHRO 119B	Tech Ethics and Ethnography: the human in human-computer interaction	3-5
ANTHRO 132C	Technology and Inequality	4-5
ANTHRO 138	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise	5
BIOE 122	BioSecurity and Pandemic Resilience	4-5
COMM 124	Truth, Trust, and Tech	4-5
COMM 154	The Politics of Algorithms	4-5
CS 80Q	Race and Gender in Silicon Valley	3
CS 152	Trust and Safety Engineering	3
CS 181	Computers, Ethics, and Public Policy	4
CS 184	Bridging Policy and Tech Through Design	3
ENGR 148	Principled Entrepreneurial Decisions	3
ETHICSOC 121N	Ethics of Sports	3
ETHICSOC 131X	Ethics in Bioengineering	3
ETHICSOC 178M	Introduction to Environmental Ethics	4-5
GENE 104Q	Law and the Biosciences	3
HISTORY 202F	Surveillance States and Societies	4-5
HUMBIO 174	Foundations of Bioethics	3
HUMBIO 178A	Intro to Disability Studies: Disability and Technology	5
INTLPOL 221	Politics of Data: Algorithmic Culture, Big Data, and Information Waste	3-4
INTLPOL 253	AI and Rule of Law: A Global Perspective	2-3
INTLPOL 257	Technology & Public Purpose: Practical Solutions for Innovation's Public Dilemmas	4-5
INTLPOL 268	Hack Lab	3
LAW 4026	Internet Platforms and Free Expression	2-3
LAW 4039	Regulating Artificial Intelligence	3
ME 267	Ethics and Equity in Transportation Systems	3
MED 73N	Scientific Method and Bias	3
MS&E 193	Technology and National Security: Past, Present, and Future	3-4
MS&E 234	Data Privacy and Ethics	3
MS&E 254	The Ethical Analyst	1-3
MS&E 296	Technology, Innovation and Modern War: Keeping America's Edge in an Era of Great Power Competition	4
MS&E 330	Law, Order, & Algorithms	3
NBIO 101	Social and Ethical Issues in the Neurosciences	2-4
PHIL 20N	Philosophy of Artificial Intelligence	3
PHIL 60	Introduction to Philosophy of Science	5
POLISCI 114S	International Security in a Changing World	5
PSYC 240	Designing for the 2 Billion: Leading Innovation in Mental Health	4
PSYCH 9N	Reading the Brain: the Scientific, Ethical, and Legal Implications of Brain Imaging	3
PUBLPOL 103F	Ethics of Truth in a Post-Truth World	2-3
PUBLPOL 134	Ethics on the Edge: Business, Non-Profit Organizations, Government, and Individuals	3
SOC 157	Ending Poverty with Technology	5
STS 1	The Public Life of Science and Technology	4
STS 190	Environment and Society	4
SYMSYS 115	Critique of Technology	3-4
SYMSYS 201	Digital Technology, Society, and Democracy	3

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies

relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Center for Ethics in society counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Other Requirements

If a student has difficulty completing an undergraduate degree requirement due to the COVID-19 pandemic, (e.g., a study abroad requirement, a laboratory research requirement), the student should consult with the Program Coordinator to identify academic options to fulfill degree requirements.

Ethics in Society (ETHICSOC) courses given this year are listed here by quarter offered. Each quarter is linked to ExploreCourses where you can find times and locations.

Autumn Quarter

ExploreCourses: ETHICSOC courses offered Autumn Quarter (https://explorecourses.stanford.edu/search/?q=ETHICSOC&view=catalog&page=0&academicYear=20162017&filter-term-Autumn=on&collapse=&filter-catalognumber-ETHICSOC=on&filter-coursestatus-Active=on&filter-catalognumber-ETHICSOC=on)

		Units
ETHICSOC 134R	The Ethics of Elections	5
ETHICSOC 171	Justice	4-5
ETHICSOC 172	History of Modern Moral Philosophy	4
ETHICSOC 199	Independent Studies in Ethics in Society	1-15
ETHICSOC 200A	Ethics in Society Honors Thesis	5
ETHICSOC 200B	Ethics in Society Honors Thesis	1-5
ETHICSOC 200C	Ethics in Society Honors Thesis	1-5
ETHICSOC 204	Introduction to Philosophy of Education	3

Winter Quarter

ExploreCourses: ETHICSOC courses offered Winter Quarter (https://explorecourses.stanford.edu/search/?q=ETHICSOC&view=catalog&page=0&academicYear=20162017&filter-term-Winter=on&collapse=&filter-catalognumber-ETHICSOC=on&filter-coursestatus-Active=on&filter-catalognumber-ETHICSOC=on)

		Units
ETHICSOC 79	Ethics and Leadership in Public Service	3-4
ETHICSOC 109	On Condoned Violence: from Punishment to Pleasure	4-5
ETHICSOC 130	20th Century Political Theory: Liberalism and its Critics	5
ETHICSOC 130A	Classical Seminar: Origins of Political Thought	3-5
ETHICSOC 134	Ethics for Activists	5
ETHICSOC 135F	Deliberative Democracy and its Critics	3-5
ETHICSOC 136R	Introduction to Global Justice	4
ETHICSOC 151	The First Amendment: Freedom of Speech and Press	4-5
ETHICSOC 170	Ethical Theory	4
ETHICSOC 174B	Universal Basic Income: the philosophy behind the proposal	4
ETHICSOC 175W	Philosophy of Law: Protest, Punishment, and Racial Justice	4
ETHICSOC 179W	Du Bois and Democracy	4
ETHICSOC 182	Ethics, Public Policy, and Technological Change	5
ETHICSOC 190	Ethics in Society Honors Seminar	4
ETHICSOC 195	Ethics in Society Workshop	1
ETHICSOC 199	Independent Studies in Ethics in Society	1-15
ETHICSOC 200A	Ethics in Society Honors Thesis	1-5
ETHICSOC 200B	Ethics in Society Honors Thesis	5
ETHICSOC 200C	Ethics in Society Honors Thesis	1-5
ETHICSOC 274B	Universal Basic Income: the philosophy behind the proposal	4
ETHICSOC 378B	Unequal Relationships	2-4

Spring Quarter

ExploreCourses: ETHICSOC courses offered Spring Quarter (https://explorecourses.stanford.edu/search/?q=ETHICSOC&view=catalog&page=0&academicYear=20162017&filter-term-Spring=on&collapse=&filter-catalognumber-ETHICSOC=on&filter-coursestatus-Active=on&filter-catalognumber-ETHICSOC=on)

		Units
ETHICSOC 20	Introduction to Moral Philosophy	5
ETHICSOC 36X	Dangerous Ideas	1
ETHICSOC 105	Philosophy of Disability	4
ETHICSOC 124G	Introduction to Animal Ethics	2
ETHICSOC 131S	Modern Political Thought: Machiavelli to Marx and Mill	5
ETHICSOC 131X	Ethics in Bioengineering	3
ETHICSOC 135	Citizenship	5
ETHICSOC 174	Ethics in a Human Life	4
ETHICSOC 175B	Philosophy of Law	4
ETHICSOC 185M	Contemporary Moral Problems	4-5
ETHICSOC 187	The Ethics, Law and Politics of Artificial Intelligence	4
ETHICSOC 199	Independent Studies in Ethics in Society	1-15
ETHICSOC 200A	Ethics in Society Honors Thesis	1-5
ETHICSOC 200B	Ethics in Society Honors Thesis	1-5
ETHICSOC 200C	Ethics in Society Honors Thesis	1-5
ETHICSOC 217X	Free Speech, Academic Freedom, and Democracy	3
ETHICSOC 232T	Theories and Practices of Civil Society, Philanthropy, and the Nonprofit Sector	5
ETHICSOC 234	Democratic Theory	5
ETHICSOC 280	Transitional Justice, Human Rights, and International Criminal Tribunals	3-5
ETHICSOC 371R	Inequality: Economic and Philosophical Perspectives	5
ETHICSOC 432X	Selections in Modern Political Thought	3-5

Faculty Director: Brent Sockness

Affiliated Faculty:

- Juliana Bidadanure (Philosophy)
- Emilee Chapman (Political Science)
- Jorah Dannenberg (Philosophy)
- Barbara Fried (Law)
- Pam Karlan (Law)
- Joshua Landy (Comparative Literature)
- Margaret Levi (CASBS)
- David Magnus (Biomedical Ethics, Pediatrics)
- Barry Maguire (Philosophy)
- Alison McQueen (Political Science)
- Michelle Mello (Law)
- Benoît Monin (Psychology, Graduate School of Business)
- Josiah Ober (Classics, Political Science)
- Rob Reich (Political Science, Philosophy)
- Debra Satz (Philosophy)
- Mehran Sahami (Computer Science)
- Wendy Salkin (Philosophy)
- Brent Sockness (Religious Studies)
- Fred Turner (Communications)

Courses

ETHICSOC 19SI. Philosophy of the Covid-19 Pandemic. 1 Unit.
The coronavirus pandemic has brought philosophical questions about morality, politics, and bioethics into sharp relief. These include questions about how to balance personal freedom and collective interests, how to allocate medical resources, and issues of justice in the treatment of ¿essential workers,¿ among other topics. This class provides a setting for in-depth, group discussion of these questions and more. It will bring together 10-20 students to read articles, hear from guest lecturers, and deliberate about these issues. The goal is to engage students in philosophy as an accessible, interpersonal practice of questioning concepts and refining our beliefs about the world around us. Prior study of philosophy is not needed. Although rooted in philosophy, this class will examine topics through the lens of economics, public policy, law, psychology, and more. Readings are drawn from both formal texts and thought-pieces/op-eds from mainstream publications. To apply for the class, please fill out this form by Friday September 4th, 2020 at 11:59pm PST https://forms.gle/iqtuQLLRuUv6V5cK7.

ETHICSOC 20. Introduction to Moral Philosophy. 5 Units.
What should I do with my life? What kind of person should I be? How should we treat others? What makes actions right or wrong? What is good and what is bad? What should we value? How should we organize society? Is there any reason to be moral? Is morality relative or subjective? How, if at all, can such questions be answered? Intensive introduction to theories and techniques in contemporary moral philosophy.
Same as: PHIL 2

ETHICSOC 24SI. Deliberative Discussions. 1 Unit.
Deliberative Discussions - spurred at the initiative of the ASSU Undergraduate Senate - aims to help depolarize our campus by offering the opportunity for students of different backgrounds, beliefs, and experiences to meet regularly and share in a process of mutual exchange. Rooted in the understanding that polarization can consist of both ideological and social distance, Deliberative Discussions will focus on what is necessary for respectful and deliberative listening and allow students to practice engaging diverse perspectives. Participants will learn about and from one another as they acquire skills and tools that will help them to transform contentious debates into meaningful exchange. Discussion topics will be informed by participant preference. For questions about enrolling, email Collin Anthony (canthony@stanford.edu).

ETHICSOC 25SI. Effective Altruism - How can we have the biggest positive impact?. 1 Unit.
This course will introduce students to Effective Altruism - a social movement and philosophy attempting to maximize positive social impact, along with critiques and questions raised by the philosophy. The course will feature lectures, discussions and workshops to think through how we can increase our impact with our careers, time, donations and other resources.

ETHICSOC 36X. Dangerous Ideas. 1 Unit.
Ideas matter. Concepts such as revolution, tradition, and hell have inspired social movements, shaped political systems, and dramatically influenced the lives of individuals. Others, like immigration, universal basic income, and youth play an important role in contemporary debates in the United States. All of these ideas are contested, and they have a real power to change lives, for better and for worse. In this one-unit class we will examine these "dangerous" ideas. Each week, a faculty member from a different department in the humanities and arts will explore a concept that has shaped human experience across time and space. Some weeks will have short reading assignments, but you are not required to purchase any materials.
Same as: ARTHIST 36, COMPLIT 36A, EALC 36, ENGLISH 71, FRENCH 36, HISTORY 3D, MUSIC 36H, PHIL 36, POLISCI 70, RELIGST 36X, SLAVIC 36

ETHICSOC 79. Ethics and Leadership in Public Service. 3-4 Units.
This course explores ethical questions that arise in public service work, as well as leadership theory and skills relevant to public service work. Through readings, discussions, in-class activities, assignments, and guest lectures, students will develop a foundation and vision for a future of ethical and effective service leadership. This course serves as a gateway for interested students to participate in the Haas Center's Public Service Leadership Program.
Same as: CSRE 126C, EDUC 126A, URBANST 126A

ETHICSOC 95. Leadership Challenges in Public Service. 4-5 Units.
This course will examine the responsibilities and challenges for those who occupy leadership roles in public service, broadly defined to include work in government, non-profit organizations, academia, and philanthropy, whether as a full- time career or part ¿time volunteer. Topics will include characteristics and styles of leadership, organizational dynamics, forms of influence, decision making, diversity, social change, and ethical responsibilities. Class sessions will include visitors who have occupied prominent leadership roles. Readings will include excerpts of relevant research, problems, exercises, and case studies. This course serves as a gateway for students participating in the Public Service Leadership Program, coordinated through the Haas Center. The class will be capped at 40 students.
Same as: PUBLPOL 111

ETHICSOC 105. Philosophy of Disability. 4 Units.
This course is an introduction to the ethical and political issues concerning disability. It aims to provide students with a set of tools to think critically about the connections between our ideas about disability, interpersonal relationships and political institutions. The first part of the course explores different conceptions of disability, and their relationships to ideas such as impairment, disorder, disease, dependence, disadvantage. The second part of the course considers how these conceptions interact with or shape the fundamental ideas around which our interpersonal relationships and common institutions are built. What standards of care and non-interference are reasonable? What does it mean to be independent, free, equal or have political representation? How might these ideas be re-configured if we conceptualize disability differently?.

ETHICSOC 106. Human Rights in Comparative and Historical Perspective. 3-5 Units.
This course examines core human rights issues and concepts from a comparative and historical perspective. In the beginning part of the course we will focus on current debates about the universality of human rights norms, considering the foundation of the international human rights regime and claims that it is a product of western colonialism, imperialism, or hegemony. We will then discuss a series of issues where the debates about universality are particularly acute: gender inequality and discrimination, sexual violence, child marriage and forced marriage more generally, and other related topics. We will also consider the way in which issues of gender-based violence arise in the context of internal and international conflicts.
Same as: CLASSICS 116, HUMRTS 106

ETHICSOC 109. On Condoned Violence: from Punishment to Pleasure. 4-5 Units.
This course offers students an introduction to issues surrounding the ways in which punishment and violence have been justified in the Western tradition. The readings address condoned violence broadly understood, covering a wide array of practices that produce suffering, but are considered justifiable to one degree or another by states or societies: judicial punishment, incarceration, the death penalty, pornography, and industrial farming practices, among others. We shall not discuss war, but will focus instead on domestic phenomena. By considering how such forms of violence are justified, the course aims to critically approach the notion that human societies are generally moving towards greater kindness and empathy. This seminar will bring together texts from political theory and political philosophy, legal theory, comparative politics, alongside several other cultural attachés. This class is on the Pre-Approved Courses list for the Political Science department.

ETHICSOC 121. History of Political Philosophy. 4 Units.
Nation-states issue legal commands, and wield overwhelming power to coercively enforce them. On one hand, this allows states to protect people from each other. On the other hand, what protects people from the state, even if is democratic, when it facilitates domination and oppression of some citizens by others? In this course we are introduced to authors grappling with these issues in the evolving canon of Western political philosophy from ancient Greece to the 20th century. This takes us through questions about obligation, the state, consent, rights, democracy, property, free speech, socialism, gender, race. Authors whose arguments we will study and scrutinize include Plato, Hobbes, Locke, Rousseau, Marx, Mill, Wollstonecraft, Douglass, and Rawls, along with critics and commentators.
Same as: PHIL 121, PHIL 221

ETHICSOC 121N. Ethics of Sports. 3 Units.
This seminar will be focused on the ethical challenges that are encountered in sport. We will focus on the moral and political issues that affect the world of sport and which athletes, coaches, sports commentators and fans are faced with. For instance, we will ask questions such as: what is a fair game (the ethics of effort, merit, success)? Is it ethical to train people to use violence (the ethics of martial arts)? Are divisions by gender categories justified and what should we think of gender testing? Is the use of animals in sport ever justified? Which forms of performance enhancements are acceptable in sport (the ethics of drug use and enhancements through technologies)? Should we ban sports that damage the players¿ health? Does society owe social support to people who hurt themselves while practicing extreme sports? nnThe class will be structured around small group discussions and exercises as well as brief lectures to introduce key moral and political concepts (such as fairness, equality, freedom, justice, exploitation, etc.). I will also bring guests speakers who are involved in a sport activity at Stanford or who have worked on sports as part of their academic careers. By the end of the seminar, students will have a good understanding of the various ethical challenges that surround the world of sport. They will be able to critically discuss sport activities, norms, modes of assessments and policies (on campus and beyond). They will also be prepared to apply the critical ethical thinking that they will have deployed onto other topics than sports. They will have been introduced to the normative approach to social issues, which consists in asking how things should be rather than describing how things are. They will be prepared to take more advanced classes in ethics, political theory, as well as moral and political philosophy.
Same as: PHIL 21N

ETHICSOC 124G. Introduction to Animal Ethics. 2 Units.
In this introductory course we will engage in an interdisciplinary discussion about the theoretical and applied aspects of animal rights and the ethical treatment of animals. This course will be of interest to a wide range of students: philosophers, political scientists, ecologists, environmental scientists, and biologists. Throughout the course we will focus on the following questions: Do non-human animals have moral status and do we have moral obligations toward them? If so, what grounds the moral status of animals? Are some animals `persons¿? Do we have the right to eat and farm animals, use them in scientific and cosmetic experiments, display them in zoos and circuses, and keep them as pets? Under what circumstances would these actions be permissible, if at all? Was animal domestication a mistake? Basic familiarity with ethical theory (such as covered by PHIL2) is recommended.
Same as: PHIL 24G

ETHICSOC 130. 20th Century Political Theory: Liberalism and its Critics. 5 Units.
In this course, students learn and engage with the debates that have animated political theory since the early 20th century. What is the proper relationship between the individual, the community, and the state? Are liberty and equality in conflict, and, if so, which should take priority? What does justice mean in a large and diverse modern society? The subtitle of the course, borrowed from a book by Michael Sandel, is "Liberalism and its Critics" because the questions we discuss in this class center on the meaning of, and alternatives to, the liberal idea that the basic goal of society should be the protection of individual rights. Readings include selections from works by John Rawls, Hannah Arendt, Robert Nozick, Michael Sandel, Iris Marion Young, and Martha Nussbaum. No prior experience with political theory is necessary.
Same as: PHIL 171P, POLISCI 130

ETHICSOC 130A. Classical Seminar: Origins of Political Thought. 3-5 Units.
Political philosophy in classical antiquity, centered on reading canonical works of Thucydides, Plato, Aristotle against other texts and against the political and historical background. Topics include: interdependence, legitimacy, justice; political obligation, citizenship, and leadership; origins and development of democracy; law, civic strife, and constitutional change.
Same as: CLASSICS 181, CLASSICS 381, PHIL 176A, PHIL 276A, POLISCI 230A, POLISCI 330A

ETHICSOC 131S. Modern Political Thought: Machiavelli to Marx and Mill. 5 Units.
This course offers an introduction to the history of Western political thought from the late fifteenth through the nineteenth centuries. We will consider the development of ideas like individual rights, government by consent, and the protection of private property. We will also explore the ways in which these ideas continue to animate contemporary political debates. Thinkers covered will include: Niccolò Machiavelli, Thomas Hobbes, John Locke, Jean-Jacques Rousseau, Edmund Burke, John Stuart Mill, and Karl Marx.
Same as: POLISCI 131L

ETHICSOC 131X. Ethics in Bioengineering. 3 Units.
Bioengineering focuses on the development and application of new technologies in the biology and medicine. These technologies often have powerful effects on living systems at the microscopic and macroscopic level. They can provide great benefit to society, but they also can be used in dangerous or damaging ways. These effects may be positive or negative, and so it is critical that bioengineers understand the basic principles of ethics when thinking about how the technologies they develop can and should be applied. On a personal level, every bioengineer should understand the basic principles of ethical behavior in the professional setting. This course will involve substantial writing, and will use case-study methodology to introduce both societal and personal ethical principles, with a focus on practical applications.
Same as: BIOE 131

ETHICSOC 133. Ethics and Politics of Public Service. 3-5 Units.
Ethical and political questions in public service work, including volunteering, service learning, humanitarian assistance, and public service professions such as medicine and teaching. Motives and outcomes in service work. Connections between service work and justice. Is mandatory service an oxymoron? History of public service in the U.S. Issues in crosscultural service work. Integration with the Haas Center for Public Service to connect service activities and public service aspirations with academic experiences at Stanford.
Same as: CSRE 178, PHIL 175A, PHIL 275A, POLISCI 133, PUBLPOL 103D, URBANST 122

ETHICSOC 134. Ethics for Activists. 5 Units.
Activists devote sustained effort and attention toward achieving particular goals of social and political change. Do we have an ethical obligation to be activists? And how should those who do choose to be activists (for whatever reason) understand the ethics of that role? Questions discussed in this course may include: When is civil disobedience appropriate, and what does it entail? Should activists feel constrained by obligations of fairness, honesty, or civility toward those with whom we disagree? Are there special ethical considerations in activism on behalf of those who cannot advocate for themselves? What is solidarity and what does it require of us? Students in this course will develop skills in analyzing, evaluating, and constructing logical arguments about ethical concerns related to activism, but class discussions will also address the potential limitations of logical argument in ethical and political reasoning.
Same as: POLISCI 134

ETHICSOC 134R. The Ethics of Elections. 5 Units.
Do you have a duty to vote? Should immigrants be allowed to vote? Should we make voting mandatory? How (if at all) should we regulate campaign finance? Should we even have elections at all? In this course, we will explore these and other ethical questions related to electoral participation and the design of electoral institutions. We will evaluate arguments from political philosophers, political scientists, and politicians to better understand how electoral systems promote important democratic values and how this affects citizens' and political leaders' ethical obligations. We will focus, in particular, on issues in electoral design that have been relevant in recent US elections (e.g. gerrymandering), though many of the ethical issues we will discuss in this course will be relevant in any electoral democracy.
Same as: POLISCI 132A

ETHICSOC 135. Citizenship. 5 Units.
This class begins from the core definition of citizenship as membership in a political community and explores the many debates about what that membership means. Who is (or ought to be) a citizen? Who gets to decide? What responsibilities come with citizenship? Is being a citizen analogous to being a friend, a family member, a business partner? How can citizenship be gained, and can it ever be lost? These debates figure in the earliest recorded political philosophy but also animate contemporary political debates. This class uses ancient, medieval, and modern texts to examine these questions and different answers given over time. We¿ÄôIl pay particular attention to understandings of democratic citizenship but look at non-democratic citizenship as well. Students will develop and defend their own views on these questions, using the class texts as foundations. No experience with political philosophy is required or expected, and students can expect to learn or hone the skills (writing / reading / analysis) of political philosophy.
Same as: PHIL 135X, POLISCI 135

ETHICSOC 135F. Deliberative Democracy and its Critics. 3-5 Units.
This course examines the theory and practice of deliberative democracy and engages both in a dialogue with critics. Can a democracy which emphasizes people thinking and talking together on the basis of good information be made practical in the modern age? What kinds of distortions arise when people try to discuss politics or policy together? The course draws on ideas of deliberation from Madison and Mill to Rawls and Habermas as well as criticisms from the jury literature, from the psychology of group processes and from the most recent normative and empirical literature on deliberative forums. Deliberative Polling, its applications, defenders and critics, both normative and empirical, will provide a key case for discussion.
Same as: AMSTUD 135, COMM 135, COMM 235, COMM 335, POLISCI 234P, POLISCI 334P

ETHICSOC 135R. The Ethics of Democratic Citizenship. 5 Units.
We usually think about democratic citizenship in terms of rights and opportunities, but are these benefits of democracy accompanied by special obligations? Do citizens of a democracy have an obligation to take an interest in politics and to actively influence political decision making? How should citizens respond when a democracy¿s laws become especially burdensome? Do citizens of a democracy have a special obligation to obey the law? In this course, we will read classical and contemporary political philosophy including Plato's Crito and King's "Letter from a Birmingham Jail" to explore how political thinkers have understood and argued for the ethics of citizenship. Students in this course will draw on these materials to construct their own arguments, and to identify and assess implicit appeals to the ethics of citizenship in popular culture and contemporary public discourse, from The Simpsons to President Obama's speeches.
Same as: POLISCI 135D

ETHICSOC 136R. Introduction to Global Justice. 4 Units.
This course explores the normative demands and definitions of justice that transcend the nation-state and its borders, through the lenses of political justice, economic justice, and human rights. What are our duties (if any) towards those who live in other countries? Should we be held morally responsible for their suffering? What if we have contributed to it? Should we be asked to remedy it? At what cost? These are some of the questions driving the course. Although rooted in political theory and philosophy, the course will examine contemporary problems that have been addressed by other scholarly disciplines, public debates, and popular media, such as immigration and open borders, climate change refugees, and the morality of global capitalism (from exploitative labor to blood diamonds). As such, readings will combine canonical pieces of political theory and philosophy with readings from other scholarly disciplines, newspaper articles, and popular media.
Same as: INTNLREL 136R, PHIL 76, POLISCI 136R, POLISCI 336

ETHICSOC 145. The Ethics of Migration. 4 Units.
How should states treat immigrants and would-be immigrants? On what grounds can immigration be justly restricted, and through what means? This module engages with these complex questions by offering a broad overview of key issues in the ethics of migration and their relation to public policy. Guided by the tools of contemporary political philosophy, you will reflect closely upon a series of pressing issues including the basis of the state¿s right to exclude non-citizens, the prospect of open borders and their tensions with egalitarian justice, the human right to free movement, and the rights of refugees and undocumented migrants.

ETHICSOC 151. The First Amendment: Freedom of Speech and Press. 4-5 Units.
The First Amendment: Freedom of Speech and Press (7084): Introduction to the constitutional protections for freedom of speech, press, and expressive association. All the major Supreme Court cases dealing with issues such as incitement, libel, hate speech, obscenity, commercial speech, and campaign finance. There are no prerequisites, but a basic understanding of American government would be useful. This course is crosslisted in the university and undergraduates are eligible to take it. Elements used in grading: Law students will be evaluated based on class participation and a final exam. Non-law students will be evaluated on class participation, a midterm and final exam, and nonlaw students will participate in a moot court on a hypothetical case. Non-law students will also have an additional one hour discussion section each week led by a teaching assistant. Cross-listed with Communication (COMM 151, COMM 251) and Political Science (POLISCI 125P). nnnClass time will be 11:10-12:40 on Mondays and Wednesdays.
Same as: COMM 151, COMM 251, POLISCI 125P

ETHICSOC 155. The Ethics And Politics of Effective Altruism. 4-5 Units.
What should I do? How should I live? These are the central questions that practical ethics seeks to answer. "Effective altruism" (EA), a growing school of thought and popular social movement, offers a clear and attractive response. It holds that we should try to do the best that we can for the world, and that we should do so on the basis of careful reasoning and reliable evidence. In a short amount of time, effective altruism has become a popular theoretical framework for thinking about our duties to others, and for navigating difficult practical questions. How much do I owe to others? To whom do I have obligations? How should I choose amongst different strategies for discharging these obligations? The course examines the theoretical assumptions behind effective altruism, its internal debates, external criticisms, and rival alternatives. We explore these questions in part by focusing on certain case studies that highlight different elements of the EA approach: organ donation, career choice, animal treatment, and global poverty. Guest lecturers, representing prominent advocates and critics of effective altruism, may also be added to the schedule, pending availability.

ETHICSOC 170. Ethical Theory. 4 Units.
This course explores some major topics/themes in ethical theory from the middle of the 20th century through the present. We'll read philosophy by John Rawls, Thomas Nagel, Bernard Williams, Christine Korsgaard, G.E.M. Anscombe, Philipa Foot, and others. Substantial background in moral philosophy will be assumed. Students should have completed Philosophy 2 (or its equivalent ¿ if you have questions, please contact the instructor).
Same as: PHIL 170, PHIL 270

ETHICSOC 171. Justice. 4-5 Units.
In this course, we explore three sets of questions relating to justice and the meaning of a just society: (1) Liberty: What is liberty, and why is it important? Which liberties must a just society protect? (2) Equality: What is equality, and why is it important? What sorts of equality should a just society ensure? (3) Reconciliation: Are liberty and equality in conflict? If so, how should we respond to the conflict between them? We approach these topics by examining competing theories of justice including utilitarianism, libertarianism/classical liberalism, and egalitarian liberalism. The class also serves as an introduction to how to do political philosophy, and students approaching these topics for the first time are welcome. Political Science majors taking this course to fulfill the WIM requirement should enroll in POLISCI 103.
Same as: PHIL 171, POLISCI 103, POLISCI 336S, PUBLPOL 103C

ETHICSOC 172. History of Modern Moral Philosophy. 4 Units.
prerequisites: Phil 2 and Phil 80. Grads enroll in 272.
Same as: PHIL 172, PHIL 272

ETHICSOC 172C. The Ethics of Care. 4 Units.
Since the 1970s, a number of feminists, socialists, and virtue theorists have directed their attention to the importance of care in practical philosophy. In this class, we will focus on the ambition to employ the notion of care in systematic political ethics. We will address the relationship between care and integrity, care and community, care and justice, and the role of care in thinking about the ethics of economics. Students will be evaluated on the basis of three essays. There will be no final exam. All readings will be available online; no books required.
Same as: PHIL 172C

ETHICSOC 173. Introduction to Feminist Philosophy. 4 Units.
If feminism is a political practice aimed at ending patriarchy, what is the point of feminist philosophy? This course provides an introduction to feminist philosophy by exploring how important theoretical questions around sex and gender bear on practical ethical and political debates. The first part of the course will examine some of the broader theoretical questions in feminist philosophy, including: the metaphysics of gender, the demands of intersectionality, and feminist critiques of capitalism and liberalism. Questions will include: How should we understand the category `woman¿? How does gender intersect with other axes of oppression? Is capitalism inherently patriarchal? The second part of the course will address more applied topics of ethical and political debate, such as: objectification, pornography, consent, markets in women¿s sexual and reproductive labor, and the institution of marriage.
Same as: FEMGEN 173R, PHIL 90R

ETHICSOC 174. Ethics in a Human Life. 4 Units.
Ethical questions pervade a human life from before a person is conceived until after she dies, and at every point in between. This course raises a series of ethical questions, following along the path of a person's life - questions that arise before, during, and after she lives it. We will explore distinctive questions that a life presents at each of several familiar stages: prior to birth, childhood, adulthood, death, and even beyond. We will consider how some philosophers have tried to answer these questions, and we will think about how answering them might help us form a better understanding of the ethical shape of a human life as a whole.
Same as: HUMBIO 174A, PHIL 74A

ETHICSOC 174B. Universal Basic Income: the philosophy behind the proposal. 3 Units.
Universal basic income (or UBI) is a regular cash allowance given to all members of a community without means test, regardless of personal desert, and with no strings attached. Once a utopian proposal, the policy is now discussed and piloted throughout the world. The growth of income and wealth inequalities, the precariousness of labor, and the persistence of abject poverty have all been important drivers of renewed interest in UBI in the United States. But it is without a doubt the fear that automation may displace workers from the labor market at unprecedented rates that explains the revival of the policy in recent years, including by many in or around Silicon Valley. Among the various objections to the proposal, one concerns its moral adequacy: Isn't it fundamentally unjust to give cash to all indiscriminately rather than to those who need it and deserve it? Over the years, a variety of scholars have defended the policy on moral grounds, arguing that UBI is a tool of equality, liberal freedom, republican freedom, gender equity, or racial equity. Many others have attacked UBI on those very same grounds, making the case that alternative policy proposals like the job guarantee, means-tested benefits, conditional benefits, or reparations should be preferred. Students will learn a great deal about political theory and ethics in general but always through the specific angle of the policy proposal, and they will become experts on the philosophy, politics and economics of UBI. The seminar is open to undergraduate and graduate students in all departments. There are no pre-requisites.
Same as: ETHICSOC 274B, PHIL 174B, PHIL 274B, POLISCI 134E, POLISCI 338

ETHICSOC 174E. Egalitarianism: A course on the history and theory of egalitarianism and anti-egalitarianism. 4 Units.
Egalitarianism is a conception of justice that takes the value of equality to be of primary political and moral importance. There are many different ways to be an egalitarian - it all depends on what we take to be the currency of egalitarian justice. Are we trying to equalize basic rights and liberties, or resources, opportunities, positions, status, respect, welfare, or capabilities? Is equality really what we should try to achieve in a just society? Or should we just make sure everyone has enough? Why do egalitarians think that such society would still be unjust; and how do they proceed to argue for equality?nnThis class will introduce students to egalitarian and anti-egalitarian thought by looking both at the history of egalitarian thinking and at contemporary accounts in defense of equality. It will provide an in depth introduction to the concepts that are used when inequalities are discussed by philosophers, economists, scientists and politicians. The class will attest of the varieties of approaches and perspectives to equality. For instance, we will learn from the 19th century debate on racial inequalities to understand how anti-egalitarian discourses are constructed; we will look into Rousseau's conception of social equality in the Second Discourse and the Social Contract; and we will engage with contemporary egalitarian theories by studying Rawlsian and post-Rawlsian forms of egalitarianism.
Same as: PHIL 174E, PHIL 274E, POLISCI 138E

ETHICSOC 174L. Betrayal and Loyalty, Treason and Trust. 2 Units.
The main topic of the seminar is Betrayal: its meaning as well as its moral, legal and political implications. We shall discuss various notions of betrayal: Political (military) betrayal such as treason, Religious betrayal with Judas as its emblem, but also apostasy (converting one's religion) which is regarded both as a basic human right and also as an act of betrayal, social betrayal - betraying class solidarity as well as Ideological betrayal - betraying a cause. On top of political betrayal we shall deal with personal betrayal, especially in the form of infidelity and in the form of financial betrayal of the kind performed by Madoff. The contrasting notions to betrayal, especially loyalty and trust, will get special consideration so as to shed light or cast shadow, as the case may be, on the idea of betrayal. The seminar will focus not only on the normative aspect of betrayal - moral or legal, but also on the psychological motivations for betraying others. The seminar will revolve around glaring historical examples of betrayal but also use informed fictional novels, plays and movies from Shakespeare and Pinter, to John Le Carre. SAME AS LAW 520.
Same as: ETHICSOC 274L, PHIL 174L, PHIL 274L

ETHICSOC 175B. Philosophy of Law. 4 Units.
This course will explore foundational issues about the nature of law and its relation to morality, and about legal responsibility and criminal punishment. Prerequisite: graduate student standing in philosophy or, for others, prior course work in philosophy that includes Philosophy 80.
Same as: PHIL 175, PHIL 275

ETHICSOC 175W. Philosophy of Law: Protest, Punishment, and Racial Justice. 4 Units.
In this course, we will examine some of the central questions in philosophy of law, including: What is law? What gives law its authority? Must we obey the law? If so, when and why? How should we understand and respond to unjust laws? When is civil disobedience morally permissible? Is civil disobedience ever morally required?nWhat is punishment for? What are prisons for? What is the case for reparations?.
Same as: CSRE 175W, PHIL 175W, PHIL 275W

ETHICSOC 175X. Philosophy of Public Policy. 4 Units.
From healthcare to voting reforms, social protection and educational policies, public policies are underpinned by moral values. When we debate those policies, we typically appeal to values like justice, fairness, equality, freedom, privacy, and safety. A proper understanding of those values, what they mean, how they may conflict, and how they can be weighed against each other is essential to developing a competent and critical eye on our complex political world. We will ask questions such as: Is compulsory voting justified? Should children have the right to vote? Is affirmative action just? What is wrong with racial profiling? What are the duties of citizens of affluent countries towards migrants? Do we have a right to privacy? Is giving cash to all unconditionally fair? This class will introduce students to a number of methods and frameworks coming out of ethics and political philosophy and will give students a lot of time to practice ethically informed debates on public policies. At the end of this class, students should have the skills to critically examine a wide range of diverse policy proposals from the perspective of ethics, moral and political philosophy. There are no prerequisites. Undergraduates and graduates from all departments are welcome to attend.
Same as: PHIL 175B, PHIL 275B, POLISCI 135E, POLISCI 235E, PUBLPOL 177

ETHICSOC 176. Political Philosophy: The Social Contract Tradition. 4 Units.
(Graduate students register for 276.) What makes political institutions legitimate? What makes them just? When do citizens have a right to revolt against those who rule over them? Which of our fellow citizens must we tolerate?Surprisingly, the answers given by some of the most prominent modern philosophers turn on the idea of a social contract. We will focus on the work of Hobbes, Locke, Rousseau, and Rawls.
Same as: PHIL 176, PHIL 276, POLISCI 137A, POLISCI 337A

ETHICSOC 178M. Introduction to Environmental Ethics. 4-5 Units.
How should human beings relate to the natural world? Do we have moral obligations toward non-human animals and other parts of nature? And what do we owe to other human beings, including future generations, with respect to the environment? The first part of this course will examine such questions in light of some of our current ethical theories: considering what those theories suggest regarding the extent and nature of our environmental obligations; and also whether reflection on such obligations can prove informative about the adequacy of our ethical theories. In the second part of the course, we will use the tools that we have acquired to tackle various ethical questions that confront us in our dealings with the natural world, looking at subjects such as: animal rights; conservation; economic approaches to the environment; access to and control over natural resources; environmental justice and pollution; climate change; technology and the environment; and environmental activism.
Same as: ETHICSOC 278M, PHIL 178M, PHIL 278M, POLISCI 134L

ETHICSOC 179W. Du Bois and Democracy. 4 Units.
In this course, we will work together to develop a detailed and comprehensive understanding of the political philosophy of W. E. B. Du Bois, giving special attention to the development of his democratic theory. We will do so by reading a number of key texts by Du Bois as well as contemporary scholarship from philosophy and cognate fields.
Same as: CSRE 179W, PHIL 179W, PHIL 279W

ETHICSOC 181. Architecture, Space, and Politics. 4-5 Units.
We spend most of our lives in buildings and cities that are planned by architects and urbanists. What are the normative considerations that should guide how these spaces are designed? What social role should architecture aim to play? and what criteria should we use to assess whether an architectural intervention is successful or not? This course seeks to address these questions by bringing architecture in conversation with contemporary normative political theory. It examines both how political theory can inform our thinking about architecture, and how the work of architects -- with its attention to the specificities of the built environment -- can advance our thinking about politics.

ETHICSOC 182. Ethics, Public Policy, and Technological Change. 5 Units.
Examination of recent developments in computing technology and platforms through the lenses of philosophy, public policy, social science, and engineering. Course is organized around four main units: algorithmic decision-making and bias; data privacy and civil liberties; artificial intelligence and autonomous systems; and the power of private computing platforms. Each unit considers the promise, perils, rights, and responsibilities at play in technological developments. Prerequisite: CS106A.
Same as: COMM 180, CS 182, PHIL 82, POLISCI 182, PUBLPOL 182

ETHICSOC 185M. Contemporary Moral Problems. 4-5 Units.
This course is an introduction to contemporary ethical thought with a focus on the morality of harming others and saving others from harm. It aims to develop students' ability to think carefully and rationally about moral issues, to acquaint them with modern moral theory, and to encourage them to develop their own considered positions about important real-world issues. In the first part of the course, we will explore fundamental topics in the ethics of harm. Among other questions, we will ask: How extensive are one's moral duties to improve the lives of the less fortunate? When is it permissible to inflict harm on others for the sake of the greater good? Does the moral permissibility of a person's action depend on her intentions? Can a person be harmed by being brought into existence? In the second part of the course, we will turn to practical questions. Some of these will be familiar; for example: Is abortion morally permissible? What obligations do we have to protect the planet for the sake of future generations? Other questions we will ask are newer and less well-trodden. These will include: How does the availability of new technology, in particular artificial intelligence, change the moral landscape of the ethics of war? What moral principles should govern the programming and operation of autonomous vehicles?.
Same as: PHIL 72, POLISCI 134P

ETHICSOC 187. The Ethics, Law and Politics of Artificial Intelligence. 4 Units.
This course explores cutting-edge disputes in the ethics, law and politics of artificial intelligence. We will examine the relation between foundational questions about fairness, autonomy, corporate responsibility, and the value of human life; and practical questions about the ethical design and regulation of emerging technologies. Topics include superintelligence and existential risk, explainable intelligent systems, nudging and targeted advertising, and algorithmic fairness.

ETHICSOC 190. Ethics in Society Honors Seminar. 4 Units.
For students planning honors in Ethics in Society. Methods of research. Students present issues of public and personal morality; topics chosen with advice of instructor.
Same as: PHIL 178

ETHICSOC 195. Ethics in Society Workshop. 1 Unit.
Workshop for Ethics in Society seniors completing their honors thesis.

ETHICSOC 199. Independent Studies in Ethics in Society. 1-15 Unit.
May be repeated for credit.

ETHICSOC 200A. Ethics in Society Honors Thesis. 1-5 Unit.
Limited to Ethics in Society honors students, who must enroll once in 200A, once in 200B, and once in 200C in their senior year. Students enrolling in 200A for less than 3 units must get approval from the faculty director.

ETHICSOC 200B. Ethics in Society Honors Thesis. 1-5 Unit.
Limited to Ethics in Society honors students, who must enroll once in 200A, once in 200B, and once in 200C in their senior year. Students enrolling in 200B for less than 3 units must get approval from the faculty director.

ETHICSOC 200C. Ethics in Society Honors Thesis. 1-5 Unit.
Limited to Ethics in Society honors students, who must enroll once in 200A, once in 200B, and once in 200C in their senior year. Students enrolling in 200C for less than 3 units must get approval from the faculty director.

ETHICSOC 202. EMOTIONS: MORALITY AND LAW. 2 Units.
If emotions are the stuff of life, some emotions are the stuff of our moral and legal life. Emotions such as: guilt, shame, revenge, indignation, resentment, disgust, envy, jealousy and humiliation, along with forgiveness, compassion, pity, mercy and patriotism, play a central role in our moral and legal life. The course is about these emotions, their meaning and role in morality and law. Issues such as the relationship between punishment and revenge, or between envy and equality, or St. Paul¿s contrast between law and love, or Nietzsche¿s idea that resentment is what feeds morality, will be discussed alongside other intriguing topics.
Same as: ETHICSOC 302, PHIL 177B, PHIL 277B

ETHICSOC 203R. Ethics in Real Life: How Philosophy Can Make Us Better People. 4 Units.
Socrates thought that philosophy was supposed to be practical, but most of the philosophy we do today is anything but. This course will convince you that philosophy actually is useful outside of the classroom--and can have a real impact on your everyday decisions and how to live your life. We'll grapple with tough practical questions such as: 'Is it selfish if I choose to have biological children instead of adopting kids who need homes?' 'Am I behaving badly if I don't wear a helmet when I ride my bike?' 'Should I major in a subject that will help me make a lot of money so I can then donate most of it to overseas aid instead of choosing a major that will make me happy?' Throughout the course, we will discuss philosophical questions about blame, impartiality, the force of different 'shoulds', and whether there are such things as universal moral rules that apply to everyone.

ETHICSOC 204. Introduction to Philosophy of Education. 3 Units.
How to think philosophically about educational problems. Recent influential scholarship in philosophy of education. No previous study in philosophy required.
Same as: EDUC 204

ETHICSOC 205R. JUST AND UNJUST WARS. 2 Units.
War is violent, but also a means by which political communities pursue collective interests. When, in light of these features, is the recourse to armed force justified? Pacifists argue that because war is so violent it is never justified, and that there is no such thing as a just war. Realists, in contrast, argue that war is simply a fact of life and not a proper subject for moral judgment, any more than we would judge an attack by a pack of wolves in moral terms. In between is just war theory, which claims that some wars, but not all, are morally justified. We will explore these theories, and will consider how just war theory comports with international law rules governing recourse to force. We will also explore justice in war, that is, the moral and legal rules governing the conduct of war, such as the requirement to avoid targeting non-combatants. Finally, we will consider how war should be terminated; what should be the nature of justified peace? We will critically evaluate the application of just war theory in the context of contemporary security problems, including: (1) transnational conflicts between states and nonstate groups and the so-called "war on terrorism"; (2) civil wars; (3) demands for military intervention to halt humanitarian atrocities taking place in another state. Same as LAW 751.
Same as: ETHICSOC 305R, PHIL 205R, PHIL 305R

ETHICSOC 207R. Democratic Accountability and Transparency. 5 Units.
This course critically examines two related democratic values, accountability and transparency. We begin with historical perspectives on accountability, tracing its centrality to democratic politics to ancient Athens and early modern debates about the nature and function of political representation. But the bulk of the course deals with contemporary issues and problems: how should we conceive of accountability, both conceptually and normatively, and what is its relationship to other values such as transparency and publicity? What forms of accountability are appropriate for modern democratic politics? Is accountability only for elites, or should ordinary citizens be accountable to one another? In what contexts are transparency and publicity valuable, and when might we instead find their operation counter-productive and troubling? Readings draw from canonical texts as well as contemporary political theory, philosophy, and political science.

ETHICSOC 217X. Free Speech, Academic Freedom, and Democracy. 3 Units.
The course examines connected ideas of free speech, academic freedom, and democratic legitimacy that are still widely shared by many of us but have been subject to skeptical pressures both outside and inside the academy in recent years. The course explores the principled basis of these ideas, how well they might (or might not) be defended against skeptical challenge, and how they might be applied in particular controversies about the rights of students, instructors, and researchers.
Same as: EDUC 217, PHIL 278C

ETHICSOC 232T. Theories and Practices of Civil Society, Philanthropy, and the Nonprofit Sector. 5 Units.
What is the basis of private action for public good? How are charitable dollars distributed and what role do nonprofit organizations and philanthropic dollars play in civil society and modern democracy? In the "Philanthropy Lab" component of this course, students will award $100,000 in grants to local nonprofits. Students will explore how nonprofit organizations operate domestically and globally as well as the historical development and modern structure of civil society and philanthropy. Readings in political philosophy, history, political sociology, and public policy. Political Science majors who are taking this course to fulfill the WIM requirement should enroll in POLISCI 236S.
Same as: POLISCI 236, POLISCI 236S

ETHICSOC 233R. The Ethics of Religious Politics. 5 Units.
Is it possible for a deeply committed religious person to be a good citizen in a liberal, pluralistic democracy? Is it morally inappropriate for religious citizens to appeal to the teachings of their tradition when they support and vote for laws that coerce fellow citizens? Must the religiously committed be prepared to defend their arguments by appealing to 'secular reasons' ostensibly accessible to all 'reasonable' citizens? What is so special about religious claims of conscience and expression that they warrant special protection in the constitution of most liberal democracies? Is freedom of religion an illusion when it is left to ostensibly secular courts to decide what counts as religion? Exploration of the debates surrounding the public role of religion in a religiously pluralistic American democracy through the writings of scholars on all sides of the issue from the fields of law, political science, philosophy, and religious studies.

ETHICSOC 234. Democratic Theory. 5 Units.
Most people agree that democracy is a good thing, but do we agree on what democracy is? This course will examine the concept of democracy in political philosophy. We will address the following questions: What reason(s), if any, do we have for valuing democracy? What does it mean to treat people as political equals? When does a group of individuals constitute "a people," and how can a people make genuinely collective decisions? Can democracy really be compatible with social inequality? With an entrenched constitution? With representation?.
Same as: PHIL 176P, POLISCI 234

ETHICSOC 237. Civil Society and Democracy in Comparative Perspective. 5 Units.
A cross-national approach to the study of civil societies and their role in democracy. The concept of civil society--historical, normative, and empirical. Is civil society a universal or culturally relative concept? Does civil society provide a supportive platform for democracy or defend a protected realm of private action against the state? How are the norms of individual rights, the common good, and tolerance balanced in diverse civil societies? Results of theoretical exploration applied to student-conducted empirical research projects on civil societies in eight countries. Summary comparative discussions. Prerequisite: a course on civil society or political theory. Students will conduct original research in teams of two on the selected nations. Enrollment limited to 18. Enrollment preference given to students who have taken PoliSci 236S/EthicSoc 232T.
Same as: POLISCI 237S

ETHICSOC 274B. Universal Basic Income: the philosophy behind the proposal. 3 Units.
Universal basic income (or UBI) is a regular cash allowance given to all members of a community without means test, regardless of personal desert, and with no strings attached. Once a utopian proposal, the policy is now discussed and piloted throughout the world. The growth of income and wealth inequalities, the precariousness of labor, and the persistence of abject poverty have all been important drivers of renewed interest in UBI in the United States. But it is without a doubt the fear that automation may displace workers from the labor market at unprecedented rates that explains the revival of the policy in recent years, including by many in or around Silicon Valley. Among the various objections to the proposal, one concerns its moral adequacy: Isn't it fundamentally unjust to give cash to all indiscriminately rather than to those who need it and deserve it? Over the years, a variety of scholars have defended the policy on moral grounds, arguing that UBI is a tool of equality, liberal freedom, republican freedom, gender equity, or racial equity. Many others have attacked UBI on those very same grounds, making the case that alternative policy proposals like the job guarantee, means-tested benefits, conditional benefits, or reparations should be preferred. Students will learn a great deal about political theory and ethics in general but always through the specific angle of the policy proposal, and they will become experts on the philosophy, politics and economics of UBI. The seminar is open to undergraduate and graduate students in all departments. There are no pre-requisites.
Same as: ETHICSOC 174B, PHIL 174B, PHIL 274B, POLISCI 134E, POLISCI 338

ETHICSOC 274L. Betrayal and Loyalty, Treason and Trust. 2 Units.
The main topic of the seminar is Betrayal: its meaning as well as its moral, legal and political implications. We shall discuss various notions of betrayal: Political (military) betrayal such as treason, Religious betrayal with Judas as its emblem, but also apostasy (converting one's religion) which is regarded both as a basic human right and also as an act of betrayal, social betrayal - betraying class solidarity as well as Ideological betrayal - betraying a cause. On top of political betrayal we shall deal with personal betrayal, especially in the form of infidelity and in the form of financial betrayal of the kind performed by Madoff. The contrasting notions to betrayal, especially loyalty and trust, will get special consideration so as to shed light or cast shadow, as the case may be, on the idea of betrayal. The seminar will focus not only on the normative aspect of betrayal - moral or legal, but also on the psychological motivations for betraying others. The seminar will revolve around glaring historical examples of betrayal but also use informed fictional novels, plays and movies from Shakespeare and Pinter, to John Le Carre. SAME AS LAW 520.
Same as: ETHICSOC 174L, PHIL 174L, PHIL 274L

ETHICSOC 278M. Introduction to Environmental Ethics. 4-5 Units.
How should human beings relate to the natural world? Do we have moral obligations toward non-human animals and other parts of nature? And what do we owe to other human beings, including future generations, with respect to the environment? The first part of this course will examine such questions in light of some of our current ethical theories: considering what those theories suggest regarding the extent and nature of our environmental obligations; and also whether reflection on such obligations can prove informative about the adequacy of our ethical theories. In the second part of the course, we will use the tools that we have acquired to tackle various ethical questions that confront us in our dealings with the natural world, looking at subjects such as: animal rights; conservation; economic approaches to the environment; access to and control over natural resources; environmental justice and pollution; climate change; technology and the environment; and environmental activism.
Same as: ETHICSOC 178M, PHIL 178M, PHIL 278M, POLISCI 134L

ETHICSOC 280. Transitional Justice, Human Rights, and International Criminal Tribunals. 3-5 Units.
(Formerly IPS 280) Historical backdrop of the Nuremberg and Tokyo Tribunals. The creation and operation of the Yugoslav and Rwanda Tribunals (ICTY and ICTR). The development of hybrid tribunals in East Timor, Sierra Leone, and Cambodia, including evaluation of their success in addressing perceived shortcomings of the ICTY and ICTR. Examination of the role of the International Criminal Court and the extent to which it will succeed in supplanting all other ad hoc international justice mechanisms and fulfill its goals. Analysis focuses on the politics of creating such courts, their interaction with the states in which the conflicts took place, the process of establishing prosecutorial priorities, the body of law they have produced, and their effectiveness in addressing the needs of victims in post-conflict societies.
Same as: HUMRTS 103, INTLPOL 280, INTNLREL 180A

ETHICSOC 301. Conflicts, Ethics, and the Academy. 1-3 Unit.
(Same as LAW 684) This course looks at conflicts of interest and ethical issues as they arise within academic work. The participants will be drawn from schools and departments across the University so that the discussion will prompt different examples of, and perspectives on, the issues we discuss. Topics will include the conflicts that arise from sponsored research, including choices of topics, shaping of conclusions, and nondisclosure agreements; issues of informed consent with respect to human subjects research, and the special issues raised by research conducted outside the United States; peer review, co-authorship, and other policies connected to scholarly publication; and the ethics of the classroom and conflicts of interest implicating professor-student relationships. Representative readings will include Marcia Angell's work, Drug Companies and Doctors: A Story of Corruption, N.Y. Rev. Books, Jan. 15, 2009, and Is Academic Medicine for Sale? 342 N. Engl. J. Med. 1516 (2000) (and responses); William R. Freudenburg, Seeding Science, Courting Conclusions: Reexamining the Intersection of Science, Corporate Cash, and the Law, 20 Sociological Forum 3 (2005); Max Weber, Science as a Vocation; legal cases; and conflict-of-interest policies adopted by various universities and professional organizations. The course will include an informal dinner at the end of each session. The goal of the course is to have students across disciplines think about the ethical issues they will confront in an academic or research career. Non-law students should enroll in ETHICSOC 301.

ETHICSOC 302. EMOTIONS: MORALITY AND LAW. 2 Units.
If emotions are the stuff of life, some emotions are the stuff of our moral and legal life. Emotions such as: guilt, shame, revenge, indignation, resentment, disgust, envy, jealousy and humiliation, along with forgiveness, compassion, pity, mercy and patriotism, play a central role in our moral and legal life. The course is about these emotions, their meaning and role in morality and law. Issues such as the relationship between punishment and revenge, or between envy and equality, or St. Paul¿s contrast between law and love, or Nietzsche¿s idea that resentment is what feeds morality, will be discussed alongside other intriguing topics.
Same as: ETHICSOC 202, PHIL 177B, PHIL 277B

ETHICSOC 303R. Ethics, Economics and the Market. 4 Units.
Economic analysis inevitably raises moral questions. Getting clear on those moral questions, and the competing answers to them, can help improve both economic analysis and our understanding of the values involved in alternative social policies. This course focuses on a central economic institution: the market. How have the benefits and costs of using markets been understood? For example, it is often claimed that markets are good for welfare, but how is welfare to be understood? What is the connection between markets and different values such as equality and autonomy? What, if anything is wrong with markets in everything? Are there moral considerations that allow us to, distinguish different markets? This course examines competing answers to these questions, drawing on historical and contemporary literature. Readings include Adam Smith, JS Mill, Karl Marx, Michael Walzer, Dan Hausman and Michael McPherson and Debra Satz among others. For graduate students only.
Same as: PHIL 375, POLISCI 434A

ETHICSOC 305R. JUST AND UNJUST WARS. 2 Units.
War is violent, but also a means by which political communities pursue collective interests. When, in light of these features, is the recourse to armed force justified? Pacifists argue that because war is so violent it is never justified, and that there is no such thing as a just war. Realists, in contrast, argue that war is simply a fact of life and not a proper subject for moral judgment, any more than we would judge an attack by a pack of wolves in moral terms. In between is just war theory, which claims that some wars, but not all, are morally justified. We will explore these theories, and will consider how just war theory comports with international law rules governing recourse to force. We will also explore justice in war, that is, the moral and legal rules governing the conduct of war, such as the requirement to avoid targeting non-combatants. Finally, we will consider how war should be terminated; what should be the nature of justified peace? We will critically evaluate the application of just war theory in the context of contemporary security problems, including: (1) transnational conflicts between states and nonstate groups and the so-called "war on terrorism"; (2) civil wars; (3) demands for military intervention to halt humanitarian atrocities taking place in another state. Same as LAW 751.
Same as: ETHICSOC 205R, PHIL 205R, PHIL 305R

ETHICSOC 371R. Inequality: Economic and Philosophical Perspectives. 5 Units.
The nature of and problem of inequality is central to both economics and philosophy. Economists study the causes of inequality, design tools to measure it and track it over time, and examine its consequences. Philosophers are centrally concerned with the justification of inequality and the reasons why various types of inequality are or are not objectionable.nIn this class we bring both of these approaches together. Our class explores the different meanings of and measurements for understanding inequality, our best understandings of how much inequality there is, its causes, its consequences, and whether we ought to reduce it, and if so, how. nThis is an interdisciplinary graduate seminar. We propose some familiarity with basic ideas in economics and basic ideas in contemporary political philosophy; we will explain and learn about more complex ideas as we proceed. The class will be capped at 20 students.
Same as: PHIL 371D, POLISCI 431L

ETHICSOC 372R. Ending Wars: A Just Peace or Just a Peace. 2 Units.
Much of just war theory focuses on the justifications for resorting to armed force and the conduct of hostilities. But what are the ethical and legal principles that govern ending wars and making peace? This course will explore the theory of "just peace," including such problems as when a party to war may demand the unconditional surrender of its adversary and what kinds of compromises are ethically permissible in order to end ¿ or to avoid ¿ armed conflict. We will also consider the terms and practices the winning party in war may impose on the loser, such as reparations and occupation (particularly transformative occupation). In addition, we will examine the topic of transitional justice, including issues related to amnesty, forgiveness, criminal and other forms of accountability, and reconciliation. Elements used in grading: Class Participation, Written Assignments, Final Exam.
Same as: PHIL 372M

ETHICSOC 374R. Science, Religion, and Democracy. 3-5 Units.
How should conflicts between citizens with science-based and religion-based beliefs be handled in modern liberal democracies? Are religion-based beliefs as suitable for discussion within the public sphere as science-based beliefs? Are there still important conflicts between science and religion, e.g., Darwinian evolution versus creationism or intelligent design? How have philosophy and recent theology been engaged with such conflicts and how should they be engaged now? What are the political ramifications? This is a graduate-level seminar; undergraduates must obtain permission of the instructors.
Same as: PHIL 374F, RELIGST 374F

ETHICSOC 378B. Unequal Relationships. 2-4 Units.
Over the past three decades, a relational egalitarian conception of equality has emerged in political philosophy. Proponents of the view argue that the point of equality is to establish communities where people are able to stand and relate as equals. This entails building societies free from a variety of modes of relating that are thought to be detrimental to our status as moral equals. The list of those inegalitarian relationships is long and includes oppression, domination, exploitation, marginalization, objectification, demonization, infantilization, and stigmatization. The relational approach to equality departs from the more distributive conceptions of equality that were offered in the 70s and after. The theories of justice proposed in response are still comparatively underdeveloped and need further elaboration, but they all concur in rejecting both the overly distributive paradigm and the preoccupation with individual responsibility central to most other egalitarian accounts. This graduate seminar will introduce students to the rich literature on equality in contemporary political philosophy, with a special focus on identifying and scrutinizing unequal relationships. Each week will be centered on a specific type of such unequal relationship, trying to understand how it operates, what social function it serves, and what makes it specifically harmful or wrongful to groups and individuals. Although there are no formal pre-requisites, this class is primarily designed for students considering writing a thesis in political or moral theory as well as for students in other disciplines who want to advance their understanding of equality as a moral value. Seniors in philosophy and political science with a substantial training in political theory will also be considered and should email the PI to communicate their interest. 2 unit option only for Phil PhDs beyond the second year.
Same as: PHIL 378B, POLISCI 338B

ETHICSOC 432X. Selections in Modern Political Thought. 3-5 Units.
This graduate-level seminar explores selections from the canon of Western political thought from the late fifteenth through nineteenth centuries. Throughout the course, we will engage in close textual readings of individual thinkers and consider some of the larger questions raised by political modernity. This offering will focus on American political thought from the Puritan era through the turn of the 20th century. We will pay special attention to dissenting voices and to texts that address the settler empire, slavery, and the color line. Thinkers covered will include: John Winthrop, Thomas Jefferson, James Madison, Alexander Hamilton, "Brutus," William Apess, Henry David Thoreau, John C. Calhoun, David Walker, Abraham Lincoln, Frederick Douglass, and W.E.B. Du Bois.
Same as: POLISCI 432R

FEMINIST, GENDER, AND SEXUALITY STUDIES

Courses offered by the Program in Feminist, Gender, and Sexuality Studies are listed under the subject code FEMGEN on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=FEMST&filter-catalognumber-FEMST=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=FEMST&filter-catalognumber-FEMST=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=FEMST&filter-catalognumber-FEMST=on).

The Program in Feminist, Gender, and Sexuality Studies offers an undergraduate major and minor, and an interdisciplinary honors program that is open to students in all majors. Each Feminist, Gender, and Sexuality Studies student builds an individual program of study around a self-defined thematic focus, integrating courses from multiple departments. The program encourages work in the arts and supports creative honors theses. Feminist, Gender, and Sexuality Studies majors may declare Arts & Culture, Global Studies, Health, or LGBT/Queer Studies as a subplan, or may design their own thematic focus. Subplans are printed on the diploma; individual thematic foci are not printed on the diploma. See the "Bachelor's" (p. 1432) tab of this section of the bulletin for descriptions of the subplans.

Curriculum guidelines and forms for the undergraduate major, minor, and honors programs are available on the program web site (https://feminist.stanford.edu/undergraduates/). See the program web site for additional contact information (https://feminist.stanford.edu/about/).

The Program in Feminist, Gender, and Sexuality Studies offers the option of a Ph.D. minor to graduate students already enrolled in a Ph.D. program at Stanford University. The Ph.D. minor in Feminist, Gender, and Sexuality Studies provides graduate students pursuing Ph.D.s broad interdisciplinary knowledge in the field and prepares them to teach courses in the subject. The goal of the program is to bring together graduate students and faculty from different departments, programs, and schools who use feminist and queer perspectives in their research.

Mission of the Undergraduate Program in Feminist, Gender, and Sexuality Studies

The interdepartmental Program in Feminist, Gender, and Sexuality Studies provides students with knowledge and skills to investigate the significance of gender and sexuality in all areas of human life. Feminist, Gender, and Sexuality Studies examines how societies structure gender roles, relations, and identities, and how these intersect with other hierarchies of power, such as class, race, nationality, ethnicity, sexuality, ability, and age. The program coordinates courses offered across the University in feminist and lesbian, gay, bisexual, transgender, and queer studies. Students learn to employ critical gender and sexuality studies methodologies to analyze the assumptions about gender and sexuality that inform the study of individuals, cultures, social institutions, policy, and areas of scholarly inquiry. The program prepares majors for graduate study in humanities and social sciences and for professional schools.

Learning Outcomes (Undergraduate)

The program expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the undergraduate program. Students are expected to demonstrate:

1. understanding of how social hierarchies related to gender, sexuality, race and ethnicity have developed historically, cross-culturally, and transnationally.
2. knowledge of the histories of feminist, gender, sexuality, and/or LGBT/queer social movements and their intersections with other social movements.
3. knowledge and comprehension of feminist, gender, sexuality, and/or LGBT/queer theories and methods for social, historical, literary and cultural analysis.
4. skill in making and communicating feminist, gender, sexuality, and/or LGBT/queer analyses of data, texts, and arguments.
5. competence in applying theory to practical experience for social transformation and citizenship.

Bachelor of Arts in Feminist, Gender, and Sexuality Studies

The major in Feminist, Gender, and Sexuality Studies requires 63 units and may be taken as a single major, as one of multiple majors, or as a secondary major. FEMGEN core courses must be taken for a letter grade. A student wishing to major in Feminist, Gender, and Sexuality Studies should declare the major via Axess, by Autumn Quarter of the junior year. The student then selects a subplan or develops an individualized proposal describing a thematic focus and outlining a course of study, approved by a prospective adviser from the list of affiliated faculty. The proposal is then submitted to the Program Office (Bldg. 460, Room 216) for approval by the Director.

A maximum of 10 of the 63 units for the major may be taken on a credit/no credit or satisfactory/no credit basis; a maximum of 10 units may be taken as independent study or directed reading.

If taken as one of multiple majors, none of the 63 units counted toward the major in Feminist, Gender, and Sexuality Studies may overlap with units counted toward the major in another department or program. If taken as a secondary major, the units counted toward the Feminist, Gender, and Sexuality Studies major may also be counted as fulfilling the major requirements in another department or program if that department or program consents.

Curriculum

The major in Feminist, Gender, and Sexuality Studies includes a total of at least 12 approved courses for a minimum of 63 units. The courses are divided among the core, the focus, and electives to reach the total course requirement.

Not all courses are offered every year; consult ExploreCourses (https://explorecourses.stanford.edu/search/?view=catalog&academicYear=&q=FEMGEN&filter-departmentcode-FEMGEN=on&filter-coursestatus-Active=on&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&page=0) for current course offerings.

Courses not listed below that relate to the themes of Feminist, Gender, and Sexuality Studies may potentially be counted towards the major as well; contact the academic services administrator (apotemski@stanford.edu) or other FGSS staff for more information.

Degree Requirements

The Core

		Units
1. Introductory Course		
FEMGEN 101	Introduction to Feminist, Gender, and Sexuality Studies	5
2. Feminist Theories and Method		

FEMGEN 103	Feminist and Queer Theories and Methods Across the Disciplines	2-5
3. Junior and Senior Seminars and Practica		
FEMGEN 104A	Junior Seminar and Practicum	1
FEMGEN 104B	Senior Seminar and Practicum	2
4. One feminist, gender, or sexuality theory course from approved course list below.		**3-5**
FEMGEN 63N	The Feminist Critique: The History and Politics of Gender Equality	
FEMGEN 130S	Sex and the Novel	
FEMGEN 131	Introduction to Queer Theory	
FEMGEN 134	The Marriage Plot	
FEMGEN 138	Men's Violence Against Women in Literature: A Critical and Social Analysis	
FEMGEN 154	Black Feminist Theory	
FEMGEN 155	The Changing American Family	
FEMGEN 163	Queer America	
FEMGEN 297	Gender and Education in Global and Comparative Perspectives	
FEMGEN 313	Performance and Performativity	
FEMGEN 314	Performing Identities	
FEMGEN 363D	Feminist Theory: Thinking Through/With/About the Gendered Body	
ANTHRO 90B	Theory of Cultural and Social Anthropology	
5. One Feminist, Gender, and Sexuality Studies or a related course in Global Perspectives		**3-5**
FEMGEN 17	Gender and Power in Ancient Greece	
FEMGEN 111	Reproductive Politics in the United States and Abroad	
FEMGEN 129		
FEMGEN 144F		
FEMGEN 144X	Transforming Self and Systems: Crossing Borders of Race, Nation, Gender, Sexuality, and Class	
FEMGEN 150	Sex, Gender, and Power in Modern China	
FEMGEN 180	Gender Relations in Islam	
FEMGEN 181A		
FEMGEN 206	Global Medical Issues Affecting Women	
FEMGEN 250	Sex, Gender, and Power in Modern China	
FEMGEN 395J	Gender and Sexuality in Chinese History	
6. One Feminist, Gender, and Sexuality Studies or a related course in Intersection Structures of Oppression (Race, Ethnicity, and/or Class)		**3-5**
FEMGEN 94H		
FEMGEN 103S	Gender in Native American Societies	
FEMGEN 141	Activism and Intersectionality	
FEMGEN 149	Gender Violence: Critical Race, Feminist, and Queer Perspectives	
FEMGEN 157P	Solidarity and Racial Justice	
FEMGEN 159	James Baldwin & Twentieth Century Literature	
7. One Feminist, Gender, and Sexuality Studies or a related course in Lesbian, Gay, Bisexual, Transgender/Queer Studies		
FEMGEN 36N	Gay Autobiography	
FEMGEN 109	Looking Back, Moving Forward: Raising Critical Awareness in Gender and Sports	
FEMGEN 115	Queer Reading and Queer Writing in Early Modern England	
FEMGEN 116	Narrating Queer Trauma	
FEMGEN 117Q	Queer Arts: Remembering and Imagining Social Change	
FEMGEN 118	Transgender Cultural Studies	
FEMGEN 121	Intro to Queer Studies	
FEMGEN 140D	LGBTQ History of the United States	
FEMGEN 119	Archaeology of Gender and Sexuality	5
Total Units		24-33

Writing in the Major (WIM)

Majors in Feminist, Gender, and Sexuality Studies may satisfy the Writing in the Major (WIM) requirement by taking one of the approved WIM courses in the list below. Honors students satisfy the WIM requirement through their honors work. Not all courses are offered every year; consult ExploreCourses (https://explorecourses.stanford.edu/search/?view=catalog&academicYear=&q=FEMGEN&filter-departmentcode-FEMGEN=on&filter-coursestatus-Active=on&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&page=0) for current course offerings.

		Units
WIM Courses for Majors		**4-5**
AMSTUD 160	Perspectives on American Identity	
ANTHRO 90B	Theory of Cultural and Social Anthropology	
LINGUIST 150	Language and Society	
FEMGEN 157	Language as Political Tool: Feminist and LGBTQ Movements and Impacts	
Total Units		4-5

Practicum

The practicum courses (FEMGEN 104A Junior Seminar and Practicum, FEMGEN 104B Senior Seminar and Practicum) bring together theory and practical experience. The practicum involves field research, community service, or other relevant experience such as a public service internship. Students plan their practicum during Winter Quarter of the junior year in FEMGEN 104A Junior Seminar and Practicum (1 unit). The practicum is normally done over the summer between junior and senior year and may be taken for additional units. It is followed by FEMGEN 104B Senior Seminar and Practicum (2 units), in Autumn Quarter of the senior year.

The Focus

All Feminist, Gender, and Sexuality Studies majors must complete the Feminist, Gender, and Sexuality Studies major core requirements (7 courses) and an additional 5 courses constituting an area of focus. Those 5 courses should be chosen in consultation with the student's adviser and the Associate Director.

FGSS majors have the option of declaring a formal subplan *or* of designing an individualized thematic focus. Subplans are noted on student transcripts and diplomas; individually designed thematic foci are not noted on the transcript or diploma. The following are the four formal subplans:

Arts & Culture Subplan

The Arts & Culture subplan is appropriate for fields of study focusing on interpretation, production, and consumption of messages of feminism, gender, and sexuality through arts, media, literature and performance.

Not all courses are offered every year; consult ExploreCourses (https://explorecourses.stanford.edu/search/?view=catalog&academicYear=&q=FEMGEN&filter-departmentcode-FEMGEN=on&filter-coursestatus-Active=on&filter-term-

Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&page=0) for current course offerings.

Courses that may fulfill requirements include but are not limited to:

		Units
LINGUIST 52N	Spoken Sexuality: Language and the Social Construction of Sexuality	3
FEMGEN 102	Art and Social Criticism	5
FEMGEN 109	Looking Back, Moving Forward: Raising Critical Awareness in Gender and Sports	3
FEMGEN 117Q	Queer Arts: Remembering and Imagining Social Change	4-5
FEMGEN 130S	Sex and the Novel	5
FEMGEN 134	The Marriage Plot	5
FEMGEN 144F		5
FEMGEN 145	Culture Wars: Art and Social Conflict in the USA, 1890-1950	4
FEMGEN 159	James Baldwin & Twentieth Century Literature	5
FEMGEN 183	Re- Imagining American Borders	5
FEMGEN 188Q	Imagining Women: Writers in Print and in Person	4-5
FEMGEN 205	Songs of Love and War: Gender, Crusade, Politics	3-5
FEMGEN 250J	Baldwin and Hansberry: The Myriad Meanings of Love	4
FEMGEN 261	Personal Narratives in Feminist, Gender, and Sexuality Studies	4-5
FEMGEN 287G		5
FEMGEN 313	Performance and Performativity	5
FEMGEN 314	Performing Identities	4

Health Subplan

The Health subplan is appropriate for fields of study focusing on feminist perspectives of science and technologies, gender justice and human rights, gender health and medicine, access/disparities/needs regarding health and sexuality, and women's roles as practitioners and researchers.

Not all courses are offered every year; consult ExploreCourses (https://explorecourses.stanford.edu/search/?view=catalog&academicYear=&q=FEMGEN&filter-departmentcode-FEMGEN=on&filter-coursestatus-Active=on&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&page=0) for current course offerings.

Courses that may fulfill requirements include but are not limited to:

		Units
FEMGEN 94H		4
FEMGEN 114	Sexual Diversity and Health	1
FEMGEN 124	Challenging Sex and Gender Dichotomies in Medicine	1
FEMGEN 129		4
FEMGEN 138	Men's Violence Against Women in Literature: A Critical and Social Analysis	3-5
FEMGEN 143	One in Five: The Law, Politics, and Policy of Campus Sexual Assault	3-5
FEMGEN 156H	Women and Medicine in US History: Women as Patients, Healers and Doctors	5
FEMGEN 206	Global Medical Issues Affecting Women	1
FEMGEN 216X	Narrating Queer Trauma	4-5
FEMGEN 224	Challenging Sex and Gender Dichotomies in Medicine	1
FEMGEN 230	Sexual Function and Diversity in Medical Disciplines	2-3
FEMGEN 237	Health Impact of Sexual Assault and Relationship Abuse across the Lifecourse	1-3
FEMGEN 241	Sex and Gender in Human Physiology and Disease	2-3
FEMGEN 256	Current Topics and Controversies in Women's Health	2-3
FEMGEN 260	Disability, Gender, and Identity: Women's Personal Experiences	5

Global Studies Subplan

The Global Studies subplan is appropriate for fields of study focusing cross-cultural perspectives on gender, gender justice and human rights, race/class/gender intersections, gender/spirituality/religion, geopolitical contexts of feminism and LGBTQ activism, and gender and education.

Not all courses are offered every year; consult ExploreCourses (https://explorecourses.stanford.edu/search/?view=catalog&academicYear=&q=FEMGEN&filter-departmentcode-FEMGEN=on&filter-coursestatus-Active=on&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&page=0) for current course offerings.

Courses that may fulfill requirements include but are not limited to:

		Units
FEMGEN 111	Reproductive Politics in the United States and Abroad	3-5
FEMGEN 115	Queer Reading and Queer Writing in Early Modern England	5
FEMGEN 129		4
FEMGEN 130	Sex and Gender in Judaism and Christianity	3
FEMGEN 144F		5
FEMGEN 144X	Transforming Self and Systems: Crossing Borders of Race, Nation, Gender, Sexuality, and Class	5
FEMGEN 150	Sex, Gender, and Power in Modern China	3-5
FEMGEN 180	Gender Relations in Islam	4
FEMGEN 206	Global Medical Issues Affecting Women	1-2
FEMGEN 250	Sex, Gender, and Power in Modern China	3-5
FEMGEN 297	Gender and Education in Global and Comparative Perspectives	4
FEMGEN 395J	Gender and Sexuality in Chinese History	4-5

LGBT/Queer Studies Subplan

The LGBT/Queer Studies subplan is appropriate for fields of study focusing on history and theories of lesbian, gay, bisexual, transgender, and queer identities, communities, cultural practices, politics, and legal and medical issues.

Not all courses are offered every year; consult ExploreCourses (https://explorecourses.stanford.edu/search/?view=catalog&academicYear=&q=FEMGEN&filter-departmentcode-FEMGEN=on&filter-coursestatus-Active=on&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&page=0) for current course offerings.

Courses that may fulfill requirements include but are not limited to:

		Units
FEMGEN 36N	Gay Autobiography	4
LINGUIST 52N	Spoken Sexuality: Language and the Social Construction of Sexuality	3
FEMGEN 113	Transgender Studies	3-4
FEMGEN 114	Sexual Diversity and Health	1
FEMGEN 115	Queer Reading and Queer Writing in Early Modern England	5
FEMGEN 116	Narrating Queer Trauma	4-5
FEMGEN 117Q	Queer Arts: Remembering and Imagining Social Change	4-5
FEMGEN 118	Transgender Cultural Studies	4-5
FEMGEN 121	Intro to Queer Studies	4-5
FEMGEN 124	Challenging Sex and Gender Dichotomies in Medicine	1
FEMGEN 131	Introduction to Queer Theory	3-5
FEMGEN 140D	LGBTQ History of the United States	4-5
FEMGEN 159	James Baldwin & Twentieth Century Literature	5
FEMGEN 163	Queer America	4
FEMGEN 239	Queer Theory	3-5
SOC 155	The Changing American Family	4
FEMGEN 119	Archaeology of Gender and Sexuality	5

Additional Information

Overseas Studies Courses in Feminist, Gender, and Sexuality Studies

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) web site or the Bing Overseas Studies (http://bosp.stanford.edu) web site. Students should consult the Associate Director for applicability of Overseas Studies courses to a major or minor program.

Honors Program in Feminist, Gender, and Sexuality Studies

For Majors in Feminist, Gender, and Sexuality Studies

Admission—The honors program offers an opportunity to do independent research for a senior thesis. It is open to students with a grade point average (GPA) of 3.5 or better in course work in Feminist, Gender, and Sexuality Studies, or demonstrated academic competence. Students should begin the application process by consulting with the Program Director or the Associate Director as early as possible in the junior year, preferably by the end of Winter Quarter.

During the application process, students design a project in consultation with their proposed thesis advisers and the Associate Director. A proposal describing the project and the number of units to be taken toward the honors directed project must be submitted to the program office for final approval. All projects must have a primary focus on gender or sexuality. See the honors section of the program web site (https://feminist.stanford.edu/undergraduates/honors-program/) for additional details.

Note: FEMGEN 199A/B/C Honors Seminar and FEMGEN 105 Honors Work units do not count towards the 63 units for the major or the 30 units for the minor.

Requirements

1. Students enroll for 2-3 units per quarter in FEMGEN 199A, FEMGEN 199B, and FEMGEN 199C Feminist, Gender, and Sexuality Studies Honors Workshop.
2. Students in the honors program also enroll for FEMGEN 105 Honors Work with their respective advisers, for an additional 2-3 units each quarter. The combined number of units in 199 and 105 must be 10-15 units over the course of senior year.
3. A semifinal draft of the thesis is due early in Spring Quarter of the senior year.
4. The final thesis must be submitted by May 15 (or the following Monday should May 15 fall on a weekend). The completed thesis must be submitted with the Thesis Completion Form, which requires the adviser's signature of approval. Creative projects must include a section of critical analysis. For guidelines, see the honors section of the program web site (https://feminist.stanford.edu/undergraduates/honors-program/).

For Majors in Other Departments

Interdisciplinary Honors in Feminist, Gender, and Sexuality Studies for majors in other departments or programs, as distinguished from honors for students pursuing a major in Feminist, Gender, and Sexuality Studies, is intended to complement study in any major. Feminist, Gender, and Sexuality Studies minors who wish to pursue honors in Feminist, Gender, and Sexuality Studies should apply through the process for non-majors.

Admission

The Feminist, Gender, and Sexuality Studies honors program is open to students majoring in any field with an overall GPA of 3.5 or better or demonstrated academic competence.

Students must complete the following with a grade of 'B+' or better:

- Either FEMGEN 101 Introduction to Feminist, Gender, and Sexuality Studies *or* FEMGEN 103 Feminist and Queer Theories and Methods Across the Disciplines, *and* and two other FGSS courses that relate to their research topic.

Students should begin the application process by consulting with the Program Director or the Associate Director as early as possible in the junior year, preferably by the end of Winter Quarter. During the application process, students design a project in consultation with their proposed thesis advisers and the Associate Director. A proposal describing the project and the number of units to be taken toward the honors directed project must be submitted to the program office for final approval. All projects must have a primary focus on gender or sexuality. See the honors section of the program web site (https://feminist.stanford.edu/undergraduates/honors-program/) for additional details.

Requirements

1. Students enroll for 2-3 units per quarter in FEMGEN 199A, FEMGEN 199B, and FEMGEN 199C Feminist, Gender, and Sexuality Studies Honors Workshop.
2. Students in the honors program also enroll for FEMGEN 105 Honors Work with their respective advisers, for an additional 2-3 units each quarter. The combined number of units in 199 and 105 must be 10-15 units over the course of senior year..
3. A semifinal draft of the thesis is due early in Spring Quarter of the senior year.
4. The final thesis must be submitted by May 15 (or the following Monday should May 15 fall on a weekend). The completed thesis must be submitted with the Thesis Completion Form, which requires the adviser's signature of approval. Creative projects must include a section of critical analysis. For guidelines, see the honors section of the program web site (https://feminist.stanford.edu/undergraduates/honors/).

Flexibility

For students pursuing honors during the 2020-21 Academic Year, please work with our honors program coordinator, Maxe Crandall, regarding flexibility in meeting honors program requirements due to student leaves of absence, or other COVID-related challenges.

Minor in Feminist, Gender, and Sexuality Studies

1. A student wishing to minor in Feminist, Gender, and Sexuality Studies should apply to the minor via Axess, preferably by Winter Quarter of the junior year.
2. The student then develops an individualized proposal outlining a course of study to be approved by the Associate Director (maxec@stanford.edu).
3. The approved proposal is then submitted to the program office (Bldg. 460, Room 216) or via email to apotemski@stanford.edu.

The minor in Feminist, Gender, and Sexuality Studies consists of at least six courses for a minimum of 30 units. None of the units for the FGSS minor may count towards the student's major.

Requirements

		Units
1. Introductory Course		
FEMGEN 101	Introduction to Feminist, Gender, and Sexuality Studies	4-5
2. One of the feminist, gender, or sexuality theory courses from the approved course list on the Bachelor's tab		
3. Focus Courses		
At least 4 courses of 3 or more units each		

The Focus

At least 4 of the courses for the minor should relate to a thematic focus defined by the student and faculty adviser. See the suggested clusters listed in the "Bachelor of Arts in Feminist, Gender, and Sexuality Studies (p. 1432)" section of this bulletin. At least one course within the thematic focus should address race/ethnicity and/or global perspectives on feminist, gender, and sexuality studies.

Ph.D Minor in Feminist, Gender, and Sexuality Studies

The Ph.D. minor in Feminist, Gender, and Sexuality Studies provides graduate students pursuing Ph.D.s broad interdisciplinary knowledge in the field and prepares them to teach courses in the subject. The goal of the program is to bring together graduate students and faculty from different departments, programs, and schools who use feminist and queer perspectives in their research.

Application and Acceptance

Prospective students submit a Ph.D. minor application form outlining an academic plan with courses and quarters to satisfy the minor requirements. The form must be signed by the student's home department faculty adviser.

An Application for Ph.D. Minor (http://studentaffairs.stanford.edu/sites/default/files/registrar/files/app_phd_minor.pdf) outlining a program of study must be approved by the major and minor departments and submitted to the Student Services Center. This form is submitted at the time of admission to candidacy or at the appropriate time thereafter. Prior to that time, students are expected to have been working with an adviser from the affiliated faculty in Feminist, Gender, and Sexuality Studies to ensure that all the requirements can be met without delaying progress to degree or to TGR status. Students are encouraged to consult with the Director or Associate Director as soon as they have developed an interest in pursuing the minor. A student who is planning to apply for a master's degree on the way to the Ph.D. should plan out the course of study carefully, since units for the minor may not also be counted toward a Stanford master's degree.

An accepted student selects a Feminist, Gender, and Sexuality Studies faculty adviser with assistance from the program director. The adviser meets with the student to discuss and sign the academic plan outlined on the Application for Ph.D. Minor form. The plan represents a student's best estimate of courses planned to meet the minor requirements. Students who wish to enroll in the minor after the Winter Quarter of their first year must demonstrate that their participation will not delay their time to degree or their time to TGR.

Students must remain in good academic standing in their home departments.

Requirements

To receive the Ph.D. Minor in Feminist, Gender, and Sexuality Studies, students fulfill the following requirements, for a minimum of 20 units at the graduate level (typically 200-level or higher).

		Units
Required Course		
FEMGEN 203	Feminist and Queer Theories and Methods Across the Disciplines (REQUIRED)	3-5
A second feminist theory course such as:		**4-5**
ANTHRO 201	Introduction to Cultural and Social Anthropology	
FEMGEN 238	Men's Violence Against Women in Literature: A Critical and Social Analysis	
FEMGEN 239	Queer Theory	
FEMGEN 314	Performing Identities	
FEMGEN 363D	Feminist Theory: Thinking Through/With/About the Gendered Body	
SOC 242	Sociology of Gender	
SOC 252	The Social Determinants of Health	
SOC 255	The Changing American Family	
10 units of elective graduate-level courses or related courses (a minimum of 2 courses, but 3 courses if necessary in order to achieve 10 units): graduate-level courses or related courses in Feminist, Gender, and Sexuality Studies, one of which may be from the student's home department. The following are examples of appropriate elective courses. Check ExploreCourses for scheduling information.		10
FEMGEN 205	Songs of Love and War: Gender, Crusade, Politics	3-5
FEMGEN 208B		4-5
FEMGEN 209	Looking Back, Moving Forward: Raising Critical Awareness in Gender and Sports	3
FEMGEN 213	Transgender Studies	3-4
FEMGEN 214	Sexual Diversity and Health	1
FEMGEN 216X	Narrating Queer Trauma	4-5
FEMGEN 223X		5
FEMGEN 224	Challenging Sex and Gender Dichotomies in Medicine	1
FEMGEN 226A		3-5
FEMGEN 230	Sexual Function and Diversity in Medical Disciplines	2
FEMGEN 230X		2
FEMGEN 235A		2-5
FEMGEN 236	Literature and Transgression	3-5

FEMGEN 237	Health Impact of Sexual Assault and Relationship Abuse across the Lifecourse	1-3
FEMGEN 240D	LGBTQ History of the United States	4-5
FEMGEN 241W		5
FEMGEN 242	Sociology of Gender	3
FEMGEN 250	Sex, Gender, and Power in Modern China	3-5
FEMGEN 255	The Changing American Family	4
FEMGEN 256	Current Topics and Controversies in Women's Health	2-3
FEMGEN 257	Language as Political Tool: Feminist and LGBTQ Movements and Impacts	3-5
FEMGEN 260	Disability, Gender, and Identity: Women's Personal Experiences	5
FEMGEN 272E		4-5
FEMGEN 295J		5
FEMGEN 297	Gender and Education in Global and Comparative Perspectives	4
FEMGEN 310X		3-5
FEMGEN 311C		1-2
FEMGEN 313	Performance and Performativity	1-4
FEMGEN 360	Disability, Gender, and Identity: Women's Personal Experiences	5
FEMGEN 395J	Gender and Sexuality in Chinese History	4-5

Academic Progress

Students submit an annual progress report listing the courses completed towards the minor and courses planned in future quarters. This form is approved by both the main faculty adviser and the Feminist, Gender, and Sexuality Studies faculty adviser. Students meet with their Feminist, Gender, and Sexuality Studies faculty adviser to discuss their progress report.

Notation

Students who complete all the requirements receive the following notation on their transcript and diploma: Ph.D. Minor in Feminist, Gender, and Sexuality Studies.

Sponsorship

The Ph.D. minor in Feminist, Gender, and Sexuality Studies is sponsored by the Program in Modern Thought and Literature. The minor is administered by the Program in Feminist, Gender, and Sexuality Studies.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Program in Feminist, Gender, and Sexuality Studies counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Other Undergraduate Policies

The Honors Program for Feminist, Gender, and Sexuality Studies will consider flexibility in meeting program requirements on a case-by-case basis.

Graduate Degree Requirements

Grading

The Program in Feminist, Gender, and Sexuality Studies counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B-' or better level.

Graduate Advising Expectations

The Department of Feminist, Gender, and Sexuality Studies is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee for students enrolled in the Ph.D. minor in Feminist, Gender, and Sexuality Studies. Students enrolled in the Ph.D. minor are encouraged to consult their advisers each quarter. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Program Director

Adrian Daub (German Studies)

Associate Director

Maxe Crandall

Director of Undergraduate Studies

Adrian Daub (German Studies)

Faculty Affiliates

American Studies: Shelley Fisher Fishkin

Anthropology: Paulla Ebron, Miyako Inoue, Barbara Voss, Sylvia Yanagisako

Art and Art History: Terry Berlier, Jean Ma, Richard Meyer

Comparative Literature: Petra Dierkes-Thrun, Patricia Parker

Developmental Biology: Ellen Porzig (emerita)

East Asian Languages and Cultures: Haiyan Lee, Yoshiko Matsumoto, James Reichert, Melinda Takeuchi (emerita)

Education: Debra Meyerson, Myra Strober (emerita), Christine Min Wotipka

English: Terry Castle, Michele Elam, Shelly Fisher Fishkin, Barbara Gelpi (emerita), Andrea Lunsford (emerita), Paula Moya, Stephen Orgel (emeritus), Ramón Saldívar, Alice Staveley, Elizabeth Tallent

Feminist, Gender, and Sexuality Studies: Ann Atura, Maxe Crandall, Laura Goode, Susan Krieger, Valerie Miner, Rabbi Patricia Karlin-Neumann, Rev. Joanne Sanders

French and Italian: Cecile Alduy, Marisa Galvez, Carolyn Springer (emerita)

German Studies: Russell Berman, Adrian Daub

History: Jennifer Burns, Carolyn Lougee Chappell (emerita), Paula Findlen, Estelle Freedman, Fiona Griffiths, Allyson Hobbs, Katherine Jolluck, Nancy Kollmann, Ana Minian, Paul Robinson (emeritus), Londa Schiebinger, Matthew Sommer, Laura Stokes

Human Biology: Anne Firth Murray

Iberian and Latin American Cultures: Yvonne Yarbro-Bejarano

Law: Michele Dauber, Deborah Rhode, Jane Schacter

Linguistics: Penelope Eckert, Rob Podesva

Medical School: Ann Arvin, Helen Blau, Gabriel Garcia (emeritus), Cheryl Gore-Felton, Roy King, Cheryl Koopman, Iris Litt (emerita), Leah Millheiser, Marcia Stefanick, Lynn Marie Westphal

Music: Heather Hadlock

Philosophy: Helen Longino, Debra Satz

Political Science: Lisa Blaydes, Terry Karl (emerita)

Psychology: Laura Carstensen, Hazel Markus

Religious Studies: Charlotte Fonrobert, Hester Gelber (emerita)

Slavic Languages and Literatures: Monika Greenleaf

Sociology: Shelley Correll, Cecilia Ridgeway (emerita), Michael Rosenfeld, Robb Willer

Theatre and Performance Studies: Jennifer Brody, Harry J. Elam (emeritus), Jisha Menon, Peggy Phelan, Janice Ross

Overseas Studies Courses in Feminist, Gender, and Sexuality Studies

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPBER 174	Sports, Culture, and Gender in Comparative Perspective	3-5
OSPFLOR 34	The Virgin Mother, Goddess of Beauty, Grand Duchess, and the Lady: Women in Florentine Art	4
OSPFLOR 67	The Celluloid Gaze: Gender, Identity and Sexuality in Cinema	4
OSPHONGK 42	Gender and Sexuality in Contemporary Society	4
OSPKYOTO 41	Queer Culture and Life in Japan	4
OSPMADRD 45	Women in Art: Case Study in the Madrid Museums	4
OSPOXFRD 117W	Gender and Social Change in Modern Britain	4-5
OSPSANTG 14	Women Writers of Latin America in the 20th Century	4-5

Related Courses

The following is a partial list of related courses for Feminist, Gender, and Sexuality Studies. See ExploreCourses for course descriptions and General Education Requirements (GER)/WAYS information. See degree requirements above or check with the program associate director for applicability of these courses toward specific major or minor program requirements.

		Units
AMSTUD 139B	American Women Writers, 1850-1920	3-5
AMSTUD 156H	Women and Medicine in US History: Women as Patients, Healers and Doctors	5
AMSTUD 183	Re- Imagining American Borders	5
AMSTUD 214	The American 1960s: Thought, Protest, and Culture	5
AMSTUD 258	History of Sexual Violence in America	4-5
ANTHRO 201	Introduction to Cultural and Social Anthropology	3-5
COMPLIT 11Q	Shakespeare, Playing, Gender	3
COMPLIT 236	Literature and Transgression	3-5
CSRE 103S	Gender in Native American Societies	5
CSRE 162	The Politics of Sex: Work, Family, and Citizenship in Modern American Women's History	3-5
CSRE 183	Re- Imagining American Borders	5
CSRE 192E	History of Sexual Violence in America	4-5
EDUC 100A	EAST House Seminar: Current Issues and Debates in Education	1
EDUC 100B	EAST House Seminar: Current Issues and Debates in Education	1
EDUC 193G	Psychological Well-Being on Campus: A Focus on Gender and Sexual Identities	1
ENGLISH 139B	American Women Writers, 1850-1920	3-5
ENGLISH 160	Poetry and Poetics	5
FEMGEN 205	Songs of Love and War: Gender, Crusade, Politics	3-5
FILMSTUD 102	Theories of the Moving Image	4
HISTORY 36N	Gay Autobiography	4

HISTORY 44	Sex, Gender, and Intersectional Analysis in Science, Medicine, Engineering, and Environment	3
HISTORY 134A	The European Witch Hunts	5
HISTORY 144	Sex, Gender, and Intersectional Analysis in Science, Medicine, Engineering, and Environment	5
HISTORY 161	The Politics of Sex: Work, Family, and Citizenship in Modern American Women's History	3-5
HISTORY 166B	Immigration Debates in America, Past and Present	3-5
HISTORY 258	History of Sexual Violence in America	4-5
HUMBIO 140	Sex and Gender in Human Physiology and Disease	2-3
HUMBIO 143	Adolescent Sexuality	4
HUMBIO 144	Boys' Psychosocial Development	4
ILAC 193	The Cinema of Pedro Almodovar	3-5
INDE 215	Queer Health & Medicine	1
LINGUIST 150	Language and Society	3-4
LINGUIST 156	Language, Gender, & Sexuality	4
MED 242	Physicians and Human Rights	1
MUSIC 14N	Women Making Music	3
NATIVEAM 103S	Gender in Native American Societies	5
OBGYN 216	Current Issues in Reproductive Health	1
PEDS 223	Human Rights and Global Health	3
SOC 118	Social Movements and Collective Action	4
SOC 120	Interpersonal Relations	4
SOC 134	Gender and Education in Global and Comparative Perspectives	3-4
SOC 140	Introduction to Social Stratification	3
SOC 142	Sociology of Gender	3
SOC 152	The Social Determinants of Health	4
SOC 155	The Changing American Family	4
TAPS 314	Performing Identities	4

Courses

FEMGEN 3E. Michelle Obama in American Culture. 1 Unit.
Never before has the United States had a First Lady like Michelle Obama. During her eight years in the White House, Michelle Obama transformed traditional meanings of womanhood, marriage, motherhood, and style and created new possibilities for what it means to be strong and what it means to be beautiful. No First Lady has ever been so scrutinized but also so beloved: from her J. Crew dresses to her Let's Move campaign, from her vegetable gardens to her chiseled arms, and from her powerful speeches to her casual and always authentic personality. This class examines the impact on American culture of the most popular First Lady in American history.
Same as: AFRICAAM 3E, AMSTUD 3E, CSRE 3E, HISTORY 3E

FEMGEN 5C. Human Trafficking: Historical, Legal, and Medical Perspectives. 3 Units.
(Same as History 105C. History majors and others taking 5 units, enroll in 105C.) Interdisciplinary approach to understanding the extent and complexity of the global phenomenon of human trafficking, especially for forced prostitution, labor exploitation, and organ trade, focusing on human rights violations and remedies. Provides a historical context for the development and spread of human trafficking. Analyzes the current international and domestic legal and policy frameworks to combat trafficking and evaluates their practical implementation. Examines the medical, psychological, and public health issues involved. Uses problem-based learning. Required weekly 50-min. discussion section, time TBD. Students interested in service learning should consult with the instructor and will enroll in an additional course.
Same as: CSRE 5C, HISTORY 5C, INTNLREL 5C

FEMGEN 5S. Comparative Partitions: Religion, Identity, and the Nation-State. 5 Units.
This course looks at demands for representation made by religious minority communities, specifically by Indian Muslim and European Jewish intellectuals, in the twentieth century. We will explore what national belonging means from the perspective of minorities against the backdrop of global discussions of anticolonialism, national self determination, and equal representation. Through primary sources, namely political tracts and speeches, oral histories, literary sources, and historical maps, we question how authors from different backgrounds constructed religious communities as nations in need of states.
Same as: HISTORY 5S

FEMGEN 6W. Community-Engaged Learning Workshop on Human Trafficking - Part I. 3 Units.
Considers purpose, practice, and ethics of service learning. Provides training for students' work in community. Examines current scope of human trafficking in Bay Area, pressing concerns, capacity and obstacles to effectively address them. Students work with community partners dedicated to confronting human trafficking and problems it entails on a daily basis. Must currently be enrolled in or have previously taken History 5C/105C (FemGen 5C/105C, HumBio 178H, IR 105C, CSRE 5C/105C). (Cardinal Course certified by the Haas Center).
Same as: HISTORY 6W, HUMRTS 6W

FEMGEN 7W. Community-Engaged Learning Workshop on Human Trafficking - Part II. 3 Units.
Prerequisite: HISTORY6W (FEMGEN 6W). Continuation of HISTORY 6W (FEMGEN 6W). Students will continue working on their projects with their community partners. Several class meetings and small group consultations throughout the quarter. (Cardinal Course certified by the Haas Center).
Same as: HISTORY 7W, HUMRTS 7W

FEMGEN 9SI. A Road to Diversity inclusion: Learning to Embrace the Intersection of Identities within Athletics. 1 Unit.
This course explores the interaction of one¿s identities within the context of athletics. With an emphasis on the importance of self-awareness and story telling, we will navigate how all identities intersect and affect the privilege we receive within current society. We will specifically look at how race, ethnicity, sexual orientation, religion, socioeconomic status, mental health, and disabilities interact with our identity as athletes. ¿A Road to Diversity Inclusion: Learning to Embrace the Intersection of Identities within Athletics¿ will help athletes find their voice and use it for positive social change within their communities.

FEMGEN 10A. BAY AREA DOMESTIC WORKERS: RIGHTS: A GRASSROOTS CAMPAIGN FOR SOCIAL JUSTICE. 1 Unit.
In this Alternative Spring Break course and trip, we will examine how ournsociety and institutions allow for and perpetuate the exploitation andnoppression of domestic workers. Historically, domestic workers have largelynbeen excluded from basic labor protections. We cannot think criticallynabout the issues domestic workers face without considering the rolesngender, race and ethnicity, immigration status, and language play in thenindustry. We will use a conceptual framework based on citizenship andnreproductive labor theory to address themes in the context of Bay Areanmigrant women of color who are vehemently campaigning for equal labornrights. Through collaborations with domestic worker organizations based innSan Francisco and Oakland, ASB participants will learn how this movementnseeks to transform the domestic work industry through multilingual andnmulticultural alliances.

FEMGEN 11SI. Protecting your Bubble: Self Defense Strategies for College Students. 1 Unit.
This course will offer self defense training for students, with a focus on mental and physical defense, primarily against sexual assault. The course will focus on an "empowerment" method of self defense, seeking to provide tools and build confidence in students for a variety of situations. Students will participate in group discussions on the topic of sexual assault on college campuses, as well as physical and mental self defense tactics both to build confidence in any situation, prevent assault, and to employ in dangerous situations.

FEMGEN 12SI. Beyond the Athlete: Intersection of Diversity, Storytelling, and Athletics. 1-2 Unit.
This course explores the interaction of one's identities within the context of athletics. With an emphasis on the importance of self-awareness and storytelling, we will navigate how all identities intersect and affect the privilege we receive within current society. We will specifically look at how race, ethnicity, sexual orientations, religion, socioeconomic status, mental health, and disabilities interact with the sphere of athletics. "Beyond the Athlete: Intersection of Storytelling, Diversity, and Athletics" will help students find their voice and use it for positive social change within their communities.

FEMGEN 13. Stanford Anti-Violence Educator Training. 2 Units.
The Stanford Anti-Violence Educators (SAVE) Program seeks to cultivate a more resilient, supportive, and safe Stanford culture by engaging students in peer-to-peer dialogues about sexuality and consent, equipping them with skills to better relate with others. In this class, you will develop the knowledge and skill to facilitate peer education workshops with a variety of groups on campus throughout the year, including the required frosh curriculum. We will engage in conversations about sexuality, gender, identity, boundaries, and communication. We will examine social discourses, campus norms, systems of oppression, as well as explore new ways for the community to engage itself on these topics. The class will offer the structure and guidance to 1) gain in-depth knowledge of SAVE curricula content, 2) facilitate with presence, authenticity, and connection, and 3) increase self-efficacy as a leader for cultural change.

FEMGEN 13N. Women Making Music. 3 Units.
Preference to freshmen. Women's musical activities across times and cultures; how ideas about gender influence the creation, performance, and perception of music.
Same as: MUSIC 14N

FEMGEN 17. Gender and Power in Ancient Greece. 4 Units.
(Formerly CLASSGEN 17.) Introduction to the sex-gender system of ancient Greece, with comparative material from modern America. How myths, religious rituals, athletics, politics and theater reinforced gender stereotypes and sometimes undermined them. Skills: finding clues, identifying patterns and making connections amongst the components of a strange and beautiful culture very different from our own. Weekly participation in a discussion section is required.

FEMGEN 20Q. Making of the Modern Woman: Robots, Aliens, & the Feminine in Science Fiction. 3 Units.
What does the genre of science fiction have to say about gender identity? How are women in science fiction represented by themselves and by others? Who are women? What is gender and how is it constructed and performed? What is the relationship between man and machine? Between woman and machine? How is gender represented through narratives of literal alien otherness? What does it mean to be a woman online or in gamer culture? Material will include feminist analysis of gender in popular science fiction literature and visual media from 19th through 21st centuries. Texts range from Mary Shelley's Frankenstein to Alex Garland¿s Ex Machina.nnThis course will be reading and writing intensive but should also offer opportunities for spirited discussion. We will be engaging with sensitive subjects such as race, class, gender, and sexuality. Assignments include weekly short essays, discussion leadership, individual presentations, and a final research paper.

FEMGEN 21R. StoryCraft: Athlete Relationships. 2 Units.
What is intimacy like as an athlete? What are the stereotypes and the realities? In this class, athletic-identifying students will learn about relationships from the inside out: through an examination and telling of their lived experiences. We will explore various perspectives on intimacy and relationships that illuminate different aspects of our lives and then dive into our own stories to discover the many facets of intimacy. Due to the personal nature of the topic, we will emphasize safety, trust, and confidentiality throughout. The class offers the structure and guidance to 1) mine your life for stories, 2) craft the structure and shape of your stories, and 3) perform with presence, authenticity, and connection. nPlease fill out this short application for enrollment: bit.ly/Winter2021StoryCraft.
Same as: TAPS 21AR

FEMGEN 21S. StoryCraft: On Relationships. 2 Units.
Do we need love? And if so, what does it look like? In this class, students will learn about relationships from the inside out: through an examination and telling of their lived experiences. We will explore various perspectives on intimacy and relationships that illuminate different aspects of our lives, and then dive into our own stories to discover the many facets of intimacy. Due to the personal nature of the topic, we will emphasize safety, trust, and confidentiality throughout. The class offers the structure and guidance to 1) mine your life for stories, 2) craft the structure and shape of your stories, and 3) perform with presence, authenticity, and connection. Please fill out this short application for enrollment: bit.ly/Fall2020StoryCraft.
Same as: TAPS 21S

FEMGEN 21T. StoryCraft: Sexuality, Intimacy & Relationships. 2 Units.
What are the roles of sexuality, intimacy, and relationships in my life? How do I tell a compelling story? In this class, students will learn about these topics from the inside out. We will explore various perspectives on sexuality, intimacy, and relationships and then dive into our own stories to discover the richness and vibrancy of this part of our lives. Due to the personal nature of the topic, we will emphasize safety, trust, and confidentiality throughout. The class offers the structure and guidance to 1) mine your life for stories, 2) craft the structure and shape of your stories, and 3) perform with presence, authenticity, and connection. Students will be selected from this class to tell their stories in Beyond Sex Ed Part 1 during NSO 2020. Please fill out this short application for enrollment: bit.ly/Spring2020StoryCraft. Class will be held in KINGSCOTE Gardens 140.
Same as: TAPS 21T

FEMGEN 24N. Sappho: Erotic Poetess of Lesbos. 3 Units.
Preference to freshmen. Sappho's surviving fragments in English; traditions referring to or fantasizing about her disputed life. How her poetry and legend inspired women authors and male poets such as Swinburne, Baudelaire, and Pound. Paintings inspired by Sappho in ancient and modern times, and composers who put her poetry to music.
Same as: CLASSICS 16N

FEMGEN 36N. Gay Autobiography. 4 Units.
Preference to freshmen. Gender, identity, and solidarity as represented in nine autobiographies: Isherwood, Ackerley, Duberman, Monette, Louganis, Barbin, Cammermeyer, Gingrich, and Lorde. To what degree do these writers view sexual orientation as a defining feature of their selves? Is there a difference between the way men and women view identity? What politics follow from these writers' experiences?.
Same as: HISTORY 36N

FEMGEN 39. Long Live Our 4Bil. Year Old Mother: Black Feminist Praxis, Indigenous Resistance, Queer Possibility. 1-4 Unit.
How can art facilitate a culture that values women, mothers, transfolks, caregivers, girls? How can black, indigenous, and people of color frameworks help us reckon with oppressive systems that threaten safety and survival for marginalized people and the lands that sustain us? How can these questions reveal the brilliant and inventive forms of survival that precede and transcend harmful systems toward a world of possibility? Each week, this course will call on artists, scholars, and organizers of color who clarify the urgency and interconnection of issues from patriarchal violence to environmental degradation; criminalization to legacies of settler colonialism. These same thinkers will also speak to the imaginative, everyday knowledge and creative healing practices that our forebears have used for millennia to give vision and rise to true transformation.
Same as: AFRICAAM 39, CSRE 39, NATIVEAM 39

FEMGEN 41Q. Madwomen and Madmen: Gender and the History of Mental Illness in the U.S.. 3 Units.
This seminar explores the ways that gender and historical context shaped the experience and treatment of mental illness in U.S. history. What is the relationship between historically constructed ideas of femininity and masculinity and madness? Why have women been the witches and hysterics of the past, while men experienced neurasthenia and schizoid conditions? Why have there historically been more women than men among the mentally ill? How has the emotional and psychological suffering of women differed from that of men, and how has it changed over time? Among the sources we use to explore these questions are memoirs and films such as The Three Faces of Eve and One Flew Over the Cuckoos Nest. By contrasting the changing ways women and men experienced mental illness and were treated in the past, this seminar will elucidate the historically embedded nature of medical ideas, diagnoses and treatments.
Same as: AMSTUD 41Q

FEMGEN 44Q. Gendered Innovations in Science, Medicine, Engineering, and Environment. 4-5 Units.
Explores ¿Gendered Innovations¿ or how sex, gender, and intersectional analysis in research sparks discovery and innovation. Section 1 focuses on the history of women in science. Section 2 looks at transforming research institutions. Section 3 explores ¿Gendered Innovations. ¿ Topics include historical background, basic concepts, social robots, sustainability, medicine & public health, facial recognition, inclusive crash test dummies, and more. Stanford University is engaged in a multi-year collaboration with the European Commission and the U.S. National Science Foundation project on Gendered Innovations in Science, Health & Medicine, Engineering, and Environment, and this class will contribute that project. This course fulfills the second level Writing and Rhetoric Requirement (WRITE 2) and emphasizes oral, multimedia presentation, and writing skills. Each student will develop a case study illustrating how sex, gender, and intersectional analysis can lead to innovation and enhance social equalities.
Same as: HISTORY 44Q

FEMGEN 50Q. Life and Death of Words. 4 Units.
In this course, we explore the world of words: their creation, evolution, borrowing, change, and death. Words are the key to understanding the culture and ideas of a people, and by tracing the biographies of words we are able to discern how the world was, is, and might be perceived and described. We trace how words are formed, and how they change in pronunciation, spelling, meaning, and usage over time. How does a word get into the dictionary? What do words reveal about status, class, region, and race? How is the language of men and women critiqued differently within our society? How does slang evolve? How do languages become endangered or die, and what is lost when they do? We will visit the Facebook Content Strategy Team and learn more about the role words play in shaping our online experiences. Together, the class will collect Stanford language and redesign the digital dictionary of the future. Trigger Warning: Some of the subject matter of this course is sensitive and may cause offense. Please consider this prior to enrolling in the course.
Same as: CSRE 50Q, ENGLISH 50Q, NATIVEAM 50Q

FEMGEN 52N. Spoken Sexuality: Language and the Social Construction of Sexuality. 3 Units.
The many ways language is used in the construction of sexuality and sexual identity. How language is used as a resource for performing and perceiving sexual identity. Drawing on linguistic analyses of pronunciation, word choice, and grammar, questions such as: Is there a gay accent? Why isn't there a lesbian accent? How do transgendered people modify their linguistic behavior when transitioning? How are unmarked (heterosexual) identities linguistically constructed? Sexuality as an issue of identity, as well as of desire. Iconic relations between elements of language such as breathy voice quality and high pitch, and aspects of desire such as arousal and excitement. How language encodes ideologies about sexuality; how language is used to talk about sexuality in public discourses about gay marriage and bullying, as well as in personal narratives of coming out. How language encodes dominant ideologies about sexuality, evident in labels for sexual minorities as well as terminology for sex acts. Discussions of readings, explorations of how sexuality is portrayed in popular media, and analyses of primary data. Final research paper on a topic of student choice.
Same as: LINGUIST 52N

FEMGEN 54Q. African American Women's Lives. 3-4 Units.
Preference to sophomores. African American women have been placed on the periphery of many historical documents. This course will encourage students to think critically about historical sources and to use creative and rigorous historical methods to recover African American women¿s experiences. Drawing largely on primary sources such as letters, personal journals, literature and film, this course explores the everyday lives of African American women in 19th- and 20th-century America. We will begin in our present moment with a discussion of Michelle Obama and then we will look back on the lives and times of a wide range of African American women including: Charlotte Forten Grimké, a 19th-century reformer and teacher; Nella Larsen, a Harlem Renaissance novelist; Josephine Baker, the expatriate entertainer and singer; and Ida B. Wells and Ella Baker, two luminaries of civil rights activism. We will examine the struggles of African American women to define their own lives and improve the social, economic, political and cultural conditions of black communities. Topics will include women¿s enslavement and freedom, kinship and family relations, institution and community building, violence, labor and leisure, changing gender roles, consumer and beauty culture, social activism, and the politics of sexuality.
Same as: AFRICAAM 54Q, AMSTUD 54Q, HISTORY 54Q

FEMGEN 62S. From Runaway Wives to Dancing Girls: Urban Women in the Long Nineteenth Century. 5 Units.
This course explores the ways in which women - white and black, immigrant and native born, free and enslaved - lived and labored in American cities during the long nineteenth century. Together we will examine a variety of primary sources including diaries, municipal and institutional records, newspapers, memoirs, oral histories, and visual culture. We will also consider whose stories are told and explore how historians make sense of times very different from our own. Priority given to History majors and minors.
Same as: HISTORY 62S

FEMGEN 63N. The Feminist Critique: The History and Politics of Gender Equality. 3-4 Units.
This course explores the long history of ideas about gender and equality. Each week we read, dissect, compare, and critique a set of primary historical documents (political and literary) from around the world, moving from the 15th century to the present. We tease out changing arguments about education, the body, sexuality, violence, labor, politics, and the very meaning of gender, and we place feminist critics within national and global political contexts.
Same as: AMSTUD 63N, CSRE 63N, HISTORY 63N

FEMGEN 90M. Queer Stories. 5 Units.
Like other 90 and 91-level courses, 90M will explore basic elements of fiction and nonfiction writing. Students will read a wide variety of stories and essays in order to develop a language for working through the themes, forms, and concerns of the queer prose canon. Students will complete and workshop a piece of writing that in some way draws upon the aesthetics or sensibilities of the work we have read, culled from exercises completed throughout the quarter. This final piece may be a short story, a personal essay, a chapter from a novel or memoir, or a piece that, in the spirit of queerness, blurs or interrogates standard demarcations of genre. The course is open to any and all students, regardless of how they define their gender or sexuality. NOTE: First priority to undergrads. Students must attend the first class meeting to retain their roster spot.
Same as: ENGLISH 90M

FEMGEN 94Q. The Future is Feminine. 3 Units.
Gender is one of the great social issues of our time. What does it mean to be female or feminine? How has femininity been defined, performed, punished, or celebrated? Writers are some of our most serious and eloquent investigators of these questions, and in this class we'll read many of our greatest writers on the subject of femininity, as embodied by both men and women, children and adults, protagonists and antagonists. From Virginia Woolf to Ernest Hemingway, from Beloved to Gone Girl (and even "RuPaul's Drag Race"), we'll ask how the feminine is rendered and contested. We'll do so in order to develop a history and a vocabulary of femininity so that we may, in this important time, write our own way in to the conversation. This is first and foremost a creative writing class, and our goals will be to consider in our own work the importance of the feminine across the entire spectrum of gender, sex, and identity. We will also study how we write about femininity, using other writers as models and inspiration. As we engage with these other writers, we will think broadly and bravely, and explore the expressive opportunities inherent in writing. We will explore our own creative practices through readings, prompted exercises, improv, games, collaboration, workshop, and revision, all with an eye toward writing the feminine future.
Same as: ENGLISH 94Q

FEMGEN 97. Bow Down: Queer Hip-Hop Pedagogy. 3 Units.
Although Hip-Hop is frequently associated with homophobia, violence, sexism, and misogyny it continues to resonate with people the world over. By going beyond a surface level critique of Hip-Hop culture, this course explores the ways that queerness operates in and in conjunction with Hip-Hop culture. Topics covered include Hip-Hop and feminism, tensions between Hip-Hop and queerness, the role of commercialization of Hip-Hop in queer representation and inclusion with the culture, and how the intersections of Hip-Hop and queer theory can speak to issues of identity, power and privilege.

FEMGEN 98. Queer Music. 1-2 Unit.
This course explores the cultural and historical overlap of two marginal categories¿the queer, the musical¿with a focus on what these critical concepts can teach us much about identity, identification, and belonging. We will discuss genres including classical, musical theater, rap, pop, country, and punk as well as queer socialities formed in and through these musical scenes. We will think critically about the subtleties of musical language and queer affect, the circulation of gay rumors, and the diva as an object of queer obsession while asking how race, gender, and class as well as elitism, status, and taste inform such inquiries.

FEMGEN 99. Seeds of Change. 1 Unit.
This course is a required training for student leaders of the Seeds of Change initiative. This initiative takes an interdisciplinary approach to STEM education, infusing students' technical training with leadership training through a lens of gender inequality - bringing together key components of feminist pedagogy, service-learning, and experiential education to create a transformational learning experience. In this three-quarter course (Fall, Winter, Spring), student leaders will: learn the core content featured in the Seeds of Change curriculum, reflect on their experiences as both learners and teachers of this content, hone their own leadership and group facilitation skills, and engage as researchers in the initiative's evaluation efforts. NOTE: Instructor Consent Required. Please email kpedersen@stanford.edu *Cardinal Course certified by the Haas Center. See syllabus for adjusted course schedule and times.

FEMGEN 100X. Grassroots Community Organizing: Building Power for Collective Liberation. 3-5 Units.
Taught by long-time community organizer, Beatriz Herrera. This course explores the theory, practice and history of grassroots community organizing as a method for developing community power to promoting social justice. We will develop skills for 1-on-1 relational meetings, media messaging, fundraising strategies, power structure analysis, and strategies organizing across racial/ethnic difference. And we will contextualize these through the theories and practices developed in the racial, gender, queer, environmental, immigrant, housing and economic justice movements to better understand how organizing has been used to engage communities in the process of social change. Through this class, students will gain the hard skills and analytical tools needed to successfully organize campaigns and movements that work to address complex systems of power, privilege, and oppression. As a Community-Engaged Learning course, students will work directly with community organizations on campaigns to address community needs, deepen their knowledge of theory and history through hands-on practice, and develop a critical analysis of inequality at the structural and interpersonal levels. Placements with community organizations are limited. Enrollment will be determined on the first day through a simple application process. Students will have the option to continue the course for a second quarter in the Winter, where they will execute a campaign either on campus or in collaboration with their community partner.
Same as: AFRICAAM 100, CSRE 100, URBANST 108

FEMGEN 101. Introduction to Feminist, Gender, and Sexuality Studies. 4-5 Units.
Introduction to interdisciplinary approaches to gender, sexuality, queer, trans and feminist studies. Topics include the emergence of sexuality studies in the academy, social justice and new subjects, science and technology, art and activism, history, film and memory, the documentation and performance of difference, and relevant socio-economic and political formations such as work and the family. Students learn to think critically about race, gender, and sexuality from local and global perspectives.
Same as: AMSTUD 107, CSRE 108, TAPS 108

FEMGEN 102. Art and Social Criticism. 5 Units.
Visual artists have long been in the forefront of social criticism in America. Since the 1960s, various visual strategies have helped emergent progressive political movements articulate and represent complex social issues. Which artists and particular art works/projects have become key anchors for discourses on racism, sexism, economic and social inequality, immigrant rights and climate change? We will learn about a spectrum of political art designed to raise social awareness, spark social change and rouse protest. The Art Workers Coalition's agit-prop opposing the Vietnam War and ACT-UP's emblematic signs and symbols during the AIDS/HIV crisis of the 1980s galvanized a generation into action. Works such as Judy Chicago's The Dinner Party (1979), Fred Wilson's Mining the Museum (1992), and Glenn Ligon's paintings appropriating fragments from African-American literature all raised awareness by excavating historical evidence of the long legacy resisting marginalization. For three decades feminist artists Adrian Piper, Barbara Kruger and the Guerilla Girls have combined institutional critique and direct address into a provocative form of criticality. Recent art for social justice is reaching ever broadening publics by redrawing the role of artist and audience exemplified by the democratization of poster making and internet campaigns of Occupy and the Movement for Black Lives. We will also consider the collective aesthetic activisms in the Post-Occupy era including Global Ultra Luxury Faction, Climate Justice art projects, and the visual culture of Trump era mass protests. Why are each of these examples successful as influential and enduring markers of social criticism? What have these socially responsive practices contributed to our understanding of American history?.
Same as: AFRICAAM 102B, AMSTUD 102, ARTHIST 162B, CSRE 102A

FEMGEN 103. Feminist and Queer Theories and Methods Across the Disciplines. 2-5 Units.
(Graduate Students register for PHIL 279A or FEMGEN 203) This course is an opportunity to explore the difference feminist and queer perspectives make in creative arts, humanities, and social science research.nPrerequisites: Feminist Studies 101 or equivalent with consent of instructor.nNOTE: This course must be taken for a letter grade and a minimum of 3 units to be eligible for WAYS credit. The 2 unit option is for graduate students only.
Same as: FEMGEN 203, PHIL 179A, PHIL 279A

FEMGEN 103S. Gender in Native American Societies. 5 Units.
Seminar examines the impact of colonialism on gender roles & gender relations in American Indian communities beginning with the 17th century to the present. Topics include demographic changes; social, political & economic transformations associated with biological & spiritual assaults; the dynamism & diversity of native societies. Sources include history, ethnography, biography, autobiography, the novel & film.
Same as: CSRE 103S, NATIVEAM 103S

FEMGEN 104A. Junior Seminar and Practicum. 1 Unit.
Preference to and required of Feminist Studies majors; others require consent of instuctor. Feminist experiential learning projects related to critical studies in gender and sexuality. Identifying goals, grant proposal writing, and negotiating ethical issues in feminist praxis. Developing the relationship between potential projects and their academic focus in the major.

FEMGEN 104B. Senior Seminar and Practicum. 2 Units.
Required for Feminist Studies majors. Non-majors enrolled with consent of instructor. Students develop oral reports on their practicum and its relationship to their academic work, submit a report draft and revised written analysis of the practicum, and discuss applications of feminist scholarship. May be repeated once for credit.

FEMGEN 105. Honors Work. 1-15 Unit.
(Staff).

FEMGEN 105C. Human Trafficking: Historical, Legal, and Medical Perspectives. 5 Units.
(Same as HISTORY 5C. History majors and others taking 5 units, enroll in 105C.) Interdisciplinary approach to understanding the extent and complexity of the global phenomenon of human trafficking, especially for forced prostitution, labor exploitation, and organ trade, focusing on human rights violations and remedies. Provides a historical context for the development and spread of human trafficking. Analyzes the current international and domestic legal and policy frameworks to combat trafficking and evaluates their practical implementation. Examines the medical, psychological, and public health issues involved. Uses problem-based learning. Required weekly 50-min. discussion section, time TBD. Students interested in service learning should consult with the instructor and will enroll in an additional course.
Same as: CSRE 105C, HISTORY 105C, HUMRTS 112, INTNLREL 105C

FEMGEN 105P. FGSS Honors Preparation Seminar. 1 Unit.
This 2 unit course will provide students the opportunity to explore possible honors topics, project design, advisor options, and university resources including grants, libraries, and faculty. nOver the 10 weeks, students will review related research, potential methodologies, explore creative genres, and consider summer research and preparation. Students will use their findings to write a proposal to submit to the honors program as well as a proposal to submit to UAR for undergraduate funding. After completing the proposal, students will have more clear next steps for their honors projects, including summer research needs, spring course selection as it relates to their topic, and building advisor relationships.

FEMGEN 106Q. Gender and Media. 3-4 Units.
From childhood, individuals are presented with texts and images about what it means to be female, what it means to be male, but rarely what it means to question that binary. These images and texts also present what it means to be in relationship with one another, and what it means to reject established gender roles. In this course, students will examine and research how lessons learned from popular culture impact the treatment and expectations of people individually as well as in relationship with each other. Specifically, we will analyze the ways in which news articles, movie clips, magazine advertisements, television commercials as well as other texts present gender identities as binary as well as gender roles of those binary structures. How are the roles and bodies of all genders presented as objects open to scrutiny, critique, exploitation, abuse, and awe? After examining rhetorical strategies and devices, we¿ll read excerpts from texts by social critics such as Susan Bordo who analyze culture and it¿s presentation of bodies. Through case studies of films and campaign ads, visits to spaces on campus that construct gender binaries, and field trips to off campus sites, we will explore how representations of gender challenge or reinforce messages in popular media.

FEMGEN 107A. Ripped from the Headlines: Current Feminist, Gender, and Sexuality Issues and Questions. 1-2 Unit.
Discussion of current issues and questions related to Feminist, Gender, and Sexuality Studies.

FEMGEN 107C. You're Majoring in What?! Why Feminism is Still Relevant. 1-2 Unit.
Stanford Feminist Study alum and community activists will join this weekly seminar to share how studying feminism has helped them professionally. Together speakers and students will explore answers to questions such as: ¿Why study feminism, sexuality, or gender studies? ¿ ¿Why is feminism still relevant?¿.

FEMGEN 107G. Sisterhood, Brotherhood, & Gender Identity: The Histories, Stories, and Constructs of Greek Life. 1 Unit.
In this course, we will explore the history, the development, the critiques and praise of sororities and fraternities. We¿ll pay particular attention to how gender and sexuality are framed in those discussions¿ones by outsiders as well as ones by insiders. How do Greek organizations present their activities and goals? What values and roles do they highlight during recruitment? Who joins them? What expectations are there for participants? What are the perceived benefits that come with joining? What does it mean to be a ¿fraternity brother¿ or a ¿sorority sister¿ in modern Greek organizations? How are sorority women and fraternity men discussed by outsiders? How do the stereotypes of Greek life impact perceptions of individuals as well as particular sororities and fraternities? To consider these questions, we¿ll look at historical documents and analyze how groups described themselves as they were establishing; we¿ll also analyze recent documents (websites, books, etc.) to consider current ways organizations describe themselves, their activities, and their values. We¿ll use both to consider how the messages created by and about Greek organizations shape public perceptions as well as individuals¿ experiences of gender and sexuality identity.

FEMGEN 107M. College Culture & Masculinity. 1-2 Unit.
Students in this course will interrogate masculinity and its impacts on culture broadly, with a focus on college campuses. Some questions considered will include: How do structures and expectations of masculinity impact sexual assault and response to sexual assault? Where on campus do we see pressure to perform masculinity? What expectations do some campus communities, such as athletics and Greek life, have of their members to perform and maintain masculinity? How are male identifying individuals expected to behave in communities shaped by masculinity? What spaces are there for gender non-conforming folks in communities shaped by masculinity? How do structures of masculinity impact expectations of femininity and femme in these spaces and others?.

FEMGEN 107P. Momcore, Me Too, and Hook-Ups: Gender, Sexuality, and Power in Politics and Practice. 1-2 Unit.
Students bring widely varying experiences of relationships, whether romantic, familial, platonic, sexual, or professional. This course provides students an opportunity to explore how power functions in these relationships. Relying on feminist critiques of power, students will examine how constructions of gender and sexuality impact our daily lives as well as how we relate to others in those relationships while negotiating power. Activities, readings, and discussions will prompt students to reflect on ways society constructs sex, gender, and intimacy via media and politics. We will explore the following themes through an intersectional lens: codes of masculinity, concepts and practicalities of affirmative consent in straight and LGBTQIA contexts, sexual harassment and sexual empowerment, and the lived experience of dating, romance, and relationships.

FEMGEN 107S. Barbie Girls vs Sea Monsters: Gender, Sexuality, & Identity in American Culture. 1-2 Unit.
Incoming students bring widely varying experiences of intimate relationships, whether romantic, familial, platonic, or sexual. This course provides students an opportunity to examine sexuality as a broad concept encompassing a dimension of our humanity and its surrounding cultural systems, impacting how we relate with one another: our experience of sex, gender, intimacy, and worldview. Activities, readings, and discussions will prompt students to reflect on society constructs sex, gender, and intimacy. Themes will include intersectional feminism and codes of masculinity, concepts and practicalities of affirmative consent in straight and LGBTQIA contexts, gender and sexual identity spectrums, and the lived experience of dating, romance, and relationships.

FEMGEN 108. Internship in Feminist Studies. 1-5 Unit.
Supervised field, community, or lab experience in law offices, medical research and labs, social service agencies, legislative and other public offices, or local and national organizations that address issues related to gender and/or sexuality. One unit represents approximately three hours work per week. Required paper. May be repeated for credit. Service Learning Course (certified by Haas Center). Feminist, Gender, and Sexuality Majors may not receive 108 credit for their required practicum, as they are to sign up for FEMGEN 104 A & B instead. Prerequisites: Course work in Feminist, Gender, and Sexuality Studies, written proposal and application form submitted for approval by program office, written consent of faculty sponsor. Course may be taken 3 times total, for a max of 15 units.

FEMGEN 108A. Enacting Community Liberation: Women's Community Center. 1 Unit.
Campus internships are crucial forms of community-building that provide students hands-on experience with organizing, outreach, and community care. Moving from theory to praxis, the FGSS department in partnership with the Women's Community Center offers the ¿Enacting Community Liberation¿ internship.nnIn accordance with the mission of the WCC, this internship will focus on addressing issues of gender, identity, equity, and justice through a lens of intersectionality. The WCC strives to center the most marginalized, and create programming, projects, and services that serve said populations - understanding that when the needs of the most marginalized are met, everyone will be cared for.nnThis is a year-long internship, with the ability to receive one unit of course credit per quarter for up to 3 quarters of the academic year.

FEMGEN 108B. Gender in the Arab and Middle Eastern City. 5 Units.
What are the components of gendered experience in the city, and how are these shaped by history and culture? How do meanings attributed to Islam and the Middle East obscure the specificity of women¿s and men¿s lives in Muslim-majority cities? This course explores gender norms and gendered experience in the major cities of Arab-majority countries, Iran and Turkey. Assigned historical and sociological readings contextualize feminism in these countries. Established and recent anthropological publications address modernity, mobility, reproduction, consumption, and social movements within urban contexts. Students will engage with some of the key figures shaping debates about gender, class, and Islam in countries of the region typically referenced as North Africa and the Middle East (MENA). They will also evaluate regional media addressing concerns about gender in light of the historical content of the course and related political concepts.
Same as: ANTHRO 108B, URBANST 108B

FEMGEN 109. Looking Back, Moving Forward: Raising Critical Awareness in Gender and Sports. 3 Units.
In 1972, Title IX legislation opened up a vast range of opportunities for women in sports. Since then, women's sports have continued to grow yet the fight for recognition and equality persists. Simply put, men's sports are more popular than women's--so much so, in fact, that people often make the hierarchical distinction between "sports" and "women's sports." But what would it take to get more women's sports featured on ESPN or more female athletes on the cover of Sports Illustrated? And, given the well-documented corruption at the highest levels of men's sports, should such an ascent in popularity be the goal for women's sports? This course will map out and respond to the multifaceted issues that emerge when women enter the sports world. Throughout the quarter, we will explore the fight for gender equality in sports through historical, cultural, and rhetorical lenses. NOTE: Class will meet in Old Union, Room 302.
Same as: FEMGEN 209

FEMGEN 109E. Global Women Leaders: Past and Present. 3-4 Units.
This course will introduce students to global women's history, and focus on the emergence of women political leaders in the 20th century. We will begin by looking at the history of patriarchy around the world, and then consider the growth of feminist politics. We will look at movements for women's self-determination in the 19th and 20th centuries, and women's emergence as national political leaders in the 20th century. We then focus on a series of global women leaders, primarily heads of state, and explore their biographies and historical contributions. What conditions have permitted women to emerge as heads of state in the 20th century? Have women made a distinctive contribution as heads of state and political activists? In addition to lectures and discussions, class meetings include viewing several films.

FEMGEN 109S. Gender & Sports: Beyond Equality Speaker Series. 1 Unit.
To be taken in conjunction with attendance at the Winter Quarter Gender & Sports Speaker Series. This discussion group will meet 2-3 times during the quarter. Course times will be determined at the start of Winter Quarter. For questions, email rmeisels@stanford.edu. Repeatable for credit.

FEMGEN 110J. Romance, Desire, and Sexuality in Modern Japanese Literature. 3-4 Units.
This class is structured around three motifs: love suicide (as a romantic ideal), female desire, and same-sex sexuality. Over the course of the quarter we will look at how these motifs are treated in the art and entertainment from three different moments of Japanese history: the Edo period (1615-1868), the modern period (1920-65), and the contemporary period (1965-present). We will start by focusing on the most traditional representations of these topics. Subsequently, we will consider how later artists and entertainers revisited the conventional treatments of these motifs, informing them with new meanings and social significance. We will devote particular attention to how this material comments upon issues of gender, sexuality, and human relationships in the context of Japan. Informing our perspective will be feminist and queer theories of reading and interpretation.
Same as: FEMGEN 210J, JAPAN 110, JAPAN 210

FEMGEN 111. Reproductive Politics in the United States and Abroad. 3-5 Units.
Course description: This course examines the issues and debates surrounding women's reproduction in the United States and beyond. It pays special attention to how knowledge and technology travel across national/cultural borders and how women's reproductive functions are deeply connected to international politics and events abroad. Topics include: birth control, population control, abortion, sex education, sex trafficking, genetic counseling, assisted reproductive technologies, midwifery, breastfeeding, menstruation, and reproductive hazards.
Same as: AMSTUD 111

FEMGEN 112. "When We Dead Awaken": Breakthroughs in Conceptions of the Gendered Self in Literature and the Arts. 4-5 Units.
Remarkable breakthroughs In conceptions of the gendered self are everywhere evident in literature and the arts, beginning primarily with the Early Modern world and continuing into today. Many of these works inhere in innovations in literary and artistic forms in order to capture and even evoke the strong cognitive, or psychological, dimension of such ¿awakenings.¿ The reader, or viewer, is often challenged to adapt her or his mind to new forms of thought, such as John Donne¿s seventeenth century creation of the Dramatic Monologue, a form popular with modern writers, which requires the reader¿s cognitive ¿presence¿ in order to fill out the dramatic scene. In so doing, the reader often supplies the presence of the female voice and thereby enters into her self-consciousness and inner thoughts. Adrienne Rich, for example, specifically ¿rewrites¿ one of Donne¿s major poems from the female perspective. This can be, in Rich¿s words, an ¿awakening¿ for the active reader, as he or she assumes that often-unspoken female perspective. The course will also explore male conceptions of the self and how such conceptions are often grounded in cultural attitudes imposed on male subjects, which can contribute to gender-bias toward women, a subject often neglected in exploring gendered attitudes, but which is now gaining more study, for example, in Shakespeare¿s ¿Othello.¿ Readings from recent developments in the neurosciences and cognitive studies will be included in our study of artistic forms and how such forms can activate particular mindsets. Writers and artists will include Shakespeare, Michelangelo, John Donne, Virginia Woolf, Adrienne Rich, Gertrude Stein, Picasso, June Wayne, and Edward Albee¿s 1960¿s play, ¿Who¿s Afraid of Virginia Woolf?¿.
Same as: ENGLISH 182J, FEMGEN 212

FEMGEN 113. Transgender Studies. 3-4 Units.
Transgender and gender-expansive identities are the subject of growing attention and (often sensationalist) interest in the media as well as in the healthcare field, yet there exists a dearth of legitimate academic courses, research and writing that reflect and explore gender identity and expression as a fluid spectrum rather than a fixed binary. This course will address transgender and gender expansive identities from historical, medical, literary, developmental and sociopolitical perspectives.
Same as: FEMGEN 213

FEMGEN 113X. Feminist Poetry in the U.S., 1973-2017. 3-5 Units.
Traces the development of feminist poetry in the United States from second wave feminists like Adrienne Rich, Audre Lorde, and Alicia Ostriker to contemporary poetry of Anne Boyer, Steph Burt, and Eileen Myles, among others. We will think broadly about the relationship between politics and poetry, and focus specifically on the influences of second- and third- wave feminism on poetry produced by women in the U.S. from the 1970s until today.Note: To be eligible for WAYS credit, you must take the course for a Letter Grade.

FEMGEN 114. Sexual Diversity and Health. 1 Unit.
Explores multiple aspects of sexual diversity and health, including: kink/BDSM, polyamory, trans* sexuality, asexuality, high-risk sex, inter-sex-tionality, questioning gender and sexual binaries, and more. The format includes a one-day conference featuring a variety of expert speakers covering different aspects of sexual diversity and health, followed by a debriefing and discussion session to integrate what has been heard and learned.
Same as: FEMGEN 214

FEMGEN 115. Queer Reading and Queer Writing in Early Modern England. 5 Units.
Considers the possibility of identifying queer reading and writing practices in early modern England as well the theoretical and historical obstacles such a project necessarily encounters. Focus on the role which Renaissance discourses of desire continue to play in our negotiations of homo/erotic subjectivity, identity politics, and sexual and gender difference. Study of Renaissance queerness in relation to the classical tradition on the one hand and the contemporary discourses of religion, law, and politics on the other. Readings include plays, poems, and prose narratives as well as letters, pamphlets, and ephemeral literature. Both major and minor authors will be represented.

FEMGEN 115A. The Queer 20th Century: German LGBTQ Literature and Film. 3-5 Units.
What was it like to be queer in 20th-century Germany? This course examines the rich and sometimes surprising LGBTQ culture of 20th-century Germany, featuring stories that are often left out of traditional seminars. Through literature and film, we will learn about pioneering gay rights activists, persecution under National Socialism, emancipation movements under capitalism and socialism, and debates that are shaping queer life in contemporary Germany. Taught in English; students of all backgrounds are very welcome. Remote synchronous, with plenty of opportunities for breakout rooms, student discussion, Zoom breaks, and off-screen work.
Same as: FEMGEN 215A, GERMAN 115, GERMAN 215

FEMGEN 116. Narrating Queer Trauma. 4-5 Units.
Psychiatrist Dori Laub has argued that the process of narrating trauma is essential to the healing process. Not only is telling the story important, but it is also crucial to have someone else bear witness to the narrative. But how do people even begin to narrate stories of violence and pain, and how do we become good listeners? How are these stories told and heard in the specific context of queer world making? This course will explore narratives of trauma in queer lives through literature, film, media, and performance in conjunction with trauma theory and psychoanalysis. We will pay specific attention to questions of community, healing, violence, and affect at the intersections of queerness and race, sex, disability, class, gender, and nationality.
Same as: FEMGEN 216X

FEMGEN 117. Expanding Engineering Limits: Culture, Diversity, and Equity. 3 Units.
This course investigates how culture and diversity shape who becomes an engineer, what problems get solved, and the quality of designs, technology, and products. As a course community, we consider how cultural beliefs about race, ethnicity, gender, sexuality, abilities, socioeconomic status, and other intersectional aspects of identity interact with beliefs about engineering, influence diversity in the field, and affect equity in engineering education and practice. We also explore how engineering cultures and environments respond to and change with individual and institutional agency. The course involves weekly presentations by scholars and engineers, readings, short writing assignments, small-group discussion, and hands-on, student-driven projects. Students can enroll in the course for 1 unit (lectures only), or 3 units (lectures+discussion+project). For 1 unit, students should sign up for Section 1 and Credit/No Credit grading, and for 3 units students should sign up for Section 2 and either the C/NC or Grade option.
Same as: CSRE 117, CSRE 217, ENGR 117, ENGR 217, FEMGEN 217

FEMGEN 117F. Race, Gender, and Sexuality in Contemporary American Film. 4-5 Units.
This course introduces students to the theoretical and analytical frameworks necessary to critically understand constructions of race, gender, and sexuality in contemporary American film. Through a sustained engagement with a range of independent and Hollywood films produced since 2000, students analyze the ways that cinematic representations have both reflected and constructed dominant notions of race, gender, and sexuality in the United States. Utilizing an intersectional framework that sees race, gender, and sexuality as always defined by one another, the course examines the ways that dominant notions of difference have been maintained and contested through film in the United States. Readings include work by Michael Omi & Howard Winant, Patricia Hill Collins, Jodi Melamed, Stuart Hall, Lisa Duggan and bell hooks. Films to be discussed include Moonlight, Mosquita y Mari, Kumu Hina, Hustlers, and Crazy Rich Asians. To enroll in the course, please fill out the following form: https://forms.gle/RKqURW6niyB1LRyEA.
Same as: AFRICAAM 117J, AMSTUD 117, ASNAMST 117D, CSRE 117D

FEMGEN 117Q. Queer Arts: Remembering and Imagining Social Change. 4-5 Units.
This interdisciplinary fine arts course is designed to examine the nature of artistic imagination, sources of creativity and the way this work helps shape social change. We will consider the relationship among muses, mentors and models for queer artists engaged in such fields as visual art, music, theatre, film, creative writing and dance. Exploring various cultures, lands and times, we will study the relationship between memory and vision in serious art. We will ask questions about the role of the artist in the academy and the broader social responsibility of the artist. We will locate some of the similarities and differences among artists, engage with different disciplines, and discover what we can learn from one another. This seminar requires the strong voices of all participants. To encourage students to take their ideas and questions beyond the classroom, we will be attending art events (performances, exhibits, readings) individually and in groups.nnThe learning goals include a serious exploration of individual students¿ creativity, a more nuanced appreciation of diverse arts and a stronger understanding of the multifaceted nature of gender, race and class. Students will develop their abilities to write well-argued papers. They will stretch their imaginations in the written and oral assignments. And they will grow more confident as public speakers and seminar participants.
Same as: CSRE 117Q

FEMGEN 118. Transgender Cultural Studies. 4-5 Units.
In the United States, we seem to be in a ¿transgender moment,¿ or we¿ve reached what Time magazine has called the ¿transgender tipping point.¿ In this course, we will explore what this cultural moment means for the representation of transgender, nonbinary, and gender non-conforming people. We will look historically and globally at differences in representation in order to better understand our current cultural moment. We will explore multiple genres, formats, and authorial points of view to critically think through how and by whom trans stories are told. How do interlocking systems of oppression continue to dictate and drive trans representation and narrative; how do trans authors and artists push back against these systems to (re)construct their own narrative and image? Through a critical engagement with film, memoir, graphic narrative, poetry, and fiction created by and/or about trans* people, this course will engage students with an instersectional approach to trans identity and representation in concert with racial identity, sexuality, disability, socio-economic status, age, gender, and citizenship.

FEMGEN 119. Archaeology of Gender and Sexuality. 5 Units.
How archaeologists study sex, sexuality, and gender through the material remains left behind by past cultures and communities. Theoretical and methodological issues; case studies from prehistoric and historic archaeology.
Same as: ANTHRO 111, ARCHLGY 129

FEMGEN 121. Intro to Queer Studies. 4-5 Units.
This course provides an interdisciplinary grounding in historical and theoretical foundations of queer culture and theory. A critical interrogation of sex, gender, sexuality, pleasure, and embodiment will provide students with a framework for producing their own queer cultural critique. We will explore LGBTQ history alongside contemporary queer issues in popular culture, health, science, government policy, and politics. This course will also address the intersections of sexuality and gender with race, class, ability, age, nationality, and religion. Students will engage with multiple disciplinary approaches that have both shaped queer studies and have been shaped by queer methodology.

FEMGEN 122. Reality Television and All Things Basic. 3-5 Units.
In ¿Visual Pleasure and Narrative Cinema¿ (1975), feminist film theorist Laura Mulvey argues that ¿the cinema poses questions of the ways the unconscious (formed by the dominant order) structures ways of seeing and pleasure in looking,¿ (804-805), conceptualizing what has become ubiquitously known as ¿the male gaze.¿ Mulvey's theory of the male gaze in film centers on two processes, the pleasures produced through objectification and those produced through identification. Feminists of color who study the politics of popular media have critiqued as well as expanded on Mulvey's notion of the male gaze, including bell hook's articulation of an oppositional gaze¿a critical gaze¿a possible site of resistance for colonized black people.nnWithin the last two decades, reality television has become a staple of popular culture in the U.S., a key component of the representational politics of audiovisual media. Thinking the processes of objectification and identification more expansively and privileging bell hook¿s formulation of critical spectatorship, what types of pleasures are produced through the addition of the category ¿reality? ¿ How does this relate to our understandings of racialized gender in the U.S.? Is reality television ¿this generation¿s¿ soap opera, a feminized genre of (melo)drama? And does this form of reality simply reproduce the heteronormative order, or can this form of media ever subvert normative prescriptions regarding gender, age, race, class, and sex(uality)?.
Same as: CSRE 122B

FEMGEN 123. Sex and Love in Modern U.S. Society. 3 Units.
Social influences on private intimate relations involving romantic love and sexuality. Topics include the sexual revolution, contraception, dating, hook-ups, cohabitation, sexual orientation, and changing cultural meanings of marriage, gender, and romantic love.
Same as: SOC 123, SOC 223

FEMGEN 124. Challenging Sex and Gender Dichotomies in Medicine. 1 Unit.
Explores and challenges the traditional physiological bases for distinguishing human males from females, as well as the psychosocial factors that play a role in experiencing and expressing gender and sexuality. Topics include the influence of sociocultural (gender) norms and behaviors on human biology, the interactions of sex and gender on medical outcomes, the importance of understanding the spectrum of sex, gender, and sexuality in clinical practice.
Same as: FEMGEN 224

FEMGEN 125V. Virginia Woolf in the Age of #MeToo. 3-5 Units.
How does a groundbreaking first wave feminist theorist and novelistic innovator speak intergenerationally? Everything about #MeToo can be found in Virginia Woolf's works, from gender oppression, to the politics of women's entry into the public sphere, to the struggle of women to be heard and believed. We begin with A Room of One's Own (1929) and Three Guineas (1938), tying them to media coverage of #MeToo, then turn to the identity politics of her fiction and to broader histories of feminism and feminist theory.

FEMGEN 126D. Victorian Sex. 5 Units.
How can we make sense of a culture of extraordinary sexual repression that nevertheless seemed fully preoccupied with sex? Examination of the depictions of sex in Victorian literary and cultural texts. Authors include: Collins, Braddon, the Brownings, Swinburne, Stoker and Wilde.

FEMGEN 127. Human in a Time of War. 3-5 Units.
It has often been said that the post-9/11 era has been one of never-ending war for the United States. Privatization and the increasing proliferation of ever more removed technologies of killing have raised questions regarding the disposability of racialized populations targeted for submission or containment. The global, ubiquitous nature of the U.S. military industrial complex has made war synonymous with impunity.nnHowever, racialized populations have arguably been under siege and positioned as disposable since the colonization of the Americas. This course draws upon Alexander Weheliye¿s (2014) challenge to move beyond the particular, querying how racialized, gendered experiences condition more expansive notions of the human. Following Jodi Kim¿s notion of the protracted afterlife of the Cold War as epistemological structure, this course traces the continuities and transformations in constructions of populations as more or less human, from settler colonial conquest to the post-9/11 era. How has racial and gendered violence functioned to determine not only which bodies matter but which lives are legible and which subjects granted the full range of human complexity? Recognizing the ¿layered interconnectedness of political violence, racialization, and the human,¿ this course also engages ¿the existence of alternative modes of life alongside the violence, subjection, exploitation, and racialization that define the modern human¿ (Weheliye, 1-2).
Same as: CSRE 127C

FEMGEN 129A. Body Text. 4-5 Units.
Written on the body is a secret code only visible in certain lights; the accumulations of a lifetime gather there. In places the palimpsest is so heavily worked that the letters feel like braille. I like to keep my body rolled up away from prying eyes. Never unfold too much, tell the whole story. Jeanette Winterson, Written on the BodynThis course asks when and where flesh becomes text. Through an eclectic mix of short stories, novels, film, nonfiction, and critical theory, we will think through how text becomes a metaphor for, substitute for, and/or extension of the body. What exactly do we talk about when we talk about The Body How are bodies written into and out of existence? Topics will include the virtual body, the eating-disordered body, the choreographed body, the medicalized trans body, and the black body in the carceral state. Throughout the course, we will draw out the theoretical in the literary and the literary in the theoretical, and will pay special attention to the relationship between embodied practice and (traditionally) disembodied thought.

FEMGEN 130. Sex and Gender in Judaism and Christianity. 3 Units.
What role do Jewish and Christian traditions play in shaping understandings of gender differences? Is gender always imagined as dual, male and female? This course explores the variety of ways in which Jewish and Christian traditions - often in conversation with and against each other - have shaped gender identities and sexual politics. We will explore the central role that issues around marriage and reproduction played in this conversation. Perhaps surprisingly, early Jews and Christian also espoused deep interest in writing about 'eunuchs' and 'androgynes,' as they thought about Jewish and Christian ways of being a man or a woman. We will examine the variety of these early conversations, and the contemporary Jewish and Christian discussions of feminist, queer, trans- and intersex based on them.
Same as: JEWISHST 120, RELIGST 130

FEMGEN 130S. Sex and the Novel. 5 Units.
How do novels represent sexual life? This course reads texts from the eighteenth century to the present day, and considers how novelists represent the discombobulating effects of desire in fictional prose. Authors may include: S. Richardson, N. Hawthorne, J. Austen, E. Brontë, G. Gissing, H. James, D.H. Lawrence, J. Joyce, V. Nabokov, J. Baldwin, A. Hollinghurst and Z. Smith.

FEMGEN 131. Introduction to Queer Theory. 3-5 Units.
What can Queer Theory help us do and undo? Emerging at the intersections of feminist theory, queer activism, and critical race studies in the 1990's, Queer Theory has become a dynamic interdisciplinary field that informs a wide range of cultural and artistic practices. This course will introduce students to the development of queer theory as well as core concepts and controversies in the field. While considering theoretical frames for thinking gender, sexuality, and sex, we will explore the possibilities--and limitations--of queer theory with a focus on doing and undoing identity, knowledge, and power.

FEMGEN 132. Intersectional Feminism. 4 Units.
This course is focused on the feminist concept of intersectionality. As a mode of Black feminist thought, lived activist practice, and interdisciplinary research methodology, intersectionality allows us to think about overlapping forms of identity and the interlocking power structures that produce systematic oppression and discrimination. We will examine the origins and development of intersectional feminism and consider its far-reaching impact in social justice work and contemporary activist movements. As we learn the language, methods, and critiques of intersectionality, we will cover issues related to rights, ethics, privilege, and globalization while discussing social difference on micro- and macro-levels.

FEMGEN 133. Transgender Performance and Performativity. 4 Units.
This course examines theater, performance art, dance, and embodied practice by transgender artists. Students will learn the history and politics of transgender performance while considering the creative processes and formal aesthetics trans artists use to make art. We will analyze creative work in conversation with critical and theoretical texts from the fields of performance studies, art history, and queer studies.
Same as: TAPS 133T

FEMGEN 133M. Masculinity: Technologies and Cultures of Gender. 4 Units.
What is masculinity? How are masculinities invested with power and meaning in cultural contexts? How is anthropological attention to them informed by and extending inquiry across the academy in spheres such as culture studies, political theory, gender studies, history, and science and technology studies? Limited enrollment.
Same as: ANTHRO 133, ANTHRO 233

FEMGEN 133T. Transatlantic Female Modernists. 3-5 Units.
How did American and British women writers express their experiences of modernity? A major critical lens on modernism interrogates questions of gender and sexuality, including how women expressed the experiences of `writing as a woman during these years (1910-1940). But distinctions of race, class, culture, nation, and literary inheritance were powerful determinants on how individual writers gave voice to their creative aspirations. This course explores what binds and what differentiates various forms of aesthetic, political, and cultural representation in the works of pioneering transatlantic innovators: Virginia Woolf; Charlotte Perkins Gilman; Zora Neale Hurston; Djuna Barnes; Katherine Mansfield; Nella Larson; Amy Lowell; H.D.; Jessie Fauset; Nancy Cunard.

FEMGEN 134. The Marriage Plot. 5 Units.
The centrality of the marriage plot in the development of the British novel beginning in the 18th century with Samuel Richardson's *Pamela* and ending with Woolf's modernist novel *Mrs. Dalloway*. The relationship between novelistic plotting and the development of female characters into marriageable women. What is the relationship between the novel and feminine subjectivity? What aspects of marriage make it work as a plotting device? What kinds of marriages do marriage plots allow? Is the development of women's political agency related to their prominence in the novel form?.

FEMGEN 134D. Sex, Courtship, and Marriage in America. 3 Units.
How people meet, who they date, and when they settle down have all changed dramatically in recent decades. This course will provide students with a thorough overview of demographic, sociological, and historical perspectives on sex, relationships, and family in the United States. Students will become familiar with the empirical patterns and trends, political and cultural debates, and policy issues concerning historical and modern romantic and sexual relationships, as well as the major theories and research methods used in the sociological study of relationships. Throughout the course, we will explore how changes in modern relationships may affect broader patterns of social inequality and family structure. Additionally, we will examine how the mate selection process intersects with various aspects of gender, sexuality, class, race, and technology.
Same as: SOC 134D

FEMGEN 135. Body Politics. 1-2 Unit.
This weekly course facilitates conversations on issues of the body across a wide spectrum of contemporary experiences, controversies, and contexts. Informed by gender studies, critical race theory, and feminist theory, we will explore current events related to racialized violence, size liberation, reproductive rights, HIV criminalization, rape culture, disability, transgender rights, and health and fitness.

FEMGEN 136. Transnational Sexualities. 3-5 Units.
This course considers the impact of globalization on sexual identities and cultures from a transnational perspective. We will consider how shifting geographical discourses and practices have redefined gender and sexuality across cultures, across borders. With a dual goal of destabilizing the assumptions in liberal human rights agendas and the heterosexual/homosexual binary, we will examine the politics of migration and diaspora; queer nationalisms and homonationalisms; queer transnational labor flows; urban-rural divides and difference; neoliberalism and queer gentrification, among other current debates across postcolonial, feminist, queer, legal, and transnational sexuality studies.

FEMGEN 137. Beauty and Power. 1-2 Unit.
Beauty functions as a form of currency that can grant access, privilege, and possibility. How do European beauty standards collude with patriarchal power to justify social inequalities? This class facilitates weekly discussions that focus on the social construction of beauty and its socio-political impact on people of all genders. We will chart the intersections of beauty and power in order to consider the colonial construction of racial and sexual hierarchies, the $445 billion beauty industry, and daily practices that subvert, queer, or decolonize beauty. With the goal of expanding our sense of what beauty is and does, we will mine feminist theory and popular culture for surprising commentary on topics including objectification, aging, celebrity, self-fashioning, and the politics of counter-aesthetics.

FEMGEN 138. Men's Violence Against Women in Literature: A Critical and Social Analysis. 3-5 Units.
Literature, as a social and cultural product of its time, can inform and deepen our understanding of oppression. Using literature as a vehicle, this course will explore the impact of and responses to men's violence against women. Students will critically assess how the author has portrayed the topic of sexual assault and relationship abuse, how the characters and/or author exhibits victim blaming, and, if the characters were living today, would current policies adequately hold the perpetrator responsible, provide safety and justice for the survivor, and challenge rape culture. In dialogue with theoretical texts, we will analyze the literary representations of patriarchy that inform societal acceptance of gender-based violence, identify the historical prevalence of victim blaming and impunity in these works, and assess the implications on policy making at the individual, community and political level. Students will critically examine literature including Shakespeare's Taming of the Shrew, Thomas Hardy's Tess of the D'Ubervilles, Zora Neale Hurston's Their Eyes Were Watching God, Louise Erdrich's The Round House and Joyce Carol Oates' We Were the Mulvaneys. There is an optional service-learning component.
Same as: FEMGEN 238

FEMGEN 138A. How College Works: An Introduction to the Sociology of Higher Education. 3-5 Units.
This course is designed for students who want to better understand the elite 4-year college system and how inequalities are both perpetuated and ameliorated by its structure and practices (focusing on gender, race, and first generation college students). This course will prepare students for their own undergraduate study at Stanford, using research and reflection. Focusing on the sociology of higher education, the course draws from research in education, sociology and gender studies. This course is designed for undergraduates, with a notable utility for first-year students, but anyone is welcome!.
Same as: EDUC 138

FEMGEN 139. Rereading Judaism in Light of Feminism. 4 Units.
During the past three decades, Jewish feminists have asked new questions of traditional rabbinic texts, Jewish law, history, and religious life and thought. Analysis of the legal and narrative texts, rituals, theology, and community to better understand contemporary Jewish life as influenced by feminism.
Same as: JEWISHST 139

FEMGEN 139B. American Women Writers, 1850-1920. 3-5 Units.
This course traces the ways in which female writers negotiated a series of literary, social, and intellectual movements, from abolitionism and sentimentalism in the nineteenth century to Progressivism and avant-garde modernism in the twentieth. Authors include Harriet Beecher Stowe, Harriet Jacobs, Rebecca Harding Davis, Emily Dickinson, Kate Chopin, Edith Wharton, Gertrude Stein, Willa Cather, and Charlotte Perkins Gilman.
Same as: AMSTUD 139B, ENGLISH 139B

FEMGEN 140A. Destroying Dichotomies: Exploring Multiple Sex, Gender, and Sexual Identities. 3-5 Units.
This course is designed to broaden the student's awareness of the human experience by introducing scholarly debates about sex, gender and sexual identities and expressions. We will consider the socially constructed nature of sex, gender and sexuality and examine the history and community of those who identify as intersexual, transgender, homosexual, bisexual, asexual, pansexual and/or queer through texts, discussion, films, and class presentations.

FEMGEN 140D. LGBTQ History of the United States. 4-5 Units.
An introductory course that explores LGBT/Queer social, cultural, and political history in the United States. By analyzing primary documents that range from personal accounts (private letters, autobiography, early LGBT magazines, and oral history interviews) to popular culture (postcards, art, political posters, lesbian pulp fiction, and film) to medical, military, and legal papers, students will understand how the categories of gender and sexuality have changed over the past 150 years. This class investigates the relationship among queer, straight and transgender identities. Seminar discussions will question how the intersections of race, class, gender, and sexuality influenced the construction of these categories.
Same as: FEMGEN 240D, HISTORY 257C

FEMGEN 141. Activism and Intersectionality. 3-4 Units.
How are contemporary U.S. social movements shaped by the intersections of race, class, gender, and sexuality? This course explores the emergence, dynamics, tactics, and targets of social movements. Readings include empirical and theoretical social movement texts, including deep dives into Black, White, and Chicana feminisms; the KKK; and queer/LGBT movements. We will explore how social movement emergence and persistence is related to participants¿ identities and experiences with inequality; how the dynamics, targets, and tactics of mobilized participants are shaped by race, class, gender, and/or sexuality; and how social movement scholars have addressed the intersectional nature of inequality, identity, and community.
Same as: AFRICAAM 141X, CSRE 141X, SOC 153

FEMGEN 142. Sociology of Gender. 3 Units.
The aim of this course is to provide students with an understanding of the sociological conceptualization of gender. Through the sociological lens, gender is not an individual attribute or a role, but rather a system of social practices that constructs two different categories of people men and women and organizes social interaction and inequality around this difference. First we will explore what ¿gender¿ is according to sociologists and the current state of gender inequality in the labor market, at home, and at school. We will then investigate how gender structures our everyday lives through the individual, interactional, and institutional levels. Finally, we will discuss avenues for reducing gender inequality. Throughout the course, we will prioritize reading, evaluating, and questioning sociological theory and research on gender.".
Same as: FEMGEN 242, SOC 142, SOC 242

FEMGEN 143. One in Five: The Law, Politics, and Policy of Campus Sexual Assault. 3-5 Units.
TRIGGER WARNING: Over the past several years the issue of campus sexual assault and harassment has exploded into the public discourse. Multiple studies have reinforced the finding that between 20-25% of college women (and a similar proportion of students identifying as transgender and gender-nonconforming, as well as approximately 10% of male students) experience sexual assault carried out through force or while the victim was incapacitated during their time in college. Fraternities have been found to be associated with an increased risk of female sexual assault on campus. Vulnerable students and those from marginalized groups are often found to be at increased risk. This is also a significant problem in k12 education. Sexual harassment rates are even higher. Survivors have come forward across the country with harrowing stories of assault followed by what they describe as an insensitive or indifferent response from college administrators. These survivors have launched one of the most successful, and surprising, social movements in recent memory. As a result, the federal government under President Obama stepped up its civil rights enforcement in this area, with over 300 colleges and universities under investigation for allegedly mishandling student sexual assault complaints as of the end of that administration. At the same time, the Obama administration¿s heightened response led to a series of high-profile lawsuits by accused students who assert that they were falsely accused or subjected to mishandled investigations that lacked sufficient due process protections. The one thing that survivors and accused students appear to agree on is that colleges are not handling these matters appropriately and appeared to be more concerned with protection the institutional brand than with stopping rape or protecting student rights. Colleges have meanwhile complained of being whipsawed between survivors, accused students, interest groups, and enforcement authorities. In an about-face that many found shocking, the Trump Administration rescinded all of the Obama-era guidance on the subject of sexual harassment and has promulgated new proposed regulations that would offer significantly greater protection to accused students and to institutions and commensurately less protection to survivors. An increasingly partisan Congress has been unable to pass legislation addressing the issue.This course focuses on the legal, policy, and political issues surrounding sexual assault and harassment on college campuses. Each week we will read, dissect, compare and critique a set of readings that include social science, history, literature, legal, policy, journalism, and narrative explorations of the topic of campus sexual assault. We will explore the history of gender-based violence and the efforts to implement legal protections for survivors in the educational context. We will also study the basic legal frameworks governing campus assault, focusing on the relevant federal laws such as Title IX and the Clery Act. We will critically explore the ways that responses to this violence have varied by the race, class, gender identity, sexual orientation, and other characteristics of parties and institutions. We will hear from guest speakers who are actively involved in shaping policy and advocating in this area, including lawyers, activists, journalists, and policymakers. This year we will also host special guest speaker Chanel Miller, author of the bestselling memoir Know My Name. The subject matter of this course is sensitive, and students are expected to treat the material with maturity. Much of the reading and subject matter may be upsetting and/or triggering for students who identify as survivors. There is no therapeutic component for this course, although supportive campus resources and Title IX staff are available for those who need them.Elements used in grading: Grades will be based on class attendance, class participation, and a research paper or project and class presentation Enrollment is by INSTRUCTOR PERMISSION. Access the consent form here feminist.stanford.edu/academics/undergraduate-program/forms or email etsurkov@stanford.edu to request a form via email. Applications will be reviewed on a rolling basis until the class is full. Demand for the class is high and participation is capped at 18. The class usually fills quickly, so make sure to apply early. Cross-listed with the Law School (LAW 7065 and with Sociology (SOC 188).
Same as: SOC 188

FEMGEN 144. Sex, Gender, and Intersectional Analysis in Science, Medicine, Engineering, and Environment. 5 Units.
(HISTORY 44 is offered for 3 units; HISTORY 144 is offered for 5 units.) Explores "Gendered Innovations" or how sex, gender, and intersectional analysis in research sparks discovery and innovation. Section 1 focuses on the history of women in science. Section 2 looks at transforming research institutions. Section 3 explores Gendered Innovations. Topics include historical background, basic concepts, social robots, sustainability, medicine & public health, facial recognition, inclusive crash test dummies, and more. Stanford University is engaged in a multi-year collaboration with the European Commission and the U.S. National Science Foundation project on Gendered Innovations in Science, Health & Medicine, Engineering, and Environment, and this class will contribute that project. The operative questions is: how can sex, gender, and intersectional analysis lead to discovery and enhance social equalities?.
Same as: HISTORY 144

FEMGEN 144X. Transforming Self and Systems: Crossing Borders of Race, Nation, Gender, Sexuality, and Class. 5 Units.
Exploration of crossing borders within ourselves, and between us and them, based on a belief that understanding the self leads to understanding others. How personal identity struggles have meaning beyond the individual, how self healing can lead to community healing, how the personal is political, and how artistic self expression based in self understanding can address social issues. The tensions of victimization and agency, contemplation and action, humanities and science, embracing knowledge that comes from the heart as well as the mind. Studies are founded in synergistic consciousness as movement toward meaning, balance, connectedness, and wholeness. Engaging these questions through group process, journaling, reading, drama, creative writing, and storytelling. Study is academic and self-reflective, with an emphasis on developing and presenting creative works in various media that express identity development across borders.
Same as: ASNAMST 144, CSRE 144

FEMGEN 145. Culture Wars: Art and Social Conflict in the USA, 1890-1950. 4 Units.
This course examines social conflicts and political controversies in American culture through the lens of visual art and photography. We consider how visual images both reflect and participate in the social and political life of the nation and how the terms of citizenship have been represented¿and, at times, contested¿by artists throughout the first half of the 20th century. The class explores the relation between American art and the body politic by focusing on issues of poverty, war, censorship, consumerism, class identity, and racial division.
Same as: AMSTUD 145M, ARTHIST 145, ARTHIST 345

FEMGEN 146. The Politics of Epidemics. 4-5 Units.
When it comes to healthcare, whose bodies matter, who deserves care? How do scholars, activists, and patients confront and combat widespread healthcare disparities? This course explores prevailing epidemics of our moment (including HIV/AIDS, breast cancer, opioid addiction, and Lyme disease) in order to consider how infectious disease, moral panic, and national identity interplay across public health platforms, scientific research, and popular rhetoric. We will utilize intersectional frameworks to consider the histories, politics, and broader context of current epidemiological data and larger questions about doctor bias, the gender gap in pain, and cultural fears related to illness and the body. How do treatment, media coverage, policy, and access to care change according to population, location, and technology?.
Same as: PUBLPOL 166

FEMGEN 149. Gender Violence: Critical Race, Feminist, and Queer Perspectives. 5 Units.
This course examines the problem of domestic violence, sexual violence, and other forms of gender violence using critical race, legal, feminist, and queer theory. Readings reflect an interdisciplinary approach to understanding gender violence as it is understood in U.S. law, history, culture, and politics. We will explore foundational theories for why gender violence persists as well as its relationship to structural power along axes of race, gender, class, sexuality, and nation. This course will also consider feminist anti-violence social movements and debates within legal and philosophical approaches to gender violence.

FEMGEN 150. Sex, Gender, and Power in Modern China. 3-5 Units.
Investigates how sex, gender, and power are entwined in the Chinese experience of modernity. Topics include anti-footbinding campaigns, free love/free sex, women's mobilization in revolution and war, the new Marriage Law of 1950, Mao's iron girls, postsocialist celebrations of sensuality, and emergent queer politics. Readings range from feminist theory to China-focused historiography, ethnography, memoir, biography, fiction, essay, and film. All course materials are in English.
Same as: CHINA 115, CHINA 215, FEMGEN 250

FEMGEN 150G. Performing Race, Gender, and Sexuality. 4 Units.
In this theory and practice-based course, students will examine performances by and scholarly texts about artists who critically and mindfully engage race, gender, and sexuality. Students will cultivate their skills as artist-scholars through written assignments and the creation of performances in response to the assigned material. Attendance and written reflection about a live performance event on campus are required. Students will also learn various meditation practices as tools for making and critiquing performance, in both our seminar discussions and performance workshops. We will approach mindfulness as method and theory in our own practice, as well as in relation to the works studied. We will also consider the ethics and current debates concerning the mindfulness industry. Examples of artists studied include James Luna, Nao Bustamante, Renee Cox, William Pope.L, Cassils, boychild, Curious, Adrian Piper, Xandra Ibarra, Valérie Reding, Guillermo Gomez-Peña, and Ana Mendieta.
Same as: ARTSINST 150G, CSRE 150G, CSRE 350G, LIFE 150G, TAPS 150G

FEMGEN 151. Feminist Life-Writing. 4-5 Units.
This course explores life-writing as a form of feminist praxis. Feminist life-writing is an art form grounded in truth-telling, activism, and self-making that emerges from the long tradition of women writing private lives. Beginning with the politicized practices of second wave feminists up through contemporary trends in memoir and autofiction, we will confront an array of intersectional autobiographies that connect personal experience to broader movements, power structures, and oppressions. How has life-writing contributed to the articulation of feminist consciousness? How has feminism impacted the methods marginalized authors use to create forms for belonging and self-determination? As we think about the politics of life-writing, we will also consider feminist rhetorical and aesthetic strategies for confronting issues like trauma, disability, incarceration, motherhood, and friendship. Each student will conduct a large-scale research project focused on an author, genre, or theme of their choice. As we research the critical historical contexts for feminist memoir, we will simultaneously conduct our own creative experiments in life-writing.

FEMGEN 152. 'Tis all in pieces: Space and Gender on the Threshold of the Modern World. 5 Units.
These dramatic words, spoken by the British poet John Donne, signal the onset of the Early Modern world and the profound reconfigurations of space and related structures of thought, including conceptions of the self and the encoding of gender roles. We will explore the vibrant Early Modern world in the context of space and representations of gender, sexuality, and race as manifest in unprecedented literary and artistic forms, such as Shakespeare¿s ¿Othello,¿ Marlowe¿s ¿Doctor Faustus,, ¿ the poetry of John Donne, the art of Michelangelo and Caravaggio as well as key historical and cultural texts. And we will visit the Cantor Arts Center (on campus) for a guided tour and lecture on art and perspective. We also will read and discuss selected texts from the modern world, such as Samuel Beckett¿s ¿Waiting for Godot¿ and poetry and commentary by Adrienne Rich, to study both changes and continuities with the Early Modern period. We will consider the vital cognitive role of the reader or viewer in the formation of particular instances of artistic form, including recent---and highly thought-provoking---material from the neurosciences and cognitive studies.nnNote: Instructor will consider changes in meeting times/days to accommodate student schedules if feasible. Please send request to: hbrooks@stanford.edu.
Same as: FEMGEN 252

FEMGEN 153. Warhol's World. 5 Units.
Andy Warhol's art has never before been more widely exhibited, published, or licensed for commercial use, product design, and publication than it is today. For all Warhol's promiscuous visibility and global cachet at the current moment, there is much we have yet to learn about his work and the conditions of its making. This course considers the wide world of Warhol's art and life, including his commercial work of the 1950s, Pop art and films of the 1960s, and celebrity portraiture of the 1970s and 80s. Of particular interest throughout will be Warhol's photography as it reflects his interest in wealth and celebrity on the one hand and on the everyday life of everyday people on the other. The course will include multiple visits to Contact Warhol: Photography without End, an exhibition co-curated by Prof. Meyer on view throughout the quarter at the Cantor Arts Center.
Same as: AMSTUD 153, ARTHIST 153, ARTHIST 353, TAPS 153W, TAPS 353W

FEMGEN 153Q. Reading and Writing the Gendered Story. 4-5 Units.
Exploration of novels, stories, memoirs and micro-narratives in which gender plays a major role. The texts are by writers of varied genders and sexual orientations as well as varied class, racial and national backgrounds. Written assignments present a mixture of academic and creative options.
Same as: CSRE 153Q

FEMGEN 154. Black Feminist Theory. 5 Units.
This course will examine black feminist theoretical traditions, marking black women's analytic interventions into sexual and pleasure politics, reproduction, citizenship, power, violence, agency, art, representation, and questions of the body. Exploring concepts like intersectionality, matrices of violence, the politics of respectability, womanism, and other contours of a black feminist liberation politic, we will look to black feminist scholars, activists, and artists from the 19th century to today.
Same as: AFRICAAM 154

FEMGEN 154E. Black Feminist Epistemology and Analytics. 5 Units.
Building from the foundational canon of black feminist theory and praxis, this seminar will explore more recent advances in black feminist epistemologies and modes of analysis. Students will engage black feminist conceptions of the human and the self; love and relationality in precarious conditions; speculative queer, sexual, and body politics; aesthetics and cultural theory; and contemporary proposals for radical freedom and social transformation. We will consider how black feminist theory not only engages, builds on, critiques, and transforms other schools of thought, but also produces its own systems of reason and interpretation.
Same as: AFRICAAM 139

FEMGEN 154G. Black Magic: Ethnicity, Race, and Identity in Performance Cultures. 3-4 Units.
In 2013, CaShawn Thompson devised a Twitter hashtag, #blackgirlmagic, to celebrate the beauty and intelligence of black women. Twitter users quickly adopted the slogan, using the hashtag to celebrate everyday moments of beauty, accomplishment, and magic. The slogan offered a contemporary iteration of an historical alignment: namely, the concept of "magic" with both Black people as well as "blackness." This course explores the legacy of Black magic--and black magic--through performance texts including plays, poetry, films, and novels. We will investigate the creation of magical worlds, the discursive alignment of magic with blackness, and the contemporary manifestation of a historical phenomenon. We will cover, through lecture and discussion, the history of black magic representation as well as the relationship between magic and religion. Our goal will be to understand the impact and history of discursive alignments: what relationship does "black magic" have to and for "black bodies"? How do we understand a history of performance practice as being caught up in complicated legacies of suspicion, celebration, self-definition? The course will give participants a grounding in black performance texts, plays, and theoretical writings. *This course will also satisfy the TAPS department WIM requirement.*.
Same as: AFRICAAM 154G, CSRE 154D, TAPS 154G

FEMGEN 155. The Changing American Family. 4 Units.
Family change from historical, social, demographic, and legal perspectives. Extramarital cohabitation, divorce, later marriage, interracial marriage, and same-sex cohabitation. The emergence of same-sex marriage as a political issue. Are recent changes in the American family really as dramatic as they seem? Theories about what causes family systems to change.
Same as: FEMGEN 255, SOC 155, SOC 255

FEMGEN 156H. Women and Medicine in US History: Women as Patients, Healers and Doctors. 5 Units.
This course explores ideas about women's bodies in sickness and health, as well as women's encounters with lay and professional healers in the United States from the eighteenth century to the present. We begin with healthy women and explore ideas about women's life cycle in the past, including women's sexuality, the history of birth control, abortion, childbirth, and aging. We then turn to the history of women healers including midwives, lay physicians, professional physicians and nurses. Finally, we examine women's illnesses and their treatment as well as the lives of women with disabilities in the past. We will examine differences in women's experience with medicine on the basis of race, ethnicity, sexuality and class. We will relate this history to issues in contemporary medicine, and consider the efforts of women to gain control of their bodies and health care throughout US history.
Same as: AMSTUD 156H

FEMGEN 156X. Language, Gender, & Sexuality. 4 Units.
The role of language in the construction of gender, the maintenance of the gender order, and social change. Field projects explore hypotheses about the interaction of language and gender. No knowledge of linguistics required.
Same as: LINGUIST 156

FEMGEN 157. Language as Political Tool: Feminist and LGBTQ Movements and Impacts. 3-5 Units.
How does a social or political movement gain traction? For example, how did 20th-century movements of the disenfranchised, such as the Civil Rights movement, LGBTQ movements, or feminist movements, gain a voice and eventually enact change? In the mediascape of today, where everyone with access to a computer could have a voice, how does a movement change the national conversation? How do written and verbal choices of the movements impact their success and outreach to supporters? In this course, students will write and revise their own arguments in order to best understand the rhetorical potential in these movements¿ choices and to consider how those rhetorical moves are incorporated into political discourse. We'll examine the role of rhetoric, the use of argument to persuade, in social movements working toward social justice, party platforms, and public policy.
Same as: AMSTUD 157X, FEMGEN 257

FEMGEN 157P. Solidarity and Racial Justice. 4-5 Units.
Is multiracial solidarity necessary to overcome oppression that disproportionately affects certain communities of color? What is frontline leadership and what role should people play if they are not part of frontline communities? In this course we will critically examine practices of solidarity and allyship in movements for collective liberation. Through analysis of historical and contemporary movements, as well as participation in movement work, we will see how movements have built multiracial solidarity to address issues that are important to the liberation of all. We will also see how racial justice intersects with other identities and issues. This course is for students that want to learn how to practice solidarity, whether to be better allies or to work more effectively with allies. There will be a community engaged learning option for this course. Students who choose to participate in this option will either work with Stanford's DGen Office or a community organization that is explicitly devoted to multiracial movement-building.
Same as: AFRICAAM 157P, AMSTUD 157P, CSRE 157P

FEMGEN 158. Black Queer Theory. 5 Units.
This course takes a multifaceted approach to black queer theory, not only taking up black theories of gender and queer sexuality, but queer theoretical interrogations of blackness and race. The course will also examine some of the important ways that black queer theory reads and is intersected with issues like affect, epistemology, space and geography, power and subjectivity, religion, economy, the body, and the law, asking questions like: How have scholars critiqued the very language of queer and the ways it works as a signifier of white marginality? What are the different spaces we can find queer black relationality, eroticism, and kinship? How do we negotiate issues like trans*misogyny or tensions around gender and sexuality in the context of race? Throughout the course, students will become versed in foundational and emerging black queer theory as we engage scholars like Sharon Holland, Cathy Cohen, Hortense Spillers, Marlon B. Ross, Aliyyah Abdur-Rahman, Barbara Smith, Roderick Ferguson, Robert Reid-Pharr, E. Patrick Johnson, and many others. Students will also gain practice applying black queer theory as an interpretive lens for contemporary social issues and cultural production including film, music, art, and performance.
Same as: AFRICAAM 158

FEMGEN 159. James Baldwin & Twentieth Century Literature. 5 Units.
Black, gay and gifted, Baldwin was hailed as a "spokesman for the race", although he personally, and controversially, eschewed titles and classifications of all kinds. This course examines his classic novels and essays as well his exciting work across many lesser-examined domains - poetry, music, theatre, sermon, photo-text, children's literature, public media, comedy and artistic collaboration. Placing his work in context with other writers of the 20C (Faulkner, Wright,Morrison) and capitalizing on a resurgence of interest in the writer (NYC just dedicated a year of celebration of Baldwin and there are 2 new journals dedicated to study of Baldwin), the course seeks to capture the power and influence of Baldwin's work during the Civil Rights era as well as his relevance in the "post-race" transnational 21st century, when his prescient questioning of the boundaries of race, sex, love, leadership and country assume new urgency.nNOTE: Enrollment by department consent. To apply, please email Prof. Elam (melam@stanford.edu) with your name, year, major, and one sentence about why you would like to take this class.
Same as: AFRICAAM 159, ENGLISH 159

FEMGEN 160. Performance and History: Rethinking the Ballerina. 4 Units.
The ballerina occupies a unique place in popular imagination as an object of over-determined femininity as well as an emblem of extreme physical accomplishment for the female dancer. This seminar is designed as an investigation into histories of the ballerina as an iconographic symbol and cultural reference point for challenges to political and gender ideals. Through readings, videos, discussions and viewings of live performances this class investigates pivotal works, artists and eras in the global histories of ballet from its origins as a symbol of patronage and power in the 15th century through to its radical experiments as a site of cultural obedience and disobedience in the 20th and 21st centuries.
Same as: TAPS 160, TAPS 260

FEMGEN 160M. Introduction to Representations of the Middle East in Dance, Performance, & Popular Culture. 3-4 Units.
This course will introduce students to the ways in which the Middle East has been represented and performed by/in the 'West' through dance, performance, and popular culture in both historical and contemporary contexts. A brief look through today's media sources exposes a wide range of racialized and gendered representations of the Middle East that shape the way the world imagines the Middle East to be. As postcolonial theorist Edward Said explains, the framework we call Orientalism establishes the ontological character of the Orient and the Oriental as inherently `Other'. Starting with 19th century colonialism and continuing into the post-9/11 era, this course will trace the Western production, circulation, and consumption of representations of the Middle East as 'Other' in relation to global geopolitics. We will further examine dance forms produced in mid-twentieth century Iran and Egypt, with particular attention to nation-state building and constructions of gender. Finally, we will examine artistic productions and practices from the Middle East and Middle Eastern diasporic communities that respond to colonialism, war, displacement, secularism, and Euro-American Empire. Using dance studies, postcolonial feminist, and critical race theoretical frameworks, we will consider the gender, racial, political, and cultural implications of selected performance works and practices in order to analyze how bodies produce meaning in dance, performance art, theater, film, photography, and new media. Students will engage in multiple modes of learning; the course will include lectures, engaged group discussions, viewing of live and recorded performance, embodied participation in dance practice, student oral presentations, and a variety of writing exercises. Course assignments will culminate in a final research project related to class themes and methods.
Same as: CSRE 160M, DANCE 160M, TAPS 160M

FEMGEN 161. The Politics of Sex: Work, Family, and Citizenship in Modern American Women's History. 3-5 Units.
This course explores the transition from Victorian to modern American womanhood by asking how Native, European, African, Mexican, and Asian American women navigated the changing sexual, economic, and political landscapes of the twentieth century. Through secondary readings, primary sources, films, music, and literature we explore the opportunities and boundaries on groups of women in the context of historical events that included immigration, urbanization, wartime, depression, the Cold War, as well as recurrent feminist and conservative political movements.
Same as: AMSTUD 161, CSRE 162, HISTORY 61, HISTORY 161

FEMGEN 161D. Introduction to Dance Studies: Dancing Across Stages, Clubs, Screens, and Borders. 3-4 Units.
This introduction to dance studies course explores dance practice and performance as means for producing cultural meaning. Through theoretical and historical texts and viewing live and recorded dance, we will develop tools for analyzing dance and understanding its place in social, cultural, and political structures. This uses dance and choreography as a lens to more deeply understand a wide range of identity and cultural formations, such as gender, race, sexuality, (dis)ability, (trans)nationality, and empire. We will analyze dancing bodies that move across stages, dance clubs, film screens, and border zones. We will examine dance from diverse locales and time periods including ballet, modern and contemporary dance, contact improvisation, folkloric dance, burlesque, street dance, queer club dance, drag performance, music videos, TV dance competitions, and intermedia/new media performance. In addition to providing theoretical and methodological grounding in dance studies, this course develops performance analysis skills and hones the ability to write critically and skillfully about dance. No previous experience in dance is necessary to successfully complete the course.
Same as: CSRE 61, DANCE 161D, TAPS 161D

FEMGEN 163. Queer America. 4 Units.
This class explores queer art, photography and politics in the United States since 1930. Our approach will be grounded in close attention to the history and visual representation of sexual minorities in particular historical moments and social contexts. We will consider the cultural and political effects of World War II, the Cold War, the civil rights movement, psychedelics, hippie culture and sexual liberation, lesbian separatism, the AIDS crisis, and marriage equality.
Same as: AMSTUD 163, ARTHIST 163

FEMGEN 166. The Divine Feminine in India. 4 Units.
What happens when God is a woman? Is the Goddess a feminist? The Goddess, in her numerous incarnations, is foundational to much of Indian religiosity, whether Hindu, Buddhist, or even Jain¿and in turn, without her story, much of the theology and practice of these religions remains incomprehensible. This course examines the principal expressions of the theology and ritual worship of the Goddess in Indian history, from the Vedas to the Hindu Epics, to Indian philosophy, tantric ritual practice and modern global and new age movements in order to understand how the gendering of divinity affects theological speculation, religious experience, and embodied religious identity.
Same as: RELIGST 166

FEMGEN 169. Introduction to Intersectionality. 4 Units.
"Intersectionality" is so popular, it's almost impossible to avoid: it was added to the Merriam-Webster dictionary in 2017, it was painted on signs at the Women's Marches, and it guides modern day social movement organizers. But what does intersectionality mean? What can intersectionality offer And what does it mean for research and social movements to be truly intersectional? The aim of this course is to provide students with an understanding of the concept of intersectionality. First, we will delve into the works (chiefly from Black feminist scholars) that provide the foundation for today's concept of intersectionality. We will then explore, compare, and critique sociological research that applies (or fails to apply) an intersectional lens to its objects of study. Finally, we will investigate the use of intersectionality in social movements and outside academia. Throughout the course, we will prioritize reading, evaluating, and questioning sociological theory and research.
Same as: AFRICAAM 169B, SOC 169

FEMGEN 173. Gender and Higher Education: National and International Perspectives. 3-4 Units.
This course examines the ways in which higher education structures and policies interact with gender, gender identity, and other characteristics in the United States, around the world, and over time. Attention is paid to how changes in those structures and policies relate to access to, experiences in, and outcomes of higher education by gender. Students can expect to gain an understanding of theories and perspectives from the social sciences relevant to an understanding of the role of higher education in relation to structures of gender differentiation and hierarchy. Topics include undergraduate and graduate education; identity and sexuality; gender and science; gender and faculty; and feminist scholarship and pedagogy.
Same as: EDUC 173, EDUC 273, SOC 173, SOC 273

FEMGEN 173R. Introduction to Feminist Philosophy. 4 Units.
If feminism is a political practice aimed at ending patriarchy, what is the point of feminist philosophy? This course provides an introduction to feminist philosophy by exploring how important theoretical questions around sex and gender bear on practical ethical and political debates. The first part of the course will examine some of the broader theoretical questions in feminist philosophy, including: the metaphysics of gender, the demands of intersectionality, and feminist critiques of capitalism and liberalism. Questions will include: How should we understand the category `woman¿? How does gender intersect with other axes of oppression? Is capitalism inherently patriarchal? The second part of the course will address more applied topics of ethical and political debate, such as: objectification, pornography, consent, markets in women¿s sexual and reproductive labor, and the institution of marriage.
Same as: ETHICSOC 173, PHIL 90R

FEMGEN 180. Gender Relations in Islam. 4 Units.
This course investigates the ways in which gender identities and relationships between men and women have been articulated, constructed, and refashioned throughout the Muslim world. Starting with problematizing the fixed notions of gender and sexuality, we map the attitudes toward these notions through visiting a diverse array of sources from the Qur¿an, Sunna, and legal documents to historical and anthropological case studies, literature, and film from South East Asia to Europe and North America. We examine the notions of femininity and masculinity in the Qur¿an, family laws, and attitudes toward homosexuality and transgendered populations. We read examples of ambiguous use of language with regards to gender and sexuality in Persian poetry and mystical traditions. We study the dynamic relationship between Islam and Feminism in the Muslim world. Finally, we witness the implications of these attitudes in our case studies and stories, from a divorce court in Iran to a wedding in Sudan.
Same as: RELIGST 180

FEMGEN 183. Re- Imagining American Borders. 5 Units.
In this third volatile and violent year of the Trump presidency, American borders of all kinds seem to be dangerously tight. This is seen in the literal horror of immigrant detention centers filled with hungry, sick children taken from parents, ongoing mass incarceration and police attacks on young black and brown men and gendered violence targeting trans Americans and pro-choice movements. Additionally urban and rural antagonisms and constant social media anger with a kind of newly brutal linguistic framing are all underscoring a vision of an America of intractable difference. The hopeful transformation from the 2018 elections, which is having enormous reverberations in the present 2020 presidential campaigns, is interestingly also based in a discourse of difference. This course investigates sources of these borderlines and most crucially how novelists, filmmakers, poets, visual artists and essayists perceive racial, ethnic, gender, religious, sexual orientation and class borders in this country as they may re-imagine difference possibly via Vijay Prashad's polyculturalism or Gloria Anzaldùa's borderlands. Texts include those of Ta-Nehisi Coates, Boots Riley, Dee Rees, Ryan Coogler, Nelly Rosario, Janice Lobo Sapigao, Layli Long Soldier, Naomi Shihab Nye, Edwidge Danticat, Sherman Alexie, Shailja Patel, Kara Walker, and the podcast Ear Hustle, narratives created and produced from inside San Quentin, along with Shane Bauer's undercover expose of an American prison. Course guests will include actors and writers from the acclaimed web series, The North Pole, showing parts of the new second season of biting, humorous stories of gentrification, racism and immigration issues in West Oakland. And the Bay Area founder of the only women-run, inclusive mosque in the US, Rabi¿a Keeble, will speak with us about an American Islam with a Muslim community that embraces difference. Course work includes active discussion, journal entries, one comparative analytical essay and a creative final project/with analytical paper examining personal or community identities.
Same as: AMSTUD 183, CSRE 183

FEMGEN 183A. Sex, Money, and Power: An Approach Through Feminist Anthropology. 3 Units.
What are the sexual politics of labor and capital? How is the global economy shaped by sex, love, and intimacy? This course will examine intimacy--gender, sexuality, kinship, and care-- as a lense for understanding and interrogating socio-political and economic systems from an anthropological perspective. By refusing the categorical separation of the private or domestic realm from the realm of politics, this course will critically interrogate the naturalization of particular intimate configurations (like the family, romantic couple, and domestic labor) in global contexts of colonialism, (neo)liberalism, and global capitalism. It will explore how domains of seemingly ¿private¿ sentiment and personal relations are connected to liberal and illiberal forms of power, inequality, exploitation and control, as well as to processes of incorporation, citizenship, and care. Finally, through selected ethnographic texts, this course will also look at the intimate as staging ground for social resistance, political refusal, economic ingenuity, and creativity.
Same as: ANTHRO 183A

FEMGEN 187C. The Evolution of the Feminist First-Person Essay, 2000-present. 3-5 Units.
The internet age has coincided with the rise of new and reinvented modes of nonfiction writing by women online. The feminist first-person essay (what simply goes by ¿personal essay¿ in the business) has transformed internet writing formally, politically, and economically. The explosion innpopularity and shareability of this nonfiction subgenre has generated a host of new media and catapulted a new coterie of women writers into prominence. Which authors have exerted the most influence upon this new subgenre, how does the emergence of the first-person essay by women signify a mainstreaming of feminist dialectic, and how has this emergence been received by both a popular readership and the media establishment?nThis discussion-based course will investigate how the growth of the feminist first-person essay has promoted new publications and modes of publication. It will trace the genesis of the online personal essay genre from public journals like LiveJournal, Blogspot, and Tumblr, via its codification in online publications like The Toast, The Rumpus, Gawker, Jezebel, Guernica, The Hairpin, The Awl, and xoJane, to its eventual breakthrough into established newspapers, magazines, and traditionally published memoirs and essay collections.nWe will investigate questions like: How can the rendering of one individual's story benefit the political mandate of the collective? What is the first person¿s effect, and affect, in interspersing an author¿s personal experience, and what feminist potential does it contain? How does the myth of journalistic ¿objectivity¿ conflict with the presentation of the first person, and how has this objectivity myth descended from patriarchal tropes of legitimation? What do the terms ¿confessional¿ and ¿silence-breaking¿ connote? How has social media simultaneously empowered these new modes of public feminist dialogue and also exposed feminist public intellectuals to alarming levels of harassment and abuse? How successfully has the personal essay subgenre acted in de-centering hegemonic identity structures including whiteness, class privilege, and heterosexuality? What role has the feminist first-person essay played in the emergence of heavily digitized political movements including Black Lives Matter and #MeToo? What is ¿trauma porn¿, and how does it interface with the capitalistic structures of the first-person essay economy; what problems arise when capitalism and confessionalism intersect?.
Same as: ENGLISH 187C

FEMGEN 187X. Sex, Gender, and Violence: French Women Writers Today. 1-5 Unit.
Long before the 2017 #Metoo campaign, French women writers have explored through powerful fictions and autobiographies the different shades of economic, social, psychological, physical, or sexual violence that is exerted against, but also by and between, women. How does literature - the power of words - address, deconstruct or comfort power dynamics (during sex and between the sexes) that are usually silenced, taboo or unspeakable? Themes explored: sex and gender, sex and power, rape culture, sexual and moral taboos (incest, abortion, pornography, infanticide, lesbianism), the body as social stigma or source of meaning. Special attention given to narrative and descriptive strategies designed to avert, expose, deconstruct or account for specifically feminine experiences (rape, orgasm, pregnancy). Authors include Marie Darrieusecq, Christine Angot, Annie Ernaux, Marie NDiaye, Virginie Despentes, Leila Slimani, Ivan Jablonka along with feminist theory. Taught in French.
Same as: FEMGEN 287X, FEMGEN 387X, FRENCH 187, FRENCH 287, FRENCH 387

FEMGEN 188Q. Imagining Women: Writers in Print and in Person. 4-5 Units.
Gender roles, gender relations and sexual identity explored in contemporary literature and conversation with guest authors. Weekly meetings designated for book discussion and meeting with authors. Interest in writing and a curiosity about diverse women's lives would be helpful to students. Students will use such tools as close reading, research, analysis and imagination. Seminar requires strong voice of all participants. Oral presentations, discussion papers, final projects.
Same as: CSRE 188Q

FEMGEN 190W. Contemporary Women Writers. 3-5 Units.
"Every word a woman writes changes the story of the world, revises the official version¿¿is this what sets contemporary women writers apart? How can we understand the relation between the radically unprecedented material such writers explore and ¿the official version¿? What do we find compelling in their challenging of structure, style, chronology, character? Our reading- and writing-intensive seminar will dig into the ways women writers confront, appropriate, subvert, or re-imagine convention, investigating, for example, current debate about the value of ¿dislikable¿ or ¿angry¿ women characters and their impact on readers. While pursuing such issues, you'll write a variety of both essayistic and fictional responses, each of which is designed to complicate and enlarge your creative and critical responsiveness and to spark ideas for your final project. By affirming risk-taking and originality throughout our quarter, seminar conversation will support gains in your close-reading practice and in articulating your views, including respectful dissent, in lively discourse¿in short, skills highly useful in a writer¿s existence. Our texts will come from various genres, including short stories, novels, essays, blog posts, reviews, memoir.
Same as: ENGLISH 190W

FEMGEN 191Q. Writing Women's Lives. 2 Units.
Creative writing through dialogue focusing on prose about the lives of women in different cultures and generations. Novels, short stories, and micro-narrative including fiction and memoir. Students produce work using research, memory, imagination, and metaphor.

FEMGEN 192. Women in French Cinema: 1958-. 3-5 Units.
Women as objects and subjects of the voyeuristic gaze inherent to cinema. The myth of the feminine idol in French films in historical and cultural context since the New Wave until now. The mythology of stars as the imaginary vehicle that helped France to change from traditional society to modern, culturally mixed nation. The evolution of female characters, roles, actresses, directors in the film industry. Filmmakers include Vadim, Buñuel, Truffaut, Varda, Chabrol, Colline Serreau, Tonie Marshall. Discussion in English; films in French with English subtitles.
Same as: FILMSTUD 112, FRENCH 192

FEMGEN 193G. Psychological Well-Being on Campus: A Focus on Gender and Sexual Identities. 1 Unit.
This course examines mental health and psychological well-being across the spectrum of gender and sexual identities. It addresses the unique challenges that face LGBTQ-identified students, and provides tools for supporting peers as they navigate these challenges. Discussion topics include current conceptualizations of gender identity and sexual orientation, including sexual and gender fluidity; the intersection of queer identities with multiple identities such as ethnic/racial identify and faith/spirituality; unpacking stereotypes; queer relationships and sexuality, coming out and disclosure, and mental health issues.
Same as: EDUC 193G

FEMGEN 195. Directed Reading. 1-15 Unit.
May be repeated for credit. (Staff).

FEMGEN 195X. Research in Feminist, Gender, & Sexuality Studies. 1-5 Unit.
Independent research conducted under faculty or graduate student supervision. May be taken for a maximum of 3 quarters of credit.

FEMGEN 199A. Feminist, Gender, and Sexuality Studies Honors Workshop. 2-3 Units.
Required of seniors in the Feminist, Gender, and Sexuality Studies honors program. Participants share ongoing work on their honors theses. Prerequisite: consent of Instructor.

FEMGEN 199B. Feminist, Gender, and Sexuality Studies Honors Workshop. 2-3 Units.
Required of seniors in the Feminist, Gender, and Sexuality Studies honors program. Participppants share ongoing work on their honors theses. Prerequisite: consent of instructor.

FEMGEN 199C. Feminist, Gender, and Sexuality Studies Honors Workshop. 2-3 Units.
Required of seniors in the Feminist, Gender, and Sexuality Studies honors program. Participppants share ongoing work on their honors theses. Prerequisite: consent of instructor.

FEMGEN 199X. Preparation for Senior Thesis. 2-3 Units.
This course is designed for juniors (majors, minors, and those seeking Interdisciplinary Honors in CSRE or FGSS) who intend to write a senior thesis in one of the CSRE Family of Programs or FGSS Interdisciplinary Honors. The course offers resources and strategies for putting together a significant and original senior thesis. Topics to be covered include: getting funding; finding an advisor; navigating the institutional review board; formulating an appropriate question; and finding the right data/medium/texts.
Same as: AFRICAAM 199X, ANTHRO 189X, CSRE 199

FEMGEN 203. Feminist and Queer Theories and Methods Across the Disciplines. 2-5 Units.
(Graduate Students register for PHIL 279A or FEMGEN 203) This course is an opportunity to explore the difference feminist and queer perspectives make in creative arts, humanities, and social science research.nPrerequisites: Feminist Studies 101 or equivalent with consent of instructor.nNOTE: This course must be taken for a letter grade and a minimum of 3 units to be eligible for WAYS credit. The 2 unit option is for graduate students only.
Same as: FEMGEN 103, PHIL 179A, PHIL 279A

FEMGEN 205. Songs of Love and War: Gender, Crusade, Politics. 3-5 Units.
Analysis of medieval love, satirical and Crusade lyrics of the trouabdours. Study of deictic address, corporeal subjectivity, the female voice, love debates, and the body as a figure of political conflict. Course readings include medieval treatises on lyric and modern translations of the troubadour tradition. Works by Ovid, Bernart de Ventadorn, Bertran de Born, La Comtessa de Dia, Thibaut de Champagne, Raimon Vidal, Dante, and Pound. Taught in English. Course includes a lab component for creation of multi-media translation projects: trobar. stanford.edu.
Same as: FRENCH 205

FEMGEN 206. Global Medical Issues Affecting Women. 1-2 Unit.
This course probes the principal issues affecting women and girls medically around the world. Through interactive discussions, guest lectures, case studies, and academic readings, students become acquainted with the most critical challenges to women's health globally, and use selected analytical tools to assess how these may be addressed efficiently, cost-effectively, and sustainably. Topics include women's cancer, birth control, infertility, female genital mutilation, midwifery, obstetric fistula, breastfeeding, violence against women, and women's representation in biomedical research. The aim is to cultivate in students a nuanced appreciation of women's unique needs, roles, and challenges in the contemporary global health landscape. For second unit, students do a midterm project and final project on a topic of their choosing which has been approved by the instructor, as well as meet with the instructor in small groups 2-3 additional times (days/times TBD depending on schedules) throughout the quarter to discuss progress.
Same as: SOMGEN 206

FEMGEN 207D. Transhistory Colloquium. 4-5 Units.
Colloquium on the history of transgender practices and identities. Readings will include scholarly texts from the emerging historical field of transhistory as well as adjacent fields within gender history. Colloquium will investigate avenues for deepening transhistory through further historical inquiry.
Same as: FEMGEN 307D, HISTORY 207D, HISTORY 307D

FEMGEN 209. Looking Back, Moving Forward: Raising Critical Awareness in Gender and Sports. 3 Units.
In 1972, Title IX legislation opened up a vast range of opportunities for women in sports. Since then, women's sports have continued to grow yet the fight for recognition and equality persists. Simply put, men's sports are more popular than women's--so much so, in fact, that people often make the hierarchical distinction between "sports" and "women's sports." But what would it take to get more women's sports featured on ESPN or more female athletes on the cover of Sports Illustrated? And, given the well-documented corruption at the highest levels of men's sports, should such an ascent in popularity be the goal for women's sports? This course will map out and respond to the multifaceted issues that emerge when women enter the sports world. Throughout the quarter, we will explore the fight for gender equality in sports through historical, cultural, and rhetorical lenses. NOTE: Class will meet in Old Union, Room 302.
Same as: FEMGEN 109

FEMGEN 210J. Romance, Desire, and Sexuality in Modern Japanese Literature. 3-4 Units.
This class is structured around three motifs: love suicide (as a romantic ideal), female desire, and same-sex sexuality. Over the course of the quarter we will look at how these motifs are treated in the art and entertainment from three different moments of Japanese history: the Edo period (1615-1868), the modern period (1920-65), and the contemporary period (1965-present). We will start by focusing on the most traditional representations of these topics. Subsequently, we will consider how later artists and entertainers revisited the conventional treatments of these motifs, informing them with new meanings and social significance. We will devote particular attention to how this material comments upon issues of gender, sexuality, and human relationships in the context of Japan. Informing our perspective will be feminist and queer theories of reading and interpretation.
Same as: FEMGEN 110J, JAPAN 110, JAPAN 210

FEMGEN 212. "When We Dead Awaken": Breakthroughs in Conceptions of the Gendered Self in Literature and the Arts. 4-5 Units.
Remarkable breakthroughs In conceptions of the gendered self are everywhere evident in literature and the arts, beginning primarily with the Early Modern world and continuing into today. Many of these works inhere in innovations in literary and artistic forms in order to capture and even evoke the strong cognitive, or psychological, dimension of such ¿awakenings.¿ The reader, or viewer, is often challenged to adapt her or his mind to new forms of thought, such as John Donne¿s seventeenth century creation of the Dramatic Monologue, a form popular with modern writers, which requires the reader¿s cognitive ¿presence¿ in order to fill out the dramatic scene. In so doing, the reader often supplies the presence of the female voice and thereby enters into her self-consciousness and inner thoughts. Adrienne Rich, for example, specifically ¿rewrites¿ one of Donne¿s major poems from the female perspective. This can be, in Rich¿s words, an ¿awakening¿ for the active reader, as he or she assumes that often-unspoken female perspective. The course will also explore male conceptions of the self and how such conceptions are often grounded in cultural attitudes imposed on male subjects, which can contribute to gender-bias toward women, a subject often neglected in exploring gendered attitudes, but which is now gaining more study, for example, in Shakespeare¿s ¿Othello.¿ Readings from recent developments in the neurosciences and cognitive studies will be included in our study of artistic forms and how such forms can activate particular mindsets. Writers and artists will include Shakespeare, Michelangelo, John Donne, Virginia Woolf, Adrienne Rich, Gertrude Stein, Picasso, June Wayne, and Edward Albee¿s 1960¿s play, ¿Who¿s Afraid of Virginia Woolf?¿.
Same as: ENGLISH 182J, FEMGEN 112

FEMGEN 213. Transgender Studies. 3-4 Units.
Transgender and gender-expansive identities are the subject of growing attention and (often sensationalist) interest in the media as well as in the healthcare field, yet there exists a dearth of legitimate academic courses, research and writing that reflect and explore gender identity and expression as a fluid spectrum rather than a fixed binary. This course will address transgender and gender expansive identities from historical, medical, literary, developmental and sociopolitical perspectives.
Same as: FEMGEN 113

FEMGEN 214. Sexual Diversity and Health. 1 Unit.
Explores multiple aspects of sexual diversity and health, including: kink/BDSM, polyamory, trans* sexuality, asexuality, high-risk sex, inter-sextionality, questioning gender and sexual binaries, and more. The format includes a one-day conference featuring a variety of expert speakers covering different aspects of sexual diversity and health, followed by a debriefing and discussion session to integrate what has been heard and learned.
Same as: FEMGEN 114

FEMGEN 215A. The Queer 20th Century: German LGBTQ Literature and Film. 3-5 Units.
What was it like to be queer in 20th-century Germany? This course examines the rich and sometimes surprising LGBTQ culture of 20th-century Germany, featuring stories that are often left out of traditional seminars. Through literature and film, we will learn about pioneering gay rights activists, persecution under National Socialism, emancipation movements under capitalism and socialism, and debates that are shaping queer life in contemporary Germany. Taught in English; students of all backgrounds are very welcome. Remote synchronous, with plenty of opportunities for breakout rooms, student discussion, Zoom breaks, and off-screen work.
Same as: FEMGEN 115A, GERMAN 115, GERMAN 215

FEMGEN 216X. Narrating Queer Trauma. 4-5 Units.
Psychiatrist Dori Laub has argued that the process of narrating trauma is essential to the healing process. Not only is telling the story important, but it is also crucial to have someone else bear witness to the narrative. But how do people even begin to narrate stories of violence and pain, and how do we become good listeners? How are these stories told and heard in the specific context of queer world making? This course will explore narratives of trauma in queer lives through literature, film, media, and performance in conjunction with trauma theory and psychoanalysis. We will pay specific attention to questions of community, healing, violence, and affect at the intersections of queerness and race, sex, disability, class, gender, and nationality.
Same as: FEMGEN 116

FEMGEN 217. Expanding Engineering Limits: Culture, Diversity, and Equity. 3 Units.
This course investigates how culture and diversity shape who becomes an engineer, what problems get solved, and the quality of designs, technology, and products. As a course community, we consider how cultural beliefs about race, ethnicity, gender, sexuality, abilities, socioeconomic status, and other intersectional aspects of identity interact with beliefs about engineering, influence diversity in the field, and affect equity in engineering education and practice. We also explore how engineering cultures and environments respond to and change with individual and institutional agency. The course involves weekly presentations by scholars and engineers, readings, short writing assignments, small-group discussion, and hands-on, student-driven projects. Students can enroll in the course for 1 unit (lectures only), or 3 units (lectures+discussion+project). For 1 unit, students should sign up for Section 1 and Credit/No Credit grading, and for 3 units students should sign up for Section 2 and either the C/NC or Grade option.
Same as: CSRE 117, CSRE 217, ENGR 117, ENGR 217, FEMGEN 117

FEMGEN 224. Challenging Sex and Gender Dichotomies in Medicine. 1 Unit.
Explores and challenges the traditional physiological bases for distinguishing human males from females, as well as the psychosocial factors that play a role in experiencing and expressing gender and sexuality. Topics include the influence of sociocultural (gender) norms and behaviors on human biology, the interactions of sex and gender on medical outcomes, the importance of understanding the spectrum of sex, gender, and sexuality in clinical practice.
Same as: FEMGEN 124

FEMGEN 230. Sexual Function and Diversity in Medical Disciplines. 2-3 Units.
This course is a coordinated seminar series that presents evidence-based health promotion and disease prevention guidelines by clinical and translational research and population health science faculty of clinical departments other than Medicine (the focus of CHPR 260) of the Stanford School of Medicine, including; Anesthesiology & Perioperative, & Pain Medicine, Cardiothoracic gy, Emergency Medicine, Neurology & Neurological Sciences, Neurosurgery, Obstetrics & Gynecology, Ophthalmology, Orthopaedic Surgery, Otolaryngology, Pathology, Pediatrics, Psychiatry & Behavioral Sciences, Radiation Oncology, Radiology, Surgery and Urology. CHPR master's program students must enroll in CHPR 230 for a letter grade and priority for enrollment will be given to current CHPR students. For third unit, graduate students attend INDE 215 Queer Health & Medicine and complete assignments for that section. For third unit and WAYs, undergrads enroll in SOMGEN 130. Prerequisites: CHPR 201 or HUMBIO 126/CHPR 226 or equivalent or consent of instructor.
Same as: CHPR 230, SOMGEN 230

FEMGEN 236. Literature and Transgression. 3-5 Units.
Close reading and analysis of erotic-sexual and aesthetic-stylistic transgression in selected works by such authors as Baudelaire, Wilde, Flaubert, Rachilde, Schnitzler, Kafka, Joyce, Barnes, Eliot, Bataille, Burroughs, Thomas Mann, Kathy Acker, as well as in recent digital literature and online communities. Along with understanding the changing cultural, social, and political contexts of what constitutes "transgression" or censorship, students will gain knowledge of influential theories of transgression and conceptual limits by Foucault, Blanchot, and contemporary queer and feminist writers.
Same as: COMPLIT 236

FEMGEN 237. Health Impact of Sexual Assault and Relationship Abuse across the Lifecourse. 1-3 Unit.
(Human Biology students must enroll in HUMBIO 28 or AFRICAAM 28. Med/Grad students should enroll in SOMGEN 237 for 1-3 units.) An overview of the acute and chronic physical and psychological health impact of sexual abuse through the perspective of survivors of childhood, adolescent, young and middle adult, and elder abuse, including special populations such as pregnant women, military and veterans, prison inmates, individuals with mental or physical impairments. Also addresses: race/ethnicity, gender identity, sexual orientation, and other demographic and societal factors, including issues specific to college culture. Professionals with expertise in sexual assault present behavioral and prevention efforts such as bystander intervention training, medical screening, counseling and other interventions to manage the emotional trauma of abuse. Undergraduates must enroll for 3 units.To receive a letter grade in any listing, students must enroll for 3 units. This course must be taken for a letter grade and a minimum of 3 units to be eligible for Ways credit.
Same as: AFRICAAM 28, HUMBIO 28, SOMGEN 237

FEMGEN 238. Men's Violence Against Women in Literature: A Critical and Social Analysis. 3-5 Units.
Literature, as a social and cultural product of its time, can inform and deepen our understanding of oppression. Using literature as a vehicle, this course will explore the impact of and responses to men's violence against women. Students will critically assess how the author has portrayed the topic of sexual assault and relationship abuse, how the characters and/or author exhibits victim blaming, and, if the characters were living today, would current policies adequately hold the perpetrator responsible, provide safety and justice for the survivor, and challenge rape culture. In dialogue with theoretical texts, we will analyze the literary representations of patriarchy that inform societal acceptance of gender-based violence, identify the historical prevalence of victim blaming and impunity in these works, and assess the implications on policy making at the individual, community and political level. Students will critically examine literature including Shakespeare's Taming of the Shrew, Thomas Hardy's Tess of the D'Ubervilles, Zora Neale Hurston's Their Eyes Were Watching God, Louise Erdrich's The Round House and Joyce Carol Oates' We Were the Mulvaneys. There is an optional service-learning component.
Same as: FEMGEN 138

FEMGEN 239. Queer Theory. 3-5 Units.
Do we really need a theory in order to be queer? Queer Theory emerged in response to feminist thought, and the study of the history of sexuality, building on their insights, but also uncovering their blind spots. Without Queer Theory, few of the discourses around desire, power and gender identity that we take for granted on college campuses today would exist. Yet there is also a real risk that reality has left the theory behind. In this course, we will try to answer the question: What do we need queer theory for? Do we still need it? And if so, of what kind? The course is designed to introduce students to core texts of queer theory, and to connect them to current debates, be this around trans rights, the representation of homosexuality or the fight against campus sexual assault.
Same as: COMPLIT 239, GERMAN 239

FEMGEN 240D. LGBTQ History of the United States. 4-5 Units.
An introductory course that explores LGBT/Queer social, cultural, and political history in the United States. By analyzing primary documents that range from personal accounts (private letters, autobiography, early LGBT magazines, and oral history interviews) to popular culture (postcards, art, political posters, lesbian pulp fiction, and film) to medical, military, and legal papers, students will understand how the categories of gender and sexuality have changed over the past 150 years. This class investigates the relationship among queer, straight and transgender identities. Seminar discussions will question how the intersections of race, class, gender, and sexuality influenced the construction of these categories.
Same as: FEMGEN 140D, HISTORY 257C

FEMGEN 241. Sex and Gender in Human Physiology and Disease. 2-3 Units.
(HUMBIO students must enroll in HUMBIO 140. PhD minor in FGSS must enroll in FEMGEN 241. Med students must enroll in MED 240.) Chromosomal, hormonal and environmental influences that lead to male and female and intersex reproductive anatomy and physiology and neuroendocrine regulation. Masculinizing and feminizing effects of endogenous and exogenous sex hormones and sociocultural factors, in particular gender identity, (social) gender norms and relationships, on the musculoskeletal, neurological, cardiovascular, immunological and other systems and tissues, e.g. adipose, skin, etc. over the lifecourse, from conception to puberty, through reproductive phases (including changes during the menstrual cycle and pregnancy up to and beyond menopause in women, and with aging in both sexes). Transgender health issues. Guest lecturers. Enrollment limited to students with sophomore academic standing or above. Prerequisites: Human Biology Core or Biology Foundations or equivalent, or consent of instructor.
Same as: HUMBIO 140, MED 240

FEMGEN 242. Sociology of Gender. 3 Units.
The aim of this course is to provide students with an understanding of the sociological conceptualization of gender. Through the sociological lens, gender is not an individual attribute or a role, but rather a system of social practices that constructs two different categories of people men and women and organizes social interaction and inequality around this difference. First we will explore what ¿gender¿ is according to sociologists and the current state of gender inequality in the labor market, at home, and at school. We will then investigate how gender structures our everyday lives through the individual, interactional, and institutional levels. Finally, we will discuss avenues for reducing gender inequality. Throughout the course, we will prioritize reading, evaluating, and questioning sociological theory and research on gender.".
Same as: FEMGEN 142, SOC 142, SOC 242

FEMGEN 250. Sex, Gender, and Power in Modern China. 3-5 Units.
Investigates how sex, gender, and power are entwined in the Chinese experience of modernity. Topics include anti-footbinding campaigns, free love/free sex, women's mobilization in revolution and war, the new Marriage Law of 1950, Mao's iron girls, postsocialist celebrations of sensuality, and emergent queer politics. Readings range from feminist theory to China-focused historiography, ethnography, memoir, biography, fiction, essay, and film. All course materials are in English.
Same as: CHINA 115, CHINA 215, FEMGEN 150

FEMGEN 250J. Baldwin and Hansberry: The Myriad Meanings of Love. 4 Units.
This course looks at major dramatic works by James Baldwin and Lorraine Hansberry. Both of these queer black writers had prophetic things to say about the world-historical significance of major dramas on the 20th Century including civil rights, revolution, gender, colonialism, racism, sexism, war, nationalism and as well as aesthetics and politics.
Same as: AFRICAAM 250J, AMSTUD 250J, CSRE 250J, TAPS 250J

FEMGEN 252. 'Tis all in pieces: Space and Gender on the Threshold of the Modern World. 5 Units.
These dramatic words, spoken by the British poet John Donne, signal the onset of the Early Modern world and the profound reconfigurations of space and related structures of thought, including conceptions of the self and the encoding of gender roles. We will explore the vibrant Early Modern world in the context of space and representations of gender, sexuality, and race as manifest in unprecedented literary and artistic forms, such as Shakespeare¿s ¿Othello,¿ Marlowe¿s ¿Doctor Faustus,„ ¿ the poetry of John Donne, the art of Michelangelo and Caravaggio as well as key historical and cultural texts. And we will visit the Cantor Arts Center (on campus) for a guided tour and lecture on art and perspective. We also will read and discuss selected texts from the modern world, such as Samuel Beckett¿s ¿Waiting for Godot¿ and poetry and commentary by Adrienne Rich, to study both changes and continuities with the Early Modern period. We will consider the vital cognitive role of the reader or viewer in the formation of particular instances of artistic form, including recent-–and highly thought-provoking-–material from the neurosciences and cognitive studies.nnNote: Instructor will consider changes in meeting times/days to accommodate student schedules if feasible. Please send request to: hbrooks@stanford.edu.
Same as: FEMGEN 152

FEMGEN 253L. Caring Labor in the United States. 3-5 Units.
Who cares for America's children, elderly, and infirm? How is the structure of these labor forces influenced by ideologies of race, gender, and class? Beginning with theories of reproductive and caring labor, we examine the history of coerced and enslaved care and then caring as free labor. We will look at housework, child care, nursing, and elder care, among others, and will also examine how activists, policy makers, and workers have imagined new ways of performing and valuing care.
Same as: AFRICAAM 253, HISTORY 253L

FEMGEN 255. The Changing American Family. 4 Units.
Family change from historical, social, demographic, and legal perspectives. Extramarital cohabitation, divorce, later marriage, interracial marriage, and same-sex cohabitation. The emergence of same-sex marriage as a political issue. Are recent changes in the American family really as dramatic as they seem? Theories about what causes family systems to change.
Same as: FEMGEN 155, SOC 155, SOC 255

FEMGEN 255B. Contested Masculinities in Modern America. 5 Units.
This course examines masculinity in the twentieth-century United States across academic disciplines. Suspending the idea that manhood is biologically fixed or innate, this course presents masculinity as socially constructed and in a state of ongoing contest and crisis. Students will explore what it has meant (and means) to be a man in America, how masculinity has related to femininity and feminism, and masculinity's intersection with other identities like race, ethnicity, religion, and sexual orientation. Assigned materials include an array of readings in History, African and African American Studies, Gender and Women's Studies, Art History, and American Studies, along with documentary and fictional films.
Same as: HISTORY 255B

FEMGEN 256. Current Topics and Controversies in Women's Health. 2-3 Units.
(HUMBIO students must enroll in HUMBIO 125. PhD minor in FGSS must enroll in FEMGEN 256. Med students must enroll in OBGYN 256.) Interdisciplinary. Focus is primarily on the U.S., with selected global women's health topics. Topics include: leading causes of morbidity and mortality across the life course; reproductive (e.g. gynecologic & obstetric) health issues; sexual function; importance of lifestyle (e.g. diet, exercise, weight control), including eating disorders; mental health; sexual and relationship abuse; issues for special populations. In-class Student Debates on key controversies in women's health. Guest lecturers. Undergraduates must enroll for 3 units. PhD minor in FGSS should enroll for 2 - 3 units. Med students should enroll for 2 units. To receive a letter grade in any listing, students must enroll for 3 units. This course must be taken for a letter grade and a minimum of 3 units to be eligible for Ways credit. Enrollment limited to students with sophomore academic standing or above. Undergraduate prerequisite: Human Biology Core or Biology Foundations or equivalent or consent of instructor.
Same as: HUMBIO 125, OBGYN 256

FEMGEN 257. Language as Political Tool: Feminist and LGBTQ Movements and Impacts. 3-5 Units.
How does a social or political movement gain traction? For example, how did 20th-century movements of the disenfranchised, such as the Civil Rights movement, LGBTQ movements, or feminist movements, gain a voice and eventually enact change? In the mediascape of today, where everyone with access to a computer could have a voice, how does a movement change the national conversation? How do written and verbal choices of the movements impact their success and outreach to supporters? In this course, students will write and revise their own arguments in order to best understand the rhetorical potential in these movements¿ choices and to consider how those rhetorical moves are incorporated into political discourse. We'll examine the role of rhetoric, the use of argument to persuade, in social movements working toward social justice, party platforms, and public policy.
Same as: AMSTUD 157X, FEMGEN 157

FEMGEN 257X. Simone Weil, Simone de Beauvoir, Hannah Arendt, and Adriana Cavarero. 3-5 Units.
What does it mean to say the personal is the political, or, in the case of Arendt, that the personal is not political, especially if you are a woman? This course explores how Weil, De Beauvoir, Arendt, and Caverero contend with the question of personhood, in its variegated social, political, ethical, and gendered dimensions. Particular attention will be given to a philosophy of social change and personal transformation, and to the enduring relevance of these women's thought to issues of our day. Texts include selections from "Gravity and Grace," "The Second Sex," "The Ethics of Ambiguity," "The Human Condition," "Between Past and Future," "Stately Bodies," and "Relating Narratives.".
Same as: COMPLIT 257, COMPLIT 357A, FEMGEN 357X, FRENCH 257, FRENCH 357, ITALIAN 257, ITALIAN 357

FEMGEN 258. History of Sexual Violence in America. 4-5 Units.
This undergraduate/graduate colloquium explores the history of sexual violence in America, with particular attention to the intersections of gender and race in the construction of rape. We discuss the changing definitions of sexual violence in law and in cultural representations from early settlement through the late-twentieth century, including slavery, wartime and prison rape, the history of lynching and anti-lynching movements, and feminist responses to sexual violence. In addition to introducing students to the literature on sexual violence, the course attempts to teach critical skills in the analysis of secondary and primary historical texts. Students write short weekly reading responses and a final paper; no final exam; fifth unit research or CEL options.nnLimited enrollment, permission of instructor required. Submit application form and indicate interest in CEL option. Priority admission to History, FGSS, CSRE, AFRICAAM, and AMSTUD declared majors and minors. (Cardinal Course certified by the Haas Center).
Same as: AFRICAAM 192, AMSTUD 258, CSRE 192E, FEMGEN 358, HISTORY 258, HISTORY 358

FEMGEN 258X. Black Feminist Theater and Theory. 4 Units.
From the rave reviews garnered by Angelina Weld Grimke's lynching play, Rachel to recent work by Lynn Nottage on Rwanda, black women playwrights have addressed key issues in modern culture and politics. We will analyze and perform work written by black women in the U.S., Britain and the Caribbean in the 20th and 21st centuries. Topics include: sexuality, surrealism, colonialism, freedom, violence, colorism, love, history, community and more. Playwrights include: Angelina Grimke, Lorriane Hansberry, Winsome Pinnock, Adrienne Kennedy, Suzan- Lori Parks, Ntzoke Shange, Pearl Cleage, Sarah Jones, Anna DeVeare Smith, Alice Childress, Lydia Diamond and Zora Neale Hurston.).
Same as: AFRICAAM 258, CSRE 258, TAPS 258

FEMGEN 260. Disability, Gender, and Identity: Women's Personal Experiences. 5 Units.
This course explores visible and invisible disabilities, focusing on issues of gender and identity in the personal experiences of women. The course emphasizes psychological as well as physical health, the diversity of disability experiences, self-labeling, caretaking, stigma and passing, and social and political aspects. Disabilities covered include blindness, multiple sclerosis, diabetes, arthritis, emotional and learning disabilities, and conditions requiring wheelchairs and other forms of assistance. The readings draw from the disability studies literature and emphasize women's personal narratives in sociological perspective. Note: Instructor Consent Required.
Same as: AMSTUD 260, FEMGEN 360

FEMGEN 261. Personal Narratives in Feminist, Gender, and Sexuality Studies. 4-5 Units.
This course explores the contribution of personal narratives to knowledge in the field of feminist, gender, and sexuality studies. Each week, students do extensive readings of exemplary personal narratives that have contributed in substance and method to the field and that have opened up new areas of inquiry. These narratives deal especially with issues of individual and group identity; gender, sexuality, racial and ethnic diversity; and disability. Students select a topic of special interest to them to focus their readings and guide individual research during the quarter. The approach of the course is feminist, ethnographic, and welcoming of a variety of approaches to personal narrative. Instructor consent required; students apply at the first class meeting.
Same as: AMSTUD 261, FEMGEN 361

FEMGEN 262. Sex and the Early Church. 4 Units.
Sex and the Early Church examines the ways first- through sixth-century Christians addressed questions regarding human sexuality. We will pay particular attention to the relationship between sexuality and issues of gender, culture, power, and resistance. We will read a Roman gynecological manual, an ancient dating guide, the world's first harlequin romance novels, ancient pornography, early Christian martyrdom accounts, stories of female and male saints, instructions for how to best battle demons, visionary accounts, and monastic rules. These will be supplemented by modern scholarship in classics, early Christian studies, gender studies, queer studies, and the history of sexuality. The purpose of our exploration is not simply to better understand ancient views of gender and sexuality. Rather, this investigation of a society whose sexual system often seems so surprising aims to denaturalize many of our own assumptions concerning gender and sexuality. In the process, we will also examine the ways these first centuries of what eventually became the world's largest religious tradition has profoundly affected the sexual norms of our own time. The seminar assumes no prior knowledge of Judaism, Christianity, the bible, or ancient history.
Same as: CLASSICS 262, RELIGST 262, RELIGST 362

FEMGEN 287X. Sex, Gender, and Violence: French Women Writers Today. 1-5 Unit.
Long before the 2017 #Metoo campaign, French women writers have explored through powerful fictions and autobiographies the different shades of economic, social, psychological, physical, or sexual violence that is exerted against, but also by and between, women. How does literature - the power of words - address, deconstruct or comfort power dynamics (during sex and between the sexes) that are usually silenced, taboo or unspeakable? Themes explored: sex and gender, sex and power, rape culture, sexual and moral taboos (incest, abortion, pornography, infanticide, lesbianism), the body as social stigma or source of meaning. Special attention given to narrative and descriptive strategies designed to avert, expose, deconstruct or account for specifically feminine experiences (rape, orgasm, pregnancy). Authors include Marie Darrieusecq, Christine Angot, Annie Ernaux, Marie NDiaye, Virginie Despentes, Leila Slimani, Ivan Jablonka along with feminist theory. Taught in French.
Same as: FEMGEN 187X, FEMGEN 387X, FRENCH 187, FRENCH 287, FRENCH 387

FEMGEN 292. Gender in Modern South Asia. 5 Units.
Gender is crucial to understanding the political, cultural, and economic trajectories of communities in colonial and postcolonial South Asia. Throughout this course, we will ask a series of questions: How does gender structure conceptions of home, community, and homeland in South Asia? How do gender and religion become represented in movements for nation-states? How does women's participation in anticolonial politics and fights for equal representation in postcolonial nation-states affect our understanding of gender in South Asia today? Readings examine the creation and impact of religious personal law under British colonial rule, the role of masculinity in the British-Indian army, perspectives on religion and clothing, the interplay of rights movements and anti-colonialism, and the status of women in postcolonial India, Pakistan, and Bangladesh. Students will also explore a range of primary sources, including political treatises, short stories, didactic manuals, autobiographies, and travelogues.
Same as: HISTORY 292C

FEMGEN 297. Gender and Education in Global and Comparative Perspectives. 3-4 Units.
This course introduces students to theories and perspectives from the social sciences relevant to an understanding of the role of education in relation to structures of gender differentiation, hierarchy, and power. It familiarizes students with and enables them to critically evaluate research on the status of children, adolescents, and young adults around the world and their participation patterns in various sectors of society, particularly in education. Students have the opportunity to gain research skills by designing research proposals or to develop action plans on topics of their choosing related to gender and education from global and/or comparative perspectives.
Same as: EDUC 197, SOC 134

FEMGEN 298C. Race, Gender, & Sexuality in Chinese History. 5 Units.
This course examines the diverse ways in which identities--particularly race, ethnicity, gender and sexuality have been understood and experienced in Chinese societies, broadly defined, from the imperial period to the present day. Topics include changes in women's lives and status, racial and ethnic categorizations, homosexuality, prostitution, masculinity, and gender-crossing.
Same as: ASNAMST 298, CSRE 298G, HISTORY 298C, HISTORY 398C

FEMGEN 299. Graduate Workshop: Feminist, Gender, and Sexuality Studies. 1-3 Unit.
Theory, methods, and research in feminist, gender, and sexuality studies, through presentations of ongoing work by students, faculty, and guest speakers, and discussion of recent literature and controversies, feminist pedagogy and career development issues. Restricted to doctoral students. Repeatable for credit. Required for PhD Minors in Feminist, Gender, and Sexuality Studies (3 quarters min.).

FEMGEN 307D. Transhistory Colloquium. 4-5 Units.
Colloquium on the history of transgender practices and identities. Readings will include scholarly texts from the emerging historical field of transhistory as well as adjacent fields within gender history. Colloquium will investigate avenues for deepening transhistory through further historical inquiry.
Same as: FEMGEN 207D, HISTORY 207D, HISTORY 307D

FEMGEN 312F. Pitching and Publishing in Popular Media. 1 Unit.
Most of the time, writing a pitch for a popular outlet just means writing an email. So why be intimidated? This course will outline the procedure for pitching essays and articles to popular media: how to convince an editor, agent, or anyone else that your idea is compelling, relevant, and deliverable. We'll take a holistic approach to self-presentation that includes presenting yourself with confidence, optimizing your social media and web platform, networking effectively, writing excellent queries and pitches, avoiding the slush pile, and perhaps most importantly, persevering through the inevitable self-doubt and rejection.We will focus on distinguishing the language, topics and hooks of popular media writing from those of academic writing, learn how to target and query editors on shortform pieces (personal essays, news stories, etc.), and explore how humanists can effectively self-advocate and get paid for their work.
Same as: DLCL 312, ENGLISH 318

FEMGEN 312G. Advanced Workshop in Pitching and Publishing for Popular Media. 1 Unit.
Graduate students may self-determine a popular media project¿such as an essay, column/series of essays, podcast, agent query, or book proposal¿to be completed, with consent, under the mentorship of the Graduate Humanities Public Writing Project. Prerequisite: Pitching and Publishing in Popular Media (DLCL 312/ENG 318/FEMGEN 312F), approved project proposal. Students will determine their individual meeting schedule with the instructor, and will also convene for at least one group meeting.
Same as: ENGLISH 318A

FEMGEN 313. Performance and Performativity. 5 Units.
Performance theory through topics including: affect/trauma, embodiment, empathy, theatricality/performativity, specularity/visibility, liveness/disappearance, belonging/abjection, and utopias and dystopias. Readings from Schechner, Phelan, Austin, Butler, Conquergood, Roach, Schneider, Silverman, Caruth, Fanon, Moten, Anzaldúa, Agamben, Freud, and Lacan. May be repeated for credit.
Same as: ENGLISH 313, TAPS 313

FEMGEN 314. Performing Identities. 4 Units.
This course examines claims and counter-claims of identity, a heated political and cultural concept over the past few decades. We will consider the ways in which theories of performance have offered generative discursive frameworks for the study of identities, variously shaped by vectors of race, gender, sexuality, religion, class, nation, ethnicity, among others. How is identity as a social category different from identity as a unique and personal attribute of selfhood? Throughout the course we will focus on the inter-locking ways in which certain dimensions of identity become salient at particular historical conjunctures. In addition, we will consider the complex discourses of identity within transnational and historical frameworks. Readings include Robin Bernstein, Ann Pellegrini, Tavia Nyong¿o, Jose Munoz, Michael Taussig, Wendy Brown, Talal Asad, Jasbir Puar, among others.
Same as: TAPS 314

FEMGEN 344F. Intersectional Design: An Expanded Approach to Gender in Tech. 4-5 Units.
This d-school seminar prototypes concepts and methods for "inclusive" design. From the moment we arrive on the planet, gender shapes our perception of the world. Examples of products (including objects, services, and systems) gone awry will serve as prompts for design activities, challenges, and discussions on gender issues to illustrate the different needs of women, men, and gender-fluid people. Class sessions mix use case explorations with design methodology, design thinking abilities, and guest speakers from technology, design, and academia. Students will be asked to work in interdisciplinary teams on several design challenges, culminating in the development of a toolkit for inclusive design. Methods will interact in crucial ways to create "intersectional thinking" (i.e., to consider how gender, ethnicity, sexuality, socio-economic status, etc. work together to require new solutions in design). Topics include: algorithms, media, seat belts for pregnant women, robotics, assistive technologies, tech for developing worlds, video games, urban/rural design, software development, and many more. Admission by application only. Visit d.school.stanford.edu/classes for more information.
Same as: HISTORY 244F, HISTORY 344F

FEMGEN 357X. Simone Weil, Simone de Beauvoir, Hannah Arendt, and Adriana Cavarero. 3-5 Units.
What does it mean to say the personal is the political, or, in the case of Arendt, that the personal is not political, especially if you are a woman? This course explores how Weil, De Beauvoir, Arendt, and Caverero contend with the question of personhood, in its variegated social, political, ethical, and gendered dimensions. Particular attention will be given to a philosophy of social change and personal transformation, and to the enduring relevance of these women's thought to issues of our day. Texts include selections from "Gravity and Grace," "The Second Sex," "The Ethics of Ambiguity," "The Human Condition," "Between Past and Future," "Stately Bodies," and "Relating Narratives.".
Same as: COMPLIT 257, COMPLIT 357A, FEMGEN 257X, FRENCH 257, FRENCH 357, ITALIAN 257, ITALIAN 357

FEMGEN 358. History of Sexual Violence in America. 4-5 Units.
This undergraduate/graduate colloquium explores the history of sexual violence in America, with particular attention to the intersections of gender and race in the construction of rape. We discuss the changing definitions of sexual violence in law and in cultural representations from early settlement through the late-twentieth century, including slavery, wartime and prison rape, the history of lynching and anti-lynching movements, and feminist responses to sexual violence. In addition to introducing students to the literature on sexual violence, the course attempts to teach critical skills in the analysis of secondary and primary historical texts. Students write short weekly reading responses and a final paper; no final exam; fifth unit research or CEL options.nnLimited enrollment, permission of instructor required. Submit application form and indicate interest in CEL option. Priority admission to History, FGSS, CSRE, AFRICAAM, and AMSTUD declared majors and minors. (Cardinal Course certified by the Haas Center).
Same as: AFRICAAM 192, AMSTUD 258, CSRE 192E, FEMGEN 258, HISTORY 258, HISTORY 358

FEMGEN 360. Disability, Gender, and Identity: Women's Personal Experiences. 5 Units.
This course explores visible and invisible disabilities, focusing on issues of gender and identity in the personal experiences of women. The course emphasizes psychological as well as physical health, the diversity of disability experiences, self-labeling, caretaking, stigma and passing, and social and political aspects. Disabilities covered include blindness, multiple sclerosis, diabetes, arthritis, emotional and learning disabilities, and conditions requiring wheelchairs and other forms of assistance. The readings draw from the disability studies literature and emphasize women's personal narratives in sociological perspective. Note: Instructor Consent Required.
Same as: AMSTUD 260, FEMGEN 260

FEMGEN 361. Personal Narratives in Feminist, Gender, and Sexuality Studies. 4-5 Units.
This course explores the contribution of personal narratives to knowledge in the field of feminist, gender, and sexuality studies. Each week, students do extensive readings of exemplary personal narratives that have contributed in substance and method to the field and that have opened up new areas of inquiry. These narratives deal especially with issues of individual and group identity; gender, sexuality, racial and ethnic diversity; and disability. Students select a topic of special interest to them to focus their readings and guide individual research during the quarter. The approach of the course is feminist, ethnographic, and welcoming of a variety of approaches to personal narrative. Instructor consent required; students apply at the first class meeting.
Same as: AMSTUD 261, FEMGEN 261

FEMGEN 363D. Feminist Theory: Thinking Through/With/About the Gendered Body. 5 Units.
Organized around a series of case studies, this graduate feminist theory course will consider issues related to the complex relationship between sex, gender, sexuality, biological reproduction, violence, and social power. It is a core course for the PhD minor in Feminist, Gender, and Sexuality Studies. Enrollment is limited to PhD-level students.

FEMGEN 385N. Transfeminism. 2-4 Units.
This graduate seminar explores the metaphysics, ethics, and epistemology of transness, using sources from the 1970s to the present, primarily focused on the US, the UK, and Canada. Among the questions we¿ll investigate are: How can we theorize about gender in a way that acknowledges the breadth and diversity of embodied human experience? How should we understand trans femininity, trans masculinity, and genderqueerness? What is the relationship between a person¿s internal sense of their own gender, and the gendered expectations of the broader society where they live?2 unit option only for Phil PhDs beyond the second year.
Same as: PHIL 385N

FEMGEN 387X. Sex, Gender, and Violence: French Women Writers Today. 1-5 Unit.
Long before the 2017 #Metoo campaign, French women writers have explored through powerful fictions and autobiographies the different shades of economic, social, psychological, physical, or sexual violence that is exerted against, but also by and between, women. How does literature - the power of words - address, deconstruct or comfort power dynamics (during sex and between the sexes) that are usually silenced, taboo or unspeakable? Themes explored: sex and gender, sex and power, rape culture, sexual and moral taboos (incest, abortion, pornography, infanticide, lesbianism), the body as social stigma or source of meaning. Special attention given to narrative and descriptive strategies designed to avert, expose, deconstruct or account for specifically feminine experiences (rape, orgasm, pregnancy). Authors include Marie Darrieusecq, Christine Angot, Annie Ernaux, Marie NDiaye, Virginie Despentes, Leila Slimani, Ivan Jablonka along with feminist theory. Taught in French.
Same as: FEMGEN 187X, FEMGEN 287X, FRENCH 187, FRENCH 287, FRENCH 387

FEMGEN 395. Graduate Independent Study. 1-15 Unit.
Students pursue a special subject of investigation under supervision of an affiliated faculty member. May be repeated for credit.

FEMGEN 395J. Gender and Sexuality in Chinese History. 4-5 Units.
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Same as: CHINA 395, HISTORY 395J

FEMGEN 444. Graduate Research Seminar: Gender in Science, Medicine, and Engineering. 5 Units.
Theory and practice of gender in STEM. 1. "Fix the Numbers of Women" focuses on increasing women's participation; 2. "Fix the Institutions" promotes gender equality in careers through structural change in research organizations; 3. "Fix the Knowledge" or "gendered innovations" stimulates excellence in science and technology by integrating gender analysis into research. Seminar explores harnessing the creative power of gender analysis to enhance knowledge and spark innovation.
Same as: HISTORY 444

FEMGEN 466. Queer America. 5 Units.
This class explores queer art, photography and politics in the United States since 1930. Our approach will be grounded in close attention to the history and visual representation of sexual minorities in particular historical moments and social contexts. We will consider the cultural and political effects of World War II, the Cold War, the civil rights movement, psychedelics, hippie culture and sexual liberation, lesbian separatism, the AIDS crisis, and marriage equality.
Same as: ARTHIST 466

FRENCH AND ITALIAN

Courses offered by the Department of French and Italian are listed on the Stanford Bulletin's ExploreCourses web site under the subject codes FRENCH (French General and Literature) and ITALIAN (Italian General and Literature). For courses in French or Italian language instruction with the subject code FRENLANG or ITALLANG, see the "Language Center (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/languagecenter/)" section of this bulletin.

The department is a part of the Division of Literatures, Cultures, and Languages (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/divisionofliteraturesculturesandlanguages/).

French Section

The French section provides students with the opportunity to pursue course work at all levels in French language, literature, cultural and intellectual history, theory, film, and Francophone studies. It understands the domain of French Studies as encompassing the complex of cultural, political, social, scientific, commercial, and intellectual phenomena associated with French-speaking parts of the world, from France and Belgium to Canada, Africa, and the Caribbean.

Three degree programs are available in French: a B.A., a terminal M.A., and a Ph.D. A Ph.D. in French and Italian is also available.

Visiting faculty and instructors contribute regularly to the life of the French section. The section maintains contacts with the Ecole Normale Supérieure, the Institut d'Etudes Politiques, and the Ecole Polytechnique.

A curator for Romance languages oversees the extensive French collection at Green Library. The Hoover Institute on War, Revolution, and Peace also includes materials on 20th-century France and French social and political movements.

Stanford Center for Interdisciplinary Studies

The Stanford Center for Interdisciplinary Studies (https://francestanford.stanford.edu/), founded in partnership with the French Ministry of Foreign Affairs, aims to bridge the disciplines of the humanities, social sciences, sciences, engineering, business, and law, to address historical and contemporary issues. Its programs bring faculty and students from across Stanford's departments and schools in contact with colleagues in France to explore issues of common intellectual concern. The center invites French-speaking scholars to offer courses or give lectures or seminars on campus. It facilitates internships for Stanford students in computer science and engineering in Sophia-Antipolis, France's new high-tech center near Nice.

Stanford in Paris

The Bing Overseas Studies Program in Paris offers undergraduates the opportunity to study in France during Autumn, Winter, and Spring quarters. It provides a wide range of academic options, including course work at the Stanford center and at the University of Paris, independent study projects, and internships. In addition, the program promotes interaction with the local community through volunteer employment, homestays, and internships. The minimum language requirement for admission into Stanford in Paris is one year of French at the college level.

Courses offered in Paris may count toward fulfillment of the requirements of the French major or minor. Students should consult with the Chair of Undergraduate Studies before and after attending the program, in order to ensure that course work and skills acquired abroad can be coordinated appropriately with their degree program. Detailed information, including program requirements and curricular offerings, may be obtained from the "Overseas Studies" section of this bulletin, the Stanford in Paris (http://osp.stanford.edu/program/paris/) web site, or the Overseas Studies Program Office in Sweet Hall.

La Maison Française

La Maison Française, 610 Mayfield, is an undergraduate residence that serves as a campus French cultural center, hosting in-house seminars as well as social events, film series, readings, and lectures by distinguished representatives of French and Francophone intellectual, artistic, and political life. Assignment is made through the regular housing draw.

Mission of the Undergraduate Program in French

The mission of the undergraduate in French is to expose students to a variety of perspectives in French language, culture, and history by providing majors and minors with training in writing and communication as well cultural, textual, and historical analysis. Through such skills, students develop into critical and global thinkers prepared for careers in business, social service, journalism, and government, or for graduate study in French.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. oral proficiency in French beyond the interpersonal level with presentational language abilities.
2. writing proficiency in French beyond the interpersonal level with presentational language abilities.
3. close reading skills of authentic texts in French.
4. the ability to develop effective and nuanced lines of interpretation.

Italian Section

The Italian section offers graduate and undergraduate programs in Italian language, literature, culture, and intellectual history. Course offerings range from small, specialized graduate seminars to general courses open to all students on authors such as Dante, Boccaccio, and Machiavelli.

Three degree programs are available in Italian: a B.A., a Ph.D., and Ph.D. in French and Italian. An Italian minor program is available to undergraduates.

Collections in Green Research Library are strong in the medieval, Renaissance, and contemporary periods; the Italian section is one of the larger constituents of the western European collection at the Hoover Institution for the Study of War, Revolution, and Peace; and the Music Library has excellent holdings in Italian opera.

La Casa Italiana

La Casa Italiana, 562 Mayfield, is an undergraduate residence devoted to developing an awareness of Italian language and culture. It works closely with the Italian Cultural Institute in San Francisco and with other local cultural organizations. It hosts visiting representatives of Italian intellectual, artistic, and political life. A number of departmental courses are taught at the Casa, which also offers in-house seminars. Assignment is made through the regular undergraduate housing draw.

Stanford in Florence

The Bing Overseas Studies Program in Florence affords undergraduates with at least three quarters of Italian language the opportunity to take advantage of the unique intellectual and visual resources of the city and to focus on two areas: Renaissance history and art, and contemporary Italian and European studies. The program is structured to help integrate

students into Italian culture through homestays, Florence University courses, the Language Partners Program, research, internship and public service opportunities, and by conducting some of the program's classes in Italian. Many courses offered in Florence may count toward the fulfillment of requirements for the Italian major or minor. Students are encouraged to consult with the Italian undergraduate adviser before and after a sojourn in Florence to ensure that their course selections meet Italian section requirements. Information on the Florence program is available in the "Overseas Studies" section of this bulletin, the Stanford in Florence (http://osp.stanford.edu/program/florence/) web site, or at the Overseas Studies office in Sweet Hall.

Mission of the Undergraduate Program in Italian

The mission of the undergraduate program in Italian is to expose students to a variety of perspectives in Italian language, culture, and history by providing majors with training in writing and communication as well as cultural, textual, and historical analysis in order to develop students into critical and global thinkers prepared for careers in business, social service, and government, or for graduate study in Italian.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. oral proficiency in Italian beyond the interpersonal level with presentational language abilities.
2. writing proficiency in Italian beyond the interpersonal level with presentational language abilities.
3. close reading skills of authentic texts in Italian.
4. the ability to develop effective and nuanced lines of interpretation.

Graduate Programs in French and Italian

The department offers a Ph.D. and terminal M.A. in French, a Ph.D. in Italian, and a Ph.D. in French and Italian.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in French or Italian and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in French, Italian, or French and Italian. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of French, Italian, or French and Italian and to interpret and present the results of such research.

Bachelor of Arts in French

The French section offers a major and a minor in French. Students are encouraged to pursue a course of study tailored to their individual needs and interests. A degree in French serves as a stepping stone to entering international business, law, translation, and teaching, or as preparation for graduate studies in French, history, or comparative literature.

The French major allows students to combine their work in French with work from another field such as African studies, linguistics, art history, music, economics, history, education, medicine, international relations, political science, or other foreign languages and literatures. The literature and philosophy specialization offers students the opportunity to pursue interdisciplinary studies at the intersection of literature and philosophy in a structured manner and alongside similarly interested students from a variety of humanistic disciplines.

Declaring the Major

Students declare the major in French through Axess. Students should meet with the Director of Undergraduate Studies and the undergraduate student services officer in Pigott Hall, room 128, to discuss appropriate courses and options within the major, and to plan the course of study.

Requirements

Complete a minimum of 60 units of coursework in the major.

- These units may not be used towards any other major or minor.
- Courses applied to the major must be taken for a letter grade, and a grade point average (GPA) of 2.0 or better must be achieved in each course.
- Limit independent study courses to no more than 12 units of coursework for the major.
- Relevant courses from other departments or programs and earn credit toward the major as electives with the prior consent of the Director of Undergraduate Studies.
- Limit to 12 units coursework completed at another university to count toward the major, and only with approval by the Director of Undergraduate Studies.

Coursework

To enroll in all French literature courses, students are highly encouraged to complete FRENLANG 124 Advanced French: Composition, Writing, and Presentation, or successfully tested above this level through the Language Center.

1. Recommended Introductory Course counts toward the major course unit requirement.

		Units
FRENCH 129	Camus	4-5

2. Required Courses. 3 courses minimum. For 2020-21, FRENCH 129, 131 and 133 fulfill the Writing in the Major (WIM) requirement.

		Units
FRENCH 130	Introduction to Medieval and Renaissance French Literature	4
FRENCH 131	Absolutism, Enlightenment, and Revolution in 17th- and 18th-Century France	4
FRENCH 132	Literature, Revolutions, and Changes in 19th- and 20th-Century France	4
FRENCH 133	Literature and Society in Africa and the Caribbean (WIM)	4

3. Medieval/Early Modern Course. Students must take one course that concerns the period before 1800. See the Director of Undergraduate Studies for additional appropriate courses.

		Units
FRENCH 130	Introduction to Medieval and Renaissance French Literature	4

4. Capstone Course. In their senior year students must enroll in a 3 unit Independent Study to prepare a final project that reflects their coursework in the major. In consultation with the Director of Undergraduate Studies, students choose a project from a menu of options. Options include but are not limited to a creative project or short

essay. They will present this project to members of the department before graduation.

5. Oral Proficiency Interview (OPI). Students must take the Oral Proficiency Interview (OPI) two quarters prior to degree conferral through the Stanford Language Center (https://language.stanford.edu/).

6. Electives. Students must complete a total of 60 units towards the major. A maximum of 30 units can be elective courses. Elective courses can be taken within the following parameters:

- *Coursework within the department.* Additional FRENCH courses taught by French faculty (may be taught in English or French) at the 100- or 200- level.
- *Language course work.* Up to three language courses in French at or above FRENLANG 21C for a maximum of 13 units.
- *Coursework in other departments relevant to the degree*, with approval by the Director of Undergraduate Studies.
- *Bing Overseas Program.* Courses taken at the Bing Overseas Studies in Paris program with prior approval of the Director of Undergraduate Studies.
- *Thinking Matters or Education as Self-Fashioning courses* taught at least partially by a faculty member of the French and Italian Department. Students may count a maximum of 10 units.
- *Structured Liberal Education.* Students may count up to 10 units of SLE towards the major electives.
- *Digital Humanities course.* Student work must reflect French interests. Prior approval of the Director of Undergraduate Studies. Maximum of 5 units.

Bachelor of Arts in French, French and Philosophy Subplan

The French and Philosophy subplan requires a total of 65 units as described below. Students interested in this option should review the Philosophy and Literature web site (http://philit.stanford.edu/). Substitutions and transfer credit are not normally permitted for the PHIL 170 series class or the PHIL 180 series class, and are never permitted for PHIL 80, FRENCH 181, or the capstone seminar. Up to 10 units of courses taken in the Philosophy department may be taken 'CR/NC' or 'S/NC'; the remainder must be taken for a letter grade. Once a student has completed the SLE sequence (all three quarters) they may count up to 10 units towards this major. The SLE units can replace one history of philosophy course and one upper-division French course.

Required French Coursework

1. Advanced Language. FRENLANG 124 Advanced French: Composition, Writing, and Presentation

2. Required Courses. Students must take three of the following core courses.

		Units
FRENCH 130	Introduction to Medieval and Renaissance French Literature	4
FRENCH 131	Absolutism, Enlightenment, and Revolution in 17th- and 18th-Century France	4
FRENCH 132	Literature, Revolutions, and Changes in 19th- and 20th-Century France	4
FRENCH 133	Literature and Society in Africa and the Caribbean	4

3. Upper division French Courses. At least three courses numbered FRENCH 140 or higher.

4. Students must take the Oral Proficiency Interview (OPI) two quarters prior to degree conferral through the Stanford Language Center (https://language.stanford.edu/.html).

Required Philosophy Coursework

1. *Philosophy Writing in the Major.*

		Units
PHIL 80	Mind, Matter, and Meaning (WIM) (prerequisite: introductory philosophy course)	5

2. *Philosophy and Literature Course.* This course should be taken as early as possible in the student's career, normally in the sophomore year.

		Units
FRENCH 181	Philosophy and Literature	3-5

3. *Aesthetics, Ethics, Political Philosophy.* One course from the PHIL 170 Ethical Theory series.
4. *Language, Mind Metaphysics, and Epistemology.* One course from the PHIL 180 series.
5. *History of Philosophy.* Two courses in the history of Philosophy, numbered above PHIL 100.
6. Two additional elective courses of special relevance to the study of philosophy and literature. A list of approved courses may be found on the Philosophy and Literature (http://philit.stanford.edu/programs/relevance.html) web site. Students must consult with the Chair of Undergraduate Studies in French. See https://philit.stanford.edu/undergraduates/undergraduate-special-relevance-courses (https://philit.stanford.edu/undergraduates/undergraduate-special-relevance-courses/).
7. *Capstone.* Students must do one of the following: (a) take one of the officially-designated Philosophy and Literature capstone seminars listed below; (b) write an honors thesis (see “Honors Program” for instructions); or (c) write a 5,000-word paper on a topic of their choosing, serving as the culmination of their work in the field. To make time to write the paper, students must enroll in a 3-unit, letter-grade independent study with a faculty member (or affiliate) in the Philosophy and Literature Focal Group. The paper must involve both philosophy and literature, and the topic must be approved by the faculty member by the add/drop deadline.

		Units
COMPLIT 283A	Modern Notions of 'The Holy'	3-5
PHIL 194W	Capstone Seminar: Imagination in Fiction and Philosophy	4
PHIL 194Z	Capstone: Living a Meaningful Literary Life	4

Honors Program

Students majoring in any DLCL department (i.e., Comparative Literature, French and Italian, German Studies, Iberian and Latin American Cultures, and Slavic Languages and Literatures) who have an overall grade point average (GPA) of 3.3 or above and who maintain a 3.5 (GPA) in their major courses, are eligible to participate in the DLCL's honors program.

Declaring Honors

Prospective honors students must choose a senior thesis adviser from among their home department's regular faculty in their junior year by May 1. During Spring Quarter of the junior year, a student interested in the honors program should consult with the Chair of Undergraduate Studies of their home department to submit a thesis proposal (2-5 pages), DLCL Honors application, and an outline of planned course work for their senior year. When their applications are approved by their home department, students will request honors through Axess.

Honors theses vary considerably in length as a function of their topic, historical scope, and methodology. They may make use of previous work developed in seminars and courses, but display an enhanced comparative or theoretical scope. Quality rather than quantity is the key criterion. Honors theses range from 40 to 90 pages not including bibliography and notes.

Honors students are encouraged to participate in the DLCL program hosted by Bing Honors College. This DLCL Honors College is designed to help students develop their projects and is offered at the end of the summer before senior year. Applications must be submitted through the Bing program. For more information, view the Bing Honors (https://undergrad.stanford.edu/programs/bhc/) web site.

Program Requirements

A minimum of 10 units total, described below, and a completed thesis is required. Honors essays are due to the thesis adviser no later than 5:00 p.m. on May 15, of the terminal year. If an essay is found deserving of a grade of 'A-' or better by the thesis adviser, honors are granted at the time of graduation.

1. Spring Quarter of the junior year (optional): DLCL 189C Honors Thesis Seminar, 2-4 units S/NC, under the primary thesis adviser. Drafting or revision of the thesis proposal. The proposal is reviewed by the Chair of Undergraduate Studies and the Director of the department and will be approved or returned for submission.
2. Autumn Quarter of the senior year (required): DLCL 189A Honors Thesis Seminar, 4 units S/NC, taught by a DLCL appointed faculty member. Course focuses on researching and writing the honors thesis.
3. Winter Quarter of the senior year (required): DLCL 189B Honors Thesis Seminar, 2-4 units S/NC, under the primary thesis adviser. Focus is on writing under guidance of primary adviser.
4. Spring Quarter of the senior year (option; mandatory if not taken during junior year): DLCL 189C Honors Thesis Seminar, 2-4 units S/NC, under the primary thesis adviser. Honors essays are due to the thesis adviser and student services officer no later than 5:00 p.m. on May 15 of the terminal year.
5. Spring Quarter of the senior year (required) DLCL 199 Honors Thesis Oral Presentation, 1 unit S/NC. Enroll with primary thesis adviser.

The honors thesis in the DLCL embodies Stanford's excellence in course work and research. It is simultaneously one element of the student's intellectual legacy and part of the University's official history. The faculty considers the honors thesis to be far more than a final paper; rather, it is the product of solid research that contributes to conversations taking place within a larger scholarly community and representative of the intellectual vitality of the discipline. For all of these reasons, DLCL honors theses will be visible to future scholars researching similar questions through full online access through the Stanford Digital Repository (https://library.stanford.edu/research/stanford-digital-repository/) (SDR) and may be used as course materials for future Stanford honors preparatory courses. For similar purposes, a printed copy may also be kept in DLCL spaces. Students who wish to limit the availability or formats in which the thesis may be shared may do so by filling out the appropriate form with the DLCL student affairs officer.

Bachelor of Arts in Italian

The Italian section offers a major and a minor. Students are encouraged to pursue a course of study tailored to their individual needs and interests. A degree in Italian serves as a stepping stone to entering international business, law, translation, and teaching, or as preparation for graduate studies in Italian, history, or comparative literature.

The Italian major allows students to combine their work in Italian with work from another field such as linguistics, art history, music, economics, history, education, medicine, international relations, political science, or other foreign languages and literatures. The literature and philosophy specialization offers students the opportunity to pursue interdisciplinary studies at the intersection of literature and philosophy in a structured manner and alongside similarly interested students from a variety of humanistic disciplines.

Declaring the Major

Students declare the major in Italian through Axess. Students should meet with the Director of Undergraduate Studies and the DLCL undergraduate student support officer to discuss appropriate courses and options within the major, and to plan the course of study.

Requirements

Complete a minimum of 60 units of course work in the major.

- These 60 units may not be used towards any other major or minor.
- Courses applied to the major must be taken for a letter grade, and a grade point average (GPA) of 2.0 or better must be achieved in each course.
- No more than 12 units of coursework for the major should be taken as independent study courses.
- Relevant courses from other departments or programs may also earn credit toward the major as electives with prior approval from the Director of Undergraduate Studies.
- Limit to 12 units of coursework completed at another university to count toward the major, and only with approval by the Director of Undergraduate Studies.

Coursework

To enroll in all ITALIAN or ITALLANG courses taught in Italian at or above the 100 level, students must have successfully completed ITALLANG 22A or the equivalent.

1. Recommended Introductory Courses count as electives toward the major.

		Units
ITALIAN 148	Cinema and the Real: Italian Neo-Realism and the French New Wave	3-5
ITALIAN 155	The Mafia in Society, Film, and Fiction	4

2. Intermediate Language. Students may earn up to 12 units in second-year language courses (maximum 12 units).

		Units
ITALLANG 21	Second Year Italian, First Quarter	4
ITALLANG 22	Second-Year Italian, Second Quarter	4
ITALLANG 23	Second-Year Italian, Third Quarter	3-4
or		
ITALLANG 21A	Accelerated Second-Year Italian, Part 1	5
ITALLANG 22A	Accelerated Second-Year Italian, Part 2	5

3. Required Courses. Students must take all three of the following core courses at Stanford (12 units). For 2020-21, ITALIAN 128 The Italian Renaissance and the Path to Modernity fulfills the Writing in the Major (WIM) requirement.

		Units
ITALIAN 127	Inventing Italian Literature: Dante, Boccaccio, Petrarca	4
ITALIAN 128	The Italian Renaissance and the Path to Modernity (WIM)	4
ITALIAN 129	19th and 20th Century Literature and Culture: Constructing and Re-Constructing Italy	4

4. Capstone Course: In their senior year, students must enroll in a 3-unit Independent Study to prepare a final project that reflects their coursework in the major. In consultation with the Director of Undergraduate Studies, students choose a project from a menu of options. Options include but are not limited to a creative project or short essay. Students will present this project to the faculty of the department before graduation.

5. Students must take the Oral Proficiency Interview (OPI) two quarters prior to degree conferral through the Stanford Language Center (https://language.stanford.edu/.html).

6. Electives. Students must complete a total of 60 units towards the major. A maximum of 33 units can be elective courses. Elective courses can be taken within the following parameters:

- *Coursework within the department.* Additional ITALIAN courses taught by Italian faculty (may be taught in English or Italian) at the 100- or 200- level.
- Coursework in other departments relevant to the degree, on Italian topics, with the approval of the Director of Undergraduate Studies. Maximum of 14 units.
- *Bing Overseas Program.* Courses taken at the Bing Overseas Studies in Florence program with approval of the Chair of Undergraduate Studies.
- *Thinking Matters or Education as Self-Fashioning courses* taught at least partially by a faculty member of the French and Italian Department. Students may count a maximum of 10 units.
- *Structured Liberal Education.* Students may count 10 units of SLE coursework towards their major elective totals.
- *Digital Humanities Course.* Student work must reflect Italian interests. Prior approval of the Director of Undergraduate Studies. Maximum of 5 units.

Italian and Philosophy Subplan

The Italian and Philosophy subplan requires a total of 65 units as described below. Students interested in this subplan should review the Philosophy and Literature (https://philit.stanford.edu/undergraduates/undergraduates-overview/) website. Substitutions and transfer credit are not normally permitted for the PHIL 170 series class or the PHIL 180 series class, and are never permitted for PHIL 80, ITALIAN 181 Philosophy and Literature or the capstone seminar. Up to 10 units of courses taken in the Philosophy department may be taken 'CR/NC' or 'S/NC'; the remainder must be taken for a letter grade. Once a student has completed the SLE sequence (all three quarters) they may count up to 10 units towards this major. The SLE units can replace one history of philosophy course and one upper-division ITALIAN course.

Required Italian Course Work

- *Intermediate Language.* Students may earn up to 12 units in second-year language courses (maximum 12 units).

		Units
ITALLANG 21	Second Year Italian, First Quarter	4
ITALLANG 22	Second-Year Italian, Second Quarter	4
ITALLANG 23	Second-Year Italian, Third Quarter	3-4

or

		Units
ITALLANG 21A	Accelerated Second-Year Italian, Part 1	5
ITALLANG 22A	Accelerated Second-Year Italian, Part 2	5

- *Required ITALIAN Courses.*Students must take all three of the following core courses at Stanford (12 units) ITALIAN 128 fulfills the Writing in the Major (WIM) requirement.

		Units
ITALIAN 127	Inventing Italian Literature: Dante, Boccaccio, Petrarca	4
ITALIAN 128	The Italian Renaissance and the Path to Modernity	4
ITALIAN 129	19th and 20th Century Literature and Culture: Constructing and Re-Constructing Italy	4

- *Studies in Italian Culture.* Students must complete a minimum of 10 additional units (2-3 courses) in ITALIAN coursework (taught in English or Italian).
- *Additional Requirements.* Students must take the Oral Proficiency Interview (OPI) two quarters prior to degree conferral. Students should contact the Language Center to arrange the assessment.

Required Philosophy Coursework

1. *Philosophy Writing in the Major.*

		Units
PHIL 80	Mind, Matter, and Meaning (WIM) (prerequisite: introductory philosophy course)	5

2. *Philosophy and Literature Course.* This course should be taken as early as possible in the student's career, normally in the sophomore year.

		Units
FRENCH 181	Philosophy and Literature	3-5

3. *Aesthetics, Ethics, Political Philosophy.* One course from the PHIL 170 Ethical Theory series.
4. *Language, Mind Metaphysics, and Epistemology.* One course from the PHIL 180 series.
5. *History of Philosophy.* Two courses in the history of Philosophy, numbered above PHIL 100.
6. Two additional elective courses of special relevance to the study of philosophy and literature. A list of approved courses may be found on the Philosophy and Literature (http://philit.stanford.edu/programs/relevance.html) web site. Students must consult with the Chair of Undergraduate Studies in French. See https://philit.stanford.edu/undergraduates/undergraduate-special-relevance-courses (https://philit.stanford.edu/undergraduates/undergraduate-special-relevance-courses/).
7. *Capstone.* Students must do one of the following: (a) take one of the officially-designated Philosophy and Literature capstone seminars listed below; (b) write an honors thesis (see “Honors Program” for instructions); or (c) write a 5,000-word paper on a topic of their choosing, serving as the culmination of their work in the field. To make time to write the paper, students must enroll in a 3-unit, letter-grade independent study with a faculty member (or affiliate) in the Philosophy and Literature Focal Group. The paper must involve both philosophy and literature, and the topic must be approved by the faculty member by the add/drop deadline.

		Units
COMPLIT 283A	Modern Notions of 'The Holy'	3-5
PHIL 194W	Capstone Seminar: Imagination in Fiction and Philosophy	4
PHIL 194Z	Capstone: Living a Meaningful Literary Life	4

Honors Program

Students majoring in any DLCL department (i.e., Comparative Literature, French and Italian, German Studies, Iberian and Latin American Cultures, and Slavic Languages and Literatures) who have an overall grade point average (GPA) of 3.3 or above and who maintain a 3.5 (GPA) in their major courses, are eligible to participate in the DLCL's honors program.

Declaring Honors

Prospective honors students must choose a senior thesis adviser from among their home department's regular faculty in their junior year by May 1. During Spring Quarter of the junior year, a student interested in the honors program should consult with the Chair of Undergraduate Studies of their home department to submit a thesis proposal (2-5 pages), DLCL Honors application, and an outline of planned course work for their senior year. When their applications are approved by their home department, students will request honors through Axess.

Honors theses vary considerably in length as a function of their topic, historical scope, and methodology. They may make use of previous work developed in seminars and courses, but display an enhanced comparative or theoretical scope. Quality rather than quantity is the key criterion. Honors theses range from 40 to 90 pages not including bibliography and notes.

Honors students are encouraged to participate in the DLCL program hosted by Bing Honors College. This DLCL Honors College is designed to help students develop their projects and is offered at the end of the summer before senior year. Applications must be submitted through the Bing program. For more information, view the Bing Honors (https://undergrad.stanford.edu/programs/bhc/) web site.

Program Requirements

A minimum of 10 units total, described below, and a completed thesis is required. Honors essays are due to the thesis adviser no later than 5:00 p.m. on May 15, of the terminal year. If an essay is found deserving of a grade of 'A-' or better by the thesis adviser, honors are granted at the time of graduation.

1. Spring Quarter of the junior year (optional): DLCL 189C Honors Thesis Seminar, 2-4 units S/NC, under the primary thesis adviser. Drafting or revision of the thesis proposal. The proposal is reviewed by the Chair of Undergraduate Studies and the Director of the department and will be approved or returned for submission.
2. Autumn Quarter of the senior year (required): DLCL 189A Honors Thesis Seminar, 4 units S/NC, taught by a DLCL appointed faculty member. Course focuses on researching and writing the honors thesis.
3. Winter Quarter of the senior year (required): DLCL 189B Honors Thesis Seminar, 2-4 units S/NC, under the primary thesis adviser. Focus is on writing under guidance of primary adviser.
4. Spring Quarter of the senior year (option; mandatory if not taken during junior year): DLCL 189C Honors Thesis Seminar, 2-4 units S/NC, under the primary thesis adviser. Honors essays are due to the thesis adviser and student services officer no later than 5:00 p.m. on May 15 of the terminal year.
5. Spring Quarter of the senior year (required) DLCL 199 Honors Thesis Oral Presentation, 1 unit S/NC. Enroll with primary thesis adviser.

The honors thesis in the DLCL embodies Stanford's excellence in course work and research. It is simultaneously one element of the student's intellectual legacy and part of the University's official history. The faculty considers the honors thesis to be far more than a final paper; rather, it is the product of solid research that contributes to conversations taking place within a larger scholarly community and representative of the intellectual vitality of the discipline. For all of these reasons, DLCL honors theses will be visible to future scholars researching similar questions through full online access through the Stanford Digital Repository (https://library.stanford.edu/research/stanford-digital-repository/) (SDR) and may be used as course materials for future Stanford honors preparatory courses. For similar purposes, a printed copy may also be kept in DLCL spaces. Students who wish to limit the availability or formats in which the thesis may be shared may do so by filling out the appropriate form with the DLCL student affairs officer.

Minor in French

Declaring the Minor

Students declare the major in French through Axess. Students should meet with the Director of Undergraduate Studies and undergraduate student support officer to discuss appropriate courses and options within the minor, and to plan the course of study.

Requirements of the Minor

To earn a minor in French, students must:

- Complete a minimum of 6 courses at 3 units or more and total 24 units of course work in the department.
- These 24 units may not be used towards any other major or minor.
- Courses applied to the minor must be taken for a letter grade, and a grade point average (GPA) of 2.0 or better must be achieved in each course.
- To enroll in all French literature courses, students are highly encouraged to complete FRENLANG 124 Advanced French: Composition, Writing, and Presentation or successfully tested above this level through the Stanford Language Center (https://language.stanford.edu/).

Coursework for the Minor

1. Required Courses: Students must take a minimum of three French Literature courses. Two must be from the FRENCH 130 sequence (8 units):

		Units
FRENCH 130	Introduction to Medieval and Renaissance French Literature	4
FRENCH 131	Absolutism, Enlightenment, and Revolution in 17th- and 18th-Century France	4
FRENCH 132	Literature, Revolutions, and Changes in 19th- and 20th-Century France	4
FRENCH 133	Literature and Society in Africa and the Caribbean	4

2. Electives. A maximum of 12 elective units may be applied to the minor. Prior approval from the Director of Undergraduate Studies is required. The following courses have been pre-approved as electives:

		Units
Courses taught in FRENCH department		
FRENLANG 21C	Second-Year French: Cultural Emphasis, First Quarter	4
FRENLANG 22C	Second-Year French: Cultural Emphasis, Second Quarter	4
FRENLANG 23C	Second-Year French: Cultural Emphasis, Third Quarter	4
FRENLANG 120	Advanced French Oral Communication	3
FRENLANG 124	Advanced French: Composition, Writing, and Presentation	4-5
OSPPARIS courses. Courses taken at the Bing Overseas Studies in Paris program with prior approval of the Chair of Undergraduate Studies (language of instruction must be French)		

Education as Self-Fashioning and, Thinking Matters courses taught at least partially by a faculty member in French. Maximum of 5 units.	5
Structured Liberal Education Students may count 5 units of SLE towards the major electives. Maximum of 5 units.	
Digital Humanities Course. Student work must reflect French interests. Prior approval of the Chair of Undergraduate Studies. Maximum of 5 units.	

Minor in Italian

Declaring the Major

Students declare the minor in Italian through Axess. Students should meet with the Director of Undergraduate Studies and undergraduate student support officer to discuss appropriate courses and options within the minor, and to plan the course of study.

Requirements of the Minor

To earn a minor in Italian, students must:

- Complete a minimum of 6 courses at 3 units or more and total 24 units of coursework in Italian language and culture.
- These 24 units may not be used towards any other major or minor.
- Courses applied to the minor must be taken for a letter grade, and a grade point average (GPA) of 2.0 or better must be achieved in each course.
- To enroll in all ITALIAN or ITALLANG courses taught in Italian at or above the 100 level, students must have successfully completed ITALLANG 22A or the equivalent. Language assessments for placement purposes may be arranged through the Stanford Language Center (https://language.stanford.edu/).

Coursework for the Major

1. *Intermediate Language.*Students may earn up to 12 units in second-year language courses (maximum 12 units)

		Units
ITALLANG 21	Second Year Italian, First Quarter	4
ITALLANG 22	Second-Year Italian, Second Quarter	4
ITALLANG 23	Second-Year Italian, Third Quarter	3-4

or

ITALLANG 21A	Accelerated Second-Year Italian, Part 1	5
ITALLANG 22A	Accelerated Second-Year Italian, Part 2	5

2. *Required Courses.* Students must take at least two of the following courses taught in Italian at Stanford (minimum 6 units). At least one course must be ITALIAN 127, 128 or 129:

ITALLANG 114	Composition, Writing, and Presentation	3
ITALLANG 115	Academic and Creative Writing	3
ITALIAN 127	Inventing Italian Literature: Dante, Boccaccio, Petrarca	4
ITALIAN 128	The Italian Renaissance and the Path to Modernity	4
ITALIAN 129	19th and 20th Century Literature and Culture: Constructing and Re-Constructing Italy	4

* With approval of the Director of Undergraduate Studies, one of these courses may be replaced by a course taken at BOSP Florence.

3. *Electives*. A maximum of 10 elective units may be applied to the minor. Prior approval from the Chair of Undergraduate Studies is required. The following courses have been pre-approved as electives:

- Coursework within the ITALIAN department at the 100- or 200- level.
- *Bing Overseas Program.* Courses taken at the Bing Overseas Studies in Florence program with prior approval of the Director of Undergraduate Studies.
- *Thinking Matters* or *Education as Self-Fashioning* courses taught at least partially by a faculty member in Italian. Maximum of 5 units.
- *Structured Liberal Education.* Students may count 5 units of SLE towards the major electives. Maximum of 5 units.
- *Digital Humanities* course*.* Student work must reflect Italian interests. Prior approval of the Director of Undergraduate Studies. Maximum of 5 units.

Minor in Modern Languages

The Division of Literatures, Cultures, and Languages offers an undergraduate minor in Modern Languages that permits students to demonstrate strength in two distinct modern languages and their literatures. See the "Division of Literatures, Cultures, and Languages (p.)" section of this bulletin for further details about the minor and its requirements.

Coterminal Master's Program in French

University requirements for the coterminal M.A. are described in the "Coterminal Bachelor's and Master's Degrees (p. 56)" section of this bulletin. For University coterminal master's degree application forms, see the Registrar's Publications page (https://studentaffairs.stanford.edu/registrar/publications/#Coterm).

Each year the department admits a small number of undergraduates to the coterminal M.A. degree in French. Applications for Autumn Quarter must be submitted by January 31 of the senior year to the director of the department. Students must submit the Coterminal Online Application (https://applyweb.com/stanterm/) and include the following:

- a written statement of purpose
- two letters of recommendation from faculty at Stanford
- a transcript.

Students accepted into the coterminal program must have been undergraduate majors in French and must meet all requirements both for the B.A. and the M.A.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Master of Arts in French

University regulations pertaining to the M.A. are listed in the "Graduate Degrees (p. 65)" section of this bulletin.

The terminal M.A. in French provides a flexible combination of language, literature, cultural history, and methodology course work designed to enhance the preparation of secondary school, junior college, or college teachers.

Candidates must complete a minimum of 45 units of graduate work, all courses being taken for a letter grade, with a minimum grade point average (GPA) of 3.3, as well as pass the master's examination at the end of their studies. To fulfill the requirements in a single year, enrollment must be for an average of 15 units per quarter.

Candidates must take one cultural history course (to be taken either inside or outside the Department of French and Italian). All remaining units are to be taken in advanced French literature courses (200 level or above), three of which must be concerned with the pre-revolutionary period of French cultural history.

Applicants should consult Graduate Admissions (http://gradadmissions.stanford.edu/) for information related to the application process. Candidates for this degree are not eligible for financial aid or for teaching assistantships.

Examination

The terminal M.A. examination is administered between the third and fifth week of Spring Quarter by a three-member committee, selected each year by the Director of Graduate Studies. It consists of two parts:

1. **Written Exam**
   The two-hour written exam tests the candidate's general knowledge of French literature and is based on the French Ph.D. reading list which may be obtained from the Director of Graduate Studies, Student Services Manager, or by referencing the French and Italian Graduate Student Handbook.
   The exam requires that the candidate answer two questions (out of three) in a manner that demonstrates his/her ability to synthesize and draw parallels between periods, genres, and systems of representation on the basis of the standard reading list. One question must be answered in French. Use of a dictionary is allowed.
   If the student's performance on the exam is deemed a 'pass' by two out of three of the members of the examining committee, the student is then permitted to go on to the oral examination (taken later the same week). Should the candidate fail the M.A. written exam, he/she is given a second chance at the end of Spring Quarter.
2. **Oral Exam**
   The 90-minute oral exam is based upon the student's answers on the written exam. It examines the candidate's knowledge and understanding of French literary history on the basis of the standard reading list.
   At the conclusion of the oral exam, the examination committee meets in closed session and discusses the student's performance on the written and the oral portions of the examination. If it is judged adequate, the M.A. degree is granted. In no event may the master's written and oral exams be taken more than twice.

Doctor of Philosophy in French

University regulations pertaining to the Ph.D. are listed in the "Graduate Degrees (p. 65)" section of this bulletin.

Degree Requirements

1. **Course work**
   A candidate for the Ph.D. degree must complete at least 135 units of graduate-level study. 72 of the 135 units must be taken within the department. All courses counted towards the 135-unit requirement for the PhD be at the graduate level. Excess course work can be taken at the undergraduate level but may not be used towards the Ph.D. requirements. All course work should be selected in consultation with the Director of Graduate Studies.
   Required Courses:

		Units
DLCL 301	The Learning and Teaching of Second Languages (must be taken in the first year of studies)	3
DLCL 311	Professional Workshop	1
A minimum of five courses on French literature and culture taught at the graduate level. Three of the required five courses must be taken within the first year.		15

   Elective Courses— Apart from the required courses above, students are granted considerable freedom in structuring a course of study appropriate to their individual needs. During the first year, most course work is done within the French and Italian department, in order to ensure an adequate preparation for the qualifying examination. Students are encouraged to take a variety of courses in order to be exposed to different periods and issues. Students are not allowed to take Independent Study during their first year. In the second and third years, however, the program of study is tailored to the specific interests of the student.

2. **Examinations**
   Completion of all department and University examinations.
3. **Dissertation**
   Submission and approval of a dissertation.
4. **Teaching**
   Ph.D. students are required to teach a minimum of five courses within their five years of funding.
5. **Language Requirements**
   Attaining a native or near-native fluency in French is a requirement to qualify for the Ph.D. degree. Upon entering the program, candidates must contact the Language Center and arrange to take the OPI (Oral Proficiency Interview) to determine their fluency in French. An advanced level or above must have been reached by the time candidates take their qualifying exam in Autumn Quarter of the second year of study. If a student fails to score in the advanced bracket of the OPI test upon entering, he/she is tested again at the beginning of the second year. It is the responsibility of the candidates to design a course of study to improve his or her proficiency in French. Candidates who do not meet the minimum language requirement must discuss their plans to meet this requirement with the Director of Graduate Studies.
   In addition, candidates are required to achieve a high level of proficiency in one additional foreign language, with the language in question to be determined by the student and adviser as a function of the student's area of specialization. Such proficiency may be demonstrated either by completing a graduate seminar in the language in question, or by passing an exam that establishes a third-year or above level of competence in writing, reading, and speaking. In the case of ancient Greek and Latin, a high level of proficiency means a level superior to a second-year collegiate level of proficiency in

reading and writing. The second foreign language requirement must be completed by the end of the third year.

6. **Candidacy**
   Admission to candidacy is an important decision grounded in an overall assessment of a student's ability to successfully complete the Ph.D. program. Per University policy, students are expected to complete department qualifying procedures and apply for candidacy by the end of the second year in residence. In reviewing a student for admission to candidacy, the faculty considers a student's academic progress including but not limited to: advanced language proficiency, coursework, performance on the Qualifying Exam (or Field Exam for those with a waiver of the Qualifying Exam), and successful completion of teaching and research assistantships. A student must also have completed at least 3 units of work with each of 4 Stanford faculty members prior to consideration for candidacy. Students applying to candidacy must provide for their annual review a writing sample in French (or English for French native speakers) corresponding to a paper completed for a course taken at Stanford. In addition to successful completion of department prerequisites, a student is only admitted to candidacy if the faculty makes the judgment that the student has the potential to successfully complete the requirements of the degree program. Candidacy is determined by faculty vote. Failure to advance to candidacy results in the dismissal of the student from the doctoral program. Candidacy is valid for five years and students are required to maintain active candidacy through conferral of the doctoral degree. All requirements for the degree must be completed before candidacy expires. The Department of French and Italian conducts regular reviews of each student's academic performance, both prior to and following successful admission to candidacy. Failure to make satisfactory progress to degree may result in dismissal from the doctoral program. Additional information about University candidacy policy is available in the Bulletin (p. 67) and GAP (http://gap.stanford.edu/4-6.html).

7. **TGR Status**
   Doctoral students who have been admitted to candidacy, completed all required courses and degree requirements other than the dissertation, completed 135 units, and submitted a Doctoral Dissertation Reading Committee form, must request Terminal Graduate Registration status to complete their dissertations. Each quarter, all TGR students must enroll in FRENCH 802 TGR Dissertation for zero units, in the appropriate section for their adviser.

Grading

Doctoral students in the department must take required courses for a letter grade if available and are expected to earn a grade of 'B+' or better in each course. Any grade of 'B' or below is considered to be less than satisfactory. Grades of 'B' or below are reviewed by faculty: while the grade will stand, the student may be required to revise and resubmit the work associated with that course.

Examinations

There are three examinations: the qualifying examination, the field examination, and the University oral examination. Students may not take any department or University exam while course work is incomplete.

Qualifying Examination

The first oral examination, which takes place in the week prior to autumn quarter of the second year of study, tests the student's knowledge of language and literature and his/her aptitude for critical thinking. The examining committee, determined by the Director of French and Italian, schedules the precise exam date and time.

The exam is based on a standard reading list covering major works from all periods of literature in the language(s) of study, from the Middle Ages to present day. The list may be expanded to reflect a student's particular interests, but not abridged. The reading list may be obtained from the Director of Graduate Studies, the student services manager, or by referencing the French and Italian student handbook.

The exam is 90 minutes in length and consists of two parts:

1. A 20-minute presentation by the candidate on a topic to be determined by the student. This presentation may be given in English or in the language of study and should engage, in a succinct manner, an issue or set of issues of broad relevance to the literary history of the language(s) of study. The presentation must not simply be a text read aloud, but rather must be given from notes. It is meant to be suggestive and not exhaustive, so as to provoke further discussion. You may bring a single letter-sized page of notes, printed in 12-point font, with no full sentences except for quotations; you must hand it in at the end of the exam.
2. A 70-minute question and answer period in which the examining committee follows up on the candidate's presentation and discusses the reading list with the student. At least part of this portion of the exam takes place in the language(s) of study. The student is expected to demonstrate a solid knowledge of the texts on the reading list and of the basic issues which they raise, as well as a broader sense of the cultural/literary context into which they fit and demonstrate the ability to formulate an original point of view on such texts and contexts.

Students who do not pass the qualifying exam their first time may be placed on probation with limited enrollment and be allowed to retake the exam at the end of Autumn Quarter. Should the student not pass the retake exam, his or her studies in the Ph.D. program are concluded.

Students already holding an advanced degree in the relevant area may request to be excused from the Qualifying Exam. However, the student must present a formal request for a waiver to the Director of Graduate Studies by the end of autumn quarter of the first year. Such a request must document the course work completed elsewhere and include all relevant reading lists. Only in cases where taking the Qualifying Exam would involve considerable repetition of already competed work is such a waiver likely to be granted.

Field Examination

The second oral examination takes place in week prior to Autumn Quarter of the third year of study. Students waived from the qualifying exam take the field exam in the week prior to Autumn Quarter of the second year of study. The exam is 100 minutes in length and consists of two parts:

1. A 20-minute presentation by the student on a topic (a particular literary genre or a broad theoretical, historical, or interdisciplinary question) freely chosen and developed by the individual student working in collaboration with his/her adviser and the Director of Graduate Studies. The student should design this research project so that it has the focus of an article or a seminar he/she might teach. The student should discuss the proposed topic with the Director of Graduate Studies before the end of the quarter preceding the quarter in which he/she plans to take the exam; together they choose a committee of three faculty members with interests close to the proposed topic. In most cases, one of these committee members is the student's adviser. This presentation is followed by a 20-minute discussion.
2. A 60-minute discussion of a reading list, assembled by the student, which covers about a century of writing. The reading list should include works in all genres relevant to the period covered and should be around two single-spaced pages in length. The list may well include critical and scholarly works or texts from outside the traditional domain of literary studies in the chosen tradition (such as film, philosophy, other literary traditions), but such coverage should be regarded as supplemental except in rare instances where the Director and faculty advisers have agreed to define these materials as the student's field. Students are required to discuss the reading list for the examination with the Director of Graduate

Studies and with members of their committee during the quarter preceding the examination. A final reading list must be submitted to the committee no later than two weeks preceding the examination. Each member of the committee is assigned a 20-minute period to question the candidate on the reading list and its intellectual-historical implications. The aim of these questions is to establish the student's credentials as a specialist in the period of his/her choosing, so the core of the reading list must be made up of texts that are essential to any specialist. It follows that reading lists must not focus on the narrow area of the student's research interest. The tendency to bias reading lists towards the dissertation topic, be it an author or a genre, does not cancel the obligation to cover the major figures and genres. It is understandable that some students, by their third year, have become so deeply committed to their work toward the dissertation that they wish to use the preparation period for the examination as part of their dissertation research. Certainly, some of the exam work may prove relevant, but students should also remember that the examination is the central means of certifying their expertise in a literary period.

The University Oral Examination

This examination takes the form of a dissertation proposal defense. It is to be taken no later than Spring Quarter of the student's third year. Students must have completed all course work and language requirements before the quarter in which they take the University oral examination. One quarter prior to the University oral examination, students must schedule the exam date and time as well as work with their primary adviser to obtain an outside chair for the examination.

Two weeks before the exam, the student must submit to the committee a 25-35 page proposal, which must contain the following parts:

1. a clear presentation of the student's central thesis
2. a synthetic overview of the dissertation
3. a description of the methodology that is used in the dissertation
4. an in-depth discussion of current secondary sources on the topic.

The student must also append a bibliography, but this does not take the place of number 4. The proposal must be prepared in close consultation with the dissertation director during the months preceding the exam.

The exam committee consists of four members, in addition to a committee chair from outside the Division of Literatures, Cultures, and Languages, whose principal functions are to keep track of time and to call on the four members of the committee who question the candidate on the talk and on the reading list.

After a 20-minute presentation on the part of the candidate, each member of the committee (apart from the committee chair) questions the student for 20 minutes. At the end of the hour and forty minutes, the faculty readers vote on the outcome of the exam. If the outcome is favorable, (four out of five votes in favor of the student passing), the student is free to proceed with work on the dissertation. If the proposal is found to be unsatisfactory, the dissertation readers may ask the student to revise and resubmit the dissertation prospectus and to schedule a second exam. A student who fails a second time will be released from the Ph.D. program and awarded a terminal M.A. degree.

Advising

Given the interdisciplinary nature of the Ph.D. programs and the opportunity they afford each student to create an individualized program of study, regular consultation with an adviser is of the utmost importance. The adviser for all entering graduate students is the Director of Graduate Studies, whose responsibility it is to assist students with their course planning and to keep a running check on progress in completing the course, teaching, and language requirements. By the end of the second year of study, each student should have chosen a faculty adviser whose expertise is appropriate to his/her own area of research and interests.

Yearly Review

The faculty provide students with timely and constructive feedback on their progress toward the Ph.D. In order to evaluate students' progress and to identify potential problem areas, the department's faculty reviews the academic progress of each student at the end of the academic year. The yearly reviews are primarily intended to identify developing problems that could impede progress. In most cases, students are simply given constructive feedback, but if more serious concerns warrant, a student may be placed on probation with specific guidelines for addressing the problems detected. Possible outcomes of the yearly review include (1) continuation of the student in good standing, or (2) placing the student on probation, with specific guidelines for the period on probation and the steps to be taken in order to be returned to good standing. For students on probation at this point (or at any other subsequent points), possible outcomes of a review include: (1) restoration to good standing; (2) continued probation, again with guidelines for necessary remedial steps; or (3) termination from the program. Students leaving the program at the end of the first or second year are usually allowed to complete the requirements to receive an M.A. degree, if this does not involve additional residency or financial support.

Ph.D. Minor for Graduate Students in French or Italian

The Ph.D. may be combined with a minor in a related field, including Comparative Literature, Linguistics, Modern Thought and Literature, Art History, History, Music, Philosophy, and Spanish. Ph.D. candidates in French may minor in Italian, and vice versa. Students interested in a minor should design their course of study with their advisor(s).

Ph.D. Minor in French Literature

The department offers a minor in French Literature. The requirement for a minor in French is completion of 24 units of graduate course work in the French section. Interested students should consult the Director of Graduate Studies.

Doctor of Philosophy in Italian

University regulations pertaining to the Ph.D. are listed in the "Graduate Degrees (p. 65)" section of this bulletin.

Degree Requirements

1. **Course work**
   A candidate for the Ph.D. degree must complete at least 135 units of graduate-level study. 72 of the 135 units must be taken within the department. All courses counted towards the 135-unit requirement for the PhD be at the graduate level. Excess coursework can be taken at the UG level, but not used towards the PhD requirements. All course work should be selected in consultation with the Director of Graduate Studies.
   Required Courses—

		Units
DLCL 301	The Learning and Teaching of Second Languages (must be taken in the first year of studies)	3
DLCL 311	Professional Workshop	1
A minimum of five courses on Italian literature and culture taught at the graduate level. Three of the required five courses must be taken within the first year.		15

   Elective Courses— Apart from the required courses above, students are granted considerable freedom in structuring a course of study

appropriate to their individual needs. During the first year, most course work is done within the French and Italian department, in order to ensure an adequate preparation for the qualifying examination. Students are encouraged to take a variety of courses in order to be exposed to different periods and issues. Students are not allowed to take Independent Study during their first year. In the second and third years, however, the program of study is tailored to the specific interests of the student.

2. **Examinations**
   Completion of all department and University examinations.
3. **Dissertation**
   Submission and approval of a dissertation.
4. **Teaching**
   Ph.D. students are required to teach a minimum of five courses within their five years of funding.
5. **Language Requirements**
   Attaining a native or near-native fluency in Italian is a requirement to qualify for the Ph.D. degree. Upon entering the program, candidates must contact the Language Center and arrange to take the OPI (Oral Proficiency Interview) to determine their fluency in Italian. An advanced level or above must have been reached by the time candidates take their qualifying exam in the Autumn Quarter of the second year of study. If a student fails to score in the advanced bracket of the OPI test upon entering, he/she is tested again at the beginning of the second year. It is the responsibility of the candidates to design a course of study to improve their proficiency in Italian. Candidates who do not meet the minimum language requirement must discuss their plans to meet this requirement with the Director of Graduate Studies. By the end of the third year, students must have passed a reading examination in one additional foreign language. If the candidate's period of concentration is earlier than the Romantic period, this must be Latin; if Romantic or later, French.
6. **Candidacy**
   Admission to candidacy is an important decision grounded in an overall assessment of a student's ability to successfully complete the Ph.D. program. Per University policy, students are expected to complete department qualifying procedures and apply for candidacy by the end of the second year in residence. In reviewing a student for admission to candidacy, the faculty considers a student's academic progress including but not limited to: advanced language proficiency, course work, performance on the Qualifying Exam (or Field Exam for those with a waiver of the Qualifying Exam), and successful completion of teaching and research assistantships. A student must also have completed at least 3 units of work with each of four Stanford faculty members prior to consideration for candidacy. Students applying to candidacy must provide for their annual review a writing sample in Italian (or English for Italian native speakers) corresponding to a paper completed for a course taken at Stanford. In addition to successful completion of department prerequisites, a student is only admitted to candidacy if the faculty makes the judgment that the student has the potential to successfully complete the requirements of the degree program. Candidacy is determined by faculty vote. Failure to advance to candidacy results in the dismissal of the student from the doctoral program. Candidacy is valid for five years and students are required to maintain active candidacy through conferral of the doctoral degree. All requirements for the degree must be completed before candidacy expires. The Department of French and Italian conducts regular reviews of each student's academic performance, both prior to and following successful admission to candidacy. Failure to make satisfactory progress to degree may result in dismissal from the doctoral program. Additional information about University candidacy policy is available in the Bulletin (p. 67) and GAP (http://gap.stanford.edu/4-6.html).
7. **TGR Status**
   Doctoral students who have been admitted to candidacy, completed all required courses and degree requirements other than the dissertation, completed 135 units, and submitted a Doctoral Dissertation Reading Committee form, must request Terminal Graduate Registration status to complete their dissertations. Each quarter, all TGR students must enroll in ITALIAN 802 TGR Dissertation for zero units, in the appropriate section for their adviser.

Grading

Doctoral students in the department must take required courses for a letter grade if available and are expected to earn a grade of 'B+' or better in each course. Any grade of 'B' or below is considered to be less than satisfactory. Grades of 'B' or below are reviewed by faculty: while the grade will stand, the student may be required to revise and resubmit the work associated with that course.

Examinations

There are three examinations: the qualifying examination, the field examination, and the University oral examination. Students may not take any department or University exam while course work is incomplete.

Qualifying Examination

The first oral examination, which takes place in the first two weeks of October of the second year of study, tests the student's knowledge of language and literature and his/her aptitude for critical thinking. The examining committee, determined by the Director of French and Italian, schedules the precise exam date and time.

The exam is based on a standard reading list covering major works from all periods of literature in the language(s) of study, from the Middle Ages to present day. The list may be expanded to reflect a student's particular interests, but not abridged. The reading list may be obtained from the Director of Graduate Studies, the student services manager, or by referencing the French and Italian student handbook.

The exam is 90 minutes in length and consists of two parts:

1. A 20-minute presentation by the candidate on a topic to be determined by the student. This presentation may be given in English or in the language of study and should engage, in a succinct manner, an issue or set of issues of broad relevance to the literary history of the language(s) of study. The presentation must not simply be a text read aloud, but rather must be given from notes. It is meant to be suggesting and not exhaustive, so as to provoke further discussion.
2. A 70-minute question and answer period in which the examining committee follows up on the candidate's presentation and discusses the reading list with the student. At least part of this portion of the exam takes place in the language(s) of study. The student is expected to demonstrate a solid knowledge of the texts on the reading list and of the basic issues which they raise, as well as a broader sense of the cultural/literary context into which they fit and demonstrate the ability to formulate an original point of view on such texts and contexts.

Students who do not pass the qualifying exam their first time may be placed on probation with limited enrollment and be allowed to retake the exam at the end of Autumn Quarter. Should the student not pass the retake exam, his/her studies in the Ph.D. program are concluded.

Students already holding an advanced degree in the relevant area may request to be excused from the Qualifying Exam. However, the student must present a formal request for a waiver to the Director of Graduate Studies by the end of autumn quarter of the first year. Such a request must document the course work completed elsewhere and include all relevant reading lists. Only in cases where taking the Qualifying Exam

would involve considerable repetition of already competed work is such a waiver likely to be granted.

Field Examination

The second oral examination takes place in the Autumn Quarter of the third year of study. The exam is 100 minutes in length and consists of two parts:

1. A 20-minute presentation by the student on a topic (a particular literary genre or a broad theoretical, historical, or interdisciplinary question) freely chosen and developed by the individual student working in collaboration with his/her adviser and the Director of Graduate Studies. The student should design this research project so that it has the focus of an article or a seminar he/she might teach. The student should discuss the proposed topic with the Director of Graduate Studies before the end of the quarter preceding the quarter in which he/she plans to take the exam; together they choose a committee of three faculty members with interests close to the proposed topic. (In most cases, one of these committee members is the student's adviser.) This presentation is followed by a 20-minute discussion.
2. A 60-minute discussion of a reading list, assembled by the student, which covers about a century of writing. The reading list should include works in all genres relevant to the period covered and should be around two single-spaced pages in length. The list may well include critical and scholarly works or texts from outside the traditional domain of literary studies in the chosen tradition (such as film, philosophy, other literary traditions), but such coverage should be regarded as supplemental except in rare instances where the Director and faculty advisers have agreed to define these materials as the student's field. Students are required to discuss the reading list for the examination with the Director of Graduate Studies and with members of their committee during the quarter preceding the examination. A final reading list must be submitted to the committee no later than two weeks preceding the examination. Each member of the committee is assigned a 20-minute period to question the candidate on the reading list and its intellectual-historical implications. The aim of these questions is to establish the student's credentials as a specialist in the period of his/her choosing, so the core of the reading list must be made up of texts that are essential to any specialist. It follows that reading lists must not focus on the narrow area of the student's research interest. The tendency to bias reading lists towards the dissertation topic, be it an author or a genre, does not cancel the obligation to cover the major figures and genres. It is understandable that some students, by their third year, have become so deeply committed to their work toward the dissertation that they wish to use the preparation period for the examination as part of their dissertation research. Certainly, some of the exam work may prove relevant, but students should also remember that the examination is the central means of certifying their expertise in a literary period.

The University Oral Examination

This examination takes the form of a dissertation proposal defense. It is to be taken no later than Autumn Quarter of the student's fourth year. Students must have completed all course work and language requirements before the quarter in which they take the University oral examination. One quarter prior to the University oral examination, students must schedule the exam date and time as well as work with their primary adviser to obtain an outside chair for the examination.

Two weeks before the exam, the student must submit to the committee a 25-35 page proposal, which must contain the following parts:

1. a clear presentation of the student's central thesis
2. a synthetic overview of the dissertation
3. a description of the methodology that is used in the dissertation
4. an in-depth discussion of current secondary sources on the topic.

The student must also append a bibliography, but this does not take the place of number 4. The proposal must be prepared in close consultation with the dissertation director during the months preceding the exam.

The exam committee consists of four members, in addition to a committee chair from outside the Division of Literatures, Cultures, and Languages, whose principal functions are to keep track of time and to call on the four members of the committee who question the candidate on the talk and on the reading list.

After a 20-minute presentation on the part of the candidate, each member of the committee (apart from the committee chair) questions the student for 20 minutes. At the end of the hour and forty minutes, the faculty readers vote on the outcome of the exam. If the outcome is favorable, (four out of five votes in favor of the student passing), the student is free to proceed with work on the dissertation. If the proposal is found to be unsatisfactory, the dissertation readers may ask the student to revise and resubmit the dissertation prospectus and to schedule a second exam. A student who fails a second time will be released from the Ph.D. program and awarded a terminal M.A. degree.

Advising

Given the interdisciplinary nature of the Ph.D. programs and the opportunity they afford each student to create an individualized program of study, regular consultation with an adviser is of the utmost importance. The adviser for all entering graduate students is the Director of Graduate Studies, whose responsibility it is to assist students with their course planning and to keep a running check on progress in completing the course, teaching, and language requirements. By the end of the second year of study, each student should have chosen a faculty adviser whose expertise is appropriate to his/her own area of research and interests.

Yearly Review

The faculty provide students with timely and constructive feedback on their progress toward the Ph.D. In order to evaluate students' progress and to identify potential problem areas, the department's faculty reviews the academic progress of each student at the end of the academic year. The yearly reviews are primarily intended to identify developing problems that could impede progress. In most cases, students are simply given constructive feedback, but if more serious concerns warrant, a student may be placed on probation with specific guidelines for addressing the problems detected. Possible outcomes of the yearly review include (1) continuation of the student in good standing, or (2) placing the student on probation, with specific guidelines for the period on probation and the steps to be taken in order to be returned to good standing. For students on probation at this point (or at any other subsequent points), possible outcomes of a review include: (1) restoration to good standing; or (2) continued probation, again with guidelines for necessary remedial steps; or (3) termination from the program. Students leaving the program at the end of the first or second year are usually allowed to complete the requirements to receive an M.A. degree, if this does not involve additional residency or financial support.

Ph.D. Minor for Graduate Students in French or Italian

The Ph.D. may be combined with a minor in a related field, including Comparative Literature, Linguistics, Modern Thought and Literature, Art History, History, Music, Philosophy, and Spanish. Ph.D. candidates in French may minor in Italian, and vice versa. Students interested in a minor should design their course of study with their adviser(s).

Ph.D. Minor in Italian Literature

The department offers a minor in Italian Literature. The requirement for a minor in Italian is a minimum of 24 units of graduate course work in Italian literature. Interested students should consult the Director of Graduate Studies.

Doctor of Philosophy in French and Italian

University regulations pertaining to the Ph.D. are listed in the "Graduate Degrees (p. 65)" section of this bulletin.

Degree Requirements

1. **Course work—**
   A candidate for the Ph.D. degree must complete at least 135 units of graduate-level study. 72 of the 135 units must be taken within the department. All courses counted towards the 135-unit requirement for the PhD be at the graduate level. Excess coursework can be taken at the UG level, but not used towards the PhD requirements. All course work should be selected in consultation with the Director of Graduate Studies.
   Required courses—
2.

		Units
DLCL 301	The Learning and Teaching of Second Languages (must be taken in first year of studies)	3
DLCL 311	Professional Workshop	1
A minimum of four advanced courses on French literature and culture, and four advanced courses on Italian literature and culture. Four of the required eight courses must be taken within the first year.		24

   Elective Courses—Apart from the required courses above, students are granted considerable freedom in structuring a course of study appropriate to their individual needs. During the first year, most course work is done within the French and Italian department, in order to ensure an adequate preparation for the qualifying examination. Students are encouraged to take a variety of courses in order to be exposed to different historical periods and issues. Students are not allowed to take Independent Study during their first year. In the second and third years, however, the program of study is tailored to the specific interests of the student.

3. **Examinations**
   Successful completion of all department and University examinations.
4. **Dissertation**
   Submission and approval of a dissertation. The dissertation topic must include a substantial quotient of material from both the French and Italian tradition, and the dissertation must include either (1) at least one chapter on French materials and one chapter on Italian materials, or (2) at least two chapters focusing on a comparison between French and Italian materials.
5. **Teaching**
   Ph.D. students are required to teach a minimum of five courses within their five years of funding. Of these five courses the student is required to teach at least one French language course and one Italian language course.
6. **Language Requirements**
   Attaining a native or near-native fluency in both French and Italian is the individual responsibility of all candidates in the Ph.D. program, and remedial course work needed to achieve such fluency cannot count towards the Ph.D. degree.
   For students specializing in areas (a) medieval and renaissance and (b) renaissance and early modern, proficiency in Latin equivalent to a second year collegiate level of proficiency (the equivalent of CLASSICS 11L, CLASSICS 12L , and CLASSICS 13L) in reading is also required. Such proficiency may be demonstrated by successfully completing a course in the language in question (at least second-year level, but preferably a graduate seminar); or by passing an exam that establishes a second-year or above level of competence. In no case is passage of a standard reading competence exam considered sufficient.
   For students specializing in area (c) modern and contemporary, proficiency in a third language (beyond French and Italian) is not required; students are, however, encouraged to acquire competency in a third language or area that is relevant to their research (e.g. German).
   The language requirements should be completed as soon as possible, but in any case not later than the end of the third year.
7. **Candidacy**
   Admission to candidacy is an important decision grounded in an overall assessment of a student's ability to successfully complete the Ph.D. program. Per University policy, students are expected to complete department qualifying procedures and apply for candidacy by the end of the second year in residence. In reviewing a student for admission to candidacy, the faculty considers a student's academic progress including but not limited to: advanced language proficiency, course work, performance on the qualifying exam (or field exam for those with a waiver of the qualifying exam), and successful completion of teaching and research assistantships. A student must also have completed at least 3 units of work with each of 4 Stanford faculty members prior to consideration for candidacy. Students applying to candidacy must provide for their annual review a writing sample in French and Italian (or English for French and/or Italian native speakers) corresponding to a paper completed for a course taken at Stanford. In addition to successful completion of department prerequisites, a student is only admitted to candidacy if the faculty makes the judgment that the student has the potential to successfully complete the requirements of the degree program. Candidacy is determined by faculty vote. Failure to advance to candidacy results in the dismissal of the student from the doctoral program. Candidacy is valid for five years and students are required to maintain active candidacy through conferral of the doctoral degree. All requirements for the degree must be completed before candidacy expires. The Department of French and Italian conducts regular reviews of each student's academic performance, both prior to and following successful admission to candidacy. Failure to make satisfactory progress to degree may result in dismissal from the doctoral program. Additional information about University candidacy policy is available in the Bulletin (p. 67) and GAP (http://gap.stanford.edu/4-6.html).
8. **TGR Status**
   Doctoral students who have been admitted to candidacy, completed all required courses and degree requirements other than the dissertation, completed 135 units, and submitted a Doctoral Dissertation Reading Committee form, must request Terminal Graduate Registration status to complete their dissertations. Each quarter, all TGR students must enroll in FRENCH 802 TGR Dissertation or ITALIAN 802 TGR Dissertation for zero units, in the appropriate section for their adviser.

Grading

Doctoral students in the department must take required courses for a letter grade if available and are expected to earn a grade of 'B+' or better in each course. Any grade of 'B' or below is considered to be less than satisfactory. Grades of 'B' or below are reviewed by faculty: while the grade stands, the student may be required to revise and resubmit the work associated with that course.

Examinations

There are three examinations: the qualifying examination, the field examination, and the University oral examination. Students may not take any department or University exam while coursework is incomplete.

Qualifying Examination

The first oral examination, which takes place in the first two weeks of October of the second year of study, tests the student's knowledge of language and literature and his/her aptitude for critical thinking. The examining committee, determined by the Director of French and Italian, schedules the precise exam date and time.

Students may take either two qualifying exams, one in French and one in Italian, or a single qualifying exam in French and Italian. The combined French and Italian qualifying exam covers one of three periods, (a) medieval and renaissance, (b) renaissance and early modern, or (c) modern and contemporary. For each period it is based on a standard reading list. The list may be expanded to reflect a student's particular interests, but not abridged. One third of the combined exam takes place in English, one third in French, and one third in Italian (with the student free to choose which portion transpires in which language). The reading lists may be obtained from the Directors of Graduate Studies, the student services manager, or by referencing the French and Italian student handbook.

The exam is 90 minutes in length and consists of two parts:

1. A 20-minute presentation by the candidate on a topic to be determined by the student. This presentation may be given in English or in the language of study and should engage, in a succinct manner, an issue or set of issues of broad relevance to the literary history of the language(s) of study. The presentation must not simply be a text read aloud, but rather must be given from notes. It is meant to be suggesting and not exhaustive, so as to provoke further discussion.
2. A 70-minute question and answer period in which the examining committee follows up on the candidate's presentation and discusses the reading list with the student. At least part of this portion of the exam takes place in the languages of study. The student is expected to demonstrate a solid knowledge of the texts on the reading list and of the basic issues which they raise, as well as a broader sense of the cultural/literary context into which they fit, and demonstrate the ability to formulate an original point of view on such texts and contexts.

Students who do not pass the qualifying exam their first time may be placed on probation with limited enrollment and be allowed to retake the exam at the end of Autumn Quarter. If the student does not pass the second exam, his/her studies in the Ph.D. program will be concluded.

If, at the qualifying exam stage, a student's work is judged insufficient for admission to candidacy for the Ph.D., the student may petition to continue in French only or Italian only. This petition is reviewed by the qualifying exam committee, the relevant Director of Graduate Studies, and the Director of the Department of French and Italian.

Students already holding an advanced degree in the relevant area may request to be excused from the Qualifying Exam. However, the student must present a formal request for a waiver to the Director of Graduate Studies by the end of autumn quarter of the first year. Such a request must document the course work completed elsewhere and include all relevant reading lists. Only in cases where taking the Qualifying Exam would involve considerable repetition of already competed work is such a waiver likely to be granted.

Field Examination

The second oral examination takes place in the Autumn Quarter of the third year of study. The exam is 100 minutes in length and consists of two parts:

1. A 20-minute presentation by the student on a topic (a particular literary genre or a broad theoretical, historical, or interdisciplinary question) freely chosen and developed by the individual student working in collaboration with his/her adviser and the Director of Graduate Studies. The student should design this research project so that it has the focus of an article or a seminar he/she might teach. The student should discuss the proposed topic with the Directors of Graduate Studies before the end of the quarter preceding the quarter in which he/she plans to take the exam; together they choose a committee of three faculty members with interests close to the proposed topic. (In most cases, one of these committee members is the student's adviser.) This presentation is followed by a 20-minute discussion.
2. A 60-minute discussion of a reading list, assembled by the student, which covers about a century of writing. The reading list should include works in all genres relevant to the period covered and should be around two single-spaced pages in length. The list may well include critical and scholarly works or texts from outside the traditional domain of literary studies in the chosen tradition (such as film, philosophy, other literary traditions), but such coverage should be regarded as supplemental except in rare instances where the Director and faculty advisers have agreed to define these materials as the student's field. Students are required to discuss the reading list for the examination with the Directors of Graduate Studies and with members of their committee during the quarter preceding the examination. A final reading list must be submitted to the committee no later than two weeks preceding the examination. Each member of the committee is assigned a 20-minute period to question the candidate on the reading list and its intellectual-historical implications. The aim of these questions is to establish the student's credentials as a specialist in the period of his/her choosing, so the core of the reading list must be made up of texts that are essential to any specialist. It follows that reading lists must not focus on the narrow area of the student's research interest. The tendency to bias reading lists towards the dissertation topic, be it an author or a genre, does not cancel the obligation to cover the major figures and genres. It is understandable that some students, by their third year, have become so deeply committed to their work toward the dissertation that they wish to use the preparation period for the examination as part of their dissertation research. Certainly, some of the exam work may prove relevant, but students should also remember that the examination is the central means of certifying their expertise in a literary period.

The University Oral Examination

This examination takes the form of a dissertation proposal defense. It is to be taken no later than Autumn Quarter of the student's fourth year. Students must have completed all course work and language requirements before the quarter in which they take the University oral examination. One quarter prior to the University oral examination, students must schedule the exam date and time as well as work with their primary adviser to obtain an outside chair for the examination.

Two weeks before the exam, the student must submit to the committee a 25-35 page proposal. This proposal must contain the following parts:

1. a clear presentation of the student's central thesis
2. a synthetic overview of the dissertation
3. a description of the methodology that is used in the dissertation
4. an in-depth discussion of current secondary sources on the topic.

The student must also append a bibliography, but this does not take the place of number 4. The reading list should include works in both French and Italian in all genres relevant to the period covered. The proposal must be prepared in close consultation with the dissertation director during the months preceding the exam.

The exam committee consists of four members, in addition to a committee chair from outside the Division of Literatures, Cultures, and Languages, whose principal functions are to keep track of time and to call on the four members of the committee who question the candidate on the talk and on the reading list.

After a 20-minute presentation on the part of the candidate, each member of the committee (apart from the committee chair) questions the student for 20 minutes. At the end of the hour and forty minutes, the faculty readers vote on the outcome of the exam. If the outcome is favorable (four out of five votes in favor of the student passing), the student is free to proceed with work on the dissertation. If the proposal is found to be unsatisfactory, the dissertation readers may ask the student to revise and resubmit the dissertation prospectus and to schedule a second exam. A student who fails a second time will be released from the Ph.D. program and awarded a terminal M.A. degree.

Advising

Given the interdisciplinary nature of the Ph.D. programs and the opportunity they afford each student to create an individualized program of study, regular consultation with an adviser is of the utmost importance. The adviser for all entering graduate students is the Director of Graduate Studies, whose responsibility it is to assist students with their course planning and to keep a running check on progress in completing the course, teaching, and language requirements. By the end of the second year of study, each student should have chosen a faculty adviser whose expertise is appropriate to his/her own area of research and interests.

Yearly Review

The faculty provide students with timely and constructive feedback on their progress toward the Ph.D. In order to evaluate students' progress and to identify potential problem areas, the department's faculty reviews the academic progress of each student at the end of the academic year. The yearly reviews are primarily intended to identify developing problems that could impede progress. In most cases, students are simply given constructive feedback, but if more serious concerns warrant, a student may be placed on probation with specific guidelines for addressing the problems detected. Possible outcomes of the yearly review include (1) continuation of the student in good standing, or (2) placing the student on probation, with specific guidelines for the period on probation and the steps to be taken in order to be returned to good standing. For students on probation at this point (or at any other subsequent points), possible outcomes of a review include: (1) restoration to good standing; or (2) continued probation, again with guidelines for necessary remedial steps; or (3) termination from the program. Students leaving the program at the end of the first or second year are usually allowed to complete the requirements to receive an M.A. degree, if this does not involve additional residency or financial support.

Ph.D. Minor for Graduate Students in French or Italian

The Ph.D. may be combined with a minor in a related field, including Comparative Literature, Linguistics, Modern Thought and Literature, Art History, History, Music, Philosophy, and Spanish. Ph.D. candidates in French may minor in Italian, and vice versa. Students interested in a minor should design their course of study with their advisor(s).

Ph.D. Minor in French Literature

The department offers a minor in French Literature. The requirement for a minor in French is completion of 24 units of graduate course work in the French section. Interested students should consult the Director of Graduate Studies.

Ph.D. Minor in Italian Literature

The department offers a minor in Italian Literature. The requirement for a minor in Italian is a minimum of 24 units of graduate course work in Italian literature. Interested students should consult the Director of Graduate Studies.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of French and Italian counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

French Degrees Required Courses Policy

In academic year 2020-21, as Stanford operates on a four-quarter system, students may opt not to be enrolled in one of the four quarters of the year. Students may therefore be unable to take a FRENCH core class (FRENCH 130, 131, 132, 133) because they are on leave during the quarter it is offered. In these cases, the Chair of Undergraduate Studies will, in coordination with the student’s departmental advisor, suggest appropriate substitute classes and approve one of them.

Italian Degrees Required Courses Policy

In academic year 2020-2021, as Stanford operates on a four-quarter system, students may opt not to be enrolled in one of the four quarters of the year. Students may therefore be unable to take a ITALIAN core class (ITALIAN 127, 128, 129) because they are on leave during the quarter it is offered. In these cases, the Chair of Undergraduate Studies will, in coordination with the student’s departmental advisor, suggest appropriate substitute classes and approve one of them.

Graduate Degree Requirements

Grading

Doctoral students in the department must take required courses for a letter grade and are expected to earn a grade of 'B' or better in each required course. In other courses, doctoral students are expected to earn a grade of 'B' or better in each course taken for a letter grade in AY 2020-21 that will count towards their degree requirement. Any grade of 'B-' or below is considered to be less than satisfactory. Grades of 'B' or below are reviewed by faculty: while the grade will stand, the student may be required to revise and resubmit the work associated with that course. For courses taken for CR/NC, instructors will be asked to submit written assessment to the student and the department of what would be the equivalent letter grade to allow for review of satisfactory academic achievement by the DGS and department.

Graduate Advising Expectations

The Department of French and Italian is committed to providing academic advising in support of graduate student scholarly and professional development. The overall goal of advising, both in the DLCL and the department, is to help graduate students make academic and career choices wisely, and think ahead, in order to craft a long-term plan for their graduate student career and beyond. When most effective, the advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity. Advising is both an academically invaluable form for the transmission of expertise, as well as a key aspect of creating a strong departmental and Stanford community.

Faculty Advisers

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

- Upon enrolling, students plan their work under the direction of the Chair of Graduate Studies or a faculty member designated by the program. When the student selects a more specialized adviser, the transition should involve oral or written communication between both advisers and the student concerning the student's progress, goals, and expectations. It is possible for doctoral students to choose two main advisers at the dissertation stage, provided all agree this is academically sound.
- Faculty advisers should meet with assigned students to discuss their selection of courses and to plan from a broader, longer-term perspective, including discussion of Program milestones and a basic timeline; an overview of Department and DLCL offerings beyond courses; student goals and interests and DLCL or Stanford programs that may be relevant; and (for doctoral students) how to transfer previous graduate coursework.
- Faculty advisers and graduate students should meet at least once per quarter to assess the advisee's course of study, performance over the past quarter, and plans for the next quarter, as well as longer term plans. If a student has two advisers, the student should meet at least once per quarter with each adviser and at least once per year with both advisers at the same time.
- For doctoral students, faculty should help their advisees plan for exams, research grant applications, develop research projects, and plan ahead for both the academic job market and the job search beyond academia.
- Faculty advisers should provide feedback about the student's progress to the department during the Annual Review process. For more information about the Annual Review, see the Graduate Handbook.

Graduate Students

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

- Upon enrolling, students plan their work under the direction of the Chair of Graduate Studies or a faculty member designated by the program. As the student develops a field of expertise, the student choose a program adviser to replace the Chair of Graduate Studies role. The transition should involve oral or written communication between both advisers and the student concerning the student's progress, goals, and expectations.
- Graduate students and faculty advisers and should meet at least once per quarter to assess the advisee's course of study, performance over the past quarter, and plans for the next quarter, as well as longer term plans. If a student has two advisers, the student should meet at least once per quarter with each adviser and at least once per year with both advisers at the same time.
- Students should consult with their advisers on all academic matters, including coursework, conference presentations and publications, research travel, and teaching plans.
- Students should provide a thorough self-evaluation each year for the annual review. For more information about the Annual Review, see the Graduate Handbook.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Faculty in French and Italian

Director: Laura Wittman

Chair of Graduate Studies: Cécile Alduy (French), Laura Wittman (Italian)

Chairs of Undergraduate Studies: Marisa Galvez (French for Autumn), Fatoumata Seck (French for Winter/ Spring), Sarah Prodan (Italian)

Professors: Cécile Alduy, Jean-Pierre Dupuy, Dan Edelstein, Joshua Landy, Robert Harrison

Associate Professors: Marisa Galvez, Laura Wittman

Assistant Professors: Sarah Prodan, Fatoumata Seck

Lecturers: Andrei Pesic

Courtesy Professors: Keith Baker, Margaret Cohen, Paula Findlen

Courtesy Associate Professor: James P. Daughton

Emeriti: (Professors) Jean-Marie Apostolidès, John G. Barson, Robert G. Cohn, John Freccero, Hans U. Gumbrecht, Ralph M. Hester, Elisabeth Mudimbe-Boyi, Carolyn Springer

Overseas Studies Courses in French

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPPARIS 30	The Avant Garde in France through Literature, Art, and Theater	4
OSPPARIS 32	French History and Politics: Understanding the Present through the Past	5
OSPPARIS 54	The Artist's World: The Workshop, Patronage and Public in 19th and 20th Century France	4

OSPPARIS 92	Building Paris: Its History, Architecture, and Urban Design	4
OSPPARIS 186F	Contemporary African Literature in French	4

Overseas Studies Courses in Italian

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPFLOR 34	The Virgin Mother, Goddess of Beauty, Grand Duchess, and the Lady: Women in Florentine Art	4
OSPFLOR 41	The Florentine Sketchbook: A Visual Arts Practicum	4
OSPFLOR 48	Sharing Beauty in Florence: Collectors, Collections and the Shaping of the Western Museum Tradition	4
OSPFLOR 49	On-Screen Battles: Filmic Portrayals of Fascism and World War II	5
OSPFLOR 54	High Renaissance and Mannerism: the Great Italian Masters of the 15th and 16th Centuries	4
OSPFLOR 58	Space as History: Social Vision and Urban Change	4
OSPFLOR 67	The Celluloid Gaze: Gender, Identity and Sexuality in Cinema	4
OSPFLOR 71	A Studio with a View: Drawing, Painting and Informing your Aesthetic in Florence	4
OSPFLOR 111Y	From Giotto to Michelangelo: The Birth and Flowering of Renaissance Art in Florence	4
OSPFLOR 115Y	Building the Cathedral and the Town Hall: Constructing and Deconstructing Symbols of a Civilization	4

French Courses

FRENCH 12Q. Humanities Core: Great Books, Big Ideas -- Europe, Middle Ages and Renaissance. 3-4 Units.
This three-quarter sequence asks big questions of major texts in the European and American tradition. What is a good life? How should society be organized? Who belongs? How should honor, love, sin, and similar abstractions govern our actions? What duty do we owe to the past and future? The second quarter focuses on the transition from the Middle Ages to Modernity, Europe's re-acquaintance with classical antiquity and its first contacts with the New World. Authors include Dante, Shakespeare, Machiavelli, Cervantes, and Milton. N.B. This is the second of three courses in the European track. These courses offer an unparalleled opportunity to study European history and culture, past and present. Take all three to experience a year-long intellectual community dedicated to exploring how ideas have shaped our world and future. Students who take HUMCORE 11 and HUMCORE 12Q will have preferential admission to HUMCORE 13Q (a WR2 seminar).
Same as: DLCL 12Q, HUMCORE 12Q, ILAC 12Q

FRENCH 13. Humanities Core: Great Books, Big Ideas -- Europe, Modern. 3 Units.
This three-quarter sequence asks big questions of major texts in the European and American tradition. What is a good life? How should society be organized? Who belongs? How should honor, love, sin, and similar abstractions govern our actions? What duty do we owe to the past and future? This third and final quarter focuses on the modern period, from the rise of revolutionary ideas to the experiences of totalitarianism and decolonization in the twentieth century. Authors include Locke, Mary Shelley, Marx, Nietzsche, Freud, Weber, Primo Levi, and Frantz Fanon.
Same as: DLCL 13, HISTORY 239C, HUMCORE 13, PHIL 13

FRENCH 36. Dangerous Ideas. 1 Unit.
Ideas matter. Concepts such as revolution, tradition, and hell have inspired social movements, shaped political systems, and dramatically influenced the lives of individuals. Others, like immigration, universal basic income, and youth play an important role in contemporary debates in the United States. All of these ideas are contested, and they have a real power to change lives, for better and for worse. In this one-unit class we will examine these "dangerous" ideas. Each week, a faculty member from a different department in the humanities and arts will explore a concept that has shaped human experience across time and space. Some weeks will have short reading assignments, but you are not required to purchase any materials.
Same as: ARTHIST 36, COMPLIT 36A, EALC 36, ENGLISH 71, ETHICSOC 36X, HISTORY 3D, MUSIC 36H, PHIL 36, POLISCI 70, RELIGST 36X, SLAVIC 36

FRENCH 75N. Narrative Medicine and Near-Death Experiences. 3 Units.
Even if many of us don't fully believe in an afterlife, we remain fascinated by visions of it. This course focuses on Near-Death Experiences and the stories around them, investigating them from the many perspectives pertinent to the growing field of narrative medicine: medical, neurological, cognitive, psychological, sociological, literary, and filmic. The goal is not to understand whether the stories are veridical but what they do for us, as individuals, and as a culture, and in particular how they seek to reshape the patient-doctor relationship. Materials will span the 20th century and come into the present. Taught in English.
Same as: ITALIAN 75N

FRENCH 87N. The New Wave: How The French Reinvented Cinema. 3-4 Units.
Focus on the French New Wave's cinematic revolution of 1959-1962. In a few years, the Nouvelle Vague delivered landmark works such as Truffaut's 400 Blows, Godard's Breathless, Chabrol's Les Cousins or Resnais' Hiroshima mon amour, and changed forever the way we make and think about movies. Why did these films look so radically fresh? What do they say about France's youth culture in the early 60s? How is the author's theory behind them still influencing us today? Focus is on cultural history, aesthetic analysis, interpretation of narrative, sound and visual forms. Taught in English. NOTE: Class meets Tuesday/Thursday 12:00-1:20pm; film screenings Monday 6:00-8:50pm in room 540-108.

FRENCH 110. French Painting from Watteau to Monet. 3-5 Units.
This course offers a survey of painting in France from 1700 to around 1900. It introduces major artists, artworks, and the concepts used by contemporary observers and later art historians to make sense of this extraordinarily rich period. Overarching themes discussed in the class will include the dueling legacies of coloristic virtuosity and classical formalism, new ways of representing visual perception, the opposing artistic effects of absorption and theatricality, the rise and fall of official arts institutions, and the participation of artists and artworks in political upheaval and social change. The course ends with an interrogation of the concept of modernity and its emergence out of dialogue and conflict with artists of the past. Students will learn and practice formal analysis of paintings, as well as interpretations stressing historical context.
Same as: ARTHIST 110, ARTHIST 310, FRENCH 310

FRENCH 118. Literature and the Brain. 3 Units.
Recent developments in and neuroscience and experimental psychology have transformed the way we think about the operations of the brain. What can we learn from this about the nature and function of literary texts? Can innovative ways of speaking affect ways of thinking? Do creative metaphors draw on embodied cognition? Can fictions strengthen our "theory of mind" capabilities? What role does mental imagery play in the appreciation of descriptions? Does (weak) modularity help explain the mechanism and purpose of self-reflexivity? Can the distinctions among types of memory shed light on what narrative works have to offer?.
Same as: COMPLIT 138, COMPLIT 238, ENGLISH 118, ENGLISH 218, FRENCH 218, PSYC 126, PSYCH 118F

FRENCH 120. Coffee and Cigarettes: The Making of French Intellectual Culture. 4-5 Units.
Examines a quintessential French figure "l'intellectuel" from a long-term historical perspective. We will observe how this figure was shaped over time by such other cultural types as the writer, the artist, the historian, the philosopher, and the moralist. Proceeding in counter-chronological order, from the late 20th to the 16th century, we will read a collection of classic French works. As this course is a gateway for French studies, special emphasis will be placed on oral proficiency. Taught in French; readings in French.

FRENCH 121. Jean-Jacques Rousseau: Politics, Philosophy, and Literature. 3-5 Units.
"Man is born free, and everywhere he is in chains." This seminar explores the work of one of the most important and enigmatic thinkers about the problems of modern society: Jean-Jacques Rousseau. Students will read a selection of his most important works in dialogue with other important thinkers of his time. They will grapple with Rousseau's political philosophy in his critique of modernity and his vision for remaking politics, as well as his moral philosophy and influential fictional visions of education and love. We will discuss not only Rousseau's landmark contributions to debates about authenticity, transparency, and self-interest, but also his troubling views on gender. The class will conclude with Rousseau's autobiography and its profound meditation on the formation of selfhood. Taught in French.
Same as: FRENCH 221A

FRENCH 124A. Napoleon. 3-5 Units.
Who was Napoleon? A fierce patriot or a traitor of the Revolution? A beloved emperor or a merciless dictator? There is not one single or indeed final answer to these questions: in this course we shall learn to make a distinction between the historical figure (his life and actual deeds) and the literary character (how his detractors or enthusiasts represented him). We will explore the multi-faceted representations of Napoleon with a particular focus on his portraits in poems, novels, essays, paintings and sculptures. The syllabus will include readings and excerpts from Balzac, Stendhal, Dumas, Hugo, Thackeray, Tolstoy, Manzoni, Foscolo, Calvino. Taught in English.
Same as: COMPLIT 124C

FRENCH 129. Camus. 4-5 Units.
"The admirable conjunction of a man, of an action, and of a work" for Sartre, "the ideal husband of contemporary letters" for Susan Sontag, reading "Camus's fiction as an element in France's methodically constructed political geography of Algeria" for Edward Said, Camus embodies the very French figure of the "intellectuel engagé," or public intellectual. From his birth in 1913 into a poor European family in Algeria to the Nobel Prize in Literature in 1957, from the Mediterranean world to Paris, Camus engaged in the great ethical and political battles of his time, often embracing controversial positions. Through readings and films, we will explore his multiple legacies. Readings from Albert Camus, Jean-Paul Sartre, Assia Djebar, Kamel Daoud, Mouloud Feraoun, Alice Kaplan, Edward Said, Edwidge Danticat. Students will work on their production of written French, in addition to speaking French and reading comprehension. Taught in French. Students are highly encouraged to complete FRENLANG 124 or to successfully test above this level through the Language Center. This course fulfills the Writing in the Major (WIM) requirement.
Same as: COMPLIT 229B, CSRE 129, HISTORY 235F

FRENCH 130. Introduction to Medieval and Renaissance French Literature. 4 Units.
In this introductory course, we will read some key texts of literature written in French between 1100 and 1600, paying special attention to how gender, ethnicity and love played a role in the doing and undoing of communities. What does it mean to be a woman writer when most things were written by men? What does it mean to be a man, at court or at war? What did people learn when traveling to Asia or to the New Continent, and how did it impact the way people conceived of ethnicity? How did people think of ethnic difference in their midst? How can love strengthen an empire, and how can one be sincere when copying a love-poem? These cultural questions will be answered with special attention to literary form. Different genres might have yielded different possibilities to not just represent, but also imagine ways of living together; perhaps the very structure of a sentence allows one to construe one¿s own identity. While the course will be taught in French, no knowledge of Old French, Latin, or Occitan is required. All readings will be done in modern French or English translation. Assignments and discussions are all in French. Students are highly encouraged to complete FRENLANG 124 or to successfully test above this level through the Language Center.

FRENCH 131. Absolutism, Enlightenment, and Revolution in 17th- and 18th-Century France. 4 Units.
The literature, culture, and politics of France from Louis XIV to Olympe de Gouges. How this period produced the political and philosophical foundations of modernity. Readings may include Corneille, Molière, Racine, Lafayette, Voltaire, Diderot, Rousseau, Beaumarchais, and Gouges. Taught in French. Students are highly encouraged to complete FRENLANG 124 or to successfully test above this level through the Language Center. This course fulfills the Writing in the Major (WIM) requirement.

FRENCH 132. Literature, Revolutions, and Changes in 19th- and 20th-Century France. 4 Units.
This course will explore several important texts of 19th- and 20th-Century French literature, with the aim of following the evolution of the main literary movements during those centuries of important cultural and social changes. We will study texts related to movements such as Romanticism, Realism, Naturalism, Surrealism, the Absurd, the Nouveau Roman in all major genres (prose, poetry, theater, film) and will regularly refer to other arts, such as painting and music. Authors include Chateaubriand, Musset, Balzac, Flaubert, Maupassant, Baudelaire, Rimbaud, Apollinaire, Proust, Céline, Radiguet, Ionesco, Robbe-Grillet, Duras, Gary. All readings, discussion, and assignments are in French. Students are highly encouraged to complete FRENLANG 124 or to successfully test above this level through the Language Center.

FRENCH 133. Literature and Society in Africa and the Caribbean. 4 Units.
This course explores texts and films from Francophone Africa and the Caribbean in the 20th and 21st centuries. The course will explore the connections between Sub-Saharan Africa, the Maghreb and the Caribbean through both foundational and contemporary works while considering their engagement with the historical and political contexts in which they were produced. This course will also serve to improve students' speaking and writing skills in French while sharpening their knowledge of the linguistic and conceptual tools needed to conduct literary analysis. The diverse topics discussed in the course will include national and cultural identity, race and class, gender and sexuality, orality and textuality, transnationalism and migration, colonialism and decolonization, history and memory, and the politics of language. Readings include the works of writers and filmmakers such as Djibril Tamsir Niane, Léopold Senghor, Aimé Césaire, Albert Memmi, Patrick Chamoiseau, Leonora Miano, Leila Slimani, Dani Laferrière and Ousmane Sembène. Taught in French. Students are highly encouraged to complete FRENLANG 124 or to successfully test above this level through the Language Center. This course fulfills the Writing in the Major (WIM) requirement.
Same as: AFRICAAM 133, AFRICAST 132, COMPLIT 133A, COMPLIT 233A, CSRE 133E, JEWISHST 143

FRENCH 140. Paris: Capital of the Modern World. 4-5 Units.
This course explores how Paris, between the eighteenth and twentieth centuries, became the political, cultural, and artistic capital of the modern world. It considers how the city has both shaped and been shaped by the tumultuous events of modern history- class conflict, industrialization, imperialism, war, and occupation. It will also explore why Paris became the major world destination for intellectuals, artists and writers. Sources will include films, paintings, architecture, novels, travel journals, and memoirs. Course taught in English with an optional French section.
Same as: FRENCH 340, HISTORY 230C, URBANST 184

FRENCH 148. Cinema and the Real: Italian Neo-Realism and the French New Wave. 3-5 Units.
Between the 1940s and 1960s, in Italy and France, a handful of movie directors revolutionized the art of cinema. In the wake of World War II they entirely re-defined the aesthetics of the 7th art in films such as "Bicycle Thieves," "400 Blows," "Rome Open City," and "Breathless." These works shared an aesthetic and a philosophy of "the real" - they eschewed big studios and sets in favor of natural light, on-location shooting, and non-professional actors to capture the present moment. This survey course will explore how the dialogue between Italian neo-realism and the French New Wave has yielded some of the most revolutionary filmic masterpieces of both traditions, while raising theoretical and philosophical questions about form, time, space, fiction, representation, and reality. Films: Roberto Rossellini, Vittorio de Sica, Luchino Visconti, Federico Fellini, François Truffaut, Jean-Luc Godard, Alain Resnais and Agnès Varda.
Same as: FRENCH 248, ITALIAN 148, ITALIAN 248

FRENCH 149. Love at First Sight: Visual Desire, Attraction, and the Pleasures of Art. 3-5 Units.
Why do dating sites rely on photographs? Why do we believe that love is above all a visual force? How is pleasure, even erotic pleasure, achieved through looking? While the psychology of impressions offers some answers, this course uncovers the ways poets, songwriters, and especially artists have explored myths and promoted ideas about the coupling of love and seeing. Week by week, we will be reflecting on love as political critique, social disruption, and magical force. And we will do so by examining some of the most iconic works of art, from Dante's writings on lovesickness to Caravaggio's Narcissus, studying the ways that objects have shifted from keepsakes to targets of our cares. While exploring the visual roots and evolutions of what has become one of life's fundamental drives, this course offers a passionate survey of European art from Giotto's kiss to Fragonard's swing that elicits stimulating questions about the sensorial nature of desire and the human struggle to control emotions.
Same as: ARTHIST 119, ARTHIST 319, FRENCH 349, ITALIAN 149, ITALIAN 349

FRENCH 150. Season and Off-Season of North-African Cinema and Literature. 3-5 Units.
This course explores the emergence of Francophone cinema and literature from North Africa (Algeria, Tunisia, Morocco) in the post-independence era: aesthetics, language metissage and hybridization, ethnic interactions, gender relations, collective imagination and collective memory, nationalism, popular culture, religion, urbanism, post-colonialism, migration, and the Arab Spring will be covered. Special attention will be given to Moroccan cinema, and to the notions of francophone/maghrebi/"beur"/diasporic cinema and literature. Readings from Franz Fanon, Albert Memmi, Kateb Yacine, Albert Camus, Reda Bensmaia, Assia Djebar, Colette Fellous, Abdelkebir Khatibi, Michel de Certeau, Benjamin Stora, Lucette Valensi, Abdelwahab Meddeb. Movies include Viva Laldjérie, Rome plutot que vous, Les Sabots en or, Les Silence des Palais, Halfaouine, Satin Rouge, Le Chant des Mariées, and Mort à Vendre. Taught in French. Films in French and Arabic with English subtitles.
Same as: FRENCH 350

FRENCH 152. French Painting from the Revolution to Impressionism. 3-5 Units.
This course offers a survey of painting in France from 1700 to around 1900. It introduces major artists, artworks, and the concepts used by contemporary observers and later art historians to make sense of this extraordinarily rich period. Overarching themes discussed in the class will include the dueling legacies of coloristic virtuosity and classical formalism, new ways of representing visual perception, the opposing artistic effects of absorption and theatricality, the rise and fall of official arts institutions, and the participation of artists and artworks in political upheaval and social change. The course ends with an interrogation of the concept of modernity and its emergence out of dialogue and conflict with artists of the past. Students will learn and practice formal analysis of paintings, as well as interpretations stressing historical context.
Same as: FRENCH 352

FRENCH 153. « Liberté, Égalité, Fraternité » : French Political Myths and Concepts. 3-5 Units.
"Liberté, égalité, fraternité," but also "laïcité," "diversité," "parité," "universalisme" : the French have forged over the last two centuries key political concepts that are articulated together in a unique way and shape the political consciousness, modes of engagements, aspirations and current debates of what has been called "the most political nation in the world." Along with mythologies such as the People, the Nation, the providential Leader, or the "enemy from within," they are at the centre of semantic and political battles, tugged over by the Left, the Right, populist movements, activists and counter-cultures. How did they emerge? How do they apply today? How does theory compare to practices, principles to day-to-day realities? An introduction through case-studies, films, paintings, cartoons, and texts from political theory, history, politics and literature. Taught in English.
Same as: FRENCH 353

FRENCH 154. Film & Philosophy. 3 Units.
Issues of authenticity, morality, personal identity, and the value of truth explored through film; philosophical investigation of the filmic medium itself. Screenings to include Blade Runner (Scott), Do The Right Thing (Lee), The Seventh Seal (Bergman), Fight Club (Fincher), La Jetée (Marker), Memento (Nolan), and Eternal Sunshine of the Spotless Mind (Kaufman). Taught in English.
Same as: COMPLIT 154A, ENGLISH 154F, ITALIAN 154, PHIL 193C, PHIL 293C

FRENCH 154E. Film & Philosophy CE. 3 Units.
Issues of authenticity, morality, personal identity, and the value of truth explored through film; philosophical investigation of the filmic medium itself. Screenings to include Blade Runner (Scott), Do The Right Thing (Lee), The Seventh Seal (Bergman), Fight Club (Fincher), La Jetée (Marker), Memento (Nolan), and Eternal Sunshine of the Spotless Mind (Kaufman). Taught in English. Satisfies the WAY CE.
Same as: ITALIAN 154E, PHIL 193E, PHIL 293E

FRENCH 166. Food, Text, Music: A Multidisciplinary Lab on the Art of Feasting. 3-5 Units.
Students cook a collection of unfamiliar recipes each week while learning about the cultural milieus in which they originated. The course focuses on the fourteenth and fifteenth centuries, a time of great banquets that brought together chefs, visual artists, poets, musicians, and dancers. Students read late-medieval cookbooks under the guidance of professional chefs, learn songs and poetry with the help of visiting performers, and delve into a burgeoning scholarly literature on food history and sensory experience. We will also study trade routes and food networks, the environmental impact of large-scale banquets, the science of food, and the politics of plenty. This course may count towards the Medieval component of the French major, and corresponds to DLCL 121, a course requirement for the Medieval Studies Minor. Students interested in applying for course must email the professor (jrodin@stanford.edu) by 20 September with a statement of up to 350 words that includes: (a) reasons for wanting to take the class; (b) relevant background in cooking/medieval studies/etc.; (c) stated commitment to attend all ten course meetings; and (d) any dietary restrictions/preferences.
Same as: FRENCH 266, FRENCH 366, MUSIC 133, MUSIC 333

FRENCH 175. CAPITALS: How Cities Shape Cultures, States, and People. 3-5 Units.
This course takes students on a trip to major capital cities, at different moments in time: Renaissance Florence, Golden Age Madrid, Colonial Mexico City, Enlightenment and Romantic Paris, Existential and Revolutionary St. Petersburg, Roaring Berlin, Modernist Vienna, and bustling Buenos Aires. While exploring each place in a particular historical moment, we will also consider the relations between culture, power, and social life. How does the cultural life of a country intersect with the political activity of a capital? How do large cities shape our everyday experience, our aesthetic preferences, and our sense of history? Why do some cities become cultural capitals? Primary materials for this course will consist of literary, visual, sociological, and historical documents (in translation); authors we will read include Boccaccio, Dante, Sor Juana, Montesquieu, Baudelaire, Gogol, Irmgard Keun, Freud, and Borges. Note: To be eligible for WAYS credit, you must take the course for a Letter Grade.
Same as: COMPLIT 100, DLCL 100, GERMAN 175, HISTORY 206E, ILAC 175, ITALIAN 175, URBANST 153

FRENCH 181. Philosophy and Literature. 3-5 Units.
What, if anything, does reading literature do for our lives? What can literature offer that other forms of writing cannot? Can fictions teach us anything? Can they make people more moral? Why do we take pleasure in tragic stories? This course introduces students to major problems at the intersection of philosophy and literature. It addresses key questions about the value of literature, philosophical puzzles about the nature of fiction and literary language, and ways that philosophy and literature interact. Readings span literature, film, and philosophical theories of art. Authors may include Sophocles, Dickinson, Toni Morrison, Proust, Woolf, Walton, Nietzsche, and Sartre. Students master close reading techniques and philosophical analysis, and write papers combining the two. This is the required gateway course for the Philosophy and Literature major tracks. Majors should register in their home department.
Same as: CLASSICS 42, COMPLIT 181, ENGLISH 81, GERMAN 181, ILAC 181, ITALIAN 181, PHIL 81, SLAVIC 181

FRENCH 185. Texts and Contexts: French-English Translation. 3-5 Units.
This course introduces students to the ways in which translation has shaped the image of France and the Francophone world. What texts and concepts were translated, how, where, and to what effect? Students will work on a translation project throughout the quarter and translate texts from French to English and English to French. Topics may include the role of translation in the development of cultures; the political dimension of translation, translation in the context of migration, and the socio-cultural frameworks that shape translations. Case studies: Camus, Fanon, Glissant, de Beauvoir, Meddeb, Duras. Prior knowledge of French language required.
Same as: COMPLIT 285, CSRE 285, FRENCH 285

FRENCH 187. Sex, Gender, and Violence: French Women Writers Today. 1-5 Unit.
Long before the 2017 #Metoo campaign, French women writers have explored through powerful fictions and autobiographies the different shades of economic, social, psychological, physical, or sexual violence that is exerted against, but also by and between, women. How does literature - the power of words - address, deconstruct or comfort power dynamics (during sex and between the sexes) that are usually silenced, taboo or unspeakable? Themes explored: sex and gender, sex and power, rape culture, sexual and moral taboos (incest, abortion, pornography, infanticide, lesbianism), the body as social stigma or source of meaning. Special attention given to narrative and descriptive strategies designed to avert, expose, deconstruct or account for specifically feminine experiences (rape, orgasm, pregnancy). Authors include Marie Darrieusecq, Christine Angot, Annie Ernaux, Marie NDiaye, Virginie Despentes, Leila Slimani, Ivan Jablonka along with feminist theory. Taught in French.
Same as: FEMGEN 187X, FEMGEN 287X, FEMGEN 387X, FRENCH 287, FRENCH 387

FRENCH 192. Women in French Cinema: 1958-. 3-5 Units.
Women as objects and subjects of the voyeuristic gaze inherent to cinema. The myth of the feminine idol in French films in historical and cultural context since the New Wave until now. The mythology of stars as the imaginary vehicle that helped France to change from traditional society to modern, culturally mixed nation. The evolution of female characters, roles, actresses, directors in the film industry. Filmmakers include Vadim, Buñuel, Truffaut, Varda, Chabrol, Colline Serreau, Tonie Marshall. Discussion in English; films in French with English subtitles.
Same as: FEMGEN 192, FILMSTUD 112

FRENCH 199. Individual Work. 1-12 Unit.
Restricted to French majors with consent of department. Normally limited to 4-unit credit toward the major. May be repeated for credit.

FRENCH 205. Songs of Love and War: Gender, Crusade, Politics. 3-5 Units.
Analysis of medieval love, satirical and Crusade lyrics of the trouabdours. Study of deictic address, corporeal subjectivity, the female voice, love debates, and the body as a figure of political conflict. Course readings include medieval treatises on lyric and modern translations of the troubadour tradition. Works by Ovid, Bernart de Ventadorn, Bertran de Born, La Comtessa de Dia, Thibaut de Champagne, Raimon Vidal, Dante, and Pound. Taught in English. Course includes a lab component for creation of multi-media translation projects: trobar. stanford.edu.
Same as: FEMGEN 205

FRENCH 214. Pirandello, Sartre, and Beckett. 3-5 Units.
In this course we will read the main novels and plays of Pirandello, Sartre, and Beckett, with special emphasis on the existentialist themes of their work. Readings include The Late Mattia Pascal, Six Characters in Search of an Author, Henry IV; Nausea, No Exit, "Existentialism is a Humanism"; Molloy, Endgame, Krapp's Last Tape, Waiting for Godot. Taught in English.
Same as: COMPLIT 281E, COMPLIT 381E, FRENCH 314, ITALIAN 214, ITALIAN 314

FRENCH 218. Literature and the Brain. 3 Units.
Recent developments in and neuroscience and experimental psychology have transformed the way we think about the operations of the brain. What can we learn from this about the nature and function of literary texts? Can innovative ways of speaking affect ways of thinking? Do creative metaphors draw on embodied cognition? Can fictions strengthen our "theory of mind" capabilities? What role does mental imagery play in the appreciation of descriptions? Does (weak) modularity help explain the mechanism and purpose of self-reflexivity? Can the distinctions among types of memory shed light on what narrative works have to offer?.
Same as: COMPLIT 138, COMPLIT 238, ENGLISH 118, ENGLISH 218, FRENCH 118, PSYC 126, PSYCH 118F

FRENCH 219. The Renaissance Body in French Literature and Medicine. 3-5 Units.
If the Renaissance is famous for discovering unknown continents and ancient texts the body too was a new territory of conquest. How did literature respond to the rise of an anatomical gaze in the arts and in medicine and how did it stage the aesthetic religious philosophical and moral issues related to such a promotion or deconstruction of the body? Does literature aim at representing the body or does it use it instead as a ubiquitous signifier for intellectual emotional and political ideas? The locus of desire, pleasure and disease, the body also functioned as a reminder of human mortality and was caught in the web of gender issues, religious controversies and new norms of behavior. Texts from prose fiction (Rabelais) poetry (Scève Ronsard Labé D'Aubigné) essays (Montaigne) and emblem literature. Extra documents include music scores tapestries paintings philosophical and anatomical plates from medical treatises. Taught in French.
Same as: FRENCH 319

FRENCH 220. Rethinking Francophonie in the 21st Century. 3-5 Units.
This course is a critical examination of literature from the Francophone world of the 20th and 21st centuries. Students will travel through time and space with a selection of novels, poems, epics, memoirs, essays, manifestos and short stories. In this historical and cultural journey through Sub-Saharan Africa, North Africa, the Caribbean, Canada, Vietnam and Mauritius, our objective will be to provide a reassessment, of what "Francophonie" means in the 21st century. While exploring francophone societies we will examine several canonical texts together with more recent works and consider their engagement with the historical and political contexts in which they were produced. Topics discussed in the course will include: race and representation, national and cultural identity, immigration and nationalism, transnationalism and diaspora, littérature-monde, language politics, postcolonialism and universalism. Readings will include the works of: Aimé Césaire, Lyonnel Trouillot, Edouard Glissant, Boubacar Boris Diop, Alain Mabanckou, Kim Thúy, Ananda Devi, Fatou Diome, Simone Swartz-Bart, Abdelkader Khatibi, among others. Taught in French.

FRENCH 221A. Jean-Jacques Rousseau: Politics, Philosophy, and Literature. 3-5 Units.
"Man is born free, and everywhere he is in chains." This seminar explores the work of one of the most important and enigmatic thinkers about the problems of modern society: Jean-Jacques Rousseau. Students will read a selection of his most important works in dialogue with other important thinkers of his time. They will grapple with Rousseau's political philosophy in his critique of modernity and his vision for remaking politics, as well as his moral philosophy and influential fictional visions of education and love. We will discuss not only Rousseau's landmark contributions to debates about authenticity, transparency, and self-interest, but also his troubling views on gender. The class will conclude with Rousseau's autobiography and its profound meditation on the formation of selfhood. Taught in French.
Same as: FRENCH 121

FRENCH 228. Science, technology and society and the humanities in the face of the looming disaster. 3-5 Units.
How STS and the Humanities can together help think out the looming catastrophes that put the future of humankind in jeopardy.
Same as: ITALIAN 228, POLISCI 233F

FRENCH 228E. Getting Through Proust. 3-5 Units.
Selections from all seven volumes of "In Search of Lost Time". Focus on issues of personal identity (perspective, memory, life-narrative); interpersonal relations (friendship, love, homosexuality, jealousy, indirect expression); knowledge (objective truth, subjective truth, necessary illusions); redemption (enchantment, disenchantment, re-enchantment); aesthetics (music, painting, fiction); and Proust's own style (narrative sequence, sentence structure, irony, metaphor, metonymy, metalepsis). Taught in English; readings in French or English.

FRENCH 230. Giambattista Vico & Claude Lévi-Strauss. 3-5 Units.
An intensive reading of Vico's New Science with special emphasis on Vico's theory of anthropogenesis, myth, and the poetic origins of human consciousness. Vico's thought will be placed in relation to Lévi-Strauss's theories of myth and so-called "primitive thought". Readings include Vico's New Science and Lévi-Strauss's "The Structural Study of Myth", and the first chapters of his book The Savage Mind. Taught in English.
Same as: FRENCH 330, ITALIAN 327

FRENCH 236. Casablanca - Algiers - Tunis : Cities on the Edge. 3-5 Units.
Casablanca, Algiers and Tunis embody three territories, real and imaginary, which never cease to challenge the preconceptions of travelers setting sight on their shores. In this class, we will explore the myriad ways in which these cities of North Africa, on the edge of Europe and of Africa, have been narrated in literature, cinema, and popular culture. Home to Muslims, Christians, and Jews, they are an ebullient laboratory of social, political, religious, and cultural issues, global and local, between the nineteenth and twenty-first centuries. We will look at mass images of these cities, from films to maps, novels to photographs, sketching a new vision of these magnets as places where power, social rituals, legacies of the Ottoman and French colonial pasts, and the influence of the global economy collude and collide. Special focus on class, gender, and race.
Same as: AFRICAAM 236B, COMPLIT 236A, CSRE 140S, FRENCH 336, HISTORY 245C, URBANST 140F

FRENCH 238. Art and the Market. 3-5 Units.
This course examines the relationship between art and the market, from the château-builders of the French Renaissance to avant-garde painters in the nineteenth-century Salon des Refusés. Using examples drawn from France, this course explores the relationship between artists and patrons, the changing status of artists in society, patterns of shifting taste, and the effects of museums on making and collecting art. Students will read a mixture of historical texts about art and artists, fictional works depicting the process of artistic creation, and theoretical analyses of the politics embedded in artworks. They will engage in sustained analysis of individual artworks, as well as the market structures in which such artworks were produced and bought. The course will be taught in English, with the option of readings in French for departmental majors.
Same as: ARTHIST 238C

FRENCH 239. The Afterlife of the Middle Ages. 3-5 Units.
Literary works that evoke a medieval past in contrast to a historical present, and critical texts that treat aspects of the medieval or medievalism. How does the concept of medievalism emerge and evolve through the ages? Topics include periodization, philology, critical theory, the study of Gothic architecture, and the use of the term medieval in modern political discourse and postcolonial studies. Authors include Burckhardt, Camille, Chateaubriand, Chrétien de Troyes, Didi-Huberman, Jauss, Michelet, Panofsky, Pound, films by Dreyer and Bergman, and contemporary poetry. Taught in English.
Same as: FRENCH 339

FRENCH 246. Body over Mind. 3-5 Units.
How does modern fiction, aided by modern philosophy, give the lie to Descartes' famous "I think therefore I am"? And how does writing convey the desire for a different, perhaps stronger, integration of mind and body? Does the body speak a particular truth that we must learn to hear, that the mind is not always connected to? How do modern metaphors for the mind-body connection shape our experience? These questions will be explored via the works of major French and Italian writers and thinkers, including Pirandello, Calvino, Camus, Houellebecq, Sartre, and Agamben.
Same as: FRENCH 346, ITALIAN 346

FRENCH 248. Cinema and the Real: Italian Neo-Realism and the French New Wave. 3-5 Units.
Between the 1940s and 1960s, in Italy and France, a handful of movie directors revolutionized the art of cinema. In the wake of World War II they entirely re-defined the aesthetics of the 7th art in films such as "Bicycle Thieves," "400 Blows," "Rome Open City," and "Breathless." These works shared an aesthetic and a philosophy of "the real" - they eschewed big studios and sets in favor of natural light, on-location shooting, and non-professional actors to capture the present moment. This survey course will explore how the dialogue between Italian neo-realism and the French New Wave has yielded some of the most revolutionary filmic masterpieces of both traditions, while raising theoretical and philosophical questions about form, time, space, fiction, representation, and reality. Films: Roberto Rossellini, Vittorio de Sica, Luchino Visconti, Federico Fellini, François Truffaut, Jean-Luc Godard, Alain Resnais and Agnès Varda.
Same as: FRENCH 148, ITALIAN 148, ITALIAN 248

FRENCH 249. The Algerian Wars. 3-5 Units.
From Algiers the White to Algiers the Red, Algiers, the Mecca of the Revolutionaries in the words of Amilcar Cabral, this course offers to study the Algerian Wars since the French conquest of Algeria (1830-) to the Algerian civil war of the 1990s. We will revisit the ways in which the war has been narrated in literature and cinema, popular culture, and political discourse. A special focus will be given to the Algerian War of Independence (1954-1962). The course considers the racial representations of the war in the media, the continuing legacies surrounding the conflict in France, Africa, and the United States, from Che Guevara to the Black Panthers. A key focus will be the transmission of collective memory through transnational lenses, and analyses of commemorative events and movies. nReadings from James Baldwin, Assia Djebar, Albert Camus, Frantz Fanon, Mouloud Feraoun. Movies include "The Battle of Algiers," "Days of Glory," and "Viva Laldjérie." nTaught in English.
Same as: CSRE 249, HISTORY 239G, JEWISHST 249

FRENCH 252. Art and Power: From Royal Spectacle to Revolutionary Ritual. 3-5 Units.
From the Palace of Versailles to grand operas to Jacques-Louis David's portraits of revolutionary martyrs, rarely have the arts been so powerfully mobilized by the State as in early modern France. This course examines how the arts were used from Louis XIV to the Revolution in order to broadcast political authority across Europe. We will also consider the resistance to such attempts to elicit shock-and-awe through artistic patronage. By studying music, architecture, garden design, the visual arts, and theater together, students will gain a new perspective on works of art in their political contexts. But we will also examine the libelous pamphlets and satirical cartoons that turned the monarchy¿s grandeur against itself, ending the course with an examination of the new artistic regime of the French Revolution. The course will be taught in English with the option of French readings for departmental majors.
Same as: ARTHIST 252A

FRENCH 257. Simone Weil, Simone de Beauvoir, Hannah Arendt, and Adriana Cavarero. 3-5 Units.
What does it mean to say the personal is the political, or, in the case of Arendt, that the personal is not political, especially if you are a woman? This course explores how Weil, De Beauvoir, Arendt, and Caverero contend with the question of personhood, in its variegated social, political, ethical, and gendered dimensions. Particular attention will be given to a philosophy of social change and personal transformation, and to the enduring relevance of these women's thought to issues of our day. Texts include selections from "Gravity and Grace," "The Second Sex," "The Ethics of Ambiguity," "The Human Condition," "Between Past and Future," "Stately Bodies," and "Relating Narratives.".
Same as: COMPLIT 257, COMPLIT 357A, FEMGEN 257X, FEMGEN 357X, FRENCH 357, ITALIAN 257, ITALIAN 357

FRENCH 260A. Transcultural Perspectives of South-East Asian Music and Arts. 2-4 Units.
This course will explore the links between aspects of South-East Asian cultures and their influence on modern and contemporary Western art and literature, particularly in France; examples of this influence include Claude Debussy (Gamelan music), Jacques Charpentier (Karnatak music), Auguste Rodin (Khmer art) and Antonin Artaud (Balinese theater). In the course of these interdisciplinary analyses - focalized on music and dance but not limited to it - we will confront key notions in relation to transculturality: orientalism, appropriation, auto-ethnography, nostalgia, exoticism and cosmopolitanism. We will also consider transculturality interior to contemporary creation, through the work of contemporary composers such as Tran Kim Ngoc, Chinary Ung and Tôn-Thât Tiêt. Viewings of sculptures, marionette theater, ballet, opera and cinema will also play an integral role. To satisfy a Ways requirement, this course must be taken for at least 3 units. In AY 2020-21, a letter grade or `CR¿ grade satisfies the Ways requirement. WIM credit in Music at 4 units and a letter grade.
Same as: COMPLIT 148, COMPLIT 267, MUSIC 146N, MUSIC 246N

FRENCH 261. War and Peace: Writings by and about Veterans in the 20th and 21st Centuries. 2-5 Units.
Since the aftermath of World War One, and with increasing urgency in contemporary America, stories about and by veterans are assigned a double role: that of exposing the horror of war yet also defending the possibility of a just war, and that of healing both veterans themselves and the society they return to. Key questions for this course are: Given the current practice of using writing and the hero¿s journey as a model for healing veterans and making their voices heard in our culture, can we look back to post-World-War-One culture and see if writing fulfills a similar function? And given how many post-World-War-One veterans became famous writers, how do we assess the interplay between literature, poetry, memoir, journalism, personal letters, photo accounts? Is there a connection between artistic innovation and the capacity to heal?.
Same as: FRENCH 361, ITALIAN 261, ITALIAN 361

FRENCH 262. Symbolism in Literature and the Arts. 3-5 Units.
This course will deal with the some of the 19th and 20th century authors and artists associated with Symbolism. We will focus on some key theoretical essays about the symbol, as well as on symbolist poetry, novels, visual arts, cinema, and music. In reading authors such as Coleridge, Blake, Poe, Baudelaire, Rimbaud, Verlaine, Mallarmé, Valéry, Pascoli, Campana, d¿Annunzio, and Savinio, we will explore the nature and uses of the symbol in art.
Same as: FRENCH 362, ITALIAN 262, ITALIAN 362

FRENCH 264. Crossing the Atlantic: Race and Identity in the African Diaspora. 3-5 Units.
This course interrogates the relationship between literature, culture, race and identity in the African diaspora. We will analyze racial discourses through literature, and various forms of cultural expression while examining the role of class and gender in these configurations. As we follow the historical and geographical trajectories of people of African descent in different parts of the world, students will explore literary and political movements with the objective of examining how race has been constructed and is performed in different regions of the diaspora. Our readings will take us from Martinique, Guadeloupe, Guyana, France, and Senegal to Cuba, Brazil, Haiti and the Dominican Republic. Topics discussed will include: Race, identity, gender, class, memory, oral tradition, Afro-Caribbean religions, Negrismo, Négritude, Antillanité, Créolité, colonialism, modernity and national belonging. Readings will include the works of: Jean Price-Mars, Léopold Senghor, Aimé Césaire, Léon Damas, Frantz Fanon, Nicolás Guillén, Nancy Morejon, Maryse Condé, Patrick Chamoiseau, Edouard Glissant, among others. Taught in English.
Same as: COMPLIT 264, CSRE 265

FRENCH 265. The Problem of Evil in Literature, Film, and Philosophy. 3-5 Units.
Conceptions of evil and its nature and source, distinctions between natural and moral evil, and what belongs to God versus to the human race have undergone transformations reflected in literature and film. Sources include Rousseau's response to the 1755 Lisbon earthquake; Hannah Arendt's interpretation of Auschwitz; Günther Anders' reading of Hiroshima; and current reflections on looming climatic and nuclear disasters. Readings from Rousseau, Kant, Dostoevsky, Arendt, Anders, Jonas, Camus, Ricoeur, Houellebeck, Girard. Films by Lang, Bergman, Losey, Hitchcock.
Same as: POLISCI 338E

FRENCH 266. Food, Text, Music: A Multidisciplinary Lab on the Art of Feasting. 3-5 Units.
Students cook a collection of unfamiliar recipes each week while learning about the cultural milieus in which they originated. The course focuses on the fourteenth and fifteenth centuries, a time of great banquets that brought together chefs, visual artists, poets, musicians, and dancers. Students read late-medieval cookbooks under the guidance of professional chefs, learn songs and poetry with the help of visiting performers, and delve into a burgeoning scholarly literature on food history and sensory experience. We will also study trade routes and food networks, the environmental impact of large-scale banquets, the science of food, and the politics of plenty. This course may count towards the Medieval component of the French major, and corresponds to DLCL 121, a course requirement for the Medieval Studies Minor. Students interested in applying for course must email the professor (jrodin@stanford.edu) by 20 September with a statement of up to 350 words that includes: (a) reasons for wanting to take the class; (b) relevant background in cooking/ medieval studies/etc.; (c) stated commitment to attend all ten course meetings; and (d) any dietary restrictions/preferences.
Same as: FRENCH 166, FRENCH 366, MUSIC 133, MUSIC 333

FRENCH 272. Body Doubles: From the Fantastic Short Story to Science-Fiction. 2-5 Units.
How do we imagine our bodies through language, at times almost completely refashioning a physical double, be it idealized or abject? How do such body doubles intersect with our sense of self, defining or redefining sexual identity, spiritual aspirations, illness and recovery, and the senses themselves, as our window into reality? This course focuses on short stories from the late 19th- and early 20th-century fantastic genre, and science fiction stories from the following turn of the century, 100 years later: in these revealing instances, body doubles often seem to acquire a will of their own, overwhelming normal physical identity.
Same as: FRENCH 372, ITALIAN 272, ITALIAN 372

FRENCH 279. How the French Reinvented Cinema: The New Wave. 3-5 Units.
Focus on the French New Wave's cinematic revolution of 1959-1962. In a few years, the Nouvelle Vague delivered landmark works such as Truffaut's 400 Blows, Godard's Breathless, Chabrol's The Cousins or Resnais' Hiroshima mon amour, and changed forever the way we make and think about movies. Why did these films look so radically fresh? What do they say about France's youth culture in the early 60s? How is the author's theory behind them still influencing us today? Focus is on cultural history, aesthetic analysis, interpretation of narrative, sound and visual forms. Graduate and Junior/Senior level. Taught in English. NOTE: Class meets Thursday 1:30-4:20pm; film screenings Monday 6:00-8:50pm in room 540-108.
Same as: FRENCH 379

FRENCH 281. Women in Africa and the Caribbean: Tales of Agency. 3-5 Units.
This course explores forms of women¿s agency in African and Caribbean cultural productions. Drawing on literature, visual art and feminist theory we will grapple with the concept of agency in different socio-historical and economic contexts while examining texts and films at the intersection of race, gender and agency. In addition to considering the acts of subversion, negotiation, resistance and transgression, throughout the semester, our investigations of gendered agency will pay particular attention to creativity as a tool to challenge power relations specific to each context explored. Topics include race, class, nationalism, métissage, oral tradition, Afro-Caribbean religions, sexuality, marriage, food and the body. Taught in English.

FRENCH 285. Texts and Contexts: French-English Translation. 3-5 Units.
This course introduces students to the ways in which translation has shaped the image of France and the Francophone world. What texts and concepts were translated, how, where, and to what effect? Students will work on a translation project throughout the quarter and translate texts from French to English and English to French. Topics may include the role of translation in the development of cultures; the political dimension of translation, translation in the context of migration, and the socio-cultural frameworks that shape translations. Case studies: Camus, Fanon, Glissant, de Beauvoir, Meddeb, Duras. Prior knowledge of French language required.
Same as: COMPLIT 285, CSRE 285, FRENCH 185

FRENCH 286. Poetry and Philosophy. 2-5 Units.
When and why do philosophers resort to poetry?nWhat is the relationship between poetic metaphor and philosophical argumentation?nWhy is the poetic often associated with empathy - recently touted as an essential human characteristic - whereas philosophy is considered more objective? nWhat is poetry's role in the pursuit of wisdom or the good life?nAuthors include Nietzsche, Heidegger, Bataille, Agamben, Ricoeur, Derrida, Irigaray, Wyschogrod, and Cavarero.
Same as: FRENCH 386, ITALIAN 286, ITALIAN 386

FRENCH 287. Sex, Gender, and Violence: French Women Writers Today. 1-5 Unit.
Long before the 2017 #Metoo campaign, French women writers have explored through powerful fictions and autobiographies the different shades of economic, social, psychological, physical, or sexual violence that is exerted against, but also by and between, women. How does literature - the power of words - address, deconstruct or comfort power dynamics (during sex and between the sexes) that are usually silenced, taboo or unspeakable? Themes explored: sex and gender, sex and power, rape culture, sexual and moral taboos (incest, abortion, pornography, infanticide, lesbianism), the body as social stigma or source of meaning. Special attention given to narrative and descriptive strategies designed to avert, expose, deconstruct or account for specifically feminine experiences (rape, orgasm, pregnancy). Authors include Marie Darrieusecq, Christine Angot, Annie Ernaux, Marie NDiaye, Virginie Despentes, Leila Slimani, Ivan Jablonka along with feminist theory. Taught in French.
Same as: FEMGEN 187X, FEMGEN 287X, FEMGEN 387X, FRENCH 187, FRENCH 387

FRENCH 290. Magic, Science, and Religion. 3-5 Units.
With the rise of the human sciences in the later nineteenth century, "magic," "science," and "religion" came to be understood as entirely separate domains, with different versions of truth and divergent methods of inquiry. But how has this division broken down in the past 150 years? How is it, for example, that other people's religion is "merely magic"? How does science still draw on religious categories, in particular to claim the universe is meaningful? How have new forms of magic shaped new age, global culture? We will examine these questions by pairing literary texts with readings from anthropology, history of science, religious studies, and cultural criticism. This course is taught in English.
Same as: COMPLIT 290A, COMPLIT 390A, FRENCH 390, ITALIAN 290, ITALIAN 390

FRENCH 292. Romancing the Stone: Crystal Media from Babylon to Superman. 3-5 Units.
This seminar investigates the importance of rock crystal and its imitations as material, medium, and metaphor from antiquity until modernity. The objects examined include rings, reliquaries, lenses, and the Crystal Aesthetic in early twentieth-century architecture and even Superman's Fortress of Solitude. The texts range from Pliny to Arabic Poetry to Romance Literature to modern manifestos.
Same as: ARTHIST 292, ARTHIST 492, FRENCH 392

FRENCH 307A. Proust and His World. 3-5 Units.
This course is a chance to read together Proust's <e>A la recherche du temps perdu</e>. This seven-volume novel is a stylistic tour de force, a brilliant meditation on defining elements of modernity, and an eccentric meander through art, history and the self. We will look closely at Proust's narrative edifice, and its poetic achievements. We will augment our reading of the novel with secondary selections that enable us to explore the many themes and questions raised by the work, ranging from fashion as a serious mode of modern expression to the phenomenology of memory to the decadence of French culture on the eve of the First World War. We'll look at the importance of Proust for structuralist and post-structuralist critics of the 1960s-1980s, whose paradigms continue to resonate today. We'll also consider together the interest and limits of a single-author course, and the value of absorptive, "slow" reading in our multi-tasking era. Supplementary readings might include selections from Charles Baudelaire, John Ruskin, Henri Bergson, Gérard Genette, Gilles Deleuze, Eve Sedgwick, Maurice Samuels, and Caroline Weber. Reading knowledge of French strongly recommended.
Same as: COMPLIT 307

FRENCH 310. French Painting from Watteau to Monet. 3-5 Units.
This course offers a survey of painting in France from 1700 to around 1900. It introduces major artists, artworks, and the concepts used by contemporary observers and later art historians to make sense of this extraordinarily rich period. Overarching themes discussed in the class will include the dueling legacies of coloristic virtuosity and classical formalism, new ways of representing visual perception, the opposing artistic effects of absorption and theatricality, the rise and fall of official arts institutions, and the participation of artists and artworks in political upheaval and social change. The course ends with an interrogation of the concept of modernity and its emergence out of dialogue and conflict with artists of the past. Students will learn and practice formal analysis of paintings, as well as interpretations stressing historical context.
Same as: ARTHIST 110, ARTHIST 310, FRENCH 110

FRENCH 314. Pirandello, Sartre, and Beckett. 3-5 Units.
In this course we will read the main novels and plays of Pirandello, Sartre, and Beckett, with special emphasis on the existentialist themes of their work. Readings include The Late Mattia Pascal, Six Characters in Search of an Author, Henry IV; Nausea, No Exit, "Existentialism is a Humanism"; Molloy, Endgame, Krapp's Last Tape, Waiting for Godot. Taught in English.
Same as: COMPLIT 281E, COMPLIT 381E, FRENCH 214, ITALIAN 214, ITALIAN 314

FRENCH 319. The Renaissance Body in French Literature and Medicine. 3-5 Units.
If the Renaissance is famous for discovering unknown continents and ancient texts the body too was a new territory of conquest. How did literature respond to the rise of an anatomical gaze in the arts and in medicine and how did it stage the aesthetic religious philosophical and moral issues related to such a promotion or deconstruction of the body? Does literature aim at representing the body or does it use it instead as a ubiquitous signifier for intellectual emotional and political ideas? The locus of desire, pleasure and disease, the body also functioned as a reminder of human mortality and was caught in the web of gender issues, religious controversies and new norms of behavior. Texts from prose fiction (Rabelais) poetry (Scève Ronsard Labé D'Aubigné) essays (Montaigne) and emblem literature. Extra documents include music scores tapestries paintings philosophical and anatomical plates from medical treatises. Taught in French.
Same as: FRENCH 219

FRENCH 320. The Posthumanistic Subject. 3-5 Units.
The course will examine the need to rethink the traditional western idea of the strong subject. Through close readings of works by Agamben, Braidotti, Derrida, Deleuze, Hall, Haraway, Latour, Wolfe, among others, this course will explore posthumanist theories of individual and collective subjectivity that challenge traditional ways of defining the human and the non-human subject/person and promote fundamental reconsideration of issues such as agency, autonomy, essence, freedom, dignity, otherness, substance, personhood, sociality, and life itself. The course would consider, how we can empower the subject and community in order to develop a desired model of participatory democracy. Prerequisite: graduate standing or consent of instructor.

FRENCH 321. Giambattista Vico. 1-5 Unit.
An intensive reading of Vico's New Science. Emphasis will be on Vico's philosophy of history and theories of poetic wisdom, myth, and language. Vico will be put in dialogue with René Descartes, Rousseau, Auguste Compte, Claude Lévi Strauss, and Paul Feyerabend, whose ideas about myth and science converge in striking ways with Vico's.
Same as: ITALIAN 321

FRENCH 322. Decadence and Modernism from Mallarmé to Marinetti. 1-2 Unit.
One hundred years ago, artists feared their work was incompatible with modern economic systems, secular bourgeois values, and materialist science. Accused of being decadent, they took up this term of derision and made it into a program of rebellion that has shaped modern art. This course explores decadent rebellion, with an eye toward how the last turn of the century might be similar to our current one. Writers include Huysmans, Poe, Mallarmé, Nietzsche, Nordau, d'Annunzio, Valéry, Ungaretti, Marinetti, and Breton; we will also consider parallels in the visual arts.

FRENCH 327. Genres of the Novel. 5 Units.
Provides students with an overview of some major genres in the history of the modern novel, along with major theorists in the critical understanding of the form. Novels might include works by Cervantes, Defoe, Lafayette, Radcliffe, Goethe, Scott, Balzac, Melville, and Woolf. Theorists might include Lukacs, Bakhtin, Jameson, Gallagher, Barthes, Kristeva, and Bourdieu. *PLEASE NOTE: Course for graduate students only.*.
Same as: COMPLIT 327, ENGLISH 327

FRENCH 329. Rethinking Francophone Literature in the 21st Century. 3-5 Units.
This course is a critical examination of literature from the Francophone world of the 20th and 21st centuries. Students will travel through time and space with a selection of novels, poems, essays, and short stories. In this historical and cultural journey through Sub-Saharan Africa, North Africa, the Caribbean, Canada, Vietnam and Mauritius, our objective will be to provide a reassessment of what Francophone studies mean in the 21st century. Topics discussed in the course will include race and representation, national and cultural identity, immigration and nationalism, transnationalism and diaspora, "littérature-monde," the politics of language, postcolonialism and universalism. Readings will include the works of Dani Laferrière, Bessora, Ken Bugul, Alain Mabanckou, Kim Thúy, Ananda Devi, Abdourahman Waberi, Véronique Tadjo and Abdelkebir Khatibi. Taught in French.
Same as: CSRE 329

FRENCH 330. Giambattista Vico & Claude Lévi-Strauss. 3-5 Units.
An intensive reading of Vico's New Science with special emphasis on Vico's theory of anthropogenesis, myth, and the poetic origins of human consciousness. Vico's thought will be placed in relation to Lévi-Strauss's theories of myth and so-called "primitive thought". Readings include Vico's New Science and Lévi-Strauss's "The Structural Study of Myth", and the first chapters of his book The Savage Mind. Taught in English.
Same as: FRENCH 230, ITALIAN 327

FRENCH 331. The Craft of Confession and Its Cultural Contexts. 5 Units.
Course examines medieval treatises and literature relating to the practice of confession as well as modern examples, with a focus on medieval concern with a sincere and authentic confession in theological, ethical, and aesthetic terms. Study includes expressions of subjectivity, institutional frameworks of confession, and the phenomenon as an instrument for political activity such as crusade. Texts: Augustine¿s Confessions, pastoral treatises, Aquinas, Arthurian romances concerning the grail legend, crusade lyric, and Foucault; films such as Dreyer and martyrdom videos. Taught in French.

FRENCH 336. Casablanca - Algiers - Tunis : Cities on the Edge. 3-5 Units.
Casablanca, Algiers and Tunis embody three territories, real and imaginary, which never cease to challenge the preconceptions of travelers setting sight on their shores. In this class, we will explore the myriad ways in which these cities of North Africa, on the edge of Europe and of Africa, have been narrated in literature, cinema, and popular culture. Home to Muslims, Christians, and Jews, they are an ebullient laboratory of social, political, religious, and cultural issues, global and local, between the nineteenth and twenty-first centuries. We will look at mass images of these cities, from films to maps, novels to photographs, sketching a new vision of these magnets as places where power, social rituals, legacies of the Ottoman and French colonial pasts, and the influence of the global economy collude and collide. Special focus on class, gender, and race.
Same as: AFRICAAM 236B, COMPLIT 236A, CSRE 140S, FRENCH 236, HISTORY 245C, URBANST 140F

FRENCH 339. The Afterlife of the Middle Ages. 3-5 Units.
Literary works that evoke a medieval past in contrast to a historical present, and critical texts that treat aspects of the medieval or medievalism. How does the concept of medievalism emerge and evolve through the ages? Topics include periodization, philology, critical theory, the study of Gothic architecture, and the use of the term medieval in modern political discourse and postcolonial studies. Authors include Burckhardt, Camille, Chateaubriand, Chrétien de Troyes, Didi-Huberman, Jauss, Michelet, Panofsky, Pound, films by Dreyer and Bergman, and contemporary poetry. Taught in English.
Same as: FRENCH 239

FRENCH 340. Paris: Capital of the Modern World. 4-5 Units.
This course explores how Paris, between the eighteenth and twentieth centuries, became the political, cultural, and artistic capital of the modern world. It considers how the city has both shaped and been shaped by the tumultuous events of modern history- class conflict, industrialization, imperialism, war, and occupation. It will also explore why Paris became the major world destination for intellectuals, artists and writers. Sources will include films, paintings, architecture, novels, travel journals, and memoirs. Course taught in English with an optional French section.
Same as: FRENCH 140, HISTORY 230C, URBANST 184

FRENCH 343. In Defense of Poetry. 3-5 Units.
Beginning with the account of the quarrel between philosophy and poetry in Plato's Republic, we will read definitions and defenses of poetry by authors such as Cicero, Horace, Petrarch, Boccaccio, Sidney, Shelley, and Pound, among others. While we will try to historicize these authors' defenses as much as possible, we will also read them from the perspective of contemporary efforts to defend literature and the humanities. Topics of central concern will be the connection between poetry and ethics, the conflict between poetry and the professions of business, law, and medicine, poetry's place in the university, the political role of the poet, questions of poetic language and form, and the relevance of defenses of poetry to literary theory.

FRENCH 346. Body over Mind. 3-5 Units.
How does modern fiction, aided by modern philosophy, give the lie to Descartes' famous "I think therefore I am"? And how does writing convey the desire for a different, perhaps stronger, integration of mind and body? Does the body speak a particular truth that we must learn to hear, that the mind is not always connected to? How do modern metaphors for the mind-body connection shape our experience? These questions will be explored via the works of major French and Italian writers and thinkers, including Pirandello, Calvino, Camus, Houellebecq, Sartre, and Agamben.
Same as: FRENCH 246, ITALIAN 346

FRENCH 349. Love at First Sight: Visual Desire, Attraction, and the Pleasures of Art. 3-5 Units.
Why do dating sites rely on photographs? Why do we believe that love is above all a visual force? How is pleasure, even erotic pleasure, achieved through looking? While the psychology of impressions offers some answers, this course uncovers the ways poets, songwriters, and especially artists have explored myths and promoted ideas about the coupling of love and seeing. Week by week, we will be reflecting on love as political critique, social disruption, and magical force. And we will do so by examining some of the most iconic works of art, from Dante's writings on lovesickness to Caravaggio's Narcissus, studying the ways that objects have shifted from keepsakes to targets of our cares. While exploring the visual roots and evolutions of what has become one of life's fundamental drives, this course offers a passionate survey of European art from Giotto's kiss to Fragonard's swing that elicits stimulating questions about the sensorial nature of desire and the human struggle to control emotions.
Same as: ARTHIST 119, ARTHIST 319, FRENCH 149, ITALIAN 149, ITALIAN 349

FRENCH 350. Season and Off-Season of North-African Cinema and Literature. 3-5 Units.
This course explores the emergence of Francophone cinema and literature from North Africa (Algeria, Tunisia, Morocco) in the post-independence era: aesthetics, language metissage and hybridization, ethnic interactions, gender relations, collective imagination and collective memory, nationalism, popular culture, religion, urbanism, post-colonialism, migration, and the Arab Spring will be covered. Special attention will be given to Moroccan cinema, and to the notions of francophone/maghrebi/"beur"/diasporic cinema and literature. Readings from Franz Fanon, Albert Memmi, Kateb Yacine, Albert Camus, Reda Bensmaia, Assia Djebar, Colette Fellous, Abdelkebir Khatibi, Michel de Certeau, Benjamin Stora, Lucette Valensi, Abdelwahab Meddeb. Movies include Viva Laldjérie, Rome plutot que vous, Les Sabots en or, Les Silence des Palais, Halfaouine, Satin Rouge, Le Chant des Mariées, and Mort à Vendre. Taught in French. Films in French and Arabic with English subtitles.
Same as: FRENCH 150

FRENCH 352. French Painting from the Revolution to Impressionism. 3-5 Units.
This course offers a survey of painting in France from 1700 to around 1900. It introduces major artists, artworks, and the concepts used by contemporary observers and later art historians to make sense of this extraordinarily rich period. Overarching themes discussed in the class will include the dueling legacies of coloristic virtuosity and classical formalism, new ways of representing visual perception, the opposing artistic effects of absorption and theatricality, the rise and fall of official arts institutions, and the participation of artists and artworks in political upheaval and social change. The course ends with an interrogation of the concept of modernity and its emergence out of dialogue and conflict with artists of the past. Students will learn and practice formal analysis of paintings, as well as interpretations stressing historical context.
Same as: FRENCH 152

FRENCH 353. « Liberté, Égalité, Fraternité » : French Political Myths and Concepts. 3-5 Units.
"Liberté, égalité, fraternité," but also "laïcité," "diversité," "parité," "universalisme" : the French have forged over the last two centuries key political concepts that are articulated together in a unique way and shape the political consciousness, modes of engagements, aspirations and current debates of what has been called "the most political nation in the world." Along with mythologies such as the People, the Nation, the providential Leader, or the "enemy from within," they are at the centre of semantic and political battles, tugged over by the Left, the Right, populist movements, activists and counter-cultures. How did they emerge? How do they apply today? How does theory compare to practices, principles to day-to-day realities? An introduction through case-studies, films, paintings, cartoons, and texts from political theory, history, politics and literature. Taught in English.
Same as: FRENCH 153

FRENCH 357. Simone Weil, Simone de Beauvoir, Hannah Arendt, and Adriana Cavarero. 3-5 Units.
What does it mean to say the personal is the political, or, in the case of Arendt, that the personal is not political, especially if you are a woman? This course explores how Weil, De Beauvoir, Arendt, and Caverero contend with the question of personhood, in its variegated social, political, ethical, and gendered dimensions. Particular attention will be given to a philosophy of social change and personal transformation, and to the enduring relevance of these women's thought to issues of our day. Texts include selections from "Gravity and Grace," "The Second Sex," "The Ethics of Ambiguity," "The Human Condition," "Between Past and Future," "Stately Bodies," and "Relating Narratives.".
Same as: COMPLIT 257, COMPLIT 357A, FEMGEN 257X, FEMGEN 357X, FRENCH 257, ITALIAN 257, ITALIAN 357

FRENCH 361. War and Peace: Writings by and about Veterans in the 20th and 21st Centuries. 2-5 Units.
Since the aftermath of World War One, and with increasing urgency in contemporary America, stories about and by veterans are assigned a double role: that of exposing the horror of war yet also defending the possibility of a just war, and that of healing both veterans themselves and the society they return to. Key questions for this course are: Given the current practice of using writing and the hero¿s journey as a model for healing veterans and making their voices heard in our culture, can we look back to post-World-War-One culture and see if writing fulfills a similar function? And given how many post-World-War-One veterans became famous writers, how do we assess the interplay between literature, poetry, memoir, journalism, personal letters, photo accounts? Is there a connection between artistic innovation and the capacity to heal?.
Same as: FRENCH 261, ITALIAN 261, ITALIAN 361

FRENCH 362. Symbolism in Literature and the Arts. 3-5 Units.
This course will deal with the some of the 19th and 20th century authors and artists associated with Symbolism. We will focus on some key theoretical essays about the symbol, as well as on symbolist poetry, novels, visual arts, cinema, and music. In reading authors such as Coleridge, Blake, Poe, Baudelaire, Rimbaud, Verlaine, Mallarmé, Valéry, Pascoli, Campana, d¿Annunzio, and Savinio, we will explore the nature and uses of the symbol in art.
Same as: FRENCH 262, ITALIAN 262, ITALIAN 362

FRENCH 365. The Problem of Evil in Philosophy, Literature, and Film. 5 Units.
This workshop will explore how the existence of evil in the world has been perceived, felt, analyzed, conceptualized, and dealt with over time, from the 1755 Lisbon earthquake and tsunami to our post-Auschwitz, post-Hiroshima era. We'll take it for granted that "the problem of evil is the guiding force of modern thought" (Susan Neiman, Evil in Modern Thought.) We'll ask why this is apparently no longer the case. Such philosophers as Rousseau, Voltaire, Diderot, Leibniz, Kant, Heidegger, Hannah Arendt, Günther Anders, Hans Jonas and Ivan Illich will be our guides. One could argue, however, that theology, metaphysics or moral philosophy are not up to the task of making sense of evil if they are not aided by literature and, today, film. Fiction can often articulate ideas that escape the grasp of philosophy. NOTE: Enrollment is capped and limited to graduate students: To be considered for enrollment in this course, please submit by March 13, 2020 a letter of motivation fleshing out the state of your own research or reflections in this domain. This letter should be sent to the instructor at jpdupuy@stanford.edu.

FRENCH 366. Food, Text, Music: A Multidisciplinary Lab on the Art of Feasting. 3-5 Units.
Students cook a collection of unfamiliar recipes each week while learning about the cultural milieus in which they originated. The course focuses on the fourteenth and fifteenth centuries, a time of great banquets that brought together chefs, visual artists, poets, musicians, and dancers. Students read late-medieval cookbooks under the guidance of professional chefs, learn songs and poetry with the help of visiting performers, and delve into a burgeoning scholarly literature on food history and sensory experience. We will also study trade routes and food networks, the environmental impact of large-scale banquets, the science of food, and the politics of plenty. This course may count towards the Medieval component of the French major, and corresponds to DLCL 121, a course requirement for the Medieval Studies Minor. Students interested in applying for course must email the professor (jrodin@stanford.edu) by 20 September with a statement of up to 350 words that includes: (a) reasons for wanting to take the class; (b) relevant background in cooking/medieval studies/etc.; (c) stated commitment to attend all ten course meetings; and (d) any dietary restrictions/preferences.
Same as: FRENCH 166, FRENCH 266, MUSIC 133, MUSIC 333

FRENCH 368A. Imagining the Oceans. 5 Units.
How has Western culture constructed the world's oceans since the beginning of global ocean exploration? How have imaginative visions of the ocean been shaped by marine science, technology, exploration, commerce and leisure? Primary authors read might include Cook, Banks, Equiano, Ricketts, and Steinbeck; Defoe, Cooper, Verne, Conrad, Woolf and Hemingway; Coleridge, Baudelaire, Moore, Bishop and Walcott. Critical readings include Schmitt, Rediker and Linebaugh, Baucom, Best, Corbin, Auden, Sontag and Heller-Roazen. Films by Sekula, Painlevé and Bigelow. Seminar coordinated with a 2015 Cantor Arts Center public exhibition. Visits to the Cantor; other possible field trips include Hopkins Marine Station and SF Maritime Historical Park. Open to graduate students only.
Same as: COMPLIT 368A, ENGLISH 368A

FRENCH 369. Introduction to the Profession of Literary Studies. 1-2 Unit.
A survey of how literary theory and other methods have been made institutional since the nineteenth century. The readings and conversation are designed for entering Ph.D. students in the national literature departments and comparative literature.
Same as: COMPLIT 369, DLCL 369, GERMAN 369, ITALIAN 369

FRENCH 372. Body Doubles: From the Fantastic Short Story to Science-Fiction. 2-5 Units.
How do we imagine our bodies through language, at times almost completely refashioning a physical double, be it idealized or abject? How do such body doubles intersect with our sense of self, defining or redefining sexual identity, spiritual aspirations, illness and recovery, and the senses themselves, as our window into reality? This course focuses on short stories from the late 19th- and early 20th-century fantastic genre, and science fiction stories from the following turn of the century, 100 years later. in these revealing instances, body doubles often seem to acquire a will of their own, overwhelming normal physical identity.
Same as: FRENCH 272, ITALIAN 272, ITALIAN 372

FRENCH 377. Medieval Lyric: How Lyric Moves. 3-5 Units.
Through the study of various vernacular premodern traditions, this graduate level course examines the qualities that make texts "lyric" and place them into conversation with contemporary theories of lyric. The course will situate medieval lyric within the critical discourse of poetics, the Global South, the archive, and anachrony. We will consider the movement of verse within and among various material contexts (song, manuscript, artworks, objects, tombstones). Poets considered: troubadours, trouvères, Galician-Portugese cantigas d'amigo, Stilnovists, Dante, Petrarchan poetry, Jean Renart, Charles d'Orléans, Villon, Pound, Brazilian Concrete Poetry.
Same as: COMPLIT 377, ITALIAN 377

FRENCH 379. How the French Reinvented Cinema: The New Wave. 3-5 Units.
Focus on the French New Wave's cinematic revolution of 1959-1962. In a few years, the Nouvelle Vague delivered landmark works such as Truffaut's 400 Blows, Godard's Breathless, Chabrol's The Cousins or Resnais' Hiroshima mon amour, and changed forever the way we make and think about movies. Why did these films look so radically fresh? What do they say about France's youth culture in the early 60s? How is the author's theory behind them still influencing us today? Focus is on cultural history, aesthetic analysis, interpretation of narrative, sound and visual forms. Graduate and Junior/Senior level. Taught in English. NOTE: Class meets Thursday 1:30-4:20pm; film screenings Monday 6:00-8:50pm in room 540-108.
Same as: FRENCH 279

FRENCH 380. Critical Poetics. 3-5 Units.
After recent critiques of "close" methods of literary criticism and reading practices, what claims can we make today about the literary object? Can we ever return to broad and general categories of poetics that were formulated by the major syncretic works of twentieth-century literary criticism by figures such as Auerbach, Curtius, and Frye? This course will discuss recent debates around literariness and concepts of poetics that move past a hermeneutic of suspicion and embrace the productive energies of form and affect produced by literary texts, including new methods of data analysis and concepts of genres in historical time.

FRENCH 386. Poetry and Philosophy. 2-5 Units.
When and why do philosophers resort to poetry?nWhat is the relationship between poetic metaphor and philosophical argumentation?nWhy is the poetic often associated with empathy - recently touted as an essential human characteristic - whereas philosophy is considered more objective? nWhat is poetry's role in the pursuit of wisdom or the good life?nAuthors include Nietzsche, Heidegger, Bataille, Agamben, Ricoeur, Derrida, Irigaray, Wyschogrod, and Cavarero.
Same as: FRENCH 286, ITALIAN 286, ITALIAN 386

FRENCH 387. Sex, Gender, and Violence: French Women Writers Today. 1-5 Unit.
Long before the 2017 #Metoo campaign, French women writers have explored through powerful fictions and autobiographies the different shades of economic, social, psychological, physical, or sexual violence that is exerted against, but also by and between, women. How does literature - the power of words - address, deconstruct or comfort power dynamics (during sex and between the sexes) that are usually silenced, taboo or unspeakable? Themes explored: sex and gender, sex and power, rape culture, sexual and moral taboos (incest, abortion, pornography, infanticide, lesbianism), the body as social stigma or source of meaning. Special attention given to narrative and descriptive strategies designed to avert, expose, deconstruct or account for specifically feminine experiences (rape, orgasm, pregnancy). Authors include Marie Darrieusecq, Christine Angot, Annie Ernaux, Marie NDiaye, Virginie Despentes, Leila Slimani, Ivan Jablonka along with feminist theory. Taught in French.
Same as: FEMGEN 187X, FEMGEN 287X, FEMGEN 387X, FRENCH 187, FRENCH 287

FRENCH 390. Magic, Science, and Religion. 3-5 Units.
With the rise of the human sciences in the later nineteenth century, "magic," "science," and "religion" came to be understood as entirely separate domains, with different versions of truth and divergent methods of inquiry. But how has this division broken down in the past 150 years? How is it, for example, that other people's religion is "merely magic"? How does science still draw on religious categories, in particular to claim the universe is meaningful? How have new forms of magic shaped new age, global culture? We will examine these questions by pairing literary texts with readings from anthropology, history of science, religious studies, and cultural criticism. This course is taught in English.
Same as: COMPLIT 290A, COMPLIT 390A, FRENCH 290, ITALIAN 290, ITALIAN 390

FRENCH 392. Romancing the Stone: Crystal Media from Babylon to Superman. 3-5 Units.
This seminar investigates the importance of rock crystal and its imitations as material, medium, and metaphor from antiquity until modernity. The objects examined include rings, reliquaries, lenses, and the Crystal Aesthetic in early twentieth-century architecture and even Superman's Fortress of Solitude. The texts range from Pliny to Arabic Poetry to Romance Literature to modern manifestos.
Same as: ARTHIST 292, ARTHIST 492, FRENCH 292

FRENCH 395. Philosophical Reading Group. 1 Unit.
Discussion of one contemporary or historical text from the Western philosophical tradition per quarter in a group of faculty and graduate students. For admission of new participants, a conversation with Professor Robert Harrison is required. May be repeated for credit. Taught in English.
Same as: COMPLIT 359A, ITALIAN 395

FRENCH 398. Intensive Reading in French/Italian. 10 Units.
Enrollment is limited to French/Italian Ph.D. students. Course is designed for French/Italian Ph.D. students to prepare for department milestone exams.
Same as: ITALIAN 398

FRENCH 399. Individual Work. 1-12 Unit.
For students in French working on special projects or engaged in predissertation research.

FRENCH 801. TGR Project. 0 Units.
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FRENCH 802. TGR Dissertation. 0 Units.
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Italian Courses

ITALIAN 75N. Narrative Medicine and Near-Death Experiences. 3 Units.
Even if many of us don't fully believe in an afterlife, we remain fascinated by visions of it. This course focuses on Near-Death Experiences and the stories around them, investigating them from the many perspectives pertinent to the growing field of narrative medicine: medical, neurological, cognitive, psychological, sociological, literary, and filmic. The goal is not to understand whether the stories are veridical but what they do for us, as individuals, and as a culture, and in particular how they seek to reshape the patient-doctor relationship. Materials will span the 20th century and come into the present. Taught in English.
Same as: FRENCH 75N

ITALIAN 101. Italy: The Good, the Bad and the Ugly. 3 Units.
Renowned for its rich cultural tradition, Italy is also one of the most problematic nations in Europe. This course explores the contradictions at the heart of Italy by examining how art and literature provide a unique perspective onto modern Italian history. We will focus on key phenomena that contribute both positively and negatively to the complex "spirit" of Italy, such as the presence of the past, political realism and idealism, revolution, corruption, decadence, war, immigration, and crises of all kinds. Through the study of historical and literary texts, films, and news media, the course seeks to understand Italy's current place in Europe and its future trajectory by looking to its past as a point of comparison. Taught in English.

ITALIAN 115. Virtual Italy: Methods for Historical Data Science. 4-5 Units.
Classical Italy attracted thousands of travelers throughout the 1700s. Referring to their journey as the "Grand Tour," travelers pursued intellectual passions, promoted careers, and satisfied wanderlust, all while collecting antiquities to fill museums and estates back home. What can computational approaches tell us about who traveled, where and why? We will read travel accounts; experiment with parsing; and visualize historical data. Final projects to form credited contributions to the Grand Tour Project, a cutting-edge digital platform. No prior programming experience necessary.
Same as: CLASSICS 115, ENGLISH 115, HISTORY 238C

ITALIAN 127. Inventing Italian Literature: Dante, Boccaccio, Petrarca. 4 Units.
This course examines the origins of Italian literature in the late Middle Ages. We will read selections from Dante's Vita Nuova and Inferno; Petrarca's Canzoniere; and Boccaccio's Decameron. Taught in Italian.
Recommended: ITALLANG 22A or equivalent level of proficiency.

ITALIAN 128. The Italian Renaissance and the Path to Modernity. 4 Units.
Are humans free and self-determining agents possessed of infinite potential or limited beings subject to the vagaries of fortune? What is the relationship between love and beauty? Is it better for a leader to inspire love or fear? These are the kind of questions Renaissance thinkers asked and we will pursue in our study of the literature, art, and history of Italy from the fifteenth through the eighteenth centuries. In this course, you will become acquainted with major writers, thinkers, and artists, and key ideas, innovations, and movements. Examining masterpieces of literature (poetry and prose), art (painting, drawing and sculpture), theater and music, including works of the High Renaissance, we will explore such topics as love, power, faith, reason, and contingency in human affairs. With the themes of discovery, invention and adaption as our guide, we will reflect on perennial tensions between imitation and inspiration, tradition and innovation, and conformity and transgression in Renaissance and early modern Italy. Taught in Italian. Recommended: ITALLANG 22A or equivalent (2 years of Italian). This course fulfills the Writing in the Major (WIM) requirement.

ITALIAN 129. 19th and 20th Century Literature and Culture: Constructing and Re-Constructing Italy. 4 Units.
This course will explore 19th and 20th century Italian history through a literary and cinematic lens. The Italian Risorgimento and unification in the mid-19th century opened a series of debates that resonated throughout the 20th century and its political and social turns: by looking at several works of literature, essays, films, and visual art, students will reflect on the cultural, historical, political, and social dynamics that shaped the Belpaese throughout the past two centuries. The construction of modern Italy will be analyzed as both an ideological and aesthetic process, to provide students with a grasp of how Italian-ness has been shaped from the 19th century to today. This course is both an introduction to modern Italian literature and culture, and a continuation of the study of the Italian language. All class discussion, reading, and writing will be in Italian. Recommended: ITALLANG 22A or equivalent.

ITALIAN 138. The Politics of Love in 20th-Century Italy. 3-5 Units.
Italy is often associated with love and passion, both in its literary and cinematic representations as well as in the tourism industry, promising visitors unprecedented opportunities for romance and excitement.nHow has this conception of Italy emerged and developed? Does it still hold us captive today? How has the idea of a "romantic Italy" shifted over the years, as Italian society itself has undergone significant transformations? nWe will explore these questions through literature (both poetry and prose), philosophy, history, and film. Topics will include sexuality, love, gender, marriage, and divorce, and the way they have been debated in modern Italian society and politics. The course will be taught in English and the materials will be discussed in translation.

ITALIAN 142. The Good Life: Renaissance Perspectives on Perennial Questions. 3-5 Units.
What constitutes a good life? What conditions and relationships enable one to live well, and what attitudes and activities, systems and structures bring them about or make them possible? Renaissance men and women asked such questions, turning to study of the classical past and to close observation of their contemporary world in search of satisfying answers. This course will explore their reflections and investigations, experimentations and creations, examining seminal conceptions and ideals of the Renaissance through their expression in text and image. Topics will include beauty and love; virtue and honor; excellence and exceptionalism; freedom and justice; power and authority; leadership and governance; wealth and prosperity; work and service; education and religion; health and medicine; family, friendship and community. Focusing on Italian contexts with reference to broader European and global trends, discussion and analysis will center on discrepancies between the real and the ideal in Renaissance society and culture. Taught in English. NOTE: New Italian Studies Assistant Professor Sarah Prodan will teach this course.

ITALIAN 148. Cinema and the Real: Italian Neo-Realism and the French New Wave. 3-5 Units.
Between the 1940s and 1960s, in Italy and France, a handful of movie directors revolutionized the art of cinema. In the wake of World War II they entirely re-defined the aesthetics of the 7th art in films such as "Bicycle Thieves," "400 Blows," "Rome Open City," and "Breathless." These works shared an aesthetic and a philosophy of "the real" - they eschewed big studios and sets in favor of natural light, on-location shooting, and non-professional actors to capture the present moment. This survey course will explore how the dialogue between Italian neo-realism and the French New Wave has yielded some of the most revolutionary filmic masterpieces of both traditions, while raising theoretical and philosophical questions about form, time, space, fiction, representation, and reality. Films: Roberto Rossellini, Vittorio de Sica, Luchino Visconti, Federico Fellini, François Truffaut, Jean-Luc Godard, Alain Resnais and Agnès Varda.
Same as: FRENCH 148, FRENCH 248, ITALIAN 248

ITALIAN 149. Love at First Sight: Visual Desire, Attraction, and the Pleasures of Art. 3-5 Units.
Why do dating sites rely on photographs? Why do we believe that love is above all a visual force? How is pleasure, even erotic pleasure, achieved through looking? While the psychology of impressions offers some answers, this course uncovers the ways poets, songwriters, and especially artists have explored myths and promoted ideas about the coupling of love and seeing. Week by week, we will be reflecting on love as political critique, social disruption, and magical force. And we will do so by examining some of the most iconic works of art, from Dante's writings on lovesickness to Caravaggio's Narcissus, studying the ways that objects have shifted from keepsakes to targets of our cares. While exploring the visual roots and evolutions of what has become one of life's fundamental drives, this course offers a passionate survey of European art from Giotto's kiss to Fragonard's swing that elicits stimulating questions about the sensorial nature of desire and the human struggle to control emotions.
Same as: ARTHIST 119, ARTHIST 319, FRENCH 149, FRENCH 349, ITALIAN 349

ITALIAN 152. Boccaccio's Decameron: The Ethics of Storytelling. 3-5 Units.
This course involves an in-depth study of Boccaccio's Decameron in the context of medieval theories of poetry and interpretation. The goal is to understand more fully the relationship between literature and lived experience implied by Boccaccio's fictions. We will address key critical issues and theoretical approaches related to the text. Taught in English translation, there will be an optional supplementary Italian discussion section during weeks 2-9.
Same as: ITALIAN 352

ITALIAN 154. Film & Philosophy. 3 Units.
Issues of authenticity, morality, personal identity, and the value of truth explored through film; philosophical investigation of the filmic medium itself. Screenings to include Blade Runner (Scott), Do The Right Thing (Lee), The Seventh Seal (Bergman), Fight Club (Fincher), La Jetée (Marker), Memento (Nolan), and Eternal Sunshine of the Spotless Mind (Kaufman). Taught in English.
Same as: COMPLIT 154A, ENGLISH 154F, FRENCH 154, PHIL 193C, PHIL 293C

ITALIAN 154E. Film & Philosophy CE. 3 Units.
Issues of authenticity, morality, personal identity, and the value of truth explored through film; philosophical investigation of the filmic medium itself. Screenings to include Blade Runner (Scott), Do The Right Thing (Lee), The Seventh Seal (Bergman), Fight Club (Fincher), La Jetée (Marker), Memento (Nolan), and Eternal Sunshine of the Spotless Mind (Kaufman). Taught in English. Satisfies the WAY CE.
Same as: FRENCH 154E, PHIL 193E, PHIL 293E

ITALIAN 155. The Mafia in Society, Film, and Fiction. 4 Units.
The mafia has become a global problem through its infiltration of international business, and its model of organized crime has spread all over the world from its origins in Sicily. At the same time, film and fiction remain fascinated by a romantic, heroic vision of the mafia. Compares both Italian and American fantasies of the Mafia to its history and impact on Italian and global culture. Taught in English.
Same as: COMPLIT 155A

ITALIAN 175. CAPITALS: How Cities Shape Cultures, States, and People. 3-5 Units.
This course takes students on a trip to major capital cities, at different moments in time: Renaissance Florence, Golden Age Madrid, Colonial Mexico City, Enlightenment and Romantic Paris, Existential and Revolutionary St. Petersburg, Roaring Berlin, Modernist Vienna, and bustling Buenos Aires. While exploring each place in a particular historical moment, we will also consider the relations between culture, power, and social life. How does the cultural life of a country intersect with the political activity of a capital? How do large cities shape our everyday experience, our aesthetic preferences, and our sense of history? Why do some cities become cultural capitals? Primary materials for this course will consist of literary, visual, sociological, and historical documents (in translation); authors we will read include Boccaccio, Dante, Sor Juana, Montesquieu, Baudelaire, Gogol, Irmgard Keun, Freud, and Borges. Note: To be eligible for WAYS credit, you must take the course for a Letter Grade.
Same as: COMPLIT 100, DLCL 100, FRENCH 175, GERMAN 175, HISTORY 206E, ILAC 175, URBANST 153

ITALIAN 181. Philosophy and Literature. 3-5 Units.
What, if anything, does reading literature do for our lives? What can literature offer that other forms of writing cannot? Can fictions teach us anything? Can they make people more moral? Why do we take pleasure in tragic stories? This course introduces students to major problems at the intersection of philosophy and literature. It addresses key questions about the value of literature, philosophical puzzles about the nature of fiction and literary language, and ways that philosophy and literature interact. Readings span literature, film, and philosophical theories of art. Authors may include Sophocles, Dickinson, Toni Morrison, Proust, Woolf, Walton, Nietzsche, and Sartre. Students master close reading techniques and philosophical analysis, and write papers combining the two. This is the required gateway course for the Philosophy and Literature major tracks. Majors should register in their home department.
Same as: CLASSICS 42, COMPLIT 181, ENGLISH 81, FRENCH 181, GERMAN 181, ILAC 181, PHIL 81, SLAVIC 181

ITALIAN 190. The Celluloid Gaze: Gender, Identity and Sexuality in Cinema. 4 Units.
This course examines femininity and gender representation in cinema. The rich tradition of film theory, from the key semiotic approaches of the 1970s-1990s until the current and equally influential methodologies, will provide the framework for an informed analysis of the films. Topics: the question of the gaze, the power of looking, of being looked at, and of looking back; women as disruption in the patriarchal/cultural text; maternity both as a sign of normalcy as well as a locus for obsession and manic concerns; the woman¿s body as a place of illness and sexuality. Our main object of investigation will be Italian cinema but we will also analyze a few Hollywood films which have inspired much feminist debate; we will focus as well on recent cinematic re-conceptualizations of gender and sexuality. Students will become familiar with key theoretical concepts such as the gaze, desire, intersectionality, masochism and masquerade, as well as modes of feminist resistance to traditional gender hierarchies. Taught in English.

ITALIAN 199. Individual Work. 1-12 Unit.
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ITALIAN 200. Italian Modernities: Lecture Series and Course. 1-2 Unit.
Over the course of the whole year, we will invite 6 speakers to present work on modern Italian culture and literature; these sessions will be supplemented by seminar meetings in which we discuss the work of our guests and prepare writing projects that relate to them. May be repeated for credit.
Same as: ITALIAN 300

ITALIAN 206. Dante and the Romantics. 5 Units.
Dante Alighieri has profoundly influenced literary tradition. The Romantic poets admired Dante¿s capacity to find spiritual redemption in moments of personal crisis, melancholy, and alienation. They drew inspiration from his protomodern blend of lyric and epic, of romance and dream vision, and of allegorical pilgrimage and spiritual autobiography. Prophetic poets like P.B. Shelley and John Keats turned to Dante in their dying attempts at epic. William Blake illustrated The Divine Comedy and adapted the Dantean style of visionary world-making in his own illuminated poetry. T.S. Eliot (a belated Romantic in poems like ¿The Love Song of J. Alfred Prufrock¿) used Dante¿s technique of the dramatic monologue as a vehicle to explore character. This course will focus on The Inferno and its lasting legacy on the poetry of modernity.
Same as: ENGLISH 206

ITALIAN 214. Pirandello, Sartre, and Beckett. 3-5 Units.
In this course we will read the main novels and plays of Pirandello, Sartre, and Beckett, with special emphasis on the existentialist themes of their work. Readings include The Late Mattia Pascal, Six Characters in Search of an Author, Henry IV; Nausea, No Exit, "Existentialism is a Humanism"; Molloy, Endgame, Krapp's Last Tape, Waiting for Godot. Taught in English.
Same as: COMPLIT 281E, COMPLIT 381E, FRENCH 214, FRENCH 314, ITALIAN 314

ITALIAN 216. Michelangelo Architect. 5 Units.
The architecture of Michelangelo Buonarroti (1475-1564), "Father and Master of all the Arts," redefined the possibilities of architectural expression for generations. This course considers his civic, ecclesiastic, and palatial works. It proceeds from his beginnings in Medicean Florence to his fulfillment in Papal Rome. It examines the anxiety of influence following his death and his enduring legacy in modernism. Topics include: Michelangelo's debt to Classical and Early Renaissance prototypes; his transformation of the canon; the iterative sketch as disegno; architecture and the body; the queering of architectural language; sketch, scale, and materiality; Modernism and Michelangelo. The historiography of Michelangelo has predominantly favored studies in painting and sculpture. Our focus on architecture encourages students to test new ideas and alternative approaches to his work.
Same as: ARTHIST 416A, CEE 33A

ITALIAN 228. Science, technology and society and the humanities in the face of the looming disaster. 3-5 Units.
How STS and the Humanities can together help think out the looming catastrophes that put the future of humankind in jeopardy.
Same as: FRENCH 228, POLISCI 233F

ITALIAN 232B. Heretics, Prostitutes and Merchants: The Venetian Empire. 5 Units.
Between 1200-1600, Venice created a powerful empire at the boundary between East and West that controlled much of the Mediterranean, with a merchant society that allowed social groups, religions, and ethnicities to coexist. Topics include the features of Venetian society, the relationship between center and periphery, order and disorder, orthodoxy and heresy, the role of politics, art, and culture in the Venetian Renaissance, and the empire's decline as a political power and reinvention as a tourist site and living museum.
Same as: HISTORY 232B

ITALIAN 233. When Worlds Collide: The Trial of Galileo. 4-5 Units.
In 1633, the Italian mathematician Galileo was tried and condemned for advocating that the sun, not the earth, was the center of the cosmos. The Catholic Church did not formally admit that Galileo was right until 1992. Examines the many factors that led to the trial of Galileo and looks at multiple perspectives on this signal event in the history of science and religion. Considers the nature and definition of intellectual heresy in the sixteenth and early seventeenth centuries, and examines the writings of Galileo's infamous predecessor Giordano Bruno (burned at the stake in 1600). Looks closely at documents surrounding the trial and related literature on Renaissance and Reformation Italy in order to understand the perspectives of various participants in this famous event. Focal point of seminar involves the examination of the many different histories that can be produced from Galileo's trial. What, in the end, were the crimes of Galileo?.
Same as: HISTORY 235D, HISTORY 335D, ITALIAN 333

ITALIAN 237. Michelangelo: Gateway to Early Modern Italy. 3-5 Units.
Revered as one of the greatest artists in history, Michelangelo Buonarroti's extraordinarily long and prodigious existence (1475-1564) spanned the Renaissance and the Reformation in Italy. The celebrity artist left behind not only sculptures, paintings, drawings, and architectural designs, but also an abundantly rich and heterogeneous collection of artifacts, including direct and indirect correspondence (approximately 1400 letters), an eclectic assortment of personal notes, documents and contracts, and 302 poems and 41 poetic fragments. This course will explore the life and production of Michelangelo in relation to those of his contemporaries. Using the biography of the artist as a thread, this interdisciplinary course will draw on a range of critical methodologies and approaches to investigate the civilization and culture of Italy in the fifteenth and sixteenth centuries. Course themes will follow key tensions that defined the period and that found expression in Michelangelo: physical-spiritual, classical-Christian, tradition-innovation, individual-collective.
Same as: ARTHIST 218A, ARTHIST 418A, ITALIAN 337

ITALIAN 240. Great Minds of the Italian Renaissance and their World. 3-5 Units.
What enabled Leonardo da Vinci to excel in over a dozen fields from painting to engineering and to anticipate flight four hundred years before the first aircraft took off? How did Michelangelo paint the Sistine Chapel Ceiling? What forces and insights led Machiavelli to write "The Prince"? An historical moment and a cultural era, the Italian Renaissance famously saw monumental achievements in literature, art, and architecture, influential developments in science and technology, and the flourishing of multi-talented individuals who contributed profoundly, expertly, and simultaneously to very different fields. In this course on the great thinkers, writers, and achievers of the Italian Renaissance, we will study these ¿universal geniuses¿ and their world. Investigating the writings, thought, and lives of such figures as Leonardo da Vinci, Niccolò Machiavelli, and Galileo Galilei, we will interrogate historical and contemporary ideas concerning genius, creativity, and the phenomenon of ¿Renaissance man¿ known as polymathy. Taught in English.
Same as: ITALIAN 340

ITALIAN 248. Cinema and the Real: Italian Neo-Realism and the French New Wave. 3-5 Units.
Between the 1940s and 1960s, in Italy and France, a handful of movie directors revolutionized the art of cinema. In the wake of World War II they entirely re-defined the aesthetics of the 7th art in films such as "Bicycle Thieves," "400 Blows," "Rome Open City," and "Breathless." These works shared an aesthetic and a philosophy of "the real" - they eschewed big studios and sets in favor of natural light, on-location shooting, and non-professional actors to capture the present moment. This survey course will explore how the dialogue between Italian neo-realism and the French New Wave has yielded some of the most revolutionary filmic masterpieces of both traditions, while raising theoretical and philosophical questions about form, time, space, fiction, representation, and reality. Films: Roberto Rossellini, Vittorio de Sica, Luchino Visconti, Federico Fellini, François Truffaut, Jean-Luc Godard, Alain Resnais and Agnès Varda.
Same as: FRENCH 148, FRENCH 248, ITALIAN 148

ITALIAN 257. Simone Weil, Simone de Beauvoir, Hannah Arendt, and Adriana Cavarero. 3-5 Units.
What does it mean to say the personal is the political, or, in the case of Arendt, that the personal is not political, especially if you are a woman? This course explores how Weil, De Beauvoir, Arendt, and Caverero contend with the question of personhood, in its variegated social, political, ethical, and gendered dimensions. Particular attention will be given to a philosophy of social change and personal transformation, and to the enduring relevance of these women's thought to issues of our day. Texts include selections from "Gravity and Grace," "The Second Sex," "The Ethics of Ambiguity," "The Human Condition," "Between Past and Future," "Stately Bodies," and "Relating Narratives.".
Same as: COMPLIT 257, COMPLIT 357A, FEMGEN 257X, FEMGEN 357X, FRENCH 257, FRENCH 357, ITALIAN 357

ITALIAN 261. War and Peace: Writings by and about Veterans in the 20th and 21st Centuries. 2-5 Units.
Since the aftermath of World War One, and with increasing urgency in contemporary America, stories about and by veterans are assigned a double role: that of exposing the horror of war yet also defending the possibility of a just war, and that of healing both veterans themselves and the society they return to. Key questions for this course are: Given the current practice of using writing and the hero¿s journey as a model for healing veterans and making their voices heard in our culture, can we look back to post-World-War-One culture and see if writing fulfills a similar function? And given how many post-World-War-One veterans became famous writers, how do we assess the interplay between literature, poetry, memoir, journalism, personal letters, photo accounts? Is there a connection between artistic innovation and the capacity to heal?.
Same as: FRENCH 261, FRENCH 361, ITALIAN 361

ITALIAN 262. Symbolism in Literature and the Arts. 3-5 Units.
This course will deal with the some of the 19th and 20th century authors and artists associated with Symbolism. We will focus on some key theoretical essays about the symbol, as well as on symbolist poetry, novels, visual arts, cinema, and music. In reading authors such as Coleridge, Blake, Poe, Baudelaire, Rimbaud, Verlaine, Mallarmé, Valéry, Pascoli, Campana, d¿Annunzio, and Savinio, we will explore the nature and uses of the symbol in art.
Same as: FRENCH 262, FRENCH 362, ITALIAN 362

ITALIAN 265. Word and Image. 3-5 Units.
What impact do images have on our reading of a text? How do words influence our understanding of images or our reading of pictures? What makes a visual interpretation of written words or a verbal rendering of an image successful? These questions will guide our investigation of the manifold connections between words and images in this course on intermediality and the relations and interrelations between writing and art from classical antiquity to the present. Readings and discussions will include such topics as the life and afterlife in word and image of Ovid's "Metamorphoses," Dante's "Divine Comedy," Ludovico Ariosto's "Orlando Furioso," and John Milton's "Paradise Lost;" the writings and creative production of poet-artists Michelangelo Buonarroti, William Blake, and Dante Gabriel Rossetti; innovations in and correspondences between literature and art in the modern period, from symbolism in the nineteenth century through the flourishing of European avant-garde movements in the twentieth century.
Same as: ARTHIST 265A, ARTHIST 465A, COMPLIT 225, ITALIAN 365

ITALIAN 272. Body Doubles: From the Fantastic Short Story to Science-Fiction. 2-5 Units.
How do we imagine our bodies through language, at times almost completely refashioning a physical double, be it idealized or abject? How do such body doubles intersect with our sense of self, defining or redefining sexual identity, spiritual aspirations, illness and recovery, and the senses themselves, as our window into reality? This course focuses on short stories from the late 19th- and early 20th-century fantastic genre, and science fiction stories from the following turn of the century, 100 years later: in these revealing instances, body doubles often seem to acquire a will of their own, overwhelming normal physical identity.
Same as: FRENCH 272, FRENCH 372, ITALIAN 372

ITALIAN 286. Poetry and Philosophy. 2-5 Units.
When and why do philosophers resort to poetry?nWhat is the relationship between poetic metaphor and philosophical argumentation?nWhy is the poetic often associated with empathy - recently touted as an essential human characteristic - whereas philosophy is considered more objective? nWhat is poetry's role in the pursuit of wisdom or the good life?nAuthors include Nietzsche, Heidegger, Bataille, Agamben, Ricoeur, Derrida, Irigaray, Wyschogrod, and Cavarero.
Same as: FRENCH 286, FRENCH 386, ITALIAN 386

ITALIAN 290. Magic, Science, and Religion. 3-5 Units.
With the rise of the human sciences in the later nineteenth century, "magic," "science," and "religion" came to be understood as entirely separate domains, with different versions of truth and divergent methods of inquiry. But how has this division broken down in the past 150 years? How is it, for example, that other people's religion is "merely magic"? How does science still draw on religious categories, in particular to claim the universe is meaningful? How have new forms of magic shaped new age, global culture? We will examine these questions by pairing literary texts with readings from anthropology, history of science, religious studies, and cultural criticism. This course is taught in English.
Same as: COMPLIT 290A, COMPLIT 390A, FRENCH 290, FRENCH 390, ITALIAN 390

ITALIAN 300. Italian Modernities: Lecture Series and Course. 1-2 Unit.
Over the course of the whole year, we will invite 6 speakers to present work on modern Italian culture and literature; these sessions will be supplemented by seminar meetings in which we discuss the work of our guests and prepare writing projects that relate to them. May be repeated for credit.
Same as: ITALIAN 200

ITALIAN 312. Feminist Activists. 3-5 Units.
Is it true that European, and Italian, feminism is more cultural and artistic, whereas American feminists foreground political and economic issues? How can we understand the connections and disjunctions between activism and literature in both contexts, and in the history of feminism from the early twentieth centuty to the present? How do these different strands of feminism come together today in global thinking? We will read both feminist fiction and theory to discuss these questions; authors include Aleramo, Woolf, Banti, McCarthy, Bulter, and Cavarero.

ITALIAN 314. Pirandello, Sartre, and Beckett. 3-5 Units.
In this course we will read the main novels and plays of Pirandello, Sartre, and Beckett, with special emphasis on the existentialist themes of their work. Readings include The Late Mattia Pascal, Six Characters in Search of an Author, Henry IV; Nausea, No Exit, "Existentialism is a Humanism"; Molloy, Endgame, Krapp's Last Tape, Waiting for Godot. Taught in English.
Same as: COMPLIT 281E, COMPLIT 381E, FRENCH 214, FRENCH 314, ITALIAN 214

ITALIAN 321. Giambattista Vico. 1-5 Unit.
An intensive reading of Vico's New Science. Emphasis will be on Vico's philosophy of history and theories of poetic wisdom, myth, and language. Vico will be put in dialogue with René Descartes, Rousseau, Auguste Compte, Claude Lévi Strauss, and Paul Feyerabend, whose ideas about myth and science converge in striking ways with Vico's.
Same as: FRENCH 321

ITALIAN 325. Petrarch & Petrarchism: Fragments of the Self. 3-5 Units.
In this course we will examine Francis Petrarch's book of Italian lyric poems, Rerum vulgarium fragmenta, and its reception in early modern France, England, and Spain. Readings from Petrarch's epistolary and ethical writings will contextualize historically and intellectually the aesthetics and ethics of the fragment in his poetry. With this foundation, we will investigate the long-lasting impact of Petrarch's work on Renaissance poetry and humanism, with attention to both the literary and the material aspects of its reception. Taught in English.

ITALIAN 327. Giambattista Vico & Claude Lévi-Strauss. 3-5 Units.
An intensive reading of Vico's New Science with special emphasis on Vico's theory of anthropogenesis, myth, and the poetic origins of human consciousness. Vico's thought will be placed in relation to Lévi-Strauss's theories of myth and so-called "primitive thought". Readings include Vico's New Science and Lévi-Strauss's "The Structural Study of Myth", and the first chapters of his book The Savage Mind. Taught in English.
Same as: FRENCH 230, FRENCH 330

ITALIAN 332B. Heretics, Prostitutes and Merchants: The Venetian Empire. 4-5 Units.
Between 1200-1600, Venice created a powerful empire at the boundary between East and West that controlled much of the Mediterranean, with a merchant society that allowed social groups, religions, and ethnicities to coexist. Topics include the features of Venetian society, the relationship between center and periphery, order and disorder, orthodoxy and heresy, the role of politics, art, and culture in the Venetian Renaissance, and the empire's decline as a political power and reinvention as a tourist site and living museum.
Same as: HISTORY 332B

ITALIAN 333. When Worlds Collide: The Trial of Galileo. 4-5 Units.
In 1633, the Italian mathematician Galileo was tried and condemned for advocating that the sun, not the earth, was the center of the cosmos. The Catholic Church did not formally admit that Galileo was right until 1992. Examines the many factors that led to the trial of Galileo and looks at multiple perspectives on this signal event in the history of science and religion. Considers the nature and definition of intellectual heresy in the sixteenth and early seventeenth centuries, and examines the writings of Galileo's infamous predecessor Giordano Bruno (burned at the stake in 1600). Looks closely at documents surrounding the trial and related literature on Renaissance and Reformation Italy in order to understand the perspectives of various participants in this famous event. Focal point of seminar involves the examination of the many different histories that can be produced from Galileo's trial. What, in the end, were the crimes of Galileo?.
Same as: HISTORY 235D, HISTORY 335D, ITALIAN 233

ITALIAN 337. Michelangelo: Gateway to Early Modern Italy. 3-5 Units.
Revered as one of the greatest artists in history, Michelangelo Buonarroti's extraordinarily long and prodigious existence (1475-1564) spanned the Renaissance and the Reformation in Italy. The celebrity artist left behind not only sculptures, paintings, drawings, and architectural designs, but also an abundantly rich and heterogeneous collection of artifacts, including direct and indirect correspondence (approximately 1400 letters), an eclectic assortment of personal notes, documents and contracts, and 302 poems and 41 poetic fragments. This course will explore the life and production of Michelangelo in relation to those of his contemporaries. Using the biography of the artist as a thread, this interdisciplinary course will draw on a range of critical methodologies and approaches to investigate the civilization and culture of Italy in the fifteenth and sixteenth centuries. Course themes will follow key tensions that defined the period and that found expression in Michelangelo: physical-spiritual, classical-Christian, tradition-innovation, individual-collective.
Same as: ARTHIST 218A, ARTHIST 418A, ITALIAN 237

ITALIAN 340. Great Minds of the Italian Renaissance and their World. 3-5 Units.
What enabled Leonardo da Vinci to excel in over a dozen fields from painting to engineering and to anticipate flight four hundred years before the first aircraft took off? How did Michelangelo paint the Sistine Chapel Ceiling? What forces and insights led Machiavelli to write "The Prince"? An historical moment and a cultural era, the Italian Renaissance famously saw monumental achievements in literature, art, and architecture, influential developments in science and technology, and the flourishing of multi-talented individuals who contributed profoundly, expertly, and simultaneously to very different fields. In this course on the great thinkers, writers, and achievers of the Italian Renaissance, we will study these ¿universal geniuses¿ and their world. Investigating the writings, thought, and lives of such figures as Leonardo da Vinci, Niccolò Machiavelli, and Galileo Galilei, we will interrogate historical and contemporary ideas concerning genius, creativity, and the phenomenon of ¿Renaissance man¿ known as polymathy. Taught in English.
Same as: ITALIAN 240

ITALIAN 346. Body over Mind. 3-5 Units.
How does modern fiction, aided by modern philosophy, give the lie to Descartes' famous "I think therefore I am"? And how does writing convey the desire for a different, perhaps stronger, integration of mind and body? Does the body speak a particular truth that we must learn to hear, that the mind is not always connected to? How do modern metaphors for the mind-body connection shape our experience? These questions will be explored via the works of major French and Italian writers and thinkers, including Pirandello, Calvino, Camus, Houellebecq, Sartre, and Agamben.
Same as: FRENCH 246, FRENCH 346

ITALIAN 349. Love at First Sight: Visual Desire, Attraction, and the Pleasures of Art. 3-5 Units.
Why do dating sites rely on photographs? Why do we believe that love is above all a visual force? How is pleasure, even erotic pleasure, achieved through looking? While the psychology of impressions offers some answers, this course uncovers the ways poets, songwriters, and especially artists have explored myths and promoted ideas about the coupling of love and seeing. Week by week, we will be reflecting on love as political critique, social disruption, and magical force. And we will do so by examining some of the most iconic works of art, from Dante's writings on lovesickness to Caravaggio's Narcissus, studying the ways that objects have shifted from keepsakes to targets of our cares. While exploring the visual roots and evolutions of what has become one of life's fundamental drives, this course offers a passionate survey of European art from Giotto's kiss to Fragonard's swing that elicits stimulating questions about the sensorial nature of desire and the human struggle to control emotions.
Same as: ARTHIST 119, ARTHIST 319, FRENCH 149, FRENCH 349, ITALIAN 149

ITALIAN 352. Boccaccio's Decameron: The Ethics of Storytelling. 3-5 Units.
This course involves an in-depth study of Boccaccio's Decameron in the context of medieval theories of poetry and interpretation. The goal is to understand more fully the relationship between literature and lived experience implied by Boccaccio's fictions. We will address key critical issues and theoretical approaches related to the text. Taught in English translation, there will be an optional supplementary Italian discussion section during weeks 2-9.
Same as: ITALIAN 152

ITALIAN 357. Simone Weil, Simone de Beauvoir, Hannah Arendt, and Adriana Cavarero. 3-5 Units.
What does it mean to say the personal is the political, or, in the case of Arendt, that the personal is not political, especially if you are a woman? This course explores how Weil, De Beauvoir, Arendt, and Caverero contend with the question of personhood, in its variegated social, political, ethical, and gendered dimensions. Particular attention will be given to a philosophy of social change and personal transformation, and to the enduring relevance of these women's thought to issues of our day. Texts include selections from "Gravity and Grace," "The Second Sex," "The Ethics of Ambiguity," "The Human Condition," "Between Past and Future," "Stately Bodies," and "Relating Narratives.".
Same as: COMPLIT 257, COMPLIT 357A, FEMGEN 257X, FEMGEN 357X, FRENCH 257, FRENCH 357, ITALIAN 257

ITALIAN 361. War and Peace: Writings by and about Veterans in the 20th and 21st Centuries. 2-5 Units.
Since the aftermath of World War One, and with increasing urgency in contemporary America, stories about and by veterans are assigned a double role: that of exposing the horror of war yet also defending the possibility of a just war, and that of healing both veterans themselves and the society they return to. Key questions for this course are: Given the current practice of using writing and the hero¿s journey as a model for healing veterans and making their voices heard in our culture, can we look back to post-World-War-One culture and see if writing fulfills a similar function? And given how many post-World-War-One veterans became famous writers, how do we assess the interplay between literature, poetry, memoir, journalism, personal letters, photo accounts? Is there a connection between artistic innovation and the capacity to heal?.
Same as: FRENCH 261, FRENCH 361, ITALIAN 261

ITALIAN 362. Symbolism in Literature and the Arts. 3-5 Units.
This course will deal with the some of the 19th and 20th century authors and artists associated with Symbolism. We will focus on some key theoretical essays about the symbol, as well as on symbolist poetry, novels, visual arts, cinema, and music. In reading authors such as Coleridge, Blake, Poe, Baudelaire, Rimbaud, Verlaine, Mallarmé, Valéry, Pascoli, Campana, d¿Annunzio, and Savinio, we will explore the nature and uses of the symbol in art.
Same as: FRENCH 262, FRENCH 362, ITALIAN 262

ITALIAN 365. Word and Image. 3-5 Units.
What impact do images have on our reading of a text? How do words influence our understanding of images or our reading of pictures? What makes a visual interpretation of written words or a verbal rendering of an image successful? These questions will guide our investigation of the manifold connections between words and images in this course on intermediality and the relations and interrelations between writing and art from classical antiquity to the present. Readings and discussions will include such topics as the life and afterlife in word and image of Ovid's "Metamorphoses," Dante's "Divine Comedy," Ludovico Ariosto's "Orlando Furioso," and John Milton's "Paradise Lost;" the writings and creative production of poet-artists Michelangelo Buonarroti, William Blake, and Dante Gabriel Rossetti; innovations in and correspondences between literature and art in the modern period, from symbolism in the nineteenth century through the flourishing of European avant-garde movements in the twentieth century.
Same as: ARTHIST 265A, ARTHIST 465A, COMPLIT 225, ITALIAN 265

ITALIAN 369. Introduction to the Profession of Literary Studies. 1-2 Unit.
A survey of how literary theory and other methods have been made institutional since the nineteenth century. The readings and conversation are designed for entering Ph.D. students in the national literature departments and comparative literature.
Same as: COMPLIT 369, DLCL 369, FRENCH 369, GERMAN 369

ITALIAN 372. Body Doubles: From the Fantastic Short Story to Science-Fiction. 2-5 Units.
How do we imagine our bodies through language, at times almost completely refashioning a physical double, be it idealized or abject? How do such body doubles intersect with our sense of self, defining or redefining sexual identity, spiritual aspirations, illness and recovery, and the senses themselves, as our window into reality? This course focuses on short stories from the late 19th- and early 20th-century fantastic genre, and science fiction stories from the following turn of the century, 100 years later: in these revealing instances, body doubles often seem to acquire a will of their own, overwhelming normal physical identity.
Same as: FRENCH 272, FRENCH 372, ITALIAN 272

ITALIAN 377. Medieval Lyric: How Lyric Moves. 3-5 Units.
Through the study of various vernacular premodern traditions, this graduate level course examines the qualities that make texts "lyric" and place them into conversation with contemporary theories of lyric. The course will situate medieval lyric within the critical discourse of poetics, the Global South, the archive, and anachrony. We will consider the movement of verse within and among various material contexts (song, manuscript, artworks, objects, tombstones). Poets considered: troubadours, trouvères, Galician-Portugese cantigas d'amigo, Stilnovists, Dante, Petrarchan poetry, Jean Renart, Charles d'Orléans, Villon, Pound, Brazilian Concrete Poetry.
Same as: COMPLIT 377, FRENCH 377

ITALIAN 386. Poetry and Philosophy. 2-5 Units.
When and why do philosophers resort to poetry?nWhat is the relationship between poetic metaphor and philosophical argumentation?nWhy is the poetic often associated with empathy - recently touted as an essential human characteristic - whereas philosophy is considered more objective? nWhat is poetry's role in the pursuit of wisdom or the good life?nAuthors include Nietzsche, Heidegger, Bataille, Agamben, Ricoeur, Derrida, Irigaray, Wyschogrod, and Cavarero.
Same as: FRENCH 286, FRENCH 386, ITALIAN 286

ITALIAN 390. Magic, Science, and Religion. 3-5 Units.
With the rise of the human sciences in the later nineteenth century, "magic," "science," and "religion" came to be understood as entirely separate domains, with different versions of truth and divergent methods of inquiry. But how has this division broken down in the past 150 years? How is it, for example, that other people's religion is "merely magic"? How does science still draw on religious categories, in particular to claim the universe is meaningful? How have new forms of magic shaped new age, global culture? We will examine these questions by pairing literary texts with readings from anthropology, history of science, religious studies, and cultural criticism. This course is taught in English.
Same as: COMPLIT 290A, COMPLIT 390A, FRENCH 290, FRENCH 390, ITALIAN 290

ITALIAN 395. Philosophical Reading Group. 1 Unit.
Discussion of one contemporary or historical text from the Western philosophical tradition per quarter in a group of faculty and graduate students. For admission of new participants, a conversation with Professor Robert Harrison is required. May be repeated for credit. Taught in English.
Same as: COMPLIT 359A, FRENCH 395

ITALIAN 398. Intensive Reading in French/Italian. 10 Units.
Enrollment is limited to French/Italian Ph.D. students. Course is designed for French/Italian Ph.D. students to prepare for department milestone exams.
Same as: FRENCH 398

ITALIAN 399. Individual Work. 1-12 Unit.
Repeatable for Credit.

ITALIAN 802. TGR Dissertation. 0 Units.
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GERMAN STUDIES

Courses offered by the Department of German Studies are listed on the *Stanford Bulletin's* ExploreCourses web site under the subject code GERMAN. For courses in German language instruction with the subject code GERLANG, see the "Language Center" section of this bulletin.

The department is a part of the Division of Literatures, Cultures, and Languages (p. 1298).

The department provides students with the linguistic and analytic ability to explore the significance of the cultural traditions and political histories of the German-speaking countries of Central Europe. At the same time, the interdisciplinary study of German culture, which can include art, economics, history, literature, media theory, philosophy, political science, and other fields, encourages students to evaluate broader and contradictory legacies of the German past, the history of rapid modernization and the status of Germany, Austria, and Switzerland today.

The German experience of national identity, political unification, and integration into the European Union sheds light on wider issues of cultural cohesion and difference, as well as on the causes and meaning of phenomena such as racial prejudice, anti-Semitism, and the Holocaust. In general, an education in German Studies not only encourages the student to consider the impact of German-speaking thinkers and artists, but also provides a lens through which the contours of the present and past, in Europe and elsewhere, can be evaluated.

The department offers students the opportunity to pursue course work at all levels in the languages, cultures, literatures, and societies of the German-language traditions. Whether interested in German literature, the influence of German philosophy on other fields in the humanities, or the character of German society and politics, students find a broad range of courses covering language acquisition and refinement, literary history and criticism, cultural history and theory, history of thought, continental philosophy, and linguistics.

By carefully planning their programs, students may fulfill the B.A. requirements for a double major in German Studies and another subject. A coterminal program is offered for the B.A. and M.A. degrees in German Studies. Doctoral students may elect Ph.D. minors in Comparative Literature, Humanities, Linguistics, and Modern Thought and Literature.

Special collections and facilities at Stanford offer possibilities for extensive research in German Studies and related fields pertaining to Central Europe. Facilities include the Stanford University Libraries and the Hoover Institution on War, Revolution, and Peace. Special collections include the Hildebrand Collection (texts and early editions from the 16th to the 19th century), the Austrian Collection (with emphasis on source material to the time of Maria Theresa and Joseph II, the Napoleonic wars, and the Revolution of 1848), and the Stanford Collection of German, Austrian, and Swiss Culture. New collections emphasize culture and cultural politics in the former German Democratic Republic. The Hoover Institution has a unique collection of historical and political documents pertaining to Germany and Central Europe from 1870 to the present. The department also has its own reference library.

Haus Mitteleuropa, the German theme house at 620 Mayfield, is an undergraduate residence devoted to developing an awareness of the culture of Central Europe. A number of department courses are regularly taught at the house, and there are in-house seminars and conversation courses. Assignment is made through the regular undergraduate housing draw.

Mission of the Undergraduate Program in German Studies

The mission of the undergraduate program in German Studies is to provide students with the German language skills, the ability to interpret literature and other cultural material, and the capacity to analyze the societies of the German-speaking countries of Central Europe. In addition, its interdisciplinary component prepares students to understand other cultures from the perspectives of multiple disciplines. The program prepares students for careers in business, social service, and government, and for graduate work in German Studies.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. oral proficiency in German beyond the interpersonal level with presentational language abilities.
2. writing proficiency in German beyond the interpersonal level with presentational language abilities.
3. close reading skills of authentic texts in German.
4. the ability to develop effective and nuanced lines of interpretation.

Graduate Programs in German Studies

The University requirements for the M.A. and Ph.D. degrees are described in the "Graduate Degrees" section of this bulletin.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in German Studies and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in German Studies. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of German Studies and to pursue career tracks in higher education and in other sectors.

German Studies and a Minor Field

Students may work toward a Ph.D. in German Studies with minors in such areas as Comparative Literature, History, Humanities, Linguistics, or Modern Thought and Literature. Students obtaining a Ph.D. in such combinations may require additional training.

Bachelor of Arts in German Studies

Requirements

- 60 units minimum.
- Majors must demonstrate basic language skills, either by completing GERLANG 1, 2, 3, First-Year German, or the equivalent such as an appropriate course of study at the Stanford in Berlin Center.
- All courses taken for a letter grade, unless only offered for a faculty-elected S/NC (no more than 10 units)
- Courses may not be used towards any other major or minor.
- A maximum of 10 Advanced Placement (AP) units may be counted towards the major with the approval of the Chair of Undergraduate Studies.

- With the exception of GERMAN 191, which is required, all courses listed below are recommended, and substitutes are permitted with the approval of the Chair of Undergraduate Studies. Students may combine a major in German Studies with a major in any other field. Relevant courses in other fields may count towards the German Studies major with approval. Check ExploreCourses (https://explorecourses.stanford.edu/) for current listings.

Declaring the Major

Students declare the major in German Studies through Axess. Students meet with the Chair of Undergraduate Studies and undergraduate student support officer to discuss appropriate courses and options within the major, and to plan a course of study.

Course Requirements

Completion of 60 units. Units earned towards the Bachelor of Arts in German Studies with honors degree may be applied to the 60 unit total.

1. Writing in the Major (WIM Requirement):

		Units
GERMAN 116	Writing About Germany: New Topics, New Genres	3-5

2. Completion of three GERMAN Courses from 120 and 130 Series, each taught in the German language.

		Units
GERMAN 120A	Berlin: Literature and Culture in the 20th Century and Beyond	3-5
GERMAN 120B	Fairy Tales	3-5
GERMAN 120C	German in Public: 99 German Songs	3-5
GERMAN 120D	The German Graphic Novel	3-5
GERMAN 131	What is German Literature?	3-5
GERMAN 132	History and Politics of the Future in Germany, 1900-Present	3-5
GERMAN 135	German Conversation	3

3. Senior Capstone Project:

		Units
GERMAN 191	German Capstone Project	1

4. Students must take the Oral Proficiency Interview (OPI) two quarters prior to degree conferral. Students should contact the Stanford Language Center to arrange assessment.

5. Remaining units must be completed through elective courses approved in consultation with the Chair of Undergraduate Studies.

- All courses taken at the Berlin Overseas campus are pre-approved as major electives.
- Structured Liberal Education (SLE)/ ESF, IntroSems or Thinking Matters (THINK) courses may contribute for a maximum of 10 units.
- Subject to approval by the Chair of Undergraduate Studies, courses from other fields may count if they contribute to the student's language skills, the ability to interpret literature and other cultural material, or the capacity to analyze societies.

German and Philosophy Subplan

The German and Philosophy subplan offers students the opportunity to combine studies in literature and philosophy. Students take most of their courses from departments specializing in the intersection of literature and philosophy. This option requires a minimum of 16 courses, for a minimum total of 65 units. A student who has completed the SLE sequence (all three quarters) may count up to 10 units towards this major. The SLE units can replace one history of philosophy course and one upper-division German course.

Degree Requirements

German Studies:

1. Completion of three GERMAN Courses from 120 and 130 Series, each taught in the German language.

		Units
GERMAN 120A	Berlin: Literature and Culture in the 20th Century and Beyond	3-5
GERMAN 120B	Fairy Tales	3-5
GERMAN 120C	German in Public: 99 German Songs	3-5
GERMAN 120D	The German Graphic Novel	3-5
GERMAN 131	What is German Literature?	3-5
GERMAN 132	History and Politics of the Future in Germany, 1900-Present	3-5
GERMAN 133	Marx, Nietzsche, Freud	3-5

2. GERMAN 191 German Capstone Project
3. Students must take the Oral Proficiency Interview (OPI) two quarters prior to degree conferral.

Philosophy:

1. PHIL 80 Mind, Matter, and Meaning; fulfills the Writing-in-the-Major (WIM) requirement.
2. GERMAN 181 Philosophy and Literature
3. Aesthetics, Ethics, Political Philosophy: one course from PHIL 170 series.
4. Language, Mind Metaphysics, and Epistemology: one course from PHIL 180 series.
5. History of Philosophy: one course in the history of Philosophy, numbered above PHIL 100.
6. Two additional elective courses of special relevance to the study of philosophy and literature as identified by the committee in charge of the program. Students must consult with their advisers, the Chair of Undergraduate Studies, and the undergraduate adviser of the program in philosophical and literary thought.
7. Capstone: Students must do one of the following: (a) take one of the officially-designated Philosophy and Literature capstone seminars listed below, in the senior year; (b) write an honors thesis (see “Honors Program” for instructions); or (c) write a 5,000-word paper on a topic of their choosing, serving as the culmination of their work in the field. To make time to write the paper, students must enroll in a 3-unit, letter-grade independent study with a faculty member (or affiliate) in the Philosophy and Literature Focal Group. The paper must involve both philosophy and literature, and the topic must be approved by the faculty member by the add/drop deadline.
8.

		Units
GERMAN 125	Nietzsche: Life as Performance	3-5
COMPLIT 283A	Modern Notions of 'The Holy'	3-5
PHIL 194W	Capstone Seminar: Imagination in Fiction and Philosophy	4
PHIL 194Z	Capstone: Living a Meaningful Literary Life	4

Units devoted to meeting the department’s language requirement are not counted toward the 65-unit requirement.

The capstone seminar and the two related courses must be approved by both the German Studies Chair of Undergraduate Studies and the undergraduate adviser of the program in philosophical and literary thought administered through the DLCL. Substitutions, including transfer credit, are not normally permitted for items 3b, 3c, and 3d, and are not

permitted under any circumstances for items 2, 3a, and 5. Up to 10 units taken in the Philosophy Department may be taken CR/NC or S/NC; the remainder must be taken for a letter grade.

Honors Program

Students majoring in any DLCL department (i.e., Comparative Literature, French and Italian, German Studies, Iberian and Latin American Cultures, and Slavic Languages and Literatures) who have an overall grade point average (GPA) of 3.3 or above and who maintain a 3.5 (GPA) in their major courses, are eligible to participate in the DLCL's honors program.

Declaring Honors

Prospective honors students must choose a senior thesis adviser from among their home department's regular faculty in their junior year by May 1. During Spring Quarter of the junior year, a student interested in the honors program should consult with the Chair of Undergraduate Studies of their home department to submit a thesis proposal (2-5 pages), DLCL Honors application, and an outline of planned course work for their senior year. When their applications are approved by their home department, students will request honors through Axess.

Honors theses vary considerably in length as a function of their topic, historical scope, and methodology. They may make use of previous work developed in seminars and courses, but display an enhanced comparative or theoretical scope. Quality rather than quantity is the key criterion. Honors theses range from 40 to 90 pages not including bibliography and notes.

Honors students are encouraged to participate in the DLCL program hosted by Bing Honors College. This DLCL Honors College is designed to help students develop their projects and is offered at the end of the summer before senior year. Applications must be submitted through the Bing program. For more information, view the Bing Honors (https://undergrad.stanford.edu/programs/bhc/) web site.

Program Requirements

A minimum of 10 units total, described below, and a completed thesis is required. Honors essays are due to the thesis adviser no later than 5:00 p.m. on May 15, of the terminal year. If an essay is found deserving of a grade of 'A-' or better by the thesis adviser, honors are granted at the time of graduation.

1. Spring Quarter of the junior year (optional): DLCL 189C Honors Thesis Seminar, 2-4 units S/NC, under the primary thesis adviser. Drafting or revision of the thesis proposal. The proposal is reviewed by the Chair of Undergraduate Studies and the Director of the department and will be approved or returned for submission.
2. Autumn Quarter of the senior year (required): DLCL 189A Honors Thesis Seminar, 4 units S/NC, taught by a DLCL appointed faculty member. Course focuses on researching and writing the honors thesis.
3. Winter Quarter of the senior year (required): DLCL 189B Honors Thesis Seminar, 2-4 units S/NC, under the primary thesis adviser. Focus is on writing under guidance of primary adviser.
4. Spring Quarter of the senior year (option; mandatory if not taken during junior year): DLCL 189C Honors Thesis Seminar, 2-4 units S/NC, under the primary thesis adviser. Honors essays are due to the thesis adviser and student services officer no later than 5:00 p.m. on May 15 of the terminal year.
5. Spring Quarter of the senior year (required) DLCL 199 Honors Thesis Oral Presentation, 1 unit S/NC. Enroll with primary thesis adviser.

The honors thesis in the DLCL embodies Stanford's excellence in course work and research. It is simultaneously one element of the student's intellectual legacy and part of the University's official history. The faculty considers the honors thesis to be far more than a final paper; rather, it is the product of solid research that contributes to conversations taking place within a larger scholarly community and representative of the intellectual vitality of the discipline. For all of these reasons, DLCL honors theses will be visible to future scholars researching similar questions through full online access through the Stanford Digital Repository (https://library.stanford.edu/research/stanford-digital-repository/) (SDR) and may be used as course materials for future Stanford honors preparatory courses. For similar purposes, a printed copy may also be kept in DLCL spaces. Students who wish to limit the availability or formats in which the thesis may be shared may do so by filling out the appropriate form with the DLCL student affairs officer.

Overseas Studies and Internships in German Studies

All students who are planning to study at Stanford in Berlin or engage in an internship are encouraged to consult with the Chair of Undergraduate Studies and the Overseas Studies office about integrating work done abroad into their degree program. Through the Center, students with at least two years of college-level German can also take courses at the Freie Universität, Technische Universität, or Humboldt Universität. All credits earned in Berlin can be applied to the undergraduate major in German Studies. For course descriptions and additional offerings, see the listings in the *Stanford Bulletin's* ExploreCourses (http://explorecourses.stanford.edu) web site, or the Bing Overseas Studies (http://bosp.stanford.edu) web site.

Internships in Germany are arranged through the Bing Overseas Studies Program. In addition, students may consult with the department to arrange local internships involving German language use or issues pertaining to Germany or Central Europe. Returning interns who wish to develop a paper based on their experience should enroll in GERMAN 116 Writing about Germany.

Minor in German Studies

The Department of German Studies offers a minor in German Studies.

Declaring the Minor

Students declare the major in German Studies through Axess. Students should meet with the Chair of Undergraduate Studies and undergraduate student support officer to discuss appropriate courses and options within the minor, and to plan the course of study.

Requirements

- At least 6 courses of 3 units or more and at least 24 units of course work.
- 15 units must be taken in the subject code of GERMAN or with faculty members from German Studies.
- All GERLANG courses from the Language Center may be counted.
- All courses of 3 units or more at the Bing Overseas Studies Center OSPBER in Berlin have been pre-approved for the minor.
- Students may use 5 units from SLE and/or a Thinking Matters course taught by a German Studies faculty member toward their electives for the minor.
- A maximum of 5 units of transfer credit may be applied with the approval of the Chair of Undergraduate Studies.
- Units may not be double counted.
- All courses must be taken for a letter grade, except where letter grades are not offered.

Minor in Modern Languages

The Division of Literatures, Cultures, and Languages offers an undergraduate minor in Modern Languages that permits students to demonstrate strength in two distinct modern languages and their literatures. See the "Division of Literatures, Cultures, and Languages

(p. 1299)" section of this bulletin for further details about this minor and its requirements.

Master of Arts in German Studies

This program is designed for those who do not intend to continue studies through the Ph.D. degree at Stanford. In order to complete the M.A. degree, students must complete a minimum of 45 units of graduate work. If students enroll for three quarters for a minimum of 15 units per quarter, they will be able to fulfill the M.A. requirements in one year. The M.A. program requires students to take the three graduate core courses (GERMAN 330, GERMAN 331, and GERMAN 322). These courses cover texts from our core reading lists in three areas of German Studies: pre-1700. 1700-1900, and post-1900. The remaining courses may be selected by the student but they must be graduate-level courses in German and/or approved courses in related fields such as art history, comparative literature, linguistics, history, or philosophy.

M.A. candidates must take an oral examination toward the end of their last quarter. In preparation for the oral exam students are expected to compile a reading list of 60 texts comprised of:

- 15 items from each of the three core; lists (pre-1700, 1700-1900, 1900-2000)
- 10 items from the film/opera lists
- 5 additional items of their own choice

This M.A. reading list must be compiled in consultation with the advisor.

Coterminal Program

Students may apply to combine programs for the B.A. and M.A. degrees in German Studies. Coterminal students in German Studies may count eligible courses taken up to one academic year before enrollment in the first graduate quarter. Students are reminded that course transfer is subject to approval of the undergraduate and graduate departments.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Doctor of Philosophy in German Studies

The requirements for the Ph.D. in German Studies include:

1. Required Courses. A total of 135 units is required for the Ph.D.; doctoral candidates must complete at least one course with each member of the department. All courses counted towards the 135-unit requirement for the Ph.D. must be at the graduate level. Undergraduate courses may be taken but not used towards the Ph.D. requirements.
   During the Autumn, Winter, and Spring quarters in year one, students are required each quarter to enroll in and complete at least two graduate courses taught by German Studies faculty and submit at least one seminar paper in German Studies. DLCL 301 The Learning and Teaching of Second Languages is a required course for all doctoral students and must be taken in the Spring of the first year. It is highly recommended that students take GERMAN 369 Introduction to the Profession of Literary Studies (not offered this year) in year one or two. GERMAN 330, GERMAN 331, and GERMAN 322 must be taken in the first two years of study. Students should take all courses for letter grades when the option is available. During the Summer Quarter of year one, students may take a language course, or conduct research abroad, but they must also enroll in independent study units with their adviser (GERMAN 399 Individual Work) and complete a research paper.
   In year two, students are required to enroll and complete one graduate course and submit one seminar paper each quarter (Autumn, Winter, Spring). It is highly recommended that students take DLCL 311 Professional Workshop in year two. During the second Summer Quarter, students enroll in independent study units (GERMAN 399 Individual Work) with their adviser and complete a dissertation chapter or prospectus.
   All graduate students must participate in the German Graduate Colloquium (students may enroll in GERMAN 397 Graduate Studies Colloquium for 1 unit per quarter). For more information, see the Graduate Handbook 2019-20.
2. Units. All German Studies seminars are offered for 3-5 units with different requirements for each unit designation. Students writing seminar papers should enroll in 5 units.
   a. *First Year.* During the Autumn, Winter, and Spring quarters students must enroll in at least 18 graduate units. Students must enroll in at least two courses each quarter offered by German Studies faculty. During the Summer of the first year, students enroll in GERMAN 399 Individual Work and complete a research paper on a topic in their presumed area of specialization. For more information, see the Graduate Handbook 2019-20.
   b. *Second Year.* Students must enroll in 10 graduate units each quarter during their second year of graduate study. In the Autumn Quarter, students enroll in individual work (GERMAN 399 Individual Work) with a faculty adviser to refine the research paper written over the Summer. It must be submitted to a reading committee comprised of three faculty members by the end of the Autumn Quarter. In the Winter and Spring quarters, students take seminars that are pertinent to the dissertation topic. During the second Summer, students enroll in GERMAN 399 Individual Work and complete a draft dissertation chapter, which is presented to a faculty committee at the beginning of the Autumn Quarter. For more information, see the Graduate Handbook 2019-2020.
   c. *Third Year.* Students who have not reached TGR status (135 units) must complete 10 units each quarter during their third year of graduate study until TGR status is achieved. Students may enroll in 1-10 independent study units (GERMAN 399 Individual Work) with their adviser.
3. Qualifying Examination. Immediately following the end of classes in the Spring Quarter of the first year, all Ph.D. students must take their qualifying examination. This examination is designed to cover the full range of German literary history. It is based on the German Studies reading list available in the Graduate Handbook 2019-20 and builds on the core courses GERMAN 330, GERMAN 331, and GERMAN 322. Students who fail this examination may request to retake it once

before October 15. A second fail of the qualifying examination results in dismissal from the Ph.D. program.

4. Qualifying Paper Submission. Based upon summer independent study and progress in GERMAN 399 Individual Work, the Ph.D. student submits a polished research paper in Autumn Quarter of their second year. The paper must be submitted by December 1 and is reviewed by a committee of three faculty members, including the adviser, who determine approval. A qualifying paper that does not meet approval may be revised and resubmitted by February 15. A second failure to submit a paper meeting approval of the faculty readers results in dismissal from the program.
5. Candidacy. Admission to candidacy is an important decision grounded in an overall assessment of a student's ability to successfully complete the Ph.D. program. Per University policy, students are expected to complete departmental qualifying procedures and apply for candidacy by the end of the second year in residence. In reviewing a student for admission to candidacy, the faculty considers a student's academic progress including but not limited to: advanced language proficiency, course work, performance on the qualifying exam, the qualifying paper, and successful completion of teaching/research assistantships.
    a. In addition to successful completion of department prerequisites, a student is only admitted to candidacy if the faculty makes the judgment that the student has the potential to successfully complete the requirements of the degree program. Candidacy is determined by faculty vote. Failure to advance to candidacy results in the dismissal of the student from the doctoral program. Candidacy is valid for five years and students are required to maintain active candidacy through conferral of the doctoral degree. All requirements for the degree must be completed before candidacy expires. Additional information about University candidacy policy is available in the Bulletin (p. 67) and GAP (http://gap.stanford.edu/4-6.html).
6. Dissertation Chapter Defense (Prospectus). Building on work in Winter and Spring quarters of the student's second year, and ideally on the qualifying paper, students spend the Summer Quarter of the second year completing a draft chapter of the dissertation or a detailed preliminary dissertation prospectus. It must be discussed in a one-hour session of the reading committee at the beginning of the Autumn Quarter. The reading committee is comprised of three faculty members. At least two members of the reading committee must have primary appointments in German Studies. Students select members of the reading committee in consultation with the primary adviser.
7. After completion of the dissertation prospectus, all students are strongly encouraged to spend at least one quarter abroad in a German-speaking country, while remaining in regular contact with their advisers.
8. Language Requirement. A reading knowledge of one language other than English and German is required. Students in Medieval Studies must also have a reading knowledge of Latin. Reading knowledge is assessed by an examination administered by the Language Center. The language requirement must be satisfied by the Autumn Quarter of the fifth year.
9. The University Oral Examination. The University Oral Examination in the Department of German Studies involves a defense of a substantial portion of the dissertation, normally at least three draft chapters, and takes place no later than the end of Autumn Quarter of the fifth year. The student's work must be distributed to the committee at least four weeks before the formal University Oral Examination. The committee consists of the dissertation committee (three faculty members), one additional reader, plus an outside chair, selected in consultation with the primary adviser. The examination lasts no longer than two hours. It begins with a brief statement by the candidate (no longer than 15 minutes) followed by questions from the four examiners, each of whom is limited to 20 minutes. The remaining time is reserved for optional questions from the chair of the examination. Students who fail the University Oral Examination are allowed one opportunity to retake it. A second fail of the University oral examination results in dismissal from the Ph.D. program.
10. Public Lecture. All Ph.D. students are strongly encouraged to give a public lecture on the topic of their dissertation. This lecture may be scheduled after the successful completion of the University oral exam.
11. Submission and approval of a dissertation.
12. Teaching Assistant. The teaching requirement includes four quarters of language teaching during the second and third years of study and is mandatory for continued enrollment or support in the program. Students must also teach a fifth course which may be a language course, but they may alternatively request to teach or co-teach a literature course at a later time in the course of study, normally once their dissertation has reached an advanced stage, contingent upon department need and subject to approval of the Director of German Studies. Such teaching does not extend the length or scope of support. Graduate students are advised to develop skills in the teaching of literature by participating in the teaching of undergraduate courses beyond language courses. Students may enroll in independent studies with faculty members to gain experience as apprentices in undergraduate teaching.
13. Research Assistant. The department expects candidates to demonstrate research skills appropriate to their special areas of study.
14. Graduate Studies Colloquium.Enrollment and/or participation in the Colloquium is mandatory for all students (students conducting research abroad are exempt). The Colloquium meets every two weeks throughout the year and involves presentation of student work and professionalization workshops.
15. German Studies Lecture Series. Regular attendance at lectures sponsored by the department is required. Students may enroll in the German Studies Lecture Series for one unit. Enrolled students are required to read a book by one of the speakers and submit a brief book report, or complete a similar assignment in consultation with the faculty coordinator of the Lecture Series.
16. The principal conditions for continued registration of a graduate student are the timely and satisfactory completion of University, department, and program requirements for the degree, and fulfillment of minimum progress requirements. Failure to meet these requirements results in corrective measures, which may include a written warning, academic probation, and/or dismissal from the program.
17. Annual Review. The Department of German Studies conducts annual reviews of each student's academic performance at the end of the Spring Quarter. All students are given feedback from the Chair of Graduate Studies, helping them to identify areas of strength and potential weakness. In most cases, students are simply given constructive feedback, but if more serious concerns warrant, a student may be placed on probation with specific guidelines for addressing the problems detected. At any point during the degree program, evidence that a student is performing at a less than satisfactory level may be cause for a formal academic review of that student. Possible outcomes of the annual review include: continuation of the student in good standing, or placing the student on probation, with specific guidelines for the period of probation and the steps to be taken in order to be returned to good standing. For students on probation at this point (or at any other subsequent points), possible outcomes of a review include: restoration to good standing; continued probation, with guidelines for necessary remedial steps; or dismissal from the program.

Ph.D. Minor in German Studies

The department offers a Ph.D. Minor in German Studies. The requirement for the Ph.D. minor is completion of 25 units of graduate course work in

German Studies classes. Interested students should consult the Director of Graduate Studies.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The German Department counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Required Courses Policy

In academic year 2020-2021, as Stanford operates on a four-quarter system, students may opt not to be enrolled in one of the four quarters of the year. German majors may therefore be unable to take GERMAN 116 because they are on leave during the quarters it is offered. In these cases, the Chair of Undergraduate Studies will suggest and approve an appropriate substitute class.

Graduate Degree Requirements

Grading

Doctoral students in the department must take required courses for a letter grade and are expected to earn a grade of 'B' or better in each required course. In other courses, doctoral students are expected to earn a grade of 'B' or better in each course taken for a letter grade in AY 2020-21 that will count towards their degree requirement. Any grade of 'B-' or below is considered to be less than satisfactory. Grades of 'B' or below are reviewed by faculty: while the grade will stand, the student may be required to revise and resubmit the work associated with that course. For courses taken for CR/NC, instructors will be asked to submit written assessment to the student and the department of what would be the equivalent letter grade to allow for review of satisfactory academic achievement by the DGS and department.

Graduate Advising Expectations

The Department of German Studies is committed to providing academic advising in support of graduate student scholarly and professional development. The overall goal of advising, both in the DLCL and the department, is to help graduate students make academic and career choices wisely, and think ahead, in order to craft a long-term plan for their graduate student career and beyond. When most effective, the advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity. Advising is both an academically invaluable form for the transmission of expertise, as well as a key aspect of creating a strong departmental and Stanford community.

Faculty Advisers

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

- Upon enrolling, students plan their work under the direction of the Chair of Graduate Studies or a faculty member designated by the program. When the student selects a more specialized adviser, the transition should involve oral or written communication between both advisers and the student concerning the student's progress, goals, and expectations. It is possible for doctoral students to choose two main advisers at the dissertation stage, provided all agree this is academically sound.
- Faculty advisers should meet with assigned students to discuss their selection of courses and to plan from a broader, longer-term perspective, including discussion of Program milestones and a basic timeline; an overview of Department and DLCL offerings beyond courses; student goals and interests and DLCL or Stanford programs that may be relevant; and (for doctoral students) how to transfer previous graduate coursework.
- Faculty advisers and graduate students should meet at least once per quarter to assess the advisee's course of study, performance over the past quarter, and plans for the next quarter, as well as longer term plans. If a student has two advisers, the student should meet at least once per quarter with each adviser and at least once per year with both advisers at the same time.
- For doctoral students, faculty should help their advisees plan for exams, research grant applications, develop research projects, and plan ahead for both the academic job market and the job search beyond academia.
- Faculty advisers should provide feedback about the student's progress to the department during the Annual Review process. For more information about the Annual Review, see the Graduate Handbook.

Graduate Students

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

- Upon enrolling, students plan their work under the direction of the Chair of Graduate Studies or a faculty member designated by the program. As the student develops a field of expertise, the student chooses a program adviser to replace the Chair of Graduate Studies role. The transition should involve oral or written communication between both advisers and the student concerning the student's progress, goals, and expectations.
- Graduate students and faculty advisers and should meet at least once per quarter to assess the advisee's course of study, performance over the past quarter, and plans for the next quarter, as well as longer term plans. If a student has two advisers, the student should meet at least once per quarter with each adviser and at least once per year with both advisers at the same time.
- Students should consult with their advisers on all academic matters, including coursework, conference presentations and publications, research travel, and teaching plans.
- Students should provide a thorough self-evaluation each year for the annual review. For more information about the Annual Review, see the Graduate Handbook.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Faculty in German Studies

Director: Elizabeth Bernhardt-Kamil

Chair of Graduate Studies: Amir Eshel

Chair of Undergraduate Studies: Elizabeth Bernhardt-Kamil

Professors: Russell A. Berman (also Comparative Literature), Elizabeth Bernhardt-Kamil, Adrian Daub (also Comparative Literature), Amir Eshel (also Comparative Literature), Matthew Wilson Smith, Kathryn Starkey (on leave)

Assistant Professor: Lea Pao

Courtesy Professors: R. Lanier Anderson, Karol Berger, Michael Friedman, Hester Gelber, Thomas S. Grey, Fiona Griffiths, Stephen Hinton, Norman Naimark, Thomas Sheehan, Brent Sockness, Elaine Treharne

Courtesy Associate Professors: Christopher Krebs, Laura Stokes, Marisa Galvez, Nadeem Hussain, Charlotte Fonrobert

Courtesy Assistant Professor:

Emeriti: (Professors) Theodore M. Andersson, Gerald Gillespie, Katharina Mommsen, Orrin W. Robinson III

Overseas Studies Courses in German Studies

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPBER 17	Split Images: A Century of Cinema	3-4
OSPBER 66	Theory from the Bleachers: Reading German Sports and Culture	3
OSPBER 70	The Long Way to the West: German History from the 18th Century to the Present	4-5
OSPBER 71	EU in Crisis	4-5
OSPBER 101A	Contemporary Theater	5
OSPBER 126X	A People's Union? Money, Markets, and Identity in the EU	4-5
OSPBER 174	Sports, Culture, and Gender in Comparative Perspective	3-5

Courses

GERMAN 13Q. Humanities Core: Great Books, Big Ideas -- Europe, Modern. 3-4 Units.
This three-quarter sequence asks big questions of major texts in the European and American tradition. What is a good life? How should society be organized? Who belongs? How should honor, love, sin, and similar abstractions govern our actions? What duty do we owe to the past and future? This third and final quarter focuses on the modern period, from the rise of revolutionary ideas to the experiences of totalitarianism and decolonization in the twentieth century. Authors include Locke, Mary Shelley, Marx, Nietzsche, Freud, Weber, Primo Levi, and Frantz Fanon. N.B. This is the third of three courses in the European track. These courses offer an unparalleled opportunity to study European history and culture, past and present. Take all three to experience a year-long intellectual community dedicated to exploring how ideas have shaped our world and future. Students who take HUMCORE 11 and HUMCORE 12Q will have preferential admission to HUMCORE 13Q (a WR2 seminar). **NOTE** This class meets Monday and Wednesday in room 20-22K and Fridays in room 260-113 to attend a lecture along with the other two HUMCORE courses this quarter.
Same as: DLCL 13Q, HUMCORE 13Q

GERMAN 57N. Nietzsche and the Search for Meaning. 3 Units.
Many of us have heard his declarations of the death of God, the arrival of the Superman, and the need to live beyond good and evil. But what, beyond such sound bites, did Nietzsche actually teach? How can his writings be understood in the context of their own time? And what significance might they hold for us today?.

GERMAN 60N. German Crime. 3 Units.
Crime is as old as humanity, as old as storytelling. Cain's murder of Abel, Antigone's burial of Polynices, Robin Hood's robbing from the rich: all of these testify to the ongoing fascination with crime and criminality, and to literature's role in policing, and probing, the boundaries of social legitimacy. This is a course about murders, break-ins, betrayals, sexual infidelity and violence, and crimes against humanity, and the ways those crimes, sometimes moral, sometimes legal, and sometimes not really even exactly criminal, teach us about German and German literature in recent centuries. Course material will include modern and classical crime fiction (Friedrich Glauser, Friedrich Dürrenmatt, Jakob Arjouni, Thomas Glavinic), crime in novelistic, theatrical and poetic genres (Anna Seghers, Bertolt Brecht, Heinrich von Kleist, Friedrich Schiller), and German-language television and film (Fritz Lang's "M,"Carol Reed's "The Third Man," "Tatort"). nThis course is for students with good knowledge of German. Students without German can participate in a special section with English language material.nGerman Studies Assistant Professor Lea Pao will teach this course.

GERMAN 68N. Franz Kafka: Literature and the Modern Human Condition. 3 Units.
This class will address major works by Franz Kafka and consider Kafka as a modernist writer whose work reflects on modernity. We will also examine the role of Kafka's themes and poetics in the work of contemporary writers.

GERMAN 75N. Famous Last Words. 3 Units.
What would you say if you knew it would be the last thing you would ever say? Who would you want to hear your words? Would you want to inspire somebody? Terrify them? Shout your defiance or your love in their direction?nThis is a course about last words the final utterances left as legacies for the world in the face of revolution, war, betrayal, heartbreak, or that simplest of endings, death. We will look at a wide variety of last words, including last words codified as genres¿quotations, suicide notes, epitaphs, dying declarations, Japanese death poems, confessions, and the like as literary devices (last sentences, envois, punch lines, epilogues), and as forms of social or cultural practice (the making of heroes, idols, and martyrs in religious, political, and popular culture). We will look at fictional last words, real last words, last words spoken by heroes, gods, and ordinary people. And we will end the course, each of us, by writing out our own last words imagining what we each would write, if we had to sum up what mattered most to us, and if we wanted some small selection of signs to stand in, as it has for many of the authors we will read, for our life and the legacy of it.

GERMAN 97. 10 Poems That Will Change Your Life. 3-5 Units.
This course is for anyone who has ever been afraid of poetry, anyone who has ever thought that poems are too difficult to understand, a course for anyone who has fallen in love with poetry before, and for anyone who has used a poem to make a difference in someone's life. You will learn how to read, understand, and if you don't already like poetry. We will read poems from different centuries, different kinds of writers, and different media (paper, computer screens, and even DNA); they will be about loss and love and war and loyalty and bacteria. Some of them will be about you. You will develop interpretive skills that come with this range of poetic forms and structures and will learn how to think about what it means for something to be poetic, whether it is a poem, a Leonard Cohen song, a last minute field goal, or a toilet. Can the poems in this class really change your life? (What would that even mean? We'll discuss.) Maybe; maybe not. But they're certainly going to try.

GERMAN 101. Germany in 5 Words. 3-5 Units.
This course explores German history, culture and politics by tracing five (largely untranslatable) words and exploring the debates they have engendered in Germany over the past 200 years. This course is intended as preparation for students wishing to spend a quarter at the Bing Overseas Studies campus in Berlin, but is open to everyone. Taught in English.

GERMAN 106. Turkish-German Literature, Cinema, and Theater. 3-5 Units.
One in five people in Germany now has, as it is termed, a background of migration. Immigration from Turkey is probably the most prominent not only in terms of its massiveness and demographic consequences, but also for its significant role in changing Germany's overall cultural, social, and economic landscape. In this course, through analyzing selected literary works, films, and plays produced by Turkish-German writers and artists, we will discuss complex ideas like migration, ethnicity, race, religion, gender, and class, resorting not to oversimplifications and binary thinking but instead to relevant literary concepts and formative historical moments which have shaped the Turkish-German experience. Remote synchronous with plenty of opportunities to participate in group and breakout room discussions and creative projects.
Same as: GERMAN 206

GERMAN 109. The End of Europe (as we know it) - Germany and the Future of the European Union. 3-5 Units.
Europe is struggling with the impact of the sovereign debt crisis of the Eurozone, mass migration, political extremism and xenophobia, external and internal security challenges, as well as political and social needs for reform to mention only some of the most pressing problems. The European Union, a project of an ever closer union of European states with currently 28 members started with the promise to provide peace, stability and prosperity. This narrative attracted new members in five enlargement rounds since the 1970s while today Eurosceptic parties, separatist movements as well as internal and external critics of the EU question the European integration project as such. nnThe course starts with the narrative of the success story of European integration and its achievements. This is followed by an analysis of current crises and future problems. In a third step we will discuss consequences and strategies to deal with challenges for Europe as a whole, as well as the EU and its members in particular. The course will follow ongoing debates within and outside of the EU. It includes global reflections on the state European situation and it makes comparisons with responses to similar challenges in other parts of the world.

GERMAN 111. The End of the Western World (as we know it): German Responses to Global Challenges. 3-5 Units.
Germany defines its foreign policy being based on two pillars: being a part of an integrated Europe and belonging to the Western World. For decades, America and Europe have remained closely connected politically, economically, and culturally. This close working relationship, however, now risks coming to an end, or getting substantially weakened. When asked to identify his "biggest foe globally right now," President Trump put the European Union on the list, along with China and Russia. Not only deeds but already words have far reaching consequences for Germany in a number of respects. The course addresses the question whether "The Western World" is coming to an end and discusses root causes and possible implications. As the course unfolds, we will cover a number of timely topics, including the future of NATO and why multilateralism matters, how an open society can survive the rising tide of populism, how migration is changing demographics and politics on both sides of the Atlantic, and the prospects for finding political solutions to climate change. We will even address German and European approaches to dealing with digitization and the protection of private data. The course will be discussion based, and include a number of illuminating studies; our goal is to increase students' understanding of the major challenges facing the decades-old American-European alliance and how Germany is dealing with them. Students will need no prior knowledge of Germany and the European Union. Knowledge of the American perspective is welcome but not required.

GERMAN 115. The Queer 20th Century: German LGBTQ Literature and Film. 3-5 Units.
What was it like to be queer in 20th-century Germany? This course examines the rich and sometimes surprising LGBTQ culture of 20th-century Germany, featuring stories that are often left out of traditional seminars. Through literature and film, we will learn about pioneering gay rights activists, persecution under National Socialism, emancipation movements under capitalism and socialism, and debates that are shaping queer life in contemporary Germany. Taught in English; students of all backgrounds are very welcome. Remote synchronous, with plenty of opportunities for breakout rooms, student discussion, Zoom breaks, and off-screen work.
Same as: FEMGEN 115A, FEMGEN 215A, GERMAN 215

GERMAN 116. Writing About Germany: New Topics, New Genres. 3-5 Units.
Writing about various topics in German Studies. Topics based on student interests: current politics, economics, European affairs, start-ups in Germany. Intensive focus on writing. Students may write on their experience at Stanford in Berlin or their internship. Fulfills the WIM requirement for German Studies majors.

GERMAN 120. Contemporary Politics in Germany. 3-5 Units.
This course provides an opportunity to engage with issues and actors, politicians and parties in contemporary Germany, while building German language abilities. We will work with current events texts, news reports, speeches and websites. Course goals include building analytic and interpretive capacities of political topics in today's Europe, including the European Union, foreign policy, and environmentalism. Differences between US and German political culture are a central topic. At least one year German language study required.

GERMAN 120A. Berlin: Literature and Culture in the 20th Century and Beyond. 3-5 Units.
For much of the twentieth century Berlin has been at the epicentre of geopolitics, the Berlin Wall standing as the physical manifestation of a fragile world order. Huge social and political upheavals in the city have inspired much cultural production. Through novels, poetry, films, speeches and more we will examine the Golden Era of Weimar Berlin, the National Socialist period, the Cold War division, reunification, and the contemporary city. Authors include Keun, Döblin, Fallada, Schernikau, Wolf, Brussig, Erpenbeck. Taught in GermanPrerequisite: GERLANG 3 or permission of instructor.

GERMAN 120B. Fairy Tales. 3-5 Units.
In this course, we will explore the fairy tale genre both from a systematic and historical perspective. We will start by asking how fairy tales differ from other short prose texts like legends and fables. We will then focus on bigger themes, allowing us to discern differences within this literary form, namely: the fantastic and the real, motif constancy and variation, narration and orality, animality and the human. Over the course of the seminar, we will not only delve into the world-famous folk tale collection of the Grimm brothers, but also the more stylized Romantic "Kunstmärchen" tradition (Goethe, Brentano, Hoffmann). Examples from the later 19th-century (Keller, Storm) and the 20th century (Hofmannsthal, Kafka, Döblin, Bachmann) demonstrate attempts to reformulate the fairy tale tradition by transgressing its boundaries. Taught in German. Prerequisite: GERLANG 3 or permission of instructor.

GERMAN 120C. German in Public: 99 German Songs. 3-5 Units.
Germany is the land of Beethoven and Brahms, but has also given the world Marlene Dietrich, Nena, and Rammstein. This course aims to introduce you to a variety of music repertories, and a range of ways through popular songs to think and talk about 200 years of German history, art, culture, and politics. While we explore some of the great ¿classics¿ of the musical canon in the German speaking countries, we will also discover the social, critical, and political impacts expressed and triggered by folksongs, rock, punk, hip-hop, techno, and heavy metal music. Our focus will be on particular German genres and obsessions by listening not only good songs but also bad ones, very goofy and entertaining pieces. A class to hum along to! Taught in German. Prerequisite: One year of German or permission of instructor.

GERMAN 120D. The German Graphic Novel. 3-5 Units.
This course is an introduction to the history, theory, and social life of German graphic novels. We will look at early examples of text-and-image (Sebastian Brant¿s "Ship of Fools," a satire published in 1497, Heinrich Hoffmann¿s "Der Struwwelpeter," an 1845 children¿s book detailing various forms of misbehavior in spine-chilling visual detail, or Wilhelm Busch¿s 1895 tale of the mischievous brothers "Max und Moritz") and modern and contemporary comics, political caricatures, and graphic novels from Swiss, German, and Austrian artists (Nicolas Mahler, Gerhard Haderer, Manfred Deix, Ulli Lust, Max Goldt, or Anke Feuchtenberger). This course is in German; no prior knowledge of the topic is required. You will develop your German reading, speaking, and writing skills through a variety of short creative assignments and in-class discussions, develop critical reading skills as they attend to specific formal features, and improve your abilities to think historically about the emergence and development of aesthetic forms.

GERMAN 125. Nietzsche: Life as Performance. 3-5 Units.
Nietzsche famously considered that "there is no 'being' behind the deed, its effect, and what becomes of it; the 'doer' is invented as an afterthought - the doing is everything." How should we understand this idea of a deed without a doer, how might it relate to performance, and what influence has it had on modern culture? In order to answer these questions, we will consider Nietzsche's writings alongside some of the artworks that influenced Nietzsche or were influenced by him.
Same as: GERMAN 325, TAPS 152L, TAPS 325

GERMAN 131. What is German Literature?. 3-5 Units.
How have migration and minority discourses changed the German literary and cultural tradition? What is German literature today, and how does it differ from the traditional notion of Germany as the land of "Dichter und Denker?" We will read texts by Goethe, Novalis, Annette von Droste-Hülshoff, Thomas Mann, Kafka, Anna Seghers, Brecht, Christa Wolf, Emine Sevgi Özdamar, Yoko Tawada, and Sasha Marianna Salzmann, and discuss such topics as identity formation, race, ethnicity, gender, sexuality, religion, class, and ecocriticism. Taught in German. GERLANG 3 or equivalent required.

GERMAN 132. History and Politics of the Future in Germany, 1900-Present. 3-5 Units.
The twentieth century brought profound changes to Germany, including two World Wars, changing borders, and the division between competing Cold War ideological blocs. At the same time, the necessity to build and reshape Germany also inspired politicians, writers, and filmmakers to think about how society could be made anew. The century especially ushered in a new era for thoughts about the future. Thinkers imagined new technologies, social structures, and political orders as they dreamed about a German future that could be different from its recent past. Furthermore, this period represented a golden age of German science fiction, as authors thought about what the future could and should be.nThis class considers the possibilities that Germans imagined for the future in the face of ambiguous promises of peace and warfare, democracy and totalitarianism, and capitalism and communism. Regardless of whether these hopes, dreams, and fears came to fruition, historical visions of the future illuminate the lives of Germans during the twentieth century.nThis course will use close readings of several types of primary sources, including films, television shows, short stories, political posters, art, and newspaper articles. We will consider what different thinkers anticipated as the possibilities for the development of the country and what they saw as the driving forces of change, such as mechanics and computers, political parties, and social movements. We will discuss which advancements they thought seemed likely and which seemed fantastical. Finally, this class will investigate how the future offered a space for dissident thinkers to articulate their frustrations with state and society.

GERMAN 133. Marx, Nietzsche, Freud. 3-5 Units.
We read and discuss selections from works by the key master thinkers who have exerted a lasting influence by debunking long-cherished beliefs. Do these authors uphold or repudiate Enlightenment notions of rationality, autonomy and progress? How do they assess the achievements of civilization? How do their works illuminate the workings of power in social and political contexts? Readings and discussion in German.

GERMAN 134. Freud's Vienna. 3-5 Units.
This course is an introduction to the literature and culture of Vienna between 1890 and 1918. The last decades of the Habsburg Empire are often considered a "Golden Age" for bourgeois Viennese Jews, albeit one with its end already visible on the horizon. Students in the course will explore the city through the eyes of several of Vienna's most prominent writers, including Sigmund Freud and Arthur Schnitzler, and seek their own answers to the questions of the era: Was this a Golden Age at all, and if so, for whom?.

GERMAN 135. German Conversation. 3 Units.
This small, individualized course will offer students the chance to work on their spoken expression and critical thinking, in German. Topics will change each quarter but will span contemporary politics and culture, film, literature, and visual arts. The focus will be on speaking German in small groups, as opposed to formal presentations or written assignments. Students will have the opportunity to pursue topics of personal interest, as well as work collaboratively and individually on projects intended to foster advanced communicative skills.
Same as: GERMAN 235

GERMAN 141. The Magic Mountain: Your Travel Guide to a Great Novel. 1-3 Unit.
In this course, students will read their way through one of the great German novels, Thomas Mann's The Magic Mountain (Der Zauberberg, 1924) an epic stock-taking of European thought and sensibility between the world wars. Students will meet and discuss the novel weekly, each time under the guidance of a different tour guide Stanford faculty, superfans and professors from other institutions. No final paper, no readings other than the novel required. All readings in German (though an English translation will be made available), class discussion in English.

GERMAN 141A. Mephisto: Your Travel Guide to a Great Novel. 1-3 Unit.
In this course, students will read their way through one of the most disputed German novels in the postwar Federal Republic, Klaus Mann's "Mephisto" (1936 published in exile in Amsterdam) a satirical novel about opportunism and the German theater scene during the NS-Regime. Students will meet and discuss the novel weekly, each time under the guidance of a different tour guide Stanford faculty and professors from other institutions. No final paper, no readings other than the novel required. All readings in German (though an English translation will be made available), class discussion in English. NOTE: This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.

GERMAN 141C. Gottfried's "Tristan and Isolde" - Your Travel Guide to a Great Novel. 1-3 Unit.
Does true love have to break with the rules and norms of society? Gottfried's "Tristan and Isolde," a masterpiece of medieval epic poetry, follows this question through its portrayal of a tragic romance. The course will close-read, analyze and discuss this milestone of German literature, focusing in particular on its notions of love, loyalty, fate, and honor. Later sessions will also include modern adaptations of the Tristan story. Contributions by invited guest speakers and experts will provide different perspectives for us to discuss.

GERMAN 142. Feminist Avant Garde. 3-5 Units.
Feminist Avant Garde.
Same as: GERMAN 342

GERMAN 147. The Conservative Revolution. 3-5 Units.
Rapid modernization in early twentieth-century Germany elicited various conservative criticisms, which became particularly acute after the First World War. The thinkers of the Conservative Revolution gave voice to post-Nietzschean concerns about cultural transformation, combining traditionalist and anti-traditionalist positions. Its legacy anticipates current discussions regarding post-modernity, post-democracy, and the impact of technological change. Texts by authors such as: Jünger, Heidegger, Hofmannsthal, Borchardt, Mann, Arendt, Marcuse. Taught in English.
Same as: GERMAN 347

GERMAN 157. What kind of Information is Poetry. 1-5 Unit.
"Only a fool reads poetry for facts": To read a poem with the same fact-seeking attention required by using a dictionary, reading a newspaper article, or following a recipe is, perhaps, foolish. But if it is, it is so only because it means the reader has not understood what a poem is supposed to do. Consider Wittgenstein's famous warning: "Do not forget that a poem, even though it is composed in the language of information, is not used in the language-game of giving information." A poem, even though it is made of the same (kinds of) words as information, ought not to be treated as information (the sentence seems to say). Distinct in their respective functions, poetry and information form two ends of an opposition: one for the creative possibilities for human expression, the other for the practical and mechanical tasks of everyday life.nBut what really "is" information? Has poetry not, since the beginning of time, also functioned as vehicle for storing, quantifying, and communicating things¿from historical events, the law, to agricultural manuals, just as "informational" texts do? How has the emergence of technological media in our so-called Information Age altered, reinforced, or revolutionized the place of poetry in the realm of human communication?nThese questions will motivate this course, which is also a general introduction to poetry and poetics. We will closely read German texts from the Musipilli to digital-born poetry, and secondary material from thinkers and theorists such as Schlegel, Schleiermacher, Benjamin, Wittgenstein, Flusser, and Bense, to learn how various methods of reading and literary criticism - from formalism and structuralism to Digital Humanities approaches - have developed alongside something like "information" as literary quality and social form.nAssistant Professor Lea Pao will teach this course.
Same as: GERMAN 357

GERMAN 174. The Poem as Medium. 3-5 Units.
Since Marshall McLuhan formulated his theory of "media" as "extensions of ourselves," we've come to understand the history of human communication in terms of its physical carriers, tools, and technologies. From cuneiform, hieroglyphs, and logographic writing systems, to the alphabet, to algorithms; from clay tablets, to papyrus, to LED screens; from scrolls, to books, to the gramophone, to DNA - the medium and the message shape how we store and communicate information. Poetry's place in this history of media has been both elusive and strangely consistent. In media theory, the poem, which Hans Magnus Enzensberger once called an "archaic medium" and Niklas Luhman a "paradoxical form of communication," often serves as an example of the non-ordinary, of opacity, untranslatability, self-mediation, or hypermediacy. We will read (often lesser known) texts by media theorists (McLuhan, Kittler, Flusser, Benjamin, Luhmann, Siegfried J. Schmidt, Hayles) and a selection of pre-media theory texts on the mediality and mediacy of poetry (Lessing, Hegel, Herder Schleiermacher, Hamburger), as well as one poem each week as we explore the relation between medium and message, content and form. Taught in German.
Same as: GERMAN 374

GERMAN 175. CAPITALS: How Cities Shape Cultures, States, and People. 3-5 Units.
This course takes students on a trip to major capital cities, at different moments in time: Renaissance Florence, Golden Age Madrid, Colonial Mexico City, Enlightenment and Romantic Paris, Existential and Revolutionary St. Petersburg, Roaring Berlin, Modernist Vienna, and bustling Buenos Aires. While exploring each place in a particular historical moment, we will also consider the relations between culture, power, and social life. How does the cultural life of a country intersect with the political activity of a capital? How do large cities shape our everyday experience, our aesthetic preferences, and our sense of history? Why do some cities become cultural capitals? Primary materials for this course will consist of literary, visual, sociological, and historical documents (in translation); authors we will read include Boccaccio, Dante, Sor Juana, Montesquieu, Baudelaire, Gogol, Irmgard Keun, Freud, and Borges. Note: To be eligible for WAYS credit, you must take the course for a Letter Grade.
Same as: COMPLIT 100, DLCL 100, FRENCH 175, HISTORY 206E, ILAC 175, ITALIAN 175, URBANST 153

GERMAN 181. Philosophy and Literature. 3-5 Units.
What, if anything, does reading literature do for our lives? What can literature offer that other forms of writing cannot? Can fictions teach us anything? Can they make people more moral? Why do we take pleasure in tragic stories? This course introduces students to major problems at the intersection of philosophy and literature. It addresses key questions about the value of literature, philosophical puzzles about the nature of fiction and literary language, and ways that philosophy and literature interact. Readings span literature, film, and philosophical theories of art. Authors may include Sophocles, Dickinson, Toni Morrison, Proust, Woolf, Walton, Nietzsche, and Sartre. Students master close reading techniques and philosophical analysis, and write papers combining the two. This is the required gateway course for the Philosophy and Literature major tracks. Majors should register in their home department.
Same as: CLASSICS 42, COMPLIT 181, ENGLISH 81, FRENCH 181, ILAC 181, ITALIAN 181, PHIL 81, SLAVIC 181

GERMAN 188. In Search of the Holy Grail: Percival's Quest in Medieval Literature. 3-5 Units.
This course focuses on one of the most famous inventions of the Middle Ages: the Holy Grail. The grail - a mysterious vessel with supernatural properties - is first mentioned in Chrétien de Troyes' "Perceval," but the story is soon rewritten by authors who alter the meaning of both the grail and the quest. By reading three different versions, we will explore how they respond differently to major topics in medieval culture and relevant to today: romantic love, family ties, education, moral guilt, and spiritual practice. The texts are: Chrétien de Troyes' "Perceval," Wolfram von Eschenbach's "Parzival," and the anonymous "Queste del Saint Graal." All readings will be available in English.
Same as: COMPLIT 188, COMPLIT 388, GERMAN 388

GERMAN 189. KRUPP-FLEX: Work-Life Balance in Today's Germany. 2-3 Units.
This class is being offered in collaboration with Stanford in Berlin, Bing Overseas Studies Program. This course will accompany and deepen the experience of Krupp Interns living and working in German cities and towns in summer 2021. Their participant observations in the workplace and in Germany's rich leisure culture, as well as critical consideration of their own assumptions and experiences in the context of cultural exploration, will be recorded in a reflective Arbeitsjournal (critical journal -- genre and language at the discretion of the student). These reflections will be informed by regular reading of the German press (print or online) around themes on which students choose to focus -- be that the history behind the extensive rights and social services that support labor in Germany; or habits, mores and modes of personal interaction in and outside the workplace; or attitudes toward diversity, gender, class in contemporary German culture; or topics of immediate socio-political concern that lend themselves to comparative reflection with home-country culture (e.g. immigration and asylum, structure of systemic and social responses to COVID 19, environmental awareness, vocational training); or religion, or sport culture, or indeed the specific professional sector of the internship itself. Students will submit their completed journals with an annotated reading list at the end of the summer and will give a short presentation during the mandatory Internship Seminar in late August of 2021. Permission code required. You will receive a permission code from Cornelia Kastelan - ckastelan@stanford.edu. This course is restricted to Krupp Internship students in the Program for Stanford Students in Germany.

GERMAN 191. German Capstone Project. 1 Unit.
Each student participates in a capstone interview and discussion with a panel of the German Studies faculty on topics related to German cultural and literary analysis. In prepration for the interview/discussion, students submit written answers to a set of questions based on several authentic cultural texts in German. The written answers, normally in English, should be well-formed and coherent. Within the interview/discussion, students must demonstrate a further understanding of the topic(s) posed, through cogent argument.

GERMAN 199. Individual Work. 1-12 Unit.
Repeatable for Credit. Instructor Consent Required.

GERMAN 206. Turkish-German Literature, Cinema, and Theater. 3-5 Units.
One in five people in Germany now has, as it is termed, a background of migration. Immigration from Turkey is probably the most prominent not only in terms of its massiveness and demographic consequences, but also for its significant role in changing Germany's overall cultural, social, and economic landscape. In this course, through analyzing selected literary works, films, and plays produced by Turkish-German writers and artists, we will discuss complex ideas like migration, ethnicity, race, religion, gender, and class, resorting not to oversimplifications and binary thinking but instead to relevant literary concepts and formative historical moments which have shaped the Turkish-German experience. Remote synchronous with plenty of opportunities to participate in group and breakout room discussions and creative projects.
Same as: GERMAN 106

GERMAN 213. Medieval Germany, 900-1250. 1-5 Unit.
(Undergraduates may sign up for German 213 or History 213F, graduate students should sign up for German 313 or History 313F. This course may be taken for variable units. Check the individual course numbers for unit spreads.) This course will provide a survey of the most important political, historical, and cultural events and trends that took place in the German-speaking lands between 900 and 1250. Important themes include the evolution of imperial ideology and relations with Rome, expansion along the eastern frontier, the crusades, the investiture controversy, the rise of powerful cities and civic identities, monastic reform and intellectual renewal, and the flowering of vernacular literature.nnTo satisfy a Ways requirement, this course must be taken for at least 3 units. In AY 2020-21, a letter grade or "CR" grade satisfies the Ways requirement.
Same as: GERMAN 313, HISTORY 213F, HISTORY 313F

GERMAN 215. The Queer 20th Century: German LGBTQ Literature and Film. 3-5 Units.
What was it like to be queer in 20th-century Germany? This course examines the rich and sometimes surprising LGBTQ culture of 20th-century Germany, featuring stories that are often left out of traditional seminars. Through literature and film, we will learn about pioneering gay rights activists, persecution under National Socialism, emancipation movements under capitalism and socialism, and debates that are shaping queer life in contemporary Germany. Taught in English; students of all backgrounds are very welcome. Remote synchronous, with plenty of opportunities for breakout rooms, student discussion, Zoom breaks, and off-screen work.
Same as: FEMGEN 115A, FEMGEN 215A, GERMAN 115

GERMAN 222. Myth and Modernity. 3-5 Units.
Masters of German 20th- and 21st-Century literature and philosophy as they present aesthetic innovation and confront the challenges of modern technology, social alienation, manmade catastrophes, and imagine the future. Readings include Nietzsche, Freud, Rilke, Musil, Brecht, Kafka, Doeblin, Benjamin, Juenger, Arendt, Musil, Mann, Adorno, Celan, Grass, Bachmann, Bernhardt, Wolf, and Kluge. Taught in English. Note for German Studies grad students: GERMAN 322 will fulfill the grad core requirement since GERMAN 332 is not being offered this year. NOTE: Enrollment requires Professor Eshel's consent. Please contact him directly at eshel@stanford.edu and answer these 2 questions: "Why do you want to take this course?" and "What do you think you can add to the discussion?" Applications will be considered in the order in which they were received. Enrollment is limited to 20 students.
Same as: COMPLIT 222A, GERMAN 322, JEWISHST 242G, JEWISHST 342

GERMAN 230. German Literature (800-1700). 3-5 Units.
In this seminar we will read and discuss a number of key medieval texts: Hartmann von Aue's "Gregorius," Wolfram von Eschenbach's "Parzival," Alber's "Tnugdalus," sermons by Meister Eckhart and a selection of twelfth-century religious poetry. Discussions will focus on sin, atonement and subjectivity. Some course materials are only available in German.
Same as: GERMAN 330

GERMAN 231. German Literature (1700-1900). 3-5 Units.
How the literature of the period between 1750 and 1900 gives voice to new conceptions of selfhood and articulates the emergent self-understanding of modernity. Responses to unprecedented historical experiences such as the French Revolution and the ensuing wars, changes in the understanding of nature, the crisis of foundations, and the persistence of theological motifs. Lessing, Herder, Goethe, Schiller, Holderlin, Kleist, Heine, Buchner, Keller, and Fontane. Taught in English, readings in German.
Same as: GERMAN 331

GERMAN 232. German Literature 3: Modernity and the Unspeakable. 3-5 Units.
Masterpieces of German literature, drama, and film from the first half of the 20th century. Particular focus on modernism and the crisis of language. What urgent truths (whether psychological, political, spiritual, or sexual) cannot be expressed, and how do art and dreams attempt to speak the unspeakable? Readings and viewings include works by Hofmannsthal, Schnitzler, Freud, Wedekind, Mann, Musil, Kafka, Toller, Höch, Rilke, Schoenberg, Riefensthal, Benjamin, and Brecht. Taught in English.
Same as: GERMAN 332

GERMAN 235. German Conversation. 3 Units.
This small, individualized course will offer students the chance to work on their spoken expression and critical thinking, in German. Topics will change each quarter but will span contemporary politics and culture, film, literature, and visual arts. The focus will be on speaking German in small groups, as opposed to formal presentations or written assignments. Students will have the opportunity to pursue topics of personal interest, as well as work collaboratively and individually on projects intended to foster advanced communicative skills.
Same as: GERMAN 135

GERMAN 237. Fascism after Fascism. 3-5 Units.
When World War II ended, most of the states that described themselves as "fascist" ended with it. Nevertheless, fascism haunted postwar democracy as an ever-present threat. The question of what exactly had characterized fascism, and what parts of it persisted within liberal democracies themselves, were continuously and contentiously debated. This question has emerged all the more forcefully in recent years as "illiberal," or "right-wing populist," movements and governments have begun to question the basic premises of liberal democracy. What was fascism, and what would it mean for it to return? This course considers writings by philosophers, historians, journalists and writers, and moves from early anti-fascist writings to critiques of online movements and neo-reactionaries.
Same as: COMPLIT 237

GERMAN 239. Queer Theory. 3-5 Units.
Do we really need a theory in order to be queer? Queer Theory emerged in response to feminist thought, and the study of the history of sexuality, building on their insights, but also uncovering their blind spots. Without Queer Theory, few of the discourses around desire, power and gender identity that we take for granted on college campuses today would exist. Yet there is also a real risk that reality has left the theory behind. In this course, we will try to answer the question: What do we need queer theory for? Do we still need it? And if so, of what kind? The course is designed to introduce students to core texts of queer theory, and to connect them to current debates, be this around trans rights, the representation of homosexuality or the fight against campus sexual assault.
Same as: COMPLIT 239, FEMGEN 239

GERMAN 253. Hannah Arendt: Facing Totalitarianism. 3-5 Units.
Like hardly any other thinker of the modern age, Hannah Arendt's thought offers us timeless insights into the fabric of the modern age, especially regarding the perennial danger of totalitarianism. This course offers an in-depth introduction to Arendt's most important works in their various contexts, as well as a consideration of their reverberations in contemporary philosophy and literature. Readings include Arendt's The Origin of Totalitarianism, The Human Condition, Between Past and Future, Men in Dark Times, On Revolution,Eichmann in Jerusalem, and The Life of the Mind, as well as considerations of Hannah Arendt's work by Max Frisch, Jürgen Habermas, Seyla Benhabib, Judith Butler, Giorgio Agamben, and others. Special attention will be given to Arendt's writings on literature with an emphasis on Kafka, Brecht, Auden, Sartre, and Camus. This course will be synchronously conducted, but will also use an innovative, Stanford-developed, online platform called Poetic Thinking. Poetic Thinking allows students to share both their scholarly and creative work with each other. Based on the newest technology and beautifully designed, it greatly enhances their course experience.
Same as: COMPLIT 353B, GERMAN 353, JEWISHST 243A

GERMAN 256. Thomas Bernhard. 3-5 Units.
This is a course about the Austrian writer Thomas Bernhard, his work, and his time.
Same as: GERMAN 356

GERMAN 261. Theorie des Erzählens. 3-5 Units.
This course approaches the history of narrative theory from the German perspective: we will read canonical and foundational texts that have shaped the way we read and study narrative¿from the usual suspects (Gerard Genette, Yuri Lotman, Tzvetan Todorov, Algirdas Julien Greimas) to the (here) lesser known German theorists of narrative forms and literary theory (Frank K. Stanzel, Käte Hamburger, Monika Fludernik, Siegfried J. Schmidt). Alongside these theoretical approaches, we will read two German novels, which we¿ll use as experimental playground to better test and understand how and why literary theory can help us construct models of reading, world-making, human experience, and storytelling. Towards the end of the course, we¿ll switch to the open questions and future of narrative theory: what media of long-form storytelling come after the novel? What do they have in common with, say, the novels of J.W. Goethe, Adalbert Stifter, Lou Andreas-Salomé, or Ingeborg Bachmann? How would we expand narrative theory to include today¿s most important and engaging sites of storytelling (like video games or serial television)? Taught in German.
Same as: GERMAN 361

GERMAN 265. Middle High German. 1-3 Unit.
Middle High German (MHG), a form of German spoken in the High Middle Ages c. 1050¿1350, constitutes one of the most important medieval languages of Europe. Numerous fundamental classics of European literature were originally composed in MHG, among them the Nibelungenlied, Wolfram von Eschenbach¿s Parzival, and Meister Eckhart¿s German Sermons. Reading skills in this language will thus allow literary scholars and historians to both appreciate well-known texts in their original form and access a range of untranslated literary works and sources. Working with different textual examples, students will learn how to read and translate MHG texts. They will additionally gain an overview of the history of the German language. Focusing on reading comprehension, this course will take a hands-on approach to key methods and concepts of historical linguistics (etymology, dialectology, historical semantics, phonetic history, premodern Germanic morphology and syntax). Additionally, students will learn how to work with printed and digital tools for translating MHG texts (lexical databases, dictionaries, historical grammars). German skills of intermediate level or higher are required. Assignments include weekly translation exercises.

GERMAN 267. Prospects for Transatlantic Relations: What Holds the West Together?. 1-2 Unit.
This seminar treats disintegration tendencies in the trans-Atlantic West, including the impact of China and Russia in globalization and north-south issues inside the EU. This course involves participation in an international conference during October and the preparation of individual research papers.nMeeting times: This seminar will meet from 9:00 to 11:00am in room 260-252 on Monday, October 21, Wednesday, October 23 and Friday, October 25, 2019.
Same as: GERMAN 367

GERMAN 268. Socialism: Theory, Literature, Practice. 3-5 Units.
The prospect of socialism has circulated in the cultural and political programs of many countries, and socialist programs have informed the real governance structures in some. This course examines some of the theoretical texts that have described socialism as well as critical responses. In addition, the treatment of socialism in literature will be discussed as well as considerations of the outcomes of institutionalized programs. Readings will include texts by authors such as Marx, Lenin, Hayek, Friedman, Koestler, Steinbeck, Wolf, Brauenig, Wright and others.
Same as: COMPLIT 268

GERMAN 270. Sovereignty and the Limits of Globalization and Technology. 3-5 Units.
Current opposition to globalization is emerging in many countries in the various forms of populism, restrictive trade policies, protest parties and localism, accompanied by appeals to national interests and cultural traditions. At stake is the reassertion of state sovereignty against market processes and internationalist claims. This seminar explores the tensions between state and market, their cultural contexts, new technologies, and the importance of community belonging. Readings include texts by authors such as Marx, Nietzsche, Schmitt, Strauss, Girard, Lasch, Bloom, Appiah. Student research projects on contemporary topics. NOTE: To be considered for enrollment in this course, please complete and submit this short application by October 19, 2018, 11:59pm PST. Students accepted to participate in this course will be notified on October 26, 2018 by 6:00pm. Auditors are not permitted.nLink to application: http://web.stanford.edu/~conorato/german270.fb.

GERMAN 275. Outer Space Exploration in Germany in the Twentieth Century. 1-5 Unit.
Since the nineteenth century, Germans, like their counterparts around the world, have considered the meaning and the role of humanity in outer space. As space travel developed from a dream to a reality, and as Germany changed borders and political systems among empires, dictatorships, socialist states, and capitalist states, German interest in spaceflight remained, although the meaning found in the stars changed dramatically. This course considers Germans' dreams of and predictions for outer space travel alongside German technological developments in spaceflight. It includes the different German states throughout the century, including Weimar Germany, National Socialism, East Germany, and West Germany. The course looks at science fiction films and novels, newspaper reports, scientific developments, and German space engineering projects, which together demonstrate how and why space travel often found high levels of support in Germany. Students will engage in historical and cultural analysis through course readings, discussions, and assignments.nNOTE: To be eligible for WAYS credit, you must take this course for a minimum of 3 units and a letter grade.
Same as: HISTORY 237G

GERMAN 277. Stagnation or Progress. 3-5 Units.
Vibrant cultures draw on the dynamism of innovation and creativity, but they can decline through stagnation, forms of which we have been facing in recent years: deceleration of technological innovation, prospects of slowed economic growth, and a generalized cultural stagnation or decadence. This seminar examines this problem and asks about antidotes, whether as progress, renaissance, or disruption. Readings drawn from authors such as Nietzsche, Burckhardt, Spengler Strauss, Girard, Lasch and contemporary treatments of technology, economy and culture. Taught in English. NOTE: To be considered for enrollment in this course, please complete and submit this short application by January 31, 2020, 11:59pm PST. Students accepted to participate in this course will be notified on February 7, 2020 by 6:00pm. Auditors are not permitted. nLink to syllabus: https://stanford.box.com/s/h18yow1j80zv9vvlbk64suchzs2c0rcc Link to application: http://web.stanford.edu/~conorato/german277.fb.

GERMAN 281. G.W.F. Hegel: System, History, Dialectics. 3-5 Units.
This course is intended to introduce students to the study of G.W.F. Hegel. The seminar will read several of Hegel's central works and discuss his reception in the later 19th and 20th century.

GERMAN 283A. Modern Notions of 'The Holy'. 3-5 Units.
This course explores the question, "What may we call 'holy' in the modern era?" by focusing on key writers and thinkers, who in various ways, and in different times raised this question: Friedrich Hölderlin, Hermann Cohen, Franz Kafka, Martin Heidegger, Martin Buber, Franz Rosenzweig, Else Lasker-Schüler, Walter Benjamin, Ernst Bloch, Hannah Arendt, Margarete Susman, Nelly Sachs, Paul Celan, and Judith Butler.nnThis course will be synchronous-conducted, but will also use an innovative, Stanford-developed, on-line platform called Poetic Thinking. Poetic Thinking allows students to share both their scholarly and creative work with each other. Based on the newest technology and beautifully designed, it will greatly enhance their course experience.
Same as: COMPLIT 283A, COMPLIT 383A, GERMAN 383A, RELIGST 283A, RELIGST 383A

GERMAN 286. Forming the world: Pragmatism and Aesthetics. 3-5 Units.
This course will explore key pragmatist philosophical and theoretical approaches to literature, the visual arts, and music. How are human lives mediated by and through aesthetic experience, in the realm of the private as well as the public. Rather than positing a metaphysical idea of beauty, the thinkers and artists we engage ask how texts and artworks render us sensitive to our multifaceted contingencies, and how we may speak and write about them. Readings and viewings include R. W. Emerson, Friedrich Nietzsche, Emily Dickinson, Martin Heidegger, John Dewey, T. W. Adorno, Hannah Arendt, Richard Rorty, Terrence Malick, J. M. Coetzee, Bruno Latour, Marilynne Robinson, Nancy Fraser, Rita Felski, Tania Bruguera, Yivve Citton, Richard Moose, Cheryl Misak, and Shannon Sullivan, among others.
Same as: COMPLIT 286

GERMAN 313. Medieval Germany, 900-1250. 1-5 Unit.
(Undergraduates may sign up for German 213 or History 213F, graduate students should sign up for German 313 or History 313F. This course may be taken for variable units. Check the individual course numbers for unit spreads.) This course will provide a survey of the most important political, historical, and cultural events and trends that took place in the German-speaking lands between 900 and 1250. Important themes include the evolution of imperial ideology and relations with Rome, expansion along the eastern frontier, the crusades, the investiture controversy, the rise of powerful cities and civic identities, monastic reform and intellectual renewal, and the flowering of vernacular literature.nnTo satisfy a Ways requirement, this course must be taken for at least 3 units. In AY 2020-21, a letter grade or "CR" grade satisfies the Ways requirement.
Same as: GERMAN 213, HISTORY 213F, HISTORY 313F

GERMAN 319. Modern Theatre. 1-5 Unit.
Modern theatre in Europe and the US, with a focus on the most influential works from roughly 1880 to the present. What were the conventions of theatrical practice that modern theatre displaced? What were the principal innovations of modern playwriting, acting, stage design, and theatrical architecture? How did modern theatrical artists wrestle with the revolutionary transformations of the modern age? Plays by Büchner, Ibsen, Strindberg, Shaw, Chekhov, Wilde, Wedekind, Treadwell, Pirandello, Brecht, O¿Neill, Beckett, Smith, Parks, and Nottage.
Same as: TAPS 119, TAPS 319

GERMAN 322. Myth and Modernity. 3-5 Units.
Masters of German 20th- and 21st-Century literature and philosophy as they present aesthetic innovation and confront the challenges of modern technology, social alienation, manmade catastrophes, and imagine the future. Readings include Nietzsche, Freud, Rilke, Musil, Brecht, Kafka, Doeblin, Benjamin, Juenger, Arendt, Musil, Mann, Adorno, Celan, Grass, Bachmann, Bernhardt, Wolf, and Kluge. Taught in English. Note for German Studies grad students: GERMAN 322 will fulfill the grad core requirement since GERMAN 332 is not being offered this year. NOTE: Enrollment requires Professor Eshel's consent. Please contact him directly at eshel@stanford.edu and answer these 2 questions: "Why do you want to take this course?" and "What do you think you can add to the discussion?" Applications will be considered in the order in which they were received. Enrollment is limited to 20 students.
Same as: COMPLIT 222A, GERMAN 222, JEWISHST 242G, JEWISHST 342

GERMAN 325. Nietzsche: Life as Performance. 3-5 Units.
Nietzsche famously considered that "there is no 'being' behind the deed, its effect, and what becomes of it; the 'doer' is invented as an afterthought - the doing is everything." How should we understand this idea of a deed without a doer, how might it relate to performance, and what influence has it had on modern culture? In order to answer these questions, we will consider Nietzsche's writings alongside some of the artworks that influenced Nietzsche or were influenced by him.
Same as: GERMAN 125, TAPS 152L, TAPS 325

GERMAN 330. German Literature (800-1700). 3-5 Units.
In this seminar we will read and discuss a number of key medieval texts: Hartmann von Aue's "Gregorius," Wolfram von Eschenbach's "Parzival," Alber's "Tnugdalus," sermons by Meister Eckhart and a selection of twelfth-century religious poetry. Discussions will focus on sin, atonement and subjectivity. Some course materials are only available in German.
Same as: GERMAN 230

GERMAN 331. German Literature (1700-1900). 3-5 Units.
How the literature of the period between 1750 and 1900 gives voice to new conceptions of selfhood and articulates the emergent self-understanding of modernity. Responses to unprecedented historical experiences such as the French Revolution and the ensuing wars, changes in the understanding of nature, the crisis of foundations, and the persistence of theological motifs. Lessing, Herder, Goethe, Schiller, Holderlin, Kleist, Heine, Buchner, Keller, and Fontane. Taught in English, readings in German.
Same as: GERMAN 231

GERMAN 332. German Literature 3: Modernity and the Unspeakable. 3-5 Units.
Masterpieces of German literature, drama, and film from the first half of the 20th century. Particular focus on modernism and the crisis of language. What urgent truths (whether psychological, political, spiritual, or sexual) cannot be expressed, and how do art and dreams attempt to speak the unspeakable? Readings and viewings include works by Hofmannsthal, Schnitzler, Freud, Wedekind, Mann, Musil, Kafka, Toller, Höch, Rilke, Schoenberg, Riefensthal, Benjamin, and Brecht. Taught in English.
Same as: GERMAN 232

GERMAN 342. Feminist Avant Garde. 3-5 Units.
Feminist Avant Garde.
Same as: GERMAN 142

GERMAN 343. World War Two: Place, Loss, History. 5 Units.
A consideration of how the Second World War still goes on today in the form of haunted absences and vivid representations. Studying literature and art in detail, the seminar will center on some of the places where those absences and representations gather: Portbou, Pearl Harbor, Auschwitz, Guadalcanal, London, Berlin, Hamburg, Rome, Omaha Beach, Peleliu, Monte Cassino, Hollywood. Writers and artists include: James Jones, Georges Didi-Huberman, Walter Benjamin, Eduardo Cadava, W.G. Sebald, Rachel Whiteread, Ingeborg Bachman, Wis¿awa Szymborska, Eugene Sledge, Hans Erich Nossack, Jorie Graham, Gerhard Richter, Dani Karavan, Tom Lea, W. Eugene Smith, Val Lewton, and Terrence Malick.
Same as: ARTHIST 401

GERMAN 347. The Conservative Revolution. 3-5 Units.
Rapid modernization in early twentieth-century Germany elicited various conservative criticisms, which became particularly acute after the First World War. The thinkers of the Conservative Revolution gave voice to post-Nietzschean concerns about cultural transformation, combining traditionalist and anti-traditionalist positions. Its legacy anticipates current discussions regarding post-modernity, post-democracy, and the impact of technological change. Texts by authors such as: Jünger, Heidegger, Hofmannsthal, Borchardt, Mann, Arendt, Marcuse. Taught in English.
Same as: GERMAN 147

GERMAN 353. Hannah Arendt: Facing Totalitarianism. 3-5 Units.
Like hardly any other thinker of the modern age, Hannah Arendt's thought offers us timeless insights into the fabric of the modern age, especially regarding the perennial danger of totalitarianism. This course offers an in-depth introduction to Arendt's most important works in their various contexts, as well as a consideration of their reverberations in contemporary philosophy and literature. Readings include Arendt's The Origin of Totalitarianism, The Human Condition, Between Past and Future, Men in Dark Times, On Revolution,Eichmann in Jerusalem, and The Life of the Mind, as well as considerations of Hannah Arendt's work by Max Frisch, Jürgen Habermas, Seyla Benhabib, Judith Butler, Giorgio Agamben, and others. Special attention will be given to Arendt's writings on literature with an emphasis on Kafka, Brecht, Auden, Sartre, and Camus. This course will be synchronously conducted, but will also use an innovative, Stanford-developed, online platform called Poetic Thinking. Poetic Thinking allows students to share both their scholarly and creative work with each other. Based on the newest technology and beautifully designed, it greatly enhances their course experience.
Same as: COMPLIT 353B, GERMAN 253, JEWISHST 243A

GERMAN 356. Thomas Bernhard. 3-5 Units.
This is a course about the Austrian writer Thomas Bernhard, his work, and his time.
Same as: GERMAN 256

GERMAN 357. What kind of Information is Poetry. 1-5 Unit.
"Only a fool reads poetry for facts": To read a poem with the same fact-seeking attention required by using a dictionary, reading a newspaper article, or following a recipe is, perhaps, foolish. But if it is, it is so only because it means the reader has not understood what a poem is supposed to do. Consider Wittgenstein's famous warning: "Do not forget that a poem, even though it is composed in the language of information, is not used in the language-game of giving information." A poem, even though it is made of the same (kinds of) words as information, ought not to be treated as information (the sentence seems to say). Distinct in their respective functions, poetry and information form two ends of an opposition: one for the creative possibilities for human expression, the other for the practical and mechanical tasks of everyday life.nBut what really "is" information? Has poetry not, since the beginning of time, also functioned as vehicle for storing, quantifying, and communicating things¿from historical events, the law, to agricultural manuals, just as "informational" texts do? How has the emergence of technological media in our so-called Information Age altered, reinforced, or revolutionized the place of poetry in the realm of human communication?nThese questions will motivate this course, which is also a general introduction to poetry and poetics. We will closely read German texts from the Musipilli to digital-born poetry, and secondary material from thinkers and theorists such as Schlegel, Schleiermacher, Benjamin, Wittgenstein, Flusser, and Bense, to learn how various methods of reading and literary criticism - from formalism and structuralism to Digital Humanities approaches - have developed alongside something like "information" as literary quality and social form.nAssistant Professor Lea Pao will teach this course.
Same as: GERMAN 157

GERMAN 358. Seminar in Medieval German Studies. 3-5 Units.
In this weekly seminar we will read primary materials, and important scholarship, and discuss ongoing debates and trends in medieval studies. The reading list will be determined in consultation with the participants; students will be invited to share their own work with the group. All graduate students working in medieval studies or interested in deepening their familiarity with medieval studies are encouraged to participate.

GERMAN 361. Theorie des Erzählens. 3-5 Units.
This course approaches the history of narrative theory from the German perspective: we will read canonical and foundational texts that have shaped the way we read and study narrative¿from the usual suspects (Gerard Genette, Yuri Lotman, Tzvetan Todorov, Algirdas Julien Greimas) to the (here) lesser known German theorists of narrative forms and literary theory (Frank K. Stanzel, Käte Hamburger, Monika Fludernik, Siegfried J. Schmidt). Alongside these theoretical approaches, we will read two German novels, which we¿ll use as experimental playground to better test and understand how and why literary theory can help us construct models of reading, world-making, human experience, and storytelling. Towards the end of the course, we¿ll switch to the open questions and future of narrative theory: what media of long-form storytelling come after the novel? What do they have in common with, say, the novels of J.W. Goethe, Adalbert Stifter, Lou Andreas-Salomé, or Ingeborg Bachmann? How would we expand narrative theory to include today¿s most important and engaging sites of storytelling (like video games or serial television)? Taught in German.
Same as: GERMAN 261

GERMAN 367. Prospects for Transatlantic Relations: What Holds the West Together?. 1-2 Unit.
This seminar treats disintegration tendencies in the trans-Atlantic West, including the impact of China and Russia in globalization and north-south issues inside the EU. This course involves participation in an international conference during October and the preparation of individual research papers.nMeeting times: This seminar will meet from 9:00 to 11:00am in room 260-252 on Monday, October 21, Wednesday, October 23 and Friday, October 25, 2019.
Same as: GERMAN 267

GERMAN 369. Introduction to the Profession of Literary Studies. 1-2 Unit.
A survey of how literary theory and other methods have been made institutional since the nineteenth century. The readings and conversation are designed for entering Ph.D. students in the national literature departments and comparative literature.
Same as: COMPLIT 369, DLCL 369, FRENCH 369, ITALIAN 369

GERMAN 374. The Poem as Medium. 3-5 Units.
Since Marshall McLuhan formulated his theory of "media" as "extensions of ourselves," we've come to understand the history of human communication in terms of its physical carriers, tools, and technologies. From cuneiform, hieroglyphs, and logographic writing systems, to the alphabet, to algorithms; from clay tablets, to papyrus, to LED screens; from scrolls, to books, to the gramophone, to DNA - the medium and the message shape how we store and communicate information. Poetry's place in this history of media has been both elusive and strangely consistent. In media theory, the poem, which Hans Magnus Enzensberger once called an "archaic medium" and Niklas Luhman a "paradoxical form of communication," often serves as an example of the non-ordinary, of opacity, untranslatability, self-mediation, or hypermediacy. We will read (often lesser known) texts by media theorists (McLuhan, Kittler, Flusser, Benjamin, Luhmann, Siegfried J. Schmidt, Hayles) and a selection of pre-media theory texts on the mediality and mediacy of poetry (Lessing, Hegel, Herder Schleiermacher, Hamburger), as well as one poem each week as we explore the relation between medium and message, content and form. Taught in German.
Same as: GERMAN 174

GERMAN 383A. Modern Notions of 'The Holy'. 3-5 Units.
This course explores the question, "What may we call 'holy' in the modern era?" by focusing on key writers and thinkers, who in various ways, and in different times raised this question: Friedrich Hölderlin, Hermann Cohen, Franz Kafka, Martin Heidegger, Martin Buber, Franz Rosenzweig, Else Lasker-Schüler, Walter Benjamin, Ernst Bloch, Hannah Arendt, Margarete Susman, Nelly Sachs, Paul Celan, and Judith Butler.nnThis course will be synchronous-conducted, but will also use an innovative, Stanford-developed, on-line platform called Poetic Thinking. Poetic Thinking allows students to share both their scholarly and creative work with each other. Based on the newest technology and beautifully designed, it will greatly enhance their course experience.
Same as: COMPLIT 283A, COMPLIT 383A, GERMAN 283A, RELIGST 283A, RELIGST 383A

GERMAN 384. The Nervous Age: Neurosis, Neurology, and Nineteenth-century Theatre. 1-4 Unit.
The nineteenth century witnessed profound developments in neurological and psychological sciences, developments that fundamentally altered conceptions of embodiment, agency, and mind. This course will place these scientific shifts in conversation with theatrical transformations of the period. We will read nineteenth-century neuropsychologists such as Charles Bell, Johannes Müller, George Miller Beard, Jean-Martin Charcot, and Hippolyte Bernheim alongside artists such as Percy Shelley, Georg Büchner, Richard Wagner, Émile Zola, and August Strindberg. NOTE: Only for German Studies PhD students.

GERMAN 388. In Search of the Holy Grail: Percival's Quest in Medieval Literature. 3-5 Units.
This course focuses on one of the most famous inventions of the Middle Ages: the Holy Grail. The grail - a mysterious vessel with supernatural properties - is first mentioned in Chrétien de Troyes' "Perceval," but the story is soon rewritten by authors who alter the meaning of both the grail and the quest. By reading three different versions, we will explore how they respond differently to major topics in medieval culture and relevant to today: romantic love, family ties, education, moral guilt, and spiritual practice. The texts are: Chrétien de Troyes' "Perceval," Wolfram von Eschenbach's "Parzival," and the anonymous "Queste del Saint Graal." All readings will be available in English.
Same as: COMPLIT 188, COMPLIT 388, GERMAN 188

GERMAN 396. German Studies Lecture Series. 1 Unit.
What's happening in German Studies today? The GSLS invites 3 speakers per quarter to present on their work and research in German literature, culture, politics, and history, offering students an insight into the current field of German Studies and an engagement with topics ranging from medieval fabrics to the refugee crisis. Luncheons are scheduled every first Tuesday of the month. To earn the unit for this course, students will attend the lecture, read 1-2 articles or book chapters written by the speaker of the week, and complete one short 2-page writing assignment (this could be a reflection, a review, a creative assignment, a poetic adaptation of a talk - we'll discuss).

GERMAN 397. Graduate Studies Colloquium. 1 Unit.
Colloquium for graduate students in German Studies. Taught in English. May be repeated for credit.

GERMAN 399. Individual Work. 1-12 Unit.
Repeatable for Credit. Instructor Consent Required.

GERMAN 680. Curricular Practical Training. 1-3 Unit.
CPT course required for international students completing degree. nPrerequisite: German Studies Ph.D candidate.

GERMAN 802. TGR Dissertation. 0 Units.
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GLOBAL STUDIES

The Stanford Global Studies Division (SGS) is a hub for internationally focused research and teaching on campus. SGS prepares Stanford students for the world through an interdisciplinary education that cultivates knowledge of different cultures, and deepens our understanding of the global affairs through innovative research. Stanford Global Studies is comprised of 14 centers and programs, which are described below.

Global Studies Minor

The Global Studies minor (https://sgs.stanford.edu/programs-centers/global-studies-minor/) is available to Stanford undergraduates from any major, and is designed to provide students with the opportunity to pursue interdisciplinary study in one of six specializations, including in-depth language study, while integrating this knowledge into a larger vision of global affairs:

- African Studies (https://africanstudies.stanford.edu/study/academic-programs/undergraduate-minor/)
- European Studies (http://tec.fsi.stanford.edu/node/219264/)
- Iranian Studies (https://iranian-studies.stanford.edu/students/minor/)
- Islamic Studies (https://islamicstudies.stanford.edu/)
- Latin American Studies (https://clas.stanford.edu/academics/undergraduate-minor/)
- South Asian Studies (https://southasia.stanford.edu/)

Students who have participated or plan to participate in the Bing Overseas Studies Program (BOSP) are especially encouraged to enroll as most units earned through the BOSP program satisfy the Global Studies minor.

All students are required to complete 28 units, including a 3 unit gateway course GLOBAL 101 Critical Issues in Global Affairs. The remaining 25 units are unique to each specialization. For questions, contact Dr. Katherine Kuhns at kkuhns@stanford.edu.

To declare the Global Studies minor, students must:

1. Set up an appointment with the appropriate specialization adviser (see appropriate specialization page for contact information).
2. Declare the Global Studies minor and subplan in Axess (http://axess.stanford.edu).

Center for African Studies

Director: James Ferguson
Office: 127 Encina Commons
Web Site: http://africanstudies.stanford.edu (http://africanstudies.stanford.edu/)

The Center for African Studies (CAS) coordinates an interdisciplinary program in African Studies for undergraduates and graduate students. The program seeks to enrich understanding of the interactions among the social, economic, cultural, historical, linguistic, genetic, geopolitical, ecological, and biomedical factors that shape and have shaped African societies. CAS offers a certificate and a specialization in African Studies as part of the Global Studies minor (https://africanstudies.stanford.edu/study/academic-programs/undergraduate-minor/). For further information, see the "African Studies (p. 918)" section of this bulletin.

Center for East Asian Studies

Director: Dafna Zur
Office: Knight Building, 521 Memorial Way
Web Site: http://ceas.stanford.edu (http://ceas.stanford.edu/)

The Center for East Asian Studies (CEAS) supports teaching and research on East Asia-related topics across all disciplines; disseminates knowledge about East Asia through projects of local, regional, national, and international scope; and serves as the intellectual gathering point for a collaborative and innovative community of scholars and students of East Asia. CEAS works with all schools, departments, research centers, and student groups to facilitate and enhance all aspects of East Asia-related research, teaching, outreach, and exchange across the Stanford campus.

For further information, see the "East Asian Studies (p. 1353)" section of this bulletin.

France-Stanford Center for Interdisciplinary Studies

Director: Amalia Kessler
Office: Building 260, Room 122
Web Site: http://francestanford.stanford.edu (http://francestanford.stanford.edu/)

The France-Stanford Center for Interdisciplinary Studies, founded in partnership with the French Ministry of Foreign Affairs, aims to bridge the disciplines of the humanities, social sciences, sciences, engineering, business, and law, addressing historical and contemporary issues of significance for France and the United States. The Center brings together Stanford faculty and students and academics in France to advance collaborative research and foster interdisciplinary inquiry. Its programs include conferences, support for collaborative research projects, internships, exchanges, lectures, and seminars.

Global Studies Internship Program

Web Site: https://global-internships.stanford.edu

The Stanford Global Studies Division offers highly qualified Stanford students an opportunity to extend classroom knowledge of the world to immersive cultural and working experiences every summer through the Global Studies Internship Program. Currently enrolled freshmen, sophomores, juniors, seniors, and coterms at Stanford in all majors are eligible to apply, including students who are undeclared. For more information, visit http://global-internships.stanford.edu/.

WSD HANDA Center for Human Rights and International Justice

Director: David Cohen
Office: Encina Hall West, Room W208
Web Site: https://handacenter.stanford.edu/

The WSD HANDA Center equips a new generation of leaders with the knowledge and skills necessary to protect and promote human rights and dignity for all. Reflecting a deep commitment to international justice and the rule of law, the center collaborates with partners across Stanford University and beyond on innovative programs that foster critical inquiry in the classroom and in the world. The center offers an undergraduate minor. For further information, see the "Human Rights (p. 1642)" section of this bulletin.

Program in International Relations

Director: Kenneth Schultz
Office: Encina Hall West, Room W216
Web Site: http://internationalrelations.stanford.edu (http://internationalrelations.stanford.edu/)

International Relations (IR) is an interdisciplinary undergraduate major focusing on changing political, economic, and cultural relations within the international system in the modern era. The IR program also offers an interdisciplinary minor (p. 1704) and honors program. For further information, see the "International Relations (p. 1691)" section of this bulletin.

Hamid and Christina Moghadam Program in Iranian Studies

Director: Abbas Milani
Office: 615 Crothers Way
Web Site: http://iranian-studies.stanford.edu (http://iranian-studies.stanford.edu/)

The Hamid and Christina Moghadam Program in Iranian Studies at Stanford University provides an interdisciplinary and multidisciplinary platform for the study of modern Iranian history, culture, politics, society, and economy. The program combines pedagogy, policy analysis, and research on all aspects of Iran as a civilization, one of the oldest in the world. The program offers research support, internships, a range of events and initiatives, and a specialization in Iranian Studies as part of the Global Studies minor (https://iranian-studies.stanford.edu/students/minor/).

Sohaib and Sara Abbasi Program in Islamic Studies

Director: Lisa Blaydes
Office: Encina Commons 124D, 615 Crothers Way
Web Site: http://islamicstudies.stanford.edu (http://islamicstudies.stanford.edu/)

The mission of the Sohaib and Sara Abbasi Program in Islamic Studies is to serve as a forum for interdisciplinary research and teaching in Islamic studies, complemented by seminars, colloquia and public lectures. The program seeks to illuminate Islamic history from its beginnings to the 21st century, the religion of Islam in its many aspects, and the diversity of Muslim cultures and societies, past and present, not only in the Middle East but also including South and Southeast Asia, Africa, Europe, and America. In addition to geographical breadth, the program promotes scholarship from both the humanities and the social sciences. The program offers student grants for research and language training and a specialization in Islamic Studies as part of the Global Studies minor (https://islamicstudies.stanford.edu/study/undergraduate-minor/).

Taube Center For Jewish Studies

Director: Ari Kelman
Office: Building 360, Room 362H
Web Site: http://jewishstudies.stanford.edu (http://jewishstudies.stanford.edu/)

The interdisciplinary Taube Center for Jewish Studies coordinates and promotes the study of all aspects of Jewish life. The center offers an undergraduate minor and an interdisciplinary major through the Center for Comparative Studies in Race and Ethnicity (https://ccsre.stanford.edu/academics/undergraduate-program/). For further information, see the "Jewish Studies (p. 1712)" section of this bulletin.

Center for Latin American Studies

Director: Alberto Díaz-Cayeros
Office: Bolivar House
Web Site: http://las.stanford.edu (http://las.stanford.edu/)

The Stanford Center for Latin American Studies supports research and teaching on Latin America by the faculty and students of Stanford in all fields of study. The center offers a master's degree, in addition to a specialization in Latin American Studies as part of the Global Studies minor (https://clas.stanford.edu/academics/undergraduate-minor/). For further information, see the "Center for Latin American Studies (p. 1763)" section of this bulletin.

Mediterranean Studies Forum

Director: Lisa Blaydes
Office: Encina Commons 124D, 615 Crothers Way
Web Site: http://mediterraneanstudies.stanford.edu (http://mediterraneanstudies.stanford.edu/)

The Mediterranean Studies Forum encourages scholars to explore the interplay among societies, cultures, and communities around the Mediterranean Basin from the Middle Ages to the present. The forum also studies the relations of the Mediterranean with other regions and areas of the world. The central goal of the forum is to contribute to interfield and interdisciplinary dialogue among scholars of these areas through lectures, colloquia, workshops, conferences, and publications. Particular programming fields include Turkish Studies and Sephardic Studies.

Center for Russian, East European and Eurasian Studies

Director: Amir Weiner
Office: 615 Crothers Way
Web Site: http://creees.stanford.edu (http://creees.stanford.edu/)

The Center for Russian, East European and Eurasian Studies (CREEES) is Stanford University's hub for the interdisciplinary study of a vast region stretching from the former Berlin Wall to the Bering Strait. CREEES is home to a one year master's degree, and supports undergraduates and graduate students throughout campus, especially in regards to funding for research and language study. CREEES also hosts renowned visiting scholars, lecture series, conferences, and public events. For further information, see the "Center for Russian, East European and Eurasian Studies (p. 2060)" section of this bulletin.

Center for South Asia

Director: Jisha Menon
Office: 615 Crothers Way
Web Site: http://southasia.stanford.edu (http://southasia.stanford.edu/)

The Center for South Asia (CSA) serves to coordinate and develop Stanford's resources for the study of South Asia across all the disciplines in the School of Humanities and Sciences. It works closely with departments and other units of the University to increase faculty strength, support research, enhance the curriculum, build the library collection, and sponsor programs and events. The program also offers a specialization in South Asian Studies as part of the Global Studies minor (https://southasia.stanford.edu/academics/undergraduate-minor/).

The Europe Center

Director: Anna Grzymala-Busse
Office: Encina Hall Central C243
Web Site: https://tec.fsi.stanford.edu/

The Europe Center is a multidisciplinary institute committed to the examination of European society, culture, politics, diplomacy, and security. The program also offers a specialization in European Studies as part of the Global Studies minor (http://tec.fsi.stanford.edu/node/219264/).

Minor in Global Studies

The minor in Global Studies is designed to give students an in-depth interdisciplinary study in one of six specializations within a larger global perspective.

Global Studies is centered on the interdisciplinary study of regions and their intersecting cultures, languages, history, politics, and societies. Historically, Global (or Area) Studies have sought ways to understand the distinctiveness of cultures and nations by applying the combined knowledge from the social sciences and humanities to their study. This approach was further developed during World War II and the Cold War to be able to understand both American allies and enemies.

Today, Global Studies examine regions and cultures within the larger context of globalization. It applies more branches of knowledge, from human biology and earth sciences to music and management engineering, to better understand the character of regions, their respective developmental trajectories, and the way those trajectories fit into a larger global context.

All students are required to complete 28 units, including a 3 unit gateway course GLOBAL 101 Critical Issues in Global Affairs. The remaining 25 units are unique to each specialization. Students participating in the Bing Overseas Studies Program are especially encouraged to enroll.

Each student chooses one of the six specializations. The specialization appears on the transcript but it does not appear on the diploma.

Admission

Students from any major interested in applying for admission to the Global Studies minor program should consult the relevant center adviser, or Executive Director of Stanford Global Studies, Kate Kuhns (kkuhns@stanford.edu). To declare the Global Studies minor with one of six specializations, students must:

1. Set up an appointment with the appropriate specialization adviser (see appropriate specialization page for contact information).
2. Declare the Global Studies minor and subplan in Axess (http://axess.stanford.edu).

COVID-19-Related Degree Requirement Changes

For information on how the Global Studies with African Studies Specialization minor requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 1520)" in the "Stanford Global Studies" section of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

Minor in Global Studies with African Studies Specialization

The minor in Global Studies, African Studies specialization, offers students the opportunity to complement their major course of study with an in-depth, interdisciplinary exploration of the cultures, histories, politics, religions, and societies of Africa.

Students from any major interested in applying for admission to this minor program should consult the minor adviser at the Center for African Studies. Students declare the minor and the African Studies specialization in Axess (http://axess.stanford.edu) (see below for detailed instructions).

Students consult with their minor adviser to develop individual programs. The minor is especially well-suited for undergraduates who plan to make service, research, or study abroad in Africa as part of their Stanford experience.

Declaring the Global Studies Minor with African Studies Specialization

To declare the Global Studies minor with African Studies specialization, students must:

1. Set up an appointment with Laura Hubbard, <lhubbard@stanford.edu>, Associate Director for the Center for African Studies.
2. Declare the Global Studies minor and subplan in Axess (http://axess.stanford.edu).

Learning Outcomes

The SGS minor specialization in African Studies enables students to:

1. develop critical knowledge and skills in African Studies
2. organize their interest in Africa into a coherent course of study through directed mentorship and participation in intellectual community.
3. prepare for research, study, or service in Africa

Upon completion of requirements, final certification of the minor is made by the Center for African Studies. The minor and the specialization appear on the transcript but they do not appear on the diploma.

Requirements

A total of 28 units which include the following:

1. GLOBAL 101 Critical Issues in Global Affairs (3 units)
2. A minimum of 25 units of Africa-related courses. Students may not double-count courses for completing major and minor requirements. Coursework must be letter-graded, except where letter grades are not offered.
3. At least one quarter's exposure to a sub-Saharan African language. The Center for African Studies (p. 918) and the Special Languages Program of the Language Center (p. 1722) can arrange instruction in any of several languages spoken in West, East, Central, and Southern Africa.
4. One entry level course that covers more than one region of Africa.
5. A designated focus of study, either disciplinary or regional, through a three course concentration developed with the minor adviser.
6. Students may work with the subplan advisor to develop a capstone project to count towards the unit fulfillment of the minor. Projects may include (but are not limited to):

1. Research with units through directed reading under the supervision of the subplan advisor.

- Research may take place at Stanford or during a relevant study abroad program, and options may include regional fieldwork, creative arts projects, short films, etc.

2. Advanced language study beyond the subplan minimum requirement with units through directed reading under the supervision of the subplan advisor.

- Intensive language training may take place at Stanford, off-campus, or overseas.

Students may propose other projects related to their subplan.

Course List

For a representative, rather than comprehensive, list of courses that count towards the minor, see the Related Courses (p. 1520) tab in this

section of the Bulletin. Other courses may also fulfill the requirements; students should consult their African Studies minor adviser concerning which courses might fulfill minor requirements.

COVID-19-Related Degree Requirement Changes

For information on how the Global Studies with European Studies Specialization minor requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 1520)" in the "Stanford Global Studies" section of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

Minor in Global Studies with European Studies Specialization

The Stanford Global Studies, European Studies specialization, is designed for undergraduates with an interdisciplinary interest in the history, culture, politics, societies, and institutions of Europe, past and present.

The minor is especially well-suited for undergraduates who plan to make Europe-based overseas studies a part of their Stanford experience.

Declaring the Global Studies Minor with European Studies Specialization

To declare the Global Studies minor with European Studies specialization, students must:

1. Set up an appointment with minor advisers, Anna Grzymala-Busse (amgbusse@stanford.edu), Faculty Director for The Europe Center, or Christophe Crombez (crombez@stanford.edu) to discuss your academic plan.
2. Declare the Global Studies minor and subplan in Axess (http://axess.stanford.edu).

Learning Outcomes

The SGS minor specialization in European Studies enables students to:

1. Organize their studies in a coherent and mentored minor.
2. Prepare for or follow up on involvement in a Bing Overseas Studies Program in Europe.

Upon completion of requirements, final certification of the minor is made by Stanford Global Studies. The minor and the specialization appear on the transcript but they do not appear on the diploma.

Requirements

1. Completion of 28 units that include the following:
   a. GLOBAL 101 Critical Issues in Global Affairs (3 units)
   b. INTNLREL 122 Introduction to European Studies (5 units)
   c. 5 unit survey course on European history or culture. The list of course alternatives that fulfill this requirement this year are:
      - DLCL 100 CAPITALS: How Cities Shape Cultures, States, and People
      - HISTORY 106B Global Human Geography: Europe and Americas
      - HISTORY 132 Ordinary Lives: A Social History of the Everyday in Early Modern Europe
      - HISTORY 230D Europe in the World, 1789-Present
   d. 15 additional units on a coherent theme of interest developed with the minor adviser. This combination of courses can be on any thematic subject with an interdisciplinary and comparative focus on Europe. See the Related Courses tab below for example courses.
   e. At least 13 of the 28 units need to be completed on the Stanford campus.
   f. Coursework must be letter-graded work, except where letter grades are not offered.
2. Advanced proficiency in a modern European language achieved by one of the following:
   a. Completion of six quarters of college-level study of a modern European language.
   b. Completion of a course taught in a modern European language at the 100-level or higher and with a letter grade of 'B' or higher. This may be a course on a European language or literature, or other subject as long as it fulfills the above criteria. (This course may fulfill both the minor foreign language requirement and the minor 28 unit minimum requirement.)
   c. Achieve the advanced proficiency level on the ACTFL scale in a test administered by the Stanford Language Center. (p. 1722)
3. Students may work with the subplan advisor to develop a capstone project to count towards the unit fulfillment of the minor. Projects may include (but are not limited to):

1. Research with units through directed reading under the supervision of the subplan advisor.

   - Research may take place at Stanford or during a relevant study abroad program, and options may include regional fieldwork, creative arts projects, short films, etc.

2. Advanced language study beyond the subplan minimum requirement with units through directed reading under the supervision of the subplan advisor.

   - Intensive language training may take place at Stanford, off-campus, or overseas.

Students may propose other projects related to their subplan.

Course List

For a representative, rather than comprehensive, list of courses that count towards the minor, see the Related Courses (p. 1521) tab in this section of the Bulletin. Other courses may also fulfill the requirements; students should consult their European Studies minor adviser concerning which courses might fulfill minor requirements.

COVID-19-Related Degree Requirement Changes

For information on how the Global Studies with Iranian Studies Specialization minor requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 1520)" in the "Stanford Global Studies" section of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

Minor in Global Studies with Iranian Studies Specialization

The Stanford Global Studies, Iranian Studies specialization, is designed for undergraduates with an interdisciplinary interest in the modern history and politics of Iran or the Middle East; Islam, particularly Shiism; the geopolitics of the Middle East; and the religions, ethnicities, and cultures.

Students consult with their minor adviser to develop individual programs. The minor is especially well-suited for undergraduates who plan graduate studies, teaching, or research and analysis focused on Iran.

Upon completion of requirements, final certification of the minor is made by Stanford Global Studies. The minor and the specialization appear on the transcript but they do not appear on the diploma.

Declaring the Global Studies Minor with Iranian Studies Specialization

To declare the Global Studies minor with Iranian Studies specialization, students must:

1. Set up an appointment with Roma Parhad (rparhad@stanford.edu), Associate Director for the Iranian Studies Program.

Declare the Global Studies minor and subplan in Axess (http://axess.stanford.edu).

Learning Outcomes

The SGS minor specialization in Iranian Studies enables students to:

1. Develop critical knowledge and skills in Iranian Studies.

2. Organize their interest in Iranian Studies into a coherent course of study through directed mentorship and participation in an intellectual community.

3. Enhance students' ability to understand and participate in an increasingly global world.

Upon completion of requirements, final certification of the minor is made by the Iranian Studies Program. The minor and the specialization appear on the transcript but they do not appear on the diploma.

Requirements

A total of 28 units which include the following:

1. GLOBAL 101 Critical Issues in Global Affairs (3 units)
2. One area-specific entry course that deals with Iran and the Middle East. If a student wants to take a course on a subject matter not directly related to Iran, the consent of the Director of Iranian Studies is required.
3. A minimum of 25 units of qualifying courses. 15 units must be from the list of core courses. The remaining 10 units can be chosen from the list of approved elective courses.
   - Coursework must be letter-graded work, except where letter grades are not offered.
   - Students may not double-count courses for completing major and minor requirements.
4. Completion of two quarters of Persian language, or proven proficiency in the language.
5. Students may work with the subplan advisor to develop a capstone project to count towards the unit fulfillment of the minor. Projects may include (but are not limited to):

1. Research with units through directed reading under the supervision of the subplan advisor.

   - Research may take place at Stanford or during a relevant study abroad program, and options may include regional fieldwork, creative arts projects, short films, etc.

2. Advanced language study beyond the subplan minimum requirement with units through directed reading under the supervision of the subplan advisor.

   - Intensive language training may take place at Stanford, off-campus, or overseas.

Students may propose other projects related to their subplan.

Course List

For a representative, rather than comprehensive, list of courses that count towards the minor, see the Related Courses (p. 1522) tab in this section of the Bulletin. Other courses may also fulfill the requirements; students should consult their Iranian Studies minor adviser concerning which courses might fulfill minor requirements.

COVID-19-Related Degree Requirement Changes

For information on how the Global Studies with Islamic Studies Specialization minor requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 1520)" in the "Stanford Global Studies" section of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

Minor in Global Studies with Islamic Studies Specialization

The minor in Stanford Global Studies, Islamic Studies specialization, offers students an interdisciplinary and global exploration of Islam and Muslim societies and cultures. Focus is on knowledge of Islam in all its internal complexity, the history of Islam from its beginnings to the 21st century, Islamic social contexts, and the diversity of human experience as seen in literature and the arts originating in societies affected by Islamic civilizations. Students explore the global extent of Islam and the growth of its diasporas by taking courses on geographical regions such as the Middle East, South Asia, Eurasia, Africa, Western Europe, and Americas) and from disciplines such as anthropology, art and art history, comparative literature, history, political science, international relations, and religious studies.

Students consult with their minor adviser to develop individual programs.

Declaring the Global Studies Minor with Islamic Studies Specialization

To declare the Global Studies minor with Islamic Studies specialization, students must:

1. Set up an appointment with Colin Hamill <chamill@stanford.edu>, Associate Director for the Islamic Studies Program to discuss your academic plan.
2. Declare the Global Studies minor and subplan in Axess (http://axess.stanford.edu).

Learning Outcomes

The SGS minor specialization in Islamic Studies enables students to:

1. organize their studies in a coherent and mentored minor.
2. gain exposure to the past and present of Islam in diverse social, political, and cultural settings around the globe.
3. prepare for or follow up on involvement in a Bing Overseas Studies Program such as in Istanbul, France, Germany, or Cape Town.

Upon completion of requirements, final certification of the minor is made by the Abbasi Program in Islamic Studies. The minor and the

specialization appear on the transcript but they do not appear on the diploma.

Requirements

1. Completion of 28 units that includes GLOBAL 101 Critical Issues in Global Affairs (3 units)
2. A minimum of 25 units of Islamic studies-related courses. Coursework must be letter-graded, except where letter grades are not offered.
3. At least one course must be an area-specific entry course focusing on the Islamic world. The following courses may be used to fulfill this requirement:
   - GLOBAL 134 The Birth of Islam: Authority, Community, and Resistance (3-5 units)
   - GLOBAL 133 The Medieval Middle East: Crusaders, Turks, and Mongols (3-5 units)
   - MUSIC 186E Sounds of Islam (3 units)
   - PHIL 101A History of Philosophy from Al-Kindi to Averroes (3-5 units)
   - POLISCI 149S Islam, Iran, and the West (5 units)
   - POLISCI 149T Middle Eastern Politics (5 units)
4. At least one course must be from each of the following areas:
   - Islamic Arts, Literatures, and Cultures
   - Islam, History, and Politics
   - Religion of Islam
5. Completion of three courses in a relevant language such as Arabic, Persian, Turkish, Ottoman Turkish, Urdu, Pashto, Kazakh, or Swahili.
6. Students may work with the subplan advisor to develop a capstone project to count towards the unit fulfillment of the minor. Projects may include (but are not limited to):

   1. Research with units through directed reading under the supervision of the subplan advisor.

      - Research may take place at Stanford or during a relevant study abroad program, and options may include regional fieldwork, creative arts projects, short films, etc.

   2. Advanced language study beyond the subplan minimum requirement with units through directed reading under the supervision of the subplan advisor.

      - Intensive language training may take place at Stanford, off-campus, or overseas.

Students may propose other projects related to their subplan.

Course List

For a representative, rather than comprehensive, list of courses that count towards the minor, see the Related Courses (p. 1523) tab in this section of the Bulletin. Other courses may also fulfill the requirements; students should consult their Islamic Studies minor adviser concerning which courses might fulfill minor requirements.

COVID-19-Related Degree Requirement Changes

For information on how the Global Studies with Latin American Studies Specialization minor requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 1520)" in the "Stanford Global Studies" section of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

Minor in Global Studies with Latin American Studies Specialization

The minor in Global Studies, Latin American Studies (LAS) specialization, consists of a core set of courses surveying the history, politics, society, ecology, and culture of the Latin American region; advanced language training; and in-depth course work.

Students from any major interested in applying for admission to the minor in Global Studies, Latin American Studies (LAS) specialization, should consult Stanford Global Studies and the Center for Latin American Studies (CLAS (https://clas.stanford.edu/academics/undergraduate-minor/)). Students who wish to complete the minor must declare online (through Axess (http://axess.stanford.edu)) and submit a proposal of course work no later than the second quarter of the junior year. The minor must be completed by the second quarter of the senior year. Units taken for a student's major cannot be double-counted towards the minor.

Students consult with their minor adviser to develop individual programs. The minor is especially well-suited for undergraduates who plan to make service, research, or study abroad in Latin America a part of their Stanford experience.

The Global Studies Minor with Specialization in Latin American Studies is open to students in any major.

Upon completion of all requirements, final certification of the minor is made by the Center for Latin American Studies subcommittee on undergraduate programs. The minor and the specialization appear on the transcript but they do not appear on the diploma.

Declaring the Global Studies Minor with Latin American Studies Specialization

To declare the Global Studies minor with Latin American Studies specialization, students must:

1. Set up an appointment with the CLAS associate director to discuss your academic plan.
2. Declare the Global Studies minor and subplan in Axess (http://axess.stanford.edu).

Requirements

1. Students may not double-count courses for completing major and minor requirements. Completion of 28 units as follows:
   a. GLOBAL 101 Critical Issues in Global Affairs (3 units)
   b. A 5-unit course surveying Latin America, either ILAC 131 Introduction to Latin America: Cultural Perspectives or an approved substitute. For further information contact a CLAS undergraduate adviser at latinamerica@stanford.edu.
   c. 20 additional units in courses which together comprise a coherent focus on a theoretical problem or issue of the region, such as but not limited to
      i. culture and identity
      ii. political economy
      iii. sustainable development.
   d. At least 15 of the 28 units must be completed at Stanford.
   e. All courses to be counted toward the minor must be taken for a letter grade, except where letter grades are not offered.
2. Foreign Language Requirement. The minimum requirement for completion of the minor in Global Studies with Latin American Studies Specialization is advanced proficiency in Spanish or Portuguese by one of the following:
   a. Completion of seven quarters of college-level study of Spanish or Portuguese.
   b. Completion of a course taught in Spanish or Portuguese at the 100-level or higher, with a letter grade of 'B' or higher. This may

be a course on Spanish or Portuguese language or literature, or some other subject.

c. Achievement of the advanced proficiency level on the ACTFL scale in a test administered by the Stanford Language Center. Contact the Stanford Language Center (p. 1722) for test dates and procedures.

3. Students may work with the subplan advisor to develop a capstone project to count towards the unit fulfillment of the minor. Projects may include (but are not limited to):

1. Research with units through directed reading under the supervision of the subplan advisor.

- Research may take place at Stanford or during a relevant study abroad program, and options may include regional fieldwork, creative arts projects, short films, etc.

2. Advanced language study beyond the subplan minimum requirement with units through directed reading under the supervision of the subplan advisor.

- Intensive language training may take place at Stanford, off-campus, or overseas.

Students may propose other projects related to their subplan.

Course List

For a representative, rather than comprehensive, list of courses that count towards the minor, see the Related Courses (p. 1525) tab in this section of the Bulletin. Other courses may also fulfill the requirements; students should consult their Latin American Studies minor adviser concerning which courses might fulfill minor requirements.

COVID-19-Related Degree Requirement Changes

For information on how the Global Studies with South Asian Studies Specialization minor requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 1520)" in the "Stanford Global Studies" section of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

Minor in Global Studies with South Asian Studies Specialization

The minor in Stanford Global Studies, South Asian Studies specialization, offers students a focused study from an interdisciplinary perspective of the cultures, histories, politics, religions, and societies of South Asia, including India, Pakistan, Sri Lanka, Nepal, Bhutan, Bangladesh, and the Maldives.

The Global Studies Minor with Specialization in South Asian Studies is open to students in any major. Students consult with their minor adviser to develop individual programs.

Declaring the Global Studies Minor with South Asian Studies Specialization

To declare the Global Studies minor with South Asian Studies specialization, students must:

1. Set up an appointment with Lalita du Perron (lalita@stanford.edu), Associate Director for the South Asian Studies Center, to discuss your academic plan.
2. Declare the Global Studies minor and subplan in Axess (http://axess.stanford.edu).

Learning Outcomes

The SGS minor specialization in South Asian Studies enables students to:

1. acquire a nuanced and sophisticated understanding of the texts and contexts of South Asian Studies .
2. work on this geographical and disciplinary area within the broader contours, conversations, and methods of Global Studies.
3. enhance students' ability to understand and participate in an increasingly global world.
4. develop critical and wide-ranging insight into a key world area.

Upon completion of requirements, final certification of the minor is made by the Center for South Asian Studies. The minor and the specialization appear on the transcript but they do not appear on the diploma.

Requirements

A total of 28 units which include the following:

1. GLOBAL 101 Critical Issues in Global Affairs (3 units)
2. At least 25 units of qualifying courses. Students may not double-count courses for completing major and minor requirements. At least 10 of the 25 units must be completed at Stanford. All courses to be counted toward the minor must be taken for a letter grade, except where letter grades are not offered.
   a. A 5-unit core course such as ANTHRO 149 or HISTORY 106A Global Human Geography: Asia and Africa.
   b. 20 units in courses that together represent an area of interdisciplinary focus such as, but not limited to, the following:
      i. immigration and law
      ii. urbanization and film
      iii. history and culture
   c. All courses, with the exception of Overseas Studies courses, must be taken at the 100-level or higher. For a list of courses, see the "Related Courses" tab in this section.
3. Foreign Language Requirement. Language requirement: Intermediate proficiency in a South Asian language by one of the following methods:
   a. Completion of two introductory language courses in a South Asian language such as Urdu, Hindi, Persian, Bengali, Pashto, Tamil, Telugu, Kannada, Gujarati, Malayalam, Garhwali, Nepalese, Tibetan, or Sindhi; other languages may also qualify.
   b. Intermediate proficiency in any of the above languages, as measured by the ACTFL scale in a test administered by the Stanford Language Center (p. 1722).
4. Students may work with the subplan advisor to develop a capstone project to count towards the unit fulfillment of the minor. Projects may include (but are not limited to):

1. Research with units through directed reading under the supervision of the subplan advisor.

- Research may take place at Stanford or during a relevant study abroad program, and options may include regional fieldwork, creative arts projects, short films, etc.

2. Advanced language study beyond the subplan minimum requirement with units through directed reading under the supervision of the subplan advisor.

- Intensive language training may take place at Stanford, off-campus, or overseas.

Students may propose other projects related to their subplan.

Course List

For a representative, rather than comprehensive, list of courses that count towards the minor, see the Related Courses (p. 1527) tab in this section of the Bulletin. Other courses may also fulfill the requirements; students should consult their South Asian Studies minor adviser concerning which courses might fulfill minor requirements.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Stanford Global Minor Requirements

Grading

Stanford Global Studies counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

SGS Division Director

Jeremy Weinstein (https://profiles.stanford.edu/jeremy-weinstein/) (Political Science)

SGS Directors

Center for African Studies: James Ferguson (https://www.stanford.edu/dept/anthropology/cgi-bin/web/?q=node/42) (Anthropology)

Center for East Asian Studies: Dafna Zur (https://profiles.stanford.edu/dafna-zur/) (East Asian Languages and Cultures)

France-Stanford Center: Amalia Kessler (https://law.stanford.edu/directory/amalia-d-kessler/) (Law)

WSD Handa Center for Human Rights and International Justice: David Cohen (https://classics.stanford.edu/people/david-cohen/) (Classics)

Program in International Relations: Kenneth Schultz (https://politicalscience.stanford.edu/people/kenneth-schultz/) (Political Science)

Hamid and Christina Moghadam Program In Iranian Studies: Abbas Milani (https://iranian-studies.stanford.edu/people/abbas-milani/) (Hoover Institution)

Sohaib and Sara Abbasi Program in Islamic Studies: Lisa Blaydes (https://politicalscience.stanford.edu/people/lisa-blaydes/) (Political Science)

Taube Center For Jewish Studies: Ari Kelman (http://jewishstudies.stanford.edu/faculty/ari-y-kelman/) (Graduate School of Education)

Center for Latin American Studies: Alberto Díaz-Cayeros (https://profiles.stanford.edu/alberto-diaz-cayeros/) (Freeman Spogli Institute for International Studies)

Mediterranean Studies Forum: Lisa Blaydes (https://politicalscience.stanford.edu/people/lisa-blaydes/) (Political Science)

Center for Russian, East European and Eurasian Studies: Amir Weiner (https://history.stanford.edu/people/amir-weiner/) (History)

Center for South Asia: Jisha Menon (https://profiles.stanford.edu/jisha-menon/) (Theater and Performance Studies)

The Europe Center: Anna Gryzmala-Busse (https://politicalscience.stanford.edu/people/anna-grzymala-busse/) (Political Science)

The following lists are representative rather than comprehensive lists of courses that may apply to the six specializations in the minor in Stanford Global Studies. Students should consult their adviser to determine courses that apply to their specific program.

African Studies Specialization

The following is a current selection of courses related to African Studies. Students should consult with their minor adviser to determine the applicability of any course to the minor in Stanford Global Studies, African Studies specialization.

		Units
AFRICAST 111	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 112	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AFRICAST 113V	Freedom in Chains: Black Slavery in the Atlantic, 1400s-1800s	3-5
AFRICAST 132	Literature and Society in Africa and the Caribbean	4
AFRICAST 135	Designing Research-Based Interventions to Solve Global Health Problems	3-4
AFRICAST 142	Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice	3-5
AFRICAST 195	Shifting Frames	1-2
AFRICAST 300	Contemporary Issues in African Studies	1
Related Courses from Other Departments		
AFRICAST 114N	Desert Biogeography of Namibia Prefield Seminar	3
AFRICAST 119	Novel Perspectives on South Africa	2-3
AFRICAST 122F	Histories of Race in Science and Medicine at Home and Abroad	4
AFRICAST 199	Independent Study or Directed Reading	1-5
AFRICAST 220E	Renaissance Africa	3-5
AFRICAST 235	Designing Research-Based Interventions to Solve Global Health Problems	3-4
AFRICAST 249	Bodies, Technologies, and Natures in Africa	4-5
ANTHRO 1	Introduction to Cultural and Social Anthropology	3-5
ANTHRO 41	Genes and Identity	4
COMPLIT 121	Poems, Poetry, Worlds	5
ECON 118	Development Economics	5
HISTORY 47	History of South Africa	3
HISTORY 48	The Egyptians	3-5
HISTORY 48Q	South Africa: Contested Transitions	4

HISTORY 106A	Global Human Geography: Asia and Africa	5
HISTORY 145B	Africa in the 20th Century	5
HISTORY 146	History of Humanitarian Aid in sub-Saharan Africa	4-5
HISTORY 238J	The European Scramble for Africa: Origins and Debates	4-5
OSPCPTWN 30	Introduction to Contemporary Issues in South Africa	2
OSPCPTWN 36	The Archaeology of Southern African Hunter Gatherers	4
OSPCPTWN 38	Genocide: African Experiences in Comparative Perspective	3-5
OSPCPTWN 55	Arts of Change	3
OSPCPTWN 67	ICT4D: An Introduction to the Use of ICTs for Development	3
OSPCPTWN 78	Postcolonial Modernist Art Movements in Africa	3
POLISCI 11N	The Rwandan Genocide	3
POLISCI 114D	Democracy, Development, and the Rule of Law	3-5
POLISCI 146A	African Politics	4-5
SURG 150	Politics, Culture, and Economics of Global Surgery	1-4
THINK 42	Thinking Through Africa: Perspectives on Health, Wealth, and Well-Being	4

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European Studies Specialization

The following is a current selection of courses related to European Studies. Students should consult with their minor adviser to determine the applicability of any course to the minor in Stanford Global Studies, European Studies specialization.

		Units
ARTHIST 101	Introduction to Greek Art I: The Archaic Period	4
ARTHIST 102	Introduction to Greek Art II: The Classical Period	4
ARTHIST 108	Virginity and Power: Mary in the Middle Ages	4
ARTHIST 111	Introduction to Italian Renaissance, 1420-1580	4
ARTHIST 114	Mystical Naturalism: Van Eyck, Dürer, and the Northern Renaissance	4
ARTHIST 117	Picturing the Papacy, 1300-1850	4
ARTHIST 118	Titian, Veronese, Tintoretto	4
ARTHIST 124	The Age of Naturalism, Painting in Europe1830-1874	4
ARTHIST 142	Architecture Since 1900	4
ARTHIST 147	Modernism and Modernity	4
ARTHIST 203	Artists, Athletes, Courtesans and Crooks	5
ARTHIST 210	Giotto	5
ARTHIST 213	Renaissance Print Culture: Art in the Cantor Arts Center	5
COMPLIT 115	Vladimir Nabokov: Displacement and the Liberated Eye	3-5
COMPLIT 181	Philosophy and Literature	3-5
DLCL 100	CAPITALS: How Cities Shape Cultures, States, and People	3-5
ENGLISH 81	Philosophy and Literature	3-5
FRENCH 181	Philosophy and Literature	3-5
FRENCH 192	Women in French Cinema: 1958-	3-5
FRENCH 205	Songs of Love and War: Gender, Crusade, Politics	3-5
FRENCH 219	The Renaissance Body in French Literature and Medicine	3-5
GERMAN 181	Philosophy and Literature	3-5
GERMAN 267	Prospects for Transatlantic Relations: What Holds the West Together?	1-2
GLOBAL 101	Critical Issues in Global Affairs	3
HISTORY 10C	The Problem of Modern Europe	3
HISTORY 30C	Culture and Society in Reformation England	3
HISTORY 85B	Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV	3
HISTORY 106B	Global Human Geography: Europe and Americas	5
HISTORY 110C	The Problem of Modern Europe	5
HISTORY 132	Ordinary Lives: A Social History of the Everyday in Early Modern Europe	5
HISTORY 137A	Europe, 1945-2002	5
HISTORY 140A	The Scientific Revolution	5
HISTORY 185B	Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV	4-5
HISTORY 222	Crime and Punishment in Early Modern Europe and Russia	4-5
HISTORY 230D	Europe in the World, 1789-Present	4-5
HISTORY 233G	Catholic Politics in Europe, 1789-1992	5
HISTORY 239H	Colonialism and Empire in Modern Europe	5
HISTORY 330D	Europe in the World, 1789-Present	4-5
ILAC 130	Introduction to Iberia: Cultural Perspectives	3-5
ILAC 136	Modern Iberian Literatures	3-5
ILAC 157	Medieval and Early Modern Iberian Literatures	3-5
ILAC 193	The Cinema of Pedro Almodovar	3-5
ILAC 199	Individual Work	1-12
ILAC 242	Poetry Workshop in Spanish	3-5
INTNLREL 122	Introduction to European Studies	5
INTNLREL 123	The Future of the European Union: Challenges and Opportunities	5
ITALIAN 181	Philosophy and Literature	3-5
JEWISHST 5	Biblical Greek	3-5
JEWISHST 5B	Biblical Greek	3-5
JEWISHST 148	Writing Between Languages: The Case of Eastern European Jewish Literature	1-5
JEWISHST 185B	Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV	4-5
LAW 5005	European Union Law	2-3
ME 421	European Entrepreneurship and Innovation Thought Leaders Seminar	1
OSPBER 17	Split Images: A Century of Cinema	3-4
OSPBER 60	Cityscape as History: Architecture and Urban Design in Berlin	5
OSPBER 66	Theory from the Bleachers: Reading German Sports and Culture	3
OSPBER 70	The Long Way to the West: German History from the 18th Century to the Present	4-5
OSPBER 71	EU in Crisis	4-5

OSPBER 77	"Ich bin ein Berliner" Lessons of Berlin for International Politics	4-5
OSPBER 79	Political Economy of Germany in Europe: an Historical-Comparative Perspective	4-5
OSPBER 82	Globalization and Germany	4-5
OSPBER 83	Refugees and Germany	3-4
OSPBER 126X	A People's Union? Money, Markets, and Identity in the EU	4-5
OSPBER 174	Sports, Culture, and Gender in Comparative Perspective	3-5
OSPFLOR 11	Film, Food and the Italian Identity	4
OSPFLOR 15	The Italy Around You: Society, Politics, the Arts and the Economy	3
OSPFLOR 26	Economics of the EU	5
OSPFLOR 34	The Virgin Mother, Goddess of Beauty, Grand Duchess, and the Lady: Women in Florentine Art	4
OSPFLOR 49	On-Screen Battles: Filmic Portrayals of Fascism and World War II	5
OSPFLOR 54	High Renaissance and Mannerism: the Great Italian Masters of the 15th and 16th Centuries	4
OSPFLOR 76	Sociology of Migrations	5
OSPFLOR 78	The Impossible Experiment: Politics and Policies of the New European Union	5
OSPMADRD 8A	Cities and Creativity: Cultural and Architectural Interpretations of Madrid	4
OSPMADRD 8B	Debating Design: Spanish and International Fashion	2
OSPMADRD 14	Introduction to Spanish Culture	2
OSPMADRD 47	Cultural Relations between Spain and the United States:Historical Perceptions and Influences, 1776-2	4
OSPMADRD 48	Migration and Multiculturality in Spain	4
OSPMADRD 54	Contemporary Spanish Economy and the European Union	4
OSPMADRD 57	Health Care: A Contrastive Analysis between Spain and the U.S.	4
OSPMADRD 61	Society and Cultural Change: The Case of Spain	4
OSPMADRD 75	Sefarad: The Jewish Community in Spain	4
OSPOXFRD 41	Western Thought: Origins of Twentieth Century Semiotics	4-5
OSPOXFRD 72	Oxford Fantasists	4-5
OSPOXFRD 93	Collecting the World	4-5
OSPOXFRD 117W	Gender and Social Change in Modern Britain	4-5
OSPPARIS 24	Introduction to French Society	2
OSPPARIS 30	The Avant Garde in France through Literature, Art, and Theater	4
OSPPARIS 32	French History and Politics: Understanding the Present through the Past	5
OSPPARIS 72	The Ceilings of Paris	4
OSPPARIS 91	The Future of Globalization: Economics, Politics and the Environment	5
OSPPARIS 92	Building Paris: Its History, Architecture, and Urban Design	4
PHIL 81	Philosophy and Literature	3-5
POLISCI 140P	Populism and the Erosion of Democracy	5
REES 100	Current Issues in Russian, East European, and Eurasian Studies	1-2
SLAVIC 181	Philosophy and Literature	3-5
SOC 309	Nations and Nationalism	3-5

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Iranian Studies Specialization

The following is a current selection of courses related to Iranian Studies. Students should consult with their minor adviser to determine the applicability of any course to the minor in Stanford Global Studies, Iranian Studies specialization.

		Units
AFRICAAM 94	Public Space in Iran: Murals, Graffiti, Performance	3-4
AMELANG 44A	Accelerated First-Year Persian	5
AMELANG 45A	Accelerated Second-Year Persian	5
AMELANG 144A	First-Year Modern Persian, First Quarter	5
AMELANG 144B	First-Year Modern Persian, Second Quarter	5
AMELANG 144C	First-Year Modern Persian, Third Quarter	5
AMELANG 145A	Second-Year Modern Persian, First Quarter	5
AMELANG 145B	Second-Year Modern Persian, Second Quarter	5
AMELANG 145C	Second-Year Modern Persian ,Third Quarter	5
AMELANG 146A	Third-Year Persian, First Quarter	4
AMELANG 146B	Third-Year Persian, Second Quarter	4
AMELANG 146C	Third-Year Persian, Third Quarter	4
CLASSICS 81	Ancient Empires: Near East	4-5
COMPLIT 134A	Classics of Persian Literature	3-5
COMPLIT 184	READING RUMI	3-5
COMPLIT 194	Independent Research	1-5
COMPLIT 234	Classics of Persian Literature	3-5
COMPLIT 243	The Age of Beloveds: Inflections of Desire in Persian and Ottoman Literature	3-5
COMPLIT 243A	From Idol to Equal: Changing Images of Love in 20th-Century Persian and Turkish Literature	3-5
COMPLIT 244	Modern Persian Poetry	3-5
COMPLIT 249	Rumi: Rhythms of Creation	3-5
COMPLIT 249A	The Iranian Cinema: Image and Meaning	1-3
COMPLIT 249B	Iranian Cinema in Diaspora	1-3
COMPLIT 249C	Contemporary Iranian Theater	1-3
COMPLIT 399	Individual Work	1-15
CSRE 95I	Space, Public Discourse and Revolutionary Practices	3-4
DLCL 144	An Introduction to Persian Literature, an Aesthetic Tradition Over a Millennium Old	3-4
DLCL 227	Persian, Arabic, Turkish, and Hebrew Languages, Literatures, and Cultures	1
FILMSTUD 135	Around the World in Ten Films	3-4
GLOBAL 101	Critical Issues in Global Affairs	3
GLOBAL 104	Iranian Cuisine	1
GLOBAL 249A	The Iranian Cinema: Image and Meaning	1-3
GLOBAL 249B	Iranian Cinema in Diaspora	1-3
GLOBAL 249C	Contemporary Iranian Theater	1-3
HISTORY 81B	Formation of the Contemporary Middle East	3
HISTORY 87	The Islamic Republics: Politics and Society in Iran, Afghanistan and Pakistan	3
HISTORY 181B	Formation of the Contemporary Middle East	5

HISTORY 187	The Islamic Republics: Politics and Society in Iran, Afghanistan and Pakistan	5
HISTORY 201A	The Global Drug Wars	4-5
HISTORY 252B	Diplomacy on the Ground: Case Studies in the Challenges of Representing Your Country	5
HISTORY 284F	Empires, Markets and Networks: Early Modern Islamic World Between Europe and China, 1400-1900	4-5
HISTORY 288C	Jews of the Modern Middle East and North Africa	5
HISTORY 384F	Empires, Markets and Networks: Early Modern Islamic World Between Europe and China, 1400-1900	4-5
INTNLREL 174	Diplomacy on the Ground: Case Studies in the Challenges of Representing Your Country	5
INTNLREL 198	Senior Thesis	2-10
JEWISHST 288C	Jews of the Modern Middle East and North Africa	5
POLISCI 118P	U.S. Relations with Iran	5
POLISCI 149S	Islam, Iran, and the West	5
POLISCI 149T	Middle Eastern Politics	5
POLISCI 211N	Nuclear Politics	3-5
POLISCI 215F	Nuclear Weapons and International Politics	5
POLISCI 219	Directed Reading and Research in International Relations	1-10
POLISCI 229	Directed Reading and Research in American Politics	1-10
POLISCI 245R	Politics in Modern Iran	5
POLISCI 311N	Nuclear Politics	3-5
POLISCI 315F	Nuclear Weapons and International Politics	5
RELIGST 180	Gender Relations in Islam	4

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Islamic Studies Specialization

The following is a current selection of courses related to Islamic Studies. Students should consult with their minor adviser to determine the applicability of any course to the minor in Stanford Global Studies, Islamic Studies specialization.

		Units
Islamic Arts, Literatures, and Cultures		
AFRICAAM 94	Public Space in Iran: Murals, Graffiti, Performance	3-4
AMELANG 126	Reflection on the Other: The Arab Israeli Conflict in Literature and Film	3-5
AMSTUD 15	Global Flows: The Globalization of Hip Hop Art, Culture, and Politics	1-2
ANTHRO 132	Religion and Politics in the Muslim World	5
ANTHRO 147B	World Heritage in Global Conflict	5
ANTHRO 247B	World Heritage in Global Conflict	5
ARCHLGY 147B	World Heritage in Global Conflict	5
ARTHIST 1A	Decolonizing the Western Canon: Introduction to Art and Architecture from Prehistory to Medieval	5
ARTHIST 105B	Medieval Journeys: Introduction through the Art and Architecture	5
ARTHIST 208	Hagia Sophia	5
ARTHIST 208B	The Art of Medieval Spain: Muslims, Christians, Jews	5
ARTHIST 405	Art, Ekphrasis, and Music in Byzantium and Islam	5
ARTHIST 408	Hagia Sophia	5
ARTHIST 408B	The Art of Medieval Spain: Muslims, Christians, Jews	5
ARTHIST 409	Theories of the Image: Byzantium, Islam and the Latin West	5
CLASSICS 47	Ancient Knowledge, New Frontiers: How the Greek Legacy Became Islamic Science	3
CLASSICS 56	Decolonizing the Western Canon: Introduction to Art and Architecture from Prehistory to Medieval	5
COMPLIT 102	Film Series: Understanding Turkey Through Film	1-2
COMPLIT 107A	Ancient Knowledge, New Frontiers: How the Greek Legacy Became Islamic Science	3
COMPLIT 121	Poems, Poetry, Worlds	5
COMPLIT 134A	Classics of Persian Literature	3-5
COMPLIT 145	Reflection on the Other: The Arab Israeli Conflict in Literature and Film	3-5
COMPLIT 234	Classics of Persian Literature	3-5
COMPLIT 243	The Age of Beloveds: Inflections of Desire in Persian and Ottoman Literature	3-5
COMPLIT 243A	From Idol to Equal: Changing Images of Love in 20th-Century Persian and Turkish Literature	3-5
COMPLIT 243B	Advanced Readings in Arabic Literature and Science II	3-5
COMPLIT 244	Modern Persian Poetry	3-5
COMPLIT 249A	The Iranian Cinema: Image and Meaning	1-3
COMPLIT 249B	Iranian Cinema in Diaspora	1-3
COMPLIT 249C	Contemporary Iranian Theater	1-3
COMPLIT 252A	Great Arabic Poetry	3-5
COMPLIT 252B	Great Arabic Prose	3-5
CSRE 129	Camus	4-5
CSRE 160M	Introduction to Representations of the Middle East in Dance, Performance, & Popular Culture	3-4
CSRE 249	The Algerian Wars	3-5
DLCL 227	Persian, Arabic, Turkish, and Hebrew Languages, Literatures, and Cultures	1
DLCL 245	LA ALJAMÍA, ROMÁRABE LANGUAGE	3-5
ENGLISH 92AP	Arab and Arab-American Poetry	5
FRENCH 249	The Algerian Wars	3-5
GLOBAL 199	Capstone Project: Global Studies Minor	1-5
GLOBAL 249A	The Iranian Cinema: Image and Meaning	1-3
GLOBAL 249B	Iranian Cinema in Diaspora	1-3
GLOBAL 249C	Contemporary Iranian Theater	1-3
HISTORY 239G	The Algerian Wars	3-5
HUMCORE 121	Ancient Knowledge, New Frontiers: How the Greek Legacy Became Islamic Science	3
ILAC 157	Medieval and Early Modern Iberian Literatures	3-5
ILAC 278A	Senior Seminar: The Iberian Pastoral	3-5
JEWISHST 106	Reflection on the Other: The Arab Israeli Conflict in Literature and Film	3-5
MUSIC 7B	Musical Cultures of the World	2-3
MUSIC 186E	Sounds of Islam	3

MUSIC 187	Spiritual Sound of Central Asia: Introduction to the Music of Central Asia	1-5
OSPMADRD 74	Islam in Spain and Europe: 1300 Years of Contact	4
PHIL 101A	History of Philosophy from Al-Kindi to Averroes	3-5
RELIGST 283	Religion and Literature	4
TAPS 157	World Drama and Performance	4
TAPS 157P	Performing Arabs and Others in Theory and Practice	4
TAPS 160M	Introduction to Representations of the Middle East in Dance, Performance, & Popular Culture	3-4
TAPS 357	World Drama and Performance	4
Islamic History		
AFRICAAM 145B	Africa in the 20th Century	5
ANTHRO 108B	Gender in the Arab and Middle Eastern City	5
CSRE 82G	Making Palestine Visible	3-5
CSRE 218	Islam, Race and Revolution: A Pan-American Approach	3-5
FEMGEN 5S	Comparative Partitions: Religion, Identity, and the Nation-State	5
GLOBAL 102	The Mamluks: Slave-Soldiers and Sultans of Medieval Egypt	3-5
GLOBAL 133	The Medieval Middle East: Crusaders, Turks, and Mongols	3-5
GLOBAL 134	The Birth of Islam: Authority, Community, and Resistance	3-5
GLOBAL 210	The Mamluks: Slave-Soldiers and Sultans of Medieval Egypt	3-5
HISTORY 5S	Comparative Partitions: Religion, Identity, and the Nation-State	5
HISTORY 18S	Pirates, Captives, and Renegades: Encounters in the Early Modern Mediterranean World	5
HISTORY 39	Modern Britain and the British Empire	3
HISTORY 45B	Africa in the 20th Century	3
HISTORY 81B	Formation of the Contemporary Middle East	3
HISTORY 83S	Refugees of Palestine and Syria: History, Identity, and Politics of Exile in the Middle East	5
HISTORY 87	The Islamic Republics: Politics and Society in Iran, Afghanistan and Pakistan	3
HISTORY 97	Southeast Asia: From Antiquity to the Modern Era	3-5
HISTORY 102	History of the International System since 1914	5
HISTORY 139	Modern Britain and the British Empire	5
HISTORY 181B	Formation of the Contemporary Middle East	5
HISTORY 182G	Making Palestine Visible	3-5
HISTORY 187	The Islamic Republics: Politics and Society in Iran, Afghanistan and Pakistan	5
HISTORY 201A	The Global Drug Wars	4-5
HISTORY 210	The History of Occupation, 1914-2010	4-5
HISTORY 249	The Mamluks: Slave-Soldiers and Sultans of Medieval Egypt	3-5
HISTORY 284	The Ottoman Empire: Conquest, Coexistence, and Coffee	4-5
HISTORY 284F	Empires, Markets and Networks: Early Modern Islamic World Between Europe and China, 1400-1900	4-5
HISTORY 292C	Gender in Modern South Asia	5
HISTORY 301A	The Global Drug Wars	4-5
HISTORY 345B	African Encounters with Colonialism	4-5
HISTORY 349A	The Mamluks: Slave-Soldiers and Sultans of Medieval Egypt	3-5
HISTORY 381	Economic and Social History of the Modern Middle East	4-5
HISTORY 384	The Ottoman Empire: Conquest, Coexistence, and Coffee	4-5
HISTORY 384F	Empires, Markets and Networks: Early Modern Islamic World Between Europe and China, 1400-1900	4-5
ILAC 278A	Senior Seminar: The Iberian Pastoral	3-5
POLISCI 149S	Islam, Iran, and the West	5
POLISCI 215A	Special Topics: State-Society Relations in the Contemporary Arab World-Key Concepts and Debates	5
PSYC 86Q	Psychology of Xenophobia	3
TAPS 157S	Edward Said, or Scholar vs Empire	3-4
Islamic Politics		
COMM 177Y	Specialized Writing and Reporting: Foreign Correspondence	4-5
COMM 277Y	Specialized Writing and Reporting: Foreign Correspondence	4-5
CSRE 82G	Making Palestine Visible	3-5
INTLPOL 214	Refugees in the Twenty-first Century	3-5
POLISCI 118P	U.S. Relations with Iran	5
POLISCI 149S	Islam, Iran, and the West	5
POLISCI 149T	Middle Eastern Politics	5
POLISCI 222	The Political Psychology of Intolerance	5
POLISCI 245R	Politics in Modern Iran	5
POLISCI 246A	Paths to the Modern World: The West in Comparative Perspective	3-5
POLISCI 441L	Grad Seminar on Middle Eastern Politics	3-5
Languages		
AMELANG 15T	Intermediate to Advanced Turkish Conversation	2
AMELANG 84A	Accelerated First-Year Turkish, Part 1	5
AMELANG 84B	Accelerated First-Year Turkish, Part 2	5
AMELANG 144A	First-Year Modern Persian, First Quarter	5
AMELANG 144B	First-Year Modern Persian, Second Quarter	5
AMELANG 144C	First-Year Modern Persian, Third Quarter	5
AMELANG 145A	Second-Year Modern Persian, First Quarter	5
AMELANG 145B	Second-Year Modern Persian, Second Quarter	5
AMELANG 145C	Second-Year Modern Persian ,Third Quarter	5
AMELANG 146A	Third-Year Persian, First Quarter	4
AMELANG 146B	Third-Year Persian, Second Quarter	4
AMELANG 146C	Third-Year Persian, Third Quarter	4
AMELANG 185A	Second-Year Turkish, First Quarter	5
AMELANG 185B	Second-Year Turkish, Second Quarter	5
AMELANG 185C	Second-Year Turkish, Third Quarter	5
AMELANG 297	Directed Reading in African and Middle Eastern Languages	1-5
AMELANG 395	Graduate Studies in African and Middle Eastern Languages	1-5

ARABLANG 1	First-Year Arabic, First Quarter	5
ARABLANG 1A	Accelerated First-Year Arabic, Part I	5
ARABLANG 2	First-Year Arabic, Second Quarter	5
ARABLANG 2A	Accelerated First-Year Arabic, Part II	5
ARABLANG 3	First-Year Arabic, Third Quarter	5
ARABLANG 10	Arabic Calligraphy	3
ARABLANG 21	Second-Year Arabic, First Quarter	5
ARABLANG 21A	Accelerated Second-Year Arabic, Part I	5
ARABLANG 21H	Second-Year Arabic for Heritage Learners, First Quarter	5
ARABLANG 22	Second-Year Arabic, Second Quarter	5
ARABLANG 22A	Accelerated second-Year Arabic, Part II	5
ARABLANG 22H	Second-Year Arabic for Heritage Learners, Second Quarter	5
ARABLANG 23	Second-Year Arabic, Third Quarter	5
ARABLANG 23H	Second-Year Arabic for Heritage Learners, Third Quarter	5
ARABLANG 24	Arabic Skills Workshop	4
ARABLANG 116	Arabic of the Qur'an	3
ARABLANG 125A	Colloquial Arabic, First Quarter	4
ARABLANG 125B	Conversational/Colloquial Arabic, Second Quarter	4
ARABLANG 127	Intermediate to Advanced Conversation	3
ARABLANG 131	Third-Year Arabic, First Quarter	4
ARABLANG 131H	Third-Year Arabic for Heritage Learners, First Quarter	4
ARABLANG 132	Third-Year Arabic, Second Quarter	4
ARABLANG 132H	Third-Year Arabic for Heritage Learners, Second Quarter	4
ARABLANG 133	Third-Year Arabic, Third Quarter	4
ARABLANG 133H	Third-Year Arabic for Heritage Learners, Third Quarter	5
ARABLANG 297	Directed Reading	1-5
ARABLANG 394	Graduate Studies in Arabic Conversation	1-3
ARABLANG 395	Graduate Studies in Arabic	1-5
COMPLIT 245	Introductory Ottoman Turkish	1-3
COMPLIT 248A	Reading Turkish I	2-4
COMPLIT 248B	Reading Turkish II	2-4
COMPLIT 248C	Advanced Turkish-English Translation	2-4
SPECLANG 152A	First-Year Hindi, First Quarter	5
SPECLANG 152B	First-Year Hindi, Second Quarter	5
SPECLANG 152C	First-Year Hindi, Third Quarter	5
SPECLANG 153A	Second-Year Hindi, First Quarter	4
SPECLANG 153B	Second-Year Hindi, Second Quarter	4
SPECLANG 153C	Second-Year Hindi, Third Quarter	4
SPECLANG 154A	Third-Year Hindi, First Quarter	4
SPECLANG 154B	Third-Year Hindi, Second Quarter	4
SPECLANG 154C	Third-Year Hindi, Third Quarter	4
SPECLANG 156A	First-Year Indonesian, First Quarter	5
SPECLANG 157A	Second-Year Indonesian, First Quarter	4
SPECLANG 192A	First-Year Kazakh, First Quarter	4
SPECLANG 192B	First-Year Kazakh, Second Quarter	4
SPECLANG 192C	First-Year Kazakh, Third Quarter	4
SPECLANG 193A	Second-Year Kazakh, First Quarter	4
SPECLANG 193B	Second-Year Kazakh, Second Quarter	4
SPECLANG 193C	Second-Year Kazakh, Third Quarter	4
SPECLANG 194B	Third-Year Kazakh, Second Quarter	3
SPECLANG 194C	Third-Year Kazakh, Third Quarter	3
SPECLANG 218A	Beginning Urdu, First Quarter	5
SPECLANG 218B	Beginning Urdu, Second Quarter	4
SPECLANG 218C	Beginning Urdu, Third Quarter	4
SPECLANG 219B	Intermediate Urdu, Second Quarter	4
SPECLANG 229A	Beginning Pashto, First Quarter	5
SPECLANG 229B	Beginning Pashto, Second Quarter	5
SPECLANG 239A	Second-Year Uzbek, First Quarter	3
SPECLANG 239B	Second-Year Uzbek, Second Quarter	3
SPECLANG 239C	Second-Year Uzbek, Third Quarter	3
SPECLANG 240A	Third-Year Uzbek, First quarter	3

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Latin American Studies Specialization

1. All courses to be counted toward the minor must be taken at the 100-level or higher, with the exception of Overseas Studies courses (see also note 1, above).
2. All courses to be counted toward the minor must be taken for a letter grade.
3. Some courses have prerequisites or special enrollment requirements. Students are responsible for making sure they have completed any prerequisites and/or secured an instructor's permission, as needed.

Culture and Society

		Units
AMSTUD 271	Mexicans in the United States	5
ANTHRO 100D	Chavin de Huantar Research |Seminar	3-5
ANTHRO 153	Asylum: Knowledge, Politics, and Population	3-5
ANTHRO 181	Religion and Science in the Amazon and Elsewhere	5
ANTHRO 206A	Incas and their Ancestors: Peruvian Archaeology	3-5
ANTHRO 212B	Biology, Culture and Social Justice in Latin America: Perspectives from Forensic Anthropology	5
ANTHRO 281	Religion and Science in the Amazon and Elsewhere	5
ARCHLGY 100D	Chavin de Huantar Research |Seminar	3-5
CHILATST 111	Curander@s, remedios y espiritualidad: Chican@/Latin@ healing practices	3-5
CHILATST 140	Migration in 21st Century Latin American Film	3-5
CHILATST 173	Mexican Migration to the United States	3-5
CHILATST 212	Biology, Culture and Social Justice in Latin America: Perspectives from Forensic Anthropology	5
COMPLIT 100	CAPITALS: How Cities Shape Cultures, States, and People	3-5
COMPLIT 142	The Literature of the Americas	5
COMPLIT 348	US-Mexico Border Fictions: Writing La Frontera, Tearing Down the Wall	3-5
CSRE 23	Race and the War on Drugs: Long Roots and Other Futures	3-5
CSRE 156X	Theater of Dissent: Social Movements, Migration, and Revolution in the Americas	4
CSRE 189	Race and Immigration	4-5
CSRE 212	Biology, Culture and Social Justice in Latin America: Perspectives from Forensic Anthropology	5

DLCL 100	CAPITALS: How Cities Shape Cultures, States, and People	3-5
FILMSTUD 116	International Documentary	4
FILMSTUD 316	International Documentary	4
FRENCH 264	Crossing the Atlantic: Race and Identity in the African Diaspora	3-5
HISTORY 106B	Global Human Geography: Europe and Americas	5
HISTORY 112	Medicine and Disease in the Ancient World	5
HISTORY 166C	The Cold War: An International History	5
HISTORY 173	Mexican Migration to the United States	3-5
HISTORY 174	Mexico Since 1876: The Road to Ayotzinapa	5
HISTORY 178	Film and History of Latin American Revolutions and Counterrevolutions	3-5
HISTORY 201A	The Global Drug Wars	4-5
HISTORY 272	Colonial Mexico: Images and Power	3-5
HISTORY 274E	Urban Poverty and Inequality in Latin America	5
HISTORY 279	Latin American Development: Economy and Society, 1800-2014	4-5
HISTORY 279B	Potatoes, Coca, and Tamales: Food in Latin American History	5
HISTORY 301A	The Global Drug Wars	4-5
HISTORY 366B	Immigration Debates in America, Past and Present	3-5
HISTORY 371	Graduate Colloquium: Explorations in Latin American History and Historiography	4-5
HISTORY 372A	Mexico: From Colony to Nation or the History of an Impossible Republic?	5
HISTORY 373E	The Emergence of Nations in Latin America: Independence Through 1880	4-5
HISTORY 379	Latin American Development: Economy and Society, 1800-2014	4-5
HUMRTS 108	Advanced Spanish Service-Learning: Migration, Asylum, and Human Rights at the Border	1-3
ILAC 113Q	Borges and Translation	3-5
ILAC 122A	Radical Poetry: The Avant-garde in Latin America and Spain	4
ILAC 124	Coming of Age in Latin America	3-5
ILAC 128	Spanish Literature and Language through Comics	3-5
ILAC 131	Introduction to Latin America: Cultural Perspectives	3-5
ILAC 132	Drug Wars: from Pablo Escobar to the Mara Salvatrucha to Iguala Mass Student Kidnapping	3-5
ILAC 132E	Introduction to Global Portuguese: Cultural Perspectives	3-5
ILAC 140	Migration in 21st Century Latin American Film	3-5
ILAC 157	Medieval and Early Modern Iberian Literatures	3-5
ILAC 161	Modern Latin American Literature	3-5
ILAC 175	CAPITALS: How Cities Shape Cultures, States, and People	3-5
ILAC 214	Colonial Mexico: Images and Power	3-5
ILAC 227	The Making of Modern Brazil	3-5
ILAC 238	Latin American Poetry as Witness to Self and World.	4
ILAC 241	Fiction Workshop in Spanish	3-5
ILAC 242	Poetry Workshop in Spanish	3-5
ILAC 243	Latin American Aesthetics	3-5
ILAC 254	Crónicas: Soccer, Pop Icons, Shipwrecks, and Populism	3-5
ILAC 255	Climate Change and Latin American Naturecultures	3-5
ILAC 268	INDIGENISMOS REVISITED	3-5
ILAC 272	New Brazilian Cinema	3-5
ILAC 277	Senior Seminar: Horror, Gothic, and Fantasy in Spanish	3-5
ILAC 278A	Senior Seminar: The Iberian Pastoral	3-5
ILAC 336	One World or Many? Representing Distance, Time, and Place in Iberian Expansion	3-5
ILAC 342	Meat	3-5
ILAC 348	US-Mexico Border Fictions: Writing La Frontera, Tearing Down the Wall	3-5
ILAC 373	Baroque Brazil	3-5
INTNLREL 154	The Cold War: An International History	5
LATINAM 177A	Mapping Poverty, Colonialism and Nation Building in Latin America	3-5
LATINAM 248	Racial and Gender Inequalities in Latin America	3-5
LATINAM 264VP	Indigenous resistance and contradictions in Latin America	3-5
LATINAM 266VP	A Critical Review of Guatemala's Indigenous Movements	3-5
LATINAM 268VP	Democracy, crisis and disease: Covid-19 and Indigenous People in Latin America.	3-5
LAW 5027	Social Conflict, Social Justice, and Human Rights in 21st Century Latin America	2
LAW 5028	Regional Human Rights Protections: The Inter-American System	3
OSPMADRD 55	Latin Americans in Spain: Cultural Identities, Social Practices, and Migratory Experience	4
OSPSANTG 14	Women Writers of Latin America in the 20th Century	4-5
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America	5
OSPSANTG 30	Short Latin American Fiction of the 20th Century	4-5
OSPSANTG 68	The Emergence of Nations in Latin America	4-5
OSPSANTG 119X	The Chilean Economy: History, International Relations, and Development Strategies	5
RELIGST 270X	Religion and Science in the Amazon and Elsewhere	5
RELIGST 370X	Religion and Science in the Amazon and Elsewhere	5
SOC 189	Race and Immigration	4-5
SOC 289	Race and Immigration	4-5
SOC 350W	Workshop: Migration, Ethnicity, Race and Nation	1-3
SPECLANG 101A	First-Year Nahuatl, First Quarter	4
SPECLANG 102A	Second-Year Nahuatl	4
SPECLANG 174A	First-Year Quechua, First Quarter	4
SPECLANG 174B	First-Year Quechua, Second Quarter	4
SPECLANG 174C	First-Year Quechua, Third Quarter	4
SPECLANG 175A	Second-Year Quechua, First Quarter	4

SPECLANG 175B	Second-Year Quechua, Second Quarter	4
SPECLANG 175C	Second-Year Quechua, Third Quarter	4

Environment, Ecology, and Sustainability

		Units
ANTHRO 139C	Anthropology of Global Health	5
BIO 234	Conservation Biology: A Latin American Perspective	3
BIOE 371	Global Biodesign: Medical Technology in an International Context	1
EARTHSYS 121	Building a Sustainable Society: New Approaches for Integrating Human and Environmental Priorities	3
ETHICSOC 278M	Introduction to Environmental Ethics	4-5
GEOPHYS 212	Topics in Climate Change	2
HISTORY 278B	The Historical Ecology of Latin America	4-5
HISTORY 378	The Historical Ecology of Latin America	4-5
HISTORY 471A	Environmental History of Latin America	5
HISTORY 471B	Environmental History of Latin America	5
HUMBIO 129S	Global Public Health	3
ILAC 255	Climate Change and Latin American Naturecultures	3-5
OSPSANTG 58	Global Change in Chile	5

Political Economy

		Units
ECON 106	World Food Economy	5
EDUC 306A	Economics of Education in the Global Economy	5
EDUC 404	Topics in Brazilian Education: Public Policy and Innovation for the 21st Century	1-2
HISTORY 177D	U.S. Intervention and Regime Change in 20th Century Latin America	5
INTNLREL 141A	Camera as Witness: International Human Rights Documentaries	5
INTNLREL 146A	Energy and Climate Cooperation in the Western Hemisphere	4
INTNLREL 147	Political Economy of the Southern Cone Countries of South America	5
INTNLREL 179	Major Themes in U.S.-Latin America Diplomatic History	5
LAW 5017	Law in Latin America	2
LAW 5041	Business, Institutions, and Corruption in Latin America	2
OSPSANTG 119X	The Chilean Economy: History, International Relations, and Development Strategies	5
POLISCI 247G	Governance and Poverty	5
POLISCI 248S	Latin American Politics	3-5
POLISCI 347G	Governance and Poverty	3-5
POLISCI 348S	Latin American Politics	3-5
POLISCI 440B	Comparative Political Economy	3-5

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South Asian Studies Specialization

The following is a current selection of courses related to South Asian Studies. Students should consult with their minor adviser to determine the applicability of any course to the minor in Stanford Global Studies, South Asian Studies specialization.

		Units
AMELANG 144A	First-Year Modern Persian, First Quarter	5
AMELANG 144B	First-Year Modern Persian, Second Quarter	5
AMELANG 144C	First-Year Modern Persian, Third Quarter	5
AMELANG 146A	Third-Year Persian, First Quarter	4
AMELANG 146B	Third-Year Persian, Second Quarter	4
AMELANG 146C	Third-Year Persian, Third Quarter	4
ANTHRO 126	Urban Culture in Global Perspective	5
HISTORY 39	Modern Britain and the British Empire	3
HISTORY 139	Modern Britain and the British Empire	5
RELIGST 114	Yoga: Ancient and Modern	4
RELIGST 124	Sufi Islam	4
SPECLANG 152A	First-Year Hindi, First Quarter	5
SPECLANG 152B	First-Year Hindi, Second Quarter	5
SPECLANG 152C	First-Year Hindi, Third Quarter	5
SPECLANG 153A	Second-Year Hindi, First Quarter	4
SPECLANG 153B	Second-Year Hindi, Second Quarter	4
SPECLANG 153C	Second-Year Hindi, Third Quarter	4
SPECLANG 154A	Third-Year Hindi, First Quarter	4
SPECLANG 154B	Third-Year Hindi, Second Quarter	4
SPECLANG 154C	Third-Year Hindi, Third Quarter	4
SPECLANG 183A	First-Year Sanskrit, First Quarter	4
SPECLANG 183B	First-Year Sanskrit, Second Quarter	4
SPECLANG 183C	First-Year Sanskrit, Third Quarter	4
SPECLANG 218A	Beginning Urdu, First Quarter	5
SPECLANG 218B	Beginning Urdu, Second Quarter	4
SPECLANG 218C	Beginning Urdu, Third Quarter	4
SPECLANG 219A	Intermediate Urdu, First Quarter	4
SPECLANG 219B	Intermediate Urdu, Second Quarter	4
SPECLANG 229A	Beginning Pashto, First Quarter	5
SPECLANG 229B	Beginning Pashto, Second Quarter	5
TAPS 157	World Drama and Performance	4
TIBETLNG 3	First Year Tibetan, Third Quarter	4
TIBETLNG 23	Intermediate/Advance Tibetan, Third Quarter	4
URBANST 114	Urban Culture in Global Perspective	5

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African Studies Courses

AFRICAST 51N. Visible Bodies: Black Female Authors and the Politics of Publishing in Africa. 4 Units.
Where are the African female writers of the twentieth century and the present day? This Introductory Seminar addresses the critical problem of the marginalization of black female authors within established canons of modern African literature. We will explore, analyse and interrogate the reasons why, and the ways in which, women-authored bodies of work from this period continue to be lost, misplaced, forgotten, and ignored by a male-dominated and largely European/white publishing industry in the context of colonialism, apartheid and globalization. nnYou will be introduced to key twentieth-century and more contemporary female authors from Africa, some of them published but many more unpublished or out-of-print. The class will look at the challenges these female authors faced in publishing, including how they navigated a hostile publishing industry and a lack of funding and intellectual support for black writers, especially female writers. nnWe will also examine the strategies these writers used to mitigate their apparent marginality, including looking at how women self-published, how they used newspapers as publication venues, how they have increasingly turned to digital platforms, and how many sought international publishing networks outside of the African continent. As one of the primary assessments for the seminar, you will be asked to conceptualize and design an in-depth and imaginative pitch for a new publishing platform that specializes in African female authors. nnYou will also have the opportunity for in-depth engagement (both in class and in one-on-one mentor sessions) with a range of leading pioneers in the field of publishing and literature in Africa. Figures like Ainehi Edoro (founder of Brittle Paper) and Zukiswa Wanner (prize-winning author of The Madams and Men of the South), amongst others, will be guests to our Zoom classroom. One of our industry specialists will meet with you to offer detailed feedback on your proposal for your imagined publishing platform. nnYou can expect a roughly 50/50 division between synchronous and asynchronous learning, as well as plenty of opportunity to collaborate with peers in smaller settings.
Same as: AFRICAAM 140N, ENGLISH 54N, HISTORY 41N

AFRICAST 58. Egypt in the Age of Heresy. 3-5 Units.
Perhaps the most controversial era in ancient Egyptian history, the Amarna period (c.1350-1334 BCE) was marked by great sociocultural transformation, notably the introduction of a new 'religion' (often considered the world's first form of monotheism), the construction of a new royal city, and radical departures in artistic and architectural styles. This course will introduce archaeological and textual sources of ancient Egypt, investigating topics such as theological promotion, projections of power, social structure, urban design, interregional diplomacy, and historical legacy during the inception, height, and aftermath of this highly enigmatic period. Students with or without prior background are equally encouraged.
Same as: AFRICAAM 58A, ARCHLGY 58, CLASSICS 58

AFRICAST 90. Black Earth Rising: Law and Society in Postcolonial Africa. 5 Units.
Is the International Criminal Court a neocolonial institution? Should African art in Western museums be returned? Why have anti-homosexuality laws emerged in many African countries? This course engages these questions, and more, to explore how Africans have grappled with the legacies of colonialism through law since independence. Reading court documents, listening to witness testimonies, analyzing legal codes, and watching cultural commentaries¿including hit TV series Black Earth Rising¿students will examine the histories of legal conflict in Africa and their implications for the present and future of African societies. This course fulfills the Social Inquiry and Engaging Diversity Ways requirements.
Same as: HISTORY 47S

AFRICAST 111. Education for All? The Global and Local in Public Policy Making in Africa. 3-5 Units.
Policy making in Africa and the intersection of policy processes and their political and economic dimensions. The failure to implement agreements by international institutions, national governments, and nongovernmental organizations to promote education. Case studies of crowded and poorly equipped schools, overburdened and underprepared teachers, and underfunded education systems.
Same as: AFRICAAM 211, AFRICAST 211

AFRICAST 112. AIDS, Literacy, and Land: Foreign Aid and Development in Africa. 3-5 Units.
Foreign aid can help Africa, say the advocates. Certainly not, say the critics. Is foreign aid a solution? or a problem? Should there be more aid, less aid, or none at all? Africa has developed imaginative and innovative approaches in many sectors. At the same time, many African countries have become increasingly dependent on foreign aid. How do foreign aid and local initiatives intersect? We will examine several contentious issues in contemporary Africa, exploring roots, contested analyses, and proposed solutions, examining foreign aid and the aid relationship. As African communities and countries work to shape their future, what are the foreign roles, and what are their consequences?.
Same as: AFRICAAM 111, AFRICAST 212

AFRICAST 113V. Freedom in Chains: Black Slavery in the Atlantic, 1400s-1800s. 3-5 Units.
This course will focus on the history of slavery in the British, French, Spanish, Portuguese and Dutch Atlantic world(s), from the late 1400s to the 1800s. Its main focus will be on the experiences of enslaved Africans and their descendants. Between the sixteenth and nineteenth centuries, the Europeans forcibly embarked over 10 million Africans to the Americas. Drawing on methodologies used by historians, archaeologists and anthropologists, the course will reconstruct the daily lives and the socio-economic, cultural and political histories of these captives. We will seek to hear their voices by investigating a variety of historical testimonies and recent scholarship. The course will examine slavery in the context of broader trends in Atlantic World studies, a field that has grown considerably in recent years, providing new ways of understanding historical developments across national boundaries. We will seek to identify commonalities and differences across time periods and regions and the reasons for those differences. Covered topics will include slave ship voyages, labor, agency, the creation of new identities (creolization), religion, race, gender, resistance, legacies, and memory.
Same as: AFRICAAM 113V, CSRE 113V, HISTORY 205D

AFRICAST 114N. Desert Biogeography of Namibia Prefield Seminar. 3 Units.
Desert environments make up a third of the land areas on Earth, ranging from the hottest to the coldest environments. Aridity leads to the development of unique adaptations among the organisms that inhabit them. Climate change and other processes of desertification as well as increasing human demand for habitable and cultivatable areas have resulting in increasing need to better understand these systems. Namibia is a model system for studying these processes and includes the Sossuvlei (Sand Sea) World Heritable Site. This seminar will prepare students for their overseas field experience in Namibia. The seminar will provide an introduction to desert biogeography and culture, using Namibia as a case study. During the seminar, students will each give two presentations on aspects of desert biogeography and ecology, specific organisms and their adaptations to arid environments, cultural adaptations of indigenous peoples and immigrants, ecological threats and conservation efforts, and/or national and international policy towards deserts. Additional assignments include a comprehensive dossier and a final exam. Students will also carry out background research for the presentations they will be giving during the field seminar where access to the internet and to other scholarly resources will be limited. In addition, we will cover logistics, health and safety, cultural sensitivity, geography, and politics. We will deal with post-field issues such as reverse culture shock, and ways in which participants can consolidate and build up their abroad experiences after they return to campus.
Same as: EARTHSYS 115N

AFRICAST 119. Novel Perspectives on South Africa. 2-3 Units.
21st-century South Africa continues its literary effervescence. In this class we'll sample some recent novels and related writings to tease out the issues shaping the country (and to some degree the continent) at present. Is `South African literature' a meaningful category today? What are the most significant features we can identify in new writings and how do they relate to contemporary social dynamics? The course will appeal to anyone interested in present-day Cape Town or Johannesburg, including students who have spent a term in BOSP-Cape Town or plan to do so in future. Both undergraduate and graduate students are welcome. 2-3 units. Course may be repeated for credit.nn nnAll students will write short analyses from the prescribed texts. Students taking the course for three units will write an extended essay on a topic agreed with the instructor.
Same as: AFRICAAM 119, AFRICAAM 219, AFRICAST 219, CSRE 119

AFRICAST 122F. Histories of Race in Science and Medicine at Home and Abroad. 4 Units.
This course has as its primary objective, the historical study of the intersection of race, science and medicine in the US and abroad with an emphasis on Africa and its Diasporas in the US. By drawing on literature from history, science and technology studies, sociology and other related disciplines, the course will consider the sociological and cultural concept of race and its usefulness as an analytical category. The course will explore how the study of race became its own ¿science¿ in the late-Enlightenment era, the history of eugenics--a science of race aimed at the ostensible betterment of the overall population through the systematic killing or "letting die" of humanity¿s "undesirable" parts, discuss how the ideology of pseudo-scientific racism underpinned the health policies of the French and British Empires in Africa, explore the fraught relationship between race and medicine in the US, discuss how biological notions of race have quietly slipped back into scientific projects in the 21st century and explore how various social justice advocates and scholars have resisted the scientific racisms of the present and future and/or proposed new paths towards a more equitable and accessible science.
Same as: AFRICAAM 122F, CSRE 122F, HISTORY 248D

AFRICAST 127. African Art and Politics, c. 1900 - Present. 4 Units.
This course explores the relationship between art and politics in twentieth century Africa. Artistic production and consumption is considered in the context of various major political shifts, from the experience of colonialism to the struggle against Apartheid. Each week we will look closely at different works of art and examine how artists and designers responded to such challenges as independence, modernization and globalization. We will look at painting, sculpture, religious art, public and performance art, photography and film. How western perceptions and understanding of African art have shifted, and how museums have framed African art throughout the twentieth century will remain important points of discussion throughout the course.
Same as: ARTHIST 127A

AFRICAST 132. Literature and Society in Africa and the Caribbean. 4 Units.
This course explores texts and films from Francophone Africa and the Caribbean in the 20th and 21st centuries. The course will explore the connections between Sub-Saharan Africa, the Maghreb and the Caribbean through both foundational and contemporary works while considering their engagement with the historical and political contexts in which they were produced. This course will also serve to improve students' speaking and writing skills in French while sharpening their knowledge of the linguistic and conceptual tools needed to conduct literary analysis. The diverse topics discussed in the course will include national and cultural identity, race and class, gender and sexuality, orality and textuality, transnationalism and migration, colonialism and decolonization, history and memory, and the politics of language. Readings include the works of writers and filmmakers such as Djibril Tamsir Niane, Léopold Senghor, Aimé Césaire, Albert Memmi, Patrick Chamoiseau, Leonora Miano, Leila Slimani, Dani Laferrière and Ousmane Sembène. Taught in French. Students are highly encouraged to complete FRENLANG 124 or to successfully test above this level through the Language Center. This course fulfills the Writing in the Major (WIM) requirement.
Same as: AFRICAAM 133, COMPLIT 133A, COMPLIT 233A, CSRE 133E, FRENCH 133, JEWISHST 143

AFRICAST 135. Designing Research-Based Interventions to Solve Global Health Problems. 3-4 Units.
The excitement around social innovation and entrepreneurship has spawned numerous startups focused on tackling world problems, particularly in the fields of education and health. The best social ventures are launched with careful consideration paid to research, design, and efficacy. This course offers students insights into understanding how to effectively develop, evaluate, and scale social ventures. Using TeachAids (an award-winning nonprofit educational technology social venture used in 82 countries) as a primary case study, students will be given an in-depth look into how the entity was founded and scaled globally. Guest speakers will include world-class experts and entrepreneurs in Philanthropy, Medicine, Communications, Education, and Technology. Open to both undergraduate and graduate students.
Same as: AFRICAST 235, EDUC 135, EDUC 335, EPI 235, HUMBIO 26, MED 235

AFRICAST 142. Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice. 3-5 Units.
This seminar is part of a broader program on Social Entrepreneurship at CDDRL in partnership with the Haas Center for Public Service. It will use practice to better inform theory. Working with three visiting social entrepreneurs from developing and developed country contexts students will use case studies of successful and failed social change strategies to explore relationships between social entrepreneurship, gender, democracy, development and justice. It interrogates current definitions of democracy and development and explores how they can become more inclusive of marginalized populations. This is a service learning class in which students will learn by working on projects that support the social entrepreneurs' efforts to promote social change. Students should register for either 3 OR 5 units only. Students enrolled in the full 5 units will have a service-learning component along with the course. Students enrolled for 3 units will not complete the service-learning component. Limited enrollment. Attendance at the first class is mandatory in order to participate in service learning.
Same as: AFRICAST 242, CSRE 142C, INTNLREL 142

AFRICAST 146M. New Keywords in African Sound. 3-4 Units.
This course identifies and considers new keywords for the study of contemporary African music and sound. Each week we will foster discussion around a keyword and a constellation of case studies. The sonic practices we will encounter range from South African house music to Ghanaian honk horns; from Congolese rumba bands to Tunisian trance singers; from listening to the radio in a Tanzanian homestead to making hip hop music videos on the Kenyan coast. By exploring the unexpected interconnections between contemporary African musical communities, we will discuss new keywords arising in current scholarship, including technologies like the amplifier and the hard drive, spaces like the studio and the city, and analytics like pleasure and hotness. We will also engage with established concepts for the study of postcolonial African cultures, including nationalism, cosmopolitanism, globalization, diaspora, and Pan-Africanism. This is a seminar-based course open to graduate students, upper level undergraduate students, and other students with consent of the instructor. Proficiency in music is not required. WIM at 4 units only.
Same as: AFRICAAM 146D, CSRE 146D, MUSIC 146M, MUSIC 246M

AFRICAST 151. AIDS in Africa. 3 Units.
Medical, social, and political aspects of the HIV epidemic in sub-Saharan Africa including: biology, transmission, diagnosis,and treatment of HIV; mother-to-child transmission and breastfeeding; vaccines; community and activist responses to the HIV epidemic; economics of HIV treatment; governance and health; ethics in research and program implementation.

AFRICAST 195. Shifting Frames. 1-2 Unit.
This is a student driven, dialogue based, and intellectual community focused course. We will explore and challenge the taken-for-granted framing of key African issues and debates. Engagement with discussion leaders drawing on their own research and case studies from across the African continent will guide us across shifting terrain. This course centers the scholarship and voices of African students. Topics include: Afropolitanism, Brain Drain/ Gain, Education, Leadership, Global Health, AI Application in Africa, Economic Development, Industrial Policy, LGBTQI Rights, Gender and Sexuality.

AFRICAST 199. Independent Study or Directed Reading. 1-5 Unit.
May be repeated for credit.

AFRICAST 211. Education for All? The Global and Local in Public Policy Making in Africa. 3-5 Units.
Policy making in Africa and the intersection of policy processes and their political and economic dimensions. The failure to implement agreements by international institutions, national governments, and nongovernmental organizations to promote education. Case studies of crowded and poorly equipped schools, overburdened and underprepared teachers, and underfunded education systems.
Same as: AFRICAAM 211, AFRICAST 111

AFRICAST 212. AIDS, Literacy, and Land: Foreign Aid and Development in Africa. 3-5 Units.
Foreign aid can help Africa, say the advocates. Certainly not, say the critics. Is foreign aid a solution? or a problem? Should there be more aid, less aid, or none at all? Africa has developed imaginative and innovative approaches in many sectors. At the same time, many African countries have become increasingly dependent on foreign aid. How do foreign aid and local initiatives intersect? We will examine several contentious issues in contemporary Africa, exploring roots, contested analyses, and proposed solutions, examining foreign aid and the aid relationship. As African communities and countries work to shape their future, what are the foreign roles, and what are their consequences?.
Same as: AFRICAAM 111, AFRICAST 112

AFRICAST 219. Novel Perspectives on South Africa. 2-3 Units.
21st-century South Africa continues its literary effervescence. In this class we'll sample some recent novels and related writings to tease out the issues shaping the country (and to some degree the continent) at present. Is `South African literature' a meaningful category today? What are the most significant features we can identify in new writings and how do they relate to contemporary social dynamics? The course will appeal to anyone interested in present-day Cape Town or Johannesburg, including students who have spent a term in BOSP-Cape Town or plan to do so in future. Both undergraduate and graduate students are welcome. 2-3 units. Course may be repeated for credit.nn nnAll students will write short analyses from the prescribed texts. Students taking the course for three units will write an extended essay on a topic agreed with the instructor.
Same as: AFRICAAM 119, AFRICAAM 219, AFRICAST 119, CSRE 119

AFRICAST 220E. Renaissance Africa. 3-5 Units.
Literature and Portuguese expansion into Africa during the sixteenth century. Emphasis on forms of exchange between Portuguese and Africans in Morocco, Angola/Congo, South Africa, the Swahili Coast, and Ethiopia. Readings in Portuguese and English. Taught in English.
Same as: COMPLIT 220, ILAC 220E, ILAC 320E

AFRICAST 224. Memory and Heritage In South Africa Syllabus. 1 Unit.
The focus of this course is to provide a forum in which students examine the role of memory and heritage in South Africa. The course will include visiting speakers, discussion and other activities. The complex relationship between memory and heritage in South Africa will provide the basis for a series of broad conversations about citizenship, national reconciliation, memorialization, justice, modernity and heritage ethics.

AFRICAST 235. Designing Research-Based Interventions to Solve Global Health Problems. 3-4 Units.
The excitement around social innovation and entrepreneurship has spawned numerous startups focused on tackling world problems, particularly in the fields of education and health. The best social ventures are launched with careful consideration paid to research, design, and efficacy. This course offers students insights into understanding how to effectively develop, evaluate, and scale social ventures. Using TeachAids (an award-winning nonprofit educational technology social venture used in 82 countries) as a primary case study, students will be given an in-depth look into how the entity was founded and scaled globally. Guest speakers will include world-class experts and entrepreneurs in Philanthropy, Medicine, Communications, Education, and Technology. Open to both undergraduate and graduate students.
Same as: AFRICAST 135, EDUC 135, EDUC 335, EPI 235, HUMBIO 26, MED 235

AFRICAST 242. Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice. 3-5 Units.
This seminar is part of a broader program on Social Entrepreneurship at CDDRL in partnership with the Haas Center for Public Service. It will use practice to better inform theory. Working with three visiting social entrepreneurs from developing and developed country contexts students will use case studies of successful and failed social change strategies to explore relationships between social entrepreneurship, gender, democracy, development and justice. It interrogates current definitions of democracy and development and explores how they can become more inclusive of marginalized populations. This is a service learning class in which students will learn by working on projects that support the social entrepreneurs' efforts to promote social change. Students should register for either 3 OR 5 units only. Students enrolled in the full 5 units will have a service-learning component along with the course. Students enrolled for 3 units will not complete the service-learning component. Limited enrollment. Attendance at the first class is mandatory in order to participate in service learning.
Same as: AFRICAST 142, CSRE 142C, INTNLREL 142

AFRICAST 248. Religion, Radicalization and Media in Africa since 1945. 4-5 Units.
What are the paths to religious radicalization, and what role have media- new and old- played in these conversion journeys? We examine how Pentecostal Christians and Reformist Muslims in countries such as South Africa, Nigeria, Sudan, and Ethiopia have used multiple media forms- newspapers, cell phones, TV, radio, and the internet- to gain new converts, contest the authority of colonial and post-colonial states, construct transnational communities, and position themselves as key political players.
Same as: AFRICAST 348, HISTORY 248, HISTORY 348, RELIGST 230X, RELIGST 330X

AFRICAST 249. Bodies, Technologies, and Natures in Africa. 4-5 Units.
This interdisciplinary course explores how modern African histories, bodies, and natures have been entangled with technological activities. Viewing Africans as experts and innovators, we consider how technologies have mediated, represented, or performed power in African societies. Topics include infrastructure, extraction, medicine, weapons, communications, sanitation, and more. Themes woven through the course include citizenship, mobility, labor, bricolage, in/formal economies, and technopolitical geographies, among others. Readings draw from history, anthropology, geography, and social/cultural theory.
Same as: ANTHRO 348B, HISTORY 349

AFRICAST 299. Independent Study or Directed Reading. 1-10 Unit.
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AFRICAST 300. Contemporary Issues in African Studies. 1 Unit.
Guest scholars present analyses of major African themes and topics. Brief response papers required. May be repeated for credit.

AFRICAST 302. Research Workshop. 1 Unit.
Required for African Studies master's students. Student presentations.

AFRICAST 303E. Infrastructure & Power in the Global South. 4-5 Units.
In the last decade, the field of infrastructure studies has entered into conversation with area studies, post/colonial studies, and other scholarship on the "Global South." These intersections have produced dramatic new understandings of what "infrastructures" are, and how to analyze them as conduits of social and political power. This course offers a graduate-level introduction to this recent scholarship, drawing primarily on works from history, anthropology, geography, and architecture.
Same as: ANTHRO 303E, HISTORY 303E

AFRICAST 348. Religion, Radicalization and Media in Africa since 1945. 4-5 Units.
What are the paths to religious radicalization, and what role have media- new and old- played in these conversion journeys? We examine how Pentecostal Christians and Reformist Muslims in countries such as South Africa, Nigeria, Sudan, and Ethiopia have used multiple media forms- newspapers, cell phones, TV, radio, and the internet- to gain new converts, contest the authority of colonial and post-colonial states, construct transnational communities, and position themselves as key political players.
Same as: AFRICAST 248, HISTORY 248, HISTORY 348, RELIGST 230X, RELIGST 330X

AFRICAST 801. TGR Project. 0 Units.
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East Asian Studies Courses

EASTASN 77. Divided Memories & Reconciliation: the formation of wartime historical memory in the Pacific. 4 Units.
Divided Memories will examine the formation of historical memory about World War Two in Asia, looking comparatively at the national memories of China, Japan, Korea, and the United States. It will also study efforts at reconciliation in contemporary Asia. The course will look at the role of textbooks, popular culture, with an emphasis on cinema, and elite opinion on the formation of wartime memory. We will study and discuss controversial issues such as war crimes, forced labor, sexual servitude, and the use of atomic weapons. Class will combine lectures with in class discussion, with short essays or papers.
Same as: EASTASN 277

EASTASN 94. The Rise of China in World Affairs. 3-5 Units.
This course examines the impact and implications of the rise of China in contemporary world politics from a historical and international relations perspective. It reviews China's halting progress into the international system, sketches the evolution of PRC foreign policy since 1949, and analyzes China's developmental priorities and domestic political context as they figure into Beijing's interactions with the world. It sketches American policy toward the PRC, and it assesses alternative approaches to dealing with China on such issues as arms and nuclear proliferation, regional security arrangements, international trade and investment, human rights, environmental problems, and the Taiwan and Tibet questions.
Same as: EASTASN 294

EASTASN 97. The International Relations of Asia since World War II. 3-5 Units.
Asian international relations since World War II were dominated by the efforts of the newly independent nation-states of Asia, almost all of which had been colonies before the war, to establish and maintain sovereignty in a context of American and Soviet competition for influence in the region. This course traces the major developments of the period, including the Chinese civil war, the U.S. occupation of Japan, the division of Korea and the Korean War, the South and Southeast Asian independence struggles, the American and Soviet alliance systems, the Vietnam War, the strategic realignments that led to the end of the Cold War in Asia, the emergence of Central Asia, and the legacy of issues that the period has posed for the region today.
Same as: EASTASN 297

EASTASN 117. Health and Healthcare Systems in East Asia. 3-5 Units.
China, Japan, and both Koreas. Healthcare economics as applied to East Asian health policy, including economic development, population aging, infectious disease outbreaks (SARS, avian flu), social health insurance, health service delivery, payment incentives, competition, workforce policy, pharmaceutical industry, and regulation. No prior knowledge of economics or healthcare required.
Same as: EASTASN 217

EASTASN 143. Taiwan's Democratic Evolution. 3-5 Units.
This course is an introduction to the contemporary politics of Taiwan. Once a poor, insecure autocracy, today Taiwan has been transformed into a prosperous and stable liberal democracy, albeit one whose long-term security remains imperiled by the rising power of the People's Republic of China. We will draw on concepts and theories from political science to explore distinct aspects of this ongoing political evolution, including the transition to and consolidation of democracy, origins and trajectory of economic and social development, sources of Taiwanese nationalism, security of the Taiwanese state and its relationship to the PRC and the United States, parties and elections, and public policy processes and challenges.
Same as: EASTASN 243

EASTASN 162. Seminar on the Evolution of the Modern Chinese State, 1550-Present. 3-5 Units.
This seminar will assess the evolving response of the late imperial, early Republican, Nanjing Republic, and the PRC regimes in response to China's changing international setting, to successive revolutions in warfare, and to fundamental economic, social and demographic trends domestically from the 16th century to present. It will assess the capacities of each successive Chinese state to extract resources from society and economy and to mobilize people behind national purposes, to elaborate centralized institutions to pursue national priorities, to marshal military forces for national defense and police forces to sustain domestic order, and to generate popular identities loyal to national authority.
Same as: EASTASN 262

EASTASN 168. Taiwan Security Issues. 3-5 Units.
This course will provide a broad overview of Taiwan's place in the security environment of East Asia, covering the history of US-Taiwan-People's Republic of China relations, Taiwan's ambiguous status in the contemporary inter-state system, cross-Strait trends including the military balance of power and economic integration, the emergence and evolution of "sharp power" threats to Taiwan's security, and domestic politics and the quality of Taiwan's democracy. The course will be offered remotely and integrated with the fall 2020 quarter programming of the Project on Taiwan in the Indo-Pacific at the Hoover Institution. It will feature a combination of guest presentations by outside speakers as part of the PTIP's fall conference agenda, online lectures and discussions led by the instructor, and student presentations. Some course events may be open to the public.
Same as: EASTASN 268

EASTASN 179. Rebalancing Economic Systems in a World Driven by Tech: Quality-of-Life in Socio-Cultural Context. 4 Units.
This course examines the broader consequences of economic models that rely on innovation-driven growth, e.g. increases in social inequality, tension between globalism and isolationism, and tendencies toward authoritarianism. After an overview of the historical outcomes of previous industrial revolutions, we examine how the above trends are exacerbated in the era of digital transformation, comparing different economic systems (e.g. China, India, Japan, and the U.S.) as realized in their socio-political and cultural contexts. We then discuss approaches toward rebalancing existing systems, including metrics for evaluating economic performance and its impact, in order to satisfy the imperatives of social, environmental, and economic sustainability.
Same as: EASTASN 279

EASTASN 189K. Korea and the World. 3 Units.
This course investigates the theoretical and empirical underpinnings of modern Korea. The course offers a rough mix of history, domestic politics, and foreign relations. It also approaches the empirics of Korea through various theoretical lenses ranging from identity to balance of power to alliance theory to sports diplomacy. We will cover a vast expanse of time, ranging from the Kanghwa treaty to Donald Trump and Kim Jong-un. The course divides into four sections. The first is an understanding of the traditional historical and Cold War context of Korea's external relations. The second assesses the drivers of Korea¿s relations with the region, including Japan, the United States, China, and Russia. The next section is a three-week unit on North Korea. The last section investigates the policy priorities and potential pitfalls in Korea's path to unification as well as the implications of a united Korea on the balance of power in East Asia. No previous background on Korea is required.
Same as: EASTASN 289K

EASTASN 217. Health and Healthcare Systems in East Asia. 3-5 Units.
China, Japan, and both Koreas. Healthcare economics as applied to East Asian health policy, including economic development, population aging, infectious disease outbreaks (SARS, avian flu), social health insurance, health service delivery, payment incentives, competition, workforce policy, pharmaceutical industry, and regulation. No prior knowledge of economics or healthcare required.
Same as: EASTASN 117

EASTASN 243. Taiwan's Democratic Evolution. 3-5 Units.
This course is an introduction to the contemporary politics of Taiwan. Once a poor, insecure autocracy, today Taiwan has been transformed into a prosperous and stable liberal democracy, albeit one whose long-term security remains imperiled by the rising power of the People's Republic of China. We will draw on concepts and theories from political science to explore distinct aspects of this ongoing political evolution, including the transition to and consolidation of democracy, origins and trajectory of economic and social development, sources of Taiwanese nationalism, security of the Taiwanese state and its relationship to the PRC and the United States, parties and elections, and public policy processes and challenges.
Same as: EASTASN 143

EASTASN 262. Seminar on the Evolution of the Modern Chinese State, 1550-Present. 3-5 Units.
This seminar will assess the evolving response of the late imperial, early Republican, Nanjing Republic, and the PRC regimes in response to China's changing international setting, to successive revolutions in warfare, and to fundamental economic, social and demographic trends domestically from the 16th century to present. It will assess the capacities of each successive Chinese state to extract resources from society and economy and to mobilize people behind national purposes, to elaborate centralized institutions to pursue national priorities, to marshal military forces for national defense and police forces to sustain domestic order, and to generate popular identities loyal to national authority.
Same as: EASTASN 162

EASTASN 268. Taiwan Security Issues. 3-5 Units.
This course will provide a broad overview of Taiwan's place in the security environment of East Asia, covering the history of US-Taiwan-People's Republic of China relations, Taiwan's ambiguous status in the contemporary inter-state system, cross-Strait trends including the military balance of power and economic integration, the emergence and evolution of "sharp power" threats to Taiwan's security, and domestic politics and the quality of Taiwan's democracy. The course will be offered remotely and integrated with the fall 2020 quarter programming of the Project on Taiwan in the Indo-Pacific at the Hoover Institution. It will feature a combination of guest presentations by outside speakers as part of the PTIP's fall conference agenda, online lectures and discussions led by the instructor, and student presentations. Some course events may be open to the public.
Same as: EASTASN 168

EASTASN 277. Divided Memories & Reconciliation: the formation of wartime historical memory in the Pacific. 4 Units.
Divided Memories will examine the formation of historical memory about World War Two in Asia, looking comparatively at the national memories of China, Japan, Korea, and the United States. It will also study efforts at reconciliation in contemporary Asia. The course will look at the role of textbooks, popular culture, with an emphasis on cinema, and elite opinion on the formation of wartime memory. We will study and discuss controversial issues such as war crimes, forced labor, sexual servitude, and the use of atomic weapons. Class will combine lectures with in class discussion, with short essays or papers.
Same as: EASTASN 77

EASTASN 279. Rebalancing Economic Systems in a World Driven by Tech: Quality-of-Life in Socio-Cultural Context. 4 Units.
This course examines the broader consequences of economic models that rely on innovation-driven growth, e.g. increases in social inequality, tension between globalism and isolationism, and tendencies toward authoritarianism. After an overview of the historical outcomes of previous industrial revolutions, we examine how the above trends are exacerbated in the era of digital transformation, comparing different economic systems (e.g. China, India, Japan, and the U.S.) as realized in their socio-political and cultural contexts. We then discuss approaches toward rebalancing existing systems, including metrics for evaluating economic performance and its impact, in order to satisfy the imperatives of social, environmental, and economic sustainability.
Same as: EASTASN 179

EASTASN 285. The United States, China, & Global Security. 2 Units.
This graduate-level seminar will be taught simultaneously on the campuses of Stanford University and Peking University and will feature a lecture series in which prominent American and Chinese scholars provide presentations that focus on key global security issues. The course content will highlight topics relevant to current U.S.- China relations and their respective roles in Asian and global security. Proposed lecture topics include: an introduction to U.S.- China relations; finance, trade, and investment; cyber security; nonproliferation; maritime security; terrorism; and energy and the environment. Hosted jointly by Stanford University and Peking University, enrollment will be limited to 20 students at each campus and, at Stanford, will be restricted to graduate students and undergraduates with senior standing. Enrollment is competitive, so potential students must complete an application by March 12, 2018 at 5pm: https://web.stanford.edu/dept/CEAS/EASTASN285.fb.
Same as: INTLPOL 285

EASTASN 289K. Korea and the World. 3 Units.
This course investigates the theoretical and empirical underpinnings of modern Korea. The course offers a rough mix of history, domestic politics, and foreign relations. It also approaches the empirics of Korea through various theoretical lenses ranging from identity to balance of power to alliance theory to sports diplomacy. We will cover a vast expanse of time, ranging from the Kanghwa treaty to Donald Trump and Kim Jong-un. The course divides into four sections. The first is an understanding of the traditional historical and Cold War context of Korea's external relations. The second assesses the drivers of Korea¿s relations with the region, including Japan, the United States, China, and Russia. The next section is a three-week unit on North Korea. The last section investigates the policy priorities and potential pitfalls in Korea's path to unification as well as the implications of a united Korea on the balance of power in East Asia. No previous background on Korea is required.
Same as: EASTASN 189K

EASTASN 294. The Rise of China in World Affairs. 3-5 Units.
This course examines the impact and implications of the rise of China in contemporary world politics from a historical and international relations perspective. It reviews China's halting progress into the international system, sketches the evolution of PRC foreign policy since 1949, and analyzes China's developmental priorities and domestic political context as they figure into Beijing's interactions with the world. It sketches American policy toward the PRC, and it assesses alternative approaches to dealing with China on such issues as arms and nuclear proliferation, regional security arrangements, international trade and investment, human rights, environmental problems, and the Taiwan and Tibet questions.
Same as: EASTASN 94

EASTASN 297. The International Relations of Asia since World War II. 3-5 Units.
Asian international relations since World War II were dominated by the efforts of the newly independent nation-states of Asia, almost all of which had been colonies before the war, to establish and maintain sovereignty in a context of American and Soviet competition for influence in the region. This course traces the major developments of the period, including the Chinese civil war, the U.S. occupation of Japan, the division of Korea and the Korean War, the South and Southeast Asian independence struggles, the American and Soviet alliance systems, the Vietnam War, the strategic realignments that led to the end of the Cold War in Asia, the emergence of Central Asia, and the legacy of issues that the period has posed for the region today.
Same as: EASTASN 97

EASTASN 300. Graduate Directed Reading. 1-5 Unit.
Independent studies under the direction of a faculty member for which academic credit may properly be allowed. For East Asian Studies M.A. students only.

EASTASN 301. Graduate Archival Directed Reading. 1 Unit.
Independent studies under the direction of a faculty member for which academic credit may properly be allowed. Research will require in-person access to archival materials in Hoover Institution, Stanford's East Asia Library, and/or Branner Map Collections. For East Asian Studies M.A. students only.

EASTASN 330. Core Seminar: Issues and Approaches in East Asian Studies. 1 Unit.
For East Asian Studies M.A. students only.

EASTASN 390. Practicum Internship. 1 Unit.
On-the-job training under the guidance of experienced, on-site supervisors. Meets the requirements for curricular practical training for students on F-1 visas. Students submit a concise report detailing work activities, problems worked on, and key results. May be repeated for credit. Prerequisite: qualified offer of employment and consent of adviser.

EASTASN 402A. Topics in International Technology Management. 1 Unit.
Theme for Autumn 2020 is "Digital transformation among new and traditional industries in Asia." Distinguished guest speakers and panels from industry discuss approaches in Asia to data-driven business models, influencer marketing, DevOps for new AI solutions, data privacy and security, new value chain relationships, etc. See syllabus for specific requirements, which may differ from those of other seminars at Stanford.
Same as: EALC 402A, EE 402A

EASTASN 402T. Entrepreneurship in Asian High Tech Industries. 1 Unit.
Distinctive patterns and challenges of entrepreneurship in Asia; update of business and technology issues in the creation and growth of start-up companies in major Asian economies. Distinguished speakers from industry, government, and academia.
Same as: EALC 402T, EE 402T

EASTASN 801. TGR Project. 0 Units.
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Courses

International Relations Courses

INTNLREL 5C. Human Trafficking: Historical, Legal, and Medical Perspectives. 3 Units.
(Same as History 105C. History majors and others taking 5 units, enroll in 105C.) Interdisciplinary approach to understanding the extent and complexity of the global phenomenon of human trafficking, especially for forced prostitution, labor exploitation, and organ trade, focusing on human rights violations and remedies. Provides a historical context for the development and spread of human trafficking. Analyzes the current international and domestic legal and policy frameworks to combat trafficking and evaluates their practical implementation. Examines the medical, psychological, and public health issues involved. Uses problem-based learning. Required weekly 50-min. discussion section, time TBD. Students interested in service learning should consult with the instructor and will enroll in an additional course.
Same as: CSRE 5C, FEMGEN 5C, HISTORY 5C

INTNLREL 33SI. Myths and Realities of U.S.-China Relations. 2 Units.
This course introduces students to the U.S.-China relationship through a weekly speaker series followed by student-led discussions. Speakers from academia and industry will explore topics such as the business environment of China, the politics of the Sino-American dynamic, and technological growth in China. The purpose of the course is to tackle the myths and misconceptions surrounding U.S.-China relations, and build in students a strong foundational understanding of the multiple facets of the bilateral relationship. Students will be exposed to a variety of issues and will be able to explore a topic of interest through a capstone presentation at the end of the course.

INTNLREL 60Q. United Nations Peacekeeping. 3 Units.
Focus is on an examination of United Nations peacekeeping, from its inception in 1956 in the wake of the Suez Crisis, to its increasingly important role as an enforcer of political stability in sub-Saharan Africa. Examines the practice of "classic" peacekeeping as it developed during the Cold War, the rise and fall of "second-generation" peacekeeping, and the reemergence of a muscular form of peacekeeping in sub-Saharan Africa more recently. Topics include the basic history of the United Nations since 1945, he fundamentals of the United Nations Charter, and the historical trajectory of U.N. peaeckeeping and the evolving arguments of its proponents and critics over the years.
Same as: PEDS 60Q

INTNLREL 61Q. Food and security. 3 Units.
The course will provide a broad overview of key policy issues concerning agricultural development and food security, and will assess how global governance is addressing the problem of food security. At the same time the course will provide an overview of the field of international security, and examine how governments and international institutions are beginning to include food in discussions of security.
Same as: EARTHSYS 61Q, ESS 61Q

INTNLREL 62Q. Mass Atrocities: Reckoning and Reconciliation. 3 Units.
Imagine you live in a country in which a delusional dictator imprisons untold masses in labor and concentration camps, and kills millions of them. Imagine you live in another country, in which one ethnic group slaughters the other. Imagine you live in yet another country in which a racial white minority terrorizes and violently discriminates against a huge majority of black population. Or, imagine you live in a country in which members of one group engage in an "ethnic cleansing" of their former neighbors.nnNow imagine this: Some big political change comes to each of these societies, and the perpetrators lose their power and are finally stopped from committing any more crimes and atrocities. Now comes the time to decide how to bring about justice for the past wrongs. It is also a question of how to come to terms with the terrible past. How to remember it? How to confront it? How to judge the perpetrators? How to identify them? How to punish them appropriately if at all? Also, is it possible to ever reconcile with the former oppressors and enemies? Maybe even to forgive them? If so, under what circumstances? What is necessary for such reconciliation? What if some of the victims were also perpetrators?nnThe scenarios mentioned above are real ones¿they happened in Germany, Rwanda, South Africa, Bosnia, and elsewhere. In this IntroSem we will explore the social, political, and legal arrangements societies debated about, negotiated, and used to deal with the atrocities of the past. We will assess their utility in the process of ¿transitional justice.¿ We will scrutinize crimes tribunals and truth commissions, and inquire whether they enabled the victims to gain a sense of justice and fairness. Likewise, we will consider under what conditions those victims might ever be capable of a genuine reconciliation.

INTNLREL 63Q. International Organizations and Accountability. 3 Units.
International organizations (IOs), like the IMF, the World Bank, the United Nations, and others, have been widely criticized as insufficiently accountable. For example, some argue that states are not able to control IOs whose bureaucracies have grown out of control and run amok, while others argue that the real problem is that communities most impacted by IO activities, such as those receiving World Bank loans or UN peacekeeping operations, are least able to influence their activities. Still others contend that the voting rules by which states control IOs are outdated and should be reformed to remedy these problems.nnThrough readings, discussions and case studies, students will learn about a range of international organizations in order to better understand what they do and how they are supposed to be controlled. In addition, we will evaluate the critiques of IO accountability that come from the right and the left, as well as the North, South, East and West, and will analyze different mechanisms of accountability, both formal and informal. Students will have the opportunity to research and present on specific international organizations and accountability mechanisms.

INTNLREL 64Q. Leadership and International Organizations. 3 Units.
What do intergovernmental organizations like the United Nations, the World Food Program, the United Nations High Commission for Refugees actually do? Do these organizations simply act on the interests of the governments that comprise them? Or do they have some autonomy to pursue their own programs, plans, and priorities? Does leadership of these organizations matter for their performance? What dilemmas do the leaders or intergovernmental organizations face as they try to satisfy governments while serving people in need all over the world? This course will get at these questions through examining the lives, careers and choices of leaders of major international organizations over the last thirty years. Reading assignments will include memoirs and biographies of leaders of international organizations, as well as analytical and empirical studies of international organizations. We plan on inviting former and current leaders of international organizations to visit the seminar.

INTNLREL 76. Protagonists in Policy. 1 Unit.
Interested in learning from activists, academics, and politicians about the different ways you can be an agent of change and affect public policy? This course presents a lecture/discussion series in which students will have the opportunity to engage with influential speakers to discover and learn more about timely topics relating to policy, government, and international affairs. Speakers will be selected in cooperation with the Policy Dinners Committee, a branch of Stanford in Government.
Same as: POLISCI 76

INTNLREL 82. The Ending of World War I: Three Perspectives. 2 Units.
This course is required for those students who will be taking the BOSP Overseas Seminar, The Ending of the First World War and the Shaping of the 20th Century. Enrollment is limited to students who will be taking the overseas seminar, or are waitlisted for the seminar.nnThis course has three learning goals: 1.) to provide historical background on the war and the events and processes leading up to the ending of the war; 2.) to help students formulate possible research topics for the Overseas Seminar; and 3.) to acquaint the students with archival research in preparation for their time in London. The course will be taught from the perspectives of military history, political science, and literature. Each week we will meet to discuss the reading material.

INTNLREL 101Z. Introduction to International Relations. 4 Units.
Approaches to the study of conflict and cooperation in world affairs. Applications to war, terrorism, trade policy, the environment, and world poverty. Debates about the ethics of war and the global distribution of wealth.
Same as: POLISCI 101Z

INTNLREL 102. History of the International System since 1914. 5 Units.
After defining the characteristics of the international system at the beginning of the twentieth century, this course reviews the primary developments in its functioning in the century that followed. Topics include the major wars and peace settlements; the emergence of Nazism and Communism; the Cold War; decolonization; and globalization. The role of international institutions and international society will also be a focus as will the challenges of climate change, inequality, migration, and terrorism.
Same as: HISTORY 102

INTNLREL 103F. The Changing Face of War: Introduction to Military History. 3-5 Units.
Introduces students to the rich history of military affairs and, at the same time, examines the ways in which we think of change and continuity in military history. How did war evolve from ancient times, both in styles of warfare and perceptions of war? What is the nature of the relationship between war and society? Is there such a thing as a Western way of war? What role does technology play in transforming military affairs? What is a military revolution and can it be manufactured or induced? Chronologically following the evolution of warfare from Ancient Greece to present day so-called new wars, we will continuously investigate how the interdependencies between technological advances, social change, philosophical debates and economic pressures both shaped and were influenced by war. Students satisfying the WiM requirement for the major in International Relations, must enroll in INTNLREL 103F course listing.
Same as: HISTORY 3F, HISTORY 103F

INTNLREL 105C. Human Trafficking: Historical, Legal, and Medical Perspectives. 5 Units.
(Same as HISTORY 5C. History majors and others taking 5 units, enroll in 105C.) Interdisciplinary approach to understanding the extent and complexity of the global phenomenon of human trafficking, especially for forced prostitution, labor exploitation, and organ trade, focusing on human rights violations and remedies. Provides a historical context for the development and spread of human trafficking. Analyzes the current international and domestic legal and policy frameworks to combat trafficking and evaluates their practical implementation. Examines the medical, psychological, and public health issues involved. Uses problem-based learning. Required weekly 50-min. discussion section, time TBD. Students interested in service learning should consult with the instructor and will enroll in an additional course.
Same as: CSRE 105C, FEMGEN 105C, HISTORY 105C, HUMRTS 112

INTNLREL 110C. America and the World Economy. 5 Units.
Examination of contemporary US foreign economic policy. Areas studied: the changing role of the dollar; mechanism of international monetary management; recent crises in world markets including those in Europe and Asia; role of IMF, World Bank and WTO in stabilizing world economy; trade politics and policies; the effects of the globalization of business on future US prosperity. Political Science majors taking this course for WIM credit should enroll in POLISCI 110C.
Same as: POLISCI 110C, POLISCI 110X

INTNLREL 110D. War and Peace in American Foreign Policy. 3-5 Units.
The causes of war in American foreign policy. Issues: international and domestic sources of war and peace; war and the American political system; war, intervention, and peace making in the post-Cold War period. Political Science majors taking this course to fulfill the WIM requirement should enroll in POLISCI 110D for 5 units. International Relations majors taking this course should enroll in INTNLREL 110D for 5 units. SCPD students should enroll for 3 units.
Same as: AMSTUD 110D, POLISCI 110D, POLISCI 110Y

INTNLREL 114D. Democracy, Development, and the Rule of Law. 3-5 Units.
This course explores the different dimensions of development - economic, social, and political - as well as the way that modern institutions (the state, market systems, the rule of law, and democratic accountability) developed and interacted with other factors across different societies around the world. The class will feature additional special guest lectures by Francis Fukuyama, Larry Diamond, Michael McFaul, Anna Grzymala-Busse, and other faculty and researchers affiliated with the Center on Democracy, Development, and the Rule of Law. Undergraduate students should enroll in this course for 5 units. Graduate students should enroll for 3.
Same as: INTLPOL 230, POLISCI 114D, POLISCI 314D

INTNLREL 118S. Political Economy of International Trade and Investment. 5 Units.
How domestic and international politics influence the economic relations between countries. Why do governments promote or oppose globalization? Why do countries cooperate economically in some situations but not others? Why do countries adopt bad economic policies? Focus on the politics of international trade and investment. Course approaches each topic by examining alternative theoretical approaches and evaluate these theories using historical and contemporary evidence from many geographical regions around the world. Prerequisites: ECON 1A, ECON 1B, and a statistics course.
Same as: POLISCI 218S

INTNLREL 122. Introduction to European Studies. 5 Units.
This course offers an introduction to major topics in the study of historical and contemporary Europe. We focus on European politics, economics and culture. First, we study what makes Europe special, and how its distinct identity has been influenced by its history. Next, we analyze Europe's politics. We study parliamentary government and proportional representation electoral systems, and how they affect policy. Subsequently, we examine the challenges the European economy faces. We further study the European Union and transatlantic relations.
Same as: POLISCI 213E

INTNLREL 123. The Future of the European Union: Challenges and Opportunities. 5 Units.
First, this course analyzes the EU's greatest challenge, preserving the monetary union, and discusses the political and economic reforms needed to achieve that goal. In this context the course also studies the fiscal and budgetary polices of the EU. Second, the course discusses the EU's role in global politics, its desire to play a more prominent role, and the ways to reach that objective. Third, the course analyzes the EU's institutional challenges in its efforts to enhance its democratic character.

INTNLREL 124. Immigration Issues in Europe. 4-5 Units.
This course will consider responses to mass migration in Europe and its contribution to a radicalized political landscape. Sampling immigrant integration policies from Germany, Sweden, Denmark, France, Britain, Hungary, Poland, and Italy will help us examine public discourse on cultural and civic assimilation of mostly Muslim immigrants. Issues such as security and counterterrorism, as well as obstacles to cooperation with countries outside the EU (Turkey, Libya), will be included.

INTNLREL 135A. International Environmental Law and Policy: Oceans and Climate Change. 4-5 Units.
This seminar offers an introduction to International Environmental Law, with a strong emphasis on oceans and climate change, its underlying principles, how it is developed and implemented, and the challenges of enforcing it. We will focus on oceans and climate change, exploring the United Nations Law of the Sea Convention (UNCLOS) and the United Nations Framework Convention for Climate Change (UNFCCC). We will explain why these agreements are described as ¿umbrella conventions¿ and how new conventions like the Paris Agreement fit within them. There will be guest speakers, a negotiation simulation, and a legal design sprint focused on re-imagining International Environmental Law.

INTNLREL 136R. Introduction to Global Justice. 4 Units.
This course explores the normative demands and definitions of justice that transcend the nation-state and its borders, through the lenses of political justice, economic justice, and human rights. What are our duties (if any) towards those who live in other countries? Should we be held morally responsible for their suffering? What if we have contributed to it? Should we be asked to remedy it? At what cost? These are some of the questions driving the course. Although rooted in political theory and philosophy, the course will examine contemporary problems that have been addressed by other scholarly disciplines, public debates, and popular media, such as immigration and open borders, climate change refugees, and the morality of global capitalism (from exploitative labor to blood diamonds). As such, readings will combine canonical pieces of political theory and philosophy with readings from other scholarly disciplines, newspaper articles, and popular media.
Same as: ETHICSOC 136R, PHIL 76, POLISCI 136R, POLISCI 336

INTNLREL 140A. International Law and International Relations. 4-5 Units.
International law, as a body of law, performs multiple, competing functions. It serves the interests, and seeks to limit the actions, of state actors. It is also a political rhetoric captured by the oppressed, and a foundation for activism and resistance. The purpose of this seminar is to illuminate this malleable nature of international law, to explain its foundational principles and sources, and to evaluate the contours of its role as law and discourse. Questions that will accompany us throughout this seminar include: What is the character of international legal rules? Do they matter in international politics? How effective are they? What potential and what limitations do they have? In addition to exploring such questions against the backdrop of theories of international relations, we will consider several topics which bring tensions between international law and international relations to the fore, such as use of force, human rights, and international criminal law.

INTNLREL 140C. The U.S., U.N. Peacekeeping, and Humanitarian War. 4-5 Units.
The involvement of U.S. and the UN in major wars and international interventions since the 1991 Gulf War. The UN Charter's provisions on the use of force, the origins and evolution of peacekeeping, the reasons for the breakthrough to peacemaking and peace enforcement in the 90s, and the ongoing debates over the legality and wisdom of humanitarian intervention. Case studies include Croatia and Bosnia, Somalia, Rwanda, Kosovo, East Timor, and Afghanistan. *International Relations majors taking this course to fulfill the WiM requirement should enroll in INTNLREL 140C for 5 units.
Same as: HISTORY 201C, INTNLREL 140X

INTNLREL 140X. The U.S., U.N. Peacekeeping, and Humanitarian War. 4-5 Units.
The involvement of U.S. and the UN in major wars and international interventions since the 1991 Gulf War. The UN Charter's provisions on the use of force, the origins and evolution of peacekeeping, the reasons for the breakthrough to peacemaking and peace enforcement in the 90s, and the ongoing debates over the legality and wisdom of humanitarian intervention. Case studies include Croatia and Bosnia, Somalia, Rwanda, Kosovo, East Timor, and Afghanistan. *International Relations majors taking this course to fulfill the WiM requirement should enroll in INTNLREL 140C for 5 units.
Same as: HISTORY 201C, INTNLREL 140C

INTNLREL 141A. Camera as Witness: International Human Rights Documentaries. 5 Units.
Rarely screened documentary films, focusing on global problems, human rights issues, and aesthetic challenges in making documentaries on international topics. Meetings with filmmakers.

INTNLREL 142. Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice. 3-5 Units.
This seminar is part of a broader program on Social Entrepreneurship at CDDRL in partnership with the Haas Center for Public Service. It will use practice to better inform theory. Working with three visiting social entrepreneurs from developing and developed country contexts students will use case studies of successful and failed social change strategies to explore relationships between social entrepreneurship, gender, democracy, development and justice. It interrogates current definitions of democracy and development and explores how they can become more inclusive of marginalized populations. This is a service learning class in which students will learn by working on projects that support the social entrepreneurs' efforts to promote social change. Students should register for either 3 OR 5 units only. Students enrolled in the full 5 units will have a service-learning component along with the course. Students enrolled for 3 units will not complete the service-learning component. Limited enrollment. Attendance at the first class is mandatory in order to participate in service learning.
Same as: AFRICAST 142, AFRICAST 242, CSRE 142C

INTNLREL 143. State and Society in Korea. 4 Units.
20th-century Korea from a comparative historical perspective. Colonialism, nationalism, development, state-society relations, democratization, and globalization with reference to the Korean experience.
Same as: SOC 111, SOC 211

INTNLREL 145. Genocide and Humanitarian Intervention. 4 Units.
The course, traces the history of genocide in the 20th century and the question of humanitarian intervention to stop it, a topic that has been especially controversial since the end of the Cold War. The pre-1990s discussion begins with the Armenian genocide during the First World War and includes the Holocaust and Cambodia under the Khmer Rouge in the 1970s. Coverage of genocide and humanitarian intervention since the 1990s includes the wars in Bosnia, Rwanda, Kosovo, the Congo, and Sudan. The final session of the course will be devoted to a discussion of the International Criminal Court and the separate criminal tribunals that have been tasked with investigating and punishing the perpetrators of genocide.

INTNLREL 146A. Energy and Climate Cooperation in the Western Hemisphere. 4 Units.
The seminar provides an overview of the current political dynamics in each of the major fossil fuel producing countries in the Western Hemisphere and its impact on local energy exploration and production. It also explores the potential for expanding existing or developing new renewable energy resources throughout the Americas, and impacts on the local environment, food prices, and land use issues. The course examines the feasibility of integrating energy markets and establishing initiatives to reduce greenhouse gas emissions at the regional and hemispheric level. The seminar focuses on Chile, a country that lacks significant petroleum and natural gas reserves and has traditionally been a major user of coal. Accordingly, the country has been at the forefront of efforts to facilitate the regional integration of energy markets and develop renewable and non-traditional energy resources. The course concludes with a discussion of the Energy and Climate Partnership of the Americas or ECPA, launched by the Obama administration at the Fifth Summit of the Americas in Trinidad in April 2009, and China¿s increasing role in Latin America¿s energy sector.

INTNLREL 147. Political Economy of the Southern Cone Countries of South America. 5 Units.
This seminar examines the economic and political development of the five countries that make up South America's Southern Cone (i.e., Argentina, Brazil, Chile, Paraguay, and Uruguay) as well as Bolivia (which was historically part of the sub-region and with which today it has close commercial ties). In particular, the course focuses on the era of Import Substitution Industrialization (ISI), explores the reasons why that model of economic development eventually collapsed and how this contributed to the rise of military dictatorships, looks at the return to democratic rule and the adoption of market-oriented economic policies, and concludes with a discussion of the contemporary situation.

INTNLREL 154. The Cold War: An International History. 5 Units.
Though it ended twenty years ago, we still live in a world shaped by the Cold War. Beginning with its origins in the mid-1940s, this course will trace the evolution of the global struggle, until its culmination at the end of the 1980s. Students will be asked to ponder the fundamental nature of the Cold War, what kept it alive for nearly fifty years, how it ended, and its long term legacy for the world. As distinguished from the lecture taught in previous quarters, this class will closely investigate ten major Cold War battlegrounds over the quarter. Selected case studies will include: the division of Germany, Iran in the 1950s, Cuba, Vietnam, the Six Day War, the Chilean coup, sub-Saharan Africa, Afghanistan, Central America, and the Eastern European revolutions of 1989. Students will be asked to consult a combination of original documents and recent histories.
Same as: HISTORY 166C

INTNLREL 160. United Nations Peacekeeping. 4 Units.
This seminar is devoted to an examination of United Nations peacekeeping, from its inception in 1956 in the wake of the Suez Crisis, to its increasingly important role as an enforcer of political stability in sub-Saharan Africa. We will look at the practice of "classic" peacekeeping as it developed during the Cold War, with the striking exception of the Congo Crisis of 1960; the rise and fall of so-called "second-generation peacekeeping"¿more accurately labeled "peace enforcement"¿in the early 1990s in Bosnia and Somalia; and the reemergence in recent years of a muscular form of peacekeeping in sub-Saharan Africa, most notably in Congo in 2013.nStudents will learn the basic history of the United Nations since 1945 and the fundamentals of the United Nations Charter, especially with respect to the use of force and the sovereignty of member states. While the course does not attempt to provide comprehensive coverage of the historical details of any particular peacekeeping mission, students should come away with a firm grasp of the historical trajectory of U.N. peacekeeping and the evolving arguments of its proponents and critics over the years.nEach session of the course is structured around the discussion of assigned readings. Students are expected to complete the readings before class and to come to class prepared to participate in discussions. Each student will serve as rapporteur for one of the assigned readings, providing a critical summary of the reading in question and helping to stimulate the discussion to follow. The instructor will occasionally begin a session with brief introductory remarks (no more than ten minutes) to provide historical context about one or another topic. Required coursework includes two short papers whose particular topic and guidelines will be announced in class.

INTNLREL 168. America as a World Power in the Modern Era. 5 Units.
This course will examine the modern history of American foreign relations, from the turn of the twentieth century to the present. Beginning with the fateful decision to go to war with Spain, it will examine the major crises and choices that have defined the "American Century." Our study of U.S. foreign relations will consider such key factors as geopolitics, domestic politics, bureaucracy, psychology, race, and culture. IR majors taking this course to fulfill the IR WIM requirement should enroll in INTNLREL168W.
Same as: HISTORY 152K, INTNLREL 168W

INTNLREL 168A. American Interventions, 1898-Present. 5 Units.
This class seeks to examine the modern American experience with limited wars, beginning with distant and yet pertinent cases, and culminating in the war in Iraq. Although this class will examine war as a consequence of foreign policy, it will not focus primarily on presidential decision making. Rather, it will place wartime policy in a broader frame, considering it alongside popular and media perceptions of the war, the efforts of antiwar movements, civil-military relations, civil reconstruction efforts, and conditions on the battlefield. We will also examine, when possible, the postwar experience.
Same as: HISTORY 259E, HISTORY 359E

INTNLREL 168W. America as a World Power in the Modern Era. 5 Units.
This course will examine the modern history of American foreign relations, from the turn of the twentieth century to the present. Beginning with the fateful decision to go to war with Spain, it will examine the major crises and choices that have defined the "American Century." Our study of U.S. foreign relations will consider such key factors as geopolitics, domestic politics, bureaucracy, psychology, race, and culture. IR majors taking this course to fulfill the IR WIM requirement should enroll in INTNLREL168W.
Same as: HISTORY 152K, INTNLREL 168

INTNLREL 173. Presidents and Foreign Policy in Modern History. 5 Units.
Nothing better illustrates the evolution of the modern presidency than the arena of foreign policy. This class will examine the changing role and choices of successive presidential administrations over the past century, examining such factors as geopolitics, domestic politics, the bureaucracy, ideology, psychology, and culture. Students will be encouraged to think historically about the institution of the presidency, while examining specific case studies, from the First World War to the conflicts of the 21st century.
Same as: HISTORY 261G

INTNLREL 174. Diplomacy on the Ground: Case Studies in the Challenges of Representing Your Country. 5 Units.
The tragic death of Ambassador Chris Stevens has recently highlighted the dangers of diplomacy in the modern era. This class will look at how Americans in embassies have historically confronted questions such as authoritarian rule, human rights abuses, violent changes of government, and covert action. Case studies will include the Berlin embassy in the 1930s, Tehran in 1979, and George Kennan's experiences in Moscow, among others. Recommended for students contemplating careers in diplomatic service. *IR majors taking this course to fulfill the IR WIM requirement should enroll in INTNLREL174. As space is limited, first-year students must obtain the instructor's prior consent before enrolling.
Same as: HISTORY 252B

INTNLREL 175. American Empire in the Pacific. 3 Units.
This course will provide an interdisciplinary overview of the history and current state of American empire in the Pacific Islands. Through the lenses of law, history, and anthropology, the course will chart the progression of the American empire, beginning with early colonization, through World War II and the Cold War, to present day, including modern challenges facing communities affected by U.S. imperialism, decolonization movements, and the intersection of empire and climate change. Themes include cultural imperialism, militarization and experimentation, human rights and global ethics, and social and environmental justice.

INTNLREL 179. Major Themes in U.S.-Latin America Diplomatic History. 5 Units.
This seminar provides an overview of the most important events and initiatives that have characterized the relationship of the United States of America with its neighbors to the south, including Mexico, the Caribbean (especially Cuba, Haiti, and the Dominican Republic), Central America, and South America since the proclamation of the Monroe Doctrine in the early 19th century until the Obama Administration. In particular, the course examines the motivations for the Theodore Roosevelt Corollary to the Monroe Doctrine and the resulting period of blatant interventionism known as "Dollar Diplomacy," the Good Neighbor Policy of Franklin Delano Roosevelt, the brutal Cold War period, as well as policies pursued by the Clinton, George W. Bush, and Obama administrations, such as the Free Trade Area of the Americas (FTAA) and the Energy and Climate Partnership of the Americas (ECPA). The seminar explores not only what motivated U.S. policy makers and how their polices were implemented (and explains why they either succeeded or failed), but also discusses the impacts on individual countries and/or the region as a whole and the long-term consequences whose repercussions are still being felt today. The course also examines the major features of the inter-American system from the Pan American Union to the creation of the Organization of American States (OAS) and its continued relevancy in light of new institutional frameworks such as the Community of Latin American and Caribbean States (CELAC) and the Union of South American Nations (UNASUR) that exclude the United States of America.

INTNLREL 180A. Transitional Justice, Human Rights, and International Criminal Tribunals. 3-5 Units.
(Formerly IPS 280) Historical backdrop of the Nuremberg and Tokyo Tribunals. The creation and operation of the Yugoslav and Rwanda Tribunals (ICTY and ICTR). The development of hybrid tribunals in East Timor, Sierra Leone, and Cambodia, including evaluation of their success in addressing perceived shortcomings of the ICTY and ICTR. Examination of the role of the International Criminal Court and the extent to which it will succeed in supplanting all other ad hoc international justice mechanisms and fulfill its goals. Analysis focuses on the politics of creating such courts, their interaction with the states in which the conflicts took place, the process of establishing prosecutorial priorities, the body of law they have produced, and their effectiveness in addressing the needs of victims in post-conflict societies.
Same as: ETHICSOC 280, HUMRTS 103, INTLPOL 280

INTNLREL 182. The Great War. 5 Units.
The First World War provided a prototype for a new, horrific kind of war. It catalyzed the emergence of modern means of warfare and the social mechanisms necessary to sustain the industrialized war machine. Killing millions, it became the blueprint for the total war that succeeded it. It also brought about new social and political orders, transforming the societies which it mobilized at unprecedented levels.n nThis course will examine the military, political, economic, social and cultural aspects of the conflict. We will discuss the origins and outbreak of the war, the land, sea and air campaigns, the war's economic and social consequences, the home fronts, the war's final stages in eastern and western Europe as well as non-European fronts, and finally, the war's impact on the international system and on its belligerents and participants' perceptions of the new reality it had created.

INTNLREL 183. The Modern Battle. 5 Units.
The purpose of this seminar is to examine the evolution of modern warfare by closely following four modern battles/campaigns. For this purpose the seminar offers four mock staff rides, facilitating highly engaged, well-researched experience for participants. In a mock staff ride, students are assigned roles; each student is playing a general or staff officer who was involved in the battle/campaign. Students will research their roles and, during the staff ride, will be required to explain "their" decisions and actions. Staff rides will not deviate from historical records, but closely examine how decisions were made, what pressures and forces were in action, battle outcomes, etc. This in-depth examination will allow students to gain a deeper understanding of how modern tactics, technology, means of communications, and the scale of warfare can decide, and indeed decided, campaigns. We will will spend two weeks preparing for and playing each staff ride. One meeting will be dedicated to discussing the forces shaping the chosen battle/campaign: the identity and goals ofnthe belligerents, the economic, technological, cultural and other factors involved, as well as the initial general plan. The second meeting will be dedicated to the battle itself. The four battles will illustrate major developments in modern warfare.
Same as: HISTORY 206C

INTNLREL 189. PRACTICAL TRAINING. 1-3 Unit.
Students obtain internship in a relevant research or industrial activity to enhance their professional experience consistent with their degree program and area of concentration. Prior to enrolling students must get internship approved by the director. At the end of the quarter, a three page final report must be supplied documenting work done and relevance to degree program. Meets the requirements for Curricular Practical Training for students on F-1 visas. Student is responsible for arranging own internship. Limited to declared International Relations students only who are non-US citizens. May be repeated for credit.

INTNLREL 197. Directed Reading in International Relations. 1-5 Unit.
Open only to declared International Relations majors.n (Staff).

INTNLREL 198. Senior Thesis. 2-10 Units.
Open only to declared International Relations majors with approved senior thesis proposals.

INTNLREL 200A. International Relations Honors Field Research. 3 Units.
For juniors planning to write an honors thesis during senior year. Initial steps to prepare for independent research. Professional tools for conceptualizing a research agenda and developing a research strategy. Preparation for field research through skills such as data management and statistics, references and library searches, and fellowship and grant writing. Creating a work schedule for the summer break and first steps in writing. Prerequisite: acceptance to IR honors program.

INTNLREL 200B. International Relations Honors Seminar. 3 Units.
Second of two-part sequence. For seniors working on their honors theses. Professional tools, analysis of research findings, and initial steps in writing of thesis. How to write a literature review, formulate a chapter structure, and set a timeline and work schedule for the senior year. Skills such as data analysis and presentation, and writing strategies. Prerequisites: acceptance to IR honors program, and 199 or 200A. * Course satisfies the WiM requirement for International Relations majors who are accepted into the IR Honors program.

INTNLREL 200C. IR Honors Thesis Writing. 1 Unit.
Mandatory seminar for International Relations Honors Students who are writing their Honors Thesis. INTNLREL 200A and 200B are prerequisites.

INTNLREL 202. Original Research in International Relations. 5 Units.
This new course offers IR majors an opportunity to conduct in-depth, original research and write an original research paper on a topic of their choosing within a single quarter. It is ideally suited for students who have a question that has intrigued them and that they would like to answer through original research. Through this course, students will narrow their interests into a clear research question, develop a research design, review relevant literature that addresses this question, conduct original empirical research and produce a final research paper. The course is designed for IR majors, and thus has an interdisciplinary focus and embraces methodological diversity. It may also be petitioned to count towards the IR major.

Jewish Studies Courses

JEWISHST 4. What Didn't Make It into the Bible. 4 Units.
Over two billion people alive today consider the Bible to be sacred scripture. But how did the books that made it into the bible get there in the first place? Who decided what was to be part of the bible and what wasn't? How would history look differently if a given book didn't make the final cut and another one did? Hundreds of ancient Jewish and Christian texts are not included in the Bible. "What Didn't Make It in the Bible" focuses on these excluded writings. We will explore the Dead Sea Scrolls, Gnostic gospels, hear of a five-year-old Jesus throwing temper tantrums while killing (and later resurrecting) his classmates, peruse ancient romance novels, explore the adventures of fallen angels who sired giants (and taught humans about cosmetics), tour heaven and hell, encounter the garden of Eden story told from the perspective of the snake, and learn how the world will end. The course assumes no prior knowledge of Judaism, Christianity, the bible, or ancient history. It is designed for students who are part of faith traditions that consider the bible to be sacred, as well as those who are not. The only prerequisite is an interest in exploring books, groups, and ideas that eventually lost the battles of history and to keep asking the question "why." In critically examining these ancient narratives and the communities that wrote them, you will investigate how religions canonize a scriptural tradition, better appreciate the diversity of early Judaism and Christianity, understand the historical context of these religions, and explore the politics behind what did and did not make it into the bible.
Same as: CLASSICS 9N, RELIGST 4

JEWISHST 4N. A World History of Genocide. 3-5 Units.
Reviews the history of genocide from ancient times until the present. Defines genocide, both in legal and historical terms, and investigates its causes, consequences, and global dimensions. Issues of prevention, punishment, and interdiction. Main periods of concern are the ancient world, Spanish colonial conquest; early modern Asia; settler genocides in America, Australia, and Africa; the Armenian genocide and the Holocaust; genocide in communist societies; and late 20th century genocide.
Same as: HISTORY 4N

JEWISHST 5. Biblical Greek. 3-5 Units.
This is a one term intensive class in Biblical Greek. After quickly learning the basics of the language, we will then dive right into readings from the New Testament and the Septuagint, which is the ancient Greek translation of the Hebrew Bible. No previous knowledge of Greek required. If demand is high for a second term, an additional quarter will be offered in the Spring.
Same as: CLASSICS 6G, RELIGST 171A

JEWISHST 5B. Biblical Greek. 3-5 Units.
This is a continuation of the Winter Quarter Biblical Greek Course. Pre-requisite: CLASSICS 6G or a similar introductory course in Ancient Greek.
Same as: CLASSICS 7G

JEWISHST 5G. Intensive Biblical Greek. 8 Units.
Equivalent to two quarters of Biblical Greek (CLASSICS 6G, 7G). Students will learn the core of New Testament Greek with the goal of learning to accurately translate and read the New Testament. Students will read one-third of the Gospel of John during the course and will be well-prepared to read the Greek New Testament independently after the course. Focus on knowledge of key vocabulary and grammar needed to read the Greek Bible with ease. No previous knowledge of Greek required. Course does not fulfill the Stanford language requirement.
Same as: RELIGST 171X

JEWISHST 18N. Religion and Politics: Comparing Europe to the U.S.. 3-4 Units.
Interdisciplinary and comparative. Historical, political, sociological, and religious studies approaches. The relationship between religion and politics as understood in the U.S. and Europe. How this relationship has become tense both because of the rise of Islam as a public religion in Europe and the rising influence of religious groups in public culture. Different understandings and definitions of the separation of church and state in Western democratic cultures, and differing notions of the public sphere. Case studies to investigate the nature of public conflicts, what issues lead to conflict, and why. Why has the head covering of Muslim women become politicized in Europe? What are the arguments surrounding the Cordoba House, known as the Ground Zero Mosque, and how does this conflict compare to controversies about recent constructions of mosques in Europe? Resources include media, documentaries, and scholarly literature.
Same as: RELIGST 18N

JEWISHST 19N. Everyone Eats: Food, Religion and Culture. 3 Units.
Food is one of the most essential aspects of the human experience. The decisions and choices we make about food define who we have been, who we are now, and who we want to become. In this seminar we will study how food habits have shaped religious traditions, and vice versa, how religious traditions have shaped food ways. Some traditions are centered around food regiments such as the dietary laws, derived from biblical law that shapes Jewish and Christian tradition very differently. Indeed, many religious and ethical thinkers, as well as anthropologists, have interpreted the meanings of the dietary laws very differently. Further, in many religious traditions the killing of animals and consumption of meat is deeply fraught. We will explore the history of food practices and their contemporary impact; the connections between food, religion, and identity; the meanings that religious thinkers and anthropologists have attributed to food habits; as well as the creative translations of religious traditions into contemporary food ethics by various social movements and groups, predominantly in the U.S.
Same as: CSRE 19N, RELIGST 19N

JEWISHST 37Q. Zionism and the Novel. 3 Units.
At the end of the nineteenth century, Zionism emerged as a political movement to establish a national homeland for the Jews, eventually leading to the establishment of the State of Israel in 1948. This seminar uses novels to explore the changes in Zionism, the roots of the conflict in the Middle East, and the potentials for the future. We will take a close look at novels by Israelis, both Jewish and Arab, in order to understand multiple perspectives, and we will also consider works by authors from the North America and from Europe. NOTE: To satisfy a WAYS requirement, this course must be taken for at least 3 units. In AY 2020-21, a 'CR' grade will satisfy the WAYS requirement.
Same as: COMPLIT 37Q

JEWISHST 39S. The Other Side: Ethnography and Travel Writing through Jewish, Christian and Muslim Eyes. 3 Units.
In an age of reality television and social media, we are bombarded with snapshots of the exotic, monstrous, and bizarre. Yet despite their quantity, these images pale in comparison to the qualities of terror, wonder and curiosity that ancient travelers evoked in their encounters with foreign lands and peoples. Early ethnographers, too, painstakingly explored the beliefs and practices of unfamiliar peoples sometimes very close to home. This course surveys their most vivid writings, from ancient Greece to the colonization of the New World, focusing on the relation between fascination with the other and the author's own religious imagination. In particular, it introduces the contributions of Jewish travelers and ethnographers to this history, which has often been written from the standpoint of imperial, ecclesiastical or colonial power. It stresses literary continuities across three general periods (ancient, medieval, and colonial), showing how remarkably consistent patterns of identification spring from diverse encounters.

JEWISHST 53. Exploring Jewish Spirituality. 4 Units.
It was once accepted as fact that Judaism is, at its core, a rational religion devoid of any authentic mystical tradition. But the past century of scholarship has reversed this claim, demonstrating that the spiritual life has been integral to Judaism's vital heart since ancient times. This yearning for a direct immediate experience of God's Presence, a longing to grasp the mysteries of the human soul and know the inner dynamics of the Divine realm, has taken on many different forms across the centuries.
This course will introduce students to the major texts--from theological treatises to poems and incantations--and core ideas of Jewish mysticism and spirituality, tracking their development from the Hebrew Bible to the dawn of modernity. Close attention will be paid to the historical context of these sources, and we will also engage with broader methodological approaches--from phenomenology to philology--regarding the academic study of religion and the comparative consideration of mysticism in particular.
This course assumes no prior background of Judaism or any other religious traditions. All readings will be made available in English. Students are, however, invited to challenge themselves with the "optional/advanced" readings of sources both primary and secondary. Pending interest, students with facility in the original languages (Hebrew or Aramaic) will be given the opportunity to do so.
Same as: RELIGST 53

JEWISHST 85B. Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV. 3 Units.
(HISTORY 85B is 3 units; HISTORY 185B is 5 units.) Who are American Jews as depicted in popular media-- film, television, etc.-- since the Second World War? How are their religion, politics, mores, and practices represented and what ways, if at all, do such portraits reflect historical trends among Jews and society in general? What can be learned from film or tv about Jewish identity, notions of Jewish power and powerlessness, communal cohesiveness and assimilation, sexuality and the wages of intermarriage or race?.
Same as: CSRE 85B, HISTORY 85B, REES 85B

JEWISHST 86. Exploring the New Testament. 4 Units.
To explore the historical context of the earliest Christians, students will read most of the New Testament as well as many documents that didn't make the final cut. Non-Christian texts, Roman art, and surviving archeological remains will better situate Christianity within the ancient world. Students will read from the Dead Sea Scrolls, explore Gnostic gospels, hear of a five-year-old Jesus throwing divine temper tantrums while killing (and later resurrecting) his classmates, peruse an ancient marriage guide, and engage with recent scholarship in archeology, literary criticism, and history.
Same as: CLASSICS 43, RELIGST 86

JEWISHST 86Q. Blood and Money: The Origins of Antisemitism. 4-5 Units.
For over two millennia, Jews and Judaism have been the object of sustained anxieties, fears, and fantasies, which have in turn underpinned repeated outbreaks of violence and persecution. This course will explore the development and impact of antisemitism from Late Antiquity to the Enlightenment, including the emergence of the Blood libel, the association between Jews and moneylending, and the place of Judaism in Christian and Islamic theology. No prior background in history or Jewish studies is necessary. Prerequisite: PWR 1.
Same as: HISTORY 86Q

JEWISHST 101A. First-Year Hebrew, First Quarter. 5 Units.
In the first-year program, students acquire essential Hebrew through abundant opportunities to interact in the language in meaningful ways. The students learn to function appropriately in the language in a variety of social and cultural contexts.
Same as: AMELANG 128A

JEWISHST 101B. First-Year Hebrew, Second Quarter. 5 Units.
Continuation of AMELANG 128A. Prerequisite: Placement Test, AMELANG 128A.
Same as: AMELANG 128B

JEWISHST 101C. First-Year Hebrew, Third Quarter. 5 Units.
Continuation of AMELANG 128B. Prerequisite: Placement Test, AMELANG 128B. Fulfill the University Foreign Language Requirement.
Same as: AMELANG 128C

JEWISHST 102A. Second-Year Hebrew, First Quarter. 4 Units.
Continuation of AMELANG 128C. Sequence integrating culture and language. Emphasis is on proficiency in oral and written discourse including presentational language and socio culturally appropriate discourse in formal and informal, academic, and professional contexts. Prerequisite: Placement Test, First Year Hebrew .
Same as: AMELANG 129A

JEWISHST 102B. Second-Year Hebrew, Second Quarter. 4 Units.
Continuation of AMELANG 129A. Sequence integrating culture and language. Emphasis is on proficiency in oral and written discourse including presentational language and socio culturally appropriate discourse in formal and informal, academic, and professional contexts. Prerequisite: Placement Test, Hebrew 129A.
Same as: AMELANG 129B

JEWISHST 102C. Second-Year Hebrew, Third Quarter. 4 Units.
Continuation of AMELANG 129B. Sequence integrating culture and language. Emphasis is on advanced proficiency in oral and written discourse including presentational language and socio culturally appropriate discourse in formal and informal, academic, and professional contexts. Prerequisite: placement Test, Hebrew129B.
Same as: AMELANG 129C

JEWISHST 103A. Third-Year Hebrew, First Quarter. 3 Units.
Continuation of AMELANG 129C. Prerequisite: Placement Test, AMELANG 129C.
Same as: AMELANG 130A

JEWISHST 104. Hebrew Forum. 1-3 Unit.
Intermediate and advanced level. Biweekly Hebrew discussion on contemporary issues with Israeli guest speakers. Vocabulary enhancement. Focus on exposure to academic Hebrew. May be repeat for credit up to 4 times.
Same as: AMELANG 131A

JEWISHST 104A. First-Year Yiddish, First Quarter. 4 Units.
Reading, writing, and speaking.
Same as: AMELANG 140A

JEWISHST 104B. First-Year Yiddish, Second Quarter. 4 Units.
Continuation of AMELANG 140A. Prerequisite: AMELANG.
Same as: AMELANG 140B

JEWISHST 104C. First-Year Yiddish, Third Quarter. 4 Units.
Continuation of AMELANG 140B. Prerequisite: AMELANG 140B. Fulfills the University Foreign Language Requirement.
Same as: AMELANG 140C

JEWISHST 105. Hebrew Forum. 2-4 Units.
Intermediate and advanced level. Biweekly Hebrew discussion on contemporary issues with Israeli guest speakers. Vocabulary enhancement. Focus on exposure to academic Hebrew. May repeat for credit.
Same as: AMELANG 131B

JEWISHST 106. Reflection on the Other: The Arab Israeli Conflict in Literature and Film. 3-5 Units.
How literary works outside the realm of Western culture struggle with questions such as identity, minority, and the issue of the Other. How the Arab is viewed in Hebrew literature, film and music and how the Jew is viewed in Palestinian works in Hebrew or Arabic (in translation to English). Historical, political, and sociological forces that have contributed to the shaping of these writers' views. Guest lectures about the Jew in Palestinian literature and music. Note: To be eligible for WAYS credit, you must take course for a Letter Grade.
Same as: AMELANG 126, COMPLIT 145

JEWISHST 107A. Biblical Hebrew, First Quarter. 2 Units.
Establish a basic familiarity with the grammar and vocabulary of Biblical Hebrew and will begin developing a facility with the language. Students that are enrolled in this course must also enroll in Beginning Hebrew. This course requires no prior knowledge of Hebrew and will begin with learning the alphabet. By the end of the year, students will be able to translate basic biblical texts, will be familiar with common lexica and reference grammars, and will have sufficient foundational knowledge to enable them to continue expanding their knowledge either in a subsequent course or own their own.
Same as: RELIGST 170A

JEWISHST 107B. Biblical Hebrew, Second Quarter. 2 Units.
Continuation of 170A.

JEWISHST 107C. Biblical Hebrew, Third Quarter. 4 Units.
Continuation of 170B.
Same as: AMELANG 170C

JEWISHST 120. Sex and Gender in Judaism and Christianity. 3 Units.
What role do Jewish and Christian traditions play in shaping understandings of gender differences? Is gender always imagined as dual, male and female? This course explores the variety of ways in which Jewish and Christian traditions - often in conversation with and against each other - have shaped gender identities and sexual politics. We will explore the central role that issues around marriage and reproduction played in this conversation. Perhaps surprisingly, early Jews and Christian also espoused deep interest in writing about 'eunuchs' and 'androgynes,' as they thought about Jewish and Christian ways of being a man or a woman. We will examine the variety of these early conversations, and the contemporary Jewish and Christian discussions of feminist, queer, trans- and intersex based on them.
Same as: FEMGEN 130, RELIGST 130

JEWISHST 123. Muslims, Jews, and Christians: Conflict, Coexistence, and Collaboration. 4 Units.
Relationships between Muslims, Jews, and Christians today are informed by a multitude of complex and often painful histories. These faith traditions emerged out of deep and sustained engagement with one another sharing theological and ethical principles, and revering many of the same figures and there have been many periods of rich and productive interaction. Yet there have also been areas of dissension and conflict, and periods when theological, social, or political disagreement devolved into violence and oppression. In recent times (especially following the Holocaust and the establishment of the modern State of Israel), religious, political, and intellectual leaders of Muslim, Jewish, and Christian communities, in the U.S. and around the world, have recognized the need to forge deeper and more meaningful relationships with one another. Knowledge and understanding of the perspectives that different communities and individuals bring to bear on their entangled past, present, and future are a critical part of efforts to resolve intransigent conflicts and advance mutual interests. This course explores some of the most significant moments of interaction through literature and art, polemic and dialogue that have shaped engagements between Muslims, Jews, and Christians throughout history, and examines both prospects and pitfalls for engagement in the present and future.
Same as: RELIGST 133

JEWISHST 125. Modern Jewish Mysticism: Devotion in a Secular Age. 4 Units.
The twentieth-century was a time of tremendous upheaval and unspeakable tragedy for the Jewish communities of Europe. But the past hundred years were also a period of great renewal for Jewish spirituality, a renaissance that has continued into the present day. Beginning with the writings of the Safed Renaissance, the Sabbateanism, and the Hasidic masters, our course will focus on key thinkers in the 19th and 20th centuries, including: Hillel Zeitlin, Martin Buber, Abraham Isaac Kook, Abraham Joshua Heschel, and Arthur Green. Drawing upon essays, homilies, and poems, we will examine the ways in which their works re-cast and reinterpret the Jewish tradition in answer to the singular questions and challenges modernity. We will mark the development of their thinking against the two World Wars, the Holocaust, and the complex and multi-faceted processes of secularization. We will also consider the theological project of modern Jewish mystics in dialogue with modern Jewish philosophers (such as Hermann Cohen, Franz Rosenzweig, and Emmanuel Levinas) as well as modern philosophers and scholars informed by Christianity (from William James to Charles Taylor). This course argues that the processes of sacralization, of reclaiming a life of mystical devotion, are best understood as a unique response to Jewish modernity rather than a retreat to past modalities of religion. In seeking to prove this point, we will explore writers whose work emerged in and engaged with different social and cultural domains. We will investigate their writings with an eye to issues such as power and identity, and will draw upon their works in charting the intersection of mysticism, literature, language and experience. Throughout our readings, we will keep our eye on the sustained impact of feminism on Jewish mysticism in the second half of the twentieth century. This course is structured as a seminar, and our class discussions will be rooted in the primary sources. It assumes no prior background of Judaism or any other religious traditions. All readings will be made available in English.
Same as: RELIGST 165

JEWISHST 127D. Readings in Talmudic Literature. 1 Unit.
Readings of Talmudic texts. Some knowledge of Hebrew is preferred, but not necessary. The goal of the ongoing workshop is to provide Stanford students with the opportunity to engage in regular Talmud study, and to be introduced to a variety of approaches to studying Talmudic texts and thought.
Same as: JEWISHST 227D, RELIGST 170D

JEWISHST 127E. Readings in Talmudic Literature Advanced. 1 Unit.
Readings of the talmudic texts. Knowledge of Hebrew is required. The ongoing seminar is designed to study the making of the talmudic sugya (unit of discourse), along with classic commentaries. Students will consider some of the recent developments in the academic study of Talmudic literature, introduced by the instructor. The goal of the ongoing seminar is to provide Stanford students and faculty with the opportunity to engage in regular Talmud study, and to be introduced to a variety of approaches to studying Talmudic texts. Meeting time and location TBA. May be repeated for credit.
Same as: JEWISHST 227E, RELIGST 170E

JEWISHST 128. Women and Gender in Early Judaism and Christianity. 4 Units.
Beginning with the Hebrew Bible and New Testament, we will explore female figures in early Jewish and Christian literatures, such as Eve, Ruth, Mary, and Junia. Based on this, we will probe the prescriptions for female comportment in early Judaism and Christianity placing these literary prescriptions in conversation with material evidence related to women, such as for example the Babatha archive. We will analyze the politics of patriarchy in ancient discourse, and examine, among other topics, efforts by Christian clergy to silence female prophets in the second and third centuries CE. The bulk of the course will be devoted to the formative years of both Judaism and Christianity in Late Antiquity. This course assumes no prior knowledge of Judaism, Christianity, the Bible, or ancient history. It is designed for students who are part of faith traditions that consider the Bible to be sacred, as well as those who are not. Ancient readings in this course will be supplemented by modern scholarship in classics, early Christian studies, gender studies, queer studies, and the history of sexuality.
Same as: RELIGST 128

JEWISHST 129. Sacred Words: Jewish Thought and the Question of Language. 4 Units.
Jews have long been referred as the people of the book, but they might better be referred to as the people of the word. Drawing upon texts from the Hebrew Bible to the works of modern Hebrew writers like of Hayyim Nahman Bialik and Amoz Oz, this seminar will chart the development of Jewish thinking on language over the past two millennia. We will explore issues such as: the idea of canonization; oral versus written language; the nature and possibility of translation; the origins of language; notions of negative theology; mystical approaches to the word; the rebirth of Hebrew as a spoken and cultural language; and the limits of language after the Holocaust. This course will also bring Jewish thought into dialogue with contemporary philosophical reflections on issues of language. Modern explorations of language will prove an interesting way of deepening our understanding of the Jewish thinkers on one hand, and enriching contemporary intellectual discourse on the other.
Same as: RELIGST 169

JEWISHST 129A. Milk and Honey, Wine and Blood: Food, Justice, and Ethnic Identity in Jewish Culture. 4 Units.
This course examines Jewish culture and the food practices and traditions that have shaped and continue to shape it. Students learn to prepare a variety of meals while studying about the historical and literary traditions associated with them, such as the dietary `laws¿ and the long history of their interpretation, as well as the cultivation of eating as devotional practice in Jewish mystical traditions. We will explore how regional foods the world over contribute to the formation of distinct Jewish ethnic identities, and how these traditions shape contemporary Jewish food ethics. The course includes guest visits by professional chefs and food writers, and field trips to a local winery.
Same as: RELIGST 129

JEWISHST 130VP. Introduction to Social Demography: A Comparative Approach (Israel & US). 3 Units.
In this class we will learn about Israel's unique demographic structure and we will compare it to the US and other countries. Reading materials include general theories as well as research published in scholarly journals. In the first half of this class we will review basic demographic concepts (mortality, fertility and migration), and we will apply them to the Israeli context, with comparisons between different social groups in Israel and with comparison to the US. We will also review basic demographic theories (theories of population change) and apply them to different countries. nnIn the second half of the class we will focus on demography of the family. We will ask how fertility, marriage and divorce differ for different population groups in Israel and the US, and we will tie family processes to current theories of gender and family change. We will also learn how demographic processes may be related to the reproduction of poverty, and inequality.
Same as: SOC 119VP

JEWISHST 131VP. Poverty and Inequality in Israel and the US: A Comparative Approach. 3 Units.
Poverty rates in Israel are high and have been relatively stable in recent decades, with about one fifth of all households (and a third of all children) living below the poverty line. In this class we will learn about poverty and inequality in Israel and we will compare with the US and other countries.nnIn the first few weeks of this class we will review basic theories of poverty and inequality and we will discuss how theories regarding poverty have changed over the years, from the "culture of poverty" to theories of welfare state regimes. We will also learn about various ways of measuring poverty, material hardship, and inequality, and we will review the methods and data used.nnIn the remaining weeks of the class we will turn to substantive topics such as gender, immigration, ethnicity/nationality, welfare policy, age, and health. Within each topic we will survey the debates within contemporary scholarship and we will compare Israel and the US. Examination of these issues will introduce students to some of the challenges that Israeli society faces today.
Same as: CSRE 120P, SOC 120VP

JEWISHST 132. Between Nation-Building and Liberalization: The Welfare State in Israel. 3 Units.
According to one commentator, the political economy of Israel is characterized by embedded illiberalism. In the context of a national and territorial conflict, the Israeli state fostered comprehensive nation-building projects (such as immigration absorption), via employment and social protection schemes. This course surveys the distinctive development of the Israeli welfare state in comparative perspective, and analyzes its particular politics and outcomes in the form of inclusion but also exclusion of different populations from full citizenship. The course will follow a chronological path from the pre-state crystallization of national welfare institutions to the current neo-liberalization trend that seems to undermine collectivist projects and advance the re-commodification of citizenship. Throughout the course we will discuss issues such as: the role of labor and nationalism in the design of social policy, the production of national, ethnic and gender inequality, and the dynamics of change and continuity following heightened liberalization and internationalization since the 1980s. The course exposes students to key issues of the sociology of the welfare state with particular emphasis on the development and role of the state in a deeply conflicted society, using the Israeli experience. At the conclusion of the course students are expected to understand how welfare state institutions reflect but also reproduce societal schisms and conflicts, and be familiar with central aspects of Israeli politics past and present.
Same as: SOC 102

JEWISHST 132A. Social Inequality in Israel. 3 Units.
Like the US, Israel is a nation of immigrants. Israel additionally shares with the US vast economic, ethnic/racial and gender gaps, which are shaped and are being shaped by the demographic diversity characterizing its society. The course will provide a comparative framework for analyzing social inequality in Israel. We will start by reviewing essential concepts and theories in the study of social stratification. We will then review the main cleavages characterizing Israeli society, while comparing them to gaps in other advances societies and particularly the US. We will focus on class, gender and ethnicity as the main distinctions and will examine their implications for differences in life chances in several domains across the life course. We will conclude with a discussion of possible scenarios for change, which are relevant to both Israel and the US. Throughout the course, we will study critical thinking techniques and will use them for analyzing issues that are central for the analysis of social inequality in Israel and elsewhere.
Same as: CSRE 132A, SOC 102A

JEWISHST 132D. Sociology of Jewishness. 3-5 Units.
Examines the place of the Jewish people in society throughout various locales and historical periods to understand how interactions among Jews and with other groups have shaped Jewish identities. Topics include modernism, the Holocaust, Israel/nationhood, race/ethnicity, intermarriage, and assimilation. Uses theoretical, empirical, and historical material from multiple social scientific fields of study and explores the study of Judaism from several major sociological lenses.
Same as: CSRE 132J, SOC 132J

JEWISHST 132VP. Family and Society: A Comparative Approach (Israel & the US). 3 Units.
Families are changing: Non-marital partnerships such as cohabitation are becoming more common, marriage is delayed and fertility is declining. In this class we will learn about how families are changing in Israel and we will compare with the US and other countries. Reading materials include general theories as well as research published in scholarly journals. nnAfter reviewing general theories and major scholarly debates concerning issues of family change, we will turn to specific family processes and compare Israel, the US and other countries. We will ask how family transitions may differ for different population groups and at different stages of the life course, and we will tie family processes to current theories of gender. nnWe will cover a wide range of topics, from marriage and marital dissolution to cohabitation, LAT and remarriage. We will also discuss changes in women's labor force participation and how it bears on fertility, parenthood and household division of labor. Within each substantive topic we will survey the debates within contemporary scholarship and we will compare Israel and the US.
Same as: SOC 121VP, SOC 221VP

JEWISHST 133. Sociology of Citizenship. 3 Units.
Not only a legal status, citizenship forms a major concern for political sociologists interested in questions of membership, exclusion, redistribution, and struggles over the boundaries of collective identity. Citizenship is in essence membership in a political community that entails rights and duties, and structures a tripartite relationship between the individual, community and state. The institutions of citizenship include formal and bureaucratic rules of eligibility ¿ but also informal institutions such as identity and belonging. Throughout the course, students are exposed to key issues of the sociology of citizenship such as the historically different paths of men, women, minority groups and immigrants into citizenship, the contested development of rights and duties, the regulation of population, as well as insurgency and collective attempts to rearticulate the terms of the ¿contract¿ with the state. Israel, the USA, France and Germany are used as empirical illustrations. At the conclusion of the course students will know how to utilize the analytic framework of citizenship in order to analyze a wide range of political phenomena in contemporary societies.
Same as: SOC 103

JEWISHST 133A. WELFARE, WORK AND POVERTY.. 3 Units.
Early theorists of the welfare state described it as a reaction to the emergence of needs and interests of specific social groups during processes of economic development and change. Later theorists countered that the welfare state does not merely react to social cleavages during times of economic change but rather works to actively shape them, in line with worldviews or the interests of dominant group members. Adopting the latter approach, the goal of this course is to provide the tools and knowledge necessary for a critical evaluation of the social services provided to Israeli citizens and their impact on social and economic inequalities. The course will survey various approaches to the understanding of the goals of the welfare state. A comparative and historical account of the development of the welfare state will be presented, while highlighting recent developments, such as the increase in poverty rates and the aging of the population. During the course, we will examine the diverse needs that are served by the welfare state, as well as major dilemmas associated with the provision of services. Throughout the course, we will study critical thinking techniques and will use them for analyzing issues that are central for the development of social policies in Israel and the US.
Same as: CSRE 133J, SOC 103A

JEWISHST 139. Rereading Judaism in Light of Feminism. 4 Units.
During the past three decades, Jewish feminists have asked new questions of traditional rabbinic texts, Jewish law, history, and religious life and thought. Analysis of the legal and narrative texts, rituals, theology, and community to better understand contemporary Jewish life as influenced by feminism.
Same as: FEMGEN 139

JEWISHST 143. Literature and Society in Africa and the Caribbean. 4 Units.
This course explores texts and films from Francophone Africa and the Caribbean in the 20th and 21st centuries. The course will explore the connections between Sub-Saharan Africa, the Maghreb and the Caribbean through both foundational and contemporary works while considering their engagement with the historical and political contexts in which they were produced. This course will also serve to improve students' speaking and writing skills in French while sharpening their knowledge of the linguistic and conceptual tools needed to conduct literary analysis. The diverse topics discussed in the course will include national and cultural identity, race and class, gender and sexuality, orality and textuality, transnationalism and migration, colonialism and decolonization, history and memory, and the politics of language. Readings include the works of writers and filmmakers such as Djibril Tamsir Niane, Léopold Senghor, Aimé Césaire, Albert Memmi, Patrick Chamoiseau, Leonora Miano, Leila Slimani, Dani Laferrière and Ousmane Sembène. Taught in French. Students are highly encouraged to complete FRENLANG 124 or to successfully test above this level through the Language Center. This course fulfills the Writing in the Major (WIM) requirement.
Same as: AFRICAAM 133, AFRICAST 132, COMPLIT 133A, COMPLIT 233A, CSRE 133E, FRENCH 133

JEWISHST 144B. Poetic Thinking Across Media. 4 Units.
Even before Novalis claimed that the world must be romanticized, thinkers, writers, and artists wanted to perceive the human and natural world poetically. The pre- and post-romantic poetic modes of thinking they created are the subject of this course. Readings include Ecclestias, Zhaozhou Congshen, Montaigne, Nietzsche, Kafka, Benjamin, Arendt, and Sontag. This course will also present poetic thinking in the visual arts–from the expressionism of Ingmar Bergman to the neo-romanticism of Gerhard Richter.

JEWISHST 147A. The Hebrew Bible in Literature. 3-5 Units.
Close reading of major biblical stories and poems that influenced modern literature written in English and Hebrew. Hebrew texts will be read in translation to English. Each class will include a section from the Hebrew Bible as well as a modern text or film based on the biblical story/poem. Discussion of questions such as: the meaning and function of myths and the influence of the Hebrew Bible on the development of literary styles and genres.
Same as: JEWISHST 347A

JEWISHST 147B. The Hebrew and Jewish Short Story. 3-5 Units.
Short stories from Israel, the US and Europe including works by Agnon, Kafka, Keret, Castel-Bloom, Kashua, Singer, Benjamin, Freud, biblical myths and more. The class will engage with questions related to the short story as a literary form and the history of the short story. Reading and discussion in English. Optional: special section with readings and discussions in Hebrew. Note: To be eligible for WAYS credit, you must take the course for a Letter Grade. In AY 2020-21, a 'CR' grade will satisfy the WAYS requirement.
Same as: COMPLIT 127B

JEWISHST 148. Writing Between Languages: The Case of Eastern European Jewish Literature. 1-5 Unit.
Eastern European Jews spoke and read Hebrew, Yiddish, and their co-territorial languages (Russian, Polish, etc.). In the modern period they developed secular literatures in all of them, and their writing reflected their own multilinguality and evolving language ideologies. We focus on major literary and sociolinguistic texts. Reading and discussion in English; students should have some reading knowledge of at least one relevant language as well. ***This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit***.
Same as: JEWISHST 348, SLAVIC 198, SLAVIC 398

JEWISHST 150. Texts that Changed the World from the Ancient Middle East. 3-5 Units.
This course traces the story of the cradle of human civilization. We will begin with the earliest human stories, the Gilgamesh Epic and biblical literature, and follow the path of the development of law, religion, philosophy and literature in the ancient Mediterranean or Middle Eastern world, to the emergence of Jewish and Christian thinking. We will pose questions about how this past continues to inform our present: What stories, myths, and ideas remain foundational to us? How did the stories and myths shape civilizations and form larger communities? How did the earliest stories conceive of human life and the divine? What are the ideas about the order of nature, and the place of human life within that order? How is the relationship between the individual and society constituted? This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: COMPLIT 31, HUMCORE 111, RELIGST 150

JEWISHST 155D. Jewish American Literature and Film. 5 Units.
From its inception, Jewish-American literature has taken as its subject as well as its context the idea of Jewishness itself. Jewish culture is a diasporic one, and for this reason the concept of Jewishness differs from country to country and across time. What stays remarkably similar, though, is Jewish self-perception and relatedly Jewish literary style. This is as true for the first-generation immigrant writers like Isaac Bashevis Singer and Anzia Yezierska who came to the United States from abroad as it is for their second-generation children born in the United States, and the children of those children. In this course, we will consider the difficulties of displacement for the emigrant generation and their efforts to sustain their cultural integrity in the multicultural American environment. We'll also examine the often comic revolt of their American-born children and grandchildren against their (grand-)parents nostalgia and failure to assimilate. Only by considering these transnational roots can one understand the particularity of the Jewish-American novel in relation to mainstream and minority American literatures. In investigating the link between American Jewish writers and their literary progenitors, we will draw largely but not exclusively from Russia and the countries of Eastern Europe.
Same as: AMSTUD 145D, ENGLISH 145D, REES 145D

JEWISHST 155J. The Jewish-American Novel: Diaspora, Privilege, Anxiety, Comedy. 4-5 Units.
Jews are sometimes referred to as 'the people of the book.' Would Portnoy's Complaint count as a book that constitutes Jewish-American peoplehood? What about Fear of Flying? This seminar introduces students to influential Jewish-American novels (and some short stories and film) from the late nineteenth century to the present day. These works return time and again to questions of diaspora, race, queer social belonging, and the duty to a Jewish past, mythical or real. Through close readings of short stories and novels coupled with secondary readings about Jewish-American history and culture, we will explore how American Jewishness is constructed differently in changing historical climates. What makes a text Jewish? What do we mean by Jewish humor and Jewish seriousness? How do Jewish formulations of gender and power respond to Jews' entrance into the white American mainstream? As we read, we'll think through and elaborate on models of ethnicity, privilege, sexuality, and American pluralism. Authors include Cahan, Yezierska, Singer, Roth, Bellow, Malamud, Ozick, Mailer, Jong, and Englander.
Same as: AMSTUD 145J, ENGLISH 145J

JEWISHST 185B. Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV. 4-5 Units.
(HISTORY 185B is 5 units; HISTORY 85B IS 3 units.) Who are American Jews as depicted in popular media -- film, television, etc. -- since the Second World War? How are their religion, politics, mores, and practices represented and what ways, if at all, do such portraits reflect historical trends among Jews and society in general? What can be learned from film or tv about Jewish identity, notions of Jewish power and powerlessness, communal cohesiveness and assimilation, sexuality and the wages of intermarriage or race?.
Same as: CSRE 185B, HISTORY 185B, HISTORY 385C, REES 185B, SLAVIC 183

JEWISHST 186. Jews in Trump's America and Before. 5 Units.
This class considers the notion of American Jewish exceptionalism through the lens of Trump's America. The social and economic success of American Jewry over the last 350 years is remarkable, yet Jews continue to find their position in American society called into question. This course moves between past and present and will consider key moments in American Jewish life with a particular emphasis on contemporary currents, including post-liberal identity politics, Israel, and the rise of white supremacy.
Same as: HISTORY 286F

JEWISHST 199B. Directed Reading in Yiddish, Second Quarter. 1-5 Unit.
For intermediate or advanced students. May be repeated for credit.

JEWISHST 205. Reading Hebrew, First Quarter. 2-4 Units.
Introduction to Hebrew literature through short stories and poetry by notable Israeli writers. In Hebrew. Prerequisite: one year of Hebrew or equivalent.

JEWISHST 211. Out of Eden: Deportation, Exile, and Expulsion from Antiquity to the Renaissance. 4-5 Units.
This course examines the long pedigree of modern deportations and mass expulsions, from the forced resettlements of the ancient world to the expulsion of Jews from Spain in 1492, and from the outlawry of Saga-era Iceland to the culture of civic exile in Renaissance Italy. The course focuses on Europe and the Mediterranean from antiquity to the early modern period, but students are welcome to venture beyond these geographical and chronological boundaries for their final papers.
Same as: HISTORY 211, HISTORY 311

JEWISHST 215. Understanding Jews. 1-2 Unit.
This discussion-based course will give students an opportunity to explore the constellation of religious, ethnic, national, cultural, artistic, spiritual, and political forces that shape Jewish life in the 21st century. Drawing on historical documents, classical texts, and contemporary events, this course will give students from any background an opportunity to ask hard questions, deepen their own understandings, and challenge their conceptions of what makes Jewish life ¿Jewish.¿ No matter where you went for Sunday school ¿ church, synagogue, the woods, or nowhere at all ¿ this course is a chance to question what you know, and interrogate how you came to know what you know about Jews, Judaism, and Jewish culture.
Same as: AMSTUD 215

JEWISHST 221C. Aramaic Texts. 1-5 Unit.
Readings in Aramaic/Syriac with special focus on grammar and syntax of ancient texts.
Same as: JEWISHST 321C, RELIGST 221C, RELIGST 321C

JEWISHST 221D. Readings in Syriac Literature. 2-5 Units.
In recent years, there has been growing interest in the works of Syriac speaking Christians in antiquity and beyond. This course offers an introduction to the Syriac language, including its script, vocabulary and grammar, and a chance to read from a selection of foundational Syriac Christian texts.
Same as: JEWISHST 321D, RELIGST 221D, RELIGST 321D

JEWISHST 226E. The Holocaust: Insights from New Research. 4-5 Units.
Overview of the history of the Holocaust, the genocide of European Jews. Explores its causes, course, consequences, and memory. Addresses the events themselves, as well as the roles of perpetrators and bystanders, dilemmas faced by victims, collaboration of local populations, and the issue of rescue. Considers how the Holocaust was and is remembered and commemorated by victims and participants alike. Uses different kinds of sources: scholarly work, memoirs, diaries, film, and primary documents.
Same as: CSRE 226D, CSRE 326D, HISTORY 226D, HISTORY 326D, JEWISHST 326D

JEWISHST 227D. Readings in Talmudic Literature. 1 Unit.
Readings of Talmudic texts. Some knowledge of Hebrew is preferred, but not necessary. The goal of the ongoing workshop is to provide Stanford students with the opportunity to engage in regular Talmud study, and to be introduced to a variety of approaches to studying Talmudic texts and thought.
Same as: JEWISHST 127D, RELIGST 170D

JEWISHST 227E. Readings in Talmudic Literature Advanced. 1 Unit.
Readings of the talmudic texts. Knowledge of Hebrew is required. The ongoing seminar is designed to study the making of the talmudic sugya (unit of discourse), along with classic commentaries. Students will consider some of the recent developments in the academic study of Talmudic literature, introduced by the instructor. The goal of the ongoing seminar is to provide Stanford students and faculty with the opportunity to engage in regular Talmud study, and to be introduced to a variety of approaches to studying Talmudic texts. Meeting time and location TBA. May be repeated for credit.
Same as: JEWISHST 127E, RELIGST 170E

JEWISHST 240. The Yiddish Story. 3-5 Units.
The Yiddish language is associated with jokes, folktales, and miracle legends, as well as modern stories. This class traces the development of Yiddish literature through these short oral and written forms, following Jewish writers out of the East European market town to cities in the Soviet Union, Israel, and especially the United States. We conclude with stories written in other languages about Yiddish writers. Readings include Sholem Aleichem, I. L. Peretz, Isaac Bashevis Singer, Esther Singer-Kreitman, Cynthia Ozick, and Dina Rubina. Readings in English; optional discussion section for students who read Yiddish.
Same as: AMSTUD 240Y

JEWISHST 242G. Myth and Modernity. 3-5 Units.
Masters of German 20th- and 21st-Century literature and philosophy as they present aesthetic innovation and confront the challenges of modern technology, social alienation, manmade catastrophes, and imagine the future. Readings include Nietzsche, Freud, Rilke, Musil, Brecht, Kafka, Doeblin, Benjamin, Juenger, Arendt, Musil, Mann, Adorno, Celan, Grass, Bachmann, Bernhardt, Wolf, and Kluge. Taught in English. Note for German Studies grad students: GERMAN 322 will fulfill the grad core requirement since GERMAN 332 is not being offered this year. NOTE: Enrollment requires Professor Eshel's consent. Please contact him directly at eshel@stanford.edu and answer these 2 questions: "Why do you want to take this course?" and "What do you think you can add to the discussion?" Applications will be considered in the order in which they were received. Enrollment is limited to 20 students.
Same as: COMPLIT 222A, GERMAN 222, GERMAN 322, JEWISHST 342

JEWISHST 243A. Hannah Arendt: Facing Totalitarianism. 3-5 Units.
Like hardly any other thinker of the modern age, Hannah Arendt's thought offers us timeless insights into the fabric of the modern age, especially regarding the perennial danger of totalitarianism. This course offers an in-depth introduction to Arendt's most important works in their various contexts, as well as a consideration of their reverberations in contemporary philosophy and literature. Readings include Arendt's The Origin of Totalitarianism, The Human Condition, Between Past and Future, Men in Dark Times, On Revolution,Eichmann in Jerusalem, and The Life of the Mind, as well as considerations of Hannah Arendt's work by Max Frisch, Jürgen Habermas, Seyla Benhabib, Judith Butler, Giorgio Agamben, and others. Special attention will be given to Arendt's writings on literature with an emphasis on Kafka, Brecht, Auden, Sartre, and Camus. This course will be synchronously conducted, but will also use an innovative, Stanford-developed, online platform called Poetic Thinking. Poetic Thinking allows students to share both their scholarly and creative work with each other. Based on the newest technology and beautifully designed, it greatly enhances their course experience.
Same as: COMPLIT 353B, GERMAN 253, GERMAN 353

JEWISHST 249. The Algerian Wars. 3-5 Units.
From Algiers the White to Algiers the Red, Algiers, the Mecca of the Revolutionaries in the words of Amilcar Cabral, this course offers to study the Algerian Wars since the French conquest of Algeria (1830-) to the Algerian civil war of the 1990s. We will revisit the ways in which the war has been narrated in literature and cinema, popular culture, and political discourse. A special focus will be given to the Algerian War of Independence (1954-1962). The course considers the racial representations of the war in the media, the continuing legacies surrounding the conflict in France, Africa, and the United States, from Che Guevara to the Black Panthers. A key focus will be the transmission of collective memory through transnational lenses, and analyses of commemorative events and movies. nReadings from James Baldwin, Assia Djebar, Albert Camus, Frantz Fanon, Mouloud Feraoun. Movies include "The Battle of Algiers," "Days of Glory," and "Viva Laldjérie." nTaught in English.
Same as: CSRE 249, FRENCH 249, HISTORY 239G

JEWISHST 265. Jewish Law: Introduction and Topics. 2 Units.
This course will provide an overview of the field of Jewish Law and will seek to provide a few case studies of topics in Jewish Law. All the readings are in English and this course presupposes no background in Jewish Law. Jewish Law is the world's oldest complex legal systems with distinct and idiosyncratic approaches to family, commercial, ritual and many other areas of law. It also has developed an elaborate "conflicts of law" sub-literature focusing on when should Jewish Law apply and when should some other legal system apply, reflecting the long history of the Jewish community in the diaspora as a minority. In this course, we will consider how Jewish law approaches a number of specific topics and we will ponder as well the proper interaction between Jewish law and secular legal norms, Jewish Law and changes in technology, Jewish law and sovereignty, Jewish Law and Bioethics and Jewish law and Family. Other topics will be added as we all see fit. Students who are interested in making a presentation on an area of their choice are welcome to do so. The course will seek to include an optional supplementary "field trip" to see a rabbinical court in action in California. The Learning Outcomes provided by this court include the following: Students who take this course will: 1. Exhibit knowledge and understanding of key concepts in substantive law, procedural law, and legal thought in Jewish Law. 2. Demonstrate facility with legal analysis and reasoning in the Jewish Legal tradition and will demonstrate the ability to conduct legal research in Jewish Law. After the term begins, students accepted into the course can transfer, with consent of the instructor, from section (01) into section (02), which meets the R requirement. Elements used in grading: Attendance, Class Participation, Final Paper. Cross-listed with the Law School (LAW 5038).

JEWISHST 281K. Departures: Late Ottoman Displacements of Muslims, Christians, and Jews, 1853-1923. 5 Units.
In the late nineteenth and early twentieth centuries, millions of people moved into and out of the Ottoman Empire, sometimes voluntarily and sometimes under extremely violent circumstances. More often than not, they moved in groups that were religiously defined. This course examines how these developments shaped the future of the modern Middle East, Balkans, and beyond. Questions include: How did migration and the idea of the nation shape each other? What does it mean to call a group or a migration "religious"? Why did certain types of diversity become a "problem," in the eyes of the state? What caused these population displacements? What can this topic teach us about today's mass migrations?.
Same as: HISTORY 281K

JEWISHST 282. Circles of Hell: Poland in World War II. 5 Units.
Looks at the experience and representation of Poland's wartime history from the Nazi-Soviet Pact (1939) to the aftermath of Yalta (1945). Examines Nazi and Soviet ideology and practice in Poland, as well as the ways Poles responded, resisted, and survived. Considers wartime relations among Polish citizens, particularly Poles and Jews. In this regard, interrogates the traditional self-characterization of Poles as innocent victims, looking at their relationship to the Holocaust, thus engaging in a passionate debate still raging in Polish society.
Same as: HISTORY 228, HISTORY 328, JEWISHST 382

JEWISHST 282K. The Holocaust and Its Aftermath. 4-5 Units.
This seminar gives an overview over different aspects of the history of the Holocaust and its aftermath and will examine key issues in recent Holocaust historiography and questions of memory and representation. Special emphasis is put on the nature of the historian's task, as viewed through the lens of historians of the Holocaust, as well as to the significance of the Holocaust in history and how it has changed over time. The course will confront students with historiographical texts and historical documents, with photography and film, works of scholarship and art.
Same as: HISTORY 202K, HISTORY 302K, JEWISHST 382K

JEWISHST 284C. Genocide and Humanitarian Intervention. 3 Units.
Open to medical students, graduate students, and undergraduate students. Traces the history of genocide in the 20th century and the question of humanitarian intervention to stop it, a topic that has been especially controversial since the end of the Cold War. The pre-1990s discussion begins with the Armenian genocide during the First World War and includes the Holocaust and Cambodia under the Khmer Rouge in the 1970s. Coverage of genocide and humanitarian intervention since the 1990s includes the wars in Bosnia, Rwanda, Kosovo, the Congo and Sudan.
Same as: HISTORY 224C, HISTORY 324C, JEWISHST 384C, PEDS 224

JEWISHST 285C. The Immigrant in Modern America. 5 Units.
The 2016 presidential election propelled the topic of immigration to the center of public attention. This is not the first time, however, that questions of immigration and what it means to be an American have revealed deep divisions within the U.S. This course explores the reception of immigrants in modern America, including differing views toward immigration; how immigrants help shape ideas about the American nation; and the growth of state bureaucracy and policing apparatus as a response.
Same as: HISTORY 285C

JEWISHST 286D. Yours in Struggle: African Americans and Jews in the 20th Century U.S.. 5 Units.
This colloquium explores the history of African Americans and Jews in 20th century US beginning with Jewish immigration from Eastern Europe and the Great Migration to America's urban centers. It considers the geographical and economic tensions that developed between two minority groups living in close proximity; the appropriation of black culture; Jewish claims to whiteness and performance of blackness; intercommunal relations during the Civil Rights movement; the breakdown of the black-Jewish alliance in the late 1960s; and the lingering ramifications of this shift today.
Same as: HISTORY 286D

JEWISHST 287S. Research Seminar in Ottoman and Middle East History. 4-5 Units.
Student-selected research topics. May be repeated for credit.
Same as: HISTORY 481, JEWISHST 481

JEWISHST 288C. Jews of the Modern Middle East and North Africa. 5 Units.
This course will explore the cultural, social, and political histories of the Jews of the Middle East and North Africa (MENA) from 1860 to present times. The geographic concentration will range from Morocco to Iran, Iraq to Turkey, and everywhere in between. Topics include: Jewish culture and identity in Islamic contexts; the impacts of colonialism, westernization, and nationalism; Jewish-Muslim relations; the racialization of MENA Jews; the Holocaust; the experience and place of MENA Jews in Israel; and "Jews of Color.".
Same as: HISTORY 288C

JEWISHST 291X. Learning Religion: How People Acquire Religious Commitments. 4 Units.
This course will examine how people learn religion outside of school, and in conversation with popular cultural texts and practices. Taking a broad social-constructivist approach to the variety of ways people learn, this course will explore how people assemble ideas about faith, identity, community, and practice, and how those ideas inform individual, communal and global notions of religion. Much of this work takes place in formal educational environments including missionary and parochial schools, Muslim madrasas or Jewish yeshivot. However, even more takes place outside of school, as people develop skills and strategies in conversation with broader social trends. This course takes an interdisciplinary approach to questions that lie at the intersection of religion, popular culture, and education. May be repeat for credit.
Same as: AMSTUD 231X, EDUC 231, RELIGST 231X

JEWISHST 297X. American Jewish History: Learning to be Jewish in America. 2-4 Units.
This course will be a seminar in American Jewish History through the lens of education. It will address both the relationship between Jews and American educational systems, as well as the history of Jewish education in America. Plotting the course along these two axes will provide a productive matrix for a focused examination of the American Jewish experience. History students must take course for at least 3 units.
Same as: AMSTUD 279X, EDUC 279, HISTORY 288D, RELIGST 279X

JEWISHST 299A. Directed Reading in Yiddish, First Quarter. 1-5 Unit.
Directed Reading in Yiddish, First Quarter.

JEWISHST 301. Colloquium on Jews, Judaism, and Jewish Culture. 1 Unit.
An interdisciplinary graduate student colloquium for Stanford graduate students interested in Jewish Studies.

JEWISHST 321C. Aramaic Texts. 1-5 Unit.
Readings in Aramaic/Syriac with special focus on grammar and syntax of ancient texts.
Same as: JEWISHST 221C, RELIGST 221C, RELIGST 321C

JEWISHST 321D. Readings in Syriac Literature. 2-5 Units.
In recent years, there has been growing interest in the works of Syriac speaking Christians in antiquity and beyond. This course offers an introduction to the Syriac language, including its script, vocabulary and grammar, and a chance to read from a selection of foundational Syriac Christian texts.
Same as: JEWISHST 221D, RELIGST 221D, RELIGST 321D

JEWISHST 326D. The Holocaust: Insights from New Research. 4-5 Units.
Overview of the history of the Holocaust, the genocide of European Jews. Explores its causes, course, consequences, and memory. Addresses the events themselves, as well as the roles of perpetrators and bystanders, dilemmas faced by victims, collaboration of local populations, and the issue of rescue. Considers how the Holocaust was and is remembered and commemorated by victims and participants alike. Uses different kinds of sources: scholarly work, memoirs, diaries, film, and primary documents.
Same as: CSRE 226D, CSRE 326D, HISTORY 226D, HISTORY 326D, JEWISHST 226E

JEWISHST 342. Myth and Modernity. 3-5 Units.
Masters of German 20th- and 21st-Century literature and philosophy as they present aesthetic innovation and confront the challenges of modern technology, social alienation, manmade catastrophes, and imagine the future. Readings include Nietzsche, Freud, Rilke, Musil, Brecht, Kafka, Doeblin, Benjamin, Juenger, Arendt, Musil, Mann, Adorno, Celan, Grass, Bachmann, Bernhardt, Wolf, and Kluge. Taught in English. Note for German Studies grad students: GERMAN 322 will fulfill the grad core requirement since GERMAN 332 is not being offered this year. NOTE: Enrollment requires Professor Eshel's consent. Please contact him directly at eshel@stanford.edu and answer these 2 questions: "Why do you want to take this course?" and "What do you think you can add to the discussion?" Applications will be considered in the order in which they were received. Enrollment is limited to 20 students.
Same as: COMPLIT 222A, GERMAN 222, GERMAN 322, JEWISHST 242G

JEWISHST 347A. The Hebrew Bible in Literature. 3-5 Units.
Close reading of major biblical stories and poems that influenced modern literature written in English and Hebrew. Hebrew texts will be read in translation to English. Each class will include a section from the Hebrew Bible as well as a modern text or film based on the biblical story/poem. Discussion of questions such as: the meaning and function of myths and the influence of the Hebrew Bible on the development of literary styles and genres.
Same as: JEWISHST 147A

JEWISHST 348. Writing Between Languages: The Case of Eastern European Jewish Literature. 1-5 Unit.
Eastern European Jews spoke and read Hebrew, Yiddish, and their co-territorial languages (Russian, Polish, etc.). In the modern period they developed secular literatures in all of them, and their writing reflected their own multilinguality and evolving language ideologies. We focus on major literary and sociolinguistic texts. Reading and discussion in English; students should have some reading knowledge of at least one relevant language as well. ***This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit***.
Same as: JEWISHST 148, SLAVIC 198, SLAVIC 398

JEWISHST 382. Circles of Hell: Poland in World War II. 5 Units.
Looks at the experience and representation of Poland's wartime history from the Nazi-Soviet Pact (1939) to the aftermath of Yalta (1945). Examines Nazi and Soviet ideology and practice in Poland, as well as the ways Poles responded, resisted, and survived. Considers wartime relations among Polish citizens, particularly Poles and Jews. In this regard, interrogates the traditional self-characterization of Poles as innocent victims, looking at their relationship to the Holocaust, thus engaging in a passionate debate still raging in Polish society.
Same as: HISTORY 228, HISTORY 328, JEWISHST 282

JEWISHST 382K. The Holocaust and Its Aftermath. 4-5 Units.
This seminar gives an overview over different aspects of the history of the Holocaust and its aftermath and will examine key issues in recent Holocaust historiography and questions of memory and representation. Special emphasis is put on the nature of the historian's task, as viewed through the lens of historians of the Holocaust, as well as to the significance of the Holocaust in history and how it has changed over time. The course will confront students with historiographical texts and historical documents, with photography and film, works of scholarship and art.
Same as: HISTORY 202K, HISTORY 302K, JEWISHST 282K

JEWISHST 384C. Genocide and Humanitarian Intervention. 3 Units.
Open to medical students, graduate students, and undergraduate students. Traces the history of genocide in the 20th century and the question of humanitarian intervention to stop it, a topic that has been especially controversial since the end of the Cold War. The pre-1990s discussion begins with the Armenian genocide during the First World War and includes the Holocaust and Cambodia under the Khmer Rouge in the 1970s. Coverage of genocide and humanitarian intervention since the 1990s includes the wars in Bosnia, Rwanda, Kosovo, the Congo and Sudan.
Same as: HISTORY 224C, HISTORY 324C, JEWISHST 284C, PEDS 224

JEWISHST 385A. Core Colloquium in Jewish History, 17th to 19th Centuries. 4-5 Units.
.
Same as: HISTORY 385A

JEWISHST 385B. Graduate Colloquium in Jewish History, 19th-20th Centuries. 4-5 Units.
Instructor consent required.
Same as: HISTORY 385B

JEWISHST 393X. The Education of American Jews. 4 Units.
This course will take an interdisciplinary approach to the question of how American Jews negotiate the desire to retain a unique ethnic sensibility without excluding themselves from American culture more broadly. Students will examine the various ways in which people debate, deliberate, and determine what it means to be an "American Jew". This includes an investigation of how American Jewish relationships to formal and informal educational encounters through school, popular culture, religious ritual, and politics.
Same as: EDUC 313, RELIGST 313X

JEWISHST 481. Research Seminar in Ottoman and Middle East History. 4-5 Units.
Student-selected research topics. May be repeated for credit.
Same as: HISTORY 481, JEWISHST 287S

JEWISHST 486A. Graduate Research Seminar in Jewish History. 4-5 Units.
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Same as: HISTORY 486A

JEWISHST 486B. Graduate Research Seminar in Jewish History. 4-5 Units.
Prerequisite: HISTORY 486A.
Same as: HISTORY 486B

HISTORY

Courses offered by the Department of History are listed under the subject code History on the Stanford Bulletin's ExploreCourses web site (https://explorecourses.stanford.edu/search/?view=catalog&academicYear=&page=0&q=HISTORY&filter-catalognumber-HISTORY=on&filter-coursestatus-Active=on&filter-term-Summer=on).

Mission of the Department of History

History courses teach the analytical, interpretive, and writing knowledge and skills necessary for understanding the connections between past and present. History is a pragmatic discipline in which the analysis of change over time involves sifting the influences and perspectives that affect the course of events, and evaluating the different forms of evidence historians exploit to make sense of them. Teaching students how to weigh these sources and convert the findings into persuasive analysis lies at the heart of the department's teaching. Graduates with a History major pursue careers and graduate study in law, public service, business, writing, education, and journalism.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. an understanding of what it means to think historically: locating subjects in time and place and being sensitive to the contingencies of context and to change over time.
2. critical and interpretive thinking skills using course's primary source materials.
3. the ability to identify different types of sources of historical knowledge.
4. analytical writing skills and close reading skills.
5. effective oral communication skills.

Degrees Offered

The Department of History offers the following degree programs: Bachelor of Arts, Bachelor of Arts and Sciences, Master of Arts, and Doctor of Philosophy.

Graduate Programs in History

The primary goal of the Stanford Department of History's graduate program is the training of scholars. Most students who receive doctorates in the program go on to teach at colleges or universities. Other students have obtained positions in university administration and research.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in History and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in History. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of History and to interpret and present the results of such research.

History Course Catalog Numbering System

Location	Introductory Seminars: Freshman-Sophomore	Sources and Methods Seminars	Lectures	Colloquia	Research Seminars and Workshops
International, Global, Thematic	4N, 44Q, 95N	3S	1B, 64, 102, 103D,F, 105C, 106A,B, 107	201A, 202A,B,G, 203,B,C, 204,C,E,G, 206,206A, 207C, 208C, 243G, 301A, 302A,B,G, 303,303B,C,F, 304,C,G, 305, 306A, D, 307C,E, 308C, 343G, 399A	306K, 401A
Ancient and Medieval Europe	11N		101	207F, 215K, 307F	
Early Modern and Modern Europe		33S, 38S	110B, C, 131A, 133A, 134A	230C, 231G, 232A, 233, 331G, 332A, 333	326A, 430, 433A, B, 438
Eastern Europe, Russia, Eurasia	20N	20S	125	221B, 224A, 228, 321A, 328	424A, B
History of Science	41Q, 44Q	42S	130A, 140, 144	208A, 232F, 308A, 332F	
Africa	48N, 48Q		145B, 147		445A, B
United States	36N, 41Q, 50K, 60N	71S, 74S, 76S	64, 130A, 150A, B, C, 151, 158C,159, 161, 166, B, 167A	201, 203C, 251G, 252B, 253D, 256, G, 257C, 258, E, 260, 261G, 262A, E, 269, 301, 303C, 351B, C, E, 356, 358, 369	460
Latin America	78N		174	277D	471A, B
Middle East			181B, 182C, 187	281B, 284, F, 288, 381, B, 384, F	481
Jewish History			185B		486A
Asia	98N		191B, 192, 195, C, 196, 198	290E, 292, D, 297, 390E, 391B, 392, D, 396D, 397	491A, B, 494C

Bachelor of Arts in History

The Department of History offers a Bachelor of Arts in History. Eligible students may also pursue a Bachelor of Arts with Honors (p. 1557). The department also offers a minor in History (p. 1559).

Suggested Preparation for the Major

Before declaring the History major, students must take one lecture course. They must take a second lecture course within one year of declaring. Fulfilling this requirement are courses numbered HISTORY 1-199 (with the exception of Frosh (xxN) and Sophomore (xxQ) Introductory Seminars).

Lecture Courses

		Units
The choices for 2020-21 are:		
HISTORY 1A	Global History: The Ancient World	3-5
HISTORY 1B	Global History: The Early Modern World, 1300 to 1800	3-5
HISTORY 1C	Global History: Modern Times	3-5
HISTORY 102	History of the International System since 1914	5
HISTORY 103D	Human Society and Environmental Change	4
HISTORY 103F	The Changing Face of War: Introduction to Military History	5
HISTORY 105C	Human Trafficking: Historical, Legal, and Medical Perspectives	5
HISTORY 106A	Global Human Geography: Asia and Africa	5
HISTORY 106B	Global Human Geography: Europe and Americas	5
HISTORY 110C	The Problem of Modern Europe	5
HISTORY 115D	Europe in the Middle Ages, 300-1500	3-5
HISTORY 116	Traders and Crusaders in the Medieval Mediterranean	3-5
HISTORY 133B	Revolutionary England: The Stuart Age	5
HISTORY 134A	The European Witch Hunts	5
HISTORY 139	Modern Britain and the British Empire	5
HISTORY 140	World History of Science	5
HISTORY 140A	The Scientific Revolution	5
HISTORY 144	Sex, Gender, and Intersectional Analysis in Science, Medicine, Engineering, and Environment	5
HISTORY 145B	Africa in the 20th Century	5
HISTORY 150A	Colonial and Revolutionary America	5
HISTORY 150B	Nineteenth Century America	5
HISTORY 150C	The United States in the Twentieth Century	5
HISTORY 155F	The Civil War and Reconstruction Era, 1830 to 1877	3-5
HISTORY 173	Mexican Migration to the United States	3-5
HISTORY 174	Mexico Since 1876: The Road to Ayotzinapa	5
HISTORY 179C	The Ethical Challenges of the Climate Catastrophe	3-5
HISTORY 181B	Formation of the Contemporary Middle East	5
HISTORY 185B	Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV	4-5
HISTORY 187	The Islamic Republics: Politics and Society in Iran, Afghanistan and Pakistan	5
HISTORY 195	Modern Korean History	5
HISTORY 195C	Modern Japanese History: From Samurai to Pokemon	5
HISTORY 198	The History of Modern China	5

Degree Requirements

Completion of the major requires planning. History majors should plan to meet with their faculty advisors twice yearly, once in the Autumn and once in the Winter or Spring quarters. These meetings should take place within the first three weeks of the quarter, before the final study list deadline.

1. Courses comprising the 63 units must be taken for a letter grade, and the student must maintain a grade point average (GPA) in History courses of 2.0 or higher.
2. At least nine courses must be taken from within the Stanford Department of History. Transfer students and those who study abroad may be granted exemptions from this requirement at the discretion of the Director of Undergraduate Studies.
3. At least six quarters of enrollment in the major. Each candidate for the B.A. in History should declare the major by the Autumn Quarter of the third year of study or earlier, if possible.
4. One HISTORY 299S (https://exploredegrees.stanford.edu/search/?P=HISTORY%20299S) Undergraduate Directed Research and Writing taken for 3-5 units and for a letter grade may be applied toward the thirteen courses required for the B.A. in History.
5. Capstone: The History department organizes a series of luncheon workshops quarterly, at which students present their research essays and honors theses.
6. The department encourages students to acquire proficiency in foreign languages and study at one of Stanford's overseas programs. Such studies are not only valuable in themselves; they can provide an opportunity for independent research and a foundation for honors essays and graduate study.
7. Advanced Placement credits do not fulfill any major requirements.

For further information on History courses' satisfaction of major requirements, see the Department of History (http://history.stanford.edu/programs/undergraduate/) web site.

Writing in the Major (WIM):

History's Writing in the Major requirement is satisfied by completing HISTORY 209S Research Seminar for Majors.

This course may be taken in either the junior or senior year, but not before completing the sources and methods seminar requirement. Students write a 20-25 page research essay. Original research and revision are important parts of the research essay. Students must conduct substantial research in the libraries and must submit at least two drafts (a rough draft and a final draft) of the essay. Students who wish to write an honors thesis should take HISTORY 209S Research Seminar for Majors in the junior year. Where appropriate, a student can use the research seminar to begin working on the honors thesis.

HISTORY 209S Research Seminar for Majors fulfills the WIM requirement only. It does not fulfill geographical requirements or small group course requirements.

Students select their research topics based on the general topics of each quarter's offerings.

- HISTORY 209S Research Seminar for Majors
  - Autumn: Honors; Crime and Punishment in Early Modern Europe and America
  - Winter: Race, Gender, Sexuality in the U.S.
  - Spring: Europe Before 1500; Early Empires; Open Topic
  - Summer: Arms-Makers in History; Early Modern Travel Accounts

Course Requirements

History majors are required to complete a minimum of 63 units (i.e., a minimum of 13 courses) to include:

		Units
1. One Sources and Methods Seminar (HISTORY 1S-99S) [1]		**5**
Sources and Methods courses offered this year are:		
HISTORY 13S	Misfits of the Middle Ages: Persecution and Tolerance in Medieval Europe	5
HISTORY 18S	Pirates, Captives, and Renegades: Encounters in the Early Modern Mediterranean World	5
HISTORY 23S	Sex and Socialism	5
HISTORY 32S	Utopian Dreams, Dystopian Nightmares: Visions of the Ideal Society in Early Modern Britain	5
HISTORY 47S	Black Earth Rising: Law and Society in Postcolonial Africa	5
HISTORY 64S	The Religious Right and Its Critics in America from 1920 to Today	5
HISTORY 82S	Enemies Within: Hostile Minorities in Israel and Iraq in the 20th Century	5
HISTORY 89S	Chinese Diaspora and the Making of the Pacific World, 1750-1911	5
HISTORY 98S	Crime and Punishment in Late Imperial China: Law, State Formation, and Society	5
2. Two 200-level undergraduate colloquia (HISTORY 200-298) [2]		**10**
3. One Doing History colloquium (HISTORY 200x) [3]		**5**
HISTORY 200A	Doing Legal History	5
HISTORY 200B	Doing Environmental History: Climate Change... the podcast	5
HISTORY 200C	Doing the History of Race and Ethnicity	5
HISTORY 200J	Doing Oral History	5
HISTORY 200M	Doing Digital History	5
HISTORY 200R	Doing Community History: Asian Americans and the Pandemic	5
HISTORY 200Y	Doing Colonial History	5
4. Two lecture courses [4]		**10**
One of which must be either		
A Europe survey course such as:		
HISTORY 110C	The Problem of Modern Europe	
Or, a United States survey course such as:		
HISTORY 150A	Colonial and Revolutionary America	
HISTORY 150B	Nineteenth Century America	
HISTORY 150C	The United States in the Twentieth Century	
The second must be a lecture course in African, Asian, Middle East, or Latin American History, such as:		
HISTORY 145B	Africa in the 20th Century	
HISTORY 174	Mexico Since 1876: The Road to Ayotzinapa	
HISTORY 181B	Formation of the Contemporary Middle East	
HISTORY 195C	Modern Japanese History: From Samurai to Pokemon	
5. Completion of the Writing in the Major (WIM) requirement [5]		
HISTORY 209S	Research Seminar for Majors	5
6. At least 6 additional courses to total a minimum of 63 units.		**28**
Total Units		143

1. Sources and Methods seminars constitute the department's 'skills' class and should be taken as early as possible in a student's course of study. They are designed for freshmen and sophomores considering or beginning the History major. This requirement must be completed prior to enrolling in HISTORY 209S Research Seminar for Majors.
2. ExploreCourses lists all colloquia offered in 2020-21 (https://explorecourses.stanford.edu/search/?filter-term-Winter=on&filter-academiclevel-UG=on&q=HISTORY&view=catalog&filter-catalognumber-HISTORY=on&filter-term-Summer=on&filter-term-Autumn=on&filter-component-COL=on&filter-term-Spring=on&page=0&filter-coursestatus-Active=on&collapse=%2c6%2c7%2c&academicYear=20202021).
3. Course requirement beginning with declared majors of academic year 2019-20.
4. Students may count courses they took as prerequisites to the major for this requirement.
5. In completing this course, students must write a 20-25 page essay based on original research and including at least two drafts. HISTORY 209S Research Seminar for Majors may be taken in either the junior or the senior year. Students must complete the Sources and Methods seminar before enrolling in the Research Seminar.

History Fields of Study or Degree Options

The Department of History offers six tracks to the B.A. in History. These tracks are not declared in Axess and are not printed on the transcript or diploma.

The General History track emphasizes breadth of study among historical areas and periods as well as concentration in one selected field. The Global Affairs and World History track emphasizes an understanding of today's world through a historical examination of its evolution, from the early modern to the contemporary era. The four tracks with interdisciplinary emphasis (History, Philosophy, and the Arts; History of Science and Medicine; History and Law; and Public History/Public Service) combine the study of history with the methods and approaches of other disciplines, and involve substantial course work outside of History.

General History Track

In addition to completing the requirements for all History majors, the student in the General History track is required to satisfy breadth and concentration requirements.

1. *Breadth Requirements:* to ensure chronological and geographical breadth, at least two courses must be completed in a pre-modern chronological period and in each of three geographical fields:
   a. Field I (Africa, Asia, and Middle East)
   b. Field II (the Americas)
   c. Field III (Europe, including Western Europe, Eastern Europe, and Russia).
   d. Courses fulfilling the pre-modern chronological period (Field IV) may also count for Fields I-III.

2. Courses for 2020-21 follow below.
3. *Concentration:* to develop some measure of expertise, students must complete four courses in a single area (including one undergraduate colloquium or research seminar). The proposed concentration must be approved by the major advisor; a proposal for a thematic concentration must be approved by both the advisor and the department's director of undergraduate studies. Areas of concentration are:
   - Africa
   - Asia
   - Eastern Europe and Russia
   - Europe before 1700
   - Europe since 1700
   - Jewish History
   - Latin America
   - Science and Medicine
   - The United States
   - The Middle East
   - International History
   - Comparative Empires and Cultures
   - or a thematic subject treated comparatively, such as war and revolution, work, gender, family history, popular culture, or high culture.
4. *Required course:* HISTORY 102 History of the International System since 1914 is a required course for students who select the International History concentration. This course is offered in Autumn Quarter.

		Units
Field I: Africa/Asia/Middle East		
HISTORY 41N	Visible Bodies: Black Female Authors and the Politics of Publishing in Africa	4
HISTORY 82S	Enemies Within: Hostile Minorities in Israel and Iraq in the 20th Century	5
HISTORY 98S	Crime and Punishment in Late Imperial China: Law, State Formation, and Society	5
HISTORY 106A	Global Human Geography: Asia and Africa	5
HISTORY 145B	Africa in the 20th Century	5
HISTORY 185B	Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV	4-5
HISTORY 187	The Islamic Republics: Politics and Society in Iran, Afghanistan and Pakistan	5
HISTORY 195	Modern Korean History	5
HISTORY 195C	Modern Japanese History: From Samurai to Pokemon	5
HISTORY 197	Southeast Asia: From Antiquity to the Modern Era	3-5
HISTORY 198	The History of Modern China	5
HISTORY 200Y	Doing Colonial History	5
HISTORY 202F	Surveillance States and Societies	4-5
HISTORY 204G	War and Society	4-5
HISTORY 248	Religion, Radicalization and Media in Africa since 1945	4-5
HISTORY 281K	Departures: Late Ottoman Displacements of Muslims, Christians, and Jews, 1853-1923	5
HISTORY 282J	Disasters in Middle Eastern History	5
HISTORY 283F	Capital and Crisis in the Middle East and the World	5
HISTORY 284F	Empires, Markets and Networks: Early Modern Islamic World Between Europe and China, 1400-1900	4-5
HISTORY 288C	Jews of the Modern Middle East and North Africa	5
HISTORY 290	North Korea in Historical Perspective	4-5
HISTORY 292D	Japan in Asia, Asia in Japan	4-5
Field II: The Americas		
HISTORY 64S	The Religious Right and Its Critics in America from 1920 to Today	5
HISTORY 106B	Global Human Geography: Europe and Americas	5
HISTORY 150A	Colonial and Revolutionary America	5
HISTORY 150B	Nineteenth Century America	5
HISTORY 150C	The United States in the Twentieth Century	5
HISTORY 155F	The Civil War and Reconstruction Era, 1830 to 1877	3-5
HISTORY 173	Mexican Migration to the United States	3-5
HISTORY 174	Mexico Since 1876: The Road to Ayotzinapa	5
HISTORY 179C	The Ethical Challenges of the Climate Catastrophe	3-5
HISTORY 200J	Doing Oral History	5
HISTORY 200R	Doing Community History: Asian Americans and the Pandemic	5
HISTORY 203F	Racial Justice in the Nuclear Age	5
HISTORY 251C	The American Enlightenment	5
HISTORY 251J	The End of American Slavery, 1776-1865	4-5
HISTORY 253F	Thinking the American Revolution	4-5
HISTORY 256E	The American Civil War: The Lived Experience	5
HISTORY 257E	History of Conservatism	4-5
HISTORY 260P	American Protest Movements, Past and Present	5
HISTORY 261E	Introduction to Asian American History	5
Field III: Europe, Eastern Europe, and Russia		
HISTORY 10C	The Problem of Modern Europe	3
HISTORY 13S	Misfits of the Middle Ages: Persecution and Tolerance in Medieval Europe	5
HISTORY 15D	Europe in the Middle Ages, 300-1500	3-5
HISTORY 16	Traders and Crusaders in the Medieval Mediterranean	3-5
HISTORY 32S	Utopian Dreams, Dystopian Nightmares: Visions of the Ideal Society in Early Modern Britain	5
HISTORY 33B	Revolutionary England: The Stuart Age	3
HISTORY 39	Modern Britain and the British Empire	3
HISTORY 39Q	Were They Really "Hard Times"? Mid-Victorian Social Movements and Charles Dickens	3
HISTORY 40A	The Scientific Revolution	3
HISTORY 42N	The Missing Link	4

HISTORY 85B	Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV	3
HISTORY 106B	Global Human Geography: Europe and Americas	5
HISTORY 110C	The Problem of Modern Europe	5
HISTORY 115D	Europe in the Middle Ages, 300-1500	3-5
HISTORY 116	Traders and Crusaders in the Medieval Mediterranean	3-5
HISTORY 133B	Revolutionary England: The Stuart Age	5
HISTORY 134A	The European Witch Hunts	5
HISTORY 139	Modern Britain and the British Empire	5
HISTORY 140A	The Scientific Revolution	5
HISTORY 185B	Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV	4-5
HISTORY 202G	Peoples, Armies and Governments of the Second World War	4-5
HISTORY 203	Premodern Economic Cultures	4-5
HISTORY 204G	War and Society	4-5
HISTORY 210D	Neighbors: Intimate Relationships and Everyday Life in Hitler's Europe	5
HISTORY 210J	Fascism and Authoritarianism	5
HISTORY 211	Out of Eden: Deportation, Exile, and Expulsion from Antiquity to the Renaissance	4-5
HISTORY 213F	Medieval Germany, 900-1250	1-5
HISTORY 215B	Race and Ethnicity in Premodern Europe	3-5
HISTORY 216D	Nationalism, Colonialism, and the Lord of the Rings: The Middle Ages in the Modern World	5
HISTORY 222	Crime and Punishment in Early Modern Europe and Russia	4-5
HISTORY 224A	The Soviet Civilization	4-5
HISTORY 224D	The Soviet Civilization, Part 2	4-5
HISTORY 227B	The Business of Socialism: Economic Life in Cold War Eastern Europe	5
HISTORY 228	Circles of Hell: Poland in World War II	5
HISTORY 230C	Paris: Capital of the Modern World	4-5
HISTORY 232G	Early Modern Cities	4-5
HISTORY 233	Reformation to Civil War: England under the Tudors and Stuarts	4-5
HISTORY 233F	Political Thought in Early Modern Britain	4-5
HISTORY 234P	The Age of Plague: Medicine and Society, 1300-1750	5
HISTORY 235J	The Meaning of Life: Modern European Encounters with Consequential Questions	5
HISTORY 235L	Alien Imaginations: Extraterrestrial Speculations in Modern European History	5
HISTORY 240	The History of Evolution	4-5
Field IV: Pre-1700		
HISTORY 1A	Global History: The Ancient World	3-5
HISTORY 1B	Global History: The Early Modern World, 1300 to 1800	3-5
HISTORY 10N	Thinking About War	3
HISTORY 12N	Income and wealth inequality from the Stone Age to the present	4
HISTORY 13S	Misfits of the Middle Ages: Persecution and Tolerance in Medieval Europe	5
HISTORY 15D	Europe in the Middle Ages, 300-1500	3-5
HISTORY 16	Traders and Crusaders in the Medieval Mediterranean	3-5
HISTORY 33B	Revolutionary England: The Stuart Age	3
HISTORY 40	World History of Science	3
HISTORY 40A	The Scientific Revolution	3
HISTORY 50A	Colonial and Revolutionary America	3
HISTORY 90	Early Chinese Thought	3-5
HISTORY 91B	The City in Imperial China	3
HISTORY 94B	Japan in the Age of the Samurai	3
HISTORY 97	Southeast Asia: From Antiquity to the Modern Era	3-5
HISTORY 102A	The Romans	3-5
HISTORY 114	Origins of History in Greece and Rome	4-5
HISTORY 115D	Europe in the Middle Ages, 300-1500	3-5
HISTORY 116	Traders and Crusaders in the Medieval Mediterranean	3-5
HISTORY 133B	Revolutionary England: The Stuart Age	5
HISTORY 134A	The European Witch Hunts	5
HISTORY 140	World History of Science	5
HISTORY 140A	The Scientific Revolution	5
HISTORY 150A	Colonial and Revolutionary America	5
HISTORY 190	Early Chinese Thought	3-5
HISTORY 191B	The City in Imperial China	5
HISTORY 197	Southeast Asia: From Antiquity to the Modern Era	3-5
HISTORY 203	Premodern Economic Cultures	4-5
HISTORY 208D	Pre-Modern Warfare	4-5
HISTORY 211	Out of Eden: Deportation, Exile, and Expulsion from Antiquity to the Renaissance	4-5
HISTORY 213F	Medieval Germany, 900-1250	1-5
HISTORY 215B	Race and Ethnicity in Premodern Europe	3-5
HISTORY 216D	Nationalism, Colonialism, and the Lord of the Rings: The Middle Ages in the Modern World	5
HISTORY 232G	Early Modern Cities	4-5
HISTORY 233	Reformation to Civil War: England under the Tudors and Stuarts	4-5
HISTORY 233F	Political Thought in Early Modern Britain	4-5
HISTORY 249	The Mamluks: Slave-Soldiers and Sultans of Medieval Egypt	3-5
HISTORY 284F	Empires, Markets and Networks: Early Modern Islamic World Between Europe and China, 1400-1900	4-5
HISTORY 291G	Pre-Modern Chinese Warfare	4-5

Global Affairs and World History Track

The Global Affairs and World History track is designed to offer an empirically rich curriculum for Stanford students interested in international affairs. The goal is to impart an understanding of today's world through a historical examination of its evolution, from the early modern to the contemporary era. This track appeals to students who are aiming for a career in the international arena, and who seek to inform themselves about the complexities of cultural diversity and spatial differentiation on the ground. Deploying both connective and comparative modes of analysis, majors who choose this track will acquire a robust understanding of the relevance of the past to current events.

The Global Affairs and World History track features gateway courses in Global Human Geography, a recommended skills component, a geographical concentration, and a core cluster of global and comparative

offerings. Students choosing this track also develop proficiency in a foreign language at the second-year level or above. Incorporating primary sources in a language other than English into the capstone seminar or honors thesis is encouraged.

		Units
Gateway Courses		
Students must complete two of the following courses:		
HISTORY 1A	Global History: The Ancient World	
HISTORY 1B	Global History: The Early Modern World, 1300 to 1800	
HISTORY 1C	Global History: Modern Times	
HISTORY 106A	Global Human Geography: Asia and Africa	
HISTORY 106B	Global Human Geography: Europe and Americas	
Note: If a student wishes to do more than two of these courses, the course is applied to the methodological cluster.		
Geographical Cluster		
Students select four History courses in one geographic area, such as Europe, Latin America, Asia, Middle East, or Africa. The faculty coordinator must pre-approve all courses in this cluster.		
Global and Comparative Courses (Methodological Cluster)		
Majors selecting this track take at least 6 thematic history courses of global scope.		
Courses offered in 2020-21 are:		
HISTORY 10N	Thinking About War	3
HISTORY 44Q	Gendered Innovations in Science, Medicine, Engineering, and Environment	4-5
HISTORY 63N	The Feminist Critique: The History and Politics of Gender Equality	3-4
HISTORY 102	History of the International System since 1914	5
HISTORY 103D	Human Society and Environmental Change	4
HISTORY 103F	The Changing Face of War: Introduction to Military History	3-5
HISTORY 105C	Human Trafficking: Historical, Legal, and Medical Perspectives	5
HISTORY 110C	The Problem of Modern Europe	5
HISTORY 139	Modern Britain and the British Empire	5
HISTORY 140	World History of Science	5
HISTORY 140A	The Scientific Revolution	5
HISTORY 144	Sex, Gender, and Intersectional Analysis in Science, Medicine, Engineering, and Environment	5
HISTORY 145B	Africa in the 20th Century	5
HISTORY 173	Mexican Migration to the United States	3-5
HISTORY 179C	The Ethical Challenges of the Climate Catastrophe	3-5
HISTORY 181B	Formation of the Contemporary Middle East	5
HISTORY 187	The Islamic Republics: Politics and Society in Iran, Afghanistan and Pakistan	5
HISTORY 190	Early Chinese Thought	3-5
HISTORY 195	Modern Korean History	4-5
HISTORY 195C	Modern Japanese History: From Samurai to Pokemon	5
HISTORY 198	The History of Modern China	5
HISTORY 201A	The Global Drug Wars	4-5
HISTORY 202F	Surveillance States and Societies	4-5
HISTORY 202G	Peoples, Armies and Governments of the Second World War	4-5
HISTORY 203C	History of Ignorance	5
HISTORY 204D	Advanced Topics in Agnotology	4-5
HISTORY 204G	War and Society	4-5
HISTORY 216D	Nationalism, Colonialism, and the Lord of the Rings: The Middle Ages in the Modern World	5
HISTORY 224A	The Soviet Civilization	4-5
HISTORY 224C	Genocide and Humanitarian Intervention	3
HISTORY 243C	People, Plants, and Medicine: Colonial Science and Medicine	4-5
HISTORY 243G	Tobacco and Health in World History	4-5
HISTORY 283F	Capital and Crisis in the Middle East and the World	5
HISTORY 284F	Empires, Markets and Networks: Early Modern Islamic World Between Europe and China, 1400-1900	4-5
HISTORY 290	North Korea in Historical Perspective	4-5
HISTORY 291G	Pre-Modern Chinese Warfare	4-5
HISTORY 292D	Japan in Asia, Asia in Japan	4-5

Proficiency in a foreign language: Students electing the Global Affairs and World History track must acquire proficiency in a foreign language through two years of college-level course work (second-year, third-quarter) or by passing a proficiency exam. Language courses do not count toward the 13 required courses in the major; students may, however, be interested in pairing this track in the History major with a foreign language minor.

Skills Training: Students in the Global Affairs and World History track are encouraged to acquire technical proficiencies relevant for geo-historical analysis and fieldwork abroad. Please see the Undergraduate Student Services Coordinator for further information on these courses.

Overseas Study Experience: Students electing this track are encouraged to study abroad, with a Stanford BOSP program or another program approved by the directors of the track. Course work taken overseas may be accepted for credit in the track on a case by case basis, in consultation with a faculty coordinator.

Research Seminar for Majors: HISTORY 209S Research Seminar for Majors fulfills Writing in the Major requirement.

General Requirements:

As for all History majors, students in this track must complete two lecture courses (one Europe or U.S., and one Africa, Asia, Middle East, or Latin America), two 200-level courses, a Sources and Methods seminar, and HISTORY 209S Research Seminar for Majors.

History Tracks with Interdisciplinary Emphasis (HMIE)

These tracks (History, Philosophy, and the Arts; History of Science and Medicine; History and Law; and Public History/Public Service) with Interdisciplinary Emphasis are designed for students who are interested in other disciplines who want to focus on the historical aspects of the subject matter covered by that discipline, who want to understand how interdisciplinary approaches can deepen their understanding of history, or who are primarily interested in developing interdisciplinary approaches to historical scholarship by combining the careful attention to evidence and context that motivates historical research with the analytic and methodological tools of science and the humanities.

In pursuing the designated requirements for all History majors, students in HMIE are required to complete their thirteen courses for the major as follows:

Gateway Course: Students are required to take the appropriate gateway course for their interdisciplinary track. This course introduces students to the application of particular interdisciplinary methods to the study of history. See the section on each HMIE for the gateway course appropriate to that major track. *Note:* The History and the Law track has no gateway course requirement.

Methodological Cluster: This cluster is designed to acquaint students with the ways in which interdisciplinary methods are employed in historical scholarship, by practicing historians and scholars in other disciplines whose work is historical. This program of study must provide methodological coherence and must be approved in advanced by the student's advisor. See the section on each HMIE for the appropriate historical methods courses.

Geographic Cluster: History is embedded in time and place. This cluster is designed to emphasize that the purpose of studying methodology is to more fully understand the history of a particular region of the world. Students select a particular geographic region, as specified in the History major, and complete four courses in that area.

Interdisciplinary Cluster: These courses, taken outside the Department of History, acquaint students with the methods and approaches of another discipline appropriate for the interdisciplinary study of history. This program of study must provide methodological coherence and must be approved in advance by the student's advisor. See the section on each HMIE for appropriate interdisciplinary courses.

Research Seminar for Majors: HISTORY 209S Research Seminar for Majors fulfills Writing in the Major Requirement.

HMIE tracks do not mandate the breadth or concentration requirements of the General History track.

History, Philosophy, and the Arts Track

The History, Philosophy, and the Arts (HPA) track is designed for the student who wishes to complement his or her work in History with study in literature and philosophy, particularly in a foreign language. For the purposes of this track, Arts are defined broadly, including fine art and art history, drama, films, memoirs and autobiography, poetry and novels, as well as canonical works in philosophy, political science, and history of political thought. It appeals to students who are interested in studying the humanities and its conceptual and linguistic worlds in their historical context, or who want to focus on both the literature and history of a specific geographical area while also learning the language of that area.

		Units
Gateway Courses		
Students must take two of the following courses:		
HISTORY 1C	Global History: Modern Times	
HISTORY 115D	Europe in the Middle Ages, 300-1500	
HISTORY 116	Traders and Crusaders in the Medieval Mediterranean	
HISTORY 140A	The Scientific Revolution	
HISTORY 251C	The American Enlightenment	
Note: If a student wishes to do more than two of these courses, the course is applied to the methodological cluster.		
Methodological Cluster		
This two-course cluster teaches students how historians, in particular, analyze literary texts and philosophical works as documentary sources for writing cultural and intellectual history. Students choose two courses from among the pre-approved HPA methodology curriculum. These courses need not be in the student's geographic concentration.		
For 2020-21, these courses are:		
HISTORY 32S	Utopian Dreams, Dystopian Nightmares: Visions of the Ideal Society in Early Modern Britain	5
HISTORY 41N	Visible Bodies: Black Female Authors and the Politics of Publishing in Africa	4
HISTORY 63N	The Feminist Critique: The History and Politics of Gender Equality	3-4
HISTORY 139	Modern Britain and the British Empire	5
HISTORY 150A	Colonial and Revolutionary America	5
HISTORY 150C	The United States in the Twentieth Century	5
HISTORY 187	The Islamic Republics: Politics and Society in Iran, Afghanistan and Pakistan	5
HISTORY 198	The History of Modern China	5
HISTORY 203C	History of Ignorance	5
HISTORY 204G	War and Society	4-5
HISTORY 211	Out of Eden: Deportation, Exile, and Expulsion from Antiquity to the Renaissance	4-5
HISTORY 213F	Medieval Germany, 900-1250	1-5
HISTORY 215B	Race and Ethnicity in Premodern Europe	3-5
HISTORY 216D	Nationalism, Colonialism, and the Lord of the Rings: The Middle Ages in the Modern World	5
HISTORY 224A	The Soviet Civilization	4-5
HISTORY 233F	Political Thought in Early Modern Britain	4-5
HISTORY 242J	London Low Life in the Nineteenth Century	5
HISTORY 248	Religion, Radicalization and Media in Africa since 1945	4-5
HISTORY 257E	History of Conservatism	4-5
HISTORY 282J	Disasters in Middle Eastern History	5

Geographical Cluster (four courses): Students select four History courses in one geographic area. These are: Europe, Britain and the countries of the former British Empire, Asia, North America, Latin America, the Middle East, or Africa. These four courses must be taken in addition to the two methodological courses required above.

Interdisciplinary Cluster (four courses): Four courses, taken outside the Department of History, must address the literature and arts, broadly defined, of the area chosen for the geographic concentration. The student's advisor must pre-approve all courses in this cluster; these courses may not be double-counted towards a minor or major other than History.

Research Seminar for Majors: HISTORY 209S Research Seminar for Majors fulfills Writing in the Major requirement.

General Requirements: Like all History majors, students in History Interdisciplinary Programs must complete two lecture courses (one Europe or U.S, one Africa, Asia, Middle East or Latin America), two 200-level courses, a Sources and Methods seminar, and a Research Seminar for Majors.

History of Science and Medicine Track

The History of Science and Medicine (HS&M) track is a collaborative program of the Department of History and the Program in the History and Philosophy of Science. The major is designed for students interested in

both sciences and humanities, and in the interactions between the two. It is also especially useful for students contemplating medical school, since it allows them to study the history of medicine, biology, and allied sciences in conjunction with fulfilling the premed science requirements.

		Units
Gateway Course		
Students must complete the following:		
HISTORY 140A	The Scientific Revolution	5
Methodological Cluster		
These History courses focus on the history of science and medicine. Students must take three courses.		
For 2020-21, these courses are:		
HISTORY 42N	The Missing Link	4
HISTORY 140	World History of Science	5
HISTORY 144	Sex, Gender, and Intersectional Analysis in Science, Medicine, Engineering, and Environment	5
HISTORY 179C	The Ethical Challenges of the Climate Catastrophe	3-5
HISTORY 203C	History of Ignorance	5
HISTORY 203F	Racial Justice in the Nuclear Age	5
HISTORY 204D	Advanced Topics in Agnotology	4-5
HISTORY 204G	War and Society	4-5
HISTORY 234P	The Age of Plague: Medicine and Society, 1300-1750	5
HISTORY 235L	Alien Imaginations: Extraterrestrial Speculations in Modern European History	5
HISTORY 240	The History of Evolution	4-5
HISTORY 243C	People, Plants, and Medicine: Colonial Science and Medicine	4-5
HISTORY 243G	Tobacco and Health in World History	4-5

Geographical Cluster (four courses): Students select four History courses in one geographic area. Examples include: Europe, Britain and the countries of the former British Empire, Asia, North America, Latin America, the Middle East, or Africa. These four courses must be taken in addition to the three methodological cluster courses. Courses in the history of science, technology, and medicine that have a geographic focus may be used to fulfill this requirement, but cannot be double-counted in the methodological cluster.

Interdisciplinary Cluster (four courses): Students select four courses in scientific disciplines and/or in philosophy of science, anthropology of science, or sociology of science. These courses require faculty advisor pre-approval.

Research Seminar for Majors: HISTORY 209S Research Seminar for Majors fulfills the Writing in the Major requirement.

General Requirements: As with all History majors, students in History Interdisciplinary Programs must complete two lecture courses (one Europe or U.S., one Africa, Asia, Middle East or Latin America), two 200-level courses, a Sources and Methods seminar, and a Research Seminar for Majors.

History and Law Track

The History and Law (HL) interdisciplinary track is for students who want to explore the intersections between historical and legal studies. The HL curriculum focuses on the role of legal institutions, policies, and structures in various societies. HL track majors enroll in at least four History department courses that focus on issues of law in civil societies and four courses that provide a geographic concentration. In addition, students enroll in four courses outside History that provide disciplinary or interdisciplinary perspectives on the role of law in shaping societies and a Research Seminar for Majors.

Gateway Course: There is no gateway course for this track. Instead, students take an extra course in the Methodological cluster.

		Units
Methodological Cluster		
Students enroll in at least four History department courses, including courses outside History taught by faculty affiliated with the department, that focus on how law, policies, constitutions, and legal structures affect the development of various societies. Note: The Methodological Cluster for this HIP contains one extra course since there is no Gateway course.		
For 2020-21, these courses are:		
HISTORY 63N	The Feminist Critique: The History and Politics of Gender Equality	3-4
HISTORY 102A	The Romans	3-5
HISTORY 105C	Human Trafficking: Historical, Legal, and Medical Perspectives	5
HISTORY 133B	Revolutionary England: The Stuart Age	5
HISTORY 134A	The European Witch Hunts	5
HISTORY 150A	Colonial and Revolutionary America	5
HISTORY 150B	Nineteenth Century America	5
HISTORY 150C	The United States in the Twentieth Century	5
HISTORY 179C	The Ethical Challenges of the Climate Catastrophe	3-5
HISTORY 187	The Islamic Republics: Politics and Society in Iran, Afghanistan and Pakistan	5
HISTORY 200A	Doing Legal History	5
HISTORY 201A	The Global Drug Wars	4-5
HISTORY 202F	Surveillance States and Societies	4-5
HISTORY 203C	History of Ignorance	5
HISTORY 204D	Advanced Topics in Agnotology	4-5
HISTORY 204G	War and Society	4-5
HISTORY 211	Out of Eden: Deportation, Exile, and Expulsion from Antiquity to the Renaissance	4-5
HISTORY 222	Crime and Punishment in Early Modern Europe and Russia	4-5
HISTORY 224A	The Soviet Civilization	4-5
HISTORY 233F	Political Thought in Early Modern Britain	4-5
HISTORY 243C	People, Plants, and Medicine: Colonial Science and Medicine	4-5
HISTORY 243G	Tobacco and Health in World History	4-5
HISTORY 251J	The End of American Slavery, 1776-1865	4-5
HISTORY 253F	Thinking the American Revolution	4-5
HISTORY 257E	History of Conservatism	4-5
HISTORY 281K	Departures: Late Ottoman Displacements of Muslims, Christians, and Jews, 1853-1923	5
HISTORY 283F	Capital and Crisis in the Middle East and the World	5
HISTORY 284F	Empires, Markets and Networks: Early Modern Islamic World Between Europe and China, 1400-1900	4-5

Geographical Cluster (four courses): Students select four History courses in one geographic area. These are: Europe, Britain and the countries of the former British Empire, Asia, North America, Latin America, the Middle

East, or Africa. These four courses must be taken in addition to the three methodological courses required above.

Interdisciplinary Cluster (four courses): Students may select from courses offered in the School of Law, School of Education, and others as appropriate. *Note:* Courses in the School of Law and School of Education require the permission of the instructor before undergraduate students can enroll, since these are graduate-level courses.

Research Seminar for Majors: HISTORY 209S Research Seminar for Majors fulfills the Writing in the Major requirement.

General Requirements: Like all history majors, students in History Interdisciplinary Programs must complete two lecture courses (one Europe or U.S., one Africa, Asia, Middle East or Latin America), two 200-level courses, a Sources and Methods seminar, and a Research Seminar for Majors.

Public History/Public Service Track

The Public History/Public Service (PH/PS) interdisciplinary history track is designed for students who wish to include in their course of studies the application of historical study in (1) public settings such as museums and heritage sites, national and state parks, public agencies, and private foundations, and (2) public service settings in non-profit organizations, public agencies, and educational institutions.

PH/PS majors enroll in a gateway course on public history and public service and in four History department courses that provide a geographic concentration as well as completing a two-course methodological requirement. PH/PS majors must also complete an internship through a regularly offered community engaged learning course or through a summer internship or fellowship. In addition, students, in consultation with the PH/PS faculty coordinator,must complete four courses from outside the History department (see the annual listing of community engaged learning courses [Cardinal Courses] provided by the Haas Center for Public Service).

Gateway Course (one course): HISTORY 200R Doing Community History: Asian Americans and the Pandemic

Geographical Cluster (four courses): Students select four History courses in one geographic area, such as the United States, Europe, Latin America, Asia, Middle East, or Africa.

Interdisciplinary Cluster (four courses): Students select four courses from outside the History department that addresses a theme or topic of interest. The faculty coordinator must pre-approve all courses in this cluster.

Methodological Cluster (two courses): Students must enroll in one Sources and Methods seminar course and one additional 200-level History course. The Writing in the Major (WIM) requirement must be completed in a Research Seminar for Majors.

Public Service/Service Learning Internship (one course): Students must engage in at least a one quarter internship through a community engaged learning course or through a full-time public service or public history summer internship or fellowship. This internship must be pre-approved by the faculty coordinator.

Students who complete a paid summer internship in lieu of one for academic credit must enroll in 3 units of HISTORY 299S Undergraduate Directed Research and Writing with the faculty coordinator of the PH/PS track and write a 20-page research paper related to their internship work. This research paper is in addition to that required for the Research Seminar for Majors.

The following History community engaged learning courses are offered in 2020-21:

		Units
HISTORY 6W	Community-Engaged Learning Workshop on Human Trafficking - Part I	3
HISTORY 7W	Community-Engaged Learning Workshop on Human Trafficking - Part II	3
HISTORY 200J	Doing Oral History	5
HISTORY 200M	Doing Digital History	5
HISTORY 200R	Doing Community History: Asian Americans and the Pandemic	5
HISTORY 201A	The Global Drug Wars	4-5

If students elect to fulfill the internship requirement through a History Department service-learning course, they must enroll in an additional course in either the geographical cluster or the Interdisciplinary cluster in order to complete the 13 courses required for the major.

Research Seminar for Majors: HISTORY 209S Research Seminar for Majors fulfills Writing in the Major requirement.

General Requirements: As with all history majors, students in History Interdisciplinary Programs must complete two lecture courses (one Europe or US, one Africa, Asia, Middle East or Latin America), two 200-level courses, a Sources and Methods seminar, and a Research Seminar for Majors.

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Additional Information

Overseas Studies or Study Abroad

Courses offered by Stanford's Bing Overseas Studies Program and appearing on the History department's cognate course list automatically receive credit towards the major or minor in History. Course work completed in non-Stanford Study Abroad programs is evaluated for major/minor credit by designated History department faculty on a case-by-case basis. Students in non-Stanford Study Abroad programs are advised to take classes with reading and writing components comparable to History department course loads.

History Secondary Teacher's Credential

Applicants for the Single Subject Teaching Credential (Secondary) in the social studies may obtain information regarding this program from the Credential Administrator, School of Education.

Honors Program

For a limited number of majors, the department offers a special program leading to Departmental Honors in History. Students accepted for this program, in additional to fulfilling the general requirements stated above, begin work as early as Spring Quarter of the junior year and complete the essay by mid-May of the senior year. In addition to HISTORY 299H (https://exploredegrees.stanford.edu/search/?P=HISTORY%20299H) Junior Honors Colloquium, students must enroll in 11-15 units of Senior Research in the senior year, to be distributed as best fits their specific project. For students in the Honors program, Senior Research units (HISTORY 299A (https://exploredegrees.stanford.edu/search/?P=HISTORY%20299A) Senior Research I, HISTORY 299B (https://exploredegrees.stanford.edu/search/?P=HISTORY%20299B) Senior Research II, HISTORY 299C (https://exploredegrees.stanford.edu/search/?P=HISTORY%20299C) Senior Research III) are taken in addition to the thirteen required courses in History.

To enter this program, the student must be accepted by a member of the department who agrees to advise the research and writing of the essay, and must complete the Junior Honors Colloquium (299H) offered in Winter Quarter. An exception to the latter requirement may be made for those studying overseas Winter Quarter of the junior year, but such

students should consult with the director of the honors program, if possible, prior to going overseas. Students who study abroad for the entire junior year and want to write an honors thesis should plan to take the Research Seminar for Majors in the first quarter following completion of the study abroad program. Under exceptional circumstances, students are admitted to the program in Autumn Quarter of the senior year. Such students must not enroll in any HISTORY 299A (https://exploredegrees.stanford.edu/search/?P=HISTORY%20299A) Senior Research I, HISTORY 299B (https://exploredegrees.stanford.edu/search/?P=HISTORY%20299B) Senior Research II, HISTORY 299C (https://exploredegrees.stanford.edu/search/?P=HISTORY%20299C) Senior Research III, units until HISTORY 209S (https://exploredegrees.stanford.edu/search/?P=HISTORY%20209S) Research Seminar for Majors, has been completed.

In considering an applicant for such a project, the advisor and director of the honors program take into account general preparation in the field of the project and expect a GPA of at least 3.5 in the student's previous work in History and a 3.3 in overall University work. Students completing the thesis with a grade of 'B+' or higher are eligible for Departmental Honors in History. To enter the Honors program, apply at the Department of History office.

Outstanding honors essays may be considered for the University's Robert M. Golden Medal, as well as for departmental James Birdsall Weter prize.

Honors Program Requirements

To graduate with departmental honors in History, students must:

1. complete HISTORY 299H (https://exploredegrees.stanford.edu/search/?P=HISTORY%20299H) Junior Honors Colloquium in the junior year.
2. maintain a GPA of at least 3.3 in overall University work and a 3.5 in the History major during the final 5 quarters of enrollment/thesis preparation, or obtain the consent of the Director of the Honors Program.
3. select both a primary thesis advisor (who is a member of the Stanford History faculty) and a secondary advisor (who is a Stanford University faculty member with an active teaching appointment for the duration of academic year 2020-21) no later than Autumn Quarter of the senior year.
4. submit a completed honors thesis on May 4, 2020 by noon that meets submission requirements and receives a grade of 'B+' or better.
5. enroll in the 11-15 units of Senior Research as specified below.
6. participate in mandatory Honors Program activities throughout senior year (including, but not limited to, writing workshops and the annual Honors Presentation Luncheon) as specified in the Honors Program Handbook.

HISTORY 299A (https://exploredegrees.stanford.edu/search/?P=HISTORY%20299A) Senior Research I, HISTORY 299B (https://exploredegrees.stanford.edu/search/?P=HISTORY%20299B) Senior Research II, HISTORY 299C (https://exploredegrees.stanford.edu/search/?P=HISTORY%20299C) Senior Research III do not fulfill any history major requirements other than honors, but the units do count towards the 180 required for B.A. degree conferral.

		Units
Required Course—To be taken in the junior year:		
HISTORY 299H	Junior Honors Colloquium	1
Required Course—Recommended to be taken in junior year:		
HISTORY 209S	Research Seminar for Majors	5
To be taken in the senior year:		
HISTORY 299A	Senior Research I	1-5
HISTORY 299B	Senior Research II	1-5
HISTORY 299C	Senior Research III	1-5

An exception (for HISTORY 299H (https://exploredegrees.stanford.edu/search/?P=HISTORY%20299H) Junior Honors Colloquium) may be made for those studying overseas Winter Quarter of the junior year, but such students should consult with the Director of the Honors Program prior to going overseas.

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Joint Major Program in History and Computer Science

The joint major program (JMP) was discontinued at the end of the academic year 2018-19. Students may no longer declare this program. All students with declared joint majors are permitted to complete their degree; faculty and departments are committed to providing the necessary advising support.

See the "Joint Major Program (p. 33)" section of this bulletin for a description of University requirements for the JMP. See also the Undergraduate Advising and Research JMP (https://majors.stanford.edu/more-ways-explore/joint-majors-csx/) web site and its associated FAQs.

Students completing the JMP receive a B.A.S. (Bachelor of Arts and Science).

History Major Requirements in the Joint Major Program

See the "Computer Science Joint Major Progra (p. 714)m" section of this bulletin for details on Computer Science requirements.

Students majoring in the History and Computer Science joint major program fulfill all of the breadth, focus, and WIM requirements of the standard History major. Students in the JMP are excused from completing one elective course, reducing the required unit count of the History major from 63 to 59 units (i.e., from a minimum of 13 courses to 12 courses). All courses comprising the major must be taken for a letter grade.

For details on the requirements of the History major, see the Bachelor's tab (p. 1550) of this section of this bulletin.

Integrative Capstone Experience

One of the highlights of the JMP is an integrative capstone experience, which enables students to work with faculty mentors in the two departments to devise and complete original projects that bring together the different fields. Some students may choose to complete capstone projects under the auspices of HISTORY 209S Research Seminar for Majors which is the required Writing in the Major requirement for all History majors including those in the JMP. Others may choose to complete their capstones under the auspices of other courses in Computer Science or History, or in the context of senior honors projects in one or the other or both departments. In keeping with University policy, units obtained from a capstone course taken within a particular department can be applied to only that department's requirements.

Dropping a Joint Major Program

To drop the joint major, students must submit the Declaration or Change of Undergraduate Major, Minor, Honors, or Degree Program (https://stanford.box.com/change-UG-program/). Students may also consult the Student Services Center (http://studentservicescenter.stanford.edu/) with questions concerning dropping the joint major.

Transcript and Diploma

Students completing a joint major graduate with a B.A.S. degree. The two majors are identified on one diploma separated by a hyphen. There will be a notation indicating that the student has completed a "Joint Major." The two majors are identified on the transcript with a notation indicating that the student has completed a "Joint Major."

Minor in History

Students must declare the minor in History no later than Autumn Quarter of the senior year via Axess. Minor declarations are approved by the Department of History and confirmation is sent via email to the student.

Degree Requirements

Candidates for the minor in History must complete six courses, at least three of which must have a field or thematic focus. Students completing the minor may choose to concentrate in such fields as African, American, Asian, British, European (medieval, early modern, or modern), Russian and East European history, comparative empires and cultures, or such thematic topics as the history of gender, the family, religion, technology, or revolution. Students may also petition to have a concentration of their own design count toward the minor.

- All six courses must be of at least 3 units each and must be taken for a letter grade.
- The student must maintain a grade point average (GPA) in History courses of 2.0 (C) or higher.
- Two of the six courses must be small-group in format (Stanford Introductory Seminars, Sources and Methods Seminars, departmental colloquia, and research seminars).
- History courses taken at Stanford overseas campuses may count toward the minor, but at least three of the six courses must be taken from Stanford History faculty.
- Advanced Placement credits do not fulfill any minor requirements.

Optional Courses for the Minor

History courses taken at non-Stanford Study Abroad programs may count toward the minor (provided the History Department approves them), but at least three of the six courses must be taken from Stanford History faculty. One course from certain Introduction to the Humanities courses and Thinking Matters courses (those taught by History faculty) may count toward the six-course requirement, but not for the three-course field of concentration. One Undergraduate Directed Research and Writing HISTORY 299S) course may count toward the minor, if taken for 3-5 units and for a letter grade. A maximum of three transfer courses may be used toward the minor.

Coterminal Master's Program in History

The department each year admits a limited number of undergraduates for coterminal M.A. degree in History. Coterminal applications are accepted during Autumn Quarter for admission in Spring Quarter. Applicants are responsible for checking their compliance with University coterminal requirements listed in the "Coterminal Bachelor's and Master's Degrees (p. 56)" section of this bulletin.

Admission

Applicants must meet the same general standards as those seeking admission to the M.A. program. Students must submit the Coterminal Online Application (https://applyweb.com/stanterm/), including a written statement of purpose, a transcript, GRE test scores, and three letters of recommendation, at least two of which should be from members of the Department of History faculty. To be competitive, coterminal applicants should have a 3.75 GPA in their undergraduate history major (or equivalent if they are entering without a History major.) The decision on admission rests with the department faculty upon recommendation by the graduate admissions committee.

Students must meet all requirements for both degrees. They must complete 15 full-time quarters (or the equivalent), or three full-time quarters after completing 180 units, for a total of 225 units. During the senior year they may, with the consent of the instructors, register for as many as two graduate courses. In the final year of study, they must complete at least three courses that fall within a single Ph.D. field.

The application filing deadline is December 1, 2020.

The coterminal M.A. program is not declarable on Axess.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Master of Arts in History

University requirements for the M.A. are described in the "Graduate Degrees (p. 65)" section of this bulletin.

The department requires the completion of nine courses (totaling not less than 45 units) of graduate work; seven courses of this work must be Department of History courses. Of the seven, one must be a seminar and four must be either graduate colloquia or graduate seminars. Directed reading may be counted for a maximum of 10 units. A candidate whose undergraduate training in history is deemed inadequate must complete nine courses of graduate work in the department. The department does not recognize for credit toward the M.A. degree any work that has not received the grade of 'A' or 'B.'

Terminal M.A. Program

Applicants who do not wish to continue beyond the M.A. degree are admitted to this program at the discretion of the faculty in individual fields (U.S., modern Europe, and so on). Students admitted may not apply to enter the Ph.D. program in History during the course of work for the M.A. degree.

M.A. in Teaching (History)

The department cooperates with the School of Education in offering the Master of Arts in Teaching degree. For the general requirements, see the "Graduate School of Education (p.)" section of this bulletin.

For certain additional requirements made by the Department of History, contact the department office. Candidates must possess a teaching credential or relevant teaching experience.

Admission

Applicants for admission to graduate work must take the General Test of the Graduate Record Examination. It may be taken at most American colleges and in nearly all foreign countries. For details, see the Graduate Admissions (http://gradadmissions.stanford.edu) web site.

Students admitted to graduate standing do not automatically become candidates for a graduate degree. With the exception of students in the terminal M.A. program, they are admitted with the expectation that they will be working toward the Ph.D. degree and may become candidates to receive the M.A. degree after completing three quarters of work.

The application filing deadline is December 1, 2020.

Doctor of Philosophy in History

University requirements for the Ph.D. are described in the "Graduate Degrees (p. 65)" section of this bulletin.

Students planning to work for the doctorate in history should be familiar with the general degree requirements of the University outlined in the "Graduate Degrees (p. 65)" section of this bulletin. Those interested in applying for admission to the M.A. and Ph.D. programs should contact the graduate program coordinator in the History department. Online applications are available in September of the year prior to intended enrollment. The application filing deadline is December 1, 2020. Applicants must file a report of their general scores on the Graduate Record Examination and submit a writing sample of 10-25 pages on a historical topic. Successful applicants for the M.A. and Ph.D. programs may enter only in Autumn Quarter.

Upon enrollment in the graduate program in History, the student has a member of the department designated as an adviser with whom to plan the Ph.D. program. Much of the first two years of graduate study is spent taking courses, and, from the outset, the student should be aware that the ultimate objective is not merely the completion of courses but preparation for general examinations and for writing a dissertation.

Admission to the Department of History in the graduate division does not establish any rights respecting candidacy for an advanced degree. At the end of the first year of graduate study, students are evaluated by the faculty and given a progress report. A decision as to whether the student is admitted to candidacy for the Ph.D. is normally made by the start of the student's third year.

After the completion of certain further requirements, students must apply for acceptance for candidacy for the doctorate in the graduate division of the University.

Admission

Applicants for admission to graduate work must take the General Test of the Graduate Record Examination. It may be taken at most American colleges and in nearly all foreign countries. For details, see the Office of Graduate Admissions (http://gradadmissions.stanford.edu) web site.

Students admitted to graduate standing do not automatically become candidates for a graduate degree. With the exception of students in the terminal M.A. program, they are admitted with the expectation that they will be working toward the Ph.D. degree and may become candidates to receive the M.A. degree after completing three quarters of work.

The application filing deadline is December 1, 2020.

Degree Requirements

Required Courses

		Units
For all first-year Ph.D. students		
HISTORY 304	Approaches to History	4-5
HISTORY 305	Graduate Pedagogy Workshop	1
For first-year and second-year Ph.D students in American History		
HISTORY 351A	Core in American History, Part I	4-5
HISTORY 351B	Core in American History, Part II	4-5
HISTORY 351C	Core in American History, Part III	4-5
HISTORY 351D	Core in American History, Part IV	4-5
HISTORY 351E	Core in American History, Part V	4-5
HISTORY 351F	Core in American History, Part VI	4-5

Other Graduate Core Colloquia required for Ph.D. students studying in fields other than the above are listed in the Department of History's Graduate Handbook.

University Oral Examinations

The student is expected to take the University oral examination in the major concentration in the third graduate year.

Dissertation

The student must complete and submit a dissertation which is the result of independent work and is a contribution to knowledge. It should evidence the command of approved techniques of research, ability to organize findings, and competence in expression. For details and procedural information, inquire in the department.

Dissertation Committee

The reading committee consists of the principal dissertation adviser (first reader), and two additional members of the Department (second and third readers) agreed upon by the adviser and the student.

Financial Support

Students who are admitted with financial support are provided multiple years of support through fellowships, teaching and research assistantships, and tuition grants. Applicants should indicate on the admissions application whether they wish to be considered for such support. No separate application for financial aid is required.

U.S. citizens and permanent resident aliens who are interested in area language studies in East Asia, Africa, and the republics of the former Soviet Union may request a Foreign Language and Area Studies (FLAS) fellowship application from the FLAS coordinator of the respective programs offering the FLAS (CEAS, CAS, CREEES). The FLAS application deadlines are in January and February (CAS).

Resources

The degree requirements section relates to formal requirements, but the success of a student's graduate program depends in large part on the quality of the guidance received from faculty and on the library resources available. Prospective graduate applicants are advised to study the list of History faculty and the courses this faculty offers. As to library resources, no detailed statement is possible in this bulletin, but areas in which library resources are unusually strong are described following.

The University Library maintains strong general collections in almost all fields of history. It has a very large microtext collection, including, for instance, all items listed in Charles Evans' American Bibliography, and in the Short-Title Catalogues of English publications, 1474-1700, and virtually complete microfilmed documents of the Department of State to 1906. It also has a number of valuable special collections including the Borel Collection on the History of California; many rare items on early American and early modern European history; the Brasch Collection

on Sir Isaac Newton and scientific thought during his time; the Gimon Collection on French political economy, and other such materials.

The rich collection of the Hoover Institution on the causes, conduct, and results of WW I and WW II are being augmented for the post-1945 period. The materials include government documents, newspaper and serial files, and organization and party publications (especially the British and German Socialist parties). There are also important manuscript collections, including unpublished records of the Paris Peace Conference of 1919 and the Herbert Hoover archives, which contain the records of the Commission for Relief in Belgium, the American Relief Administration, the various technical commissions established at the close of WW I for reconstruction in Central and Eastern Europe, the personal papers of Herbert Hoover as United States Food Administrator, and other important personal papers. Other materials for the period since 1914 relate to revolutions and political ideologies of international importance; colonial and minority problems; propaganda and public opinion; military occupation; peace plans and movements; international relations; international organizations and administration including the publications of the United Nations, as well as principal international conferences. The Hoover Institution also possesses some of the richest collections available anywhere on the British labor movement; Eastern Europe, including the Soviet Union; East Asia (runs of important newspapers and serials and extensive documentary collections, especially for the period of WW II); and Africa since 1860, especially French-speaking Africa, the former British colonies, and South Africa.

Requirements

1. In consultation with the adviser, students select an area of study from the list below in which to concentrate their study and later take the University oral examination. The major concentrations are:
   - Europe, 300-1500
   - Europe, 1400-1800
   - Europe since 1700
   - Jewish History
   - Russia
   - Eastern Europe
   - Middle East and Central Asia
   - South Asia
   - East Asia before 1600
   - China since 1600
   - Japan since 1600
   - Korea since 1800
   - Africa
   - Britain and the British Empire since 1460
   - Latin America
   - The United States (including colonial America)
   - The History of Science and Medicine
   - Transnational, International, and Global
2. The department seeks to provide a core colloquium in every major concentration. Students normally enroll in this colloquium during the first year of graduate study.
3. Students are required to take two research seminars, at least one in the major concentration. Normally, research seminars are taken in the first and second years.
4. Each student, in consultation with the adviser, defines a secondary concentration. This concentration should represent a total of four graduate courses or their equivalents, and it may be fulfilled by working in a historical concentration or an interdisciplinary concentration. The historical concentrations include:
   a. One of the concentrations listed above (other than the student's major concentration).
   b. One of the concentrations listed below, which falls largely outside the student's major concentration:
      - The Ancient Greek World
      - The Roman World
      - Europe, 300-1000
      - Europe, 1000-1400
      - Europe, 1400-1600
      - Europe, 1600-1789
      - Europe, 1700-1871
      - Europe since 1848
      - England, 450-1460
      - Britain and the British Empire, 1460-1714
      - Britain and the British Empire since 1714
      - Russia to 1800
      - Russia since 1800
      - Eastern Europe to 1800
      - Eastern Europe since 1800
      - Jewish History
      - Middle East and Central Asia to 1800
      - Middle East and Central Asia since 1800
      - Africa
      - South Asia
      - China before 1600
      - China since 1600
      - Japan before 1600
      - Japan since 1600
      - Latin America to 1825
      - Latin America since 1810
      - The United States (including Colonial America) to 1865
      - The United States since 1850
      - The History of Science and Medicine
      - Transnational, International, and Global
   c. Work in a national history of sufficiently long time to span chronologically two or more major concentrations. For example, a student with Europe since 1700 as a major concentration may take France from 1000 to the present as a secondary concentration.
   d. A comparative study of a substantial subject across countries or periods. The secondary concentration requirement may also be satisfied in an interdisciplinary concentration. Students plan these concentrations in consultation with their advisers. Interconcentrations require course work outside the Department of History which is related to the student's training as a historian. Interdisciplinary course work can either add to a student's technical competence or broaden his or her approach to the problems of the research concentration.
5. Each student, before conferral of the Ph.D., is required to satisfy the department's teaching requirement.
6. There is no University or department foreign language requirement for the Ph.D. degree. A reading knowledge of one or more foreign languages is required in concentrations where appropriate. The faculty in the major concentration prescribes the necessary languages. In no concentration is a student required to take examinations in more than two foreign languages. Certification of competence in commonly taught languages (that is, French, German, Italian, Portuguese, Russian, and Spanish) for candidates seeking to fulfill the language requirement in this fashion is done by the appropriate language department of the University. Certification of competence in other languages is determined in a manner decided on by faculty in the major concentration. In either case, certification of language competence must be accomplished before a student takes the University oral examination.

7. The student is expected to take the University oral examination in the major concentration in the third graduate year.
8. The student must complete and submit a dissertation which is the result of independent work and is a contribution to knowledge. It should evidence the command of approved techniques of research, ability to organize findings, and competence in expression. For details and procedural information, inquire in the department.

Ph.D. Minor in History

Students pursuing a Ph.D. other than in History may apply for the Ph.D. Minor in History. Ph.D. students cannot pursue a minor in their own program. The minimum University requirement for a Ph.D. minor is 20 units of History course work at the graduate level (courses numbered 300 and above) at Stanford. All units should be in a single field. Units taken for the minor can be counted as part of the overall requirement for the Ph.D. of 135 units taken at Stanford. Courses used for a minor may not be used to meet the requirements for a master's degree.

Degree Requirements

20 units of History course work at the graduate level (HISTORY 300-399W and 400-499X) at Stanford. All units should be in a single field.

Optional Courses for the Minor

A Ph.D. minor form outlining the program of study must be approved by the major and minor departments.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of History will accept courses taken with a CR/NC or S/NC grading basis toward the major for the entire period of remote learning in AY 2020-21, with the exception of the honors thesis which must be taken for a letter grade.

Graduate Degree Requirements

Grading

The Department of History expects graduate students to take classes for a letter grade and they should enroll for the letter grade option when available in Axess. If a problem arises over the course of the quarter, the student may request an extension or withdraw from the course (in accordance with University rules). The department will work with students to help in any way it can.

Graduate Advising Expectations

The Department of History is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

Upon enrolling, all students plan their work under the direction of a faculty member designated by the Department as their adviser. Entering students should meet with their adviser to discuss the selection of courses, choice of major and secondary fields, and the overall plan of their graduate programs. Faculty advisers and graduate student advisees meet at least once a quarter to assess the advisee’s course of study, performance over the past quarter, and plans for the next quarter’s program of study. Students should consult with their advisers on all academic matters. Faculty should help their advisees plan for orals, research grant applications, research projects, and the dissertation. Until a student is advanced to candidacy, the Director of Graduate Studies reviews the student's quarterly transcript and the adviser's evaluation.

Normally the original adviser remains in this capacity during a student’s period of graduate study. However, in the event that a student wishes to change the admitting adviser, they may do so after consultation with and approval of the two faculty members involved. The necessary forms are available from the Graduate Program Coordinator.

The Director of Graduate Studies supervises the Graduate Program in the Department. The Director’s duties include approving the committees for the University oral examination, dissertation prospectus, and dissertation, certifying graduate students’ progress to degree and completion of University and Departmental requirements, and chairing the Department’s Committee on Graduate Studies.

For a statement of University policy on graduate advising, see the "Graduate Advising (https://exploredegrees.stanford.edu/graduatedegrees/#advisingandcredentialstext)" section of this bulletin.

Emeriti: (Professors) Barton J. Bernstein, Joel Beinin, Albert Camarillo, Clayborne Carson, Peter Duus, Terence Emmons, David M. Kennedy, David Holloway, Carolyn Lougee Chappell, Mark Mancall, Peter Paret, Jack N. Rakove, Paul A. Robinson, James J. Sheehan, Peter Stansky, Lyman P. Van Slyke, Richard White; (Senior Lecturer) Joseph J. Corn

Chair: Caroline Winterer

Vice Chair: Jessica Riskin

Director of Graduate Studies: Londa Schiebinger

Director of Graduate Teaching: David R. Como

Director of Undergraduate Studies: Fiona Griffiths

Honors Director: James P. Daughton

Professors: Keith M. Baker, James T. Campbell, Gordon Chang, Robert Crews, David R. Como, Paula Findlen, Zephyr Frank, Estelle Freedman, Fiona Griffiths, Stephen Haber, Gabrielle Hecht, Nancy S. Kollmann, Mark E. Lewis, Thomas S. Mullaney, Norman M. Naimark, Robert Proctor, Jessica Riskin, Richard L. Roberts, Aron Rodrigue, Priya Satia, Walter

Scheidel, Londa Schiebinger, Matthew H. Sommer, Kären E. Wigen, Caroline Winterer, Steven J. Zipperstein

Associate Professors: Jennifer Burns, James P. Daughton, Allyson V. Hobbs, Ana Raquel Minian, Yumi Moon, Laura Stokes, Jun Uchida, Amir Weiner, Ali Yaycioglu

Assistant Professors: Nora E. Barakat, Joel Cabrita, Rowan Dorin, Jonathan Gienapp, Kathryn Olivarius, Steven M. Press, Mikael D. Wolfe

Courtesy Professors: Gregory Ablavsky, Rabia Belt, Giovanna Ceserani, Daniel Edelstein, Lawrence Friedman, Avner Greif, Amalia Kessler, David F. Labaree, Kathryn Gin Lum, Reviel Netz, Richard P. Saller, Fred Turner, Sam Wineburg

Senior Lecturers: Katherine Jolluck, Martin W. Lewis

Lecturer: Gil-li Vardi, J'Nese Williams, Adrien Zakar

Overseas Studies Courses in History

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPAUSTL 40	Australian Studies: History, Society and Culture Down Under	3
OSPBER 70	The Long Way to the West: German History from the 18th Century to the Present	4-5
OSPBER 79	Political Economy of Germany in Europe: an Historical-Comparative Perspective	4-5
OSPBER 83	Refugees and Germany	3-4
OSPCPTWN 38	Genocide: African Experiences in Comparative Perspective	3-5
OSPFLOR 47	Faith, Science, and the Classical Tradition in Renaissance Florence	4
OSPFLOR 49	On-Screen Battles: Filmic Portrayals of Fascism and World War II	5
OSPFLOR 58	Space as History: Social Vision and Urban Change	4
OSPFLOR 115Y	Building the Cathedral and the Town Hall: Constructing and Deconstructing Symbols of a Civilization	4
OSPHONGK 23	China Under Mao	4
OSPMADRD 47	Cultural Relations between Spain and the United States:Historical Perceptions and Influences, 1776-2	4
OSPOXFRD 41	Western Thought: Origins of Twentieth Century Semiotics	4-5
OSPOXFRD 81	Displacement and Identity in 20th Century Europe	4-5
OSPSANTG 20	Comparative Law & Society: Conflicts in the Structuring of Democratic Polities across Latin America	4-5
OSPSANTG 62	Topics in Chilean History	4-5
OSPSANTG 68	The Emergence of Nations in Latin America	4-5

Courses

HISTORY 1A. Global History: The Ancient World. 3-5 Units.
World history from the origins of humanity to the Black Death. Focuses on the evolution of complex societies, wealth, violence, hierarchy, and large-scale belief systems.
Same as: CLASSICS 76

HISTORY 1B. Global History: The Early Modern World, 1300 to 1800. 3-5 Units.
(Course is offered for 3 OR 5 units.) Topics include early globalization and cross-cultural exchanges; varying and diverse cultural formations in different parts of the world; the growth and interaction of empires and states; the rise of capitalism and the economic divergence of "the west"; changes in the nature of technology, including military and information technologies; migration of ideas and people (including the slave-trade); disease, climate, and environmental change over time. Designed to accommodate beginning students, non-majors, and more advanced history students.

HISTORY 1C. Global History: Modern Times. 3-5 Units.
History 1C explores the making of our modern world. It investigates the interconnectednhistories of revolution, war, imperialism, migration, race, slavery, democracy, rebellion, nnationalism, feminism, socialism, fascism, genocide, anti-colonialism, neoliberalism, and npopulist authoritarianism. Analyzing memoirs, novels, films, and other sources, we will ninvestigate how key political ideas have transformed societies, cultures, and economies nacross the globe from the late eighteenth century through to the present.

HISTORY 3D. Dangerous Ideas. 1 Unit.
Ideas matter. Concepts such as revolution, tradition, and hell have inspired social movements, shaped political systems, and dramatically influenced the lives of individuals. Others, like immigration, universal basic income, and youth play an important role in contemporary debates in the United States. All of these ideas are contested, and they have a real power to change lives, for better and for worse. In this one-unit class we will examine these "dangerous" ideas. Each week, a faculty member from a different department in the humanities and arts will explore a concept that has shaped human experience across time and space. Some weeks will have short reading assignments, but you are not required to purchase any materials.
Same as: ARTHIST 36, COMPLIT 36A, EALC 36, ENGLISH 71, ETHICSOC 36X, FRENCH 36, MUSIC 36H, PHIL 36, POLISCI 70, RELIGST 36X, SLAVIC 36

HISTORY 3E. Michelle Obama in American Culture. 1 Unit.
Never before has the United States had a First Lady like Michelle Obama. During her eight years in the White House, Michelle Obama transformed traditional meanings of womanhood, marriage, motherhood, and style and created new possibilities for what it means to be strong and what it means to be beautiful. No First Lady has ever been so scrutinized but also so beloved: from her J. Crew dresses to her Let's Move campaign, from her vegetable gardens to her chiseled arms, and from her powerful speeches to her casual and always authentic personality. This class examines the impact on American culture of the most popular First Lady in American history.
Same as: AFRICAAM 3E, AMSTUD 3E, CSRE 3E, FEMGEN 3E

HISTORY 3F. The Changing Face of War: Introduction to Military History. 3-5 Units.
Introduces students to the rich history of military affairs and, at the same time, examines the ways in which we think of change and continuity in military history. How did war evolve from ancient times, both in styles of warfare and perceptions of war? What is the nature of the relationship between war and society? Is there such a thing as a Western way of war? What role does technology play in transforming military affairs? What is a military revolution and can it be manufactured or induced? Chronologically following the evolution of warfare from Ancient Greece to present day so-called new wars, we will continuously investigate how the interdependencies between technological advances, social change, philosophical debates and economic pressures both shaped and were influenced by war. Students satisfying the WiM requirement for the major in International Relations, must enroll in INTNLREL 103F course listing.
Same as: HISTORY 103F, INTNLREL 103F

HISTORY 3G. Hamilton: An American Musical. 1 Unit.
"Hamilton" is one the most popular and most celebrated musicals in American history. It has received 11 Tony Awards, including best musical, and 16 Tony nominations, the most nominations in Broadway history. It won the Pulitzer Prize and a Grammy Award. The musical draws on the language and rhythms of hip-hop and R & B, genres that are underrepresented in the musical theater tradition. "Hamilton" has redefined the American musical, particularly in terms of sound, casting, and storytelling. What explains the deep cultural impact and acclaim for this play?n nThis interdisciplinary course examines Alexander Hamilton and his world as well as Hamilton: An American Musical through a series of lectures from faculty in History, Theater and Performance Studies, English, Music, and Writing and Rhetoric.
Same as: AFRICAAM 5I, AMSTUD 5I, CSRE 5I

HISTORY 3J. Human Trafficking: Historical, Legal, and Medical Perspectives. 1 Unit.
Interdisciplinary approach to understanding the extent and complexity of the global phenomenon of human trafficking, especially for forced prostitution, labor exploitation, and organ trade, focusing on human rights violations and remedies. Provides a historical context for the development and spread of human trafficking. Analyzes the current international and domestic legal and policy frameworks to combat trafficking and evaluates their practical implementation.

HISTORY 3N. Terrorism. 4 Units.
Why do we categorize some acts of violence as terrorism? How do the practitioners of such violence legitimize their actions? What are the effects of terror on culture, society, and politics? This course explores these questions around the globe from the nineteenth century to the present. Topics include the Russian populists, Ku Klux Klan, IRA, al Qaida, state terror, and the representation of terrorism in law, journalism, literature, film, and TV.

HISTORY 3S. A Global History of the Apocalypse: Millenarian Movements in the Modern World. 5 Units.
This course will examine the rise, fall, and legacy of modern millenarian movements-- movements that claim that our corrupt world is about to be swept away, to be replaced with a particular version of paradise-- in a global perspective. Drawing on an array of sources ranging from proclamations, diaries, criminal confessions, newspaper accounts, cartoons, songs, photographs, and films, we will explore what, if anything, these movements had in common, and their connections to and influences on one another.

HISTORY 4N. A World History of Genocide. 3-5 Units.
Reviews the history of genocide from ancient times until the present. Defines genocide, both in legal and historical terms, and investigates its causes, consequences, and global dimensions. Issues of prevention, punishment, and interdiction. Main periods of concern are the ancient world, Spanish colonial conquest; early modern Asia; settler genocides in America, Australia, and Africa; the Armenian genocide and the Holocaust; genocide in communist societies; and late 20th century genocide.
Same as: JEWISHST 4N

HISTORY 5C. Human Trafficking: Historical, Legal, and Medical Perspectives. 3 Units.
(Same as History 105C. History majors and others taking 5 units, enroll in 105C.) Interdisciplinary approach to understanding the extent and complexity of the global phenomenon of human trafficking, especially for forced prostitution, labor exploitation, and organ trade, focusing on human rights violations and remedies. Provides a historical context for the development and spread of human trafficking. Analyzes the current international and domestic legal and policy frameworks to combat trafficking and evaluates their practical implementation. Examines the medical, psychological, and public health issues involved. Uses problem-based learning. Required weekly 50-min. discussion section, time TBD. Students interested in service learning should consult with the instructor and will enroll in an additional course.
Same as: CSRE 5C, FEMGEN 5C, INTNLREL 5C

HISTORY 5Q. The History of Information: From Movable Type to Machine Learning. 4 Units.
Information has a history-- and it's not the one you've been told by Silicon Valley. In a series of propulsive, empirically rich, and provocative lectures and discussions, this course deep-dives into the history of information and IT, including moveable type, telegraphy, typewriting, personal computing, gaming, social media, algorithms, machine learning, Digital Humanities, and more. You will leave the course with entirely new perspectives on information, including how IT shapes-- and is shaped by-- culture, nationality, gender, ethnicity, economy, and environment.

HISTORY 5S. Comparative Partitions: Religion, Identity, and the Nation-State. 5 Units.
This course looks at demands for representation made by religious minority communities, specifically by Indian Muslim and European Jewish intellectuals, in the twentieth century. We will explore what national belonging means from the perspective of minorities against the backdrop of global discussions of anticolonialism, national self determination, and equal representation. Through primary sources, namely political tracts and speeches, oral histories, literary sources, and historical maps, we question how authors from different backgrounds constructed religious communities as nations in need of states.
Same as: FEMGEN 5S

HISTORY 6W. Community-Engaged Learning Workshop on Human Trafficking - Part I. 3 Units.
Considers purpose, practice, and ethics of service learning. Provides training for students' work in community. Examines current scope of human trafficking in Bay Area, pressing concerns, capacity and obstacles to effectively address them. Students work with community partners dedicated to confronting human trafficking and problems it entails on a daily basis. Must currently be enrolled in or have previously taken History 5C/105C (FemGen 5C/105C, HumBio 178H, IR 105C, CSRE 5C/105C). (Cardinal Course certified by the Haas Center).
Same as: FEMGEN 6W, HUMRTS 6W

HISTORY 7W. Community-Engaged Learning Workshop on Human Trafficking - Part II. 3 Units.
Prerequisite: HISTORY6W (FEMGEN 6W). Continuation of HISTORY 6W (FEMGEN 6W). Students will continue working on their projects with their community partners. Several class meetings and small group consultations throughout the quarter. (Cardinal Course certified by the Haas Center).
Same as: FEMGEN 7W, HUMRTS 7W

HISTORY 9N. How to Start Your Own Country: Sovereignty and State-Formation in Modern History. 3 Units.
What does it mean to start a country, or to acquire and possess sovereignty over a territory? This course will examine the historical evolution of fundamental concepts in our international system: state formation, statehood, and sovereignty. Each week will spotlight a case-study in which sovereignty and statehood have appeared greatly confused and hotly contested. These include: the UK-China lease for control of Hong Kong; the US Naval Station in Guantanamo Bay; the corporate state of the legendary British East India Company; and Disney World.

HISTORY 9R. Humanities Research Intensive. 2 Units.
Everyone knows that scientists do research, but how do you do research in the humanities? This five-day course, taught over spring break, will introduce you to the excitement of humanities research, while preparing you to develop an independent summer project or to work as a research assistant for a Stanford professor. Through hands-on experience with archival materials in Special Collections and the East Asia Library, you will learn how to formulate a solid research question; how to gather the evidence that will help you to answer that question; how to write up research results; how to critique the research of your fellow students; how to deliver your results in a public setting; and how to write an effective grant proposal. Students who complete this course become Humanities Research Intensive Fellows and receive post-program mentorship during spring quarter, ongoing opportunities to engage with faculty and advanced undergraduates, and eligibility to apply for additional funding to support follow-up research. Freshmen and sophomores only. All majors and undeclared students welcome. No prior research experience necessary. Enrollment limited: apply by 11/4/19 at hri-fellows.stanford.edu.
Same as: CLASSICS 9R, EALC 9R, ENGLISH 9R

HISTORY 10C. The Problem of Modern Europe. 3 Units.
(Same as HISTORY 110C. History majors and others taking 5 units, register for 110C.) From the late 18th century to the present. How Europeans responded to rapid social changes caused by political upheaval, industrialization, and modernization. How the experience and legacy of imperialism and colonialism both influenced European society and put in motion a process of globalization that continues to shape international politics today.

HISTORY 10N. Thinking About War. 3 Units.
This course examines classic approaches to war as an intellectual problem, looking at how a matter of such great physical violence and passions can be subjected to understanding and used in philosophy, political theory, and art. Questions to be examined include the definition of war, its causes, its moral value, the nature of its participants, its use in the self-definition of individuals and societies, its relation to political authority, warfare and gender, and the problem of civil war.

HISTORY 10SC. Biography in History, Fiction, and Elsewhere. 2 Units.
How biographers, novelists, critics and others have written about the rhythms of life the lives of the famous as well as the obscure - will be explored in this course. Biographical writing can be frivolous, but at its best it has the capacity to undercover so much of life's richness, complexity, and confusions. We'll study biography with the use of some of the most resonant, compelling examples of the genre. Together we'll read books about poets Sylvia Plath and Ted Hughes, Henry James Aspern Papers, the brilliant novel on biographical writing, A. S. Byatt's Possession, and Norman Mailer on Marilyn Monroe. How one chooses one topic over another; the differences and similarities between the representation of lives in fiction and biography; the benefits and pitfalls of an intense identification with one's own subjects these and other matters will be examined. We'll meet in San Francisco with local writers wrestling with issues of this sort, and students will be encouraged to try their hands at writing about lives based on research, personal observation, or both.

HISTORY 11N. The Roman Empire: Its Grandeur and Fall. 4 Units.
Preference to freshmen. Explore themes on the Roman Empire and its decline from the 1st through the 5th centuries C.E.. What was the political and military glue that held this diverse, multi-ethnic empire together? What were the bases of wealth and how was it distributed? What were the possibilities and limits of economic growth? How integrated was it in culture and religion? What were the causes and consequences of the conversion to Christianity? Why did the Empire fall in the West? How suitable is the analogy of the U.S. in the 21st century?.
Same as: CLASSICS 26N

HISTORY 11SC. How Is a Buddhist. 2 Units.
Buddhism as a system of thought, a culture, a way of life, a definition of reality, a method for investigating it, and a mental, physical, and social practice. Buddhism as a total phenomenon. Readings, films, music, and art. How Buddhist practices constitue the world of the Buddhist.

HISTORY 11W. Service-Learning Workshop on Issues of Education Equity. 1 Unit.
Introduces students to a variety of issues at stake in the public education of at-risk high school youth in California. Participants will hear from some of the leading faculty in the School of Education as well as the Departments of Psychology, Sociology, and others, who will share perspectives on the problems and challenges of educating a diverse student body in the state's public school system. The service-learning component of the workshop is a mentoring project (Stanford Students for Educational Equity) with junior class history students from East Palo Alto Academy High School, a Stanford charter school.
Same as: CSRE 11W

HISTORY 12. Medicine and Disease in the Ancient World. 3 Units.
(Same as HISTORY 112. History majors and others taking 5 units, register for 112.) This course explores medicine and disease through case studies from civilizations of the ancient world such as Egypt, Greece, and Peru. We will discuss how these cultures conceptualized disease, and in turn, how they contended with illnesses. Lectures will address different forms of illness through medical texts, art, and human remains. Weekly discussion will incorporate evidence from these sources to explore both their potential and their limitations.

HISTORY 12N. Income and wealth inequality from the Stone Age to the present. 4 Units.
Rising inequality is a defining feature of our time. How long has economic inequality existed, and when, how and why has the gap between haves and have-nots widened or narrowed over the course of history? This seminar takes a very long-term view of these questions. It is designed to help you appreciate dynamics and complexities that are often obscured by partisan controversies and short-term perspectives, and to provide solid historical background for a better understanding of a growing societal concern.
Same as: CLASSICS 12N

HISTORY 13S. Misfits of the Middle Ages: Persecution and Tolerance in Medieval Europe. 5 Units.
Medieval Europe is infamous for its persecutions. In the popular imagination, the Middle Ages were a uniquely unhappy time for Jews, heretics, lepers, witches, and countless other outsiders. But what is the truth about Europe¿s ¿Dark Ages?¿ What was it actually like to be a Jew in medieval Italy, a leper in England, a heretic in France? Who carried out the persecutions, what motivated them to violence, and did they actually succeed? How do the experiences of medieval Europe¿s outsiders still inform our own notions of tolerance, human rights, and inclusion today?.

HISTORY 15D. Europe in the Middle Ages, 300-1500. 3-5 Units.
(HISTORY 15D is 3 units; HISTORY 115D is 5 units.) This course provides an introduction to Medieval Europe from the fall of Rome to the Renaissance. While the framework of the course is chronological, we'll concentrate particularly on the structure of medieval society. Rural and urban life, kingship and papal government, wars and plagues provide the context for our examination of the lives of medieval people, what they believed, and how they interacted with other, both within Christendom and beyond it. This course may count as DLCL 123, a course requirement for the Medieval Studies Minor.
Same as: HISTORY 115D, RELIGST 115X

HISTORY 15N. Inequality: the Last 100,000 Years. 3 Units.
(Formerly CLASSHIS 13N.) This seminar traces the evolution of resource inequality from the Stone Age to the present. Only this long-term perspective reveals the forces that drive inequality and allows us to address two key questions: what causes inequality, and what factors have been capable of reducing it, at least for a while? We are going to confront challenging arguments: that inequality has been closely tied up with overall economic and human development, and that over the long course of history, war, revolution and pestilence were the most effective equalizers of income and wealth. This class will help you appreciate contexts and complexities that are usually obscured by partisan polemics and short-term thinking. Seminar participants will be directly involved in the instructor's current research project on the history of inequality.
Same as: CLASSICS 28N

HISTORY 16. Traders and Crusaders in the Medieval Mediterranean. 3-5 Units.
Trade and crusade were inextricably interconnected in the high Middle Ages. As merchant ships ferried knights and pilgrims across the Mediterranean, rulers borrowed heavily to finance their expeditions, while military expansion opened new economic opportunities. Course themes include the origins of the Crusading movement; the rise of Venice and other maritime powers; the pivotal roles of the Byzantine and Mongol Empires; relations between Christians, Muslims, and Jews; new military, maritime, and commercial technologies; and the modern legacy of the Crusades.
Same as: HISTORY 116

HISTORY 18S. Pirates, Captives, and Renegades: Encounters in the Early Modern Mediterranean World. 5 Units.
In this course, we will study how mobile subjects, such as (barbary) pirates, slaves, captives, renegades, merchants, and dragomans shaped the history of the early modern Mediterranean. By studying a range of primary sources, including official documents, chronicles, travel accounts, autobiographical texts, objects, and visual materials, we will analyze how people living on the Mediterranean's European, Asian, and African littorals experienced and influenced interactions between regional powers, such as the Italian city states, Spain, Portugal, France, Morocco, and the Ottoman Empire. In order to analyze these accounts, we will employ various historical methods and evaluate what is at stake in understanding cross-cultural/religious encounters and exchanges in the Mediterranean world during the early modern period.

HISTORY 23N. The Soviet Union and the World: View from the Hoover Archives. 3 Units.
This course seeks to explore the Soviet Union's influence on the world from 1917 to its end in 1991 from a variety of perspectives. Hoover Institution archival holdings will be the basic sources for the course.

HISTORY 23S. Sex and Socialism. 5 Units.
Among the major promises made by socialism and communism was the liberation of women from an imperialist, capitalist, and patriarchal world. How did these promises hold up in the face of the realities of revolution and state formation? This course explores the relationship between gender, sex, and sexuality within the state socialist polities of the 20th century. Topics include diversity in barricades and workplaces, motherhood and reproductive rights, medicine and sexology, incarceration and state violence, and homosexuality and gender non-conformity.

HISTORY 25. St. Petersburg: A Cultural Biography. 1 Unit.
This course explores the rich cultural heritage of St. Petersburg: art, architecture, urban planning, literature, dance, music, theater. Lectures will be extensively slide-illustrated, particularly on architecture and art. The course will meet Thursday evenings 7:00-9:00 pm as part of the Continuing Studies Program (CSP) for adult students; undergraduate students are welcome to participate by enrolling in this 1-unit History course. Readings will be posted in Coursework for CSP participants and will be available but optional for undergraduate students. Satisfactory credit for undergraduates will be earned by attending 80% of the lectures and by submitting a 5-page paper on a topic of the student's choice utilizing the CSP assigned readings and sources suggested by the instructor.

HISTORY 25N. Stalin's Europe, 1944-1948. 3 Units.
This freshman seminar explores the history of wartime and postwar Europe through the lenses of the communist parties of Europe, the anti-Soviet forces on the continent, the devastation of the civilian population, and the intentions and actions of the Soviet Union on the one hand, and the United States on the other. We will analyze issues of resistance and collaboration under the Nazis, Allied occupation, and the division of Europe. We will also consider the forcible displacement of peoples and the fate of Jewish survivors. The idea is to understand the harsh and complex realities of European life and politics in this crucial time frame spanning war and peace. One can discover the beginnings of the Cold War in this period, the first signs of the "Iron Curtain," and the origins of the European Union. Our sources for the reconstruction of European life at this crucial time include documents, memoirs, literature, film, and various collections at the Hoover Archives. In addition to analyzing written and visual materials in discussion, presentations, and short essays, you will engage in a quarter long project on one thematic or country study during this period.

HISTORY 28S. Napoleon. 5 Units.
This course examines the life and times of Napoleon Bonaparte. For twenty years, Napoleon commanded and captivated Europe, evoking fascination and fear in equal measure and profoundly shaping the course of the modern world. In this course we follow the arc of his career, from revolutionary to emperor to exile, with each week devoted to a different theme of his life and the age in which he lived. Topics include politics, warfare, revolution, colonialism, gender, popular culture, and the arts. The course has no prerequisites and all readings are in English.

HISTORY 30C. Culture and Society in Reformation England. 3 Units.
(Same as History 130C. History majors and others taking 5 units, register for 130C.) Focuses on the appeal of both Reformed and Catholic ideas in the political and cultural contexts of early modern Europe. Topics include: the Lutheran revolt; the spread of Protestant ideas; Calvin's Geneva; the English Reformation; Tridentine reform and the Jesuits; toleration and the underground churches; wars and religious violence; and the making of European confessional identities. Sources include sermons, religious polemic, autobiographies, graphic prints, poetry, and music.

HISTORY 32S. Utopian Dreams, Dystopian Nightmares: Visions of the Ideal Society in Early Modern Britain. 5 Units.
Visions of the ideal society are a mainstay in the European imagination, from Plato¿s Republic to Charles Fourier¿s phalanstère. Yet utopianism has always been maligned as idealistic, impracticable, or naïve, while its proponents accused variously of hypocrisy, totalitarianism, and abject failure. Nowhere more so has the utopian impulse been felt than in early modern Britain during the age of imperial, scientific, and industrial revolution. This course asks how British writers imagined better futures, starting with Thomas More¿s genre-defining Utopia and ending with the utopian socialists and communitarian experiments of the early nineteenth century. We will ask what utopias can tell us about the societies which imagined them, and appraise their lasting legacies in political thought, social science, and critical theory. Covering themes such as empire, capitalism, gender, enlightenment, and socialism, we will engage with a range of primary sources, including literary texts, cartographic images, political and scientific tracts, and letters, aided by secondary literature from the history of political thought, literary history, the history of science, and theory.

HISTORY 33A. Blood and Roses: The Age of the Tudors. 3 Units.
(Same as HISTORY 133A. History majors and others taking 5 units, register for 133A.) English society and state from the Wars of the Roses to the death of Elizabeth. Political, social, and cultural upheavals of the Tudor period and the changes wrought by the Reformation. The establishment of the Tudor monarchy; destruction of the Catholic church; rise of Puritanism; and 16th-century social and economic changes.

HISTORY 33B. Revolutionary England: The Stuart Age. 3 Units.
(Same as HISTORY 133B. History majors and others taking 5 units, register for 133B.) From the accession of King James I in 1603 to the death of Queen Anne in 1714: a brutal civil war, the execution of one anointed king, and the deposition of another. Topics include the causes and consequences of the English Revolution, the origins of Anglo-American democratic thought, the rise and decline of Puritanism, and the emergence of England as an economic and colonial power. (Como).

HISTORY 36N. Gay Autobiography. 4 Units.
Preference to freshmen. Gender, identity, and solidarity as represented in nine autobiographies: Isherwood, Ackerley, Duberman, Monette, Louganis, Barbin, Cammermeyer, Gingrich, and Lorde. To what degree do these writers view sexual orientation as a defining feature of their selves? Is there a difference between the way men and women view identity? What politics follow from these writers' experiences?.
Same as: FEMGEN 36N

HISTORY 37D. Germany's Wars and the World, 1848-2010. 3-5 Units.
(History 37D is 3 units; History 137D is 5 units.)This course examines a series of explosive encounters between Germans, Europe, and the world. Starting with the overlooked revolutions of 1848 and ending with the reunification of West Germany and East Germany after the Cold War, the course will explore a range of topics: capitalism, communism, imperialism, nationalism, diplomacy, antisemitism, gender, race, and the Holocaust, among others. We will also consider competing visions of Germany its borders, its members, its enemies.
Same as: HISTORY 137D

HISTORY 39. Modern Britain and the British Empire. 3 Units.
(History 39 is offered for 3 units; History 139 is offered for 5 units.) From American Independence to the latest war in Iraq. Topics include: the rise of the modern British state and economy; imperial expansion and contraction; the formation of class, gender, and national identities; mass culture and politics; the world wars; and contemporary racial politics. Focus is on questions of decline, the fortunes and contradictions of British liberalism in an era of imperialism, and the weight of the past in contemporary Britain.

HISTORY 39Q. Were They Really "Hard Times"? Mid-Victorian Social Movements and Charles Dickens. 3 Units.
"It was a town of red brick, or of brick that would have been red if the smoke and ashes had allowed it." So begins Charles Dickens description of Coketown in Hard Times. And it only seems to get more grim from there. But the world that Dickens sought to portray in the novel was a hopeful one, too. And that tension is our starting point. The intent of this class is to more closely examine mid-Victorian Britain in light of Dickens' novel, with particular focus on the rise of some of our modern social movements in the 19th century. While things like the labor movement, abolitionism, feminism, and environmentalism, are not the same now as they were then, this class will explore the argument that the 21st century is still, in some ways, working out 19th century problems and questions. At the same time, this is also a course that seeks to expand the kinds of sources we traditionally use as historians. Thus, while recognizing that literary sources are particularly complex, we will use Hard Times as a guide to our exploration to this fascinating era. We will seek both to better understand this complex, transitional time and to assess the accuracy of Dickens' depictions of socio-political life.nnThrough a combination of short response papers, creative Victorian projects (such as sending a hand-written letter to a classmate), and a final paper/project, this course will give you the opportunity to learn more about the 19th century and the value of being historically minded.nnAs a seminar based course, discussion amongst members of the class is vital. The class will be delivered online using a combination of both synchronous and asynchronous modes. All students are welcome.

HISTORY 40. World History of Science. 3 Units.
(History 40 is 3 units; History 140 is 5 units.) The earliest developments in science, the prehistoric roots of technology, the scientific revolution, and global voyaging. Theories of human origins and the oldest known tools and symbols. Achievements of the Mayans, Aztecs, and native N. Americans. Science and medicine in ancient Greece, Egypt, China, Africa, and India. Science in medieval and Renaissance Europe and the Islamic world including changing cosmologies and natural histories. Theories of scientific growth and decay; how science engages other factors such as material culture and religions.

HISTORY 40A. The Scientific Revolution. 3 Units.
(Same as History 140A. History majors and others taking 5 units, register for History 140A.) What do people know and how do they know it? What counts as scientific knowledge? In the 16th and 17th centuries, understanding the nature of knowledge engaged the attention of individuals and institutions including Copernicus, Galileo, Descartes, Newton, the early Royal Society, and less well-known contemporaries. New meanings of observing, collecting, experimenting, and philosophizing, and political, religious, and cultural ramifications in early modern Europe.

HISTORY 41N. Visible Bodies: Black Female Authors and the Politics of Publishing in Africa. 4 Units.
Where are the African female writers of the twentieth century and the present day? This Introductory Seminar addresses the critical problem of the marginalization of black female authors within established canons of modern African literature. We will explore, analyse and interrogate the reasons why, and the ways in which, women-authored bodies of work from this period continue to be lost, misplaced, forgotten, and ignored by a male-dominated and largely European/white publishing industry in the context of colonialism, apartheid and globalization. nnYou will be introduced to key twentieth-century and more contemporary female authors from Africa, some of them published but many more unpublished or out-of-print. The class will look at the challenges these female authors faced in publishing, including how they navigated a hostile publishing industry and a lack of funding and intellectual support for black writers, especially female writers. nnWe will also examine the strategies these writers used to mitigate their apparent marginality, including looking at how women self-published, how they used newspapers as publication venues, how they have increasingly turned to digital platforms, and how many sought international publishing networks outside of the African continent. As one of the primary assessments for the seminar, you will be asked to conceptualize and design an in-depth and imaginative pitch for a new publishing platform that specializes in African female authors. nnYou will also have the opportunity for in-depth engagement (both in class and in one-on-one mentor sessions) with a range of leading pioneers in the field of publishing and literature in Africa. Figures like Ainehi Edoro (founder of Brittle Paper) and Zukiswa Wanner (prize-winning author of The Madams and Men of the South), amongst others, will be guests to our Zoom classroom. One of our industry specialists will meet with you to offer detailed feedback on your proposal for your imagined publishing platform. nnYou can expect a roughly 50/50 division between synchronous and asynchronous learning, as well as plenty of opportunity to collaborate with peers in smaller settings.
Same as: AFRICAAM 140N, AFRICAST 51N, ENGLISH 54N

HISTORY 42N. The Missing Link. 4 Units.
This course explores the history of evolutionary science, focusing upon debates surrounding the evolutionary place of human beings in the natural world, by examining the history of the idea of a "missing link," an intermediate form between humans and apes. We will consider famous hoaxes such as the Piltdown Man, and films and stories such as King Kong and Planet of the Apes, as well as serious scientific work such as that of EugÃ¨ne Dubois, the paleoanthropologist and geologist who discovered Homo erectus (first called Java Man and then Pithecanthropus erectus) and first developed the notion of a missing link. We will take an interest not only in scientific aspects of missing-link theories but in their accompanying political, social and cultural implications. And we'll watch some classic monster films.

HISTORY 42S. The Circle of Life: Visions of Nature in Modern Science, Religion, Politics and Culture. 5 Units.
A new understanding of nature emerged in the 1700s that fundamentally altered our perception of the living world and humanity's relationship with it. By tracing the evolution of this understanding forward, we gain insight into the interactions among science, religion, politics and culture. Topics include: nature in Romantic science, poetry and art; Darwin's theory of evolution and its afterlife in science, literature and popular culture; the science and politics of the 20th-century environmental movement; and the philosophical presuppositions underlying modern debates about biodiversity. In addition to close readings of canonical texts and contemporary commentaries, students will be introduced to digital history methods. Students will design their own final projects in consultation with the instructor.

HISTORY 44. Sex, Gender, and Intersectional Analysis in Science, Medicine, Engineering, and Environment. 3 Units.
(HISTORY 44 is offered for 3 units; HISTORY 144 is offered for 5 units.) Explores ¿Gendered Innovations¿ or how sex, gender, and intersectional analysis in research sparks discovery and innovation. Section 1 focuses on the history of women in science. Section 2 looks at transforming research institutions. Section 3 explores Gendered Innovations. Topics include historical background, basic concepts, social robots, sustainability, medicine & public health, facial recognition, inclusive crash test dummies, and more. Stanford University is engaged in a multi-year collaboration with the European Commission and the U.S. National Science Foundation project on Gendered Innovations in Science, Health & Medicine, Engineering, and Environment, and this class will contribute that project. The operative questions is: how can sex, gender, and intersectional analysis lead to discovery and enhance social equalities?.

HISTORY 44Q. Gendered Innovations in Science, Medicine, Engineering, and Environment. 4-5 Units.
Explores ¿Gendered Innovations¿ or how sex, gender, and intersectional analysis in research sparks discovery and innovation. Section 1 focuses on the history of women in science. Section 2 looks at transforming research institutions. Section 3 explores ¿Gendered Innovations. ¿ Topics include historical background, basic concepts, social robots, sustainability, medicine & public health, facial recognition, inclusive crash test dummies, and more. Stanford University is engaged in a multi-year collaboration with the European Commission and the U.S. National Science Foundation project on Gendered Innovations in Science, Health & Medicine, Engineering, and Environment, and this class will contribute that project. This course fulfills the second level Writing and Rhetoric Requirement (WRITE 2) and emphasizes oral, multimedia presentation, and writing skills. Each student will develop a case study illustrating how sex, gender, and intersectional analysis can lead to innovation and enhance social equalities.
Same as: FEMGEN 44Q

HISTORY 45B. Africa in the 20th Century. 3 Units.
(Same as HISTORY 145B. History majors and others taking 5 units, register for 145B.) The challenges facing Africans from when the continent fell under colonial rule until independence. Case studies of colonialism and its impact on African men and women drawn from West, Central, and Southern Africa. Novels, plays, polemics, and autobiographies written by Africans.

HISTORY 45N. Power, Prestige and Politics in African Societies. 4 Units.
This seminar infuses a human dimension into the study of politics in Africa. Considering the 1800s to the present day, the seminar prompts students to creatively connect the political with the personal. We will examine how gender, intimate and romantic relationships, arguments between parents and children, attempts to access and harness the power of the sacred, and fights for status and authority of all kinds, were pivotal forces shaping the form that politics and political activism assumed on the continent.

HISTORY 47. History of South Africa. 3 Units.
(Same as HISTORY 147. History majors and others taking 5 units, register for 147.) Introduction, focusing particularly on the modern era. Topics include: precolonial African societies; European colonization; the impact of the mineral revolution; the evolution of African and Afrikaner nationalism; the rise and fall of the apartheid state; the politics of post-apartheid transformation; and the AIDS crisis.
Same as: AFRICAAM 47, CSRE 74

HISTORY 47N. Global History of Death and Dying. 4 Units.
Does death have a history? Explores the changing realities of, attitudes towards and ways of coping with death. The role of death in shaping the modern world via the global slave trades, imperial conquests, pandemics, wars and genocides. Ways people have made sense of death in extraordinary circumstances and during calmer times. Continuities and transformations in death rituals, intellectual and philosophical debates about the personal and social meanings of death, and the consequences of ways and patterns of dying.

HISTORY 47S. Black Earth Rising: Law and Society in Postcolonial Africa. 5 Units.
Is the International Criminal Court a neocolonial institution? Should African art in Western museums be returned? Why have anti-homosexuality laws emerged in many African countries? This course engages these questions, and more, to explore how Africans have grappled with the legacies of colonialism through law since independence. Reading court documents, listening to witness testimonies, analyzing legal codes, and watching cultural commentaries¿including hit TV series Black Earth Rising¿students will examine the histories of legal conflict in Africa and their implications for the present and future of African societies. This course fulfills the Social Inquiry and Engaging Diversity Ways requirements.
Same as: AFRICAST 90

HISTORY 48. The Egyptians. 3-5 Units.
This course traces the emergence and development of the distinctive cultural world of the ancient Egyptians over nearly 4,000 years. Through archaeological and textual evidence, we will investigate the social structures, religious beliefs, and expressive traditions that framed life and death in this extraordinary region. Students with or without prior background are equally encouraged.
Same as: AFRICAAM 30, CLASSICS 82, HISTORY 148

HISTORY 48Q. South Africa: Contested Transitions. 4 Units.
Preference to sophomores. The inauguration of Nelson Mandela as president in May 1994 marked the end of an era and a way of life for South Africa. The changes have been dramatic, yet the legacies of racism and inequality persist. Focus: overlapping and sharply contested transitions. Who advocates and opposes change? Why? What are their historical and social roots and strategies? How do people reconstruct their society? Historical and current sources, including films, novels, and the Internet.
Same as: AFRICAAM 48Q

HISTORY 49S. African Futures: Nationalism, Pan-Africanism, and Beyond. 5 Units.
This course examines decolonization and its aftermath in sub-Saharan Africa. With a "wind of change" sweeping the continent, how did Africans imagine their futures together? From W.E.B. Du Bois to Black Panther, this course will engage in historical readings of political essays, speeches, film, and literature to consider how Africans envisioned their communities beyond empire. Topics will include a variety of projects for African unity, from experiments with Pan-Africanism, to religious revivalism, to Afrofuturist art and aesthetics.
Same as: AFRICAAM 49S

HISTORY 50A. Colonial and Revolutionary America. 3 Units.
(Same as HISTORY 150A. History majors and others taking 5 units, register for 150A.) Survey of the origins of American society and polity in the 17th and 18th centuries. Topics: the migration of Europeans and Africans and the impact on native populations; the emergence of racial slavery and of regional, provincial, Protestant cultures; and the political origins and constitutional consequences of the American Revolution.

HISTORY 50B. Nineteenth Century America. 3 Units.
(Same as HISTORY 150B. History majors and others taking 5 units, register in 150B.) Territorial expansion, social change, and economic transformation. The causes and consequences of the Civil War. Topics include: urbanization and the market revolution; slavery and the Old South; sectional conflict; successes and failures of Reconstruction; and late 19th-century society and culture.
Same as: AFRICAAM 50B, CSRE 50S

HISTORY 50C. The United States in the Twentieth Century. 3 Units.
(Same as HISTORY 150C. History majors and others taking 5 units, register for 150C.) 100 years ago, women and most African-Americans couldn't vote; automobiles were rare and computers didn't exist; and the U.S. was a minor power in a world dominated by European empires. This course surveys politics, culture, and social movements to answer the question: How did we get from there to here? Two historical research "labs" or archival sessions focus on the Great Depression in the 1930s and radical and conservative students movements of the 1960s. Suitable for non-majors and majors alike.
Same as: AFRICAAM 50C

HISTORY 50K. John F. Kennedy: Fifty Years Later. 1 Unit.
November 22, 2013 marks the 50th anniversary of President John F. Kennedy's assassination. Half a century on, our visually saturated culture remains besotted with images of the youthful president and his strikingly photogenic family. But the passage of time has also yielded new perspectives on Kennedy's presidency and on his era. November 22, 1963 may well come to be remembered not only as the day when the life of a promising young leader was violently cut short, but also as the pivot between two distinct eras in American history. Ironically, though Kennedy was the first World War II veteran to reach the White House, his death heralded the end of the long postwar season of national pride, optimism, confidence, and widely shared prosperity¿and may have opened the road to the great catastrophe that was the Vietnam War. His passing also helped to pry open the portals to historic changes in the lives of millions of African Americans, as witnessed by Lyndon Johnson's artful invocation of the fallen president to bring about passage of the epic civil rights legislation of the late 1960s. nnThis course will examine the postwar domestic and international settings in which Kennedy rose to and exercised power. It will probe our continuing fascination with his character and with his family; his role as a Cold Warrior, especially in the tense confrontation known as the Cuban Missile Crisis; and his relation to the African American struggle to bury Jim Crow. We will conclude with an assessment of the longer-term historical consequence of his brief moment in the arenas of celebrity and power. Guest speakers will include noted Kennedy biographer Robert Dallek; Johnson biographer Bruce Schulman; Taylor Branch, acclaimed biographer of Martin Luther King, Jr.; and Stanford's own Jennifer Burns, historian of modern America.

HISTORY 51B. The End of American Slavery, 1776-1865. 3-5 Units.
How did the institution of American slavery come to an end? The story is more complex than most people know. This course examines the rival forces that fostered slavery's simultaneous contraction in the North and expansion in the South between 1776 and 1861. It also illuminates, in detail, the final tortuous path to abolition during the Civil War. Throughout, the course introduces a diverse collection of historical figures, including seemingly paradoxical ones, such as slaveholding southerners who professed opposition to slavery and non-slaveholding northerners who acted in ways that preserved it. Historical attitudes toward race are a central integrative theme.
Same as: HISTORY 151B

HISTORY 51Q. American Greed: From Gold Rush to Silicon Valley. 3 Units.
For centuries greed reigned as one of the seven deadly sins, but in the nineteenth century, it went through a major transformation. This course will attempt to solve to puzzle of how greed became an acceptable and desirable component of the American Dream by the end of the Gilded Age. While studies on greed have tended to look to human evolutionary biology or the writings of political economists for answers, this course will turn to specific historical events and trends in the American context in order to trace how ordinary Americans have understood the place and meaning of greed in their lives over the past two centuries. Starting with the Gold Rush, an event that revealed a darker side to the values and ideals of a young nation, we will explore how dreams of El Dorado began a process that saw Americans questioning how the acquisition of wealth fit into their beliefs about what it meant to be an American. We will follow this question as it moved through debates over slavery, the conquest of Native lands, the women's movement, the labor movement, liberalism, monopoly, and the rise of corporations.nnIn the final part of the course, we will jump ahead to the present to look at modern parallels to the Gilded Age. Many of today's conditions, from high income inequality and political disunity to new technologies, appear strikingly similar. Furthermore, the landmark decision in Citizens United and the 2008 bank bailout seem to indicate a nation and culture fully in the grasp of greed, not unlike the earlier period in which the sin first became a virtue. At the same time, however, we see challenges and alternatives presented that call back to earlier ideals. You will work throughout the quarter on a research-based project on a topic of interest to you that connects the present to the past.

HISTORY 52Q. Democracy in Crisis: Learning from the Past. 3 Units.
This Sophomore Seminar will focus on U.S. democracy and will use a series of case studies of major events in our national history to explore what happened and why to American democracy at key pressure points. This historical exploration should shed light on how the current challenges facing American democracy might best be handled. (Cardinal Course certified by the Haas Center).
Same as: EDUC 122Q, POLISCI 20Q

HISTORY 54Q. African American Women's Lives. 3-4 Units.
Preference to sophomores. African American women have been placed on the periphery of many historical documents. This course will encourage students to think critically about historical sources and to use creative and rigorous historical methods to recover African American women¿s experiences. Drawing largely on primary sources such as letters, personal journals, literature and film, this course explores the everyday lives of African American women in 19th- and 20th-century America. We will begin in our present moment with a discussion of Michelle Obama and then we will look back on the lives and times of a wide range of African American women including: Charlotte Forten Grimké, a 19th-century reformer and teacher; Nella Larsen, a Harlem Renaissance novelist; Josephine Baker, the expatriate entertainer and singer; and Ida B. Wells and Ella Baker, two luminaries of civil rights activism. We will examine the struggles of African American women to define their own lives and improve the social, economic, political and cultural conditions of black communities. Topics will include women¿s enslavement and freedom, kinship and family relations, institution and community building, violence, labor and leisure, changing gender roles, consumer and beauty culture, social activism, and the politics of sexuality.
Same as: AFRICAAM 54Q, AMSTUD 54Q, FEMGEN 54Q

HISTORY 54S. The American Civil War. 5 Units.
Few events in American history match the significance of the Civil War, a conflict that freed 4 million people held in bondage and left 750,000 men dead. This course will explore the war from a range of perspectives, including those of Union and Confederate soldiers, African Americans, women, and Native Americans. Based on the documents these different groups left behind, as well as the histories they inspired, we will seek to understand how the Civil War was experienced and commemorated. Priority given to history majors and minors.

HISTORY 55F. The Civil War and Reconstruction Era, 1830 to 1877. 3-5 Units.
(History 55F is 3 units; History 155F is 5 units.)This course explores the causes, course, and consequences of the American Civil War. The Civil War profoundly impacted American life at national, sectional, and constitutional levels, and radically challenged categories of race and citizenship. Topics covered include: the crisis of union and disunion in an expanding republic; slavery, race, and emancipation as national problems and personal experiences; the horrors of total war for individuals and society; and the challenges--social and political--of Reconstruction.
Same as: AFRICAAM 55F, AMSTUD 55F, AMSTUD 155F, HISTORY 155F

HISTORY 57E. State of the Union 2014. 1 Unit.
This course will examine major themes that contribute to the health, or disease, of the US body politic. Challenges and opportunities abound: we live in an age of rising inequality, dazzling technological innovation, economic volatility, geopolitical uncertainty, and the accumulating impact of climate change. These conditions confront our political leaders and us as citizens of a democracy plagued by dysfunction. What are the implications for the body politic? Led by Rob Reich (Political Science, Stanford), David Kennedy (History, Stanford), and James Steyer (CEO, Common Sense Media), the course will bring together distinguished analysts of American politics. Together, we will examine the following topics: inequality; energy and the environment; media and technology; the economy; and the 2014 midterm elections. The course is designed for the entire Stanford community: jointly offered for undergraduate and graduate students at Stanford (through listings in Political Science and History) and for community members through the Continuing Studies Program. For students, the course is available for 1 credit. This course may not be taken for a Letter Grade.
Same as: POLISCI 57E

HISTORY 58Q. American Landscapes of Segregation. 3-4 Units.
This course examines various landscapes of segregation in U.S. history from 19th century reconstruction and settler expansion through the contemporary U.S. security state. Each week we consider different histories of segregation including native reservation and boarding school stories, Jim Crow and post-World War II urban/suburban segregation, school integration and bussing, and the rise of the carceral state. We will ask: How have Americans moved through space with different degrees of freedom and constraint over time, and how has that shaped what it has meant to be an American in different ways for different groups? How has access to land, property, consumer, recreational and educational spaces and resources been regulated by categories of race, gender, sexuality, colonial subjectivity, immigrant status and class? To gain a better sense of our local history, we will also consider how structures of segregation have historically mapped the Bay Area. Sources include primary and secondary historic texts, feature and documentary films, photography, and poetry.
Same as: AFRICAAM 58Q, AMSTUD 58Q

HISTORY 60N. Revolutionaries and Founders. 3 Units.
Americans remain fascinated by the revolutionary generation which secured independence and established a national constitutional republic. Books about the founders come steadily from the presses, some describing the lives of individual revolutionaries, others trying to analyze and explain what made these events possible. This seminar will approach the Revolution through both a biographical and analytical framework, relying both on scholarly writings and the massive array of primary sources that are readily available through letterpress editions and on-line. The course will rely on the instructor's own recent book, Revolutionaries: A New History of the Invention of America, which carries the story from the crisis around the Boston Tea Party of 1773 through the end of President Washington's first administration. The course will be divided evenly between modern scholarship and the careful reading of original materials, and students will write short essays that will involve the analysis of explanatory problems, the close interpretation of documents, and the crafting of historical narratives. Topics to be discussed will include the outbreak of the revolution, constitution-making at both the state and national levels of government, the conduct of the war, and the legacies that Americans particularly associate with Thomas Jefferson, James Madison, and Alexander Hamilton.

HISTORY 61. The Politics of Sex: Work, Family, and Citizenship in Modern American Women's History. 3-5 Units.
This course explores the transition from Victorian to modern American womanhood by asking how Native, European, African, Mexican, and Asian American women navigated the changing sexual, economic, and political landscapes of the twentieth century. Through secondary readings, primary sources, films, music, and literature we explore the opportunities and boundaries on groups of women in the context of historical events that included immigration, urbanization, wartime, depression, the Cold War, as well as recurrent feminist and conservative political movements.
Same as: AMSTUD 161, CSRE 162, FEMGEN 161, HISTORY 161

HISTORY 62S. From Runaway Wives to Dancing Girls: Urban Women in the Long Nineteenth Century. 5 Units.
This course explores the ways in which women - white and black, immigrant and native born, free and enslaved - lived and labored in American cities during the long nineteenth century. Together we will examine a variety of primary sources including diaries, municipal and institutional records, newspapers, memoirs, oral histories, and visual culture. We will also consider whose stories are told and explore how historians make sense of times very different from our own. Priority given to History majors and minors.
Same as: FEMGEN 62S

HISTORY 63N. The Feminist Critique: The History and Politics of Gender Equality. 3-4 Units.
This course explores the long history of ideas about gender and equality. Each week we read, dissect, compare, and critique a set of primary historical documents (political and literary) from around the world, moving from the 15th century to the present. We tease out changing arguments about education, the body, sexuality, violence, labor, politics, and the very meaning of gender, and we place feminist critics within national and global political contexts.
Same as: AMSTUD 63N, CSRE 63N, FEMGEN 63N

HISTORY 64S. The Religious Right and Its Critics in America from 1920 to Today. 5 Units.
In 2016, Donald Trump won 81% of white evangelical voters. Evangelical and conservative Catholic voters, members of the so-called Religious Right, have formed an essential pillar of the Republican Party for the entire lifetime of most Stanford undergraduates. But this was not always the case. In this course, we will discover leaders who shaped the Religious Right through coalition building, ideological line-drawing, and sermonizing as well as those who offered political alternatives of the Irreligious Right and ever-elusive Religious Left.

HISTORY 67S. The Vietnam War/The American War. 5 Units.
This course explores the conflict called "the Vietnam War" in the United States and "the American War" in Vietnam - one of the longest and most violent wars of the twentieth century - from the perspectives of those who experienced it. Engaging diverse primary sources from Vietnam, the U.S., and beyond, the course traces the conflict's global roots and consequences as well as challenges of interpreting war generally. Students have the option of a final paper or an oral history.

HISTORY 68D. American Prophet: The Inner Life and Global Vision of Martin Luther King, Jr.. 3-5 Units.
Martin Luther King, Jr., was the 20th-century's best-known African-American leader, but the religious roots of his charismatic leadership are far less widely known. The documents assembled and published by Stanford's King Research and Education Institute provide the source materials for this exploration of King's swift rise to international prominence as an articulate advocate of global peace and justice.
Same as: AFRICAAM 68D, AMSTUD 168D, CSRE 68, HISTORY 168D

HISTORY 69Q. American Road Trips. 4 Units.
"Nothing behind me, everything ahead of me, as is ever so on the road." --Jack Kerouac, On the Road, 1957. From Jack Kerouac's On the Road to Cheryl Strayed's Wild, this course explores epic road trips of the twentieth century. Travel is a fundamental social and cultural practice through which Americans have constructed ideas about the self, the nation, the past, and the future. The open road, as it is often called, offered excitement, great adventure, and the space for family bonding and memory making. But the footloose and fancy-free nature of travel that Jack Kerouac celebrated was available to some travelers but not to all. Engaging historical and literary texts, film, autobiography, memoir, photography, and music, we will consider the ways that travel and road trips have been represented in American culture. This course examines the following questions: How did men and women experience travel differently? How did the motivations for travel change over time? What role did race, ethnicity, class, relationships, and sexuality play in these trips? Students will work together to plan a road trip of their own which the class will take during the quarter.
Same as: AMSTUD 109Q

HISTORY 70S. The Mexican-American War. 5 Units.
Frequently overshadowed by the Louisiana Purchase and the Civil War, the Mexican-American War was central to antebellum conflicts over territorial expansion, the expansion of slavery, and debates about race, ethnicity, and citizenship. This course examines the long and deep history of the war by situating it within its colonial, national, and borderlands contexts. The course will draw on methods from a range of historical subfields including, diplomatic, political, social, cultural, and spatial history. Priority given to History majors and minors.

HISTORY 71S. American Political Thought from the Civil War to the Cold War. 5 Units.
This course explores America's most important political tradition: liberalism. What does liberalism mean? Does it mean something different today than it did in the past? Using multiple textual and visual sources, students will grapple with how Americans remade liberalism in the 19th and 20th centuries and how political thinkers have understood its meaning over time. We will see how American liberalism was shaped by factors of race, gender, and class and by competing ideologies like conservatism and socialism.

HISTORY 73. Mexican Migration to the United States. 3-5 Units.
(History 73 is 3 units; History 173 is 5 units.) This course is an introduction to the history of Mexican migration to the United States. Barraged with anti-immigrant rhetoric and calls for bigger walls and more restrictive laws, few people in the United States truly understand the historical trends that shape migratory processes, or the multifaceted role played by both US officials and employers in encouraging Mexicans to migrate north. Moreover, few have actually heard the voices and perspectives of migrants themselves. This course seeks to provide students with the opportunity to place migrants' experiences in dialogue with migratory laws as well as the knowledge to embed current understandings of Latin American migration in their meaningful historical context.
Same as: AMSTUD 73, CHILATST 173, HISTORY 173

HISTORY 73S. History of the Police in the United States: Slave Patrols to Ferguson. 5 Units.
How did police come to have the power to use violence? Themes: growth of professional policing, creation of private police forces and vigilantism, and public portrayals of police--by Hollywood and the press. The historical relationship between race and the administration of policing is a central question. Students will hone the methodology necessary to examine primary sources such as police memoirs, court records, police files, detective novels, music videos and photographs. The course fulfills the departmental Sources and Methods requirement. Priority given to history majors and minors.

HISTORY 74. Mexico Since 1876: The Road to Ayotzinapa. 3 Units.
(History 74 is for 3 units; History 174 is for 5 units.) In September of 2014, 43 students from a Mexican teacher's college in Ayotzinapa, Guerrero were abducted and disappeared via the actions of police and organized crime. This shocking human rights violation, as well as the violence and impunity it represented, were symbolic of the decline of the rule of law embodied by Mexico's drug war. How did the nation arrive at this crossroads? This course is an introduction to the history of Mexico from 1876 to the present. Through lectures, discussions, primary and secondary sources, film and documentaries, and written assignments, students will critically explore the events and people that shaped Mexico for over a century. From the Porfirian dictatorship, to the Revolution, to the PRI's "perfect dictatorship," this course analyzes socioeconomic and racial inequality, foreign intervention, urbanization and industrialization, technological innovation and environmental degradation, education and ideology, modernity and migration, culture and media, and the drug trade.

HISTORY 74S. Sounds of the Century: Popular Music and the United States in the 20th Century. 5 Units.
What can popular music teach us about the pst? What can we learn about music if we study it historically? This course grapples with these two questions by examining various examples of American music in the 20th century, as well as more conventional historical sources, scholarly books, and essays. Will pay special attention to how issues of race, gender, sexuality, class, and nation were reflected in and produced by people's interactions with music, inside and outside American borders.

HISTORY 78. Film and History of Latin American Revolutions and Counterrevolutions. 3-5 Units.
Note: Students who have completed HISTORY 78N or 78Q should not enroll in this course. In this course we will watch and critique films made about Latin America's 20th century revolutions focusing on the Cuban, Chilean and Mexican revolutions. We will analyze the films as both social and political commentaries and as aesthetic and cultural works, alongside archivally-based histories of these revolutions.
Same as: FILMSTUD 178, HISTORY 178, ILAC 178

HISTORY 78Q. Film and History of Latin American Revolutions and Counterrevolutions. 3 Units.
In this course we will watch and critique films made about Latin America's 20th century revolutions focusing on the Mexican, Cuban, Chilean and Nicaraguan revolutions. We will analyze the films as both social and political commentaries and as aesthetic and cultural works, alongside archivally-based histories of these revolutions.

HISTORY 79C. The Ethical Challenges of the Climate Catastrophe. 3-5 Units.
(History 79C is 3 units; History 179C is 5 units.) This course explores the ethical challenges of the climate catastrophe from historical, social, economic, political, cultural and scientific perspectives. These include the discovery of global warming over two centuries, the rise of secular and religious denialism and skepticism toward the scientific consensus on it, the dispute between developed and developing countries over how to forge a binding global agreement to mitigate it, and the "role morality" of various actors (scientists, politicians, fossil fuel companies, the media and ordinary individuals) in the US in assessing ethical responsibility for the catastrophe and how to mitigate, adapt, or even geoengineer, it.
Same as: HISTORY 179C

HISTORY 81B. Formation of the Contemporary Middle East. 3 Units.
(Same as HISTORY 181B. 81B is 3 units; 181B is 5 units) This course introduces major themes in the modern history of the region linking the Mediterranean and Indian Ocean worlds. We will begin with the Eurasian context that produced the Safavid and Ottoman dynastic empires and quickly move to the economic and political transformations of the nineteenth century and the imperial dissolution of the early twentieth. Twentieth-century themes will include mass migrations and colonial occupation; nationalism, mass politics and revolution; socialist and Islamist movements; and the growing role of American policy in the region. The course will conclude with a close examination of the profound transformations of the past decade, from the multiform revolutions of the ¿Arab Spring¿ to the equally multiform attempts to repress them.

HISTORY 82G. Making Palestine Visible. 3-5 Units.
Israel-Palestine is one of the most difficult subjects to talk about, in large part because we in the United States do not have much exposure to Palestinian history, culture, and politics in their own terms. This course aims to humanize Palestinians and asks why Palestinian claims to rights are illegible for much of the American public. We begin to answer this question by examining a broad sampling of history, structures of power and law, culture, and contemporary political issues.
Same as: CSRE 82G, HISTORY 182G

HISTORY 82S. Enemies Within: Hostile Minorities in Israel and Iraq in the 20th Century. 5 Units.
This course explores the nation state in the Middle East through the perspectives of minority groups in Israel and Iraq. The class examines the origins of these two states since WWI, and considers the integral role that minority groups have played in their formation. Using an array of primary sources and methods of analysis, we will examine significant political, economic, social, and discursive trends in these states, while keeping in mind the broader regional and global contexts.

HISTORY 83S. Refugees of Palestine and Syria: History, Identity, and Politics of Exile in the Middle East. 5 Units.
Mass displacements of Palestinians (1948, 1967) and Syrians (2011-) remain crucial to our understanding of history and politics of the modern Middle East. The course topics include the media's role in alleviating or worsening refugee crises, the Palestinian "right of return," and the place of religion in the Syrian civil war. By looking at autobiographies, graffiti, revolutionary posters, and music, we will study the construction of refugee identities, through the prism of race, ethnicity, statelessness, gender, and sexual orientation. Priority given to history majors and minors.

HISTORY 85B. Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV. 3 Units.
(HISTORY 85B is 3 units; HISTORY 185B is 5 units.) Who are American Jews as depicted in popular media-- film, television, etc.-- since the Second World War? How are their religion, politics, mores, and practices represented and what ways, if at all, do such portraits reflect historical trends among Jews and society in general? What can be learned from film or tv about Jewish identity, notions of Jewish power and powerlessness, communal cohesiveness and assimilation, sexuality and the wages of intermarriage or race?.
Same as: CSRE 85B, JEWISHST 85B, REES 85B

HISTORY 86Q. Blood and Money: The Origins of Antisemitism. 4-5 Units.
For over two millennia, Jews and Judaism have been the object of sustained anxieties, fears, and fantasies, which have in turn underpinned repeated outbreaks of violence and persecution. This course will explore the development and impact of antisemitism from Late Antiquity to the Enlightenment, including the emergence of the Blood libel, the association between Jews and moneylending, and the place of Judaism in Christian and Islamic theology. No prior background in history or Jewish studies is necessary. Prerequisite: PWR 1.
Same as: JEWISHST 86Q

HISTORY 87. The Islamic Republics: Politics and Society in Iran, Afghanistan and Pakistan. 3 Units.
(Same as HISTORY 187. History majors and other taking 5 units, register for 187.) Explores the contested politics of these societies in modern times. Topics include controversies surrounding the meaning of revolution, state building, war, geopolitics, Islamic law, clerical authority, gender, an Islamic economy, culture, and ethnic, national and religious identities from the 1940s to the present. Assignments will focus on primary sources (especially legal documents, poetry, novels, and memoirs) and films.

HISTORY 89S. Chinese Diaspora and the Making of the Pacific World, 1750-1911. 5 Units.
What do the city of Singapore, ICE, the abolition of the slave trade, and the latex condom have in common? All are entangled with the merchant princes, people-smugglers, indentured laborers, and rubber planters that made up the Chinese diaspora in the ¿long¿ 19th century. This course will introduce the primary sources and interpretive techniques that historians use to understand the Chinese diasporic past by focusing on four main themes: autonomy and assimilation, indenture and forced labor, race and immigration, and intellectual and material exchanges.

HISTORY 90. Early Chinese Thought. 3-5 Units.
This lecture course examines the emergence of critical thought in early China. After a brief study of the social and political changes that made this emergence possible, it looks at the nature and roles of the thinkers, and finally their ideas about the social order, the state, war and the army, the family, the cosmos, and the self (both physical and mental). Some brief comparisons with early Greek thought.
Same as: HISTORY 190

HISTORY 91B. The City in Imperial China. 3 Units.
The evolution of cities in the early imperial, medieval, and early modern periods. Topics include physical structure, social order, cultural forms, economic roles, relations to rural hinterlands, and the contrast between imperial capitals and other cities. Comparative cases from European history. Readings include primary and secondary sources, and visual materials.

HISTORY 91D. China: The Northern and Southern Dynasties. 3 Units.
(Same as HISTORY 191D. History majors and others taking 5 units, register for 191D.) Examines one of the most dynamic periods of Chinese history with the emergence of the institutional religions (Buddhism and Daoism), the development of the garden as an art form, the rise of landscape as a theme of verse and art, the invention of lyric poetry, and the real beginnings of the southward spread of Chinese civilization.

HISTORY 91S. Before Footbinding: Women, Gender, and Sexuality in Early and Medieval China. 5 Units.
This course discusses women, gender, and sexuality from ancient China to the Tang Dynasty (618-907 AD). During this period, gender norms and practices changed with the political system, state ideology, and family structure, as well as religions and literary genres. Using diverse approaches and sources, we will explore topics including family and marriage, women and political power, gender and law, gender and medical care, gender and arts, the construction of femininity and masculinity, and same-sex relations.

HISTORY 92A. The Historical Roots of Modern East Asia. 4-5 Units.
Focus is on China and Japan before and during their transition to modernity. The populous, urbanized, economically advanced, and culturally sophisticated Ming empire and Muromachi shogunate in the 16th century when Europeans first arrived. How the status quo had turned on its head by the early 20th century when European and American steamships dominated the Pacific, China was in social and political upheaval, and Japan had begun its march to empire.
Same as: HISTORY 392E

HISTORY 94B. Japan in the Age of the Samurai. 3 Units.
(Same as HISTORY 194B. History majors and others taking 5 units, register for 194B.) From the Warring States Period to the Meiji Restoration. Topics include the three great unifiers, Tokugawa hegemony, the samurai class, Neoconfucian ideologies, suppression of Christianity, structures of social and economic control, frontiers, the other and otherness, castle-town culture, peasant rebellion, black marketing, print culture, the floating world, National Studies, food culture, samurai activism, black ships, unequal treaties, anti-foreign terrorism, restorationism, millenarianism, modernization as westernization, Japan as imagined community.

HISTORY 95. Modern Korean History. 3 Units.
(Same as HISTORY 195. History majors and others taking 5 units, register for 195.) This lecture course provides a general introduction to the history of modern Korea. Themes include the characteristics of the Chosôn dynasty, reforms and rebellions in the nineteenth century, Korean nationalism; Japan's colonial rule and Korean identities; decolonization and the Korean War; and the different state-building processes in North and South, South Korea's democratization in 1980s, and the current North Korean crisis.

HISTORY 95N. Maps in the Modern World. 4-5 Units.
Preference to freshmen. Focus is on cutting-edge research. Topics: the challenge of grasping the globe as a whole; geography's roots in empire; maps as propaganda and as commodities; the cultural production of scale; and the cartography of imaginery worlds.Sources include resources in the Green Library Special Collections and in the Stanford Spatial History Lab.

HISTORY 96S. The World the Mongols Made: Nomads, Empire, Legacy. 5 Units.
The Mongols created global history. Their enterprise was the largest land-based empire in world history, and it lasted longer than most of the competition. This course will examine the world that the Mongols left behind, a world whose ways the Mongols affected and still continue to affect. In particular we will look first at the Mongol Empire in its entirety and its interactions with the Christian, Muslim, and the Chinese worlds. We will then examine the legacies left by the Mongols in the aftermath of its fracture and reorganization to form various successors.

HISTORY 97. Southeast Asia: From Antiquity to the Modern Era. 3-5 Units.
The history of S.E. Asia, comprising Indonesia, the Philippines, Malaysia, Singapore, Thailand, Vietnam, Burma, Cambodia, and Laos, from antiquity to the present. The spread of Indian cultural influences, the rise of indigenous states, and the emergence of globally linked trade networks. European colonization, economic transformation, the rise of nationalism, the development of the modern state, and the impact of globalization.
Same as: HISTORY 197

HISTORY 98. The History of Modern China. 3 Units.
(Same as HISTORY 198. History majors and others taking 5 units, register for 198.) This course charts major historical transformations in modern China, and will be of interest to those concerned with Chinese politics, culture, society, ethnicity, economy, gender, international relations, and the future of the world.

HISTORY 98N. Beijing, Shanghai, and the Structure of Modern China. 3 Units.
This course examines the transformation of China from the late empire to the present by studying the nature of its two greatest cities. Topics examined will include the evolving physical structure of the cities, their changing relations to the Chinese state and the outside world, shifting understandings of the urban population/crowd, the changing nature of time, new modes of self-definition through patterns of consumption, the cities as topics of literature and movies, and the nature of urban modernity.

HISTORY 98S. Crime and Punishment in Late Imperial China: Law, State Formation, and Society. 5 Units.
How did crime and punishment in late imperial China compare to other parts of the world? What place did the law have in the imperial Chinese state's strategies of governance and in resolving social grievances? How did certain groups and behaviors come to be criminalized, and how did this relate to broader contexts of pre-modern Chinese society? How was Chinese law perceived by foreign observers? Over the course of the quarter, we will utilize a wide range of both Qing legal documents and other types of primary sources to search for answers to these questions.

HISTORY 101. The Greeks. 4-5 Units.
250 years ago, for almost the first time in history, a few societies rejected kings who claimed to know what the gods wanted and began moving toward democracy. Only once before had this happened--in ancient Greece. This course asks how the Greeks did this, and what they can teach us today. It uses texts and archaeology to trace the material and military sides of the story as well as cultural developments, and looks at Greek slavery and misogyny as well as their achievements. Weekly participation in a discussion section is required.
Same as: CLASSICS 83

HISTORY 102. History of the International System since 1914. 5 Units.
After defining the characteristics of the international system at the beginning of the twentieth century, this course reviews the primary developments in its functioning in the century that followed. Topics include the major wars and peace settlements; the emergence of Nazism and Communism; the Cold War; decolonization; and globalization. The role of international institutions and international society will also be a focus as will the challenges of climate change, inequality, migration, and terrorism.
Same as: INTNLREL 102

HISTORY 102A. The Romans. 3-5 Units.
How did a tiny village create a huge empire and shape the world, and why did it fail? Roman history, imperialism, politics, social life, economic growth, and religious change. Weekly participation in a discussion section is required; enroll in sections on Coursework.
Same as: CLASSICS 84

HISTORY 103D. Human Society and Environmental Change. 4 Units.
Interdisciplinary approaches to understanding human-environment interactions with a focus on economics, policy, culture, history, and the role of the state. Prerequisite: ECON 1.
Same as: EARTHSYS 112, EARTHSYS 212, ESS 112

HISTORY 103F. The Changing Face of War: Introduction to Military History. 3-5 Units.
Introduces students to the rich history of military affairs and, at the same time, examines the ways in which we think of change and continuity in military history. How did war evolve from ancient times, both in styles of warfare and perceptions of war? What is the nature of the relationship between war and society? Is there such a thing as a Western way of war? What role does technology play in transforming military affairs? What is a military revolution and can it be manufactured or induced? Chronologically following the evolution of warfare from Ancient Greece to present day so-called new wars, we will continuously investigate how the interdependencies between technological advances, social change, philosophical debates and economic pressures both shaped and were influenced by war. Students satisfying the WiM requirement for the major in International Relations, must enroll in INTNLREL 103F course listing.
Same as: HISTORY 3F, INTNLREL 103F

HISTORY 105C. Human Trafficking: Historical, Legal, and Medical Perspectives. 5 Units.
(Same as HISTORY 5C. History majors and others taking 5 units, enroll in 105C.) Interdisciplinary approach to understanding the extent and complexity of the global phenomenon of human trafficking, especially for forced prostitution, labor exploitation, and organ trade, focusing on human rights violations and remedies. Provides a historical context for the development and spread of human trafficking. Analyzes the current international and domestic legal and policy frameworks to combat trafficking and evaluates their practical implementation. Examines the medical, psychological, and public health issues involved. Uses problem-based learning. Required weekly 50-min. discussion section, time TBD. Students interested in service learning should consult with the instructor and will enroll in an additional course.
Same as: CSRE 105C, FEMGEN 105C, HUMRTS 112, INTNLREL 105C

HISTORY 106A. Global Human Geography: Asia and Africa. 5 Units.
Global patterns of demography, economic and social development, geopolitics, and cultural differentiation, covering E. Asia, S. Asia, S.E. Asia, Central Asia, N. Africa, and sub-Saharan Africa. Use of maps to depict geographical patterns and processes.

HISTORY 106B. Global Human Geography: Europe and Americas. 5 Units.
Patterns of demography, economic and social development, geopolitics, and cultural differentiation. Use of maps to depict geographical patterns and processes.

HISTORY 107. Introduction to Urban Studies. 4 Units.
Today, for the first time in history, a majority of people live in cities. By 2050, cities will hold two-thirds of the world¿s population. This transformation touches everyone, and raises critical questions. What draws people to live in cities? How will urban growth affect the world¿s environment? Why are cities so divided by race and by class, and what can be done about it? How do cities change who we are, and how can we change cities? In this class, you will learn to see cities in new ways, from the smallest everyday interactions on a city sidewalk to the largest patterns of global migration and trade. We will use specific examples from cities around the world to illustrate the concepts that we learn in class. The course is intended primarily for freshmen and sophomores.
Same as: URBANST 110

HISTORY 110C. The Problem of Modern Europe. 5 Units.
(Same as HISTORY 10C. History majors and others taking 5 units, register for 110C.) From the late 18th century to the present. How Europeans responded to rapid social changes caused by political upheaval, industrialization, and modernization. How the experience and legacy of imperialism and colonialism both influenced European society and put in motion a process of globalization that continues to shape international politics today.

HISTORY 112. Medicine and Disease in the Ancient World. 5 Units.
(Same as HISTORY 12. History majors and others taking 5 units, register for HISTORY 112.) This course explores medicine and disease through case studies from civilizations of the ancient world such as Egypt, Greece, and Peru. We will discuss how these cultures conceptualized disease, and in turn, how they contended with illnesses. Lectures will address different forms of illness through medical texts, art, and human remains. Weekly discussion will incorporate evidence from these sources to explore both their potential and their limitations.

HISTORY 113. Before Globalization: Understanding Premodern World History. 3-5 Units.
(Formerly CLASSHIS 147.) This course covers the history of the world from 60,000 years ago until 1500 by asking big questions: Why did civilizations develop the way they did? What factors were responsible for similarities and differences between different parts of the world? What does this mean for our newly globalized world?.

HISTORY 114. Origins of History in Greece and Rome. 4-5 Units.
What¿s the history of `History¿? The first ancient historians wrote about commoners and kings, conquest and power¿those who had it, those who wanted it, those without it. Their powerful ways of recounting the past still resonate today and can be harnessed to tell new stories. We will look at how ancients like Herodotus, Thucydides, Tacitus, and Livy turned stories about the past into compelling narratives of loss, growth and decline¿inventing ¿History¿ as we know it. All readings in English.
Same as: CLASSICS 88

HISTORY 115D. Europe in the Middle Ages, 300-1500. 3-5 Units.
(HISTORY 15D is 3 units; HISTORY 115D is 5 units.) This course provides an introduction to Medieval Europe from the fall of Rome to the Renaissance. While the framework of the course is chronological, we'll concentrate particularly on the structure of medieval society. Rural and urban life, kingship and papal government, wars and plagues provide the context for our examination of the lives of medieval people, what they believed, and how they interacted with other, both within Christendom and beyond it. This course may count as DLCL 123, a course requirement for the Medieval Studies Minor.
Same as: HISTORY 15D, RELIGST 115X

HISTORY 116. Traders and Crusaders in the Medieval Mediterranean. 3-5 Units.
Trade and crusade were inextricably interconnected in the high Middle Ages. As merchant ships ferried knights and pilgrims across the Mediterranean, rulers borrowed heavily to finance their expeditions, while military expansion opened new economic opportunities. Course themes include the origins of the Crusading movement; the rise of Venice and other maritime powers; the pivotal roles of the Byzantine and Mongol Empires; relations between Christians, Muslims, and Jews; new military, maritime, and commercial technologies; and the modern legacy of the Crusades.
Same as: HISTORY 16

HISTORY 116M. "You Know Nothing, Jon Snow": Representations and Misrepresentations of the Middle Ages in Film. 5 Units.
Throughout the history of film, writers, directors and producers have made the Middle Ages one of the most popular settings featured in the medium. Some films attempt to faithfully represent this fascinating period in great historical detail. Other films use a deformed image of the Middle Ages as an inspiration for movies that propagate misleading depictions of this important time. Finally, most films could be placed somewhere on the spectrum between these two extremes. This class will examine eight films and one broad theme (e.g., violence, women, politics, etc.) featured in them. Through examination of primary and secondary sources, students will investigate these themes within the context of medieval history, critique their cinematic representation and discuss medievalism and its proponents.

HISTORY 116N. Howard Zinn and the Quest for Historical Truth. 3 Units.
With more than two million copies in print, Howard Zinn's A People's History is a cultural icon. We will use Zinn's book to probe how we determine what was true in the past. A People's History will be our point of departure, but our journey will visit a variety of historical trouble spots: debates about whether the US was founded as a Christian nation, Holocaust denial, and the "Birther" controversy of President Obama.
Same as: EDUC 116N

HISTORY 117. Ancient Empires: Near East. 4-5 Units.
Why do imperialists conquer people? Why do some people resist while others collaborate? This course tries to answer these questions by looking at some of the world's earliest empires. The main focus is on the expansion of the Assyrian and Persian Empires between 900 and 300 BC and the consequences for the ancient Jews, Egyptians, and Greeks. The main readings come from the Bible, Herodotus, and Assyrian and Persian royal inscriptions, and the course combines historical and archaeological data with social scientific approaches. Weekly participation in a discussion section is required.
Same as: CLASSICS 81

HISTORY 120B. The Russian Empire. 5 Units.
From Peter the Great to the Bolsheviks. Russia as an empire; its varied regions, including the Caucasus, Central Asia, Ukraine, Poland, and the Baltics. Focus is on the politics and cultures of empire. Sources include novels, political tracts, paintings, music, and other primary sources.

HISTORY 120C. 20th-Century Russian and Soviet History. 5 Units.
The Soviet polity from the 1917 Revolution to its collapse in 1991. Essentials of Marxist ideology; the Russian Empire in 1917. Causation in history; interpretations of the Revolution; state building in a socialist polity; social engineering through collectivization of agriculture, force-paced industrialization, and cultural revolution; terror as concept and practice; nationality policies in a multiethnic socialist empire; the routinization, decline, and collapse of the revolutionary ethos; and the legacy of the Soviet experiment in the new Russia.

HISTORY 126B. Protestant Reformation. 3-5 Units.
The emergence of Protestant Christianity in 16th-century Europe. Analysis of writings by evangelical reformers (Luther, Calvin, Zwingli, Sattler, Hubmeier, Müntzer) and study of reform movements (Lutheran, Reformed, Anabaptist, Spiritualist) in their medieval context and as expressions of new and influential visions of Christian belief, life, social order.
Same as: RELIGST 126

HISTORY 132. Ordinary Lives: A Social History of the Everyday in Early Modern Europe. 5 Units.
What war meant for foot soldiers and the peasants across whose fields they marched. Ordinary people's lives in the eras of Machiavelli, Shakespeare, the Reformation, and the scientific revolution. Topics include: birth, marriage, and death; city life and peasant culture; lay encounters with religious and intellectual ideas; war and crime; and gender and sexuality.

HISTORY 133A. Blood and Roses: The Age of the Tudors. 5 Units.
English society and state from the Wars of the Roses to the death of Elizabeth. Political, social, and cultural upheavals of the Tudor period and the changes wrought by the Reformation. The establishment of the Tudor monarchy; destruction of the Catholic church; rise of Puritanism; and 16th-century social and economic changes.

HISTORY 133B. Revolutionary England: The Stuart Age. 5 Units.
(Same as HISTORY 33B. HISTORY 133B is 5 units; 33B is 3 units.) From the accession of King James I in 1603 to the death of Queen Anne in 1714: a brutal civil war, the execution of one anointed king, and the deposition of another. Topics include the causes and consequences of the English Revolution, the origins of Anglo-American democratic thought, the rise and decline of Puritanism, and the emergence of England as an economic and colonial power.

HISTORY 134A. The European Witch Hunts. 5 Units.
(Same as HISTORY 34A. History majors and others taking 5 units, register for 134A.) After the Reformation, in the midst of state-building and scientific discovery, Europeans conducted a series of deadly witch hunts, violating their own laws and procedures in the process. What was it about early modernity that fueled witch hunting? Examines witch trials and early modern demonology as well as historians' interpretations of events to seek answers to this question.

HISTORY 137A. Europe, 1945-2002. 5 Units.
Europe's transformation from the end of WW II to an expanded EU. Political, cultural, economic, and social history. Topics: postwar reconstruction, Cold War, consumer versus socialist culture, collapse of Communism, postcommunist integration.

HISTORY 137D. Germany's Wars and the World, 1848-2010. 3-5 Units.
(History 37D is 3 units; History 137D is 5 units.)This course examines a series of explosive encounters between Germans, Europe, and the world. Starting with the overlooked revolutions of 1848 and ending with the reunification of West Germany and East Germany after the Cold War, the course will explore a range of topics: capitalism, communism, imperialism, nationalism, diplomacy, antisemitism, gender, race, and the Holocaust, among others. We will also consider competing visions of Germany its borders, its members, its enemies.
Same as: HISTORY 37D

HISTORY 139. Modern Britain and the British Empire. 5 Units.
(Same as HISTORY 39. History majors and others taking 5 units, register in 139.) From American Independence to the latest war in Iraq. Topics include: the rise of the modern British state and economy; imperial expansion and contraction; the formation of class, gender, and national identities; mass culture and politics; the world wars; and contemporary racial politics. Focus is on questions of decline, the fortunes and contradictions of British liberalism in an era of imperialism, and the weight of the past in contemporary Britain.

HISTORY 140. World History of Science. 5 Units.
(History 40 is 3 units; History 140 is 5 units.) The earliest developments in science, the prehistoric roots of technology, the scientific revolution, and global voyaging. Theories of human origins and the oldest known tools and symbols. Achievements of the Mayans, Aztecs, and native N. Americans. Science and medicine in ancient Greece, Egypt, China, Africa, and India. Science in medieval and Renaissance Europe and the Islamic world including changing cosmologies and natural histories. Theories of scientific growth and decay; how science engages other factors such as material culture and religions.

HISTORY 140A. The Scientific Revolution. 5 Units.
What do people know and how do they know it? What counts as scientific knowledge? In the 16th and 17th centuries, understanding the nature of knowledge engaged the attention of individuals and institutions including Copernicus, Galileo, Descartes, Newton, the early Royal Society, and less well-known contemporaries. New meanings of observing, collecting, experimenting, and philosophizing, and political, religious, and cultural ramifications in early modern Europe.

HISTORY 144. Sex, Gender, and Intersectional Analysis in Science, Medicine, Engineering, and Environment. 5 Units.
(HISTORY 44 is offered for 3 units; HISTORY 144 is offered for 5 units.) Explores "Gendered Innovations" or how sex, gender, and intersectional analysis in research sparks discovery and innovation. Section 1 focuses on the history of women in science. Section 2 looks at transforming research institutions. Section 3 explores Gendered Innovations. Topics include historical background, basic concepts, social robots, sustainability, medicine & public health, facial recognition, inclusive crash test dummies, and more. Stanford University is engaged in a multi-year collaboration with the European Commission and the U.S. National Science Foundation project on Gendered Innovations in Science, Health & Medicine, Engineering, and Environment, and this class will contribute that project. The operative questions is: how can sex, gender, and intersectional analysis lead to discovery and enhance social equalities?.
Same as: FEMGEN 144

HISTORY 145A. Africa Until European Conquest. 5 Units.
Episodes in African history from the earliest records up until European partition of the continent, focusing on how knowledge about the natural, social, and spiritual worlds was linked to the exercise of power. The effects of technological innovations on states and other forms of social complexity; use of religious beliefs and practices to legitimate or critique authority. The effects of slave trades and imperial conquest on these forms of authority.

HISTORY 145B. Africa in the 20th Century. 5 Units.
(Same as HISTORY 45B. Students taking 5 units, register for 145B.) The challenges facing Africans from when the continent fell under colonial rule until independence. Case studies of colonialism and its impact on African men and women drawn from West, Central, and Southern Africa. Novels, plays, polemics, and autobiographies written by Africans.
Same as: AFRICAAM 145B

HISTORY 146. History of Humanitarian Aid in sub-Saharan Africa. 4-5 Units.
Explores humanitarian endeavors through the era of the slave trade, colonialism, the Cold War and the present. Our focus is both local and global examining international humanitarian policy and the effects and perceptions of humanitarian aid within different African localities. Assignments use primary and secondary sources including organizational reports, ethnographies, memoirs and film. Topics: anti-slave trade and abolition movements, `civilizing¿ missions, development, refugees, peacekeeping, famine and women's rights.

HISTORY 147. History of South Africa. 5 Units.
(Same as HISTORY 47. History majors and others taking 5 units, register for 147.) Introduction, focusing particularly on the modern era. Topics include: precolonial African societies; European colonization; the impact of the mineral revolution; the evolution of African and Afrikaner nationalism; the rise and fall of the apartheid state; the politics of post-apartheid transformation; and the AIDS crisis.
Same as: AFRICAAM 147, CSRE 174

HISTORY 148. The Egyptians. 3-5 Units.
This course traces the emergence and development of the distinctive cultural world of the ancient Egyptians over nearly 4,000 years. Through archaeological and textual evidence, we will investigate the social structures, religious beliefs, and expressive traditions that framed life and death in this extraordinary region. Students with or without prior background are equally encouraged.
Same as: AFRICAAM 30, CLASSICS 82, HISTORY 48

HISTORY 149C. The Slave Trade. 5 Units.
(Same as HISTORY 49C. History majors and others taking 5 units, enroll in 149C.) Slave trades and forms of slavery in W. Africa from 1000 to 1885; impacts on lives, social organization, and political structures. Slavery in Islam, the slave market in the Mediterranean and Middle East, and the Saharan slave trade. Slavery within Africa, growth of the Atlantic trade, the Middle Passage, and war and trade that produced slaves. Impact of the Industrial Revolution and European abolition movements on the use of slaves and warfare in Africa. The relationship between slaving and the European conquest of Africa.

HISTORY 150A. Colonial and Revolutionary America. 5 Units.
(HISTORY 50A is 3 units. HISTORY 150A is 5 units) This course surveys early American history from the onset of English colonization of North America in the late sixteenth century through the American Revolution and the creation of the United States in the late eighteenth. It situates the origins and the development of colonial American society as its peoples themselves experienced it, within the wider histories of the North American continent and the Atlantic basin. It considers the diversity of peoples and empires that made up these worlds as well as the complex movement of goods, peoples, and ideas that defined them. The British North American colonies were just one interrelated part of this wider complex. Yet out of that interconnected Atlantic world, those particular colonies produced a revolution for national independence that had a far-reaching impact on the world. The course, accordingly, explores the origins of this revolutionary movement and the nation state that it wrought, one that would rapidly ascend to hemispheric and then global prominence.
Same as: AMSTUD 150A

HISTORY 150B. Nineteenth Century America. 5 Units.
(Same as HISTORY 50B. History majors and others taking 5 units, register for 150B.) Territorial expansion, social change, and economic transformation. The causes and consequences of the Civil War. Topics include: urbanization and the market revolution; slavery and the Old South; sectional conflict; successes and failures of Reconstruction; and late 19th-century society and culture.
Same as: AFRICAAM 150B, AMSTUD 150B, CSRE 150S

HISTORY 150C. The United States in the Twentieth Century. 5 Units.
(Same as HISTORY 50C. History majors and others taking 5 units, register for 150C.) 100 years ago, women and most African-Americans couldn't vote; automobiles were rare and computers didn't exist; and the U.S. was a minor power in a world dominated by European empires. This course surveys politics, culture, and social movements to answer the question: How did we get from there to here? Two historical research "labs" or archival sessions focus on the Great Depression in the 1930s and radical and conservative students movements of the 1960s. Suitable for non-majors and majors alike.
Same as: AFRICAAM 150C, AMSTUD 150C

HISTORY 151. The American West. 5 Units.
The American West is characterized by frontier mythology, vast distances, marked aridity, and unique political and economic characteristics. This course integrates several disciplinary perspectives into a comprehensive examination of Western North America: its history, physical geography, climate, literature, art, film, institutions, politics, demography, economy, and continuing policy challenges. Students examine themes fundamental to understanding the region: time, space, water, peoples, and boom and bust cycles.
Same as: AMSTUD 124A, ARTHIST 152, ENGLISH 124, POLISCI 124A

HISTORY 151B. The End of American Slavery, 1776-1865. 3-5 Units.
How did the institution of American slavery come to an end? The story is more complex than most people know. This course examines the rival forces that fostered slavery's simultaneous contraction in the North and expansion in the South between 1776 and 1861. It also illuminates, in detail, the final tortuous path to abolition during the Civil War. Throughout, the course introduces a diverse collection of historical figures, including seemingly paradoxical ones, such as slaveholding southerners who professed opposition to slavery and non-slaveholding northerners who acted in ways that preserved it. Historical attitudes toward race are a central integrative theme.
Same as: HISTORY 51B

HISTORY 152. History of American Law. 5 Units.
(Formerly Law 318. Now Law 3504.) This course examines the growth and development of American legal institutions with particular attention to crime and punishment, slavery and race relations, the role of law in developing the economy, and the place of lawyers in American society, from colonial times to the present. Special Instructions: Any student may write a paper in lieu of the final exam with consent of instructor. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Final exam or paper. Automatic grading penalty waived for writers. Cross-listed with History (HISTORY 152 Consent of instructor required) & (HISTORY 352B).
Same as: HISTORY 352B

HISTORY 152K. America as a World Power in the Modern Era. 5 Units.
This course will examine the modern history of American foreign relations, from the turn of the twentieth century to the present. Beginning with the fateful decision to go to war with Spain, it will examine the major crises and choices that have defined the "American Century." Our study of U.S. foreign relations will consider such key factors as geopolitics, domestic politics, bureaucracy, psychology, race, and culture. IR majors taking this course to fulfill the IR WIM requirement should enroll in INTNLREL168W.
Same as: INTNLREL 168, INTNLREL 168W

HISTORY 153. Creation of the Constitution. 5 Units.
The course begins with readings setting forth the intellectual and experiential background of the framing, including common law and natural rights theory, republicanism, economic & political scientific ideas, and colonial and post-Independence experience. We then study large parts of the debates at the Constitutional Convention, primarily using Madison's Notes. Major topics are the principle of representation, the extent and enumeration of national powers, the construction of the executive and judicial branches, and slavery. Next come the ratification debates, including readings from antifederalist writers, The Federalist, and speeches in ratification conventions. We conclude with the addition of the Bill of Rights. Classes consist of a combination of lecture and extensive participation by students. Elements used in grading: Class participation, In-class exam, supplemented by short take-home essay. Cross-listed with the Law School (LAW 7017).

HISTORY 154. American Intellectual and Cultural History to the Civil War. 5 Units.
(Same as HISTORY 54. History majors and others taking 5 units, register for 154.) How Americans considered problems such as slavery, imperialism, and sectionalism. Topics include: the political legacies of revolution; biological ideas of race; the Second Great Awakening; science before Darwin; reform movements and utopianism; the rise of abolitionism and proslavery thought; phrenology and theories of human sexuality; and varieties of feminism. Sources include texts and images.
Same as: AMSTUD 154

HISTORY 155. The White Supremacist Constitution: American Constitutional History. 5 Units.
This course addresses U.S. constitutional history from the post-Civil War Reconstruction period through the mid-20th century. Because of the breadth of the subject matter, the view will necessarily be partial. In particular we will take as our focus the way the Constitution has provided a point of political mobilization for social movements challenging economic and social inequality. Topics covered include: Civil War Reconstruction and restoration; the rise of corporate capitalism and efforts to constrain it; Progressive Era regulation; the New Deal challenge to federalism and the anti-New Deal backlash; government spending; WWII and the Japanese Internment; the Civil Rights Era, and the War on Poverty. Readings will include both legal and historical materials with a focus on the relationship between law and society. Elements used in grading: Class Participation, Attendance, Written Assignments, Final Paper. Paper extensions will be granted with instructor permission. No automatic grading penalty for late papers. Cross-listed with the Law School (LAW 7008),.
Same as: AMSTUD 155

HISTORY 155F. The Civil War and Reconstruction Era, 1830 to 1877. 3-5 Units.
(History 55F is 3 units; History 155F is 5 units.)This course explores the causes, course, and consequences of the American Civil War. The Civil War profoundly impacted American life at national, sectional, and constitutional levels, and radically challenged categories of race and citizenship. Topics covered include: the crisis of union and disunion in an expanding republic; slavery, race, and emancipation as national problems and personal experiences; the horrors of total war for individuals and society; and the challenges--social and political--of Reconstruction.
Same as: AFRICAAM 55F, AMSTUD 55F, AMSTUD 155F, HISTORY 55F

HISTORY 158C. History of Higher Education in the U.S.. 3-5 Units.
Major periods of evolution, particularly since the mid-19th century. Premise: insights into contemporary higher education can be obtained through its antecedents, particularly regarding issues of governance, mission, access, curriculum, and the changing organization of colleges and universities.
Same as: AMSTUD 165, EDUC 165, EDUC 265

HISTORY 161. The Politics of Sex: Work, Family, and Citizenship in Modern American Women's History. 3-5 Units.
This course explores the transition from Victorian to modern American womanhood by asking how Native, European, African, Mexican, and Asian American women navigated the changing sexual, economic, and political landscapes of the twentieth century. Through secondary readings, primary sources, films, music, and literature we explore the opportunities and boundaries on groups of women in the context of historical events that included immigration, urbanization, wartime, depression, the Cold War, as well as recurrent feminist and conservative political movements.
Same as: AMSTUD 161, CSRE 162, FEMGEN 161, HISTORY 61

HISTORY 163. A History of North American Wests. 5 Units.
The history, peoples, and natural systems of a region that has never been contained within a single empire or nation state, but has been united by the movement of peoples, species, and things. Topics include smallpox, horses, gold, salmon, rivers, coal, and oil.

HISTORY 164C. From Freedom to Freedom Now: African American History, 1865-1965. 5 Units.
(Same as HISTORY 64C. History majors and others taking 5 units, register for 164C.) Explores the working lives, social worlds, political ideologies and cultural expressions of African Americans from emancipation to the early civil rights era. Topics include: the transition from slavery to freedom, family life, work, culture, leisure patterns, resistance, migration and social activism. Draws largely on primary sources including autobiographies, memoirs, letters, personal journals, newspaper articles, pamphlets, speeches, literature, film and music.
Same as: AMSTUD 164C

HISTORY 166B. Immigration Debates in America, Past and Present. 3-5 Units.
Examines the ways in which the immigration of people from around the world and migration within the United States shaped American nation-building and ideas about national identity in the twentieth century. Focuses on how conflicting ideas about race, gender, ethnicity, and citizenship with respect to particular groups led to policies both of exclusion and integration. Part One begins with the ways in which the American views of race and citizenship in the colonial period through the post-Reconstruction Era led to the passage of the Chinese Exclusion Act in 1882 and subsequently to broader exclusions of immigrants from other parts of Asia, Southern and Eastern Europe, and Mexico. Explores how World War II and the Cold War challenged racial ideologies and led to policies of increasing liberalization culminating in the passage of the 1965 Immigration Act, which eliminated quotas based on national origins and opened the door for new waves of immigrants, especially from Asia and Latin America. Part Two considers new immigration patterns after 1965, including those of refugees, and investigates the contemporary debate over immigration and immigration policy in the post 9/11 era as well as inequalities within the system and the impact of foreign policy on exclusions and inclusions.
Same as: CSRE 166B, HISTORY 366B

HISTORY 166C. The Cold War: An International History. 5 Units.
Though it ended twenty years ago, we still live in a world shaped by the Cold War. Beginning with its origins in the mid-1940s, this course will trace the evolution of the global struggle, until its culmination at the end of the 1980s. Students will be asked to ponder the fundamental nature of the Cold War, what kept it alive for nearly fifty years, how it ended, and its long term legacy for the world. As distinguished from the lecture taught in previous quarters, this class will closely investigate ten major Cold War battlegrounds over the quarter. Selected case studies will include: the division of Germany, Iran in the 1950s, Cuba, Vietnam, the Six Day War, the Chilean coup, sub-Saharan Africa, Afghanistan, Central America, and the Eastern European revolutions of 1989. Students will be asked to consult a combination of original documents and recent histories.
Same as: INTNLREL 154

HISTORY 167A. Martin Luther King, Jr. and the Global Freedom Struggle. 3-5 Units.
Using the unique documentary resources and publications of Stanford's King Research and Education Institute, this course will be taught by Professor Carson and his colleagues at the Institute. It will provide a general introduction to the life and legacy of Martin Luther King, Jr., as well as devote attention to the movements he inspired. In addition to lectures, the course will include presentations of documentaries such as Eyes on the Prize. Students will be expected to read the required texts, participate in class discussions, and take a final exam or submit a research paper (or an audio-visual project developed in consultation with the professor).

HISTORY 168. American History in Film Since World War ll. 3-4 Units.
U.S. society, culture, and politics since WW II through feature films. Topics include: McCarthyism and the Cold War; ethnicity and racial identify; changing sex and gender relationships; the civil rights and anti-war movements; and mass media. Films include: The Best Years of Our Lives, Salt of the Earth, On the Waterfront, Raisin in the Sun, Kramer v Kramer, and Falling Down.

HISTORY 168D. American Prophet: The Inner Life and Global Vision of Martin Luther King, Jr.. 3-5 Units.
Martin Luther King, Jr., was the 20th-century's best-known African-American leader, but the religious roots of his charismatic leadership are far less widely known. The documents assembled and published by Stanford's King Research and Education Institute provide the source materials for this exploration of King's swift rise to international prominence as an articulate advocate of global peace and justice.
Same as: AFRICAAM 68D, AMSTUD 168D, CSRE 68, HISTORY 68D

HISTORY 172A. Mexico: From Colony to Nation, or the History of an impossible Republic?. 5 Units.
Was a republican form of government even possible in 19th-century Mexico after 300 years of colonial rule under the Spanish monarchy? Was the Spanish colonial heritage a positive or a negative legacy according to 19th-century Mexican politicians? How were they to forge a new national identity with so many ethnically and culturally diverse peoples throughout the territory? Just how ¿traditional¿ was, in fact, the colonial period? These are some of the questions we will explore in this course. Journeying from the late colonial period (c.1700) to the 35-year dictatorship known as El Porfiriato (1876-1911) we will examine how Mexico¿s diverse indigenous peoples adapted to both colonial and postcolonial rule, how they actively participated in politics and political discourse to preserve their cultures, customs and colonial privileges, and how after independence in 1821, a new republican political culture was forged. Mexico was not an impossible republic, but rather another kind of republic.

HISTORY 173. Mexican Migration to the United States. 3-5 Units.
(History 73 is 3 units; History 173 is 5 units.) This course is an introduction to the history of Mexican migration to the United States. Barraged with anti-immigrant rhetoric and calls for bigger walls and more restrictive laws, few people in the United States truly understand the historical trends that shape migratory processes, or the multifaceted role played by both US officials and employers in encouraging Mexicans to migrate north. Moreover, few have actually heard the voices and perspectives of migrants themselves. This course seeks to provide students with the opportunity to place migrants' experiences in dialogue with migratory laws as well as the knowledge to embed current understandings of Latin American migration in their meaningful historical context.
Same as: AMSTUD 73, CHILATST 173, HISTORY 73

HISTORY 174. Mexico Since 1876: The Road to Ayotzinapa. 5 Units.
(History 74 is for 3 units; History 174 is for 5 units.) In September of 2014, 43 students from a Mexican teacher's college in Ayotzinapa, Guerrero were abducted and disappeared via the actions of police and organized crime. This shocking human rights violation, as well as the violence and impunity it represented, were symbolic of the decline of the rule of law embodied by Mexico's drug war. How did the nation arrive at this crossroads? This course is an introduction to the history of Mexico from 1876 to the present. Through lectures, discussions, primary and secondary sources, film and documentaries, and written assignments, students will critically explore the events and people that shaped Mexico for over a century. From the Porfirian dictatorship, to the Revolution, to the PRI's "perfect dictatorship," this course analyzes socioeconomic and racial inequality, foreign intervention, urbanization and industrialization, technological innovation and environmental degradation, education and ideology, modernity and migration, culture and media, and the drug trade.

HISTORY 177D. U.S. Intervention and Regime Change in 20th Century Latin America. 5 Units.
Policy discussions of regime change by US politicians, journalists and pundits usually focus on Iraq, Iran, Syria and North Korea, often with little or no historical context or perspective. This course does the opposite and takes seriously the proverbial saying "if history is any guide..." by examining U.S. interventions in Latin America, a region where so-called preventive regime change (covert as well as overt) has been operative policy for well over a century. Investigates the rationales, motivations and strategies behind U.S.-backed or engineered regime changes in Mexico in the 1910s, Guatemala in the 1950s, Chile in the 1970s, and Nicaragua in the 1980s.

HISTORY 178. Film and History of Latin American Revolutions and Counterrevolutions. 3-5 Units.
Note: Students who have completed HISTORY 78N or 78Q should not enroll in this course. In this course we will watch and critique films made about Latin America's 20th century revolutions focusing on the Cuban, Chilean and Mexican revolutions. We will analyze the films as both social and political commentaries and as aesthetic and cultural works, alongside archivally-based histories of these revolutions.
Same as: FILMSTUD 178, HISTORY 78, ILAC 178

HISTORY 179C. The Ethical Challenges of the Climate Catastrophe. 3-5 Units.
(History 79C is 3 units; History 179C is 5 units.) This course explores the ethical challenges of the climate catastrophe from historical, social, economic, political, cultural and scientific perspectives. These include the discovery of global warming over two centuries, the rise of secular and religious denialism and skepticism toward the scientific consensus on it, the dispute between developed and developing countries over how to forge a binding global agreement to mitigate it, and the "role morality" of various actors (scientists, politicians, fossil fuel companies, the media and ordinary individuals) in the US in assessing ethical responsibility for the catastrophe and how to mitigate, adapt, or even geoengineer, it.
Same as: HISTORY 79C

HISTORY 181B. Formation of the Contemporary Middle East. 5 Units.
(Same as 81B. 181B is 5 units; 81B is 3 units) This course introduces major themes in the modern history of the region linking the Mediterranean and Indian Ocean worlds. We will begin with the Eurasian context that produced the Safavid and Ottoman dynastic empires and quickly move to the economic and political transformations of the nineteenth century and the imperial dissolution of the early twentieth. Twentieth-century themes will include mass migrations and colonial occupation; nationalism, mass politics and revolution; socialist and Islamist movements; and the growing role of American policy in the region. The course will conclude with a close examination of the profound transformations of the past decade, from the multiform revolutions of the ¿Arab Spring¿ to the equally multiform attempts to repress them.

HISTORY 182G. Making Palestine Visible. 3-5 Units.
Israel-Palestine is one of the most difficult subjects to talk about, in large part because we in the United States do not have much exposure to Palestinian history, culture, and politics in their own terms. This course aims to humanize Palestinians and asks why Palestinian claims to rights are illegible for much of the American public. We begin to answer this question by examining a broad sampling of history, structures of power and law, culture, and contemporary political issues.
Same as: CSRE 82G, HISTORY 82G

HISTORY 185B. Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV. 4-5 Units.
(HISTORY 185B is 5 units; HISTORY 85B IS 3 units.) Who are American Jews as depicted in popular media -- film, television, etc. -- since the Second World War? How are their religion, politics, mores, and practices represented and what ways, if at all, do such portraits reflect historical trends among Jews and society in general? What can be learned from film or tv about Jewish identity, notions of Jewish power and powerlessness, communal cohesiveness and assimilation, sexuality and the wages of intermarriage or race?.
Same as: CSRE 185B, HISTORY 385C, JEWISHST 185B, REES 185B, SLAVIC 183

HISTORY 187. The Islamic Republics: Politics and Society in Iran, Afghanistan and Pakistan. 5 Units.
(Same as HISTORY 87. History majors and others taking 5 units, register for 187.) Explores the contested politics of these societies in modern times. Topics include controversies surrounding the meaning of revolution, state building, war, geopolitics, Islamic law, clerical authority, gender, an Islamic economy, culture and ethnic, national and religious identities from the 1940s to the present. Assignments will focus on primary sources (especially legal documents, poetry, novels, and memoirs) and films.

HISTORY 187D. Zionism and Its Critics. 4-5 Units.
Zionism from its genesis in the 1880s up until the establishment of the state of Israel in May, 1948, exploring the historical, ideological and political dimensions of Zionism. Topics include: the emergence of Zionist ideology in connection to and as a response to challenges of modernity; emancipation; Haskalah (Jewish enlightenment); other national and ideological movements of the period; the ideological crystallization of the movement; and the immigration waves to Palestine.

HISTORY 190. Early Chinese Thought. 3-5 Units.
This lecture course examines the emergence of critical thought in early China. After a brief study of the social and political changes that made this emergence possible, it looks at the nature and roles of the thinkers, and finally their ideas about the social order, the state, war and the army, the family, the cosmos, and the self (both physical and mental). Some brief comparisons with early Greek thought.
Same as: HISTORY 90

HISTORY 191B. The City in Imperial China. 5 Units.
The evolution of cities in the early imperial, medieval, and early modern periods. Topics include physical structure, social order, cultural forms, economic roles, relations to rural hinterlands, and the contrast between imperial capitals and other cities. Comparative cases from European history. Readings include primary and secondary sources, and visual materials.

HISTORY 191D. China: The Northern and Southern Dynasties. 5 Units.
(Same as HISTORY 91D. History majors and others taking 5 units, register for 191D.) Examines one of the most dynamic periods of Chinese history with the emergence of the institutional religions (Buddhism and Daoism), the development of the garden as an art form, the rise of landscape as a theme of verse and art, the invention of lyric poetry, and the real beginnings of the southward spread of Chinese civilization.

HISTORY 194B. Japan in the Age of the Samurai. 5 Units.
(Same as HISTORY 94B. History majors and others taking 5 units, register for 194B.) From the Warring States Period to the Meiji Restoration. Topics include the three great unifiers, Tokugawa hegemony, the samurai class, Neoconfucian ideologies, suppression of Christianity, structures of social and economic control, frontiers, the other and otherness, castle-town culture, peasant rebellion, black marketing, print culture, the floating world, National Studies, food culture, samurai activism, black ships, unequal treaties, anti-foreign terrorism, restorationism, millenarianism, modernization as westernization, Japan as imagined community.

HISTORY 194G. Humanities Core: Technology and Media in Modern Japan. 3-5 Units.
This course considers the political, economic, social, cultural, and artistic effects of the introduction of new technologies and media to modern China and Japan. The methodology will integrate techniques gleaned from the disciplines of history and literary studies. Our cross-discipline exploration will encompass printed books and images, language reform, communication technology, serialized fiction and commercial journalism, propaganda and censorship, cinema, comics, animation and television, gaming, and the internet. Through examination of these topics we will investigate a wide range of issues including nationality, ethnic identity, class, revolution, cultural identification, gender, sexuality, literacy, colonialism, imperialism, consumerism, materialism, and globalism, to name just a few. Throughout the course we will be attentive not only to the ways that new technology and media are represented in cultural materials but also how they are materialized in these products through the acts of adaptation, translation, transliteration, and remediation.nnStudents will survey, collect, and synthesize archival materials, engage in media analysis, and undertake close readings to illuminate narrative strategies and other signifying effects. This work will in part be facilitated by the Massive Multiplayer Humanities pedagogical model, which involves flipped classrooms, faculty curated online archives, and student initiated group work.

HISTORY 195. Modern Korean History. 4-5 Units.
(Same as HISTORY 95. History majors and others taking 5 units, register for 195.) This lecture course provides a general introduction to the history of modern Korea. Themes include the characteristics of the Chosôn dynasty, reforms and rebellions in the nineteenth century, Korean nationalism; Japan's colonial rule and Korean identities; decolonization and the Korean War; and the different state-building processes in North and South, South Korea's democratization in 1980s, and the current North Korean crisis.

HISTORY 195C. Modern Japanese History: From Samurai to Pokemon. 5 Units.
(Same as HISTORY 95C. History majors and others taking 5 units, register for 195C.) Japan's modern transformation from the late 19th century to the present. Topics include: the Meiji revolution; industrialization and social dislocation; the rise of democracy and empire; total war and US occupation; economic miracle and malaise; Japan as soft power; and politics of memory. Readings and films focus on the lived experience of ordinary men and women across social classes and regions.

HISTORY 197. Southeast Asia: From Antiquity to the Modern Era. 3-5 Units.
The history of S.E. Asia, comprising Indonesia, the Philippines, Malaysia, Singapore, Thailand, Vietnam, Burma, Cambodia, and Laos, from antiquity to the present. The spread of Indian cultural influences, the rise of indigenous states, and the emergence of globally linked trade networks. European colonization, economic transformation, the rise of nationalism, the development of the modern state, and the impact of globalization.
Same as: HISTORY 97

HISTORY 198. The History of Modern China. 5 Units.
(Same as HISTORY 98. History majors and others taking 5 units, register for 198.) This course charts major historical transformations in modern China, and will be of interest to those concerned with Chinese politics, culture, society, ethnicity, economy, gender, international relations, and the future of the world.

HISTORY 198G. Beijing, Shanghai, and the Structure of China. 3-5 Units.
China's modern history through the rivalry of its two most important cities. The course begins in the nineteenth century, contrasting Beijing, the classic imperial capital and a foreign foundation paradoxically celebrated as the embodiment of "traditional" China, with Shanghai, a treaty port and demographic/economic center of China, but identified as a "foreign" city. After following the cities' history through the warlord period, the "Shanghai decade" of Nationalist rule, and the Japanese occupation, the course examines the two cities' developments under Mao and Deng. The course concludes with a look at their current relations and roles, and the transformed nature of China's cities.

HISTORY 200A. Doing Legal History. 5 Units.
What is law, and how do we write its history? Drawing on case studies from a broad range of periods and places, this course will explore how law is made, interpreted, enforced, experienced, and resisted. It will also explore how historians use both legal and non-legal sources to study the ways in which law and society have shaped each other. This course forms part of the "Doing History" series: rigorous undergraduate colloquia that introduce the practice of history within a particular field or thematic area.

HISTORY 200B. Doing Environmental History: Climate Change... the podcast. 5 Units.
This will be a hands-on course that will emphasize how to do environmental history. Students will reflect on what it means to think historically about a pressing contemporary problem--climate change. We will ask historical questions, produce historical knowledge, and as a critical part of the course, present that knowledge to a general audience in the form of a podcast. This course forms part of the "Doing History" series: rigorous undergraduate colloquia that introduce the practice of history within a particular field or thematic area.

HISTORY 200C. Doing the History of Race and Ethnicity. 5 Units.
How does ethnicity and race operate in different time periods, and across different historical, national, and cultural contexts? This course guides students through an historical and cross-cultural exploration of ethnoracial identity formation, racism, ethnopolitics, migration, belonging, and exclusion, using primary and secondary sources to examine how the lived experience of race and ethnicity shapes and is shaped by local, regional, and global dimensions. This course forms part of the "Doing History" series: rigorous undergraduate colloquia that introduce the practice of history within a particular field or thematic area.

HISTORY 200D. Doing the History of Science and Technology. 5 Units.
The history of science has often been at the crux of key debates in the larger field of history, including debates over objectivity and bias, relativism and the problem of "present-ism." This course explores key questions, methods and debates in the history of science and examines how historians of science have addressed these organizing problems of the historical discipline. This course forms part of the "Doing History" series: rigorous undergraduate colloquia that introduce the practice of history within a particular field or thematic area.

HISTORY 200E. Doing Economic History. 5 Units.
The courses examines how historians and economists, from different intellectual traditions and schools, grapple with major problems of economic history including pre-modern agrarian orders; demographic fluctuations; diverse property regimes; financial and commercial expansion; the emergence of fiscal-military state; the industrial revolution; growth and poverty; markets and networks; epidemics and their economic impacts; labor and capital; the rise of capitalism and imperialism; anti-capitalist and socialist movements; immigration; formal and informal economies; ; development and underdevelopment; globalization and environmental crisis; Special emphasis will be given to the theories of the Great Divergence, namely why the West became the dominant economic power over the rest of the world and how different economies responded to that.

HISTORY 200F. Doing Microhistory. 5 Units.
The genre of microhistory was expressly invented in the 1970s to recover the voices of people usually neglected in the past, often based on scanty sources. It's an exciting and risky endeavor, as the historian often has to fill in details lacking in the sources, a historical tightrope act. Class includes three sessions with authors of microhistory who share how they met these challenges:Profs. Zipperstein and Stokes (Stanford) and Getz (San Francisco State).

HISTORY 200J. Doing Oral History. 5 Units.
Students explore exemplary historical works based on oral histories and develop a range of practical skills while completing their own interviews. Topics include oral history and narrative theory, interview techniques, transcript preparation, and digital archiving. Students also learn how to analyze interviews using both qualitative and quantitative methods, practice writing history using oral evidence, and experiment with digital humanities approaches for disseminating oral history, including the Stanford Oral History Text Analysis Project. This course forms part of the "Doing History" series: rigorous undergraduate colloquia that introduce the practice of history within a particular field or thematic area.
Same as: AMSTUD 200J

HISTORY 200K. Doing Literary History: Orwell in the World. 5 Units.
This course will bring together the disciplines of history and literary studies by looking closely at the work of one major twentieth-century author: the British writer and political polemicist George Orwell. In 1946, Orwell writes, "What I have most wanted to do throughout the past ten years is to make political writing into an art." In these years, Orwell writes about-- and often participates in or witnesses first-hand--a series of major events and crises. These include British imperialism in Burma, urban poverty in Europe, class inequality in England, the conflict between Socialism and Fascism in Spain, and the rise of totalitarianism in the Soviet Union. In engaging all of these events, Orwell experiments with different literary forms, moving between fiction and non-fiction, novel and autobiography, essay and memoir, manifesto and fable, literature and journalism. Few writers demand such sustained and equal attention to text and context: in this course we will move back-and-forth between Orwell's varied writing and the urgent social and political contexts it addresses.
Same as: ENGLISH 224

HISTORY 200L. Doing Public History. 5 Units.
Examines history outside the classroom; its role in political/cultural debates in U.S. and abroad. Considers functions, practices, and reception of history in public arena, including museums, memorials, naming of buildings, courtrooms, websites, op-eds. Analyzes controversies arising when historians' work outside the academy challenges the status quo; role funders, interest groups, and the public play in promoting, shaping, or suppressing historical interpretation. Who gets to tell a group's story? What changes can public history enable? Students will engage in public history projects.
Same as: CSRE 201L

HISTORY 200M. Doing Digital History. 5 Units.
This course is designed to introduce students to the theories and methods of digital history. In keeping with the digital humanities¿ commitment to experimentation, public discourse, and praxis, we will compile a web presence for our seminar that includes blog posts from students that engage with the discussions and readings. A series of tutorials will provide hands-on experience with a range of common digital history tools. The course will culminate in a final project in which students apply DH methodologies to their own research interests.

HISTORY 200R. Doing Community History: Asian Americans and the Pandemic. 5 Units.
Students utilize a community-engaged oral history methodology to produce short video documentaries focused on Asian Americans in the Covid-19 pandemic. In producing these collaborative digital history projects, students learn to evaluate the ways social power influences historical documentation at various levels including the making of sources, the construction of archives, and the telling of historical narratives. We ask: how have race and racism, ethnicity and community, gender and class, shaped the ways that the pandemic has influenced the lives of Asian Americans? To what extent have Asian American experiences with the pandemic been shaped by the recent global protests for racial justice and Black liberation? In studying the pandemic and its relationship to histories of race and racism, how should we understand the place of Asian Americans?.
Same as: AMSTUD 200R, ASNAMST 201

HISTORY 200U. Doing History: Beyond the Book. 5 Units.
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HISTORY 200Y. Doing Colonial History. 5 Units.
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HISTORY 201. From Confederate Monuments to Wikipedia: The Politics of Remembering the Past. 5 Units.
Gateway course for Public History/Public Service track. Examines various ways history is used outside of the classroom, and its role in political/cultural debates in the U.S. and abroad. Showcases issues and careers in public history with guest speakers.

HISTORY 201A. The Global Drug Wars. 4-5 Units.
Explores the global story of the struggle over drugs from the nineteenth century to the present. Topics include the history of the opium wars in China, controversies over wine and tobacco in Iran, narco-trafficking and civil war in Lebanon, the Afghan 'narco-state,' Andean cocaine as a global commodity, the politics of U.S.- Mexico drug trafficking, incarceration, drugs, and race in the U.S., and the globalization of the American 'war on drugs.'.
Same as: HISTORY 301A

HISTORY 201B. Spatial History: Concepts, Methods, Problems. 4-5 Units.
What can digital mapping and spatial analysis bring to history? How have historians written spatial history in the past? How do scholars in other disciplines deal with space and what can we learn from them? The course provides students with conceptual and technical skills in spatial history. As part of the exercise to think spatially about the past, students will receive training in Geographic Informational Science (GIS) and develop their own spatial history projects. No prior technical skills are needed for this course.
Same as: HISTORY 401A

HISTORY 201C. The U.S., U.N. Peacekeeping, and Humanitarian War. 4-5 Units.
The involvement of U.S. and the UN in major wars and international interventions since the 1991 Gulf War. The UN Charter's provisions on the use of force, the origins and evolution of peacekeeping, the reasons for the breakthrough to peacemaking and peace enforcement in the 90s, and the ongoing debates over the legality and wisdom of humanitarian intervention. Case studies include Croatia and Bosnia, Somalia, Rwanda, Kosovo, East Timor, and Afghanistan. *International Relations majors taking this course to fulfill the WiM requirement should enroll in INTNLREL 140C for 5 units.
Same as: INTNLREL 140C, INTNLREL 140X

HISTORY 201D. History Goes Pop! Songwriting the Past. 3 Units.
Historical research doesn't always take the form of a thesis, an article, or a book. Sometimes, research leads to film, museum exhibits, works of art, or... music. In this class, students will collaborate to write, record, and produce original pop music (perhaps even an entire album) based on original research in Stanford's wealth of archives and Special Collections. Background in music is NOT required.
Same as: HISTORY 301D

HISTORY 201J. Objects of History: From "Material Culture" to "Making". 4-5 Units.
This class considers objects as historical sources. It surveys diverse approaches to the study and display of physical evidence, from "material culture" to "making." These explorations of object-oriented research will inform the course's hands-on components, working with objects and replicating historical experiences. With its focus on the question of what historical knowledge can be gained through interactivity, the course is suited to students whose interests include museums and public history, reenactment and performance, the maker movement, or interdisciplinary methodology.
Same as: HISTORY 301J

HISTORY 202B. Coffee, Sugar, and Chocolate: Commodities and Consumption in World History, 1200-1800. 4-5 Units.
Many of the basic commodities that we consider staples of everyday life became part of an increasingly interconnected world of trade, goods, and consumption between 1200 and 1800. This seminar offers an introduction to the material culture of the late medieval and early modern world, with an emphasis on the role of European trade and empires in these developments. We will examine recent work on the circulation, use, and consumption of things, starting with the age of the medieval merchant, and followed by the era of the Columbian exchange in the Americas that was also the world of the Renaissance collector, the Ottoman patron, and the Ming connoisseur. This seminar will explore the material horizons of an increasingly interconnected world, with the rise of the Dutch East India Company and other trading societies, and the emergence of the Atlantic economy. It concludes by exploring classic debates about the "birth" of consumer society in the eighteenth century. How did the meaning of things and people's relationships to them change over these centuries? What can we learn about the past by studying things?.
Same as: ARTHIST 302B, HISTORY 302B

HISTORY 202F. Surveillance States and Societies. 4-5 Units.
The course analyzes the evolution, functions, structures and consequences of surveillance in the modern era. Among issues discussed are the rise of the modern state and population politics, information gathering and its uses in domestic and national security arenas, institutions of surveillance in various regimes, the challenge of privacy and ethical dilemmas.
Same as: HISTORY 302F

HISTORY 202G. Peoples, Armies and Governments of the Second World War. 4-5 Units.
Clausewitz conceptualized war as always consisting of a trinity of passion, chance, and reason, mirrored, respectively, in the people, army and government. Following Clausewitz, this course examines the peoples, armies, and governments that shaped World War II. Analyzes the ideological, political, diplomatic and economic motivations and constraints of the belligerents and their resulting strategies, military planning and fighting. Explores the new realities of everyday life on the home fronts and the experiences of non-combatants during the war, the final destruction of National Socialist Germany and Imperial Japan, and the emerging conflict between the victors. How the peoples, armies and governments involved perceived their possibilities and choices as a means to understand the origins, events, dynamics and implications of the greatest war in history.
Same as: HISTORY 302G

HISTORY 202J. Climate Politics: Science and Global Governance. 3-4 Units.
(Formerly IPS 271) Provides a unique perspective on contemporary debates about climate change through a study of their long history. After some background about climate science and a look at how people thought about climate in the 18th, 19th, and early 20th centuries, we explore the co-evolution of climate science and climate politics from World War II to the present. The approach is to examine a series of political issues and debates that established human effects on the global atmosphere as serious problems. We then focus on the UN Framework Convention on Climate Change, the 2015 Paris Agreement, and the future of international climate policy. Assignments include in-class presentations and a policy brief.
Same as: INTLPOL 271

HISTORY 202K. The Holocaust and Its Aftermath. 4-5 Units.
This seminar gives an overview over different aspects of the history of the Holocaust and its aftermath and will examine key issues in recent Holocaust historiography and questions of memory and representation. Special emphasis is put on the nature of the historian's task, as viewed through the lens of historians of the Holocaust, as well as to the significance of the Holocaust in history and how it has changed over time. The course will confront students with historiographical texts and historical documents, with photography and film, works of scholarship and art.
Same as: HISTORY 302K, JEWISHST 282K, JEWISHST 382K

HISTORY 203. Premodern Economic Cultures. 4-5 Units.
Modern economists have made a science of studying the aggregate effects of individual choices. This science is based on the realities of personal freedom and individual choice. Prior to the modern era, however, different realities comprised very different economic cultures: moral economies in which greed was evil and generosity benefitted the patron¿s soul; familial collectives operating within historical conditioned diasporas; economies of obligation that threatened to collapse under their own weight as economic structures shifted. In this course we will be reading cross-culturally to develop an understanding of the shared and distinct elements of premodern economic cultures.
Same as: HISTORY 303

HISTORY 203C. History of Ignorance. 5 Units.
Scholars pay a lot of attention to knowledge--how it arises and impacts society--but much less attention has been given to ignorance, even though its impacts are equally profound. Here we explore the political history of ignorance, through case studies including: corporate denials of harms from particular products (tobacco, asbestos), climate change denialism, and creationist rejections of Darwinian evolution. Students will be expected to produce a research paper tracing the origins and impact of a particular form of ignorance.

HISTORY 203F. Racial Justice in the Nuclear Age. 5 Units.
This upper-level course explores the history of radioactive contamination in the Bay Area and elsewhere. We'll examine the legacy of atomic bomb testing in our region and the current political implications of that legacy. We'll then explore the colonial and postcolonial dimensions of the nuclear age and the long-term contamination it has produced. Case studies vary yearly; they include uranium mining in Africa, nuclear testing in the Pacific, and accidents at Chernobyl and Fukushima. At least one field trip!.
Same as: STS 200T

HISTORY 204A. Reimagining History: Or, Finding the "I" in History. 4-5 Units.
This class explores, through analysis and practice, the ways in which history can be told and experienced through means other than traditional scholarly narratives. Approaches include literary fiction and non-fiction, digital media, graphic arts, maps, exhibitions, and film. A final project will require students to produce their own innovative work of history.
Same as: HISTORY 304A

HISTORY 204D. Advanced Topics in Agnotology. 4-5 Units.
Advanced research into the history of ignorance. Our goal will be to explore how ignorance is created, maintained and destroyed, using case studies from topics such as tobacco denialism, global climate denialism, and other forms of resistance to knowledge making. Course culminates in a research paper on the theory and practice of agnotology, the science of ignorance.
Same as: HISTORY 304D

HISTORY 204E. Totalitarianism. 4-5 Units.
This course analyzes the evolution and nature of revolutionary and totalitarian polities through the reading of monographs on the Puritan Reformation, French Revolutionary, turn of the 20th Century, interwar, and Second World War eras. Among topics explored are the essence of modern ideology and politics, the concept of the body national and social, the modern state, state terror, charismatic leadership, private and public spheres, totalitarian economies, and identities and practices in totalitarian polities.
Same as: HISTORY 307E

HISTORY 204G. War and Society. 4-5 Units.
(History 204G is an undergraduate course offered for 5 units; History 304G is a graduate course offered for 4-5 units.) How Western societies and cultures have responded to modern warfare. The relationship between its destructive capacity and effects on those who produce, are subject to, and must come to terms with its aftermath. Literary representations of WW I; destructive psychological effects of modern warfare including those who take pleasure in killing; changes in relations between the genders; consequences of genocidal ideology and racial prejudice; the theory of just war and its practical implementation; how wars end and commemorated.
Same as: HISTORY 304G, REES 304G

HISTORY 205D. Freedom in Chains: Black Slavery in the Atlantic, 1400s-1800s. 3-5 Units.
This course will focus on the history of slavery in the British, French, Spanish, Portuguese and Dutch Atlantic world(s), from the late 1400s to the 1800s. Its main focus will be on the experiences of enslaved Africans and their descendants. Between the sixteenth and nineteenth centuries, the Europeans forcibly embarked over 10 million Africans to the Americas. Drawing on methodologies used by historians, archaeologists and anthropologists, the course will reconstruct the daily lives and the socio-economic, cultural and political histories of these captives. We will seek to hear their voices by investigating a variety of historical testimonies and recent scholarship. The course will examine slavery in the context of broader trends in Atlantic World studies, a field that has grown considerably in recent years, providing new ways of understanding historical developments across national boundaries. We will seek to identify commonalities and differences across time periods and regions and the reasons for those differences. Covered topics will include slave ship voyages, labor, agency, the creation of new identities (creolization), religion, race, gender, resistance, legacies, and memory.
Same as: AFRICAAM 113V, AFRICAST 113V, CSRE 113V

HISTORY 205K. The Age of Revolution: America, France, and Haiti. 4-5 Units.
(History 205K is an undergraduate course offered for 5 units; History 305K is a graduate course offered for 4-5 units.) This course examines the "Age of Revolution," spanning the 18th and 19th centuries. Primarily, this course will focus on the American, French, and Haitian Revolutions (which overthrew both French and white planter rule). Taken together, these events reshaped definitions of citizenship, property, and government. But could republican principles-- color-blind in rhetoric-- be so in fact? Could nations be both republican and pro-slavery? Studying a wide range of primary materials, this course will explore the problem of revolution in an age of empires, globalization, and slavery.
Same as: AFRICAAM 205K, HISTORY 305K

HISTORY 205L. Prostitution & Sex Trafficking: Regulating Morality and the Status of Women. 5 Units.
Examines governmental policies toward prostitution from the late 19th century to the present. Focuses on the underlying attitudes, assumptions, strategies, and consequences of various historical and current legal frameworks regulating prostitution, including: prohibitionism, abolitionism, legalization, partial decriminalization, and full decriminalization. Special focus on these policies' effects on sex trafficking, sex worker rights, and the status of women. Emphasis on Europe and the U.S., with additional cases from across the globe.

HISTORY 206A. City, Society, Literature- 19th Century Histories. 4 Units.
This course examines the rise of modern cities through an analysis of urban society and the imaginative literature of the 1800s.
Same as: HISTORY 306A, URBANST 106

HISTORY 206C. The Modern Battle. 5 Units.
The purpose of this seminar is to examine the evolution of modern warfare by closely following four modern battles/campaigns. For this purpose the seminar offers four mock staff rides, facilitating highly engaged, well-researched experience for participants. In a mock staff ride, students are assigned roles; each student is playing a general or staff officer who was involved in the battle/campaign. Students will research their roles and, during the staff ride, will be required to explain "their" decisions and actions. Staff rides will not deviate from historical records, but closely examine how decisions were made, what pressures and forces were in action, battle outcomes, etc. This in-depth examination will allow students to gain a deeper understanding of how modern tactics, technology, means of communications, and the scale of warfare can decide, and indeed decided, campaigns. We will will spend two weeks preparing for and playing each staff ride. One meeting will be dedicated to discussing the forces shaping the chosen battle/campaign: the identity and goals ofnthe belligerents, the economic, technological, cultural and other factors involved, as well as the initial general plan. The second meeting will be dedicated to the battle itself. The four battles will illustrate major developments in modern warfare.
Same as: INTNLREL 183

HISTORY 206D. Global Humanities: The Grand Millennium, 800-1800. 3-4 Units.
How should we live? This course explores ethical pathways in European, Islamic, and East Asian traditions: mysticism and rationality, passion and duty, this and other worldly, ambition and peace of mind. They all seem to be pairs of opposites, but as we'll see, some important historical figures managed to follow two or more of them at once. We will read works by successful thinkers, travelers, poets, lovers, and bureaucrats written between 800 and 1900 C.E. We will ask ourselves whether we agree with their choices and judgments about what is a life well lived.
Same as: DLCL 52, HUMCORE 52, JAPAN 52

HISTORY 206E. CAPITALS: How Cities Shape Cultures, States, and People. 3-5 Units.
This course takes students on a trip to major capital cities, at different moments in time: Renaissance Florence, Golden Age Madrid, Colonial Mexico City, Enlightenment and Romantic Paris, Existential and Revolutionary St. Petersburg, Roaring Berlin, Modernist Vienna, and bustling Buenos Aires. While exploring each place in a particular historical moment, we will also consider the relations between culture, power, and social life. How does the cultural life of a country intersect with the political activity of a capital? How do large cities shape our everyday experience, our aesthetic preferences, and our sense of history? Why do some cities become cultural capitals? Primary materials for this course will consist of literary, visual, sociological, and historical documents (in translation); authors we will read include Boccaccio, Dante, Sor Juana, Montesquieu, Baudelaire, Gogol, Irmgard Keun, Freud, and Borges. Note: To be eligible for WAYS credit, you must take the course for a Letter Grade.
Same as: COMPLIT 100, DLCL 100, FRENCH 175, GERMAN 175, ILAC 175, ITALIAN 175, URBANST 153

HISTORY 207. Biography and History. 4-5 Units.
The relationship between biographical and historical writing, primarily in Europe and America. Problems of methodology, evidence, dispassion, and empathy. Texts: biographies, critical literature on biographical work, and novels (A. S. Byatt's *Possession*, Bernard Malamud's *Dubin's Lives*) that illuminate the intellectual underpinnings of biographical labor.
Same as: HISTORY 308

HISTORY 207B. Environment, Technology and Revolution in World History. 4-5 Units.
Exploration of historiographical and interdisciplinary methodologies and approaches to intersections among environmental, technological, and revolutionary social change in diverse geographical and temporal contexts. Readings include broad theoretical and synthetic works as well as case studies of American, French, Mexican, Russian, Chinese, and Hungarian revolutions.

HISTORY 207D. Transhistory Colloquium. 4-5 Units.
Colloquium on the history of transgender practices and identities. Readings will include scholarly texts from the emerging historical field of transhistory as well as adjacent fields within gender history. Colloquium will investigate avenues for deepening transhistory through further historical inquiry.
Same as: FEMGEN 207D, FEMGEN 307D, HISTORY 307D

HISTORY 208. Private Lives, Public Stories: Autobiography in Women's History. 5 Units.
Changing contexts of women's lives and how women's actions have shaped and responded to those contexts.

HISTORY 208D. Pre-Modern Warfare. 4-5 Units.
This course examines the evolving nature of warfare and its impact on society across the Eurasian continent up to the Gunpowder Revolution and rise of the nation-state. Beginning with an attempt to define war, it will trace the evolution of military technology from the Stone Age through the rise of the chariot, the sword, and the mounted rider, and examine how changing methods of conducting warfare were inextricably linked to changes in the social order and political structures.
Same as: HISTORY 308D

HISTORY 208S. Facing the Past: The Politics of Retrospective Justice. 5 Units.
Forms of injustice in history including slavery, genocide, ethnic cleansing, mass rape, forced religious conversion, and torture of prisoners. Mechanisms developed over the last century to define, deter, and alleviate the effects of such offenses, including war crimes tribunals, truth commissions, national apologies, and monetary reparations. Case studies chart the international field of retrospective justice, exploring the legal, political, and moral implications of confronting traumatic pasts.

HISTORY 209B. The Idea of Politics. 4-5 Units.
Can we live without politics? Is politics indispensable for humanity and vice-versa? The idea of politics is that it must transform, through human action, conditions of collective life. But the 20th century produced colliding beliefs about what that life might be and what the human being itself might look like. Explore whether, after the century, we might still think of politics as an ethical idea and the "human" as foundational political category. Keywords: Civility, Cruelty, Friendship, Empire, Democracy, Humanism, Animals.
Same as: HISTORY 309B

HISTORY 209D. Postcolonialism and Universalism. 4-5 Units.
Key texts and motifs from postcolonial theory: empire, class, exile, suffering, textuality, archive in juxtaposition to 20th-century philosophical questions about universal history and the relevance of humanist inquiry.
Same as: HISTORY 309A

HISTORY 209F. Maps in the Early Modern World. 4-5 Units.
The significance of cartographic enterprise across the early modern world. Political, economic, and epistemological imperatives that drove the proliferation of nautical charts, domain surveys, city plans, atlases, and globes; the types of work such artifacts performed for their patrons, viewers, and subjects. Contributions of indigenous knowledge to imperial maps; the career of the map in commerce, surveillance, diplomacy, conquest, and indoctrination. Sources include recent research from Asia, Europe, and the Americas.
Same as: HISTORY 309F

HISTORY 209S. Research Seminar for Majors. 5 Units.
Required of History majors. How to conduct original, historical research and analysis, including methods such as using the libraries and archives at Stanford and elsewhere, and working collaboratively to frame topics, identify sources, and develop analyses. nnAutumn quarter focuses on Honors topics and Crime and Punishment in Early Modern Europe and America; Winter quarter on Race, Gender, Sexuality in U.S History; Spring quarter on Europe Before 1500, Early Empires, and Open Topic; and Summer quarter on Early Modern Travel Accounts and Arms Makers in History.

HISTORY 210. The History of Occupation, 1914-2010. 4-5 Units.
(History 210 is an undergraduate course offered for 5 units; History 310 is a graduate course offered for 4-5 units.) Examines the major cases of occupation in the twentieth century, from the first World War until the present, and issues of similarities, differences, and implications for contemporary policy making. Topics include European and Asian cases emerging from World War I and World War II, the Israeli occupation of the West Bank; the Soviet and American occupations of Afghanistan; and the American occupation of Iraq. Discussions will revolve around the problems, efficacy, and effects of occupation in historical perspective.
Same as: HISTORY 310

HISTORY 210D. Neighbors: Intimate Relationships and Everyday Life in Hitler's Europe. 5 Units.
This course explores how different groups of people experienced Nazi rule in Germany and German-occupied Europe. While we will cover the general history of Hitler's rise to power, the prewar years of his rule, and the Second World War, our focus will be on the effects of fascism on everyday life and relationships between neighbors, family members, partners, friends, and coworkers. How did class, race, gender, religion, and sexual orientation interact with Nazi rule and occupation? The course pays special attention to the fate of European Jews and the Holocaust. On a theoretical level, we will discuss the opportunities and challenges of "Alltagsgeschichte," or the history of everyday life, as an approach to studying Nazi rule. The course provides tools to manage efficiently a fairly high reading load, a skill that will greatly help students to succeed in future academic endeavors.

HISTORY 210J. Fascism and Authoritarianism. 5 Units.
This course introduces students to the history of fascist and authoritarian movements in modern Europe, from their origins through the post-WWII era. Germany and Italy will serve as central case studies, though the course will consider other examples as well. Through analytical consideration of secondary sources, primary texts, and art as political propaganda, we will interrogate the meanings and applications of these fraught and complex terms, the different forms taken by fascist and authoritarian movements, and their relationship to nationalism, race, religion, gender, and economic and political institutions. Why did millions of Europeans accept -- and even enthusiastically support -- fascist and authoritarian regimes? To what extent was a single, charismatic leader central to the success or failure of such governments? The course will conclude with an opportunity to reflect on the degree to which fascism and authoritarianism are concepts that remain relevant to political discourse in the twenty-first century.

HISTORY 211. Out of Eden: Deportation, Exile, and Expulsion from Antiquity to the Renaissance. 4-5 Units.
This course examines the long pedigree of modern deportations and mass expulsions, from the forced resettlements of the ancient world to the expulsion of Jews from Spain in 1492, and from the outlawry of Saga-era Iceland to the culture of civic exile in Renaissance Italy. The course focuses on Europe and the Mediterranean from antiquity to the early modern period, but students are welcome to venture beyond these geographical and chronological boundaries for their final papers.
Same as: HISTORY 311, JEWISHST 211

HISTORY 213F. Medieval Germany, 900-1250. 1-5 Unit.
(Undergraduates may sign up for German 213 or History 213F, graduate students should sign up for German 313 or History 313F. This course may be taken for variable units. Check the individual course numbers for unit spreads.) This course will provide a survey of the most important political, historical, and cultural events and trends that took place in the German-speaking lands between 900 and 1250. Important themes include the evolution of imperial ideology and relations with Rome, expansion along the eastern frontier, the crusades, the investiture controversy, the rise of powerful cities and civic identities, monastic reform and intellectual renewal, and the flowering of vernacular literature.nnTo satisfy a Ways requirement, this course must be taken for at least 3 units. In AY 2020-21, a letter grade or "CR" grade satisfies the Ways requirement.
Same as: GERMAN 213, GERMAN 313, HISTORY 313F

HISTORY 214C. Renaissances: Living, Learning, and Loving around the Mediterranean. 5 Units.
This course explores three watershed moments in Mediterranean history: the Carolingian Renaissance, the Twelfth-Century Renaissance, and the Italian Renaissance. The class examines how each renaissance redefined a specific place and how those changes influenced connections across the Mediterranean world.
Same as: 800-1500 CE

HISTORY 215B. Race and Ethnicity in Premodern Europe. 3-5 Units.
How do historians, art historians, and literary historians of premodern Europe shape their research and their teaching around questions of race? How do current debates on race theory shape our perception of the past and deepen historical inquiry? This graduate colloquium focuses on the most recent publications on race in medieval and early modern studies to reflect on such questions while examining the challenges that race studies put on historical definitions, research methodologies, as well as teaching institutions.
Same as: ARTHIST 207D, ARTHIST 407D, HISTORY 315B

HISTORY 216D. Nationalism, Colonialism, and the Lord of the Rings: The Middle Ages in the Modern World. 5 Units.
From its inception the term "Middle Ages" carried negative connotations. Renaissance humanists bewailed the fall of the Roman Empire and its replacement with "barbarian" kingdoms. Enlightenment philosophes abhorred the Middle Ages even more intensely than their Renaissance forerunners and decried medieval "superstition" and "barbarism." Nevertheless, as part of their rejection of the Enlightenment, nineteenth-century Romantics embraced the Middle Ages and sought inspiration for political and cultural renewal within medieval civilization. From nationalist movements, to colonialism, to movements within high and popular culture interest in the Middle Ages helped fashion the modern world in important ways. This class will explore the complex history associated with the images of the Middle Ages in the modern world.

HISTORY 217S. Minorities In Medieval Europe. 5 Units.
This course examines attitudes towards outsider groups within medieval society and the treatment of these groups by medieval Christians. Heretics, Jews, Muslims, homosexuals, prostitutes and usurers occupied ambivalent and at time dangerous positions within a society that increasingly defined itself as Christian. Differences in the treatment of these various 'outcast' groups, their depiction in art, their legal segregation, and their presumed association with demonic activity are addressed through discussion, and readings from primary and secondary source material.
Same as: RELIGST 217X

HISTORY 218C. Peace and War in Medieval Islam: From the Arab Conquests to the Crusades. 3-5 Units.
This course interrogates the theory and reality of war-making and peacemaking across the first millennium of Islamic history (c.600-c.1600 CE). We will examine major historical events (e.g. the struggle of the early community of Muslims against the pagan tribes of Arabia; Arab expansion and conquest during the seventh and eighth centuries; a sequence of civil wars, dynastic struggles, and schisms within Islam; and external invasions of the Islamic world by crusaders and steppe nomads, etc.). We will also investigate the development of major normative concepts across the Islamic tradition concerning peace and war (e.g. holy war; treaty- and truce-making; treatment of conquered enemies and prisoner; diplomacy with Muslims and non-Muslims, etc.). With respect to these concepts, we will attend especially to change over time and diversity across various sects. Mix of lecture and discussion. Readings will consist of both primary sources (in English translation) and modern scholarship. No previous experience with pre-modern or Islamic history required.
Same as: GLOBAL 190, GLOBAL 232, HISTORY 318C

HISTORY 219C. Science, Technology, and Modernity in the Soviet Union. 5 Units.
Science and technology were integral to the Soviet claim to offer a vision of modernity superior to that of Western capitalism. Science and technology would flourish; society would develop on a scientific basis. The results were more complex than the vision. Topics to be covered: science and Marxism-Leninism; the Lysenko affair; the R&D system; the role of the secret police; the atomic project; the space race; missile development; Andrei Sakharov; technology and innovation.
Same as: HISTORY 319C

HISTORY 221A. Men, Women, and Power in Early Modern Russia, 1500-1800. 5 Units.
Social values, gender relations, and social change in an era of rapid change; challenges to established norms by new constructions of deviance (witchcraft, religious reform, and revolt) and new standards of civility; encounters with non-Russians and the construction of national consciousness. Social values as political ethos: patrimonial autocracy and the reality of female rule in the late 17th and 18th century.

HISTORY 222. Crime and Punishment in Early Modern Europe and Russia. 4-5 Units.
Explores criminal law in early modern Europe and Russia, ca 1500-1800, in law and in practice. Engages debates about use of exemplary public executions as tactic of governance, and about gradual decline in "violence" in Europe over this time. Explores practice of accusatory and inquisitory judicial procedures, judicial torture, forms of punishment, concepts of justice.
Same as: HISTORY 322A

HISTORY 223. Art and Ideas in Imperial Russia. 4-5 Units.
Poetry, novels, symphonic music, theater, opera, painting, design, and architecture: what they reveal about the politics and culture of tsarist Russia.
Same as: HISTORY 323

HISTORY 223E. Cities of Empire: An Urban Journey through Eastern Europe and the Mediterranean. 3-5 Units.
This course explores the cities of the Habsburg, Ottoman and Russian empires in the dynamic and turbulent period of their greatest transformation from the 19th century through the Two World Wars. Through the reading of urban biographies of Venice and Trieste, Vienna, Budapest, Cracow, Lviv, Sarajevo, Belgrade, Salonica, and Odessa, we consider broad historical trends of political, economic, and social modernization, urbanization, identity formation, imperialism, cosmopolitanism, and orientalism. As vibrant centers of coexistence and economic exchange, social and cultural borderlands, and sites of transgression, these cities provide an ideal lens through which to examine these themes in the context of transition from imperial to post-imperial space.
Same as: HISTORY 323E, REES 204, REES 304

HISTORY 224A. The Soviet Civilization. 4-5 Units.
(History 224A is an undergraduate course offered for 5 units; History 424A is a graduate course offered for 4-5 units.) Socialist visions and practices of the organization of society and messianic politics; Soviet mass state violence; culture, living and work spaces. Primary and secondary sources. Research paper or historiographical essay.
Same as: HISTORY 424A, REES 224A

HISTORY 224C. Genocide and Humanitarian Intervention. 3 Units.
Open to medical students, graduate students, and undergraduate students. Traces the history of genocide in the 20th century and the question of humanitarian intervention to stop it, a topic that has been especially controversial since the end of the Cold War. The pre-1990s discussion begins with the Armenian genocide during the First World War and includes the Holocaust and Cambodia under the Khmer Rouge in the 1970s. Coverage of genocide and humanitarian intervention since the 1990s includes the wars in Bosnia, Rwanda, Kosovo, the Congo and Sudan.
Same as: HISTORY 324C, JEWISHST 284C, JEWISHST 384C, PEDS 224

HISTORY 224D. The Soviet Civilization, Part 2. 4-5 Units.
Prerequisite: HISTORY 224A/424A.
Same as: HISTORY 424B

HISTORY 225E. From Vladimir to Putin: Key Themes in Russian History. 4-5 Units.
Formative issues in Russian history from Muscovy to the present: autocracy and totalitarianism; tsars, emperors, and party secretaries; multi-ethnicity and nationalism; serfdom, peasantry; rebellions and revolutions, dissent and opposition; law and legality; public and private spheres; religion and atheism; patterns of collapse. Class format will be discussion of one to two assigned books or major articles per class.
Same as: HISTORY 325E, REES 225E

HISTORY 226D. The Holocaust: Insights from New Research. 4-5 Units.
Overview of the history of the Holocaust, the genocide of European Jews. Explores its causes, course, consequences, and memory. Addresses the events themselves, as well as the roles of perpetrators and bystanders, dilemmas faced by victims, collaboration of local populations, and the issue of rescue. Considers how the Holocaust was and is remembered and commemorated by victims and participants alike. Uses different kinds of sources: scholarly work, memoirs, diaries, film, and primary documents.
Same as: CSRE 226D, CSRE 326D, HISTORY 326D, JEWISHST 226E, JEWISHST 326D

HISTORY 226E. Famine in the Modern World. 3 Units.
Open to medical students, graduate students, and undergraduate students. Examines the major famines of modern history, the controversies surrounding them, and the reasons that famine persists in our increasingly globalized world. Focus is on the relative importance of natural, economic, and political factors as causes of famine in the modern world. Case studies include the Great Irish Famine of the 1840s; the Bengal famine of 1943-44; the Soviet famines of 1921-22 and 1932-33; China's Great Famine of 1959-61; the Ethiopian famines of the 1970s and 80s, and the Somalia famines of the 1990s and of 2011.
Same as: HISTORY 326E, PEDS 226

HISTORY 227B. The Business of Socialism: Economic Life in Cold War Eastern Europe. 5 Units.
This colloquium investigates the processes of buying, making, and selling goods and services in Cold War Eastern Europe and the Soviet Union. We will familiarize ourselves with a variety of approaches to writing the history of economic life and discuss to what extent they are applicable to state socialist systems. Our focus will not be on theories of socialism but on empirically grounded studies that allow for insights into how the system operated in practice and interacted with capitalism. We will, among others, explore the following questions: What was the role of the state in the economies east and west of the Iron Curtain? Are socialism and capitalism two incompatible systems? How did women experience and shape economic life after the Second World War? What had a greater impact on the economies of the region: Cold War politics or globalization?.
Same as: REES 205

HISTORY 227D. All Quiet on the Eastern Front? East Europe and Russia in the First World War. 3-5 Units.
Until recently history has been comparatively quiet about the experience of World War I in the east. Far from being a peripheral theater of war, however, the experiences of war on the Eastern Front were central to shaping the 20th century. Not only was the first shot of the war fired in the east, it was also the site of the most dramatic political revolution. Using scholarly texts, literature and film, this course combines political, military, cultural and social approaches to introduce the causes, conduct and consequences of World War I with a focus on the experiences of soldiers and civilians on the Eastern Front. Topics include: the war of movement, occupation, extreme violence against civilians, the Armenian genocide, population exchanges, the Russian Revolution and civil war, and the disintegration of empires and rise of nation-states.
Same as: HISTORY 327D, REES 227, REES 327

HISTORY 228. Circles of Hell: Poland in World War II. 5 Units.
Looks at the experience and representation of Poland's wartime history from the Nazi-Soviet Pact (1939) to the aftermath of Yalta (1945). Examines Nazi and Soviet ideology and practice in Poland, as well as the ways Poles responded, resisted, and survived. Considers wartime relations among Polish citizens, particularly Poles and Jews. In this regard, interrogates the traditional self-characterization of Poles as innocent victims, looking at their relationship to the Holocaust, thus engaging in a passionate debate still raging in Polish society.
Same as: HISTORY 328, JEWISHST 282, JEWISHST 382

HISTORY 230A. The Witness in Modern History: Memoir, Reportage, Image. 5 Units.
The rise of the witness as icon and debates about its reliability as a historical source. The power of eyewitness accounts to convict accused criminals, inspire indignation about war and genocide, and attract attention to humanitarian crises. Their notorious unreliability due to exaggeration and misapprehension. Sources include reportage, photography, and documentary film. Case studies include criminal cases, war, poverty, and natural disasters.

HISTORY 230C. Paris: Capital of the Modern World. 4-5 Units.
This course explores how Paris, between the eighteenth and twentieth centuries, became the political, cultural, and artistic capital of the modern world. It considers how the city has both shaped and been shaped by the tumultuous events of modern history- class conflict, industrialization, imperialism, war, and occupation. It will also explore why Paris became the major world destination for intellectuals, artists and writers. Sources will include films, paintings, architecture, novels, travel journals, and memoirs. Course taught in English with an optional French section.
Same as: FRENCH 140, FRENCH 340, URBANST 184

HISTORY 230D. Europe in the World, 1789-Present. 4-5 Units.
The European conquest of parts of Africa, Asia, and the South Pacific by European merchants, missionaries, armies, and administrators had significant, and often cataclysmic, effects on indigenous political alliances, cultural practices, and belief systems. But were the effects of expansion entirely one-sided? What impact did the experiences of colonialism have on European politics, culture,and Europe's relations with the rest of the world? Explores how interaction between Europe and the rest of the world redefined the political, racial, sexual, and religious boundaries of both Europe and its colonies and gave rise to the more "globalized' society we live in today.
Same as: HISTORY 330D

HISTORY 230L. Modern Irish History. 5 Units.
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HISTORY 231E. Paper, Printing, and Digital Revolutions: Transformations of the Book. 4-5 Units.
What is a book? This seminar explores the conceptual implications of approximately two millennia of transformations in the physical and material properties of books. How have the meaning and authority we assign the written word changed as technologies of book production and dissemination have evolved, and how have they remained continuous? Topics covered include the rise of the medieval manuscript codex, the emergence of print culture in early modern Europe, and current debates over the nature of text in the digital age.
Same as: HISTORY 331E

HISTORY 231G. European Reformations. 3-5 Units.
Readings in and discussion of theological and social aspects of sixteenth century reformations: Luther, Radical Reform, Calvin, and Council of Trent, missionary expansion, religious conflict, creative and artistic expressions. Texts include primary sources and secondary scholarly essays and monographs.
Same as: HISTORY 331G, RELIGST 231, RELIGST 331

HISTORY 232B. Heretics, Prostitutes and Merchants: The Venetian Empire. 5 Units.
Between 1200-1600, Venice created a powerful empire at the boundary between East and West that controlled much of the Mediterranean, with a merchant society that allowed social groups, religions, and ethnicities to coexist. Topics include the features of Venetian society, the relationship between center and periphery, order and disorder, orthodoxy and heresy, the role of politics, art, and culture in the Venetian Renaissance, and the empire's decline as a political power and reinvention as a tourist site and living museum.
Same as: ITALIAN 232B

HISTORY 232G. Early Modern Cities. 4-5 Units.
Colloquium on the history of early modern European cities, covering urbanization, street life, neighborhoods, fortifications, guilds and confraternities, charity, vagrancy, and begging, public health, city-countryside relationship, urban constitutions, and confederations. Assignments include annotated bibliography, book review, and a final paper. Second-quarter continuation of research seminar available (HIST299S or HIST402).
Same as: HISTORY 332G

HISTORY 233. Reformation to Civil War: England under the Tudors and Stuarts. 4-5 Units.
English political and religious culture from the end of the Wars of the Roses to the Civil War of the 1640s. Themes include the growth of the size and power of the state, Reformation, creation of a Protestant regime, transformation of the political culture of the ruling elite, emergence of Puritanism, and causes of the Civil War. HISTORY 333 is a prerequisite for HISTORY 402 (Spring quarter).
Same as: HISTORY 333

HISTORY 233C. Two British Revolutions. 4-5 Units.
Current scholarship on Britain,1640-1700, focusing on political and religious history. Topics include: causes and consequences of the English civil war and revolution; rise and fall of revolutionary Puritanism; the Restoration; popular politics in the late 17th century; changing contours of religious life; the crisis leading to the Glorious Revolution; and the new order that emerged after the deposing of James II.
Same as: HISTORY 333C

HISTORY 233F. Political Thought in Early Modern Britain. 4-5 Units.
1500 to 1700. Theorists include Hobbes, Locke, Harrington, the Levellers, and lesser known writers and schools. Foundational ideas and problems underlying modern British and American political thought and life.
Same as: HISTORY 333F

HISTORY 233G. Catholic Politics in Europe, 1789-1992. 5 Units.
What led to the creation of a specifically Catholic mass politics? How did these parties and movements interact with the Vatican and the wider Church? What accounts for political Catholicism's involvement in clerical-fascist states and its important role in shaping the EU? Sources focus on monographs. Research paper using primary sources.

HISTORY 233K. The Invention of the Modern Republic. 4-5 Units.
Examines the history of republican thinking in the Atlantic World from the Renaissance to the French Revolution.
Same as: HISTORY 333K

HISTORY 234P. The Age of Plague: Medicine and Society, 1300-1750. 5 Units.
(Undergraduates, enroll in 234P. Graduates, enroll in 334P) The arrival of plague in Eurasia in 1347-51 affected many late medieval and early modern societies. It transformed their understanding of disease, raised questions about the efficacy of medical knowledge, and inspired new notions of public health. This class explores the history of medicine in the medieval Islamic and European worlds. Changing ideas about the body, the roles of different healers and religion in healing, the growth of hospitals and universities, and the evolution of medical theory and practice will be discussed. How did medicine and society change in the age of plague?.
Same as: STS 200U

HISTORY 234R. Risk and Credit Before Modern Finance. 1 Unit.
In today's world, credit scores are nearly as important as citizenship. Creditworthiness is measured in numbers, but is also bound up with moral qualities. To lack credit is to be on the margins of society, and vice versa. How did we get here? How did lenders mitigate risks before credit scores were available? Where do the risk management tools of modern finance come from? How did merchants trade over long distances when information technology was extremely poor? This one-unit course will address these pressing questions from a historical perspective, starting from the modern U.S. and reaching back in time to the Middle Ages. Classroom discussions and readings include articles written by historians and social scientists, as well as primary sources in English translation.
Same as: HISTORY 334R

HISTORY 235. The Renaissance of War: Politics, Technology, and War in Late Medieval and Renaissance Italy. 5 Units.
The dynamic societies of the Italian Peninsula of the 14th to 16th centuries "prosperous, astonishingly creative, politically fractious, and endemically violent" produced sweeping, deeply consequential changes. Among these were new developments in the theory and practice of war, politics, and diplomacy that laid the foundations for the modern state system and European military power. The class covers: new diplomatic practice; the Military Revolution; state-building; war finance; court culture; and the intersection of these with the shimmering brilliance of Renaissance culture.

HISTORY 235C. Readings in the Supernatural. 4-5 Units.
Class will read and discuss a selection of monographs, scholarly essays, and primary sources on the rich supernatural world of early modern Europe. We will discuss how fairies, werewolves, nightmares, and trolls all became witches, how the binary of angels and demons figured in European thought, and how the marginalized imaginary was reconstituted in theatre and fiction.
Same as: HISTORY 335C

HISTORY 235D. When Worlds Collide: The Trial of Galileo. 4-5 Units.
In 1633, the Italian mathematician Galileo was tried and condemned for advocating that the sun, not the earth, was the center of the cosmos. The Catholic Church did not formally admit that Galileo was right until 1992. Examines the many factors that led to the trial of Galileo and looks at multiple perspectives on this signal event in the history of science and religion. Considers the nature and definition of intellectual heresy in the sixteenth and early seventeenth centuries, and examines the writings of Galileo's infamous predecessor Giordano Bruno (burned at the stake in 1600). Looks closely at documents surrounding the trial and related literature on Renaissance and Reformation Italy in order to understand the perspectives of various participants in this famous event. Focal point of seminar involves the examination of the many different histories that can be produced from Galileo's trial. What, in the end, were the crimes of Galileo?.
Same as: HISTORY 335D, ITALIAN 233, ITALIAN 333

HISTORY 235F. Camus. 4-5 Units.
"The admirable conjunction of a man, of an action, and of a work" for Sartre, "the ideal husband of contemporary letters" for Susan Sontag, reading "Camus's fiction as an element in France's methodically constructed political geography of Algeria" for Edward Said, Camus embodies the very French figure of the "intellectuel engagé," or public intellectual. From his birth in 1913 into a poor European family in Algeria to the Nobel Prize in Literature in 1957, from the Mediterranean world to Paris, Camus engaged in the great ethical and political battles of his time, often embracing controversial positions. Through readings and films, we will explore his multiple legacies. Readings from Albert Camus, Jean-Paul Sartre, Assia Djebar, Kamel Daoud, Mouloud Feraoun, Alice Kaplan, Edward Said, Edwidge Danticat. Students will work on their production of written French, in addition to speaking French and reading comprehension. Taught in French. Students are highly encouraged to complete FRENLANG 124 or to successfully test above this level through the Language Center. This course fulfills the Writing in the Major (WIM) requirement.
Same as: COMPLIT 229B, CSRE 129, FRENCH 129

HISTORY 235J. The Meaning of Life: Modern European Encounters with Consequential Questions. 5 Units.
(History 235J is an undergraduate course offered for 5 units; History 335J is a graduate course offered for 4-5 units.) Across two centuries of social, political, and religious upheaval and transformation, modern Europeans confronted a series of interconnected ¿big questions¿: What is humanity¿s relationship with deity? Where does life, including human life, come from, and where is it going? What considerations should shape human beings¿ relationships with, and actions toward, one another? What is socially and morally acceptable¿or transgressive? Is there life after death, and a spiritual realm distinct from the material world? Through case studies in the history of religion, evolutionary thought, gender and sexuality, and the aims and ends of empire, this course will examine European engagement with these questions across the nineteenth and twentieth centuries (with some background in earlier periods), paying attention to the ways in which the questions people asked¿and the conclusions they drew¿were shaped by social, religious, and political institutions and structures.

HISTORY 235L. Alien Imaginations: Extraterrestrial Speculations in Modern European History. 5 Units.
(History 235L is an undergraduate course offered for 5 units; History 335L is a graduate course offered for 4-5 units.) This course will examine the historical basis and evolution of modern European beliefs concerning the existence and nature of alien life throughout the universe, and the ways in which these imagined alien beings have historically reflected an interplay of social, religious, political, and scientific assumptions, hopes, fears, and preoccupations. We will explore the relationship between belief in extraterrestrial life and historical themes and episodes in European history including the debate over heliocentrism, deism and freethought, theories of life and of human nature, changing concepts of national identity, and the intertwined histories of immigration, colonialism, race, and gender. We will particularly examine how and why concepts of the alien took a dark and sinister turn across the late nineteenth- and early-to-mid-twentieth centuries.

HISTORY 236. The Ethics of Imperialism. 5 Units.
Can a commitment to liberty, progress, and universal rights be reconciled with imperialism? The ethical underpinnings of empire; how modern Europeans provided ethical and political justifications for colonial expansion. How European ideals were used to defend and justify inequality, violence, and genocide. The ethics of American-driven globalization and humanitarianism. Texts include primary sources, philosophical treatises, and historical studies.

HISTORY 236F. The End of the World As They Knew It: Culture, Cafés, and Crisis in Europe, 1880-1918. 4-5 Units.
The years stretching from roughly 1880 to end of the First World War were marked by profound social upheaval and an intense burst of creativity. This seminar will focus on the major cultural movements and big ideas of the period. Topics covered include the rise of mass culture and cinema, the origins of psychoanalysis, anti-Semitism and Zionism, new anxieties about sexuality and the ¿New Woman,¿ anarchism, decadence, degeneration, and Dada ¿ with cameos from Bernhardt, Freud, Klimt, Nietzsche, Toulouse-Lautrec, Wilde, Zola, and other luminaries of the age.
Same as: HISTORY 336F

HISTORY 236J. A Tour of Dangerous Ideas: Radical Thinkers in Modern Europe. 4-5 Units.
In this course we will examine ideas radical to their context in modern European thought, paying close attention to what it has meant to explain features of society, government, and politics in terms of power. What is power? What is human nature, and do all humans possess natural rights? How is human identity interwoven with the practice of power? What makes an idea radical? We will examine these and other questions through close readings of seven thinkers whose ideas shaped the modern period: John Locke, Jean-Jacques Rousseau, Mary Wollstonecraft, John Stuart Mill, Karl Marx, C.L.R. James, and Michel Foucault.
Same as: HISTORY 336J

HISTORY 237C. Building Modernity: Urban Planning and European Cities in the Twentieth Century. 5 Units.
This seminar explores the history of urban planning in twentieth-century Europe. We will discuss visions of ideal cities and attempts at their implementation in the context of democratic and authoritarian systems as well as capitalism and socialism. Through case studies from eastern and western Europe--from Berlin in Germany to Nowa Huta in Poland--we will examine how broader historical trends played out in, and were shaped by, specific local circumstances. The seminar is intended for advanced undergraduate students.
Same as: URBANST 152

HISTORY 237D. The French Revolution and the Birth of Modern Politics. 4-5 Units.
(Students who have taken HISTORY 134 should not enroll in this course.) This course will focus on the birth of modern politics in the French Revolution. The goal will be to understand the structural contradictions of the French monarchy in the pre-revolutionary period, the reasons for the monarchy's failure to resolve those contradictions, and the political dynamic unleashed as they were solved by the revolutionary action of 1789. Sovereignty, democracy, rights, representation, and terror will be principal themes. Lectures will be combined with close reading and discussions of political and philosophical writings of the period.
Same as: HISTORY 337D

HISTORY 237F. 20th Century British History through the Hoover Archives. 4-5 Units.
From the rich resources of the Hoover Institution, the students in this course will select a particular archive (war posters, politician, spy, literary figure, diplomat, etc. etc.) to investigate, to write about,discuss in class, and, it is hoped, present in an exhibition at the Hoover, learning museum skills along the way as well as the history of Britain in the 20th century.
Same as: HISTORY 337F

HISTORY 237G. Outer Space Exploration in Germany in the Twentieth Century. 1-5 Unit.
Since the nineteenth century, Germans, like their counterparts around the world, have considered the meaning and the role of humanity in outer space. As space travel developed from a dream to a reality, and as Germany changed borders and political systems among empires, dictatorships, socialist states, and capitalist states, German interest in spaceflight remained, although the meaning found in the stars changed dramatically. This course considers Germans' dreams of and predictions for outer space travel alongside German technological developments in spaceflight. It includes the different German states throughout the century, including Weimar Germany, National Socialism, East Germany, and West Germany. The course looks at science fiction films and novels, newspaper reports, scientific developments, and German space engineering projects, which together demonstrate how and why space travel often found high levels of support in Germany. Students will engage in historical and cultural analysis through course readings, discussions, and assignments.nNOTE: To be eligible for WAYS credit, you must take this course for a minimum of 3 units and a letter grade.
Same as: GERMAN 275

HISTORY 238C. Virtual Italy: Methods for Historical Data Science. 4-5 Units.
Classical Italy attracted thousands of travelers throughout the 1700s. Referring to their journey as the "Grand Tour," travelers pursued intellectual passions, promoted careers, and satisfied wanderlust, all while collecting antiquities to fill museums and estates back home. What can computational approaches tell us about who traveled, where and why? We will read travel accounts; experiment with parsing; and visualize historical data. Final projects to form credited contributions to the Grand Tour Project, a cutting-edge digital platform. No prior programming experience necessary.
Same as: CLASSICS 115, ENGLISH 115, ITALIAN 115

HISTORY 238G. Ethnography of the Late Middle Ages: Social history and popular culture in the age of the plague. 4-5 Units.
During the late Middle Ages, as Europe was recovering from the devastation of the Black Death, political reorganization contributed to a burst of archival documentation that allows historians richly detailed glimpses of societies in transition. We will be reading selected scholarly articles and monographs covering such topics as persecution, prechristian cultural remnants, folk theologies, festival cultures, peasant revolts, heresy, and the advent of the diabolic witch.
Same as: HISTORY 338G

HISTORY 238J. The European Scramble for Africa: Origins and Debates. 4-5 Units.
Why and how did Europeans claim control of 70% of African in the late nineteenth century? Students will engage with historiographical debates ranging from the national (e.g. British) to the topical (e.g. international law). Students will interrogate some of the primary sources on which debaters have rested their arguments. Key discussions include: the British occupation of Egypt; the autonomy of French colonial policy; the mystery of Germany¿s colonial entry; and, not least, the notorious Berlin Conference of 1884-1885.
Same as: AFRICAAM 238J, HISTORY 338J

HISTORY 239C. Humanities Core: Great Books, Big Ideas -- Europe, Modern. 3 Units.
This three-quarter sequence asks big questions of major texts in the European and American tradition. What is a good life? How should society be organized? Who belongs? How should honor, love, sin, and similar abstractions govern our actions? What duty do we owe to the past and future? This third and final quarter focuses on the modern period, from the rise of revolutionary ideas to the experiences of totalitarianism and decolonization in the twentieth century. Authors include Locke, Mary Shelley, Marx, Nietzsche, Freud, Weber, Primo Levi, and Frantz Fanon.
Same as: DLCL 13, FRENCH 13, HUMCORE 13, PHIL 13

HISTORY 239F. Empire and Information. 4-5 Units.
How do states see? How do they know what they know about their subjects, citizens, economies, and geographies? How does that knowledge shape society, politics, identity, freedom, and modernity? Focus is on the British imperial state activities in S. Asia and Britain: surveillance technologies and information-gathering systems, including mapping, statistics, cultural schemata, and intelligence systems, to render geographies and social bodies legible, visible, and governable.
Same as: HISTORY 339F

HISTORY 239G. The Algerian Wars. 3-5 Units.
From Algiers the White to Algiers the Red, Algiers, the Mecca of the Revolutionaries in the words of Amilcar Cabral, this course offers to study the Algerian Wars since the French conquest of Algeria (1830-) to the Algerian civil war of the 1990s. We will revisit the ways in which the war has been narrated in literature and cinema, popular culture, and political discourse. A special focus will be given to the Algerian War of Independence (1954-1962). The course considers the racial representations of the war in the media, the continuing legacies surrounding the conflict in France, Africa, and the United States, from Che Guevara to the Black Panthers. A key focus will be the transmission of collective memory through transnational lenses, and analyses of commemorative events and movies. nReadings from James Baldwin, Assia Djebar, Albert Camus, Frantz Fanon, Mouloud Feraoun. Movies include "The Battle of Algiers," "Days of Glory," and "Viva Laldjérie." nTaught in English.
Same as: CSRE 249, FRENCH 249, JEWISHST 249

HISTORY 239H. Colonialism and Empire in Modern Europe. 5 Units.
To better understand the history of modern Europe within a global context, explores the following questions: What impact did more than a century of colonialism have on the social lives, cultural attitudes, political loyalties, and intellectual world views of European women and men during the nineteenth century? What accounts for the resiliency of empire during a period of rapid global change that witnessed the rise of modern democracy, economic liberalism, ethnic nationalism, and international socialism?.

HISTORY 239J. Work and Leisure in Nineteenth Century Britain. 4-5 Units.
This course charts the changes wrought by the Industrial Revolution, empire, and social factors in Britons' lives at work and at home in the nineteenth century. Readings will explore trade unionism and Chartism, urban migration, consumer culture, print culture, organized sports, shows, rational leisure" and the development of exhibitions and public museums. Students will gain a sense of how Britons worked and played in a century that gave birth to pastimes and institutions that continue to shape our own.
Same as: HISTORY 339J

HISTORY 239K. Sex, Death, and God in Modern Europe. 4-5 Units.
In the midst of social and political upheaval and transformation, people in modern Europe have grappled with central questions of human existence. What place does humanity occupy in the universe and in relation to God? How does life begin, and under what circumstances? What gives life its meaning? What is socially and morally acceptable--or transgressive? Is there life after death, and a spiritual realm distinct from the material world? This course will examine answers to these questions across the late eighteenth, nineteenth, and twentieth centuries, and the ways in which the questions people asked--and the conclusions they drew--were shaped by social, political, and religious assumptions, hopes, and fears.
Same as: HISTORY 339K

HISTORY 240. The History of Evolution. 4-5 Units.
This course examines the history of evolutionary biology from its emergence around the middle of the eighteenth century. We will consider the continual engagement of evolutionary theories of life with a larger, transforming context: philosophical, political, social, economic, institutional, aesthetic, artistic, literary. Our goal will be to achieve a historical rich and nuanced understanding of how evolutionary thinking about life has developed to its current form.
Same as: HISTORY 340

HISTORY 241C. History of Suggestion and Mind Control. 5 Units.
This course traces the history of suggestion and hypnosis from the birth of mesmerism in the late 18th-century to Cold War controversies over brainwashing, and recent debates on global terrorism and the ethics of technology. Born during the Age of Revolutions, the therapeutic system of mesmerism was quickly pushed to the margins of scientific practice as it was elaborated in the 19th-century but nonetheless remained a key determinant of human experience, politics, social relations, and medical practice. While reading secondary and primary texts, we will follow the evolution of various theories of trance and hypnotic induction alongside the development of scientific approaches to psychology in the West and the non-West to unravel the complex relationship between politics, social reform, labor, international relations, espionage, and indoctrination, and practices of suggestion and mind control.

HISTORY 242D. Knowledge and Information Infrastructures. 3-4 Units.
This course introduces historical, theoretical, and comparative perspectives on knowledge and information systems from the medieval world to the present. Cases include libraries, meteorology, climate science, the Internet, the World Wide Web, and social science data systems. It theorizes how infrastructures form, how they change, and how they shape (and are shaped by) social systems. The course ends with challenges to modern knowledge infrastructures, such as crowdsourcing, citizen science, and alternative and bogus knowledge.
Same as: STS 166

HISTORY 242G. Spaces and Practices of Natural History. 4-5 Units.
Gentleman scientists once practiced natural history by studying specimens collected from around the world, stored in cabinets of curiosity. From the 17th to 19th centuries, natural history moved out of the cabinet and into the field; these environments required new ways of thinking and different types of scientific workers. This course will track how new spaces, practices, and people became associated with natural history and explore how they shaped the content of the field and the social contours of science.
Same as: HISTORY 342G

HISTORY 242J. London Low Life in the Nineteenth Century. 5 Units.
(History 242J is an undergraduate course offered for 5 units; History 342J is a graduate course offered for 4-5 units.) London began the nineteenth century as a city of one million, but was home to over six million people by the century¿s end. How did Londoners in the nineteenth century respond to the challenges and temptations of life in a growing metropolis? How did government and reformers try to influence and control city dwellers¿ behavior? This class seeks to answer these questions by exploring life in Britain¿s capital in the nineteenth century, using the digital database ¿London Low Life¿ as a guide. Contemporary street literature, night-life guides, pamphlets, broadsides, images, reformer¿s tracts, and public-interest journalism are some of the sources that will give us a window into vice, virtue, and daily life in London during a period of great uncertainty and change.

HISTORY 243C. People, Plants, and Medicine: Colonial Science and Medicine. 4-5 Units.
Explores the global exchange of knowledge, technologies, plants, peoples, disease, and medicines. Considers primarily Africans, Amerindians, and Europeans in the eighteenth-century West but also takes examples from other knowledge traditions. Readings treat science and medicine in relation to voyaging, colonialism, slavery, racism, plants, and environmental exchange. Colonial sciences and medicines were important militarily and strategically for positioning emerging nation states in global struggles for land and resources.
Same as: HISTORY 343C

HISTORY 243G. Tobacco and Health in World History. 4-5 Units.
Cigarettes are the world's leading cause of death--but how did we come into this world, where 6 trillion cigarettes are smoked every year? Here we explore the political, cultural, and technological origins of the cigarette and cigarette epidemic, using the tobacco industry's 80 million pages of secret documents. Topics include the history of cigarette advertising and cigarette design, the role of the tobacco industry in fomenting climate change denial, and questions raised by the testimony of experts in court.
Same as: HISTORY 343G

HISTORY 243S. Human Origins: History, Evidence, and Controversy. 4-5 Units.
Research seminar. Debates and controversies include: theories of human origins; interpretations of fossils, early art, and the oldest tools; the origin and fate of the Neanderthals; evolutionary themes in literature and film; visual rhetoric and cliché in anthropological dioramas and phyletic diagrams; the significance of hunting, gathering, and grandmothering; climatological theories and neocatastrophic geologies; molecular anthropology; the impact of racial theories on human origins discourse. Background in human evolution not required.
Same as: HISTORY 443A

HISTORY 244C. The History of the Body in Science, Medicine, and Culture. 4-5 Units.
The human body as a natural and cultural object, historicized. The crosscultural history of the body from the 18th century to the present. Topics include: sciences of sex and race; medical discovery of particular body parts; human experimentation, foot binding, veiling, and other bodily coverings; thinness and obesity; notions of the body politic.
Same as: HISTORY 444C

HISTORY 244F. Intersectional Design: An Expanded Approach to Gender in Tech. 4-5 Units.
This d-school seminar prototypes concepts and methods for "inclusive" design. From the moment we arrive on the planet, gender shapes our perception of the world. Examples of products (including objects, services, and systems) gone awry will serve as prompts for design activities, challenges, and discussions on gender issues to illustrate the different needs of women, men, and gender-fluid people. Class sessions mix use case explorations with design methodology, design thinking abilities, and guest speakers from technology, design, and academia. Students will be asked to work in interdisciplinary teams on several design challenges, culminating in the development of a toolkit for inclusive design. Methods will interact in crucial ways to create "intersectional thinking" (i.e., to consider how gender, ethnicity, sexuality, socio-economic status, etc. work together to require new solutions in design). Topics include: algorithms, media, seat belts for pregnant women, robotics, assistive technologies, tech for developing worlds, video games, urban/rural design, software development, and many more. Admission by application only. Visit d.school.stanford.edu/classes for more information.
Same as: FEMGEN 344F, HISTORY 344F

HISTORY 245C. Casablanca - Algiers - Tunis : Cities on the Edge. 3-5 Units.
Casablanca, Algiers and Tunis embody three territories, real and imaginary, which never cease to challenge the preconceptions of travelers setting sight on their shores. In this class, we will explore the myriad ways in which these cities of North Africa, on the edge of Europe and of Africa, have been narrated in literature, cinema, and popular culture. Home to Muslims, Christians, and Jews, they are an ebullient laboratory of social, political, religious, and cultural issues, global and local, between the nineteenth and twenty-first centuries. We will look at mass images of these cities, from films to maps, novels to photographs, sketching a new vision of these magnets as places where power, social rituals, legacies of the Ottoman and French colonial pasts, and the influence of the global economy collude and collide. Special focus on class, gender, and race.
Same as: AFRICAAM 236B, COMPLIT 236A, CSRE 140S, FRENCH 236, FRENCH 336, URBANST 140F

HISTORY 245G. Law and Colonialism in Africa. 4-5 Units.
Law in colonial Africa provides an opportunity to examine the meanings of social, cultural, and economic change in the anthropological, legal, and historical approaches. Court cases as a new frontier for the social history of Africa. Topics: meanings of conflicts over marriage, divorce, inheritance, property, and authority.
Same as: HISTORY 348D

HISTORY 246F. The African State: An Inconvenient History. 5 Units.
This course offers a history of the formation of postcolonial African states and how they came to be the way they are now. It will explore what exactly is meant by a "state", as well as examine the forms of governments that existed within Africa prior to, and during colonial rule. The course looks at structures and institutions the colonial state erected and what effects they had on their succeeding African states.

HISTORY 248. Religion, Radicalization and Media in Africa since 1945. 4-5 Units.
What are the paths to religious radicalization, and what role have media- new and old- played in these conversion journeys? We examine how Pentecostal Christians and Reformist Muslims in countries such as South Africa, Nigeria, Sudan, and Ethiopia have used multiple media forms- newspapers, cell phones, TV, radio, and the internet- to gain new converts, contest the authority of colonial and post-colonial states, construct transnational communities, and position themselves as key political players.
Same as: AFRICAST 248, AFRICAST 348, HISTORY 348, RELIGST 230X, RELIGST 330X

HISTORY 248D. Histories of Race in Science and Medicine at Home and Abroad. 4 Units.
This course has as its primary objective, the historical study of the intersection of race, science and medicine in the US and abroad with an emphasis on Africa and its Diasporas in the US. By drawing on literature from history, science and technology studies, sociology and other related disciplines, the course will consider the sociological and cultural concept of race and its usefulness as an analytical category. The course will explore how the study of race became its own ¿science¿ in the late-Enlightenment era, the history of eugenics--a science of race aimed at the ostensible betterment of the overall population through the systematic killing or "letting die" of humanity¿s "undesirable" parts, discuss how the ideology of pseudo-scientific racism underpinned the health policies of the French and British Empires in Africa, explore the fraught relationship between race and medicine in the US, discuss how biological notions of race have quietly slipped back into scientific projects in the 21st century and explore how various social justice advocates and scholars have resisted the scientific racisms of the present and future and/or proposed new paths towards a more equitable and accessible science.
Same as: AFRICAAM 122F, AFRICAST 122F, CSRE 122F

HISTORY 249. The Mamluks: Slave-Soldiers and Sultans of Medieval Egypt. 3-5 Units.
Known as ghulam or mamluk in Arabic, the slave-soldier was a ubiquitous phenomenon in the world of medieval Islam. Usually pagan steppe nomads, mamluks were purchased in adolescence, converted to Islam, taught Arabic, and trained to lead armies. Sometimes manumitted and sometimes not, in either case mamluks rose to positions of privilege and prominence in numerous regimes in the medieval Middle East.nnNowhere was the mamluk institution so fundamental as it was in Egypt between 1250 and 1517 CE, when Cairo was ruled by these slave-soldiers, their ranks constantly renewed by imports of new mamluks from the Black Sea and Caucuses. Born in the age of the crusades and ultimately conquered by the Ottoman Empire, the Mamluk Sultanate can be understood as a bridge between the worlds of medieval and early modern Islam, as well as between East and West, sitting astride the major Nile-Red Sea route that linked the Mediterranean world to that of the Indian Ocean and beyond. This class will investigate the rise and fall of the Mamluk Sultanate in Egypt and its key roles in the commercial, diplomatic, and political history both of the medieval Middle East and the wider world.
Same as: GLOBAL 102, GLOBAL 210, HISTORY 349A

HISTORY 250A. History of Native Americans in California. 3-5 Units.
This course examines the political histories and cultural themes of Native Americans in California, 1700s1950s. Throughout the semester we will focus on: demographics, diversity of tribal cultures; regional environmental backgrounds; the Spanish Era and missionization; the Mexican Era and secularization; relations with the United States Government and the State of California, including the gold rush period, statehood, unratified treaties, origin of reservations/rancherias, and other federal policies, e.g., Allotment Act, Indian Reorganization Act and termination.
Same as: CSRE 117S, NATIVEAM 117S

HISTORY 250E. Taxing America: From the Puritans to Prop. 13. 5 Units.
Taxes have shaped American society and politics since before the Revolution. And they've been extremely controversial just as long. In this course we'll try to understand American society and government by looking at the politics of taxation from the colonial period to the twentieth century. Topics include the legitimacy of taxation, the constitution, economic development, inequality, gender, and race.

HISTORY 251C. The American Enlightenment. 5 Units.
The eighteenth century saw the rise of many exciting new political, religious, and scientific theories about human happiness, perfectibility, and progress that today we call "the Enlightenment." Most people associate the Enlightenment with Europe, but in this course we will explore the many ways in which the specific conditions of eighteenth-century North America --such as slavery, the presence of large numbers of indigenous peoples, a colonial political context, and even local animals, rocks, and plants--also shaped the major questions and conversations of the people who strove to become "enlightened." We'll also explore how American Enlightenment ideas have profoundly shaped the way Americans think today about everything from politics to science to race. The class is structured as lecture and discussion, with deep reading in primary sources from the seventeenth and eighteenth centuries.
Same as: AMSTUD 251C

HISTORY 251J. The End of American Slavery, 1776-1865. 4-5 Units.
How did the institution of American slavery come to an end? The story is more complex than most people know. This course examines the rival forces that fostered slavery's simultaneous contraction in the North and expansion in the South between 1776 and 1861. It also illuminates, in detail, the final tortuous path to abolition during the Civil War. Throughout, the course introduces a diverse collection of historical figures, including seemingly paradoxical ones, such as slaveholding southerners who professed opposition to slavery and non-slaveholding northerners who acted in ways that preserved it. Historical attitudes toward race are a central integrative theme.
Same as: AFRICAAM 251J, AMSTUD 251J, HISTORY 351J

HISTORY 252B. Diplomacy on the Ground: Case Studies in the Challenges of Representing Your Country. 5 Units.
The tragic death of Ambassador Chris Stevens has recently highlighted the dangers of diplomacy in the modern era. This class will look at how Americans in embassies have historically confronted questions such as authoritarian rule, human rights abuses, violent changes of government, and covert action. Case studies will include the Berlin embassy in the 1930s, Tehran in 1979, and George Kennan's experiences in Moscow, among others. Recommended for students contemplating careers in diplomatic service. *IR majors taking this course to fulfill the IR WIM requirement should enroll in INTNLREL174. As space is limited, first-year students must obtain the instructor's prior consent before enrolling.
Same as: INTNLREL 174

HISTORY 252C. The Old South: Culture, Society, and Slavery. 5 Units.
This course explores the political, social, and cultural history of the antebellum American South, with an emphasis on the history of African-American slavery. Topics include race and race making, slave community and resistance, gender and reproduction, class and immigration, commodity capitalism, technology, disease and climate, indigenous Southerners, white southern honor culture, the Civil War, and the region's place in national mythmaking and memory.
Same as: AFRICAAM 252C, CSRE 252C

HISTORY 252E. From Gold Rush to Google Bus: History of San Francisco. 4 Units.
This class will examine the history of San Francisco from Native American and colonial settlement through the present. Focus is on social, environmental, and political history, with the theme of power in the city. Topics include Native Americans, the Gold Rush, immigration and nativism, railroads and robber barons, earthquake and fire, progressive reform and unionism, gender, race and civil rights, sexuality and politics, counterculture, redevelopment and gentrification. Students write final project in collaboration with ShapingSF, a participatory community history project documenting and archiving overlooked stories and memories of San Francisco. (Cardinal Course certified by the Haas Center).
Same as: AMSTUD 150X, URBANST 150

HISTORY 253F. Thinking the American Revolution. 4-5 Units.
No period in American history has generated as much creative political thinking as the era of the American Revolution. This course explores the origins and development of that thought from the onset of the dispute between Great Britain and its American colonies over liberty and governance through the debates surrounding the construction and implementation of the United States federal Constitution.
Same as: HISTORY 353F

HISTORY 253L. Caring Labor in the United States. 3-5 Units.
Who cares for America's children, elderly, and infirm? How is the structure of these labor forces influenced by ideologies of race, gender, and class? Beginning with theories of reproductive and caring labor, we examine the history of coerced and enslaved care and then caring as free labor. We will look at housework, child care, nursing, and elder care, among others, and will also examine how activists, policy makers, and workers have imagined new ways of performing and valuing care.
Same as: AFRICAAM 253, FEMGEN 253L

HISTORY 253P. Before the Model Minority: South Asians in the US. 5 Units.
The model minority myth has been used to create a wedge between Asian and Black people in the United States, and masks the histories and lives of itinerant South Asian traders, laborers, and farmers. Beginning in the 1860s, South Asians (mostly male, and often undocumented) traveled to major ports in the US, such as New York City, New Orleans, and the California coast, where they found working-class jobs and married Puerto Rican, African American, Creole, and Mexican women. Some South Asians were double migrants, first brought to British colonies in the Caribbean and South America through indentured servitude, and later migrated to the United States. Their life stories expand to the racial history of the United States by looking beyond a Black/white binary. nnBy juxtaposing immigrant stories with exclusionary US immigration laws, the course touches upon major themes of migration, capitalism, surveillance, race and racism, multiracial couples and communities, resistance, intersectional activism, borderlands and cities in the US, and the formation of national identity. During the quarter, we will seek to connect experiences in the past with contemporary issues of political culture in the United States to engage with the continuing challenge of locating and attaining self-definition, justice, and social progress in a fraught and divided world.
Same as: CSRE 153R

HISTORY 254. Popular Culture and American Nature. 5 Units.
Despite John Muir, Aldo Leopold, and Rachel Carson, it is arguable that the Disney studios have more to do with molding popular attitudes toward the natural world than politicians, ecologists, and activists. Disney as the central figure in the 20th-century American creation of nature. How Disney, the products of his studio, and other primary and secondary texts see environmentalism, science, popular culture, and their interrelationships.

HISTORY 254D. Religion and War in America. 4 Units.
Scholars have devoted much attention to wars in American history, but have not agreed as to whether religion was a major cause or simply a cover for political, economic, and other motives. We will compare interpretations that leave religion out, with those that take it into account. We will also look at the impact of war on the religious lives of ordinary Americans. We will examine both secondary as well as primary sources, beginning with King Philip's War in the 17th century, and ending with the "War on Terror" in the present day.
Same as: AMSTUD 105R, CSRE 105, HISTORY 354D, RELIGST 105

HISTORY 254G. The Causes and Consequences of the American Revolution. 5 Units.
Why did Britain's North American colonies declare independence from an empire they had long revered? What did the American Revolution mean for the people who experienced it? In this course we will explore the explosive origins of the American republic. Topics: revolutionary ideology, empire, the federal constitution, slavery, social conflict, and the international consequences of the American Revolution.

HISTORY 255. Martin Luther King, Jr.: The Social Gospel and the Struggle for Justice. 5 Units.
The religious and political thought of Martin Luther King, Jr., using the documentary resources of the King Institute at Stanford. His social gospel Christianity and prophetic message of radical social transformation. Readings include the forthcoming *The Papers of Martin Luther King, Jr., Volume VI: Advocate of the Social Gospel*.

HISTORY 255B. Contested Masculinities in Modern America. 5 Units.
This course examines masculinity in the twentieth-century United States across academic disciplines. Suspending the idea that manhood is biologically fixed or innate, this course presents masculinity as socially constructed and in a state of ongoing contest and crisis. Students will explore what it has meant (and means) to be a man in America, how masculinity has related to femininity and feminism, and masculinity's intersection with other identities like race, ethnicity, religion, and sexual orientation. Assigned materials include an array of readings in History, African and African American Studies, Gender and Women's Studies, Art History, and American Studies, along with documentary and fictional films.
Same as: FEMGEN 255B

HISTORY 255E. Education, Race, and Inequality in African American History, 1880-1990. 3-5 Units.
Seminar. The relationship among race, power, inequality, and education from the 1880s to the 1990s. How schools have constructed race, the politics of school desegregation, and ties between education and the late 20th-century urban crisis.
Same as: AFRICAAM 116, AMSTUD 216, CSRE 216X, EDUC 216

HISTORY 256E. The American Civil War: The Lived Experience. 5 Units.
What was it like to live in the United States during the Civil War? This course uses the lenses of racial/ethnic identity, gender, class, and geography (among others) to explore the breadth of human experience during this singular moment in American history. It illuminates the varied ways in which Americans, in the Union states and the Confederate states, struggled to move forward and to find meaning in the face of unprecedented division and destruction.
Same as: AFRICAAM 256E, AMSTUD 256E

HISTORY 256G. Constructing Race and Religion in America. 4-5 Units.
This seminar focuses on the interrelationships between social constructions of race and social interpretations of religion in America. How have assumptions about race shaped religious worldviews? How have religious beliefs shaped racial attitudes? How have ideas about religion and race contributed to notions of what it means to be "American"? We will look at primary and secondary sources and at the historical development of ideas and practices over time.
Same as: AFRICAAM 236, AMSTUD 246, CSRE 246, HISTORY 356G, RELIGST 246, RELIGST 346

HISTORY 257C. LGBTQ History of the United States. 4-5 Units.
An introductory course that explores LGBT/Queer social, cultural, and political history in the United States. By analyzing primary documents that range from personal accounts (private letters, autobiography, early LGBT magazines, and oral history interviews) to popular culture (postcards, art, political posters, lesbian pulp fiction, and film) to medical, military, and legal papers, students will understand how the categories of gender and sexuality have changed over the past 150 years. This class investigates the relationship among queer, straight and transgender identities. Seminar discussions will question how the intersections of race, class, gender, and sexuality influenced the construction of these categories.
Same as: FEMGEN 140D, FEMGEN 240D

HISTORY 257E. History of Conservatism. 4-5 Units.
What is conservatism in America? Where did it come from, and where might it be going? Looking at conservatism as a political, social, and intellectual movement, we will consider these questions by reading primary and secondary sources and archival material. Suitable for students of any or no particular political persuasion. No prerequisites or background required, although the reading will be considerable.
Same as: HISTORY 357E

HISTORY 258. History of Sexual Violence in America. 4-5 Units.
This undergraduate/graduate colloquium explores the history of sexual violence in America, with particular attention to the intersections of gender and race in the construction of rape. We discuss the changing definitions of sexual violence in law and in cultural representations from early settlement through the late-twentieth century, including slavery, wartime and prison rape, the history of lynching and anti-lynching movements, and feminist responses to sexual violence. In addition to introducing students to the literature on sexual violence, the course attempts to teach critical skills in the analysis of secondary and primary historical texts. Students write short weekly reading responses and a final paper; no final exam; fifth unit research or CEL options.nnLimited enrollment, permission of instructor required. Submit application form and indicate interest in CEL option. Priority admission to History, FGSS, CSRE, AFRICAAM, and AMSTUD declared majors and minors. (Cardinal Course certified by the Haas Center).
Same as: AFRICAAM 192, AMSTUD 258, CSRE 192E, FEMGEN 258, FEMGEN 358, HISTORY 358

HISTORY 258B. History of Education in the United States. 3-5 Units.
How education came to its current forms and functions, from the colonial experience to the present. Focus is on the 19th-century invention of the common school system, 20th-century emergence of progressive education reform, and the developments since WW II. The role of gender and race, the development of the high school and university, and school organization, curriculum, and teaching. Class meetings will typically end around 1:50pm.
Same as: AMSTUD 201, EDUC 201

HISTORY 258E. History of School Reform: Origins, Policies, Outcomes, and Explanations. 3-5 Units.
Strongly recommended for students in the POLS M.A. program; others welcome. Focus is on 20th-century U.S. Intended and unintended patterns in school change; the paradox of reform that schools are often reforming but never seem to change much; rhetorics of reform and factors that inhibit change. Case studies emphasize the American high school. This course is strongly recommended for POLS students pursuing K -12 leadership.
Same as: EDUC 220D

HISTORY 259A. Poverty and Homelessness in America. 4-5 Units.
Service learning. Students participate in a two quarter internship at a local shelter for homeless individuals or families. Readings include historical, social science, and social commentary literature. Service Learning Course (certified by Haas Center).

HISTORY 259E. American Interventions, 1898-Present. 5 Units.
This class seeks to examine the modern American experience with limited wars, beginning with distant and yet pertinent cases, and culminating in the war in Iraq. Although this class will examine war as a consequence of foreign policy, it will not focus primarily on presidential decision making. Rather, it will place wartime policy in a broader frame, considering it alongside popular and media perceptions of the war, the efforts of antiwar movements, civil-military relations, civil reconstruction efforts, and conditions on the battlefield. We will also examine, when possible, the postwar experience.
Same as: HISTORY 359E, INTNLREL 168A

HISTORY 260K. Exploring American Religious History. 4 Units.
This course will trace how contemporary beliefs and practices connect to historical trends in the American religious landscape.
Same as: AMSTUD 91, CSRE 91, RELIGST 91

HISTORY 260P. American Protest Movements, Past and Present. 5 Units.
(History 260P is an undergraduate course offered for 5 units; History 360P is a graduate course offered for 4-5 units.) Societal change comes only when individuals and groups speak out, perseverantly, against prevailing norms. This course examines the overlapping histories of three nineteenth-century protest movements: antislavery, women¿s rights, and temperance. It focuses on the arguments and tactics used by these movements to persuade Americans to oppose the status quo, and it examines the points of agreement and disagreement that arose within and among these movements. Ultimately, the course connects these past protest movements to more recent analogs, such as Black Lives Matter, ERA ratification, and marijuana legalization. Throughout the course, race, gender, and class serve as central analytical themes.

HISTORY 261. Race, Gender, and Class in Jim Crow America. 5 Units.
How African American life and labor were redefined from 1890-1954. Topics include family life, work, leisure patterns, transnational relations, cultural expressions emphasizing literature and music, resistance and social activisim. Primary sources including visual materials, literature, and film; historical interpretations of the period.

HISTORY 261D. Democracy in Crisis: Historical Perspectives. 5 Units.
Scholars and pundits warn that American democracy is in crisis. But what is at stake? How new is this crisis? And can historical analysis offer insight into our present predicament?nnThis course will examine five historical crises of democracy: the Constitutional Convention, the Civil War, the Progressive Movement, World War II, and the protest movements of the 1960s. For each crisis, we will explore the political, cultural, and intellectual factors that defined and resolved (or failed to resolve) each crisis.

HISTORY 261E. Introduction to Asian American History. 5 Units.
This course provides an introduction to the field of Asian American history. Tracing this history between the arrival of the first wave of Asian immigrants to the US in the mid-nineteenth century and the present, we foreground the voices and personal histories of seemingly everyday Asian Americans. In the process, the course disrupts totalizing national historical narratives that center the US nation-state and its political leaders as the primary agents of historical change.
Same as: AMSTUD 261W, ASNAMST 261

HISTORY 261G. Presidents and Foreign Policy in Modern History. 5 Units.
Nothing better illustrates the evolution of the modern presidency than the arena of foreign policy. This class will examine the changing role and choices of successive presidential administrations over the past century, examining such factors as geopolitics, domestic politics, the bureaucracy, ideology, psychology, and culture. Students will be encouraged to think historically about the institution of the presidency, while examining specific case studies, from the First World War to the conflicts of the 21st century.
Same as: INTNLREL 173

HISTORY 263C. Nature's Bounty: Natural Resources and U.S. Political Economy. 5 Units.
The United States has long been among the wealthiest countries in the world, and its economic life has been closely tied to natural resource extraction. Taking the relation between these two historical facts as a question to be examined rather than a truism to be repeated, this course considers the histories of fossil fuels, plantation agriculture, farming, forestry, fishing, and nuclear energy as they relate to wealth, poverty, and economic thought.

HISTORY 263D. Junipero Serra. 3-5 Units.
Why is Junipero Serra considered a representative figure of California? How have assessments of Serra evolved over the last 200 years? Why does his name appear so often on our campus? In this course we will consider these and other questions in terms of Spanish empire, Native American history, California politics of memory and commemoration, among other approachs. Requirements include weekly reading, class discussion, a field trip to Carmel Mission, short writing assignments, and a formal debate on the ethics naming university or public buildings after historical figures with contested pasts. Taught in English.

HISTORY 264. History of Prisons and Immigration Detention. 4-5 Units.
This course will explore the history of the growing prison and immigration detention systems in the United States. They will pay particular attention to how they developed and how they affect different populations.
Same as: AMSTUD 264, CSRE 264, HISTORY 364

HISTORY 264D. Modern America in Historical Perspective. 5 Units.
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Same as: SIW 185

HISTORY 267E. Martin Luther King, Jr. - His Life, Ideas, and Legacy. 4-5 Units.
Using the unique documentary resources and publications of Stanford's King Research and Education Institute, this course will provide a general introduction to King's life, visionary ideas, and historical significance. In addition to lectures and discussions, the course will include presentations of documentaries such as Eyes on the Prize. Students will be expected to read the required texts, participate in class discussions, and submit a research paper or an audio-visual project developed in consultation with the professor.
Same as: AFRICAAM 267E, AMSTUD 267E

HISTORY 269F. Modern American History: From Civil Rights to Human Rights. 4-5 Units.
(History 269F is an undergraduate course offered for 5 units; History 369F is a graduate course offered for 4-5 units.) This focuses on American social justice movements during the years since the passage of landmark civil rights legislation during the 1960s, with particular emphasis on efforts to extend rights to all people.
Same as: HISTORY 369F

HISTORY 270E. Queer History of the Americas. 4-5 Units.
This course will examine LGBT history in the Americas. It traces the development of homosexuality as a category of analysis; the construction of trans identity; the ways in which same-sex desire and gender identity were regulated over time; and queer people's struggles for recognition, liberation, and, ultimately, rights.
Same as: HISTORY 370E

HISTORY 270F. History of the Police in the United States. 5 Units.
How did police come to have the power to use violence? Who counts as a police officer and why? Topics include: growth of professional policing, creation of private police forces and vigilantism, slave patrols, political economy of policing, global policing, and cultural depictions of police. The entanglement of race, class, gender, and state power with police work is central.

HISTORY 271. Mexicans in the United States. 5 Units.
This course explores the lives and experiences of Mexicans living in the United States, from 1848 to the present. Themes and topics include: the legacies of colonialism, the Mexican-American War, transnational migration, the effects of economic stratification, race and racialization, and the impact of sexual and gender ideologies on the lives of Mexicans residing north of the border.
Same as: AMSTUD 271, CHILATST 171, CSRE 171H

HISTORY 272. Colonial Mexico: Images and Power. 3-5 Units.
How did images maintain, construct, or transform political power during the conquest and colonization of Mexico? The creation and destruction of visual materials in this period had a complicated relationship with power. The pictographic codices that celebrated the expansive Aztec Empire were created after its fall; and the conquistadors' indigenous allies painted some of the most triumphalist narratives of the conquest. Friars accused indigenous peoples of "idolatry" both to justify the destruction of their images and objects, and to construct legal defenses of their humanity. Colonial authorities frequently claimed Afro-Catholic festivals were seditious. In light of such complexity, official histories that recount the top-down consolidation of royal and viceroyal power are suspiciously simple. What counter-narratives do images and other visual phenomena from this tumultuous period offer? This course introduces students to major texts from Colonial Mexico (royal chronicles, conquistadors' tales, letters, poems, festival accounts) alongside a fascinating trove of images (painted codices with Nahuatl texts, feather mosaics, and indigenous heraldry) and considers how experiences of images and spectacles were transformed into textual accounts ("ekphrasis" or the literary device of description). Taught in Spanish.
Same as: HISTORY 372B, ILAC 214, ILAC 314

HISTORY 273. The European Expansion. 4-5 Units.
The relationship between European monarchies and their colonial domains from the 16th-18th centuries. Reasons for expansion, methods, and results. Case studies include the Spanish, Portuguese, Dutch, French, and English domains in Africa, Asia, and the Americas. Readings include primary and secondary sources.
Same as: HISTORY 373A

HISTORY 273E. The Emergence of Nations in Latin America: Independence Through 1880. 4-5 Units.
This course provides an introduction to the main themes of nineteenth-century Latin American history, including independence from Spain, the emergence of various nation-states, and the development of a new social, political, and economic order in the region.
Same as: HISTORY 373E

HISTORY 274C. The History of Mexicans and Mexican Americans. 4-5 Units.
This course will explore the history of Mexican migrants and Mexican Americans from 1848 to the present.
Same as: CHILATST 274, HISTORY 374C

HISTORY 274E. Urban Poverty and Inequality in Latin America. 5 Units.
We examine historical issues of social inequality, poverty, crime, industrialization, globalization, and environment in major Latin American cities.

HISTORY 278B. The Historical Ecology of Latin America. 4-5 Units.
What role did the natural environment play in the emergence of Latin America as a distinct geographical and socio-cultural world region? How do we analyze the historical relationship between the regions rich and seemingly abundant natural resources and its status as "underdeveloped"? What historical consequences did this relationship have and what alternative, more sustainable developmental paths can we envision for the future in light of the past that we will study? In this course, students will become familiar with the historiography on Latin America (with emphasis on Mexico) that has explored these questions through a variety of approaches, methodologies and points of view.
Same as: HISTORY 378

HISTORY 279. Latin American Development: Economy and Society, 1800-2014. 4-5 Units.
The newly independent nations of Latin America began the 19th century with economies roughly equal to the U.S. and Canada. What explains the economic gap that developed since 1800? Why are some Latin American nations rich and others poor and how have societies changed over time? Marxist, dependency, neoclassical, and institutionalist interpretive frameworks are explored. The effects of globalization on Latin American economic growth, autonomy, and potential for social justice are examined and debated.
Same as: HISTORY 379

HISTORY 279B. Potatoes, Coca, and Tamales: Food in Latin American History. 5 Units.
The history of Latin America is profoundly marked by the production, circulation, preparation, and consumption of food in its most different forms: as a staple food, drugs, ethnic dishes, drinks, etc. This course examines the cultural, social, economic, and environmental significance of food throughout the history of the region, from pre-Columbian times to the present. By selecting specific examples of ingredients, spices, dishes, cooking practices, and dietary habits, we will explore the role of new foods in shaping empires and global trading networks, the global circulation of Latin America's food commodities and internationalization of its cuisine, and food as an expression of identities based on race, class, gender, and nationality, linking them to major trends in the region's history. Students are welcome to explore themes of their interest related to the course topic in their assignments.

HISTORY 279D. Modern Brazil: Economy, Society & Culture. 4-5 Units.
This course addresses the history of modern Brazil from independence in 1822 to the present day. The class focuses on theories of economic development, social structure and change, and cultural life in Brazil's diverse regions.
Same as: HISTORY 379D

HISTORY 280B. The Birth of Islam: Authority, Community, and Resistance. 3-5 Units.
This course explores the historical problem of how authority and community (in both the political and religious sense) were defined and challenged in the early Islamic period. Chronological topics covered include: the political, cultural, and religious world of Late Antiquity into which Muhammad was born; the crystallization of a small community of believers who supported Muhammad's message of radical monotheism and aided him in the conquest and conversion of the Arabian Peninsula; the problems of legacy and leadership in the community of the faithful after Muhammad's death; the Arabo-Islamic conquests beyond Arabia during the 7th and early 8th centuries and the establishment of the first Islamic empire under the rule of the Umayyad clan; the Sunni/Shi'a split (and further splits in Shi'ism); the revolution of 750 A.D. and overthrow of the Umayyads by the 'Abbasids; the flourishing of a sophisticated world of learning and culture under the 'Abbasids; and the waning of the 'Abbasids empire in the tenth century and political reconfiguration of the Islamic lands.
Same as: GLOBAL 134, GLOBAL 234, HISTORY 380B

HISTORY 281A. Twentieth-Century Iraq: A Political and Social History. 5 Units.
The colonial experience, creation of the modern Iraqi state, and transition to military dictatorship. Political movements, religious and tribal elements, and their relation to the state. Geopolitical context.

HISTORY 281E. Oil, Maps, Data: Technology in the Middle East. 4-5 Units.
This course introduces students to a wide range of humanities and social science concepts pertaining to the global study of technology with an emphasis on the Middle East in the 19th, 20th and 21st-centuries. The main body of the course focuses on three case studies namely oil, mapping, and the internet through which issues of power, race, colonialism, financial imperialism, violence, and surveillance will be explored. This colloquium provides a unique perspective on contemporary debates about the politics and ethics of technology through a study of their global circulation.
Same as: HISTORY 381E

HISTORY 281J. The Road to Global Jihad: From Radical Networks to Militant Islamism. 4-5 Units.
This course traces the historical development of Islamically-oriented armed networks without theologizing or essentializing their nature, organizational structures, activities, or violence. We will cover the scholarly studies on militant organizations such as Egyptian Jihad, Al-Gama'at Al-Islamiyya, Taliban, Al-Qaeda, IS(IS), Hizbullah with their sectarian, ideological, and strategic diversity. The trajectory of militant Islamism as various offshoots from earlier global radical Muslim networks will be of critical focus. Basic jihadi texts and historical surveys and monographs on organizations will form the major components of the readings.".

HISTORY 281K. Departures: Late Ottoman Displacements of Muslims, Christians, and Jews, 1853-1923. 5 Units.
In the late nineteenth and early twentieth centuries, millions of people moved into and out of the Ottoman Empire, sometimes voluntarily and sometimes under extremely violent circumstances. More often than not, they moved in groups that were religiously defined. This course examines how these developments shaped the future of the modern Middle East, Balkans, and beyond. Questions include: How did migration and the idea of the nation shape each other? What does it mean to call a group or a migration "religious"? Why did certain types of diversity become a "problem," in the eyes of the state? What caused these population displacements? What can this topic teach us about today's mass migrations?.
Same as: JEWISHST 281K

HISTORY 282. The United States and the Middle East since 1945. 4-5 Units.
Since the end of WW II, U.S. interests in the Middle East have traditionally been defined as access to oil at a reasonable price, trade and markets, containing the influence of the Soviet Union, and the security of Israel. Is this the full range of U.S. interests? How has the pursuit of these interests changed over time? What forces have shaped U.S. policy? What is the impact of U.S. policy on the region itself?.
Same as: HISTORY 382

HISTORY 282J. Disasters in Middle Eastern History. 5 Units.
(History 282J is an undergraduate course offered for 5 units; History 382J is a graduate course offered for 4-5 units.) nnThis course explores the history of disasters in the Middle East from the early modern period to the mid-20th-century. We will trace the evolving meanings of disasters and misfortunes by focusing on critical moments -- plagues, fires, earthquakes, wars -- to examine how people have responded to these events, labeled them, and devised strategies to live with or forget them. The course readings follow the evolution of policies and norms together with the articulation of new forms of knowledge and expertise in the wake of catastrophe. Additionally, particular attention will be paid to how modern conceptions of disaster relate to older understandings of apocalypse, as well as to various strands of "disaster reformism," when rethinking tragedy and time helped assert radical agendas for reforming political, economic, social, communal, racial, and gender relations while remodeling social science and intellectual life. The course focuses on various trajectories of disaster thinking in Arabic, Turkish, Greek, Armenian, and Hebrew.

HISTORY 283C. The Medieval Middle East: Crusaders, Turks, and Mongols. 3-5 Units.
This course surveys the history of the Middle East from c.950 A.D. to c.1517 A.D., placing particular emphasis on the following questions: What were the social, cultural, and political contexts for conversion to Islam in the Middle Ages? How did the interplay of nomadic and sedentary peoples shape Middle Eastern history? What were the nature of Christian-Muslim relations and the fate of religious minorities in an age of Crusade and Jihad? What were the conditions for the rise, flourishing, and eventual collapse of a ¿world-system¿ in this period (with the lands of the Middle East serving as its nexus)? Chronological topics include: the arrival in the Middle East of the Seljuk Turks, new adopters of Islam and recent nomads; the western European crusades to the Holy Land and the establishment of so-called ¿Crusader States¿ in Syria; the subjugation of Iran to pagan Mongols¿and the Mongols¿ eventual conversion to Islam; the rise to power of a dynasty of Turkish slave-soldiers (mamluks) in Cairo and the political reunification of Syria and Egypt under their rule. Readings will consist of both primary sources and works of modern scholarship.
Same as: GLOBAL 133, GLOBAL 233, HISTORY 383C

HISTORY 283F. Capital and Crisis in the Middle East and the World. 5 Units.
(History 283F is an undergraduate course for 5 units; History 383F is a graduate course for 4-5 units.) How do economies change in times of crisis? How do economic crises intersect with pandemics, violence and environmental disaster to redefine the workings of capital? This course approaches these questions through critical reading in the histories of capitalism, crisis, and intersections between legal history and political economy, using the Middle East region as a starting point for the study of global phenomena. We will examine the ways in which constructions like race and ethnicity, gender, and the human/non-human divide have mediated the social and spatial expansion of capital in the region, especially through legal categories and instruments that transform rapidly in times of crisis. Temporally, we will focus our examination between two moments of economic crisis: the ¿long depression¿ of the late nineteenth century and the financial crisis of 2008. We will ground our historical reading in attention to current events, in particular the Middle East¿s ongoing experience of the pandemic-induced global financial crisis of 2020.

HISTORY 283J. Global Islam. 5 Units.
(Undergraduates, enroll in 283J; Graduates, enroll in 383J.) Explores the history and politics of Islam in Africa, Asia, Europe, the Middle East and the Americas --- and of the novel connections that have linked Muslim communities across the globe in modern times.

HISTORY 284. The Ottoman Empire: Conquest, Coexistence, and Coffee. 4-5 Units.
(History 284 is an undergraduate course offered for 5 units; History 384 is a graduate course offered for 4-5 units.) The Ottoman Empire ruled the Middle East, North Africa and Eastern Europe from the 15th to the early 20th centuries. How did the Ottoman enterprise appear in the frontier region between Christendom and the Islamic world? How were diverse peoples, religions, and regions integrated under the Ottoman order? Was there an Ottoman Mediterranean and Indian Ocean? How did reform movements in Islamic, Christian and Jewish thinking transform Ottoman societies? Topics include the Ottoman Empire between Europe and Eastern Islamic World; merchants and their markets; elite, urban, rural and nomadic lives; women, family, childhood and sexuality; life, afterlife and dreams; epidemics and natural disasters. Special emphasis will be given to coffee and coffee houses which shaped public life in the Ottoman World since the 16th century. The survey ends with the rise of nationalism, inter-communal violence and the disintegration of the Ottoman world.
Same as: HISTORY 384

HISTORY 284E. Contemporary Muslim Political Thought. 4-5 Units.
This course aims to provide an intellectual history of contemporary Muslim political thought. It presents post-nineteenth century Muslim contributions to political thought. It is designed as a survey of some major thinkers from the Arab world to Iran and Southeast Asia, from Turkey to North America, who sought to interpret Islam's basic sources and Islamic intellectual legacy. Our readings include primary texts by Tahtawi, Tunisi, Afghani, Rida, Huda Sharawi, Qutb, Shariati, and Mernissi among other prominent figures. We will analyze recurring ideas in this body of thought such as decline, civilization, rationality, ijtihad (Islamic independent reasoning), shura (deliberative decision-making), democracy, secularism, Muslim unity, khilafah (caliphate and vicegerency), freedom, equality, and justice. We will discuss their current significance for the ongoing theoretical debates in Muslim political thought, Muslim intellectual history, and comparative political theory.
Same as: HISTORY 384E

HISTORY 284F. Empires, Markets and Networks: Early Modern Islamic World Between Europe and China, 1400-1900. 4-5 Units.
Focuses on political regimes, transregional connections, economic interactions and sociocultural formations in the early modern Islamic Afro-Eurasia. Topics include complex political-economic systems of the Ottoman, Safavid and Mughal empires and expansion of Turco-Persianate political and literary cultures across the Post-Mongolian Eurasia; experiences of various Muslim, Christian, Jewish and Hindu, as well as urban, rural and nomadic communities and networks under Islamicate political regimes; consolidation of transregional commerce and cultural exchange with the proliferation of networks of merchants, scholars and sufis; new tendencies in knowledge, individual, gender, family, social order, and religion; incorporation of the Islamic world in the global economy; Muslims in the age of revolutions; political and social reforms and consolidation of Muslim internationalism in the age of imperialism.
Same as: HISTORY 384F

HISTORY 285C. The Immigrant in Modern America. 5 Units.
The 2016 presidential election propelled the topic of immigration to the center of public attention. This is not the first time, however, that questions of immigration and what it means to be an American have revealed deep divisions within the U.S. This course explores the reception of immigrants in modern America, including differing views toward immigration; how immigrants help shape ideas about the American nation; and the growth of state bureaucracy and policing apparatus as a response.
Same as: JEWISHST 285C

HISTORY 285E. Counterinsurgency and Torture: Algeria, Vietnam, and Iraq. 5 Units.
This course covers the post-WWII history of counterinsurgency, a type of warfare in which a powerful, state-backed military is pitted against guerrilla fighters, or insurgents. In the context of decolonization (the dissolution of European overseas empires) and the United States' growing role on the world stage, we will examine four counterinsurgency campaigns: the French in Indochina (1946-1954) and Algeria (1954-1962); and the Americans in Vietnam (1964-1973) and Iraq (2003-2011). Using a combination of secondary and primary sources, including declassified government documents, maps, photography, film, music, news broadcasts, and recorded tapes of presidential phone calls, we will ask four overarching questions: 1) How did military planners and politicians learn from prior counterinsurgencies, and what are the strengths and pitfalls of an approach to warfare that applies historical "lessons learned" to contemporary problems? 2) Are torture and violence against civilians the results of mishandled counterinsurgency, or are they inherent to the doctrine? 3) Why have counterinsurgency strategies persisted despite long-term failures and public criticism? 4) How does historical thinking allow us to participate more effectively in debates about counterinsurgency and torture in America today? Throughout, we will explore how counterinsurgency and torture have traveled across space and time, intertwining historical trajectories in Southeast Asia, North Africa, and the Middle East.

HISTORY 286D. Yours in Struggle: African Americans and Jews in the 20th Century U.S.. 5 Units.
This colloquium explores the history of African Americans and Jews in 20th century US beginning with Jewish immigration from Eastern Europe and the Great Migration to America's urban centers. It considers the geographical and economic tensions that developed between two minority groups living in close proximity; the appropriation of black culture; Jewish claims to whiteness and performance of blackness; intercommunal relations during the Civil Rights movement; the breakdown of the black-Jewish alliance in the late 1960s; and the lingering ramifications of this shift today.
Same as: JEWISHST 286D

HISTORY 286E. Labor Migration: Gender, Race, and Capitalism in North Africa and the Middle East. 5 Units.
Current media coverage dwells on the plight of migrants passing through North Africa in search of higher-wage jobs in Europe. But labor migration from, to, and through North Africa and the Middle East is nothing new. Pushing beyond widespread views of labor migration as a policy problem for Western governments to "solve," we will instead explore how migrant laborers shaped the modern history of North Africa and the Middle East, from the late Ottoman Empire until today. We will read an array of texts in history and historical anthropology--each deploying different sources, methods, and empirical examples--to discuss how migrant laborers molded 1) conceptions of race and gender, 2) the development of capitalism, 3) political mobilization, and 4) the boundaries between nations and regions. Among other examples, we will discuss trans-Atlantic migrants from the Ottoman Levant who shaped labor and gender relations within the Middle East and the Americas; migrant workers from North Africa and the Middle East who sustained wartime industries in European empires and metropoles; the construction of an oil economy in the Gulf that was built by migrant labor; and sub-Saharan African domestic workers in the Middle East facing exploitation and crisis. Throughout, we will devote particular attention to the ways in which our readings place migrant laborers and their communities at the center of analysis, despite the fact that migrant laborers do not have a voice in dominant archives.

HISTORY 286F. Jews in Trump's America and Before. 5 Units.
This class considers the notion of American Jewish exceptionalism through the lens of Trump's America. The social and economic success of American Jewry over the last 350 years is remarkable, yet Jews continue to find their position in American society called into question. This course moves between past and present and will consider key moments in American Jewish life with a particular emphasis on contemporary currents, including post-liberal identity politics, Israel, and the rise of white supremacy.
Same as: JEWISHST 186

HISTORY 288C. Jews of the Modern Middle East and North Africa. 5 Units.
This course will explore the cultural, social, and political histories of the Jews of the Middle East and North Africa (MENA) from 1860 to present times. The geographic concentration will range from Morocco to Iran, Iraq to Turkey, and everywhere in between. Topics include: Jewish culture and identity in Islamic contexts; the impacts of colonialism, westernization, and nationalism; Jewish-Muslim relations; the racialization of MENA Jews; the Holocaust; the experience and place of MENA Jews in Israel; and "Jews of Color.".
Same as: JEWISHST 288C

HISTORY 288D. American Jewish History: Learning to be Jewish in America. 2-4 Units.
This course will be a seminar in American Jewish History through the lens of education. It will address both the relationship between Jews and American educational systems, as well as the history of Jewish education in America. Plotting the course along these two axes will provide a productive matrix for a focused examination of the American Jewish experience. History students must take course for at least 3 units.
Same as: AMSTUD 279X, EDUC 279, JEWISHST 297X, RELIGST 279X

HISTORY 290. North Korea in Historical Perspective. 4-5 Units.
This colloquium will approach North Korea from a longer historical perspective and also discuss the country's current crisis and its future. Themes will include the northern region in colonial Korea, Kim Il Sung and Manchurian guerrillas, the USSR and North Korean Revolution, the reconstruction after the Korean War, Juche ideology and the political system, the everyday life of North Korea people, the Cold War and North Korean diplomacy, culture and mass performance, the great famine and economy in transition, the military and nuclear development, and refugees and the succession of leadership.
Same as: HISTORY 390

HISTORY 291G. Pre-Modern Chinese Warfare. 4-5 Units.
This course examines the evolution of warfare in China, and its impact on the evolving political and social orders, from the earliest states through the Mongol conquest. It will study how changing military technology was inextricably linked to changes in the state and society. It will also look at changing Chinese attitudes towards warfare over the same period, from the celebration of heroism, through writing about warfare as an intellectual art, to the links of militarism with steppe peoples/.
Same as: HISTORY 391G

HISTORY 291K. Korean History and Culture before 1900. 3-5 Units.
This course serves as an introduction to Korean culture, society, and history before the modern period. It begins with a discussion of early Korea and controversies over Korean origins; the bulk of the course will be devoted to the Chos'n period (1392-1910), that from the end of medieval Korea to the modern period. Topics to be covered include: Korean national and ethnic origins, the role of religious and intellectual traditions such as Buddhism and Confucianism, popular and indigenous religious practices, the traditional Korean family and social order, state and society during the Chos'n dynasty, vernacular prose literature, Korean's relations with its neighbors in East Asia, and changing conceptions of Korean identity.nThe course will be conducted through the reading and discussion of primary texts in English translation alongside scholarly research. As such, it will emphasize the interpretation of historical sources, which include personal letters, memoirs, and diaries, traditional histories, diplomatic and political documents, along with religious texts and works of art. Scholarly work will help contextualize these materials, while the class discussions will introduce students to existing scholarly debates about the Korean past. Students will be asked also to examine the premodern past with an eye to contemporary reception. The final project for the class is a film study, where a modern Korean film portraying premodern Korea will be analyzed as a case study of how the past works in public historical memory in contemporary Korea, both North and South. An open-ended research paper is also possible, pending instructor approval.
Same as: HISTORY 391K, KOREA 158, KOREA 258

HISTORY 292C. Gender in Modern South Asia. 5 Units.
Gender is crucial to understanding the political, cultural, and economic trajectories of communities in colonial and postcolonial South Asia. Throughout this course, we will ask a series of questions: How does gender structure conceptions of home, community, and homeland in South Asia? How do gender and religion become represented in movements for nation-states? How does women's participation in anticolonial politics and fights for equal representation in postcolonial nation-states affect our understanding of gender in South Asia today? Readings examine the creation and impact of religious personal law under British colonial rule, the role of masculinity in the British-Indian army, perspectives on religion and clothing, the interplay of rights movements and anti-colonialism, and the status of women in postcolonial India, Pakistan, and Bangladesh. Students will also explore a range of primary sources, including political treatises, short stories, didactic manuals, autobiographies, and travelogues.
Same as: FEMGEN 292

HISTORY 292D. Japan in Asia, Asia in Japan. 4-5 Units.
(History 292D is an undergraduate course offered for 5 units; History 392D is a graduate course offered for 4-5 units.) How Japan and Asia mutually shaped each other in the late 19th and 20th centuries. Focus is on Japanese imperialism in Asia and its postwar legacies. Topics include: pan-Asianism and orientalism; colonial modernization in Korea and Taiwan; collaboration and resistance; popular imperialism in Manchuria; total war and empire; comfort women and the politics of apology; the issue of resident Koreans; and economic and cultural integration of postwar Asia.
Same as: HISTORY 392D

HISTORY 292F. Culture and Religions in Korean History. 4-5 Units.
This colloquium explores the major themes of Korean history before 1800 and the role of culture and religions in shaping the everyday life of Chosôn-dynasty Koreans. Themes include the aristocracy and military in the Koryô dynasty, Buddhism and Confucianism in the making of Chosôn Korea, kingship and court culture, slavery and women, family and rituals, death and punishment, and the Korean alphabet (Hangûl) and print culture.
Same as: HISTORY 392F

HISTORY 293C. Stateless in South Asia. 4-5 Units.
Taking statelessness as more than a political condition, this course reviews the myriad aspects of statelessness. Exploring a few critical moments in modern South Asia (1945-2010), this seminar thematically follows the historical construction of statelessness in some of the most conflict-ridden theatres of world politics. This course explores the following questions: Is statelessness always a result of national and nationalist exclusion? What are the ways in which statelessness has amplified the gaps in the coherent rationale of national belonging?.

HISTORY 293F. Chinese Politics and Society. 3-5 Units.
(Doctoral students register for 317B.) This seminar surveys the major turning points that have shaped China's evolution since 1949. The topics covered include the Great Leap Forward, the Cultural Revolution, the political and economic turning point of the early 1980s, the political crisis of 1989, the restructuring of the state sector since the 1990s, and the patterns of protest that have accompanied the rapid social changes over the past three decades. We will conclude the course with current debates about China's future.
Same as: HISTORY 393F, SOC 217B, SOC 317B

HISTORY 294D. Manchuria: Cradle of Conflict, Cockpit of Asia. 4-5 Units.
How did Manchuria become Chinese? This course utilizes the dual waves of early twentieth-century writings and a wide array of recent scholarship dealing with Manchuria to explore the formation of nation-states out of the Qing and Japanese empires in Northeast Asia through the lenses of opium, migration, cities, warlords, and memoir. This course will be of interest to students concerned with developing transcultural understandings of Northeast Asian history.
Same as: HISTORY 394D

HISTORY 294E. The Past in Ancient China. 4-5 Units.
Introduction to the most important sources in the early Chinese historiographical tradition (broadly conceived), examining how the past was mobilized across a range of textual genres including poetry, speeches, philosophy, narrative, and rhetoric. Prior knowledge of premodern Chinese history and culture is not required. All reading materials will be in English; no knowledge of modern or classical Chinese is expected.
Same as: HISTORY 394E

HISTORY 294J. Science, Power, and Knowledge: East Asia to 1900. 3-5 Units.
In the early modern period, East Asian societies featured long-established institutions of learning and traditions of knowledge. This course examines the relationship between knowledge and power in East Asia societies prior to 1900. It explores how knowledge production operated in late imperial China (1550-1900), Chos'n Korea (1392-1910), and Tokugawa Japan (1600-1868). Among the themes addressed are: the state's role in patronizing science and knowledge; major intellectual movements; engagement with Western science and religion; East Asian statecraft; and East Asian understandings of space and geography. nTaking a holistic perspective, it places science and technology in 1) a social and cultural context 2) in relation to other bodies and fields of knowledge 3) in comparison to other societies in a similar historical time period. A socially embedded perspective on knowledge and science seeks to appreciate how politics, society, and knowledge are integrated, and in particular how science and knowledge can be both instruments and sites of political power. By exploring these links, the course will also illustrate how our modern disciplinary categories of natural science,social science and the humanities cannot be taken for granted and the areas of knowledge they cover can be deeply intertwined. nnThe course will also address these issues historically and across geographic regions in East Asia and beyond. The comparative lens and frameworks these perspectives can offer will bring an awareness of the diverse traditions of knowledge production in East Asia. Its examination of East Asian encounters with Western paradigms of knowledge throughout the early modern period will also illustrate how communication occurs across cultural, social, and linguistic barriers and how diverse world-views were managed in these encounters. These encounters of knowledge-exchange between Jesuit missionaries, Ming literati, Korean aristocrats, and Japanese doctors also show how cultural identities were constructed, reinforced, and challenged. These identities, expressed through the mastery of knowledge, are essential for understanding how East Asian reckoned with growing pressures to adopt Western industrial technology and military science in the late nineteenth century.
Same as: CHINA 157, CHINA 257, JAPAN 157, JAPAN 257, KOREA 157, KOREA 257

HISTORY 296. Communism and Revolution in China. 5 Units.
From the formation of the Chinese Communist Party (CCP) in 1921 through the 1949 founding of the People's Republic of China (PRC). Topics include: early theories of socialism in China; the relationship between Chinese communism and the Communist International and Soviet Union; agrarian reformulation of communism by Mao; the communist-nationalist civil war; the Communist Revolution of 1949; and the consolidation of communist power in the PRC.

HISTORY 296E. Modern South Asia, 1500- Present. 5 Units.
This course examines the major political, social, religious, and cultural developments within early modern, colonial, and postcolonial South Asia. Topics include religious reform, the role of women, anticolonialism, and national formation. Students will be introduced to critical writings on the emergence of modernity on the Indian subcontinent.

HISTORY 297. The Cold War and East Asia. 5 Units.
Explores how East Asia negotiated superpower rivalry and global ideological competition during the Cold War. Considers the ways in which China, Japan, and Korea were more than battlegrounds for US-Soviet contestation and played active roles in defining the nature and dynamics of the conflict. Re-examines conventional narratives and periodizations against alternative conceptual models and interpretive frameworks highlighting the constructed nature of the struggle as well as the role of historical and cultural factors in shaping the East Asian experience.
Same as: HISTORY 397

HISTORY 297F. Religion and Power in the Making of Modern South Asia. 3-5 Units.
This course examines the diverse ways that religious traditions have been involved in the brokering of power in South Asia from the late seventeenth century to the present day. We will examine the intersection of religion and power in different arenas, including historical memory, religious festivals, language politics, and violent actions. At the core of our inquiry is how religion is invoked in political contexts (and vice-versa), public displays of religiosity, and the complex dynamics of religion and the state. Among other issues, we will particularly engage with questions of religious identity, knowledge, and violence. Undergraduates must enroll in RELIGST 255 for 5 units. Graduate students must enroll RELIGST 355 for 3-5 units. HISTORY297F must be taken for 4-5 units.
Same as: RELIGST 255, RELIGST 355

HISTORY 297G. Rulers, Reformers, Radicals: History of India in Two Centuries. 5 Units.
This course traces the cultural, religious, literary, and political lineages of India during the last two centuries. It investigates the conditions and impact of colonialism in the formation of the contemporary subcontinent. In doing so, the course examines the ways in which Indians changed their society, culture, and identities as they became entwined with colonial, imperial, and global forces. Over the course of the quarter, we will address the following questions: What was the nature of colonial rule in India? How did the process of colonization shape questions of gender and class, race and caste in India? In societies as diverse as India, is anticolonialism synonymous with nationalism?.

HISTORY 298C. Race, Gender, & Sexuality in Chinese History. 5 Units.
This course examines the diverse ways in which identities--particularly race, ethnicity, gender and sexuality have been understood and experienced in Chinese societies, broadly defined, from the imperial period to the present day. Topics include changes in women's lives and status, racial and ethnic categorizations, homosexuality, prostitution, masculinity, and gender-crossing.
Same as: ASNAMST 298, CSRE 298G, FEMGEN 298C, HISTORY 398C

HISTORY 298E. Chinese Pop Culture: A History. 5 Units.
This discussion course examines the evolution of popular culture in the Chinese-speaking world and diaspora from the late imperial era to the present. Analyzing myth, literature, medicine, music, art, film, fashion, and internet culture will help students understand the revolutionary social and political changes that have transformed modern East Asia.

HISTORY 299A. Senior Research I. 1-5 Unit.
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HISTORY 299B. Senior Research II. 1-5 Unit.
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HISTORY 299C. Senior Research III. 1-5 Unit.
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HISTORY 299D. Tooling Up for Digital Humanities. 1 Unit.
What are the digital humanities? The twenty-first century presents new opportunities in the humanities, such as unprecedented access to millions upon millions of digitized sources along with powerful technological tools to study those sources. Yet it also raises new challenges, such as the responsible and effective use of technology, and defining the nature of digital scholarship and communication. This workshop offers an introduction to fundamental concepts, methods, and issues within the growing field of digital humanities, including managing your online identity, digitizing sources, managing databases, text mining, spatial analysis, visualization, and pedagogy.

HISTORY 299F. Curricular Practical Training. 1 Unit.
Following internship work, students complete a research report outlining work activity, problems investigated, key results and follow-up projects. Meets the requirements for curricular practical training for students on F-1 visas. Student is responsible for arranging own internship and faculty sponsorship.

HISTORY 299H. Junior Honors Colloquium. 1 Unit.
Required of junior History majors planning to write a History honors thesis during senior year. Meets four times during the quarter.

HISTORY 299M. Undergraduate Directed Research: Martin Luther King, Jr., Research and Education Institute. 1-4 Unit.
May be repeated for credit.

HISTORY 299P. Mastering Uncertainty: The Power of Archival Thinking. 1 Unit.
When confronted with chaos and uncertainty, do you know how to stay calm, ask the right questions, and find the answers? Archival researchers do. Do you realize that less than 1 percent of primary sources have been digitized, and that 99 percent still exist in their original formats in collections, small and large, scattered all across the world? Do you know how to find them and use them? Archival researchers do. Through hands-on exercises in Stanford's archives, students learn the fundamentals of archival research. Pursuing their own research interests, students will learn to become self-sufficient, independent researchers capable of navigating uncertainty and producing knowledge--a skill set in demand no matter what their major or post-graduate plans.
Same as: HISTORY 399P

HISTORY 299S. Undergraduate Directed Research and Writing. 1-5 Unit.
May be repeated for credit.

HISTORY 299T. Tough Questions. 1 Unit.
A H&S initiative course.
Same as: HISTORY 399T

HISTORY 301A. The Global Drug Wars. 4-5 Units.
Explores the global story of the struggle over drugs from the nineteenth century to the present. Topics include the history of the opium wars in China, controversies over wine and tobacco in Iran, narco-trafficking and civil war in Lebanon, the Afghan 'narco-state,' Andean cocaine as a global commodity, the politics of U.S.- Mexico drug trafficking, incarceration, drugs, and race in the U.S., and the globalization of the American 'war on drugs.'.
Same as: HISTORY 201A

HISTORY 301D. History Goes Pop! Songwriting the Past. 3 Units.
Historical research doesn't always take the form of a thesis, an article, or a book. Sometimes, research leads to film, museum exhibits, works of art, or... music. In this class, students will collaborate to write, record, and produce original pop music (perhaps even an entire album) based on original research in Stanford's wealth of archives and Special Collections. Background in music is NOT required.
Same as: HISTORY 201D

HISTORY 301J. Objects of History: From "Material Culture" to "Making". 4-5 Units.
This class considers objects as historical sources. It surveys diverse approaches to the study and display of physical evidence, from "material culture" to "making." These explorations of object-oriented research will inform the course's hands-on components, working with objects and replicating historical experiences. With its focus on the question of what historical knowledge can be gained through interactivity, the course is suited to students whose interests include museums and public history, reenactment and performance, the maker movement, or interdisciplinary methodology.
Same as: HISTORY 201J

HISTORY 302. Technopolitics: Materiality, Power, Theory. 4-5 Units.
This graduate readings seminar provides a lively introduction to some of the major themes and issues in the field of Science and Technology Studies (STS). How do technologies and material assemblages perform power? How are their designs and uses shaped by social, cultural, and political dynamics? How do they shape those dynamics? The course draws on an interdisciplinary body of literature in humanities and social science, mixing theoretical material with more empirically oriented studies, and classics with new scholarship.
Same as: ANTHRO 302A

HISTORY 302B. Coffee, Sugar, and Chocolate: Commodities and Consumption in World History, 1200-1800. 4-5 Units.
Many of the basic commodities that we consider staples of everyday life became part of an increasingly interconnected world of trade, goods, and consumption between 1200 and 1800. This seminar offers an introduction to the material culture of the late medieval and early modern world, with an emphasis on the role of European trade and empires in these developments. We will examine recent work on the circulation, use, and consumption of things, starting with the age of the medieval merchant, and followed by the era of the Columbian exchange in the Americas that was also the world of the Renaissance collector, the Ottoman patron, and the Ming connoisseur. This seminar will explore the material horizons of an increasingly interconnected world, with the rise of the Dutch East India Company and other trading societies, and the emergence of the Atlantic economy. It concludes by exploring classic debates about the "birth" of consumer society in the eighteenth century. How did the meaning of things and people's relationships to them change over these centuries? What can we learn about the past by studying things?.
Same as: ARTHIST 302B, HISTORY 202B

HISTORY 302F. Surveillance States and Societies. 4-5 Units.
The course analyzes the evolution, functions, structures and consequences of surveillance in the modern era. Among issues discussed are the rise of the modern state and population politics, information gathering and its uses in domestic and national security arenas, institutions of surveillance in various regimes, the challenge of privacy and ethical dilemmas.
Same as: HISTORY 202F

HISTORY 302G. Peoples, Armies and Governments of the Second World War. 4-5 Units.
Clausewitz conceptualized war as always consisting of a trinity of passion, chance, and reason, mirrored, respectively, in the people, army and government. Following Clausewitz, this course examines the peoples, armies, and governments that shaped World War II. Analyzes the ideological, political, diplomatic and economic motivations and constraints of the belligerents and their resulting strategies, military planning and fighting. Explores the new realities of everyday life on the home fronts and the experiences of non-combatants during the war, the final destruction of National Socialist Germany and Imperial Japan, and the emerging conflict between the victors. How the peoples, armies and governments involved perceived their possibilities and choices as a means to understand the origins, events, dynamics and implications of the greatest war in history.
Same as: HISTORY 202G

HISTORY 302K. The Holocaust and Its Aftermath. 4-5 Units.
This seminar gives an overview over different aspects of the history of the Holocaust and its aftermath and will examine key issues in recent Holocaust historiography and questions of memory and representation. Special emphasis is put on the nature of the historian's task, as viewed through the lens of historians of the Holocaust, as well as to the significance of the Holocaust in history and how it has changed over time. The course will confront students with historiographical texts and historical documents, with photography and film, works of scholarship and art.
Same as: HISTORY 202K, JEWISHST 282K, JEWISHST 382K

HISTORY 303. Premodern Economic Cultures. 4-5 Units.
Modern economists have made a science of studying the aggregate effects of individual choices. This science is based on the realities of personal freedom and individual choice. Prior to the modern era, however, different realities comprised very different economic cultures: moral economies in which greed was evil and generosity benefitted the patron¿s soul; familial collectives operating within historical conditioned diasporas; economies of obligation that threatened to collapse under their own weight as economic structures shifted. In this course we will be reading cross-culturally to develop an understanding of the shared and distinct elements of premodern economic cultures.
Same as: HISTORY 203

HISTORY 303C. History of Ignorance. 4-5 Units.
Scholars pay a lot of attention to knowledge--how it arises and impacts society--but much less attention has been given to ignorance, even though its impacts are equally profound. Here we explore the political history of ignorance, through case studies including: corporate denials of harms from particular products (tobacco, asbestos), climate change denialism, and creationist rejections of Darwinian evolution. Students will be expected to produce a research paper tracing the origins and impact of a particular form of ignorance.

HISTORY 303E. Infrastructure & Power in the Global South. 4-5 Units.
In the last decade, the field of infrastructure studies has entered into conversation with area studies, post/colonial studies, and other scholarship on the "Global South." These intersections have produced dramatic new understandings of what "infrastructures" are, and how to analyze them as conduits of social and political power. This course offers a graduate-level introduction to this recent scholarship, drawing primarily on works from history, anthropology, geography, and architecture.
Same as: AFRICAST 303E, ANTHRO 303E

HISTORY 303F. Words and Things in the History of Classical Scholarship. 4-5 Units.
How have scholars used ancient texts and objects since the revival of the classical tradition? How did antiquarians study and depict objects and relate them to texts and reconstructions of the past? What changed and what stayed the same as humanist scholarship gave way to professional archaeologists, historians, and philologists? Focus is on key works in the history of classics, such as Erasmus and Winckelmann, in their scholarly, cultural, and political contexts, and recent critical trends in intellectual history and the history of disciplines.
Same as: CLASSICS 331

HISTORY 303K. Trauma and History: Intergenerational suffering and collective healing. 4-5 Units.
This course will examine trauma as a historical process, following the intergenerational impacts of history's darker dramas, analyzing collective strategies for coping and healing after trauma, and asking whether we can speak of "traumatized societies." Readings for graduate students will include Ben Shephard's A War of Nerves, Didier Fassin and Richard Rechtman's The Empire of Trauma, and selections from Yael Danieli, ed., Intergenerational Handbook of Multigenerational Legacies of Trauma. Colloquium will be discussion-oriented, but will also include guest discussants from around the world. The course will culminate in a conference to be held at Stanford, June 4-6: "Soul Wounds: Trauma and Healing Across Generations." Undergraduate requirements for 1 credit: Attend weekly "Mind, Body, and Culture" workshop and first hour of Wednesday morning discussion, attend some part of conference on June 4-6. Graduate requirements for 4-5 credits: Attend workshop, read weekly, discussion on Wednesday mornings, write a paper and if desired present at conference.

HISTORY 304. Approaches to History. 4-5 Units.
For first-year History and Classics Ph.D. students. This course explores ideas and debates that have animated historical discourse and shaped historiographical practice over the past half-century or so. The works we will be discussing raise fundamental questions about how historians imagine the past as they try to write about it, how they constitute it as a domain of study, how they can claim to know it, and how (and why) they argue about it.

HISTORY 304A. Reimagining History: Or, Finding the "I" in History. 4-5 Units.
This class explores, through analysis and practice, the ways in which history can be told and experienced through means other than traditional scholarly narratives. Approaches include literary fiction and non-fiction, digital media, graphic arts, maps, exhibitions, and film. A final project will require students to produce their own innovative work of history.
Same as: HISTORY 204A

HISTORY 304D. Advanced Topics in Agnotology. 4-5 Units.
Advanced research into the history of ignorance. Our goal will be to explore how ignorance is created, maintained and destroyed, using case studies from topics such as tobacco denialism, global climate denialism, and other forms of resistance to knowledge making. Course culminates in a research paper on the theory and practice of agnotology, the science of ignorance.
Same as: HISTORY 204D

HISTORY 304G. War and Society. 4-5 Units.
(History 204G is an undergraduate course offered for 5 units; History 304G is a graduate course offered for 4-5 units.) How Western societies and cultures have responded to modern warfare. The relationship between its destructive capacity and effects on those who produce, are subject to, and must come to terms with its aftermath. Literary representations of WW I; destructive psychological effects of modern warfare including those who take pleasure in killing; changes in relations between the genders; consequences of genocidal ideology and racial prejudice; the theory of just war and its practical implementation; how wars end and commemorated.
Same as: HISTORY 204G, REES 304G

HISTORY 305. Graduate Pedagogy Workshop. 1 Unit.
Required of first-year History Ph.D. students. Perspectives on pedagogy for historians: course design, lecturing, leading discussion, evaluation of student learning, use of technology in teaching lectures and seminars. Addressing today's classroom: sexual harassment issues, integrating diversity, designing syllabi to include students with disabilities.

HISTORY 305C. Graduate Workshop Series. 1 Unit.
This is a 1-credit course for which only regular attendance is required, and graduate students may audit any or all of the sessions as they find useful. The majority of the course addresses questions of research, grant writing, and professionalization, while the last few sessions offer general guidance on preparing for the job market.

HISTORY 305K. The Age of Revolution: America, France, and Haiti. 4-5 Units.
(History 205K is an undergraduate course offered for 5 units; History 305K is a graduate course offered for 4-5 units.) This course examines the "Age of Revolution," spanning the 18th and 19th centuries. Primarily, this course will focus on the American, French, and Haitian Revolutions (which overthrew both French and white planter rule). Taken together, these events reshaped definitions of citizenship, property, and government. But could republican principles-- color-blind in rhetoric-- be so in fact? Could nations be both republican and pro-slavery? Studying a wide range of primary materials, this course will explore the problem of revolution in an age of empires, globalization, and slavery.
Same as: AFRICAAM 205K, HISTORY 205K

HISTORY 305L. Prostitution & Sex Trafficking: Regulating Morality and the Status of Women. 4-5 Units.
Examines governmental policies toward prostitution from the late 19th century to the present. Focuses on the underlying attitudes, assumptions, strategies, and consequences of various historical and current legal frameworks regulating prostitution, including: prohibitionism, abolitionism, legalization, partial decriminalization, and full decriminalization. Special focus on these policies' effects on sex trafficking, sex worker rights, and the status of women. Emphasis on Europe and the U.S., with additional cases from across the globe.

HISTORY 306. Beyond Borders: Approaches to Transnational History. 4-5 Units.
This core colloquium for the Transnational, International, and Global (TIG) field will introduce students to the major historiographical trends, methodological challenges, and theoretical approaches to studying and writing transnational histories.

HISTORY 306A. City, Society, Literature- 19th Century Histories. 4 Units.
This course examines the rise of modern cities through an analysis of urban society and the imaginative literature of the 1800s.
Same as: HISTORY 206A, URBANST 106

HISTORY 306D. World History: Graduate Colloquium. 4 Units.
How do historians engage the global scale in the classroom as well as in research? The world history canon including Toynbee, McNeill, Braudel, Wolf, and Wallerstein; contrasting approaches, recent research, and resources for teaching. Recommended: concurrent enrollment in HISTORY 306K.

HISTORY 306F. Identities and Identification in the Atlantic World. 4-5 Units.
How identities and processes of identification changed in Europe, Africa, and the Americas during the early modern period and as a result of the engagement of the inhabitants of these three continents in the Atlantic world.

HISTORY 306G. Colonial Law. 4-5 Units.
Examines the relationship between law and colonialism in Latin America, Africa and Asia during both the early modern and the modern period. By reading some of the seminal works that have been published on this issue, we will seek to understand how law both facilitated and limited colonialism and how colonialism, in turn, had modified the legal systems that had existed previously. Attention will also be given to law an an acculturating agent and to the legal arena as a sphere for conflict resolution, negotiation,and identity formation.

HISTORY 306K. World History Pedagogy Workshop. 1 Unit.
Students draft a syllabus and create a curriculum module for use in a world history lecture course. Corequisite: HISTORY 306D, recommended.

HISTORY 307A. Legal History Workshop. 4-5 Units.
(Same as LAW 3516.) The Legal History Workshop is designed as a forum in which faculty and students from the Law School, the History Department, and elsewhere in the university can discuss some of the best work now being done in the field of legal history. Every other week, an invited speaker will present his or her current research for discussion. In the week prior to a given speaker's presentation, the class will meet as a group to discuss secondary literature relevant to understanding and critiquing the speaker's research. Students will then read the speaker's paper in advance of the following week's workshop presentation. Special Instructions: Students may choose to enroll in one of two sections of the course. In the first, students must write brief responses to each speaker's paper. There will be a total of four speakers, and thus four papers. Guidance will be provided concerning how to frame these response papers, which will be due every two weeks - i.e., on the day before speaker presents. In the second section, students must write a research paper on a legal history topic that they select in consultation with the professors. Enrollment will be limited to 30 students -- 20 from SLS who will be selected by lottery and 10 from H&S. Elements used in grading: Class participation, attendance, assignments and final paper.

HISTORY 307D. Transhistory Colloquium. 4-5 Units.
Colloquium on the history of transgender practices and identities. Readings will include scholarly texts from the emerging historical field of transhistory as well as adjacent fields within gender history. Colloquium will investigate avenues for deepening transhistory through further historical inquiry.
Same as: FEMGEN 207D, FEMGEN 307D, HISTORY 207D

HISTORY 307E. Totalitarianism. 4-5 Units.
This course analyzes the evolution and nature of revolutionary and totalitarian polities through the reading of monographs on the Puritan Reformation, French Revolutionary, turn of the 20th Century, interwar, and Second World War eras. Among topics explored are the essence of modern ideology and politics, the concept of the body national and social, the modern state, state terror, charismatic leadership, private and public spheres, totalitarian economies, and identities and practices in totalitarian polities.
Same as: HISTORY 204E

HISTORY 308. Biography and History. 4-5 Units.
The relationship between biographical and historical writing, primarily in Europe and America. Problems of methodology, evidence, dispassion, and empathy. Texts: biographies, critical literature on biographical work, and novels (A. S. Byatt's *Possession*, Bernard Malamud's *Dubin's Lives*) that illuminate the intellectual underpinnings of biographical labor.
Same as: HISTORY 207

HISTORY 308D. Pre-Modern Warfare. 4-5 Units.
This course examines the evolving nature of warfare and its impact on society across the Eurasian continent up to the Gunpowder Revolution and rise of the nation-state. Beginning with an attempt to define war, it will trace the evolution of military technology from the Stone Age through the rise of the chariot, the sword, and the mounted rider, and examine how changing methods of conducting warfare were inextricably linked to changes in the social order and political structures.
Same as: HISTORY 208D

HISTORY 309A. Postcolonialism and Universalism. 4-5 Units.
Key texts and motifs from postcolonial theory: empire, class, exile, suffering, textuality, archive in juxtaposition to 20th-century philosophical questions about universal history and the relevance of humanist inquiry.
Same as: HISTORY 209D

HISTORY 309B. The Idea of Politics. 4-5 Units.
Can we live without politics? Is politics indispensable for humanity and vice-versa? The idea of politics is that it must transform, through human action, conditions of collective life. But the 20th century produced colliding beliefs about what that life might be and what the human being itself might look like. Explore whether, after the century, we might still think of politics as an ethical idea and the "human" as foundational political category. Keywords: Civility, Cruelty, Friendship, Empire, Democracy, Humanism, Animals.
Same as: HISTORY 209B

HISTORY 309E. History Meets Geography. 4-5 Units.
Focus is on developing competence in GIS computer applications and applying it to historical problems. Previous experience with GIS not required. Recommended: complete the GIS tutorial in Branner Library before the course starts.

HISTORY 309F. Maps in the Early Modern World. 4-5 Units.
The significance of cartographic enterprise across the early modern world. Political, economic, and epistemological imperatives that drove the proliferation of nautical charts, domain surveys, city plans, atlases, and globes; the types of work such artifacts performed for their patrons, viewers, and subjects. Contributions of indigenous knowledge to imperial maps; the career of the map in commerce, surveillance, diplomacy, conquest, and indoctrination. Sources include recent research from Asia, Europe, and the Americas.
Same as: HISTORY 209F

HISTORY 309G. Paleography of Medieval and Early Modern Manuscripts. 3-5 Units.
Introductory course in the history of writing and of the book, from the late antique period until the advent of printing. Opportunity to learn to read and interpret medieval manuscripts through hands-on examination of original materials in Special Collections of Stanford Libraries as well as through digital images. Offers critical training in the reading of manuscripts for students from departments as diverse as Classics, History, Philosophy, Religious Studies, English, and the Division of Languages Cultures and Literatures.
Same as: CLASSICS 215, DLCL 209, RELIGST 204

HISTORY 310. The History of Occupation, 1914-2010. 4-5 Units.
(History 210 is an undergraduate course offered for 5 units; History 310 is a graduate course offered for 4-5 units.) Examines the major cases of occupation in the twentieth century, from the first World War until the present, and issues of similarities, differences, and implications for contemporary policy making. Topics include European and Asian cases emerging from World War I and World War II, the Israeli occupation of the West Bank; the Soviet and American occupations of Afghanistan; and the American occupation of Iraq. Discussions will revolve around the problems, efficacy, and effects of occupation in historical perspective.
Same as: HISTORY 210

HISTORY 311. Out of Eden: Deportation, Exile, and Expulsion from Antiquity to the Renaissance. 4-5 Units.
This course examines the long pedigree of modern deportations and mass expulsions, from the forced resettlements of the ancient world to the expulsion of Jews from Spain in 1492, and from the outlawry of Saga-era Iceland to the culture of civic exile in Renaissance Italy. The course focuses on Europe and the Mediterranean from antiquity to the early modern period, but students are welcome to venture beyond these geographical and chronological boundaries for their final papers.
Same as: HISTORY 211, JEWISHST 211

HISTORY 311A. Family, Gender, and Production in Ancient Rome. 4-5 Units.
Seminar. The household as the basic unit of production in Rome in the context of family relations and ideologies of gender. Methodological challenges of doing social and economic history from literary, epigraphic, and literary texts. Demography of family and kinship in ancient Rome. Ideologies of gender and family roles and their influence on economic production. Economic theories of the family and human capital.

HISTORY 311G. Big Ancient History. 4-5 Units.
How the shift away from thinking about European history in terms of a western civilization model toward embedding it in stories of how global history affects research and teaching on ancient Greece and Rome. Conventional, evolutionary, and global history narratives of the past 5,000 to 15,000 years and some new ideas about how Greco-Roman history might fit into different storylines.

HISTORY 313. Core Colloquium: Graduate Readings in Medieval History. 4-5 Units.
This course serves as a graduate-level introduction to major themes, problems, methods, and historiographical traditions in medieval European history.

HISTORY 313F. Medieval Germany, 900-1250. 1-5 Unit.
(Undergraduates may sign up for German 213 or History 213F, graduate students should sign up for German 313 or History 313F. This course may be taken for variable units. Check the individual course numbers for unit spreads.) This course will provide a survey of the most important political, historical, and cultural events and trends that took place in the German-speaking lands between 900 and 1250. Important themes include the evolution of imperial ideology and relations with Rome, expansion along the eastern frontier, the crusades, the investiture controversy, the rise of powerful cities and civic identities, monastic reform and intellectual renewal, and the flowering of vernacular literature.nnTo satisfy a Ways requirement, this course must be taken for at least 3 units. In AY 2020-21, a letter grade or "CR" grade satisfies the Ways requirement.
Same as: GERMAN 213, GERMAN 313, HISTORY 213F

HISTORY 315. Advanced Paleography. 5 Units.
This course will train students in the transcription and editing of original Medieval and Early Modern textual materials from c. 1000 to 1600, written principally in Latin and English (but other European languages are possible, too). Students will hone their archival skills, learning how to describe, read and present a range of manuscripts and single-leaf documents, before turning their hand to critical interpretation and editing. Students, who must already have experience of working with early archival materials, will focus on the full publication of one individual fragment or document as formal assessment.
Same as: CLASSICS 216, RELIGST 329X

HISTORY 315B. Race and Ethnicity in Premodern Europe. 3-5 Units.
How do historians, art historians, and literary historians of premodern Europe shape their research and their teaching around questions of race? How do current debates on race theory shape our perception of the past and deepen historical inquiry? This graduate colloquium focuses on the most recent publications on race in medieval and early modern studies to reflect on such questions while examining the challenges that race studies put on historical definitions, research methodologies, as well as teaching institutions.
Same as: ARTHIST 207D, ARTHIST 407D, HISTORY 215B

HISTORY 318C. Peace and War in Medieval Islam: From the Arab Conquests to the Crusades. 3-5 Units.
This course interrogates the theory and reality of war-making and peacemaking across the first millennium of Islamic history (c.600-c.1600 CE). We will examine major historical events (e.g. the struggle of the early community of Muslims against the pagan tribes of Arabia; Arab expansion and conquest during the seventh and eighth centuries; a sequence of civil wars, dynastic struggles, and schisms within Islam; and external invasions of the Islamic world by crusaders and steppe nomads, etc.). We will also investigate the development of major normative concepts across the Islamic tradition concerning peace and war (e.g. holy war; treaty- and truce-making; treatment of conquered enemies and prisoner; diplomacy with Muslims and non-Muslims, etc.). With respect to these concepts, we will attend especially to change over time and diversity across various sects. Mix of lecture and discussion. Readings will consist of both primary sources (in English translation) and modern scholarship. No previous experience with pre-modern or Islamic history required.
Same as: GLOBAL 190, GLOBAL 232, HISTORY 218C

HISTORY 319B. Secularity. 4-5 Units.
Classic theories of secularity. Is a secular world possible? How does, historically seen, the notion of the secular emerge, impose itself, and get challenged? Readings include Max Weber, E. Durkheim, R.A. Markus, Carl Schmitt, and Hans Blumenberg, and studies bearing on the Middle Ages, English monastic secularization, the French Revolution, and 20th-century political religions.

HISTORY 319C. Science, Technology, and Modernity in the Soviet Union. 5 Units.
Science and technology were integral to the Soviet claim to offer a vision of modernity superior to that of Western capitalism. Science and technology would flourish; society would develop on a scientific basis. The results were more complex than the vision. Topics to be covered: science and Marxism-Leninism; the Lysenko affair; the R&D system; the role of the secret police; the atomic project; the space race; missile development; Andrei Sakharov; technology and innovation.
Same as: HISTORY 219C

HISTORY 321A. State, Society and Nation in Modern Russian Historiography. 4-5 Units.
Main trends of Russian intellectual history as seen through major historians' treatment of Muscovy: Romanticism, Slavophilism, Hegelianism, Populism, Social Democracy, New Idealism, and Marxism-Leninism.

HISTORY 322A. Crime and Punishment in Early Modern Europe and Russia. 4-5 Units.
Explores criminal law in early modern Europe and Russia, ca 1500-1800, in law and in practice. Engages debates about use of exemplary public executions as tactic of governance, and about gradual decline in "violence" in Europe over this time. Explores practice of accusatory and inquisitory judicial procedures, judicial torture, forms of punishment, concepts of justice.
Same as: HISTORY 222

HISTORY 323. Art and Ideas in Imperial Russia. 4-5 Units.
Poetry, novels, symphonic music, theater, opera, painting, design, and architecture: what they reveal about the politics and culture of tsarist Russia.
Same as: HISTORY 223

HISTORY 323B. Research Methodologies in Early Modern Russian History. 4-5 Units.
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HISTORY 323E. Cities of Empire: An Urban Journey through Eastern Europe and the Mediterranean. 3-5 Units.
This course explores the cities of the Habsburg, Ottoman and Russian empires in the dynamic and turbulent period of their greatest transformation from the 19th century through the Two World Wars. Through the reading of urban biographies of Venice and Trieste, Vienna, Budapest, Cracow, Lviv, Sarajevo, Belgrade, Salonica, and Odessa, we consider broad historical trends of political, economic, and social modernization, urbanization, identity formation, imperialism, cosmopolitanism, and orientalism. As vibrant centers of coexistence and economic exchange, social and cultural borderlands, and sites of transgression, these cities provide an ideal lens through which to examine these themes in the context of transition from imperial to post-imperial space.
Same as: HISTORY 223E, REES 204, REES 304

HISTORY 324C. Genocide and Humanitarian Intervention. 3 Units.
Open to medical students, graduate students, and undergraduate students. Traces the history of genocide in the 20th century and the question of humanitarian intervention to stop it, a topic that has been especially controversial since the end of the Cold War. The pre-1990s discussion begins with the Armenian genocide during the First World War and includes the Holocaust and Cambodia under the Khmer Rouge in the 1970s. Coverage of genocide and humanitarian intervention since the 1990s includes the wars in Bosnia, Rwanda, Kosovo, the Congo and Sudan.
Same as: HISTORY 224C, JEWISHST 284C, JEWISHST 384C, PEDS 224

HISTORY 324F. The Caucasus and the Muslim World. 4-5 Units.
The linkages connecting the societies of the Caucasus to Muslim communities in Iran, Russia, the Ottoman Empire and Turkey, S. Asia, and the Middle East.

HISTORY 325E. From Vladimir to Putin: Key Themes in Russian History. 4-5 Units.
Formative issues in Russian history from Muscovy to the present: autocracy and totalitarianism; tsars, emperors, and party secretaries; multi-ethnicity and nationalism; serfdom, peasantry; rebellions and revolutions, dissent and opposition; law and legality; public and private spheres; religion and atheism; patterns of collapse. Class format will be discussion of one to two assigned books or major articles per class.
Same as: HISTORY 225E, REES 225E

HISTORY 326A. Modern Europe: Society and Politics. 5 Units.
The goal of this course is to introduce graduate students to major works of history and literature in the field of nineteenth and early-twentieth century history. A colloquia will be given in tandem with a research seminar.

HISTORY 326C. Graduate Colloquium on Balkan History. 4-5 Units.
Designed for History Ph.D. students to develop competence in the history and historiography of the modern Balkans, from the French Revolution to the present. Areas of study include the influence of empires on the region, the rise of nationalism and nation states, the dilemmas of independence, the emergence and decline of communism in the region, and the recurrence of war and ethnic conflict.

HISTORY 326D. The Holocaust: Insights from New Research. 4-5 Units.
Overview of the history of the Holocaust, the genocide of European Jews. Explores its causes, course, consequences, and memory. Addresses the events themselves, as well as the roles of perpetrators and bystanders, dilemmas faced by victims, collaboration of local populations, and the issue of rescue. Considers how the Holocaust was and is remembered and commemorated by victims and participants alike. Uses different kinds of sources: scholarly work, memoirs, diaries, film, and primary documents.
Same as: CSRE 226D, CSRE 326D, HISTORY 226D, JEWISHST 226E, JEWISHST 326D

HISTORY 326E. Famine in the Modern World. 3 Units.
Open to medical students, graduate students, and undergraduate students. Examines the major famines of modern history, the controversies surrounding them, and the reasons that famine persists in our increasingly globalized world. Focus is on the relative importance of natural, economic, and political factors as causes of famine in the modern world. Case studies include the Great Irish Famine of the 1840s; the Bengal famine of 1943-44; the Soviet famines of 1921-22 and 1932-33; China's Great Famine of 1959-61; the Ethiopian famines of the 1970s and 80s, and the Somalia famines of the 1990s and of 2011.
Same as: HISTORY 226E, PEDS 226

HISTORY 327B. The Business of Socialism: Economic Life in Cold War Eastern Europe and the Soviet Union. 4-5 Units.
(Graduate students, enroll in 327B. Undergraduate students, enroll in 227B.) This colloquium investigates the processes of buying, making, and selling goods and services in Cold War Eastern Europe and the Soviet Union. We will familiarize ourselves with a variety of approaches to writing the history of economic life and discuss to what extent they are applicable to state socialist systems. Our focus will not be on theories of socialism but on empirically grounded studies that allow for insights into how the system operated in practice and interacted with capitalism. We will, among others, explore the following questions: What was the role of the state in the economies east and west of the Iron Curtain? Are socialism and capitalism two incompatible systems? How did women experience and shape economic life after the Second World War? What had a greater impact on the economies of the region: Cold War politics or globalization?.

HISTORY 327D. All Quiet on the Eastern Front? East Europe and Russia in the First World War. 3-5 Units.
Until recently history has been comparatively quiet about the experience of World War I in the east. Far from being a peripheral theater of war, however, the experiences of war on the Eastern Front were central to shaping the 20th century. Not only was the first shot of the war fired in the east, it was also the site of the most dramatic political revolution. Using scholarly texts, literature and film, this course combines political, military, cultural and social approaches to introduce the causes, conduct and consequences of World War I with a focus on the experiences of soldiers and civilians on the Eastern Front. Topics include: the war of movement, occupation, extreme violence against civilians, the Armenian genocide, population exchanges, the Russian Revolution and civil war, and the disintegration of empires and rise of nation-states.
Same as: HISTORY 227D, REES 227, REES 327

HISTORY 328. Circles of Hell: Poland in World War II. 5 Units.
Looks at the experience and representation of Poland's wartime history from the Nazi-Soviet Pact (1939) to the aftermath of Yalta (1945). Examines Nazi and Soviet ideology and practice in Poland, as well as the ways Poles responded, resisted, and survived. Considers wartime relations among Polish citizens, particularly Poles and Jews. In this regard, interrogates the traditional self-characterization of Poles as innocent victims, looking at their relationship to the Holocaust, thus engaging in a passionate debate still raging in Polish society.
Same as: HISTORY 228, JEWISHST 282, JEWISHST 382

HISTORY 330. Core Colloquium on Early Modern Europe: Ancien Regime. 4-5 Units.
Topics in the social, political, and religious history of Western Europe, 1550-1789, with an emphasis on France. May be repeated for credit.

HISTORY 330A. Early Modern Colloquium. 4-5 Units.
Historiographical survey from the Renaissance to the Enlightenment. Topics include Renaissance, Reformation, European expansion, state and nation building, printing, military, and scientific revolutions, origins of Enlightenment. Designed to prepare students doing either a primary or secondary graduate field in early modern European history.

HISTORY 330D. Europe in the World, 1789-Present. 4-5 Units.
The European conquest of parts of Africa, Asia, and the South Pacific by European merchants, missionaries, armies, and administrators had significant, and often cataclysmic, effects on indigenous political alliances, cultural practices, and belief systems. But were the effects of expansion entirely one-sided? What impact did the experiences of colonialism have on European politics, culture,and Europe's relations with the rest of the world? Explores how interaction between Europe and the rest of the world redefined the political, racial, sexual, and religious boundaries of both Europe and its colonies and gave rise to the more "globalized' society we live in today.
Same as: HISTORY 230D

HISTORY 331C. Modern European Core: The Twentieth Century. 4-5 Units.
The historiography of 20th-century Europe. Topics include WW I, the Russian Revolution, National Socialism, and the EU.

HISTORY 331D. Core Colloquium on Modern Europe: Intellectual History. 4-5 Units.
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HISTORY 331E. Paper, Printing, and Digital Revolutions: Transformations of the Book. 4-5 Units.
What is a book? This seminar explores the conceptual implications of approximately two millennia of transformations in the physical and material properties of books. How have the meaning and authority we assign the written word changed as technologies of book production and dissemination have evolved, and how have they remained continuous? Topics covered include the rise of the medieval manuscript codex, the emergence of print culture in early modern Europe, and current debates over the nature of text in the digital age.
Same as: HISTORY 231E

HISTORY 331G. European Reformations. 3-5 Units.
Readings in and discussion of theological and social aspects of sixteenth century reformations: Luther, Radical Reform, Calvin, and Council of Trent, missionary expansion, religious conflict, creative and artistic expressions. Texts include primary sources and secondary scholarly essays and monographs.
Same as: HISTORY 231G, RELIGST 231, RELIGST 331

HISTORY 332B. Heretics, Prostitutes and Merchants: The Venetian Empire. 4-5 Units.
Between 1200-1600, Venice created a powerful empire at the boundary between East and West that controlled much of the Mediterranean, with a merchant society that allowed social groups, religions, and ethnicities to coexist. Topics include the features of Venetian society, the relationship between center and periphery, order and disorder, orthodoxy and heresy, the role of politics, art, and culture in the Venetian Renaissance, and the empire's decline as a political power and reinvention as a tourist site and living museum.
Same as: ITALIAN 332B

HISTORY 332G. Early Modern Cities. 4-5 Units.
Colloquium on the history of early modern European cities, covering urbanization, street life, neighborhoods, fortifications, guilds and confraternities, charity, vagrancy, and begging, public health, city-countryside relationship, urban constitutions, and confederations. Assignments include annotated bibliography, book review, and a final paper. Second-quarter continuation of research seminar available (HIST299S or HIST402).
Same as: HISTORY 232G

HISTORY 333. Reformation to Civil War: England under the Tudors and Stuarts. 4-5 Units.
English political and religious culture from the end of the Wars of the Roses to the Civil War of the 1640s. Themes include the growth of the size and power of the state, Reformation, creation of a Protestant regime, transformation of the political culture of the ruling elite, emergence of Puritanism, and causes of the Civil War. HISTORY 333 is a prerequisite for HISTORY 402 (Spring quarter).
Same as: HISTORY 233

HISTORY 333C. Two British Revolutions. 4-5 Units.
Current scholarship on Britain,1640-1700, focusing on political and religious history. Topics include: causes and consequences of the English civil war and revolution; rise and fall of revolutionary Puritanism; the Restoration; popular politics in the late 17th century; changing contours of religious life; the crisis leading to the Glorious Revolution; and the new order that emerged after the deposing of James II.
Same as: HISTORY 233C

HISTORY 333F. Political Thought in Early Modern Britain. 4-5 Units.
1500 to 1700. Theorists include Hobbes, Locke, Harrington, the Levellers, and lesser known writers and schools. Foundational ideas and problems underlying modern British and American political thought and life.
Same as: HISTORY 233F

HISTORY 333K. The Invention of the Modern Republic. 4-5 Units.
Examines the history of republican thinking in the Atlantic World from the Renaissance to the French Revolution.
Same as: HISTORY 233K

HISTORY 334F. Science, Technology, and Empire. 4-5 Units.
How modern Europe came to be connected to thennwider world through repeated cycles of expansion, circulation, andnnexchange from the mid-nineteenth century to the present. Using weeklynnthemes and in-depth discussions of ¿watershed¿ moments, nnthe roles played by colonialism, migration, commerce, warfare,nntelecommunications, and popular culture in redefining the place ofnnEurope in a changing global landscape will be explored.

HISTORY 334P. The Age of Plague: Medicine and Society, 1300-1750. 4-5 Units.
(Graduates, enroll in 334P. Undergraduates, enroll in 234P.) The arrival of plague in Eurasia in 1347-51 affected many late medieval and early modern societies. It transformed their understanding of disease, raised questions about the efficacy of medical knowledge, and inspired new notions of public health. This class explores the history of medicine in the medieval Islamic and European worlds. Changing ideas about the body, the roles of different healers and religion in healing, the growth of hospitals and universities, and the evolution of medical theory and practice will be discussed. How did medicine and society change in the age of plague?.

HISTORY 334R. Risk and Credit Before Modern Finance. 1 Unit.
In today's world, credit scores are nearly as important as citizenship. Creditworthiness is measured in numbers, but is also bound up with moral qualities. To lack credit is to be on the margins of society, and vice versa. How did we get here? How did lenders mitigate risks before credit scores were available? Where do the risk management tools of modern finance come from? How did merchants trade over long distances when information technology was extremely poor? This one-unit course will address these pressing questions from a historical perspective, starting from the modern U.S. and reaching back in time to the Middle Ages. Classroom discussions and readings include articles written by historians and social scientists, as well as primary sources in English translation.
Same as: HISTORY 234R

HISTORY 335. The Renaissance of War: Politics, Technology, and War in Late Medieval and Renaissance Italy. 4-5 Units.
The dynamic societies of the Italian Peninsula of the 14th to 16th centuries "prosperous, astonishingly creative, politically fractious, and endemically violent" produced sweeping, deeply consequential changes. Among these were new developments in the theory and practice of war, politics, and diplomacy that laid the foundations for the modern state system and European military power. The class covers: new diplomatic practice; the Military Revolution; state-building; war finance; court culture; and the intersection of these with the shimmering brilliance of Renaissance culture.

HISTORY 335C. Readings in the Supernatural. 4-5 Units.
Class will read and discuss a selection of monographs, scholarly essays, and primary sources on the rich supernatural world of early modern Europe. We will discuss how fairies, werewolves, nightmares, and trolls all became witches, how the binary of angels and demons figured in European thought, and how the marginalized imaginary was reconstituted in theatre and fiction.
Same as: HISTORY 235C

HISTORY 335D. When Worlds Collide: The Trial of Galileo. 4-5 Units.
In 1633, the Italian mathematician Galileo was tried and condemned for advocating that the sun, not the earth, was the center of the cosmos. The Catholic Church did not formally admit that Galileo was right until 1992. Examines the many factors that led to the trial of Galileo and looks at multiple perspectives on this signal event in the history of science and religion. Considers the nature and definition of intellectual heresy in the sixteenth and early seventeenth centuries, and examines the writings of Galileo's infamous predecessor Giordano Bruno (burned at the stake in 1600). Looks closely at documents surrounding the trial and related literature on Renaissance and Reformation Italy in order to understand the perspectives of various participants in this famous event. Focal point of seminar involves the examination of the many different histories that can be produced from Galileo's trial. What, in the end, were the crimes of Galileo?.
Same as: HISTORY 235D, ITALIAN 233, ITALIAN 333

HISTORY 335J. The Meaning of Life: Modern European Encounters with Consequential Questions. 4-5 Units.
(History 235J is an undergraduate course offered for 5 units; History 335J is a graduate course offered for 4-5 units.) Across two centuries of social, political, and religious upheaval and transformation, modern Europeans confronted a series of interconnected ¿big questions¿: What is humanity¿s relationship with deity? Where does life, including human life, come from, and where is it going? What considerations should shape human beings¿ relationships with, and actions toward, one another? What is socially and morally acceptable¿or transgressive? Is there life after death, and a spiritual realm distinct from the material world? Through case studies in the history of religion, evolutionary thought, gender and sexuality, and the aims and ends of empire, this course will examine European engagement with these questions across the nineteenth and twentieth centuries (with some background in earlier periods), paying attention to the ways in which the questions people asked¿and the conclusions they drew¿were shaped by social, religious, and political institutions and structures.

HISTORY 335L. Alien Imaginations: Extraterrestrial Speculations in Modern European History. 4-5 Units.
(History 235L is an undergraduate course offered for 5 units; History 335L is a graduate course offered for 4-5 units.) This course will examine the historical basis and evolution of modern European beliefs concerning the existence and nature of alien life throughout the universe, and the ways in which these imagined alien beings have historically reflected an interplay of social, religious, political, and scientific assumptions, hopes, fears, and preoccupations. We will explore the relationship between belief in extraterrestrial life and historical themes and episodes in European history including the debate over heliocentrism, deism and freethought, theories of life and of human nature, changing concepts of national identity, and the intertwined histories of immigration, colonialism, race, and gender. We will particularly examine how and why concepts of the alien took a dark and sinister turn across the late nineteenth- and early-to-mid-twentieth centuries.

HISTORY 336. Modern France. 4-5 Units.
(Daughton).

HISTORY 336E. Humanities+Design: Visualizing the Grand Tour. 4-5 Units.
Study of the eighteenth-century Grand Tour of Italy through visualization tools of the digital age. Critical readings in both visual epistemology and current Grand Tour studies; interrogating the relationship between quantitative and qualitative approaches in digital humanities; what new insights in eighteenth-century British travel to Italy does data visualization offer us? Students will transform traditional texts and documents into digital datasets, developing individual data analysis projects using text mining, data capture and visualization techniques.
Same as: CLASSICS 396, DLCL 396

HISTORY 336F. The End of the World As They Knew It: Culture, Cafés, and Crisis in Europe, 1880-1918. 4-5 Units.
The years stretching from roughly 1880 to end of the First World War were marked by profound social upheaval and an intense burst of creativity. This seminar will focus on the major cultural movements and big ideas of the period. Topics covered include the rise of mass culture and cinema, the origins of psychoanalysis, anti-Semitism and Zionism, new anxieties about sexuality and the ¿New Woman,¿ anarchism, decadence, degeneration, and Dada ¿ with cameos from Bernhardt, Freud, Klimt, Nietzsche, Toulouse-Lautrec, Wilde, Zola, and other luminaries of the age.
Same as: HISTORY 236F

HISTORY 336J. A Tour of Dangerous Ideas: Radical Thinkers in Modern Europe. 4-5 Units.
In this course we will examine ideas radical to their context in modern European thought, paying close attention to what it has meant to explain features of society, government, and politics in terms of power. What is power? What is human nature, and do all humans possess natural rights? How is human identity interwoven with the practice of power? What makes an idea radical? We will examine these and other questions through close readings of seven thinkers whose ideas shaped the modern period: John Locke, Jean-Jacques Rousseau, Mary Wollstonecraft, John Stuart Mill, Karl Marx, C.L.R. James, and Michel Foucault.
Same as: HISTORY 236J

HISTORY 337C. Street History: Learning the Past in School and Out. 3-5 Units.
Interdisciplinary. Since Herodotus, history and memory have competed to shape minds: history cultivates doubt and demands interpretation; memory seeks certainty and detests that which thwarts its aims. History and memory collide in modern society, often violently. How do young people become historical amidst these forces; how do school, family, nation, and mass media contribute to the process?.
Same as: EDUC 356

HISTORY 337D. The French Revolution and the Birth of Modern Politics. 4-5 Units.
(Students who have taken HISTORY 134 should not enroll in this course.) This course will focus on the birth of modern politics in the French Revolution. The goal will be to understand the structural contradictions of the French monarchy in the pre-revolutionary period, the reasons for the monarchy's failure to resolve those contradictions, and the political dynamic unleashed as they were solved by the revolutionary action of 1789. Sovereignty, democracy, rights, representation, and terror will be principal themes. Lectures will be combined with close reading and discussions of political and philosophical writings of the period.
Same as: HISTORY 237D

HISTORY 337F. 20th Century British History through the Hoover Archives. 4-5 Units.
From the rich resources of the Hoover Institution, the students in this course will select a particular archive (war posters, politician, spy, literary figure, diplomat, etc. etc.) to investigate, to write about,discuss in class, and, it is hoped, present in an exhibition at the Hoover, learning museum skills along the way as well as the history of Britain in the 20th century.
Same as: HISTORY 237F

HISTORY 338A. Graduate Colloquium in Modern British History, Part I. 4-5 Units.
Influential approaches to problems in British, European, and imperial history. The 19th-century British experience and its relationship to Europe and empire. National identity, the industrial revolution, class formation, gender, liberalism, and state building. Goal is to prepare specialists and non-specialists for oral exams.

HISTORY 338B. MODERN BRITISH HISTORY PART II. 4-5 Units.
Themes include empire and racism, the crisis of liberalism, the rise of the welfare state, national identity, the experience of total war, the politics of decline, and modernity and British culture.

HISTORY 338G. Ethnography of the Late Middle Ages: Social history and popular culture in the age of the plague. 4-5 Units.
During the late Middle Ages, as Europe was recovering from the devastation of the Black Death, political reorganization contributed to a burst of archival documentation that allows historians richly detailed glimpses of societies in transition. We will be reading selected scholarly articles and monographs covering such topics as persecution, prechristian cultural remnants, folk theologies, festival cultures, peasant revolts, heresy, and the advent of the diabolic witch.
Same as: HISTORY 238G

HISTORY 338J. The European Scramble for Africa: Origins and Debates. 4-5 Units.
Why and how did Europeans claim control of 70% of African in the late nineteenth century? Students will engage with historiographical debates ranging from the national (e.g. British) to the topical (e.g. international law). Students will interrogate some of the primary sources on which debaters have rested their arguments. Key discussions include: the British occupation of Egypt; the autonomy of French colonial policy; the mystery of Germany¿s colonial entry; and, not least, the notorious Berlin Conference of 1884-1885.
Same as: AFRICAAM 238J, HISTORY 238J

HISTORY 339F. Empire and Information. 4-5 Units.
How do states see? How do they know what they know about their subjects, citizens, economies, and geographies? How does that knowledge shape society, politics, identity, freedom, and modernity? Focus is on the British imperial state activities in S. Asia and Britain: surveillance technologies and information-gathering systems, including mapping, statistics, cultural schemata, and intelligence systems, to render geographies and social bodies legible, visible, and governable.
Same as: HISTORY 239F

HISTORY 339H. Modern European History in a Global Age. 4-5 Units.
How scholars can write the history of modern Europe in a way that integrates global and transnational perspectives. Discussed the methodological challenges and merits of various approaches and reviews relevant theoretical and interdisciplinary models for how this can best be done. Topics include globalization, migration, internationalism, colonialism, post-colonialism, modern warfare, and the media.

HISTORY 339J. Work and Leisure in Nineteenth Century Britain. 4-5 Units.
This course charts the changes wrought by the Industrial Revolution, empire, and social factors in Britons' lives at work and at home in the nineteenth century. Readings will explore trade unionism and Chartism, urban migration, consumer culture, print culture, organized sports, shows, rational leisure" and the development of exhibitions and public museums. Students will gain a sense of how Britons worked and played in a century that gave birth to pastimes and institutions that continue to shape our own.
Same as: HISTORY 239J

HISTORY 339K. Sex, Death, and God in Modern Europe. 4-5 Units.
In the midst of social and political upheaval and transformation, people in modern Europe have grappled with central questions of human existence. What place does humanity occupy in the universe and in relation to God? How does life begin, and under what circumstances? What gives life its meaning? What is socially and morally acceptable--or transgressive? Is there life after death, and a spiritual realm distinct from the material world? This course will examine answers to these questions across the late eighteenth, nineteenth, and twentieth centuries, and the ways in which the questions people asked--and the conclusions they drew--were shaped by social, political, and religious assumptions, hopes, and fears.
Same as: HISTORY 239K

HISTORY 340. The History of Evolution. 4-5 Units.
This course examines the history of evolutionary biology from its emergence around the middle of the eighteenth century. We will consider the continual engagement of evolutionary theories of life with a larger, transforming context: philosophical, political, social, economic, institutional, aesthetic, artistic, literary. Our goal will be to achieve a historical rich and nuanced understanding of how evolutionary thinking about life has developed to its current form.
Same as: HISTORY 240

HISTORY 341C. History of Suggestion and Mind Control. 4-5 Units.
This course traces the history of suggestion and hypnosis from the birth of mesmerism in the late 18th-century to Cold War controversies over brainwashing, and recent debates on global terrorism and the ethics of technology. Born during the Age of Revolutions, the therapeutic system of mesmerism was quickly pushed to the margins of scientific practice as it was elaborated in the 19th-century but nonetheless remained a key determinant of human experience, politics, social relations, and medical practice. While reading secondary and primary texts, we will follow the evolution of various theories of trance and hypnotic induction alongside the development of scientific approaches to psychology in the West and the non-West to unravel the complex relationship between politics, social reform, labor, international relations, espionage, and indoctrination, and practices of suggestion and mind control.

HISTORY 342. Darwin in the History of Life. 4-5 Units.
Origins and impact of evolutionary theory from the nineteenth century to the present. Early theories of fossils, the discovery of deep time and uniformitarian geology, debates over evolution vs. extinction, the origin of life, and human origins; the rise of anthropology and racial theory; the changing challenge of creationism, the abuse of evolution in eugenics and Nazi racial hygiene; and new discoveries in the realm of extreme life, evo-devo, neocatastrophism, and the new technological frontier of biomimicry. Attendance at the lectures of HISTORY 142 is required.

HISTORY 342G. Spaces and Practices of Natural History. 4-5 Units.
Gentleman scientists once practiced natural history by studying specimens collected from around the world, stored in cabinets of curiosity. From the 17th to 19th centuries, natural history moved out of the cabinet and into the field; these environments required new ways of thinking and different types of scientific workers. This course will track how new spaces, practices, and people became associated with natural history and explore how they shaped the content of the field and the social contours of science.
Same as: HISTORY 242G

HISTORY 342J. London Low Life in the Nineteenth Century. 4-5 Units.
(History 242J is an undergraduate course offered for 5 units; History 342J is a graduate course offered for 4-5 units.) London began the nineteenth century as a city of one million, but was home to over six million people by the century's end. How did Londoners in the nineteenth century respond to the challenges and temptations of life in a growing metropolis? How did government and reformers try to influence and control city dwellers' behavior? This class seeks to answer these questions by exploring life in Britain's capital in the nineteenth century, using the digital database ¿London Low Life¿ as a guide. Contemporary street literature, night-life guides, pamphlets, broadsides, images, reformer's tracts, and public-interest journalism are some of the sources that will give us a window into vice, virtue, and daily life in London during a period of great uncertainty and change.

HISTORY 343C. People, Plants, and Medicine: Colonial Science and Medicine. 4-5 Units.
Explores the global exchange of knowledge, technologies, plants, peoples, disease, and medicines. Considers primarily Africans, Amerindians, and Europeans in the eighteenth-century West but also takes examples from other knowledge traditions. Readings treat science and medicine in relation to voyaging, colonialism, slavery, racism, plants, and environmental exchange. Colonial sciences and medicines were important militarily and strategically for positioning emerging nation states in global struggles for land and resources.
Same as: HISTORY 243C

HISTORY 343G. Tobacco and Health in World History. 4-5 Units.
Cigarettes are the world's leading cause of death--but how did we come into this world, where 6 trillion cigarettes are smoked every year? Here we explore the political, cultural, and technological origins of the cigarette and cigarette epidemic, using the tobacco industry's 80 million pages of secret documents. Topics include the history of cigarette advertising and cigarette design, the role of the tobacco industry in fomenting climate change denial, and questions raised by the testimony of experts in court.
Same as: HISTORY 243G

HISTORY 344. Narrative Knowing. 1-2 Unit.
Philosophers and historians have been debating the status of narrative explanation for well over 50 years. Until quite recently, a supposed dichotomy between natural science and history has shaped the discussion. Beginning from the origins, history, and limitations of the dichotomy, this seminar will explore how claims for narrative understanding and explanation have come to occupy an increasingly important role in the natural sciences as well as the social sciences. Some classic contributors are Hempel, Danto, Mink, Kuhn, White, Ricouer, Geertz, and Ginzburg. Current authors include Roth, Rheinberger, Kitcher, Beatty, Morgan, and (yes) Wise.
Same as: PHIL 344

HISTORY 344F. Intersectional Design: An Expanded Approach to Gender in Tech. 4-5 Units.
This d-school seminar prototypes concepts and methods for "inclusive" design. From the moment we arrive on the planet, gender shapes our perception of the world. Examples of products (including objects, services, and systems) gone awry will serve as prompts for design activities, challenges, and discussions on gender issues to illustrate the different needs of women, men, and gender-fluid people. Class sessions mix use case explorations with design methodology, design thinking abilities, and guest speakers from technology, design, and academia. Students will be asked to work in interdisciplinary teams on several design challenges, culminating in the development of a toolkit for inclusive design. Methods will interact in crucial ways to create "intersectional thinking" (i.e., to consider how gender, ethnicity, sexuality, socio-economic status, etc. work together to require new solutions in design). Topics include: algorithms, media, seat belts for pregnant women, robotics, assistive technologies, tech for developing worlds, video games, urban/rural design, software development, and many more. Admission by application only. Visit d.school.stanford.edu/classes for more information.
Same as: FEMGEN 344F, HISTORY 244F

HISTORY 345A. Africa in the Era of the Slave Trade. 4-5 Units.
The slave trade, including the trans-Saharan, Indian Ocean, and trans-Atlantic trades, constituted nearly a millennium of interaction with the wider world and set in motion transformations in African societies, polities, and cultures. Topics include the debates about slavery in Africa, the impact of the slave trade on African societies, state formation, economic change, religious change, and household change in the period before the scramble for Africa in the late 19th century.

HISTORY 345B. African Encounters with Colonialism. 4-5 Units.
This colloquium is a broad sweep of some of the main themes in the history of the colonial period for Africa. A course of this nature can not help but be a selective sample of the field. For example, topics on the end of slavery in Africa, on the social history of law in colonial Africa, Islam and religious conversion, nationalism and decolonization are not included here because they are covered by more specialized courses. This course is designed to let students sample different approaches to the history of the colonial period.

HISTORY 346F. Women in African history, Gender in Herstory. 4-5 Units.
This graduate colloquium focuses on the place of women in modern African history. We focus specifically on the literary techniques that African women have used to represent themselves to the outside world. In the course of ten in-depth seminars, we will intensively read a number of African women-authored autobiographies and biographies from the twentieth century to the present day. We look at the auto/biographies of prominent as well as not-so-well-known African women: Winnie Madikizela-Mandela and Wangari Maathai¿s autobiographies will be read alongside the life stories of more ¿ordinary¿ women. The seminar straddles history, literary theory and gender studies, and it encourages students to think critically about the creative ways in which African women have portrayed themselves to their intimates and their families as well as to the wider world.

HISTORY 348. Religion, Radicalization and Media in Africa since 1945. 4-5 Units.
What are the paths to religious radicalization, and what role have media- new and old- played in these conversion journeys? We examine how Pentecostal Christians and Reformist Muslims in countries such as South Africa, Nigeria, Sudan, and Ethiopia have used multiple media forms- newspapers, cell phones, TV, radio, and the internet- to gain new converts, contest the authority of colonial and post-colonial states, construct transnational communities, and position themselves as key political players.
Same as: AFRICAST 248, AFRICAST 348, HISTORY 248, RELIGST 230X, RELIGST 330X

HISTORY 348D. Law and Colonialism in Africa. 4-5 Units.
Law in colonial Africa provides an opportunity to examine the meanings of social, cultural, and economic change in the anthropological, legal, and historical approaches. Court cases as a new frontier for the social history of Africa. Topics: meanings of conflicts over marriage, divorce, inheritance, property, and authority.
Same as: HISTORY 245G

HISTORY 349. Bodies, Technologies, and Natures in Africa. 4-5 Units.
This interdisciplinary course explores how modern African histories, bodies, and natures have been entangled with technological activities. Viewing Africans as experts and innovators, we consider how technologies have mediated, represented, or performed power in African societies. Topics include infrastructure, extraction, medicine, weapons, communications, sanitation, and more. Themes woven through the course include citizenship, mobility, labor, bricolage, in/formal economies, and technopolitical geographies, among others. Readings draw from history, anthropology, geography, and social/cultural theory.
Same as: AFRICAST 249, ANTHRO 348B

HISTORY 349A. The Mamluks: Slave-Soldiers and Sultans of Medieval Egypt. 3-5 Units.
Known as ghulam or mamluk in Arabic, the slave-soldier was a ubiquitous phenomenon in the world of medieval Islam. Usually pagan steppe nomads, mamluks were purchased in adolescence, converted to Islam, taught Arabic, and trained to lead armies. Sometimes manumitted and sometimes not, in either case mamluks rose to positions of privilege and prominence in numerous regimes in the medieval Middle East.nnNowhere was the mamluk institution so fundamental as it was in Egypt between 1250 and 1517 CE, when Cairo was ruled by these slave-soldiers, their ranks constantly renewed by imports of new mamluks from the Black Sea and Caucuses. Born in the age of the crusades and ultimately conquered by the Ottoman Empire, the Mamluk Sultanate can be understood as a bridge between the worlds of medieval and early modern Islam, as well as between East and West, sitting astride the major Nile-Red Sea route that linked the Mediterranean world to that of the Indian Ocean and beyond. This class will investigate the rise and fall of the Mamluk Sultanate in Egypt and its key roles in the commercial, diplomatic, and political history both of the medieval Middle East and the wider world.
Same as: GLOBAL 102, GLOBAL 210, HISTORY 249

HISTORY 351A. Core in American History, Part I. 4-5 Units.
May be repeated for credit.

HISTORY 351B. Core in American History, Part II. 4-5 Units.
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HISTORY 351C. Core in American History, Part III. 4-5 Units.
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HISTORY 351D. Core in American History, Part IV. 4-5 Units.
May be repeated once for credit.

HISTORY 351E. Core in American History, Part V. 4-5 Units.
Required of all first-year United States History Ph.D. students. Topics in Twentieth Century United States History.

HISTORY 351F. Core in American History, Part VI. 4-5 Units.
Required of all first-year Ph.D. students in U.S. History.

HISTORY 351J. The End of American Slavery, 1776-1865. 4-5 Units.
How did the institution of American slavery come to an end? The story is more complex than most people know. This course examines the rival forces that fostered slavery's simultaneous contraction in the North and expansion in the South between 1776 and 1861. It also illuminates, in detail, the final tortuous path to abolition during the Civil War. Throughout, the course introduces a diverse collection of historical figures, including seemingly paradoxical ones, such as slaveholding southerners who professed opposition to slavery and non-slaveholding northerners who acted in ways that preserved it. Historical attitudes toward race are a central integrative theme.
Same as: AFRICAAM 251J, AMSTUD 251J, HISTORY 251J

HISTORY 352B. History of American Law. 5 Units.
(Formerly Law 318. Now Law 3504.) This course examines the growth and development of American legal institutions with particular attention to crime and punishment, slavery and race relations, the role of law in developing the economy, and the place of lawyers in American society, from colonial times to the present. Special Instructions: Any student may write a paper in lieu of the final exam with consent of instructor. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Final exam or paper. Automatic grading penalty waived for writers. Cross-listed with History (HISTORY 152 Consent of instructor required) & (HISTORY 352B).
Same as: HISTORY 152

HISTORY 353D. Approaches to American Legal History. 4-5 Units.
(Same as LAW 651.) Legal history may once have been primarily devoted to exploring legal doctrines and key judicial opinions, and thus to be of interest mainly to legal scholars and lawyers. Now, the best writing in legal history resembles historical writing more generally, and the study of legal ideas and practices is increasingly integrated with social, intellectual, cultural, and political history. Examines recent writings in American legal history, ranging broadly across time and space to ask how the field reflects developments in historical writing more generally, and how the use of legal materials affects our understanding of major aspects of American history.

HISTORY 353F. Thinking the American Revolution. 4-5 Units.
No period in American history has generated as much creative political thinking as the era of the American Revolution. This course explores the origins and development of that thought from the onset of the dispute between Great Britain and its American colonies over liberty and governance through the debates surrounding the construction and implementation of the United States federal Constitution.
Same as: HISTORY 253F

HISTORY 354D. Religion and War in America. 4 Units.
Scholars have devoted much attention to wars in American history, but have not agreed as to whether religion was a major cause or simply a cover for political, economic, and other motives. We will compare interpretations that leave religion out, with those that take it into account. We will also look at the impact of war on the religious lives of ordinary Americans. We will examine both secondary as well as primary sources, beginning with King Philip's War in the 17th century, and ending with the "War on Terror" in the present day.
Same as: AMSTUD 105R, CSRE 105, HISTORY 254D, RELIGST 105

HISTORY 354F. Law and Empire in U.S. History. 2-3 Units.
(Same as LAW 3506. Instructor consent required for History 354F.) This course will examine the interrelationship between legal norms and empire in the history of the United States. Topics in this part will include the Constitution as an imperial document; law and the expansion of the United States in western North America, Puerto Rico, and Hawaii; the Insular Cases; and current debates over extraterritoriality and the War on Terror. Substantial readings will consist of scholarly articles, historical cases, and primary sources, and will be provided online. Requirements for the course include regular class participation and, at the students' election, either response papers or a historiographical essay. Students may also elect to complete a research paper, in which case they will receive 3 units and "R" credit.

HISTORY 356E. The American Civil War: The Lived Experience. 4-5 Units.
What was it like to live in the United States during the Civil War? This course uses the lenses of racial/ethnic identity, gender, class, and geography (among others) to explore the breadth of human experience during this singular moment in American history. It illuminates the varied ways in which Americans, in the Union states and the Confederate states, struggled to move forward and to find meaning in the face of unprecedented division and destruction.

HISTORY 356G. Constructing Race and Religion in America. 4-5 Units.
This seminar focuses on the interrelationships between social constructions of race and social interpretations of religion in America. How have assumptions about race shaped religious worldviews? How have religious beliefs shaped racial attitudes? How have ideas about religion and race contributed to notions of what it means to be "American"? We will look at primary and secondary sources and at the historical development of ideas and practices over time.
Same as: AFRICAAM 236, AMSTUD 246, CSRE 246, HISTORY 256G, RELIGST 246, RELIGST 346

HISTORY 357E. History of Conservatism. 4-5 Units.
What is conservatism in America? Where did it come from, and where might it be going? Looking at conservatism as a political, social, and intellectual movement, we will consider these questions by reading primary and secondary sources and archival material. Suitable for students of any or no particular political persuasion. No prerequisites or background required, although the reading will be considerable.
Same as: HISTORY 257E

HISTORY 358. History of Sexual Violence in America. 4-5 Units.
This undergraduate/graduate colloquium explores the history of sexual violence in America, with particular attention to the intersections of gender and race in the construction of rape. We discuss the changing definitions of sexual violence in law and in cultural representations from early settlement through the late-twentieth century, including slavery, wartime and prison rape, the history of lynching and anti-lynching movements, and feminist responses to sexual violence. In addition to introducing students to the literature on sexual violence, the course attempts to teach critical skills in the analysis of secondary and primary historical texts. Students write short weekly reading responses and a final paper; no final exam; fifth unit research or CEL options.nnLimited enrollment, permission of instructor required. Submit application form and indicate interest in CEL option. Priority admission to History, FGSS, CSRE, AFRICAAM, and AMSTUD declared majors and minors. (Cardinal Course certified by the Haas Center).
Same as: AFRICAAM 192, AMSTUD 258, CSRE 192E, FEMGEN 258, FEMGEN 358, HISTORY 258

HISTORY 359E. American Interventions, 1898-Present. 5 Units.
This class seeks to examine the modern American experience with limited wars, beginning with distant and yet pertinent cases, and culminating in the war in Iraq. Although this class will examine war as a consequence of foreign policy, it will not focus primarily on presidential decision making. Rather, it will place wartime policy in a broader frame, considering it alongside popular and media perceptions of the war, the efforts of antiwar movements, civil-military relations, civil reconstruction efforts, and conditions on the battlefield. We will also examine, when possible, the postwar experience.
Same as: HISTORY 259E, INTNLREL 168A

HISTORY 360P. American Protest Movements, Past and Present. 4-5 Units.
(History 260P is an undergraduate course offered for 5 units; History 360P is a graduate course offered for 4-5 units.) Societal change comes only when individuals and groups speak out, perseverantly, against prevailing norms. This course examines the overlapping histories of three nineteenth-century protest movements: antislavery, women¿s rights, and temperance. It focuses on the arguments and tactics used by these movements to persuade Americans to oppose the status quo, and it examines the points of agreement and disagreement that arose within and among these movements. Ultimately, the course connects these past protest movements to more recent analogs, such as Black Lives Matter, ERA ratification, and marijuana legalization. Throughout the course, race, gender, and class serve as central analytical themes.

HISTORY 361D. History of Civil Rights Law. 5 Units.
(Same as LAW 7838.) This is a seminar that will examine canonical civil rights law using history. We will investigate the historical context behind the enactment of particular laws and judicial decisions. We will also discuss the meaning and implications of the term "civil rights law." Readings will include cases, law review articles, primary sources, and history articles. Topics will include segregation, abortion, workers' rights, and disability. 14th Amendment is not a prerequisite for the seminar. Requirements for the course include regular class participation and, at the students' election, either response papers or a historiographical essay. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

HISTORY 362G. The Pivotal Decade in U.S. History: 1960's or 1970's?. 4-5 Units.
Which had more lasting impact, the civil war of the 1960s or the conservative revolt of the 1970s? Should the 1970s supersede the 1960s as a pivotal moment when something happened of considerable importance to historians? Considers this debate of the decades comparatively and thematically, addressing topics including civil rights, foreign policy, electoral politics, popular culture, law, economics, labor, and social movement organizing.

HISTORY 364. History of Prisons and Immigration Detention. 4-5 Units.
This course will explore the history of the growing prison and immigration detention systems in the United States. They will pay particular attention to how they developed and how they affect different populations.
Same as: AMSTUD 264, CSRE 264, HISTORY 264

HISTORY 366B. Immigration Debates in America, Past and Present. 3-5 Units.
Examines the ways in which the immigration of people from around the world and migration within the United States shaped American nation-building and ideas about national identity in the twentieth century. Focuses on how conflicting ideas about race, gender, ethnicity, and citizenship with respect to particular groups led to policies both of exclusion and integration. Part One begins with the ways in which the American views of race and citizenship in the colonial period through the post-Reconstruction Era led to the passage of the Chinese Exclusion Act in 1882 and subsequently to broader exclusions of immigrants from other parts of Asia, Southern and Eastern Europe, and Mexico. Explores how World War II and the Cold War challenged racial ideologies and led to policies of increasing liberalization culminating in the passage of the 1965 Immigration Act, which eliminated quotas based on national origins and opened the door for new waves of immigrants, especially from Asia and Latin America. Part Two considers new immigration patterns after 1965, including those of refugees, and investigates the contemporary debate over immigration and immigration policy in the post 9/11 era as well as inequalities within the system and the impact of foreign policy on exclusions and inclusions.
Same as: CSRE 166B, HISTORY 166B

HISTORY 369F. Modern American History: From Civil Rights to Human Rights. 4-5 Units.
(History 269F is an undergraduate course offered for 5 units; History 369F is a graduate course offered for 4-5 units.) This focuses on American social justice movements during the years since the passage of landmark civil rights legislation during the 1960s, with particular emphasis on efforts to extend rights to all people.
Same as: HISTORY 269F

HISTORY 370. Graduate Colloquium on Colonial Latin American History. 4-5 Units.
Sixteenth to nineteenth centuries. Indigenous cultures. The arrival of Europeans and its impact on native and European societies. Culture, religion and institutions, and everyday life. The independence period and the formation of new nations.

HISTORY 370E. Queer History of the Americas. 4-5 Units.
This course will examine LGBT history in the Americas. It traces the development of homosexuality as a category of analysis; the construction of trans identity; the ways in which same-sex desire and gender identity were regulated over time; and queer people's struggles for recognition, liberation, and, ultimately, rights.
Same as: HISTORY 270E

HISTORY 371. Graduate Colloquium: Explorations in Latin American History and Historiography. 4-5 Units.
Introduction to modern Latin American history and historiography, including how to read and use primary sources for independent research.
Same as: ILAC 371

HISTORY 372A. Mexico: From Colony to Nation or the History of an Impossible Republic?. 5 Units.
Was a republican form of government even possible in 19th-century Mexico after 300 years of colonial rule under the Spanish monarchy? Was the Spanish colonial heritage a positive or a negative legacy according to 19th-century Mexican politicians? How were they to forge a new national identity with so many ethnically and culturally diverse peoples throughout the territory? Just how ¿traditional¿ was, in fact, the colonial period? These are some of the questions we will explore in this course. Journeying from the late colonial period (c.1700) to the 35-year dictatorship known as El Porfiriato (1876-1911) we will examine how Mexico¿s diverse indigenous peoples adapted to both colonial and postcolonial rule, how they actively participated in politics and political discourse to preserve their cultures, customs and colonial privileges, and how after independence in 1821, a new republican political culture was forged. Mexico was not an impossible republic, but rather another kind of republic.

HISTORY 372B. Colonial Mexico: Images and Power. 3-5 Units.
How did images maintain, construct, or transform political power during the conquest and colonization of Mexico? The creation and destruction of visual materials in this period had a complicated relationship with power. The pictographic codices that celebrated the expansive Aztec Empire were created after its fall; and the conquistadors' indigenous allies painted some of the most triumphalist narratives of the conquest. Friars accused indigenous peoples of "idolatry" both to justify the destruction of their images and objects, and to construct legal defenses of their humanity. Colonial authorities frequently claimed Afro-Catholic festivals were seditious. In light of such complexity, official histories that recount the top-down consolidation of royal and viceroyal power are suspiciously simple. What counter-narratives do images and other visual phenomena from this tumultuous period offer? This course introduces students to major texts from Colonial Mexico (royal chronicles, conquistadors' tales, letters, poems, festival accounts) alongside a fascinating trove of images (painted codices with Nahuatl texts, feather mosaics, and indigenous heraldry) and considers how experiences of images and spectacles were transformed into textual accounts ("ekphrasis" or the literary device of description). Taught in Spanish.
Same as: HISTORY 272, ILAC 214, ILAC 314

HISTORY 373A. The European Expansion. 4-5 Units.
The relationship between European monarchies and their colonial domains from the 16th-18th centuries. Reasons for expansion, methods, and results. Case studies include the Spanish, Portuguese, Dutch, French, and English domains in Africa, Asia, and the Americas. Readings include primary and secondary sources.
Same as: HISTORY 273

HISTORY 373E. The Emergence of Nations in Latin America: Independence Through 1880. 4-5 Units.
This course provides an introduction to the main themes of nineteenth-century Latin American history, including independence from Spain, the emergence of various nation-states, and the development of a new social, political, and economic order in the region.
Same as: HISTORY 273E

HISTORY 374. Mexico Since 1876: History of a "Failed State"?. 5 Units.
(Same as History 174.) This course is an introduction to the history and diverse peoples of modern Mexico from 1876 to the present. Through lectures, discussions, primary and secondary readings, short documentaries, and written assignments, students will critically explore and analyze the multiplicity of historical processes, events and trends that shaped and were shaped by Mexicans over the course of a century. The course will cover some of the social and political dimensions of rural social change, urbanization and industrialization, technological innovation and misuse, environmental degradation and conservation, education, ideology, culture and media, migration, and the drug trade.

HISTORY 374C. The History of Mexicans and Mexican Americans. 4-5 Units.
This course will explore the history of Mexican migrants and Mexican Americans from 1848 to the present.
Same as: CHILATST 274, HISTORY 274C

HISTORY 375B. Borders and Borderlands in Modern Mexico. 4-5 Units.
Surveys the history of Mexico's borders and borderlands from the nineteenth century to the present. Examines theoretical conceptualizations of the borderlands as well as the historical development of identities and geographic borders within and around Mexico. Topics include the legacies of war, map making, the construction of lo Mexicano, the politics of culture, and migrations to, from, and through Mexico. Analyzes the prevailing trends in Mexicanist historiography.

HISTORY 378. The Historical Ecology of Latin America. 4-5 Units.
What role did the natural environment play in the emergence of Latin America as a distinct geographical and socio-cultural world region? How do we analyze the historical relationship between the regions rich and seemingly abundant natural resources and its status as "underdeveloped"? What historical consequences did this relationship have and what alternative, more sustainable developmental paths can we envision for the future in light of the past that we will study? In this course, students will become familiar with the historiography on Latin America (with emphasis on Mexico) that has explored these questions through a variety of approaches, methodologies and points of view.
Same as: HISTORY 278B

HISTORY 378A. The Logic of Authoritarian Government, Ancient and Modern. 5 Units.
If authoritarianism is less economically efficient than democracy, and if authoritarianism is a less stable form of political organization than democracy, then why are there more authoritarian governments than democracies? To address this paradox, focus is on theoretical and empirical literature on authoritarian governments, and related literatures on the microeconomic analysis of property rights and credible commitments.

HISTORY 379. Latin American Development: Economy and Society, 1800-2014. 4-5 Units.
The newly independent nations of Latin America began the 19th century with economies roughly equal to the U.S. and Canada. What explains the economic gap that developed since 1800? Why are some Latin American nations rich and others poor and how have societies changed over time? Marxist, dependency, neoclassical, and institutionalist interpretive frameworks are explored. The effects of globalization on Latin American economic growth, autonomy, and potential for social justice are examined and debated.
Same as: HISTORY 279

HISTORY 379D. Modern Brazil: Economy, Society & Culture. 4-5 Units.
This course addresses the history of modern Brazil from independence in 1822 to the present day. The class focuses on theories of economic development, social structure and change, and cultural life in Brazil's diverse regions.
Same as: HISTORY 279D

HISTORY 380B. The Birth of Islam: Authority, Community, and Resistance. 3-5 Units.
This course explores the historical problem of how authority and community (in both the political and religious sense) were defined and challenged in the early Islamic period. Chronological topics covered include: the political, cultural, and religious world of Late Antiquity into which Muhammad was born; the crystallization of a small community of believers who supported Muhammad's message of radical monotheism and aided him in the conquest and conversion of the Arabian Peninsula; the problems of legacy and leadership in the community of the faithful after Muhammad's death; the Arabo-Islamic conquests beyond Arabia during the 7th and early 8th centuries and the establishment of the first Islamic empire under the rule of the Umayyad clan; the Sunni/Shi'a split (and further splits in Shi'ism); the revolution of 750 A.D. and overthrow of the Umayyads by the 'Abbasids; the flourishing of a sophisticated world of learning and culture under the 'Abbasids; and the waning of the 'Abbasids empire in the tenth century and political reconfiguration of the Islamic lands.
Same as: GLOBAL 134, GLOBAL 234, HISTORY 280B

HISTORY 380C. Archives, Documents, and Manuscripts: Sources of Ottoman History. 4-5 Units.
The seminar focuses on Ottoman-Turkish texts in various genres - political and moral treatises, histories, legal canons and court records, imperial decrees and fiscal documents, travelogues, private letters and novellas - gathered from archival sources, manuscripts and printed primary material from the 16th to 19th centuries. Students will be introduced to various paleographical and codicological skills. The seminar explores Ottoman-Turkish manuscripts in the Special Collections at Stanford Library. Knowledge of Turkish and Ottoman-Turkish is required.

HISTORY 381. Economic and Social History of the Modern Middle East. 4-5 Units.
The integration of the Middle East into the world capitalist market on a subordinate basis and the impact on economic development, class formation, and politics. Alternative theoretical perspectives on the rise and expansion of the international capitalist market are combined with possible case studies of Egypt, Iraq, and Palestine.

HISTORY 381E. Oil, Maps, Data: Technology in the Middle East. 4-5 Units.
This course introduces students to a wide range of humanities and social science concepts pertaining to the global study of technology with an emphasis on the Middle East in the 19th, 20th and 21st-centuries. The main body of the course focuses on three case studies namely oil, mapping, and the internet through which issues of power, race, colonialism, financial imperialism, violence, and surveillance will be explored. This colloquium provides a unique perspective on contemporary debates about the politics and ethics of technology through a study of their global circulation.
Same as: HISTORY 281E

HISTORY 382. The United States and the Middle East since 1945. 4-5 Units.
Since the end of WW II, U.S. interests in the Middle East have traditionally been defined as access to oil at a reasonable price, trade and markets, containing the influence of the Soviet Union, and the security of Israel. Is this the full range of U.S. interests? How has the pursuit of these interests changed over time? What forces have shaped U.S. policy? What is the impact of U.S. policy on the region itself?.
Same as: HISTORY 282

HISTORY 382G. Israel from the Margins. 4-5 Units.
Although secular, European Jews form a minority of the population of the State of Israel, and its history is typically narrated and interpreted from that perspective. Israel looks like a rather different place if it is seen and understood from the point of view of Middle Eastern and North African Jews,including those indigenous to the country before the advent of the modern Zionist movement, orthodox and ultra-orthodox Jews, Palestinian Arabs (nearly twenty percent of Israel's population today), migrant workers (about 200,000), and women. This course does not suggest that their perspectives are necessarily more real or true, only that an understanding of Israel that does not adequately consider them is necessarily false.

HISTORY 382J. Disasters in Middle Eastern History. 4-5 Units.
(History 282J is an undergraduate course offered for 5 units; History 382J is a graduate course offered for 4-5 units.) This course explores the history of disasters in the Middle East from the early modern period to the mid-20th-century. We will trace the evolving meanings of disasters and misfortunes by focusing on critical moments -- plagues, fires, earthquakes, wars -- to examine how people have responded to these events, labeled them, and devised strategies to live with or forget them. The course readings follow the evolution of policies and norms together with the articulation of new forms of knowledge and expertise in the wake of catastrophe. Additionally, particular attention will be paid to how modern conceptions of disaster relate to older understandings of apocalypse, as well as to various strands of "disaster reformism," when rethinking tragedy and time helped assert radical agendas for reforming political, economic, social, communal, racial, and gender relations while remodeling social science and intellectual life. The course focuses on various trajectories of disaster thinking in Arabic, Turkish, Greek, Armenian, and Hebrew.
Same as: ANTHRO 382J

HISTORY 383C. The Medieval Middle East: Crusaders, Turks, and Mongols. 3-5 Units.
This course surveys the history of the Middle East from c.950 A.D. to c.1517 A.D., placing particular emphasis on the following questions: What were the social, cultural, and political contexts for conversion to Islam in the Middle Ages? How did the interplay of nomadic and sedentary peoples shape Middle Eastern history? What were the nature of Christian-Muslim relations and the fate of religious minorities in an age of Crusade and Jihad? What were the conditions for the rise, flourishing, and eventual collapse of a ¿world-system¿ in this period (with the lands of the Middle East serving as its nexus)? Chronological topics include: the arrival in the Middle East of the Seljuk Turks, new adopters of Islam and recent nomads; the western European crusades to the Holy Land and the establishment of so-called ¿Crusader States¿ in Syria; the subjugation of Iran to pagan Mongols¿and the Mongols¿ eventual conversion to Islam; the rise to power of a dynasty of Turkish slave-soldiers (mamluks) in Cairo and the political reunification of Syria and Egypt under their rule. Readings will consist of both primary sources and works of modern scholarship.
Same as: GLOBAL 133, GLOBAL 233, HISTORY 283C

HISTORY 383F. Capital and Crisis in the Middle East and the World. 4-5 Units.
(History 383F is a graduate course for 4-5 units; History 283F is an undergraduate course for 5 units.) How do economies change in times of crisis? How do economic crises intersect with pandemics, violence and environmental disaster to redefine the workings of capital? This course approaches these questions through critical reading in the histories of capitalism, crisis, and intersections between legal history and political economy, using the Middle East region as a starting point for the study of global phenomena. We will examine the ways in which constructions like race and ethnicity, gender, and the human/non-human divide have mediated the social and spatial expansion of capital in the region, especially through legal categories and instruments that transform rapidly in times of crisis. Temporally, we will focus our examination between two moments of economic crisis: the ¿long depression¿ of the late nineteenth century and the financial crisis of 2008. We will ground our historical reading in attention to current events, in particular the Middle East¿s ongoing experience of the pandemic-induced global financial crisis of 2020.

HISTORY 383J. Global Islam. 4-5 Units.
(Undergraduates, enroll in 283J; Graduates, enroll in 383J.) Explores the history and politics of Islam in Africa, Asia, Europe, the Middle East and the Americas --- and of the novel connections that have linked Muslim communities across the globe in modern times.

HISTORY 384. The Ottoman Empire: Conquest, Coexistence, and Coffee. 4-5 Units.
(History 284 is an undergraduate course offered for 5 units; History 384 is a graduate course offered for 4-5 units.) The Ottoman Empire ruled the Middle East, North Africa and Eastern Europe from the 15th to the early 20th centuries. How did the Ottoman enterprise appear in the frontier region between Christendom and the Islamic world? How were diverse peoples, religions, and regions integrated under the Ottoman order? Was there an Ottoman Mediterranean and Indian Ocean? How did reform movements in Islamic, Christian and Jewish thinking transform Ottoman societies? Topics include the Ottoman Empire between Europe and Eastern Islamic World; merchants and their markets; elite, urban, rural and nomadic lives; women, family, childhood and sexuality; life, afterlife and dreams; epidemics and natural disasters. Special emphasis will be given to coffee and coffee houses which shaped public life in the Ottoman World since the 16th century. The survey ends with the rise of nationalism, inter-communal violence and the disintegration of the Ottoman world.
Same as: HISTORY 284

HISTORY 384E. Contemporary Muslim Political Thought. 4-5 Units.
This course aims to provide an intellectual history of contemporary Muslim political thought. It presents post-nineteenth century Muslim contributions to political thought. It is designed as a survey of some major thinkers from the Arab world to Iran and Southeast Asia, from Turkey to North America, who sought to interpret Islam's basic sources and Islamic intellectual legacy. Our readings include primary texts by Tahtawi, Tunisi, Afghani, Rida, Huda Sharawi, Qutb, Shariati, and Mernissi among other prominent figures. We will analyze recurring ideas in this body of thought such as decline, civilization, rationality, ijtihad (Islamic independent reasoning), shura (deliberative decision-making), democracy, secularism, Muslim unity, khilafah (caliphate and vicegerency), freedom, equality, and justice. We will discuss their current significance for the ongoing theoretical debates in Muslim political thought, Muslim intellectual history, and comparative political theory.
Same as: HISTORY 284E

HISTORY 384F. Empires, Markets and Networks: Early Modern Islamic World Between Europe and China, 1400-1900. 4-5 Units.
Focuses on political regimes, transregional connections, economic interactions and sociocultural formations in the early modern Islamic Afro-Eurasia. Topics include complex political-economic systems of the Ottoman, Safavid and Mughal empires and expansion of Turco-Persianate political and literary cultures across the Post-Mongolian Eurasia; experiences of various Muslim, Christian, Jewish and Hindu, as well as urban, rural and nomadic communities and networks under Islamicate political regimes; consolidation of transregional commerce and cultural exchange with the proliferation of networks of merchants, scholars and sufis; new tendencies in knowledge, individual, gender, family, social order, and religion; incorporation of the Islamic world in the global economy; Muslims in the age of revolutions; political and social reforms and consolidation of Muslim internationalism in the age of imperialism.
Same as: HISTORY 284F

HISTORY 385A. Core Colloquium in Jewish History, 17th to 19th Centuries. 4-5 Units.
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Same as: JEWISHST 385A

HISTORY 385B. Graduate Colloquium in Jewish History, 19th-20th Centuries. 4-5 Units.
Instructor consent required.
Same as: JEWISHST 385B

HISTORY 385C. Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV. 4-5 Units.
(HISTORY 185B is 5 units; HISTORY 85B IS 3 units.) Who are American Jews as depicted in popular media -- film, television, etc. -- since the Second World War? How are their religion, politics, mores, and practices represented and what ways, if at all, do such portraits reflect historical trends among Jews and society in general? What can be learned from film or tv about Jewish identity, notions of Jewish power and powerlessness, communal cohesiveness and assimilation, sexuality and the wages of intermarriage or race?.
Same as: CSRE 185B, HISTORY 185B, JEWISHST 185B, REES 185B, SLAVIC 183

HISTORY 385K. History of Modern Antisemitism: Nineteenth and Twentieth Centuries. 4-5 Units.
The articulations of anti-Jewish hatred from the advent of Jewish emancipation in Europe. The legacy of premodern Christian demonization and its modern protean transformations as they penetrated and annexed new currents of ideology, notions of identity (social, national, racial), taste, and aesthetics. A history of ideas, representations, and stereotypes, and their relation to historical experience, action, and mobilization. Europe is the focus; case studies also include the Middle East and elsewhere.

HISTORY 386B. The Ottoman Empire in the Age of Revolutions, 1750-1850. 4-5 Units.
Investigates the Ottoman World (the Balkans and the Middle East under the Ottoman Empire) in the Age of Revolutions in the global context. While the Ottoman World is the primary interest, developments in Europe, India and China are also discussed in a comparative perspective. Topics include military and fiscal transformation; regionalism; urban life and formations of public spheres; political crisis, social disturbances and political violence; transformation in the ethnoreligious structures, gender relations and family life; protonationalism in the Balkans and Egypt.

HISTORY 387K. Gentlemen and Jews: History of the Jews of England. 4-5 Units.
Focuses on key chapters in the cultural and political histories of Britain and itsnnJews, between 1650 and 1950 and examines the advantages, as well as possible difficulties, that emerge when connecting Anglo-Jewish history to mainstream British history. What is unique about Jewish emancipation in England, and what are its connections to the formation of British national identity? Is there unique path in which Jewish Enlightenment developed in England? What was the contribution of Jews to British Imperialism? Is there a cultural affinity betweennnEnglish philosemitism and liberalism?.

HISTORY 390. North Korea in Historical Perspective. 4-5 Units.
This colloquium will approach North Korea from a longer historical perspective and also discuss the country's current crisis and its future. Themes will include the northern region in colonial Korea, Kim Il Sung and Manchurian guerrillas, the USSR and North Korean Revolution, the reconstruction after the Korean War, Juche ideology and the political system, the everyday life of North Korea people, the Cold War and North Korean diplomacy, culture and mass performance, the great famine and economy in transition, the military and nuclear development, and refugees and the succession of leadership.
Same as: HISTORY 290

HISTORY 390A. Major Topics in Modern Chinese History: Qing/ Republican Transition. 4-5 Units.
Continuities and discontinuities in society, economy, politics, culture, and thought during the transition from the Qing dynasty to the republic. May be repeated for credit.

HISTORY 391. East Asia in the Early Buddhist Age. 4-5 Units.
Evolution of cities in imperial China through early imperial, medieval, and early modern periods. Topics include physical structure, social order, cultural forms, economic roles, relations to rural hinterlands, and the contrast between imperial capitals and other cities. Comparative examination of cases from European history.

HISTORY 391B. The City in Imperial China. 4-5 Units.
The evolution of cities in the early imperial, medieval, and early modern periods. Topics include physical structure, social order, cultural forms, economic roles, relations to rural hinterlands, and the contrast between imperial capitals and other cities. Comparative cases from European history. Readings include primary and secondary sources, and visual materials.

HISTORY 391C. Early Imperial China. 4-5 Units.
The first millennium of imperial China, what endured over the centuries, and the major changes that took place in the political, social, and intellectual realms. Topics include the evolving geographic and environmental background, cities, the countryside, kinship, relations with the outer world, religion, philosophy,and literature. Also examines the nature of empire as a distinctive political form.

HISTORY 391G. Pre-Modern Chinese Warfare. 4-5 Units.
This course examines the evolution of warfare in China, and its impact on the evolving political and social orders, from the earliest states through the Mongol conquest. It will study how changing military technology was inextricably linked to changes in the state and society. It will also look at changing Chinese attitudes towards warfare over the same period, from the celebration of heroism, through writing about warfare as an intellectual art, to the links of militarism with steppe peoples/.
Same as: HISTORY 291G

HISTORY 391K. Korean History and Culture before 1900. 3-5 Units.
This course serves as an introduction to Korean culture, society, and history before the modern period. It begins with a discussion of early Korea and controversies over Korean origins; the bulk of the course will be devoted to the Chos'n period (1392-1910), that from the end of medieval Korea to the modern period. Topics to be covered include: Korean national and ethnic origins, the role of religious and intellectual traditions such as Buddhism and Confucianism, popular and indigenous religious practices, the traditional Korean family and social order, state and society during the Chos'n dynasty, vernacular prose literature, Korean's relations with its neighbors in East Asia, and changing conceptions of Korean identity.nThe course will be conducted through the reading and discussion of primary texts in English translation alongside scholarly research. As such, it will emphasize the interpretation of historical sources, which include personal letters, memoirs, and diaries, traditional histories, diplomatic and political documents, along with religious texts and works of art. Scholarly work will help contextualize these materials, while the class discussions will introduce students to existing scholarly debates about the Korean past. Students will be asked also to examine the premodern past with an eye to contemporary reception. The final project for the class is a film study, where a modern Korean film portraying premodern Korea will be analyzed as a case study of how the past works in public historical memory in contemporary Korea, both North and South. An open-ended research paper is also possible, pending instructor approval.
Same as: HISTORY 291K, KOREA 158, KOREA 258

HISTORY 392A. Gender in Modern South Asia. 4-5 Units.
Gender is crucial to understanding the political, cultural, and economic trajectories of communities in colonial and postcolonial South Asia. Throughout this course, we will ask a series of questions: How does gender structure conceptions of home, community, and homeland in South Asia? How do gender and religion become represented in movements for nation-states? How does women's participation in anticolonial politics and fights for equal representation in postcolonial nation-states affect our understanding of gender in South Asia today? Readings examine the creation and impact of religious personal law under British colonial rule, the role of masculinity in the British-Indian army, perspectives on religion and clothing, the interplay of rights movements and anti-colonialism, and the status of women in postcolonial India, Pakistan, and Bangladesh. Students will also explore a range of primary sources, including political treatises, short stories, didactic manuals, autobiographies, and travelogues.

HISTORY 392D. Japan in Asia, Asia in Japan. 4-5 Units.
(History 292D is an undergraduate course offered for 5 units; History 392D is a graduate course offered for 4-5 units.) How Japan and Asia mutually shaped each other in the late 19th and 20th centuries. Focus is on Japanese imperialism in Asia and its postwar legacies. Topics include: pan-Asianism and orientalism; colonial modernization in Korea and Taiwan; collaboration and resistance; popular imperialism in Manchuria; total war and empire; comfort women and the politics of apology; the issue of resident Koreans; and economic and cultural integration of postwar Asia.
Same as: HISTORY 292D

HISTORY 392E. The Historical Roots of Modern East Asia. 4-5 Units.
Focus is on China and Japan before and during their transition to modernity. The populous, urbanized, economically advanced, and culturally sophisticated Ming empire and Muromachi shogunate in the 16th century when Europeans first arrived. How the status quo had turned on its head by the early 20th century when European and American steamships dominated the Pacific, China was in social and political upheaval, and Japan had begun its march to empire.
Same as: HISTORY 92A

HISTORY 392F. Culture and Religions in Korean History. 4-5 Units.
This colloquium explores the major themes of Korean history before 1800 and the role of culture and religions in shaping the everyday life of Chosôn-dynasty Koreans. Themes include the aristocracy and military in the Koryô dynasty, Buddhism and Confucianism in the making of Chosôn Korea, kingship and court culture, slavery and women, family and rituals, death and punishment, and the Korean alphabet (Hangûl) and print culture.
Same as: HISTORY 292F

HISTORY 393. Frontier Expansion and Ethnic Statecraft in the Qing Empire. 4-5 Units.
The legacy of the Qing dynasty in the territorial boundaries claimed by the People's Republic of China including the frontier zones that lie outside China proper. How the Qing acquired and ruled its frontier territories. Growth and migration of the Han Chinese population. How the dynasty's Manchu rulers managed ethnic difference. Consequences of Qing expansionism and ethnic statecraft for subject peoples and for the dynasty itself. At what point and by what processes did the Qing become China.
Same as: CHINA 393

HISTORY 393F. Chinese Politics and Society. 3-5 Units.
(Doctoral students register for 317B.) This seminar surveys the major turning points that have shaped China's evolution since 1949. The topics covered include the Great Leap Forward, the Cultural Revolution, the political and economic turning point of the early 1980s, the political crisis of 1989, the restructuring of the state sector since the 1990s, and the patterns of protest that have accompanied the rapid social changes over the past three decades. We will conclude the course with current debates about China's future.
Same as: HISTORY 293F, SOC 217B, SOC 317B

HISTORY 394D. Manchuria: Cradle of Conflict, Cockpit of Asia. 4-5 Units.
How did Manchuria become Chinese? This course utilizes the dual waves of early twentieth-century writings and a wide array of recent scholarship dealing with Manchuria to explore the formation of nation-states out of the Qing and Japanese empires in Northeast Asia through the lenses of opium, migration, cities, warlords, and memoir. This course will be of interest to students concerned with developing transcultural understandings of Northeast Asian history.
Same as: HISTORY 294D

HISTORY 394E. The Past in Ancient China. 4-5 Units.
Introduction to the most important sources in the early Chinese historiographical tradition (broadly conceived), examining how the past was mobilized across a range of textual genres including poetry, speeches, philosophy, narrative, and rhetoric. Prior knowledge of premodern Chinese history and culture is not required. All reading materials will be in English; no knowledge of modern or classical Chinese is expected.
Same as: HISTORY 294E

HISTORY 395B. Readings in Early Modern Japanese History. 4-5 Units.
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HISTORY 395J. Gender and Sexuality in Chinese History. 4-5 Units.
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Same as: CHINA 395, FEMGEN 395J

HISTORY 396D. Historiography of Modern Japan. 4-5 Units.
Introduces students to the major historical problems and historiographic trends in the study of modern Japan from the Meiji period to the present. Themes include approaches to late Meiji culture and politics, the formation of imperial subjects and citizens, agrarian society and politics, gender in modern Japan, empire and modernity, total war and transwar state and society, U.S. occupation, and postwar Japan.

HISTORY 397. The Cold War and East Asia. 5 Units.
Explores how East Asia negotiated superpower rivalry and global ideological competition during the Cold War. Considers the ways in which China, Japan, and Korea were more than battlegrounds for US-Soviet contestation and played active roles in defining the nature and dynamics of the conflict. Re-examines conventional narratives and periodizations against alternative conceptual models and interpretive frameworks highlighting the constructed nature of the struggle as well as the role of historical and cultural factors in shaping the East Asian experience.
Same as: HISTORY 297

HISTORY 398C. Race, Gender, & Sexuality in Chinese History. 5 Units.
This course examines the diverse ways in which identities--particularly race, ethnicity, gender and sexuality have been understood and experienced in Chinese societies, broadly defined, from the imperial period to the present day. Topics include changes in women's lives and status, racial and ethnic categorizations, homosexuality, prostitution, masculinity, and gender-crossing.
Same as: ASNAMST 298, CSRE 298G, FEMGEN 298C, HISTORY 298C

HISTORY 398E. Chinese Pop Culture: A History. 4-5 Units.
This discussion course examines the evolution of popular culture in the Chinese-speaking world and diaspora from the late imperial era to the present. Analyzing myth, literature, medicine, music, art, film, fashion, and internet culture will help students understand the revolutionary social and political changes that have transformed modern East Asia.

HISTORY 399E. Preparing for International Field Research: Public Svc or Research, Electronic Version. 1 Unit.
Restricted to students studying at a Stanford Overseas Studies campus; same course content as HISTORY 299X. Problems involved in research abroad: ethical issues; safety; security and conduct; human subjects protocol. Methodologies of research: interviewing, networking, case studies, participant observation, large surveys. Prerequisite: consent of instructor.

HISTORY 399P. Mastering Uncertainty: The Power of Archival Thinking. 1 Unit.
When confronted with chaos and uncertainty, do you know how to stay calm, ask the right questions, and find the answers? Archival researchers do. Do you realize that less than 1 percent of primary sources have been digitized, and that 99 percent still exist in their original formats in collections, small and large, scattered all across the world? Do you know how to find them and use them? Archival researchers do. Through hands-on exercises in Stanford's archives, students learn the fundamentals of archival research. Pursuing their own research interests, students will learn to become self-sufficient, independent researchers capable of navigating uncertainty and producing knowledge--a skill set in demand no matter what their major or post-graduate plans.
Same as: HISTORY 299P

HISTORY 399T. Tough Questions. 1 Unit.
A H&S initiative course.
Same as: HISTORY 299T

HISTORY 399W. Graduate Directed Reading. 1-10 Unit.
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HISTORY 401A. Spatial History: Concepts, Methods, Problems. 4-5 Units.
What can digital mapping and spatial analysis bring to history? How have historians written spatial history in the past? How do scholars in other disciplines deal with space and what can we learn from them? The course provides students with conceptual and technical skills in spatial history. As part of the exercise to think spatially about the past, students will receive training in Geographic Informational Science (GIS) and develop their own spatial history projects. No prior technical skills are needed for this course.
Same as: HISTORY 201B

HISTORY 401B. Spatial History, Part II. 4-5 Units.
Prerequisite: 401A.

HISTORY 403A. Materialities of Power, Part I. 4-5 Units.
How is power made material? And how do material things--objects, commodities, technologies, and infrastructures --reflect, change, consolidate, or distribute power? This research seminar is aimed at PhD students in history, anthropology, and STS who are working on such questions. All geographic specialties welcome. A small amount of common reading will launch the course, whose main goal is to guide students towards producing a research paper draft that's close to submission-ready for a journal. Along the way, we'll also address practical topics, including how to pick and submit to a journal, how to present a paper, and more.
Same as: ANTHRO 402D

HISTORY 403B. Materialities of Power, Part II. 4-5 Units.
How is power made material? And how do material things --objects, commodities, technologies, and infrastructures--reflect, change, consolidate, or distribute power? This research seminar is aimed at PhD students in history, anthropology, and STS who are working on such questions. All geographic specialties welcome. A small amount of common reading will launch the course, whose main goal is to guide students towards producing a research paper draft that's close to submission-ready for a journal. Along the way, we'll also address practical topics, including how to pick and submit to a journal, how to present a paper, and more.
Same as: ANTHRO 402F

HISTORY 406. Graduate Research Seminar on Colonial Law. 4-5 Units.
Prerequisite: HISTORY 306G.

HISTORY 421A. Early Modern Russia. 4-5 Units.
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HISTORY 422A. Research Seminar on the History of the Russian Empire. 4-5 Units.
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HISTORY 422B. Research Seminar in Imperial Russia. 4-5 Units.
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HISTORY 424A. The Soviet Civilization. 4-5 Units.
(History 224A is an undergraduate course offered for 5 units; History 424A is a graduate course offered for 4-5 units.) Socialist visions and practices of the organization of society and messianic politics; Soviet mass state violence; culture, living and work spaces. Primary and secondary sources. Research paper or historiographical essay.
Same as: HISTORY 224A, REES 224A

HISTORY 424B. The Soviet Civilization, Part 2. 4-5 Units.
Prerequisite: HISTORY 224A/424A.
Same as: HISTORY 224D

HISTORY 424C. The End of Communism in Europe. 4-5 Units.
Causes, course, and consequences.

HISTORY 430A. Graduate Research Seminar: Early Modern Europe. 3-5 Units.
Students will begin a research project on any aspect of early modern European history, 1400-1800, by taking HISTORY 430A in winter quarter as the first quarter of this two-quarter sequence. Enrollment by permission of instructor.

HISTORY 431. Early Modern Things. 4-5 Units.
How do objects reveal their histories? What can be learned about the past by studying things? The material culture of early modern Europe, ca 1450-1750. Recent work on the circulation, use, and consumption of things, starting with the Columbian exchange which expanded the material horizons of the early modern world in the late 15th century, exploring challenges to the meaning of things in the age of the Reformation and Scientific Revolution, and ending with the birth of consumer society in the 18th century How did the meaning of things and people's relationships to them change over these centuries? What objects, ordinary and extraordinary, secular and sacred, natural and man-made, came to define the emerging features of the early modern world?.

HISTORY 433A. Research Seminar in Modern Europe. 4-5 Units.
Students will complete an article-length research paper based on primary sources.

HISTORY 433B. Research Seminar in Modern Europe. 4-5 Units.
Prerequisite: HISTORY 433A.

HISTORY 438. European History Workshop. 1 Unit.
All European history graduate students in residence register for this weekly workshop, at which dissertation chapters and prospectuses, papers, and grant proposals by students and faculty are read and discussed.

HISTORY 439A. Graduate Research Seminar: Modern Britain and the British Empire. 4-5 Units.
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HISTORY 439B. Graduate Research Seminar: Modern Britain and the British Empire II. 4-5 Units.
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HISTORY 443A. Human Origins: History, Evidence, and Controversy. 4-5 Units.
Research seminar. Debates and controversies include: theories of human origins; interpretations of fossils, early art, and the oldest tools; the origin and fate of the Neanderthals; evolutionary themes in literature and film; visual rhetoric and cliché in anthropological dioramas and phyletic diagrams; the significance of hunting, gathering, and grandmothering; climatological theories and neocatastrophic geologies; molecular anthropology; the impact of racial theories on human origins discourse. Background in human evolution not required.
Same as: HISTORY 243S

HISTORY 444. Graduate Research Seminar: Gender in Science, Medicine, and Engineering. 5 Units.
Theory and practice of gender in STEM. 1. "Fix the Numbers of Women" focuses on increasing women's participation; 2. "Fix the Institutions" promotes gender equality in careers through structural change in research organizations; 3. "Fix the Knowledge" or "gendered innovations" stimulates excellence in science and technology by integrating gender analysis into research. Seminar explores harnessing the creative power of gender analysis to enhance knowledge and spark innovation.
Same as: FEMGEN 444

HISTORY 444C. The History of the Body in Science, Medicine, and Culture. 4-5 Units.
The human body as a natural and cultural object, historicized. The crosscultural history of the body from the 18th century to the present. Topics include: sciences of sex and race; medical discovery of particular body parts; human experimentation, foot binding, veiling, and other bodily coverings; thinness and obesity; notions of the body politic.
Same as: HISTORY 244C

HISTORY 445A. Research Seminar in African History. 4-5 Units.
Primary sources such as government records and missionary archives. Students present work in progress. Prerequisite: consent of instructor.

HISTORY 445B. Research Seminar in African History. 4-5 Units.
Primary sources such as government records and missionary archives. Students present work in progress. Prerequisite: consent of instructor.

HISTORY 448A. Colonial States and African Societies, Part I. 4-5 Units.
(History 248S is an undergraduate course offered for 5 units; History 448A is a graduate course offered for 4-5 units.) Colonialism set in motion profound transformations of African societies. These transformations did not occur immediately following military conquest, nor did they occur uniformly throughout the continent. This research seminar will focus directly on the encounter between the colonial state and African societies. The seminar will examine problems of social transformation, the role of the colonial state, and the actions of Africans. Following four weeks of collloquim style discussion, students then embark on independent research on the encounter between one colonial state and its constituent African societies.

HISTORY 448B. Colonial States and African Societies, Part II. 4-5 Units.
Second part of the research seminar offered in the Winter. Students continue their research and present their penultimate drafts in week 8.

HISTORY 452A. Graduate Research Seminar: American Cultural and Intellectual History. 4-5 Units.
Major methods and issues. Goal is to produce a research paper based on primary sources suitable for inclusion in a doctoral dissertation or submission to a peer-reviewed scholarly journal. Topics include: compiling primary and secondary source bibliographies; primary and secondary source issues; and how to articulate an argument. Students produce a prospectus by the end of Spring Quarter. Summer Quarter meetings to discuss outlines, drafts, and problems, culminating in presentation of papers in scholarly conference format.

HISTORY 459A. Grad Research Seminar in U.S. History. 4-5 Units.
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HISTORY 460. Research Seminar in America in the World. 4-5 Units.
Ways to place American history in an international context. Comparative, transnational, diplomatic, and world systems are approaches to complete a research paper based on research into primary materials. Historical methodologies, research strategies, and essay projects. May be repeated for credit.

HISTORY 468A. Graduate Research Seminar: U.S. History in the 20th Century. 4-5 Units.
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HISTORY 468B. Graduate Research Seminar: U.S. History in the 20th Century Part II. 4-5 Units.
Prerequisite: History 468A.

HISTORY 471A. Environmental History of Latin America. 5 Units.
What role did the natural environment play in the emergence of Latin America as a distinct geographical and socio-cultural world region? How do we analyze the historical relationship between the regions rich and seemingly abundant natural resources and its status as underdeveloped? What historical consequences did this relationship have and what alternative, more sustainable developmental paths can we envision for the future in light of the past that we will study? In this course, students will become familiar with the historiography on Brazil, Mexico, Peru, Cuba and Honduras that has explored these questions through a variety of approaches, methodologies and points of view.

HISTORY 471B. Environmental History of Latin America. 5 Units.
What role did the natural environment play in the emergence of Latin America as a distinct geographical and socio-cultural world region? How do we analyze the historical relationship between the region's rich and seemingly abundant natural resources and its status as 'underdeveloped'? What historical consequences did this relationship have and what alternative, more sustainable developmental paths can we envision for the future in light of the past that we will study? In this course, students will become familiar with the historiography on Brazil, Mexico, Peru, Cuba and Honduras that has explored these questions through a variety of approaches, methodologies and points of view.

HISTORY 481. Research Seminar in Ottoman and Middle East History. 4-5 Units.
Student-selected research topics. May be repeated for credit.
Same as: JEWISHST 287S, JEWISHST 481

HISTORY 486A. Graduate Research Seminar in Jewish History. 4-5 Units.
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Same as: JEWISHST 486A

HISTORY 486B. Graduate Research Seminar in Jewish History. 4-5 Units.
Prerequisite: HISTORY 486A.
Same as: JEWISHST 486B

HISTORY 491A. Modern Korea Research Seminar. 4-5 Units.
This graduate seminar prepares students to undertake research using Korean-language sources on a variety of themes in modern Korea. Students will identify characteristics of major online and offline archives in Korean studies, learn essential skills in investigating primary sources, and analyze selected sample documents in class.

HISTORY 491B. Modern Korea Research Seminar. 4-5 Units.
This graduate seminar prepares students to undertake research using Korean-language sources on a variety of themes in modern Korea. Students will identify characteristics of major online and offline archives in Korean studies, learn essential skills in investigating primary sources, and analyze selected sample documents in class.

HISTORY 496A. Research Seminar in Chinese History. 4-5 Units.
First part of a two part sequence. Primary sources and research methods to be used in the study of modern Chinese history.

HISTORY 496B. Research Seminar in Chinese History. 4-5 Units.
Second part of a two part sequence. Primary sources and research methods to be used in the study of modern Chinese history. Prerequisite: HISTORY 496A.

HISTORY 497A. Maps and Gazetteers as Sources for East Asian History. 4-5 Units.
For graduate students of early modern or modern East Asia. Includes weekend workshop on Chinese historical GIS with Harvard's Peter Bol. Students work with the Stanford Spatial History Lab to develop analytical techniques. Prerequisite: background in GIS.

HISTORY 497B. Maps and Gazetters as Sources for East Asian History, Part 2. 4-5 Units.
Prerequisite: HISTORY 497A.

HISTORY 498C. Japanese Imperial Archives, Part 1. 4-5 Units.
First part of a two-quarter research graduate seminar on Japanese imperialism in Asia. Students explore different types of archives, from national and research libraries to online databases; learn various methods of research including oral history; and translate and analyze sample documents including government publications, company histories, police records, and media sources. Prerequisite: advanced reading ability in Japanese.

HISTORY 498D. Japanese Imperial Archives, Part 2. 4-5 Units.
Second part of a two-quarter research graduate seminar on Japanese imperialism in Asia. Students complete research papers based on research conducted for History 498C; the class meets occasionally to report on progress and discuss working drafts. Prerequisite: History 498C.

HISTORY 499X. Graduate Research. 1-10 Unit.
Units by arrangement. May be repeated for credit.

HISTORY 802. TGR Dissertation. 0 Units.
Units by arrangement.

HISTORY AND PHILOSOPHY OF SCIENCE

Courses offered by the Program in History and Philosophy of Science are listed under the subject code HPS on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=HPS&filter-catalognumber-HPS=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=HPS&filter-catalognumber-HPS=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=HPS&filter-catalognumber-HPS=on).

The Program in History and Philosophy of Science (HPS) teaches students to examine the sciences, medicine and technology from a number of perspectives, conceptual, historical and social. The community of scholars includes core faculty and students in History and Philosophy and affiliated members in Classics, Anthropology, English, Political Science, Communication, and other disciplines. Together, they draw upon the multiple methods of their disciplines to study the development, functioning, applications, and social and cultural engagements of the sciences.

Stanford's Program in History and Philosophy of Science is a collaborative enterprise of the departments of History and Philosophy. Each department has its own undergraduate and graduate degree programs in this area, but these overlap and interact through the structure of requirements, advising, team-taught courses, an active graduate student community and a shared colloquium series (http://HPS.stanford.edu/colloquia.html).

The program's courses span from antiquity to the late 20th century, with emphasis on:

- ancient science
- Renaissance science
- the Scientific Revolution
- Enlightenment and transatlantic science
- history of medicine and the body
- history and philosophy of biology
- history and philosophy of modern physics
- history of the philosophy of science from the early modern period to the present
- central issues in contemporary philosophy of science
- gender, science, and technology

Undergraduate Degrees

HPS offers undergraduates the opportunity to study science, medicine and technology by combining scientific and humanistic perspectives in a single program. Students can pursue HPS through the two departments (History and Philosophy) that coordinate this interdisciplinary program. The HPS Program offers students an in-depth understanding of the nature and evolution of scientific ideas, practices, and institutions; their contemporary significance to intellectual life; and their material transformation of the modern world.

The Department of History offers an interdisciplinary track in History of Science, and Medicine (p. 1550). This track is especially well suited to students who wish to combine history and science, or who are interested in studying the history of science and medicine in combination with premed science requirements in preparation for a future career in medicine and public health.

The Department of Philosophy offers a special program in History and Philosophy of Science (p. 1864). This program is especially well suited to students who want to combine their concentration in Philosophy with the study of science and its history.

Students interested in HPS should contact the faculty advisors (in 2020-21 Paula Findlen for History and Michael Friedman for Philosophy) to discuss the undergraduate program.

Graduate Degrees

Graduate students in the Program in History and Philosophy of Science can pursue a Ph.D. either in History, through its Ph.D. concentration in History of Science, Medicine, and Technology, or in Philosophy, through its Ph.D. subplan in History and Philosophy of Science. Diplomas will be issued by the respective departments, but the HPS study will not be noted on the transcript nor on the diploma.

Graduate students in the Program in History and Philosophy of Science that wish to pursue a Ph.D. in Philosophy must fulfill Departmental degree requirements (p. 1870) and the following requirements:

1. HPS colloquium series attendance
2. One of the following graduate level Philosophy of Science courses: 263, 264, 264A, 265, 265C, 266, 267A or 267B
3. One elective seminar in the history of science
4. One elective seminar (in addition to the course satisfying requirement 2) in philosophy of science

Philosophy Ph.D. students declaring the HPS subplan in Axess will have it appear on the official transcript but is not printed on the diploma.

The Program in History and Philosophy of Science degree requirements for the Ph.D. in History of Science, Medicine and Technology, in addition to the general History Department Ph.D. degree requirements (p. 1560), are:

1. HPS colloquium series attendance
2. the History Department core seminar in History of Science, Medicine and Technology
3. Four other courses in the history of science, technology and/or medicine
4. One course in the philosophy of science
5. Four additional courses in a given geographical or national field of research, one of which must be a core course

The courses described above must include two research seminars, at least one of which must be in the history of science, technology and/or medicine. Students are expected to write papers on substantially different topics for each seminar. You should also aim to present your research at the annual meeting of a professional society associated with the history of science, technology and/or medicine sometime during your third or fourth year. For more information, see the program's (http://hps.stanford.edu/grad.html) web site.

Bachelor of Arts Programs

HPS offers undergraduates the opportunity to study science, medicine and technology by combining scientific and humanistic perspectives in a single program. Students can pursue HPS through the two departments (History and Philosophy) that coordinate this interdisciplinary program. The HPS Program offers students an in-depth understanding of the nature and evolution of scientific ideas, practices, and institutions; their contemporary significance to intellectual life; and their material transformation of the modern world.

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Course Sequences

The following courses are offered in 2020-21 in the area of History and Philosophy of Science.

Introductory

		Units
HPS/PHIL 60	Introduction to Philosophy of Science	5
HPS/PHIL 61	Philosophy and the Scientific Revolution	5

Science in History

This sequence is designed to introduce students to the history of Science from antiquity to the 20th century. Students are advised to take most or all of this sequence as a core foundation.

		Units
CLASSICS 197	Aristotle's Logic	3-5
HISTORY 40/140	World History of Science	3
HISTORY 40A/140A	The Scientific Revolution	3
HISTORY 42N	The Missing Link	4
HISTORY 44/144	Sex, Gender, and Intersectional Analysis in Science, Medicine, Engineering, and Environment	3
HISTORY 140	World History of Science	5
HISTORY 200D	Doing the History of Science and Technology	5
HISTORY 202B/302B	Coffee, Sugar, and Chocolate: Commodities and Consumption in World History, 1200-1800	4-5
HISTORY 203C/303C	History of Ignorance	5
HISTORY 234P	The Age of Plague: Medicine and Society, 1300-1750	5
HISTORY 235D	When Worlds Collide: The Trial of Galileo	4-5
HISTORY 240/340	The History of Evolution	4-5
HISTORY 342	Darwin in the History of Life	4-5
HISTORY 431	Early Modern Things	4-5
HISTORY 343C/243C	People, Plants, and Medicine: Colonial Science and Medicine	4-5
STS 200P	Leonardo's World: Science, Technology and Art	4-5

Medicine in History

This sequence is designed to introduce students to the history of medicine from antiquity to the 20th century.

		Units
AMSTUD 41Q	Madwomen and Madmen: Gender and the History of Mental Illness in the U.S.	3
HISTORY 234P	The Age of Plague: Medicine and Society, 1300-1750	5
HISTORY 243G/343G	Tobacco and Health in World History	4-5
HISTORY 244C	The History of the Body in Science, Medicine, and Culture	4-5

Philosophical Perspectives on Science, Medicine, and Technology

This sequence is designed to introduce students to the philosophy of science. Students are advised to take HPS 61 Philosophy and the Scientific Revolution above as a starting point, and combine a number of the electives listed below in conjunction with courses in the other concentrations that address their specific interests.

		Units
PHIL 125/225	Kant's First Critique	4
PHIL 162	Philosophy of Mathematics	4
PHIL 164/264	Central Topics in the Philosophy of Science: Theory and Evidence	4
PHIL 165/265	Philosophy of Physics: Space and Time	4
PHIL 167A/267A	Philosophy of Biology	4
PHIL 167B/267B	Philosophy, Biology, and Behavior	4
PHIL 224	Kant's Philosophy of Physical Science	2-4
PHIL 224A	Mathematics in Kant's Philosophy	4
PHIL 263	Significant Figures in Philosophy of Science: Einstein	4
PHIL 265	Philosophy of Physics: Space and Time	4
PHIL 265C	Philosophy of Physics: Probability and Relativity	4
PHIL 266	Probability: Ten Great Ideas About Chance	4
PHIL 324	Kant's System of Nature and Freedom	4
PHIL 326	Kant's Transcendental Deduction	4
PHIL 327	Scientific Philosophy: From Kant to Kuhn and Beyond	2-4
PHIL 361	Social Dimensions of Scientific Knowledge	4
PHIL 362	Grad Seminar on Philosophy of Science	4
PHIL 365	Seminar in Philosophy of Physics	2-4
PHIL 374F	Science, Religion, and Democracy	4

Advanced Course Sequences

Contemporary Perspectives on Science, Medicine and Technology

The following courses focus on contemporary cultural and social science approaches to science, technology, and medicine.

		Units
HPS 199	Directed Reading	1-15
HPS 299	Graduate Individual Work	1-15
HISTORY 44	Sex, Gender, and Intersectional Analysis in Science, Medicine, Engineering, and Environment	3
HISTORY 203F	Racial Justice in the Nuclear Age	5
HISTORY 204D	Advanced Topics in Agnotology	4-5
HISTORY 243S/443A	Human Origins: History, Evidence, and Controversy	4-5
HISTORY 302	Technopolitics: Materiality, Power, Theory	4-5
HISTORY 344F	Intersectional Design: An Expanded Approach to Gender in Tech	4-5
HISTORY 403A	Materialities of Power, Part I	4-5
HISTORY 403B	Materialities of Power, Part II	4-5
HISTORY 444	Graduate Research Seminar: Gender in Science, Medicine, and Engineering	5

Graduate Degrees

Graduate students in the Program in History and Philosophy of Science can pursue a Ph.D. either in History, through its Ph.D. concentration in History of Science, Medicine, and Technology, or in Philosophy, through its Ph.D. subplan in History and Philosophy of Science. Diplomas are issued by the respective departments, but the HPS study is not noted on the transcript nor on the diploma.

Graduate students in the Program in History and Philosophy of Science that wish to pursue a Ph.D. in Philosophy must fulfill Philosophy Department Ph.D. requirements (p.) and the following requirements:

1. HPS colloquium series attendance
2. One of the following graduate level Philosophy of Science courses: 263, 264, 264A, or 266
3. One elective seminar in the history of science
4. One elective seminar (in addition to the course satisfying requirement 2) in philosophy of science

Philosophy Ph.D. students declaring the HPS subplan via the Declaration or Change to a Field of Study form (http://studentaffairs.stanford.edu/sites/default/files/registrar/files/grad-subplan-change.pdf) will have it appear on the official transcript but is not printed on the diploma.

The Program in History and Philosophy of Science degree requirements for the Ph.D. in History of Science, Medicine and Technology, in addition to the general History Department Ph.D. degree requirements (p.), are:

1. HPS colloquium series attendance
2. The History Department core seminar in History of Science, Medicine and Technology
3. Four other courses in the history of science, technology and/or medicine
4. One course in the philosophy of science
5. Four additional courses in a given geographical or national field of research, one of which must be a core course

The courses described above must include two research seminars, at least one of which must be in the history of science, technology and/or medicine. Students are expected to write papers on substantially different topics for each seminar. You should also aim to present your research at the annual meeting of a professional society associated with the history of science, technology and/or medicine sometime during your third or fourth year. For more information, see the program's (http://HPST.stanford.edu/grad.html) web site.

Course Sequences

See the Bachelor's tab for all History and Philosophy of Science courses offered in this academic year.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

The Program in History and Philosophy of Science refers students to the policies of the Department of History (p. 1562) and the Department of Philosophy (p. 1873) for COVID-19 policies related to their degree programs.

Co-chairs: Paula Findlen (History), Michael Friedman (Philosophy)

Directors of Graduate Studies: Paula Findlen (History), Michael Friedman (Philosophy)

Committee-in-Charge: Paula Findlen (History), Michael Friedman (Philosophy), Helen Longino (Philosophy), Reviel Netz (Classics), Robert Proctor (History), Jessica Riskin (History), Thomas Ryckman (Philosophy)

Program Committee: Paula Findlen (History), Michael Friedman (Philosophy), Helen Longino (Philosophy), Tom Mullaney (History), Reviel Netz (Classics), Robert Proctor (History), Jessica Riskin (History), Thomas Ryckman (Philosophy), Londa Schiebinger (History)

Professors: Keith Baker (History), Paula Findlen (History), Michael Friedman (Philosophy), Gabrielle Hecht (CISAC, History), David Holloway (History, Institute for International Studies, Political Science), Helen Longino (Philosophy), Reviel Netz (Classics), Robert Proctor (History), Jessica Riskin (History), Londa Schiebinger (History), Fred Turner (Communication), Richard White (History), Caroline Winterer (History)

Associate Professors: Thomas Mullaney (History), Sarah Jain (Anthropology), Priya Satia (History)

Professor (Teaching): Thomas Ryckman (Philosophy)

Professor (Research): Rega Wood (Philosophy, emerita)

Senior Lecturer: Paul Edwards (STS)

Other Affiliation: Henry Lowood (Stanford University Libraries), Larry Lagerstrom (UAR)

Visiting Scholars: Adrienne Mayor (Classics)

Overseas Studies Courses in History and Philosophy of Science

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

	Units
explorecourses:OSP hps	

Courses

HPS 60. Introduction to Philosophy of Science. 5 Units.
This course introduces students to tools for the philosophical analysis of science. We will cover issues in observation, experiment, and reasoning, questions about the aims of science, scientific change, and the relations between science and values.
Same as: PHIL 60

HPS 61. Philosophy and the Scientific Revolution. 5 Units.
Galileo's defense of the Copernican world-system that initiated the scientific revolution of the 17th century, led to conflict between science and religion, and influenced the development of modern philosophy. Readings focus on Galileo and Descartes.
Same as: PHIL 61

HPS 199. Directed Reading. 1-15 Unit.
May be repeated for credit.

HPS 299. Graduate Individual Work. 1-15 Unit.
May be repeated for credit.

HUMAN BIOLOGY

Courses offered by the Program in Human Biology are listed under the subject code HUMBIO on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=HUMBIO&filter-catalognumber-HUMBIO=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=HUMBIO&filter-catalognumber-HUMBIO=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=HUMBIO&filter-catalognumber-HUMBIO=on).

The program offers a Bachelor of Arts and a Bachelor of Science in Human Biology, as well as a minor and an honors program.

Mission of the Undergraduate Program in Human Biology

The mission of the undergraduate program in Human Biology is to provide students with an interdisciplinary approach to understanding human beings from biological, behavioral, social, and cultural perspectives. Courses in the major allow students to see connections and parallels with other fields as they learn to formulate and evaluate health, environmental, and other public policy issues that influence human welfare. The program prepares majors to pursue advanced training in professional or graduate programs.

To achieve these goals, all students complete a 30-unit core sequence, normally in the sophomore year, which provides the foundation for the major. Also during the sophomore year, students consult with student advisers to choose a faculty adviser and complete the declaration process. Together they plan a road map of course work designed to help each student focus on an Area of Concentration within Human Biology. Early planning and subsequent refining of an individualized course of study, in consultation with student and faculty advisers, are strengths and requirements of the program. The curriculum draws on faculty from across the University. To complete a B.A. or B.S. in Human Biology, students must take courses from within the program and from other University departments. Many Human Biology majors go on to advanced training in professional schools or graduate programs in the behavioral, natural, and social sciences, including coterminal master's degree programs in other University departments. Additional information about the major may be obtained from the program's offices or at the Program in Human Biology (https://humanbiology.stanford.edu./) web site.

Learning Outcomes (Undergraduate)

The program expects its undergraduate majors to be able to demonstrate the following learning outcomes.

Communication

Because Human Biology is an interdisciplinary program with an emphasis on both empirical inquiry and applied knowledge, excellent communication skills are critical to majors. Successful students must be able to engage with literature and audiences not only from multiple disciplines but also with varying levels of subject expertise and to communicate information and ideas clearly, precisely, concisely, and purposefully in any setting. Toward this end, a graduate of Human Biology is expected to be able to:

1. adopt an appropriate style for written communication in the biological and social sciences
2. accurately summarize a scientific article
3. synthesize and criticize multiple sources of scientific literature
4. revise effectively in response to feedback
5. write collaboratively
6. present information visually in a variety of forms (charts, graphs, figures, and posters) for different audiences, purposes, and occasions
7. communicate in a variety of major scientific genres (such as abstracts, literature reviews, posters, research proposals, research presentations, and policy proposals) and popular genres (such as op-eds, PSA, podcasts, and science blogs)
8. use citations to provide context and to credit others for their intellectual contributions
9. communicate scientific knowledge to both specialist and non-specialist audiences
10. construct a well-supported, logical argument based on relevant evidence and established conceptual frameworks
11. frame a research question in relation to the current state of knowledge in a field
12. articulate a well-reasoned hypothesis
13. listen to any speaker and pose questions
14. deliver an oral presentation and respond to audience questions

Data Analysis

Data is used in the social and biological sciences to make observations and judgments regarding patterns of human behavior and function. These data are sometimes imperfect or incomplete, but they are used nevertheless to make decisions and policies regarding humans individually and in groups within the worlds they inhabit. Thus, students should cultivate a capacity within the Human Biology major to examine and analyze data. A graduate of Human Biology is expected to be able to:

1. recognize that different scientific disciplines draw on various sources and types of evidence
2. translate a research topic into a hypothesis or focused question that can be tested using quantitative or qualitative data
3. identify variables that are relevant to a study and describe their nature (e.g., categorical, continuous) and interrelationships (independent, dependent, covariates)
4. use statistical software to summarize and describe data of various types
5. choose an appropriate analytical framework or statistical model for testing a given hypothesis, considering the structure of the data (e.g., sample size, distribution, qualitative or quantitative nature)
6. employ quantitative or qualitative data to support a conclusion
7. understand and interpret the results of hypothesis tests
8. detect mistakes commonly made in empirical reasoning and data analysis
9. assess the limits of available data and identify potential sources of uncertainty
10. present data accurately, clearly, and effectively in the forms of tables, graphs, and figures
11. explore specialized modes of data analysis such as meta-analysis, bioinformatics, modeling, and epidemiological approaches

Scientific Literacy

The Program in Human Biology prepares students to join a broad scientific community with a culture of building and sharing knowledge. A goal of the major is to cultivate judicious consumers of research in the natural and social sciences, irrespective of their individual career paths. A graduate of Human Biology is expected to be able to:

1. appreciate the distinct roles of common genres of scientific writing, including peer-reviewed research papers, review articles, commentaries, and popular science writing
2. acknowledge and apply the normative and ethical standards of conducting and publishing research, including accuracy, transparency, and responsibility to colleagues and subjects
3. consider the credibility and importance of a published article and its relevance within a field
4. engage with peer-reviewed scientific literature actively and critically
5. identify research questions and understand their theoretical or practical importance
6. assess research methodologies including experimental or other study design
7. evaluate evidence and statistical analyses presented in support of claims
8. interpret data presented in a table, graph, or figure
9. use a hypothesis or conceptual framework to make predictions or pose questions about a novel setting

Student Advisers

Human Biology has an advising program comprising faculty and student advisers. Before declaring Human Biology as the undergraduate major, each student must meet with student advisers who assist in developing a coherent study plan based on an individualized Area of Concentration, and the selection of breadth, depth, and upper-division courses. The student advisers also assist students in selecting an appropriate faculty adviser and a suitable capstone experience for their Area of Concentration and career goals. Student advisers offer drop-in services during scheduled office hours every weekday.

Bachelor of Science in Human Biology

The B.S. in Human Biology (HUMBIO) requires 81+ units in the major divided among four levels of courses: fundamental program requirements, breadth requirement (20+ units), depth requirement (20+ units) and upper-division (3+ courses). The B.S. degree allows students a more scientific and technical focus for their studies, and requires completion of course work and specialization in the biological sciences, physical sciences, mathematics, and/or computer science and engineering. The degree is suitable for a variety of career trajectories, including for attending graduate or professional school, such as medical school. Students who plan to pursue graduate work should be aware of the admission requirements of the schools to which they intend to apply. Early planning is advisable to guarantee completion of major and graduate school requirements.

For the B.S. degree, majors take 10 or more units of breadth courses and five or more classes in the upper-division and depth courses from a set of pre-approved life and natural sciences courses. For the five or more B.S. eligible courses in the depth and upper division, three of those courses must be in the depth section. Many pre-approved courses satisfy University Ways requirements, specifically applied quantitative reasoning, formal reasoning, and scientific methods and analysis courses. Students still also take courses in the social sciences or humanities, although fewer than for the B.A. degree.

How to Declare a Major in Human Biology

Over the course of declaration, a prospective major must consult with the Human Biology advising team to obtain detailed information about the program and guidance in the development of an individual course of study. At the time the major is declared, the student submits a written statement (3-5 pages) of academic and long-term goals and the proposed list of courses satisfying the requirements for the major. The proposal is then reviewed by the student advisers who can help identify an appropriate faculty adviser.

It is important to declare in the sophomore year, and planning may begin once a student in good academic standing has passed two of six courses in the core. The program recommends that students finish the declaration process by the time they finish the HumBio core.

Degree Requirements

Course Requirements

		Units
Human Biology Core		**30**
The required core sequence introduces the biological and social sciences and, most importantly, relationships between the two. Classes meet throughout the academic year. The A and B series are designed to be taken concurrently. The required core sequence introduces the biological and social sciences and, most importantly, relationships between the two. Classes meet throughout the academic year. The A and B series are designed to be taken concurrently. Students should initiate the core in Autumn Quarter of the sophomore year. Freshmen are strongly advised to wait to start the HUMBIO Core until Autumn of sophomore year. Majors must earn a minimum letter grade of 'C-' in every core course. The Human Biology core consists of the following courses:		
HUMBIO 2A	Genetics, Evolution, and Ecology	
HUMBIO 2B	Culture, Evolution, and Society	
HUMBIO 3A	Cell and Developmental Biology	
HUMBIO 3B	Environmental and Health Policy Analysis	
HUMBIO 4A	The Human Organism	
HUMBIO 4B	Behavior, Health, and Development	
Statistics		**3-5**
The statistics course must be taken for a letter grade by majors. The minimum grade requirement is 'C-'. Statistics may be chosen from courses such as:		
BIO 141	Biostatistics	
CME 106	Introduction to Probability and Statistics for Engineers	
CS 109	Introduction to Probability for Computer Scientists	
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	
EDUC 400A	Introduction to Statistical Methods in Education	
EPI 259	Introduction to Probability and Statistics for Epidemiology	
EPI 262	Intermediate Biostatistics: Regression, Prediction, Survival Analysis	
HUMBIO 88	Introduction to Statistics for the Health Sciences	
HUMBIO 89	Introduction to Health Sciences Statistics	
SOC 180B	Introduction to Data Analysis	
SOC 181B	Sociological Methods: Statistics	
STATS 116	Theory of Probability	
Capstone		**1-10**
Complete area from below:		
Human Biology Practicum		
HUMBIO 191	Human Biology Practicum	
Human Biology Synthesis		
HUMBIO 192A	Human Biology Synthesis	
HUMBIO 192W	Human Biology Synthesis	
HUMBIO 192S	Human Biology Synthesis	
Honors in Human Biology		

HUMBIO 194	Honors	
Breadth Courses		**20**
Consistent with the student's chosen area of concentration topic. This requirement allows the student to explore the topic with a broad focus. Courses may include introductory-level courses from across the University and lab courses, and may be taken for credit or letter grade. The minimum grade requirement is 'C-.'		
Depth Courses		**20**
A minimum of five courses totaling at least 20 units consistent with the student's chosen area of concentration topic. This requirement allows the student to gain expertise on on their chosen area. Courses are non-introductory and are usually numbered over 100. Three or more departments must be represented in the depth requirement. Each course must be taken for a letter grade and at least three units. The minimum grade requirement is 'C-'. Three or more courses in the Depth must be in your chosen degree option of B.S..		
Upper Division Electives		
Three courses selected from pre-approved list of life and natural science courses		
Minimum Total Units		**81**

Students who have previously taken HUMBIO 85 Essential Statistics for Human Biology, may use it to fulfill the statistics requirement. In certain circumstances, students completing an additional major or minor in another department may submit a petition to waive the units requirement for Statistics; contact Human Biology student services for more information. Students who did not declare before September 21, 2015, may not use STATS 60 to fulfill the statistics requirement.

Additional Information

Capstone (1-10 units)

The following options fulfill the Capstone (https://humanbiology.stanford.edu/capstone/) requirement:

1. *Human Biology Practicum:* HUMBIO 191 Human Biology Practicum (1 unit total, letter grade). Allows students to integrate their academics with their community-engaged learning, research or pre-professional experiences through reflective written work and presentation. Students can take workshops over several quarters, and enroll in one unit of 191 for the quarter they plan to complete the practicum.
2. *Human Biology Synthesis (by application):* This sequence should be taken for 2-3 units in Autumn (HUMBIO 192A Human Biology Synthesis), Winter (HUMBIO 192W Human Biology Synthesis) and/or Spring (HUMBIO 192S Human Biology Synthesis) for 6 units total, letter grade. The sequence is designed for students to expand upon the work of their area of concentration. It allows students the opportunity to craft a culminating, creative work of scholarship based on a synthesis of personal and academic interests, including service projects. The work must be exhibited during senior year.
3. *Honors in Human Biology (by application):* HUMBIO 194 Honors also satisfies the Capstone requirement.
4. Non-Human Biology activities that fulfill the Capstone requirement:
   a. Notation in Science Communication
   b. Interdisciplinary Honors

Breadth and Depth Requirement

These courses inform the student's chosen area of concentration topic. The student selects courses for these two requirement categories in consultation with the advising staff, who approve the final course selections. A Human Biology area of concentration topic generally falls within one (or a combination of 2) of the following areas of emphasis:

- Environment and Environmental Policy
- Health and Health Policy
- Human Performance
- Human Development
- Biomedical Science and Biocomputation
- Brain and Behavior
- Ethics and Medical Humanities
- Evolution

Upper-Division Requirement

Students must take three Human Biology upper-division courses numbered 100 to 189. These courses should be used to explore subjects outside the depth requirement. One upper-division course may be taken satisfactory/no credit. Each course must be taken for a minimum of 3 units. Minimum grade requirement for upper-division courses is 'C-'. All non-laboratory advanced HUMBIO courses (those numbered 100 to 189) fulfill the Human Biology upper-division requirement. A list of Overseas Studies courses that satisfy upper-division requirements can be found on the Overseas tab (p. 1630) of this section of this bulletin.

Honors Program

The honors program in Human Biology provides qualified majors the opportunity to work closely with faculty on an individual research project, culminating in an honors thesis. Students may begin honors research from a number of starting points including topics introduced in the core or upper-division courses; independent interests stemming from an internship experience; or collaborating with faculty from the natural, social, or behavioral sciences.

Students may apply to the honors program if they have completed the Human Biology core with a minimum GPA of 3.0, have an overall Stanford GPA of 3.2, and meet other requirements detailed in the honors handbook. Interested students should consult the Human Biology Honors website (http://humanbiology.stanford.edu/academics/honors/) and meet with the Human Biology Associate Director or student services officer.

Most honors projects involve a total of 10-15 units of course work in HUMBIO 193 and 194:

		Units
HUMBIO 193	Research in Human Biology	1-5
HUMBIO 194	Honors	1-10

Admission to the honors program is by preliminary application in early February, followed by the full application in early March of the junior year. Students planning to undertake honors begin research or preparation as early as completion of the sophomore year.

The honors thesis is normally completed by the middle of Spring Quarter of the senior year. Honors students present summaries of their research at the Human Biology Senior Symposium in May.

Human Biology also holds a Summer Honors College just prior to Autumn Quarter each year for students who have applied to the honors program. Students apply to Summer Honors College in April of the junior year.

Bachelor of Arts in Human Biology

The B.A. in Human Biology (HUMBIO) requires a minimum of 81 units in the major divided among four types of courses: fundamental program requirements, breadth requirement (20+ units), depth requirement (20+ units) and upper-division (3+ courses). The B.A. degree is designed for students who prefer a traditional liberal arts degree with a curriculum based across the natural sciences, social sciences, and humanities. The degree is suitable for a variety of career trajectories, including for

attending graduate or professional school, such as medical school. Students who plan to pursue graduate work should be aware of the admission requirements of the schools to which they intend to apply. Early planning is advisable to guarantee completion of major and graduate school requirements.

For the B.A. degree 10 or more units of the breadth requirement and five or more of the classes in the upper-division and depth requirement must come from a set of pre-approved Social Sciences and Humanities courses. For the five or more B.A. eligible courses in your Depth and Upper Division, three of those courses must be in the Depth section. Many pre-approved courses additionally satisfy University Ways of Thinking and Doing requirements, specifically Aesthetic and Interpretive Inquiry, Creative Expression, Engaging Diversity, Ethical Reasoning, and Social Inquiry. Students pursuing a B.A. degree do take courses in the natural sciences, although fewer than for the B.S. degree.

How to Declare a Major in Human Biology

Over the course of declaration, a prospective major must consult with the Human Biology advising team to obtain detailed information about the program and guidance in the development of an individual course of study. At the time the major is declared, the student submits a written statement (3-5 pages) of academic and long-term goals and the proposed list of courses satisfying the requirements for the major. The proposal is then reviewed by the student advisors who can help identify an appropriate faculty advisor.

It is important to declare in the sophomore year, and planning may begin once a student in good academic standing has passed two of six courses in the core. The program recommends that students finish the declaration process by the time they finish the HumBio core.

Degree Requirements

Course Requirements

		Units
Human Biology Core		**30**
The required core sequence introduces the biological and social sciences and, most importantly, relationships between the two. Classes meet throughout the academic year. The A and B series are designed to be taken concurrently. Students should initiate the core in Autumn Quarter of the sophomore year. Freshmen are strongly advised to wait to start the HUMBIO Core until Autumn of sophomore year. Majors must earn a minimum letter grade of 'C-' in every core course. The Human Biology core consists of the following courses:		
HUMBIO 2A	Genetics, Evolution, and Ecology	
HUMBIO 2B	Culture, Evolution, and Society	
HUMBIO 3A	Cell and Developmental Biology	
HUMBIO 3B	Environmental and Health Policy Analysis	
HUMBIO 4A	The Human Organism	
HUMBIO 4B	Behavior, Health, and Development	
Statistics		**3-5**
The statistics course must be taken for a letter grade by majors. The minimum grade requirement is 'C-'. Statistics may be chosen from courses such as:		
BIO 141	Biostatistics	
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HUMBIO 89	Introduction to Health Sciences Statistics	
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STATS 116	Theory of Probability	
Capstone		**1-10**
Complete area from below:		
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Honors in Human Biology		
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Depth Courses		**20**
A minimum of five courses totaling at least 20 units consistent with the student's chosen area of concentration topic. This requirement allows the student to gain expertise on on their chosen area. Courses are non-introductory and are usually numbered over 100. Three or more departments must be represented in the depth requirement. Each course must be taken for a letter grade and at least three units. The minimum grade requirement is 'C-'. Three or more courses in the Depth must be in your chosen degree option of B.A..		
Upper Division Electives		
Three courses selected from pre-approved list of social science and humanities courses		
Minimum Total Units		**81**

Students who have previously taken HUMBIO 85 Essential Statistics for Human Biology, may use it to fulfill the statistics requirement. In certain circumstances, students completing an additional major or minor in another department may submit a petition to waive the units requirement for Statistics; contact Human Biology student services for more information. Students who did not declare before September 21, 2015, may not use STATS 60 to fulfill the statistics requirement.

Additional Information

Capstone (1-10 units)

The following options fulfill the Capstone (https://humanbiology.stanford.edu/capstone/) requirement:

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4. Non-Human Biology activities that fulfill the Capstone requirement:
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   b. Interdisciplinary Honors

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- Health and Health Policy
- Human Performance
- Human Development
- Biomedical Science and Biocomputation
- Brain and Behavior
- Ethics and Medical Humanities
- Evolution

Upper-Division Requirement

Students must take three Human Biology upper-division courses numbered 100 to 189. These courses should be used to explore subjects outside the depth requirement. One upper-division course may be taken satisfactory/no credit. Each course must be taken for a minimum of 3 units. Minimum grade requirement for upper-division courses is 'C-'. All non-laboratory advanced HUMBIO courses (those numbered 100 to 189) fulfill the Human Biology upper-division requirement. A list of Overseas Studies courses that satisfy upper-division requirements can be found on the Overseas tab (p. 1630) of this section of this bulletin.

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The honors thesis is normally completed by the middle of Spring Quarter of the senior year. Honors students present summaries of their research at the Human Biology Senior Symposium in May.

Human Biology also holds a Summer Honors College just prior to Autumn Quarter each year for students who have applied to the honors program. Students apply to Summer Honors College in April of the junior year.

Minor in Human Biology

A minor in Human Biology provides students with an introduction to the relationship between the biological and social aspects of humanity's origin, development, and future. Many of the serious problems facing humans today involve both biological and social aspects. Scientific approaches to these problems are essential, but they must be broadly conceived and placed within their proper social and cultural setting. Students with a minor in Human Biology are expected to develop a strong content background and the skills to integrate the biological and social aspects of human beings.

The Human Biology minor requires at minimum three core courses to ensure coverage of the field disciplines, while offering flexibility for students pursuing specific subplans in the fields of Global Health, Epidemiology, or Health Policy.

- The Global Health subplan introduce students to critical social perspectives, policy, and applications in global health.
- The Epidemiology subplan introduces students to epidemiological constructs and applies these methods to the study of real world public health challenges.
- The Health Policy subplan introduces students to population-level problems, interventions, and policy in public health.

Students declaring a minor in Human Biology must do so no later than two quarters prior to their intended quarter of degree conferral (for example, a student must declare a minor before the end of Autumn Quarter if graduating in the following Spring Quarter). Students who declared a minor prior to September 2018 should refer to previous guidelines and requirements for the minor and if interested in a subplan should contact HumBio Student Services by emailing humbioadvising@stanford.edu to determine eligibility. Undergraduate fields of study (subplans) are declared on Axess; these subplans appear on the transcript but not on the diploma. Students may submit a petition to declare the HumBio minor without a subplan; contact Human Biology Student Services for more information.

In order to graduate with a minor in Human Biology, undergraduates must complete the minor program of study as described here, for a total of at least 25 units, with a minimum of six courses.

Degree Requirements

Students completing a major that requires some of the HumBio Core or equivalent may submit a petition to substitute the Core requirement; contact Human Biology Student Services for more information.

Course Requirements

		Units
Human Biology Core		**15**
Complete three courses from (at least one A-side and at least one B-side class):		
HUMBIO 2A	Genetics, Evolution, and Ecology	
HUMBIO 2B	Culture, Evolution, and Society	

HUMBIO 3A	Cell and Developmental Biology	
HUMBIO 3B	Environmental and Health Policy Analysis	
HUMBIO 4A	The Human Organism	
HUMBIO 4B	Behavior, Health, and Development	
Electives		**10**
Three (3) elective courses, each 3 or more units, totaling 10 or more units, within the chosen subplan. A comprehensive list of suitable elective courses is provided below.		
Global Health Subplan Electives		
HUMBIO 114	Global Change and Emerging Infectious Disease	
HUMBIO 122M	Challenges of Human Migration: Health and Health Care of Migrants and Autochthonous Populations	
HUMBIO 124C	Global Child Health	
HUMBIO 129S	Global Public Health	
HUMBIO 129W	Health Care Systems Around the World	
HUMBIO 153	Parasites and Pestilence: Infectious Public Health Challenges	
HUMBIO 154D	Models for Understanding and Controlling Global Infectious Diseases	
HUMBIO 179B	Music and Healing	
HUMBIO 26	Designing Research-Based Interventions to Solve Global Health Problems	
AFRICAAM 41	Genes and Identity	
ANTHRO 182N	Smoke and Mirrors in Global Health	
COMPMED 84Q	Globally Emerging Zoonotic Diseases	
EARTHSYS 162	Data for Sustainable Development	
EASTASN 117	Health and Healthcare Systems in East Asia	
HISTORY 243G	Tobacco and Health in World History	
EPI 231	Epidemiology of Infectious Diseases	
EPI 237	Practical Approaches to Global Health Research	
HUMRTS 110	Global Women's Issues in Human Rights and Health	
MED 232	Global Health: Scaling Health Technology Innovations in Low Resource Settings	
PEDS 223	Human Rights and Global Health	
SOMGEN 207	Theories of Change in Global Health	
Epidemiology Subplan Electives		
HUMBIO 57	Epidemic Intelligence: How to Identify, Investigate and Interrupt Outbreaks of Disease	
HUMBIO 114	Global Change and Emerging Infectious Disease	
HUMBIO 126	Promoting Health Over the Life Course: the Science of Healthy Living	
HUMBIO 153	Parasites and Pestilence: Infectious Public Health Challenges	
HUMBIO 154B	Principles of Epidemiology	
HUMBIO 154C	Cancer Epidemiology	
HUMBIO 154D	Models for Understanding and Controlling Global Infectious Diseases	
HUMBIO 159	Genes and Environment in Disease Causation: Implications for Medicine and Public Health	
COMPMED 84Q	Globally Emerging Zoonotic Diseases	
EPI 206	Meta-research: Appraising Research Findings, Bias, and Meta-analysis	
EPI 219	Evaluating Technologies for Diagnosis, Prediction and Screening	
EPI 225	Introduction to Epidemiologic and Clinical Research Methods	
EPI 231	Epidemiology of Infectious Diseases	
EPI 259	Introduction to Probability and Statistics for Epidemiology	
EPI 261	Intermediate Biostatistics: Analysis of Discrete Data	
Health Policy Subplan Electives		
HUMBIO 120	Health Care in America: An Introduction to U.S. Health Policy	
HUMBIO 120A	American Health Policy	
HUMBIO 122A	Health Care Policy and Reform	
HUMBIO 123E	Health Economics & Policy: exploring health disparities, child health & health care spending	
HUMBIO 129W	Health Care Systems Around the World	
HUMBIO 153	Parasites and Pestilence: Infectious Public Health Challenges	
EASTASN 117	Health and Healthcare Systems in East Asia	
HRP 211	Law and Biosciences: Neuroscience	
HRP 221	Law and the Biosciences: Genetics	
HRP 249	Topics in Health Economics I	
HRP 256	Economics of Health and Medical Care	
HRP 252	Outcomes Analysis	
MS&E 292	Health Policy Modeling	
PUBLPOL 156	Health Care Policy and Reform	
PUBLPOL 231	Health Law: Finance and Insurance	
SOC 152	The Social Determinants of Health	

Additional Information

Course work completed for the Human Biology Minor must meet the following criteria:

- All courses must be taken for a letter grade.
- All courses must be completed with a minimum 'C-' grade.
- Courses used to fulfill the minor may not be used to fulfill any other department degree requirements (major or minor).
- All courses must be taken at Stanford University.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Program in Human Biology counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Director: Lianne Kurina

Associate Director: Katherine Preston

Director of Undergraduate Studies: Lianne Kurina

Honors Chair: Katherine Preston

Emeriti: (Professors) Carol Boggs (Biology), Donna Bouley (Comparative Medicine), Doug Brutlag (Biochemistry), William H. Durham (Anthropology), Anne Fernald (Psychology), Russell D. Fernald (Biology), Ronald Garcia (Center for Excellence), A. Dale Kaiser (Development Biology/Biochemistry) - in memoriam, Herant Katchadourian (Human Biology), Donald Kennedy (Biology) - in memoriam, Michael Marmor (Ophthalmology), Gordon Matheson (Orthopaedic Surgery/Sports Medicine), Ellen FitzSimmons Porzig (Developmental Biology), Carol Winograd (Medicine)

Professors: Julie C. Baker (Genetics), Laurence Baker (Health Research and Policy - Health Services Research), Laura Carstensen (Psychology), Tiffany Chao (Surgery - General Surgery), Rodolfo Dirzo (Biology), Heidi Feldman (Pediatrics/Developmental Behavioral Pediatrics), Paul Fisher (Neurology) - on leave (Autumn), Margaret Fuller (Developmental Biology), Garry Gold (Radiology/Musculoskeletal Imaging), Brenda Golianu (Anesthesiology, Perioperative and Pain Medicine - Pediatrics), Lawrence H. Goulder (Economics), James J. Gross (Psychology), Joachim Hallmayer (Psychiatry and Behavioral Sciences - Child and Adolescent Psychiatry and Child Development), H. Craig Heller (Biology), Jill Helms (Surgery - Plastic and Reconstructive Surgery), Richard Klein (Anthropology and Biology), Tanya Luhrmann (Anthropology), Yvonne Maldonado (Pediatrics - Infectious Diseases/Health Research and Policy), Roeland Nusse (Developmental Biology), Ruth O'Hara (Psychiatry and Behavioral Sciences/Public Mental Health and Population Sciences), Michael Ostacher (Psychiatry and Behavioral Sciences/Public Mental Health and Population Sciences), Amado Padilla (Education), Julie Parsonnet (Medicine/Infectious Diseases), Rob Reich (Political Science), Allan Reiss (Psychology and Behavior Sciences - Center for Interdisciplinary Brain Sciences Research/Radiology), Robert Sapolsky (Biology, Neurology and Neurological Sciences, Neurosurgery), Walter Scheidel (Classics and History), Sara Singer (Medicine/Primary Care and Population Health), Randall Stafford (Medicine/Stanford Center for Research in Disease Prevention), William Talbot (Developmental Biology), Shripad Tuljapurkar (Biology), Jeffrey Wine (Psychology)

Associate Professors: Michael C. Frank (Psychology), Duana Fullwiley (Anthropology), Angela Garcia (Anthropology), Jeremy Goldhaber-Fiebert (Medicine/Primary Care and Outcomes Research), Peter Kao (Medicine/Pulmonary and Critical Care Medicine), N. Grant Miller (Medicine/Primary Care and Outcomes Research), Michelle Monje-Deisseroth (Neurology), Jelena Obradovic (Education), Jonathan Pritchard (Biology and Genetics), Lee Sanders (Pediatrics - General Pediatrics), Aliya Saperstein (Sociology), Gavin Sherlock (Genetics)

Assistant Professors: Geoffrey Abrams (Orthopaedic Surgery), Jorah Dannenberg (Philosophy), Denise Gill (Music — Ethnomusicology), Roanne Kantor (English) - maternity leave, Anshul Kundaje (Genetics and Computer Science), Michelle Monje-Deisseroth (Neurology), Maria Polyakova (Health Research and Policy - Health Services Research), Maya Rossin-Slater (Health Research and Policy - Health Services Research),

Professors (Research): Christopher Gardner (Medicine - Stanford Prevention Research Center), David Lyons (Psychiatry and Behavioral Sciences/General Psychiatry and Psychology - Adult), Marcia Stefanick (Medicine - Stanford Prevention Research Center/Obstetrics and Gynecology)

Associate Professors (Research): Philippe Mourrain (Psychiatry and Behavioral Sciences — Sleep Disorder/Stanford Center for Sleep Sciences and Medicine), Karen Parker (Psychiatry and Behavioral Sciences), Lisa Goldman Rosas (Health Research and Policy - Epidemiology; Medicine/Primary Care and Population Health), Jamie Zeitzer (Psychiatry and Behavioral Sciences - Stanford Center for Sleep Sciences and Medicine)

Professors (Teaching): Donald Barr (Pediatrics - General Pediatrics), Gary Darmstadt (Pediatrics - Neonatology), Ronald Davis (Biochemistry/Genetics), David Magnus (Pediatrics/SCBE), John Oppenshaw (Medicine/Infectious Diseases), Robert Siegel (Microbiology and Immunology)

Associate Professors (Teaching): Jason Andrews (Medicine/Infectious Diseases), Catherine Heaney (Psychology/Medicine - Stanford Prevention Research Center), Lianne Kurina (Medicine/Primary Care and Population Health), Eunice Rodriguez (Pediatrics - General Pediatrics), Kristin Sainani (Health Research and Policy — Epidemiology)

Clinical Assistant Professors: Moises Gallegos (Emergency Medicine), Jason Hom (Medicine), Andrea Kussman (Orthopaedic Surgery), Daniel Mason (Psychiatry), Margaret Windy McNerney (VA Palo Alto Health Care Services), Rita Popat (Health Research and Policy — Epidemiology)

Clinical Associate Professor: Cynthia Nguyen (Psychiatry and Behavioral Sciences), Clea Sarnquist (Pediatics - Infectious Diseases)

Other Teaching Faculty and Staff: Tamar Brand-Perez, David Crane (Public Policy), Judy Chu, Sophia Colamarino (Psychiatry and Behavioral Sciences - Child and Adolescent Psychiatry and Child Development), Anne Friedlander, Renu Heller (Biology), Catherine Ley (Medicine/Infectious Diseases), Mark Mabry, Lisa Medoff, Joe Nation (Public Policy), Katherine Preston, Annette Salmeen, Piya Sorcar (Center for Health Policy and the Center for Primary Care and Outcomes Research), Jennifer Wolf (Education)

Course Associates: Abby Chen, Courtney Gao, Ginger Gramson, Sierra Maciorowski, Alessandra Marcone, Cameron Nosrat, Paul Phan, Caroline Zha

Overseas Studies Courses in Human Biology

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPAUSTL 10	Coral Reef Ecosystems	3
OSPAUSTL 28	Terrestrial Ecology and Conservation	3

OSPAUSTL 32	Coastal Ecosystems	3
OSPCPTWN 67	ICT4D: An Introduction to the Use of ICTs for Development	3
OSPHONGK 44	Medical Sociology	4
OSPMADRD 57	Health Care: A Contrastive Analysis between Spain and the U.S.	4
OSPMADRD 72	Issues in Bioethics Across Cultures	4
OSPPARIS 76	From Art to Medicine: The Human Body and Tissue Regeneration	3

Courses

HUMBIO 2A. Genetics, Evolution, and Ecology. 5 Units.
Introduction to the principles of classical and modern genetics, evolutionary theory, and ecology. Topics: micro- and macro-evolution, population and molecular genetics including personal genomics and CRISPR, biodiversity and ecology, emphasizing the genetics and ecology of the evolutionary process and applications to human populations. HUMBIO 2A and HUMBIO 2B are designed to be taken concurrently and exams for both sides may include material from joint module lectures. Concurrent enrollment is strongly encouraged and is necessary for majors in order to meet declaration deadlines. Please note that Human Biology majors are typically required to take the Human Biology Core Courses for a letter grade; however in academic year 20-21 majors may count courses taken for a letter grade or for Credit (CR).

HUMBIO 2B. Culture, Evolution, and Society. 5 Units.
Introduction to the evolutionary study of human diversity, the origins of social complexity, and the field of demography. Topics will include hominid evolution, population dynamics and the demographic transition, the impact of disease on societies, social theory, and patterns and consequences of inequality. HUMBIO2B, with HUMBIO3B and HUMBIO 4B, satisfies the Writing in the Major (WIM) requirement for students in Human Biology. HUMBIO 2A and HUMBIO 2B are designed to be taken concurrently and exams or quizzes for both sides may include material from joint module lectures. Concurrent enrollment is strongly encouraged and is necessary for majors in order to meet declaration deadlines. Please note that Human Biology majors are typically required to take the Human Biology Core Courses for a letter grade; however in academic year 20-21 majors may count courses taken for a letter grade or for Credit (CR).

HUMBIO 3A. Cell and Developmental Biology. 5 Units.
Principles of the biology of cells, embryonic development and pattern formation, biochemistry of energetics and metabolism, the nature of membranes and organelles, hormone action and signal transduction in normal and diseased states (diabetes, cancer, autoimmune diseases), stem cells and immunology. HUMBIO 3A and HUMBIO 3B are designed to be taken concurrently and exams for both sides may include material from joint module lectures. Concurrent enrollment is strongly encouraged and is necessary for majors in order to meet declaration deadlines. Please note that Human Biology majors are typically required to take the Human Biology Core Courses for a letter grade; however in academic year 20-21 majors may count courses taken for a letter grade or for Credit (CR).nnPrerequisite: college chemistry or completion of the HumBio Core on-line chemistry lecture series during the fall quarter.

HUMBIO 3B. Environmental and Health Policy Analysis. 5 Units.
Connections among the life sciences, social sciences, public health, and public policy. The economic, social, and institutional factors that underlie environmental degradation, the incidence of disease, and challenges facing the health care system including high spending and inequalities in access to health care. Public policies to address these problems. Topics include pollution regulation, climate change policy, biodiversity protection, health insurance, health care regulation, health disparities, and health care reform. HUMBIO 3B, with HUMBIO 2B and HUMBIO 4B, satisfies the Writing in the Major (WIM) requirement for students in Human Biology. HUMBIO 3A and HUMBIO 3B are designed to be taken concurrently and exams or quizzes for both sides may include material from joint module lectures. Concurrent enrollment is strongly encouraged and is necessary for majors in order to meet declaration deadlines. Please note that Human Biology majors are typically required to take the Human Biology Core Courses for a letter grade; however in academic year 20-21 majors may count courses taken for a letter grade or for Credit (CR).

HUMBIO 4A. The Human Organism. 5 Units.
Integrative Physiology: Neurobiology, endocrinology, and organ system function, control, and regulation. HUMBIO 4A and HUMBIO 4B are designed to be taken concurrently and exams for both sides may include material from joint module lectures. Concurrent enrollment is strongly encouraged and is necessary for majors in order to meet declaration deadlines. Please note that Human Biology majors are typically required to take the Human Biology Core Courses for a letter grade; however in academic year 20-21 majors may count courses taken for a letter grade or for Credit (CR).

HUMBIO 4B. Behavior, Health, and Development. 5 Units.
Research and theory on human behavior, health, and life span development. How biological factors and cultural practices influence cognition, emotion, motivation, personality, and health in childhood, adolescence, and adulthood. HUMBIO 4B, with HUMBIO2B and HUMBIO 3B, satisfies the Writing in the Major (WIM) requirement for students in Human Biology. HUMBIO 4A and HUMBIO 4B are designed to be taken concurrently and exams or quizzes for both sides may include material from joint module lectures. Concurrent enrollment is strongly encouraged and is necessary for majors in order to meet declaration deadlines. Please note that Human Biology majors are typically required to take the Human Biology Core Courses for a letter grade; however in academic year 20-21 majors may count courses taken for a letter grade or for Credit (CR).

HUMBIO 4Y. Practicum in Child Development. 1 Unit.
Learning about young children's physical, emotional, social, cognitive, and language development through guided observations and discussions from Bing Nursery School, Stanford's lab school for research and training in child development. Weekly guided observations and 5 discussion meetings. Pre- or corequisite: HUMBIO 4B (formerly 3B): Behavior, Health, and Development.

HUMBIO 5E. Science Education in Human Biology. 1 Unit.
In this seminar, students will learn about research on science education. They will use this knowledge to create and analyze teaching material such as section plans, exams, and problem sets. Material produced in this course will be related to the topics covered in the core course of the Program in Human Biology. Students will experience and practice various teaching styles. Prerequisitez: Human Biology Core or equivalent or consent of instructor.

HUMBIO 9. Public Service Internship Preparation. 1 Unit.
Are you prepared for your internship this summer? This workshop series will help you make the most of your internship experience by setting learning goals in advance; negotiating and communicating clear roles and expectations; preparing for a professional role in a non-profit, government, or community setting; and reflecting with successful interns and community partners on how to prepare sufficiently ahead of time. You will read, discuss, and hear from guest speakers, as well as develop a learning plan specific to your summer or academic year internship placement. This course is primarily designed for students who have already identified an internship for summer or a later quarter. You are welcome to attend any and all workshops, but must attend the entire series and do the assignments for 1 unit of credit.
Same as: EARTHSYS 9, EDUC 9, PUBLPOL 74, URBANST 101

HUMBIO 11. Meet HumBio: a lecture series introducing HumBio themes. 1 Unit.
A lecture and discussion series designed for freshmen who want to learn more about Human Biology - either the major itself or the topics within its realm - by hearing about a HumBio perspective on the public health response to the COVID-19 pandemic. Each week the class will feature a guest speaker, often a HumBio faculty member or alum, addressing three central questions: What do I do? How is it important for protecting or promoting the public¿s health? and What professional opportunities are possible for a person concentrating in my field? The course is not meant to cover a specific body of content, therefore the assignments for the class aim to build fundamental study skills. These include taking useful notes, articulating questions or ideas prompted by the presentations, connecting lecture topics with current events or journal articles, and paying full courteous attention to speakers and peers. There will be no required readings or exams.

HUMBIO 14. Understanding Connections between Food and the Environment. 1 Unit.
Globally, food systems, what we eat, where and how we grow it, play a major role in determining our impact on the environment. By considering our food choices, we can find "low hanging vegetables" for reducing our "foodprint". In this course, we will begin to explore the complex connections between food and the environment. We will begin with a discussion of "Planetary Boundaries" as a guide for understanding the limits for human alterations of the biosphere, beyond which abrupt changes could occur. We will then introduce nine topics which will be discussed in the nine weeks to follow, and how they relate to food.

HUMBIO 26. Designing Research-Based Interventions to Solve Global Health Problems. 3-4 Units.
The excitement around social innovation and entrepreneurship has spawned numerous startups focused on tackling world problems, particularly in the fields of education and health. The best social ventures are launched with careful consideration paid to research, design, and efficacy. This course offers students insights into understanding how to effectively develop, evaluate, and scale social ventures. Using TeachAids (an award-winning nonprofit educational technology social venture used in 82 countries) as a primary case study, students will be given an in-depth look into how the entity was founded and scaled globally. Guest speakers will include world-class experts and entrepreneurs in Philanthropy, Medicine, Communications, Education, and Technology. Open to both undergraduate and graduate students.
Same as: AFRICAST 135, AFRICAST 235, EDUC 135, EDUC 335, EPI 235, MED 235

HUMBIO 27. Traditional Chinese Medicine. 1 Unit.
The philosophy and history behind traditional Chinese medicine. Concepts such as Qi, Yin/Yang, meridians, Chinese organs, and the 5 elements. How these concepts are applied through techniques such as acupuncture, herbal medicine, Qi gong, and massage. How traditional Chinese medicine is understood from a scientific standpoint. Political and socioeconomic implications. Observation of an acupuncturist. Readings on the integration of Eastern and Western medicine and on traditional Chinese medicine.

HUMBIO 28. Health Impact of Sexual Assault and Relationship Abuse across the Lifecourse. 1-3 Unit.
(Human Biology students must enroll in HUMBIO 28 or AFRICAAM 28. Med/Grad students should enroll in SOMGEN 237 for 1-3 units.)
An overview of the acute and chronic physical and psychological health impact of sexual abuse through the perspective of survivors of childhood, adolescent, young and middle adult, and elder abuse, including special populations such as pregnant women, military and veterans, prison inmates, individuals with mental or physical impairments. Also addresses: race/ethnicity, gender identity, sexual orientation, and other demographic and societal factors, including issues specific to college culture. Professionals with expertise in sexual assault present behavioral and prevention efforts such as bystander intervention training, medical screening, counseling and other interventions to manage the emotional trauma of abuse. Undergraduates must enroll for 3 units.To receive a letter grade in any listing, students must enroll for 3 units. This course must be taken for a letter grade and a minimum of 3 units to be eligible for Ways credit.
Same as: AFRICAAM 28, FEMGEN 237, SOMGEN 237

HUMBIO 29A. Well-Being in Immigrant Children & Youth: A Service Learning Course. 4 Units.
This is an interdisciplinary course that will examine the dramatic demographic changes in American society that are challenging the institutions of our country, from health care and education to business and politics. This demographic transformation is occurring first in children and youth, and understanding how social institutions are responding to the needs of immigrant children and youth to support their well-being is the goal of this course.
Same as: CHILATST 177A, CSRE 177E, EDUC 177A

HUMBIO 29G. Gender and Intersectionality in Global Health. 3 Units.
Intersectional thinking is increasingly being applied to global health and other academic disciplines as a framework for understanding complex, and often seemingly intractable, challenges to health and well-being. This course explores how gender (e.g. male, female, trans*, non-binary, etc) identity and relationships intersect with other social categorizations, including age and reproductive status (particularly for women), race/ethnicity, socioeconomic class, immigration status, educational attainment, to create systemic advantages or disadvantages that may explain and/or could address poor health outcomes within and across global communities. More specifically, we will focus on intersectional and biological frameworks in the context of cultural gender norms, to explore possible reasons for differences in incidence and prevalence of a wide range of health disparities worldwide. We will also use these frameworks to explore options for health improvement, in terms of both prevention and care/treatment.

HUMBIO 44. Diagnostic Odysseys In Medicine. 1 Unit.
Medicine is rapidly evolving, with increasing emphasis on genetic testing, immunophenotyping and integration of technology to guide diagnosis. In this course, experts from Stanford and Silicon Valley will highlight exciting developments. Topics include the latest developments in genetics and genomics (including genome testing in clinical practice, direct to consumer testing, and frontiers in neurogenetics), immunophenotyping, utilization of databases to research diseases and the emerging field of machine learning and clinical decision support in optimizing diagnostic strategies. Students who wish to engage in a mentored multi-disciplinary team-based research project related to advanced diagnostic techniques can additionally enroll in MED 239.
Same as: MED 244

HUMBIO 51. Big Data for Biologists - Decoding Genomic Function. 3 Units.
Biology and medicine are becoming increasingly data-intensive fields. This course is designed to introduce students interested in human biology and related fields to methods for working with large biological datasets. There will be in-class activities analyzing real data that have revealed insights about the role of the genome and epigenome in health and disease. For example, we will explore data from large-scale gene expression and chromatin state studies. The course will provide an introduction to the relevant topics in biology and to fundamental computational skills such as editing text files, formatting and storing data, visualizing data and writing data analysis scripts. Students will become familiar with both UNIX and Python. This course is designed at the introductory level. Previous university-level courses in biology and programming experience are not required.

HUMBIO 57. Epidemic Intelligence: How to Identify, Investigate and Interrupt Outbreaks of Disease. 4 Units.
(HUMBIO students must enroll in HUMBIO 57. Med/Graduate students must enroll in EPI 247.) We will cover: the components of public health systems in the US; principles of outbreak investigation and disease surveillance; different types of study design for field investigation; visualization and interpretation of public health data, including identification and prevention of biases; and implementation of disease control by public health authorities. Students will meet with leaders of health departments of the state and the county and will be responsible for devising, testing and evaluating a field questionnaire to better understand the complexities of field research. (Formerly HRP 247).
Same as: EPI 247

HUMBIO 65. Biosocial Medicine: The Social, Psychological, and Biological Determinants of Behavior and Wellbeing. 3 Units.
Explores how social forces, psychological influences, and biological systems combine to affect human behavior in early childhood, in the educational experience, and throughout the life course. Examines how behaviors are linked to well-being. Uses a flipped classroom model, in which a series of lectures are available for students to view on-line before class. In-class time then focuses on case studies from published research. Students must enroll in HUMBIO 65 for a letter grade to be eligible for Ways credit.
Same as: EDUC 205, SOMGEN 215

HUMBIO 71A. Race in Science. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Fall quarter focuses on science. What is the science of race and racism? How does race affect scientific work? Weekly guest speakers will address such issues as the psychology and anthropology of race and racism; how race, language, and culture affect education; race in environmental science and environmental justice; the science of reducing police violence; and the role of race in genomic research. Talks will take a variety of forms, from panel discussions to interviews and lectures. Weekly assignments: read a related article and participate in an online discussion.
Same as: AFRICAAM 51A, CEE 151A, COMM 51A, CSRE 51A, STS 51A

HUMBIO 71B. Race in Technology. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Winter quarter focuses on technology. How do race and racism affect the design and social impact of technology, broadly defined? Can new or different technology help to reduce racial bias? Invited speakers will address the role of race in such issues as energy infrastructure, nuclear arms control, algorithmic accountability, machine learning, artificial intelligence, and synthetic biology. Talks will take a variety of forms, ranging from panel discussions to interviews and lectures. Weekly assignments: read a related article and participate in an online discussion.
Same as: AFRICAAM 51B, BIOE 91B, CEE 151B, COMM 51B, CSRE 51B, STS 51B

HUMBIO 71C. Race in Medicine. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Spring quarter focuses on medicine. How do race and racism affect medical research and medical care? What accounts for health disparities among racial groups? What are the history, ethics, legal, and social issues surrounding racialized medical experiments and treatments? Invited speakers will address these and other issues. Talks will take a variety of forms: conversations, interviews, panels, and others. Weekly assignments: read a related article and participate in an online discussion.
Same as: AFRICAAM 51C, BIOE 91C, CEE 151C, CSRE 51C, STS 51C

HUMBIO 79Q. Sexuality and Society. 3 Units.
This course will explore how sexual identity, attitudes, and behaviors are shaped by the messages sent by the various agents of society such as schools, family, peers, media, and religious, medical, and political institutions. The interaction of biology, psychology, and socio-cultural factors, such as gender roles and sexual/relationship scripts will be discussed, as will the intersection of sexuality and notions of love, romance, and commitment. Critical developmental periods, such as adolescence and emerging adulthood will be examined in depth. Students will explore their own values and feelings about sexuality and come to an understanding of how their beliefs were formed. We will discuss how information about sexuality is disseminated in our society and what we can do to help ensure that such information is used in a way that promotes healthy self-conceptions, behavior, and relationships.

HUMBIO 82A. Qualitative Research Methodology. 3 Units.
This course introduces students to core concepts and methods of qualitative research. Through a variety of hands-on learning activities, readings, field experiences, class lectures and discussions, students will explore the process and products of qualitative inquiry. This course is designed particularly to support Human Biology undergraduates in designing, proposing and preparing for Honors Thesis research; students may use the course assignments and office hours to support individual research needs (e.g., proposal design, IRB protocol, pilot work).

HUMBIO 82B. Advanced Data Analysis in Qualitative Research. 3 Units.
This course is designed to support upperclass undergraduates who have collected ¿ or are collecting ¿ qualitative data in completion of Honors Thesis research. The course will review methods of qualitative data organization (field note amendment, transcription, data indexing, conceptual memo writing) and teach methods of qualitative data analysis (mutli-stage coding, data modeling, charting, use of analytic software) and examine best methods for the reporting of qualitative research. The course introduces methodologies through readings, sample data sets, and group practice; students then display learning by executing these methodologies on their own data, and reporting findings and methods.

HUMBIO 88. Introduction to Statistics for the Health Sciences. 4 Units.
Students will learn the statistical tools used to describe and analyze data in the fields of medicine and epidemiology. This very applied course will rely on current research questions and publicly available data. Students will gain proficiency with Stata to do basic analyses of health-related data, including linear and logistic regression, and will become sophisticated consumers of health-related statistical results.

HUMBIO 89. Introduction to Health Sciences Statistics. 3 Units.
This course aims to provide a firm grounding in the foundations of probability and statistics, with a focus on analyzing data from the health sciences. Students will learn how to read, interpret, and critically evaluate the statistics in medical and biological studies. The course also prepares students to be able to analyze their own data, guiding them on how to choose the correct statistical test, avoid common statistical pitfalls, and perform basic functions in R deducer. Cardinal Course certified by the Haas Center.

HUMBIO 89X. Introduction to Probability and Statistics for Epidemiology. 3 Units.
(HUMBIO students must enroll in HUMBIO 89X. Med/Graduate students must enroll in EPI 259.) Topics: random variables, expectation, variance, probability distributions, the central limit theorem, sampling theory, hypothesis testing, confidence intervals. Correlation, regression, analysis of variance, and nonparametric tests. Introduction to least squares and maximum likelihood estimation. Emphasis is on medical applications. (Formerly HRP 259).
Same as: EPI 259

HUMBIO 112. Conservation Biology: A Latin American Perspective. 3 Units.
Principles and application of the science of preserving biological diversity. Conceptually, this course is designed to explore the major components relevant to the conservation of biodiversity, as exemplified by the Latin American region. The conceptual frameworks and principles, however, should be generally applicable, and provide insights for all regions of the world. All students will be expected to conduct a literature research exercise leading to a written report, addressing a topic of their choosing, derived from any of the themes discussed in class. Prerequisite: BIO 101 or BIO 43 or HUMBIO 2A or BIO 81 and 84 or consent of instructor.
Same as: BIO 144, BIO 234

HUMBIO 113. The Human-Plant Connection. 3 Units.
The intertwined biologies of humans and plants, particularly the ways in which people and plants have imposed selection pressures and ecological change on one another. Topics include evolution and basic plant structure; plant domestication; effects of agriculture on human health and physiology; plants in traditional and contemporary diets; and human influences on plant biology through genetic manipulation and environmental change. Class meetings center on journal articles. Final project includes written and multimedia presentations. Prerequisites: HUMBIO 2A or BIO 81 and BIO 82 or consent of instructor.

HUMBIO 113S. Healthy/Sustainable Food Systems: Maximum Sustainability across Health, Economics, and Environment. 4 Units.
Focus on problems with and systems-based solutions to food system issues. Four particular settings are addressed: University, worksite, hospital, and school food. Traditional vs. disruptive food system models compared and contrasted. The goal is to determine how best to maximize sustainability across several dimensions, including health, economics, and the environment. Underlying class themes include social justice and the potential for changing social norms around food production and consumption. Discussion-based seminar. Prerequisite: Human Biology Core or Biology Foundations or consent of instructor.
Same as: CHPR 113

HUMBIO 114. Global Change and Emerging Infectious Disease. 4-5 Units.
The changing epidemiological environment. How human-induced environmental changes, such as global warming, deforestation and land-use conversion, urbanization, international commerce, and human migration, are altering the ecology of infectious disease transmission, and promoting their re-emergence as a global public health threat. Case studies of malaria, cholera, hantavirus, plague, and HIV.
Same as: EARTHSYS 114, EARTHSYS 214, ESS 213

HUMBIO 116. Climate Perspectives: Climate Science, Impacts, Policy, Negotiations, and Advocacy. 3 Units.
The course contains four main parts:Climate Science, Climate Impacts, Climate Policy, Climate Advocacy. Part I begins with a detailed introduction to climate science, including an assessment of arguments by climate science skeptics, and an examination of climate change models. Part II describes the impacts of climate change on the planet, human health, species and biodiversity, and it adds an economic perspective on the costs and benefits of responding now¿or later¿to climate change. Part II also include a discussion on climate change ethics, i.e., fairness and responsibility among individuals, nations, and generations. Part III focuses on climate policy, from the Kyoto Protocol to the Paris Accord. Part III also includes an introduction to how the public and officials have viewed climate change over time, and it explores factors that make widespread formal agreement difficult. Part IV looks forward to climate advocacy and what to expect from future of climate negotiations. Enrollment limited to students with sophomore academic standing or above. Prerequisite: Human Biology Core or Biology Foundations or consent of instructor (i.e. background in earth systems, economics, policy).
Same as: PUBLPOL 116

HUMBIO 120. Health Care in America: An Introduction to U.S. Health Policy. 4 Units.
Health policy and health care delivery from a historical and a current policy perspective. Introduces cost, quality, and access as measures of health system performance. Considers institutional aspects of health care reform and whether health care should be a right of all Americans. This course emphasizes the historical and cultural factors that have affected the evolution of our health care system in areas such as Medicaid, Medicare, and the development of managed care systems. Note: HUMBIO courses in the 120s (specifically HUMBIO 120, HUMBIO 120A, HUMBIO 120B) are designed to have complementary content and offer a variety of perspectives on the Health Care System. Upper division course with preference given to upperclassmen. Prerequisites: Human Biology Core or equivalent, or consent of instructor.

HUMBIO 120A. American Health Policy. 3 Units.
This course addresses current issues in health care reform and the policy making process. Covers current policy options for improving the health care system, as well as differing policy perspectives among those with different political views. Explores current controversies over attempts to modify the Affordable Care Act. Students discuss the feasibility, options, and ramifications of alternative proposals for health care reform. Involves student presentations, followed by discussion. Note: HUMBIO courses in the 120s (specifically HUMBIO 120, HUMBIO 120A, HUMBIO 120B) are designed to have complementary content and offer a variety of perspectives on the Health Care System. Prerequisites: Human Biology Core or equivalent, Human Biology 120, or consent of instructor.

HUMBIO 120B. The American Health Care System and Health Policy. 3 Units.
In this course you will learn about the structure and functioning of the U.S. health care system. The health care system in the U.S. has been challenged by high and rising costs, a failure to ensure universal access to care, and a need to ensure the quality of care provided to patients. We will explore in depth how our health care system works, how its structure and function contributes to the challenges we are confronting, and explore changes to the healthcare system that could help address them. The course has two main parts, the first focused on health insurance and health care financing, and the second focused on health care providers like doctors and hospitals. In addition, we bring other important topics like the Affordable Care Act, pharmaceuticals and health reforms. Note: HUMBIO courses in the 120s (specifically HUMBIO 120, HUMBIO 120A, HUMBIO 120B) are designed to have complementary content and offer a variety of perspectives on the Health Care System. Recommended Prerequisites: Human Biology Core.

HUMBIO 121E. Ethnicity and Medicine. 1-3 Unit.
Weekly lecture series. Examines the linguistic, social class, and cultural factors that impact patient care. Presentations promote culturally sensitive health care services and review contemporary research issues involving minority and underserved populations. Topics include health care inequities and medical practices of African Americans, Asians, Latinos, Native Americans, immigrants, and refugees in both urban and rural settings. 1 unit requires weekly lecture attendance, completion of required readings, completion of response questions; 2 units requires weekly lecture attendance and discussion session, completion of required readings and weekly response questions; 3 units (HUMBIO only) requires completion of a significant term paper. Students must in enroll in HUMBIO 121E for 3 units to receive a letter grade. This course must be taken for a minimum of 3 units to be eligible for Ways credit. Enrollment limited to students with sophomore academic standing or above.
Same as: EMED 121E

HUMBIO 122. Beyond Health Care: the effects of social policies on health. 3 Units.
(HUMBIO students must enroll in HUMBIO 122. Med/Graduate students must enroll in PEDS 222.) Available evidence at the national and cross-country level linking social welfare interventions and health outcomes. If and how non-health programs and policies could have an impact on positive health outcomes. Evaluation of social programs and policies that buffer the negative health impact of economic instability and unemployment among adult workers and their children. Examination of safety nets, including public health insurance, income maintenance programs, and disability insurance. Open to both undergraduate and graduate students. Prerequisites: HUMBIO 3B or equivalent, and some background in research methods and statistics, or consent of instructor.
Same as: PEDS 222

HUMBIO 122A. Health Care Policy and Reform. 5 Units.
(HUMBIO students must enroll in HUMBIO 122A. Graduate students must enroll in PUBLPOL 156.) Focuses on U.S. health care policy. Includes comparisons with health care policy in other countries and detailed examinations of Medicare, Medicaid, private insurance, the Affordable Care Act (ACA), and proposed reforms. Examines health policy efforts at state, local, and local levels. The course includes sessions on effective memo writing as well as presentation and the politics of health policy and reform efforts. Enrollment limited to students with sophomore academic standing or above. Prerequisites: Human Biology Core.
Same as: PUBLPOL 156

HUMBIO 122E. Reducing Health Disparities and Closing the Achievement Gap through Health Integration in Schools. 3 Units.
(HUMBIO students must enroll in HUMBIO 122E. Med/Graduate students must enroll in PEDS 229.) Health and education are inextricably linked. If kids aren't healthy, they won't realize their full potential in school. This is especially true for children living in poverty. This course proposes to: 1) examine the important relationship between children's health and their ability to learn in school as a way to reduce heath disparities; 2) discuss pioneering efforts to identify and address manageable health barriers to learning by integrating health and education in school environments.
Same as: EDUC 429, PEDS 229

HUMBIO 122M. Challenges of Human Migration: Health and Health Care of Migrants and Autochthonous Populations. 3 Units.
(HUMBIO students must enroll in HUMBIO 122M. Med/Graduate students enroll in PEDS 212) An emerging area of inquiry. Topics include: global migration trends, health Issues/aspects of migration, healthcare and the needs of immigrants in the US, and migrants as healthcare providers: a new area of inquiry in the US. Class is structured to include: lectures lead by the instructor and possible guest speakers; seminar, discussion and case study sessions led by students. Upper division course with preference given to upperclassmen.
Same as: PEDS 212

HUMBIO 122S. Social Class, Race, Ethnicity, and Health. 4 Units.
Examines health disparities in the U.S., looking at the patterns of those disparities and their root causes. Explores the intersection of lower social class and ethnic minority status in affecting health status and access to health care. Compares social and biological conceptualizations of race and ethnicity. Upper division course with preference given to upperclassmen. Prerequisite: Human Biology Core or Biology Foundations.
Same as: AFRICAAM 132, CSRE 122S

HUMBIO 123E. Health Economics & Policy: exploring health disparities, child health & health care spending. 4 Units.
This course addresses issues related to population health, health care, and health policy using tools from empirical and theoretical economics. We will study topics such as the demand for health care, socioeconomic disparities in population health outcomes, health insurance design, the role of competition in health care markets, determinants of health care spending, technological change in the health care sector, and pharmaceuticals and the opioid crisis. Throughout the course, we will learn about research methodology that will help us to distinguish correlation from causation, and think critically about the role of the government and public policy. The course will feature concepts from microeconomic theory, statistics, and econometrics. Prerequisites: Human Biology Core or equivalent, and statistics requirements.

HUMBIO 124C. Global Child Health. 3-5 Units.
(HUMBIO students must enroll in HUMBIO 124C. Med/Graduate students must enroll in MED 124 or PEDS 124.) This course introduces students to key challenges to the health and well being of children worldwide. We explicitly focus on child and public health problems in low- and middle-income countries (LMIC) to reflect the global burden of disease among children. We will review the scope and magnitude of the leading causes of morbidity and mortality, as well as examine regional variations. We will then identify both medical and non-medical causes, effects of, as well as interventions to address, some of the biggest child health problems. The course will also prevent an overview of the role of culture, gender, and non-state actors (NGOs, foundations, etc.) on health and health policy. Optional: The course will be taught in conjunction with an optional two-unit community engaged learning component. Please view the course syllabus for more information. Upper division course with preference given to upperclassmen. Prerequisites: Human Biology Core or equivalent or Biology Foundations.
Same as: MED 124, PEDS 124

HUMBIO 125. Current Topics and Controversies in Women's Health. 2-3 Units.
(HUMBIO students must enroll in HUMBIO 125. PhD minor in FGSS must enroll in FEMGEN 256. Med students must enroll in OBGYN 256.) Interdisciplinary. Focus is primarily on the U.S., with selected global women's health topics. Topics include: leading causes of morbidity and mortality across the life course; reproductive (e.g. gynecologic & obstetric) health issues; sexual function; importance of lifestyle (e.g. diet, exercise, weight control), including eating disorders; mental health; sexual and relationship abuse; issues for special populations. In-class Student Debates on key controversies in women's health. Guest lecturers. Undergraduates must enroll for 3 units. PhD minor in FGSS should enroll for 2 - 3 units. Med students should enroll for 2 units. To receive a letter grade in any listing, students must enroll for 3 units. This course must be taken for a letter grade and a minimum of 3 units to be eligible for Ways credit. Enrollment limited to students with sophomore academic standing or above. Undergraduate prerequisite: Human Biology Core or Biology Foundations or equivalent or consent of instructor.
Same as: FEMGEN 256, OBGYN 256

HUMBIO 126. Promoting Health Over the Life Course: the Science of Healthy Living. 3 Units.
(HUMBIO students must enroll in HUMBIO 126. Med/Graduate students must enroll in CHPR 226.) Disease prevention and health promotion topics pertinent at different stages of the life span emphasizing healthy lifestyle and reducing risk factors in both individuals and communities. Focus is on the application of behavioral science to risk reduction strategies, and the importance of health promotion as a social and economic imperative. Public and community health are emphasized. Topics include: epidemiology of chronic diseases; social determinants of health, behavior change; physical activity, nutrition, obesity and stress reduction; children, young adult, mid-life and aging health issues; health care delivery and public health system; workplace wellness; and other additional issues. Students enrolled in CHPR 226 for a letter grade must complete additional assignments appropriate for its Masters level listing. Enrollment limited to students with sophomore academic standing or above. Undergraduate prerequisites: Human Biology Core or equivalent or consent of instructor.
Same as: CHPR 226

HUMBIO 128. Community Health Psychology. 4 Units.
Social ecological perspective on health emphasizing how individual health behavior is shaped by social forces. Topics include: biobehavioral factors in health; health behavior change; community health promotion; and psychological aspects of illness, patient care, and chronic disease management. Prerequisites: HUMBIO 3B or PSYCH 1 or equivalent.
Same as: PSYCH 101

HUMBIO 128D. Systems Design In Health. 3 Units.
Good health doesn't begin the minute someone walks into a doctor's office; it begins in the places where we live, learn, work, and play. The products, services, and environments that we encounter everyday have a tremendous impact on our health. Taking a systems design-led approach developed at IDEO, we will explore public health in the context of culture, business, and design. The course will encourage students to integrate their personal perspectives with a systems-level view, paying particular attention to health equity and the role of creative leadership. Assignments will be a blend of reading and design exercises.

HUMBIO 129S. Global Public Health. 3 Units.
The class is an introduction to the fields of international public health and global medicine. It focuses on resource poor areas of the world and explores major global health problems and their relation to policy, economic development, culture and human rights. We discuss technical solutions as well as the importance of the social determinants of health, and emphasize multi-sectoral approaches to care. The course is intended to challenge all students to think globally, and is geared for students interested in exploring how their major interests cold be directed to solve global health issues. We provide opportunities for in-depth discussion and interaction with experts in the field. This course must be taken for a letter grade to be eligible for Ways credit.

HUMBIO 129W. Health Care Systems Around the World. 4 Units.
This course will explore the role of health care systems in societies around the world, identifying the common challenges facing health care systems and how different institutional structures in different countries perform in response to these challenges. We will structure the course around general conceptual frameworks related to key health system institutions (including financing, insurance, provider payment, patient cost-sharing, and the regulation of medical technology). From this foundation, we will draw on the experience of individual countries (high and low income, with heavy chronic disease and infectious disease burdens) to illustrate the function of these institutions under real-world circumstances observed around the globe. Prerequisite: Human Biology Core or Biology Foundations or equivalent or consent of instructor.
Same as: MED 129

HUMBIO 130. Human Nutrition. 4 Units.
(HUMBIO students must enroll in HUMBIO 130. CHPR master's students must enroll in CHRP 130.) The study of food, and the nutrients and substances therein. Their action, interaction, and balance in relation to health and disease. Emphasis is on the biological, chemical, and physiological processes by which humans ingest, digest, absorb, transport, utilize, and excrete food. Dietary composition and individual choices are discussed in relationship to the food supply, and to population and cultural, race, ethnic, religious, and social economic diversity. The relationships between nutrition and disease; ethnic diets; vegetarianism; nutritional deficiencies; nutritional supplementation; phytochemicals. CHPR master's students must enroll for a letter grade. Enrollment limited to students with sophomore academic standing or above. Prerequisites: Human Biology Core or Biology Foundations or consent of instructor.
Same as: CHPR 130

HUMBIO 131. Kinesiology. 4 Units.
This course covers the basic principles governing human movement with an emphasis on sports applications. The course spends roughly equal amounts of time on the applied anatomy and biology, meaning both the large and small-scale body structure and function. The applied anatomy portion includes body structure (the muscles and their connections) and mechanics (e.g. forces, torque, momentum and power), which together describe macroscopic movement. The applied biology portion includes the molecular and cellular basis of movement, mainly muscle contraction, nerve signaling, and the mechanisms of exercise damage, cramping, muscle memory, delayed-onset muscle soreness, and fatigue. nEnrollment limited to students with sophomore academic standing or above. Prerequisites: Human Biology Core or Biology Foundations or equivalent or consent of instructor.

HUMBIO 133. Human Physiology. 4 Units.
Human physiology will be examined by organ systems: cardiovascular, respiratory, renal, gastrointestinal and endocrine. Molecular and cell biology and signaling principles that underlie organ development, pathophysiology and opportunities for regenerative medicine are discussed, as well as integrative control mechanisms and fetal development. Prerequisite: Human Biology core or Biology Foundations or equivalent or consent of instructor.
Same as: BIO 112

HUMBIO 135. Exercise Physiology. 4 Units.
Explore the amazing capacity of your body to move and adapt within your everyday world. You will learn: how your body systems respond to the stress of acute exercise and adapt to chronic exercise training, how your cardiovascular system adapts to optimize oxygen delivery and utilization, how your muscles generate force and hypertrophy in response to training, and how your metabolic/biochemical pathways are regulated to support the increased energy demand of exercise. We will discuss theories on the causes of fatigue and muscle soreness, and on what limits human performance. Applied topics such as the effects of aging, gender, and environmental conditions (high altitude, heat, cold, microgravity) on your body will be emphasized in the second half of the course. Portions of the class will be taught through videos that use online lectures and engaging stories to illustrate physiology concepts. Enrollment limited to students with sophomore academic standing or above. Prerequisites: Human Biology core or Biology Foundations or equivalent, or consent of instructor.

HUMBIO 135S. Body Hacking: Applied Topics in Exercise Physiology. 3 Units.
Our increasing understanding of exercise physiology and biochemistry provide new insights into how we can "hack" the human body to increase the response to exercise training and improve human performance and health. In this discussion based course, we will explore research and training interventions that try to capitalize on this new knowledge. Science communication will also be emphasized in the class, so students will learn the fundamentals of science storytelling and mixed media presentation of ideas. Requirements of this class include participating in blogs & in-class discussions, evaluating physiology research, writing a research paper, and creating a science-based story by video or podcast to share with the class. If class is full, contact instructor for an application. Enrollment limited to 10. Prerequisites: B+ or higher in HUMBIO 135 and/or consent of instructor.

HUMBIO 139S. Sport and Exercise Medicine. 3 Units.
This is an upper division course with a common theme of injury as well as injury prevention in sport and physical activity. The topics include the treatment and evaluation of common sports injuries and illnesses for both musculoskeletal and non-musculoskeletal/medical conditions. Students will also develop critical reading and thinking skills. Classes will incorporate didactic lectures, critical analysis of sports medicine literature, as well as hand-on labs incorporating current sports medicine injury evaluation tools. Enrollment limited to students with sophomore academic standing or above. Prerequisite: Human Biology Core or Biology Foundations or equivalent or consent of instructor.

HUMBIO 140. Sex and Gender in Human Physiology and Disease. 2-3 Units.
(HUMBIO students must enroll in HUMBIO 140. PhD minor in FGSS must enroll in FEMGEN 241. Med students must enroll in MED 240.) Chromosomal, hormonal and environmental influences that lead to male and female and intersex reproductive anatomy and physiology and neuroendocrine regulation. Masculinizing and feminizing effects of endogenous and exogenous sex hormones and sociocultural factors, in particular gender identity, (social) gender norms and relationships, on the musculoskeletal, neurological, cardiovascular, immunological and other systems and tissues, e.g. adipose, skin, etc. over the lifecourse, from conception to puberty, through reproductive phases (including changes during the menstrual cycle and pregnancy up to and beyond menopause in women, and with aging in both sexes). Transgender health issues. Guest lecturers. Enrollment limited to students with sophomore academic standing or above. Prerequisites: Human Biology Core or Biology Foundations or equivalent, or consent of instructor.
Same as: FEMGEN 241, MED 240

HUMBIO 142. Adolescent Development. 4 Units.
Underlying changes and their consequences in everyday functioning. Physical, cognitive, social, and sexual development; how these changes influence the emerging sense of identity, autonomy, and intimacy. Contexts in which adolescents move such as family, friends and peers, school, and workplace. Focus is on normal development of boys and girls; attention to problem outcomes including eating disorders, depression, and teen pregnancy. Prerequisites: HUMBIO 4B or PSYCH 1 or consent of instructor.

HUMBIO 142M. Special Topics in Adolescent Mental Health. 4 Units.
Includes the study of aspects of common disorders seen in adolescent populations, such as prevalence, developmental course, gender differences, theoretical explanations, and therapeutic interventions. Topics will include mood/anxiety disorders, eating disorders, learning disabilities and ADHD, sexual risk behaviors, developmental disorders, substance abuse, and self-harm. Goals of this course include getting students to think critically about the unique mental health needs of adolescents, collaborating on devising ways to improve the way our society meets those needs, and strengthening writing and communication skills applicable to this area of inquiry. Enrollment limited to students with sophomore academic standing or above. Prerequisites: Human Biology Core or Biology Foundations or equivalent or consent of instructor.
Same as: PSYCH 142A

HUMBIO 143. Adolescent Sexuality. 4 Units.
Developmental perspective. Issues related to scientific, historical, and cultural perceptions; social influences on sexual development; sexual risk; and the limitations and future directions of research. Sexual identity and behavior, sexually transmitted diseases including HIV, pregnancy, abortion, gay and lesbian youth, sex education and condom availability in schools, mass media, exploitative sexual activity, and difficulties and limitations in studying adolescent sexuality. Legal and policy issues, gender differences, and international and historical trends. Prerequisites: Human Biology core or Biology Foundations or equivalent, or consent of instructor.

HUMBIO 144. Boys' Psychosocial Development. 4 Units.
Focuses on early childhood through young adulthood. Examines boys' lives and experiences as embedded within interpersonal relationships as well as social and cultural contexts. Includes perspectives from psychology, sociology, gender studies, and education. Upper division course with preference given to upperclassmen nPrerequisites: Human Biology Core or Developmental Psychology Biology Foundations or consent of instructor.

HUMBIO 146. Culture and Madness: Anthropological and Psychiatric Approaches to Mental Illness. 3-5 Units.
Unusual mental phenomena have existed throughout history and across cultures. Taught by an anthropologist and psychiatrist, this course explores how different societies construct the notions of "madness": What are the boundaries between "normal" and "abnormal", reason and unreason, mind and body, diversity and disease? Optional: The course will be taught in conjunction with an optional two-unit discussion section.
Same as: ANTHRO 186, ANTHRO 286, PSYC 286

HUMBIO 149. Psychological and Educational Resilience Among Children and Youth. 4-5 Units.
Theoretical, methodological, and empirical issues pertaining to the psychological and educational resilience of children and adolescents. Overview of the resilience framework, including current terminology and conceptual and measurement issues. Adaptive systems that enable some children to achieve successful adaptation despite high levels of adversity exposure. How resilience can be studied across multiple levels of analysis, ranging from cell to society. Individual, family, school, and community risk and protective factors that influence children's development and adaptation. Intervention programs designed to foster resilient adaptation in disadvantaged children's populations.
Same as: EDUC 256

HUMBIO 149L. Longevity. 4 Units.
Interdisciplinary. Challenges to and solutions for the young from increased human life expectancy: health care, financial markets, families, work, and politics. Guest lectures from engineers, economists, geneticists, and physiologists.
Same as: NENS 202, PSYCH 102

HUMBIO 151R. Biology, Health and Big Data. 3 Units.
We are living in the midst of a revolution in the accessibility and availability of biological and medical data. How can all this data be used to improve human health? In this course, students will look at case studies from diabetes and cancer research to learn how to access publicly available data ranging from gene or protein level datasets to information about clinical trials. Students will apply what they learn from the case studies to develop a research proposal and presentation on a biology-related topic of their choice. The class will have a small group workshop-type format. Students will gain skills in research methods including accessing, analyzing and presenting data. There will be exercises using the R programming language. Prior programming experience is not required. nPrerequisites: HUMBIO 2A and HUMBIO 3A or BIO 82 and BIO 83 or consent of instructor.

HUMBIO 153. Parasites and Pestilence: Infectious Public Health Challenges. 4 Units.
We will learn about parasitic and other pestilence of public health importance and how they affect billions of people worldwide. We examine the pathogenesis, clinical syndromes, complex life cycles, and the interplay among environment, vectors, hosts, and reservoirs; we explore historical contexts as it informs current interventions and programming against disease. Public health policy initiatives aimed at halting disease transmission are viewed critically through the lens of researchers, public health level initiatives, popular media (TV and movies) and individual patients with these diseases. There will be guest visitors who have experienced these diseases and we will hear from several researchers and experts working on the challenges of controlling, eliminating or even eradicating these diseases. We will become familiar with the targeted diseases of the World Health Organization tropical disease research list, including river blindness, sleeping sickness, leishmaniasis, schistosomiasis, mycobacterial disease (tuberculosis and leprosy), malaria, toxoplasmosis, dracunculiasis, and intestinal helminthes. There will be a lab section for "hands on" learning and viewing of parasites. Interactive sessions will involve teaching each other about these biological forces of nature that invade humans. Prerequisites: Human Biology Core or Biology Foundations or equivalent or consent of instructor.

HUMBIO 154B. Principles of Epidemiology. 3 Units.
Epidemiology is the study of the distribution and determinants of health and disease in human populations. In this course, students will learn about design, measures of disease occurrence and measures of association between exposures - be they environmental, behavioral or genetic - and health outcomes of interest. Students will also learn about how error, confounding and bias can impact epidemiological results. The course draws on both classic and contemporary research articles, which students will learn to critically appraise. Through lectures, problem sets, written responses to original articles and in-class discussions, students will gain a solid foundation in epidemiology. HUMBIO 154 courses can be taken separately or as a series. Upper division course with preference given to upperclassmen. Prerequisites: Human Biology Core or Biology Foundations or consent of instructor.

HUMBIO 154C. Cancer Epidemiology. 4 Units.
Clinical epidemiological methods relevant to human research in cancer will be the focus. The concepts of risk; case control, cohort, and cross-sectional studies; clinical trials; bias; confounding; interaction; screening; and causal inference will be introduced and applied. Social, political, economic, and ethical controversies surrounding cancer screening, prevention, and research will be considered. HUMBIO 154 courses can be taken separately or as a series. Enrollment limited to students with sophomore academic standing or above. Prerequisites: Human Biology core or Biology Foundations or equivalent, or instructor consent.

HUMBIO 154D. Models for Understanding and Controlling Global Infectious Diseases. 3-4 Units.
(HUMBIO students must enroll in HUMBIO 154D. Med/Graduate students must enroll in HRP 204.) This course introduces students to the dynamics of infectious diseases of global health importance, focusing on the use of mathematical models to characterize their transmission in populations. Relevant case examples of pathogens with differing natural history and transmission routes include tuberculosis, HIV, malaria, typhoid, and cholera, as well emerging infectious diseases such as Ebola and the 2019 novel coronavirus. Lectures will emphasize the theoretical basis underlying infectious disease dynamics and link them to in-class workshops and problem sets that will emphasize public health applications and will provide students with hands-on experience in creating and coding models. Students will learn the mathematical underpinnings of key topics in infectious disease transmission including herd immunity, the basic reproductive number, vaccine effects, social contact structure, host heterogeneities, and pathogen fitness. The course will teach students how to approach new questions in infectious disease transmission, from model selection, tradeoffs in model complexity or parsimony, parameterization, sensitivity and uncertainty analyses. Students will practice building models, evaluating the influence of model parameters, making predictions about disease trajectories, and projecting the impact of public health interventions. Prerequisites: HUMBIO 88 or 89 or STATS 141 or BIOSCI 141.
Same as: HRP 204

HUMBIO 158. Building Blocks for Chronic Disease. 3 Units.
Researchers have come a long way in developing therapies for chronic disease but a gap remains between current solutions and the ability to address the disease in full. This course provides an overview to the underlying biology of many of these diseases and how they may connect to each other. A "think outside of the box" approach to drug discovery is needed to bridge such a gap in solutions, and this course teaches the building blocks for that approach. Could Legoland provide the answer? This is a guest lecture series with original contributions from prominent thought leaders in academia and industry. Interaction between students and guest lecturers is expected. Students with a major, minor or coterm in Biology: 109A/209A or 109B/209B may count toward degree program but not both.
Same as: BIO 109A, BIOC 109A, BIOC 209A

HUMBIO 159. Genes and Environment in Disease Causation: Implications for Medicine and Public Health. 2-3 Units.
(Formerly HRP 238) The historical, contemporary, and future research and practice among genetics, epidemiology, clinical medicine, and public health as a source of insight for medicine and public health. Genetic and environmental contributions to multifactorial diseases; multidisciplinary approach to enhancing detection and diagnosis. The impact of the Human Genome Project on analysis of cardiovascular and neurological diseases, and cancer. Ethical and social issues in the use of genetic information. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit. Prerequisites:Human Biology core or Biology Foundations or consent of instructor.
Same as: EPI 238

HUMBIO 160. Human Behavioral Biology. 5 Units.
Multidisciplinary. How to approach complex normal and abnormal behaviors through biology. How to integrate disciplines including sociobiology, ethology, neuroscience, and endocrinology to examine behaviors such as aggression, sexual behavior, language use, and mental illness.
Same as: BIO 150

HUMBIO 161. The Neurobiology of Sleep. 4 Units.
The neurochemistry and neurophysiology of changes in brain activity and conscious awareness associated with changes in the sleep/wake state. Behavioral and neurobiological phenomena including sleep regulation, sleep homeostasis, circadian rhythms, sleep disorders, sleep function, and the molecular biology of sleep. nnPreference to seniors and graduate students. nnEnrollment limited to 16.
Same as: BIO 149, BIO 249

HUMBIO 162L. The Literature of Psychosis. 3-5 Units.
One of the great gifts of literature is its ability to give us insight into the internal worlds of others. This is particularly true of that state clinicians call "psychosis." But psychosis is a complex concept. It can be terrifying and devastating for patients and families, and yet shares characteristics with other, less pathological states, such as mysticism and creativity. How then can we begin to make sense of it? In this course, we will examine the first-hand experience of psychosis. We will approach it from multiple perspectives, including clinical descriptions, works of art, and texts by writers ranging from Shakespeare, to the science fiction writer Philip K. Dick, to patients attempting to describe their experience. This class is not only for students thinking of careers in medicine, psychology or anthropology, but also readers and writers interested exploring extraordinary texts. There are no prerequisites necessary; all that is needed is a love of language and a curiosity about the secrets of other minds.
Same as: ANTHRO 82P, PSYC 82, PSYC 282

HUMBIO 163. The Opioid Epidemic: Using Neuroscience to Inform Policy and Law. 3 Units.
The opioid epidemic has become a national problem, killing 115 people per day in the United States, and contributing to the first decrease in life expectancy in this country for decades.This is an upper division undergraduate class that aims to help students understand the science of opiates, how opioid prescribing and availability led us to be in this place, and how that information might be used to create effective policy to reverse it. Students will engage didactic work and interactive discussions to stimulate critical thinking at the interface between psychology, psychiatry, addiction medicine, neuroscience, communication, law, and society. They will develop the knowledge-base and framework to critically evaluate the science behind opioid addiction and how to apply this knowledge to address the addiction epidemic. This highly interactive seminar aims to engage the students in critical thinking didactics, activities and discussions that shape their understanding of the complexity inherent to the issues surrounding addiction and increase the student's ability to more critically assimilate and interrogate information. Preference will be given to upperclassmen, especially in the HumBio program. Attendance at first class is mandatory. Enrollment limited to 20 by application only. Applications will be accepted on Sunday, February 28th at midnight, consistent with the Spring Quarter enrollment. Applications will be due on Friday, March 5th at 5:00PM. Applications will be considered in the order received. Apply here: https://app.smartsheet.com/b/form/615264add6dc475da6da583f9a41a4b0. Prerequisites: Human Biology Core or PSYC 83 or consent of instructor.

HUMBIO 164. Autism Spectrum Disorder. 3 Units.
Deficits in social communication and interaction and repetitive behaviors are the core symptoms of Autism Spectrum Disorder (ASD), a neurodevelopmental disorder that affects about 1% of all children and costs society an estimated $268B annually. This interactive seminar course will provide an overview of our understanding of ASD, from genetics through epidemiology, biology and treatment, and the many implications for society, including the principles and problems of diagnosis, its impact upon family and across the lifespan, and controversies regarding its etiology, perception and care. Preference will be given to upperclassmen, especially in the Human Biology program. Attendance at first class is mandatory. Enrollment is limited to 18 students by application only. Applications will be accepted on Tuesday, September 1st at midnight, consistent with the Autumn Quarter enrollment. Application is closed. Prerequisites: Human Biology core or BIO 82 and BIO 84 or consent of instructor.

HUMBIO 166. Food and Society: Exploring Eating Behaviors in Social, Environmental, and Policy Context. 4 Units.
(HUMBIO students must enroll in HUMBIO 166. Med/Graduate students must enroll in CHRP 166.) The material in this course is an introduction to the field and the target audience is undergraduates. It may be of interest to graduate students unfamiliar with the field. The class examines the array of forces that affect the foods human beings eat, and when, where, and how we eat them, including human labor, agriculture, environmental sustainability, politics, animal rights/welfare, ethics, policy, culture, economics, business, law, trade, and ideology, and psychology. The class addresses the impact of current policies and actions that might be taken to improve human nutrition and health; macro-scale influences on food, nutrition, and eating behavior. Enrollment limited to students with sophomore academic standing or above. Undergraduate Prerequisites: Human Biology Core or Biology Foundations or consent of instructor.
Same as: CHPR 166

HUMBIO 168. Multidisciplinary Perspectives on Guilt. 3 Units.
The seminar encompasses the personal and cultural components of guilt from multidisciplinary perspectives. At the individual level, it explores behaviors that induce guilt; their relational aspects; genesis in evolutionary and developmental terms: and its normal and pathological manifestations. The cultural section includes cross-cultural perspectives on guilt and its conceptions in Christianity, Judaism, Islam, Hinduism, Buddhism, and Confucianism; as well as in the philosophy of Aristotle, Kant, J. S Mill and Nietzsche, and culpability in the law. Derived from this material, the course will also focus on the nature of ethical reasoning and the ways we make ethical choices and judgments in our lives. Upper division course with preference given to upperclassmen.

HUMBIO 171. The Death Penalty: Human Biology, Law, and Policy. 3 Units.
Combines academic study with student participation in forensic research and case investigation, including DNA evidence, psychological and physiological development, mental and physical disabilities, and witness interviews. The philosophy, structure, and application of capital punishment in the U.S. Goal is to examine and challenge the issues involved in the death penalty from the perspective of involvement in a real case. Course not taught from a preconceived belief or political or philosophical agenda except to involve students in an intellectual challenge of policy and philosophy. Upper division course with preference given to upperclassmen.

HUMBIO 172B. Children, Youth, and the Law. 3 Units.
How the legal rights of children and adolescents in America are defined, protected, and enforced through the legal process within the context of their developmental needs and competing societal interests. Topics: origins and definitions of children's rights; adoption; custody; the juvenile justice system; education; freedom of speech; and sex. The class is interactive, using hypotheticals for discussion and analysis. A and B alternate; students may take one or both. Upper division course with preference given to upperclassmen.
Same as: PUBLPOL 172

HUMBIO 174. Foundations of Bioethics. 3 Units.
Classic articles, legal cases, and foundational concepts. Theoretical approaches derived from philosophy. The ethics of medicine and research on human subjects, assisted reproductive technologies, genetics, cloning, and stem cell research. Ethical issues at the end of life. Upper division course with preference given to upperclassmen.

HUMBIO 174A. Ethics in a Human Life. 4 Units.
Ethical questions pervade a human life from before a person is conceived until after she dies, and at every point in between. This course raises a series of ethical questions, following along the path of a person's life - questions that arise before, during, and after she lives it. We will explore distinctive questions that a life presents at each of several familiar stages: prior to birth, childhood, adulthood, death, and even beyond. We will consider how some philosophers have tried to answer these questions, and we will think about how answering them might help us form a better understanding of the ethical shape of a human life as a whole.
Same as: ETHICSOC 174, PHIL 74A

HUMBIO 176A. Medical Anthropology. 5 Units.
Emphasis is on how health, illness, and healing are understood, experienced, and constructed in social, cultural, and historical contexts. Topics: biopower and body politics, gender and reproductive technologies, illness experiences, medical diversity and social suffering, and the interface between medicine and science.
Same as: ANTHRO 82, ANTHRO 282

HUMBIO 177. Disability Literature. 3-5 Units.
This course explores literary and filmic narratives about disability in the Global South. Authors including Edwidge Danticat, Bapsi Sidhwa, and Ricardo Padilla highlight the unique aesthetic potential of what Michael Davidson calls the defamiliar body and Ato Quayson describes as aesthetic nervousness. While engaging universal issues of disability stigma, they also emphasize the specific geopolitics of disability and how people in the Global South face greater rates of impairment based on unequal exposure to embodied risk. The course particularly welcomes students with interests in fields of medicine, policy, or public health.

HUMBIO 178A. Intro to Disability Studies: Disability and Technology. 5 Units.
For a long time, disability studies has focused on the past, early representations of people with disabilities and histories of the movement for disability rights. This course turns toward the future, looking at activism and speculative fiction as critical vehicles for change. Drawing on fiction by Samuel Beckett, Muriel Rukeyser, and Octavia Butler, this course will address the question of the future through an interrogation of the relationship between disability and technology, including assistive technology, genetic testing, organ transplantation.

HUMBIO 179B. Music and Healing. 3 Units.
To what extent can sound or music heal? This interdisciplinary course asks questions about music and healing around the world, drawing on the fields of medical ethnomusicology, medical anthropology, sound studies, and music therapy. Our case studies will be multi-sited, as we interrogate sound-based healings and healing sounds from diverse cross-cultural, global, and historic perspectives. No musical background is needed to interrogate these issues. We begin with the knowledge that the social, cultural, and political contexts where definitions of music and healing are created inform sound and its various and often conflicting interpretations and meanings.
Same as: MUSIC 39B

HUMBIO 180. Human Skeletal Anatomy. 5 Units.
Study of the human skeleton (a. k. a. human osteology), as it bears on other disciplines, including medicine, forensics, archaeology, and paleoanthropology (human evolution). Basic bone biology, anatomy, and development, emphasizing hands-on examination and identification of human skeletal parts, their implications for determining an individual's age, sex, geographic origin, and health status, and for the evolutionary history of our species. Three hours of lecture and at least three hours of supervised and independent study in the lab each week.
Same as: ANTHRO 175, ANTHRO 275, BIO 174, BIO 274

HUMBIO 191. Human Biology Practicum. 1 Unit.
Restricted to Human Biology majors. For students who have undertaken supervised community-engaged service, research (e.g. HB-REX, Bio-X) or pre-professional experiences related to their Area of Concentration topic. Includes a series of six required elements done throughout Junior and Senior year. Enroll for 1 unit during your final undergraduate quarter, typically Senior Spring; contact Capstone Coordinator for exceptions. Satisfies the Capstone Requirement of the major.

HUMBIO 192A. Human Biology Synthesis. 2-3 Units.
Capstone course series for HUMBIO seniors. Expands the work of the student's Area of Concentration. The Synthesis allows students the opportunity to craft a culminating, creative work of scholarship based on a synthesis of personal and academic interests, including service projects. Students should begin their synthesis either in the third quarter of Junior year or the first quarter of Senior year.nParticipation in the HUMBIO Senior Symposium during Spring quarter is required. nStudents should enroll in either 3 units for two quarters or 2 units for three quarters. Prerequisite: acceptance into the synthesis program: https://humanbiology.stanford.edu/capstone/synthesis. Notes: Contact Samantha Cooper for Department Consent.

HUMBIO 192S. Human Biology Synthesis. 1-3 Unit.
Capstone course series for HUMBIO seniors. Expands the work of the student's Area of Concentration. The Synthesis allows students the opportunity to craft a culminating, creative work of scholarship based on a synthesis of personal and academic interests, including service projects. Students should begin their synthesis either in the third quarter of Junior year or the first quarter of Senior year.nParticipation in the HUMBIO Senior Symposium during Spring quarter is required.nStudents should enroll in either 3 units for two quarters or 2 units for three quarters. nPrerequisite: acceptance into the synthesis program: https://humanbiology.stanford.edu/capstone/synthesis. Notes: Contact Samantha Cooper for Department Consent.

HUMBIO 192W. Human Biology Synthesis. 2-3 Units.
Capstone course series for HUMBIO seniors. Expands the work of the student's Area of Concentration. The Synthesis allows students the opportunity to craft a culminating, creative work of scholarship based on a synthesis of personal and academic interests, including service projects. Students should begin their synthesis either in the third quarter of Junior year or the first quarter of Senior year. nParticipation in the HUMBIO Senior Symposium during Spring quarter is required. nStudents should enroll in either 3 units for two quarters or 2 units for three quarters.nPrerequisite: acceptance into the synthesis program: https://humanbiology.stanford.edu/capstone/synthesis. Notes: Contact Samantha Cooper for Department Consent.

HUMBIO 193. Research in Human Biology. 1-5 Unit.
Independent research conducted under faculty supervision, in junior or senior year, normally but not necessarily in pursuit of an honors project. May be taken for a maximum 3 quarters of credit. Prerequisite: Faculty approval; application available in student services office.

HUMBIO 194. Honors. 1-10 Unit.
Restricted to Human Biology majors. Completion of the honors project, normally taken in the student's final quarter. First component: the honors thesis, a final paper providing evidence of rigorous research, fully referenced, and written in an accepted scientific style. Second component: participation in the honors symposium, including a 10-minute oral presentation followed by a brief question and answer session. Prerequisites: HUMBIO 193 or HUMBIO 199 and acceptance into the honors program.

HUMBIO 197. Human Biology Internship. 1-4 Unit.
Limited to and required of Human Biology majors. A supervised field, community, or lab experience of student's choosing, pre-approved by Human Biology faculty and student advisers, and initiated at least three quarters prior to graduation. Participation in a poster session on the internship experience is required during the first quarter that the student is in residence at Stanford after completion of the internship. May be repeated for credit and a total of 4 units accumulatively. Prerequisites: Human Biology core.

HUMBIO 198. Senior Tutorial in Human Biology. 1-5 Unit.
Reading for Human Biology majors in exceptional circumstances and under sponsorship of Human Biology associated faculty. Students must apply through Human Biology student services before registering. Reading list, paper, and evaluation required. May be repeated for credit.

HUMBIO 199. Directed Reading/Special Projects. 1-4 Unit.
Human Biology majors must obtain a sponsor from the Human Biology associated faculty or the Academic Council. Non-majors and students who have not declared must obtain a sponsor only from the Human Biology associated faculty. Students must complete application in Student Services Office.

HUMBIO 200. Teaching of Human Biology. 1-5 Unit.
For upper division undergraduates and graduate students. Practical experience in teaching Human Biology or serving as an assistant in a lecture course. May be repeated for credit.

HUMAN RIGHTS

Courses offered by the Center for Human Rights and International Justice are listed under the subject code HUMRTS (https://explorecourses.stanford.edu/search/?view=catalog&academicYear=&q=HUMRTS&filter-departmentcode-HUMRTS=on&filter-coursestatus-Active=on&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&page=0) on the Stanford Bulletin's ExploreCourses web site.

The Center equips a new generation of leaders with the knowledge and skills necessary to protect and promote human rights and dignity for all. Reflecting a deep commitment to international justice and the rule of law, the Center collaborates with partners across Stanford University and beyond on innovative programs that foster critical inquiry in the classroom and in the world. Working within the School of Humanities and Sciences, the Center supports academic and professional development opportunities for undergraduates and graduate students interested in pursuing work in human rights or international justice. The Center offers career and academic advising, research opportunities, campus events, and student fellowship funding.

The Center also invites student participation in a diverse portfolio of well-established international programs. These include innovative human rights-related digital archival resource development efforts, justice-sector capacity-building programs, community-engaged learning initiatives, and international criminal trial monitoring opportunities. The Center is part of the Stanford Global Studies Division, in the School of Humanities and Sciences

The interdisciplinary minor in Human Rights ensures students receive mentorship from experienced human rights scholars and practitioners, while lending academic rigor to the scholastic experience of the undergraduates who choose this path. The minor provides structure to diverse academic offerings on human rights-related topics, encouraging students from across the University to understand how human rights are interconnected across seemingly disparate disciplines.

The Human Rights minor is open to students in any major.

To declare the Human Rights minor, students must:

1. Register your interest in the minor by completing this form (https://airtable.com/shr2fgFTQW3rvRZ0m/). This ensures that you receive all relevant communications.
2. Download and complete the minor in Human Rights course planning worksheet (http://stanford.box.com/s/g2d56gslhgjcjsvto1vbh6qbe4us0fq7/).
3. Email the completed form to Senior Program Manager Jessie Brunner (jbrunner@stanford.edu) and schedule a time to review your preliminary course plan, preferably during office hours.
4. Once the plan is approved, students can declare the minor in Axess (https://axess.stanford.edu/).

Requirements

1. Completion of a minimum of 25 units of Human Rights-related course work. Students may not double-count courses for completing major and minor requirements.
2. Gateway: HUMRTS 101 Cross-Disciplinary Perspectives on Human Rights Theory and Practice (4 units)
3. At least one course across each of three streams:
   a. Foundations
   b. Contemporary issues
   c. Practice
4. Capstone: HUMRTS 199 Capstone Project: Human Rights Minor (1-5 units)
   a. Under the supervision of an approved faculty member, students propose and complete a 3-5 unit capstone project. This should either include:
      i. a 25-page research paper on a human rights topic approved by the supervising faculty; or
      ii. an alternative culminating work requiring equivalent effort such as an original short film produced by the student, an annotated digital human rights database, a curated exhibit, or a software application designed to address human rights challenges, approved in advance by the supervising faculty.
   b. Capstone should be completed no later than week 4 of the quarter in which the student applies to graduate.
5. At least 10 of the 25 units must be completed on Stanford's campus (see the "COVID-19 Policies (p. 1642)" tab for more information on this).
6. All courses to be counted toward the minor must be taken for a letter grade, except where letter grades are not offered, as required by University policy.
7. All students must maintain a GPA of no less than 3.0 in the classes counting toward the minor.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Center for Human Rights counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Other Undergraduate Policies

With regard to the policy that at least 10 of 25 units for the Minor must be taken on Stanford campus, Stanford courses taken virtually during the COVID-19 pandemic count toward the 10 unit minimum.

Director: David Cohen

Associate Director: Penelope Van Tuyl

Faculty Advisory Board: JP Daughton (History), Larry Diamond (Political Science), Dan Edelstein (Division of Literatures, Cultures, and Languages), James Fearon (Political Science), Frank Fukuyama (Political Science), Katherine Jolluck (History), Tanya Luhrmann (Anthropology), Anne Firth Murray (Feminist, Gender, and Sexuality Studies), Norman Naimark (History), Josh Ober (Classics and Philosophy), David Palumbo-Liu (English and Comparative Literature), Richard Roberts (History), Beth Van Schaack (Law), Jeremy Weinstein (Political Science), Paul Wise (Medicine), Christine Min Wotipka (Education).

Courses

HUMRTS 6W. Community-Engaged Learning Workshop on Human Trafficking - Part I. 3 Units.
Considers purpose, practice, and ethics of service learning. Provides training for students' work in community. Examines current scope of human trafficking in Bay Area, pressing concerns, capacity and obstacles to effectively address them. Students work with community partners dedicated to confronting human trafficking and problems it entails on a daily basis. Must currently be enrolled in or have previously taken History 5C/105C (FemGen 5C/105C, HumBio 178H, IR 105C, CSRE 5C/105C). (Cardinal Course certified by the Haas Center).
Same as: FEMGEN 6W, HISTORY 6W

HUMRTS 7W. Community-Engaged Learning Workshop on Human Trafficking - Part II. 3 Units.
Prerequisite: HISTORY6W (FEMGEN 6W). Continuation of HISTORY 6W (FEMGEN 6W). Students will continue working on their projects with their community partners. Several class meetings and small group consultations throughout the quarter. (Cardinal Course certified by the Haas Center).
Same as: FEMGEN 7W, HISTORY 7W

HUMRTS 101. Cross-Disciplinary Perspectives on Human Rights Theory and Practice. 4 Units.
In this survey human rights course, students will learn about the principal historical and philosophical bases for the modern concept of human rights, as well as the international legal frameworks meant to protect and promote these rights. Class sessions will include a mix of seminar discussions and guest lectures by distinguished Stanford faculty from departments across the university as well as practitioners from a variety of professional fields. The course seeks to illuminate for how the distinct methodologies, assumptions, and vocabulary of particular disciplinary communities affect the way scholars and practitioners trained in these fields approach, understand, and employ human rights concepts. This course fulfills the gateway course requirement for the minor in Human Rights.nnnPlease note that whether you enroll in the morning section or the afternoon section of the course, this class is scheduled to meet for 80 minutes at a time, twice a week (M/W). The morning section runs 10:30-11:50am. The afternoon section runs 3:00-4:20pm.

HUMRTS 103. Transitional Justice, Human Rights, and International Criminal Tribunals. 3-5 Units.
(Formerly IPS 280) Historical backdrop of the Nuremberg and Tokyo Tribunals. The creation and operation of the Yugoslav and Rwanda Tribunals (ICTY and ICTR). The development of hybrid tribunals in East Timor, Sierra Leone, and Cambodia, including evaluation of their success in addressing perceived shortcomings of the ICTY and ICTR. Examination of the role of the International Criminal Court and the extent to which it will succeed in supplanting all other ad hoc international justice mechanisms and fulfill its goals. Analysis focuses on the politics of creating such courts, their interaction with the states in which the conflicts took place, the process of establishing prosecutorial priorities, the body of law they have produced, and their effectiveness in addressing the needs of victims in post-conflict societies.
Same as: ETHICSOC 280, INTLPOL 280, INTNLREL 180A

HUMRTS 106. Human Rights in Comparative and Historical Perspective. 3-5 Units.
This course examines core human rights issues and concepts from a comparative and historical perspective. In the beginning part of the course we will focus on current debates about the universality of human rights norms, considering the foundation of the international human rights regime and claims that it is a product of western colonialism, imperialism, or hegemony. We will then discuss a series of issues where the debates about universality are particularly acute: gender inequality and discrimination, sexual violence, child marriage and forced marriage more generally, and other related topics. We will also consider the way in which issues of gender-based violence arise in the context of internal and international conflicts.
Same as: CLASSICS 116, ETHICSOC 106

HUMRTS 108. Advanced Spanish Service-Learning: Migration, Asylum, and Human Rights at the Border. 1-3 Unit.
This community engaged learning workshop is open only to students who are concurrently enrolled in SPANLANG 108SL. Through the HUMRTS 108 units, students will have the opportunity to apply their advanced Spanish language skills and knowledge from the class as remote volunteers with immigrant rights advocacy organizations.nnStudents will be trained to work remotely to staff a hotline through with they can help monitor detention conditions, report abuse, and request support on behalf of detainees and their loved ones. They will also have a commitment to work on more projects such as providing interpretations or translations for attorneys or mental/health professionals working remotely with detainees or their families, and/or conducting basic internet research regarding/compilation of news articles or government reports to substantiate asylum claims or fear of persecution. This course requires permission from the instructor to enroll. Please email instructor Vivian Brates vbrates@stanford.edu to get a link to the appropriate web form. Please note that this course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit. In AY 2020-21, a letter grade or `CR¿ grade satisfies the Ways requirement.

HUMRTS 109. Slavery, human trafficking, and the moral order: ancient and modern. 3 Units.
Slavery and trafficking in persons in the Greco-Roman world were legal and ubiquitous; today slavery is illegal in most states and regarded as a grave violation of human rights and as a crime against humanity under international law. In recent trends, human trafficking has been re-conceptualized as a form of "modern day slavery. " Despite more than a century since the success of the abolition movement, slavery and trafficking continue in the 21st century on a global scale. The only book for the course is: Peter Garnsey, Ideas of Slavery from Aristotle to Augustine, Cambridge University Press.
Same as: CLASSICS 118, CLASSICS 218

HUMRTS 110. Global Women's Issues in Human Rights and Health. 4 Units.
This course provides an overview of international women's human rights issues presented in the context of a woman's life, beginning in infancy and childhood and moving through adolescence, reproductive years, and aging. The approach to women's human rights is broad, taking into account economic and social factors and particularly the importance of women's capacities to manage their lives in the face of societal pressures and obstacles. Attention will be given to critical issues, such as: discrimination against women; poverty; unequal access to the cash economy, education, food, and health care; and violence. Issues such as maternal mortality, sexually transmitted diseases, violence in the home and in conflict and refugee situations, unequal access to economic opportunity, and sex trafficking will be discussed, with particular emphasis on promising interventions relating to the issues.

HUMRTS 112. Human Trafficking: Historical, Legal, and Medical Perspectives. 5 Units.
(Same as HISTORY 5C. History majors and others taking 5 units, enroll in 105C.) Interdisciplinary approach to understanding the extent and complexity of the global phenomenon of human trafficking, especially for forced prostitution, labor exploitation, and organ trade, focusing on human rights violations and remedies. Provides a historical context for the development and spread of human trafficking. Analyzes the current international and domestic legal and policy frameworks to combat trafficking and evaluates their practical implementation. Examines the medical, psychological, and public health issues involved. Uses problem-based learning. Required weekly 50-min. discussion section, time TBD. Students interested in service learning should consult with the instructor and will enroll in an additional course.
Same as: CSRE 105C, FEMGEN 105C, HISTORY 105C, INTNLREL 105C

HUMRTS 114. Human Rights Practice and Challenges in Southeast Asia: Issues, fieldwork, career paths. 3-5 Units.
This course aims to address student interest in the practice of human rights both from the individual perspective, particularly regarding a variety of professional career paths, as well as from institutional perspectives. Courses that focus on particular human rights issues or on the broad international legal framework of human rights are core components of a human rights curriculum. This course, on the other hand, is regionally focused, practice-oriented, and addresses the ways in which human rights initiatives and projects are designed, developed, funded, implemented, and evaluated by the various actors and institutions that make up the complex landscape of human rights work. We will have several guest speakers who have successfully followed different career paths in the UN, NGOs, academia, philanthropy, and development. They also reflect engagement in a number of key areas of human rights practice: gender based violence and gender discrimination; statelessness; freedom of religion and expression in an electronic age; justice sector reform and the rule of law; business and human rights; prosecution and accountability for war crimes, genocide, and crimes against humanity.nnnThe requirements for an effective practice-oriented course dictate that it be of limited geographical scope while at the same time having a regional, and to a lesser extent, a cross-regional perspective. Accordingly, the focus of this course will be on the 10 Southeast Asian nations that make up ASEAN as a region with its own legal and institutional human rights framework. We will also consider some of the ways in which ASEAN human rights issues are connected to its neighbors and, in this case, particularly to South Asia (Rohingya) and China (human trafficking and environmental issues). nnnThe course will be structured around the following 5 main segments:nn(1) Issues: Overview of human rights challenges in ASEAN: What are the most pressing issues (and to whom); how is the human rights agenda defined at the national and regional levels; how are priorities established; what are the obstacles to effective implementation of the agenda? nn(2) Players: The roles of national and regional institutions; national NGOs and human rights activists; national human rights commissions; governmental and regional bodies; international human rights organizations; the UN and its various engaged institutions (UNDP, UNODC, UNHCHR, UNHCR, Special Mandates, Human Rights Committee, etc.); national development agencies and embassies.nn(3) Initiatives and Projects: How are broad national and ASEAN human initiatives developed? How do they come to be incorporated into specific projects (research, training and capacity building, awareness raising and education, accountability, etc.)? How are such projects developed and by whom? How are they awarded, funded and implemented? What is the role of human rights philanthropy? How are such initiatives and projects evaluated? What determines the success or failure of such projects and according to whom? nn(4) Seeking accountability for human rights abuses: case studies on trafficking; gender based violence and discrimination; ethnic, religious, or political conflict and violence. nn(5) Human rights careers at the national, regional, and international levels.

HUMRTS 115. Business, Social Responsibility and Human Rights. 3 Units.
Large corporations now routinely spend millions of dollars to protect human rights and the environment. Shell Nigeria builds hospitals and schools in the Niger Delta. Nike employs hundreds of inspectors to improve conditions for the factory workers who produce its shoes across Asia and Latin America. Social media companies have faced scandals over user privacy, hate speech, and political manipulation. Other examples abound, across industries and around the globe. nnn"Don't be evil" (Google's one-time slogan) may be one motivation for these companies, but something more mundane is also at work: many companies believe they will do well, financially, if they do good, ethically. This course considers: nn-What does it mean for a company to "do good?" Should it care? nn-When does it serve a company¿s interest to take costly action to address human rights, labor, and environmental concerns? nn-What tactics have activists used to shift public opinion, media frames, and the law, and thereby change companies' incentives? nnnWe will learn through lectures, discussion, and occasional small group exercises. Several guest speakers with experience in business, advocacy, or in between will provide additional insights.

HUMRTS 116. International Criminal Law and Its Enforcement. 3 Units.
(LAW 5003) This course will introduce students to the law, institutions, and actors that constitute the system of international justice and to the political environment in which this system is situated. Readings will map the once and future international criminal law institutions, offer an elemental analysis of international crimes and forms of responsibility as they have evolved in international law, and focus on the challenges of pursuing criminal prosecutions for international crimes. Jurisprudence from the various international and domestic tribunals will be scrutinized with an emphasis on understanding the prosecution's burden, available defenses, and sources of proof. The course will also engage new and perennial debates about the suitability of using criminal justice mechanisms to respond to mass atrocity situations and consider alternatives from the domain of transitional justice. In addition to the substance of international criminal law, this course will also serve as an introduction to international legal reasoning, law-making, and institutional design.
Same as: INTLPOL 354

HUMRTS 117. International Human rights. 3 Units.
(LAW 5010) An introduction to the theory and practice of human rights. We will examine major sources of international human rights law---including treaties, customary international law, and national law---as well as the institutions in which human rights are contested, adjudicated, and enforced. Key sites of human rights activity include multilateral organizations, like the United Nations Security Council and Human Rights Council; international, regional, and national courts and tribunals; and quasi-judicial treaty bodies, like the U.N. Committee Against Torture. This degree of jurisdictional redundancy offers an opportunity to explore questions of institutional design and interaction as well as processes of normative diffusion. The course will also consider the role of non-state actors---including non-governmental organizations, corporations, terrorist organizations, and ordinary individuals---in promoting and violating human rights. In addition to this survey of the human rights ecosystem, the course will engage some of the fundamental theoretical debates underlying the international human rights project with a focus on perennial questions of legitimacy, justiciability, compliance, and efficacy. Finally, we will explore a range of threats and challenges to the promotion of human rights---both perennial and novel---including economic under-development, terrorism, national security over-reach, patriarchy, and racism. We will read case law originating from all over the world, including the United States. Special Instructions: Students have the option to write a long research paper in lieu of the final exam with consent of instructor. Elements used in grading: Class participation; exam or final long research paper. (Formerly Law 330).
Same as: INTLPOL 355

HUMRTS 194A. Environmental Justice Colloquium. 1 Unit.
This colloquium brings the voices and vision of leading Environmental Justice (EJ) advocates to the Stanford community, in order to educate, inspire, and transform our understanding of environmental science. Environmental Justice advances a positive vision for policies and actions that fight environmental racism. EJ approaches involve centering the voices and leadership of marginalized communities in 1) ensuring equitable access to environmental benefits, and 2) preventing or mitigating the disproportionate impacts of environmental harms for all communities, regardless of gender, class, race, ethnicity, or other social positions. This colloquium highlights the work of leading EJ thinkers and practitioners, speaking from frontline organizations on a wide range of topics. These topics include acting on toxic exposures and health disparities for community resilience, climate justice and youth action, Indigenous land and water rights, green cities and Afrofuturism, food justice and intersecting social movements, queer ecologies, and more. The colloquium will host a weekly speaker, and final symposium at the end of the quarter. nnThe first meeting for this course will take place during WEEK 3.
Same as: EARTHSYS 194A, URBANST 155A

HUMRTS 196. Environmental Justice and Human Rights Lab. 1 Unit.
The Environmental Justice and Human Rights Lab is an intellectual hub and supportive learning community for students engaging in environmental justice and human rights work of any kind. Environmental justice (EJ) advances a positive vision for policies and actions that fight environmental racism, and human rights (HR) center on the notion that all people, by virtue of their existence and regardless of any given status or classification, are equally entitled to fundamental rights and protections. Our semi-structured weekly sessions will foster an open learning environment for students and peer-to-peer learning connections. Sessions will include giving and receiving feedback on capstone or community-based projects, independent research, or other relevant coursework or extracurricular activity. We also welcome students who are new to these topics and would like to learn more. We are open to students of all backgrounds and disciplines at any stage of their research or project work. Following EJ and HR principles, we seek to center local, contextualised knowledge and leadership through ethical research partnerships with community members. To do so, we follow community-based participatory research approaches and decolonizing methodologies. Examples of our work to date include 1) enabling graduate students to effectively bring EJ and HR approaches into dissertation research, 2) supporting campus leaders and directly participating in diversity, equity, and inclusion (DEI) initiatives, and 3) educating and learning from one another about critical EJ and HR scholarship and anti-racist approaches to our work. Lab interests include addressing inequitable impacts of climate change, advancing decolonial approaches to land and water management, promoting food justice, combatting human trafficking and labor exploitation, promoting fair and just immigration policies, and additional EJ and HR research topics. Note that this lab is intended as an open space for engagement. If you are unable to enroll for credit, but would still like to participate, please email humanrights@stanford.edu.
Same as: EARTHSYS 196A

HUMRTS 197. Human Rights Careers Intensive. 1 Unit.
This weekly seminar aimed at juniors, seniors, and graduate students, to support practical exploration of human rights careers. Students will meet alumni and other human rights professionals working in a variety of sectors, and get job-search ready. Each week, a guest speaker will present their unique story to the group, helping you connect your skills and undergraduate experiences at Stanford to long-term, meaningful human rights work.

HUMRTS 198. Independent Study or Directed Reading in Human Rights. 1-5 Unit.
May be repeated for credit. Students using these units toward the Minor in Human Rights must take for a letter grade. Department consent is required for enrollment. Please contact humanrights@stanford.edu indicating your plan and demonstrating agreement from the instructor.

HUMRTS 199. Capstone Project: Human Rights Minor. 1-5 Unit.
Students completing a required capstone project for the Minor in Human Rights must enroll in this course for units with their capstone adviser selected as the instructor. Students must agree with their capstone advisor how many units (3-5) their proposed capstone project is worth, and enroll accordingly. This course is open only to Human Rights Minors. Department consent is required for enrollment. Please contact handacenter@stanford.edu indicating your plan and demonstrating agreement from the your advisor.

HUMANITIES

The undergraduate minor in Humanities provides Stanford students with a broad foundation in the humanities, emphasizing literature, philosophy, and history. The program combines this general knowledge with a focus on the particular cultures of a global region and allows students to reflect on and discuss many of the critical questions that arise everywhere that human beings live together.

Minor in Humanities Requirements

Students in any field qualify for the Humanities minor by meeting the following requirements:

- A minimum of 6 HUMCORE courses completed at 3 units each.
- Courses applied to the minor must be taken for a letter grade where offered.
- A grade point average (GPA) of 2.0 or better must be achieved in each course.
- Transfer credit and AP credit do not apply to this minor.
- Courses applied toward the minor may not fulfill requirements for another degree.

The HUMCORE courses are:

		Units
Autumn Quarter		
HUMCORE 111	Texts that Changed the World from the Ancient Middle East	3-5
HUMCORE 112	Great Books, Big Ideas from Ancient Greece and Rome	3
HUMCORE 113	Order, Patterns, and Disorder in Early China	3
HUMCORE 117	Ancients and Moderns: Africa and South Asia in World Literature	3
Winter Quarter		
HUMCORE 121	Ancient Knowledge, New Frontiers: How the Greek Legacy Became Islamic Science	3
HUMCORE 122	Humanities Core: The Renaissance in Europe	3
HUMCORE 123	Beauty and Renunciation in Japan	3
Spring Quarter		
HUMCORE 131	Modernity and Novels in the Middle East	3-5
HUMCORE 134	Freedom Fighters, Terrorists, and Social Justice Warriors: Protest and Decolonization in South Asia	3
HUMCORE 135	Atlantic Folds: Indigeneity and Modernity	3

Certificate

The Humanities Interdisciplinary Program offers a certificate to students who complete a three quarter HUMCORE course sequence. To receive the certificate, the student should contact Student Services, located in Room 128, Pigott Hall, or email odunlop@stanford.edu. To receive the certificate, all courses must be for a letter grade where offered.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Minor Program Requirements

Grading

The HUMCORE minor program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Faculty Director: Alexander Key (Associate Professor of Arabic and Comparative Literature, Director of Stanford Humanities Core)

Faculty: Vincent Barletta (Associate Professor of Comparative Literature and Iberian and Latin American Cultures), Anna Bigelow (Associate Professor of Religious Studies), Ronald Egan (Professor of East Asian Languages and Cultures), Charlotte Fonrobert (Associate Professor of Religious Studies), Blair Hoxby (Professor of English), Burcu Karahan (Lecturer in Turkish Language and Literature), Christopher B. Krebs (Associate Professor of Classics), Haiyan Lee (Professor of East Asian Languages and Cultures and Comparative Literature), Reviel Netz (Professor of Classics), Grant Parker (Associate Professor of Classics), Vered Karti Shemtov (Senior Lecturer in Hebrew Language and Literature), Eva Chernov Lokey (Senior Lecturer in Hebrew and Comparative Literature), Ariel Stilerman (Assistant Professor of East Asian Languages and Cultures)

Courses

HUMCORE 12Q. Humanities Core: Great Books, Big Ideas -- Europe, Middle Ages and Renaissance. 3-4 Units.
This three-quarter sequence asks big questions of major texts in the European and American tradition. What is a good life? How should society be organized? Who belongs? How should honor, love, sin, and similar abstractions govern our actions? What duty do we owe to the past and future? The second quarter focuses on the transition from the Middle Ages to Modernity, Europe's re-acquaintance with classical antiquity and its first contacts with the New World. Authors include Dante, Shakespeare, Machiavelli, Cervantes, and Milton. N.B. This is the second of three courses in the European track. These courses offer an unparalleled opportunity to study European history and culture, past and present. Take all three to experience a year-long intellectual community dedicated to exploring how ideas have shaped our world and future. Students who take HUMCORE 11 and HUMCORE 12Q will have preferential admission to HUMCORE 13Q (a WR2 seminar).
Same as: DLCL 12Q, FRENCH 12Q, ILAC 12Q

HUMCORE 13. Humanities Core: Great Books, Big Ideas -- Europe, Modern. 3 Units.
This three-quarter sequence asks big questions of major texts in the European and American tradition. What is a good life? How should society be organized? Who belongs? How should honor, love, sin, and similar abstractions govern our actions? What duty do we owe to the past and future? This third and final quarter focuses on the modern period, from the rise of revolutionary ideas to the experiences of totalitarianism and decolonization in the twentieth century. Authors include Locke, Mary Shelley, Marx, Nietzsche, Freud, Weber, Primo Levi, and Frantz Fanon.
Same as: DLCL 13, FRENCH 13, HISTORY 239C, PHIL 13

HUMCORE 13Q. Humanities Core: Great Books, Big Ideas -- Europe, Modern. 3-4 Units.
This three-quarter sequence asks big questions of major texts in the European and American tradition. What is a good life? How should society be organized? Who belongs? How should honor, love, sin, and similar abstractions govern our actions? What duty do we owe to the past and future? This third and final quarter focuses on the modern period, from the rise of revolutionary ideas to the experiences of totalitarianism and decolonization in the twentieth century. Authors include Locke, Mary Shelley, Marx, Nietzsche, Freud, Weber, Primo Levi, and Frantz Fanon. N.B. This is the third of three courses in the European track. These courses offer an unparalleled opportunity to study European history and culture, past and present. Take all three to experience a year-long intellectual community dedicated to exploring how ideas have shaped our world and future. Students who take HUMCORE 11 and HUMCORE 12Q will have preferential admission to HUMCORE 13Q (a WR2 seminar). **NOTE** This class meets Monday and Wednesday in room 20-22K and Fridays in room 260-113 to attend a lecture along with the other two HUMCORE courses this quarter.
Same as: DLCL 13Q, GERMAN 13Q

HUMCORE 20. Humanities Core: Dao, Virtue, and Nature -- Foundations of East Asian Thought. 3 Units.
This course explores the values and questions posed in the formative period of East Asian civilizations. Notions of a Dao ("Way") are common to Confucianism, Daoism, and Buddhism, but those systems of thought have radically different ideas about what that Dao is and how it might be realized in society and an individual's life. These systems of thought appeared first in China, and eventually spread to Korea and Japan. Each culture developed its own ways of reconciling the competing systems, but in each case the comprehensive structure of values and human ideals differs significantly from those that appeared elsewhere in the ancient world. The course examines East Asian ideas about self-cultivation, harmonious society, rulership, and the relation between human and nature with a view toward expanding our understanding of these issues in human history, and highlighting their legacies in Asian civilizations today. The course features selective readings in classics of Confucian, Daoist, and Buddhist texts that present the foundational tenets of Asian thought. N. B. This is the first of three courses in the Humanities Core, East Asian track. These courses show how history and ideas shape our world and future. Take all three to experience a year-long intellectual community dedicated to the life of the mind.
Same as: CHINA 20, JAPAN 20, KOREA 20

HUMCORE 21. Humanities Core: Love and Betrayal in Asia. 3 Units.
Why are lovers in storybooks East and West always star-crossed? Why do love and death seem to go together? For every Romeo and Juliet, there are dozens of doomed lovers in the Asian literary repertoires, from Genji's string of embittered mistresses, to the Butterfly lovers in early modern China, to the voices of desire in Koryo love songs, to the devoted adolescent cousins in Dream of the Red Chamber, to the media stars of Korean romantic drama, now wildly popular throughout Asia. In this course, we explore how the love story has evolved over centuries of East Asian history, asking along the way what we can learn about Chinese, Japanese, and Korean views of family and community, gender and sexuality, truth and deception, trust and betrayal, ritual and emotion, and freedom and solidarity from canonical and non-canonical works in East Asian literatures. N.B. This is the second of three courses in the East Asian track. These courses offer an unparalleled opportunity to study East Asian history and culture, past and present. Take all three to experience a year-long intellectual community dedicated to exploring how ideas have shaped our world and future.
Same as: CHINA 21, JAPAN 21, KOREA 21

HUMCORE 21Q. Humanities Core: Love and Betrayal in Asia. 3 Units.
Why are lovers in storybooks East and West always star-crossed? Why do love and death seem to go together? For every Romeo and Juliet, there are dozens of doomed lovers in the Asian literary repertoires, from Genji's string of embittered mistresses, to the Butterfly lovers in early modern China, to the voices of desire in Koryo love songs, to the devoted adolescent cousins in Dream of the Red Chamber, to the media stars of Korean romantic drama, now wildly popular throughout Asia. In this course, we explore how the love story has evolved over centuries of East Asian history, asking along the way what we can learn about Chinese, Japanese, and Korean views of family and community, gender and sexuality, truth and deception, trust and betrayal, ritual and emotion, and freedom and solidarity from canonical and non-canonical works in East Asian literatures. N.B. This is the second of three courses in the East Asian track. These courses offer an unparalleled opportunity to study East Asian history and culture, past and present. Take all three to experience a year-long intellectual community dedicated to exploring how ideas have shaped our world and future.
Same as: CHINA 21Q, JAPAN 21Q, KOREA 21Q

HUMCORE 22. Humanities Core: Everybody Eats: The Language, Culture, and Ethics of Food in East Asia. 3 Units.
Many of us have grown up eating "Asian" at home, with friends, on special occasions, or even without full awareness that Asian is what we were eating. This course situates the three major culinary traditions of East Asia--China, Japan, and Korea--in the histories and civilizations of the region, using food as an introduction to their rich repertoires of literature, art, language, philosophy, religion, and culture. It also situates these seemingly timeless gastronomies within local and global flows, social change, and ethical frameworks. Specifically, we will explore the traditional elements of Korean court food, and the transformation of this cuisine as a consequence of the Korean War and South Korea¿s subsequent globalizing economy; the intersection of traditional Japanese food with past and contemporary identities; and the evolution of Chinese cuisine that accompanies shifting attitudes about the environment, health, and well-being. Questions we will ask ourselves during the quarter include, what is "Asian" about Asian cuisine? How has the language of food changed? Is eating, and talking about eating, a gendered experience? How have changing views of the self and community shifted the conversation around the ethics and ecology of meat consumption?.
Same as: CHINA 118, JAPAN 118, KOREA 118

HUMCORE 33. Humanities Core: Global Identity, Culture, and Politics from the Middle East. 3 Units.
How do we face the future? What resources do we have? Which power structures hold us back and which empower us? What are our identities at college in the Bay Area? In 1850s Lebanon, Abu Faris Shidyaq faced all these same questions (except the last one; he was a Christian magazine editor). In this course we will engage with claims about identity, culture, and politics that some might say come from the "Middle East" but that we understand as global. Ganzeer's graphic novel is as much for California as it is for Egypt. Ataturk's speech is about power and identity just like Donald Trump is about power and identity. In Turkish novels and in Arabic poetry, the people we engage in this course look to their pasts and our futures. What happens next? This is the third of three courses in the Middle Eastern track. These courses offer an unparalleled opportunity to study Middle Eastern history and culture, past and present. Take all three to experience a year-long intellectual community dedicated to exploring how ideas have shaped our world and future.future.
Same as: COMPLIT 33, DLCL 33

HUMCORE 52. Global Humanities: The Grand Millennium, 800-1800. 3-4 Units.
How should we live? This course explores ethical pathways in European, Islamic, and East Asian traditions: mysticism and rationality, passion and duty, this and other worldly, ambition and peace of mind. They all seem to be pairs of opposites, but as we'll see, some important historical figures managed to follow two or more of them at once. We will read works by successful thinkers, travelers, poets, lovers, and bureaucrats written between 800 and 1900 C.E. We will ask ourselves whether we agree with their choices and judgments about what is a life well lived.
Same as: DLCL 52, HISTORY 206D, JAPAN 52

HUMCORE 111. Texts that Changed the World from the Ancient Middle East. 3-5 Units.
This course traces the story of the cradle of human civilization. We will begin with the earliest human stories, the Gilgamesh Epic and biblical literature, and follow the path of the development of law, religion, philosophy and literature in the ancient Mediterranean or Middle Eastern world, to the emergence of Jewish and Christian thinking. We will pose questions about how this past continues to inform our present: What stories, myths, and ideas remain foundational to us? How did the stories and myths shape civilizations and form larger communities? How did the earliest stories conceive of human life and the divine? What are the ideas about the order of nature, and the place of human life within that order? How is the relationship between the individual and society constituted? This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: COMPLIT 31, JEWISHST 150, RELIGST 150

HUMCORE 112. Great Books, Big Ideas from Ancient Greece and Rome. 3 Units.
This course will journey through ancient Greek and Roman literature from Homer to St. Augustine, in constant conversation with the other HumCore travelers in the Ancient Middle East, Africa and South Asia, and Early China. It will introduce participants to some of its fascinating features and big ideas (such as the idea of history); and it will reflect on questions including: What is an honorable life? Who is the Other? How does a society fall apart? Where does human subjectivity fit into a world of matter, cause and effect? Should art serve an exterior purpose? Do we have any duties to the past? This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: CLASSICS 37, DLCL 11

HUMCORE 113. Order, Patterns, and Disorder in Early China. 3 Units.
This course explores the human impulse of order-making and its limits in the specific context of Early China. Since antiquity, the Chinese civilization displayed constant efforts to understand the natural world and human society, to seek patterns from the numerous and the diverse, and to fathom individuals¿ positions in the world and the proper ways to respond to all its complexity. Such attempts manifested in a cosmology with an emphasis on the resonance between the human and the natural realms, the prescription of ideals for behaviors and morals, the persistent pursuit and celebration of refined patterns in expression, and the state¿s construction of order through policies and cultural projects of standardization. Yet, despite the efforts of order and control, there had always been a strong tendency of anarchy, unveiling how much the seemingly prevailing structures could not contain. The course will probe into ancient philosophy, dynastic histories, literature, and arts to trace these efforts of establishing order and their consequences. The materials will also lead us to contemplate the other side of the story: What was left out? What were the restrictions? What if one failed to conform? Were any advantages found in disorder? This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: CHINA 163A

HUMCORE 117. Ancients and Moderns: Africa and South Asia in World Literature. 3 Units.
How might we make sense of culturally significant texts and text equivalents? We'll compare different answers to abiding human questions, such as: Where do we come from? Why do origins matter? What role do different media (written, spoken, otherwise performed, or visual) play in conveying a sense of the past from one generation to another? In what ways is our access to such cultural productions framed by colonial histories, with their discrepant experiences and perspectives? Readings include the Ramayana; the Bhagavad-Gita; Chinua Achebe, Things Fall Apart; and Chimamanda Adichie, `The headstrong historian'. This course is part of the Humanities Core sequence.
Same as: CLASSICS 45

HUMCORE 121. Ancient Knowledge, New Frontiers: How the Greek Legacy Became Islamic Science. 3 Units.
What contributions did Arabic and Islamic civilization make to the history of science? This course will read key moments in Greek and Islamic science and philosophy and ask questions about scientific method, philosophy, and religious belief. We will read Ibn Sina (Avicenna), Ibn Haytham, and Baha al-Din al-Amili, among others. What is the scientific method and is it universal across time and place? What is Islamic rationality? What is Greek rationality? Who commits to empiricism and who relies on inherited ideas? This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: CLASSICS 47, COMPLIT 107A

HUMCORE 122. Humanities Core: The Renaissance in Europe. 3 Units.
The Renaissance in Europe saw a cultural flowering founded on the achievements of pagan antiquity, a new humanism founded on the conviction that nothing which has ever interested living men and women can wholly lose its vitality, and the foundation of the modern state. We start with those ¿Renaissance men¿ Leonardo Da Vinci, Michelangelo, and Raphael. We then turn to Martin Luther¿s rejection of Papal Rome and his erection of a competing, Protestant ideal. Montaigne and Shakespeare invent our modern sense of subjectivity before our eyes. And Machiavelli and Hobbes create a science of power politics. Each week, during the first class meeting, we will focus on these issues in Europe. During the second class meeting, we will participate in a collaborative conversation with the other students and faculty in Humanities Core classes, about other regions and issues. This course is taught in English . This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: ENGLISH 112C

HUMCORE 123. Beauty and Renunciation in Japan. 3 Units.
Is it okay to feel pleasure? Should humans choose beauty or renunciation? This is the main controversy of medieval Japan. This course introduces students to the famous literary works that created a world of taste, subtlety, and sensuality. We also read essays that warn against the risks of leading a life of gratification, both in this life and in the afterlife. And we discover together the ways in which these two positions can be not that far from each other. Does love always lead to heartbreak? Is the appreciation of nature compatible with the truths of Buddhism? Is it good to have a family? What kind of house should we build for ourselves? Can fictional stories make us better persons? Each week, during the first class meeting, we will focus on these issues in Japan. During the second class meeting, we will participate in a collaborative conversation with the other students and faculty in Humanities Core classes, about other regions and issues. This course is taught in English.
Same as: JAPAN 163A

HUMCORE 131. Modernity and Novels in the Middle East. 3 Units.
This course will investigate cultural and literary responses to modernity in the Middle East. The intense modernization process that started in mid 19th century and lingers to this day in the region caused Arabic, Persian, and Turkish literary cultures to encounter rapid changes; borders dissolved, new societies and nations were formed, daily life westernized, and new literary forms took over the former models. In order to understand how writers and individuals negotiated between tradition and modernity and how they adapted their traditions into the modern life we will read both canonical and graphic novels comparatively from each language group and focus on the themes of nation, identity, and gender. All readings will be in English translation. This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: COMPLIT 43

HUMCORE 133. Humanities Core: How to be Modern in East Asia. 3-5 Units.
Modern East Asia was almost continuously convulsed by war and revolution in the 19th and 20th centuries. But the everyday experience of modernity was structured more profoundly by the widening gulf between the country and the city, economically, politically, and culturally. This course examines literary and cinematic works from China and Japan that respond to and reflect on the city/country divide, framing it against issues of class, gender, national identity, and ethnicity. It also explores changing ideas about home/hometown, native soil, the folk, roots, migration, enlightenment, civilization, progress, modernization, nationalism, cosmopolitanism, and sustainability. All materials are in English. This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: CHINA 24, COMPLIT 44, JAPAN 24, KOREA 24

HUMCORE 134. Freedom Fighters, Terrorists, and Social Justice Warriors: Protest and Decolonization in South Asia. 3 Units.
The South Asian region comprises the contemporary nations of India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan, and the Maldives. Racially, linguistically, politically, religiously, and in every way diverse, this region has also experienced the challenge of European colonialism, the effects of global climate change, the impact of rapid industrialization and urbanization, and internal conflicts within and between nations. It is also a creatively and intellectually vibrant region in which principles of non-violent resistance, award winning arts and literature, stunning natural environments, and scientific discovery are integral and celebrated. How have South Asians engaged the rapid social change of the twentieth century with decolonization and regional conflicts? What artistic and literary formations emerged from and drove the freedom movements against colonial rule and the nation forming projects that ensued? How have globalization and internal debates about national identities shaped contemporary South Asian societies?.
Same as: RELIGST 118

HUMCORE 135. Atlantic Folds: Indigeneity and Modernity. 3 Units.
The Atlantic as an infinite doubling of ancient and modern. The Atlantic as an endless, watery cloth of African, American, and European folds, unfolding and refolding through bodies and ideas: blackness, whiteness, nature, nurture, water, blood, cannibal, mother, you, and I. The Atlantic as a concept, a space, a muse, a goddess. The Atlantic as birth and burial. One ocean under God, divisible, with salt enough for all who thirst. Authors include: Paul Gilroy, Gilles Deleuze, Chimamanda Adichie, Eduardo Viveiros de Castro, Davi Kopenawa, Pepetela, Beyoncé, and José Vasconcelos. This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: COMPLIT 46

IBERIAN AND LATIN AMERICAN CULTURES

Courses offered by the Department of Iberian and Latin American Cultures, formerly the Department of Spanish and Portuguese, are listed under the subject code ILAC on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=ILAC&filter-catalognumber-ILAC=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=ILAC&filter-catalognumber-ILAC=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=ILAC&filter-catalognumber-ILAC=on). For courses in Catalan, Portuguese, and Spanish language instruction with the subject codes CATLANG, PORTLANG and SPANLANG, see the "Language Center (http://www.stanford.edu/dept/registrar/bulletin/5966.htm)" section of this bulletin.

The Language Center offers a series of second- and third-year courses designed for students who grew up in homes where Spanish is spoken (heritage speakers) and who wish to develop their existing linguistic strengths. See the "Language Center (https://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/languagecenter/)" section of this bulletin.

The department is a part of the Division of Literatures, Cultures, and Languages (p. 1298).

Mission of the Undergraduate Program in Iberian and Latin American Cultures

Studying Iberian and Latin American cultures at Stanford means engaging in a deep and compelling exploration of the languages, literatures, and cultures of the Iberian Peninsula, Latin America (including Brazil), and Latinx communities in the United States. To achieve the goal of training students as experts in these areas, the department balances an emphasis on literary studies with philosophical, historical, and social approaches to cultural issues. Given the focus on critical thinking, open discussion, and close textual analysis, undergraduate majors are provided excellent preparation for a large number of professional fields, including business, education, international relations, law, and medicine. The graduate program provides rigorous and highly individualized advanced training in the analysis of Iberian, Latin American (including Brazil), and Latinx literatures, and students go on to produce innovative original research and find excellent jobs, both in academe and beyond.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. oral proficiency in Catalan, Portuguese, and/or Spanish beyond the interpersonal level with presentational language abilities;
2. close reading skills of texts in Catalan, Portuguese, and/or Spanish;
3. writing proficiency in Catalan, Portuguese, and/or Spanish beyond the interpersonal level with presentational language abilities.

Bachelor of Arts in Iberian and Latin American Cultures

In this major, students engage in a thoroughly transnational and cross-linguistic study of Iberian and Latin American (including Brazil) literatures and cultures. Courses emphasize critical thinking and close textual analysis, with a focus on the deep and often understudied intersections between literature written in Catalan, Portuguese, and Spanish from the medieval period to the present day.

Bachelor of Arts in Spanish

This undergraduate program is designed for students who want to move towards fluency in reading, listening, speaking, and writing Spanish while developing a contextualized understanding of the language through linguistic and cultural study. This degree emphasizes critical use of the Spanish language in a global perspective.

Learning Outcomes (Graduate)

The purpose of the terminal M.A. program in Iberian and Latin American Cultures is for students to develop the knowledge and skills acquired as undergraduates and to prepare students for a professional career or doctoral studies. This is achieved through the completion of graduate courses in the student's major area of interest as well as in related areas.

The Ph.D. in Iberian and Latin American Cultures is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in the areas and traditions taught by the department. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to develop innovative research and to present the results of this research to the world in compelling ways.

The department offers a Bachelor of Arts in Iberian and Latin American Cultures (p. 1650) and a Bachelor of Arts in Spanish (p. 1650).

Bachelor of Arts in Iberian and Latin American Cultures

This program is designed for students who wish to engage in a transitional and cross-linguistic study of Iberian and Latin American literatures and cultures. Courses emphasize critical thinking and close textual analysis, with an emphasis on the deep and often understudied intersections between literature written in Catalan, Portuguese, and Spanish from the medieval period to the present day. Iberian and Latin American Cultures appears on the official transcript and diploma. The major in Iberian and Latin American Cultures requires:

- 60 units of coursework
- Courses cannot be duplicated for two degrees
- All courses for the major must be taken for a letter grade except those only offered for S/NC

Prerequisites

For all ILAC courses taught in Spanish, students must be able to perform ordinary classwork and complete assignments in that language. At a minimum, they must have completed SPANLANG 13C or be concurrently enrolled in that course. SPANLANG 101 The Structure of Spanish and SPANLANG 102 Composition and Writing Workshop are highly recommended.

Declaring the Major

Students declare the major in Iberian and Latin American Cultures through Axess. Students should meet with the Chair of Undergraduate Studies to discuss appropriate courses and options within the major, and to plan a course of study. The major is administered through the DLCL undergraduate student services office in Pigott Hall, Room 128.

Double Majors

The major in ILAC is designed to combine with a second major in another field and with study abroad. Students should be aware, however, that

university policy prevents one course from counting for both degree programs.

General Course Requirements

Students must complete a total of 60 units for the major. The first five requirements listed below are considered core requirements and must be taken at Stanford University. AP credit and Transfer credit from other Universities do not count towards this major.

1. A Writing in the Major (WIM) course: 5 units are required. The WIM courses for 2020-21 are ILAC 161 Modern Latin American Literature (Autumn); ILAC 136 Modern Iberian Literatures (Winter); and ILAC 157 Medieval and Early Modern Iberian Literatures (Spring).

2. Core courses in literature. All three courses must be completed. Majors are required to take these courses for 4 units.

		Units
ILAC 136	Modern Iberian Literatures	3-5
ILAC 157	Medieval and Early Modern Iberian Literatures	3-5
ILAC 161	Modern Latin American Literature	3-5

3. Core courses in culture, history, and civilization. Choose at least two of three. Majors are required to take these courses for 4 units.

		Units
ILAC 130	Introduction to Iberia: Cultural Perspectives	3-5
ILAC 131	Introduction to Latin America: Cultural Perspectives	3-5

4. Elective Courses. Elective courses can be taken within the following parameters:

- Up to 15 units of language courses (excluding conversational courses) in Spanish, Portuguese, or Catalan.
- Additional 100- or 200- level ILAC literature courses.
- Up to 15 units of pre-approved coursework from Stanford Study Abroad programs in Madrid or Santiago. A course taught abroad by a core member of the ILAC faculty does not count against this limit.
- Up to 5 units of pre-approved coursework from outside ILAC. AP credit is not accepted.
- Up to 10 units of Thinking Matters courses taught at least partially by an ILAC faculty member

5. Capstone: A senior seminar designed as a culmination to the course of study while providing reflection on the nature of the discipline. Topics vary. This seminar is open to other students, excepting frosh and sophomores. The senior seminars for 2020-21 are:

- ILAC 277 Senior Seminar: Horror, Gothic, and Fantasy in Spanish (Fall)
- ILAC 278A Senior Seminar: The Iberian Pastoral (Spring)

6. In addition to course requirements for the major, students must also take an Oral Proficiency Interview (OPI) in Catalan, Portuguese, or Spanish by contacting the Language Center two quarters prior to degree conferral.

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Bachelor of Arts in Spanish

This program is designed for students who want to move towards fluency in reading, listening, speaking, and writing Spanish while developing a contextualized understanding of the language through linguistic and cultural study. This degree emphasizes critical use of the language in a global perspective. Spanish appears on the official transcript and diploma. The major in Spanish requires:

- 60 units of coursework
- All coursework must be done in Spanish. If a class is taught in a language other than Spanish, then written work (e.g., final papers) must be completed in Spanish
- Courses cannot be duplicated for two degrees
- All courses for the major must be taken for a letter grade except those only offered for CR/NC
- AP credit and Transfer credit from other Universities are not accepted

Prerequisites

For all ILAC courses taught in Spanish, students must be able to perform ordinary classwork and complete assignments in that language. At a minimum, they must have completed SPANLANG 13C or be concurrently enrolled in that course. SPANLANG 101 The Structure of Spanish and SPANLANG 102 Composition and Writing WorkshopWorkshop are highly recommended.

Declaring the Major

Students declare the major in Spanish through Axess. Students should meet with the Chair of Undergraduate Studies to discuss appropriate courses and options within the major, and to plan a course of study. The major is administered through the DLCL undergraduate student services office in Pigott Hall, Room 128.

Double Majors

The Spanish major is designed to combine with a second major in another field and with study abroad. Students should be aware, however, that university policy prevents one course from counting for both degree programs.

General Course Requirements

Students must complete a total of 60 units for the major. The first four requirements listed below are core requirements and must be taken at Stanford University. Majors are required to take their selected courses for at least 4 units.

1. A Writing in the Major (WIM) course: 5 units are required. The WIM courses for 2020-21 are ILAC 161 Modern Latin American Literature (Fall); ILAC 136 Modern Iberian Literatures (Winter); andILAC 157 Medieval and Early Modern Iberian Literatures (Spring).

2. Core courses in culture, history, and civilization. Two are required.

		Units
ILAC 130	Introduction to Iberia: Cultural Perspectives	3-5
ILAC 131	Introduction to Latin America: Cultural Perspectives	3-5

3. Elective Courses. Elective courses can be taken within the following parameters:

- Additional 100- or 200-level ILAC courses. If course is taught in a language other than Spanish, written work must be completed in Spanish, as appropriate.
- Up to 15 units of pre-approved coursework from Stanford study abroad programs in Madrid or Santiago. A course abroad taught by a core member of the ILAC faculty does not count against this limit.
- Up to 5 units of pre-approved coursework from outside ILAC. AP credit is not accepted.

- Up to three courses of SPANLANG at the second year level or above, excluding conversation courses.

4. Capstone: A senior seminar designed as a culmination to the course of study while providing reflection on the nature of the discipline. Topics vary. This seminar is open to other students, excepting frosh and sophomores. The senior seminars for 2020-21 are:

- ILAC 277 Senior Seminar: Horror, Gothic, and Fantasy in Spanish (Fall)
- ILAC 278A Senior Seminar: The Iberian Pastoral (Spring)

5. In addition to the course requirements for the major, students must also take an Oral Proficiency Interview (OPI) in Spanish by contacting the Language Center two quarters prior to degree conferral.

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Honors Program

Students majoring in any DLCL department (i.e., Comparative Literature, French and Italian, German Studies, Iberian and Latin American Cultures, and Slavic Languages and Literatures) who have an overall grade point average (GPA) of 3.3 or above and who maintain a 3.5 (GPA) in their major courses, are eligible to participate in the DLCL's honors program.

Declaring Honors

Prospective honors students must choose a senior thesis adviser from among their home department's regular faculty in their junior year by May 1. During Spring Quarter of the junior year, a student interested in the honors program should consult with the Chair of Undergraduate Studies of their home department to submit a thesis proposal (2-5 pages), DLCL Honors application, and an outline of planned course work for their senior year. When their applications are approved by their home department, students will request honors through Axess.

Honors theses vary considerably in length as a function of their topic, historical scope, and methodology. They may make use of previous work developed in seminars and courses, but display an enhanced comparative or theoretical scope. Quality rather than quantity is the key criterion. Honors theses range from 40 to 90 pages not including bibliography and notes.

Honors students are encouraged to participate in the DLCL program hosted by Bing Honors College. This DLCL Honors College is designed to help students develop their projects and is offered at the end of the summer before senior year. Applications must be submitted through the Bing program. For more information, view the Bing Honors (https://undergrad.stanford.edu/programs/bhc/) web site.

Program Requirements

A minimum of 10 units total, described below, and a completed thesis is required. Honors essays are due to the thesis adviser no later than 5:00 p.m. on May 15, of the terminal year. If an essay is found deserving of a grade of 'A-' or better by the thesis adviser, honors are granted at the time of graduation.

1. Spring Quarter of the junior year (optional): DLCL 189C Honors Thesis Seminar, 2-4 units S/NC, under the primary thesis adviser. Drafting or revision of the thesis proposal. The proposal is reviewed by the Chair of Undergraduate Studies and the Director of the department and will be approved or returned for submission.
2. Autumn Quarter of the senior year (required): DLCL 189A Honors Thesis Seminar, 4 units S/NC, taught by a DLCL appointed faculty member. Course focuses on researching and writing the honors thesis.
3. Winter Quarter of the senior year (required): DLCL 189B Honors Thesis Seminar, 2-4 units S/NC, under the primary thesis adviser. Focus is on writing under guidance of primary adviser.
4. Spring Quarter of the senior year (option; mandatory if not taken during junior year): DLCL 189C Honors Thesis Seminar, 2-4 units S/NC, under the primary thesis adviser. Honors essays are due to the thesis adviser and student services officer no later than 5:00 p.m. on May 15 of the terminal year.
5. Spring Quarter of the senior year (required) DLCL 199 Honors Thesis Oral Presentation, 1 unit S/NC. Enroll with primary thesis adviser.

The honors thesis in the DLCL embodies Stanford's excellence in course work and research. It is simultaneously one element of the student's intellectual legacy and part of the University's official history. The faculty considers the honors thesis to be far more than a final paper; rather, it is the product of solid research that contributes to conversations taking place within a larger scholarly community and representative of the intellectual vitality of the discipline. For all of these reasons, DLCL honors theses will be visible to future scholars researching similar questions through full online access through the Stanford Digital Repository (https://library.stanford.edu/research/stanford-digital-repository/) (SDR) and may be used as course materials for future Stanford honors preparatory courses. For similar purposes, a printed copy may also be kept in DLCL spaces. Students who wish to limit the availability or formats in which the thesis may be shared may do so by filling out the appropriate form with the DLCL student affairs officer.

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Minors in Spanish and Portuguese

Both the minor in Portuguese and the minor in Spanish are for students who want to combine acquisition of linguistic competence with the study of the literatures and cultures of the Lusophone or Spanish-speaking worlds.

Declaring the Minor

Students declare the minor in Spanish or the minor in Portuguese through Axess. Students should meet with the Chair of Undergraduate Studies to discuss appropriate courses and options within the minor programs, and to plan the course of study. The minors are administered through the undergraduate student services office in Pigott Hall, Room 128.

Requirements

- Each minor requires 6 courses at 3 units or more totaling a minimum of 23 units. Each course must be taken for a letter grade.
- At least two courses must be taken in the ILAC department (or with ILAC faculty abroad).
- Up to 12 units of second-year or above Spanish language (for Spanish minor) or Portuguese (for Portuguese minor) may count towards the degree, not including conversational, oral communication, business, or medical language courses.
- With the approval of the Chair of Undergraduate Studies, Independent Study courses may count towards the degree.
- Up to 10 units of pre-approved BOSP coursework
- One approved 3-5 unit course (5 units maximum) from outside ILAC or the Language Center. AP credit is not accepted.

Minor in Spanish

	Units
Required Courses: Minimum of 6 courses at 3 units each and 23 units.	**23**

1. An ILAC course with a significant Iberian component. Courses may include (but are not limited to): ILAC 130, ILAC 157, ILAC 136, ILAC 193, ILAC 278A	
2. An ILAC course with a significant Latin American component. Courses include (but are not limited to): ILAC 131, ILAC 140, ILAC 161, ILAC 277	
3. Additional coursework to complete the required 23 units and six courses.	

Minor in Portuguese

	Units
1. Two ILAC courses with a Lusophone component including ILAC 157 and ILAC 161	
2. Additional coursework to complete the required 23 units and six courses. Options include ILAC 130, ILAC 131, ILAC 136, and ILAC 278A	

Master of Arts in Iberian and Latin American Cultures

The purpose of the terminal M.A. program in Iberian and Latin American Cultures is for students to further develop the knowledge and skills acquired as undergraduates, and to prepare students for a professional career or doctoral studies. This is achieved through the completion of graduate courses in the student's major area of interest as well as in related areas. Students in this program may not apply concurrently for entrance to the Ph.D. program.

Coterminal Master of Arts in Iberian and Latin American Cultures

The coterminal degree program allows undergraduates to study for a master's degree in Iberian and Latin American Cultures while completing their bachelor's degree(s) in ILAC or a different department. The course requirements for the coterminal M.A. are the same as those for the terminal M.A., and students should be aware that University policy prevents one course from counting for both the B.A. and M.A. degrees.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Degree Requirements for the Master of Arts in Iberian and Latin American Cultures

Students must complete a minimum of 45 graduate-level units, 36 of which must be taken at Stanford. All 45 units must have a letter grade of 'B' or above. Students enrolled in the terminal M.A. program must file a Program Proposal for a Master's Degree during their first quarter of enrollment. Any changes to the proposal should be reviewed and approved by the Chair of Graduate Studies.

The requirements for the terminal M.A. and coterminal M.A. are:

1. A 200-level or above course in literary or cultural theory
2. Two 200-level or above courses in Latin American (including Brazilian) or Latinx/Chicanx literature and culture
3. Two 200-level or above courses in Iberian literature and culture
4. One 300-level course in Latin American (including Brazilian) or Latinx/Chicanx literature and culture
5. One 300-level course in Iberian literature and culture
6. Enrollment in at least two graduate seminars (200- or 300- level) offered in the department each quarter
7. Intermediate-high proficiency in Portuguese or Catalan (equivalent to one year of university study).

Independent study courses (ILAC 299 Individual Work, ILAC 399 Individual Work) and crosslisted courses originating outside the department may not be used to fulfill requirements except by consent of the Chair of Graduate Studies.

Doctor of Philosophy in Iberian and Latin American Cultures

The Ph.D. in Iberian and Latin American Cultures is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis with respect to the areas and traditions taught by the department. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to develop innovative research and to present the results of this research to the world in compelling ways.

University requirements for the Ph.D. are described in the "Graduate Degrees (p. 65)" section of this bulletin. The requirements of the Ph.D. in Iberian and Latin American Cultures (ILAC) are:

1. Course Work

A total of 135 units is required for the Ph.D. During each quarter preceding advancement to TGR status, students are required to complete (for a letter grade) at least two graduate courses (200- or 300- level) offered through the department. These are taken for at least 3 units each.

All courses counted towards the 135-unit requirement for the Ph.D. must be at the graduate level.

Excess course work may be taken at the UG level, but it may not be used towards the Ph.D. requirements.

Students should make every effort to take a seminar with a core member of the faculty each quarter and one course with each faculty member of the department during the first two years of study.

Students may take independent study courses (ILAC 299, ILAC 399) only during the Summer Quarter until they reach TGR status. Any exceptions must be made in consultation with the Chair of Graduate Studies, the relevant faculty member, and/or the student's faculty adviser.

During the first three years of study, students must meet with their primary adviser and the Chair of Graduate Studies early in the Spring Quarter of each year to plan a course of study for the units to be

completed during the Summer Quarter. Students who transfer graduate units from another institution may adjust the course of study outlined below. For more details, see the Graduate Handbook that corresponds to the student's first year of enrollment.

Doctoral students in the department must take required courses for a letter grade if available, and they are expected to earn a grade of 'B +' or better in each course taken in the DLCL. Any grade of 'B' or below is considered to be less than satisfactory. Grades of 'B' or below are reviewed by faculty and the following actions may be taken:

1. the grade stands, and the student's academic performance is monitored to ensure that satisfactory progress is being made; or
2. the grade stands, and the student is required to revise and resubmit the work associated with the course; or
3. the student may be required to retake the course.

In consultation with the Chair of Graduate Studies, students in their first year choose one major field and two minor areas of study from the following:

- A1. Medieval and Early Modern Iberian Literature and Culture
- A2. Eighteenth- and Nineteenth-Century Iberian Literature and Culture
- A3. Twentieth- and Twenty-First-Century Iberian Literature and Culture
- B1. Colonial and Nineteenth-Century Latin American Literature and Culture
- B2. Twentieth- and Twenty-First-Century Latin American Literature and Culture
- B3. Luso-Brazilian Literature and Culture
- C. US Latinx Literature and Culture

Areas of Study Coursework:

- At least four graduate-level courses must be taken in the major area of study.
- Students must select one minor area from a group (A, B, C) other than that in which their major area falls.
- At least two graduate-level courses must be taken in each minor area.

1a. First Year

Students must enroll in and complete a minimum of 18 graduate units during each quarter of their first year of graduate study. Summer coursework may be required. First year required course work:

- One 200-level or above course in literary or cultural theory.
- Enrollment in the 300-level ILAC seminar offered each quarter.
- Four 200-level or above courses in ILAC. At least one in Latin American (including Brazilian or Latinx literature and culture) and at least one in Iberian literature and culture.
- Enrollment in and completion of DLCL 301 The Learning and Teaching of Second Languages.
- Intermediate-high proficiency in Portuguese or Catalan (equivalent to one year of university study) by the end of Spring Quarter.

1b. Second Year

Students must enroll in and complete a minimum of 30 graduate units during their second year, including enrollment in the 300-level ILAC seminar offered each quarter. Summer coursework may be required. Second-year students must complete at least two additional graduate seminars (200- or 300- level) offered in the department each quarter and enroll in DLCL 311 Professional Workshop during one quarter (but attend all year). All ILAC and DLCL courses must be taken for a letter grade.

1c. Third Year

Students must enroll in and complete a minimum of 30 graduate units during their third year of graduate study. Summer coursework may be required. Third-year students must enroll in and complete at least two graduate seminars (200- or 300- level) offered in the department each quarter. All DLCL courses must be taken for a letter grade.

1d. Fourth Year

Students who have not reached TGR status must enroll in and complete 15 units of graduate work during the Autumn and Winter quarters of their fourth year. All DLCL courses must be taken for a letter grade.

2. Language

All students are required to have advanced-high proficiency in English and Spanish by the time they take the comprehensive examination. In addition, students specializing in Iberian literature and culture must attain intermediate-mid proficiency in Catalan and Portuguese (equivalent to two quarters of university study for each language); for students specializing in Latin American and/or U.S. Latinx literature and culture, the level of advanced-low or (C1) proficiency in Portuguese (equivalent to four quarters of university study) must be attained. Alternatively, students may study Portuguese for three quarters and study one quarter of Catalan or a Native American language such as Nahuatl, Quechua, or Tupi. This requirement must be fulfilled before students take the comprehensive examination. Students wishing to satisfy the language requirements in Catalan and/or Portuguese may do so by passing a proficiency exam administered by the Language Center. Further explanation of the language requirements and options for satisfying them can be found in the Graduate Handbook corresponding to the first year of enrollment.

3. Examinations

All students must pass the following:

1. a qualifying exam;
2. a written and oral comprehensive examination; and
3. a University oral examination.

3a. Qualifying Examination

In the Autumn Quarter of their first year, students receive a digital reader with a selection of texts related to all areas of Iberian and Latin American literature and culture. These texts serve as the basis for the qualifying exam which is administered the first week of Autumn Quarter of the student's second year of study. During the one-hour oral examination, students meet with a faculty committee and must answer questions in English and/or in Spanish submitted by all active members of the ILAC faculty. Students who fail this examination may request to retake it during the Winter Quarter of the same year.

3b. Comprehensive Examination

This exam consists of two parts:

1. the submission of a written paper; and
2. an oral question and answer period.

It is designed for students to demonstrate intellectual competence in multiple areas of study. This exam occurs during Spring Quarter of the third year of graduate study, and it must be completed prior to the last day of instruction in that same quarter. Students with transferred credits may take this exam earlier in the third year. Students must select a major and two minor areas for the exam from the following options:

- A1. Medieval and Early Modern Iberian Literature and Culture
- A2. Eighteenth- and Nineteenth-Century Iberian Literature and Culture
- A3. Twentieth- and Twenty-First-Century Iberian Literature and Culture
- B1. Colonial and Nineteenth-Century Latin American Literature and Culture
- B2. Twentieth- and Twenty-First-Century Latin American Literature and Culture

- B3. Luso-Afro-Brazilian Literature and Culture
- C. U.S. Latinx Literature and Culture

Students must select one minor area from a group (A, B, C) other than that in which their major area falls.

The committee for the comprehensive exam consists of three ILAC professors to serve on the committee, one for each of the three examination areas chosen by the student. Students are responsible for forming their own committee.

In consultation with each member of the committee, the student must develop a list of 130 texts (approximately 60 for the major area and 35 for each of the minor areas) and should propose organizing themes in discussion with the committee as appropriate. In addition, the student must submit a 6,000-word research paper on a topic preferably related to the dissertation. This paper must be written in English. The comprehensive exam reading list and research paper must be presented to committee members and to the graduate student services coordinator at least two weeks prior to the oral portion of the comprehensive exam. The oral exam is based upon the submitted list and research paper and lasts no more than two hours.

3c. University Oral Examination

Ph.D. candidates in ILAC are required to take a University oral examination after successfully completing the comprehensive examination and before the end of the Spring Quarter of their fourth year. Students with transferred credits may take this exam earlier in the fourth year. This examination is a defense of the dissertation prospectus. During the examination, the candidate speaks for approximately 20 minutes on the proposed dissertation, the methods to be used in research, and the conclusions the candidate expects to reach. Afterward, each member of the committee, in an order established by the chair of the committee, questions the candidate further. The examination lasts no more than two hours.

The University oral examination committee must be finalized no later than the last week of the quarter during which the student successfully completes the comprehensive examination. The examination committee should include the dissertation adviser and three other members, usually from the reading committee, and a chair from outside the department, for a total of five members. All members must belong to the Academic Council. The adviser and two other members must be ILAC faculty. Once a committee and date are finalized, the student must submit the University oral examination form to the graduate student services coordinator. The members of the oral examination committee must receive copies of the dissertation prospectus no later than three weeks prior to the examination.

The dissertation prospectus should consist of approximately 10 pages (3,000 words). It must contain a title along with the following sections:

1. statement of thesis;
2. statement of project significance, both for the student's chosen sub-field(s) and the humanities at large;
3. chapter outline;
4. preliminary biography;and
5. timetable for completion.

4. Teaching

Each Ph.D. candidate must teach a minimum of five quarters of undergraduate courses; three are taught during the second year and the remaining two during the third year. Language course assignments are arranged through the Language Center. In preparation for teaching, Ph.D. candidates are required to take DLCL 301 The Learning and Teaching of Second Languages during the Spring Quarter of their first year. All students must complete one full year (three quarters) plus an additional quarter during the regular academic year of teaching in the Language Center. Students then may apply to co-teach an ILAC literature or culture course with a core ILAC faculty member or they may choose to teach another course in the Language Center to satisfy the requirement of five quarters of undergraduate teaching. Other teaching opportunities may arise but these do not satisfy the teaching requirement.

5. Ph.D. Dissertation

The doctoral dissertation should demonstrate the student's ability to carry out original research and to organize and present the results in publishable form. A copy of the completed dissertation must be submitted to each member of the reading committee at least eight weeks before the University filing deadline in the quarter during which the candidate expects to receive the Ph.D. degree. Committee members have three weeks to read the dissertation before determining whether to approve or require changes. Ph.D. dissertations must be completed and approved within five years from the date of admission to candidacy. Students taking more than five years must apply for reinstatement of candidacy, which is reviewed on a case-by-case basis.

Yearly Review

The department conducts annual reviews of each student's academic performance at the end of the Spring Quarter. All students are given feedback from the Chair of Graduate Studies, the purpose of which is to help them to identify areas of strength and potential weakness. In most cases, students are simply given constructive feedback; however, if there are more serious concerns, a student may be placed on probation with specific guidelines for addressing the problems detected. At any point during the degree program, evidence that a student is performing at a less than satisfactory level may be cause for a formal academic review of that student.

Possible outcomes of the spring review include: continuation of the student in good standing, or placing the student on probation, with specific guidelines for the period of probation and the steps to be taken in order to be returned to good standing. For students on probation at this point (or at any other subsequent points), possible outcomes of a review include: restoration to good standing; continued probation, with guidelines for necessary remedial steps; or dismissal from the program.

Candidacy

Admission to candidacy is an important decision grounded in an overall assessment of a student's ability to complete the Ph.D. program successfully. Per University policy, students are expected to complete department qualifying procedures and apply for candidacy by the end of the second year in residence.

In reviewing a student for admission to candidacy, the faculty considers a student's academic progress including but not limited to: advanced language proficiency, course work, performance on the qualifying exam, and successful completion of teaching and research assistantships. A student must also have completed at least 3 units of work with each of four ILAC Academic Council faculty members prior to consideration for candidacy.

In addition to successful completion of department prerequisites, a student is only admitted to candidacy if the faculty makes the judgment that the student has the potential to complete the requirements of the degree program successfully. Candidacy is determined by faculty vote. Failure to advance to candidacy results in the dismissal of the student from the doctoral program.

Candidacy is valid for five years and students are required to maintain active candidacy through conferral of the doctoral degree. All requirements for the degree must be completed before candidacy expires. The department conducts regular reviews of each student's academic performance, both prior to and following successful admission to candidacy. Failure to make satisfactory progress to degree may result in dismissal from the doctoral program. Additional information about

University candidacy policy is available in the Bulletin (p.) and GAP (http://gap.stanford.edu/4-6.html).

Ph.D. Minor in Iberian and Latin American Cultures

Stanford Ph.D. students wishing to earn a minor in Iberian and Latin American Cultures must complete 25 units, with a grade point average (GPA) of 3.0 or above, selected from courses numbered 200 or higher. For more information, students should speak with the ILAC Chair of Graduate Studies and develop an approved course of study. Students in the Ph.D. program in ILAC who choose a minor in another department should consult with advisers in that department.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Iberian and Latin American Cultures Department counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Required Courses Policy

In the academic year 2020-21, as Stanford operates on a four-quarter system, students may opt not to be enrolled in one of the four quarters of the year. Students may therefore be unable to take an ILAC core course (ILAC 130, 131, 136, 157, 161) because they are on leave during the quarter it is offered. In these cases only, the Chair of Undergraduate Studies, in consultation with the Department Director, will suggest appropriate substitute classes and approve one of them.

Graduate Degree Requirements

Grading

Doctoral students in the department must take required courses for a letter grade and are expected to earn a grade of 'B' or better in each required course. In other courses, doctoral students are expected to earn a grade of 'B' or better in each course taken for a letter grade in AY 2020-21 that will count towards their degree requirement. Any grade of 'B-' or below is considered to be less than satisfactory. Grades of 'B' or below are reviewed by faculty: while the grade will stand, the student may be required to revise and resubmit the work associated with that course. For courses taken for CR/NC, instructors will be asked to submit written assessment to the student and the department of what would be the equivalent letter grade to allow for review of satisfactory academic achievement by the DGS and department.

Graduate Advising Expectations

The Department of Iberian and Latin American Studies is committed to providing academic advising in support of graduate student scholarly and professional development. The overall goal of advising, both in the DLCL and the department, is to help graduate students make academic and career choices wisely, and think ahead, in order to craft a long-term plan for their graduate student career and beyond. When most effective, the advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity. Advising is both an academically invaluable form for the transmission of expertise, as well as a key aspect of creating a strong departmental and Stanford community.

Faculty Advisers

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

- Upon enrolling, students plan their work under the direction of the Chair of Graduate Studies or a faculty member designated by the program. When the student selects a more specialized adviser, the transition should involve oral or written communication between both advisers and the student concerning the student's progress, goals, and expectations. It is possible for doctoral students to choose two main advisers at the dissertation stage, provided all agree this is academically sound.
- Faculty advisers should meet with assigned students to discuss their selection of courses and to plan from a broader, longer-term perspective, including discussion of Program milestones and a basic timeline; an overview of Department and DLCL offerings beyond courses; student goals and interests and DLCL or Stanford programs that may be relevant; and (for doctoral students) how to transfer previous graduate coursework.
- Faculty advisers and graduate students should meet at least once per quarter to assess the advisee's course of study, performance over the past quarter, and plans for the next quarter, as well as longer term plans. If a student has two advisers, the student should meet at least once per quarter with each adviser and at least once per year with both advisers at the same time.
- For doctoral students, faculty should help their advisees plan for exams, research grant applications, develop research projects, and plan ahead for both the academic job market and the job search beyond academia.
- Faculty advisers should provide feedback about the student's progress to the department during the Annual Review process. For more information about the Annual Review, see the Graduate Handbook.

Graduate Students

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

- Upon enrolling, students plan their work under the direction of the Chair of Graduate Studies or a faculty member designated by the program. As the student develops a field of expertise, the student chooses a program adviser to replace the Chair of Graduate Studies role. The transition should involve oral or written communication between both advisers and the student concerning the student's progress, goals, and expectations.
- Graduate students and faculty advisers and should meet at least once per quarter to assess the advisee's course of study,

performance over the past quarter, and plans for the next quarter, as well as longer term plans. If a student has two advisers, the student should meet at least once per quarter with each adviser and at least once per year with both advisers at the same time.
- Students should consult with their advisers on all academic matters, including coursework, conference presentations and publications, research travel, and teaching plans.
- Students should provide a thorough self-evaluation each year for the annual review. For more information about the annual review, see the Graduate Handbook.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Faculty in Iberian and Latin American Cultures

Director: Héctor Hoyos

Chair of Graduate Studies: Héctor Hoyos

Chair of Undergraduate Studies: Nicole Hughes

Professor: Joan Ramon Resina (also Comparative Literature)

Associate Professors: Vincent Barletta (also Comparative Literature), Héctor Hoyos, Lisa Surwillo

Assistant Professor: Nicole Hughes

Lecturers: Ximena Briceño

Courtesy Professors: Zephyr Frank, Roland Greene, Ramón Saldívar, Paula Moya

Courtesy Associate Professor: James A. Fox

Emeriti: (Professors) Bernard Gicovate, Mary Pratt, Jorge Ruffinelli, Sylvia Wynter, Yvonne Yarbro-Bejarano; (Professor, Teaching) María-Paz Haro

Overseas Studies Courses in Iberian and Latin American Cultures

Study Abroad Programs in Iberian and Latin American Cultures

All majors are encouraged to study abroad. To transfer credits from non-Stanford programs abroad, consult the Bing Overseas Studies Office. Course work taken abroad may be applied toward both our major and minor programs. Students planning to study abroad must consult with the Chair of Undergraduate Studies to coordinate the course work from abroad with their degree program. The maximum number of units is identified in the elective section for each major.

The Department, The Center for Latin American Studies (https://clas.stanford.edu), and the Bechtel International Center maintain information on study abroad programs. Stanford supports the options listed below and credits course work taken in academically sound programs. Students considering different options are encouraged to speak with the Director of the Department or the Chair of Undergraduate Studies.

Stanford in Santiago de Chile and Madrid, Spain

The Bing Overseas Studies Programs in Santiago de Chile and Madrid, Spain require a certain level of proficiency in Spanish. For more information, students should consult the program summary of their interested campus. Course work is primarily in Spanish. Information is available in the "Overseas Studies" section of this bulletin or at the Bing Overseas Studies web site. Internships and research opportunities may be arranged for students staying for two quarters. Admission is highly competitive.

The department also recognizes other programs, and students are encouraged to discuss their interests with the Director of the Department or with the Chair of Undergraduate Studies.

Brazil and Portugal

Students interested in study in Brazil or Portugal should contact Professor Vincent Barletta.

Bing Overseas Studies Program

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPMADRD 43	The Jacobean Star Way and Europe: Society, Politics and Culture	5
OSPMADRD 45	Women in Art: Case Study in the Madrid Museums	4
OSPMADRD 46	Drawing with Four Spanish Masters: Goya, Velazquez, Picasso and Dali	4
OSPMADRD 47	Cultural Relations between Spain and the United States:Historical Perceptions and Influences, 1776-2	4
OSPMADRD 55	Latin Americans in Spain: Cultural Identities, Social Practices, and Migratory Experience	4
OSPMADRD 61	Society and Cultural Change: The Case of Spain	4
OSPSANTG 14	Women Writers of Latin America in the 20th Century	4-5
OSPSANTG 20	Comparative Law & Society: Conflicts in the Structuring of Democratic Polities across Latin America	4-5
OSPSANTG 44	Introduction to Borderlands Literature of the Americas	3-5
OSPSANTG 68	The Emergence of Nations in Latin America	4-5
OSPSANTG 116X	Modernization and its Discontents: Chilean Politics at the Turn of the Century	5
OSPSANTG 118X	Artistic Expression in Latin America	5

Catalan Language Courses Courses

CATLANG 1A. Accelerated First-Year Catalan, Part 1. 5 Units.
First quarter of the two-quarter sequence. For students with knowledge of another Romance language, preferably Spanish. Emphasis is on developing beginning proficiency in interpersonal, interpretive, and presentational spheres. Prerequisite: consent of instructor.

CATLANG 2A. Accelerated First-Year Catalan, Part 2. 5 Units.
Continuation of CATLANG 1A. For students with knowledge of another Romance language, preferably Spanish. Further development of socially and culturally appropriate proficiency in interpersonal, interpretive, and presentational spheres. Completion of CATLANG 2A fulfills the University language requirement. Prerequisite: CATLANG 1A.

CATLANG 11A. Accelerated Second-Year Catalan, Part 1. 4 Units.
Continuation of CATLANG 2A. First half of the second-year sequence integrating culture and language of the Catalan-speaking world. Socially and culturally appropriate forms in narrations, descriptions, and expression of ideas and opinions. Emphasis is on oral and written proficiency in formal, informal, academic, and professional contexts. Prerequisite: CATLANG 2A.

CATLANG 12A. Accelerated Second-Year Catalan, Part 2. 4 Units.
Continuation of CATLANG 11A. Second half of the second-year sequence integrating culture and language of the Catalan-speaking world. Socially and culturally appropriate forms in narrations, descriptions, and expression of ideas and opinions. Emphasis is on oral and written proficiency in formal, informal, academic, and professional contexts. Prerequisite: CATLANG 11A.

CATLANG 199. Individual Work. 1-5 Unit.
May be repeated for credit. Prerequisite: consent of instructor.

CATLANG 395. Graduate Studies in Catalan. 1-5 Unit.
May be repeated for credit. Prerequisite: consent of instructor.

Iberian & Latin Amer. Cultures Courses

ILAC 12Q. Humanities Core: Great Books, Big Ideas -- Europe, Middle Ages and Renaissance. 3-4 Units.
This three-quarter sequence asks big questions of major texts in the European and American tradition. What is a good life? How should society be organized? Who belongs? How should honor, love, sin, and similar abstractions govern our actions? What duty do we owe to the past and future? The second quarter focuses on the transition from the Middle Ages to Modernity, Europe's re-acquaintance with classical antiquity and its first contacts with the New World. Authors include Dante, Shakespeare, Machiavelli, Cervantes, and Milton. N.B. This is the second of three courses in the European track. These courses offer an unparalleled opportunity to study European history and culture, past and present. Take all three to experience a year-long intellectual community dedicated to exploring how ideas have shaped our world and future. Students who take HUMCORE 11 and HUMCORE 12Q will have preferential admission to HUMCORE 13Q (a WR2 seminar).
Same as: DLCL 12Q, FRENCH 12Q, HUMCORE 12Q

ILAC 111Q. Texts and Contexts: Spanish/English Literary Translation Workshop. 4 Units.
This course introduces students to the theoretical knowledge and practical skills necessary to translate literary texts from Spanish to English and English to Spanish. Students will workshop and revise a translation project throughout the quarter. Topics may include comparative syntaxes, morphologies, and semantic systems; register and tone; audience; the role of translation in the development of languages and cultures; and the ideological and socio-cultural forces that shape translations.
Same as: COMPLIT 111Q, DLCL 111Q

ILAC 112Q. 2666. 3-5 Units.
The novel 2666 has been regarded as the first classic of world literature in the 21st century. At the end of this course, you will have read and studied this work in its entirety. Close to 1000 pages long, Roberto Bolaño's opus is both daunting and eminently readable¿a feast for serious readers and aspiring writers. It is a dark thriller that spans several continents, with memorable characters and unsuspected plot twists throughout. Similar to Anna Karenina or One Hundred Years of Solitude in ambition, it explores the limits of the sayable, and of the novel form. Its protagonists include vivacious young people, a lost German author, an African-American journalist in Mexico, gallivanting academics, and bodily remains. Some of its topics include literary fame and influence, exile, Cartel violence, and the legacies of World War II. Take this course if you would like to gain solid training in the art of close reading, take your Spanish to the next level, immerse yourself in deep learning, familiarize yourself with current events in Latin America, and participate in a dedicated book salon. The reading pace is very moderate (20 pages every weekday), which allows for careful consideration and readerly enjoyment. The analytical skills you gain in this seminar are also highly portable: they will serve you well in all of your future scholarly pursuits. The course combines small seminar discussion¿a staple of humanities education¿with an approximation to a fresh, contemporary text. You will present on a small section of the book, write short response papers, and engage in various creative activities. Guest speakers and archival work will complement our regular activities.

ILAC 113Q. Borges and Translation. 3-5 Units.
Borges's creative process and practice as seen through the lens of translation. How do Borges's texts articulate the relationships between reading, writing, and translation? Topics include authorship, fidelity, irreverence, and innovation. Readings will draw on Borges's short stories, translations, and essays. Taught in Spanish. Prerequisite: 100-level course in Spanish or permission of instructor.
Same as: DLCL 113Q

ILAC 115Q. From Rubber to Cocaine: Commodities in Colombian Literature. 3-5 Units.
Do you like "Narcos" on Netflix and want to learn more about the Drug Wars and its representation? Are you curious about Colombia? The present sophomore seminar serves the double purpose of introducing you to Colombian culture and of training you in sophisticated rhetorical analysis. At the end of the course you will be a better reader and writer (in Spanish, no less!). You will also have familiarity with a country that in some ways is a "meta-Latin American country," for it includes the regional cultures of the Caribbean, Pacific, Andes, plains, and Amazon jungle. We will read fascinating novels that deal with the sugar plantation economy in the 19th century, the exploitation of rubber at the onset of the 20th, and the coffee and cocaine booms leading to the present. Some things to expect: gripping, tragic love stories among the landed elites of the Pacific Coast, and among their slaves, set against the backdrop of a landscape forever transformed by agriculture (La María); dangerous adventures of city-dwellers turned jungle explorers (La Vorágine), a strike among banana workers turned supernatural catastrophe (Cien años de soledad); the criminal legacy of Pablo Escobar, a man who built an empire of coca leaf, as a symptom of broader societal problems (La parábola de Pablo). This rare course offering will allow you to gain granular knowledge about a fascinating body of literature. You will also become acquainted with an exciting method of cultural analysis called "new materialism." Taught in Spanish.

ILAC 116. Approaches to Spanish and Spanish American Literature. 4 Units.
Short stories, poetry, and theater. What analytical tools do the "grammars" of different genres call for? What contact zones exist between these genres? How have ideologies, the power of patronage, and shifting poetics shaped their production over time? Authors may include Arrabal, Borges, Cortázar, Cernuda, García Márquez, Lorca, Neruda, Rivas. Taught in Spanish. Prerequisite: 100-level course in Spanish or permission of instructor.

ILAC 119. The Memory of the Eye: Iberian Cinema from Buñuel to Almodóvar. 3-5 Units.
An introduction to Spanish, Portuguese, Basque, and Catalan cinema through films from the 1920s and 30s to the present. How film uses a visual grammar of the image to tackle social questions and construct a collective memory. This course will consider the problems of individual recollection under conditions of collective trauma and distortion of the past, exploring the relation between film and history. The course will also focus on how images can be used to explore subjectivity and the passions. We will be watching outstanding films by Luis Buñuel, Carlos Saura, Víctor Erice, Bigas Luna, Pedro Almodóvar, Miguel Gomes, Julio Medem, Ventura Pons, Iciar Bollaín, and Isabel Coixet. Students will be responsible for watching all the films, engaging in lively discussion, in preparation for which, they will be asked to consider certain issues in writing before each class. Each student will present on one of the films for about fifteen minutes. There will be one short midterm essay and one final paper "on a different film.".

ILAC 122A. Radical Poetry: The Avant-garde in Latin America and Spain. 4 Units.
The first few decades of the 20th century ushered in a dynamic literary and aesthetic renewal in Spain and Latin America. Young poets sought a radical change in response to a rapidly changing world, one marked by the horrors of World War I and the rise of a new technological urban society. This course will focus on the poetry and attendant manifestos of movements such as Creacionismo, Ultraismo, Estridentismo, Surrealismo and other -ismos. How did the European avant-garde (e.g. Futurism, Dada, and Surrealism) inform such aesthetic turns? In what ways did poetry assimilate modern visual culture while questioning established poetics? Authors may include Aleixandre, Borges, Cansino-Assens, G. Diego, G. de Torre, Huidobro, Larrea, Lorca, Maples Arce, Neruda, Tablada, and Vallejo. Taught in Spanish. Prior completion of SpanLang 102 is highly recommended.

ILAC 124. Coming of Age in Latin America. 3-5 Units.
What can a novel tell us about coming of age? How does a novel shape a character when they do not conform to social norms? This course interrogates how the coming of age novel the Bildungsroman may combine, successfully or not, a narrative of national social progress and of personal growth. We will compare and contrast short selections from 19th, 20th and 21st centuries novels, while analyzing two masterpieces in depth. Taught in Spanish.

ILAC 127. After Dictatorship: Facts, Fiction, and Justice in Latin America. 3-5 Units.
In the wake of dictatorships across twentieth-century Latin America, writers and artists (as well as laws and truth commissions) have confronted past human rights violations. Today, authors across disciplines and genres continue to grapple with past atrocities. In this course, as we examine the stories we tell about the past, we will focus on concepts such as memory, truth, and justice. What kind of truth can fiction uncover? Whose stories are either remembered or excluded? How do different types of narratives confront issues of human rights and justice? And what can these narratives teach us about issues we continue to face today? Course will be taught in Spanish with the option to write in English (majors should write in Spanish). Readings will be in Spanish (and in Portuguese with translation) and will include fictional and "true crime" narratives as well as legal/historical texts and manifestos. Authors may include Alia Trabucco Zerán, Gonzálo Eltesch, Selva Almada, Mariana Enríquez, Neusa Maria Pereira, and Julián Fuks.

ILAC 128. Spanish Literature and Language through Comics. 3-5 Units.
The course, an exploration of the graphic narrative medium in Spanish, is open to intermediate and advanced Spanish speakers. We'll analyze vignettes, sections, or chapters from both auteur and pop-culture series. These may include: Mortadelo y Filemón and Arrugas (Spain), Mafalda and El eternauta (Argentina), Ídolo and Condorito (Chile), Los once and Caminos condenados (Colombia), Vampiros en La Habana (Cuba), Virus tropical (Ecuador/ Colombia), Vivos se los llevaron (Mexico), as well as Spy vs. Spy and My Favorite Thing is Monsters (ChicanX/LatinX). Secondary sources include McCloud and Dorfman and Mattelart. The through line will be representations and instantiations of power struggles in this deceivingly naive form. Visual narratological aspects and the specificity of the medium will also be discussed at length. Language learners must enroll in the cognate course SPANLANG 103 "Concurrent Writing Support.".

ILAC 130. Introduction to Iberia: Cultural Perspectives. 3-5 Units.
The purpose of this course is to study major figures and historical trends in modern Iberia against the background of the linguistic plurality and cultural complexity of the Iberian world. We will cover the period from the loss of the Spanish empire, through the civil wars and dictatorships to the end of the Portuguese Estado Novo and the monarchic restoration in Spain. Particular attention will be given to the Peninsula's difficult negotiation of its cultural and national diversity, with an emphasis on current events. This course is designed to help prepare students for their participation in the Stanford overseas study program in Spain. Taught in Spanish.

ILAC 131. Introduction to Latin America: Cultural Perspectives. 3-5 Units.
Part of the Gateways to the World program, this is an introductory course for all things Latin American: culture, history, literature, and current events. By combining lecture and seminar formats, the class prepares you for all subsequent research on, and learning about, the region. Comparative discussion of independence movements in Mexico, Central America, the Caribbean, the Andean Region, Brazil, and the Southern Cone. Other topics vary yearly, including: representations of ethnicity and class, the Cold War, popular culture, as well as major thinkers and writers. Open to all. Recommended for students who want to study abroad in Santiago, Chile. Required for majors in Spanish or Iberian and Latin American Cultures (ILAC). In Spanish.

ILAC 132. Drug Wars: from Pablo Escobar to the Mara Salvatrucha to Iguala Mass Student Kidnapping. 3-5 Units.
This course will study the ways in which Latin American Narcos are represented in feature films, documentaries, essays, and novels. We will choose two regions and times: Pablo Escobar's Colombia (1949-1993) and current Mexico (1990-2015), including the mass students kidnappings in Iguala, México, 2014. Films: Sins of my Father (Entel, 2009); Pablo's Hippos (Lawrence Elman, 2010); True Story of Killing Pablo, David Keane (2002), Sumas y restas (Víctor Gaviria, 2003); La vida loca (Poveda, 2009), Sin nombre (Cary Fukunaga, 2009), El velador (Almada, 2011); La jaula de oro (Quemada-Díez, 2013); La bestia (Pedro Ultreras, 2010); Cartel Land (Heineman, 2015); The Missing 43 (Vice, 2015). Books: Alejandra Inzunza, José Luis Pardo, Pablo Ferri: Narco America, de los Andes a Manhattan (2015); Sergio González Rodríguez: El hombre sin cabeza (2010); Rafael Ramírez Heredia: La Mara (2004).

ILAC 132E. Introduction to Global Portuguese: Cultural Perspectives. 3-5 Units.
Portuguese is the sixth most-spoken language in the world (roughly 250 million speakers now, with expected growth to 400 million by 2050) and the most-spoken language south of the Equator. It is the official language of nation-states on four continents, making it truly global in scope. Beyond Brazil, there are tens of millions of Portuguese speakers in Africa and Europe as well as smaller communities in Asia and North America. In this course, students will learn about the cultures and communities that make up the Portuguese-speaking world, even as they learn to critique the idea of linking these communities by means of a language that became global (like Spanish and English) through violent colonial expansion. Topics include art and music, film, poetry, short story, post-colonialism, indigeneity, crioulismo, empire, diaspora, semi-peripherality, modernism. Course taught in English with optional Portuguese section.

ILAC 136. Modern Iberian Literatures. 3-5 Units.
1800 to the mid 20th century. Topics include: romanticism; realism and its variants; the turn of the century; modernism and the avant garde; the Civil War; and the first half of the 20th century. Authors may include Mariano Jose de Larra, Gustavo Adolfo Becquer, Rosalia de Castro, Benito Perez Galdos, Jacint Verdaguer, Eca de Queiros, Miguel de Unamuno, Ramon de Valle-Inclan, Antonio Machado, and Federico García Lorca. Taught in Spanish. Prerequisites: SPANLANG 13 or equivalent.

ILAC 139. Jaguars and Labyrinths: A Survey of South American Short Fiction. 3-5 Units.
10 South American short stories in 10 weeks. We will read tales of jaguars and octopuses, labyrinthic cities and eerie parks, magicians and mediums, time loops and spatial stretches. Each of the works will offer a unique insight into South American literature, history, and culture. We will focus on 20th and 21st century stories that deal with the future of techno-science, the interaction between Western and indigenous worldviews, the intersection of fiction and reality, the relation between the human and the non-human, and the ecological planetary crisis. Authors include Clarice Lispector, Roberto Bolaño, Jorge Luis Borges, Julio Cortázar, João Guimarães Rosa, Vilém Flusser, and Conceição Evaristo. Taught in English, no previous knowledge of Spanish and Portuguese required. Note: Students with a background in Portuguese and/or Spanish may use this course as a platform to enhance their linguistic proficiency and their close-reading skills in the target languages.
Same as: COMPLIT 139A

ILAC 140. Migration in 21st Century Latin American Film. 3-5 Units.
Focus on how images and narratives of migration are depicted in recent Latin American film. It compares migration as it takes place within Latin America to migration from Latin America to Europe and to the U.S. We will analyze these films, and their making, in the global context of an ever-growing tension between "inside" and "outside"; we consider how these films represent or explore precariousness and exclusion; visibility and invisibility; racial and gender dynamics; national and social boundaries; new subjectivities and cultural practices. Films include: Bolivia, Copacabana, La teta asustada, Norteado, Sin nombre, Migración, Ulises, among others. Films in Spanish, with English subtitles. Discussions and assignments in Spanish.
Same as: CHILATST 140

ILAC 145. Poets, Journalists and Collectors: Latin American Modernismo. 3-5 Units.
Discusses the different artistic avatars exercised by Latin American modernistas at the turn of the 19th Century in the context of growing capitalism, technological innovation and social transformation. We focus on how modernistas as poets, journalists and collectors explored and transgressed the limits of the individual and his/her situation. We consider topics like cosmopolitanism, dandysm, autonomy of art, and the aesthetic cultivation of the self. Authors include: Delmira Agustini, Rubén Darío, Julián del Casal, Leopoldo Lugones, José Martí, Manuel Gutierrez Nájera, José Enrique Rodó, José Asunción Silva, and Abraham Valdelomar. Spanish proficiency required.

ILAC 149. The Laboring of Diaspora & Border Literary Cultures. 3-5 Units.
Focus is given to emergent theories of culture and on comparative literary and cultural studies. How do we treat culture as a social force? How do we go about reading the presence of social contexts within cultural texts? How do ethno-racial writers re-imagine the nation as a site with many "cognitive maps" in which the nation-state is not congruent with cultural identity? How do diaspora and border narratives/texts strive for comparative theoretical scope while remaining rooted in specific local histories. Note: This course must be taken for a letter grade to be eligible for WAYS credit. In AY 2020-21, a "CR" grade will satisfy the WAYS requirement.
Same as: COMPLIT 149, CSRE 149

ILAC 156. Brevity as an Art Form. 3-5 Units.
In both literature and film, brevity has been recognize as a superior artistic form. Augusto Monterroso's "El Dinosaurio" (only one line) has been celebrated as a perfect short story, and "Bagdah Messi" (18 minutes) by Sahim Omar Kalifa) could also be considered a work of art. This course will choose no less than 20 short stories and shorts, to analyze and comment, besides a couple of books on the theory of the short literature.

ILAC 157. Medieval and Early Modern Iberian Literatures. 3-5 Units.
From roughly 1000 to 1700 CE. A survey of significant authors and works of early Iberian literatures, focusing on fictional/historical prose and poetry. Topics include lyric poetry and performance, the rise of European empire, Islam in the West, the rise of the novel, early European accounts of Africa and the Americas. Authors may include: Andalusi lyric poets, Llull, the Archpriest of Hita, Zurara, March, Rojas, Vaz de Caminha, Cabeza de Vaca, Sá de Miranda, Monte(ay)or, Teresa of Ávila, Camões, Mendes Pinto, Góngora, Sóror Violante do Céu, Sor Juana, Calderón, and Cervantes. Taught in Spanish.

ILAC 159. Don Quijote. 3-5 Units.
Focus is on a close reading of Miguel de Cervantes's prose masterpiece. Topics include: the rise of the novel, problems of authorship and meaning, modes of reading, the status of Muslim and Jewish converts in early modern Spain, the rise of capitalism, masochistic desire. Taught in Spanish. Prerequisites: SPANLANG 13 or equivalent.

ILAC 161. Modern Latin American Literature. 3-5 Units.
From independence to the present. A survey of significant authors and works of Hispanic and Brazilian Portuguese literatures, focusing on fictional prose and poetry. Topics include romantic allegories of the nation; modernism and postmodernism; avant-garde poetry; regionalism versus cosmopolitanism; indigenous and indigenist literature; magical realism and the literature of the boom; Afro-Hispanic literature; and testimonial narrative. Authors may include: Bolívar, Bello, Gómez de Avellaneda, Isaacs, Sarmiento, Machado de Assis, Darío, Martí-, Agustini, Vallejo, Huidobro, Borges, Cortázar, Neruda, Guillon, Rulfo, Ramos, García Marquez, Lispector, and Bolaño. As a Writing in the Major (WIM) course, ILAC 161 provides structured opportunities for ILAC and Spanish majors to gradually develop their scholarly writing skills in Spanish. This component of the course is optional for non-majors. Taught in Spanish.

ILAC 175. CAPITALS: How Cities Shape Cultures, States, and People. 3-5 Units.
This course takes students on a trip to major capital cities, at different moments in time: Renaissance Florence, Golden Age Madrid, Colonial Mexico City, Enlightenment and Romantic Paris, Existential and Revolutionary St. Petersburg, Roaring Berlin, Modernist Vienna, and bustling Buenos Aires. While exploring each place in a particular historical moment, we will also consider the relations between culture, power, and social life. How does the cultural life of a country intersect with the political activity of a capital? How do large cities shape our everyday experience, our aesthetic preferences, and our sense of history? Why do some cities become cultural capitals? Primary materials for this course will consist of literary, visual, sociological, and historical documents (in translation); authors we will read include Boccaccio, Dante, Sor Juana, Montesquieu, Baudelaire, Gogol, Irmgard Keun, Freud, and Borges. Note: To be eligible for WAYS credit, you must take the course for a Letter Grade.
Same as: COMPLIT 100, DLCL 100, FRENCH 175, GERMAN 175, HISTORY 206E, ITALIAN 175, URBANST 153

ILAC 178. Film and History of Latin American Revolutions and Counterrevolutions. 3-5 Units.
Note: Students who have completed HISTORY 78N or 78Q should not enroll in this course. In this course we will watch and critique films made about Latin America's 20th century revolutions focusing on the Cuban, Chilean and Mexican revolutions. We will analyze the films as both social and political commentaries and as aesthetic and cultural works, alongside archivally-based histories of these revolutions.
Same as: FILMSTUD 178, HISTORY 78, HISTORY 178

ILAC 181. Philosophy and Literature. 3-5 Units.
What, if anything, does reading literature do for our lives? What can literature offer that other forms of writing cannot? Can fictions teach us anything? Can they make people more moral? Why do we take pleasure in tragic stories? This course introduces students to major problems at the intersection of philosophy and literature. It addresses key questions about the value of literature, philosophical puzzles about the nature of fiction and literary language, and ways that philosophy and literature interact. Readings span literature, film, and philosophical theories of art. Authors may include Sophocles, Dickinson, Toni Morrison, Proust, Woolf, Walton, Nietzsche, and Sartre. Students master close reading techniques and philosophical analysis, and write papers combining the two. This is the required gateway course for the Philosophy and Literature major tracks. Majors should register in their home department.
Same as: CLASSICS 42, COMPLIT 181, ENGLISH 81, FRENCH 181, GERMAN 181, ITALIAN 181, PHIL 81, SLAVIC 181

ILAC 193. The Cinema of Pedro Almodovar. 3-5 Units.
Pedro Almodóvar is one of the most recognizable auteur directors in the world today. His films express a hybrid and eclectic visual style and the blurring of frontiers between mass and high culture. Special attention is paid to questions of sexuality and the centering of usually marginalized characters. This course studies Pedro Almodóvar's development from his directorial debut to the present, from the shock value of the early films to the award-winning mastery of the later ones. Prerequisite: ability to understand spoken Spanish. Readings in English. Midterm and final paper can be in English. Majors should write in Spanish.

ILAC 199. Individual Work. 1-12 Unit.
Open only to students in the department, or by consent of instructor.

ILAC 200E. War and the Modern Novel. 3-5 Units.
From the turn of the 19th century to well into the 20th century, novelists developed the theme of alienation and the decline of civilization. Along with the fall of centuries-old empires, World War I brought about the collapse of traditional European values and the dissociation of the subject. The aestheticizing of violence and the ensuing insecurity inaugurated the society of totally administered life, based on universal suspicion and pervasive guilt. The seminar will study narrative responses to these developments in some of the foremost authors of the 20th century from several European literatures: Knut Hamsun, Joseph Roth, Ernst Jünger, Virginia Woolf, Franz Kafka, Curzio Malaparte, Thomas Mann, Mercè Rodoreda, Antonio Lobo Antunes, and Jaume Cabré. Taught in English.

ILAC 203. Philosophies Behind Architecture: The Work of Antoni Gaudí as a Response to Modernity.. 3-5 Units.
The emergence of modern and contemporary Architecture in the West is intimately linked to the background culture that spread across the intellectual centers of Europe and the US between early nineteenth century and the Second World War. Catalan architect Antoni Gaudí (1852-1926) is a major representative of a style of architecture that asks and answers the questions posed by modernity and industrialization with an attitude of resistance. The purpose of this course is to pair these two perspectives: first, an exploration of the history of the most influential movements in Architecture and Interior Design since 1850 and the philosophies and historical events that explain their impact. Second, an elucidation of the originality and relevance of Antoni Gaudí in light of this international context. The course will combine texts by Marx, Smith, Nietzsche, Benjamin, Emerson, Walt Whitman, or Nelson Goodman with those of Cerdà, William Morris, or Adolf Loos, so as to shed light on the most representative buildings and interiors of the period: from the 1851 Crystal Palace of London to the state of La Sagrada Família in 1926, the year Gaudí died. The poles of this history will be represented by industrialization on one side, and autographic craftsmanship on the other. In particular, we will disentangle the tension between creativity and uniformization and their influence in the building of an entire artistic sensibility and culture, in architecture as in politics.
Same as: ARTHIST 203A

ILAC 211. Existentialism, from Moral Quest to Novelistic Form. 3-5 Units.
This seminar intends to follow the development of Existentialism from its genesis to its literary expressions in the European postwar. The notions of defining commitment, of moral ambiguity, the project of the self, and the critique of humanism will be studied in selected texts by Kierkegaard, Heidegger, Unamuno, Albert Camus, Jean-Paul Sartre, Simone de Beauvoir, and Joan Sales.
Same as: COMPLIT 258A, ILAC 311

ILAC 214. Colonial Mexico: Images and Power. 3-5 Units.
How did images maintain, construct, or transform political power during the conquest and colonization of Mexico? The creation and destruction of visual materials in this period had a complicated relationship with power. The pictographic codices that celebrated the expansive Aztec Empire were created after its fall; and the conquistadors' indigenous allies painted some of the most triumphalist narratives of the conquest. Friars accused indigenous peoples of "idolatry" both to justify the destruction of their images and objects, and to construct legal defenses of their humanity. Colonial authorities frequently claimed Afro-Catholic festivals were seditious. In light of such complexity, official histories that recount the top-down consolidation of royal and viceroyal power are suspiciously simple. What counter-narratives do images and other visual phenomena from this tumultuous period offer? This course introduces students to major texts from Colonial Mexico (royal chronicles, conquistadors' tales, letters, poems, festival accounts) alongside a fascinating trove of images (painted codices with Nahuatl texts, feather mosaics, and indigenous heraldry) and considers how experiences of images and spectacles were transformed into textual accounts ("ekphrasis" or the literary device of description). Taught in Spanish.
Same as: HISTORY 272, HISTORY 372B, ILAC 314

ILAC 217. Fernando Pessoa: Aesthetics as Ontology. 3-5 Units.
The poetry and prose of Fernando Pessoa (1888-1935), Portugal's greatest modern poet. As famous for his written work as for his complex understanding of selfhood, Pessoa remains a towering and largely perplexing figure even today. Class discussions will focus on close readings of Pessoa's work along with the implications of his theory of subjectivity for our understanding of modernity, aesthetics, and the self. Taught in English. Readings in Portuguese and English.

ILAC 220E. Renaissance Africa. 3-5 Units.
Literature and Portuguese expansion into Africa during the sixteenth century. Emphasis on forms of exchange between Portuguese and Africans in Morocco, Angola/Congo, South Africa, the Swahili Coast, and Ethiopia. Readings in Portuguese and English. Taught in English.
Same as: AFRICAST 220E, COMPLIT 220, ILAC 320E

ILAC 227. The Making of Modern Brazil. 3-5 Units.
This course explores vital moments in Brazil after its republican revolution of 1889 until the present. Through a cultural lens, we will study moments in Brazil's various impulses for "progress" and "modernity." Through various authors, films, artworks, and manifestos from Brazil's biggest cities to the backlands and to the Amazon, we seek to imagine contemporary Brazil from a deep understanding of its cultural and historical context. Specific areas of focus include the Modern Art Week of 1922 in Sao Paulo, the construction of Brasilia, and the rise (and fall) of Brazil in the 2010s. Taught in English, with readings available in English and Portuguese and an option for students to complete assignments in Portuguese if desired.

ILAC 233. Current Debates in Brazilian Studies. 1 Unit.
A discussion of contemporary Brazilian Studies with guest lecturers Pedro Erber (Cornell University) and Alfredo Cesar Barbosa de Melo (UNICAMP, Brazil). Class meets February 18, 19, 20, 25, 26 and 27, 2020. On February 27 there will be a cognate all-afternoon event with lectures by the instructors and additional guests speakers.

ILAC 234. Valeria Luiselli: A Mexican New Materialist?. 3-5 Units.
Award-winning Mexican Valeria Luiselli¿s (1983) novels, although thematically very different from each other, explore the tension between body and text in ways that engage with contemporary critical theory, media ecology studies and new materialist philosophies, raising important aesthetic and political questions about the representability of actual and residual boundaries. Students taking this class will both engage in a narratological examination of the novels, survey the existing secondary bibliography, and explore pertinent theoretical frameworks. Combining sentence-by-sentence analysis with well-informed speculative reflection, the goal of the class is to prepare and encourage students to formulate their own perspectives on literature¿s agency in the world. The course will be taught in Spanish and is open to intermediate and advanced Spanish speakers.

ILAC 236. Gender and Feminist Debates in Latin America. 1 Unit.
This interdisciplinary, 10 hour, 1-unit course, explores gender politics and representation in contemporary Latin American film, theory, and social movements. Seminar format, open to undergraduate and graduate students. Works may include: film: Señorita María (2017) by Rubén Mendoza (Colombia); studies by Marta Lamas (Mexico), Ana Amado (Argentina), and Sonia Corrêa (Brazil), among others. The course will be taught in Spanish at Bolivar House, 582 Alvarado Row. Schedule: The course dates are Monday, April 23 to Wednesday April, 25, 6:00-9:00pm. Instructor: Professor Moira Fradinger (Yale University), hosted by Professor Héctor Hoyos. NOTE: Professor Fradinger will also give a talk on "Antígonas: A Latin American Tradition," on Friday, April 27th, in the CLAS noon lecture series.

ILAC 238. Latin American Poetry as Witness to Self and World.. 4 Units.
Can lyric poetry engage with the political? How have political contexts shaped poetic form? In this course we will study the ways in which Latin American poetry has modified, dismissed, and drawn inspiration from the traditions of the avant-garde and politicized poetry. Authors may include Darío, Huidobro, Vallejo, Guillén, Storni, Neruda, Paz, Pizarnik, Parra, Dalton, Zurita, and Morejón.

ILAC 241. Fiction Workshop in Spanish. 3-5 Units.
Spanish and Spanish American short stories approached through narrative theory and craft. Assignments are creative in nature and focus on the formal elements of fiction (e.g. character and plot development, point of view, creating a scene, etc.). Students will write, workshop, and revise an original short story throughout the term. No previous experience with creative writing is required. Readings may include works by Ayala, Bolaño, Borges, Clarín, Cortázar, García Márquez, Piglia, Rodoreda, and others. Enrollment limited.

ILAC 242. Poetry Workshop in Spanish. 3-5 Units.
Latin American and Spanish poetry approached through elements of craft. Assignments are creative in nature and focus on the formal elements of poetry (meter, rhythm, lineation, rhetorical figures and tropes) and the exploration of lyric subgenres (e.g. ode, elegy, prose poem). Students write original poems throughout the quarter. No previous experience with creative writing is required. Prerequisite: 100-level course in Spanish or permission of instructor. Enrollment limited.

ILAC 243. Latin American Aesthetics. 3-5 Units.
As the branch of philosophy that deals with the principles of beauty and artistic taste, aesthetics is, purportedly, universal. The course interrogates its conspicuous omission of Latin American theorization and cultural production. Three thematic axes are vanguardia, colonialidad, and populismo; a central concern is aesthetic responses to precariousness. Argentine, Brazilian, Chilean, Colombian, and Cuban essayism and visual arts from the mid 20th century to the present, notably origenismo, neo-baroque, and indigenismo. In collaboration with a cognate course at UC Berkeley. Taught in Spanish.nNOTE: This course must be taken for a minimum of 3 units and a letter grade to be eligible for WAYS credit.

ILAC 249. Women and Wolves in Film and Literature. 3-5 Units.
This course deconstructs the foundational narrative that corrals women into capitalist patriarchy, together with animals. Paying close attention to interspecies bonds between canidae and homo sapiens, we study novels and films where women, wolves and dogs resist the male gaze. Ever heard of Little Red Riding Hood? What if there could be a liberating alliance between her and the wolf? Taught in Spanish.
Same as: ILAC 355

ILAC 254. Crónicas: Soccer, Pop Icons, Shipwrecks, and Populism. 3-5 Units.
In this course, Mexican scholar and writer Juan Villoro analyzes Latin American works that sit halfway between fiction and non-fiction ("crónicas"). A survey on the shifting Latin-American cultural and political landscape, and its narrative representations. Authors include Nobel-laureate Gabriel García Márquez, Elena Ponitowska, and her groundbreaking account of social movements in Mexico. Martín Camparrós (biographer of Boca Juniors),queer activist auteur Pedro Lemebel (Chile), contemporary Argentine journalist Leila Guerriero, and selections from Tomás Eloy Martínez's epochal Santa Evita.

ILAC 255. Climate Change and Latin American Naturecultures. 3-5 Units.
In this course, we will explore fundamental concepts of the environmental humanities as they relate to the inseparable natural and cultural phenomena that constitute climate change in Latin America. The course will be structured around different ecological themes¿such as, energy and extractive industries, the Amazon, the desert, the Andes, the Caribbean, urban habitats¿that will be examined through twentieth- and twenty-first-century Latin American novels, film, short story, and song. Possible authors include Gloria Anzaldúa, Macarena Gómez-Barris, Gabriel García Márquez, and José Eustasio Rivera. We will consider the ethics and politics of climate change in the Americas, how the methodologies of literary and decolonial studies can generate insights into contemporary climate change impacts in Latin America, and what role culture has in a period defined by chronic and slow-moving environmental crisis and recovery. Taught in English.

ILAC 256A. Landscapes in Latin American Cinema. 3-5 Units.
From Patagonia to the US/Mexico border, this course examines diverse cinematic visions of the Latin American continent through documentaries, fiction films, stories, and essays. We will consider different regions and time periods, including representations of dictatorship/violence, the drug trade, and cities to explore how land, nature, and humanity interact in film and to what effect. Areas of focus are the Southern Cone, Brazil, and the US/Mexico/Central America borderlands, and students will gain a solid critical understanding of how to read film.

ILAC 263. Visions of the Andes. 3-5 Units.
Themes like "people," "revolt," "community," "utopia" and "landscape" are central to 20th century Andean narrative and its accompanying critical apparatus. The course reviews major works of Andean literature to reconsider the aesthetic and intellectual legacy of modernity and modernization in the region. We discuss changes in recent literature and film. Special attention is payed to post-conflict Peru and Evo Morales' Bolivia.

ILAC 268. INDIGENISMOS REVISITED. 3-5 Units.
How are indigenous peoples represented in Mexico and Peru in the early 20th century? Why do we call that literature and visual art indigenista? What is the relationship between indigenista art, revolution and the nation? How do we examine indigenismos now?.

ILAC 269. Realismo Mágico vs. Real Maravilloso. 3-5 Units.
Two important concepts and theories realismo mágico and lo Real maravilloso have given sense and substance to Latin American literature during the last three decades. This course will focus on those concepts and on the works of Garcia Marquez and Alejo Carpentier, two key authors of modern Latin America. NOTE: Taught by professor Tom Winterbottom.

ILAC 272. New Brazilian Cinema. 3-5 Units.
This course studies cinema from Brazil with a focus on films from the last decade. We will consider how to effectively talk and write about film, particularly according to Brazil's specific historical and cultural context and from a perspective of social realism. Numerous readings and discussions will bolster our viewings of fiction films and documentaries. Directors include Kleber Mendonça Filho, Anna Muylaert, Gabriel Mascaro, Karim Aïnouz, Aly Muritiba, and Petra Costa. Taught in English; films shown with English subtitles.

ILAC 277. Senior Seminar: Horror, Gothic, and Fantasy in Spanish. 3-5 Units.
In this course we delve into stories and film where realism is put to the test. From vampires in Havana to mysterious children in Buenos Aires, we work with a constellation of writers who shape minor genres into masterpieces. We'll map the ways in which these narratives work with form (against literary or cinematic realism), affect (eliciting emotional responses), and adaptation (as translations or dislocations of genre, gender, geography, time, and modes of production). The selection includes Bombal, Quiroga, Borges, Cortázar, Lispector, Ocampo, Enríquez, Schweblin, Sandoval, and Del Toro, among others.

ILAC 278A. Senior Seminar: The Iberian Pastoral. 3-5 Units.
What does pastoral literature, with its lovesick shepherds, acts of self-immolation, and aquatic nymphs, have to teach us? For early modern Portugal and Spain, it formed a surprisingly indispensable foundation for the social. From the earliest lyric traditions to the rise of the modern novel, the pastoral is everywhere. Through a close analysis and discussion of early modern texts in Spanish and Portuguese, as well as some theoretical/philosophical texts in English, we will explore the place of the pastoral in early modern Iberia and reckon with its impact on our own sense of the past. Authors include: Bernardim Ribeiro, Francisco de Sá de Miranda, Garcilaso de la Vega, Joan Boscà, Jorge de Montemayor, Luís de Camões, Diogo Bernardes, Luis de Góngora, and Violante do Céu.

ILAC 281E. Peripheral Dreams: The Art and Literature of Miró, Dalí, and other Surrealists in Catalonia. 3-5 Units.
Why was Salvador Dalí fascinated with the architecture of Gaudí? Why did André Breton, Paul Éluard and Federico García Lorca visit Barcelona? Moreover, why did Catalonia become such an important cradle for Surrealism? Why is the (Catalan) landscape such a relevant presence in the work of Miró and Dalí? Through a critical analysis and discussion of selected works of art and literature, this seminar focuses and follows the trajectories of Miró and Dalí, from Barcelona to Paris to New York, and explores the role of their Catalan background as a potentially essential factor in their own contributions to Surrealism and the reception of their work. The course will provide the materials and guide the student to conduct research on a specific work(s) of art, architecture, literature or cinema either by Miró, Dalí or one of his peers in relation to their cultural, social and political context. The course is intended for graduate students in Iberian and Comparative Literature, Art History, Cultural Studies, and related fields. Taught in English by Jordi Falgàs i Casanovas.
Same as: ARTHIST 221E

ILAC 299. Individual Work. 1-12 Unit.
Open to department advanced undergraduates or graduate students by consent of professor. May be repeated for credit.

ILAC 303. Topics of: Early Modern Theories of History. 3-5 Units.
From the 15th to the 17th centuries, European expansion projects, especially the Iberian ones, prompted new constructions of the past, present, and future. This proliferation of history writing was complicated by the fact that the various populations of the global Iberian monarchies, particularly those of New Spain, Peru, and Brazil, did not share the same concepts of historicity or temporality. In this course, students will explore a great diversity of primary sources (chronicles, reports, annals, pictographic codices, theater, paintings, feather mosaics, murals, etc.) and discover the unexpected social memories and theories of history that they created.

ILAC 305. Rhythm: Ethics and Poetics of the Premodern. 3-5 Units.
Focus is on the notion of rhythm as a theoretical frame for the analysis of medieval and early modern Iberian poetry. Topics include Ancient Greek and modern conceptions of rhythm and the links between poetics and ethics in the medieval period and beyond. Authors include: Aeschylus, Plato, Aristoxenus, Maurice Blanchot, Paul Celan, EmmanuelnnLevinas, Arcipreste de Hita, Ausiàs March, Garcilaso de la Vega, and Luís de Camões. Taught in English.

ILAC 311. Existentialism, from Moral Quest to Novelistic Form. 3-5 Units.
This seminar intends to follow the development of Existentialism from its genesis to its literary expressions in the European postwar. The notions of defining commitment, of moral ambiguity, the project of the self, and the critique of humanism will be studied in selected texts by Kierkegaard, Heidegger, Unamuno, Albert Camus, Jean-Paul Sartre, Simone de Beauvoir, and Joan Sales.
Same as: COMPLIT 258A, ILAC 211

ILAC 314. Colonial Mexico: Images and Power. 3-5 Units.
How did images maintain, construct, or transform political power during the conquest and colonization of Mexico? The creation and destruction of visual materials in this period had a complicated relationship with power. The pictographic codices that celebrated the expansive Aztec Empire were created after its fall; and the conquistadors' indigenous allies painted some of the most triumphalist narratives of the conquest. Friars accused indigenous peoples of "idolatry" both to justify the destruction of their images and objects, and to construct legal defenses of their humanity. Colonial authorities frequently claimed Afro-Catholic festivals were seditious. In light of such complexity, official histories that recount the top-down consolidation of royal and viceroyal power are suspiciously simple. What counter-narratives do images and other visual phenomena from this tumultuous period offer? This course introduces students to major texts from Colonial Mexico (royal chronicles, conquistadors' tales, letters, poems, festival accounts) alongside a fascinating trove of images (painted codices with Nahuatl texts, feather mosaics, and indigenous heraldry) and considers how experiences of images and spectacles were transformed into textual accounts ("ekphrasis" or the literary device of description). Taught in Spanish.
Same as: HISTORY 272, HISTORY 372B, ILAC 214

ILAC 320E. Renaissance Africa. 3-5 Units.
Literature and Portuguese expansion into Africa during the sixteenth century. Emphasis on forms of exchange between Portuguese and Africans in Morocco, Angola/Congo, South Africa, the Swahili Coast, and Ethiopia. Readings in Portuguese and English. Taught in English.
Same as: AFRICAST 220E, COMPLIT 220, ILAC 220E

ILAC 321. Aljamiado Literature: Crypto-Muslim Culture in Early Modern Iberia. 3-5 Units.
The history, culture, and literature of minority Muslim communities in Spain and Portugal from 1492 to the Morisco expulsions of 1609-14. Topics include: Islam and the West; Religious minorities in Europe; Inquisition and resistance; Gender and Islam; Law and Culture. Class discussions will revolve around selected works of Aljamiado literature (students will learn to read Arabic script), and the final project will involve the partial transcription and study of a sixteenth-century Aljamiado manuscript.

ILAC 334A. Concepts of Modernity I: Philosophical Foundations. 5 Units.
In the late eighteenth century, Immanuel Kant proclaimed his epoch to be "the genuine age of criticism." He went on to develop the critique of reason, which set the stage for many of the themes and problems that have preoccupied Western thinkers for the last two centuries. This fall quarter survey is intended as an introduction to these themes and problems. The general course layout draws equal parts on Koselleck's practice of "conceptual history" (Begriffsgeschichte) and on Jameson's "cognitive mapping." After consideration of an important, if often under-appreciated precedent (the baroque), we turn our attention to the conceptual triad of subject, reason and critique, followed by that of revolution, utopia and sovereignty. Authors may include Hegel, Marx, Nietzsche, Weber, Freud, Lukács, and others. This course is the first of a two-course sequence. Priority to graduate students in MTL, ILAC, and English.
Same as: COMPLIT 334A, MTL 334A

ILAC 336. One World or Many? Representing Distance, Time, and Place in Iberian Expansion. 3-5 Units.
The travelers, missionaries, and historians that reflected on Iberian overseas expansion during the early modern period often asked themselves a crucial question: was there only one world or many? Could the New World, unknown to the ancients, be entirely detached from the rest of human history? Many of these chroniclers continued to think that the world was divided into three parts: Europe, Asia, and Africa. In their descriptions of the Americas, they drew heavily on histories and travel reports pertaining to other epochs and locales, especially contemporary Asia and ancient Rome. Local authors and artists in the New World in this period used world history and news of distant conflicts to reflect on the immediacy of their historical experience. In this course, we will consider the ways in which historians, conquistadors, missionaries, and indigenous authors in New Spain (Mexico), Brazil, and Peru contemplated themselves in the looking glass of remote times and places: from Greco-Roman Antiquity to Lutheran Germany, from the Ottoman Mediterranean to the Apocalyptic End of Times. Students will reassess the importance of this archive to early modern studies writ large and challenge the scholarly tendency to frame the Iberian Peninsula as the center and the Americas as the periphery. Primary sources will include sixteenth and seventeenth-century chronicles, reports, poetry, theater, pictographic codices, feather mosaics, and maps. Reading knowledge of Spanish and a willingness to work with Portuguese required. Course to be taught by Nicole T. Hughes.

ILAC 342. Meat. 3-5 Units.
"Carne" mistranslates as "meat," "Körper," or "chair." Does the word codify into language a certain culturally specific experience of the body and its mediation with nature? In which ways does "flesh" subordinate nonhumans? How does the theme of meat articulate natural and political histories? This advanced research seminar tackles these questions across Latin American corpora: Piñera, Eltit, Echeverría, Bolaño, Bombal, and Lispector. Theorists include: Singer, Santner, and Ortiz. Culturalist, new materialist debates on cattle and corpses. This course will be taught in Spanish.

ILAC 347. Early Modern Iberian Lyric Poetry. 3-5 Units.
Focused analysis of lyric poetry in Catalan, Portuguese, and Spanish from the fifteenth through the seventeenth centuries. Readings include poems by Ausiàs March, el marqués de Santillana, Bernardim Ribeiro, Francisco de Sá de Miranda, Garcilaso de la Vega, Luís de Camões, Diogo Bernardes, Vicent Garcia, Luis de Góngora, and Soror Violante do Céu. Ways of thinking about and thinking through poetry. Focus on poetic form, voice, figural language, performativity, empire, and the interaction of sensory registers. Taught in English with readings in Catalan, Portuguese, and Spanish.

ILAC 348. US-Mexico Border Fictions: Writing La Frontera, Tearing Down the Wall. 3-5 Units.
A border is a force of containment that inspires dreams of being overcome, crossed, and cursed; motivates bodies to climb over walls; and threatens physical harm. This graduate seminar places into comparative dialogue a variety of perspectives from Chicana/o and Mexican/Latin American literary studies. Our seminar will examine fiction and cultural productions that range widely, from celebrated Mexican and Chicano/a authors such as Carlos Fuentes (La frontera de cristal), Yuri Herrera (Señales que precederan al fin del mundo), Willivaldo Delgaldillo (La Virgen del Barrio Árabe), Américo Paredes (George Washington Gómez: A Mexico-Texan Novel), Gloria Anzaldúa (Borderlands/La Frontera: The New Mestiza), and Sandra Cisneros (Carmelo: Puro Cuento), among others, to musicians whose contributions to border thinking and culture have not yet been fully appreciated such as Herb Albert, Ely Guerra, Los Tigres del Norte, and Café Tacvba. Last but not least, we will screen and analyze Orson Welles' iconic border films Touch of Evil and Rodrigo Dorfman's Los Sueños de Angélica. Proposing a diverse and geographically expansive view of the US-Mexico border literary and cultural studies, this seminar links the work of these authors and musicians to struggles for land and border-crossing rights, anti-imperialist forms of trans-nationalism, and to the decolonial turn in border thinking or pensamineto fronterizo. It forces us to take into account the ways in which shifts in the nature of global relations affect literary production and negative aesthetics especially in our age of (late) post-industrial capitalism.
Same as: COMPLIT 348

ILAC 350. Roberto Bolaño's 2666. 3-5 Units.
Roberto Bolaño's 2666 raises questions about the representability of sovereignty, neoliberalism, gender violence, and globalization. An unlikely global classic, it has become a de rigueur referent in contemporary literary studies. Graduate students taking this class will not only engage in a narratological examination of novel, but also survey the existing secondary bibliography, including forthcoming manuscripts with special permission from the authors. The goal of the seminar is to prepare graduate students to formulate their own contributions to the state of the discipline.

ILAC 355. Women and Wolves in Film and Literature. 3-5 Units.
This course deconstructs the foundational narrative that corrals women into capitalist patriarchy, together with animals. Paying close attention to interspecies bonds between canidae and homo sapiens, we study novels and films where women, wolves and dogs resist the male gaze. Ever heard of Little Red Riding Hood? What if there could be a liberating alliance between her and the wolf? Taught in Spanish.
Same as: ILAC 249

ILAC 366. Topics of: The Yellow-Brick Road to the Spanish Nation-State. 3-5 Units.
Nation states arise historically with the transfer of rule from the king to the people, which becomes depository of the general interest. But the old patrimonial state included different peoples, some of which continued to have their own constitutions, representative chambers, and codes of law. Unifying them was a pre-requisite for the emergence of the nation state. This was achieved through a process of nation building which, for most European states, culminated in the 19th century. Not so in Spain. The recurring crises of the Spanish state through the 19th and 20th centuries, and renewed territorial problems in the 21st, reveal an unachieved national project. The seminar will discuss theories of nationalism and sovereignty, and will consider the historical attempts of the Spanish state to manage its intractable nationalities problem, with particular reference to Catalonia. In addition to the state¿s political fractures, the significance of culture for the insolubility of national identities in a single national project will be considered in some detail, as will the role of academic disciplines in furthering a cultural mandate in the sense of political power or in challenge to it.

ILAC 371. Graduate Colloquium: Explorations in Latin American History and Historiography. 4-5 Units.
Introduction to modern Latin American history and historiography, including how to read and use primary sources for independent research.
Same as: HISTORY 371

ILAC 373. Baroque Brazil. 3-5 Units.
In this course we will read texts from and about seventeenth- and eighteenth-century Brazil, with special emphasis on the baroque aesthetic in literature, art, and music. Authors include António Vieira; Gregório de Matos; Bento Teixeira; Sebastião da Rocha Pita; Nuno Marques Pereira; Manuel Botelho de Oliveira; and Frei Itaparica.nReadings in English and Portuguese. Taught in English.

ILAC 399. Individual Work. 1-12 Unit.
For Spanish and Portuguese department graduate students only. Prerequisite: consent of instructor.

ILAC 680. Curricular Practical Training. 1-3 Unit.
CPT course required for international students completing degree. Prerequisite: Comparative Literature Ph.D. candidate.

ILAC 801. TGR Project. 0 Units.
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ILAC 802. TGR Dissertation. 0 Units.
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Portuguese Language Courses

PORTLANG 1. First-Year Portuguese, First Quarter. 5 Units.
Emphasis is on oral comprehension and developing socially and culturally appropriate beginning speaking proficiency in interpersonal, interpretive, and presentational modes. Completion of Portlang 3 fulfills the University Foreign Language Requirement.

PORTLANG 1A. Accelerated First-Year Portuguese, Part 1. 5 Units.
Completes first-year sequence in two rather than three quarters. For students with a strong background in another Romance language, preferably Spanish. Emphasis is on developing oral comprehension and socially and culturally appropriate beginning proficiency in interpersonal, interpretive, and presentational modes. Completion of PORTLANG 2A fulfills the University's foreign language requirement.

PORTLANG 2. First-Year Portuguese, 2nd Quarter. 5 Units.
Continuation of 1.Emphasis is on strengthening socially and culturally appropriate beginning,proficiency in interpersonal, interpretive, and presentational modes.Completion of PORTLANG 3 fulfills the University's Foreign Language Prerequisite: Portlang 1 or placement test.

PORTLANG 2A. Accelerated First-Year Portuguese, Part 2. 5 Units.
Continuation of PORTLANG 1A. For students with a strong background in another Romance language, preferably Spanish. Emphasis is on developing oral comprehension and socially and culturally appropriate intermediate proficiency in interpersonal, interpretive, and presentational modes. Completion of PORTLANG 2A fulfills the University's foreign language requirement. Prerequisite: Placement Test or PORTLANG 1A or equivalent.

PORTLANG 3. First-Year Portuguese, Third Quarter. 5 Units.
Continuation of PORTLANG 2. .Emphasis is on developing socially and culturally appropriate intermediate, proficiency in interpersonal, interpretive, and presentational modes. Completion of 3 fulfills the University Foreign Language Requirement. Prerequisite: Placement Test, PORTLANG 2 or equivalent.

PORTLANG 11A. Accelerated Second-Year Portuguese, Part 1. 5 Units.
Continuation of PORTLANG 2A. Fast-paced first half of the second-year sequence. Emphasis is on developing a solid basis for socially and culturally appropriate advanced proficiency in oral and written discourse, including presentational language, and formal and informal discourse for the academic and professional contexts.Prerequisite: Placement Test, PORTLANG 2A, PORTLANG 3 or equivalent.

PORTLANG 12A. Accelerated Second-Year Portuguese, Part 2. 5 Units.
Continuation of PORTLANG 11A. Fast-paced second half of the second-year sequence. Emphasis is on strengthening socially and culturally appropriate advanced proficiency in oral and written discourse, including presentational language, and formal and informal discourse for the academic and professional contexts.nPrerequisite: Placement Test, PORTLANG 11A or equivalent.

PORTLANG 99. Language Specials. 1-5 Unit.
Prerequisite: consent of instructor.n (Staff).

PORTLANG 101. Reading Brazil. 3-4 Units.
3rd year course Expository readings, guest lectures, discussions, on current Brazilian issues. Emphasis is on strengthening and expanding socially and culturally appropriate advanced proficiency in oral and written discourse departing from texts.. Prerequisite: Placement Test, PORTLANG 12A or equivalent.

PORTLANG 102. Brazil in Text: Advanced Grammar and Composition. 3-4 Units.
3rd year course Further development of writing competence. Short expository readings, guest lectures, discussions, review of advanced structures, compositions on current Brazilian issues. Emphasis is on expanding students repertoire of structures,building paragraphs, organizing arguments, and justifying positions. May be repeated once for credit. May be repeated once for credit. Prerequisite: PORTLANG 12A or equivalent.

PORTLANG 103. Advanced Conversation: Brazil Today. 3-4 Units.
3rd year course. Reading and discussions on issues from current media sites and magazines, reading comprehension strategies and vocabulary building. Emphasis is on solidifying and expanding formal expository language. and formal and informal discourse for the academic and professional context. May be repeated once for credit. Prerequisite: PORTLANG 12A.

PORTLANG 161. Advanced Reading in Portuguese, Fourth-year Portuguese. 3-4 Units.
4th year course. Emphasis is on high-level reading comprehension leading to advanced development of communication skills for extended formal and informal discourse in Portuguese. Prerequisite: Placement Test or PORTLANG 101.

PORTLANG 162. Advanced Writing in Portuguese, Fourth-year Portuguese. 3-4 Units.
4th-year course. The course has two tracks, depending on the interest of the student: a) advanced expository writing (correspondence, technical reports, editorials, etc.) and b) creative writing (`crônicas' short stories, poems, etc.). Prerequisite: Placement Test or PORTLANG 102.

PORTLANG 163. Contemporary Issues in the Lusophone World. Fourth-Year Portuguese. 3-4 Units.
4th-year course. The class emphasizes formal presentations/discussions in Portuguese, based on contemporary issues in the lusophone world.Emphasis is on mastering high-level vocabulary/structure as well as rhetorical strategies, for appropriate use in professional settings. . Prerequisite: Placement Test or PORTLANG 103.

PORTLANG 164. Translating the Lusophone world, Fourth-Year Portuguese. 3-5 Units.
For advanced students. Literary and technical translation. Readings on theoretical topics on translation; discussion, analysis and comparison of existing translations (literary and technical); individual translation projects according to students' field of study, and discussion and analysis of those projects in class. Final translation project to be undertaken individually. Prerequisite: PORTLANG 250 or completion of 3rd year sequence.

PORTLANG 297. Directed Reading. 1-4 Unit.
Prerequisite: consent of instructor.nn (Staff).

PORTLANG 394. Graduate Studies in Portuguese Conversation. 1-3 Unit.
Prerequisite: consent of instructor.nn (Staff).

PORTLANG 395. Graduate Studies in Portuguese. 1-5 Unit.
Prerequisite: consent of instructor.n (Staff).

Spanish Language Courses

SPANLANG 1. First-Year Spanish, First Quarter. 5 Units.
First quarter of the three-quarter sequence. Emphasis is on developing socially and culturally appropriate proficiency in interpersonal, interpretive, and presentational spheres. Influences shaping the production of oral and written texts in the Spanish speaking world.

SPANLANG 1A. Accelerated First-Year Spanish, Part 1. 5 Units.
Completes first-year sequence in two rather than three quarters. For students with previous knowledge of Spanish, or those with a strong background in another Romance language. SPANLANG 2A fulfills the University Foreign Language Requirement. Prerequisite: Placement Test in Spanish or second-year placement in another Romance language.

SPANLANG 2. First-Year Spanish, Second Quarter. 5 Units.
Continuation of SPANLANG 1. Emphasis is on developing socially and culturally appropriate proficiency in interpersonal, interpretive, and presentational spheres. Influences shaping the production of oral and written texts in the Spanish speaking world. Prerequisite Placement Test or SPANLANG 1.

SPANLANG 2A. Accelerated First-Year Spanish, Part 2. 5 Units.
Continuation of SPANLANG 1A. Completes first-year sequence in two rather than three quarters. For students with previous knowledge of Spanish, or those with a strong background in another Romance language. Prerequisite: SPANLANG 1A. Fulfills the University language requirement.

SPANLANG 3. First-Year Spanish, Third Quarter. 5 Units.
Continuation of SPANLANG 2. Emphasis is on developing socially and culturally appropriate proficiency in interpersonal, interpretive, and presentational spheres. Influences shaping the production of oral and written texts in the Spanish speaking world. Prerequisite: Placement Test or SPANLANG 2. Fulfills the University Foreign Language Requirement.

SPANLANG 5. Intensive First-Year Spanish. 10 Units.
Completes first-year sequence in one rather than three quarters. Completion of this course fulfills the University Foreign Language Requirement.

SPANLANG 10. Beginning Oral Communication. 2 Units.
Additional pronunciation, vocabulary, and speaking skills. May be repeated once for credit. Prerequisite: one quarter of Spanish, demonstrated oral proficiency above the novice level; may be taken concurrently with SPANLANG 2, SPANLANG 2A, or SPANLANG 3.

SPANLANG 11C. Second-Year Spanish: Cultural Emphasis, First Quarter. 4 Units.
Continuation of SPANLANG 3 or SPANLANG 2A. Sequence integrating culture and language, with emphasis on developing advanced proficiency in oral and written discourse. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, academic, and professional contexts. `C' - track content focuses on societal and cultural components of the Spanish-speaking world. Prerequisite: Placement Test, SPANLANG 3 or SPANLANG 2A.

SPANLANG 11R. Second-Year Spanish: Emphasis on International Relations, First Quarter. 4 Units.
Continuation of SPANLANG 3 or SPANLANG 2A. Sequence integrating geopolitics and language, with emphasis on developing advanced proficiency in oral and written discourse. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, academic, and professional contexts. `R'-track content focuses on international relations and socioeconomics of the Spanish-speaking world. Prerequisite: Placement Test, SPANLANG 2A or SPANLANG 3.

SPANLANG 11SL. Second-Year Spanish: Emphasis on Service Learning, First Quarter. 4 Units.
Continuation of SPANLANG 3 or SPANLANG 2A. Identity and community. Sequence integrating community engaged learning, culture and language with emphasis on developing advanced proficiency in oral and written discourse. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, community and academic contexts. SL content focuses on artistic projects with Spanish-speaking youth organizations in the local community. Requires one evening off campus per week in addition to four hours of regular class time. Projects may vary from quarter to quarter (e.g., mural art, print-making, digital storytelling, etc.) but focus on themes surrounding community and youth identity. Cardinal Course (certified by Haas Center). Prerequisite: Placement Test, SPANLANG 3 or SPANLANG 2A.

SPANLANG 12C. Second-Year Spanish: Cultural Emphasis, Second Quarter. 4 Units.
Continuation of SPANLANG 11C. Sequence integrating culture and language, with emphasis on developing advanced proficiency in oral and written discourse. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, academic, and professional contexts. "C" content focuses on societal and cultural components of the Spanish-speaking world. Prerequisite: Placement Test, SPANLANG SPANLANG 11C, 11R, 11SL, or 21B.

SPANLANG 12R. Second-Year Spanish: Emphasis on International Relations, Second Quarter. 4 Units.
Continuation of SPANLANG 11R. Sequence integrating geopolitics and language, with emphasis on developing advanced proficiency in oral and written discourse. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, academic, and professional contexts."R" content focuses on international relations and socioeconomics of the Spanish-speaking world. Prerequisite: Placement Test, SPANLANG 11C, 11R, 11SL, or 21B.

SPANLANG 12SL. Second-Year Spanish: Emphasis on Service Learning, Second Quarter. 4 Units.
Continuation of SPANLANG 11. Identity and community. Sequence integrating community engaged learning, culture and language with emphasis on developing advanced proficiency in oral and written discourse. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, community and academic contexts. SL content focuses on artistic projects with Spanish-speaking youth organizations in the local community. May require additional hours off campus immediately before and after class, in addition to regular class time. Projects may vary from quarter to quarter (e.g., drama and video production, environmental projects, poetry, etc.) but focus on themes surrounding community and youth identity. Cardinal Course (certified by Haas Center). Prerequisite: Placement Test, SPANLANG 11C, 11R, 11SL, or 21B.

SPANLANG 13C. Second-Year Spanish: Cultural Emphasis, Third Quarter. 4 Units.
Continuation of SPANLANG 12C. Sequence integrating culture and language, with emphasis on developing advanced proficiency in oral and written discourse. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, academic, and professional contexts. "C" content focuses on societal and cultural components of the Spanish-speaking world. Prerequisite: Placement Test, SPANLANG 12C,12R or 12SL. Fulfills the IR major Language Requirement.

SPANLANG 13R. Second-Year Spanish: Emphasis on International Relations, Third Quarter. 4 Units.
Continuation of SPANLANG 12R. Sequence integrating geopolitics and language. Emphasis is on advanced proficiency in oral and written discourse including presentational language, international relations, and socioeconomics of the Spanish-speaking world. Prerequisite: SPANLANG 12C,12R,12M, 12S,22B or 21SL. Fulfills the IR major Language Requirement.

SPANLANG 13SL. Second-Year Spanish: Emphasis on Service Learning, Third Quarter. 4 Units.
Continuation of SPANLANG 12. Immigration & Citizenship. Sequence integrating community engaged learning, culture and language with emphasis on developing advanced proficiency in oral and written discourse. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, community and professional contexts. SL content focuses on immersion in civics-based service learning in the Spanish-speaking local community. Requires one evening off campus per week in addition to three hours of regular class time. Service Learning Course (certified by Haas Center). Prerequisite: Placement Test, SPANLANG 12C, 12R, 12SL,12M or 12S. Fulfills the IR major language requirement.

SPANLANG 15. Intermediate Oral Communication. 3 Units.
Emphasis is on interaction in Spanish locally and globally. Regional vocabularies and cultures at home and abroad. Interaction with local native Spanish speakers and communities.. May be repeated once for credit. Prerequisite: SPANLANG 2A, SPANLANG 3 and demonstrated oral proficiency above the low intermediate level.

SPANLANG 21B. Second-Year Spanish for Heritage Language Students, First Quarter. 4 Units.
First quarter of the three-quarter sequence.Emphasis is on ability to communicate orally and in writing. Spelling and the written accent. Goal is to understand, interpret, and analyze oral and written texts. Written language skills include rules for editing written language. Third quarter focus is on the development of written and oral styles and registers used in more formal settings. Prerequisite: Placement Test.

SPANLANG 22B. Second-Year Spanish for Heritage Language Students, Second Quarter. 4 Units.
Continuation of SPANLANG 21B. Emphasis is on ability to communicate orally and in writing. Spelling and the written accent. Goal is to understand, interpret, and analyze oral and written texts. Written language skills include rules for editing written language. Prerequisite: Placement Test, Placement Test or SPANLANG 21B.

SPANLANG 23B. Second-Year Spanish for Heritage Language Students, Third Quarter. 4 Units.
Continuation of SPANLANG 22B. Emphasis is on ability to communicate orally and in writing. Spelling and the written accent. Goal is to understand, interpret, and analyze oral and written texts.Written language skills include rules for editing written language. Third quarter focus is on the development of written and oral styles and registers used in more formal settings. Prerequisite: Placement Test or SPANLANG 22B.

SPANLANG 25B. Intensive Second-Year Spanish, Part B. 4 Units.
Same as SPANLANG 12. Continuation of 25A. Prerequisite: 25A or equivalent.

SPANLANG 25C. Intensive Second-Year Spanish, Part C. 4 Units.
Same as SPANLANG 13. Continuation of 25B. Prerequisite: 25B or equivalent.

SPANLANG 99. Language Specials. 1-5 Unit.
May be repeated for credit. Prerequisite: consent of instructor.

SPANLANG 100. Advanced Oral Communication. 3 Units.
For students who have completed second-year Spanish or who have oral skills above the intermediate level. Interactive activities require students to persuade, analyze, support opinions, and gather and interpret others' points of view. Focus is on vocabulary enrichment and idiomatic expressions. Cultural, literary, political, and journalistic readings. May be repeated once for credit. Prerequisite: SPANLANG 13 or equivalent.

SPANLANG 100S. Advanced Oral Communication. 2 Units.
For students who have completed second-year Spanish or who have oral skills above the intermediate level. Interactive activities require students to persuade, analyze, support opinions, and gather and interpret others' points of view. Focus is on vocabulary enrichment and idiomatic expressions. Cultural, literary, political, and journalistic readings. May be repeated once for credit. Prerequisite: SPANLANG 13 or equivalent.

SPANLANG 101. The Structure of Spanish. 4 Units.
Criteria and skills to analyze Spanish grammatical structure. Identification of word functions in sentences and texts, types of sentences, and terminology. Structure of nouns, adjectives, and verbs, and their relationship with meaning. The differences between Spanish grammar as a formal system and in everyday life. Students who wish to participate in the optional community engaged learning component should sign up for Spanlang 101SL (below). Prerequisite: SPANLANG 13C,13R,13SL,23B,13S or 13M.

SPANLANG 101SL. The Structure of Spanish. 4 Units.
Equivalent to Spanlang 101, integrating service learning with course material. Assignments will be modified for students enrolled under 101SL to focus on principles and practice of community-engaged learning. Students and native Spanish-speaking Stanford workers exchange oral histories and create digital stories with testimonials, advice, or remembrances that workers wish to share. Cardinal Course (certified by Haas Center). Prerequisite: SPANLANG 13C, SPANLANG 13R, SPANLANG 13SL,23B,13S or SPANLANG 13M.
Same as: Service Learning Option

SPANLANG 102. Composition and Writing Workshop. 3-5 Units.
Individual development of the ability to write in Spanish. Emphasis is on style and diction, and on preparing and writing essays on literary topics. Non-Spanish majors or minors may choose topics more closely related to their studies for projects. Students who wish to participate in the optional community engaged learning component should sign up for Spanlang 102SL (below). Prerequisite: two years of college Spanish or equivalent.

SPANLANG 102SL. Composition and Writing Workshop. 3-5 Units.
SPANLANG 102SL. Equivalent to Spanlang 102, integrating service learning with course material. Assignments will be modified for students enrolled under 102SL to focus on principles and practice of community-engaged learning. Students and native Spanish-speaking Stanford workers exchange oral histories and create digital stories with testimonials, advice, or remembrances that workers wish to share. Cardinal Course (certified by Haas Center). In 2016-2017, Spring Quarter only. Prerequisite: SPANLANG 13C, SPANLANG 13R, SPANLANG 13SL, or SPANLANG 23B.

SPANLANG 108SL. Advanced Spanish Service-Learning: Migration, Asylum & Human Rights at the Border. 3 Units.
Students develop advanced Spanish language proficiency through examination of issues surrounding current immigration and refugee crises. There will be class discussions of Central American contexts, international treaties, human rights, and U.S. immigration law. Class will include expert commentary from legal and mental health professionals, human rights specialists, migrants, and refugees. Legal, medical, and psychological implications of migration will be examined. Students should enroll in the companion course HUMRTS 108 to receive units for volunteer hours performed throughout the quarter, concurrent with class meetings and assignments. Service-learning opportunities will entail working directly with Spanish-speaking immigrant and asylum seekers in detention in the U.S. Due to COVID-19, all service-learning hours will be performed remotely. Taught entirely in Spanish. Cardinal Course (certified by Haas Center). Prerequisite: completion of SPANLANG 13, 23B or equivalent. SPANLANG 108SL is a requirement for HUMRTS 108. This course requires an application process. Please email instructor for consent.

SPANLANG 121M. Spanish for Medical Students. 2 Units.
First quarter of three-quarter series. Goal is a practical and culturally appropriate command of spoken Spanish. Emphasis is on taking the medical history. Topics include anatomy, general hospital procedures, pediatrics, nutrition, and essential doctor-patient phrases when dealing with Spanish-speaking patients. Series can be taken independently, depending on the level of prior knowledge. Undergraduates are welcome to enroll.
Same as: HRP 280

SPANLANG 122M. Spanish for Medical Students. 2 Units.
Second quarter of three-quarter series.Goal is a practical and culturally appropriate command of spoken Spanish. Emphasis is on performing a physical examination. Topics include anatomy, general hospital procedures, reproductive health, emergency medicine, and essential doctor-patient phrases when dealing with Spanish-speaking patients. Series can be taken independently, depending on the level of prior knowledge. Undergraduates are welcome to enroll.
Same as: HRP 281

SPANLANG 123M. Spanish for Medical Students. 2 Units.
Third quarter of three-quarter series. Goal is a practical and culturally appropriate command of spoken Spanish. Emphasis is on different specialties and medical conditions. Topics include anatomy, diagnostic procedures, HIV, diabetes, hypertension, and essential doctor-patient phrases when dealing with Spanish-speaking patients. Series can be taken independently, depending on the level of prior knowledge. Undergraduates are welcome to enroll.
Same as: HRP 282

SPANLANG 199. Individual Reading. 1-5 Unit.
May be repeated for credit. Prerequisite: consent of instructor.

SPANLANG 199SL. Directed Service Learning. 1-2 Unit.
Students collaborate with native Spanish-speaking workers on a mutually agreed project of benefit to the workers. Past projects have included: digital storytelling¿creating podcasts using testimonials, advice, or remembrances that workers wish to share¿and Spanish-English language exchanges. Cardinal Course (certified by Haas Center). Prerequisite: Completion of SPANLANG 13C, SPANLANG 13R, SPANLANG 13SL, or SPANLANG 23B and concurrent enrollment in SPANLANG 100, SPANLANG 101, SPANLANG 102, SPANLANG 103, or SPANLANG 108SL.

SPANLANG 250. Reading Spanish. 3 Units.
Reading Spanish - For graduate students who have taken Spanish one year or more of Spanish or have superior reading proficiency in another Romance language. Emphasis is on academic texts. Fulfills University reading requirements for advanced degrees if students earn a grade of 'B.'.

SPANLANG 394. Graduate Studies in Spanish Conversation. 1-3 Unit.
Prerequisite: consent of instructor.

SPANLANG 395. Graduate Studies in Spanish. 1-5 Unit.
Prerequisite: consent of instructor.

INTERNATIONAL POLICY

Courses offered by the Ford Dorsey Master's in International Policy are listed under the subject code INTLPOL on the Stanford Bulletin's ExploreCourses web site (http://explorecourses.stanford.edu/search;jsessionid=CD85410D8306285785D60502AD7D575F/?page=0&q=ips&filter-coursestatus-Active=on&view=timeschedule&collapse=&catalog=71).

Mission

The Ford Dorsey Master's in International Policy (MIP), is an interdisciplinary program devoted to rigorous analysis of international policy issues in diplomacy, governance, cyber and international security, global health, and environmental policy. The program is designed to integrate perspectives from political science, law, economics, history, and other disciplines, while also incorporating research opportunities and a focus on implementation and administration of solutions addressing global problems. The MIP program combines a scholarly focus with practical training designed to prepare students for careers in public service and other settings where they can have an impact on international issues.

The program allows students to specialize in cyber policy and security; energy, natural resources, and the environment; governance and development; or international security. Established in 1982, and subsequently renamed as the Ford Dorsey Program in International Policy Studies (IPS) in 2007, the program was redesigned for 2018-19.

University requirements for the M.A. degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

Learning Outcomes (Graduate)

The purpose of the master's program is to help students develop knowledge and skills in preparation for professional careers in international policy and related fields. This is achieved through completion of required courses in the core curriculum and area of specialization, elective courses in primary and related areas, and the capstone course. Students are also encouraged to gain experience through a summer internship and research skills through assistantships with Stanford faculty. Graduates from the Master of Arts in International Policy will demonstrate an advanced understanding of international issues pertaining to governance, security, diplomacy, and other related areas, and will have a depth of knowledge in interpreting and analyzing qualitative and quantitative data.

Admission

To apply, or for information on graduate admission, see the Office of Graduate Admissions (https://gradadmissions.stanford.edu/) website. Applications for admission in Autumn Quarter must be filed with supporting credentials by 11:59 pm on Tuesday, January 12, 2021.

Prerequisite Course Work

The MIP program has a quantitatively rigorous core curriculum and requires University-level courses in microeconomics and macroeconomics taken either as part of a student's undergraduate education, at another accredited educational institution, or through an approved online course. In addition, while not required, the program strongly encourages applicants to complete an introductory course in statistics. An understanding of calculus may also be useful in preparation for the Research Methods course sequence. For details on the content each prerequisite course should cover, see Frequently Asked Questions (https://fsi.stanford.edu/masters-degree/faq/) on the MIP website. All prerequisite courses must be completed prior to the start of classes in late September; however, they do not need to be completed at the time of application.

Application Materials

In addition to the web-based application, applicants must submit the following materials:

- Statement of purpose on relevant personal, academic, and career plans and goals
- Official transcripts (two original sets, which are mailed to the MIP program office, and one scanned copy electronically uploaded to the online application)
  - Stanford students, and alumni with an active SUNetID and password, may request an official eTranscript to be sent from Stanford University and automatically deposited into the application; in this case, hard copies are not required.
  - *Note:* Two official hard copy transcripts are required to be sent to the MIP program office
- Three letters of recommendation
  - Please submit recommendations from academic and professional contacts who can effectively speak to your academic skills and/or professional experience, as well as your preparedness for graduate study
- Academic writing sample (written in English, 7-15 pages in length, and double-spaced)
- Resume or curriculum vitae
- Graduate Record Examination (GRE) scores are not required of MIP applicants for matriculation in Autumn Quarter 2021. However, GRE scores will be considered for applicants who are able to submit them.
  - Stanford University code for ETS is 4704.
- TOEFL scores (only required of applicants who are non-native English speakers and who did not attend undergraduate institutions where English is the language of instruction; please see Graduate Admissions (https://gradadmissions.stanford.edu/about/frequently-asked-questions/gre-and-toefl/) for additional information)

Applicants are expected to have a B.A. or B.S. degree from an accredited school.

Applicants should plan to review the A (https://fsi.stanford.edu/masters-degree/admissions/)dmissions section (https://fsi.stanford.edu/masters-degree/admissions/) of the MIP website as well as the Frequently Asked Questions (https://fsi.stanford.edu/masters-degree/faq/).

Master of Arts in International Policy

University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

See the Coterminal Master's Program (p. 1672) below for coterm information. Also see below for the Stanford MIP-Vienna School of International Studies Academic Exchange Program (p. 1672).

(The Master of Arts in International Policy program is referred to below as "MIP.")

Degree Requirements

To earn the M.A. in International Policy, students matriculating in Autumn Quarter 2020 must complete the courses listed in the curriculum below. These requirements include:

- *Core* — 31 units
  - All courses must be completed during the first year
- *Area of Specialization* — 20 units; including:

- Two required courses
- Three or more additional courses (see the "Specialization Courses (p. 1675)" tab on this page for approved options)

- *Customized Electives* — 20 units
  - Elective courses selected by the student to augment the course of study
- *Capstone* — 9 units
  - Students must enroll in the policy studio course for winter and spring in their second year
  - Students must also enroll in the field research course for spring in their second year

The minimum number of units required to graduate is 80.

See "MIP Academic Policies" below for details on the degree requirements

Students who matriculated prior to Autumn Quarter 2020-21 should review their degree requirements by visiting the University's Archived Bulletins (http://exploredegrees.stanford.edu/archive/#text).

Curriculum

		Units
Core Courses		**31**
INTLPOL 300A	International Policy Speaker Series	1
INTLPOL 300S	Leading Effective Teams	2
INTLPOL 301A	Research Methods and Policy Applications I	5
INTLPOL 301B	Research Methods and Policy Applications II	5
INTLPOL 302	The Global Economy	5
INTLPOL 306	International Relations Theory and the American Experience	5
INTLPOL 307	Policy Problem-Solving in the Real World	4
INTLPOL 308	Comparative Public Policy	4
Area of Specialization		**20**
Two required courses		
Three or more additional courses from an approved list		
Customized Electives		**20**
International Policy related courses; 100-level or above		
Practicum		**9**
INTLPOL 310	Policy Change Studio (x2)	4
INTLPOL 310A	Capstone Field Research	1
Total Units		**80**

Area of Specialization Curriculum

Students are required to choose one area of specialization from the list below and complete at least five courses within the specialization for a minimum of 20 total units. Each area of specialization has two required courses, which must be taken during the first year and prior to enrolling in subsequent courses, except when unfeasible due to core course scheduling conflicts. Additionally, each area of specialization has a list of approved courses, which can be found under the "Specialization Courses (http://exploredegrees.stanford.edu/schoolofhumanities/schoolofhumanitiesandsciences/internationalpolicy/#specializationcoursestext)" tab of this page. At least three additional courses must be taken from this list.

Area of Specialization Requirements

1. Students must select an area of specialization during Autumn Quarter of their first year of the program. The area of specialization, or subplan per University terminology, must be entered by the student in Axess (https://axess.stanford.edu).
   a. A student may change the area of specialization through the end of the first academic year although it requires approval from MIP.
   b. If a student would like to change the area of specialization (or subplan) it must be approved by the MIP Assistant Director for Academic and Student Affairs. If approved, the student must submit a formal e-Form in Axess (https://axess.stanford.edu) in order to process the change to the academic plan.
2. Students must complete the two required courses within the area of specialization, and at least three courses from a list of approved options for a minimum total of 20 units.
   a. The two required courses must be completed during the first year of the program unless there are unforeseen conflicts or other issues. Approval to complete a required specialization course during the second year of the program must be obtained from the MIP Assistant Director for Academic and Student Affairs.
   b. There are no exemptions permitted for the required courses; exceptions may apply to coterm students.
3. All courses must be taken for a letter grade.
4. Courses below 100-level do not count towards graduate degrees.

Area of Specialization Petition Process

During Autumn Quarter, as well as during late Spring Quarter and early summer, MIP will accept petitions to incorporate additional courses into the approved electives. The process will allow students to add courses to a spreadsheet for each of the areas of specialization (available on the MIP website under "Student Resources"), which will be reviewed by MIP leadership and the subject-matter faculty leaders. For each review period, the timeline for the submission of petitions will be provided in writing.

The process requires students to submit detailed course information, including syllabi and a rationale for inclusion. Courses that are approved will be tagged for addition to the "Specialization Courses (http://exploredegrees.stanford.edu/schoolofhumanities/schoolofhumanitiesandsciences/internationalpolicy/#specializationcoursestext)" tab of this page.

The criteria for inclusion will include a review of a course's substantive fit within the specialization; rationale submitted by the student; recency and consistency of offering; graduate offering (i.e., course number generally 200-level and above); letter grade option (except GSB/LAW/SoM); and teaching evaluations. Of note, skills courses that could apply to multiple areas of specialization will generally be considered Customized Electives, which is a separate degree requirement.

Area of Specialization Required Courses

		Units
Cyber Policy and Security		
INTLPOL 268	Hack Lab	3
INTLPOL 321	Fundamentals of Cyber Policy and Security	4-5
Energy, Natural Resources, and the Environment		
Complete two of the following courses		
CEE 207A	Understanding Energy	3-5
GSBGEN 336	Energy Markets and Policy	3
INTLPOL 272	Empirical Methods in Sustainable Development	3-5
Governance and Development		
ECON 118	Development Economics	5
INTLPOL 220	Comparative Political Economy of Development	3
International Security		
INTLPOL 240	Contemporary Issues in International Security	4

INTLPOL 340	Technology, Innovation and Modern War: Keeping America's Edge in an Era of Great Power Competition	4

MIP Academic Policies

The University's general requirements, applicable to all graduate degrees at Stanford, are listed in the "Graduate Degrees (p. 67)" section of this bulletin. In addition, the MIP-specific degree requirement academic policies are listed below.

Core Courses

All core courses must be completed during the first year of the program. The only exemption is for coterm, dual, or joint degree students who have conflicts with courses in their other degree program. In this instance, prior approval from MIP is required to move a core course to the second year. Note the additional guidance on first-year core courses:

- INTLPOL 301A and INTLPOL 301B are a sequenced series. Students are required to enroll in the first course (301A) during Autumn Quarter and the second course (301B) during Winter Quarter.
- Students are required to enroll in INTLPOL 300A and INTLPOL 302 for Autumn Quarter.
- Students are required to enroll in INTLPOL 306 for Winter Quarter.
- Students are required to enroll in INTLPOL 300S, INTLPOL 307 , and INTLPOL 308, for Spring Quarter.

Customized Electives

Students are permitted to take a wide range of courses in order to augment their area of interest. The purpose of the customized electives is to provide students the opportunity to explore the many academic offerings across campus and to give them the ability to tailor their courses in a suitable manner. These courses must be related to international policy, broadly understood. Students may choose to: enroll in additional courses in their area of specialization; build their own sub-specialization (e.g., area studies, computational social science certificate); enroll in language courses; explore a second area of specialization; or combine diverse courses to supplement their academic focus. Please note that courses below 100-level and activity units do not count towards graduate degrees. There are additional academic policies listed that pertain to grading basis, maximum units of undergraduate courses that can be applied to the degree, and directed reading units.

Capstone

Students enroll in INTLPOL 310 for both Winter Quarter and Spring Quarter of the second year of the program. Additionally, students enroll in INTLPOL 310A , which is the field research component, in Spring Quarter of the second year of the program.

Directed Readings

Students may arrange directed reading courses to be applied towards the Areas of Specialization or Customized Electives if the current course offerings do not meet particular research or study needs. Directed reading courses are independent study projects students may undertake with Stanford faculty members. Once the student has identified a faculty member to support his or her studies, the student must submit the directed reading proposal (https://fsi.stanford.edu/masters-degree/content/mip-student-forms/) for review by the MIP Assistant Director for Academic and Student Affairs. Directed reading proposals must be submitted no later than the end of the second week of the quarter. MIP reviews the directed reading proposal and renders a decision no later than two days prior to the Final Study List Deadline. If approved, the MIP academic services team will create a section number for the specific instructor so the student can enroll in the course. The course is listed as INTLPOL 299 and the section number corresponds to the instructor (e.g., INTLPOL 299 - 02 (Stoner, Kathryn). There are important restrictions for directed readings:

1. Students can apply a maximum of 15 directed reading units towards the MIP degree requirements.
   a. This includes a maximum of five units of directed reading towards the Area of Specialization. Exceptions can be requested up to a total of eight units, however approval beyond the five units will reduce the number of directed reading units that can be applied towards the Customized Electives.
   b. Additionally, students may apply no more than 10 units of directed reading towards the Customized Electives.
2. Students may receive credit for a maximum of 5 units per directed reading course.
3. Students must receive a letter grade for the directed reading course.

Degree Progress, Academic Standing, and Grade Requirements

MIP students must maintain a minimum 3.0 cumulative GPA to remain in good academic standing. Similarly, a minimum 3.0 cumulative GPA is required for conferral of the M.A. degree. Failure to remain in good academic standing due to not meeting the GPA requirement or making insufficient degree progress will result in being placed on academic probation (which could ultimately result in dismissal from the university).

All courses applied towards degree requirements for the M.A. in International Policy must be taken for a letter grade. The only exceptions are:

- INTLPOL 300A (only offered as S/NC).
- 1-2 unit courses that are only offered as S/NC.
  - No more than six S/NC units may be applied towards the degree.
- Courses taken in the Law School, the School of Medicine, or the Graduate School of Business where a letter grade is not an available option.
  - Pre-approval is required from the MIP student services team in order to apply a non-letter grade course from Law, Medicine, or the Graduate School of Business toward the MIP degree.
- If a student wishes to apply a S/NC course towards the area of specialization elective units, prior approval from MIP is required. Credit will not be granted retroactively.

Additional Grade Requirements

Students who receive an incomplete grade (denoted as "I") are required to complete the course on a shorter timeline than University policy. The following completion schedule applies:

- Autumn and Winter Quarters: Incomplete grades must be completed no later than June 30 of the same academic year.
- Spring Quarter: Incomplete grades must be completed no later than August 30 of the same academic year.
- Summer Quarter: Incomplete grades must be completed no later than December 30 of the same calendar year.

Students are also responsible for coordinating the completion of the course with the instructor(s) as well as keeping the Assistant Director for Academic and Student Affairs apprised of progress.

Students who have three or more incomplete grades (denoted as "I"), or who have incomplete grades in multiple quarters, will be placed on academic probation unless there is a rationale due to personal or health reasons that is accompanied by documentation from Counseling and Psychological Services (https://vaden.stanford.edu/caps/), the Office of Accessible Education (https://oae.stanford.edu/), or Vaden Health Center (https://vaden.stanford.edu/).

Additional Academic Requirements

1. All graduate degree candidates must submit a Master's Degree Program Proposal in Spring Quarter of the first year of study. See "Graduate Advising (p. 1677)" in this bulletin for additional information. Submission of the Program Proposal requires scheduling a 30-minute advising session with the MIP Academic Services Team to review degree progress and outline course work that needs to be completed in subsequent quarters in order to graduate. The University requires each student to have a program proposal on file with the academic program in order for the student to apply to graduate. Failure to complete this process will result in a hold being placed on the student's account.
2. In order to graduate, students must apply for graduation in Axess (https://axess.stanford.edu). Additionally, students will need to submit a final, completed Program Proposal during the quarter of study in which they have applied to graduate. This also requires submission of an explanation for the customized electives completed (1-2 paragraphs). The deadline is the second week of the intended graduation quarter.
3. A maximum of 20 undergraduate units can be applied towards the MIP degree, i.e., courses numbered between 100-199. The exceptions are History and Political Science, which list undergraduate courses at the 100 and 200-level. Per University policy, courses below 100 do not count towards graduate degrees.
4. Units from language courses may only be applied towards the 20 units of Customized Electives. English proficiency courses for international students do not count towards the MIP degree requirements. Students are advised to review the details on Customized Electives (p. 1671) to clearly understand the academic policies that apply, in particular that courses below 100 do not count towards any graduate degree. Students who hope to apply language courses below the 100-level towards the MIP degree requirements should discuss options with the Stanford Language Center (https://language.stanford.edu/), including enrolling in courses numbered 395. Students should also confirm their language course enrollment with the Assistant Director for Academic and Student Affairs sufficiently in advance of the Final Study List deadline for a given quarter.
5. Activity units do not apply towards the MIP degree requirements.

Coterminal Master's Program

Undergraduates at Stanford may apply for admission to the coterminal master's program in International Policy when they have earned a minimum of 120 units toward graduation, including Advanced Placement and transfer credit, and no later than the quarter prior to the expected completion of their undergraduate degree. MIP has one application deadline per year in early January for matriculation in Autumn Quarter of the same calendar year.

Students must submit the Coterminal Online Application (https://applyweb.com/stanterm/). Applications must be filed together with supporting materials by 11:59 pm on Tuesday, January 12, 2021.

In addition to the web-based application, coterminal applicants must submit the following supporting materials:

- Two letters of recommendation from University faculty
- Academic writing sample of at least seven double-spaced pages (but no more than 15 pages)
- Statement of purpose focusing on relevant personal, academic, and career plans and goals
- Resume
- Unofficial Stanford transcript

Note: The GRE exam is not required for coterminal applicants to the MIP program.

MIP Coterm Degree Requirements

To earn the M.A. in International Policy, coterm students matriculating in Autumn Quarter 2019 must complete the courses listed in the curriculum below. These requirements include:

- *Core courses* — 31 units
- *Area of specialization* — 14 units; including:
  - Two required courses
  - One or more additional courses (see "Specialization Courses (p. 1675)" for approved options)
- *Capstone courses* — 9 units

The minimum number of units required for a coterm in MIP to graduate is 54.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken three quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to the graduate career. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Exchange Program

Stanford MIP-Vienna School of International Studies Academic Exchange

The Stanford MIP-Vienna School of International Studies Academic Exchange is an Autumn Quarter exchange program between the Ford Dorsey Master's in International Policy and the Diplomatische Akademie Wien – Vienna School of International Studies (DA). Two second-year students from each institution are selected by application to receive fellowships to spend Autumn Quarter in an academic exchange at the other institution where they take courses as full-time students, pursue extracurricular activities, and participate in the academic life of the host institution.

MIP students participating in the exchange program must complete all requirements listed in the M.A. curriculum. However, the minimum number of Stanford units required to graduate will be 65. In addition to the minimum requirement of 65 units, students must complete, at minimum, the equivalent of 15 units (4 or more full-time courses) at the DA. MIP students selected for the exchange must submit their list of

chosen DA courses to the MIP academic services team for approval, no later than the end of the first week of classes in autumn.

Students who are considering applying to the academic exchange program should assess how the courses taken at the DA will fit into their degree requirements.

While on exchange at the DA, MIP students' status will be listed as active but they are not considered enrolled at Stanford. In addition, MIP students receive an academic transcript from the DA for Autumn Quarter. Hence, there is no reference to the exchange on a MIP student's Stanford transcript.

For further information, please see the Stanford-Vienna Academic Exchange (https://fsi.stanford.edu/masters-degree/content/stanford-vienna-exchange/) section of the MIP website.

Joint Degree Programs

Up to a maximum of 45 units, or one year, of the University residency requirement can be credited toward both graduate degree programs (i.e., the joint degree may require up to 45 fewer units than the sum of the individual degree unit requirements). For example, an M.A./M.P.P. has a three-year residency requirement, one year less than what is required for the separate degrees. The reduced requirement recognizes the subject matter overlap between the fields comprising the joint degree.

Juris Doctor and Master of Arts in International Policy (J.D./M.A.)

Students may choose to pursue a joint J.D./M.A. in International Policy degree. The joint degree program combines the strengths of the Law School and MIP. Prospective students interested in this joint degree program may apply concurrently to both the Stanford Law School (SLS) and the MIP program. Two separate application forms are required and applicants must submit LSAT scores to the Law School and GRE scores to MIP.

Academic Policies

The joint J.D. requires 111 units and the M.A. in International Policy requires 54 units. Joint students must complete the MIP core curriculum, area of specialization (14 units), and capstone. Students who originate their studies in the Stanford Law School may complete the required statistics sequence in Law instead of completing the INTLPOL sequence although it is not advisable. Note that there is generally one statistical course in Law instead of the two-course sequence in INTLPOL, and it does not sufficiently cover topics important for the MIP capstone course, so students who proceed with this option may be at a disadvantage. Approval from MIP is required to pursue this sequence. Any additional units that students need to complete would fall into the area of specialization. Additionally, the customized electives are not required for joint J.D. students who first matriculate at the law school; in some instances, they may not be required for students who matriculate into MIP.

How to Apply

Students already enrolled at SLS may apply to the joint J.D./M.A. in International Policy program no later than the end of the second year of Law School. Applications are due no later than Tuesday, January 12, 2021 by 11:59 pm PST. The MIP program makes admissions decisions based on the student's original application materials, which the student must have sent from the School of Law to MIP.

Submission of the following is required for consideration:

- Joint Degree Application Form (available from the MIP website (http://ips.stanford.edu/joint_program/))
- Law School Joint Degree Petition (details available on the SLS Joint Degree Application Process (https://law.stanford.edu/apply/how-to-apply/joint-degree-application-process/) webpage)
- Graduate Program Authorization Petition (submitted via Axess (http://axess.stanford.edu/))
- Tuition Agreement for Students with Multiple Programs (available for on the eForms portal on Axess)
- Current resume or curriculum vitae
- LSAT scores are sufficient (GRE scores are not required)

For further information, see the "J (p. 70)oint Degree Programs (p. 70)" section of this bulletin, the University Registrar's site (https://registrar.stanford.edu/students/graduate-degree-progress/joint-degree-program-information/), and the SLS' Joint and Cooperative Degree Programs (https://law.stanford.edu/education/degrees/joint-degrees-within-stanford-university/#slsnav-established-joint-degrees) website.

Master of Public Policy and Master of Arts in International Policy (M.P.P./M.A.)

The M.P.P./M.A. in International Policy joint degree program allows students to pursue study in both the Public Policy and International Policy (MIP) programs in three academic years of residence. Students that participate in this program gain depth of knowledge in both international and domestic policy issues.

Academic Policies

A joint degree is regarded by the University as distinct from either of its component degrees, and requirements for the joint degree differ from the sum of the requirements for the individual degrees. Joint students must complete 90 units for the M.P.P. and 80 units for the M.A. in International Policy. Up to a maximum of 45 units, or one year, of the University residency requirement can be credited toward both graduate degree programs (i.e., the joint degree requirements may contain up to 45 units less than the sum of the individual degree unit requirements). The M.P.P./M.A. in International Policy has a three-year residency requirement, one year less than the sum of the requirements for the separate degrees. This recognizes that there is a subject matter overlap between the fields comprising the joint degree.

The Public Policy Program strives to encourage an intellectual, professional, and social community among its students. For this reason, joint degree students are strongly encouraged to devote one year of full-time study at Stanford entirely to the Public Policy Program, rather than spacing Public Policy courses throughout their graduate careers.

How to Apply

Admission to the joint degree program requires admission to and matriculation in MIP as well as consent of that program. MIP students should consult the MIP Assistant Director for Academic and Student Affairs to express interest. Prospective applicants to Stanford should contact the MIP Recruitment and Admissions Manager.

Applications for graduate study in Public Policy are only accepted from:

1. students currently enrolled in any Stanford graduate or undergraduate degree program
2. from external applicants seeking a joint degree, or
3. from Stanford alumni who have graduated within the past five years.

To be considered for matriculation beginning in Autumn Quarter 2021-22, all application materials must be submitted by early April 2021 (visit the Public Policy website (https://publicpolicy.stanford.edu/academics/graduate/admissions/stanford-seniors-and-alumni/) for details). Please contact Public Policy directly if you are interested in applying since they set their own application deadlines and processes.

External applicants for joint degrees must apply to the department or school offering the other graduate degree (i.e., Ph.D., M.D., M.A., M.S., M.B.A., or J.D.), indicating an interest in the joint degree program; applicants admitted to the other degree program are then evaluated for admission to the M.P.P. or M.A. program. Applicants who are admitted to MIP may apply once they have received admission to the program but prior to matriculation in autumn quarter. They may also apply during the first or second year of the MIP program.

Details on the joint degree curriculum can be found on the Public Policy (https://publicpolicy.stanford.edu/academics/graduate/joint-degree-programs/) website.

For further information, see the "Joint Degree Programs (p. 70)" section of this bulletin and the University Registrar's site (https://registrar.stanford.edu/students/graduate-degree-progress/joint-degree-program-information/).

Dual Degree Programs

Students who have attended Stanford for at least one term and who are currently enrolled may apply to add a second degree program. The first step in the process is to consult with the primary degree program as well as the degree program to which the student is considering applying to add. Admissions and application requirements vary by graduate program. If a secondary degree program admits a student then she/he/they must submit a Graduate Program Authorization Petition to add the new degree program that will be pursued concurrently with the existing program.

It is important that the attempt to add degree programs be made while the student is enrolled. Otherwise, a new Application for Graduate Admission must be submitted and an application fee paid. Similarly, enrollment must be continuous if a new degree program is added after completion of an existing program. Summer quarter enrollment is optional for students who intend to begin a new degree program in the Autumn quarter, provided that they have been enrolled the prior Spring quarter.

Graduate Program Authorization Petitions are filed electronically in Axess (https://axess.stanford.edu/) and approved by the current and the new department. In addition, petitions from international students are routed to the Bechtel International Center for review. Upon all approvals, the student's record automatically updates with the requested changes.

MIP offers two dual degree programs that feature a more formalized course of study.

Master of Business Administration and Master of Arts in International Policy (M.B.A./M.A.)

The dual degree is designed for students who want to work at the intersection of business and the state both in the U.S. and abroad. Prospective students interested in this dual degree program may apply concurrently to both the Stanford Graduate School of Business and the MIP program. Two separate applications are required and applicants must submit GRE scores with each application.

Academic Policies

Completing this combined course of study requires approximately three academic years, depending on the student's background and quantitative preparation. Admissions processes for both programs are completely independent of each other and units from courses can only be applied to one degree or the other, not both. Students enrolled in this dual degree program are required to complete 90 units for the M.B.A. and 54 units for the M.A. in International Policy. Please contact the MBA Program office and MIP Assistant Director for Academic and Student Affairs for details.

How to Apply

Students already enrolled at the Stanford Graduate School of Business may apply to the M.B.A./M.A. in International Policy dual degree program no later than the end of the first year. The MIP program has one annual application deadline by which applications are due no later than 11:59 pm PST on Tuesday, January 12, 2021. Applicants from the Graduate School of Business must request to have their original application sent to MIP for review. Additionally, submission of the following is required for consideration:

- Dual Degree Application Form (available from the MIP website (http://ips.stanford.edu/joint_program/))
- Stanford Official Transcript
- Graduate Program Authorization Petition (submitted via Axess (http://axess.stanford.edu/))
- Tuition Agreement for Students with Multiple Programs (available for on the eForms portal on Axess)

Master of Science in Environment and Resources and Master of Arts in International Policy (M.S./M.A.)

The dual degree with the Emmett Interdisciplinary Program in Environment and Resources (E-IPER) provides MIP students the opportunity to deepen their understanding of the science, technology and engineering that underlies current environmental problems. This understanding, integrated with their professional education in International Policy, provides a unique lens for future leaders and innovators to influence and solve the world's most challenging environmental and sustainability problems.

For the dual degree, students must meet the University's minimum requirements for their M.A. degree and also complete an additional 45 units for the M.S. in Environment and Resources. Completion of the M.S. typically requires at least three quarters of study in addition to the time required for the student's M.A. degree. For additional information, see the E-IPER website (https://pangea.stanford.edu/eiper/).

Academic Policies

Dual degree students must meet the University's minimum requirements for both the M.S. and M.A.; course units may not be counted towards both degrees. The M.S. in Environment and Resources requires a minimum of 45 units while the M.A. in International Policy requires a minimum of 80 units. In general, students will likely complete the dual degree program in nine academic quarters, however, there are uncommon instances in which it may be possible to complete it in as few as seven. The M.S. degree can be conferred separately from the M.A., however it may be beneficial to maintain both careers in order to transfer courses between the two programs.

How to Apply

Students pursuing the dual degree must obtain approval from MIP and E-IPER to ensure their dual MS Program Plan meets the curricular expectations of both programs. As a first step, MIP students should plan to discuss their interest with the MIP Assistant Director for Academic and Student Affairs. They should also plan to meet with the E-IPER Joint M.S. Student Services Officer.

Applications from first-year MIP students are due annually in Winter Quarter. In exceptional cases, second-year MIP students may apply to E-IPER. These students must demonstrate their interest in and commitment to the M.S. degree by completing or enrolling in a minimum of nine units of E-IPER related coursework by the time of their application. This minimum requirement does not guarantee admission. The application deadline is January 31, 2021 for the 2020-21 Academic Year.

For application information, see the Admissions (https://earth.stanford.edu/eiper/joint-ms-admissions/) page on the E-IPER website (https://earth.stanford.edu/eiper/).

Area of Specialization Curriculum

The Ford Dorsey Master's in International Policy (MIP) offers four areas of specialization:

- Cyber Policy and Security (CYBER)
- Energy, Natural Resources, and the Environment (ENRE)
- Governance and Development (GOVDEV)
- International Security (ISEC)

Each specialization is guided by one -or more- major research centers at the Freeman Spogli Institute for International Studies at Stanford. This collaboration provides MIP students with exposure to cutting-edge research on global policy issues. Students are required to choose one area of specialization and complete at least five courses within the specialization for a minimum of 20 total units. Each area of specialization requires the completion of two required courses (indicated on the Master's tab), and at least three elective courses from an approved list, as shown below. Due to the recent changes in the MIP program curriculum, the following specialization elective course lists may be updated over the course of the academic year.

Cyber Policy and Security

		Units
COMM 257	Information Control in Authoritarian Regimes	4-5
CS 106A	Programming Methodology	3-5
CS 181	Computers, Ethics, and Public Policy	4
CS 182	Ethics, Public Policy, and Technological Change	5
CS 251	Cryptocurrencies and blockchain technologies	3
EARTHSYS 262	Data for Sustainable Development	3-5
INTLPOL 200	The Social & Economic Impact of Artificial Intelligence	1
INTLPOL 221	Politics of Data: Algorithmic Culture, Big Data, and Information Waste	3-4
INTLPOL 225	Technology Policy, Innovation, and Startup Ecosystems: Japan and Comparative Perspectives	3
INTLPOL 251	Cybersecurity: A Legal and Technical Perspective	2
INTLPOL 252	Cyber Risk: A Multidisciplinary Approach	2-3
INTLPOL 253	AI and Rule of Law: A Global Perspective	2-3
INTLPOL 257	Technology & Public Purpose: Practical Solutions for Innovation's Public Dilemmas	4-5
INTLPOL 258	Psychology, Influence, and Propaganda	4
INTLPOL 259	Research Topics in Technology and National Security	1-3
INTLPOL 259A	Research Seminar on Cybersecurity: Automotive Safety, Security, and Privacy	2-4
INTLPOL 268D	Online Open Source Investigation	3-4
INTLPOL 269	Cyber Law: International and Domestic Legal Frameworks for Cyber Policy	2
INTLPOL 323	Free Speech, Democracy and the Internet	2-3
INTLPOL 361	Foundations of Internet Speech Platform Regulation	3
INTLPOL 362	Data: Privacy, Property and Security	3
INTLPOL 363	Confronting Misinformation Online: Law and Policy	2
LAW 4039	Regulating Artificial Intelligence	3
LAW 4048	Regulating Internet Speech Platforms	2-3
MS&E 297	"Hacking for Defense": Solving National Security issues with the Lean Launchpad	3-4

Energy, Natural Resources, and the Environment

		Units
CEE 207A	Understanding Energy	3-5
CEE 207S	Understanding Energy - Essentials	3-4
CEE 218X	Shaping the Future of the Bay Area	3-5
CEE 218Y	Shaping the Future of the Bay Area	3-5
CEE 241C	Global Infrastructure Projects Seminar	1-2
CEE 257	Sustainable Finance and Investment Seminar	1
CEE 263D	Air Pollution and Global Warming: History, Science, and Solutions	3
CEE 265D	Water and Sanitation in Developing Countries	1-3
CEE 265E	Adaptation to Sea Level Rise and Extreme Weather Events	3
CEE 273S	Electricity Economics	3
CS 325B	Data for Sustainable Development	3-5
EARTHSYS 159	Economic, Legal, and Political Analysis of Climate-Change Policy	5
EARTHSYS 185	Feeding Nine Billion	4-5
EARTHSYS 206	World Food Economy	5
EARTHSYS 243	Environmental Advocacy and Policy Communication	3
EARTHSYS 288	Social and Environmental Tradeoffs in Climate Decision-Making	1-2
ECON 155	Environmental Economics and Policy	5
ECON 251	Natural Resource and Energy Economics	2-5
ENERGY 271	Energy Infrastructure, Technology and Economics	3
ENVRES 222	Climate Law and Policy	3
ENVRES 226	Energy Law	3
ENVRES 240	Environmental Decision-Making and Risk Perception	1-3
ENVRES 380	Innovating Large Scale Sustainable Transformations/Collaborating for the Future	3-4
HISTORY 303E	Infrastructure & Power in the Global South	4-5
INTLPOL 266	Managing Nuclear Waste: Technical, Political and Organizational Challenges	3
INTLPOL 271	Climate Politics: Science and Global Governance	3-4
INTLPOL 272	Empirical Methods in Sustainable Development	3-5
INTLPOL 358	Business, Social Responsibility, and Human Rights	3
INTLPOL 371	Policy Practicum: Assessing the Impact of China's Global Infrastructure Spending on Climate Change	2-3
LAW 2503	Energy Law	3
LAW 2504	Environmental Law and Policy	3
LAW 2508	The Business of Water	2
LAW 2513	Climate: Politics, Finance, and Infrastructure	2-3

LAW 7823	International Negotiation: Solving Intractable Conflict	3
MS&E 243	Energy and Environmental Policy Analysis	3
PUBLPOL 265F	Environmental Governance and Climate Resilience	3

Governance and Development

		Units
AFRICAST 235	Designing Research-Based Interventions to Solve Global Health Problems	3-4
CEE 265D	Water and Sanitation in Developing Countries	1-3
COMM 230A	Digital Civil Society	3
CS 325B	Data for Sustainable Development	3-5
EARTHSYS 262	Data for Sustainable Development	3-5
EASTASN 289K	Korea and the World	3
ECON 246	Labor Economics I	2-5
EDUC 306A	Economics of Education in the Global Economy	5
HISTORY 303E	Infrastructure & Power in the Global South	4-5
INTLPOL 203	Trade and Development	3-5
INTLPOL 204A	Microeconomics for Policy	4-5
INTLPOL 204B	Economic Policy Analysis for Policymakers	4-5
INTLPOL 207	Economics of Corruption	3-5
INTLPOL 214	Refugees in the Twenty-first Century	3-5
INTLPOL 215	Special Topics: State-Society Relations in the Contemporary Arab World-Key Concepts and Debates	5
INTLPOL 218	Political Mobilization and Democratic Breakthroughs	3-5
INTLPOL 224	Economic Development and Challenges of East Asia	3-5
INTLPOL 225	Technology Policy, Innovation, and Startup Ecosystems: Japan and Comparative Perspectives	3
INTLPOL 227	Finance, Corporations, and Society	4
INTLPOL 230	Democracy, Development, and the Rule of Law	3-5
INTLPOL 231B	Understanding Russia: Its Power and Purpose in a New Global Order	5
INTLPOL 238	Social Movements in the Post Spring Arab World	4
INTLPOL 239	State responses to the COVID-19 pandemic in the Arab world	3
INTLPOL 242	American Foreign Policy: Interests, Values, and Process	5
INTLPOL 244	U.S. Policy toward Northeast Asia	4
INTLPOL 253	AI and Rule of Law: A Global Perspective	2-3
INTLPOL 257	Technology & Public Purpose: Practical Solutions for Innovation's Public Dilemmas	4-5
INTLPOL 280	Transitional Justice, Human Rights, and International Criminal Tribunals	3-5
INTLPOL 281	Global Poverty and the Law	3
INTLPOL 290	Practical Approaches to Global Health Research	1-3
INTLPOL 291	Theories of Change in Global Health	3-4
INTLPOL 323	Free Speech, Democracy and the Internet	2-3
INTLPOL 350	International Law	4
INTLPOL 351	Law of Democracy	3
INTLPOL 352	State Building and the Rule of Law Seminar	3
INTLPOL 353	Policy Practicum: Human Rights & International Justice	3-5
INTLPOL 355	International Human rights	3
INTLPOL 357	Transitional Justice	3
INTLPOL 358	Business, Social Responsibility, and Human Rights	3
INTNLREL 123	The Future of the European Union: Challenges and Opportunities	5
LAW 5036	Law and Ethics of War	2
MED 271	Global Biodesign: Medical Technology in an International Context	1
POLECON 680	Foundations of Political Economy	4
POLECON 683	Political Development Economics	3
POLISCI 110G	Governing the Global Economy	5
POLISCI 147	Comparative Democratic Development	5
POLISCI 147P	The Politics of Inequality	5
POLISCI 325L	Law and the New Political Economy	3-5
POLISCI 347G	Governance and Poverty	3-5
POLISCI 348S	Latin American Politics	3-5
POLISCI 441L	Grad Seminar on Middle Eastern Politics	3-5
SOC 217B	Chinese Politics and Society	3-5
STRAMGT 325	Formation of Impact Ventures	3
STRAMGT 345	Taking Social Innovation to Scale	3
STRAMGT 584	Assessing High Impact Business Models in Emerging Markets	2

International Security

		Units
EASTASN 243	Taiwan's Democratic Evolution	3-5
EASTASN 289K	Korea and the World	3
HISTORY 303E	Infrastructure & Power in the Global South	4-5
HISTORY 349	Bodies, Technologies, and Natures in Africa	4-5
INTLPOL 210	The Politics of International Humanitarian Action	3-5
INTLPOL 213	International Mediation and Civil Wars	3-5
INTLPOL 214	Refugees in the Twenty-first Century	3-5
INTLPOL 217	The Future of Global Cooperation	3-4
INTLPOL 221	Politics of Data: Algorithmic Culture, Big Data, and Information Waste	3-4
INTLPOL 231B	Understanding Russia: Its Power and Purpose in a New Global Order	5
INTLPOL 232	Foreign Policy Decision Making in Comparative Perspective	3
INTLPOL 233	Presidential Decision Making in Wartime	3
INTLPOL 236	American Grand Strategy	3
INTLPOL 244	U.S. Policy toward Northeast Asia	4
INTLPOL 246	China's Foreign Policies: Objectives, Instruments, and Impacts	4
INTLPOL 247	Verification for 21st Century Arms Control Treaties	3
INTLPOL 250	International Conflict Resolution	2
INTLPOL 256	Technology and National Security: Past, Present, and Future	3-4
INTLPOL 257	Technology & Public Purpose: Practical Solutions for Innovation's Public Dilemmas	4-5
INTLPOL 266	Managing Nuclear Waste: Technical, Political and Organizational Challenges	3

INTLPOL 280	Transitional Justice, Human Rights, and International Criminal Tribunals	3-5
INTLPOL 285	The United States, China, & Global Security	2
INTLPOL 350	International Law	4
INTLPOL 353	Policy Practicum: Human Rights & International Justice	3-5
INTLPOL 354	International Criminal Law and Its Enforcement	3
INTLPOL 355	International Human rights	3
INTLPOL 356	Human trafficking: Law and Policy	3
INTLPOL 357	Transitional Justice	3
INTLPOL 358	Business, Social Responsibility, and Human Rights	3
LAW 5036	Law and Ethics of War	2
LAW 7823	International Negotiation: Solving Intractable Conflict	3
MS&E 297	"Hacking for Defense": Solving National Security issues with the Lean Launchpad	3-4
POLISCI 314R	Challenges and Dilemmas in American Foreign Policy	5
POLISCI 348	Chinese Politics	3-5
POLISCI 443S	Political Economy of Reform in China	3-5
SOC 217B	Chinese Politics and Society	3-5
SOC 309	Nations and Nationalism	3-5

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

International Policy counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade. Instructors are required to track progress so that students may demonstrate that they are maintaining a high standard of academic performance. Students should proactively engage with their instructors on course progress and performance. If there are concerns, students should discuss them with the instructor and MIP Assistant Director for Academic and Student Affairs.

Graduate Advising Expectations

International Policy (MIP) is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity. Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

Each student in the MIP program is assigned a faculty adviser as well as a program adviser and a career adviser. The faculty adviser, who is assigned in September of the student's first quarter of matriculation, is identified based on a student's interests and area of specialization. The expectation is that students meet with their faculty advisers on a quarterly basis, at minimum. Please note that it is the student's responsibility to schedule the advising meetings. In addition to the faculty adviser, the program adviser (i.e., MIP Assistant Director for Academic and Student Services) advises all students in the program by providing guidance and support on degree requirements and progress, academic policy interpretation and enforcement, degree program support, personal support, and other matters as needed. The career adviser (i.e., MIP Career Services and Alumni Affairs Manager) provides support on internships, careers, and professional development.

To expand, faculty advisers guide students in key areas such as exploring academic opportunities and professional pathways, understanding and interpreting the university ecosystem, and identifying ways to pursue one's interests at Stanford. MIP students should view the faculty adviser as an entry point to their interests, and they are actively encouraged to meet broadly with other faculty as well.

Academic progress and student completion of program requirements and milestones are monitored by MIP Assistant Director for Academic and Student Affairs. MIP students (including coterminal, dual, and joint degree students) are required to submit a program proposal to the department during spring quarter of their first year of enrollment in the program. This time frame is different from general University policy. The program proposal, which is a formal milestone, establishes a student's individual program of study to meet University and department degree requirements. Students must amend the proposal formally if their plans for meeting degree requirements change. The form is available on the MIP website (https://fsi.stanford.edu/masters-degree/). Additional information on the Master’s Program Proposal is available in the “Graduate Degrees (p. 65)” section of this bulletin.

Additionally, the program adheres to the advising guidelines and responsibilities listed by the Office of the Vice Provost for Graduate Education (https://vpge.stanford.edu/academic-guidance/advising-mentoring/) (VPGE) and in the Graduate Academic Policies (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/page-3-3-1/) (GAP).

Director:

Francis Fukuyama (Freeman Spogli Institute for International Studies)

Director of Graduate Studies:

Francis Fukuyama (Freeman Spogli Institute for International Studies)

Associate Director:

Chonira Aturupane (International Policy)

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Colin Kahl (Freeman Spogli Institute for International Studies)
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Jeremy Goldhaber-Fiebert (Medicine)
Anna Grzymala-Busse (Political Science)
Garbielle Hecht (History)
Siegfried Hecker (Freeman Spogli Institute for International Studies *(Emeritus)*)
David Holloway (History *(Emeritus)*)
Erik Jensen (Law)
Saumitra Jha (Graduate School of Business)
Tsutsui Kiyoteru (Sociology)
Yong Suk Lee (Freeman Spogli Institute for International Studies)
David Lobell (Earth System Science)
Prashant Loyalka (School of Education)
Steve Luby (Medicine)
Stephen Krasner (Political Science)
Robert MacCoun (Law)
Beatriz Magaloni (Political Science)
Jennifer Martinez (Law)
Abbas Milani (Iranian Studies)
Grant Miller (School of Medicine)
Norman Naimark (History)
Rosamond Naylor (Freeman Spogli Institute for International Studies)
Jean Oi (Political Science)
Doug Owens (School of Medicine)
Jennifer Pan (Communications)
William J. Perry (Freeman Spogli Institute for International Studies *(Emeritus)*)
Nathaniel Persily (Law)
Condoleezza Rice (Graduate School of Business)
Scott Rozelle (Freeman Spogli Institute for International Studies)
Scott Sagan (Political Science)
Kenneth Scheve (Political Science)
Gi-Wook Shin (Sociology)
Stephen J. Stedman (Freeman Spogli Institute for International Studies)
Florencia Torche (Sociology)
Andrew Walder (Sociology)
Jeremy Weinstein (Political Science)
Keith Winstein (Computer Science)
Paul Wise (Pediatrics)
Frank Wolak (Economics)
Zhou Xueguang (Sociology)
Amy Zegart (Hoover Institution)

Adjunct Professors:

Michael Armacost (Freeman Spogli Institute for International Studies)
Thomas Fingar (Freeman Spogli Institute for International Studies)
Steve Pifer (Freeman Spogli Institute for International Studies)

Lecturers, Academic Staff, Scholars, and Fellows:

Steve Blank (Management Science and Engineering)
Dikla Carmel-Hurwitz (Graduate School of Business)
Leslie Chin (Graduate School of Business)
Christophe Crombez (Freeman Spogli Institute for International Studies)
Eileen Donahoe (Freeman Spogli Institute for International Studies)
Paul Edwards (Freeman Spogli Institute for International Studies)
Gregory Falco (Freeman Spogli Institute for International Studies)
Joseph Felter (Freeman Spogli Institute for International Studies)
Rose Gottemoeller (Freeman Spogli Institute for International Studies)
Shelby Grossman (Freeman Spogli Institute for International Studies)
Rosanna Guadagno (Freeman Spogli Institute for International Studies)
Medi-Jalalddin Hakimi (Law)
Amr Hamzawy (Freeman Spogli Institute for International Studies)
Jerry Kaplan (Freeman Spogli Institute for International Studies)
Kenji Kushida (Freeman Spogli Institute for International Studies)
Herb Lin (Freeman Spogli Institute for International Studies)
Anja Manuel (International Policy)
Oriana Mastro (Freeman Spogli Institute for International Studies)
Brett McGurk (Freeman Spogli Institute for International Studies)
H.R. McMaster (Freeman Spogli Institute for International Studies)
Dinsha Mistree (Law)
Eric Morris (International Policy)
Jamie O'Connell (Law)
Megan Palmer (Freeman Spogli Institute for International Studies)
Riana Pfefferkorn (Law)
Marietje Schaake (Freeman Spogli Institute for International Studies)
Raj Shah (Freeman Spogli Institute for International Studies)
Daniel Sneider (Freeman Spogli Institute for International Studies)
Julia Spiegel (International Policy)
Alex Stamos (Freeman Spogli Institute for International Studies)
Ognen Stojanovski (Freeman Spogli Institute for International Studies)
Mark Thurber (Freeman Spogli Institute for International Studies)
Harold Trinkunas (Freeman Spogli Institute for International Studies)
Allen Weiner (Law)
Steve Weinstein (Management Science & Engineering)

Visiting Scholars:

Nancy Okail (Freeman Spogli Institute for International Studies)

Courses

INTLPOL 200. The Social & Economic Impact of Artificial Intelligence. 1 Unit.
Recent advances in computing may place us at the threshold of a unique turning point in human history. Soon we are likely to entrust management of our environment, economy, security, infrastructure, food production, healthcare, and to a large degree even our personal activities, to artificially intelligent computer systems. The prospect of "turning over the keys" to increasingly autonomous systems raises many complex and troubling questions. How will society respond as versatile robots and machine-learning systems displace an ever-expanding spectrum of blue- and white-collar workers? Will the benefits of this technological revolution be broadly distributed or accrue to a lucky few? How can we ensure that these systems are free of algorithmic bias and respect human ethical principles? What role will they play in our system of justice and the practice of law? How will they be used or abused in democratic societies and autocratic regimes? Will they alter the geopolitical balance of power, and change the nature of warfare? The goal of CS22a is to equip students with the intellectual tools, ethical foundation, and psychological framework to successfully navigate the coming age of intelligent machines.
Same as: CS 22A

INTLPOL 203. Trade and Development. 3-5 Units.
(Formerly IPS 203) This course analyzes the role of international trade in the development experience of countries. Amongst the topics covered are the instruments of trade policy, the developmental impact of trade liberalization/protectionism, and trade policy formulation, with particular attention to the political economy of trade policy. Given the current international trade environment, students will also debate the rise of trade protectionism, as well as discuss policies to enhance the benefits (winners) and address the costs (losers) of trade liberalization. The purpose of the course is to equip students with the tools to analyze international trade issues, propose policies, and assess the feasibility of policy implementation, particularly in the context of trade as a development strategy. Students will also dissect several common myths about international trade, such as the recent populist message that "trade deficits are bad." In addition, the "In the News" segment in class will discuss and analyze current events in areas relevant to the course.
Prerequisites: ECON 1.

INTLPOL 204A. Microeconomics for Policy. 4-5 Units.
Microeconomic concepts relevant to decision making. Topics include: competitive market clearing, price discrimination; general equilibrium; risk aversion and sharing, capital market theory, Nash equilibrium; welfare analysis; public choice; externalities and public goods; hidden information and market signaling; moral hazard and incentives; auction theory; game theory; oligopoly; reputation and credibility. Undergraduate Public Policy students may take PublPol 51 as a substitute for the Econ 51 major requirement. Economics majors still need to take Econ 51.
Prerequisites: ECON 50 and MATH 51 or equiv.
Same as: PUBLPOL 51, PUBLPOL 301A

INTLPOL 204B. Economic Policy Analysis for Policymakers. 4-5 Units.
This class provides economic and institutional background necessary to conduct policy analysis. We will examine the economic justification for government intervention and illustrate these concepts with applications drawn from different policy contexts. The goal of the course is to provide you with the conceptual foundations and the practical skills and experience you will need to be thoughtful consumers or producers of policy analysis. Prerequisites: ECON 102B or PUBLPOL 303D.
Same as: PUBLPOL 301B

INTLPOL 207. Economics of Corruption. 3-5 Units.
(Formerly IPS 207) This course applies economic tools to understanding and analyzing the developmental impact and determinants of corruption, as well as policy initiatives to address corruption. In addition to theories of corruption, students evaluate several case studies, randomized experiments, and empirical evidence, including from Argentina, Botswana, Brazil, China, Guatemala, India, Indonesia, Mexico, Uganda, the United Kingdom, and the United States. The "Corruption in the News" section supplements the class material.

INTLPOL 207B. Public Policy and Social Psychology: Implications and Applications. 4 Units.
Theories, insights, and concerns of social psychology relevant to how people perceive issues, events, and each other, and links between beliefs and individual and collective behavior will be discussed with reference to a range of public policy issues including education, public health, income and wealth inequalities, policing and climate change, Specific topics include: situationist and subjectivist traditions of applied and theoretical social psychology; social comparison, dissonance, and attribution theories; stereotyping and stereotype threat, and sources of intergroup conflict and misunderstanding; challenges to universality assumptions regarding human motivation, emotion, and perception of self and others; also the general problem of producing individual and collective changes in norms and behavior.
Same as: PSYCH 216, PUBLPOL 305B

INTLPOL 210. The Politics of International Humanitarian Action. 3-5 Units.
(Formerly IPS 210) The relationship between humanitarianism and politics in international responses to civil conflicts and forced displacement. Focus is on policy dilemmas and choices, and the consequences of action or inaction. Case studies include northern Iraq (Kurdistan), Bosnia, Rwanda, Kosovo, and Darfur. In addition to class attendance, each student will meet with the instructor for multiple one-on-one sessions during the quarter.

INTLPOL 213. International Mediation and Civil Wars. 3-5 Units.
(Formerly IPS 213) This graduate seminar will examine international mediation efforts to achieve negotiated settlements for civil wars over the last two decades. Contending approaches to explain the success or failure of international mediation efforts will be examined in a number of cases from Africa (Sudan, Sierra Leone, Burundi), the Balkans (Bosnia, Macedonia), and Asia (Cambodia, Indonesia/Aceh). In addition to class attendance, each student will meet with the instructor for multiple one-on-one sessions during the quarter. Satisfies the IPS Policy Writing Requirement.

INTLPOL 214. Refugees in the Twenty-first Century. 3-5 Units.
(Formerly IPS 214) The focus of this graduate seminar is policy dilemmas in international responses to massive population movements. In 2015 and 2016 hundreds of thousands of persons from the Middle East (particularly Syria) and Africa fled their home countries and attempted to cross into Europe by sea. In September 2016, the United Nations General Assembly unanimously adopted the "New York Declaration for Refugees and Migrants". This political declaration aims to improve the international response to large movements of refugees and migrants, including protracted refugee situations. One of the many challenges confronting this multilateral diplomatic undertaking is that the definition of the word "refugee" is contested, as is the process to determine who is a refugee. This course will provide an immersive examination of the causes and consequences of refugee movements. This course is a seminar that requires full student attendance and participation. A focus of the course is to develop the skills of students in writing policy memos. Students will meet with the instructor for multiple one-on-one sessions on their policy memos.

INTLPOL 215. Special Topics: State-Society Relations in the Contemporary Arab World-Key Concepts and Debates. 5 Units.
(Formerly IPS 215) This course looks at key concepts pertaining to state-society relations in the Arab world as they have evolved in regional intellectual and political debates since the 1990s. Citizenship, minority rights, freedom of expression, freedom of association, the rule of law, government accountability, independence of the judiciary, civil-military relations, and democratic transition will be among the concepts discussed.
Same as: POLISCI 215A

INTLPOL 217. The Future of Global Cooperation. 3-4 Units.
As threats to peace and security emerge, should states respond unilaterally, build ad hoc coalitions of the willing, or work through multilateral institutions? What are the benefits and risks of global cooperation? This seminar interrogates these questions by examining the role that international organizations play in responding to global threats in the modern era. The first section focuses on the advent of the modern global institutional architecture, considering its historical context, theoretical underpinnings, sources of legitimacy and power (or lack thereof), and the role of regional, subnational, and nongovernmental actors. The second section weighs the efficacy of global institutions in responding to transnational crises by delving into recent case studies, including the Syrian war, the Paris Climate Accord, the Iran Nuclear Deal, the 2014-2016 Ebola outbreak in West Africa, and the COVID-19 pandemic. The final section explores the future of the liberal world order and its institutions, and considers alternative models of global cooperation. Students should enroll for three units. Those who wish to receive an additional unit of credit must write a long policy memo. See syllabus for details. Enrollment is capped. Course is cross-listed with LAW 5039.
Same as: PUBLPOL 217

INTLPOL 218. Political Mobilization and Democratic Breakthroughs. 3-5 Units.
Mass political mobilization occurs in both democracies and autocracies. Sometimes political protests, demonstrations, and acts of nonviolence civic resistance undermine autocracies, produce democratic breakthroughs, or generate democratic reforms. Other times, they do not. This course explores why, first examining the original causes of mobilization, and then understanding why some movements succeed and others fail. The first sessions of the course will review theories of revolution, social movements, and democratization. The remainder of the course will do deep dives into case studies, sometime with guest lecturers and participants from these historical moments. Cases to be discussed will likely include the U.S. civil rights movement (1960s), Iran (1978 and 2009), Chile (1988), Eastern Europe (1989), China/Hong Kong (1989, 2011, 2019), USSR/Russia (1991 & 2011), South Africa (1990s), Serbia (2000), Egypt and Arab Spring (2011), Ukraine (2004 and 2013), and Black Lives Matter (2000s).
Same as: POLISCI 242G, POLISCI 342G

INTLPOL 220. Comparative Political Economy of Development. 3 Units.
Review of how nations develop politically and economically. Theories of state development, the role of institutions, inequality and societal divisions, the impact of natural resources, the consequences of corruption, and the effect of globalization on the world's poor. The seminar introduces the key theories relevant to state-building generally, and strengthening the rule of law in particular. Bridges theory and practice.

INTLPOL 221. Politics of Data: Algorithmic Culture, Big Data, and Information Waste. 3-4 Units.
(Formerly IPS 221) This course examines the role of data and algorithms in politically significant phenomena such as fake news,Twitter bots, prediction markets, racial profiling, autonomous robotic weapons, cryptocurrencies, and hacked elections. Readings are drawn from science & technology studies, information science, anthropology, communication, media studies, legal theory, sociology, and computer science, with additional contributions from psychology and philosophy. Non-technical, but minimal familiarity with computers and data analysis is assumed. Assignments include reading logs, a midterm exam, and a term paper. NOTE: Enrollment priority will be given to graduate students, with a preference for MIP students. Undergraduate enrollment is limited to seniors, with priority given to STS majors.

INTLPOL 224. Economic Development and Challenges of East Asia. 3-5 Units.
(Formerly IPS 224) This course explores East Asia's rapid economic development and the current economic challenges. For the purpose of this course, we will focus on China, Japan, and Korea. The first part of the course examines economic growth in East Asia and the main mechanisms. In this context, we will examine government and industrial policy, international trade, firms and business groups, and human capital. We will discuss the validity of an East Asian model for economic growth. The second part of the course focuses on the current economic challenges confronting these countries, such as, political economy, human capital, inequality, and entrepreneurship and innovation. Readings will come from books, journal articles, reports, news articles, and case studies. Many of the readings will have an empirical component and students will be able to develop their understanding of how empirical evidence is presented in articles. Prerequisites: INTPOL 301B, Polisci150A(355A), Econ 102B or equivalent courses that cover regression analysis.
Same as: ECON 124

INTLPOL 225. Technology Policy, Innovation, and Startup Ecosystems: Japan and Comparative Perspectives. 3 Units.
This course asks big questions and provides detailed analysis about how governments, policies, and politics can shape technologies, innovation, and startup ecosystems through closely examining Japan¿s political economy in a comparative perspective. The experience of Japan¿s technological advances, historical trajectories of innovation, along with its recent struggles and maturing startup ecosystem are introduced through scholarship about governing and shaping markets, analyses of the Silicon Valley ecosystem, and numerous specific cases of policy areas, technologies, and firms. There are no prerequisites for this course. Each class session will consist of lecture material and active discussion.

INTLPOL 227. Finance, Corporations, and Society. 4 Units.
Both "free market capitalism" and democracy are in crisis around the world. This interdisciplinary course will help you understand the issues by exploring the interactions between the financial system, corporations, governments, and broader society. Topics include basic financial decisions of individuals and corporations, consumer finance (including mortgages, student loans, insurance and savings), financial markets and firms, corporations and their governance, the role of disclosures and regulations, political economy and government institutions, and the role of the media. We will discuss current events and policy debates regularly throughout the course. The approach will be rigorous and analytical but not overly mathematical. Visitors with relevant experience will enrich the discussion.
Same as: ECON 143, POLISCI 127A, PUBLPOL 143

INTLPOL 230. Democracy, Development, and the Rule of Law. 3-5 Units.
This course explores the different dimensions of development - economic, social, and political - as well as the way that modern institutions (the state, market systems, the rule of law, and democratic accountability) developed and interacted with other factors across different societies around the world. The class will feature additional special guest lectures by Francis Fukuyama, Larry Diamond, Michael McFaul, Anna Grzymala-Busse, and other faculty and researchers affiliated with the Center on Democracy, Development, and the Rule of Law. Undergraduate students should enroll in this course for 5 units. Graduate students should enroll for 3.
Same as: INTNLREL 114D, POLISCI 114D, POLISCI 314D

INTLPOL 231B. Understanding Russia: Its Power and Purpose in a New Global Order. 5 Units.
Russia presents a puzzle for theories of socio-economic development and modernization and their relationship to state power in international politics. The collapse of the Soviet Union in 1991 brought into being the new Russia (or Russian Federation) as its successor in international politics. Russia suffered one of the worst recessions and experienced 25 years of halting reform. Despite these issues, Russia is again a central player in international affairs. Course analyzes motivations behind contemporary Russian foreign policy by reviewing its domestic and economic underpinnings. Examination of concept of state power in international politics to assess Russia's capabilities to influence other states' policies, and under what conditions its leaders use these resources. Is contemporary Russia strong or weak? What are the resources and constraints its projection of power beyond its borders? What are the determinants of state power in international politics in the twenty-first century? Includes lectures, readings, class discussions, films and documentaries.
Same as: POLISCI 213C, REES 231B

INTLPOL 232. Foreign Policy Decision Making in Comparative Perspective. 3 Units.
This seminar will examine how countries and multilateral organizations make decisions about foreign and international policy. The hypothesis to be explored in the course is that individuals, bureaucracies, and interest groups shape foreign policy decisions. That hypothesis will be tested against other more structural explanations of how countries behave in the international system. After a brief review of the academic literature in the first part of the course, the seminar will focus on several cases studies of foreign policy decision-making by the United States, China, Russia, Iran, and North Korea, as well as the United Nations and NATO. This seminar is intended for masters students and fourth-year undergraduates. NOTE: Please send a one-page document to Bronte Kass, bkass@stanford.edu, by March 9th with the following information: full name, class year, major, contact email, which version of the course you want to enroll in (e.g., POLISCI or INTLPOL). In the document, please also outline previous associated coursework and/or relevant experience and your interest in enrolling in the seminar. Application results will be announced on March 20th. Any questions related to this course or office hours with Professor McFaul should be directed to Mahlorei Bruce-Apalis at mahlorei@stanford.edu.
Same as: POLISCI 242, POLISCI 342

INTLPOL 233. Presidential Decision Making in Wartime. 3 Units.
This course will analyze how presidents approach the most consequential matters of war and peace. It will discuss how presidents oversee military operations once initiated. It will consider how presidents can avoid embarking on objectives that are unlikely to succeed at reasonable cost.
Same as: A Practitioner's Handbook

INTLPOL 236. American Grand Strategy. 3 Units.
This course examines the origin and practice of American grand strategy in foreign affairs. The course will cover the making of American grand strategy and focus on applying these models to evaluate trends in American foreign policy after World War II. The course will also explore alternative approaches to grand strategy from the perspective of China and Russia, ¿great power competitors¿ that the Trump administration has sought to define as a focal point for U.S. foreign policy. Throughout the quarter, we will consider the merits and risks of a ¿grand strategy¿ approach to the world after the end of the Cold War, and whether it is realistic in a hyper-partisan era to agree on bipartisan principles for America¿s proper role in the world. We will aim to develop such a set of principles. Enrollment priority will be given to graduate students.

INTLPOL 238. Social Movements in the Post Spring Arab World. 4 Units.
This course analyzes the role of social movements such as labor movements, student unions, women¿s movements, and human rights groups in shaping political realities in the Arab world after the brief period of democratic uprisings 2011-2013. It develops an in depth understanding of the challenges facing social movements in a social environment shaped by patriarchal values and in a political landscape driven by autocratic governments.

INTLPOL 239. State responses to the COVID-19 pandemic in the Arab world. 3 Units.
The emergence of the Covid-19 crisis has brought to light the long-term governance challenges confronting states in the Arab region. The ongoing efforts on the part of Arab governments to contain the outbreak and contend with its social and economic repercussions highlight a host of fundamental structural and institutional flaws in the dominant governance frameworks in the Arab region. At the same time, they highlight new patterns of political contestation between governments and various social forces, as well as among important bureaucratic and state actors. In some Arab countries, governments have lacked transparency and attempted to control public debates about the pandemic by silencing independent media outlets whenever their coverage contradicted official narratives. Elsewhere, pubic pressures have compelled some governments to abandon their initially secretive approaches in favor of a more transparent handling of the pandemic. This course seeks to analyze state responses to the pandemic in the Arab world, highlighting differences between countries such as Egypt, Saudi Arabia, and Tunisia.

INTLPOL 240. Contemporary Issues in International Security. 4 Units.
This seminar examines crucial foreign policy and defense-related challenges. Emphasis is on understanding how the recent past produced today's challenges and evaluating alternative strategies intended to overcome them. Topics include great power competition; terrorism and other transnational threats; security dynamics in South Asia and the Middle East; nuclear proliferation; disruptive technologies; and the interrelated problem set associated with climate change and environmental protection as well as energy, water, food, and health security. Students are expected to engage actively in class discussions, present on select course topics and write short weekly reflections. Enrollment priority will be given to students in the Master's in International Policy.

INTLPOL 241S. International Security in a Changing World. 3 Units.
This class examines the most pressing international security problems facing the world today: nuclear crises, non-proliferation, insurgencies and civil wars, terrorism, and climate change. Alternative perspectives - from political science, history, and STS (Science, Technology, and Society) studies - are used to analyze these problems.nn nnThe IPS241S listing is open to students enrolled via the Stanford Center for Professional Development only. It has been adapted to be available to online students. This class does NOT include the two-day international negotiation simulation.

INTLPOL 242. American Foreign Policy: Interests, Values, and Process. 5 Units.
(Formerly IPS 242) This seminar will examine the tension in American foreign policy between pursuing U.S. security and economic interests and promoting American values abroad. The course will retrace the theoretical and ideological debates about values versus interests, with a particular focus on realism versus liberalism. The course will examine the evolution of these debates over time, starting with the French revolution, but with special attention given to the Cold War, American foreign policy after September 11th, and the Obama administration. The course also will examine how these contending theories and ideologies are mediated through the U.S. bureaucracy that shapes the making of foreign policy. ** NOTE: The enrollment of the class is by application only. Please provide a one page double-spaced document outlining previous associated coursework and why you want to enroll in the seminar to Anna Coll (acoll@stanford.edu) by February 22nd. Any questions related to this course can be directed to Anna Coll.
Same as: GLOBAL 220, POLISCI 217A

INTLPOL 244. U.S. Policy toward Northeast Asia. 4 Units.
(Formerly IPS 244) This course offers a case-study approach to an examination of contemporary U.S. policy towards Japan, Korea, and China. It will look at the historical evolution of U.S. foreign policy and the dynamics and drivers of US policy in Northeast Asia. It will examine selected dimensions of US-China relations, US-Japan relations, and relations and policy toward South and North Korea. It will also discuss US relations with Russia and Taiwan. The class will focus on the cases of US security policy in the region, economic and trade policy, and human rights and democracy policy. Each week the class will combine lectures with student presentations in a seminar-style setting. Grades will be based on oral presentations, and on midterm and final take-home exams.

INTLPOL 244D. Asia-Pacific Transformation. 4 Units.
Post-WW II transformation in the Asia-Pacific region, with focus on the ascent of Japan, the development of newly industrialized capitalist countries (S. Korea and Taiwan), the emergence of socialist states (China and N. Korea), and the changing relationship between the U.S. and these countries.
Same as: SOC 167A, SOC 267A

INTLPOL 246. China's Foreign Policies: Objectives, Instruments, and Impacts. 4 Units.
(Formerly IPS 246) China is a global actor and its foreign policies are designed to protect and advance increasingly diverse interests in every country and region. Some interests and policies are common to all regions and have remained relatively stable over time; others are tailored to meet specific objectives and respond to the perceptions, objectives, and demands of particular countries. This course will help you to understand the domestic and international drivers and shapers of China¿s foreign policies and actions and how they have changed as China has become more developed, more prosperous, and more deeply integrated into the international system.

INTLPOL 247. Verification for 21st Century Arms Control Treaties. 3 Units.
Strong monitoring and verification are at the heart of an effective arms control treaty. The better we can monitor, the better we can verify that treaty obligations are met and nobody is cheating. Arms control monitoring is stuck in the past, however, with tools and methods unchanged from the first nuclear negotiations in the 1970s. Meanwhile, other international regimes have gone ahead, with environmental and resource management treaties making big strides in the use of ubiquitous sensing and other new technologies. This course will explore how to bring these innovations to the arms control arena and create treaties for the 21st century.

INTLPOL 250. International Conflict Resolution. 2 Units.
(Formerly IPS 250) (Same as LAW 5009; formerly Law 656) This seminar examines the challenges of managing and resolving intractable political and violent intergroup and international conflicts. Employing an interdisciplinary approach drawing on social psychology, political science, game theory, and international law, the course identifies various tactical, psychological, and structural barriers that can impede the achievement of efficient solutions to conflicts. We will explore a conceptual framework for conflict management and resolution that draws not only on theoretical insights, but also builds on historical examples and practical experience in the realm of conflict resolution. This approach examines the need for the parties to conflicts to address the following questions in order to have prospects of creating peaceful relationships: (1) how can the parties to conflict develop a vision of a mutually bearable shared future; (2) how can parties develop trust in the enemy; (3) how can each side be persuaded, as part of a negotiated settlement, to accept losses that it will find very painful; and (4) how do we overcome the perceptions of injustice that each side are likely to have towards any compromise solution? We will consider both particular conflicts, such as the Israeli-Palestinian conflict and the South African transition to majority rule, as well as cross-cutting issues, such as the role international legal rules play in facilitating or impeding conflict resolution, the ways intragroup dynamics affect intergroup conflict resolution efforts, and the role of criminal accountability for atrocities following civil wars. Special Instructions: Section 01: Grades will be based on class participation, written assignments, and a final exam. Section 02: Up to five students, with consent of the instructor, will have the option to write an independent research paper for Research (R) credit in lieu of the written assignments and final exam for Section 01. After the term begins, students (max 5) accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor.
Same as: PSYCH 383

INTLPOL 251. Cybersecurity: A Legal and Technical Perspective. 2 Units.
(Formerly IPS 251) This class will use the case method to teach basic computer, network, and information security from technology, law, policy, and business perspectives. Using real world topics, we will study the technical, legal, policy, and business aspects of an incident or issue and its potential solutions. The case studies will be organized around the following topics: vulnerability disclosure, state sponsored sabotage, corporate and government espionage, credit card theft, theft of embarrassing personal data, phishing and social engineering attacks, denial of service attacks, attacks on weak session management and URLs, security risks and benefits of cloud data storage, wiretapping on the Internet, and digital forensics. Students taking the class will learn about the techniques attackers use, applicable legal prohibitions, rights, and remedies, the policy context, and strategies in law, policy and business for managing risk. Grades will be based on class participation, two reflection papers, and a final exam. Special Instructions: This class is limited to 65 students, with an effort made to have students from Stanford Law School (30 students will be selected by lottery) and students from Computer Science (30 students) and International Policy Studies (5 students). Elements used in grading: Class Participation (20%), Written Assignments (40%), Final Exam (40%). Cross-listed with the Law School (Law 4004) and International Policy Studies (IPS course number TBD).
Same as: CS 203

INTLPOL 252. Cyber Risk: A Multidisciplinary Approach. 2-3 Units.
Our businesses, critical infrastructure and governments are under attack. Cyberattacks can be extremely complex or equally simple and reckless. Because of the unique attributes of cyberattacks, new risk management approaches are required to properly manage the cyber threat. Organizations must incorporate cyber risk management into business continuity planning. Technical security tools are useful, but not enough to protect organizations from cyber threats. Non-technical tools such as cyber insurance and the emerging field of defensive social engineering can complement technical solutions. Cyber metrics are essential to measuring and managing an organization¿s risk exposure and cyber defense budget. Policy and law is still emerging and extremely important for managing cyber risk. We will explore all these topics through this highly interactive course.

INTLPOL 253. AI and Rule of Law: A Global Perspective. 2-3 Units.
Advances in machine learning, big data, networked communications, and computing are transforming our world and fueling calls for regulation. This course--a joint venture of a Stanford law professor and a former Member of the European Parliament and leading voice on tech regulation--offers a global perspective on the profound legal and governance challenges posed by the new digital technologies. Students will emerge with an understanding of how tech is reshaping the global distribution of political authority, rights, and resources, the existing state of law and regulation in the U.S., Europe, China, and elsewhere, and the new democratic governance models that are emerging in response. Each class session will feature one or more distinguished speakers from around the world drawn from the ranks of government officials, judges, activists, and academics who work in the fields of human rights, privacy, free speech, trade, and national security. There are no course prerequisites, whether in law or otherwise. Students will be responsible for one-page responses to each week's readings and a research paper to be turned in at the spring paper deadline. Students can take the course for 2 or 3 units, depending on research paper length. This class is cross-listed with LAW 4050, and undergraduates and graduates are eligible to take it. Stanford Non-Law students may enroll in INTLPOL 253 directly in Axess. Non-law students wishing to enroll in LAW 4050 should complete the Non-Law Student Add Request form available at https://law.stanford.edu/education/courses/non-law-students/ for a permission number to enroll. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper.

INTLPOL 256. Technology and National Security: Past, Present, and Future. 3-4 Units.
Explores the relation between technology, war, and national security policy from early history to modern day, focusing on current U.S. national security challenges and the role that technology plays in shaping our understanding and response to these challenges. Topics include the interplay between technology and modes of warfare; dominant and emerging technologies such as nuclear weapons, cyber, sensors, stealth, and biological; security challenges to the U.S.; and the U.S. response and adaptation to new technologies of military significance.
Same as: MS&E 193, MS&E 293

INTLPOL 257. Technology & Public Purpose: Practical Solutions for Innovation's Public Dilemmas. 4-5 Units.
The arc of innovative progress has reached an inflection point. Technological innovation has brought immeasurable benefits to billions through improved health, productivity, and convenience. Yet as recent events have shown, unless we actively manage their risks to society, ranging from privacy concerns, to rogue AI and gene editing, to massive potential job losses, to keeping up with China and others -- new technologies may also bring unforeseen destructive consequences. We will begin with a brief history of successful and unsuccessful governance of far reaching technological changes in the past. We then turn to key technologies and the dilemmas each create, in particular: digital/social media (privacy, truth, and election interference); AI/big data (algorithmic bias, etc); the coming biotech revolution (gene editing, bio weapons); driverless cars and car-less drivers: the future of work; and the role of China and other competitors. This class is designed for advanced students in international and public policy, or any technical discipline. The goal is to have a thoughtful exchange of ideas and you do not need prior expertise in any of these topics. We will have some fantastic guest speakers, and each class will be divided into understanding the problem, and thinking about some solutions. Enrollment will be limited to 20. You will learn to think and write like a policymaker tackling these novel concerns.

INTLPOL 258. Psychology, Influence, and Propaganda. 4 Units.
Propaganda has been a tool of statecraft since humans first organized themselves into societies. How do tools such as these convince people to change their attitudes, beliefs or behavior? What factors affect the psychological process related to social influence and persuasion? And how does the increasing importance of digital media as an information source affect these processes? This course will address these issues by focusing on the ways in which misleading and/or patently false information spread in today's information ecosystem, often as a result of foreign adversaries' efforts to shape public perception through the use of propaganda as well as coordinated bot networks and Internet trolls.

INTLPOL 259. Research Topics in Technology and National Security. 1-3 Unit.
Research on technology and national security, especially including but not limited to cyber conflict and information warfare, nuclear weapons, emerging technologies with relevance to national security. Student and faculty member will agree on one or more topics for research, and student will prepare a topic-relevant paper of approximately 4000 words per unit. A longer paper on one topic or two or three shorter papers on different topics are acceptable. May be repeated for credit.

INTLPOL 259A. Research Seminar on Cybersecurity: Automotive Safety, Security, and Privacy. 2-4 Units.
The course will explore the safety, security and privacy implications of the automobile. The modern automobile is a computer on wheels, with processors, sensors and networked connectivity managing hundreds of safety-critical functions. Automation will further drive the evolution of cars from the analog, mechanically-operated vehicles of the 20th century to the digital, AI-driven automobile of the 21st century. Overall, digitization has made cars safer, greener, and more enjoyable to ride in. But this digitization also introduces new risks. Cybersecurity vulnerabilities can expose vehicle occupants, commuters and pedestrians to safety and privacy risks. In addition to the physical, economic and psychological harms experienced by victims of cybersecurity attacks and intrusions, such attacks could undermine consumer and policy-maker confidence in the trustworthiness of digitally-dependent vehicles. The automotive industry and government regulators are in the formative stages of developing regulatory and governance frameworks for these risks, which may have broader implications for regulatory policy concerning digital technologies generally. Students will accompany the instructor on a deep dive into the regulatory, business, and geopolitical dimensions of the automobile. Each student will be expected to use the course to produce a publication-quality research paper on a relevant topic of their choosing (in consultation with the instructor), with mentorship from the instructor and peer support from fellow classmates. (Students may register for 2-4 units with increased research paper word count per unit. 10 slots, graduate students only, undergraduates by permission of instructor.) Note: Topic of course may change from year-to-year. Update in Winter Quarter 2021.

INTLPOL 266. Managing Nuclear Waste: Technical, Political and Organizational Challenges. 3 Units.
(Formerly IPS 266) The essential technical and scientific elements of the nuclear fuel cycle, focusing on the sources, types, and characteristics of the nuclear waste generated, as well as various strategies for the disposition of spent nuclear fuel - including reprocessing, transmutation, and direct geologic disposal. Policy and organizational issues, such as: options for the characteristics and structure of a new federal nuclear waste management organization, options for a consent-based process for locating nuclear facilities, and the regulatory framework for a geologic repository. A technical background in the nuclear fuel cycle, while desirable, is not required.
Same as: GEOLSCI 266

INTLPOL 268. Hack Lab. 3 Units.
(Formerly IPS 268) This course aims to give students a solid understanding of the most common types of attacks used in cybercrime and cyberwarfare. Taught by a long-time cybersecurity practitioner, a recovering cyberlaw litigator, and a group of hearty, motivated TAs, each session will begin with a lecture covering the basics of an area of technology and how that technology has been misused in the past. Students will then complete a lab section, with the guidance of the instructor and assistants, where they attack a known insecure system using techniques and tools seen in the field. Each week, there will be a second lecture on the legal and policy impacts of the technologies and techniques we cover. By the end of the course, students are expected to have a basic understanding of some of the most common offensive techniques in use today as well as a comprehensive overview of the most important aspects of cyberpolicy and law. No computer science background is required. All students must have access to a Windows, Mac OS X or Linux laptop.

INTLPOL 268D. Online Open Source Investigation. 3-4 Units.
This course is a practical introduction to online open source investigation -- internet research using free and publicly available information. The course will cover domain investigations, social media research, strategies for geolocation and chronolocation (placing videos or images at a point in time), image verification, and research on individuals. We will discuss the discovery process, i.e. identifying potentially inauthentic information in the first place. Students will learn best practices related to archiving and note taking. The goal of the course is to prepare students for online open source research in jobs in the public sector, with technology companies, human rights organizations, and other research and advocacy groups.

INTLPOL 269. Cyber Law: International and Domestic Legal Frameworks for Cyber Policy. 2 Units.
(Formerly IPS 269) Was Russia's interference in the 2016 U.S. elections an act of war? When do cyber attacks constitute a use of force? Is sovereignty in cyberspace different than in other domains, and can states meaningfully defend their sovereignty in cyberspace? Is hacking back against cyber thieves the legal equivalent of defending one's own property? How should states respond to cyber espionage and information operations, and what legal options are available? This course explores the domestic and international law of cyberspace and its application to significant practical challenges. It also addresses broader legal policy questions, including the extent to which law acts as a constraint on state and non-state actors in cyberspace, whether the application of existing law to cyber activities is sufficient or new laws and norms are needed, and how they could be developed. Policy and law students are welcome; no previous legal knowledge is required. Please note that the course will run 10 minutes longer per class session than listed due to American Bar Association requirements for the Stanford Law School. (Cross-listed with LAW 4035.).

INTLPOL 271. Climate Politics: Science and Global Governance. 3-4 Units.
(Formerly IPS 271) Provides a unique perspective on contemporary debates about climate change through a study of their long history. After some background about climate science and a look at how people thought about climate in the 18th, 19th, and early 20th centuries, we explore the co-evolution of climate science and climate politics from World War II to the present. The approach is to examine a series of political issues and debates that established human effects on the global atmosphere as serious problems. We then focus on the UN Framework Convention on Climate Change, the 2015 Paris Agreement, and the future of international climate policy. Assignments include in-class presentations and a policy brief.
Same as: HISTORY 202J

INTLPOL 272. Empirical Methods in Sustainable Development. 3-5 Units.
The determinants of human well-being over the short and long-run, including the role of environmental factors in shaping development outcomes. A focus on the empirical literature across both social and natural sciences, with discussion and assignments emphasizing empirical analysis of environment-development linkages, application of methods in causal inference, and data visualization.
Same as: ESS 268

INTLPOL 274. International Urbanization Seminar: Cross-Cultural Collaboration for Sustainable Urban Development. 4-5 Units.
(formerly IPS 274) Comparative approach to sustainable cities, with focus on international practices and applicability to China. Tradeoffs regarding land use, infrastructure, energy and water, and the need to balance economic vitality, environmental quality, cultural heritage, and social equity. Student teams collaborate with Chinese faculty and students partners to support urban sustainability projects. Limited enrollment via application; see internationalurbanization.org for details. Prerequisites: consent of the instructor(s).
Same as: CEE 126, EARTHSYS 138, URBANST 145

INTLPOL 280. Transitional Justice, Human Rights, and International Criminal Tribunals. 3-5 Units.
(Formerly IPS 280) Historical backdrop of the Nuremberg and Tokyo Tribunals. The creation and operation of the Yugoslav and Rwanda Tribunals (ICTY and ICTR). The development of hybrid tribunals in East Timor, Sierra Leone, and Cambodia, including evaluation of their success in addressing perceived shortcomings of the ICTY and ICTR. Examination of the role of the International Criminal Court and the extent to which it will succeed in supplanting all other ad hoc international justice mechanisms and fulfill its goals. Analysis focuses on the politics of creating such courts, their interaction with the states in which the conflicts took place, the process of establishing prosecutorial priorities, the body of law they have produced, and their effectiveness in addressing the needs of victims in post-conflict societies.
Same as: ETHICSOC 280, HUMRTS 103, INTNLREL 180A

INTLPOL 281. Global Poverty and the Law. 3 Units.
(Formerly IPS 281) With more than a billion people living on less than $2 a day, global poverty is one of the biggest challenges currently facing humanity. Even though those who suffer the most are located in the developing world, many of the policies, economic opportunities, and legal actions that offer the biggest potential for global poverty alleviation are made in the United States. This course will provide an introduction to the study of global poverty. What causes poverty? Why have some parts of the developing world done better at alleviating poverty than other parts? Can the world ever be free of poverty, as the World Bank's official motto suggests? And most importantly, what can aspiring lawyers do to improve the condition of the world's impoverished? These are some of the questions this course is designed to address. This course is designed especially for future lawyers and policymakers who seek a deeper understanding of the developing world. After a brief overview that will familiarize students with the major concepts and empirical debates in poverty and development studies, we will examine a variety of 'causes' of poverty, from poor governance to lack of economic opportunity to the role of society. Since this course is just as much about what can be done, we shall also consider applied approaches to poverty alleviation. These types of interventions include political/legal reforms such as anti-corruption initiatives, 'rule of law' interventions, right to information programs, privatization, and community-driven development models; economic solutions such as cash transfers and microfinance; and technological approaches such as new methods for measuring policy impact and the application of new technologies for state identification and distribution programs. In addition to more typical scholarly readings, students will review poverty alleviation policy proposals and contracts made by various stakeholders (academics, NGOs, states, international bodies, etc.). Grading is based on participation, a presentation of research or a proposal, and, in consultation with the professor, a research paper. The research paper may be a group project (Section 01) graded MP/R/F or an individual in-depth research proposal either of which could be the basis for future field research (Section 02) graded H/P/R/F. Students approved for Section 01 or Section 02 may receive R credit. After the term begins, students accepted into the course can transfer from Section 01 into Section 02 with consent of the instructor. Automatic grading penalty waived for research paper. This course is taught in conjunction with the India Field Study component (Law 5026). Students may enroll for this course alone or for both this course and Law 5026 with consent of the instructor (12 students will come to India). See Law 5026 for application instructions. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. Cross-listed with LAW 5025.

INTLPOL 285. The United States, China, & Global Security. 2 Units.
This graduate-level seminar will be taught simultaneously on the campuses of Stanford University and Peking University and will feature a lecture series in which prominent American and Chinese scholars provide presentations that focus on key global security issues. The course content will highlight topics relevant to current U.S.- China relations and their respective roles in Asian and global security. Proposed lecture topics include: an introduction to U.S.- China relations; finance, trade, and investment; cyber security; nonproliferation; maritime security; terrorism; and energy and the environment. Hosted jointly by Stanford University and Peking University, enrollment will be limited to 20 students at each campus and, at Stanford, will be restricted to graduate students and undergraduates with senior standing. Enrollment is competitive, so potential students must complete an application by March 12, 2018 at 5pm: https://web.stanford.edu/dept/CEAS/EASTASN285.fb.
Same as: EASTASN 285

INTLPOL 290. Practical Approaches to Global Health Research. 1-3 Unit.
(Formerly IPS 290 and HRP 237) How do you come up with an idea for a useful research project in a low resource setting? How do you develop a research question, prepare a concept note, and get your project funded? How do you manage personnel in the field, complex cultural situations, and unexpected problems? How do you create a sampling strategy, select a study design, and ensure ethical conduct with human subjects? This course takes students through the process of health research in under-resourced countries from the development of the initial research question and literature review to securing support and detailed planning for field work. Students progressively develop and receive weekly feedback on a concept note to support a funding proposal addressing a research question of their choosing. Aimed at graduate students interested in global health research, though students of all disciplines interested in practical methods for research are welcome. Undergraduates who have completed 85 units or more may enroll with instructor consent. Sign up for 1 unit credit to participate in class sessions or 3 units to both participate in classes and develop a concept note.
Same as: EPI 237, MED 226

INTLPOL 291. Theories of Change in Global Health. 3-4 Units.
Open to graduate students studying in any discipline whose research work or interest engages global health. Upper-class undergraduates who have completed at least one of the prerequisite courses and who are willing to commit the preparatory time for a graduate level seminar class are welcome. The course undertakes a critical assessment of how different academic disciplines frame global health problems and recommend pathways toward improvements. Focuses on evaluating examples of both success and failure of different theories of change in specific global health implementations. Prerequisites: ECON 118, CEE 265D, HUMBIO 129S or HUMBIO 124C.
Same as: SOMGEN 207

INTLPOL 298. Practical Training. 1-3 Unit.
(Formerly IPS 298) Students obtain internship in a relevant research or industrial activity to enhance their professional experience consistent with their degree program and area of specialization. Prior to enrolling, students are required to submit a concise proposal to the MIP assistant director outlining the proposed project and work activities. After the internship, students are required to submit a three-page summary of the work completed, skills learned, and reflection of the professional growth gained as a result of the internship. The summary should also include relevance to the degree program. Meets the requirements for Curricular Practical Training for students on F-1 visas. Student is responsible for arranging own internship. Limited to International Policy (INTLPOL) students only. May be repeated for credit.

INTLPOL 299. Directed Reading. 1-5 Unit.
(Formerly IPS 299) Directed reading in International Policy. Course is open to students from all degree programs. To be considered for enrollment, interested students must first submit the International Policy Directed Reading Proposal (https://fsi.stanford.edu/masters-degree/student-resources), which is due no later than the second Friday of the academic quarter in which they would like to enroll. Proposal requires signature of the advising instructor (email confirmation or e-signature) and should be sent to jjachter@stanford.edu. If approved, a directed reading section will be created for the instructor (if s/he does not already have a section). May be repeated for credit.

INTLPOL 300. Policy Seminar for MIP. 1 Unit.
(Formerly IPS 300) Seminars and speaker series offered by programs and centers at the Freeman Spogli Institute for International Studies. Quarterly, students must attend a minimum of eight sessions that are relevant to their area of specialization. Details on speaker series and colloquia available on course Canvas site. Required for, and limited to, second-year students in International Policy (i.e., Class of 2020). May be repeated for credit.

INTLPOL 300A. International Policy Speaker Series. 1 Unit.
Presentations on international policy topics by Freeman Spogli Institute for International Studies faculty and guests. Includes discussion with students. Required for first-year M.A. students in International Policy. Optional for second-year M.A. students in International Policy (to be taken in place of INTLPOL 300). Enrollment is limited to MIP students.

INTLPOL 300J. International Policy Journal. 1 Unit.
Edit and publish the Stanford International Policy Review (SIPR). Editors can receive credit for their work. Must be approved as an editor and must receive approval from faculty advisor before enrolling. Course is available to second-year MIP students who are editors for autumn and spring quarters. Course is limited to spring quarter for first-year MIP students.

INTLPOL 300S. Leading Effective Teams. 2 Units.
In this interactive course students will develop practical skills for leading effective teams, and will apply their learning in group projects (1st year) and in their capstone (2nd year). Topics include understanding of group development stages and different work styles, setting and tracking group norms, developing mutual accountability mechanisms to ensure productivity, creating efficient decision making processes, resolving conflict, and leveraging cultural diversity. Enrollment limited to first-year Master's in International Policy (MIP) students.

INTLPOL 301A. Research Methods and Policy Applications I. 5 Units.
This course provides a conceptual and applied introduction to quantitative social sciences methodology. We will discuss the formal statistical formulation and practical applications of techniques of statistical data analysis. Concepts covered include basics of probability, estimation theory, statistical inference, ANOVA, correlation, and regression analysis. Students will gain practical experience analyzing their own data and interpreting results. We will devote substantial time to "learning by doing" using statistics software. Students will use the Stata programming language to learn the basics of programming, generate data, manipulate real-world datasets, and conduct statistical analysis. Core course so enrollment is limited to MIP students.

INTLPOL 301B. Research Methods and Policy Applications II. 5 Units.
We will build on the basic knowledge of statistical methods from the previous quarter to further develop fundamentals for the design, implementation and interpretation of policy-relevant research. We will discuss the statistical formulation and practical applications of linear regression analysis, the assumptions of OLS models, and how to check and address violations of these assumptions. We will consider models for dichotomous and categorical dependent variables including logit and problt regression. We will also discuss specialized topics including causal inference strategies (such as fixed effects, instrumental variables, and regression discontinuity), missing data, and data reduction techniques such as factor analysis. Students will conduct their own empirical research using quantitative analysis. Once again, we will make extensive use of Stata software. Core course so enrollment is limited to MIP students.

INTLPOL 302. The Global Economy. 5 Units.
This course examines the economic inter-connectedness of nations. Among the topics covered are the causes and consequences of current account imbalances, exchange rate determination, monetary unification, financial and currency crises, and contagion. In addition, the course includes an assessment of key global financial institutions, such as the International Monetary Fund, and the global effort to reform the international financial architecture. The goal of the course is to equip students with the tools to analyze international macroeconomic issues, events, and policies. Students will analyze economic data of countries with a view to assessing the economic health and vulnerabilities of countries. They will propose policies to address the identified economic vulnerabilities, and will assess the feasibility of policy implementation. In addition, the "In the News" segment in class will discuss and analyze current events in areas relevant to the course. (This course was formerly IPS 202.) Enrollment limited to Master's in International Policy (MIP) students.

INTLPOL 305. International Relations Theory and Practice in the 21st Century. 5 Units.
A review of major theoretical approaches to international relations including realism, liberalism, constructivism, and domestic politics and an examination of major episodes including the first world war, second world war, Cold War, US and Soviet interventions, and terrorism.

INTLPOL 306. International Relations Theory and the American Experience. 5 Units.
This course provides students with a theoretical and practical overview of the key elements of U.S. foreign policy, with a particular focus on the challenges, dilemmas, and constraints faced by contemporary U.S. decision makers in the executive branch. It is divided into three sections. The first discusses U.S. strategy from the founding of the republic to the present day. The second describes the major elements of national power used to advance U.S. interests and objectives: force, economic instruments, intelligence, and diplomacy. The third focuses on the key processes and constraints affecting national security policy, including bureaucratic politics and the interagency process, civil-military relations, constraints imposed by the U.S. Congress, and the role of outside influences (public opinion, interest groups, think tanks, and the media). Enrollment is limited to students in International Policy (MIP).

INTLPOL 307. Policy Problem-Solving in the Real World. 4 Units.
(Formerly IPS 216) This course introduces students to the MIP Policy Problem-Solving Framework that will be used in their second-year capstone. It will present both conceptual frameworks and concrete cases that help students define public problems, analyze potential solutions, and design implementation strategies for bringing about change in real-world situations. Required MIP core curriculum; enrollment from non-MIP students will be extremely limited and require consent from the instructor.

INTLPOL 308. Comparative Public Policy. 4 Units.
This course provides analytic tools and case studies to understand the policy making process in developing countries. Public policies in realms such as the regulation of financial markets, infrastructure investment, poverty relief programs, and public health systems are analyzed through the lens of a comparative institutionalist perspective, grounded in case studies from Africa, Asia, and Latin America. Required MIP core curriculum. Enrollment is limited to Master's in International Policy (MIP) students.

INTLPOL 310. Policy Change Studio. 4 Units.
Collaboration with real-world partners to define solutions to pressing policy problems. Students work in teams and are guided by the teaching team, along with project-specific advice from a faculty mentor and an external advisor. Students may also travel in order to collect data and meet with stakeholders. The capstone course takes place winter and spring quarters of the second year and revolves around a cutting-edge policy-making framework. Drawing from methods learned in the core courses, each group will work through the framework in parallel, analyzing their problem, developing a solution, and navigating a successful implementation. (Enrollment limited to second-year International Policy students.).

INTLPOL 310A. Capstone Field Research. 1 Unit.
Students travel with their policy change studio teams to collaborate with partner organizations, gather data, perform assessments, and analyze in-country aspects of their capstone project. (Limited to International Policy students enrolled concurrently in INTLPOL 310: Policy Change Studio.).

INTLPOL 321. Fundamentals of Cyber Policy and Security. 4-5 Units.
This course will provide an introduction to fundamental issues in cyber policy and security. It will focus on the way that cyber issues impact people and organizations across sectors - from government and law to business, tech, and others - and how people and organizations can and should approach the myriad cyber challenges. This is not a technical or computer science course and no technical background nor prerequisites are necessary. In the first part of the course, we will introduce cyber policy and security fundamentals. The second part of the course will explore cyber policy and security aspects related to economics, psychology, law, warfare, international relations, critical infrastructure, privacy, and innovation. The third part of the course will be focused mostly on a number of case studies designed to simulate the challenges faced by policy-makers and executive-level decision makers. This course is heavily discussion-based and so attendance is required. Assignments will consist of three short papers and a take-home final exam. All graduate students are welcome to enroll, especially those in the international policy, law, and business programs. Undergraduate enrollment only by permission of instructor.

INTLPOL 323. Free Speech, Democracy and the Internet. 2-3 Units.
(LAW 7082) This course will cover contemporary challenges to democracy presented by the Internet. Topics will include disinformation, polarization, hate speech, media transformation, election integrity, and legal regulation of internet platforms in the U.S. and abroad. Guest speakers from academia and industry will present on these topics in each class session, followed by a discussion. Students will be responsible for one-page papers each week on the readings and a research paper to be turned in at the fall paper deadline. Students can take the seminar for either 2 or 3 units, depending on the research paper length. This class is limited to 30 students, with an effort made to have students from SLS (20 students will be selected by lottery) and 10 non-law students by consent of instructor. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper. Cross-listed with COMM 153B/ 253B.

INTLPOL 340. Technology, Innovation and Modern War: Keeping America's Edge in an Era of Great Power Competition. 4 Units.
This course explores how technology advances in areas like Cyber, Space, AI, Machine Learning, and Autonomy will create new types of military systems that will be deployed in modern conflicts, and the new operational concepts, organization and strategies that will emerge from these technologies. The course develops an appreciation that innovation in military systems throughout history has followed a repeatable pattern: technology innovation > new weapons > experimentation with new weapons/operational concepts > pushback from incumbents > first use of new operational concepts. Students will apply course concepts and learning to identify opportunities for the U.S. to maintain its technological edge and compete more effectively in this era of great power rivalry. The course builds on concepts presented in MS&E 193/293: Technology and National Security and provides a strong foundation for MS&E 297: Hacking for Defense.
Same as: MS&E 296

INTLPOL 350. International Law. 4 Units.
(LAW 5013) This course provides a general introduction to international law and its role in today's complex and interdependent world. We will begin by considering fundamental questions about the nature of international law, such as: the origins of international law in the sovereign equality of states; the sources of international law (including treaties and customary international law); the subjects of international law; principles of state responsibility; the bases upon which states may exercise jurisdiction; and the global governance challenges arising from the absence of assured mechanisms for the interpretation or enforcement of international law. We will then examine the operation of international law in the U.S. legal system. In the second half of the course, we will look at a series of contemporary international law topics and issues, including international human rights law, the law governing coercion and the use of armed force, the law of armed conflict, international environmental law, and international criminal law. Throughout, we will consider current issues and problems arising in the international arena and the extent to which international law affects the behavior of states. This course provides a general grounding in public international law and a foundation for more advanced or specialized international law courses. Elements used in grading: Class participation, optional paper, and final exam. (Formally Law 479).

INTLPOL 351. Law of Democracy. 3 Units.
(LAW 7036) This course is intended to give students a basic understanding of the themes in the legal regulation of elections and politics. We will cover all the major Supreme Court cases on topics of voting rights, reapportionment/redistricting, ballot access, regulation of political parties, campaign finance, and the 2000 presidential election controversy. The course pays particular attention to competing political philosophies and empirical assumptions that underlie the Court's reasoning while still focusing on the cases as litigation tools used to serve political ends. Elements used in grading: Class participation and final exam. Cross-listed with Comm 361 Polisci 327C. (Formerly Law 577).

INTLPOL 352. State Building and the Rule of Law Seminar. 3 Units.
(LAW 5103) This Seminar is centrally concerned with bridging theory and practice. The seminar introduces the key theories relevant to state-building generally, and strengthening the rule of law in particular. This course explores the multidisciplinary nature of development --- through readings, lectures, guest lectures, case studies, and seminar discussions --- and asks how lawyers fit in and contribute to the process? The set of developing countries considered within the scope of this workshop is broad. It includes, among others, states engaged in post-conflict reconstruction, e.g., Cambodia, Timor Leste, Rwanda, Iraq, Sierra Leone; states still in conflict, e.g., Afghanistan, Somalia; the poorest states of the world that may not fall neatly into the categories of conflict or post-conflict, e.g., Nepal, Haiti; least developed states that are not marked by high levels of violent conflict at all, e.g., Bhutan; and more developed states at critical stages of transition, e.g., Tunisia, Georgia, Hungary. Grading is based on participation, a presentation of research or a proposal, and, in consultation with the professor, a research paper. The research paper may be a group project or an individual in-depth research proposal, either of which could be the basis for future field research. CONSENT APPLICATION: The seminar is open by consent to up to sixteen (16) JD, SPILS, and LLM students, and graduate students from other departments within Stanford University. This course is taught in conjunction with the India Field Study component (Law 5026). Students may enroll for this course alone or for both this course and Law 5026 with consent of the instructor (12 students will come to India). To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. (Formerly Law 259).

INTLPOL 353. Policy Practicum: Human Rights & International Justice. 3-5 Units.
(LAW 807R) Atrocities continue to ravage our planet--in Syria, Iraq, Myanmar/Burma, North Korea, and Yemen, to name a few. And yet, the international community is increasingly divided when it comes to advancing the project of international justice. Lab will support several multilateral, civil society, and non-governmental organizations institutions in their effort to move justice processes forward. Full course details available at https://law.stanford.edu/courses/policy-practicum-human-rights-international-justice/.nnCONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

INTLPOL 354. International Criminal Law and Its Enforcement. 3 Units.
(LAW 5003) This course will introduce students to the law, institutions, and actors that constitute the system of international justice and to the political environment in which this system is situated. Readings will map the once and future international criminal law institutions, offer an elemental analysis of international crimes and forms of responsibility as they have evolved in international law, and focus on the challenges of pursuing criminal prosecutions for international crimes. Jurisprudence from the various international and domestic tribunals will be scrutinized with an emphasis on understanding the prosecution's burden, available defenses, and sources of proof. The course will also engage new and perennial debates about the suitability of using criminal justice mechanisms to respond to mass atrocity situations and consider alternatives from the domain of transitional justice. In addition to the substance of international criminal law, this course will also serve as an introduction to international legal reasoning, law-making, and institutional design.
Same as: HUMRTS 116

INTLPOL 355. International Human rights. 3 Units.
(LAW 5010) An introduction to the theory and practice of human rights. We will examine major sources of international human rights law---including treaties, customary international law, and national law---as well as the institutions in which human rights are contested, adjudicated, and enforced. Key sites of human rights activity include multilateral organizations, like the United Nations Security Council and Human Rights Council; international, regional, and national courts and tribunals; and quasi-judicial treaty bodies, like the U.N. Committee Against Torture. This degree of jurisdictional redundancy offers an opportunity to explore questions of institutional design and interaction as well as processes of normative diffusion. The course will also consider the role of non-state actors---including non-governmental organizations, corporations, terrorist organizations, and ordinary individuals---in promoting and violating human rights. In addition to this survey of the human rights ecosystem, the course will engage some of the fundamental theoretical debates underlying the international human rights project with a focus on perennial questions of legitimacy, justiciability, compliance, and efficacy. Finally, we will explore a range of threats and challenges to the promotion of human rights---both perennial and novel---including economic under-development, terrorism, national security over-reach, patriarchy, and racism. We will read case law originating from all over the world, including the United States. Special Instructions: Students have the option to write a long research paper in lieu of the final exam with consent of instructor. Elements used in grading: Class participation; exam or final long research paper. (Formerly Law 330).
Same as: HUMRTS 117

INTLPOL 356. Human trafficking: Law and Policy. 3 Units.
(LAW 5034) Taking an historical and comparative perspective, this course will introduce students to the international, domestic, foreign, and sub-national law governing the many manifestations of human trafficking (including legal prohibitions on forced labor and modern forms of slavery, sexual exploitation, organ trafficking, and child soldiering). We will also explore the diplomatic and policy tools employed by state and local governments to tackle this phenomenon. Class sessions will be comprised of a combination of lectures, seminar discussions, and guest speakers. Students have the option of completing a research paper or a take-home final exam. The first eight weeks of the course will coincide with the first eight weeks of winter quarter and will be conducted at Stanford Law School. Enrollment in the Thailand field study option is limited to 12 students (See Law 5035 for application instructions and deadline). Elements used in grading: Attendance, Class Participation, Written Assignments; Final Exam, or Final Research Paper.

INTLPOL 357. Transitional Justice. 3 Units.
The political, social, and legal problems confronting societies after periods of mass human rights violations or war have attracted increasing attention from policymakers and scholars in the last three decades. This course will examine the legacies of atrocities and the institutions and processes that governments and citizens most often use to address them, comparing approaches from across the globe. South Africa's Truth and Reconciliation Commission; the prosecution of Chile's former dictator, Augusto Pinochet; Argentina's reparations to victims of its military regime; and the International Criminal Court are among the best-known policy responses to those problems. In addition, non-legal interventions---such as the Berlin Holocaust Memorial and Nelson Mandela's many symbolic gestures toward reconciliation with white South Africans---may have important social and political effects. In addition to initiatives at the national and international levels, we will devote some attention to transitional justice at the local level. A recurring theme throughout the course will be the connections between atrocities and transitional justice measures intended to address them, on the one hand, and economic justice and development, on the other. Special Instructions: Students have the option to write a long research paper in lieu of the final exam with consent of instructor. Elements used in grading: Class Participation, Written Assignments; Final Exam or Final Paper.

INTLPOL 358. Business, Social Responsibility, and Human Rights. 3 Units.
Large corporations now routinely spend millions of dollars to protect human rights and the environment. Shell Nigeria builds hospitals and schools in the Niger Delta. Nike employs hundreds of inspectors to improve conditions for the factory workers who produce its shoes across Asia and Latin America. Technology companies such as Facebook have scrambled to fend off the threat of new regulation since the Cambridge Analytica revelations. Other examples abound, across industries and around the globe. "Don't be evil" (Google's former motto) may be one motivation for these companies, but something more mundane is also at work: many companies believe they will do well, financially, if they do good, ethically. This course examines questions that lawyers in large law firms, corporations, NGOs, and government agencies regularly confront: --What does it mean for a company to "do good"? Should it care? --When does it serve a company's interest to take costly action to address human rights, labor, and environmental concerns? --What tactics have activists used to shift public opinion, media frames, and the law, and thereby change companies' incentives? We will learn through seminar-style discussion, lectures, role play, and small group exercises. Several guest speakers with experience in business, advocacy, or in between will provide insights from their experiences on the ground. Special Instructions: Students have the option to write a long research paper in lieu of the final exam with consent of instructor. Elements used in grading: Class Participation, Written Assignments; Final Exam or Final Paper. Cross-listed with the Law School (LAW 1047).

INTLPOL 361. Foundations of Internet Speech Platform Regulation. 3 Units.
(LAW 4051) Internet platforms like Google and Facebook play an enormous role in our online speech and information environment today. Review of laws that shape platforms' decisions about online content with primary focus on intermediary liability laws like the Digital Millennium Copyright Act (DMCA), Communications Decency Act Section 230 (CDA 230), and EU's eCommerce Directive. Majority of course material will be from the U.S., but some will explore international models and in particular recently enacted laws in the EU. Important themes include Constitutional and human rights constraints on intermediary liability laws; legal limits (or lack thereof) on platforms' enforcement of privatized speech rules under their Community Guidelines or Terms of Service; global enforcement of national laws requiring platforms to remove content; and tensions between goals of intermediary liability law and those of privacy, competition, and other legal frameworks. Students encouraged to think pragmatically about legal, operational, and product design choices platforms may make in response to particular laws, drawing on instructor's experience handling such questions as Associate General Counsel at Google. Open to law students and students in the Master's in International Policy (MIP) program. Enrollment cap at 35 students (25 students from SLS admitted by lottery; up to 10 from MIP admitted by instructor consent).

INTLPOL 362. Data: Privacy, Property and Security. 3 Units.
The collection, use and marketing of personal data are ubiquitous in the digital age. This seminar will explore the diverse legal regimes regulating personal data--including privacy, property and security--and the imperfect nature of their protections. Legal rules are rapidly evolving to address, if not resolve, the inevitable conflicts between privacy, property and security in relation to personal data. Laws have been enacted and new ones are under consideration at the national, state and even municipal levels, as well as around the world. Norms are emerging to guide these conflicts in the operation of business. Technology is evolving that can facilitate the protection, or accelerate the exploitation, of personal data. At the heart of all these developments is the question, who owns and controls personal data in the digital age. The same piece of data may in different hands raise different expectations. As an example, A may have a privacy expectation that her purchase from an online marketplace is no one's business but her own. B, the app that served as intermediary between the buyer and seller, may have a property or contract expectation that it owns the metadata and other information about A's buying habits. C, a government agency, may have a security interest in collecting or unearthing the details of A's purchase of particular items. This same triad of interests is implicated across a wide variety of highly sensitive personal data, such as location information, facial recognition and medical results. This seminar will explore these data rules, norms, technologies and conflicts through three sessions of lecture and interactive exercises addressed to privacy, property and security, respectively; four sessions devoted to presentations from leading representatives of consumer, corporate and government interests, with questioning by students in the class; and two sessions devoted to discussion of student answers to problem sets, focusing on an exploration of the privacy-property-security conflict and on forward-looking solutions to the protection of personal data. Elements used in grading: Attendance, class participation, final research paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. Non-law students will also need to submit the Non-Law Student Registration Information Form (Non-Law Student Registration Information). Cross-listed with LAW 4046.

INTLPOL 363. Confronting Misinformation Online: Law and Policy. 2 Units.
This course will examine contemporary challenges and trade-offs for tech law and policy decision-making presented by false information online. Topics will include policy and regulatory responses to election misinformation; medical misinformation; the spread of misinformation in armed conflict and situations of widespread human rights violations; and conspiracy theories and rumors in the areas of science, climate, religion, and politics. Along with the faculty, guest speakers from academia and industry thought leaders will present on these topics, followed by a discussion. In addition, students will analyze real-world dilemmas confronting policymakers through practical case studies and will assume the role of a policymaker as part of each class. Finally, this course will explore regulatory, policy, technological, and other solutions to enhance the integrity of the online information ecosystem and address the growing problem of false information online. Special Instructions: Up to five Law students, with the consent of the instructors, will have the option to write an independent research paper for Law School Research (R) credit. For students in this section (02), the research paper will replace the Final Policy Memo. All other elements used in grading will apply. Students taking the course for R credit can take the course for either 2 or 3 units, depending on the paper length. Elements used in grading: Attendance, Class Participation, Written Assignments; Final Policy Memo or Final Research Paper. Non-law students will also need to submit the Non-Law Student Registration Information Form (Non-Law Student Registration Information). Cross-listed with LAW 4053.

INTLPOL 371. Policy Practicum: Assessing the Impact of China's Global Infrastructure Spending on Climate Change. 2-3 Units.
(LAW 807O) Client: Steyer-Taylor Center for Energy Policy and Finance. China is investing in massive foreign-infrastructure construction, notably in emerging economies. Whether that infrastructure is high-carbon or low-carbon will largely determine the future of climate change. In this policy lab, students will advance research that is underway toward two sorts of deliverables: a data-analysis and data-visualization tool to map players, financing structures, and carbon emissions from Chinese-financed infrastructure projects; and a written account of how Chinese-financed infrastructure is playing out in those countries. Research will involve close interaction with officials at key infrastructure-financing institutions in China and around the world. Graduate students from any discipline at Stanford are invited to apply. Data-analysis skills, energy-finance understanding, and proficiency in Mandarin are useful skills for this work but are not required. To apply, submit Consent Application Form available on Stanford Law School website. Form includes instructions and submission deadline. See LAW listing for full description.

INTLPOL 801. TGR Project. 0 Units.
(Formerly IPS 801).

INTLPOL 802. TGR Dissertation. 0 Units.
(Formerly IPS 802).

INTERNATIONAL RELATIONS

Courses offered by the Program in International Relations (IR) are listed under the subject code INTNLREL (https://explorecourses.stanford.edu/search/?view=catalog&academicYear=&q=INTNLREL&filter-departmentcode-INTNLREL=on&filter-coursestatus-Active=on&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&page=0) on the Stanford Bulletin's ExploreCourses web site.

Mission of the Program in International Relations

The Program in International Relations (IR) offers an interdisciplinary undergraduate major, minor and honors program allowing students to explore how global, regional and domestic factors influence relations between actors on the world stage. The program equips students with the skills and knowledge necessary to analyze choices and challenges that arise in this arena. IR majors pursue study in world politics, including courses in Political Science, Economics, History, languages, and other fields focusing on issues such as international security, political economy, economic development, and democratization. The major prepares students for careers in government and the corporate sector, and for admission into graduate programs including, but not exclusive to law, business, economics, and political science.

Learning Outcomes (Undergraduate)

The program expects its undergraduate majors to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the Program in International Relations. Students are expected to demonstrate:

1. understanding of core knowledge necessary to understand contemporary world politics.
2. ability to analyze international issues and draw correct inferences using qualitative and/or quantitative analysis.
3. ability to write clearly and persuasively, communicating ideas clearly.
4. ability to evaluate theory and critique research within the discipline.

Bachelor of Arts in International Relations

In the undergraduate major program, students focus on political, economic, and cultural relations among peoples and states in the modern world. Students majoring in IR will pursue a course of study that includes classes in Political Science, Economics, History, languages and other fields. IR majors may focus on a range of issues including international security, international trade and finance, political and economic development as well as history, politics and culture of other countries and world regions. All IR majors must spend at least one quarter studying abroad and show proficiency in a foreign language.

Minor in International Relations

In the undergraduate minor program, students will also focus on political, economic, and cultural relations among peoples and states in the modern world. Students minoring in IR will pursue a condensed course of study that includes classes in Political Science, Economics, History, languages, and other fields. IR minors may focus on a range of issues including international security, international trade and finance, political and economic development as well as history, politics and culture of other countries and world regions. IR minors are not required to study abroad or show proficiency in a foreign language.

Honors Program

The International Relations honors program offers qualified students the opportunity to conduct a major independent research project under faculty guidance. Such a project requires a high degree of initiative and dedication, significant amounts of time and energy, and demonstrated skills in research and writing.

In their junior year, students should consult with prospective honors advisors, choose the courses that provide academic background in their areas of inquiry, and demonstrate an ability to conduct independent research. Students can also select to complete an Interdisciplinary honors thesis with other programs on campus.

Prerequisites for participation include a 3.5 grade point average (GPA), a strong overall academic record, good academic standing, successful experience in writing a research paper, and submission of an acceptable thesis proposal. Students should submit their honors thesis proposal late in Winter Quarter of the junior year; please check with the IR office for the exact deadline. Students are required to enroll in INTNLREL 200A International Relations Honors Field Research, in Spring Quarter of their junior year and should consider participating in Bing Honors College (https://undergrad.stanford.edu/programs/bhc/). In their senior year, honors students must enroll in INTNLREL 200B International Relations Honors Seminar in Autumn Quarter, INTNLREL 200C IR Honors Thesis Writing in Winter Quarter, and in research units through INTNLREL 198 Senior Thesis each quarter of their senior year (Autumn, Winter, and Spring) with their faculty advisor. Honors students present a formal defense of their theses in mid-May. Students must receive at least a grade of 'B+' in order to graduate with honors in International Relations.

Coterminal Programs in Related Fields

It is possible for students majoring in International Relations to work simultaneously for a coterminal master's degree in a number of related fields. Coterminal students should consult advisers in both departments or programs to ensure that they fulfill the degree requirements in both fields. For information on the M.A. program in International Policy, see the "International Policy (p. 1669)" section of this bulletin. University requirements for the coterminal M.A. are described in the "Coterminal Degree (p. 56)s" section of this bulletin. See also the Registrar's Coterminal Degree Programs (https://registrar.stanford.edu/students/coterminal-degree-programs/) pages.

Bachelor of Arts in International Relations

The International Relations (IR) major is designed to provide students with an interdisciplinary education of both foundational skills and specific knowledge necessary to analyze contemporary international relations.

Suggested Preparation for the Major

Prospective International Relations majors are advised to consider Thinking Matters courses that relate to international relations to satisfy a major requirement. Also recommended is any introductory seminar taught by International Relations affiliated faculty through Stanford Introductory Studies.

Degree Requirements

Students interested in majoring in International Relations are encouraged to declare during their sophomore year, but no later than the beginning of their junior year to ensure timely completion of the program. They are urged to discuss their plans with the undergraduate student services officer as early as possible, and to take recommended preparatory courses for the major in their freshman and sophomore years. To declare the major, students must fill out the Declaration of Major in Axess; choose a faculty advisor; and submit completed and acceptable program proposal forms to the Director of the Program in International Relations (IR). It is recommended that students meet with their faculty advisor at least once per academic year to discuss progress towards degree completion. Quarterly meetings are highly encouraged. Students completing a double major, or who have a minor, are also required to file a Major-Minor and Multiple Major Course Approval Form (https://

stanford.box.com/MajMin-MultMaj/) by the Final Study List deadline for the term in which the student intends to graduate.

With the exception of foreign language courses used to satisfy the two-year language requirement, which may be taken for CR/NC, all IR major courses, listed below, must be taken for a letter grade of 'C' or better. Transfer courses from universities outside of Stanford must receive a 'B-' or better to count towards degree requirements. Up to five units of Directed Reading can be counted towards major requirements. Up to three non-Stanford courses, for a maximum of fifteen units, may be counted towards degree requirements. Request for transfer credit, including course syllabi and official transcripts, should be submitted to the undergraduate student services officer, and to the Office of the Registrar's external credit evaluation section. Approval of such courses toward the major is at the discretion of the Faculty Director.

Students majoring in International Relations must complete a minimum of 70 units (30 units of core courses as well as 40 units of specialization courses). As part of the core curriculum, IR majors must take an Introductory economics course.

Students who took courses in previous years that are not featured in the below table should consult the Stanford Bulletin for the years in which the courses were taken.

Core Courses (30 units):

		Units
Required Courses:		
International Politics:		5
POLISCI 101	Introduction to International Relations	
Comparative Governance (Select one of the following):		5
HISTORY 102	History of the International System since 1914	
POLISCI 104	Introduction to Comparative Politics	
POLISCI 114D	Democracy, Development, and the Rule of Law	
American Foreign Policy (Select one of the following):		5
INTNLREL 154	The Cold War: An International History	
INTNLREL 168	America as a World Power in the Modern Era	
INTNLREL 168A	American Interventions, 1898-Present	
INTNLREL 173	Presidents and Foreign Policy in Modern History	
INTNLREL 174	Diplomacy on the Ground: Case Studies in the Challenges of Representing Your Country	
POLISCI 110C	America and the World Economy	
POLISCI 110D	War and Peace in American Foreign Policy	
POLISCI 110G	Governing the Global Economy	
POLISCI 214R	Challenges and Dilemmas in American Foreign Policy	
Introductory Economics (Select one of the following):		5
ECON 1	Principles of Economics	
ECON 50	Economic Analysis I	
ECON 51	Economic Analysis II	
ECON 52	Economic Analysis III	
Skills Classes (Select one of the following):		5
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	
POLISCI 150A	Data Science for Politics	
STATS 60	Introduction to Statistical Methods: Precalculus	
STATS 101	Data Science 101	
Applied Economics Courses (Select one of the following):		5
ECON 106	World Food Economy	
ECON 111	Money and Banking	
ECON 118	Development Economics	
ECON 124	Economic Development and Challenges of East Asia	
ECON 125	Economic Development, Microfinance, and Social Networks	
ECON 126	Economics of Health and Medical Care	
ECON 127	Economics of Health Improvement in Developing Countries	
ECON 131	The Chinese Economy	
ECON 141	Public Finance and Fiscal Policy	
ECON 143	Finance, Corporations, and Society	
ECON 149	The Modern Firm in Theory and Practice	
ECON 150	Economic Policy Analysis	
ECON 155	Environmental Economics and Policy	
ECON 162	Games Developing Nations Play	
ECON 165	International Finance	
ECON 166	International Trade	
EDUC 306A	Economics of Education in the Global Economy	
HISTORY 200E	Doing Economic History	
INTLPOL 207	Economics of Corruption	
INTNLREL 110C	America and the World Economy	
INTNLREL 118S	Political Economy of International Trade and Investment	
INTNLREL 123	The Future of the European Union: Challenges and Opportunities	
INTNLREL 147	Political Economy of the Southern Cone Countries of South America	
OSPBER 82	Globalization and Germany	
OSPFLOR 26	Economics of the EU	
OSPMADRD 54	Contemporary Spanish Economy and the European Union	
OSPPARIS 91	The Future of Globalization: Economics, Politics and the Environment	
OSPSANTG 119X	The Chilean Economy: History, International Relations, and Development Strategies	
POLISCI 110C	America and the World Economy	
POLISCI 110G	Governing the Global Economy	
POLISCI 110X	America and the World Economy	
POLISCI 213R	Political Economy of Financial Crisis	
POLISCI 218S	Political Economy of International Trade and Investment	
POLISCI 241A	Political Economy of Development	
SIW 103	Economic Growth and Development Patterns, Policies, and Prospects	
SOC 114	Economic Sociology	
Total Units		30

Specialization Courses (40 units):

The eleven specializations are:

1. Africa
2. Comparative International Governance
3. East and South Asia
4. Economic Development/World Economy
5. Environment, Energy, and Natural Resources

6. Europe (East and West) & Russia
7. International History and Culture
8. International Security
9. Latin America and Iberian Studies
10. Middle East and Central Asia
11. Social Development/Human Well-Being

Students must take 40 units of specialization courses in order to meet the 70 units required for the major. 20-25 units must be from the student's primary specialization; 15-20 units from the secondary specialization. Functional specializations are not declared on Axess nor are they printed on the diploma or transcript.

The following courses are approved for each functional specialization.

Africa

Crosslisted courses may appear in the list below multiple times. Crosslisted courses may only be taken once for credit.

		Units
AFRICAAM 49S	African Futures: Nationalism, Pan-Africanism, and Beyond	5
AFRICAAM 133	Literature and Society in Africa and the Caribbean	4
AFRICAAM 145B	Africa in the 20th Century	5
AFRICAST 111	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 112	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
AFRICAST 127	African Art and Politics, c. 1900 - Present	4
AFRICAST 132	Literature and Society in Africa and the Caribbean	4
AFRICAST 135	Designing Research-Based Interventions to Solve Global Health Problems	3-4
AFRICAST 211	Education for All? The Global and Local in Public Policy Making in Africa	3-5
ANTHRO 27N	Ethnicity and Violence: Anthropological Perspectives	3-5
ARTHIST 127A	African Art and Politics, c. 1900 - Present	4
COMPLIT 133A	Literature and Society in Africa and the Caribbean	4
COMPLIT 233A	Literature and Society in Africa and the Caribbean	4
CSRE 133E	Literature and Society in Africa and the Caribbean	4
FRENCH 133	Literature and Society in Africa and the Caribbean	4
HISTORY 45B	Africa in the 20th Century	3
HISTORY 48Q	South Africa: Contested Transitions	4
HISTORY 106A	Global Human Geography: Asia and Africa	5
HISTORY 145B	Africa in the 20th Century	5
HISTORY 146	History of Humanitarian Aid in sub-Saharan Africa	4-5
HISTORY 147	History of South Africa	5
INTNLREL 62Q	Mass Atrocities: Reckoning and Reconciliation	3
OSPCPTWN 10	Climate Change and Political Violence	4
OSPCPTWN 30	Introduction to Contemporary Issues in South Africa	2
OSPCPTWN 38	Genocide: African Experiences in Comparative Perspective	3-5
OSPCPTWN 45	Transitional Justice and Transformation Debates in South Africa	4
POLISCI 146A	African Politics	4-5
THINK 42	Thinking Through Africa: Perspectives on Health, Wealth, and Well-Being	4

Comparative International Governance

Crosslisted courses may appear in the list below multiple times. Crosslisted courses may only be taken once for credit.

		Units
COMM 180	Ethics, Public Policy, and Technological Change	5
CS 182	Ethics, Public Policy, and Technological Change	5
EARTHSYS 61Q	Food and security	3
EARTHSYS 112	Human Society and Environmental Change	4
EASTASN 162	Seminar on the Evolution of the Modern Chinese State, 1550-Present	3-5
ESS 61Q	Food and security	3
ETHICSOC 131S	Modern Political Thought: Machiavelli to Marx and Mill	5
ETHICSOC 182	Ethics, Public Policy, and Technological Change	5
GERMAN 270	Sovereignty and the Limits of Globalization and Technology	3-5
HISTORY 48Q	South Africa: Contested Transitions	4
HISTORY 173	Mexican Migration to the United States	3-5
HISTORY 181B	Formation of the Contemporary Middle East	5
HISTORY 187	The Islamic Republics: Politics and Society in Iran, Afghanistan and Pakistan	5
HISTORY 202G	Peoples, Armies and Governments of the Second World War	4-5
HISTORY 204E	Totalitarianism	4-5
HISTORY 205K	The Age of Revolution: America, France, and Haiti	4-5
HISTORY 207B	Environment, Technology and Revolution in World History	4-5
HISTORY 224C	Genocide and Humanitarian Intervention	3
HUMRTS 106	Human Rights in Comparative and Historical Perspective	3-5
INTLPOL 203	Trade and Development	3-5
INTLPOL 217	The Future of Global Cooperation	3-4
INTLPOL 231B	Understanding Russia: Its Power and Purpose in a New Global Order	5
INTNLREL 60Q	United Nations Peacekeeping	3
INTNLREL 61Q	Food and security	3
INTNLREL 63Q	International Organizations and Accountability	3
INTNLREL 64Q	Leadership and International Organizations	3
INTNLREL 114D	Democracy, Development, and the Rule of Law	3-5
INTNLREL 122	Introduction to European Studies	5
INTNLREL 124	Immigration Issues in Europe	4-5
INTNLREL 135A	International Environmental Law and Policy: Oceans and Climate Change	4-5
INTNLREL 140A	International Law and International Relations	4-5
INTNLREL 140C	The U.S., U.N. Peacekeeping, and Humanitarian War	4-5

INTNLREL 145	Genocide and Humanitarian Intervention	4
INTNLREL 160	United Nations Peacekeeping	4
INTNLREL 180A	Transitional Justice, Human Rights, and International Criminal Tribunals	3-5
LAW 5005	European Union Law	2-3
OSPBER 71	EU in Crisis	4-5
OSPBER 79	Political Economy of Germany in Europe: an Historical-Comparative Perspective	4-5
OSPFLOR 78	The Impossible Experiment: Politics and Policies of the New European Union	5
OSPMADRD 48	Migration and Multiculturality in Spain	4
OSPOXFRD 36	Creating English Democracy	4-5
OSPPARIS 32	French History and Politics: Understanding the Present through the Past	5
OSPPARIS 91	The Future of Globalization: Economics, Politics and the Environment	5
OSPPARIS 122X	Europe and its Challenges Today	4
OSPSANTG 20	Comparative Law & Society: Conflicts in the Structuring of Democratic Polities across Latin America	4-5
OSPSANTG 68	The Emergence of Nations in Latin America	4-5
OSPSANTG 116X	Modernization and its Discontents: Chilean Politics at the Turn of the Century	5
PHIL 82	Ethics, Public Policy, and Technological Change	5
POLISCI 18N	Civil War and International Politics: Syria in Context	3
POLISCI 110G	Governing the Global Economy	5
POLISCI 130	20th Century Political Theory: Liberalism and its Critics	5
POLISCI 140P	Populism and the Erosion of Democracy	5
POLISCI 143S	Comparative Corruption	3
POLISCI 146A	African Politics	4-5
POLISCI 147	Comparative Democratic Development	5
POLISCI 148	Chinese Politics	3-5
POLISCI 149T	Middle Eastern Politics	5
POLISCI 182	Ethics, Public Policy, and Technological Change	5
POLISCI 212X	Civil War and International Politics: Syria in Context	5
POLISCI 214R	Challenges and Dilemmas in American Foreign Policy	5
POLISCI 215A	Special Topics: State-Society Relations in the Contemporary Arab World-Key Concepts and Debates	5
POLISCI 216	State Building	5
POLISCI 237S	Civil Society and Democracy in Comparative Perspective	5
POLISCI 240T	Democracy, Promotion, and American Foreign Policy	5
POLISCI 244	An Introduction to Political Development	5
POLISCI 244U	Political Culture	3-5
POLISCI 245R	Politics in Modern Iran	5
POLISCI 246A	Paths to the Modern World: The West in Comparative Perspective	3-5
POLISCI 247G	Governance and Poverty	5
POLISCI 248S	Latin American Politics	3-5
PUBLPOL 182	Ethics, Public Policy, and Technological Change	5
SINY 144	The UN in Action	4
SIW 119	U. S. and Europe: Cooperation or Competition?	5
THINK 51	The Spirit of Democracy	4

East and South Asia

Crosslisted courses may appear in the list below multiple times. Crosslisted courses may only be taken once for credit.

		Units
CHINA 112	Tiananmen Square: History, Literature, Iconography	3-5
CHINA 115	Sex, Gender, and Power in Modern China	3-5
CHINA 157	Science, Power, and Knowledge: East Asia to 1900	3-5
EARTHSYS 138	International Urbanization Seminar: Cross-Cultural Collaboration for Sustainable Urban Development	4-5
EASTASN 77	Divided Memories & Reconciliation: the formation of wartime historical memory in the Pacific	4
EASTASN 94	The Rise of China in World Affairs	3-5
EASTASN 117	Health and Healthcare Systems in East Asia	3-5
EASTASN 162	Seminar on the Evolution of the Modern Chinese State, 1550-Present	3-5
EASTASN 168	Taiwan Security Issues	3-5
EASTASN 189K	Korea and the World	3
EASTASN 277	Divided Memories & Reconciliation: the formation of wartime historical memory in the Pacific	4
EASTASN 285	The United States, China, & Global Security	2
EASTASN 289K	Korea and the World	3
EASTASN 297	The International Relations of Asia since World War II	3-5
ECON 124	Economic Development and Challenges of East Asia	3-5
ECON 131	The Chinese Economy	4
FILMSTUD 134	The Art Cinema of India	5
FILMSTUD 334	The Art Cinema of India	5
HISTORY 67S	The Vietnam War/The American War	5
HISTORY 95	Modern Korean History	3
HISTORY 98	The History of Modern China	3
HISTORY 98S	Crime and Punishment in Late Imperial China: Law, State Formation, and Society	5
HISTORY 106A	Global Human Geography: Asia and Africa	5
HISTORY 195	Modern Korean History	4-5
HISTORY 195C	Modern Japanese History: From Samurai to Pokemon	5
HISTORY 197	Southeast Asia: From Antiquity to the Modern Era	3-5
HISTORY 198	The History of Modern China	5
HISTORY 290	North Korea in Historical Perspective	4-5
HISTORY 292D	Japan in Asia, Asia in Japan	4-5
HISTORY 297	The Cold War and East Asia	5
HISTORY 297F	Religion and Power in the Making of Modern South Asia	3-5
HISTORY 392D	Japan in Asia, Asia in Japan	4-5
HISTORY 397	The Cold War and East Asia	5
INTLPOL 244	U.S. Policy toward Northeast Asia	4

INTLPOL 246	China's Foreign Policies: Objectives, Instruments, and Impacts	4
INTNLREL 143	State and Society in Korea	4
JAPAN 125	Tokyo, Kyoto, Osaka and beyond: place in modern Japan	2-5
OSPKYOTO 13	Contemporary Religion in Japan's Ancient Capital: Sustaining and Recasting Tradition	3-4
POLISCI 148	Chinese Politics	3-5
RELIGST 56	Exploring Chinese Religions	4
SOC 111	State and Society in Korea	4
SOC 117A	China Under Mao	5
SOC 211	State and Society in Korea	4
SOC 217A	China Under Mao	5
THINK 55	Understanding China through Film	4

Economic Development/World Economy

Crosslisted courses may appear in the list below multiple times. Crosslisted courses may only be taken once for credit.

		Units
BIOMEDIN 156	Economics of Health and Medical Care	5
CEE 107A	Understanding Energy	3-5
EARTHSYS 41N	The Global Warming Paradox	3
EARTHSYS 103	Understanding Energy	3-5
EARTHSYS 106	World Food Economy	5
EARTHSYS 112	Human Society and Environmental Change	4
ECON 106	World Food Economy	5
ECON 111	Money and Banking	5
ECON 118	Development Economics	5
ECON 124	Economic Development and Challenges of East Asia	3-5
ECON 125	Economic Development, Microfinance, and Social Networks	5
ECON 126	Economics of Health and Medical Care	5
ECON 127	Economics of Health Improvement in Developing Countries	5
ECON 131	The Chinese Economy	4
ECON 141	Public Finance and Fiscal Policy	5
ECON 143	Finance, Corporations, and Society	4
ECON 149	The Modern Firm in Theory and Practice	5
ECON 150	Economic Policy Analysis	4-5
ECON 155	Environmental Economics and Policy	5
ECON 159	Economic, Legal, and Political Analysis of Climate-Change Policy	5
ECON 162	Games Developing Nations Play	3-5
ECON 165	International Finance	5
ECON 166	International Trade	5
GERMAN 109	The End of Europe (as we know it) - Germany and the Future of the European Union	3-5
HISTORY 200E	Doing Economic History	5
HISTORY 201A	The Global Drug Wars	4-5
HISTORY 202B	Coffee, Sugar, and Chocolate: Commodities and Consumption in World History, 1200-1800	4-5
INTLPOL 203	Trade and Development	3-5
INTNLREL 110C	America and the World Economy	5
INTNLREL 114D	Democracy, Development, and the Rule of Law	3-5
INTNLREL 118S	Political Economy of International Trade and Investment	5
INTNLREL 123	The Future of the European Union: Challenges and Opportunities	5
INTNLREL 135A	International Environmental Law and Policy: Oceans and Climate Change	4-5
INTNLREL 147	Political Economy of the Southern Cone Countries of South America	5
MED 262	Economics of Health Improvement in Developing Countries	5
MS&E 185	Global Work	4
MS&E 271	Global Entrepreneurial Marketing	3-4
OSPBER 79	Political Economy of Germany in Europe: an Historical-Comparative Perspective	4-5
OSPBER 82	Globalization and Germany	4-5
OSPBER 126X	A People's Union? Money, Markets, and Identity in the EU	4-5
OSPFLOR 26	Economics of the EU	5
OSPFLOR 78	The Impossible Experiment: Politics and Policies of the New European Union	5
OSPMADRD 54	Contemporary Spanish Economy and the European Union	4
OSPPARIS 91	The Future of Globalization: Economics, Politics and the Environment	5
OSPPARIS 122X	Europe and its Challenges Today	4
OSPSANTG 119X	The Chilean Economy: History, International Relations, and Development Strategies	5
POLISCI 110C	America and the World Economy	5
POLISCI 110G	Governing the Global Economy	5
POLISCI 110X	America and the World Economy	5
POLISCI 143S	Comparative Corruption	3
POLISCI 213R	Political Economy of Financial Crisis	5
POLISCI 218S	Political Economy of International Trade and Investment	5
POLISCI 241A	Political Economy of Development	5
POLISCI 247G	Governance and Poverty	5
PUBLPOL 104	Economic Policy Analysis	4-5
PUBLPOL 107	Public Finance and Fiscal Policy	5
PUBLPOL 204	Economic Policy Analysis	4-5
SIW 103	Economic Growth and Development Patterns, Policies, and Prospects	5
SOC 114	Economic Sociology	4
SOC 137	Global Inequality	4
SOC 177D	Economic Elites in the 21st Century	3-5

Environment, Energy, and Natural Resources

Crosslisted courses may appear in the list below multiple times. Crosslisted courses may only be taken once for credit.

		Units
ANTHRO 123B	Government of Water and Crisis: Corporations, States and the Environment	3-5
ANTHRO 123C	"Third World Problems?" Environmental Anthropology and the Intersectionality of Justice	3-4
ANTHRO 135B	Waste Politics: Contesting Toxicity, Value, and Power	3
ANTHRO 166	Political Ecology of Tropical Land Use: Conservation, Natural Resource Extraction, and Agribusiness	3-5

ANTHRO 266	Political Ecology of Tropical Land Use: Conservation, Natural Resource Extraction, and Agribusiness	3-5
BIO 117	Biology and Global Change	4
BIO 138	Ecosystem Services: Frontiers in the Science of Valuing Nature	3
BIO 179	Integrated Valuation of Ecosystem Services and Tradeoffs	1-3
BIO 238	Ecosystem Services: Frontiers in the Science of Valuing Nature	3
BIOHOPK 187H	Sensory Ecology	4
BIOHOPK 287H	Sensory Ecology	4
CEE 64	Air Pollution and Global Warming: History, Science, and Solutions	3
CEE 70	Environmental Science and Technology	3
CEE 107A	Understanding Energy	3-5
CEE 107S	Understanding Energy - Essentials	3-4
CEE 146S	Engineering Economics and Sustainability	3
CEE 171G	Environmental & Ecological Economics	3
CEE 175A	California Coast: Science, Policy, and Law	3-4
CEE 207A	Understanding Energy	3-5
CEE 263D	Air Pollution and Global Warming: History, Science, and Solutions	3
CEE 275A	California Coast: Science, Policy, and Law	3-4
CHEMENG 60Q	Environmental Regulation and Policy	3
CSRE 125E	Shades of Green: Redesigning and Rethinking the Environmental Justice Movements	3-5
EARTH 2	Climate and Society	3
EARTHSYS 10	Introduction to Earth Systems	4
EARTHSYS 41N	The Global Warming Paradox	3
EARTHSYS 46N	Exploring the Critical Interface between the Land and Monterey Bay: Elkhorn Slough	3
EARTHSYS 61Q	Food and security	3
EARTHSYS 101	Energy and the Environment	3
EARTHSYS 102	Fundamentals of Renewable Power	3
EARTHSYS 103	Understanding Energy	3-5
EARTHSYS 104	The Water Course	4
EARTHSYS 105	Food and Community: Food Security, Resilience and Equity	2-3
EARTHSYS 106	World Food Economy	5
EARTHSYS 107	Control of Nature	3
EARTHSYS 111	Biology and Global Change	4
EARTHSYS 112	Human Society and Environmental Change	4
EARTHSYS 114	Global Change and Emerging Infectious Disease	4-5
EARTHSYS 125	Shades of Green: Redesigning and Rethinking the Environmental Justice Movements	3-5
EARTHSYS 139	Ecosystem Services: Frontiers in the Science of Valuing Nature	3
EARTHSYS 159	Economic, Legal, and Political Analysis of Climate-Change Policy	5
EARTHSYS 185	Feeding Nine Billion	4-5
EARTHSYS 188	Social and Environmental Tradeoffs in Climate Decision-Making	1-2
EARTHSYS 196	Implementing Climate Solutions at Scale	3
EARTHSYS 205	Food and Community: Food Security, Resilience and Equity	2-3
EARTHSYS 214	Global Change and Emerging Infectious Disease	4-5
EARTHSYS 225	Shades of Green: Redesigning and Rethinking the Environmental Justice Movements	3-5
EARTHSYS 239	Ecosystem Services: Frontiers in the Science of Valuing Nature	3
EARTHSYS 243	Environmental Advocacy and Policy Communication	3
EARTHSYS 288	Social and Environmental Tradeoffs in Climate Decision-Making	1-2
EARTHSYS 296	Implementing Climate Solutions at Scale	3
ECON 17N	Energy, the Environment, and the Economy	3
ECON 106	World Food Economy	5
ECON 155	Environmental Economics and Policy	5
ECON 159	Economic, Legal, and Political Analysis of Climate-Change Policy	5
ECON 209	Economic, Legal, and Political Analysis of Climate-Change Policy	5
EE 60N	Man versus Nature: Coping with Disasters Using Space Technology	4
ENERGY 101	Energy and the Environment	3
ENERGY 102	Fundamentals of Renewable Power	3
ENGR 60	Engineering Economics and Sustainability	3
ENGR 90	Environmental Science and Technology	3
ENVRES 250	Environmental Governance	3
ESS 46N	Exploring the Critical Interface between the Land and Monterey Bay: Elkhorn Slough	3
ESS 61Q	Food and security	3
ESS 107	Control of Nature	3
ESS 111	Biology and Global Change	4
ESS 112	Human Society and Environmental Change	4
GEOPHYS 60N	Man versus Nature: Coping with Disasters Using Space Technology	4
HISTORY 103D	Human Society and Environmental Change	4
HUMBIO 3B	Environmental and Health Policy Analysis	5
HUMBIO 114	Global Change and Emerging Infectious Disease	4-5
INTNLREL 61Q	Food and security	3
INTNLREL 135A	International Environmental Law and Policy: Oceans and Climate Change	4-5
INTNLREL 146A	Energy and Climate Cooperation in the Western Hemisphere	4
MS&E 92Q	International Environmental Policy	3
OSPAUSTL 10	Coral Reef Ecosystems	3
OSPCPTWN 10	Climate Change and Political Violence	4
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America	5
PUBLPOL 159	Economic, Legal, and Political Analysis of Climate-Change Policy	5
STS 190	Environment and Society	4

Europe (East and West) & Russia

Crosslisted courses may appear in the list below multiple times. Crosslisted courses may only be taken once for credit.

		Units
AFRICAAM 133	Literature and Society in Africa and the Caribbean	4

CSRE 133E	Literature and Society in Africa and the Caribbean	4
ENGLISH 145D	Jewish American Literature and Film	5
FEMGEN 115	Queer Reading and Queer Writing in Early Modern England	5
FRENCH 120	Coffee and Cigarettes: The Making of French Intellectual Culture	4-5
FRENCH 132	Literature, Revolutions, and Changes in 19th- and 20th-Century France	4
FRENCH 133	Literature and Society in Africa and the Caribbean	4
FRENCH 140	Paris: Capital of the Modern World	4-5
GERMAN 101	Germany in 5 Words	3-5
GERMAN 109	The End of Europe (as we know it) - Germany and the Future of the European Union	3-5
GERMAN 120	Contemporary Politics in Germany	3-5
HISTORY 106B	Global Human Geography: Europe and Americas	5
HISTORY 110C	The Problem of Modern Europe	5
HISTORY 139	Modern Britain and the British Empire	5
HISTORY 185B	Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV	4-5
HISTORY 219C	Science, Technology, and Modernity in the Soviet Union	5
HISTORY 224A	The Soviet Civilization	4-5
HISTORY 227D	All Quiet on the Eastern Front? East Europe and Russia in the First World War	3-5
HISTORY 228	Circles of Hell: Poland in World War II	5
HISTORY 230C	Paris: Capital of the Modern World	4-5
HISTORY 284	The Ottoman Empire: Conquest, Coexistence, and Coffee	4-5
ILAC 130	Introduction to Iberia: Cultural Perspectives	3-5
ILAC 136	Modern Iberian Literatures	3-5
ILAC 193	The Cinema of Pedro Almodovar	3-5
INTLPOL 231B	Understanding Russia: Its Power and Purpose in a New Global Order	5
INTNLREL 122	Introduction to European Studies	5
INTNLREL 123	The Future of the European Union: Challenges and Opportunities	5
INTNLREL 124	Immigration Issues in Europe	4-5
ITALIAN 129	19th and 20th Century Literature and Culture: Constructing and Re-Constructing Italy	4
ITALIAN 155	The Mafia in Society, Film, and Fiction	4
JEWISHST 155D	Jewish American Literature and Film	5
JEWISHST 185B	Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV	4-5
JEWISHST 282	Circles of Hell: Poland in World War II	5
OSPBER 17	Split Images: A Century of Cinema	3-4
OSPBER 60	Cityscape as History: Architecture and Urban Design in Berlin	5
OSPBER 70	The Long Way to the West: German History from the 18th Century to the Present	4-5
OSPBER 71	EU in Crisis	4-5
OSPBER 77	"Ich bin ein Berliner" Lessons of Berlin for International Politics	4-5
OSPBER 79	Political Economy of Germany in Europe: an Historical-Comparative Perspective	4-5
OSPBER 82	Globalization and Germany	4-5
OSPBER 126X	A People's Union? Money, Markets, and Identity in the EU	4-5
OSPBER 174	Sports, Culture, and Gender in Comparative Perspective	3-5
OSPFLOR 15	The Italy Around You: Society, Politics, the Arts and the Economy	3
OSPFLOR 26	Economics of the EU	5
OSPFLOR 45	Europe: The State of the Union	2
OSPFLOR 48	Sharing Beauty in Florence: Collectors, Collections and the Shaping of the Western Museum Tradition	4
OSPFLOR 49	On-Screen Battles: Filmic Portrayals of Fascism and World War II	5
OSPFLOR 65	Exclusion/Inclusion Processes of Migrants in Italian Society	5
OSPFLOR 78	The Impossible Experiment: Politics and Policies of the New European Union	5
OSPFLOR 111Y	From Giotto to Michelangelo: The Birth and Flowering of Renaissance Art in Florence	4
OSPMADRD 54	Contemporary Spanish Economy and the European Union	4
OSPMADRD 57	Health Care: A Contrastive Analysis between Spain and the U.S.	4
OSPMADRD 61	Society and Cultural Change: The Case of Spain	4
OSPMADRD 72	Issues in Bioethics Across Cultures	4
OSPMADRD 74	Islam in Spain and Europe: 1300 Years of Contact	4
OSPMADRD 75	Sefarad: The Jewish Community in Spain	4
OSPOXFRD 36	Creating English Democracy	4-5
OSPOXFRD 117W	Gender and Social Change in Modern Britain	4-5
OSPPARIS 32	French History and Politics: Understanding the Present through the Past	5
OSPPARIS 91	The Future of Globalization: Economics, Politics and the Environment	5
OSPPARIS 122X	Europe and its Challenges Today	4
POLISCI 246A	Paths to the Modern World: The West in Comparative Perspective	3-5
SLAVIC 147	Modern Russian Literature and Culture: The Age of War and Revolution	3-5
SLAVIC 148	Slavic Literature and Culture since the Death of Stalin	3-5

International History and Culture

Crosslisted courses may appear in the list below multiple times. Crosslisted courses may only be taken once for credit.

		Units
AFRICAAM 49S	African Futures: Nationalism, Pan-Africanism, and Beyond	5
AFRICAAM 133	Literature and Society in Africa and the Caribbean	4
ANTHRO 1	Introduction to Cultural and Social Anthropology	3-5
ANTHRO 16	Native Americans in the 21st Century: Encounters, Identity, and Sovereignty in Contemporary America	5

ANTHRO 147B	World Heritage in Global Conflict	5
ARCHLGY 173	Heritage Institutions Inside Out: The Power of Bureaucracies	5
ARTHIST 1A	Decolonizing the Western Canon: Introduction to Art and Architecture from Prehistory to Medieval	5
ARTHIST 1B	How to Look at Art and Why: An Introduction to the History of Western Painting	5
ARTHIST 106	Byzantine Art and Architecture, 300-1453 C.E.	5
ARTHIST 190A	Indigenous Cultural Heritage: Protection, Practice, Repatriation	3
ARTHIST 203	Artists, Athletes, Courtesans and Crooks	5
CHINA 157	Science, Power, and Knowledge: East Asia to 1900	3-5
CLASSICS 163	Artists, Athletes, Courtesans and Crooks	5
CLASSICS 391	Early Empires: Han and Rome	4-5
COMPLIT 100	CAPITALS: How Cities Shape Cultures, States, and People	3-5
COMPLIT 145	Reflection on the Other: The Arab Israeli Conflict in Literature and Film	3-5
COMPLIT 237	Fascism after Fascism	3-5
COMPLIT 249A	The Iranian Cinema: Image and Meaning	1-3
CSRE 133E	Literature and Society in Africa and the Caribbean	4
DLCL 100	CAPITALS: How Cities Shape Cultures, States, and People	3-5
EASTASN 77	Divided Memories & Reconciliation: the formation of wartime historical memory in the Pacific	4
EASTASN 189K	Korea and the World	3
EASTASN 277	Divided Memories & Reconciliation: the formation of wartime historical memory in the Pacific	4
ENGLISH 145D	Jewish American Literature and Film	5
FEMGEN 101	Introduction to Feminist, Gender, and Sexuality Studies	4-5
FILMSTUD 134	The Art Cinema of India	5
FILMSTUD 135	Around the World in Ten Films	3-4
FILMSTUD 334	The Art Cinema of India	5
FRENCH 130	Introduction to Medieval and Renaissance French Literature	4
FRENCH 131	Absolutism, Enlightenment, and Revolution in 17th- and 18th-Century France	4
FRENCH 132	Literature, Revolutions, and Changes in 19th- and 20th-Century France	4
FRENCH 133	Literature and Society in Africa and the Caribbean	4
FRENCH 140	Paris: Capital of the Modern World	4-5
FRENCH 175	CAPITALS: How Cities Shape Cultures, States, and People	3-5
FRENCH 205	Songs of Love and War: Gender, Crusade, Politics	3-5
FRENCH 228E	Getting Through Proust	3-5
FRENCH 265	The Problem of Evil in Literature, Film, and Philosophy	3-5
GERMAN 120	Contemporary Politics in Germany	3-5
GERMAN 131	What is German Literature?	3-5
GERMAN 132	History and Politics of the Future in Germany, 1900-Present	3-5
GERMAN 133	Marx, Nietzsche, Freud	3-5
GERMAN 175	CAPITALS: How Cities Shape Cultures, States, and People	3-5
GERMAN 222	Myth and Modernity	3-5
GLOBAL 249A	The Iranian Cinema: Image and Meaning	1-3
HISTORY 50C	The United States in the Twentieth Century	3
HISTORY 67S	The Vietnam War/The American War	5
HISTORY 86Q	Blood and Money: The Origins of Antisemitism	4-5
HISTORY 102	History of the International System since 1914	5
HISTORY 103F	The Changing Face of War: Introduction to Military History	3-5
HISTORY 110C	The Problem of Modern Europe	5
HISTORY 113	Before Globalization: Understanding Premodern World History	3-5
HISTORY 139	Modern Britain and the British Empire	5
HISTORY 145B	Africa in the 20th Century	5
HISTORY 147	History of South Africa	5
HISTORY 150C	The United States in the Twentieth Century	5
HISTORY 152K	America as a World Power in the Modern Era	5
HISTORY 177D	U.S. Intervention and Regime Change in 20th Century Latin America	5
HISTORY 178	Film and History of Latin American Revolutions and Counterrevolutions	3-5
HISTORY 181B	Formation of the Contemporary Middle East	5
HISTORY 185B	Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV	4-5
HISTORY 187	The Islamic Republics: Politics and Society in Iran, Afghanistan and Pakistan	5
HISTORY 194B	Japan in the Age of the Samurai	5
HISTORY 198	The History of Modern China	5
HISTORY 200E	Doing Economic History	5
HISTORY 202B	Coffee, Sugar, and Chocolate: Commodities and Consumption in World History, 1200-1800	4-5
HISTORY 202G	Peoples, Armies and Governments of the Second World War	4-5
HISTORY 204E	Totalitarianism	4-5
HISTORY 204G	War and Society	4-5
HISTORY 205K	The Age of Revolution: America, France, and Haiti	4-5
HISTORY 206C	The Modern Battle	5
HISTORY 206E	CAPITALS: How Cities Shape Cultures, States, and People	3-5
HISTORY 227D	All Quiet on the Eastern Front? East Europe and Russia in the First World War	3-5
HISTORY 230C	Paris: Capital of the Modern World	4-5
HISTORY 243G	Tobacco and Health in World History	4-5
HISTORY 281K	Departures: Late Ottoman Displacements of Muslims, Christians, and Jews, 1853-1923	5
HISTORY 284	The Ottoman Empire: Conquest, Coexistence, and Coffee	4-5
HISTORY 284F	Empires, Markets and Networks: Early Modern Islamic World Between Europe and China, 1400-1900	4-5

HISTORY 292D	Japan in Asia, Asia in Japan	4-5
HUMRTS 106	Human Rights in Comparative and Historical Perspective	3-5
ILAC 130	Introduction to Iberia: Cultural Perspectives	3-5
ILAC 131	Introduction to Latin America: Cultural Perspectives	3-5
ILAC 136	Modern Iberian Literatures	3-5
ILAC 157	Medieval and Early Modern Iberian Literatures	3-5
ILAC 161	Modern Latin American Literature	3-5
ILAC 175	CAPITALS: How Cities Shape Cultures, States, and People	3-5
ILAC 193	The Cinema of Pedro Almodovar	3-5
ILAC 278A	Senior Seminar: The Iberian Pastoral	3-5
INTNLREL 5C	Human Trafficking: Historical, Legal, and Medical Perspectives	3
INTNLREL 103F	The Changing Face of War: Introduction to Military History	3-5
INTNLREL 105C	Human Trafficking: Historical, Legal, and Medical Perspectives	5
INTNLREL 154	The Cold War: An International History	5
INTNLREL 168	America as a World Power in the Modern Era	5
INTNLREL 168A	American Interventions, 1898-Present	5
INTNLREL 168W	America as a World Power in the Modern Era	5
INTNLREL 173	Presidents and Foreign Policy in Modern History	5
INTNLREL 174	Diplomacy on the Ground: Case Studies in the Challenges of Representing Your Country	5
INTNLREL 175	American Empire in the Pacific	3
INTNLREL 179	Major Themes in U.S.-Latin America Diplomatic History	5
INTNLREL 182	The Great War	5
INTNLREL 183	The Modern Battle	5
ITALIAN 101	Italy: The Good, the Bad and the Ugly	3
ITALIAN 127	Inventing Italian Literature: Dante, Boccaccio, Petrarca	4
ITALIAN 128	The Italian Renaissance and the Path to Modernity	4
ITALIAN 129	19th and 20th Century Literature and Culture: Constructing and Re-Constructing Italy	4
ITALIAN 152	Boccaccio's Decameron: The Ethics of Storytelling	3-5
ITALIAN 175	CAPITALS: How Cities Shape Cultures, States, and People	3-5
LINGUIST 167	Languages of the World	3-4
MUSIC 7B	Musical Cultures of the World	2-3
OSPBER 17	Split Images: A Century of Cinema	3-4
OSPBER 70	The Long Way to the West: German History from the 18th Century to the Present	4-5
OSPBER 77	"Ich bin ein Berliner" Lessons of Berlin for International Politics	4-5
OSPFLOR 15	The Italy Around You: Society, Politics, the Arts and the Economy	3
OSPFLOR 34	The Virgin Mother, Goddess of Beauty, Grand Duchess, and the Lady: Women in Florentine Art	4
OSPFLOR 48	Sharing Beauty in Florence: Collectors, Collections and the Shaping of the Western Museum Tradition	4
OSPFLOR 49	On-Screen Battles: Filmic Portrayals of Fascism and World War II	5
OSPFLOR 64	Colonial Heritage, Euro-Mediterranean Relations, Migrations, Multiculturalism	5
OSPFLOR 111Y	From Giotto to Michelangelo: The Birth and Flowering of Renaissance Art in Florence	4
OSPFLOR 115Y	Building the Cathedral and the Town Hall: Constructing and Deconstructing Symbols of a Civilization	4
OSPKYOCT 142	Japan in East Asia	6
OSPKYOTO 13	Contemporary Religion in Japan's Ancient Capital: Sustaining and Recasting Tradition	3-4
OSPMADRD 43	The Jacobean Star Way and Europe: Society, Politics and Culture	5
OSPMADRD 47	Cultural Relations between Spain and the United States:Historical Perceptions and Influences, 1776-2	4
OSPMADRD 74	Islam in Spain and Europe: 1300 Years of Contact	4
OSPMADRD 80	Word, Image and Power	4
OSPOXFRD 76	Access, Distinction and Material Culture through Coffee	4-5
OSPPARIS 30	The Avant Garde in France through Literature, Art, and Theater	4
OSPPARIS 92	Building Paris: Its History, Architecture, and Urban Design	4
OSPSANTG 68	The Emergence of Nations in Latin America	4-5
OSPSANTG 118X	Artistic Expression in Latin America	5
POLISCI 131L	Modern Political Thought: Machiavelli to Marx and Mill	5
POLISCI 149S	Islam, Iran, and the West	5
REES 301B	History and Politics in Russian and Eastern European Cinema	5
RELIGST 1	Religion Around the Globe	4
RELIGST 56	Exploring Chinese Religions	4
RELIGST 61	Exploring Islam	4
RELIGST 65	Exploring Global Christianity	4
RELIGST 119	Religion and Conflict	4
RELIGST 124	Sufi Islam	4
SLAVIC 77Q	Russia's Weird Classic: Nikolai Gogol	3-4
SLAVIC 129	Russian Versification: History and Theory	3-4
SLAVIC 145	Survey of Russian Literature: The Age of Experiment	3-5
SLAVIC 146	The Great Russian Novel: Tolstoy and Dostoevsky	3-5
SLAVIC 156	Vladimir Nabokov: Displacement and the Liberated Eye	3-5
SLAVIC 188	20th century Russian Poetry: From Aleksandr Blok to Joseph Brodsky	3-4
SLAVIC 198	Writing Between Languages: The Case of Eastern European Jewish Literature	1-5
SLAVIC 230	18th Century Russian Literature	3-4
THINK 12	Century of Violence	4
THINK 60	American Enemies	4
URBANST 153	CAPITALS: How Cities Shape Cultures, States, and People	3-5

International Security

Crosslisted courses may appear in the list below multiple times. Crosslisted courses may only be taken once for credit.

		Units
COMM 177Y	Specialized Writing and Reporting: Foreign Correspondence	4-5
EARTHSYS 61Q	Food and security	3
EASTASN 168	Taiwan Security Issues	3-5
EASTASN 285	The United States, China, & Global Security	2
EASTASN 297	The International Relations of Asia since World War II	3-5
ESS 61Q	Food and security	3
HISTORY 3N	Terrorism	4
HISTORY 4N	A World History of Genocide	3-5
HISTORY 10N	Thinking About War	3
HISTORY 102	History of the International System since 1914	5
HISTORY 103F	The Changing Face of War: Introduction to Military History	3-5
HISTORY 150C	The United States in the Twentieth Century	5
HISTORY 152K	America as a World Power in the Modern Era	5
HISTORY 177D	U.S. Intervention and Regime Change in 20th Century Latin America	5
HISTORY 201A	The Global Drug Wars	4-5
HISTORY 202G	Peoples, Armies and Governments of the Second World War	4-5
HISTORY 204G	War and Society	4-5
HISTORY 206C	The Modern Battle	5
HISTORY 224C	Genocide and Humanitarian Intervention	3
HISTORY 252B	Diplomacy on the Ground: Case Studies in the Challenges of Representing Your Country	5
HISTORY 290	North Korea in Historical Perspective	4-5
HISTORY 297	The Cold War and East Asia	5
INTLPOL 213	International Mediation and Civil Wars	3-5
INTLPOL 217	The Future of Global Cooperation	3-4
INTLPOL 233	Presidential Decision Making in Wartime	3
INTLPOL 244	U.S. Policy toward Northeast Asia	4
INTLPOL 246	China's Foreign Policies: Objectives, Instruments, and Impacts	4
INTLPOL 268	Hack Lab	3
INTLPOL 321	Fundamentals of Cyber Policy and Security	4-5
INTNLREL 60Q	United Nations Peacekeeping	3
INTNLREL 61Q	Food and security	3
INTNLREL 102	History of the International System since 1914	5
INTNLREL 103F	The Changing Face of War: Introduction to Military History	3-5
INTNLREL 110D	War and Peace in American Foreign Policy	3-5
INTNLREL 140A	International Law and International Relations	4-5
INTNLREL 140C	The U.S., U.N. Peacekeeping, and Humanitarian War	4-5
INTNLREL 145	Genocide and Humanitarian Intervention	4
INTNLREL 154	The Cold War: An International History	5
INTNLREL 160	United Nations Peacekeeping	4
INTNLREL 168	America as a World Power in the Modern Era	5
INTNLREL 168A	American Interventions, 1898-Present	5
INTNLREL 168W	America as a World Power in the Modern Era	5
INTNLREL 173	Presidents and Foreign Policy in Modern History	5
INTNLREL 174	Diplomacy on the Ground: Case Studies in the Challenges of Representing Your Country	5
INTNLREL 182	The Great War	5
INTNLREL 183	The Modern Battle	5
MS&E 193	Technology and National Security: Past, Present, and Future	3-4
MS&E 297	"Hacking for Defense": Solving National Security issues with the Lean Launchpad	3-4
OSPCPTWN 10	Climate Change and Political Violence	4
OSPFLOR 49	On-Screen Battles: Filmic Portrayals of Fascism and World War II	5
OSPKYOCT 142	Japan in East Asia	6
POLISCI 18N	Civil War and International Politics: Syria in Context	3
POLISCI 110D	War and Peace in American Foreign Policy	3-5
POLISCI 110Y	War and Peace in American Foreign Policy	3-5
POLISCI 114S	International Security in a Changing World	5
POLISCI 118P	U.S. Relations with Iran	5
POLISCI 149S	Islam, Iran, and the West	5
POLISCI 212X	Civil War and International Politics: Syria in Context	5
POLISCI 214R	Challenges and Dilemmas in American Foreign Policy	5
POLISCI 215	Explaining Ethnic Violence	5
POLISCI 215F	Nuclear Weapons and International Politics	5
POLISCI 216	State Building	5
POLISCI 240T	Democracy, Promotion, and American Foreign Policy	5
PUBLPOL 122	BioSecurity and Pandemic Resilience	4-5
PUBLPOL 123	Thinking About War	4-5
THINK 12	Century of Violence	4
THINK 19	Rules of War	4
THINK 54	100,000 Years of War	4
THINK 60	American Enemies	4

Latin American and Iberian Studies

Crosslisted courses may appear in the list below multiple times. Crosslisted courses may only be taken once for credit.

		Units
AMSTUD 142	The Literature of the Americas	5
CHILATST 180E	Introduction to Chicanx/Latinx Studies	5
COMPLIT 100	CAPITALS: How Cities Shape Cultures, States, and People	3-5
COMPLIT 142	The Literature of the Americas	5
CSRE 142	The Literature of the Americas	5
CSRE 180E	Introduction to Chicanx/Latinx Studies	5
DLCL 100	CAPITALS: How Cities Shape Cultures, States, and People	3-5
EARTHSYS 138	International Urbanization Seminar: Cross-Cultural Collaboration for Sustainable Urban Development	4-5

ENGLISH 172E	The Literature of the Americas	5
FRENCH 175	CAPITALS: How Cities Shape Cultures, States, and People	3-5
GERMAN 175	CAPITALS: How Cities Shape Cultures, States, and People	3-5
HISTORY 106B	Global Human Geography: Europe and Americas	5
HISTORY 173	Mexican Migration to the United States	3-5
HISTORY 174	Mexico Since 1876: The Road to Ayotzinapa	5
HISTORY 177D	U.S. Intervention and Regime Change in 20th Century Latin America	5
HISTORY 178	Film and History of Latin American Revolutions and Counterrevolutions	3-5
HISTORY 206E	CAPITALS: How Cities Shape Cultures, States, and People	3-5
HISTORY 279	Latin American Development: Economy and Society, 1800-2014	4-5
HISTORY 471A	Environmental History of Latin America	5
ILAC 130	Introduction to Iberia: Cultural Perspectives	3-5
ILAC 131	Introduction to Latin America: Cultural Perspectives	3-5
ILAC 132	Drug Wars: from Pablo Escobar to the Mara Salvatrucha to Iguala Mass Student Kidnapping	3-5
ILAC 136	Modern Iberian Literatures	3-5
ILAC 140	Migration in 21st Century Latin American Film	3-5
ILAC 161	Modern Latin American Literature	3-5
ILAC 175	CAPITALS: How Cities Shape Cultures, States, and People	3-5
ILAC 193	The Cinema of Pedro Almodovar	3-5
INTNLREL 146A	Energy and Climate Cooperation in the Western Hemisphere	4
INTNLREL 147	Political Economy of the Southern Cone Countries of South America	5
INTNLREL 179	Major Themes in U.S.-Latin America Diplomatic History	5
ITALIAN 175	CAPITALS: How Cities Shape Cultures, States, and People	3-5
OSPMADRD 14	Introduction to Spanish Culture	2
OSPMADRD 43	The Jacobean Star Way and Europe: Society, Politics and Culture	5
OSPMADRD 47	Cultural Relations between Spain and the United States:Historical Perceptions and Influences, 1776-2	4
OSPMADRD 54	Contemporary Spanish Economy and the European Union	4
OSPMADRD 55	Latin Americans in Spain: Cultural Identities, Social Practices, and Migratory Experience	4
OSPMADRD 57	Health Care: A Contrastive Analysis between Spain and the U.S.	4
OSPMADRD 60	Integration into Spanish Society: Service Learning and Professional Opportunities	4
OSPMADRD 61	Society and Cultural Change: The Case of Spain	4
OSPMADRD 72	Issues in Bioethics Across Cultures	4
OSPMADRD 74	Islam in Spain and Europe: 1300 Years of Contact	4
OSPMADRD 75	Sefarad: The Jewish Community in Spain	4
OSPSANTG 14	Women Writers of Latin America in the 20th Century	4-5
OSPSANTG 20	Comparative Law & Society: Conflicts in the Structuring of Democratic Polities across Latin America	4-5
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America	5
OSPSANTG 58	Global Change in Chile	5
OSPSANTG 68	The Emergence of Nations in Latin America	4-5
OSPSANTG 71	Santiago: Urban Planning, Public Policy, and the Built Environment	5
OSPSANTG 116X	Modernization and its Discontents: Chilean Politics at the Turn of the Century	5
OSPSANTG 118X	Artistic Expression in Latin America	5
OSPSANTG 119X	The Chilean Economy: History, International Relations, and Development Strategies	5
POLISCI 248S	Latin American Politics	3-5
POLISCI 348S	Latin American Politics	3-5
URBANST 153	CAPITALS: How Cities Shape Cultures, States, and People	3-5

Middle East and Central Asia

Crosslisted courses may appear in the list below multiple times. Crosslisted courses may only be taken once for credit.

		Units
ARTHIST 106	Byzantine Art and Architecture, 300-1453 C.E.	5
CLASSICS 171	Byzantine Art and Architecture, 300-1453 C.E.	5
HISTORY 181B	Formation of the Contemporary Middle East	5
HISTORY 185B	Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV	4-5
HISTORY 187	The Islamic Republics: Politics and Society in Iran, Afghanistan and Pakistan	5
HISTORY 224A	The Soviet Civilization	4-5
HISTORY 282J	Disasters in Middle Eastern History	5
HISTORY 284	The Ottoman Empire: Conquest, Coexistence, and Coffee	4-5
HISTORY 284F	Empires, Markets and Networks: Early Modern Islamic World Between Europe and China, 1400-1900	4-5
INTLPOL 238	Social Movements in the Post Spring Arab World	4
JEWISHST 185B	Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV	4-5
POLISCI 118P	U.S. Relations with Iran	5
POLISCI 149S	Islam, Iran, and the West	5
POLISCI 149T	Middle Eastern Politics	5
POLISCI 212X	Civil War and International Politics: Syria in Context	5
POLISCI 215A	Special Topics: State-Society Relations in the Contemporary Arab World-Key Concepts and Debates	5
POLISCI 245R	Politics in Modern Iran	5
POLISCI 246A	Paths to the Modern World: The West in Comparative Perspective	3-5
RELIGST 61	Exploring Islam	4

Social Development and Human Well-Being

Crosslisted courses may appear in the list below multiple times. Crosslisted courses may only be taken once for credit.

		Units
AFRICAST 111	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 112	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
ANTHRO 126	Urban Culture in Global Perspective	5
ANTHRO 137	The Politics of Humanitarianism	5
ANTHRO 137A	Traditional Medicine in the Modern World	3
ARTHIST 190A	Indigenous Cultural Heritage: Protection, Practice, Repatriation	3
CHILATST 180E	Introduction to Chicanx/Latinx Studies	5
CHINA 115	Sex, Gender, and Power in Modern China	3-5
COMM 177Y	Specialized Writing and Reporting: Foreign Correspondence	4-5
COMM 180	Ethics, Public Policy, and Technological Change	5
COMPLIT 100	CAPITALS: How Cities Shape Cultures, States, and People	3-5
CS 182	Ethics, Public Policy, and Technological Change	5
CSRE 180E	Introduction to Chicanx/Latinx Studies	5
DLCL 100	CAPITALS: How Cities Shape Cultures, States, and People	3-5
EARTHSYS 41N	The Global Warming Paradox	3
ECON 155	Environmental Economics and Policy	5
EDUC 136	World, Societal, and Educational Change: Comparative Perspectives	4-5
EDUC 202	Introduction to International and Comparative Education	3
ETHICSOC 182	Ethics, Public Policy, and Technological Change	5
FEMGEN 101	Introduction to Feminist, Gender, and Sexuality Studies	4-5
FEMGEN 136	Transnational Sexualities	3-5
FRENCH 175	CAPITALS: How Cities Shape Cultures, States, and People	3-5
GERMAN 175	CAPITALS: How Cities Shape Cultures, States, and People	3-5
HISTORY 5C	Human Trafficking: Historical, Legal, and Medical Perspectives	3
HISTORY 103D	Human Society and Environmental Change	4
HISTORY 106A	Global Human Geography: Asia and Africa	5
HISTORY 106B	Global Human Geography: Europe and Americas	5
HISTORY 113	Before Globalization: Understanding Premodern World History	3-5
HISTORY 146	History of Humanitarian Aid in sub-Saharan Africa	4-5
HISTORY 174	Mexico Since 1876: The Road to Ayotzinapa	5
HISTORY 185B	Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV	4-5
HISTORY 201A	The Global Drug Wars	4-5
HISTORY 204D	Advanced Topics in Agnotology	4-5
HISTORY 204E	Totalitarianism	4-5
HISTORY 206E	CAPITALS: How Cities Shape Cultures, States, and People	3-5
HISTORY 224C	Genocide and Humanitarian Intervention	3
HISTORY 243G	Tobacco and Health in World History	4-5
HUMBIO 26	Designing Research-Based Interventions to Solve Global Health Problems	3-4
HUMBIO 57	Epidemic Intelligence: How to Identify, Investigate and Interrupt Outbreaks of Disease	4
HUMBIO 114	Global Change and Emerging Infectious Disease	4-5
HUMBIO 122M	Challenges of Human Migration: Health and Health Care of Migrants and Autochthonous Populations	3
HUMBIO 129S	Global Public Health	3
HUMRTS 101	Cross-Disciplinary Perspectives on Human Rights Theory and Practice	4
HUMRTS 108	Advanced Spanish Service-Learning: Migration, Asylum, and Human Rights at the Border	1-3
HUMRTS 110	Global Women's Issues in Human Rights and Health	4
HUMRTS 115	Business, Social Responsibility and Human Rights	3
ILAC 175	CAPITALS: How Cities Shape Cultures, States, and People	3-5
INTLPOL 210	The Politics of International Humanitarian Action	3-5
INTLPOL 213	International Mediation and Civil Wars	3-5
INTLPOL 238	Social Movements in the Post Spring Arab World	4
INTLPOL 250	International Conflict Resolution	2
INTNLREL 5C	Human Trafficking: Historical, Legal, and Medical Perspectives	3
INTNLREL 60Q	United Nations Peacekeeping	3
INTNLREL 62Q	Mass Atrocities: Reckoning and Reconciliation	3
INTNLREL 105C	Human Trafficking: Historical, Legal, and Medical Perspectives	5
INTNLREL 114D	Democracy, Development, and the Rule of Law	3-5
INTNLREL 136R	Introduction to Global Justice	4
INTNLREL 140C	The U.S., U.N. Peacekeeping, and Humanitarian War	4-5
INTNLREL 141A	Camera as Witness: International Human Rights Documentaries	5
INTNLREL 142	Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice	3-5
INTNLREL 145	Genocide and Humanitarian Intervention	4
INTNLREL 160	United Nations Peacekeeping	4
INTNLREL 180A	Transitional Justice, Human Rights, and International Criminal Tribunals	3-5
ITALIAN 175	CAPITALS: How Cities Shape Cultures, States, and People	3-5
MED 159	Oaxacan Health on Both Sides of the Border	2
MS&E 92Q	International Environmental Policy	3
MS&E 185	Global Work	4
MS&E 271	Global Entrepreneurial Marketing	3-4
OSPBER 71	EU in Crisis	4-5

OSPBER 83	Refugees and Germany	3-4
OSPBER 174	Sports, Culture, and Gender in Comparative Perspective	3-5
OSPCPTWN 38	Genocide: African Experiences in Comparative Perspective	3-5
OSPCPTWN 45	Transitional Justice and Transformation Debates in South Africa	4
OSPFLOR 65	Exclusion/Inclusion Processes of Migrants in Italian Society	5
OSPFLOR 78	The Impossible Experiment: Politics and Policies of the New European Union	5
OSPMADRD 57	Health Care: A Contrastive Analysis between Spain and the U.S.	4
OSPMADRD 60	Integration into Spanish Society: Service Learning and Professional Opportunities	4
OSPMADRD 61	Society and Cultural Change: The Case of Spain	4
OSPMADRD 72	Issues in Bioethics Across Cultures	4
OSPOXFRD 117W	Gender and Social Change in Modern Britain	4-5
OSPSANTG 71	Santiago: Urban Planning, Public Policy, and the Built Environment	5
PEDS 223	Human Rights and Global Health	3
PEDS 225	Humanitarian Aid and Politics	3
PHIL 82	Ethics, Public Policy, and Technological Change	5
POLISCI 133	Ethics and Politics of Public Service	3-5
POLISCI 143S	Comparative Corruption	3
POLISCI 149S	Islam, Iran, and the West	5
POLISCI 182	Ethics, Public Policy, and Technological Change	5
POLISCI 244	An Introduction to Political Development	5
POLISCI 244U	Political Culture	3-5
POLISCI 247G	Governance and Poverty	5
PSYC 51Q	Culture, Psychology, and Mental Health Treatment	2
PSYCH 75	Introduction to Cultural Psychology	5
PUBLPOL 134	Ethics on the Edge: Business, Non-Profit Organizations, Government, and Individuals	3
PUBLPOL 168	Global Organizations: The Matrix of Change	4
PUBLPOL 182	Ethics, Public Policy, and Technological Change	5
RELIGST 1	Religion Around the Globe	4
RELIGST 65	Exploring Global Christianity	4
RELIGST 119	Religion and Conflict	4
SOC 118	Social Movements and Collective Action	4
SOC 126	Introduction to Social Networks	4
SOC 134	Gender and Education in Global and Comparative Perspectives	3-4
SOC 137	Global Inequality	4
SOC 177D	Economic Elites in the 21st Century	3-5
SPANLANG 108SL	Advanced Spanish Service-Learning: Migration, Asylum & Human Rights at the Border	3
THINK 19	Rules of War	4
THINK 42	Thinking Through Africa: Perspectives on Health, Wealth, and Well-Being	4
THINK 48	Reading the Body: How Medicine and Culture Define the Self	4
URBANST 114	Urban Culture in Global Perspective	5
URBANST 145	International Urbanization Seminar: Cross-Cultural Collaboration for Sustainable Urban Development	4-5
URBANST 153	CAPITALS: How Cities Shape Cultures, States, and People	3-5

Additional Policies/Requirements:

- At least one course must be an upper-division seminar or colloquium.
- At least one writing intensive course designated as Writing in the Major (WiM) for International Relations.
- All courses must be taken for a letter grade, and a minimum grade of 'C' is required for courses to count towards major requirements.
- Completion of one quarter of academic study overseas, either through the Stanford Overseas Studies Program or an approved non-Stanford program. Non-Stanford programs must be pre-approved by the IR office before the student enrolls in the program.
- All IR majors must demonstrate proficiency in a foreign language by either completing two years of course work (second-year, third-quarter) or passing a proficiency exam. Foreign language units do not count towards the major.
- Upon approval, a maximum of 15 non-Stanford units may be applied to the major for credit.

Independent Study/Honors

		Units
INTNLREL 197	Directed Reading in International Relations	1-5
INTNLREL 198	Senior Thesis	2-10
INTNLREL 200A	International Relations Honors Field Research	3
INTNLREL 200B	International Relations Honors Seminar	3
INTNLREL 200C	IR Honors Thesis Writing	1

Honors Program

The International Relations honors program offers qualified students the opportunity to conduct a major independent research project under faculty guidance. Such a project requires a high degree of initiative and dedication, significant amounts of time and energy, and demonstrated skills in research and writing.

In their junior year, students should consult with prospective honors advisers, choose the courses that provide academic background in their areas of inquiry, and demonstrate an ability to conduct independent research. Students can also select to complete an Interdisciplinary honors thesis with other programs on campus.

Prerequisites for participation include a 3.5 grade point average (GPA), a strong overall academic record, good academic standing, successful experience in writing a research paper, and submission of an acceptable thesis proposal. Students should submit their honors thesis proposal in the Winter Quarter of the junior year; check with IR office for the exact deadline. Students are required to enroll in INTNLREL 200A International Relations Honors Field Research, in the Spring Quarter of their junior year and should consider participating in Bing Honors College (https://undergrad.stanford.edu/programs/bhc/). In their senior year, honors students must enroll in INTNLREL 200B International Relations Honors Seminar in Autumn Quarter, INTNLREL 200C IR Honors Thesis Writing in Winter Quarter, and in research units through INTNLREL 198 Senior Thesis each quarter of their senior year (Autumn, Winter, and Spring) with their faculty adviser. Honors students present a formal defense of their theses in mid-May. Students must receive at least a grade of 'B+' in order to graduate with honors in International Relations. For more information, refer to the International Relations (http://internationalrelations.stanford.edu/) website.

Minor in International Relations

A minor in International Relations (IR) is intended to provide an interdisciplinary background allowing a deeper understanding of contemporary international issues. To declare the IR minor, students must complete the application for a minor in Axess and complete the IR Minor Declaration and Course Proposal form and submit this to the IR office. Students completing a minor are also required to file a Major-Minor and Multiple Major Course Approval Form (https://stanford.box.com/MajMin-MultMaj/) by the Final Study List deadline for the term in which the student intends to graduate.

Students complete the minor by taking 30 units from the IR curriculum that do not duplicate with the student's major (or, if applicable, any other minor), including the following:

		Units
Core Course (Select one of the following):		5
World Politics		
POLISCI 101	Introduction to International Relations	
Comparative Governance		
INTNLREL 102	History of the International System since 1914	
INTNLREL 114D	Democracy, Development, and the Rule of Law	
American Foreign Policy		
INTNLREL 110C	America and the World Economy	
INTNLREL 110D	War and Peace in American Foreign Policy	
INTNLREL 154	The Cold War: An International History	
INTNLREL 168	America as a World Power in the Modern Era	
INTNLREL 168A	American Interventions, 1898-Present	
INTNLREL 173	Presidents and Foreign Policy in Modern History	
INTNLREL 174	Diplomacy on the Ground: Case Studies in the Challenges of Representing Your Country	
POLISCI 110G	Governing the Global Economy	
POLISCI 214R	Challenges and Dilemmas in American Foreign Policy	
Specialization Coursework (See below)		20
Any IR Course (pre-approved or petitioned)		5
Total Units		30

Complete at least **20 units** in one of the following specializations below.

- Africa
- Comparative International Governance
- East and South Asia
- Economic Development/World Economy
- Environment, Energy, and Natural Resources
- Europe (East and West) & Russia
- International History and Culture
- International Security
- Latin America and Iberian Studies
- Middle East and Central Asia
- Social Development/Human Well-Being

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Program in International Relations counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Other Undergraduate Policies

While the program hopes that all IR majors have an opportunity to study abroad, it understands that program disruptions due to COVID-19 may make that difficult, if not impossible. The program is committed to ensuring that cancellations and travel risks due to COVID-19 do not prevent IR majors from graduating. For IR majors whose study abroad plans have been affected by program disruptions, the program will arrange appropriate accommodations, including waiving the requirement if necessary.

If a student has difficulty completing an undergraduate degree requirement due to the COVID-19 pandemic (e.g., study abroad requirement), the student should consult with the associate director to identify academic options to fulfill degree requirements.

Director: Kenneth Schultz (Political Science).

Faculty Committee: Kyle Bagwell (Economics), Judith L. Goldstein (Political Science), Norman Naimark (History), Kenneth Scheve (Political Science), Kenneth Schultz (Political Science), Kathryn Stoner (Freeman Spogli Institute), Michael Tomz (Political Science).

Affiliated Faculty: Lisa Blaydes (Political Science), Gordon Chang (History), David Cohen (Classics), Larry J. Diamond (Hoover Institution), Amir Eshel (German Studies), James Fearon (Political Science), Zephyr Frank (History), Francis Fukuyama (Freeman Spogli Institute for International Studies, Political Science), Lawrence H. Goulder (Economics), Anna Grzymala-Busse (Political Science), Stephen H. Haber (Political Science), Daniel Ho (Stanford Law School, Political Science), David J. Holloway (History, Political Science), Colin Kahl (Freeman Spogli Institute for International Studies), Stephen D. Krasner (Political Science), Beatriz Magaloni (Political Science), Michael McFaul (Freeman Spogli Institute for International Studies, Political Science), Robert McGinn (Management Science and Engineering), Brett McGurk (Freeman Spogli Institute for International Studies), H.R. McMaster (Hoover Institution), Rosamond Naylor (Freeman Spogli Institute for International Studies), Jean C. Oi (Political Science), Richard Roberts (History), Condoleezza Rice (Political Science, Freeman Spogli Institute for International Studies), Jonathan Rodden (Political Science), Scott Sagan (Political Science), Debra M. Satz (Philosophy), Andrew Walder (Sociology), Amir Weiner (History), Jeremy Weinstein (Political Science), Paul Wise (Freeman Spogli Institute for International Studies), Amy Zegart (Freeman Spogli Institute for International Studies, Political Science).

Other Affiliation: Kevin Arrigo (Earth System Science), Chonira Aturupane (Freeman Spogli Institute for International Studies), (Karen Biestman (Native American Cultural Center), Jasmina Bojic (International Relations), Marshall Burke (Earth System Science, Freeman Spogli

Institute for International Studies), Robert Crews (History), Christophe Crombez (Freeman Spogli Institute for International Studies), Thomas Fingar (Freeman Spogli Institute for International Studies), Erica Gould (International Relations), Kathleen Janus (Freeman Spogli Institute for Program on Social Entrepreneurship, International Relations), Katherine Jolluck (History), Anjini Kochar (Stanford Institute for Economic Policy Research), Martin W. Lewis (History), Pawel Lutomski (International Relations), Abbas Milani (Hoover Institution, Iranian Studies), Alice Lyman Miller (Hoover Institution), Thomas O'Keefe (International Relations), Bertrand Patenaude (International Relations), Robert Rakove (International Relations), Scott Rozelle (Freeman Spogli Institute for International Studies), Margaret Sena (El Centro Chicano), Beth Van Schaack (Stanford Law School), Stephen Stedman (Political Science), Harold Trinkunas (Freeman Spogli Institute for International Studies), Gil-Li Vardi (International Relations, History).

Overseas Studies Courses in International Relations

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPBER 70	The Long Way to the West: German History from the 18th Century to the Present	4-5
OSPBER 71	EU in Crisis	4-5
OSPBER 77	"Ich bin ein Berliner" Lessons of Berlin for International Politics	4-5
OSPBER 79	Political Economy of Germany in Europe: an Historical-Comparative Perspective	4-5
OSPBER 82	Globalization and Germany	4-5
OSPBER 83	Refugees and Germany	3-4
OSPBER 126X	A People's Union? Money, Markets, and Identity in the EU	4-5
OSPBER 174	Sports, Culture, and Gender in Comparative Perspective	3-5
OSPCPTWN 10	Climate Change and Political Violence	4
OSPCPTWN 38	Genocide: African Experiences in Comparative Perspective	3-5
OSPCPTWN 45	Transitional Justice and Transformation Debates in South Africa	4
OSPFLOR 49	On-Screen Battles: Filmic Portrayals of Fascism and World War II	5
OSPFLOR 64	Colonial Heritage, Euro-Mediterranean Relations, Migrations, Multiculturalism	5
OSPFLOR 65	Exclusion/Inclusion Processes of Migrants in Italian Society	5
OSPFLOR 78	The Impossible Experiment: Politics and Policies of the New European Union	5
OSPHONGK 22	China's Financial Reforms - Problems and Perspectives	4
OSPHONGK 23	China Under Mao	4
OSPHONGK 24	Urban China	4
OSPHONGK 25	Cultural History of China	4
OSPHONGK 27	China and Regional Order	4
OSPHONGK 28	An Introduction to the Development of Science and Technology in China	4
OSPHONGK 29	The Rise of China in the Global Context I: Diplomacy, Trade, and Soft Power	4
OSPMADRD 47	Cultural Relations between Spain and the United States:Historical Perceptions and Influences, 1776-2	4
OSPMADRD 48	Migration and Multiculturality in Spain	4
OSPMADRD 54	Contemporary Spanish Economy and the European Union	4
OSPMADRD 57	Health Care: A Contrastive Analysis between Spain and the U.S.	4
OSPMADRD 61	Society and Cultural Change: The Case of Spain	4
OSPMADRD 72	Issues in Bioethics Across Cultures	4
OSPMADRD 74	Islam in Spain and Europe: 1300 Years of Contact	4
OSPOXFRD 36	Creating English Democracy	4-5
OSPOXFRD 117W	Gender and Social Change in Modern Britain	4-5
OSPPARIS 32	French History and Politics: Understanding the Present through the Past	5
OSPPARIS 91	The Future of Globalization: Economics, Politics and the Environment	5
OSPPARIS 92	Building Paris: Its History, Architecture, and Urban Design	4
OSPPARIS 122X	Europe and its Challenges Today	4
OSPSANTG 14	Women Writers of Latin America in the 20th Century	4-5
OSPSANTG 20	Comparative Law & Society: Conflicts in the Structuring of Democratic Polities across Latin America	4-5
OSPSANTG 68	The Emergence of Nations in Latin America	4-5
OSPSANTG 71	Santiago: Urban Planning, Public Policy, and the Built Environment	5
OSPSANTG 116X	Modernization and its Discontents: Chilean Politics at the Turn of the Century	5
OSPSANTG 119X	The Chilean Economy: History, International Relations, and Development Strategies	5

Courses

INTNLREL 5C. Human Trafficking: Historical, Legal, and Medical Perspectives. 3 Units.

(Same as History 105C. History majors and others taking 5 units, enroll in 105C.) Interdisciplinary approach to understanding the extent and complexity of the global phenomenon of human trafficking, especially for forced prostitution, labor exploitation, and organ trade, focusing on human rights violations and remedies. Provides a historical context for the development and spread of human trafficking. Analyzes the current international and domestic legal and policy frameworks to combat trafficking and evaluates their practical implementation. Examines the medical, psychological, and public health issues involved. Uses problem-based learning. Required weekly 50-min. discussion section, time TBD. Students interested in service learning should consult with the instructor and will enroll in an additional course.
Same as: CSRE 5C, FEMGEN 5C, HISTORY 5C

INTNLREL 33SI. Myths and Realities of U.S.-China Relations. 2 Units.
This course introduces students to the U.S.-China relationship through a weekly speaker series followed by student-led discussions. Speakers from academia and industry will explore topics such as the business environment of China, the politics of the Sino-American dynamic, and technological growth in China. The purpose of the course is to tackle the myths and misconceptions surrounding U.S.-China relations, and build in students a strong foundational understanding of the multiple facets of the bilateral relationship. Students will be exposed to a variety of issues and will be able to explore a topic of interest through a capstone presentation at the end of the course.

INTNLREL 60Q. United Nations Peacekeeping. 3 Units.
Focus is on an examination of United Nations peacekeeping, from its inception in 1956 in the wake of the Suez Crisis, to its increasingly important role as an enforcer of political stability in sub-Saharan Africa. Examines the practice of "classic" peacekeeping as it developed during the Cold War, the rise and fall of "second-generation" peacekeeping, and the reemergence of a muscular form of peacekeeping in sub-Saharan Africa more recently. Topics include the basic history of the United Nations since 1945, he fundamentals of the United Nations Charter, and the historical trajectory of U.N. peaeckeeping and the evolving arguments of its proponents and critics over the years.
Same as: PEDS 60Q

INTNLREL 61Q. Food and security. 3 Units.
The course will provide a broad overview of key policy issues concerning agricultural development and food security, and will assess how global governance is addressing the problem of food security. At the same time the course will provide an overview of the field of international security, and examine how governments and international institutions are beginning to include food in discussions of security.
Same as: EARTHSYS 61Q, ESS 61Q

INTNLREL 62Q. Mass Atrocities: Reckoning and Reconciliation. 3 Units.
Imagine you live in a country in which a delusional dictator imprisons untold masses in labor and concentration camps, and kills millions of them. Imagine you live in another country, in which one ethnic group slaughters the other. Imagine you live in yet another country in which a racial white minority terrorizes and violently discriminates against a huge majority of black population. Or, imagine you live in a country in which members of one group engage in an "ethnic cleansing" of their former neighbors.nnNow imagine this: Some big political change comes to each of these societies, and the perpetrators lose their power and are finally stopped from committing any more crimes and atrocities. Now comes the time to decide how to bring about justice for the past wrongs. It is also a question of how to come to terms with the terrible past. How to remember it? How to confront it? How to judge the perpetrators? How to identify them? How to punish them appropriately if at all? Also, is it possible to ever reconcile with the former oppressors and enemies? Maybe even to forgive them? If so, under what circumstances? What is necessary for such reconciliation? What if some of the victims were also perpetrators?nnThe scenarios mentioned above are real ones¿they happened in Germany, Rwanda, South Africa, Bosnia, and elsewhere. In this IntroSem we will explore the social, political, and legal arrangements societies debated about, negotiated, and used to deal with the atrocities of the past. We will assess their utility in the process of ¿transitional justice.¿ We will scrutinize crimes tribunals and truth commissions, and inquire whether they enabled the victims to gain a sense of justice and fairness. Likewise, we will consider under what conditions those victims might ever be capable of a genuine reconciliation.

INTNLREL 63Q. International Organizations and Accountability. 3 Units.
International organizations (IOs), like the IMF, the World Bank, the United Nations, and others, have been widely criticized as insufficiently accountable. For example, some argue that states are not able to control IOs whose bureaucracies have grown out of control and run amok, while others argue that the real problem is that communities most impacted by IO activities, such as those receiving World Bank loans or UN peacekeeping operations, are least able to influence their activities. Still others contend that the voting rules by which states control IOs are outdated and should be reformed to remedy these problems.nnThrough readings, discussions and case studies, students will learn about a range of international organizations in order to better understand what they do and how they are supposed to be controlled. In addition, we will evaluate the critiques of IO accountability that come from the right and the left, as well as the North, South, East and West, and will analyze different mechanisms of accountability, both formal and informal. Students will have the opportunity to research and present on specific international organizations and accountability mechanisms.

INTNLREL 64Q. Leadership and International Organizations. 3 Units.
What do intergovernmental organizations like the United Nations, the World Food Program, the United Nations High Commission for Refugees actually do? Do these organizations simply act on the interests of the governments that comprise them? Or do they have some autonomy to pursue their own programs, plans, and priorities? Does leadership of these organizations matter for their performance? What dilemmas do the leaders or intergovernmental organizations face as they try to satisfy governments while serving people in need all over the world? This course will get at these questions through examining the lives, careers and choices of leaders of major international organizations over the last thirty years. Reading assignments will include memoirs and biographies of leaders of international organizations, as well as analytical and empirical studies of international organizations. We plan on inviting former and current leaders of international organizations to visit the seminar.

INTNLREL 76. Protagonists in Policy. 1 Unit.
Interested in learning from activists, academics, and politicians about the different ways you can be an agent of change and affect public policy? This course presents a lecture/discussion series in which students will have the opportunity to engage with influential speakers to discover and learn more about timely topics relating to policy, government, and international affairs. Speakers will be selected in cooperation with the Policy Dinners Committee, a branch of Stanford in Government.
Same as: POLISCI 76

INTNLREL 82. The Ending of World War I: Three Perspectives. 2 Units.
This course is required for those students who will be taking the BOSP Overseas Seminar, The Ending of the First World War and the Shaping of the 20th Century. Enrollment is limited to students who will be taking the overseas seminar, or are waitlisted for the seminar.nnThis course has three learning goals: 1.) to provide historical background on the war and the events and processes leading up to the ending of the war; 2.) to help students formulate possible research topics for the Overseas Seminar; and 3.) to acquaint the students with archival research in preparation for their time in London. The course will be taught from the perspectives of military history, political science, and literature. Each week we will meet to discuss the reading material.

INTNLREL 101Z. Introduction to International Relations. 4 Units.
Approaches to the study of conflict and cooperation in world affairs. Applications to war, terrorism, trade policy, the environment, and world poverty. Debates about the ethics of war and the global distribution of wealth.
Same as: POLISCI 101Z

INTNLREL 102. History of the International System since 1914. 5 Units.
After defining the characteristics of the international system at the beginning of the twentieth century, this course reviews the primary developments in its functioning in the century that followed. Topics include the major wars and peace settlements; the emergence of Nazism and Communism; the Cold War; decolonization; and globalization. The role of international institutions and international society will also be a focus as will the challenges of climate change, inequality, migration, and terrorism.
Same as: HISTORY 102

INTNLREL 103F. The Changing Face of War: Introduction to Military History. 3-5 Units.
Introduces students to the rich history of military affairs and, at the same time, examines the ways in which we think of change and continuity in military history. How did war evolve from ancient times, both in styles of warfare and perceptions of war? What is the nature of the relationship between war and society? Is there such a thing as a Western way of war? What role does technology play in transforming military affairs? What is a military revolution and can it be manufactured or induced? Chronologically following the evolution of warfare from Ancient Greece to present day so-called new wars, we will continuously investigate how the interdependencies between technological advances, social change, philosophical debates and economic pressures both shaped and were influenced by war. Students satisfying the WiM requirement for the major in International Relations, must enroll in INTNLREL 103F course listing.
Same as: HISTORY 3F, HISTORY 103F

INTNLREL 105C. Human Trafficking: Historical, Legal, and Medical Perspectives. 5 Units.
(Same as HISTORY 5C. History majors and others taking 5 units, enroll in 105C.) Interdisciplinary approach to understanding the extent and complexity of the global phenomenon of human trafficking, especially for forced prostitution, labor exploitation, and organ trade, focusing on human rights violations and remedies. Provides a historical context for the development and spread of human trafficking. Analyzes the current international and domestic legal and policy frameworks to combat trafficking and evaluates their practical implementation. Examines the medical, psychological, and public health issues involved. Uses problem-based learning. Required weekly 50-min. discussion section, time TBD. Students interested in service learning should consult with the instructor and will enroll in an additional course.
Same as: CSRE 105C, FEMGEN 105C, HISTORY 105C, HUMRTS 112

INTNLREL 110C. America and the World Economy. 5 Units.
Examination of contemporary US foreign economic policy. Areas studied: the changing role of the dollar; mechanism of international monetary management; recent crises in world markets including those in Europe and Asia; role of IMF, World Bank and WTO in stabilizing world economy; trade politics and policies; the effects of the globalization of business on future US prosperity. Political Science majors taking this course for WIM credit should enroll in POLISCI 110C.
Same as: POLISCI 110C, POLISCI 110X

INTNLREL 110D. War and Peace in American Foreign Policy. 3-5 Units.
The causes of war in American foreign policy. Issues: international and domestic sources of war and peace; war and the American political system; war, intervention, and peace making in the post-Cold War period. Political Science majors taking this course to fulfill the WIM requirement should enroll in POLISCI 110D for 5 units. International Relations majors taking this course should enroll in INTNLREL 110D for 5 units. SCPD students should enroll for 3 units.
Same as: AMSTUD 110D, POLISCI 110D, POLISCI 110Y

INTNLREL 114D. Democracy, Development, and the Rule of Law. 3-5 Units.
This course explores the different dimensions of development - economic, social, and political - as well as the way that modern institutions (the state, market systems, the rule of law, and democratic accountability) developed and interacted with other factors across different societies around the world. The class will feature additional special guest lectures by Francis Fukuyama, Larry Diamond, Michael McFaul, Anna Grzymala-Busse, and other faculty and researchers affiliated with the Center on Democracy, Development, and the Rule of Law. Undergraduate students should enroll in this course for 5 units. Graduate students should enroll for 3.
Same as: INTLPOL 230, POLISCI 114D, POLISCI 314D

INTNLREL 118S. Political Economy of International Trade and Investment. 5 Units.
How domestic and international politics influence the economic relations between countries. Why do governments promote or oppose globalization? Why do countries cooperate economically in some situations but not others? Why do countries adopt bad economic policies? Focus on the politics of international trade and investment. Course approaches each topic by examining alternative theoretical approaches and evaluate these theories using historical and contemporary evidence from many geographical regions around the world. Prerequisites: ECON 1A, ECON 1B, and a statistics course.
Same as: POLISCI 218S

INTNLREL 122. Introduction to European Studies. 5 Units.
This course offers an introduction to major topics in the study of historical and contemporary Europe. We focus on European politics, economics and culture. First, we study what makes Europe special, and how its distinct identity has been influenced by its history. Next, we analyze Europe's politics. We study parliamentary government and proportional representation electoral systems, and how they affect policy. Subsequently, we examine the challenges the European economy faces. We further study the European Union and transatlantic relations.
Same as: POLISCI 213E

INTNLREL 123. The Future of the European Union: Challenges and Opportunities. 5 Units.
First, this course analyzes the EU's greatest challenge, preserving the monetary union, and discusses the political and economic reforms needed to achieve that goal. In this context the course also studies the fiscal and budgetary polices of the EU. Second, the course discusses the EU's role in global politics, its desire to play a more prominent role, and the ways to reach that objective. Third, the course analyzes the EU's institutional challenges in its efforts to enhance its democratic character.

INTNLREL 124. Immigration Issues in Europe. 4-5 Units.
This course will consider responses to mass migration in Europe and its contribution to a radicalized political landscape. Sampling immigrant integration policies from Germany, Sweden, Denmark, France, Britain, Hungary, Poland, and Italy will help us examine public discourse on cultural and civic assimilation of mostly Muslim immigrants. Issues such as security and counterterrorism, as well as obstacles to cooperation with countries outside the EU (Turkey, Libya), will be included.

INTNLREL 135A. International Environmental Law and Policy: Oceans and Climate Change. 4-5 Units.
This seminar offers an introduction to International Environmental Law, with a strong emphasis on oceans and climate change, its underlying principles, how it is developed and implemented, and the challenges of enforcing it. We will focus on oceans and climate change, exploring the United Nations Law of the Sea Convention (UNCLOS) and the United Nations Framework Convention for Climate Change (UNFCCC). We will explain why these agreements are described as ¿umbrella conventions¿ and how new conventions like the Paris Agreement fit within them. There will be guest speakers, a negotiation simulation, and a legal design sprint focused on re-imagining International Environmental Law.

INTNLREL 136R. Introduction to Global Justice. 4 Units.
This course explores the normative demands and definitions of justice that transcend the nation-state and its borders, through the lenses of political justice, economic justice, and human rights. What are our duties (if any) towards those who live in other countries? Should we be held morally responsible for their suffering? What if we have contributed to it? Should we be asked to remedy it? At what cost? These are some of the questions driving the course. Although rooted in political theory and philosophy, the course will examine contemporary problems that have been addressed by other scholarly disciplines, public debates, and popular media, such as immigration and open borders, climate change refugees, and the morality of global capitalism (from exploitative labor to blood diamonds). As such, readings will combine canonical pieces of political theory and philosophy with readings from other scholarly disciplines, newspaper articles, and popular media.
Same as: ETHICSOC 136R, PHIL 76, POLISCI 136R, POLISCI 336

INTNLREL 140A. International Law and International Relations. 4-5 Units.
International law, as a body of law, performs multiple, competing functions. It serves the interests, and seeks to limit the actions, of state actors. It is also a political rhetoric captured by the oppressed, and a foundation for activism and resistance. The purpose of this seminar is to illuminate this malleable nature of international law, to explain its foundational principles and sources, and to evaluate the contours of its role as law and discourse. Questions that will accompany us throughout this seminar include: What is the character of international legal rules? Do they matter in international politics? How effective are they? What potential and what limitations do they have? In addition to exploring such questions against the backdrop of theories of international relations, we will consider several topics which bring tensions between international law and international relations to the fore, such as use of force, human rights, and international criminal law.

INTNLREL 140C. The U.S., U.N. Peacekeeping, and Humanitarian War. 4-5 Units.
The involvement of U.S. and the UN in major wars and international interventions since the 1991 Gulf War. The UN Charter's provisions on the use of force, the origins and evolution of peacekeeping, the reasons for the breakthrough to peacemaking and peace enforcement in the 90s, and the ongoing debates over the legality and wisdom of humanitarian intervention. Case studies include Croatia and Bosnia, Somalia, Rwanda, Kosovo, East Timor, and Afghanistan. *International Relations majors taking this course to fulfill the WiM requirement should enroll in INTNLREL 140C for 5 units.
Same as: HISTORY 201C, INTNLREL 140X

INTNLREL 140X. The U.S., U.N. Peacekeeping, and Humanitarian War. 4-5 Units.
The involvement of U.S. and the UN in major wars and international interventions since the 1991 Gulf War. The UN Charter's provisions on the use of force, the origins and evolution of peacekeeping, the reasons for the breakthrough to peacemaking and peace enforcement in the 90s, and the ongoing debates over the legality and wisdom of humanitarian intervention. Case studies include Croatia and Bosnia, Somalia, Rwanda, Kosovo, East Timor, and Afghanistan. *International Relations majors taking this course to fulfill the WiM requirement should enroll in INTNLREL 140C for 5 units.
Same as: HISTORY 201C, INTNLREL 140C

INTNLREL 141A. Camera as Witness: International Human Rights Documentaries. 5 Units.
Rarely screened documentary films, focusing on global problems, human rights issues, and aesthetic challenges in making documentaries on international topics. Meetings with filmmakers.

INTNLREL 142. Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice. 3-5 Units.
This seminar is part of a broader program on Social Entrepreneurship at CDDRL in partnership with the Haas Center for Public Service. It will use practice to better inform theory. Working with three visiting social entrepreneurs from developing and developed country contexts students will use case studies of successful and failed social change strategies to explore relationships between social entrepreneurship, gender, democracy, development and justice. It interrogates current definitions of democracy and development and explores how they can become more inclusive of marginalized populations. This is a service learning class in which students will learn by working on projects that support the social entrepreneurs' efforts to promote social change. Students should register for either 3 OR 5 units only. Students enrolled in the full 5 units will have a service-learning component along with the course. Students enrolled for 3 units will not complete the service-learning component. Limited enrollment. Attendance at the first class is mandatory in order to participate in service learning.
Same as: AFRICAST 142, AFRICAST 242, CSRE 142C

INTNLREL 143. State and Society in Korea. 4 Units.
20th-century Korea from a comparative historical perspective. Colonialism, nationalism, development, state-society relations, democratization, and globalization with reference to the Korean experience.
Same as: SOC 111, SOC 211

INTNLREL 145. Genocide and Humanitarian Intervention. 4 Units.
The course, traces the history of genocide in the 20th century and the question of humanitarian intervention to stop it, a topic that has been especially controversial since the end of the Cold War. The pre-1990s discussion begins with the Armenian genocide during the First World War and includes the Holocaust and Cambodia under the Khmer Rouge in the 1970s. Coverage of genocide and humanitarian intervention since the 1990s includes the wars in Bosnia, Rwanda, Kosovo, the Congo, and Sudan. The final session of the course will be devoted to a discussion of the International Criminal Court and the separate criminal tribunals that have been tasked with investigating and punishing the perpetrators of genocide.

INTNLREL 146A. Energy and Climate Cooperation in the Western Hemisphere. 4 Units.
The seminar provides an overview of the current political dynamics in each of the major fossil fuel producing countries in the Western Hemisphere and its impact on local energy exploration and production. It also explores the potential for expanding existing or developing new renewable energy resources throughout the Americas, and impacts on the local environment, food prices, and land use issues. The course examines the feasibility of integrating energy markets and establishing initiatives to reduce greenhouse gas emissions at the regional and hemispheric level. The seminar focuses on Chile, a country that lacks significant petroleum and natural gas reserves and has traditionally been a major user of coal. Accordingly, the country has been at the forefront of efforts to facilitate the regional integration of energy markets and develop renewable and non-traditional energy resources. The course concludes with a discussion of the Energy and Climate Partnership of the Americas or ECPA, launched by the Obama administration at the Fifth Summit of the Americas in Trinidad in April 2009, and China¿s increasing role in Latin America¿s energy sector.

INTNLREL 147. Political Economy of the Southern Cone Countries of South America. 5 Units.
This seminar examines the economic and political development of the five countries that make up South America's Southern Cone (i.e., Argentina, Brazil, Chile, Paraguay, and Uruguay) as well as Bolivia (which was historically part of the sub-region and with which today it has close commercial ties). In particular, the course focuses on the era of Import Substitution Industrialization (ISI), explores the reasons why that model of economic development eventually collapsed and how this contributed to the rise of military dictatorships, looks at the return to democratic rule and the adoption of market-oriented economic policies, and concludes with a discussion of the contemporary situation.

INTNLREL 154. The Cold War: An International History. 5 Units.
Though it ended twenty years ago, we still live in a world shaped by the Cold War. Beginning with its origins in the mid-1940s, this course will trace the evolution of the global struggle, until its culmination at the end of the 1980s. Students will be asked to ponder the fundamental nature of the Cold War, what kept it alive for nearly fifty years, how it ended, and its long term legacy for the world. As distinguished from the lecture taught in previous quarters, this class will closely investigate ten major Cold War battlegrounds over the quarter. Selected case studies will include: the division of Germany, Iran in the 1950s, Cuba, Vietnam, the Six Day War, the Chilean coup, sub-Saharan Africa, Afghanistan, Central America, and the Eastern European revolutions of 1989. Students will be asked to consult a combination of original documents and recent histories.
Same as: HISTORY 166C

INTNLREL 160. United Nations Peacekeeping. 4 Units.
This seminar is devoted to an examination of United Nations peacekeeping, from its inception in 1956 in the wake of the Suez Crisis, to its increasingly important role as an enforcer of political stability in sub-Saharan Africa. We will look at the practice of "classic" peacekeeping as it developed during the Cold War, with the striking exception of the Congo Crisis of 1960; the rise and fall of so-called "second-generation peacekeeping"¿more accurately labeled "peace enforcement"¿in the early 1990s in Bosnia and Somalia; and the reemergence in recent years of a muscular form of peacekeeping in sub-Saharan Africa, most notably in Congo in 2013.nStudents will learn the basic history of the United Nations since 1945 and the fundamentals of the United Nations Charter, especially with respect to the use of force and the sovereignty of member states. While the course does not attempt to provide comprehensive coverage of the historical details of any particular peacekeeping mission, students should come away with a firm grasp of the historical trajectory of U.N. peacekeeping and the evolving arguments of its proponents and critics over the years.nEach session of the course is structured around the discussion of assigned readings. Students are expected to complete the readings before class and to come to class prepared to participate in discussions. Each student will serve as rapporteur for one of the assigned readings, providing a critical summary of the reading in question and helping to stimulate the discussion to follow. The instructor will occasionally begin a session with brief introductory remarks (no more than ten minutes) to provide historical context about one or another topic. Required coursework includes two short papers whose particular topic and guidelines will be announced in class.

INTNLREL 168. America as a World Power in the Modern Era. 5 Units.
This course will examine the modern history of American foreign relations, from the turn of the twentieth century to the present. Beginning with the fateful decision to go to war with Spain, it will examine the major crises and choices that have defined the "American Century." Our study of U.S. foreign relations will consider such key factors as geopolitics, domestic politics, bureaucracy, psychology, race, and culture. IR majors taking this course to fulfill the IR WIM requirement should enroll in INTNLREL168W.
Same as: HISTORY 152K, INTNLREL 168W

INTNLREL 168A. American Interventions, 1898-Present. 5 Units.
This class seeks to examine the modern American experience with limited wars, beginning with distant and yet pertinent cases, and culminating in the war in Iraq. Although this class will examine war as a consequence of foreign policy, it will not focus primarily on presidential decision making. Rather, it will place wartime policy in a broader frame, considering it alongside popular and media perceptions of the war, the efforts of antiwar movements, civil-military relations, civil reconstruction efforts, and conditions on the battlefield. We will also examine, when possible, the postwar experience.
Same as: HISTORY 259E, HISTORY 359E

INTNLREL 168W. America as a World Power in the Modern Era. 5 Units.
This course will examine the modern history of American foreign relations, from the turn of the twentieth century to the present. Beginning with the fateful decision to go to war with Spain, it will examine the major crises and choices that have defined the "American Century." Our study of U.S. foreign relations will consider such key factors as geopolitics, domestic politics, bureaucracy, psychology, race, and culture. IR majors taking this course to fulfill the IR WIM requirement should enroll in INTNLREL168W.
Same as: HISTORY 152K, INTNLREL 168

INTNLREL 173. Presidents and Foreign Policy in Modern History. 5 Units.
Nothing better illustrates the evolution of the modern presidency than the arena of foreign policy. This class will examine the changing role and choices of successive presidential administrations over the past century, examining such factors as geopolitics, domestic politics, the bureaucracy, ideology, psychology, and culture. Students will be encouraged to think historically about the institution of the presidency, while examining specific case studies, from the First World War to the conflicts of the 21st century.
Same as: HISTORY 261G

INTNLREL 174. Diplomacy on the Ground: Case Studies in the Challenges of Representing Your Country. 5 Units.
The tragic death of Ambassador Chris Stevens has recently highlighted the dangers of diplomacy in the modern era. This class will look at how Americans in embassies have historically confronted questions such as authoritarian rule, human rights abuses, violent changes of government, and covert action. Case studies will include the Berlin embassy in the 1930s, Tehran in 1979, and George Kennan's experiences in Moscow, among others. Recommended for students contemplating careers in diplomatic service. *IR majors taking this course to fulfill the IR WIM requirement should enroll in INTNLREL174. As space is limited, first-year students must obtain the instructor's prior consent before enrolling.
Same as: HISTORY 252B

INTNLREL 175. American Empire in the Pacific. 3 Units.
This course will provide an interdisciplinary overview of the history and current state of American empire in the Pacific Islands. Through the lenses of law, history, and anthropology, the course will chart the progression of the American empire, beginning with early colonization, through World War II and the Cold War, to present day, including modern challenges facing communities affected by U.S. imperialism, decolonization movements, and the intersection of empire and climate change. Themes include cultural imperialism, militarization and experimentation, human rights and global ethics, and social and environmental justice.

INTNLREL 179. Major Themes in U.S.-Latin America Diplomatic History. 5 Units.
This seminar provides an overview of the most important events and initiatives that have characterized the relationship of the United States of America with its neighbors to the south, including Mexico, the Caribbean (especially Cuba, Haiti, and the Dominican Republic), Central America, and South America since the proclamation of the Monroe Doctrine in the early 19th century until the Obama Administration. In particular, the course examines the motivations for the Theodore Roosevelt Corollary to the Monroe Doctrine and the resulting period of blatant interventionism known as "Dollar Diplomacy," the Good Neighbor Policy of Franklin Delano Roosevelt, the brutal Cold War period, as well as policies pursued by the Clinton, George W. Bush, and Obama administrations, such as the Free Trade Area of the Americas (FTAA) and the Energy and Climate Partnership of the Americas (ECPA). The seminar explores not only what motivated U.S. policy makers and how their polices were implemented (and explains why they either succeeded or failed), but also discusses the impacts on individual countries and/or the region as a whole and the long-term consequences whose repercussions are still being felt today. The course also examines the major features of the inter-American system from the Pan American Union to the creation of the Organization of American States (OAS) and its continued relevancy in light of new institutional frameworks such as the Community of Latin American and Caribbean States (CELAC) and the Union of South American Nations (UNASUR) that exclude the United States of America.

INTNLREL 180A. Transitional Justice, Human Rights, and International Criminal Tribunals. 3-5 Units.
(Formerly IPS 280) Historical backdrop of the Nuremberg and Tokyo Tribunals. The creation and operation of the Yugoslav and Rwanda Tribunals (ICTY and ICTR). The development of hybrid tribunals in East Timor, Sierra Leone, and Cambodia, including evaluation of their success in addressing perceived shortcomings of the ICTY and ICTR. Examination of the role of the International Criminal Court and the extent to which it will succeed in supplanting all other ad hoc international justice mechanisms and fulfill its goals. Analysis focuses on the politics of creating such courts, their interaction with the states in which the conflicts took place, the process of establishing prosecutorial priorities, the body of law they have produced, and their effectiveness in addressing the needs of victims in post-conflict societies.
Same as: ETHICSOC 280, HUMRTS 103, INTLPOL 280

INTNLREL 182. The Great War. 5 Units.
The First World War provided a prototype for a new, horrific kind of war. It catalyzed the emergence of modern means of warfare and the social mechanisms necessary to sustain the industrialized war machine. Killing millions, it became the blueprint for the total war that succeeded it. It also brought about new social and political orders, transforming the societies which it mobilized at unprecedented levels.n nThis course will examine the military, political, economic, social and cultural aspects of the conflict. We will discuss the origins and outbreak of the war, the land, sea and air campaigns, the war's economic and social consequences, the home fronts, the war's final stages in eastern and western Europe as well as non-European fronts, and finally, the war's impact on the international system and on its belligerents and participants' perceptions of the new reality it had created.

INTNLREL 183. The Modern Battle. 5 Units.
The purpose of this seminar is to examine the evolution of modern warfare by closely following four modern battles/campaigns. For this purpose the seminar offers four mock staff rides, facilitating highly engaged, well-researched experience for participants. In a mock staff ride, students are assigned roles; each student is playing a general or staff officer who was involved in the battle/campaign. Students will research their roles and, during the staff ride, will be required to explain "their" decisions and actions. Staff rides will not deviate from historical records, but closely examine how decisions were made, what pressures and forces were in action, battle outcomes, etc. This in-depth examination will allow students to gain a deeper understanding of how modern tactics, technology, means of communications, and the scale of warfare can decide, and indeed decided, campaigns. We will will spend two weeks preparing for and playing each staff ride. One meeting will be dedicated to discussing the forces shaping the chosen battle/campaign: the identity and goals ofnthe belligerents, the economic, technological, cultural and other factors involved, as well as the initial general plan. The second meeting will be dedicated to the battle itself. The four battles will illustrate major developments in modern warfare.
Same as: HISTORY 206C

INTNLREL 189. PRACTICAL TRAINING. 1-3 Unit.
Students obtain internship in a relevant research or industrial activity to enhance their professional experience consistent with their degree program and area of concentration. Prior to enrolling students must get internship approved by the director. At the end of the quarter, a three page final report must be supplied documenting work done and relevance to degree program. Meets the requirements for Curricular Practical Training for students on F-1 visas. Student is responsible for arranging own internship. Limited to declared International Relations students only who are non-US citizens. May be repeated for credit.

INTNLREL 197. Directed Reading in International Relations. 1-5 Unit.
Open only to declared International Relations majors.n (Staff).

INTNLREL 198. Senior Thesis. 2-10 Units.
Open only to declared International Relations majors with approved senior thesis proposals.

INTNLREL 200A. International Relations Honors Field Research. 3 Units.
For juniors planning to write an honors thesis during senior year. Initial steps to prepare for independent research. Professional tools for conceptualizing a research agenda and developing a research strategy. Preparation for field research through skills such as data management and statistics, references and library searches, and fellowship and grant writing. Creating a work schedule for the summer break and first steps in writing. Prerequisite: acceptance to IR honors program.

INTNLREL 200B. International Relations Honors Seminar. 3 Units.
Second of two-part sequence. For seniors working on their honors theses. Professional tools, analysis of research findings, and initial steps in writing of thesis. How to write a literature review, formulate a chapter structure, and set a timeline and work schedule for the senior year. Skills such as data analysis and presentation, and writing strategies. Prerequisites: acceptance to IR honors program, and 199 or 200A. * Course satisfies the WiM requirement for International Relations majors who are accepted into the IR Honors program.

INTNLREL 200C. IR Honors Thesis Writing. 1 Unit.
Mandatory seminar for International Relations Honors Students who are writing their Honors Thesis. INTNLREL 200A and 200B are prerequisites.

INTNLREL 202. Original Research in International Relations. 5 Units. This new course offers IR majors an opportunity to conduct in-depth, original research and write an original research paper on a topic of their choosing within a single quarter. It is ideally suited for students who have a question that has intrigued them and that they would like to answer through original research. Through this course, students will narrow their interests into a clear research question, develop a research design, review relevant literature that addresses this question, conduct original empirical research and produce a final research paper. The course is designed for IR majors, and thus has an interdisciplinary focus and embraces methodological diversity. It may also be petitioned to count towards the IR major.

JEWISH STUDIES

The Taube Center for Jewish Studies investigates all aspects of Jewish culture, history, religion, literature, language and education from biblical times to the present. Courses are offered on the undergraduate and graduate levels in a program complemented by a full range of guest lectures, conferences, and symposia. The Center annually sponsors the Donald and Robin Kennedy Undergraduate Award for the best undergraduate essay on any theme in Jewish Studies, the Dr. Bernard Kaufman Undergraduate Research Award in Jewish Studies awarded to an undergraduate engaged in research on Jews in modernity, and the Koret Award for best essay written in Hebrew by an undergraduate. In alternate years, the Center sponsors the Nelee Langmuir Award for a student working in the field of Modern European History with a preference given to work on the Holocaust, and the Short Story Contest which awards the top three stories written on a Jewish theme.

Graduate students must apply and enroll in the program through the departments of English, History, Comparative Literature, Religious Studies, or the School of Education, and meet the requirements of those departments. All graduate students in the University with an academic interest in Jewish Studies are encouraged to participate in the Colloquium for Jews, Judaism and Jewish Culture, an ongoing opportunity to share work and meet with faculty and visiting scholars. For more information about graduate studies in Jewish Studies, contact the Center manager or Director.

Undergraduate Program in Jewish Studies

An undergraduate program in Jewish Studies is offered through Comparative Studies in Race and Ethnicity (CSRE) (p. 1224). It is interdisciplinary in that it that draws together a wide range of disciplines including history, literary studies, religious studies, gender studies, education, and other fields. Through its courses and extracurricular programs, the Taube Center seeks to introduce students to the ideas and experience of the Jewish people over its entire history, from the biblical period to the Holocaust and contemporary Israeli culture.

Undergraduates interested in completing a major or minor in Jewish Studies should visit the "Comparative Studies in Race and Ethnicity (CSRE) (p. 1235)" section of this bulletin for program descriptions and courses.

Director: Charlotte Fonrobert (Religious Studies)

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Courses

JEWISHST 4. What Didn't Make It into the Bible. 4 Units.
Over two billion people alive today consider the Bible to be sacred scripture. But how did the books that made it into the bible get there in the first place? Who decided what was to be part of the bible and what wasn't? How would history look differently if a given book didn't make the final cut and another one did? Hundreds of ancient Jewish and Christian texts are not included in the Bible. "What Didn't Make It in the Bible" focuses on these excluded writings. We will explore the Dead Sea Scrolls, Gnostic gospels, hear of a five-year-old Jesus throwing temper tantrums while killing (and later resurrecting) his classmates, peruse ancient romance novels, explore the adventures of fallen angels who sired giants (and taught humans about cosmetics), tour heaven and hell, encounter the garden of Eden story told from the perspective of the snake, and learn how the world will end. The course assumes no prior knowledge of Judaism, Christianity, the bible, or ancient history. It is designed for students who are part of faith traditions that consider the bible to be sacred, as well as those who are not. The only prerequisite is an interest in exploring books, groups, and ideas that eventually lost the battles of history and to keep asking the question "why." In critically examining these ancient narratives and the communities that wrote them, you will investigate how religions canonize a scriptural tradition, better appreciate the diversity of early Judaism and Christianity, understand the historical context of these religions, and explore the politics behind what did and did not make it into the bible.
Same as: CLASSICS 9N, RELIGST 4

JEWISHST 4N. A World History of Genocide. 3-5 Units.
Reviews the history of genocide from ancient times until the present. Defines genocide, both in legal and historical terms, and investigates its causes, consequences, and global dimensions. Issues of prevention, punishment, and interdiction. Main periods of concern are the ancient world, Spanish colonial conquest; early modern Asia; settler genocides in America, Australia, and Africa; the Armenian genocide and the Holocaust; genocide in communist societies; and late 20th century genocide.
Same as: HISTORY 4N

JEWISHST 5. Biblical Greek. 3-5 Units.
This is a one term intensive class in Biblical Greek. After quickly learning the basics of the language, we will then dive right into readings from the New Testament and the Septuagint, which is the ancient Greek translation of the Hebrew Bible. No previous knowledge of Greek required. If demand is high for a second term, an additional quarter will be offered in the Spring.
Same as: CLASSICS 6G, RELIGST 171A

JEWISHST 5B. Biblical Greek. 3-5 Units.
This is a continuation of the Winter Quarter Biblical Greek Course. Pre-requisite: CLASSICS 6G or a similar introductory course in Ancient Greek.
Same as: CLASSICS 7G

JEWISHST 5G. Intensive Biblical Greek. 8 Units.
Equivalent to two quarters of Biblical Greek (CLASSICS 6G, 7G). Students will learn the core of New Testament Greek with the goal of learning to accurately translate and read the New Testament. Students will read one-third of the Gospel of John during the course and will be well-prepared to read the Greek New Testament independently after the course. Focus on knowledge of key vocabulary and grammar needed to read the Greek Bible with ease. No previous knowledge of Greek required. Course does not fulfill the Stanford language requirement.
Same as: RELIGST 171X

JEWISHST 18N. Religion and Politics: Comparing Europe to the U.S.. 3-4 Units.
Interdisciplinary and comparative. Historical, political, sociological, and religious studies approaches. The relationship between religion and politics as understood in the U.S. and Europe. How this relationship has become tense both because of the rise of Islam as a public religion in Europe and the rising influence of religious groups in public culture. Different understandings and definitions of the separation of church and state in Western democratic cultures, and differing notions of the public sphere. Case studies to investigate the nature of public conflicts, what issues lead to conflict, and why. Why has the head covering of Muslim women become politicized in Europe? What are the arguments surrounding the Cordoba House, known as the Ground Zero Mosque, and how does this conflict compare to controversies about recent constructions of mosques in Europe? Resources include media, documentaries, and scholarly literature.
Same as: RELIGST 18N

JEWISHST 19N. Everyone Eats: Food, Religion and Culture. 3 Units.
Food is one of the most essential aspects of the human experience. The decisions and choices we make about food define who we have been, who we are now, and who we want to become. In this seminar we will study how food habits have shaped religious traditions, and vice versa, how religious traditions have shaped food ways. Some traditions are centered around food regiments such as the dietary laws, derived from biblical law that shapes Jewish and Christian tradition very differently. Indeed, many religious and ethical thinkers, as well as anthropologists, have interpreted the meanings of the dietary laws very differently. Further, in many religious traditions the killing of animals and consumption of meat is deeply fraught. We will explore the history of food practices and their contemporary impact; the connections between food, religion, and identity; the meanings that religious thinkers and anthropologists have attributed to food habits; as well as the creative translations of religious traditions into contemporary food ethics by various social movements and groups, predominantly in the U.S.
Same as: CSRE 19N, RELIGST 19N

JEWISHST 37Q. Zionism and the Novel. 3 Units.
At the end of the nineteenth century, Zionism emerged as a political movement to establish a national homeland for the Jews, eventually leading to the establishment of the State of Israel in 1948. This seminar uses novels to explore the changes in Zionism, the roots of the conflict in the Middle East, and the potentials for the future. We will take a close look at novels by Israelis, both Jewish and Arab, in order to understand multiple perspectives, and we will also consider works by authors from the North America and from Europe. NOTE: To satisfy a WAYS requirement, this course must be taken for at least 3 units. In AY 2020-21, a 'CR' grade will satisfy the WAYS requirement.
Same as: COMPLIT 37Q

JEWISHST 39S. The Other Side: Ethnography and Travel Writing through Jewish, Christian and Muslim Eyes. 3 Units.
In an age of reality television and social media, we are bombarded with snapshots of the exotic, monstrous, and bizarre. Yet despite their quantity, these images pale in comparison to the qualities of terror, wonder and curiosity that ancient travelers evoked in their encounters with foreign lands and peoples. Early ethnographers, too, painstakingly explored the beliefs and practices of unfamiliar peoples sometimes very close to home. This course surveys their most vivid writings, from ancient Greece to the colonization of the New World, focusing on the relation between fascination with the other and the author's own religious imagination. In particular, it introduces the contributions of Jewish travelers and ethnographers to this history, which has often been written from the standpoint of imperial, ecclesiastical or colonial power. It stresses literary continuities across three general periods (ancient, medieval, and colonial), showing how remarkably consistent patterns of identification spring from diverse encounters.

JEWISHST 53. Exploring Jewish Spirituality. 4 Units.
It was once accepted as fact that Judaism is, at its core, a rational religion devoid of any authentic mystical tradition. But the past century of scholarship has reversed this claim, demonstrating that the spiritual life has been integral to Judaism's vital heart since ancient times. This yearning for a direct immediate experience of God's Presence, a longing to grasp the mysteries of the human soul and know the inner dynamics of the Divine realm, has taken on many different forms across the centuries.
This course will introduce students to the major texts--from theological treatises to poems and incantations--and core ideas of Jewish mysticism and spirituality, tracking their development from the Hebrew Bible to the dawn of modernity. Close attention will be paid to the historical context of these sources, and we will also engage with broader methodological approaches--from phenomenology to philology--regarding the academic study of religion and the comparative consideration of mysticism in particular.
This course assumes no prior background of Judaism or any other religious traditions. All readings will be made available in English. Students are, however, invited to challenge themselves with the "optional/advanced" readings of sources both primary and secondary. Pending interest, students with facility in the original languages (Hebrew or Aramaic) will be given the opportunity to do so.
Same as: RELIGST 53

JEWISHST 85B. Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV. 3 Units.
(HISTORY 85B is 3 units; HISTORY 185B is 5 units.) Who are American Jews as depicted in popular media-- film, television, etc.-- since the Second World War? How are their religion, politics, mores, and practices represented and what ways, if at all, do such portraits reflect historical trends among Jews and society in general? What can be learned from film or tv about Jewish identity, notions of Jewish power and powerlessness, communal cohesiveness and assimilation, sexuality and the wages of intermarriage or race?.
Same as: CSRE 85B, HISTORY 85B, REES 85B

JEWISHST 86. Exploring the New Testament. 4 Units.
To explore the historical context of the earliest Christians, students will read most of the New Testament as well as many documents that didn't make the final cut. Non-Christian texts, Roman art, and surviving archeological remains will better situate Christianity within the ancient world. Students will read from the Dead Sea Scrolls, explore Gnostic gospels, hear of a five-year-old Jesus throwing divine temper tantrums while killing (and later resurrecting) his classmates, peruse an ancient marriage guide, and engage with recent scholarship in archeology, literary criticism, and history.
Same as: CLASSICS 43, RELIGST 86

JEWISHST 86Q. Blood and Money: The Origins of Antisemitism. 4-5 Units.
For over two millennia, Jews and Judaism have been the object of sustained anxieties, fears, and fantasies, which have in turn underpinned repeated outbreaks of violence and persecution. This course will explore the development and impact of antisemitism from Late Antiquity to the Enlightenment, including the emergence of the Blood libel, the association between Jews and moneylending, and the place of Judaism in Christian and Islamic theology. No prior background in history or Jewish studies is necessary. Prerequisite: PWR 1.
Same as: HISTORY 86Q

JEWISHST 101A. First-Year Hebrew, First Quarter. 5 Units.
In the first-year program, students acquire essential Hebrew through abundant opportunities to interact in the language in meaningful ways. The students learn to function appropriately in the language in a variety of social and cultural contexts.
Same as: AMELANG 128A

JEWISHST 101B. First-Year Hebrew, Second Quarter. 5 Units.
Continuation of AMELANG 128A. Prerequisite: Placement Test, AMELANG 128A.
Same as: AMELANG 128B

JEWISHST 101C. First-Year Hebrew, Third Quarter. 5 Units.
Continuation of AMELANG 128B. Prerequisite: Placement Test, AMELANG 128B. Fulfill the University Foreign Language Requirement.
Same as: AMELANG 128C

JEWISHST 102A. Second-Year Hebrew, First Quarter. 4 Units.
Continuation of AMELANG 128C. Sequence integrating culture and language. Emphasis is on proficiency in oral and written discourse including presentational language and socio culturally appropriate discourse in formal and informal, academic, and professional contexts. Prerequisite: Placement Test, First Year Hebrew .
Same as: AMELANG 129A

JEWISHST 102B. Second-Year Hebrew, Second Quarter. 4 Units.
Continuation of AMELANG 129A. Sequence integrating culture and language. Emphasis is on proficiency in oral and written discourse including presentational language and socio culturally appropriate discourse in formal and informal, academic, and professional contexts. Prerequisite: Placement Test, Hebrew 129A.
Same as: AMELANG 129B

JEWISHST 102C. Second-Year Hebrew, Third Quarter. 4 Units.
Continuation of AMELANG 129B. Sequence integrating culture and language. Emphasis is on advanced proficiency in oral and written discourse including presentational language and socio culturally appropriate discourse in formal and informal, academic, and professional contexts. Prerequisite: placement Test, Hebrew129B.
Same as: AMELANG 129C

JEWISHST 103A. Third-Year Hebrew, First Quarter. 3 Units.
Continuation of AMELANG 129C. Prerequisite: Placement Test, AMELANG 129C.
Same as: AMELANG 130A

JEWISHST 104. Hebrew Forum. 1-3 Unit.
Intermediate and advanced level. Biweekly Hebrew discussion on contemporary issues with Israeli guest speakers. Vocabulary enhancement. Focus on exposure to academic Hebrew. May be repeat for credit up to 4 times.
Same as: AMELANG 131A

JEWISHST 104A. First-Year Yiddish, First Quarter. 4 Units.
Reading, writing, and speaking.
Same as: AMELANG 140A

JEWISHST 104B. First-Year Yiddish, Second Quarter. 4 Units.
Continuation of AMELANG 140A. Prerequisite: AMELANG.
Same as: AMELANG 140B

JEWISHST 104C. First-Year Yiddish, Third Quarter. 4 Units.
Continuation of AMELANG 140B. Prerequisite: AMELANG 140B. Fulfills the University Foreign Language Requirement.
Same as: AMELANG 140C

JEWISHST 105. Hebrew Forum. 2-4 Units.
Intermediate and advanced level. Biweekly Hebrew discussion on contemporary issues with Israeli guest speakers. Vocabulary enhancement. Focus on exposure to academic Hebrew. May repeat for credit.
Same as: AMELANG 131B

JEWISHST 106. Reflection on the Other: The Arab Israeli Conflict in Literature and Film. 3-5 Units.
How literary works outside the realm of Western culture struggle with questions such as identity, minority, and the issue of the Other. How the Arab is viewed in Hebrew literature, film and music and how the Jew is viewed in Palestinian works in Hebrew or Arabic (in translation to English). Historical, political, and sociological forces that have contributed to the shaping of these writers' views. Guest lectures about the Jew in Palestinian literature and music. Note: To be eligible for WAYS credit, you must take course for a Letter Grade.
Same as: AMELANG 126, COMPLIT 145

JEWISHST 107A. Biblical Hebrew, First Quarter. 2 Units.
Establish a basic familiarity with the grammar and vocabulary of Biblical Hebrew and will begin developing a facility with the language. Students that are enrolled in this course must also enroll in Beginning Hebrew. This course requires no prior knowledge of Hebrew and will begin with learning the alphabet. By the end of the year, students will be able to translate basic biblical texts, will be familiar with common lexica and reference grammars, and will have sufficient foundational knowledge to enable them to continue expanding their knowledge either in a subsequent course or own their own.
Same as: RELIGST 170A

JEWISHST 107B. Biblical Hebrew, Second Quarter. 2 Units.
Continuation of 170A.

JEWISHST 107C. Biblical Hebrew, Third Quarter. 4 Units.
Continuation of 170B.
Same as: AMELANG 170C

JEWISHST 120. Sex and Gender in Judaism and Christianity. 3 Units.
What role do Jewish and Christian traditions play in shaping understandings of gender differences? Is gender always imagined as dual, male and female? This course explores the variety of ways in which Jewish and Christian traditions - often in conversation with and against each other - have shaped gender identities and sexual politics. We will explore the central role that issues around marriage and reproduction played in this conversation. Perhaps surprisingly, early Jews and Christian also espoused deep interest in writing about 'eunuchs' and 'androgynes,' as they thought about Jewish and Christian ways of being a man or a woman. We will examine the variety of these early conversations, and the contemporary Jewish and Christian discussions of feminist, queer, trans- and intersex based on them.
Same as: FEMGEN 130, RELIGST 130

JEWISHST 123. Muslims, Jews, and Christians: Conflict, Coexistence, and Collaboration. 4 Units.
Relationships between Muslims, Jews, and Christians today are informed by a multitude of complex and often painful histories. These faith traditions emerged out of deep and sustained engagement with one another sharing theological and ethical principles, and revering many of the same figures and there have been many periods of rich and productive interaction. Yet there have also been areas of dissension and conflict, and periods when theological, social, or political disagreement devolved into violence and oppression. In recent times (especially following the Holocaust and the establishment of the modern State of Israel), religious, political, and intellectual leaders of Muslim, Jewish, and Christian communities, in the U.S. and around the world, have recognized the need to forge deeper and more meaningful relationships with one another. Knowledge and understanding of the perspectives that different communities and individuals bring to bear on their entangled past, present, and future are a critical part of efforts to resolve intransigent conflicts and advance mutual interests. This course explores some of the most significant moments of interaction through literature and art, polemic and dialogue that have shaped engagements between Muslims, Jews, and Christians throughout history, and examines both prospects and pitfalls for engagement in the present and future.
Same as: RELIGST 133

JEWISHST 125. Modern Jewish Mysticism: Devotion in a Secular Age. 4 Units.
The twentieth-century was a time of tremendous upheaval and unspeakable tragedy for the Jewish communities of Europe. But the past hundred years were also a period of great renewal for Jewish spirituality, a renaissance that has continued into the present day. Beginning with the writings of the Safed Renaissance, the Sabbateanism, and the Hasidic masters, our course will focus on key thinkers in the 19th and 20th centuries, including: Hillel Zeitlin, Martin Buber, Abraham Isaac Kook, Abraham Joshua Heschel, and Arthur Green. Drawing upon essays, homilies, and poems, we will examine the ways in which their works re-cast and reinterpret the Jewish tradition in answer to the singular questions and challenges modernity. We will mark the development of their thinking against the two World Wars, the Holocaust, and the complex and multi-faceted processes of secularization. We will also consider the theological project of modern Jewish mystics in dialogue with modern Jewish philosophers (such as Hermann Cohen, Franz Rosenzweig, and Emmanuel Levinas) as well as modern philosophers and scholars informed by Christianity (from William James to Charles Taylor). This course argues that the processes of sacralization, of reclaiming a life of mystical devotion, are best understood as a unique response to Jewish modernity rather than a retreat to past modalities of religion. In seeking to prove this point, we will explore writers whose work emerged in and engaged with different social and cultural domains. We will investigate their writings with an eye to issues such as power and identity, and will draw upon their works in charting the intersection of mysticism, literature, language and experience. Throughout our readings, we will keep our eye on the sustained impact of feminism on Jewish mysticism in the second half of the twentieth century. This course is structured as a seminar, and our class discussions will be rooted in the primary sources. It assumes no prior background of Judaism or any other religious traditions. All readings will be made available in English.
Same as: RELIGST 165

JEWISHST 127D. Readings in Talmudic Literature. 1 Unit.
Readings of Talmudic texts. Some knowledge of Hebrew is preferred, but not necessary. The goal of the ongoing workshop is to provide Stanford students with the opportunity to engage in regular Talmud study, and to be introduced to a variety of approaches to studying Talmudic texts and thought.
Same as: JEWISHST 227D, RELIGST 170D

JEWISHST 127E. Readings in Talmudic Literature Advanced. 1 Unit.
Readings of the talmudic texts. Knowledge of Hebrew is required. The ongoing seminar is designed to study the making of the talmudic sugya (unit of discourse), along with classic commentaries. Students will consider some of the recent developments in the academic study of Talmudic literature, introduced by the instructor. The goal of the ongoing seminar is to provide Stanford students and faculty with the opportunity to engage in regular Talmud study, and to be introduced to a variety of approaches to studying Talmudic texts. Meeting time and location TBA. May be repeated for credit.
Same as: JEWISHST 227E, RELIGST 170E

JEWISHST 128. Women and Gender in Early Judaism and Christianity. 4 Units.
Beginning with the Hebrew Bible and New Testament, we will explore female figures in early Jewish and Christian literatures, such as Eve, Ruth, Mary, and Junia. Based on this, we will probe the prescriptions for female comportment in early Judaism and Christianity placing these literary prescriptions in conversation with material evidence related to women, such as for example the Babatha archive. We will analyze the politics of patriarchy in ancient discourse, and examine, among other topics, efforts by Christian clergy to silence female prophets in the second and third centuries CE. The bulk of the course will be devoted to the formative years of both Judaism and Christianity in Late Antiquity. This course assumes no prior knowledge of Judaism, Christianity, the Bible, or ancient history. It is designed for students who are part of faith traditions that consider the Bible to be sacred, as well as those who are not. Ancient readings in this course will be supplemented by modern scholarship in classics, early Christian studies, gender studies, queer studies, and the history of sexuality.
Same as: RELIGST 128

JEWISHST 129. Sacred Words: Jewish Thought and the Question of Language. 4 Units.
Jews have long been referred as the people of the book, but they might better be referred to as the people of the word. Drawing upon texts from the Hebrew Bible to the works of modern Hebrew writers like of Hayyim Nahman Bialik and Amoz Oz, this seminar will chart the development of Jewish thinking on language over the past two millennia. We will explore issues such as: the idea of canonization; oral versus written language; the nature and possibility of translation; the origins of language; notions of negative theology; mystical approaches to the word; the rebirth of Hebrew as a spoken and cultural language; and the limits of language after the Holocaust. This course will also bring Jewish thought into dialogue with contemporary philosophical reflections on issues of language. Modern explorations of language will prove an interesting way of deepening our understanding of the Jewish thinkers on one hand, and enriching contemporary intellectual discourse on the other.
Same as: RELIGST 169

JEWISHST 129A. Milk and Honey, Wine and Blood: Food, Justice, and Ethnic Identity in Jewish Culture. 4 Units.
This course examines Jewish culture and the food practices and traditions that have shaped and continue to shape it. Students learn to prepare a variety of meals while studying about the historical and literary traditions associated with them, such as the dietary `laws¿ and the long history of their interpretation, as well as the cultivation of eating as devotional practice in Jewish mystical traditions. We will explore how regional foods the world over contribute to the formation of distinct Jewish ethnic identities, and how these traditions shape contemporary Jewish food ethics. The course includes guest visits by professional chefs and food writers, and field trips to a local winery.
Same as: RELIGST 129

JEWISHST 130VP. Introduction to Social Demography: A Comparative Approach (Israel & US). 3 Units.
In this class we will learn about Israel's unique demographic structure and we will compare it to the US and other countries. Reading materials include general theories as well as research published in scholarly journals. In the first half of this class we will review basic demographic concepts (mortality, fertility and migration), and we will apply them to the Israeli context, with comparisons between different social groups in Israel and with comparison to the US. We will also review basic demographic theories (theories of population change) and apply them to different countries. nnIn the second half of the class we will focus on demography of the family. We will ask how fertility, marriage and divorce differ for different population groups in Israel and the US, and we will tie family processes to current theories of gender and family change. We will also learn how demographic processes may be related to the reproduction of poverty, and inequality.
Same as: SOC 119VP

JEWISHST 131VP. Poverty and Inequality in Israel and the US: A Comparative Approach. 3 Units.
Poverty rates in Israel are high and have been relatively stable in recent decades, with about one fifth of all households (and a third of all children) living below the poverty line. In this class we will learn about poverty and inequality in Israel and we will compare with the US and other countries.nnIn the first few weeks of this class we will review basic theories of poverty and inequality and we will discuss how theories regarding poverty have changed over the years, from the "culture of poverty" to theories of welfare state regimes. We will also learn about various ways of measuring poverty, material hardship, and inequality, and we will review the methods and data used.nnIn the remaining weeks of the class we will turn to substantive topics such as gender, immigration, ethnicity/nationality, welfare policy, age, and health. Within each topic we will survey the debates within contemporary scholarship and we will compare Israel and the US. Examination of these issues will introduce students to some of the challenges that Israeli society faces today.
Same as: CSRE 120P, SOC 120VP

JEWISHST 132. Between Nation-Building and Liberalization: The Welfare State in Israel. 3 Units.
According to one commentator, the political economy of Israel is characterized by embedded illiberalism. In the context of a national and territorial conflict, the Israeli state fostered comprehensive nation-building projects (such as immigration absorption), via employment and social protection schemes. This course surveys the distinctive development of the Israeli welfare state in comparative perspective, and analyzes its particular politics and outcomes in the form of inclusion but also exclusion of different populations from full citizenship. The course will follow a chronological path from the pre-state crystallization of national welfare institutions to the current neo-liberalization trend that seems to undermine collectivist projects and advance the re-commodification of citizenship. Throughout the course we will discuss issues such as: the role of labor and nationalism in the design of social policy, the production of national, ethnic and gender inequality, and the dynamics of change and continuity following heightened liberalization and internationalization since the 1980s. The course exposes students to key issues of the sociology of the welfare state with particular emphasis on the development and role of the state in a deeply conflicted society, using the Israeli experience. At the conclusion of the course students are expected to understand how welfare state institutions reflect but also reproduce societal schisms and conflicts, and be familiar with central aspects of Israeli politics past and present.
Same as: SOC 102

JEWISHST 132A. Social Inequality in Israel. 3 Units.
Like the US, Israel is a nation of immigrants. Israel additionally shares with the US vast economic, ethnic/racial and gender gaps, which are shaped and are being shaped by the demographic diversity characterizing its society. The course will provide a comparative framework for analyzing social inequality in Israel. We will start by reviewing essential concepts and theories in the study of social stratification. We will then review the main cleavages characterizing Israeli society, while comparing them to gaps in other advances societies and particularly the US. We will focus on class, gender and ethnicity as the main distinctions and will examine their implications for differences in life chances in several domains across the life course. We will conclude with a discussion of possible scenarios for change, which are relevant to both Israel and the US. Throughout the course, we will study critical thinking techniques and will use them for analyzing issues that are central for the analysis of social inequality in Israel and elsewhere.
Same as: CSRE 132A, SOC 102A

JEWISHST 132D. Sociology of Jewishness. 3-5 Units.
Examines the place of the Jewish people in society throughout various locales and historical periods to understand how interactions among Jews and with other groups have shaped Jewish identities. Topics include modernism, the Holocaust, Israel/nationhood, race/ethnicity, intermarriage, and assimilation. Uses theoretical, empirical, and historical material from multiple social scientific fields of study and explores the study of Judaism from several major sociological lenses.
Same as: CSRE 132J, SOC 132J

JEWISHST 132VP. Family and Society: A Comparative Approach (Israel & the US). 3 Units.
Families are changing: Non-marital partnerships such as cohabitation are becoming more common, marriage is delayed and fertility is declining. In this class we will learn about how families are changing in Israel and we will compare with the US and other countries. Reading materials include general theories as well as research published in scholarly journals. nnAfter reviewing general theories and major scholarly debates concerning issues of family change, we will turn to specific family processes and compare Israel, the US and other countries. We will ask how family transitions may differ for different population groups and at different stages of the life course, and we will tie family processes to current theories of gender. nnWe will cover a wide range of topics, from marriage and marital dissolution to cohabitation, LAT and remarriage. We will also discuss changes in women's labor force participation and how it bears on fertility, parenthood and household division of labor. Within each substantive topic we will survey the debates within contemporary scholarship and we will compare Israel and the US.
Same as: SOC 121VP, SOC 221VP

JEWISHST 133. Sociology of Citizenship. 3 Units.
Not only a legal status, citizenship forms a major concern for political sociologists interested in questions of membership, exclusion, redistribution, and struggles over the boundaries of collective identity. Citizenship is in essence membership in a political community that entails rights and duties, and structures a tripartite relationship between the individual, community and state. The institutions of citizenship include formal and bureaucratic rules of eligibility ¿ but also informal institutions such as identity and belonging. Throughout the course, students are exposed to key issues of the sociology of citizenship such as the historically different paths of men, women, minority groups and immigrants into citizenship, the contested development of rights and duties, the regulation of population, as well as insurgency and collective attempts to rearticulate the terms of the ¿contract¿ with the state. Israel, the USA, France and Germany are used as empirical illustrations. At the conclusion of the course students will know how to utilize the analytic framework of citizenship in order to analyze a wide range of political phenomena in contemporary societies.
Same as: SOC 103

JEWISHST 133A. WELFARE, WORK AND POVERTY.. 3 Units.
Early theorists of the welfare state described it as a reaction to the emergence of needs and interests of specific social groups during processes of economic development and change. Later theorists countered that the welfare state does not merely react to social cleavages during times of economic change but rather works to actively shape them, in line with worldviews or the interests of dominant group members. Adopting the latter approach, the goal of this course is to provide the tools and knowledge necessary for a critical evaluation of the social services provided to Israeli citizens and their impact on social and economic inequalities. The course will survey various approaches to the understanding of the goals of the welfare state. A comparative and historical account of the development of the welfare state will be presented, while highlighting recent developments, such as the increase in poverty rates and the aging of the population. During the course, we will examine the diverse needs that are served by the welfare state, as well as major dilemmas associated with the provision of services. Throughout the course, we will study critical thinking techniques and will use them for analyzing issues that are central for the development of social policies in Israel and the US.
Same as: CSRE 133J, SOC 103A

JEWISHST 139. Rereading Judaism in Light of Feminism. 4 Units.
During the past three decades, Jewish feminists have asked new questions of traditional rabbinic texts, Jewish law, history, and religious life and thought. Analysis of the legal and narrative texts, rituals, theology, and community to better understand contemporary Jewish life as influenced by feminism.
Same as: FEMGEN 139

JEWISHST 143. Literature and Society in Africa and the Caribbean. 4 Units.
This course explores texts and films from Francophone Africa and the Caribbean in the 20th and 21st centuries. The course will explore the connections between Sub-Saharan Africa, the Maghreb and the Caribbean through both foundational and contemporary works while considering their engagement with the historical and political contexts in which they were produced. This course will also serve to improve students' speaking and writing skills in French while sharpening their knowledge of the linguistic and conceptual tools needed to conduct literary analysis. The diverse topics discussed in the course will include national and cultural identity, race and class, gender and sexuality, orality and textuality, transnationalism and migration, colonialism and decolonization, history and memory, and the politics of language. Readings include the works of writers and filmmakers such as Djibril Tamsir Niane, Léopold Senghor, Aimé Césaire, Albert Memmi, Patrick Chamoiseau, Leonora Miano, Leila Slimani, Dani Laferrière and Ousmane Sembène. Taught in French. Students are highly encouraged to complete FRENLANG 124 or to successfully test above this level through the Language Center. This course fulfills the Writing in the Major (WIM) requirement.
Same as: AFRICAAM 133, AFRICAST 132, COMPLIT 133A, COMPLIT 233A, CSRE 133E, FRENCH 133

JEWISHST 144B. Poetic Thinking Across Media. 4 Units.
Even before Novalis claimed that the world must be romanticized, thinkers, writers, and artists wanted to perceive the human and natural world poetically. The pre- and post-romantic poetic modes of thinking they created are the subject of this course. Readings include Ecclestias, Zhaozhou Congshen, Montaigne, Nietzsche, Kafka, Benjamin, Arendt, and Sontag. This course will also present poetic thinking in the visual arts–from the expressionism of Ingmar Bergman to the neo-romanticism of Gerhard Richter.

JEWISHST 147A. The Hebrew Bible in Literature. 3-5 Units.
Close reading of major biblical stories and poems that influenced modern literature written in English and Hebrew. Hebrew texts will be read in translation to English. Each class will include a section from the Hebrew Bible as well as a modern text or film based on the biblical story/poem. Discussion of questions such as: the meaning and function of myths and the influence of the Hebrew Bible on the development of literary styles and genres.
Same as: JEWISHST 347A

JEWISHST 147B. The Hebrew and Jewish Short Story. 3-5 Units.
Short stories from Israel, the US and Europe including works by Agnon, Kafka, Keret, Castel-Bloom, Kashua, Singer, Benjamin, Freud, biblical myths and more. The class will engage with questions related to the short story as a literary form and the history of the short story. Reading and discussion in English. Optional: special section with readings and discussions in Hebrew. Note: To be eligible for WAYS credit, you must take the course for a Letter Grade. In AY 2020-21, a 'CR' grade will satisfy the WAYS requirement.
Same as: COMPLIT 127B

JEWISHST 148. Writing Between Languages: The Case of Eastern European Jewish Literature. 1-5 Unit.
Eastern European Jews spoke and read Hebrew, Yiddish, and their co-territorial languages (Russian, Polish, etc.). In the modern period they developed secular literatures in all of them, and their writing reflected their own multilinguality and evolving language ideologies. We focus on major literary and sociolinguistic texts. Reading and discussion in English; students should have some reading knowledge of at least one relevant language as well. ***This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit***.
Same as: JEWISHST 348, SLAVIC 198, SLAVIC 398

JEWISHST 150. Texts that Changed the World from the Ancient Middle East. 3-5 Units.
This course traces the story of the cradle of human civilization. We will begin with the earliest human stories, the Gilgamesh Epic and biblical literature, and follow the path of the development of law, religion, philosophy and literature in the ancient Mediterranean or Middle Eastern world, to the emergence of Jewish and Christian thinking. We will pose questions about how this past continues to inform our present: What stories, myths, and ideas remain foundational to us? How did the stories and myths shape civilizations and form larger communities? How did the earliest stories conceive of human life and the divine? What are the ideas about the order of nature, and the place of human life within that order? How is the relationship between the individual and society constituted? This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: COMPLIT 31, HUMCORE 111, RELIGST 150

JEWISHST 155D. Jewish American Literature and Film. 5 Units.
From its inception, Jewish-American literature has taken as its subject as well as its context the idea of Jewishness itself. Jewish culture is a diasporic one, and for this reason the concept of Jewishness differs from country to country and across time. What stays remarkably similar, though, is Jewish self-perception and relatedly Jewish literary style. This is as true for the first-generation immigrant writers like Isaac Bashevis Singer and Anzia Yezierska who came to the United States from abroad as it is for their second-generation children born in the United States, and the children of those children. In this course, we will consider the difficulties of displacement for the emigrant generation and their efforts to sustain their cultural integrity in the multicultural American environment. We'll also examine the often comic revolt of their American-born children and grandchildren against their (grand-)parents nostalgia and failure to assimilate. Only by considering these transnational roots can one understand the particularity of the Jewish-American novel in relation to mainstream and minority American literatures. In investigating the link between American Jewish writers and their literary progenitors, we will draw largely but not exclusively from Russia and the countries of Eastern Europe.
Same as: AMSTUD 145D, ENGLISH 145D, REES 145D

JEWISHST 155J. The Jewish-American Novel: Diaspora, Privilege, Anxiety, Comedy. 4-5 Units.
Jews are sometimes referred to as 'the people of the book.' Would Portnoy's Complaint count as a book that constitutes Jewish-American peoplehood? What about Fear of Flying? This seminar introduces students to influential Jewish-American novels (and some short stories and film) from the late nineteenth century to the present day. These works return time and again to questions of diaspora, race, queer social belonging, and the duty to a Jewish past, mythical or real. Through close readings of short stories and novels coupled with secondary readings about Jewish-American history and culture, we will explore how American Jewishness is constructed differently in changing historical climates. What makes a text Jewish? What do we mean by Jewish humor and Jewish seriousness? How do Jewish formulations of gender and power respond to Jews' entrance into the white American mainstream? As we read, we'll think through and elaborate on models of ethnicity, privilege, sexuality, and American pluralism. Authors include Cahan, Yezierska, Singer, Roth, Bellow, Malamud, Ozick, Mailer, Jong, and Englander.
Same as: AMSTUD 145J, ENGLISH 145J

JEWISHST 185B. Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV. 4-5 Units.
(HISTORY 185B is 5 units; HISTORY 85B IS 3 units.) Who are American Jews as depicted in popular media -- film, television, etc. -- since the Second World War? How are their religion, politics, mores, and practices represented and what ways, if at all, do such portraits reflect historical trends among Jews and society in general? What can be learned from film or tv about Jewish identity, notions of Jewish power and powerlessness, communal cohesiveness and assimilation, sexuality and the wages of intermarriage or race?.
Same as: CSRE 185B, HISTORY 185B, HISTORY 385C, REES 185B, SLAVIC 183

JEWISHST 186. Jews in Trump's America and Before. 5 Units.
This class considers the notion of American Jewish exceptionalism through the lens of Trump's America. The social and economic success of American Jewry over the last 350 years is remarkable, yet Jews continue to find their position in American society called into question. This course moves between past and present and will consider key moments in American Jewish life with a particular emphasis on contemporary currents, including post-liberal identity politics, Israel, and the rise of white supremacy.
Same as: HISTORY 286F

JEWISHST 199B. Directed Reading in Yiddish, Second Quarter. 1-5 Unit.
For intermediate or advanced students. May be repeated for credit.

JEWISHST 205. Reading Hebrew, First Quarter. 2-4 Units.
Introduction to Hebrew literature through short stories and poetry by notable Israeli writers. In Hebrew. Prerequisite: one year of Hebrew or equivalent.

JEWISHST 211. Out of Eden: Deportation, Exile, and Expulsion from Antiquity to the Renaissance. 4-5 Units.
This course examines the long pedigree of modern deportations and mass expulsions, from the forced resettlements of the ancient world to the expulsion of Jews from Spain in 1492, and from the outlawry of Saga-era Iceland to the culture of civic exile in Renaissance Italy. The course focuses on Europe and the Mediterranean from antiquity to the early modern period, but students are welcome to venture beyond these geographical and chronological boundaries for their final papers.
Same as: HISTORY 211, HISTORY 311

JEWISHST 215. Understanding Jews. 1-2 Unit.
This discussion-based course will give students an opportunity to explore the constellation of religious, ethnic, national, cultural, artistic, spiritual, and political forces that shape Jewish life in the 21st century. Drawing on historical documents, classical texts, and contemporary events, this course will give students from any background an opportunity to ask hard questions, deepen their own understandings, and challenge their conceptions of what makes Jewish life ¿Jewish.¿ No matter where you went for Sunday school ¿ church, synagogue, the woods, or nowhere at all ¿ this course is a chance to question what you know, and interrogate how you came to know what you know about Jews, Judaism, and Jewish culture.
Same as: AMSTUD 215

JEWISHST 221C. Aramaic Texts. 1-5 Unit.
Readings in Aramaic/Syriac with special focus on grammar and syntax of ancient texts.
Same as: JEWISHST 321C, RELIGST 221C, RELIGST 321C

JEWISHST 221D. Readings in Syriac Literature. 2-5 Units.
In recent years, there has been growing interest in the works of Syriac speaking Christians in antiquity and beyond. This course offers an introduction to the Syriac language, including its script, vocabulary and grammar, and a chance to read from a selection of foundational Syriac Christian texts.
Same as: JEWISHST 321D, RELIGST 221D, RELIGST 321D

JEWISHST 226E. The Holocaust: Insights from New Research. 4-5 Units.
Overview of the history of the Holocaust, the genocide of European Jews. Explores its causes, course, consequences, and memory. Addresses the events themselves, as well as the roles of perpetrators and bystanders, dilemmas faced by victims, collaboration of local populations, and the issue of rescue. Considers how the Holocaust was and is remembered and commemorated by victims and participants alike. Uses different kinds of sources: scholarly work, memoirs, diaries, film, and primary documents.
Same as: CSRE 226D, CSRE 326D, HISTORY 226D, HISTORY 326D, JEWISHST 326D

JEWISHST 227D. Readings in Talmudic Literature. 1 Unit.
Readings of Talmudic texts. Some knowledge of Hebrew is preferred, but not necessary. The goal of the ongoing workshop is to provide Stanford students with the opportunity to engage in regular Talmud study, and to be introduced to a variety of approaches to studying Talmudic texts and thought.
Same as: JEWISHST 127D, RELIGST 170D

JEWISHST 227E. Readings in Talmudic Literature Advanced. 1 Unit.
Readings of the talmudic texts. Knowledge of Hebrew is required. The ongoing seminar is designed to study the making of the talmudic sugya (unit of discourse), along with classic commentaries. Students will consider some of the recent developments in the academic study of Talmudic literature, introduced by the instructor. The goal of the ongoing seminar is to provide Stanford students and faculty with the opportunity to engage in regular Talmud study, and to be introduced to a variety of approaches to studying Talmudic texts. Meeting time and location TBA. May be repeated for credit.
Same as: JEWISHST 127E, RELIGST 170E

JEWISHST 240. The Yiddish Story. 3-5 Units.
The Yiddish language is associated with jokes, folktales, and miracle legends, as well as modern stories. This class traces the development of Yiddish literature through these short oral and written forms, following Jewish writers out of the East European market town to cities in the Soviet Union, Israel, and especially the United States. We conclude with stories written in other languages about Yiddish writers. Readings include Sholem Aleichem, I. L. Peretz, Isaac Bashevis Singer, Esther Singer-Kreitman, Cynthia Ozick, and Dina Rubina. Readings in English; optional discussion section for students who read Yiddish.
Same as: AMSTUD 240Y

JEWISHST 242G. Myth and Modernity. 3-5 Units.
Masters of German 20th- and 21st-Century literature and philosophy as they present aesthetic innovation and confront the challenges of modern technology, social alienation, manmade catastrophes, and imagine the future. Readings include Nietzsche, Freud, Rilke, Musil, Brecht, Kafka, Doeblin, Benjamin, Juenger, Arendt, Musil, Mann, Adorno, Celan, Grass, Bachmann, Bernhardt, Wolf, and Kluge. Taught in English. Note for German Studies grad students: GERMAN 322 will fulfill the grad core requirement since GERMAN 332 is not being offered this year. NOTE: Enrollment requires Professor Eshel's consent. Please contact him directly at eshel@stanford.edu and answer these 2 questions: "Why do you want to take this course?" and "What do you think you can add to the discussion?" Applications will be considered in the order in which they were received. Enrollment is limited to 20 students.
Same as: COMPLIT 222A, GERMAN 222, GERMAN 322, JEWISHST 342

JEWISHST 243A. Hannah Arendt: Facing Totalitarianism. 3-5 Units.
Like hardly any other thinker of the modern age, Hannah Arendt's thought offers us timeless insights into the fabric of the modern age, especially regarding the perennial danger of totalitarianism. This course offers an in-depth introduction to Arendt's most important works in their various contexts, as well as a consideration of their reverberations in contemporary philosophy and literature. Readings include Arendt's The Origin of Totalitarianism, The Human Condition, Between Past and Future, Men in Dark Times, On Revolution,Eichmann in Jerusalem, and The Life of the Mind, as well as considerations of Hannah Arendt's work by Max Frisch, Jürgen Habermas, Seyla Benhabib, Judith Butler, Giorgio Agamben, and others. Special attention will be given to Arendt's writings on literature with an emphasis on Kafka, Brecht, Auden, Sartre, and Camus. This course will be synchronously conducted, but will also use an innovative, Stanford-developed, online platform called Poetic Thinking. Poetic Thinking allows students to share both their scholarly and creative work with each other. Based on the newest technology and beautifully designed, it greatly enhances their course experience.
Same as: COMPLIT 353B, GERMAN 253, GERMAN 353

JEWISHST 249. The Algerian Wars. 3-5 Units.
From Algiers the White to Algiers the Red, Algiers, the Mecca of the Revolutionaries in the words of Amilcar Cabral, this course offers to study the Algerian Wars since the French conquest of Algeria (1830-) to the Algerian civil war of the 1990s. We will revisit the ways in which the war has been narrated in literature and cinema, popular culture, and political discourse. A special focus will be given to the Algerian War of Independence (1954-1962). The course considers the racial representations of the war in the media, the continuing legacies surrounding the conflict in France, Africa, and the United States, from Che Guevara to the Black Panthers. A key focus will be the transmission of collective memory through transnational lenses, and analyses of commemorative events and movies. nReadings from James Baldwin, Assia Djebar, Albert Camus, Frantz Fanon, Mouloud Feraoun. Movies include "The Battle of Algiers," "Days of Glory," and "Viva Laldjérie." nTaught in English.
Same as: CSRE 249, FRENCH 249, HISTORY 239G

JEWISHST 265. Jewish Law: Introduction and Topics. 2 Units.
This course will provide an overview of the field of Jewish Law and will seek to provide a few case studies of topics in Jewish Law. All the readings are in English and this course presupposes no background in Jewish Law. Jewish Law is the world's oldest complex legal systems with distinct and idiosyncratic approaches to family, commercial, ritual and many other areas of law. It also has developed an elaborate "conflicts of law" sub-literature focusing on when should Jewish Law apply and when should some other legal system apply, reflecting the long history of the Jewish community in the diaspora as a minority. In this course, we will consider how Jewish law approaches a number of specific topics and we will ponder as well the proper interaction between Jewish law and secular legal norms, Jewish Law and changes in technology, Jewish law and sovereignty, Jewish Law and Bioethics and Jewish law and Family. Other topics will be added as we all see fit. Students who are interested in making a presentation on an area of their choice are welcome to do so. The course will seek to include an optional supplementary "field trip" to see a rabbinical court in action in California. The Learning Outcomes provided by this court include the following: Students who take this course will: 1. Exhibit knowledge and understanding of key concepts in substantive law, procedural law, and legal thought in Jewish Law. 2. Demonstrate facility with legal analysis and reasoning in the Jewish Legal tradition and will demonstrate the ability to conduct legal research in Jewish Law. After the term begins, students accepted into the course can transfer, with consent of the instructor, from section (01) into section (02), which meets the R requirement. Elements used in grading: Attendance, Class Participation, Final Paper. Cross-listed with the Law School (LAW 5038).

JEWISHST 281K. Departures: Late Ottoman Displacements of Muslims, Christians, and Jews, 1853-1923. 5 Units.
In the late nineteenth and early twentieth centuries, millions of people moved into and out of the Ottoman Empire, sometimes voluntarily and sometimes under extremely violent circumstances. More often than not, they moved in groups that were religiously defined. This course examines how these developments shaped the future of the modern Middle East, Balkans, and beyond. Questions include: How did migration and the idea of the nation shape each other? What does it mean to call a group or a migration "religious"? Why did certain types of diversity become a "problem," in the eyes of the state? What caused these population displacements? What can this topic teach us about today's mass migrations?.
Same as: HISTORY 281K

JEWISHST 282. Circles of Hell: Poland in World War II. 5 Units.
Looks at the experience and representation of Poland's wartime history from the Nazi-Soviet Pact (1939) to the aftermath of Yalta (1945). Examines Nazi and Soviet ideology and practice in Poland, as well as the ways Poles responded, resisted, and survived. Considers wartime relations among Polish citizens, particularly Poles and Jews. In this regard, interrogates the traditional self-characterization of Poles as innocent victims, looking at their relationship to the Holocaust, thus engaging in a passionate debate still raging in Polish society.
Same as: HISTORY 228, HISTORY 328, JEWISHST 382

JEWISHST 282K. The Holocaust and Its Aftermath. 4-5 Units.
This seminar gives an overview over different aspects of the history of the Holocaust and its aftermath and will examine key issues in recent Holocaust historiography and questions of memory and representation. Special emphasis is put on the nature of the historian's task, as viewed through the lens of historians of the Holocaust, as well as to the significance of the Holocaust in history and how it has changed over time. The course will confront students with historiographical texts and historical documents, with photography and film, works of scholarship and art.
Same as: HISTORY 202K, HISTORY 302K, JEWISHST 382K

JEWISHST 284C. Genocide and Humanitarian Intervention. 3 Units.
Open to medical students, graduate students, and undergraduate students. Traces the history of genocide in the 20th century and the question of humanitarian intervention to stop it, a topic that has been especially controversial since the end of the Cold War. The pre-1990s discussion begins with the Armenian genocide during the First World War and includes the Holocaust and Cambodia under the Khmer Rouge in the 1970s. Coverage of genocide and humanitarian intervention since the 1990s includes the wars in Bosnia, Rwanda, Kosovo, the Congo and Sudan.
Same as: HISTORY 224C, HISTORY 324C, JEWISHST 384C, PEDS 224

JEWISHST 285C. The Immigrant in Modern America. 5 Units.
The 2016 presidential election propelled the topic of immigration to the center of public attention. This is not the first time, however, that questions of immigration and what it means to be an American have revealed deep divisions within the U.S. This course explores the reception of immigrants in modern America, including differing views toward immigration; how immigrants help shape ideas about the American nation; and the growth of state bureaucracy and policing apparatus as a response.
Same as: HISTORY 285C

JEWISHST 286D. Yours in Struggle: African Americans and Jews in the 20th Century U.S.. 5 Units.
This colloquium explores the history of African Americans and Jews in 20th century US beginning with Jewish immigration from Eastern Europe and the Great Migration to America's urban centers. It considers the geographical and economic tensions that developed between two minority groups living in close proximity; the appropriation of black culture; Jewish claims to whiteness and performance of blackness; intercommunal relations during the Civil Rights movement; the breakdown of the black-Jewish alliance in the late 1960s; and the lingering ramifications of this shift today.
Same as: HISTORY 286D

JEWISHST 287S. Research Seminar in Ottoman and Middle East History. 4-5 Units.
Student-selected research topics. May be repeated for credit.
Same as: HISTORY 481, JEWISHST 481

JEWISHST 288C. Jews of the Modern Middle East and North Africa. 5 Units.
This course will explore the cultural, social, and political histories of the Jews of the Middle East and North Africa (MENA) from 1860 to present times. The geographic concentration will range from Morocco to Iran, Iraq to Turkey, and everywhere in between. Topics include: Jewish culture and identity in Islamic contexts; the impacts of colonialism, westernization, and nationalism; Jewish-Muslim relations; the racialization of MENA Jews; the Holocaust; the experience and place of MENA Jews in Israel; and "Jews of Color.".
Same as: HISTORY 288C

JEWISHST 291X. Learning Religion: How People Acquire Religious Commitments. 4 Units.
This course will examine how people learn religion outside of school, and in conversation with popular cultural texts and practices. Taking a broad social-constructivist approach to the variety of ways people learn, this course will explore how people assemble ideas about faith, identity, community, and practice, and how those ideas inform individual, communal and global notions of religion. Much of this work takes place in formal educational environments including missionary and parochial schools, Muslim madrasas or Jewish yeshivot. However, even more takes place outside of school, as people develop skills and strategies in conversation with broader social trends. This course takes an interdisciplinary approach to questions that lie at the intersection of religion, popular culture, and education. May be repeat for credit.
Same as: AMSTUD 231X, EDUC 231, RELIGST 231X

JEWISHST 297X. American Jewish History: Learning to be Jewish in America. 2-4 Units.
This course will be a seminar in American Jewish History through the lens of education. It will address both the relationship between Jews and American educational systems, as well as the history of Jewish education in America. Plotting the course along these two axes will provide a productive matrix for a focused examination of the American Jewish experience. History students must take course for at least 3 units.
Same as: AMSTUD 279X, EDUC 279, HISTORY 288D, RELIGST 279X

JEWISHST 299A. Directed Reading in Yiddish, First Quarter. 1-5 Unit.
Directed Reading in Yiddish, First Quarter.

JEWISHST 301. Colloquium on Jews, Judaism, and Jewish Culture. 1 Unit.
An interdisciplinary graduate student colloquium for Stanford graduate students interested in Jewish Studies.

JEWISHST 321C. Aramaic Texts. 1-5 Unit.
Readings in Aramaic/Syriac with special focus on grammar and syntax of ancient texts.
Same as: JEWISHST 221C, RELIGST 221C, RELIGST 321C

JEWISHST 321D. Readings in Syriac Literature. 2-5 Units.
In recent years, there has been growing interest in the works of Syriac speaking Christians in antiquity and beyond. This course offers an introduction to the Syriac language, including its script, vocabulary and grammar, and a chance to read from a selection of foundational Syriac Christian texts.
Same as: JEWISHST 221D, RELIGST 221D, RELIGST 321D

JEWISHST 326D. The Holocaust: Insights from New Research. 4-5 Units.
Overview of the history of the Holocaust, the genocide of European Jews. Explores its causes, course, consequences, and memory. Addresses the events themselves, as well as the roles of perpetrators and bystanders, dilemmas faced by victims, collaboration of local populations, and the issue of rescue. Considers how the Holocaust was and is remembered and commemorated by victims and participants alike. Uses different kinds of sources: scholarly work, memoirs, diaries, film, and primary documents.
Same as: CSRE 226D, CSRE 326D, HISTORY 226D, HISTORY 326D, JEWISHST 226E

JEWISHST 342. Myth and Modernity. 3-5 Units.
Masters of German 20th- and 21st-Century literature and philosophy as they present aesthetic innovation and confront the challenges of modern technology, social alienation, manmade catastrophes, and imagine the future. Readings include Nietzsche, Freud, Rilke, Musil, Brecht, Kafka, Doeblin, Benjamin, Juenger, Arendt, Musil, Mann, Adorno, Celan, Grass, Bachmann, Bernhardt, Wolf, and Kluge. Taught in English. Note for German Studies grad students: GERMAN 322 will fulfill the grad core requirement since GERMAN 332 is not being offered this year. NOTE: Enrollment requires Professor Eshel's consent. Please contact him directly at eshel@stanford.edu and answer these 2 questions: "Why do you want to take this course?" and "What do you think you can add to the discussion?" Applications will be considered in the order in which they were received. Enrollment is limited to 20 students.
Same as: COMPLIT 222A, GERMAN 222, GERMAN 322, JEWISHST 242G

JEWISHST 347A. The Hebrew Bible in Literature. 3-5 Units.
Close reading of major biblical stories and poems that influenced modern literature written in English and Hebrew. Hebrew texts will be read in translation to English. Each class will include a section from the Hebrew Bible as well as a modern text or film based on the biblical story/poem. Discussion of questions such as: the meaning and function of myths and the influence of the Hebrew Bible on the development of literary styles and genres.
Same as: JEWISHST 147A

JEWISHST 348. Writing Between Languages: The Case of Eastern European Jewish Literature. 1-5 Unit.
Eastern European Jews spoke and read Hebrew, Yiddish, and their co-territorial languages (Russian, Polish, etc.). In the modern period they developed secular literatures in all of them, and their writing reflected their own multilinguality and evolving language ideologies. We focus on major literary and sociolinguistic texts. Reading and discussion in English; students should have some reading knowledge of at least one relevant language as well. ***This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit***.
Same as: JEWISHST 148, SLAVIC 198, SLAVIC 398

JEWISHST 382. Circles of Hell: Poland in World War II. 5 Units.
Looks at the experience and representation of Poland's wartime history from the Nazi-Soviet Pact (1939) to the aftermath of Yalta (1945). Examines Nazi and Soviet ideology and practice in Poland, as well as the ways Poles responded, resisted, and survived. Considers wartime relations among Polish citizens, particularly Poles and Jews. In this regard, interrogates the traditional self-characterization of Poles as innocent victims, looking at their relationship to the Holocaust, thus engaging in a passionate debate still raging in Polish society.
Same as: HISTORY 228, HISTORY 328, JEWISHST 282

JEWISHST 382K. The Holocaust and Its Aftermath. 4-5 Units.
This seminar gives an overview over different aspects of the history of the Holocaust and its aftermath and will examine key issues in recent Holocaust historiography and questions of memory and representation. Special emphasis is put on the nature of the historian's task, as viewed through the lens of historians of the Holocaust, as well as to the significance of the Holocaust in history and how it has changed over time. The course will confront students with historiographical texts and historical documents, with photography and film, works of scholarship and art.
Same as: HISTORY 202K, HISTORY 302K, JEWISHST 282K

JEWISHST 384C. Genocide and Humanitarian Intervention. 3 Units.
Open to medical students, graduate students, and undergraduate students. Traces the history of genocide in the 20th century and the question of humanitarian intervention to stop it, a topic that has been especially controversial since the end of the Cold War. The pre-1990s discussion begins with the Armenian genocide during the First World War and includes the Holocaust and Cambodia under the Khmer Rouge in the 1970s. Coverage of genocide and humanitarian intervention since the 1990s includes the wars in Bosnia, Rwanda, Kosovo, the Congo and Sudan.
Same as: HISTORY 224C, HISTORY 324C, JEWISHST 284C, PEDS 224

JEWISHST 385A. Core Colloquium in Jewish History, 17th to 19th Centuries. 4-5 Units.
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Same as: HISTORY 385A

JEWISHST 385B. Graduate Colloquium in Jewish History, 19th-20th Centuries. 4-5 Units.
Instructor consent required.
Same as: HISTORY 385B

JEWISHST 393X. The Education of American Jews. 4 Units.
This course will take an interdisciplinary approach to the question of how American Jews negotiate the desire to retain a unique ethnic sensibility without excluding themselves from American culture more broadly. Students will examine the various ways in which people debate, deliberate, and determine what it means to be an "American Jew". This includes an investigation of how American Jewish relationships to formal and informal educational encounters through school, popular culture, religious ritual, and politics.
Same as: EDUC 313, RELIGST 313X

JEWISHST 481. Research Seminar in Ottoman and Middle East History. 4-5 Units.
Student-selected research topics. May be repeated for credit.
Same as: HISTORY 481, JEWISHST 287S

JEWISHST 486A. Graduate Research Seminar in Jewish History. 4-5 Units.
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Same as: HISTORY 486A

JEWISHST 486B. Graduate Research Seminar in Jewish History. 4-5 Units.
Prerequisite: HISTORY 486A.
Same as: HISTORY 486B

LANGUAGE CENTER

The Stanford Language Center oversees all language instruction at Stanford. The center's charge is to guarantee that Stanford language programs are of the highest quality; to develop and administer achievement and proficiency tests needed to implement the language requirement; to provide technical assistance and support to the graduate students, lecturers, and faculty who deliver Stanford's language instruction; and to take leadership in research and development efforts in language learning. The Language Center is a unit within the Division of Literatures, Cultures, and Languages (p. 1298).

Courses

Courses offered by the Language Center are listed under the following subject codes on the Stanford Bulletin's ExploreCourses web site:

- AMELANG (African and Middle Eastern Languages and Literatures) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=AMELANG&filter-catalognumber-AMELANG=on)
- ARABLANG (Arabic Language) (https://explorecourses.stanford.edu/search/?view=catalog&catalog=71&page=0&q=ARABLANG&filter-catalognumber-ARABLANG=on&filter-coursestatus-Active=on)
- CATLANG (Catalan Language) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=CATLANG&filter-catalognumber-CATLANG=on)
- CHINLANG (Chinese Language) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=CHINLANG&filter-catalognumber-CHINLANG=on)
- EFSLANG (English for Foreign Students) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=EFSLANG&filter-catalognumber-EFSLANG=on)
- FRENLANG (French Language) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=FRENLANG&filter-catalognumber-FRENLANG=on)
- GERLANG (German Language) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=GERLANG&filter-catalognumber-GERLANG=on)
- ITALLANG (Italian Language) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=ITALLANG&filter-catalognumber-ITALLANG=on)
- JAPANLNG (Japanese Language) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=JAPANLNG&filter-catalognumber-JAPANLNG=on)
- KORLANG (Korean Language) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=KORLANG&filter-catalognumber-KORLANG=on)
- PORTLANG (Portuguese Language) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=PORTLANG&filter-catalognumber-PORTLANG=on)
- SLAVLANG (Slavic Language) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=SLAVLANG&filter-catalognumber-SLAVLANG=on)
- SPANLANG (Spanish Language) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=SPANLANG&filter-catalognumber-SPANLANG=on)
- SPECLANG (Special Language) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=SPECLANG&filter-catalognumber-SPECLANG=on)
- TIBETLNG (Tibetan Language) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=TIBETLNG&filter-catalognumber-TIBETLNG=on)

Beginning-Level, First-Year Courses

Beginning-level, first-year language courses require no previous knowledge of the language. The beginning-level sequence emphasizes development of the full range of language skills, reading, listening comprehension, the use of grammatical structures, and oral and written communication, through a variety of learning themes. Individual, small group, interactive work and multimedia-based activities reinforce language skills and provide the platform for adapting the curriculum to specific student learning goals. Cultural awareness is a strong component of the curriculum.

Intermediate-Level, Second-Year Courses

Intermediate-level, second-year language courses require completion of the beginning sequence, corresponding placement or consent of the program coordinator. The intermediate-level sequence focuses on continuous mastery and development of skills that help students to converse and present accurately and more fluently, incorporate more advanced grammatical structures in their oral and written work, use idiomatic expressions in the right context, and read and write more sophisticated compositions. Curricular objectives and enhanced cultural understanding are built into the courses through a multimodal approach.

Advanced-Level, Third-Year Courses

Advanced-level, third-year language courses require completion of the intermediate-year sequence, corresponding placement, or consent of the program coordinator. The advanced-level sequence focuses on accurate understanding and use of structures through authentic texts and multimedia materials, and readings from various genres. Individual learning goals and student proficiency are taken into account to provide a learning environment that helps students become more autonomous learners.

Proficiency in Foreign Language Notation

A student who demonstrates levels of achievement equivalent to those expected at the end of the third quarter of the third year of study in a language may be awarded the notation "proficiency in" that language on the official transcript. Successful candidates tend to have completed the third year or beyond of language study at Stanford and spent considerable time studying abroad in the foreign language.

In order to receive the proficiency notation and for it to appear on the official transcript, the student must complete the following oral and written requirements according to the timeline below. The notation is available only for languages where external assessment is offered through Language Testing International. Successful completion of the oral component is required before proceeding with the written component.

Both oral and written components must be completed no later than the quarter preceding the graduating quarter.

For more information visit https://language.stanford.edu/ or contact languagecenter@stanford.edu.

Application and Oral Component: Two quarters prior to graduation

1. Notify the Language Center via email of the intent to pursue the notation and request an official Oral Proficiency Interview (OPI). Since this is a formal interview conducted according to national academic and professional standards, at least two quarters of lead time are essential for scheduling.
2. Complete the 30-minute Oral Proficiency Interview as scheduled through the Language Center and conducted by a certified OPI tester. The interview must take place no later than one quarter prior to graduation and be administered on campus
3. Receive an official rating of Advanced Low or higher on the Foreign Service Institute/American Council on the Teaching of Foreign Languages (FSI/ACTFL) scale of oral proficiency, except in the non-cognate languages which require a minimum rating of Intermediate High. Students who do not meet the minimum level for the notation will nonetheless receive an official OPI rating, which carries national recognition of their oral proficiency.

Writing Component: One quarter prior to graduation

1. Once approved to continue with the writing component, schedule a Writing Proficiency Test (WPT) through the Language Center. As an official writing assessment, the 90-minute exam must take place no later than one quarter prior to graduation and as soon as possible after the interview. The WPT is administered on campus and rated by a certified WPT rater.
2. Receive an official rating of Advanced Low or higher on the Foreign Service Institute/American Council on the Teaching of Foreign Languages (FSI/ACTFL) scale of writing proficiency, except in the non-cognate languages which require a minimum rating of Intermediate High. Students who do not meet the minimum level for the notation will nonetheless receive an official WPT rating, which carries national recognition of their writing proficiency.

Proficiency Notation Timetable

1. Graduating Spring/Summer: Apply Autumn; interview Autumn/Winter; writing Winter.
2. Graduating Autumn: Apply Winter; interview Winter/Spring; writing Spring.
3. Graduating Winter: Apply Spring; interview Spring/Autumn; writing Autumn.

Overseas Studies Courses in the Language Center

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) web site or the Bing Overseas Studies (http://bosp.stanford.edu) web site. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

African and Middle Eastern Languages and Literatures Program

The African and Middle Eastern Languages and Literatures Program offers classes in Hebrew, Persian, Swahili, Turkish, and African languages not regularly taught at Stanford. Based on current funding and student requests, the courses planned for the 2020-21 academic year are listed in the ExploreCourses (http://explorecourses.stanford.edu) section of this Bulletin under the AMELANG (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=AMELANG&filter-catalognumber-AMELANG=on) program. Additional languages may still be offered upon request, provided funding is available. Requests for the 2021-22 academic year should be made by Spring Quarter of this year to the AME program office by email to khalil@stanford.edu (ebernhar@stanford.edu).

First-, second-, and third-year each refer to the yearly sequence of language study. Letter suffixes refer to the quarter within the sequence: "A" courses (1st Quarter) are typically taught in Autumn; "B" courses (2nd Quarter), in Winter; and "C" courses (3rd Quarter) in Spring. Courses are 4 or 5 units as listed. In some circumstances, a beginning or intermediate course may be offered in alternate years. Language courses may not be repeated for credit, and must be taken in sequence.

Fulfilling the Language Requirement in AME

Students can fulfill the language requirement by taking an African or Middle Eastern language. At least 12 units are needed to complete the requirement. Students who have taken courses in the relevant language at another institution, or have previous knowledge of the language, can request to be tested. Tests are comprised of two parts, written and oral. Students must display completion of first-year level proficiency in the requested language to fulfill the requirement. Testing is guaranteed only for languages currently offered. Students planning to take a test must contact the AME program coordinator no later than the Spring Quarter of their sophomore year. To submit a request for language testing, or to request that a language be taught, and for further information on the program, see the African and Middle Eastern Language Program (https://www.stanford.edu/dept/lc/language/courses/africanMidEastern/) web site.

Special Language Program

The Special Language Program (SLP) offers foreign languages not otherwise taught at Stanford. Based on current funding and student requests, the courses planned for the 2020-21 academic year are listed in the ExploreCourses (http://explorecourses.stanford.edu/) section of this Bulletin under the Special Languages (SPECLANG) Program; however, not every course listed is taught. Additional languages may still be offered upon request, provided funding is available. Requests for the 2021-22 academic year should be made by Spring Quarter of this year at the Special Language Program office (eprionas@stanford.edu).

First-year courses are offered for 4 or 5 units, as listed. First-, second-, and third-year each refer to the yearly sequence of language study. Letter suffixes refer to the quarter within the sequence: "A" courses (1st Quarter) are typically taught in Autumn; "B" courses (2nd Quarter), in Winter; and "C" courses (3rd Quarter) in Spring. In some circumstances, a beginning or intermediate course may be offered in alternate years. Language courses may not be repeated for credit, and must be taken in sequence. For additional information, see the Special Language Program (http://www.stanford.edu/dept/SLP/) website.

Fulfilling the Language Requirement in Special Language Program

Students can fulfill the language requirement by taking courses offered by the Special Language Program. At least 12 units are needed to complete the requirement. Students who have already taken courses in the relevant language at another institution, or who have previous knowledge of the language, can request to be tested. Tests are comprised of written and oral parts. A student must display completion of first-year level proficiency in the requested language in order to fulfill the requirement. Testing is guaranteed only for these languages currently offered. Students planning to take a test must contact the Special Language Program no later than the Spring Quarter of sophomore year. To submit a request for language testing, or to request that a language be taught, and for further information on the program, contact the Special Language Program office (eprionas@stanford.edu). (eprionas@stanford.edu)

Minors in the Division of Literatures, Cultures, and Languages (DLCL)

The Division of Literatures, Cultures, and Languages (p. 1298), of which the Language Center is a part, offers the following minors that may be of interest to foreign language students. For more information, consult the contact specified in the relevant minor following.

Minor in Modern Languages

Academic Advisor: Elizabeth Bernhardt-Kamil

The Division of Literatures, Cultures, and Languages offers an undergraduate minor in Modern Languages that permits students to demonstrate strength in two distinct modern languages and their literatures. The minor draws upon courses housed within the DLCL, East Asian Languages and Cultures, the Stanford Language Center, and the Special Language Program.

Declaring the Minor

Students declare the minor in Modern Languages through Axess. The minor program is administered by the DLCL undergraduate student support office located in Pigott Hall, room 128 and may be contacted at odunlop@stanford.edu. Plans for completing the minor must be approved by through the student support office.

Minor Program

- Students enrolled in the Modern Languages minor must take 6 courses of 3 units or more, for a total of 22 units minimum.
- Students will study two modern languages, Language A and Language B.
  - Language A: two intermediate-level or higher courses, for 8 units minimum, and one literature course of 3-5 units.
  - Language B: two intermediate-level or higher courses, for 8 units minimum, and one literature course of 3-5 units.

Requirements

- Stanford Language Center courses and BOSP language courses must be second-year level or beyond.
- Literature courses from BOSP programs are pre-approved for the minor.
- Literature courses taught by Stanford faculty (Academic Council members) will be approved with permission of the Program Administrator.
- Language courses may not include conversational, oral communication, business, or medical language courses.
- Advanced Placement and transfer credits may not be applied to the minor.
- All courses must be taken for a letter grade.
- Coursework may not duplicate work counted toward other majors or minors. By University policy, no more than 36 units may be required in this minor.

Minor in Translation Studies

Faculty Director: Alexander Key

Minor Adviser: Cintia Santana

The Division of Literatures, Cultures, and Languages, in cooperation with East Asian Languages and Cultures and the English Department, teaches undergraduates to develop and apply their foreign language knowledge to the production and analysis of translations. The minor is designed to give students majoring in a variety of fields the tools to consider the practical and theoretical issues brought up by translation as an aesthetic, cultural, and ethical practice.

Declaring the Minor

Students will declare the minor in Axess, and then contact the minor adviser, Cintia Santana (csantana@stanford.edu). The program is administered by the DLCL student services office located in Pigott Hall, room 128.

Requirements

Students must take a minimum of 6 courses for 3 units or more and a minimum of 23 units for a letter grade, in fulfillment of the following requirements:

	Units
1. Prerequisite: Complete or test out of a first-year course in the language of interest.	
2. Core course: At least 4 units in a Translation Studies core course: ENGLISH/DLCL 293 or FRENCH 185 or Comparative Literature 228/ JAPAN 123/223.	4
3. Language study: At least 8 units, second year or beyond (not including conversation/oral communication) and/or relevant literature courses taught in the target language. OSP and transfer units may be considered in consultation with the minor adviser.	8
4. Literature study: At least 7 units in relevant literature courses at the 100-level or above, taught in a DLCL department, East Asian Languages and Cultures, or Classics, and determined in consultation with the minor adviser. For students interested in translation from English into another language, appropriate literature courses in the English department may be substituted.	7
5. Electives: At least 4 units in a creative writing course, or a course that foregrounds translation in departments such as Anthropology, any DLCL department, English, East Asian Languages and Cultures, Classics, Linguistics (e.g., LINGUIST 130A), or Computer Science (e.g., CS 124), determined in consultation with the minor adviser.	4
6. Final Project: Students must also complete a capstone project: a significant translation and/or translation studies project (e.g. 20 pages of prose, 10 poems, or similar appropriate amount to be determined in consultation with the minor adviser). This work may be carried out under the supervision of an instructor in a required course or as an independent study.	
Total Units	23

Minor in Middle Eastern Languages, Literatures, and Cultures

Faculty Director: Alexander Key

The undergraduate minor in Middle Eastern Languages, Literatures, and Cultures (MELLAC) has been designed to give students majoring in a variety of departments an opportunity to gain a substantial introduction to Arabic, Hebrew, Persian, Turkish, Middle Eastern, and African languages, and to the cultures and civilizations of the Middle East and Africa.

Declaring the Minor

Contact the faculty director, Alexander Key (akey@stanford.edu), before declaring the minor in Axess. The minor is administered through the DLCL undergraduate student support office in Pigott Hall, room 128.

Minor Program Overview

The minor in Middle Eastern Languages, Literatures, and Cultures (MELLAC) has five tracks. Coursework in each track may not duplicate work counted toward other majors or minors.

Minor in Middle Eastern Languages, Literatures, and Cultures: Arabic Track

The minor track requirements are:

- Minimum of 24 units total for this minor track.
- Completion of six ARABLANG courses at the third and fourth year levels, excluding conversation and colloquial courses. All courses must be taken for a letter grade.
- Up to 5 units of transfer credit may count towards this minor, subject to approval of the faculty director.
- Students must test for proficiency in Arabic through the Language Center by Winter Quarter of their senior year. Students should minimally receive a notation of intermediate-high. Those requiring outside tutoring are advised to seek resources available through the DLCL student services office in Pigott Hall 128, odunlop@gmail.com.
- All courses must be approved by the faculty director.

Minor in Middle Eastern Languages, Literatures, and Cultures: Hebrew Track

The minor track requirements are:

- Minimum of 32 units total for this minor track.
- Minimum of 3 HEBREW language classes. Students may test out of this requirement with the approval of the faculty director.
- Minimum of 20 units of Hebrew literature and culture courses, one of which must be listed in COMPLIT. The Hebrew Forum may count towards this requirement with the approval of the faculty director.
- All courses must be approved by the faculty director.

Minor in Middle Eastern Languages, Literatures, and Cultures: African Languages, Literatures and Cultures Track

Requirements for the minor are:

- Minimum 32 units for this minor track.
- Three AMELANG language classes in an African language.
- All three courses must be in the same language.
- 20 additional units from relevant literature and culture courses, one of these courses must be a COMPLIT course.
- Other relevant courses are listed under AFRICAST.
- The faculty director may approve some upper-level language classes to count towards the 20 additional units.
- All courses must be approved by the faculty director.

Minor in Middle Eastern Languages, Literatures, and Cultures: Persian Track

The minor track requirements are:

- Minimum of 30 units total for this minor track.
- Completion of 20 units of Persian courses listed in AMELANG.
- Completion of 10 units of Persian courses listed in COMPLIT.
- All courses must be approved by the faculty director.

Minor in Middle Eastern Languages, Literatures, and Cultures: Turkish Track

The minor track requirements are:

- Minimum 30 units total for this minor track.
- 15 units of Turkish courses listed in AMELANG.
- 15 units of Turkish courses listed in COMPLIT.
- All courses must be approved by the faculty director.

Certificate in Language Program Management

Faculty Director: Elizabeth Bernhardt

Programs in contemporary foreign language teaching preparation entail a knowledge base that has grown over the past 30 years, rooted in data from an explosion of linguistic as well as applied linguistic research.

In tandem with the Language Center's primary focus on learning research and theory, which graduate students explore in the teaching preparation program, the Language Program Management certificate focuses on developing the professional leadership and academic skills necessary for a career that includes the coordination and management of language learning.

The program funds summer internships which enable the completion of a certificate in Language Program Management and are intended to help Stanford graduate students prepare themselves for such work in complement to their literary studies. The certificate program is not declared on Axess and does not appear on the transcript or diploma.

Prerequisites

1. Foreign language acquisition: Oral Proficiency Interview (OPI) rating of at least advanced mid
2. Academic and professional development:
    - DLCL 301 The Learning and Teaching of Second Languages
    - Modified Oral Proficiency Interview (MOPI) Assessment workshop (2 days)
    - Limited OPI Tester Certification (average 6 months)
    - Teaching of three first-year language courses through the Language Center

These are generally met by the end of a graduate student's second year in the PhD program. Once meeting these criteria, the student may be admitted to the Program.

Requirements

Upon admission to the program, students must complete the following:

1. DLCL 302 The Learning and Teaching of Second-Language Literatures: a course designed to focus student attention on the development of oral language proficiency through the upper levels and emphasize the need for upper register speaking and writing for literature learning and teaching.
2. OPI workshop (additional 2 days of training at the Advanced and Superior levels): this workshop is the extension of the MOPI. It focuses on upper register performance on the FSI-ACTFL scale.

Hosted by either the Language Center, regional workshop, or at the national meeting of the ACTFL.

3. Completion of Writing Proficiency Familiarization workshop (Winter Quarter): Workshop conducted by a certified writing tester and structured in parallel to the MOPI/OPI assessment paradigm.
4. DLCL 303 Language Program Management (Summer Quarter): an administrative internship including, but not limited to, experiences with the following:

    - Shadow faculty and staff in select areas of administration and supervision within the Language Center and DLCL
    - Placement testing and student advisement
    - Technology in teaching and learning
    - Processes for teacher observation and feedback
    - Procedures in staff supervision and human resources
    - Course scheduling, budgeting, staffing, and searches
    - Interface with external programs (e.g., BOSP, Bechtel, VPTL)

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

As always, language courses at Stanford may be taken with the CR/NC grading basis, if so offered, to fulfill the undergraduate language requirement.

Director: Elizabeth Bernhardt

Associate Director: Joan Molitoris

African and Middle Eastern Languages
Coordinator: Khalil Barhoum

Lecturers: Ameneh Shervin Emami (Persian), Saadet Ebru Ergul (Turkish), Samuel Mukoma (Swahili), Gallia Porat (Hebrew), Vered Shemtov (Sr. Lecturer in Jewish Language & Literature)

Arabic Language
Coordinator: Khalid Obeid

Lecturers: Khalil Barhoum (Sr. Lecturer), Thoraya Boumehdi, Ramzi Salti

Catalan Language
Coordinator: Joan Molitoris (Associate Director, Language Center)

Chinese Language
Coordinator: Chao Fen Sun (Professor, East Asian Languages and Cultures)

Lecturers: Marina Chung, Sik Lee Dennig, Michelle DiBello, Nina Lin, Le Tang, Huazhi Wang, Hong Zeng, Youping Zhang, Xiaofang Zhou

English for Foreign Students
Coordinator: Kristopher Geda

Lecturers: Robyn Brinks Lockwood, Kenneth Romeo, Constance Rylance, Seth Streichler, Dominic Wang

French Language
Coordinator: Marie Lasnier

Lecturers: Maria Comsa, Heather Howard, Alix Mazuet, Vera Shapirshteyn

German Language
Coordinator: Paul Nissler

Lecturer: Patric Di Dio Di Marco

Italian Language
Coordinator: Professor Elizabeth Bernhardt (Director of the Language Center)

Lecturers: Marta Baldocchi, Alessandra McCarty, Giovanni Tempesta

Japanese Language
Coordinator: Yoshiko Matsumoto (Professor, East Asian Languages and Cultures)

Lecturers: Momoyo Kubo Lowdermilk, Emiko Yasumoto Magnani, Momoe Saito Fu, Yasuko Matsumoto, Yoshiko Tomiyama

Korean Language
Coordinator: Hee-Sun Kim

Lecturers: Hannah Yoon, HyeYeon Kim

Portuguese Language
Coordinator and Senior Lecturer: Lyris Wiedemann

Lecturer: Agripino Silveira

Slavic Language
Coordinator: Eugenia Khassina

Lecturers: Rima Greenhill (Sr. Lecturer)

Spanish Language
Coordinator: Alice Miano

Lecturers: Vivian Brates, Citlalli del Carpio, Irene Corso, Joan Molitoris (Associate Director, Language Center), Carimer Ortiz Cuevas, Kara Sanchez, Ana Maria Sierra, María Cristina Urruela, Ana Vivancos, Tom Winterbottom, Hae-Joon Won

Special Language Program
Coordinator: Eva Prionas, Modern Greek Language and Literature

Lecturers: Cathy Haas (ASL), Sonia Taneja (Hindi)

Tibetan Language Program

Lecturer and Coordinator: Robert W. Clark

Overseas Studies Courses in the Language Center

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

Overseas Studies Courses in Chinese

		Units
Course offerings in the Hong Kong program will be listed here when they are available.		

Overseas Studies Courses in French

		Units
OSPPARIS 22P	Intermediate French I	4
OSPPARIS 23P	Intermediate French II	4

Overseas Studies Courses in German

		Units
OSPBER 1Z	Accelerated German: First and Second Quarters	8
OSPBER 2Z	Accelerated German, Second and Third Quarters	8
OSPBER 3B	German Language and Culture	7
OSPBER 21B	Intermediate German	4

Overseas Studies Courses in Italian

		Units
OSPFLOR 1A	Accelerated First-Year Italian, Part 1	5
OSPFLOR 1F	First-Year Italian, First Quarter	5
OSPFLOR 2A	Accelerated First-Year Italian, Part 2	5
OSPFLOR 2F	First-Year Italian, Second Quarter	5
OSPFLOR 3F	First-Year Italian, Third Quarter	5
OSPFLOR 21F	Accelerated Second-Year Italian, Part A	5
OSPFLOR 22F	Accelerated Second-Year Italian Part B	5
OSPFLOR 31F	Advanced Oral Communication: Italian	3

Overseas Studies Courses in Japanese

		Units
OSPKYOTO 2K	First-Year Japanese Language, Culture, and Communication, Second Quarter	5
OSPKYOTO 3K	First-Year Japanese Language, Culture, and Communication, Third Quarter	5
OSPKYOTO 21K	Second-Year Japanese Language, Culture, and Communication, First Quarter	5
OSPKYOTO 23K	Second-Year Japanese Language, Culture, and Communication, Third Quarter	5
OSPKYOTO 103K	Third-Year Japanese Language, Culture, and Communication, Third Quarter	5
OSPKYOTO 210K	Advanced Japanese	5

Overseas Studies Courses in Spanish

		Units
OSPMADRD 12M	Accelerated Second-Year Spanish I	5
OSPMADRD 13M	Accelerated Second-Year Spanish II	5
OSPMADRD 102M	Composition and Writing Workshop for Students in Madrid	3-5
OSPSANTG 12S	Accelerated Second-Year Spanish, Part I: Chilean Emphasis	5
OSPSANTG 13S	Accelerated Second-Year Spanish, Part II: Chilean Emphasis	5
OSPSANTG 102S	Composition and Writing Workshop for Students in Santiago	3-5

African & Middle Eastern Lang Courses

AMELANG 15T. Intermediate to Advanced Turkish Conversation. 2 Units. Students develop communicative skills while discussing real-life issues, current events and cultural topics. The goal is to use culturally appropriate forms in formal and informal conversations, expressing emotions, feelings, and ideas in social and academic contexts. Pronunciation, vocabulary building, presentational language and daily readings are stressed. Students lead class discussions and prepare short presentations. Prerequisite: consent of instructor.

AMELANG 16. Advanced Readings in Turkish. 2 Units. This course will familiarize students whose command of the Turkish language is beyond First Year Turkish (Prereq. Amelang 184/Amelang 84 or placement exam) Students will increase their fluency especially in reading and oral comprehension besides in all communication skills, they will also expand their knowledge of grammar, diverse registers and idioms through extensive readings from literary texts, with practice in conversation and composition. Texts will include, prose and poetry pieces from contemporary Turkish literature, media and historical documents.

AMELANG 44A. Accelerated First-Year Persian. 5 Units. First part of the accelerated first-year sequence. AMELANG 44A and 44B complete the first year in two quarters rather than three quarters. Fulfills the University Language requirement. Goal is to engage in interactions with Persian speakers using socially and culturally appropriate forms. Emphasis is on the accelerated development of language proficiency, listening comprehension, reading and writing skills through conversational practice and in-class/online writing activities. Discussion of culture and social life is integrated into daily language learning activities through authentic materials and students will be interacting and integrating different aspects of language and culture live and virtually.

AMELANG 44B. Accelerated First-Year Persian, Part B. 5 Units. Second part of the accelerated first-year sequence. AMELANG 44A and 44B complete the first year in two quarters rather than three quarters. Fulfills the University Language requirement. Goal is to engage in interactions with Persian speakers using socially and culturally appropriate forms. Emphasis is on the accelerated development of language proficiency, listening comprehension, reading and writing skills through conversational practice and in-class/online writing activities. Discussion of culture and social life is integrated into daily language learning activities through authentic materials and students will be interacting and integrating different aspects of language and culture live and virtually. Prerequisite: Amelang 84A or placement test.

AMELANG 45A. Accelerated Second-Year Persian. 5 Units. First part of the accelerated second-year sequence. AMELANG 45A/ B. The course is designed for students who have previous knowledge of Persian Language and who are interested in learning more about Persian speaking cultures, history, poetry, social life, literature and artistic trends. Emphasis will be put on listening, speaking, reading and writing through communicative activities, enabling the students to perform the various tasks in the target language. This class is designed to complete the Intermediate, second year requirements, in two quarters rather than three quarters and students must have previous knowledge on Persian language and culture. Prerequisite: They must have completed the first year requirements or have exceeded the first year placement test at Stanford or its equivalent.

AMELANG 45B. Accelerated Second-Year Persian, Part B. 5 Units.
Second part of the accelerated second-year sequence. AMELANG 45A/BThe course is designed for students who have previous knowledge of Persian Language and who are interested in learning more about Persian speaking cultures, history, poetry, social life, literature and artistic trends. Emphasis will be put on listening, speaking, reading and writing through communicative activities, enabling the students to perform the various tasks in the target language. This class is designed to complete the Intermediate, second year requirements, in two quarters rather than three quarters and students must have previous knowledge on Persian language and culture. They must have completed the first year requirements or have exceeded the first year placement test at Stanford or its equivalent.

AMELANG 70A. Accelerated First-Year Swahili, Part 1. 5 Units.
First quarter of the two-quarter accelerated sequence. For students with little or no prior experience studying Swahili. Students acquire beginning proficiency in Swahili at an accelerated pace through intensive listening, speaking, reading, and writing, with special insight into Swahili-speaking cultures. Emphasis is on authentic materials and active use of the language in real-world contexts in order to develop functional abilities. Completion of AMELANG 70B fulfills the University foreign language requirement.

AMELANG 70B. Accelerated First-Year Swahili part, Part 2. 5 Units.
Continuation of AMELANG 70A. Completes the first-year sequence in two rather than three quarters. Students develop first-year proficiency in Swahili at an accelerated pace through active language use and participation in Swahili-speaking practices. Emphasis is on development of speaking, listening, reading, and writing through authentic materials and appropriate cultural contexts. Fulfills the University foreign language requirement. Prerequisite: AMELANG 70A or consent of instructor.

AMELANG 71A. Accelerated Second-Year Swahili, Part 1. 4 Units.
Accelerated Second-Year Swahili, Part 1. Accelerated Swahili second year is the third part of the accelerated sequence. It is designed for students who have prior experience studying Swahili. Completion of accelerated first year Swahili , or equivalent is a prerequisite. Students acquire proficiency in Swahili at an accelerated pace through intensive listening, speaking, reading, and writing, with special insight into Swahili-speaking cultures. Emphasis is on authentic materials and active use of the language in real-world contexts in order to develop functional abilities.

AMELANG 71B. Accelerated Second-Year Swahili, Part 2. 4 Units.
It is designed for students who have prior experience in studying Swahili. Completion of second year accelerated part two Swahili , or equivalent is a prerequisite. Students acquire proficiency in Swahili at an accelerated pace through intensive listening, speaking, reading, and writing, with special insight into Swahili-speaking cultures. Emphasis is on authentic materials and active use of the language in real-world contexts in order to develop functional abilities.

AMELANG 84A. Accelerated First-Year Turkish, Part 1. 5 Units.
First part of the accelerated first-year sequence. AMELANG 84A and 84B complete the first year in two quarters rather than three quarters. Fulfills the University Language requirement.nnGoal is to engage in interactions with Turkish speakers using socially and culturally appropriate forms. Emphasis is on the accelerated development of language proficiency, listening comprehension, reading and writing skills through conversational practice and in-class/online writing activities. Discussion of culture and social life is integrated into daily language learning activities through authentic materials.

AMELANG 84B. Accelerated First-Year Turkish, Part 2. 5 Units.
Second part of the accelerated first-year sequence. AMELANG 84A and 84B complete the first year in two rather than three quarters. AMELANG 84B (Accelerated First-Year Turkish, Part 2) fulfills the University language requirement.nGoal is to engage in interactions with Turkish speakers using socially and culturally appropriate forms. Emphasis is on the accelerated development of language proficiency, listening comprehension, reading and writing skills through conversational practice and in-class/online writing activities. Discussion of culture and social life is integrated into daily language learning activities through authentic materials.

AMELANG 99. Undergraduate Directed Reading. 1-3 Unit.
This course does not fulfill the University language requirement.

AMELANG 100A. First-Year Amharic, First Quarter. 4 Units.
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AMELANG 100B. First-Year Amharic, Second Quarter. 4 Units.
Continuation of AMELANG 100A. Prerequisite AMELANG 100A.

AMELANG 100C. First-Year Amharic, Third Quarter. 4 Units.
Continuation of AMELANG 100B. Prerequisite AMELANG 100B. Fulfills the University Foreign Language Requirement.

AMELANG 101A. Second-Year Amharic, First Quarter. 4 Units.
Continuation of AMELANG 100C.Prerequisite: AMELANG 100C.

AMELANG 101B. Second-Year Amharic, Second Quarter. 4 Units.
Continuation of AMELANG 101A. Prerequisite AMELANG 101A.

AMELANG 101C. Second-Year Amharic, Third Quarter. 4 Units.
Continuation of AMELANG 101B. Prerequisite: AMELANG 101B.

AMELANG 106A. First-Year Swahili, First Quarter. 5 Units.
This is a five-unit introductory Swahili language course for students who have little or no previous experience in studying the Swahili language. The primary focus is on developing communicative skills in Swahili through listening, speaking , reading and writing basic grammatical structures, with special insight into the Swahili culture.nThe course emphasizes the development of communicative functionality and competence through active language use; hence, classes will be geared towards real experience in spoken Swahili. This makes class participation an essential component of the course.

AMELANG 106B. First-Year Swahili, Second Quarter. 5 Units.
Continuation of AMELANG 106A. This is a five-unit introductory Swahili language course for students who have little or no previous experience in studying the Swahili language.nThe primary focus is on developing communicative skills in Swahili through listening, speaking , reading and writing basic grammatical structures, with special insight into the Swahili culture.nThe course emphasizes the development of communicative functionality and competence through active language use; hence, classes will be geared towards real experience in spoken Swahili. This makes class participation an essential component of the course.

AMELANG 106C. First-Year Swahili, Third Quarter. 5 Units.
Continuation of AMELANG 106B. Prerequisite: AMELANG 106B. Fulfills the University foreign language requirement.

AMELANG 107A. Second-Year Swahili, First Quarter. 4 Units.
Continuation of AMELANG 106C. Prerequisite: AMELANG 106C.

AMELANG 107B. Second-Year Swahili, Second Quarter. 4 Units.
Continuation of AMELANG 107A. Prerequisite: AMELANG 107A.

AMELANG 107C. Second-Year Swahili, Third Quarter. 4 Units.
Continuation of AMELANG 107B. Prerequisite: AMELANG 107B.

AMELANG 108A. Third-Year Swahili, First Quarter. 4 Units.
Continuation of AMELANG 107C. Prerequisite: AMELANG 107C.

AMELANG 108B. Third-Year Swahili, Second Quarter. 4 Units.
Continuation of AMELANG 108A. Prerequisite: AMELANG 108A.

AMELANG 108C. Third-Year Swahili, Third Quarter. 4 Units.
Continuation of AMELANG 108B. Prerequisite: amelang 108B or consent of instructor.

AMELANG 126. Reflection on the Other: The Arab Israeli Conflict in Literature and Film. 3-5 Units.
How literary works outside the realm of Western culture struggle with questions such as identity, minority, and the issue of the Other. How the Arab is viewed in Hebrew literature, film and music and how the Jew is viewed in Palestinian works in Hebrew or Arabic (in translation to English). Historical, political, and sociological forces that have contributed to the shaping of these writers' views. Guest lectures about the Jew in Palestinian literature and music. Note: To be eligible for WAYS credit, you must take course for a Letter Grade.
Same as: COMPLIT 145, JEWISHST 106

AMELANG 128A. First-Year Hebrew, First Quarter. 5 Units.
In the first-year program, students acquire essential Hebrew through abundant opportunities to interact in the language in meaningful ways. The students learn to function appropriately in the language in a variety of social and cultural contexts.
Same as: JEWISHST 101A

AMELANG 128B. First-Year Hebrew, Second Quarter. 5 Units.
Continuation of AMELANG 128A. Prerequisite: Placement Test, AMELANG 128A.
Same as: JEWISHST 101B

AMELANG 128C. First-Year Hebrew, Third Quarter. 5 Units.
Continuation of AMELANG 128B. Prerequisite: Placement Test, AMELANG 128B. Fulfill the University Foreign Language Requirement.
Same as: JEWISHST 101C

AMELANG 129A. Second-Year Hebrew, First Quarter. 4 Units.
Continuation of AMELANG 128C. Sequence integrating culture and language. Emphasis is on proficiency in oral and written discourse including presentational language and socio culturally appropriate discourse in formal and informal, academic, and professional contexts. Prerequisite: Placement Test, First Year Hebrew .
Same as: JEWISHST 102A

AMELANG 129B. Second-Year Hebrew, Second Quarter. 4 Units.
Continuation of AMELANG 129A. Sequence integrating culture and language. Emphasis is on proficiency in oral and written discourse including presentational language and socio culturally appropriate discourse in formal and informal, academic, and professional contexts. Prerequisite: Placement Test, Hebrew 129A.
Same as: JEWISHST 102B

AMELANG 129C. Second-Year Hebrew, Third Quarter. 4 Units.
Continuation of AMELANG 129B. Sequence integrating culture and language. Emphasis is on advanced proficiency in oral and written discourse including presentational language and socio culturally appropriate discourse in formal and informal, academic, and professional contexts. Prerequisite: placement Test, Hebrew129B.
Same as: JEWISHST 102C

AMELANG 130A. Third-Year Hebrew, First Quarter. 3 Units.
Continuation of AMELANG 129C. Prerequisite: Placement Test, AMELANG 129C.
Same as: JEWISHST 103A

AMELANG 131A. Hebrew Forum. 1-3 Unit.
Intermediate and advanced level. Biweekly Hebrew discussion on contemporary issues with Israeli guest speakers. Vocabulary enhancement. Focus on exposure to academic Hebrew. May be repeat for credit up to 4 times.
Same as: JEWISHST 104

AMELANG 131B. Hebrew Forum. 2-4 Units.
Intermediate and advanced level. Biweekly Hebrew discussion on contemporary issues with Israeli guest speakers. Vocabulary enhancement. Focus on exposure to academic Hebrew. May repeat for credit.
Same as: JEWISHST 105

AMELANG 133B. The African Forum, Second Quarter. 1 Unit.
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AMELANG 133C. The African Forum, Third Quarter. 1 Unit.
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AMELANG 134A. First-Year Igbo, First Quarter. 4 Units.
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AMELANG 134B. First-Year Igbo, Second Quarter. 4 Units.
Continuation of AMELANG 134A. Prerequisite: AMELANG 134A.

AMELANG 134C. First-Year Igbo, Third Quarter. 4 Units.
Continuation of AMELANG 134B. Prerequisite: AMELANG 134B. Fulfills University Foreign Language requirement.

AMELANG 135A. Second-Year Igbo, First Quarter. 4 Units.
Continuation of AMELANG 134C. Prerequisite: AMELANG 134C.

AMELANG 135B. Second-Year Igbo, Second Quarter. 3 Units.
Continuation of AMELANG 135A. Prerequisite: AMELANG 135A.

AMELANG 135C. Second-Year Igbo, Third Quarter. 4 Units.
Continuation of AMELANG 135B. Prerequisite: AMELANG 135B.

AMELANG 137A. Second-Year Xhosa, First Quarter. 4 Units.
Continuation of AMELANG 136C. Prerequisite: AMELANG 136C or consent of instructor.

AMELANG 137B. Second-Year Xhosa, Second Quarter. 4 Units.
Continuation of AMELANG 137A. Prerequisite: AMELANG 137A or consent of instructor.

AMELANG 137C. Second-Year Xhosa, Third Quarter. 4 Units.
Continuation of AMELANG 137B. Prerequisite: AMELANG 137B or consent of instructor.

AMELANG 140A. First-Year Yiddish, First Quarter. 4 Units.
Reading, writing, and speaking.
Same as: JEWISHST 104A

AMELANG 140B. First-Year Yiddish, Second Quarter. 4 Units.
Continuation of AMELANG 140A. Prerequisite: AMELANG.
Same as: JEWISHST 104B

AMELANG 140C. First-Year Yiddish, Third Quarter. 4 Units.
Continuation of AMELANG 140B. Prerequisite: AMELANG 140B. Fulfills the University Foreign Language Requirement.
Same as: JEWISHST 104C

AMELANG 141A. Second-Year Yiddish, First Quarter. 4 Units.
Continuation of AMELANG 140C. Prerequisite: AMELANG 140C.

AMELANG 141B. Second-Year Yiddish, Second Quarter. 4 Units.
Continuation of AMELANG 141A. Prerequisite: AMELANG 141A.

AMELANG 141C. Second-Year Yiddish, Third Quarter. 4 Units.
Continuation of AMELANG 141B. Prerequisite: AMELANG 141B.

AMELANG 142B. Third -Year Yiddish, Second Quarter- Reading and Writing about Yiddish Literature. 4 Units.
The focus of 142 A - C will be on the development of Yiddish literature. The course will look at the changes in literary technique from the first literary experiments in the 16th century all the way to contemporary Yiddish writing. Historical and cultural forces which shaped Yiddish writing will be discussed, thereby placing Yiddish culture within a broader European context. Course material will include fiction, poetry, and critical prose, focusing on specific challenges for contemporary students in the language and cultural settings of works discussed. Assignments will combine exercises that review essential grammatical principles with written work in Yiddish that analyze classroom readings. Learning materials include as broad a range of sources as possible (written, recorded, spoken, sung), including contemporary realia from the religious and secular worlds. Prerequisite: 142A.

AMELANG 144A. First-Year Modern Persian, First Quarter. 5 Units.
One-year sequence. Modern Persian for beginners; concentrates on rapidly developing basic skills in speaking, reading, writing, and understanding modern Persian. Strong emphasis is on the links between language and culture. The course is based on a fully integrated multimedia program. Students will learn the language with an emphasis on communicative and interactive classroom activities.

AMELANG 144B. First-Year Modern Persian, Second Quarter. 5 Units.
Continuation of AMLELANG 144A. One-year sequence. Modern Persian for beginners; concentrates on rapidly developing basic skills in speaking, reading, writing, and understanding modern Persian. Strong emphasis is on the links between language and culture. The course is based on a fully integrated multimedia program. Students will learn the language with an emphasis on communicative and interactive classroom activities. Prerequisite: Placement Test, AMELANG 144A.

AMELANG 144C. First-Year Modern Persian, Third Quarter. 5 Units.
Continuation of AMELANG 144B. One-year sequence. Modern Persian for beginners; concentrates on rapidly developing basic skills in speaking, reading, writing, and understanding modern Persian. Strong emphasis is on the links between language and culture. The course is based on a fully integrated multimedia program. Students will learn the language with an emphasis on communicative and interactive classroom activities. Fulfills the University Foreign Language Requirement. Prerequisite: Placement Test, AMELANG 144B. Fulfills the University Foreign Language Requirement.

AMELANG 145A. Second-Year Modern Persian, First Quarter. 5 Units.
Continuationof AMELANG 144C. Expands students' proficiency in Persian language and culture at intermediate level through various texts and multimedia. It stresses oral fluency, written expression, and reading comprehension. Students will continue to learn the language with an emphasis on communicative and interactive classroom activities. Students will be introduced to contemporary as well as classical short poems by famous Persian poets like Rumi. Prerequisite: Placement nTest, AMELANG 144C.

AMELANG 145B. Second-Year Modern Persian, Second Quarter. 5 Units.
Continuation of AMELANG 145A. Expands students' proficiency in Persian language and culture at intermediate level through various texts and multimedia. It stresses oral fluency, written expression, and reading comprehension. Students will continue to learn the language with an emphasis on communicative and interactive classroom activities. Students will be introduced to contemporary as well as classical short poems by famous Persian poets like Rumi. Prerequisite: Placement Test, AMELANG 144A.

AMELANG 145C. Second-Year Modern Persian ,Third Quarter. 5 Units.
Continuation of AMELANG 145B. Expands students' proficiency in Persian language and culture at intermediate level through various texts and multimedia. It stresses oral fluency, written expression, and reading comprehension. Students will continue to learn the language with an emphasis on communicative and interactive classroom activities. Students will be introduced to contemporary as well as classical short poems by famous Persian poets like Rumi. Prerequisite: Placement Test, AMELANG 144B.

AMELANG 146A. Third-Year Persian, First Quarter. 4 Units.
Continuation of AMELANG 145C. Prerequisite: Placement Test, AMELANG 145C.

AMELANG 146B. Third-Year Persian, Second Quarter. 4 Units.
Continuation of AMELANG 146A. Prerequisite: Placement Test, AMELANG 146A.

AMELANG 146C. Third-Year Persian, Third Quarter. 4 Units.
Continuation of AMELANG 146B. Prerequisite: Placement Test, AMELANG 146B.

AMELANG 153. Introduction to Twi. 1 Unit.
Introduction to the Twi language especially designed for Center for African Studies students going to Ghana in the Summer.

AMELANG 153A. First-Year Twi, First Quarter. 4 Units.
Twi is the extensively spoken dialect of Akan, the ethnic group of Ghana in West Africa. Being the largest ethnic group of the country Akans have spread Twi in almost all major areas of Ghana. Therefore, it has become pragmatic for non-Ghanaians to acquire Twi if they are to visit Ghana and engage in communication with majority of Ghanaians. This course is the first/second of three levels in the acquisition of basic Akan cultural expressions in Twi. Its goal is to build a strong foundation for cultural awareness and familiarization with the Akan cultural components that support effective communication and social interaction in Ghana. We will emphasize three out of the five structural levels of the culture: language (phonetics/tones/pronunciation and grammar/vocabulary), ethical norms, indigenous food/dishes, and music & dance. We will also learn some Akan cultural points and worldview. Class lesson format will include role-plays and oral presentations.

AMELANG 153B. First-Year Twi, Second Quarter. 4 Units.
Continuation of AMELANG 153A. Prerequisite: AMELANG 153A.

AMELANG 153C. First-Year Beginning Twi, Third Quarter. 4 Units.
Continuation of AMELANG 153B. Prerequisite: AMELANG 153B. Fulfills the University Foreign Language Requirement.

AMELANG 154A. Second-Year Twi, First Quarter. 4 Units.
Continuation of AMELANG 153C. Prerequisite: AMELANG 153C.

AMELANG 154B. Second-Year Twi, Second Quarter. 4 Units.
Continuation of AMELANG 154A. Prerequisite: AMELANG 154A.

AMELANG 154C. Second-Year Twi, Third Quarter. 4 Units.
Continuation of AMELANG 154B. Prerequisite: AMELANG 154B.

AMELANG 170C. Biblical Hebrew, Third Quarter. 4 Units.
Continuation of 170B.
Same as: JEWISHST 107C

AMELANG 185A. Second-Year Turkish, First Quarter. 5 Units.
Continuation of AMELANG 184C. Designed for students with previous knowledge of Turkish who wish to learn in depth about Turkish culture, history, social life, literature, cuisine and artistic trends. Emphasis on developing intermediate proficiency in reading, writing, listening and speaking. Class discussions and activities aim to enable students to perform various tasks in the target language. Prerequisite: AMELANG 184C.

AMELANG 185B. Second-Year Turkish, Second Quarter. 5 Units.
Continuation of AMELANG 185A. Main focus is on class discussions and essay writing practices about daily life in Turkey. Prerequisite: AMELANG 185A.

AMELANG 185C. Second-Year Turkish, Third Quarter. 5 Units.
Continuation of AMELANG 185B. Main focus is on class discussions and essay writing practices about daily life in Turkey. End of quarter presentation in Turkish. Prerequisite: AMELANG 185B.

AMELANG 187A. First-Year Yoruba, First Quarter. 4 Units.
This 4-unit course provides an introduction to Standard Yoruba language and culture. The primary goal of the course is to provide students a foundation in spoken Yoruba as well as some knowledge of reading and writing in the language. Emphasis will be placed on listening, speaking, reading and writing through communicative activities, enabling students to perform various tasks. Classroom participation and attendance are essential.

AMELANG 187B. First-Year Yoruba, Second Quarter. 4 Units.
Continuation of 187A.nThis 4-unit course provides an introduction to Standard Yoruba language and culture. The primary goal of the course is to provide students a foundation in spoken Yoruba as well as some knowledge of reading and writing in the language. Emphasis will be placed on listening, speaking, reading and writing through communicative activities, enabling students to perform various tasks. Classroom participation and attendance are essential.

AMELANG 187C. First-Year Yoruba, Third Quarter. 4 Units.
Continuation of 187B.nThis 4-unit course provides an introduction to Standard Yoruba language and culture. The primary goal of the course is to provide students a foundation in spoken Yoruba as well as some knowledge of reading and writing in the language. Emphasis will be placed on listening, speaking, reading and writing through communicative activities, enabling students to perform various tasks. Classroom participation and attendance are essential.

AMELANG 188A. Second - Year Yoruba, First Quarter. 4 Units.
The continuation of 187C,.

AMELANG 188B. Second Year Yoruba, Second Quarter. 4 Units.
Continuation of 188B.

AMELANG 188C. Second Year Yoruba, Third Year. 4 Units.
Continuation of 188B.

AMELANG 190A. Third- Year Yoruba, First Quarter. 3 Units.
This is a third year course and part 1 a 3 part sequence.This course is intended for Pre-Advanced and Advanced students of Yoruba Language who have completed at least two years of Yoruba study.

AMELANG 190B. Third Year Yoruba- Second Quarter. 4 Units.
Continuation of 190A.

AMELANG 190C. Third Year Yoruba, Third Quarter. 4 Units.
Continuation of 190B.

AMELANG 221A. Beginning Tigrinya, first quarter. 4 Units.
The basic introductory course in Tigrigna is designed for students who have no previous knowledge of Tigrigna and who are interested in learning about the culture, literature, social life Introductory courses in Tigrigna that will help students with all the four language skills: reading, writing, speaking and listening. nIn addition, cultural elements through audiovisual will be introduced throughout the course.

AMELANG 221B. Beginning Tigrinya,second quarter. 4 Units.
Continuation of amelang 221A . Prerequisite 221A.

AMELANG 221C. Beginning Tigrinya, Third Quarter. 4 Units.
Continuation of Amelang 211B- Prerequisite Amelang 221B- Fulfills the University Foreign Language requirement.

AMELANG 297. Directed Reading in African and Middle Eastern Languages. 1-5 Unit.
May be repeated for credit. Prerequisite: consent of instructor.

AMELANG 395. Graduate Studies in African and Middle Eastern Languages. 1-5 Unit.
Prerequisite: consent of instructor. Restricted to Grad students only.

Arabic Language Courses

ARABLANG 1. First-Year Arabic, First Quarter. 5 Units.
(Formerly AMELANG 1A.) One-year sequence designed to develop beginning proficiency, with additional emphasis is on reading and writing standard Arabic.

ARABLANG 1A. Accelerated First-Year Arabic, Part I. 5 Units.
Completes first-year sequence in two rather than three quarters.

ARABLANG 2. First-Year Arabic, Second Quarter. 5 Units.
Continuation of ARABLANG1. One-year sequence designed to develop beginning proficiency, with additional emphasis on reading and writing standard Arabic. nPrerequisite: Placement Test, ARABLANG 1.

ARABLANG 2A. Accelerated First-Year Arabic, Part II. 5 Units.
Completes first-year sequence in two rather than three quarters. Prerequisite: Placement Test, completion of ARABLANG 1A. This course fulfills the University Foreign Language Requirement.

ARABLANG 3. First-Year Arabic, Third Quarter. 5 Units.
(Formerly AMELANG 1C.) Continuation of ARABLANG 2. One-year sequence designed to develop beginning proficiency, with additional emphasis on reading and writing standard Arabic (*fusha*). Fulfills the University Foreign Language Requirement. Prerequisite: Placement Test, ARABLANG 2.

ARABLANG 10. Arabic Calligraphy. 3 Units.
Arabic calligraphy is the supreme art of the Islamic world. Other Islamic arts, such as architecture, metal work, ceramics, glass, and textiles, draw on calligraphy as their principal source of embellishment. Interactive lecture-workshop sketches Arabic calligraphy's development and illustrates the various types of Arabic calligraphy in use today use. Prerequisite: Knowledge of Arabic writing and reading required. May be repeated 3 times for credit.

ARABLANG 21. Second-Year Arabic, First Quarter. 5 Units.
(Formerly AMELANG 11A.) One-year sequence designed to develop intermediate proficiency, with additional emphasis on functional applications and reading and writing standard Arabic. Prerequisite: Placement Test, ARABLANG 3.

ARABLANG 21A. Accelerated Second-Year Arabic, Part I. 5 Units.
Completes second-year sequence in two rather than three quarters. For students with previous knowledge of Arabic. Prerequisite: Placement Test, ARABLANG 2A or 3.

ARABLANG 21H. Second-Year Arabic for Heritage Learners, First Quarter. 5 Units.
For students with home background or study/living experience in the Arab world. Designed to develop reading, writing, speaking and listening abilities in Arabic, as well as cultural knowledge. The course offers Arabic heritage and semi-heritage learners an opportunity to reactivate and expand their skills while studying both Modern Standard and Colloquial Arabic formally in an academic setting. Prerequisite: Placement Test, ARABLANG 3H.

ARABLANG 22. Second-Year Arabic, Second Quarter. 5 Units.
(Formerly AMELANG 11B.) Continuation of ARABLANG 21. One-year sequence designed to develop intermediate proficiency, with additional emphasis on functional applications and reading and writing standard Arabic. Prerequisite:Placement Test, ARABLANG 21.

ARABLANG 22A. Accelerated second-Year Arabic, Part II. 5 Units.
Completes Second-year sequence in two rather than three quarters. For students with previous knowledge of Arabic. Prerequisite: Placement Test, ARABLANG 21A.

ARABLANG 22H. Second-Year Arabic for Heritage Learners, Second Quarter. 5 Units.
Continuation of ARABLANG 21H. For students with home background or study/living experience in the Arab world. Designed to develop reading, writing, speaking and listening abilities in Arabic, as well as cultural knowledge. The course offers Arabic heritage and semi-heritage learners an opportunity to reactivate and expand their skills while studying both Modern Standard and Colloquial Arabic formally in an academic setting. Prerequisite: Placement Test, ARABLANG 21H.

ARABLANG 23. Second-Year Arabic, Third Quarter. 5 Units.
(Formerly AMELANG 11C.) Continuation of ARABLANG 22. One-year sequence designed to develop intermediate proficiency, with additional emphasis on functional applications and reading and writing standard Arabic. Prerequisite: Placement Test, ARABLANG 22.

ARABLANG 23H. Second-Year Arabic for Heritage Learners, Third Quarter. 5 Units.
Continuation of ARABLANG 22H. For students with home background or study/living experience in the Arab world. Designed to develop reading, writing, speaking and listening abilities in Arabic, as well as cultural knowledge. The course offers Arabic heritage and semi-heritage learners an opportunity to reactivate and expand their skills while studying both Modern Standard and Colloquial Arabic formally in an academic setting. Prerequisite: Placement Test, ARABLANG 22H.

ARABLANG 24. Arabic Skills Workshop. 4 Units.
Emphasis on the necessary Arabic skills (Reading, Writing, Listening, Speaking) needed by students to use Arabic at the Advanced level. The course is designed to deal with more complex texts and selected authentic audio materials of different styles and genres. Prerequisite: three years of Arabic or instructor's permission. This course is repeatable.

ARABLANG 116. Arabic of the Qur'an. 3 Units.
This course will introduce students to the definition, revelation, writing, organization and collection of the Qur'an. The goal will be to introduce students to the basic knowledge and the skills of reading the language of the Qur'an as one of the most authentic and widely read classical Arabic texts for hundreds of years The course is meant for students at the intermediate to native speaker¿s level of Arabic. It is suitable for anyone interested in the Arabic language, Islam, or the Middle East and its history. This is a language course, not a course on theology.

ARABLANG 125A. Colloquial Arabic, First Quarter. 4 Units.
(Formerly AMELANG 25A.) Sources include authentic videotaped conversations with native speakers, conversations, and texts of these conversations to enhance comprehension and improve aural skills. Prerequisite: 2 years of Arabic. May be repeated for credit.

ARABLANG 125B. Conversational/Colloquial Arabic, Second Quarter. 4 Units.
Formerly AMELANG 25B.) Continuation of ARABLANG 125A. Sources include authentic videotaped conversations with native speakers, conversations, and texts of these conversations to enhance comprehension and improve aural skills. Prerequisite: ARABLANG 125AnMay be repeated for credit.

ARABLANG 125C. Colloquial Arabic, Third Quarter. 4 Units.
Continuation of ARABLANG 125B. Sources include authentic videotaped conversations with native speakers, conversations, and texts of these conversations to enhance comprehension and improve aural skills. Prerequisite: ARABLANG 125B. nMay be repeated for credit.

ARABLANG 126. Media Arabic. 4 Units.
Arabic language used today in the printed and electronic media, including the Internet. Emphasizes current vocabulary and structures used in different modes of media coverage. Prerequisite: 2 years of Arabic.

ARABLANG 127. Intermediate to Advanced Conversation. 3 Units.
Students develop communication skills (listening and speaking) in Arabic while discussing real-life issues, current events, and cultural topics. Pronunciation, vocabulary development, and group discussion skills are stressed. May be taken concurrently with other Arabic courses. Prerequisite: Completion of First-Year Arabic.

ARABLANG 131. Third-Year Arabic, First Quarter. 4 Units.
(Formerly AMELANG 21A.) Continuation of ARABLANG 23. One-year sequence designed to develop advanced proficiency with emphasis on complex and compound sentences through use of literary works, media Arabic, the Internet, and cultural productions. Prerequisite: Placement Test, ARABLANG 23.

ARABLANG 131H. Third-Year Arabic for Heritage Learners, First Quarter. 4 Units.
Continuation of ARABLANG 23H. For students with home background or study/living experience in the Arab world. Designed to develop reading, writing, speaking and listening abilities in Arabic, as well as cultural knowledge. The course offers Arabic heritage and semi-heritage learners an opportunity to reactivate and expand their skills while studying both Modern Standard and Colloquial Arabic formally in an academic setting. Prerequisite: Placement Test, ARABLANG23H.

ARABLANG 132. Third-Year Arabic, Second Quarter. 4 Units.
Continuation of ARABLANG 131. One-year sequence designed to develop advanced proficiency with emphasis on complex and compound sentences through use of literary works, media Arabic, the Internet, and cultural productions. Prerequisite: Placement Test, Arablang 131.

ARABLANG 132H. Third-Year Arabic for Heritage Learners, Second Quarter. 4 Units.
Continuation of ARABLANG 131H. For students with home background or study/living experience in the Arab world. Designed to develop reading, writing, speaking and listening abilities in Arabic, as well as cultural knowledge. The course offers Arabic heritage and semi-heritage learners an opportunity to reactivate and expand their skills while studying both Modern Standard and Colloquial Arabic formally in an academic setting. Prerequisite: Placement Test, ARABLANG131H.

ARABLANG 133. Third-Year Arabic, Third Quarter. 4 Units.
(Formerly AMELANG 21C.) Continuation of ARABLANG 132. One-year sequence designed to develop advanced proficiency with emphasis on complex and compound sentences through use of literary works, media Arabic, the Internet, and cultural productions. Prerequisite: Placement Test, ARABLANG 132.

ARABLANG 133H. Third-Year Arabic for Heritage Learners, Third Quarter. 5 Units.
Continuation of ARABLANG 132H. Prerequisite: ARABLANG 132H.

ARABLANG 225. Intensive Second-Year Arabic for Graduate Students. 6-9 Units.
Equivalent to ARABLANG 21, 22, 23 combined or ARABLANG 25. Prerequisite one year of College Arabic or equivalent or completion of ARABLANG 3. Stanford graduate students resstricted to 9 units may take ARABLANG 225 for a total of 9 units.

ARABLANG 297. Directed Reading. 1-5 Unit.
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ARABLANG 394. Graduate Studies in Arabic Conversation. 1-3 Unit.
Prerequisite: Consent of Instructor.

ARABLANG 395. Graduate Studies in Arabic. 1-5 Unit.
Prerequisite: Consent of instructor. Restricted to Grad students.

Catalan Language Courses Courses

CATLANG 1A. Accelerated First-Year Catalan, Part 1. 5 Units.
First quarter of the two-quarter sequence. For students with knowledge of another Romance language, preferably Spanish. Emphasis is on developing beginning proficiency in interpersonal, interpretive, and presentational spheres. Prerequisite: consent of instructor.

CATLANG 2A. Accelerated First-Year Catalan, Part 2. 5 Units.
Continuation of CATLANG 1A. For students with knowledge of another Romance language, preferably Spanish. Further development of socially and culturally appropriate proficiency in interpersonal, interpretive, and presentational spheres. Completion of CATLANG 2A fulfills the University language requirement. Prerequisite: CATLANG 1A.

CATLANG 11A. Accelerated Second-Year Catalan, Part 1. 4 Units.
Continuation of CATLANG 2A. First half of the second-year sequence integrating culture and language of the Catalan-speaking world. Socially and culturally appropriate forms in narrations, descriptions, and expression of ideas and opinions. Emphasis is on oral and written proficiency in formal, informal, academic, and professional contexts. Prerequisite: CATLANG 2A.

CATLANG 12A. Accelerated Second-Year Catalan, Part 2. 4 Units.
Continuation of CATLANG 11A. Second half of the second-year sequence integrating culture and language of the Catalan-speaking world. Socially and culturally appropriate forms in narrations, descriptions, and expression of ideas and opinions. Emphasis is on oral and written proficiency in formal, informal, academic, and professional contexts. Prerequisite: CATLANG 11A.

CATLANG 199. Individual Work. 1-5 Unit.
May be repeated for credit. Prerequisite: consent of instructor.

CATLANG 395. Graduate Studies in Catalan. 1-5 Unit.
May be repeated for credit. Prerequisite: consent of instructor.

Chinese Language Courses

CHINLANG 1. First-Year Modern Chinese, First Quarter. 5 Units.
Conversation, grammar, reading, elementary composition. Daily sections may be set at the beginning of the quarter to suit schedule requirements.

CHINLANG 1A. Accelerated First-Year Chinese. 5 Units.
This Chinese language course is designed for students with no previous knowledge of the language. The goal is to develop communicative competence in listening, speaking, reading and writing skills at the elementary level.

CHINLANG 1B. First-Year Modern Chinese for Bilingual Students, First Quarter. 3 Units.
This is the first of a 3-course sequence (Chinlang1B, 2B, 3B)for students with some speaking skills, but with limited or no writing and reading skills in Mandarin Chinese. The course focuses on introducing a functional vocabulary and grammatical structures through culturally related topics in order to enhance the students literacy and communicative competence.

CHINLANG 2. First-Year Modern Chinese, Second Quarter. 5 Units.
Continuation of CHINLANG 1. Daily sections may be set at the beginning of the quarter to suit schedule requirements.Prerequisite: placement test, CHINLANG 1.

CHINLANG 2A. Accelerated First Year Chinese course, part 2. 5 Units.
Continuation of CHINLANG 1 or 1A. For students with previous knowledge of Chinese. Practice listening, speaking, reading and writing skills. Further development of socially and culturally appropriate proficiency in interpersonal, interpretive and presentational spheres.Prerequisites: CHINLANG 1or 1A , or Placement Test. Fulfills the University Foreign Language Requirement.

CHINLANG 2B. First-Year Modern Chinese for Bilingual Students, Second Quarter. 3 Units.
Continuation of Chinlang1B. The course continues to introduces a functional vocabulary and grammatical structures through culturally related topics in order to enhance the students literacy and communicative competence. Prerequisite: Placement Test, CHINLANG 1B.

CHINLANG 3. First-Year Modern Chinese, Third Quarter. 5 Units.
Continuation of CHINLANG 2. Daily sections may be set at the beginning of the quarter to suit schedule requirements. Fulfills the University language requirement. Prerequisite: Placement Test, CHINLANG 2.

CHINLANG 3B. First-Year Modern Chinese for Bilingual Students, Third Quarter. 3 Units.
Continuation of CHINLANG 2B. The course continues to introduce a functional vocabulary and grammatical structures through culturally related topics in order to enhance the students literacy and communicative competence. Prerequisite: Placement Test, CHINLANG 2B or consent of the instructor. Fulfills University language requirement.

CHINLANG 6. Beginning Conversational Chinese, First Quarter. 2 Units.
This is the first of a 3-course sequence in Beginning Mandarin (CHINLANG 6, 7, 8) that focuses on developing basic oral communication skills. Hanyu pinyin is used (no reading/writing of Chinese characters is required), with special emphasis on developing accurate pronunciation. Students will learn to: a) introduce themselves in an informal social situation, b) engage in simple transactions, c) converse about themselves, their friends and families, and d) talk about activities in their daily lives.

CHINLANG 7. Beginning Conversational Chinese, Second Quarter. 2 Units.
This is the second of a 3-course sequence in Beginning Mandarin (CHINLANG 6, 7, 8) that focuses on developing basic oral communication skills. Prerequisite is Beginning Conversational Chinese, First Quarter (CHINLANG 6) or equivalent. Hanyu pinyin is used (no reading/writing of Chinese characters required), with emphasis on supporting accurate pronunciation. Students will continue to build speaking proficiency across practical topics related to daily activities, social life, and studies.

CHINLANG 8. Beginning Conversational Chinese, Third Quarter. 2 Units.
This is the third of a 3-course sequence in Beginning Mandarin (CHINLANG 6, 7, 8) that focuses on developing basic oral communication skills. Hanyupinyin is used (no reading/writing of Chinese characters required). Students will continue to build speaking proficiency across practical topics including shopping and transportation.Prerequisite is Beginning Conversational Chinese, Second Quarter (CHINLANG 7) or equivalent.

CHINLANG 9A. Beginning-Intermediate Conversational Chinese. 2 Units.
This is the first of a 3-course sequence in Beginning to Intermediate level Mandarin oral communication. (Hanyu pinyin is used; no knowledge of Chinese characters is required.) Prerequisite is the Beginning Conversational Chinese sequence (CHINLANG 6,7,8) or equivalent. Students will continue to build speaking proficiency across a variety of practical content areas including Weather, Food & Dining, Asking Directions, and Health.

CHINLANG 9B. Beginning-Intermediate Conversational Chinese, Second Quarter. 2 Units.
This is the second of a 3-course sequence in Beginning to Intermediate level Mandarin oral communication. (Hanyu pinyin is used; no knowledge of Chinese characters is required.) Prerequisite is CHINLANG 9A or the equivalent. Students will further develop speaking proficiency across a variety of practical content areas.including Health, Social Life, and Living Accommodations.

CHINLANG 9C. Beginning-Intermediate Conversational Chinese, Third Quarter. 2 Units.
This is the third of a 3-course sequence in Beginning to Intermediate level Mandarin oral communication. (Hanyu pinyin is used; no knowledge of Chinese characters is required.) Prerequisite is CHINLANG 9B or the equivalent. Students will further develop speaking proficiency across a variety of practical content areas including Sports and Travel.

CHINLANG 10. Beginning Southern Min (Taiwanese) Conversation, First Quarter. 2 Units.
This is the first of a 3-course sequence in Beginning Southern Min - Taiwanese (CHINLANG 10, 11, 12) that focuses on developing basic oral communication skills. No reading/writing of Chinese characters is required.It is designed to equip students with the basic language skills needed in everyday life situations.

CHINLANG 11. Beginning Southern Min (Taiwanese) Conversation, Second Quarter. 2 Units.
Continuation of Chinlang10. The course focuses on developing basic oral communication skills. No reading/writing of Chinese characters is required.It is designed to equip students with the basic language skills needed in everyday life situations. Prerequisite or consent of instructor.

CHINLANG 12. Beginning Southern Min (Taiwanese) Conversation, Third Quarter. 2 Units.
Continuation of Chinlang 11. The course focuses on developing basic oral communication skills. No reading/writing of Chinese characters is required.It is designed to equip students with the basic language skills. needed in everyday life situations. Prerequisite: Chinlang 11 or consent of instructor.

CHINLANG 15. Beginning Conversational Cantonese, First Quarter. 2 Units.
This is the first of the 3-course series on beginning Cantonese. The primary objective of the beginning series is to help students build up a repertoire of vocabulary and basic grammatical structures so that they can: (a) introduce themselves in an informal social situation, (b) engage in simple transactions, (c) converse about themselves, their friends and families, and (d) talk about activities in daily lives. Authentic materials such as Cantopop and movie clips are incorporated in the courses and Internet tools are used to enhance learning. There is also an optional field trip to a karaoke bar, a dim-sum restaurant, or a Cantonese community every quarter to experience Cantonese culture.

CHINLANG 15M. Beginning Conversational Cantonese for Standard Modern Chinese Speakers, First Quarter. 2 Units.
This is the first of the 3-course series on beginning Cantonese for Standard Modern Chinese speakers. The primary objective of the beginning series is to help students build up a repertoire of vocabulary so that they can: (a) introduce themselves in an informal social situation, (b) engage in simple transactions, (c) converse about themselves, their friends and families, and (d) talk about activities in daily lives. Authentic materials such as Cantopop and movie clips are incorporated in the courses and Internet tools are used to enhance learning. There is also an optional field trip to a karaoke bar, a dim sum restaurant, or a Cantonese community every quarter to experience Cantonese culture. In addition, students work on common pronunciation and grammatical errors due to influences from Mandarin. Cantonese-Chinese characters will also be taught.

CHINLANG 16. Beginning Cantonese Conversation, Second Quarter. 2 Units.
Continuation of CHINLANG 15. This is the second of the 3-course series on beginning Cantonese. The primary objective of the beginning series is to help students build up a repertoire of vocabulary and basic grammatical structures so that they can: (a) introduce themselves in an informal social situation, (b) engage in simple transactions, (c) converse about themselves, their friends and families, and (d) talk about activities in daily lives. Authentic materials such as Cantopop and movie clips are incorporated in the courses and Internet tools are used to enhance learning. There is also an optional field trip to a karaoke bar, a dim-sum restaurant, or a Cantonese community every quarter to experience Cantonese culture. Prerequisite: CHINLANG 15 or consent of instructor.

CHINLANG 16M. Beginning Conversational Cantonese for Mandarin Speakers, Second Quarter. 2 Units.
Continuation of CHINLANG 15M. This is the second of the 3-course series on beginning Cantonese for Standard Modern Chinese. The primary objective of the beginning series is to help students build up a repertoire of vocabulary so that they can: (a) introduce themselves in an informal social situation, (b) engage in simple transactions, (c) converse about themselves, their friends and families, and (d) talk about activities in daily lives. Authentic materials such as Cantopop and movie clips are incorporated in the courses and Internet tools are used to enhance learning. There is also an optional field trip to a karaoke bar, a dim sum restaurant, or a Cantonese community every quarter to experience Cantonese culture. In addition, students work on common pronunciation and grammatical errors due to influences from Mandarin. Cantonese-Chinese characters will also be taught. Prerequisite: CHINLANG 15M or consent of instructor.

CHINLANG 17. Beginning Conversational Cantonese, Third Quarter. 2 Units.
Continuation of CHINLANG 16. This is the third of the 3-course series on beginning Cantonese. The primary objective of the beginning series is to help students build up a repertoire of vocabulary and basic grammatical structures so that they can: (a) introduce themselves in an informal social situation, (b) engage in simple transactions, (c) converse about themselves, their friends and families, and (d) talk about activities in daily lives. Authentic materials such as Cantopop and movie clips are incorporated in the courses and Internet tools are used to enhance learning. There is also an optional field trip to a karaoke bar, a dim-sum restaurant, or a Cantonese community every quarter to experience Cantonese culture. Prerequisite: CHINLANG 16 or consent of instructor.

CHINLANG 17M. Beginning Conversational Cantonese for Mandarin Speakers, Third Quarter. 2 Units.
Continuation of CHINLANG 16M. This is the third of the 3-course series on beginning Cantonese for Standard Modern Chinese speakers. The primary objective of the beginning series is to help students build up a repertoire of vocabulary so that they can: (a) introduce themselves in an informal social situation, (b) engage in simple transactions, (c) converse about themselves, their friends and families, and (d) talk about activities in daily lives. Authentic materials such as Cantopop and movie clips are incorporated in the courses and Internet tools are used to enhance learning. There is also an optional field trip to a karaoke bar, a dim sum restaurant, or a Cantonese community every quarter to experience Cantonese culture. In addition, students work on common pronunciation and grammatical errors due to influences from Mandarin. Cantonese-Chinese characters will also be taught. Prerequisite: CHINLANG 16M or consent of instructor.

CHINLANG 18. Intermediate Cantonese Conversation, First Quarter. 2 Units.
Continuation of CHINLANG 17. This is the first of the 3-course series on intermediate Cantonese. The primary objective of the intermediate series is to help students acquire the vocabulary: (a) to engage in conversations about less concrete topics, (b) to give directions and instructions, and (c) to carry out transactions in linguistically unfamiliar situations. Students will work on more complex grammar that allows them to express their ideas in a variety of sentence structures. Authentic materials such as Cantopop, movies, and news clips are incorporated in the courses and Internet tools are used to enhance learning. There is also an optional field trip to a karaoke bar, a dim sum restaurant, or a Cantonese community every quarter to experience Cantonese culture. Prerequisite: CHINLANG 17.

CHINLANG 19. Intermediate Conversational Cantonese, Second Quarter. 2 Units.
Continuation of CHINLANG 18. This is the second of the 3-course series on intermediate Cantonese. The primary objective of the intermediate series is to help students acquire the vocabulary: (a) to engage in conversations about less concrete topics, (b) to give directions and instructions, and (c) to carry out transactions in linguistically unfamiliar situations. Students will work on more complex grammar that allows them to express their ideas in a variety of sentence structures. Authentic materials such as Cantopop, movies, and news clips are incorporated in the courses and Internet tools are used to enhance learning. There is also an optional field trip to a karaoke bar, a dim sum restaurant, or a Cantonese community every quarter to experience Cantonese culture. Prerequisite: CHINLANG 18 or consent of instructor.

CHINLANG 20. Intermediate Conversational Cantonese, Third Quarter. 2 Units.
Continuation of CHINLANG 19. This is the third of the 3-course series on intermediate Cantonese. The primary objective of the intermediate series is to help students acquire the vocabulary: (a) to engage in conversations about less concrete topics, (b) to give directions and instructions, and (c) to carry out transactions in linguistically unfamiliar situations. Students will work on more complex grammar that allows them to express their ideas in a variety of sentence structures. Authentic materials such as Cantopop, movies, and news clips are incorporated in the courses and Internet tools are used to enhance learning. There is also an optional field trip to a karaoke bar, a dim sum restaurant, or a Cantonese community every quarter to experience Cantonese culture. Prerequisite:Cantonese Proficiency Tests on Coursework, CHINLANG 19 or consent of instructor.

CHINLANG 20A. Cantonese Through Films, First Quarter. 2 Units.
This is the first of a series of courses that targets intermediate and low-advanced students interested in expanding their Cantonese repertoire to include vocabulary, grammar, and culture for talking about movies, current events, and topics of interest to them. Students watch authentic Cantonese movies, TV dramas, news clips, and documentaries. They engage in discussions about topics relevant to them, such as history and identity of Chinese Americans. There is also an optional field trip to a karaoke bar, a dim sum restaurant, or a Cantonese community every quarter to experience Cantonese culture. Prerequisite: "Cantonese Proficiency Test or CHINLANG 20.

CHINLANG 20B. Cantonese Through Films, Second Quarter. 2 Units.
Continuation of CHINLANG 20A. This is the second of a series of courses that targets intermediate and low-advanced students interested in expanding their Cantonese repertoire to include vocabulary, grammar, and culture for talking about movies, current events, and topics of interest to them. Students watch authentic Cantonese movies, TV dramas, news clips, and documentaries. They engage in discussions about topics relevant to them, such as history and identity of Chinese Americans. There is also an optional field trip to a karaoke bar, a dim sum restaurant, or a Cantonese community every quarter to experience Cantonese culture. Prerequisite: CHINLANG 20A or consent of instructor.

CHINLANG 20C. Cantonese Through Films, Third Quarter. 2 Units.
Continuation of CHINLANG 20B. This is the third of a series of courses that targets intermediate and low-advanced students interested in expanding their Cantonese repertoire to include vocabulary, grammar, and culture for talking about movies, current events, and topics of interest to them. Students watch authentic Cantonese movies, TV dramas, news clips, and documentaries. They engage in discussions about topics relevant to them, such as history and identity of Chinese Americans. There is also an optional field trip to a karaoke bar, a dim sum restaurant, or a Cantonese community every quarter to experience Cantonese culture. Prerequisite: CHINLANG 20B or consent of instructor.

CHINLANG 21. Second-Year Modern Chinese, First Quarter. 5 Units.
Continuation of CHINLANG 3. Listening, speaking, reading, writing. Daily sections may be set at the beginning of the quarter to suit schedule requirements. Prerequisite: Placement Test, CHINLANG 3.

CHINLANG 21B. Second-Year Modern Chinese for Bilingual Students, First Quarter. 3 Units.
Continuation of CHINLANG 3B. For students with advanced comprehension and speaking skills, but lacking equivalent knowledge of grammar, reading, and writing Chinese characters. Equivalent to CHINLANG 21. Prerequisite: Placement Test, CHINLANG 3B.

CHINLANG 22. Second-Year Modern Chinese, Second Quarter. 5 Units.
Continuation of CHINLANG 21. Listening, speaking, reading, writing. Daily sections may be set at the beginning of the quarter to suit schedule requirements. Prerequisite: Placement Test, CHINLANG 21.

CHINLANG 22B. Second-Year Chinese for Bilingual Students, Second Quarter. 3 Units.
Continuation of CHINLANG 21B. For students with advanced comprehension and speaking skills, but lacking equivalent knowledge of grammar, reading, and writing Chinese characters. Prerequisite: Placement Test, CHINLANG 21B .

CHINLANG 23. Second-Year Modern Chinese, Third Quarter. 5 Units.
Continuation of CHINLANG 22. Listening, speaking, reading, writing. Daily sections may be set at the beginning of the quarter to suit schedule requirements. Prerequisite: Placement Test, CHINLANG 22.

CHINLANG 23B. Second-Year Chinese for Bilingual Students, Third Quarter. 3 Units.
Continuation of CHINLANG 22B. For students with advanced comprehension and speaking skills, but lacking equivalent knowledge of grammar, reading, and writing Chinese characters. Prerequisite: Placement Test, CHINLANG 22B.

CHINLANG 27. Intermediate Chinese Conversation, First Quarter. 2 Units.
First quarter of the three-quarter sequence. For students with basic conversational skills in Standard Modern Chinese. Emphasis is on developing learners' communicative competence in Chinese by means of language practices, oral reports, discussions and group projects. Development of functional language skills for daily communication on topics related to school life, Chinese culture and society.Prerequisite: CHINLANG 3 or consent of instructor.

CHINLANG 28. Intermediate Chinese Conversation, Second Quarter. 2 Units.
Continuation of CHINLANG 27. For students with basic conversational skills in Standard Modern Chinese. Emphasis is on developing learners communicative competence in Chinese by means of language practices, oral reports, discussions and group projects. Development of functional language skills for daily communication on topics related to school life, Chinese culture and society. Prerequisite: CHINLANG 27 or consent of instructor.

CHINLANG 29. Intermediate Chinese Conversation, Third Quarter. 2 Units.
Continuation of CHINLANG 28. For students with basic conversational skills in Standard Modern Chinese. Emphasis is on developing learners' communicative competence in Chinese by means of language practices, oral reports, discussions and group projects. Development of functional language skills for daily communication on topics related to school life, Chinese culture and society. Prerequisite: CHINLANG 28 or consent of instructor.

CHINLANG 31E. Accelerated Beginning Mandarin for Engineering Students, First Quarter. 4 Units.
Restricted to engineering students participating in the China Internship Program. . Grad students enroll in CHINLANG 331E.

CHINLANG 41. Intermediate-to-Advanced Chinese Conversation, First Quarter. 2 Units.
Repeatable once for units. Prerequisite: CHINLANG 23.

CHINLANG 42. Intermediate-to-Advanced Chinese Conversation, Second Quarter. 2 Units.
Continuation of CHINLANG 41. Repeatable once for units. Prerequisite: CHINLANG 23.

CHINLANG 43. Intermediate-to-Advanced Chinese Conversation, Third Quarter. 2 Units.
Continuation of CHINLANG 42. Repeatable once for units. Prerequisite: CHINLANG 23.

CHINLANG 51. Chinese Calligraphy. 2 Units.
Introductory course on Chinese calligraphy. Practice writing Chinese characters with a brush, emphasizing regular/standard script and the composition of the characters. May be repeated for credit.Prerequisite CHINLANG 2 or consent of instructor.

CHINLANG 99. Language Specials. 1-5 Unit.
Prerequisite: consent of instructor.nn (Staff).

CHINLANG 101. Third-Year Modern Chinese, First Quarter. 5 Units.
Continuation of CHINLANG 23. Written and spoken styles of modern Chinese. Reading and discussion of authentic writings on cultural topics; newspaper reports, radio, and TV broadcasts and films; online Chinese software and email network to facilitate study. Prerequisite: Placement Test, CHINLANG 23.

CHINLANG 101B. Third-Year Modern Chinese for Bilingual Students, First Quarter. 3 Units.
Continuation of CHINLANG 23B. Equivalent to CHINLANG 101. For students with advanced listening and speaking abilities, but lacking equivalent knowledge in reading and writing. Prerequisite: Placement Test, CHINLANG 23B.

CHINLANG 102. Third-Year Modern Chinese, Second Quarter. 5 Units.
Continuation of CHINLANG 101. Written and spoken styles of modern Chinese. Reading and discussion of authentic writings on cultural topics; newspaper reports, radio, and TV broadcasts and films; online Chinese software and email network to facilitate study. Prerequisite: Placement Test, CHINLANG 101.

CHINLANG 102B. Third-Year Modern Chinese for Bilingual Students, Second Quarter. 3 Units.
Continuation of CHINLANG 101B. Equivalent to CHINLANG 102. For students with advanced listening and speaking abilities, but lacking equivalent knowledge in reading and writing. Prerequisite: Placement Test, CHINLANG 101B.

CHINLANG 103. Third-Year Modern Chinese, Third Quarter. 5 Units.
Continuation of CHINLANG 102. Written and spoken styles of modern Chinese. Reading and discussion of authentic writings on cultural topics; newspaper reports, radio, and TV broadcasts and films; online Chinese software and email network to facilitate study Prerequisite: Placement Test, CHINLANG 102.

CHINLANG 103B. Third-Year Modern Chinese for Bilingual Students, Third Quarter. 3 Units.
Continuation of CHINLANG 102B. Equivalent of CHINLANG 103. For students with advanced listening and speaking abilities, but lacking equivalent knowledge in reading and writing. Prerequisite: CHINLANG 102B.

CHINLANG 121. Advanced Chinese Conversation, First Quarter. 2 Units.
Continuation of CHINLANG 29. This is the first quarter of a three-quarter sequence designed for students who have completed Third-year Chinese, or its equivalent, and wish to continue to develop their speaking and listening skills. Content for the course is drawn from a wide variety of current multimedia materials. Topics include general interest and social issues, international relations, and others that lend themselves to lively and in-depth discussion. New grammatical structures and vocabulary will be regularly introduced, with occasional written assignments to support students, development of conversational skills. Placement Test, CHINLANG 103.

CHINLANG 122. Advanced Chinese Conversation, Second Quarter. 2 Units.
Continuation of CHINLANG 121. Second quarter of Advanced Conversational Chinese. It is designed for students who have completed Third-year Chinese, or its equivalent, and wish to continue to develop their speaking and listening skills. Content for the course is drawn from a wide variety of current multimedia materials. Topics include general interest and social issues, international relations, and others that lend themselves to lively and in-depth discussion. New grammatical structures and vocabulary will be regularly introduced, with occasional written assignments to support students, development of conversational skills. Prerequisite: CHINLANG 121.

CHINLANG 123. Advanced Chinese Conversation, Third Quarter. 2 Units.
Continuation of CHINLANG 122. Third quarter of Advanced Conversational Chinese. It is designed for students who have completed Third-year Chinese, or its equivalent, and wish to continue to develop their speaking and listening skills. Content for the course is drawn from a wide variety of current multimedia materials. Topics include general interest and social issues,international relations, and others that lend themselves to lively and in-depth discussion. New grammatical structures and vocabulary will be regularly introduced, with occasional written assignments to support development of conversational skills. Prerequisite: Chinlang 122.

CHINLANG 125. Chinese through Modern Fiction. 3 Units.
Increasing Chinese language proficiency through reading original modern Chinese literary masterpieces covered in Chingen 133/233, including prominent modern Chinese writers such as Lu Xun, Shen Congwen, Ding Ling, Zhang Ailing and Yu Hua. Students will gain Chinese language skills and enhance their understanding of Chinese culture. Enrollment in Chingen 133/233 is not required but encouraged. Prerequisite: Chinlang 103,Chinlang 103B or equivalent (proved by placement test result). Same as: CHINLANG 225

CHINLANG 131. Business Chinese, First Quarter. 3-4 Units.
This is the first course in the Business Chinese series. It focuses on expanding students¿ economic and business-related vocabulary and improving their practical language skills in business communications with Chinese-speaking communities. Students will work on a variety of authentic materials, including newspaper and journal articles, TV news and film clips, as well as commentaries from social media. Prerequisite: CHINLANG 103 or equivalent.

CHINLANG 132. Business Chinese, Second Quarter. 3-4 Units.
Continuation of CHINLANG131. This is the second course in the Business Chinese series. It focuses on expanding students¿ economic and business-related vocabulary and improving their practical language skills in business communications with Chinese-speaking communities. Students will work on a variety of authentic materials, including newspaper and journal articles, TV news and film clips, as well as commentaries from social media.Prerequisite: Chinlang 131 or consent of instructor.

CHINLANG 133. Business Chinese, Third Quarter. 3-4 Units.
Continuation of CHINLANG132. This is the third course in the Business Chinese series. It focuses on expanding students economic and business-related vocabulary and improving their practical language skills in business communications with Chinese-speaking communities. Students will work on a variety of authentic materials, including newspaper and journal articles, TV news and film clips, as well as commentaries from social media. Prerequisite: CHINLANG 132.

CHINLANG 199. Individual Reading. 1-5 Unit.
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CHINLANG 200. Directed Reading. 1-5 Unit.
May be repeated for credit. Prerequisite: consent of instructor.

CHINLANG 211. Fourth-Year Modern Chinese, First Quarter. 5 Units.
Continuation of CHINLANG 103. This is the first quarter of a three-quarter sequence designed for students with advanced-level proficiency in Chinese. Discussions are based on short stories, essays and newspaper articles, and academic journal articles. Emphasis is on social and cultural issues in contemporary China. Students will learn speed-reading techniques and explore more subtle distinctions in Chinese language use, such as formal vs. informal styles and word choice, toward developing a more sophisticated understanding and command of the language. Having completed one year of study at this level, students will acquire sufficient skills in reading, writing, and speaking on various topics of personal or academic interest more effectively and accurately. Prerequisite: placement test, CHINLANG 103.

CHINLANG 211B. Fourth- Year Modern Chinese for Bilingual Students, First Quarter. 3 Units.
Continuation of CHINLANG 103B. This is the first quarter of a three-quarter sequence designed for bilingual students with advanced-level proficiency in Chinese. Discussions are based on short stories, essays and newspaper articles, along with related media materials. Emphasis is on social and cultural issues in contemporary China. Students will learn speed-reading techniques and explore more subtle distinctions in Chinese language use, such as formal vs. informal styles and word choice, toward developing a more sophisticated understanding and command of the language. Having completed one year of study at this level, students will acquire sufficient skills in reading, writing, and speaking on various topics of personal or public interests more effectively and accurately. Prerequisite: CHINLANG 103B.

CHINLANG 212. Fourth-Year Modern Chinese, Second Quarter. 5 Units.
Continuation of CHINLANG 211. Second quarter of fourth year Chinese. Discussions are based on short stories, essays and newspaper articles, and academic journal articles. Emphasis is on social and cultural issues in contemporary China. Students will learn speed-reading techniques and explore more subtle distinctions in Chinese language use, such as formal vs. informal styles and word choice, toward developing a more sophisticated understanding and command of the language. Having completed one year of study at this level, students will acquire sufficient skills in reading, writing, and speaking on various topics of personal or academic interest more effectively and accurately. Prerequisite: Placement Test, CHINLANG 211.

CHINLANG 212B. Fourth-Year Modern Chinese for Bilingual Students, Second Quarter. 3 Units.
Continuation of CHINLANG 211B. Second quarter of Fourth Year Chinese for bilingual students. Discussions are based on short stories, essays and newspaper articles, along with related media materials. Emphasis is on social and cultural issues in contemporary China. Students will learn speed-reading techniques and explore more subtle distinctions in Chinese language use, such as formal vs. informal styles and word choice, toward developing a more sophisticated understanding and command of the language. Having completed one year of study at this level, students will acquire sufficient skills in reading, writing, and speaking on various topics of personal or public interests more effectively and accurately. Prerequisite: CHINLANG 211B.

CHINLANG 213. Fourth-Year Modern Chinese, Third Quarter. 5 Units.
Continuation of CHINLANG 212. Third quarter of Fourth Year Chinese. Discussions are based on short stories, essays and newspaper articles, and academic journal articles. Emphasis is on social and cultural issues in contemporary China. Students will learn speed-reading techniques and explore more subtle distinctions in Chinese language use, such as formal vs. informal styles and word choice, toward developing a more sophisticated understanding and command of the language.Having completed one year of study at this level, students will acquire sufficient skills in reading, writing, and speaking on various topics of personal or academic interest more effectively and accurately. Prerequisite: Placement Test, CHINLANG 212.

CHINLANG 213B. Fourth-Year Modern Chinese for Bilingual Students, Third Quarter. 3 Units.
Continuation of CHINLANG 212B. Third quarter of Fourth Year Chinese for bilingual students. Discussions are based on short stories, essays and newspaper articles, along with related media materials. Emphasis is on social and cultural issues in contemporary China. Students will learn speed-reading techniques and explore more subtle distinctions in Chinese language use, such as formal vs. informal styles and word choice, toward developing a more sophisticated understanding and command of the language. Having completed one year of study at this level, students will acquire sufficient skills in reading, writing, and speaking on various topics of personal or public interests more effectively and accurately. Prerequisite: CHINLANG 212B.

CHINLANG 225. Chinese through Modern Fiction. 3 Units.
Increasing Chinese language proficiency through reading original modern Chinese literary masterpieces covered in Chingen 133/233, including prominent modern Chinese writers such as Lu Xun, Shen Congwen, Ding Ling, Zhang Ailing and Yu Hua. Students will gain Chinese language skills and enhance their understanding of Chinese culture. Enrollment in Chingen 133/233 is not required but encouraged. Prerequisite: Chinlang 103,Chinlang 103B or equivalent (proved by placement test result). Same as: CHINLANG 125

CHINLANG 231A. Fifth-Year Modern Chinese: Current Issues, First Quarter. 2 Units.
One of the two components of fifth-year Chinese, first quarter: A content focuses on politics, the economy, technology and society. Sequence facilitates advanced training in listening, speaking, reading and writing. Targeted functional abilities include presentational and sociocultural appropriate language in formal and informal, academic, and professional contexts. Students can take Chinlang 231A alone for 2 units, or take 231A concurrently with Chinlang 231B for 4 units.

CHINLANG 231B. Fifth-Year Modern Chinese: Cultural Texts, First Quarter. 2 Units.
One of the two components of fifth-year Chinese, first quarter: 'B' content includes cultural and literary texts in the form of dramas, fictional pieces, poetry, essays, TV shows and films. Sequence facilitates advanced training in listening, speaking, reading and writing. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, academic, and professional contexts. Students can take 231B alone for 2 units, or take 231B concurrently with 231A for 4 units. Prerequisite: Placement Test, CHINLANG 213, or CHINLANG 213B.

CHINLANG 232A. Fifth-Year Modern Chinese: Current Issues, Second Quarter. 2 Units.
One of the two components of fifth-year Chinese, second quarter: 'A' content focuses on politics, the economy, technology and society. Sequence facilitates advanced training in listening, speaking, reading and writing. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, academic, and professional contexts. Students can take 232A alone for 2 units, or take 232A concurrently with 232B for 4 units. Prerequisite: Placement Test, CHINLANG 231A, or CHINLANG 231B.

CHINLANG 232B. Fifth-Year Modern Chinese: Cultural Texts, Second Quarter. 2 Units.
One of the two components of fifth-year Chinese, second quarter: 'B' content includes cultural and literary texts in the form of dramas, fictional pieces, poetry, essays, TV shows and films. Sequence facilitates advanced training in listening, speaking, reading and writing. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, academic, and professional contexts. Students can take 232B alone for 2 units, or take 232B concurrently with 232A for 4 units. Prerequisite: Placement Test, CHINLANG 231B, or CHINLANG 231A.

CHINLANG 233A. Fifth-Year Modern Chinese: Current Issues, Third Quarter. 2 Units.
One of the two components of fifth-year Chinese, third quarter: 'A' content focuses on politics, the economy, technology and society. Sequence facilitates advanced training in listening, speaking, reading and writing. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, academic, and professional contexts. Students can take 233A alone for 2 units, or take 233A concurrently with 233B for 4 units. Prerequisite: Placement Test, CHINLANG 232A, or CHINLANG 232B.

CHINLANG 233B. Fifth-Year Modern Chinese: Cultural Texts, Third Quarter. 2 Units.
One of the two components of fifth-year Chinese, third quarter: 'B' content includes cultural and literary texts in the form of dramas, fictional pieces, poetry, essays, TV shows and films. Sequence facilitates advanced training in listening, speaking, reading and writing. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, academic, and professional contexts. Students can take 233B alone for 2 units, or take 233B concurrently with 233A for 4 units. Prerequisite: Placement Test, CHINLANG 232B, or CHINLANG 232A.

CHINLANG 251. Chinese for Academic Discussion and Reading. 2 Units.
This course is designed to provide an opportunity for PhD students, as well as Masters or senior undergraduate students with specific academic projects to practice, improve, and refine their Chinese skills. Students will share with the class reading materials related to their academic research projects, and take the leading role in related class discussion. They will additionally write about their research topics and present their research ideas and discoveries to the class. We hope these practices can help students communicate more effectively in a Chinese academic environment, and allow them to improve the presentation skills they will use at Chinese-speaking academic conferences. This course is repeatable. Prerequisite: 213/213B or equivalent and approval of instructor (Email instructor for permission).

CHINLANG 331E. Accelerated Beginning Mandarin for Engineering Students, First Quarter. 2-4 Units.
Restricted to graduate engineering students participating in the China Internship Program.

CHINLANG 394. Graduate Studies in Chinese Conversation. 1-2 Unit.
Prerequisite: consent of instructor.

CHINLANG 395. Graduate Studies in Chinese. 1-5 Unit.
Prerequisite: consent of instructor.

English for Foreign Students Courses

EFSLANG 197. Directed Study. 1-3 Unit.
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EFSLANG 397. Directed Study. 1-3 Unit.
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EFSLANG 683R. Workshop in Reading and Vocabulary for International Students. 1-2 Unit.
(1-2 units). Provides support in the development of English reading skills for academic purposes, including work on comprehension, speed, and critical interpretation, along with strategies for improving vocabulary. Students taking the course for 2 units will have additional individual assignments and a 50-minute tutorial each week. Limited to visiting undergraduates and students in the High School Summer College program.

EFSLANG 683S. Workshop in Oral Communication for International Students. 1-2 Unit.
(1-2 units) Provides support in the development of listening and speaking skills in English, including academic listening, small group discussion, oral presentation, and intercultural communication. Students taking the course for 2 units will have additional individual assignments and a 50-minute tutorial each week. Limited to visiting undergraduates and students in the High School Summer College program.

EFSLANG 683W. Workshop in Written Communication for International Students. 1-2 Unit.
Provides support in the development of English writing skills for non-natives. Writing assignments are negotiated with the instructor and may include practice in composition, SAT or TOEFL writing, and writing university application essays and statements of purpose. Students taking the course for 2 units will have additional individual assignments and a 50-minute tutorial each week. Limited to visiting undergraduates and students in the High School Summer College program.

EFSLANG 684C. Communicating in the Sciences and Engineering. 1-2 Unit.
Provides instruction and practice for international students in essential spoken and written skills to succeed in the sciences and engineering in both academics and industry. Students develop their ability to communicate effectively across the English-speaking world with both scientists and engineers as well as with others outside their fields. Students taking the course for 2 units will have additional individual assignments and a weekly 50-minute tutorial. Intended for visiting undergraduates and students in the High School Summer College program. Graduate students may attend by permission.

EFSLANG 684D. Effective Negotiation and Persuasion. 1-2 Unit.
Provides for learning, practicing, and refining essential debate and discussion skills, abilities in high demand in both academia and industry and central to effective negotiation and persuasion. The course provides practice and feedback in class and covers a range of words, phrases and discourse structures for improving English proficiency and functioning effectively in academic and industry contexts as well as familiarity with commonly accepted interactional patterns. Students taking the course for 2 units will have additional individual assignments and a weekly 50-minute tutorial. Intended for visiting undergraduates and students in the High School Summer College program. Graduate students may attend by permission.

EFSLANG 687X. American Language and Culture: Silicon Valley First Session. 3 Units.
Closed enrollment. Intensive English language and U.S. culture program. Enrollment limited to 14.

EFSLANG 687Y. American Language and Culture: Silicon Valley, Second Session. 3 Units.
Closed enrollment. Intensive English language and U.S. culture program. Enrollment limited to 14. Course may be repeated once.

EFSLANG 688. Intensive English and Academic Orientation for Foreign Graduate Students. 6 Units.
Goal is to prepare incoming international graduate students for full-time study. Academic orientation and instruction in academic writing, listening, discussion, oral presentation, and spoken usage. Enrollment limited to 14. Course may be repeated once.

EFSLANG 688A. Intensive Spoken English. 3 Units.
For current graduate students. Includes work on listening, oral presentation, discussion, and conversational interaction. May fulfill any two of the following EFS requirements, subject to approval by the EFS Coordinator: EFSLANG 690A, 690B, 691, 693B.

EFSLANG 688B. Intensive Academic Writing. 3 Units.
For current graduate students. Focus on academic writing, with some work in reading and vocabulary development. Engineering, science, humanities, and social science students prepare a research paper; business students write one or more case studies. Fulfills requirement for EFSLANG 697 or 698A, subject to approval by the EFSLANG coordinator.

EFSLANG 688V. Intensive English and Academic Orientation for Stanford Visiting Scholars. 5 Units.
Goal is to improve English proficiency and introduce the university environment. Writing, pronunciation, listening, discussion, oral presentation, and spoken usage. Enrollment limited to 14.

EFSLANG 689B. Building Communication Skills through Improvisation. 1 Unit.
Focus on building a range of English communication skills through improvisation activities. Participants explore theatrical techniques that teach collaboration, spontaneity, team building, storytelling, and confident public speaking with connections to academic, professional, and personal situations. No previous improvisation or theater experience necessary.

EFSLANG 689E. Learning English on Your Own. 1 Unit.
Independent English language learning. Learning strategies and objectives, setting and maintaining practice schedules, and evaluating progress. Focus is on exploiting web-based resources. Individual meetings.

EFSLANG 689H. American Humor. 1 Unit.
Analysis of jokes, humorous stories, and situations through modern media. Practice in advanced listening comprehension and English idioms.

EFSLANG 689L. Living in the USA. 1 Unit.
Life and relationships outside the University classroom. Goal is to familiarize international students with the cultural expectations and forms of language use in a variety of situations in the University community and in other social situations.

EFSLANG 689P. Pronunciation. 1 Unit.
The sounds of English, and stress, intonation, and rhythm patterns important to natural-sounding speech.

EFSLANG 689S. Exploring Silicon Valley Language and Culture. 1 Unit.
Focus on developing communicative skills in the context of Silicon Valley with its unique culture and language patterns. Through analysis and discussion of language and content from authentic materials, such as popular blogs and videos, students gain familiarity with local norms for interacting with the people who live and work in this region. Includes topics relevant to entrepreneurs, tech professionals, and students as well as a short individual project. Intended for both new and continuing international graduate students.Undergraduate and visiting high school students may attend with permission.

EFSLANG 689T. Interacting in California's Vineyard Culture. 1 Unit.
Focuses on communicative skills in the context of California's renowned wine culture. Emphasis on the language of wine using appropriate terminology, and interacting knowledgeably with restaurant and retail wine staff. Topics include learning the fundamentals of vineyard techniques, varietal characteristics, tasting techniques, drinking and ordering etiquette. Course is co-taught by a wine expert and an ESL instructor. Class consists of a short interactive lecture, a communicative activity such as role playing, and a tasting of four specially selected wines. Participants must be at least 21 years old. Fee.

EFSLANG 689V. Vocabulary and Idiom. 1 Unit.
Building vocabulary for academic success. Idiomatic language, and what idioms and metaphors reflect about American culture. Enrollment limited to 14.

EFSLANG 689W. Working in the USA. 1 Unit.
The language and culture of the workplace. Goal is to familiarize international students with the cultural expectations of situations in the business setting and in social situations related to business.

EFSLANG 690A. Interacting in English. 1-3 Unit.
Strategies for communicating effectively in social and academic settings. Informal and formal language used in campus settings, including starting and maintaining conversations, asking questions, making complaints, and contributing ideas and opinions. Simulations and discussions, with feedback on pronunciation, grammar, and usage.

EFSLANG 690B. Academic Discussion. 1-3 Unit.
Skills for effective participation in classroom settings, seminars, and research group meetings. Pronunciation, grammar, and appropriateness for specific tasks. Feedback on language and communication style. May be repeated once for credit. Prerequisite: EFSLANG 690A or consent of instructor.

EFSLANG 690C. Advanced Interacting in English. 1-3 Unit.
Communication skills for extended discourse such as storytelling and presenting supported arguments. Development of interactive listening facility and overall intelligibility and accuracy. Goal is advanced fluency in classroom, professional and social settings. Identification of and attention to individual patterned errors. May be repeated once for credit. Prerequisite: EFSLANG 690B or consent of instructor. Enrollment limited to 14.

EFSLANG 691. Oral Presentation. 1-3 Unit.
For advanced graduate students. Practice in academic presentation skills; strategy, design, organization, and use of visual aids. Focus is on improving fluency and delivery style, with videotaping for feedback on language accuracy and usage. May be repeated once for credit.

EFSLANG 691S. Oral Presentation. 2 Units.
For advanced graduate students. Practice in academic presentation skills; strategy, design, organization, and use of visual aids. Focus is on improving fluency and delivery style, with video recording for feedback on language accuracy and usage. Fulfills the requirement for EFSLANG 691.

EFSLANG 692. Speaking and Teaching in English. 1-3 Unit.
This course is an opportunity for international students to develop their oral communication and teaching skills to be a course assistant, teaching assistant, or instructor, especially those planning an academic career in an English-speaking context. It focuses on understanding the culture of the classroom and on developing clarity and communicative effectiveness through periodic micro-teaching presentations and role plays simulating typical teaching situations, including short lectures, problem set and review sessions, office hours, discussion leading, and student project consultations. Extensive feedback is provided on comprehensibility and accuracy along with development of interpersonal and intercultural communication skills. The instructor will meet with students regularly throughout the quarter for one-on-one tutorials. May be repeated once for credit.

EFSLANG 693A. Listening Comprehension. 1-3 Unit.
This course focuses on strategies for effective listening to university lectures and other academic content, such as seminars and group discussions. It extends beyond listening for main ideas and details, providing practice in identifying discourse markers common in academic settings and in recognizing and accommodating implied information, hesitations, and reduced forms, such as contractions. It also covers challenging areas such as processing numbers and adapting to unfamiliar vocabulary. Listening practice is complemented by instruction in effective note-taking and study strategies to retain and review comprehended information. Additionally, the course has a significant discussion component, giving students the opportunity to interpret what they hear to develop a deeper and more critical understanding of the content and to link that understanding to their own spoken English production and interaction. Materials include recorded lectures from Stanford faculty and other relevant sources.

EFSLANG 693B. Advanced Listening Comprehension, and Vocabulary Development. 1-3 Unit.
Listening strategies and vocabulary for understanding English in academic and non-academic contexts. Discussion and interpretation of communicative intent. Computer-based and video exercises across a range of genres; individual project. May be repeated once for credit. Prerequisite: EFSLANG 693A or consent of instructor.

EFSLANG 693R. Graduate Reading and Vocabulary Development. 1-3 Unit.
Strategies for improving graduate and professional academic reading comprehension and critical analysis. Focus on applying specific techniques for different reading purposes. Expansion of both general and field-specific academic vocabulary and idioms. Includes individual reading projects.

EFSLANG 694. English for Business, Industry and Professional Life. 1-3 Unit.
For advanced graduate students. Task-based practice of language appropriate for professional settings in industry and related teamwork. Simulation of the roles of manager, applicant, subordinate, and coworker. Prerequisite: EFSLANG 693A, or consent of instructor. Enrollment limited to 14.

EFSLANG 695A. Pronunciation and Intonation. 1-3 Unit.
This course provides training in recognizing and practicing American English sounds, stress, and intonation patterns in connected speech in order to improve comprehension and enhance intelligibility in a variety of settings. After receiving an individualized analysis of speech patterns, students engage in directed practice both with online software and in class, receiving immediate feedback. Through these in-class activities and practice assignments, students will improve their ability to pronounce English clearly and to self-monitor and self-correct. The instructor will meet with students regularly throughout the quarter for one-on-one tutorials. Enrollment limited to 12.

EFSLANG 695B. Advanced Pronunciation and Intonation. 1-3 Unit.
Continuation of EFSLANG 695A, focusing on American English sounds, stress, rhythm, and intonation patterns. Emphasis is on self-monitoring, integrated with short presentations. Biweekly tape assignments and tutorials. Enrollment limited to 14. May be repeated for credit three times. Prerequisite: EFSLANG 695A.

EFSLANG 695S. Pronunciation and Intonation. 2 Units.
Recognition and practice of American English sounds, stress, and intonation patterns for greater comprehension and intelligibility. Analysis of problem areas. Biweekly tape assignments and tutorials. Fulfills the requirement for EFSLANG 695A.

EFSLANG 696. Understanding American Humor. 1-3 Unit.
Recognizing rhetorical devices, jokes, and character types common to spoken humor in film and television programs. Crosscultural discussion. Prerequisite: EFSLANG 690B, EFSLANG 693B or consent of the instructor. Repeatable once for credit. Enrollment limited to 14.

EFSLANG 697. Gateway to Graduate Writing. 1-3 Unit.
Focus is on improving grammatical accuracy and vocabulary, building fluency, and learning the structure and conventions of English correspondence, reports, and short academic papers. Enrollment limited to 14.

EFSLANG 698A. Writing Academic English. 1-3 Unit.
Strategies and conventions for graduate writing. Emphasis is on fluency, organization, documentation, and appropriateness for writing tasks required in course work. May be repeated once for credit.

EFSLANG 698B. Advanced Graduate Writing. 1-3 Unit.
Focus on clarity, accuracy, and appropriate style. For graduate students experienced in English writing and currently required to write for courses and research. Class meetings and individual conferences. Prerequisite: EFSLANG 698A. May be repeated once for credit.

EFSLANG 698C. Writing and Presenting Research. 1-3 Unit.
For advanced graduate students completing major research projects. Revising and editing strategies for preparing papers, conference abstracts, and poster presentations. Practice adapting written and oral presentational content and style to different audiences. Students present their research and receive instructor and peer feedback, with regular individual tutorials in addition to class work. Enrollment limited to 12. May be repeated twice for credit. Prerequisite: Students required by the EFS Placement Exam to take EFSLANG 691, 697, 698A, or 698B may not enroll in 698C until those requirements have been fulfilled. Others may sign up directly.

EFSLANG 698S. Writing Academic English. 2 Units.
Strategies and conventions for graduate writing. Emphasis is on fluency, organization, documentation, and appropriateness for writing tasks required in course work and in producing research papers. Fulfills the requirement for EFSLANG 698A.

EFSLANG 699W. Individual Writing Projects. 1 Unit.
This tutorial-based course is aimed as a follow-up to EFSLANG writing courses to support a students' continuing growth as writers in their fields. It provides weekly individual meetings with an EFS instructor of around 50 minutes on one or more major writing projects, such as qualifying papers, grant proposals, papers for publication, or dissertation chapters. The meetings are structured around the student's individual writing needs. During the sessions, students receive detailed feedback on organization, style, and grammar, along with training on how to revise and edit more effectively. Space is limited, and priority is given to those who have completed one or more of the following ENGR 202W or EFSLANG 688, 698A, 698B, or 698C. Others will be considered if space remains. For information on how to apply, see http://efs.stanford.edu or email kgeda@stanford.edu. Students with outstanding EFS writing requirements must complete them before applying.

EFSLANG 701. Online Coaching: Writing. 1 Unit.
This short course allows intensive work on a single written text of the student's choice. Students produce two drafts of their text (1000-2000 words) and meet individually with the instructor to receive substantive feedback; additionally, they review exercises and live video lessons to improve their accuracy in written English. The course meets online over three weeks. Students with requirements in EFSLANG 697, 698A, or 698B must complete them before enrolling in 701.

EFSLANG 702. Online Coaching: Presentation. 1 Unit.
This short course provides focused instruction in delivering effective oral presentations. Students create two recorded presentations and meet individually with the instructor to discuss detailed feedback; additionally, they gain proficiency with Zoom technology and strategies for improved audience engagement. The course meets online over three weeks and is recommended for those who have already taken EFSLANG 691. Students with requirements in EFSLANG 690A, 690B, or 691 must complete them before enrolling in 702. nNote: Section 1 meets in weeks 2, 3, and 4. Section 2 meets in weeks 7, 8, and 9.

EFSLANG 703. Online Coaching: Accent Reduction. 1 Unit.
This short course provides focused instruction and practice on speaking English in personal, academic, and professional situations with greater clarity and effectiveness. Using an online approach with students selecting the times to work through the materials, they learn the key sound patterns of North American English, focusing on word stress, linking, rhythm, intonation and prosody. Over the five-week course, students improve their speaking clarity through the use of short video lectures, dictation exercises, and practice with an online pronunciation software package. They also receive individualized pronunciation coaching from the instructor via weekly 20-minute tutorials. Students with a requirement in EFSLANG 695A must complete it before enrolling: a prior course in pronunciation for others is recommended but not required.

French Language Courses

FRENLANG 1. First-Year French, First Quarter. 5 Units.
Proficiency-based. Development of discourse appropriate in French and Francophone contexts. Prerequisite: no previous exposure to French.

FRENLANG 1A. Accelerated First-Year French, Part 1. 5 Units.
Completes first-year language sequence in two rather than three quarters. Recommended for students with previous knowledge of French who place into FRENLANG 1A on the placement test, or those who are familiar with another Romance language.Prerequisite: Placement Test.or consent of coordinator.

FRENLANG 2. First-Year French, Second Quarter. 5 Units.
Continuation of FRENLANG 1. Proficiency-based. Development of discourse appropriate in French and Francophone contexts. Recent placement Test, completion of FRENLANG 1 or consent of French coordinator.

FRENLANG 2A. Accelerated First-Year French, Part 2. 5 Units.
Continuation of FRENLANG 1A. Completes first-year accelerated language sequence in two rather than three quarters. Fulfills the University foreign language requirement. Prerequisite: completion of FRENLANG 1A or recent Placement Test.

FRENLANG 3. First-Year French, Third Quarter. 5 Units.
Continuation of FRENLANG 2 . Proficiency-based. Development of discourse appropriate in French and Francophone contexts. Prerequisite: Recent Placement test, completion of FRENLANG 2 or consent of French coordinator. Fulfills the University language requirement.

FRENLANG 5. Intensive First-Year French. 10 Units.
Accelerated 1st year course. Completes first-year sequence in one rather than three quarters. Completion of this course fulfills the University Foreign Language Requirement.

FRENLANG 15. Intermediate French Oral Communication. 3 Units.
Intermediate conversation.For students who have completed FRENLANG 1A or 2. Emphasis is on speaking skills, pronunciation, vocabulary in the context of current events and news in the French and Francophone world. May be repeated once for credit. For students who have completed Frenlang 1A or Frenlang 2 or received consent of French coordinator.

FRENLANG 20B. French Cinema. 2 Units.
Second-year French conversation based on films. Intermediate-level speaking skills and advanced-level functions. Themes include: French filmmakers, stars, and trends. Required film viewing in and outside class in French. May be repeated once for credit. Prerequisite: FRENLANG 21C or equivalent.

FRENLANG 21C. Second-Year French: Cultural Emphasis, First Quarter. 4 Units.
Sequence integrating culture and language. Emphasis is on intermediate proficiency in oral and written discourse including presentational language and socio culturally appropriate discourse in formal and informal, academic, and professional contexts. Prerequiste: Completion of Frenlang 1 2A or Frenlang 3, recent placement test or consent of French coordinator.

FRENLANG 22C. Second-Year French: Cultural Emphasis, Second Quarter. 4 Units.
Continuation of FRENLANG 21C. Sequence integrating culture and language. Emphasis is on advanced proficiency in oral and written discourse including presentational language and socio culturally appropriate discourse in formal and informal, academic, and professional contexts. Prerequiste: Completion of Frenlang 21C,recent placement test or consent of French coordinator.

FRENLANG 23C. Second-Year French: Cultural Emphasis, Third Quarter. 4 Units.
Continuation of FRENLANG 22C. Sequence integrating culture and language. Emphasis is on advanced proficiency in oral and written discourse including presentational language and socio culturally appropriate discourse in formal and informal, academic, and professional contexts. Prerequiste: Completion of Frenlang 22C, recent placement test or consent of French coordinator.

FRENLANG 30. Intermediate/Advanced French Conversation. 2 Units.
For students who have completed Frenlang 2A ,3 or have placed into Frenlang 21C with recent placement. Prerequiste: Completion of Frenlang 2A, Frenlang 3 or recent placement into Frenlang 21C.

FRENLANG 120. Advanced French Oral Communication. 3 Units.
Speaking skills and functions including narration, description, supporting opinions, and hypothesizing about current events and issues in France. May be repeated once for credit. Prerequisites: FRENLANG 22C or 23C or equivalent.

FRENLANG 120S. Advanced French Conversation. 2 Units.
Speaking skills and functions including narration, description, supporting opinions, and hypothesizing about current events and issues in France. May be repeated once for credit. Prerequisites: FRENLANG 21C, 22C or 23C or equivalent.

FRENLANG 124. Advanced French: Composition, Writing, and Presentation. 4-5 Units.
This bridge course prepares students for transitioning to literature classes that are taught in French. Emphasis is on the development of speaking, writing, and presenting at the advanced level. Students will review and master the difficulties of French through the study of various types of literary texts and through analysis of current events in the francophone world. Required for students majoring or minoring in French. Prerequisite: FRENLANG¿23C, recent placement test or consent of the French coordinator.

FRENLANG 127. Acting in French. 3-4 Units.
This course aims to enhance students' French diction and enunciation while improving their oral and written discourse. Students will work with theatrical texts, discuss various ways to stage them, explore basic acting and improvisation techniques, and participate in a theatrical production. All class activities and assignments are in French. Prerequisite: Frenlang 3 or Fr2A. 3-4 units.

FRENLANG 199. Language Specials. 1-5 Unit.
Prerequisite: consent of instructor.

FRENLANG 205A. Intensive First-Year French for Stanford Grads, Part A. 3-5 Units.
Equivalent to FRENLANG 5A. For Stanford graduate students only. Accelerated. Written exercises, compositions, conversational practice, and daily work. Stanford graduate students restricted to 9 units may take 205A,B,C for a total of 9 units or 2 of the courses for a total of 9 units.

FRENLANG 205B. Intensive First-Year French for Stanford Grads, Part B. 3-5 Units.
Equivalent to FRENLANG 5B. For Stanford graduate students only. Continuation of 205A. Accelerated. Written exercises, compositions, conversational practice, and daily work . Prerequisite 205B or equivalent. Stanford graduate students restricted to 9 units may take 205A,B,C for a total of 9 units or 2 of the courses for a total of 9 units. Prerequisite 205A or equivalent.

FRENLANG 205C. Intensive First-Year French for Stanford Grads - Part C. 3-5 Units.
Equivalent to FRENLANG 5B. For Stanford graduate students only. Continuation of 205B. Accelerated. Written exercises, compositions, conversational practice, and daily work. Stanford graduate students restricted to 9 units may take 205A,B,C for a total of 9 units or 2 of the courses for a total of 9 units. Prerequisite 205B or equivalent.

FRENLANG 250. Reading French. 4 Units.
For seniors or graduate students seeking to meet the University reading requirement for advanced degrees. Reading strategies for comprehension of secondary literature for academic research. Fulfills the University foreign language requirement for advanced degrees if student earns a grade of 'B.' Prerequisite: one year or reading proficiency in another Romance language.

FRENLANG 394. Graduate Studies in French Conversation. 1-3 Unit.
Prerequisite: consent of the instructor.

FRENLANG 395. Graduate Studies in French. 1-5 Unit.
Prerequisite: consent of instructor.

German Language Courses

GERLANG 1. First-Year German, First Quarter. 5 Units.
First-quarter of three-quarter First-Year Gerlang sequence. Emphasis is on developing beginning proficiency in interpersonal, interpretive, and presentational spheres.Prerequisite: no experience with German or Placement.

GERLANG 1A. Accelerated First-Year German, Part1. 5 Units.
First-quarter of two-quarter accelerated First-Year sequence. Some experience with learning foreign language recommended. Emphasis is on developing beginning proficiency in interpersonal, interpretive, and presentational spheres.Prerequisite: Placement or consent of instructor.

GERLANG 2. First-Year German, Second Quarter. 5 Units.
Continuation of GERLANG1. Further development of socially and culturally appropriate proficiency in interpersonal, interpretive, and presentational spheres.Prerequisite: Placement, GERLANG1.

GERLANG 2A. Accelerated First-Year German, Part 2. 5 Units.
Continuation of Gerlang 1A. Second-quarter of two quarter accelerated First-Year sequence. Further development of socially and culturally appropriate proficiency in interpersonal, interpretive, and presentational spheres.Completion of Gerlang 2A fulfills the University language requirement.Prerequisite: Gerlang 1A or Placement.

GERLANG 3. First-Year German, Third Quarter. 5 Units.
Continuation of GERLANG2. Further development of socially and culturally appropriate proficiency in interpersonal, interpretive, and presentational spheres. Completion of Gerlang 3 fulfills the University language requirement. Prerequisite: Placement or GERLANG2.

GERLANG 5. Intensive First-Year German. 10 Units.
Accelerated 1st year course. Completes first-year sequence in one rather than three quarters. Completion of this course fulfills the University Foreign Language Requirement.

GERLANG 10. Elementary German for Seniors and Graduate Students. 4 Units.
Intensive. For students who need to acquire reading ability in German for the Ph.D. or for advanced research in their own field. 250 fulfills Ph.D. reading exam.

GERLANG 20C. Advanced German Conversation. 1 Unit.
Informal 1-unit course for students interested practicing advanced-level conversation. Most appropriate for students who are taking GERLANG21or higher, advanced heritage speakers, and students looking to practice professional German. Emphasis on discussion of cultural topics including politics, exploring media and news, and student interests. Attendance is required to receive course credit.

GERLANG 20G. Fashion Through FIlm. 1 Unit.
Modern German Fashion nA film-based foray into several aspects of the history of modern German fashion. Topics from class to class will be somewhat sporadic, spanning the origins of traditional German attire, subcultural youth styles in Germany throughout the 20th century, and prominent German figures in the global fashion industry such as designer Karl Lagerfeld and photographer Helmut Newton, among others. May be repeat for credit.

GERLANG 20R. German Conversation through Drama. 1 Unit.
Want to practice your German by playing improvisation games, reading dialogues and performing short scenes? In this German conversation course, for students anywhere from intermediate to advanced, we'll read scenes from Friedrich Dürrenmatt's Die Physiker, a hilarious dark comedy from the 1960's about three "scientists" in an insane asylum who want to save the world from the nuclear danger of scientific progress. We'll work through the play, discussing the broader issues and performing for each other different interpretations of important scenes. This is a great way to practice reading and speaking in German, learn new vocab, and play around with a fascinating, cold-war era text that has a lot to say about scientific ethics today.

GERLANG 20T. Teaching German Conversation. 1 Unit.
(AU).

GERLANG 21. Second-Year German, First Quarter. 4 Units.
Continuation of GERLANG3. Sequence integrating culture and language of the German-speaking world. Socially and culturally appropriate forms in narrations, descriptions, and expression of ideas and opinions. Emphasis is on oral and written proficiency in formal, informal, academic, and professional contexts. Prerequisite: Placement or GERLANG3.

GERLANG 21S. Intermediate German. 4 Units.
Reading short stories, and review of German structure. Discussions in German, short compositions, videos. Prerequisite: one year of college German; or two years high school German or equivalent, or AP German.

GERLANG 21W. Intermediate German I: German for Business and International Relations. 4 Units.
Equivalent to 21, but focus is on business and the political and economic geography of Germany. CDs and videos. For students planning to do a business internship in a German-speaking country. Prerequisite: placement test, 3.

GERLANG 22. Second-Year German, Second Quarter. 4 Units.
Continuation of GERLANG21. Sequence integrating culture and language of the Catalan-speaking world. Socially and culturally appropriate forms in narrations, descriptions, and expression of ideas and opinions. Emphasis is on oral and written proficiency in formal, informal, academic, and professional contexts. Prerequisite: Placement or GERLANG21.

GERLANG 22W. Intermediate German II: German for Business and International Relations. 4-5 Units.
Equivalent to 22, but continuation of 21W. Recommended for students planning to do a business internship in a German-speaking country. Prerequisite: placement test,21, 21W.

GERLANG 23. Second Year German, Third Quarter. 4 Units.
Continuation of GERLANG22. Sequence integrating culture and language of the Catalan-speaking world. Socially and culturally appropriate forms in narrations, descriptions, and expression of ideas and opinions. Emphasis is on oral and written proficiency in formal, informal, academic, and professional contexts. Prerequisite: Placement or GERLANG22.

GERLANG 99. Language Specials. 1-5 Unit.
Prerequisite: consent of instructor.

GERLANG 199. Individual Reading. 1-5 Unit.
Prerequisite: consent of instructor.

GERLANG 210. Elementary German for Graduate Students. 3-4 Units.
Restricted to Stanford graduate students. Prerequisite: consent of instructor.

GERLANG 250. Reading German. 4 Units.
For undergraduates and graduate students with a knowledge of German who want to acquire reading proficiency. Readings from scholarly works and professional journals. Recommended for students who need to pass the Ph.D. reading exam. Fulfills University reading requirement for advanced degrees if student earns a grade of 'B'(note requirement may vary depending on academic department)Prerequisite: one year of German or instructor ¿s consent.

GERLANG 395. Graduate Studies in German. 1-5 Unit.
Prerequisite: consent of instructor.

GERLANG 399. Independent Study. 1-5 Unit.
Prerequisite: consent of instructor.

Courses

Italian Language Courses

ITALLANG 1. First-Year Italian, First Quarter. 5 Units.
All-in-Italian communicative and interactive approach. Emphasis is on the development of appropriate discourse in contemporary cultural contexts. Interpretation of authentic materials, written and oral presentations, and plenty of conversational practice. Language lab, multimedia, and online activities.

ITALLANG 1A. Accelerated First-Year Italian, Part 1. 5 Units.
Accelerated sequence that completes first-year Italian in two rather than three quarters. For students with previous knowledge of Italian or with a strong background in another Romance language. Prerequisite: advanced proficiency or AP/SAT in another Romance language; or Italian placement test.

ITALLANG 2. First-Year Italian, Second Quarter. 5 Units.
Continuation of ITALLANG 1. All-in-Italian communicative and interactive approach. Emphasis is on the development of appropriate discourse in contemporary cultural contexts. Interpretation of authentic materials, written and oral presentations, and plenty of conversational practice. Language lab, multimedia, and online activities. Prerequisite: Itallang 1 or placement test.

ITALLANG 2A. Accelerated First-Year Italian, Part 2. 5 Units.
Continuation of ITALLANG 1A. Accelerated sequence that completes first-year Italian in two rather than three quarters. For students with previous knowledge of Italian or with a strong background in another Romance language. Prerequisite: Placement Test or ITALLANG 1A. Fulfills the University language requirement.

ITALLANG 3. First-Year Italian, Third Quarter. 5 Units.
Continuation of ITALLANG 2. All-in-Italian communicative and interactive approach. Emphasis is on the development of appropriate discourse in contemporary cultural contexts. Interpretation of authentic materials, written and oral presentations, and plenty of conversational practice. Language lab, multimedia, and online activities. Prerequisite: Itallang 2 or placement test. Fulfills the University language requirement.

ITALLANG 20. Intermediate Oral Communication: Italy Today. 3 Units.
Second-year conversational and presentational skills developed through exposure to movie clips, slide shows, and other authentic multimedia materials. Guest lectures on Italian culture including opera, pop music, wine, and food culture. Preview of the Florentine experience with Florence returnees sharing their experiences in Italy. Prerequisite: ITALLANG 2A, ITALLANG 3. Repeatable for credit twice.

ITALLANG 21. Second Year Italian, First Quarter. 4 Units.
Continuation of 3 or Italian 2A . Second-Year Italian, First Quarter - Sequence integrating culture and language in the development of socioculturally appropriate discourse. Authentic materials include news and film clips, video and audio files, and short stories. Reading, writing, listening, and speaking competence based on cross cultural understanding. Prerequisite: Placement Test, ITALLANG 3.

ITALLANG 21A. Accelerated Second-Year Italian, Part 1. 5 Units.
Continuation of ITALLANG 2A or Italian 3. For students going to Florence. Completes second-year sequence in two rather than three quarters. Prerequisite: placement test, ITALLANG 2A, ITALLANG 3.

ITALLANG 22. Second-Year Italian, Second Quarter. 4 Units.
Continuation of ITALLANG 21. Sequence integrating culture and language in the development of socioculturally appropriate discourse. Authentic materials include news and film clips, video and audio files, and excerpts from short stories. Reading, writing, listening, and speaking competence based on cross-cultural understanding. Prerequisite: Placement Test, ITALLANG 21 or equivalent.

ITALLANG 22A. Accelerated Second-Year Italian, Part 2. 5 Units.
Continuation of ITALLANG 21A or OSPFLOR 21F (for Florence returnees). Part 2 of a second-year sequence in two rather than three quarters. Satisfies the foreign language requirement for International Relations majors. Prerequisite: Placement Test, ITALLANG 21A or OSPFLOR 21F.

ITALLANG 23. Second-Year Italian, Third Quarter. 3-4 Units.
Continuation of ITALLANG 22. Sequence integrating culture and language in the development of socioculturally appropriate discourse. Authentic materials include news and film clips, video and audio files, and short stories. Reading, writing, listening, and speaking competence based on cross cultural understanding. Prerequisite: Placement Test, ITALLANG 22 or equivalent. Satisfies the foreign language requirement for International Relations majors.

ITALLANG 60C. Italian Cooking. 1 Unit.
Welcome to Italian Cooking! In this class you will learn classic Italian recipes andntechniques to carry with you through your culinary explorations. Our goal is that you will gain confidence to go out and cook Italian dishes by yourself, with or without recipes.In each class you will prepare a different dish with a small group, learn the techniques involved in the preparation, and enjoy the result of your hard work.nThe class is taught in English.

ITALLANG 99. Language Specials. 1-5 Unit.
Prerequisite: consent of instructor.

ITALLANG 102. Advanced Oral Communication: Modern Cinema. 3 Units.
For Florence returnees or those who have completed second-year Italian. Use of movies by Italian film directors such as Benigni, Moretti, Salvatores, Soldini, and Tornatore to improve communication skills and review language functions. Emphasis is on presentation, conversation, and debate. Prerequisite: placement test, 101.

ITALLANG 113. Italian Cultural Studies. 3 Units.
Literary texts, news reports, comic books, film reviews, music lyrics, and sociological surveys used to examine Italy's language, culture, and society today. Advanced grammatical analysis and reading comprehension. Prerequisite: second-year Italian or equivalent.

ITALLANG 114. Composition, Writing, and Presentation. 3 Units.
Students learn to develop advanced proficiency in their writing and oral reports through examination and practice of three modes of communication (Interpretive, Interpersonal and Presentational). Textual and grammatical analysis of online material, audio, video, and literary texts that center on cultural and sociolinguistic aspects of the Italian speaking world. Prerequisite: Placement Test, second-year Italian or equivalent.

ITALLANG 115. Academic and Creative Writing. 3 Units.
Students develop an increasingly sophisticated level of writing and cultural awareness in argumentative, expository, and creative writing. Identification and analysis of textual elements and narrative style, such as register, formal structure, expressive language, when and how to break rules for effect. Written, oral, and visual texts serve as a springboard for students¿ own production. Prerequisite: Placement Test, second-year Italian or equivalent.

ITALLANG 126. Italy and Italians Today. 1-2 Unit.
An introduction to Italian culture for residents of La Casa Italiana. Past topics have included: Italian Comedy; Contemporary Italy through Film; Italian Food Culture; Eight Great Italians; Regional Italy; European Italy. Enrollment restricted to residents of La Casa Italiana except with prior approval of the instructor. Taught in English. May be repeated for credit.

ITALLANG 250. Reading Italian. 4 Units.
For seniors or graduate students seeking to meet the University reading requirement for advanced degrees. Reading strategies for comprehension of secondary literature for academic research. Fulfills the University foreign language requirement for advanced degrees if student earns a grade of 'B.' Prerequisite: one year of Italian or reading proficiency in another Romance language.

ITALLANG 394. Graduate Studies in Italian Conversation. 1-3 Unit.
Prerequisite: consent of instructor.nn (Staff).

ITALLANG 395. Graduate Studies in Italian. 1-5 Unit.
Prerequisite: consent of instructor.n (Staff).

Japanese Language Courses

JAPANLNG 1. First-Year Japanese Language, Culture, and Communication, First Quarter. 5 Units.
First-year sequence enables students to converse, write, and read essays on topics such as personal history, experiences, familiar people. 72 kanji characters will be taught.

JAPANLNG 1A. Accelerated First- Year Japanese, Part 1. 5 Units.
Speaking, reading, writing, and listening. First-year sequence enables students to converse, write and read essays on topics such as personal history, experiences, familiar people. Completes first-year sequence in two rather than three quarters.

JAPANLNG 2. First-Year Japanese Language, Culture, and Communication, Second Quarter. 5 Units.
Continuation of 1. First-year sequence enables students to converse, write, and read essays on topics such as personal history, experiences, familiar people. Students are expected to master 177 kanji characters by completing this course. Prerequisite: placement test, Japanlng 1.

JAPANLNG 2A. Accelerated First-Year Japanese, Part 2. 5 Units.
Speaking, reading, writing, and listening. . First-year sequence enables students to converse, write and read essays on topics such as personal history, experiences, familiar people. Completes first-year sequence in two rather than three quarters. For students with previous knowledge of Japanese. Completes the Foreign Language Requirement.

JAPANLNG 3. First-Year Japanese Language, Culture, and Communication, Third Quarter. 5 Units.
Continuation of Japanlng 2. First-year sequence enables students to converse, write, and read essays on topics such as personal history, experiences, familiar people. Students are expected to master 300 kanji characters by completing the course. Fulfills University Foreign Language Requirement. Prerequisite: placement test, Japanlng 2. http://japanese.stanford.edu/.

JAPANLNG 4A. First -Year Japanese Language Essentials, First Quarter. 3 Units.
For students who want to build communication skills in limited time. Online listening exercises, audiovisual materials, kanji exercises. See http://japanese.stanford.edu/.

JAPANLNG 4B. First-Year Japanese Language Essentials, Second Quarter. 3 Units.
Continuation of JAPANLNG 4A. For students who want to build communication skills in limited time. Online listening exercises, audiovisual materials, kanji exercises. Prerequisite: Placement Test, JAPANLNG 4A . See http://japanese.stanford.edu/.

JAPANLNG 4C. First-Year Japanese Language Essentials, Third Quarter. 3 Units.
Continuation of JAPANLNG 4B. For students who want to build communication skills in limited time. Online listening exercises, audiovisual materials, kanji exercises. Prerequisite: Placement Test, JAPANLNG 4B. See http://japanese.stanford.edu/.

JAPANLNG 11A. Intermediate Japanese Conversation, First Quarter. 2 Units.
Goal of the course is to converse in Japanese with more confidence. Develops oral proficiency through building solid basic sentence patterns and increasing vocabulary in order to gain ability to speak about greater variety of topics with more detail. Class activities include role play and mini skits for practical use of Japanese. Prerequisite: JAPANLNG 3 or consent of instructor.

JAPANLNG 11B. Intermediate Japanese Conversation, Second Quarter. 2 Units.
Continuation of JAPANLNG 11A.Goal of the course is to converse in Japanese with more confidence. Develops oral proficiency through building solid basic sentence patterns and increasing vocabulary in order to gain ability to speak about greater variety of topics with more detail. Class activities include role play and mini skits for practical use of Japanese. Prerequisite: JAPANLNG 11A or consent of instructor.

JAPANLNG 11C. Intermediate Japanese Conversation, Third Quarter. 2 Units.
Goal of the course is to converse in Japanese with more confidence. Develops oral proficiency through building solid basic sentence patterns and increasing vocabulary in order to gain ability to speak about greater variety of topics with more detail. Class activities include role play and mini skits for practical use of Japanese. Prerequisite: JAPANLNG 11B or consent of instructor.

JAPANLNG 14A. Second-Year Japanese Language Essentials, First Quarter. 3 Units.
Continuation of JAPANLNG 4C. For students who want to build communication skills in limited time. Prerequisite: JAPANLNG 4C. See http://japanese.stanford.edu/?page_id=89.

JAPANLNG 14B. Second-Year Japanese Language Essentials, Second Quarter. 3 Units.
Continuation of JAPANLNG 14A. For students who want to build communication skills in limited time. Prerequisite: JAPANLNG 14A. See http://japanese.stanford.edu/.

JAPANLNG 14C. Second-Year Japanese Language Essentials, Third Quarter. 3 Units.
Continuation of JAPANLNG 14B. For students who want to build communication skills in limited time. Prerequisite: JAPANLNG 14B. See http://japanese.stanford.edu/.

JAPANLNG 15. Japanese Calligraphy. 2 Units.
Practice in writing Japanese characters with brush and ink emphasizing basic writing style. Learn stroke order and structure of characters to improve handwriting. May be repeated for credit. Prerequisite: JAPANLNG1 or consent of instructor.

JAPANLNG 21. Second-Year Japanese Language, Culture, and Communication, First Quarter. 5 Units.
Goal is to further develop and enhance spoken and written Japanese in order to handle advanced concepts such as comparison and contrast of two cultures, descriptions of incidents, and social issues. 800 kanji, 1,400 new words, and higher-level grammatical constructions. Readings include authentic materials such as newspaper articles, and essays. Prerequisite: Placement Test, JAPANLNG 3. See http://japanese.stanford.edu/.

JAPANLNG 22. Second-Year Japanese Language, Culture, and Communication, Second Quarter. 5 Units.
Continuation of JAPANLNG 21. Goal is to further develop and enhance spoken and written Japanese in order to handle advanced concepts such as comparison and contrast of two cultures, descriptions of incidents, and social issues. 800 kanji, 1,400 new words, and higher-level grammatical constructions. Readings include authentic materials such as newspaper articles, and essays. Prerequisite: Placement Test, JAPANLNG 21. See http://japanese.stanford.edu/?page_id=23.

JAPANLNG 23. Second-Year Japanese Language, Culture, and Communication, Third Quarter. 5 Units.
Goal is to further develop and enhance spoken and written Japanese in order to handle advanced concepts such as comparison and contrast of two cultures, descriptions of incidents, and social issues. 800 kanji, 1,400 new words, and higher-level grammatical constructions. Readings include authentic materials such as newspaper articles, and essays. Prerequisite: 22. http://japanese.stanford.edu/.

JAPANLNG 31A. Intermediate to Advanced Conversation, First Quarter. 2 Units.
Oral proficiency through role play, oral presentations, and discussion. Recommended for those who have participated in BOSP in Kyoto. May be taken concurrently with JAPANLNG 21, 22, and 23. Prerequisite: 3K, or consent of instructor. See http://japanese.stanford.edu/.

JAPANLNG 31B. Intermediate to Advanced Conversation, Second Quarter. 2 Units.
Continuation of JAPANLNG 31A. Oral proficiency through role play, oral presentations, and discussion. Recommended for those who have participated in BOSP in Kyoto. . May be taken concurrently with JAPANLNG 21, 22, and 23. Prerequisite: JAPANLNG 31A, or consent of instructor. See http://japanese.stanford.edu/.

JAPANLNG 31C. Intermediate to Advanced Conversation, Third Quarter. 2 Units.
Continuation of JAPANLNG 31B. Oral proficiency through role play, oral presentations, and discussion. Recommended for those who have participated in BOSP in Kyoto program. May be taken concurrently with JAPANLNG 21, 22, and 23. Prerequisite: JAPANLNG 31B. See http://japanese.stanford.edu/.

JAPANLNG 99. Language Specials. 1-5 Unit.
Prerequisite: consent of instructor.n (Staff).

JAPANLNG 100. Reading in Japanese. 1 Unit.
Goal is to advance Japanese proficiency through reading in Japanese on topics you are interested in. You will read and write journals about the booklets, magazines, periodicals, and manga you choose. Research shows that this type of reading activity further enhances learners' proficiency (accuracy, vocabulary, writing, and cultural literacy). Prerequisite: Japanlng 2, but all levels are welcome.

JAPANLNG 101. Third-Year Japanese Language, Culture, and Communication, First Quarter. 5 Units.
Goal is to express thoughts and opinions in paragraph length in spoken and written forms. Materials include current Japanese media and literature for native speakers of Japanese. Cultural and social topics related to Japan and its people. Prerequisite: Placement Tests, JAPANLNG 23. See http://japanese.stanford.edu/.

JAPANLNG 102. Third-Year Japanese Language, Culture, and Communication, Second Quarter. 5 Units.
Continuation of 101. Goal is to express thoughts and opinions in paragraph length in spoken and written forms. Materials include current Japanese media and literature for native speakers of Japanese. Cultural and social topics related to Japan and its people. Prerequisite: 101. See http://japanese.stanford.edu/.

JAPANLNG 103. Third-Year Japanese Language, Culture, and Communication, Third Quarter. 5 Units.
Continuation of 102. Goal is to express thoughts and opinions in paragraph length in spoken and written forms. Materials include current Japanese media and literature for native speakers of Japanese. Cultural and social topics related to Japan and its people. Prerequisite: 102. See http://japanese.stanford.edu/.

JAPANLNG 111A. Advanced Japanese Conversation, First Quarter. 2 Units.
The J111 A,B,& C course sequence is designed for students who wish to advance their speaking skills of the Japanese language to the advanced level. Its goals are to help students gain proficiency and confidence in the use of Japanese and to prepare them for their lifelong study.This is a students-driven, students-centered course. The instructor will not teach. Instead she is there to facilitate interactions and help the students obtain their goals. Students are expected to come to class with their concrete goals as to what they want to do with their Japanese, and be ready to work hard in class to reach their goals.

JAPANLNG 111B. Advanced Japanese Conversation, Second Quarter. 2 Units.
(Formerly JAPANLNG 122.) Continuation of JAPANLNG 111A. The J111A, B, & C course sequence is designed for students who wish to advance their speaking skills of the Japanese language to the advanced level. Its goals are to help students gain proficiency and confidence in the use of Japanese and to prepare them for their lifelong study. nnThis is a "students-driven, students-centered" course. The instructor will not "teach." Instead she is there to facilitate interactions and "help the students obtain their goals." Students are expected to come to class with their concrete goals as to what they want to do with their Japanese, and be ready to work hard in class to reach their goals.

JAPANLNG 111C. Advanced Japanese Conversation, Third Quarter. 2 Units.
(Formerly JAPANLNG 123.) Continuation of JAPANLNG 111B.The J111A, B, & C course sequence is designed for students who wish to advance their speaking skills of the Japanese language to the advanced level. Its goals are to help students gain proficiency and confidence in the use of Japanese and to prepare them for their life-long study. This is a "students-driven, students-centered" course. The instructor will not "teach." Instead she is there to facilitate interactions and "help the students obtain their goals." Students are expected to come to class with their concrete goals as to what they want to do with their Japanese, and be ready to work hard in class to reach their goals.

JAPANLNG 113F. Japanese Through Film, First Quarter. 2-4 Units.
Contemporary Japanese culture through Japanese films, documentaries, TV dramas, and anime. Structured for students with a strong desire to advance their Japanese language skills and who have limited class preparation time. Students will engage in in-depth discussion and exploration of social and cultural issues, expand the repertoire of vocabulary, and practice on advanced language skills. Topics may vary depending on student interests. Prerequisite: JAPANLNG 23. See http://japanese.stanford.edu/.

JAPANLNG 114F. Japanese Through Film, Second Quarter. 2-4 Units.
Contemporary Japanese culture through Japanese films, documentaries, TV dramas, and anime. Structured for students with a strong desire to advance their Japanese language skills and who have limited class preparation time. Students will engage in in-depth discussion and exploration of social and cultural issues, expand the repertoire of vocabulary, and practice on advanced language skills. Topics may vary depending on student interests. Prerequisite: JAPANLNG 23. See http://japanese.stanford.edu/.

JAPANLNG 115F. Japanese Through Film,Third Quarter. 2-4 Units.
Contemporary Japanese culture through Japanese films, documentaries, TV dramas, and anime. Structured for students with a strong desire to advance their Japanese language skills and who have limited class preparation time. Students will engage in in-depth discussion and exploration of social and cultural issues, expand the repertoire of vocabulary, and practice on advanced language skills. Topics may vary depending on student interests. Prerequisite: JAPANLNG 23.

JAPANLNG 200. Directed Reading. 1-5 Unit.
Prerequisite: 213 and consent of instructor.

JAPANLNG 211. Fourth-Year Japanese, First Quarter. 3-5 Units.
Structure of Japanese, writings in different genres and styles, using such knowledge in writing, and expressing opinions on a variety of topics. Original writings, including fiction, essays, newspaper, and journal articles. Recommended taken in sequence. Prerequisite: JAPANLNG 103. See http://japanese.stanford.edu/?page_id=263.

JAPANLNG 212. Fourth-Year Japanese, Second Quarter. 3-5 Units.
Continuation of JAPANLNG 211. Structure of Japanese, writings in different genres and styles, using such knowledge in writing, and expressing opinions on a variety of topics. Original writings, including fiction, essays, newspaper, and journal articles. Recommended taken in sequence. Prerequisite: JAPANLNG 211. See http://japanese.stanford.edu/?page_id=263.

JAPANLNG 213. Fourth-Year Japanese, Third Quarter. 2-4 Units.
Continuation of JAPANLNG 212. Structure of Japanese, writings in different genres and styles, using such knowledge in writing, and expressing opinions on a variety of topics. Original writings, including fiction, essays, newspaper, and journal articles. Recommended taken in sequence. Prerequisite: JAPANLNG 212. See http://japanese.stanford.edu/?page_id=263.

JAPANLNG 320. Intensive Second-Year Japanese for Stanford Graduate Students. 9 Units.
Equivalent to 21, 22, 23 combined or 20. Stanford Grads only. See http://japanese.stanford.edu/?page_id=323.

JAPANLNG 394. Graduate Studies in Japanese Conversation. 1-3 Unit.
Prerequisite: consent of instructor. (Staff).

JAPANLNG 395. Graduate Studies in Japanese. 1-5 Unit.
Prerequisite: consent of instructor. (Staff).

Korean Language Courses

KORLANG 1. First-Year Korean, First Quarter. 5 Units.
First quarter of three-quarter sequence. Emphasis is on the development of beginning proficiency in interpersonal, interpretive, and presentational spheres. Culturally appropriate conduct relevant to contexts such as greetings, gestures, and body language.

KORLANG 1A. Accelerated First-Year Korean, Part 1. 5 Units.
KORLANG 1A and 2A complete the sequence in two rather than 3 quarters. Recommended for students with previous knowledge of Korean. Students acquire beginning proficiency in Korean at an accelerated pace through intensive speaking, reading, listening, and writing. Prerequisite: Placement test or consent of instructor.

KORLANG 2. First-Year Korean, Second Quarter. 5 Units.
Continuation of KORLANG1. Emphasis is on the development of beginning proficiency in interpersonal, interpretive, and presentational spheres. Culturally appropriate conduct relevant to contexts such as greetings, gestures, and body language. Prerequisite: Prerequisite: Placement Test, KORLANG 1.

KORLANG 2A. Accelerated First-Year Korean, Part 2. 5 Units.
Continuation of KORLANG 1A. Recommended for students with previous knowledge of Korean. Emphasis is on the further development of beginning proficiency through intensive speaking, reading, listening, and writing. Completion of KORLANG 2A fulfills the University Language Requirement. Prerequisite: Placement Test or KORLANG 1A.

KORLANG 3. First-Year Korean, Third Quarter. 5 Units.
Continuation of KORLANG2. Emphasis is on the development of beginning proficiency in interpersonal, interpretive, and presentational spheres. Culturally appropriate conduct relevant to contexts such as greetings, gestures, and body language. Completion of KORLANG 3 fulfills the University language requirement.Prerequisite: Placement test or KORLANG2.

KORLANG 21. Second-Year Korean, First Quarter. 4 Units.
Continuation of KORLANG 3 or KORLANG 2A. More complex sentences and grammatical patterns. Conversation in daily situations such as making a polite request or suggestion, reading simple texts, and Korean culture. Prerequisite: Placement Test, KORLANG 3.

KORLANG 21A. Accelerated Second-Year Korean, Part 1. 5 Units.
Continuation of KORLANG 2A or 3. Completes second-year sequence in two rather than three quarters. Students acquire intermediate proficiency in Korean at an accelerated pace through intensive speaking, reading, listening, and writing. Prerequisite: Placement test, KORLANG 2A or KORLANG 3.

KORLANG 22. Second-Year Korean, Second Quarter. 4 Units.
Continuation of KORLANG 21. More complex sentences and grammatical patterns. Conversation in daily situations such as making a polite request or suggestion, reading simple texts, and Korean culture. Prerequisite: Placement Test, KORLANG 21.

KORLANG 22A. Accelerated Second-Year Korean, Part 2. 5 Units.
Continuation of KORLANG 21A. Part 2 of a second-year sequence in two rather than three quarters.Emphasis is on the further development of intermediate proficiency through intensive speaking, reading, listening, and writing. Prerequisite: Placement test or KORLANG 21A.

KORLANG 23. Second-Year Korean, Third Quarter. 4 Units.
Continuation of KORLANG 22. More complex sentences and grammatical patterns. Conversation in daily situations such as making a polite request or suggestion, reading simple texts, and Korean culture. Prerequisite: Placement Test or KORLANG 22.

KORLANG 101. Third-Year Korean, First Quarter. 4 Units.
Continuation of KORLANG 23. Materials about Korean culture and society. Proficiency in interpersonal, interpretive, and presentational communication. Vocabulary, reading, and aural/oral skills. Prerequisite: Placement test, KORLANG 23, or KORLANG 22A.

KORLANG 102. Third-Year Korean, Second Quarter. 4-5 Units.
Continuation of KORLANG 101. Materials about Korean culture and society. Proficiency in interpersonal, interpretive, and presentational communication. Vocabulary, reading, and aural/oral skills. Prerequisite: Placement Test or KORLANG 101.

KORLANG 103. Third-Year Korean, Third Quarter. 4-5 Units.
Continuation of KORLANG 102. Materials about Korean culture and society. Proficiency in interpersonal, interpretive, and presentational communication. Vocabulary, reading, and aural/oral skills. Prerequisite: Placement Test, or KORLANG 102.

KORLANG 130. Reading Korean. 1-2 Unit.
Goal is to advance Korean proficiency through reading in Korean on topics you are interested in. You will read and write journals about the booklets, magazines, articles, periodicals you choose. This reading activity further enhances learner's proficiency and cultural literacy. May be repeated up to 4 times. Prerequisite: placement test or KORLANG 103.

KORLANG 200. Directed Reading in Korean. 1-5 Unit.
Prerequisite: consent of instructor.n (Staff).

KORLANG 211. Fourth-Year Korean, First Quarter. 4 Units.
Continuation of 103. Advanced and intellectual speaking and writing skills. Vocabulary, discussion, and presentation based on readings on topics such as Korean culture, history, economy, politics, multimedia, newspaper articles, and magazines. Prerequisite: 103 or consent of instructor.

KORLANG 212. Fourth-Year Korean, Second Quarter. 4 Units.
Continuation of 211. Advanced and intellectual speaking and writing skills. Vocabulary, discussion, and presentation based on readings on topics such as Korean culture, history, economy, politics, multimedia, newspaper articles, and magazines. Prerequisite: 103 or consent of instructor.

KORLANG 213. Fourth-Year Korean,Third Quarter. 4 Units.
Continuation of 212. Advanced and intellectual speaking and writing skills. Vocabulary, discussion, and presentation based on readings on topics such as Korean culture, history, economy, politics, multimedia, newspaper articles, and magazines. Prerequisite: 103 or consent of instructor.

KORLANG 395. Graduate Studies in Korean. 1-5 Unit.
Prerequisite: consent of instructor.

Portuguese Language Courses

PORTLANG 1. First-Year Portuguese, First Quarter. 5 Units.
Emphasis is on oral comprehension and developing socially and culturally appropriate beginning speaking proficiency in interpersonal, interpretive, and presentational modes. Completion of Portlang 3 fulfills the University Foreign Language Requirement.

PORTLANG 1A. Accelerated First-Year Portuguese, Part 1. 5 Units.
Completes first-year sequence in two rather than three quarters. For students with a strong background in another Romance language, preferably Spanish. Emphasis is on developing oral comprehension and socially and culturally appropriate beginning proficiency in interpersonal, interpretive, and presentational modes. Completion of PORTLANG 2A fulfills the University's foreign language requirement.

PORTLANG 2. First-Year Portuguese, 2nd Quarter. 5 Units.
Continuation of 1.Emphasis is on strengthening socially and culturally appropriate beginning,proficiency in interpersonal, interpretive, and presentational modes.Completion of PORTLANG 3 fulfills the University's Foreign Language Prerequisite: Portlang 1 or placement test.

PORTLANG 2A. Accelerated First-Year Portuguese, Part 2. 5 Units.
Continuation of PORTLANG 1A. For students with a strong background in another Romance language, preferably Spanish. Emphasis is on developing oral comprehension and socially and culturally appropriate intermediate proficiency in interpersonal, interpretive, and presentational modes. Completion of PORTLANG 2A fulfills the University's foreign language requirement. Prerequisite: Placement Test or PORTLANG 1A or equivalent.

PORTLANG 3. First-Year Portuguese, Third Quarter. 5 Units.
Continuation of PORTLANG 2. .Emphasis is on developing socially and culturally appropriate intermediate, proficiency in interpersonal, interpretive, and presentational modes. Completion of 3 fulfills the University Foreign Language Requirement. Prerequisite: Placement Test, PORTLANG 2 or equivalent.

PORTLANG 11A. Accelerated Second-Year Portuguese, Part 1. 5 Units.
Continuation of PORTLANG 2A. Fast-paced first half of the second-year sequence. Emphasis is on developing a solid basis for socially and culturally appropriate advanced proficiency in oral and written discourse, including presentational language, and formal and informal discourse for the academic and professional contexts.Prerequisite: Placement Test, PORTLANG 2A, PORTLANG 3 or equivalent.

PORTLANG 12A. Accelerated Second-Year Portuguese, Part 2. 5 Units.
Continuation of PORTLANG 11A. Fast-paced second half of the second-year sequence. Emphasis is on strengthening socially and culturally appropriate advanced proficiency in oral and written discourse, including presentational language, and formal and informal discourse for the academic and professional contexts.nPrerequisite: Placement Test, PORTLANG 11A or equivalent.

PORTLANG 99. Language Specials. 1-5 Unit.
Prerequisite: consent of instructor.n (Staff).

PORTLANG 101. Reading Brazil. 3-4 Units.
3rd year course Expository readings, guest lectures, discussions, on current Brazilian issues. Emphasis is on strengthening and expanding socially and culturally appropriate advanced proficiency in oral and written discourse departing from texts.. Prerequisite: Placement Test, PORTLANG 12A or equivalent.

PORTLANG 102. Brazil in Text: Advanced Grammar and Composition. 3-4 Units.
3rd year course Further development of writing competence. Short expository readings, guest lectures, discussions, review of advanced structures, compositions on current Brazilian issues. Emphasis is on expanding students repertoire of structures,building paragraphs, organizing arguments, and justifying positions. May be repeated once for credit. May be repeated once for credit. Prerequisite: PORTLANG 12A or equivalent.

PORTLANG 103. Advanced Conversation: Brazil Today. 3-4 Units.
3rd year course. Reading and discussions on issues from current media sites and magazines, reading comprehension strategies and vocabulary building. Emphasis is on solidifying and expanding formal expository language. and formal and informal discourse for the academic and professional context. May be repeated once for credit. Prerequisite: PORTLANG 12A.

PORTLANG 161. Advanced Reading in Portuguese, Fourth-year Portuguese. 3-4 Units.
4th year course. Emphasis is on high-level reading comprehension leading to advanced development of communication skills for extended formal and informal discourse in Portuguese. Prerequisite: Placement Test or PORTLANG 101.

PORTLANG 162. Advanced Writing in Portuguese, Fourth-year Portuguese. 3-4 Units.
4th-year course. The course has two tracks, depending on the interest of the student: a) advanced expository writing (correspondence, technical reports, editorials, etc.) and b) creative writing (`crônicas' short stories, poems, etc.). Prerequisite: Placement Test or PORTLANG 102.

PORTLANG 163. Contemporary Issues in the Lusophone World. Fourth-Year Portuguese. 3-4 Units.
4th-year course. The class emphasizes formal presentations/discussions in Portuguese, based on contemporary issues in the lusophone world.Emphasis is on mastering high-level vocabulary/structure as well as rhetorical strategies, for appropriate use in professional settings. . Prerequisite: Placement Test or PORTLANG 103.

PORTLANG 164. Translating the Lusophone world, Fourth-Year Portuguese. 3-5 Units.
For advanced students. Literary and technical translation. Readings on theoretical topics on translation; discussion, analysis and comparison of existing translations (literary and technical); individual translation projects according to students' field of study, and discussion and analysis of those projects in class. Final translation project to be undertaken individually. Prerequisite: PORTLANG 250 or completion of 3rd year sequence.

PORTLANG 297. Directed Reading. 1-4 Unit.
Prerequisite: consent of instructor.nn (Staff).

PORTLANG 394. Graduate Studies in Portuguese Conversation. 1-3 Unit.
Prerequisite: consent of instructor.nn (Staff).

PORTLANG 395. Graduate Studies in Portuguese. 1-5 Unit.
Prerequisite: consent of instructor.n (Staff).

Slavic Language Courses

SLAVLANG 1. First-Year Russian, First Quarter. 5 Units.
A beginning Russian course. Proficiency based communicative approach. Introduction to essential vocabulary and grammar, Russian culture and the Russian view of reality.

SLAVLANG 1A. Accelerated First-Year Russian, Part 1. 5 Units.
First quarter of the two-quarter accelerated sequence. For students with little or no prior experience studying Russian. Students acquire beginning proficiency in Russian at an accelerated pace through intensive studying of basic Russian grammar and functional vocabulary. The course emphasis is put on practice in speaking, reading, and writing Russian with special insight into Russian culture. Completion of 2A fulfills the University Language Requirement.

SLAVLANG 2. First-Year Russian, Second Quarter. 5 Units.
Continuation of SLAVLANG 1.A beginning Russian course.Proficiency based communicative approach. Introduction to essential vocabulary and grammar, Russian culture and the Russian view of reality.Active practice in speaking, reading and writing Russian. Prerequisite: Placement Test or SLAVLANG 1.

SLAVLANG 2A. Accelerated First-Year Russian, part 2. 5 Units.
Continuation of Slavlang 1A. Continuation of SLAVLANG1A. Completes the first-year sequence in two rather than three quarters. Students develop basic level proficiency in Russian at an accelerated pace through intensive studying of essential Russian grammar, functional vocabulary and active language practice. Speaking, reading and writing skills in Russian are developed through diverse materials in appropriate cultural contexts. The course fulfills the University foreign language requirement. Prerequisite: Slavlang 1A or placement Test.

SLAVLANG 3. First-Year Russian, Third Quarter. 5 Units.
Continuation of SLAVLANG 2.A beginning Russian course. Proficiency based communicative approach. Introduction to essential vocabulary and grammar, Russian culture and the Russian view of reality.Active practice in speaking, reading and writing Russian. The course fulfills the University foreign language requirement. Prerequisite: Placement Test or SLAVLANG 2.

SLAVLANG 5. Russian for Heritage Speakers, First Quarter. 2 Units.
Self-paced.Emphasis on reading and writing skills in Russian. Developing communication in formal and informal settings. Does not fulfill the University foreign language requirement. Prerequisite: placement test.

SLAVLANG 6. Russian for Heritage Speakers, Second Quarter. 2 Units.
Self-paced.Emphasis on reading and writing skills in Russian. Developing communication in formal and informal settings. Does not fulfill the University foreign language requirement.Does not fulfill the University foreign language requirement. Prerequisite: SLAVLANG 5 or placement test.

SLAVLANG 7. Russian for Heritage Speakers, Third Quarter. 2 Units.
Self-paced.Emphasis on reading and writing skills in Russian. Developing communication in formal and informal settings. Does not fulfill the University foreign language requirement. Prerequisite: SLAVLANG 6 or placement test.

SLAVLANG 10. Old Church Slavonic. 2 Units.
The first written language of the Slavic people. Grammar. Primarily a skills course, with attention to the historical context of Old Church Slavic.

SLAVLANG 51. Second-Year Russian, First Quarter. 5 Units.
Developing Russian language communicative proficiency from beginning to intermediate level. The course is based on active practice of speaking, writing reading and listening skills in a variety of situations through multiple texts and cultural materials. Intensive grammar review and vocabulary build up. Prerequisite: Placement Test, SLAVLANG 3.

SLAVLANG 52. Second-Year Russian, Second Quarter. 5 Units.
Continuation of 51. Developing Russian language communicative proficiency from beginning to intermediate level. The course is based on active practice of speaking, writing reading and listening skills in a variety of situations through multiple texts and cultural materials. Intensive grammar review and vocabulary build up. Prerequisite: placement test or 51.

SLAVLANG 53. Second-Year Russian, Third Quarter. 5 Units.
Continuation of 52. Developing Russian language communicative proficiency from beginning to intermediate level. The course is based on active practice of speaking, writing reading and listening skills in a variety of situations through multiple texts and cultural materials. Intensive grammar review and vocabulary build up.Increased level of self-confidence and fluency Prerequisite: placement test or 52.

SLAVLANG 55. Intermediate Russian Conversation. 2 Units.
Russian conversation practice at intermediate level. Based on developing Russian speaking skills through multiple situations and a variety of contexts.May be repeated twice for credit. Prerequisite: SLAVLANG3 or equivalent placement.

SLAVLANG 60A. Beginning Russian Conversation. 1 Unit.
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SLAVLANG 60B. Intermediate Russian Conversation. 1 Unit.
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SLAVLANG 60C. Advanced Russian Conversation. 1 Unit.
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SLAVLANG 60F. Perspectives on Slavic Culture and History through Film. 1 Unit.
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SLAVLANG 60G. Slavic History. 1 Unit.
This course examines the history of the World War II and contemporary Russia's memory of it. World War II has been arguably the most important struggle in Russia's history and memory. In this course, we will study the history of the war and how that history is told in Russia today. We will approach the war chronologically and thematically. We will ask how this war impacted the Soviet project, the mentality of Russians, and contemporary Russia's polices.

SLAVLANG 60H. Culture and Politics of Russian Athleticism through the lens of Sochi 2014. 1 Unit.
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SLAVLANG 60T. Teaching Slavic Conversation. 1 Unit.
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SLAVLANG 70. Reading in Russian. 2 Units.
The course is designed to develop reading competence in Russian. This is not a traditional language course that takes an integrated four-skill approach. The goal of the course is to reach proficiency of advanced level in reading Russian authentic materials pertinent to history and culture. The emphasis is on vocabulary building, reading comprehension, and translation. Intermediate level of Russian is required. Placement test or consent of Instructor.

SLAVLANG 99. Language Specials. 1-5 Unit.
Prerequisite: consent of instructor.

SLAVLANG 111. Third-Year Russian, First Quarter. 4 Units.
A snapshot of Russian life. Reading comprehension, conversational competence, grammatical accuracy, and cultural sophistication. Prerequisite: Placement Test or SLAVLANG53. Prerequisite: Placement Test or SLAVLANG 53.

SLAVLANG 112. Third-Year Russian, Second Quarter. 4 Units.
Continuation of SLAVLANG 111. A snapshot of Russian life. Reading comprehension, conversational competence, grammatical accuracy, and cultural sophistication. Prerequisite: Placement Test or SLAVLANG 111.

SLAVLANG 113. Third-Year Russian, Third Quarter. 4 Units.
Continuation of SLAVLANG 112. A snapshot of Russian life. Reading comprehension, conversational competence, grammatical accuracy, and cultural sophistication. Prerequisite: Placement Test or SLAVLANG 112.

SLAVLANG 177. Fourth-Year Russian, First Quarter. 3 Units.
Continuation of SLAVLANG 113. Culture, history, and current events. Films, classical and contemporary writers, newspaper articles, documentaries, radio and TV programs, and music. Review and fine-tuning of grammar and idiomatic usage. Prerequisite: Placement Ttest, SLAVLANG 113.

SLAVLANG 178. Fourth-Year Russian, Second Quarter. 3 Units.
Continuation of SLAVLANG 177. Culture, history, and current events. Films, classical and contemporary writers, newspaper articles, documentaries, radio and TV programs, and music. Review and fine-tuning of grammar and idiomatic usage. Prerequisite: Placement Test, SLAVLANG 177.

SLAVLANG 179. Fourth-Year Russian, Third Quarter. 3 Units.
Continuation of SLAVLANG 178. Culture, history, and current events. Films, classical and contemporary writers, newspaper articles, documentaries, radio and TV programs, and music. Review and fine-tuning of grammar and idiomatic usage. Prerequisite: Placement Test, SLAVLANG 178.

SLAVLANG 181. Fifth-Year Russian, First Quarter. 3 Units.
Language proficiency maintenance; appropriate for majors and non-majors with significant language experience. Discussions, oral presentations, and writing essays on contemporary Russia. Prerequisite: Placement Test, or SLAVLANG 179.

SLAVLANG 182. Fifth-Year Russian, Second Quarter. 3 Units.
Continuation of SLAVLANG181. Language proficiency maintenance; appropriate for majors and non-majors with significant language experience. Discussions, oral presentations, and writing essays on contemporary Russia. Prerequisite: Placement Test or SLAVLANG 181.

SLAVLANG 183. Fifth-Year Russian, Third Quarter. 3 Units.
Continuation of SLAVLANG 182. Language proficiency maintenance; appropriate for majors and non-majors with significant language experience. Discussions, oral presentations, and writing essays on contemporary Russia. Prerequisite: Placement Test or SLAVLANG 182.

SLAVLANG 184A. Russian Reading Conversation and Composition. 2 Units.
Proficiency in reading, spoken and written Russian through literary and non-literary texts, movies, and contemporary media. Emphasis is on debate, oral presentations, and essay writing.

SLAVLANG 184B. Russian Advanced Conversation and Composition. 2-3 Units.
Proficiency in spoken and written Russian through literary and non-literary texts, movies, and contemporary media. Emphasis is on debate, oral presentations, and essay writing.

SLAVLANG 184C. Russian Advanced Conversation and Composition. 2-3 Units.
Proficiency in spoken and written Russian through literary and non-literary texts, movies, and contemporary media. Emphasis is on debate, oral presentations, and essay writing.

SLAVLANG 199. Individual Work. 1-5 Unit.
Prerequisite: consent of instructor.

SLAVLANG 220. Russian for Slavic PhD Students. 1-3 Unit.
For DLCL graduate students who will teach Russian language and literature. Course objective is to improve spoken Russian on literary and pedagogical topics. Prerequisite: consent of instructor. May be repeated for credit.

SLAVLANG 299. Independent Study. 1-5 Unit.
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SLAVLANG 394. Graduate Studies in Russian Conversation. 1-3 Unit.
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SLAVLANG 395. Graduate Studies in Russian. 1-5 Unit.
Prerequisite: consent of instructor. (Staff).

Spanish Language Courses

SPANLANG 1. First-Year Spanish, First Quarter. 5 Units.
First quarter of the three-quarter sequence. Emphasis is on developing socially and culturally appropriate proficiency in interpersonal, interpretive, and presentational spheres. Influences shaping the production of oral and written texts in the Spanish speaking world.

SPANLANG 1A. Accelerated First-Year Spanish, Part 1. 5 Units.
Completes first-year sequence in two rather than three quarters. For students with previous knowledge of Spanish, or those with a strong background in another Romance language. SPANLANG 2A fulfills the University Foreign Language Requirement. Prerequisite: Placement Test in Spanish or second-year placement in another Romance language.

SPANLANG 2. First-Year Spanish, Second Quarter. 5 Units.
Continuation of SPANLANG 1. Emphasis is on developing socially and culturally appropriate proficiency in interpersonal, interpretive, and presentational spheres. Influences shaping the production of oral and written texts in the Spanish speaking world. Prerequisite Placement Test or SPANLANG 1.

SPANLANG 2A. Accelerated First-Year Spanish, Part 2. 5 Units.
Continuation of SPANLANG 1A. Completes first-year sequence in two rather than three quarters. For students with previous knowledge of Spanish, or those with a strong background in another Romance language. Prerequisite: SPANLANG 1A. Fulfills the University language requirement.

SPANLANG 3. First-Year Spanish, Third Quarter. 5 Units.
Continuation of SPANLANG 2. Emphasis is on developing socially and culturally appropriate proficiency in interpersonal, interpretive, and presentational spheres. Influences shaping the production of oral and written texts in the Spanish speaking world. Prerequisite: Placement Test or SPANLANG 2. Fulfills the University Foreign Language Requirement.

SPANLANG 5. Intensive First-Year Spanish. 10 Units.
Completes first-year sequence in one rather than three quarters. Completion of this course fulfills the University Foreign Language Requirement.

SPANLANG 10. Beginning Oral Communication. 2 Units.
Additional pronunciation, vocabulary, and speaking skills. May be repeated once for credit. Prerequisite: one quarter of Spanish, demonstrated oral proficiency above the novice level; may be taken concurrently with SPANLANG 2, SPANLANG 2A, or SPANLANG 3.

SPANLANG 11C. Second-Year Spanish: Cultural Emphasis, First Quarter. 4 Units.
Continuation of SPANLANG 3 or SPANLANG 2A. Sequence integrating culture and language, with emphasis on developing advanced proficiency in oral and written discourse. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, academic, and professional contexts. `C' - track content focuses on societal and cultural components of the Spanish-speaking world. Prerequisite: Placement Test, SPANLANG 3 or SPANLANG 2A.

SPANLANG 11R. Second-Year Spanish: Emphasis on International Relations, First Quarter. 4 Units.
Continuation of SPANLANG 3 or SPANLANG 2A. Sequence integrating geopolitics and language, with emphasis on developing advanced proficiency in oral and written discourse. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, academic, and professional contexts. `R'-track content focuses on international relations and socioeconomics of the Spanish-speaking world. Prerequisite: Placement Test, SPANLANG 2A or SPANLANG 3.

SPANLANG 11SL. Second-Year Spanish: Emphasis on Service Learning, First Quarter. 4 Units.
Continuation of SPANLANG 3 or SPANLANG 2A. Identity and community. Sequence integrating community engaged learning, culture and language with emphasis on developing advanced proficiency in oral and written discourse. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, community and academic contexts. SL content focuses on artistic projects with Spanish-speaking youth organizations in the local community. Requires one evening off campus per week in addition to four hours of regular class time. Projects may vary from quarter to quarter (e.g., mural art, print-making, digital storytelling, etc.) but focus on themes surrounding community and youth identity. Cardinal Course (certified by Haas Center). Prerequisite: Placement Test, SPANLANG 3 or SPANLANG 2A.

SPANLANG 12C. Second-Year Spanish: Cultural Emphasis, Second Quarter. 4 Units.
Continuation of SPANLANG 11C. Sequence integrating culture and language, with emphasis on developing advanced proficiency in oral and written discourse. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, academic, and professional contexts. "C" content focuses on societal and cultural components of the Spanish-speaking world. Prerequisite: Placement Test, SPANLANG SPANLANG 11C, 11R, 11SL, or 21B.

SPANLANG 12R. Second-Year Spanish: Emphasis on International Relations, Second Quarter. 4 Units.
Continuation of SPANLANG 11R. Sequence integrating geopolitics and language, with emphasis on developing advanced proficiency in oral and written discourse. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, academic, and professional contexts."R" content focuses on international relations and socioeconomics of the Spanish-speaking world. Prerequisite: Placement Test, SPANLANG 11C, 11R, 11SL, or 21B.

SPANLANG 12SL. Second-Year Spanish: Emphasis on Service Learning, Second Quarter. 4 Units.
Continuation of SPANLANG 11. Identity and community. Sequence integrating community engaged learning, culture and language with emphasis on developing advanced proficiency in oral and written discourse. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, community and academic contexts. SL content focuses on artistic projects with Spanish-speaking youth organizations in the local community. May require additional hours off campus immediately before and after class, in addition to regular class time. Projects may vary from quarter to quarter (e.g., drama and video production, environmental projects, poetry, etc.) but focus on themes surrounding community and youth identity. Cardinal Course (certified by Haas Center). Prerequisite: Placement Test, SPANLANG 11C, 11R, 11SL, or 21B.

SPANLANG 13C. Second-Year Spanish: Cultural Emphasis, Third Quarter. 4 Units.
Continuation of SPANLANG 12C. Sequence integrating culture and language, with emphasis on developing advanced proficiency in oral and written discourse. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, academic, and professional contexts. "C" content focuses on societal and cultural components of the Spanish-speaking world. Prerequisite: Placement Test, SPANLANG 12C,12R or 12SL. Fulfills the IR major Language Requirement.

SPANLANG 13R. Second-Year Spanish: Emphasis on International Relations, Third Quarter. 4 Units.
Continuation of SPANLANG 12R. Sequence integrating geopolitics and language. Emphasis is on advanced proficiency in oral and written discourse including presentational language, international relations, and socioeconomics of the Spanish-speaking world. Prerequisite: SPANLANG 12C,12R,12M, 12S,22B or 21SL. Fulfills the IR major Language Requirement.

SPANLANG 13SL. Second-Year Spanish: Emphasis on Service Learning, Third Quarter. 4 Units.
Continuation of SPANLANG 12. Immigration & Citizenship. Sequence integrating community engaged learning, culture and language with emphasis on developing advanced proficiency in oral and written discourse. Targeted functional abilities include presentational and socioculturally appropriate language in formal and informal, community and professional contexts. SL content focuses on immersion in civics-based service learning in the Spanish-speaking local community. Requires one evening off campus per week in addition to three hours of regular class time. Service Learning Course (certified by Haas Center). Prerequisite: Placement Test, SPANLANG 12C, 12R, 12SL,12M or 12S. Fulfills the IR major language requirement.

SPANLANG 15. Intermediate Oral Communication. 3 Units.
Emphasis is on interaction in Spanish locally and globally. Regional vocabularies and cultures at home and abroad. Interaction with local native Spanish speakers and communities.. May be repeated once for credit. Prerequisite: SPANLANG 2A, SPANLANG 3 and demonstrated oral proficiency above the low intermediate level.

SPANLANG 21B. Second-Year Spanish for Heritage Language Students, First Quarter. 4 Units.
First quarter of the three-quarter sequence.Emphasis is on ability to communicate orally and in writing. Spelling and the written accent. Goal is to understand, interpret, and analyze oral and written texts. Written language skills include rules for editing written language. Third quarter focus is on the development of written and oral styles and registers used in more formal settings. Prerequisite: Placement Test.

SPANLANG 22B. Second-Year Spanish for Heritage Language Students, Second Quarter. 4 Units.
Continuation of SPANLANG 21B. Emphasis is on ability to communicate orally and in writing. Spelling and the written accent. Goal is to understand, interpret, and analyze oral and written texts. Written language skills include rules for editing written language. Prerequisite: Placement Test, Placement Test or SPANLANG 21B.

SPANLANG 23B. Second-Year Spanish for Heritage Language Students, Third Quarter. 4 Units.
Continuation of SPANLANG 22B. Emphasis is on ability to communicate orally and in writing. Spelling and the written accent. Goal is to understand, interpret, and analyze oral and written texts.Written language skills include rules for editing written language. Third quarter focus is on the development of written and oral styles and registers used in more formal settings. Prerequisite: Placement Test or SPANLANG 22B.

SPANLANG 25B. Intensive Second-Year Spanish, Part B. 4 Units.
Same as SPANLANG 12. Continuation of 25A. Prerequisite: 25A or equivalent.

SPANLANG 25C. Intensive Second-Year Spanish, Part C. 4 Units.
Same as SPANLANG 13. Continuation of 25B. Prerequisite: 25B or equivalent.

SPANLANG 99. Language Specials. 1-5 Unit.
May be repeated for credit. Prerequisite: consent of instructor.

SPANLANG 100. Advanced Oral Communication. 3 Units.
For students who have completed second-year Spanish or who have oral skills above the intermediate level. Interactive activities require students to persuade, analyze, support opinions, and gather and interpret others' points of view. Focus is on vocabulary enrichment and idiomatic expressions. Cultural, literary, political, and journalistic readings. May be repeated once for credit. Prerequisite: SPANLANG 13 or equivalent.

SPANLANG 100S. Advanced Oral Communication. 2 Units.
For students who have completed second-year Spanish or who have oral skills above the intermediate level. Interactive activities require students to persuade, analyze, support opinions, and gather and interpret others' points of view. Focus is on vocabulary enrichment and idiomatic expressions. Cultural, literary, political, and journalistic readings. May be repeated once for credit. Prerequisite: SPANLANG 13 or equivalent.

SPANLANG 101. The Structure of Spanish. 4 Units.
Criteria and skills to analyze Spanish grammatical structure. Identification of word functions in sentences and texts, types of sentences, and terminology. Structure of nouns, adjectives, and verbs, and their relationship with meaning. The differences between Spanish grammar as a formal system and in everyday life. Students who wish to participate in the optional community engaged learning component should sign up for Spanlang 101SL (below). Prerequisite: SPANLANG 13C,13R,13SL,23B,13S or 13M.

SPANLANG 101SL. The Structure of Spanish. 4 Units.
Equivalent to Spanlang 101, integrating service learning with course material. Assignments will be modified for students enrolled under 101SL to focus on principles and practice of community-engaged learning. Students and native Spanish-speaking Stanford workers exchange oral histories and create digital stories with testimonials, advice, or remembrances that workers wish to share. Cardinal Course (certified by Haas Center). Prerequisite: SPANLANG 13C, SPANLANG 13R, SPANLANG 13SL,23B,13S or SPANLANG 13M.
Same as: Service Learning Option

SPANLANG 102. Composition and Writing Workshop. 3-5 Units.
Individual development of the ability to write in Spanish. Emphasis is on style and diction, and on preparing and writing essays on literary topics. Non-Spanish majors or minors may choose topics more closely related to their studies for projects. Students who wish to participate in the optional community engaged learning component should sign up for Spanlang 102SL (below). Prerequisite: two years of college Spanish or equivalent.

SPANLANG 102SL. Composition and Writing Workshop. 3-5 Units.
SPANLANG 102SL. Equivalent to Spanlang 102, integrating service learning with course material. Assignments will be modified for students enrolled under 102SL to focus on principles and practice of community-engaged learning. Students and native Spanish-speaking Stanford workers exchange oral histories and create digital stories with testimonials, advice, or remembrances that workers wish to share. Cardinal Course (certified by Haas Center). In 2016-2017, Spring Quarter only. Prerequisite: SPANLANG 13C, SPANLANG 13R, SPANLANG 13SL, or SPANLANG 23B.

SPANLANG 108SL. Advanced Spanish Service-Learning: Migration, Asylum & Human Rights at the Border. 3 Units.
Students develop advanced Spanish language proficiency through examination of issues surrounding current immigration and refugee crises. There will be class discussions of Central American contexts, international treaties, human rights, and U.S. immigration law. Class will include expert commentary from legal and mental health professionals, human rights specialists, migrants, and refugees. Legal, medical, and psychological implications of migration will be examined. Students should enroll in the companion course HUMRTS 108 to receive units for volunteer hours performed throughout the quarter, concurrent with class meetings and assignments. Service-learning opportunities will entail working directly with Spanish-speaking immigrant and asylum seekers in detention in the U.S. Due to COVID-19, all service-learning hours will be performed remotely. Taught entirely in Spanish. Cardinal Course (certified by Haas Center). Prerequisite: completion of SPANLANG 13, 23B or equivalent. SPANLANG 108SL is a requirement for HUMRTS 108. This course requires an application process. Please email instructor for consent.

SPANLANG 121M. Spanish for Medical Students. 2 Units.
First quarter of three-quarter series. Goal is a practical and culturally appropriate command of spoken Spanish. Emphasis is on taking the medical history. Topics include anatomy, general hospital procedures, pediatrics, nutrition, and essential doctor-patient phrases when dealing with Spanish-speaking patients. Series can be taken independently, depending on the level of prior knowledge. Undergraduates are welcome to enroll.
Same as: HRP 280

SPANLANG 122M. Spanish for Medical Students. 2 Units.
Second quarter of three-quarter series.Goal is a practical and culturally appropriate command of spoken Spanish. Emphasis is on performing a physical examination. Topics include anatomy, general hospital procedures, reproductive health, emergency medicine, and essential doctor-patient phrases when dealing with Spanish-speaking patients. Series can be taken independently, depending on the level of prior knowledge. Undergraduates are welcome to enroll.
Same as: HRP 281

SPANLANG 123M. Spanish for Medical Students. 2 Units.
Third quarter of three-quarter series. Goal is a practical and culturally appropriate command of spoken Spanish. Emphasis is on different specialties and medical conditions. Topics include anatomy, diagnostic procedures, HIV, diabetes, hypertension, and essential doctor-patient phrases when dealing with Spanish-speaking patients. Series can be taken independently, depending on the level of prior knowledge. Undergraduates are welcome to enroll.
Same as: HRP 282

SPANLANG 199. Individual Reading. 1-5 Unit.
May be repeated for credit. Prerequisite: consent of instructor.

SPANLANG 199SL. Directed Service Learning. 1-2 Unit.
Students collaborate with native Spanish-speaking workers on a mutually agreed project of benefit to the workers. Past projects have included: digital storytelling¿creating podcasts using testimonials, advice, or remembrances that workers wish to share¿and Spanish-English language exchanges. Cardinal Course (certified by Haas Center). Prerequisite: Completion of SPANLANG 13C, SPANLANG 13R, SPANLANG 13SL, or SPANLANG 23B and concurrent enrollment in SPANLANG 100, SPANLANG 101, SPANLANG 102, SPANLANG 103, or SPANLANG 108SL.

SPANLANG 250. Reading Spanish. 3 Units.
Reading Spanish - For graduate students who have taken Spanish one year or more of Spanish or have superior reading proficiency in another Romance language. Emphasis is on academic texts. Fulfills University reading requirements for advanced degrees if students earn a grade of 'B.'.

SPANLANG 394. Graduate Studies in Spanish Conversation. 1-3 Unit.
Prerequisite: consent of instructor.

SPANLANG 395. Graduate Studies in Spanish. 1-5 Unit.
Prerequisite: consent of instructor.

Special Language Program Courses

SPECLANG 75. Greek Culture, Ideals, and Themes. 3 Units.
Introduction to Greek culture and its global influence in a social historical context, through images from its past and institutions in contemporary Greek society. Limited enrollment.

SPECLANG 99. Language Specials. 2-4 Units.
Prerequisite: Consent of instructor.

SPECLANG 100A. First-Year Cherokee, First Quarter. 4 Units.
First quarter of a three-quarter beginning sequence. Distance learning combined with periodic on-site instruction, conducted primarily in Cherokee. Course emphasizes developing effective communication at a basic level, covering grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening in everyday situations.nCherokee culture.

SPECLANG 100B. First-Year Cherokee, Second Quarter. 4 Units.
Continuation of SPECLANG 100A. Distance learning combined with periodic on-site instruction, conducted primarily in Cherokee. Course emphasizes continued development of effective communication at a basic level, covering grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening in everyday situations. Cherokee culture. Prerequisite: SPECLANG100A or placement test.

SPECLANG 100C. First-Year Cherokee, Third Quarter. 4 Units.
Continuation of SPECLANG 100B. Distance learning combined with periodic on-site instruction, conducted primarily in Cherokee. Course emphasizes developing effective communication at a basic level, covering grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening in everyday situations. Cherokee culture. Prerequisite: SPECLANG 100B or consent of instructor. Completion of 100C fulfills the University language requirement.

SPECLANG 101A. First-Year Nahuatl, First Quarter. 4 Units.
First quarter of a three-quarter beginning sequence. Distance learning combined with periodic on-site instruction, conducted primarily in Nahuatl. Course emphasizes developing effective communication at a basic level, covering grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening in everyday situations. Nahuatl culture.Some knowledge of Spanish is useful.

SPECLANG 101B. First-Year Nahuatl, Second Quarter. 4 Units.
Continuation of SPECLANG101A. Distance learning combined with periodic on-site instruction,conducted primarily in Nahuatl. Course emphasizes continued development of effective communication at a basic level, covering grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening in everyday situations. Nahuatl culture. Some knowledge of Spanish is useful. Prerequisite: SPECLANG101 A or placement test.

SPECLANG 101C. First-Year Nahuatl, Third Quarter. 4 Units.
Continuation of SPECLANG 101B. Distance learning combined with periodic on-site instruction, conducted primarily in Nahuatl. Course emphasizes continued development of effective communication at a basic level, covering grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening in everyday situations. Nahuatl culture. Some knowledge of Spanish is useful. Prerequisite: SPECLANG101B or placement test.Completion of 101C fulfills the University Foreign Language Requirement.

SPECLANG 102A. Second-Year Nahuatl. 4 Units.
Distance learning combined with periodic on-site instruction, conducted primarily in Nahuatl. Continuation of SPECLANG 101 sequence integrating language and culture, with emphasis on developing proficiency in oral and written discourse. Targeted functional abilities include socio culturally appropriate language in formal contexts. Prerequisite: Placement Test, SPECLANG101 A,B,C.

SPECLANG 102B. Second -Year Nahuatl, Second quarter. 4 Units.
Distance learning combined with periodic on-site instruction, conducted primarily in Najuatl. Continuation of SPECLANG102A sequence integrating language and culture, with emphasis on developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio culturally appropriate language in formal and informal contexts. Prerequisite: Placement Test or SPECLANG102A.

SPECLANG 102C. Second Year Nahuatl, Third Quarter. 4 Units.
Distance learning combined with periodic on-site instruction, conducted primarily in Nahuatl. Continuation of SPECLANG102B sequence integrating language and culture, with emphasis on developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio culturally appropriate language in formal and informal contexts. Prerequisite: Placement Test, SPECLANG102B.

SPECLANG 103A. Third- year Nahuatl- First Quarter. 4 Units.
Distance learning combined with periodic on-site instruction, conducted in Najuatl.Course focuses on developing advanced proficiency in oral and written Nahuatl. Emphasis on functional abilities that integrate language and culture in formal, informal, academic and professional contexts. Prerequisite- Placement test or Speclang 102C.

SPECLANG 103B. Third- Year Nahuatl, Second Quarter. 4 Units.
Distance learning combined with periodic on-site instruction, conducted in Najuatl.nCourse focuses on developing advanced proficiency in oral and written Nahuatl. Emphasis on functional abilities that integrate language and culture in formal, informal, academic and professional contexts.

SPECLANG 103C. Third- Year Nahuatl,Third Quarter. 4 Units.
Distance learning combined with periodic on-site instruction, conducted in Najuatl.nCourse focuses on developing advanced proficiency in oral and written Nahuatl. Emphasis on functional abilities that integrate language and culture in formal, informal, academic and professional contexts.

SPECLANG 107. Reading Sanskrit. 2-4 Units.
Focus of this class is the practice of reading Sanskrit. Different texts are read each term, selected largely to fit the needs and interests of the students. Knowledge of Sanskrit grammar required. This course does not fulfill the University Language Requirement. Repeatable for credit up to 12 units.

SPECLANG 108A. Second-Year Cherokee, First Quarter. 4 Units.
The course is the first in a three-quarter sequence of second-year language courses. It focuses on communicating in the language while students are developing more advanced skills in describing, narrating in all time frames, making comparisons and expressing opinions. The course uses written and oral materials within informal and formal contexts and emphasizes a deeper understanding of the Cherokee culture. Prerequisite: First Year Cherokee sequence or recent placement test.

SPECLANG 108B. Second Year Cherokee,Second Quarter. 4 Units.
The course is the second in a three-quarter sequence of second-year language courses. It focuses on communicating in the language while students are developing more advanced skills in describing, narrating in all time frames, making comparisons and expressing opinions. The course uses written and oral materials within informal and formal contexts and emphasizes a deeper understanding of the Cherokee culture. Prerequisite: Speclang 108A or recent placement test.

SPECLANG 108C. Second Year Cherokee, Third Quarter. 4 Units.
The course is the third in a three-quarter sequence of second-year language courses. It focuses on communicating in the language while students are further developing more advanced skills in describing, narrating in all time frames, making comparisons and expressing opinions. The course uses written and oral materials within informal and formal contexts and emphasizes a deeper understanding of the Cherokee culture. Prerequisite: Speclang 108B or recent placement test.

SPECLANG 111A. First-Year Finnish, First Quarter. 4 Units.
First quarter of a three-quarter beginning sequence. Course emphasizes developing effective communication at a basic level. Students communicate with short messages on everyday topics. Grammatical structures and vocabulary are introduced through speaking, reading, writing, and listening. Finnish culture.

SPECLANG 111B. First-Year Finnish, Second Quarter. 4 Units.
Continuation of SPECLANG 111A. Course emphasizes developing effective communication at a basic level, covering grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening. Topics relate to everyday situations and activities necessary for survival. Finnish Culture. Prerequisite: SPECLANG 111A or consent of instructor.

SPECLANG 111C. First-Year Finnish, Third Quarter. 4 Units.
Continuation of SPECLANG 111B. Course emphasizes developing effective communication at a basic level, with topics on personal information and activities for survival. Grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening. Finnish culture. Prerequisite: SPECLANG 111B or consent of instructor. Completion of 111C fulfills the University Foreign Language Requirement.

SPECLANG 113A. Second-Year Finnish, First Quarter. 4 Units.
First quarter of a three quarter Second Year sequence. Course emphasizes developing effective communication. Goal is to use linguistically and culturally appropriate forms in narrations, descriptions, and expression of ideas and opinions. Prerequisite: SPECLANG 111 A B C or Placement Test.

SPECLANG 113B. Second -Year Finnish. 4 Units.
Continuation of SPECLANG 113A. Course emphasizes developing effective communication. Goal is to use linguistically and culturally appropriate forms in narrations, descriptions, and expression of ideas and opinions. Prerequisite: 113A or consent of instructor.

SPECLANG 115. Intro to Uyghur. 4 Units.
The course emphasizes developing effective communication at a basic level, in every day situations, covering grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening. Culture elements are an essential part.

SPECLANG 115A. First-Year Uyghur First Quarter. 4 Units.
First Year First quarter Uyghur is the first course in a three quarter sequence. Focus on speaking writing and listening while developing students' communicative skills in Uyghur. Interactive approach emphasizing the ability to express concepts related to daily activities within traditional Uyghur cultural contexts.

SPECLANG 115B. First-Year Uyghur, Second Quarter. 4 Units.
Continuation of SPECLANG 115A. First Year second quarter Uyghur is the second course in a three quarter sequence. Focus on an Interactive approach further expanding the ability to express concepts related to daily activities within traditional Uyghur cultural contexts.Prerequisite: SPECLANG 115A or placement test.

SPECLANG 115C. First-Year Uyghur, Third Quarter. 4 Units.
Continuation of SPECLANG 115B. Prerequisite: SPECLANG 115B. Fulfills the University Foreign Language Requirement.

SPECLANG 116A. Second-Year Uyghur, First Quarter. 4 Units.
Continuation of SPECLANG 115C. Grammar structures and vocabulary through authentic materials. Cultural proficiency. Prerequisite: SPECLANG 115C. Fulfills the University Foreign Language Requirement.

SPECLANG 119A. First -Year Irish Gaelic, First Quarter. 4 Units.
First quarter of a three-quarter beginning sequence. Course emphasizes developing effective communication at a basic level. Students communicate with short messages on everyday topics. Grammatical structures and vocabulary are introduced through speaking, reading, writing, and listening. Irish Gaelic culture.

SPECLANG 119B. First year Irish Gaelic, Second Quarter. 4 Units.
The continuation of 119A.

SPECLANG 125A. First- Year Khmer. 4 Units.
The course is the first in a three-quarter sequence of first year language courses. No previous knowledge of Khmer is required. It focuses on introducing Khmer in the context of formal and informal communication. The course content is centers on topics of daily life activities and emphasizes descriptions of self and community, short narratives, expression of feelings and simple questions and answers. Khmer culture is an essential part of the course.

SPECLANG 125B. First-Year Khmer, Second Quarter. 4 Units.
This is the second course in a three-quarter sequence of first year language courses. It focuses on further introducing Khmer in the context of formal and informal communication. The course content centers on topics of daily life activities and emphasizes descriptions of self and community, short narratives, expression of feelings and simple questions and answers. Khmer culture is an essential part of the course. Prerequisite: SPECLANG 125A or a placement test.

SPECLANG 125C. First-Year Khmer,Third Quarter. 4 Units.
This is the third course in a three-quarter sequence of first year language courses. It focuses on further introducing Khmer in the context of formal and informal communication. The course content centers on topics of daily life activities and emphasizes descriptions of self and community, short narratives, expression of feelings and simple questions and answers. Khmer culture is an essential part of the course.nPrerequisite: SPECLANG 125B or a placement test.nThe completion of this course fulfills the University language requirement.

SPECLANG 126A. First-Year Dutch, First Quarter. 4 Units.
This is the first year first quarter course in a three quarter sequence. Speaking, reading, writing, and listening. Authentic materials. Interactive approach with emphasis varying according to student goals. The cultural context in which Dutch is spoken.

SPECLANG 126B. First-Year Dutch, Second Quarter. 4 Units.
This is the first year second quarter course in a three quarter sequence. Expansion on Speaking, reading, writing, and listening. Authentic materials. Interactive approach with emphasis varying according to student goals. The cultural context in which Dutch is spoken.Prerequisite: SPECLANG126A.

SPECLANG 126C. First-Year Dutch,Third Quarter. 4 Units.
This is the first year third quarter in a three quarter sequence. Further expansion on speaking, reading, writing, and listening skills Authentic materials. Interactive approach with emphasis varying according to student goals. Cultural context in which Dutch is spoken.Prerequisite SPECLANG 126B or placement test.

SPECLANG 128A. Second-Year Dutch. 4 Units.
Second Year first quarter Dutch is the first course in a three quarter sequence. The course integrates language and culture with an emphasis on developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisisite: Speclang 126C or a placement test.

SPECLANG 128B. Second-Year Dutch, Second Quarter. 4 Units.
Second Year second quarter Dutch is the second course in a three quarter sequence. The course integrates language and culture with an emphasis on further developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisisite: Speclang128B or placement test.

SPECLANG 128C. Second-Year Dutch,Third Quarter. 4 Units.
Second Year third quarter Dutch is the third course in a three quarter sequence. The course integrates language and culture with an emphasis on further developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisisite: 128B or placement test.

SPECLANG 129A. First-Year Ukrainian, First Quarter. 4 Units.
This is the first year first quarter course in a three quarter sequence. Grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening. Ukrainian culture.

SPECLANG 129B. First-Year Ukrainian, Second Quarter. 4 Units.
This is the first year second quarter course in a three quarter sequence. Expansion on Grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening. Ukrainian culture. Prerequisite SPECLANG129A or placement test.

SPECLANG 129C. First-Year Ukrainian, Third Quarter. 4 Units.
Continuation of SPECLANG 129B. Prerequisite: SPECLANG 129B. Completion of this course fulfills the language requiremet.

SPECLANG 130A. Second-Year Ukrainian, First Quarter. 4 Units.
Second Year first quarter Ukrainianis the first course in a three quarter sequence. The course integrates language and culture with an emphasis on developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisite: Speclang 129C or placement test.

SPECLANG 130B. Second-Year Ukrainian, Second Quarter. 4 Units.
Second Year Second Quarter Ukrainian is the second course in a three quarter sequence. The course integrates language and culture with an emphasis on further developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts.nPrerequisite SPECLANG130A or placement test.

SPECLANG 130C. Second-Year Ukrainian, Third Quarter. 4 Units.
Second Year Third Quarter Ukrainian is the second course in a three quarter sequence. The course integrates language and culture with an emphasis on further developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally. appropriate language in formal and informal contexts. Prerequisite SPECLANG130B or placement test.

SPECLANG 131A. Third-Year Ukrainian, First Quarter. 4 Units.
Continuation of SPECLANG 130C. Prerequisite: SPECLANG 130C.

SPECLANG 132A. First-Year Slovenian, First Quarter. 4 Units.
First quarter of the first year, in a three-quarter sequence. Students learn to use basic vocabulary, grammatical structures, and sentence patterns through speaking, reading, writing, and listening. Introduction to Slovenia and its cultures.

SPECLANG 132B. First-Year Slovenian, Second Quarter. 4 Units.
Continuation of SPECLANG 132A. Second quarter of the first year, in a three-quarter sequence. Students develop skills in speaking, reading, writing, and listening through a variety of grammatical structures, vocabulary, and sentence patterns. Exploration of Slovenia and its cultures. Prerequisite SPECLANG 132A or placement test.

SPECLANG 132C. First-Year Slovenian, Third Quarter. 4 Units.
Third quarter of a three-quarter first year sequence. Students develop proficiency in speaking, reading, writing, and listening for effective communication. Beginning competence in Slovenian-speaking cultures. Prerequisite SPECLANG 132B or placement test.Completion of this course fulfills the language requirement.

SPECLANG 133. Introduction to Georgian. 4 Units.
Introduction to spoken and written Georgian. Emphasis on listening comprehension, oral practice, grammar, vocabulary building, and elementary readings; introduction to Georgian culture.

SPECLANG 134A. First-Year Haitian Creole, First Quarter. 4 Units.
Course emphasizes developing effective communication at a basic level, with topics on personal information and activities necessary for basic survival. Grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening. Haitian Creole culture.

SPECLANG 134B. First Year Haitian Creole, Second Quarter. 4 Units.
Course emphasizes developing effective communication at a basic level, with topics on personal information and activities necessary for basic survival. Grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening. Haitian Creole culture. Prerequisite: 135A or placement test.

SPECLANG 134C. First Year Haitian Creole,Third Quarter. 4 Units.
Course emphasizes developing effective communication at a basic level, with topics on personal information and activities necessary for basic survival. Grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening. Haitian Creole culture. Prerequisite: 134B or placement test. Completion of this course completes the Stanford Language requirement.

SPECLANG 136A. First- Yup'ik, First Quarter. 4 Units.
First quarter of the first year, in a three-quarter sequence.The course is remotely taught and emphasizes developing effective communication at a basic level, in daily situations, covering grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening. Cultural context is an essential part of the course.

SPECLANG 136B. First -Year Yup'ik, Second Quarter. 4 Units.
136B Second quarter of the first year, in a three-quarter sequence. The course is remotely taught and emphasizes further development of effective communication at a basic level, in daily situations. It covers grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening. Cultural context is an essential part of the course. Prerequisite: SPECLANG 136A or placement test.

SPECLANG 136C. First-Year Yup'ik, Third Quarter. 4 Units.
Third quarter of the first year, in a three-quarter sequence. The course is remotely taught and emphasizes further development of effective communication at a basic level, in daily situations. It covers grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening. Cultural context is an essential part of the course. Prerequisite: SPECLANG 136B or placement test.Completion of the sequence fulfills the University Language requirement.

SPECLANG 138A. First-Year Navajo, First Quarter. 4 Units.
First quarter of a three-quarter beginning sequence. Distance learning combined with periodic on-site instruction, conducted primarily in Navajo. Course emphasizes developing effective communication at a basic level, covering grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening in everyday situations.nNavajo culture.

SPECLANG 138B. First-Year Navajo, Second Quarter. 4 Units.
Continuation of SPECLANG 138A. Distance learning combined with periodic on-site instruction, conducted primarily in Navajo. Course emphasizes developing effective communication at a basic level, covering grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening in everyday situations.nNavajo culture. Prerequisite: SPECLANG138A or consent of instructor.

SPECLANG 138C. First-Year Navajo, Third Quarter. 4 Units.
Continuation of SPECLANG 138B Distance learning combined with periodic on-site instruction, conducted primarily in Navajo. Course emphasizes further developing effective communication at a basic level, covering grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening in everyday situations. Navajo culture. Prerequisite: SPECLANG138B or consent of instructor. Completion of Speclang 138 fulfills the University Foreign Language Requirement.

SPECLANG 139A. Second-Year Navajo. 4 Units.
The Second-year first quarter Navajo course requires completion of the First year sequence. Students engage in meaningful intercultural communication in a variety of contexts using socially and culturally appropriate forms. Prerequisite: Placement test.

SPECLANG 139B. Second-Year Navajo, second quarter. 4 Units.
The Second-year second quarter.The second year second quarter Navajo course requires completion of the second year-first quarter Navajo . Students engage in meaningful intercultural communication in a variety of contexts using socially and culturally appropriate forms.

SPECLANG 144A. First-Year Filipino, First Quarter. 4 Units.
First quarter of First year in a three-quarter beginning sequence. Course emphasizes developing effective communication at a basic level, covering grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening in everyday situations. Filipino culture.

SPECLANG 144B. First-Year Filipino, Second Quarter. 4 Units.
Continuation of SPECLANG 144A. Second Quarter of First year in a three quarter sequence. Course emphasizes further developing effective communication at a basic level, covering grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening in everyday situations. Filipino culture.nPrerequisite: SPECLANG 144A or Placement Test.

SPECLANG 144C. First-Year Filipino, Third Quarter. 4 Units.
Continuation of SPECLANG 144B. Third Quarter of First year in a three quarter sequence. Course emphasizes further developing effective communication at a basic level, covering grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening in everyday situations. Filipino culture.nPrerequisite: SPECLANG 144B or Placement Test. Fulfills the University Foreign Language Requirement.

SPECLANG 145A. Second-Year Filipino, First Quarter. 4 Units.
Continuation of SPECLANG 144C. Second Year Filipino, First Quarter n a three quarter sequence. The course integrates language and culture with an emphasis on developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts.n Prerequisite: SPECLANG 144C or a placement test.

SPECLANG 145B. Second-Year Filipino, Second Quarter. 4 Units. Continuation of SPECLANG 145A. Second Year Second Quarter Filipino is the second course in a three quarter sequence. The course integrates language and culture with an emphasis on further developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts.nPrerequisite: SPECLANG 145A or placement test.

SPECLANG 145C. Second-Year Filipino, Third Quarter. 4 Units. Continuation of SPECLANGT 145B.Second Year third Quarter Filipino is the third course in a three quarter sequence. The course integrates language and culture with an emphasis on further developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. nPrerequisite: SPECLANG 145B or placement test.

SPECLANG 146A. Third-Year Filipino, First Quarter. 4 Units. Continuation of SPECLANG 145C. Prerequisite SPECLANG 145C or consent of instructor.

SPECLANG 146B. Third-Year Filipino, Second Quarter. 4 Units. Continuation of SPECLANG 145A. Prerequisite: SPECLANG 145A.

SPECLANG 146C. Third-Year Filipino, Third Quarter. 4 Units. Continuation of SPECLANG 146B. Prerequisite SPECLANG 146B.

SPECLANG 148A. First-Year Lithuanian, First Quarter. 4 Units. This is an introductory course in Lithuanian language. No previous knowledge of the language is required. Main focus is on all modes of communication enabling students to function in simple everyday situations. Cultural elements are introduced in every lesson as an essential part of the course.

SPECLANG 148B. First-Year Lithuanian, Second Quarter. 4 Units. This is an introductory course in Lithuanian language. No previous knowledge of the language is required. Main focus is on all modes of communication enabling students to function in simple everyday situations. Cultural elements are introduced in every lesson as an essential part of the course. Continuation of speclang 148A.

SPECLANG 150A. First-Year Vietnamese, First Quarter. 5 Units. First Year first quarter Vietnamese is the first course in a three quarter sequence. Course emphasizes developing basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Vietnamese culture.

SPECLANG 150B. First-Year Vietnamese, Second Quarter. 5 Units. Continuation of SPECLANG 150A. First Year second quarter Vietnamese is the second course in a three quarter sequence. Course emphasizes further development of basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Vietnamese culture.nPrerequisite: SPECLANG 150A or a placement test.

SPECLANG 150C. First-Year Vietnamese, Third Quarter. 5 Units. Continuation of SPECLANG 150B. First Year third quarter Vietnamese is the third course in a three quarter sequence. Course emphasizes further development of basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Vietnamese culture.nPrerequisite: SPECLANG 150B or placement test. Fulfills the University Foreign Language Requirement.

SPECLANG 151A. Second-Year Vietnamese, First Quarter. 4 Units. Continuation of SPECLANG150C.Second Year first quarter Vietnamese is the first course in a three quarter sequence. The course integrates language and culture with an emphasis on developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisite: Speclang 150C or placement test.

SPECLANG 151B. Second-Year Vietnamese, Second quarter. 4 Units. Continuation of SPECLANG 151A. Second Year second quarter Vietnamese is the second course in a three quarter sequence. The course integrates language and culture with an emphasis on expanding development of proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisite: SPECLANG151A or placement test.

SPECLANG 151C. Second-Year Vietnamese, Third Quarter. 4 Units. Continuation of SPECLANG 151B. Second Year third quarter Vietnamese is the third course in a three quarter sequence. The course integrates language and culture with an emphasis on further expanding development of proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts.n Prerequisite SPECLANG 151B. Fulfills the University Foreign Language Requirement.

SPECLANG 152A. First-Year Hindi, First Quarter. 5 Units. First Year first quarter Hindi is the first course in a three quarter sequence. Course emphasizes developing basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Hindi culture.

SPECLANG 152B. First-Year Hindi, Second Quarter. 5 Units. Continuation of SPECLANG 152A. First Year second quarter Hindi is the second course in a three quarter sequence. Course emphasizes further development of basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Hindi culture.nPrerequisite: SPECLANG 152A or placement test.

SPECLANG 152C. First-Year Hindi, Third Quarter. 5 Units. Continuation of SPECLANG 152B. First Year Third quarter Hindi is the third course in a three quarter sequence. Course emphasizes further development of basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Hindi culture.nPrerequisite: SPECLANG 152B. Fulfills the University language requirement.

SPECLANG 153A. Second-Year Hindi, First Quarter. 4 Units. Continuation of SPECLANG 152C. Second Year Hindi, First Quarter in a three quarter sequence. The course integrates language and culture with an emphasis on developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisite SPECLANG152C or placement test.

SPECLANG 153B. Second-Year Hindi, Second Quarter. 4 Units. Continuation of SPECLANG 153A. Second Year Hindi, Second Quarter in a three quarter sequence. The course integrates language and culture with an emphasis on further developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisite SPECLANG 153A or placement test.

SPECLANG 153C. Second-Year Hindi, Third Quarter. 4 Units. Continuation of SPECLANG 153B. Prerequisite: SPECLANG 153B.

SPECLANG 154A. Third-Year Hindi, First Quarter. 4 Units. Focus of the course is on developing communication and presentation skills in Hindi using a variety of topics and different contexts. Authentic audio visual material and use of level appropriate pedagogy tools enhance functional linguistic abilities. Culture is an essential part nof the course.nPlacement Test, Second-Year Hindi or equivalent.

SPECLANG 154B. Third-Year Hindi, Second Quarter. 4 Units.
Continuation of SPECLANG 154A. nFocus of the course is on developing communication and presentation skills in Hindi using a variety of topics and different contexts. Authentic audio visual material and use of level appropriate pedagogy tools to further functional linguistic abilities. Culture is an essential part of the course. Prerequisite:SPECLANG 154A or Placement Test,.

SPECLANG 154C. Third-Year Hindi, Third Quarter. 4 Units.
Continuation of SPECLANG 154B. Focus of the course is on developing communication and presentation skills in Hindi using a variety of topics and different contexts. Authentic audio visual material and use of level appropriate pedagogy tools enhance functional linguistic abilities. Culture is an essential part of the course. Prerequisite: SPECLANG 154B or Placement Test,.

SPECLANG 156A. First-Year Indonesian, First Quarter. 5 Units.
Grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening. Indonesian culture.

SPECLANG 156B. First-Year Indonesian, Second Quarter. 5 Units.
Continuation of SPECLANG 156A. Prerequisiste; SPECLANG 156A.

SPECLANG 156C. First-Year Indonesian, Third Quarter. 5 Units.
Continuation of SPECLANG 156B. Prerequisite: SPECLANG 156B.

SPECLANG 157A. Second-Year Indonesian, First Quarter. 4 Units.
Continuation of SPECLANG 156C. Prerequisite: SPELANG 156C. Fulfills the University language requirement.

SPECLANG 157B. Second-Year Indonesian, Second Quarter. 4 Units.
Continuation of SPECLANG 157A. Prerequisite; SPECLANG 157A.

SPECLANG 157C. Second-Year Indonesian, Third Quarter. 4 Units.
Continuation of SPECLANG 157B. Prerequisite: SPECLANG 157B.

SPECLANG 158A. Third-Year Indonesian, First Quarter. 4 Units.
Continuation of SPECLANG 157C. Prerequisite: SPECLANG 157C.

SPECLANG 159A. First Year Punjabi, First Quarter. 4 Units.
Grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening. Punjabi culture.

SPECLANG 159C. First Year Punjabi, Third Quarter. 4 Units.
Continuation of 159B.

SPECLANG 164A. First-Year Czech, First Quarter. 4 Units.
First Year first quarter Czech is the first course in a three quarter sequence. Course emphasizes developing basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Czech culture.

SPECLANG 164B. First-Year Czech, Second Quarter. 4 Units.
Continuation of SPECLANG 164A. First Year Second quarter Czech is the second course in a three quarter sequence. Course emphasizes further development of basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Czech culture.nPrerequisite: SPECLANG 164A or placement test.

SPECLANG 164C. First-Year Czech, Third Quarter. 4 Units.
Continuation of SPECLANG 164B. Prerequisite; SPECLANG 164B.

SPECLANG 165A. Second-Year Czech, First Quarter. 4 Units.
Continuation of SPECLANG 164C. Second Year Czech, First Quarter in a three quarter sequence. The course integrates language and culture with an emphasis on developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisite SPECLANG164C or placement test.

SPECLANG 165B. Second-Year Czech, Second Quarter. 4 Units.
Continuation of SPECLANG 165A. Second Year Czech, Second Quarter in a three quarter sequence. The course integrates language and culture with an emphasis on further developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisite SPECLANG165A or placement test.

SPECLANG 165C. Second-Year Czech, Third Quarter. 3 Units.
Continuation of SPECLANG 165B. Prerequisite: SPECLANG 165B.

SPECLANG 166A. Third-Year Czech, First Quarter. 4 Units.
Continuation of SPECLANG 165C. Prerequisite: SPECLANG 165C.

SPECLANG 166B. Third-Year Czech, Second Quarter. 4 Units.
Continuation of SPECLANG 166A. Prerequisite: SPELANG 166A.

SPECLANG 166C. Third-Year Czech, Third Quarter. 4 Units.
Continuation of SPECLANG 166B. Prerequisite: SPECLANG 166B.

SPECLANG 167A. First-Year Polish, First Quarter. 4 Units.
First Year First quarter Polish is the first course in a three quarter sequence. Course emphasizes developing basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Polish culture.

SPECLANG 167B. First-Year Polish, Second Quarter. 4 Units.
Continuation of SPECLANG 167A. First Year Second quarter Polish is the second course in a three quarter sequence. Course emphasizes further development of basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Polish culture.Prerequisite: SPECLANG 167A or placement test.

SPECLANG 167C. First-Year Polish, Third Quarter. 4 Units.
Continuation of SPECLANG 167B. First Year Third Quarter Polish is the third course in a three quarter sequence. Course emphasizes further development of basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Polish culture.Prerequisite: SPECLANG 167B or placement test. Completion of 167C fulfills the University Language Requirement.

SPECLANG 168A. Second-Year Polish, First Quarter. 4 Units.
Continuation of SPECLANG 167C. Second Year Polish, First Quarter in a three quarter sequence. The course integrates language and culture with an emphasis on developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. nn Prerequisite: SPECLANG 167C or placement test.

SPECLANG 168B. Second-Year Polish, Second Quarter. 4 Units.
Continuation of SPECLANG 168A. Second Year Polish,Second Quarter in a three quarter sequence. The course integrates language and culture with annemphasis on developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisite SPECLANG168A or placement test.

SPECLANG 168C. Second-Year Polish, Third Quarter. 4 Units.
Continuation of SPECLANG 168B. Second Year Polish, Third Quarter in a three quarter sequence. The course integrates language and culture with an emphasis on developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts.Prerequisite: SPECLANG 168B or placement test.

SPECLANG 169A. Third-Year Polish, First Quarter. 4 Units.
Continuation of SPECLANG 168C. Prerequisite: SPELANG 168C.

SPECLANG 169B. Third-Year Polish, Second Quarter. 4 Units.
Continuation of SPECLANG 169A. Prerequisite: SPECLANG 169A.

SPECLANG 169C. Third-Year Polish, Third Quarter. 4 Units.
Continuation of SPECLANG 169B. Prerequisite: SPECLANG 169B.

SPECLANG 170A. First-Year Modern Greek, First Quarter. 5 Units.
First Year First quarter Modern Greek is the first course in a three quarter sequence. Course emphasizes developing basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Modern Greek culture.

SPECLANG 170B. First-Year Modern Greek, Second Quarter. 5 Units.
Continuation of SPECLANG 170A. First Year Second Quarter Modern Greek is the second course in a three quarter sequence. Course emphasizes further development of basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Modern Greek culture. Prerequisite: SPECLANG 170A or placement testnnnnPrerequisite: SPECLANG 170A.

SPECLANG 170C. First-Year Modern Greek, Third Quarter. 5 Units.
Continuation of SPECLANG 170B. First Year Third Quarter Modern Greek is the third course in a three quarter sequence. Course emphasizes further developing basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Modern Greek culture. Prerequisite: SPECLANG 170B. Fulfills the University language requirement.

SPECLANG 171A. Second-Year Modern Greek, First Quarter. 4 Units.
Continuation of SPECLANG 170C. Second Year Modern Greek, First Quarter in a three quarter sequence. The course integrates language and culture with an emphasis on developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts.nPrerequisite SPECLANG170C or placement test.

SPECLANG 171B. Second-Year Modern Greek, Second Quarter. 4 Units.
Continuation of SPECLANG 171A. Second Year Modern Greek, Second Quarter in a three quarter sequence. The course integrates language and culture with an emphasis on further developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisite SPECLANG171A or placement test.

SPECLANG 171C. Second-Year Modern Greek, Third Quarter. 4 Units.
Continuation of SPECLANG 171B. Second Year Modern Greek, Third Quarter in a three quarter sequence. The course integrates language and culture with an emphasis on further developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisite SPECLANG171B or placement test.

SPECLANG 172A. Modern Greek Language and Culture through Literature and Film, First Quarter. 4 Units.
Accelerated. Vocabulary enrichment through multimedia, online materials.

SPECLANG 172B. Modern Greek Language and Culture through Literature and Film, Second Quarter. 4 Units.
Continuation of 172A.

SPECLANG 172C. Modern Greek Language and Culture through Literature and Film, Third Quarter. 4 Units.
Accelerated. Vocabulary enrichment through multimedia, online materials.

SPECLANG 173A. First-Year Hungarian, First Quarter. 4 Units.
First Year first quarter Hungarian is the first course in a three quarter sequence. Course emphasizes development of basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Hungarian culture.

SPECLANG 173B. First-Year Hungarian, Second Quarter. 4 Units.
Continuation of SPECLANG 173A. First Year second quarter Hungarian is the second course in a three quarter sequence. Course emphasizes further development of basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Hungarian culture. Prerequisite: SPECLANG 173A or placement test.

SPECLANG 173C. First-Year Hungarian, Third Quarter. 4 Units.
Continuation of SPECLANG 173B. First Year Third Quarter Hungarian is the third course in a three quarter sequence. Course emphasizes further development of basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Hungarian culture.Prerequisite: SPECLANG173B or placement testnnPrerequisite: SPECLANG 173B.

SPECLANG 174. Beginning Quechua. 4 Units.
Course emphasizes developing basic level communication using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Quechua culture.

SPECLANG 174A. First-Year Quechua, First Quarter. 4 Units.
First Year First Quarter Quechua is the first course in a three quarter sequence. Course emphasizes development of basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Quechua culture.

SPECLANG 174B. First-Year Quechua, Second Quarter. 4 Units.
Continuation of SPECLANG 174A. First Year Second Quarter Quechua is the second course in a three quarter sequence. Course emphasizes further development of basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Quechua culture.Prerequisite: SPECLANG 174A or placement test.

SPECLANG 174C. First-Year Quechua, Third Quarter. 4 Units.
Continuation of SPECLANG 174B. First Year Third Quarter Quechua is the third course in a three quarter sequence. Course emphasizes further development of basic level communication skills using daily life topics. Grammatical structures and vocabulary are introduced through interpersonal, interpretive and presentational modes of communication. Quechua culture.Prerequisite: SPECLANG 174B or placement test. Completion of of 174C fulfills the University Language Requirement.nnnn Prerequisite: SPECLANG 174B.

SPECLANG 175A. Second-Year Quechua, First Quarter. 4 Units.
Continuation of SPECLANG 174C. Second Year Quechua, First Quarter in a three quarter sequence. The course integrates language and culture with an emphasis on developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisite SPECLANG174C or placement test.

SPECLANG 175B. Second-Year Quechua, Second Quarter. 4 Units.
Continuation of SPECLANG 175A. Second Year Quechua, Second Quarter in a three quarter sequence. The course integrates language and culture with an emphasis on further developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisite SPECLANG175A or placement test.

SPECLANG 175C. Second-Year Quechua, Third Quarter. 4 Units.
Continuation of SPECLANG 175B. Second Year Quechua, Third Quarter in a three quarter sequence. The course integrates language and culture with an emphasis on developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisite SPECLANG175B or placement test.

SPECLANG 176A. First-Year Thai, First Quarter. 4 Units.
Grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening. Thai culture.

SPECLANG 176B. First-Year Thai, Second Quarter. 4 Units.
Continuation of SPECLANG 176A. Prerequisite: SPECLANG 176A.

SPECLANG 176C. First-Year Thai, Third Quarter. 4 Units.
Continuation of SPECLANG 176B. Prerequisite: SPECLANG 176B.

SPECLANG 177A. Second-Year Thai, First Quarter. 3 Units.
Continuation of SPECLANG 176C. Prerequisite; SPECLANG 176 C. Fulfills the University Foreign Language Requirement.

SPECLANG 177B. Second-Year Thai, Second Quarter. 4 Units.
Continuation of SPECLANG 177A. Prerequisite; SPECLANG 177A.

SPECLANG 177C. Second-Year Thai, Third Quarter. 4 Units.
Continuation of SPECLANG 177B. Prerequisite: SPECLANG 177B.

SPECLANG 178A. First-Year Sign Language, First Quarter. 5 Units.
First Year First Quarter American Sign Language is the first course in a three quarter sequence. Course emphasizes development of comprehension and production skills using daily life topics.Focus on cultural awareness necessary for communication. Limited enrollment.

SPECLANG 178B. First-Year Sign Language, Second Quarter. 5 Units.
Continuation of SPECLANG 178A. First Year Second Quarter American Sign Language is the second course in a three quarter sequence. Course emphasizes further development of comprehension and production skills using daily life topics.Focus on cultural awareness necessary for communication. Prerequisite:SPECLANG 178A or placement test. Limited enrollment.

SPECLANG 178C. First-Year Sign Language, Third Quarter. 5 Units.
Continuation of SPECLANG 178B. First Year Third Quarter American Sign Language is the third course in a three quarter sequence. Course emphasizes further development of comprehension and production skills using daily life topics.Focus on cultural awareness necessary for communication. Prerequisite:SPECLANG 178B or placement test Limited enrollment.

SPECLANG 179A. Second-Year Sign Language, First Quarter. 4 Units.
Continuation of SPECLANG 178C. Second Year ASL, First Quarter in a three quarter sequence. The course integrates language and culture with an emphasis on developing proficiency on functional structures, lexical items and history of ASL Socio-culturally appropriate language in formal and informal contexts. Prerequisite SPECLANG178C.

SPECLANG 179B. Second-Year Sign Language, Second Quarter. 4 Units.
Continuation of SPECLANG 179A. Second Year ASL, Second Quarter in a three quarter sequence. The course integrates language and culture with an emphasis on further developing proficiency on functional structures, lexical items and history of ASL Socio-culturally appropriate language informal and informal contexts. Prerequisite SPECLANG179A or placement test. Limited enrollment.

SPECLANG 179C. Second-Year Sign Language, Third Quarter. 4 Units.
Continuation of SPECLANG 179B. Second Year ASL, Third Quarter in a three quarter sequence. The course integrates language and culture with an emphasis on further developing proficiency on functional structures, lexical items and history of ASL Socio-culturally appropriate language informal and informal contexts. Prerequisite SPECLANG179B or placement test.

SPECLANG 182A. Second-Year Hungarian, First Quarter. 4 Units.
Second Year Hungarian First Quarter in a three quarter sequence. The course integrates language and culture with an emphasis on developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisite: Placement test or SPECLANG 173C.

SPECLANG 182B. Second-Year Hungarian, Second Quarter. 4 Units.
Continuation of SPECLANG 182A. Second Year Hungarian First Quarter in a three quarter sequence. The course integrates language and culture with an emphasis on developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. nPrerequisite: SPECLANG 182A or placement test.

SPECLANG 182C. Second-Year Hungarian, Third Quarter. 4 Units.
Continuation of SPECLANG 182B. Second Year Hungarian Third Quarter in a three quarter sequence. The course integrates language and culture with an emphasis on further developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisite: SPECLANG182B or placement test.

SPECLANG 183. Beginning Sanskrit. 2-4 Units.
Full class in the script, grammar, and vocabulary of the Sanskrit language of ancient India. Also included will be some readings from the Bhagavad Gita. No previous knowledge of Sanskrit required.This does not fulfill the University Language Requirement the University May be repeat for credit.

SPECLANG 183A. First-Year Sanskrit, First Quarter. 4 Units.
Full class in the script, grammar, and vocabulary of the Sanskrit language of ancient India. Also included will be some readings from the Bhagavad Gita. No previous knowledge of Sanskrit required.

SPECLANG 183B. First-Year Sanskrit, Second Quarter. 4 Units.
Continuation of SPECLANG 183A. Prerequisite: SPECLANG 183A.

SPECLANG 183C. First-Year Sanskrit, Third Quarter. 4 Units.
Continuation of SPECLANG 183B. Prerequisite; SPECLANG 183B. The completion of this course fulfills the University Language Requirement.

SPECLANG 186. Introduction to Serbo-Croatian. 1-2 Unit.
Description: This introductory course focuses on the acquisition of fundamental communication skills. Students learn to understand and carry on simple conversations on daily life topics such as work, personal interests, family, and friends, and also to conduct simple transactions related to traveling, studying or working in the region.

SPECLANG 186A. First-Year Serbo-Croatian, First Quarter. 4 Units.
Grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening. Serb and Croat culture.

SPECLANG 186B. First-Year Serbo-Croatian, Second Quarter. 4 Units.
Continuation of SPECLANG 186A. Prerequisite: SPECLANG 186A.

SPECLANG 186C. First-Year Serbo-Croatian, Third Quarter. 4 Units.
Continuation of SPECLANG 186B. Prerequisite: SPELANG 186B.

SPECLANG 188B. Third-Year Serbo-Croatian, Second Quarter. 4 Units.
Continuation of SPECLANG 188A. Prerequisite: SPECLANG 188A.

SPECLANG 189A. First-Year Hawaiian, First Quarter. 4 Units.
First Year first quarter Hawaiian is the first course in a three quarter sequence. Focus on speaking writing and listening while developing students communicative skills in Hawaiian. Interactive approach emphasizing the ability to express concepts related to daily activities within traditional Hawaiian cultural contexts.

SPECLANG 189B. First-Year Beginning Hawaiian, Second Quarter. 4 Units.
Continuation of SPECLANG 189A.First Year Second Quarter Hawaiian is the second course in a three quarter sequence. Focus on speaking writing and listening while further developing students communicative skills in Hawaiian. Interactive approach emphasizing the ability to express concepts related to daily activities within traditional Hawaiian cultural contexts. Prerequisite SPECLANG 189A or placement test.

SPECLANG 189C. First-Year Hawaiian, Third Quarter. 4 Units.
Continuation of SPECLANG 189B. First Year Third Quarter Hawaiian is the third course in a three quarter sequence. Focus on speaking writing and listening while further developing students communicative skills in Hawaiian. Interactive approach emphasizing the ability to express concepts related to daily activities within traditional Hawaiian cultural contexts.Prerequisite SPECLANG 189B or placement testn Fulfills the University Foreign Language Requirement.

SPECLANG 190A. Second-Year Hawaiian, First Quarter. 4 Units.
Continuation of SPECLANG 189C. nThe course is the first in a three-quarter sequence of second-year language courses. It focuses on communicating in the language while students are developing more advanced skills in describing, narrating in all time frames, making comparisons and expressing opinions. The course uses written and oral materials within informal and formal contexts and emphasizes a deeper understanding of the Hawaiian culture. Prerequisite: First Year Hawaiian sequence or placement test.

SPECLANG 190B. Second-Year Hawaiian, Second Quarter. 4 Units.
Continuation of SPECLANG 190A. The course is the second in a three-quarter sequence of second-year language courses. It focuses on communicating in the language while students are further developing more advanced skills in describing, narrating in all time frames, making comparisons and expressing opinions. The course uses written and oral materials within informal and formal contexts and emphasizes a deeper understanding of the Hawaiian culture. Prerequisite: First Year Hawaiian sequence or recent placement test.

SPECLANG 190C. Second-Year Hawaiian, Third Quarter. 4 Units.
Continuation of SPECLANG 190B. nThe course is the third in a three-quarter sequence of second-year language courses. It focuses on communicating in the language while students are further developing more advanced skills in describing, narrating in all time frames, making comparisons and expressing opinions. The course uses written and oral materials within informal and formal contexts and emphasizes a deeper understanding of the Hawaiian culture. Prerequisite: First Year Hawaiian sequence or placement test.

SPECLANG 192A. First-Year Kazakh, First Quarter. 4 Units.
First Year Kazakh First Quarter is the first course in a three quarter sequence.Focus on speaking writing and listening while developing students communicative skills in Kazakh. Interactive approach emphasizing the ability to express concepts related to daily activities within traditional Kazakh cultural contexts.

SPECLANG 192B. First-Year Kazakh, Second Quarter. 4 Units.
Continuation of SPECLANG 192A. nFirst Year Kazakh Second Quarter is the second course in a three quarter sequence.Focus on speaking writing and listening while developing students communicative skills in Kazakh. Interactive approach emphasizing the ability to express concepts related to daily activities within traditional Kazakh cultural contexts.Prerequisite: SPECLANG 192A or placement test.nnnPrerequisite: SPECLANG 192A.

SPECLANG 192C. First-Year Kazakh, Third Quarter. 4 Units.
Continuation of SPECLANG 192B. First Year Kazakh Third Quarter is the third course in a three quarter sequence. Focus on speaking writing and listening while further developing students communicative skills in Kazakh. Interactive approach emphasizing the ability to express concepts related to daily activities within traditional Kazakh cultural contexts.Prerequisite SPECLANG 192B or placement test.

SPECLANG 193A. Second-Year Kazakh, First Quarter. 4 Units.
Continuation of SPECLANG 192C. Second Year first quarter Kazakh is the first course in a three quarter sequence. The course integrates language and culture with an emphasis on developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisite: SPECLANG192C or placement test.

SPECLANG 193B. Second-Year Kazakh, Second Quarter. 4 Units.
Continuation of SPECLANG 193A. Second Year second quarter Kazakh is the second course in a three quarter sequence. The course integrates language and culture with an emphasis on developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisite: SPECLANG 193A or placement test.

SPECLANG 193C. Second-Year Kazakh, Third Quarter. 4 Units.
Continuation of SPECLANG 193B. Second Year Third quarter Kazak his the third course in a three quarter sequence. The course integrates language and culture with an emphasis on developing proficiency in oral and written discourse. Targeted functional abilities include presentational and socio-culturally appropriate language in formal and informal contexts. Prerequisite SPECLANG193B or placement test.

SPECLANG 194A. Third-Year Kazakh, First Quarter. 4 Units.
Continuation of SPECLANG 193C. Prerequisite: SPECLANG 193C.

SPECLANG 194B. Third-Year Kazakh, Second Quarter. 3 Units.
Continuation of SPECLANG 194A. Prerequisite SPECLANG 194A.

SPECLANG 194C. Third-Year Kazakh, Third Quarter. 3 Units.
Continuation of SPECLANG 194B. Prerequisite: SPECLANG 194B.

SPECLANG 198A. Second Year K'iche', 1st quarter. 4 Units.
This is a the first quarter of a second year course in K'iche' taught as a sequence, in three quarters. It uses an eclectic pedagogical approach to help students master and expand vocabulary necessary for their conversational activities and for developing all four language skills: reading, writing, speaking, and listening. The textbook is supplemented by audiovisual materials and authentic readings.

SPECLANG 198B. Second Year K'iche', 2nd quarter. 4 Units.
This is a the second quarter of a second year course in K'iche' taught as a sequence, in three quarters. It uses an eclectic pedagogical approach to help students master and expand vocabulary necessary for their conversational activities and for developing all four language skills: reading, writing, speaking, and listening. The textbook is supplemented by audiovisual materials and authentic readings.

SPECLANG 198Q. Modern Greece in Film and Literature. 3-5 Units.
Preference to sophomores. Cultural and literary highlights. Filmmakers include Kakoyannis, Dassen, Boulmetis, Angelopoulos, and Scorsese; readings from Eugenides, Gage, Kavafis, Kazantzakis, Samarakis, Seferis, and Elytis.

SPECLANG 199A. Third Year K'iche, First Quarter. 4 Units.
This is a long distance course. It is designed to develop reading competence in K'iche'. Focus on advanced level in reading K'iche' authentic materials pertinent to history, literature and culture. Emphasis is on vocabulary building, reading comprehension, and translation. Previous knowledge of the language is required.

SPECLANG 199B. Third Year K'iche'. 4 Units.
This is a long distance course. It is designed to develop reading competence in K'iche'. Focus on advanced level in reading K'iche' authentic materials pertinent to history, literature and culture. Emphasis is on vocabulary building, reading comprehension, and translation. Previous knowledge of the language is required.

SPECLANG 199C. Third Year K'iche', Third Quarter. 4 Units.
This is a long distance course. It is designed to develop reading competence in K'iche'. Focus on advanced level in reading K'iche' authentic materials pertinent to history, literature and culture. Emphasis is on vocabulary building, reading comprehension, and translation. Previous knowledge of the language is required.

SPECLANG 215. Modern Greek for Heritage Learners. 3-4 Units.
The course is designed with focus on advancing communication skills and proficiency while building on previous linguistic and cultural knowledge. Emphasis is given on current events and topics of general interest, from personal to social and professional. Students work individually and collaboratively to communicate in oral as well as written form by using authentic texts, films and web based audiovisual materials. Instructor's consent required.

SPECLANG 215A. Modern Greek for Heritage Language Learners, First Quarter. 2-4 Units.
The first course in the three quarter sequence for Modern Greek Heritage Learners focuses on advancing communication skills and proficiency while building on previous linguistic and cultural knowledge. Emphasis on current events and topics of general interest, from personal to social and professional. Students work individually and collaboratively to communicate in oral as well as written forms by using authentic texts, films and web based audiovisual materials. Prerequisite Placement test.

SPECLANG 215B. Modern Greek for Heritage Language Learners, Second Quarter. 2-4 Units.
The second course in the three quarter sequence for Modern Greek Heritage Learners focuses on advancing communication skills and proficiency while building on previous linguistic and cultural knowledge. Emphasis on current events and topics of general interest, from personal to social and professional. Students work individually and collaboratively to communicate in oral as well as written forms by using authentic texts, films and web based audiovisual materials. Prerequisite SPECLANG 215A or Placement test.

SPECLANG 215C. Modern Greek for Heritage Language Learners, Third Quarter. 2-4 Units.
Continuation of SPECLANG 215B. The third course in the sequence for Modern Greek Heritage Learners focuses on advancing communication skills and proficiency while building on previous linguistic and cultural knowledge. Emphasis on current events and topics of general interest, from personal to social and professional. Students work individually and collaboratively to communicate in oral as well as written forms by using authentic texts, films and web based audiovisual materials. Prerequisite: SPECLANG 215B or Placement test nnnnPrerequisite: SPECLANG 215A.

SPECLANG 218A. Beginning Urdu, First Quarter. 5 Units.
First Year Urdu will introduce students to the Urdu alphabet (Nastaliq script); to pronunciation and intonation; to basic conversation patterns; and to the elements of spelling, reading, and writing in Urdu. It will cover basic grammar of modern standard Urdu. As part of this course, students will learn popular Urdu songs, watch films and video clips, and become familiar with culture of Urdu speaking people. They will also have exciting opportunities to make their own audio and video recordings to improve their pronunciation, work with Web-based and multi-media materials, and to go on one or more field trips. By the end of year, students will have acquired a basic vocabulary of 800-1000 words, and will be able to generate and interpret several types of simple sentences in simple conversation as well as write in a variety of communication contexts.

SPECLANG 218B. Beginning Urdu, Second Quarter. 4 Units.
Grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening. Urdu culture.

SPECLANG 218C. Beginning Urdu, Third Quarter. 4 Units.
Grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening. Urdu culture.

SPECLANG 219A. Intermediate Urdu, First Quarter. 4 Units.
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SPECLANG 219B. Intermediate Urdu, Second Quarter. 4 Units.
(Staff).

SPECLANG 224A. Third-Year Vietnamese, First Quarter. 4 Units.
Third Year First Quarter Vietnamese is the first course in a three quarter sequence. Focus of the course is on developing communication and presentation skills in Vietnamese using a variety of topics and different contexts. Authentic audio visual material and use of level appropriate pedagogy tools enhance functional linguistic abilities. Culture is an essential part of the course. Prerequisite 151C or placement test.

SPECLANG 224B. Third-Year Vietnamese, Second Quarter. 4 Units.
Continuation of SPECLANG 224A. Third Year Second Quarter Vietnamese is the second course in a three quarter sequence. Focus of the course is on developing communication and presentation skills in Vietnamese using a variety of topics and different contexts. Authentic audio visual material and use of level appropriate pedagogy tools further enhance functional linguistic abilities. Culture is an essential part of the course. Prerequisite224A or placement testnnnPrerequisite: SPECLANG 224A or consent of instructor.

SPECLANG 224C. Third-Year Vietnamese, Third Quarter. 4 Units.
Continuation of SPECLANG 224B. Third Year Third Quarter Vietnamese is the third course in a three quarter sequence. Focus of the course is on developing communication and presentation skills in Vietnamese using a variety of topics and different contexts. Authentic audio-visual material and use of level appropriate pedagogy tools further enhance functional linguistic abilities. Culture is an essential part of the course. Prerequisite: 224B or placement test.

SPECLANG 226A. Second Year Khmer, First Quarter. 4 Units.
Second Year Khmer is intended for students who can already speak Khmer at a "survival" level (discuss topics such as home, family, food, traveling, work, health) and have basic knowledge of the writing system (able to read short narratives, simple folk tales; and write letters and other types of information based on personal experience). In this course, the first of a three-quarter sequence, students will learn to discuss topics such as Khmer Buddhism, proverbs, and news media using more formal language and educated vocabulary. They will also learn to read (and write about) increasingly sophisticated texts including folk tales and newspaper articles. Prerequisite: SPECLANG 125C or a placement test.

SPECLANG 226B. Second Year Khmer, Second Quarter. 4 Units.
SPECLANG 226B Second Year second quarter Khmer is the second course in a three quarter sequence. We'll focus on a spoken and written overview of Khmer history, with the goal of participating in discussions of history with educated native speakers. Students will also begin to read a Khmer novel, and design and research an independent study project. Prerequisite: Second year first quarter Khmer or placement test.

SPECLANG 226C. Second Year Khmer, Third Quarter. 4 Units.
Second Year third quarter Khmer is the final course in a three quarter sequence. Students will finish reading and discussing a Khmer novel, be introduced to traditional Khmer poetry, and finish the independent study project begun in Winter quarter, including making an oral presentation of their research in Khmer. Emphasis will be on formal grammar and vocabulary in both spoken and written applications. Prerequisite: Second year second quarter Khmer. No new students will normally be allowed to join the course this quarter.

SPECLANG 229A. Beginning Pashto, First Quarter. 5 Units.
Grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening. Pashto culture.

SPECLANG 229B. Beginning Pashto, Second Quarter. 5 Units.
Grammatical structures, vocabulary, and sentence patterns through speaking, reading, writing, and listening. Pashto culture.

SPECLANG 230A. Intermediate Pashto, First Quarter. 4 Units.
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SPECLANG 233C. Second-Year Slovenian, third Quarter. 4 Units.
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SPECLANG 239A. Second-Year Uzbek, First Quarter. 3 Units. Continuation of SPECLANG 238C. Prerequisite: SPECLANG 228C or consent of instructor. Fulfills the University Foreign Language Requirement.

SPECLANG 239B. Second-Year Uzbek, Second Quarter. 3 Units. Continuation of SPECLANG 239A. Prerequisite: SPECLANG 239A or consent of instructor.

SPECLANG 239C. Second-Year Uzbek, Third Quarter. 3 Units. Continuation of SPECLANG 239B. Prereauisite: SPECLANG 239B or consent of instructor.

SPECLANG 240A. Third-Year Uzbek, First quarter. 3 Units. Continuation of SPECLANG 239C. Prerequisite; SPECLANG 239C or consent of instructor.

SPECLANG 247A. First-Year Lakota, First Quarter. 4 Units. First Year Lakota First Quarter is the first course in a three quarter sequence. Focus on speaking writing and listening while developing communicative skills in Lakota.Interactive approach emphasizing the ability to express concepts related to daily activities within traditional Lakota cultural contexts.

SPECLANG 247B. First-Year Lakota, Second Quarter. 4 Units. Continuation of SPECLANG 247A. First Year Lakota Second Quarter is the second course in a three quarter sequence. Focus on speaking writing and listening while further developing communicative skills in Lakota Interactive approach emphasizing the ability to express concepts related to daily activities within traditional. Prerequisite SPECLANG247A or placement test.

SPECLANG 247C. First-Year Lakota, Third Quarter. 4 Units. Continuation of SPECLANG 247B. First Year Lakota Third Quarter is the third course in a three quarter sequence.Focus on speaking writing and listening while further developing communicative skills in Lakota Interactive approach emphasizing the ability to express concepts related to daily activities within traditional. Prerequisite: SPECLANG 247B or placement test.nFulfills the University Foreign Language Requirement.

SPECLANG 248A. Second-Year Lakota, First Quarter. 4 Units. Continuation of 247 ABC. Focus on speaking writing and listening while developing students' communicative skills in Lakota. Interactive approach emphasizing the ability to express concepts on a variety of social and cultural topics within traditional Lakota cultural contexts. Prerequisite: SPECLANG 247C or placement test.

SPECLANG 248B. Second-Year Lakota. 4 Units. prerequisite-speclang 248A Focus on speaking writing and listening while developing students communicative skills in Lakota. Interactive approach emphasizing the ability to express concepts on a variety of social and cultural topics within traditional Lakota cultural contexts.nPrerequisite: SPECLANG 248A or placement test.

SPECLANG 248C. Second-Year Lakota, third Quarter. 4 Units. Continuation of 248B. Focus on displaying an increased ability in reinforcing and expanding the scope of communication in Lakota, including all skills. Emphasis on engagement in a wide range of context-specific and culturally appropriate interactions in Lakota. Prerequisite: SPECLANG 248B or placement test.

SPECLANG 250A. First-Year Romanian, First Quarter. 4 Units. First Year Romanian First Quarter is the first course in a three quarter sequence. Focus on introducing Romanian in the context of formal and informal communication. Emphasis on topics of daily life activities and descriptions of self and community, short narratives, expression of feelings and simple questions and answers. Romanian culture is an essential part of the course.

SPECLANG 250B. First-Year Romanian, Second Quarter. 4 Units. Continuation of SPECLANG 250A. First Year Romanian Second Quarter is the second course in a three quarter sequence Focus on further introducing Romanian in the context of formal and informal communication. Emphasis on topics of daily life activities and descriptions of self and community, short narratives, expression of feelings and simple questions and answers. Romanian culture is an essential part of the course.Prerequisite: SPECLANG 250A or placement test.

SPECLANG 250C. First-Year Romanian, Third Quarter. 4 Units. Continuation of SPECLANG 250B. First Year Romanian Third Quarter is the third course in a three quarter sequence. Focus on further introducing Romanian in the context of formal and informal communication. Emphasis on topics of daily life activities and descriptions of self and community, short narratives,expression of feelings and simple questions and answers. Romanian culture is an essential part of the course.Prerequisite SPECLANG 250B or placement test. Completion of this course fulfills the University Language Requirement.

SPECLANG 251A. Second-Year Romanian, First Quarter. 3 Units. Continuation of SPECLANG 250C. Prerequisite: SPECLANG 250C or consent of instructor. Fulfills the University Foreign Language Requirement.

SPECLANG 251B. Second-Year Romanian, Second Quarter. 3 Units. Continuation of SPECLANG 251A. Prerequisite: SPECLANG 251A or consent of instructor.

SPECLANG 251C. Second-Year Romanian, Third Quarter. 3 Units. Continuation of SPECLANTG 251B. Prerequisite: SPECLANG 251B or consent of instructor.

SPECLANG 252A. Third-Year Romanian, First Quarter. 4 Units. The course focuses on advancing skills of previous years. Emphasis on communication within personal, academic and professional contexts. Students use specific tools that allow for better accuracy and fluency. Topics broaden from the concrete to the abstract while a thematic approach becomes the platform for introducing cultural practices and perspectives. Continuation of SPECLANG 251C. Prerequisite: SPECLANG 251C or consent of instructor.

SPECLANG 252C. Third-Year Romanian, Thrid Quarter. 4 Units. Continuation of SPECLANG 252B. Prerequisite: SPECLANG 252B or consent of instructor.

SPECLANG 254C. Third-Year Hungarian, Third Quarter. 3 Units. Continuation of SPECLANG 254B. Prerequisite: SPECLANG 254B or consent of instructor.

SPECLANG 255A. Fourth-Year Albanian, 1st quarter. 4 Units. Continuation of SPECLANG 106C.

SPECLANG 255B. Fourth-Year Albanian, 2nd quarter. 4 Units. Continuation of SPECLANG 255A.

SPECLANG 255C. Fourth-Year Albanian, 3rd Quarter. 4 Units. Continuation of 255B.

SPECLANG 260A. Third-Year Modern Greek, First Quarter. 4 Units. Third Year Modern Greek First Quarter is the first course in a three quarter sequence. Focus of the course is on developing communication and presentation skills in Modern Greek using a variety of topics and different contexts. Authentic audio-visual material and use of level appropriate pedagogy tools enhance functional linguistic abilities. Culture is an essential part of the course. Prerequisite: SPECLANG 171C or placement test.

SPECLANG 260B. Third-Year Modern Greek, Second Quarter. 4 Units.
Third Year Modern Greek Second Quarter is the second course in a three quarter sequence.Focus of the course is on developing more advanced communication and presentation skills in Modern Greek using a variety of topics and different contexts. Authentic audio-visual material and use of level appropriate pedagogy tools enhance functional linguistic abilities. Culture is an essential part of the course. Prerequisite 260Aor placement test.

SPECLANG 260C. Third-Year Modern Greek, Third Quarter. 4 Units.
Third Year Modern Greek Third Quarter is the third course in a three quarter sequence. Focus of the course is on developing more advanced communication and presentation skills in Modern Greek using a variety of topics and different contexts. Authentic audio-visual material and use of level appropriate pedagogy tools enhance functional linguistic abilities. Culture is an essential part of the course. Prerequisite 260B or placement test.

SPECLANG 264A. Advanced Czech Conversation, First Quarter. 1-4 Unit.
Repeatable once for credit.

SPECLANG 265A. Third-Year Hungarian, First Quarter. 3 Units.
Continuation of SPECLANG 182C. Prerequisite completion of SPECLANG 182C or consent of instructor.

SPECLANG 265B. Third-Year Hungarian, Second Quarter. 4 Units.
Continuation of SPECLANG 265A. Prerequisite completion of SPECLANG 265A or consent of instructor.

SPECLANG 265C. Third-Year Hungarian, Third Quarter. 4 Units.
Continuation of SPECLANG 265B. Prerequisite completion of SPECLANG 265B or consent of instructor.

SPECLANG 273. Reading in Hungarian. 4 Units.
The purpose of the class is to deepen students' reading abilities of a variety of original Hungarian text for research purposes. Prerequisite: completing the three years Hungarian language sequence or proving equivalent knowledge based on language testing.

SPECLANG 275A. Third-Year Quechua, First Quarter. 4 Units.
This is a third year first quarter course in Quechua language and culture, offered as a three quarter sequence. The course focuses on developing fluency and accuracy as students immerse in the use of the language in a range of situations. The course uses a thematic approach. Topics integrate elements of Quechua culture, review of relevant grammar concepts, and opportunities to use the language in real-world cultural contexts.

SPECLANG 275B. Third-Year Quechua. 4 Units.
This is a third year course in Quechua language and culture, offered as a three quarter sequence. The course focuses on developing fluency and accuracy as students gain practice in the use of the language in a range of situations. The course uses a thematic approach. Topics integrate elements of Quechua culture, review of relevant grammar concepts, and opportunities to use the language in real-world cultural contexts.

SPECLANG 275C. Third-Year Quechua, Third Quarter. 4 Units.
This is a third year course in Quechua language and culture, offered as a three quarter sequence. The course focuses on developing fluency and accuracy as students gain practice in the use of the language in a range of situations. The course uses a thematic approach. Topics integrate elements of Quechua culture, review of relevant grammar concepts, and opportunities to use the language in real-world cultural contexts.

SPECLANG 297. Directed Reading. 1-5 Unit.
Prerequisite: consent of instructor.- For Grad students only.

SPECLANG 395. Graduate Studies in Special Language. 1-5 Unit.
Prerequisite: consent of instructor.

Tibetan Language Courses

TIBETLNG 1. First-Year Tibetan, First Quarter. 4 Units.
Grammar, reading, and composition. Tibetan culture and the Tibetan view of reality.

TIBETLNG 2. First Year Tibetan, Second Quarter. 4 Units.
Continuation of 1.

TIBETLNG 3. First Year Tibetan, Third Quarter. 4 Units.
Continuation of 2. Fulfills the University Foreign Language Requirement.

TIBETLNG 11. Second Year - First-Quarter. 4 Units.
Continuation of 3.

TIBETLNG 12. Second Year Tibetan, Second-Quarter. 4 Units.
Continuation of 11.

TIBETLNG 13. Intermediate Tibetan, Third-Quarter. 4 Units.
Continuation of 12.

TIBETLNG 21. Intermediate/Advanced Tibetan, First Quarter. 4 Units.
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TIBETLNG 23. Intermediate/Advance Tibetan, Third Quarter. 4 Units.
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TIBETLNG 199. Individual Work. 1-5 Unit.
May be repeated for credit. Prerequisite: consent of instructor.

TIBETLNG 395. Graduate Studies in Tibetan. 1-5 Unit.
May be repeated for credit. Prerequisite: consent of instructor.

LATIN AMERICAN STUDIES

Courses offered by the Interdisciplinary Program in Latin American Studies are listed under the subject code LATINAM on the Stanford Bulletin's ExploreCourses web site (https://explorecourses.stanford.edu).

The Center for Latin American Studies (CLAS) supports research and teaching in all fields of study as they relate to Latin America. Academic programs encourage interdisciplinary approaches and draw on the expertise of nearly sixty active affiliated faculty members representing Stanford's various schools and departments. Stanford University Libraries' substantial Latin American collections are valuable resources for students, faculty, and visiting researchers alike. Each year CLAS hosts a number of Tinker Visiting Professors, highly distinguished Latin American and Iberian scholars who come to Stanford to teach a course in their field of specialization. The Center for Latin American Studies maintains a highly active public events calendar and provides funding to students and faculty for a variety of research, teaching, internship, and conference activities. The Center is a U.S. Department of Education Title VI National Resource Center for Latin America.

The program offers two academic programs in Latin American Studies: an undergraduate minor and a master of arts degree.

Undergraduate Programs in Latin American Studies

Stanford Global Studies offers a minor with a Latin American Studies Specialization. Although there is no undergraduate major in Latin American Studies, students may concentrate on Latin America through other departmental and interdisciplinary degree programs, such as Anthropology (p. 947), History (p. 1549), Political Science (p. 1938), Iberian and Latin American Cultures (p. 1650), or International Relations (p. 1691). Interested students should consult the relevant departmental web sites and sections of this bulletin for further information.

Undergraduates can obtain a coterminal M.A. degree in Latin American Studies while concurrently working on their undergraduate major by applying during the regular admissions cycle no later than their senior year.

Financial Aid

Each summer, CLAS awards grants to a small number of undergraduates to complete internships in Latin America. Applications include a proposal, academic transcript, and letters of recommendation. Students from any department are eligible to apply. See Funding (https://clas.stanford.edu/funding/students/) section in the Center for Latin American Studies (http://las.stanford.edu) website.

Students in undergraduate programs who enroll in Portuguese, Quechua, or Nahuatl language during the academic year may be eligible for Summer Foreign Language and Area Studies (FLAS) (https://clas.stanford.edu/funding/students/stanford-undergraduate-students/flas-fellowships-undergraduate-students/) fellowships. Recipients of FLAS fellowships must be American citizens or permanent residents. For detailed program information and eligibility, see the Center for Latin American Studies (http://las.stanford.edu/) website.

Graduate Programs in Latin American Studies

The one-year master's program in Latin American Studies is designed for students who have experience working, living, or studying in Latin America or Iberia and little prior course work on Latin America.

Stanford University does not offer a Ph.D. program in Latin American Studies; however, doctoral candidates may concentrate on Latin America through other departmental programs, such as Anthropology (p. 947), History (p. 1549), Political Science (p. 1938), or Iberian and Latin American Cultures (p. 1650). Interested applicants should consult the relevant departmental web sites and sections of this bulletin for admissions information and further details.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in Latin American Studies and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization. In addition, students acquire methodology tools such as data analysis and management, visualization, and geographic information system (GIS).

Admission

The application deadline for the 2020-21 academic year is December 2, 2020. Applicants submit an online application, including a 2-3 page double-spaced statement of purpose, resumé or CV, 10-15 page double-spaced academic writing sample in English, and three letters of recommendation. In addition, all applicants must submit two sets of official transcripts. The GRE general test scores are optional, and no longer a requirement. TOEFL scores are required of applicants whose first language is not English or who did not earn a degree from an undergraduate institution where English is the primary language of instruction. For information on University graduate admissions and to access the online application, visit the Office of Graduate Admissions (http://gradadmissions.stanford.edu) website.

Applicants must meet the University admission requirements, have a working knowledge of Spanish, Portuguese, or an indigenous language of Latin America (e.g., Quechua or Nahuatl) at the university third-year level or higher, and have experience working, living, or studying in Latin America or Iberia prior to admission.

CLAS takes a broad approach to evaluating applications for admission. As important as grades are the applicant's essay, letters of recommendation, academic writing sample, and the experiences and goals conveyed through the personal statement and resume/CV.

Students interested in pursuing the joint degree program in Latin American Studies and Law (J.D.) or a dual degree in Latin American Studies and Business (M.B.A.) or Medicine (M.D.) must apply to each program separately and be accepted by both. Details about the joint and dual degree programs can be found in the "Master's (p. 1765)" tab in this section.

Financial Aid

The Center for Latin American Studies provides several graduate fellowships as well as limited course assistantships with the Tinker Visiting Professors each quarter. US and international MA in Latin American Studies applicants are encouraged to apply. See Funding (https://clas.stanford.edu/funding/students/) section in the Center for Latin American Studies (http://las.stanford.edu) website.

MA in Latin American Studies applicants who plan to enroll in Portuguese, Quechua, or Nahuatl language and area or international studies courses may be eligible for Academic Year and Summer Foreign Language and Area Studies (FLAS) fellowships, sponsored by the US Department of Education. Recipients of FLAS fellowships must be American citizens or permanent residents. Applicants to the M.A. program who can demonstrate financial need have priority in the FLAS fellowship competition; in recent years CLAS has also awarded FLAS fellowships to students enrolled in the Professional Schools. For detailed program information and eligibility, see Funding (https://clas.stanford.edu/funding/students/) section in the Center for Latin American Studies (http://las.stanford.edu) website.

CLAS awards Working Group grants to graduate students across the University who wish to organize events such as lectures, speaker series, symposia, exchange of working papers, and collaborative research efforts. For detailed program information and eligibility, see Funding (https://clas.stanford.edu/funding/students/) section in the Center for Latin American Studies (http://las.stanford.edu) website.

CLAS has a limited number of awards for graduate students to conduct field research work in Latin America or to present their Latin American related research in a conference. Please see Funding (https://clas.stanford.edu/funding/students/) section in the Center for Latin American Studies (http://las.stanford.edu) website

The Knight-Hennessy Scholars program awards full funding to pursue a graduate education at Stanford to students from all disciplines, with additional opportunities for leadership training and collaboration across fields.

Apply to Knight-Hennessy Scholars (https://knight-hennessy.stanford.edu/admission/apply-now/) by **October 14, 2020 at 1:00 p.m. Pacific Time**, and to the Latin American Studies MA Program by **November 11, 2020 at 11:59 p.m. Pacific Time**.

COVID-19-Related Degree Requirement Changes

For information on how the Global Studies with Latin American Studies Specialization minor requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 1520)" in the "Stanford Global Studies" section of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

Minor in Global Studies with Latin American Studies Specialization

The minor in Global Studies, Latin American Studies (LAS) specialization, consists of a core set of courses surveying the history, politics, society, ecology, and culture of the Latin American region; advanced language training; and in-depth course work.

Students from any major interested in applying for admission to the minor in Global Studies, Latin American Studies (LAS) specialization, should consult Stanford Global Studies and the Center for Latin American Studies (CLAS (https://clas.stanford.edu/academics/undergraduate-minor/)). Students who wish to complete the minor must declare online (through Axess (http://axess.stanford.edu)) and submit a proposal of course work no later than the second quarter of the junior year. The minor must be completed by the second quarter of the senior year. Units taken for a student's major cannot be double-counted towards the minor.

Students consult with their minor adviser to develop individual programs. The minor is especially well-suited for undergraduates who plan to make service, research, or study abroad in Latin America a part of their Stanford experience.

The Global Studies Minor with Specialization in Latin American Studies is open to students in any major.

Upon completion of all requirements, final certification of the minor is made by the Center for Latin American Studies subcommittee on undergraduate programs. The minor and the specialization appear on the transcript but they do not appear on the diploma.

Declaring the Global Studies Minor with Latin American Studies Specialization

To declare the Global Studies minor with Latin American Studies specialization, students must:

1. Set up an appointment with the CLAS associate director to discuss your academic plan.
2. Declare the Global Studies minor and subplan in Axess (http://axess.stanford.edu).

Requirements

1. Students may not double-count courses for completing major and minor requirements. Completion of 28 units as follows:
   a. GLOBAL 101 Critical Issues in Global Affairs (3 units)
   b. A 5-unit course surveying Latin America, either ILAC 131 Introduction to Latin America: Cultural Perspectives or an approved substitute. For further information contact a CLAS undergraduate adviser at latinamerica@stanford.edu.
   c. 20 additional units in courses which together comprise a coherent focus on a theoretical problem or issue of the region, such as but not limited to
      i. culture and identity
      ii. political economy
      iii. sustainable development.
   d. At least 15 of the 28 units must be completed at Stanford.
   e. All courses to be counted toward the minor must be taken for a letter grade, except where letter grades are not offered.
2. Foreign Language Requirement. The minimum requirement for completion of the minor in Global Studies with Latin American Studies Specialization is advanced proficiency in Spanish or Portuguese by one of the following:
   a. Completion of seven quarters of college-level study of Spanish or Portuguese.
   b. Completion of a course taught in Spanish or Portuguese at the 100-level or higher, with a letter grade of 'B' or higher. This may be a course on Spanish or Portuguese language or literature, or some other subject.
   c. Achievement of the advanced proficiency level on the ACTFL scale in a test administered by the Stanford Language Center. Contact the Stanford Language Center (p. 1722) for test dates and procedures.
3. Students may work with the subplan advisor to develop a capstone project to count towards the unit fulfillment of the minor. Projects may include (but are not limited to):

   1. Research with units through directed reading under the supervision of the subplan advisor.

      - Research may take place at Stanford or during a relevant study abroad program, and options may include regional fieldwork, creative arts projects, short films, etc.

   2. Advanced language study beyond the subplan minimum requirement with units through directed reading under the supervision of the subplan advisor.

      - Intensive language training may take place at Stanford, off-campus, or overseas.

Students may propose other projects related to their subplan.

Course List

For a representative, rather than comprehensive, list of courses that count towards the minor, see the Related Courses (p. 1525) tab in this section of the Bulletin. Other courses may also fulfill the requirements;

students should consult their Latin American Studies minor adviser concerning which courses might fulfill minor requirements.

Master of Arts in Latin American Studies

The Master of Arts in Latin American Studies is an interdisciplinary program. The curriculum consists of a core set of courses surveying the history, politics, society, ecology, and culture of the Latin American region; advanced language training; and in-depth course work. In consultation with a faculty adviser, students select a course of study suited to their individual interests.

Coterminal Master's Degrees in Latin American Studies

Undergraduates at Stanford may apply for admission to the coterminal master's program in Latin American Studies when they have earned a minimum of 120 units toward graduation, including advanced placement and transfer credit, and no later than the quarter prior to the expected completion of their undergraduate degree.

The application deadline for the 2021-22 academic year is December 2, 2020. Prospective students who are applying to the Knight-Hennessy Scholars program (https://knight-hennessy.stanford.edu/admission/apply-now/) must apply to the scholars program by October 14, 2020 at 1:00 p.m. Pacific Time, and to the Latin American Studies MA Program by November 11, 2020 at 11:59 p.m. Pacific Time.

Coterminal applicants must submit:

- the Coterminal Online Application (https://applyweb.com/stanterm/)
- a 2-3 page double-spaced statement of purpose
- a resumé or CV
- a 10-15 page double-spaced academic writing sample in English
- three letters of recommendation
- a Stanford transcript
- GRE general test scores (optional)

Coterminal applicants must have a minimum cumulative GPA of 3.5 and a working knowledge of Spanish or Portuguese at a university third-year level or higher.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken three quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to the graduate career. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Degree Requirements

University requirements for the master's degree are described in the "Graduate Degrees General Requirements (p. 65)" section of this bulletin.

The program requires completion of a minimum of 45 graduate units. Each student is assigned a faculty adviser who works with the student to develop a customized program of study. All courses for the M.A. degree must be at the 100-level or higher, with at least half being at the 200-level or higher.

Candidates to the M.A. in Latin American Studies must complete the following:

		Units
Required Courses		
a. Culture and Society		
HISTORY 371	Graduate Colloquium: Explorations in Latin American History and Historiography (students must register for 5 units)	5
b. Political Economy		
POLISCI 348S	Latin American Politics	5
c. Environment, Ecology, and Sustainability		
HISTORY 378	The Historical Ecology of Latin America	5
Seminar Requirement: once per quarter.		**3**
LATINAM 200	Seminar on Contemporary Issues in Latin American Studies	
Total Units		18

1. Core courses (15 units): one core 5-unit course in each of three fields of specialization: Culture and Society; Political Economy; and Environment, Ecology, and Sustainability. See above for courses offered this year.
2. *Related courses (15 units):* three courses (5 units each) from the fields of specialization listed in '1' above. For approved courses, see the "Related Courses (p. 1767)" tab in this section.
3. *Elective courses (9-15 units):* three elective courses (3-5 units each) from across the University's offerings, selected with guidance and approval from the faculty adviser.
4. *Language requirement:* at least 3 units of course work on a second Latin American language. Students proficient in both Spanish and Portuguese might take either an advanced fourth-year language course in either Spanish or Portuguese or a first-year indigenous language of Latin America (i.e. Quechua or Nahuatl); students proficient in only Spanish or only Portuguese must take a basic course in a second Latin American spoken language in which they are not already proficient. Up to 6 units of foreign language coursework may be applied toward the M.A. degree. All foreign language coursework must be taken at the 100-level or higher. English as a Foreign Language (EFS) courses do not count towards the language requirement, nor towards the total amount of required units.
5. *Seminar requirement:* 3 units (1 per quarter) of LATINAM 200 Seminar on Contemporary Issues in Latin American Studies.
6. *Final Capstone Research Paper or Thesis:* students must write a capstone research paper or a thesis. Student writing a thesis may register for LATINAM 398 Master's Thesis for up to 10 units of thesis research under the guidance of an Academic Council faculty member. Students writing a capstone research paper may register for a Directed Study or comparable course for up to 3 units under the guidance of an Academic Council faculty member. Thesis units may be counted toward the elective field unit requirements (requirement number 3, above).
7. *Grade requirements:* All courses to be counted toward the M.A. must be taken for a letter grade and earn a 'B-' or better. M.A. candidates must maintain a cumulative GPA of 3.0 or higher. The only exceptions

are LATINAM 200, Law School Courses, and courses in the Graduate School of Business (GSB).

Joint Degree Program in Latin American Studies and Law

The joint degree program in Latin American Studies and Law allows students to pursue the M.A. degree in Latin American Studies concurrently with the Doctor of Jurisprudence (J.D.) degree, with a significant number of courses that may apply to both degrees. It is designed to train students interested in a career in teaching, research, or the practice of law related to Latin American legal affairs. Students must apply separately to the Latin American Studies M.A. program and to the Stanford School of Law and be accepted by both. Completing this combined course of study requires approximately four academic years, depending on the student's background and level of language training. For more information, see the "Joint Degree Programs (p.)" section of this bulletin and consult with the program offices for the two programs.

Dual Master's Degree with Medicine or Business

Stanford offers dual degree programs that grant an M.A. degree in Latin American Studies and a Master of Business Administration degree or a Medical Doctor degree. Students must apply separately to and be accepted by both the Latin American Studies M.A. program and the Graduate School of Business or School of Medicine.

For further information, contact a CLAS adviser at latinamerica@stanford.edu

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Center for Latin American Studies counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Graduate Degree Requirements

Grading

The master's program in Latin American Studies counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B-' or better level.

Graduate Advising Expectations

The Program in Latin American Studies is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, and exploring academic opportunities and professional pathways. Program administrative staff are available for advising students on program policies and degree requirements, as well as course selection.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Director of the Center: Alberto Díaz-Cayeros

Associate Director: Elizabeth Sáenz-Ackermann

Director of Graduate Studies: Alberto Díaz-Cayeros

Tinker Visiting Professor: Irma Alicia Velásquez Nimatuj

Affiliated Faculty and Staff:

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Art and Art History: Enrique Chagoya, Rose Salseda

Biology: Gretchen Daily, Rodolfo Dirzo, Judith Frydman, Harold Mooney (emeritus), Peter Vitousek, Virginia Walbot

BOSP Santiago: Ivan Jaksic

Business, Graduate School of: Saumitra Jha, Ken Shotts

Carnegie Institution for Science: Gregory Asner

Comparative Studies in Race and Ethnicity: Carolyn Duffey

Comparative Literature: Roland Greene, Hans Ulrich Gumbrecht, José David Saldívar

Earth Sciences, School of: Rob Dunbar, Pamela Matson

Economics: Roger Noll (emeritus), Frank Wolak

Education, Graduate School of: Martin Carnoy, Amado Padilla, Jonathan Rosa, Guadalupe Valdés

Engineering, School of: Jenna Davis, Leonard Ortolano

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Freeman Spogli Institute for International Studies: Francis Fukuyama, Rosamond Naylor

History: Zephyr Frank, Ana Raquel Minian Andjel, Mikael Wolfe

Hoover Institute: Herbert Klein

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Iberian and Latin American Cultures: Héctor Hoyos, Nicole Hughes, Joan Ramon Resina, Jorge Ruffinelli (emeritus), Lisa Surwillo

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Linguistics: John Rickford (emeritus)

Medicine, School of: Jason Andrews, Michele Barry, Gabriel Garcia (emeritus), Grant Miller, Paul Wise

Political Science: Bruce Cain, Alberto Díaz-Cayeros, Stephen Haber, Terry Karl (emerita), Beatriz Magaloni, Robert Packenham (emeritus), Michael Tomz

Religious Studies: Thomas Sheehan

Sociology: Asad L. Asad, David Grusky, Tomás Jiménez, Michael Rosenfeld, Florencia Torché

Stanford University Libraries: Adán Griego, Vanessa Kam, Sergio Stone, Robert Trujillo

Latin American Studies Related Courses

The following courses may be used to satisfy requirements for the M.A in Latin American Studies or minor in Stanford Global Studies, Latin American Studies specialization. Consult the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu/) web site for full course descriptions and class schedules.

Not all of these courses are offered every year.

When selecting courses from this list, note the following:

1. Overseas Studies courses, denoted by the subject code OSPSANTG, apply only to the undergraduate minor program and are not options for M.A. students.
2. Courses with numbers ending in the letter N or Q are Introductory Seminars for undergraduates and are not options for M.A. students. Courses ending in N give preference to freshmen; courses ending in Q give preference to sophomores.
3. All courses to be counted toward the master's must be taken at the 100-level or higher.
4. All courses to be counted toward the master's must be taken for a letter grade.
5. For the M.A. degree, related courses must be taken for 5 units each. M.A. elective courses may be taken for 3-5 units each.
6. Some courses have prerequisites or special enrollment requirements. Students are responsible for making sure they have completed any prerequisites and/or secured an instructor's permission, as needed.

Culture and Society

Courses related to the Culture and Society field of specialization include:

		Units
AMSTUD 271	Mexicans in the United States	5
ANTHRO 100D	Chavin de Huantar Research |Seminar	3-5
ANTHRO 153	Asylum: Knowledge, Politics, and Population	3-5
ANTHRO 181	Religion and Science in the Amazon and Elsewhere	5
ANTHRO 206A	Incas and their Ancestors: Peruvian Archaeology	3-5
ANTHRO 212B	Biology, Culture and Social Justice in Latin America: Perspectives from Forensic Anthropology	5
ANTHRO 281	Religion and Science in the Amazon and Elsewhere	5
ARCHLGY 100D	Chavin de Huantar Research |Seminar	3-5
CHILATST 111	Curander@s, remedios y espiritualidad: Chican@/Latin@ healing practices	3-5
CHILATST 140	Migration in 21st Century Latin American Film	3-5
CHILATST 173	Mexican Migration to the United States	3-5
CHILATST 212	Biology, Culture and Social Justice in Latin America: Perspectives from Forensic Anthropology	5
COMPLIT 100	CAPITALS: How Cities Shape Cultures, States, and People	3-5
COMPLIT 142	The Literature of the Americas	5
COMPLIT 348	US-Mexico Border Fictions: Writing La Frontera, Tearing Down the Wall	3-5
CSRE 23	Race and the War on Drugs: Long Roots and Other Futures	3-5
CSRE 156X	Theater of Dissent: Social Movements, Migration, and Revolution in the Americas	4
CSRE 189	Race and Immigration	4-5
CSRE 212	Biology, Culture and Social Justice in Latin America: Perspectives from Forensic Anthropology	5
DLCL 100	CAPITALS: How Cities Shape Cultures, States, and People	3-5
FILMSTUD 116	International Documentary	4
FILMSTUD 316	International Documentary	4
FRENCH 264	Crossing the Atlantic: Race and Identity in the African Diaspora	3-5
HISTORY 106B	Global Human Geography: Europe and Americas	5
HISTORY 112	Medicine and Disease in the Ancient World	5
HISTORY 166C	The Cold War: An International History	5
HISTORY 173	Mexican Migration to the United States	3-5
HISTORY 174	Mexico Since 1876: The Road to Ayotzinapa	5
HISTORY 178	Film and History of Latin American Revolutions and Counterrevolutions	3-5
HISTORY 201A	The Global Drug Wars	4-5
HISTORY 272	Colonial Mexico: Images and Power	3-5
HISTORY 274E	Urban Poverty and Inequality in Latin America	5
HISTORY 279	Latin American Development: Economy and Society, 1800-2014	4-5
HISTORY 279B	Potatoes, Coca, and Tamales: Food in Latin American History	5
HISTORY 301A	The Global Drug Wars	4-5
HISTORY 366B	Immigration Debates in America, Past and Present	3-5
HISTORY 371	Graduate Colloquium: Explorations in Latin American History and Historiography	4-5
HISTORY 372A	Mexico: From Colony to Nation or the History of an Impossible Republic?	5
HISTORY 373E	The Emergence of Nations in Latin America: Independence Through 1880	4-5
HISTORY 379	Latin American Development: Economy and Society, 1800-2014	4-5

HUMRTS 108	Advanced Spanish Service-Learning: Migration, Asylum, and Human Rights at the Border	1-3
ILAC 113Q	Borges and Translation	3-5
ILAC 122A	Radical Poetry: The Avant-garde in Latin America and Spain	4
ILAC 124	Coming of Age in Latin America	3-5
ILAC 128	Spanish Literature and Language through Comics	3-5
ILAC 131	Introduction to Latin America: Cultural Perspectives	3-5
ILAC 132	Drug Wars: from Pablo Escobar to the Mara Salvatrucha to Iguala Mass Student Kidnapping	3-5
ILAC 132E	Introduction to Global Portuguese: Cultural Perspectives	3-5
ILAC 140	Migration in 21st Century Latin American Film	3-5
ILAC 157	Medieval and Early Modern Iberian Literatures	3-5
ILAC 161	Modern Latin American Literature	3-5
ILAC 175	CAPITALS: How Cities Shape Cultures, States, and People	3-5
ILAC 214	Colonial Mexico: Images and Power	3-5
ILAC 227	The Making of Modern Brazil	3-5
ILAC 238	Latin American Poetry as Witness to Self and World.	4
ILAC 241	Fiction Workshop in Spanish	3-5
ILAC 242	Poetry Workshop in Spanish	3-5
ILAC 243	Latin American Aesthetics	3-5
ILAC 254	Crónicas: Soccer, Pop Icons, Shipwrecks, and Populism	3-5
ILAC 255	Climate Change and Latin American Naturecultures	3-5
ILAC 268	INDIGENISMOS REVISITED	3-5
ILAC 272	New Brazilian Cinema	3-5
ILAC 277	Senior Seminar: Horror, Gothic, and Fantasy in Spanish	3-5
ILAC 278A	Senior Seminar: The Iberian Pastoral	3-5
ILAC 336	One World or Many? Representing Distance, Time, and Place in Iberian Expansion	3-5
ILAC 342	Meat	3-5
ILAC 348	US-Mexico Border Fictions: Writing La Frontera, Tearing Down the Wall	3-5
ILAC 373	Baroque Brazil	3-5
INTNLREL 154	The Cold War: An International History	5
LATINAM 177A	Mapping Poverty, Colonialism and Nation Building in Latin America	3-5
LATINAM 248	Racial and Gender Inequalities in Latin America	3-5
LATINAM 264VP	Indigenous resistance and contradictions in Latin America	3-5
LATINAM 266VP	A Critical Review of Guatemala's Indigenous Movements	3-5
LATINAM 268VP	Democracy, crisis and disease: Covid-19 and Indigenous People in Latin America.	3-5
LAW 5027	Social Conflict, Social Justice, and Human Rights in 21st Century Latin America	2
LAW 5028	Regional Human Rights Protections: The Inter-American System	3
OSPMADRD 55	Latin Americans in Spain: Cultural Identities, Social Practices, and Migratory Experience	4
OSPSANTG 14	Women Writers of Latin America in the 20th Century	4-5
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America	5
OSPSANTG 30	Short Latin American Fiction of the 20th Century	4-5
OSPSANTG 68	The Emergence of Nations in Latin America	4-5
OSPSANTG 119X	The Chilean Economy: History, International Relations, and Development Strategies	5
RELIGST 270X	Religion and Science in the Amazon and Elsewhere	5
RELIGST 370X	Religion and Science in the Amazon and Elsewhere	5
SOC 189	Race and Immigration	4-5
SOC 289	Race and Immigration	4-5
SOC 350W	Workshop: Migration, Ethnicity, Race and Nation	1-3
SPECLANG 101A	First-Year Nahuatl, First Quarter	4
SPECLANG 102A	Second-Year Nahuatl	4
SPECLANG 174A	First-Year Quechua, First Quarter	4
SPECLANG 174B	First-Year Quechua, Second Quarter	4
SPECLANG 174C	First-Year Quechua, Third Quarter	4
SPECLANG 175A	Second-Year Quechua, First Quarter	4
SPECLANG 175B	Second-Year Quechua, Second Quarter	4
SPECLANG 175C	Second-Year Quechua, Third Quarter	4
ANTHRO 262		3-5
ANTHRO 162		3-5
CHILATST 162	Latin/x America in Motion: An Introduction to Dance Studies	3-4
HISTORY 178	Film and History of Latin American Revolutions and Counterrevolutions	3-5
HISTORY 273E	The Emergence of Nations in Latin America: Independence Through 1880	4-5
HISTORY 306G	Colonial Law	4-5
ILAC 256A	Landscapes in Latin American Cinema	3-5
ILAC 269	Realismo Mágico vs. Real Maravilloso	3-5
LATINAM 177A	Mapping Poverty, Colonialism and Nation Building in Latin America	3-5
LATINAM 177B	Mapping Poverty, Colonialism and Nation Building in Latin America-Part B	1
ILAC 150: Music, Literature and Culture in Contemporary Brazil		3-5
HISTORY 275B:History of Modern Mexico (AMSTUD 275B, CHILATST 275B, CSRE 275B, HISTORY 375C)		4-5

Environment, Ecology, and Sustainability

Courses related to the Environment, Ecology, and Sustainability field of specialization include:

		Units
ANTHRO 139C	Anthropology of Global Health	5
BIO 234	Conservation Biology: A Latin American Perspective	3
BIOE 371	Global Biodesign: Medical Technology in an International Context	1
EARTHSYS 121	Building a Sustainable Society: New Approaches for Integrating Human and Environmental Priorities	3

ETHICSOC 278M	Introduction to Environmental Ethics	4-5
GEOPHYS 212	Topics in Climate Change	2
HISTORY 278B	The Historical Ecology of Latin America	4-5
HISTORY 378	The Historical Ecology of Latin America	4-5
HISTORY 471A	Environmental History of Latin America	5
HISTORY 471B	Environmental History of Latin America	5
HUMBIO 129S	Global Public Health	3
ILAC 255	Climate Change and Latin American Naturecultures	3-5
OSPSANTG 58	Global Change in Chile	5
ILAC 255	Climate Change and Latin American Naturecultures	3-5

Political Economy

Courses related to the Political Economy field of specialization include:

		Units
ECON 106	World Food Economy	5
EDUC 306A	Economics of Education in the Global Economy	5
EDUC 404	Topics in Brazilian Education: Public Policy and Innovation for the 21st Century	1-2
HISTORY 177D	U.S. Intervention and Regime Change in 20th Century Latin America	5
INTNLREL 141A	Camera as Witness: International Human Rights Documentaries	5
INTNLREL 146A	Energy and Climate Cooperation in the Western Hemisphere	4
INTNLREL 147	Political Economy of the Southern Cone Countries of South America	5
INTNLREL 179	Major Themes in U.S.-Latin America Diplomatic History	5
LAW 5017	Law in Latin America	2
LAW 5041	Business, Institutions, and Corruption in Latin America	2
OSPSANTG 119X	The Chilean Economy: History, International Relations, and Development Strategies	5
POLISCI 247G	Governance and Poverty	5
POLISCI 248S	Latin American Politics	3-5
POLISCI 347G	Governance and Poverty	3-5
POLISCI 348S	Latin American Politics	3-5
POLISCI 440B	Comparative Political Economy	3-5
OSPSANTG 51: Topics in Entrepreneurship and Innovation in Chile		1-2
OSPSANTG 63: Entrepreneurship and Innovation in Latin America		3

Overseas Studies Courses in Latin American Studies

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPSANTG 14	Women Writers of Latin America in the 20th Century	4-5
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America	5
OSPSANTG 30	Short Latin American Fiction of the 20th Century	4-5
OSPSANTG 58	Global Change in Chile	5
OSPSANTG 62	Topics in Chilean History	4-5
OSPSANTG 68	The Emergence of Nations in Latin America	4-5
OSPSANTG 71	Santiago: Urban Planning, Public Policy, and the Built Environment	5
OSPSANTG 85	Marine Ecology of Chile and the South Pacific	5
OSPSANTG 116X	Modernization and its Discontents: Chilean Politics at the Turn of the Century	5
OSPSANTG 118X	Artistic Expression in Latin America	5
OSPSANTG 119X	The Chilean Economy: History, International Relations, and Development Strategies	5

Courses

LATINAM 92. Volunteers in Latin America: Pre-Field Reading and Discussion. 1 Unit.
A pre-field seminar for students participating in the Volunteers in Latin America summer program in Quito, Ecuador. The seminar will introduce students to topics of international service, youth development, and the issues and challenges surrounding street children in Ecuador. The seminar seeks to provide participants with a cultural, socioeconomic, and political context in which to understand the experiences they will have when in Ecuador. Through discussions, guest speaker presentations, and readings, students will develop insights and further questions that will help them to be more confident, reflective, and empathetic participants in their in-country service learning experience. Course enrollment is restricted to those students that have committed to the summer program.

LATINAM 177A. Mapping Poverty, Colonialism and Nation Building in Latin America. 3-5 Units.
This course is an introduction to the mapping of colonial and early independent Latin America, as a lens through which students may learn about the process of colonization, state building, and the legacies on those processes on poverty and underdevelopment today. Historical maps are analyzed both as GIS data sources, and as interpretative lenses through which we can glimpse the way human settlements and activity reveal social, political and economic dynamics whose legacies are still present today.

LATINAM 177B. Mapping Poverty, Colonialism and Nation Building in Latin America-Part B. 1 Unit.
This course is an introduction to the mapping of colonial and early independent Latin America, as a lens through which students may learn about the process of colonization, state building, and the legacies on those processes on poverty and underdevelopment today. Historical maps are analyzed both as GIS data sources, and as interpretative lenses through which we can glimpse the way human settlements and activity reveal social, political and economic dynamics whose legacies are still present today.

LATINAM 197. Directed Individual Research. 1-10 Unit.
For students engaged in interdisciplinary work that cannot be arranged by department. May be repeated for credit. Prerequisite: consent of instructor.

LATINAM 200. Seminar on Contemporary Issues in Latin American Studies. 1 Unit.
Guest scholars present analyses of major Latin American themes. Restricted to students enrolled in the Latin American Studies MA program.

LATINAM 207. Spanish in Science/Science in Spanish. 2 Units.
For graduate and undergraduate students interested in the natural sciences and the Spanish language. Students will acquire the ability to communicate in Spanish using scientific language and will enhance their ability to read scientific literature written in Spanish. Emphasis on the development of science in Spanish-speaking countries or regions. Course is conducted in Spanish and intended for students pursuing degrees in the sciences, particularly disciplines such as ecology, environmental science, sustainability, resource management, anthropology, and archeology.
Same as: BIO 208, EARTHSYS 207

LATINAM 210. Everyday Economic Life Among Brazil's Urban Poor. 1 Unit.
This course focuses on the challenges and opportunities experienced by Brazil's urban poor as they access consumer and financial markets.

LATINAM 248. Racial and Gender Inequalities in Latin America. 3-5 Units.
This course explores the intersection between racial and gender inequalities in Latin America focusing on the historical pattern of racism, sexism and discrimination, and on the political and social changes that have enabled Afro-descendants and women to achieve social rights in some countries of the region such as Brazil, Colombia, Ecuador, and Uruguay. The first part of this course introduces the struggle of political movements taking into consideration the historical process of race and gender discrimination. It will address not only the history of blacks¿ and women's movements in the 20th century, but also racism and sexism as cultural and institutional elements that configure inequality in those countries. Socio-economic indicators, race and gender-based violence, and political participation will be analyzed. The second part of this course examines the most recent discourses about women and afro-descendant rights, and their political framework. It evaluates how they have changed public opinion, laws and the social, institutional and political environment of Latin America. Finally, this course discusses the ability of Afro-descendants and women movements to navigate in the current political climate and advance their rights.nCourse will be taught in Portuguese.

LATINAM 264VP. Indigenous resistance and contradictions in Latin America. 3-5 Units.
This seminar examines Indigenous People knowledge through community resistance, social movements and how globalization impacts in their lives. The objective is to achieve an in-depth appreciation of Indigenous resistance through some countries of Latin American and how it will vary according to each country and circumstances. Students will analyze path-breaking documents that marked these histories. Issues explored include indigenous epistemologies, impacts of globalization on women, tension between global ideologies versus indigenous worldviews, global indigenous migration, and partnerships with human rights movements. Reading and discussions will be in English and Spanish.

LATINAM 266VP. A Critical Review of Guatemala's Indigenous Movements. 3-5 Units.
This seminar will explore five moments of the Maya Movement and the relationship between the ¿traditional¿ movements and the two new indigenous trends, to shed light on the complexities of indigenous organization in the XXI century. The goal of the course is to help students understand the intricacies of indigenous lives by understanding how internal transformations of their ways of organizing and struggling impact the Guatemalan State. Reading and discussions will be in English and Spanish.

LATINAM 268VP. Democracy, crisis and disease: Covid-19 and Indigenous People in Latin America.. 3-5 Units.
Amplified by the racism and inequality inherent to the Latin American states, the COVID-19 pandemic has taken a significant toll in the health and lives of indigenous peoples of the region. Alongside the pandemic, indigenous communities face a crisis of governance and democracy that has led to the rise of authoritarian measures meant to suppress dissent, processes of organization and autonomy. As COVID-19, poverty, inequality, racism, violence, and extractive projects continue to encroach on indigenous lives, this course will analyze a query posed by indigenous peoples: that perhaps coronavirus is not the cause of the crisis, but rather, it is the harvest of what the capitalist system has sown throughout centuries.

LATINAM 299. Independent Study or Directed Reading. 1-10 Unit.
Independent Study or Directed Reading for graduate students in Latin American Studies.

LATINAM 397. Graduate Writing Seminar for Latin American Studies: The Eco¿s Guide. 1-2 Unit.
The design of this seminar is based on Umberto Eco¿s How to Write a Thesis and has been adapted to aid students in fulfilling their MA in Latin American Studies capstone research paper or thesis requirement.

LATINAM 398. Master's Thesis. 1-10 Unit.
Restricted to students writing a master's thesis in Latin American Studies. May be repeated for credit.

LATINAM 801. TGR Project. 0 Units.
TGR Project for approved students in Latin American Studies.

LINGUISTICS

Courses offered by the Department of Linguistics are listed under the subject code LINGUIST on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=LINGUIST&filter-catalognumber-LINGUIST=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=LINGUIST&filter-catalognumber-LINGUIST=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=LINGUIST&filter-catalognumber-LINGUIST=on).

Linguistics is the study of language as a fundamental human activity. Linguists consider language as a cultural, social, and psychological phenomenon and seek to determine what is universal to all languages and what is specific to individual languages, how language varies across individuals and communities, how it is acquired, how it changes, and how it is processed by humans and machines. Linguistics is an inherently interdisciplinary field that links the humanities, the social sciences, and the other cognitive sciences, as well as computer science, education, and hearing and speech sciences.

The department offers courses at the undergraduate and graduate levels. Some focus on analyzing structural patterns of sounds (phonetics and phonology), meanings (semantics and pragmatics), words (morphology), sentences (syntax). Others examine how these structures vary over time (historical linguistics), or over individuals and social groups (sociolinguistics), or how language is processed and learned by humans (psycholinguistics and language acquisition) or by computers (computational linguistics).

A variety of open forums provide for the discussion of linguistic issues, including colloquia and regularly scheduled workshops in computational linguistics, phonetics and phonology, psycholinguistics, semantics and pragmatics, sociolinguistics, and syntax and morphology.

Mission of the Undergraduate Program in Linguistics

The mission of the undergraduate program in Linguistics is to provide students with basic knowledge in the principal areas of linguistics (phonetics, phonology, morphology, syntax, semantics, pragmatics, historical linguistics, sociolinguistics, psycholinguistics, and computational linguistics) and the skills to do more advanced work in these subfields. Courses in the major also involve interdisciplinary work with connections to other programs including anthropology, communication, computer science, education, foreign languages, psychology, and symbolic systems. The program provides students with excellent preparation for further study in graduate or professional schools as well as careers in business, government agencies, social services, and teaching.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. By the end of the program, students are expected to be able to:

1. formulate theoretically interesting and tractable research questions;
2. find and collect information relevant to answering their research questions;
3. bring linguistic theory to bear in analyzing and evaluating information;
4. articulate the questions and outcomes of the process described in 1-3; and
5. engage with peers in an intellectual community around linguistic issues.

Graduate Programs in Linguistics

The department offers an M.A., Ph.D., and Ph.D. minor in Linguistics. For admissions information, please see the Department of Linguistics admissions page (https://linguistics.stanford.edu/degree-programs/graduate-admissions/). The GRE is not required.

Learning Outcomes (Graduate)

The purpose of the master's program is to develop students' knowledge and skills in Linguistics and to prepare them for a professional career or doctoral studies. This is achieved through completion of courses, including course work in an area of specialization within the field, and experience with independent research.

The Ph.D. is conferred upon candidates who have demonstrated the ability to conduct substantive, independent research in Linguistics. Through completion of advanced coursework and rigorous methodological and analytical training, the doctoral program prepares students to make original contributions to knowledge in linguistics, to articulate the results of their work, and to demonstrate its significance to linguistics and related fields.

Cognitive Science

Linguistics is participating with the departments of Philosophy and Psychology in an interdisciplinary program in Cognitive Science for doctoral students. The program is intended to provide an interdisciplinary education as well as a deeper concentration in linguistics. Students who complete the Linguistics and Cognitive Science requirements receive a special designation in Cognitive Science along with the Ph.D. in Linguistics.

To receive this designation, students must complete 30 units of approved course work. The 30 units cannot include courses counted elsewhere towards the Ph.D. Courses may be drawn from the participating departments, as well as from other departments, as long as their content is appropriate to the designation. At least 18 of the 30 units must be from outside the student's major department and must include course work in at least two other departments. The majority of the courses taken towards the 30 units of coursework must be taken for a letter grade and should be completed with at least a 'B'. Special topic seminars are excluded in favor of more foundational courses.

Linguistics Course Catalog Numbering System

Courses numbered under 100 are designed primarily for pre-majors. Courses with 100-level numbers are designed for undergraduate majors and minors; a limited number of 100-level units may apply to a master's or Ph.D. minor. Those with numbers 200 and above are primarily for graduate students, but with consent of the instructor some of them may be taken for credit by qualified undergraduates. At all levels, the final two digits of the course number indicate a special area, as follows:

Number	Special Area
00-04	General
05-09	Phonetics
10-14	Phonology
15-19	Morphology
20-29	Syntax
30-39	Semantics, Pragmatics, Discourse
40-49	Language Acquisition, Psycholinguistics
50-62	Sociolinguistics, Language Variation, Change

63-73	Language and Culture, Structure of a Language
74-79	Methods, Mathematical Linguistics, Statistics
80-89	Computational Linguistics
90-99	Directed Work, Theses, Dissertations

Bachelor of Arts in Linguistics

The Department of Linguistics offers a Bachelor of Arts in Linguistics. Eligible students may also pursue a Bachelor of Arts with Honors (p. 1772). The department also offers a minor in Linguistics (p. 1774).

The undergraduate major stresses the study of language both as a fundamental human faculty and as a changing social institution. At the core of the program is a set of departmental courses on the nature of human language; the major also draws on courses offered by other departments and programs.

The Linguistics major cuts across the humanities and the social and physical sciences. It provides a solid general education as a background for advanced studies in such disciplines as anthropology, cognitive science, communication, computer science, education (language, literacy, and culture), hearing and speech sciences, languages, law, linguistics, philosophy, and psychology.

Degree Requirements

Requirements for the B.A. include at least 55 units of course work; at least 28 of these units must be in Linguistics. Of the 55 units required for the major, no more than 12 units may be below the 100-level and a maximum of 3 courses, totaling no more than 8 units, may be taken on a credit/no credit basis (CR/NC). All required courses must be taken for a letter grade of 'C-' or better.

Course Requirements

		Units
Gateway Course		**1**
LINGUIST 196	Introduction to Research for Undergraduates (to be taken Winter Quarter, junior year)	1
Capstone Course		**2-3**
LINGUIST 197A	Undergraduate Research Seminar	2-3
Core Courses		**6-8**
Select at least one course each from two of the following three areas:		
Phonetics and Phonology		
LINGUIST 105	Phonetics	
or LINGUIST 205	Phonetics	
LINGUIST 110	Introduction to Phonology	
Morphology and Syntax		
LINGUIST 116A	Introduction to Word-Formation	
LINGUIST 121A	The Syntax of English	
LINGUIST 121B	Crosslinguistic Syntax (WIM)	
Semantics and Pragmatics		
LINGUIST 130A	Introduction to Semantics and Pragmatics (WIM)	
or LINGUIST 230A	Introduction to Semantics and Pragmatics	
LINGUIST 130B	Introduction to Lexical Semantics	
LINGUIST 230B	Advanced Semantics	
LINGUIST 232A	Lexical Semantics	
Breadth Courses		**2-8**
Select at least one course each from two of the following four areas:		
Historical Linguistics and Language Change		
LINGUIST 160	Introduction to Language Change	
LINGUIST 260A	Historical Morphology and Phonology	
LINGUIST 260B	Historical Morphosyntax	
Sociolinguistics		
LINGUIST 150	Language and Society	
LINGUIST 156	Language, Gender, & Sexuality	
LINGUIST 157	Sociophonetics	
or LINGUIST 257	Sociophonetics	
LINGUIST 250	Sociolinguistic Theory and Analysis	
Psycholinguistics		
LINGUIST 35	Minds and Machines	
LINGUIST 140	Learning to Speak: An Introduction to Child Language Acquisition	
LINGUIST 145	Introduction to Psycholinguistics	
Computational Linguistics		
LINGUIST 180	From Languages to Information	
or LINGUIST 280	From Languages to Information	
LINGUIST 188	Natural Language Understanding	
or LINGUIST 288	Natural Language Understanding	
LINGUIST 278	Programming for Linguists	
LINGUIST 284	Natural Language Processing with Deep Learning	
Depth Courses		**6-8**
Select at least two 200-level Linguistics courses, taken for 3-4 units each. See ExploreCourses for current options.		
Other Course Requirements		**27-36**
The remaining units may be in Linguistics or in related fields, and should form a coherent program of study. Majors should discuss this course work with faculty and get specific approval from the Linguistics Director of Undergraduate Studies for courses outside the department.		
Total Units		**55**

Language Requirement

Linguistics majors must have competence in at least one language other than English as part of their understanding of the field of linguistics and its study. This requirement is fulfilled by completion of six quarters of language coursework at Stanford or by certification of equivalent proficiency through the Language Center (https://web.stanford.edu/dept/lc/language/) or the relevant department (see University requirements). Language courses do not count toward the total of 55 required units for the major. Majors may petition to be exempted from the language requirement if they have grown up speaking a language other than English and can use it for everyday purposes and for linguistic analysis.

Honors Program

Students who wish to undertake a more intensive program of study, including independent research, should pursue departmental honors. Students should apply for honors by the end of Spring Quarter of their junior year. As part of the application, the student must write a research proposal describing the honors project, which must be approved by the project advisor. Approval for honors depends on the number of courses in the major that students have taken for a letter grade by the start of the third quarter of the junior year. For students who have completed at least 28 units for a letter grade in fulfillment of major requirements, only those maintaining a grade point average of 3.3 (B+) or better in these courses are eligible for honors. Students who have taken fewer than 28 units in the major for a letter grade must receive an endorsement

from both a faculty member in the Department of Linguistics who will supervise or co-supervise the honors project and a second Department of Linguistics faculty member who can attest to the student's qualifications for carrying out honors research.

Honors students complete a total of 65 units including the 55 units for the major, plus 10 additional units of Independent Study and Honors Research. In addition, they must complete an honors thesis based on research conducted with a project advisor, who must be a member of the Linguistics faculty, and a secondary faculty reader, who may, with the approval of the Linguistics Director of Undergraduate Studies, be a member of another department. In the Autumn Quarter of the senior year, honors students enroll in LINGUIST 199 Independent Study, to work closely with one of their advisors on the research project. In Winter and Spring quarters, honors students enroll in LINGUIST 198 Honors Research, with the student's project advisor for close supervision of the honors thesis. The thesis must be submitted in final, acceptable, form by May 15. The thesis topic is presented orally at a department Honors Colloquium late in Spring Quarter.

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Joint Major Program in Linguistics and Computer Science

The joint major program (JMP) was discontinued at the end of the academic year 2018-19. Students may no longer declare this program. All students with declared joint majors are permitted to complete their degree; faculty and departments are committed to providing the necessary advising support.

See the "Joint Major Program (p. 33)" section of this bulletin for a description of University requirements for the JMP. See also the Undergraduate Advising and Research JMP (https://majors.stanford.edu/more-ways-explore/joint-majors-csx/) web site and its associated FAQs.

Students completing the JMP receive a B.A.S. (Bachelor of Arts and Science).

Linguistics Major Requirements in the Joint Major Program

See the "Computer Science Joint Major Program (p. 714)" section of this bulletin for details on Computer Science requirements.

All majors must take at least 50 units of course work in Linguistics and related fields, with no more than 12 units below the 100 level and at least 8 units above the 200 level. No more than two courses may be taken on a credit/no credit basis (CR/NC). All required courses must be taken for a letter grade of C- or better.

Students in the joint major must take LINGUIST 180/CS 124 as one of these breadth courses. Students may count LINGUIST 180/CS 124 towards both major requirements as long as the units are not double-counted. If LINGUIST 180/CS 124 is required for both Linguistics and a student's specific CS track, Linguistics works with the student to identify another course (possibly independent study for 3-4 units) that would benefit the academic plan. (In this scenario, LINGUIST 180/CS 124 fulfills major requirements in both Linguistics and CS, but the units are only counted towards CS; additional units of work would be identified in Linguistics to meet the unit requirements.)

Within the 50-unit total, students in the joint major are encouraged to sign up for independent study units as part of completing the integrative capstone project. The expectation is that this project is supervised by a Linguistics faculty member. The specific number of units varies and is decided by the student and faculty adviser.

Different from Linguistics majors, CS + Linguistics joint majors are not required to display competence in a language other than English and therefore are not required to complete the equivalent of six quarters of language study.

Required Courses for the Joint Major:

Gateway Course

		Units
LINGUIST 196	Introduction to Research for Undergraduates (to be taken Autumn Quarter, junior year)	1

Capstone Course

		Units
LINGUIST 197A	Undergraduate Research Seminar (to be taken Winter Quarter, senior year)	2-3

Core Courses

		Units
Select at least one course each from two of the following three areas:		
Phonetics and Phonology		
LINGUIST 105	Phonetics	4
or LINGUIST 205A	Phonetics	
LINGUIST 110	Introduction to Phonology	4
Morphology and Syntax		
LINGUIST 120	Introduction to Syntax	4
LINGUIST 121A	The Syntax of English	4
LINGUIST 121B	Crosslinguistic Syntax	4
LINGUIST 222A	Foundations of Syntactic Theory I	3-4
Semantics and Pragmatics		
LINGUIST 130A	Introduction to Semantics and Pragmatics	4
or LINGUIST 230A	Introduction to Semantics and Pragmatics	
LINGUIST 130B	Introduction to Lexical Semantics	3-4
LINGUIST 230B	Advanced Semantics	2-4
LINGUIST 232A	Lexical Semantics	2-4

Breadth Courses

Select LINGUIST 180/280 plus at least one additional breadth course:		
LINGUIST 180	From Languages to Information	3-4
or LINGUIST 280	From Languages to Information	
Historical Linguistics and Language Change		
LINGUIST 160	Introduction to Language Change	2-4
LINGUIST 260A	Historical Morphology and Phonology	2-4
LINGUIST 260B	Historical Morphosyntax	2-4
Sociolinguistics		
LINGUIST 150	Language and Society	3-4
LINGUIST 156	Language, Gender, & Sexuality	4
LINGUIST 157	Sociophonetics	1-4
or LINGUIST 257	Sociophonetics	
LINGUIST 250	Sociolinguistic Theory and Analysis	3-4
Psycholinguistics		
LINGUIST 35	Minds and Machines	4
LINGUIST 140	Learning to Speak: An Introduction to Child Language Acquisition	4
LINGUIST 145	Introduction to Psycholinguistics	4

Depth Courses

Select at least two 200-level Linguistics courses, taken for 4 units each (for a total of at least 8 units). See ExploreCourses for current options.

Dropping a Joint Major Program

To drop the joint major, students must submit the Declaration or Change of Undergraduate Major, Minor, Honors, or Degree Program (https://stanford.box.com/change-UG-program/). Students may also consult the Student Services Center (http://studentservicescenter.stanford.edu/) with questions concerning dropping the joint major.

Transcript and Diploma

Students completing a joint major graduate with a B.A.S. degree. The two majors are identified on one diploma separated by a hyphen. There will be a notation indicating that the student has completed a "Joint Major." The two majors are identified on the transcript with a notation indicating that the student has completed a "Joint Major."

Minor in Linguistics

Requirements for the minor include at least 28 units of course work in Linguistics and related fields, approved in advance by the Linguistics Director of Undergraduate Studies. All courses must be taken for at least 3 units. No more than two courses may be taken on a credit/no credit basis (CR/NC). All required courses must be taken for letter grade of 'C-' or better. The courses counting towards the minor must be units beyond those needed to satisfy the student's major course of study.

Degree Requirements

		Units
Required Course		**4**
LINGUIST 1	Introduction to Linguistics	4
Core Courses		**11-12**
Select one course each from two of the three areas below:		
Phonetics and Phonology		
LINGUIST 105	Phonetics	
or LINGUIST 205	Phonetics	
LINGUIST 110	Introduction to Phonology	
Morphology and Syntax		
LINGUIST 116A	Introduction to Word-Formation	
LINGUIST 121A	The Syntax of English	
LINGUIST 121B	Crosslinguistic Syntax	
Semantics and Pragmatics		
LINGUIST 130A	Introduction to Semantics and Pragmatics	
LINGUIST 130B	Introduction to Lexical Semantics	
Select one of the following:		
LINGUIST 150	Language and Society	
or, in advance consultation with the Linguistics Director of Undergraduate Studies, a course in historical linguistics or the history of a language.		
Electives		**12-13**
Remaining courses are to be determined in advance consultation with the Linguistics Director of Undergraduate Studies. Students are encouraged to take at least one 200-level Linguistics course. Students may also choose to do independent work with a faculty member of their choice.		
Total Units		**28**

Master of Arts in Linguistics

The University's basic requirements for the M.A. degree are discussed in the "Graduate Degrees (https://exploredegrees.stanford.edu/graduatedegrees/)" section of this bulletin.

The Department of Linguistics occasionally admits graduate students already enrolled at Stanford for the M.A. degree.

Degree Requirements

1. *Courses*—Individual programs should be worked out in advance with an adviser in Linguistics keeping the following requirements and guidelines in mind. The master's degree requires the completion of 45 units; at least 36 of these must be in Linguistics. The course work must include one introductory graduate-level course in each of the areas of syntax (LINGUIST 222A Foundations of Syntactic Theory I), semantics (LINGUIST 230A Introduction to Semantics and Pragmatics orLINGUIST 232A Lexical Semantics), and phonetics/phonology (LINGUIST 205A Phonetics orLINGUIST 210A Phonology), as well as four courses in the student's area of specialization. If the student can make a compelling case, the department may allow up to 9 of the 45 units to be in a department other than Linguistics. Courses from outside the department must have clear linguistic content or contribute methodological knowledge that facilitates the thesis project; furthermore, if the student is simultaneously enrolled in a degree program in another department, not all of these 9 units can be earned in that department. No more than two courses should be at the 100 level. The majority of the courses taken towards the 45 units of degree program course work must be taken for a letter grade. The three required courses and the four courses constituting the specialization should all be completed with at least a 'B' and taken for 4 units. The overall course work grade point average (GPA) must be at least 3.0 (B).
2. *Thesis or Thesis Project*—A research paper supervised by a committee of two faculty (normally fulfilled by up to 6 units of LINGUIST 398 Directed Research).

Coterminal Master's Degree Program in Linguistics

The Department of Linguistics admits a limited number of Stanford undergraduates to the coterminal master's degree program. Students are required to submit to the department a complete application, which includes a statement of purpose identifying a thesis topic, a Stanford transcript, three letters of recommendation (at least one of which must be from a faculty member in Linguistics), and a proposed course of study (worked out in advance with a Linguistics adviser). Applicants for the coterminal master's degree may apply as early as their eighth quarter and no later than early in the eleventh quarter of undergraduate study. Decisions on admission to the coterminal degree program rest with the Graduate Admissions Committee of the Department of Linguistics.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken three quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to the graduate career. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Doctor of Philosophy in Linguistics

The following requirements are in addition to the basic University requirements for the degree sought; see the "Graduate Degrees (p. 65)" section of this bulletin. Students should review the department's Department of Linguistics Ph.D. Handbook (https://linguistics.stanford.edu/department-resources/) for further particulars concerning these requirements.

1. *Courses*—a minimum of 135 units of graduate work beyond the bachelor's degree, or 90 units beyond the master's degree. The core course requirements detailed in the Department of Linguistics Ph.D. Handbook guarantee that each student covers a sufficient set of subareas within the field. Students must maintain a satisfactory record in the number and distribution of units completed. The overall course work GPA must be at least 3.0 (B), and all core courses should be completed with at least a 'B'.
2. *Language*—each student must demonstrate an explicit in-depth knowledge of the structure of at least one language other than Standard English, by writing a research paper on that language.
3. *Research*—each student is expected to complete two substantial qualifying papers. The deadline for completion of the first qualifying paper is the end of Autumn Quarter of the second year; the deadline for completion of the second qualifying paper is the end of Autumn Quarter of the third year. The subject matter of the two papers, although it may be related (for example, about the same language), must be clearly distinct. The requirement is fulfilled by one quarter LINGUIST 395 Research Workshop (1-2 units), and by oral discussion of each paper with a committee of at least three faculty members selected by the faculty with input from the student.
4. *Candidacy*—each student must apply for candidacy for the Ph.D. by the end of the sixth academic year quarter, normally the Spring Quarter of the second year. Departmental prerequisites for candidacy include: (i) completion of a prescribed portion of the core course requirement (see item 1 above), (ii) completion of one qualifying paper (see item 3 above), and (iii) having an approved plan for completing the language requirement (see item 2 above).
   At the end of the academic year, the department faculty reviews each applicant and votes on whether to admit that student to candidacy. A student is only admitted to candidacy if, in addition to the student's fulfilling the department prerequisites, the faculty makes the judgment that the student has the ability to complete the remaining stages of the Ph.D. program at a level of superior quality. Students who are not admitted to candidacy are terminated from the program; at the department's discretion, they may be allowed to complete any requirements that remain for the master's degree and receive this degree.
5. *Teaching*—at least three quarters serving as a teaching assistant in Linguistics courses.
6. *Dissertation*—
   a. appointment of a dissertation committee.
   b. an approved written dissertation proposal is required by the end of Autumn Quarter of the fourth year.
   c. oral discussion of the dissertation proposal with an augmented dissertation committee by the end of Spring Quarter of the fourth year.
   d. passing a University oral examination on the dissertation and related areas which includes a public presentation of the dissertation research.
   e. dissertation (up to 15 units of LINGUIST 399 Dissertation Research).

Ph.D. Minor in Linguistics

1. *Units*—the student must complete 30 units of course work in Linguistics. At least 20 units must be graduate courses at the 200 level or above; 10 units may be at the 100 level or above, but in no event may they be below the 100 level.
2. *Introductory Courses*—The coursework for the minor must include one introductory course in each of phonetics/phonology, syntax, and semantics/pragmatics; these requirements are typically fulfilled by:
   - Phonetics/Phonology: LINGUIST 105/205A Phonetics LINGUIST 210A Phonology or LINGUIST 110 Introduction to Phonology
   - Syntax: LINGUIST 121A The Syntax of English or LINGUIST 121B Crosslinguistic Syntax or LINGUIST 222A Foundations of Syntactic Theory
   - Semantics/Pragmatics: LINGUIST 130A/230A Introduction to Semantics and Pragmatics or LINGUIST 130B Introduction to Lexical Semantics or LINGUIST 232A Lexical Semantics.
3. *Courses submitted for the minor* may not be double-counted in satisfaction of degree requirements for the student's doctoral or any other program. Individual programs should be worked out in advance with the student's Ph.D. minor adviser in Linguistics. The majority of the courses taken toward the 30 units of coursework must be taken for a letter grade. These should include the three required introductory courses, which should all be completed with at least a 'B' and taken for 4 units. The overall course work grade point average (GPA) must be at least 3.0 (B).
4. *Research Project (optional)*—the student may elect to present a paper which integrates the subject matter of linguistics into the student's field of specialization.
5. The Department of Linguistics does not require that the student's Linguistics adviser serve on the student's University oral examination committee

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of Linguistics counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards

satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Graduate Degree Requirements

Grading

During academic year 2020-21, Ph.D. students may take up to three of the basic courses (those in Groups I-III and LINGUIST 200) for CR/NC, and have those count toward the program requirements if they receive a grade of 'CR'. Students may choose whether to take advantage of this option, and if so, which three courses they will use.

All other required courses should still be taken for a letter grade, and the department standard for basic courses and LINGUIST 200 applies to them: students should earn a grade of 'B' or above in order for those courses to count toward program requirements.

Graduate Advising Expectations

The department is committed to providing academic advising in support of each graduate student's scholarly and professional development. The advising relationship should entail collaborative engagement by both the adviser and the advisee. Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, navigating degree requirements, exploring academic and professional opportunities, and preparing for their post-Ph.D. careers. Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for the Ph.D. program. An important part of the advisee-adviser relationship is that students learn to advocate for themselves; this includes discussing expectations for the adviser/advisee relationship with the adviser and revisiting these expectations periodically to ensure mutual understanding.

Advisers and Advising Meetings

A department faculty member serves as the Graduate Studies Adviser (GSA). Typically, the GSA keeps track of the general degree progress of all M.A. and Ph.D. students, offers advice on meeting department and University milestones, coordinates departmental advising and TA assignments, and approves special petitions.

Ph.D. Students

Each student has an individual adviser (also referred to as a second adviser in the pre-candidacy stage), usually chosen based on shared research interests, who advises on coursework, training in research methodologies, research projects, and professional development. Entering students are assigned a second adviser for their first two quarters in the program. The second adviser helps first year students make the transition to graduate school and take the initial steps towards their long-term goals. Beginning with Spring Quarter of the first year, the student's current Qualifying Paper Committee Chair serves as the second adviser. On completion of these papers, the student chooses a faculty member as Chair of their dissertation Reading Committee; this faculty member becomes the main adviser. Throughout their graduate career, students are also encouraged to consult with other faculty, including the members of their Qualifying Paper and Reading Committees.

In order to meet the department's advising expectations, twice a year each student and their adviser meet for a holistic, structured discussion of the student's recent progress, short-term plans, and longer-term academic and professional goals and to discuss the steps that the student should take to meet these objectives. The GSA usually joins the discussion with students in the earlier stages of the Ph.D. program. Students who receive department Summer funding are also expected to fill out a Summer Commitments Agreement that lays out their activities, priorities and goals for the summer, and to discuss these with their adviser.

Students are expected to meet regularly with their advisers and to keep them informed about their academic progress. Each student and their adviser should mutually agree on the frequency of these meetings when the advising relation begins and reassess their frequency at the start of every quarter.

M.A. Students

At the start of graduate study, each student is assigned a faculty member as an M.A. program adviser, chosen based on shared research interests and the student's proposed M.A. thesis area. Usually this faculty member serves in this role for the duration of the M.A. program. Besides advising the student on the M.A. thesis, the adviser provides guidance on the student's overall path through the M.A. program. Students are expected to meet with their advisers at least once each quarter and to keep them informed about their academic progress. The precise meeting frequency should be mutually agreed upon and reassessed quarterly; it depends on the student's stage in the program.

Additional resources

The Department of Linguistics Ph.D. Handbook provides additional information. Students are also encouraged to familiarize themselves with the Policies and Best Practices for Advising Relationships at Stanford. Additional resources on advising are offered by VPGE. For a statement of University policy on graduate advising, see the "Graduate Advising" section of the Bulletin.

Faculty

Emeriti: (Professors) Joan Bresnan, Eve V. Clark, Kenji Hakuta, Shirley Brice Heath, Philip L. Hubbard (Senior Lecturer, Language Center), Martin Kay, William R. Leben, Stanley Peters, John R. Rickford, Elizabeth C. Traugott, Thomas A. Wasow

Chair: Christopher Potts

Director of Graduate Studies/Graduate Studies Adviser: Vera Gribanova

Director of Undergraduate Studies: Robert Podesva

Professors: Cleo Condoravdi, Penelope Eckert (emerita in Winter), Daniel Jurafsky (on leave in Autumn), Paul Kiparsky (on leave in AY 2020-21), Beth Levin, Christopher Manning, Christopher Potts

Associate Professors: Arto Anttila (on leave in Spring), Vera Gribanova, Robert Podesva, Meghan Sumner

Assistant Professors: Judith Degen, Boris Harizanov, Daniel Lassiter

Courtesy Professors: Yoshiko Matsumoto, James McClelland, Chao Fen Sun

Courtesy Associate Professors: Michael C. Frank, Noah Goodman, Miyako Inoue, Jonathan Rosa

Lecturers: Katherine HIlton

Adjunct Professors: Jared Bernstein, Ronald Kaplan, Lauri Karttunen, Paul Kay, Annie Zaenen, Arnold Zwicky

Courses

LINGUIST 1. Introduction to Linguistics. 4 Units.
This introductory-level course is targeted to students with no linguistics background. The course is designed to introduce and provide an overview of methods, findings, and problems in eight main areas of linguistics: Phonetics, Phonology, Morphology, Syntax, Semantics, Pragmatics, Psycholinguistics, and Sociolinguistics. Through lectures, in-class activities, and problem sets, you will come away with an overview of various linguistic phenomena, a sense of the diversity across languages, skills of linguistic analysis, an awareness of connections between these linguistics and applications of linguistics more broadly, and a basis for understanding the systematic, but complex nature of human language. While much of the course uses English to illuminate various points, you will be exposed to and learn to analyze languages other than English. By the end of the course, you should be able to explain similarities and differences of human languages, use basic linguistic terminology appropriately, apply the tools of linguistic analysis to problems and puzzles of linguistics, understand the questions that drive much research in linguistics, and explain how understanding linguistics is relevant for a variety of real-world phenomena.

LINGUIST 5N. What's Your Accent? Investigations in Acoustic Phonetics. 3 Units.
Preference to freshmen. Phonetic variation across accents of English; experimental design; practical experience examining accents of seminar participants; acoustic analysis of speech using Praat.

LINGUIST 10N. Experimental Phonetics. 4 Units.
Everyday, we face variation in language. As readers, we see words printed in different fonts, sizes, and typefaces, typically static on a page. As listeners, we hear a speech signal riddled with variation. We are exposed to words, but a single word is produced differently each time it is uttered. These words stream by listeners at a rate of about 5 syllables per second, further complicating the listeners' task. How listeners map a speech signal into meaning despite massive variation is an issue central to linguistic theory. The field of experimental phonetics investigates how listeners take words that often vary drastically and understand them as quickly and adeptly as they do. This class introduces students to acoustic and auditory phonetics. As a class, we will carry out a project in experimental phonetics aimed at understanding how different realizations of words are able to be understood by listeners. Throughout the course, students will read background literature, become familiar with the Stanford Linguistics Lab, and learn to use software integral to the design, data collection, and data analysis of experiments. Each week, we will have two meetings,one in a seminar setting and one in the lab.

LINGUIST 21N. Linguistic Diversity and Universals: The Principles of Language Structure. 3 Units.
The human capacity for language is able to support a staggering diversity of languages. But is anything possible in a human language, and is there anything that is common to all languages? Looking past the vast surface differences, linguists have discovered deep commonalities among the languages of the world as well as strict limits on the observed variation and on what a possible human language is. In this seminar, we will seek to uncover the building blocks of language and the laws that govern their interactions. Our goal will be to reach an understanding of the ways in which languages are systematically alike and different, as well as of the nature of language in general. We will investigate a variety of topics, including crosslinguistic differences and similarities with respect to word order, the grammatical structure of questions, and how languages mark subjects and objects. We will explore the structure of both sentences and words, identifying and studying their fundamental properties. In this pursuit, we will rely on data from a range of languages, such as English, Navajo, Zulu, and many others. This seminar will teach you how to view language as an object of scientific study, introducing you to central concepts and methods of linguistics (with a particular emphasis on syntax) along the way. It will give you the tools to describe and analyze even unfamiliar languages, and will teach you to construct explicit hypotheses about how language works and to test them empirically. There are no prerequisites for this course and no experience with linguistics will be assumed; the course is Socratically taught and there will be no textbook.

LINGUIST 30N. Linguistic Meaning and the Law. 3 Units.
We will investigate how inherent properties of language, such as ambiguity, vagueness and context-dependence, play into the meaning of a legal text, and how the meaning of a law can remain invariant while its range of application can change with the facts and with our discovery of what the facts are. Our focus will be on the perspective linguistic analysis brings to legal theory, addressing current controversies surrounding different conceptions of `textualism¿ and drawing on well-known examples of legal reasoning about language in cases of identity fraud, obstruction of justice and genocide.

LINGUIST 35. Minds and Machines. 4 Units.
(Formerly SYMSYS 100). An overview of the interdisciplinary study of cognition, information, communication, and language, with an emphasis on foundational issues: What are minds? What is computation? What are rationality and intelligence? Can we predict human behavior? Can computers be truly intelligent? How do people and technology interact, and how might they do so in the future? Lectures focus on how the methods of philosophy, mathematics, empirical research, and computational modeling are used to study minds and machines. Students must take this course before being approved to declare Symbolic Systems as a major. All students interested in studying Symbolic Systems are urged to take this course early in their student careers. The course material and presentation will be at an introductory level, without prerequisites. If you have any questions about the course, please email symsys1staff@gmail.com.
Same as: CS 24, PHIL 99, PSYCH 35, SYMSYS 1, SYMSYS 200

LINGUIST 40S. Lab in Scientific and Critical Thinking: The Emergence of Language. 2-4 Units.
This course introduces students to the basic skills of critical thinking and provides a venue to apply these skills to a controversial topic: the emergence of human language. We discuss the following questions: what is language? Do animals have it? How did humans begin to talk? How do children learn to speak? In discussing these questions, we cover the basics of the scientific method and critical thinking. Students practice how to read scientific articles, find their main claims, differentiate between factual and theoretical claims, assess the evidence supporting the factual claims, and critically evaluate the arguments. Students practice small scale data collection, hypothesis formation, and hypothesis testing as part of their final project. We discuss the problems that researchers face in each of these phases of research.

LINGUIST 44N. Living with Two Languages. 3 Units.
Preference to freshmen. The nature of bi- and multilingualism with emphasis on the social and educational effects in the U.S. and worldwide, in individual versus society, and in child and adult. The social, cognitive, psycholinguistic, and neurological consequences of bilingualism. Participation in planning and carrying out a research project in language use and bilingualism.

LINGUIST 47N. Languages, Dialects, Speakers. 3 Units.
Preference to freshmen. Variation and change in languages from around the world; language and thought; variation in sound patterns and grammatical structures; linguistic and social structures of variation; how languages differ from one another and how issues in linguistics connect to other social and cultural issues; the systematic study of language.

LINGUIST 51S. Language, Society, and Media. 3 Units.
How do people use language to construct identities and achieve interactional goals? How is that language use represented, circulated, and discussed in the media? This course will explore the way that language operates in society with a particular focus on popular and new media. The media, as both a platform for the display and dissemination of linguistic creativity as well as a site for explicit commentary about language, is ripe for analysis of both language use and language attitudes. To do this, we'll examine specific contexts: how public figures, actors, and corporations use language in movies, television, and advertising, and how individuals use language in new media (e.g. YouTube) and on social media (e.g. Twitter). We'll discuss the function of linguistic variation in the construction, recognition, and circulation of social types and conventionalized notions about language.

LINGUIST 52N. Spoken Sexuality: Language and the Social Construction of Sexuality. 3 Units.
The many ways language is used in the construction of sexuality and sexual identity. How language is used as a resource for performing and perceiving sexual identity. Drawing on linguistic analyses of pronunciation, word choice, and grammar, questions such as: Is there a gay accent? Why isn't there a lesbian accent? How do transgendered people modify their linguistic behavior when transitioning? How are unmarked (heterosexual) identities linguistically constructed? Sexuality as an issue of identity, as well as of desire. Iconic relations between elements of language such as breathy voice quality and high pitch, and aspects of desire such as arousal and excitement. How language encodes ideologies about sexuality; how language is used to talk about sexuality in public discourses about gay marriage and bullying, as well as in personal narratives of coming out. How language encodes dominant ideologies about sexuality, evident in labels for sexual minorities as well as terminology for sex acts. Discussions of readings, explorations of how sexuality is portrayed in popular media, and analyses of primary data. Final research paper on a topic of student choice.
Same as: FEMGEN 52N

LINGUIST 53N. Language and Adolescence. 3 Units.
Adolescents are arguably the most creative age group in our society. They are the leaders in linguistic change, introducing innovations that eventually spread to the entire population. Not only do adolescents create new speech styles such as "valley girl" and "cholo", and new forms such as the quotative "I'm like", they also accelerate the phonetic changes that differentiate regional and ethnic dialects. This seminar will explore the diversity and creativity of adolescent language, and the role of adolescents in linguistic and social change.

LINGUIST 54N. Social Bias and Earwitness Memory. 3 Units.
As individuals, we would like to believe that we are free from biases and that we are somehow immune to acting on the social biases that we have been socialized to since birth. We would like to believe that we can report experiences accurately, recalling events as they truly happened. But, memory is faulty and stereotypes and social biases are pervasive. And, at a level beneath our own control, these biases slip in and influence our memory of events. Eyewitness memory, and the inaccuracy and unreliability of eyewitnesses, is a perfect example of this. But, what about the things we hear? Speech carries a great deal of information; packets of co-varying cues we have been raised to recognize categorically, informing us about a talker¿s race, accent, emotion, and gender. We have, through our ears, information about events that occur. And, we have in our minds, stereotyped expectations about how various groups of people behave and what various groups of people might say. In this course, we will explore how these two types of information (e.g., the percept of what is actually heard vs. our stereotypes about who is likely to have said what) clash together and influence ¿earwitness memory¿. We will read and critique journal articles, blogs, and popular science articles, think about the reliability of memory for auditory events, and we will work together to develop three well-designed thought experiments that address questions at the heart of this issue. Along the way, we will learn a bit about the acoustics of speech, social variation in speech, speech perception and spoken word recognition, memory, and experimental design and analysis. Students in this course should be committed to reading the assignments, sharing their ideas about the readings (without concern for ¿being right¿), and think creatively about ways we can explore the idea of earwitness memory together. While this is a one-quarter course, my goal is to pursue our thought experiments collaboratively, with any interested students in subsequent quarters.

LINGUIST 55N. Language in the City. 3 Units.
Language communicates a great deal more than the meaning of our words. Our regional accents, for example, offer clues about where we grew up. And even though accents are usually labeled in geographical terms, their symbolic meanings extend far beyond mere coordinates on a map. When we hear a New Yorker, we not only wonder whether they¿re from Brooklyn, but also conjecture about the kind of person they are: they might prefer to walk down the street quickly over strolling, they might enjoy lively conversations where people talk over one another, and they might tend to express their opinions bluntly. This seminar explores the linguistic practices and social meaning of accents spoken in San Francisco. nClass participants will collectively choose a neighborhood in San Francisco for in-depth examination. Through a series of field trips (once every two or three weeks), students will document the varieties of English spoken by lifelong residents of the neighborhood. Field assignments will consist primarily of observation and audio-recorded interviews. Interviews will serve as data for linguistic analysis (transcription, quantitative analysis of a linguistic feature of interest) throughout the term. Linguistic patterns will be analyzed in relation to salient social issues in the community, which will be identified in both interview content and historical records.nUpon completing the seminar, students will have (a) learned how to treat language as an object of scientific analysis, (b) developed an understanding of the social ramifications of linguistic practice, (c) gained fieldwork skills in general and interviewing skills in particular, and (d) come to appreciate the diversity of experiences in an urban community near Stanford.

LINGUIST 55S. Language, Speech, and Social interaction. 3 Units.
We use language to communicate every day, but we take its complex and dynamic nature for granted. This introduction to Linguistics will ask students to rethink their assumptions about language and communication as it approaches the field with a special focus on speech and social interactions. The course is grounded in the production and perception of speech sounds: its physiological basis, its acoustic signal form, and its cognitive process of perception. From this foundation, the course will move on to explore how the subtle variation and change of sounds is used to construct identity, foster relationships, and shape community. We will also investigate how exciting linguistic research sheds light on important contemporary social debates and on speech technology. Throughout the course, students will supplement readings, exercises, and discussion with lab sessions that will teach them how to manipulate and analyze speech sound recordings. Their accumulated theoretical and practical knowledge will find its expression in an intensive research project drawing on social media data. There is no prerequisite for this course.

LINGUIST 61S. Language Evolution and Change. 2-3 Units.
Every human culture has a sophisticated, systematic means of communication which we call "language". Why? What makes languages the way they are, and what makes them keep changing over time? In this course, we will explore proposed explanations for language evolution and their connections to language change. In doing so, we will address a major roadblock in scientific inquiry: how do you study something you can't directly observe? Language evolution left no fossils behind, so how can different proposed explanations for it be evaluated? We will examine the argumentation behind different proposed explanations and the various methodologies that have been used to support them. Students will put to practice the knowledge and critical thinking skills gained from this course by developing and workshopping their own research project proposals. Students taking the course for 3 units will be expected to complete a project proposal and peer review in addition to the regular assignments.

LINGUIST 63N. The Language of Comics. 3 Units.
This seminar will explore language as represented in cartoons and comics such as Bizarro, Dilbert and Zits, how we interpret it, and why we find comics funny. We will explore and analyze language play, genderspeak and teenspeak; peeving about usage; new and spreading usages.

LINGUIST 65. African American Vernacular English. 3-5 Units.
Vocabulary, pronunciation and grammatical features of the systematic and vibrant vernacular English [AAVE] spoken by African Americans in the US, its historical relation to British dialects, and to English creoles spoken on the S. Carolina Sea Islands (Gullah), in the Caribbean, and in W. Africa. The course will also explore the role of AAVE in the Living Arts of African Americans, as exemplified by writers, preachers, comedians and actors, singers, toasters and rappers, and its connections with challenges that AAVE speakers face in the classroom and courtroom. Service Learning Course (certified by Haas Center). UNITS: 3-5 units. Most students should register for 4 units. Students willing and able to tutor an AAVE speaking child in East Palo Alto and write an additional paper about the experience may register for 5 units, but should consult the instructor first. Students who, for exceptional reasons, need a reduced course load, may request a reduction to 3 units, but more of their course grade will come from exams, and they will be excluded from group participation in the popular AAVE Happenin at the end of the course.
Same as: AFRICAAM 21, CSRE 21, LINGUIST 265

LINGUIST 66. Vernacular English and Reading. 4-5 Units.
Discusses some of the literature on the relation between use of vernacular English varieties (e.g. African American Vernacular English, Chicano English) and the development of literacy (especially in Standard English). But our primary focus is on improving the reading skills of African American and Latino students in local schools through the Reading Road program developed at the University of Pennsylvania. Students must commit to tutoring one or more elementary students weekly, using the program. L65 AAVE recommended, but not required.
Same as: LINGUIST 266

LINGUIST 67S. The Role of Language in Perception and Cognition. 3 Units.
One of the driving questions in linguistics involves the relationship between language and cognition: what do the properties of language tell us about the nature of our thinking and reasoning? Whorf's theory of linguistic relativism, made famous in popular science, suggests that the structures and patterns of the language(s) we speak constrain the way we think. This hypothesis, and the data that motivated it, have been the subject of much debate in the linguistic literature over the past few decades.This course introduces methods and ideas in modern linguistics through the lens of this debate. We first discuss Whorf's original hypothesis, and then examine arguments and data for strong and weak interpretations of linguistic relativism. We look at data from languages that differ structurally and conceptually from English, including languages that divide the colour spectrum differently, languages that lack numerals beyond the low single digits, and languages that use geographical coordinate systems (north, south, etc) instead of speaker-oriented ones (left, right). We consider how to use these differences to investigate a potential connection between language and cognitive capacities, focusing on understanding and critiquing recent research and experimental work in these areas.

LINGUIST 83Q. Translation. 3 Units.
Preference to Sophomores. What is a translation? The increased need for translations in the modern world due to factors such as tourism and terrorism, localization and globalization, diplomacy and treaties, law and religion, and literature and science. How to meet this need; different kinds of translation for different purposes; what makes one translation better than another; why some texts are more difficult to translate than others. Can some of this work be done by machines? Are there things that cannot be said in some languages?.

LINGUIST 105. Phonetics. 4 Units.
Phonetics is the systematic study of speech. In this class, we will learn about the physical gestures and timing involved in the articulation of spoken language and about the resulting acoustic signal that is decoded into linguistic units by the human auditory system. The class is structured into two parts: A practical lab component, and a class component. This course highlights both the complexity of the physical nature of producing spoken language, and the highly variable acoustic signal that is interpreted by listeners as language. By the end of this course, you should: (1) Understand the process of preparing an utterance to articulating it; (2) Understand the basic acoustic properties of speech; (3) Provide detailed phonetic transcriptions of speech; (4) Produce and understand the gestures involved in nearly all of the world's speech sounds, and (5) Understand the ways this knowledge can be used to advance our understanding of spoken language understanding by humans and machines. We will be using the software program Praat (https://www.fon.hum.uva.nl/praat/) weekly, beginning on the first day of class. Please download the program and have it installed on your computer before class begins.
Same as: LINGUIST 205A

LINGUIST 106. Introduction to Speech Perception. 4 Units.
Basics of acoustic phonetics and audition. What do listeners perceive when they perceive speech. Examine current research including: the categorical perception of speech, cross-language speech perception, infant speech perception. Theoretical questions of interest to speech perception researchers and experimental methods used in the field.

LINGUIST 110. Introduction to Phonology. 4 Units.
Introduction to the sound systems of the world's languages, their similarities and differences. Theories that account for the tacit generalizations that govern the sound patterns of languages. Prerequisite: Linguist 1.

LINGUIST 112. Seminar in Phonology: Stress, Tone, and Accent. 4 Units.
Stress, tone, and accent systems vary widely, sometimes even within closely related language groups. Adding to their linguistic allure are their interactions with morphology and syntax, and with one another. Stress, tone, and accent are often also closely linked to phonological quantity and syllable structure. nnThis course will survey the different behaviors of stress, tone, and accent systems in the languages of the world. Decades of work on this topic has led to fundamental changes in how we represent phonological structure. While we will analyze a few systems deeply in order to get at the heart of the topic, an even bigger aim will be breadth of coverage. The result will be a better empirical grasp of the underpinnings of the typology of accentual systems.

LINGUIST 116. Morphology. 4 Units.
A survey of words including their structures, pronunciations, meanings, and syntactic possibilities in a wide sampling of languages to provide a laboratory for investigating the nature of morphology.

LINGUIST 116A. Introduction to Word-Formation. 3-4 Units.
This course provides an introduction to word formation in the world¿s languages. It investigates the notion of word, the internal structure of words, the relation between a word's structure and its meaning, and processes for forming new words. Data will be drawn from a range of languages with an emphasis on English. Prerequisites: One of Linguist 1, 110, 121A, 121B, 130A, or 130B, or permission of instructor.

LINGUIST 120. Introduction to Syntax. 4 Units.
Grammatical constructions, primarily English, and their consequences for a general theory of language. Practical experience in forming and testing linguistic hypotheses, reading, and constructing rules.

LINGUIST 121A. The Syntax of English. 4 Units.
A data-driven introduction to the study of generative syntax through an in-depth investigation of the sentence structure of English. Emphasis is on central aspects of English syntax, but the principles of theory and analysis extend to the study of the syntax of other languages. The course focuses on building up syntactic argumentation skills via the collective development of a partial formal theory of sentence structure, which attempts to model native speaker knowledge. Satisfies the WIM requirement for Linguistics and the WAY-FR requirement. Prerequisites: none (can be taken before or after Linguistics 121B). The discussion section is mandatory.

LINGUIST 121B. Crosslinguistic Syntax. 4 Units.
A data-driven introduction to the study of syntax through the investigation of a diverse array of the world's languages, including but not limited to English. Emphasis is on understanding how languages are systematically alike and different in their basic sentence structure. The course focuses on building up syntactic argumentation skills via the collective development of a partial formal theory of sentence structure, which attempts to model native speaker knowledge. Satisfies the WIM requirement for Linguistics and the WAY-FR requirement. Prerequisites: none (can be taken before or after Linguistics 121A). The discussion section is mandatory.

LINGUIST 127. Linguistic Meaning and Legal Interpretation. 3-4 Units.
This course applies analytical concepts from semantics and pragmatics to the interpretation of legal texts. It critically examines methods and theories of legal interpretation, such as 'textualism', 'intentionalism', 'originalism'. Prerequisites: LINGUIST 130A/230A, or PHIL 181/281, or permission of instructor.
Same as: LINGUIST 227

LINGUIST 130A. Introduction to Semantics and Pragmatics. 4 Units.
Linguistic meaning and its role in communication. Topics include logical semantics, conversational implicature, presupposition, and speech acts. Applications to issues in politics, the law, philosophy, advertising, and natural language processing. Those who have not taken logic, such as PHIL 150 or 151, should attend section. Prerequisites: LINGUIST 1, SYMSYS 1 (LINGUIST 35), consent of instructor, or graduate standing in Linguistics.
Same as: LINGUIST 230A

LINGUIST 130B. Introduction to Lexical Semantics. 3-4 Units.
Introduction to basic concepts and issues in the linguistic study of word meaning. We explore grammatical regularities in word meaning and the relation between word meaning and the conceptual realm. The questions we address include the following. How is the meaning of a word determined from its internal structure? How can simple words have complex meanings? What is a possible word? How does a word's meaning determine the word's syntactic distribution and what kind of reasoning does it support? What kind of information belongs to the lexical entry of a word? The course will show that the investigation of the linguistic and semantic structure of words draws on the full resources of linguistic theory and methodology. Prerequisites: Symsys 1, Linguist 35, or equivalent or permission of the instructor. Linguist 130A is not a prerequisite for this course.

LINGUIST 130C. Logic Laboratory. 1 Unit.
Typically taken in conjunction with 130A/230A.
Same as: LINGUIST 230E

LINGUIST 132. Lexical Semantic Typology. 3-4 Units.
This course surveys how languages express members of the basic conceptual categories entity, event, property, and spatial relation. It examines strategies languages use to name members of these categories, and factors that might influence the choices languages make. Relatedly, it explores similarities and differences among languages in the sets of words they have to express notions within various conceptual domains. Restricted to undergraduates. Prerequisites: Linguist 121A, 121B, 130A, or 130B, or permission of the instructor.

LINGUIST 134A. The Structure of Discourse: Theory and Applications. 2-4 Units.
This course examines the linguistic structure of discourse, with a particular emphasis on learning to identify the emergent structures of spontaneous conversations. Specific topics include: narrative structure; turn-taking; discourse markers; face and politeness; inference and implicature; discourse coherence; reference; intertextuality; stance-taking; and framing. Class-time is split between hands-on data analysis and the discussion of both recent and foundational research on conversation. Throughout the class discussions and data analysis projects, students will also explore how the structure of discourse is shaped by cognition, social identities, interpersonal relationships, and cultural contexts.nnPrerequisites: Prior coursework in linguistics or permission of the instructor.
Same as: LINGUIST 234

LINGUIST 140. Learning to Speak: An Introduction to Child Language Acquisition. 4 Units.
None of us were born talking. We all had to learn it. How did we do that? We start the journey by looking at the perception of sounds before birth. We follow infants as they discover the sounds of their native languages. We talk about how the infant mind breaks the speech stream into words, phrases, and sentences; how it makes sense of language and uses it to convey thoughts and feelings. We finish by discussing how the majority of children in the world learn two or more languages at once. The course content will introduce you to major topics in child language acquisition. Assignments will help you develop skills in collecting, analyzing, and reporting empirical data. The class project involves collecting data from children at the Bing Nursery school on campus as well as the analysis of a large dataset of children's speech online. Class discussion and projects focus on giving you a hands-on experience with critical and scientific thinking.

LINGUIST 141. Language and Gesture. 4 Units.
History of work on gesture, gestural systems associated with particular languages/cultures, and with specific activities - music, sports, traffic management, stock exchanges, etc. Examination of how gesture is represented in painting and animation, and the role it plays in early adult-child interaction.

LINGUIST 142. Heritage Languages. 3-4 Units.
The linguistic and cultural properties of Heritage languages, which are partially acquired and supplanted by a dominant language in childhood. Topics: Syntactic, phonological and morphological properties of heritage languages, implications from experimental HL research for language universals, cultural vs. linguistic knowledge, the role of schooling in HL competence, influence of the dominant language on the HL, and pedagogical issues for HL learners in the classroom.
Same as: LINGUIST 242

LINGUIST 143. Sign Languages. 4 Units.
The linguistic structure of sign languages. How sign languages from around the world differ, and what properties they share. Accents and dialects in sign languages. How sign languages are similar to and different from spoken languages. How and why sign languages have emerged.

LINGUIST 145. Introduction to Psycholinguistics. 4 Units.
How do people do things with language? How do we go from perceiving the acoustic waves that reach our ears to understanding that someone just announced the winner of the presidential election? How do we go from a thought to spelling that thought out in a sentence? How do babies learn language from scratch? This course is a practical introduction to psycholinguistics -- the study of how humans learn, represent, comprehend, and produce language. The course aims to provide students with a solid understanding of both the research methodologies used in psycholinguistic research and many of the well-established findings in the field. Topics covered will include visual and auditory recognition of words, sentence comprehension, reading, discourse and inference, sentence production, language acquisition, language in the brain, and language disorders. Students will conduct a small but original research project and gain experience with reporting and critiquing psycholinguistic research.
Same as: LINGUIST 245A, PSYCH 140

LINGUIST 148. Language of Advertising. 4 Units.
A good ad takes the language we all share and manipulates it in creative, sometimes unique ways to influence our thoughts and our behavior. This course explores the range of techniques that advertisers use to express propositions that we consumers will notice, enjoy, and accept. Because advertising is quick to pick up on new trends, tracing the changes over the past century will allow us to re-experience the huge shifts in culture and media that have happened since then. The most effective advertisers understand us really well. Their choice of words, structure, image, and sometimes sound together form a careful composition. By taking apart some great past ads, we'll indirectly be looking at ourselves, as seen by the advertiser. Many of the techniques in ads are adapted from our own normal linguistic behavior. For example, think of how you adjust your vocabulary and tone to the person you're talking to, whether a friend, a professor, or a parent. This lecture course will include weekly input from students, who will present examples to form the basis for discussion and discovery.

LINGUIST 150. Language and Society. 3-4 Units.
This course explores the social life of spoken language. Students learn to address the following big questions about language and society: Why do languages vary across different time periods, locations, and social groups? What do our opinions about the way other people speak tell us about society? How do our social identities and goals influence the way we speak? And how do we use language to alter our social relationships? In addition to weekly reading responses, students complete two projects during the quarter: a transcription of spoken interaction and a quantitative analysis of linguistic variation. Students taking the course for four units write a literature review and project proposal for their final papers. Students taking the course for three units complete a shorter final paper that aims to improve public awareness about sociolinguistics.

LINGUIST 150E. Who Speaks Good English. 4 Units.
Many people have strong beliefs that there are right and wrong ways of speaking, good and bad versions of their language. These norms are reinforced explicitly in the education system, and implicitly in the ways that people talk about language or see it portrayed in media. Students will learn about the history, development, and linguistic structure of three language varieties that are sometimes characterized by non-linguists as "bad English": Singaporean English, Jamaican Creole, and African American Vernacular English. By critically examining public discourses about these language varieties and learning to identify their systematic patterns of grammatical structure, students will discover that popular ideas about "good" and "bad" English are rooted in the narratives that surround language, not linguistic fact.

LINGUIST 152. Sociolinguistics and Pidgin Creole Studies. 2-4 Units.
Introduction to pidgins and creoles, organized around the main stages in the pidgin-creole life cycle: pidginization, creolization, and decreolization. Focus is on transformations in the English language as it was transported from Britain to Africa, Asia, the Caribbean, and the Pacific. Resultant pidginized and creolized varieties such as Nigerian Pidgin English, Chinese Pidgin English, New Guinea Tok Pisin, Suriname Sranan, and the creole continua of Guyana, Jamaica, and Hawaii. Also French, Dutch, Portugese, Chinook, Motu, and Sango.
Same as: LINGUIST 252

LINGUIST 153. Language, Power & Politics. 3-4 Units.
The integral role language plays in politics; how power operates in linguistic practices and political interaction. Critical examination of how language is used to articulate, maintain and subvert relations of power in society, emphasizing language in the media, the political rhetoric associated with war, and the construction of `truth¿ in politics. The role of ethnographic analysis in aiding sociolinguistic understandings of how social actors use and (re)interpret political language.

LINGUIST 155K. Seminar in Sociolinguistics: Applied Sociolinguistics -- Tryna Make a Difference. 3-4 Units.
In this new course, we will explore how sociolinguistic research and principles can be used to make a positive difference in society, especially for speakers of vernacular varieties, who are often stymied in schools, courtrooms, job searches, doctor¿s visits, apartment searches and so on. We will focus especially on language and the law, and language in education, drawing on some brand new texts, but also on recent and ongoing research and experimentation at Stanford and elsewhere. (Our schedule will include some visiting lecturers from other universities.).
Same as: LINGUIST 255K

LINGUIST 156. Language, Gender, & Sexuality. 4 Units.
The role of language in the construction of gender, the maintenance of the gender order, and social change. Field projects explore hypotheses about the interaction of language and gender. No knowledge of linguistics required.
Same as: FEMGEN 156X

LINGUIST 157. Sociophonetics. 1-4 Unit.
The study of phonetic aspects of sociolinguistic variation and the social significance of phonetic variation. Acoustic analysis of vowels, consonants, prosody, and voice quality. Hands-on work on collaborative research project. Prerequisite: 105, 110 or equivalent, or consent of instructor.
Same as: LINGUIST 257

LINGUIST 159. American Dialects. 2-4 Units.
What is a dialect, and who speaks one? This course will focus on the fundamentals of linguistic study and dialectology through examinations of regional, social and ethnic dialects in the United States. The course will examine dialect variation on many linguistic levels, from variation in individual words (pop v. soda) to variation in how vowels are pronounced. Historical development of U.S. dialects, linguistic change, perceptual dialectology, and prestige and stigma of dialects will be discussed. Students will participate in real variation research to gain experience with quantitative data in examining the influence of social factors on dialect variation.

LINGUIST 160. Introduction to Language Change. 2-4 Units.
Principles of historical linguistics:, the nature of language change. Kinds and causes of change, variation and diffusion of changes through populations, differentiation of dialects and languages, determination and classification of historical relationships among languages, the reconstruction of ancestral languages and intermediate changes, parallels with cultural and genetic evolutionary theory, and implications of variation and change for the description and explanation of language in general. Prerequisite: introductory course in linguistics.

LINGUIST 167. Languages of the World. 3-4 Units.
The diversity of human languages, their sound systems, vocabularies, and grammars. Tracing historical relationships between languages and language families. Parallels with genetic evolutionary theory. Language policy, endangered languages and heritage languages. Classification of sign languages.

LINGUIST 168. Introduction to Linguistic Typology. 3-4 Units.
This course covers the foundations of the linguistic subfield concerned with comparing and classifying world languages. The course provides an overview of the analytic tools which may be used to identify and classify a language based on its phonological, morphological, and syntactic properties, and explores the major ways in which languages may be similar or different in these domains. Students will acquire a useful toolkit for studying novel, unusual, and typologically diverse linguistic data, and for conducting fieldwork on understudied languages. Prerequisites: Linguist 110, 121A, 121B, 130A, 130B, or permission of the instructor.

LINGUIST 173. The Structure of Russian. 2-4 Units.
A synchronic overview of contemporary standard Russian, including its sound system, word formation and grammatical structure. Emphasis is on problems presented by Russian for current linguistic theory. The acquisition of Russian as a first language.
Same as: LINGUIST 273

LINGUIST 180. From Languages to Information. 3-4 Units.
Extracting meaning, information, and structure from human language text, speech, web pages, social networks. Introducing methods (regex, edit distance, naive Bayes, logistic regression, neural embeddings, inverted indices, collaborative filtering, PageRank), applications (chatbots, sentiment analysis, information retrieval, question answering, text classification, social networks, recommender systems), and ethical issues in both. Prerequisites: CS106B.
Same as: CS 124, LINGUIST 280

LINGUIST 188. Natural Language Understanding. 3-4 Units.
Project-oriented class focused on developing systems and algorithms for robust machine understanding of human language. Draws on theoretical concepts from linguistics, natural language processing, and machine learning. Topics include lexical semantics, distributed representations of meaning, relation extraction, semantic parsing, sentiment analysis, and dialogue agents, with special lectures on developing projects, presenting research results, and making connections with industry. Prerequisites: one of LINGUIST 180/280, CS 124, CS 224N, or CS 224S.
Same as: CS 224U, LINGUIST 288, SYMSYS 195U

LINGUIST 192. Language Testing. 3 Units.
Performance with language (speaking, reading, writing, listening, translating or interpreting) is used to measure a person's proficiency or achievement level in the language. Language performance is also used to measure other human characteristics, including psycho-social states and traits. The course will review basic methods in language measurement and cover their use as applied in education, psychology, and commerce. Topics include both traditional and automatic methods for assessing speaking, reading, writing, affect, and language disorders. Students will develop, apply, and evaluate a language test.
Same as: LINGUIST 292A

LINGUIST 195A. Undergraduate Research Workshop. 1 Unit.
Designed for undergraduates beginning or working on research projects in linguistics. Participants present and receive feedback on their projects and receive tips on the research and writing process.

LINGUIST 196. Introduction to Research for Undergraduates. 1 Unit.
Introduction to linguistic research via presentations by Stanford linguistics faculty and graduate students. Open to undergraduate students interested in linguistics. Required for linguistics majors.

LINGUIST 197A. Undergraduate Research Seminar. 2-3 Units.
Senior capstone seminar. Joint readings in an annually varying topic, exploring the implications and importance of linguistic research for other domains of knowledge or practice.

LINGUIST 198. Honors Research. 1-15 Unit.
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LINGUIST 199. Independent Study. 1-15 Unit.
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LINGUIST 200. Foundations of Linguistic Theory. 4 Units.
Restricted to Linguistics Ph.D. students. Theories that have shaped contemporary linguistics; recurrent themes and descriptive practice. Strong background in Linguistics or permission of instructor.

LINGUIST 200C. Foundations of Linguistic Theory: Categories and Concepts. 3-4 Units.
This course investigates foundational issues and recurrent themes in linguistics related to the notions of category and concept. It will review traditional approaches to these notions and consider how they have shaped more recent developments in our understanding. Possible topics include: the world-to-word mapping, the relation between cognitive and grammatical categories, arbitrariness vs. regularity in the grammatical properties of words, and the nature of lexical categories. The discussion will be grounded in lexical semantics, but students will have an opportunity to examine how categorization figures in other areas of linguistics. Restricted to Linguistics Ph.D. students.nnPrerequisites: Graduate-level background in Linguistics or permission of instructor.

LINGUIST 205A. Phonetics. 4 Units.
Phonetics is the systematic study of speech. In this class, we will learn about the physical gestures and timing involved in the articulation of spoken language and about the resulting acoustic signal that is decoded into linguistic units by the human auditory system. The class is structured into two parts: A practical lab component, and a class component. This course highlights both the complexity of the physical nature of producing spoken language, and the highly variable acoustic signal that is interpreted by listeners as language. By the end of this course, you should: (1) Understand the process of preparing an utterance to articulating it; (2) Understand the basic acoustic properties of speech; (3) Provide detailed phonetic transcriptions of speech; (4) Produce and understand the gestures involved in nearly all of the world's speech sounds, and (5) Understand the ways this knowledge can be used to advance our understanding of spoken language understanding by humans and machines. We will be using the software program Praat (https://www.fon.hum.uva.nl/praat/) weekly, beginning on the first day of class. Please download the program and have it installed on your computer before class begins.
Same as: LINGUIST 105

LINGUIST 205B. Advanced Phonetics. 2-4 Units.
In this course, we will read and discuss literature relating broadly to issues of attention in speech perception. This course will illuminate the complexity of speech perception, identify where we are as a field in understanding human behavior with respect to speech perception, pinpoint specific areas of research that might be informed by considering attention, and to understand the impact an attentional component in current models would have on the structure and organization of language and on our current understanding of linguistic experience.

LINGUIST 207. Seminar in Phonetics: The perception and recognition of clear and casual speech.. 2-4 Units.
Through readings and discussion, we will focus on two questions in this seminar:n(1) Is the balance of top-down versus bottom-up information different when processing careful vs. casual speech?n(2) What provides more information to a listener - Half of a clearly-articulated word, or an entire reduced word?nThis is not a project-based seminar, but the seminar is linked to an ongoing research project, and we will use that project to ground how a researcher might go about addressing the above questions. We will refer to our in-progress project to provide concrete examples of (a) testable, theoretically-grounded hypotheses, (b) appropriately matched methods/design, (c) benefits/costs of different types of statistical methods, and (d) supported vs. speculative accounts. The seminar is heavily based on reading and discussion, but will be supplemented by the practical issues associated with a related project. At the end of the seminar, students will have a basic understanding of the literature related to the topic, what gaps/inconsistencies exist in that work, and how to pursue those gaps, if interested. A research proposal is required at the end of the quarter.

LINGUIST 207A. Advanced Phonetics. 3 Units.
In this seminar, we will work collaboratively on a research project in spoken word recognition and/or memory, that is sensitive to current issues dealing with phonetic variation. We will choose one of four clearly delineated questions and work as a team throughout the quarter to complete the project. With this structure, everyone will gain hand-on experience in experimental design, stimulus development, experimental setup, data collection, and data analysis.

LINGUIST 207L. Phonetics Research Lab. 1 Unit.
Regular meetings of the members of the Phonetics Lab.

LINGUIST 208. Memory for Spoken Words. 3 Units.
Research on memory for spoken words altered the course of much research in phonetics and psycholinguistics since the 1990s. In 2019, though, we are facing three main issues: (1) Much work was unmoved by this seminal work, carrying assumptions that need to be clearly thought through and addressed, (2) We still have no clear grasp of all the intricacies and predictions of this earlier work, and (3) Redundancy in research exists, where parts of our field appear to be caught in a loop. This seminar will be reading and discussion based, focusing on work related to each of these three points. Students will be expected to read two papers a week (one course paper, and one paper cited within that work) to bring us to a clear picture of past work. In addition, the final project involves close collaboration between each student and me, to arrive at a novel and feasible study proposal that addresses one of these three issues, with the expectation that the study will be conducted in the Spring and/or Summer quarters.

LINGUIST 210A. Phonology. 3-4 Units.
Introduction to phonological theory and analysis based on cross-linguistic evidence. Topics: phonological representations including features, syllables, metrical structure; phonological processes; phonological rules and constraints; phonological typology and universals; the phonology/morphology interface; Optimality Theory and Harmonic Grammar.

LINGUIST 210B. Advanced Phonology. 2-4 Units.
New developments in phonological theory, in particular Optimality Theory, primarily on the empirical basis of stress, syllable structure, prosodic organization, and phonological variation.

LINGUIST 211. Metrics. 1-4 Unit.
Principles of versification from a linguistic point of view. Traditional and optimality-theoretic approaches. The canonical system of English metrics, and its varieties and offshoots. The typology of metrical systems and its linguistic basis. Meter and performance.

LINGUIST 212B. Seminar in Phonology. 1-4 Unit.
May be repeated for credit.

LINGUIST 213. Corpus Phonology. 3-4 Units.
An introduction to constructing and using phonologically annotated corpora to test phonological hypotheses. Hands-on experience in corpus manipulation and phonological modeling.

LINGUIST 214. Phonology Workshop. 1-2 Unit.
May be repeated for credit.

LINGUIST 215. Corpus Phonology: Sentence Prosody. 2-4 Units.
Prosodic prominence at the sentence level from phonological, syntactic, and discourse perspectives. The course combines lectures with hands-on corpus work, with the opportunity to develop joint projects.

LINGUIST 216. Morphology. 2-4 Units.
Major contemporary approaches to morphology. Word-based vs. morpheme-based morphol- ogy. Realizational vs. generative morphology. Affix ordering and morphological constituency. The mirror principle. The morphology/syntax boundary and the lexicalist hypothesis. Compound- ing: synthetic and phrasal compounds, incorporation. Prosodic morphology. The semantics of inflection and derivation. Feature decomposition of inflectional categories: markedness, blocking, underspecification. Gaps and periphrasis. Inheritance hierarchies. Valence-changing operations. This is a 4-unit course. May be taken for fewer units with prior approval of the instructor.

LINGUIST 217. Morphosyntax. 2-4 Units.
The role of morphology in grammar: how word structure serves syntax in the expression of meaning. Lexical semantics, Theta-roles, argument structure, and grammatical relations. Licensing: case, agreement, word order, and their interaction.

LINGUIST 218. Seminar on Morphological Theories. 2-4 Units.
Word formation and the lexicon: empirical generalizations and theoretical approaches. Lexicalist and Distributed Morphology. How words are built and interpreted: constituency and headedness, morpheme order and scope, the mirror principle, bracketing paradoxes, the hierarchy of functional categories. Paradigms, blocking, gaps, periphrasis, syncretism. Locality, head movement vs. selection, constraints on allomorphy, incorporation, polysynthesis, cliticization and prosodic re-ordering phenomena.

LINGUIST 222A. Foundations of Syntactic Theory I. 3-4 Units.
The roles of the verb and the lexicon in the determination of sentence syntax and their treatment in modern grammatical theories. Empirical underpinnings of core phenomena, including the argument/adjunct distinction, argument structure and argument realization, control and raising, operations on argument structure and grammatical function changing rules. Motivations for a lexicalist approach rooted in principles of lexical expression and subcategorization satisfaction. Prerequisite: Linguist 121A, Linguist 121B, or permission of instructor.

LINGUIST 222B. Foundations of Syntactic Theory II. 3-4 Units.
The nature of unbounded dependency constructions such as constituent questions, topicalization, relative clauses, and clefts, among others. Topics include A-bar movement, constraints on extraction, successive cyclicity, as well as variation in the way unbounded dependencies are established crosslinguistically. Prerequisite: 222A.

LINGUIST 222C. Foundations of Syntactic Theory III - Topics. 3-4 Units.
This course introduces contemporary approaches to syntactic theory. Focus is on a few central topics of current interest such as ellipsis, binding, locality, movement, case and agreement, among others. Prerequisites: Linguist 222B or permission of the instructor.

LINGUIST 223. Introduction to Minimalist Syntax. 3-4 Units.
Introduces the basics of Minimalist architecture and structure-building operations, with attention to the communication of syntax with the phonological and semantic interfaces. Topics include phrase structure, locality and phases, phrasal and head movement, functional categories, and features. A previous graduate-level syntax course, or permission of the instructor required.

LINGUIST 225. Seminar in Syntax. 2-4 Units.
Seminar on advanced topics in syntax. Topics may vary from year to year. May be repeated for credit.

LINGUIST 225A. Seminar in Syntax: Ellipsis. 1-4 Unit.
Diverse kinds of elliptical utterances. The fundamental problems in grammatical analysis of ellipsis (primary focus: English). The clarification of key data relating to current theoretical controversies. May be repeated for credit.

LINGUIST 225B. Seminar in Syntax: Syntax/Phonology Interface. 2-4 Units.
The nature of the syntax-phonology interface. To what extent does syntax influence phonology and in what ways does phonology influence syntax? Topics may include: word order and linearization, second-position effects, prosodic structure and the prosodic hierarchy, sentential stress, ellipsis, focus, allomorphy, among others. May be repeated for credit. Prerequisites: Linguistics 222A (Foundations of Syntactic Theory I) and Linguistics 210A (Phonology), or permission of the instructor.

LINGUIST 225D. Seminar in Syntax: Advanced Topics. 2-4 Units.
Seminar on advanced topics in syntax. Topics may vary from year to year. Prerequisites: LINGUIST 222A and 222B, or permission of instructor. May be repeated for credit.

LINGUIST 225S. Syntax and Morphology Research Seminar. 1 Unit.
Presentation of ongoing research in syntax and morphology. May be repeated for credit.

LINGUIST 227. Linguistic Meaning and Legal Interpretation. 3-4 Units.
This course applies analytical concepts from semantics and pragmatics to the interpretation of legal texts. It critically examines methods and theories of legal interpretation, such as 'textualism', 'intentionalism', 'originalism'. Prerequisites: LINGUIST 130A/230A, or PHIL 181/281, or permission of instructor.
Same as: LINGUIST 127

LINGUIST 230A. Introduction to Semantics and Pragmatics. 4 Units.
Linguistic meaning and its role in communication. Topics include logical semantics, conversational implicature, presupposition, and speech acts. Applications to issues in politics, the law, philosophy, advertising, and natural language processing. Those who have not taken logic, such as PHIL 150 or 151, should attend section. Prerequisites: LINGUIST 1, SYMSYS 1 (LINGUIST 35), consent of instructor, or graduate standing in Linguistics.
Same as: LINGUIST 130A

LINGUIST 230B. Advanced Semantics. 2-4 Units.
The primary goal of this course is to cover advanced topics in semantics and pragmatics that are central to research in those fields. The course is aimed at advanced graduate students who plan to do research in semantics, pragmatics, or philosophy of language. Prerequisites: LINGUIST 130A/230A or permission from instructor.

LINGUIST 230C. Advanced Topics in Semantics & Pragmatics. 1-4 Unit.
We focus on a topic in the meaning and use of linguistic expressions to explore a number of central issues in semantics and pragmatics. These include quantification, binding, referentiality, presupposition, pragmatic inferences, context-dependency, indexicality, and systems of dynamic interpretation. Prerequisites: LINGUIST 230B or permission of the instructor.

LINGUIST 230E. Logic Laboratory. 1 Unit.
Typically taken in conjunction with 130A/230A.
Same as: LINGUIST 130C

LINGUIST 230P. Advanced Pragmatics. 2-4 Units.
The primary goal of this course is to cover advanced topics in pragmatics that are central to research in those fields. The course is aimed at advanced graduate students who plan to do research in semantics, pragmatics, or philosophy of language. Prerequisites: LINGUIST 130A/230A or permission of instructor.

LINGUIST 232A. Lexical Semantics. 2-4 Units.
Introduction to issues in word meaning, focused primarily around verbs. Overview of the core semantic properties of verbs and the organization of the verb lexicon. Approaches to lexical semantic representation, including semantic role lists, proto-roles, and causal and aspectual theories of event conceptualization. Prerequisite: Linguist 130A, Linguist 130B, or permission of instructor.

LINGUIST 232B. Seminar in Lexical Semantics: Unaccusativity. 1-4 Unit.
A general introduction to the phenomenon of unaccusativity, followed by in-depth exploration of several facets of this phenomenon, chosen according to participant's interests. Potential topics include: an assessment of proposed semantic determinants of unaccusativity, the linguistic representation of unaccusativity, its crosslinguistic manifestations, and case studies of unaccusative phenomena (e.g. auxiliary selection, resultatives, the causative alternation, psych-verbs, weather verbs). These topics may be approached from theoretical, typological, psycholinguistic, and acquisition perspectives. May be repeated for credit with different content. Prerequisite: Linguist 232A or permission of the instructor.

LINGUIST 234. The Structure of Discourse: Theory and Applications. 2-4 Units.
This course examines the linguistic structure of discourse, with a particular emphasis on learning to identify the emergent structures of spontaneous conversations. Specific topics include: narrative structure; turn-taking; discourse markers; face and politeness; inference and implicature; discourse coherence; reference; intertextuality; stance-taking; and framing. Class-time is split between hands-on data analysis and the discussion of both recent and foundational research on conversation. Throughout the class discussions and data analysis projects, students will also explore how the structure of discourse is shaped by cognition, social identities, interpersonal relationships, and cultural contexts.nnPrerequisites: Prior coursework in linguistics or permission of the instructor.
Same as: LINGUIST 134A

LINGUIST 235. Semantic Fieldwork. 2-4 Units.
Techniques for evidence from less well-studied languages within formal semantic theory. Semantic phenomena, and techniques for investigating them, including scope, quantifiers, pronouns, focus, tense, aspect, mood, evidentiality, and information structure. Practical work on a language.

LINGUIST 236. Seminar in Semantics: Conditionals. 2-4 Units.
Discussion of the semantics and pragmatics of conditionals with a focus on recent developments in linguistics, analytic philosophy, and cognitive psychology.

LINGUIST 237. Seminar in Semantics: Gradation & Modality. 1-4 Unit.
Discussion of major semantic theories of modality and gradation, with special attention to empirical and logical issues that arise from the study of gradable modals.

LINGUIST 239. Semantics and Pragmatics Research Seminar. 1-2 Unit.
Presentation of ongoing research in semantics. May be repeated for credit.

LINGUIST 241. Language Acquisition II. 4 Units.
Pragmatics and acquisition. May be repeated for credit.

LINGUIST 242. Heritage Languages. 3-4 Units.
The linguistic and cultural properties of Heritage languages, which are partially acquired and supplanted by a dominant language in childhood. Topics: Syntactic, phonological and morphological properties of heritage languages, implications from experimental HL research for language universals, cultural vs. linguistic knowledge, the role of schooling in HL competence, influence of the dominant language on the HL, and pedagogical issues for HL learners in the classroom.
Same as: LINGUIST 142

LINGUIST 245A. Introduction to Psycholinguistics. 4 Units.
How do people do things with language? How do we go from perceiving the acoustic waves that reach our ears to understanding that someone just announced the winner of the presidential election? How do we go from a thought to spelling that thought out in a sentence? How do babies learn language from scratch? This course is a practical introduction to psycholinguistics -- the study of how humans learn, represent, comprehend, and produce language. The course aims to provide students with a solid understanding of both the research methodologies used in psycholinguistic research and many of the well-established findings in the field. Topics covered will include visual and auditory recognition of words, sentence comprehension, reading, discourse and inference, sentence production, language acquisition, language in the brain, and language disorders. Students will conduct a small but original research project and gain experience with reporting and critiquing psycholinguistic research.
Same as: LINGUIST 145, PSYCH 140

LINGUIST 245B. Methods in Psycholinguistics. 4 Units.
Over the past ten years, linguists have become increasingly interested in testing theories with a wider range of empirical data than the traditionally accepted introspective judgments of hand-selected linguistic examples. Consequently, linguistics has seen a surge of interest in psycholinguistic methods across all subfields. This course will provide an overview of various standard psycholinguistic techniques and measures, including offline judgments (e.g., binary categorization tasks like truth-value judgments, Likert scale ratings, continuous slider ratings), response times, reading times, eye-tracking, ERPs, and corpus methods. Students will present and discuss research articles. Students will also run an experiment (either a replication or an original design, if conducive to the student¿s research) to gain hands-on experience with experimental design and implementation in html/javascript and Mechanical Turk; data management, analysis, and visualization in R; and open science tools like git/github.
Same as: SYMSYS 195L

LINGUIST 246. Foundations of Psycholinguistics. 4 Units.
Basic readings in language processing and language use, with a historical dimension; discussion each week in class of the relevant papers.

LINGUIST 247. Seminar in Psycholinguistics: Advanced Topics. 2-4 Units.
Adaptation to speaker variability in language use has receivednincreasing attention in recent years from linguists and psychologistsnalike, who have recognized that, though long ignored, it poses a problemnfor static theories of language. The course will present a broad surveynof recent work in this area across levels of linguistic representation,nincluding phonetic, lexical, syntactic, prosodic, and semanto-pragmaticnadaptation. We will discuss the cognitive underpinnings of adaptationnand its relation to priming and learning, compare adaptation in varyingndomains, and consider the implications for theories of language andncommunication. The course will be organized primarily around discussionnof assigned readings. Students will develop a research proposal relevantnto issues in adaptation. May be repeated for credit. Prerequisite: LINGUIST 145 or background in any subfield of linguistics.
Same as: PSYCH 227

LINGUIST 247L. Alps Research Lab. 1 Unit.
Regular meetings of members of the Alps Lab.

LINGUIST 248. Seminar in Developmental Psycholinguistics. 4 Units.
Children's acquisition of word meaning, with particular emphasis on socio-pragmatic approaches vs. a priori constraints. Consideration of differences in acquisition by syntactic category (nouns versus verbs), by semantic domain, and by conversational frame, in considering how children build up a lexical repertoire.

LINGUIST 249. Language Processing. 2-4 Units.
Understanding spoken or written language requires the rapid, incremental processing of novel compositional structures, as well as the integration of the incoming language stream with multiple sources of information, such as the prior discourse, physical context, social information, etc. How are humans able to efficiently accomplish this task? To address this question, this course will consider principles of sentence and discourse processing that guide language understanding and features of sentence & discourse structure that facilitate comprehension. Specific topics are likely to include reference processing, memory & forgetting, individual differences in comprehension ability, the role of context, and computational models of language comprehension.

LINGUIST 249L. Workshop on Incremental Language Processing. 1 Unit.
Language is processed incrementally over time. This has consequences for language comprehension, production, acquisition, and change, all of which occur at different timescales. What is the role of time in language? The class will be based around visiting lectures by major researchers in this area, along with meetings to prepare for their visits by discussing key readings. May be repeated for credit.
Same as: PSYCH 249L

LINGUIST 250. Sociolinguistic Theory and Analysis. 3-4 Units.
Methods of modeling the patterned variation of language in society. Emphasis is on variation, its relation to social structure and practice, and its role in linguistic change. Intersection between quantitative and qualitative analysis, combining insights of sociology and linguistic anthropology with quantitative linguistic data. Prerequisite: graduate standing in Linguistics or consent of instructor.

LINGUIST 251. Sociolinguistic Field Methods. 3-5 Units.
Strengths and weaknesses of the principal methods of data collection in sociolinguistics.

LINGUIST 252. Sociolinguistics and Pidgin Creole Studies. 2-4 Units.
Introduction to pidgins and creoles, organized around the main stages in the pidgin-creole life cycle: pidginization, creolization, and decreolization. Focus is on transformations in the English language as it was transported from Britain to Africa, Asia, the Caribbean, and the Pacific. Resultant pidginized and creolized varieties such as Nigerian Pidgin English, Chinese Pidgin English, New Guinea Tok Pisin, Suriname Sranan, and the creole continua of Guyana, Jamaica, and Hawaii. Also French, Dutch, Portugese, Chinook, Motu, and Sango.
Same as: LINGUIST 152

LINGUIST 253. Race, Ethnicity, and Language: Racial, Ethnic, and Linguistic Formations. 3-5 Units.
Language, as a cultural resource for shaping our identities, is central to the concepts of race and ethnicity. This seminar explores the linguistic construction of race and ethnicity across a wide variety of contexts and communities. We begin with an examination of the concepts of race and ethnicity and what it means to be "doing race," both as scholarship and as part of our everyday lives. Throughout the course, we will take a comparative perspective and highlight how different racial/ethnic formations (Asian, Black, Latino, Native American, White, etc.) participate in similar, yet different, ways of drawing racial and ethnic distinctions. The seminar will draw heavily on scholarship in (linguistic) anthropology, sociolinguistics and education. We will explore how we talk and don't talk about race, how we both position ourselves and are positioned by others, how the way we talk can have real consequences on the trajectory of our lives, and how, despite this, we all participate in maintaining racial and ethnic hierarchies and inequality more generally, particularly in schools.
Same as: ANTHRO 320A, CSRE 389A, EDUC 389A

LINGUIST 254. Race, Ethnicity, and Language: Writing Race, Ethnicity, and Language in Ethnography. 3-4 Units.
This methods seminar focuses on developing ethnographic strategies for representing race, ethnicity, and language in writing without reproducing the stereotypes surrounding these categories and practices. In addition to reading various ethnographies, students conduct their own ethnographic research to test out the authors' contrasting approaches to data collection, analysis, and representation. The goal is for students to develop a rich ethnographic toolkit that will allow them to effectively represent the (re)production and (trans)formation of racial, ethnic, and linguistic phenomena.
Same as: ANTHRO 398B, EDUC 389B

LINGUIST 255A. Seminar in Sociolinguistics: California Dialectology. 2-4 Units.
This seminar organizes and analyzes data gathered by the Voices of California project. This year, we will be working with the data from Amador County. May be repeated for credit.

LINGUIST 255B. Sociolinguistics Classics and Community Studies. 3-5 Units.
This course discusses some of the major community studies in sociolinguistics (e.g. Labov in NYC, Wolfram in Detroit, Trudgill in Norwich, Milroy in Belfast, and a selection of others up to the present) and the work of other classic sociolinguistic figures (e.g. Romaine, Hymes) who contributed in other ways. Our goal is to reach a deep understanding and critique of their methods, findings and ideas, to improve our own research and our responses to new developments in the field.

LINGUIST 255C. Seminar in Sociolinguistics: Sociogrammar. 2-4 Units.
Seminar style course exploring the literature on sociolinguistic variation in morphology and syntax from the 1960s to the present, and its implication for (socio)linguistic theory, especially in relation to (and in contrast with) socio-phonetics.

LINGUIST 255D. Seminar in Sociolinguistics: Character Types in Sociolinguistics. 1-4 Unit.
Figures of personhood, personas, character types, and stereotypes in the study of linguistic variation. What are the significant differences among these types? Are these social types merely the vehicles through which social meanings travel or do they constitute the meanings themselves?.

LINGUIST 255E. Seminar in Sociolinguistics: Stylistic Landscapes. 2-5 Units.
The study of the role of language in the stylistic construction of personae has progressed significantly over the past decade. We know that patterns of association of these personae ramp up to construct the major macro-social categories such as gender, age, class, ethnicity, hence patterns across their linguistic styles correlate with these categories. We have yet, though, to theorize how that patterning takes place on the ground. This seminar will explore ways to theorize the stylistic landscape. nPrerequisites: 105/205 and 250, or consent of instructor.

LINGUIST 255F. Seminar in Sociolinguistics: Classics in Sociolinguistics. 1-4 Unit.
Figures of personhood, personas, character types, and stereotypes in the study of linguistic variation. What are the significant differences among these types? Are these social types merely the vehicles through which social meanings travel or do they constitute the meanings themselves?.

LINGUIST 255G. Seminar in Sociolinguistics: Language & Embodiment. 1-4 Unit.
Topics vary by quarter. This course examines the role of the body (beyond speech articulators) in language use. Topics will include gesture, facial expression, physical stance, and hexis. Readings will be drawn from a variety of fields outside of linguistics. May be repeated for credit.

LINGUIST 255H. Seminar in Sociolinguistics: Iconicity. 3-5 Units.
The nature of iconicity in language, with a focus on the role of sound symbolism in sociolinguistic variation.

LINGUIST 255I. Seminar in Sociolinguistics: Class Stratification of the California Vowel Shift in Sacramento. 2-4 Units.
Models of the role of socioeconomic class in the spread of sound change are based on studies in cities that have had a stable English-speaking population for several centuries. The question underlying this seminar is whether this model applies to California, whose dialect is in the early stages of development and whose cities have, for example, no major industrial history. We will use data from the Voices of California fieldsite in Sacramento to examine the role of class in the California Vowel Shift.

LINGUIST 255J. Seminar in Sociolinguistics: Style. 3-4 Units.
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LINGUIST 255K. Seminar in Sociolinguistics: Applied Sociolinguistics -- Tryna Make a Difference. 3-4 Units.
In this new course, we will explore how sociolinguistic research and principles can be used to make a positive difference in society, especially for speakers of vernacular varieties, who are often stymied in schools, courtrooms, job searches, doctor¿s visits, apartment searches and so on. We will focus especially on language and the law, and language in education, drawing on some brand new texts, but also on recent and ongoing research and experimentation at Stanford and elsewhere. (Our schedule will include some visiting lecturers from other universities.).
Same as: LINGUIST 155K

LINGUIST 255L. Seminar in Sociolinguistics: Multiracial Identity in Variation Studies. 1-4 Unit.
This course confronts the challenge of investigating linguistic variation among multiracial speakers. Hands-on individual and collaborative projects using the voices of California corpus. Prerequisite: Linguistics 258 or equivalent, no exceptions.

LINGUIST 257. Sociophonetics. 1-4 Unit.
The study of phonetic aspects of sociolinguistic variation and the social significance of phonetic variation. Acoustic analysis of vowels, consonants, prosody, and voice quality. Hands-on work on collaborative research project. Prerequisite: 105, 110 or equivalent, or consent of instructor.
Same as: LINGUIST 157

LINGUIST 257L. Interactional Phonetics Research Lab. 1 Unit.
Sociophonetic, discourse-analytic, and computational approaches to social interaction. Meetings consist of presentations of research, discussions of readings, and collaborative research project work. Prerequisites: Linguist 250, Linguist 258, or Linguist 258A.

LINGUIST 258. Analysis of Variation. 1-4 Unit.
The quantitative study of linguistic variability in time, space, and society emphasizing social constraints in variation. Hands-on work with variable data. Prerequisites: 105/205 and 250, or consent of instructor.

LINGUIST 258A. Variation and Social Meaning. 2-4 Units.
The social meaning of linguistic variation. Approaches to investigating social meaning, encoding meaning across different levels of language, the structure of meaning and theories of indexicality, the role of meaning in language change.

LINGUIST 260A. Historical Morphology and Phonology. 2-4 Units.
Sound change and analogical change in the perspective of linguistic theory. Internal and comparative reconstruction. Establishing genetic relationships.

LINGUIST 260B. Historical Morphosyntax. 2-4 Units.
Morphological and syntactic variation and change. Reanalysis, grammaticalization. The use of corpora and quantitative evidence. This is a 4-unit course. May be taken for fewer units with prior approval of the instructor.

LINGUIST 264. English Transplanted, English Transformed: Pidgins and Creoles. 2-4 Units.
English varieties around the world, including white vernacular dialects and creole, pidgin, and indiginized Englishes. Emphasis is on the historical circumstances of origin, linguistic characteristics, and social setting in colonial and postcolonial societies. Theoretical issues pertaining to language contact, language shift, and pidgin and creole formation.

LINGUIST 265. African American Vernacular English. 3-5 Units.
Vocabulary, pronunciation and grammatical features of the systematic and vibrant vernacular English [AAVE] spoken by African Americans in the US, its historical relation to British dialects, and to English creoles spoken on the S. Carolina Sea Islands (Gullah), in the Caribbean, and in W. Africa. The course will also explore the role of AAVE in the Living Arts of African Americans, as exemplified by writers, preachers, comedians and actors, singers, toasters and rappers, and its connections with challenges that AAVE speakers face in the classroom and courtroom. Service Learning Course (certified by Haas Center). UNITS: 3-5 units. Most students should register for 4 units. Students willing and able to tutor an AAVE speaking child in East Palo Alto and write an additional paper about the experience may register for 5 units, but should consult the instructor first. Students who, for exceptional reasons, need a reduced course load, may request a reduction to 3 units, but more of their course grade will come from exams, and they will be excluded from group participation in the popular AAVE Happenin at the end of the course.
Same as: AFRICAAM 21, CSRE 21, LINGUIST 65

LINGUIST 266. Vernacular English and Reading. 4-5 Units.
Discusses some of the literature on the relation between use of vernacular English varieties (e.g. African American Vernacular English, Chicano English) and the development of literacy (especially in Standard English). But our primary focus is on improving the reading skills of African American and Latino students in local schools through the Reading Road program developed at the University of Pennsylvania. Students must commit to tutoring one or more elementary students weekly, using the program. L65 AAVE recommended, but not required.
Same as: LINGUIST 66

LINGUIST 267. Panini. 2-4 Units.
Panini's "Astadhyayi", the most complete generative grammar of any language yet written, is the source of many of the principles and formal techniques of modern linguistic theory. Remarkably, in Pa 'n.ini's work these emerge just from jointly maximizing empirical coverage and minimizing description length. We review the overall organization of his grammar and its motivation, the levels of representation, the types of rules and constraints, and the principles that govern their application and interaction. Among the specific aspects of the analysis that we will examine are the thematic role-based syntax, the lexicalist analysis of word-formation and inflection, and the stratally organized phonology. Course is 4 units. May be taken for fewer units with prior approval from instructor.

LINGUIST 271. Structure of Basque. 2-4 Units.
Introduction to key topics in Basque morphology, syntax, semantics and how they bear on current theoretical debates. Topics covered may include basic clause structure and word order, case-marking and ergativity, the expression of motion and location.

LINGUIST 272. Structure of Finnish. 2-4 Units.
Central topics in Finnish morphology, syntax, and semantics and how they bear on current theoretical debates. Topics: clause structure; case; aspect; word order.

LINGUIST 272A. Structure of Slavic. 2-4 Units.
Central topics in the syntax, morphology, and phonology of Slavic languages and how they bear on current theoretical debates. Prerequisites: Linguistics 222A (Foundations of Syntactic Theory I) and Linguistics 210A (Phonology).

LINGUIST 273. The Structure of Russian. 2-4 Units.
A synchronic overview of contemporary standard Russian, including its sound system, word formation and grammatical structure. Emphasis is on problems presented by Russian for current linguistic theory. The acquisition of Russian as a first language.
Same as: LINGUIST 173

LINGUIST 274A. Linguistic Field Methods I. 3-4 Units.
Practical training in the collection and analysis of linguistic data from native speakers of a language largely unknown to the investigator. Documentation of endangered languages. Research goals, field trip preparation, ethics (including human subjects, cooperation with local investigators, and governmental permits), working in the community, technical equipment, and analytical strategies. Emphasis is on the use of recording devices and computers in collection and analysis. Students are strongly encouraged to make a commitment to both 274A and 274B in the same year. Prerequisites: One course in phonetics or phonology and syntax, or permission of the instructor. Open to undergraduates with permission of instructor only.

LINGUIST 274B. Linguistic Field Methods II. 3-4 Units.
Continuation of 274A, with a focus on student projects in a targeted language. Prerequisite: 274A or consent of instructor. Graduate students are strongly encouraged to make a commitment to both 274A and 274B in the same year. For full credit, students are expected to work privately with the consultant outside of class time.

LINGUIST 275. Probability and Statistics for linguists. 2-4 Units.
Introduction to probability and statistical inference, with a focus on conceptual and practical issues relevant to theoretical, experimental, and corpus linguistics. Data analysis and modeling using R. Course project will involve reproducing a published modeling result or statistical analysis in full detail.

LINGUIST 276. Quantitative Methods in Linguistics. 2-4 Units.
Introduction to methods for collecting and analyzing quantitative linguistic data, with a primary focus on the use of corpora in exploring theoretical questions in various areas of linguistics. Topics include the access and retrieval of corpus data (including web-based corpora), data annotation, and statistical modeling. Practical experience with R, Python scripting, and setting up online experiments through Amazon Mechanical Turk.

LINGUIST 278. Programming for Linguists. 1-4 Unit.
Computer programming techniques for collecting and analyzing data in linguistic research. Introduction to the UNIX, regular expressions, and Python scripting. Hands-on experience gathering, formatting, and manipulating corpus, field, and experimental data, combining data from multiple sources, and working with existing tools. Knowledge of computer programming not required.

LINGUIST 280. From Languages to Information. 3-4 Units.
Extracting meaning, information, and structure from human language text, speech, web pages, social networks. Introducing methods (regex, edit distance, naive Bayes, logistic regression, neural embeddings, inverted indices, collaborative filtering, PageRank), applications (chatbots, sentiment analysis, information retrieval, question answering, text classification, social networks, recommender systems), and ethical issues in both. Prerequisites: CS106B.
Same as: CS 124, LINGUIST 180

LINGUIST 281. Computational Models of Linguistic Formalism. 1-4 Unit.
This seminar will explore the computational properties of a small set of formalisms from phonology, morphology, syntax, and semantics, the choice depending on the interests of the participants. Possible topics include, but are not limited to, finite-state techniques, Optimality Theory, Unification-based grammar, Montague Grammar, Sound change, Corpus-based exploration, and Translation.

LINGUIST 284. Natural Language Processing with Deep Learning. 3-4 Units.
Methods for processing human language information and the underlying computational properties of natural languages. Focus on deep learning approaches: understanding, implementing, training, debugging, visualizing, and extending neural network models for a variety of language understanding tasks. Exploration of natural language tasks ranging from simple word level and syntactic processing to coreference, question answering, and machine translation. Examination of representative papers and systems and completion of a final project applying a complex neural network model to a large-scale NLP problem. Prerequisites: calculus and linear algebra; CS124, CS221, or CS229.
Same as: CS 224N, SYMSYS 195N

LINGUIST 285. Spoken Language Processing. 2-4 Units.
Introduction to spoken language technology with an emphasis on dialogue and conversational systems. Deep learning and other methods for automatic speech recognition, speech synthesis, affect detection, dialogue management, and applications to digital assistants and spoken language understanding systems. Prerequisites: CS124, CS221, CS224N, or CS229.
Same as: CS 224S

LINGUIST 286. Information Retrieval and Web Search. 3 Units.
Text information retrieval systems; efficient text indexing; Boolean, vector space, and probabilistic retrieval models; ranking and rank aggregation; evaluating IR systems; text clustering and classification; Web search engines including crawling and indexing, link-based algorithms, web metadata, and question answering; distributed word representations. Prerequisites: CS 107, CS 109, CS 161.
Same as: CS 276

LINGUIST 287. Extracting Social Meaning and Sentiment. 3 Units.
Methods for extracting social meaning (speaker perspectives, emotions and attitudes) from text and speech. Topics include sentiment analysis and summarization, detection of deception, sarcasm, emotion, and personality.nnAnalysis of meaning-bearing characteristics of the speaker and topic, including text, discourse, prosodic and other cues. Prerequisite: CS 124 or 221 or 229 or permission of instructors.

LINGUIST 288. Natural Language Understanding. 3-4 Units.
Project-oriented class focused on developing systems and algorithms for robust machine understanding of human language. Draws on theoretical concepts from linguistics, natural language processing, and machine learning. Topics include lexical semantics, distributed representations of meaning, relation extraction, semantic parsing, sentiment analysis, and dialogue agents, with special lectures on developing projects, presenting research results, and making connections with industry. Prerequisites: one of LINGUIST 180/280, CS 124, CS 224N, or CS 224S.
Same as: CS 224U, LINGUIST 188, SYMSYS 195U

LINGUIST 289. Topics in Computational Linguistics: Computational Models of Language Change. 3-4 Units.
Topics in computational models of language change. Vector semantic models of change in word meaning, word sentiment, and word innovation, computational models of syntactic change and sound change, and models of language evolution like the interated learning paradigm. Prerequisites: LINGUIST 288, LINGUIST 230A, LINGUIST 250, and either LINGUIST 205A or 210A. Or consent of instructor.

LINGUIST 289L. Computational Linguistics Research Lab. 1 Unit.
Regular meetings of the members of the Computational Research Lab.

LINGUIST 292A. Language Testing. 3 Units.
Performance with language (speaking, reading, writing, listening, translating or interpreting) is used to measure a person's proficiency or achievement level in the language. Language performance is also used to measure other human characteristics, including psycho-social states and traits. The course will review basic methods in language measurement and cover their use as applied in education, psychology, and commerce. Topics include both traditional and automatic methods for assessing speaking, reading, writing, affect, and language disorders. Students will develop, apply, and evaluate a language test.
Same as: LINGUIST 192

LINGUIST 294. Linguistic Research Discussion Group. 1 Unit.
Restricted to first-year Linguistics Ph.D. students.

LINGUIST 390. M.A. Project. 1-6 Unit.
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LINGUIST 391A. Curricular Practical Training. 1 Unit.
Educational opportunities in research and development labs in industry. Qualified linguistics students engage in internship work and integrate that work into their academic program. Students register during the quarter they are employed and complete a research report outlining their work activity, problems investigated, results, and follow-on projects they expect to perform. Course may be repeated for credit.

LINGUIST 393. Summer Research Activity. 1-8 Unit.
Restricted to Linguistics Ph.D. students. May be repeated for credit.

LINGUIST 394. TA Training Workshop. 1 Unit.
For second-year graduate students in Linguistics.

LINGUIST 395. Research Workshop. 1-2 Unit.
Restricted to Linguistics Ph.D. students. Student presentations of research toward qualifying papers. May be repeated for credit.

LINGUIST 395C. Summer Research Workshop. 1-2 Unit.
Restricted to Linguistics Ph.D. students. May be repeated for credit. Student presentations of ongoing research plus professional development sessions.

LINGUIST 395D. Linguistics Writing Group. 1 Unit.
Restricted to Linguistics Ph.D. students. May be repeated for credit. Meets weekly to support student writing projects.

LINGUIST 396. Research Projects in Linguistics. 2-3 Units.
Mentored research project for first-year graduate students in linguistics.

LINGUIST 397. Directed Reading. 1-15 Unit.
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LINGUIST 398. Directed Research. 1-15 Unit.
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LINGUIST 399. Dissertation Research. 1-15 Unit.
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LINGUIST 802. TGR Dissertation. 0 Units.
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MASTER OF LIBERAL ARTS

Courses offered by the Master of Liberal Arts Program are listed under the subject code MLA on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=MLA&filter-catalognumber-MLA=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=MLA&filter-catalognumber-MLA=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=MLA&filter-catalognumber-MLA=on).

Program Description

The Master of Liberal Arts (MLA) program aims to provide a flexible, interdisciplinary program for returning adult students who seek a broad education in the liberal arts. Begun in 1991, the underlying premise of the MLA program is that knowledge gained through an interdisciplinary course of study leads to intellectual independence and satisfaction not always found in discipline-based programs of study. The goals of the MLA program are to develop advanced critical thinking, to foster intellectual range and flexibility, and to cultivate an individual's ability to find the connections among different areas of human thought: art, history, literature, music, philosophy, political science, science, and theology.

The program is designed with part-time students in mind: seminars meet in the evening, and students complete the degree in 4-5 years. All master's seminars are taught by members of the Stanford faculty. Seminar size is limited to 20 students.

Learning Outcomes (Graduate)

The purpose of the Master of Liberal Arts Program is to address subjects that cross disciplinary boundaries; to develop an understanding of the strength and the shortcomings of disciplinary evaluation; to help students to refine their skills in writing, research, critical thinking, collaborative work, and collegial discussion. While students are not being groomed for academic careers, graduates of the program have used their experience to gain acceptance into Ph.D. programs at Stanford and elsewhere. Students who complete the MLA program are well positioned to advance in careers that require the careful analytical and rhetorical training they receive. This training is achieved through the completion of four foundations courses, which together emphasize the program's goals as stated above; seven seminars that offer a more specific engagement with interdisciplinary subject matter; and a master's thesis, accomplished under the direction of a Stanford faculty member who is expert in the subject of the thesis.

Degree Requirements

Candidates for the MLA degree must complete a minimum of 50 units of course work with at least a grade point average of 3.3 (B+). These units must include a three-quarter foundation course (equal to 12 units total), one 4-unit core introductory seminar for second-year students, at least seven 4-unit MLA seminars, and a 6-unit master's thesis. Students must also fulfill distribution requirements in each of the following areas: humanities; social science or social policy; and science, engineering, or medicine.

Foundation Course

During the Autumn, Winter, and Spring quarters following admission to the program, a three quarter foundation course is required of all students, MLA 101A Foundations I, MLA 101B Foundations II: the Middle Ages and Renaissance., MLA 101C Foundations III: the Enlightenment through Modernism. The purpose of this course sequence is to lay the groundwork for the interdisciplinary, intercultural studies the student will shortly undertake. The foundation course introduces students to the broad framework of history, literature, philosophy, political science, and art.

Core Seminar

During the first quarter of the second year, students take the core introductory seminar, MLA 102 An Introduction to Interdisciplinary Graduate Study. This seminar prepares students for interdisciplinary graduate work at Stanford. Students concentrate on writing a critical graduate paper, conducting library research, presenting the results of their research, and productively participating in a collaborative seminar.

MLA Seminars

Students are required to take at least seven MLA seminars of 4 units each. Each MLA course requires a substantial seminar paper. Students are encouraged to use these papers as a way to investigate new fields of interest, as well as a way to develop different perspectives on issues in which they have an ongoing interest.

Master's Thesis

The MLA program culminates in the master's thesis. Students approaching the end of the program write a thesis, approximately 75-100 pages in length, that evolves out of work they have pursued during their MLA studies. The thesis is undertaken with the prior approval of the MLA program, and under the supervision of a Stanford faculty member. During the process of writing the thesis, students are members of a thesis-in-progress course, which meets regularly to provide peer critiques, motivation, and advice. Each student presents the penultimate draft of the thesis to a colloquium of MLA faculty and students, in preparation for revising and submitting the final draft to the adviser and to the MLA program.

Enrollment Requirements

MLA students must enroll for each academic year from the time of original matriculation until conferral of the degree. To remain active, students must either:

1. complete a minimum of two courses (eight units) in one academic year, defined as from the beginning of Autumn Quarter through the end of the following Summer Quarter; or,
2. be actively working on their thesis and regularly attend a minimum of three quarters of the thesis-in-progress meetings from the time the student enrolls in thesis-in-progress through graduation.

Timeline for Completion

All requirements for the Master of Liberal Arts degree must be completed within five years after the student's first term of enrollment in the program. If extraordinary circumstances prevent completion within five years, a student may submit a written petition for a maximum one-year extension to the Associate Dean and Director. This petition is reviewed by a committee which makes a recommendation to the Director; the final decision is at the discretion of the Director. To be considered, the petition must be submitted on or before May 1 of the student's fifth year in the program.

Registration

Master of Liberal Arts students enroll in courses through Stanford's Axess (http://axess.stanford.edu/) system.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

The MLA Program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade, provided that the instructor affirms that the work was done at a 'B-' or better level.

Foundations/Core Courses

The MLA Program requires that students successfully complete (earn a B- or better) each Foundations course before moving on to the next Foundations or Core course. If students choose to take a Foundations or the Core course for CR/NC, student work must be at a B- or better level to fulfill the requirement.

MLA students should consult the 2020-21 MLA Student Handbook for detailed grading policies. The handbook is available on the MLA website.

For a statement of University policy on graduate advising, see the "Graduate Advising" section of this bulletin.

The MLA Program has an advising program that is created to respond to student need as well as the unique nature of this student group. That is to say, the MLA student group is diverse in age, experience, expectation, and availability. The program has determined that important gateway moments in the program (finishing core courses and entering the seminar track, preparation of the thesis prospectus, work on thesis) require cohort advising meetings. Individual academic advising, however, is best accomplished one-on-one, between student and adviser, at a mutually convenient time and place. The advising structure has two stages: Pre-thesis Advising and Thesis Advising.

Pre-thesis Advising begins just before matriculation and lasts until the student has been assigned a thesis adviser.

- Specific pre-thesis academic advising sessions occur before students begin the program, at the conclusion of their foundations course year, as they begin to choose their seminars, and as they begin to contemplate their thesis topics. The dates for these sessions are published well before the events, and students recognize the importance of attending; when exceptional circumstances keep students away, the program offers make-up sessions in person or by phone or video call.
- Entering students are also assigned a faculty adviser as they enter the program. They are encouraged to meet with the adviser during the first year to establish a relationship with the faculty member. Once they begin to choose seminars and to move toward thesis subject matter, the program encourages students to contact their adviser once a quarter, before they sign up for the following quarter, for a meeting.

Year 1

Incoming students meet individually with the Associate Dean and Director in July, prior to starting the program. This meeting provides an opportunity to talk about student and program expectations, to clarify the administrative specifics of the program, and to pass on information about the resources available to the student. This meeting also constitutes an open invitation for students to consult the Associate Dean and Director throughout their time in the program. Before this meeting, students are sent the *MLA Student Handbook* for their perusal.

In October of their first year, students are assigned a Stanford faculty adviser, from among the members of the MLA Faculty Advisory Committee. These advisers are familiar with MLA program policies and the MLA curriculum; they also are familiar with the *MLA Student Handbook*. This adviser works with students throughout Foundations, Core, and seminar classes, until they are assigned a thesis adviser.

In their first year, students should plan to reach out to their adviser at least once. The meeting (or meetings) during their first year provide an opportunity to get to know the adviser before the students and adviser begin meeting regularly during the second year.

Students meet with the Associate Dean and Director again in June at the completion of their first year. This meeting provides an opportunity to go over how the year went, and discuss concerns or challenges the student is having.

Year 2

During Autumn Quarter, second-year students are taking their final core course. One session of that course begins an hour early, and addresses the students' move into seminar choice. The Associate Dean and Director and the Chair of the Faculty Advisory Committee conduct the meeting; faculty who will be offering seminars through the rest of the academic year are invited to the session. This meeting takes place just prior to enrollment opening for Winter Quarter.

Students are encouraged to consult with their faculty adviser prior to enrolling in courses Autumn, Winter, Spring, and summer quarters of the second year to keep the adviser informed of their choices, to discuss program expectations and upcoming responsibilities. These meetings can be held in person, by phone, or over email. Students are expected to initiate these quarterly meetings.

Year 3

Students are advised to contact their faculty adviser each quarter as they continue their seminar work.

Early in Winter Quarter of their third year, students meet as a group with the Associate Dean and Director, and the writing instructor. This meeting is an orientation for students as they begin to think about their thesis topic, and move into the next stage of the degree program. They receive a substantial binder of policies and advice to consult through their thesis-writing.

As students reach the end of their seminars and begin thinking about thesis topics, they begin a conversation with the Associate Dean and Director and the Chair of the Faculty Advisory Committee about their thesis direction and potential faculty they should speak with as they are writing their prospectus. Students are introduced to and encouraged to consult individual faculty members whose expertise can guide the students' building of the prospectus.

Thesis Advising, End of Year 3 and Beyond

The MLA Faculty Advisory committee responds in writing to each students' prospectus, approving it, deferring approval, or rejecting it. In each case, the response brings together the considered advice of the committee as to next steps for the student.

Once students have an approved prospectus, the MLA Faculty Advisory committee assigns them a Stanford faculty adviser.

Students with approved prospectuses (or those who are close to having their prospectuses approved) attend a day-long thesis workshop, held every summer. The MLA writing consultant and instructor directs the workshop; the Chair of the Faculty Advisory Committee, the Faculty Writing Consultant, and the Associate Dean and Director attend, along

with representative faculty advisers and recent graduates. The thesis workshop is intended to give provide insight into working with a thesis adviser, to help students to take maximum advantage of class and instructor feedback in the weekly thesis workshops, to address the necessary work of researching and then shaping and focusing the thesis, to inform students about the practices and expectations of the weekly Thesis-in-Progress sessions and of thesis presentations, and generally to illuminate some of the ups and downs of thesis-writing. (The summer thesis workshop is intended for all students who are working on their theses, not only those who are beginning their work.)

As soon as their prospectus is approved, students become a part of the thesis working group, MLA 398 MLA Thesis in Progress. The thesis-in-progress group meets weekly and includes all MLA students who are working on their theses; it is led by the MLA writing instructor; the MLA faculty writing consultant and the Associate Dean and Director attend most meetings. The meetings provide a time for peer feedback and support as well as guidance from the writing consultants.

Associate Dean and Director: Linda Paulson

Director of Graduate Studies: Linda Paulson

Participating Faculty: Jonathan Berger (Music), Jay Bhattacharya (Medicine), James Campbell (History), William Chace (English, emeritus), James Daughton (History), Gerald Dorfman (Hoover Institution, Political Science), William Durham (Anthropology), Michele Elam (English), Paula Findlen (History), Hester Gelber (Religious Studies, emerita), Albert Gelpi (English, emeritus), Barbara Gelpi (English, emerita), Jonathan Gienapp (History), Denise Gigante (English), Robert Gregg (Religious Studies, emeritus), Heather Hadlock (Music), Allyson Hobbs (History), Ari Kelman (Education), Nancy Kollmann (History), Pavle Levi (Film and Media), James Lock (Medicine), Ivan Lupic (English), Marsh McCall (Classics, emeritus), Ana Minian (History), Paula Moya (English), Thomas Mullaney (History), Alexander Nemerov (Arts), Kathryn Olivarius (History), David Palumbo-Liu (Comparative Literature), Grant Parker (Classics), Rush Rehm (Drama, Classics), John Rick (Anthropology), David Riggs (English, Emeritus), Jessica Riskin (History), Eric Roberts (Engineering, emeritus), Paul Robinson (History, emeritus), Thomas Sheehan (Religious Studies), Robert Siegel (Microbiology and Immunology), Peter Stansky (History, emeritus), Stephen Stedman (Freeman Spogli Institute for International Studies), Barton Thompson (Law), Elaine Treharne (Humanities), Peter Vitousek (Biology), Michael Wilcox (Anthropology), Caroline Winterer (History), Yvonne Yarbro-Bejarano (Latin American Cultures).

Courses

MLA 101A. Foundations I. 4 Units.
Required of and limited to first-year MLA students. First of three quarter foundation course. Introduction to the main political, philosophical, literary, and artistic trends that inform the liberal arts vision of the world and that underlie the MLA curriculum.

MLA 101B. Foundations II: the Middle Ages and Renaissance.. 4 Units.
Required of and limited to first-year MLA students. Second of three quarter foundation course. Introduction to the main political, philosophical, literary, and artistic trends that inform the liberal arts vision of the world and that underlie the MLA curriculum.

MLA 101C. Foundations III: the Enlightenment through Modernism. 4 Units.
Required of and limited to first-year MLA students. First of three quarter foundation course. Introduction to the main political, philosophical, literary, and artistic trends that inform the liberal arts vision of the world and that underlie the MLA curriculum.

MLA 102. An Introduction to Interdisciplinary Graduate Study. 4 Units.
Limited to and required of second-year MLA students. Historical, literary, artistic, medical, and theological issues are covered. Focus is on skills and information needed to pursue MLA graduate work at Stanford: writing a critical, argumentative graduate paper; conducting library research; expectations of seminar participation. Readings include Homer, Thucydides, Camus, Mann, Kushner, and sacred, scientific, and historical writings.

MLA 262. The Economics of Life and Death. 4 Units.
.

MLA 295. The American Enlightenment. 4 Units.
.

MLA 298. Heretics, Prostitutes, and Merchants: The Venetian Empire. 4 Units.
.

MLA 300. Oxford Summer Programme. 2-4 Units.
.

MLA 305. Russia Encounters the Enlightenment: The Art, Culture, and Politics. 4 Units.
.

MLA 322. Coffee, Sugar, and Chocolate: Commodities and Consumption in World History. 120--1800. 4 Units.
.

MLA 326. Nature through Photography. 4 Units.
.

MLA 338. William Blake: A Literary and Visual Exploration of the Illuminated Poetry. 4 Units.
.

MLA 339. The Human Predicament in Three Masterpieces. 4 Units.
.

MLA 341. Aesthetics of Dissent in Contemporary Iran. 4 Units.
.

MLA 342. The Human Story in the Archives. 4 Units.
.

MLA 344. Making and Unmaking Apartheid: Topics in South African History. 4 Units.
.

MLA 347. Rome: From Pilgrimage to the Grand Tour. 4 Units.
.

MLA 348. Modern Iranian Politics Through Modern Iranian Art and Literature. 4 Units.
.

MLA 350. From Literature to Opera. 4 Units.
.

MLA 351. The Civil Rights Movement in History and Memory. 4 Units.
.

MLA 352. Virus in the News. 4 Units.
.

MLA 353. The Fourth R: Religion, Education and Schooling in America. 4 Units.
.

MLA 354. Intimations of Mortality. 4 Units.
.

MLA 355. Dante and the Poets. 4 Units.
Dante Alighieri has had a profound influence on literary tradition. Among his more active respondents were the poets. While the Romantic poets found inspiration in his blend of lyric and epic, of romance and dream vision, of allegorical pilgrimage and spiritual autobiography, pre-Raphaelite poets such as Christina and Dante Gabriel Rossetti (named after the Italian national poet) explored his use of gender dynamics, poetic authority, and the obsessive nature of love poetry. T.S. Eliot was, as always, a mixed bag, and at the same time as he was critical of a poet like William Blake, who illustrated all of The Divine Comedy and who was in his illuminated poetry in the visionary Dantean tradition of world-making, used The Inferno as the basis for his own deep psychological explorations in poems like ¿The Love Song of J. Alfred Prufrock.¿ Prophetic poets like Percy Bysshe Shelley and John Keats found themselves turning to Dante in their own dying attempts at epic, those masterful fragments The Triumph of Life and The Fall of Hyperion, respectively. This course will explore the lasting legacy of Dante as a poet of melancholy, alienation, and redemption in the visual and verbal artwork he inspired.

MLA 356. Film Analysis. 4 Units.
.

MLA 357. Historic Journeys to Sacred Places. 4 Units.
.

MLA 358. The Intersection of Medicine, Science, Public Policy, and Ethics: Cancer as a Case Study. 4 Units.
.

MLA 359. The Big Shift: Demographic and Social Change in America. 4 Units.
.

MLA 398. MLA Thesis in Progress. 0 Units.
Group meetings provide peer critiques, motivations, and advice under the direction of the Associate Dean.

MLA 399. MLA Thesis Final Quarter. 6 Units.
Students write a 75-100 page thesis that evolves out of work they pursued during their MLA studies.

MATHEMATICAL AND COMPUTATIONAL SCIENCE

Courses offered by Mathematical and Computational Science program are listed under the subject code MCS on the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu/) website.

This interdisciplinary undergraduate degree program in MCS is sponsored by Stanford's departments of Statistics, Mathematics, Computer Science, and Management Science & Engineering, providing students with a core of mathematics basic to all the mathematical sciences and an introduction to concepts and techniques of computation, optimal decision making, probabilistic modeling, and statistical inference.

Utilizing the faculty and courses of the departments listed above, this major prepares students for graduate study or employment in the mathematical and computational sciences or in those areas of applied mathematics which center around the use of computers and are concerned with the problems of the social and management sciences. A biology option is offered for students interested in applications of mathematics, statistics, and computer science to the biological sciences (bioinformatics, computational biology, statistical genetics, neurosciences); and in a similar spirit, an engineering and statistics option.

Undergraduate Mission Statement for Mathematical and Computational Science

The mission of the Mathematical and Computational Science Program is to provide students with a core of mathematics basic to all the mathematical sciences and an introduction to concepts and techniques of computation, optimal decision making, probabilistic modeling and statistical inference. The program is interdisciplinary in its focus, and students are required to complete course work in mathematics, computer science, statistics, and management science and engineering. A computational biology track is available for students interested in biomedical applications. The program prepares students for careers in academic, financial and government settings as well as for study in graduate or professional schools.

Learning Outcomes

The program expects undergraduate majors to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to be able to demonstrate:

1. understanding of principles and tools of statistics.
2. command of optimization and its applications and the ability to analyze and interpret problems from various disciplines.
3. an understanding of computer applications emphasizing modern software engineering principles.
4. an understanding of multivariate calculus, linear algebra, and algebraic and geometric proofs.

Bachelor of Science in Mathematical and Computational Science

The Program in Mathematical and Computational Science (MCS) offers a Bachelor of Science in Mathematical and Computational Science. Eligible students may also pursue a Bachelor of Science with Honors (p. 1797). The department also offers a minor in Mathematical and Computational Science (p. 1798).

Suggested Preparation for the Major

Students ordinarily would have taken two of the required Math courses (MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications/MATH 52 Integral Calculus of Several Variables/MATH 53 Ordinary Differential Equations with Linear Algebra) and one of the required Statistics core courses (STATS 116 Theory of Probability, STATS 191 Introduction to Applied Statistics) before declaring MCS during their freshman or sophomore year.

How to Declare the Major

To declare the major, a student should first meet with an MCS peer advisor to create a proposed study plan and then with the MCS student services officer to discuss the major. Students ordinarily have taken two of the required MATH 50 series courses and a core Statistics course prior to declaration. Once the student has created a proposed study plan, they should connect with the MCS student services officer and declare the major through Axess. Students should have an overall grade point average (GPA) of 3.0 to declare.

Degree Requirements

- The student must have a grade point average (GPA) of 3.0 or better in all course work used to fulfill the major requirement.
- At least three quarters before graduation, majors must file with their advisor a plan for completing degree requirements.
- All courses used to fulfill major requirements must be taken for a letter grade with the exception of courses offered satisfactory/no credit only.
- Students who earn less than a 'C+' in STATS 116 Theory of Probability or STATS 200 Introduction to Statistical Inference must repeat the course.
- Only one MCS core course can be substituted by filing a petition with their advisor (with the exception of STATS 200 Introduction to Statistical Inference which cannot be substituted). The Course Substitution Form (https://mcs.stanford.edu/sites/mcs/files/media/file/mcs-course-sub-1819.pdf)must be submitted the quarter prior to enrolling in the course.
- Course transfer credit is subject to department evaluation and to the Office of the Registrar's external credit evaluation. These courses may result in a replacement course for MCS required course or may establish placement in a higher-level course. Transfer requests must first be submitted to Student Services Center prior to being evaluated by your advisor. Submit the MCS Program Transfer Credit Form (https://mcs.stanford.edu/academicsmajor/transfer-credit-mcs-declared-students/) to the student services office.
- Students may take their three electives courses for credit (CR).
- Students may be granted a one-time exception to take a core course for credit (CR) with the exception of STATS 116 and STATS 200.
- The University requires students to complete at least one approved writing-intensive course in each of their majors. See the Hume Center for Writing and Speaking (https://undergrad.stanford.edu/tutoring-support/hume-center/writing/undergraduate-students/writing-major-resources/) web site for a full description of the WIM (https://undergrad.stanford.edu/programs/pwr/courses/writing-major/)requirement.

Course Requirements

		Units
Mathematics (MATH)		**28**
Single-variable calculus or AP credit. [1]		
MATH 19	Calculus	3
MATH 20	Calculus	3
MATH 21	Calculus	4
Students may choose one of the following sequences:		15
Multivariable Calculus and Linear Algebra		
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
MATH 52	Integral Calculus of Several Variables	
MATH 53	Ordinary Differential Equations with Linear Algebra	
Modern Mathematics: Continuous Methods (a proof-oriented sequence)		
MATH 61CM	Modern Mathematics: Continuous Methods	
MATH 62CM	Modern Mathematics: Continuous Methods	
MATH 63CM	Modern Mathematics: Continuous Methods	
Modern Mathematics: Discrete Methods (a proof-oriented sequence)		
MATH 61DM	Modern Mathematics: Discrete Methods	
MATH 62DM	Modern Mathematics: Discrete Methods	
MATH 63DM	Modern Mathematics: Discrete Methods	
Select one of the following:		3
MATH 104	Applied Matrix Theory	
MATH 113	Linear Algebra and Matrix Theory	
Computer Science (CS)		**22-25**
CS 103	Mathematical Foundations of Computing	5
CS 106A	Programming Methodology	5
and either		
CS 106B	Programming Abstractions	5
or CS 106X	Programming Abstractions	
Select two of the following:		7-10
CME 108	Introduction to Scientific Computing	
CS 107	Computer Organization and Systems	
CS 154	Introduction to the Theory of Computation	
CS 161	Design and Analysis of Algorithms	
CS 181W	Computers, Ethics, and Public Policy	
CS 182W	Ethics, Public Policy, and Technological Change	
Management Science and Engineering (MS&E)		**7-11**
MS&E 211X	Introduction to Optimization (Accelerated)	3-4
MS&E 221	Stochastic Modeling	3
Or select three of the following:		9-11
MS&E 111	Introduction to Optimization	
MS&E 121	Introduction to Stochastic Modeling	
MS&E 211	Introduction to Optimization	
MS&E 213	Introduction to Optimization Theory	
MS&E 221	Stochastic Modeling	
MS&E 251	Introduction to Stochastic Control with Applications	
Statistics (STATS)		**10-11**
STATS 116	Theory of Probability	3-4
or MATH 151	Introduction to Probability Theory	
STATS 200	Introduction to Statistical Inference	4
Select one of the following:		3
STATS 191	Introduction to Applied Statistics	
STATS 203	Introduction to Regression Models and Analysis of Variance	
Writing in the Major (WIM)		**3-5**
Choose one from the MCS-designated WIM courses to fulfill the Writing in the Major requirement:		
MATH 109	Applied Group Theory	
MATH 110	Applied Number Theory and Field Theory	
MATH 120	Groups and Rings	
MATH 171	Fundamental Concepts of Analysis	
CS 181W	Computers, Ethics, and Public Policy	
CS 182W	Ethics, Public Policy, and Technological Change	
STATS 155	Modern Statistics for Modern Biology	
WIM courses offered by other majors may be used in cases of specific concentrations (e.g. biology, decision theory). Advisor approval required.		
Mathematical and Computational Science Approved Electives		**9**
Choose three courses in Mathematical and Computational Science 100-level or above, at least 3 units each from two different departments.		
Choose three electives:		
ECON 102C	Advanced Topics in Econometrics	
ECON 140	Introduction to Financial Economics	
ECON 160	Game Theory and Economic Applications	
ECON 179	Experimental Economics	
EE 261	The Fourier Transform and Its Applications	
EE 263	Introduction to Linear Dynamical Systems	
EE 278	Introduction to Statistical Signal Processing	
EE 282	Computer Systems Architecture	
EE 364A	Convex Optimization I	
EE 364B	Convex Optimization II	
MS&E 220	Probabilistic Analysis	
MS&E 223	Simulation	
MS&E 226	Fundamentals of Data Science: Prediction, Inference, Causality	
MS&E 251	Introduction to Stochastic Control with Applications	
MS&E 334	Topics in Social Data	
MATH 104	Applied Matrix Theory	
MATH 106	Functions of a Complex Variable	
MATH 107	Graph Theory	
MATH 108	Introduction to Combinatorics and Its Applications	
MATH 113	Linear Algebra and Matrix Theory	
MATH 114	Introduction to Scientific Computing	
MATH 115	Functions of a Real Variable	
MATH 116	Complex Analysis	
MATH 131P	Partial Differential Equations	
MATH 136	Stochastic Processes	
MATH 158	Basic Probability and Stochastic Processes with Engineering Applications	
MATH 159	Discrete Probabilistic Methods	
MATH 171	Fundamental Concepts of Analysis	
MATH 172	Lebesgue Integration and Fourier Analysis	
PHIL 151	Metalogic	
STATS 100	Mathematics of Sports	
STATS 101	Data Science 101	

STATS 202	Data Mining and Analysis
STATS 206	Applied Multivariate Analysis
STATS 207	Introduction to Time Series Analysis
STATS 208	Bootstrap, Cross-Validation, and Sample Re-use
STATS 215	Statistical Models in Biology
STATS 216	Introduction to Statistical Learning
STATS 217	Introduction to Stochastic Processes I
STATS 218	Introduction to Stochastic Processes II
STATS 219	Stochastic Processes
STATS 240	Statistical Methods in Finance
STATS 270	A Course in Bayesian Statistics
For Computer Science (CS), electives can include courses not taken as units under the CS list above and the following:	
CME 206	Introduction to Numerical Methods for Engineering
CME 211	Software Development for Scientists and Engineers
CME 302	Numerical Linear Algebra
CS 108	Object-Oriented Systems Design
CS 110	Principles of Computer Systems
CS 140	Operating Systems and Systems Programming
CS 143	Compilers
CS 157	Computational Logic
CS 161	Design and Analysis of Algorithms
CS 194	Software Project
CS 221	Artificial Intelligence: Principles and Techniques
CS 223A	Introduction to Robotics
CS 225A	Experimental Robotics
CS 228	Probabilistic Graphical Models: Principles and Techniques
CS 229	Machine Learning
CS 243	Program Analysis and Optimizations
CS 246	Mining Massive Data Sets
CS 248	Interactive Computer Graphics
Electives that are not offered this year, but may be offered in subsequent years, are eligible for credit toward the major.	
With the advisor's approval, courses other than those listed or offered by the sponsoring departments may be used to fulfill part of the elective requirement. Courses must provide skills relevant to the MCS degree and do not overlap courses in the student's program. Depending on student's interests, these may be in fields such as, biology, economics, electrical engineering, industrial engineering, and medicine, are otherwise relevant to a mathematical sciences major.	
Total Units	**76-89**

[1] Students who scored a 5 on both the Calculus AB and BC advanced placement exams (total of 10 units) can be waived out of MATH 19 Calculus, MATH 20 Calculus, MATH 21 Calculus; See also the Registrar's Advanced Placement (https://registrar.stanford.edu/students/transfer-credit/advanced-placement/) web site (AP (https://registrar.stanford.edu/students/transfer-credit-and-advanced-placement/advanced-placement/ap-credit-chart/) or IB (https://registrar.stanford.edu/students/transfer-credit-and-advanced-placement/advanced-placement/ib-credit-chart/) exams). Students who place out of MATH 19, 20, and 21 are required to take additional Math classes as discussed with MCS student services and the student's faculty advisor.

Mathematical and Computational Science Tracks

MCS program has designed three tracks to allow majors to pursue their interests in fields where applied mathematics and statistical analysis is utilized. Declared MCS majors are not required to choose a track. These tracks are not declared in Axess and are not printed on the transcript or diploma.

Biology Track

Students in the Biology track take the introductory courses for the Mathematics and Computational Science major with the following allowable substitutions as electives.

		Units
STATS/BIO 141	Biostatistics [1]	5
Allowable Elective Course Substitutions:		
Take three courses from Foundational Biology Core:		10
BIO 82	Genetics	
BIO 83	Biochemistry & Molecular Biology	
BIO 84	Physiology	
BIO 85	Evolution	
BIO 86	Cell Biology	
Or take two courses from the Biology core and one of the following:		3-4
BIO 104	Advance Molecular Biology: Epigenetics and Proteostasis	
BIO 133	(no longer offered)	
BIO 144	Conservation Biology: A Latin American Perspective	
BIO 183	Theoretical Population Genetics (offered alternate years)	
BIO 230	Molecular and Cellular Immunology	
Honors students select the following three courses:		1-4
STATS 155	Modern Statistics for Modern Biology	
BIO 113	Fundamentals of Molecular Evolution	
BIO 146	Genes and Disease (no longer offered)	
The following courses are no longer offered, but may be used by students who completed them in fulfillment of this requirement: BIO102, 160A & 160B		

[1] STATS 141 (https://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=&q=stats141&collapse=): Biostatis (BIO 141) can replace STATS 191 Introduction to Applied Statistics or STATS 203 Introduction to Regression Models and Analysis of Variance from the major's Statistics core requirement.

Engineering Track

Students in the Engineering track take the introductory courses for the Mathematics and Computational Sciences major with the following allowable substitutions.

		Units
With consent of an MCS advisor, MATH 51, MATH 52, MATH 53 series may be substituted for CME 100, CME 102, CME 104. Depending on the exact material taught in relevant years, an additional math course may be necessary [1]		15
CME 100	Vector Calculus for Engineers	
CME 102	Ordinary Differential Equations for Engineers	

CME 104/ ENGR 155B	Linear Algebra and Partial Differential Equations for Engineers	
STATS 116 may be replaced by:		3-5
STATS 110	Statistical Methods in Engineering and the Physical Sciences	
STATS 191/STATS 203 may be replaced by:		3-4
STATS 202	Data Mining and Analysis	
Allowable Elective Course Substitutions:		**9**
Select one of the following:		3-4
MATH 106	Functions of a Complex Variable	
MATH 108	Introduction to Combinatorics and Its Applications	
MATH 116	Complex Analysis	
PHIL 151	Metalogic	
Select two of the following:		3-5
ENGR 15	Dynamics	
ENGR 20	Introduction to Chemical Engineering	
ENGR 25B		
ENGR 40	(no longer offered)	
ENGR 50	Introduction to Materials Science, Nanotechnology Emphasis	
ENGR 105	Feedback Control Design	

[1] Only MCS majors pursuing the engineering track may petition their advisor to substitute the required Math series for CME courses listed above.

Statistics Track

Students in the Statistics track take the introductory courses for the Mathematics and Computational Sciences major with the following additional courses - (87 units total)

Required:

		Units
Additional Courses for the Statistics Track:		**9**
STATS 217	Introduction to Stochastic Processes I	
Advanced CS, such as:		3
CS 246	Mining Massive Data Sets	
Advanced MS&E, such as:		3
MS&E 220	Probabilistic Analysis	
or		
MS&E 223	Simulation	
Allowable Elective Course Substitutions:		**9**
Select three of the following:		
STATS 202	Data Mining and Analysis	
STATS 206	Applied Multivariate Analysis	
STATS 207	Introduction to Time Series Analysis	
STATS 208	Bootstrap, Cross-Validation, and Sample Re-use	
STATS 216	Introduction to Statistical Learning	
STATS 219	Stochastic Processes	
STATS 270	A Course in Bayesian Statistics	

Honors Program

The honors program is designed to encourage a more intensive study of mathematical sciences than the B.S. program. Students interested in honors should consult with their faculty advisor as soon as possible to allow more opportunities in course planning and concentration area. The honors program allows for a capstone experience, building upon the student's current academic knowledge and strengthening their understanding in a specific field of study/concentration. Honors work may be concentrated in fields such as biological sciences and medicine, environment, physics, sports analytics, investment science, AI/machine learning, etc.

Students are required to submit an MCS Honors Proposal Form (https://mcs.stanford.edu/sites/g/files/sbiybj9376/f/mcs_honors_proposal_form_2019-20.pdf) describing the concentration for honors work, including the courses they intend to use, by the final study list deadline two quarters prior to the expected degree conferral quarter. The honors final report is due no later than the last day of classes of the quarter the student expects to graduate. More information can be found on the MCS Honors Website. (https://mcs.stanford.edu/academics/honors/)

In addition to meeting all requirements for the B.S., the student must:

1. Maintain a GPA of at least 3.5 in all major coursework.
2. Students should complete 15 units of graduate level coursework. Included in these 15 units can be any of the following:
   a. Related research from a 199 course
   b. Participation for credit in a small group seminar
   c. Directed reading
3. Complete a final report which should:
   a. Include their name, degree and the title of their work.
   b. Be typed with 12pt font, single-spaced, minimum 1 page (no longer than 2 pages) with a one-inch margin at the top and bottom of each page.
   c. Explain a theme between the student's coursework, their interests, and how they relate to MCS.
   d. Describe how each course selected added to the student's knowledge and understanding in the chosen area of concentration.
   e. The student's work must demonstrate in-depth learning of a topic or shared idea in the breadth of the MCS major (examples are on MCS webpage), and all students are held to Stanford's Honor Code (https://communitystandards.stanford.edu/policies-and-guidance/honor-code/).

		Units
Suggested electives for students pursuing honors:		
CME 206	Introduction to Numerical Methods for Engineering	3
CS/STATS 229	Machine Learning	3-4
CS 248	Interactive Computer Graphics	3-4
EE 364A	Convex Optimization I	3
MATH 171	Fundamental Concepts of Analysis	3
MATH 172	Lebesgue Integration and Fourier Analysis	3
MATH 205A	Real Analysis	3
STATS 202	Data Mining and Analysis	3
STATS 216	Introduction to Statistical Learning	3
STATS 217	Introduction to Stochastic Processes I	3

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Minor in Mathematical and Computational Science

The minor in Mathematical and Computational Science is intended to provide an experience of the four constituent areas: Mathematics, Computer Science, Management Science and Engineering, and Statistics. The minor consists of nine courses for a minimum of 32 units. A grade point average (GPA) of 2.75 is required for courses fulfilling the minor. All courses for the minor must be taken for a letter grade, if offered.

Degree Requirements

		Units
Mathematics (MATH)		**3-5**
Select one of the following:		
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
MATH 104	Applied Matrix Theory	
Computer Science (CS)		**10**
Select two of the following:		
CS 106A	Programming Methodology	5
and either		
CS 106B	Programming Abstractions	5
or CS 106X	Programming Abstractions	
Management Science and Engineering (MS&E)		**3-4**
Select one of the following:		
MS&E 211	Introduction to Optimization	
MS&E 221	Stochastic Modeling	
Statistics (STATS)		**7**
Select two of the following:		
STATS 116	Theory of Probability	4
and either		
STATS 191	Introduction to Applied Statistics	3-4
or STATS 200	Introduction to Statistical Inference	
Electives		**9**
The minor requires three courses, two of which must be in different departments.		
Select three of the following:		
CME 108	Introduction to Scientific Computing	
CS 103	Mathematical Foundations of Computing	
CS 107	Computer Organization and Systems	
CS 154	Introduction to the Theory of Computation	
CS 161	Design and Analysis of Algorithms	
ECON 160	Game Theory and Economic Applications	
EE 261	The Fourier Transform and Its Applications	
MS&E 211	Introduction to Optimization	
MS&E 212	Mathematical Programming and Combinatorial Optimization	
MS&E 221	Stochastic Modeling	
MS&E 251	Introduction to Stochastic Control with Applications	
MATH 104	Applied Matrix Theory	
MATH 106	Functions of a Complex Variable	
MATH 108	Introduction to Combinatorics and Its Applications	
MATH 109	Applied Group Theory	
MATH 110	Applied Number Theory and Field Theory	
MATH 115	Functions of a Real Variable	
MATH 131P	Partial Differential Equations	
MATH 171	Fundamental Concepts of Analysis	
PHIL 151	Metalogic	
STATS 191	Introduction to Applied Statistics	
STATS 200	Introduction to Statistical Inference	
STATS 202	Data Mining and Analysis	
STATS 203	Introduction to Regression Models and Analysis of Variance	
STATS 217	Introduction to Stochastic Processes I	
Other upper-division courses appropriate to the program major may be substituted with consent of MCS program director. Undergraduate majors in the constituent programs may not count courses in their own departments.		
Total Units		**32-34**

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The MCS program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements and minor that otherwise require a letter grade.

Faculty

Director: Professor Guenther Walther

Associate Director: Professor Chiara Sabatti

Faculty Advisers: Assistant Professor John Duchi, Professor Bradley Efron, Associate Professor David Rogosa, Assistant Professor Johan Ugander, Assistant Professor Scott Linderman

Steering Committee: Takeshi Amemiya (Economics, emeritus), Emmanuel Candès (Mathematics, Statistics), Brian Conrad (Mathematics), Richard Cottle (Management Science and Engineering, emeritus), John Duchi (Electrical Engineering & Statistics), Darrel Duffie (Economics & GSB), Bradley Efron (Statistics), Peter Glynn (Management Science and Engineering), Ramesh Johari (Management Science and Engineering), Percy Liang (Computer Science & Statistics), Parviz Moin (Mechanical Engineering), George Papanicolaou (Mathematics), David Rogosa (Education & Statistics), Chiara Sabatti (Biomedical Data Science & Statistics), David Siegmund (Statistics), Jonathan Taylor (Statistics), Brian White (Mathematics)

Courses

MCS 198. Practical Training. 1 Unit.
For students majoring in Mathematical and Computational Science only. Students obtain employment in a relevant industrial or research activity to enhance their professional experience. Students may enroll in Summer Quarters only and for a total of three times. Students must first notify their MCS adviser before enrolling in their course section, and must submit a one-page written final report summarizing the knowledge/experience gained upon completion of the internship in order to receive credit.

MATHEMATICS

Courses offered by the Department of Mathematics are listed under the subject code MATH on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=MATH&filter-catalognumber-MATH=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=MATH&filter-catalognumber-MATH=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=MATH&filter-catalognumber-MATH=on).

The Department of Mathematics offers programs leading to the degrees of Bachelor of Science, Master of Science, and Doctor of Philosophy in Mathematics, and also participates in the program leading to the B.S. in Mathematical and Computational Science, and the M.S. and Ph.D. degree programs offered through the Institute for Computational & Mathematical Engineering.

Mission of the Undergraduate Program in Mathematics

The mission of the undergraduate program in Mathematics is to provide students with a broad understanding of mathematics encompassing logical reasoning, generalization, abstraction, and formal proof. Courses in the program teach students to create, analyze, and interpret mathematical models and to communicate sound arguments based on mathematical reasoning and careful data analysis. The mathematics degree prepares students for careers in the corporate sector, tech industry, government agencies, and for graduate programs in mathematics.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. problem solving skills,
2. the ability to formulate proofs and to structure mathematical arguments,
3. the ability to communicate mathematical ideas via extended written presentation.

Advanced Placement in Mathematics

Students can receive units of advanced placement credit for single-variable calculus, depending on their scores on the CEEB Advanced Placement Examination or the IB Exam. See the the "Advanced Placement (p. 38)" section of this bulletin.

Those who have not studied single-variable calculus or have studied it partially but are not ready to begin with multivariable calculus (MATH 50-series) should begin at the single-variable course recommended by the math placement diagnostic.

Students who are ready to study multivariable calculus (based on prior courseswork or exams, or recommended by the math placement diagnostic) should begin with one of the following courses:

		Units
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	5
MATH 52	Integral Calculus of Several Variables	5
MATH 53	Ordinary Differential Equations with Linear Algebra	5

The above sequence supplies the necessary mathematics background for most majors in science and engineering. It also provides a solid foundation for the major or minor in Mathematics, or in Mathematical and Computational Science.

Bachelor of Science in Mathematical and Computational Science

The Department of Mathematics participates with the departments of Computer Science, Management Science and Engineering, and Statistics in a program leading to a B.S. in Mathematical and Computational Science. See the "Mathematical and Computational Science (p. 1794)" section of this bulletin.

Introductory and Undergraduate Courses

The department offers a year-long sequence in single-variable calculus: MATH 19, MATH 20, and MATH 21.

There are three options for studying multivariable mathematics:

1. MATH 51, MATH 52, and MATH 53 cover differential and integral calculus in several variables, linear algebra, and ordinary differential equations. These topics are taught in an integrated fashion and emphasize applications. MATH 51 covers differential calculus in several variables and introduces matrix theory and basic linear algebra; MATH 52 covers integral calculus in several variables and vector analysis; MATH 53 studies further topics in linear algebra and applies them to ordinary differential equations. This sequence is strongly recommended for incoming freshmen who have mastered single-variable calculus.
2. The sequence MATH 61CM, MATH 62CM, and MATH 63CM (Modern Mathematics: Continuous Methods) covers the material of the Math 50 series at a much more advanced level with an emphasis on rigorous proofs and conceptual arguments.
3. The sequence MATH 61DM, MATH 62DM, and MATH 63DM (Modern Mathematics: Discrete Methods) covers the same linear algebra material as the Math 60CM series and otherwise focuses on topics in discrete mathematics, algebra, and probability theory at an advanced level with an emphasis on rigorous proofs.

Learning Outcomes (Graduate)

The master's degree is conferred upon candidates who have developed advanced knowledge and skills in Mathematics. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in Mathematics. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of Mathematics and to interpret and present the results of such research.

Bachelor of Science in Mathematics

The following department requirements are in addition to the University's basic requirements for the bachelor's degree.

Students wishing to major in Mathematics must satisfy the following requirements and complete a minimum of 64 units:

1. Department of Mathematics courses totaling at least 49 units credit; among these at least eight courses worth at least 3 units

each numbered above 63. Such courses must be taken for a letter grade. For the purposes of this requirement, STATS 116 Theory of Probability, PHIL 151 Metalogic, and PHIL 152 Computability and Logic count as Department of Mathematics courses.

2. Additional units taken from Department of Mathematics courses numbered 101 and above or from approved courses in other disciplines with significant mathematical content, totaling at least 15 units credit. At least 9 of these units must be taken for a letter grade.
3. The Department of Mathematics adviser can be any member of the department's faculty.
4. To receive the department's recommendation for graduation, a student must have been enrolled as a major in the Department of Mathematics for a minimum of two full quarters, including the quarter immediately before graduation.

Students with an Advanced Placement score of 5 in BC math may receive 10 units credit and fulfill requirement '1' by taking at least 39 units of Department of Mathematics courses. Students with an Advanced Placement score of at least 4 in BC math or 5 in AB math may receive 8 units credit and fulfill requirement '1' by taking at least 41 units of Department of Mathematics courses.

Freshman and sophomore introductory seminar courses may be counted among the choice of courses under item '1'. Other variations of the course requirements laid down above (under items '1' and '2') may, in some circumstances, be allowed. For example, students transferring from other universities may be allowed credit for some courses completed before their arrival at Stanford. However, at least 24 units of the 49 units under item '1' above and 9 of the units under item '2' above must be taken at Stanford. In all cases, approval for variations in the degree requirements must be obtained from the department's Director of Undergraduate Studies. The policy of the Mathematics Department is that no courses other than the MATH 60 series and below may be double-counted toward any other University major or minor.

Proof Writing

For students who are not experienced with writing mathematical proofs, this crucial skill can be learned by taking any one of the following courses: MATH 110 Applied Number Theory and Field Theory, MATH 113 Linear Algebra and Matrix Theory, or MATH 115 Functions of a Real Variable (after finishing the chosen calculus sequence).

Preparation for Graduate School:

It is to be emphasized that the above regulations are minimum requirements for the major; students contemplating graduate work in mathematics are strongly encouraged to include the courses MATH 116 Complex Analysis, MATH 120 Groups and Rings, MATH 121 Galois Theory, MATH 147 Differential Topology or MATH 148 Algebraic Topology, and MATH 171 Fundamental Concepts of Analysis in their selection of courses, and in addition, take at least three Department of Mathematics courses over and above the minimum requirements laid out under items '1' and '2' above, including at least one 200-level course. Such students are also encouraged to consider the possibility of taking the honors program.

Sample Course Plans

To help develop a sense of the type of course selection (under items '1' and '2' above) that would be recommended for math majors with various backgrounds and interests, see the following examples. These represent only a few of a very large number of possible combinations of courses that could be taken in fulfillment of the Mathematics major requirements:

Example 1: for students with both pure and applied interests

		Units
Single-variable calculus: AP Credit, (MATH 19, MATH 20, MATH 21)		8-10
Multivariable calculus: (MATH 51, MATH 52, MATH 53)		15
MATH 104	Applied Matrix Theory	3
or MATH 113	Linear Algebra and Matrix Theory	
MATH 106	Functions of a Complex Variable	3
MATH 109	Applied Group Theory	3
MATH 110	Applied Number Theory and Field Theory	3
MATH 115	Functions of a Real Variable	3
Plus any selection of at least eight of the following courses, including three Department of Mathematics courses:		26
MATH 107	Graph Theory	
MATH 108	Introduction to Combinatorics and Its Applications	
MATH 131P	Partial Differential Equations	
MATH 143	Differential Geometry	
MATH 144	Introduction to Topology and Geometry	
MATH 147	Differential Topology	
MATH 148	Algebraic Topology	
MATH 152	Elementary Theory of Numbers	
MATH 161	Set Theory	
CME 108	Introduction to Scientific Computing	
ECON 50	Economic Analysis I	
PHYSICS 41	Mechanics	
PHYSICS 43	Electricity and Magnetism	
PHYSICS 45	Light and Heat	
STATS 116	Theory of Probability	
or MATH 151	Introduction to Probability Theory	
Total Units		64-66

The courses from other departments are only meant as examples; there are many suitable courses in several departments that can be taken to fulfill part or all of requirement '2'.

Example 2: for students with strong theoretical interest and considering graduate school in math

		Units
Single-variable calculus: AP Credit, (MATH 19, MATH 20, MATH 21)		8-10
Select one of the following multivariable calculus sequences:		15
Math 50 Series: (MATH 51, MATH 52, MATH 53). These courses are not proof-oriented.		
Math 60CM Series: (MATH 61CM, MATH 62CM, MATH 63CM). This proof-oriented sequence is called Modern Mathematics: Continuous Methods		
Math 60DM Series: (MATH 61DM, MATH 62DM, MATH 63DM). This proof-oriented sequence is called Modern Mathematics: Discrete Methods		
MATH 101	Math Discovery Lab	3
MATH 106	Functions of a Complex Variable	3
or MATH 116	Complex Analysis	
MATH 113	Linear Algebra and Matrix Theory	3
MATH 120	Groups and Rings	3
MATH 171	Fundamental Concepts of Analysis	3
Plus 24-26 units of math courses numbered 121 or higher (the logic courses PHIL 151 and PHIL 152 are considered to be such courses), including at least one algebra course, one analysis course, and one geometry/topology course. (See the description of the honors program below)		26
Total Units		64-66

In addition, those contemplating eventual graduate work in Mathematics should consider including at least one graduate-level math course such as MATH 205A Real Analysis, MATH 210A Modern Algebra I, or MATH 215A Algebraic Topology or MATH 215B Differential Topology. Such students should also consider the possibility of entering the honors program.

Example 3: for students interested in applied math

Students desiring significant computational and/or financial and/or statistical components are encouraged to also consider the Mathematics and Computational Science program.

		Units
Single-variable calculus: AP Credit, (MATH 19, MATH 20, MATH 21)		8-10
Select one of the following multivariable calculus sequences:		15
Math 50 Series (MATH 51, MATH 52, MATH 53). These courses are not proof-oriented.		
Math 60 Series (MATH 61DM, MATH 62DM, MATH 63DM). This proof-oriented sequence is called Modern Mathematics: Discrete Methods		
MATH 104	Applied Matrix Theory	3
MATH 106	Functions of a Complex Variable	3
MATH 107	Graph Theory	3
MATH 108	Introduction to Combinatorics and Its Applications	3
MATH 109	Applied Group Theory	3
MATH 110	Applied Number Theory and Field Theory	3
MATH 115	Functions of a Real Variable	3
MATH 131P	Partial Differential Equations	3
STATS 116	Theory of Probability	3
or MATH 151	Introduction to Probability Theory	
Plus at least 12 units of additional courses in applied mathematics, including, for example, suitable courses from the departments of Physics, Computer Science, Economics, Engineering, and Statistics.		14
Total Units		64-66

Honors Program

This option is intended for students who have strong theoretical interests and abilities in mathematics. The goal is to give students a thorough introduction to the main branches of mathematics. The honors program requires a senior thesis, which can involve either original research or expository work on advanced topics in mathematics. This option provides an excellent background with which to enter a Master's or Ph.D. program in Mathematics. Students completing the honors program are awarded a B.S. in Mathematics with Honors.

It is recommended that either sequence (MATH 61CM, MATH 62CM, MATH 63CM) or (MATH 61DM, MATH 62DM, MATH 63DM) be taken in the freshman year. To graduate with a B.S. in Mathematics with Honors, the following conditions apply in addition to the usual requirements for math majors:

1. The selection of courses under items '1' and '2' above must contain:

		Units
MATH 116	Complex Analysis	3
MATH 120	Groups and Rings	3
MATH 171	Fundamental Concepts of Analysis	3

And must also include seven additional 3-unit Math courses numbered 121 or higher. (The logic courses PHIL 151 Metalogic and PHIL 152 Computability and Logic can also be used.) These seven courses must include at least:

		Units
One Algebra Course:		
MATH 121	Galois Theory	3
MATH 122	Modules and Group Representations	3
MATH 152	Elementary Theory of Numbers	3
MATH 154	Algebraic Number Theory	3
One Analysis Course:		
MATH 136	Stochastic Processes	3
MATH 151	Introduction to Probability Theory	3
MATH 155	Analytic Number Theory	3
MATH 172	Lebesgue Integration and Fourier Analysis	3
MATH 173	Theory of Partial Differential Equations	3
MATH 175	Elementary Functional Analysis	3
One Geometry/Topology Course:		
MATH 143	Differential Geometry	3
MATH 144	Introduction to Topology and Geometry	3
MATH 145	Algebraic Geometry	3
MATH 147	Differential Topology	3
MATH 148	Algebraic Topology	3

2. All courses counting towards the honors requirements (MATH 116, MATH 120, MATH 171, all 7 additional Math courses used to fulfill the major requirement, and MATH 197) must be taken for a letter grade.
3. Students must have an average GPA of at least a 3.3 across all math classes counting towards the major at the time of applying for honors to be eligible for acceptance into the honors program, as well as upon graduation to graduate with honors.
4. Majors interested in honors can apply in winter quarter of their junior year at the earliest, and no later than the last day of classes in the spring quarter of junior year.
5. Students in the honors program must write a senior thesis. In order to facilitate this, the student must, by the end of the junior year, choose an undergraduate thesis adviser from the Department of Mathematics faculty and map out a concentrated reading program under the direction and guidance of the adviser. This will occur when the student applies for honors. During the senior year, the student must enroll in MATH 197 Senior Honors Thesis with his/her adviser for a total of 6 units (recommended to be spread over three quarters), and work toward completion of the thesis under the direction and guidance of the thesis adviser. The thesis may contain original material, or be a synthesis of work in current or recent research literature. The 6 units of credit for MATH 197 Senior Honors Thesis are required in addition to the 64 units required of the major. (See the major requirements at the top of the page.)
6. The deadline for the senior thesis final draft is the Monday of week 8 of the student's graduation quarter.

In addition to the minimum requirements laid out above, it is strongly recommended that students take at least one graduate-level course (that is, at least one course in the 200 plus range). MATH 205A Real Analysis, MATH 210A Modern Algebra I, and MATH 215A Algebraic Topology or MATH 215B Differential Topology are especially recommended in this context.

Students with questions about the honors program should see the department's director of undergraduate studies.

Computer Science Theory/Discrete Mathematics Subplan

There are two pathways to achieve a Mathematics B.S. degree:

- The Mathematics bachelor's degree, or
- The Mathematics bachelor's degree with the Computer Science Theory/Discrete Mathematics subplan.

The following requirements refer to the Mathematics Bachelor's degree with the Computer Science Theory/Discrete Mathematics Subplan. Students who are interested in the Mathematics Bachelor's degree should see the Bachelor's tab (p. 1800).

The Computer Science Theory/Discrete Mathematics subplan is declared on Axess; it appears on the transcript and the diploma.

Computer Science Theory/Discrete Mathematics Subplan Description

This subplan is intended for students wishing for a strong and deep background in the area of computer science theory and mathematics. The subplan could prepare students for graduate work in either area, as well as for other careers requiring particular strength in this type of thinking. The emphasis of this subplan is on theory. Students interested in a combination of mathematics and computer science more generally should consider the Bachelor of Science in Mathematical and Computational Science. Depending on their interests, students are also encouraged to consider the regular Mathematics major, the Computer Science major, and in particular, the Computer Science Theory track of the Computer Science major.

Course Requirements

The subplan requires a minimum of 64 units as outlined in requirements 1 and 2 of the Bachelor of Science in Mathematics; see the Bachelor's tab (p. 1800). The selection of courses for the 64 total units must contain the required courses listed in the chart below. For the purposes of the subplan, the required Computer Science Department courses can count toward either the 49 units of Math Department courses or the 15 additional units. All required courses must be taken for a letter grade. It is highly recommended to complete the MATH 60DM sequence, although it is not required.

		Units
Required Courses		
Required Math Courses		
MATH 106	Functions of a Complex Variable	3
or MATH 116	Complex Analysis	
MATH 120	Groups and Rings	3
MATH 171	Fundamental Concepts of Analysis	3
Required CS Theory Courses		
CS 154	Introduction to the Theory of Computation	3-4
CS 161	Design and Analysis of Algorithms	3-5
Additional Math Courses		
Two of the following:		6-8
MATH 61DM	Modern Mathematics: Discrete Methods	
MATH 107	Graph Theory	
MATH 108	Introduction to Combinatorics and Its Applications	
One of the following:		3-5
MATH 151	Introduction to Probability Theory	
MATH 230A	Theory of Probability I	
STATS 116	Theory of Probability	
Two of the following:		6
MATH 113	Linear Algebra and Matrix Theory	
MATH 152	Elementary Theory of Numbers	
MATH 154	Algebraic Number Theory	
MATH 155	Analytic Number Theory	
MATH 159	Discrete Probabilistic Methods	
MATH 161	Set Theory	
Additional CS Theory Courses:		
Four of the following:		12-13
CS 167		
CS 168	The Modern Algorithmic Toolbox	
CS 254	Computational Complexity	
CS 255	Introduction to Cryptography	
CS 261	Optimization and Algorithmic Paradigms	
CS 265	Randomized Algorithms and Probabilistic Analysis	
CS 268	Geometric Algorithms	
Total Units		42-50

Minor in Mathematics

To qualify for the minor in Mathematics, a student should complete, for a letter grade, at least six Department of Mathematics courses numbered 51 or higher, totaling a minimum of 24 units. For the purposes of this requirement, STATS 116 Theory of Probability, PHIL 151 Metalogic, and PHIL 152 Computability and Logic count as Department of Mathematics courses. No other courses from outside the Department of Mathematics may be used towards the minor in Mathematics.

It is recommended that these courses include:

		Units
Math Minor		
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	5
or MATH 61CM	Modern Mathematics: Continuous Methods	
or MATH 61DM	Modern Mathematics: Discrete Methods	
MATH 52	Integral Calculus of Several Variables	5
or MATH 62CM	Modern Mathematics: Continuous Methods	
or MATH 62DM	Modern Mathematics: Discrete Methods	
MATH 53	Ordinary Differential Equations with Linear Algebra	5
or MATH 63CM	Modern Mathematics: Continuous Methods	
or MATH 63DM	Modern Mathematics: Discrete Methods	
Plus three additional MATH courses		9
Total Units		24

At least 12 of the units applied toward the minor in Mathematics must be taken at Stanford. The policy of the Mathematics Department is that no courses other than the MATH 50/60 series and below may be double-counted toward any other University major or minor.

Master of Science in Mathematics

The University's basic requirements for the master's degree are discussed in the "Graduate Degrees (p. 65)" section of this bulletin. Students should pay particular attention to the University's course requirements for graduate degrees.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the

graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken three quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to the graduate career. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

The following are specific departmental requirements:

Candidates must complete an approved course program of 45 units of courses beyond the department requirements for the B.S. degree, of which at least 36 units must be Mathematics Department courses, taken for a letter grade. The Mathematics Department courses must include at least 18 units numbered 200 or above. The candidate must have a grade point average (GPA) of 3.0 (B) over all course work taken in Mathematics, and a GPA of 3.0 (B) in the 200-level courses considered separately. Course work for the M.S. degree must be approved during the first quarter of enrollment in the program by the department's Director of Graduate Studies.

The Financial Mathematics M.S. degree program is no longer offered through the School of Humanities and Sciences. The Institute for Computational and Mathematical Engineering (ICME (https://icme.stanford.edu/)) now offers a master's degree track in Mathematical and Computational Finance (p. 781).

Doctor of Philosophy in Mathematics

The University's basic requirements for the doctorate (residence, dissertation, examinations, etc.) are discussed in the "Graduate Degrees (p. 65)" section of this bulletin. The following are specific departmental requirements.

To be admitted to candidacy, the student must have successfully completed 27 units of graduate courses (that is, courses numbered 200 and above). In addition, the student must pass qualifying examinations given by the department.

Beyond the requirements for candidacy, the student must complete a course of study approved by the Graduate Affairs Committee of the Department of Mathematics and submit an acceptable dissertation. In accordance with University requirements, Ph.D. students must complete a total of 135 course units beyond the bachelor's degree. These courses should be Department of Mathematics courses or approved courses from other departments. The course program should display substantial breadth in mathematics outside the student's field of application. The student must receive a grade point average (GPA) of 3.0 (B) or better in courses used to satisfy the Ph.D. requirement. In addition, the student must pass the Department area examination and the University oral examination.

Experience in teaching is emphasized in the Ph.D. program. Each student is required to complete nine quarters of such experience. The nature of the teaching assignment for each of those quarters is determined by the department in consultation with the student. Typical assignments include teaching or assisting in teaching an undergraduate course or lecturing in an advanced seminar.

For further information concerning degree programs, fellowships, and assistantships, inquire of the department's student services office.

Ph.D. Minor in Mathematics

Requirements for the Ph.D. Minor in Mathematics are:

		Units
Complete both of the following Sequences: [1, 2]		
Sequence 1		
MATH 106	Functions of a Complex Variable	3
or MATH 116	Complex Analysis	
MATH 131P	Partial Differential Equations	3
Sequence 2		
MATH 113	Linear Algebra and Matrix Theory	3
MATH 120	Groups and Rings	3
or MATH 152	Elementary Theory of Numbers	
Additional Courses		
21 units of 200-level MATH courses [3]		21
Total Units		33

1. The 100-level courses may have been completed during undergraduate study, and their equivalents from other universities are acceptable.
2. A third coherent sequence designed by the student, subject to the approval of the graduate committee, may be considered as a substitute for Sequence 1 or 2.
3. The 200-level courses must be taken at Stanford and approved by the Department of Mathematics Ph.D. minor adviser.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

Math courses taken during Spring 2020 or during the 2020-21 academic year that ordinarily count toward the Math major will still be valid if taken S/NC (Spring 2020) or CR/NC (2020-21). These will not count against the limit of 6 CR/NC elective units that may be applied towards the major.

Graduate Degree Requirements

Grading

The Mathematics Department has not changed its policy concerning 'CR' (credit) or 'S' (satisfactory) grades in degree requirements requiring a letter grade for academic year 2020-21.

Graduate Advising Expectations

The Department of Mathematics is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Emeriti: Gregory Brumfiel, Gunnar Carlsson, Robert Finn, Yitzhak Katznelson, Harold Levine, Jun Li, Tai-Ping Liu, R. James Milgram, Donald Ornstein, Richard Schoen, Leon Simon, Ralph L. Cohen

Chair: Rafe Mazzeo

Director of Graduate Studies: Jan Vondrák

Director of Undergraduate Studies: Brian Conrad

Professors: Daniel Bump, Emmanuel Candès, Sourav Chatterjee, Brian Conrad, Amir Dembo (on leave Spring 2021), Persi Diaconis, Yakov Eliashberg, Jacob Fox, June Huh, Steven Kerckhoff (on leave Winter 2021), Eugenia Malinnikova, Ciprian Manlescu, Rafe Mazzeo, Eleny Ionel, George Papanicolaou (on leave Spring 2021), Lenya Ryzhik, Kannan Soundararajan, Richard Taylor (on leave Spring 2021), Ravi Vakil, András Vasy, Brian White (on leave Spring 2021), Lexing Ying

Professor (Teaching): Tadashi Tokieda

Associate Professor: Jan Vondrák, Jonathan Luk

Assistant Professors: Otis Chodosh

Courtesy Professors: Moses Charikar, Renata Kallosh, Andrea Montanari

Adjunct Professors: Brian Conrey, David Hoffman

Szegö Assistant Professors: Perry Kleinhenz, Matthew Kwan, Joonhyun La, Zhenkun Li, Chao Ma, Hunter Spink, Steve Trettel, Umut Varolgunes, Sara Venkatesh

Senior Lecturer: Mark Lucianovic

Lecturers: Pawel Grzegrzolka, Gene Kim, Christine Taylor, Wojciech Wieczorek

Courses

MATH 19. Calculus. 3 Units.
Introduction to differential calculus of functions of one variable. Review of elementary functions (including exponentials and logarithms), limits, rates of change, the derivative and its properties, applications of the derivative. Prerequisites: trigonometry, advanced algebra, and analysis of elementary functions (including exponentials and logarithms). You must have taken the math placement diagnostic (offered through the Math Department website) in order to register for this course.

MATH 19A. Calculus, ACE. 1 Unit.
Additional problem solving session for Math 19 guided by a course assistant. Concurrent enrollment in Math 19 required. Application required: https://engineering.stanford.edu/students-academics/equity-and-inclusion-initiatives/undergraduate-programs/additional-calculus.

MATH 20. Calculus. 3 Units.
The definite integral, Riemann sums, antiderivatives, the Fundamental Theorem of Calculus. Integration by substitution and by parts. Area between curves, and volume by slices, washers, and shells. Initial-value problems, exponential and logistic models, direction fields, and parametric curves. Prerequisite: Math 19 or equivalent. If you have not previously taken a calculus course at Stanford then you must have taken the math placement diagnostic (offered through the Math Department website) in order to register for this course.

MATH 20A. Calculus, ACE. 1 Unit.
Additional problem solving session for Math 20 guided by a course assistant. Concurrent enrollment in Math 20 required. Application required: https://engineering.stanford.edu/students-academics/equity-and-inclusion-initiatives/undergraduate-programs/additional-calculus.

MATH 21. Calculus. 4 Units.
Review of limit rules. Sequences, functions, limits at infinity, and comparison of growth of functions. Review of integration rules, integrating rational functions, and improper integrals. Infinite series, special examples, convergence and divergence tests (limit comparison and alternating series tests). Power series and interval of convergence, Taylor polynomials, Taylor series and applications. Prerequisite: Math 20 or equivalent. If you have not previously taken a calculus course at Stanford then you must have taken the math placement diagnostic (offered through the Math Department website) in order to register for this course.

MATH 21A. Calculus, ACE. 5 Units.
Students attend one of the regular MATH 21 lectures with a longer discussion section of two hours per week instead of one. Active mode: students in small groups discuss and work on problems, with a TA providing guidance and answering questions. Application required: https://forms.gle/BZJqJTawa5PUqe9E7.

MATH 51. Linear Algebra, Multivariable Calculus, and Modern Applications. 5 Units.
This course provides unified coverage of linear algebra and multivariable differential calculus, and the free course e-text connects the material to many fields. Linear algebra in large dimensions underlies the scientific, data-driven, and computational tasks of the 21st century. The linear algebra portion includes orthogonality, linear independence, matrix algebra, and eigenvalues with applications such as least squares, linear regression, and Markov chains (relevant to population dynamics, molecular chemistry, and PageRank); the singular value decomposition (essential in image compression, topic modeling, and data-intensive work in many fields) is introduced in the final chapter of the e-text. The multivariable calculus portion includes unconstrained optimization via gradients and Hessians (used for energy minimization), constrained optimization (via Lagrange multipliers, crucial in economics), gradient descent and the multivariable Chain Rule (which underlie many machine learning algorithms, such as backpropagation), and Newton's method (an ingredient in GPS and robotics). The course emphasizes computations alongside an intuitive understanding of key ideas. The widespread use of computers makes it important for users of math to understand concepts: novel users of quantitative tools in the future will be those who understand ideas and how they fit with examples and applications. This is the only course at Stanford whose syllabus includes nearly all the math background for CS 229, which is why CS 229 and CS 230 specifically recommend it (or other courses resting on it). For frequently asked questions about the differences between Math 51 and CME 100, see the FAQ on the placement page on the Math Department website. Prerequisite: Math 21 or the math placement diagnostic (offered through the Math Department website) in order to register for this course.

MATH 51A. Linear Algebra, Multivariable Calculus, and Modern Applications, ACE. 6 Units.
Students attend one of the regular MATH 51 lectures with a longer discussion section of four hours per week instead of two. Active mode: students in small groups discuss and work on problems from a worksheet distributed 2 or 3 days in advance, with a TA providing guidance and answering questions. Application required: https://forms.gle/7Bexo81r9YcZYRW1A.

MATH 52. Integral Calculus of Several Variables. 5 Units.
Iterated integrals, line and surface integrals, vector analysis with applications to vector potentials and conservative vector fields, physical interpretations. Divergence theorem and the theorems of Green, Gauss, and Stokes. Prerequisite: 51 or equivalents.

MATH 52A. Integral Calculus of Several Variables, ACE. 1 Unit.
Additional problem solving session for Math 52 guided by a course assistant. Concurrent enrollment in Math 52 required. Application required: https://engineering.stanford.edu/students-academics/equity-and-inclusion-initiatives/undergraduate-programs/additional-calculus.

MATH 53. Ordinary Differential Equations with Linear Algebra. 5 Units.
Ordinary differential equations and initial value problems, systems of linear differential equations with constant coefficients, applications of second-order equations to oscillations, matrix exponentials, Laplace transforms, stability of non-linear systems and phase plane analysis, numerical methods. Prerequisite: 51 or equivalents.

MATH 53A. Ordinary Differential Equations with Linear Algebra, ACE. 1 Unit.
Additional problem solving session for Math 53 guided by a course assistant. Concurrent enrollment in Math 53 required. Application required: https://engineering.stanford.edu/students-academics/equity-and-inclusion-initiatives/undergraduate-programs/additional-calculus.

MATH 56. Proofs and Modern Mathematics. 3 Units.
How do mathematicians think? Why are the mathematical facts learned in school true? In this course students will explore higher-level mathematical thinking and will gain familiarity with a crucial aspect of mathematics: achieving certainty via mathematical proofs, a creative activity of figuring out what should be true and why. This course is ideal for students who would like to learn about the reasoning underlying mathematical results, but at a pace and level of abstraction not as intense as Math 61CM/DM, as a consequence benefiting from additional opportunity to explore the reasoning. Familiarity with one-variable calculus is strongly recommended at least at the AB level of AP Calculus since a significant part of the course develops some of the main results in that material systematically from a small list of axioms. We also address linear algebra from the viewpoint of a mathematician, illuminating notions such as fields and abstract vector spaces. This course may be paired with Math 51; though that course is not a pre- or co-requisite.

MATH 61CM. Modern Mathematics: Continuous Methods. 5 Units.
This is the first part of a theoretical (i.e., proof-based) sequence in multivariable calculus and linear algebra, providing a unified treatment of these topics. Covers general vector spaces, linear maps and duality, eigenvalues, inner product spaces, spectral theorem, metric spaces, differentiation in Euclidean space, submanifolds of Euclidean space as local graphs, integration on Euclidean space, and many examples. The linear algebra content is covered jointly with Math 61DM. Students should know 1-variable calculus and have an interest in a theoretical approach to the subject. Prerequisite: score of 5 on the BC-level Advanced Placement calculus exam, or consent of the instructor.

MATH 61DM. Modern Mathematics: Discrete Methods. 5 Units.
This is the first part of a theoretical (i.e., proof-based) sequence in discrete mathematics and linear algebra. Covers general vector spaces, linear maps and duality, eigenvalues, inner product spaces, spectral theorem, counting techniques, and linear algebra methods in discrete mathematics including spectral graph theory and dimension arguments. The linear algebra content is covered jointly with Math 61CM. Students should have an interest in a theoretical approach to the subject. Prerequisite: score of 5 on the BC-level Advanced Placement calculus exam, or consent of the instructor.nnThis sequence is not appropriate for students planning to major in natural sciences, economics, or engineering, but is suitable for majors in any other field (such as MCS ("data science"), computer science, and mathematics).

MATH 62CM. Modern Mathematics: Continuous Methods. 5 Units.
A proof-based introduction to manifolds and the general Stokes' theorem. This includes a treatment of multilinear algebra, further study of submanifolds of Euclidean space (with many examples), differential forms and their geometric interpretations, integration of differential forms, Stokes' theorem, and some applications to topology. Prerequisites: Math 61CM.

MATH 62DM. Modern Mathematics: Discrete Methods. 5 Units.
This is the second part of a proof-based sequence in discrete mathematics. This course covers topics in elementary number theory, group theory, and discrete Fourier analysis. For example, we'll discuss the basic examples of abelian groups arising from congruences in elementary number theory, as well as the non-abelian symmetric group of permutations. Prerequisites: 61DM or 61CM.

MATH 63CM. Modern Mathematics: Continuous Methods. 5 Units.
A proof-based course on ordinary differential equations. Topics include the inverse and implicit function theorems, implicitly-defined submanifolds of Euclidean space, linear systems of differential equations and necessary tools from linear algebra, stability and asymptotic properties of solutions to linear systems, existence and uniqueness theorems for nonlinear differential equations, behavior of solutions near an equilibrium point, and Sturm-Liouville theory. Prerequisite: Math 61CM.

MATH 63DM. Modern Mathematics: Discrete Methods. 5 Units.
Third part of a proof-based sequence in discrete mathematics. The first half of the quarter gives a fast-paced coverage of probability and random processes with an intensive use of generating functions. The second half treats entropy, Shannon¿s coding theorem, game theory, probabilistic methods in solving non-probabilistic problems; some of these topics may vary from year to year. nnPrerequisite: Math 61DM or 61CM.

MATH 70SI. The Game of Go: Strategy, Theory, and History. 1 Unit.
Strategy and mathematical theories of the game of Go, with guest appearance by a professional Go player.

MATH 80Q. Capillary Surfaces: Explored and Unexplored Territory. 3 Units.
Preference to sophomores. Capillary surfaces: the interfaces between fluids that are adjacent to each other and do not mix. Recently discovered phenomena, predicted mathematically and subsequently confirmed by experiments, some done in space shuttles. Interested students may participate in ongoing investigations with affinity between mathematics and physics.

MATH 87Q. Mathematics of Knots, Braids, Links, and Tangles. 3 Units.
Preference to sophomores. Types of knots and how knots can be distinguished from one another by means of numerical or polynomial invariants. The geometry and algebra of braids, including their relationships to knots. Topology of surfaces. Brief summary of applications to biology, chemistry, and physics.

MATH 101. Math Discovery Lab. 3 Units.
MDL is a discovery-based project course in mathematics. Students work independently in small groups to explore open-ended mathematical problems and discover original mathematics. Students formulate conjectures and hypotheses; test predictions by computation, simulation, or pure thought; and present their results to classmates. No lecture component; in-class meetings reserved for student presentations, attendance mandatory. Admission is by application: http://math101.stanford.edu. Motivated students with any level of mathematical background are encouraged to apply. WIM.

MATH 104. Applied Matrix Theory. 3 Units.
Linear algebra for applications in science and engineering: orthogonality, projections, spectral theory for symmetric matrices, the singular value decomposition, the QR decomposition, least-squares, the condition number of a matrix, algorithms for solving linear systems. MATH 113 offers a more theoretical treatment of linear algebra. MATH 104 and ENGR 108 cover complementary topics in applied linear algebra. The focus of MATH 104 is on algorithms and concepts; the focus of ENGR 108 is on a few linear algebra concepts, and many applications. Prerequisites: MATH 51 and programming experience on par with CS 106.

MATH 106. Functions of a Complex Variable. 3 Units.
Complex numbers, analytic functions, Cauchy-Riemann equations, complex integration, Cauchy integral formula, residues, elementary conformal mappings. (Math 116 offers a more theoretical treatment.) Prerequisite: 52.

MATH 107. Graph Theory. 3 Units.
An introductory course in graph theory establishing fundamental concepts and results in variety of topics. Topics include: basic notions, connectivity, cycles, matchings, planar graphs, graph coloring, matrix-tree theorem, conditions for hamiltonicity, Kuratowski's theorem, Ramsey and Turan-type theorem. Prerequisites: 51 or equivalent and some familiarity with proofs is required.

MATH 108. Introduction to Combinatorics and Its Applications. 3 Units.
Topics: graphs, trees (Cayley's Theorem, application to phylogony), eigenvalues, basic enumeration (permutations, Stirling and Bell numbers), recurrences, generating functions, basic asymptotics. Prerequisites: 51 or equivalent.

MATH 109. Applied Group Theory. 3 Units.
Applications of the theory of groups. Topics: elements of group theory, groups of symmetries, matrix groups, group actions, and applications to combinatorics and computing. Applications: rotational symmetry groups, the study of the Platonic solids, crystallographic groups and their applications in chemistry and physics. Honors math majors and students who intend to do graduate work in mathematics should take 120. WIM. Prerequisite: Math 51.

MATH 110. Applied Number Theory and Field Theory. 3 Units.
Number theory and its applications to modern cryptography. Topics: congruences, finite fields, primality testing and factorization, public key cryptography, error correcting codes, and elliptic curves, emphasizing algorithms. Includes an introduction to proof-writing. WIM. Prerequisite: Math 51.

MATH 113. Linear Algebra and Matrix Theory. 3 Units.
Algebraic properties of matrices and their interpretation in geometric terms. The relationship between the algebraic and geometric points of view and matters fundamental to the study and solution of linear equations. Topics: linear equations, vector spaces, linear dependence, bases and coordinate systems; linear transformations and matrices; similarity; eigenvectors and eigenvalues; diagonalization. Includes an introduction to proof-writing. (Math 104 offers a more application-oriented treatment.) Prerequisites: Math 51.

MATH 114. Introduction to Scientific Computing. 3 Units.
Introduction to Scientific Computing Numerical computation for mathematical, computational, physical sciences and engineering: error analysis, floating-point arithmetic, nonlinear equations, numerical solution of systems of algebraic equations, banded matrices, least squares, unconstrained optimization, polynomial interpolation, numerical differentiation and integration, numerical solution of ordinary differential equations, truncation error, numerical stability for time dependent problems and stiffness. Implementation of numerical methods in MATLAB programming assignments. Prerequisites: MATH 51, 52, 53; prior programming experience (MATLAB or other language at level of CS 106A or higher).
Same as: CME 108

MATH 115. Functions of a Real Variable. 3 Units.
The development of real analysis in Euclidean space: sequences and series, limits, continuous functions, derivatives, integrals. Basic point set topology. Includes introduction to proof-writing. Prerequisite: 21.

MATH 116. Complex Analysis. 3 Units.
Analytic functions, Cauchy integral formula, power series and Laurent series, calculus of residues and applications, conformal mapping, analytic continuation, introduction to Riemann surfaces, Fourier series and integrals. (Math 106 offers a less theoretical treatment.) Prerequisites: 52, and 115 or 171.

MATH 118. Mathematics of Computation. 3 Units.
Notions of analysis and algorithms central to modern scientific computing: continuous and discrete Fourier expansions, the fast Fourier transform, orthogonal polynomials, interpolation, quadrature, numerical differentiation, analysis and discretization of initial-value and boundary-value ODE, finite and spectral elements. Prerequisites: MATH 51 and 53.

MATH 120. Groups and Rings. 3 Units.
Recommended for Mathematics majors and required of honors Mathematics majors. Similar to 109 but altered content and more theoretical orientation. Groups acting on sets, examples of finite groups, Sylow theorems, solvable and simple groups. Fields, rings, and ideals; polynomial rings over a field; PID and non-PID. Unique factorization domains. WIM.

MATH 121. Galois Theory. 3 Units.
Field of fractions, splitting fields, separability, finite fields. Galois groups, Galois correspondence, examples and applications. Prerequisite: Math 120 and (also recommended) 113.

MATH 122. Modules and Group Representations. 3 Units.
Modules over PID. Tensor products over fields. Group representations and group rings. Maschke's theorem and character theory. Character tables, construction of representations. Prerequisite: Math 120. Also recommended: 113.

MATH 131P. Partial Differential Equations. 3 Units.
An introduction to PDE; particularly suitable for non-Math majors. Topics include physical examples of PDE's, method of characteristics, D'Alembert's formula, maximum principles, heat kernel, Duhamel's principle, separation of variables, Fourier series, Harmonic functions, Bessel functions, spherical harmonics. Students who have taken MATH 171 should consider taking MATH 173 rather than 131P. Prerequisite: 53.

MATH 136. Stochastic Processes. 3 Units.
Introduction to measure theory, Lp spaces and Hilbert spaces. Random variables, expectation, conditional expectation, conditional distribution. Uniform integrability, almost sure and Lp convergence. Stochastic processes: definition, stationarity, sample path continuity. Examples: random walk, Markov chains, Gaussian processes, Poisson processes, Martingales. Construction and basic properties of Brownian motion. Prerequisite: STATS 116 or MATH 151 or equivalent. Recommended: MATH 115 or equivalent. http://statweb.stanford.edu/~adembo/math-136/.
Same as: STATS 219

MATH 137. Mathematical Methods of Classical Mechanics. 3 Units.
Newtonian mechanics. Lagrangian formalism. E. Noether's theorem. Oscillations. Rigid bodies. Introduction to symplectic geometry. Hamiltonian formalism. Legendre transform. Variational principles. Geometric optics. Introduction to the theory of integrable systems. Prerequisites: 51, 52, 53, or 61CM, 62CM, 63CM.

MATH 138. Celestial Mechanics. 3 Units.
Mathematically rigorous introduction to the classical N-body problem: the motion of N particles evolving according to Newton's law. Topics include: the Kepler problem and its symmetries; other central force problems; conservation theorems; variational methods; Hamilton-Jacobi theory; the role of equilibrium points and stability; and symplectic methods. Prerequisites: 53, and 115 or 171.

MATH 143. Differential Geometry. 3 Units.
Geometry of curves and surfaces in three-space and higher dimensional manifolds. Parallel transport, curvature, and geodesics. Surfaces with constant curvature. Minimal surfaces.

MATH 144. Introduction to Topology and Geometry. 3 Units.
Point set topology, including connectedness, compactness, countability and separation axioms. The inverse and implicit function theorems. Smooth manifolds, immersions and submersions, embedding theorems. Prerequisites: Math 61CM, or Math 51 and familiarity with linear algebra and analysis arguments at the level of 113 and 115 respectively.

MATH 145. Algebraic Geometry. 3 Units.
An introduction to the methods and concepts of algebraic geometry. The point of view and content will vary over time, but include: affine varieties, Hilbert basis theorem and Nullstellensatz, projective varieties, algebraic curves. Required: 120. Strongly recommended: additional mathematical maturity via further basic background with fields, point-set topology, or manifolds.

MATH 147. Differential Topology. 3 Units.
Introduction to smooth methods in topology including tranvsersality, intersection number, fixed point theorems, as well as differential forms and integration. Prerequisites: Math 62CM or Math 144.

MATH 148. Algebraic Topology. 3 Units.
Fundamental group, covering spaces, Euler characteristic, homology, classification of surfaces, knots. Prerequisite: 109 or 120.

MATH 151. Introduction to Probability Theory. 3 Units.
A proof-oriented development of basic probability theory. Counting; axioms of probability; conditioning and independence; expectation and variance; discrete and continuous random variables and distributions; joint distributions and dependence; Central Limit Theorem and laws of large numbers. nPrerequisite: Either Math 61CM or Math 52, and Math 115 or equivalent.

MATH 152. Elementary Theory of Numbers. 3 Units.
Euclid's algorithm, fundamental theorems on divisibility; prime numbers; congruence of numbers; theorems of Fermat, Euler, Wilson; congruences of first and higher degrees; quadratic residues; introduction to the theory of binary quadratic forms; quadratic reciprocity; partitions.

MATH 154. Algebraic Number Theory. 3 Units.
Properties of number fields and Dedekind domains, quadratic and cyclotomic fields, applications to some classical Diophantine equations. Prerequisites: 120 and 121, especially modules over principal ideal domains and Galois theory of finite fields.

MATH 155. Analytic Number Theory. 3 Units.
Introduction to Dirichlet series and Dirichlet characters, Poisson summation, Gauss sums, analytic continuation for Dirichlet L-functions, applications to prime numbers (e.g., prime number theorem, Dirichlet's theorem). Prerequisites: Complex analysis (Math 106 or 116), Math 152 (or comparable familiarity with the Euclidean algorithm, multiplicative group modulo n, and quadratic reciprocity), and experience with basic analysis arguments.

MATH 158. Basic Probability and Stochastic Processes with Engineering Applications. 3 Units.
Calculus of random variables and their distributions with applications. Review of limit theorems of probability and their application to statistical estimation and basic Monte Carlo methods. Introduction to Markov chains, random walks, Brownian motion and basic stochastic differential equations with emphasis on applications from economics, physics and engineering, such as filtering and control. Prerequisites: exposure to basic probability.
Same as: CME 298

MATH 159. Discrete Probabilistic Methods. 3 Units.
Modern discrete probabilistic methods suitable for analyzing discrete structures of the type arising in number theory, graph theory, combinatorics, computer science, information theory and molecular sequence analysis. Prerequisite: STATS 116/MATH 151 or equivalent. Typically in alternating years.

MATH 161. Set Theory. 3 Units.
Informal and axiomatic set theory: sets, relations, functions, and set-theoretical operations. The Zermelo-Fraenkel axiom system and the special role of the axiom of choice and its various equivalents. Well-orderings and ordinal numbers; transfinite induction and transfinite recursion. Equinumerosity and cardinal numbers; Cantor's Alephs and cardinal arithmetic. Open problems in set theory. Prerequisite: students should be comfortable doing proofs.

MATH 171. Fundamental Concepts of Analysis. 3 Units.
Recommended for Mathematics majors and required of honors Mathematics majors. Similar to 115 but altered content and more theoretical orientation. Properties of Riemann integrals, continuous functions and convergence in metric spaces; compact metric spaces, basic point set topology. Prerequisite: 61CM or 61DM or 115 or consent of the instructor. WIM.

MATH 172. Lebesgue Integration and Fourier Analysis. 3 Units.
Similar to 205A, but for undergraduate Math majors and graduate students in other disciplines. Topics include Lebesgue measure on Euclidean space, Lebesgue integration, L^p spaces, the Fourier transform, the Hardy-Littlewood maximal function and Lebesgue differentiation. Prerequisite: 171 or consent of instructor.

MATH 173. Theory of Partial Differential Equations. 3 Units.
A rigorous introduction to PDE accessible to advanced undergraduates. Elliptic, parabolic, and hyperbolic equations in many space dimensions including basic properties of solutions such as maximum principles, causality, and conservation laws. Methods include the Fourier transform as well as more classical methods. The Lebesgue integral will be used throughout, but a summary of its properties will be provided to make the course accessible to students who have not had 172 or 205A. In years when Math 173 is not offered, Math 220 is a recommended alternative (with similar content but a different emphasis). Prerequisite: 171 or equivalent.

MATH 175. Elementary Functional Analysis. 3 Units.
Linear operators on Hilbert space. Spectral theory of compact operators; applications to integral equations. Elements of Banach space theory. Prerequisite: 115 or 171.

MATH 177. Geometric Methods in the Theory of Ordinary Differential Equations. 3 Units.
Hamiltonian systems and their geometry. First order PDE and Hamilton-Jacobi equation. Structural stability and hyperbolic dynamical systems. Completely integrable systems. Perturbation theory.

MATH 193. Polya Problem Solving Seminar. 1 Unit.
Topics in mathematics and problem solving strategies with an eye towards the Putnam Competition. Topics may include parity, the pigeonhole principle, number theory, recurrence, generating functions, and probability. Students present solutions to the class. Open to anyone with an interest in mathematics.

MATH 197. Senior Honors Thesis. 1-6 Unit.
Honors math major working on senior honors thesis under an approved advisor carries out research and reading. Satisfactory written account of progress achieved during term must be submitted to advisor before term ends. May be repeated 3 times for a max of 9 units. Contact department student services specialist to enroll.

MATH 198. Practical Training. 1 Unit.
Only for undergraduate students majoring in mathematics. Students obtain employment in a relevant industrial or research activity to enhance their professional experience. Students submit a concise report detailing work activities, problems worked on, and key results. May be repeated for credit up to 3 units. Prerequisite: qualified offer of employment and consent of department. Prior approval by Math Department is required; you must contact the Math Department's Student Services staff for instructions before being granted permission to enroll.

MATH 199. Reading Topics. 1-3 Unit.
For Math majors only. Undergraduates pursue a reading program under the direction of a Math faculty member; topics limited to those not in regular department course offerings. Credit can fulfill the elective requirement for Math majors. Departmental approval required; please contact the Student Services Specialist for the enrollment proposal form at least 2 weeks before the final study list deadline. May be repeated for credit. Enrollment beyond a third section requires additional approval.

MATH 205A. Real Analysis. 3 Units.
Basic measure theory and the theory of Lebesgue integration. Prerequisite: 171 or equivalent.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 205B. Real Analysis. 3 Units.
Point set topology, basic functional analysis, Fourier series, and Fourier transform. Prerequisites: 171 and 205A or equivalent.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 205C. Real Analysis. 3 Units.
Continuation of 205B.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 210A. Modern Algebra I. 3 Units.
Basic commutative ring and module theory, tensor algebra, homological constructions, linear and multilinear algebra, canonical forms and Jordan decomposition. Prerequisite: 121 and 122 or equivalent.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 210B. Modern Algebra II. 3 Units.
Continuation of 210A. Topics in field theory, commutative algebra, algebraic geometry, and finite group representations. Prerequisites: 210A, and 121 or equivalent.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 210C. Lie Theory. 3 Units.
Topics in Lie groups, Lie algebras, and/or representation theory. Prerequisite: math 210B. May be repeated for credit.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 215A. Algebraic Topology. 3 Units.
Topics: fundamental group and covering spaces, basics of homotopy theory, homology and cohomology (simplicial, singular, cellular), products, introduction to topological manifolds, orientations, Poincare duality. Prerequisites: 113, 120, and 171.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 215B. Differential Topology. 3 Units.
Topics: Basics of differentiable manifolds (tangent spaces, vector fields, tensor fields, differential forms), embeddings, tubular neighborhoods, integration and Stokes' Theorem, deRham cohomology, intersection theory via Poincare duality, Morse theory. Prerequisite: 215AnnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 215C. Differential Geometry. 3 Units.
This course will be an introduction to Riemannian Geometry. Topics will include the Levi-Civita connection, Riemann curvature tensor, Ricci and scalar curvature, geodesics, parallel transport, completeness, geodesics and Jacobi fields, and comparison techniques. Prerequisites 146 or 215BnnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 216A. Introduction to Algebraic Geometry. 3 Units.
Algebraic varieties, and introduction to schemes, morphisms, sheaves, and the functorial viewpoint. May be repeated for credit. Prerequisites: 210AB or equivalent.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 216B. Introduction to Algebraic Geometry. 3 Units.
Continuation of 216A. May be repeated for credit.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 216C. Introduction to Algebraic Geometry. 3 Units.
Continuation of 216B. May be repeated for credit.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 217C. Complex Differential Geometry. 3 Units.
Complex structures, almost complex manifolds and integrability, Hermitian and Kahler metrics, connections on complex vector bundles, Chern classes and Chern-Weil theory, Hodge and Dolbeault theory, vanishing theorems, Calabi-Yau manifolds, deformation theory.

MATH 220. Partial Differential Equations of Applied Mathematics. 3 Units.
First-order partial differential equations; method of characteristics; weak solutions; elliptic, parabolic, and hyperbolic equations; Fourier transform; Fourier series; and eigenvalue problems. Prerequisite: Basic coursework in multivariable calculus and ordinary differential equations, and some prior experience with a proof-based treatment of the material as in Math 171 or Math 61CM.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.
Same as: CME 303

MATH 221A. Mathematical Methods of Imaging. 3 Units.
Image denoising and deblurring with optimization and partial differential equations methods. Imaging functionals based on total variation and l-1 minimization. Fast algorithms and their implementation.
Same as: CME 321A

MATH 221B. Mathematical Methods of Imaging. 3 Units.
Array imaging using Kirchhoff migration and beamforming, resolution theory for broad and narrow band array imaging in homogeneous media, topics in high-frequency, variable background imaging with velocity estimation, interferometric imaging methods, the role of noise and inhomogeneities, and variational problems that arise in optimizing the performance of array imaging algorithms.
Same as: CME 321B

MATH 226. Numerical Solution of Partial Differential Equations. 3 Units.
Hyperbolic partial differential equations: stability, convergence and qualitative properties; nonlinear hyperbolic equations and systems; combined solution methods from elliptic, parabolic, and hyperbolic problems. Examples include: Burger's equation, Euler equations for compressible flow, Navier-Stokes equations for incompressible flow. Prerequisites: MATH 220 or CME 302.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.
Same as: CME 306

MATH 227. Partial Differential Equations and Diffusion Processes. 3 Units.
Parabolic and elliptic partial differential equations and their relation to diffusion processes. First order equations and optimal control. Emphasis is on applications to mathematical finance. Prerequisites: MATH 136/ STATS 219 (or equivalents) and MATH 131P + MATH 115/171 or MATH 173 or MATH 220.

MATH 228. Stochastic Methods in Engineering. 3 Units.
The basic limit theorems of probability theory and their application to maximum likelihood estimation. Basic Monte Carlo methods and importance sampling. Markov chains and processes, random walks, basic ergodic theory and its application to parameter estimation. Discrete time stochastic control and Bayesian filtering. Diffusion approximations, Brownian motion and an introduction to stochastic differential equations. Examples and problems from various applied areas. Prerequisites: exposure to probability and background in analysis.
Same as: CME 308, MS&E 324

MATH 228A. Probability, Stochastic Analysis and Applications. 3 Units.
The basic limit theorems of probability theory and their application to maximum likelihood estimation. Basic Monte Carlo methods and importance sampling. Markov chains and processes, random walks, basic ergodic theory and its application to parameter estimation. Discrete time stochastic control and Bayesian filtering. Diffusion approximations, Brownian motion and basic stochastic differential equations. Examples and problems from various applied areas. Prerequisites: exposure to probability and background in analysis.

MATH 230A. Theory of Probability I. 3 Units.
Mathematical tools: sigma algebras, measure theory, connections between coin tossing and Lebesgue measure, basic convergence theorems. Probability: independence, Borel-Cantelli lemmas, almost sure and Lp convergence, weak and strong laws of large numbers. Large deviations. Weak convergence; central limit theorems; Poisson convergence; Stein's method. Prerequisites: STATS 116, MATH 171.
Same as: STATS 310A

MATH 230B. Theory of Probability II. 3 Units.
Conditional expectations, discrete time martingales, stopping times, uniform integrability, applications to 0-1 laws, Radon-Nikodym Theorem, ruin problems, etc. Other topics as time allows selected from (i) local limit theorems, (ii) renewal theory, (iii) discrete time Markov chains, (iv) random walk theory,n(v) ergodic theory. http://statweb.stanford.edu/~adembo/stat-310b. Prerequisite: 310A or MATH 230A.
Same as: STATS 310B

MATH 230C. Theory of Probability III. 3 Units.
Continuous time stochastic processes: martingales, Brownian motion, stationary independent increments, Markov jump processes and Gaussian processes. Invariance principle, random walks, LIL and functional CLT. Markov and strong Markov property. Infinitely divisible laws. Some ergodic theory. Prerequisite: 310B or MATH 230B. http://statweb.stanford.edu/~adembo/stat-310c/.
Same as: STATS 310C

MATH 231. Mathematics and Statistics of Gambling. 3 Units.
Probability and statistics are founded on the study of games of chance. Nowadays, gambling (in casinos, sports and the Internet) is a huge business. This course addresses practical and theoretical aspects. Topics covered: mathematics of basic random phenomena (physics of coin tossing and roulette, analysis of various methods of shuffling cards), odds in popular games, card counting, optimal tournament play, practical problems of random number generation. Prerequisites: Statistics 116 and 200.
Same as: STATS 334

MATH 232. Topics in Probability: Percolation Theory. 3 Units.
An introduction to first passage percolation and related general tools and models. Topics include early results on shape theorems and fluctuations, more modern development using hyper-contractivity, recent breakthrough regarding scaling exponents, and providing exposure to some fundamental long-standing open problems. Course prerequisite: graduate-level probability.

MATH 233A. Topics in Combinatorics. 3 Units.
A topics course in combinatorics and related areas. The topic will be announced by the instructor.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 233B. Topics in Combinatorics. 3 Units.
A topics course in combinatorics and related areas. The topic will be announced by the instructor.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 233C. Topics in Combinatorics. 3 Units.
A topics course in combinatorics and related areas. The topic will be announced by the instructor.

MATH 234. Large Deviations Theory. 3 Units.
Combinatorial estimates and the method of types. Large deviation probabilities for partial sums and for empirical distributions, Cramer's and Sanov's theorems and their Markov extensions. Applications in statistics, information theory, and statistical mechanics. Prerequisite: MATH 230A or STATS 310. Offered every 2-3 years. http://statweb.stanford.edu/~adembo/large-deviations/.
Same as: STATS 374

MATH 235A. Topics in combinatorics. 3 Units.
This advanced course in extremal combinatorics covers several major themes in the area. These include extremal combinatorics and Ramsey theory, the graph regularity method, and algebraic methods.

MATH 235B. Modern Markov Chain Theory. 3 Units.
This is a graduate-level course on the use and analysis of Markov chains. Emphasis is placed on explicit rates of convergence for chains used in applications to physics, biology, and statistics. Topics covered: basic constructions (metropolis, Gibbs sampler, data augmentation, hybrid Monte Carlo); spectral techniques (explicit diagonalization, Poincaré, and Cheeger bounds); functional inequalities (Nash, Sobolev, Log Sobolev); probabilistic techniques (coupling, stationary times, Harris recurrence). A variety of card shuffling processes will be studies. Central Limit and concentration.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 235C. Topics in Markov Chains. 3 Units.
Classical functional inequalities (Nash, Faber-Krahn, log-Sobolev inequalities), comparison of Dirichlet forms. Random walks and isoperimetry of amenable groups (with a focus on solvable groups). Entropy, harmonic functions, and Poisson boundary (following Kaimanovich-Vershik theory).

MATH 236. Introduction to Stochastic Differential Equations. 3 Units.
Brownian motion, stochastic integrals, and diffusions as solutions of stochastic differential equations. Functionals of diffusions and their connection with partial differential equations. Random walk approximation of diffusions. Prerequisite: 136 or equivalent and differential equations.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 237. Default and Systemic Risk. 3 Units.
Introduction to mathematical models of complex static and dynamic stochastic systems that undergo sudden regime change in response to small changes in parameters. Examples from materials science (phase transitions), power grid models, financial and banking systems. Special emphasis on mean field models and their large deviations, including computational issues. Dynamic network models of financial systems and their stability.

MATH 237A. Topics in Financial Math: Market microstructure and trading algorithms. 3 Units.
Introduction to market microstructure theory, including optimal limit order and market trading models. Random matrix theory covariance models and their application to portfolio theory. Statistical arbitrage algorithms.

MATH 238. Mathematical Finance. 3 Units.
Stochastic models of financial markets. Forward and futures contracts. European options and equivalent martingale measures. Hedging strategies and management of risk. Term structure models and interest rate derivatives. Optimal stopping and American options. Corequisites: MATH 236 and 227 or equivalent.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.
Same as: STATS 250

MATH 239. Computation and Simulation in Finance. 3 Units.
Monte Carlo, finite difference, tree, and transform methods for the numerical solution of partial differential equations in finance. Emphasis is on derivative security pricing. Prerequisite: 238 or equivalent.

MATH 243. Functions of Several Complex Variables. 3 Units.
Holomorphic functions in several variables, Hartogs phenomenon, d-bar complex, Cousin problem. Domains of holomorphy. Plurisubharmonic functions and pseudo-convexity. Stein manifolds. Coherent sheaves, Cartan Theorems A&B. Levi problem and its solution. Grauert's Oka principle. Prerequisites: MATH 215A and experience with manifolds. NOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 244. Riemann Surfaces. 3 Units.
Riemann surfaces and holomorphic maps, algebraic curves, maps to projective spaces. Calculus on Riemann surfaces. Elliptic functions and integrals. Riemann-Hurwitz formula. Riemann-Roch theorem, Abel-Jacobi map. Uniformization theorem. Hyperbolic surfaces. (Suitable for advanced undergraduates.) Prerequisites: MATH 106 or MATH 116, and familiarity with surfaces equivalent to MATH 143, MATH 146, or MATH 147.

MATH 245A. Topics in Algebraic Geometry. 3 Units.
Topics of contemporary interest in algebraic geometry. May be repeated for credit.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 245B. Topics in Algebraic Geometry. 3 Units.
May be repeated for credit.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 245C. Topics in Algebraic Geometry. 3 Units.
May be repeated for credit.

MATH 246. Topics in number theory: L-functions. 3 Units.
The Riemann Zeta function and Dirichlet L-functions, zero-free regions and vertical distribution of the zeros, primes in arithmetic progressions, the class number problem, Hecke L-functions and Tate's thesis, Artin L-functions and the Chebotarev density theorem, Modular forms and Maass forms.nnPrerequisites: Algebraic Number Theory.

MATH 248. Introduction to Ergodic Theory. 3 Units.
Topics may include 1) subadditive and multiplicative ergodic theorems, 2) notions of mixing, weak mixing, spectral theory, 3) metric and topological entropy of dynamical systems, 4) measures of maximal entropy. Prerequisites: Solid background in "Measure and Integration" (Math 205A) and some functional analysis, including Riesz representation theorem and Hahn-Banach theorem (Math 205B).

MATH 249A. Topics in number theory. 3 Units.
Topics of contemporary interest in number theory. May be repeated for credit.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 249B. Topics in Number Theory. 3 Units.
NOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 249C. Topics in Number Theory. 3 Units.
NOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 256A. Partial Differential Equations. 3 Units.
The theory of linear and nonlinear partial differential equations, beginning with linear theory involving use of Fourier transform and Sobolev spaces. Topics: Schauder and L2 estimates for elliptic and parabolic equations; De Giorgi-Nash-Moser theory for elliptic equations; nonlinear equations such as the minimal surface equation, geometric flow problems, and nonlinear hyperbolic equations.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 256B. Partial Differential Equations. 3 Units.
Continuation of 256A.

MATH 257A. Symplectic Geometry and Topology. 3 Units.
Linear symplectic geometry and linear Hamiltonian systems. Symplectic manifolds and their Lagrangian submanifolds, local properties. Symplectic geometry and mechanics. Contact geometry and contact manifolds. Relations between symplectic and contact manifolds. Hamiltonian systems with symmetries. Momentum map and its properties. May be repeated for credit.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 257B. Symplectic Geometry and Topology. 3 Units.
Continuation of 257A. May be repeated for credit.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 257C. Symplectic Geometry and Topology. 3 Units.
Continuation of 257B. May be repeated for credit.

MATH 258. Topics in Geometric Analysis. 3 Units.
May be repeated for credit.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 262. Applied Fourier Analysis and Elements of Modern Signal Processing. 3 Units.
Introduction to the mathematics of the Fourier transform and how it arises in a number of imaging problems. Mathematical topics include the Fourier transform, the Plancherel theorem, Fourier series, the Shannon sampling theorem, the discrete Fourier transform, and the spectral representation of stationary stochastic processes. Computational topics include fast Fourier transforms (FFT) and nonuniform FFTs. Applications include Fourier imaging (the theory of diffraction, computed tomography, and magnetic resonance imaging) and the theory of compressive sensing. NOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.
Same as: CME 372

MATH 263A. Topics in Representation Theory: Affine Lie Algebras and Modular Forms. 3 Units.
Kac-Moody Lie algebras are infinite-dimensional Lie algebras whose theory is remarkably similar to finite-dimensional semisimple Lie algebras. Affine Lie algebras are the most important special case.We will develop some of the Kac-Moody theory, such as the Kac-Weyl character formula, before specializing to affine Lie algebras. Ideas from physics give a multiplication called fusion on the irreducible integrable representations of fixed level. Kac and Peterson showed that the characters and related "string functions" of these representations are modular forms, and the transformation properties of these theta functions of fixed level encode important information about the fusion ring. NOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc. May be repeated for credit.

MATH 263B. Crystal Bases: Representations and Combinatorics. 3 Units.
Crystal Bases are combinatorial analogs of representation theorynof Lie groups. We will explore different aspects of thesenanalogies and develop rigorous purely combinatorial foundations.

MATH 263C. Topics in Representation Theory. 3 Units.
Conformal Field Theory is a branch of physics with origins in solvable lattice models and string theory. But the mathematics that it has inspired has many applications in pure mathematics.nWe will give an introduction to this theory with related representation theories of the Virasoro and affine Lie algebras, and vertex operators.nnPrerequisites: we will not assume any particular knowledge from physics, but some knowledge of Lie algebras will be helpful.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.nnnMay be repeated for credit.

MATH 269. Topics in symplectic geometry. 3 Units.
May be repeated for credit.

MATH 270. Geometry and Topology of Complex Manifolds. 3 Units.
Complex manifolds, Kahler manifolds, curvature, Hodge theory, Lefschetz theorem, Kahler-Einstein equation, Hermitian-Einstein equations, deformation of complex structures. May be repeated for credit.

MATH 271. The H-Principle. 3 Units.
The language of jets. Thom transversality theorem. Holonomic approximation theorem. Applications: immersion theory and its generaliazations. Differential relations and Gromov's h-principle for open manifolds. Applications to symplectic geometry. Microflexibility. Mappings with simple singularities and their applications. Method of convex integration. Nash-Kuiper C^1-isometric embedding theorem.

MATH 272. Topics in Partial Differential Equations. 3 Units.
NOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 273. Topics in Mathematical Physics. 3 Units.
Covers a list of topics in mathematical physics. The specific topics may vary from year to year, depending on the instructor's discretion. Background in graduate level probability theory and analysis is desirable.
Same as: STATS 359

MATH 275. Topics in Applied Mathematics: A World of Flows II. 3 Units.
The purpose of this course is to show beautiful surprises and instructive paradoxes in a maximal diversity of fluid phenomena, and to understand them with minimal models. The prerequisites are fluency in the so-called "mathematical methods", plus ability to think physics at the advanced undergraduate level. The content will be the same as that of winter 2019 (but different from that of winter 2020). nnNOTE: Undergraduates must obtain instructor permission and pass a test to enroll. Undergraduates interested in taking the course should contact the instructor no later than the first week of class, providing information about performance in prior coursework.

MATH 280. Evolution Equations in Differential Geometry. 3 Units.
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MATH 282A. Low Dimensional Topology. 3 Units.
The theory of surfaces and 3-manifolds. Curves on surfaces, the classification of diffeomorphisms of surfaces, and Teichmuller space. The mapping class group and the braid group. Knot theory, including knot invariants. Decomposition of 3-manifolds: triangulations, Heegaard splittings, Dehn surgery. Loop theorem, sphere theorem, incompressible surfaces. Geometric structures, particularly hyperbolic structures on surfaces and 3-manifolds. May be repeated for credit up to 6 total units.

MATH 282B. Homotopy Theory. 3 Units.
Homotopy groups, fibrations, spectral sequences, simplicial methods, Dold-Thom theorem, models for loop spaces, homotopy limits and colimits, stable homotopy theory. May be repeated for credit up to 6 total units.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 282C. Fiber Bundles and Cobordism. 3 Units.
Possible topics: principal bundles, vector bundles, classifying spaces. Connections on bundles, curvature. Topology of gauge groups and gauge equivalence classes of connections. Characteristic classes and K-theory, including Bott periodicity, algebraic K-theory, and indices of elliptic operators. Spectral sequences of Atiyah-Hirzebruch, Serre, and Adams. Cobordism theory, Pontryagin-Thom theorem, calculation of unoriented and complex cobordism. May be repeated for credit up to 6 total units.

MATH 283A. Topics in Topology. 3 Units.
Topics of contemporary interest in topology. NOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 284. Topics in Geometric Topology. 3 Units.
Incompressible surfaces, irreducible manifolds, prime decomposition, Morse theory, Heegaard diagrams, Heegaard splittings, the Thurston norm, sutured manifold theory, Heegaard Floer homology, sutured Floer homology.

MATH 286. Topics in Differential Geometry. 3 Units.
Topics of contemporary interest in differential geometry. May be repeated for credit.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.

MATH 298. Graduate Practical Training. 1 Unit.
Only for mathematics graduate students. Students obtain employment in a relevant industrial or research activity to enhance their professional experience. Students submit a concise report detailing work activities, problems worked on, and key results. May be repeated for credit up to 3 units. Prerequisite: qualified offer of employment and consent of department. Prior approval by Math Department is required; you must contact the Math Department's Student Services staff for instructions before being granted permission to enroll.

MATH 301. Advanced Topics in Convex Optimization. 3 Units.
Modern developments in convex optimization: semidefinite programming; novel and efficient first-order algorithms for smooth and nonsmooth convex optimization. Emphasis on numerical methods suitable for large scale problems arising in science and engineering. Prerequisites: convex optimization (EE 364), linear algebra (Math 104), numerical linear algebra (CME 302); background in probability, statistics, real analysis and numerical optimization.
Same as: CME 375

MATH 305. Applied mathematics through toys and magic. 3 Units.
This course is a series of case-studies in doing applied mathematics on surprising phenomena we notice in daily life. Almost every class will show demos of these phenomena (toys and magic) and suggest open projects. The topics range over a great variety and cut across areas traditionally pigeonholed as physics, biology, engineering, computer science, mathematics ¿ but, instead of developing sophisticated mathematics on simple material, our aim is to extract simple mathematical understanding from sophisticated material which, at first, we may not yet know how to pigeonhole. In each class I will try to make the discussion self-contained and to give everybody something to take home, regardless of the background.

MATH 355. Graduate Teaching Seminar. 1 Unit.
Required of and limited to first-year Mathematics graduate students.

MATH 360. Advanced Reading and Research. 1-10 Unit.
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MATH 382. Qualifying Examination Seminar. 1-3 Unit.
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MATH 391. Seminar on Logic & Formal Philosophy. 2-4 Units.
Research seminar for graduate students working in logic and formal philosophy. Presentations on contemporary topics by seminar participants and outside visitors. Maybe be repeated for credit.
Same as: PHIL 391

MATH 802. TGR Dissertation. 0 Units.
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MEDIEVAL STUDIES

The Division of Literatures, Cultures, and Languages (https://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/divisionofliteraturesculturesandlanguages/) offers a Medieval Studies minor in conjunction with the Stanford Center for Medieval and Early Modern Studies (CMEMS). CMEMS is a multidisciplinary community working together to produce new perspectives on medieval and early modern studies. The mission of CMEMS is to promote innovative research and foster a lively dialogue among faculty, students, librarians, and research affiliates, to rethink the nature of the field across time, space, and disciplinary boundaries, and to explore the significance of these earlier periods for our understanding of today's world.

There are a number of programs and courses related to medieval and early modern studies. To learn more, see the center's web site (http://cmems.stanford.edu/)

COVID-19-Related Degree Requirement Changes

For information on how the Minor in Medieval Studies requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 1305)" in the "Division of Literatures, Cultures, and Languages" of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

Minor in Medieval Studies

Faculty Director: Marisa Galvez

The Division of Literatures, Cultures, and Languages offers an undergraduate minor in Medieval Studies. The minor in Medieval Studies:

- provides Stanford students with the historical knowledge and framework through which to view globalism;
- embeds the study of medieval culture in a coherent framework that resonates with contemporary issues of community building, the virtual world and mobility;
- and promotes an innovative cross-disciplinary and skill-based approach to Medieval Studies.

Declaring the Minor

Students should declare the minor in Medieval Studies in Axess. The undergraduate program is administered by the DLCL student services office located in Pigott Hall, room 128.

Requirements

Students in any major field qualify for the minor by meeting the following requirements:

- Students complete 6 courses courses of 3 units or more for a total of 25 units.
- The 6 courses must include an introductory core course taken for 5 units.

		Units
ARTHIST 106	Byzantine Art and Architecture, 300-1453 C.E.	5
DLCL 204	Digital Humanities Across Borders	3-5
HISTORY 115D	Europe in the Middle Ages, 300-1500	3-5

- Electives may be selected from a large number of offerings in a variety of disciplines according to student interests, but they must follow a coherent course of study. This course of study must be approved by the Undergraduate Faculty Director. Courses are relevant to the major in departments across the University including English, East Asian Studies, History, Religious Studies, Music, Comparative Literature, German, French, Italian, Iberian and Latin American Cultures, and Slavic Languages and Literatures, and Classics.
- Up to 5 units may be taken in a medieval language, such as (but not limited to) Old English, Old Norse, Medieval Latin, Old French, Middle High German, Classical Arabic.
- Appropriate courses offered through BOSP may count toward this minor.
- No transfer credit may be used toward the Medieval Studies minor, and course work in this minor may not duplicate work counted toward other majors or minors.
- Advanced placement credit and transfer credit do not apply to this minor.
- All courses must be taken for a letter grade.

Instructions:

Click on the Edit pencil to getstarted.Delete this "Instructions" block when you have finished editing...just click inside the blue box to select and then clickdelete.Do not delete the block immediatelybelow.This block of general University information isrequired.Replace ENTER ANY GENERAL DEPARTMENT/PROGRAM TEXT HERE with any general department/program text, or just delete theline.This might include something generic about support, or instructions on who to contact,etc.If you department has not decided what to do, replace this line with text such as "The department is in the process of making decisions concerning COVID-19 policies and will update this tab when those decisions have been made." Then delete the remaining text below asrelevant.Undergraduate and graduategrading:Pick one statement and delete the others, or enter your owntext.You can add to the text also, perhaps to include reference to whom the student should contact,etc.Also, replace DEPARTMENTorPROGRAM with the name of your own department or program, e.g., Department ofBiology.Enter any additional policies under "Other..." or delete the header if there are no additionalpolicies.When done, save, and send toworkflow.Contact Stephen by Slack (arod) if you have questions, or come to our Bulletin officehours:https://asconfluence.stanford.edu/confluence/display/SASLL/Stanford+Bulletin+2020-21.Note that you will be able to edit this content as new informationdevelops.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Medieval Studies minor counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Affiliated Faculty: Cécile Alduy (French and Italian), Keith Baker (History), Vincent Barletta (Iberian and Latin American Cultures and Comparative

Literature), John Bender (English), Karol Berger (Music), Carl Bielefeldt (Religious Studies), George H. Brown (English, Emeritus), Steven Carter (East Asian Languages and Cultures), Terry Castle (English), Giovanna Ceserani (Classics), Carolyn Lougee Chappell (History), David Como (History), Graciela De Pierris (Philosophy), Rowan Dorin (History), Dan Edelstein (French and Italian) Ronald Egan (Asian Languages), Elaine Fisher (Religious Studies), Fiona Griffiths (History), Paula Findlen (History), Charlotte Fonrobert (Religious Studies), James Fox (Anthropology), Michael Friedman (Philosophy), Marisa Galvez (French and Italian), Denise Gigante (English), Roland Greene (Comparative Literature and English) Avner Greif (Economics), Fiona Griffiths (History) Hans Ulrich Gumbrecht (Emeritus, Comparative Literature and French and Italian, Emeritus), Heather Hadlock (Music), Paul Harrison (Religious Studies), Robert Harrison (French and Italian), Tamar Herzog (History), Blair Hoxby (English), Nicole Hughes (Iberia and Latin American Cultures and Comparative Literature), Amalis Kessler (Law School), Alexander Key (Comparative Literature), Nancy S.Kollmann (History), Mark E. Lewis (History), Emanuele Lugli (Art History), William Mahrt (Music), Reviel Netz (Classics),David Palumbo-Liu (Comparative Literature) Grant Parker (Classics) Patricia Parker (English), Bissera Pentcheva (Art and Art History), Sarah Prodan (Italian), Jack Rakove (History), Jessica Riskin (History), Ian Robertson (Anthropology) Orrin W. Robinson (German Studies, Emeritus), David Riggs (English, Emeritus), Jesse Rodin (Music), Nancy Ruttenburg (English), Behnam Sadeki (Religious Studies), Londa Schiebinger (History), Krish Seetah (Anthropology), Matthew Sommer (History), Carolyn Springer (French and Italian, Emeritus), Kathryn Starkey (German Studies), Laura Stokes (History), Melinda Takeuchi (East Asian Languages and Cultures) Elaine Treharne (English),Blakey Vermeule (English), Richard Vinograd (Art and Art History), Richard White (History), Karen Wigen (History), Caroline Winterer (History), Allen Wood (Philosophy), Ali Yaycioglu (History), Lee H. Yearley (Religious Studies), Yiqun Zhou (East Asian Languages and Cultures)

MODERN THOUGHT AND LITERATURE

Courses offered by the Program in Modern Thought and Literature are listed under the subject code MTL on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=MTL&filter-catalognumber-MTL=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=MTL&filter-catalognumber-MTL=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=MTL&filter-catalognumber-MTL=on).

The program in Modern Thought and Literature admits students for the Ph.D. and a limited number for a coterminal B.A./M.A. Program.

Graduate Programs in Modern Thought and Literature

Modern Thought and Literature (MTL) is an interdisciplinary humanities graduate program advancing the study of critical issues in the modern world. Since 1971, MTL students have helped to redefine the cutting edge of many interdisciplinary fields and to reshape the ways in which disciplinary scholarship is understood and practiced. MTL graduates are leaders in fields such as American studies, ethnic studies, film studies, social and cultural studies, and women's studies, as well as English and comparative literature.

The program trains students to understand the histories and methods of disciplines and to test their assumptions. It considers how disciplines shape knowledge and, most importantly, how interdisciplinary methods reshape objects of study. MTL students produce innovative analyses of diverse texts, forms, and practices, including those of literature, history, philosophy, anthropology, law, and science; film, visual arts, popular culture, and performance; and material culture and technology.

Each student constructs a unique program of study suited to his or her research. Students have focused on such areas as gender and sexuality; race and ethnicity; science, technology, and medicine; media and performance; legal studies; and critical and social theory. The program's affiliated faculty is drawn from fields throughout the humanities and humanistic social sciences, as well as from education and law. As interdisciplinary study is impossible without an understanding of the disciplines under consideration, each student is expected to master the methods of literary analysis and to gain a foundation in a second field or discipline.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in interdisciplinary literary studies and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in interdisciplinary literary studies. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of interdisciplinary literary studies and to interpret and present the results of such research.

Master of Arts

The Master of Arts is available to students who are admitted to the doctoral program and have not been awarded an M.A. previously. Students are not admitted into the program for the purpose of earning a terminal Master of Arts degree. Candidates for the Ph.D. who satisfy the committee of their progress and satisfactorily complete 45 units of course work forming a coherent program of study, may apply for an M.A. in Modern Thought and Literature.

Coterminal Master's Program in Modern Thought and Literature

Each year, one or two undergraduates who are exceptionally well prepared in literature and whose undergraduate course work includes a strong interdisciplinary component, may petition to be admitted to the program for the purpose of completing a coterminal M.A. degree. Admission to this program is granted only on condition that in the course of working on their master's degrees they do not apply to enter the Ph.D. program in Modern Thought and Literature. The deadline for application is February 15 or the first business day following, if the 15th falls on a weekend or holiday.

To apply, applicants submit:

1. An unofficial grade transcript from Axess.
2. An Application for Admission to Coterminal Masters' Program (http://registrar.stanford.edu/pdf/CotermApplic.pdf).
3. A statement giving the reasons the student wishes to pursue this program and its place in his or her future plans. This statement should pay particular attention to the reasons why the student could not pursue the studies he or she desires in some other way.
4. An initial plan of study listing, quarter by quarter, each course by name, units, and instructor, to be taken in order to fulfill the requirements for the degree for a total of 45 units, including at least 20 units of advanced work in one literature, and at least 20 units of advanced work in a coherent interdisciplinary program of courses taken in non-literature departments. Students may include appropriate coursework taken during the two quarters prior to the quarter of expected matriculation in the program. Except in unusual cases, this will mean courses taken in the autumn and winter quarters of the year of application for admission. (Changes in the course list are to be expected.)
5. A writing sample of critical or analytical prose, 20 pages maximum.
6. Two letters of recommendation from members of the faculty who know the applicant well and who can speak directly to the question of his or her ability to do graduate-level work.
7. A designated adviser from among the Stanford faculty; normally one letter of recommendation will be from this faculty member.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken two quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to

the graduate career. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Degree Requirements

The candidate for the M.A. must complete at least 45 units of graduate work, to be divided in the following manner:

1. The introductory seminar, MTL 334A Concepts of Modernity I: Philosophical Foundations, 5 units; in the event of a scheduling conflict students may substitute MTL 334B Concepts of Modernity II: Culture, Aesthetics, and Society in the Age of Globalization, with the director's prior permission.
2. At least 20 units of advanced course work in literature, to be approved by the director.
3. At least 20 units of advanced course work in a coherent and individually arranged interdisciplinary program, to be approved by the director.

Doctor of Philosophy in Modern Thought and Literature

University requirements for the Ph.D. are discussed in the "Graduate Degrees (p. 65)" section of this bulletin.

Applicants for the Ph.D. program can visit the program's website (https://mtl.stanford.edu) for additional information. Online graduate applications are available at the Office of Graduate Admissions (http://gradadmissions.stanford.edu/) web site. The GRE (Graduate Record Examination) is not required for application to the program. All applicants must submit the following as part of their application: statement of purpose, three letters of recommendation, and a writing sample of a maximum of about 7000 words, or two shorter papers of a similar combined length. Graduate students in Modern Thought and Literature begin study in Autumn Quarter of each academic year; there are no mid-year admissions.

A candidate for the Ph.D. degree in Modern Thought and Literature must complete three years (nine quarters) of full-time work, or the equivalent, in graduate study beyond the B.A. degree. He or she is expected to complete at least 18 courses of graduate work in addition to the dissertation. Students may spend one year of graduate study abroad.

Requirements for the Ph.D. in Modern Thought and Literature are:

1.

		Units
MTL 334A	Concepts of Modernity I: Philosophical Foundations	5
MTL 334B	Concepts of Modernity II: Culture, Aesthetics, and Society in the Age of Globalization (Offered in 2016-17 as MTL 334)	5
MTL 334C	Introduction to Interdisciplinary Studies	3

2. A coherent program of eight courses of advanced work in literary studies to be worked out with the adviser, of which at least six must be regularly scheduled courses in literature. Courses in the teaching of composition, independent study, or thesis registration may not be counted among these six courses; ENGLISH 396L Pedagogy Seminar I, MTL 399 Reading for Orals, MTL 802 TGR Dissertation may not be counted toward these requirements under any circumstances. Petitions to modify this requirement to substitute a course from a non-literature department for one or more of the required eight literature courses must be approved by the MTL Committee in Charge.
3. Eight courses of advanced work in non-literature departments, the core of which is completion of either a departmental minor or an interdepartmental concentration, typically consisting of six courses. Departmental minors are available from a number of departments in the humanities and social sciences, including the departments of Anthropology, Art and Art History, Communication, History, Philosophy, Political Science, Religious Studies, Sociology, and Theater and Performance Studies (see the relevant information in those sections of this bulletin). Alternatively, students may opt to join interdisciplinary Ph.D. minors in either Comparative Studies in Race and Ethnicity or in Feminist, Gender, and Sexuality Studies. Individually designed concentrations may be approved by petition to the director. In addition to the required six courses in a minor or a concentration, two additional courses from non-literature departments are chosen in consultation with the student's academic adviser. At the end of the first year, each student must submit to the director a preliminary statement of approximately 1500 words outlining the scope and coherence of the interdisciplinary focus, either as it relates to the departmental minor or to the interdepartmental concentration. In either case, the student should note the relevance of any proposed coursework to the overall program (see #7 below). Course restrictions noted above in # 2 also apply.
4. *Qualifying Paper:* This certifies that students are likely to be able to undertake the quality of research, sustained argumentation, and cogent writing demanded in a doctoral dissertation. The qualifying paper must be a substantial revision of a seminar paper written at Stanford during the first year and should embody a substantial amount of independent research, develop an intellectual argument with significant elements of original thinking, and demonstrate the ability to do interdisciplinary work. Each paper is evaluated by two or three readers (designated before the end of the first year of graduate study), one of whom must be a member of the Committee in Charge or have been a member within the previous five years. Qualifying papers must be submitted to the program office no later than the end of the third week of the fifth quarter of enrollment, normally, Winter Quarter of the second year.
5. *Teaching* is an essential part of the program. One quarter is normally undertaken in conjunction with the Department of English. The second quarter may be undertaken in conjunction with any department or program within the university. Although students have some flexibility in arranging for teaching appointments, program approval is required in order to assure that each experience provides appropriate and useful training.
6. Students must demonstrate, before the beginning of the second year of study, a reading knowledge of one foreign language and, by Spring Quarter of the third year, a reading knowledge of one other foreign language. Reading knowledge means the ability to make a genuine scholarly use of the language: that is, to read prose of ordinary difficulty. Students may not take the University oral examination before completion of the foreign language requirement.
7. *Candidacy:* At the end of the second year, students apply for candidacy. The decision to advance a student to candidacy is a judgment of the faculty. The student is only admitted to candidacy if, in addition to the student's fulfilling departmental prerequisites, the faculty makes the judgment that the student has the potential to successfully complete the requirements of the degree program. The following qualifications are required before candidacy can be certified:
   - the earlier submission of a satisfactory qualifying paper;
   - demonstration of a reading knowledge of one foreign language;

- satisfactory progress in course work;
- a list of courses applicable to the degree, distinguishing between courses appropriate to the literary component and courses appropriate to the non-literary component;
- designation of a departmental minor or an interdisciplinary concentration; and,
- the submission of a statement outlining the scope and coherence of the interdisciplinary component of the program in relation to the literary component, and noting the relevance of the course work to that program.

8. *Annual Review:* The program and progress of each student must be approved by the Committee in Charge at the end of each academic year. First-year students will submit the preliminary interdisciplinary statement along with the first year-end report (see #3 above).
9. *University Oral Examination:* This examination, covering the student's areas of concentration, is normally taken in the third year of graduate study. It is a two-hour oral examination administered by four faculty members specializing in the student's areas of concentration, and a chair from another department. The exam is based on a substantial reading list prepared by the student in conjunction with the faculty committee and designed to cover the areas of expertise pertinent to the student's dissertation project.
10. *Dissertation Proposal and Colloquium:* Within one quarter after the University oral examination, the student writes up the dissertation proposal. The recommended length for the dissertation proposal is 5 pages double-spaced (with a maximum length of 8 pages). It should contain (additionally) a full bibliography. The proposal is submitted to the program director and the dissertation committee for approval. After completion of one chapter of the dissertation, the student sets up a meeting with the dissertation committee for one hour to discuss the work accomplished in the first chapter and plans for completing the rest of the dissertation.
11. *Dissertation:* The fourth and fifth years are devoted to the dissertation, which should be a substantial and original contribution acceptable to the Committee in Charge of Modern Thought and Literature. The subject is drawn from the literature of specialization and the area of nonliterary studies. The dissertation project will conclude with a two-hour defense. The first hour is open to the public and includes a brief presentation of the dissertation project on the part of the Ph.D. candidate. The second hour is reserved to the candidate and his/her Dissertation Committee.

Ph.D. Minor in Feminist, Gender, and Sexuality Studies

The Program in Modern Thought and Literature sponsors a Ph.D. minor in Feminist, Gender, and Sexuality Studies. The Ph.D. minor is administered by the Program in Feminist, Gender, and Sexuality Studies. (p. 1436)

Ph.D. Minor in Comparative Studies in Race and Ethnicity

The Program in Modern Thought and Literature sponsors a Ph.D. minor in Comparative Studies in Race and Ethnicity. The Ph.D. minor is administered by the Program in Comparative Studies in Race and Ethnicity.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

The Program in Modern Thought and Literature counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B-' or better level.

Other Graduate Policies

The Program in Modern Thought and Literature will provide extensions to program milestones during the 2020-21 academic year, as needed. The Program Director, Director of Graduate Studies, advisors and Academic Services Administrator will work with individual students to determine what flexibility is needed.

Graduate Advising Expectations

The Program in Modern Thought and Literature is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Upon arrival, incoming MTL Ph.D. students are assigned first-year faculty advisers who help students select classes with the student’s academic interests as well as the program requirements in mind. Advising arrangements are made for coterminal M.A. students at the time of their admission to the program.

Prior to advancement to TGR status, all Ph.D. students should also meet with the Director of Graduate Studies (DGS) each quarter to discuss overall progress. After reaching TGR status, students should check in with the DGS at least once a year.

As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. For both Ph..D and M.A. students, at least two consultations per quarter with the DGS and the primary adviser are highly recommended to foster an effective advising relationship. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

After the first year of study, when Ph.D. students have a better sense of their academic trajectories, they may choose to change advisers with the approval of the director and the DGS.

For a statement of University policy on graduate advising, see the "Graduate Advising (https://exploredegrees.stanford.edu/graduatedegrees/#advisingandcredentialstext)" section of this bulletin.

Director: Héctor Hoyos

Director of Graduate Studies: Tom Mullaney

Committee in Charge: Michaela Bronstein, Shelley Fisher Fishkin (on leave autumn, winter), Héctor Hoyos (Chair), Roanne Kantor, Elizabeth Kessler, Charles Kronengold, Marci Kwon, Bernadette Meyler, Ana Minian, Tom Mullaney, Karla Oeler, Vaughn Rasberry, José David Saldívar, Matthew Smith

Affiliated Faculty: Lanier Anderson *(Philosophy)*, Russell Berman *(German Studies)*, Jennifer Brody *(Theater & Performance Studies),* Michaela Bronstein *(English)*, Scott Bukatman *(Art & Art History)*, Gordon Chang *(History)*, Adrian Daub *(German Studies)*, Jean-Pierre Dupuy *(French & Italian)*, Paulla Ebron *(Anthropology)*, Harry Elam *(Theater & Performance Studies)*, Michele Elam *(English)*, Amir Eshel *(German Studies, Comparative Literature),* Shelley Fisher Fishkin *(English)*, Zephyr Frank *(History)*, Estelle Freedman *(History)*, Duana Fullwiley (*Anthropology),* Thomas Hansen *(Anthropology)*, David Hills *(Philosophy),* Héctor Hoyos *(Iberian & Latin American Cultures)*, Lochlain Jain (*Anthropology*), Tomas Jimenez *(Sociology)*, Roanne Kantor *(English)*, Elizabeth Kessler *(American Studies)*, Matthew Kohrman *(Anthropology)*, Charles Kronengold (*Music*), Marci Kwon *(Art & Art History)*, Joshua Landy *(French & Italian, Comparative Literature)*, Pavle Levi *(Art & Art History)*, Helen Longino *(Philosophy)*, Douglas McAdam *(Sociology)*, Mark McGurl *(English)*, Alison McQueen *(Political Science)*, Jisha Menon *(Theater & Performance Studies)*, Lynn Meskell *(Anthropology)*, Ana Minian *(History)*, Paula Moya *(English)*, Tom Mullaney *(History)*, Alex Nemerov (*Art & Art History*), David Palumbo-Liu *(Comparative Literature),* Peggy Phelan *(Theater & Performance Studies)*, Robert Proctor *(History)*, Vaughn Rasberry *(English)*, Robert Reich *(Political Science),* Jessica Riskin *(History),* José David Saldívar *(Comparative Literature)*, Ramón Saldívar *(English, Comparative Literature),* Londa Schiebinger *(History)*, Matthew Smith *(German Studies, Theater and Performance Studies)*, Sharika Thiranagama (*Anthropology*), Fred Turner *(Communication)*, Ban Wang *(East Asian Languages and Cultures),* Gail Wight *(Art & Art History)*, Alex Woloch *(English)*

Courses

MTL 200. Curricular Practical Training. 1-3 Unit.
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MTL 299. Edgework: New Directions in the Study of Culture. 1-3 Unit.
Workshop. Required of first-year students in the doctoral program. Methodologies of different disciplines, the possibility and difficulty of interdisciplinary work within these disciplines, and their connection with the individual projects of students in Modern Thought and Literature. May be repeated for credit.

MTL 334A. Concepts of Modernity I: Philosophical Foundations. 5 Units.
In the late eighteenth century, Immanuel Kant proclaimed his epoch to be "the genuine age of criticism." He went on to develop the critique of reason, which set the stage for many of the themes and problems that have preoccupied Western thinkers for the last two centuries. This fall quarter survey is intended as an introduction to these themes and problems. The general course layout draws equal parts on Koselleck's practice of "conceptual history" (Begriffsgeschichte) and on Jameson's "cognitive mapping." After consideration of an important, if often under-appreciated precedent (the baroque), we turn our attention to the conceptual triad of subject, reason and critique, followed by that of revolution, utopia and sovereignty. Authors may include Hegel, Marx, Nietzsche, Weber, Freud, Lukács, and others. This course is the first of a two-course sequence. Priority to graduate students in MTL, ILAC, and English.
Same as: COMPLIT 334A, ILAC 334A

MTL 334B. Concepts of Modernity II: Culture, Aesthetics, and Society in the Age of Globalization. 5 Units.
Emphasis on world-system theory, theories of coloniality and power, and aesthetic modernity/postmodernity in their relation to culture broadly understood.
Same as: COMPLIT 334B, ENGLISH 334B

MTL 334C. Introduction to Interdisciplinary Studies. 3 Units.
Our course serves both as an introduction to graduate studies and as an introduction to interdisciplinary practice for entering PhD students in MTL at Stanford. Required for first-year graduate students, our course examines major historical and theoretical approaches to the interdisciplinary humanities via engagement with the living application of these approaches on campus. Additionally, we attend to contemporary debates about PhD study, higher education, and issues of professional development. At the end of the class you will have a clearer sense of the scholar you want to become and on concrete ways to develop your interests, navigate faculty mentor-grad relations, department cultures, and life-work balance. Non MTL graduate students will be accepted only with permission from the instructors.

MTL 390. Qualifying Paper. 1-5 Unit.
Preparation and writing of the qualifying paper for the Ph.D. in Modern Thought and Literature. nn (Staff).

MTL 398. Graduate Independent Study. 1-15 Unit.
Students pursue a special subject of investigation under supervision of a member of the committee or another faculty member. May be repeated for credit.

MTL 399. Reading for Orals. 1-15 Unit.
Reading in preparation for the University Oral Examination. May be repeated for credit.

MTL 801. TGR Project. 0 Units.
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MTL 802. TGR Dissertation. 0 Units.
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MUSIC

Courses offered by the Department of Music are listed under the subject code MUSIC on the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=MUSIC&filter-catalognumber-MUSIC=on) web site.

Mission of the Department of Music

The Department of Music at Stanford brings together music-making and scholarly research in composition, conducting, performance, music history, ethnomusicology, music theory, cognitive science, intermedia, and computer-based technologies.

Departmental activities serve a broad and diverse constituency on campus and in local communities, with an abundance of courses, concerts, performance opportunities, research projects, workshops, and lectures throughout the year. Ensembles from a variety of world cultures are open to all students: orchestras, jazz and chamber ensembles, taiko, guzheng, steelpan, and several choral groups. Many of the faculty have affiliations with other departments, programs, and interdisciplinary centers, such as Computer Science, Electrical Engineering, Art and Art History, German Studies, Neuroscience, Symbolic Systems, Comparative Studies in Race and Ethnicity, and Islamic Studies. Alumni include faculty in universities and conservatories around the world, researchers in the technologies of music and acoustics, members of major orchestras, soloists, chamber musicians, and sound artists, composers and arrangers in contemporary, film and game music.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. The department's aim is to educate students to be:

1. artists and scholars who research, interpret, and create music in an informed and thoughtful way.
2. literate in fundamentals of music, aesthetics, and historical thought.
3. prepared to engage in musical and scholarly discourse.
4. sensitive to cultural and historical perspectives in thinking about music analytically and critically.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in Music, including concentration in the fields of Composition, Music History, Computer-Based Music Theory and Acoustics, or Music, Science, and Technology, and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge and practice of Music and to interpret and present the results of such work in appropriate venues and publications.

The Doctor of Philosophy (Ph.D.) is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in Ethnomusicology, Musicology, or Computer-Based Music Theory and Acoustics, based at the Center for Computer Research in Music and Acoustics (CCRMA).

The Doctor of Musical Arts (D.M.A.) in Composition is conferred upon candidates who have demonstrated substantial abilities in creating new musical works as demonstrated by their completed works under the supervision of composition faculty.

Bachelor of Arts in Music

The Department of Music offers a Bachelor of Arts in Music. Students have the option of pursuing one of eleven possible subplans associated with the major. Eligible students may also be awarded a Bachelor of Arts with Honors (p. 1826). The department also offers a minor in Music (p. 1827).

Suggested Preparation for the Major

Recommended prerequisites for students without prior experience in reading music in standard Western notation. The appropriate level of entry into music theory coursework is determined by a placement evaluation on the first day of instruction.

		Units
Suggested Preparation for the Major:		
MUSIC 19A	Introduction to Music Theory	3
MUSIC 19B	Intermediate Music Theory	3

Requirements for the minimum levels of proficiency in each instrument for private instruction are posted on the department's Lessons (http://music.stanford.edu/ensembles-lessons/lessons/) website.

Students should allow more than two years for completion of the major, in part because of sequential courses with prerequisite requirements. Early planning is especially important for students who plan to double-major, study abroad or pursue any of the concentrations described below. Music majors should attempt to complete sequential courses in the order below.

Degree Requirements

The undergraduate major in Music is based on a course of study that combines breadth of musical experiences across multiple dimensions with depth in a chosen area, allowing students to develop an array of tools as part of their aesthetic and musical formation. Theory, performance, history, cultural contextualization, technology, and science all contribute to a curricular foundation for all majors. Of the required 62 units, 42 comprise the shared foundation. The remaining 20 minimum required units can be devoted either to an area of focus, including Composition, Conducting, Performance, Music History, Ethnomusicology, Music Theory, MST (Music, Science, & Technology), or to broadly based exploration. Mentorship under the guidance of a faculty advisor is an indispensable component of this 20-unit requirement.

Students with little or no prior musical literacy who wish to pursue the music major (or minor) can take gateway classes (specifically MUSIC 19A and 19B) aimed at providing basic skills. All required courses for the B.A. in Music must be taken for a letter grade. Electives above the minimum number of required courses may be taken credit/no credit.

Majors must complete 62 units to meet the general requirements for a Bachelor of Arts in Music, and must achieve a minimum GPA of 2.0 in all coursework.

MUSIC 21 - 23 should be completed no later than Autumn Quarter junior year.

Students pursuing multiple concentrations must fulfill all the requirements of each.

Prospective majors are required to choose a faculty advisor and submit a course plan. (Course plans and advisor agreement forms are available from the undergraduate student services officer.) It is recommended

that students schedule a consultation meeting with the undergraduate student services officer as early as possible to plan a program of study.

Course Requirements

All required courses for the B.A. in Music must be taken for a letter grade, as must all courses taken toward concentration requirements. Electives may be taken credit/no credit. Upper Division History Courses (MUSIC 141 - 148) taken for at least 4 units satisfy the Writing In the Major (WIM) requirement).

		Units
Lower Division Theory/Ear Training		
Take 6 courses for at least 12 units		12
MUSIC 21	Elements of Music I	
MUSIC 22	Elements of Music II	
MUSIC 23	Elements of Music III	
MUSIC 24A	Ear Training I	
MUSIC 24B	Ear Training II	
MUSIC 24C	Ear Training III	
Piano Proficency Exam		
See "Optional Coursework" for introductory piano proficiency course sequence		
Ear Training Exit Exam		
See "Proficiency Exams" for information about the ear training exit examination		
Lower Division History		
Take 3 courses		
MUSIC 40	Music History to 1600	4
MUSIC 41	Music History 1600-1830	4
MUSIC 42	Music History Since 1830	4
Upper division History & Analysis		
Take 3 courses, one of each Analysis and History, plus one by choice		12
1. Upper Division Analysis Courses		
MUSIC 122A	Counterpoint	
MUSIC 122B	Analysis of Tonal Music	
MUSIC 122C	Introduction to 20th-Century Composition	
2. Upper Division History Courses		
MUSIC 141: Studies in Music of the Renaissance		
MUSIC 142: Studies in Music of the Baroque		
MUSIC 143: Studies in Music of the Classical Period		
MUSIC 144: Studies in Music of the Romantic Period		
MUSIC 145: Studies in Western Art Music Since 1900		
MUSIC 146: Studies in Ethnomusicology		
MUSIC 147: Studies in Music, Media, and Popular Culture		
MUSIC 148: Studies in Performance Practice		
Performance		
Take 3 units		3
MUSIC 126A	Thoroughbass Accompaniment	1-3
MUSIC 130B	Elementary Instrumental Conducting	2
MUSIC 130C	Elementary Choral Conducting	2
MUSIC 156	"sic": Improvisation Collective	
MUSIC 157	Cardinal Calypso--Steelpan Ensemble	
MUSIC 159	Early Music Singers	
MUSIC 160	Stanford Symphony Orchestra	
MUSIC 161 Stanford Wind Symphony (anything in the 161 series except for 161D)		
MUSIC 162	Symphonic Chorus	
MUSIC 163	Memorial Church Choir	
MUSIC 165	Chamber Chorale	
MUSIC 167	University Singers	
MUSIC 171	Chamber Music	
MUSIC 172/272 - Keyboard Instruments		
MUSIC 173/273 - Voice		
MUSIC 174/274 - String Instruments		
MUSIC 175/275 - Wind Instruments		
MUSIC 176/276 - Brass Instruments		
MUSIC 177/277 - Percussion		
MUSIC 181	Jazz Combos	
MUSIC 183A	German Art Song Interpretation	
MUSIC 183B	French Art Song Interpretation	
MUSIC 183C	Interpretation of Musical Theater Repertoire	
MUSIC 183D	Musical Theater	
MUSIC 183E	Singing for Musicals	
MUSIC 184A	Editing and Performing Early Music	
MUSIC 184B	Topics on the Musical Stage	
MUSIC 184C	Dramatic Vocal Arts: Songs and Scenes Onstage	
See "Optional Coursework" for introductory instrumental and voice course sequences		
Composition/MST/MUSIC 127		
Take 3 units		3
MUSIC 20C	Jazz Arranging and Composition	
MUSIC 101	Introduction to Creating Electronic Sounds	
MUSIC 112	Film Scoring	
MUSIC 113	Introduction to Instrumental Composition	
MUSIC 120E	Advanced Jazz Improvisation	
MUSIC 123A	Undergraduate Seminar in Composition: Rhythmic Design	
MUSIC 123B	Undergraduate Seminar in Composition: Pitch Design	
MUSIC 123C	Undergraduate Seminar in Composition: World Music	
MUSIC 124A	Songwriters Workshop	
MUSIC 124B	Songwriters Workshop	
MUSIC 125	Individual Undergraduate Projects in Composition	
MUSIC 127A	Instrumentation and Orchestration	
MUSIC 127B	Advanced Orchestration	
MUSIC 127C	Band Arranging	
MUSIC 128	Stanford Laptop Orchestra: Composition, Coding, and Performance	
MUSIC 155	Intermedia Workshop	
MUSIC 192A	Foundations of Sound-Recording Technology	
MUSIC 192B	Advanced Sound Recording Technology	
MUSIC 192C	Session Recording	
MUSIC 220A	Fundamentals of Computer-Generated Sound	
MUSIC 220B	Compositional Algorithms, Psychoacoustics, and Computational Music	
MUSIC 220C	Research Seminar in Computer-Generated Music	
MUSIC 220D	Research in Computer-Generated Music	
MUSIC 223B	Sonic Experiments in Composition	
MUSIC 250A	Physical Interaction Design for Music	

MUSIC 250C	Interaction - Intermedia - Immersion	
MUSIC 256A	Music, Computing, Design: The Art of Design	
MUSIC 256B	Music, Computing, Design II: Virtual and Augmented Reality for Music	
Concentration		**20**
Courses taken to fulfill Core Breadth requirements may not be double-counted towards the fulfillment of concentration requirements.		
Total Units		67-69

Optional Coursework

		Units
Piano Proficiency		
MUSIC 12A	Introductory Piano Class	1
MUSIC 12B	Introductory Piano Class	1
MUSIC 12C	Introductory Piano Class	1
Voice Introductory Course Sequence		
MUSIC 65A	Voice Class I	1
MUSIC 65B	Voice Class II	1
Piano Introductory Course Sequence		
MUSIC 12A	Introductory Piano Class	1
MUSIC 72A	Intermediate Piano Class	1
Guitar Introductory Course		
MUSIC 74C	Classical Guitar Class	1

Proficiency Exams

- *Piano Proficiency:* Majors are required to pass a piano proficiency examination as part of the music theory core (MUSIC 21 Elements of Music I, MUSIC 22 Elements of Music II, MUSIC 23 Elements of Music III). The examination is given in the first two weeks of MUSIC 21. Students who do not pass the piano proficiency examination are required to enroll in either MUSIC 12A Introductory Piano Class, MUSIC 12B Introductory Piano Class, or MUSIC 12C Introductory Piano Class concurrently with the music theory core until they are able to pass the examination. The examination consists of scales and arpeggios, performance of a simple tune to be set by the examiner, sight-reading, and the performance of prepared pieces. Download additional information regarding the proficiency examination (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/music/pianoprofexaminfo_0.pdf).
- *Ear Training Exit Exam:* in conjunction with the music theory series, majors are required to pass an aural skills proficiency examination administered at the end of their junior year. This assesses the ability to transcribe, represent, and reproduce music vocally and at the keyboard, and must be passed before June of the senior year. The exam is scheduled once a year in Spring Quarter for a date and time in Braun Music Center announced a few weeks ahead of time by the ear training advisor. Visit the Music website for additional information about ear training (https://music.stanford.edu/academics/undergraduates/current/major/).

Subplans

Subplans (concentrations) are offered in eleven areas: Composition; Conducting; Music, Science, and Technology; Musicology and Ethnomusicology; Musicology/Ethnomusicology and Performance; Performance in Keyboard Studies; Performance in String Studies; Performance in Vocal Studies; Performance in Woodwind, Brass, and Percussion Studies; Theory; and a self-designed concentration. Subplans are declared in Axess, and appear on the student's transcript and diploma. Guidelines and application information are explained the "Declare a Concentration (https://music.stanford.edu/academic-programs/undergraduate/current-undergraduates/major/declare-concentration/)" pages of the department website. In order to complete requirements in a timely manner, students are urged to select this option no later than the beginning of the junior year. Students pursuing multiple concentrations must fulfill all the requirements of each. Requests to declare a concentration must be approved by the undergraduate student services officer in Music.

Composition Subplan

		Units
Courses taken to fulfill Core Breadth requirements may not be double-counted towards the fulfillment of concentration requirements.		
Composition Seminar		
Enroll in each course for a minimum of 1 unit		2
MUSIC 123A	Undergraduate Seminar in Composition: Rhythmic Design	
MUSIC 123B	Undergraduate Seminar in Composition: Pitch Design	
Orchestration		
Choose one of the following		3
MUSIC 127A	Instrumentation and Orchestration	
MUSIC 127B	Advanced Orchestration	
Individual composition lessons		
Enroll in MUSIC 125 a minimum of three times		3
MUSIC 125	Individual Undergraduate Projects in Composition	
Computer Music		
Complete at least 4 units from the following		4
MUSIC 101	Introduction to Creating Electronic Sounds	
MUSIC 155	Intermedia Workshop	
MUSIC 192A	Foundations of Sound-Recording Technology	
MUSIC 192B	Advanced Sound Recording Technology	
MUSIC 192C	Session Recording	
MUSIC 220A	Fundamentals of Computer-Generated Sound	
MUSIC 220B	Compositional Algorithms, Psychoacoustics, and Computational Music	
MUSIC 220C	Research Seminar in Computer-Generated Music	
MUSIC 223B	Sonic Experiments in Composition	
MUSIC 223D	Sound Practice: Embodiment and the Social	
MUSIC 250A	Physical Interaction Design for Music	
MUSIC 250C	Interaction - Intermedia - Immersion	
MUSIC 256A	Music, Computing, Design: The Art of Design	
MUSIC 256B	Music, Computing, Design II: Virtual and Augmented Reality for Music	
Concentration Electives		
Complete at least 6 units from the following		6
MUSIC 20C	Jazz Arranging and Composition	
MUSIC 112	Film Scoring	
MUSIC 122A	Counterpoint	
MUSIC 122B	Analysis of Tonal Music	
MUSIC 122C	Introduction to 20th-Century Composition	
MUSIC 123C	Undergraduate Seminar in Composition: World Music	

MUSIC 127B	Advanced Orchestration	
MUSIC 128	Stanford Laptop Orchestra: Composition, Coding, and Performance	
MUSIC 155	Intermedia Workshop	
MUSIC 156	"sic": Improvisation Collective	
MUSIC 160B	Stanford New Ensemble	
MUSIC 161B	Jazz Orchestra	
MUSIC 161E	Stanford Afro-Latin Jazz Orchestra	
MUSIC 192A	Foundations of Sound-Recording Technology	
MUSIC 192B	Advanced Sound Recording Technology	
MUSIC 192C	Session Recording	
MUSIC 220A	Fundamentals of Computer-Generated Sound	
MUSIC 220B	Compositional Algorithms, Psychoacoustics, and Computational Music	
MUSIC 220C	Research Seminar in Computer-Generated Music	
MUSIC 223B	Sonic Experiments in Composition	
MUSIC 250A	Physical Interaction Design for Music	
MUSIC 250C	Interaction - Intermedia - Immersion	
MUSIC 251	Psychophysics and Music Cognition	
MUSIC 256A	Music, Computing, Design: The Art of Design	
MUSIC 256B	Music, Computing, Design II: Virtual and Augmented Reality for Music	
Capstone experience: recital		
MUSIC 198	Concentrations Project	2
Total Units		20

Conducting Subplan

		Units
Courses taken to fulfill Core Breadth requirements may not be double-counted towards the fulfillment of concentration requirements.		
Conducting Course Requirement		
Complete at least 10 units from among the following courses in these two groups		10
1. Complete one of the following		
MUSIC 130B	Elementary Instrumental Conducting	
MUSIC 130C	Elementary Choral Conducting	
MUSIC 136	Intermediate Conducting: Music Since 1900	
2. Complete all of the following for a total of 8 units		
MUSIC 230	Advanced Orchestral Conducting	
MUSIC 231	Advanced Choral Conducting *	
*Conducting concentrators with instrumental focus take MUSIC 230 twice and MUSIC 231 once; those with choral focus take MUSIC 231 twice and MUSIC 230 once. The total unit count for MUSIC 230/231 is thus 6 units		
Concentration Theory/Analysis/Ear-Training Requirement		
Complete at least 5 units from among the following courses in these two groups		5
1. Complete any of these courses that were not taken to fulfill the Core Requirement		
MUSIC 122A	Counterpoint	
MUSIC 122B	Analysis of Tonal Music	
MUSIC 122C	Introduction to 20th-Century Composition	
2. Complete this course for at least 1 unit		
MUSIC 129	Advanced Ear-Training/Musicianship *	
*MUSIC 129 is offered for 1 or 2 units. Conducting concentrators must take it for 1 unit to fulfill the Conducting Concentration requirement, but are strongly urged to take it for 2 units, if possible.		
Concentration Performance Requirement		
Complete three quarters in any combination of these ensembles, 1 unit per quarter; these Performance units are in addition to the 3 units that satisfy the Core Breadth Performance requirement.		3
MUSIC 159	Early Music Singers	
MUSIC 160	Stanford Symphony Orchestra	
MUSIC 160A	Stanford Philharmonia	
MUSIC 161A	Stanford Wind Symphony	
MUSIC 161B	Jazz Orchestra	
MUSIC 162	Symphonic Chorus	
MUSIC 163	Memorial Church Choir	
MUSIC 165	Chamber Chorale	
MUSIC 167	University Singers	
MUSIC 171	Chamber Music	
Or another ensemble (with advisor's permission)		
Capstone experience: recital		
MUSIC 198	Concentrations Project	2
Total Units		20

Music, Science, and Technology (MST) Subplan

		Units
Courses taken to fulfill Core Breadth requirements may not be double-counted towards the fulfillment of concentration requirements.		
Complete all the following courses for a minimum of 4 units per course		
MUSIC 220A	Fundamentals of Computer-Generated Sound	4
MUSIC 220B	Compositional Algorithms, Psychoacoustics, and Computational Music	4
MUSIC 220C	Research Seminar in Computer-Generated Music *	4
MUSIC 251	Psychophysics and Music Cognition	4
*Capstone project to be completed in MUSIC 220C.		
Complete one of the following for a minimum of 4 units.		4
MUSIC 256A	Music, Computing, Design: The Art of Design	
MUSIC 320A	Introduction to Audio Signal Processing Part I: Spectrum Analysis	
MUSIC 320B	Introduction to Audio Signal Processing Part II: Digital Filters	
Total Units		20

Musicology and Ethnomusicology Subplan

		Units
Courses taken to fulfill Core Breadth requirements may not be double-counted towards the fulfillment of concentration requirements.		
Complete at least 10 units from among the following courses*		10
MUSIC 141: Studies in Music of the Renaissance		
MUSIC 142: Studies in Music of the Baroque		
MUSIC 143: Studies in Music of the Classical Period		

MUSIC 144: Studies in Music of the Romantic Period		
MUSIC 145: Studies in Western Art Music Since 1900		
MUSIC 146: Studies in Ethnomusicology		
MUSIC 147: Studies in Music, Media, and Popular Culture		
MUSIC 148: Studies in Performance Practice		
Any upper-level, writing-intensive course, plus relevant courses outside the department, is possible, in consultation with the advisor.		
*These courses must cover at least two historical periods. At least one of these courses must be taken in the Department of Music.		
Complete 6 units of concentration electives in any music-related course		6
In consultation with the advisor, language courses, too, can count toward concentration electives. Students are strongly encouraged to attain proficiency in at least one language relevant to their research interests.		
Capstone project: Thesis		
Complete 4 units of MUSIC 198		4
MUSIC 198	Concentrations Project	
Total Units		20

Musicology/Ethnomusicology and Performance Subplan

		Units
Courses taken to fulfill Core Breadth requirements may not be double-counted towards the fulfillment of concentration requirements.		
Complete at least 10 units from among the following courses*		10
MUSIC 141: Studies in Music of the Renaissance		
MUSIC 142: Studies in Music of the Baroque		
MUSIC 143: Studies in Music of the Classical Period		
MUSIC 144: Studies in Music of the Romantic Period		
MUSIC 145: Studies in Western Art Music Since 1900		
MUSIC 146: Studies in Ethnomusicology		
MUSIC 147: Studies in Music, Media, and Popular Culture		
MUSIC 148: Studies in Performance Practice		
Any upper-level, writing-intensive course, plus relevant courses outside the department, is possible, in consultation with the advisor.		
*These courses must cover at least two historical periods. At least one of these courses must be taken in the Department of Music.		
Complete at least 6 units from among the following courses		6
MUSIC 156	"sic": Improvisation Collective	
MUSIC 159-171: Large and small ensembles		
MUSIC 172A/272A Piano		
MUSIC 182	Diction for Singers	
MUSIC 183A	German Art Song Interpretation	
MUSIC 183B	French Art Song Interpretation	
MUSIC 183C	Interpretation of Musical Theater Repertoire	
MUSIC 183D	Musical Theater	
MUSIC 183E	Singing for Musicals	
MUSIC 184A	Editing and Performing Early Music	
MUSIC 184B	Topics on the Musical Stage	
MUSIC 184C	Dramatic Vocal Arts: Songs and Scenes Onstage	
MUSIC 184D	Creating a Musical	
In consultation with the advisor, the student can choose any performance course. Students are strongly encouraged to attain proficiency in at least one language relevant to their research interests.		
Capstone project: Thesis		
Complete 4 units of MUSIC 198		4
MUSIC 198	Concentrations Project	
Total Units		20

Performance in Keyboard Studies Subplan

		Units
Courses taken to fulfill Core Breadth requirements may not be double-counted towards the fulfillment of concentration requirements.		
Solo and Ensemble Techniques		
Complete all of the following		
Private lessons: Complete six quarters for at least 1 unit per quarter		6
MUSIC 172/272 Piano, Fortepiano, Harpsichord or Organ		
Small, unconducted ensemble: enroll in MUSIC 171 a minimum of three times		3
MUSIC 171	Chamber Music	
Thoroughbass		1
MUSIC 126A	Thoroughbass Accompaniment	
Complete one of the following		1
MUSIC 160C	Stanford Baroque Soloists	
MUSIC 170	Collaborative Piano	
MUSIC 183A	German Art Song Interpretation	
MUSIC 183B	French Art Song Interpretation	
Aural and analytical skills especially pertinent to performance		
Complete all of the following		
MUSIC 122D	Analysis for Performance	2
MUSIC 129K	Advanced Keyboard Musicianship	2
Awareness of repertoire and cultural history		
MUSIC 155A	Piano Literature (enroll a minimum of three times)	3
Capstone Project: Senior Keyboard Recital		
The capstone project consists of an adjudicated solo recital supported by program preparation, program notes supervised by musicology faculty member, and dress rehearsal.		
MUSIC 198	Concentrations Project	2
Total Units		20

Performance in String Studies Subplan

		Units
Courses taken to fulfill Core Breadth requirements may not be double-counted towards the fulfillment of concentration requirements.		
Solo and Ensemble Techniques		
Complete all of the following		
Private lessons: Complete six quarters for at least 1 unit per quarter		6
MUSIC 174/274 Piano, Fortepiano, Harpsichord or Organ		
Chamber Music		
Complete six quarters*		6
MUSIC 171	Chamber Music	
*Chamber Music refers to a small, unconducted ensemble. Up to 2 units in MUSIC 160B or 160C may also apply toward the Chamber Music requirement		

Aural and analytical skills especially pertinent to performance		
Complete all of the following		
MUSIC 122D	Analysis for Performance	2
MUSIC 129	Advanced Ear-Training/Musicianship	2
Large, conducted ensemble		
Complete at least 2 units from among the following		
MUSIC 160	Stanford Symphony Orchestra	1
MUSIC 160A	Stanford Philharmonia	1
Capstone Project: Senior String Recital		
The capstone project consists of an adjudicated solo recital supported by program preparation, program notes supervised by musicology faculty member, and dress rehearsal.		
MUSIC 198	Concentrations Project	2
Total Units		20

Performance in Vocal Studies Subplan

		Units
Courses taken to fulfill Core Breadth requirements may not be double-counted towards the fulfillment of concentration requirements.		
Private Lessons		
Complete six quarters for at 2 units per quarter		12
MUSIC 173/273 Voice		
Voice Repertoire		
Complete three courses for 1 unit among the following		3
Aural and analytical skills especially pertinent to performance		
MUSIC 182	Diction for Singers	
MUSIC 183A	German Art Song Interpretation	
MUSIC 183B	French Art Song Interpretation	
MUSIC 183C	Interpretation of Musical Theater Repertoire	
Voice Pedagogy		
MUSIC 60	How We Sing: The Voice, How It Functions, and the Singer's Mind	1
Vocal Stage Performance		
Complete one course for 2 units among the following		2
MUSIC 184A	Editing and Performing Early Music	
MUSIC 184B	Topics on the Musical Stage	
MUSIC 184C	Dramatic Vocal Arts: Songs and Scenes Onstage	
Capstone Project		
MUSIC 198	Concentrations Project	2
Total Units		20

Performance in Woodwind, Brass, and Percussion Studies Subplan

		Units
Courses taken to fulfill Core Breadth requirements may not be double-counted towards the fulfillment of concentration requirements.		
Develop solo and ensemble techniques: 15 units		
Complete six quarters for 1 unit per quarter		6
MUSIC 175/275 Woodwinds		
MUSIC 176/276 Brass		
MUSIC 177/277 Percussion		
Complete at least 6 total units from among the following		6
MUSIC 160	Stanford Symphony Orchestra	
MUSIC 160A	Stanford Philharmonia	
MUSIC 160B	Stanford New Ensemble	
MUSIC 161A	Stanford Wind Symphony	
MUSIC 161B	Jazz Orchestra	
MUSIC 161D	Stanford Brass Ensemble	
Complete at least 3 units		3
MUSIC 171	Chamber Music	
Analysis Skills for Performance		
Complete all of the following		
MUSIC 6F	Art is My Occupation: Professional Development in Music	1
MUSIC 122D	Analysis for Performance	2
Capstone Project		
MUSIC 198	Concentrations Project	2
Total Units		20

Theory Subplan

		Units
Courses taken to fulfill Core Breadth requirements may not be double-counted towards the fulfillment of concentration requirements.		
Complete one course from among the following		4
MUSIC 122A	Counterpoint	
MUSIC 122B	Analysis of Tonal Music	
MUSIC 122C	Introduction to 20th-Century Composition	
Complete one course from among the following		4
MUSIC 140		
MUSIC 141: Studies in Music of the Renaissance		
MUSIC 142: Studies in Music of the Baroque		
MUSIC 143: Studies in Music of the Classical Period		
MUSIC 144: Studies in Music of the Romantic Period		
MUSIC 145: Studies in Western Art Music Since 1900		
MUSIC 146: Studies in Ethnomusicology		
MUSIC 147: Studies in Music, Media, and Popular Culture		
Complete one course from among the following		2
MUSIC 126A	Thoroughbass Accompaniment	
MUSIC 127A	Instrumentation and Orchestration	
MUSIC 129	Advanced Ear-Training/Musicianship	
MUSIC 129K	Advanced Keyboard Musicianship	
Complete one course for at least 3 units from among the following		3
MUSIC 184A	Editing and Performing Early Music	
MUSIC 251	Psychophysics and Music Cognition	
MUSIC 269	Research in Performance Practices	
Complete one course from among the following		3
MUSIC 18A	Jazz History: Ragtime to Bebop, 1900-1940	
MUSIC 18B	Jazz History: Bebop to Present, 1940-Present	
Concentration Electives		
Choose any 2 units in a music-related course		2
Capstone project: Thesis		
MUSIC 198	Concentrations Project	2
Total Units		20

Self-Designed Subplan

The self-designed music major allows the student to choose the courses to take beyond the shared 42-unit core. They develop a focus area in consultation with the Program Advisor. They are allocated 16 units

toward courses in this focus area; the remaining 4 units are reserved for the capstone project (see below).

If necessary for the focus area, 3 of the 16 units may be taken outside the Music Department, with the permission of the advisor.

Focus areas may center on courses in established areas of the department for which there is no existing subplan (e.g., jazz, musical theater), or they may delineate a path that moves across different programs within the department. Focal areas may have a creative or critical emphasis, or take a blended approach. The 16 units in the focus area should provide a spur and grounding for the 4-unit capstone project.

		Units
Courses taken to fulfill Core Breadth requirements may not be double-counted towards the fulfillment of concentration requirements.		
Take 16 units in a focal area in consultation with the Program Advisor		16
Capstone Project		
Take 4 units of independent study in support of a thesis		4
MUSIC 199	Independent Study	
Total Units		20

Capstone project guidelines

Beginning ideally in the junior year, students should choose one or two capstone advisors, and plan regular meetings to develop a capstone project. If a student has two capstone advisors, one may be a faculty member outside the Music Department.

The capstone can be understood as a culmination of the 16 units of coursework in the focus area.

Where possible the student should, beginning in Spring Quarter of the junior year, allocate 1 or 2 units per quarter to independent studies, for a total of 4 units by graduation. Otherwise the units can spread over as few as two quarters.

Advising meetings should take place at least twice per quarter, and at least three times per quarter during the two quarters leading up to graduation.

Capstone projects may take a variety of forms. In consultation with the capstone advisor(s), the student determines whether the project culminates in creative work, an academic paper or other research output, a recital or lecture-recital, or a mix.

Additional Information

Overseas Study or Study Abroad

Courses in Music are often available at Stanford overseas programs, especially in Berlin, Paris, Florence, and Oxford. See the “Overseas Studies Program” section of this bulletin for this year’s listings. Music majors and minors should talk to the Department of Music undergraduate administrator prior to going overseas.

Honors

Honors in Music are awarded by the faculty to majors who have produced an independent project of exceptional quality through a concentration. Students who wish to pursue honors must declare their concentration(s) by May 31 of their junior year (see the undergraduate student services officer for concentration-specific requirements). To receive honors, students must also have earned an overall GPA of 3.6 or higher and a GPA of 3.7 or higher in courses required for the Music major. Honors are conferred through faculty adjudication. For students concentrating in multiple areas, a single jury will be convened.

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Joint Major Program in Music and Computer Science

The joint major program (JMP) was discontinued at the end of the academic year 2018-19. Students may no longer declare this program. All students with declared joint majors are permitted to complete their degree; faculty and departments are committed to providing the necessary advising support.

See the "Joint Major Program (p. 33)" section of this bulletin for a description of University requirements for the JMP. See also the Undergraduate Advising and Research JMP (https://majors.stanford.edu/more-ways-explore/joint-majors-csx/) web site and its associated FAQs.

Students completing the JMP receive a B.A.S. (Bachelor of Arts and Science).

Music Major Requirements in the Joint Major Program

Because the Joint Major Program is new and experimental, some changes to the following may occur. Questions concerning a concentration project in addition to the basic requirements for a Joint Major in Music and Computer Science should be directed to the Department of Music student services office in Braun Music Center, Room 101.

See the "Computer Science Joint Major Program (p. 714)" section of this bulletin for details on Computer Science requirements.

Students majoring in the joint major program in Computer Science and Music must complete the following:

1. Music Theory

		Units
MUSIC 21	Elements of Music I	3
MUSIC 22	Elements of Music II	3
MUSIC 23	Elements of Music III	3
MUSIC 24A	Ear Training I	1
MUSIC 24B	Ear Training II	1
MUSIC 24C	Ear Training III	1
Total Units		12

Students enrolled in 21, 22, or 23 must concurrently enroll in an ear-training and musicianship lab, MUSIC 24A, 24B, or 24C.

Additional Music Theory Requirements

- *Piano Proficiency:* Majors are required to pass a piano proficiency examination as part of the music theory core (MUSIC 21 Elements of Music I, MUSIC 22 Elements of Music II, MUSIC 23 Elements of Music III). The examination is given in the first two weeks of MUSIC 21. Students who do not pass the piano proficiency examination are required to enroll in either MUSIC 12A Introductory Piano Class, MUSIC 12B Introductory Piano Class, or MUSIC 12C Introductory Piano Class concurrently with the music theory core until they are able to pass the examination. The examination consists of scales and arpeggios, performance of a simple tune to be set by the examiner, sight-reading, and the performance of prepared pieces. For additional information about this requirement, see Piano Proficiency Examination (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/music/pianoprofexaminfo_0.pdf).
- *Ear Training Elective:* In addition to the theory requirements listed above, majors must successfully complete one unit of an ear training elective course from the list below:

		Units
MUSIC 20B	Advanced Jazz Theory	3
MUSIC 65A	Voice Class I	1

MUSIC 126A	Thoroughbass Accompaniment	1-3
MUSIC 127A	Instrumentation and Orchestration	3
MUSIC 127B	Advanced Orchestration	3
MUSIC 129	Advanced Ear-Training/Musicianship	1-2
Or any course upon approval of the Ear Training adviser		
MUSIC 130A	Introduction to Conducting	3

- *Ear Training Exit Exam:* in conjunction with the music theory series, majors are required to pass an aural skills proficiency examination administered at the end of their junior year. This assesses the ability to accurately transcribe, represent, and reproduce music vocally and at the keyboard, and must be passed before June of the senior year.

2. Music History

		Units
Select 2 of 3 from the list below		8
MUSIC 40	Music History to 1600	4
MUSIC 41	Music History 1600-1830	4
MUSIC 42	Music History Since 1830	4

3. Analysis

		Units
MUSIC 122B	Analysis of Tonal Music	4

4. Computing and Music

		Units
MUSIC 220A	Fundamentals of Computer-Generated Sound	4
MUSIC 256A	Music, Computing, Design: The Art of Design	4
Total Units		8

5. WIM

		Units
One WIM-designated course must be taken for a minimum of 4 units. The course below is recommended, but can be replaced with any Music WIM course depending on student's area of interest.		
MUSIC 251	Psychophysics and Music Cognition	4
Total Units		4

6. Electives

		Units
Students must submit 12 unit elective course plan to the JMP faculty adviser for approval no later than the beginning of the junior year. MUSIC 220B and MUSIC 250A are recommended, but elective course plan can consist of any courses from list below, or other Music department course(s) with permission of adviser.		12
MUSIC 122A	Counterpoint	4
MUSIC 122C	Introduction to 20th-Century Composition	4
MUSIC 128	Stanford Laptop Orchestra: Composition, Coding, and Performance	4
MUSIC 150		3
MUSIC 220B	Compositional Algorithms, Psychoacoustics, and Computational Music	4
MUSIC 220C	Research Seminar in Computer-Generated Music	4
MUSIC 250A	Physical Interaction Design for Music	4
MUSIC 256B	Music, Computing, Design II: Virtual and Augmented Reality for Music	4

7. Applied Music

Students may elect to take either of the following to fulfill the applied music requirement:

7.1 Lesson and Ensemble Study

- 6 units of individual studies in performance, MUSIC 172/272-177/277 and
- 5 quarters totaling 5 units of work in one or more of the department's ensembles or chamber music groups. To fulfill the ensemble requirement, Music majors need at least three quarters of participation in the department's traditional large ensembles (MUSIC 159-167) with the exception of students whose primary instrument is guitar, harp, or keyboard, who need to participate at least one quarter in the ensembles above, but who may fulfill the rest of the requirement with chamber music.

7.2 Sound Recording

- 1 quarter (3 units) of MUSIC 192A Foundations of Sound-Recording Technology
- 1 quarter (3 units) of MUSIC 192B Advanced Sound Recording Technology
- 5 units of MUSIC 192C Session Recording

8. Capstone Project

		Units
MUSIC 220D	Research in Computer-Generated Music (3 units taken in conjunction with CS Capstone)	3

9. Optional Concentrations

Students who would also like to complete an additional capstone project in Performance, Conducting, Composition, Music History and Theory, or Music, Science, and Technology must consult the Department of Music student services office in Braun Music Center, Room 101 to submit a proposal for an optional concentration.

Dropping a Joint Major Program

To drop the joint major, students must submit the Declaration or Change of Undergraduate Major, Minor, Honors, or Degree Program (https://stanford.box.com/change-UG-program/). Students may also consult the Student Services Center (http://studentservicescenter.stanford.edu/) with questions concerning dropping the joint major.

Transcript and Diploma

Students completing a joint major graduate with a B.A.S. degree. The two majors are identified on one diploma separated by a hyphen. There will be a notation indicating that the student has completed a "Joint Major." The two majors are identified on the transcript with a notation indicating that the student has completed a "Joint Major."

Minor in Music

The Music minor allows students to explore music through a flexible program of study. The minor can focus on Composition, History, Music, Science & Technology (MST), Performance/Conducting, or Theory, or on areas not currently served by the major, such as Ethnomusicology, Jazz, or Musical Theater. The minor can also focus on musical aspects of a non-Music major such as American Studies, Anthropology, Area Studies, Computer Science, CSRE, TAPS, etc. Courses used to fulfill the minor may not be used to fulfill any other department degree requirements (major or minor).

Minor Requirements — 24 units total for the minor

Within the minimum 24-unit requirement:

1. All courses must be taken for a letter grade, except where letter grades are not offered.

2. 6 courses must be for 3 units each or more.
3. Students must complete at least 3 units of coursework in 3 of the following 5 areas:
    - Composition (https://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=&q=MUSIC%3A%3AUGComp&collapse=)
    - History/Ethnomusicology (https://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=20192020&q=MUSIC%3A%3Aminorhistethno&collapse=)
    - MST/Computer Music (https://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=&q=MUSIC%3A%3Aminormst&collapse=)
    - Performance/Conducting (https://explorecourses.stanford.edu/search/?q=MUSIC%3a%3aminorperfcond&view=catalog&page=0&filter-coursestatus-Active=on&collapse=&academicYear=20192020)
    - Theory (https://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=20192020&q=MUSIC%3A%3ATheory&collapse=)

The elective units may be fulfilled in either breadth or depth in any area(s) desired, and may be selected from any of the Department of Music's courses. Prospective minors are required to choose a faculty adviser and submit a course plan. Course plans and adviser agreement forms are available from the undergraduate student services officer.

The Department of Music has adopted the above requirements for students declaring the minor starting September 2019. Students who declared a Music minor prior to September 2019 should refer to previous guidelines and requirements for the minor below. If interested in changing to the new requirements, contact the undergraduate student services officer.

Minor Requirements prior to September 2019

The Music minor provides students with a core of essential Music courses in the disciplines that establish both a foundation for informed appreciation of music and a basis for more advanced study, should the student wish to pursue it. Two options are available for the minor: General Music and Music, Science, and Technology.

Total of 36 units required course work as delineated in each of the two options below, and passage of the piano proficiency and ear training examinations. To fulfill Music minor requirements, courses must be taken for a letter grade.

- **Piano Proficiency**: minors are required to pass a piano proficiency examination as part of the music theory core (MUSIC 21 Elements of Music I, MUSIC 22 Elements of Music II, MUSIC 23 Elements of Music III). The examination is given in the first two weeks of MUSIC 21. Students who do not pass the piano proficiency examination are required to enroll in either MUSIC 12A Introductory Piano Class, MUSIC 12B Introductory Piano Class, or MUSIC 12C Introductory Piano Class concurrently with the music theory core until they are able to pass the examination. The examination consists of scales and arpeggios, performance of a simple tune to be set by the examiner, sight-reading, and the performance of prepared pieces. Download additional information regarding the proficiency examination (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/music/pianoprofexaminfo_0.pdf).
- **Ear Training Exit Exam:** in conjunction with the music theory series, minors are required to pass an aural skills proficiency examination administered at the end of their junior year. This examination tests the ability to accurately transcribe, represent, and reproduce music vocally and at the keyboard, and must be passed before June of the senior year.

Required Courses: General Music

1. Theory

		Units
MUSIC 21	Elements of Music I	3
MUSIC 22	Elements of Music II	3
MUSIC 23	Elements of Music III	3
MUSIC 24A	Ear Training I	1
MUSIC 24B	Ear Training II	1
MUSIC 24C	Ear Training III	1

Students enrolled in 21, 22, or 23 must concurrently enroll in an ear-training and musicianship lab, MUSIC 24A, 24B, or 24C.

2.History

		Units
MUSIC 40	Music History to 1600	4
MUSIC 41	Music History 1600-1830	4
MUSIC 42	Music History Since 1830	4

3. Applied: Ensemble

Two quarters, 2 units total.

4. Applied: Individual

Two quarters at 3 units per quarter, 6 units total.

5. WIM, 4 units

		Units
4 units in any course numbered Music 140-149, except MUSIC 140G, or MUSIC 251. Offerings in 2018-2019 include:		
MUSIC 142K	Studies in Music of the Baroque: Handel the Cosmopolitan	4-5
MUSIC 145K	Studies in Western Art Music Since 1900: Concepts of New Music	4
MUSIC 147K	Studies in Music, Media, and Popular Culture: Music and Urban Film	4
MUSIC 149J		4
MUSIC 251	Psychophysics and Music Cognition	4

Required Courses: Music, Science and Technology

1. Theory

		Units
MUSIC 21	Elements of Music I	3
MUSIC 22	Elements of Music II	3
MUSIC 23	Elements of Music III	3
MUSIC 24A	Ear Training I	1
MUSIC 24B	Ear Training II	1
MUSIC 24C	Ear Training III	1
MUSIC 150		
MUSIC 220A	Fundamentals of Computer-Generated Sound	2-4
MUSIC 220B	Compositional Algorithms, Psychoacoustics, and Computational Music	2-4

2. Applied

		Units
MUSIC 192A	Foundations of Sound-Recording Technology	3
MUSIC 192B	Advanced Sound Recording Technology	3
MUSIC 192C	Session Recording (two quarters, 3 units total)	1-2

Alternatively, students pursuing the MST minor may elect to fulfill the applied music requirement with ensemble units and individual lessons as described in the Applied requirements for the General Music minor above.

3. WIM, 4 units

		Units
MUSIC 251	Psychophysics and Music Cognition	4

Performance Certificate Program for Non Music Majors

As a locus of great academic and artistic depth and diversity, the Department of Music's performance programs have long engaged students who, even though they are not music majors, are serious and dedicated to furthering their skills in music performance. The Certificate in Music Performance program provides a select cohort of these students the opportunity for further recognition of their artistic achievement.

This program is open by audition to undergraduate students who already demonstrate a high degree of accomplishment in their area of music performance, study privately with one of the Department of Music's faculty, and who wish to bolster their performance studies with coursework that may be drawn from the Department of Music's other areas of academic focus: history, theory, computer music, and composition. The Certificate in Music Performance is issued by the Department of Music and will not appear on any University record, including the student's transcript.

Admission

Students are admitted to the Certificate in Music Performance program based on an audition adjudicated by Department of Music faculty at the beginning of Winter Quarter. To request an audition, the student should speak with the private lesson instructor and the Department of Music's undergraduate student services officer. Email ugmusicinquiries@lists.stanford.edu for additional information. At the time of the audition, students must have already declared a major outside of music.

Requirements

Once admitted into the program, students must complete a course plan to be approved by department faculty based on the requirements below.

1. Performance

- A minimum of six quarters of individual lessons of private instruction and/or vocal performance (MUSIC 172/272-177/277). Any quarters of instruction taken prior to admission into the program may also count towards these requirements. Requirements for the minimum levels of proficiency in each instrument for private instruction are posted on the department's web site (https://music.stanford.edu/ensembles-lessons/lessons/). All six quarters of lesson study must be in the same instrument area.
- A minimum of six quarters of ensemble experience in the Department of Music's ensembles and chamber groups. For students whose primary instrument area is guitar, keyboard or harp, at least one quarter of ensemble experience must be in one of the department's traditional large ensembles (MUSIC 159-167, MUSIC 184). The remaining ensemble requirements may be filled with chamber music (MUSIC 171). Keyboard students may also take MUSIC 171 Chamber Music, MUSIC 171 Chamber Music, and MUSIC 171 Chamber Music to fulfill this requirement. All non-keyboard, guitar or harp students must successfully complete three quarters in the department's traditional large ensembles (MUSIC 159-167, MUSIC 184), and three quarters in conductor-less, small ensembles such as chamber music or jazz combos MUSIC 171 Chamber Music. MUSIC 156 "sic": Improvisation Collective may count for up to two of the ensemble unit requirements. Any quarters of ensemble taken prior to admission into the program may also count towards these requirements.

2. Music Theory

Students are required to complete one course in music theory (MUSIC 21 Elements of Music I, MUSIC 22 Elements of Music II, or MUSIC 23 Elements of Music III). For the purposes of the Performance Certificate, the student may elect to take these courses on a Credit/No Credit grading basis. However, students must also pass the associated piano proficiency exam (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/music/pianoprofexaminfo_0.pdf) and take one course in ear training.

3. Elective Courses

Six or more total units in Music, dependent upon course plan document submitted following acceptance into the program.

4. Final Project

To complete the Performance Certificate, students must enroll in a 4-unit MUSIC 199 Independent Study or 4-unit MUSIC 198 Concentrations Project and complete a final, performance-based capstone project. Students must pass faculty adjudication, and, in addition, complete a writing project (essay or program notes) pre-approved by the lesson instructor. Students should refer to the Department of Music website's Recitals-at-a-Glance (https://sites.stanford.edu/music-dept/venues-spaces/reserve/recitals/) page for reservation deadlines and calendar links.

Master of Arts in Music

University requirements for the M.A. are described in the "Graduate Degrees (p. 65)" section of this bulletin.

The Department of Music accepts M.A. applications into the Music, Science, and Technology program. The M.A. in Music, Science, and Technology is available to current Stanford undergraduates as a coterminal M.A. as well as to current Stanford graduate students and external applicants.

Music does not accept direct applications for an M.A. degree in Composition, Musicology, or Computer-Based Music Theory and Acoustics. Students admitted to doctoral programs may receive an M.A. in Composition, Musicology, or Computer-Based Music Theory and Acoustics under certain circumstances (see below).

Degree Options

All of the following fields of study are declarable as subplans in Axess via the "Declaration or Change to a Field of Student" form; they appear on the transcript and the diploma:

- Master of Arts degree (M.A.) in Music—Composition subplan.
- Master of Arts degree (M.A.) in Music—Music History subplan.
- Master of Arts degree (M.A.) in Music—Computer-Based Music Theory and Acoustics subplan.
- Master of Arts degree (M.A.) in Music—Music, Science, and Technology subplan

Degree Requirements

A minimum of 45 academic units is required for a master's degree in Music. At least half of those units must in courses with the career GR code in the Bulletin; all must be at the 100-level or higher.

No course used to fulfill degree requirements for the BA in Music may be used to fulfill degree requirements for a graduate degree in Music, unless specifically required for both degrees.

Only work that receives a grade of 'A', 'B', or 'S' (a passing grade in an instructor-mandated credit/no credit course) in Music courses numbered 100 or higher taken as a graduate student is recognized as fulfilling the advanced-degree requirements.

Courses numbered 100 or higher taken as electives in other departments may be taken for credit or letter grade.

The expectation is that a student will be able to complete the required 45 units of coursework by the end of their second year.

M.A. in Music, Science, and Technology

The M.A. in Music, Science, and Technology is the department's only terminal master's degree. This is a two-year program of 45 graduate-level units focusing on the integration of music perception, music-related signal processing and controllers, synthesis, performance, and composition. The program is designed for students who have an undergraduate music, engineering, or science degree.

Admission to the Master of Arts in Music, Science and Technology

All components of the M.A./MST application are due by the second Tuesday in December, including evidence of accomplishment (scores, recordings, and/or research papers). The Graduate Record Examination (GRE) is optional for Master's applications. Applicants who choose to take the GRE should arrange to take it well in advance of the application deadline of the second Tuesday in December to ensure that test scores are received in a timely manner. International students whose first language is not English are required to take the TOEFL exam (with certain exceptions: see the Office of Graduate Admissions (http://studentaffairs.stanford.edu/gradadmissions/) web site.)

		Units
Required Courses (units determined in consultation with advisor)		
MUSIC 201	CCRMA Colloquium	
MUSIC 220A	Fundamentals of Computer-Generated Sound	
MUSIC 251	Psychophysics and Music Cognition	
MUSIC 256A	Music, Computing, Design: The Art of Design	
MUSIC 320A	Introduction to Audio Signal Processing Part I: Spectrum Analysis	3-4
MUSIC 320B	Introduction to Audio Signal Processing Part II: Digital Filters	3-4
Electives		
The remaining units of graduate level work are determined in consultation with the student's advisor, must include three CCRMA electives, and may include courses taken outside the department.		
Capstone Project		
MA MST students can choose to pursue the Capstone project as part of their electives, by enrolling either in MUSIC 298 (MA capstone, 1-5 units per quarter, repeatable 3 times), or in a course plan devised in consultation with their advisor(s), totaling at least 6 units. The MA/MST capstone is intended to gather and focus skills acquired throughout the program toward an exploratory project aimed at bridging between your residency as a student and whatever will follow beyond your MA. For example, students interested in applied research might do design projects and/or mentored internships. For students considering going on to PhD research the capstone can be considered a more flexible form of a master's thesis, producing research and publication(s) that will strengthen your PhD application. For students wishing to continue in a DMA or another MFA program the capstone can be the core of your creative portfolio. Mentorship can include your advisor augmented, should you chose, by any other faculty member from CCRMA or in other programs.		

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Required course work is listed above. A complete program with an individually-tailored list of electives will be formed in consultation with the student's advisor.

M.A. in Composition, Musicology, and Computer-Based Music Theory and Acoustics

A minimum of 45 academic units is required for the master's degree in Music. The Department of Music does not accept students for study only towards the M.A. degree except in the Music, Science, and Technology program, described below.

Students in the D.M.A. program in composition and the Ph.D. programs in Musicology and Computer-Based Music Theory and Acoustics who enter with a Bachelor's degree may request and received the M.A. degree in their program at any time after completing 45 units of graduate coursework and advancing to Candidacy.

A doctoral student who has completed 45 units of graduate coursework in Music, but does not advance to doctoral candidacy, may petition for a terminal M.A. in their program. A terminal M.A in Composition, Musicology and Computer-Based Music Theory and Acoustics is granted on an individual basis and at the discretion of the Music Academic Council faculty.

Doctor of Musical Arts (D.M.A.) and Doctor of Philosophy (Ph.D.) in Music

University requirements for the D.M.A and Ph.D. are described in the "Graduate Degrees" section of this bulletin. The following statements apply to all the graduate degrees described below, unless otherwise indicated.

Admission

All components of the application are due by the second Tuesday in December. Applicants are required to submit evidence of accomplishment (scores, recordings, and/or research papers, according to the proposed field of concentration) with their application. The Graduate Record Examination (GRE) is optional for doctoral applications. Applicants who choose to take the GRE should arrange to take it well in advance of the application deadline of the second Tuesday in December to ensure that test scores are received in a timely manner. International students whose first language is not English are also required to take the TOEFL exam (with certain exceptions: see the Office of Graduate Admissions (https://gradadmissions.stanford.edu/applying/starting-your-application/required-exams/exam-requirements-international-applicants/) web site).

Department Examinations

All entering doctoral graduate students are required to take and pass:

1. a proficiency examination in dictation and sight-singing; a diagnostic examination in theory (counterpoint, harmony, and analysis); AND,
2. for musicologists and composers only, a proficiency examination in piano; for ethnomusicologists, a proficiency examination in piano or another instrument; AND
3. for ethnomusicologists only, a test on musical traditions outside of Western art music; OR
4. for musicologists only, a test on history and repertoire of Western art music.

These exams are given the week before classes begin in September each year. Teaching Assistant assignments are made on the basis of diagnostic exam results.

Graduate Credit

A minimum of 135 units are required for a doctoral degree.
No course used to fulfill degree requirements for the BA in Music may be used to fulfill degree requirements for a graduate degree in Music, unless specifically required for both degrees. Only work that receives a grade of 'A,' 'B,' or 'S' (a passing grade in an instructor-mandated credit/no credit course) in music courses numbered 100 or higher taken as a graduate student is recognized as fulfilling the advanced-degree requirements. The expectation is that a student will be able to complete the required 135 units of coursework by the end of Autumn Quarter of their 4th year.

The following may be taken as electives for graduate credit:

1. any course in another department or school numbered 100 or over (with advisor's consent); OR
2. any Music course with the Career: GR code in the Bulletin. A letter grade of A, B, or S (a passing grade in an instructor-mandated credit/no credit course) is required; OR
3. Music Department group instruction (MUSIC 72A Intermediate Piano Class through MUSIC 77 Percussion Class). Enroll as MUSIC 299 Independent Study Study after consulting with instructor.

Degree Options

The following fields of study are declarable as subplans in Axess via the "Declaration or Change to a Field of Study for Graduate Students" form; they appear on the transcript and the diploma:

- **Doctor of Musical Arts degree (D.M.A.) in Composition**
  The D.M.A. is offered to a limited number of students who demonstrate substantial experience in composition, sonic and intermedial arts, with high promise of attainment in their respective fields. Breadth is given through studies in other branches of music and in relevant fields outside music, as desirable. The final project for the D.M.A.degree is a creative project, which may consist of a large-scale composition for ensemble, a series of compositions, or a substantial sonic or intermedial project.
- **Doctor of Philosophy degree (Ph.D.) in Ethnomusicology**
  Ethnomusicology at Stanford prepares students to study sound, listening, and musical practices in diverse social and cultural contexts. Intensive training in fieldwork and ethnographic methods as well as critical theory, performance studies, anthropology, and area studies are central to the program. A vital aspect of students' experience is collaboration with historical musicology, composition, Euro-American music theory, and creative music-making.
- **Doctor of Philosophy degree (Ph.D.) in Musicology**
  Musicology at Stanford prepares students for the historical and critical study of music and musical practices. Intensive training in archival, textual, analytical, and interpretive methods as well as critical theory, performance studies, and cultural studies are central to the program. A vital aspect of students' experience is collaboration with ethnomusicology, composition, and performance.
- **Doctor of Philosophy degree (Ph.D.) in Computer-Based Music Theory and Acoustics**
  The Ph.D. is offered in areas of the research of Stanford's graduate faculty: Musicology, Ethnomusicology, and Computer-Based Music Theory and Acoustics (CBMTA) at the Center for Computer Research in Music and Acoustics (CCRMA). The department seeks students who demonstrate substantial scholarship, high promise of attainment, and the ability to do independent investigation and present the results of such research in a dissertation.

Degree Requirements

Residence

The candidate must complete a minimum of 135 academic units (see Residency under the Graduate Degrees (p. 65) section of this bulletin). Doctoral candidates working on Ph.D. dissertations or Doctor of Musical Arts (D.M.A.) final projects that require consultation with faculty members continue enrollment in the University under Terminal Graduate Registration (TGR), after they have earned the required 135 academic units and have completed their Special Area Examinations.

Qualifying Examination

D.M.A. students and Ph.D. students in the Computer-Based Music Theory and Acoustics programs take a written and oral Qualifying Examination just prior to the fourth funded quarter of study.

D.M.A. students submit a Special Area Examination topic proposal by the end of their fifth quarter.

Ph.D. students in Ethnomusicology take their written and oral Qualifying Exams just prior to the eighth funded quarter of study.

Ph.D. students in Musicology take their written and oral Qualifying Exams just prior to the eighth funded quarter of study.

Admission to Doctoral Candidacy

Faculty review the doctoral student's progress and academic achievement annually. Admission to candidacy for the doctoral degree is a judgment by the faculty in the department or school of the student's potential to successfully complete the requirements of the degree program. Students are expected to complete department qualifying procedures and apply for candidacy by the end of their second year in the Ph.D. program. If the student's progress and potential are deemed sufficient to advance to Candidacy, the student must complete the Application for Candidacy for Doctoral Degree (https://stanford.box.com/s/wlcmlt9bw2ztv6r3rlphp0rwwy7iapzs/). A student who does not advance to Candidacy will be dismissed from the program.

Teaching

All students in the Ph.D. or D.M.A. degree programs, regardless of sources of financial support, are required to complete six quarters of supervised teaching (Teaching Assistantship) at half time. MUSIC 280 TA Training Course (offered in Spring Quarter and taken at the end of the first year) is required preparation for Teaching Assistants. The department may offer additional quarters of teaching to students beyond the third year, depending on teaching needs and student qualifications. Teaching Assistants are required to be present on campus during the instruction period and until their duties in exam week are fulfilled. A TA who needs to take a short absence related to professional development (no more than one week in a quarter) should ask the instructor to approve that absence at least one month before the quarter begins. Absences during midterms and finals are not acceptable.

I. Composition

The Doctor of Musical Arts (D.M.A.) degree in Composition is given breadth through collateral studies in other branches of music and in relevant studies outside music as seems desirable. In addition to degree requirements required of all doctoral graduate students and listed above, students must complete the following required courses:

		Units
Required Courses		
MUSIC 280	TA Training Course	1
MUSIC 300G	Analysis and Repertoire: Late-Romantic to Contemporary	3-4
MUSIC 305D	Analysis from a Compositional Perspective	4
MUSIC 323	Doctoral Seminar in Composition (6 quarters during the first 3 years of study) [1]	3-4
MUSIC 324	Graduate Composition Forum	1-9
MUSIC 325	Individual Graduate Projects in Composition [2]	1-5
One elective course from the CBMTA curriculum chosen from the following or similar, with advisor's approval:		
MUSIC 220A	Fundamentals of Computer-Generated Sound	
MUSIC 250C	Interaction - Intermedia - Immersion	
MUSIC 300G	Analysis and Repertoire: Late-Romantic to Contemporary	
MUSIC 251	Psychophysics and Music Cognition	
MUSIC 255	Intermedia Workshop	
MUSIC 256A	Music, Computing, Design: The Art of Design	

1. In addition to the nine required terms (to be complete in the first three years), participation in classmates' Portfolio Reviews, Area Exams, and Final Project Presentations is strongly encouraged. We find that attending others' milestone events increases student's preparedness for their own. Attendance at Final Project Presentations is particularly important; students are expected to communicate with their adviser in the case that they must miss a Final Project Presentation. Students are also encouraged to attend presentations by invited composers beyond the 9-quarter requirement.
2. Two or more quarters per year are required until advancement to candidacy. By the end of the second year the student shall have enrolled with a minimum of two different faculty members. By the end of the third year the student shall have enrolled with a minimum of three different faculty.

1. Besides those requirements listed above, candidates are expected to produce a portfolio of works demonstrating their ability to compose in a variety of forms and for the common media: vocal, instrumental, and electronic music. If possible, the works submitted are presented in public performance prepared by the composer. Annual progress is reviewed by the composition faculty, with a major portfolio review during the Autumn Quarter of the third year.
2. *Foreign Language Requirement*—At the time of advancement to candidacy, all D.M.A. students are required to have demonstrated a reading knowledge of one language other than English and the ability to translate it into idiomatic English.
3. *Special-Area Examination*—During the Winter Quarter of the fourth year of study (no later than the ninth week of classes), the DMA student completes the following: a written examination on their planned field of concentration; a one-hour presentation followed by questions in MUSIC 324 Graduate Composition Forum; a sample course syllabus; and the final project proposal.
4. *Final Project Presentation*—Required during the last quarter of residence, no later than the ninth week of classes, the purpose of the presentation is to demonstrate the ability of the candidate to organize and present the topic of their final project for public review. It should be one hour in length, followed by questions, treating aspects of the final project, followed by questions. Details regarding the D.M.A. final project presentation may be found in the Department of Music Graduate Handbook.
5. *Final Project*—Candidate's D.M.A. work culminates in a required Final Project. The final project in composition must be a substantial composition, the scope of which shall be agreed upon by the members of the committee. This may consist of a single large-scale work, or a series of compositions unified by an artistic theme or process. Typically, work on the final project encompasses several quarters.
6. *Reading Committee*—The membership of the reading committee is the principal final project advisor and a minimum of two additional members. The notice of appointment of a D.M.A. Final Project Reading Committee should be submitted to the department at the same time as the approved final project proposal and the completion of the Special Area Exam. It is the responsibility of the student, with the advice of his or her advisor, to approach appropriate faculty members and obtain their consent to serve on the reading committee. Download the D.M.A. reading committee form (https://stanford.box.com/s/5irt1a01fti7lkebpq6sr93lxvr6oqtp/); fill it out; obtain committee members' signatures; return to the graduate student administrator.
7. The faculty expect doctoral students to engage deeply with the on-campus composition community above and beyond TA requirements. This includes engagement with new music by faculty and fellow students and participation in critical discourse. We strongly encourage students to attend peers' milestone events such as Portfolio Reviews, Area Exam Presentations, and Final Project Presentations.

8. Students are expected to be in residence during their studies, to fully profit from and contribute to the Music Department. However, students may request research and artistic practice-based leaves when specific activities warrant it, as long as they do not interfere with the above stated requirements. Leave requests must be reviewed by the full composition faculty and approved by a majority, in consultation with the Department Chair. Leave requests should be made to the adviser at least two weeks before relevant University deadlines.

II. Ethnomusicology

In addition to the degree requirements required of all doctoral graduate students and listed above, students in the PhD Ethnomusicology subplan must complete the following courses:

Required Courses		
MUSIC 200A	Proseminar in Musicology and Music Bibliography	3-4
MUSIC 200B	Proseminar in Ethnomusicology	3-5
MUSIC 280	TA Training Course	1
MUSIC 300D	Music Ethnography	3-5
MUSIC 300(X)	Methods for Graduate Music Study [1]	3-5
MUSIC 310	Research Seminar in Musicology [2]	3-5
	GR-coded course in Anthropology	3-5
	GR-coded course in TAPS	3-5
	GR-coded course in global/regional/linquistic area	3-5
	GR-coded course in race/ethnicity/gender/ sexuality	3-5
	Course, lessons, or ensemble in "non-Western" musics	0-3
MUSIC 330	Musicology Dissertation Colloquium [3]	1

1 The requirement is for one 300(X) seminar of 3-4 units, in addition to MUSIC 300D Music Ethnography. A student may request to take another 310 in lieu of 300[X].

2 The requirement is for three 310 seminars of 3-5 units each, to be taken in the first three years of study.

3 The requirement is for enrollment each quarter offered during Candidacy, EXCEPT when conducting ethnographic fieldwork.

1. *Foreign Language Requirement*—By the time of advancement to Candidacy, all Ph.D. students in Ethnomusicology must demonstrate proficiency in one field language, and EITHER one “classical” language (Latin, German, Italian, French, Spanish, or Russian) OR a second field language. If one of these languages is the student's native language, the student may be exempted from an examination.
2. *Special-Area Examination*—During Autumn quarter of the fourth year of study, the student submits a dissertation proposal and takes a written and oral examination of their knowledge of musics and literature of the student’s area of concentration. The examination will also test students on the conceptual foundations of the field of Ethnomusicology, as well as a theoretical topic that is central to the student’s dissertation. The Special Area exam concludes with an oral defense of the written answers and the dissertation proposal. The Special Area exam committee comprises prospective readers of the dissertation.
3. *Reading Committee*—The dissertation reading committee is constituted according to the G.A.P., section 4.8.1 (https://gap.stanford.edu/handbooks/gap-handbook/chapter-4/subchapter-8/page-4-8-1/). It includes, at minimum: the principal dissertation advisor; a second reader from the Music faculty; a third reader from a department outside of Music. It is the responsibility of the student, with the advice of his or her advisor, to approach appropriate faculty members and obtain their consent to serve on the reading committee. The student must file a completed and signed Doctoral Dissertation Reading Committee form with the Student Services Officer at the same time as the approved dissertation proposal and the completion of the Special Area Exam.
4. *Dissertation*—After the first two years of graduate study, the student concentrates on researching and writing the dissertation. The dissertation demonstrates the student's ability to produce a work of original and excellent scholarship
5. *University Oral Examination*—When the dissertation is substantially complete, as judged by the candidate and their principal dissertation advisor, the candidate gives a public oral presentation on the research, method, and results. Immediately following the presentation, there is a closed-session examination of the candidate by a University Orals Committee constituted according to the G.A.P., section 4.7.1 (https://gap.stanford.edu/handbooks/gap-handbook/chapter-4/subchapter-7/page-4-7-1/).

III. Musicology

In addition to degree requirements required of all doctoral graduate students and listed above, students must complete the following required courses:

		Units
Required Courses		
MUSIC 200A	Proseminar in Musicology and Music Bibliography	3-4
MUSIC 200B	Proseminar in Ethnomusicology	3-5
MUSIC 280	TA Training Course	1
MUSIC 310	Research Seminar in Musicology [1]	3-5
MUSIC 330	Musicology Dissertation Colloquium [2]	1
MUSIC 300(X)	Methods for Graduate Music Study [3]	3-5

1 The requirement is for five 310 seminars of 3-5 units each, to be taken in the first three years of study.

2 Student must enroll in MUSIC 330 Musicology Dissertation Colloquium each quarter offered while they are TGR and continuing to graduation.

3 The requirement is for six 300(X) seminars of 3-4 units each, to be taken in the first two years of study.

1. *Foreign Language Requirement*—By the time of advancement to Candidacy, all Ph.D. students in Musicology must pass Ph.D. language reading examinations in German and in a second language chosen from French, Italian, or Latin. A student may petition to substitute a different second language necessary for their planned doctoral research. If one of these languages is the student's native language, the student may be exempted from an examination.
2. *Special-Area Examination*—During Autumn quarter of the fourth year of study, the student submits a dissertation proposal and takes a written examination on repertoire and scholarly literature in their proposed area of dissertation research. The Special Area exam concludes with an oral defense of the written answers and the dissertation proposal. The Special Area exam committee comprises prospective readers of the dissertation.
3. *Reading Committee*—The dissertation reading committee is constituted according to the G.A.P., section 4.8.1 (https://gap.stanford.edu/handbooks/gap-handbook/chapter-4/subchapter-8/page-4-8-1/). It includes, at minimum: the principal dissertation advisor; a second reader from the Music faculty; a third reader from Music or another department. It is the responsibility of the student, with the advice of his or her advisor, to approach appropriate faculty members and obtain their consent to serve on the reading committee. The student must file a completed and signed Doctoral Dissertation Reading Committee form with the Student Services Officer at the same time as the approved dissertation proposal and the completion of the Special Area Exam.

4. *Dissertation*—After the first two years of graduate study, the student concentrates on researching and writing the dissertation. The dissertation demonstrates the student's ability to produce a work of original and excellent scholarship.
5. *University Oral Examination*—When the dissertation is substantially complete, as judged by the candidate and their principal dissertation advisor, the candidate gives a public oral presentation on the research, method, and results. Immediately following the presentation, there is a closed-session examination of the candidate by a University Orals Committee constituted according to the G.A.P., section 4.7.1 (https://gap.stanford.edu/handbooks/gap-handbook/chapter-4/subchapter-7/page-4-7-1/).

IV. Computer-Based Music Theory and Acoustics

In addition to degree requirements required of all doctoral graduate students and listed above, students must complete the following required courses:

Required Courses		
MUSIC 220A	Fundamentals of Computer-Generated Sound [1]	4
MUSIC 220B	Compositional Algorithms, Psychoacoustics, and Computational Music [1]	4
MUSIC 220C	Research Seminar in Computer-Generated Music [1]	2-4
MUSIC 220D	Research in Computer-Generated Music [2]	1-10
MUSIC 251	Psychophysics and Music Cognition	1-5
MUSIC 280	TA Training Course	1
MUSIC 305D	Analysis from a Compositional Perspective	4
MUSIC 300G	Analysis and Repertoire: Late-Romantic to Contemporary	3-4
MUSIC 320A	Introduction to Audio Signal Processing Part I: Spectrum Analysis	3-4
MUSIC 320B	Introduction to Audio Signal Processing Part II: Digital Filters	3-4
MUSIC 341	Ph.D Dissertation [2]	1-10
MUSIC 398	PhD Dissertation Proposal [4]	1-3

1 Recommend taking this in the first year.

2 220D and 341 can be taken multiple times for 1-10 units each time, for a combined total of 9 units or more.

3 Must take in first year.

4 Recommend taking this in the third year.

1. *Foreign Language Requirement*—At the time of advancement to Candidacy, all Ph.D. students in Computer-Based Music Theory and Acoustics are required to have demonstrated a reading knowledge of one language other than English and the ability to translate it into idiomatic English.
2. *Special-Area Examination*—A written and oral examination testing the student's knowledge of music and research in the student's field of concentration is completed during the fourth year of study, no later than the last day of classes in Autumn Quarter of that year. This includes an oral defense of the dissertation proposal. The examining committee comprises prospective readers of the dissertation.
3. *Reading Committee*—The dissertation reading committee is constituted according to the G.A.P., section 4.8.1 (https://gap.stanford.edu/handbooks/gap-handbook/chapter-4/subchapter-8/page-4-8-1/). It includes, at minimum: the principal dissertation advisor; a second reader from the Music faculty; a third reader from Music or another department. It is the responsibility of the student, with the advice of his or her advisor, to approach appropriate faculty members and obtain their consent to serve on the reading committee. The student must file a completed and signed Doctoral Dissertation Reading Committee (https://stanford.box.com/docdiss-reading-committee-form/) form with the Student Services Officer at the same time as the approved dissertation proposal and the completion of the Special Area Exam.
4. *Dissertation*—After the first two years of graduate study, the student concentrates on research and writing of the dissertation. The dissertation demonstrates the student's ability to work systematically and independently to produce an essay of competent scholarship.
5. *University Oral Examination*—When the dissertation is substantially complete, as judged by the candidate and their principal dissertation advisor, the candidate gives a public oral presentation on the research, method, and results. Immediately following the presentation, there is a closed-session examination of the candidate by a University Orals Committee constituted according to the G.A.P., section 4.7.1 (https://gap.stanford.edu/handbooks/gap-handbook/chapter-4/subchapter-7/page-4-7-1/).

Doctoral Certificate in Composition

Admission

Students are admitted to the Certificate in Composition program based on a selection process adjudicated by Department of Music composition faculty at the start of the student's second year in Ph.D. program in Music. To request consideration for the Doctoral Certificate Program in Composition, the student should speak with a member of the composition faculty and the Department of Music's graduate student services officer. At the time of consideration, the student must be in good standing in the Department of Music.

Requirements

Once admitted into the program, students must complete a course plan to be approved by department faculty based on the requirements below.

		Units
MUSIC 323	Doctoral Seminar in Composition (Doctoral Seminar in Composition (3 quarters required, 2 of which must be completed by the end of the second year of the doctoral program)) [1]	9-12
MUSIC 324	Graduate Composition Forum (Graduate Composition Forum1 (3 quarters required by the end of the second year, plus 6 additional quarters, for a total of 9 quarters))	9
MUSIC 325	Individual Graduate Projects in Composition (Individual Graduate Projects in Composition (7 quarters of individual instruction in composition for any number of units, minimum of 7 units); two quarters must be taken by the end of the second year; the student must have studies with two different composition professors by the end of the second year of the doctoral program, and three different professors by the end of year three of the doctoral program)	7

[1] The Graduate Composition Forum requirement includes participating in group discussions and presentations by guest artists, attending Composition Advising Council (CAC) meetings and helping produce CAC concerts, and attending milestone events associated with the Doctoral Certificate in Composition and the DMA in Composition (i.e. portfolio reviews, special area exam presentations, and final project presentations). There is, however, no residency requirement other than completing 3 of 9 quarters of Music 324 by the end of the second year. A quarter of second-year participation in Music 324 may be deferred if there are pressing research needs or other extenuating circumstances.

Other Requirements and Opportunities

A final project presentation in the fifth year of doctoral study, with or without a written component. Co-supervision (a DCC advisor), by a composition faculty member.

Undertaking the Doctoral Certificate in Composition entitles the student to participate in the Composition Advising Council's selection of visiting ensembles. In addition, it entitles the student to engage in collaborations with, at a minimum, half the number of collaborations with artists invited by the CAC in which a typical DMA student would participate.

Optional Requirements and Expectations

Qualifying Exam: optional but recommended; to be completed no later than the first term of year three. [See Qualifying Exam information under the DMA program tab.]

Third-year Portfolio Review: optional but recommended. [See Portfolio Review information under the DMA program tab.]

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of Music counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Graduate Degree Requirements

Grading

The Department of Music counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B' or better level.

Graduate Advising Expectations

The Department of Music is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

The faculty program adviser is the primary source of information for the duration of a student's graduate career. Program adviser assignments are made based on perceived best fit at the time of acceptance to a degree program. Only Academic Council Teaching Faculty ("ACTFac" – any tenure-track faculty, i.e., Assistant, Associate, and full Professors), are eligible to serve as graduate program advisers; however, non-ACTFac instructors may serve as co-advisers in conjunction with an ACTFac instructor. See the faculty listing on the Music website (https://music.stanford.edu/people/faculty/).

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program. Graduate students are encouraged to meet with their program adviser at least once each quarter, and are actively encouraged to communicate frequently with their advisers. It is valuable to set clear mutual expectations for the advising process, and to revisit those expectations periodically. While developing a proposal for the Ph.D. dissertation or DMA final project, the student should invite a reading committee in consultation with the program adviser and other relevant faculty.

At the start of graduate study, each student is assigned a program adviser. Should you feel it necessary to change advisers, the following procedure should be followed:

1. Discuss this with your current adviser. With their permission,
2. Solicit agreement from your proposed new adviser.
3. Email the Graduate Student Services Officer with a notification of this change; cc both your old and new advisers.

If there are problems with the advising relationship, please contact the Department Chair or the Graduate Student Services Officer.

Advising Expectations for Ph.D. Students

A student should be an active advisee and should not wait for your adviser to email. Students should arrange for meetings to discuss coursework, summer plans, quals preparation, language study, and, later, the dissertation topic, fellowship applications, and other aspects of professional development. Students should prepare for these meetings carefully, recognizing that the adviser's time is limited.

Advising Expectations for Master of Art in Music (M.S.T.) Students

The same expectations guiding the doctoral advisees guide advising relationships for master's students as well.

Stanford Advising Documents and Resources

The Office of the Vice Provost for Graduate Education (VPGE (http://vpge.stanford.edu/)) works collaboratively with Stanford's schools and departments to enhance the quality of graduate education at Stanford University. Among the many resources at their site is a set of graduate

advising resources (https://vpge.stanford.edu/academic-guidance/advising-mentoring/).

The Graduate Academic Policies and Procedures (GAP) section on advising (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/page-3-3-1/) is available on the GAP website.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Emeriti: (Professors) George Barth, Karol Berger, John M. Chowning, Brian Ferneyhough, William H. Ramsey; *(Professors, Performance)* Arthur P. Barnes, Marie Gibson

Chair: Stephen Hinton

Director of Graduate Studies: Heather Hadlock

Director of Undergraduate Studies: Charles Kronengold

Professors: Mark Applebaum, Jonathan Berger, Chris Chafe, Thomas Grey, Stephen Hinton, Julius O. Smith (on leave AW)

Associate Professors: Takako Fujioka, Heather Hadlock, Jaroslaw Kapuscinski (on leave), William P. Mahrt, Jesse Rodin, Ge Wang

Assistant Professors: Patricia Alessandrini, Denise Gill (on leave), Charles Kronengold

Professor (Teaching): Stephen M. Sano (Director of Choral Studies)

Associate Professor (Teaching): Paul Phillips (Director of Orchestral Studies)

Courtesy Professors: Paul DeMarinis, Elizabeth Erikson-DiRenzo, Doug L. James, C. Kwang Sung

Senior Lecturers: Giancarlo Aquilanti (Director of Theory; Wind Ensemble), Talya Berger (Theory), Laura Dahl (Resident Collaborative Pianist), Stephen Harrison (Cello), François Rose (Theory and Composition), Thomas Schultz (Piano), Greg Wait (Voice; Director of Vocal Studies), Frederick R. Weldy (Piano)

Lecturers: Akwasi Papa Abrefah (Steelpan), Kumaran Arul (Piano), Erika Arulanantham (Theory), Mark Brandenburg (Clarinet), Marie-Louise Catsalis (Voice), Hongchan Choi (CCRMA), Tony Clements (Tuba), Anthony Doheny (Violin), Greer Ellison (Flute, Baroque Flute), Charles A. Ferguson (Guitar), Debra Fong (Violin), Michael Galisatus (Jazz Ensemble), Russell Gavin (LSJUMB), Dawn Harms (Violin, Viola), Alexandra Hawley (Flute), David Henderson (Classical Saxophone), Wendy Hillhouse (Voice), Melody Holmes-Vedder (Flute), Kathryne Jennings (Voice), Nova Jiménez (Voice), McDowell Kenley (Trombone), Hans Kretz (SNE), Joo-Mee Lee (Violin), Mary Linduska (Voice, Summer), Murray Low (Jazz & Jazz Piano), Adam Luftman (Trumpet), Anthony Martin (Baroque Violin), Robin May (Oboe), Charles McCarthy (Jazz Saxophone), Robert Huw Morgan (University Organist, Organ), Bruce Moyer (Contrabass), Stan Muncy (Percussion), Herbert Myers (Early Winds), James Nadel (Jazz), Rufus Olivier (Bassoon), Rafael Ornes (Summer Chorus) Lawrence Ragent (French Horn), Joshua Redman (Jazz), David Rokeach (Drum Set), Robin Sharp (Violin), Annabelle Taubl (Harp), Elaine Thornburgh (Harpsichord), Josh Thurston-Milgrom (Jazz Bass), Erik Ulman (Composition, Theory), Linda Uyechi (Taiko), Rick Vandivier (Jazz Guitar), John Worley (Jazz Trumpet), Hui (Daisy) You (Gu-Zheng), Timothy Zerlang (University Carillonneur, Piano)

Adjunct Professors: Jonathan Abel (CCRMA), David Berners (CCRMA), Marina Bosi (CCRMA), Poppy Crum (CCRMA), Pierre Divenyi (CCRMA), Walter Hewlett (Computer-Assisted Research in the Humanities), Blair Kaneshiro (CCRMA), Gautham Mysore (CCRMA), Craig Sapp (Computer-Assisted Research in the Humanities), Eleanor Selfridge-Field (Computer-Assisted Research in the Humanities), Malcolm Slaney (CCRMA)

Artists-in-Residence (St. Lawrence String Quartet): Geoff Nuttall (Violin), Owen Dalby (Violin), Lesley Robertson (Viola), Christopher Costanza (Cello)

Courses

MUSIC 1. Musical Genius: Exemplars in the History of Organized Sound. 3 Units.
How does music work? A broad exploration of music as defined by three major components (i) Theories of Music (elements and parameters), (ii) Histories of Music (cultures and people), and (iii) Practitioners of Music (musicians and scholars). Lecture, discussion, guided critical listening and viewing of audio, video, and live performance, and creation of self-curated mini-projects.

MUSIC 1A. Music, Mind, and Human Behavior. 3 Units.
An introductory exploration of the question of why music is a pervasive and fundamental aspect of human existence. The class will introduce aspects of music perception and cognition as well as anthropological and cultural considerations.

MUSIC 1SI. Introduction to Indian Classical Music. 1 Unit.
This is an introductory course in the classical music of India, with emphasis on learning to listen to and appreciate Indian classical music concerts. It will cover a broad overview of the two main genres of Indian classical music - Carnatic and Hindustani. We will have several in-class demonstrations of instruments unique to the Indian classical music tradition. Class meetings will include discussions of landmark performances and artists as well as fundamentals of this music style, such as Raaga (melody), Taala (rhythm), song structure, and improvisation.

MUSIC 2A. The Symphony. 3 Units.
Symphonic literature 1750 to the present, with emphasis on developing listening skills and preparation for attending a live performance. Ability to read music not required.

MUSIC 2C. An Introduction to Opera. 3 Units.
The lasting appeal of opera as a lavishly hybrid genre from the 1600s to the present. How and why does opera set its stories to music? What is operatic singing? Who is the audience? How do words, music, voices, movement, and staging collaborate in different operatic eras and cultures? Principal works by Monteverdi, Handel, Mozart, Verdi, Wagner, Strauss, Britten, and Adams. Class studies and attends two works performed by the San Francisco Opera.

MUSIC 4SI. Interactive Introduction to North American Taiko. 1 Unit.
Taught by Stanford Taiko members. Techniques and history. No experience necessary. May be repeated for credit. This course was initiated by Mitchell Fukumoto and Stanford Taiko.

MUSIC 6F. Art is My Occupation: Professional Development in Music. 1 Unit.
Open to majors and non-majors. This course is designed for students who are considering careers in performance or the music industry to explore their personal and artistic identity. Weekly guest speakers provide real world insight on topics related to professional advancement.

MUSIC 7B. Musical Cultures of the World. 2-3 Units.
Ethnomusicologists study music in human life. Music is with us as we articulate and define social identities -- punk rocker, student, Japanese-American, member of a sorority, Catholic, radical, etc. --and as we acquire new identities through rites of passage such as weddings, graduations, and initiation ceremonies. Many of life's most intense moments are accompanied or created by music, but music can also be part of the everyday, with us as we work, move, and socialize. This course is about what music does in human life and what it means to participants. In other words, it is about the myriad ways that music makes us human. We will address musical meanings and practices in selected regions of Africa, Asia, Europe, and the Americas. As you encounter music in an increasingly connected world, this course will provide you with a new awareness of musical diversity and of the social implications of music making. To satisfy a Ways requirement, this course must be taken for at least 3 units. In AY 2020-21, a letter grade or `CR¿ grade satisfies the Ways requirement.

MUSIC 8A. Rock, Sex, and Rebellion. 3 Units.
Development of critical listening skills and musical parameters through genres in the history of rock music. Focus is on competing aesthetic tendencies and subcultural forces that shaped the music. Rock's significance in American culture, and the minority communities that have enriched rock's legacy as an expressively diverse form. Lectures, readings, listening, and video screenings. Attendance at all lectures is required.

MUSIC 11N. Harmonic Convergence: Music's Intersections with Science, Mathematics, History, and Literature. 3 Units.
Topics include music and the brain; tuning and temperament; musical form; connections between music and mathematics; and readings in history and literature with strong musical elements. Readings include "The Power of Music" (Mannes), "Musicophilia" (Sacks), "From Music to Mathematics" (Roberts), "The Kreutzer Sonata" (Tolstoy), "A Clockwork Orange" and "Honey for the Bears" (Burgess). Compositions by Bach, Mozart, Beethoven, Debussy, Schoenberg, Stravinsky, Shostakovich, and others will be studied. Goals: increased understanding of music's relationship to other fields; improved writing skills. While ability to read music is not required, students with musical ability will be encouraged to perform relevant works in class.

MUSIC 11Q. Art in the Metropolis. 3 Units.
This seminar is offered in conjunction with the annual "Arts Immersion" trip to New York that takes place over the spring break and is organized by the Stanford Arts Institute (SAI). Participation in the trip is a requirement for taking part in the seminar (and vice versa). The trip is designed to provide a group of students with the opportunity to immerse themselves in the cultural life of New York City guided by faculty and SAI staff. Students will experience a broad range and variety of art forms (visual arts, theater, opera, dance, etc.) and will meet with prominent arts administrators and practitioners, some of whom are Stanford alumni. For further details and updates about the trip, see https://arts.stanford.edu/for-students/academics/arts-immersion/new-york/.
Same as: ARTSINST 11Q, ENGLISH 11Q, TAPS 11Q

MUSIC 12A. Introductory Piano Class. 1 Unit.
(A=level 1; B=level 2; C=level 3) There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fee and signup information. Class is closed by design. Please register on the waitlist and show up on the first day of class to receive a permission number for enrollment. Preference to department majors. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 12AS. Introductory Piano Class, Level 1. 1 Unit.
Piano: Introductory Level 1 (Group; 10 students to a section) (A=Level 1; B=Level 2; C=Level 3). Class is closed by design. Please register on the wait-list and show up on the first day of class to receive a permission number for enrollment. Complete registration form available for download at: http://tinyurl.com/q43c48g. May be repeated for credit 5 times. Zero unit enrollment option available with instructor permission. See website: (http://tinyurl.com/posmuhn) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.
Same as: Group

MUSIC 12AZ. Introductory Piano Class. 0 Units.
(A=level 1; B=level 2; C=level 3) There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fee and signup information. Class is closed by design. Please register on the waitlist and show up on the first day of class to receive a permission number for enrollment. Preference to department majors. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.May be repeat for credit for 0 unit and total completion allowed 99.

MUSIC 12B. Introductory Piano Class. 1 Unit.
This class is closed by design. To enroll, please sign up on the Axess waitlist and show up on the first day to receive a permission number for re-enrollment. Your place on the waitlist will be considered a reservation. If the waitlist is closed, there are no more spaces in the class. (A=level 1; B=level 2; C=level 3) There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fee and signup information. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 12BS. Introductory Piano Class, Level 2. 1 Unit.
Piano: Introductory Level 2 (Group; 10 students to a section) (A=Level 1; B=Level 2; C=Level 3). Class is closed by design. Please register on the wait-list and show up on the first day of class to receive a permission number for enrollment. Complete registration form available for download at: http://tinyurl.com/q43c48g. May be repeated for credit 5 times. Zero unit enrollment option available with instructor permission. See website: (http://tinyurl.com/posmuhn) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.
Same as: Group

MUSIC 12BZ. Introductory Piano Class. 0 Units.
This class is closed by design. To enroll, please sign up on the Axess waitlist and show up on the first day to receive a permission number for re-enrollment. Your place on the waitlist will be considered a reservation. If the waitlist is closed, there are no more spaces in the class. (A=level 1; B=level 2; C=level 3) There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fee and signup information. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 12C. Introductory Piano Class. 1 Unit.
This class is closed by design. To enroll, please sign up on the Axess waitlist and show up on the first day to receive a permission number for re-enrollment. Your place on the waitlist will be considered a reservation. If the waitlist is closed, there are no more spaces in the class. (A=level 1; B=level 2; C=level 3.) May be repeated for credit a total of 14 times. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fee and signup information. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 12CS. Introductory Piano Class, Level 3. 1 Unit.
Piano: Introductory Level 3 (Group; 10 students to a section) (A=Level 1; B=Level 2; C=Level 3). Class is closed by design. Please register on the wait-list and show up on the first day of class to receive a permission number for enrollment. Complete registration form available for download at: http://tinyurl.com/q43c48g. May be repeated for credit 5 times. Zero unit enrollment option available with instructor permission. See website: (http://tinyurl.com/posmuhn) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.
Same as: Group

MUSIC 12CZ. Introductory Piano Class. 0 Units.
This class is closed by design. To enroll, please sign up on the Axess waitlist and show up on the first day to receive a permission number for re-enrollment. Your place on the waitlist will be considered a reservation. If the waitlist is closed, there are no more spaces in the class. (A=level 1; B=level 2; C=level 3.). There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fee and signup information. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 12SZ. Introductory Piano. 0 Units.
Introductory Piano (zero-unit option). Complete registration form available for download at: http://tinyurl.com/q43c48g. Zero unit enrollment option available with instructor permission. See website: (http://tinyurl.com/posmuhn) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 13N. Music and Politics: From Mozart to Miranda. 3 Units.
This course examines the relationship between music and politics. It will view music within an historical context, exploring how music can reflect and sometimes influence major political issues of the day. Topics will include "The Marriage of Figaro" and the French Revolution; Verdi's operas and politics in 19th-century Italy; Wagner controversies; Stravinsky and fascism; ¿Degenerate Music¿ in Nazi Germany; Shostakovich in the USSR; Radical Chic ¿ Leonard Bernstein's fundraiser for the Black Panthers; "The Death of Klinghoffer" and the Israeli-Palestinian conflict; and Hamilton and its 21st-century view of the American Revolution. The ability to read music, while beneficial, is not required.

MUSIC 14N. Women Making Music. 3 Units.
Preference to freshmen. Women's musical activities across times and cultures; how ideas about gender influence the creation, performance, and perception of music.
Same as: FEMGEN 13N

MUSIC 15N. The Aesthetics of Data. 3 Units.
Focus on visual and auditory display of data, specifically, the importance of aesthetic principles in effective data display, and the creative potential of scientific, biological, environmental and other data as inspiration for artistic expression.

MUSIC 16Q. Listening to Climate Change. 3 Units.
Today, it seems that evidence of climate change is everywhere. But, climate change is not new, nor is public consciousness of it. As early as 1840, climate change had become a subject of cultural fascination–especially for musicians and composers.nThis course will focus on five musical works from a range of time periods and traditions that reflect contemporary consciousness of and reactions to climate change. What ideas about power, race, and identity are reflected in music about the changing environment? How has the history of musical encounters with climate shaped that mode of engagement today?.

MUSIC 18A. Jazz History: Ragtime to Bebop, 1900-1940. 3 Units.
From the beginning of jazz to the war years.
Same as: AFRICAAM 18A

MUSIC 18B. Jazz History: Bebop to Present, 1940-Present. 3 Units.
Modern jazz styles from Bebop to the current scene. Emphasis is on the significant artists of each style.
Same as: AFRICAAM 18B

MUSIC 19A. Introduction to Music Theory. 3 Units.
For non-music majors and Music majors or minors unable to pass the proficiency test for entry to MUSIC 21. The fundamentals of music theory and notation, basic sight reading, sight singing, ear training, keyboard harmony; melodic, rhythmic, and harmonic dictation. Skill oriented, using piano and voice as basic tools to develop listening and reading skills.

MUSIC 19B. Intermediate Music Theory. 3 Units.
This course is an introduction to music theory geared toward students who have basic literacy skills (i.e. fundamental notation, identifying major and minor scales, keys, etc). Using musical materials from repertoire selected from campus and area concerts, and incorporating the opportunity to attend these concerts, the course will introduce elements of harmony, melody, form, orchestration and arrangement. The course is an appropriate successor to Music 19A. Students who successfully complete Music 19B can go on directly to Music 21.

MUSIC 20A. Jazz Theory. 3 Units.
Introduces the language and sounds of jazz through listening, analysis, and compositional exercises. Students apply the fundamentals of music theory to the study of jazz. Prerequisite: 19 or consent of instructor.
Same as: AFRICAAM 20A

MUSIC 20B. Advanced Jazz Theory. 3 Units.
Approaches to improvisation and composed jazz lines through listening, transcribing, analysis, and compositional exercises. Topics include: chord/scale theory, melodic minor harmony, altered chords, and substitute harmony. Prerequisite: 20A or consent of instructor.

MUSIC 20C. Jazz Arranging and Composition. 3 Units.
Jazz arranging and composition for small ensembles. Foundation for writing for big band. Prerequisite: 20A or consent of instructor.

MUSIC 21. Elements of Music I. 3 Units.
Preference to majors. Introduction to tonal theory. Practice and analysis. Diatonic harmony focusing on melodic and harmonic organization, functional relationships, voice-leading, and tonal structures. Students must concurrently enroll in an Ear-training and musicianship lab (MUSIC 24a, 24b, or 24c as appropriate). Music majors must take 4 courses in ear training, and pass an ear training exit exam in their Junior year. Enrollment limited to 40. Prerequisites: (1) Piano Proficiency Exam (must be passed within the first two weeks of the term) or MUSIC 12A (may be taken concurrently); (2) Passing grade on a basic musical skills proficiency examination on the first day of class or MUSIC 19.

MUSIC 22. Elements of Music II. 3 Units.
Preference to majors. Introduction to chromatic harmony focusing on secondary functions, modulations, harmonic sequences, mode mixture, and the Neapolitan, and augmented sixth chords. Analysis of musical forms and harmonizations complemented by harmonic and melodic dictation, sight singing, and other practical skills. Students must concurrently enroll in an Ear-training and musicianship lab (MUSIC 24a, 24b, or 24c as appropriate). Music majors must take 4 courses in ear training, and pass an ear training exit exam in their Junior year. Prerequisites: (1) MUSIC 21; (2) Piano Proficiency Exam or MUSIC 12B (may be taken concurrently).

MUSIC 23. Elements of Music III. 3 Units.
Preference to majors. Continuation of chromatic harmony and complex forms of late Romantic period. Students must concurrently enroll in an Ear-training and musicianship lab (MUSIC 24a, 24b, or 24c as appropriate). Music majors must take 4 courses in ear training, and pass an ear training exit exam in their Junior year. Prerequisites: (1) MUSIC 22; (2) Piano Proficiency Exam or MUSIC 12C (may be taken concurrently).

MUSIC 24A. Ear Training I. 1-2 Unit.
Class is closed by design. Please contact instructor Erika Arul (mailto:earul@stanford.edu) for permission to enroll. Preference to Music majors and minors.

MUSIC 24B. Ear Training II. 1-2 Unit.
Class is closed by design. Please contact instructor Erika Arul (mailto:earul@stanford.edu) for permission to enroll. Preference to Music majors and minors.

MUSIC 24C. Ear Training III. 1-2 Unit.
Class is closed by design. Please contact instructor Erika Arul (mailto:earul@stanford.edu) for permission to enroll. Preference to Music majors and minors.

MUSIC 24Z. Ear Training. 0 Units.
Class is closed by design. Please contact instructor Erika Arul (mailto:earul@stanford.edu) for permission to enroll. Preference to Music majors and minors.

MUSIC 25. Decoding Anime. 3 Units.
Anime as an artistic form often boasts highly imaginative graphics, striking music, vibrant characters, and fantastical stories. The course aims at decoding the expressive power of anime by applying a method of multimedia analysis that focuses on the interaction between its component elements: story, image, sound and music. Through close reading of works by five leading and innovative directors the students will develop tools to analyze anime and interpret it in a larger cultural context.

MUSIC 27N. The British Invasion. 3 Units.
Examination of three generations of British popular music in the `60s and `70s: the Beatles (and the Rolling Stones, the Kinks, the Who); progressive rock (art rock) as embodied in Pink Floyd, Yes, King Crimson, Genesis, and Emerson, Lake, and Palmer; the emergence of punk in its revolutionary (the Clash) and nihilistic (the Sex Pistols) forms. Among other issues, the manner in which marginal American culture (particularly African-American blues) is neglected by Americans and venerated by foreigners and the subsequent mainstream consumption of a transformed and repackaged American minority culture is discussed.

MUSIC 31N. Behind the Big Drums: Exploring Taiko. 3 Units.
Preference to Freshman. Since 1992 generations of Stanford students have heard, seen, and felt the power of taiko, big Japanese drums, at Admit Weekend, NSO, or Baccalaureate. During a time of COVID, this online version of the seminar takes students behind the taiko. Taiko is a relative newcomer to the American music scene. The contemporary ensemble drumming form, or kumidaiko, developed in Japan in the 1950s. The first North American taiko groups emerged from the Japanese American community shortly after and coincided with increased Asian American activism. In the intervening years, taiko has spread into communities in the UK, Europe, Australia, and South America. What drives the power of these drums? In this course, we explore the musical, cultural, historical, and political perspectives of taiko through readings and discussion, conversations with taiko artists, and online taiko lessons. With the taiko as our focal point, we find intersections of Japanese music, Japanese American history, and Asian American activism, and explore relations between performance, cultural expression, community, and identity.
Same as: ASNAMST 31N

MUSIC 32N. Sculpting with Sounds, Images, and Words. 3 Units.
Throughout history and from East to West, cultures abound in multimedia forms. Whether in Coldplay's Music Video or Fantasia, Pepsi TV adds or Wagner's opera, Miyazaki anime or traditional Noh Theater of Japan, the three modes of expression (sounds, images, and word) are interwoven in distinctive ways. What are their individual and combined powers? How can one harness them in an online context? Can Web be a stage for multimedia theater? What is unique about the poetry of intermodal metaphor? The course will be an opportunity to face these questions in creative web-based projects as well as through in-class viewing of multimedia works, analysis and debates, readings, and student presentations. The seminar will be taught at the Center for Computer Research in Music and Acoustics where students will have access to new media technologies. Prior experience in music, literature, art practice or computer programming is welcome but not required.

MUSIC 33N. Beethoven. 3 Units.
This seminar is designed as an in-depth introduction to the music of Ludwig van Beethoven. In addition to exploring the composer's principal works in a variety of genres (symphonies, piano sonatas, string quartets, opera, etc.), we will consider broader questions of biography and reception history. How have images of the composer and the fortunes of his music changed over time? How did his compositions come to define the paradigm of Western classical music? What impact has he had on popular culture? The class is open to all levels of musical expertise; the ability to read music is not a requirement. Come prepared to discover -- or rediscover -- some great music!.

MUSIC 34N. Performing America: The Broadway Musical. 3 Units.
Musical theater as a site for the construction of American identity in the twentieth century to the present. Issues of class, race, gender, and sexuality; intersections with jazz, rock, and pop; roles of lyricist, composer, director, choreographer, producer, performers. Individual shows (Showboat, Oklahoma, South Pacific, Guys and Dolls, West Side Story, Wicked, Book of Mormon, Hamilton, Dear Evan Hansen), show tunes in jazz performance, film musicals, and television. Opportunities for performance and attendance at local productions.

MUSIC 36H. Dangerous Ideas. 1 Unit.
Ideas matter. Concepts such as revolution, tradition, and hell have inspired social movements, shaped political systems, and dramatically influenced the lives of individuals. Others, like immigration, universal basic income, and youth play an important role in contemporary debates in the United States. All of these ideas are contested, and they have a real power to change lives, for better and for worse. In this one-unit class we will examine these "dangerous" ideas. Each week, a faculty member from a different department in the humanities and arts will explore a concept that has shaped human experience across time and space. Some weeks will have short reading assignments, but you are not required to purchase any materials.
Same as: ARTHIST 36, COMPLIT 36A, EALC 36, ENGLISH 71, ETHICSOC 36X, FRENCH 36, HISTORY 3D, PHIL 36, POLISCI 70, RELIGST 36X, SLAVIC 36

MUSIC 37N. Ki ho'alu: The New Renaissance of a Hawaiian Musical Tradition. 2 Units.
Preference to freshman. A style of guitar playing originally developed in the Hawaiian Islands during the early 1800s, ki ho alu, or Hawaiian slack key guitar, is an art form that has experienced exposure and popularity in Hawai'i and worldwide. Its rise in popularity coincides with the increased awareness, dissemination, and growth of political activism directly relating to Hawaiian culture. In this on-line, synchronously-taught seminar we will explore the musical, cultural, historical, and political perspectives of Hawaiian music in general, and ki ho alu in particular, through critical listening, readings, discussion, and a conversation with guest slack key artist and 6-time Grammy winner Daniel Ho. With ki ho alu as the focus, we will learn about Hawaiian music and history, and explore the relationship between performance, cultural expression, community, and identity.

MUSIC 39B. Music and Healing. 3 Units.
To what extent can sound or music heal? This interdisciplinary course asks questions about music and healing around the world, drawing on the fields of medical ethnomusicology, medical anthropology, sound studies, and music therapy. Our case studies will be multi-sited, as we interrogate sound-based healings and healing sounds from diverse cross-cultural, global, and historic perspectives. No musical background is needed to interrogate these issues. We begin with the knowledge that the social, cultural, and political contexts where definitions of music and healing are created inform sound and its various and often conflicting interpretations and meanings.
Same as: HUMBIO 179B

MUSIC 40. Music History to 1600. 4 Units.
Pre- or corequisite: 21.

MUSIC 41. Music History 1600-1830. 4 Units.
Pre- or corequisite: 22.

MUSIC 42. Music History Since 1830. 4 Units.
Pre- or corequisite: 23.

MUSIC 60. How We Sing: The Voice, How It Functions, and the Singer's Mind. 1 Unit.
A weekly lecture course for singers, pianists, directors, conductors, and anyone who is interested in the art and craft of the voice. The voice is an instrument whose sounds are determined by its structure and the choices the singer makes. Students will learn how the voice works: the physiology of the instrument, breathing, resonance, and adjustments the singer makes to the instrument to produce sounds appropriate for various styles of vocal music. This course is intended for singers, pianists, conductors, musical directors and directors of groups that include singers, regardless of style or size of ensemble, with the goal of promoting excellent and healthy vocal performance. Ability to sing and/or read music is not required; this is not a voice class.
Same as: TAPS 60

MUSIC 65A. Voice Class I. 1 Unit.
Group (7 students to a section) beginning voice (A = level 1; B = level 2). May be repeated for credit. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and signup information. This class is closed by design. Please register on the waitlist and show up on the first day of class to receive a permission number for enrollment. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 65AS. Voice Class 1: Beginning Voice, Level 1. 1 Unit.
Group (6 students to a section) beginning voice. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.
Same as: Group

MUSIC 65AZ. Voice Class I. 0 Units.
Group (7 students to a section) beginning voice (A = level 1; B = level 2). There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and signup information. This class is closed by design. Please register on the waitlist and show up on the first day of class to receive a permission number for enrollment. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. May be repeated for credit for 0 unit and total completion allowed 99.

MUSIC 65B. Voice Class II. 1 Unit.
Group (7 students to a section) beginning voice for the non-major (A = level 1; B = level 2). May be repeated for credit. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and signup information. This class is closed by design. Please register on the waitlist and show up on the first day of class to receive a permission number for enrollment. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 65BS. Voice Class 2: Beginning Voice, Level 2. 1 Unit.
Group (6 students to a section) beginning voice (A = level 1; B = level 2). Complete registration form available for download at: http://tinyurl.com/q43c48g. May be repeated for credit 5 times. Zero unit enrollment option available with instructor permission. See website: (http://tinyurl.com/posmuhn) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.
Same as: Group

MUSIC 65BZ. Voice Class II. 0 Units.
Group (7 students to a section) beginning voice for the non-major (A = level 1; B = level 2). There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and signup information. This class is closed by design. Please register on the waitlist and show up on the first day of class to receive a permission number for enrollment. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. May be repeat for credit for 0 units and total completion of 99.

MUSIC 65SZ. Beginning Voice. 0 Units.
Beginning Voice (zero-unit option). Complete registration form available for download at: http://tinyurl.com/q43c48g. May be repeated 5 times. Zero unit enrollment option available with instructor permission. See website: (http://tinyurl.com/posmuhn) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 70. Stories and music of refugees. 3 Units.
As part of a creative project to gather cultural materials of people who inhabited the shores of the Mekong River, this course will combine ethnomusicology, anthropology, and cultural history with creative projects based upon gathering and compiling first hand materials through interviews and recordings of people around the Bay Area, and perhaps beyond, who were transplanted from their native homes in the Mekong region.

MUSIC 72A. Intermediate Piano Class. 1 Unit.
For intermediate students. May be repeated for credit a total of 14 times. Prerequisites: 12C or equivalent, audition. There is a fee for this class. Please visit https://music.stanford.edu/ensembles-lessons/applied-music-policies/applied-music-fees-and-policies for class fee information. This class is closed by design. Please register on the waitlist and meet with Dr. Zerlang in room 111, or contact him at timzer@stanford.edu or (650) 723-1549 to receive a permission number for enrollment. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 72AS. Intermediate Piano Class. 1 Unit.
Piano: Intermediate Level (Group; 10 students to a section) Class is closed by design. Please register on the wait-list and show up on the first day of class to receive a permission number for enrollment. Complete registration form available for download at: http://tinyurl.com/q43c48g. May be repeated for credit 5 times. Zero unit enrollment option available with instructor permission. See website: (http://tinyurl.com/posmuhn) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.
Same as: Group

MUSIC 72AZ. Intermediate Piano Class. 0 Units.
For intermediate students. Prerequisites: 12C or equivalent, audition. There is a fee for this class. Please visit https://music.stanford.edu/ensembles-lessons/applied-music-policies/applied-music-fees-and-policies for class fee information. This class is closed by design. Please register on the waitlist and show up on the first day of class to receive a permission number for enrollment. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 72C. Harpsichord Class. 1 Unit.
For beginning harpsichord students who have keyboard skills. May be repeated for credit a total of 14 times. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and signup information. Admission based on instructor consent. Contact instructor prior to enrolling to discuss availability. Class meets in Braun 201. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 72CZ. Harpsichord Class. 0 Units.
For beginning harpsichord students who have keyboard skills. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and signup information. Admission based on instructor consent. Contact instructor prior to enrolling to discuss availability. Class meets in Braun 201. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 72D. Jazz Piano Class. 1 Unit.
There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fee and signup information. To enroll, please register on the waitlist and contact the instructor (murlow@stanford.edu) to receive a permission number for enrollment. Priority to majors and jazz-ensemble participants. Zero unit enrollment option available with instructor permission. For prerequisites and full description, please visit https://music.stanford.edu/music-72d-introductory-jazz-piano. Course meets for one hour per week at the mutual convenience of the class participants, sometime on Wed 10-9 PM or Friday 10-3 PM. Exact time to be determined during first week of instruction. Course to be taught online when COVID restrictions are in effect. Live class meeting participation is encouraged, but all classes will be recorded for convenience. Student should have access to a piano to complete assignments. Students on campus who do not have such access, please contact instructor for further information.

MUSIC 72DZ. Jazz Piano Class. 0 Units.
There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fee and signup information. To enroll, please register on the waitlist and contact the instructor (murlow@stanford.edu) to receive a permission number for enrollment. Priority to majors and jazz-ensemble participants. Zero unit enrollment option available with instructor permission. For prerequisites and full description, please visit https://music.stanford.edu/music-72d-introductory-jazz-piano. Course meets for one hour per week at the mutual convenience of the class participants, sometime on Wed 10-9 PM or Friday 10-3 PM. Exact time to be determined during first week of instruction. Course to be taught online when COVID restrictions are in effect. Live class meeting participation is encouraged, but all classes will be recorded for convenience. Student should have access to a piano to complete assignments. Students on campus who do not have such access, please contact instructor for further information.

MUSIC 72G. Gu-Zheng Class. 1 Unit.
Introduction to Chinese music through learning how to play Gu-Zheng, a 21-stringed traditional Chinese instrument. The cultural, social, and historical significance of Gu-Zheng. 15 Gu-Zheng techniques, how to read Chinese music and Gu-Zheng notation, and two simple classic Gu-Zheng pieces. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fee information. All participants must enroll. May be repeated for credit a total of 14 times. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 72GZ. Gu-Zheng Class. 0 Units.
Introduction to Chinese music through learning how to play Gu-Zheng, a 21-stringed traditional Chinese instrument. The cultural, social, and historical significance of Gu-Zheng. 15 Gu-Zheng techniques, how to read Chinese music and Gu-Zheng notation, and two simple classic Gu-Zheng pieces. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fee information. All participants must enroll. May be repeated for credit a total of 14 times. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 72SZ. Intermediate Piano. 0 Units.
Intermediate Piano (zero-unit option). Zero unit enrollment option available with instructor permission. See website: (http://tinyurl.com/posmuhn) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 73. Intermediate Voice Class. 1 Unit.
For intermediate students. Admission by audition. May be repeated for credit a total of 14 times. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and signup information. This class is closed by design. Please register on the Axess waitlist and show up on the first day of class to receive a permission number for enrollment. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 73Z. Intermediate Voice Class. 0 Units.
For intermediate students. Admission by audition. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and signup information. This class is closed by design. Please register on the Axess waitlist and show up on the first day of class to receive a permission number for enrollment.

MUSIC 74AA. Introductory Violin Class Level 1: Beginner. 1 Unit.
Open to majors and non-majors. Focus is on beginning violin skills. Topics include brief history and physics of the instrument, and survey of repertoire. There is a fee for this class. Please visit http://music.stanford.edu for class fees and signup information. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 74AB. Introductory Violin Class Level 2: Intermediate. 1 Unit.
Open to majors and non-majors. Focus is on beginning violin skills. Topics include brief history and physics of the instrument, and survey of repertoire. There is a fee for this class. Please visit http://music.stanford.edu for class fees and signup information. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 74AC. Introductory Violin Class Level 3: Advanced Intermediate. 1 Unit.
Open to majors and non-majors. Focus is on beginning violin skills. Topics include brief history and physics of the instrument, and survey of repertoire. There is a fee for this class. Please visit http://music.stanford.edu for class fees and signup information. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 74AZ. Introductory Violin Class. 0 Units.
(74A.1=Level 1 beginners; 74A.2=Level 2 continuing) Open to majors and non-majors. Focus is on beginning violin skills. Topics include brief history and physics of the instrument, and survey of repertoire. There is a fee for this class. Please visit http://music.stanford.edu for class fees and signup information. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 74C. Classical Guitar Class. 1 Unit.
May be repeated for credit a total of 14 times. There is a fee for this class. Please visit https://music.stanford.edu/ensembles-lessons/applied-music-policies/applied-music-fees-and-policies for class fee information. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 74CZ. Classical Guitar Class. 0 Units.
There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and signup information. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 74D. Harp Class. 1 Unit.
May be repeated for credit a total of 14 times. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and signup information. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 74DZ. Harp Class. 0 Units.
There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and signup information. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 75B. Renaissance Wind Instruments Class. 1 Unit.
May be repeated for credit. There is a fee for this class. Please visit http://music.stanford.edu for class fees and signup information. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 75BZ. Renaissance Wind Instruments Class. 0 Units.
May be repeated for credit. There is a fee for this class. Please visit http://music.stanford.edu for class fees and signup information. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 76. Brass Instruments Class. 1 Unit.
May be repeated for credit a total of 14 times. There is a fee for this class. Please visit http://music.stanford.edu for class fees and signup information. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 76A. Tuba Class. 1 Unit.
Basic brass techniques as they apply to the tuba including warmups, breathing, and developing a daily routine. For beginning through intermediate players. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. May be repeated for credit.

MUSIC 76AZ. Tuba Class. 0 Units.
Basic brass techniques as they apply to the tuba including warmups, breathing, and developing a daily routine. For beginning through intermediate players. This course includes a fee of $175 for Music majors and minors, and $200 for non Music majors. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.May be repeated for credit for 0 unit.

MUSIC 76Z. Brass Instruments Class. 0 Units.
May be repeated for credit a total of 14 times. There is a fee for this class. Please visit http://music.stanford.edu for class fees and signup information. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 77. Percussion Class. 1 Unit.
May be repeated for credit a total of 14 times. There is a fee for this class. Please visit http://music.stanford.edu for class fees and signup information. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 77Z. Percussion Class. 0 Units.
There is a fee for this class. Please visit http://music.stanford.edu for class fees and signup information. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 80. Russian Modernists: Stravinsky & Shostakovich. 3 Units.
An examination and comparison of the lives and music of Igor Stravinsky and Dmitri Shostakovich, two of the most important Modernist composers of the 20th century. Although both composers were Russians closely affiliated with St. Petersburg, their lives diverged dramatically, with Stravinsky pursuing an international career in the West while Shostakovich spent his entire life in the USSR after the Russian Revolution. Major compositions, including symphonies, operas, chamber music, and keyboard works, will be covered, as well as key writings by and about both composers. The ability to read music, while beneficial, is not required. This course must be taken for a letter grade to be eligible for Ways credit.

MUSIC 101. Introduction to Creating Electronic Sounds. 3-4 Units.
Introduction to Creating Electronic Sounds enables students from a wide variety of backgrounds to cultivate conceptual and technical skills within the production of electronic sound and music composition. Lectures, readings, and group discussions will examine the evolution of recording technology and industrialization as it relates to music within historical, social, and contemporary contexts. Over the course of ten weeks students will develop and produce a portfolio of creative projects, wherein the integration of one's life experiences, imagination, and musical preferences are encouraged. In addition to regular coursework, students who choose to enroll in the class for 4 units will create and publish a 12-20 minute EP according to their own musical taste and technical abilities. This course is a prerequisite for MUSIC 192A: Foundations of Sound Recording Technology. Enrollment by permission number only. No previous experience required.

MUSIC 102. The Art of Music Video: Practice and Analysis. 2-4 Units.
Making and understanding music videos and other short audiovisual genres. This course is a critical and creative exploration of music and performing bodies in moving media. Listening/viewing includes music videos from the 1980s to today, along with musicals, dance, and opera on film, experimental film and video, and segments from feature film. We'll attend to both music and image, focusing on gesture, rhythm, and affect, and considering visual parameters like décor, lighting, texture, camera movement, and editing. Requirements include choosing and documenting a live performance; producing a short audiovisual work involving post-production; several short writing assignments; and weekly reading and viewing/listening assignments. No prerequisites; no previous videomaking experience required. This course must be taken for a minimum of 3 units for Ways-AII and a letter grade to be eligible for Ways-AII credit.
Same as: MUSIC 202

MUSIC 103. Live Listening Lab. 1 Unit.
The course is a one unit, discussion-based experience for non-musicians and musicians to explore live concerts, learn how to describe their listening experiences and reflect on their aesthetic preferences. In this course, we will attend live music concerts, some as a group and some individually, and reflect critically on those multi-modal sensory and cognitive experiences. Along the way, we will build our own listening toolkits and practice communicating our personal experiences. Students attend 5 course meetings and 5 concerts.
Same as: TAPS 130M

MUSIC 112. Film Scoring. 3 Units.
Through analysis and technical exercises that involve click tracks, spotting, scoring under dialogue and picture, and the creative use of overlap cues, among others, students will learn how to develop and synchronize an engaging music score that supports visual events. Prerequisite: The students will be expected to: Know how to read and write music; Know how to create scores using a music editor such as Finale, Sibelius, among others; Be familiar with MIDI sequencing; and, Be familiar with DAW such as Logic Pro X, Pro Tools, among others.

MUSIC 113. Introduction to Instrumental Composition. 2-3 Units.
Students compose weekly exercises to improve creative fluency and develop basic control of instruments. Audio examples of diverse compositional techniques are introduced, analyzed and emulated. Prerequisite: Music 19A or Instructor's permission.

MUSIC 115. Individual Undergraduate Projects in Jazz. 1-3 Unit.
Students may pursue individual projects in jazz performance, theory, history, etc. Prerequisite: Music 20A or permission of instructor.

MUSIC 118. Musics and Appropriation Throughout the World. 3 Units.
This course critically examines musical practices and appropriation through the amplification of intersectionality. We consider musics globally through recourse to ethnomusicological literature and critical race theories. Our approach begins from an understanding that the social and political contexts where musics are created, disseminated, and consumed inform disparate interpretations and meanings of music, as well as its sounds. Our goal is to shape our ears to hear the effects of slavery, colonialism, capitalism, nationalism, class, gender difference, militarism, and activism. We interrogate the process of appropriating musics throughout the world by making the power structures that shape privileges and exclusions audible.
Same as: AFRICAAM 218, CSRE 118D

MUSIC 120D. Jazz Improvisation. 1-3 Unit.
This class will focus on developing a deeper understanding of, and capacity for, jazz improvisation -- as it relates to individual expression as well as group interaction, communication, and cohesion. In-class soloing and ensemble playing; guided listening; ear training; internalization; personalization; and an awareness of the historical evolution of the jazz improvisational language will all be emphasized. The coursework will be primarily based on actual instrumental performance and practice; with an extensive listening list; and possibly some complementary composition, transcribing, self-evaluation; reading and writing assignments. Limited enrollment: Audition required. Students auditioning for Music 120D may submit the same audition material for consideration for Music 120E and vice-versa, but they are asked to make clear that they are applying for both (or, alternatively, for just one of the two, and if so, which one.) This class will be closed to enrollment, so students wishing to enroll must join the Axess waiting list. You will then be contacted with audition instructions. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 120DZ. Jazz Improvisation. 0 Units.
This class will focus on developing a deeper understanding of, and capacity for, jazz improvisation -- as it relates to individual expression as well as group interaction, communication, and cohesion. In-class soloing and ensemble playing; guided listening; ear training; internalization; personalization; and an awareness of the historical evolution of the jazz improvisational language will all be emphasized. The coursework will be primarily based on actual instrumental performance and practice; with an extensive listening list; and possibly some complementary composition, transcribing, self-evaluation; reading and writing assignments. Limited enrollment: Audition required. Students auditioning for Music 120D may submit the same audition material for consideration for Music 120E and vice-versa, but they are asked to make clear that they are applying for both (or, alternatively, for just one of the two, and if so, which one.) This class will be closed to enrollment, so students wishing to enroll must join the Axess waiting list. You will then be contacted with audition instructions. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 120E. Advanced Jazz Improvisation. 1-3 Unit.
This class will focus on broadening the participants' fluency with established improvisational languages, encouraging them to trust and develop their own unique improvisational voices, and deepening their capacities for integrating those individual voices into a collaborative musical framework -- working and playing together as a group, forging a collective identity, finding a band sound. In-class soloing and ensemble playing; guided listening; ear training; internalization; personalization; transcription, composition and arranging will all be emphasized. The coursework will be primarily based on actual instrumental performance and practice; with an extensive list of tracks to listen to and tunes to learn. The class will spend ample time focusing on the repertoire from the jazz "canon" (works by jazz masters such Ellington, Monk, Parker, Shorter, Mingus, Coltrane, Coleman, etc, as well as "standards" from the American popular songbook). Participants will be encouraged to submit for consideration by the group their own ideas for material, including, but not limited to, their own original compositions or arrangements. Limited enrollment: Audition required. Students auditioning for Music 120E may submit the same audition material for consideration for Music 120D and vice-versa, but they are asked to make clear that they are applying for both (or, alternatively, for just one of the two, and if so, which one.) All who are interested are strongly encouraged to apply, with the understanding that some priority may be given to those who have already completed Music 120D. This class will be closed to enrollment, so students who would like to enroll must join the Axess wait list. You will then be contacted with audition instructions.

MUSIC 122A. Counterpoint. 4 Units.
Analysis and composition of contrapuntal styles from the Renaissance and Baroque periods. Use of keyboard, ear training, and sight singing underlies all written work. Prerequisites: MUSIC 23 and MUSIC 24C; passing piano-proficiency examination; or, consent of instructor.

MUSIC 122B. Analysis of Tonal Music. 4 Units.
Complete movements, or entire shorter works of the 18th and 19th centuries, are analyzed in a variety of theoretical approaches. Prerequisites: MUSIC 23 and MUSIC 24C; passing piano-proficiency examination; or, consent of instructor.

MUSIC 122C. Introduction to 20th-Century Composition. 4 Units.
Contemporary works, with emphasis on music since 1945. Projects in free composition based on 20th-century models. Prerequisites: MUSIC 23 and MUSIC 24C; passing piano-proficiency examination; or, consent of instructor.

MUSIC 122D. Analysis for Performance. 2 Units.
Prerequisites: 23 or consent of instructor, successful completion of the ear-training and piano-proficiency examinations.

MUSIC 123A. Undergraduate Seminar in Composition: Rhythmic Design. 1-2 Unit.
Students compose weekly exercises to develop creative fluency and personal style. The course focuses on listening to examples, analysis and emulation of diverse compositional techniques involving rhythm.

MUSIC 123B. Undergraduate Seminar in Composition: Pitch Design. 1-2 Unit.
Students compose weekly exercises to develop creative fluency and personal style. The course focuses on listening to examples, analysis and emulation of diverse compositional techniques involving pitch.

MUSIC 123C. Undergraduate Seminar in Composition: World Music. 1-2 Unit.
The course introduces composition techniques used in traditional music from Bali, Central African Republic, India, and Japan, that the students use as inspiration to explore and develop their own composition techniques. Prerequisite: Music 19A or Instructor's permission.

MUSIC 124A. Songwriters Workshop. 1-2 Unit.
Laboratory for composers of any kind of vernacular music: singer-songwriters; folk singers; laptop dance music composers; rock and pop bands; rappers; writers of instrumentals or music with lyrics; solo artists and collaborators; etc. Compositional strategies for songwriting, overview of exemplars, discussion of aesthetic issues, and development of artistic personae. Weekly critique session for students and faculty to share work and offer feedback. Music theory and literacy not required. Aimed, however, at those with at least some experience as writers, whether casual or extensive. For bands at least half of members must be enrolled.

MUSIC 124B. Songwriters Workshop. 3 Units.
Laboratory for composers of any kind of vernacular music: singer-songwriters; folk singers; laptop dance music composers; rock and pop bands; rappers; writers of instrumentals or music with lyrics; solo artists and collaborators; etc. Compositional strategies for songwriting, overview of exemplars, discussion of aesthetic issues, and development of artistic personae. Weekly critique session for students and faculty to share work and offer feedback. Music theory and literacy not required. Aimed, however, at those with at least some experience as writers, whether casual or extensive. For bands at least half of members must be enrolled. Enrollment in 3-unit course is by permission of, and invites lessons with instructor.

MUSIC 125. Individual Undergraduate Projects in Composition. 1-3 Unit.
May be repeated for credit a total of 14 times. Prerequisites: Music123A and Music123B or Instructor's permission.

MUSIC 126A. Thoroughbass Accompaniment. 1-3 Unit.
The development of continuo techniques and skills for figured-bass realization. Performance and analysis of selected repertoire, using thoroughbass principles and exercises based on historical theoretical treatises. Prerequisite: 21.

MUSIC 127A. Instrumentation and Orchestration. 3 Units.
Individual instruments, instrumental groups within the orchestra, and combinations of groups. Arrangements from piano to orchestral music. Score analysis with respect to orchestration. Practical exercises using chamber ensembles and school orchestra. Prerequisite: 23.

MUSIC 127B. Advanced Orchestration. 3 Units.
Through analysis and writing exercises, students develop proficiency in advanced orchestration practices. The course covers techniques currently used in film scoring as well as form basis for new experimental orchestral composition.

MUSIC 127C. Band Arranging. 3 Units.
Develop skills and techniques related to arranging for marching and concert bands; emphasizes instrumentation, transposition, and voicing.

MUSIC 128. Stanford Laptop Orchestra: Composition, Coding, and Performance. 1-5 Unit.
Classroom instantiation of the Stanford Laptop Orchestra (SLOrk) which includes public performances. An ensemble of more than 20 humans, laptops, controllers, and special speaker arrays designed to provide each computer-mediated instrument with its sonic identity and presence. Topics and activities include issues of composing for laptop orchestras, instrument design, sound synthesis, programming, and live performance. May be repeated four times for credit. Space is limited; see https://ccrma.stanford.edu/courses/128 for information about the application and enrollment process. May be repeat for credit.
Same as: CS 170

MUSIC 129. Advanced Ear-Training/Musicianship. 1-2 Unit.
A course in advanced aural analysis and musicianship skills for students who have completed the Music 24 series. Topics of study include analysis by ear of large scale forms, chromatic or extended-tertian harmony, modulations to distantly related keys, chromatic or atonal melodies, modal harmony and melody, as well as alternative forms of aural analysis.

MUSIC 129K. Advanced Keyboard Musicianship. 1-2 Unit.
Score-reading at the keyboard, for pianists. Students will learn to read and reduce as necessary, score examples from a variety of ensembles, including music for strings, choir, winds, and orchestra. Practice reading associated clefs and transpositions will enable students to demonstrate short passages from ensemble repertoire effectively at the keyboard.

MUSIC 130A. Introduction to Conducting. 3 Units.
Baton techniques and rehearsal procedures. The development of coordination of the members of the body involved in conducting; fluency in beat patterns and meters; dynamics, tempi, cueing, and use of the left hand in conducting. Prerequisites: 122B and diagnostic musicianship exam given first day of class.

MUSIC 130B. Elementary Instrumental Conducting. 2 Units.
The theory, technique, and practice of instrumental conducting, with training in the art of physical gesture. Studies in clef reading, transposition, and structural analysis to develop the skills needed to read orchestral scores. Topics include baton technique; rehearsal procedure; working with soloists, singers, and composers; and conducting symphonic works as well as concertos, oratorio, opera, and Broadway musicals. Selected repertoire from the Baroque through contemporary periods will be studied and conducted in class. Prerequisite: MUSIC 130A or instructor's permission.

MUSIC 130C. Elementary Choral Conducting. 2 Units.
Techniques specific to the conducting of choral ensembles: warm-ups, breathing, balance, blend, choral tone, isolation principles, recitative conducting, preparation, and conducting of choral/orchestral works. Prerequisite: 130A.

MUSIC 132. Music Education: Then, Now, and Then Again. 3 Units.
Explores the presence and impact of music across a variety of educational settings, with a focus on the historical function of music education, the current role of music education, and potential future models of music education.
Same as: EDUC 132

MUSIC 133. Food, Text, Music: A Multidisciplinary Lab on the Art of Feasting. 3-5 Units.
Students cook a collection of unfamiliar recipes each week while learning about the cultural milieus in which they originated. The course focuses on the fourteenth and fifteenth centuries, a time of great banquets that brought together chefs, visual artists, poets, musicians, and dancers. Students read late-medieval cookbooks under the guidance of professional chefs, learn songs and poetry with the help of visiting performers, and delve into a burgeoning scholarly literature on food history and sensory experience. We will also study trade routes and food networks, the environmental impact of large-scale banquets, the science of food, and the politics of plenty. This course may count towards the Medieval component of the French major, and corresponds to DLCL 121, a course requirement for the Medieval Studies Minor. Students interested in applying for course must email the professor (jrodin@stanford.edu) by 20 September with a statement of up to 350 words that includes: (a) reasons for wanting to take the class; (b) relevant background in cooking/medieval studies/etc.; (c) stated commitment to attend all ten course meetings; and (d) any dietary restrictions/preferences.
Same as: FRENCH 166, FRENCH 266, FRENCH 366, MUSIC 333

MUSIC 136. Intermediate Conducting: Music Since 1900. 2 Units.
The art of reading and conducting scores from the Impressionist, late Romantic, and Modern periods to the present, with emphasis on orchestral and choral works that involve changing meters, advanced harmonic vocabulary, and modern instrumental and vocal practices. Topics include clef reading and transposition, baton technique, and rehearsal procedure. Prerequisite: MUSIC 130A, 130B, or 130C; or instructor's permission.

MUSIC 142K. Studies in Music of the Baroque: Handel the Cosmopolitan. 4-5 Units.
Music history seminar on the operatic, sacred, and instrumental works of G.F. Handel as examples of the diversity, cosmopolitanism, expression, formal and technical features, and social uses of music in the first half of eighteenth century. Traces Handel¿s career from his native Germany to an elite Roman circle of musical connoisseurs, and to the Italian opera company he founded in London and his transformation of Italian opera into a new genre of English oratorio. By analyzing Handel¿s works in context, we examine the aesthetic, harmonic, and dramatic principles of the major European Baroque art-music genres. Prerequisites: MUSIC 22, MUSIC 41. (WIM at 4-unit level only.).
Same as: MUSIC 242K

MUSIC 143J. Studies in Music of the Classical Period: Haydn and Mozart: Music in the Age of Enlightenment. 3-4 Units.
Music and Musicians in the Age of EnlightenmentnPrerequisites: MUSIC 22, MUSIC 41. (WIM at 4-unit level only.).
Same as: MUSIC 243J

MUSIC 144M. Robert Schumann and the Interpretation of Musical Romanticism. 3-4 Units.
The creative personality, compositions, and writings of Robert Schumann (1810-1856) as exemplars of musical Romanticism in early nineteenth century European culture. Musical "interpretation" explored through a writing focus and a performance focus. Weekly writing assignments interpret compositions as texts, performances, and cultural documents. Students study and interpret up to three works (solo piano, chamber music, art-songs) by Schumann and/or contemporary figures (Schubert, Mendelssohn, Chopin, Brahms, Clara Schumann) for in-class presentation and final lecture-recital. Prerequisites: Music 42, and Music 22 or equivalent (intermediate music theory), intermediate or higher performance ability in piano, strings, or voice. (WIM at 4-unit level only.).
Same as: MUSIC 244M

MUSIC 145K. Studies in Western Art Music Since 1900: Concepts of New Music. 4 Units.
A survey of the history of Western classical music in the twentieth century, concentrating on shifts in the concept of New Music in the first half of the century. The aim is twofold: to study in depth a representative selection of works and to develop a historiographical framework for that study. Relevant concepts to be examined include Expressionism, Neo-Classicism, New Objectivity, Serialism, Aleatoricism, and Minimalism -- all of them key terms used by music historians and critics to describe and delineate the multifaceted phenomenon of "New Music." Composers to be studied include Schoenberg, Stravinsky, Berg, Weill, Shostakovich, Reich and Glass, and others. Prerequisites: MUSIC 23, MUSIC 42. (WIM course for Music majors.).
Same as: MUSIC 245K

MUSIC 146M. New Keywords in African Sound. 3-4 Units.
This course identifies and considers new keywords for the study of contemporary African music and sound. Each week we will foster discussion around a keyword and a constellation of case studies. The sonic practices we will encounter range from South African house music to Ghanaian honk horns; from Congolese rumba bands to Tunisian trance singers; from listening to the radio in a Tanzanian homestead to making hip hop music videos on the Kenyan coast. By exploring the unexpected interconnections between contemporary African musical communities, we will discuss new keywords arising in current scholarship, including technologies like the amplifier and the hard drive, spaces like the studio and the city, and analytics like pleasure and hotness. We will also engage with established concepts for the study of postcolonial African cultures, including nationalism, cosmopolitanism, globalization, diaspora, and Pan-Africanism. This is a seminar-based course open to graduate students, upper level undergraduate students, and other students with consent of the instructor. Proficiency in music is not required. WIM at 4 units only.
Same as: AFRICAAM 146D, AFRICAST 146M, CSRE 146D, MUSIC 246M

MUSIC 146N. Transcultural Perspectives of South-East Asian Music and Arts. 2-4 Units.
This course will explore the links between aspects of South-East Asian cultures and their influence on modern and contemporary Western art and literature, particularly in France; examples of this influence include Claude Debussy (Gamelan music), Jacques Charpentier (Karnatak music), Auguste Rodin (Khmer art) and Antonin Artaud (Balinese theater). In the course of these interdisciplinary analyses - focalized on music and dance but not limited to it - we will confront key notions in relation to transculturality: orientalism, appropriation, auto-ethnography, nostalgia, exoticism and cosmopolitanism. We will also consider transculturality interior to contemporary creation, through the work of contemporary composers such as Tran Kim Ngoc, Chinary Ung and Tôn-Thât Tiêt. Viewings of sculptures, marionette theater, ballet, opera and cinema will also play an integral role. To satisfy a Ways requirement, this course must be taken for at least 3 units. In AY 2020-21, a letter grade or `CR¿ grade satisfies the Ways requirement. WIM credit in Music at 4 units and a letter grade.
Same as: COMPLIT 148, COMPLIT 267, FRENCH 260A, MUSIC 246N

MUSIC 147J. Studies in Music, Media, and Popular Culture: The Soul Tradition in African American Music. 3-4 Units.
1960s and 70s Black music, including rhythm and blues, Motown, Southern soul, funk, Philadelphia soul, and disco. Its origins in blues, gospel, and jazz to its influence on today's r&b, hip hop, and dance music. Soul's cultural influence and global reach; its interaction with politics, racism, gender, place, technology, and the economy. Synchronous and asynchronous remote learning, with class discussions, small-group activities, guest presenters, and opportunities for activism. Pre-/co-requisite (for music majors): MUSIC 22. (WIM at 4 units only.).
Same as: AFRICAAM 19, AMSTUD 147J, CSRE 147J, MUSIC 247J

MUSIC 147K. Studies in Music, Media, and Popular Culture: Music and Urban Film. 3-4 Units.
How music and sound work in urban cinema. What happens when music's capacity to transform everyday reality combines with the realism of urban films? Provides an introduction to traditional theories of film music and film sound; considers how new technologies and practices have changed the roles of music in film. Readings discuss film music, realistic cinema, urban musical practices and urban culture. Viewing includes action/adventure, Hindi film, documentary, film noir, hip hop film, the musical, and borderline cases by Jean-Luc Godard, Spike Lee, Wong Kar-Wai and Tsai Ming-Liang. Pre- or corequisite (for music majors): MUSIC 22. (WIM at 4 unit level only.).
Same as: CSRE 147D, MUSIC 247K

MUSIC 150P. The Changing World of Popular Music. 2 Units.
This course will cover changes in the business, economics, and practices of the popular music industry. It will provide a brief historical overview of the industry and its business models. The majority of the course will focus on the industry as it works today and on forces that are causing it to change rapidly. The course will feature guest artists and executives with current experience in the field, as well as project-based assignments designed to give students hands-on experience. Topics will include: economics and business models of commercial music business, music production, music distribution, marketing, leadership in the music industry and artist management.
Same as: ARTSINST 150

MUSIC 151B. Red Vest Band. 1 Unit.
A small ensemble of the Leland Stanford Junior University Marching Band open to members of the LSJUMB by audition and consent of instructor. Members perform at multiple Stanford Athletics events, multiple community events, and travel to some away and post-season games. Weekly rehearsals focus on introduction of new student arrangements and the LSJUMB's repertoire of rock, funk, and traditional styles. May be repeated for credit a total of 12 times.

MUSIC 151BZ. Red-Vest Band. 0 Units.
A small ensemble of the Leland Stanford Junior University Marching Band open to members of the LSJUMB by audition and consent of instructor. Members perform at multiple Stanford Athletics events, multiple community events, and travel to some away and post-season games. Weekly rehearsals focus on introduction of new student arrangements and the LSJUMB's repertoire of rock, funk, and traditional styles. May be repeated for credit a total of 12 times.

MUSIC 151C. Stanford University Ragtime Ensemble. 1 Unit.
Performance ensemble of twelve musicians (5 winds, 5 strings, drums, piano) playing repertoire by Scott Joplin and other ragtime composers. The make-up of the ensemble is based on the Red Back Book arrangements of Joplin rags for flute/piccolo, clarinet, cornet (trumpet), trombone, tuba, 2 violins, viola, cello, double bass, drums, and piano.

MUSIC 151CZ. Stanford University Ragtime Ensemble. 0 Units.
Performance ensemble of twelve musicians (5 winds, 5 strings, drums, piano) playing repertoire by Scott Joplin and other ragtime composers. The make-up of the ensemble is based on the Red Back Book arrangements of Joplin rags for flute/piccolo, clarinet, cornet (trumpet), trombone, tuba, 2 violins, viola, cello, double bass, drums, and piano.

MUSIC 151D. Orchestra Online. 1-2 Unit.
An inquiry into orchestral music, through videos, recordings, and readings, with live discussions with prominent individuals from the musical world. Topics may also include opera, musical theatre, and other non-orchestral aspects of music. All classes will be recorded and available to all participants in order to make it possible for anyone to take the course, even if they have a conflict with the meeting time or reside in a time zone that precludes them from participating in the live sessions.

MUSIC 151DZ. Orchestra Online. 0 Units.
An inquiry into orchestral music, through videos, recordings, and readings, with live discussions with prominent individuals from the musical world. Topics may also include opera, musical theatre, and other non-orchestral aspects of music. All classes will be recorded and available to all participants in order to make it possible for anyone to take the course, even if they have a conflict with the meeting time or reside in a time zone that precludes them from participating in the live sessions.

MUSIC 152B. Black Music Revealed: Black composers, performers, and themes from the 18th century to the present. 3 Units.
Online seminar on the achievements of Black composers and performers in ragtime, jazz, and classical music, from Chevalier de Saint-Georges, whose music influenced Mozart, and George Bridgetower, for whom Beethoven composed his "Kreutzer" Sonata, to Anthony Davis's opera "The Central Park Five". Students will examine issues of cultural borrowing in operas by Mozart and Verdi, and shows like Showboat and Porgy and Bess. Guest speakers will include composers and performers. Students will work together in groups to produce materials on course topics in coordination with the African American Museum & Library at Oakland. (Cardinal Course certified by the Haas Center).
Same as: CSRE 152B

MUSIC 153A. Network Performance Practice. 2-4 Units.
JackTrip software, developed at Stanford, provides the means for ultra-low-latency, uncompressed sound transmission for live music-making. Remote ensemble rehearsals, coaching, music lessons, jamming and concert broadcasting during the COVID-19 pandemic are making use of the technology. The open-source project has developed rapidly in the past 6 months, especially in its ability to support large ensembles of home-to-home connections. The course will cover recent features, history and theory of JackTrip and engage in a series of practical, participatory performance sessions. Students will learn the software and related network and audio principles with a focus on intuition building and ear training. Course participants will work from home and be able to use CCRMA facilities remotely. The course can be audited or coordinated with another course.
Same as: ARTSINST 141

MUSIC 153AZ. Network Performance Practice. 0 Units.
JackTrip software, developed at Stanford, provides the means for ultra-low-latency, uncompressed sound transmission for live music-making. Remote ensemble rehearsals, coaching, music lessons, jamming and concert broadcasting during the COVID-19 pandemic are making use of the technology. The open-source project has developed rapidly in the past 6 months, especially in its ability to support large ensembles of home-to-home connections. The course will cover recent features, history and theory of JackTrip and engage in a series of practical, participatory performance sessions. Students will learn the software and related network and audio principles with a focus on intuition building and ear training. Course participants will work from home and be able to use CCRMA facilities remotely. The course can be audited or coordinated with another course.

MUSIC 153B. Internet Ensemble Tech Force. 1 Unit.
This course inaugurates an Internet Ensemble Tech Force which is needed urgently worldwide and locally to support music ensembles going online. Calling it urgent is not an exaggeration. We can provide a valuable service and that's the purpose of the course. Course participants will quickly come up to speed on low-latency audio collaboration technology and will then pair with ensembles interested in using it. Ensemble rehearsals, coaching and concert broadcasting are planned for the quarter. 153B participants will work from home and be able to use CCRMA facilities remotely. The course can be audited or coordinated with another course. Let's help make group playing possible during this public health challenge.
Same as: ARTSINST 141B

MUSIC 154A. Sound Art I. 4 Units.
Acoustic, digital and analog approaches to sound art. Familiarization with techniques of listening, recording, digital processing and production. Required listening and readings in the history and contemporary practice of sound art. (lower level).
Same as: ARTSTUDI 131

MUSIC 154E. Creative Agency in the Pandemic World. 3 Units.
Distributed workshop for creative invention and artistic collaboration within radical pandemic constraints. Students imagine, design, and explore emergent creative strategies for art-making under quarantine conditions. Small art projects--in ANY artistic medium--will be made every two weeks, some collaborative. By reframing sub-optimal working conditions as super-optimal, participants create a modest canon of pieces that serve as a manual for sustaining creative vibrancy during stressful periods. Weekly synchronous conversation about artistic strategies and an overview of historical artistic constraints (both necessitated and voluntarily adopted); breakout group collaborations; consultations with professor; sharing of work; mutual critique, support, and mentorship.

MUSIC 155. Intermedia Workshop. 3-4 Units.
Students develop and produce intermedia works. Musical and visual approaches to the conceptualisation and shaping of time-based art. Exploration of sound and image relationship. Study of a wide spectrum of audiovisual practices including experimental animation, video art, dance, performance, non-narrative forms, interactive art and installation art. Focus on works that use music/sound and image as equal partners. Limited enrollment. Prerequisites: consent of instructors, and one of FILMPROD 114, ARTSTUDI 131, 138, 167, 177, 179, or MUSIC 123, or equivalent. May be repeated for credit.
Same as: ARTSTUDI 239, MUSIC 255

MUSIC 155A. Piano Literature. 1 Unit.
An exploration of the repertoire for piano and keyboards, providing experience with and context for this literature while engaging practical, technical and analytical features of the works. Each quarter will cover focused areas defined by time, place, composer, stylistic tradition, formal type, etc. Students will perform works in class, as well as listen to and compare performances through videos and recordings. Assignments include reading, listening, and a final project. Prerequisite: Private lesson proficiency level in piano, or consent of instructor.
Same as: MUSIC 255A

MUSIC 155AZ. Piano Literature. 0 Units.
An exploration of the repertoire for piano and keyboards, providing experience with and context for this literature while engaging practical, technical and analytical features of the works. Each quarter will cover focused areas defined by time, place, composer, stylistic tradition, formal type, etc. Students will perform works in class, as well as listen to and compare performances through videos and recordings. Assignments include reading, listening, and a final project. Prerequisite: Private lesson proficiency level in piano, or consent of instructor.

MUSIC 155S. String Literature. 1 Unit.
An exploration of the repertoire for stringed instruments, providing experience with and context for this literature while engaging practical, technical and analytical features of the works. Each quarter will cover focused areas defined by time, place, composer, stylistic tradition, formal type, etc. Students will perform works in class, as well as listen to and compare performances through videos and recordings. Assignments include reading, listening, and a final project. Prerequisite: Private lesson proficiency level in piano, or consent of instructor.
Same as: MUSIC 255S

MUSIC 156. "sic": Improvisation Collective. 1 Unit.
Small ensemble devoted to learning trans-idiomatic improvisation techniques and composing indeterminate pieces in a workshop setting. One major concert. Prerequisite: access to an instrument. Improvisational experience and conventional instrumental virtuosity not required. May be repeated for credit for a total of 3 times.

MUSIC 156Z. "sic": Improvisation Collective. 0 Units.
Small ensemble devoted to learning trans-idiomatic improvisation techniques and composing indeterminate pieces in a workshop setting. One major concert. Prerequisite: access to an instrument. Improvisational experience and conventional instrumental virtuosity not required. May be repeated for credit for a total of 3 times.

MUSIC 157. Cardinal Calypso--Steelpan Ensemble. 1 Unit.
This course introduces students to steelpan as an instrument and as a culture. Over the course of the year students will gain fundamental knowledge of the pitched percussion instrument, background knowledge of the culture of Trinidad and Tobago that created this instrument, and the opportunity to expand and share that knowledge through rehearsals, lecture topics/discussion, performances, and guest performers. Soca and Calypso music are genres of focus, but we will cover a diverse range of other genres as well.

MUSIC 157Z. Cardinal Calypso -- Steelpan Ensemble. 0 Units.
This course introduces students to steelpan as an instrument and as a culture. Over the course of the year students will gain fundamental knowledge of the pitched percussion instrument, background knowledge of the culture of Trinidad and Tobago that created this instrument, and the opportunity to expand and share that knowledge through rehearsals, lecture topics/discussion, performances, and guest performers. Soca and Calypso music are genres of focus, but we will cover a diverse range of other genres as well.

MUSIC 159. Early Music Singers. 1 Unit.
Small choir specializing in Medieval, Renaissance, and early Baroque vocal music. One major concert per quarter. May be repeated for credit for a total of 15 times. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 159J. Performance as Analysis: Late-Medieval Music in Action. 1-3 Unit.
This experimental course channels embodied musical knowledge into text-based analysis. Centered around a group of Italian manuscripts recently deposited at Stanford (the Burke Collection), Part I features an intensive period of workshops and rehearsals: working with members of Cut Circle (http://cutcircle.org) as well as specialists in computer science and art history, students prepare a concert to be held during Week 2 of the quarter. In Part II (Weeks 3--4) students perform "embodied analysis," channeling their experiences performing into deepening engagement with the repertoire. Regular meetings conclude after Week 5; a paper is due in Week 7. Prerequisites: good sight-singing skills; at least one quarter's experience in MUSIC 165 (Chamber Chorale) or an ensemble of a similar caliber. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University. All meetings at Green Library Rotunda except Weeks 3-5 meetings which will be in Braun 131. Week 1: Mon 6 January: 4:30 - 7:00; Wed 8 January: 4:30 - 7:00; Fri 10 January; Sat 11 and Sun 12 January: 2:30 - 6pm; Week 2: Tues 14 January: 4:30 - 7:00; Wed 15 January: 5:30pm call for 7:30p concert; Weeks 3-5: Tues/Thurs, 3:00-4:30, Braun 131; Weeks 6-10: No class meeting.

MUSIC 159Z. Early Music Singers. 0 Units.
Small choir specializing in Medieval, Renaissance, and early Baroque vocal music. One major concert per quarter. May be repeated for credit for a total of 15 times for 0 unit. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 160. Stanford Symphony Orchestra. 1 Unit.
Large symphony orchestra (ca. 100 members) that rehearses two evenings per week (M/Th) and performs repertoire primarily from the Classical Period to the present. Usually prepares 1-2 programs per quarter, and presents 2-3 performances each quarter in Bing Concert Hall. Enrollment based on audition; for audition information, please refer to the Stanford Orchestra website at https://web.stanford.edu/group/sso/cgi-bin/orchestras/how-to-join/auditions/. May be taken for credit up to 15 times. Zero-unit enrollment option (MUSIC 160Z) available with instructor permission. See website (orchestra.stanford.edu) for further information. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 160A. Stanford Philharmonia. 1 Unit.
Chamber orchestra (ca. 45 members) that rehearses one evening per week (Tu) and performs repertoire primarily from the Baroque Period to the present. Usually prepares 1-2 programs per quarter, and presents 1-2 performances each quarter in Bing Concert Hall. Enrollment based on audition; for audition information, please refer to the Stanford Orchestra website at https://web.stanford.edu/group/sso/cgi-bin/orchestras/how-to-join/auditions/. May be taken for credit up to 15 times. Zero-unit enrollment option (MUSIC 160AZ) available with instructor permission. See website (orchestra.stanford.edu) for further information. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 160AZ. Stanford Philharmonia. 0 Units.
Chamber orchestra (ca. 45 members) that rehearses one evening per week (Tu) and performs repertoire primarily from the Baroque Period to the present. Usually prepares 1-2 programs per quarter, and presents 1-2 performances each quarter in Bing Concert Hall. Enrollment based on audition; for audition information, please refer to the Stanford Orchestra website at https://web.stanford.edu/group/sso/cgi-bin/orchestras/how-to-join/auditions/. May be taken for credit up to 15 times. Zero-unit enrollment option (MUSIC 160AZ) available with instructor permission. See website (orchestra.stanford.edu) for further information. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 160B. Stanford New Ensemble. 1 Unit.
Performing compositions of the 20th century, recent works of this century, and new works by Stanford faculty and student composers. Musicians collaborate with composers and artists visiting and performing at Stanford. One concert per quarter. Admission and enrollment based on audition. For audition and contact information, please refer to the SSO/SPO/SNE website at (http://www.stanford.edu/group/sso/cgi-bin/wordpress/member-login/). All participants must register. May be repeated for credit a total of 14 times. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 160BZ. Stanford New Ensemble. 0 Units.
Performing compositions of the 20th century, recent works of this century, and new works by Stanford faculty and student composers. Musicians collaborate with composers and artists visiting and performing at Stanford. One concert per quarter. Admission and enrollment based on audition. For audition and contact information, please refer to the SSO/SPO/SNE website at (http://www.stanford.edu/group/sso/cgi-bin/wordpress/member-login/). All participants must register. May be repeated for credit a total of 14 times. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 160C. Stanford Baroque Soloists. 1 Unit.
Elite string group focusing on chamber music of the Baroque era, c. 1600-1750. Solo & trio sonatas for your instrument, quartet music from the pre-history of the string quartet. Coaching will emphasize leadership and ensemble techniques, intonation and blend, particulars of seventeenth & eighteenth century notation & performance practice. Modern instruments, modern pitch, baroque bows are available. Limited enrollment, admission by audition. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. Contact instructor for audition and enrollment information: apmartin@stanford.edu. May be repeated for credit for total completion of 15 and total 15 units. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 160CZ. Stanford Baroque Soloists. 0 Units.
Elite string group focusing on chamber music of the Baroque era, c. 1600-1750. Solo & trio sonatas for your instrument, quartet music from the pre-history of the string quartet. Coaching will emphasize leadership and ensemble techniques, intonation and blend, particulars of seventeenth & eighteenth century notation & performance practice. Modern instruments, modern pitch, baroque bows are available. Limited enrollment, admission by audition. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. Contact instructor for audition and enrollment information: apmartin@stanford.edu. May be repeated for credit for total completion of 15 and total 15 units. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 160S. Stanford Summer Orchestra. 1 Unit.
See website for details: https://music.stanford.edu/academic-programs/summer-studies-stanford-music/summer-session-ensembles-chorus-and-symphony. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 160SZ. Summer Orchestra. 0 Units.
See website for details: https://music.stanford.edu/academic-programs/summer-studies-stanford-music/summer-session-ensembles-chorus-and-symphony. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 160Z. Stanford Symphony Orchestra. 0 Units.
Large symphony orchestra (ca. 100 members) that rehearses two evenings per week (M/Th) and performs repertoire primarily from the Classical Period to the present. Usually prepares 1-2 programs per quarter, and presents 2-3 performances each quarter in Bing Concert Hall. Enrollment based on audition; for audition information, please refer to the Stanford Orchestra website at https://web.stanford.edu/group/sso/cgi-bin/orchestras/how-to-join/auditions/. May be taken for credit up to 15 times. Zero-unit enrollment option (MUSIC 160Z) available with instructor permission. See website (orchestra.stanford.edu) for further information. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 161A. Stanford Wind Symphony. 1 Unit.
40- to 50-member ensemble performing transcriptions of symphonic music, brass band music, and repertoire composed specifically for symphonic band. One concert per quarter. May be repeated for credit a total of 14 times. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 161AZ. Stanford Wind Symphony. 0 Units.
40- to 50-member ensemble performing transcriptions of symphonic music, brass band music, and repertoire composed specifically for symphonic band. One concert per quarter. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 161B. Jazz Orchestra. 1 Unit.
Jazz Orchestra will begin a hybrid approach for the upcoming Fall Quarter. The first four weeks will be conducted in a virtual format, and will be dedicated to the production of a virtual recording. Weekly virtual meetings either as a group, or section within the group, will serve to discuss, prepare, and evaluate selections for the recording assignments. In-person sectional rehearsals could resume when appropriate to university Covid-19 protocols and necessary on an artistic and preparatory basis.

MUSIC 161BZ. Jazz Orchestra. 0 Units.
Jazz Orchestra will begin a hybrid approach for the upcoming Fall Quarter. The first four weeks will be conducted in a virtual format, and will be dedicated to the production of a virtual recording. Weekly virtual meetings either as a group, or section within the group, will serve to discuss, prepare, and evaluate selections for the recording assignments. In-person sectional rehearsals could resume when appropriate to university Covid-19 protocols and necessary on an artistic and preparatory basis.

MUSIC 161D. Stanford Brass Ensemble. 1 Unit.
Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. Performance of works for full brass choir and for smaller ensembles of brass instruments. Once weekly rehearsals. May be repeated for credit. Prerequisite: audition and consent of instructor. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 161DZ. Stanford Brass Ensemble. 0 Units.
Performance of works for full brass choir and for smaller ensembles of brass instruments. Once weekly rehearsals. May be repeated for credit. Prerequisite: audition and consent of instructor. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 161E. Stanford Afro-Latin Jazz Orchestra. 1 Unit.
Ensemble dedicated to the performance, interpretation and study of Afro-Latin music and its fusion with North American jazz. Repertoire includes the music of Brazil, Cuba, Dominican Republic, Puerto Rico, Peru and Argentina, as well as the United States. Idioms studied include Latin Jazz, Danzon, Son Montuno, Samba, Bossa, Traditional and Modern Salsa, Timba, Lando, and Candombe. African roots of the music are also presented including songs and rhythms from the Lucumi and Arara traditions. Focus is placed on learning rhythms, associated syncopations and also clave phrasing. One weekly rehearsal and a concert are required per quarter. Other playing opportunities available at the discretion of the group. Regular openings for brass/wind players, drummers, percussionists, pianists, bassists, and vocalists. Guest openings on violin, guitar and vibraphone. Inclusion of other instruments at the discretion of the director. Members should have basic reading ability and some related ensemble experience (e.g, jazz band). Ability to read and play complex syncopations are mandatory. Percussionists with experience in bongo, congas, timbales and pandeiro desired. Vocalists with fluency or exposure to Spanish and/or Portuguese also preferred. May be repeat for credit. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University. While COVID restrictions are in effect, class will be a mixture of live sectionals, interactive sessions over Zoom and Jacktrip, and a possible live stream concert.

MUSIC 161EZ. Stanford Afro-Latin Jazz Orchestra. 0 Units.
Ensemble dedicated to the performance, interpretation and study of Afro-Latin music and its fusion with North American jazz. Repertoire includes the music of Brazil, Cuba, Dominican Republic, Puerto Rico, Peru and Argentina, as well as the United States. Idioms studied include Latin Jazz, Danzon, Son Montuno, Samba, Bossa, Traditional and Modern Salsa, Timba, Lando, and Candombe. African roots of the music are also presented including songs and rhythms from the Lucumi and Arara traditions. Focus is placed on learning rhythms, associated syncopations and also clave phrasing. One weekly rehearsal and a concert are required per quarter. Other playing opportunities available at the discretion of the group. Regular openings for brass/wind players, drummers, percussionists, pianists, bassists, and vocalists. Guest openings on violin, guitar and vibraphone. Inclusion of other instruments at the discretion of the director. Members should have basic reading ability and some related ensemble experience (e.g, jazz band). Ability to read and play complex syncopations are mandatory. Percussionists with experience in bongo, congas, timbales and pandeiro desired. Vocalists with fluency or exposure to Spanish and/or Portuguese also preferred. May be repeat for credit. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University. While COVID restrictions are in effect, class will be a mixture of live sectionals, interactive sessions over Zoom and Jacktrip, and a possible live stream concert.

MUSIC 161F. Ottoman Music ensemble. 1 Unit.
Stanford's Ottoman Music Ensemble introduces select music played in the present day that hearkens back to musical practices from diverse communities of Ottoman Constantinople or Istanbul. Much of this music has now fallen under the guise of Turkish art, folk, or classical music. Through oral transmission and collective practice, we will attune our voices, instruments, and ears to hear and play select Ottoman pieces. Ensemble members will additionally be introduced to the microtonal (makam) music theory system and to the arts of solo improvisation (taksim) during the course. No previous experience required. The course culminates in a final end-of-quarter concert.

MUSIC 161FZ. Ottoman Music Ensemble. 0 Units.
Stanford's Ottoman Music Ensemble introduces select music played in the present day that hearkens back to musical practices from diverse communities of Ottoman Constantinople or Istanbul. Much of this music has now fallen under the guise of Turkish art, folk, or classical music. Through oral transmission and collective practice, we will attune our voices, instruments, and ears to hear and play select Ottoman pieces. Ensemble members will additionally be introduced to the microtonal (makam) music theory system and to the arts of solo improvisation (taksim) during the course. No previous experience required. The course culminates in a final end-of-quarter concert.

MUSIC 162. Symphonic Chorus. 1 Unit.
180- to 200-voice choral ensemble, performing major choral masterworks with orchestra. One concert per quarter. May be repeated for credit a total of 14 times. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 162Z. Symphonic Chorus. 0 Units.
180- to 200-voice choral ensemble, performing major choral masterworks with orchestra. One concert per quarter. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 163. Memorial Church Choir. 1 Unit.
Official choir of Memorial Church, furnishing music for Sunday services and special occasions in the church calendar. May be repeated for credit a total of 14 times. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 163Z. Memorial Church Choir. 0 Units.
Official choir of Memorial Church, furnishing music for Sunday services and special occasions in the church calendar. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 165. Chamber Chorale. 1 Unit.
Select 24-voice choral ensemble, specializing in virtuoso choral repertoire from all periods of Western art music. Annual touring commitment required. May be repeated for credit a total of 14 times. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 165Z. Chamber Chorale. 0 Units.
Select 24-voice choral ensemble, specializing in virtuoso choral repertoire from all periods of Western art music. Annual touring commitment required. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 167. University Singers. 1 Unit.
Select, 50-voice choral ensemble, performing choral repertoire from all periods of Western art music. May be repeated for credit a total of 14 times. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 167S. Summer Chorus. 1 Unit.
80- to 100-voice non-auditioned ensemble, performing major choral masterworks and choral repertoire from all periods of Western art music. For details see: https://music.stanford.edu/academic-programs/summer-studies-stanford-music/summer-session-ensembles. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. May be repeated for credit for a total of 0 (zero) unit. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 167SZ. Summer Chorus. 0 Units.
80- to 100-voice non-auditioned ensemble, performing major choral masterworks and choral repertoire from all periods of Western art music. For details see: https://music.stanford.edu/academic-programs/summer-studies-stanford-music/summer-session-ensembles. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. May be repeated for credit for a total of 0 (zero) unit. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 167Z. University Singers. 0 Units.
Select, 50-voice choral ensemble, performing choral repertoire from all periods of Western art music. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 169. Stanford Taiko. 1 Unit.
Select 15- to 18-member North American taiko ensemble, performing all-original repertoire for Japanese drums. Multiple performances in Winter and Spring quarters, also touring; instrument construction and maintenance. Admission by audition in Autumn Quarter only. May be repeated for credit a total of 14 times. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 169Z. Stanford Taiko. 0 Units.
Select 15- to 18-member North American taiko ensemble, performing all-original repertoire for Japanese drums. Multiple performances in Winter and Spring quarters, also touring; instrument construction and maintenance. Admission by audition in Autumn Quarter only. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 170. Collaborative Piano. 1 Unit.
Performance class in a workshop setting, exploring the art of collaboration with other musicians. Practical techniques will be addressed in highly varied repertoire. Admission is by audition only. Private-lesson proficiency level in piano is a prerequisite.

MUSIC 171. Chamber Music. 1 Unit.
Admission based on audition. Placements according to availability. 3 hr/weekly time commitment minimum. (Two hours of in-person or remote ensemble rehearsal plus one-hour remote coaching from Music department faculty.) Classical string quartets and piano/string groups supervised by the SLSQ. All participants must enroll. Zero unit enrollment option available with instructor permission. See website for policy, procedure, and audition sign up: http://music.stanford.edu/. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 171Z. Chamber Music. 0 Units.
Admission based on audition. Placements according to availability. 3 hr/weekly time commitment minimum. (Two hours of in-person or remote ensemble rehearsal plus one-hour remote coaching from Music department faculty.) Classical string quartets and piano/string groups supervised by the SLSQ. All participants must enroll. Zero unit enrollment option available with instructor permission. See website for policy, procedure, and audition sign up: http://music.stanford.edu/. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 172A. Piano. 1-3 Unit.
Private lessons and group master class weekly. May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 172B. Organ. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 172C. Harpsichord. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 172D. Jazz Piano. 1-3 Unit.
Admission is by audition and/or invitation only; priority to majors and jazz-ensemble participants. All participants must enroll. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. Zero unit enrollment option available with instructor permission. May be repeated for credit a total of 14 times. Lessons meet for one hour per week at the mutual convenience of the instructor and student. Exact time to be determined during the first week of classes. Course to be taught online when COVID restrictions are in effect as a live private interactive session. Student should have access to a piano during the lesson. Students on campus who do not have such access,nplease contact instructor for further information.

MUSIC 172E. Fortepiano. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. edit Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 172F. Carillon. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 172G. Gu-Zheng. 1-3 Unit.
Private lessons weekly. May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 173. Voice. 1-3 Unit.
Private lessons and group master classes weekly. May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 174A. Violin. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 174B. Viola. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 174C. Violoncello. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 174D. Contrabass. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 174E. Viola Da Gamba. 1-3 Unit.
Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 174F. Classical Guitar. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 174G. Harp. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 174H. Baroque Violin. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 174I. Jazz Bass. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 174J. Jazz & Contemporary Guitar. 1-3 Unit.
An application of the performance techniques developed by the innovative, genius, and radical guitarists from 1930 to 2020. Improvising, comping, reading, repertoire, and technique will be studied in depth. Rhythm styles, the application of modern theory, transcribing solos, and chord melody arranging are developed through the course of study. May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 175A. Flute. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 175B. Oboe. 1-3 Unit.
May be repeated for credit a total of 15 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 175C. Clarinet. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 175D. Bassoon. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 175E. Recorder/Early Winds. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 175F. Saxophone. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 175G. Baroque Flute. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 175H. Jazz Saxophone. 1-3 Unit.
May be repeated for credit a total of 15 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 176A. French Horn. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 176B. Trumpet. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 176C. Trombone. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 176D. Tuba. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 176E. Jazz Trumpet. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 177. Percussion. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 177A. Drum Set Lessons. 1-3 Unit.
These lessons will be geared toward the individual student's desires and needs. All levels are welcome, but students should contact instructor to set up initial meeting, prior to enrolling in the course. Students will explore drumset technique, coordination, reading and a study various styles including, Jazz, Rock, R&B, Blues, Latin and Brazilian music. Students will use different texts as needed. These texts may include: Syncopation by Ted Reed, Modern Reading Text in 4/4 by Louis Bellson, A Funky Primer by Charles Dowd, Advanced Techniques for the Modern Drummer by Jim Chapin, and others. Students will also use material created by David for his classes "Around the World on a Drumset" and "Chart Reading Demystified." These lessons are designed to be both fun and challenging. Students will play along with recordings and are encouraged to bring in recordings of music that they enjoy. May be repeated for credit a total of 15 times. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 179Z. Applied Music Private Lessons. 0 Units.
Students enroll in appropriate instructor section for private instrumental/vocal lessons using this zero unit enrollment option. Available only with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information.

MUSIC 181. Jazz Combos. 1 Unit.
Admission based on audition. These small jazz ensembles meet weekly and typically include coaching, one masterclass and one performance per quarter. May be repeated for credit. All participants must enroll. Zero unit enrollment option available with instructor permission. See website for policy, procedure, and audition information: https://music.stanford.edu/stanford-jazz-combos.

MUSIC 181Z. Jazz Combo. 0 Units.
Admission based on audition. These small jazz ensembles meet weekly and typically include coaching, one masterclass and one performance per quarter. May be repeated for credit. All participants must enroll. Zero unit enrollment option available with instructor permission. See website for policy, procedure, and audition information: https://music.stanford.edu/stanford-jazz-combos.

MUSIC 182. Diction for Singers. 1 Unit.
The international phonetic alphabet and its application to German, French, and Italian vocal literature. Open also to pianists interested in vocal coaching and choral conducting.

MUSIC 183A. German Art Song Interpretation. 1 Unit.
By audition only. For advanced singers and pianists as partners. Performance class in a workshop setting. Composers include Beethoven, Schubert, Wolf and Strauss. May be repeated for credit a total of 2 times. Enrollment limit: 20 (ten singers maximum). Prerequisite: consent of instructor. Recommended prerequisite: 170 (pianists) or 182 (singers).

MUSIC 183B. French Art Song Interpretation. 1 Unit.
By audition only. For advanced singers and pianists as partners. Performance class in a workshop setting. Composers include Fauré, Debussy, Ravel and Poulenc. May be repeated for credit a total of 2 times. Enrollment limit: 20 (ten singers maximum). Prerequisite: consent of instructor. Recommended prerequisite: 170 (pianists) or 182 (singers).

MUSIC 183C. Interpretation of Musical Theater Repertoire. 1-2 Unit.
By audition only: Contact instructor prior to enrolling (mlcats@stanford.edu). Ability to read music expected, but students with experience singing in musical theater can be accepted. For singers and pianists as partners. Performance class in a workshop setting along with lecture/discussion of important eras of musical theater history. Composers include Kern, Porter, Gershwin, Rodgers, Sondheim, Lloyd Weber, Jason Robert Brown and others. May be repeated for credit a total of 2 times. Enrollment limit: 20 (ten singers maximum). Prerequisite: consent of instructor. Recommended prerequisite: 170 (pianists).
Same as: TAPS 183C

MUSIC 183CZ. Interpretation of Musical Theater Repertoire. 0 Units.
By audition only: Contact instructor prior to enrolling (mlcats@stanford.edu). Ability to read music expected, but students with experience singing in musical theater can be accepted. For singers and pianists as partners. Performance class in a workshop setting along with lecture/discussion of important eras of musical theater history. Composers include Kern, Porter, Gershwin, Rodgers, Sondheim, Lloyd Weber, Jason Robert Brown and others. May be repeated for credit a total of 2 times. Enrollment limit: 20 (ten singers maximum). Prerequisite: consent of instructor. Recommended prerequisite: 170 (pianists).

MUSIC 183D. Musical Theater. 1-3 Unit.
In this workshop we will traverse the landscape of world of Musical Theater. It will serve as an introduction for the beginning actor and singer, and expand the more experienced performer's range in this genre. The world of Musical Theater is filled with stories of love, passion, joy, violence, heartbreak and rage. The class will include an introduction to vocal and movement skills for musical theater, beginning with exercises to build an ensemble and encourage a sense of play and relaxation in supportive environment. Our class must be a place where everyone feels safe. As ensemble members, we will be responsible for each other in this environment. nStudents will choose one solo song, and perform in a group number from this exciting discipline. The instructor will work with the actors on technique, utilization of action, specificity of language, personalization, and emotional truth. A professional coach from the theater community will conduct vocal coaching. Physical warm-ups and choreography will be suited for both the dancer and non-dancer.nThe class will culminate in the last week with live performance for friends and family.nSTUDENTS ARE ENCOURAGED TO BRING THEIR OWN SUGGESTIONS. (Isn't there a role you've always wanted to sing?)nRequired text: Broadway Musicals Show by Show: Sixth Edition - Stanley Green; Paperback.
Same as: TAPS 115

MUSIC 183E. Singing for Musicals. 2 Units.
Do you love singing in musicals? Do you know how to sing in musicals? This course provides training in vocal technique and acting for students interested in performing musical theater. Students will learn about the physical process of singing, including posture, breath support, and vocal exercises. They will incorporate vocal technique with the study of phrasing in different styles of Broadway repertoire, and apply both to the art of acting the song. Each student will work on solo selections and ensembles, and sing in most classes. Through understanding vocal technique, students will become more confident and joyful performers. The course will culminate in a final public workshop performance. Admission to course by audition or permission of the instructor. Due to the COVID-19 situation, the Singing for Musicals class will be taught online. As this can pose a problem with students in various time zones and internet arrangements, the instructor will contact all waitlisted students with more detailed information regarding video auditions and a questionnaire.
Same as: TAPS 183E

MUSIC 184A. Editing and Performing Early Music. 1-3 Unit.
This course is a practical workshop in early music vocal repertoire. The main focus of this course is to use original source material to explore editorial practice. Having prepared the score, students learn to perform the piece from an historically informed performance practice point of view. In addition to broadening the student's knowledge of vocal repertoire, the following skills are developed: text preparation, foreign language translation and diction; rehearsal for performance and/or recording. Enrollment by audition only. Prerequisite: vocal or instrumental instruction, as the class is open to singers or collaborative artists. May be repeated for credit a total of 4 times. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 184AZ. Editing and Performing Early Music. 0 Units.
This course is a practical workshop in early music vocal repertoire. The main focus of this course is to use original source material to explore editorial practice. Having prepared the score, students learn to perform the piece from an historically informed performance practice point of view. In addition to broadening the student's knowledge of vocal repertoire, the following skills are developed: text preparation, foreign language translation and diction; rehearsal for performance and/or recording. Enrollment by audition only. Prerequisite: vocal or instrumental instruction, as the class is open to singers or collaborative artists. All participants must enroll. May be repeated for a total of 4 times. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 184B. Topics on the Musical Stage. 1-3 Unit.
This course is a practical workshop in vocal repertoire for the stage. Each quarter's offering emphasizes a specific genre or period, therefore the course can be repeated with permission of the instructor. In addition to broadening the student's knowledge of vocal repertoire, the following skills are developed: text preparation, foreign language translation and diction; rehearsal etiquette for performance and/or recording. Enrollment by audition only. Prerequisite: vocal or instrumental instruction, as the class is open to singers or collaborative artists. May be repeated for credit a total of 4 times. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 184BZ. Topics on the Musical Stage. 0 Units.
This course is a practical workshop in vocal repertoire for the stage. Each quarter's offering emphasizes a specific genre or period, therefore the course can be repeated with permission of the instructor. In addition to broadening the student's knowledge of vocal repertoire, the following skills are developed: text preparation, foreign language translation and diction; rehearsal etiquette for performance and/or recording. Enrollment by audition only. Prerequisite: vocal or instrumental instruction, as the class is open to singers or collaborative artists. May be repeated for credit a total of 4 times. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 184C. Dramatic Vocal Arts: Songs and Scenes Onstage. 1-2 Unit.
Studies in stagecraft, acting and performance for singers, culminating in a public performance. Repertoire to be drawn from the art song, opera, American Songbook and musical theater genres. Enrollment by audition only. May be repeated for credit a total of 4 times. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.
Same as: TAPS 184C

MUSIC 184CZ. Dramatic Vocal Arts: Songs and Scenes Onstage. 0 Units.
Studies in stagecraft, acting and performance for singers, culminating in a public performance. Repertoire to be drawn from the art song, opera, American Songbook and musical theater genres. Enrollment by audition only. May be repeated for credit a total of 4 times. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure. By enrolling in this course you are giving consent for the video and audio recording and distribution of your image and performance for use by any entity at Stanford University.

MUSIC 184D. Creating a Musical. 4 Units.
This practical, hands on class in the making of musicals explores all aspects of creating musical theater, including writing, composing, producing, directing, designing, and casting this most American of theater genres. The class will include direct engagement and discussion with the producers and artists of TheatreWorks Silicon Valley's production of The Bridges of Madison County, book by Marsha Norman and music by Jason Robert Brown, including off-campus field trip to rehearsal of the show. The class will explore the creation of several renowned musicals including Stephen Sondheim's Merrily We Roll Along, and will include live Skype interviews with Broadway composers Andrew Lippa (The Wild Party), Paul Gordon (Jane Eyre), and David Hein and Irene Sankoff (Come from Away, winner of the 2017 Drama Desk Award for Best Musical). The quarter will culminate in the creation, production, and performance of several mini-musicals created by members of the class. Instructor Robert Kelley is the Founding Artistic Director of TheatreWorks Silicon Valley, where he has directed 170 productions, including many world and regional premieres.
Same as: TAPS 177C

MUSIC 184E. Musical Theater Dance Styles. 1 Unit.
Students will be able to demonstrate period specificity, character of style through learning different musical theater dances from the early 20th C.to the present. ALL students will participate in an end of quarter showing of the choreography developed and composed in class. Class will be supplemented with the occasional guest, DJ accompaniment and video viewing.
Same as: DANCE 102

MUSIC 184F. Introduction to Theater Sound Design. 4 Units.
This course explores the history and aesthetics,of theatre sound design, and provides the basic technical knowledge to create your own work. Learn how to analyze a script for sound design elements, gain practical knowledge of microphones and loudspeakers, sound editing and cueing software, and put your knowledge to work creating your own design.
Same as: TAPS 138

MUSIC 186B. American Song in the 20th Century and after. 3-4 Units.
Critical and creative exploration of song in the Americas. About twenty-five key examples will guide discussion of the interactions between words, music, performance and culture. Weekly listening, reading and assignments will be organized around central themes: love, sex and romance; war and politics; labor and money; place; identity; society and everyday life. Genres include art song; blues, gospel, jazz and country; pop, soul, rock and hip-hop; bossa nova, nueva canción and salsa; electronic and experimental. Takehome and in-class assignments will include critical and creative writing, and music composition, production and performance; final projects may emphasize any of the above.
Same as: AMSTUD 186B, MUSIC 286B

MUSIC 186E. Sounds of Islam. 3 Units.
This course explores diverse intersections of sound and Islam in religious and secular contexts throughout the world. From studying Islamic philosophies about the art of listening to interrogating Muslim hip hop, we examine how sonic practices simultaneously reflect and shape different Muslim identities globally. Issues of nationalism, war and trauma, class, race and ethnicity, gender and sexualities, colonialism, social in/justice, and migration will remain central to our exploration of spirituality, secularism, piety, and religiosity for the individuals and communities making or listening to sounds of Islam.
Same as: RELIGST 156X

MUSIC 187. Spiritual Sound of Central Asia: Introduction to the Music of Central Asia. 1-5 Unit.
In this course, master-musician Imamyar Hasanov teaches students to perform and appreciate music from Central Asia. Students learn a spectrum of traditional Azerbaijani, Kazakh, Kyrgyz, Uyghur and Uzbek folk melodies, including improvisational art music of mugham. The class is also a seminar, with discussions led by Professor Denise Gill on music of Central Asia, guest lectures and demonstrations, and Skype interviews with a musician in Kyrgyzstan and instrument maker in Istanbul. No prerequisites or prior knowledge of Azeri, Uzbek and Kyrgyz music for this course. Both a music workshop and seminar, this course is open to students who have experience playing musical instruments and those who do not. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways-ED credit. For Ways-CE credit, it may be taken for any number of units.

MUSIC 192A. Foundations of Sound-Recording Technology. 3 Units.
This course serves as an introduction to recording technologies and practices in a studio, at home, and in the field. The facilities available at CCRMA provide a basis for learning studio operation, as well as a space for recording projects remotely. Students also receive a portable recording kit* to develop professional-sounding projects at home with audio recordings from inside and outside their location. The course addresses various audio engineering topics: room acoustics, analog and digital recording, microphone selection and placement, audio editing and mixing, audio effects processing (equalization, compression, convolution reverb, etc.), and sound design. (*subject to availability of funds). Prerequisite: MUSIC 101 or consent of instructor.

MUSIC 192B. Advanced Sound Recording Technology. 3 Units.
This course aims to heighten the listening skills of students. In a series of group sessions and discussions students compare and contrast a variety of dynamic based processes and other audio effects/plug-ins which might be used in their mixes. Students also explore recording concepts and technologies that will augment their studio practices such as making customized impulse response recordings, advanced equalization practices, and exploring additional advanced studio/non-studio techniques and software. Prerequisite: 192A or consent of instructor.

MUSIC 192C. Session Recording. 1-3 Unit.
Independent engineering of recording sessions combined with instruction in the use and maintenance of other CCRMA audio/studio facilities and equipment that is required for the realization of studio informed artistic projects. Students will explore how ideas such as acoustic phenomena, interactivity, or new instruments can augment their studio practice. May be repeated for credit a total of 14 times (1 unit per quarter throughout the year - recommended - or 3 units in Spring). Prerequisite: Consent of instructor.

MUSIC 192F. Sound Installation. 4 Units.
This class will cover creative, historical and theoretical aspects of sited artworks based in sound. We will create, install and critique new works that use sound with special attention the ways that sound intersects with time, space and architecture. Attention will be given both to sound as immaterial signal and to sound in its relation to visual environments and objects. The class is intended for artists, composers and others who want to explore the spatial, social and aesthetic dimensions of sound. Assigned readings will cover sound practices in the contexts of art, music, sound studies and anthropology. Experience in sound recording or production, signal processing and spatialization, or installation are valuable but not required. Curiosity and attention to sounds are.
Same as: ARTSTUDI 175

MUSIC 196. Music Outside the Concert Hall. 1 Unit.
Some of the most engaging and important work we do as musicians is outside of the concert hall at the intersection of music and public service. Candidates will be encouraged to explore these intersections either by reviewing existing programs or by participating in or creating new initiatives. Some jumping off points may include exploring programming for incarcerated populations through the work of Arts on the Edge in Alaska, DeCoda in NY, Community Music Works and more locally, SLSQ¿s community programming. Quarterly informational meetings will be convened to point students to resources, programs, etc., they could research or in which they can become involved.

MUSIC 197. Undergraduate Teaching Apprenticeship. 1-2 Unit.
Work in an apprentice-like relationship with faculty teaching a student-initiated course. Prerequisite: consent of instructor. (Staff).

MUSIC 198. Concentrations Project. 2 Units.
For concentration program participants only. Must be taken in senior year. Multiple concentrators may enroll in one section of 198 per concentration.

MUSIC 199. Independent Study. 1-5 Unit.
For advanced undergraduates and graduate students who wish to do work outside the regular curriculum. Before registering, student must present specific project and enlist a faculty sponsor. May be repeated for credit a total of 14 times.

MUSIC 200A. Proseminar in Musicology and Music Bibliography. 3-4 Units.
Introduction to research in music, bibliographical materials, major issues in the field, philosophy, and methods in music history. Guest lecturers and individual research topics.

MUSIC 200B. Proseminar in Ethnomusicology. 3-5 Units.
A graduate-level introduction to the field of ethnomusicology. Issues and debates are traced through the history of the discipline, with emphasis on influences from anthropology, performance studies, linguistics, and cultural studies. Topics include music and: social organization, "culture," structure, practice, comparison, representation, globalization, identity, transcription, and embodiment.

MUSIC 201. CCRMA Colloquium. 1 Unit.
Weekly review of work being done in the field, research taking place at CCRMA, and tools to make the most of the CCRMA technical facilities.

MUSIC 202. The Art of Music Video: Practice and Analysis. 2-4 Units.
Making and understanding music videos and other short audiovisual genres. This course is a critical and creative exploration of music and performing bodies in moving media. Listening/viewing includes music videos from the 1980s to today, along with musicals, dance, and opera on film, experimental film and video, and segments from feature film. We'll attend to both music and image, focusing on gesture, rhythm, and affect, and considering visual parameters like décor, lighting, texture, camera movement, and editing. Requirements include choosing and documenting a live performance; producing a short audiovisual work involving post-production; several short writing assignments; and weekly reading and viewing/listening assignments. No prerequisites; no previous videomaking experience required. This course must be taken for a minimum of 3 units for Ways-AII and a letter grade to be eligible for Ways-AII credit.
Same as: MUSIC 102

MUSIC 203. Audiovisual Performance. 3-4 Units.
Students perform with music and video in synergy. This course explores theories and practices of engaging audiovisual media in performance on stage and online. Examples come from the scenes of experimental music and multimedia performance. Other audiovisual categories to be approached: avant-garde film, visual music, video art, music video, network art. Readings, listening-viewings, discussions, and analyses of relevant works provide a conceptual framework. Labs and assignments give students hands-on experience in crafting and performing their own audiovisual works. The course culminates with a public live streaming show. A background in either music or visual arts is recommended, but not required.

MUSIC 220A. Fundamentals of Computer-Generated Sound. 2-4 Units.
What are the basic tools that computer music researchers and artists use to create sound? This course will include a summary of digital synthesis techniques (additive, subtractive, wavetable, frequency modulation and physical-modeling), signal processing techniques for digital effects, (reverberation, panning, filters), and basic psychoacoustics. Programming experience is recommended, but not required. The course will use the Web Audio/MIDI API (JavaScript) for computer music programming. Majors (undergraduate or graduate) must take for 4 units. See https://ccrma.stanford.edu/courses/220a/.

MUSIC 220B. Compositional Algorithms, Psychoacoustics, and Computational Music. 2-4 Units.
The use of high-level programming language as a compositional aid in creating musical structures. Advanced study of sound synthesis techniques. Simulation of a reverberant space and control of the position of sound within the space. To satisfy a Ways requirement, this course must be taken for at least 3 units. In AY 2020-21, a letter grade or `CR¿ grade satisfies the Ways requirement. See http://ccrma.stanford.edu/. Prerequisite: 220A.

MUSIC 220C. Research Seminar in Computer-Generated Music. 2-4 Units.
Individual projects in composition, psychoacoustics, or signal processing. See http://ccrma.stanford.edu. May be repeated for credit. Prerequisite: 220B.

MUSIC 220D. Research in Computer-Generated Music. 1-10 Unit.
Independent research projects in composition, psychoacoustics, or signal processing. See http://ccrma.stanford.edu/. May be repeated for credit. Prerequisite: 220C.

MUSIC 221N. Deep Learning for Music and Audio. 1 Unit.
Seminar reviewing the development of deep-learning methods in music and audio fields.

MUSIC 222. Sound in Space. 1-4 Unit.
Historical background, techniques and theory on the use of space in music composition and diffusion. Listening and analysis of relevant pieces. Experimental work in spatialization techniques leading to short studies to be diffused in concert at the end of the quarter.

MUSIC 223B. Sonic Experiments in Composition. 2-3 Units.
The course will present post-1945 works with timbre serving as an organizing principle or compositional metaphor, in the context of historical works in which timbre plays a structural role. Composers considered may include: Alvin Lucier, Pauline Oliveros and other American experimentalists; Scelsi and his influence on the French Spectral school; the first and subsequent generations of French Spectralism; and contemporary composers of experimental music such as Peter Ablinger. Topics will include: process and form; timbre in relation to time and space; harmonicity and noise; and the influence of analog and digital technology on instrumental composition. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit for AII.

MUSIC 223C. Tradition, Experimentation, and Technology in String Quartet Composition and Performance. 1-3 Unit.
This course will explore string quartet composition and performance by focusing in on the act of composer-performer collaboration. It will investigate this relationship and its facets through the composition of a work for the Saint Lawrence String Quartet by Patricia Alessandrini based on the SLSQ's relationship with the Opus 76 quartets of Haydn employing Artificial Intelligence (AI) techniques, in addition to workshopping of student exercises and compositions. Students will have the opportunity to participate in the class as performers, composers, technologists, or musicologically, through analysis of the collaborative process informed by concepts such as agency, representation, interpretation, expression, and experimentation.

MUSIC 223D. Sound Practice: Embodiment and the Social. 2-3 Units.
How can sound-making impact interpersonal relations and institutional practices? This class offers space to creatively re-think and challenge received relationships between artists, audiences, technologies, and environments. In class, we will create, perform, and analyze sound and music. We will explore sound¿s potential to catalyze social change via experimental and embodied approaches to sound-making. We will engage with sound practices that compose communal solidarity, augment and transform vocal identities, and potentially, alter how we listen to and live in the world. Readings/listenings include Björk, Maria Chavez, Donna Haraway, Pauline Oliveros, George Lewis, Meredith Monk, Maurice Merleau-Ponty, Hildegard Westerkamp, and Pamela Z.

MUSIC 230. Advanced Orchestral Conducting. 2-3 Units.
Advanced study of orchestral conducting through individual weekly meetings with the instructor. Develop skills in score reading and analysis, baton technique and the physical art of conducting, performance practice, and rehearsal technique. Expand knowledge of the orchestral repertoire through score study plus reading and listening assignments. This course is intended primarily for juniors, seniors, and graduate students with prior conducting experience. Prerequisites: MUSIC 130B and MUSIC 136, or two equivalent beginning and intermediate conducting courses. May be taken for credit a maximum of 6 times.

MUSIC 231. Advanced Choral Conducting. 2-3 Units.
Individual instruction continuing trajectory of Music 130C. Focus on gestural technique and analysis of works by genre and historical period. May be repeated for credit a total of 8 times. Prerequisite: 130C.

MUSIC 236. Future Media, Media Archaeologies. 3-4 Units.
Hand-on. Media technologies from origins to the recent past. Students create artworks based on Victorian era discoveries and inventions, early developments in electronic media, and orphaned technologies. Research, rediscover, invent, and create devices of wonder and impossible objects. Readings in history and theory. How and what media technologies mediate.
Same as: ARTSTUDI 236

MUSIC 242K. Studies in Music of the Baroque: Handel the Cosmopolitan. 4-5 Units.
Music history seminar on the operatic, sacred, and instrumental works of G.F. Handel as examples of the diversity, cosmopolitanism, expression, formal and technical features, and social uses of music in the first half of eighteenth century. Traces Handel¿s career from his native Germany to an elite Roman circle of musical connoisseurs, and to the Italian opera company he founded in London and his transformation of Italian opera into a new genre of English oratorio. By analyzing Handel¿s works in context, we examine the aesthetic, harmonic, and dramatic principles of the major European Baroque art-music genres. Prerequisites: MUSIC 22, MUSIC 41. (WIM at 4-unit level only.).
Same as: MUSIC 142K

MUSIC 243J. Studies in Music of the Classical Period: Haydn and Mozart: Music in the Age of Enlightenment. 3-4 Units.
Music and Musicians in the Age of EnlightenmentnPrerequisites: MUSIC 22, MUSIC 41. (WIM at 4-unit level only.).
Same as: MUSIC 143J

MUSIC 244M. Robert Schumann and the Interpretation of Musical Romanticism. 3-4 Units.
The creative personality, compositions, and writings of Robert Schumann (1810-1856) as exemplars of musical Romanticism in early nineteenth century European culture. Musical "interpretation" explored through a writing focus and a performance focus. Weekly writing assignments interpret compositions as texts, performances, and cultural documents. Students study and interpret up to three works (solo piano, chamber music, art-songs) by Schumann and/or contemporary figures (Schubert, Mendelssohn, Chopin, Brahms, Clara Schumann) for in-class presentation and final lecture-recital. Prerequisites: Music 42, and Music 22 or equivalent (intermediate music theory), intermediate or higher performance ability in piano, strings, or voice. (WIM at 4-unit level only.).
Same as: MUSIC 144M

MUSIC 245K. Studies in Western Art Music Since 1900: Concepts of New Music. 4 Units.
A survey of the history of Western classical music in the twentieth century, concentrating on shifts in the concept of New Music in the first half of the century. The aim is twofold: to study in depth a representative selection of works and to develop a historiographical framework for that study. Relevant concepts to be examined include Expressionism, Neo-Classicism, New Objectivity, Serialism, Aleatoricism, and Minimalism -- all of them key terms used by music historians and critics to describe and delineate the multifaceted phenomenon of "New Music." Composers to be studied include Schoenberg, Stravinsky, Berg, Weill, Shostakovich, Reich and Glass, and others. Prerequisites: MUSIC 23, MUSIC 42. (WIM course for Music majors.).
Same as: MUSIC 145K

MUSIC 246M. New Keywords in African Sound. 3-4 Units.
This course identifies and considers new keywords for the study of contemporary African music and sound. Each week we will foster discussion around a keyword and a constellation of case studies. The sonic practices we will encounter range from South African house music to Ghanaian honk horns; from Congolese rumba bands to Tunisian trance singers; from listening to the radio in a Tanzanian homestead to making hip hop music videos on the Kenyan coast. By exploring the unexpected interconnections between contemporary African musical communities, we will discuss new keywords arising in current scholarship, including technologies like the amplifier and the hard drive, spaces like the studio and the city, and analytics like pleasure and hotness. We will also engage with established concepts for the study of postcolonial African cultures, including nationalism, cosmopolitanism, globalization, diaspora, and Pan-Africanism. This is a seminar-based course open to graduate students, upper level undergraduate students, and other students with consent of the instructor. Proficiency in music is not required. WIM at 4 units only.
Same as: AFRICAAM 146D, AFRICAST 146M, CSRE 146D, MUSIC 146M

MUSIC 246N. Transcultural Perspectives of South-East Asian Music and Arts. 2-4 Units.
This course will explore the links between aspects of South-East Asian cultures and their influence on modern and contemporary Western art and literature, particularly in France; examples of this influence include Claude Debussy (Gamelan music), Jacques Charpentier (Karnatak music), Auguste Rodin (Khmer art) and Antonin Artaud (Balinese theater). In the course of these interdisciplinary analyses - focalized on music and dance but not limited to it - we will confront key notions in relation to transculturality: orientalism, appropriation, auto-ethnography, nostalgia, exoticism and cosmopolitanism. We will also consider transculturality interior to contemporary creation, through the work of contemporary composers such as Tran Kim Ngoc, Chinary Ung and Tôn-Thât Tiêt. Viewings of sculptures, marionette theater, ballet, opera and cinema will also play an integral role. To satisfy a Ways requirement, this course must be taken for at least 3 units. In AY 2020-21, a letter grade or `CR¿ grade satisfies the Ways requirement. WIM credit in Music at 4 units and a letter grade.
Same as: COMPLIT 148, COMPLIT 267, FRENCH 260A, MUSIC 146N

MUSIC 247J. Studies in Music, Media, and Popular Culture: The Soul Tradition in African American Music. 3-4 Units.
1960s and 70s Black music, including rhythm and blues, Motown, Southern soul, funk, Philadelphia soul, and disco. Its origins in blues, gospel, and jazz to its influence on today's r&b, hip hop, and dance music. Soul's cultural influence and global reach; its interaction with politics, racism, gender, place, technology, and the economy. Synchronous and asynchronous remote learning, with class discussions, small-group activities, guest presenters, and opportunities for activism. Pre-/co-requisite (for music majors): MUSIC 22. (WIM at 4 units only.).
Same as: AFRICAAM 19, AMSTUD 147J, CSRE 147J, MUSIC 147J

MUSIC 247K. Studies in Music, Media, and Popular Culture: Music and Urban Film. 3-4 Units.
How music and sound work in urban cinema. What happens when music's capacity to transform everyday reality combines with the realism of urban films? Provides an introduction to traditional theories of film music and film sound; considers how new technologies and practices have changed the roles of music in film. Readings discuss film music, realistic cinema, urban musical practices and urban culture. Viewing includes action/adventure, Hindi film, documentary, film noir, hip hop film, the musical, and borderline cases by Jean-Luc Godard, Spike Lee, Wong Kar-Wai and Tsai Ming-Liang. Pre- or corequisite (for music majors): MUSIC 22. (WIM at 4 unit level only.).
Same as: CSRE 147D, MUSIC 147K

MUSIC 250A. Physical Interaction Design for Music. 3-4 Units.
This lab and project-based course explores how we can physically interact with real-time electronic sound. Students learn to use and design sensors, circuits, embedded computers, communication protocols and sound synthesis. Advanced topics include real-time media, haptics, sound synthesis using physical model analogs, and human-computer interaction theory and practice. Course culminates in musical performance with or exhibition of completed design projects. An $80 lab fee will be added to your bill upon enrollment in this course. See https://ccrma.stanford.edu/courses/250a.

MUSIC 250C. Interaction - Intermedia - Immersion. 2-3 Units.
This course explores creative and technical approaches to the design of digital musical instruments (DMIs) and other systems for interactive performance, composition and/or installations in audio, audiovisual, and other intermedia practice. Various paradigms of Human Computer Interaction (HCI) and techniques such as motion tracking, biosignal analysis, Music Information Retrieval (MIR), concatenation, and machine learning will be considered through analysis of examples of historical and current intermedia practice, framed by key concepts such as affordances and embodiment. It will focus on individual creative output and process, with a final project consisting of the realization of a creative work applying these principles. Please note that attendance of both sessions listed here is not required: the weekly sessions will consist of a lecture and discussion in the first half, and lab time with optional attendance in the second. We plan to concentrate principally on digital - including online - interactive/intermedial/immersive projects. This course is in the P3D program and, therefore, each student has the possibility of receiving a personal 3D printer for their home use. Further equipment loans from CCRMA for student projects involving physical media may be possible. Feedback on projects will be provided by Denning Visiting Artist Pamela Z, in addition to tutorials/consultations with the course co-instructors and teaching assistant.

MUSIC 251. Psychophysics and Music Cognition. 1-5 Unit.
Lecture, lab and experiment-based course in perception, psychoacoustics, cognition, and neuroscience of music. (WIM at 4 or 5 units only.).

MUSIC 253. Symbolic Musical Information. 2-4 Units.
Focus on symbolic data for music applications including advanced notation systems, optical music recognition, musical data conversion, and internal structure of MIDI files.
Same as: CS 275A

MUSIC 254. Computational Music Analysis. 2-4 Units.
Leveraging off three synchronized sets of symbolic data resources for notation and analysis, the lab portion introduces students to the open-source Humdrum Toolkit for music representation and analysis. Issues of data content and quality as well as methods of information retrieval, visualization, and summarization are considered in class. Grading based primarily on student projects. Prerequisite: 253 or consent of instructor.
Same as: CS 275B

MUSIC 255. Intermedia Workshop. 3-4 Units.
Students develop and produce intermedia works. Musical and visual approaches to the conceptualisation and shaping of time-based art. Exploration of sound and image relationship. Study of a wide spectrum of audiovisual practices including experimental animation, video art, dance, performance, non-narrative forms, interactive art and installation art. Focus on works that use music/sound and image as equal partners. Limited enrollment. Prerequisites: consent of instructors, and one of FILMPROD 114, ARTSTUDI 131, 138, 167, 177, 179, or MUSIC 123, or equivalent. May be repeated for credit.
Same as: ARTSTUDI 239, MUSIC 155

MUSIC 255A. Piano Literature. 1 Unit.
An exploration of the repertoire for piano and keyboards, providing experience with and context for this literature while engaging practical, technical and analytical features of the works. Each quarter will cover focused areas defined by time, place, composer, stylistic tradition, formal type, etc. Students will perform works in class, as well as listen to and compare performances through videos and recordings. Assignments include reading, listening, and a final project. Prerequisite: Private lesson proficiency level in piano, or consent of instructor.
Same as: MUSIC 155A

MUSIC 255S. String Literature. 1 Unit.
An exploration of the repertoire for stringed instruments, providing experience with and context for this literature while engaging practical, technical and analytical features of the works. Each quarter will cover focused areas defined by time, place, composer, stylistic tradition, formal type, etc. Students will perform works in class, as well as listen to and compare performances through videos and recordings. Assignments include reading, listening, and a final project. Prerequisite: Private lesson proficiency level in piano, or consent of instructor.
Same as: MUSIC 155S

MUSIC 256A. Music, Computing, Design: The Art of Design. 3-4 Units.
Creative design for computer music software. Programming, audiovisual design, as well as software design for musical tools, instruments, toys, and games. Provides paradigms and strategies for designing and building music software, with emphases on interactive systems, aesthetics, and artful product design. Course work includes several programming assignments and a "design+implement" final project. Prerequisite: experience in C/C++ and/or Java.See https://ccrma.stanford.edu/courses/256a/.
Same as: CS 476A

MUSIC 256B. Music, Computing, Design II: Virtual and Augmented Reality for Music. 3-4 Units.
Aesthetics, design, and exploration of creative musical applications of virtual reality (VR) and augmented reality (AR), centered around VR and mobile technologies. Comparison between AR, VR, and traditional software design paradigms for music. Topics include embodiment, interaction design, novel instruments, social experience, software design + prototyping. Prerequisite: MUSIC 256A / CS 476A.
Same as: CS 476B

MUSIC 257. Neuroplasticity and Musical Gaming. 3-5 Units.
What changes in a musician's brain after hours and years of daily practice? How do skills that make a great violinist transfer to other abilities? Can directed neuroplasticity be used to target skill learning? This course will include fundamentals of psychoacoustics and auditory neuroscience. Focus will be development of video games that use perceptually motivated tasks to drive neural change. Emphasis will be on music, linguistic, and acoustic based skills. Programming experience is highly recommended, but not required.

MUSIC 258. Orchestration and Timbral Analysis. 1-4 Unit.
Hands-on approach to orchestration and applied computational timbral analysis. For Music majors with a concentration or interest in composition or MST. Assignments in orchestration and timbre analysis, and computer-based timbre analysis. Final project involving either computer-based analysis or an advanced orchestration assignment. See http://ccrma.stanford.edu/courses/255/.

MUSIC 258A. Computational Music Theory & Analysis. 1-3 Unit.
Topics in music analysis, with emphasis on perception and cognition. Topics include engagement, expectation formulation and processing, timbre and time perception, with particular relevance to computer applications in music.

MUSIC 269. Research in Performance Practices. 1-5 Unit.
Directed reading and research. May be repeated for credit a total of 5 times.

MUSIC 271. Chamber Music Discovery. 1 Unit.
Weekly class to include a series of presentations by Stanford¿s Ensemble-in-Residence the St. Lawrence String Quartet with live and recorded performances and live discussion. Students are expected to develop a final project in the style of Discovery for presentation at the end of the quarter.

MUSIC 272A. Advanced Piano. 1-3 Unit.
Private lessons and group masterclass weekly. May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 272B. Advanced Organ. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 272C. Advanced Harpsichord. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 272D. Advanced Jazz Piano. 1-3 Unit.
Admission is by audition and/or invitation only; priority to majors and jazz-ensemble participants. All participants must enroll. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. Zero unit enrollment option available with instructor permission. May be repeated for credit a total of 14 times. Lessons meet for one hour per week at the mutual convenience of the instructor and student. Exact time to be determined during the first week of classes. Course to be taught online when COVID restrictions are in effect as a live private interactive session. Student should have access to a piano during the lesson. Students on campus who do not have such access, please contact instructor for further information.

MUSIC 272E. Advanced Fortepiano. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 272F. Advanced Carillon. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 272G. Advanced Gu-Zheng. 1-3 Unit.
Private lesson weekly. May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 273. Advanced Voice. 1-3 Unit.
Private lessons and group master class weekly. May be repeated for credit. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 274A. Advanced Violin. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 274B. Advanced Viola. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 274C. Advanced Violoncello. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 274D. Advanced Contrabass. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 274E. Advanced Viola da Gamba. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.htmlfor class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 274F. Advanced Classical Guitar. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 274G. Advanced Harp. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 274H. Advanced Baroque Violin. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 274I. Advanced Jazz Bass. 1-3 Unit.
Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 274J. Advanced Jazz & Contemporary Guitar. 1-3 Unit.
An application of the performance techniques developed by the innovative, genius, and radical guitarists from 1930 to 2020. Improvising, comping, reading, repertoire, and technique will be studied in depth. Rhythm styles, the application of modern theory, transcribing solos, and chord melody arranging are developed through the course of study. May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 275A. Advanced Flute. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 275B. Advanced Oboe. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 275C. Advanced Clarinet. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 275D. Advanced Bassoon. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 275E. Advanced Recorder/Early Winds. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. http://music.stanford.edu/Academics/LessonSignups.html.

MUSIC 275F. Advanced Saxophone. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. http://music.stanford.edu/Academics/LessonSignups.html.

MUSIC 275G. Advanced Baroque Flute. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 275H. Advanced Jazz Saxophone. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 276A. Advanced French Horn. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 276B. Advanced Trumpet. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 276C. Advanced Trombone. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 276D. Advanced Tuba. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 276E. Advanced Jazz Trumpet. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 277. Advanced Percussion. 1-3 Unit.
May be repeated for credit a total of 14 times. Admission is by audition only. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 277A. Advanced Drum Set. 1-3 Unit.
May be repeated for credit a total of 15 times. There is a fee for this class. Please visit http://music.stanford.edu/Academics/LessonSignups.html for class fees and audition information. All participants must enroll. Zero unit enrollment option available with instructor permission. See website: (http://music.stanford.edu) for policy and procedure.

MUSIC 280. TA Training Course. 1 Unit.
Required for doctoral students serving as teaching assistants. Orientation to resources at Stanford, guest presentations on the principles of common teaching activities, supervised teaching experience. Students who entered in the Autumn should take 280 in the Spring prior to the Autumn they begin teaching.

MUSIC 285. Intermedia Lab. 1 Unit.
The Intermedia Lab is a space to develop projects bridging sound with other media through technology. Projects may involve instrument design, physical computing, audiovisual interaction, immersive audio engaging with acoustic environments, and/or other intermedial projects that engage listening in tandem with other senses. Students will be encouraged to develop creative projects using resources at CCRMA such as those of the Max Lab and Listening Room. Lab sessions will focus on skill-sharing, consideration of mapping strategies, critique sessions and problem-solving related to projects, contextualized by discussions of readings. It will feature guest-workshops and open studio project presentations. We plan to concentrate principally on digital - including online - intermedial projects in the Winter term, as the CCRMA spaces listed in the course description may not yet be accessible. This course is in the P3D program and, therefore, each student has the possibility of receiving a personal 3D printer for their home use. Further equipment loans from CCRMA for student projects involving physical media may be possible. This term we will be joined remotely by special guests, including Denning Visiting Artist Pamela Z.

MUSIC 286B. American Song in the 20th Century and after. 3-4 Units.
Critical and creative exploration of song in the Americas. About twenty-five key examples will guide discussion of the interactions between words, music, performance and culture. Weekly listening, reading and assignments will be organized around central themes: love, sex and romance; war and politics; labor and money; place; identity; society and everyday life. Genres include art song; blues, gospel, jazz and country; pop, soul, rock and hip-hop; bossa nova, nueva canción and salsa; electronic and experimental. Takehome and in-class assignments will include critical and creative writing, and music composition, production and performance; final projects may emphasize any of the above.
Same as: AMSTUD 186B, MUSIC 186B

MUSIC 298. MA/MST CAPSTONE PROJECT. 1-5 Unit.
The MA/MST capstone is intended to gather and focus skills acquired throughout the program toward an exploratory project aimed at bridging between the student¿s residency and whatever will follow beyond the MA. Mentorship can include your advisor augmented, should you chose, by any other faculty member from CCRMA or in other programs. The project can be in applied research areas such as design projects and/or mentored internships. Also, the capstone can be considered as a more flexible form of a master¿s thesis, aiming to produce research and publication(s). Students can also pursue the artistic projects to enhance the creative portfolio.

MUSIC 299. Independent Study. 1-5 Unit.
For advanced undergraduates and graduate students who wish to do work outside the regular curriculum. Before registering, student must present specific project and enlist a faculty sponsor. May be repeated for credit a total of 14 times.

MUSIC 300A. Medieval Notation. 3-4 Units.
Western notation of the Middle Ages and Renaissance: principles, purposes, and transcription.

MUSIC 300B. Renaissance Notation. 3-4 Units.
Western notation of the Middle Ages and Renaissance: principles, purposes, and transcription.

MUSIC 300D. Music Ethnography. 3-5 Units.
This graduate seminar serves as an introduction to the methodologies and theoretical approaches for the ethnography of sound and musical practices. While we center on research problems, ethics, and methods in the field of ethnomusicology, ethnographic field research on sound and sounding has long been an interdisciplinary venture. We will additionally draw on performance studies, critical ethnography, anthropology, and critical race and gender studies to broaden our exposure to diverse methods and approaches. Throughout the seminar, we will pay close attention to the multiple ethical implications of crafting ethnographies about musicians, music-making, sound, performance, and listening practices.

MUSIC 300E. Analysis and Repertoire: Medieval and Renaissance. 3-4 Units.
Analytical approaches to genres, styles, forms, and techniques of Western music from [chant and early polyphony through the sixteenth century]. Issues of aesthetics, history, and interpretation viewed through representative repertoire, readings, and analytical methods.

MUSIC 300F. Analysis and Repertoire: Baroque to Early Romantic. 3-4 Units.
Analytical approaches to genres, styles, forms, and techniques of Western music from the seventeenth through the mid-nineteenth centuries. Issues of aesthetics, history, and interpretation viewed through representative repertoire, readings, and analytical methods.

MUSIC 300G. Analysis and Repertoire: Late-Romantic to Contemporary. 3-4 Units.
Analytical approaches to genres, styles, materials and techniques of Western music from the mid-nineteenth century through the present. Questions of aesthetics, history and performance explored through musical analysis. Representative repertoire and readings, and a range of analytical methods.

MUSIC 300H. Aesthetics and Criticism of Music, Ancients and Moderns: Plato to Nietzsche. 3-4 Units.
For graduate students. Primary texts focusing on the nature, purposes, and uses of music and other arts.

MUSIC 300I. Aesthetics and Criticism of Music, Contemporaries: Heidegger to Today. 3-4 Units.
For graduate students. Primary texts focusing on the nature, purposes, and uses of music and other arts.

MUSIC 300J. Methods for Studying Gender and Sexuality in Music. 3-5 Units.
Introduction to graduate-level study of gender and sexuality in music; includes feminist and queer critiques of musical canons, historiography, biography, and genius; feminist, queer, and trans perspectives on musical performance, performers, subcultures, and cultures. Methods for studying gender/sexuality in a variety of classical and vernacular musics.

MUSIC 302. Research in Musicology. 1-5 Unit.
Directed reading and research. May be repeated for credit a total of 14 times.

MUSIC 305D. Analysis from a Compositional Perspective. 4 Units.
Introduction to analysis, examining diverse examples in part chosen from, otherwise supplementing and illuminating, the graduate composers' qualifying exam list; consideration of aesthetic premises and motivations, and of implications for contemporary compositional practice.

MUSIC 310. Research Seminar in Musicology. 3-5 Units.
For graduate students. Topics vary each quarter. May be repeated for credit a total of 8 times.

MUSIC 319. Research Seminar on Computational Models of Sound Perception. 1-3 Unit.
All aspects of auditory perception, often with emphasis on computational models. Topics: music perception, signal processing, auditory models, pitch perception, speech, binaural hearing, auditory scene analysis, basic psychoacoustics, and neurophysiology. See http://ccrma.stanford.edu/courses/. May be repeated for credit a total of 14 times.

MUSIC 320A. Introduction to Audio Signal Processing Part I: Spectrum Analysis. 3-4 Units.
Digital signal representations and transforms for music and audio research. Topics: complex numbers, sinusoids, spectrum representation, sampling and aliasing, the Discrete Fourier Transform (DFT), Fourier theorems, z transform, Laplace transform, and introduction to the associated Python software. See http://ccrma.stanford.edu/courses/320/.

MUSIC 320B. Introduction to Audio Signal Processing Part II: Digital Filters. 3-4 Units.
Digital filters for music and audio research. Topics: digital filter structures, frequency response, z transforms, transfer-function analysis, and associated Matlab software. See http://ccrma.stanford.edu/courses/320/.

MUSIC 320C. Software Projects in Music/Audio Signal Processing. 3-10 Units.
Course focuses on developing an audio signal-processing plugin or stand-alone application in C++. Prior experience is assumed with programming in Matlab/Octave and C/C++, and signal processing theory on the level of Music 320. Class time is devoted to presenting use of the Faust programming language for generating C++, the JUCE framework for creating audio plugins or stand-alone applications, related theory and projects, project progress reports, and project final presentations.

MUSIC 321. Readings in Music Theory. 1-5 Unit.
Directed reading and research. May be repeated for credit a total of 15 times.

MUSIC 323. Doctoral Seminar in Composition. 3-4 Units.
Illustrated discussions of compositional issues and techniques. Presentation of relevant topics, including students' own compositional practice. May be repeated for credit a total of 14 times.

MUSIC 324. Graduate Composition Forum. 1 Unit.
Community forum for all graduate student composers. Discussion of completed and in-progress work by students, faculty, and visiting composers. Repertoire listening sessions. Planning of upcoming Department events. Special area exam topic presentations, final doctoral project presentations, and review of portfolios. Many sessions are open to the public.May be repeated for credit.

MUSIC 325. Individual Graduate Projects in Composition. 1-5 Unit.
May be repeated for credit.

MUSIC 330. Musicology Dissertation Colloquium. 1-4 Unit.
Weekly meetings for all musicology students 4th year and beyond to discuss research and writing strategies, share and critique work in progress, and discuss issues in professional development (preparing abstracts, conference papers, C.V. and job interviews, book reviews, submitting articles for publication). Open to 3rd-year students.

MUSIC 332. Philosophy, Literature, and the Arts Core Seminar. 2-4 Units.
This course serves as the Core Seminar for the PhD Minor in Philosophy, Literature, and the Arts. It introduces students to a wide range of topics at the intersection of philosophy with literary and arts criticism. The seminar is intended for graduate students. It is suitable for theoretically ambitious students of literature and the arts, philosophers with interests in value theory, aesthetics, and topics in language and mind, and other students with strong interest in the psychological importance of engagement with the arts. May be repeated for credit. In this year¿s installment, we focus on how artistic kinds or genres help set the terms on which individual works are experienced, understood, and valued, with special attention to lyric poetry and music.
Same as: DLCL 333, ENGLISH 333, PHIL 333

MUSIC 333. Food, Text, Music: A Multidisciplinary Lab on the Art of Feasting. 3-5 Units.
Students cook a collection of unfamiliar recipes each week while learning about the cultural milieus in which they originated. The course focuses on the fourteenth and fifteenth centuries, a time of great banquets that brought together chefs, visual artists, poets, musicians, and dancers. Students read late-medieval cookbooks under the guidance of professional chefs, learn songs and poetry with the help of visiting performers, and delve into a burgeoning scholarly literature on food history and sensory experience. We will also study trade routes and food networks, the environmental impact of large-scale banquets, the science of food, and the politics of plenty. This course may count towards the Medieval component of the French major, and corresponds to DLCL 121, a course requirement for the Medieval Studies Minor. Students interested in applying for course must email the professor (jrodin@stanford.edu) by 20 September with a statement of up to 350 words that includes: (a) reasons for wanting to take the class; (b) relevant background in cooking/medieval studies/etc.; (c) stated commitment to attend all ten course meetings; and (d) any dietary restrictions/preferences.
Same as: FRENCH 166, FRENCH 266, FRENCH 366, MUSIC 133

MUSIC 341. Ph.D Dissertation. 1-10 Unit.
May be repeated for credit a total of 5 times.

MUSIC 351A. Seminar in Music Perception and Cognition I. 1-3 Unit.
A seminar on topics in music perception and cognition. Students will study and discuss recent research as well as design and implement experiments.

MUSIC 390. Practicum Internship. 1 Unit.
On-the-job training under the guidance of experienced, on-site supervisors. Meets the requirements for curricular practical training for students on F-1 visas. Students submit a concise report detailing work activities, problems worked on, and key results. May be repeated for credit. Prerequisite: qualified offer of employment and consent of adviser.

MUSIC 398. PhD Dissertation Proposal. 1-3 Unit.
Students have to identify a research advisor and enroll in this course with her/him to develop the dissertation proposal. By the end of this required course or its series (repeatable for three times), students are expected to have identified a) a special area exam committee, b) the structure of the dissertation proposal, and c) the scope of the thesis with the depth and breadth of the research field.

MUSIC 399. D.M.A. Final Project. 1-10 Unit.
May be repeated for credit a total of 5 times.

MUSIC 408C. Architecture, Acoustics and Ritual in Byzantium. 1-3 Unit.
Onassis Seminar "Icons of Sound: Architecture, Acoustics and Ritual in Byzantium". This year-long seminar explores the creation and operations of sacred space in Byzantium by focusing on the intersection of architecture, acoustics, music, and ritual. Through the support of the Onassis Foundation (USA), nine leading scholars in the field share their research and conduct the discussion of their pre-circulated papers. The goal is to develop a new interpretive framework for the study of religious experience and assemble the research tools needed for work in this interdisciplinary field.nnNOTE: This course is only offered on the graduate level and undergraduates would be admitted by request (sending a letter expressing interest to the instructor and specifying what other courses in music or art history has prepared them to tackle this subject) and special permission only.
Same as: ARTHIST 408C, REES 408C, RELIGST 308C

MUSIC 420A. Signal Processing Models in Musical Acoustics. 3-4 Units.
Computational methods in musical sound synthesis and digital audio effects based on acoustic physical models. Topics: mass-spring-dashpot systems; electric circuit analogies; finite difference schemes; state-space models and the modal representation; impedance; ports; acoustic simulation using delay lines, digital filters, and nonlinear elements; interpolation and sampling-rate conversion; delay effects; wave digital filters; real-time computational models for musical instruments and effects, both acoustic and electronic. See http://ccrma.stanford.edu/courses/420/. Prerequisites: MUSIC 320A and MUSIC 320B or equivalent; PHYSICS 21 or equivalent course applying Newton's laws of motion; and CS 106B or equivalent programming in C and C++.

MUSIC 421A. Time-Frequency Audio Signal Processing. 3-4 Units.
Spectrum analysis and signal processing using Fast Fourier Transforms (FFTs) with emphasis on audio applications. Topics: Fourier theorems; FFT windows; spectrum analysis; spectrograms; sinusoidal modeling; spectral modeling synthesis; FFT convolution; FIR filter design and system identification; overlap-add and filter-bank-summation methods for short-time Fourier analysis, modification, and resynthesis. See http://ccrma.stanford.edu/courses/421/. Prerequisites: Music 320A and Music 320B or equivalent background in spectrum analysis and linear systems.

MUSIC 421N. Deep Learning for Music and Audio. 1 Unit.
Seminar reviewing the development of deep-learning methods in music and audio fields. See the course website for latest information: http://ccrma.stanford.edu/courses/mus421n/.

MUSIC 422. Perceptual Audio Coding. 3 Units.
History and basic principles: development of psychoacoustics-based data-compression techniques; perceptual-audio-coder applications (radio, television, film, multimedia/internet audio, DVD, EMD). In-class demonstrations: state-of-the-art audio coder implementations (such as AC-3, MPEG) at varying data rates; programming simple coders. Topics: audio signals representation; quantization; time to frequency mapping; introduction to psychoacoustics; bit allocation and basic building blocks of an audio codec; perceptual audio codecs evaluation; overview of MPEG-1, 2, 4 audio coding and other coding standards (such asAC-3). Prerequisites: knowledge of digital audio principles, familiarity with C programming. Recommended: 320, EE 261. See http://ccrma.stanford.edu/.

MUSIC 423. Graduate Research in Music Technology. 1-10 Unit.
Research discussion, development, and presentation by graduate students, visiting scholars, and CCRMA faculty in the areas of music and/or audio technology. Permission of instructor required. See http://ccrma.stanford.edu/courses/423/ for latest information. May be repeated for credit.

MUSIC 424. Signal Processing Techniques for Digital Audio Effects. 3-4 Units.
Techniques for dynamic range compression, reverberation, equalization and filtering, panning and spatialization, digital emulation of analog processors, and implementation of time-varying effects. Single-band and multiband compressors, limiters, noise gates, de-essers, convolutional reverberators, parametric and linear-phase equalizers, wah-wah and envelope-following filters, and the Leslie. Students develop effects algorithms of their own design in labs. Prerequisites: digital signal processing, sampling theorem, digital filtering, and the Fourier transform at the level of 320 or EE 261; Matlab and modest C programming experience. Recommended: 420 or EE 264; audio effects in mixing and mastering at the level of 192.

MUSIC 451A. Basics in Auditory and Music Neuroscience. 2-5 Units.
Understanding basic concepts and techniques in cognitive neuroscience using electroencephalography (EEG) specific to auditory perception and music cognition via seminar and laboratory exercise work. Acquiring and practicing skills in experimental design, data analysis, and interpretation, writing for scientific reports and research proposals, and giving a critical review of others' scientific work. Seminar discusses related literature in neuroanatomy, neurophysiology, psychology, and neuroimaging. Laboratory focuses on electroencephalography (EEG) techniques, classic paradigms for recording evoked response, and associated data analysis methods.

MUSIC 451B. Neuroscience of Auditory Perception and Music Cognition II: Neural Oscillations. 2-5 Units.
Building on 451A, this course will review basic knowledge and EEG techniques of neural oscillations related to auditory perception and music cognition via seminar and laboratory work. Through reviewing and replicating findings using classic and recent paradigms, the laboratory exercises offer multiple ways to understand how to design experiments and analyze data to observe neural oscillatory activities in different frequency bands, then interpret their functional significance in sensorimotor processing, attention, and social interaction ¿ important aspects of music listening and performance. Seminar discusses literature in neurophysiology, neuropsychology, and brain-computer interface. Prerequisite: Music 451A or permission of instructor.

MUSIC 451C. Auditory EEG Research III: Coordinated Actions and Hyperscanning. 2-5 Units.
Advancing EEG research skills in cognitive neuroscience specific to music cognition by conducting a group research project. In particular, this course focuses on basics for 2-person EEG (hyperscanning) paradigms and explores how coordinated actions and social interactions during musical ensemble are processed in the two brains. Laboratory works covers advanced electroencephalography (EEG) recording and analysis techniques specifically for oscillation and phase coherence across brain areas and between subjects. Seminar activities include surveying literature, discussing research articles and giving criticisms, and writing research reports. Lab scheduled separately Prerequisite: Music 451A.

MUSIC 801. TGR Project. 0 Units.
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MUSIC 802. TGR Dissertation. 0 Units.
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PHILOSOPHY

Courses offered by the Department of Philosophy are listed under the subject code PHIL on the Stanford Bulletin's ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=PHIL&filter-catalognumber-PHIL=on).

Philosophy concerns itself with fundamental problems. Some are abstract and deal with the nature of truth, justice, value, and knowledge; others are more concrete, and their study may help guide conduct or enhance understanding of other subjects. Philosophy also examines the efforts of past thinkers to understand the world and people's experience of it.

Although it may appear to be an assortment of different disciplines, there are features common to all philosophical inquiry. These include an emphasis on methods of reasoning and the way in which judgments are formed, on criticizing and organizing beliefs, and on the nature and role of fundamental concepts.

Students of almost any discipline can find something in philosophy which is relevant to their own specialties. In the sciences, it provides a framework within which the foundations and scope of a scientific theory can be studied, and it may even suggest directions for future development. Since philosophical ideas have had an important influence on human endeavors of all kinds, including artistic, political, and economic, students of the humanities and social sciences should find their understanding deepened by acquaintance with philosophy.

Mission of the Undergraduate Program in Philosophy

The mission of the undergraduate program in Philosophy is to train students to think clearly and critically about the deepest and broadest questions concerning being, knowledge, and value, as well as their connections to the full range of human activities and interests. The Philosophy major presents students with paradigms and perspectives of past thinkers and introduces students to a variety of methods of reasoning and judgment formation. Courses in the major equip students with core skills involved in critical reading, analytical thinking, sound argumentation, and the clear, well-organized expression of ideas. Philosophy is an excellent major for those planning a career in law, medicine, business, or the non-profit sector. It provides analytical skills and a breadth of perspective helpful to those called upon to make decisions about their own conduct and the welfare of others. Philosophy majors who have carefully planned their undergraduate program have an excellent record of admission to professional and graduate schools.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. the ability to effectively communicate philosophical ideas orally and in writing.
2. close reading, argument evaluation, and analytical writing.
3. dialectical ability to identify strengths and weaknesses of an argument and devise appropriate and telling responses.
4. the ability to think critically and demonstrate clarity of conceptualization.
5. the ability to differentiate good from unpromising philosophical questions.
6. the ability to sustain an argument of substantial scope, showing control over logical, argumentative, and evidential relations among its parts.
7. mastery over a domain of literature, an area of philosophical problems, or an area in the history of thought.
8. an understanding of argumentative relations among different philosophical issues in their area, and an ability to discriminate between problems that must be addressed, and those that may be deferred to future work.
9. the ability to frame and pursue more deeply a philosophical question within the domain.
10. the ability to develop, articulate, and defend a thesis about the question.
11. knowledge and awareness of plausible objections to their arguments, and resourcefulness in responding to them.

Special and Joint Majors

The Special Program in the History and Philosophy of Science enables students to combine interests in science, history, and philosophy. Students interested in this program should see the special adviser.

The Special Option in Philosophy and Literary Thought enables students to combine interests in philosophy and literary studies. Interested students should see the Director of Undergraduate Studies for Philosophy and Literature.

The combined major in Philosophy and Religious Studies joins courses from both departments into a coherent theoretical pattern.

The joint major in Philosophy and Computer Science provides opportunities for the systematic study of computation together with philosophy in the broadest sense.

Graduate Program in Philosophy

The Department of Philosophy offers an M.A. and a Ph.D. degree. The University's basic requirements for the M.A. and Ph.D. degrees are discussed in the "Graduate Degrees (http://www.stanford.edu/dept/registrar/bulletin/4901.htm)" section of this bulletin.

Learning Outcomes (Graduate)

The purpose of the master's program is to develop knowledge and skills in Philosophy and to prepare students for a professional career or doctoral studies. This is achieved through completion of core courses, with an option for further specialization. (See below for details.)

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in Philosophy. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of Philosophy and to interpret and present the results of such research.

Library and Associations

The Tanner Memorial Library of Philosophy contains an excellent working library and ideal conditions for study. Graduate students and undergraduate majors in philosophy have formed associations for discussion of philosophical issues and the reading of papers by students, faculty, and visitors.

Bachelor of Arts in Philosophy

Preparation for the Major

Students must take an introductory course (under 100) and PHIL 80 Mind, Matter, and Meaning. (PHIL 80 should normally be taken no later than the first quarter after declaring the major.) Students taking a Philosophy

Thinking Matters course may count 4 units toward the introductory Philosophy requirement.

How to Declare the Bachelor of Arts in Philosophy

There are three ways of majoring in Philosophy:

- The General Program
- The Special Program in the History and Philosophy of Science
- The Special Option in Philosophy and Literature.

A student completing any of these receives a B.A. degree in Philosophy. There is also a major program offered in Philosophy and Religious Studies. To declare a major, a student should consult with the Director of Undergraduate Study and see the undergraduate student services administrator to be assigned an adviser and work out a coherent plan. The department recommends proficiency in at least one foreign language.

Degree Requirements

Course Requirements

		Units
Core Courses		
Logic		
More advanced logic courses may also be counted for this requirement by petition.		
Select one of the following:		
PHIL 49	Survey of Formal Methods	4
PHIL 150	Mathematical Logic	4
PHIL 151	Metalogic	4
PHIL 154	Modal Logic	4
Philosophy of Science		
Complete one course from:		
PHIL 60	Introduction to Philosophy of Science	5
PHIL 61	Philosophy and the Scientific Revolution	5
or an intermediate philosophy of science course numbered between PHIL 160-169		
Moral and Politicial Philosophy		
PHIL 2	Introduction to Moral Philosophy	5
or any intermediate course devoted to central topics in moral and political philosophy numbered between PHIL 170-172 or 174-176.		
Contemporary Theoretical Philosophy		
Any intermediate course numbered between PHIL 180-189.		
History of Philosophy		
PHIL 100	Greek Philosophy	4
PHIL 102	Modern Philosophy, Descartes to Kant	4
Philosophy Seminar		
One undergraduate seminar from PHIL 194 series		
Major Electives		
Any course 10 and above, at least 9 units must be 99 and above.		

1. Units for Tutorial, Directed Reading (PHIL 196 Tutorial, Senior Year, PHIL 197 Individual Work, Undergraduate, PHIL 198 The Dualist), The Dualist (PHIL 198 The Dualist), Honors Seminar (PHIL 199 Seminar for Prospective Honors Students), or affiliated courses may not be counted in the 55-unit requirement. No more than 10 units completed with grades of 'satisfactory' and/or 'credit' may be counted in the 55-unit requirement. Any courses taken for a letter grade in fulfillment of the core requirements listed under 1.b. must be taken for a minimum of 3 units and completed with a grade of 'C-' or higher.
2. A maximum of 10 transfer units or two courses can be used for the departmental major. In general, transfer courses cannot be used to satisfy the six area requirements or the undergraduate seminar requirement. Students may not substitute transfer units for the PHIL 80 requirement.

Subplan in History and Philosophy of Science

Undergraduates may major in Philosophy with a field of study in History and Philosophy of Science. This field of study is declared on Axess and is printed on the transcript.

Each participating student is assigned an adviser who approves the course of study. A total of 61 units are required for the sub-major, to be taken according to requirements 1 through 5 below. Substitutions for the listed courses are allowed only by written consent of the undergraduate adviser for History and Philosophy of Science.

Students are encouraged to consider doing honors work with an emphasis on the history and philosophy of science. Interested students should see the description of the honors thesis in Philosophy and consult their advisers for further information.

1. Three science courses (for example, biology, chemistry, physics) for 12 units.
2. The following Philosophy (PHIL) core courses must be completed with a letter grade by the end of the junior year:
   a.

		Units
Select one of the following:		3
PHIL 49	Survey of Formal Methods	4
PHIL 150	Mathematical Logic	4
PHIL 151	Metalogic	4
PHIL 154	Modal Logic	4

   b. either PHIL 60 Introduction to Philosophy of Science or PHIL 61 Philosophy and the Scientific Revolution.
   c. PHIL 80 Mind, Matter, and Meaning.
3. Three history of science courses.
4. Three philosophy of science courses, of which one must be PHIL 164 Central Topics in the Philosophy of Science: Theory and Evidence.
5. Three additional courses related to the major, in philosophy or history, to be agreed on by the adviser.
6. At least six courses in the major must be completed at Stanford with a letter grade. Units for Tutorial, Directed Reading, or The Dualist (PHIL 196 Tutorial, Senior Year, PHIL 197 Individual Work, Undergraduate, PHIL 198 The Dualist) may not be counted in the 61-unit requirement. No more than 10 units completed with grades of 'satisfactory' and/or 'credit' may be counted in the 61-unit requirement. Courses taken in fulfillment of the philosophy requirements under 2. must be taken for a minimum of 3 units and completed with a grade of 'C-' or higher.
7. Transfer units must be approved in writing by the Director of Undergraduate Study at the time of declaring a major. Transfer courses are strictly limited when used to satisfy major requirements.

Subplan in Philosophy and Literature

Undergraduates may major in Philosophy through a special track in Philosophy and Literature. This field of study is declared on Axess and is printed on the transcript. Students should also meet with the DUS of Philosophy and the Program Director of the Philosophy and Literature initiative to receive advising about course planning. The special track requires at least 65 units, and it consists of three main parts: a) core requirements in Philosophy (requirements 1, 4, and 6 below), b) a dedicated program of study in a single national literature, approved by the Program Director for Philosophy and Literature (requirement 3 below), and c) a group of courses exploring the interdisciplinary connections between philosophy and literature (requirements 2, 5, and 7 below). Students are encouraged to do honors work with an emphasis on philosophy and literature through the Philosophy honors program. (See

the description of the honors thesis in Philosophy and consult advisers for further information.)

Requirements:

1. Core requirements for the major in Philosophy, including:
   a. an introductory course
   b. PHIL 80 Mind, Matter, and Meaning
   c. the core distribution requirements listed in section 1b of the general program above.
   d. All courses taken for a letter grade in fulfillment of the philosophy core requirements (under 1., above) must be taken for a minimum of 3 units and completed with a grade of 'C-' or higher.
2. Gateway course in philosophy and literature (PHIL 81 Philosophy and Literature). This course should be taken as early as possible in the student's career, normally in the sophomore year.
3. Three courses in a single national literature, chosen by the student in consultation both with the adviser and with the director of undergraduate studies for Philosophy and Literature. In cases where a national literature department or program has a required or recommended three-course sequence, the student should normally take that sequence. In cases where the national literature is not in English, this normally involves meeting the language proficiency requirements of the relevant department.
4. Electives within Philosophy beyond the core requirements totaling at least 5 units, and drawn from courses numbered 100 or higher.
5. Two upper division courses of special relevance to the study of philosophy and literature, as identified by the committee in charge of the program. A list of approved courses is available from the program director of undergraduate studies, and is published on the web at https://philit.stanford.edu/undergraduates/undergraduate-special-relevance-courses (https://philit.stanford.edu/undergraduates/undergraduate-special-relevance-courses/)
6. Capstone seminar in the PHIL 194 series.
7. Capstone seminar of relevance to the study of philosophy and literature, as approved by the program committee. In some cases, with approval of the Philosophy Director of Undergraduate Study and the Philosophy and Literature Director of Undergraduate Studies, the same course may be used to meet requirements 6 and 7 simultaneously.

The following rules also apply to the special option:

1. Units for Honors Tutorial, Directed Reading (PHIL 196 Tutorial, Senior Year, PHIL 197 Individual Work, Undergraduate, PHIL 198 The Dualist), The Dualist (PHIL 198 The Dualist), Honors Seminar (PHIL 199 Seminar for Prospective Honors Students) may not be counted toward the 65-unit requirement. No more than 10 units with a grade of 'satisfactory' or 'credit' may be counted toward the unit requirement.
2. A maximum of 15 transfer units may be counted toward the major, at most 10 of which may substitute for courses within Philosophy. Transfer credits may not substitute for PHIL 80 or PHIL 81, and are approved as substitutes for the five area requirements or PHIL 194 only in exceptional cases.
3. Courses offered in other departments may be counted toward requirements 3, 5 and 7, but such courses, including affiliated courses, do not generally count toward the other requirements. In particular, such courses may not satisfy requirement 4.
4. Units devoted to meeting the language requirement are not counted toward the 65-unit requirement.

Philosophy and Religious Studies Combined Major

The undergraduate major in Philosophy and Religious Studies consists of 60 units of course work with approximately one third each in the philosophy core; the religious studies core; and additional coursework and a capstone requirement that completes the course of study.

No courses in either the philosophy or religious studies core may be taken satisfactory/no credit or credit/no credit.

In general, transfer units cannot be used to satisfy the core requirements. Transfer units and substitutions must be approved by the Director of Undergraduate Studies in the relevant department.

Students who have declared the combined major prior to Autumn 2019-20 may choose to follow the Degree Requirements listed in either the current Bulletin or the 2018-19 Bulletin (http://exploredegrees.stanford.edu/archive/2018-19/schoolofhumanitiesandsciences/philosophy/).

Core Requirements

1. Philosophy (PHIL) courses:
   a. Required course: PHIL 80 Mind, Matter, and Meaning (5 units).
   b. 16 units, including at least one Philosophy course from each of the following areas:
      i. Logic and philosophy of science: Students take either one from this list or an intermediate philosophy of science course numbered PHIL 160-169.

		Units
PHIL 49	Survey of Formal Methods	4
PHIL 60	Introduction to Philosophy of Science	5
PHIL 61	Philosophy and the Scientific Revolution	5
PHIL 150	Mathematical Logic	4
PHIL 151	Metalogic	4
PHIL 154	Modal Logic	4

      ii. Ethics and value theory: This requirement may be satisfied by PHIL 2 or any intermediate course devoted to central topics in moral and political philosophy numbered between PHIL 170-172 or 174-176.
      iii. Epistemology, metaphysics, and philosophy of language. This requirement may be satisfied by any intermediate course numbered between PHIL 180-189.
      iv. History of philosophy: Select one of

		Units
PHIL 100	Greek Philosophy	4
PHIL 101	Introduction to Medieval Philosophy	4
PHIL 102	Modern Philosophy, Descartes to Kant	4
PHIL 103	19th-Century Philosophy	4

   c. All philosophy courses taken for a grade in fulfillment of requirements under 1.a. and 1.b. must be taken for a minimum of 3 units and completed with a grade of 'C-' or higher.
2. Religious Studies (RELIGST) courses:
   a. One foundational course from RELIGST 1-99 (3-4 units).
   b. Two courses from RELIGST 100-289 in religious thought, broadly construed, chosen in consultation with, and approved by, the Religious Studies Director of Undergraduate Studies (8-10 units).
   c. Required Course: RELIGST 290 Majors' Seminar: Theories of Religion (5 units; offered Winter Quarter; junior year; fulfills WIM requirement).
3. The remaining coursework (approximately 20 units) is to be chosen according to interest, in consultation with the student's adviser, and with an eye to the senior capstone requirement.
   a. No more than 5 of these additional units in either department may come from courses numbered below PHIL/RELIGST 100.

b. No more than 10 units taken credit/no credit may count toward the major.
c. Students should ensure that their total complement of RELIGST courses (i.e. core and elective taken together) is not focused on a single religious tradition.

Capstone Requirement

The capstone experience aims to foster the integration of capacities, knowledge, and skills acquired in the student's core and elective coursework. Combined majors fulfill this requirement by completing the capstone requirement for *either* the B.A. in Philosophy or the B.A. in Religious Studies. Students should discuss this choice with their adviser during their junior year and consult the capstone requirements for Philosophy and the Religious Studies majors, respectively, in the Bulletin.

1. The capstone requirement in Philosophy is fulfilled by the successful completion of one of the PHIL 194 Capstone Seminars. The role of the PHIL Capstone Seminar is to provide students with an opportunity to synthesize their undergraduate educational careers and to demonstrate their capacity for independent and creative philosophical work.
   a. PHIL 194_ (4 units)
2. The capstone requirement in Religious Studies is fulfilled by the writing of either a senior essay or an honors thesis, which provides students with the opportunity to pursue independent research on a topic of interest under the direction of a Religious Studies faculty member. Two required courses support the successful completion of this senior project:

		Units
RELIGST 297	Senior Essay/Honors Thesis Research	5-10
	Senior Essay: 5 units, Winter Quarter, graded 'N' until submission	
	Honors Thesis: 5-10 units, spread over Autumn and Winter Quarters, graded 'N' until submission	
RELIGST 298	Senior Colloquium (Spring Quarter; grading option S/NC)	4

Honors Program

Students who wish to undertake a more intensive and extensive program of study, including seminars and independent work, are invited to apply for the honors program during Winter Quarter of the junior year. Admission is selective on the basis of demonstrated ability in Philosophy, including an average grade of at least 'A-' in a substantial number of Philosophy courses and progress towards satisfying the requirements of the major.

With their application, candidates should submit an intended plan of study for the remainder of the junior and the senior years. It should include at least 5 units of Senior Tutorial (PHIL 196 Tutorial, Senior Year) during Autumn and/or Winter quarter(s) of the senior year. Students who are applying to Honors College may use the same application for philosophy honors. In the quarter preceding the tutorial, students should submit an essay proposal to the Philosophy undergraduate director and determine an adviser.

Students applying for honors should enroll in Junior Honors Seminar (PHIL 199 Seminar for Prospective Honors Students) during the Spring Quarter of the junior year.

The length of the honors essay may vary considerably depending on the problem and the approach; usually it falls somewhere between 7,500 and 12,500 words. This essay may use work in previous seminars and courses as a starting point, but it cannot be the same essay that has been used, or is being used, in some other class or seminar. It must be a substantially new and different piece of work reflecting work in the tutorials.

A completed draft of the essay is submitted to the adviser at the end of the Winter Quarter of the senior year. Any further revisions must be finished by the fifth full week of the Spring Quarter, when three copies of the essay are to be given to the undergraduate secretary. The honors essay is graded by the adviser together with a second reader, chosen by the adviser in consultation with the student. The student also provides an oral defense of the thesis at a meeting with the adviser and second reader. The essay must receive a grade of 'A-' or better for the student to receive honors.

Honors tutorials represent units in addition to the 55-unit requirement.

For further information, contact the Honors Director.

Joint Major Program in Philosophy and Computer Science

The joint major program (JMP) was discontinued at the end of the academic year 2018-19. Students may no longer declare this program. All students with declared joint majors are permitted to complete their degree; faculty and departments are committed to providing the necessary advising support.

See the "Joint Major Program (p. 33)" section of this bulletin for a description of University requirements for the JMP. See also the Undergraduate Advising and Research JMP (https://majors.stanford.edu/more-ways-explore/joint-majors-csx/) web site and its associated FAQs.

Students completing the JMP receive a B.A.S. (Bachelor of Arts and Science).

The joint major in Philosophy and Computer Science provides opportunities for the systematic study of computation together with philosophy in the broadest sense.

The joint major is appropriate for three distinct groups of students:

1. students with separate interests in the two fields who wish to begin thinking about their interaction (or else applications of one set to the other);
2. students interested in exploring philosophical issues in, and foundations of, computing;
3. students who would like to pursue philosophical investigations using computational methods.

Philosophy Major Requirements in the Joint Major Program

See the "Computer Science Joint Major Progra (p. 714)m" section of this bulletin for details on Computer Science requirements.

Students in the joint major are required to complete the same introductory and core requirements as other Philosophy majors, with the exception of a more demanding logic requirement. In addition, joint majors must complete a senior capstone seminar in Philosophy (PHIL 194), and are normally expected to complete (separately from PHIL 194) an integrative senior capstone project, developed with faculty adviser(s) in CS and/or Philosophy, and approved in writing by the joint major's faculty adviser in Philosophy. Students may register for 5-10 units Individual Work, Undergraduate (PHIL 197) in association with the integrative capstone. These units may be taken across one or two quarters, and must be taken for a letter grade. Such projects must integrate the student's CS and philosophical learning.

In recognition of the student's work in the CS side of the joint major, the normal elective units required for Philosophy majors are reduced by

5 units for joint majors. Thus, the joint major requires 50 units within Philosophy.

Because logic is a core area of intersection between Philosophy and CS, students are in the best position to leverage the intersection of their work in the two fields if they develop a strong background in logical methods, and have a clear understanding of the way those formal methods are or can be used within Philosophy. Joint majors are therefore required to complete training in logic at least through successful completion of PHIL 150.

Thus, the Philosophy requirements of the joint major are:

1. An Introductory course (numbered under 100)
2. PHIL 80 (writing in the major)
3. Core requirements in philosophy
   a. One course in logic (PHIL 150 or higher);
   b. One course in philosophy of science;
   c. One course in moral or political philosophy (normally PHIL 2 or PHIL 170s)
   d. One course in contemporary theoretical philosophy (PHIL 180s)
   e. Two courses in the history of philosophy, namely
      i. PHIL 100 (ancient philosophy)
      ii. PHIL 102 (modern philosophy)
4. Capstone seminar within philosophy (PHIL 194s)
5. Expected integrative independent capstone project
6. Electives sufficient to bring the student's overall program up to a minimum total of 50 units in Philosophy.

Units for Independent Work, Directed Reading, the Dualist, and Honors Seminar (PHIL 196, 197, 198, 199) do not count toward the overall requirement of 50 units within Philosophy. No more than 10 units of courses completed with grades of 'Satisfactory' or 'Credit' may be counted toward the 50-unit requirement. Units taken for a letter grade in fulfillment of the core requirements listed under 3. must be completed with a grade of 'C-' or higher.

Students in the joint major should register their major declaration not only with the Director of Undergraduate Study (DUS) of Philosophy but also with the joint major's faculty adviser in Philosophy. In consultation with the faculty adviser (ideally beginning in the sophomore year), each joint major should work out an individualized program of courses to develop her/his philosophical interests and to explore the connections between them and her/his interests in computation. Each student should meet with the faculty adviser quarterly for a program update, during which there is discussion of opportunities for integrating the ongoing work in Philosophy and CS through course work, employment, projects, or other extracurricular activities. The faculty adviser assists students to develop coherent programs of study leading toward integrative senior experiences. If the normal expectation of a senior project turns out not to be suitable in individual cases, the student must obtain approval in writing from the faculty adviser of the substitute integrative activities and the faculty advisor of the joint major.

Learning Objectives

Because the joint major seeks to develop deep disciplinary knowledge within Philosophy, the learning objectives of the general philosophy major also apply in the case of the joint major. In this aspect, students are expected to demonstrate:

1. the ability to communicate philosophical ideas effectively orally and in writing.
2. close reading, argument evaluation, and analytical writing.
3. dialectical ability to identify strengths and weaknesses of an argument and devise appropriate and telling responses.
4. the ability to think critically and demonstrate clarity of conceptualization.
5. the ability to differentiate good from unpromising philosophical questions.
6. the ability to sustain an argument of substantial scope, showing control over logical, argumentative, and evidential relations among its parts.

In addition, the joint major has the ambition to develop key knowledge and capacities that are relevant to the intersection of Philosophy and CS. In this domain, students in the joint major are expected to:

1. develop problem solving skills suitable to their work in the Computer Science side of the major, in accordance with learning goals specified for the joint major by Computer Science.
2. develop mastery of logical and formal methods adequate to support their work at the intersection of computing and philosophy.
3. demonstrate a deep understanding of at least one particular area of intersection between the two fields, or of how methods and ideas from one of the disciplines can inform or be applied to the other.

Dropping a Joint Major Program

To drop the joint major, students must submit the Declaration or Change of Undergraduate Major, Minor, Honors, or Degree Program (https://stanford.box.com/change-UG-program/). Students may also consult the Student Services Center (http://studentservicescenter.stanford.edu/) with questions concerning dropping the joint major.

Transcript and Diploma

Students completing a joint major graduate with a B.A.S. degree. The two majors are identified on one diploma separated by a hyphen. There will be a notation indicating that the student has completed a "Joint Major." The two majors are identified on the transcript with a notation indicating that the student has completed a "Joint Major."

Minor in Philosophy

A minor in Philosophy consists of at least 30 units of Philosophy courses satisfying the following conditions:

1. Students taking a Philosophy Thinking Matters course may count it as equivalent to a maximum of 4 units of Philosophy courses under 100. Students who took the Winter/Spring Philosophy Introduction to the Humanities (IHUM) track may count these courses as equivalent to a maximum of 5 units of Philosophy courses under 100. (IHUM courses are no longer offered).
2. The 30 units must include one of:
   a. a history of philosophy course numbered 100 or above and for a minimum of 3 units
   b. one quarter of Philosophy Thinking Matters (THINK)
3. Minors must take one course from any two of the following three areas (PHIL):
   a. Philosophy of Science and Logic: For philosophy of science, either PHIL 60, PHIL 61, or an intermediate philosophy of science courses numbered between PHIL 160 - 169; or else, for logic, one of:

		Units
Logic		
PHIL 49	Survey of Formal Methods	4
PHIL 150	Mathematical Logic	4
PHIL 151	Metalogic	4
PHIL 154	Modal Logic	4

   b. Moral and political philosophy: This requirement may be satisfied by PHIL 2 or any intermediate course devoted to central topics in

moral and political philosophy numbered between PHIL 170 - 172, or 174-176.

c. Contemporary theoretical philosophy: This requirement may be satisfied by most intermediate courses numbered between PHIL 180 - 189.

4. At least 10 units must be from courses numbered 100 or above.
5. Transfer units must be approved in writing by the Director of Undergraduate Study at the time of declaring. The number of transfer units is generally limited to a maximum of 10.
6. No more than 6 units completed with grades of 'satisfactory' or 'credit' count towards the 30-unit requirement.
7. Any courses taken for a letter grade in fulfillment of the 30-unit requirement must be taken for a minimum of 3 units and completed with a grade of 'C-' or higher.
8. Units for tutorials, directed reading, and affiliated courses may not be counted.

Students must declare their intention to minor in Philosophy in a meeting with the Director of Undergraduate Study. This formal declaration must be made no later than the last day of the quarter two quarters before degree conferral. The Permission to Declare a Philosophy Minor (signed by the Director of Undergraduate Study) lists courses taken and to be taken to fulfill minor requirements. This permission is on file in the department office. Before graduation, a student's record is checked to see that requirements have been fulfilled, and the results are reported to the University Registrar.

Master of Arts in Philosophy

University requirements for the M.A. are discussed in the "Graduate Degrees (p. 65)" section of this bulletin.

Three programs lead to the M.A. in Philosophy. One is a general program providing a grounding in all branches of the subject. The others provide special training in one branch.

Coterminal Bachelor's and Master's Degrees in Philosophy

It is possible to earn an M.A. in Philosophy while earning a B.A. or B.S. This can usually be done by the end of the fifth undergraduate year, although a student whose degree is not in Philosophy may require an additional year. Standards for admission to, and completion of, this program are the same as for M.A. applicants who already have the bachelor's degree when matriculating. Applicants for the coterminal program are not, however, required to take the Graduate Record Exam.

University requirements for the coterminal M.A. are described in the "Coterminal Bachelor's and Master's Degrees (p. 56)" section of this bulletin. See also the Registrar's Coterminal Degree Programs (https://registrar.stanford.edu/students/coterminal-degree-programs/) web site.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Admissions

All prospective master's students, including those currently enrolled in other Stanford programs, must apply for admission to the program. No fellowships are available. Entering students must meet with the director of the master's program and have their advisor's (p. 1874) approval, in writing, of program proposals. The master's program should not be considered a stepping stone to the doctoral program; these two programs are separate and distinct. Coterminal applications are only accepted in Winter Quarter, for a Spring Quarter start. The coterm deadline is the end of the second week of Winter Quarter.

Unit Requirements

Each program requires a minimum of 45 units in philosophy. Students in a special program may be allowed or required to replace up to 9 units of philosophy by 9 units in the field of specialization. Although the requirements for the M.A. are designed so that a student with the equivalent of a strong undergraduate philosophy major at Stanford might complete them in one year, most students need longer. Students should also keep in mind that although 45 units is the minimum required by the University, quite often more units are necessary to complete department requirements. Up to 6 units of directed reading in philosophy may be allowed. There is no thesis requirement, but an optional master's thesis or project, upon faculty approval, may count as the equivalent of up to 8 units. A special program may require knowledge of a foreign language. At least 45 units in courses numbered 100 or above must be completed with a grade of 'B-' or better at Stanford. Students are reminded of the University requirements for advanced degrees, and particularly of the fact that for the M.A., students must complete three full quarters as measured by tuition payment.

General Program

The General Program requires a minimum of 45 units in Philosophy courses numbered above 99. These courses must be taken for a letter grade, and the student must receive at least a 'B-' in the course. Courses taken to satisfy the undergraduate core or affiliated courses may not be counted in the 45 units. The requirement has three parts:

1. **Undergraduate Core**
   Students must have when they enter, or complete early in their program, the following undergraduate courses (students entering from other institutions should establish equivalent requirements with a master's advisor upon arrival or earlier):

   a. Logic:

   Select one of the following:

		Units
PHIL 49	Survey of Formal Methods	4
PHIL 150	Mathematical Logic	4
PHIL 151	Metalogic	4
PHIL 154	Modal Logic	4

   b. Philosophy of science: This requirement may be satisfied by PHIL 60, PHIL 61, or any intermediate philosophy of science course numbered between PHIL 160 - 169.

c. Moral and political philosophy: This requirement may be satisfied by any intermediate course devoted to central topics in moral and political philosophy numbered between PHIL 170 - 172, or PHIL 174-176.
d. Contemporary theoretical philosophy: This requirement may be satisfied by any intermediate course numbered between PHIL 180 - 189.
e. History of philosophy: two history of philosophy courses numbered 100 or above

2. **Graduate Core**
Students must take at least one course numbered over 105 from three of the following five areas (courses used to satisfy the undergraduate core cannot also be counted toward satisfaction of the graduate core). Crosslisted and other courses taught outside the Department of Philosophy do not count towards satisfaction of the core.
   a. Logic and semantics
   b. Philosophy of science and history of science
   c. Ethics, value theory, and moral and political philosophy
   d. Metaphysics, epistemology, philosophy of mind, and philosophy of language
   e. History of philosophy
3. **200-Level Course Requirement**
Each master's candidate must take at least two courses numbered above 200; these cannot be graduate sections of undergraduate courses.
4. **Specialization**
Students must take at least three courses numbered over 105 in one of the five areas.

Special Program in Symbolic Systems

Students should have the equivalent of the Stanford undergraduate major in Symbolic Systems. Students who have a strong major in one of the basic SSP disciplines (philosophy, psychology, linguistics, computer science) may be admitted, but are required to do a substantial part of the undergraduate SSP core in each of the other basic SSP fields. This must include the following philosophy courses:

		Units
PHIL 80	Mind, Matter, and Meaning	5
PHIL 151	Metalogic	4
And one of the following:		
PHIL 181	Philosophy of Language	4
PHIL 184	Topics in Epistemology	4
PHIL 186	Philosophy of Mind	4
PHIL 187	Philosophy of Action	4

This work does not count towards the 45-unit requirement.

Course Requirements

1. Four courses in philosophy at the graduate level (numbered 200 or above), including courses from three of the following five areas:
   a. Philosophy of language
   b. Logic
   c. Philosophy of mind
   d. Metaphysics and epistemology
   e. Philosophy of science

   At most two of the four courses may be graduate sections of undergraduate courses numbered 100 or higher.
2. Three courses numbered 100 or higher from outside Philosophy, chosen in consultation with an advisor. These courses should be from two of the following four areas:
   a. Psychology
   b. Linguistics
   c. Computer Science
   d. Education

   Remaining courses are chosen in consultation with and approved by an advisor.

Special Program in the Philosophy of Language

Admission is limited to students with substantial preparation in philosophy or linguistics. Those whose primary preparation has been in linguistics may be required to satisfy all or part of the undergraduate core requirements as described in the "General Program" subsection above. Those whose preparation is primarily in philosophy may be required to take additional courses in linguistics.

Course Requirements

1. Philosophy of language: two approved courses in the philosophy of language numbered 180 or higher.
2. Syntactic theory and generative grammar:

		Units
PHIL 384	Seminar in Metaphysics and Epistemology	4
LINGUIST 230A	Introduction to Semantics and Pragmatics	4

3. Logic: at least two approved courses numbered PHIL 151 Metalogic or higher.
4. An approved graduate-level course in mathematical linguistics or automata theory.

Doctor of Philosophy in Philosophy

Prospective graduate students should see the Office of Graduate Admissions (http://gradadmissions.stanford.edu) web site for information and application materials. Applicants should take the Graduate Record Examination by October of the year the application is submitted; in the 2020-21 admissions cycle the GRE is optional, due to the pandemic.

The University's basic requirements for the Ph.D. degree including candidacy, residence, dissertation, and examination are discussed in the "Graduate Degrees (p. 65)" section of this bulletin.

University candidacy requirements, published in the "Candidacy (p. 67)" section of this bulletin, apply to all Ph.D. students. Admission to a doctoral degree program is preliminary to, and distinct from, admission to candidacy. Admission to candidacy for the doctoral degree is a judgment by the faculty in the department or school of the student's potential to successfully complete the requirements of the degree program. Students are expected to complete department qualifying procedures and apply for candidacy at the beginning of the seventh academic quarter, normally the Autumn Quarter of the student's third year.

Admission to candidacy for the doctoral degree is granted by the major department following a student's successful completion of qualifying procedures as determined by the department. Departmental policy determines procedures for subsequent attempts to become advanced to candidacy in the event that the student does not successfully complete the procedures. Failure to advance to candidacy results in the dismissal of the student from the doctoral program; see the "Guidelines for Dismissal of Graduate Students for Academic Reasons (p. 70)" section of this bulletin.

The requirements detailed here are department requirements. These requirements are meant to balance structure and flexibility in allowing students, in consultation with their advisors (https://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/philosophy/#graduateadvisingtext), to take a path through the program that gives them a rigorous and broad philosophical education, with room to focus on areas of particular interest, and with an eye to completing the degree with an excellent dissertation and a solid preparation for a career in academic philosophy.

Normally, all courses used to satisfy the distribution requirements for the Philosophy Ph.D. are Stanford courses taken as part of a student's graduate program. In special circumstances, a student may petition to use a very small number of graduate-level courses taken at other institutions to satisfy a distribution requirement. To be approved for this purpose, the student's work in such a graduate-level course would need to involve an appropriate subject matter and would need to be judged by the department to be at the level of an 'A' in a corresponding graduate-level course at Stanford.

Courses used to satisfy any course requirement in Philosophy (except Teaching Methods and the summer Dissertation Development Seminar) must be passed with a letter grade of 'B-' or better (no satisfactory/no credit), except in the case of a course/seminar used to satisfy the third-year course/seminar requirement and taken for only 2 units. Such a reduced-unit third-year course/seminar must be taken credit/no credit.

At the end of each year, the department reviews the progress of each student to determine whether the student is making satisfactory progress, and on that basis to make decisions about probationary status and termination from the program where appropriate.

Any student in one of the Ph.D. programs may apply for the M.A. when all University and department requirements have been met.

Proficiency Requirements

1. *First-year Ph.D. Proseminar*: a one quarter, topically focused seminar offered in Autumn Quarter, and required of all first-year students.

2. *Distribution requirements during the first six quarters*. Intended to ensure a broad and substantial exposure to major areas of philosophy while allowing for considerable freedom to explore.

    a. six courses, each taken for the full unit load for the course, distributed across three areas as follows:
        i. two courses in value theory including ethics, aesthetics, political philosophy, social philosophy, philosophy of law. At least one of the courses satisfying this distribution requirement must be in ethics or political philosophy.
        ii. Two courses in language, mind, and action. One course satisfying this requirement must be drawn from the language related courses, and one from mind and action related courses.
        iii. two courses in metaphysics and epistemology (including metaphysics, epistemology, philosophy of science). At least one of the courses satisfying this requirement must be drawn from either metaphysics or epistemology.
        iv. Instructors indicate which courses may satisfy particular requirements. If a course potentially satisfies more than one requirement the student may use it for only one of those area requirements; no units may be double-counted. Students must develop broad competencies in all these areas. Those without strong backgrounds in these areas would normally satisfy these distribution requirements by taking more basic courses rather than highly specialized and focused courses. Students should consult with their advisor in making these course decisions, and be prepared to explain these decisions when reviewed for candidacy; see requirement 6 below.
    b. Logic requirement: PHIL 150 Mathematical Logic or equivalent.
    c. History/logic requirement. One approved course each in ancient and modern philosophy, plus either another approved history of philosophy course or PHIL 151 Metalogic.
    d. Students should normally take at least 64 graduate level units at Stanford during their first six quarters (in many cases students would take more units than that) and of those total units, at least 49 units of course work are to be in the Philosophy department. These courses must be numbered above 110, but not including Teaching Methods (PHIL 239 Teaching Methods in Philosophy) or affiliated courses. Units of Individual Directed Reading are normally not to be counted toward this 49-unit requirement unless there is special permission from the student's advisor and the Director of Graduate Studies.
    e. Prior to candidacy, at least 3 units of work must be taken with each of four Stanford faculty members.
3. *Writing Requirement: Second Year Paper*

    The second year paper should demonstrate good scholarship and argumentative rigor, and be a polished piece of writing approximately 8000 words in length. The second year paper need not bear any specific relationship to the dissertation. It may be a version of a prospective dissertation chapter, but this is not required. The final version must be turned in on the last day of Summer Quarter of the second year. Extensions of this deadline require the consent of the instructor of the second year Writing Seminar and the Director of Graduate Studies and are only granted in exceptional cases (e.g., documented illness, family crisis). The final paper is read by a committee of two faculty members and it is an important consideration in the department's decision on the student's candidacy.

4. *Teaching Assistancy*

    A minimum of five quarters of teaching assistancy are required for the Ph.D. Normally one of these quarters is as a teaching assistant for the Philosophy Department's Writing in the Major course, PHIL 80 Mind, Matter, and Meaning. It is expected that students not teach in their first year and that they teach no more than two quarters in their second year. Students are required to take PHIL 239 Teaching Methods in Philosophy during Spring Quarter of their first year and during Autumn Quarter of their second year. Teaching is an important part of students' preparation to be professional philosophers.
5. *Review at the End of the Second Year for Advancement to Candidacy*

    The faculty's review of each student includes a review of the student's record, an assessment of the second year paper, and an assessment of the student's preparation for work in her/his intended area of specialization, as well as recommendations of additional preparation, if necessary.
6. *Candidacy*

    To continue in the Ph.D. program, each student must apply for candidacy at the beginning of the seventh academic quarter, normally the Autumn Quarter of the student's third year. Students may be approved for or denied candidacy by the end of that quarter by the department. In some cases, where there are only one or two outstanding deficiencies, the department may defer the candidacy decision and require the student to re-apply for candidacy in a subsequent quarter. In such cases, definite conditions for the candidacy re-application must be specified, and the student must work with the advisor and the DGS to meet those conditions in a timely fashion. A failure to maintain timely progress in satisfying the specified conditions constitutes grounds for withholding travel and discretionary funds and for a denial of advancement to candidacy.
7. *Writing Seminar*: In the Summer Quarter after the second year, students are required to attend the Writing Seminar. The Writing

Seminar is intended to help students complete their second year papers.

8. Upon completion of the summer writing seminar, students must sign up for independent study credit, PHIL 240 Individual Work for Graduate Students, with their respective advisors each quarter. A plan at the beginning, and a report at the end, of each quarter must be signed by both student and advisor and submitted to the graduate administrator for inclusion in the student's file. This is the process every quarter until the completion of the departmental oral.
9. In Autumn and Winter quarters of the third year, students register in and satisfactorily complete PHIL 301 Dissertation Development Proseminar. Students meet to present their work in progress and discuss their thesis project. Participation in these seminars is required.
10. During the third and fourth years in the program, a student should complete at least three graduate-level courses/seminars, at least two of them in philosophy (a course outside philosophy can be approved by the advisor), and at least two of them in the third year. The three seminars can be taken credit/no-credit for reduced (2) units. Courses required for candidacy are not counted toward satisfaction of this requirement. This light load of courses allows students to deepen their philosophical training while keeping time free for thesis research.
11. *Dissertation Work and Defense*

    The third and following years are devoted to dissertation work. The few requirements in this segment of the program are milestones to encourage students and advisors to ensure that the project is on track.
    a. *Dissertation Proposal*—By Spring Quarter of the third year, students should have selected a dissertation topic and committee. A proposal sketching the topic, status, and plan for the thesis project, as well as an annotated bibliography or literature review indicating familiarity with the relevant literature, must be received by the committee one week before the meeting on graduate student progress late in Spring Quarter. The dissertation proposal and the reading committee's report on it will constitute a substantial portion of the third year review.
    b. *Departmental Oral*—During Autumn Quarter of the fourth year, students take an oral examination based on at least 30 pages of written work, in addition to the proposal. The aim of the exam is to help the student arrive at an acceptable plan for the dissertation and to make sure that student, thesis topic, and advisors make a reasonable fit. It is an important chance for the student to clarify their goals and intentions with the entire committee present.
    c. *Fourth-Year Colloquium*—No later than Spring Quarter of the fourth year, students present a research paper in a 60-minute seminar open to the entire department. This paper should be on an aspect of the student's dissertation research. This is an opportunity for the student to make their work known to the wider department, and to explain their ideas to a general philosophical audience.
    d. *University Oral Exam*—Ph.D. students must submit a completed draft of the dissertation to the reading committee at least one month before the student expects to defend the thesis in the University oral exam. If the student is given consent to go forward, the University oral can take place approximately two weeks later. A portion of the exam consists of a student presentation based on the dissertation and is open to the public. A closed question period follows. If the draft is ready by Autumn Quarter of the fourth year, the student may request that the University oral count as the department oral.

Interdisciplinary Study

The department supports interdisciplinary study. Courses in Stanford's other departments and programs may be counted towards the degree, and course requirements in Philosophy are designed to allow students considerable freedom in taking such courses. Dissertation committees may include members from other departments. Where special needs arise, the department is committed to making it possible for students to obtain a philosophical education and to meet their interdisciplinary goals. Students are advised to consult their advisors and the department's student services office for assistance.

Interdepartmental Programs

Graduate Program in Cognitive Science

Philosophy participates with the departments of Computer Science, Linguistics, and Psychology in an interdisciplinary program in Cognitive Science. It is intended to provide an interdisciplinary education, as well as a deeper concentration in philosophy, and is open to doctoral students. Students who complete the requirements within Philosophy and the Cognitive Science requirements receive a special designation in Cognitive Science along with the Ph.D. in Philosophy. To receive this field designation, students must complete 30 units of approved courses, 18 of which must be taken in two disciplines outside of philosophy. The list of approved courses can be obtained from the Cognitive Science program located in the Department of Psychology.

Special Track in Philosophy and Symbolic Systems

Students interested in interdisciplinary work relating philosophy to artificial intelligence, cognitive science, computer science, linguistics, or logic may pursue a degree in this program.

Prerequisites—Admitted students should have covered the equivalent of the core of the undergraduate Symbolic Systems Program requirements as described in the "Symbolic Systems (p. 2155)" section of this bulletin, including courses in artificial intelligence (AI), cognitive science, linguistics, logic, and philosophy. The graduate program is designed with this background in mind. Students missing part of this background may need additional course work. In addition to the required course work below, the Ph.D. requirements are mostly the same as for the regular program, with the exceptions noted below.

Courses of Study—The program consists of three years of courses and two years of dissertation work. Students are required to take the following philosophy courses in the first two years:

1. Proseminar
2. Two courses in Language/Mind/Action
3. Two courses in Metaphysics/Epistemology/Science
4. Two courses in Value Theory
5. One course each in Ancient and Modern
   Among the eight courses required by 2-5, students in the program may omit two, in any two of the four categories. The two omitted courses may not come from the same category.
6. One advanced course in logic, at the level of Phil 151 or higher
7. Two graduate courses in cognitive psychology
8. Two graduate courses in computer science, one of which must be either CS 221 Artificial Intelligence: Principles and Techniques or a more advanced course in AI.
9. Two graduate courses in linguistics.
   From categories 7-9, at least one of these courses must significantly engage with experimental literature.
10. 64 graduate-level units, 49 of which are units in philosophy, during the first six quarters.
11. A second-year paper, which not need not be on a topic in symbolic systems, but could be on any philosophical topic.
    After the first 2 years, the requirements are mostly the same as for the standard track:
12. Three graduate-level seminars in the third and fourth year, at least two of which are taught in the Philosophy department, and at least two of which are in the third year. [All can be taken credit/no credit for reduced (2) units.]

13. Three advanced seminars in symbolic systems. Double counting: at most one of these could be a course satisfying one of 1-5; at most one could be a course satisfying one of 6-9; and at most one could be a course satisfying 11. At least one must not be counted for any other requirement. (In other words, at most two of these courses could count toward other requirements.) These may be completed any time before the fourth year.
14. Five quarters serving as a course TA, and taking the Teaching Methods in Philosophy (PHIL 239) course.
15. Dissertation Development Seminar in the summer after the second year.
16. The usual requirements for the dissertation (proposal, oral, 4th year talk, etc.).
17. The dissertation committee must include at least one member of the Department of Philosophy and one member of the Program in Symbolic Systems outside the Department of Philosophy.

Joint Program in Ancient Philosophy

This program is jointly administered by the Departments of Classics and Philosophy and is overseen by a joint committee composed of members of both departments. It provides students with the training, specialist skills, and knowledge needed for research and teaching in ancient philosophy while producing scholars who are fully trained as either philosophers with a strong specialization in ancient languages and philology, or classicists with a concentration in philosophy.

Students are admitted to the program by either department. Graduate students admitted by the Philosophy department receive their Ph.D. from the Philosophy department; those admitted by the Classics department receive their Ph.D. from the Classics department. For Philosophy graduate students, this program provides training in classical languages, literature, culture, and history. For Classics graduate students, this program provides training in the history of philosophy and in contemporary philosophy.

Each student in the program is advised by a committee consisting of one professor in each department.

Requirements for Philosophy Graduate Students: These are the same as the proficiency requirements for the Ph.D. in Philosophy.

One year of Greek is a requirement for admission to the program. If students have had a year of Latin, they are required to take 3 courses in second- or third-year Greek or Latin, at least one of which must be in Latin. If they have not had a year of Latin, they are then required to complete a year of Latin, and take two courses in second- or third-year Greek or Latin.

Students are also required to take at least three courses in ancient philosophy at the 200 level or above, one of which must be in the Classics department and two of which must be in the Philosophy department.

Ph.D. Subplan in History and Philosophy of Science

Graduate students in the Philosophy Ph.D. program may pursue a Ph.D. subplan in History and Philosophy of Science. The subplan is declared in Axess and subplan designations appear on the official transcript, but are not printed on the diploma.
Students must fulfill Departmental degree requirements and the following requirements:
1. Attendance at the HPS colloquium series.
2. Philosophy of Science courses:

		Units
Select one of the following:		
PHIL 263	Significant Figures in Philosophy of Science: Einstein	4
PHIL 264	Central Topics in the Philosophy of Science: Theory and Evidence	4
PHIL 264A	Central Topics in Philosophy of Science: Causation	4
PHIL 265	Philosophy of Physics: Space and Time	4
PHIL 265C	Philosophy of Physics: Probability and Relativity	4
PHIL 266	Probability: Ten Great Ideas About Chance	4
PHIL 267A	Philosophy of Biology	4
PHIL 267B	Philosophy, Biology, and Behavior	4

3. One elective seminar in the history of science.
4. One elective seminar (in addition to the course satisfying requirement 2) in philosophy of science.

Ph.D. Minor in Philosophy

To obtain a Ph.D. minor in Philosophy, students must follow these procedures:

1. Consult with the Director of Graduate Study to establish eligibility, and select a suitable advisor (https://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/philosophy/#graduateadvisingtext).
2. Give to the graduate administrator a signed copy of the program of study (designed with the advisor) which offers:
   a. 30 units of courses in the Department of Philosophy with a letter grade of 'B-' or better in each course. No more than 3 units of directed reading may be counted in the 30-unit requirement.
   b. At least one course or seminar numbered over 99 to be taken in each of these six areas:
      i. Logic
      ii. Philosophy of science
      iii. Ethics, value theory, and moral and political philosophy
      iv. Metaphysics and epistemology
      v. Language, mind and action
      vi. History of philosophy
   c. Two additional courses numbered over 199 to be taken in one of those (b) six areas.
3. A faculty member from the Department of Philosophy (usually the student's advisor) serves on the student's doctoral oral examination committee and may request that up to one third of this examination be devoted to the minor subject.
4. Paperwork for the minor must be submitted to the department office before beginning the program.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of Philosophy counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards

satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Other Undergraduate Policies

If a student has difficulty completing an undergraduate degree requirement due to the COVID-19 pandemic, (e.g., a study abroad requirement, a laboratory research requirement), the student should consult with the Student Services Officer to identify academic options to fulfill degree requirements.

Graduate Degree Requirements

Grading

The Department of Philosophy counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B' or better level.

Other Graduate Policies

If a student has difficulty completing a graduate degree requirement due to the COVID-19 pandemic, (e.g., a study abroad requirement, a laboratory research requirement), the student should consult with the Student Services Officer to identify academic options to fulfill degree requirements.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

The Philosophy department is committed to providing academic advising in support of graduate student scholarly and professional development. Faculty advisors guide students in key areas such as selecting courses, designing and conducting research, navigating degree requirements, exploring academic and professional opportunities, and preparing for their post-degree careers. When most effective, this advising relationship involves collaborative and sustained engagement by both the advisor and the advisee. An important part of the advisee-advisor relationship is that students learn to advocate for themselves; this includes discussing expectations for the advisor-advisee relationship with the advisor and revisiting these expectations periodically.

Master's Advising

Each first year Philosophy M.A. student is assigned an advisor on the basis of the student's interests. Entering students should meet with their advisors to discuss the selection of courses. Changes of advisors are always possible; they are initiated by a request of the graduate student to the M.A. Director and require the agreement of the proposed new advisor.

The department expects that M.A. advisors meet with their advisees regularly and at least once during the academic year. Such meetings may either be in-person or via the Internet (Skype, Zoom, etc.) and may be scheduled in-person or by email. Students typically initiate such meetings although faculty, when appropriate, try to get in touch with students who do not stay in regular contact.

M.A. advisors direct students towards the successful completion of the degree in good time. The Director of Graduate Studies and the M.A. Director monitor the student's progress and may initiate meetings when appropriate. Any graduate student can always seek the advice of the M.A. Director or the Director of Graduate Studies on general issues pertaining to the graduate program.

Academic progress and student completion of program requirements and milestones are monitored by the program director and staff, and are discussed by faculty at an annual meeting devoted to assessing graduate student progress. A detailed description of the program's requirements, milestones, and advising expectations is found in the Stanford Bulletin (p. 1869). Additionally, the program adheres to the advising guidelines and responsibilities listed by the Office of the Vice Provost for Graduate Education (https://vpge.stanford.edu/academic-guidance/advising-mentoring/) (VPGE) and in the (GAP) (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/philosophy/Graduate Academic Policies https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/page-3-3-1/).

Graduate students are active contributors to the advising relationship. They should proactively seek academic and professional guidance and take responsibility for informing themselves of policies and degree requirements.

As a best practice, advising expectations should be periodically discussed and reviewed to promote mutual understanding.

Doctoral Advising

Each first year Philosophy Ph.D. student is assigned an advisor on the basis of the student's stated interests. Entering students should meet with their Ph.D. advisors to discuss the selection of courses. Changes of advisors are always possible; they are initiated by a request of the graduate student to the Director of Graduate Studies (DGS) and require the agreement of the proposed new advisor. Students may, for instance, change advisors as their research focus takes shape. Ph.D. advisors direct students towards the successful completion of the degree in good time. In the first years of the program, this means successfully reaching candidacy (https://exploredegrees.stanford.edu/graduatedegrees/#doctoraltext). The DGS also monitors the student's progress and may initiate meetings when appropriate. Any graduate student can always seek the advice of the Director of Graduate Studies on general issues pertaining to the graduate program.

The department expects that Ph.D. advisors, during the student's first two years, meet with their advisees at least once per quarter during the academic year. Such meetings may either be in-person or via the Internet (Skype, Zoom, etc.) and may be scheduled in-person or by email. Students typically initiate such meetings although faculty, when appropriate, try to get in touch with students who do not stay in regular contact. Academic progress and student completion of program requirements and milestones are monitored by the Ph.D. advisor, the DGS, and staff, and are discussed by faculty at an annual meeting devoted to assessing graduate student progress. A detailed description of the program's requirements, milestones, and advising expectations is found on the Stanford Bulletin (p. 1870). Additionally, the program adheres to the advising guidelines and responsibilities listed by the Office of the Vice Provost for Graduate Education (https://vpge.stanford.edu/academic-guidance/advising-mentoring/) (VPGE) and in the Graduate Academic Policies (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/page-3-3-1/) (GAP).

A required pre-dissertation seminar in the summer after the second year helps students make the transition to forming a dissertation committee and starting to work on their dissertation. The University's requirements for the composition of the dissertation committee may be found in the "Doctoral (p. 67)" section of this bulletin. Dissertation development seminars are available to graduate students in their third year and beyond. At this point in the program, students often transition from the Ph.D. advisor to a dissertation advisor.

Students and their dissertation advisors are expected to regularly establish mutually agreed upon expectations for turning in written work. Dissertation advisors are expected to meet quarterly with their advisees. Submitted work is to be discussed or commented upon without undue delay. During each year that the student teaches in the department, a student's teaching experience and preparation for academic teaching is to be discussed during at least one meeting with their dissertation advisors.

Dissertation advisors direct the student towards the successful completion of the degree in good time. The DGS monitors the student's progress and initiates meetings when appropriate. The DGS and the placement committee cooperate to make the student aware of opportunities for professional development both inside and outside academics.

Advising and mentoring relationships are not limited to members of the dissertation committee, and all faculty (especially those on the student's dissertation committee) contribute when they can. When a faculty member joins a Ph.D. dissertation committee, the faculty member and the student should meet and work out mutually agreed upon expectations about how often they meet and when written work is to be turned in. Such work is to be read and commented on within a reasonable period of time. Any graduate student can always seek the advice of the Director of Graduate Studies on general issues pertaining to the graduate program.

Graduate students are active contributors to the advising relationship. They should proactively seek academic and professional guidance and take responsibility for informing themselves of policies and degree requirements for the Philosophy Ph.D. program.

As a best practice, advising expectations should be periodically discussed and reviewed to promote mutual understanding.

Dissertation advisors, members of the dissertation committee, and the advisee are expected to maintain professionalism and integrity throughout the course of their work together.

Emeriti (Professors): Dagfinn Føllesdal, John Perry, Thomas Wasow, Allen Wood, Rega Wood, Denis Phillips (Courtesy Professor)

Chair: Krista Lawlor

Director of Graduate Studies: Chris Bobonich

Director of Undergraduate Studies: Ray Briggs

Honors Director and Undergraduate Outreach Coordinator: Ray Briggs

Faculty Adviser for Joint Major with Computer Science: Ray Briggs

Professors: R. Lanier Anderson, Chris Bobonich, Michael Bratman, Ray Briggs, Alan Code, Graciela De Pierris, John Etchemendy, Michael Friedman, Krista Lawlor, Helen Longino, Thomas Ryckman (Teaching), Debra Satz, Brian Skyrms (Spring), Kenneth Taylor (deceased December 2, 2019), Johan van Benthem (Spring)

Associate Professors: Mark Crimmins, David Hills (Teaching), Nadeem Hussain (on leave)

Assistant Professors: Juliana Bidadanure, Rosa Cao, Jorah Dannenberg, Thomas Icard, Barry Maguire, Anna-Sara Malmgren, Antonia Peacocke, Wendy Salkin, Jared Warren

Courtesy Professors: Eamonn Callan, Reviel Netz, Josiah Ober, Rob Reich, Thomas Sheehan

Visiting Professors: John Broome (Winter), David Estlund (Autumn), Mikkel Gerken (Winter), Terence Irwin (Winter), Kendall Walton (Spring)

Visiting Assistant Professor: Gabrielle Jackson

Lecturers: John Holliday, Alison McConwell, Rhodes Pinto, Monica Solomon

Cognate Courses

The following courses have substantial philosophical content. However, in the absence of special permission these courses cannot generally be used to satisfy requirements for the Philosophy major or graduate degrees in Philosophy.

		Units
CLASSICS 181	Classical Seminar: Origins of Political Thought	4-5
EDUC 217	Free Speech, Academic Freedom, and Democracy	3
ETHICSOC 136R	Introduction to Global Justice	4
ETHICSOC 185M	Contemporary Moral Problems	4-5
GLOBAL 139	History of Philosophy from Al-Kindi to Averroes	3-5
MATH 161	Set Theory	3
RELIGST 181	Heidegger and Mysticism	4
RELIGST 269	Plotinus and Augustine	3-5

Courses

PHIL 1. Introduction to Philosophy. 4 Units.
Is there one truth or many? Does science tell us everything there is to know? Can our minds be purely physical? Do we have free will? Is faith rational? Should we always be rational? What is the meaning of life? Are there moral truths? What are truth, reality, rationality, and knowledge? How can such questions be answered? Intensive introduction to theories and techniques in philosophy from various contemporary traditions. Once a week discussions will occur during scheduled meeting time (~50 minutes).

PHIL 1X. intro to philosophical methodology. 4 Units.
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PHIL 2. Introduction to Moral Philosophy. 5 Units.
What should I do with my life? What kind of person should I be? How should we treat others? What makes actions right or wrong? What is good and what is bad? What should we value? How should we organize society? Is there any reason to be moral? Is morality relative or subjective? How, if at all, can such questions be answered? Intensive introduction to theories and techniques in contemporary moral philosophy.
Same as: ETHICSOC 20

PHIL 3N. Randomness: Computational and Philosophical Approaches. 3 Units.
Is it ever reasonable to make a decision randomly? For example, would you ever let an important choice depend on the flip of a coin? Can randomness help us answer difficult questions more accurately or more efficiently? What is randomness anyway? Can an object be random? Are there genuinely random processes in the world, and if so, how can we tell? In this seminar, we will explore these questions through the lenses of philosophy and computation. By the end of the quarter students should have an appreciation of the many roles that randomness plays in both humanities and sciences, as well as a grasp of some of the key analytical tools used to study the concept. The course will be self-contained, and no prior experience with randomness/probability is necessary.
Same as: CS 57N

PHIL 4N. Knowing Nothing. 3 Units.
Our beliefs are subject to multiple sources of error: a traveler's perception of an oasis in the desert may turn out to be a mirage; the key witness in a trial criminal may turn out to be lying; or a fluke in the data may mislead a research team into believing a false hypothesis; or a miscalculating math student may end up with the wrong answer. Philosophers often characterize knowledge as belief that is safe from error--but is knowledge possible? This course uses the philosophical arguments and thought experiments to assess the question of how much we can hope to know.

PHIL 5N. The Art of Living. 4 Units.
Whether we realize it or not, all of us are forced to make a fundamental choice: by deciding what is most valuable to us, we decide how we are going to live our life. We may opt for a life of reason and knowledge; one of faith and discipline; one of nature and freedom; one of community and altruism; or one of originality and style.We may even choose to live our lives as though they were works of art. In every case, hard work is required: our lives are not just given to us, but need to be made. To live well is, in fact, to practice an art of living. Where, however, do such ideals come from? How do we adopt and defend them? What is required to put them into practice? What do we do when they come into conflict with one another? And what role do great works of art play in all this? "The Art of Living" will explore the various ways in which it is possible to live well and beautifully, what it takes to implement them, and what happens when they come under pressure from inside and out.

PHIL 7N. Philosophy and Science Fiction. 3 Units.
What if things had been otherwise? What if things are someday, somewhere, very different than they are here and now? Science fiction and other genre fiction gives us the opportunity to explore worlds that stretch our conceptions of reality, of what it is to have a mind, to be human, and to communicate with one another. This course examines central questions in philosophy through the lens of speculative fiction. Can there be freedom in a deterministic world? How could language and communication evolve? What is a mind, and what is the nature of experience? How can we know what the world is like? We¿ll read classical and contemporary papers in philosophy alongside short stories, novels, and movies that play the role of thought experiments in illuminating philosophical issues.

PHIL 8N. Free Will and Responsibility. 4 Units.
In what sense are we, or might we be free agents? Is our freedom compatible with our being fully a part of the same natural, causal order that includes other physical and biological systems? What assumptions about freedom do we make when we hold people accountable morally and/or legally? When we hold people accountable, and so responsible, can we also see them as part of the natural, causal order? Or is there a deep incompatibility between these two ways of understanding ourselves? What assumptions about our freedom do we make when we deliberate about what to do? Are these assumptions in conflict with seeing ourselves as part of the natural, causal order?nWe will explore these and related questions primarily by way of careful study of recent and contemporary philosophical research on these matters.

PHIL 10N. Bounded Rationality. 3 Units.
This course takes a philosophical approach to a cutting edge debate in psychology. Readings include texts in contemporary cognitive science as well as in philosophy of mind.

PHIL 11N. Skepticism. 3 Units.
Preference to freshmen. Historical and contemporary philosophical perspectives on the limits of human knowledge of a mind-independent world and causal laws of nature. The nature and possibility of a priori knowledge. Skepticism regarding religious beliefs.

PHIL 12N. Concepts and concept possession. 3 Units.
Our thoughts are made up of concepts. If I didn't have the concept of a caterpillar or of love or of a prime number, I couldn't think about caterpillars, love, or prime numbers, respectively. And if I couldn't think about those things then I couldn't talk or sing or make jokes about them, believe or remember anything about them, reason about them, hope or desire or fear anything to do with them¿and so on. But what are concepts? What does it take to have one? And how do we get to do that: what's involved in the acquisition of a concept? Are some concepts innate? To what extent can empirical psychology help improve our understanding of concepts? How are concepts related to natural language? What counts as concept change? And how is it possible for concepts to 'reach out' and be about aspects of the world (e.g., about caterpillars, love or prime numbers)?nnIn this seminar we will explore these and related questions through extensive discussions, reading and writing. There will be a lot of emphasis on active class participation. The reading will include texts in contemporary cognitive science as well as in philosophy of mind.

PHIL 13. Humanities Core: Great Books, Big Ideas -- Europe, Modern. 3 Units.
This three-quarter sequence asks big questions of major texts in the European and American tradition. What is a good life? How should society be organized? Who belongs? How should honor, love, sin, and similar abstractions govern our actions? What duty do we owe to the past and future? This third and final quarter focuses on the modern period, from the rise of revolutionary ideas to the experiences of totalitarianism and decolonization in the twentieth century. Authors include Locke, Mary Shelley, Marx, Nietzsche, Freud, Weber, Primo Levi, and Frantz Fanon.
Same as: DLCL 13, FRENCH 13, HISTORY 239C, HUMCORE 13

PHIL 13N. Justice across Borders. 3 Units.
Most people are not your fellow citizens. (Over 95% of human beings, for example, are not Americans.) What do you owe to them as a matter of justice? What do they owe to you? nShould you save a foreigner's life instead of buying luxuries for yourself? Should you boycott 'fast fashion' produced by exploited workers abroad? Should universities divest from fossil fuels? How can a country like the United States justify forcefully preventing anyone from crossing its borders? Is anything absolutely prohibited to win a war? When examining such issues, we need to start with facts¿facts about poverty, inequality, climate change, immigration, etc. After surveying the basic facts, we will use philosophical readings to focus and deepen our discussions of what justice requires across borders. Some of the topics we discuss will be chosen on the basis of students' interests.

PHIL 14N. Belief and the Will. 3 Units.
Preference to freshmen. Is there anything wrong with believing something without evidence? Is it possible? The nature and ethics of belief, and belief's relation to evidence and truth. How much control do believers have over their belief?.

PHIL 15N. Freedom, Community, and Morality. 3 Units.
Preference to freshmen. Does the freedom of the individual conflict with the demands of human community and morality? Or, as some philosophers have maintained, does the freedom of the individual find its highest expression in a moral community of other human beings? Readings include Camus, Mill, Rousseau, and Kant.

PHIL 20N. Philosophy of Artificial Intelligence. 3 Units.
Is it really possible for an artificial system to achieve genuine intelligence: thoughts, consciousness, emotions? What would that mean? How could we know if it had been achieved? Is there a chance that we ourselves are artificial intelligences? Would artificial intelligences, under certain conditions, actually be persons? If so, how would that affect how they ought to be treated and what ought to be expected of them? Emerging technologies with impressive capacities already seem to function in ways we do not fully understand. What are the opportunities and dangers that this presents? How should the promises and hazards of these technologies be managed?nnPhilosophers have studied questions much like these for millennia, in scholarly debates that have increased in fervor with advances in psychology, neuroscience, and computer science. The philosophy of mind provides tools to carefully address whether genuine artificial intelligence and artificial personhood are possible. Epistemology (the philosophy of knowledge) helps us ponder how we might be able to know. Ethics provides concepts and theories to explore how all of this might bear on what ought to be done. We will read philosophical writings in these areas as well as writings explicitly addressing the questions about artificial intelligence, hoping for a deep and clear understanding of the difficult philosophical challenges the topic presents.nnNo background in any of this is presupposed, and you will emerge from the class having made a good start learning about computational technologies as well as a number of fields of philosophical thinking. It will also be a good opportunity to develop your skills in discussing and writing critically about complex issues.

PHIL 20S. Introduction to Moral Philosophy. 3 Units.
Moral philosophy is the area of philosophy concerned with how we ought to live our lives. This includes questions such as: what makes an action right or wrong? what makes for a virtuous versus a vicious character? and what sort of obligations, if any, do we have to other people or animals? Our aim is to understand how influential philosophers (including Plato, Aristotle, Mill, Hume, and Kant) have answered these questions and how they have justified their positions. We will also focus on developing student skills in argument and rigorous academic writing.

PHIL 21N. Ethics of Sports. 3 Units.
This seminar will be focused on the ethical challenges that are encountered in sport. We will focus on the moral and political issues that affect the world of sport and which athletes, coaches, sports commentators and fans are faced with. For instance, we will ask questions such as: what is a fair game (the ethics of effort, merit, success)? Is it ethical to train people to use violence (the ethics of martial arts)? Are divisions by gender categories justified and what should we think of gender testing? Is the use of animals in sport ever justified? Which forms of performance enhancements are acceptable in sport (the ethics of drug use and enhancements through technologies)? Should we ban sports that damage the players¿ health? Does society owe social support to people who hurt themselves while practicing extreme sports? nnThe class will be structured around small group discussions and exercises as well as brief lectures to introduce key moral and political concepts (such as fairness, equality, freedom, justice, exploitation, etc.). I will also bring guests speakers who are involved in a sport activity at Stanford or who have worked on sports as part of their academic careers. By the end of the seminar, students will have a good understanding of the various ethical challenges that surround the world of sport. They will be able to critically discuss sport activities, norms, modes of assessments and policies (on campus and beyond). They will also be prepared to apply the critical ethical thinking that they will have deployed onto other topics than sports. They will have been introduced to the normative approach to social issues, which consists in asking how things should be rather than describing how things are. They will be prepared to take more advanced classes in ethics, political theory, as well as moral and political philosophy.
Same as: ETHICSOC 121N

PHIL 21S. Classical Greek Philosophy. 3 Units.
This course introduces students to the ancient Greek philosophical tradition through the three great philosophers of the classical period: Socrates, Plato, and Aristotle. No prerequisites.

PHIL 22Q. Being Reasonable. 3 Units.
In everyday life, we ask each other to be reasonable, and we fault unreasonable behavior in ourselves and others. Moreover, the Anglo-American legal system makes extensive use of the ¿reasonable person standard¿ in everything from negligence to administrative law. What is it to be a reasonable person? What do we mean by ¿reasonable¿? This course will look at applications of the concept, and attempts by philosophers and legal theorists to understand what reasonableness is. We¿ll also look at criticisms of the use of the concept by feminist and critical legal theorists.nnCourse expectations: Philosophy involves lots of independence of mind, and you spend a lot of time reading and then writing, in order to sort out what you think. It also involves lots of time spent with others, discussing ideas and arguments. Our class will divide into time you spend reading and writing reactions to your reading (budget about 5 hours per week), and then hours spent together, in a free-ranging question and answer session, and a more formal, focused discussion of the reading (about 2 hours per week). You¿ll be working on a final short paper throughout the quarter. You should have a reliable internet connection. We¿ll talk via Zoom and use Canvas for shared reading reactions. First preference to Sophomores; second preference to Freshman. Enrollment Cap 10. No prior Philosophy courses needed.

PHIL 23A. The Cognitive Science of Mathematics. 2 Units.
Mathematics has two features which, taken together, are quite puzzling: (i) itsnobjects (numbers, functions, derivatives, manifolds, and the like) are very unlike everyday concrete material objects, yet (ii) it seems to be the source of our most certain knowledge. In this course, we will examine the role in which findings from empirical theories of mathematical cognition can help address and possibly dissolve this puzzle. The course will be broken up into three units: Philosophical Foundations, Numerical Cognition, and Metaphor and Higher Mathematical Thought.

PHIL 23S. Philosophy as Freedom. 3 Units.
Philosophizing, if done correctly, can be life-changing: new ideas can change the way we think about, look at, interact, engage and deal with the world around us. New ideas can bring out problems that we could not even see as problems before; they can change our conception of how and why we are to live the lives in the way we think we should; they can change our relations with other individuals who either share or do not share the ideas that we have newly come to acquire. The aim of this course is a philosophical exploration of some of the ideas that have shaped and are currently shaping our world today, and what that means for our evolving understanding of freedom, to be "purely at home with ourselves.".

PHIL 24G. Introduction to Animal Ethics. 2 Units.
In this introductory course we will engage in an interdisciplinary discussion about the theoretical and applied aspects of animal rights and the ethical treatment of animals. This course will be of interest to a wide range of students: philosophers, political scientists, ecologists, environmental scientists, and biologists. Throughout the course we will focus on the following questions: Do non-human animals have moral status and do we have moral obligations toward them? If so, what grounds the moral status of animals? Are some animals `persons¿? Do we have the right to eat and farm animals, use them in scientific and cosmetic experiments, display them in zoos and circuses, and keep them as pets? Under what circumstances would these actions be permissible, if at all? Was animal domestication a mistake? Basic familiarity with ethical theory (such as covered by PHIL2) is recommended.
Same as: ETHICSOC 124G

PHIL 27S. Human Nature. 3 Units.
In this course we'll investigate what makes us human. We'll ask ourselves such questions as: "What is rationality, and to what extent are we distinctively rational?"; "What is happiness, and is it attainable for us, given our nature?"; "What is the relation between human nature and our other identities, for instance gender?"; and "Can human nature change?" We'll pause to consider whether and how the facts we unearth in our investigation matter for ethical theory: How might our duties change in light of what we find out about human nature through descriptive metaphysics and the natural sciences? Might there instead be moral pressure to adopt a particular conception of our humanity? Readings will be culled primarily from the philosophical canon, though will also incorporate work in evolutionary biology and the cognitive and social sciences. No prior study in philosophy is presupposed.

PHIL 28S. Introduction to Modern Philosophy. 3 Units.
This course is an introduction to modern philosophy which focuses on foundational texts from the early modern period by Descartes, Leibniz and Hume. These thinkers strive to answer questions about the nature of the material world and our knowledge of it which are at the center of the development of modern science as we know it. At the same time, they struggle with a broader set of questions concerning the nature and existence of the soul, freedom of the will, and God. Texts include: Rene Descartes, Mediations on First Philosophy, G.W. Leibniz, Discourse on Metaphysics, New System of Nature, and assorted short essays and letters, David Hume, An Enquiry Concerning Human Understanding.

PHIL 29S. Philosophy and Emerging Technologies. 3 Units.
This course is an investigation into the philosophical questions raised by emerging technologies such as genetic engineering, self-driving cars, Mars colonization, and interactive art. For each unit, we will first familiarize ourselves with a specific emerging technology, and then look at classic philosophical readings in related topics. We will consider both how these philosophical discussions can help us think about the emerging technology and how the emerging technology might challenge our philosophical preconceptions. Through this course students will become sensitive to the various philosophical issues which new technologies raise, and learn how to apply existing philosophical theories and concepts to new topics and problems. No background in philosophy or familiarity with emerging technologies is required.

PHIL 30. Democracy Matters. 1 Unit.
Should the U.S. close its border to immigrants? What are the ramifications of income inequality? How has COVID-19 changed life as we know it? Why are Americans so politically polarized? How can we address racial injustice? As the 2020 election approaches, faculty members from across Stanford will explore and examine some of the biggest challenges facing society today. Each week will be dedicated to a different topic, ranging from health care and the economy to racial injustice and challenges to democracy. Faculty with expertise in philosophy, economics, law, political science, psychology, medicine, history, and more will come together for lively conversations about the issues not only shaping this election season but also the nation and world at large. There will also be a Q&A following the initial discussion. Attendance and supplemental course readings are the only requirements for the course.
Same as: ECON 4, POLISCI 42, PUBLPOL 4

PHIL 36. Dangerous Ideas. 1 Unit.
Ideas matter. Concepts such as revolution, tradition, and hell have inspired social movements, shaped political systems, and dramatically influenced the lives of individuals. Others, like immigration, universal basic income, and youth play an important role in contemporary debates in the United States. All of these ideas are contested, and they have a real power to change lives, for better and for worse. In this one-unit class we will examine these "dangerous" ideas. Each week, a faculty member from a different department in the humanities and arts will explore a concept that has shaped human experience across time and space. Some weeks will have short reading assignments, but you are not required to purchase any materials.
Same as: ARTHIST 36, COMPLIT 36A, EALC 36, ENGLISH 71, ETHICSOC 36X, FRENCH 36, HISTORY 3D, MUSIC 36H, POLISCI 70, RELIGST 36X, SLAVIC 36

PHIL 39S. Introduction to Ethics. 3 Units.
Construed broadly, ethics encompasses questions about moral truth, objectivity, and relativity; questions about what reasons we have to persist in acting morally; and questions about morality's substance or content. Some examples: Are moral claims mere matters of opinion? Is morality relative? If there are objective moral facts, what are they like, and how can we know them? Can we argue an avowed amoralist into caring about morality? If so, on what basis? What is morality telling us to do, anyway? In this course, we will make a preliminary investigation of these questions and of some important historical and contemporary attempts to answer them. We will also look at some possible sources for skepticism about morality: What if we are, in the end, wholly selfish animals? What if the correct account of the origins of our moral beliefs ends up undermining them? Does the role of luck in our lives undercut our basic notion of ourselves as responsible for our actions? More generally, is moral enterprise hopeless if nature's course is settled in advance?.

PHIL 40S. Introduction to the Philosophy of Science. 3 Units.
This course provides an introduction to some of the major philosophical questions about science. The first part of the course focuses on the role of values in a variety of sciences, especially in the environmental, biomedical and social sciences that have close connections with public policy. Question examined will include: Should values be involved in accepting or rejecting scientific hypotheses? Are certain scientific categories value laden? Are there scientific topics that should be deprioritized or not pursued at all in a society? How should scientists communicate socially important but uncertain information to the policy makers and the public? The second part of the course focuses on the scientific method and how it contributes to the success and progress of science. We will examine three different accounts of the scientific method, accounts that lead to different conceptions of the nature and growth of scientific knowledge: The hypothetical-deductive view; Thomas Kuhn's account of normal science and scientific revolutions; and finally, an account of theory testing by George Smith, a leading scholar on Isaac Newton. Throughout the course, we will examine the philosophical ideas in the light of concrete cases in the history and practice of science. This course is designed to help students develop critical thinking skills, to communicate effectively through speaking and writing, and to construct well-reasoned arguments. Students of any discipline are welcome to attend, and no particular background is presupposed.

PHIL 46S. Modern Political Philosophy: Origins of the U.S. Constitution. 3 Units.
In this course, we consider the political philosophy that culminated in the founding of the U.S. Constitution. We will consider, among other questions:n- What assumptions about human nature were made by thinkers in this tradition?n- What are rights and where do they come from?n- Why do we form government and what is the common good preserved or promoted by government?n- What is required to preserve our political institutions?n- What is the role of law in civil society?n- To what extent does the political success of the U.S. require virtue?nIn this discussion based seminar, we will read Machiavelli, Descartes, Hobbes, Locke, Rousseau, Lincoln, and the American Founders.

PHIL 47S. Introduction to Modern Philosophy: Skepticism and Scientific Rationalism. 3 Units.
Focusing on Descartes, Newton, and Leibniz, the course investigates foundational debates in metaphysics and epistemology of modern philosophy. We closely scrutinize Descartes¿ Meditations, which involves radical skepticism of the external world and subsequent proofs that I exist, that God exists, that material bodies exist, and that I am really distinct from my body. Next, we study Newton¿s criticisms of Descartes¿ physical theories of motion and space. We attempt a definition of Newton¿s important concept of `absolute space¿ and observe its role in his proof of universal gravity. Finally, we turn to Leibniz to raise significant philosophical issues with Newtonian spacetime and Cartesian physics. Though our focus is the seventeenth century, we will end with connections to contemporary debates in philosophy of physics.

PHIL 48S. Introduction to Chinese Philosophy: Confucianism and its Critics. 3 Units.
The class will be an introduction to classical Chinese philosophy, mostly focusing on Confucianism and its critics (Mohism, Daoism, and Buddhism). No prerequisites.

PHIL 49. Survey of Formal Methods. 4 Units.
Survey of important formal methods used in philosophy. The course covers the basics of propositional and elementary predicate logic, probability and decision theory, game theory, and statistics, highlighting philosophical issues and applications. Specific topics include the languages of propositional and predicate logic and their interpretations, rationality arguments for the probability axioms, Nash equilibrium and dominance reasoning, and the meaning of statistical significance tests. Assessment is through a combination of problems designed to solidify competence with the mathematical tools and short-answer questions designed to test conceptual understanding.

PHIL 50S. Introduction to Formal Methods in Contemporary Philosophy. 3 Units.
This course will serve as a first introduction to the formal tools and techniques of contemporary philosophy, including probability and formal logic. Traditionally, philosophy is an attempt to systematically tackle foundational problems related to value, inquiry, mind and reality. Contemporary philosophy continuesthis tradition of critical thinking with modern subject matter (often engaging with natural, social and mathematical science) and modern rigorous methods, including the methods of set theory, probability theory and formal logic. The aim of this course is to introduce such methods, along with various core philosophical distinctions and motivations. The focus will be on basic conceptual underpinnings and skills, not technical details. The material covered is also useful preparation for certain topics in mathematics, computer science, linguistics, economics and statistics. No previous philosophical or mathematical training is presupposed, though an appreciation of precise thinking is an advantage.

PHIL 60. Introduction to Philosophy of Science. 5 Units.
This course introduces students to tools for the philosophical analysis of science. We will cover issues in observation, experiment, and reasoning, questions about the aims of science, scientific change, and the relations between science and values.
Same as: HPS 60

PHIL 61. Philosophy and the Scientific Revolution. 5 Units.
Galileo's defense of the Copernican world-system that initiated the scientific revolution of the 17th century, led to conflict between science and religion, and influenced the development of modern philosophy. Readings focus on Galileo and Descartes.
Same as: HPS 61

PHIL 70. Introduction to political philosophy. 4 Units.
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PHIL 71H. Introduction to Aesthetics. 4 Units.
Aesthetics encompasses a seemingly special and particularly rewarding way of perceiving the world. Appreciating the beauty of a sunset, feeling moved by a piece of music, becoming absorbed in the composition of an artwork: these are all aesthetic matters, and they are all matters that lie at the heart of this course. We will begin by exploring core debates on aesthetic experience, aesthetic properties, and aesthetic value. But we will also venture into considerations of aesthetics in our everyday lives, aesthetic taste and our personalities, aesthetics and grief, aesthetics and gender, and aesthetics and race. By the end of the quarter, you will have a strong foundation in understanding this rich aspect of life we call aesthetics.

PHIL 72. Contemporary Moral Problems. 4-5 Units.
This course is an introduction to contemporary ethical thought with a focus on the morality of harming others and saving others from harm. It aims to develop students' ability to think carefully and rationally about moral issues, to acquaint them with modern moral theory, and to encourage them to develop their own considered positions about important real-world issues. In the first part of the course, we will explore fundamental topics in the ethics of harm. Among other questions, we will ask: How extensive are one's moral duties to improve the lives of the less fortunate? When is it permissible to inflict harm on others for the sake of the greater good? Does the moral permissibility of a person's action depend on her intentions? Can a person be harmed by being brought into existence? In the second part of the course, we will turn to practical questions. Some of these will be familiar; for example: Is abortion morally permissible? What obligations do we have to protect the planet for the sake of future generations? Other questions we will ask are newer and less well-trodden. These will include: How does the availability of new technology, in particular artificial intelligence, change the moral landscape of the ethics of war? What moral principles should govern the programming and operation of autonomous vehicles?.
Same as: ETHICSOC 185M, POLISCI 134P

PHIL 74A. Ethics in a Human Life. 4 Units.
Ethical questions pervade a human life from before a person is conceived until after she dies, and at every point in between. This course raises a series of ethical questions, following along the path of a person's life - questions that arise before, during, and after she lives it. We will explore distinctive questions that a life presents at each of several familiar stages: prior to birth, childhood, adulthood, death, and even beyond. We will consider how some philosophers have tried to answer these questions, and we will think about how answering them might help us form a better understanding of the ethical shape of a human life as a whole.
Same as: ETHICSOC 174, HUMBIO 174A

PHIL 75W. Freedom and Responsibility. 4 Units.
On the one hand we think of ourselves as free, and our practices of holding one another responsible seem to depend on it. On the other we think of nature as law-governed and of ourselves as subject to these laws. Is there a tension here? If so, what must give? In this course we will examine a number of proposed answers to these questions, canvassing compatibilist, libertarian, and hard determinist theories of free will. We will also devote a number of sessions to the theory of responsibility. Readings will be drawn primarily from the latter half of the twentieth-century analytic tradition. No prior background in philosophy presupposed.

PHIL 76. Introduction to Global Justice. 4 Units.
This course explores the normative demands and definitions of justice that transcend the nation-state and its borders, through the lenses of political justice, economic justice, and human rights. What are our duties (if any) towards those who live in other countries? Should we be held morally responsible for their suffering? What if we have contributed to it? Should we be asked to remedy it? At what cost? These are some of the questions driving the course. Although rooted in political theory and philosophy, the course will examine contemporary problems that have been addressed by other scholarly disciplines, public debates, and popular media, such as immigration and open borders, climate change refugees, and the morality of global capitalism (from exploitative labor to blood diamonds). As such, readings will combine canonical pieces of political theory and philosophy with readings from other scholarly disciplines, newspaper articles, and popular media.
Same as: ETHICSOC 136R, INTNLREL 136R, POLISCI 136R, POLISCI 336

PHIL 77. Introduction to Philosophy of Religion. 4 Units.
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PHIL 80. Mind, Matter, and Meaning. 5 Units.
Intensive study of central topics in metaphysics, epistemology, philosophy of language and mind in preparation for advanced courses in philosophy. Emphasis on development of analytical writing skills. nPrerequisite: one prior course in Philosophy, not including SYMSYS1/ PHIL99. Note: all courses labelled PHIL in the Bulletin (with the exception of PHIL99) count for this requirement. For the purposes of this requirement, Thinking Matters courses (labelled THINK) taught by a Philosophy faculty person also count as a course in Philosophy.

PHIL 81. Philosophy and Literature. 3-5 Units.
What, if anything, does reading literature do for our lives? What can literature offer that other forms of writing cannot? Can fictions teach us anything? Can they make people more moral? Why do we take pleasure in tragic stories? This course introduces students to major problems at the intersection of philosophy and literature. It addresses key questions about the value of literature, philosophical puzzles about the nature of fiction and literary language, and ways that philosophy and literature interact. Readings span literature, film, and philosophical theories of art. Authors may include Sophocles, Dickinson, Toni Morrison, Proust, Woolf, Walton, Nietzsche, and Sartre. Students master close reading techniques and philosophical analysis, and write papers combining the two. This is the required gateway course for the Philosophy and Literature major tracks. Majors should register in their home department.
Same as: CLASSICS 42, COMPLIT 181, ENGLISH 81, FRENCH 181, GERMAN 181, ILAC 181, ITALIAN 181, SLAVIC 181

PHIL 82. Ethics, Public Policy, and Technological Change. 5 Units.
Examination of recent developments in computing technology and platforms through the lenses of philosophy, public policy, social science, and engineering. Course is organized around four main units: algorithmic decision-making and bias; data privacy and civil liberties; artificial intelligence and autonomous systems; and the power of private computing platforms. Each unit considers the promise, perils, rights, and responsibilities at play in technological developments. Prerequisite: CS106A.
Same as: COMM 180, CS 182, ETHICSOC 182, POLISCI 182, PUBLPOL 182

PHIL 82T. Philosophy of Cognitive Science. 4 Units.
Does all human cognition occur in the brain? In what sense do we direct our attention to the things that we pay attention to? Such questions are among those asked by researchers working in the interdisciplinary field of cognitive science. In this course we will discuss ways in which philosophy participates in this interdisciplinary project by considering aspects of research on, for example, attention, theory of mind, embodied cognition, and metal representation.

PHIL 85. Topics in Philosophy of Medicine. 4 Units.
In this course, we will address major issues in philosophy and medicine. Some topics will be well-known within the practice of medicine: informed consent, advanced directives, medical trials. Other topics will be more familiar to philosophers: the concept of health, self-deception, social construction of disability, visualizations of illness. We will do our best to interpolate these discourses, by combining readings in medical ethics with philosophical essays.

PHIL 87. Personal Identity. 4 Units.
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PHIL 90R. Introduction to Feminist Philosophy. 4 Units.
If feminism is a political practice aimed at ending patriarchy, what is the point of feminist philosophy? This course provides an introduction to feminist philosophy by exploring how important theoretical questions around sex and gender bear on practical ethical and political debates. The first part of the course will examine some of the broader theoretical questions in feminist philosophy, including: the metaphysics of gender, the demands of intersectionality, and feminist critiques of capitalism and liberalism. Questions will include: How should we understand the category `woman¿? How does gender intersect with other axes of oppression? Is capitalism inherently patriarchal? The second part of the course will address more applied topics of ethical and political debate, such as: objectification, pornography, consent, markets in women¿s sexual and reproductive labor, and the institution of marriage.
Same as: ETHICSOC 173, FEMGEN 173R

PHIL 99. Minds and Machines. 4 Units.
(Formerly SYMSYS 100). An overview of the interdisciplinary study of cognition, information, communication, and language, with an emphasis on foundational issues: What are minds? What is computation? What are rationality and intelligence? Can we predict human behavior? Can computers be truly intelligent? How do people and technology interact, and how might they do so in the future? Lectures focus on how the methods of philosophy, mathematics, empirical research, and computational modeling are used to study minds and machines. Students must take this course before being approved to declare Symbolic Systems as a major. All students interested in studying Symbolic Systems are urged to take this course early in their student careers. The course material and presentation will be at an introductory level, without prerequisites. If you have any questions about the course, please email symsys1staff@gmail.com.
Same as: CS 24, LINGUIST 35, PSYCH 35, SYMSYS 1, SYMSYS 200

PHIL 100. Greek Philosophy. 4 Units.
We shall cover the major developments in Greek philosophical thought, focusing on Plato, Aristotle, and the Hellenistic schools (the Epicureans, the Stoics, and the Skeptics). Topics include epistemology, metaphysics, psychology, ethics and political theory. No prereqs, not repeatable.
Same as: CLASSICS 40

PHIL 101. Introduction to Medieval Philosophy. 4 Units.
This course is an introduction to medieval moral philosophy, broadly construed. In addition to doctrines that we would nowadays readily think of as falling within the domain of ethics, we will be looking at closely related topics that might today be thought to belong more properly to metaphysics, the philosophy of religion, or the philosophy of human nature.
Same as: PHIL 201

PHIL 101A. History of Philosophy from Al-Kindi to Averroes. 3-5 Units.
The rise of Islam saw a flourishing of philosophical and scientific activity across Islamic civilizations from Central Asia to Spain. Between the 7th to 13th centuries, many of the major philosophers in the history of philosophy lived in the Muslim world and wrote in Arabic. They saw themselves, just as later philosophers in medieval Europe, as working in part in the same tradition as Plato and Aristotle. This course surveys this important chapter in the history of philosophy, examining the key philosophical problems, analyses, arguments and ideas developed by philosophers such as Al-Kindi, Al-Razi, Al-Farabi, Avicenna, Al-Ghazali and Averroes, as well as their views on the role and aims of philosophy itself. We will look closely at their writings (in English translation) on philosophical topics in mind, metaphysics, epistemology, ethics, and politics.
Same as: GLOBAL 139

PHIL 102. Modern Philosophy, Descartes to Kant. 4 Units.
Major figures in early modern philosophy in epistemology, metaphysics, and philosophy of mind. Writings by Descartes, Leibniz, Hume, and Kant.

PHIL 102M. Fichte. 1-2 Unit.
This three-day intensive mini-course will introduce the moral and political thought of Johann Gottlieb Fichte, the founder of the German idealist movement. The topics to be discussed are: Fichte's theory of subjectivity and transcendental idealism; Fichte's defense of radical freedom of the will; Fichte's transcendental deduction of other selves; the relation of right between rational beings and the foundations of political philosophy; Fichte's deduction of the moral law from the absolute freedom of the rational being; the application of the moral law through conscience. No previous acquaintance with Fichte's philosophy will be presupposed.
Same as: PHIL 202M

PHIL 103. 19th-Century Philosophy. 4 Units.
Focus is on ethics and the philosophy of history. Works include Mill's *Utilitarianism*, Hegel's *The Philosophy of World History*, Marx's *Economic and Philosophic Manuscripts*, Kierkegaard's *The Sickness Unto Death*, and Nietzsche's *On the Genealogy of Morals*.

PHIL 104. Philosophy of Religion. 4 Units.
Key issues in the philosophy of religion. Topics include the relationship between faith and reason, the concept of God, proofs of God's existence, the meaning of religious language, arguments for and against divine command theory in ethics and the role of religious belief in a liberal society.

PHIL 105C. Beauty in Ancient Greek Philosophy. 4 Units.
Beauty occupies a peculiarly central place in ancient Greek philosophical thought, figuring prominently in Plato's and Aristotle's ethics, epistemology, and metaphysics. The ancient conception of beauty is also in various ways at odds with our modern conception: far from being "in the eye of the beholder", ancient philosophers thought of beauty as a paradigm of objectivity, and closely aligned with moral goodness. Why this discrepancy between the ancient and modern conceptions of beauty? And what might the centrality of beauty in ancient thought reveal about ancient ethics, epistemology, and metaphysics? This course is an investigation into these questions, by means of a close reading of the major ancient texts in which beauty appears. Some background in ancient Greek philosophy and/or contemporary aesthetics is preferred, but not required.
Same as: PHIL 205C

PHIL 106. Ancient Greek Skepticism. 4 Units.
The ancient Pyrrhonian skeptics who think that for any claim there is no more reason to assert it than deny it and that a life without any beliefs is the best route to happiness. Some ancient opponents of the Pyrrhonian skeptics and some relations between ancient and modern skepticism.
Same as: PHIL 206

PHIL 107. Plato's Early Dialogues. 4 Units.
We shall read some of the most important and difficult of Plato¿s `early¿ dialogues: the Charmides, parts of the Euthydemus, the Gorgias, the Hippias Minor, the Meno, and the Protagoras. Topics include: the nature of pleasure and its role in the good life, good luck and the good life, self-knowledge, the relation between knowledge and virtue, whether virtue can be taught, learning and recollection, rhetoric, the relations among the virtues, Socratic ignorance, and the Socratic method of the elenchus.
Same as: PHIL 207

PHIL 107A. The Greeks on Irrationality. 2-4 Units.
In this course, we shall examine the views of some central Greek philosophers (Plato, Aristotle, the Epicureans, and the Stoics) on the irrational and non-rational aspects of human life. What makes something irrational and what roles (negative and perhaps positive as well) does the irrational play in our lives? We shall examine their views on anger, fear, madness, love, pleasure and pain, sexual desire and so on. We shall also consider more briefly some depictions of these psychic items in ancient Greek literature.
Same as: PHIL 207A

PHIL 107B. Plato's Later Metaphysics and Epistemology. 4 Units.
A close reading of Plato's Theatetus and Parmenides, his two mature dialogues on the topics of knowledge and reality. We will consider various definitions of knowledge, metaphysical problems about the objects of knowledge, and a proposed method for examining and resolving such problems. Some background in ancient Greek philosophy and/or contemporary metaphysics and epistemology is preferred, but not required. Prerequisite: Phil 80.
Same as: PHIL 207B

PHIL 107C. Plato's Timaeus. 4 Units.
In this course, we will explore the Timaeus, Plato's account of the nature and creation of the universe. This work, from Plato's late period, with its highly notable postulations of the Demiurge and the receptacle, received the place of prominence in the ancient reception of Plato and contains a number of challenges in interpretation for contemporary scholars of Plato. We will carefully examine the work and its contributions to Platonic metaphysics, physics, psychology, teleology, cosmology, and theology. In so doing, we will also consider questions of how we are to understand it as a likely story, its role within the Platonic corpus, and its engagement with pre-existing traditions of Greek natural philosophy.
Same as: PHIL 207C

PHIL 108. Aristotle's Metaphysics Book Alpha. 4 Units.
An introduction both to Aristotle's own metaphysics and to his treatment of his predecessors on causality, included the early Ionian cosmologists, atomism, Pythagoreans, Heraclitus, Parmenides, Empedocles, Anaxagoras and Plato. Prerequisite: one course in ancient Greek philosophy.
Same as: PHIL 208

PHIL 108A. Aristotelian Logic. 2-4 Units.
A careful examination of Aristotle's syllogistic, with special emphasis on the interpretation of his modal syllogistic. This course will serve both as an introduction to ancient term logic and to the difference between sentential modal operators and modal modifiers to the copula. Topics will include the analysis of syllogisms into figures and moods, the reduction of 2nd and 3rd figure syllogisms to the first, the consistency of the modal syllogistic, models for the syllogistic, and de re versus de dicto modalities. For students with at least some introductory background in logic.
Same as: PHIL 208A

PHIL 108B. Aristotle's Physics Book One. 4 Units.
A chapter by chapter analysis of Aristotle's introductory discussions of physical theory. Topics to be considered include Aristotle's treatment of Eleatic monism, the role of opposites in pre-Socratic physics, the role of matter in physics, and an analysis of the elements of changing objects into form, privation and a subject.
Same as: PHIL 208B

PHIL 109. Topics in Ancient Philosophy: Plato and Aristotle on Art and Rhetoric. 4 Units.
Plato's and Aristotle's views on the nature of art and rhetoric and their connections with the emotions, reason and the good life. Readings include Plato's Gorgias, Ion and parts of the Republic and the Laws and Aristotle's Poetics and Rhetoric.
Same as: PHIL 209

PHIL 109A. Special Topics in Ancient Philosophy: Aristotle's Metaphysics Zeta. 4 Units.
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Same as: PHIL 209A

PHIL 109B. Greek philosophers read their ancestors: Intro to the ancient reception of Presocratic philosophy. 4 Units.
The first Greek philosophers are known to us only through fragments of their original works, generally few in number and transmitted by later authors, as well as through a set of testimonies covering a thousand years and more. Thus it is crucial, in order to understand archaic thought, to get a sense of how they were read by those to whom we owe their transmission. What was their aim, their method, their presuppositions or prejudices?nn The course will employ this perspective to examine authors such as Plato, Aristotle, Theophrastus, Diogenes Laertius, Simplicius ¿ among others. We shall also reflect, on the basis of the paradigmatic case of the Presocratics, on some of the more general problems raised by literary and philosophical approaches to the notion of reception.
Same as: PHIL 209B

PHIL 109C. Aristotle's cosmology and theology. 4 Units.
PHIL 109C/209C now meets in Raubitschek Room, Green Library Room 351. Undergrads please sign up for 109C; grads sign up for 209C.
Same as: PHIL 209C

PHIL 110. Plato's Republic. 4 Units.
We shall examine this complex and fascinating dialogue in detail, comparing it with other relevant Platonic texts, focusing on its ethics, epistemology, metaphysics, and political philosophy. We shall examine the connections that Plato sees between these different areas of philosophy, and consider some of the strengths and weaknesses of his overall argument.
Same as: PHIL 210

PHIL 110C. The Stoics on Freedom and Determinism. 4 Units.
We will investigate ancient Stoic conceptions of causality and freedom, their arguments for causal determinism, and ancient attaches on and defenses of compatibilism.
Same as: PHIL 210C

PHIL 111. Aristotle's Posterior Analytics. 4 Units.
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Same as: PHIL 211

PHIL 112. Causality in Ancient Greek Philosophy. 4 Units.
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Same as: PHIL 212

PHIL 112A. Aristotle's metaphysics. 4 Units.
.
Same as: PHIL 212A

PHIL 113. Hellenistic Philosophy. 4 Units.
Epicureans, skeptics, and stoics on epistemology, ethics, metaphysics, and psychology.
Same as: PHIL 213

PHIL 113A. Porphyry's Introduction to Logic. 4 Units.
The main text will be the Isagoge.
Same as: PHIL 213A

PHIL 114A. Ancient Philosophical Methodologies. 4 Units.
In this course, we shall examine the philosophical methodologies that Plato, Aristotle, and the Hellenistics use and advocate. In Plato, we shall consider the elenchus and dialectic, in Aristotle dialectic and science. For the Stoics and Epicureans, we shall focus on the methodological differences that come to light in their epistemological disagreements and in their ethical and metaethical disagreements. For the skeptics, we shall consider whether they have a philosophical methodology at all.
Same as: PHIL 214A

PHIL 115. PreSocratics. 4 Units.
Exploration of the Greek philosophical inquiry undertaken in the roughly two hundred years before Socrates. This Presocratic period saw vibrant and varied treatment of a wide range of areas, including physics, metaphysics, epistemology, cosmology, theology, biology, and ethics. We will proceed chronologically through the major Presocratic philosophers and schools, carefully examining the fragmentary evidence on each and discussing the interpretation of their doctrines from this evidence. Focus will be on the Presocratics in their own right, though their influence upon later thought, especially Plato and Aristotle, will also receive considerable attention. Consideration of how the ideas of the Presocratics were transmitted and manipulated in the ancient tradition, as well as of the nature and development of Western philosophy itself.
Same as: PHIL 215

PHIL 116. Aquinas. 4 Units.
This course is an introduction to the metaphysical thought of St. Thomas Aquinas (1225 - 1274), one of the most important and influential philosopher-theologians of the High Middle Ages. Readings will be drawn primarily from the "Summa theologiae.".
Same as: PHIL 216

PHIL 117. Descartes. 4 Units.
(Formerly 121/221.) Descartes's philosophical writings on rules for the direction of the mind, method, innate ideas and ideas of the senses, mind, God, eternal truths, and the material world.
Same as: PHIL 217

PHIL 117D. Aristotle's De Anima. 4 Units.
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Same as: PHIL 217D

PHIL 118. British Empiricism, 1660s-1730s. 4 Units.
Focus is on the big three British Empiricists and their developments of thought based on the foundational role that they give to sensory perception or experience as the source of knowledge. Topics may include the theory of ideas, idealism, personal identity, human agency, moral motivation, causation, and induction. Readings predominantly from Locke, Berkeley, and Hume.

PHIL 118A. Origins of Empiricism: Gassendi, Locke, and Berkeley. 4 Units.
Particular light is shed on both the strengths and weaknesses of empiricism by studying it as it first arose during the 17th century revolution in philosophy and the sciences initiated by Descartes. Three philosophers of that period helped to advance empiricism: Pierre Gassendi (1592-1655), John Locke (1632-1704), and George Berkeley (1685-1753). A brief introduction to Descartes is followed by Gassendi's reaction to Descartes and his influence on Locke; Locke's theory of ideas, mind, language, reality, and natural philosophy expounded in his An Essay concerning Human Understanding (Fourth Edition, 1689); and Berkeley's later reaction to Locke.
Same as: PHIL 218A

PHIL 118P. Early Modern Ethics. 4 Units.
The early modern period in philosophy saw the introduction and development of many of the most powerful and lasting ideas in the history of ethical thought. This course provides an introduction to some of these ideas. Figures to be discussed will likely include Locke, Hume, Hutcheson, Montaigne, Mandeville, Hobbes, Leibniz, and Kant.

PHIL 119. Rationalists. 4 Units.
Developments in 17th-century continental philosophy. Descartes's views on mind, necessity, and knowledge. Spinoza and Leibniz emphazing their own doctrines and their criticism of their predecessors. Prerequisite: 102.
Same as: PHIL 219

PHIL 120. Leibniz. 4 Units.
A polymath, Leibniz invented the calculus independently of Newton and made major contributions to virtually every science, including logic and computer science. In this course, we investigate Leibniz's philosophical system and its metaphysics: that God created the best of all possible worlds; that humans freely choose actions that are nevertheless pre-established; that space and time are idealizations and `imaginary'; and that true, fundamental reality consists of minds.
Same as: PHIL 220

PHIL 120W. Richard Rufus on Aristotle's Metaphysics: Ontology, Unity, Universals, & Individuation. 1-2 Unit.
Mini-Course taught by Rega Wood in association with Santiago Melo Arias & Professors Alan Code & Calvin Normore. Code, Wood, & Melo Arias have spent the last 6 months intensively studying Richard Rufus of Cornwall's commentary on Aristotle's Metaphysics Zeta, Eta, & Theta. This June we will present Rufus' views on ontology, unity, & universals. There will be 6 two hour sessions on June, 4,5, & 6 (Thurs - Saturday), 10-12 noon , 2-4 pm. Readings will be taken chiefly from Melo Arias' new translations of Rufus' circa 1238 commentary; other readings, from Aristotle and Averroes. We will consider the difference between the treatment of definition, essence and being in logic and in metaphysics, the sense in which accidents have definitions, the unity of genus and differentia in the ndefinitions of substances, the unity of form and proximate matter in hylomorphic compounds, and the unity of the parts of the rational soul. In this context we will discuss the formal distinction pioneered by Rufus as a description of differences in formal predication consistent with real sameness.Richard Rufus was the nfirst Western professor to lecture on Aristotle's metaphysics in Medieval Europe.
Same as: PHIL 220W

PHIL 121. History of Political Philosophy. 4 Units.
Nation-states issue legal commands, and wield overwhelming power to coercively enforce them. On one hand, this allows states to protect people from each other. On the other hand, what protects people from the state, even if is democratic, when it facilitates domination and oppression of some citizens by others? In this course we are introduced to authors grappling with these issues in the evolving canon of Western political philosophy from ancient Greece to the 20th century. This takes us through questions about obligation, the state, consent, rights, democracy, property, free speech, socialism, gender, race. Authors whose arguments we will study and scrutinize include Plato, Hobbes, Locke, Rousseau, Marx, Mill, Wollstonecraft, Douglass, and Rawls, along with critics and commentators.
Same as: ETHICSOC 121, PHIL 221

PHIL 122. Hume. 4 Units.
(Formerly 120/220; graduate students enroll in 222.) Hume's theoretical philosophy, in particular, skepticism and naturalism, the theory of ideas and belief, space and time, causation and necessity, induction and laws of nature, miracles, a priori reasoning, the external world, and the identity of the self.
Same as: PHIL 222

PHIL 123. Introduction to Chinese Philosophy. 4 Units.
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Same as: PHIL 223

PHIL 124. Topics in Early Modern Philosophy. 4 Units.
Philosophical views of the highly influential rationalist philosophers Benedict (or Baruch) Spinoza (1632-1677) and G. W. Leibniz (1646-1716). Topics to be treated include: the nature of God and the question of his providential care for human beings, the concept of substance and its extension, the ontological relation of finite beings to God, the mental and its relation to the corporeal, and the nature of human freedom.

PHIL 125. Kant's First Critique. 4 Units.
(Graduate students register for 225.) The founding work of Kant's critical philosophy emphasizing his contributions to metaphysics and epistemology. His attempts to limit metaphysics to the objects of experience. Prerequisite: course dealing with systematic issues in metaphysics or epistemology, or with the history of modern philosophy.
Same as: PHIL 225

PHIL 126B. Kant's Ethical Theory. 2-4 Units.
(Graduate students register for 226B.) Kant's moral philosophy based primarily on the *Groundwork of Metaphysics of Morals, Critique of Practical Reason,* and *The Metaphysics of Morals.*.
Same as: PHIL 226B

PHIL 127. Kant's Foundations of Morality, 2nd Critique. 4 Units.
(Graduate students enroll in 227.) A study of Kant's ethical thought, focusing on The Groundwork of the Metaphysics of Morals, The Critique of Practical Reason, and The Metaphysics of Morals. Prerequisite: Phil. 2, Phil. 170, or equivalent (consult the instructor). Designed for undergraduate department majors and graduate students.
Same as: PHIL 227

PHIL 127A. Kant's Value Theory. 4 Units.
(Graduate students register for 227A.) The role of autonomy, principled rational self-governance, in Kant's account of the norms to which human beings are answerable as moral agents, citizens, empirical inquirers, and religious believers. Relations between moral values (goodness, rightness) and aesthetic values (beauty, sublimity).
Same as: PHIL 227A

PHIL 127B. Kant's Anthropology and Philosophy of History. 4 Units.
Kant's conception of anthropology or human nature, based on his philosophy of history, which influenced and anticipated 18th- and 19th-century philosophers of history such as Herder, Fichte, Hegel, and Marx. Texts include *Idea for a Universal History, Conjectural Beginning of Human History,* and *Anthropology from a Pragmatic Point of View.* Topics include: Kant's pragmatic approach to the study of human nature; the difficulty of human self knowledge; the role of regulative and teleological principles in studying human history; and Kant's theory of race.
Same as: PHIL 227B

PHIL 127M. Richard Rufus of Cornwall. 1-2 Unit.
Metaphysics and Epistemology, readings from Rufus' newly translated Contra Averroem & Speculum animae. In these works, Rufus solves a problem for Aristotelian epistemology that was to bedevil later scolastics such as Thomas Aquinas. He also states for the first time a theory of individuation by form that was subsequently adopted by Duns Scotus. Though Scotus like Rufus preferred to speak of individual forms, the theory itself is often identified by a term very seldom used by Scotus, `haeceitas' or thisness. Taughtly jointly by Rega Wood and Calvin Normore.
Same as: PHIL 227M

PHIL 127P. Kant's Practical Philosophy. 4 Units.
For Kant, human agency is best understood in light of the fact that humans issue laws to themselves. His practical philosophy thus centers on the idea of autonomy--free, principled, rational self-governance. In this course, we'll consider his prolonged effort to work through this novel, powerful, and extremely influential idea.

PHIL 128. Fichte's Ethics. 4 Units.
(Graduate students register for 228.) The founder of the German Idealist movement who adopted but revised Kant's project of transcendental philosophy basing it on the principle of awareness of free self-activity. The awareness of other selves and of ethical relations to them as a necessary condition for self-awareness. His writings from 1793-98 emphasizing the place of intersubjectivity in his theory of experience.
Same as: PHIL 228

PHIL 130. Hegel. 4 Units.
(Formerly 122/222; graduate students register for 230.) Introduction to Hegel's philosophy, emphasizing his moral and political philosophy, through study of his last major work (1821). May be repeated for credit. Prerequisite: course in the history of modern philosophy.
Same as: PHIL 230

PHIL 131W. Kant's Theory of Law and Justice. 1-2 Unit.
This course will look at Kant's theory of right or law (Recht) and its implications for morality and politics. The topics we will discuss are: the difference between right and ethics in Kant¿s metaphysics of morals; the relation of law to property and morality; the moral obligations of politicians as holders of rightful authority; and the standards of right as they apply to international relations and war.
Same as: PHIL 231W

PHIL 132. Phenomenology: Merleau-Ponty. 4 Units.
(Graduate students register for 232.) French philosopher Maurice Merleau-Ponty wrote that we are neither angels nor machines but living beings. In contrast to both a first person introspective analysis and the third person scientific approach, Merleau-Ponty aimed to describe the basic invariant structures of human life by using the phenomenological method. The result was a new concept of experience that is essentially embodied. In this class, you will learn about the phenomenological method and read Merleau-Ponty's now classic text Phenomenology of Perception. Prerequisite: one prior course in Philosophy, or permission of instructor.
Same as: PHIL 232

PHIL 132W. Mini Course: Topics in Kant's Ethics. 1-2 Unit.
This mini-course will deal with several selected topics relating to Kant's ethics: (1) Kant's formulas of the moral law, their meaning and their relation to one another; (2) Kant's concept of imperfect (wide, meritorious) duties and its role in his ethical theory; (3) the place of feeling, emotion, desire and inclination, their relation to our empirical nature and to human reason, in Kant's moral psychology; and (4) the place of duties regarding animals and other non-human beings in Kant's ethical theory. There will be six sessions, each two hours in length. Either the instructor or one of the guest lecturers will be in charge of each session, which will consist in part of a presentation by the person in charge and partly of discussion. Instructor: Allen Wood (Indiana University/Stanford University); guest lecturers: Barbara Herman (UCLA), Janelle DeWitt (Indiana University). Course meets Monday, Tuesday, Wednesday, June 6, 7, 8, 2016. May be repeated for credit.
Same as: PHIL 232W

PHIL 133S. Heidegger and Mysticism. 4 Units.
A close reading of Heidegger's *Being and Time* in light of the new paradigm for reading his work, as well as a study of his long-standing interest in mysticism and the question of the divine.
Same as: RELIGST 181

PHIL 133T. Atheism: Hegel to Heidegger. 5 Units.
The radical changes in ideas of God between Hegel and Heidegger, arguing that their questions about theism and atheism are still pertinent today. Texts from Hegel, Feuerbach, Marx, Nietzsche, and Heidegger: on God, history, and the social dimensions of human nature. N.B.: Class size limited. Apply early at tsheehan@stanford.edu.
Same as: RELIGST 183

PHIL 134. Phenomenology: Husserl. 4 Units.
(Graduate students register for 234.) Neuroscience, psychology, linguistics, artificial intelligence, and other related fields face fundamental obstacles when they turn to the study of the mind. Can there be a rigorous science of us? German philosopher Edmund Husserl (1859-1938), founder of phenomenology, devised a method intended to disclose the basic structures of minds. In this class, we will read one of Husserl's major later works, Cartesian Meditations, as well as companion essays from both his time and ours. A guiding question for us will be how phenomenology is applied outside of philosophy, specifically, how has it influenced discussions of the mind in the sciences? Prerequisite: one prior course in philosophy, or permission of instructor.
Same as: PHIL 234

PHIL 134A. Phenomenology: Animals. 4 Units.
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Same as: PHIL 234A

PHIL 135. Existentialism. 4 Units.
Focus is on the existentialist preoccupation with human freedom. What constitutes authentic individuality? What is one's relation to the divine? How can one live a meaningful life? What is the significance of death? A rethinking of the traditional problem of freedom and determinism in readings from Rousseau, Kierkegaard, and Nietzsche, and the extension of these ideas by Sartre, Beauvoir, and Camus, including their social and political consequences in light of 20th-century fascism and feminism.
Same as: PHIL 235

PHIL 135X. Citizenship. 5 Units.
This class begins from the core definition of citizenship as membership in a political community and explores the many debates about what that membership means. Who is (or ought to be) a citizen? Who gets to decide? What responsibilities come with citizenship? Is being a citizen analogous to being a friend, a family member, a business partner? How can citizenship be gained, and can it ever be lost? These debates figure in the earliest recorded political philosophy but also animate contemporary political debates. This class uses ancient, medieval, and modern texts to examine these questions and different answers given over time. We¿Äôll pay particular attention to understandings of democratic citizenship but look at non-democratic citizenship as well. Students will develop and defend their own views on these questions, using the class texts as foundations. No experience with political philosophy is required or expected, and students can expect to learn or hone the skills (writing / reading / analysis) of political philosophy.
Same as: ETHICSOC 135, POLISCI 135

PHIL 136. History of Analytic Philosophy. 4 Units.
(Formerly 147/247; graduate students register for 236.) Theories of knowledge in Frege, Carnap, and Quine. Emphasis is on conceptions of analyticity and treatment of logic and mathematics. Prerequisite: 50 and one course numbered 150-165 or 181-90.
Same as: PHIL 236

PHIL 137. Wittgenstein. 4 Units.
(Graduate students register for 237.) An exploration of Wittgenstein's changing views about meaning, mind, knowledge, and the nature of philosophical perplexity and philosophical insight, focusing on the Tractatus Logico-Philosophicus and Philosophical Investigations.
Same as: PHIL 237

PHIL 137X. Wittgenstein. 4 Units.
An exploration of Wittgenstein's changing views about meaning, mind, knowledge, and the nature of philosophical perplexity and philosophical insight, focusing on the Tractatus Logico-Philosophicus and Philosophical Investigations. By permission of instructor only.

PHIL 138. Recent European Philosophy: Between Nature and History. 4 Units.
A critical introduction to the novel understandings of time, language, and cultural power developed by 20th-century continental thinkers, with close attention to work by Heidegger, Saussure, Benjamin, and Foucault.
Same as: PHIL 238

PHIL 142. Race, Justice, and Integration. 3 Units.
Recent philosophical research on injustice, race, and the ideal of racial integration.
Same as: AFRICAAM 241, EDUC 241, PHIL 242

PHIL 143. Quine. 4 Units.
(Formerly 183/283; graduate students register for 243.) The philosophy of Quine: meaning and communication; analyticity, modality, reference, and ontology; theory and evidence; naturalism; mind and the mental.
Same as: PHIL 243

PHIL 150. Mathematical Logic. 4 Units.
An introduction to the concepts and techniques used in mathematical logic, focusing on propositional, modal, and predicate logic. Highlights connections with philosophy, mathematics, computer science, linguistics, and neighboring fields.
Same as: PHIL 250

PHIL 150E. Logic in Action: A New Introduction to Logic. 4 Units.
A new introduction to logic, covering propositional, modal, and first-order logic, with special attention to major applications in describing information and information-driven action. Highlights connections with philosophy, mathematics, computer science, linguistics, and neighboring fields. Based on the open source course 'Logic in Action,' available online at http://www.logicinaction.org/.nFulfills the undergraduate philosophy logic requirement.

PHIL 150X. Mathematical Logic. 2 Units.
Equivalent to the second half of 150. Students attend the first meeting of 150 and rejoin the class on October 30. Prerequisite: CS 103A or X, or PHIL 50.

PHIL 151. Metalogic. 4 Units.
(Formerly 160A.) The syntax and semantics of sentential and first-order logic. Concepts of model theory. Gödel's completeness theorem and its consequences: the Löwenheim-Skolem theorem and the compactness theorem. Prerequisite: 150 or consent of instructor.
Same as: PHIL 251

PHIL 151A. Recursion Theory. 4 Units.
Computable functions, Turing degrees, generalized computability and definability. "What does it mean for a function from the natural numbers to themselves to be computable?" and "How can noncomputable functions be classified into a hierarchy based on their level of noncomputability?". Theory of relative computability, reducibility notions and degree structures. Prerequisite is PHIL 150, or PHIL 151 or CS 103.
Same as: PHIL 251A

PHIL 152. Computability and Logic. 4 Units.
Approaches to effective computation: recursive functions, register machines, and Turing machines. Proof of their equivalence, discussion of Church's thesis. Elementary recursion theory. These techniques used to prove Gödel's incompleteness theorem for arithmetic, whose technical and philosophical repercussions are surveyed. Prerequisite: 151.
Same as: PHIL 252

PHIL 153L. Computing Machines and Intelligence. 4 Units.
In this course we will explore the central question of what intelligence is by adopting artificial intelligence research as a point of reference. Starting with ideas proposed by Alan Turing in his 1950 paper, we will see what the contemporary interpretations are for those questions, and learn what new questions new technologies have brought. Among the subtopics are: Is it possible for a computer to think? What is thought? Are we computers? Could machines feel emotions or be conscious? Can AI die? Is there a relation between AI and decidability? What is the relationship between AI and Neuroscience Research? nThis course is intended for students of different majors interested in learning how the researchers in AI understand today the concept of intelligent machine, and examine what are the philosophical problems associated with the concept of artificial intelligence.
Same as: PHIL 253L

PHIL 154. Modal Logic. 4 Units.
(Graduate students register for 254.) Syntax and semantics of modal logic and its basic theory: including expressive power, axiomatic completeness, correspondence, and complexity. Applications to topics in philosophy, computer science, mathematics, linguistics, and game theory. Prerequisite: 150 or preferably 151.
Same as: PHIL 254

PHIL 155. Topics in Mathematical Logic: Non-Classical Logic. 4 Units.
This year's topic is Non-Classical Logic. May be repeated for credit.
Same as: PHIL 255

PHIL 156A. Modal Logics - A Modern Perspective. 4 Units.
Modal logic encompasses a rich variety of systems that have been used within philosophy to study such diverse topics as necessity and possibility, knowledge, time, action, and deontology. In recent years modal logic has also found applications outside of philosophy, in mathematics (the study of topology and formal provability) and in computational theory (including knowledge representation and software verification). This course will offer a modern approach to modal logic, covering the classical themes as well as cutting edge approaches and topics, such as hybrid logics and dynamic logics.
Same as: PHIL 256A

PHIL 157. Topics in Philosophy of Logic. 3 Units.
(Graduate students register for 257.) Disputed foundational issues in logic; the question of what the subject matter and boundaries of logic are, such as whether what is called second-order logic should be counted as logic. What is the proper notion of logical consequence? May be repeated for credit. Pre- or corequisite: 151, or consent of instructor.
Same as: PHIL 257

PHIL 158. Topics in Logic: Ten Problems in Deontic Logic. 2 Units.
As witnessed by the handbook of deontic logic and normative systems, the area of deontic logic is in flux. Traditional questions and logical methods of deontic logic are being supplemented by new questions and new techniques. This tutorial gives an introduction to the current discussion in deontic logic. In what sense are obligations different from norms? Jorgensen's dilemma, from preference based modal logic to the modern approach. How to reason about dilemmas, contrary-to-duty and defeasible norms? Distinguishing various kinds of defeasibility. How to relate various kinds of permissive and constitutive norms? Permissions as exceptions and prioritized norms. How do norms relate to other modalities like beliefs, desires, and intentions How do norms change? What is the role of time, action and games in deontic reasoning? For each problem, we discuss traditional as well as new research questions. We see the new questions as good questions for current research, in the sense that they point to modern theories and applications. We are especially interested in new questions that make older traditional questions obsolete in the sense that they are now addressed from a modern perspective, or in a more general setting. This mini-course wil from the week of 15 April through the week of 13 May.
Same as: PHIL 258

PHIL 159. Non-Classical Logic. 4 Units.
This course introduces non-classical extensions and alternatives to classical logic, and the philosophical debates surrounding them. Topics include modal logic (the logic of possibility and necessity), intuitionistic and many-valued logics (in which sentences may be neither true nor false, or both true and false), and relevant logic (which tries to refine the classical concept of entailment to capture the idea that the premises of arguments should be relevant to their conclusions). nnnStudents will learn tableau-style proof theories and Kripke frame semantics for a variety of non-classical logics, and will discuss adjacent philosophical issues, including the nature of necessity and possibility, the metaphysics of ordinary objects and fictional characters, the nature of truth, and the relationship between the world and the logical theories used to describe it.
Same as: PHIL 259

PHIL 160A. Newtonian Revolution. 4 Units.
(Graduate students register for 260A.) 17th-century efforts in science including by Kepler, Galileo, Descartes, and Huygens, that formed the background for and posed the problems addressed in Newton¿s *Principia*.
Same as: PHIL 260A

PHIL 160B. Newtonian Revolution. 4 Units.
(Graduate students register for 260B.) Newton¿s *Principia* in its historical context, emphasizing how it produced a revolution in the conduct of empirical research and in standards of evidence in science.
Same as: PHIL 260B

PHIL 162. Philosophy of Mathematics. 4 Units.
Prerequisite: PHIL150 or consent of instructor.
Same as: PHIL 262

PHIL 163. Significant Figures in Philosophy of Science: Einstein. 4 Units.
(Graduate students register for 263.)nThe influences of Hertz, Boltzmann, Mach and Planck on the development of Einstein's philosophical views regarding the scope and limits of physical theory. The distinction between principle theories and constructive theories from Poincaré and Lorentz, to Einstein. The impact of special and general relativity on logical empiricism. How Einstein's views changed in response to two core challenges, the advent of quantum mechanics and his three-decades long failure to extend general relativity to a "theory of the total field". We conclude by considering the lasting impact of Einstein's philosophical views, and whether they can be assimilated to contemporary currents in philosophy of science.nnPREREQUISITES: No detailed knowledge of physics or mathematics is presumed. Some background in philosophy, natural science or mathematics will be helpful. Students will benefit from possession of a modicum of mathematical maturity (roughly equivalent to a familiarity with elementary single-variable calculus or the metatheory of first-order logic).
Same as: PHIL 263

PHIL 164. Central Topics in the Philosophy of Science: Theory and Evidence. 4 Units.
(Graduate students register for 264.) Is reductionism opposed to emergence? Are they compatible? If so, how or in what sense? We consider methodological, epistemological, logical and metaphysical dimensions of contemporary discussions of reductionism and emergence in physics, in the ¿sciences of complexity¿, and in philosophy of mind.
Same as: PHIL 264

PHIL 164A. Central Topics in Philosophy of Science: Causation. 4 Units.
(Graduate Students register for 264A.) Establishing causes in science, engineering, and medicine versus establishing them in Anglo-American law, considered in the context of Hume and Mill on causation. May be repeated for credit.
Same as: PHIL 264A

PHIL 165. Philosophy of Physics: Space and Time. 4 Units.
Graduate students register for 265.nnPREREQUISITES: No detailed knowledge of quantum physics or advanced mathematics is presumed. Some background in philosophy, natural science or mathematics will be helpful. Students will benefit from possession of a modicum of mathematical maturity (roughly equivalent to a familiarity with elementary single-variable calculus or the metatheory of first-order logic).
Same as: PHIL 265

PHIL 166. Probability: Ten Great Ideas About Chance. 4 Units.
Foundational approaches to thinking about chance in matters such as gambling, the law, and everyday affairs. Topics include: chance and decisions; the mathematics of chance; frequencies, symmetry, and chance; Bayes great idea; chance and psychology; misuses of chance; and harnessing chance. Emphasis is on the philosophical underpinnings and problems. Prerequisite: exposure to probability or a first course in statistics at the level of STATS 60 or 116.
Same as: PHIL 266, STATS 167, STATS 267

PHIL 166A. Foundations of Quantum Mechanics. 4 Units.
This seminar will concentrate on a variety of probability questions that arise in quantum mechanics, including some from recent experiments. Negative probabilities and nonmonotonic upper probabilities will be emphasized.
Same as: PHIL 266A

PHIL 167A. Philosophy of Biology. 4 Units.
(Graduate students register for 267A.) Evolutionary theory and in particular, on characterizing natural selection and how it operates. We examine debates about fitness, whether selection is a cause or force, the levels at which selection operates, and whether cultural evolution is a Darwinian process. Prerequisites: one PHIL course and either one BIO course or Human Biology core; or equivalent with consent of instructor.
Same as: PHIL 267A

PHIL 167B. Philosophy, Biology, and Behavior. 4 Units.
(Graduate Students register for 267B) Philosophical study of key theoretical ideas in biology as deployed in the study of behavior. Topics to include genetic, neurobiological, ecological approaches to behavior; the classification and measurement of behaviors: reductionism, determinism, interactionism. Prerequisites: one PHIL course and either one BIO course or Human Biology core; or equivalent with consent of instructor.
Same as: PHIL 267B

PHIL 167C. Associative Theories of Mind and Brain. 4 Units.
After a historical survey of associative theories from Hume to William James, current versions will be analyzed including the important early ideas of Karl Lashley. Emphasis will be on the computational power of associative networks and their realization in the brain.
Same as: PHIL 267C

PHIL 167D. Philosophy of Neuroscience. 4 Units.
How can we explain the mind? With approaches ranging from computational models to cellular-level characterizations of neural responses to the characterization of behavior, neuroscience aims to explain how we see, think, decide, and even feel. While these approaches have been highly successful in answering some kinds of questions, they have resulted in surprisingly little progress in others. We'll look at the relationships between the neuroscientific enterprise, philosophical investigations of the nature of the mind, and our everyday experiences as creatures with minds. Prerequisite: PHIL 80.n(Not open to freshmen.).
Same as: PHIL 267D, SYMSYS 167D

PHIL 167E. Topics in Philosophy of Neuroscience. 4 Units.
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Same as: PHIL 267E

PHIL 167M. Evolutionary Contingency. 4 Units.
This course explores evolutionary contingency¿the role of dependency relations and chance in the history of life. Topics to be explored will include some work by Stephen Jay Gould in addition to philosophical debates concerning modal and process-based approaches to chance in evolution. Our investigation of contingency will be set against background issues concerning evolutionary convergences, inevitability, panselectionism, (in)determinism, and the usefulness of narrative explanations in this context.
Same as: PHIL 267M

PHIL 168M. Biological Individuality. 4 Units.
Our intuitions about the nature of organisms and of individuals are challenged by numerous puzzle cases in recent biological science. The nature of individuals is of long-standing interest in philosophy (as well as in different branches of the sciences). However, ideas of biological individuality have been challenged by developments in a variety of subfields of biology, and related areas including, for example, evolutionary biology, developmental biology, microbiology, and immunology. These challenges invite us to present a traditional philosophical thread discussion with new and exciting puzzles. In this course, we will read and discuss papers and book excerpts from both historical and contemporary authors working on biological individuality, which is often spearheaded by the use of case studies. The course will begin with a select history of how the particular problem(s) of biological individuality developed. Having established a shared understanding of the range of questions and perspectives available, students will gain a common language to communicate about this topic with those working in other fields. A background in biology is not necessary to take this course, and we will only visit traditional philosophical conceptions of individuality insofar as they are illuminating for the cases and readings we cover. Students are welcome from the humanities and sciences alike with the opportunity to come together over a philosophical topic that has consequences both within philosophy and beyond.
Same as: PHIL 268M

PHIL 169. Evolution of the Social Contract. 4 Units.
Explore naturalizing the social contract. Classroom presentations and term papers.nTexts: Binmore - Natural Justicen Skyrms - Evolution of the Social Contract.
Same as: PHIL 269

PHIL 169M. Topics in 18th Century Natural Philosophy: Virtues and Technology. 4 Units.
This course will be an introduction to the eighteenth-century history of ideas and philosophy, dealing primarily with questions encountered in natural philosophy: nWhat is the proper method of natural philosophy? What role do hypotheses play in physical theorizing? nWhat is the nature of space, time, matter and force? nWhat are the metaphysical and methodological frameworks of the Newtonian project of universal gravitation? nWhat kinds of intelligibility does mathematics bring to natural philosophy?nThis course is focused on questions, problems, and developments in the mathematical and exact sciences and experimental physics, and only briefly touches subjects in chemistry, natural history, physiology and moral sciences. Topic for 2020-21: Virtues and Technology.
Same as: PHIL 269M

PHIL 170. Ethical Theory. 4 Units.
This course explores some major topics/themes in ethical theory from the middle of the 20th century through the present. We'll read philosophy by John Rawls, Thomas Nagel, Bernard Williams, Christine Korsgaard, G.E.M. Anscombe, Philipa Foot, and others. Substantial background in moral philosophy will be assumed. Students should have completed Philosophy 2 (or its equivalent ¿ if you have questions, please contact the instructor).
Same as: ETHICSOC 170, PHIL 270

PHIL 170B. Metaphor. 4 Units.
In metaphor we think and talk about two things at once: two different subject matters are mingled to rich and unpredictable effect. A close critical study of the main modern accounts of metaphor's nature and interest, drawing on the work of writers, linguists, philosophers, and literary critics. Attention to how understanding, appreciation, and pleasure connect with one another in the experience of metaphor. Consideration of the possibility that metaphor or something very like it occurs in nonverbal media: gesture, dance, painting, music.
Same as: PHIL 270B

PHIL 170D. Trust and Trustworthiness. 4 Units.
An exploration of the place of interpersonal trust in ethical thought. What is it to trust another person? How is trusting related to, though different from, other attitudes we sometimes bear towards others (e.g. justified beliefs we form about others and their conduct; ethically significant expectations we have of others, etc.)? What is involved in acquiring/possessing the virtue of trustworthiness? How should trust (and trustworthiness) figure in our thinking about important ethical activities, for example promising, friendship, or the practice of politics?.
Same as: PHIL 270D

PHIL 171. Justice. 4-5 Units.
In this course, we explore three sets of questions relating to justice and the meaning of a just society: (1) Liberty: What is liberty, and why is it important? Which liberties must a just society protect? (2) Equality: What is equality, and why is it important? What sorts of equality should a just society ensure? (3) Reconciliation: Are liberty and equality in conflict? If so, how should we respond to the conflict between them? We approach these topics by examining competing theories of justice including utilitarianism, libertarianism/classical liberalism, and egalitarian liberalism. The class also serves as an introduction to how to do political philosophy, and students approaching these topics for the first time are welcome. Political Science majors taking this course to fulfill the WIM requirement should enroll in POLISCI 103.
Same as: ETHICSOC 171, POLISCI 103, POLISCI 336S, PUBLPOL 103C

PHIL 171P. 20th Century Political Theory: Liberalism and its Critics. 5 Units.
In this course, students learn and engage with the debates that have animated political theory since the early 20th century. What is the proper relationship between the individual, the community, and the state? Are liberty and equality in conflict, and, if so, which should take priority? What does justice mean in a large and diverse modern society? The subtitle of the course, borrowed from a book by Michael Sandel, is "Liberalism and its Critics" because the questions we discuss in this class center on the meaning of, and alternatives to, the liberal idea that the basic goal of society should be the protection of individual rights. Readings include selections from works by John Rawls, Hannah Arendt, Robert Nozick, Michael Sandel, Iris Marion Young, and Martha Nussbaum. No prior experience with political theory is necessary.
Same as: ETHICSOC 130, POLISCI 130

PHIL 172. History of Modern Moral Philosophy. 4 Units.
prerequisites: Phil 2 and Phil 80. Grads enroll in 272.
Same as: ETHICSOC 172, PHIL 272

PHIL 172B. Recent Ethical Theory: Moral Obligation. 4 Units.
Some moral obligations are "relational," "directional," or "bipolar" in structure: in promising you to act in a certain way, for example, I incur an obligation to you to so act and you acquire a corresponding claim or right against me that I so act. This entails that if I violate my obligation to you, I will not merely be doing something that is morally wrong, but will be wronging you in particular. What does explain this? Do all moral obligations have this structure? We will discuss how different moral theories (consequentialist, deontological, contractualist) try to account for such obligations. Readings include Adams, Anscombe, Darwall, Feinberg, Hart, Parfit, Raz, Scanlon, Skorupski, Thompson, Thomson, Wallace, and Wolf.
Same as: PHIL 272B

PHIL 172C. The Ethics of Care. 4 Units.
Since the 1970s, a number of feminists, socialists, and virtue theorists have directed their attention to the importance of care in practical philosophy. In this class, we will focus on the ambition to employ the notion of care in systematic political ethics. We will address the relationship between care and integrity, care and community, care and justice, and the role of care in thinking about the ethics of economics. Students will be evaluated on the basis of three essays. There will be no final exam. All readings will be available online; no books required.
Same as: ETHICSOC 172C

PHIL 172D. Bernard Williams. 4 Units.
An exploration of some central themes from the work of Bernard Williams. Particular attention will be paid to his discussion of the character and identity of the self, his sustained critique of morality and moral philosophy. We will also read several of Williams¿ interlocutors, including Nagel, Parfit, Korsgaard, and Herman.
Same as: PHIL 272D

PHIL 172N. Prudence and Morality. 4 Units.
We sometimes think we should do something just because it will benefit us in the future, even though we don¿t particularly feel like doing it now (e.g. we exercise, go to the dentist for a check-up, or set aside money for retirement). And we sometimes think we should do something for the sake of another person, even when it is inconvenient, costly, or unpleasant (e.g. we stop to help a stranded motorist, donate to charity, or tell someone an embarrassing truth rather than a face-saving lie). When we do the former, we act prudently. When we do the latter, we act morally. This course explores the debate among philosophers about the source of our reasons for acting prudently and morally. Some argue that our reasons to be prudent and moral stem directly from the fact that we are rational ¿ that it is contrary to reason to ignore our own future interests, or the interests of other people. Others disagree, arguing that the source of these reasons must lie elsewhere. Course readings will include work by Thomas Nagel, Bernard Williams, Christine Korsgaard, Derek Parfit, Philippa Foot, and others.
Same as: PHIL 272N

PHIL 172V. Virtue Ethics. 4 Units.
In recent years virtue ethics has emerged as a challenger to Kantian and utilitarian moral theories. In this course, we shall examine some of the leading contemporary virtue theorists and their critics. We shall consider how to define the virtues, the relation between virtue and right action and action guidance, the relation between virtue and happiness and criticisms made of virtue theory based on contemporary psychology. Authors to be read include GEM Anscombe, Julia Annas, John Doris, Philippa Foot, Gilbert Harman, Tom Hurka, Rosalind Hursthouse, Michael Slote, Christine Swanton and Bernard Williams.
Same as: PHIL 272V

PHIL 173B. Metaethics. 4 Units.
This is an intensive, undergraduate-only introduction to, and survey of, contemporary metaethics. Can moral and ethical values be justified or is it just a matter of opinion? Is there a difference between facts and values? Are there any moral truths? Does it matter if there are not? Focus is not on which things or actions are valuable or morally right, but what is value or rightness itself. Prerequisites: 80, 181 and one ethics course.

PHIL 173W. Aesthetics. 4 Units.
This course will investigate a cluster of varied but related philosophical issues concerning the arts - music, painting, literature, poetry, photography, theater, film, etc.- issues most of which are, at the same time, problems in philosophy of mind or language, value theory, or epistemology. We will address questions like the following (though probably not all of them): What, if anything, is distinctive about art and aesthetic experience?, What is aesthetic value, and how do aesthetic values relate to and interact with moral values and values of other kinds?, What is fiction and why are people interested in it?, In what ways are works of art expressive of feelings or emotions? What similarities and differences are there in the expressive qualities of music, literature, painting, poetry? How might we learn from works of art of one or another kind, and how might they work to change people's perspectives or attitudes?, In what ways do artworks serve as vehicles of communication? Are the values of works of art fundamentally different from those of beautiful natural objects? Along the way, we will bump into more specific questions such as: Why and in what ways is photography more (or less) 'realistic' than painting and drawing, or more or less revealing of reality? Does (instrumental) music have cognitive or semantic content? Is music representational in anything like the ways literature and figurative painting are?, Do all literary works have narrators? Is there ever (or always?) anything like narrators in paintings, films, music? Prerequisite: One course in philosophy, or permission of the instructor.
Same as: PHIL 273W

PHIL 174. Freedom and the Practical Standpoint. 4 Units.
(Graduate students register for 274.) Confronted with the question of how to act, people think of themselves as freely determining their own conduct. Natural science poses a challenge to this by explaining all events, including human actions, in terms of causal processes. Are people justified in thinking of themselves as free? Major philosophical approaches to this question: incompatibilism, compatibilism, and the two-standpoint view.
Same as: PHIL 274

PHIL 174B. Universal Basic Income: the philosophy behind the proposal. 3 Units.
Universal basic income (or UBI) is a regular cash allowance given to all members of a community without means test, regardless of personal desert, and with no strings attached. Once a utopian proposal, the policy is now discussed and piloted throughout the world. The growth of income and wealth inequalities, the precariousness of labor, and the persistence of abject poverty have all been important drivers of renewed interest in UBI in the United States. But it is without a doubt the fear that automation may displace workers from the labor market at unprecedented rates that explains the revival of the policy in recent years, including by many in or around Silicon Valley. Among the various objections to the proposal, one concerns its moral adequacy: Isn't it fundamentally unjust to give cash to all indiscriminately rather than to those who need it and deserve it? Over the years, a variety of scholars have defended the policy on moral grounds, arguing that UBI is a tool of equality, liberal freedom, republican freedom, gender equity, or racial equity. Many others have attacked UBI on those very same grounds, making the case that alternative policy proposals like the job guarantee, means-tested benefits, conditional benefits, or reparations should be preferred. Students will learn a great deal about political theory and ethics in general but always through the specific angle of the policy proposal, and they will become experts on the philosophy, politics and economics of UBI. The seminar is open to undergraduate and graduate students in all departments. There are no pre-requisites.
Same as: ETHICSOC 174B, ETHICSOC 274B, PHIL 274B, POLISCI 134E, POLISCI 338

PHIL 174C. On What Is Intolerable. 4 Units.
Moral and political philosophy often focuses on ideals we should aspire to and principles we should follow. Yet individuals and societies almost invariably fall short of these ideals and principles. Unless you are a fundamentalist or a relentless perfectionist, you tolerate these failures. That is, you tolerate them to a point. This point will be the topic of our course: how badly may we fail? How far short of the ideal is too far? We will be concerned with that which is not merely bad, unjustified, wrong, or unjust, but which is intolerably so. Examples include: intolerable injustice, rotten compromises, unconscionable contracts, dirty hands, unjust wars, personal failures, grief, desperation, betrayal, and humiliation. Just as important, we will ask: how should we respond to the intolerable? Should intolerably unjust political institutions be met with disobedience, or perhaps rebellion? When we emerge from grief to continue with our lives, do we thereby accept our loss as tolerable? Can we ever forgive without forgetting the severity of the wrong done to us and the harm we suffered? We will draw on thinkers such as Kierkegaard, Nietzsche, Du Bois, and Baldwin, as well as contemporary moral and political philosophers, such as John Rawls, Thomas Nagel, Bernard Williams, Alexander Nehamas, Jonathan Lear, and others.
Same as: PHIL 274C

PHIL 174D. Moral Luck. 4 Units.
We draw a fundamental distinction between what a person voluntarily does, and what is beyond her control. Such a distinction seems central to how we think about what it is to justify our actions (whether to ourselves or to one another), as well as to our practice of holding one another morally responsible for what we do. Yet under pressure, this distinction can appear to collapse ¿ we find that we cannot successfully disentangle what a person controls from what she does not when she acts. This course examines this problem in depth, and considers how we might respond in the face of it: Is it really a problem? If so, does it threaten our moral practices? How should it influence the way in which we make choices, or the way we understand those choices once we¿ve made them?.
Same as: PHIL 274D

PHIL 174E. Egalitarianism: A course on the history and theory of egalitarianism and anti-egalitarianism. 4 Units.
Egalitarianism is a conception of justice that takes the value of equality to be of primary political and moral importance. There are many different ways to be an egalitarian - it all depends on what we take to be the currency of egalitarian justice. Are we trying to equalize basic rights and liberties, or resources, opportunities, positions, status, respect, welfare, or capabilities? Is equality really what we should try to achieve in a just society? Or should we just make sure everyone has enough? Why do egalitarians think that such society would still be unjust; and how do they proceed to argue for equality?nnThis class will introduce students to egalitarian and anti-egalitarian thought by looking both at the history of egalitarian thinking and at contemporary accounts in defense of equality. It will provide an in depth introduction to the concepts that are used when inequalities are discussed by philosophers, economists, scientists and politicians. The class will attest of the varieties of approaches and perspectives to equality. For instance, we will learn from the 19th century debate on racial inequalities to understand how anti-egalitarian discourses are constructed; we will look into Rousseau's conception of social equality in the Second Discourse and the Social Contract; and we will engage with contemporary egalitarian theories by studying Rawlsian and post-Rawlsian forms of egalitarianism.
Same as: ETHICSOC 174E, PHIL 274E, POLISCI 138E

PHIL 174L. Betrayal and Loyalty, Treason and Trust. 2 Units.
The main topic of the seminar is Betrayal: its meaning as well as its moral, legal and political implications. We shall discuss various notions of betrayal: Political (military) betrayal such as treason, Religious betrayal with Judas as its emblem, but also apostasy (converting one's religion) which is regarded both as a basic human right and also as an act of betrayal, social betrayal - betraying class solidarity as well as Ideological betrayal - betraying a cause. On top of political betrayal we shall deal with personal betrayal, especially in the form of infidelity and in the form of financial betrayal of the kind performed by Madoff. The contrasting notions to betrayal, especially loyalty and trust, will get special consideration so as to shed light or cast shadow, as the case may be, on the idea of betrayal. The seminar will focus not only on the normative aspect of betrayal - moral or legal, but also on the psychological motivations for betraying others. The seminar will revolve around glaring historical examples of betrayal but also use informed fictional novels, plays and movies from Shakespeare and Pinter, to John Le Carre. SAME AS LAW 520.
Same as: ETHICSOC 174L, ETHICSOC 274L, PHIL 274L

PHIL 175. Philosophy of Law. 4 Units.
This course will explore foundational issues about the nature of law and its relation to morality, and about legal responsibility and criminal punishment. Prerequisite: graduate student standing in philosophy or, for others, prior course work in philosophy that includes Philosophy 80.
Same as: ETHICSOC 175B, PHIL 275

PHIL 175A. Ethics and Politics of Public Service. 3-5 Units.
Ethical and political questions in public service work, including volunteering, service learning, humanitarian assistance, and public service professions such as medicine and teaching. Motives and outcomes in service work. Connections between service work and justice. Is mandatory service an oxymoron? History of public service in the U.S. Issues in crosscultural service work. Integration with the Haas Center for Public Service to connect service activities and public service aspirations with academic experiences at Stanford.
Same as: CSRE 178, ETHICSOC 133, PHIL 275A, POLISCI 133, PUBLPOL 103D, URBANST 122

PHIL 175B. Philosophy of Public Policy. 4 Units.
From healthcare to voting reforms, social protection and educational policies, public policies are underpinned by moral values. When we debate those policies, we typically appeal to values like justice, fairness, equality, freedom, privacy, and safety. A proper understanding of those values, what they mean, how they may conflict, and how they can be weighed against each other is essential to developing a competent and critical eye on our complex political world. We will ask questions such as: Is compulsory voting justified? Should children have the right to vote? Is affirmative action just? What is wrong with racial profiling? What are the duties of citizens of affluent countries towards migrants? Do we have a right to privacy? Is giving cash to all unconditionally fair? This class will introduce students to a number of methods and frameworks coming out of ethics and political philosophy and will give students a lot of time to practice ethically informed debates on public policies. At the end of this class, students should have the skills to critically examine a wide range of diverse policy proposals from the perspective of ethics, moral and political philosophy. There are no prerequisites. Undergraduates and graduates from all departments are welcome to attend.
Same as: ETHICSOC 175X, PHIL 275B, POLISCI 135E, POLISCI 235E, PUBLPOL 177

PHIL 175D. Capitalism and Virtue. 4 Units.
This class addresses the ethics of production and consumption. We start by introducing the basic concepts for studying the ethics of market participation ¿ property rights, prices, efficiency, means of production, etc, as well as some more theoretical issues: invisible hand explanations, Hayek¿s knowledge problem, the basic welfare theorems. Then we will address questions such as the following: Does market participate encourage vice? Virtue? Alienation? Exploitation? How should we think about virtue if profit-maximising behavour is in everyone¿s interest? How should we weigh the promotion of vice against the promotion of benefits? Should there be `social spheres¿ that are isolated from market transactions? What is the broader relationship between the ethics of markets and distributive justice?.
Same as: PHIL 275D

PHIL 175M. Two Ethical Theories and Being a Person. 4 Units.
The distinction between the ethics of being a person and the ethics of rules as opposed to the distinction between Kantian ethics and utilitarianism or consequentialism consequentialism. Comparison of these two types of ethics with respect to their relationship to agency and being a good person. Relations between Western ethics and those of other continents.
Same as: PHIL 275M

PHIL 175P. Philosophy of Law and Conceptions of Agency. 4 Units.
In this course we will explore the connections between recent work in philosophy of law and philosophy of action. Current philosophy of law draws on philosophy of action. One example is the work of Scott Shapiro, who interprets legal activity as a form of social planning that enables citizens to coordinate their activities as agents. We will consider what normative requirements are necessary to make citizens self-legislating autonomous agents. Are formal requirements like consistency and coherence sufficient, or does law have to meet substantial normative and moral requirements? We will also discuss whether the deficiency of ¿evil legal systems¿ can be explained in terms of agency. Can distorted legal system provide agents a coherent form of self-understanding? We will explore these questions through readings by Scott Shapiro, Ronald Dworkin, Lon F. Fuller, David Dyzenhaus, Kristen Rundle, Michael Bratman, David Velleman, and Christine Korsgaard.
Same as: PHIL 275P

PHIL 175W. Philosophy of Law: Protest, Punishment, and Racial Justice. 4 Units.
In this course, we will examine some of the central questions in philosophy of law, including: What is law? What gives law its authority? Must we obey the law? If so, when and why? How should we understand and respond to unjust laws? When is civil disobedience morally permissible? Is civil disobedience ever morally required?nWhat is punishment for? What are prisons for? What is the case for reparations?.
Same as: CSRE 175W, ETHICSOC 175W, PHIL 275W

PHIL 176. Political Philosophy: The Social Contract Tradition. 4 Units.
(Graduate students register for 276.) What makes political institutions legitimate? What makes them just? When do citizens have a right to revolt against those who rule over them? Which of our fellow citizens must we tolerate?Surprisingly, the answers given by some of the most prominent modern philosophers turn on the idea of a social contract. We will focus on the work of Hobbes, Locke, Rousseau, and Rawls.
Same as: ETHICSOC 176, PHIL 276, POLISCI 137A, POLISCI 337A

PHIL 176A. Classical Seminar: Origins of Political Thought. 3-5 Units.
Political philosophy in classical antiquity, centered on reading canonical works of Thucydides, Plato, Aristotle against other texts and against the political and historical background. Topics include: interdependence, legitimacy, justice; political obligation, citizenship, and leadership; origins and development of democracy; law, civic strife, and constitutional change.
Same as: CLASSICS 181, CLASSICS 381, ETHICSOC 130A, PHIL 276A, POLISCI 230A, POLISCI 330A

PHIL 176B. The Economic Individual in the Behavioral Sciences. 4 Units.
(Graduate students register for 276B.).
Same as: PHIL 276B

PHIL 176P. Democratic Theory. 5 Units.
Most people agree that democracy is a good thing, but do we agree on what democracy is? This course will examine the concept of democracy in political philosophy. We will address the following questions: What reason(s), if any, do we have for valuing democracy? What does it mean to treat people as political equals? When does a group of individuals constitute "a people," and how can a people make genuinely collective decisions? Can democracy really be compatible with social inequality? With an entrenched constitution? With representation?.
Same as: ETHICSOC 234, POLISCI 234

PHIL 177B. EMOTIONS: MORALITY AND LAW. 2 Units.
If emotions are the stuff of life, some emotions are the stuff of our moral and legal life. Emotions such as: guilt, shame, revenge, indignation, resentment, disgust, envy, jealousy and humiliation, along with forgiveness, compassion, pity, mercy and patriotism, play a central role in our moral and legal life. The course is about these emotions, their meaning and role in morality and law. Issues such as the relationship between punishment and revenge, or between envy and equality, or St. Paul¿s contrast between law and love, or Nietzsche¿s idea that resentment is what feeds morality, will be discussed alongside other intriguing topics.
Same as: ETHICSOC 202, ETHICSOC 302, PHIL 277B

PHIL 177C. Ethics of Climate Change. 4 Units.
Climate change is an ethical failure. When we cause greenhouse gas to be emitted for our own benefit, the gas spreads around the world and does harm everywhere. Many of those who are harmed emit very little greenhouse gas themselves. When some people harm others for their own benefit, something is morally wrong. Specifically, there is an injustice. One of the ethical problems raised by climate change is how to rectify this injustice. Climate change also raises a different range of ethical questions, which may be classified as questions of value. For example, in making decisions, how should the distant future be valued in comparison with the present and how should we take account of the great loss of human life that climate change will cause? This course investigates the issues of justice and the issues of value. It considers the moral demands that climate change puts both on private individuals and on public institutions. Because the effects of climate change are so widespread and so complex, the methods of economics can be useful in putting ethical principles into effect. The course will therefore assess some of these methods.
Same as: PHIL 277C

PHIL 177W. Human Rights. 4 Units.
In this course we will think critically about human rights by evaluating complex moral situations and weighing powerful but opposed arguments. In our discussions we will explore a variety of alleged human rights and ask: Which of these is really a human right? What could the justification of human rights be? If some right is a real human right, what exactly does it require of us and others? Are there really any human rights at all, or are human rights just another means for Western societies to impose their way of life on the rest of the world? What is a human right? Case studies will include the death penalty, democratic participation, gay rights and duties of corporations to respect human rights.
Same as: PHIL 277W

PHIL 178. Ethics in Society Honors Seminar. 4 Units.
For students planning honors in Ethics in Society. Methods of research. Students present issues of public and personal morality; topics chosen with advice of instructor.
Same as: ETHICSOC 190

PHIL 178M. Introduction to Environmental Ethics. 4-5 Units.
How should human beings relate to the natural world? Do we have moral obligations toward non-human animals and other parts of nature? And what do we owe to other human beings, including future generations, with respect to the environment? The first part of this course will examine such questions in light of some of our current ethical theories: considering what those theories suggest regarding the extent and nature of our environmental obligations; and also whether reflection on such obligations can prove informative about the adequacy of our ethical theories. In the second part of the course, we will use the tools that we have acquired to tackle various ethical questions that confront us in our dealings with the natural world, looking at subjects such as: animal rights; conservation; economic approaches to the environment; access to and control over natural resources; environmental justice and pollution; climate change; technology and the environment; and environmental activism.
Same as: ETHICSOC 178M, ETHICSOC 278M, PHIL 278M, POLISCI 134L

PHIL 179A. Feminist and Queer Theories and Methods Across the Disciplines. 2-5 Units.
(Graduate Students register for PHIL 279A or FEMGEN 203) This course is an opportunity to explore the difference feminist and queer perspectives make in creative arts, humanities, and social science research.nPrerequisites: Feminist Studies 101 or equivalent with consent of instructor.nNOTE: This course must be taken for a letter grade and a minimum of 3 units to be eligible for WAYS credit. The 2 unit option is for graduate students only.
Same as: FEMGEN 103, FEMGEN 203, PHIL 279A

PHIL 179S. Moral Psychology, Reasons for Action, and Moral Theory. 4 Units.
What sorts of considerations does an ethical agent take to be good reasons for action? Work in moral psychology to illuminate the theory of practical reasons, and the theory of practical reasons to test the prospects for systematic moral theory. Can any systematic moral theory be reconciled with the moral psychology of ordinary, morally respectable agents? Reading include Bernard Williams, Rosalind Hursthouse, Peter Railton, T.M. Scanlon, and Barbara Herman.
Same as: PHIL 279S

PHIL 179W. Du Bois and Democracy. 4 Units.
In this course, we will work together to develop a detailed and comprehensive understanding of the political philosophy of W. E. B. Du Bois, giving special attention to the development of his democratic theory. We will do so by reading a number of key texts by Du Bois as well as contemporary scholarship from philosophy and cognate fields.
Same as: CSRE 179W, ETHICSOC 179W, PHIL 279W

PHIL 180. Metaphysics. 4 Units.
This is an undergraduate only class. Intensive introduction to core topics in contemporary metaphysics. What is the fundamental structure of reality? Is it objective? How can there be truths about what is possible or necessary, if only the actual exists? Do we have free will? What is it for an event to be determined by its causes? Is the only thing that exists the current instance of time? Is the world purely physical? Does science answer all of these questions? Prerequisites: 1, 80 and background in logic.

PHIL 180A. Realism, Anti-Realism, Irrealism, Quasi-Realism. 4 Units.
Realism and its opponents as options across a variety of different domains: natural science, mathematics, ethics, and aesthetics. Clarify the various conceptions that fall under these terms and outline the reasons for and against adopting realism for the various domains. Highlight the general issues involved. Prerequisites: 80, 181.
Same as: PHIL 280A

PHIL 181. Philosophy of Language. 4 Units.
The study of conceptual questions about language as a focus of contemporary philosophy for its inherent interest and because philosophers see questions about language as behind perennial questions in other areas of philosophy including epistemology, philosophy of science, metaphysics, and ethics. Key concepts and debates about the notions of meaning, truth, reference, and language use, with relations to psycholinguistics and formal semantics. Readings from philosophers such as Frege, Russell, Wittgenstein, Grice, and Kripke. Prerequisites: 80 and background in logic.
Same as: PHIL 281

PHIL 181B. Topics in Philosophy of Language. 4 Units.
This course builds on the material of 181/281, focusing on debates and developments in the pragmatics of conversation, the semantics/pragmatics distinction, the contextuality of meaning, the nature of truth and its connection to meaning, and the workings of particular linguistic constructions of special philosophical relevance. Students who have not taken 181/281 should seek the instructor's advice as to whether they have sufficient background.
Same as: PHIL 281B

PHIL 182. Advanced Philosophy of Language. 4 Units.
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Same as: PHIL 282

PHIL 182A. Naturalizing Representation. 4 Units.
Notions of meaning and representation are ubiquitous in how we conceive of our mental lives. Intentionality is one of the marks of the mental -- but it's not clear how these semantic notions can fit into our understanding of the natural world. nIn this class we'll discuss attempts to naturalize semantic notions, for example by appeal to informational or functional concepts. We'll read works by Dretske, Millikan, Skyrms, and others in evaluating this project.nPrerequisite: PHIL 80 or consent of instructor.
Same as: PHIL 282A

PHIL 182B. Naturalizing Content. 4 Units.
Meaning is mysterious. Right now you are looking at funny marks on a screen. Somehow, these marks are conveying to you information about a class that will be offered at Stanford during the winter quarter 2020. But how is this happening? These marks surely have no natural connection to the future class. They aren't like the footprints of a tiger, for example. Additionally, thousands of times a day, you manage to gain information about all manner of subjects by hearing strange sounds that have no natural connection to the subject matter. The sounds aren't like the bark of a dog, for example. You also manage to think about things that aren't in front of you, as when you think of a Hippo wearing a fedora. Yet activity in your brain has no natural connection to Hippos in fedoras (we presume). This class will investigate how it is that sounds, marks, and mental states manage to have semantic content. In other words, we will discuss attempts to solve the mystery of meaning, in all of its forms.nThe class is open to all graduate students in philosophy. Undergraduates who have not taken Phil 80 and at least one upper level philosophy class must receive permission to enroll.
Same as: PHIL 282B

PHIL 182H. Truth. 4 Units.
Philosophical debates about the place in human lives and the value to human beings of truth and its pursuit. The nature and significance of truth-involving virtues such as accuracy, sincerity, and candor. Prerequisite Phil 80 or permission of the instructor.
Same as: PHIL 282H

PHIL 183. Self-knowledge and Metacognition. 4 Units.
The course will be divided into two parts. In the first, we will survey the dominant models of how we come to know our own mental states. Among the issues we will explore will be our ways of discovering and coming to terms with "implicit" attitudes (e.g. biases), and the role of expression (e.g. verbal expression) in coming to know such attitudes. In the second part of the course, we will investigate the broader set of capacities by which we monitor and regulate our own cognitive processes, while paying special attention to the role of feelings (e.g. of knowing, fluency, fit) in the exercise of these capacities.
Same as: PHIL 283

PHIL 184. Topics in Epistemology. 4 Units.
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Same as: PHIL 284

PHIL 184B. Formal Epistemology. 4 Units.
Grads enroll in 284B. Prerequisite: PHIL 80.
Same as: PHIL 284B

PHIL 184M. Topics in the Theory of Justification. 4 Units.
graduate seminar. Prerequisite: PHIL 80.
Same as: PHIL 284M

PHIL 185. Special Topics in Epistemology: Testimony in science and everyday life. 4 Units.
Much of what we know, we know by relying on the testimony of other individuals, groups, traditional news media or social media. The course explores varieties of testimonial knowledge which arise from relaxed everyday testimony ('the coffee machine is broken') and from scientific expert testimony ('Venus is larger than Mars'). The course also touches on issues concerning testimonial injustice ¿ the type of injustice that occurs when someone is wronged in their capacity as a testifier ¿ for example, when their testimony is unjustly devaluated. Finally, we will consider whether philosophical theorizing about testimony may shed light on obstacles for science communication about divisive issues such as vaccines, climate science etc.nnThus, the course is organized around three interrelated themes. 1: Foundational questions, 2: Testimonial injustice and 3: Scientific testimony. Overall, then, the course connects foundational work in epistemology and philosophy of science to some pertinent ethical and political problems.
Same as: PHIL 285

PHIL 185B. Philosophy of Perception. 4 Units.
The nature of perceptual experience and the role it plays in securing empirical knowledge. Focus will be on what is sometimes called "the problem of perception": the question of how perception could provide us with direct awareness of the surrounding environment given the possibility of illusions or hallucinations. Topics, include the relationship between perception and belief, the nature of perceptual phenomenology, whether or not perceptual experiences are representational states, and the philosophical relevance of empirical research on perception.
Same as: PHIL 285B

PHIL 185W. Metaontology. 4 Units.
Do existence questions have (determinate) answers? How should ontological commitment be understood? This class will discuss these and other questions in the metatheory of ontology. Specific topics will include: naturalness, metaphysical structure, grounding, and quantifier variance. Some familiarity with standard metaphysical and ontological debates will be assumed.
Same as: PHIL 285W

PHIL 186. Philosophy of Mind. 4 Units.
(Graduate students register for 286.) This is an advanced introduction to core topics in the philosophy of mind. Prerequisite: PHIL 80.
Same as: PHIL 286

PHIL 186A. Self-fashioning. 3 Units.
This undergraduate and graduate seminar will examine philosophical and psychological literature relevant to self-fashioning. Meetings will be discussion oriented, and each meeting will focus on a different question of theoretical and applied significance. Prerequisite: consent of instructor. May be repeat for credit.
Same as: PHIL 286A, PSYCH 172

PHIL 186B. Inner Sense. 4 Units.
Often the label "inner" is used to describe aspects of ourselves we believe are not immediately observable to another. Thoughts, feelings, sensations; these all happen on the "inside," whereas speech, mannerisms, and actions are "outward" expressions. But how useful is this way of thinking? And what does it assume about what is "inner" versus what is "outer"? How reliable are the various internal mechanisms that allow us to know ourselves? Do we have a special kind of direct access to our own inner lives? And what can we know about the inner lives of others? Readings from philosophy of mind and cognitive science.

PHIL 186M. Ontology of the Mental. 4 Units.
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Same as: PHIL 286M

PHIL 187. Philosophy of Action. 4 Units.
This course will explore foundational issues about individual agency, explanation of action, reasons and causes, agency in the natural world, practical rationality, interpretation, teleological explanation, intention and intentional action, agency and time, intention and belief, knowledge of one's own actions, identification and hierarchy, and shared agency. Prerequisite: graduate student standing in philosophy or, for others, prior course work in philosophy that includes Philosophy 80.
Same as: PHIL 287

PHIL 188. Personal Identity. 4 Units.
Do you persist through time the way that a skyscraper persists through space, by having different parts at different locations? Or are you ¿wholly present¿ at every moment of your life, in something more like the way that an elevator is present in each place as it travels up to the top floor? What criteria determine whether you now are the very same person as some unique person located at some time in the past? Is the continuity of your memories or other mental states sufficient for your survival? Can you survive the loss or destruction of your body? Do you really exist for more than just the present moment? How do different answers to these questions bear on your moral, personal, and professional obligations? What kinds of considerations could possibly help us to answer these questions? This course explores these and related issues. Readings include a mix of introductory survey, historical, and contemporary material.
Same as: PHIL 288

PHIL 188W. Paradoxes. 4 Units.
Paradoxes arise when unacceptable or contradictory conclusions are generated by apparently unobjectionable reasoning. Consider the sentence: "This sentence is not true." Is the sentence true or not? If it is true, then what it says is the case, but it says that it is not true. On the other hand, if it is not true, then since it says it is not true, what it says is the case. So if the sentence is true it is not true, and if it is not true it is true. This is a version of the Liar Paradox. In this class we'll discuss the liar and other paradoxes, including the paradoxes of set theory, the Sorites Paradox, and several other well-known paradoxes. Familiarity with mathematical logic will be assumed by many of the class readings.
Same as: PHIL 288W

PHIL 189. Examples of Free Will. 4 Units.
Examples drawn from three domains: choice, computation, and conflict of norms. Conceptually, a distinction is made between examples that are predictable and those that are not, but skepticism about making a sharp distinction between determinism and indeterminism is defended.
Same as: PHIL 289

PHIL 189G. Fine-Tuning Arguments for God's Existence. 4 Units.
We will carefully assess contemporary "fine-tuning" arguments for the existence of God. Some argue that life only exists because certain fundamental characteristics of the universe are set precisely in the way needed for life; small variations would have resulted in no life. Thus the universe seems to be "fine-tuned" for life. This apparent fine-tuning is used to defend the existence of a "fine-tuner", namely, God. Prerequisites: PHIL 80 and a basic high-school level understanding of probability.

PHIL 189R. Philosophy of Religion. 4 Units.
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PHIL 193C. Film & Philosophy. 3 Units.
Issues of authenticity, morality, personal identity, and the value of truth explored through film; philosophical investigation of the filmic medium itself. Screenings to include Blade Runner (Scott), Do The Right Thing (Lee), The Seventh Seal (Bergman), Fight Club (Fincher), La Jetée (Marker), Memento (Nolan), and Eternal Sunshine of the Spotless Mind (Kaufman). Taught in English.
Same as: COMPLIT 154A, ENGLISH 154F, FRENCH 154, ITALIAN 154, PHIL 293C

PHIL 193D. Dante and Aristotle. 5 Units.
Students will read all of Dante¿s *Commedia* alongside works by Aristotle and various ancient and medieval philosophers. Our aim will be to understand the way an Aristotelian worldview informs the *Commedia*. For instance, what is the role of pleasure in the ethical life? What is the highest good of the human being? All readings will be in translation.

PHIL 193E. Film & Philosophy CE. 3 Units.
Issues of authenticity, morality, personal identity, and the value of truth explored through film; philosophical investigation of the filmic medium itself. Screenings to include Blade Runner (Scott), Do The Right Thing (Lee), The Seventh Seal (Bergman), Fight Club (Fincher), La Jetée (Marker), Memento (Nolan), and Eternal Sunshine of the Spotless Mind (Kaufman). Taught in English. Satisfies the WAY CE.
Same as: FRENCH 154E, ITALIAN 154E, PHIL 293E

PHIL 193H. The Art of the Movies: Story, Drama, and Image. 4 Units.
A philosophical study of how movies coordinate and transform elements they borrow from older arts of literary narrative, live theater, and graphic illustration. Examples from the career of Alfred Hitchcock.

PHIL 193W. Nietzsche, Doestoevsky, and Sartre. 4 Units.
Literary works in which philosophical ideas and issues are put forward, such as prose poems, novels, and plays. Ideas and issues and the dramatic or narrative structures through which they are presented. Texts include: Nietzsche, *Thus Spoke Zarathustra;* Dostoevsky, *The Brothers Karamazov;* and Sartre, *Nausea* and *No Exit.*.

PHIL 194A. Rationality Over Time. 4 Units.
Our beliefs and intentions seem to be subject to norms of rationality that enjoin consistency and coherence at a given time. Are there also norms of rationality that concern the relations among and changes in our beliefs and intentions over time? What might such norms of rationality over time be, how might we defend them (or argue that they are not defensible), how are they related to norms of rationality at a time, and how does our approach to these rationality norms affect our overall understanding of the kind of thinkers and actors we are? Our focus will be primarily on potential norms of practical rationality concerning intention, but we will also consider potential norms of theoretical rationality concerning belief. We will proceed by studying contemporary work on these issues, including Richard Holton's Willing, Wanting, Waiting.

PHIL 194B. Reason and Passion. 4 Units.
An influential strand of the Western philosophical tradition maintains that human beings are composites of two motivational sources: reason and passion (sometimes called 'feeling,' or 'emotion'). What are the philosophical reasons for positing this division? If there is such a division, how are we to conceive of passion? In what ways is it like and/or unlike reason? In what ways does it interact and/or fail to interact with reason? And how are both sources related to the self as a whole? We will explore these questions by drawing on both classical and contemporary readings.

PHIL 194C. Time and Free Will. 4 Units.
Classic and contemporary reading on free will, with special attention to the consequence argument for incompatibilism, and issues involving causation and time.

PHIL 194D. Capstone Seminar: Artificial Intelligence. 4 Units.
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PHIL 194E. Ethical Antitheory. 4 Units.
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PHIL 194F. Capstone seminar: Beauty and Other Forms of Value. 4 Units.
The nature and importance of beauty and our susceptibility to beauty, our capacity to discern it and enjoy it and prize it, as discussed by philosophers, artists, and critics from various traditions and historical periods. Relations between beauty and ethical values (such as moral goodness) and cognitive values (such as truth). Capstone seminar for undergrad majors.

PHIL 194G. Philosophical Issues in Language. 4 Units.
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PHIL 194H. Capstone Seminar on Justification and Consciousness. 4 Units.
In this seminar we¿ll discuss some central notions of epistemology ¿ in particular: justification, evidence and rationality ¿ and how they connect with the notions of consciousness and reflection. Capstone seminar for the major.

PHIL 194J. Capstone Seminar: Nietzsche. 4 Units.
Undergraduate capstone seminar; preference to philosophy majors and seniors; not appropriate for graduate students. Close study of Nietzsche¿s later works, emphasizing The Gay Science, Beyond Good and Evil, and On the Genealogy of Morality. Focus is on Nietzsche¿s philosophical projects and core doctrines (e.g., will to power, eternal recurrence, perspectivism), as well as broad issues about the role of science, morality, art, and illusion in life. Some attention to Nietzsche¿s literary strategies.

PHIL 194K. Slurs and Derogation: Semantic, Pragmatic and Ethical Perspectives. 4 Units.
Do slurring words differ in semantic character from their so-called neutral counterparts? If so how do we explain the difference in meaning between a slur and its neutral counterpart. Or is slurring better explained by appeal to the resources of pragmatics, speech act theory or sociolinguistics? What is the source of the offensiveness of a slur? How can mere words subordinate and marginalize? We attempt to answer these and other questions about slurs and derogatory language. nA previous course in either the philosophy of language or linguistic semantics or pragmatics is strongly recommended, though students without such background who are willing to do additional reading to fill in gaps in their knowledge are also welcome.

PHIL 194L. Montaigne. 4 Units.
Preference to Philosophy seniors. Philosophical and literary aspects of Montaigne's *Essays* including the nature of the self and self-fashioning, skepticism, fideism, and the nature of Montaigne's philosophical project. Montaigne's development of the essay as a literary genre.

PHIL 194M. Capstone Seminar: Consequences for Ethics. 4 Units.
Should you always do whatever would have the best consequences? Plausibly, if everything else is equal, and the first of your two options will do more good than the second, then you should take the first one. But this principle faces a number of interesting challenges. Studying these challenges will yield insight into the nature of morality. The course is structured around three units. In the first unit we will study the structure of consequentialist ethical views. We will read the work of old dead masters and exciting new theorists. In the second unit we address questions arising from collective action, such as the following: do you have any reason to vote, or recycle, or protest, if your actions by themselves are guaranteed not to make much difference? We will address a related dispute in the philosophy of activism. The third unit addresses the relationship between actions and character. We¿ll address questions such as the following: what¿s so great about abandoning one¿s friends and family to attend to the greater good? Is it a problem if the best moral theory tells us not to follow it? By the end of all this, you will improve your understanding of ethics generally, as well as applications of related principles in economics, political theory, and public policy.

PHIL 194N. Philosophical Issues in Cognitive Science. 4 Units.
Philosophers generally do not perform systematic empirical observations or construct computational models. But philosophy remains important to cognitive science because it deals with fundamental issues that underlie the experimental and computational approach to mind. Abstract questions such as the nature of representation and computation. Relation of mind and body and methodological questions such as the nature of explanations found in cognitive science. Normative questions about how people should think as well as with descriptive ones about how they do. In addition to the theoretical goal of understanding human thinking, cognitive science can have the practical goal of improving it, which requires normative reflection on what we want thinking to be. Philosophy of mind does not have a distinct method, but should share with the best theoretical work in other fields a concern with empirical results.

PHIL 194P. The Meaning of Life. 4 Units.
What makes life meaningful? It's a question that pulls on many, if not most, people, particularly in light of our current global situation; and in this course, we will give this question rigorous consideration. We'll explore matters of identity, authenticity, accomplishment, social connection, love, attention, religion, and happiness. But first, we'll examine whether meaningfulness is a subjective or objective affair. Our readings will primarily be in philosophy, but we will supplement with research in psychology and literary texts.

PHIL 194R. Epistemic Paradoxes. 4 Units.
Paradoxes that arise from concepts of knowledge and rational belief, such as the skeptical paradox, the preface paradox, and Moore¿s paradox. Can one lose knowledge without forgetting anything? Can one change one's mind in a reasonable way without gaining new evidence?.

PHIL 194S. Skepticism. 4 Units.
Modern arguments for skepticism are hard to combat, but also curiously inert in ordinary life. We will look at a variety of contemporary attempts to come to terms with skepticism about the external world, each of which seeks to exploit the curious inertness of skeptical hypotheses.

PHIL 194T. Practical Reason. 4 Units.
Contemporary research on practical reason, practical rationality, and reasons for action. Enrollment limited to 12. Priority given to undergraduate Philosophy majors.

PHIL 194W. Capstone Seminar: Imagination in Fiction and Philosophy. 4 Units.
This course is about imagination in fiction and philosophy. One core set of questions will have to do with our use of the imagination in fiction. Are there limits to the way in which fiction can engage the imagination? If so, are these limits different from general limits on the imagination? Another set of questions is about the nature of imagination and its importance to philosophy. What is imagination? Can it produce knowledge? How is imagination engaged in fictional thought experiments? Readings will include: selections from contemporary analytic philosophy; a few pieces of literary theory; and both contemporary and historical fiction. Students are expected to have general facility with challenging philosophical texts and fiction in English. Knowledge of modal logic will be helpful but not required. Prerequisites: at least one course in the Philosophy department. Course is not repeatable for credit. This is a capstone seminar for philosophy majors and students pursuing the Philosophy & Literature concentration. Other students are welcome to enroll, but preference will be given to students in these groups.

PHIL 194Y. Capstone seminar: Common Sense Philosophy. 4 Units.
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PHIL 194Z. Capstone: Living a Meaningful Literary Life. 4 Units.
What makes life meaningful? It's a question that pulls on many, if not most, people; and in this course, we will give it rigorous consideration, with a slight twist. Our guiding question will be what makes for a meaningful literary life. In other words, what roll can literature¿its creation, consumption, and contemplation¿play in living a meaningful life? We will consider matters of narrative, identity, self, social connection, empathy, perception, and attention. But first, we'll lay some groundwork with the question of what makes for a meaningful life in general.

PHIL 195A. Unity of Science. 4-5 Units.
Primarily for seniors.

PHIL 195B. Donor Seminar: Practical Reasoning. 4 Units.
Primarily for seniors. Relationships among action, deliberation, reasons, and rationality. On what basis do people decide what to do? What norms or rules structure reasoning? What constitutes rationality?.

PHIL 196. Tutorial, Senior Year. 5 Units.
(Staff).

PHIL 197. Individual Work, Undergraduate. 1-15 Unit.
May be repeated for credit.

PHIL 197C. Curricular Practical Training. 1 Unit.
(Graduate students enroll in 297C) Students engage in internship work and integrate that work into their academic program. Following internship work, students complete a research report outlining work activity. Meets the requirements for curricular practical training for students on F-1 visas. Student is responsible for arranging own internship/employment and faculty sponsorship. Register under faculty sponsor's section number. Course may be repeated for credit.

PHIL 198. The Dualist. 1 Unit.
The Dualist brings together people who are passionate about exploring deep philosophical and life questions. As we face these challenging times, The Dualist hopes to continue exploring questions about race, class, and justice through remote discussions. We will focus on building an online community through an online bookclub style of conversations, plus end-of-quarter virtual celebrations (with surprises!). We welcome students from all backgrounds, regardless of your experience with philosophy. If you are interested in joining, contact the instructor to be put on an email list, we are still finalizing the meeting time and the reading list. May be repeated.

PHIL 199. Seminar for Prospective Honors Students. 2 Units.
Open to juniors intending to do honors in philosophy. Methods of research in philosophy. Topics and strategies for completing honors project. May be repeated for credit.

PHIL 201. Introduction to Medieval Philosophy. 4 Units.
This course is an introduction to medieval moral philosophy, broadly construed. In addition to doctrines that we would nowadays readily think of as falling within the domain of ethics, we will be looking at closely related topics that might today be thought to belong more properly to metaphysics, the philosophy of religion, or the philosophy of human nature.
Same as: PHIL 101

PHIL 201B. John Duns Scotus: Politics, Metaphysics & Philosophy of Mind. 1-2 Unit.
Life and an introduction to the difficulties of medieval biography. Franciscanism and Scotus' view on property and ownership. Proofs for the existence of God. Philosophy of mind. Metaphysics in general. Universals, Common natures, Formal Distinction, and Individuation. Formal distinction, individual forms and the precedents for Scotus' view in Richard Rufus.

PHIL 202M. Fichte. 1-2 Unit.
This three-day intensive mini-course will introduce the moral and political thought of Johann Gottlieb Fichte, the founder of the German idealist movement. The topics to be discussed are: Fichte's theory of subjectivity and transcendental idealism; Fichte's defense of radical freedom of the will; Fichte's transcendental deduction of other selves; the relation of right between rational beings and the foundations of political philosophy; Fichte's deduction of the moral law from the absolute freedom of the rational being; the application of the moral law through conscience. No previous acquaintance with Fichte's philosophy will be presupposed.
Same as: PHIL 102M

PHIL 205C. Beauty in Ancient Greek Philosophy. 4 Units.
Beauty occupies a peculiarly central place in ancient Greek philosophical thought, figuring prominently in Plato's and Aristotle's ethics, epistemology, and metaphysics. The ancient conception of beauty is also in various ways at odds with our modern conception: far from being "in the eye of the beholder", ancient philosophers thought of beauty as a paradigm of objectivity, and closely aligned with moral goodness. Why this discrepancy between the ancient and modern conceptions of beauty? And what might the centrality of beauty in ancient thought reveal about ancient ethics, epistemology, and metaphysics? This course is an investigation into these questions, by means of a close reading of the major ancient texts in which beauty appears. Some background in ancient Greek philosophy and/or contemporary aesthetics is preferred, but not required.
Same as: PHIL 105C

PHIL 205R. JUST AND UNJUST WARS. 2 Units.
War is violent, but also a means by which political communities pursue collective interests. When, in light of these features, is the recourse to armed force justified? Pacifists argue that because war is so violent it is never justified, and that there is no such thing as a just war. Realists, in contrast, argue that war is simply a fact of life and not a proper subject for moral judgment, any more than we would judge an attack by a pack of wolves in moral terms. In between is just war theory, which claims that some wars, but not all, are morally justified. We will explore these theories, and will consider how just war theory comports with international law rules governing recourse to force. We will also explore justice in war, that is, the moral and legal rules governing the conduct of war, such as the requirement to avoid targeting non-combatants. Finally, we will consider how war should be terminated; what should be the nature of justified peace? We will critically evaluate the application of just war theory in the context of contemporary security problems, including: (1) transnational conflicts between states and nonstate groups and the so-called "war on terrorism"; (2) civil wars; (3) demands for military intervention to halt humanitarian atrocities taking place in another state. Same as LAW 751.
Same as: ETHICSOC 205R, ETHICSOC 305R, PHIL 305R

PHIL 206. Ancient Greek Skepticism. 4 Units.
The ancient Pyrrhonian skeptics who think that for any claim there is no more reason to assert it than deny it and that a life without any beliefs is the best route to happiness. Some ancient opponents of the Pyrrhonian skeptics and some relations between ancient and modern skepticism.
Same as: PHIL 106

PHIL 207. Plato's Early Dialogues. 4 Units.
We shall read some of the most important and difficult of Plato¿s `early¿ dialogues: the Charmides, parts of the Euthydemus, the Gorgias, the Hippias Minor, the Meno, and the Protagoras. Topics include: the nature of pleasure and its role in the good life, good luck and the good life, self-knowledge, the relation between knowledge and virtue, whether virtue can be taught, learning and recollection, rhetoric, the relations among the virtues, Socratic ignorance, and the Socratic method of the elenchus.
Same as: PHIL 107

PHIL 207A. The Greeks on Irrationality. 2-4 Units.
In this course, we shall examine the views of some central Greek philosophers (Plato, Aristotle, the Epicureans, and the Stoics) on the irrational and non-rational aspects of human life. What makes something irrational and what roles (negative and perhaps positive as well) does the irrational play in our lives? We shall examine their views on anger, fear, madness, love, pleasure and pain, sexual desire and so on. We shall also consider more briefly some depictions of these psychic items in ancient Greek literature.
Same as: PHIL 107A

PHIL 207B. Plato's Later Metaphysics and Epistemology. 4 Units.
A close reading of Plato's Theatetus and Parmenides, his two mature dialogues on the topics of knowledge and reality. We will consider various definitions of knowledge, metaphysical problems about the objects of knowledge, and a proposed method for examining and resolving such problems. Some background in ancient Greek philosophy and/or contemporary metaphysics and epistemology is preferred, but not required. Prerequisite: Phil 80.
Same as: PHIL 107B

PHIL 207C. Plato's Timaeus. 4 Units.
In this course, we will explore the Timaeus, Plato's account of the nature and creation of the universe. This work, from Plato's late period, with its highly notable postulations of the Demiurge and the receptacle, received the place of prominence in the ancient reception of Plato and contains a number of challenges in interpretation for contemporary scholars of Plato. We will carefully examine the work and its contributions to Platonic metaphysics, physics, psychology, teleology, cosmology, and theology. In so doing, we will also consider questions of how we are to understand it as a likely story, its role within the Platonic corpus, and its engagement with pre-existing traditions of Greek natural philosophy.
Same as: PHIL 107C

PHIL 208. Aristotle's Metaphysics Book Alpha. 4 Units.
An introduction both to Aristotle's own metaphysics and to his treatment of his predecessors on causality, included the early Ionian cosmologists, atomism, Pythagoreans, Heraclitus, Parmenides, Empedocles, Anaxagoras and Plato. Prerequisite: one course in ancient Greek philosophy.
Same as: PHIL 108

PHIL 208A. Aristotelian Logic. 2-4 Units.
A careful examination of Aristotle's syllogistic, with special emphasis on the interpretation of his modal syllogistic. This course will serve both as an introduction to ancient term logic and to the difference between sentential modal operators and modal modifiers to the copula. Topics will include the analysis of syllogisms into figures and moods, the reduction of 2nd and 3rd figure syllogisms to the first, the consistency of the modal syllogistic, models for the syllogistic, and de re versus de dicto modalities. For students with at least some introductory background in logic.
Same as: PHIL 108A

PHIL 208B. Aristotle's Physics Book One. 4 Units.
A chapter by chapter analysis of Aristotle's introductory discussions of physical theory. Topics to be considered include Aristotle's treatment of Eleatic monism, the role of opposites in pre-Socratic physics, the role of matter in physics, and an analysis of the elements of changing objects into form, privation and a subject.
Same as: PHIL 108B

PHIL 209. Topics in Ancient Philosophy: Plato and Aristotle on Art and Rhetoric. 4 Units.
Plato's and Aristotle's views on the nature of art and rhetoric and their connections with the emotions, reason and the good life. Readings include Plato's Gorgias, Ion and parts of the Republic and the Laws and Aristotle's Poetics and Rhetoric.
Same as: PHIL 109

PHIL 209A. Special Topics in Ancient Philosophy: Aristotle's Metaphysics Zeta. 4 Units.
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Same as: PHIL 109A

PHIL 209B. Greek philosophers read their ancestors: Intro to the ancient reception of Presocratic philosophy. 4 Units.
The first Greek philosophers are known to us only through fragments of their original works, generally few in number and transmitted by later authors, as well as through a set of testimonies covering a thousand years and more. Thus it is crucial, in order to understand archaic thought, to get a sense of how they were read by those to whom we owe their transmission. What was their aim, their method, their presuppositions or prejudices?nn The course will employ this perspective to examine authors such as Plato, Aristotle, Theophrastus, Diogenes Laertius, Simplicius ¿ among others. We shall also reflect, on the basis of the paradigmatic case of the Presocratics, on some of the more general problems raised by literary and philosophical approaches to the notion of reception.
Same as: PHIL 109B

PHIL 209C. Aristotle's cosmology and theology. 4 Units.
PHIL 109C/209C now meets in Raubitschek Room, Green Library Room 351. Undergrads please sign up for 109C; grads sign up for 209C.
Same as: PHIL 109C

PHIL 210. Plato's Republic. 4 Units.
We shall examine this complex and fascinating dialogue in detail, comparing it with other relevant Platonic texts, focusing on its ethics, epistemology, metaphysics, and political philosophy. We shall examine the connections that Plato sees between these different areas of philosophy, and consider some of the strengths and weaknesses of his overall argument.
Same as: PHIL 110

PHIL 210C. The Stoics on Freedom and Determinism. 4 Units.
We will investigate ancient Stoic conceptions of causality and freedom, their arguments for causal determinism, and ancient attaches on and defenses of compatibilism.
Same as: PHIL 110C

PHIL 211. Aristotle's Posterior Analytics. 4 Units.
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Same as: PHIL 111

PHIL 212. Causality in Ancient Greek Philosophy. 4 Units.
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Same as: PHIL 112

PHIL 212A. Aristotle's metaphysics. 4 Units.
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Same as: PHIL 112A

PHIL 213. Hellenistic Philosophy. 4 Units.
Epicureans, skeptics, and stoics on epistemology, ethics, metaphysics, and psychology.
Same as: PHIL 113

PHIL 213A. Porphyry's Introduction to Logic. 4 Units.
The main text will be the Isagoge.
Same as: PHIL 113A

PHIL 214A. Ancient Philosophical Methodologies. 4 Units.
In this course, we shall examine the philosophical methodologies that Plato, Aristotle, and the Hellenistics use and advocate. In Plato, we shall consider the elenchus and dialectic, in Aristotle dialectic and science. For the Stoics and Epicureans, we shall focus on the methodological differences that come to light in their epistemological disagreements and in their ethical and metaethical disagreements. For the skeptics, we shall consider whether they have a philosophical methodology at all.
Same as: PHIL 114A

PHIL 215. PreSocratics. 4 Units.
Exploration of the Greek philosophical inquiry undertaken in the roughly two hundred years before Socrates. This Presocratic period saw vibrant and varied treatment of a wide range of areas, including physics, metaphysics, epistemology, cosmology, theology, biology, and ethics. We will proceed chronologically through the major Presocratic philosophers and schools, carefully examining the fragmentary evidence on each and discussing the interpretation of their doctrines from this evidence. Focus will be on the Presocratics in their own right, though their influence upon later thought, especially Plato and Aristotle, will also receive considerable attention. Consideration of how the ideas of the Presocratics were transmitted and manipulated in the ancient tradition, as well as of the nature and development of Western philosophy itself.
Same as: PHIL 115

PHIL 216. Aquinas. 4 Units.
This course is an introduction to the metaphysical thought of St. Thomas Aquinas (1225 - 1274), one of the most important and influential philosopher-theologians of the High Middle Ages. Readings will be drawn primarily from the "Summa theologiae.".
Same as: PHIL 116

PHIL 217. Descartes. 4 Units.
(Formerly 121/221.) Descartes's philosophical writings on rules for the direction of the mind, method, innate ideas and ideas of the senses, mind, God, eternal truths, and the material world.
Same as: PHIL 117

PHIL 217D. Aristotle's De Anima. 4 Units.
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Same as: PHIL 117D

PHIL 218A. Origins of Empiricism: Gassendi, Locke, and Berkeley. 4 Units.
Particular light is shed on both the strengths and weaknesses of empiricism by studying it as it first arose during the 17th century revolution in philosophy and the sciences initiated by Descartes. Three philosophers of that period helped to advance empiricism: Pierre Gassendi (1592-1655), John Locke (1632-1704), and George Berkeley (1685-1753). A brief introduction to Descartes is followed by Gassendi's reaction to Descartes and his influence on Locke; Locke's theory of ideas, mind, language, reality, and natural philosophy expounded in his An Essay concerning Human Understanding (Fourth Edition, 1689); and Berkeley's later reaction to Locke.
Same as: PHIL 118A

PHIL 219. Rationalists. 4 Units.
Developments in 17th-century continental philosophy. Descartes's views on mind, necessity, and knowledge. Spinoza and Leibniz emphazing their own doctrines and their criticism of their predecessors. Prerequisite: 102.
Same as: PHIL 119

PHIL 220. Leibniz. 4 Units.
A polymath, Leibniz invented the calculus independently of Newton and made major contributions to virtually every science, including logic and computer science. In this course, we investigate Leibniz's philosophical system and its metaphysics: that God created the best of all possible worlds; that humans freely choose actions that are nevertheless pre-established; that space and time are idealizations and `imaginary'; and that true, fundamental reality consists of minds.
Same as: PHIL 120

PHIL 220W. Richard Rufus on Aristotle's Metaphysics: Ontology, Unity, Universals, & Individuation. 1-2 Unit.
Mini-Course taught by Rega Wood in association with Santiago Melo Arias & Professors Alan Code & Calvin Normore. Code, Wood, & Melo Arias have spent the last 6 months intensively studying Richard Rufus of Cornwall's commentary on Aristotle's Metaphysics Zeta, Eta, & Theta. This June we will present Rufus' views on ontology, unity, & universals. There will be 6 two hour sessions on June, 4,5, & 6 (Thurs - Saturday), 10-12 noon , 2-4 pm. Readings will be taken chiefly from Melo Arias' new translations of Rufus' circa 1238 commentary; other readings, from Aristotle and Averroes. We will consider the difference between the treatment of definition, essence and being in logic and in metaphysics, the sense in which accidents have definitions, the unity of genus and differentia in the ndefinitions of substances, the unity of form and proximate matter in hylomorphic compounds, and the unity of the parts of the rational soul. In this context we will discuss the formal distinction pioneered by Rufus as a description of differences in formal predication consistent with real sameness.Richard Rufus was the nfirst Western professor to lecture on Aristotle's metaphysics in Medieval Europe.
Same as: PHIL 120W

PHIL 221. History of Political Philosophy. 4 Units.
Nation-states issue legal commands, and wield overwhelming power to coercively enforce them. On one hand, this allows states to protect people from each other. On the other hand, what protects people from the state, even if is democratic, when it facilitates domination and oppression of some citizens by others? In this course we are introduced to authors grappling with these issues in the evolving canon of Western political philosophy from ancient Greece to the 20th century. This takes us through questions about obligation, the state, consent, rights, democracy, property, free speech, socialism, gender, race. Authors whose arguments we will study and scrutinize include Plato, Hobbes, Locke, Rousseau, Marx, Mill, Wollstonecraft, Douglass, and Rawls, along with critics and commentators.
Same as: ETHICSOC 121, PHIL 121

PHIL 222. Hume. 4 Units.
(Formerly 120/220; graduate students enroll in 222.) Hume's theoretical philosophy, in particular, skepticism and naturalism, the theory of ideas and belief, space and time, causation and necessity, induction and laws of nature, miracles, a priori reasoning, the external world, and the identity of the self.
Same as: PHIL 122

PHIL 223. Introduction to Chinese Philosophy. 4 Units.
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Same as: PHIL 123

PHIL 224. Kant's Philosophy of Physical Science. 2-4 Units.
Kant's *Metaphysical Foundations of Natural Science* (1786), published between the first (1781) and second (1787) editions of the *Critique of Pure Reason,* in the scientific and philosophical context provided by Newtonian natural philosophy and the Leibnizean tradition. The place of this work in the development of Kant's thought. Prerequisite: acquaintance with either Kant's theoretical philosophy or the contemporaneous scientific context, principally Newton, Leibniz, and Euler.

PHIL 224A. Mathematics in Kant's Philosophy. 4 Units.
Recent work in Kant's philosophy of mathematics, examined with a view to the role of mathematics, both pure and applied, within Kant's theory of experience. Particular attention to the Transcendental Deduction and the Categories of Quantity. Prerequisite: prior acquaintance with Kant's theoretical philosophy and the Critique of Pure Reason.

PHIL 225. Kant's First Critique. 4 Units.
(Graduate students register for 225.) The founding work of Kant's critical philosophy emphasizing his contributions to metaphysics and epistemology. His attempts to limit metaphysics to the objects of experience. Prerequisite: course dealing with systematic issues in metaphysics or epistemology, or with the history of modern philosophy.
Same as: PHIL 125

PHIL 226B. Kant's Ethical Theory. 2-4 Units.
(Graduate students register for 226B.) Kant's moral philosophy based primarily on the *Groundwork of Metaphysics of Morals, Critique of Practical Reason,* and *The Metaphysics of Morals.*.
Same as: PHIL 126B

PHIL 227. Kant's Foundations of Morality, 2nd Critique. 4 Units.
(Graduate students enroll in 227.) A study of Kant's ethical thought, focusing on The Groundwork of the Metaphysics of Morals, The Critique of Practical Reason, and The Metaphysics of Morals. Prerequisite: Phil. 2, Phil. 170, or equivalent (consult the instructor). Designed for undergraduate department majors and graduate students.
Same as: PHIL 127

PHIL 227A. Kant's Value Theory. 4 Units.
(Graduate students register for 227A.) The role of autonomy, principled rational self-governance, in Kant's account of the norms to which human beings are answerable as moral agents, citizens, empirical inquirers, and religious believers. Relations between moral values (goodness, rightness) and aesthetic values (beauty, sublimity).
Same as: PHIL 127A

PHIL 227B. Kant's Anthropology and Philosophy of History. 4 Units.
Kant's conception of anthropology or human nature, based on his philosophy of history, which influenced and anticipated 18th- and 19th-century philosophers of history such as Herder, Fichte, Hegel, and Marx. Texts include *Idea for a Universal History, Conjectural Beginning of Human History,* and *Anthropology from a Pragmatic Point of View.* Topics include: Kant's pragmatic approach to the study of human nature; the difficulty of human self knowledge; the role of regulative and teleological principles in studying human history; and Kant's theory of race.
Same as: PHIL 127B

PHIL 227C. Rousseau and Kant. 1-2 Unit.
Kant considered Rousseau ¿the Newton of the moral world.¿ A portrait of Rousseau was reportedly the only decoration in Kant¿s study, and it was Kant¿s reading of Émile, or On Education and On the Social Contract in the early 1760s which, more than anything else, first awakened Kant¿s interest in moral philosophy. In a three-day intensive mini-course, we will explore the relation between Rousseau¿s philosophy and Kant¿s on such topics as the standards of right and virtue, human equality, the relation of reason and feeling in human nature, and the philosophy of history.

PHIL 227M. Richard Rufus of Cornwall. 1-2 Unit.
Metaphysics and Epistemology, readings from Rufus' newly translated Contra Averroem & Speculum animae. In these works, Rufus solves a problem for Aristotelian epistemology that was to bedevil later scolastics such as Thomas Aquinas. He also states for the first time a theory of individuation by form that was subsequently adopted by Duns Scotus. Though Scotus like Rufus preferred to speak of individual forms, the theory itself is often identified by a term very seldom used by Scotus, `haeceitas' or thisness. Taughtly jointly by Rega Wood and Calvin Normore.
Same as: PHIL 127M

PHIL 227W. Introducing Ockham & His Razor: Mind & Metaphysics, Logic, Epistemology, & Ethics. 1-2 Unit.
Three day mini course on topics in Medieval Philosophy. This year's topic is "Introducing Ockham & His Razor: Mind & Metaphysics, Logic, Epistemology, & Ethics." Course runs June 2-4, 2017. Guest lectures by Peter King (Toronto), Elizabeth Karger (CNRS, Paris).n We begin with a general introduction to Ockham's place in the history of philosophy from Democritus to Descartes. Then we turn to Ockham's logic and his most popular work, the Summa logicae. In this connection we will discuss Ockham's distinction between absolute and connotative terms and his theory of supposition, a theory that corresponds roughly to modern reference theory. n On day two we take up Ockham's Epistemology, the distinction he drew between intuitive & abstractive cognition, his approach to problems of certainty and judgment, and his response to skeptical worries. In this connection we will discuss the razor in its application of sensible species. That afternoon our topic will be nominalist metaphysics & the razor as Ockham deploys the principle of parsimony to justify his denial of common natures and his rejection of some of the Aristotelian categories, such as motion and relation. More generally we see an approach to physics with minimal reliance on metaphysics.n Day three begins with philosophy of mind. Here we will see Ockham refusing to posit faculties of will and intellect distinct from the intellective soul itself, while admitting a distinction between the sensitive and intellective souls. The course will close with a discussion of Ockham's ethics and politics. In ethics we will consider the ground of the good and the connection of the virtues; in politics we will focus on property rights, a major source of controversy within the church.n Undergraduates are welcome to take the course, but must have the instructor's permission.

PHIL 228. Fichte's Ethics. 4 Units.
(Graduate students register for 228.) The founder of the German Idealist movement who adopted but revised Kant's project of transcendental philosophy basing it on the principle of awareness of free self-activity. The awareness of other selves and of ethical relations to them as a necessary condition for self-awareness. His writings from 1793-98 emphasizing the place of intersubjectivity in his theory of experience.
Same as: PHIL 128

PHIL 229. Plotinus and Augustine. 3-5 Units.
Professor's permission required to register. A reading course focused on the influence of Plotinus Enneads on Augustine's Confessions, early dialogues, and sections on reason and memory in the De trinitate. Proficiency in Greek and Latin will be helpful but is not required. Professor's prior permission required, interested students should contact the professor about course schedule: tsheehan@stanford.edu . Undergraduates register for 200-level for 5 units. Graduate students register for 300-level for 3-5 units.
Same as: PHIL 329, RELIGST 269, RELIGST 369

PHIL 230. Hegel. 4 Units.
(Formerly 122/222; graduate students register for 230.) Introduction to Hegel's philosophy, emphasizing his moral and political philosophy, through study of his last major work (1821). May be repeated for credit. Prerequisite: course in the history of modern philosophy.
Same as: PHIL 130

PHIL 231W. Kant's Theory of Law and Justice. 1-2 Unit.
This course will look at Kant's theory of right or law (Recht) and its implications for morality and politics. The topics we will discuss are: the difference between right and ethics in Kant¿s metaphysics of morals; the relation of law to property and morality; the moral obligations of politicians as holders of rightful authority; and the standards of right as they apply to international relations and war.
Same as: PHIL 131W

PHIL 232. Phenomenology: Merleau-Ponty. 4 Units.
(Graduate students register for 232.) French philosopher Maurice Merleau-Ponty wrote that we are neither angels nor machines but living beings. In contrast to both a first person introspective analysis and the third person scientific approach, Merleau-Ponty aimed to describe the basic invariant structures of human life by using the phenomenological method. The result was a new concept of experience that is essentially embodied. In this class, you will learn about the phenomenological method and read Merleau-Ponty's now classic text Phenomenology of Perception. Prerequisite: one prior course in Philosophy, or permission of instructor.
Same as: PHIL 132

PHIL 232W. Mini Course: Topics in Kant's Ethics. 1-2 Unit.
This mini-course will deal with several selected topics relating to Kant's ethics: (1) Kant's formulas of the moral law, their meaning and their relation to one another; (2) Kant's concept of imperfect (wide, meritorious) duties and its role in his ethical theory; (3) the place of feeling, emotion, desire and inclination, their relation to our empirical nature and to human reason, in Kant's moral psychology; and (4) the place of duties regarding animals and other non-human beings in Kant's ethical theory. There will be six sessions, each two hours in length. Either the instructor or one of the guest lecturers will be in charge of each session, which will consist in part of a presentation by the person in charge and partly of discussion. Instructor: Allen Wood (Indiana University/Stanford University); guest lecturers: Barbara Herman (UCLA), Janelle DeWitt (Indiana University). Course meets Monday, Tuesday, Wednesday, June 6, 7, 8, 2016. May be repeated for credit.
Same as: PHIL 132W

PHIL 233. Husserl. 4 Units.
Husserl's phenomenology. Main themes in his philosophy and their interconnections, including consciousness, perception, intersubjectivity, lifeworld, ethics, mathematics and the sciences, and time and space. Works in English translation.

PHIL 234. Phenomenology: Husserl. 4 Units.
(Graduate students register for 234.) Neuroscience, psychology, linguistics, artificial intelligence, and other related fields face fundamental obstacles when they turn to the study of the mind. Can there be a rigorous science of us? German philosopher Edmund Husserl (1859-1938), founder of phenomenology, devised a method intended to disclose the basic structures of minds. In this class, we will read one of Husserl's major later works, Cartesian Meditations, as well as companion essays from both his time and ours. A guiding question for us will be how phenomenology is applied outside of philosophy, specifically, how has it influenced discussions of the mind in the sciences? Prerequisite: one prior course in philosophy, or permission of instructor.
Same as: PHIL 134

PHIL 234A. Phenomenology: Animals. 4 Units.
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Same as: PHIL 134A

PHIL 234B. The Later Heidegger: Art, Poetry, Language. 3 Units.
Lectures and seminar discussions of the problematic of the later Heidegger (1930 - 1976) in the light of his entire project. Readings from "On the Origin of the Work of Art" and Elucidations of Holderlin's Poetry.
Same as: RELIGST 277, RELIGST 377

PHIL 235. Existentialism. 4 Units.
Focus is on the existentialist preoccupation with human freedom. What constitutes authentic individuality? What is one's relation to the divine? How can one live a meaningful life? What is the significance of death? A rethinking of the traditional problem of freedom and determinism in readings from Rousseau, Kierkegaard, and Nietzsche, and the extension of these ideas by Sartre, Beauvoir, and Camus, including their social and political consequences in light of 20th-century fascism and feminism.
Same as: PHIL 135

PHIL 236. History of Analytic Philosophy. 4 Units.
(Formerly 147/247; graduate students register for 236.) Theories of knowledge in Frege, Carnap, and Quine. Emphasis is on conceptions of analyticity and treatment of logic and mathematics. Prerequisite: 50 and one course numbered 150-165 or 181-90.
Same as: PHIL 136

PHIL 237. Wittgenstein. 4 Units.
(Graduate students register for 237.) An exploration of Wittgenstein's changing views about meaning, mind, knowledge, and the nature of philosophical perplexity and philosophical insight, focusing on the Tractatus Logico-Philosophicus and Philosophical Investigations.
Same as: PHIL 137

PHIL 238. Recent European Philosophy: Between Nature and History. 4 Units.
A critical introduction to the novel understandings of time, language, and cultural power developed by 20th-century continental thinkers, with close attention to work by Heidegger, Saussure, Benjamin, and Foucault.
Same as: PHIL 138

PHIL 239. Teaching Methods in Philosophy. 1-4 Unit.
For Ph.D. students in their first or second year who are or are about to be teaching assistants for the department. May be repeated for credit.

PHIL 240. Individual Work for Graduate Students. 1-15 Unit.
May be repeated for credit.

PHIL 241. Second Year Paper Development Seminar. 1-4 Unit.
Required of second-year Philosophy Ph.D. students; restricted to Stanford Philosophy Ph.D. students. Prerequisite: consent of instructor. This seminar will focus on helping students complete their second year paper.

PHIL 242. Race, Justice, and Integration. 3 Units.
Recent philosophical research on injustice, race, and the ideal of racial integration.
Same as: AFRICAAM 241, EDUC 241, PHIL 142

PHIL 243. Quine. 4 Units.
(Formerly 183/283; graduate students register for 243.) The philosophy of Quine: meaning and communication; analyticity, modality, reference, and ontology; theory and evidence; naturalism; mind and the mental.
Same as: PHIL 143

PHIL 248. Medieval Latin Paleography. 3-5 Units.
The history of medieval scripts and medieval abbreviation. Dating and placing Latin European medieval manuscripts. Editing medieval texts in philosophy, psychology, physics, and theology. Class project: an early 13th century encyclopedia (with entries citing both Plato and Aristotle). Intellectually exciting, easy to read (textualis script).

PHIL 249. Evidence and Evolution. 3-5 Units.
The logic behind the science. The concept of evidence and how it is used in science with regards to testing claims in evolutionary biology and using tools from probability theory, Bayesian, likelihoodist, and frequentist ideas. Questions about evidence that arise in connection with evolutionary theory. Creationism and intelligent design. Questions that arise in connection with testing hypotheses about adaptation and natural selection and hypotheses about phylogenetic relationships.
Same as: PHIL 349

PHIL 250. Mathematical Logic. 4 Units.
An introduction to the concepts and techniques used in mathematical logic, focusing on propositional, modal, and predicate logic. Highlights connections with philosophy, mathematics, computer science, linguistics, and neighboring fields.
Same as: PHIL 150

PHIL 251. Metalogic. 4 Units.
(Formerly 160A.) The syntax and semantics of sentential and first-order logic. Concepts of model theory. Gödel's completeness theorem and its consequences: the Löwenheim-Skolem theorem and the compactness theorem. Prerequisite: 150 or consent of instructor.
Same as: PHIL 151

PHIL 251A. Recursion Theory. 4 Units.
Computable functions, Turing degrees, generalized computability and definability. "What does it mean for a function from the natural numbers to themselves to be computable?" and "How can noncomputable functions be classified into a hierarchy based on their level of noncomputability?". Theory of relative computability, reducibility notions and degree structures. Prerequisite is PHIL 150, or PHIL 151 or CS 103.
Same as: PHIL 151A

PHIL 252. Computability and Logic. 4 Units.
Approaches to effective computation: recursive functions, register machines, and Turing machines. Proof of their equivalence, discussion of Church's thesis. Elementary recursion theory. These techniques used to prove Gödel's incompleteness theorem for arithmetic, whose technical and philosophical repercussions are surveyed. Prerequisite: 151.
Same as: PHIL 152

PHIL 253L. Computing Machines and Intelligence. 4 Units.
In this course we will explore the central question of what intelligence is by adopting artificial intelligence research as a point of reference. Starting with ideas proposed by Alan Turing in his 1950 paper, we will see what the contemporary interpretations are for those questions, and learn what new questions new technologies have brought. Among the subtopics are: Is it possible for a computer to think? What is thought? Are we computers? Could machines feel emotions or be conscious? Can AI die? Is there a relation between AI and decidability? What is the relationship between AI and Neuroscience Research? nThis course is intended for students of different majors interested in learning how the researchers in AI understand today the concept of intelligent machine, and examine what are the philosophical problems associated with the concept of artificial intelligence.
Same as: PHIL 153L

PHIL 254. Modal Logic. 4 Units.
(Graduate students register for 254.) Syntax and semantics of modal logic and its basic theory: including expressive power, axiomatic completeness, correspondence, and complexity. Applications to topics in philosophy, computer science, mathematics, linguistics, and game theory. Prerequisite: 150 or preferably 151.
Same as: PHIL 154

PHIL 255. Topics in Mathematical Logic: Non-Classical Logic. 4 Units.
This year's topic is Non-Classical Logic. May be repeated for credit.
Same as: PHIL 155

PHIL 256A. Modal Logics - A Modern Perspective. 4 Units.
Modal logic encompasses a rich variety of systems that have been used within philosophy to study such diverse topics as necessity and possibility, knowledge, time, action, and deontology. In recent years modal logic has also found applications outside of philosophy, in mathematics (the study of topology and formal provability) and in computational theory (including knowledge representation and software verification). This course will offer a modern approach to modal logic, covering the classical themes as well as cutting edge approaches and topics, such as hybrid logics and dynamic logics.
Same as: PHIL 156A

PHIL 257. Topics in Philosophy of Logic. 3 Units.
(Graduate students register for 257.) Disputed foundational issues in logic; the question of what the subject matter and boundaries of logic are, such as whether what is called second-order logic should be counted as logic. What is the proper notion of logical consequence? May be repeated for credit. Pre- or corequisite: 151, or consent of instructor.
Same as: PHIL 157

PHIL 258. Topics in Logic: Ten Problems in Deontic Logic. 2 Units.
As witnessed by the handbook of deontic logic and normative systems, the area of deontic logic is in flux. Traditional questions and logical methods of deontic logic are being supplemented by new questions and new techniques. This tutorial gives an introduction to the current discussion in deontic logic. In what sense are obligations different from norms? Jorgensen's dilemma, from preference based modal logic to the modern approach. How to reason about dilemmas, contrary-to-duty and defeasible norms? Distinguishing various kinds of defeasibility. How to relate various kinds of permissive and constitutive norms? Permissions as exceptions and prioritized norms. How do norms relate to other modalities like beliefs, desires, and intentions How do norms change? What is the role of time, action and games in deontic reasoning? For each problem, we discuss traditional as well as new research questions. We see the new questions as good questions for current research, in the sense that they point to modern theories and applications. We are especially interested in new questions that make older traditional questions obsolete in the sense that they are now addressed from a modern perspective, or in a more general setting. This mini-course wil from the week of 15 April through the week of 13 May.
Same as: PHIL 158

PHIL 259. Non-Classical Logic. 4 Units.
This course introduces non-classical extensions and alternatives to classical logic, and the philosophical debates surrounding them. Topics include modal logic (the logic of possibility and necessity), intuitionistic and many-valued logics (in which sentences may be neither true nor false, or both true and false), and relevant logic (which tries to refine the classical concept of entailment to capture the idea that the premises of arguments should be relevant to their conclusions). nnnStudents will learn tableau-style proof theories and Kripke frame semantics for a variety of non-classical logics, and will discuss adjacent philosophical issues, including the nature of necessity and possibility, the metaphysics of ordinary objects and fictional characters, the nature of truth, and the relationship between the world and the logical theories used to describe it.
Same as: PHIL 159

PHIL 260A. Newtonian Revolution. 4 Units.
(Graduate students register for 260A.) 17th-century efforts in science including by Kepler, Galileo, Descartes, and Huygens, that formed the background for and posed the problems addressed in Newton¿s *Principia*.
Same as: PHIL 160A

PHIL 260B. Newtonian Revolution. 4 Units.
(Graduate students register for 260B.) Newton¿s *Principia* in its historical context, emphasizing how it produced a revolution in the conduct of empirical research and in standards of evidence in science.
Same as: PHIL 160B

PHIL 262. Philosophy of Mathematics. 4 Units.
Prerequisite: PHIL150 or consent of instructor.
Same as: PHIL 162

PHIL 263. Significant Figures in Philosophy of Science: Einstein. 4 Units.
(Graduate students register for 263.)nThe influences of Hertz, Boltzmann, Mach and Planck on the development of Einstein's philosophical views regarding the scope and limits of physical theory. The distinction between principle theories and constructive theories from Poincaré and Lorentz, to Einstein. The impact of special and general relativity on logical empiricism. How Einstein's views changed in response to two core challenges, the advent of quantum mechanics and his three-decades long failure to extend general relativity to a "theory of the total field". We conclude by considering the lasting impact of Einstein's philosophical views, and whether they can be assimilated to contemporary currents in philosophy of science.nnPREREQUISITES: No detailed knowledge of physics or mathematics is presumed. Some background in philosophy, natural science or mathematics will be helpful. Students will benefit from possession of a modicum of mathematical maturity (roughly equivalent to a familiarity with elementary single-variable calculus or the metatheory of first-order logic).
Same as: PHIL 163

PHIL 264. Central Topics in the Philosophy of Science: Theory and Evidence. 4 Units.
(Graduate students register for 264.) Is reductionism opposed to emergence? Are they compatible? If so, how or in what sense? We consider methodological, epistemological, logical and metaphysical dimensions of contemporary discussions of reductionism and emergence in physics, in the ¿sciences of complexity¿, and in philosophy of mind.
Same as: PHIL 164

PHIL 264A. Central Topics in Philosophy of Science: Causation. 4 Units.
(Graduate Students register for 264A.) Establishing causes in science, engineering, and medicine versus establishing them in Anglo-American law, considered in the context of Hume and Mill on causation. May be repeated for credit.
Same as: PHIL 164A

PHIL 265. Philosophy of Physics: Space and Time. 4 Units.
Graduate students register for 265.nnPREREQUISITES: No detailed knowledge of quantum physics or advanced mathematics is presumed. Some background in philosophy, natural science or mathematics will be helpful. Students will benefit from possession of a modicum of mathematical maturity (roughly equivalent to a familiarity with elementary single-variable calculus or the metatheory of first-order logic).
Same as: PHIL 165

PHIL 265C. Philosophy of Physics: Probability and Relativity. 4 Units.
Conceptual puzzles in formulating probability concepts to be invariant in the sense of the Lorentz transformation of special relativity. Problems arise in both classical and quantum physics.

PHIL 266. Probability: Ten Great Ideas About Chance. 4 Units.
Foundational approaches to thinking about chance in matters such as gambling, the law, and everyday affairs. Topics include: chance and decisions; the mathematics of chance; frequencies, symmetry, and chance; Bayes great idea; chance and psychology; misuses of chance; and harnessing chance. Emphasis is on the philosophical underpinnings and problems. Prerequisite: exposure to probability or a first course in statistics at the level of STATS 60 or 116.
Same as: PHIL 166, STATS 167, STATS 267

PHIL 266A. Foundations of Quantum Mechanics. 4 Units.
This seminar will concentrate on a variety of probability questions that arise in quantum mechanics, including some from recent experiments. Negative probabilities and nonmonotonic upper probabilities will be emphasized.
Same as: PHIL 166A

PHIL 267A. Philosophy of Biology. 4 Units.
(Graduate students register for 267A.) Evolutionary theory and in particular, on characterizing natural selection and how it operates. We examine debates about fitness, whether selection is a cause or force, the levels at which selection operates, and whether cultural evolution is a Darwinian process. Prerequisites: one PHIL course and either one BIO course or Human Biology core; or equivalent with consent of instructor.
Same as: PHIL 167A

PHIL 267B. Philosophy, Biology, and Behavior. 4 Units.
(Graduate Students register for 267B) Philosophical study of key theoretical ideas in biology as deployed in the study of behavior. Topics to include genetic, neurobiological, ecological approaches to behavior; the classification and measurement of behaviors: reductionism, determinism, interactionism. Prerequisites: one PHIL course and either one BIO course or Human Biology core; or equivalent with consent of instructor.
Same as: PHIL 167B

PHIL 267C. Associative Theories of Mind and Brain. 4 Units.
After a historical survey of associative theories from Hume to William James, current versions will be analyzed including the important early ideas of Karl Lashley. Emphasis will be on the computational power of associative networks and their realization in the brain.
Same as: PHIL 167C

PHIL 267D. Philosophy of Neuroscience. 4 Units.
How can we explain the mind? With approaches ranging from computational models to cellular-level characterizations of neural responses to the characterization of behavior, neuroscience aims to explain how we see, think, decide, and even feel. While these approaches have been highly successful in answering some kinds of questions, they have resulted in surprisingly little progress in others. We'll look at the relationships between the neuroscientific enterprise, philosophical investigations of the nature of the mind, and our everyday experiences as creatures with minds. Prerequisite: PHIL 80.n(Not open to freshmen.).
Same as: PHIL 167D, SYMSYS 167D

PHIL 267E. Topics in Philosophy of Neuroscience. 4 Units.
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Same as: PHIL 167E

PHIL 267M. Evolutionary Contingency. 4 Units.
This course explores evolutionary contingency¿the role of dependency relations and chance in the history of life. Topics to be explored will include some work by Stephen Jay Gould in addition to philosophical debates concerning modal and process-based approaches to chance in evolution. Our investigation of contingency will be set against background issues concerning evolutionary convergences, inevitability, panselectionism, (in)determinism, and the usefulness of narrative explanations in this context.
Same as: PHIL 167M

PHIL 268M. Biological Individuality. 4 Units.
Our intuitions about the nature of organisms and of individuals are challenged by numerous puzzle cases in recent biological science. The nature of individuals is of long-standing interest in philosophy (as well as in different branches of the sciences). However, ideas of biological individuality have been challenged by developments in a variety of subfields of biology, and related areas including, for example, evolutionary biology, developmental biology, microbiology, and immunology. These challenges invite us to present a traditional philosophical thread discussion with new and exciting puzzles. In this course, we will read and discuss papers and book excerpts from both historical and contemporary authors working on biological individuality, which is often spearheaded by the use of case studies. The course will begin with a select history of how the particular problem(s) of biological individuality developed. Having established a shared understanding of the range of questions and perspectives available, students will gain a common language to communicate about this topic with those working in other fields. A background in biology is not necessary to take this course, and we will only visit traditional philosophical conceptions of individuality insofar as they are illuminating for the cases and readings we cover. Students are welcome from the humanities and sciences alike with the opportunity to come together over a philosophical topic that has consequences both within philosophy and beyond.
Same as: PHIL 168M

PHIL 269. Evolution of the Social Contract. 4 Units.
Explore naturalizing the social contract. Classroom presentations and term papers.nTexts: Binmore - Natural Justicen Skyrms - Evolution of the Social Contract.
Same as: PHIL 169

PHIL 269M. Topics in 18th Century Natural Philosophy: Virtues and Technology. 4 Units.
This course will be an introduction to the eighteenth-century history of ideas and philosophy, dealing primarily with questions encountered in natural philosophy: nWhat is the proper method of natural philosophy? What role do hypotheses play in physical theorizing? nWhat is the nature of space, time, matter and force? nWhat are the metaphysical and methodological frameworks of the Newtonian project of universal gravitation? nWhat kinds of intelligibility does mathematics bring to natural philosophy?nThis course is focused on questions, problems, and developments in the mathematical and exact sciences and experimental physics, and only briefly touches subjects in chemistry, natural history, physiology and moral sciences. Topic for 2020-21: Virtues and Technology.
Same as: PHIL 169M

PHIL 270. Ethical Theory. 4 Units.
This course explores some major topics/themes in ethical theory from the middle of the 20th century through the present. We'll read philosophy by John Rawls, Thomas Nagel, Bernard Williams, Christine Korsgaard, G.E.M. Anscombe, Philipa Foot, and others. Substantial background in moral philosophy will be assumed. Students should have completed Philosophy 2 (or its equivalent ¿ if you have questions, please contact the instructor).
Same as: ETHICSOC 170, PHIL 170

PHIL 270B. Metaphor. 4 Units.
In metaphor we think and talk about two things at once: two different subject matters are mingled to rich and unpredictable effect. A close critical study of the main modern accounts of metaphor's nature and interest, drawing on the work of writers, linguists, philosophers, and literary critics. Attention to how understanding, appreciation, and pleasure connect with one another in the experience of metaphor. Consideration of the possibility that metaphor or something very like it occurs in nonverbal media: gesture, dance, painting, music.
Same as: PHIL 170B

PHIL 270D. Trust and Trustworthiness. 4 Units.
An exploration of the place of interpersonal trust in ethical thought. What is it to trust another person? How is trusting related to, though different from, other attitudes we sometimes bear towards others (e.g. justified beliefs we form about others and their conduct; ethically significant expectations we have of others, etc.)? What is involved in acquiring/possessing the virtue of trustworthiness? How should trust (and trustworthiness) figure in our thinking about important ethical activities, for example promising, friendship, or the practice of politics?.
Same as: PHIL 170D

PHIL 270E. Sexual Ethics. 4 Units.
What is sex? What are the implications of different conceptions of sex for sexual ethics? Are there any distinctively sexual ethical principles or virtues or are principles and virtues that govern the sexual domain specific instances of principles and virtues that govern human activity more generally? Readings will range from historical to contemporary sources.

PHIL 271T. History of Ethics: Central Questions in Modern Ethical Theory. 2-3 Units.
Hobbes marks the beginning of a period of intensive discussion and debate among moral philosophers writing (mainly) in English. His successors argue about questions that are still among the primary questions in ethical theory: n1. The nature of moral judgments: metaphysical questions. nWhen we say, and sometimes claim to know, that an action is right, or a person is good, what sort of judgment is this? We often say they are true or false, but are we entitled to say so? If they are true, what sort of fact about the objective world makes them true? If no fact about the objective world makes them true, then what makes them true? n2. Moral knowledge: epistemological questions. nIf we sometimes know that a moral judgment is true or false, how do we know? Can we rely on anything analogous to perception (a moral sense)? What is the role of reason in moral judgments?n3. The practical function of moral judgments. nMoral judgments are practical, in so far as we make them with the intention of guiding our own action, when we try to make our mind up about the right thing to do, or of guiding other people's action, when we offer advice or criticism. Moreover, they engage our feelings, emotions, affections, and sentiments, not simply our rational capacities. What difference should this function of moral judgments make to our answers to the previous two questions? n4. The content of morality: normative questions. n(1) Can we derive the whole content of morality from enlightened self-interest? Are the principles underlying rational prudence the only ones we need if we are to understand morality? n(2) Can we derive morality from benevolence, understanding moral principles as simply the product of this sentiment? (3) Can we take moral principles to be various ways of promoting utility - the maximum happiness of all those affected by an action? n5. The justification of morality. nWhy should we care about morality? We might appeal to (1) self-interest; (2) sentiments, especially sympathy; (3) rational principles. nWe will discuss (1) The modification and elaboration of Hobbes's account of morality by Hume. n(2) The alternative to Hobbes that is developed by Butler, Price, and Reid. n(3) Kant's response to this debate among his predecessors.n(4) Sidgwick's attempt to reconcile elements of these different views.nThis course begins on January 28, and ends on March 13. May be repeated for credit. 2 unit option available only to PhD students beyond the second year. Undergraduates wishing to take this course must have taken a previous Philosophy course and have the permission of the instructor.

PHIL 272. History of Modern Moral Philosophy. 4 Units.
prerequisites: Phil 2 and Phil 80. Grads enroll in 272.
Same as: ETHICSOC 172, PHIL 172

PHIL 272B. Recent Ethical Theory: Moral Obligation. 4 Units.
Some moral obligations are "relational," "directional," or "bipolar" in structure: in promising you to act in a certain way, for example, I incur an obligation to you to so act and you acquire a corresponding claim or right against me that I so act. This entails that if I violate my obligation to you, I will not merely be doing something that is morally wrong, but will be wronging you in particular. What does explain this? Do all moral obligations have this structure? We will discuss how different moral theories (consequentialist, deontological, contractualist) try to account for such obligations. Readings include Adams, Anscombe, Darwall, Feinberg, Hart, Parfit, Raz, Scanlon, Skorupski, Thompson, Thomson, Wallace, and Wolf.
Same as: PHIL 172B

PHIL 272D. Bernard Williams. 4 Units.
An exploration of some central themes from the work of Bernard Williams. Particular attention will be paid to his discussion of the character and identity of the self, his sustained critique of morality and moral philosophy. We will also read several of Williams¿ interlocutors, including Nagel, Parfit, Korsgaard, and Herman.
Same as: PHIL 172D

PHIL 272N. Prudence and Morality. 4 Units.
We sometimes think we should do something just because it will benefit us in the future, even though we don¿t particularly feel like doing it now (e.g. we exercise, go to the dentist for a check-up, or set aside money for retirement). And we sometimes think we should do something for the sake of another person, even when it is inconvenient, costly, or unpleasant (e.g. we stop to help a stranded motorist, donate to charity, or tell someone an embarrassing truth rather than a face-saving lie). When we do the former, we act prudently. When we do the latter, we act morally. This course explores the debate among philosophers about the source of our reasons for acting prudently and morally. Some argue that our reasons to be prudent and moral stem directly from the fact that we are rational ¿ that it is contrary to reason to ignore our own future interests, or the interests of other people. Others disagree, arguing that the source of these reasons must lie elsewhere. Course readings will include work by Thomas Nagel, Bernard Williams, Christine Korsgaard, Derek Parfit, Philippa Foot, and others.
Same as: PHIL 172N

PHIL 272V. Virtue Ethics. 4 Units.
In recent years virtue ethics has emerged as a challenger to Kantian and utilitarian moral theories. In this course, we shall examine some of the leading contemporary virtue theorists and their critics. We shall consider how to define the virtues, the relation between virtue and right action and action guidance, the relation between virtue and happiness and criticisms made of virtue theory based on contemporary psychology. Authors to be read include GEM Anscombe, Julia Annas, John Doris, Philippa Foot, Gilbert Harman, Tom Hurka, Rosalind Hursthouse, Michael Slote, Christine Swanton and Bernard Williams.
Same as: PHIL 172V

PHIL 273B. Metaethics. 2-4 Units.
This is a graduate student only introduction to contemporary metaethics. Can moral and ethical values be justified or is it just a matter of opinion? Is there a difference between facts and values? Are there any moral truths? Does it matter if there are not? Focus is not on which things or actions are valuable or morally right, but what is value or rightness itself. Prerequisites: graduate standing and PHIL 281, and an ethics course.

PHIL 273W. Aesthetics. 4 Units.
This course will investigate a cluster of varied but related philosophical issues concerning the arts - music, painting, literature, poetry, photography, theater, film, etc.- issues most of which are, at the same time, problems in philosophy of mind or language, value theory, or epistemology. We will address questions like the following (though probably not all of them): What, if anything, is distinctive about art and aesthetic experience?, What is aesthetic value, and how do aesthetic values relate to and interact with moral values and values of other kinds?, What is fiction and why are people interested in it?, In what ways are works of art expressive of feelings or emotions? What similarities and differences are there in the expressive qualities of music, literature, painting, poetry? How might we learn from works of art of one or another kind, and how might they work to change people's perspectives or attitudes?, In what ways do artworks serve as vehicles of communication? Are the values of works of art fundamentally different from those of beautiful natural objects? Along the way, we will bump into more specific questions such as: Why and in what ways is photography more (or less) 'realistic' than painting and drawing, or more or less revealing of reality? Does (instrumental) music have cognitive or semantic content? Is music representational in anything like the ways literature and figurative painting are?, Do all literary works have narrators? Is there ever (or always?) anything like narrators in paintings, films, music? Prerequisite: One course in philosophy, or permission of the instructor.
Same as: PHIL 173W

PHIL 274. Freedom and the Practical Standpoint. 4 Units.
(Graduate students register for 274.) Confronted with the question of how to act, people think of themselves as freely determining their own conduct. Natural science poses a challenge to this by explaining all events, including human actions, in terms of causal processes. Are people justified in thinking of themselves as free? Major philosophical approaches to this question: incompatibilism, compatibilism, and the two-standpoint view.
Same as: PHIL 174

PHIL 274B. Universal Basic Income: the philosophy behind the proposal. 3 Units.
Universal basic income (or UBI) is a regular cash allowance given to all members of a community without means test, regardless of personal desert, and with no strings attached. Once a utopian proposal, the policy is now discussed and piloted throughout the world. The growth of income and wealth inequalities, the precariousness of labor, and the persistence of abject poverty have all been important drivers of renewed interest in UBI in the United States. But it is without a doubt the fear that automation may displace workers from the labor market at unprecedented rates that explains the revival of the policy in recent years, including by many in or around Silicon Valley. Among the various objections to the proposal, one concerns its moral adequacy: Isn't it fundamentally unjust to give cash to all indiscriminately rather than to those who need it and deserve it? Over the years, a variety of scholars have defended the policy on moral grounds, arguing that UBI is a tool of equality, liberal freedom, republican freedom, gender equity, or racial equity. Many others have attacked UBI on those very same grounds, making the case that alternative policy proposals like the job guarantee, means-tested benefits, conditional benefits, or reparations should be preferred. Students will learn a great deal about political theory and ethics in general but always through the specific angle of the policy proposal, and they will become experts on the philosophy, politics and economics of UBI. The seminar is open to undergraduate and graduate students in all departments. There are no pre-requisites.
Same as: ETHICSOC 174B, ETHICSOC 274B, PHIL 174B, POLISCI 134E, POLISCI 338

PHIL 274C. On What Is Intolerable. 4 Units.
Moral and political philosophy often focuses on ideals we should aspire to and principles we should follow. Yet individuals and societies almost invariably fall short of these ideals and principles. Unless you are a fundamentalist or a relentless perfectionist, you tolerate these failures. That is, you tolerate them to a point. This point will be the topic of our course: how badly may we fail? How far short of the ideal is too far? We will be concerned with that which is not merely bad, unjustified, wrong, or unjust, but which is intolerably so. Examples include: intolerable injustice, rotten compromises, unconscionable contracts, dirty hands, unjust wars, personal failures, grief, desperation, betrayal, and humiliation. Just as important, we will ask: how should we respond to the intolerable? Should intolerably unjust political institutions be met with disobedience, or perhaps rebellion? When we emerge from grief to continue with our lives, do we thereby accept our loss as tolerable? Can we ever forgive without forgetting the severity of the wrong done to us and the harm we suffered? We will draw on thinkers such as Kierkegaard, Nietzsche, Du Bois, and Baldwin, as well as contemporary moral and political philosophers, such as John Rawls, Thomas Nagel, Bernard Williams, Alexander Nehamas, Jonathan Lear, and others.
Same as: PHIL 174C

PHIL 274D. Moral Luck. 4 Units.
We draw a fundamental distinction between what a person voluntarily does, and what is beyond her control. Such a distinction seems central to how we think about what it is to justify our actions (whether to ourselves or to one another), as well as to our practice of holding one another morally responsible for what we do. Yet under pressure, this distinction can appear to collapse ¿ we find that we cannot successfully disentangle what a person controls from what she does not when she acts. This course examines this problem in depth, and considers how we might respond in the face of it: Is it really a problem? If so, does it threaten our moral practices? How should it influence the way in which we make choices, or the way we understand those choices once we¿ve made them?.
Same as: PHIL 174D

PHIL 274E. Egalitarianism: A course on the history and theory of egalitarianism and anti-egalitarianism. 4 Units.
Egalitarianism is a conception of justice that takes the value of equality to be of primary political and moral importance. There are many different ways to be an egalitarian - it all depends on what we take to be the currency of egalitarian justice. Are we trying to equalize basic rights and liberties, or resources, opportunities, positions, status, respect, welfare, or capabilities? Is equality really what we should try to achieve in a just society? Or should we just make sure everyone has enough? Why do egalitarians think that such society would still be unjust; and how do they proceed to argue for equality?nnThis class will introduce students to egalitarian and anti-egalitarian thought by looking both at the history of egalitarian thinking and at contemporary accounts in defense of equality. It will provide an in depth introduction to the concepts that are used when inequalities are discussed by philosophers, economists, scientists and politicians. The class will attest of the varieties of approaches and perspectives to equality. For instance, we will learn from the 19th century debate on racial inequalities to understand how anti-egalitarian discourses are constructed; we will look into Rousseau's conception of social equality in the Second Discourse and the Social Contract; and we will engage with contemporary egalitarian theories by studying Rawlsian and post-Rawlsian forms of egalitarianism.
Same as: ETHICSOC 174E, PHIL 174E, POLISCI 138E

PHIL 274L. Betrayal and Loyalty, Treason and Trust. 2 Units.
The main topic of the seminar is Betrayal: its meaning as well as its moral, legal and political implications. We shall discuss various notions of betrayal: Political (military) betrayal such as treason, Religious betrayal with Judas as its emblem, but also apostasy (converting one's religion) which is regarded both as a basic human right and also as an act of betrayal, social betrayal - betraying class solidarity as well as Ideological betrayal - betraying a cause. On top of political betrayal we shall deal with personal betrayal, especially in the form of infidelity and in the form of financial betrayal of the kind performed by Madoff. The contrasting notions to betrayal, especially loyalty and trust, will get special consideration so as to shed light or cast shadow, as the case may be, on the idea of betrayal. The seminar will focus not only on the normative aspect of betrayal - moral or legal, but also on the psychological motivations for betraying others. The seminar will revolve around glaring historical examples of betrayal but also use informed fictional novels, plays and movies from Shakespeare and Pinter, to John Le Carre. SAME AS LAW 520.
Same as: ETHICSOC 174L, ETHICSOC 274L, PHIL 174L

PHIL 275. Philosophy of Law. 4 Units.
This course will explore foundational issues about the nature of law and its relation to morality, and about legal responsibility and criminal punishment. Prerequisite: graduate student standing in philosophy or, for others, prior course work in philosophy that includes Philosophy 80.
Same as: ETHICSOC 175B, PHIL 175

PHIL 275A. Ethics and Politics of Public Service. 3-5 Units.
Ethical and political questions in public service work, including volunteering, service learning, humanitarian assistance, and public service professions such as medicine and teaching. Motives and outcomes in service work. Connections between service work and justice. Is mandatory service an oxymoron? History of public service in the U.S. Issues in crosscultural service work. Integration with the Haas Center for Public Service to connect service activities and public service aspirations with academic experiences at Stanford.
Same as: CSRE 178, ETHICSOC 133, PHIL 175A, POLISCI 133, PUBLPOL 103D, URBANST 122

PHIL 275B. Philosophy of Public Policy. 4 Units.
From healthcare to voting reforms, social protection and educational policies, public policies are underpinned by moral values. When we debate those policies, we typically appeal to values like justice, fairness, equality, freedom, privacy, and safety. A proper understanding of those values, what they mean, how they may conflict, and how they can be weighed against each other is essential to developing a competent and critical eye on our complex political world. We will ask questions such as: Is compulsory voting justified? Should children have the right to vote? Is affirmative action just? What is wrong with racial profiling? What are the duties of citizens of affluent countries towards migrants? Do we have a right to privacy? Is giving cash to all unconditionally fair? This class will introduce students to a number of methods and frameworks coming out of ethics and political philosophy and will give students a lot of time to practice ethically informed debates on public policies. At the end of this class, students should have the skills to critically examine a wide range of diverse policy proposals from the perspective of ethics, moral and political philosophy. There are no prerequisites. Undergraduates and graduates from all departments are welcome to attend.
Same as: ETHICSOC 175X, PHIL 175B, POLISCI 135E, POLISCI 235E, PUBLPOL 177

PHIL 275D. Capitalism and Virtue. 4 Units.
This class addresses the ethics of production and consumption. We start by introducing the basic concepts for studying the ethics of market participation ¿ property rights, prices, efficiency, means of production, etc, as well as some more theoretical issues: invisible hand explanations, Hayek¿s knowledge problem, the basic welfare theorems. Then we will address questions such as the following: Does market participate encourage vice? Virtue? Alienation? Exploitation? How should we think about virtue if profit-maximising behavour is in everyone¿s interest? How should we weigh the promotion of vice against the promotion of benefits? Should there be `social spheres¿ that are isolated from market transactions? What is the broader relationship between the ethics of markets and distributive justice?.
Same as: PHIL 175D

PHIL 275M. Two Ethical Theories and Being a Person. 4 Units.
The distinction between the ethics of being a person and the ethics of rules as opposed to the distinction between Kantian ethics and utilitarianism or consequentialism consequentialism. Comparison of these two types of ethics with respect to their relationship to agency and being a good person. Relations between Western ethics and those of other continents.
Same as: PHIL 175M

PHIL 275P. Philosophy of Law and Conceptions of Agency. 4 Units.
In this course we will explore the connections between recent work in philosophy of law and philosophy of action. Current philosophy of law draws on philosophy of action. One example is the work of Scott Shapiro, who interprets legal activity as a form of social planning that enables citizens to coordinate their activities as agents. We will consider what normative requirements are necessary to make citizens self-legislating autonomous agents. Are formal requirements like consistency and coherence sufficient, or does law have to meet substantial normative and moral requirements? We will also discuss whether the deficiency of ¿evil legal systems¿ can be explained in terms of agency. Can distorted legal system provide agents a coherent form of self-understanding? We will explore these questions through readings by Scott Shapiro, Ronald Dworkin, Lon F. Fuller, David Dyzenhaus, Kristen Rundle, Michael Bratman, David Velleman, and Christine Korsgaard.
Same as: PHIL 175P

PHIL 275W. Philosophy of Law: Protest, Punishment, and Racial Justice. 4 Units.
In this course, we will examine some of the central questions in philosophy of law, including: What is law? What gives law its authority? Must we obey the law? If so, when and why? How should we understand and respond to unjust laws? When is civil disobedience morally permissible? Is civil disobedience ever morally required?nWhat is punishment for? What are prisons for? What is the case for reparations?.
Same as: CSRE 175W, ETHICSOC 175W, PHIL 175W

PHIL 276. Political Philosophy: The Social Contract Tradition. 4 Units.
(Graduate students register for 276.) What makes political institutions legitimate? What makes them just? When do citizens have a right to revolt against those who rule over them? Which of our fellow citizens must we tolerate?Surprisingly, the answers given by some of the most prominent modern philosophers turn on the idea of a social contract. We will focus on the work of Hobbes, Locke, Rousseau, and Rawls.
Same as: ETHICSOC 176, PHIL 176, POLISCI 137A, POLISCI 337A

PHIL 276A. Classical Seminar: Origins of Political Thought. 3-5 Units.
Political philosophy in classical antiquity, centered on reading canonical works of Thucydides, Plato, Aristotle against other texts and against the political and historical background. Topics include: interdependence, legitimacy, justice; political obligation, citizenship, and leadership; origins and development of democracy; law, civic strife, and constitutional change.
Same as: CLASSICS 181, CLASSICS 381, ETHICSOC 130A, PHIL 176A, POLISCI 230A, POLISCI 330A

PHIL 276B. The Economic Individual in the Behavioral Sciences. 4 Units.
(Graduate students register for 276B.).
Same as: PHIL 176B

PHIL 276D. Origins of Political Thought. 3-5 Units.
Political philosophy in classical antiquity, focusing on canonical works of Thucydides, Plato, Aristotle, and Cicero. Historical background. Topics include: political obligation, citizenship, and leadership; origins and development of democracy; and law, civic strife, and constitutional change. This course is open to PhD students only. Non-PhD students should enroll in POLISCI 230A/330A (also listed as CLASSICS 181/381, PHIL 176A/276A) Classical Seminar: Origins of Political Thought.
Same as: CLASSICS 390, POLISCI 430

PHIL 277B. EMOTIONS: MORALITY AND LAW. 2 Units.
If emotions are the stuff of life, some emotions are the stuff of our moral and legal life. Emotions such as: guilt, shame, revenge, indignation, resentment, disgust, envy, jealousy and humiliation, along with forgiveness, compassion, pity, mercy and patriotism, play a central role in our moral and legal life. The course is about these emotions, their meaning and role in morality and law. Issues such as the relationship between punishment and revenge, or between envy and equality, or St. Paul¿s contrast between law and love, or Nietzsche¿s idea that resentment is what feeds morality, will be discussed alongside other intriguing topics.
Same as: ETHICSOC 202, ETHICSOC 302, PHIL 177B

PHIL 277C. Ethics of Climate Change. 4 Units.
Climate change is an ethical failure. When we cause greenhouse gas to be emitted for our own benefit, the gas spreads around the world and does harm everywhere. Many of those who are harmed emit very little greenhouse gas themselves. When some people harm others for their own benefit, something is morally wrong. Specifically, there is an injustice. One of the ethical problems raised by climate change is how to rectify this injustice. Climate change also raises a different range of ethical questions, which may be classified as questions of value. For example, in making decisions, how should the distant future be valued in comparison with the present and how should we take account of the great loss of human life that climate change will cause? This course investigates the issues of justice and the issues of value. It considers the moral demands that climate change puts both on private individuals and on public institutions. Because the effects of climate change are so widespread and so complex, the methods of economics can be useful in putting ethical principles into effect. The course will therefore assess some of these methods.
Same as: PHIL 177C

PHIL 277W. Human Rights. 4 Units.
In this course we will think critically about human rights by evaluating complex moral situations and weighing powerful but opposed arguments. In our discussions we will explore a variety of alleged human rights and ask: Which of these is really a human right? What could the justification of human rights be? If some right is a real human right, what exactly does it require of us and others? Are there really any human rights at all, or are human rights just another means for Western societies to impose their way of life on the rest of the world? What is a human right? Case studies will include the death penalty, democratic participation, gay rights and duties of corporations to respect human rights.
Same as: PHIL 177W

PHIL 278C. Free Speech, Academic Freedom, and Democracy. 3 Units.
The course examines connected ideas of free speech, academic freedom, and democratic legitimacy that are still widely shared by many of us but have been subject to skeptical pressures both outside and inside the academy in recent years. The course explores the principled basis of these ideas, how well they might (or might not) be defended against skeptical challenge, and how they might be applied in particular controversies about the rights of students, instructors, and researchers.
Same as: EDUC 217, ETHICSOC 217X

PHIL 278M. Introduction to Environmental Ethics. 4-5 Units.
How should human beings relate to the natural world? Do we have moral obligations toward non-human animals and other parts of nature? And what do we owe to other human beings, including future generations, with respect to the environment? The first part of this course will examine such questions in light of some of our current ethical theories: considering what those theories suggest regarding the extent and nature of our environmental obligations; and also whether reflection on such obligations can prove informative about the adequacy of our ethical theories. In the second part of the course, we will use the tools that we have acquired to tackle various ethical questions that confront us in our dealings with the natural world, looking at subjects such as: animal rights; conservation; economic approaches to the environment; access to and control over natural resources; environmental justice and pollution; climate change; technology and the environment; and environmental activism.
Same as: ETHICSOC 178M, ETHICSOC 278M, PHIL 178M, POLISCI 134L

PHIL 279A. Feminist and Queer Theories and Methods Across the Disciplines. 2-5 Units.
(Graduate Students register for PHIL 279A or FEMGEN 203) This course is an opportunity to explore the difference feminist and queer perspectives make in creative arts, humanities, and social science research.nPrerequisites: Feminist Studies 101 or equivalent with consent of instructor.nNOTE: This course must be taken for a letter grade and a minimum of 3 units to be eligible for WAYS credit. The 2 unit option is for graduate students only.
Same as: FEMGEN 103, FEMGEN 203, PHIL 179A

PHIL 279S. Moral Psychology, Reasons for Action, and Moral Theory. 4 Units.
What sorts of considerations does an ethical agent take to be good reasons for action? Work in moral psychology to illuminate the theory of practical reasons, and the theory of practical reasons to test the prospects for systematic moral theory. Can any systematic moral theory be reconciled with the moral psychology of ordinary, morally respectable agents? Reading include Bernard Williams, Rosalind Hursthouse, Peter Railton, T.M. Scanlon, and Barbara Herman.
Same as: PHIL 179S

PHIL 279W. Du Bois and Democracy. 4 Units.
In this course, we will work together to develop a detailed and comprehensive understanding of the political philosophy of W. E. B. Du Bois, giving special attention to the development of his democratic theory. We will do so by reading a number of key texts by Du Bois as well as contemporary scholarship from philosophy and cognate fields.
Same as: CSRE 179W, ETHICSOC 179W, PHIL 179W

PHIL 280A. Realism, Anti-Realism, Irrealism, Quasi-Realism. 4 Units.
Realism and its opponents as options across a variety of different domains: natural science, mathematics, ethics, and aesthetics. Clarify the various conceptions that fall under these terms and outline the reasons for and against adopting realism for the various domains. Highlight the general issues involved. Prerequisites: 80, 181.
Same as: PHIL 180A

PHIL 281. Philosophy of Language. 4 Units.
The study of conceptual questions about language as a focus of contemporary philosophy for its inherent interest and because philosophers see questions about language as behind perennial questions in other areas of philosophy including epistemology, philosophy of science, metaphysics, and ethics. Key concepts and debates about the notions of meaning, truth, reference, and language use, with relations to psycholinguistics and formal semantics. Readings from philosophers such as Frege, Russell, Wittgenstein, Grice, and Kripke. Prerequisites: 80 and background in logic.
Same as: PHIL 181

PHIL 281B. Topics in Philosophy of Language. 4 Units.
This course builds on the material of 181/281, focusing on debates and developments in the pragmatics of conversation, the semantics/pragmatics distinction, the contextuality of meaning, the nature of truth and its connection to meaning, and the workings of particular linguistic constructions of special philosophical relevance. Students who have not taken 181/281 should seek the instructor's advice as to whether they have sufficient background.
Same as: PHIL 181B

PHIL 282. Advanced Philosophy of Language. 4 Units.
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Same as: PHIL 182

PHIL 282A. Naturalizing Representation. 4 Units.
Notions of meaning and representation are ubiquitous in how we conceive of our mental lives. Intentionality is one of the marks of the mental -- but it's not clear how these semantic notions can fit into our understanding of the natural world. nIn this class we'll discuss attempts to naturalize semantic notions, for example by appeal to informational or functional concepts. We'll read works by Dretske, Millikan, Skyrms, and others in evaluating this project.nPrerequisite: PHIL 80 or consent of instructor.
Same as: PHIL 182A

PHIL 282B. Naturalizing Content. 4 Units.
Meaning is mysterious. Right now you are looking at funny marks on a screen. Somehow, these marks are conveying to you information about a class that will be offered at Stanford during the winter quarter 2020. But how is this happening? These marks surely have no natural connection to the future class. They aren't like the footprints of a tiger, for example. Additionally, thousands of times a day, you manage to gain information about all manner of subjects by hearing strange sounds that have no natural connection to the subject matter. The sounds aren't like the bark of a dog, for example. You also manage to think about things that aren't in front of you, as when you think of a Hippo wearing a fedora. Yet activity in your brain has no natural connection to Hippos in fedoras (we presume). This class will investigate how it is that sounds, marks, and mental states manage to have semantic content. In other words, we will discuss attempts to solve the mystery of meaning, in all of its forms.nThe class is open to all graduate students in philosophy. Undergraduates who have not taken Phil 80 and at least one upper level philosophy class must receive permission to enroll.
Same as: PHIL 182B

PHIL 282H. Truth. 4 Units.
Philosophical debates about the place in human lives and the value to human beings of truth and its pursuit. The nature and significance of truth-involving virtues such as accuracy, sincerity, and candor. Prerequisite Phil 80 or permission of the instructor.
Same as: PHIL 182H

PHIL 283. Self-knowledge and Metacognition. 4 Units.
The course will be divided into two parts. In the first, we will survey the dominant models of how we come to know our own mental states. Among the issues we will explore will be our ways of discovering and coming to terms with "implicit" attitudes (e.g. biases), and the role of expression (e.g. verbal expression) in coming to know such attitudes. In the second part of the course, we will investigate the broader set of capacities by which we monitor and regulate our own cognitive processes, while paying special attention to the role of feelings (e.g. of knowing, fluency, fit) in the exercise of these capacities.
Same as: PHIL 183

PHIL 284. Topics in Epistemology. 4 Units.
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Same as: PHIL 184

PHIL 284B. Formal Epistemology. 4 Units.
Grads enroll in 284B. Prerequisite: PHIL 80.
Same as: PHIL 184B

PHIL 284M. Topics in the Theory of Justification. 4 Units.
graduate seminar. Prerequisite: PHIL 80.
Same as: PHIL 184M

PHIL 285. Special Topics in Epistemology: Testimony in science and everyday life. 4 Units.
Much of what we know, we know by relying on the testimony of other individuals, groups, traditional news media or social media. The course explores varieties of testimonial knowledge which arise from relaxed everyday testimony ('the coffee machine is broken') and from scientific expert testimony ('Venus is larger than Mars'). The course also touches on issues concerning testimonial injustice ¿ the type of injustice that occurs when someone is wronged in their capacity as a testifier ¿ for example, when their testimony is unjustly devaluated. Finally, we will consider whether philosophical theorizing about testimony may shed light on obstacles for science communication about divisive issues such as vaccines, climate science etc.nnThus, the course is organized around three interrelated themes. 1: Foundational questions, 2: Testimonial injustice and 3: Scientific testimony. Overall, then, the course connects foundational work in epistemology and philosophy of science to some pertinent ethical and political problems.
Same as: PHIL 185

PHIL 285B. Philosophy of Perception. 4 Units.
The nature of perceptual experience and the role it plays in securing empirical knowledge. Focus will be on what is sometimes called "the problem of perception": the question of how perception could provide us with direct awareness of the surrounding environment given the possibility of illusions or hallucinations. Topics, include the relationship between perception and belief, the nature of perceptual phenomenology, whether or not perceptual experiences are representational states, and the philosophical relevance of empirical research on perception.
Same as: PHIL 185B

PHIL 285W. Metaontology. 4 Units.
Do existence questions have (determinate) answers? How should ontological commitment be understood? This class will discuss these and other questions in the metatheory of ontology. Specific topics will include: naturalness, metaphysical structure, grounding, and quantifier variance. Some familiarity with standard metaphysical and ontological debates will be assumed.
Same as: PHIL 185W

PHIL 286. Philosophy of Mind. 4 Units.
(Graduate students register for 286.) This is an advanced introduction to core topics in the philosophy of mind. Prerequisite: PHIL 80.
Same as: PHIL 186

PHIL 286A. Self-fashioning. 3 Units.
This undergraduate and graduate seminar will examine philosophical and psychological literature relevant to self-fashioning. Meetings will be discussion oriented, and each meeting will focus on a different question of theoretical and applied significance. Prerequisite: consent of instructor. May be repeat for credit.
Same as: PHIL 186A, PSYCH 172

PHIL 286M. Ontology of the Mental. 4 Units.
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Same as: PHIL 186M

PHIL 287. Philosophy of Action. 4 Units.
This course will explore foundational issues about individual agency, explanation of action, reasons and causes, agency in the natural world, practical rationality, interpretation, teleological explanation, intention and intentional action, agency and time, intention and belief, knowledge of one's own actions, identification and hierarchy, and shared agency. Prerequisite: graduate student standing in philosophy or, for others, prior course work in philosophy that includes Philosophy 80.
Same as: PHIL 187

PHIL 288. Personal Identity. 4 Units.
Do you persist through time the way that a skyscraper persists through space, by having different parts at different locations? Or are you ¿wholly present¿ at every moment of your life, in something more like the way that an elevator is present in each place as it travels up to the top floor? What criteria determine whether you now are the very same person as some unique person located at some time in the past? Is the continuity of your memories or other mental states sufficient for your survival? Can you survive the loss or destruction of your body? Do you really exist for more than just the present moment? How do different answers to these questions bear on your moral, personal, and professional obligations? What kinds of considerations could possibly help us to answer these questions? This course explores these and related issues. Readings include a mix of introductory survey, historical, and contemporary material.
Same as: PHIL 188

PHIL 288W. Paradoxes. 4 Units.
Paradoxes arise when unacceptable or contradictory conclusions are generated by apparently unobjectionable reasoning. Consider the sentence: "This sentence is not true." Is the sentence true or not? If it is true, then what it says is the case, but it says that it is not true. On the other hand, if it is not true, then since it says it is not true, what it says is the case. So if the sentence is true it is not true, and if it is not true it is true. This is a version of the Liar Paradox. In this class we'll discuss the liar and other paradoxes, including the paradoxes of set theory, the Sorites Paradox, and several other well-known paradoxes. Familiarity with mathematical logic will be assumed by many of the class readings.
Same as: PHIL 188W

PHIL 289. Examples of Free Will. 4 Units.
Examples drawn from three domains: choice, computation, and conflict of norms. Conceptually, a distinction is made between examples that are predictable and those that are not, but skepticism about making a sharp distinction between determinism and indeterminism is defended.
Same as: PHIL 189

PHIL 293C. Film & Philosophy. 3 Units.
Issues of authenticity, morality, personal identity, and the value of truth explored through film; philosophical investigation of the filmic medium itself. Screenings to include Blade Runner (Scott), Do The Right Thing (Lee), The Seventh Seal (Bergman), Fight Club (Fincher), La Jetée (Marker), Memento (Nolan), and Eternal Sunshine of the Spotless Mind (Kaufman). Taught in English.
Same as: COMPLIT 154A, ENGLISH 154F, FRENCH 154, ITALIAN 154, PHIL 193C

PHIL 293E. Film & Philosophy CE. 3 Units.
Issues of authenticity, morality, personal identity, and the value of truth explored through film; philosophical investigation of the filmic medium itself. Screenings to include Blade Runner (Scott), Do The Right Thing (Lee), The Seventh Seal (Bergman), Fight Club (Fincher), La Jetée (Marker), Memento (Nolan), and Eternal Sunshine of the Spotless Mind (Kaufman). Taught in English. Satisfies the WAY CE.
Same as: FRENCH 154E, ITALIAN 154E, PHIL 193E

PHIL 297C. Curricular Practical Training. 1 Unit.
(Undergraduate students enroll in 197C) Students engage in internship work and integrate that work into their academic program. Following internship work, students complete a research report outlining work activity. Meets the requirements for curricular practical training for students on F-1 visas. Student is responsible for arranging own internship/employment and faculty sponsorship. Register under faculty sponsor's section number. Course may be repeated for credit.

PHIL 298. Research Methods. 1 Unit.
Research Methods will introduce incoming students to Stanford¿s many libraries and library resources. Throughout the quarter, students will have regular research tasks on campus, structured with the aim of familiarizing students with our libraries, librarians and resource specialists. For first year Philosophy PhDs only, department permission required.

PHIL 300. Proseminar. 4 Units.
Topically focused seminar. Required of all first year Philosophy PhD students. This seminar is limited to first-year Ph.D. students in Philosophy. We will focus on some major work over roughly the past 60 years on inter-related issues about practical reason, responsibility, agency, and sociality.

PHIL 301. Dissertation Development Proseminar. 2-4 Units.
A required seminar for third year philosophy PhD students, designed to extend and consolidate work done in the dissertation development seminar the previous summer.

PHIL 302P. Plato's Laws X. 2-4 Units.
Grad seminar. Close reading and analysis of Book 10 of Plato's Laws. In this book, Plato's political thought intersects with his philosophic theology (and therein also with his physics and metaphysics) as he considers the appropriate handling of god(s) by the polis and argues against atheism, deism, and conventional propitiatory theism. 2 unit option only for Philosophy PhDs beyond the second year.

PHIL 305. Aristotle's Nicomachean Ethics. 2-4 Units.
In this seminar, we shall study one of the classic works of ethical philosophy, Aristotle's Nicomachean Ethics. Topics include: eudaimonism, the nature of the virtues, responsibility, practical reason, pleasure, akrasia, friendship, and contemplation. 2 unit option is for PhD students only.

PHIL 305R. JUST AND UNJUST WARS. 2 Units.
War is violent, but also a means by which political communities pursue collective interests. When, in light of these features, is the recourse to armed force justified? Pacifists argue that because war is so violent it is never justified, and that there is no such thing as a just war. Realists, in contrast, argue that war is simply a fact of life and not a proper subject for moral judgment, any more than we would judge an attack by a pack of wolves in moral terms. In between is just war theory, which claims that some wars, but not all, are morally justified. We will explore these theories, and will consider how just war theory comports with international law rules governing recourse to force. We will also explore justice in war, that is, the moral and legal rules governing the conduct of war, such as the requirement to avoid targeting non-combatants. Finally, we will consider how war should be terminated; what should be the nature of justified peace? We will critically evaluate the application of just war theory in the context of contemporary security problems, including: (1) transnational conflicts between states and nonstate groups and the so-called "war on terrorism"; (2) civil wars; (3) demands for military intervention to halt humanitarian atrocities taking place in another state. Same as LAW 751.
Same as: ETHICSOC 205R, ETHICSOC 305R, PHIL 205R

PHIL 306C. Plato on Eros and Beauty. 3-5 Units.
We read Plato's Symposium and Phaedrus; topics: love, beauty, language (oral and written). Graduate seminar, but open to seniors.
Same as: CLASSICS 336

PHIL 308. Aristotle's Politics. 4 Units.
The seminar will be a critical examination of Aristotle¿s political philosophy and we shall focus on his Politics as our primary text. We¿ll supplement this with some other texts by Aristotle that are relevant and explore the most important connections between Aristotle¿s political philosophy and his ethics.

PHIL 308B. Aristotle on his Predecessors. 2-4 Units.
An introduction both to Aristotle's own metaphysics and to his treatment of his predecessors on causality, included the early Ionian cosmologists, atomism, Pythagoreans, Heraclitus, Parmenides, Empedocles, Anaxagoras and Plato. Prerequisite: one course in ancient Greek philosophy.

PHIL 309. Hume's Psychology and Political Theory. 3-5 Units.
This seminar will concentrate on Humes' political ideas, which to a large extent have been neglected, both by philosophers and political scientists. We will read passages from three important works of Hume, as listed above, together with the lively support of a strong view concerning the importance of Hume's ideas about politics. The requirement for the course will be a paper on a subject relevant to the main topic, and mutually agreed to. The first six sessions of the seminar will be held jointly by live video with Professor Russell Hardin of NYU and his students. By the end of the sixth session, NYU¿s Spring Term will have ended. We will decide at that point how many more joint sessions to have, and how much time should be devoted to individual consultation about the paper to be written.

PHIL 309C. Aristotle's Metaphysics Zeta and its Medieval Reception: Definition. 4 Units.
Grad seminar on the medieval reception of Book Zeta of Aristotle's Metaphysics.

PHIL 310. Plato's Phaedo. 4 Units.
A close reading of Plato's Phaedo, with a special emphasis on its metaphysical aspects, such as its discussions of Forms, causation, and coming-to-be. Also to be investigated: the nature and immortality of the soul, the correct attitude to have toward one's death, the theory of recollection, the method of hypothesis, and the respective roles of argument and myth.

PHIL 311. Plato's Philebus and Timaeus. 4 Units.
We shall carefully examine two Platonic dialogues, the Philebus and the Timaeus. We shall focus on the dialogues' ethics, metaphysics, and psychology.

PHIL 312. Aristotle's Psychology. 4 Units.
De Anima and parts of *Parva Naturalia*..

PHIL 313T. Aristotle's Moral Theory. 2-3 Units.
The aim of this seminar is philosophical; we want to discuss the basis, the structure, the merits, and the defects of Aristotle's moral theory. But we intend to draw on all of the three major ethical treatises in the Aristotelian Corpus: the Nicomachean Ethics, Eudemian Ethics, and Magna Moralia. We will also discuss parts of the Protrepticus. Topics include: the composition of the good; the argument from the human function to the human good; virtues of character and intellect; voluntary action and responsibility; pleasure and the good: friendship and the good of others; the place of contemplation in the ultimate good. This course begins on January 28, and ends on March 13. 2 unit option available only to PhD students beyond the second year. Undergraduates wishing to take this course must have taken Philosophy 100 or a more advanced Philosophy course in ancient philosophy and have the permission of the instructors.

PHIL 313W. Aristotle on Virtues. 2-4 Units.
Graduate seminar. 2 unit option only for Phil PhDs beyond the second year.

PHIL 314. Practical Reasoning in Plato and Aristotle. 2-4 Units.
It is often said that the greatest difference between Plato's ethics and those of Aristotle is that the latter thinks that practical and theoretical reason are distinct, but the former does not. We shall read some of both Plato and Aristotle and ask whether the above claim is true and then consider what the implications the differences between their views of practical reason have for the rest of their ethics.

PHIL 315. Aristotle's Protrepticus and its Background. 2-4 Units.
In this seminar, we shall read Aristotle's Protrepticus. This is an early work of Aristotle that attempts to turn the reader to a philosophic life and it is by far the least read of his works on ethics. It was only recovered in the 19th century and only in the past 15 years or so do we have a reliable text. Thus studies of it are very much underdeveloped. We shall also read as background some other protreptic works by Plato and the rhetorician Isocrates. 2 unit option is only for Philosophy PhD students beyond the second year.
Same as: CLASSICS 346

PHIL 316P. Aristotle's On the Motion of Animals. 2-4 Units.
A seminar based around a close reading and analysis of Aristotle's De Motu Animalium. This short text, on how animals bring about action (motion), is something of a treasure-trove of various interesting details and complications concerning Aristotle's philosophy of action, psychology, physics, and metaphysics. It is also heterogenous or interdisciplinary in its discussions, which will lead us to consider questions of method in Aristotle. We additionally have the treat of seeing what we make of a brand new (summer 2020) major edition from the Symposium Aristotelicum series.The 2 unit option is only for Philosophy PhD students beyond the second year; all others take for 4 units.

PHIL 317. Topics in Plato: Plato on Practical Rationality. 2-4 Units.
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PHIL 318. Aristotle and the Object of Mathematical Reasoning. 4 Units.
The concept of definition plays a central role in Aristotle's treatment of both philosophical and scientific inquiry, as well as explanation. A definition is an account of what something is, and some definitions are used to guide causal inquiry whereas others function as explanatory starting points. In this course we will examine texts from his logic, natural science and metaphysics in order to see what the different kinds of definition are, how they obtained, and how they are capture the nature or essence of a definable object. Particular attention will be given to the role of matter in the definition of the form of a natural substance, state, process or activity. For instance, what role does a specification of physiological processes play in the definitions of emotions such as anger? No knowledge of Greek is required. May be repeat for credit.
Same as: CLASSICS 315

PHIL 319. Aristotle on Substance. 2-4 Units.
Aristotle's views about substance and the nature and possibility of metaphysics. Focus is on *Categories* and *Metaphysics* Book Zeta.n2 unit option only for Phil PhDs beyond the second year.

PHIL 320. Aristotle on the problems of metaphysics. 2-4 Units.
The main text will be Metaphysics Beta. 2 unit option only for Philosophy PhD students beyond the second year.

PHIL 321. Leibniz's Metaphysics. 2-4 Units.
Leibniz's metaphysical views during his so-called "mature period" (early 1680s to 1716). Topics will include Leibniz's conception of substance, his alleged idealism, his doctrine of possible worlds and his doctrine of pre-established harmony. Reading of the Discourse on Metaphysics (1686) and the correspondence with Arnauld (1686-1690).

PHIL 322. Hume. 2-4 Units.
Hume's theoretical philosophy emphasizing skepticism and naturalism, the theory of ideas and belief, space and time, causation and necessity, induction and laws of nature, miracles, a priori reasoning, the external world, and the identity of the self. 2 unit option only for Philosophy PhD students beyond the relevant PhD distribution requirements. Prerequisites: Undergraduates wishing to take this course must have previously taken History of Modern Philosophy or the equivalent, and may only enroll with permission from the instructor.

PHIL 323. Kant's Criticism of Metaphysics. 4 Units.
Motivations and strategies of Kant's criticisms of traditional metaphysics in the *Critique of Pure Reason.* Leibnizian and Wolffian versions of the concept containment theory of truth and the Wolffian ideal of a conceptual system of metaphysical knowledge. Kant's analytic/synthetic distinction, focusing on its place in the rejection of metaphysics and in arguments about the ideas of reason in the transcendental dialectic. Prerequisite: course on the first *Critique,* or consent of instructor.

PHIL 324. Kant's System of Nature and Freedom. 4 Units.
The aim is to acquire a sense of how the two main parts of Kant's philosophy, theoretical and practical, fit together. These two parts, according to the Critique of the Power of Judgment, concern the realm of nature and the realm of freedom respectively. We shall study parts of all three Critiques, along with appropriate supplementary materials. Prior acquaintance with both Kant's theoretical and his practical philosophy is presupposed.

PHIL 325. Kant's Third Critique. 2-4 Units.
2 unit option only for Philosophy PhD students beyond the second year.

PHIL 326. Kant's Transcendental Deduction. 4 Units.
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PHIL 327. Scientific Philosophy: From Kant to Kuhn and Beyond. 2-4 Units.
Examines the development of scientific philosophy from Kant, through the Naturphilosophie of Schelling and Hegel, to the neo-Kantian scientific tradition initiated by Hermann von Helmholtz and the neo-Kantian history and philosophy of science of Ernst Cassirer and Thomas Kuhn. Proposes a post-Kuhnian approach to the history and philosophy of science in light of these developments.

PHIL 329. Plotinus and Augustine. 3-5 Units.
Professor's permission required to register. A reading course focused on the influence of Plotinus Enneads on Augustine's Confessions, early dialogues, and sections on reason and memory in the De trinitate. Proficiency in Greek and Latin will be helpful but is not required. Professor's prior permission required, interested students should contact the professor about course schedule: tsheehan@stanford.edu . Undergraduates register for 200-level for 5 units. Graduate students register for 300-level for 3-5 units.
Same as: PHIL 229, RELIGST 269, RELIGST 369

PHIL 331. Happiness and Value in Ancient Greek Philosophy. 2-4 Units.
Grad seminar. 2 unit option only for Philosophy PhD students beyond the second year.

PHIL 332. Nietzsche. 2-4 Units.
Preference to doctoral students. Nietzsche's later works emphasizing *The Gay Science, Beyond Good and Evil,* and *On the Genealogy of Morals.* The shape of Nietzsche's philosophical and literary projects, and his core doctrines such as eternal recurrence, will to power, and perspectivism. Problems such as the proper regulation of belief, and the roles of science, morality, art, and illusion in life.

PHIL 333. Philosophy, Literature, and the Arts Core Seminar. 2-4 Units.
This course serves as the Core Seminar for the PhD Minor in Philosophy, Literature, and the Arts. It introduces students to a wide range of topics at the intersection of philosophy with literary and arts criticism. The seminar is intended for graduate students. It is suitable for theoretically ambitious students of literature and the arts, philosophers with interests in value theory, aesthetics, and topics in language and mind, and other students with strong interest in the psychological importance of engagement with the arts. May be repeated for credit. In this year¿s installment, we focus on how artistic kinds or genres help set the terms on which individual works are experienced, understood, and valued, with special attention to lyric poetry and music.
Same as: DLCL 333, ENGLISH 333, MUSIC 332

PHIL 334. Habermas. 3-5 Units.
Does Habermas have a distinctive account of normativity and normative judgements?.

PHIL 335. Topics in Aesthetics. 4 Units.
Much of the seminar will focus on notions of abstraction in the arts (and related notions of formalism) in painting, music, poetry, etc. What is it for a work to be abstract, or more or less abstract than other works? How is abstraction important, and how is it related to aesthetic value and to values of other kinds? I understand abstraction to consist in the absence or limitation of one or another kind of aboutness: representation in any of several senses, semantic properties, pragmatic implications, meanings of one sort or another, etc. There are many of different kinds of aboutness, and so many corresponding varieties of abstraction. Readings will be by an assortment of philosophers, critics, music theorists, art historians etc., probably including Clive Bell, Roger Fry, Ernst Gombrich, Clement Greenberg, Eduard Hanslick, Eileen John, Peter Kivy, Peter Lamarque, Suzanne Langer, Alexander Nehamas, Roger Scruton, Richard Wollheim. I will try out some of my own recent work-in-progress. The course will be organized as a seminar. Students will work on projects, term papers, and present drafts to the group, so we can help one another. They will also be asked to give short informal presentations on readings to be discussed. The topics we cover after the first several meetings will depend partly on what projects students choose, as well as our interests. There are lots of great possibilities, including, of course, exploring various kinds of aboutness. Grades will be based on the term papers and participation in the seminar. This course is intended for graduate students. Qualified undergraduates are welcome, but instructor permission is required.

PHIL 337. Virtue and Reason in Plato. 4 Units.
We shall consider questions about the nature of virtue and the role of reason in ethics and ethical psychology in Plato. Questions to be considered include: the nature of virtue, the value of non-rational virtues, the unity of the virtues, the relation between virtue and happiness, the problem of akrasia, Plato¿s theories of goodness, and individual and political decisionmaking. We shall focus on the relevant parts of the Gorgias, the Laws, the Meno, the Phaedo, the Protagoras, the Republic, the Philebus, and the Statesman.

PHIL 339. Marx. 2-4 Units.
This course examines the works of a thinker who radically transformed the ways that we think about modern society. Marx saw fundamental problems with capitalist societies, including: un-freedom, alienation, inequality, and bureaucratization. He developed a theory to account for these problems. Our task will be to read his works critically and to evaluate their contributions to our understanding the relationship between politics, social structure, knowledge and human agency. We will also be especially interested in comparing his view with alternative diagnoses of the problems of modern capitalist societies, especially those of Max Weber and John Rawls.
Same as: POLISCI 333S

PHIL 340. Time and Free Will. 3-5 Units.
Free will and the consequence argument of Peter van Inwagen and others. Focus is on the principle that one cannot change the past and the problem of backtracking conditionals, and less on the problem raised by determinismon. Hypotheses less drastic than determinism support backtrackers; given the backtracker, would someone¿s not having done something require that he change the past? Issues related to time, change, the phenomenology of agency, and McTaggart's argument about the reality of time.

PHIL 344. Narrative Knowing. 1-2 Unit.
Philosophers and historians have been debating the status of narrative explanation for well over 50 years. Until quite recently, a supposed dichotomy between natural science and history has shaped the discussion. Beginning from the origins, history, and limitations of the dichotomy, this seminar will explore how claims for narrative understanding and explanation have come to occupy an increasingly important role in the natural sciences as well as the social sciences. Some classic contributors are Hempel, Danto, Mink, Kuhn, White, Ricouer, Geertz, and Ginzburg. Current authors include Roth, Rheinberger, Kitcher, Beatty, Morgan, and (yes) Wise.
Same as: HISTORY 344

PHIL 347. Aristotle's Logic. 3-5 Units.
In this seminar we read through Aristotle's Prior Analytics, paying close attention to the relation between Aristotle's logic to Greek mathematics, and to its place within Aristotle's overall philosophy. Knowledge of Greek is not required. Open to advanced undergraduate students.
Same as: CLASSICS 197

PHIL 348. Evolution of Signalling. 2-4 Units.
Explores evolutionary (and learning) dynamics applied to nsimple models of signaling, emergence of information and inference. Classroom presentations and term papers.nText: Skyrms - SIGNALS: EVOLUTION,LEARNING and INFORMATIONnand selected articles.

PHIL 349. Evidence and Evolution. 3-5 Units.
The logic behind the science. The concept of evidence and how it is used in science with regards to testing claims in evolutionary biology and using tools from probability theory, Bayesian, likelihoodist, and frequentist ideas. Questions about evidence that arise in connection with evolutionary theory. Creationism and intelligent design. Questions that arise in connection with testing hypotheses about adaptation and natural selection and hypotheses about phylogenetic relationships.
Same as: PHIL 249

PHIL 350. What makes a good explanation? Psychological and philosophical perspectives. 4 Units.
Explanation is a topic of longstanding interest in philosophy and psychology, and has recently attracted renewed attention due to novel challenges in interpreting and interacting with relatively opaque AI systems. In this graduate seminar, we will study the science and engineering of explanations, combining perspectives from philosophy, psychology, AI, and the legal sciences. We will ask questions like: When do we ask for explanations? What makes a good explanation? How can we build machines that can understand and explain? This interdisciplinary seminar is co-taught by Thomas Icard (Philosophy) and Tobias Gerstenberg (Psychology). We will meet twice a week (Tuesdays and Thursdays 10:30am-11:50am) to discuss research articles from a range of disciplines. Students are expected to write responses based on their readings, lead the discussion on one of the papers, and actively participate in the discussion otherwise. As a final project, students will outline a novel study on explanation that makes an empirical, modeling, or theoretical contribution. Participation is restricted to a maximum of 12 graduate students (by application). The course website, with information about application, can be found here: phil350.stanford.edu.
Same as: PSYCH 293

PHIL 350A. Model Theory. 3 Units.
Back-and-forth arguments with applications to completeness, quantifier-elimination and omega-categoricity. Elementary extensions and the monster model. Preservation theorems. Interpolation and definability theorems. Imaginaries. Prerequisite: Phil151A or consent of the instructor.

PHIL 351. Representation Theorems. 4 Units.
Representation theorems show that beliefs which obey certain qualitative constraints have the structure of probabilities, while preferences which obey certain qualitative constraints have the structure of expected-utility maximization. In this course, we prove several representation theorems in detail, and discuss the philosophic controversies surrounding them: how to justify the qualitative constraints, the difference between normative and descriptive interpretations, and what the formal relation of representability amounts to in real terms.

PHIL 351A. Recursion Theory. 3 Units.
Theory of recursive functions and recursively enumerable sets. Register machines, Turing machines, and alternative approaches. Gödel's incompleteness theorems. Recursively unsolvable problems in mathematics and logic. Introduction to higher recursion theory. The theory of combinators and the lambda calculus. Prerequisites: 151, 152, and 161, or equivalents.

PHIL 351B. Proof Mining. 1-3 Unit.
Uses of proof theory in analysis and number theory. Proof mining: extraction of bounds from non-effective proofs. May be repeated for credit. Prerequisite: 151,152 or equivalents, and a calculus course.

PHIL 351C. Formal Methods in Ethics. 2-4 Units.
Grad seminar. 2 unit option for PhD students only.

PHIL 351D. Measurement Theory. 2-4 Units.
What does it mean to assign numbers to beliefs (as Bayesian probability theorists do), desires (as economists and philosophers who discuss utilities do), or perceptions (as researchers in psychometrics often do)? What is the relationship between the numbers and the underlying reality they purport to measure? Measurement theory helps answer these questions using representation theorems, which link structural features of numerical scales (such as probabilities, utilities, or degrees of loudness) to structural features of relations (such as comparative belief, preference, or judgments that one sound is louder than another).nThis course will introduce students to measurement theory, and its applications in psychophysics and decision theory. n2 unit option only for Philosophy PhD students who are past their second year.nPrerequisites: Undergraduates wishing to take this course must have previously taken PHIL150, and may only enroll with permission from the instructor.

PHIL 353. Seminar on Philosophy of Logic and Mathematics. 4 Units.
This class will be a discussion of inferentialism and conventionalism in logic and mathematics. To structure discussion, we'll work through the manuscript of Shadows of Syntax, my forthcoming book on these topics, in addition to classic readings from Carnap, Quine, and other luminaries.".
Same as: Conventionalism

PHIL 353B. Proof Theory B. 2-3 Units.
Consistency ordinal as a measure of the strength of a mathematical theory. The open problem of describing the ordinal of mathematical analysis (second order arithmetic). Present state of the problem and approaches to a solution. Prerequisites: Phil 151,152 or equivalents.

PHIL 353C. Functional Interpretations. 4 Units.
Finite-type arithmetic. Gödel's functional interpretation and Kreisel's modified realizability. Systems based on classical logic. Spector's extension by bar-recursive functionals. Kohlenbach's monotone interpretation and the bounded functional interpretation. The elimination of weak Kônig's lemma. Uniform boundedness. A look at Tao's hard/soft analysis distinction.

PHIL 354. Topics in Logic. 1-3 Unit.
Complexity of propositional calculi. P=NP problem. Exponential lower bounds for resolution and for intuitionistic derivations. Problem of saving proofs. Complexity of derivations in arithmetic. Inventor's paradox. Synthesis of inductive invariants. Prerequisites: Phil 151,152 or equivalents.

PHIL 355. Logic and Social Choice. 4 Units.
Topics in the intersection of social choice theory and formal logic. Voting paradoxes, impossibility theorems and strategic manipulation, logical modeling of voting procedures, preference versus judgment aggregation, role of language in social choice, and metatheory of social choice. May be repeated for credit. Prerequisite: 151 or consent of instructor.

PHIL 356. Applications of Modal Logic. 3 Units.
Applications of modal logic to knowledge and belief, and actions and norms. Models of belief revision to develop a dynamic doxastic logic. A workable modeling of events and actions to build a dynamic deontic logic on that foundation. (Staff).

PHIL 356C. Logic and Artificial Intelligence. 2-4 Units.
This is a course at the intersection of philosophical logic and artificial intelligence. After reviewing recent work in AI that has leveraged ideas from logic, we will slow down and study in more detail various components of high-level intelligence and the tools that have been designed to capture those components. Specific areas will include: reasoning about belief and action, causality and counterfactuals, legal and normative reasoning, natural language inference, and Turing-complete logical formalisms including (probabilistic) logic programming and lambda calculus. Our main concern will be understanding the logical tools themselves, including their formal properties and how they relate to other tools such as probability and statistics. At the end, students should expect to have learned a lot more about logic, and also to have a sense for how logic has been and can be used in AI applications. Prerequisites: A background in logic, at least at the level of Phil 151, will be expected. In case a student is willing to put in the extra work to catch up, it may be possible to take the course with background equivalent to Phil 150 or CS 157. A background in AI, at the level of CS 221, would also be very helpful and will at times be expected. 2 unit option only for PhD students past the second year. Course website: http://web.stanford.edu/class/cs257/. Same as: CS 257

PHIL 357. Research Seminar on Logic and Cognition. 2-4 Units.
How might cognitive modeling and logical theory be of mutual benefit? What kinds of interesting logical questions arise from the study of cognition? And what kinds of tools from logic and theory of computation might be useful in modeling cognitive phenomena? Through student presentations of current research (original or from the contemporary literature) we will explore these questions. Precise topics will depend largely on student interest, but may include models of: causal reasoning, quantification, probabilistic computation and computable probability theory, erotetic theory of reasoning, moral cognition, and other topics at this intersection. 2 unit option only for Philosophy PhD students beyond the second year.

PHIL 359. Topics in Logic, Information and Agency. 2-4 Units.
Logical analysis of information, interaction and games, with topics connecting philosophy, computer science, game theory, and other fields. The focus is on current research at these interfaces. Prerequisite: 151, 154/254, or equivalent background. May be repeated for credit.

PHIL 360. Grad Seminar: Philosophy of Neuroscience. 2-4 Units.
Assumptions underlying the scientific study of how our brains work have implications for the kinds of results that neuroscience can - and cannot - deliver. We will look at the interplay between two approaches within neuroscience - mechanistic explanation and computational explanation, with a focus on neural coding and representation. Pre-reqs TBD. Repeatable for credit. 2 unit option only for Philosophy PhD students beyond the second year.

PHIL 361. Social Dimensions of Scientific Knowledge. 4 Units.
Study of philosophical issues raised by the social character of scientific research and the relation of scientific inquiry to its broader social, economic, and cultural context: values in/of science, science and policy, distribution of cognitive labor, trust in science, models of knowledge.

PHIL 362. Grad Seminar on Philosophy of Science. 4 Units.
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PHIL 363A. Seminar in History and Philosophy of Science: Democratic Science¿of the Climate, Races, H2O. 4 Units.
Is the Earth's climate real? Does it exist beyond experimental data, computer simulation, and scientists' writings? This seminar considers philosophical, historical, and anthropological perspectives on the reality of scientific entities. It asks how these metaphysical questions are connected to our democratic societies and our position as scholars. We will ask whether Homo sapiens is sub-divided into races and ethnicities in the manner of a census form. And how genetics should interact with our social understanding of human diversity. Further, can the answers to these questions stand alone as isolated academic questions, or must they be tied together with our political philosophy and social norms? If democratic pluralism leads to metaphysical pluralism, what becomes of long-discarded scientific entities, such as phlogiston? Some argue that pluralism upsets our most basic scientific facts, like: water is H2O. nnThis graduate seminar examines these scientific entities - the climate, races, phlogiston - from perspectives in Philosophy, Anthropology, and History of Science. The course topics illustrate recent trends toward metaphysics in the humanistic study of science. Students will develop their ability to compare positions and arguments between disciplines. Class time will emphasize inter-disciplinary discussion. The major writing assignment is an essay with multiple drafts. This is designed to prepare students for writing and revising dissertation chapters and peer-reviewed articles. Activities may include a film screening and visit to a scientific laboratory. Students from all programs are welcome. (Advanced undergraduates by permission.).

PHIL 364M. Mathematics in Practice. 4 Units.
What does "good" mathematics look like? Certainly, it should be correct, but mathematicians are often far more demanding. For example, they want their work to be deep, explanatory, fitting or even beautiful. This simple observation from mathematical practice raises philosophical questions: What do these terms mean? Why is work that exhibits these properties valuable? Are there design principles we can follow to help ensure our mathematics has these qualities? Throughout this course we will explore these questions by seeing what mathematicians and philosophers have had to say and by examining both modern and historical case studies.

PHIL 365. Seminar in Philosophy of Physics. 2-4 Units.
2 unit option for PhD students only.

PHIL 366. Evolution and Communication. 4 Units.
Topics include information bottlenecks, signaling networks, information processing, invention of new signals, teamwork, evolution of complex signals, teamwork. Sources include signaling games invented by David Lewis and generalizations thereof, using evolutionary and learning dynamics.

PHIL 368. Philosophy of Biology: Learning and Evolution. 2-4 Units.
Graduate seminar. 2 unit option for Philosophy PhDs beyond the second year only.

PHIL 368A. Topics in Neuroscience. 2-4 Units.
2 unit option for Philosophy PhD students beyond the second year. May be repeated for credit.

PHIL 370A. Grad Seminar in Ethics. 4 Units.
Conceptions of the self in practical philosophy. Graduate seminar exploring topics at the intersection of personal identity, agency, and morality. Specific topics and authors to be determined.

PHIL 370W. Consequentialism. 2-4 Units.
Grad seminar. 2 unit option only for Philosophy PhDs beyond the second year.

PHIL 371D. Inequality: Economic and Philosophical Perspectives. 5 Units.
The nature of and problem of inequality is central to both economics and philosophy. Economists study the causes of inequality, design tools to measure it and track it over time, and examine its consequences. Philosophers are centrally concerned with the justification of inequality and the reasons why various types of inequality are or are not objectionable.nIn this class we bring both of these approaches together. Our class explores the different meanings of and measurements for understanding inequality, our best understandings of how much inequality there is, its causes, its consequences, and whether we ought to reduce it, and if so, how. nThis is an interdisciplinary graduate seminar. We propose some familiarity with basic ideas in economics and basic ideas in contemporary political philosophy; we will explain and learn about more complex ideas as we proceed. The class will be capped at 20 students.
Same as: ETHICSOC 371R, POLISCI 431L

PHIL 371E. New Themes in Democratic Theory. 4 Units.
After a tradition of skepticism about democracy, and then a period mostly in the 20th century of virtually unquestioned approval of it, normative democratic theory recently is showing (collectively) more ambivalence. After an introduction to the period in which ¿deliberative democracy¿ was the most influential paradigm, we will look closely at developments beginning with the ¿epistemic¿ variant of that approach (Estlund, Landemore), an ensuing reaction on epistemic grounds against democracy (Brennan, Mulligan), and then two new approaches that are influential: the case for (and against) choosing ¿representatives¿ by lottery rather than voting (Guerrero, Saunders), and the idea that the model for democratic equality is nothing like majoritarianism or agents who act on behalf of constituents but the idea of a social and institutional world in which no class or category of citizens is generally above the others, increasingly called ¿relational equality¿ (Pettit, Anderson, Scheffler, Kolodny).

PHIL 371W. Representation: Race, Law, and Politics. 2-4 Units.
Graduate seminar. In this course, we will work together to develop a detailed and comprehensive understanding of the concept(s) of political representation. We will do so by examining a number of historical and contemporary theories of political representation developed within philosophy and cognate fields. 2 unit option only for Phil PhDs beyond the second year.
Same as: CSRE 371

PHIL 372. Topics in Kantian Ethics. 4 Units.
Selected topics in ethics, considering both Kant's texts and recent writings by Kant interpreters and moral philosophers in the Kantian tradition. Among the topics covered will be: Practical reason, personal relationships, duties to oneself, evil, right and politics, lying, constructivism in ethics.

PHIL 372E. Graduate Seminar on Moral Psychology. 3-5 Units.
Recent philosophical works on desire, intention, the motivation of action, valuing, and reasons for action. Readings: Williams, Korsgaard, Smith, Blackburn, Velleman, Stampe, Frankfurt.

PHIL 372M. Ending Wars: A Just Peace or Just a Peace. 2 Units.
Much of just war theory focuses on the justifications for resorting to armed force and the conduct of hostilities. But what are the ethical and legal principles that govern ending wars and making peace? This course will explore the theory of "just peace," including such problems as when a party to war may demand the unconditional surrender of its adversary and what kinds of compromises are ethically permissible in order to end ¿ or to avoid ¿ armed conflict. We will also consider the terms and practices the winning party in war may impose on the loser, such as reparations and occupation (particularly transformative occupation). In addition, we will examine the topic of transitional justice, including issues related to amnesty, forgiveness, criminal and other forms of accountability, and reconciliation. Elements used in grading: Class Participation, Written Assignments, Final Exam.
Same as: ETHICSOC 372R

PHIL 372P. Korsgaard and her Critics. 2-4 Units.
Christine Korsgaard has developed an unusually complex and comprehensive theory of morality, according to which moral authority has it's source in our authority over ourselves simply as human agents. Her view purports to be humanist without falling into relativism, subjectivism, or voluntarism. Our aim is to understand an evaluate Korsgaard's theory, which Derek Parfit has characterized as combining "Kantian, Humean, and existentialist ideas in unexpected, platitude-denying ways." Readings include Korsgaard's own works as well as selected critiques. Graduate level seminar aimed primarily at philosophy students.

PHIL 372R. Political Realism. 3-5 Units.
This seminar will explore various articulations of political realism in their historical contexts. Realism is generally taken to be a pragmatic approach to a political world marked by the competition for material interests and the struggle for power. Yet beyond a shared critique of idealism and an insistence on the priority and autonomy of the political, realists tend to have very different normative visions and political projects. We will consider the works of several political realists from the history of political and international relations thought, including: Thucydides, Machiavelli, Hobbes, Carr, Niebuhr, and Morgenthau.
Same as: POLISCI 435R

PHIL 373. Moral Motivation. 2-4 Units.
Grad seminar on ethical topic. May be repeated for credit. 2 unit option for PhD students beyond the second year only.

PHIL 373M. Ethical Foundations of Socialism. 2-4 Units.
A number of important issues in the ethical foundations of socialism have been overlooked by mainstream ethical theory. This is doubly regrettable, since both socialist theory and mainstream ethical theory might be improved by their integration. In this seminar, we will attempt to pair works in contemporary ethical theory with works in post-Marxian theory in an attempt to make some substantive progress. Possible topics include: alienation, reification, and objectification for consequentialists, feminists, and market ethicists; social ontology and the values of community and solidarity; ideology and the individuation of options and reasons; exclusionary reasons, the right/wrong reasons distinction, 'role ethics,' and actions in market contexts; exchange, reciprocity, and the obligations of friendship. May be repeated for credit. 2 unit option only for Philosophy PhD students who are beyond the second year.

PHIL 374. Caring and Practical Reasoning. 4 Units.
What is it to care about something; how is caring related to desiring, emotions, and having policies; what is the relationship between caring and the will; why do people care about things; can attention to caring help explain the phenomenon of silencing reasons? Readings from contemporary literature, including Frankfurt, Watson, Bratman, Scanlon, Williams, Helm, and Kolodny. May be repeated for credit.

PHIL 374F. Science, Religion, and Democracy. 3-5 Units.
How should conflicts between citizens with science-based and religion-based beliefs be handled in modern liberal democracies? Are religion-based beliefs as suitable for discussion within the public sphere as science-based beliefs? Are there still important conflicts between science and religion, e.g., Darwinian evolution versus creationism or intelligent design? How have philosophy and recent theology been engaged with such conflicts and how should they be engaged now? What are the political ramifications? This is a graduate-level seminar; undergraduates must obtain permission of the instructors.
Same as: ETHICSOC 374R, RELIGST 374F

PHIL 375. Ethics, Economics and the Market. 4 Units.
Economic analysis inevitably raises moral questions. Getting clear on those moral questions, and the competing answers to them, can help improve both economic analysis and our understanding of the values involved in alternative social policies. This course focuses on a central economic institution: the market. How have the benefits and costs of using markets been understood? For example, it is often claimed that markets are good for welfare, but how is welfare to be understood? What is the connection between markets and different values such as equality and autonomy? What, if anything is wrong with markets in everything? Are there moral considerations that allow us to, distinguish different markets? This course examines competing answers to these questions, drawing on historical and contemporary literature. Readings include Adam Smith, JS Mill, Karl Marx, Michael Walzer, Dan Hausman and Michael McPherson and Debra Satz among others. For graduate students only.
Same as: ETHICSOC 303R, POLISCI 434A

PHIL 375G. Seminar on Emotion. 3 Units.
This undergraduate and graduate seminar will examine ancient Greek philosophical and contemporary psychological literatures relevant to emotion. Questions to be investigated include: What is the nature of emotions? What is the appropriate place in our lives for emotions? How should we manage our emotions? Do the emotions threaten the integrity of the agent? Meetings will be discussion oriented. Prerequisite: consent of instructor.
Same as: PSYCH 160, PSYCH 260

PHIL 375J. Jurisprudence. 3 Units.
This course examines the diverse ways in which the philosophy of law bears on the practice of law. Our subject is thus a set of philosophical concepts, particularly legal positivism and natural law, but the approach is not purely conceptual. Rather, we will examine both the philosophical concepts in the abstract and how those philosophical concepts are reflected or actualized in the craft of legal argumentation, in the intellectual history of law, and in contemporary questions of politics and government. Above all, we will ask which conception of law best contributes to legal justice. The course consists in three units. Unit I is about theories of the nature of law, focusing on legal positivism and natural law. Unit II is about theories of particular departments of law, focusing on tort law and criminal law. Unit III takes a philosophical perspective on being a lawyer, focusing on questions of what principles define lawyers' role in society and what ideals give the life of a lawyer meaning. Grading is based on class participation, two in-class moot court presentations, and, based on individual student preference, either a final exam (a one-day take-home essay with a word limit) or a final research paper. Cross-listed with the Law School (LAW 5806).

PHIL 375K. Criminal Procedure: Theoretical Foundations. 2-3 Units.
This course examines the theoretical foundations of criminal procedure-political, historical, and, above all, philosophical. What are the ideas at work in the American system of criminal procedure? How, historically, did the system develop, and why does it presently function as it does? Is the system broken and, if so, what principles should orient us in fixing it? This theoretical inquiry has a practical point. Procedure plays a major role in the present crisis of American criminal justice. By examining criminal procedure's theoretical foundations, this course aims to develop competing "big picture," synthetic perspectives on the criminal justice crisis as a whole. Thus, for students interested in criminal justice reform, this course will equip you to take a philosophically richer view of the underlying policy issues. For students thinking about a career in criminal law, this course will equip you to engage in large-scale thinking about how criminal procedure should change, rather than just working within the doctrinal and institutional structures that exist at present. For students interested in legal academia, this course will develop your ability to read sophisticated theoretical material, to write in the same vein, and to relate theoretical ideas to policy prescriptions. Elements used in grading: Class participation and, based on individual student preference, either a final reflection paper (2 units) or a final research paper with instructor permission. Students electing the final research paper option can take the course for either 2 or 3 units, depending on paper length. Cross-listed with the Law School (LAW 2019).

PHIL 375V. Graduate Seminar: Voting. 2-4 Units.
Graduate Seminar. 2 unit option only for Philosophy PhD students beyond the second year.

PHIL 376. Agency and Personal Identity. 4 Units.
How philosophical theories of agency interact with philosophical accounts of personal identity. Readings include David Velleman and Harry Frankfurt.

PHIL 376A. Shared Agency and Organized Institutions. 2-4 Units.
Our human lives involve remarkable forms of practical organization: diachronic organization of individual intentional activity; small-scale social organization of shared intentional action; and the organization of complex, organized institutions. A philosophically illuminating theory of human action should help us understand these multiple forms of human practical organization and their inter-relations. This graduate seminar primarily focuses on the role of shared intention and shared agency in organized institutions. The main focus will be a book manuscript on which I am working: Shared and Institutional Agency: Toward a Planning Theory of Human Practical Organization. In this book I seek to extend the foundational role of our capacity for planning agency first to shared agency and then thereby to human organized institutions. To do this I draw on the idea from H.L.A. Hart that our organized institutions are rule-governed, and that to understand this we need a theory of social rules. We will work through this manuscript, together with a wide range of related work by others, including work by H.L.A. Hart, Margaret Gilbert, Scott Shapiro, Philip Pettit, John Searle, Geoffrey Brennan, Cristina Bicchieri, Donald Davidson, and Harry Frankfurt.nnEnrollment limited to graduate students in Philosophy, others by permission of instructor. 2 unit option available only to Philosophy PhD students beyond the second year.

PHIL 376B. Institutions and Practical Reason. 2-4 Units.
We live our lives in a thicket of institutions: small-scale, such as friendships and marriages, large-scale, such as massive economic and political systems, and everything in between. These institutions yield standards by which individual conduct in pertinent contexts can be assessed; these standards can themselves be ethically evaluated. Individuals must organize their commitments to these standards and evaluations in some kind of ethically responsible way. These issues have been discussed on rather different terms in normative ethics, political theory, normative theory, action theory, and social metaphysics. Our goal will be to bring these different literatures to bear on a general inquiry into the ethics of institutional participation. Topics may include: recent work on reasoning; rule worship; exclusionary and silencing reasons; the putative distinctness of political normativity; incentives and the 'ethos of justice'; the ethics of exchange; social structures and practices; and institutionalised relational values. nnLimited to graduate students in Philosophy and to others by permission of the instructor. 2 unit option available only to PhD students beyond the second year.

PHIL 376C. Tragic Form and Political Theory. 5 Units.
Tragic form and political theory have in common a profound interest in the conflictual foundation of human society. This course explores how the two intellectual approaches define the actors of conflict, its causes, and its possible (or impossible) resolution.

PHIL 377. Social Agency. 2-4 Units.
Humans are agents who live in a social world. Philosophical reflection on human agency needs to include reflection both on the agency of individual human agents and on forms of social agency that involve multiple individuals. This seminar will focus on aspects of the latter.nnWhat is it for multiple individuals to think and to act together -- to engage in shared intentional/shared cooperative activity? to deliberate together? to engage in what some have called team reasoning? What kinds of social agency are characteristic of larger social organizations or groups? What would it be for larger groups themselves to be agents, ones who have their own distinctive intentions on the basis of which they act? What is the relation between these larger forms of social agency and small-scale shared cooperative activity? In all these cases how do we best understand what we are talking about when we speak of what we intend or believe and of what we are doing? Readings to be drawn from recent work of Michael Bratman, Margaret Gilbert, Christian List, Kirk Ludwig, Philip Pettit, John Searle, Scott Shapiro, and others, as well as classic work of H.L.A. Hart.nnPrerequisite: graduate standing in Philosophy or permission of instructor. 2 unit option for PhD students only; all others must enroll for 4 units.
Same as: POLISCI 333

PHIL 377A. Planning, Time, and Rationality. 2-4 Units.
Intentions seem subject to basic rationality norms, including norms of consistency, means-end coherence, and (perhaps) stability over time. Such norms seem central to the planning agency in which intentions are normally embedded. But what is the nature and status of such norms? Why are they if indeed they are norms of rationality? What is the big deal about such consistency, coherence, stability? Is appeal to such norms an unjustified myth? What is the relation between such norms and theoretical norms of consistency, coherence, and (perhaps) stability of belief? Are there defensible norms not only of rationality at a time but also of rationality over time? What is the relation between such norms and agency? What is the relation between such norms and self-governance at a time/self-governance over time? Readings from Bratman, Broome, Brunero, Ferrero, Gold, Holton, Kolodny, Korsgaard, Millgram, Nefsky, Paul, Raffman, Raz, Tenenbaum, Setiya, Velleman, Wallace. Repeatable for credit. Prerequisite: graduate standing in Philosophy or permission of instructor. 2 unit option only for Philosophy PhD students beyond the second year; all others must enroll for 4 units.

PHIL 377B. Normativity, Rationality, and Reasoning. 1-2 Unit.
This 4-week mini course in February 2020 will explore the nature and interconnections of normativity, rationality and reasoning. It particularly concentrates on practical rationality and practical reasoning. Broome's book "Rationality Through Reasoning" will be a guide to the course. First meeting is February 10, last meeting is March 2.

PHIL 378. Amartya Sen's capability theory. 2-4 Units.
Amartya Sen's pioneering work attempts to open up economics to missing informational and evaluative dimensions. This seminar will explore Sen's "capability approach" and its implications for the study of economics, gender, and justice. It will look at different ways that the capability approach has been developed, in particular, by Martha Nussbaum, but also by other political philosophers.
Same as: POLISCI 436R

PHIL 378A. Special Topics in Political Philosophy. 4 Units.
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PHIL 378B. Unequal Relationships. 2-4 Units.
Over the past three decades, a relational egalitarian conception of equality has emerged in political philosophy. Proponents of the view argue that the point of equality is to establish communities where people are able to stand and relate as equals. This entails building societies free from a variety of modes of relating that are thought to be detrimental to our status as moral equals. The list of those inegalitarian relationships is long and includes oppression, domination, exploitation, marginalization, objectification, demonization, infantilization, and stigmatization. The relational approach to equality departs from the more distributive conceptions of equality that were offered in the 70s and after. The theories of justice proposed in response are still comparatively underdeveloped and need further elaboration, but they all concur in rejecting both the overly distributive paradigm and the preoccupation with individual responsibility central to most other egalitarian accounts. This graduate seminar will introduce students to the rich literature on equality in contemporary political philosophy, with a special focus on identifying and scrutinizing unequal relationships. Each week will be centered on a specific type of such unequal relationship, trying to understand how it operates, what social function it serves, and what makes it specifically harmful or wrongful to groups and individuals. Although there are no formal pre-requisites, this class is primarily designed for students considering writing a thesis in political or moral theory as well as for students in other disciplines who want to advance their understanding of equality as a moral value. Seniors in philosophy and political science with a substantial training in political theory will also be considered and should email the PI to communicate their interest. 2 unit option only for Phil PhDs beyond the second year.
Same as: ETHICSOC 378B, POLISCI 338B

PHIL 378W. Owning the Earth. 4 Units.
(Why) do Americans have the right to control the land and resources of the United States? Or should we think that all humans have an equal right to the earth? Should we allocate responsibilities to act on climate change based on equal ownership of the atmosphere? Does a national people living on an island that will disappear because of climate change have a right to a new state elsewhere? Can an individual rightfully own a distant planet? Why are resource-rich states at higher risk for authoritarianism, civil conflict and corruption¿and can this `resource curse¿ be lifted? This course will draw on philosophy, political science and law to ask who has¿and should have¿control over the earth and its resources.

PHIL 379. Graduate Seminar in Metaethics. 2-4 Units.
This is a graduate research seminar in metaethics. We will be investigating current issues in the metaethical literature. PHIL 273B, the graduate introduction to metaethics, (or an equivalent) is a required pre-requisite. The course can be retaken for credit.

PHIL 380. Core Seminar in Metaphysics and Epistemology. 4 Units.
Limited to first- and second-year students in the Philosophy Ph.D. program.

PHIL 381. Graduate Seminar in Metaphysics: Recent Work on Ground. 4 Units.
Metaphysicians have done an enormous amount of work on grounding over the past ten years or so. In this seminar, we will survey this new literature, focusing on the 'pure logic of ground' and the 'impure logic of ground'. Kit Fine's "A Guide to Ground" (which is easy to find through Google) is a useful introduction to the topic.

PHIL 382. Seminar on Reference. 4 Units.
Philosophical issues concerning the relationship between linguistic expressions and the objects to which they refer. Is it possible to get one unified theory of reference for different kinds of referring expressions such as proper names, pronouns, demonstratives, and other kinds of indexicals? Unsolved problems and desiderata for a theory of reference?.

PHIL 382A. Practical knowledge. 2-4 Units.
When you do something intentionally, you have a special kind of knowledge of what you are doing. Anscombe called this practical knowledge. She argued that it is non-observational and non-inferential, and that it plays a role in making your action intentional at all. Was Anscombe right? What kind of knowledge do you have of your action when you are acting intentionally? We will consider various interpretations of Anscombe's view on practical knowledge, and various competitors. This class is open to all philosophy graduate students, and to other students only with instructor permission. The 2 unit option is only allowed for Philosophy PhD students who are beyond the second year.

PHIL 383. Advanced Topics in Epistemology. 2-4 Units.
May be repeated for credit. 2 unit option is only for Phil PhD students beyond the second year.

PHIL 383B. What's an Inference?. 2-4 Units.
Fundamental issues in epistemology, philosophy of mind and language: issues relating to the notion (or rather, notions) of an inference. What's inferential justification? What's an inferential reasoning process? What are inference rules, and what distinguishes a good rule of inference from a bad rule? Subtopics to be discussed include: the problem of mental causation, the distinction between personal and sub-personal levels of explanation, preservation of content and warrant, the epistemic support relation, and time permitting the nature of perceptual justification.

PHIL 384. Seminar in Metaphysics and Epistemology. 4 Units.
2015-16 topic: Logical Consequence.nMay be repeated for credit.

PHIL 384J. Grad Seminar. 2-4 Units.
This class is open to graduate students in philosophy, all others need explicit permission. 2 unit option is for 3rd year Philosophy PhDs only.

PHIL 384P. Mental Action and Its Pathologies. 2-4 Units.
In this graduate seminar, we will examine the nature of mental action. What is mental action? What kinds of mental actions can we perform intentionally? Is there such a thing as paralysis of mental action? Are delusions of thought insertion pathologies of mental action? nnThis is a seminar mainly for graduate students in philosophy, but readings will include many sources from the cognitive sciences. Students taking the course for credit will be required to do a presentation and write a research paper. 2 unit option only for Philosophy PhDs beyond the second year.

PHIL 384W. The Liar Paradox. 2-4 Units.
This is a graduate seminar on the liar and related paradoxes. We will go over recent approaches, starting with Kripke's 1975 approach. Work on the liar by Field, McGee, Priest, and others will be discussed. We will cover both technical and philosophical issues related to the liar. This class is open to graduate students in philosophy, all others need explicit permission. 2 unit option is for 3rd year Philosophy PhDs only.

PHIL 385B. Topics in Metaphysics and Epistemology: Situations and Attitudes. 2-4 Units.
2 unit option for PhD students only. May be repeated for credit.

PHIL 385C. Topics in Philosophy of Language: The Frege-Russell Problems. 2-4 Units.
Explore various approaches to the difficulties for semantic theories raised by the behavior of propositional attitude sentences. How, if Superman and Clark are the same person, can Lois have different beliefs about them? "Classic" treatments of the issues including Frege, Russell, Quine, Davidson, and Kripke. Contemporary debates about the most promising approaches, including "naive Russellianism" and "unarticulated constituent" accounts.

PHIL 385D. Advanced Topics in Philosophy of Language. 2-4 Units.
Course may be repeat for credit. 2 unit option for PhD students only.

PHIL 385M. Metaphysics and Semantics. 2-4 Units.
2 unit option only for Phil PhDs beyond the second year.

PHIL 385N. Transfeminism. 2-4 Units.
This graduate seminar explores the metaphysics, ethics, and epistemology of transness, using sources from the 1970s to the present, primarily focused on the US, the UK, and Canada. Among the questions we¿ll investigate are: How can we theorize about gender in a way that acknowledges the breadth and diversity of embodied human experience? How should we understand trans femininity, trans masculinity, and genderqueerness? What is the relationship between a person¿s internal sense of their own gender, and the gendered expectations of the broader society where they live?2 unit option only for Phil PhDs beyond the second year.
Same as: FEMGEN 385N

PHIL 385R. Metaphysics of Reference. 2-4 Units.
This seminar is an investigation of the nature of reference in both private thought and public talk. Just what is it for some bits of either our shared public language or our inner thoughts to refer to or stand for bits of the world? In virtue of what does the relation of reference obtain between some bit of the world and some bit of either outer language or inner thought? What about apparent reference to putatively non-existent objects, like Santa Claus or Sherlock Holmes? We appear to think and talk about objects that do not exist. But there are no such objects. So just how do we manage to think and talk about them? Or consider abstract objects, like numbers, that are thought by some to exist outside the spatial-temporal order. We appear to think and talk about such objects as well. But it is a mystery how, if at all, the reach of our thought could possibly extend beyond even the bounds of space and time. Though we will canvass a a number of different answers to this questions, proposed by a variety of philosophers, my main goal will be to develop and defend a view that I call two-factor referentialism. Readings will be drawn from a number of sources, including several chapters of my book in progress Referring to the World.

PHIL 386. Truth as the aim of belief and inquiry. 2-4 Units.
This is a graduate seminar in epistemology and mind. 2 unit option for Philosophy PhD students beyond the second year only. May be repeated for credit.

PHIL 386B. Husserl and Adam Smith. 4 Units.
Readings from Husserl and others in the phenomenological tradition, and recent work on intentionality and consciousness by philosophers and cognitive scientists.

PHIL 386C. Subjectivity. 4 Units.
Continuation of 386B.

PHIL 386D. Personal Identity. 4 Units.
Focus on personal identity as a case study in metaphysical indeterminacy. The classic puzzles of PI can be construed as arguments that it can be indeterminate whether person A is identical to person B, and indeed, whether person A exists. Can such cases of indeterminacy be plausibly interpreted as semantic (or epistemic), or do they support the possibility of worldly or "ontic" indeterminacy? Is ontic indeterminacy even coherent? How might it be modeled? Parallel questions arise in the metaphysics of ordinary material objects, of course; but it's not obvious that their answers should also run parallel. And even if they do, focusing on PI lends the questions some real urgency. How should I feel about the interests of a past or future person who's only indeterminately me? Should I fear a future in which I merely indeterminately exist? Maybe outright death is preferable to being literally liminal. Seminar. Graduate work in core philosophy a prerequisite.

PHIL 386E. About Being. 4 Units.
A pop-up course on Burgess' eponymous book project, which deals with the metaphysics of linguistic representation in the service of developing a methodology for adjudicating ontological disputes. Keywords: linguistic turn, Plato's beard, problem of intentionality, grounding, deflationism, metaontology, etc. Readings will be a mix of chapter drafts and recent, relevant work by other people, including Rayo, Sider, Manley & Hawthorne; with a couple classics by Quine and Stalnaker thrown in for good measure.

PHIL 387. Intention and Normative Judgment. 2-4 Units.
Prominent views in both metaethics and the philosophy of action hold that there are distinctively practical states of mind that nonetheless play many of the roles traditionally associated with belief. Some action theorists hold that intention is a kind of practical attitude subject to rational requirements such as requirements of consistency and coherence. Metaethical noncognitivists hold that normative judgments are distinctively practical¿perhaps even a species of intention¿and face the well-known Frege-Geach problem because of that commitment. We will consider what metaethicists can learn from debates about intention in the philosophy of action, and what philosophers of action can learn from debates about metaethical non-cognitivism.

PHIL 387B. Plan Rationality. 4 Units.
This seminar will explore foundational issues about practical rationality as they arise in the context of agency in which planning plays a basic role. We will consider issues both about rationality at a time and about rationality over time.nOpen to graduate students in Philosophy and to others by permission.

PHIL 387C. Consistency and Coherence. 2-4 Units.
Some philosophers think that attitudes like belief and intention are subject to consistency and coherence requirements. Are there such general purpose cogency requirements on attitudes? If so, what is their nature and strength? What grounds these requirements; for instance, does the point or purpose of a belief or an intention ground consistency and coherence requirements on that attitude? How are such requirements on belief related to requirements on intention? How does the answer to such questions bear on understanding of the interrelations between theoretical and practical rationality?.

PHIL 387D. Rationality over Time. 2-4 Units.
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PHIL 387F. Grad Seminar. 2-4 Units.
An introduction to truthmaker semantics, recently developed by Fine and others, and considering some of the applications to natural and formal languages.nThere will be a focus both on presenting the semantics in rigorous fashion and showing, in detail, how it might be applied in a number of different areas. Grad seminar with Kit Fine. 2 unit option for PhD students only.

PHIL 387S. Practical Reasons and Practical Reasoning. 4 Units.
Attempts to develop alternatives to Humean, instrumentalist conceptions of practical reasoning, and alternatives to Humean, non-cognitivist views of practical reasons. Readings include Aurel Kolnai, Bernard Williams, David Wiggins, Joseph Raz, Michael Bratman, Elijah Millgram, and T.M. Scanlon.

PHIL 388. Topics in Normativity. 2-4 Units.
Topics in Normativity. Normative Consciousness. May be repeated for credit. 2 unit option for PhD students only.

PHIL 389. Advanced Topics in Epistemology. 2-5 Units.
Advanced topics in epistemology. Pre-requisite Phil 284. May be repeated for credit.

PHIL 391. Seminar on Logic & Formal Philosophy. 2-4 Units.
Research seminar for graduate students working in logic and formal philosophy. Presentations on contemporary topics by seminar participants and outside visitors. Maybe be repeated for credit.
Same as: MATH 391

PHIL 450. Thesis. 1-15 Unit.
(Staff).

PHIL 500. Advanced Dissertation Seminar. 1 Unit.
Presentation of dissertation work in progress by seminar participants. May be repeated for credit.

PHIL 801. TGR Project. 0 Units.
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PHIL 802. TGR Dissertation. 0 Units.
(Staff).

PHYSICS

Courses offered by the Department of Physics are listed under the subject code PHYSICS on the Stanford Bulletin's ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=PHYSICS&filter-catalognumber-PHYSICS=on).

Mission of the Undergraduate Program in Physics

The mission of the undergraduate program in Physics is to provide students with a strong foundation in both classical and modern physics. The goal of the program is to develop both quantitative problem solving skills and the ability to conceive experiments and analyze and interpret data. These abilities are acquired through both course work and opportunities to conduct independent research. The program prepares students for careers in fields that benefit from quantitative and analytical thinking, including physics, engineering, teaching, medicine, law, science writing, and science policy, in government or the private sector. In some cases, the path to this career will be through an advanced degree in physics or a professional program.

Learning Outcomes (Undergraduate)

Students develop an understanding of the fundamental laws that govern the universe, and a strong foundation of mathematical, analytical, laboratory, and written communication skills. They will also be presented with opportunities for learning through research. Upon completion of the Physics degree, students should have acquired the following knowledge and skills:

1. a thorough quantitative and conceptual understanding of the core areas of physics, including mechanics, electricity and magnetism, thermodynamics, statistical physics, and quantum mechanics, at a level compatible with admission to graduate programs in physics at peer institutions.
2. the ability to analyze and interpret quantitative results, both in the core areas of physics and in complex problems that cross multiple core areas.
3. the ability to apply the principles of physics to solve new and unfamiliar problems. This ability is often described as "thinking like a physicist."
4. the ability to use contemporary experimental apparatus and analysis tools to acquire, analyze and interpret scientific data.
5. the ability to communicate scientific results effectively in written papers and presentations or posters.

Course Work

The course work is designed to provide students with a sound foundation in both classical and modern physics. Students who wish to specialize in astronomy, astrophysics, or space science should also consult the "Astronomy Program (p. 1083)" section of this bulletin.

Three introductory series of courses include labs in which undergraduates carry out individual experiments. The Intermediate and Advanced Physics Laboratories offer facilities for increasingly complex individual work, including the conception, design, and fabrication of laboratory equipment. Undergraduates are also encouraged to participate in research; most can do this through the senior thesis and/or the summer research program.

The study of physics is undertaken by three principal groups of undergraduates: those including physics as part of a general education; those preparing for careers in professional fields that require a knowledge of physics, such as medicine or engineering; and those preparing for careers in physics or related fields, including teaching and research in colleges and universities, research in federally funded laboratories and industry, and jobs in technical areas. Physics courses numbered below 100 are intended to serve all three of these groups. The courses numbered above 100 mainly meet the needs of the third group, but also of some students majoring in other branches of science and engineering.

Entry-Level Sequences in Physics

The Department of Physics offers three year-long, entry-level physics sequences, the PHYSICS 20, 40, and 60 series. The first of these (the 20 series) is non-calculus-based, and is intended primarily for those who are majoring in biology. Students with AP Physics credit, particularly those who are considering research careers, may wish to consider taking the PHYSICS 40 series, rather than using AP placement. These introductory courses provide a depth and emphasis on problem solving that has significant value in biological research, given today's considerable physics-based technology.

For those intending to major in engineering or the physical sciences, or simply wanting a stronger background in physics, the department offers the PHYSICS 40 and 60 series. Either of these satisfies the entry-level physics requirements of any Stanford major. The 60 series is intended for those who have already taken a Physics course at the level of the 40 series, or at least have a strong background in mechanics, some background in electricity and magnetism, and a strong background in calculus.

The PHYSICS 40 series begins with PHYSICS 41 Mechanics offered Autumn and Spring Quarter, PHYSICS 43 Electricity and Magnetism offered Winter and Summer Quarter, and PHYSICS 45 Light and Heat in Autumn Quarter. While it is recommended that most students begin the sequence with PHYSICS 41 in Autumn Quarter, those who have had strong physics preparation in high school (such as a score of at least 4 on the Physics AP C exam) may start the sequence with PHYSICS 45 in Autumn Quarter.

PHYSICS 41E and PHYSICS 43A are optional 1 unit companion courses to PHYSICS 41 and PHYSICS 43 respectively. They provide additional problem solving for students with less preparation in math and physics.

The Physics Tutoring Center offers help to students in the Entry-Level courses. It is staffed Monday through Friday.

Entry-Level Course List

One course from the following is recommended for the humanities or social science student who wishes to become familiar with the methodology and content of modern physics:

		Units
PHYSICS 15	Stars and Planets in a Habitable Universe	3
PHYSICS 16	The Origin and Development of the Cosmos	3
PHYSICS 17	Black Holes and Extreme Astrophysics	3
PHYSICS 19	How Things Work: An Introduction to Physics (not offered 2020-21)	3

The 20 series (below) is recommended for general students and for students preparing for medicine or biology:

		Units
PHYSICS 21	Mechanics, Fluids, and Heat	4
PHYSICS 22	Mechanics, Fluids, and Heat Laboratory	1
PHYSICS 23	Electricity, Magnetism, and Optics	4
PHYSICS 24	Electricity, Magnetism, and Optics Laboratory	1
PHYSICS 25	Modern Physics	4
PHYSICS 26	Modern Physics Laboratory	1

The 40 series (below) is for students majoring in engineering, chemistry, earth sciences, mathematics, or physics:

		Units
PHYSICS 41	Mechanics	4
PHYSICS 42	Classical Mechanics Laboratory	1
PHYSICS 43	Electricity and Magnetism	4
PHYSICS 44	Electricity and Magnetism Lab	1
PHYSICS 45	Light and Heat	4
PHYSICS 46	Light and Heat Laboratory	1

The 60 series (below), or advanced freshman series, is for students who have had strong preparation in physics and calculus in high school. Students who have had the appropriate background and wish to major in physics should take this introductory series:

		Units
PHYSICS 61	Mechanics and Special Relativity	4
PHYSICS 62	Mechanics Laboratory	1
PHYSICS 63	Electricity, Magnetism, and Waves	4
PHYSICS 64	Electricity, Magnetism and Waves Laboratory	1
PHYSICS 65	Quantum and Thermal Physics	4
PHYSICS 67	Introduction to Laboratory Physics	1

Physics Placement Diagnostic

All students who would like to enroll in either PHYSICS 45 Light and Heat or PHYSICS 61 Mechanics and Special Relativity must take the Placement Diagnostic if they have never taken an Introductory Physics course at Stanford (i.e., not taken at least one of the following courses: PHYSICS 21, 23, 25, 41, 41A/E, 43, 45, 61, 63, 65).

All frosh must take the Placement Diagnostic to enroll in PHYSICS 41 Mechanics.

For more information, see the department's Physics Placement Diagnostic (https://physics.stanford.edu/academics/undergraduate-students/placement-diagnostic/) page.

Graduate Programs in Physics

Graduate students find opportunities for research in many areas of Physics. Faculty advisers are drawn from many departments, including, but not limited to Physics, Particle Physics and Astrophysics at SLAC, Photon Science at SLAC, Materials Science and Engineering, Electrical Engineering, and Biology.

The number of graduate students admitted to the Department of Physics is strictly limited. Students should submit applications by Tuesday, December 15, 2020 at 11:59 p.m. Pacific Time for matriculation the following Autumn Quarter. Graduate students may normally enter the department only at the beginning of Autumn Quarter.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in physics and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis using the tools of Physics. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of physics and to interpret and present the results of such research.

Fellowships and Assistantships

The Department of Physics makes an effort to support all its graduate students through fellowships, teaching assistantships, research assistantships, or a combination of sources. More detailed information is provided with the offer of admission.

Laboratories and Institutes

The Russell H. Varian Laboratory of Physics, the Physics and Astrophysics Building, the W. W. Hansen Experimental Physics Laboratory (HEPL), the E. L. Ginzton Laboratory, the Center for Nanoscale Science and Engineering and the Geballe Laboratory for Advanced Materials (GLAM) together house a range of physics activities from general courses through advanced research. Ginzton Lab houses research on optical systems, including quantum electronics, metrology, optical communication and development of advanced lasers. GLAM houses research on novel and nanopatterned materials, from high-temperature superconductors and magnets to organic semiconductors, subwavelength photon waveguides, and quantum dots. GLAM also supports the materials community on campus with a range of characterization tools: it is the site for the Stanford Nanocharacterization Lab (SNL) and the NSF-sponsored Center for Probing the Nanoscale (CPN). The SLAC National Accelerator Laboratory is just a few miles from the Varian Laboratory. SLAC is a national laboratory funded by the Offices of Basic Energy Sciences and High Energy Physics of the Department of Energy. Scientists at SLAC conduct research in photon science, accelerator physics, particle physics, astrophysics and cosmology. The laboratory hosts a two-mile-long linear accelerator that can accelerate electrons and positrons. The Stanford Synchrotron Radiation Light Source (SSRL) uses intense x-ray beams produced with a storage ring on the SLAC site. The Linac Coherent Light Source (LCLS), completed in 2009, is the world's first x-ray free-electron laser and has opened new avenues of research in ultra-fast photon science.

The Kavli Institute for Particle Astrophysics and Cosmology (KIPAC), formed jointly with the SLAC National Accelerator Laboratory, provides a focus for theoretical, computational, observational, and instrumental research programs. A wide range of research areas in particle astrophysics and cosmology are investigated by students, postdocs, research staff and faculty. The two major projects with which KIPAC is heavily involved are the Fermi Gamma-Ray Space Telescope (FGST) and the Large Synoptic Survey Telescope (LSST). KIPAC members also participate fully in the Cryogenic Dark Matter Search (CDMS), the Solar Dynamics Observatory (SDO), the EXO-200 double beta decay experiment, the Dark Energy Survey (DES), the NuSTAR and Astro-H X-ray satellites, and several cosmic microwave background experiments (BICEP, KECK, QUIET and POLAR-1).

The Ginzton Laboratory, HEPL, GLAM, KIPAC, SLAC, and SSRL are listed in the "Centers, Laboratories, and Institutes (p. 2512)" section of this bulletin. Students may also be interested in research and facilities at two other independent labs: the Center for Integrated Systems, focused on electronics and nanofabrication; and the Clark Center, an interdisciplinary biology, medicine, and bioengineering laboratory.

The Stanford Institute for Theoretical Physics is devoted to the investigation of the basic structure of matter (particle theory, string theory, M-theory, quantum cosmology, condensed matter physics).

Physics Course Numbering System

Course numbers beyond 99 are numbered in accordance with a three-digit code. The first digit indicates the approximate level of the course:

Digit	Description
100	intermediate and advanced undergraduate courses
200	first-year graduate courses
300	more advanced courses
400	research, special, or current topics

The second digit indicates the general subject matter.

Digit	Description
00	laboratory
10,20,30	general courses
40	nuclear physics, nuclear energy, energy
50	elementary particle physics
60	astrophysics, cosmology, gravitation
70	condensed matter physics
80	optics and atomic physics
90	miscellaneous courses

Bachelor of Science in Physics

Physics is concerned with a rigorous, mathematical understanding of the fundamental laws that govern our universe and everything in it. The Physics major provides students with a foundational understanding of the pillars of modern physics: mechanics, electromagnetic theory, quantum mechanics, and statistical mechanics. The major is designed around a range of tracks that allow students the flexibility to explore a particular interest in more depth, including but not limited to astrophysics, biophysics, computational physics, education, geophysics, and quantum information science.

Physics majors have gone on to pursue careers in basic or applied research, teaching, and policy, as well as many parts of the private sector as engineers, consultants, and founders of startups. Others have combined the Physics major with a minor or major in the humanities and pursued careers in the arts.

Physics majors often pursue advanced degrees, including coterminal master's degrees in EE, CS, Applied & Engineering Physics, Statistics and other fields, and Ph.D. programs in physics or other fields. Students who are specifically interested in preparing for a Ph.D. program in physics should see "Suggestions for students interested in pursuing a Ph.D. program in Physics or closely related fields (p. 1922)" below.

Suggested Preparation for the Major

Prospective Physics majors are advised to take PHYSICS 59 Frontiers of Physics Research in their freshman or sophomore year.

How to Declare the Major in Physics

All prospective physics majors should take the Physics Placement Diagnostic web site (https://physics.stanford.edu/academics/undergraduate-students/placement-diagnostic/) to get sound advice on which introductory physics sequence will be sufficiently challenging without being overwhelming, and where to begin in that sequence. Prospective majors, especially those who are beginning the major during sophomore year, can contact the undergraduate program coordinator(elva@stanford.edu) to arrange an advising appointment. Students who have had previous college-level courses should make an advising appointment for placement and possible transfer credit. For additional information on Advanced Placement, see the Registrar's web site (http://studentaffairs.stanford.edu/registrar/students/ap/).

Degree Requirements

All courses for the Physics major must be taken for a letter grade, and a grade of 'C-' or better must be received for all units applied toward the major. The only exceptions for which a grade of S or CR is acceptable are PHYSICS 42, 44, 46, 62, 64, 67, and one and only one of the following courses: PHYSICS 41, 43, 45, 61, 63, 65.

Each Physics major takes a set of required courses common to all tracks, followed by an additional six courses in one of eight defined tracks or, in rare cases, an individually designed track.

See these sample four-year plans (https://docs.google.com/spreadsheets/d/1KIjKj8-EMStYKC3YqPvgdfsnwCq-ybSpF-XwFAcHf-4/edit/#gid=1959434091) that illustrate how to complete the required courses for all tracks for different starting points in the math and physics sequences.

Course Requirements

		Units
Introductory Sequence		**16-20**
Complete either the 40 Series or the 60 Series [1]		
40 Series (19-20 units):		
PHYSICS 41	Mechanics	
PHYSICS 42	Classical Mechanics Laboratory	
PHYSICS 43	Electricity and Magnetism	
PHYSICS 44	Electricity and Magnetism Lab	
or PHYSICS 67	Introduction to Laboratory Physics	
PHYSICS 45	Light and Heat	
PHYSICS 46	Light and Heat Laboratory	
PHYSICS 70	Foundations of Modern Physics	
60 Series (16 units):		
PHYSICS 61	Mechanics and Special Relativity	
PHYSICS 62	Mechanics Laboratory	
PHYSICS 63	Electricity, Magnetism, and Waves	
PHYSICS 64	Electricity, Magnetism and Waves Laboratory	
PHYSICS 65	Quantum and Thermal Physics	
PHYSICS 67	Introduction to Laboratory Physics	
Required Math Courses		**21-24**
Complete MATH 50 or 60CM Series:		
50-Series		
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	
MATH 52	Integral Calculus of Several Variables	
MATH 53	Ordinary Differential Equations with Linear Algebra	
60CM-Series		
MATH 61CM	Modern Mathematics: Continuous Methods	
MATH 62CM	Modern Mathematics: Continuous Methods	
MATH 63CM	Modern Mathematics: Continuous Methods	
Complete one course from:		
PHYSICS 111	Partial Differential Equations of Mathematical Physics	
MATH 131P	Partial Differential Equations	
MATH 173	Theory of Partial Differential Equations [2]	
Intermediate Physics Sequence		
PHYSICS 120	Intermediate Electricity and Magnetism I	4
PHYSICS 121	Intermediate Electricity and Magnetism II	4
PHYSICS 130	Quantum Mechanics I	4

PHYSICS 170	Thermodynamics, Kinetic Theory, and Statistical Mechanics I	4
Writing In the Major (WIM)		
PHYSICS 191	Scientific Communication in Physics [3]	
Physics Track		
Select one of the tracks defined below and complete six courses for the selected track. Physics, math and practicum elective course options for each track are listed here.		24
Physics Elective Options		
Any Physics (PHYSICS) or Applied Physics (APPPHYS) course of 3 or more units, numbered 100 and above not including PHYSICS 190, 198, 199, 201, 205, 240, 241, 290, 291, 293, 294, and APPPHYS 100, APPPHYS 290, APPPHYS 291, APPPHYS 390, or any APPPHYS course numbered 400 or higher)		
Math Elective Options		
Any Math (MATH) course 101 and above (not 197), 3 units or more. Or any of the following		
PHYSICS 112	Mathematical Methods for Physics	
CS 109	Introduction to Probability for Computer Scientists	
STATS 116	Theory of Probability	
EE 261	The Fourier Transform and Its Applications	
Practicum Course Options		
PHYSICS 100	Introduction to Observational Astrophysics	
PHYSICS 104	Electronics and Introduction to Experimental Methods	
PHYSICS 105	Intermediate Physics Laboratory I: Analog Electronics (Course not offered this year)	
PHYSICS 106	Experimental Methods in Quantum Physics	
PHYSICS 107	Intermediate Physics Laboratory II: Experimental Techniques and Data Analysis (Course not offered this year)	
PHYSICS 108	Advanced Physics Laboratory: Project (Course not offered this year)	
PHYSICS 113	Computational Physics	
PHYSICS 166	Statistical Methods in Experimental Physics	
Total Units		77-84

[1] Although not generally recommended, students with sufficient lab preparation who do not take all three required introductory lab courses may substitute an extra advanced lab course (PHYSICS 100, 104, 105, 106, 107, or 108) for all three required introductory labs. Note that in this case, taking any of the introductory labs does not in any way reduce the requirement of taking an extra advanced lab. In general, only an extra advanced lab, not any other courses, may substitute for the intro labs. A student must apply to make this substitution using the usual course substitution form.

[2] In years when MATH 173 Theory of Partial Differential Equations is not offered, MATH 220 Partial Differential Equations of Applied Mathematics is a recommended alternative.

[3] PHYSICS 107 Intermediate Physics Laboratory II: Experimental Techniques and Data Analysis qualifies for WIM if taken in 2019-20 or earlier.

Tracks

In addition to the courses listed above (required for all tracks), Physics majors must complete six additional courses as defined for one of the following tracks. A course taken to satisfy the general requirements above cannot also count for a track requirement. Any course taken to satisfy a track requirement must be at least 3 units. Tracks are not declarable in Axess; they do not appear on the transcript nor on the diploma.

A letter grade of 'C-' or higher is required for all courses in each Physics track; therefore, any course in another department that does not offer a letter grade cannot count towards the requirement for a Physics track, even if the course is listed as an option for a track.

Click on the name of the track to see detailed requirements:

Core Track

Recommended starting point for students considering applying to Ph.D. programs in physics; see below for further advice (p. 1922).

		Units
Required		
PHYSICS 110	Advanced Mechanics	3-4
PHYSICS 131	Quantum Mechanics II	4
PHYSICS 171	Thermodynamics, Kinetic Theory, and Statistical Mechanics II	4
Complete one practicum course		
Complete one Physics elective		
Complete one additional physics or math elective course		

Astrophysics

		Units
PHYSICS 100	Introduction to Observational Astrophysics	4
PHYSICS 110	Advanced Mechanics	3-4
PHYSICS 160	Introduction to Stellar and Galactic Astrophysics	3
PHYSICS 161	Introduction to Cosmology and Extragalactic Astrophysics	3
or PHYSICS 262	General Relativity	
PHYSICS 171	Thermodynamics, Kinetic Theory, and Statistical Mechanics II	4
Complete one course from:		3
PHYSICS 113	Computational Physics	
PHYSICS 166	Statistical Methods in Experimental Physics	
PHYSICS 262	General Relativity	

PHYSICS 160 and PHYSICS 161 are jointly taught to undergraduates and graduate students (PHYSICS 260 and PHYSICS 261 are for graduate students). Undergraduates must register for 160/161 not 260/261.

Biophysics

It is recommended that Physics majors interested in pursuing a career in biophysics consider a minor in Biology.

		Units
PHYSICS 110	Advanced Mechanics	3-4
or PHYSICS 131	Quantum Mechanics II	
PHYSICS 171	Thermodynamics, Kinetic Theory, and Statistical Mechanics II	4
Complete one course from:		
One Practicum Course		
APPPHYS 232	Advanced Imaging Lab in Biophysics	4
Complete three courses from:		
APPPHYS 205	Introduction to Biophysics	3-4
or BIO 126	Introduction to Biophysics	
APPPHYS 237	Quantitative Evolutionary Dynamics and Genomics	3

or BIO 251	Quantitative Evolutionary Dynamics and Genomics	
APPPHYS 293	Theoretical Neuroscience	3
or PSYCH 242	Theoretical Neuroscience	
APPPHYS 294	Cellular Biophysics	3
or BIO 294	Cellular Biophysics	
BIOE 42	Physical Biology	4
BIOE 101	Systems Biology	3
BIOE 102	Physical Biology of Macromolecules	4

Computational Physics and Data Science

		Units
PHYSICS 110	Advanced Mechanics	3-4
PHYSICS 113	Computational Physics	4
One Physics Elective Course		
Complete three courses from:		
PHYSICS 166	Statistical Methods in Experimental Physics	3
or STATS 116	Theory of Probability	
or CS 109	Introduction to Probability for Computer Scientists	
CS 129	Applied Machine Learning	3-4
CS 154	Introduction to the Theory of Computation	3-4
CS 161	Design and Analysis of Algorithms	3-5
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	3
CS 221	Artificial Intelligence: Principles and Techniques	3-4
CS 229	Machine Learning	3-4
CS 230	Deep Learning	3-4
STATS 200	Introduction to Statistical Inference	4
STATS 203	Introduction to Regression Models and Analysis of Variance	3
or STATS 270	A Course in Bayesian Statistics	
or STATS 271	Applied Bayesian Statistics	

Geophysics

		Units
PHYSICS 110	Advanced Mechanics	3-4
PHYSICS 131	Quantum Mechanics II	4
or PHYSICS 171	Thermodynamics, Kinetic Theory, and Statistical Mechanics II	
One Practicum Course		
Complete three courses from:		
GEOPHYS 110	Introduction to the Foundations of Contemporary Geophysics	3
GEOPHYS 120	Ice, Water, Fire	3-5
GEOPHYS 128	MODELING EARTH	3-4
GEOPHYS 130	Introductory Seismology	3
GEOPHYS 162		3-4
GEOPHYS 165	Ice Penetrating Radar	1-3
GEOPHYS 182	Reflection Seismology	3
GEOPHYS 184	Journey to the Center of the Earth	3
GEOPHYS 188	Basic Earth Imaging	2-3
GEOPHYS 227	Global Seismology	3
GEOPHYS 237	Evolution of Terrestrial Planets	3

Mathematical Physics

		Units
PHYSICS 110	Advanced Mechanics	3-4
One Practicum Course		
Two Math Elective Courses		
Two Physics or Math Elective Courses		

Physics Education

		Units
PHYSICS 110	Advanced Mechanics	3-4
PHYSICS 131	Quantum Mechanics II	4
or PHYSICS 171	Thermodynamics, Kinetic Theory, and Statistical Mechanics II	
One Practicum Course		
Complete three courses from:		
PHYSICS 295	Learning & Teaching of Science ((Recommended))	3
or EDUC 280	Learning & Teaching of Science	
EDUC 101	Introduction to Teaching and Learning	4
EDUC 398	Core Mechanics for Learning	3
EDUC 400A	Introduction to Statistical Methods in Education	3-4
EDUC 266	Educational Neuroscience	3
EDUC 332	Theory and Practice of Environmental Education	3
EDUC 357	Science and Environmental Education in Informal Contexts	3-4
EDUC 218	Topics in Cognition and Learning: Technology and Multitasking	3
EDUC 328	Topics in Learning and Technology: Core Mechanics for Learning	3
EDUC 391	Engineering Education and Online Learning	3

Quantum Science and Information

		Units
PHYSICS 131	Quantum Mechanics II	4
PHYSICS 134	Advanced Topics in Quantum Mechanics	3-4
PHYSICS 110	Advanced Mechanics	3-4
or PHYSICS 171	Thermodynamics, Kinetic Theory, and Statistical Mechanics II	
One Practicum Course		
Complete two courses from:		
APPPHYS 225	Probability and Quantum Mechanics	3
APPPHYS 228	Quantum Hardware	4
CS 154	Introduction to the Theory of Computation	3-4
CS 259Q/269Q	Quantum Computing	3
EE 276	Information Theory	3
or STATS 376A	Information Theory	

Individually Designed Track

In rare cases, a student may propose a new track. The proposed courses must have a theme (rather than being a disconnected set of courses), and they should either include physics content, benefit from a physics perspective, deepen the student's understanding of physics, or allow students to apply their physics knowledge more broadly. The proposal should be as specific as possible and include detailed rationale for the track. The proposed track must not be largely redundant with an existing track or major. The proposal should address feasibility

issues such as whether the proposed courses are offered with sufficient frequency.

Other Information

Senior Thesis

The department offers Physics majors the opportunity to complete a senior thesis. These are the guidelines:

1. Students must submit a Senior Thesis Application form once they identify a physics project, either theoretical or experimental, in consultation with individual faculty members. Proposal forms are available from the undergraduate coordinator and must be submitted by the week prior to the Thanksgiving break of the academic year in which the student plans to graduate.
2. Credit for the project is assigned by the adviser within the framework of PHYSICS 205 Senior Thesis Research. A minimum of 3 units of PHYSICS 205 Senior Thesis Research must be completed for a letter grade during the senior year. Work completed in the senior thesis program may not be used as a substitute for regular required courses for the Physics major.
3. A written report and a presentation of the work at its completion are required for the senior thesis. By mid-May, the senior thesis candidate is required to present the project at the department's Senior Thesis Presentation Program. This event is publicized and open to the general public. The expectation is that the student's adviser, second reader, and all other senior thesis candidates attend.

Honors Program

Physics majors are granted a Bachelor of Science in Physics with Honors if they satisfy these three requirements beyond the general Physics major requirements:

1. The student files for entry into the honors program by completing an Honors Program Application (available from the undergraduate coordinator) by the same deadline as the Senior Thesis Application. Eligibility is confirmed by the department.
2. The student completes a senior thesis by meeting the deadlines and requirements described above.
3. The student completes course work with an overall GPA of 3.30 or higher, and a GPA of 3.50 or higher in courses required for the Physics major.

Additional Information

Suggestions for students interested in pursuing a Ph.D. program in Physics or closely related fields

Research in physics is roughly divided into fields that include astrophysics, atomic, molecular and optical (AMO) physics, biophysics, condensed matter physics, and particle physics. Physics research at Stanford includes computational, experimental, observational, and theoretical work in these fields. It can be useful to consult with faculty in each of the research areas that you might be interested in pursuing in graduate school since recommendations for preparation often vary by field. See the Physics Research Areas webpage (https://physics.stanford.edu/research/research-areas/) to get started.

The above requirements are the minimum for the Physics major; they are intended to provide a foundation in math and physics that prepares students for the very wide range of careers pursued by Physics majors. However, if a student is considering pursuing a Ph.D. program in Physics, the department recommends that they complete more than the required Math and Physics courses in a track. In particular, they should take PHYSICS 110, 131, 134, and 171, which are necessary elements of undergraduate Physics in preparation for Ph.D. programs.

The department also recommends acquiring laboratory experience, e.g., courses such as PHYSICS 100, 104, 105, 106, 107, or 108, or research experience in an experimental laboratory. It also recommends completing additional Physics and Math courses based on the student's interests and the advice of faculty in their field(s) of interest. In addition, they should pursue research in physics, e.g., through the Undergraduate Summer Research program (https://physics.stanford.edu/academics/undergraduate-students/undergraduate-summer-research/) in the Physics department, or through research opportunities outside Stanford (https://physics.stanford.edu/academics/undergraduate-students/summer-research/research-opportunities-outside-stanford/).

The department strongly recommend that students consult with their Physics major advisor (and faculty in any research area in which they are interested) for recommendations on courses and research or internship opportunities, and attend the faculty-led group advising meetings held near the end of Autumn Quarter on applying for summer research, and in the Autumn and Spring quarters on thinking about advanced degrees.

Minor in Physics

The Physics minor allows the student to select a concentration in Physics or Astronomy. The Astronomy concentration has a technical and non-technical option.

How to Declare the Minor in Physics

The minor declaration deadline is three quarters before graduation, typically the beginning of Autumn Quarter if the student is graduating at the end of Spring Quarter.

Physics Concentration

Degree Requirements

All courses for the minor must be taken at Stanford University for a letter grade, and a grade of 'C-' or better must be received for all units applied toward the minor except as noted in the following paragraph.

Students who take the PHYSICS 20, 40, or 60 series at Stanford in support of their major may count those units towards the minor. Those who have fulfilled Physics requirements at the 20 or 40 level by enrollment at another accredited university, or through advanced placement credits, may count credits towards PHYSICS 21, PHYSICS 23, and PHYSICS 24, or PHYSICS 41/PHYSICS 42 and PHYSICS 43/PHYSICS 44.

PHYSICS 25/PHYSICS 26, or PHYSICS 45 /PHYSICS 46 for a minor in Physics or the technical minor concentration in Astronomy, must be taken at Stanford even if similar material has been covered elsewhere.

Course Requirements

		Units
An undergraduate minor in Physics requires a minimum of 25 units with the following course work:		
Select one of the following Series:		16-19
Series A (19 units)		
PHYSICS 41 & PHYSICS 42	Mechanics and Classical Mechanics Laboratory	
PHYSICS 43 & PHYSICS 44	Electricity and Magnetism and Electricity and Magnetism Lab [1]	
PHYSICS 45 & PHYSICS 46	Light and Heat and Light and Heat Laboratory	
PHYSICS 70	Foundations of Modern Physics	
Series B (16 units)		
PHYSICS 61 & PHYSICS 62	Mechanics and Special Relativity and Mechanics Laboratory	

PHYSICS 65 & PHYSICS 67	Quantum and Thermal Physics and Introduction to Laboratory Physics	
PHYSICS 63 & PHYSICS 64	Electricity, Magnetism, and Waves and Electricity, Magnetism and Waves Laboratory	
At least three PHYSICS courses numbered 100 or above from the following courses: PHYSICS 100, 105, 107, 108, 110, 111, 112, 113, 120, 121, 130, 131, 134, 152, 160, 161, 166, 170, 171, 172, 182, 199, 211, 212, 216, 220, 230, 231, 262.		9-12
Total Units		25-31

[1] PHYSICS 67 Introduction to Laboratory Physics may be substituted for PHYSICS 44 Electricity and Magnetism Lab.

Minor in Physics with Concentration in Astronomy

Students wishing to pursue advanced work in astrophysical sciences should major in Physics (p. 1919) and concentrate in astrophysics. However, students outside of Physics with a general interest in astronomy may organize their studies by completing one of the following Physics minor concentration programs.

Students who take the 20, 40, or 60 series at Stanford in support of their major may count those units towards the minor.

An undergraduate Physics minor with a concentration in Astronomy requires the following courses:

Non-Technical

For students whose majors do not require the PHYSICS 40 or 60 series:

		Units
PHYSICS 21	Mechanics, Fluids, and Heat	4
PHYSICS 23	Electricity, Magnetism, and Optics	4
PHYSICS 25 & PHYSICS 26	Modern Physics and Modern Physics Laboratory	5
PHYSICS 50	Astronomy Laboratory and Observational Astronomy	3-4
or PHYSICS 100	Introduction to Observational Astrophysics	
Select two of the following:		6
PHYSICS 15	Stars and Planets in a Habitable Universe	
PHYSICS 16	The Origin and Development of the Cosmos	
PHYSICS 17	Black Holes and Extreme Astrophysics	
Total Units		22-23

Technical

For students whose majors require the PHYSICS 40 or 60 series:

		Units
Select one of the following Series:		14-17
Series A		
PHYSICS 41	Mechanics	
PHYSICS 43	Electricity and Magnetism	
PHYSICS 45 & PHYSICS 46	Light and Heat and Light and Heat Laboratory	
PHYSICS 70	Foundations of Modern Physics	
Series B		
PHYSICS 61	Mechanics and Special Relativity	
PHYSICS 63	Electricity, Magnetism, and Waves	
PHYSICS 65	Quantum and Thermal Physics	
PHYSICS 67	Introduction to Laboratory Physics	
And take the following three courses:		
PHYSICS 100	Introduction to Observational Astrophysics	4
PHYSICS 160	Introduction to Stellar and Galactic Astrophysics	3
PHYSICS 161	Introduction to Cosmology and Extragalactic Astrophysics	3
Total Units		24-27

Students are also encouraged to take the electricity and magnetism/optics lab of the appropriate PHYSICS series , PHYSICS 24 , PHYSICS 44 or PHYSICS 64 for 1 additional unit.

Master of Science

The department does not offer a coterminal degree program, or a separate program for the M.S. degree, but this degree may be awarded for a portion of the Ph.D. degree work.

University requirements for the master's degree, discussed in the "Graduate Degrees (p. 65)" section of this bulletin, include completion of 45 units of unduplicated course work after the bachelor's degree. Course taken to fulfill the degree requirements below must be taken for a letter grade. Among the department requirements are a grade point average (GPA) of at least 3.0 (B) for the following required courses (or their equivalents):

		Units
PHYSICS 212	Statistical Mechanics	3
PHYSICS 220	Classical Electrodynamics	3
Plus one of the following courses:		
PHYSICS 230	Graduate Quantum Mechanics I	3
PHYSICS 231	Graduate Quantum Mechanics II	3
PHYSICS 234	Advanced Topics in Quantum Mechanics	3
PHYSICS 330	Quantum Field Theory I	3
PHYSICS 331	Quantum Field Theory II	3
PHYSICS 332	Quantum Field Theory III	3
Plus two 3 unit graduate level courses in Physics or Applied Physics.		6

Up to 6 of these required units may be waived on petition if a thesis is submitted.

Doctor of Philosophy in Physics

The University's basic requirements for the Ph.D. are discussed in the "Graduate Degrees (p. 65)" section of this bulletin.

The minimum department requirements for the Ph.D. degree in Physics consist of completing all courses listed below and at least one course from each of two subject areas outside the student's primary area of research (among biophysics, condensed matter, quantum optics and atomic physics, astrophysics and gravitation, and nuclear and particle physics). For this requirement students must choose from courses numbered above PHYSICS 234, excluding 290 and 294. All courses taken to fulfill the Physics Ph.D. degree requirements must be taken for a letter grade, except for PHYSICS 290 and PHYSICS 294 which are only offered for Satisfactory/No Credit.

The requirements in the following list may be fulfilled by passing the course at Stanford or passing an equivalent course elsewhere:

		Units
PHYSICS 212	Statistical Mechanics	3
PHYSICS 220	Classical Electrodynamics	3
PHYSICS 290	Research Activities at Stanford	1
PHYSICS 294	Teaching of Physics Seminar	1

Plus one of the following courses:

PHYSICS 230	Graduate Quantum Mechanics I	3
PHYSICS 231	Graduate Quantum Mechanics II	3
PHYSICS 234	Advanced Topics in Quantum Mechanics	3
PHYSICS 330	Quantum Field Theory I	3
PHYSICS 331	Quantum Field Theory II	3
PHYSICS 332	Quantum Field Theory III	3

A grade point average (GPA) of at least 3.0 (B) is required for courses taken toward the degree.

All Ph.D. candidates must have math proficiency equivalent to the following Stanford MATH courses:

		Units
MATH 106	Functions of a Complex Variable	3
MATH 113	Linear Algebra and Matrix Theory	3
MATH 116	Complex Analysis	3
PHYSICS 111	Partial Differential Equations of Mathematical Physics	4
PHYSICS 112	Mathematical Methods for Physics	4

Prior to making an application for candidacy, each student is required to pass a comprehensive oral qualifying examination. A thesis proposal must be submitted during the third year. In order to assess the direction and progress toward a thesis, an oral report and evaluation are required during the fourth year. After completion of the dissertation, each student must take the University oral examination (defense of dissertation).

Three quarters of teaching (including a demonstrated ability to teach) are a requirement for obtaining the Ph.D. in Physics.

Students interested in applied physics and biophysics research should also take note of the Ph.D. granted independently by the Department of Applied Physics and by the Biophysics Program. Students interested in astronomy, astrophysics, or space science should also consult the "Astronomy Course Program (p. 1083)" section of this bulletin.

Ph.D. Minor in Physics

Doctoral students seeking a minor in Physics must take at least six courses from the following list: 210, 211, 212, 216, 220, 230, 231, and 234 among the 20 required units. Courses must be taken for a letter grade. All prospective minors must obtain approval of their Physics course program from the Physics Graduate Study Committee at least one year before conferral of the Ph.D.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of Physics counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Course Requirements

Students who take PHYSICS 61 and PHYSICS 63 in Autumn and Winter quarters may take either PHYSICS 65 in Summer 2021 or EE 65 in Spring 2021 to complete the requirement of an introductory physics sequence for the Physics major.

For all undergraduates who entered Stanford in Autumn 2019, the requirement to take PHYSICS 44 or PHYSICS 67 for the Physics major is waived as these courses were not offered in Spring 2020. This does not change the other introductory lab requirements.

Graduate Degree Requirements

Grading

The Department of Physics counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B' or better level.

Other Graduate Policies

The Department of Physics will conduct doctoral candidacy reviews as scheduled in Spring Quarter 2020-21.

Qualifying exams will continue to be administered in Spring Quarter 2020-21. Students may request an extension by writing to the Director of Graduate Studies.

Graduate Advising Expectations

The Department of Physics is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Emeriti: (Professors) Sebastian Doniach, Alexander L. Fetter, William A. Little, Douglas D. Osheroff, H. Alan Schwettman, Robert V. Wagoner, John Dirk Walecka, Stanley G. Wojcicki, Mason R. Yearian; (Professors, Research) John A. Lipa, Todd I. Smith, John P. Turneaure; (Professor, Courtesy) Peter A. Sturrock (Applied Physics), Richard Taylor (SLAC National Accelerator Laboratory)

Chair: Shamit Kachru

Director of Undergraduate Studies: Peter Graham

Director of Graduate Studies: Sean Hartnoll

Professors: Tom Abel, Steven Allen, Roger Blandford, Phil Bucksbaum, Patricia Burchat, Blas Cabrera, Steven Chu, Sarah Church, Persis Drell, Savas G. Dimopoulos, David Goldhaber-Gordon, Giorgio Gratta, Patrick Hayden, Kent Irwin, Shamit Kachru, Steven Kahn, Renata E. Kallosh, Aharon Kapitulnik, Mark Kasevich, Steven A. Kivelson, Chao-Lin Kuo, Robert B. Laughlin, Andrei D. Linde, Bruce Macintosh, Kathryn Moler, Peter F. Michelson, Vahe Petrosian, Xiao-liang Qi, Roger W. Romani, Zhi-Xun Shen, Stephen Shenker, Eva Silverstein, Leonard Susskind, Risa Wechsler, Carl Wieman

Associate Professors: Peter Graham, Sean Hartnoll, Benjamin Lev, Hari Manoharan, Srinivas Raghu, Monika Schleier-Smith, Leonardo Senatore, Douglas Stanford (untenured)

Assistant Professors: Benjamin Feldman, Jason Hogan, Vedika Khemani, Lauren Tompkins

Professors (Research): Leo Hollberg, Phillip H. Scherrer

Courtesy Professors: Daniel Akerib, Rhiju Das, Craig Levin, Stephen Quake, Thomas Shutt, Richard N. Zare

Lecturers: Julien Devin, Chaya Nanavati, Rick Pam

Adjunct Professor: Adam Brown, Ralph DeVoe, Steve Yellin

Courses

PHYSICS 14N. Quantum Information: Visions and Emerging Technologies. 3 Units.
What sets quantum information apart from its classical counterpart is that it can be encoded non-locally, woven into correlations among multiple qubits in a phenomenon known as entanglement. We will discuss paradigms for harnessing entanglement to solve hitherto intractable computational problems or to push the precision of sensors to their fundamental quantum mechanical limits. We will also examine challenges that physicists and engineers are tackling in the laboratory today to enable the quantum technologies of the future.

PHYSICS 15. Stars and Planets in a Habitable Universe. 3 Units.
Is the Earth unique in our galaxy? Students learn how stars and our galaxy have evolved and how this produces planets and the conditions suitable for life. Discussion of the motion of the night sky and how telescopes collect and analyze light. The life-cycle of stars from birth to death, and the end products of that life cycle -- from dense stellar corpses to supernova explosions. Course covers recent discoveries of extrasolar planets -- those orbiting stars beyond our sun -- and the ultimate quest for other Earths. Intended to be accessible to non-science majors, material is explored quantitatively with problem sets using basic algebra and numerical estimates. Sky observing exercise and observatory field trips supplement the classroom work.

PHYSICS 16. The Origin and Development of the Cosmos. 3 Units.
How did the present Universe come to be? The last few decades have seen remarkable progress in understanding this age-old question. Course will cover the history of the Universe from its earliest moments to the present day, and the physical laws that govern its evolution. The early Universe including inflation and the creation of matter and the elements. Recent discoveries in our understanding of the makeup of the cosmos, including dark matter and dark energy. Evolution of galaxies, clusters, and quasars, and the Universe as a whole. Implications of dark matter and dark energy for the future evolution of the cosmos. Intended to be accessible to non-science majors, material is explored quantitatively with problem sets using basic algebra and numerical estimates.

PHYSICS 17. Black Holes and Extreme Astrophysics. 3 Units.
Black holes represent an extreme frontier of astrophysics. Course will explore the most fundamental and universal force -- gravity -- and how it controls the fate of astrophysical objects, leading in some cases to black holes. How we discover and determine the properties of black holes and their environment. How black holes and their event horizons are used to guide thinking about mysterious phenomena such as Hawking radiation, wormholes, and quantum entanglement. How black holes generate gravitational waves and powerful jets of particles and radiation. Other extreme objects such as pulsars. Relevant physics, including relativity, is introduced and treated at the algebraic level. No prior physics or calculus is required, although some deep thinking about space, time, and matter is important in working through assigned problems.

PHYSICS 18N. Frontiers in Theoretical Physics and Cosmology. 3 Units.
Preference to freshmen. The course will begin with a description of the current standard models of gravitation, cosmology, and elementary particle physics. We will then focus on frontiers of current understanding including investigations of very early universe cosmology, string theory, and the physics of black holes.

PHYSICS 19. How Things Work: An Introduction to Physics. 3 Units.
Introduction to the principles of physics through familiar objects and phenomena, including airplanes, cameras, computers, engines, refrigerators, lightning, radio, microwave ovens, and fluorescent lights. Estimates of real quantities from simple calculations. Prerequisite: high school algebra and trigonometry.

PHYSICS 21. Mechanics, Fluids, and Heat. 4 Units.
How are the motions of objects and the behavior of fluids and gases determined by the laws of physics? Students learn to describe the motion of objects (kinematics) and understand why objects move as they do (dynamics). Emphasis on how Newton's three laws of motion are applied to solids, liquids, and gases to describe diverse phenomena. Understanding many-particle systems requires connecting macroscopic properties (e.g., temperature and pressure) to microscopic dynamics (collisions of particles). Laws of thermodynamics provide understanding of real-world phenomena such as energy conversion. Everyday examples are analyzed using tools of algebra and trigonometry. Problem-solving skills are developed, including verifying that derived results satisfy criteria for correctness, such as dimensional consistency and expected behavior in limiting cases. Physical understanding fostered by peer interaction and interactive group problem solving. Prerequisite: high school algebra and trigonometry; calculus not required. Autumn 2020-21: Class will be taught remote synchronously in active learning format with much of the learning in smaller breakout rooms that will not be recorded. Please enroll in a section that you can attend regularly.

PHYSICS 21S. Mechanics and Heat. 5 Units.
How are the motions of objects and the behavior of fluids and gases determined by the laws of physics? Students learn to describe the motion of objects (kinematics) and understand why objects move as they do (dynamics). Emphasis on how Newton's three laws of motion are applied to solids, liquids, and gases to describe phenomena as diverse as spinning gymnasts, blood flow, and sound waves. Understanding many-particle systems requires connecting macroscopic properties (e.g., temperature and pressure) to microscopic dynamics (collisions of particles). Laws of thermodynamics provide understanding of real-world phenomena such as energy conversion and performance limits of heat engines. Everyday examples are analyzed using tools of algebra and trigonometry. Problem-solving skills are developed, including verifying that derived results satisfy criteria for correctness, such as dimensional consistency and expected behavior in limiting cases. Physical understanding fostered by peer interaction and demonstrations in lecture, and interactive group problem solving in discussion sections. Prerequisite: high school algebra and trigonometry; calculus not required.

PHYSICS 22. Mechanics, Fluids, and Heat Laboratory. 1 Unit.
Guided hands-on exploration of concepts in classical mechanics, fluids, and thermodynamics with an emphasis on student predictions, observations and explanations. Pre- or corequisite: PHYSICS 21.nnIn this unusual pandemic year we have planned remote lab activity for you. These labs are a mix of online labs as well as hands-on exercises you can do at home, in a dorm or wherever you may be. The class will be structured with an online Zoom section, where you and others in your section will meet with a TA and go over your results, and do some group exercises. You can do the online materials with a virtual lab partner, we encourage you to get the benefit of someone to collaborate on your analysis and observations.nnWe will be sending every enrolled student a kit of hands-on lab materials, you will get more details the first week of class.

PHYSICS 23. Electricity, Magnetism, and Optics. 4 Units.
How are electric and magnetic fields generated by static and moving charges, and what are their applications? How is light related to electromagnetic waves? Students learn to represent and analyze electric and magnetic fields to understand electric circuits, motors, and generators. The wave nature of light is used to explain interference, diffraction, and polarization phenomena. Geometric optics is employed to understand how lenses and mirrors form images. These descriptions are combined to understand the workings and limitations of optical systems such as the eye, corrective vision, cameras, telescopes, and microscopes. Discussions based on the language of algebra and trigonometry. Physical understanding fostered by peer interaction and demonstrations in lecture, and interactive group problem solving in discussion sections. Prerequisite: PHYSICS 21 or PHYSICS 21S.

PHYSICS 23S. Electricity and Optics. 5 Units.
How are electric and magnetic fields generated by static and moving charges, and what are their applications? How is light related to electromagnetic waves? Students learn to represent and analyze electric and magnetic fields to understand electric circuits, motors, and generators. The wave nature of light is used to explain interference, diffraction, and polarization phenomena. Geometric optics is employed to understand how lenses and mirrors form images. These descriptions are combined to understand the workings and limitations of optical systems such as the eye, corrective vision, cameras, telescopes, and microscopes. Discussions based on the language of algebra and trigonometry. Physical understanding fostered by peer interaction and demonstrations in lecture, and interactive group problem solving in discussion sections. Prerequisite: PHYSICS 21 or PHYSICS 21S.

PHYSICS 24. Electricity, Magnetism, and Optics Laboratory. 1 Unit.
Guided hands-on exploration of concepts in electricity and magnetism, circuits and optics with an emphasis on student predictions, observations and explanations. Introduction to multimeters and oscilloscopes. Pre- or corequisite: PHYS 23.

PHYSICS 25. Modern Physics. 4 Units.
How do the discoveries since the dawn of the 20th century impact our understanding of 21st-century physics? This course introduces the foundations of modern physics: Einstein's theory of special relativity and quantum mechanics. Combining the language of physics with tools from algebra and trigonometry, students gain insights into how the universe works on both the smallest and largest scales. Topics may include atomic, molecular, and laser physics; semiconductors; elementary particles and the fundamental forces; nuclear physics (fission, fusion, and radioactivity); astrophysics and cosmology (the contents and evolution of the universe). Emphasis on applications of modern physics in everyday life, progress made in our understanding of the universe, and open questions that are the subject of active research. Physical understanding fostered by peer interaction and demonstrations in lecture, and interactive group problem solving in discussion sections. Prerequisite: PHYSICS 23 or PHYSICS 23S.

PHYSICS 26. Modern Physics Laboratory. 1 Unit.
Guided hands-on and simulation-based exploration of concepts in modern physics, including special relativity, quantum mechanics and nuclear physics with an emphasis on student predictions, observations and explanations. Pre- or corequisite: PHYSICS 25.

PHYSICS 40. Vector and Mathematical Analysis for Mechanics. 2 Units.
Physics 40 teaches fundamental math and physics concepts that are important for success in Physics 41+ and engineering statics/dynamics. This class has a strong emphasis on physics problem solving schema and vector and mathematical analysis for geometry, forces, and motion. Students master both geometric and algebraic representations of vectors, resolving vectors into components, vector addition/subtraction, dot-products, cross-products, and derivatives. Through systematic practice, students translate between various representations, e.g. sketches, descriptions of a physical system, equations, graphs, and real systems (from various physics and engineering disciplines). Vector equations are used to generate scalar equations, which are then solved using analytical or easy-to-use online tools. Physics 40 is an on-ramp to Physics 41 for students with little high school physics. The minimum corequisite is Math 20 (or equivalent). A permission number is required to enroll. Contact mitiguy@stanford.edu.

PHYSICS 41. Mechanics. 4 Units.
How are motions of objects in the physical world determined by laws of physics? Students learn to describe the motion of objects (kinematics) and then understand why motions have the form they do (dynamics). Emphasis on how the important physical principles in mechanics, such as conservation of momentum and energy for translational and rotational motion, follow from just three laws of nature: Newton's laws of motion. Distinction made between fundamental laws of nature and empirical rules that are useful approximations for more complex physics. Problems drawn from examples of mechanics in everyday life. Skills developed in verifying that derived results satisfy criteria for correctness, such as dimensional consistency and expected behavior in limiting cases. Discussions based on language of mathematics, particularly vector representations and operations, and calculus. Physical understanding fostered by peer interaction and demonstrations in lecture, and discussion sections based on interactive group problem solving. In order to register for this class all FROSH must complete the Physics Placement Diagnostic at https://physics.stanford.edu/academics/undergraduate-students/placement-diagnostic. Students who complete the Physics Placement Diagnostic by 3 PM (Pacific) on Friday will have their hold lifted over the weekend. Minimum prerequisites: High school physics and MATH 20 (or high school calculus if sufficiently rigorous). Minimum co-requisite: MATH 21 or equivalent. Since high school math classes vary widely, it is recommended that you take at least one math class at Stanford before or concurrently with taking Physics 41. In addition, it is recommended that you take Math 51 or CME 100 before taking the next course in the Physics 40 series, Physics 43.

PHYSICS 41E. Mechanics, Concepts, Calculations, and Context. 5 Units.
Physics 41E (Physics 41 Extended) is an 5-unit version of Physics 41 (4 units) for students with little or no high school physics or calculus. Course topics and mathematical complexity are identical to Physics 41, but the extra classroom time allows students to engage with concepts, develop problem solving skills, and become fluent in mathematical tools that include vector representations and operations, and calculus. The course will use problems drawn from everyday life to explore important physical principles in mechanics, such as Newton's Laws of motion, equations of kinematics, and conservation of energy and momentum. Prerequisite: Math 19 or equivalent; Co-requisite: Math 20 or equivalent. In order to register for this class students must EITHER have already taken an introductory Physics class (20, 40, or 60 sequence) or have taken the Physics Placement Diagnostic at https://physics.stanford.edu/academics/undergraduate-students/placement-diagnostic. Enrollment is via permission number which can be obtained by filling in the application at https://stanforduniversity.qualtrics.com/jfe/form/SV_2fNzeSIjoYtKiln.

PHYSICS 42. Classical Mechanics Laboratory. 1 Unit.
Hands-on exploration of concepts in classical mechanics: Newton's laws, conservation laws, rotational motion. Introduction to laboratory techniques, experimental equipment and data analysis. Pre- or corequisite: PHYSICS 41nnIn this unusual pandemic year we have planned remote lab activity for you. These labs are a mix of online labs as well as hands-on exercises you can do at home, in a dorm or wherever you may be. The class will be structured with an online Zoom section, where you and others in your section will meet with a TA and go over your results, and do some group exercises. You can do the online materials with a virtual lab partner, we encourage you to get the benefit of someone to collaborate on your analysis and observations.nnWe will be sending every enrolled student a kit of hands-on lab materials, you will get more details the first week of class.

PHYSICS 43. Electricity and Magnetism. 4 Units.
What is electricity? What is magnetism? How are they related? How do these phenomena manifest themselves in the physical world? The theory of electricity and magnetism, as codified by Maxwell's equations, underlies much of the observable universe. Students develop both conceptual and quantitative knowledge of this theory. Topics include: electrostatics; magnetostatics; simple AC and DC circuits involving capacitors, inductors, and resistors; integral form of Maxwell's equations; electromagnetic waves. Principles illustrated in the context of modern technologies. Broader scientific questions addressed include: How do physical theories evolve? What is the interplay between basic physical theories and associated technologies? Discussions based on the language of mathematics, particularly differential and integral calculus, and vectors. Physical understanding fostered by peer interaction and demonstrations in lecture, and discussion sections based on interactive group problem solving. Prerequisite: PHYSICS 41 or equivalent. MATH 21 or MATH 51 or CME 100 or equivalent. Recommended corequisite: MATH 52 or CME 102.

PHYSICS 43A. Electricity and Magnetism: Concepts, Calculations and Context. 1 Unit.
Additional assistance and applications for Physics 43. In-class problems in physics and engineering. Exercises in calculations of electric and magnetic forces and field to reinforce concepts and techniques; Calculations involving inductors, transformers, AC circuits, motors and generators. Highly recommended for students with limited or no high school physics or calculus. Corequisite: PHYSICS 43-34 or PHYSICS 43-35; Prerequisite: application at https://stanforduniversity.qualtrics.com/jfe/form/SV_da1PUm1scvnQ5IV .

PHYSICS 43N. Understanding Electromagnetic Phenomena. 1 Unit.
Preference to freshmen. Expands on the material presented in PHYSICS 43; applications of concepts in electricity and magnetism to everyday phenomena and to topics in current physics research. Corequisite: PHYSICS 43 or advanced placement.

PHYSICS 44. Electricity and Magnetism Lab. 1 Unit.
Hands-on exploration of concepts in electricity, magnetism, and circuits. Introduction to multimeters, function generators, oscilloscopes, and graphing techniques. Pre- or corequisite: PHYSICS 43.

PHYSICS 45. Light and Heat. 4 Units.
What is temperature? How do the elementary processes of mechanics, which are intrinsically reversible, result in phenomena that are clearly irreversible when applied to a very large number of particles, the ultimate example being life? In thermodynamics, students discover that the approach of classical mechanics is not sufficient to deal with the extremely large number of particles present in a macroscopic amount of gas. The paradigm of thermodynamics leads to a deeper understanding of real-world phenomena such as energy conversion and the performance limits of thermal engines. In optics, students see how a geometrical approach allows the design of optical systems based on reflection and refraction, while the wave nature of light leads to interference phenomena. The two approaches come together in understanding the diffraction limit of microscopes and telescopes. Discussions based on the language of mathematics, particularly calculus. Physical understanding fostered by peer interaction and demonstrations in lecture, and discussion sections based on interactive group problem solving. In order to register for this class students must EITHER have already taken an introductory Physics class (20, 40, or 60 sequence) or have taken the Physics Placement Diagnostic at https://physics.stanford.edu/academics/undergraduate-students/placement-diagnostic. Prerequisite: PHYSICS 41 or equivalent. MATH 21 or MATH 51 or CME 100 or equivalent.

PHYSICS 45N. Topics in Light and Heat. 1 Unit.
Preference to freshmen. Explores the quantum and classical properties of light from stars, lasers and other sources. Includes modern applications ranging from gravity wave interferometers to x-ray lasers.

PHYSICS 46. Light and Heat Laboratory. 1 Unit.
Hands-on exploration of concepts in geometrical optics, wave optics and thermodynamics. Pre- or corequisite: PHYSICS 45.nnIn this unusual pandemic year we have planned remote lab activity for you. These labs are a mix of online labs as well as hands-on exercises you can do at home, in a dorm or wherever you may be. The class will be structured with an online Zoom section, where you and others in your section will meet with a TA and go over your results, and do some group exercises. You can do the online materials with a virtual lab partner, we encourage you to get the benefit of someone to collaborate on your analysis and observations.nnWe will be sending every enrolled student a kit of hands-on lab materials, you will get more details the first week of class.

PHYSICS 50. Astronomy Laboratory and Observational Astronomy. 3 Units.
Introduction to observational astronomy emphasizing the use of optical telescopes. Observations of stars, nebulae, and galaxies in laboratory sessions with telescopes at the Stanford Student Observatory. Meets at the observatory one evening per week from dusk until well after dark, in addition to day-time lectures each week. No previous physics required. Limited enrollment.

PHYSICS 59. Frontiers of Physics Research. 1 Unit.
Recommended for prospective Physics or Engineering Physics majors or anyone with an interest in learning about the big questions and unknowns that physicists tackle in their research at Stanford. Weekly faculty presentations, in some cases followed by tours of experimental laboratories where the research is conducted.

PHYSICS 61. Mechanics and Special Relativity. 4 Units.
(First in a three-part advanced freshman physics series: PHYSICS 61, PHYSICS 63, PHYSICS 65.) This course covers Einstein's special theory of relativity and Newtonian mechanics at a level appropriate for students with a strong high school mathematics and physics background, who are contemplating a major in Physics or Engineering Physics, or are interested in a rigorous treatment of physics. Postulates of special relativity, simultaneity, time dilation, length contraction, the Lorentz transformation, causality, and relativistic mechanics. Central forces, contact forces, linear restoring forces. Momentum transport, work, energy, collisions. Angular momentum, torque, moment of inertia in three dimensions. Damped and forced harmonic oscillators. Uses the language of vectors and multivariable calculus. In order to register for this class students must EITHER have already taken an introductory Physics class (20, 40, or 60 sequence) or have taken the Physics Placement Diagnostic at https://physics.stanford.edu/academics/undergraduate-students/placement-diagnostic. Recommended prerequisites: Mastery of mechanics at the level of AP Physics C and AP Calculus BC or equivalent. Corequisite: MATH 51 or MATH 61CM or MATH 61DM.

PHYSICS 62. Mechanics Laboratory. 1 Unit.
Introduction to laboratory techniques, experiment design, data collection and analysis simulations, and correlating observations with theory. Labs emphasize discovery with open-ended questions and hands-on exploration of concepts developed in PHYSICS 61 including Newton's laws, conservation laws, rotational motion. Pre-or corequisite PHYSICS 61nnIn this unusual pandemic year we have planned remote lab activity for you. These labs are a mix of online labs as well as hands-on exercises you can do at home, in a dorm or wherever you may be. The class will be structured with an online Zoom section, where you and others in your section will meet with a TA and go over your results, and do some group exercises. You can do the online materials with a virtual lab partner, we encourage you to get the benefit of someone to collaborate on your analysis and observations.nnWe will be sending every enrolled student a kit of hands-on lab materials, you will get more details the first week of class.

PHYSICS 63. Electricity, Magnetism, and Waves. 4 Units.
(Second in a three-part advanced freshman physics series: PHYSICS 61, PHYSICS 63, PHYSICS 65.) This course covers the foundations of electricity and magnetism for students with a strong high school mathematics and physics background, who are contemplating a major in Physics or Engineering Physics, or are interested in a rigorous treatment of physics. Electricity, magnetism, and waves with some description of optics. Electrostatics and Gauss' law. Electric potential, electric field, conductors, image charges. Electric currents, DC circuits. Moving charges, magnetic field, Ampere's law. Solenoids, transformers, induction, AC circuits, resonance. Relativistic point of view for moving charges. Displacement current, Maxwell's equations. Electromagnetic waves, dielectrics. Diffraction, interference, refraction, reflection, polarization. Prerequisite: PHYSICS 61 and MATH 51 or MATH 61CM. Pre- or corequisite: MATH 52 or MATH 62CM.

PHYSICS 64. Electricity, Magnetism and Waves Laboratory. 1 Unit.
Introduction to multimeters, breadboards, function generators and oscilloscopes. Emphasis on student-developed design of experimental procedure and data analysis for topics covered in PHYSICS 63: electricity, magnetism, circuits, and optics. Pre- or corequisite: PHYSICS 63.

PHYSICS 65. Quantum and Thermal Physics. 4 Units.
(Third in a three-part advanced freshman physics series: PHYSICS 61, PHYSICS 63, PHYSICS 65.) This course introduces the foundations of quantum and thermodynamics for students with a strong high school mathematics and physics background, who are contemplating a major in Physics or Engineering Physics, or are interested in a rigorous treatment of physics. Topics related to quantum mechanics include: atoms, electrons, nuclei. Experimental evidence for physics that is not explained by classical mechanics and E&M. Quantization of light, Planck's constant. Photoelectric effect, Compton and Bragg scattering. Bohr model, atomic spectra. Matter waves, wave packets, interference. Fourier analysis and transforms, Heisenberg uncertainty relationships. Particle-in-a-box, simple harmonic oscillator, barrier penetration, tunneling. Topics related to thermodynamics: limitations of classical mechanics in describing systems with a very large number of particles. Ideal gas, equipartition, heat capacity, definition of temperature, entropy. Brief introduction to kinetic theory and statistical mechanics. Maxwell speed distribution, ideal gas in a box. Laws of thermodynamics. Cycles, heat engines, free energy.nPrerequisites: PHYSICS 61 & PHYSICS 63.

PHYSICS 67. Introduction to Laboratory Physics. 1 Unit.
Methods of experimental design, data collection and analysis, statistics, curve fitting and model validation used in experimental science. Study of common data analysis techniques drawn via example measurements from electronics, optics, heat, and modern physics. Lecture format only for AY2020/2021. Required for PHYSICS 60 series Physics and Engineering Physics majors; recommended for PHYSICS 40 series students who intend to major in Physics or Engineering Physics. Pre- or corequisite: PHYSICS 65 or PHYSICS 43.

PHYSICS 70. Foundations of Modern Physics. 4 Units.
Required for Physics or Engineering Physics majors who completed the PHYSICS 40 series. Introduction to special relativity: reference frames, Michelson-Morley experiment. Postulates of relativity, simultaneity, time dilation. Length contraction, the Lorentz transformation, causality. Doppler effect. Relativistic mechanics and mass, energy, momentum relations. Introduction to quantum physics: atoms, electrons, nuclei. Quantization of light, Planck constant. Photoelectric effect, Compton and Bragg scattering. Bohr model, atomic spectra. Matter waves, wave packets, interference. Fourier analysis and transforms, Heisenberg uncertainty relationships. Schrödinger equation, eigenfunctions and eigenvalues. Particle-in-a-box, simple harmonic oscillator, barrier penetration, tunneling, WKB and approximate solutions. Time-dependent and multi-dimensional solution concepts. Coulomb potential and hydrogen atom structure. Prerequisites: PHYSICS 41, PHYSICS 43. Pre or corequisite: PHYSICS 45. Recommended: prior or concurrent registration in MATH 53.

PHYSICS 81N. Science on the Back of the Envelope. 3 Units.
Understanding the complex world around us quantitatively, using order of magnitude estimates and dimensional analysis. Starting from a handful of fundamental constants of Nature, one can estimate complex quantities such as cosmological length and time scales, size of the atom, height of Mount Everest, speed of tsunami, energy density of fuels and climate effects. Through these examples students learn the art of deductive thinking, fundamental principles of science and the beautiful unity of nature.

PHYSICS 83N. Physics in the 21st Century. 3 Units.
Preference to freshmen. This course provides an in-depth examination of frontiers of physics research, including fundamental physics, cosmology, and physics of the future. Questions such as: What is the universe made of? What is the nature of space, time, and matter? What can we learn about the history of the universe and what does it tell us about its future? A large part of 20th century was defined by revolutions in physics ¿ everyday applications of electromagnetism, relativity, and quantum mechanics. What other revolutions can physics bring to human civilization in the 21st century? What is quantum computing? What can physics say about consciousness? What does it take to visit other parts of the solar system, or even other stars? nnWe will also learn to convey these complex topics in engaging and diverse terms to the general public through writing and reading assignments, oral presentations, and multimedia projects. No prior knowledge of physics is necessary; all voices are welcome to contribute to the discussion about these big ideas. Learning Goals: By the end of the quarter you will be able to explain the major questions that drive physics research to your friends and peers. You will understand how scientists study the impossibly small and impossibly large and be able to convey this knowledge in clear and concise terms.

PHYSICS 91SI. Practical Computing for Scientists. 2 Units.
Essential computing skills for researchers in the natural sciences. Helping students transition their computing skills from a classroom to a research environment. Topics include the Unix operating system, the Python programming language, and essential tools for data analysis, simulation, and optimization. More advanced topics as time allows. Prerequisite: CS106A or equivalent.

PHYSICS 93SI. Beyond the Laboratory: Physics, Identity, and Society. 1-2 Unit.
Beyond its laws and laboratories, what can physics teach us about society and ourselves? How do physicists¿ identities impact the types of scientific questions that are asked throughout history? And who do we call a physicist? This course seeks to address questions such as these, with an eye to understanding how physics relates to history, politics, and our own identities as young researchers. Students will develop a broader appreciation for where physics comes from, how it relates to themselves, and how they can shape its future. No prior knowledge of physics is necessary; all voices are welcome to contribute to the discussion about these big ideas. As an optional addendum to 93SI, students can participate in POISE (Physics Outreach through Inclusive Science Education), an intensive spring break program in which the themes discussed during the course will be explored in more depth. During POISE, students will develop short workshops for high school students that are geared towards making Physics interesting and accessible. In addition, we will take frequent off-campus trips to Bay Area national labs, museums, companies, the beach, camping sites, and more! Our intention is to create a retreat-style experience in which students can learn more about themselves and each other as Physicists, and put their knowledge to good use in the classroom. Those wishing to participate in the spring break component should apply here, https://goo.gl/forms/KAOA0aCjD7QxxVbW2, and expect to be enrolled in 2 units. Those who are interested in only the course component should apply here, https://goo.gl/forms/xlrsDP0V2ESkMnbS2, and expect to be enrolled in 1 unit.

PHYSICS 94SI. Diverse Perspectives in Physics. 1 Unit.
Have you ever wondered what it is like to be a professor, or what you could do with physics beyond academia? Do you want to hear about the life stories of people with diverse backgrounds who have studied or are studying physics? Professors and industry researchers possessing a diverse set of identities and backgrounds will share their journey in physics and their career trajectories, emphasizing their personal lives and experiences as undergraduates and graduate students. A Q&A session will follow. A free meal will be provided each session!.

PHYSICS 95Q. The Philosophies of Three Great Physicists. 3 Units.
Richard Feynman has famously said, Philosophy of science is about as useful to scientists as ornithology is to birds. A closer look at key moments in the history of physics, however, reveals a different picture. Contrary to the misconception that philosophy has nothing to offer to science in general, and physics in particular, watershed moments in the development of physics were inspired and motivated by deeply held philosophical principles. Similarly, important developments in physics have generated important and difficult philosophical questions. In this sophomore seminar we will explore three significant moments in the development of physics surrounding the works of Newton, Einstein, and Bohr. We will analyze the relationship between the prevailing philosophical views they espoused and the physics they produced. How did Newton come to the view of absolute and fixed space and time? What led Einstein to reject the notion of a fixed space and time and propose a relativistic, and even dynamic space-time? What is Bohr's influential doctrine of complementary, and why did several generations of physicists believe it to be an adequate philosophical response to quantum mechanics? We will see that the relationship between philosophy and physics is more similar to the relationship between mathematics and physics where progress in one area is often preceded and followed by progress in the second.

PHYSICS 96N. Harmony and the Universe. 3 Units.
Harmony is a multifaceted concept that has profoundly connects music, mathematics, physics, philosophy, physiology, and psychology. We will explore the evolution of our understanding of harmony and its immediate application in the function of musical instruments, and employ it as a nexus to understand its role in revolutionary scientific advances in gravity, relativity, quantum mechanics, and cosmology. In these explorations, we will examine some of the fundamental mathematical tools which provide us our current understanding of harmony. We will also see how the some concepts surrounding harmony are in tension, if not conflict, and how some great thinkers have followed them down down blind alleys and dead ends. The aim of the course is to show the enormous consequences of harmony in the evolution of our understanding of the universe, and how science itself progresses in fits, starts, and setbacks as old ideas intermingle with new developments. We will also see how objective/quantitative aspects of harmony interact with subjective/qualitative considerations, and how cultural perspectives and prejudices can affect the progression of science.

PHYSICS 100. Introduction to Observational Astrophysics. 4 Units.
Designed for undergraduate physics majors but open to all students with a calculus-based physics background and some laboratory and coding experience. Students make and analyze observations using the telescopes at the Stanford Student Observatory. Topics covered include navigating the night sky, the physics of stars and galaxies, telescope instrumentation and operation, imaging and spectroscopic techniques, quantitative error analysis, and effective scientific communication. The course concludes with an independent project where student teams propose and execute an observational astronomy project of their choosing, using techniques learned in class to gather and analyze their data, and presenting their findings in the forms of professional-style oral presentations and research papers. Enrollment by permission. To get a permission number please complete form: http://web.stanford.edu/~elva/physics100prelim.fb If you have not heard from us by the beginning of class, please come to the first class session.

PHYSICS 104. Electronics and Introduction to Experimental Methods. 4 Units.
Introductory laboratory electronics, intended for Physics and Engineering Physics majors but open to all students with science or engineering interests in analog circuits, instrumentation and signal processing. The first part of the course is focused on hands-on exercises that build skills needed for measurements, including input/output impedance concepts, filters, amplifiers, sensors, and fundamentals of noise in physical systems. Lab exercises include DC circuits, RC and diode circuits, applications of operational amplifiers, optoelectronics, synchronous detection, and noise in measurements. The second portion of the class is an instrumentation design project, where essential instrumentation for a practical lab measurement is designed, constructed and applied for an experiment. Example measurements can include temperature measurement in a cryostat, resistivity measurement of a superconducting material, measurement of the 2-D position of an optical beam, development of a high impedance ion probe and clamp for neuroscience, or other projects of personal interest. The course focuses on practical techniques and insight from the lab exercises, with a goal to prepare undergraduates for laboratory research. No formal electronics experience is required beyond exposure to concepts from introductory Physics or Engineering courses (Ohm's law, charge conservation, physics of capacitors and inductors, etc.). Recommended prerequisite: Physics 43 and 44 or Physics 63 and 64, or Engineering 40A or 40M.

PHYSICS 105. Intermediate Physics Laboratory I: Analog Electronics. 4 Units.
Introductory laboratory electronics, designed for Physics and Engineering Physics majors but open to all students with science or engineering interests in analog circuits, instrumentation and signal processing. The course is focused on laboratory exercises that build skills needed for measurements, including sensors, amplification and filtering, and fundamentals of noise in physical systems. The hands-on lab exercises include DC circuits, RC and diode circuits, applications of operational amplifiers, non-linear circuits and optoelectronics. The class exercises build towards a lock-in amplifier contest where each lab section designs and builds a synchronous detection system to measure a weak optical signal, with opportunities to understand the limits of the design, build improvements and compare results with the other lab sections. The course focuses on practical techniques and insight from the lab exercises, with a goal to prepare undergraduates for laboratory research. No formal electronics experience is required beyond exposure to concepts from introductory Physics or Engineering courses (Ohm's law, charge conservation, physics of capacitors and inductors, etc.). Recommended prerequisite: Physics 43 or 63, or Engineering 40A or 40M.

PHYSICS 106. Experimental Methods in Quantum Physics. 4 Units.
Experimental physics lab course aimed at providing an understanding of and appreciation for experimental methods in physics, including the capabilities and limitations, both fundamental and technical. Students perform experiments that use optics, lasers, and electronics to measure fundamental constants of nature, perform measurements at the atomic level, and analyze results. Goals include developing an understanding of measurement precision and accuracy through concepts of spectral-analysis of coherent signals combined with noise. We explore the fundamental limits to measurement set by thermal noise at finite temperature, as well as optical shot-noise in photo-detection that sets the ¿standard quantum limit¿ in detecting light. Spectroscopy of light emitted from atoms reveals the quantum nature of atomic energy levels, and when combined with theoretical models provides information on atomic structure and fundamental constants of nature (e.g. the fine structure constant (¿¿) that characterizes the strength of all electro-magnetic interactions, and the ratio of the electron mass to the proton mass, me/mp. Experiments may include laser spectroscopy to determine the interatomic potential, effective spring constant, and binding energy of a diatomic molecule, or measure the speed of light. This course will provide hands-on experience with semiconductor diode lasers, basic optics, propagation and detection of optical beams, and related electronics and laboratory instrumentation.nFor lab notebooks the class uses an integrated online environment for data analysis, curve fitting, (system is based on Jupyter notebooks, Python, and document preparation). Prerequisites: PHYSICS 40 series and PHYSICS 70, or 60 series, PHYSICS 120, PHYSICS 130; some familiarity with basic electronics is helpful but not required. Very basic programming in Python is needed, but background with Matlab, Origin, or similar software should be sufficient to come up to speed for the data analysis.

PHYSICS 107. Intermediate Physics Laboratory II: Experimental Techniques and Data Analysis. 4 Units.
Experiments on lasers, Gaussian optics, and atom-light interaction, with emphasis on data and error analysis techniques. Students describe a subset of experiments in scientific paper format. Prerequisites: completion of PHYSICS 40 or PHYSICS 60 series, and PHYSICS 70 and PHYSICS 105. Recommended pre- or corequisites: PHYSICS 120 and 130. WIM.

PHYSICS 108. Advanced Physics Laboratory: Project. 5 Units.
Have you ever wanted to dream up a research question, then design, execute, and analyze an experiment to address it, together with a small group of your fellow students? This is an accelerated, guided experimental research experience, resembling real frontier research. Phenomena that have been studied include magnetization of ferromagnets, quantum hall effect in graphene, interference in superconducting circuits, loss in nanomechanical resonators, and superfluidity in helium. But most projects pursued (drawn from condensed matter and recently also particle physics) have never been done in the class before. Our equipment and apparatus for Physics 108 are very flexible, not standardized like in most other lab classes. We provide substantial resources to help your team. Often, with instructors' help, students obtain unique samples from Stanford research groups. Prerequisite: PHYSICS 105, or other experience in electronics. Suggested but less critical: Physics 130 (many phenomena you might study build on quantum mechanics) and Physics 107 (experience with data analysis and useful measurement tools: lock-in amplifier, spectrum analyzer.) We recommend taking this class in junior year if possible, as it can inform post-graduation decisions and can empower the professor to write a powerful letter of recommendation.

PHYSICS 110. Advanced Mechanics. 3-4 Units.
Lagrangian and Hamiltonian mechanics. Principle of least action, Euler-Lagrange equations. Small oscillations and beyond. Symmetries, canonical transformations, Hamilton-Jacobi theory, action-angle variables. Introduction to classical field theory. Selected other topics, including nonlinear dynamical systems, attractors, chaotic motion. Undergraduates register for Physics 110 (4 units). Graduates register for Physics 210 (3 units). Prerequisites: MATH 131P or PHYSICS 111, and PHYSICS 112 or MATH elective 104 or higher. Recommended prerequisite: PHYSICS 130.
Same as: PHYSICS 210

PHYSICS 111. Partial Differential Equations of Mathematical Physics. 4 Units.
This course is intended to introduce students to the basic techniques for solving partial differential equations that commonly occur in classical mechanics, electromagnetism, and quantum mechanics. Tools that will be developed include separation of variables, Fourier series and transforms, and Sturm-Liouville theory. Examples (including the heat equation, Laplace equation, and wave equation) will be drawn from different areas of physics. Through examples, students will gain a familiarity with some of the famous special functions arising in mathematical physics. Prerequisite: MATH 53 or 63. Completing PHYSICS 40 or 60 sequences helpful.

PHYSICS 112. Mathematical Methods for Physics. 4 Units.
The course will focus on nonlinear dynamics and chaos and its applications in physics and other areas of science. Topics will include first-order differential equations and bifurcations, phase plane analysis, limit cycles, chaos, iterated maps, period doubling, fractals, and strange attractors. Applications will be drawn from traditional areas of physics as well as fields like systems biology, evolutionary game theory, and sociophysics. This course can be repeated for credit. Prerequisites: MATH 53 or equivalent.

PHYSICS 113. Computational Physics. 4 Units.
Numerical methods for solving problems in mechanics, astrophysics, electromagnetism, quantum mechanics, and statistical mechanics. Methods include numerical integration; solutions of ordinary and partial differential equations; solutions of the diffusion equation, Laplace's equation and Poisson's equation with various methods; statistical methods including Monte Carlo techniques; matrix methods and eigenvalue problems. Short introduction to Python, which is used for class examples and active learning notebooks; independent class projects make up more than half of the grade and may be programmed in any language such as C, Python or Matlab. No Prerequisites but some previous programming experience is advisable.

PHYSICS 120. Intermediate Electricity and Magnetism I. 4 Units.
Vector analysis. Electrostatic fields, including boundary-value problems and multipole expansion. Dielectrics, static and variable magnetic fields, magnetic materials. Maxwell's equations. Prerequisites: PHYSICS 43 or PHYS 63; MATH 52 and MATH 53. Pre- or corequisite: PHYS 111, MATH 131P or MATH 173. Recommended corequisite: PHYS 112.

PHYSICS 121. Intermediate Electricity and Magnetism II. 4 Units.
Conservation laws and electromagnetic waves, Poynting's theorem, tensor formulation, potentials and fields. Plane wave problems (free space, conductors and dielectric materials, boundaries). Dipole and quadruple radiation. Special relativity and transformation between electric and magnetic fields. Prerequisites: PHYS 120 and PHYS 111 or MATH 131P or MATH 173; Recommended: PHYS 112.

PHYSICS 130. Quantum Mechanics I. 4 Units.
The origins of quantum mechanics and wave mechanics. Schrödinger equation and solutions for one-dimensional systems. Commutation relations. Generalized uncertainty principle. Time-energy uncertainty principle. Separation of variables and solutions for three-dimensional systems; application to hydrogen atom. Spherically symmetric potentials and angular momentum eigenstates. Spin angular momentum. Addition of angular momentum. Prerequisites: PHYSICS 65 or PHYSICS 70 and PHYSICS 111 or MATH 131P or MATH 173. MATH 173 can be taken concurrently. Pre- or corequisites: PHYSICS 120.

PHYSICS 131. Quantum Mechanics II. 4 Units.
Identical particles; Fermi and Bose statistics. Time-independent perturbation theory. Fine structure, the Zeeman effect and hyperfine splitting in the hydrogen atom. Time-dependent perturbation theory. Variational principle and WKB approximation. Prerequisite: PHYSICS 120, PHYSICS 130, PHYSICS 111 or MATH 131P, or MATH 173. Pre- or corequisite: PHYSICS 121.

PHYSICS 134. Advanced Topics in Quantum Mechanics. 3-4 Units.
Scattering theory, partial wave expansion, Born approximation. Additional topics may include nature of quantum measurement, EPR paradox, Bell's inequality, and topics in quantum information science; path integrals and applications; Berry's phase; structure of multi-electron atoms (Hartree-Fock); relativistic quantum mechanics (Dirac equation). Undergraduates register for PHYSICS 134 (4 units). Graduate students register for PHYSICS 234 (3 units). Prerequisite: PHYSICS 131.
Same as: PHYSICS 234

PHYSICS 152. Introduction to Particle Physics I. 3 Units.
Elementary particles and the fundamental forces. Quarks and leptons. The mediators of the electromagnetic, weak and strong interactions. Interaction of particles with matter; particle acceleration, and detection techniques. Symmetries and conservation laws. Bound states. Decay rates. Cross sections. Feynman diagrams. Introduction to Feynman integrals. The Dirac equation. Feynman rules for quantum electrodynamics and for chromodynamics. Undergraduates register for PHYSICS 152. Graduate students register for PHYSICS 252. (Graduate students will be required to complete additional assignments in a format determined by the instructor.) Prerequisite: PHYSICS 130. Pre- or corequisite: PHYSICS 131.
Same as: PHYSICS 252

PHYSICS 153. Introduction to String Theory, Quantum Gravity, and Black Holes. 4 Units.
This course will begin with a basic introduction to the physics and mathematics of string theory and its relation to gravity. Following that we will study the quantum mechanics of black holes, and how string theory has impacted our understanding of these extreme gravitational objects. Prerequisites: 130 and 131.

PHYSICS 155. Accelerators and Beams: Tools of Discovery and Innovation. 3 Units.
Particle accelerators range in scale from sub-mm structures created using lithography on a silicon chip to the 27-km Large Hadron Collider in Switzerland based on superconducting magnets. Some accelerators generate beams that are only nanometers in size while others are used to make the brightest x-ray beams in the world. Accelerators are used for medicine, security, and industry as well as discovery science. A recent study shows that nearly 30% of the Nobel Prizes in Physics had a direct contribution from accelerators. This course will cover the fundamentals of particle beam acceleration and control. Topics will include radio-frequency acceleration, alternate gradient focusing, and collective effects where electromagnetic fields from the particle beam act back on the beam or on adjacent beams. Some experimental studies of beam physics may be performed at the SLAC National Accelerator Laboratory. Prerequisites: Special relativity at the level of Physics 61 or 70, or equivalent. Physics 120 and 121, or EE 142 and 242; Physics 121/EE 142 can be taken concurrently with class.

PHYSICS 160. Introduction to Stellar and Galactic Astrophysics. 3 Units.
Radiative processes. Observed characteristics of stars and the Milky Way galaxy. Physical processes in stars and matter under extreme conditions. Structure and evolution of stars from birth to death. White dwarfs, planetary nebulae, supernovae, neutron stars, pulsars, binary stars, x-ray stars, and black holes. Galactic structure, interstellar medium, molecular clouds, HI and HII regions, star formation, and element abundances. Undergraduates register for PHYSICS 160. Graduate students register for PHYSICS 260. Pre-requisite: Physics 120 or permission of instructor. Recommended: Some familiarity with plotting and basic numerical calculations.
Same as: PHYSICS 260

PHYSICS 161. Introduction to Cosmology and Extragalactic Astrophysics. 3 Units.
What do we know about the physical origins, content, and evolution of the Universe -- and how do we know it? Students learn how cosmological distances and times, and the geometry and expansion of space, are described and measured. Composition of the Universe. Origin of matter and the elements. Observational evidence for dark matter and dark energy. Thermal history of the Universe, from inflation to the present. Emergence of large-scale structure from quantum perturbations in the early Universe. Astrophysical tools used to learn about the Universe. Big open questions in cosmology. Undergraduates register for Physics 161. Graduates register for Physics 261. (Graduate students will be required to complete additional assignments in a format determined by the instructor.) Prerequisite: PHYSICS 121 or equivalent.
Same as: PHYSICS 261

PHYSICS 166. Statistical Methods in Experimental Physics. 3 Units.
Statistical methods constitute a fundamental tool for the analysis and interpretation of experimental physics data. In this course, students will learn the foundations of statistical data analysis methods and how to apply them to the analysis of experimental data. Problem sets will include data-sets from real experiments and require the use of programming tools to extract physics results. Topics include probability and statistics, experimental uncertainties, parameter estimation, confidence limits, and hypothesis testing. Students will be required to complete a final project.
Same as: PHYSICS 266

PHYSICS 170. Thermodynamics, Kinetic Theory, and Statistical Mechanics I. 4 Units.
Basic probability and statistics for random processes such as random walks. The derivation of laws of thermodynamics from basic postulates; the determination of the relationship between atomic substructure and macroscopic behavior of matter. Temperature; equations of state, heat, internal energy, equipartition; entropy, Gibbs paradox; equilibrium and reversibility; heat engines; applications to various properties of matter; absolute zero and low-temperature phenomena. Distribution functions, fluctuations, the partition function for classical and quantum systems, irreversible processes. Pre- or corequisite: PHYSICS 130.

PHYSICS 171. Thermodynamics, Kinetic Theory, and Statistical Mechanics II. 4 Units.
Mean-field theory of phase transitions; critical exponents. Ferromagnetism, the Ising model. The renormalization group. Dynamics near equilibrium: Brownian motion, diffusion, Boltzmann equations. Other topics at discretion of instructor. Prerequisite: PHYSICS 170. Recommended pre- or corequisite: PHYSICS 130.

PHYSICS 172. Solid State Physics. 3 Units.
Introduction to the properties of solids. Crystal structures and bonding in materials. Momentum-space analysis and diffraction probes. Lattice dynamics, phonon theory and measurements, thermal properties. Electronic structure theory, classical and quantum; free, nearly-free, and tight-binding limits. Electron dynamics and basic transport properties; quantum oscillations. Properties and applications of semiconductors. Reduced-dimensional systems. Undergraduates should register for PHYSICS 172 and graduate students for APPPHYS 272. Prerequisites: PHYSICS 170 and PHYSICS 171, or equivalents.
Same as: APPPHYS 272

PHYSICS 182. Quantum Gases. 3 Units.
Introduction to the physics of quantum gases and their use in quantum simulation and computation. Topics in modern atomic physics and quantum optics will be covered, including laser cooling and trapping, ultracold collisions, optical lattices, ion traps, cavity QED, quantum phase transitions in quantum gases and lattices, BEC and quantum degenerate Fermi gases, 1D and 2D quantum gases, dipolar gases, and quantum nonequilibrium dynamics and phase transitions. Prerequisites: undergraduate quantum and statistical mechanics courses. Applied Physics 203 strongly recommended but not required.
Same as: APPPHYS 282, PHYSICS 282

PHYSICS 190. Independent Research and Study. 1-9 Unit.
Undergraduate research in experimental or theoretical physics under the supervision of a faculty member. Prerequisites: superior work as an undergraduate Physics major and consent of instructor.

PHYSICS 191. Scientific Communication in Physics. 3 Units.
Development and practice of effective scientific communication in physics, including scientific publications, research proposals, science writing for a general audience, and effective communication of data. The course will involve extensive writing, reviewing, and revision, including responding effectively to critiques. Satisfies the WIM requirement for Physics and Engineering Physics majors. Intended for juniors and seniors. Prerequisites: two years of college level physics (e.g., completion of Physics 121).

PHYSICS 198. Learning Assistant Training Seminar. 1 Unit.
Training seminar for undergraduate students selected for the Learning Assistant (LA) program. In this seminar LAs learn and practice pedagogical techniques they will apply in an active learning classroom. LAs practice instruction strategies in a collaborative small group setting, with regular reflection and feedback. In addition, LAs learn mentoring practices to help fellow undergraduates develop academic skills. The seminar meets 90 minutes weekly with additional readings and reflection outside of class.

PHYSICS 199. The Physics of Energy and Climate Change. 3 Units.
Topics include measurements of temperature and sea level changes in the climate record of the Earth, satellite atmospheric spectroscopy, satellite gravity geodesy measurements of changes in water aquifers and glaciers, and ocean changes. The difference between weather fluctuations changes and climate change, climate models and their uncertainties in the context of physical, chemical and biological feedback mechanisms to changes in greenhouse gases and solar insolation will be discussed. Energy efficiency, transmission and distribution of electricity, energy storage, and the physics of harnessing fossil, wind, solar, geothermal, fission and fusion will be covered, along with prospects of future technological developments in energy use and production. Prerequisite: Physics 40 or Physics 60 series.
Same as: PHYSICS 201

PHYSICS 201. The Physics of Energy and Climate Change. 3 Units.
Topics include measurements of temperature and sea level changes in the climate record of the Earth, satellite atmospheric spectroscopy, satellite gravity geodesy measurements of changes in water aquifers and glaciers, and ocean changes. The difference between weather fluctuations changes and climate change, climate models and their uncertainties in the context of physical, chemical and biological feedback mechanisms to changes in greenhouse gases and solar insolation will be discussed. Energy efficiency, transmission and distribution of electricity, energy storage, and the physics of harnessing fossil, wind, solar, geothermal, fission and fusion will be covered, along with prospects of future technological developments in energy use and production. Prerequisite: Physics 40 or Physics 60 series.
Same as: PHYSICS 199

PHYSICS 205. Senior Thesis Research. 1-12 Unit.
Long-term experimental or theoretical project and thesis in Physics under supervision of a faculty member. Planning of the thesis project is recommended to begin as early as middle of the junior year. Successful completion of a senior thesis requires a minimum of 3 units for a letter grade completed during the senior year, along with the other formal thesis and physics major requirements. Students doing research for credit prior to senior year should sign up for Physics 190. Prerequisites: superior work as an undergraduate Physics major and approval of the thesis application.

PHYSICS 210. Advanced Mechanics. 3-4 Units.
Lagrangian and Hamiltonian mechanics. Principle of least action, Euler-Lagrange equations. Small oscillations and beyond. Symmetries, canonical transformations, Hamilton-Jacobi theory, action-angle variables. Introduction to classical field theory. Selected other topics, including nonlinear dynamical systems, attractors, chaotic motion. Undergraduates register for Physics 110 (4 units). Graduates register for Physics 210 (3 units). Prerequisites: MATH 131P or PHYSICS 111, and PHYSICS 112 or MATH elective 104 or higher. Recommended prerequisite: PHYSICS 130.
Same as: PHYSICS 110

PHYSICS 211. Continuum Mechanics. 3 Units.
Elasticity, fluids, turbulence, waves, gas dynamics, shocks, and MHD plasmas. Examples from everyday phenomena, geophysics, and astrophysics.

PHYSICS 212. Statistical Mechanics. 3 Units.
Principles, ensembles, statistical equilibrium. Thermodynamic functions, ideal and near-ideal gases. Fluctuations. Mean-field description of phase-transitions and associated critical exponents. One-dimensional Ising model and other exact solutions. Renormalization and scaling relations. Prerequisites: PHYSICS 131, 171, or equivalents.

PHYSICS 216. Back of the Envelope Physics. 2 Units.
This course will deal with order of magnitude or approximate, low-tech approaches to estimating physical effects in various systems. One goal is to promote a synthesis of understanding of basic physics (including quantum mechanics, electromagnetism, and physics of fluids) through solving various classic problems. A special feature of the class this year will be a new format, where students will develop and present many of the lectures in close consultation with the faculty instructor. This is intended to both enhance learning, and to keep the interactive nature of instruction front and center in a quarter where lectures are delivered over zoom.

PHYSICS 220. Classical Electrodynamics. 3 Units.
Special relativity: The principles of relativity, Lorentz transformations, four vectors and tensors, relativistic mechanics and the principle of least action. Lagrangian formulation, charges in electromagnetic fields, gauge invariance, the electromagnetic field tensor, covariant equations of electrodynamics and mechanics, four-current and continuity equation. Noether's theorem and conservation laws, Poynting's theorem, stress-energy tensor. Constant electromagnetic fields: conductors and dielectrics, magnetic media, electric and magnetic forces, and energy. Electromagnetic waves: Plane and monochromatic waves, spectral resolution, polarization, electromagnetic properties of matter, dispersion relations, wave guides and cavities. Prerequisites: PHYSICS 121 and PHYSICS 210, or equivalent; MATH 106 or MATH 116, and MATH 132 or equivalent.

PHYSICS 223. Stochastic and Nonlinear Dynamics. 3 Units.
Theoretical analysis of dynamical processes: dynamical systems, stochastic processes, and spatiotemporal dynamics. Motivations and applications from biology and physics. Emphasis is on methods including qualitative approaches, asymptotics, and multiple scale analysis. Prerequisites: ordinary and partial differential equations, complex analysis, and probability or statistical physics.
Same as: APPPHYS 223, BIO 223, BIOE 213

PHYSICS 230. Graduate Quantum Mechanics I. 3 Units.
Fundamental concepts. Introduction to Hilbert spaces and Dirac's notation. Postulates applied to simple systems, including those with periodic structure. Symmetry operations and gauge transformation. The path integral formulation of quantum statistical mechanics. Problems related to measurement theory. The quantum theory of angular momenta and central potential problems. Prerequisite: PHYSICS 131 or equivalent.

PHYSICS 231. Graduate Quantum Mechanics II. 3 Units.
Basis for higher level courses on atomic solid state and particle physics. Problems related to measurement theory and introduction to quantum computing. Approximation methods for time-independent and time-dependent perturbations. Semiclassical and quantum theory of radiation, second quantization of radiation and matter fields. Systems of identical particles and many electron atoms and molecules. Prerequisite: PHYSICS 230.

PHYSICS 234. Advanced Topics in Quantum Mechanics. 3-4 Units.
Scattering theory, partial wave expansion, Born approximation. Additional topics may include nature of quantum measurement, EPR paradox, Bell's inequality, and topics in quantum information science; path integrals and applications; Berry's phase; structure of multi-electron atoms (Hartree-Fock); relativistic quantum mechanics (Dirac equation). Undergraduates register for PHYSICS 134 (4 units). Graduate students register for PHYSICS 234 (3 units). Prerequisite: PHYSICS 131.
Same as: PHYSICS 134

PHYSICS 240. Introduction to the Physics of Energy. 3 Units.
Energy as a consumable. Forms and interconvertability. World Joule budget. Equivalents in rivers, oil pipelines and nuclear weapons. Quantum mechanics of fire, batteries and fuel cells. Hydrocarbon and hydrogen synthesis. Fundamental limits to mechanical, electrical and magnetic strengths of materials. Flywheels, capacitors and high pressure tanks. Principles of AC and DC power transmission. Impossibility of pure electricity storage. Surge and peaking. Solar constant. Photovoltaic and thermal solar conversion. Physical limits on agriculture.

PHYSICS 241. Introduction to Nuclear Energy. 3 Units.
Radioactivity. Elementary nuclear processes. Energetics of fission and fusion. Cross-sections and resonances. Fissionable and fertile isotopes. Neutron budgets. Light water, heavy water and graphite reactors. World nuclear energy production. World reserves of uranium and thorium. Plutonium, reprocessing and proliferation. Half lives of fission decay products and actinides made by neutron capture. Nuclear waste. Three Mile Island and Chernobyl. Molten sodium breeders. Generation-IV reactors. Inertial confinement and magnetic fusion. Laser compression. Fast neutron production and fission-fusion hybrids. Prerequisities: Strong undergraduate background in elementary chemistry and physics. PHYSICS 240 and PHYSICS 252 recommended but not required. Interested undergraduates encouraged to enroll, with permission of instructor.

PHYSICS 252. Introduction to Particle Physics I. 3 Units.
Elementary particles and the fundamental forces. Quarks and leptons. The mediators of the electromagnetic, weak and strong interactions. Interaction of particles with matter; particle acceleration, and detection techniques. Symmetries and conservation laws. Bound states. Decay rates. Cross sections. Feynman diagrams. Introduction to Feynman integrals. The Dirac equation. Feynman rules for quantum electrodynamics and for chromodynamics. Undergraduates register for PHYSICS 152. Graduate students register for PHYSICS 252. (Graduate students will be required to complete additional assignments in a format determined by the instructor.) Prerequisite: PHYSICS 130. Pre- or corequisite: PHYSICS 131.
Same as: PHYSICS 152

PHYSICS 260. Introduction to Stellar and Galactic Astrophysics. 3 Units.
Radiative processes. Observed characteristics of stars and the Milky Way galaxy. Physical processes in stars and matter under extreme conditions. Structure and evolution of stars from birth to death. White dwarfs, planetary nebulae, supernovae, neutron stars, pulsars, binary stars, x-ray stars, and black holes. Galactic structure, interstellar medium, molecular clouds, HI and HII regions, star formation, and element abundances. Undergraduates register for PHYSICS 160. Graduate students register for PHYSICS 260. Pre-requisite: Physics 120 or permission of instructor. Recommended: Some familiarity with plotting and basic numerical calculations.
Same as: PHYSICS 160

PHYSICS 261. Introduction to Cosmology and Extragalactic Astrophysics. 3 Units.
What do we know about the physical origins, content, and evolution of the Universe -- and how do we know it? Students learn how cosmological distances and times, and the geometry and expansion of space, are described and measured. Composition of the Universe. Origin of matter and the elements. Observational evidence for dark matter and dark energy. Thermal history of the Universe, from inflation to the present. Emergence of large-scale structure from quantum perturbations in the early Universe. Astrophysical tools used to learn about the Universe. Big open questions in cosmology. Undergraduates register for Physics 161. Graduates register for Physics 261. (Graduate students will be required to complete additional assignments in a format determined by the instructor.) Prerequisite: PHYSICS 121 or equivalent.
Same as: PHYSICS 161

PHYSICS 262. General Relativity. 3 Units.
Einstein's General Theory of Relativity is a basis for modern ideas of fundamental physics, including string theory, as well as for studies of cosmology and astrophysics. The course begins with an overview of special relativity, and the description of gravity as arising from curved space. From Riemannian geometry and the geodesic equations, to curvature, the energy-momentum tensor, and the Einstein field equations. Applications of General Relativity: topics may include experimental tests of General Relativity and the weak-field limit, black holes (Schwarzschild, charged Reissner-Nordstrom, and rotating Kerr black holes), gravitational waves (including detection methods), and an introduction to cosmology (including cosmic microwave background radiation, dark energy, and experimental probes). Prerequisite: PHYSICS 121 or equivalent including special relativity.

PHYSICS 266. Statistical Methods in Experimental Physics. 3 Units.
Statistical methods constitute a fundamental tool for the analysis and interpretation of experimental physics data. In this course, students will learn the foundations of statistical data analysis methods and how to apply them to the analysis of experimental data. Problem sets will include data-sets from real experiments and require the use of programming tools to extract physics results. Topics include probability and statistics, experimental uncertainties, parameter estimation, confidence limits, and hypothesis testing. Students will be required to complete a final project.
Same as: PHYSICS 166

PHYSICS 268. Physics with Neutrinos. 3 Units.
Relativistic fermions, Weyl and Dirac equations, Majorana masses. Electroweak theory, neutrino cross sections, neutrino refraction in matter, MSW effect. Three-flavor oscillations, charge-parity violation, searches for sterile neutrinos, modern long- and short-baseline oscillation experiments. Seesaw mechanism, models of neutrino masses, lepton flavor violation. Neutrinoless double beta decay. Cosmological constraints on neutrino properties. Advanced topics, such as collective oscillations in supernovae or ultrahigh energy neutrinos, offered as optional projects. The material in this course is largely complementary to PHYS 269, focusing on particle physics aspects of neutrinos. Prerequisites: PHYSICS 121, 131 and 171 or equivalent. PHYS 230-231, 269, 152 and 161 or equivalent are helpful, but not required.

PHYSICS 269. Neutrinos in Astrophysics and Cosmology. 3 Units.
Basic neutrino properties. Flavor evolution in vacuum and in matter. Oscillations of atmospheric, reactor and beam neutrinos. Measurements of solar neutrinos; physics of level-crossing and the resolution of the solar neutrino problem. Roles of neutrinos in stellar evolution; bounds from stellar cooling. Neutrinos and stellar collapse; energy transport, collective flavor oscillations, neutrino flavor in turbulent medium. Ultra-high-energy neutrinos. The cosmic neutrino background, its impact on the cosmic microwave background and structure formation; cosmological bounds on the neutrino sector. Prerequisites/corerequisites: PHYSICS 121, 131 and 171 or equivalent. PHYS 230-231, 152 and 161 or equivalent are helpful, but not required. May be repeat for credit.

PHYSICS 275. Electrons in Nanostructures. 3 Units.
The strange behavior of electrons in metals or semiconductors at length scales below 1 micron, smaller than familiar macroscopic objects but larger than atoms. Ballistic transport, Coulomb blockade, localization, quantum mechanical interference, persistent currents, graphene, topological insulators, 1D wires. After a few background lectures, students come to each class session prepared to discuss one or more classic review articles or recent experimental publications.nPrerequisite: undergraduate quantum mechanics and solid state physics preferred; physicists, engineers, chemists welcome.

PHYSICS 282. Quantum Gases. 3 Units.
Introduction to the physics of quantum gases and their use in quantum simulation and computation. Topics in modern atomic physics and quantum optics will be covered, including laser cooling and trapping, ultracold collisions, optical lattices, ion traps, cavity QED, quantum phase transitions in quantum gases and lattices, BEC and quantum degenerate Fermi gases, 1D and 2D quantum gases, dipolar gases, and quantum nonequilibrium dynamics and phase transitions. Prerequisites: undergraduate quantum and statistical mechanics courses. Applied Physics 203 strongly recommended but not required.
Same as: APPPHYS 282, PHYSICS 182

PHYSICS 290. Research Activities at Stanford. 1 Unit.
Required of first-year Physics graduate students; suggested for junior or senior Physics majors for 1 unit. Review of research activities in the department and elsewhere at Stanford at a level suitable for entering graduate students.

PHYSICS 291. Curricular Practical Training. 1-3 Unit.
Curricular practical training for students participating in an internship with a physics-related focus. Meets the requirements for curricular practical training for students on F-1 visas. Prior to the internship, students submit a concise description of the proposed project and work activities. After the internship, students submit a summary of the work completed and skills learned, including a reflection on the professional growth gained as a result of the internship. This course may be repeated for credit. Students are responsible for arranging their own internship/employment and faculty sponsorship. Register under faculty sponsor's section number.

PHYSICS 293. Literature of Physics. 1-15 Unit.
Study of the literature of any special topic. Preparation, presentation of reports. If taken under the supervision of a faculty member outside the department, approval of the Physics chair required. Prerequisites: 25 units of college physics, consent of instructor.

PHYSICS 294. Teaching of Physics Seminar. 1 Unit.
Weekly seminar/discussions on interactive techniques for teaching physics. Practicum which includes class observations, grading and student teaching in current courses. Required of all Teaching Assistants prior to first teaching assignment. Mandatory attendance at weekly in-class sessions during first 5 weeks of the quarter; mandatory successful completion of all practicum activities. Students who do not hold a US Passport must complete the International Teaching/Course Assistant Screening Exam and be cleared to TA before taking the class. Details: https://language.stanford.edu/programs/efs/languages/english-foreign-students/international-teachingcourse-assistant-screening. Enrollment in PHYSICS 294 is by permission.To get a permission number please complete form: https://stanforduniversity.qualtrics.com/jfe/form/SV_7VVM88d1iMTw8Xr. If you have not heard from us by the beginning of class, please come to the first class session.

PHYSICS 295. Learning & Teaching of Science. 3 Units.
This course will provide students with a basic knowledge of the relevant research in cognitive psychology and science education and the ability to apply that knowledge to enhance their ability to learn and teach science, particularly at the undergraduate level. Course will involve readings, discussion, and application of the ideas through creation of learning activities. It is suitable for advanced undergraduates and graduate students with some science background.
Same as: EDUC 280, ENGR 295, MED 270, VPTL 280

PHYSICS 301. Astrophysics Laboratory. 3 Units.
Designed for physics graduate students but open to all graduate students with a calculus-based physics background and some laboratory and coding experience. Students make and analyze observations using the telescopes at the Stanford Student Observatory. Topics covered include navigating the night sky, the physics of stars and galaxies, telescope instrumentation and operation, imaging and spectroscopic techniques, quantitative error analysis, and effective scientific communication. The course concludes with an independent project where student teams propose and execute an observational astronomy project of their choosing, using techniques learned in class to gather and analyze their data, and presenting their findings in the forms of professional-style oral presentations and research papers. Enrollment by permission. To get a permission number please complete form: http://web.stanford.edu/~elva/physics301prelim.fbn If you have not heard from us by the beginning of class, please come to the first class session.

PHYSICS 312. Basic Plasma Physics. 3 Units.
For the nonspecialist who needs a working knowledge of plasma physics for space science, astrophysics, fusion, or laser applications. Topics: orbit theory, the Boltzmann equation, fluid equations, magneto hydrodynamics (MHD) waves and instabilities, electromagnetic (EM) waves, the Vlasov theory of electrostatic (ES) waves and instabilities including Landau damping and quasilinear theory, the Fokker-Planck equation, and relaxation processes. Advanced topics in resistive instabilities and particle acceleration. Prerequisite: PHYSICS 220, or consent of instructor.

PHYSICS 321. Laser Spectroscopy. 3 Units.
Theoretical concepts and experimental techniques. Absorption, dispersion, Kramers-Kronig relations, line-shapes. Classical and laser linear spectroscopy. Semiclassical theory of laser atom interaction: time-dependent perturbation theory, density matrix, optical Bloch equations, coherent pulse propagation, multiphoton transitions. High-resolution nonlinear laser spectroscopy: saturation spectroscopy, polarization spectroscopy, two-photon and multiphoton spectroscopy, optical Ramsey spectroscopy. Phase conjugation. Four-wave mixing, harmonic generation. Coherent Raman spectroscopy, quantum beats, ultra-sensitive detection. Prerequisite: PHYSICS 230. Recommended: PHYSICS 231.

PHYSICS 330. Quantum Field Theory I. 3 Units.
Lorentz Invariance. S-Matrix. Quantization of scalar and Dirac fields. Feynman diagrams. Quantum electrodynamics. Elementary electrodynamic processes: Compton scattering; e+e- annihilation. Loop diagrams. Prerequisites: PHYSICS 130, PHYSICS 131, or equivalents AND a basic knowledge of Group Theory.

PHYSICS 331. Quantum Field Theory II. 3 Units.
Functional integral methods. Local gauge invariance and Yang-Mills fields. Asymptotic freedom. Spontaneous symmetry breaking and the Higgs mechanism. Unified models of weak and electromagnetic interactions. Prerequisite: PHYSICS 330.

PHYSICS 332. Quantum Field Theory III. 3 Units.
Theory of renormalization. The renormalization group and applications to the theory of phase transitions. Renormalization of Yang-Mills theories. Applications of the renormalization group of quantum chromodynamics. Perturbation theory anomalies. Applications to particle phenomenology. Prerequisite: PHYSICS 331.

PHYSICS 351. Standard Model of Particle Physics. 3 Units.
Symmetries, group theory, gauge invariance, Lagrangian of the Standard Model, flavor group, flavor-changing neutral currents, CKM quark mixing matrix, GIM mechanism, rare processes, neutrino masses, seesaw mechanism, QCD confinement and chiral symmetry breaking, instantons, strong CP problem, QCD axion. Prerequisite: PHYSICS 330.

PHYSICS 360. Modern Astrophysics. 3 Units.
Basic theory of production of radiation in stars, galaxies and diffuse interstellar and intergalactic media and and transfer of radiation throughout the universe. Magnetic fields, turbulence shocks and particle acceleration and transport around magnetospheres of planets to clusters of galaxies. Application to compact objects, pulsars and accretion in binary stars and super-massive black holes, supernova remnants, cosmic rays and active galactic nuclei Prerequisite: PHYSICS 260 or equivalent.

PHYSICS 361. Cosmology and Extragalactic Astrophysics. 3 Units.
Intended as a complement to Ph 362 and Ph 364.nGalaxies (including their nuclei), clusters, stars and backgrounds in the contemporary universe. Geometry, kinematics, dynamics, and physics of the universe at large. Evolution of the universe following the epoch of nucleosynthesis. Epochs of recombination, reionization and first galaxy formation. Fluid and kinetic description of the growth of structure with application to microwave background fluctuations and galaxy surveys. Gravitational lensing. The course will feature interleaved discussion of theory and observation. Undergraduate exposure to general relativity and cosmology at the level of Ph 262 and Ph 161 will be helpful but is not essential.

PHYSICS 362. The Early Universe. 3 Units.
Intended to complement PHYSICS 361, this course will cover the earlier period in cosmology up to and including nucleosynthesis. The focus will be on high energy, early universe physics. This includes topics such as inflation and reheating including generation of density perturbations and primordial gravitational waves, baryogenesis mechanisms, out of equilibrium particle production processes in the early universe e.g. both thermal and non-thermal production mechanisms for dark matter candidates such as WIMPs and axions, and production of the light nuclei and neutrinos. Techniques covered include for example out of equilibrium statistical mechanics such as the Boltzmann equation, and dynamics of scalar fields in the expanding universe. Other possible topics if time permits may include cosmological phase transitions and objects such as monopoles and primordial black holes. We will use quantum field theory, although it will hopefully be accessible for those without much background in that area. Suggested prerequisites: general relativity at the level of PHYSICS 262, some knowledge of cosmology and in particular the basics of FRW cosmology as in PHYSICS 361 for example, and some knowledge of quantum field theory e.g. at the level of PHYSICS 331 as a corequisite.

PHYSICS 364. Gravitational Radiation, Black Holes and Neutron Stars. 3 Units.
General relativistic theory of spinning black holes and neutron stars including accretion, jets and tidal capture. Direct and indirect observation of relativistic effects in active galactic nuclei and stellar sources. Linear theory of the generation and propagation of (non-primordial) gravitational radiation. Detection of gravitational waves by Michelson interferometers, pulsars and atom interferometers. Nonlinear emission by binary black holes. Nuclear equation of state and nucleosynthetic implications of neutron star binaries. Pre-requisite: Ph 262 or equivalent.

PHYSICS 366. Statistical Methods in Astrophysics. 3 Units.
Foundations of principled inference from data, primarily in the Bayesian framework, organized around applications in astrophysics and cosmology. Topics include probabilistic modeling of data, parameter constraints and model comparison, numerical methods including Markov Chain Monte Carlo, and connections to frequentist and machine learning frameworks. Hands-on experience with real data through in-class tutorials, problem sets and a final project. Prerequisite: programming in Python or a similar language at the level of CS 106A. Recommended but not required: probability at the level of STATS 116 or PHYSICS 166/266.

PHYSICS 367. Special Topics in Astrophysics: Structure Formation and nGalaxy Formation. 2 Units.
How does structure form in the Universe, and how do galaxies form within that structure?nTopics will include the dependence of structure formation on cosmological parameters and the nature of dark matter, the key astrophysical processes involved in galaxy formation, and the connection between matter and galaxies. Current outstanding problems in structure formation and galaxy formation and the modern techniques used to address them will be highlighted. Course will include reading current literature and hands on computational problems. Recommended prerequisite: PHYSICS 261 or equivalent.

PHYSICS 368. Computational Cosmology and Astrophysics. 2 Units.
Create virtual Universes and understand our own using your computer. Techniques for studying the dynamics of dark matter and gas as it assembles over cosmic time to form the structure in the Universe. The use of modern computer codes on supercomputers to combine modeling of gravitation, gas dynamics, radiation processes, magnetohydrodynamics, and other relevant physical processes to make detailed predictions about the evolution of the Universe. Practical exercises to explore how cosmic microwave background observations are sensitive to cosmological parameters, how key numerical algorithms work, how different cosmological observations can be combined to constrain what the Universe is made of and how it changed over time. Additional current topics in computational cosmology depending on student interest. Hands-on activities based on open-source software in C++ and Python. Pre- or corequisites: PHYSICS 361. Recommended prerequisite: PHYSICS 366.

PHYSICS 372. Condensed Matter Theory I. 3 Units.
Fermi liquid theory, many-body perturbation theory, response function, functional integrals, interaction of electrons with impurities. Prerequisite: APPPHYS 273 or equivalent.

PHYSICS 373. Condensed Matter Theory II. 3 Units.
Superfluidity and superconductivity. Quantum magnetism. Prerequisite: PHYSICS 372.

PHYSICS 450. Advanced Theoretical Physics I: Random Matrices in Physics. 3 Units.
This course will survey some of the basic ideas and techniques in the theory of random matrices. These will be interspersed with discussions of some of the physical applications of these ideas including: energy spectra of quantum chaotic systems and the Eigenstate Thermalization Hypothesis; entanglement entropies; and aspects of 2D quantum gravity.

PHYSICS 451. Advanced Theoretical Physics II: Quantum Information Theory, Complexity, Gravity and Black Holes. 3 Units.
This course will cover the developing intersection between quantum information theory and the quantum theory of gravity. We will focus on the central roles of entanglement and computational complexity in black hole physics. Prerequisites: Basic knowledge of quantum mechanics, quantum field theory, and general relativity.

PHYSICS 455. Introductory Seminar on Recent Developments in Theoretical Physics. 1 Unit.
This seminar is for first-year graduate students interested in theoretical physics. It is driven by introductory-level student talks and focuses on recent foundational developments across the field. Typical areas of interest include cosmology, particle physics, string theory, quantum gravity, and condensed matter.

PHYSICS 470. Topics in Modern Condensed Matter Theory I: Many Body Quantum Dynamics. 3 Units.
Many body quantum systems can display rich emergent dynamical phenomena far from thermal equilibrium, whose understanding represents an exciting frontier of research at the interface of condensed matter, statistical physics, high energy theory and quantum information. This course is intended to serve as an introduction to this active research area, assuming only a knowledge of quantum mechanics and statistical physics. Topics covered include: quantum thermalization, many-body localization, quantum entanglement and its dynamics, tensor network methods, dynamical quantum phases and phase transitions, and Floquet theory. Prerequisites: PHYSICS 113, PHYSICS 130, PHYSICS 131, PHYSICS 170, and PHYSICS 171.

PHYSICS 471. Topics in Modern Condensed Matter Theory II: Open Problems in the theory of metals & superconductor. 3 Units.
We will begin by reviewing a modern perspective on the theory of conventional (BCS s-wave) and unconventional (e.g. d-wave) superconductors. We will then discuss a variety of issues that are of current interest, but which are either incompletely understood or entirely open problems in the field. Depending upon the interests of the class and the whims of the instructor, topics to be covered may include: quantum superconductor to insulator and superconductor to metal transitions, emergence of superconductivity from a non-Fermi liquid normal state, exotic superconducting phases of matter, interplay between superconductivity and other broken symmetry states (issues of ¿intertwined orders¿), and superconductivity in paradigmatic models of highly correlated electron systems, including problems in which there is an interplay between strong electron-electron and electron-phonon interactions. We will also touch on theoretical ideas - all of them currently still being explored and hence controversial - concerning theories of unconventional metallic states - i.e. metallic states that cannot be well described in the context of a theory of weakly interacting quasiparticles. While the subject matter of this course is motivated by ongoing experimental studies in a variety of quantum materials and devices, the principle focus of the class will be on a coherent understanding of what is known and on crisply identifying what is not known.

PHYSICS 490. Research. 1-18 Unit.
Open only to Physics graduate students, with consent of instructor. Work is in experimental or theoretical problems in research, as distinguished from independent study of a non-research character in 190 and 293.

PHYSICS 491. Symmetry and Quantum Information. 2 Units.
This course gives an introduction to quantum information theory through the study of symmetries. We start with Bell's and Tsirelson's inequalities, which bound the strength of classical and quantum correlations, and discuss their relation to algebraic symmetries. Next, we exploit permutation symmetry to quantify the monogamy of entanglement and explain how to securely distribute a secret key. Lastly, we study quantum information in the limit of many copies and discuss a powerful technique for constructing universal quantum protocols, based on the Schur-Weyl duality between the unitary and symmetric groups. Applications include quantum data compression, state estimation, and entanglement distillation. Prerequisite: PHYSICS 230 or equivalent. All required group and representation theory will be introduced. This course runs for the first five weeks of the quarter.

PHYSICS 492. Topological Quantum Computation. 2 Units.
This course will be an introduction to topological quantum computation (TQC), which has recently emerged as an exciting approach to constructing fault-tolerant quantum computers. We start with a review of some basics of quantum computing, 2D topological phases of matter, Abelian/non-Abelian anyons, etc. Then we introduce the concept of TQC and study some examples such as the toric/surface code and Levin-Wen string-net model. We continue to talk about the mathematical theory of anyons including modular tensor categories, braid groups, 6j-symbols, Pentagon Equations. We study the issue of universality for different systems. Lastly, we show the equivalence of TQC with standard circuit model. Additional topics include complexity classes, Jones polynomials, topological field theories, etc. Prerequisite: Basic knowledge of quantum mechanics and condensed matter physics. Some knowledge of category theory and representation theory is useful but is not required. The course will run the first five weeks.

PHYSICS 801. TGR Project. 0 Units.
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PHYSICS 802. TGR Dissertation. 0 Units.
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POLITICAL SCIENCE

Courses offered by the Department of Political Science are listed under the subject code POLISCI on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=POLISCI&filter-catalognumber-POLISCI=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=POLISCI&filter-catalognumber-POLISCI=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=POLISCI&filter-catalognumber-POLISCI=on).

Mission of the Undergraduate Program in Political Science

The mission of the undergraduate program in Political Science is to provide students with a solid grasp of the American political system and other political systems within the context of global forces, international conflicts, social movements, ideological systems and diversity. Courses in the major are designed to help students gain competency in the study of political science; to introduce students to a variety of research methodologies and analytical frameworks; and to develop students' written and oral communication skills. Students in the program have excellent preparation for further study in graduate or professional schools as well as careers in government, business, and not-for-profit organizations.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. an understanding of core knowledge within the discipline of Political Science
2. the ability to communicate ideas clearly and persuasively in writing
3. the ability to analyze a problem and draw correct inferences using qualitative and/or quantitative analysis
4. the ability to evaluate theory and critique research within the discipline of Political Science

Graduate Programs in Political Science

The Department of Political Science offers two types of advanced degrees:

- Doctor of Philosophy
- Master of Arts in Political Science which is open to current Stanford University doctoral or professional school (Schools of Law, Medicine, Business) students only.

The department does not have a terminal M.A. program for external applicants.

Learning Outcomes (Graduate)

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in Political Science. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of Political Science and to interpret and present the results of such research.

Pursued in combination with a doctoral degree, the master's program furthers students' knowledge and skills in Political Science. This is achieved through completion of courses in three subfields, and experience with independent work and specialization.

Bachelor of Arts in Political Science

The Department of Political Science offers a Bachelor of Arts in Political Science. Eligible students may also pursue a Bachelor of Arts with Honors (p. 1943). The department also offers a minor in Political Science (p. 1944).

How to Declare the Major

Students are encouraged to declare the major by the end of the sophomore year. Students must complete a declaration form, available on the Political Science website (https://politicalscience.stanford.edu/undergraduate-major/major/) and in the department office in Encina Hall West 100. The form must be signed by an advisor of the student's choosing who is a member of the Political Science faculty (https://politicalscience.stanford.edu/people/faculty/) or courtesy faculty (https://politicalscience.stanford.edu/people/other-instructors/). The advisor should not be a Political Science lecturer. Next, the student should submit the declaration form during a meeting with the Political Science undergraduate administrator and declare on Axess. For additional information, students may visit the Political Science website (https://politicalscience.stanford.edu/undergraduate-major/major/) or office or call (650) 723-1608.

Degree Requirements

Students majoring in Political Science must complete a minimum of 70 units:

		Units
Introductory Course		**5**
Preferably taken in freshman or sophomore year.		
POLISCI 1	The Science of Politics	5
Methods Course		**5**
Select one of the following:		
POLISCI 150A	Data Science for Politics	
STATS 60	Introduction to Statistical Methods: Precalculus	
STATS 101	Data Science 101	
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	
CS 106A	Programming Methodology	
Two Major Tracks		**40**
25 units in a primary track and 15 units in a secondary track. Each major must select two tracks from the list below on which to focus their studies.[1]		
1. Justice and Law		
2. International Relations		
3. Elections, Representation, and Governance		
4. Political Economy and Development		
5. Data Science		
Additional Coursework		**20**
Additional Political Science coursework, which may include no more than 5 units of directed reading.		
Writing in the Major (WIM) Course		
Demonstrate a capacity for sustained research and writing in the discipline by taking at least one Political Science Writing in the Major (WIM) course. This course may count toward the units taken to satisfy the Primary Track, Secondary Track, or Additional Coursework requirements. Select one of the courses listed below.		

POLISCI 103	Justice	
POLISCI 110C	America and the World Economy	
POLISCI 110D	War and Peace in American Foreign Policy	
POLISCI 120C	American Political Institutions in Uncertain Times	
POLISCI 121	Political Power in American Cities	
POLISCI 148	Chinese Politics	
POLISCI 236S	Theories and Practices of Civil Society, Philanthropy, and the Nonprofit Sector	
POLISCI 299A	Research Design [2]	
Seminar Course		
Students must take at least one 5-unit, 200-level or 300-level undergraduate seminar in Political Science. This course may count toward the units taken to satisfy the Primary Track, Secondary Track, or Additional Coursework requirements.		
Total Units		**70**

[1] The classes that count toward each track can be found below.

[2] POLISCI 299A only fulfills the WIM requirement for students who are writing an honors thesis in Political Science.

Undergraduate Tracks

The tracks for the Political Science undergraduate major and minor are:

- Justice and Law
- International Relations
- Elections, Representation, and Governance
- Political Economy and Development
- Data Science

Political Science majors must select a primary track and a secondary track on which to focus their studies. They must complete at least 25 units of coursework toward the primary track and 15 units toward the secondary track. For the major, up to one course for the primary track and up to one course for the secondary track may be a pre-approved non-Political Science (p.) course or a petitioned (https://politicalscience.stanford.edu/undergraduate-major/major/) course.

Political Science minors must complete 20 units in one track of their choosing. For the minor, all courses completed toward the track must be Political Science courses and 100-level or above.

These tracks are not declared in Axess and are not printed on the transcript or diploma.

The classes for each track are listed below.

Justice and Law

		Units
POLISCI 29N		3
POLISCI 31N	Political Freedom: Rights, Justice, and Democracy in the Western Tradition	3
POLISCI 31Q	Justice and Cities	3
POLISCI 102	Introduction to American Politics and Policy: The Good, The Bad, and The Ugly	4-5
POLISCI 103	Justice	4-5
POLISCI 114D	Democracy, Development, and the Rule of Law	5
POLISCI 122	Introduction to American Law	3-5
POLISCI 125P	The First Amendment: Freedom of Speech and Press	4-5
POLISCI 126P	Constitutional Law	3
POLISCI 127A	Finance, Corporations, and Society	4
POLISCI 128F		3
POLISCI 128S		5
POLISCI 130	20th Century Political Theory: Liberalism and its Critics	5
POLISCI 131L	Modern Political Thought: Machiavelli to Marx and Mill	5
POLISCI 132A	The Ethics of Elections	5
POLISCI 133	Ethics and Politics of Public Service	3-5
POLISCI 133Z	Ethics and Politics in Public Service	4
POLISCI 134	Ethics for Activists	5
POLISCI 134L	Introduction to Environmental Ethics	4-5
POLISCI 134P	Contemporary Moral Problems	4-5
POLISCI 135	Citizenship	5
POLISCI 135D	The Ethics of Democratic Citizenship	5
POLISCI 136R	Introduction to Global Justice	4
POLISCI 137A	Political Philosophy: The Social Contract Tradition	4
POLISCI 182	Ethics, Public Policy, and Technological Change	5
POLISCI 221A	American Political Development, 1865-present	3-5
POLISCI 222S		5
POLISCI 225C	Fixing US Politics: Political Reform in Principle and Practice	5
POLISCI 225L	Law and the New Political Economy	3-5
POLISCI 226	Race and Racism in American Politics	5
POLISCI 226A	The Changing Face of America	4-5
POLISCI 228C	Law and Politics of Bureaucracy	3-5
POLISCI 230A	Classical Seminar: Origins of Political Thought	3-5
POLISCI 231	High-Stakes Politics: Case Studies in Political Philosophy, Institutions, and Interests	3-5
POLISCI 232T	The Dialogue of Democracy	4-5
POLISCI 233	Justice and Cities	5
POLISCI 234	Democratic Theory	5
POLISCI 234P	Deliberative Democracy and its Critics	3-5
POLISCI 236	Theories and Practices of Civil Society, Philanthropy, and the Nonprofit Sector	5
POLISCI 236S	Theories and Practices of Civil Society, Philanthropy, and the Nonprofit Sector	5
POLISCI 238R	The Greeks and the Rational: Deliberation, Strategy, and Choice in Ancient Greek Political Thought	3-5
POLISCI 314D	Democracy, Development, and the Rule of Law	5
POLISCI 325L	Law and the New Political Economy	3-5
POLISCI 326	Race and Racism in American Politics	5
POLISCI 327C	Law of Democracy	3-5
POLISCI 330A	Classical Seminar: Origins of Political Thought	3-5
POLISCI 331	High-Stakes Politics: Case Studies in Political Philosophy, Institutions, and Interests	3-5
POLISCI 332T	The Dialogue of Democracy	4-5
POLISCI 334P	Deliberative Democracy and its Critics	3-5
POLISCI 336	Introduction to Global Justice	4
POLISCI 336S	Justice	4-5

POLISCI 337A	Political Philosophy: The Social Contract Tradition	4

International Relations

		Units
POLISCI 10N	International Organizations and the World Order	3
POLISCI 18N	Civil War and International Politics: Syria in Context	3
POLISCI 101	Introduction to International Relations	5
POLISCI 101Z	Introduction to International Relations	4
POLISCI 110C	America and the World Economy	5
POLISCI 110D	War and Peace in American Foreign Policy	3-5
POLISCI 110G	Governing the Global Economy	5
POLISCI 110X	America and the World Economy	5
POLISCI 110Y	War and Peace in American Foreign Policy	3-5
POLISCI 114D	Democracy, Development, and the Rule of Law	5
POLISCI 114S	International Security in a Changing World	5
POLISCI 118P	U.S. Relations with Iran	5
POLISCI 136R	Introduction to Global Justice	4
POLISCI 147	Comparative Democratic Development	5
POLISCI 149S	Islam, Iran, and the West	5
POLISCI 211N	Nuclear Politics	3-5
POLISCI 213A		5
POLISCI 213E	Introduction to European Studies	5
POLISCI 214R	Challenges and Dilemmas in American Foreign Policy	5
POLISCI 215A	Special Topics: State-Society Relations in the Contemporary Arab World-Key Concepts and Debates	5
POLISCI 216	State Building	5
POLISCI 217A	American Foreign Policy: Interests, Values, and Process	5
POLISCI 242	Foreign Policy Decision Making in Comparative Perspective	3
POLISCI 311N	Nuclear Politics	3-5
POLISCI 314D	Democracy, Development, and the Rule of Law	5
POLISCI 314R	Challenges and Dilemmas in American Foreign Policy	5
POLISCI 336	Introduction to Global Justice	4
POLISCI 342	Foreign Policy Decision Making in Comparative Perspective	3

Elections, Representation, and Governance

		Units
POLISCI 20N	The American Electorate in the Trump Era	3
POLISCI 20Q	Democracy in Crisis: Learning from the Past	3
POLISCI 23Q	Analyzing the 2016 Elections	3
POLISCI 25N	The US Congress in Historical and Comparative Perspective	3
POLISCI 27N	Thinking Like a Social Scientist	3
POLISCI 28N	The Changing Nature of Racial Identity in American Politics	3
POLISCI 29N		3
POLISCI 31N	Political Freedom: Rights, Justice, and Democracy in the Western Tradition	3
POLISCI 72	Policy, Politics and the 2020 Elections: What 2020 Means for Future Campaigns and Elections	2
POLISCI 75	The 2018 Midterm Election: Making Your Voice Heard	2-3
POLISCI 102	Introduction to American Politics and Policy: The Good, The Bad, and The Ugly	4-5
POLISCI 104	Introduction to Comparative Politics	5
POLISCI 110D	War and Peace in American Foreign Policy	3-5
POLISCI 110Y	War and Peace in American Foreign Policy	3-5
POLISCI 120B	Campaigns, Voting, Media, and Elections	4-5
POLISCI 120C	American Political Institutions in Uncertain Times	5
POLISCI 120Z	What's Wrong with American Government? An Institutional Approach	4
POLISCI 121	Political Power in American Cities	5
POLISCI 121L	Racial-Ethnic Politics in US	5
POLISCI 124L	The Psychology of Communication About Politics in America	4-5
POLISCI 125M	Latino Social Movements	5
POLISCI 125P	The First Amendment: Freedom of Speech and Press	4-5
POLISCI 125S	Chicano/Latino Politics	5
POLISCI 126P	Constitutional Law	3
POLISCI 128F		3
POLISCI 128S		5
POLISCI 130	20th Century Political Theory: Liberalism and its Critics	5
POLISCI 131L	Modern Political Thought: Machiavelli to Marx and Mill	5
POLISCI 132A	The Ethics of Elections	5
POLISCI 134P	Contemporary Moral Problems	4-5
POLISCI 134L	Introduction to Environmental Ethics	4-5
POLISCI 135	Citizenship	5
POLISCI 135D	The Ethics of Democratic Citizenship	5
POLISCI 140P	Populism and the Erosion of Democracy	5
POLISCI 143S	Comparative Corruption	3
POLISCI 147	Comparative Democratic Development	5
POLISCI 147B	Gender, Identity, and Politics	5
POLISCI 147P	The Politics of Inequality	5
POLISCI 148	Chinese Politics	3-5
POLISCI 149T	Middle Eastern Politics	5
POLISCI 150A	Data Science for Politics	5
POLISCI 213E	Introduction to European Studies	5
POLISCI 217A	American Foreign Policy: Interests, Values, and Process	5
POLISCI 220	Urban Policy Research Lab	5
POLISCI 220C	The Politics of the Administrative State	3-5
POLISCI 220R	The Presidency	3-5
POLISCI 222	The Political Psychology of Intolerance	5
POLISCI 222S		5
POLISCI 223A	Public Opinion and American Democracy	5
POLISCI 223B	Money, Power, and Politics in the New Gilded Age	5
POLISCI 225C	Fixing US Politics: Political Reform in Principle and Practice	5
POLISCI 226A	The Changing Face of America	4-5
POLISCI 226T	The Politics of Education	3-5
POLISCI 228C	Law and Politics of Bureaucracy	3-5

POLISCI 234	Democratic Theory	5
POLISCI 240A	Democratic Politics	3-5
POLISCI 241A	Political Economy of Development	5
POLISCI 244U	Political Culture	3-5
POLISCI 245R	Politics in Modern Iran	5
POLISCI 246A	Paths to the Modern World: The West in Comparative Perspective	3-5
POLISCI 247G	Governance and Poverty	5
POLISCI 248S	Latin American Politics	3-5
POLISCI 320C	The Politics of the Administrative State	3-5
POLISCI 320R	The Presidency	3-5
POLISCI 322A	Advances in Political Psychology	3-5
POLISCI 324L	The Psychology of Communication About Politics in America	4-5
POLISCI 326T	The Politics of Education	3-5
POLISCI 327C	Law of Democracy	3-5
POLISCI 340A	Democratic Politics	3-5
POLISCI 344	Politics and Geography	3-5
POLISCI 344U	Political Culture	3-5
POLISCI 348	Chinese Politics	3-5
POLISCI 348S	Latin American Politics	3-5
POLISCI 355A	Data Science for Politics	5

Political Economy and Development

		Units
POLISCI 18N	Civil War and International Politics: Syria in Context	3
POLISCI 24Q	Law and Order	3
POLISCI 25N	The US Congress in Historical and Comparative Perspective	3
POLISCI 28N	The Changing Nature of Racial Identity in American Politics	3
POLISCI 31Q	Justice and Cities	3
POLISCI 46N	Contemporary African Politics	3
POLISCI 101	Introduction to International Relations	5
POLISCI 101Z	Introduction to International Relations	4
POLISCI 102	Introduction to American Politics and Policy: The Good, The Bad, and The Ugly	4-5
POLISCI 103	Justice	4-5
POLISCI 104	Introduction to Comparative Politics	5
POLISCI 110C	America and the World Economy	5
POLISCI 110G	Governing the Global Economy	5
POLISCI 110X	America and the World Economy	5
POLISCI 114D	Democracy, Development, and the Rule of Law	5
POLISCI 118P	U.S. Relations with Iran	5
POLISCI 120B	Campaigns, Voting, Media, and Elections	4-5
POLISCI 121	Political Power in American Cities	5
POLISCI 121L	Racial-Ethnic Politics in US	5
POLISCI 122	Introduction to American Law	3-5
POLISCI 124L	The Psychology of Communication About Politics in America	4-5
POLISCI 125M	Latino Social Movements	5
POLISCI 125S	Chicano/Latino Politics	5
POLISCI 127A	Finance, Corporations, and Society	4
POLISCI 137A	Political Philosophy: The Social Contract Tradition	4
POLISCI 141A	Immigration and Multiculturalism	5
POLISCI 143S	Comparative Corruption	3
POLISCI 146A	African Politics	4-5
POLISCI 147	Comparative Democratic Development	5
POLISCI 147B	Gender, Identity, and Politics	5
POLISCI 148	Chinese Politics	3-5
POLISCI 149S	Islam, Iran, and the West	5
POLISCI 149T	Middle Eastern Politics	5
POLISCI 153	Thinking Strategically	5
POLISCI 153Z	Thinking Strategically	4
POLISCI 212X	Civil War and International Politics: Syria in Context	5
POLISCI 213E	Introduction to European Studies	5
POLISCI 216	State Building	5
POLISCI 220	Urban Policy Research Lab	5
POLISCI 220C	The Politics of the Administrative State	3-5
POLISCI 220R	The Presidency	3-5
POLISCI 221A	American Political Development, 1865-present	3-5
POLISCI 223B	Money, Power, and Politics in the New Gilded Age	5
POLISCI 225L	Law and the New Political Economy	3-5
POLISCI 231	High-Stakes Politics: Case Studies in Political Philosophy, Institutions, and Interests	3-5
POLISCI 232T	The Dialogue of Democracy	4-5
POLISCI 234P	Deliberative Democracy and its Critics	3-5
POLISCI 236	Theories and Practices of Civil Society, Philanthropy, and the Nonprofit Sector	5
POLISCI 236S	Theories and Practices of Civil Society, Philanthropy, and the Nonprofit Sector	5
POLISCI 238R	The Greeks and the Rational: Deliberation, Strategy, and Choice in Ancient Greek Political Thought	3-5
POLISCI 241A	Political Economy of Development	5
POLISCI 241S	Spatial Approaches to Social Science	5
POLISCI 241T	Political Economy of Gender	5
POLISCI 244U	Political Culture	3-5
POLISCI 245R	Politics in Modern Iran	5
POLISCI 246A	Paths to the Modern World: The West in Comparative Perspective	3-5
POLISCI 247A	Games Developing Nations Play	3-5
POLISCI 247G	Governance and Poverty	5
POLISCI 248S	Latin American Politics	3-5
POLISCI 314D	Democracy, Development, and the Rule of Law	5
POLISCI 320C	The Politics of the Administrative State	3-5
POLISCI 320R	The Presidency	3-5
POLISCI 324L	The Psychology of Communication About Politics in America	4-5
POLISCI 325L	Law and the New Political Economy	3-5
POLISCI 327C	Law of Democracy	3-5
POLISCI 331	High-Stakes Politics: Case Studies in Political Philosophy, Institutions, and Interests	3-5
POLISCI 332T	The Dialogue of Democracy	4-5
POLISCI 334P	Deliberative Democracy and its Critics	3-5
POLISCI 336S	Justice	4-5
POLISCI 337A	Political Philosophy: The Social Contract Tradition	4

POLISCI 344	Politics and Geography	3-5
POLISCI 344U	Political Culture	3-5
POLISCI 347A	Games Developing Nations Play	3-5
POLISCI 348	Chinese Politics	3-5
POLISCI 348S	Latin American Politics	3-5
POLISCI 354	Thinking Strategically	5

Data Science

POLISCI 27N	Thinking Like a Social Scientist	3
POLISCI 141A	Immigration and Multiculturalism	5
POLISCI 147P	The Politics of Inequality	5
POLISCI 150A	Data Science for Politics	5
POLISCI 150B	Machine Learning for Social Scientists	5
POLISCI 150C	Causal Inference for Social Science	5
POLISCI 153	Thinking Strategically	5
POLISCI 153Z	Thinking Strategically	4
POLISCI 182	Ethics, Public Policy, and Technological Change	5
POLISCI 241S	Spatial Approaches to Social Science	5
POLISCI 247A	Games Developing Nations Play	3-5
POLISCI 251A	Introduction to Machine Learning for Social Scientists	4
POLISCI 343A	Field Methods	3-5
POLISCI 344	Politics and Geography	3-5
POLISCI 347A	Games Developing Nations Play	3-5
POLISCI 354	Thinking Strategically	5
POLISCI 355A	Data Science for Politics	5
POLISCI 355B	Machine Learning for Social Scientists	5
POLISCI 355C	Causal Inference for Social Science	5
POLISCI 356A	Formal Theory I: Game Theory for Political Science	3-5
POLISCI 356B	Formal Theory II: Models of Politics	3-5
POLISCI 358	Data-driven Politics	3-5

Additional Requirements and Policies

- Students may count up to 25 units of coursework from outside the Political Science Department toward the Political Science major. Pre-approved non-Political Science courses (p. 1942) are listed below and can be applied directly to the major. Courses from outside of the department that have not been pre-approved can be petitioned toward the major using a petition form, available on the Political Science website (https://politicalscience.stanford.edu/undergraduate-major/major/). Course petitions are reviewed and, if appropriate, approved by the Director of Undergraduate Studies. Petitions must be submitted to the undergraduate administrator within one quarter of course completion or within one quarter of declaring the major. Pre-approved and petitioned courses may be applied to the major in any combination of the following ways:
  a. Up to one pre-approved or petitioned course may count toward the primary track.
  b. Up to one pre-approved or petitioned course may count toward the secondary track.
  c. One pre-approved course may count toward the methods course requirement. STATS 60, STATS 101, ECON 102A, and CS 106A are courses from outside the Political Science Department and count toward the 25-unit limit. POLISCI 150A does not count toward the 25-unit limit.
  d. Pre-approved and petitioned courses may count toward the additional coursework requirement.
- BOSP and SIW courses are non-Political Science courses and count toward the 25-unit limit listed above. Some have been pre-approved (p. 1942) while others require a petition (available on the Political Science website (https://politicalscience.stanford.edu/undergraduate-major/major/)).
- Directed readings and Oxford tutorials require a petition (available on the Political Science website (https://politicalscience.stanford.edu/undergraduate-major/major/)) and may only be applied toward the additional coursework requirement. No more than 10 combined units of directed reading and Oxford tutorial units may count toward the required 70 units for the Political Science major.
- No more than two Stanford Introductory Seminar courses (p. 169) can be applied toward the 70 unit major requirement.
- All courses applied toward the major must be completed for a letter grade of 'C' or higher.
- Honors courses from outside of Political Science cannot count toward the major or the WIM requirement.

Double Counting Courses

- Students pursuing a double major (p. 32) may not double count any courses in the Political Science major aside from POLISCI 1 The Science of Politics and the methods course.
- Students pursuing a primary/secondary major (p. 32) may double count up to 30 units in the Political Science major.
- Students completing a minor in another department may not double count any courses in the Political Science major aside from POLISCI 1 The Science of Politics and the methods course.

Pre-Approved Non-Political Science Courses

Pre-approved Courses

		Units
AFRICAST 111	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 112	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
ANTHRO 182D		4-5
ANTHRO 337	VOICES	5
CLASSICS 116	Human Rights in Comparative and Historical Perspective	3-5
COMM 106	Communication Research Methods	4-5
COMM 154	The Politics of Algorithms	4-5
COMM 157	Information Control in Authoritarian Regimes	4-5
CS 106A	Programming Methodology	3-5
CS 106B	Programming Abstractions	3-5
CS 109	Introduction to Probability for Computer Scientists	3-5
CSRE 220	Public Policy Institute	1-2
EARTHSYS 10	Introduction to Earth Systems	4
ECON 1	Principles of Economics	5
ECON 50	Economic Analysis I	5
ECON 51	Economic Analysis II	5
ECON 52	Economic Analysis III	5
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	5
ECON 102B	Applied Econometrics	5
ECON 106	World Food Economy	5
ECON 155	Environmental Economics and Policy	5
ECON 180	Honors Game Theory	5

EDUC 178	Latino Families, Languages, and Schools	3-5
EDUC 197	Gender and Education in Global and Comparative Perspectives	4
EDUC 220D	History of School Reform: Origins, Policies, Outcomes, and Explanations	3-5
HISTORY 102	History of the International System since 1914	5
HISTORY 106A	Global Human Geography: Asia and Africa	5
HISTORY 106B	Global Human Geography: Europe and Americas	5
HISTORY 152	History of American Law	5
HISTORY 153	Creation of the Constitution	5
HISTORY 158C	History of Higher Education in the U.S.	3-5
HISTORY 187	The Islamic Republics: Politics and Society in Iran, Afghanistan and Pakistan	5
HISTORY 261G	Presidents and Foreign Policy in Modern History	5
HUMBIO 120	Health Care in America: An Introduction to U.S. Health Policy	4
HUMBIO 120A	American Health Policy	3
HUMBIO 129S	Global Public Health	3
HUMBIO 172B	Children, Youth, and the Law	3
HUMBIO 173		5
INTLPOL 217	The Future of Global Cooperation	3-4
INTLPOL 219		3
INTLPOL 244	U.S. Policy toward Northeast Asia	4
INTLPOL 246	China's Foreign Policies: Objectives, Instruments, and Impacts	4
INTLPOL 280	Transitional Justice, Human Rights, and International Criminal Tribunals	3-5
INTNLREL 123	The Future of the European Union: Challenges and Opportunities	5
INTNLREL 140A	International Law and International Relations	4-5
INTNLREL 140C	The U.S., U.N. Peacekeeping, and Humanitarian War	5
INTNLREL 142	Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice	3-5
INTNLREL 182	The Great War	5
LAW 2519	Water Law	3
MS&E 93Q		3
MS&E 180	Organizations: Theory and Management	4
MS&E 193	Technology and National Security: Past, Present, and Future	3-4
OSPBER 77	"Ich bin ein Berliner" Lessons of Berlin for International Politics	4-5
OSPBER 79	Political Economy of Germany in Europe: an Historical-Comparative Perspective	4-5
OSPBER 82	Globalization and Germany	4-5
OSPBER 126X	A People's Union? Money, Markets, and Identity in the EU	4-5
OSPCPTWN 31		3
OSPCPTWN 45	Transitional Justice and Transformation Debates in South Africa	4
OSPFLOR 78	The Impossible Experiment: Politics and Policies of the New European Union	5
OSPOXFRD 22		4-5
OSPPARIS 32	French History and Politics: Understanding the Present through the Past	5
OSPPARIS 122X	Europe and its Challenges Today	4
OSPSANTG 116X	Modernization and its Discontents: Chilean Politics at the Turn of the Century	5
PHIL 2	Introduction to Moral Philosophy	5
PHIL 20S	Introduction to Moral Philosophy	3
PUBLPOL 122	BioSecurity and Pandemic Resilience	4-5
PUBLPOL 132	The Politics of Policy Making	3
PUBLPOL 135	Regional Politics and Decision Making in Silicon Valley and the Greater Bay Area	4
PUBLPOL 154	Politics and Policy in California	5
PUBLPOL 156	Health Care Policy and Reform	5
PUBLPOL 353A	Science and Technology Policy	4-5
SIW 103	Economic Growth and Development Patterns, Policies, and Prospects	5
SIW 105	Education Policy	5
SIW 106	Criminal Justice Policy	5
SIW 107	Civil Rights Law	5
SIW 109		5
SIW 119	U. S. and Europe: Cooperation or Competition?	5
SIW 156	Washington Policymaking: A USER'S GUIDE	5
SIW 198Z	International Economic Policy	5
SOC 111	State and Society in Korea	4
SOC 117A	China Under Mao	5
SOC 118	Social Movements and Collective Action	4
SOC 135	Poverty, Inequality, and Social Policy in the United States	3-4
SOC 136	Sociology of Law	4
SOC 140	Introduction to Social Stratification	3
SOC 145	Race and Ethnic Relations in the USA	4
STATS 60	Introduction to Statistical Methods: Precalculus	5
STATS 110	Statistical Methods in Engineering and the Physical Sciences	5
THINK 19	Rules of War	4
THINK 42	Thinking Through Africa: Perspectives on Health, Wealth, and Well-Being	4
THINK 47	Inventing Government: Ancient and Modern	4
THINK 51	The Spirit of Democracy	4
URBANST 112	The Urban Underclass	4

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Research Honors Program

The Political Science Research Honors Program leads to a Bachelor of Arts with Honors (B.A.H.) in Political Science. Students pursuing the B.A.H. are expected to complete the standard Political Science major as well as conduct research under the supervision of a faculty member, culminating in an honors thesis.

Application Process

To participate in the Research Honors Program in Political Science, students must apply and be accepted to the program during Winter Quarter of their junior year. A complete application includes:

- The Political Science Research Honors Program application form (https://politicalscience.stanford.edu/undergraduate-program/forms/), signed by their chosen honors advisor. The advisor must be a Political Science faculty member (https://politicalscience.stanford.edu/people/faculty/) or a courtesy faculty

member (https://politicalscience.stanford.edu/people/other-instructors/) (non-lecturer).
- An essay outlining the student's research interest.
- A letter of recommendation from a member of the Political Science faculty (https://politicalscience.stanford.edu/people/faculty/) or from a teaching assistant in a Political Science course. Letters of recommendation can be sent directly by email to Zach Brown (zachbrown@stanford.edu?subject=Research%20Honors%20Program%20Letter%20of%20Recommendation).
- A copy of the unofficial transcript.

Students are expected have research experience prior to applying to the honors program. The Political Science Summer Research College (SRC) program (https://politicalscience.stanford.edu/undergraduate-program/summer-research-college/) is one way to acquire this experience. SRC is a ten-week program in which students are paid to work with faculty on their ongoing research projects. The SRC application typically opens in Winter Quarter. Students may also pursue research with faculty during the academic year.

Prerequisites for Admission

- GPA of 3.5 or higher
- POLISCI 1 The Science of Politics
- POLISCI 150A Data Science for Politics; students may substitute CS 106A Programming Methodology, ECON 102A Introduction to Statistical Methods (Postcalculus) for Social Scientists, STATS 101 Data Science 101, or STATS 60 Introduction to Statistical Methods: Precalculus.
- Research experience

Research Honors Program Requirements

To graduate with honors in Political Science, students must:

1. Secure an honors advisor at the time of application to the research honors program. The honors advisor must be a Political Science faculty member (https://politicalscience.stanford.edu/people/faculty/) or a courtesy faculty member (https://politicalscience.stanford.edu/people/other-instructors/) (non-lecturer).
2. Complete POLISCI 299A Research Design in Spring Quarter of the junior year.
3. Complete POLISCI 299B Honors Thesis Seminar in Autumn Quarter of the senior year.
4. Complete POLISCI 299C Honors Thesis in Winter Quarter of the senior year and POLISCI 299D Honors Thesis in Spring Quarter of the senior year. Enroll in both of these with the honors thesis advisor.
5. Earn a grade of 'B' or higher in in POLISCI 299A Research Design and POLISCI 299B Honors Thesis Seminar. Students unable to meet these requirements may be removed from the program.
6. Submit a completed thesis, approved by the advisor, in Spring Quarter of the senior year. The thesis must receive a grade of 'B+' or higher. The thesis grade also serves as the grade for POLISCI 299C Honors Thesis and POLISCI 299D Honors Thesis

Up to 20 units of honors coursework may be applied toward the additional related coursework requirement for the major.

For grading policies during 2020-21, see the COVID-19 Policies (p. 1949) tab in this section of this bulletin.

Minor in Political Science

Students are encouraged to declare the minor by Autumn quarter of the senior year. Students must complete a declaration form, available on the Political Science website (https://politicalscience.stanford.edu/undergraduate-major/minor/) and in the department office in Encina Hall West 100. The student should submit the declaration form during a meeting with the Political Science undergraduate administrator and declare on Axess. For additional information, students may visit the Political Science website (https://politicalscience.stanford.edu/undergraduate-major/minor/) or office or call (650) 723-1608.

Degree Requirements

Students minoring in Political Science must complete a minimum of 30 units:

		Units
Introductory Course		**5**
Preferably taken in freshman or sophomore year.		
POLISCI 1	The Science of Politics	5
Minor Track		**20**
20 units in a track of the student's choosing. The five track options are listed below. All courses completed toward the track must be Political Science courses and 100-level or above. [1]		
1. Justice and Law		
2. International Relations		
3. Elections, Representation, and Governance		
4. Political Economy and Development		
5. Data Science		
Additional Coursework		**5**
Additional Political Science coursework, which may include no more than 5 units of directed reading and/or no more than 5 units of coursework from outside the Political Science Department (pre-approved or petitioned courses).		
Total Units		**30**

[1] The classes that count toward each track can be found on the Bachelor's tab (p. 1939).

Additional Requirements and Policies

- Students may count up to 5 units of coursework from outside the Political Science Department toward the Additional Coursework requirement only. Pre-approved non-Political Science courses (p. 1945) are listed below and can be applied directly to the minor. Courses from outside of the department that have not been pre-approved can be petitioned toward the minor using a petition form, available on the Political Science website (https://politicalscience.stanford.edu/undergraduate-major/minor/). Course petitions are reviewed and, if appropriate, approved by the Director of Undergraduate Studies. Petitions must be submitted to the undergraduate administrator within one quarter of course completion or within one quarter of declaring the minor.
- BOSP and SIW courses are non-Political Science courses and count toward the 5-unit limit listed above. Some have been pre-approved (p. 1945) while others require a petition (available on the Political Science website (https://politicalscience.stanford.edu/undergraduate-major/minor/)).
- Directed readings with a Political Science faculty member (https://politicalscience.stanford.edu/people/faculty/) and Oxford tutorials require a petition (available on the Political Science website (https://politicalscience.stanford.edu/undergraduate-major/minor/)) and may only be applied toward the additional coursework requirement.
- Stanford Introductory Seminar courses (p. 169) cannot be applied toward the minor.
- All courses applied toward the minor must be completed for a letter grade of 'C' or higher.

- Students may not double count any courses between their major and the Political Science minor aside from POLISCI 1 The Science of Politics.

Transfer Work

A maximum of 10 units of work completed outside Stanford may be given Political Science credit toward the minor for transfer students. All such cases must be individually reviewed and approved by the Director of Undergraduate Studies.

Pre-Approved Non-Political Science Courses

Pre-approved Courses

		Units
AFRICAST 111	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AFRICAST 112	AIDS, Literacy, and Land: Foreign Aid and Development in Africa	3-5
ANTHRO 182D		4-5
ANTHRO 337	VOICES	5
CLASSICS 116	Human Rights in Comparative and Historical Perspective	3-5
COMM 106	Communication Research Methods	4-5
COMM 154	The Politics of Algorithms	4-5
COMM 157	Information Control in Authoritarian Regimes	4-5
CS 106A	Programming Methodology	3-5
CS 106B	Programming Abstractions	3-5
CS 109	Introduction to Probability for Computer Scientists	3-5
CSRE 220	Public Policy Institute	1-2
EARTHSYS 10	Introduction to Earth Systems	4
ECON 1	Principles of Economics	5
ECON 50	Economic Analysis I	5
ECON 51	Economic Analysis II	5
ECON 52	Economic Analysis III	5
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	5
ECON 102B	Applied Econometrics	5
ECON 106	World Food Economy	5
ECON 155	Environmental Economics and Policy	5
ECON 180	Honors Game Theory	5
EDUC 178	Latino Families, Languages, and Schools	3-5
EDUC 197	Gender and Education in Global and Comparative Perspectives	4
EDUC 220D	History of School Reform: Origins, Policies, Outcomes, and Explanations	3-5
HISTORY 102	History of the International System since 1914	5
HISTORY 106A	Global Human Geography: Asia and Africa	5
HISTORY 106B	Global Human Geography: Europe and Americas	5
HISTORY 152	History of American Law	5
HISTORY 153	Creation of the Constitution	5
HISTORY 158C	History of Higher Education in the U.S.	3-5
HISTORY 187	The Islamic Republics: Politics and Society in Iran, Afghanistan and Pakistan	5
HISTORY 261G	Presidents and Foreign Policy in Modern History	5
HUMBIO 120	Health Care in America: An Introduction to U.S. Health Policy	4
HUMBIO 120A	American Health Policy	3
HUMBIO 129S	Global Public Health	3
HUMBIO 172B	Children, Youth, and the Law	3
HUMBIO 173		5
INTLPOL 217	The Future of Global Cooperation	3-4
INTLPOL 219		3
INTLPOL 244	U.S. Policy toward Northeast Asia	4
INTLPOL 246	China's Foreign Policies: Objectives, Instruments, and Impacts	4
INTLPOL 280	Transitional Justice, Human Rights, and International Criminal Tribunals	3-5
INTNLREL 123	The Future of the European Union: Challenges and Opportunities	5
INTNLREL 140A	International Law and International Relations	4-5
INTNLREL 140C	The U.S., U.N. Peacekeeping, and Humanitarian War	5
INTNLREL 142	Challenging the Status Quo: Social Entrepreneurs Advancing Democracy, Development and Justice	3-5
INTNLREL 182	The Great War	5
LAW 2519	Water Law	3
MS&E 93Q		3
MS&E 180	Organizations: Theory and Management	4
MS&E 193	Technology and National Security: Past, Present, and Future	3-4
OSPBER 77	"Ich bin ein Berliner" Lessons of Berlin for International Politics	4-5
OSPBER 79	Political Economy of Germany in Europe: an Historical-Comparative Perspective	4-5
OSPBER 82	Globalization and Germany	4-5
OSPBER 126X	A People's Union? Money, Markets, and Identity in the EU	4-5
OSPCPTWN 31		3
OSPCPTWN 45	Transitional Justice and Transformation Debates in South Africa	4
OSPFLOR 78	The Impossible Experiment: Politics and Policies of the New European Union	5
OSPOXFRD 22		4-5
OSPPARIS 32	French History and Politics: Understanding the Present through the Past	5
OSPPARIS 122X	Europe and its Challenges Today	4
OSPSANTG 116X	Modernization and its Discontents: Chilean Politics at the Turn of the Century	5
PHIL 2	Introduction to Moral Philosophy	5
PHIL 20S	Introduction to Moral Philosophy	3
PUBLPOL 122	BioSecurity and Pandemic Resilience	4-5
PUBLPOL 132	The Politics of Policy Making	3
PUBLPOL 135	Regional Politics and Decision Making in Silicon Valley and the Greater Bay Area	4
PUBLPOL 154	Politics and Policy in California	5
PUBLPOL 156	Health Care Policy and Reform	5
PUBLPOL 353A	Science and Technology Policy	4-5
SIW 103	Economic Growth and Development Patterns, Policies, and Prospects	5
SIW 105	Education Policy	5
SIW 106	Criminal Justice Policy	5
SIW 107	Civil Rights Law	5

SIW 109		5
SIW 119	U. S. and Europe: Cooperation or Competition?	5
SIW 156	Washington Policymaking: A USER'S GUIDE	5
SIW 198Z	International Economic Policy	5
SOC 111	State and Society in Korea	4
SOC 117A	China Under Mao	5
SOC 118	Social Movements and Collective Action	4
SOC 135	Poverty, Inequality, and Social Policy in the United States	3-4
SOC 136	Sociology of Law	4
SOC 140	Introduction to Social Stratification	3
SOC 145	Race and Ethnic Relations in the USA	4
STATS 60	Introduction to Statistical Methods: Precalculus	5
STATS 110	Statistical Methods in Engineering and the Physical Sciences	5
THINK 19	Rules of War	4
THINK 42	Thinking Through Africa: Perspectives on Health, Wealth, and Well-Being	4
THINK 47	Inventing Government: Ancient and Modern	4
THINK 51	The Spirit of Democracy	4
URBANST 112	The Urban Underclass	4

Master of Arts in Political Science

The Political Science department does not offer a terminal M.A. degree. An M.A. degree may only be pursued in combination with a doctoral degree from another department within Stanford University or with an advanced degree from one of Stanford University's professional schools (Schools of Law, Medicine, Business). Students interested in pursuing the M.A. should discuss the application requirements with the Student Services Manager in Political Science.

The department does not offer a coterminal master's degree.

Adding the M.A. Degree

While formal application to the M.A. program is not required, applicants from outside of the Political Science department must:

1. Complete the M.A. Course Plan (https://stanford.box.com/v/MAdegreerequirements/) and submit it to the Political Science Student Services Manager via email or in person in Room 100, Ground Floor of Encina Hall West. Please note that a SUNet ID is required to access this form.
2. Submit the Graduate Authorization Petition (https://registrar.stanford.edu/students/graduate-degree-progress/graduate-program-authorization-petition/) through Axess.
3. After all the requirements for the masters have been completed: submit the Master's Program Proposal (https://stanford.app.box.com/v/progpropma/) to the Political Science Student Services Manager via email or in person in Room 100, Ground Floor of Encina Hall West.
4. Apply to graduate (in Axess, before the quarterly deadline) in the quarter they wish to confer the degree. The degree is not conferred automatically.

For additional information, students may visit the Political Science office in Encina Hall West Room 100 or phone (650) 723-1318.

Degree Requirements

A master's program must satisfy these criteria:

1. Completion, at Stanford, of at least three quarters of residency as a graduate student and 45 units of credit.
2. At least two graduate seminars (10 units) in each of two fields and at least one graduate seminar (5 units) in a third field. These 25 units must be taken in graduate seminars (300 or 400 level) taught by regular Political Science faculty. Cross-listed classes taught by non-Political Science department faculty, workshops and directed readings do not count towards this requirement except with prior approval from the Director of Graduate Studies. The Political Science fields that students may choose from are: International Relations, Comparative Politics, American Politics, Political Theory and Political Methodology. Not more than 25 units of the 45-unit requirement may be taken in a single field.
3. The remaining 20 units must come from courses numbered above 100. Of those 20 units, a maximum of 10 units of classes taken from outside of the Political Science department may count towards the master's degree. Classes taken from outside the Political Science department must be highly relevant to the discipline and approved by the Director of Graduate Studies. A maximum of 10 units of directed reading coursework may count towards this requirement with the approval of the Director of Graduate Studies.
4. A grade point average (GPA) of 2.7 (B-) must be maintained for all classes taken to fulfill master's degree requirements. All courses must be taken for a letter grade.
5. No thesis is required.

The middle number of the course number generally indicates to which field the class belongs:

1 = International Relations
2 = American Politics
3 = Political Theory
4 = Comparative Politics
5 = Political Methodology

For example, POLISCI 440A is a Comparative Politics class and POLISCI 410A is an International Relations class.

Doctor of Philosophy in Political Science

The principal goal of the Stanford Ph.D. program in political science is the training of scholars. Most students who receive doctorates in the program do research and teach at colleges or universities. We offer courses and research opportunities in a wide variety of fields in the discipline, including American Politics, Comparative Politics, International Relations, Political Theory, and Political Methodology. The program is built around small seminars that analyze critically the literature of a field or focus on a research problem. These courses prepare students for the Ph.D. comprehensive exam requirement within a two-year period and for work on the doctoral dissertation.

The University's basic requirements for the Ph.D. degree are discussed in the "Graduate Degrees (p. 65)" section of this bulletin.

Admission to the Ph.D. Program

Admission to the Ph.D. program is highly competitive. The selection of Ph.D. students admitted to the Department of Political Science is based on an individualized, holistic review of each application, including (but not limited to) the applicant's academic record, the letters of recommendation, the scores on the General GRE (Graduate Record Examination), the statement of purpose, and the writing sample. About 12-15 students, chosen from a large pool of applicants, enter the program every year. These students are chosen on the basis of a strong academic background as evidenced by previous study, test results, writing sample, and letters of recommendation.

General GRE scores are required of all applicants. Scores from any GRE subject tests are not required. There are no exceptions to the GRE

requirement and no other exams (including the LSAT or GMAT) are accepted in lieu of the GRE.

Before starting the application process applicants should read the Admissions (https://politicalscience.stanford.edu/academics/graduate-programs/graduate-admissions/) section of the department website, especially the Frequently Asked Questions (https://politicalscience.stanford.edu/graduate-program/phd-admissions/faq-prospective-phd-students/). All questions regarding graduate admissions should be directed to the Political Science Student Services office.

Degree Requirements

For additional details about the Ph.D. program structure and requirements, please refer to the Ph.D. Program Guide (https://politicalscience.stanford.edu/academics/graduate-programs/resources-current-students/).

Programs of study leading to the Ph.D. degree are designed by the student, in consultation with advisers and the Director of Graduate Studies, to serve their particular interests as well as to achieve the general department requirements. A student is recommended to the University Committee on Graduate Studies to receive the Ph.D. degree in Political Science when the following program of study has been completed:

1. Statement of Purpose: By the beginning of the fourth quarter in residence, each Ph.D. student must submit a statement of purpose to the student's pre-candidacy mentors. This statement indicates the student's proposed fields of study, the courses taken and those planned to be taken to cover those fields, the student's plan for meeting language and/or skill requirements, plans for taking the comprehensive examination and writing the field paper, and, where possible, dissertation ideas or plans. This statement is discussed with, and must be approved by, the student's pre-candidacy mentors. In the Autumn Quarter following completion of their first year, students are reviewed at a regular meeting of the department faculty. The main purposes of this review are to advise and assist the student to realize their educational goals; to provide an opportunity for clarifying goals and for identifying ways to achieve them; and to facilitate assessment of progress toward the degree.
2. First Field: The candidate for the Ph.D. degree must demonstrate proficiency in a primary field. The fields are: American politics, comparative politics, international relations, methodology, and political theory. Students demonstrate proficiency by:
   a. passing four five-unit classes in that field with letter grades of A- or better. Each field offers a series of two or three core courses designed to familiarize students with the literature of that field. In addition, fields require that students take one or two elective courses covering a specific aspect of the field. Specific class requirements can be found on the field statements (https://politicalscience.stanford.edu/academics/graduate-programs/resources-current-students/), available on the Political Science department website.
   b. passing a written or oral comprehensive examination by the end of spring quarter of the second year, after completion of the core sequence of the first field. Political Theory requires an oral comprehensive exam; all other fields require a written exam.
3. Second Field: The candidate for the Ph.D. degree must demonstrate proficiency in a secondary field by completing three five-unit classes in that field with letter grades of A- or better. The fields are: American politics, comparative politics, international relations, methodology, and political theory. Specific class requirements can be found on the field statements (https://politicalscience.stanford.edu/academics/graduate-programs/resources-current-students/), available on the Political Science department website.
4. Third Field: The candidate for the Ph.D. degree must also complete a third field. The third field requirement is satisfied by taking two courses for at least three units each with a letter grade of 'B' or better. Students may choose to complete a third field in one of the fields within the Political Science department: American politics, comparative politics, international relations, methodology, or political theory. Specific class requirements for each field can be found on the field statements (https://politicalscience.stanford.edu/academics/graduate-programs/resources-current-students/), available on the Political Science department website. Alternately, students may design their own third field. Classes taken for a self-designed third field do not have to offered by the Political Science department. Self-designed third fields must be approved by two members of the Political Science department faculty. The third field cannot be satisfied by courses taken to fulfill requirements for first or second fields or by classes taken to fulfill other program requirements.
5. Political Theory Program Requirement: Every Ph.D. student must complete at least one five-unit class of graduate-level instruction in political theory. All courses used to fulfill the political theory requirement must be taken for a letter grade of 'B' or better. The classes that fulfill this requirement are listed on the Political Theory field statement (https://politicalscience.stanford.edu/academics/graduate-programs/resources-current-students/), available on the Political Science department website.
6. Quantitative Methods Program Requirement: Every Ph.D. student must take POLISCI 450A Political Methodology I: Regression and POLISCI 450B Political Methodology II: Causal Inference. Credit for equivalent classes is at the discretion of the political methodology field convener. All courses used to fulfill the quantitative methods requirement must be taken for a letter grade of 'B' or better unless the candidate has a first or second field in Quantitative Methodology in which case the minimum required grade is A-.
7. Research Design Program Requirement: Every Ph.D. student must take POLISCI 400C Research Design for a letter grade of B or better. If POLISCI 400C is not offered in a given year, students must consult with their pre-candidacy mentors to determine a suitable alternative and receive permission from the Director of Graduate Studies for the substitution.
8. Foundational Concepts Workshop: all first year Ph.D. students must complete POLISCI 480 Foundational Concepts in Political Science with a grade of S (Satisfactory).
9. Competence in a Language and/or Skill: The Ph.D. candidate is required to demonstrate competence in a language and/or skill that is likely to be relevant to the dissertation research. The level of competence needed for completion of the research is determined by the student's adviser. Previous instruction can be counted towards this requirement only if approved by the Director of Graduate Studies.
10. Second Year Research Paper ('field paper'): All Ph.D. students must submit a research paper approved by two faculty readers by the end of the second year, prior to advancing to candidacy. This paper must demonstrate the capacity to produce research at a level expected of students preparing to write a high-quality Ph.D. dissertation. The second-year research paper is given considerable weight as the faculty consider an application for candidacy. Students are advised to begin work on their second-year research papers in the summer between their first and second years in the program, to select two Political Science faculty readers early in fall quarter of their second year, and to submit a first draft to their readers by early winter quarter of their second year.
11. Advancement to candidacy: In accordance with University guidelines, Ph.D. students are expected to advance to candidacy by the end of their sixth quarter in the program (i.e., by the end of their Spring Quarter in their second year in the program). It is the department's practice that all students in their sixth quarter be considered for candidacy at a special meeting of the faculty (typically in Week 9 or 10 of Spring Quarter). All the requirements for advancing to candidacy listed in items 1-10 above must be completed by this meeting but advancement to candidacy is not automatic upon

completion of these requirements. Advancement to candidacy is an expression by the faculty of their confidence that the student can successfully complete the Ph.D. program, and in particular, complete a doctoral dissertation that is an original contribution to scholarship that exemplifies the highest standard of the discipline. Should a student not be advanced to candidacy by the end of the sixth quarter, the student is at risk of being dismissed from the Ph.D. program.

12. Dissertation Prospectus: By the end of the third year, a formal dissertation prospectus must be submitted to and approved by the student's prospectus committee and the Director of Graduate Studies. The dissertation prospectus must be approved by the end of the third year. Students must also make a dissertation prospectus presentation in spring quarter of the third year.
13. Teaching Requirement: A candidate for the Ph.D. in Political Science is required to complete three quarters of teaching in Political Science department classes for a minimum of three quarters. Most students are required to complete up to five quarters of teaching as part of their funding package.
14. Dissertation Reading Committee: The dissertation reading committee must be formed by the end of the fourth year.
15. Oral Examination: The candidate must pass the University oral examination on the area of the dissertation at a time suggested by the candidate's dissertation committee.
16. Dissertation: The candidate must complete a dissertation satisfactory to the dissertation reading committee.
17. Adequate Progress: Students who are not making adequate academic progress are at serious risk of dismissal from the Ph.D. program. In addition to the specific program requirements listed above, at each stage of the Ph.D. program, the department has the following minimum standards for adequate academic progress:
    - Except in rare circumstances, no more than two of the following on the transcript at any given time: incomplete ('I'); grade not reported ('GNR'); not passed or no credit ('NP' or NC'); or withdraw ('W').
    - Adequate grades in all courses taken each term ('B-' and below are regarded as inadequate).Grades of B- or below are reviewed by the faculty and the student may be required to revise and resubmit work associated with the course or retake the course. (While a B is the minimum required grade for all classes, all students must earn a minimum grade of A- for courses taken to fulfill first and second field requirements.)
    - Completion of the 135-unit residency requirement and advancement to TGR status by the end of the fourth year.
    - Student who have advanced to TGR status must earn a grade of N in POLISCI 802 in each quarter during the academic year. An 'N-' grade constitutes a warning. A second consecutive 'N-' normally causes the department to deny the student further registration until a written plan for the completion of the degree requirements has been submitted by the student and accepted by the department. Subsequent 'N-' grades are grounds for dismissal from the program.
    - Substantial progress toward completion of the dissertation in the fourth and fifth years.
    - Completion of the Ph.D. within five calendar years after attaining candidacy.

Written petitions for exemptions to requirements are considered by (as applicable) a student's adviser, the relevant field convener and the Director of Graduate Studies. Approval is contingent on special circumstances and is not routinely granted.

Ph.D. Minor in Political Science

University requirements for the Ph.D. Minor are described in the Graduate Degrees section of this Bulletin.

To request the Ph.D. Minor in Political Science, submit the University Application for Ph.D. minor form (https://stanford.app.box.com/v/app-phd-minor/) to the Political Science Student Services office for review. Once approved, the Political Science department adds the Ph.D. minor to the student's academic career.

Ph.D. Minor Requirements

1. Completion of at least two graduate seminars (10 units) in each of two fields. These 20 units must be taken in graduate seminars (300 or 400 level) taught by Political Science faculty. Cross-listed classes taught by non-Political Science department faculty, workshops and directed readings do not count towards this requirement except with prior approval from the Director of Graduate Studies. The Political Science fields that students may choose from are: International Relations, Comparative Politics, American Politics, Political Theory and Political Methodology. Not more than 10 units of the 20-unit requirement may be taken in a single field.
2. A grade point average (GPA) of 3.0 (B) must be maintained for all classes taken to fulfill Ph.D. minor requirements. All courses must be taken for a letter grade.
3. No thesis or comprehensive examinations are required.
4. The Political Science department does not require that a Political Science faculty member serve on the students reading or oral examination committee.

In general, the middle digit of the course number indicates to which field the class belongs:

1 = International Relations
2 = American Politics
3 = Political Theory
4 = Comparative Politics
5 = Political Methodology

For example, POLISCI 440A is a Comparative Politics class and POLISCI 410A is an International Relations class.

Joint Degree Program with the School of Law (J.D./Ph.D.)

The Department of Political Science and the School of Law offer a joint program leading to a J.D. degree combined with a Ph.D. in Political Science.

The J.D./Ph.D. degree program is designed for students who wish to prepare themselves for careers in areas relating to both law and political science.

Admission to the J.D./Ph.D. Program

Students interested in the joint degree program must apply and gain entrance separately to the School of Law and the Department of Political Science following the same admission timelines, processes and subject to the same admissions standards as non-joint degree applicants. As an additional step, students must secure permission from both academic units to pursue degrees in those units as part of a joint degree program. Interest in either joint degree program should be noted on the student's admission applications and may be considered by the admission committee of each program. Alternatively, an enrolled student in either the Law School or the Political Science department may apply for admission to the other program and for joint degree status in both academic units after commencing study in either program.

Joint degree students may elect to begin their course of study in either the School of Law or the Department of Political Science. Students are advised either to complete their first year of law school before beginning

the Ph.D. program or to begin their JD after advancing to candidacy in the Ph.D. program.

Degree Requirements

Students must be enrolled full time in the Law School for the first year of law school and must be enrolled full time in the Political Science department during the first year in the Ph.D. program. In the second year in the Ph.D. program, joint JD/Ph.D. students should expect to devote one or more additional quarters largely or exclusively to studies in the Political Science program in order to be eligible to advance to candidacy at the end of the second year. After completing the first year of law school and after advancement to candidacy in the Political Science Ph.D. program, enrollment may be in the graduate school or the Law School, and students may choose courses from either program regardless of where enrolled. In the absence of extraordinary circumstances, students are expected to be in residence at the Law School for at least seven quarters.

Students must satisfy all of the requirements for both the J.D. and the Ph.D. degrees as specified in ExploreDegrees, in the Ph.D. Program Guide and by the School of Law. Faculty advisers from each academic unit participate in the planning and supervising of the student's joint program. The sequencing and schedules for individual joint degree students may vary substantially depending on the student's background and interests, and on the guidance of faculty advisers from both academic units.

Students must complete 192 quarter units to complete both degrees. Up to 54 units of approved courses may be counted toward both degrees. Of that 54, no more than 31 total quarter units of courses that originate outside the Law School as well as some types of Stanford Law School classes (e.g. independent research, externships, directed research, directed writing, policy labs, senior thesis, research track, or moot court) may count toward the Law degree. Taking any of those types of Law classes will reduce the units that a student will be able to count from the Ph.D. towards the JD on a unit-for-unit basis.

Joint degree students are eligible for the same funding arrangements in both academic units, including scholarships and grants, as students who are not pursuing a joint degree.

For more information, see the Law School's Degrees and Joint Degrees (http://www.law.stanford.edu/program/degrees/) web site.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of Political Science counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

The Department of Political Science also counts all courses taken in Winter Quarter 2020 with a grade of 'CR' (credit) and Spring Quarter 2020 with a grade of 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Other Undergraduate Policies

If a student has difficulty completing an undergraduate degree requirement due to the COVID-19 pandemic, the student should consult with the Undergraduate Program Administrator to identify academic options to fulfill degree requirements.

Honors Grading Policy

During 2020-21, to graduate with honors in Political Science, students may elect to take honors courses (POLISCI 299A-D) with the following grading bases:

1. Letter Grade: Should students elect this option, a grade of B in POLISCI 299A and POLISCI 299B, and B+ on the thesis will be required to graduate with honors.
2. CR/NC: Should students elect this option, the instructors of POLISCI 299A and POLISCI 299B must certify that the coursework completed is of at least 'B' quality, and the thesis advisor must certify that the thesis is of at least 'B+' quality, kin order for the student to graduate with honors.

If a student's performance in POLISCI 299A and POLISCI 299B or on the thesis does not meet the standards for honors described above, up to 20 units of honors coursework may be applied toward the additional related coursework requirement for the major as long as the student earns at least a 'C' (if the letter grade option is chosen) or 'CR' (if the CR/NC option is chosen) but the student will not graduate with honors.

Graduate Degree Requirements

Grading

Graduate courses taken during 2020-21 will satisfy Ph.D. pre-candidacy requirements if either (1) the student takes the course CR/NC and receives a grade of CR, or (2) the student takes the course for a letter grade and earns a grade that meets our current program requirements.

A CR notation is given when a student's work would have received a C- or better.

Because it is important for students to have feedback on their work and for the department to continue to monitor academic progress, instructors will be encouraged to provide students taking a course CR/NC with written feedback on their work. Some instructors may also provide a grade on assignments (such as papers) to give students taking courses on a CR/NC basis the usual signal about the quality of the work.

Other Graduate Policies

Students who may require additional time to meet milestone deadlines should contact the Director of Graduate Studies.

Graduate Advising Expectations

Academic advising by department faculty is a critical component of graduate students' education. The Political Science department is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. Both the adviser and the advisee are expected to maintain professionalism and integrity.

As a best practice, students and advisers should periodically discuss advising expectations to ensure mutual understanding. Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility

for informing themselves of policies and degree requirements for their graduate program.

Additionally, the program adheres to the advising guidelines and responsibilities listed by the Office of the Vice Provost for Graduate Education (https://vpge.stanford.edu/academic-guidance/advising-mentoring/) and in the "Graduate Advising (p. 80)" section of this bulletin. Academic advising by Stanford faculty is a critical component of all graduate students' education and additional resources can be found in the Policies and Best Practices for Advising Relationships at Stanford (http://stanford.box.com/shared/static/73oj7zqvy9h0fezqf310onbuunv91nyl.pdf) and the Guidelines for Faculty-Student Advising at Stanford (https://stanford.box.com/shared/static/mespm59bcanq03o4pppu7r4n9p4sb6t6.pdf).

Ph.D.

All incoming doctoral students are assigned two pre-candidacy mentors by the Director of Graduate Studies. These mentors are responsible for advising students until they advance to candidacy on key areas such as course selection, initial research projects, and early stage professional development opportunities. Students should meet with their pre-candidacy mentors at least once per quarter, although there is likely to be variation in meeting frequency by individual adviser and advisee.

In the third year, students will convene a prospectus committee who will meet them once each quarter to receive an update on overall progress and to provide feedback on the prospectus. In the fall, this committee will consist of at least two faculty members. By the spring quarter, the committee will have three faculty members, who will be expected to approve the final prospectus by the end of the year. While this prospectus committee may form the basis for a dissertation reading committee, students will be free to assemble a dissertation reading committee whose members differ from those of the prospectus committee.

By the end of the fourth year, students are required to appoint one primary dissertation adviser and are encouraged to identify two to three additional faculty who are likely to fill out the rest of their dissertation reading committee. They are required to formally identify their full reading committee by the end of their fourth year. The adviser and committee are selected by the student on the basis of expertise relevant to the dissertation project. Students should meet with their adviser and reading committee (once named) at least once per quarter, though there is likely to be variation in meeting frequency by individual adviser and advisee.

Faculty advisers should provide guidance in key areas such as selecting courses, designing and conducting research, developing teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

At least once per year, either formally or informally, students and advisers are expected to review the student's progress towards completion of their research and their degree. Such discussions may include other members of the student's dissertation committee, either together or individually.

Nearly all students have an adviser from among the primary faculty members of the department. In rare circumstances, the dissertation adviser may be a faculty member from another Stanford department. When the research adviser is from outside the department, the student must also identify a co-adviser from the department's primary faculty.

The Director of Graduate Studies is an additional advising resource for students, particularly in areas of degree progress, program requirements, and selecting research advisers. Academic progress and student completion of program requirements and milestones are monitored by the Director of Graduate Studies and student services staff and are discussed at meetings of the faculty twice per academic year.

Requirements and milestones, as well as more detailed descriptions of the program's expectations of advisers and students, are listed in the Ph.D. Program Guide (https://politicalscience.stanford.edu/academics/graduate-programs/resources-current-students/), found on the department website.

Master of Arts

The Political Science department does not offer a terminal M.A. degree. An M.A. degree may only be pursued in combination with a doctoral degree from another department within the University or with an advanced degree from one of the University's professional schools (i.e., Schools of Law, Medicine, Business).

The Director of Graduate Studies is available to provide guidance on course selection and course planning. It is the responsibility of the student to contact the Director of Graduate Studies to schedule a meeting to discuss advising expectations. This should happen when the student begins the M.A. degree program and annually as needed.

M.A. students should also discuss how the M.A. degree and Political Science coursework supports their primary doctoral degree with their doctoral program adviser.

Political Science Faculty

Emeriti: (Professors) David B. Abernethy, David W. Brady, Joshua Cohen, David Danielski, Charles Drekmeier, Richard R. Fagen, John A. Ferejohn, David J. Holloway, Terry L. Karl, John W. Lewis, John Manley, James March, Daniel Okimoto, Robert A. Packenham, Jack N. Rakove, Philippe Schmitter, Hans N. Weiler

Chair: Michael R. Tomz

Director of Graduate Studies: Alison E.J. McQueen

Director of Undergraduate Studies: Adam Bonica

Director of Honors and Senior Capstones: Lauren Davenport

Professors: Lisa Blaydes, Bruce E. Cain, Gary W. Cox, James D. Fearon, Morris P. Fiorina, Judith L. Goldstein, Justin Grimmer, Anna Grzymala-Busse, Stephen H. Haber, Jens Hainmueller, Andrew B. Hall, Daniel E. Ho, Shanto Iyengar, Stephen D. Krasner, Jon A. Krosnick, David D. Laitin, Margaret Levi, Beatriz Magaloni, Michael A. McFaul, Terry M. Moe, Josiah Ober, Jean C. Oi, Rob Reich, Condoleezza Rice, Douglas Rivers, Jonathan A. Rodden, Scott D. Sagan, Kenneth A. Schultz, Paul M. Sniderman, Michael R. Tomz, Barry R. Weingast, Jeremy M. Weinstein

Associate Professors: Avidit Acharya, Adam Bonica, Lauren Davenport, Alison McQueen

Assistant Professors: Emilee Chapman, Vasiliki Fouka, Saad Gulzar, Hakeem J. Jefferson, Amanda Kennard, Soledad Prillaman, Yiqing Xu

Lecturers: Brian Coyne

Courtesy Professors: Jonathan B. Bendor, Steven Callander, Martha Crenshaw, Larry Diamond, Jean-Pierre Dupuy, James Fishkin, Lawrence Friedman, Francis Fukuyama, Colin Kahl, Keith Krehbiel, Neil Malhotra, Nathaniel Persily, Debra M. Satz, Ken Shotts, Stephen J. Stedman, Andrew Walder, Amy Zegart

Courtesy Associate Professor: Alberto Diaz-Cayeros, Saumitra Jha

Courtesy Assistant Professor: Juliana Bidadanure, Jennifer Pan

Overseas Studies Courses in Political Science

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or

program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPBER 77	"Ich bin ein Berliner" Lessons of Berlin for International Politics	4-5
OSPBER 79	Political Economy of Germany in Europe: an Historical-Comparative Perspective	4-5
OSPBER 82	Globalization and Germany	4-5
OSPBER 126X	A People's Union? Money, Markets, and Identity in the EU	4-5
OSPCPTWN 45	Transitional Justice and Transformation Debates in South Africa	4
OSPFLOR 78	The Impossible Experiment: Politics and Policies of the New European Union	5
OSPHONGK 22	China's Financial Reforms - Problems and Perspectives	4
OSPHONGK 23	China Under Mao	4
OSPHONGK 27	China and Regional Order	4
OSPHONGK 29	The Rise of China in the Global Context I: Diplomacy, Trade, and Soft Power	4
OSPPARIS 32	French History and Politics: Understanding the Present through the Past	5
OSPPARIS 122X	Europe and its Challenges Today	4
OSPSANTG 116X	Modernization and its Discontents: Chilean Politics at the Turn of the Century	5

Courses

POLISCI 1. The Science of Politics. 5 Units.
Why do countries go to war? How can we explain problems such as poverty, inequality, and pollution? What can be done to improve political representation in the United States and other countries? We will use scientific methods to answer these and other fundamental questions about politics.

POLISCI 10N. International Organizations and the World Order. 3 Units.
Since the end of World War II, there has been an explosion in the number, scope, and complexity of international organizations. International organizations such as the United Nations, North Atlantic Treaty Organization, and World Bank now play critical roles across a wide range of policy issues. Why have international organizations proliferated and expanded since the mid-20th century? How do these organizations shape the international system? Why do states sometimes conduct foreign policy through international organizations, while other times preferring traditional means? Why do some international organizations evolve over time, while others resist change? What are some of the pathologies and problems of contemporary international organizations? We will explore these questions by carefully examining the functions and operations of major international organizations. You will also complete a research project examining an international organization of your choice and present your findings in class.

POLISCI 11N. The Rwandan Genocide. 3 Units.
Preference to freshmen. In 1994, more than 800,000 Tutsi and moderate Hutu Rwandans were killed in the most rapid genocide in history. What could bring humans to carry out such violence? Could it have been prevented? Why did no major power intervene to stop the killing? Should the U.N. be held accountable? What were the consequences for Central Africa? How have international actors respond to the challenges of reconstructing Rwanda? What happened to the perpetrators? Sources include scholarly and journalistic accounts.

POLISCI 13N. Identity Politics 101. 3 Units.
How do we understand the political choices citizens make? Why do Black and White Americans disagree so vehemently about racially-charged incidents like officer-involved shootings? What explains disagreements over policies like welfare and immigration? How do we understand ethnic conflict, both in the United States and around the world? What explains our commitments to salient social groups? Under what conditions should we expect group members to join in solidarity with one another? When does solidarity break down? And what helps us make sense of this strange time we find ourselves in? Identity does that--or at least it does a lot of it. But what is an identity? What are the conditions under which identities becomenpoliticized? How do identities work to structure attitudes and affect behavior? Over the course of the quarter, we will read a series of scholarly papers from across academic disciplines that provide some answers to these important questions.nStudents will be expected to engage the readings carefully and to participate in classroom discussions. Assignments will include reaction papers and a final presentation. By the end of our time together, I hope to convince you that all politics is identity politics, and that identity--in all of its complexity--is a thing worth thinking rigorously about. All students are encouraged to join, as we will benefit from the diversity of experiences and backgrounds that each of us brings to thenclassroom.

POLISCI 18N. Civil War and International Politics: Syria in Context. 3 Units.
How and why do civil wars start, drag on, and end? What does focus of post-Cold War U.S. foreign policy on countries torn apart by civil war tell us about contemporary international relations? We consider these and related questions, with the conflict in Syria as our main case study.

POLISCI 19N. State-Building. 3 Units.
Is it possible for the US to create consolidated democracies? Should we just give up? There are three candidate theories that explain how we get consolidated democracies: modernization theory; institutional capacity; rational choice institutionalism. Which is best? Which provides the best guidance for policy? What can we learn from Germany, Japan, Afghanistan and others?.

POLISCI 20N. The American Electorate in the Trump Era. 3 Units.
This seminar will introduce students to the methods social scientists use to analyze public opinion, voting and elections, with primary emphasis on the 2016 elections and the upcoming 2020 elections. Students will utilize major databases such as the American National Elections Studies (ANES) and the General Social Survey (GSS), as well as ongoing national panels. The seminar emphasizes analysis - not ideology, activism or personal catharsis. How are Americans in various demographic categories voting today and why? What is the relative importance of voter characteristics and identities, policy issues, the records and personal qualities of the candidates, the campaign itself, the performance of the Obama and Trump Administration, and myriad other factors?.

POLISCI 20Q. Democracy in Crisis: Learning from the Past. 3 Units.
This Sophomore Seminar will focus on U.S. democracy and will use a series of case studies of major events in our national history to explore what happened and why to American democracy at key pressure points. This historical exploration should shed light on how the current challenges facing American democracy might best be handled. (Cardinal Course certified by the Haas Center).
Same as: EDUC 122Q, HISTORY 52Q

POLISCI 22SI. Issues in American Politics and Public Policy. 1 Unit.
This course, administered in conjunction with Stanford in Government, will explore prominent contemporary issues in American politics and public policy. It will consist of eight guest lectures by Stanford professors, visiting scholars, and practitioners on salient public policy topics, and student-led discussion in non-lecture weeks. Grading will be on a satisfactory/no-credit basis, and to receive credit a student must attend at least eight of the ten total class sessions.

POLISCI 23Q. Analyzing the 2016 Elections. 3 Units.
the seminar will normally meet for two hours, but after three seminars there will be lab sessions to acquaint students with basic quantitative methods and major social science databases. After every election the commentariat promulgates a story line to explain the results. Typically later analysis shows the media story line to be wrong (eg. "values voters" in 2004). Participants in this seminar will analyze the results of the 2016 elections. The seminar is about ANALYSIS, not ideology. Some familiarity with quantitative methods is a prerequisite.

POLISCI 24Q. Law and Order. 3 Units.
Preference to sophomores. The role of law in promoting social order. What is the rule of law? How does it differ from the rule of men? What institutions best support the rule of law? Is a state needed to ensure that laws are enforced? Should victims be allowed to avenge wrongs? What is the relationship between justice and mercy?.

POLISCI 24SC. Conservatism and Liberalism in American Politics and Policy. 2 Units.
What influence do political ideologies have in American politics and government? In this course, students will study liberal and conservative ideology in American politics and public policy from the mid-20th century onward. The course begins with an examination of ideology in the American public and then considers ideology among political activists and elected officials, focusing on members of Congress and the president. The course will also cover the ideological polarization of political elites and its impact on the policy-making process. In the final part of the course, through a series of policy case studies, students will also evaluate how well certain public policies have met the ideological goals of their liberal and conservative sponsors. The course will included several lunches and dinners with guest speakers.

POLISCI 25N. The US Congress in Historical and Comparative Perspective. 3 Units.
This course traces the development of legislatures from their medieval European origins to the present, with primary emphasis on the case of the U.S. Congress. Students will learn about the early role played by assemblies in placing limits on royal power, especially via the power of the purse. About half the course will then turn to a more detailed consideration of the U.S. Congress's contemporary performance, analyzing how that performance is affected by procedural legacies from the past that affect most democratic legislatures worldwide.

POLISCI 27N. Thinking Like a Social Scientist. 3 Units.
Preference to freshman. This seminar will consider how politics and government can be studied systematically: the compound term Political SCIENCE is not an oxymoron. The seminar will introduce core concepts and explore a variety of methodological approaches. Problems of inference from evidence will be a major concern. Classic and contemporary research studies will be the basis of discussion throughout.

POLISCI 28N. The Changing Nature of Racial Identity in American Politics. 3 Units.
Almost one-third of Americans now identify with a racial/ethnic minority group. This seminar examines the relationship between racial identity, group consciousness, and public opinion. Topics include the role of government institutions in shaping identification, challenges in defining and measuring race, attitudes towards race-based policies, and the development of political solidarity within racial groups. Particular attention will be paid to the construction of political identities among the growing mixed-race population.

POLISCI 30SI. Digital Security and Civil Society. 2 Units.
This class will instruct students in the political economy of software and digital infrastructure as they relate to civil society in democracies. We will consider the role of privacy, anonymity, free expression and free association in democracies and examine the digital tools and practices that enable these freedoms. The class consists of three interwoven themes:n1) The role of civil society in democracies n2) The political economy of digital tools and their influence on societyn3) Individual and collective digital security.

POLISCI 31N. Political Freedom: Rights, Justice, and Democracy in the Western Tradition. 3 Units.
Freedom is one of our core values. Most people can agree that freedom is a good thing. Yet there is far less agreement about how to understand the concept itself and what kinds of political arrangements are best suited to protect and enhance freedom. Is freedom about being left alone? Undertaking action with others? Participating in governance? Does freedom require a limited state? An active and interventionist government? A robustly participatory political system? How is freedom connected to other political values, like justice and equality? This seminar will consider and evaluate some of the most controversial and challenging answers that have been given to these questions by canonical thinkers like John Locke, John Stuart Mill, and Karl Marx, as well as by more contemporary political and legal thinkers like Jeremy Waldron and Cass Sunstein. We will also examine how questions about the nature of freedom play out on college campuses and in the courts.

POLISCI 31Q. Justice and Cities. 3 Units.
Cities have most often been where struggles for social justice happen, where injustice is most glaring and where new or renewed visions of just communities are developed and tested. What makes a city just or unjust? How have people tried to make cities more just? Why have these efforts succeeded or failed? Each of our sessions will focus on questions like these and include a case study of a particular city, largely with a focus on the United States, including very local cases like San Francisco, Palo Alto and East Palo Alto. The central goal of this class is for you to gain an understanding of the roles of urban design and urban policies in making cities just or unjust places. You will critically engage with some of the debates on cities and justice and gain experience connecting theoretical debates about justice and democracy to empirical data and contemporary work on city design, planning, and policies through readings, our class discussions, and a sustained research project looking a particular city in depth.

POLISCI 33N. How We Decide: Social Choice in the Age of Algorithms. 4 Units.
The digital revolution arrived with the promise of improving human life, including through its ability to transform the way in which we make social decisions. But one of the most common critiques today is that unstructured interactions in social media and online platforms have actually set us back by spreading fake news, amplifying polarization, and failing to aggregate our diverse views and opinions into collective choices that move our society forward. nnHow should social decisions be made in the age of algorithms? We will approach this question through the lens of social choice theory, and connect this theory from economics and political science to the potential design of algorithms that aggregate our diverse preferences and information. We will review various systems of preference and information aggregation in small groups as well as large societies, including voting systems, bargaining protocols, and methods of deliberation. We will also describe decision making problems that arise in modern applications, such as distributed systems like blockchains and Wikipedia, as well as applications of topical interest such as the assignment of children to schools, the design of congressional districts, and the direct involvement of communities in participatory budgeting. nnA key objective of the class will be to get students to think about how social choice theory can be applied to real-life problems through the design of algorithms. There are no prerequisites, but students should come prepared to use high school level mathematics and deductive reasoning.
Same as: MS&E 33N

POLISCI 40SI. Rejecting Tyranny: Civil Resistance in Times of Crisis. 1 Unit.
Donald Trump's rise to power was anything but conventional. Although divisive among both Democrats and Republicans, he was still popular enough in the eyes of the electorate to become the leader of the free world. Is he a hero? Is he a dictator? Or something different altogether? As Trump often elicits comparisons to famous and infamous leaders of the past such as Hitler, Mussolini, and FDR, as well as right wing nationalists leaders in the present day such as Duterte and Le Pen, this class will examine the extent to which Trump's behavior resembles these authority figures and what our society should do to respond. Learning will be facilitated through discussion sections and guest professors from various Stanford departments including History, Political Science, and the Hoover Institution. Views from all sides of the political spectrum are welcome. Note: this class does not begin until the Tuesday of the second week of Spring quarter (Apr 11). Enrollment will be decided on the first day of class.

POLISCI 42. Democracy Matters. 1 Unit.
Should the U.S. close its border to immigrants? What are the ramifications of income inequality? How has COVID-19 changed life as we know it? Why are Americans so politically polarized? How can we address racial injustice? As the 2020 election approaches, faculty members from across Stanford will explore and examine some of the biggest challenges facing society today. Each week will be dedicated to a different topic, ranging from health care and the economy to racial injustice and challenges to democracy. Faculty with expertise in philosophy, economics, law, political science, psychology, medicine, history, and more will come together for lively conversations about the issues not only shaping this election season but also the nation and world at large. There will also be a Q&A following the initial discussion. Attendance and supplemental course readings are the only requirements for the course.
Same as: ECON 4, PHIL 30, PUBLPOL 4

POLISCI 42Q. The Rwandan Genocide. 5 Units.
Between April and July of 1994 more than 800,000 Rwandans, mostly Tutsi but also moderate Hutus, were killed in the most rapid genocide the world has ever known. The percentage of Rwandans killed in a single day of the genocide was ten times greater than the percentage of Americans killed in the entire Vietnam war. What could bring humans to plan and carry out such an orgy of violence? Could it have been prevented? Why did the United States or any other major power not intervene to stop the killing? To what extent should the United Nations be held accountable for the failure to end the genocide? What were the consequences of the genocide for the region of Central Africa? How did international actors respond to the challenges of reconstructing Rwanda after the killings? What has happened to the perpetrators of the genocide? This course surveys scholarly and journalistic accounts of the genocide to seek answers to these questions.nnThis seminar will be residence based in Crothers, but will be open to Crothers residents and non-residents.

POLISCI 45N. Civil War Narratives. 3 Units.
Preference to freshmen. Focus is on a new statistics-based theory to account for the susceptibility of countries to civil war. How to write a theory-based historical narrative. Students write and present an original historical narrative focusing on how well the theory explains a particular history and on the importance of factors that are absent from the theory in explaining civil war onsets.

POLISCI 46N. Contemporary African Politics. 3 Units.
Africa has lagged behind the rest of the developing world in terms of three consequential outcomes: economic development, the establishment of social order through effective governance, and the consolidation of democracy. This course seeks to identify the historical and political sources accounting for this lag, to provide extensive case study and statistical material to understand what sustains it, and to examine recent examples of success pointing to a more hopeful future. Students will be asked to develop expertise on one or two African countries and report regularly to fellow students on the progress (or lack thereof) of their countries on each outcome and the reasons for it.

POLISCI 52K. Technology and the 2020 Election. 1 Unit.
The 2020 U.S. Presidential Election season will be historic. A global pandemic, mass protests against police violence and enduring racism, an upended economy, a divisive incumbent President, and a polarized America are a potent combination for surprises. One thing is certain, however: the digital tools and platforms born in Silicon Valley will play an enormously important role in the campaign. Topics include: the technologies of the voting booth and reporting results; online filter bubbles, echo chambers, and effects on polarization; amplification and content moderation of political candidates; online political advertising and microtargeting; manipulation, misinformation, and disinformation; the U.S. in comparative perspective; and policy approaches. This course will attempt, with the help of expert guests, to draw lessons about the legitimate and illegitimate uses of technology in the 2020 election and to take stock of the health of American democracy. We also explore questions about a tech policy agenda in a Trump or Biden administration. We will meet once per week, on Wednesday evenings, with examinations of the most important digital technologies at stake in the election and for the country.

POLISCI 57E. State of the Union 2014. 1 Unit.
This course will examine major themes that contribute to the health, or disease, of the US body politic. Challenges and opportunities abound: we live in an age of rising inequality, dazzling technological innovation, economic volatility, geopolitical uncertainty, and the accumulating impact of climate change. These conditions confront our political leaders and us as citizens of a democracy plagued by dysfunction. What are the implications for the body politic? Led by Rob Reich (Political Science, Stanford), David Kennedy (History, Stanford), and James Steyer (CEO, Common Sense Media), the course will bring together distinguished analysts of American politics. Together, we will examine the following topics: inequality; energy and the environment; media and technology; the economy; and the 2014 midterm elections. The course is designed for the entire Stanford community: jointly offered for undergraduate and graduate students at Stanford (through listings in Political Science and History) and for community members through the Continuing Studies Program. For students, the course is available for 1 credit. This course may not be taken for a Letter Grade.
Same as: HISTORY 57E

POLISCI 70. Dangerous Ideas. 1 Unit.
Ideas matter. Concepts such as revolution, tradition, and hell have inspired social movements, shaped political systems, and dramatically influenced the lives of individuals. Others, like immigration, universal basic income, and youth play an important role in contemporary debates in the United States. All of these ideas are contested, and they have a real power to change lives, for better and for worse. In this one-unit class we will examine these "dangerous" ideas. Each week, a faculty member from a different department in the humanities and arts will explore a concept that has shaped human experience across time and space. Some weeks will have short reading assignments, but you are not required to purchase any materials.
Same as: ARTHIST 36, COMPLIT 36A, EALC 36, ENGLISH 71, ETHICSOC 36X, FRENCH 36, HISTORY 3D, MUSIC 36H, PHIL 36, RELIGST 36X, SLAVIC 36

POLISCI 71. Current Issues in European Security. 1 Unit.
Russia's annexation of Crimea in Spring 2014 posed not only a threat to post-World War II Europe formed around the norm of national sovereignty, but possibly also the very real threat that Russia had awakened from its 20 years of peacefulness to once again impose its will on Eastern Europe. Is Europe again under threat from the East? In Current Issues in European Security, students will attend public events organized by Stanford's Europe Center and Freeman Spogli Institute for International Studies. These events -- talks by political leaders and scholars from the U.S. and Europe -- will engage and encourage students to understand the deepening crises in Ukraine, conflict in the Baltics, and European security as a whole. Students will leave the course with a better understanding of the multi-faceted dilemmas policy makers face, historical background, and possible paths forward for global decision makers. In addition to attending the events, students will write a final memo recommending a course of action for US policy makers. Events will typically be scheduled from 12 noon to 1:30 p.m. but may be held at other times. There will be approximately six events in spring quarter, and students may also be required to attend one or two separate discussion sessions.

POLISCI 72. Policy, Politics and the 2020 Elections: What 2020 Means for Future Campaigns and Elections. 2 Units.
(Same as LAW 7057). This course looks back at the 2020 election campaign and tries to discern lessons and takeaways for future campaigns and elections. It will provide students with a behind-the-scenes understanding of how campaigns work. Each week, we will explore a different topic related to high-profile campaigns -- policy formation, communications, grassroots strategy, digital outreach, campaign finance -- and feature prominent guest speakers who have served and will serve in senior roles on both Democratic and Republican campaigns, including the Trump and Biden teams.
Same as: COMM 153A, COMM 253A, PUBLPOL 146, PUBLPOL 246

POLISCI 73. Energy Policy in California and the West. 1 Unit.
This seminar provides an in-depth analysis of the role of California state agencies and Western energy organizations in driving energy policy development, technology innovation, and market structures, in California, the West and internationally. The course covers three areas: 1) roles and responsibilities of key state agencies and Western energy organizations; 2) current and evolving energy and climate policies; and 3) development of the 21st century electricity system in California and the West. The seminar will also provide students a guideline of what to expect in professional working environment.
Same as: CEE 263G, ENERGY 73, PUBLPOL 73

POLISCI 74. Pathways to Public Service. 1 Unit.
This one-unit lecture series explores potential careers in public service, including roles in government as well as in many other organizations¿such as nonprofits, foundations, corporations, and arts organizations¿that help shape public policy and civic life. Each week, a guest speaker will introduce students to his or her organization and role, describe some of the key intellectual issues and current policy challenges, discuss career paths and skills crucial for the job, and help students reflect on possible connections between this work and their studies at Stanford. In an interactive concluding session, students will participate in a career assessment activity, reflect on possible next steps, and learn about other opportunities to explore public service at Stanford. This course is open to all students, including not only those studying political science or public policy, but also the arts, humanities, sciences, and engineering. It is co-sponsored by the School of Humanities and Sciences and Stanford in Government (SIG).
Same as: PUBLPOL 75

POLISCI 75. The 2018 Midterm Election: Making Your Voice Heard. 2-3 Units.
Elections are critical to determining the direction of this country, but how do you get involved in ways beyond voting? How do campaigns work on a practical level? How can students make a difference in the upcoming midterm elections? This class offers an opportunity to gain knowledge of and firsthand experience in an American elections. Course credit is based on classroom time, reading time and time spent on volunteer work. Students in this course will be required to participate in some way in the upcoming US Midterm election. This could mean undertaking one or more activities such as training for and serving as a poll worker, working for groups that are registering voters, or volunteering for a campaign. Students are responsible for finding their election-related opportunity, but they may contact Stephanie Burbank about options and contact information. Once you determine what activity you will be volunteering for, please fill out this form: http://web.stanford.edu/~sburbank/PS75.fb. If you have any questions, please reach out to the instructor.

POLISCI 76. Protagonists in Policy. 1 Unit.
Interested in learning from activists, academics, and politicians about the different ways you can be an agent of change and affect public policy? This course presents a lecture/discussion series in which students will have the opportunity to engage with influential speakers to discover and learn more about timely topics relating to policy, government, and international affairs. Speakers will be selected in cooperation with the Policy Dinners Committee, a branch of Stanford in Government.
Same as: INTNLREL 76

POLISCI 96X. Mobilizing Democracy: Campaigns, Elections, and Voting. 1 Unit.
Alternative Spring Break: America is often thought of as the archetypal democracy. While most democracies have surprisingly short lifespans, America has persisted for 238 years. However, in the 21st century, we have grounds to question the quality of our democracy. Turnout of the Voting Age Population hovers around 50 percent and today, we are seeing increasing legal challenges to voting rights. In the backdrop of these statistics, there is an entire industry devoted to campaigns. In the 2012 presidential race alone, almost $2.5 billion was poured into the campaign-industrial complex. Given that this cycle is a presidential election year, those amounts are expected to be surpassed. As a consequence, many questions arise: How do politicians engage voters in elections at the various levels of government? Where do they spend their money and why? In the age of big data, how accurately can elections be predicted? How do we maximize participation in elections?.

POLISCI 97X. Bridging the Civil-Military Divide: Military Service as Public Service in the 21st Century. 1 Unit.
Alternative Spring Break: Today, fewer than 0.5 percent of Americans serve in the military, as compared to roughly 12 percent during the second World War. This has led to a widening gap in knowledge about the military, its members and the functions they perform, as well as its basic structure and tradition of service. This course is intended to introduce students to the notion of military service as public service and explore how misperceptions on both sides affect the civil-military divide. We will explore military service from the life of an enlisted soldier deployed to Afghanistan, to an officer working at the Pentagon on broad national security strategy. How does society conceive of a soldier, a sailor, an airman, a marine? How do Americans perceive military service and what role do service members play in our society?.

POLISCI 101. Introduction to International Relations. 5 Units.
The course provides an introduction to major factors shaping contemporary international politics, including: the origins and nature of nationalism; explanations for war; nuclear weapons; international implications of the rise of China; civil war and international peacekeeping since the end of the Cold War; international institutions and how they facilitate interstate cooperation; and the politics of international "public bads" such as climate change and global pandemics.

POLISCI 101Z. Introduction to International Relations. 4 Units.
Approaches to the study of conflict and cooperation in world affairs. Applications to war, terrorism, trade policy, the environment, and world poverty. Debates about the ethics of war and the global distribution of wealth.
Same as: INTNLREL 101Z

POLISCI 102. Introduction to American Politics and Policy: The Good, The Bad, and The Ugly. 4-5 Units.
This is a course about American politics, which means this is a course about individuals, identities, and institutions. How do Americans come to think andnreason about politics? What is the role that identities play in affecting the political judgments that individuals make? How do our political institutionsnrespond to the demands of a diverse public that disagrees about issues related to race and justice, income and wealth inequality, climate change, gunncontrol, reproductive rights, the power of the executive, and the role that government ought to play in the lives of the governed? And how do we makensense of this seemingly peculiar contemporary moment in American politics? These are not easy questions, but they are ones for which political sciencenprovides a useful foundation to guide our inquiry. The objective of this course is to introduce students to various concepts and theoretical frameworks thatnhelp us understand the messiness and complexity of American politics. In addition to classroom lectures and discussion sections, students will benrequired to apply concepts and theoretical frameworks to contemporary issues in American politics. Undergraduate Public Policy students are required to enroll in this class for 5 units.
Same as: AMSTUD 123X, PUBLPOL 101, PUBLPOL 201

POLISCI 103. Justice. 4-5 Units.
In this course, we explore three sets of questions relating to justice and the meaning of a just society: (1) Liberty: What is liberty, and why is it important? Which liberties must a just society protect? (2) Equality: What is equality, and why is it important? What sorts of equality should a just society ensure? (3) Reconciliation: Are liberty and equality in conflict? If so, how should we respond to the conflict between them? We approach these topics by examining competing theories of justice including utilitarianism, libertarianism/classical liberalism, and egalitarian liberalism. The class also serves as an introduction to how to do political philosophy, and students approaching these topics for the first time are welcome. Political Science majors taking this course to fulfill the WIM requirement should enroll in POLISCI 103.
Same as: ETHICSOC 171, PHIL 171, POLISCI 336S, PUBLPOL 103C

POLISCI 104. Introduction to Comparative Politics. 5 Units.
Why are some countries prone to civil war and violence, while others remain peaceful? Why do some countries maintain democratic systems, while others do not? Why are some countries more prosperous than others? This course will provide an overview of the most basic questions in the comparative study of political systems, and will introduce the analytical tools that can help us answer them.

POLISCI 109Z. Research in Political Science and International Relations. 6 Units.
Students will assist faculty with research projects. They will also attend workshops/seminars and complete written assignments that demonstrate their knowledge of research design, data analysis, and software. Students must apply through Summer Session and may not enroll without permission of the instructors.

POLISCI 110C. America and the World Economy. 5 Units.
Examination of contemporary US foreign economic policy. Areas studied: the changing role of the dollar; mechanism of international monetary management; recent crises in world markets including those in Europe and Asia; role of IMF, World Bank and WTO in stabilizing world economy; trade politics and policies; the effects of the globalization of business on future US prosperity. Political Science majors taking this course for WIM credit should enroll in POLISCI 110C.
Same as: INTNLREL 110C, POLISCI 110X

POLISCI 110D. War and Peace in American Foreign Policy. 3-5 Units.
The causes of war in American foreign policy. Issues: international and domestic sources of war and peace; war and the American political system; war, intervention, and peace making in the post-Cold War period. Political Science majors taking this course to fulfill the WIM requirement should enroll in POLISCI 110D for 5 units. International Relations majors taking this course should enroll in INTNLREL 110D for 5 units. SCPD students should enroll for 3 units.
Same as: AMSTUD 110D, INTNLREL 110D, POLISCI 110Y

POLISCI 110G. Governing the Global Economy. 5 Units.
Who governs the world economy? Why do countries succeed or fail to cooperate in setting their economic policies? When and how do international institutions help countries cooperate? When and why do countries adopt good and bad economic policies? How does the international economy affect domestic politics? This course examines how domestic and international politics determine how the global economy is governed. We will study the politics of monetary, trade, international investment, energy, environmental, and foreign aid policies to answer these questions. The course will approach each topic by examining alternative theoretical approaches and evaluate these theories using historical and contemporary evidence. There will be an emphasis on applying concepts through the analysis of case studies.

POLISCI 110X. America and the World Economy. 5 Units.
Examination of contemporary US foreign economic policy. Areas studied: the changing role of the dollar; mechanism of international monetary management; recent crises in world markets including those in Europe and Asia; role of IMF, World Bank and WTO in stabilizing world economy; trade politics and policies; the effects of the globalization of business on future US prosperity. Political Science majors taking this course for WIM credit should enroll in POLISCI 110C.
Same as: INTNLREL 110C, POLISCI 110C

POLISCI 110Y. War and Peace in American Foreign Policy. 3-5 Units.
The causes of war in American foreign policy. Issues: international and domestic sources of war and peace; war and the American political system; war, intervention, and peace making in the post-Cold War period. Political Science majors taking this course to fulfill the WIM requirement should enroll in POLISCI 110D for 5 units. International Relations majors taking this course should enroll in INTNLREL 110D for 5 units. SCPD students should enroll for 3 units.
Same as: AMSTUD 110D, INTNLREL 110D, POLISCI 110D

POLISCI 114D. Democracy, Development, and the Rule of Law. 3-5 Units.
This course explores the different dimensions of development - economic, social, and political - as well as the way that modern institutions (the state, market systems, the rule of law, and democratic accountability) developed and interacted with other factors across different societies around the world. The class will feature additional special guest lectures by Francis Fukuyama, Larry Diamond, Michael McFaul, Anna Grzymala-Busse, and other faculty and researchers affiliated with the Center on Democracy, Development, and the Rule of Law. Undergraduate students should enroll in this course for 5 units. Graduate students should enroll for 3.
Same as: INTLPOL 230, INTNLREL 114D, POLISCI 314D

POLISCI 114S. International Security in a Changing World. 5 Units.
This class examines the most pressing international security problems facing the world today: nuclear crises, non-proliferation, insurgencies and civil wars, terrorism, and climate change. Alternative perspectives - from political science, history, and STS (Science, Technology, and Society) studies - are used to analyze these problems. The class includes an award-winning two-day international negotiation simulation.

POLISCI 118P. U.S. Relations with Iran. 5 Units.
The evolution of relations between the U.S. and Iran. The years after WW II when the U.S. became more involved in Iran. Relations after the victory of the Islamic republic. The current state of affairs and the prospects for the future. Emphasis is on original documents of U.S. diplomacy (White House, State Department, and the U.S. Embassy in Iran). Research paper.

POLISCI 120B. Campaigns, Voting, Media, and Elections. 4-5 Units.
This course examines the theory and practice of American campaigns and elections. First, we will attempt to explain the behavior of the key players -- candidates, parties, journalists, and voters -- in terms of the institutional arrangements and political incentives that confront them. Second, we will use current and recent election campaigns as "laboratories" for testing generalizations about campaign strategy and voter behavior. Third, we examine selections from the academic literature dealing with the origins of partisan identity, electoral design, and the immediate effects of campaigns on public opinion, voter turnout, and voter choice. As well, we'll explore issues of electoral reform and their more long-term consequences for governance and the political process.
Same as: COMM 162, COMM 262

POLISCI 120C. American Political Institutions in Uncertain Times. 5 Units.
This course examines how the rules that govern elections and the policy process determine political outcomes. It explores the historical forces that have shaped American political institutions, contemporary challenges to governing, and prospects for change. Topics covered include partisan polarization and legislative gridlock, the politicization of the courts, electoral institutions and voting rights, the expansion of presidential power, campaign finance and lobbying, representational biases among elected officials, and the role of political institutions in maintaining the rule of law. Throughout, emphasis will be placed on the strategic interactions between Congress, the presidency, and the courts and the importance of informal norms and political culture. Political Science majors taking this course to fulfill the WIM requirement should enroll in POLISCI 120C.
Same as: PUBLPOL 124

POLISCI 120R. What's Wrong with American Government? An Institutional Approach. 5 Units.
How politicians, once elected, work together to govern America. The roles of the President, Congress, and Courts in making and enforcing laws. Focus is on the impact of constitutional rules on the incentives of each branch, and on how they influence law.

POLISCI 120Z. What's Wrong with American Government? An Institutional Approach. 4 Units.
How politicians, once elected, work together to govern America. The roles of the President, Congress, and Courts in making and enforcing laws. Focus is on the impact of constitutional rules on the incentives of each branch, and on how they influence law.

POLISCI 121. Political Power in American Cities. 5 Units.
The major actors, institutions, processes, and policies of sub-state government in the U.S., emphasizing city general-purpose governments through a comparative examination of historical and contemporary politics. Issues related to federalism, representation, voting, race, poverty, housing, and finances. Political Science majors taking this course to fulfill the WIM requirement should enroll in POLISCI 121.
Same as: AMSTUD 121Z, PUBLPOL 133, URBANST 111

POLISCI 121L. Racial-Ethnic Politics in US. 5 Units.
Why is contemporary American politics so sharply divided along racial and party lines? Are undocumented immigrants really more likely to commit crimes than U.S. citizens? What makes a political ad "racist?" The U.S. population will be majority-minority by 2050; what does this mean for future electoral outcomes? We will tackle such questions in this course, which examines various issues surrounding the development of political solidarity within racial groups; the politics of immigration, acculturation, and identification; and the influence of race on public opinion, political behavior, the media, and in the criminal justice system. Prior coursework in Economics or Statistics strongly recommended.
Same as: CSRE 121L, PUBLPOL 121L

POLISCI 121Z. Political Power in American Cities. 4 Units.
The major actors, institutions, processes, and policies of sub-state government in the U.S., emphasizing city general-purpose governments through a comparative examination of historical and contemporary politics. Issues related to federalism, representation, voting, race, poverty, housing, and finances.

POLISCI 122. Introduction to American Law. 3-5 Units.
For undergraduates. The structure of the American legal system including the courts; American legal culture; the legal profession and its social role; the scope and reach of the legal system; the background and impact of legal regulation; criminal justice; civil rights and civil liberties; and the relationship between the American legal system and American society in general.
Same as: AMSTUD 179, PUBLPOL 302A

POLISCI 124A. The American West. 5 Units.
The American West is characterized by frontier mythology, vast distances, marked aridity, and unique political and economic characteristics. This course integrates several disciplinary perspectives into a comprehensive examination of Western North America: its history, physical geography, climate, literature, art, film, institutions, politics, demography, economy, and continuing policy challenges. Students examine themes fundamental to understanding the region: time, space, water, peoples, and boom and bust cycles.
Same as: AMSTUD 124A, ARTHIST 152, ENGLISH 124, HISTORY 151

POLISCI 124L. The Psychology of Communication About Politics in America. 4-5 Units.
Focus is on how politicians and government learn what Americans want and how the public's preferences shape government action; how surveys measure beliefs, preferences, and experiences; how poll results are criticized and interpreted; how conflict between polls is viewed by the public; how accurate surveys are and when they are accurate; how to conduct survey research to produce accurate measurements; designing questionnaires that people can understand and use comfortably; how question wording can manipulate poll results; corruption in survey research.
Same as: COMM 164, COMM 264, POLISCI 324L, PSYCH 170

POLISCI 124R. The Federal System: Judicial Politics and Constitutional Law. 5 Units.
Does the constitution matter? And if so, how exactly does it shape our daily lives? In this course, we will examine the impact of structural features, such as the separation of powers and federalism. While these features often seem boring and unimportant, they are not. As we will see, arguments over structure were at the heart of the debates over slavery, the incarceration of the Japanese during WWII, the drug war and gay marriage. Prerequisites: 2 or equivalent, and sophomore standing. Fulfills Writing in the Major requirement for PoliSci majors.

POLISCI 124S. Civil Liberties: Judicial Politics and Constitutional Law. 5 Units.
The role and participation of courts, primarily the U.S. Supreme Court, in public policy making and the political system. Judicial activity in civil liberty areas (religious liberty, free expression, race and sex discrimination, political participation, and rights of persons accused of crime). Prerequisites: 2 or equivalent, and sophomore standing.

POLISCI 125M. Latino Social Movements. 5 Units.
Social movements are cooperative attempts to change the world. This course reviews historically significant and contemporary political and social movements in Latino communities in the U.S., including the movements of the 1960s and events of the modern era such as the Spring 2006 marches and student walkouts, the 2010 resistance to Arizona¿s SB1070, and ongoing efforts in 2017 related to detention and deportation policies.
Same as: CHILATST 181

POLISCI 125P. The First Amendment: Freedom of Speech and Press. 4-5 Units.
The First Amendment: Freedom of Speech and Press (7084): Introduction to the constitutional protections for freedom of speech, press, and expressive association. All the major Supreme Court cases dealing with issues such as incitement, libel, hate speech, obscenity, commercial speech, and campaign finance. There are no prerequisites, but a basic understanding of American government would be useful. This course is crosslisted in the university and undergraduates are eligible to take it. Elements used in grading: Law students will be evaluated based on class participation and a final exam. Non-law students will be evaluated on class participation, a midterm and final exam, and nonlaw students will participate in a moot court on a hypothetical case. Non-law students will also have an additional one hour discussion section each week led by a teaching assistant. Cross-listed with Communication (COMM 151, COMM 251) and Political Science (POLISCI 125P). nnnClass time will be 11:10-12:40 on Mondays and Wednesdays.
Same as: COMM 151, COMM 251, ETHICSOC 151

POLISCI 125S. Chicano/Latino Politics. 5 Units.
The political position of Latinos and Latinas in the U.S.. Focus is on Mexican Americans, with attention to Cuban Americans, Puerto Ricans, and other groups. The history of each group in the American polity; their political circumstances with respect to the electoral process, the policy process, and government; the extent to which the demographic category Latino is meaningful; and group identity and solidarity among Americans of Latin American ancestry. Topics include immigration, education, affirmative action, language policy, and environmental justice.
Same as: CHILATST 125S

POLISCI 126P. Constitutional Law. 3 Units.
This course covers Supreme Court case law concerning governmental powers, equal protection, and certain fundamental rights. The course investigates the constitutional foundation for democratic participation in the United States, covering topics such as the Fourteenth Amendment's protections against discrimination on grounds of race, gender, and other classifications, as well as the individual rights to voting and intimate association, and an introduction to First Amendment rights of free speech and press. Students will be evaluated on class participation, a midterm moot court with both a written and oral component, and a take-home final exam. Lectures will be twice per week and a discussion section once per week.
Same as: COMM 152, COMM 252

POLISCI 127A. Finance, Corporations, and Society. 4 Units.
Both "free market capitalism" and democracy are in crisis around the world. This interdisciplinary course will help you understand the issues by exploring the interactions between the financial system, corporations, governments, and broader society. Topics include basic financial decisions of individuals and corporations, consumer finance (including mortgages, student loans, insurance and savings), financial markets and firms, corporations and their governance, the role of disclosures and regulations, political economy and government institutions, and the role of the media. We will discuss current events and policy debates regularly throughout the course. The approach will be rigorous and analytical but not overly mathematical. Visitors with relevant experience will enrich the discussion.
Same as: ECON 143, INTLPOL 227, PUBLPOL 143

POLISCI 127P. Economic Inequality and Political Dysfunction. 5 Units.
This course will examine how two of the defining features of contemporary U.S. politics, economic inequality and political polarization, relate to each other and to Congressional gridlock. The reading list will focus on several books recently authored by preeminent political scientists on this important topic. The course will cover a range of topics, including the disparity in political representation of the preferences of the affluent over those of the poor, the origins of Congressional polarization, the influence of money in politics, budgetary politics, immigration policy, and electoral and institutional barriers to reform.

POLISCI 130. 20th Century Political Theory: Liberalism and its Critics. 5 Units.
In this course, students learn and engage with the debates that have animated political theory since the early 20th century. What is the proper relationship between the individual, the community, and the state? Are liberty and equality in conflict, and, if so, which should take priority? What does justice mean in a large and diverse modern society? The subtitle of the course, borrowed from a book by Michael Sandel, is "Liberalism and its Critics" because the questions we discuss in this class center on the meaning of, and alternatives to, the liberal idea that the basic goal of society should be the protection of individual rights. Readings include selections from works by John Rawls, Hannah Arendt, Robert Nozick, Michael Sandel, Iris Marion Young, and Martha Nussbaum. No prior experience with political theory is necessary.
Same as: ETHICSOC 130, PHIL 171P

POLISCI 131L. Modern Political Thought: Machiavelli to Marx and Mill. 5 Units.
This course offers an introduction to the history of Western political thought from the late fifteenth through the nineteenth centuries. We will consider the development of ideas like individual rights, government by consent, and the protection of private property. We will also explore the ways in which these ideas continue to animate contemporary political debates. Thinkers covered will include: Niccolò Machiavelli, Thomas Hobbes, John Locke, Jean-Jacques Rousseau, Edmund Burke, John Stuart Mill, and Karl Marx.
Same as: ETHICSOC 131S

POLISCI 132A. The Ethics of Elections. 5 Units.
Do you have a duty to vote? Should immigrants be allowed to vote? Should we make voting mandatory? How (if at all) should we regulate campaign finance? Should we even have elections at all? In this course, we will explore these and other ethical questions related to electoral participation and the design of electoral institutions. We will evaluate arguments from political philosophers, political scientists, and politicians to better understand how electoral systems promote important democratic values and how this affects citizens' and political leaders' ethical obligations. We will focus, in particular, on issues in electoral design that have been relevant in recent US elections (e.g. gerrymandering), though many of the ethical issues we will discuss in this course will be relevant in any electoral democracy.
Same as: ETHICSOC 134R

POLISCI 133. Ethics and Politics of Public Service. 3-5 Units.
Ethical and political questions in public service work, including volunteering, service learning, humanitarian assistance, and public service professions such as medicine and teaching. Motives and outcomes in service work. Connections between service work and justice. Is mandatory service an oxymoron? History of public service in the U.S. Issues in crosscultural service work. Integration with the Haas Center for Public Service to connect service activities and public service aspirations with academic experiences at Stanford.
Same as: CSRE 178, ETHICSOC 133, PHIL 175A, PHIL 275A, PUBLPOL 103D, URBANST 122

POLISCI 133Z. Ethics and Politics in Public Service. 4 Units.
This course examines ethical and political questions that arise in doing public service work, whether volunteering, service learning, humanitarian endeavors overseas, or public service professions such as medicine and teaching. What motives do people have to engage in public service work? Are self-interested motives troublesome? What is the connection between service work and justice? Should the government or schools require citizens or students to perform service work? Is mandatory service an oxymoron?.
Same as: CSRE 133P, PUBLPOL 103Z, URBANST 122Z

POLISCI 134. Ethics for Activists. 5 Units.
Activists devote sustained effort and attention toward achieving particular goals of social and political change. Do we have an ethical obligation to be activists? And how should those who do choose to be activists (for whatever reason) understand the ethics of that role? Questions discussed in this course may include: When is civil disobedience appropriate, and what does it entail? Should activists feel constrained by obligations of fairness, honesty, or civility toward those with whom we disagree? Are there special ethical considerations in activism on behalf of those who cannot advocate for themselves? What is solidarity and what does it require of us? Students in this course will develop skills in analyzing, evaluating, and constructing logical arguments about ethical concerns related to activism, but class discussions will also address the potential limitations of logical argument in ethical and political reasoning.
Same as: ETHICSOC 134

POLISCI 134E. Universal Basic Income: the philosophy behind the proposal. 3 Units.
Universal basic income (or UBI) is a regular cash allowance given to all members of a community without means test, regardless of personal desert, and with no strings attached. Once a utopian proposal, the policy is now discussed and piloted throughout the world. The growth of income and wealth inequalities, the precariousness of labor, and the persistence of abject poverty have all been important drivers of renewed interest in UBI in the United States. But it is without a doubt the fear that automation may displace workers from the labor market at unprecedented rates that explains the revival of the policy in recent years, including by many in or around Silicon Valley. Among the various objections to the proposal, one concerns its moral adequacy: Isn't it fundamentally unjust to give cash to all indiscriminately rather than to those who need it and deserve it? Over the years, a variety of scholars have defended the policy on moral grounds, arguing that UBI is a tool of equality, liberal freedom, republican freedom, gender equity, or racial equity. Many others have attacked UBI on those very same grounds, making the case that alternative policy proposals like the job guarantee, means-tested benefits, conditional benefits, or reparations should be preferred. Students will learn a great deal about political theory and ethics in general but always through the specific angle of the policy proposal, and they will become experts on the philosophy, politics and economics of UBI. The seminar is open to undergraduate and graduate students in all departments. There are no pre-requisites.
Same as: ETHICSOC 174B, ETHICSOC 274B, PHIL 174B, PHIL 274B, POLISCI 338

POLISCI 134L. Introduction to Environmental Ethics. 4-5 Units.
How should human beings relate to the natural world? Do we have moral obligations toward non-human animals and other parts of nature? And what do we owe to other human beings, including future generations, with respect to the environment? The first part of this course will examine such questions in light of some of our current ethical theories: considering what those theories suggest regarding the extent and nature of our environmental obligations; and also whether reflection on such obligations can prove informative about the adequacy of our ethical theories. In the second part of the course, we will use the tools that we have acquired to tackle various ethical questions that confront us in our dealings with the natural world, looking at subjects such as: animal rights; conservation; economic approaches to the environment; access to and control over natural resources; environmental justice and pollution; climate change; technology and the environment; and environmental activism.
Same as: ETHICSOC 178M, ETHICSOC 278M, PHIL 178M, PHIL 278M

POLISCI 134P. Contemporary Moral Problems. 4-5 Units.
This course is an introduction to contemporary ethical thought with a focus on the morality of harming others and saving others from harm. It aims to develop students' ability to think carefully and rationally about moral issues, to acquaint them with modern moral theory, and to encourage them to develop their own considered positions about important real-world issues. In the first part of the course, we will explore fundamental topics in the ethics of harm. Among other questions, we will ask: How extensive are one's moral duties to improve the lives of the less fortunate? When is it permissible to inflict harm on others for the sake of the greater good? Does the moral permissibility of a person's action depend on her intentions? Can a person be harmed by being brought into existence? In the second part of the course, we will turn to practical questions. Some of these will be familiar; for example: Is abortion morally permissible? What obligations do we have to protect the planet for the sake of future generations? Other questions we will ask are newer and less well-trodden. These will include: How does the availability of new technology, in particular artificial intelligence, change the moral landscape of the ethics of war? What moral principles should govern the programming and operation of autonomous vehicles?.
Same as: ETHICSOC 185M, PHIL 72

POLISCI 135. Citizenship. 5 Units.
This class begins from the core definition of citizenship as membership in a political community and explores the many debates about what that membership means. Who is (or ought to be) a citizen? Who gets to decide? What responsibilities come with citizenship? Is being a citizen analogous to being a friend, a family member, a business partner? How can citizenship be gained, and can it ever be lost? These debates figure in the earliest recorded political philosophy but also animate contemporary political debates. This class uses ancient, medieval, and modern texts to examine these questions and different answers given over time. We¿Äôll pay particular attention to understandings of democratic citizenship but look at non-democratic citizenship as well. Students will develop and defend their own views on these questions, using the class texts as foundations. No experience with political philosophy is required or expected, and students can expect to learn or hone the skills (writing / reading / analysis) of political philosophy.
Same as: ETHICSOC 135, PHIL 135X

POLISCI 135D. The Ethics of Democratic Citizenship. 5 Units.
We usually think about democratic citizenship in terms of rights and opportunities, but are these benefits of democracy accompanied by special obligations? Do citizens of a democracy have an obligation to take an interest in politics and to actively influence political decision making? How should citizens respond when a democracy¿s laws become especially burdensome? Do citizens of a democracy have a special obligation to obey the law? In this course, we will read classical and contemporary political philosophy including Plato's Crito and King's "Letter from a Birmingham Jail" to explore how political thinkers have understood and argued for the ethics of citizenship. Students in this course will draw on these materials to construct their own arguments, and to identify and assess implicit appeals to the ethics of citizenship in popular culture and contemporary public discourse, from The Simpsons to President Obama's speeches.
Same as: ETHICSOC 135R

POLISCI 135E. Philosophy of Public Policy. 4 Units.
From healthcare to voting reforms, social protection and educational policies, public policies are underpinned by moral values. When we debate those policies, we typically appeal to values like justice, fairness, equality, freedom, privacy, and safety. A proper understanding of those values, what they mean, how they may conflict, and how they can be weighed against each other is essential to developing a competent and critical eye on our complex political world. We will ask questions such as: Is compulsory voting justified? Should children have the right to vote? Is affirmative action just? What is wrong with racial profiling? What are the duties of citizens of affluent countries towards migrants? Do we have a right to privacy? Is giving cash to all unconditionally fair? This class will introduce students to a number of methods and frameworks coming out of ethics and political philosophy and will give students a lot of time to practice ethically informed debates on public policies. At the end of this class, students should have the skills to critically examine a wide range of diverse policy proposals from the perspective of ethics, moral and political philosophy. There are no prerequisites. Undergraduates and graduates from all departments are welcome to attend.
Same as: ETHICSOC 175X, PHIL 175B, PHIL 275B, POLISCI 235E, PUBLPOL 177

POLISCI 136R. Introduction to Global Justice. 4 Units.
This course explores the normative demands and definitions of justice that transcend the nation-state and its borders, through the lenses of political justice, economic justice, and human rights. What are our duties (if any) towards those who live in other countries? Should we be held morally responsible for their suffering? What if we have contributed to it? Should we be asked to remedy it? At what cost? These are some of the questions driving the course. Although rooted in political theory and philosophy, the course will examine contemporary problems that have been addressed by other scholarly disciplines, public debates, and popular media, such as immigration and open borders, climate change refugees, and the morality of global capitalism (from exploitative labor to blood diamonds). As such, readings will combine canonical pieces of political theory and philosophy with readings from other scholarly disciplines, newspaper articles, and popular media.
Same as: ETHICSOC 136R, INTNLREL 136R, PHIL 76, POLISCI 336

POLISCI 137A. Political Philosophy: The Social Contract Tradition. 4 Units.
(Graduate students register for 276.) What makes political institutions legitimate? What makes them just? When do citizens have a right to revolt against those who rule over them? Which of our fellow citizens must we tolerate?Surprisingly, the answers given by some of the most prominent modern philosophers turn on the idea of a social contract. We will focus on the work of Hobbes, Locke, Rousseau, and Rawls.
Same as: ETHICSOC 176, PHIL 176, PHIL 276, POLISCI 337A

POLISCI 138E. Egalitarianism: A course on the history and theory of egalitarianism and anti-egalitarianism. 4 Units.
Egalitarianism is a conception of justice that takes the value of equality to be of primary political and moral importance. There are many different ways to be an egalitarian - it all depends on what we take to be the currency of egalitarian justice. Are we trying to equalize basic rights and liberties, or resources, opportunities, positions, status, respect, welfare, or capabilities? Is equality really what we should try to achieve in a just society? Or should we just make sure everyone has enough? Why do egalitarians think that such society would still be unjust; and how do they proceed to argue for equality?nnThis class will introduce students to egalitarian and anti-egalitarian thought by looking both at the history of egalitarian thinking and at contemporary accounts in defense of equality. It will provide an in depth introduction to the concepts that are used when inequalities are discussed by philosophers, economists, scientists and politicians. The class will attest of the varieties of approaches and perspectives to equality. For instance, we will learn from the 19th century debate on racial inequalities to understand how anti-egalitarian discourses are constructed; we will look into Rousseau's conception of social equality in the Second Discourse and the Social Contract; and we will engage with contemporary egalitarian theories by studying Rawlsian and post-Rawlsian forms of egalitarianism.
Same as: ETHICSOC 174E, PHIL 174E, PHIL 274E

POLISCI 140P. Populism and the Erosion of Democracy. 5 Units.
What is populism, and how much of a threat to democracy is it? How different is it from fascism or other anti-liberal movements? This course explores the conditions for the rise of populism, evaluates how much of a danger it poses, and examines the different forms it takes.
Same as: REES 240P

POLISCI 141A. Immigration and Multiculturalism. 5 Units.
What are the economic effects of immigration? Do immigrants assimilate into local culture? What drives native attitudes towards immigrants? Is diversity bad for local economies and societies and which policies work for managing diversity and multiculturalism? We will address these and similar questions by synthesizing the conclusions of a number of empirical studies on immigration and multiculturalism. The emphasis of the course is on the use of research design and statistical techniques that allow us to move beyond correlations and towards causal assessments of the effects of immigration and immigration policy.
Same as: CSRE 141S

POLISCI 143S. Comparative Corruption. 3 Units.
Causes, effects, and solutions to various forms of corruption in business and politics in both developing regions (e.g. Asia, E. Europe) and developed ones (the US and the EU).
Same as: SOC 113

POLISCI 146A. African Politics. 4-5 Units.
Africa has lagged the rest of the developing world in terms of economic development, the establishment of social order, and the consolidation of democracy. This course seeks to identify the historical and political sources accounting for this lag, and to provide extensive case study and statistical material to understand what sustains it, and how it might be overcome.
Same as: AFRICAAM 146A

POLISCI 147. Comparative Democratic Development. 5 Units.
Social, cultural, political, economic, and international factors affecting the development and consolidation of democracy in historical and comparative perspective. Individual country experiences with democracy, democratization, and regime performance. Emphasis is on global third wave of democratization beginning in the mid-1970s, the recent global recession of democracy (including the rise of illiberal populist parties and movements), and the contemporary challenges and prospects for democratic change.
Same as: SOC 112

POLISCI 147B. Gender, Identity, and Politics. 5 Units.
Identity, whether national, religious, racial, ethnic, gender, sexual, or otherwise, can importantly shape how people experience the political world. Why do some identities become politically salient and how does identity shape politics? This course takes the core questions of comparative politics - democratization, development, social movements, civil society, conflict, etc. - and examines them through the lens of identity, particularly gender identity. We will do so by drawing on evidence and cases from across the globe.

POLISCI 147P. The Politics of Inequality. 5 Units.
This course is about the distribution of power in contemporary democratic societies, and especially in the US: who governs? Is there a ``power elite,'' whose preferences dominate public policy making? Or, does policy reflect a wide range of interests? What is the relationship between income and power? What are the political consequences of increasing income inequality? How do income differences across racial and ethnic groups affect the quality of their representation? What are effective remedies for unequal influence? Finally, which institutions move democratic practice furthest towards full democratic equality? This course will address these questions, focusing first on local distributions of power, and then considering the implications of inequality in state and national politics. nStudents will have the opportunity to study income inequality using income and labor force surveys in a mid-term assignment. Then, in a final paper, students will conduct an empirical examination of the implications of income inequality for American democracy.
Same as: PUBLPOL 247, SOC 178

POLISCI 148. Chinese Politics. 3-5 Units.
China, one of the few remaining communist states in the world, has not only survived, but has become a global political actor of consequence with the fastest growing economy in the world. What explains China's authoritarian resilience? Why has the CCP thrived while other communist regimes have failed? How has the Chinese Communist Party managed to develop markets and yet keep itself in power? What avenues are there for political participation? How does censorship work in the information and 'connected' age of social media? What are the prospects for political change? How resilient is the part in the fave of technological and economic change? Materials will include readings, lectures, and selected films. This course has no prerequisites. (Graduate students register for 348.).
Same as: POLISCI 348

POLISCI 149S. Islam, Iran, and the West. 5 Units.
Changes in relative power and vitality of each side. The relationship in the Middle Ages revolved around power and domination, and since the Renaissance around modernity. Focus is on Muslims of the Middle East.

POLISCI 149T. Middle Eastern Politics. 5 Units.
Topics in contemporary Middle Eastern politics including institutional sources of underdevelopment, political Islam, electoral authoritarianism, and the political economy of oil.

POLISCI 150A. Data Science for Politics. 5 Units.
Data science is quickly changing the way we understand and and engage in the political process. In this course we will develop fundamental techniques of data science and apply them to large political datasets on elections, campaign finance, lobbying, and more. The objective is to give students the skills to carry out cutting edge quantitative political studies in both academia and the private sector. Students with technical backgrounds looking to study politics quantitatively are encouraged to enroll.
Same as: POLISCI 355A

POLISCI 150B. Machine Learning for Social Scientists. 5 Units.
Machine learning - the use of algorithms to classify, predict, sort, learn and discover from data - has exploded in use across academic fields, industry, government, and the non-profit sector. This course provides an introduction to machine learning for social scientists. We will introduce state of the art machine learning tools, show how to use those tools in the programming language R, and demonstrate why a social science focus is essential to effectively apply machine learning techniques in social, political, and policy contexts. Applications of the methods will include forecasting social phenomena, evaluating the use of algorithms in public policy, and the analysis of social media and text data. Prerequisite: POLISCI 150A/355A.
Same as: POLISCI 355B

POLISCI 150C. Causal Inference for Social Science. 5 Units.
Causal inference methods have revolutionized the way we use data, statistics, and research design to move from correlation to causation and rigorously learn about the impact of some potential cause (e.g., a new policy or intervention) on some outcome (e.g., election results, levels of violence, poverty). This course provides an introduction that teaches students the toolkit of modern causal inference methods as they are now widely used across academic fields, government, industry, and non-profits. Topics include experiments, matching, regression, sensitivity analysis, difference-in-differences, panel methods, instrumental variable estimation, and regression discontinuity designs. We will illustrate and apply the methods with examples drawn from various fields including policy evaluation, political science, public health, economics, business, and sociology. Prerequisite: POLISCI 150A.
Same as: POLISCI 355C

POLISCI 151. Tackling Big Questions Using Social Data Science. 5 Units.
Big data can help us provide answers to fundamental social questions, from poverty and social mobility, to climate change, migration, and the spread of disease. But making sense of data requires more than just statistical techniques: it calls for models of how humans behave and interact with each other. Social data science combines the analysis of big data with social science theory. We will take a project-oriented, many models-many methods approach: for each topic or question of general interest, we will first introduce simple formal models from across the social sciences to guide our thinking. Then we will collect and analyze the relevant data, applying data science techniques such as machine learning and causal inference. Prerequisites are Econ 102A and 102B.
Same as: ECON 151

POLISCI 152. Introduction to Game Theoretic Methods in Political Science. 3-5 Units.
Concepts and tools of non-cooperative game theory developed using political science questions and applications. Formal treatment of Hobbes' theory of the state and major criticisms of it; examples from international politics. Primarily for graduate students; undergraduates admitted with consent of instructor.
Same as: POLISCI 352

POLISCI 153. Thinking Strategically. 5 Units.
This course provides an introduction to strategic reasoning. We discuss ideas such as the commitment problem, credibility in signaling, cheap talk, moral hazard and adverse selection. Concepts are developed through games played in class, and applied to politics, business and everyday life.
Same as: POLISCI 354

POLISCI 153Z. Thinking Strategically. 4 Units.
This course provides an introduction to strategic reasoning. We discuss ideas such as the commitment problem, credibility in signaling, cheap talk, moral hazard and adverse selection. Concepts are developed through games played in class, and applied to politics, business and everyday life.

POLISCI 182. Ethics, Public Policy, and Technological Change. 5 Units.
Examination of recent developments in computing technology and platforms through the lenses of philosophy, public policy, social science, and engineering. Course is organized around four main units: algorithmic decision-making and bias; data privacy and civil liberties; artificial intelligence and autonomous systems; and the power of private computing platforms. Each unit considers the promise, perils, rights, and responsibilities at play in technological developments. Prerequisite: CS106A.
Same as: COMM 180, CS 182, ETHICSOC 182, PHIL 82, PUBLPOL 182

POLISCI 209. Curricular Practical Training. 1 Unit.
Qualified Political Science students obtain employment in a relevant research or industrial activity to enhance their professional experience consistent with their degree programs. Meets the requirements for Curricular Practical Training for students on F-1 visas. The student is responsible for arranging their own internship/employment and gaining faculty sponsorship. Prior to enrolling, students must complete a petition form available on the Political Science website (politicalscience.stanford.edu/undergraduate-program/forms). The petition is due no later the end of week one of the quarter in which the student intends to enroll. If the CPT is for Summer, the petition form is due by May 31. An offer letter will need to be submitted along with the petition. At the completion of the CPT quarter, a final report must be submitted to the faculty sponsor documenting the work done and its relevance to Political Science. This course be repeated for credit up to 3 times but will not count toward the Political Science major or minor requirements.

POLISCI 209Z. Research in Political Science and International Relations. 6 Units.
Students will assist faculty with research projects. They will also attend workshops/seminars and complete written assignments that demonstrate their knowledge of research design, data analysis, and software. Students must apply through Summer Session and may not enroll without permission of the instructors.

POLISCI 211N. Nuclear Politics. 3-5 Units.
Why do states develop nuclear weapons and why do some states, that have the technological capacity to build nuclear weapons, nonetheless refrain from doing so? What are the consequences of new states deploying nuclear weapons? Do arms control treaties and the laws of armed conflict influence nuclear proliferation and nuclear war plans? What is the relationship between the spread of nuclear energy and the spread of nuclear weapons? We will first critically examine the political science, legal, and historical literature on these key questions. Students will then design and execute small research projects to address questions that have been inadequately addressed in the existing literature.
Same as: POLISCI 311N

POLISCI 212C. Civil War and International Politics: Syria in Context. 5 Units.
The Syrian civil war is both a humanitarian disaster and a focal point for a set of interlocking regional and international political struggles. This course uses the Syrian case as an entry for exploring broader questions, such as why do civil wars begin, how do they end, and what are the international politics of civil war. Political Science majors taking this course to fulfill the WIM requirement should enroll in POLISCI 212C.
Same as: POLISCI 212X

POLISCI 212X. Civil War and International Politics: Syria in Context. 5 Units.
The Syrian civil war is both a humanitarian disaster and a focal point for a set of interlocking regional and international political struggles. This course uses the Syrian case as an entry for exploring broader questions, such as why do civil wars begin, how do they end, and what are the international politics of civil war. Political Science majors taking this course to fulfill the WIM requirement should enroll in POLISCI 212C.
Same as: POLISCI 212C

POLISCI 213. US-Russia Relations After the Cold War. 2 Units.
A quarter century ago, the Soviet Union collapsed and the Cold War ended. At the time, Russian leaders aspired to build democratic and market institutions at home. They also wanted to join the West. American presidents Democrat and Republican encouraged these domestic and international changes. Today, U.S.-Russia relations are once again confrontational, reminiscent of relations during the Cold War. This course seeks to analyze shifts in U.S.-Russia relations, with special attention given to the U.S.-Russia relationship during Obama¿s presidency. Readings will include academic articles and a book manuscript by Professor McFaul on Obama's reset policy. Open to students with previous coursework involving Russia.
Same as: POLISCI 313, REES 213

POLISCI 213C. Understanding Russia: Its Power and Purpose in a New Global Order. 5 Units.
Russia presents a puzzle for theories of socio-economic development and modernization and their relationship to state power in international politics. The collapse of the Soviet Union in 1991 brought into being the new Russia (or Russian Federation) as its successor in international politics. Russia suffered one of the worst recessions and experienced 25 years of halting reform. Despite these issues, Russia is again a central player in international affairs. Course analyzes motivations behind contemporary Russian foreign policy by reviewing its domestic and economic underpinnings. Examination of concept of state power in international politics to assess Russia's capabilities to influence other states' policies, and under what conditions its leaders use these resources. Is contemporary Russia strong or weak? What are the resources and constraints its projection of power beyond its borders? What are the determinants of state power in international politics in the twenty-first century? Includes lectures, readings, class discussions, films and documentaries.
Same as: INTLPOL 231B, REES 231B

POLISCI 213E. Introduction to European Studies. 5 Units.
This course offers an introduction to major topics in the study of historical and contemporary Europe. We focus on European politics, economics and culture. First, we study what makes Europe special, and how its distinct identity has been influenced by its history. Next, we analyze Europe's politics. We study parliamentary government and proportional representation electoral systems, and how they affect policy. Subsequently, we examine the challenges the European economy faces. We further study the European Union and transatlantic relations.
Same as: INTNLREL 122

POLISCI 213R. Political Economy of Financial Crisis. 5 Units.
Political responses to domestic and international financial crises. Monetary and fiscal policy. The role of interest groups. International cooperation and the role of the IMF.
Same as: POLISCI 313R

POLISCI 214R. Challenges and Dilemmas in American Foreign Policy. 5 Units.
This seminar will examine the complexities and trade offs involved in foreign policy decision-making at the end of the twentieth century and the dawn of the post-9/11 era. Students will analyze dilemmas confronting policymakers through case studies including post-conflict reconstruction and state-building, nuclear proliferation, democratization and peace negotiation. The seminar will conclude with a 48-hour crisis simulation. For advanced undergraduates and graduate students. Application for enrollment required. Applications will be available for pick up in Political Science Department (Encina West 100) starting late-October.
Same as: POLISCI 314R

POLISCI 215. Explaining Ethnic Violence. 5 Units.
What is ethnic violence and why does it occur? Should elite machinations, the psychology of crowds, or historical hatreds be blamed? Case studies and theoretical work on the sources and nature of ethnic violence. Counts as Writing in the Major for PoliSci majors.

POLISCI 215A. Special Topics: State-Society Relations in the Contemporary Arab World-Key Concepts and Debates. 5 Units.
(Formerly IPS 215) This course looks at key concepts pertaining to state-society relations in the Arab world as they have evolved in regional intellectual and political debates since the 1990s. Citizenship, minority rights, freedom of expression, freedom of association, the rule of law, government accountability, independence of the judiciary, civil-military relations, and democratic transition will be among the concepts discussed.
Same as: INTLPOL 215

POLISCI 215F. Nuclear Weapons and International Politics. 5 Units.
Why do states develop nuclear weapons and why do some states, that have the technological capacity to build nuclear weapons, refrain from doing so? What are the strategic consequences of new states deploying nuclear weapons? What is the relationship between the spread of nuclear energy and the spread of nuclear weapons? We will study the political science and history literature on these topics. Research paper required.
Same as: POLISCI 315F

POLISCI 216. State Building. 5 Units.
How and when can external actors (others states, aid agencies, NGOs?) promote institutional change in weak and badly governed states?.

POLISCI 217A. American Foreign Policy: Interests, Values, and Process. 5 Units.
(Formerly IPS 242) This seminar will examine the tension in American foreign policy between pursuing U.S. security and economic interests and promoting American values abroad. The course will retrace the theoretical and ideological debates about values versus interests, with a particular focus on realism versus liberalism. The course will examine the evolution of these debates over time, starting with the French revolution, but with special attention given to the Cold War, American foreign policy after September 11th, and the Obama administration. The course also will examine how these contending theories and ideologies are mediated through the U.S. bureaucracy that shapes the making of foreign policy. ** NOTE: The enrollment of the class is by application only. Please provide a one page double-spaced document outlining previous associated coursework and why you want to enroll in the seminar to Anna Coll (acoll@stanford.edu) by February 22nd. Any questions related to this course can be directed to Anna Coll.
Same as: GLOBAL 220, INTLPOL 242

POLISCI 218S. Political Economy of International Trade and Investment. 5 Units.
How domestic and international politics influence the economic relations between countries. Why do governments promote or oppose globalization? Why do countries cooperate economically in some situations but not others? Why do countries adopt bad economic policies? Focus on the politics of international trade and investment. Course approaches each topic by examining alternative theoretical approaches and evaluate these theories using historical and contemporary evidence from many geographical regions around the world. Prerequisites: ECON 1A, ECON 1B, and a statistics course.
Same as: INTNLREL 118S

POLISCI 218X. Shaping the Future of the Bay Area. 3-5 Units.
The complex urban problems affecting quality of life in the Bay Area, from housing affordability and transportation congestion to economic vitality and social justice, are already perceived by many to be intractable, and will likely be exacerbated by climate change and other emerging environmental and technological forces. Changing urban systems to improve the equity, resilience and sustainability of communities will require new collaborative methods of assessment, goal setting, and problem solving across governments, markets, and communities. It will also require academic institutions to develop new models of co-production of knowledge across research, education, and practice. This XYZ course series is designed to immerse students in co-production for social change. The course sequence covers scientific research and ethical reasoning, skillsets in data-driven and qualitative analysis, and practical experience working with local partners on urban challenges that can empower students to drive responsible systems change in their future careers. The Autumn (X) course is specifically focused on concepts and skills, and completion is a prerequisite for participation in the Winter (Y) and/or Spring (Z) practicum quarters, which engage teams in real-world projects with Bay Area local governments or community groups. X is composed of four modules: (A) participation in two weekly classes which prominently feature experts in research and practice related to urban systems; (B) reading and writing assignments designed to deepen thinking on class topics; (C) fundamental data analysis skills, particularly focused on Excel and ArcGIS, taught in lab sessions through basic exercises; (D) advanced data analysis skills, particularly focused on geocomputation in R, taught through longer and more intensive assignments. X can be taken for 3 units (ABC), 4 units (ACD), or 5 units (ABCD). Open to undergraduate and graduate students in any major. For more information, visit http://bay.stanford.edu.
Same as: CEE 118X, CEE 218X, ESS 118X, ESS 218X, GEOLSCI 118X, GEOLSCI 218X, GEOPHYS 118X, GEOPHYS 218X, PUBLPOL 118X, PUBLPOL 218X

POLISCI 218Y. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 118Y, CEE 218Y, ESS 118Y, ESS 218Y, GEOLSCI 118Y, GEOLSCI 218Y, GEOPHYS 118Y, GEOPHYS 218Y, PUBLPOL 118Y, PUBLPOL 218Y

POLISCI 218Z. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 118Z, CEE 218Z, ESS 118Z, ESS 218Z, GEOLSCI 118Z, GEOLSCI 218Z, GEOPHYS 118Z, GEOPHYS 218Z

POLISCI 219. Directed Reading and Research in International Relations. 1-10 Unit.
For undergraduates. Directed reading in Political Science with a focus on international relations. To be considered for enrollment, interested students must complete the directed reading petition form available on the Political Science website before the end of week 1 of the quarter in which they'd like to enroll. May be repeated for credit.

POLISCI 220. Urban Policy Research Lab. 5 Units.
This collaborative reading and research seminar considers the numerous ways that governments conduct social policy by shaping and remaking geographic places. Representative topics include: housing aid programs, exclusionary zoning, controls on internal migration and place of residence, and cars' role in cities. Students will contribute to faculty field research on the consequences of these policies for economic, social, and political outcomes. Prerequisites: None.
Same as: PUBLPOL 225, URBANST 170

POLISCI 220C. The Politics of the Administrative State. 3-5 Units.
Most studies of democratic government are about elected leaders, campaigns and elections, legislatures, and public opinion. But these aspects of government are, in some sense, the tail that wags the dog. To understand what government actually does and with what effects, we need to understand the dog itself. The fact is, the vast bulk of government consists of the countless departments and agencies - and the unelected experts, professionals, and functionaries within them - that execute public policy, fill out its details, determine its impacts and effectiveness, and make government a (good or bad) reality for ordinary citizens. This is the dog: the "administrative state." And it is the essence of modern government. No democracy can function without it. A hundred years ago, when the American administrative state was on the rise - propelled first by Progressivism, then the New Deal - scholars argued that there should be a separation of politics and administration: elected officials would make policy in the political process, administrators would carry it out expertly and nonpolitically. But that was a pipe dream. The administrative state is thoroughly - and inevitably - bound up in democratic politics, and an integral part of it. Politicians try to control agencies for their own ends. Special interest groups try to capture them. Political appointees try to invade them. Members of Congress want money and programs for their own states and districts. And agencies are powerful actors in their own right, seeking money, autonomy, and policy impact. The US, moreover, is hardly unique. In every nation, the administrative state is a target of political pressure and influence, infused by politics, and capable of its own exertions of power. The purpose of this class is to understand the politics of the administrative state. Our focus will mainly be on the US, but we will also look at other nations for comparative perspective. In the end, students will have a far more complete understanding of democratic government than the usual focus on electoral politics can possibly provide.
Same as: POLISCI 320C

POLISCI 220R. The Presidency. 3-5 Units.
This course provides students with a comprehensive perspective on the American presidency and covers a range of topics: elections, policy making, control of the bureaucracy, unilateral action, war-making, and much more. But throughout, the goal is to understand why presidents behave as they do, and why the presidency as an institution has developed as it has, with special attention to the dynamics of the American political system and how they condition incentives, opportunities, and power.
Same as: POLISCI 320R

POLISCI 221A. American Political Development, 1865-present. 3-5 Units.
In this reading-intensive course, we will conduct a wide-ranging survey of major transformations in the American political system in the post-Civil War period. Our inquiries about these transformations will focus on the origins of the modern administrative state, the interactive role of the state and social movements, and changes in the party system. We¿ll examine these developments not only to understand institutional change, but to learn how changing institutions have shaped the behavior of the American electorate.
Same as: POLISCI 421R

POLISCI 222. The Political Psychology of Intolerance. 5 Units.
This seminar explores the political psychology of intolerance. It focuses on two problems in particular race in America and the challenge of Muslim inclusion in Western Europe. It concentrates on primary research. The readings consist of both classic and contemporary (including on-going) studies of prejudice and politics.
Same as: CSRE 222

POLISCI 223A. Public Opinion and American Democracy. 5 Units.
This course focuses on the public mood and politics in America today. It accordingly examines, among other things, the coherence (or lack of it) of public opinion; the partisan sorting of the electorate; and the ideological and affective polarization of mass politics. It also examines contemporary critiques of representation and citizenship in liberal democracies.

POLISCI 223B. Money, Power, and Politics in the New Gilded Age. 5 Units.
During the past two generations, democracy has coincided with massive increases in economic inequality in the U.S. and many other advanced democracies. The course will explore normative and practical issues concerning democracy and equality and examine why democratic institutions have failed to counteract rising inequality. Topics will include the influence of money in politics, disparity in political representation of the preferences of the affluent over those of the poor, the implications of political gridlock, and electoral and institutional barriers to reform.

POLISCI 225C. Fixing US Politics: Political Reform in Principle and Practice. 5 Units.
Americans have been trying to perfect their system of government since its founding. Despite some notable achievements, there is a pervasive sense of frustration with political reform. This course will examine the goals and political consequences of American political regulation. Topics will vary by year to some degree but examples include campaign finance, lobbying, term limits, conflict of interest regulation, direct democracy, citizen commissions and assemblies, vote administration problems, transparency, and open meeting laws.

POLISCI 225L. Law and the New Political Economy. 3-5 Units.
(Same as LAW 7515) In this seminar, we consider key legal topics through the lens of political economy - that is, is the interplay among economics, law, and politics. This perspective has had a powerful and growing impact on how scholars and judges view the nature and scope of law and politics in the modern regulatory state. We look at a range of topics from this perspective, including: constitutional law, statutory interpretation, administrative law and regulation, and jurisprudence - all with an eye toward better understanding the dynamic interaction among law, politics, and social change. There are no prerequisites for this seminar. The final assignment will be a substantial research paper.
Same as: POLISCI 325L

POLISCI 226. Race and Racism in American Politics. 5 Units.
Topics include the historical conceptualization of race; whether and how racial animus reveals itself and the forms it might take; its role in the creation and maintenance of economic stratification; its effect on contemporary U.S. partisan and electoral politics; and policy making consequences.
Same as: AMSTUD 226, CSRE 226, POLISCI 326

POLISCI 226A. The Changing Face of America. 4-5 Units.
This upper-division seminar will explore some of the most significant issues related to educational access and equity facing American society in the 21st century. Designed for students with significant leadership potential who have already studied these topics in lecture format, this seminar will focus on in-depth analysis of the impact of race on educational access and a variety of educational reform initiatives. Please submit a brief statement with "EDUC 108" in the subject line that details your reasons for applying and what leadership skills, experience, and perspectives you would contribute to the course to: Ginny Smith (gsmith@law.stanford.edu) and Wilson Tong (wtong@commonsense.org). The deadline is rolling.
Same as: CSRE 108X, EDUC 108

POLISCI 226T. The Politics of Education. 3-5 Units.
America's public schools are government agencies, and virtually everything about them is subject to political authority--and thus to decision through the political process. This seminar is an effort to understand the politics of education and its impacts on the nation's schools. Our focus is on the modern era of reform, with special attention to the most prominent efforts to bring about fundamental change through accountability (including No Child Left Behind), school choice (charter schools, vouchers), pay for performance, and more and more to the politics of blocking that has made genuine reform so difficult to achieve.
Same as: POLISCI 326T

POLISCI 227B. Environmental Governance and Climate Resilience. 3 Units.
Adaptation to climate change will not only require new infrastructure and policies, but it will also challenge our local, state and national governments to collaborate across jurisdictional lines in ways that include many different types of private and nonprofit organizations and individual actors. The course explores what it means for communities to be resilient and how they can reach that goal in an equitable and effective way. Using wildfires in California as a case study, the course assesses specific strategies, such as controlled burns and building codes, and a range of planning and policy measures that can be used to enhance climate resilience. In addition, it considers how climate change and development of forested exurban areas (among other factors) have influenced the size and severity of wildfires. The course also examines the obstacles communities face in selecting and implementing adaptation measures (e.g., resource constraints, incentives to develop in forested areas, inadequate policy enforcement, and weak inter-agency coordination). Officials from various Bay Area organizations contribute to aspects of the course; and students will present final papers to local government offcials. Limited enrollment. Students will be asked to prepare application essays on the first day of class. Course is intended for seniors and graduate students.
Same as: CEE 265F, PUBLPOL 265F

POLISCI 227C. Money in Politics. 3-5 Units.
This course will cover campaign finance, lobbying, and interest group politics.
Same as: POLISCI 427C

POLISCI 228C. Law and Politics of Bureaucracy. 3-5 Units.
Same as Law 7096. Modern government is bureaucratic government. In the words of Justice Jackson, the rise of the administrative state is likely "the most significant legal trend of the last century and perhaps more values today are affected by [agency] decisions than by those of all the courts." This seminar will survey the major ways in which law and political science have grappled with bureaucratic governance. How do we understand the rise of the administrative state? Why are bureaucracies designed the way they are? How do bureaucracies work in the face of legal and political constraints? And what avenues are there for meaningful regulatory reform? The class is cross-listed in Political Science and the Law School and course enrollment will be by consent of instructor. Students will be responsible for writing short reflection papers and a research paper.
Same as: POLISCI 428C

POLISCI 229. Directed Reading and Research in American Politics. 1-10 Unit.
For undergraduates. Directed reading in Political Science with a focus on American politics. To be considered for enrollment, interested students must complete the directed reading petition form available on the Political Science website before the end of week 1 of the quarter in which they'd like to enroll. May be repeated for credit.

POLISCI 230A. Classical Seminar: Origins of Political Thought. 3-5 Units.
Political philosophy in classical antiquity, centered on reading canonical works of Thucydides, Plato, Aristotle against other texts and against the political and historical background. Topics include: interdependence, legitimacy, justice; political obligation, citizenship, and leadership; origins and development of democracy; law, civic strife, and constitutional change.
Same as: CLASSICS 181, CLASSICS 381, ETHICSOC 130A, PHIL 176A, PHIL 276A, POLISCI 330A

POLISCI 231. High-Stakes Politics: Case Studies in Political Philosophy, Institutions, and Interests. 3-5 Units.
Normative political theory combined with positive political theory to better explain how major texts may have responded to and influenced changes in formal and informal institutions. Emphasis is on historical periods in which catastrophic institutional failure was a recent memory or a realistic possibility. Case studies include Greek city-states in the classical period and the northern Atlantic community of the 17th and 18th centuries including upheavals in England and the American Revolutionary era.
Same as: CLASSICS 382, POLISCI 331

POLISCI 231Z. Topics in Democratic Theory. 5 Units.
Democratic rule is rule of the people. But what does that mean? This course explores democracy¿s roots in ancient Athens to its modern incarnation. The course aims to familiarize students with the various strands of democratic theory as well as the way democratic theory responds to hot political issues such as immigration and freedom of speech. The goal of the course is to equip students to think critically about democracy in the modern world and the different interpretation democratic rule can have. The questions we will investigate include: What does democracy require? What is the relationship between democracy and human rights or social justice? Can democracy justify border control? What restrictions, if any, does democracy place on hate speech? What is the role of courts in a democracy? The course provides tools to answer these questions by surveying different approaches to democracy in contemporary literature, as well surveying the history of democratic theory from ancient Athenian democracy to the modern age, with a look to the future of democracy in a globalized era.

POLISCI 232T. The Dialogue of Democracy. 4-5 Units.
All forms of democracy require some kind of communication so people can be aware of issues and make decisions. This course looks at competing visions of what democracy should be and different notions of the role of dialogue in a democracy. Is it just campaigning or does it include deliberation? Small scale discussions or sound bites on television? Or social media? What is the role of technology in changing our democratic practices, to mobilize, to persuade, to solve public problems? This course will include readings from political theory about democratic ideals - from the American founders to J.S. Mill and the Progressives to Joseph Schumpeter and modern writers skeptical of the public will. It will also include contemporary examinations of the media and the internet to see how those practices are changing and how the ideals can or cannot be realized.
Same as: AMSTUD 137, COMM 137W, COMM 237, POLISCI 332T

POLISCI 233. Justice and Cities. 5 Units.
Cities have most often been where struggles for social justice happen, where injustice is most glaring and where new visions of just communities are developed and tested. This class brings political theories of justice and democracy together with historical and contemporary empirical work on city design, planning, and policies to ask the following questions: What makes a city just or unjust? How have people tried to make cities more just? What has made these efforts succeed or fail? Each session will include a case study of a particular city, largely with a focus on the United States. Students will develop research projects examining a city of their choice through the lens of a particular aspect of justice and injustice.
Same as: URBANST 134

POLISCI 233F. Science, technology and society and the humanities in the face of the looming disaster. 3-5 Units.
How STS and the Humanities can together help think out the looming catastrophes that put the future of humankind in jeopardy.
Same as: FRENCH 228, ITALIAN 228

POLISCI 234. Democratic Theory. 5 Units.
Most people agree that democracy is a good thing, but do we agree on what democracy is? This course will examine the concept of democracy in political philosophy. We will address the following questions: What reason(s), if any, do we have for valuing democracy? What does it mean to treat people as political equals? When does a group of individuals constitute "a people," and how can a people make genuinely collective decisions? Can democracy really be compatible with social inequality? With an entrenched constitution? With representation?.
Same as: ETHICSOC 234, PHIL 176P

POLISCI 234N. The Concept of Society from Marx to Zuckerberg. 5 Units.
What is society and what does it mean to be a member of one? This course examines these questions by looking at three different periods within the history of modern political thought in which the concept of society was debated and transformed. In the first section of the course, we will explore the emergence of "civil society" within bourgeois political thought, and the relationship of this concept to notions of property, the state, commerce, and colonial encounter. In the second section of the course, we will turn to twentieth-century debates concerning mass society and issues such asncommunication, identity, democracy, and global governance. In the final section of the course, we will focus on contemporary reconfigurations of the idea of society within technological, digital, and ecological spaces and communities.

POLISCI 234P. Deliberative Democracy and its Critics. 3-5 Units.
This course examines the theory and practice of deliberative democracy and engages both in a dialogue with critics. Can a democracy which emphasizes people thinking and talking together on the basis of good information be made practical in the modern age? What kinds of distortions arise when people try to discuss politics or policy together? The course draws on ideas of deliberation from Madison and Mill to Rawls and Habermas as well as criticisms from the jury literature, from the psychology of group processes and from the most recent normative and empirical literature on deliberative forums. Deliberative Polling, its applications, defenders and critics, both normative and empirical, will provide a key case for discussion.
Same as: AMSTUD 135, COMM 135, COMM 235, COMM 335, ETHICSOC 135F, POLISCI 334P

POLISCI 235E. Philosophy of Public Policy. 4 Units.
From healthcare to voting reforms, social protection and educational policies, public policies are underpinned by moral values. When we debate those policies, we typically appeal to values like justice, fairness, equality, freedom, privacy, and safety. A proper understanding of those values, what they mean, how they may conflict, and how they can be weighed against each other is essential to developing a competent and critical eye on our complex political world. We will ask questions such as: Is compulsory voting justified? Should children have the right to vote? Is affirmative action just? What is wrong with racial profiling? What are the duties of citizens of affluent countries towards migrants? Do we have a right to privacy? Is giving cash to all unconditionally fair? This class will introduce students to a number of methods and frameworks coming out of ethics and political philosophy and will give students a lot of time to practice ethically informed debates on public policies. At the end of this class, students should have the skills to critically examine a wide range of diverse policy proposals from the perspective of ethics, moral and political philosophy. There are no prerequisites. Undergraduates and graduates from all departments are welcome to attend.
Same as: ETHICSOC 175X, PHIL 175B, PHIL 275B, POLISCI 135E, PUBLPOL 177

POLISCI 235N. Topics in Comparative Political Theory. 5 Units.
Comparative Political Theory (CPT) has emerged as one of the most important fields in political theory. Scholars working on CPT generally agree that "mainstream" political theorizing, which is dominated by modern Western way of thinking, fails to recognize the unique contributions of non-Western intellectual traditions, and is insufficient in coping with new and pressing issues in a globalized world. To study political theory from a comparative perspective, they argue, is to learn from non-Western classics and thinkers and bring non-Western political experiences to the forefront of normativenpolitical reflections. This course is an introduction to comparative political theory as a field and an exploration of several non-Western traditions and their perspectives on politics. Instead of surveying the canons in each religion or civilization, such as foundational texts in Buddhism, Catholicism, Confucianism, Hinduism, Islam, and Judaism, we will try to understand non-Western perspectives by examining key political issues in contemporary political theory and world politics, including but not limited to human rights, democracy, political legitimacy, law, toleration, and world order. Attention is given to how non-Western thinkers conceive of modernity and the West and how they reinterpret their respective traditions to answer the challenges fromnliberalism and democracy. We will see that non-Western societies are active and dynamic arenas of political debate, rather than passive receivers of Western political ideas.

POLISCI 236. Theories and Practices of Civil Society, Philanthropy, and the Nonprofit Sector. 5 Units.
What is the basis of private action for public good? How are charitable dollars distributed and what role do nonprofit organizations and philanthropic dollars play in civil society and modern democracy? In the "Philanthropy Lab" component of this course, students will award $100,000 in grants to local nonprofits. Students will explore how nonprofit organizations operate domestically and globally as well as the historical development and modern structure of civil society and philanthropy. Readings in political philosophy, history, political sociology, and public policy. Political Science majors who are taking this course to fulfill the WIM requirement should enroll in POLISCI 236S.
Same as: ETHICSOC 232T, POLISCI 236S

POLISCI 236S. Theories and Practices of Civil Society, Philanthropy, and the Nonprofit Sector. 5 Units.
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Same as: ETHICSOC 232T, POLISCI 236

POLISCI 237S. Civil Society and Democracy in Comparative Perspective. 5 Units.
A cross-national approach to the study of civil societies and their role in democracy. The concept of civil society--historical, normative, and empirical. Is civil society a universal or culturally relative concept? Does civil society provide a supportive platform for democracy or defend a protected realm of private action against the state? How are the norms of individual rights, the common good, and tolerance balanced in diverse civil societies? Results of theoretical exploration applied to student-conducted empirical research projects on civil societies in eight countries. Summary comparative discussions. Prerequisite: a course on civil society or political theory. Students will conduct original research in teams of two on the selected nations. Enrollment limited to 18. Enrollment preference given to students who have taken PoliSci 236S/EthicSoc 232T.
Same as: ETHICSOC 237

POLISCI 238C. Governing the 21st Century World. 5 Units.
How is our world governed, and by whom? How are decisions made on the most important issues of our time, including climate change, global inequality, and protection of human rights? A traditional answer to these questions is that only official governments have the power to govern -to set and enforce rules on these and other issues. In contrast, this class explores the emerging roles ofnnon-state actors, including NGOs, for-profit corporations, informal social movements, and international institutions, in governing our world and making decisions on these and other key issues. We will also study the ways that the governance by non-state actors challenges our ideas of democracy, legitimacy, and justice. The class thus seeks to bring together perspectives and tools from both empirical social science and political theory in order to better understand this important phenomenon.

POLISCI 238R. The Greeks and the Rational: Deliberation, Strategy, and Choice in Ancient Greek Political Thought. 3-5 Units.
The course explores the role of practical reasoning (instrumental rationality) in the ethical-political works of e.g. Plato and Aristotle, in the historical-political projects of e.g. Herodotus and Thucydides, and in the design of classical Greek institutions. We ask to what degree ancient Greeks shared intuitions concerning the rationality of choice with contemporary decision and game theorists. The Greek tradition recognized the limits of expected utility maximization in predicting or explaining the actual behavior of individuals, groups, and states, and sought to explain divergences from predicted rational behavior. Greek social theorists may, therefore, also have shared some of the intuitions of contemporary behavioral economists. Topics will include individual rationality, rationality of groups and states, the origins of social order, emergence and persistence of monarchical and democratic regimes, conflict and cooperation in interstate relations, competition and cooperation in exchange. Examining the Greek tradition of thought on practical reasoning has some implications for we might think about deliberation and bargaining in contemporary democratic-political, interpersonal-ethical, and interstate contexts. PREREQUISITES: Students in the course are expected to have a background in EITHER classical studies (literature, history, or philosophy), OR Greek political thought (Origins of Political Thought or equivalent) OR in formal/positive political theory. Registration for undergraduates is with permission of instructor (email jober@stanford.edu).
Same as: CLASSICS 395, POLISCI 438R

POLISCI 239. Directed Reading and Research in Political Theory. 1-10 Unit.
For undergraduates. Directed reading in Political Science with a focus on political theory. To be considered for enrollment, interested students must complete the directed reading petition form available on the Political Science website before the end of week 1 of the quarter in which they'd like to enroll. May be repeated for credit.

POLISCI 240A. Democratic Politics. 3-5 Units.
This course examines the relationship between democratic ideals and contemporary democratic politics.
Same as: POLISCI 340A

POLISCI 240T. Democracy, Promotion, and American Foreign Policy. 5 Units.
Theoretical and intellectual debates about democracy promotion with focus on realism versus liberalism. The evolution of these debates with attention to the Cold War, the 90s, and American foreign policy after 9/11. Tools for and bureaucratic struggles over how to promote democracy. Contemporary case studies.

POLISCI 241A. Political Economy of Development. 5 Units.
This course is an upper-level undergraduate seminar providing an introduction to the political economy of development. We explore many of the key academic debates surrounding how nations develop politically and economically. Course topics will include: theories of state development, the role of institutions, inequality and societal divisions, the impact of natural resources, the consequences of corruption, and the effect of globalization on the world's poor. The course emphasizes teaching students how to read the literature critically.

POLISCI 241S. Spatial Approaches to Social Science. 5 Units.
This multidisciplinary course combines different approaches to how GIS and spatial tools can be applied in social science research. We take a collaborative, project oriented approach to bring together technical expertise and substantive applications from several social science disciplines. The course aims to integrate tools, methods, and current debates in social science research and will enable students to engage in critical spatial research and a multidisciplinary dialogue around geographic space.
Same as: ANTHRO 130D, ANTHRO 230D, URBANST 124

POLISCI 241T. Political Economy of Gender. 5 Units.
This course provides an introduction to the political economy of gender. The course first explores the key areas of debate on women's representation. Why are womennunderrepresented in formal political institutions? How do political institutions affect women's representation? What are the effects of women's representation? Also, the course examines the quality of female politicians, women's voting behavior and political preferences, and public opinion on gender issues. No prior knowledge is required.

POLISCI 242. Foreign Policy Decision Making in Comparative Perspective. 3 Units.
This seminar will examine how countries and multilateral organizations make decisions about foreign and international policy. The hypothesis to be explored in the course is that individuals, bureaucracies, and interest groups shape foreign policy decisions. That hypothesis will be tested against other more structural explanations of how countries behave in the international system. After a brief review of the academic literature in the first part of the course, the seminar will focus on several cases studies of foreign policy decision-making by the United States, China, Russia, Iran, and North Korea, as well as the United Nations and NATO. This seminar is intended for masters students and fourth-year undergraduates. NOTE: Please send a one-page document to Bronte Kass, bkass@stanford.edu, by March 9th with the following information: full name, class year, major, contact email, which version of the course you want to enroll in (e.g., POLISCI or INTLPOL). In the document, please also outline previous associated coursework and/or relevant experience and your interest in enrolling in the seminar. Application results will be announced on March 20th. Any questions related to this course or office hours with Professor McFaul should be directed to Mahlorei Bruce-Apalis at mahlorei@stanford.edu.
Same as: INTLPOL 232, POLISCI 342

POLISCI 242G. Political Mobilization and Democratic Breakthroughs. 3-5 Units.
Mass political mobilization occurs in both democracies and autocracies. Sometimes political protests, demonstrations, and acts of nonviolence civic resistance undermine autocracies, produce democratic breakthroughs, or generate democratic reforms. Other times, they do not. This course explores why, first examining the original causes of mobilization, and then understanding why some movements succeed and others fail. The first sessions of the course will review theories of revolution, social movements, and democratization. The remainder of the course will do deep dives into case studies, sometime with guest lecturers and participants from these historical moments. Cases to be discussed will likely include the U.S. civil rights movement (1960s), Iran (1978 and 2009), Chile (1988), Eastern Europe (1989), China/Hong Kong (1989, 2011, 2019), USSR/Russia (1991 & 2011), South Africa (1990s), Serbia (2000), Egypt and Arab Spring (2011), Ukraine (2004 and 2013), and Black Lives Matter (2000s).
Same as: INTLPOL 218, POLISCI 342G

POLISCI 243A. Inequality. 5 Units.
What is economic inequality? What forms does it take? How do we measure it? What are its political, social, and economic causes and consequences? Why are some people and some societies more or less concerned about inequality? What normative frameworks help us think about when and why inequality is good or bad? This seminar course will engage these questions though hands-on data laboratory work in which students are taught to use data along with normative and positive theories to answer these questions. POLSCI 1 and a statistics course are recommended prerequisites.

POLISCI 244. An Introduction to Political Development. 5 Units.
Political development concerns the evolution of three categories of institutions: (1) the state itself; (2) the rule of law; and (3) accountable government. Focus on many of the major theories of political development, beginning with some classic social theorists and continuing up through the present.

POLISCI 244A. Authoritarian Politics. 3-5 Units.
This course offers a thematic approach to the study of authoritarian politics. We will cover the major areas of political science research on authoritarian politics and governance while simultaneously building empirical knowledge about the politics of particular authoritarian regimes. The course will also discuss transitions to democracy as well as authoritarian political tendencies within democratic contexts.
Same as: POLISCI 444A

POLISCI 244U. Political Culture. 3-5 Units.
The implications of social norms, preferences and beliefs for political and economic behavior and societal outcomes.
Same as: POLISCI 344U

POLISCI 245C. The Logics of Violence: Rebels, Criminal Groups and the State. 3-5 Units.
This course explore the logics of violence. The course offers an overview of the literature on civil wars as well as organized violence involving armed groups that do not seek formal state power, such as drug cartels, prison gangs, and paramilitaries. It also explores the many ways in which states engage in violence against their population through repression, torture, and murder.
Same as: POLISCI 445C

POLISCI 245R. Politics in Modern Iran. 5 Units.
Modern Iran has been a smithy for political movements, ideologies, and types of states. Movements include nationalism, constitutionalism, Marxism, Islamic fundamentalism, social democracy, Islamic liberalism, and fascism. Forms of government include Oriental despotism, authoritarianism, Islamic theocracy, and liberal democracy. These varieties have appeared in Iran in an iteration shaped by history, geography, proximity to oil and the Soviet Union, and the hegemony of Islamic culture.

POLISCI 246A. Paths to the Modern World: The West in Comparative Perspective. 3-5 Units.
How and why did Europe develop political institutions that encouraged economic growth and industrialization? And why have many other regions lagged in the creation of growth-promoting institutions? This course uses a comparative approach to understanding routes to the modern world - the historical experiences of Christian Europe, the Islamic world, and others. We will explore questions including: When do parliaments emerge? How do cities promote growth? What is the role of religion?.
Same as: POLISCI 446A

POLISCI 247A. Games Developing Nations Play. 3-5 Units.
If, as economists argue, development can make everyone in a society better off, why do leaders fail to pursue policies that promote development? The course uses game theoretic approaches from both economics and political science to address this question. Incentive problems are at the heart of explanations for development failure. Specifically, the course focuses on a series of questions central to the development problem: Why do developing countries have weak and often counterproductive political institutions? Why is violence (civil wars, ethnic conflict, military coups) so prevalent in the developing world, and how does it interact with development? Why do developing economies fail to generate high levels of income and wealth? We study how various kinds of development traps arise, preventing development for most countries. We also explain how some countries have overcome such traps. This approach emphasizes the importance of simultaneous economic and political development as two different facets of the same developmental process. No background in game theory is required.
Same as: ECON 162, POLISCI 347A

POLISCI 247G. Governance and Poverty. 5 Units.
Poverty relief requires active government involvement in the provision of public services such as drinking water, healthcare, sanitation, education, roads, electricity and public safety. Failure to deliver public services is a major impediment to the alleviation of poverty in the developing world. This course will use an interdisciplinary approach to examining these issues, bringing together readings from across the disciplines of political science, economics, law, medicine and education to increase understanding of the complex causal linkages between political institutions, the quality of governance, and the capacity of developing societies to meet basic human needs. Conceived in a broadly comparative international perspective, the course will examine cross-national and field-based research projects, with a particular focus on Latin America and Mexico.

POLISCI 248A. Politics and Institutions in Latin America. 3-5 Units.
The broad academic purpose of the course is to evaluate presidential democracies in Latin America and their impacts on the politics in this region. The goal is to give students an introduction to the main debates on political institutions in the Latin American region and help them identify issues for future research.
Same as: POLISCI 348A

POLISCI 248D. China in the Global Economy. 3-5 Units.
An examination of China in the global economy. Focus will be on China¿s Belt and Road Initiative (BRI). The goal of the course is to provide students an in-depth understanding of a key initiative of China¿s efforts to globalize. The approach examines how BRI has played out in practice and how it is changing. Specific questions addressed will include: What is the political and economic logic of BRI? Who are the key players? How much of this is controlled and coordinated by Beijing? How much by local authorities? What bureaucratic structures, if any, have been created to regulate this major initiative? Whose interests are being served with BRI? What are the challenges facing BRI? How have strategies evolved? How have international reactions affected China's globalization strategies? How has this affected US-China Relations? How does BRI affect domestic politics?.
Same as: POLISCI 348D

POLISCI 248S. Latin American Politics. 3-5 Units.
Fundamental transformations in Latin America in the last two decades: why most governments are now democratic or semidemocratic; and economic transformation as countries abandoned import substitution industrialization policies led by state intervention for neoliberal economic polices. The nature of this dual transformation.
Same as: POLISCI 348S

POLISCI 249. Directed Reading and Research in Comparative Politics. 1-10 Unit.
For undergraduates. Directed reading in Political Science with a focus on comparative politics. To be considered for enrollment, interested students must complete the directed reading petition form available on the Political Science website before the end of week 1 of the quarter in which they'd like to enroll. May be repeated for credit.

POLISCI 251A. Introduction to Machine Learning for Social Scientists. 4 Units.
This course introduces techniques to collect, analyze, and utilize large collections of data for social science inferences. The ultimate goal of the course is to familiarize students to modern machine learning techniques and provide the skills necessary to apply these methods widely. Students will leave the course equipped with a broad understanding of machine learning and on how to continue building new skills. This is an introductory course, so most the lectures and problem sets will be focused on the intuition and the mechanics behind machine learning concepts rather than the mathematical fundamentals. There are no formal prerequisites for the course, but calculus and introductory statistics are strongly recommended. Students are not expected to have any programming knowledge, and the course will be centered around bite-size assignments that will help build R coding and statistical skills from scratch.

POLISCI 259. Directed Reading and Research in Political Methodology. 1-10 Unit.
For undergraduates. Directed reading in Political Science with a focus on political methodology. To be considered for enrollment, interested students must complete the directed reading petition form available on the Political Science website before the end of week 1 of the quarter in which they'd like to enroll. May be repeated for credit.

POLISCI 299A. Research Design. 5 Units.
This course is designed to teach students how to design a research project. The course emphasizes the specification of testable hypotheses, the building of data sets, and the inferences from that may be drawn from that evidence. This course fulfills the WIM requirement for Political Science Research Honors students.

POLISCI 299B. Honors Thesis Seminar. 5 Units.
Restricted to Political Science Research Honors students who have completed POLISCI 299A.

POLISCI 299C. Honors Thesis. 1-5 Unit.
Students conduct independent research work towards a senior honors thesis. Restricted to Political Science Research Honors students who have completed POLISCI 299B.

POLISCI 299D. Honors Thesis. 1-5 Unit.
Students conduct independent research work towards a senior honors thesis. Restricted to Political Science Research Honors students who have completed POLISCI 299B.

POLISCI 309. Curricular Practical Training for PhD Students. 1 Unit.
Qualified Political Science students obtain employment in a relevant research or industrial activity to enhance their professional experience consistent with their degree programs. Meets the requirements for Curricular Practical Training for students on F-1 visas. The student is responsible for arranging their own internship/employment and gaining faculty sponsorship. At the completion of the CPT quarter, a final report must be submitted to the faculty sponsor documenting the work done and its relevance to Political Science. This course be repeated for credit up to 3 times.

POLISCI 311N. Nuclear Politics. 3-5 Units.
Why do states develop nuclear weapons and why do some states, that have the technological capacity to build nuclear weapons, nonetheless refrain from doing so? What are the consequences of new states deploying nuclear weapons? Do arms control treaties and the laws of armed conflict influence nuclear proliferation and nuclear war plans? What is the relationship between the spread of nuclear energy and the spread of nuclear weapons? We will first critically examine the political science, legal, and historical literature on these key questions. Students will then design and execute small research projects to address questions that have been inadequately addressed in the existing literature.
Same as: POLISCI 211N

POLISCI 313. US-Russia Relations After the Cold War. 2 Units.
A quarter century ago, the Soviet Union collapsed and the Cold War ended. At the time, Russian leaders aspired to build democratic and market institutions at home. They also wanted to join the West. American presidents Democrat and Republican encouraged these domestic and international changes. Today, U.S.-Russia relations are once again confrontational, reminiscent of relations during the Cold War. This course seeks to analyze shifts in U.S.-Russia relations, with special attention given to the U.S.-Russia relationship during Obama¿s presidency. Readings will include academic articles and a book manuscript by Professor McFaul on Obama's reset policy. Open to students with previous coursework involving Russia.
Same as: POLISCI 213, REES 213

POLISCI 313R. Political Economy of Financial Crisis. 5 Units.
Political responses to domestic and international financial crises. Monetary and fiscal policy. The role of interest groups. International cooperation and the role of the IMF.
Same as: POLISCI 213R

POLISCI 314D. Democracy, Development, and the Rule of Law. 3-5 Units.
This course explores the different dimensions of development - economic, social, and political - as well as the way that modern institutions (the state, market systems, the rule of law, and democratic accountability) developed and interacted with other factors across different societies around the world. The class will feature additional special guest lectures by Francis Fukuyama, Larry Diamond, Michael McFaul, Anna Grzymala-Busse, and other faculty and researchers affiliated with the Center on Democracy, Development, and the Rule of Law. Undergraduate students should enroll in this course for 5 units. Graduate students should enroll for 3.
Same as: INTLPOL 230, INTNLREL 114D, POLISCI 114D

POLISCI 314R. Challenges and Dilemmas in American Foreign Policy. 5 Units.
This seminar will examine the complexities and trade offs involved in foreign policy decision-making at the end of the twentieth century and the dawn of the post-9/11 era. Students will analyze dilemmas confronting policymakers through case studies including post-conflict reconstruction and state-building, nuclear proliferation, democratization and peace negotiation. The seminar will conclude with a 48-hour crisis simulation. For advanced undergraduates and graduate students. Application for enrollment required. Applications will be available for pick up in Political Science Department (Encina West 100) starting late-October.
Same as: POLISCI 214R

POLISCI 315F. Nuclear Weapons and International Politics. 5 Units.
Why do states develop nuclear weapons and why do some states, that have the technological capacity to build nuclear weapons, refrain from doing so? What are the strategic consequences of new states deploying nuclear weapons? What is the relationship between the spread of nuclear energy and the spread of nuclear weapons? We will study the political science and history literature on these topics. Research paper required.
Same as: POLISCI 215F

POLISCI 319. Directed Reading in International Relations. 1-10 Unit.
For PhD students. Directed reading in Political Science with a focus on international relations. May be repeated for credit.

POLISCI 320C. The Politics of the Administrative State. 3-5 Units.
Most studies of democratic government are about elected leaders, campaigns and elections, legislatures, and public opinion. But these aspects of government are, in some sense, the tail that wags the dog. To understand what government actually does and with what effects, we need to understand the dog itself. The fact is, the vast bulk of government consists of the countless departments and agencies - and the unelected experts, professionals, and functionaries within them - that execute public policy, fill out its details, determine its impacts and effectiveness, and make government a (good or bad) reality for ordinary citizens. This is the dog: the "administrative state." And it is the essence of modern government. No democracy can function without it. A hundred years ago, when the American administrative state was on the rise - propelled first by Progressivism, then the New Deal - scholars argued that there should be a separation of politics and administration: elected officials would make policy in the political process, administrators would carry it out expertly and nonpolitically. But that was a pipe dream. The administrative state is thoroughly - and inevitably - bound up in democratic politics, and an integral part of it. Politicians try to control agencies for their own ends. Special interest groups try to capture them. Political appointees try to invade them. Members of Congress want money and programs for their own states and districts. And agencies are powerful actors in their own right, seeking money, autonomy, and policy impact. The US, moreover, is hardly unique. In every nation, the administrative state is a target of political pressure and influence, infused by politics, and capable of its own exertions of power. The purpose of this class is to understand the politics of the administrative state. Our focus will mainly be on the US, but we will also look at other nations for comparative perspective. In the end, students will have a far more complete understanding of democratic government than the usual focus on electoral politics can possibly provide.
Same as: POLISCI 220C

POLISCI 320R. The Presidency. 3-5 Units.
This course provides students with a comprehensive perspective on the American presidency and covers a range of topics: elections, policy making, control of the bureaucracy, unilateral action, war-making, and much more. But throughout, the goal is to understand why presidents behave as they do, and why the presidency as an institution has developed as it has, with special attention to the dynamics of the American political system and how they condition incentives, opportunities, and power.
Same as: POLISCI 220R

POLISCI 322A. Advances in Political Psychology. 3-5 Units.
Among the topics: the comparative contributions of rational choice and political psychology; political information process; coordinating vs. inducing preferences; identities and values; and prejudice and politics.

POLISCI 323. Pivotal Moments in American Institutions and Public Law, 1781-Present. 5 Units.
(Same as Law 680) American lawyers and policymakers work today in a system of institutions that are strikingly unique in comparative and historical terms. With some exceptions, that system is characterized by relatively stable political and legal institutions, low levels of explicit corruption, high bureaucratic capacity in public organizations, and relatively open, impersonal access to political, policymaking, and legal institutions. Although these characteristics are now too often taken for granted, the process through which they emerged remains remarkably opaque. In the 1780s under the Articles of Confederation, the United States was a poor developing country on the fringe of the Atlantic community with limited capacity and a striking inability to provide basic public goods, such as security. One hundred years later, it well along the way to becoming the richest nation in the world. How did this transformation occur?nnnDrawing on judicial opinions, legal scholarship, political science, economics, and history, this course explores how institutions evolved to create such a system. It traces the problem of institutional development through several critical periods in the history of American public law, including the emergence of the Constitution, the events leading up to and following the Civil War, the Progressive era, World War II, 1964-75, and the emergence of the modern administrative state. Although the primarily focus is on the American experience, we place these developments in comparative context as well.

POLISCI 324L. The Psychology of Communication About Politics in America. 4-5 Units.
Focus is on how politicians and government learn what Americans want and how the public's preferences shape government action; how surveys measure beliefs, preferences, and experiences; how poll results are criticized and interpreted; how conflict between polls is viewed by the public; how accurate surveys are and when they are accurate; how to conduct survey research to produce accurate measurements; designing questionnaires that people can understand and use comfortably; how question wording can manipulate poll results; corruption in survey research.
Same as: COMM 164, COMM 264, POLISCI 124L, PSYCH 170

POLISCI 325L. Law and the New Political Economy. 3-5 Units.
(Same as LAW 7515) In this seminar, we consider key legal topics through the lens of political economy - that is, is the interplay among economics, law, and politics. This perspective has had a powerful and growing impact on how scholars and judges view the nature and scope of law and politics in the modern regulatory state. We look at a range of topics from this perspective, including: constitutional law, statutory interpretation, administrative law and regulation, and jurisprudence - all with an eye toward better understanding the dynamic interaction among law, politics, and social change. There are no prerequisites for this seminar. The final assignment will be a substantial research paper.
Same as: POLISCI 225L

POLISCI 326. Race and Racism in American Politics. 5 Units.
Topics include the historical conceptualization of race; whether and how racial animus reveals itself and the forms it might take; its role in the creation and maintenance of economic stratification; its effect on contemporary U.S. partisan and electoral politics; and policy making consequences.
Same as: AMSTUD 226, CSRE 226, POLISCI 226

POLISCI 326T. The Politics of Education. 3-5 Units.
America's public schools are government agencies, and virtually everything about them is subject to political authority–and thus to decision through the political process. This seminar is an effort to understand the politics of education and its impacts on the nation's schools. Our focus is on the modern era of reform, with special attention to the most prominent efforts to bring about fundamental change through accountability (including No Child Left Behind), school choice (charter schools, vouchers), pay for performance, and more and more to the politics of blocking that has made genuine reform so difficult to achieve.
Same as: POLISCI 226T

POLISCI 327. Minority Behavior and Representation. 5 Units.
Politics of minorities in the U.S. Topics include: historic and contemporary struggles of Latinos, African Americans, and gays and lesbians for political power and social acceptance; group-level public opinion and electoral behavior; scholarship on group influence in the policy making process and policy issues of importance; and the jurisprudence shaping minority political access and civil rights.

POLISCI 327C. Law of Democracy. 3-5 Units.
Combined with LAW 7036 (formerly Law 577). This course is intended to give students a basic understanding of the themes in the legal regulation of elections and politics. We will cover all the major Supreme Court cases on topics of voting rights, reapportionment/redistricting, ballot access, regulation of political parties, campaign finance, and the 2000 presidential election controversy. The course pays particular attention to competing political philosophies and empirical assumptions that underlie the Court's reasoning while still focusing on the cases as litigation tools used to serve political ends. Elements used in grading: Class participation and one day take home final exam. (POLISCI 327C; LAW 577).
Same as: COMM 361

POLISCI 329. Directed Reading and Research in American Politics. 1-10 Unit.
For PhD students. Directed reading in Political Science with a focus on American politics. May be repeated for credit.

POLISCI 330A. Classical Seminar: Origins of Political Thought. 3-5 Units.
Political philosophy in classical antiquity, centered on reading canonical works of Thucydides, Plato, Aristotle against other texts and against the political and historical background. Topics include: interdependence, legitimacy, justice; political obligation, citizenship, and leadership; origins and development of democracy; law, civic strife, and constitutional change.
Same as: CLASSICS 181, CLASSICS 381, ETHICSOC 130A, PHIL 176A, PHIL 276A, POLISCI 230A

POLISCI 331. High-Stakes Politics: Case Studies in Political Philosophy, Institutions, and Interests. 3-5 Units.
Normative political theory combined with positive political theory to better explain how major texts may have responded to and influenced changes in formal and informal institutions. Emphasis is on historical periods in which catastrophic institutional failure was a recent memory or a realistic possibility. Case studies include Greek city-states in the classical period and the northern Atlantic community of the 17th and 18th centuries including upheavals in England and the American Revolutionary era.
Same as: CLASSICS 382, POLISCI 231

POLISCI 332T. The Dialogue of Democracy. 4-5 Units.
All forms of democracy require some kind of communication so people can be aware of issues and make decisions. This course looks at competing visions of what democracy should be and different notions of the role of dialogue in a democracy. Is it just campaigning or does it include deliberation? Small scale discussions or sound bites on television? Or social media? What is the role of technology in changing our democratic practices, to mobilize, to persuade, to solve public problems? This course will include readings from political theory about democratic ideals - from the American founders to J.S. Mill and the Progressives to Joseph Schumpeter and modern writers skeptical of the public will. It will also include contemporary examinations of the media and the internet to see how those practices are changing and how the ideals can or cannot be realized.
Same as: AMSTUD 137, COMM 137W, COMM 237, POLISCI 232T

POLISCI 333. Social Agency. 2-4 Units.
Humans are agents who live in a social world. Philosophical reflection on human agency needs to include reflection both on the agency of individual human agents and on forms of social agency that involve multiple individuals. This seminar will focus on aspects of the latter.nnWhat is it for multiple individuals to think and to act together -- to engage in shared intentional/shared cooperative activity? to deliberate together? to engage in what some have called team reasoning? What kinds of social agency are characteristic of larger social organizations or groups? What would it be for larger groups themselves to be agents, ones who have their own distinctive intentions on the basis of which they act? What is the relation between these larger forms of social agency and small-scale shared cooperative activity? In all these cases how do we best understand what we are talking about when we speak of what we intend or believe and of what we are doing? Readings to be drawn from recent work of Michael Bratman, Margaret Gilbert, Christian List, Kirk Ludwig, Philip Pettit, John Searle, Scott Shapiro, and others, as well as classic work of H.L.A. Hart.nnPrerequisite: graduate standing in Philosophy or permission of instructor. 2 unit option for PhD students only; all others must enroll for 4 units.
Same as: PHIL 377

POLISCI 333M. Research and Methods in Political Theory. 3-5 Units.
This seminar has two aims. First, we examine the methodological approaches of scholars working within political theory as well as those working at the intersection of political theory and empirical social science. Second, we discuss in an informal workshop setting the ongoing work of graduate students, considering how, if at all, the readings on methodology could inform this work.

POLISCI 333S. Marx. 2-4 Units.
This course examines the works of a thinker who radically transformed the ways that we think about modern society. Marx saw fundamental problems with capitalist societies, including: un-freedom, alienation, inequality, and bureaucratization. He developed a theory to account for these problems. Our task will be to read his works critically and to evaluate their contributions to our understanding the relationship between politics, social structure, knowledge and human agency. We will also be especially interested in comparing his view with alternative diagnoses of the problems of modern capitalist societies, especially those of Max Weber and John Rawls.
Same as: PHIL 339

POLISCI 334. Philanthropy and Civil Society. 1-3 Unit.
Cross-listed with Law (LAW 7071), Political Science (POLISCI 334) and Sociology (SOC 374). Associated with the Center for Philanthropy and Civil Society (PACS). Year-long workshop for doctoral students and advanced undergraduates writing senior theses on the nature of civil society or philanthropy. Focus is on pursuit of progressive research and writing contributing to the current scholarly knowledge of the nonprofit sector and philanthropy. Accomplished in a large part through peer review. Readings include recent scholarship in aforementioned fields. May be repeated for credit for a maximum of 3 units.
Same as: EDUC 374, SOC 374

POLISCI 334P. Deliberative Democracy and its Critics. 3-5 Units.
This course examines the theory and practice of deliberative democracy and engages both in a dialogue with critics. Can a democracy which emphasizes people thinking and talking together on the basis of good information be made practical in the modern age? What kinds of distortions arise when people try to discuss politics or policy together? The course draws on ideas of deliberation from Madison and Mill to Rawls and Habermas as well as criticisms from the jury literature, from the psychology of group processes and from the most recent normative and empirical literature on deliberative forums. Deliberative Polling, its applications, defenders and critics, both normative and empirical, will provide a key case for discussion.
Same as: AMSTUD 135, COMM 135, COMM 235, COMM 335, ETHICSOC 135F, POLISCI 234P

POLISCI 335A. Adam Smith: From Moral Philosophy to Political Economy. 3-5 Units.
This course is designed for graduate students and advanced undergraduates interested in moral philosophy or modern political economy. The course blends two approaches to Adam Smith. We use political thought and intellectual history to introduce students to the intellectual roots of ¿classical Liberalism¿; asking: What are the moral psychological foundations of justice?, Does the free market make everyone, including the least advantaged, better off? How do we sustain a good society? We use social science to study Smith¿s integrated approach to human cooperation in three realms, society, politics, and markets; asking: ¿Why isn¿t the entire world developed? How did Europe develop out of feudalism? How does a community sustain moral behavior? The two perspectives allow us to discover that Smith has ideas on these subjects that expand today¿s frontiers of both positive and normative social science.

POLISCI 336. Introduction to Global Justice. 4 Units.
This course explores the normative demands and definitions of justice that transcend the nation-state and its borders, through the lenses of political justice, economic justice, and human rights. What are our duties (if any) towards those who live in other countries? Should we be held morally responsible for their suffering? What if we have contributed to it? Should we be asked to remedy it? At what cost? These are some of the questions driving the course. Although rooted in political theory and philosophy, the course will examine contemporary problems that have been addressed by other scholarly disciplines, public debates, and popular media, such as immigration and open borders, climate change refugees, and the morality of global capitalism (from exploitative labor to blood diamonds). As such, readings will combine canonical pieces of political theory and philosophy with readings from other scholarly disciplines, newspaper articles, and popular media.
Same as: ETHICSOC 136R, INTNLREL 136R, PHIL 76, POLISCI 136R

POLISCI 336S. Justice. 4-5 Units.
In this course, we explore three sets of questions relating to justice and the meaning of a just society: (1) Liberty: What is liberty, and why is it important? Which liberties must a just society protect? (2) Equality: What is equality, and why is it important? What sorts of equality should a just society ensure? (3) Reconciliation: Are liberty and equality in conflict? If so, how should we respond to the conflict between them? We approach these topics by examining competing theories of justice including utilitarianism, libertarianism/classical liberalism, and egalitarian liberalism. The class also serves as an introduction to how to do political philosophy, and students approaching these topics for the first time are welcome. Political Science majors taking this course to fulfill the WIM requirement should enroll in POLISCI 103.
Same as: ETHICSOC 171, PHIL 171, POLISCI 103, PUBLPOL 103C

POLISCI 337A. Political Philosophy: The Social Contract Tradition. 4 Units.
(Graduate students register for 276.) What makes political institutions legitimate? What makes them just? When do citizens have a right to revolt against those who rule over them? Which of our fellow citizens must we tolerate?Surprisingly, the answers given by some of the most prominent modern philosophers turn on the idea of a social contract. We will focus on the work of Hobbes, Locke, Rousseau, and Rawls.
Same as: ETHICSOC 176, PHIL 176, PHIL 276, POLISCI 137A

POLISCI 337L. Ancient Greek Law and Justice. 3-5 Units.
The development and practice of law and legal procedure in the ancient Greek world, emphasizing the well documented case of classical Athens. Constitutional, criminal, and civil law, approached through analysis of actual laws and speeches by litigants in Athenian courtrooms. Review of a growing scholarship juxtaposing Greek law to other prominent legal traditions and exploring the role of law in Greek social relations, economics, and literature, and its relationship to Greek conceptions of justice.
Same as: CLASSICS 378

POLISCI 338. Universal Basic Income: the philosophy behind the proposal. 3 Units.
Universal basic income (or UBI) is a regular cash allowance given to all members of a community without means test, regardless of personal desert, and with no strings attached. Once a utopian proposal, the policy is now discussed and piloted throughout the world. The growth of income and wealth inequalities, the precariousness of labor, and the persistence of abject poverty have all been important drivers of renewed interest in UBI in the United States. But it is without a doubt the fear that automation may displace workers from the labor market at unprecedented rates that explains the revival of the policy in recent years, including by many in or around Silicon Valley. Among the various objections to the proposal, one concerns its moral adequacy: Isn't it fundamentally unjust to give cash to all indiscriminately rather than to those who need it and deserve it? Over the years, a variety of scholars have defended the policy on moral grounds, arguing that UBI is a tool of equality, liberal freedom, republican freedom, gender equity, or racial equity. Many others have attacked UBI on those very same grounds, making the case that alternative policy proposals like the job guarantee, means-tested benefits, conditional benefits, or reparations should be preferred. Students will learn a great deal about political theory and ethics in general but always through the specific angle of the policy proposal, and they will become experts on the philosophy, politics and economics of UBI. The seminar is open to undergraduate and graduate students in all departments. There are no pre-requisites.
Same as: ETHICSOC 174B, ETHICSOC 274B, PHIL 174B, PHIL 274B, POLISCI 134E

POLISCI 338B. Unequal Relationships. 2-4 Units.
Over the past three decades, a relational egalitarian conception of equality has emerged in political philosophy. Proponents of the view argue that the point of equality is to establish communities where people are able to stand and relate as equals. This entails building societies free from a variety of modes of relating that are thought to be detrimental to our status as moral equals. The list of those inegalitarian relationships is long and includes oppression, domination, exploitation, marginalization, objectification, demonization, infantilization, and stigmatization. The relational approach to equality departs from the more distributive conceptions of equality that were offered in the 70s and after. The theories of justice proposed in response are still comparatively underdeveloped and need further elaboration, but they all concur in rejecting both the overly distributive paradigm and the preoccupation with individual responsibility central to most other egalitarian accounts. This graduate seminar will introduce students to the rich literature on equality in contemporary political philosophy, with a special focus on identifying and scrutinizing unequal relationships. Each week will be centered on a specific type of such unequal relationship, trying to understand how it operates, what social function it serves, and what makes it specifically harmful or wrongful to groups and individuals. Although there are no formal pre-requisites, this class is primarily designed for students considering writing a thesis in political or moral theory as well as for students in other disciplines who want to advance their understanding of equality as a moral value. Seniors in philosophy and political science with a substantial training in political theory will also be considered and should email the PI to communicate their interest. 2 unit option only for Phil PhDs beyond the second year.
Same as: ETHICSOC 378B, PHIL 378B

POLISCI 338E. The Problem of Evil in Literature, Film, and Philosophy. 3-5 Units.
Conceptions of evil and its nature and source, distinctions between natural and moral evil, and what belongs to God versus to the human race have undergone transformations reflected in literature and film. Sources include Rousseau's response to the 1755 Lisbon earthquake; Hannah Arendt's interpretation of Auschwitz; Günther Anders' reading of Hiroshima; and current reflections on looming climatic and nuclear disasters. Readings from Rousseau, Kant, Dostoevsky, Arendt, Anders, Jonas, Camus, Ricoeur, Houellebeck, Girard. Films by Lang, Bergman, Losey, Hitchcock.
Same as: FRENCH 265

POLISCI 339. Directed Reading and Research in Political Theory. 1-5 Unit.
For PhD students. Directed reading in Political Science with a focus on political theory. May be repeated for credit.

POLISCI 340A. Democratic Politics. 3-5 Units.
This course examines the relationship between democratic ideals and contemporary democratic politics.
Same as: POLISCI 240A

POLISCI 342. Foreign Policy Decision Making in Comparative Perspective. 3 Units.
This seminar will examine how countries and multilateral organizations make decisions about foreign and international policy. The hypothesis to be explored in the course is that individuals, bureaucracies, and interest groups shape foreign policy decisions. That hypothesis will be tested against other more structural explanations of how countries behave in the international system. After a brief review of the academic literature in the first part of the course, the seminar will focus on several cases studies of foreign policy decision-making by the United States, China, Russia, Iran, and North Korea, as well as the United Nations and NATO. This seminar is intended for masters students and fourth-year undergraduates. NOTE: Please send a one-page document to Bronte Kass, bkass@stanford.edu, by March 9th with the following information: full name, class year, major, contact email, which version of the course you want to enroll in (e.g., POLISCI or INTLPOL). In the document, please also outline previous associated coursework and/or relevant experience and your interest in enrolling in the seminar. Application results will be announced on March 20th. Any questions related to this course or office hours with Professor McFaul should be directed to Mahlorei Bruce-Apalis at mahlorei@stanford.edu.
Same as: INTLPOL 232, POLISCI 242

POLISCI 342G. Political Mobilization and Democratic Breakthroughs. 3-5 Units.
Mass political mobilization occurs in both democracies and autocracies. Sometimes political protests, demonstrations, and acts of nonviolence civic resistance undermine autocracies, produce democratic breakthroughs, or generate democratic reforms. Other times, they do not. This course explores why, first examining the original causes of mobilization, and then understanding why some movements succeed and others fail. The first sessions of the course will review theories of revolution, social movements, and democratization. The remainder of the course will do deep dives into case studies, sometime with guest lecturers and participants from these historical moments. Cases to be discussed will likely include the U.S. civil rights movement (1960s), Iran (1978 and 2009), Chile (1988), Eastern Europe (1989), China/Hong Kong (1989, 2011, 2019), USSR/Russia (1991 & 2011), South Africa (1990s), Serbia (2000), Egypt and Arab Spring (2011), Ukraine (2004 and 2013), and Black Lives Matter (2000s).
Same as: INTLPOL 218, POLISCI 242G

POLISCI 343A. Field Methods. 3-5 Units.
Familiarizes students with a variety of field methods potentially applicable to ongoing research projects and dissertations. Topics include case selection, process tracing, participant observation, interviewing, archival research, survey design, labnexperiments, field experiments, and ethical concerns in the field. Students develop a field research strategy as a final project. Prerequisites: 440A,B,C.

POLISCI 343C. Public Opinion and Elections in the Populist Era. 5 Units.
Brexit, Donald Trump, the collapse of party systems in established democracies like France and Italy - these striking developments have a common thread: the disruption of politics as usual by insurgent "populist" movements and/or parties. The seminar will focus on Europe and the U.S. Students will have access to surveys of western democracies conducted by YouGov. Undergraduates interested in this course will need to request permission from the instructor to enroll.

POLISCI 344. Politics and Geography. 3-5 Units.
The role of geography in topics in political economy, including development, political representation, voting, redistribution, regional autonomy movements, fiscal competition, and federalism.

POLISCI 344U. Political Culture. 3-5 Units.
The implications of social norms, preferences and beliefs for political and economic behavior and societal outcomes.
Same as: POLISCI 244U

POLISCI 347A. Games Developing Nations Play. 3-5 Units.
If, as economists argue, development can make everyone in a society better off, why do leaders fail to pursue policies that promote development? The course uses game theoretic approaches from both economics and political science to address this question. Incentive problems are at the heart of explanations for development failure. Specifically, the course focuses on a series of questions central to the development problem: Why do developing countries have weak and often counterproductive political institutions? Why is violence (civil wars, ethnic conflict, military coups) so prevalent in the developing world, and how does it interact with development? Why do developing economies fail to generate high levels of income and wealth? We study how various kinds of development traps arise, preventing development for most countries. We also explain how some countries have overcome such traps. This approach emphasizes the importance of simultaneous economic and political development as two different facets of the same developmental process. No background in game theory is required.
Same as: ECON 162, POLISCI 247A

POLISCI 347G. Governance and Poverty. 3-5 Units.
Poverty relief requires active government involvement in the provision of public services such as drinking water, healthcare, sanitation, education, roads, electricity and public safety. Failure to deliver public services is a major impediment to the alleviation of poverty in the developing world. This course will use an interdisciplinary approach to examining these issues, bringing together readings from across the disciplines of political science, economics, law, medicine and education to increase understanding of the complex causal linkages between political institutions, the quality of governance, and the capacity of developing societies to meet basic human needs. Conceived in a broadly comparative international perspective, the course will examine cross-national and field-based research projects, with a particular focus on Latin America and Mexico.

POLISCI 348. Chinese Politics. 3-5 Units.
China, one of the few remaining communist states in the world, has not only survived, but has become a global political actor of consequence with the fastest growing economy in the world. What explains China's authoritarian resilience? Why has the CCP thrived while other communist regimes have failed? How has the Chinese Communist Party managed to develop markets and yet keep itself in power? What avenues are there for political participation? How does censorship work in the information and 'connected' age of social media? What are the prospects for political change? How resilient is the part in the fave of technological and economic change? Materials will include readings, lectures, and selected films. This course has no prerequisites. (Graduate students register for 348.).
Same as: POLISCI 148

POLISCI 348A. Politics and Institutions in Latin America. 3-5 Units.
The broad academic purpose of the course is to evaluate presidential democracies in Latin America and their impacts on the politics in this region. The goal is to give students an introduction to the main debates on political institutions in the Latin American region and help them identify issues for future research.
Same as: POLISCI 248A

POLISCI 348D. China in the Global Economy. 3-5 Units.
An examination of China in the global economy. Focus will be on China¿s Belt and Road Initiative (BRI). The goal of the course is to provide students an in-depth understanding of a key initiative of China¿s efforts to globalize. The approach examines how BRI has played out in practice and how it is changing. Specific questions addressed will include: What is the political and economic logic of BRI? Who are the key players? How much of this is controlled and coordinated by Beijing? How much by local authorities? What bureaucratic structures, if any, have been created to regulate this major initiative? Whose interests are being served with BRI? What are the challenges facing BRI? How have strategies evolved? How have international reactions affected China's globalization strategies? How has this affected US-China Relations? How does BRI affect domestic politics?.
Same as: POLISCI 248D

POLISCI 348S. Latin American Politics. 3-5 Units.
Fundamental transformations in Latin America in the last two decades: why most governments are now democratic or semidemocratic; and economic transformation as countries abandoned import substitution industrialization policies led by state intervention for neoliberal economic polices. The nature of this dual transformation.
Same as: POLISCI 248S

POLISCI 349. Directed Reading and Research in Comparative Politics. 1-10 Unit.
For PhD students. Directed reading in Political Science with a focus on comparative politics. May be repeated for credit.

POLISCI 351A. Foundations of Political Economy. 3 Units.
Introduction to political economy with an emphasis on formal models of collective choice, public institutions, and political competition. Topics include voting theory, social choice, institutional equilibria, agenda setting, interest group politics, bureaucratic behavior, and electoral competition.

POLISCI 351B. Economic Analysis of Political Institutions. 4 Units.
Applying techniques such as information economics, games of incomplete information, sequential bargaining theory, repeated games, and rational expectations of microeconomic analysis and game theory to political behavior and institutions. Applicatoins include agenda formation in legislatures, government formation in parliamentary systems, the implications of legislative structure, elections and information aggregation, lobbying, electoral competition and interest groups, the control of bureaucracies, interest group competition, and collective choice rules.

POLISCI 351C. Institutions and Bridge-Building in Political Economy. 4 Units.
This course critically surveys empirical applications of formal models of collective-choice institutions. It is explicitly grounded in philosophy of science (e.g., Popperian positivism and Kuhn's notions of paradigms and normal science). Initial sessions address the meanings and roles of the concept of institutions in social-science research. Historically important works of political science and/or economics are then considered within a framework called Components of Institutional Analysis (or CIA), which provides a fully general way of evaluating research that is jointly empirical and formal theoretical. The course concludes with contemporary instances of such bridge-building. The over-arching objectives are to elevate the explicitness and salience of desirable properties of research and to illustrate the inescapable tradeoffs among the stipulated criteria. nAlthough this is a core course in the GSB Political Economy PhD curriculum, its substantive foci may differ across years depending on the instructor. For Professor Krehbiel's sessions, the emphasis is on legislative behavior, organization, and lawmaking, and on inter-institutional strategic interaction (e,g, between executive, legislative, and judicial branches in various combinations). nStudents should have taken POLECON 680 and POLECON 681. Also listed as Political Science 351C.

POLISCI 352. Introduction to Game Theoretic Methods in Political Science. 3-5 Units.
Concepts and tools of non-cooperative game theory developed using political science questions and applications. Formal treatment of Hobbes' theory of the state and major criticisms of it; examples from international politics. Primarily for graduate students; undergraduates admitted with consent of instructor.
Same as: POLISCI 152

POLISCI 353A. Workshop in Political Methodology. 1-2 Unit.
Mathematical and statistical models and applications to political science. Guest speakers, faculty, and students present research papers. May be repeated for credit.

POLISCI 353B. Workshop in Political Methodology. 1-2 Unit.
Continuation of POLISCI 353A. Mathematical and statistical models and applications to political science. Guest speakers, faculty, and students present research papers. May be repeated for credit.

POLISCI 353C. Workshop in Political Methodology. 1-2 Unit.
Continuation of POLISCI 353B. Mathematical and statistical models and applications to political science. Guest speakers, faculty, and students present research papers. May be repeated for credit.

POLISCI 354. Thinking Strategically. 5 Units.
This course provides an introduction to strategic reasoning. We discuss ideas such as the commitment problem, credibility in signaling, cheap talk, moral hazard and adverse selection. Concepts are developed through games played in class, and applied to politics, business and everyday life.
Same as: POLISCI 153

POLISCI 355A. Data Science for Politics. 5 Units.
Data science is quickly changing the way we understand and and engage in the political process. In this course we will develop fundamental techniques of data science and apply them to large political datasets on elections, campaign finance, lobbying, and more. The objective is to give students the skills to carry out cutting edge quantitative political studies in both academia and the private sector. Students with technical backgrounds looking to study politics quantitatively are encouraged to enroll.
Same as: POLISCI 150A

POLISCI 355B. Machine Learning for Social Scientists. 5 Units.
Machine learning - the use of algorithms to classify, predict, sort, learn and discover from data - has exploded in use across academic fields, industry, government, and the non-profit sector. This course provides an introduction to machine learning for social scientists. We will introduce state of the art machine learning tools, show how to use those tools in the programming language R, and demonstrate why a social science focus is essential to effectively apply machine learning techniques in social, political, and policy contexts. Applications of the methods will include forecasting social phenomena, evaluating the use of algorithms in public policy, and the analysis of social media and text data. Prerequisite: POLISCI 150A/355A.
Same as: POLISCI 150B

POLISCI 355C. Causal Inference for Social Science. 5 Units.
Causal inference methods have revolutionized the way we use data, statistics, and research design to move from correlation to causation and rigorously learn about the impact of some potential cause (e.g., a new policy or intervention) on some outcome (e.g., election results, levels of violence, poverty). This course provides an introduction that teaches students the toolkit of modern causal inference methods as they are now widely used across academic fields, government, industry, and non-profits. Topics include experiments, matching, regression, sensitivity analysis, difference-in-differences, panel methods, instrumental variable estimation, and regression discontinuity designs. We will illustrate and apply the methods with examples drawn from various fields including policy evaluation, political science, public health, economics, business, and sociology. Prerequisite: POLISCI 150A.
Same as: POLISCI 150C

POLISCI 356A. Formal Theory I: Game Theory for Political Science. 3-5 Units.
An introduction to noncooperative game theory through applications in political science. Topics will include the Hotelling-Downs model, the probabilistic voting model, political bargaining models and political agency models, among others.

POLISCI 356B. Formal Theory II: Models of Politics. 3-5 Units.
A continuation of Formal Theory I covering advanced topics, including classical political economy, comparative institutions, theories of conflict and cooperation, dynamic political economy, and the new behavioral political economy.

POLISCI 357. Sampling and Surveys. 5 Units.
The importance of sample surveys as a source of social science data including public opinion, voting, welfare programs, health, employment, and consumer behavior. Survey design, sampling theory, and estimation. Nonresponse, self-selection, measurement error, and web survey methods. Prerequisite: 350B or equivalent.

POLISCI 358. Data-driven Politics. 3-5 Units.
Covers advanced computational and statistical methods for collecting and modeling large-scale data on politics. Topics will include automated and computer-assisted methods for collecting, disambiguating, and merging unstructured data (web-scraping, identity resolution, and record-linkage), database management (SQL, data architecture), data-reduction techniques for measuring the political preferences for large numbers of individuals, topic models applied to political text/speech, and social network analysis for mapping relationships and identifying influential actors.

POLISCI 359. Advanced Individual Study in Political Methodology. 1-10 Unit.
For PhD students. Directed reading in Political Science with a focus on political methodology. May be repeated for credit.

POLISCI 362. New Economics of Organization. 5 Units.
Survey of economic approaches to organization, emphasizing theory and application, with attention to politics.

POLISCI 400. Dissertation. 1-18 Unit.
Pre-TGR dissertation research. Open to Poli Sci PhD students who have advanced to candidacy.

POLISCI 400C. Research Design. 5 Units.
This course is a research design practicum. Students are required to propose a research question that speaks to a consequential political issue, and one which can be successfully addressed relying on disciplinary tools. Over the quarter, they will be guided through the elements of research design (narrative, theory, and statistics). The final product will be a project description of the form demanded by the National Science Foundation for its research proposals. Required of all Political Science PhD students. Those not in the Ph.D. program in political science must get consent from the instructor to enroll.

POLISCI 410A. International Relations Theory, Part I. 3-5 Units.
This course offers a PhD-level introductory overview of the field of international relations. The primary purpose is to understand and evaluate the main theories, arguments, claims, and conjectures made by scholars in the field so as to enable students to situate arguments in the conceptual structure and intellectual history of IR theory.

POLISCI 410B. International Relations Theory, Part II. 3-5 Units.
Second of a three-part graduate sequence. Security and armed conflict, both interstate and civil war. Nuclear weapons, terrorism, political economy of defense, and related topics. Prerequisite: POLISCI 410A.

POLISCI 410C. International Relations Theory, Part III. 3-5 Units.
Third of a three-part graduate sequence. History of international relations theory, current debates, and applications to problems of international security and political economy. Prerequisite: POLISCI 410A.

POLISCI 410D. Research in International Relations. 3-5 Units.
Part of the graduate sequence in international relations. Focus is on developing research papers and exploring active areas of research in the field. Prerequisites: POLISCI 410A and 410B. 410C should be taken before or concurrently.

POLISCI 411A. Workshop in International Relations. 1-2 Unit.
For graduate students. Contemporary work. Organized around presentation of research by students and outside scholars. May be repeated for credit.

POLISCI 411B. Workshop in International Relations. 1-2 Unit.
For graduate students. Contemporary work. Organized around presentation of research by students and outside scholars. May be repeated for credit.

POLISCI 411C. Workshop in International Relations. 1-2 Unit.
For graduate students. Contemporary work. Organized around presentation of research by students and outside scholars. May be repeated for credit.

POLISCI 412. The Politics and Economics of Modern Europe. 3-5 Units.
What are the implications of European integration for social and economic policy and outcomes? In this course, we will examine how EU membership has altered the democratic politics of Europe, with a special focus on policymaking during Europe's most recent financial crisis.

POLISCI 420A. American Political Institutions. 3-5 Units.
Theories of American politics, focusing on Congress, the presidency, the bureaucracy, and the courts.

POLISCI 420B. Topics in American Political Behavior. 3-5 Units.
For graduate students with background in American politics embarking on their own research. Current research in American politics, emphasizing political behavior and public opinion. Possible topics: uncertainty and ambivalence in political attitudes, heterogeneity in public opinion, the structure of American political ideology, political learning, the media as a determinant of public opinion, and links between public opinion and public policy.

POLISCI 420C. Discovery in American Politics. 5 Units.
What are the facts being generated in the study of American politics, and how are these discoveries being made? Emphasis on strengths and limitationsnof emerging methodologies and review of the substantive contributions they yield. Student-led replication of extant research and development of originalnresearch ideas a key component of the course. Prerequisites: POLISCI 420A, POLISCI 420B.

POLISCI 421K. Questionnaire Design for Surveys and Laboratory Experiments: Social and Cognitive Perspectives. 4 Units.
The social and psychological processes involved in asking and answering questions via questionnaires for the social sciences; optimizing questionnaire design; open versus closed questions; rating versus ranking; rating scale length and point labeling; acquiescence response bias; don't-know response options; response choice order effects; question order effects; social desirability response bias; attitude and behavior recall; and introspective accounts of the causes of thoughts and actions.
Same as: COMM 339, PSYCH 231

POLISCI 421R. American Political Development, 1865-present. 3-5 Units.
In this reading-intensive course, we will conduct a wide-ranging survey of major transformations in the American political system in the post-Civil War period. Our inquiries about these transformations will focus on the origins of the modern administrative state, the interactive role of the state and social movements, and changes in the party system. We¿ll examine these developments not only to understand institutional change, but to learn how changing institutions have shaped the behavior of the American electorate.
Same as: POLISCI 221A

POLISCI 422. Workshop in American Politics. 1-2 Unit.
Research seminar. Frontiers in mass political behavior. Course may be repeated for credit.

POLISCI 422F. Seminar on Electoral Change. 3-5 Units.
This seminar will examine contemporary American and European public opinion and elections using a variety of databases, several of which have become newly available to scholars this decade (eg. YouGov/Polimetrix, ongoing FSI-Hoover Comparative Surveys). Department faculty will present research and some visitors will appear. Students will be expected to complete a significant research paper.

POLISCI 423A. The Laboratory of the Study of American Values. 1-5 Unit.
Designed for graduate students who are writing dissertations about American public opinion. Students participate in all phases of the research process and include questions on nationally representative surveys. Enrollment requires permission of the instructors. See the Notes for additional information.

POLISCI 423B. The Laboratory of the Study of American Values II. 1-5 Unit.
Designed for graduate students who are writing dissertations about American public opinion. Students participate in all phases of the research process and include questions on nationally representative surveys. Enrollment is limited to members of the Laboratory for the Study of American Values.

POLISCI 423C. The Laboratory of the Study of American Values III. 1-5 Unit.
Designed for graduate students who are writing dissertations about American public opinion. Students participate in all phases of the research process and include questions on nationally representative surveys. Enrollment is limited to members of the Laboratory for the Study of American Values.

POLISCI 424A. Democratic Elections. 3-5 Units.
How do democratic elections work? Do elections make representatives accountable, and if so, under what conditions? What preferences do electorates reveal to us when they choose candidates for office, and how do candidates and representatives respond to these preferences? What external factors change the dynamics between candidates and electorates?n n In this class we will study the functioning of democratic elections, mainly in the context of legislative elections. Because this is an elections course, the unit of analysis will be the constituency or the candidate rather than the individual voter, as it might be in a behavior course. We want to understand how candidates make it to office¿i.e., the aggregated choices of many voters¿and how the prospect of reelection shapes their behavior in office.

POLISCI 424C. Party Polarization. 3-5 Units.
This seminar surveys the literature on party polarization in the U.S and other industrialized democracies, considers alternative conceptualizations of polarization, and what is known about the causes and consequences of polarization.

POLISCI 425. Political Communication. 3-5 Units.
An overview of research in political communication with particular reference to work on the impact of the mass media on public opinion and voting behavior. Limited to Ph.D. students.
Same as: COMM 360G

POLISCI 425S. Topics in Political Communication: Media Bias, Selective Exposure, and Political Polarization. 1-5 Unit.
This course surveys theories of media bias, biased processing of information, and the empirical challenges facing researchers attempting to link changes in the composition of audiences to attitudinal and behavioral outcomes. (Limited to PhD students).
Same as: COMM 362

POLISCI 426. Identity Politics. 3-5 Units.
Whether one considers the partisan and electoral choices citizens make or the judgements citizens render in response to officer-involved shootings or other salient social and political events, the centrality of identity in our politics is indisputable. But what is an identity? What are the conditions under which identities become politicized? How do identities work to structure attitudes and affect behavior? This course is all about identity and its intersection with politics. Taking an interdisciplinary and cross-subfield approach, this course seeks to bring students into conversation with scholarship that demonstrates the powerful ways that identities influence all aspects of the political. Though much of our time will be spent reading about race and racial identification in the context of American politics, students will be encouraged to think critically and creatively about identity as it relates to their own intellectual interests. In addition to being active and engaged seminar participants, students will be required to submit a final research paper that uses concepts, themes, and ideas from the course to explore a research question of their choosing.

POLISCI 426S. Theories of Racism in American Politics: A Critique. 0 Units.
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POLISCI 427C. Money in Politics. 3-5 Units.
This course will cover campaign finance, lobbying, and interest group politics.
Same as: POLISCI 227C

POLISCI 427R. Race and Racism in American Politics. 5 Units.
Topics include the historical conceptualization of race; whether and how racial animus reveals itself and the forms it might take; its role in the creation and maintenance of economic stratification; its effect on contemporary U.S. partisan and electoral politics; and policy making consequences.

POLISCI 428. Political Economy and Political Behavior. 4 Units.
[Same as POLECON 677] This seminar will expose students to cutting-edge research in political behavior and political economy published in the leading political science (and other social science) journals. The aim is for students to learn the contemporary literature so that they can be producers of research. To that end, the required assignments in the class will be aimed at professional development: writing an original research note, writing a review, and delivering a scholarly presentation.

POLISCI 428C. Law and Politics of Bureaucracy. 3-5 Units.
Same as Law 7096. Modern government is bureaucratic government. In the words of Justice Jackson, the rise of the administrative state is likely "the most significant legal trend of the last century and perhaps more values today are affected by [agency] decisions than by those of all the courts." This seminar will survey the major ways in which law and political science have grappled with bureaucratic governance. How do we understand the rise of the administrative state? Why are bureaucracies designed the way they are? How do bureaucracies work in the face of legal and political constraints? And what avenues are there for meaningful regulatory reform? The class is cross-listed in Political Science and the Law School and course enrollment will be by consent of instructor. Students will be responsible for writing short reflection papers and a research paper.
Same as: POLISCI 228C

POLISCI 430. Origins of Political Thought. 3-5 Units.
Political philosophy in classical antiquity, focusing on canonical works of Thucydides, Plato, Aristotle, and Cicero. Historical background. Topics include: political obligation, citizenship, and leadership; origins and development of democracy; and law, civic strife, and constitutional change. This course is open to PhD students only. Non-PhD students should enroll in POLISCI 230A/330A (also listed as CLASSICS 181/381, PHIL 176A/276A) Classical Seminar: Origins of Political Thought.
Same as: CLASSICS 390, PHIL 276D

POLISCI 430A. Ancient Greek Economic Development. 4-5 Units.
(Formerly CLASSHIS 330A.) Drawing on Herodotus and other literary sources, ancient historians have traditionally seen classical Greece as a very poor land. Recent research, however (much of it conducted here at Stanford), suggests that Greece in fact saw substantial economic growth and rising standards of living across the first millennium BCE. This seminar tests the poor Hellas/wealthy Hellas models against literary and archaeological data. We will develop and test hypotheses to explain the rate and pace of economic change in the Greek world.
Same as: CLASSICS 384A

POLISCI 430B. Ancient Greek Economic Development. 1-5 Unit.
(Formerly CLASSHIS 330B.) Drawing on Herodotus and other literary sources, ancient historians have traditionally seen classical Greece as a very poor land. Recent research, however (much of it conducted here at Stanford), suggests that Greece in fact saw substantial economic growth and rising standards of living across the first millennium BCE. This seminar tests the poor Hellas/wealthy Hellas models against literary and archaeological data. We will develop and test hypotheses to explain the rate and pace of economic change in the Greek world.
Same as: CLASSICS 384B

POLISCI 431L. Inequality: Economic and Philosophical Perspectives. 5 Units.
The nature of and problem of inequality is central to both economics and philosophy. Economists study the causes of inequality, design tools to measure it and track it over time, and examine its consequences. Philosophers are centrally concerned with the justification of inequality and the reasons why various types of inequality are or are not objectionable.nIn this class we bring both of these approaches together. Our class explores the different meanings of and measurements for understanding inequality, our best understandings of how much inequality there is, its causes, its consequences, and whether we ought to reduce it, and if so, how. nThis is an interdisciplinary graduate seminar. We propose some familiarity with basic ideas in economics and basic ideas in contemporary political philosophy; we will explain and learn about more complex ideas as we proceed. The class will be capped at 20 students.
Same as: ETHICSOC 371R, PHIL 371D

POLISCI 432R. Selections in Modern Political Thought. 3-5 Units.
This graduate-level seminar explores selections from the canon of Western political thought from the late fifteenth through nineteenth centuries. Throughout the course, we will engage in close textual readings of individual thinkers and consider some of the larger questions raised by political modernity. This offering will focus on American political thought from the Puritan era through the turn of the 20th century. We will pay special attention to dissenting voices and to texts that address the settler empire, slavery, and the color line. Thinkers covered will include: John Winthrop, Thomas Jefferson, James Madison, Alexander Hamilton, "Brutus," William Apess, Henry David Thoreau, John C. Calhoun, David Walker, Abraham Lincoln, Frederick Douglass, and W.E.B. Du Bois.
Same as: ETHICSOC 432X

POLISCI 433. Workshop in Political Theory. 1-2 Unit.
For graduate students. Faculty, guest speakers, and graduate students conducting research in political theory present works-in-progress. May be repeated for credit.

POLISCI 434A. Ethics, Economics and the Market. 4 Units.
Economic analysis inevitably raises moral questions. Getting clear on those moral questions, and the competing answers to them, can help improve both economic analysis and our understanding of the values involved in alternative social policies. This course focuses on a central economic institution: the market. How have the benefits and costs of using markets been understood? For example, it is often claimed that markets are good for welfare, but how is welfare to be understood? What is the connection between markets and different values such as equality and autonomy? What, if anything is wrong with markets in everything? Are there moral considerations that allow us to, distinguish different markets? This course examines competing answers to these questions, drawing on historical and contemporary literature. Readings include Adam Smith, JS Mill, Karl Marx, Michael Walzer, Dan Hausman and Michael McPherson and Debra Satz among others. For graduate students only.
Same as: ETHICSOC 303R, PHIL 375

POLISCI 435R. Political Realism. 3-5 Units.
This seminar will explore various articulations of political realism in their historical contexts. Realism is generally taken to be a pragmatic approach to a political world marked by the competition for material interests and the struggle for power. Yet beyond a shared critique of idealism and an insistence on the priority and autonomy of the political, realists tend to have very different normative visions and political projects. We will consider the works of several political realists from the history of political and international relations thought, including: Thucydides, Machiavelli, Hobbes, Carr, Niebuhr, and Morgenthau.
Same as: PHIL 372R

POLISCI 436R. Amartya Sen's capability theory. 2-4 Units.
Amartya Sen's pioneering work attempts to open up economics to missing informational and evaluative dimensions. This seminar will explore Sen's "capability approach" and its implications for the study of economics, gender, and justice. It will look at different ways that the capability approach has been developed, in particular, by Martha Nussbaum, but also by other political philosophers.
Same as: PHIL 378

POLISCI 437. Autonomy. 5 Units.
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POLISCI 437C. 20th Century and Contemporary Political Theory. 3-5 Units.
This course provides a survey of some of the major contributions to political thought in the past century. The course will place special emphasis on the development of theories of political authority and legitimacy in the context of the modern bureaucratic state, as well as the connection between authority and other key concepts in normative political authority: democracy, justice, and freedom.

POLISCI 438R. The Greeks and the Rational: Deliberation, Strategy, and Choice in Ancient Greek Political Thought. 3-5 Units.
The course explores the role of practical reasoning (instrumental rationality) in the ethical-political works of e.g. Plato and Aristotle, in the historical-political projects of e.g. Herodotus and Thucydides, and in the design of classical Greek institutions. We ask to what degree ancient Greeks shared intuitions concerning the rationality of choice with contemporary decision and game theorists. The Greek tradition recognized the limits of expected utility maximization in predicting or explaining the actual behavior of individuals, groups, and states, and sought to explain divergences from predicted rational behavior. Greek social theorists may, therefore, also have shared some of the intuitions of contemporary behavioral economists. Topics will include individual rationality, rationality of groups and states, the origins of social order, emergence and persistence of monarchical and democratic regimes, conflict and cooperation in interstate relations, competition and cooperation in exchange. Examining the Greek tradition of thought on practical reasoning has some implications for we might think about deliberation and bargaining in contemporary democratic-political, interpersonal-ethical, and interstate contexts. PREREQUISITES: Students in the course are expected to have a background in EITHER classical studies (literature, history, or philosophy), OR Greek political thought (Origins of Political Thought or equivalent) OR in formal/positive political theory. Registration for undergraduates is with permission of instructor (email jober@stanford.edu).
Same as: CLASSICS 395, POLISCI 238R

POLISCI 440A. Theories in Comparative Politics. 3-5 Units.
Theories addressing major concerns in the comparative field including identity, order, regime type, legitimacy, and governance.

POLISCI 440B. Comparative Political Economy. 3-5 Units.
Required of Political Science Ph.D. students with comparative politics as a first or second concentration; others by consent of the instructor. The origins of political and economic institutions and their impact on long run outcomes for growth and democracy. Emphasis is on the analysis of causal models, hypothesis testing, and the quality of evidence.

POLISCI 440C. Methods in Comparative Politics. 5 Units.
Current methodological standards in comparative politics. Students develop their own research design that meets these standards.

POLISCI 440D. Workshop in Comparative Politics. 1-2 Unit.
Faculty, guest speakers, and graduate students conducting research in comparative politics present work-in-progress. May be repeated for credit.

POLISCI 441L. Grad Seminar on Middle Eastern Politics. 3-5 Units.
Survey of major topics in the study of Middle Eastern politics including state formation, authoritarian resilience and political Islam.

POLISCI 443S. Political Economy of Reform in China. 3-5 Units.
Content, process, and problems of China¿s post-Mao reforms. Changes in property rights, markets, credit, and the role of the state in economic development. Comparative insights about reform in the Chinese communist system that distinguishes it from the experience of regimes in E. Europe and the former Soviet Union.

POLISCI 443T. Approaches to Chinese Politics. 3-5 Units.
Major secondary literature on Chinese politics, involving the evolution of theoretical concepts and social scientific approaches characterizing the field. Subjects include changes made to defining fundamental issues of Chinese political theory, and the implications of shifts in research methods and analytical tools. Prerequisite: basic knowledge of politics of post-1949 China.

POLISCI 444. Comparative Political Economy: Advanced Industrial Societies. 3-5 Units.
Political economy approaches to key policy outcomes including redistribution, the size of government, fiscal behavior, and pork-barrel politics. Theories related to institutions, interest groups, and geography, focusing on middle- and upper-income countries.

POLISCI 444A. Authoritarian Politics. 3-5 Units.
This course offers a thematic approach to the study of authoritarian politics. We will cover the major areas of political science research on authoritarian politics and governance while simultaneously building empirical knowledge about the politics of particular authoritarian regimes. The course will also discuss transitions to democracy as well as authoritarian political tendencies within democratic contexts.
Same as: POLISCI 244A

POLISCI 445C. The Logics of Violence: Rebels, Criminal Groups and the State. 3-5 Units.
This course explore the logics of violence. The course offers an overview of the literature on civil wars as well as organized violence involving armed groups that do not seek formal state power, such as drug cartels, prison gangs, and paramilitaries. It also explores the many ways in which states engage in violence against their population through repression, torture, and murder.
Same as: POLISCI 245C

POLISCI 446A. Paths to the Modern World: The West in Comparative Perspective. 3-5 Units.
How and why did Europe develop political institutions that encouraged economic growth and industrialization? And why have many other regions lagged in the creation of growth-promoting institutions? This course uses a comparative approach to understanding routes to the modern world - the historical experiences of Christian Europe, the Islamic world, and others. We will explore questions including: When do parliaments emerge? How do cities promote growth? What is the role of religion?.
Same as: POLISCI 246A

POLISCI 446E. Seminar on Political Economy Experiments. 3-5 Units.
This seminar introduces recent experimental work in political economy and comparative politics. Instead of surveying research in this area broadly, we will work through a number of recent working papers. Each week we will have a guest speaker in the class whose work will be discussed by a team of students. The students will replicate, extend, and comment on the weekly paper. The first objective of the seminar is to develop an understanding of different elements of a field experiment. To this end, we will untangle project parts related to implementation, data collection, analysis, and writing. A typical weekly meeting will include the following: discussion on framing and contribution to literature, replication of the study material, and potential extensions of the analysis. We will also go through survey instruments and any other material made available by authors. A second objective is to introduce students to writing pre-analysis plans for their own research. Each student will be expected to prepare a detailed pre-analysis plan for a proposed experiment or quasi-experiment, and will have the opportunity to workshop this plan with the class towards the end of the quarter.

POLISCI 447. Gender and Development. 3-5 Units.
Gender remains an identity that defines structures of opportunity and representation in markets, society, and importantly in politics. This course studies how gender conditions experiences in political, economic, and social institutions. This seminar will pay special attention to the ways that patterns and processes of development have shaped gender inequality and will draw largely on evidence from low and middle-income countries. Specifically, we will study questions such as: Why do women in much of the world remain relatively underrepresented in formal andninformal institutions? What social, cultural, economic, and institutional factors reduce such gender inequality? How does gender inclusion shape development patterns and political outcomes?.

POLISCI 448R. Workshop: China Social Science. 1 Unit.
For Ph.D. students in the social sciences and history. Research on contemporary society and politics in the People's Republic of China. May be repeated for credit. Prerequisite: consent of instructor.
Same as: SOC 368W

POLISCI 450A. Political Methodology I: Regression. 3-5 Units.
Introduction to statistical research in political science, with a focus on linear regression. Teaches students how to apply multiple regression models as used in much of political science research. Also covers elements of probability and sampling theory.

POLISCI 450B. Political Methodology II: Causal Inference. 3-5 Units.
Survey of statistical methods for causal inference in political science research. Covers a variety of causal inference designs, including experiments, matching, regression, panel methods, difference-in-differences, synthetic control methods, instrumental variables, regression discontinuity designs, quantile regression, and bounds. Prerequisite: POLISCI 450A.

POLISCI 450C. Political Methodology III: Model-Based Inference. 3-5 Units.
Provides a survey of statistical tools for model-based inference in political science. Topics include generalized linear models for various data types and their extensions, such as discrete choice models, survival outcome models, mixed effects and multilevel models. Prerequisites: POLISCI 450A and POLISCI 450B.

POLISCI 450D. Political Methodology IV: Advanced Topics. 3-5 Units.
Covers advanced statistical tools that are useful for empirical research in political science. Possible topics include missing data, survey sampling and experimental designs for field research, machine learning, text mining, clustering, Bayesian methods, spatial statistics, and web scraping. Prerequisites: POLISCI 450A, POLISCI 450B and POLISCI 450C.

POLISCI 450X. Programming for Political Scientists. 1 Unit.
This one-unit course is designed to complement our core methods sequence. In this biweekly course, students will be introduced to programming concepts, ideas, and tools that will assist them in completing homework faster and help them to produce better, more clear, and more easily replicated code.

POLISCI 451. Design and Analysis of Experiments. 3-5 Units.
Political scientists increasingly rely on experimental methods. This course covers the principles and logic of experimental design as applied to laboratory, field and survey experiments. We discuss the strengths and limitations of experiments in relation to observational methods. Design considerations include randomization, the construction of treatments, the use of deception, the ethical implications of deception, and new developments in subject recruitment. Turning to the analysis of experimental data, we describe the methods for estimating treatment effects, interactions, and more complex indirect effects stemming from either mediator or moderator variables. We also cover appropriate data analytic strategies for quasi-experimental designs including interrupted time series, matching and propensity scores.

POLISCI 452. Machine Learning with Application to Text as Data. 3-5 Units.
Machine Learning methods are increasingly useful for the social sciences. This course introduces a framework for using machine learning methods to make social science inferences, with a particular focus on text as data. The course will explain how machine learning methods can be used to facilitate discovery, measure quantities of interest, and to make causal inferences and predictions. We will introduce a variety of methods for representing texts as quantitative data and then we will introduce a wide array of commonly used methods. Prerequisites are POLISCI 450A, 450B, and 450C.

POLISCI 460A. Political Economy I. 3-5 Units.
Introduction to empirical and theoretical research in political economy. This course focuses on issues in democracies, while Political Economy II focuses on issues in non-democracies. Topics may include institutional foundations, social choice, electoral competition and candidate positioning, accountability, voter behavior, polarization, media and political communication, redistribution, special interests and lobbying, collective action, immigration, and populism. Prerequisite for Econ PhD students: ECON 202 and 270 or permission of instructors. Prerequisites for Political Science PhD students: POLISCI 450A, POLISCI 450B, and POLISCI 356A.
Same as: ECON 220

POLISCI 460B. Political Economy II. 3-5 Units.
Continuation of ECON 220 / POLISCI 460A. Preparation for advanced research in political economy. This quarter will focus on topics related to culture, institutions, political and economic development, historical evolution, nondemocratic politics, conflict and cooperation. We will cover both empirical and theoretical work. Prerequisite for Political Science PhDnstudents: POLISCI 356A.
Same as: ECON 221

POLISCI 462. How to Write and Publish a Quantitative Political Science Paper. 3-5 Units.
This course helps students to write a publishable research paper in political science. We will focus on how to specify an important research question, how to identify appropriate research methods to answer that question, how to present evidence effectively, and how to navigate the publication process. Students will be expected to produce a completed research paper of publishable quality by the end of the quarter.

POLISCI 464. Survey Design and Implementation. 3-5 Units.
Surveys are one of the most important sources of data for political scientists and their design and implementation is therefore a critical component of a political scientist's tool kit. This course provides an overview of the tools needed to design and implement survey research. In addition, this course will expose students to canonical and cutting-edge applications of survey research in the study of political behavior and public opinion. This course aims to interweave the methodological and the practical, preparing students to implement their own survey-based research projects while also engaging with the core political science research questions answered through survey research. The course will cover methodological issues such sources of bias, measurement theory and questionnaire design, sampling and non-response, and modes of data collection alongside practical issues such as field research and in-person data collection challenges, web-based data collection challenges, interviewer hiring, and data quality control measures. Over the quarter, students will develop a research design using survey research methods, including designing their own survey questionnaire and implementation plan.

POLISCI 474. Design and Analysis of Surveys. 1-5 Unit.
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POLISCI 480. The Science of Politics: Foundational Concepts for Political Science Graduate Students. 2 Units.
This class is an introduction to the different ways that social scientists have proposed to understand politics. The emphasis is on understanding how the way a question is posed structures the way it can be answered, and how the way it can be answered structures the results that can be obtained.

POLISCI 482A. Political Science Departmental Workshop. 1-2 Unit.
The Political Science Departmental Workshop provides a forum for graduate students and faculty involved in political science research to engage with the core themes and questions of research across the discipline. Meetings will include presentations by Stanford graduate students and faculty of work "in progress" across all political science sub-disciplines. The aim of the workshop is for participants to gain a better understanding of the key questions that unite political scientists and learn about cutting-edge research.

POLISCI 482B. Political Science Guest Speaker Workshop. 1-2 Unit. The workshop brings in a distinguished speaker from outside the department each week, focusing on the sub-fields of international relations, comparative politics, American politics, and political methodology. The workshop will give participants a broad overview of cutting-edge theoretical and empirical research being carried out in political science and related fields. Visiting speakers will include both recent PhDs and senior scholars. Students will have the opportunity to follow up and have individual meetings with speakers working on related research topics.

POLISCI 801. TGR Project. 0 Units.

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POLISCI 802. TGR Dissertation. 0 Units.

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PSYCHOLOGY

Courses offered by the Department of Psychology are listed under the subject code PSYCH on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=PSYCH&filter-catalognumber-PSYCH=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=PSYCH&filter-catalognumber-PSYCH=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=PSYCH&filter-catalognumber-PSYCH=on).

The department, housed in Jordan Hall, maintains many computer-equipped laboratories and the Stanford Center for Cognitive and Neurobiological Imaging (CNI). Bing Nursery School, located on campus at 850 Escondido Road, provides a laboratory for child observation, training in nursery school teaching, and research. It was constructed with funding from the National Science Foundation and a special grant from Mrs. Anna Bing Arnold and Dr. Peter Bing.

The department provides

- courses designed for the general student
- a major program leading to the degree of Bachelor of Arts, including options for honors and a specialization in one of four content area tracks
- an undergraduate minor program
- programs of graduate study and research leading to the degree of Doctor of Philosophy
- a Ph.D. minor

Applications are not accepted for the master's degree except as noted below.

Mission of the Undergraduate Program in Psychology

The mission of the undergraduate program in Psychology is to introduce students to the theories and empirical studies of human behavior. This includes the study of aging, achievement, child development, cognitive processes, conflict, culture, decision making, emotion, group behavior, health, identity, infancy, language, learning and memory, morality, motivation, personality, psychopathology, race, self, social perception, visual perception, and other related topics. The major provides students with knowledge and skills relevant to professional careers in technology, business, counseling, education, public policy, law, and medicine, as well as graduate studies in Psychology.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. an understanding of core knowledge within the discipline of psychology including relevant theory and research.
2. the ability to analyze a problem correctly using discipline specific methodology.
3. the ability to draw sound inferences and conclusions from data.
4. the ability to write and communicate ideas clearly.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in Psychology and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization. The master's program is available only to Ph.D. students in Psychology and, under special circumstances, students enrolled in other graduate programs offered through the University.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in Psychology. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of Psychology and to disseminate this knowledge.

Bachelor of Arts in Psychology

Major Requirements

Students declaring a major in Psychology must complete a minimum of 70 units of course work in Psychology, 60 of which must be taken in the Psychology department. The remaining 10 units can be taken outside of the Psychology department but must be approved by the student services office or faculty adviser. These courses should represent a coherent thematic focus. One way to achieve this focus is through a field of study. Courses taken to satisfy the 70-unit requirement must be taken for a grade of C- or better (except for courses offered only on a satisfactory/no credit basis). Majors must take PSYCH 1 Introduction to Psychology, and PSYCH 10 Introduction to Statistical Methods: Precalculus. Advanced placement (AP) credit may not be used toward the Psychology major requirements. Beyond these two required courses, students must complete at least five of the following eleven core Psychology courses, with a minimum of two from each area A and B:

		Units
Area A		
PSYCH 30	Introduction to Perception	4
PSYCH 35	Minds and Machines	4
PSYCH 45	Introduction to Learning and Memory	3
PSYCH 50	Introduction to Cognitive Neuroscience	4
Area B		
PSYCH 60	Introduction to Developmental Psychology	3
PSYCH 70	Self and Society: Introduction to Social Psychology	4
PSYCH 75	Introduction to Cultural Psychology	5
PSYCH 80	Introduction to Personality and Affective Science	3
PSYCH 90	INTRODUCTION TO CLINICAL PSYCHOLOGY: A NEUROSCIENCE PERSPECTIVE	3
PSYCH 95	Introduction to Abnormal Psychology	3

Students must take one Writing in the Major (WIM) course in Psychology, and should check the Stanford Bulletin yearly as these courses may change. The department also strongly recommends that all majors take at least one advanced seminar.

Students may count up to 10 units of research, independent study, and practica (including but not limited to PSYCH 194 Reading and Special Work, PSYCH 195 Special Laboratory Projects, PSYCH 281 Practicum in Teaching) toward the Psychology major. Students who are teaching assistants for a Psychology course or are enrolled in the senior honors program are allowed up to 15 units in independent study and research. Any units beyond the limit of 10 or 15 may be counted toward the 180 units required for graduation.

Students who are double majoring or completing a minor degree in another department may not overlap (double-count) courses, unless the overlapping courses constitute introductory skill requirements, such as

PSYCH 10 Introduction to Statistical Methods: Precalculus. Consult the student services office for further clarification.

Summer Quarter Psychology courses are not equivalent to courses given during the regular academic year and, while applicable toward the 70 units needed for the major, may not be used to fulfill core course requirements. Therefore, PSYCH 1, PSYCH 10, and the Area A and B courses cannot be taken during Summer Quarter to fulfill the major requirements. Additionally, a course taken during the Summer Quarter cannot be used to replace the grade of a non-Summer Quarter course, even if the title and units of the two courses are the same.

Beyond the Minimal Requirements

The following recommendations may be helpful to students who wish to plan a program that goes beyond the minimal requirements listed above:

1. Within the general major, the student may take advanced undergraduate or graduate courses (although some require the consent of the instructor), including seminars. The student may also take advantage of widespread opportunities for directed research, working closely with individual faculty and graduate students.
2. The student may apply to the senior honors program, described below.

The training obtained from the pursuit of any of these options is valuable not only for students considering graduate work in Psychology, but also for those thinking of professional careers outside of Psychology in fields such as technology, business, counseling, education, law, public policy or medicine.

Credit from Outside the Department

Psychology majors must complete at least 60 units of course work toward their major at Stanford within the Psychology department. Psychology majors may count no more than a total of 10 units credit from outside the department toward the major. Both majors and minors, under extenuating circumstances, may use one course from outside the department to fulfill core course requirements. Additional courses may be used to fulfill the 70-unit major requirement, but may not be counted as core courses. Please see the student services office for further clarification.

Petition for transfer of credit is rarely granted. In cases where petitioning is necessary, there are two types of credit from outside the department: external transfer credit for courses taken at institutions other than Stanford and credit for courses in other Stanford departments. A student must have already declared Psychology as a major or minor in order to submit a petition for transfer credit. Stanford credit for courses completed at other institutions must have been granted by the External Credit Evaluation section of the Registrar's Office; those units may be applied toward the 180 units required for graduation. To have credit from outside the department evaluated to fulfill requirements toward the Psychology major or minor, students must complete an Undergraduate Petition form, available from the student services office, and submit it with a course syllabus. Students requesting external transfer credit must also submit a copy of the signed transcript from the External Credit Evaluation section of the Registrar's Office showing the number of Stanford units granted for the course. The Psychology department then evaluates external credit courses and courses from other Stanford departments to determine if they can be applied toward Psychology major or minor requirements.

Specialization Tracks

The specialization tracks in Cognitive Sciences, Health and Development, Mind, Culture, and Society, and Neuroscience are retired as of 9/1/20. Students who had declared a track before 9/1/20 will be able to complete and graduate with the specialization track. Requirements for the specialization tracks can be found on the Psychology website.

Honors Program

The senior honors program is designed for exceptional Psychology majors who wish to pursue a year of intensive supervised independent research. Admission to the program is made at the end of the student's junior year on the basis of:

- excellent academic performance
- previous research experience
- two letters of recommendation by faculty and/or graduate students

Applications are available in April and are to be submitted to the department's student services office with a current transcript and recommendations prior to the student's senior year.

Students interested in the program should involve themselves in research as early as possible and should acquire a broad general background in Psychology, including statistics, and a deep background in their chosen area. Typically, students work in their honor thesis adviser's lab for at least one quarter. The honors program is particularly appropriate for students planning to go to graduate school in Psychology or in other social sciences, as well as in computer science, business, counseling education, law, public policy and medicine.

During Autumn Quarter of their senior year, honors program students participate in a weekly seminar and meet with their advisers to develop their experimental program and begin data collection. Winter and Spring Quarters are devoted to completing the research, analyzing the data, and writing the thesis, which is submitted mid-May. Students give oral presentations of their projects at the annual Honors Convention. This convention is attended by undergraduates, graduate students, and faculty.

Advising

Psychology supports a multiple mentorship model for advising majors. Within the department, students have the following advisers:

- Faculty major adviser
- Student services officer
- Peer advisers

Psychology Department advising is supplemented by support from Undergraduate Advising and Research Academic Advising Directors, the Residential Education dormitory staff, and many other potential advisers. We encourage our students to reach out to advisers from across the University to develop a robust support network.

Minor in Psychology

Declaration

Students who wish to declare a minor field of concentration in Psychology must do so no later than the deadline for their application to graduate.

Degree Requirements

Completion of a minimum of 35 units in Psychology is required for the minor, including PSYCH 1 Introduction to Psychology and PSYCH 10 Introduction to Statistical Methods: Precalculus, or a comparable statistics course. Advanced placement (AP) credit may not be used towards the Psychology minor.

The minor must include three of ten core courses with a minimum of one from each of two areas and elective Psychology courses of at least three units each, totaling 35 units:

		Units
Area A		
Select a minimum of one of the following:		
PSYCH 30	Introduction to Perception	
PSYCH 35	Minds and Machines	
PSYCH 45	Introduction to Learning and Memory	
PSYCH 50	Introduction to Cognitive Neuroscience	
Area B		
Select a minimum of one of the following:		
PSYCH 60	Introduction to Developmental Psychology	
PSYCH 70	Self and Society: Introduction to Social Psychology	
PSYCH 75	Introduction to Cultural Psychology	
PSYCH 80	Introduction to Personality and Affective Science	
PSYCH 90	INTRODUCTION TO CLINICAL PSYCHOLOGY: A NEUROSCIENCE PERSPECTIVE	
PSYCH 95	Introduction to Abnormal Psychology	
Elective Psychology Courses		

Independent study, research, and practica cannot be counted toward the minor. Summer Quarter Psychology courses are not applicable toward the 35 units needed for the minor.

All courses used to fulfill the requirements of the minor must be passed with a grade of 'C-' or better, except for courses offered only on a satisfactory/no credit basis.

Master of Arts in Psychology

Degree Eligibility

The Department of Psychology does not offer a terminal master's degree. Only currently enrolled Stanford doctoral students (Ph.D., M.D., or J.D.) are eligible to apply for the M.A. in Psychology.

Degree Requirements

- Completion of 45 units of graduate level Psychology courses
- A maximum of 18 units may be from lab courses, independent study, outside units, and practica (e.g., 222, 258, 269, 281, 297, 282, 290)
- Successful completion of the First Year Project (FYP) or equivalent master's thesis

Of the 45 units of Psychology courses, Master's students must complete 4 Core Courses and 2 Statistical Methods Courses as outlined below. These are the same Core Course and Quantitative Methods Course requirements that the Department sets for the Ph.D. students.

Core Course Requirement

Students are required to take four core courses, each course from a different area of the Psychology department: Affective Science, Cognitive Science, Developmental Psychology, Neuroscience, and Social Psychology, as listed below. All core courses must be taken for a letter grade, for 3 units, and passed with a grade of 'B-' or better.

Consistent with the program's goal of fostering breadth and engagement across all areas of the department, students are encouraged to take all five core courses spanning the five areas of the department. If a student takes five core courses, the units and grade of the fifth course are counted towards the student's advanced units.

		Units
PSYCH 202	Cognitive Neuroscience	3
PSYCH 205	Foundations of Cognition	3
PSYCH 211	Developmental Psychology	3
PSYCH 212	Classic and contemporary social psychology research	1-3
or PSYCH 215	Mind, Culture, and Society	
PSYCH 213	Affective Science	3

Students may be required by their advisors to take up to two additional graduate courses in their area of specialization. In these cases, the additional courses are counted towards the advanced units requirement as described below. Students should consult with their advisor about any additional requirements in their area of specialization.

Quantitative Methods Course Requirement

Students are required to take two of the following Quantitative Methods courses:

		Units
PSYCH 251	Experimental Methods	3
PSYCH 252	Statistical Methods for Behavioral and Social Sciences	5
PSYCH 253	Advanced Statistical Modeling	3

Quantitative methods courses must be taken for a letter grade and passed with a grade of 'B-' or better.

Policy and Process for Current Psychology Ph.D. students

Graduate students who are already enrolled in the Psychology Ph.D. program and who have completed (a) the first-year and second-year course requirements; and (b) at least 45 units of Psychology courses may apply for conferral of the M.A. degree. This application should be discussed with the Student Services Manager.

Students who are currently enrolled in a Stanford Ph.D. or professional program in another Department may be granted a Master of Arts in Psychology. In such cases, admission to the M.A. is considered by the faculty on a case-by-case basis. An admitted student must complete at least 45 units of Psychology courses and possibly other research or course requirements as determined by the faculty. Interested applicants should consult with the Student Services Manager, Emily Fay (ecfay@stanford.edu).

All applicants must satisfy University residency requirements for the degree and are responsible for consulting with their primary departments or the Financial Aid Office about the effects of the proposed program on their current funding.

Please note: The Department of Psychology does not offer terminal M.A. degrees for students who are not already pursuing another advanced degree at Stanford.

How to apply for the Psychology M.A.: Current Psychology Ph.D. Students

1. Fill out the application form and obtain your advisor's signature.
2. Submit the completed application form to the Psychology Student Services Manager, who will obtain the Department Chair's signature.
3. Submit a request for the Master's Degree via Axess. In the Student Center tab, select "Petitions and Forms."
4. Enter your payment and select "Apply to Graduate" in Axess (make sure to select the Master's, not Ph.D.).
5. Psychology's Student Services Office will approve your request in Axess.

Policy and Procedures for External Students Requesting to Pursue a Master of Arts in Psychology

Graduate students from other Stanford departments/graduate programs may choose to request the opportunity to pursue a Master's of Arts in Psychology. They are eligible if:

- They are Ph.D., JD, or MD students in another Stanford department/graduate program AND
- They have secured a Psychology faculty sponsor who agrees to serve as their Master's research advisor.

Requirements

The requirements for the M.A. are the same for internal (Psychology Ph.D. program) and external (non-Psychology Ph.D. program) students. However, for external students, the M.A. coursework and thesis must be in addition to the coursework and milestone documents they are using towards their primary Ph.D. In other words, a student may not use the same course to count towards the unit or content requirements of both degrees; the student must choose which courses count for which degree. Note that students are still bound to the Ph.D. course load cap of 10 units per quarter. Students may count the Psych M.A. course units towards the requirement to complete 135 units in residence for a Ph.D. (a University requirement), but not towards specific Department/program-level Ph.D. requirements.

If a student requests permission to waive a particular core or methods course requirement (e.g., PSYCH 252) due to overlapping course content with their Ph.D. coursework, the student must petition the Psychology Graduate Program Committee. If this petition is granted, the student must still complete 45 units of Psychology coursework, of which a maximum of 18 can be labs/practica/research units. Waiving a course requirement simply means the student replaces the waived course with a different psychology course.

An external student's Master's Thesis cannot overlap with any similar milestone documents that count towards their primary Ph.D. For an external student, a successful Master's Thesis is a report on a research project in Psychology that is done during the first two years of their Master's studies. Typically, the thesis is written in the format of a scientific paper including the following sections (i) an introduction describing the background and theoretical context, (ii) a methods section describing the experimental paradigm, (ii) results detailing experiment outcomes with the appropriate data analyses, statistical analyses, figures, and/or tables, (iv) discussion, and (v) references. Both the primary advisor in the Psychology department and a second reader (must be a Stanford Academic Council member) will read and give the student feedback on their Master's Thesis, and the student must pass a 1-hour thesis defense at which the work is presented to the advisor and reader.

Process

A successful external M.A. recipient goes through the following steps:

1. The potential student secures a Psychology faculty research mentor who supports the addition of the M.A.; have an initial meeting with the Student Services Manager to review the program and set expectations.
2. The potential student submits an application to the Student Services Manager. This application is composed of the following materials: Statement of Purpose, CV, Letter of support from primary advisor(s) in home department
3. The Student Service Manager collates the application and submits to the area faculty for review.
4. If the area faculty approve, the Student Services Manager confirms Department approval with the student and records the student's commitment to pursue a M.A. Note: the student does not formally add the Psych M.A. program plan in Axess at this time.
5. The student pursues the M.A. coursework and research under the consultation of the M.A. advisor. The Student Services Manager is available for logistical advising.
6. The student completes the coursework and submits a M.A. Thesis. The Thesis is submitted via email to the Psychology M.A. advisor and secondary reader, cc'ing the Psychology Student Services Manager.
7. The M.A. Thesis is defended in a presentation to the primary advisor and second reader, and the Thesis is reviewed and approved by both the primary advisor in the Psychology and the second reader.
8. The student submits the M.A. form, formally matriculates, and the M.A. degree is available in the system for the student to confer.

As with internal M.A. students, external M.A. students matriculate into the M.A. at the end of the program. This ensures that if a student opts not to complete the M.A., we do not need to process a formal withdrawal or dismissal from the M.A. program.

Funding

The Department does not provide funding for external M.A. students. If a faculty mentor wishes to engage an external M.A. student as an RA, the faculty must provide the funds.

Doctor of Philosophy in Psychology

There are no specific course requirements for admission to the doctoral program. Nevertheless, an applicant should have prior research experience, as well as the equivalent of a bachelor's degree. The Department of Psychology does not require the GRE for admission. The major focus of the doctoral program is on research training, and admission is highly selective.

General University requirements for the Ph.D. are described in the "Graduate Degrees (http://www.stanford.edu/dept/registrar/bulletin/4901.htm)" section of this bulletin.

In addition to fulfilling Stanford University requirements for the degree, the following departmental requirements are stipulated.

The Doctoral Training Program

A student typically concentrates in one of several areas within Psychology. Across all areas, the training program emphasizes the development of research competence, and students are encouraged to develop skills and attitudes that are appropriate to a career of continuing research productivity.

Two kinds of experience are necessary for this purpose. One is the learning of substantial amounts of theoretical, empirical, computational, and methods information. A number of courses and seminars are provided to assist in this learning, and students are expected to construct a program in consultation with their advisor(s) to obtain this knowledge in the most stimulating and economical fashion.

A second aspect of training is one that cannot be gained from the courses or seminars. This is first-hand knowledge of, and practical experience with, the methods of psychological investigation and study. Therefore, students are expected to spend half of their time on research and to take no more than 10 units of course work per quarter, beginning in the first quarter.

Students achieve competence in unique ways and at different rates. Students and advisors work together to plan a program leading to the objectives discussed above. For further information, contact the student services manager and refer to the Department Graduate Guide available on the Psychology Department web site (https://psychology.stanford.edu/academics/phd-program/).

Courses

Ideals

The Stanford Psychology Department values a shared appreciation of the full range of approaches and research questions spanned by the five areas of the department. The department seeks to train scientists who are well prepared to pursue careers that build on their training in any one of these areas and who can interact with researchers in other fields of Psychology. Therefore, students within each area of the department are expected to construct a program of study in consultation with their primary advisor that includes exposure to other areas in the department while also achieving sufficient depth within their own area of specialization to prepare them for their next career stage after graduating.

Requirements

Professional Seminar Requirement

During the first quarter of graduate study, students are required to take PSYCH 207 Professional Seminar for First-Year Ph.D. Graduate Students.

Core Course Requirement

Students are required to take four core courses, each course from a different area of the Psychology department: Affective Science, Cognitive Science, Developmental Psychology, Neuroscience, and Social Psychology, as listed below. All core courses must be taken for a letter grade, for 3 units, and passed with a grade of 'B-' or better. Students are expected to complete four core courses by the end of the third year.

Consistent with the program's goal of fostering breadth and engagement across all areas of the department, students are encouraged to take all five core courses spanning the five areas of the department. If a student takes five core courses, the units and grade of the fifth course are counted towards the student's advanced units.

		Units
PSYCH 202	Cognitive Neuroscience	3
PSYCH 205	Foundations of Cognition	3
PSYCH 211	Developmental Psychology	3
PSYCH 212	Classic and contemporary social psychology research	1-3
or PSYCH 215	Mind, Culture, and Society	
PSYCH 213	Affective Science	3

Students may be required by their advisors to take up to two additional graduate courses in their area of specialization. In these cases, the additional courses are counted towards the advanced units requirement as described below. Students should consult with their advisor about any additional requirements in their area of specialization.

Quantitative Methods Course Requirement

Students are required to take two of the following Quantitative Methods courses:

		Units
PSYCH 251	Experimental Methods	3
PSYCH 252	Statistical Methods for Behavioral and Social Sciences	5
PSYCH 253	Advanced Statistical Modeling	3

At least one of these courses must be taken in the first year, and both should be completed by the end of the second year. Quantitative methods courses must be taken for a letter grade and passed with a grade of 'B-' or better.

In the case that a student has already taken similar graduate-level coursework, with the consent of the advisor, the student may petition to substitute an alternative course for one of the two required courses; for example, to take 252 and 253 but not 251, or to take 251 and another upper-division statistics course. Petitions must be submitted to the department's student services office and approved by the department's Director of Graduate Studies (DGS).

Students who did not take an undergraduate course in statistics should take PSYCH 10 (STATS 60) in the earliest possible quarter within the first year; this is a prerequisite to any graduate statistics course.

Advanced Units or Ph.D. Minor Requirement

Students must complete 12 units of advanced graduate course work, referred to as advanced units (AU). Students earn AU by taking: (a) non-core graduate psychology courses; and/or, (b) graduate-level courses in other departments comparable in quality to graduate courses offered by the Psychology Department. If there is any question about comparability of courses, the student should consult the advisor, student services, and, in some cases, the graduate program committee chair before taking the course.

Courses taken for a letter grade must receive a grade of 'B-' or better to count towards the advanced units requirement. Students may request to count up to 3 units of undergraduate-level coursework towards the AU requirement. The advisor should support the request and the undergraduate course must be substantive and relevant to the student's graduate research. Requests to count undergraduate-level coursework must be submitted to the student services manager and may be adjudicated by the Director of Graduate Studies and/or the Graduate Program Committee.

A student may choose to complete a Ph.D. minor in another department in lieu of the advanced units requirement. Students who choose to pursue a minor should register this decision with the student services manager.

Advanced units and/or Ph.D. minors must be completed by the end of fourth year. It is the department's expectation that all decisions related to the AUs or the Ph.D. minor are made in close consultation with the student's advisor.

Research

Ideals

The goals of the graduate program in the Stanford Psychology Department are twofold. First, it aims to develop researchers who are expert scholars in the area of their dissertation. The program expect graduates to be fluent in theoretical foundations and debates, empirical findings, and methods of their respective fields. Second, it aims to guide and foster students' development of an original research program that significantly advances knowledge in their field of specialization. Therefore, the research requirements, implemented in a series of milestones, are intended to help students obtain the necessary research experience, receive expert and constructive feedback from their primary advisor(s) and their committee, and ensure successful completion of their dissertation research at the end of the program.

Requirements

Students are expected to spend at least half of their time engaged in research from the beginning of the first year of graduate study to the completion of the Ph.D., taking no more than 10 units of course work each quarter.

First Year Project (FYP)

At the end of their first year of graduate study, students must submit a written report of their first-year research activities, called the First Year Project (FYP). This report should resemble a journal article in their area. It is written in consultation with their advisor. The FYP proposal is due at the end of Autumn Quarter. The final FYP is due on June 1 of the first year. First-year students must also work with their advisor to identify a second FYP reader (another Psychology faculty member) by the end of October in Autumn Quarter of the first year. Both the advisor and the second FYP reader are expected to read the FYP and provide the student

with constructive feedback. It is recommended that students meet with their FYP readers in the summer of the first year to receive feedback.

Dissertation Reading Committee
Students are expected to form a research committee, which must include the dissertation reading committee, before initiating their dissertation research. The research committee includes the dissertation advisor and at least two additional faculty members, for a total of three members, at least two of whom should have primary appointments in the Psychology Department. For University guidelines for the composition of the dissertation reading committee, see the "Graduate Degrees (http://www.stanford.edu/dept/registrar/bulletin/4901.htm)" section of this bulletin.

Students are required to form the committee and submit the Dissertation Reading Committee form to the student services manager by February 1 of third year.

Third Year Committee Meeting and Research Plan
Students are required to meet with their committee annually beginning in their third year. For the annual committee meetings, if a member of the student's regular committee is unavailable (e.g., on sabbatical), the student should recruit another member of the department faculty to attend instead.

In the third year, students are required to meet with their committee in Winter or Spring Quarter, no later than June 1. At least two weeks prior to this meeting, students must submit a 1-2 page research plan to the committee.

Research Plan
The third-year research plan, which is submitted to the committee, is a short (1-2 page) document containing a brief overview of the experiments that have been completed and the planned experiments. The research plan is due in Winter or Spring Quarter of the third year and no later than two weeks before the committee meeting.

Third-Year Committee Meeting
The goal of the third-year committee meeting is for students to present their planned research and preliminary data, as well as for the faculty to give students feedback on their research plan, feasibility, and progress. During the third-year committee meeting, students present and discuss with the committee:

- Background and hypothesis being tested
- Experiments and methods
- Preliminary results
- Potential outcomes as well as pitfalls

After the committee meeting, students should submit the research plan to the student services manager and report the date that the committee meeting took place.

Fourth-Year Committee Meeting and Research Plan
In the fourth year, students are required to meet with their committee in the Autumn or Winter Quarter. At least two weeks before the meeting, they must submit their Area Review and Research Roadmap (ARRR) to their committee.

Area Review and Research Roadmap (ARRR):
This document has two parts:

1. *Area Review:* A manuscript written in a format of a review paper that summarizes current theories, debates, and empirical work in the area of the dissertation, which ultimately leads to the open questions that will be answered in the dissertation. The goal of writing this document is to enable the students to organize and develop scholarly knowledge relevant to their dissertation research. This document could serve as the basis for the introduction to the dissertation and/or a basis for a review paper. The department expects that this section will be the bulk of the ARRR. It expects students to consult with their advisor on the scope of this document, and to receive feedback from their committee during the fourth-year meeting.
2. *Research Roadmap:* This section is short (1-2 pages) and contains a brief overview of the experiments that will be part of the dissertation. Given that this document is written during the fourth year, it is expected that some of the experiments have been completed, while others are planned/ongoing.

Fourth-Year Committee Meeting
The goal of the fourth-year committee meeting is for students to present their research progress and receive feedback from the committee members on the ARRR. The department expects the presentation to start with a review of the relevant work, but focus on the research progress. During the meeting, students present and discuss with the committee:

- Background and hypothesis being tests
- Experiments and methods
- Current Results
- Planned experiments towards dissertation completion

After the committee meeting, students should submit the ARRR to the student services manager and report the date that the committee meeting took place.

Note: students who were admitted prior to 2018-19 may choose to use the prior milestone documents (the Dissertation Proposal and Conceptual Analysis of Dissertation Area) instead of the ARRR. This decision should be registered with the student services manager. Refer to the Stanford Bulletin from your entering year for details about these prior requirements.

Fifth-Year Committee Meeting and Beyond
The department expects that students complete their Oral Exam by the end of the fifth year. Thus, typically the Oral Exam replaces the fifth-year committee meeting. However, if a student defers the Oral Exam, the student is expected to meet with his/her committee before June 1 of the fifth year to give an update on ongoing research progress and receive feedback. The same applies for sixth year, and so on. After each committee meeting, students should report to the student services manager the date on which the committee meeting took place.

Oral Examination
In the Department of Psychology, the Oral Examination takes the form of a dissertation defense. A 5-member committee is formed to review the oral examination. This committee includes the dissertation reading committee, an additional faculty member, and one oral examination committee chair from outside the Psychology department.

The oral examination consists of a 45-minute public presentation to the department of the completed dissertation research, followed by a 10-15 minute period of open questions and answers. Parents and friends are welcome to attend. Following the presentation, the student and the committee convene for a closed part of the oral exam in which each of the committee members asks the Ph.D. candidate questions regarding his/her Ph.D. research. After the closed session, the candidate leaves the room and the committee discusses the outcome of the exam and members anonymously vote whether the candidate passed the oral exam. The total duration of both parts of the oral examination should be less than 3 hours, per University policy.

Dissertation
Per University policy, the candidate must complete a dissertation satisfactory to the dissertation reading committee. Typically, the candidate will submit the dissertation to the reading committee 2 weeks prior to the oral examination. Minor revisions to formatting may be made after the oral examination. It is allowable by University policy to have a single additional writing quarter after the defense to finalize the

dissertation. The dissertation must be approved and signed by each member of the dissertation reading committee.

Students must complete their oral examination and submit their dissertation before their candidate status expires at the end of the 7th year (per University policy, candidacy status is granted at the end of year 2, and students have 5 years of candidacy in which to complete all requirements). See the "Graduate Degrees (http://www.stanford.edu/dept/registrar/bulletin/4901.htm)" section of this bulletin for more information. The Department will review petitions for a longer candidacy period on a case-by-case basis.

Teaching Requirement

The department views experience in supervised teaching as an integral part of its graduate program. Regardless of the source of their financial support, all students spend are required to participate in at least 5 quarters of teaching experience during their graduate study.

Of these 5 teaching quarters, students are required to apply for 2 of the quarters providing teaching support to a service course, either 2 quarters of PSYCH 1 Introduction to Psychology or 2 quarters of a core statistics course: PSYCH 10 Introduction to Statistical Methods: Precalculus, PSYCH 251 Experimental Methods, PSYCH 252 Statistical Methods for Behavioral and Social Sciences, and/or PSYCH 253 Advanced Statistical Modeling. Students report if they prefer the PSYCH 1 path or the stats path (or neutral) in their first year.

		Units
PSYCH 1	Introduction to Psychology	5
PSYCH 10	Introduction to Statistical Methods: Precalculus	3-5
or PSYCH 251	Experimental Methods	
or PSYCH 252	Statistical Methods for Behavioral and Social Sciences	
or PSYCH 253	Advanced Statistical Modeling	

Students are prohibited from teaching during the first year of graduate study. Students typically progress from closely supervised teaching to more independent teaching. Some students may be invited to offer a supervised, but essentially independent, seminar during their final year of graduate study.

Individual Development Plan

The Department of Psychology is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, the advising relationship entails collaborative and sustained engagement by both the advisor and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity.

In order to meet these advising goals, each student is required to complete an annual Individual Development Plan (IDP) and have at least one meeting with the advisor during the academic year to discuss the IDP. The purpose of the annual IDP meeting is to provide an opportunity to discuss the big picture of the student's progress over the past year as well as goals for the future. To help the IDP, prior to the meeting the student completes a form that promotes self-reflection and self-evaluation, and helps structure the discussion topics with the advisor. During the IDP meeting the student brings his or her current CV and discuss with the advisor current progress and future goals. During the meeting the student and their advisor develops an action plan for the subsequent year; both keep a copy of this plan.

For details about the IDP forms and process, please visit the Psychology Department website's Ph.D. Program Requirements page (https://psychology.stanford.edu/academics/phd-program/phd-degree-requirements/#Individual%20Development%20Plan). The IDP meeting must take place before June 1 of each year. It is the student's responsibility to report when the meeting has occurred to the student services manager.

Student Evaluations

It is the department's policy for the full faculty to evaluate the progress of each graduate student at the end of Spring Quarter. Traditionally, this meeting is scheduled for the Thursday before Commencement, although this may vary slightly from year to year. The end-of-year evaluation is primarily based on three factors:

1. Quality of research
2. Performance in courses (especially required courses)
3. Recommendations of the advisor (including a commitment on the part of that advisor to continue in that role)

Students who are not making satisfactory progress may be dropped from the program within the policies set forth by the University Senate in the "Graduate Degrees (http://www.stanford.edu/dept/registrar/bulletin/4901.htm)" section of this bulletin.

Advancement to Candidacy

During this annual evaluation, second-year students are reviewed for advancement to candidacy. Per University policy, admission to candidacy for the doctoral degree is a judgment by the faculty in the department or school of the student's potential to successfully complete the requirements of the degree program. Further details about candidacy status can be found the "Graduate Degrees (http://www.stanford.edu/dept/registrar/bulletin/4901.htm)" section of this bulletin. By the end of the second year, students are expected to have completed the First Year Project, the required statistics courses, and several other courses from either the Core Course or Advanced Units requirement in order for the faculty to make a clear evaluation of their potential for candidacy.

When students are advanced to candidacy, the student must submit the application for candidacy form (signed by the advisor) to the Student Services Manager by September 1.

Ph.D. Minor in Psychology

Candidates for the Ph.D. degree in other departments may elect to take a minor in Psychology. To obtain a minor, the student must complete 20 units of course work at the graduate level in the Department of Psychology. Crosslisted graduate courses can be used to satisfy this requirement. All courses counting toward the Ph.D. minor must be taken for a letter grade and passed with a grade of 'B-' or better. If the course is not offered for a letter grade, it cannot be counted towards the Ph.D. minor.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

Psychology counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Graduate Degree Requirements

Grading

The department recognizes that the pandemic and remote research and instruction have generated unprecedented challenges for its students. Therefore, the faculty voted to implement temporary changes to the graduate program requirements for 2020-21 to afford students greater flexibility to navigate these challenging times.

Under the 2020-21 academic year policy:

- Graduate students will be able to enroll and take all classes for letter grade, CR/NC, or S/NC.
- This grading policy extends to the core and quantitative courses that, under normal program guidelines, require a letter grade of 'B-' or higher.
- An 'S' grade, a 'CR' grade, or a letter grade of 'C-' or higher on all core and quantitative courses will be counted towards fulfilling degree requirements.

These policy changes are in line with our program's mission and values. The collective view of the faculty is that the goal of the core and quantitative courses is to provide students with foundational knowledge that is important for their careers. In response to the COVID-19 pandemic, the department would like to underscore the formative nature of these courses and the student's learning, and simply take away the worry about the grades. This indicates the trust the faculty put in its students, that they will do what you came to do, i.e., learn the material and develop the skills needed to be key contributors to science and society. The department also encourages students to discuss with faculty advisors whether they should adapt their course load and/or research plan as the pandemic may have affected their personal circumstances.

Graduate Advising Expectations

The Department of Psychology is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, the advising relationship entails collaborative and sustained engagement by both the advisor and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity.

Faculty advisors guide students in key areas, such as selecting courses, designing and conducting research, writing results of research studies as manuscripts for peer-reviewed journals, developing teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Individual Development Plan (IDP)

In order to meet the advising goals described above, each PhD student is required to complete an annual Individual Development Plan (IDP) and have at least one meeting with their advisor during the academic year to discuss the IDP. The purpose of the annual IDP meeting is to provide an opportunity to discuss the big picture of the student's progress over the past year as well as goals for the future. To help the IDP, prior to the meeting the student completes a form that promotes self-reflection and self-evaluation, and helps structure the discussion topics with the advisor. During the IDP meeting the student brings his or her current CV and discuss with the advisor current progress and future goals. During the meeting the student and their advisor develops an action plan for the subsequent year; both keep a copy of this plan.

For details about the IDP forms and process, please visit the Psychology Department website's PhD Program Requirements page (https://psychology.stanford.edu/academics/phd-program/phd-degree-requirements/#Individual%20Development%20Plan). The IDP meeting must take place before June 1 of each year. It is the student's responsibility to report when the meeting has occurred to the student services manager.

Emeriti: (Professors) Albert Bandura, Herbert H. Clark, Anne Fernald, John H. Flavell, Leonard M. Horowitz, Mark R. Lepper, Roger N. Shepard, Claude M. Steele, Ewart A. C. Thomas, Barbara Tversky, Philip G. Zimbardo

Chair: Anthony D. Wagner

Director of Graduate Studies: Kalanit Grill-Spector

Director of Undergraduate Studies: Jeanne Tsai

Professors: Laura L. Carstensen, Geoffrey Cohen, Carol Dweck, Jennifer L. Eberhardt, Ian H. Gotlib, Kalanit Grill-Spector, James J. Gross, Brian Knutson, Ellen M. Markman, Hazel R. Markus, James L. McClelland, Dale Miller, Benoit Monin, Russell A. Poldrack, Nilam Ram, Lee D. Ross, Jeanne L. Tsai, Anthony D. Wagner, Brian Wandell, Jeffrey J. Wine

Professor (Research): Anthony Norcia

Associate Professors: Michael C. Frank, Noah Goodman, Hyowon Gweon, Gregory M. Walton, Jamil Zaki

Associate Professor (Teaching): Catherine Heaney

Assistant Professors: Alia Crum, Justin Gardner, Steven Roberts, Daniel Yamins

Assistant Professor (Research): Johannes Eichstaedt

Lecturers: Parul Chandra, Todd Erickson, Amie Haas, Adrienne Lomangino, Jenna Valasek, Jennifer Winters, Beth Wise

Courtesy Professors: Gary H. Glover, Jon Krosnick, Fei-Fei Li, Tanya Luhrmann, Robert MacCoun, Bruce McCandliss, William T. Newsome, Robb Willer

Courses

PSYCH 1. Introduction to Psychology. 5 Units.
An introduction to the science of how people think, feel, and behave. We will explore such topics as intelligence, perception, memory, happiness, personality, culture, social influence, development, emotion, and mental illness. Students will learn about classic and cutting edge research, a range of methods, and discover how psychology informs our understanding of what it means to be human, addresses other fields, and offers solutions to important social problems. Psych 1 fulfills the SI Way, and, effective Autumn 2018, the SMA Way. For more information on PSYCH 1, visit http://psychone.stanford.edu.

PSYCH 4N. Predicting aggregate choice. 3 Units.
Preference to freshmen. Is prediction of group choice possible and how can it be done? This course is ideal for students that would like to extend predictions about individual choice to group choice, and who plan to apply this knowledge to future research.

PSYCH 7N. Learn to Intervene, Wisely. 3 Units.
One of the most exciting transformations in the social sciences in recent years is the finding that brief psychological exercises can improve important outcomes for months and years such as raising school achievement and reducing inequality, improving health, and reducing intergroup conflict. These interventions help individuals flourish and help our society live up to its ideals. They address critical psychological questions people have, like ¿Do people like me belong in this school?¿, ¿Can I learn math?¿, ¿Am I bad mom?¿, and ¿Can groups in conflict change?¿. In this seminar, we will learn about ¿psychologically wise¿ interventions; how they work; how they can cause lasting benefits; their intellectual lineage; how they can be used, adapted, and scaled to address contemporary problems; and challenges and mistakes that can arise in doing so. In addition to learning from classic and contemporary research, you will design your very own wise intervention and workshop others¿ efforts. Working with a community partner, you will explore a problem your partner faces, identify a specific psychological process you think contributes to this problem, and design an intervention to address this process to improve outcomes, which your partner could implement and evaluate. You will share your approach in a final report with both your seminar-mates and your community partner. When you have completed this seminar, you will more fully understand the psychological aspect of social problems and how this can be addressed through rigorous research.

PSYCH 8N. The New Longevity. 3 Units.
Life expectancy nearly doubled in the 20th century. Along with a decrease in fertility societies are also aging. These changes have ramifications for all of the fundamental structures that guide people through life, including work, education, and the nature of families, as well as health, social engagement, and fitness. This course focuses on the implications for young generations today that will likely live longer than any in human history.

PSYCH 9N. Reading the Brain: the Scientific, Ethical, and Legal Implications of Brain Imaging. 3 Units.
It's hard to pick up a newspaper without seeing a story that involves brain imaging, from research on psychological disorders to its use for lie detection or "neuromarketing". The methods are indeed very powerful, but many of the claims seen in the press are results of overly strong interpretations. In this course, you will learn to evaluate claims based on brain imaging research. We will also explore the deeper ethical and philosophical issues that arise from our ability to peer into our own brains in action. The course will start by discussing how to understand and interpret the findings of brain imaging research. We will discuss how new statistical methods provide the ability to accurately predict thoughts and behaviors from brain images. We will explore how this research has the potential to change our concepts of the self, personal responsibility and free will. We will also discuss the ethics of brain imaging, such as how the ability to detect thoughts relates to personal privacy and mental illness. Finally, we will discuss the legal implications of these techniques, such as their use in lie detection or as evidence against legal culpability.

PSYCH 10. Introduction to Statistical Methods: Precalculus. 5 Units.
Techniques for organizing data, computing, and interpreting measures of central tendency, variability, and association. Estimation, confidence intervals, tests of hypotheses, t-tests, correlation, and regression. Possible topics: analysis of variance and chi-square tests, computer statistical packages.
Same as: STATS 60, STATS 160

PSYCH 11N. Belonging in a Diverse Society. 3 Units.
One of the most important questions people ask themselves when they enter a new setting, whether a school, a workplace, or a country, is "Do I belong here?". How do people make sense of their belonging in a new setting? How and why do group identities, such as race-ethnicity, social-class background, gender, or national origin matter? What are the consequences of people's inferences about their belonging? And how can we create school and work settings in which people from diverse backgrounds can genuinely and authentically belong?.

PSYCH 12N. Self Theories. 3 Units.
Preference to freshmen. The impact of people's belief in a growing versus fixed self on their motivation and performance in school, business, sports, and relationships. How such theories develop and can be changed.

PSYCH 13N. Emotion Regulation. 3 Units.
This seminar provides a selective overview of the scientific study of emotion regulation. Topics include: theoretical foundations, cognitive consequences, developmental approaches, personality processes and individual differences, and clinical and treatment implications. Our focus is on interesting, experimentally tractable ideas. Meetings will be discussion based.

PSYCH 15N. Becoming Kinder. 3 Units.
Kindness - the ability to understand each other, the instinct to care for each other, and the desire to help each other - is among our most powerful natural resources. It supports cooperation, fosters relationships, improves health, and overwrites hatred. Kindness is also challenging, especially in the modern world. More than ever, individuals are isolated, anonymous, and independent: qualities that make it harder to truly see each other and easier to succumb to indifference and even cruelty. As technology mediates more of our interactions and tribal signifiers occupy more of our identity, kindness erodes. And yet we have options. A growing number of social scientists are now experimenting in re-building kindness, using everything from virtual reality to meditation to literature to old-fashioned friendship. Their efforts demonstrate that through directed effort, people can become kinder. nThis class will explore the nature of kindness, the challenges modernity has placed in front of it, and the many ways scientists and practitioners are stimulating kindness. Though drawing mainly from psychology, we will tour sociology, conflict resolution, technology, the humanities, and neuroscience as well. The class will also grapple with central questions about human nature -most importantly, to what extent can we change ourselves into the people we¿d like to become? Finally, we will meld science with personal narrative and exercises meant to not only explore kindness-building as a research concept, but as a part of our own lives.

PSYCH 16N. Amines and Affect. 3 Units.
Preference to freshmen. How serotonin, dopamine, and norepinephrine influence people's emotional lives. This course is ideal for students that would like to get deeper exposure to cutting edge concepts and methods at the intersection of psychology and biology, and who plan to apply their knowledge to future research.

PSYCH 20N. How Beliefs Create Reality. 3 Units.
This seminar will take an interdisciplinary approach to exploring how subjective aspects of the mind (e.g., thoughts, beliefs, and expectations) can fundamentally change objective reality. Over the course of the semester, students will be challenged to think critically about research from psychology, sociology, and medicine, which suggests that what we think, believe and expect plays a significant role in determining our physical health, performance and well-being. Students will explore research on how mindsets about nutrition, exercise, and stress can alter the body's response to those phenomena. Students will also uncover how social interactions with friends, family, colleagues and the media influence the perceived quality and impact of cultural products such as art, music, and fashion. And students will learn about the neurological and physiological underpinnings of the placebo effect, a powerful demonstration of expectation that produces real, healing changes in the body. Finally, students will have the opportunity to consider real world applications in disciplines including policy, business, medicine, academics, athletics and public health and consider the ethical implications of those applications. Throughout the class active participation and an open mind will be critical to success. The final weeks of class will be dedicated to student designed studies or interventions aimed to further explore the power of self-fulfilling prophecies, placebo effects, and the social-psychological creation of reality.

PSYCH 21N. How to Make a Racist. 3 Units.
How does a child, born without beliefs or expectations about race, grow up to be racist? To address this complicated question, this seminar will introduce you to some of the psychological theories on the development of racial stereotyping, prejudice, and discrimination. Together, these theories highlight how cognitive, social, and motivational factors contribute to racist thinking. We will engage thoughtfully and critically with each topic through reflection and discussion. Occasionally, I will supplement the discussion and class activities with a brief lecture, in order to highlight the central issues, concepts, and relevant findings. We will share our own experiences, perspectives, and insights, and together, we will explore how racist thinking takes root. Come to class with an open mind, a willingness to be vulnerable, and a desire to learn from and with your peers. Students with diverse opinions and perspectives are encouraged to enroll.
Same as: AFRICAAM 121N, CSRE 21N

PSYCH 24N. Neuroforecasting. 3 Units.
Preference to freshmen. This course explores whether brain activity can be used not only to predict the choices of individuals, but also of separate groups of individuals in the future (e.g., in markets). Questions include how neuroforecasting is possible, whether it can add value to other forecasting tools (e.g., traditional measures like behavioral choice and subjective ratings), and when it extends to different aggregate scenarios. The course is ideal for students that would like to extend neural predictions about individual choice to group choice, and who plan to apply this knowledge in future research.

PSYCH 30. Introduction to Perception. 4 Units.
Behavioral and neural aspects of perception focusing on visual and auditory perception. Topics include: scientific methods for studying perception, anatomy and physiology of the visual and auditiory systems, color vision, depth perception, motion perception, stereopsis, visual recognition, pitch and loudness perception, speech perception, and reorganization of the visual system in the blind.

PSYCH 30N. The Science of Diverse Communities. 3 Units.
This course is an exploration. Most generally, its aim is to identify distinguishing features of good diverse communities and articulate them well enough to offer principles or guidelines for how to design and manage such communities - all with a particular focus on educational communities like schools, universities, academic disciplines, etc., but with the hope that such principles might generalize to other kinds of organizations and the broader society. The readings range from those on the origins of human communities and social identities to those on intergroup trust building. They also aim to embed our discussions in the major diversity issues of the day, or example, what's in the news about campus life. nnnThus the course has a practical purpose: to develop testable ideas for improving the comfort level, fairness and goodness-for-all of identity diverse communities--especially in educational settings. nnnThe course also has a basic science purpose: to explore the psychological significance of community. Is there a psychological need for community? Is there something about a need for community that can't be reduced to other needs, for example, for a gender, racial or sexual-orientation identity? How strong is the need for community against other needs? What kinds of human groupings can satisfy it? In meeting this need, can membership in one community substitute for membership in others? What do people need from communities in order to thrive in them? Do strong diverse communities dampen intergroup biases? Can strong community loyalty mitigate identity tensions within communities? nnnSuch questions, the hope is, will help us develop a more systematic understanding of the challenges and opportunities inherent in diverse human communities.
Same as: CSRE 30N, EDUC 30N, SOC 179N

PSYCH 35. Minds and Machines. 4 Units.
(Formerly SYMSYS 100). An overview of the interdisciplinary study of cognition, information, communication, and language, with an emphasis on foundational issues: What are minds? What is computation? What are rationality and intelligence? Can we predict human behavior? Can computers be truly intelligent? How do people and technology interact, and how might they do so in the future? Lectures focus on how the methods of philosophy, mathematics, empirical research, and computational modeling are used to study minds and machines. Students must take this course before being approved to declare Symbolic Systems as a major. All students interested in studying Symbolic Systems are urged to take this course early in their student careers. The course material and presentation will be at an introductory level, without prerequisites. If you have any questions about the course, please email symsys1staff@gmail.com.
Same as: CS 24, LINGUIST 35, PHIL 99, SYMSYS 1, SYMSYS 200

PSYCH 45. Introduction to Learning and Memory. 3 Units.
The literature on learning and memory including cognitive and neural organization of memory, mechanisms of remembering and forgetting, and why people sometimes falsely remember events that never happened. Cognitive theory and behavioral evidence integrated with data from patient studies and functional brain imaging. Required prerequisite: PSYCH 1.

PSYCH 50. Introduction to Cognitive Neuroscience. 4 Units.
How does our brain give rise to our abilities to perceive, act and think? Survey of the basic facts, empirical evidence, theories and methods of study in cognitive neuroscience exploring how cognition is instantiated in neural activity. Representative topics include perceptual and motor processes, decision making, learning and memory, attention, reward processing, reinforcement learning, sensory inference and cognitive control.

PSYCH 50A. Practicum in Teaching: Intro to Cognitive Neuroscience. 3-4 Units.
TA training for Intro to Cognitive Neuroscience: preparing for sections, grading assignments, reviewing and answering questions in Canvas online forums and supporting office hours and review sections. Enrollment limited to teaching assistants for Psych 50: Intro to Cognitive Neuroscience. May be repeat for credit.

PSYCH 60. Introduction to Developmental Psychology. 3 Units.
Psychological development from birth to adulthood, emphasizing infancy and the early and middle childhood years. The nature of change during childhood and theories of development. Recommended: PSYCH 1.

PSYCH 60A. Introduction to Developmental Psychology Section. 2 Units.
Guided observation of children age 2-5 at Bing Nursery School. Corequisite: 60.

PSYCH 70. Self and Society: Introduction to Social Psychology. 4 Units.
Why do people behave the way they do? This is the fundamental question that drives social psychology. Through reading, lecture, and interactive discussion, students have the opportunity to explore and think critically about a variety of exciting issues including: what causes us to like, love, help, or hurt others; the effects of social influence and persuasion on individual thoughts, emotion, and behavior; and how the lessons of social psychology can be applied in contexts such as health, work, and relationships. The social forces studied in the class shape our behavior, though their operation cannot be seen directly. A central idea of this class is that awareness of these forces allows us to make choices in light of them, offering us more agency and wisdom in our everyday lives.
Same as: SOC 2

PSYCH 75. Introduction to Cultural Psychology. 5 Units.
The cultural sources of diversity in thinking, emotion, motivation, self, personality, morality, development, and psychopathology.

PSYCH 80. Introduction to Personality and Affective Science. 3 Units.
How do we measure personality and emotion? What parts of your personality and emotions are set at birth? What parts of your personality and emotions are shaped by your sociocultural context? Can your personality and emotions make you sick? Can you change your personality and emotions? These are questions we begin to address in this introductory course on personality and emotion. Prerequisite: Psych 1.

PSYCH 90. INTRODUCTION TO CLINICAL PSYCHOLOGY: A NEUROSCIENCE PERSPECTIVE. 3 Units.
This course will provide students with an overview of the field of clinical psychology, the various roles of clinical psychologists in research and practice, and implications of current research in neuroscience for clinical psychology. We will discuss the definition and history of clinical psychology as a profession, research methods used in clinical psychology, issues in diagnosis and classification of disorders, techniques used in the assessment of intellectual and personality functioning, various approaches to therapeutic intervention, and issues related to ethics, professionalism, and training in clinical psychology. Throughout this course we will review and integrate relevant research in the field of clinical neuroscience with our discussion and understanding of clinical psychology.

PSYCH 95. Introduction to Abnormal Psychology. 3 Units.
Theories of and approaches to understanding the phenomenology, etiology, and treatment of psychological disorders among adults and children. Research findings and diagnostic issues. Recommended: PSYCH 1.

PSYCH 101. Community Health Psychology. 4 Units.
Social ecological perspective on health emphasizing how individual health behavior is shaped by social forces. Topics include: biobehavioral factors in health; health behavior change; community health promotion; and psychological aspects of illness, patient care, and chronic disease management. Prerequisites: HUMBIO 3B or PSYCH 1 or equivalent.
Same as: HUMBIO 128

PSYCH 101S. Introduction to Neuroscience. 4 Units.
Introduction to structure and function of the nervous system. The course first surveys neuroscience research methods, physiology, and gross anatomy. We then study the brain systems which produce basic functions such as perception and motion, as well as complex processes like sleep, memory, and emotion. Finally, we examine these principles in cases of neurological and psychiatric disorders.

PSYCH 102. Longevity. 4 Units.
Interdisciplinary. Challenges to and solutions for the young from increased human life expectancy: health care, financial markets, families, work, and politics. Guest lectures from engineers, economists, geneticists, and physiologists.
Same as: HUMBIO 149L, NENS 202

PSYCH 102S. Introduction to Neuroscience. 3 Units.
Introduction to structure and function of the nervous system. The course first surveys neuroscience research methods, physiology, and gross anatomy. We then study the brain systems which produce basic functions such as perception and motion, as well as complex processes like sleep, memory, and emotion. Finally, we examine these principles in cases of neurological and psychiatric disorders.

PSYCH 103. Intergroup Communication. 3 Units.
In an increasingly globalized world, our ability to connect and engage with new audiences is directly correlated with our competence and success in any field How do our intergroup perceptions and reactions influence our skills as communicators? This course uses experiential activities and discussion sections to explore the role of social identity in effective communication. The objective of the course is to examine and challenge our explicit and implicit assumptions about various groups to enhance our ability to successfully communicate across the complex web of identity. NOTE: Please check the Notes section under each quarter to view the current enrollment survey.
Same as: CSRE 103

PSYCH 103F. Intergroup Communication Facilitation. 2 Units.
Are you interested in strengthening your skills as a facilitator or section leader? Interested in opening up dialogue around identity within your community or among friends? This course will provide you with facilitation tools and practice, but an equal part of the heart of this class will come from your own reflection on the particular strengths and challenges you may bring to facilitation and how to craft a personal style that works best for you. This reflection process is ongoing, for the instructors as well as the students.
Same as: CSRE 103F

PSYCH 104S. Affective Science. 3 Units.
This course will provide an introduction to a growing field known as affective science, which focuses on the study of emotion and other related phenomena (i.e., motivation, pain, etc.). We will explore core questions in affective science, including: 1) What is emotion and why is it useful? 2) How do emotions influence the way we perceive, attend to, and understand the world? 3) How do emotions become dysfunctional, and how can individuals control them? We will attempt to approach these questions from multiple perspectives, including i) neurobiological ii) behavioral, and iii) sociocultural perspectives.

PSYCH 105. Social Neuroscience. 4 Units.
Over the last 20 years, neuroscientists have become increasingly interested in studying topics that were previously the purview of social psychologists. In this seminar, we will survey neuroimaging research on topics such as self perception, person perception, empathy, and social influence. More broadly, we will consider the contributions that neuroscience can (and cannot) make to social psychological theory. Students will be responsible for leading discussions and producing one in-depth review or research paper at the end of the quarter.

PSYCH 105S. General Psychology. 3 Units.
In what ways does the scientific study of psychology increase our understanding of the thoughts, feelings, and behaviors we observe and experience in everyday life? What are the main areas of psychology and the different questions they seek to answer? This course will give you an introduction to the field of psychology and its many different areas. You will learn about the central methods, findings, and unanswered questions of these areas, as well as how to interpret and critically evaluate research findings.

PSYCH 107S. Introduction to Social Psychology. 3 Units.
A comprehensive overview of social psychology with in-depth lectures exploring the history of the field, reviewing major findings and highlighting areas of current research. Focus is on classic studies that have profoundly changed our understanding of human nature and social interaction, and, in turn, have triggered significant paradigm shifts within the field. Topics include: individuals and groups, conformity and obedience, attraction, intergroup relations, and judgment and decision-making.

PSYCH 108. Longevity through Film. 3 Units.
The media informs the understanding of life stages and shapes expectations about our futures. This course will explore the realities and fictions about life-span development through film. This course will revolve around selected films compared with the literature on life stages. Guest filmmakers, psychologists, sociologists and thought leaders will join the class to discuss human development.

PSYCH 108S. Introduction to Social Psychology. 3 Units.
This course aims to blend a comprehensive overview of social psychology with in-depth lectures exploring the history of the field, reviewing major findings and highlighting areas of current research. The course will focus on classic studies that have profoundly changed our understanding of human nature and social interaction, and, in turn, have triggered significant paradigm shifts within the field. Some of the topics covered in this class will include: individuals and groups, conformity and obedience, attraction, intergroup relations, and judgment and decision-making. The course, overall, will attempt to foster interest in social psychology as well as scientific curiosity in a fun, supportive and intellectually stimulating environment.

PSYCH 109. An introduction to computation and cognition. 4 Units.
How does the mind process information in order to choose good actions given the tangle of experience? The studies of computation and cognition synergise in diverse and powerful ways, from precise models of thinking to analysis of large behavioral data sets. In this course we will investigate questions of information representation and processing through a combination of lectures, hands-on (`flipped classroom') exercises, and extended homework assignments. We will explore method for psychological data analysis and three of the main computational approaches to modeling the mind: reinforcement learning, neural networks, and Bayesian inference. Using these tools we will explore human abilities such as reasoning and social cognition. Pre-requisites: Psych 1 and CS 106a (or consent of instructor).

PSYCH 109S. Introduction to Cognitive Neuroscience. 3 Units.
3)Introduction of the neurobiology of behavior including the biology of nervous system, the neural basis for perception, learning, memory, decision making and neurological disorders. Introduction to different research techniques that are prevalent in current neuroscience studies including fMRI, EEG, TMS and single unit recording.

PSYCH 110S. Introduction to Cultural Psychology. 3 Units.
In an increasingly globalized world, the ability to understand people from different cultural backgrounds, as well as understand how we are influenced by our own cultural contexts, is an essential skill. In this course, we will consider the many ways in which individuals shape, and are shaped by, institutions (e.g., education system; media; religion), social interactions (e.g., family; employers), and broad cultural ideas (e.g., democracy). Drawing from psychological research, we will analyze sociocultural sources of diversity in self, agency, cognition, emotion, motivation, development, and relationships. We will also analyze past and modern cultural products - including films, literature, music, and art - to better understand the transmission of culture. Each discussion will contribute to a better understanding of the hidden factors that guide daily experiences and the various opportunities and barriers to creating social change. The course will empower students to recognize and analyze the influence of culture on everyday functioning and apply that understanding to improving their own and other people's outcomes.

PSYCH 111S. Abnormal Psychology. 3 Units.
This course will provide an introduction to abnormal psychology. It will be targeted towards students who have had little or no exposure to coursework on mental disorders. The course will have three core aims: 1) Explore the nature of mental disorders, including the phenomenology, signs/symptoms, and causal factors underlying various forms of mental illness, 2) Explore conventional and novel treatments for various mental disorders, 3) Develop critical thinking skills in the theory and empirical research into mental disorders. The course will explore a wide range of mental disorders, including depression, anxiety, schizophrenia, addiction, eating disorders, and personality disorders.

PSYCH 113S. Developmental Psychology. 3 Units.
This class will introduce students to the basic principles of developmental psychology. As well as providing a more classic general overview, we will also look towards current methods and findings. Students will gain an appreciation of how developmental psychology as a science can be applied to their general understanding of children and the complicated process of growing into adults.

PSYCH 115S. Personality Psychology. 3 Units.
This course will focus on current empirical and theoretical approaches to personality. Lectures will be organized around the following questions central to personality research: How and why do people differ? How do we measure individual differences? Does personality change over time? How does personality interact with sociocultural factors to influence behavior? What makes people happy? What are the physical, mental, and social consequences of personalities?.

PSYCH 118F. Literature and the Brain. 3 Units.
Recent developments in and neuroscience and experimental psychology have transformed the way we think about the operations of the brain. What can we learn from this about the nature and function of literary texts? Can innovative ways of speaking affect ways of thinking? Do creative metaphors draw on embodied cognition? Can fictions strengthen our "theory of mind" capabilities? What role does mental imagery play in the appreciation of descriptions? Does (weak) modularity help explain the mechanism and purpose of self-reflexivity? Can the distinctions among types of memory shed light on what narrative works have to offer?.
Same as: COMPLIT 138, COMPLIT 238, ENGLISH 118, ENGLISH 218, FRENCH 118, FRENCH 218, PSYC 126

PSYCH 120. Cellular Neuroscience: Cell Signaling and Behavior. 4 Units.
Neural interactions underlying behavior. Prerequisites: PSYCH 1 or basic biology.
Same as: BIO 153

PSYCH 121. Ion Transport and Intracellular Messengers. 3 Units.
(Graduate students register for 228.) Ion channels, carriers, ion pumps, and their regulation by intracellular messengers in a variety of cell types. Recommended: 120, introductory course in biology or human biology.
Same as: PSYCH 228

PSYCH 123F. Navigating a Multicultural World: Practical recommendations for individuals, groups, & institutions. 4 Units.
The world is becoming increasing multicultural, as groups of different races, ethnicities, ages, genders, and socioeconomic classes are coming into closer and more frequent contact than ever before. With increased cultural contact comes the need to create spaces that are inclusive and culturally sensitive. In addition, individuals must learn to live, work, and communicate in a multicultural world. How can we leverage research from cultural psychology to promote the best possible individual, interpersonal, and institutional outcomes for all groups?nThis course will serve as an introduction on how to create multicultural worlds and individuals.nDrawing heavily on research, this course begins with a review of what culture is and how itninfluences individual thoughts, emotions, and behaviors. We then discuss multiculturalism (e.g.,nwhat is it, what are some costs and benefits) before addressing how to promote optimalnfunctioning in multicultural settings.
Same as: CSRE 123F

PSYCH 125S. Language andThought. 3 Units.
How are we able to produce and comprehend language in all its complexity? How does language processing interact with other parts of cognition? In this course, we will focus on several main themes: language production and comprehension, discourse, language acquisition, bilingualism, and linguistic relativity. We will explore these themes through lecture, demonstrations, analysis of empirical work, and student-led discussion. Special attention will also be given to the various experimental methods we use to conduct psycholinguistic and developmental research (e.g., self-paced reading, eye-tracking, cross-modal priming, and neural imaging).

PSYCH 132. Language and Thought. 3 Units.
Languages vary tremendously in how they allow us to express ourselves. In some languages, you have to say when an event happened (past, present, future, etc.), while in others it is obligatory to say how you know about the event (you saw it, you heard about it), or what genders its participants were. In addition, languages just feel different from one another - some feel poetic while others feel brutal. Some things just don't sound right in certain languages, and some translations are harder than others to pull off. But are these differences meaningful? Do differences across languages cause substantive changes in the cognition of their speakers? We'll read some of the burgeoning research literature on these questions and consider how they can be answered with new empirical tools.

PSYCH 134S. Psychology of Close Relationships. 3 Units.
The purpose of this course is to provide an overview of theory and research on the psychology of interpersonal relationships from a social psychological perspective, with a particular focus on friendships and romantic relationships. The goals for the course are: 1) To familiarize students with the variables important to the social psychological study of interpersonal relationships, 2) To review the major theoretical foundations and current research, not only from social psychology but also from other disciplines (e.g., communication, personality psychology), and 3) To give students practice in reading empirical journal articles, writing, and oral presentation. The course will examine some of the theories and research related to the psychology of interpersonal relationships. Some of the topics this course will cover include: theoretical perspectives, research methods, culture, attraction, attachment, social cognition, communication, interdependence, friendship, love, stressors in relationships, relationship maintenance, conflict, and dissolution.

PSYCH 135. The Psychology of Diverse Community. 3 Units.
This course is an exploration. Its aim is to identify distinguishing features of good diverse communities and articulate them well enough to offer principles or guidelines for how to design and mange such communities e.g. schools, universities, academic disciplines, etc.
Same as: CSRE 135P

PSYCH 135S. Sex and Sexual Assault on College Campuses. 3 Units.
Students on college campuses are disproportionately at risk of sexual assault. One in every five women and one in twenty men will be sexually assaulted during their time in college. In this course, we will use a cultural psychological lens to analyze the ways in which institutions, ideas, and individuals interact to affect both sex and sexual assault. We will tie together differing research opinions about how sexual misconduct is normalized and perpetuated on college campuses, and examine the roles of Greek life, hookup culture, and party culture. We will take an intersectional approach as we deconstruct gender roles, look at sex and consent in straight and LGBTQIA+ communities, and examine how power impacts sex. Additionally, we will explore the effects of current political and social movements such as #MeToo on campus culture. This course will combine lectures and in class discussions with weekly reflections, where students will have a chance to connect what they are learning in class to their own lived experiences. Students will leave this course with a framework for approaching, analyzing, and changing both campus culture and their own relationships.

PSYCH 136. The Psychology of Scarcity: Its Implications for Psychological Functioning and Education. 3 Units.
This course brings together several literatures on the psychological, neurological, behavioral and learning impact of scarcities, especially those of money (poverty) time and food. It will identify the known psychological hallmarks of these scarcities and explore their implications for psychological functioning, well-being and education--as well as, how they can be dealt with by individuals and in education.
Same as: CSRE 136U, PSYCH 236A

PSYCH 136S. Learning and Memory: Theory and Applications. 3 Units.
This course explores how our behavior in the present is guided by our past experiences, and how we can apply these principles to our own learning and to the broader world around us. We will explore the theory of learning and memory, including an introduction to multiple memory systems, the ways in which memory can succeed but also fail, and how memory integrity changes across the lifespan and across clinical populations. We will also explore applications of this theoretical content to the real world technologies and policies that touch our everyday lives, such as applications in brain training, advertising, the legal system, and the classroom.

PSYCH 137. Belonging in a Diverse Society. 3 Units.
One of the most important questions people ask themselves when they enter a new setting, whether a school, a workplace, or a country, is "Do I belong here?". How do people make sense of their belonging in a new setting? How and why do group identities, such as race-ethnicity, social-class background, gender, or national origin matter? What are the consequences of people¿s inferences about their belonging? And how can we create school and work settings in which people from diverse backgrounds can genuinely and authentically belong?.

PSYCH 138. Wise Interventions. 4 Units.
Classic and contemporary psychological interventions; the role of psychological factors in social reforms for social problems involving healthcare, the workplace, education, intergroup, relations, and the law. Topics include theories of intervention, the role of laboratory research, evaluation, and social policy.
Same as: PSYCH 238, PUBLPOL 238

PSYCH 138S. Motivation to Learn. 3 Units.
Why do some students delight at the thought of challenging tasks while others only care about getting the grade? Why do some seek out opportunities to learn in and out of school while others feel anxious just showing up to class? Why do our failures sometimes debilitate and other times invigorate? How do we turn our desires to achieve into concrete action? Where do these motivational processes come from and how might we use our understanding of motivation to improve educational systems? This course will address these and other fascinating questions as we consider theory and research on motivation, primarily as it applies to educational contexts. The course will be based largely around interactive discussions of primary source articles, with some lecture in order to provide you with important background information and a framework for discussing the readings.

PSYCH 139A. Bites and Insights. 1 Unit.
By its very nature psychology is interdisciplinary. This course will consist of student-led workshops for those who are interested in the role of psychology in today¿s society. Each week a different student will talk about an interest of theirs -- anything from Disney movies to memes -- and how it relates to psychology. Students are encouraged to be as creative as possible and take initiative! (Presented by the Stanford Undergraduate Psychology Association.).

PSYCH 139S. Psychology of Women. 3 Units.
Women comprise half of the human population, yet throughout much of history, the study of human thought and behavior has been largely male focused. In fact, some of the earliest psychological studies of women were conducted primarily to argue for the evolutionary supremacy of men. During the past fifty years, the field of psychology has made significant strides towards considering women and men equally worthy subjects of inquiry. In this course, we will discuss this growing body of research related to gender and the female experience. We will focus on six main themes: social and biological approaches to studying gender, evidence for gender similarities and differences, gender stereotypes and sexism, gender and language use, women in the workplace, and female sexuality. We will explore these themes through lectures, in class demonstrations, analysis of empirical work, and student led discussion.

PSYCH 140. Introduction to Psycholinguistics. 4 Units.
How do people do things with language? How do we go from perceiving the acoustic waves that reach our ears to understanding that someone just announced the winner of the presidential election? How do we go from a thought to spelling that thought out in a sentence? How do babies learn language from scratch? This course is a practical introduction to psycholinguistics -- the study of how humans learn, represent, comprehend, and produce language. The course aims to provide students with a solid understanding of both the research methodologies used in psycholinguistic research and many of the well-established findings in the field. Topics covered will include visual and auditory recognition of words, sentence comprehension, reading, discourse and inference, sentence production, language acquisition, language in the brain, and language disorders. Students will conduct a small but original research project and gain experience with reporting and critiquing psycholinguistic research.
Same as: LINGUIST 145, LINGUIST 245A

PSYCH 140S. Do I Belong Here? How to Use Social Psychology to Build Belonging. 3 Units.
This course will provide students with a theoretical and applied understanding of the challenges, barriers, and solutions for how to cultivate belonging in educational and professional contexts from a social psychological perspective. The course will pull from core findings in social psychology, sociology, and organizational behavior to scaffold the student's holistic understanding of belonging. We will then highlight research such as intergroup relations, attribution ambiguity, and mindsets that illustrates the antecedents and consequences of threats to belonging. Finally, the course will demonstrate how we can utilize 'wise interventions' in real-world settings to foster belonging by creating change at the individual, institutional, and policy level. The course, overall, will attempt to educate students about how people understand themselves, their situations, and how they understand themselves in those situations, and equip them with data-driven strategies to build and create more inclusive and diverse spaces.

PSYCH 141. Cognitive Development. 3 Units.
How do humans think, learn, and communicate? What are the developmental roots of these capacities, and what makes young children such remarkable learners? This course aims to offer an understanding of how human cognition - the ability to think, reason, and learn about the world - changes in the first few years of life. We will review and evaluate both classic findings and state-of-the-art research on cognitive development and understand the logic behind the scientific methods for studying cognition in young children. By the end of the course, students will gain a deeper understanding of the major theoretical accounts of intellectual growth as well as the key empirical findings that support (or refute) these accounts, understand the basic logic of scientific methods in cognitive development research, and be able to discuss implications of cognitive development research on real-world issues in education and social policy. PSYCH141 is an Area A course for 2019-2020. Prerequisites: PSYCH 1. Recommended: PSYCH 60.

PSYCH 141S. The Psychology of Health: Culture, Self, and Society. 3 Units.
What is health? How does someone become healthy or maintain good health? In the US, mainstream narratives about health tend to focus on individual choices and behavior. In this course, we take a broader focus, examining how individual health is shaped by social interactions (e.g., with family, friends, doctors), institutions (e.g., media, policy, advertising), and broad cultural ideas and values (e.g., personal responsibility, independence). Drawing from psychological research, we will examine topics at the intersection of self and society, including: the role of stress, stigma and blame in shaping health and wellbeing, cultural processes contributing to health disparities, attitudes about the proper role of government in shaping public health, and the erosion of trust in medical authority (e.g. anti-vaccination attitudes). We will also consider how race, gender, and socioeconomic status impact health outcomes. Throughout the course, we will analyze cultural products including advertisements, media stories, health PSAs, and government statements to better understand the transmission of cultural ideas of health. Finally, we will discuss various opportunities and barriers to creating social and cultural change regarding health. The course will empower students learn to recognize and analyze the influence of culture on everyday functioning and apply that understanding to improving their own and other people's health outcomes.

PSYCH 142A. Special Topics in Adolescent Mental Health. 4 Units.
Includes the study of aspects of common disorders seen in adolescent populations, such as prevalence, developmental course, gender differences, theoretical explanations, and therapeutic interventions. Topics will include mood/anxiety disorders, eating disorders, learning disabilities and ADHD, sexual risk behaviors, developmental disorders, substance abuse, and self-harm. Goals of this course include getting students to think critically about the unique mental health needs of adolescents, collaborating on devising ways to improve the way our society meets those needs, and strengthening writing and communication skills applicable to this area of inquiry. Enrollment limited to students with sophomore academic standing or above. Prerequisites: Human Biology Core or Biology Foundations or equivalent or consent of instructor.
Same as: HUMBIO 142M

PSYCH 145. Seminar on Infant Development. 1-2 Unit.
For students preparing honors research. Conceptual and methodological issues related to research on developmental psycholinguistics; training in experimental design; and collection, analysis, and interpretation of data.

PSYCH 145A. Monitoring the Crisis. 4-5 Units.
A course devoted to understanding how people are faring as the country's health and economic crisis unfolds. The premise of the course is that, as important and valuable as surveys are, it's a capital mistake to presume that we know what needs to be asked and that fixed-response answers adequately convey the depth of what's happening. We introduce a new type of qualitative method that allows for discovery by capturing the voices of the people, learn what they're thinking and fearing, and understand the decisions they're making. Students are trained in immersive interviewing by completing actual interviews, coding and analyzing their field notes, and then writing reports describing what's happening across the country. These reports will be designed to find out who's hurting, why they're hurting, and how we can better respond to the crisis. Students interested should submit the following application: https://docs.google.com/forms/d/e/1FAIpQLSfdOZsnpOCg4zTRbVny0ikxpZEd1AFEEJh3K9KjvINyfbWMGw/viewform.
Same as: PUBLPOL 141, SOC 141, SOC 241, URBANST 149

PSYCH 145S. Close Relationships. 3 Units.
Relationships are central to the human experience, and relationship science seeks to understand how our connections to others shape how we think, feel, and act. The purpose of this course is to explore the classic and current research and theory on close relationships in the field of psychology. Some of the topics we will explore are friendship, attraction, love, familial ties, conflict, social cognition, interdependency, sexuality, loss, and the sociocultural shaping of relationships. The course, in part, aims to create budding relationship scientists, who can turn their real-world interests and observations into testable hypotheses with the methods and tools of the field.

PSYCH 146. Observation of Children. 3 Units.
Learning about children through guided discussions and video analyses from Bing Nursery School. Together we will looking into children's interactions with the world around them within the contexts of their physical, cognitive, social, and emotional development. We will also be examining their experiences in relation to research and theory. Note: Students will enroll in discussion sections through Canvas during the first week of class.

PSYCH 146S. Brain, Mind, and Behavior. 3 Units.
How does the complexity of human behavior arise from the mind and brain? This course surveys approaches to linking these three concepts. We will introduce the brain with a hands-on neuroanatomy demo. We will explore how neurons manipulate signals to communicate, transforming our sensory experiences into rich internal representations, used to guide our attention, decision-making, and social interactions. We will immerse ourselves in the methods of cognitive neuroscientists, tinkering with models linking brain signals with behavior, learning how those signals are recorded (e.g. fMRI and EEG) and perturbed (e.g. TMS), and fine-tuning our ability to design psychological experiments. We will think about how these concepts apply in our own lives, while also learning to critically assess current research.

PSYCH 147. Development in Early Childhood. 3 Units.
For children playing is more than just fun; it is essential for children¿s growth and wellbeing. Play is so important to optimal child development that it has been recognized by the United Nations High Commission for Human Rights as a right of every child. This course explores this connection between different types of play and children¿s development in four arenas: social, emotional, cognitive, and physical. In order to promote optimal learning and growth in children, it is important to recognize that these cognitive, physical, social, and emotional systems are intertwined. In this course students will not only learn about play, but also examine their own play experiences and histories. Using readings, recordings of children at play, videos, presentations, and reflections we will delve into the experience of play for children and ourselves. The course is rooted in the play experiences and philosophy of Bing Nursery School, a laboratory school at Stanford. For over 50 years it has been engaging children in play-based learning experiences.

PSYCH 147S. Introduction to the Psychology of Emotion. 3 Units.
What are emotions? What purpose do they serve? How do we measure them? Can we control them? In this course, we will explore some of the most interesting questions in psychology: questions about emotion. Emotions shape our perceptions of the world, influence critical life decisions, and allow us to connect with others. This seminar will provide a selective review of the scientific study of emotion in Affective Science. The first unit of the course will focus on the theoretical foundations, the basic science of emotion, and methods for measuring emotions. In the second unit of the course, we will discuss topics at the intersection of motivation and emotion, such as decision-making and self-control. In the third unit, we will delve into the social function of emotions. In the fourth unit of the course, we will study the ways people succeed and fail at controlling their emotions. In the fifth unit, we will discuss a variety of additional topics such as how emotions change across the lifespan, how emotions can be harnessed to engineer behavior change, as well as emotions and artificial intelligence. My goal is that you will leave this course with a scientifically-informed understanding of your own and others' emotions as well as strategies for how to effectively use and manage your feelings in daily life.

PSYCH 148S. The Psychology of Bias: Stereotyping, Prejudice, and Discrimination. 3 Units.
From Black Lives Matter to mansplaining, issues of stereotyping, prejudice, and discrimination grab our attention and draw our concern. This course brings together research from social, cognitive, affective, developmental, cultural, and neural perspectives to examine the processes that reflect and perpetuate group biases. Along with these various research perspectives, we will consider perspectives of both privileged and disadvantaged group members. Where do stereotypes come from? Why is race so hard to talk about? Can we be biased without knowing it? How can we reduce prejudice and conflict? We will address these and other questions through lectures, class discussion, and group presentations.
Same as: CSRE 148P

PSYCH 149S. Vertical Neuroscience: How the Brain Enables Climbing. 3 Units.
Explores the brain mechanisms of physical action, including how the brain learns to create complex movements, the neural circuitry of the motor system, and how pain, fear, and adrenaline are closely tied to these systems. An emphasis is placed on real-life examples through weekly rock climbing courses that tie closely into the course content.

PSYCH 150. Race and Crime. 3 Units.
The goal of this course is to examine social psychological perspectives on race, crime, and punishment in the United States. Readings will be drawn not only from psychology, but also from sociology, criminology, economics, and legal studies. We will consider the manner in which social psychological variables may operate at various points in the crimina; justice system- from policing, to sentencing, to imprisonment, to re-entry. Conducted as a seminar. Students interested in participating should attend the first session and complete online application for permission at https://goo.gl/forms/CAut7RKX6MewBIuG3.
Same as: CSRE 150A, PSYCH 259

PSYCH 150B. Race and Crime Practicum. 2-4 Units.
This practicum is designed to build on the lessons learned in PSYCH 150 Race & Crime. In this community service learning course, students participate in community partnerships relevant to race and crime, as well as reflection to connect these experiences to research and course content. Interested students should complete an application for permission at: https://goo.gl/forms/CAut7RKX6MewBIuG3. Prerequisite: PSYCH 150 (taken concurrently or previously).
Same as: CSRE 150B

PSYCH 154. Judgment and Decision-Making. 3 Units.
Survey of research on how we make assessments and decisions particularly in situations involving uncertainty. Emphasis will be on instances where behavior deviates from optimality. Overview of recent works examining the neural basis of judgment and decision-making.

PSYCH 155. Introduction to Comparative Studies in Race and Ethnicity. 5 Units.
How different disciplines approach topics and issues central to the study of ethnic and race relations in the U.S. and elsewhere. Lectures by senior faculty affiliated with CSRE. Discussions led by CSRE teaching fellows. Includes an optional Haas Center for Public Service certified Community Engaged Learning section. In accordance with Stanford virtual learning policies implemented for the Spring Quarter, all community engagement activities for this section will be conducted virtually. Please sign up for section 2 #33285 with Kendra, A. if you are interested in participating in virtual community engagement.
Same as: CSRE 196C, ENGLISH 172D, SOC 146, TAPS 165

PSYCH 156. Communicating Neuroscience. 3 Units.
Understanding the structure and function of the brain is presently an international goal with Brain Initiatives in the United States, Europe, and Japan. Due to this global interest, knowledge about the brain is influencing all aspects of society. As such, accurate communication and translation of neuroscience findings are of utmost importance. This course will examine ways to translate and to communicate neuroscience research for public outreach, with a focus on the role of technology. Topics include: television, feature articles, blogs, documentaries, and online videos. Students will learn different ways to accurately translate and communicate neuroscience topics in the context of theoretical and methodological approaches and to apply these tools in an original way to generate a completed outreach piece by the end of the course.

PSYCH 160. Seminar on Emotion. 3 Units.
This undergraduate and graduate seminar will examine ancient Greek philosophical and contemporary psychological literatures relevant to emotion. Questions to be investigated include: What is the nature of emotions? What is the appropriate place in our lives for emotions? How should we manage our emotions? Do the emotions threaten the integrity of the agent? Meetings will be discussion oriented. Prerequisite: consent of instructor.
Same as: PHIL 375G, PSYCH 260

PSYCH 162. Brain Networks. 3 Units.
An essential aspect of the brain is its complex pattern of connectivity between neurons across different areas. This course will provide a comprehensive overview of the networks of the brain, analyzed from a range of standpoints from the microscopic to the macroscopic, with a particular focus on the organization of the human brain. Specific topics include brain anatomy, connectomics, structural and functional neuroimaging, graph theory and network science, dynamic models, and causal inference. The course will comprise a combination of lectures, paper discussions, and hands-on analysis exercises. The first session each week will be composed of lecture and background, and the second session will be focused on discussion and hands-on analyses, with students assigned to lead the discussion sessions. Prerequisites: Basic knowledge of neuroscience (equivalent to Psych 50A). A moderate level of programming experience will be required for hands-on exercises and problem sets. Primary exercises will be in Python.
Same as: PSYCH 267

PSYCH 164. Brain decoding. 3 Units.
Can we know what someone is thinking by examining their brain activity? Using knowledge of the human visual system and techniques from machine learning, recent work has shown impressive ability to decode what people are looking at from their brain activity as measured with functional imaging. The course will use a combination of lectures, primary literature readings, discussion and hands-on tutorials to understand this emerging technology from basic knowledge of the perceptual (primarily visual) and other cognitive systems (such as working memory) to tools and techniques used to decode brain activity.nPrerequisites: Either Psych 30 or Psych 50 or Consent of Instructor.

PSYCH 165. Identity and Academic Achievement. 3 Units.
How do social identities affect how people experience academic interactions? How can learning environments be better structured to support the success of all students? In this class, we will explore how a variety of identities such as race, gender, social class, and athletic participation can affect academic achievement, with the goal of identifying concrete strategies to make learning environments at Stanford and similar universities more inclusive. Readings will draw from psychology, sociology, education, and popular press. This class is a seminar format.
Same as: AFRICAAM 165, CSRE 165

PSYCH 168. Emotion Regulation. 3 Units.
(Graduate students register for 268.) The scientific study of emotion regulation. Topics: historical antecedents, conceptual foundations, autonomic and neural bases, individual differences, developmental and cultural aspects, implications for psychological and physical health. Focus is on experimentally tractable ideas.
Same as: PSYCH 268

PSYCH 169. Advanced Seminar on Memory. 3 Units.
Memory and human cognition. Memory is not a unitary faculty but consists of multiple systems that support learning and remembering, each with its own processing characteristics and neurobiological substrates. This advanced undergraduate seminar will consider recent discoveries about the cognitive and neural architectures of working, declarative, and nondeclarative memory. Required: 45.

PSYCH 170. The Psychology of Communication About Politics in America. 4-5 Units.
Focus is on how politicians and government learn what Americans want and how the public's preferences shape government action; how surveys measure beliefs, preferences, and experiences; how poll results are criticized and interpreted; how conflict between polls is viewed by the public; how accurate surveys are and when they are accurate; how to conduct survey research to produce accurate measurements; designing questionnaires that people can understand and use comfortably; how question wording can manipulate poll results; corruption in survey research.
Same as: COMM 164, COMM 264, POLISCI 124L, POLISCI 324L

PSYCH 171. Research Seminar on Aging. 4 Units.
Two quarter practicum exposes students to multiple phases of research by participating in a laboratory focusing on social behavior in adulthood and old age. Review of current research; participation in ongoing data collection, analysis, and interpretation. Prerequisites: 1, research experience, and consent of instructor. May be repeated for credit.

PSYCH 172. Self-fashioning. 3 Units.
This undergraduate and graduate seminar will examine philosophical and psychological literature relevant to self-fashioning. Meetings will be discussion oriented, and each meeting will focus on a different question of theoretical and applied significance. Prerequisite: consent of instructor. May be repeat for credit.
Same as: PHIL 186A, PHIL 286A

PSYCH 175. Social Cognition and Learning in Early Childhood. 4 Units.
Social cognition - the ability to recognize others, understand their behaviors, and reason about their thoughts - is a critical component of what makes us human. What are the basic elements of social cognition, and what do children understand about other people's actions, thoughts, and feelings? How do these capacities help us understand the world, as learning unfolds in the first few years of life? This course will take a deeper look at the intersection of social cognition and cognitive development to better understand how children learn about the world.nnStudents will explore various topics on social cognition with an emphasis on (but not limited to) developmental perspectives, including face perception, action understanding, Theory of Mind, communication, and altruism, and think about how these abilities might be linked to the developmental changes in children's understanding of the world. The course will encourage students to think hard about the fundamental questions about the human mind and how it interacts with other minds, and the value of studying young children in addressing these questions. Students should expect to read, present, and discuss theoretical and empirical research articles and to develop original research proposals as a final project. nnStudents will have an opportunity to develop their proposals into a research project in PSYCH 187, a lab course offered every other year in Spring (next offer expected to be Spring 2018) as a sequel to this course. This course fulfills the WIM requirement. nnPrerequisites Psych 60 or Psych141, or see instructor.

PSYCH 176. Biology, Culture and Family in Early Development. 3-4 Units.
Early childhood is a time of both enormous promise and vulnerability. Parents differ widely in their practices and beliefs about their role in enabling children to avoid risk and to achieve their potential for a healthy and productive life in the particular physical, social and cultural contexts of the communities and societies in which they live. In this seminar we will evaluate evidence from the biological and social sciences showing how experiences in infancy have profound and enduring effects on early brain architecture, with consequences for later language, cognitive, and socio- emotional development in childhood and adulthood. We will also consider the challenges of designing more effective social policies and programs to provide support for families in diverse socioeconomic and cultural contexts, who all want to help their children thrive. A community-service learning option, working with children as a reading tutor, is included for students taking this class for 4-units. Enrollment is limited and consent of instructor is required. Please send a brief statement of your interests, goals, and academic preparation relevant to the themes of this class to Prof. Fernald (afernald@stanford.edu). Pre-requisites: Psych 01 and Psych 60, or Human Biology 3B.

PSYCH 178. New Methods for Old Questions: Linking Social Cognition and Social Cognitive Neuroscience. 3 Units.
Novel technology can fuel new discoveries and generate new questions for future research. For instance, looking-time methods for studying infants or response time (RT) measures in cognitive psychology have been enabled by the use of computers and video cameras. More recently, neuroimaging techniques (such as fMRI) have transformed the field by offering a more direct look into the working human brain. These methods are, in a way, 'old' and 'new' ways of studying what psychologists want to study - mental representations. nnWhat are the promises and challenges of using these methods to study human cognition and its development? What have we learned, where have we fallen short, and why? Most importantly, how can we make the most out of these new methods to bear on our understanding of social cognition and its development? After the first two weeks of lectures on basic methods, each week we will consider a topic that has been extensively studied in cognitive development literature. Topics will include: perception of agency, theory of mind, and morality; on each topic, we will compare two different ways of studying mental representations - the 'old' way (behavior) and the 'new' way (neural response) - to assess their relative benefits and shortcomings, and to discuss the promises and pitfalls for combining the two.nnThis course will be a combination of lectures, presentations, and discussions aimed primarily for upper-class undergraduate students or graduate students who do not have much background in neuroimaging methods, but interested in learning more about neuroimaging methods and think about how these methods can (and cannot) help address questions about social cognition and development. Prerequisite: Psych 60 or Psych141, or see instructor.

PSYCH 180. Advanced Seminar on Racial Bias and Structural Inequality. 4 Units.
How do we address racial bias and inequities? What role do our institutions play in creating, maintaining, and magnifying those inequities? What role do we play? In this course, we will examine racial bias and inequality in our neighborhoods, schools, workplaces, healthcare facilities, and criminal justice system. In every domain, we will focus our attention on the tools and interventions that can be used to mitigate bias and decrease racial disparities. This course will be conducted as a seminar. Limited enrollment.

PSYCH 180A. SPARQshop: Social Psychological Answers to Real-world Questions. 3 Units.
Undergraduate and graduate students will work in teams to design, build, test, and distribute online toolkits that help practitioners solve real-world problems by applying social science. Graduate students can build toolkits for their own research. Students will learn how to assess the needs of practitioner audiences; write text, design graphics, and program activities for these audiences; prepare, deliver, and produce a TED-style online video; design surveys in Qualtrics; and build and user-test the toolkit. Readings and class discussions will include modules on design thinking, storytelling, science writing, information design, and impact evaluation. For an example of a toolkit in progress, please visit spacereface.org. Permission of instructor required.
Same as: PSYCH 283A

PSYCH 182. Practicum in Teaching PSYCH 1. 5 Units.
Pedagogical training focused on teaching introductory psychology: creating engaging and inclusive lesson plans and activities, providing helpful feedback to students, responding to student feedback, and supporting student learning in 1:1 and small group interactions. Students create and iterate section activities, conduct and reflect on peer feedback, and produce a statement of teaching philosophy in their second quarter. Limited to current undergraduate PSYCH 1 Teaching Fellows. May be repeated for credit.

PSYCH 183. SPARQ Lab. 2-3 Units.
Join SPARQ (Social Psychological Answers to Real-world Questions) as a research assistant and help with projects addressing real-world issues.

PSYCH 185. Racial Inequality across the Lifespan. 3 Units.
Imagine two children, one Black and one White, born on the same day and in the same country. By adulthood, these two will likely have had two remarkably different social experiences (e.g., the Black child will have received less education, income, health, and years to live). Why? Students in this course will tackle this complicated question from a psychological perspective. Together, we will examine how thinking, feeling, and behaving in ways that perpetuate stereotypes, prejudice, and discrimination contribute to racial inequality across the lifespan. The course will be conducted as a seminar, such that much of what you learn will be through group discussions, activities, and readings. A critical component of this class will be to practice writing about psychological research and social issues for the general audience. That is, students will write weekly opinion pieces that address and explain a particular area of inequality to a non-scientific audience.
Same as: AFRICAAM 185, CSRE 185C

PSYCH 186. The Psychology of Racial Inequality. 3 Units.
Our topic is the psychology of racial inequality - thinking, feeling, and behaving in ways that contribute to racial stereotyping, prejudice, and discrimination, and how these processes in turn maintain and perpetuate inequality between racial groups. We will examine how these processes unfold at both the individual and the institutional levels. Throughout this course, you will familiarize yourself with the psychological perspectives, methods, and findings that help explain racial inequality, and we will explore ways to promote racial equality. The course will be conducted as a seminar, but most of what you learn will be through the readings and discussions. That is, this course is minimally didactic; the goal is to have you engage thoughtfully with the issues and readings spurred in part by sharing perspectives, confusions, and insights through writing and discussion. Each student will facilitate at least one class session by providing an introductory framework for the readings (~10-minute presentation with handouts that overviews the concepts, issues, and controversies). Together, we will broaden our knowledge base on the subject and explain, from a psychological perspective, the pervasiveness of racial inequality. Prerequisites: PSYCH 1 and PSYCH 10.
Same as: AFRICAAM 286, CSRE 186, PSYCH 286

PSYCH 187. Research Methods in Cognition & Development. 4 Units.
For centuries, scientists have studied the invisible aspects of the physical world---air, electrons, bosons---by conducting experiments and developing new methods to measure them. Psychological science is a field in which researchers use the scientific method to study how the mind works. The ways in which humans think, reason, and learn is not directly observable, so scientists need to figure out how to design experiments and develop new methods to measure and study these mental processes. Needless to say, the informativeness of an experiment critically depends on its design. But what makes an experiment informative? nHaving first-hand experience in the actual research process is a powerful way to gain a deeper understanding of the basics of experimental methods. In particular, studies with young children often require careful considerations of experimental confounds and noisy measurements, making them ideal (and challenging) test cases for acquiring the fundamentals of experimental design. This course is an advanced, lab-based research course designed to provide an immersive experience of how to investigate the developing mind. The course will take you all the way from the design and implementation of an experiment, to the analysis and communication of its results. nIn this course, students will design a replication/extension of prior work in cognitive development, and conduct studies with children (at Bing Nursery School) as well as adults (within laboratory settings or online). Students will be provided with a general experimental context and potential dependent measures, and will develop their own studies in teams. The course will involve some lectures but it will mostly be a bootcamp-style workshop where students and instructors work together. Evaluation will primarily be based on presentations and final paper, along with a few other smaller assignments. Students should expect to spend a significant amount of hours outside of the classroom to collect their data. Instructors will expect students to have a basic understanding of statistical analyses and be comfortable with basic programming in R as well as interacting with children.

PSYCH 189. Stanford Center on Longevity Practicum. 3 Units.
Student involvement in an interdisciplinary center aimed at changing the culture of human aging using science and technology. May be repeated for credit.

PSYCH 194. Reading and Special Work. 1-3 Unit.
Independent study. May be repeated for credit. Prerequisite: consent of instructor.

PSYCH 195. Special Laboratory Projects. 1-6 Unit.
Independent study. May be repeated for credit. Prerequisites: 1, 10, and consent of instructor.

PSYCH 195S. Special Laboratory Projects. 1-6 Unit.
Independent study. May be repeated for credit. Prerequisites: 1, 10, and consent of instructor.

PSYCH 196A. Neuroscience research. 1 Unit.
This course is for undergraduate students who are part of the Wu Tsai Neurosciences Institute's Neuroscience Undergraduate Research Opportunity (NeURO) fellowship program.

PSYCH 197. Advanced Research. 1-4 Unit.
Limited to students in senior honors program. Weekly research seminar, independent research project under the supervision of an appropriate faculty member. A detailed proposal is submitted at the end of Autumn Quarter. Research continues during Winter and Spring quarters as 198. A report demonstrating sufficient progress is required at the end of Winter Quarter.

PSYCH 198. Senior Honors Research. 1-4 Unit.
Limited to students in the senior honors program. Finishing the research and data analysis, written thesis, and presentation at the Senior Honors Convention. May be repeated for credit.

PSYCH 199. Individually Supervised Practicum. 1-5 Unit.
Satisfies INS requirements for curricular practical training (CPT). May be repeated for credit. Prerequisites: consent of adviser.

PSYCH 202. Cognitive Neuroscience. 3 Units.
Graduate core course. The anatomy and physiology of the brain. Methods: electrical stimulation of the brain, neuroimaging, neuropsychology, psychophysics, single-cell neurophysiology, theory and computation. Neuronal pathways and mechanisms of attention, consciousness, emotion, language, memory, motor control, and vision. Prerequisite: For psychology graduate students, or consent of instructor.

PSYCH 204. Computation and Cognition: The Probabilistic Approach. 3 Units.
This course will introduce the probabilistic approach to cognitive science, in which learning and reasoning are understood as inference in complex probabilistic models. Examples will be drawn from areas including concept learning, causal reasoning, social cognition, and language understanding. Formal modeling ideas and techniques will be discussed in concert with relevant empirical phenomena.
Same as: CS 428

PSYCH 204A. Human Neuroimaging Methods. 3 Units.
This course introduces the student to human neuroimaging using magnetic resonance scanners. The course is a mixture of lectures and hands-on software tutorials. The course begins by introducing basic MR principles. Then various MR measurement modalities are described, including several types of structural and functional imaging methods. Finally algorithms for analyzing and visualizing the various types of neuroimaging data are explained, including anatomical images, functional data, diffusion imaging (e.g., DTI) and magnetization transfer. Emphasis is on explaining software methods used for interpreting these types of data.

PSYCH 204B. Computational Neuroimaging. 1-3 Unit.
This course provides an in-depth survey and understanding of modern computational approaches to design and analyses of neuroimaging data. The course is a mixture of lectures and projects geared to give the student an understanding of the possibilities as well as limitations of ndifferent computational approaches. Topics include: signal and noise in MRI; general linear modeling; fMRI-adaptation; multivoxel pattern analyses; decoding and encoding algorithms; modeling population receptive fields. Required: Psych 204a; Recommended: Cognitive Neuroscience.

PSYCH 205. Foundations of Cognition. 3 Units.
Topics: attention, memory, language, similarity and analogy, categories and concepts, learning, reasoning, and decision making. Emphasis is on processes that underlie the capacity to think and how these are implemented in the brain and modeled computationally. The nature of mental representations, language and thought, modular versus general purpose design, learning versus nativism. Prerequisite: 207 or consent of instructor. nOpen to Psychology PhD students only.

PSYCH 206. Cortical Plasticity: Perception and Memory. 1-3 Unit.
Seminar. Topics related to cortical plasticity in perceptual and memory systems including neural bases of implicity memory, recognition memory, visual priming, and perceptual learning. Emphasis is on recent research with an interdisciplinary scope, including theory, behavioral findings, neural mechanisms, and computational models. May be repeated for credit. Recommended: 30, 45.

PSYCH 207. Professional Seminar for First-Year Ph.D. Graduate Students. 2-3 Units.
Required of and limited to first-year Ph.D. students in Psychology. Major issues in contemporary psychology with historical backgrounds.

PSYCH 209. Neural Network Models of Cognition. 4 Units.
Neural Network models of cognitive and developmental processes and the neural basis of these processes, including contemporary deep learning models. Students learn about fundamental computational principles and classical as well as contemporary applications and carry out exercises in the first six weeks, then undertake projects during the last four weeks of the quarter. Some background in computer programming, familiarity with differential equations, linear algebra, and probability theory, and one or more courses in cognition, cognitive development or ncognitive/systems neuroscience is required.

PSYCH 211. Developmental Psychology. 3 Units.
Prerequisite: 207 or consent of instructor.

PSYCH 212. Classic and contemporary social psychology research. 1-3 Unit.
Evolution of ideas from early experiments on group dynamics, attitude change, and cognitive dissonance to later work on behavioral and emotional attribution, and more contemporary work on strategies and shortcomings in judgment and decision-making and on implicit influences on attitudes and behavior. Other topics include social dilemmas, conflict and misunderstanding, positive psychology, and the application of social psychological principles and findings to ongoing social problems including social inequality, education, and the challenge of addressing climate change.

PSYCH 213. Affective Science. 3 Units.
This seminar is the core graduate course on affective science. We consider definitional issues, such as differences between emotion and mood, as well as issues related to the function of affect, such as the role affect plays in daily life. We review autonomic, neural, genetic, and expressive aspects of affective responding. Later in the course we discuss the role of affect in cognitive processing, specifically how affective states direct attention and influence memory, as well as the role of affect in decision making. We will also discuss emotion regulation and the strategic control of emotion; the cultural shaping of emotional experience and regulation; disorders of emotion; and developmental trajectories of experience and control from early to very late life. Meetings are discussion based. Attendance and active participation are required. Prerequisite: 207 or consent of instructor.

PSYCH 215. Mind, Culture, and Society. 3 Units.
Social psychology from the context of society and culture. The interdependence of psychological and sociocultural processes: how sociocultural factors shape psychological processes, and how psychological systems shape sociocultural systems. Theoretical developments to understand social issues, problems, and polity. Works of Baldwin, Mead, Asch, Lewin, Burner, and contemporary theory and empirical work on the interdependence of psychology and social context as constituted by gender, ethnicity, race, religion, and region of the country and the world. Prerequisite: 207 or consent of instructor.

PSYCH 216. Public Policy and Social Psychology: Implications and Applications. 4 Units.
Theories, insights, and concerns of social psychology relevant to how people perceive issues, events, and each other, and links between beliefs and individual and collective behavior will be discussed with reference to a range of public policy issues including education, public health, income and wealth inequalities, policing and climate change, Specific topics include: situationist and subjectivist traditions of applied and theoretical social psychology; social comparison, dissonance, and attribution theories; stereotyping and stereotype threat, and sources of intergroup conflict and misunderstanding; challenges to universality assumptions regarding human motivation, emotion, and perception of self and others; also the general problem of producing individual and collective changes in norms and behavior.
Same as: INTLPOL 207B, PUBLPOL 305B

PSYCH 217. Topics and Methods Related to Culture and Emotion. 3-5 Units.
Preference to graduate students. How cultural factors shape emotion and other feeling states. Empirical and ethnographic literature, theories, and research on culture and emotion. Applications to clinical, educational, and occupational settings. Research in psychology, anthropology, and sociology. May be repeated for credit.

PSYCH 221. Image Systems Engineering. 1-3 Unit.
This course is an introduction to digital imaging technologies. We focus on the principles of key elements of digital systems components; we show how to use simulation to predict how these components will work together in a complete image system simulation. The early lectures introduce the software environment and describe options for the course project. The following topics are covered and software tools are introduced:n- Basic principles of optics (Snell's Law, diffraction, adaptive optics).n- Image sensor and pixel designsn- Color science, metrics, and calibrationn- Human spatial resolutionn- Image processing principlesn- Display technologiesnA special theme of this course is that it explains how imaging technologies accommodate the requirements of the human visual system. The course also explains how image systems simulations can be useful in neuroscience and industrial vision applications.nThe course consists of lectures, software tutorials, and a course project. Tutorials and projects include extensive software simulations of the imaging pipeline. Some background in mathematics (linear algebra) and programming (Matlab) is valuable.nPre-requisite: EE 261 or equivalent. Or permission of instructor required.
Same as: SYMSYS 195I

PSYCH 222. From Classic Experiments to Cutting Edge Neuroimaging: The Functional Neuroanatomy of Visual Cortex. 1-3 Unit.
We will discuss the fundamental organizational principles of the visual system starting by discussing classic papers in non-human primates and proceeding to discuss recent neuroimaging studies in humans. We will then examine how understanding these organizational principles has influenced mapping the functional organization of visual system. Finally, we will analyze neuroimaging datasets and examine how well one can evaluate and define visual areas in the human brains by understanding these principles.

PSYCH 223. Social Norms. 3 Units.
This course covers research and theory on the origins and function of social norms. Topics include the estimation of public opinion, the function of norms as ideals and standards of judgment, and the impact of norms on collective and individual behavior and norm intervention. In addition to acquainting students with the various forms and functions of social norms the course will provide students with experience in identifying and formulating tractable research questions. Priority for enrollment will be given to PhD students but advanced undergraduates may request permission for enrollment from the instructor.

PSYCH 224. Mapping the human visual system. 1-3 Unit.
The human visual system has more than two dozen topographic maps of the visual field. This course will explain principles of topographic maps in the visual system, mapping of visual areas using retinotopy, as well as modeling spatial and temporal computations in the visual system using population receptive fields. The class will combine reading and discussing papers that discovered these maps and computational principles with a lab component in which the students will analyze fMRI datasets that are used to map visual cortex.
Same as: NEPR 224

PSYCH 226. Models and Mechanisms of Memory. 1-3 Unit.
Current topics in memory as explored through computational models addressing experimental findings and physiological and behavioral investigations. Topics include: episodic and statistical learning; impact of prior knowledge on new learning; and the role of MTL structures in learning and memory. May be repeated for credit.

PSYCH 227. Seminar in Psycholinguistics: Advanced Topics. 2-4 Units.
Adaptation to speaker variability in language use has receivednincreasing attention in recent years from linguists and psychologistsnalike, who have recognized that, though long ignored, it poses a problemnfor static theories of language. The course will present a broad surveynof recent work in this area across levels of linguistic representation,nincluding phonetic, lexical, syntactic, prosodic, and semanto-pragmaticnadaptation. We will discuss the cognitive underpinnings of adaptationnand its relation to priming and learning, compare adaptation in varyingndomains, and consider the implications for theories of language andncommunication. The course will be organized primarily around discussionnof assigned readings. Students will develop a research proposal relevantnto issues in adaptation. May be repeated for credit. Prerequisite: LINGUIST 145 or background in any subfield of linguistics.
Same as: LINGUIST 247

PSYCH 228. Ion Transport and Intracellular Messengers. 3 Units.
(Graduate students register for 228.) Ion channels, carriers, ion pumps, and their regulation by intracellular messengers in a variety of cell types. Recommended: 120, introductory course in biology or human biology.
Same as: PSYCH 121

PSYCH 231. Questionnaire Design for Surveys and Laboratory Experiments: Social and Cognitive Perspectives. 4 Units.
The social and psychological processes involved in asking and answering questions via questionnaires for the social sciences; optimizing questionnaire design; open versus closed questions; rating versus ranking; rating scale length and point labeling; acquiescence response bias; don't-know response options; response choice order effects; question order effects; social desirability response bias; attitude and behavior recall; and introspective accounts of the causes of thoughts and actions.
Same as: COMM 339, POLISCI 421K

PSYCH 232. Brain and Decision. 3 Units.
This seminar explores how emerging findings at the interface of neuroscience, psychology, and economics combine to inform our understanding of how the brain makes decisions. Topics include neural processes related to reward, punishment, probability, risk, time, reflection, and social interaction, as well as theoretical implications and practical applications. We will briefly touch on the possibility of extending individual brain and behavioral data down to physiological and up to aggregate levels of analysis.nBecause the course involves interdisciplinary material, it takes the format of a research seminar with background discussions, and is targeted at graduate students and advanced undergraduates who aim to conduct related research. Goals include: (1) building familiarity with relevant neuroscience, psychology, and economics concepts; (2) increasing awareness of key relevant literature; and (3) preparation to conduct and advance innovative interdisciplinary research.

PSYCH 233. Longevity Innovations. 1 Unit.
Longer lives are generating new opportunities for products and services that support them. The Stanford Center on Longevity works closely with business leaders and entrepreneurs who are envisioning emerging longevity markets. The course overviews the broad demographic changes underway and related challenges that longer lives present. Within this context, students are required to think critically about new needs and opportunities in the longevity economy.

PSYCH 234. UNDERSTANDING DEPRESSION. 3 Units.
In this course we will discuss current issues in the study of major depression, including the epidemiology and phenomenology of depression and other affective disorders, psychological and biological theories of depression, gender differences in depression, cognitive and social functioning of depressed persons, findings from neuroimaging studies of depression, depression in children, risk factors for depression, issues involving suicide, and implications of the NIMH RDoC initiative for the study of depression and other psychiatric diagnostic categories.

PSYCH 235. Motivation and Emotion. 3 Units.
This graduate seminar will explore social-cognitive perspectives on motivation and emotion. Meetings will be discussion based. Prerequisites: Psychology 207 and consent of instructor.

PSYCH 236A. The Psychology of Scarcity: Its Implications for Psychological Functioning and Education. 3 Units.
This course brings together several literatures on the psychological, neurological, behavioral and learning impact of scarcities, especially those of money (poverty) time and food. It will identify the known psychological hallmarks of these scarcities and explore their implications for psychological functioning, well-being and education--as well as, how they can be dealt with by individuals and in education.
Same as: CSRE 136U, PSYCH 136

PSYCH 238. Wise Interventions. 4 Units.
Classic and contemporary psychological interventions; the role of psychological factors in social reforms for social problems involving healthcare, the workplace, education, intergroup, relations, and the law. Topics include theories of intervention, the role of laboratory research, evaluation, and social policy.
Same as: PSYCH 138, PUBLPOL 238

PSYCH 240. What Changes?. 3 Units.
When children get older, they start to behave differently. What¿s changing? In other words, what specific mechanisms underlie different developmental correlations between age and behavioral competence. Of course, the answer (or more likely, answers plural) to this question will differ vastly from domain to domain, but are there generalizations that we can make about the ways that different factors affect behavior across domains - differences in developmental drivers for so-called ¿lower-level¿ tasks versus ¿higher-level¿ tasks, or age-related differences in the determinants of change during specific time periods? In this course, we¿ll try to get a handle on some of the extant proposals on these questions, and maybe offer some of our own.

PSYCH 240A. Curiosity in Artificial Intelligence. 3 Units.
How do we design artificial systems that learn as we do early in life -- as "scientists in the crib" who explore and experiment with our surroundings? How do we make AI "curious" so that it explores without explicit external feedback? Topics draw from cognitive science (intuitive physics and psychology, developmental differences), computational theory (active learning, optimal experiment design), and AI practice (self-supervised learning, deep reinforcement learning). Students present readings and complete both an introductory computational project (e.g. train a neural network on a self-supervised task) and a deeper-dive project in either cognitive science (e.g. design a novel human subject experiment) or AI (e.g. implement and test a curiosity variant in an RL environment). Prerequisites: python familiarity and practical data science (e.g. sklearn or R).
Same as: EDUC 234

PSYCH 241. Psychometrics and automated experiment design. 3 Units.
n this graduate seminar we will consider how modern computational techniques and old ideas in psychometrics combine to enable new approaches to experimentation. We will cover topics such as item response theory, optimal experiment design, adaptive experiments, and Bayesian optional stopping. We will read fairly technical papers and ask students to implement some of the algorithms we are studying.

PSYCH 242. Theoretical Neuroscience. 3 Units.
Survey of advances in the theory of neural networks, mainly (but not solely) focused on results of relevance to theoretical neuroscience.Synthesizing a variety of recent advances that potentially constitute the outlines of a theory for understanding when a given neural network architecture will work well on various classes of modern recognition and classification tasks, both from a representational expressivity and a learning efficiency point of view. Discussion of results in the neurally-plausible approximation of back propagation, theory of spiking neural networks, the relationship between network and task dimensionality, and network state coarse-graining. Exploration of estimation theory for various typical methods of mapping neural network models to neuroscience data, surveying and analyzing recent approaches from both sensory and motor areas in a variety of species. Prerequisites: calculus, linear algebra, and basic probability theory, or consent of instructor.
Same as: APPPHYS 293

PSYCH 243. General Development Seminar. 1-2 Unit.
May be repeated for credit. Prerequisite: consent of instructors. Restricted to Developmental graduate students.

PSYCH 244. Psychology of Aging. 1-3 Unit.
Theory and research in gerontology. Normal and abnormal changes that occur in biological, cognitive, and psychological aging. Emphasis is on the environmental factors that influence the aging process. Prerequisite: graduate standing in Psychology or consent of instructor.

PSYCH 245. New Map of Life. 2 Units.
This is an advanced graduate seminar focused on ways the ways that key life domains must change to accommodate century-long lives.

PSYCH 245A. Understanding Racial and Ethnic Identity Development. 3-5 Units.
This seminar will explore the impact and relative salience of racial/ethnic identity on select issues including: discrimination, social justice, mental health and academic performance. Theoretical perspectives on identity development will be reviewed, along with research on other social identity variables, such as social class, gender and regional identifications. New areas within this field such as the complexity of multiracial identity status and intersectional invisibility will also be discussed. Though the class will be rooted in psychology and psychological models of identity formation, no prior exposure to psychology is assumed and other disciplines-including cultural studies, feminist studies, and literature-will be incorporated into the course materials. Students will work with community partners to better understand the nuances of racial and ethnic identity development in different contexts. (Cardinal Course certified by the Haas Center).
Same as: AFRICAAM 245, CSRE 245, EDUC 245

PSYCH 246. Cognitive and Neuroscience Friday Seminar. 1 Unit.
Participant presentations. May be repeated for credit. Prerequisite: graduate standing in psychology or neuroscience program.

PSYCH 247. Topics in Natural and Artificial Intelligence. 3 Units.
We will read a selection of recent papers from psychology, computer science, and other fields. We will aim to understand: How human-like are state of the art artificial intelligence systems? Where can AI be better informed by recent advances in cognitive science? Which ideas from modern AI inspire new approaches to human intelligence? Specific topics will be announced prior to the beginning of term.

PSYCH 248. Advanced fMRI modeling and analysis. 3 Units.
This seminar will discuss the state of the art in methods for the modeling and analysis of functional magnetic resonance imaging data. Potential topics include connectivity modeling, causal modeling, multivariate pattern analysis, encoding models, and classification analysis. The seminar will include hands-on analysis exercises in addition to lectures.

PSYCH 248A. fMRI Analysis Bootcamp. 3 Units.
This course will provide a hands-on overview of methods for processing and analysis of functional magnetic resonance imaging data. Topics include preprocessing, statistical modeling, spatial normalization, statistical power analysis, multiple comparison correction, connectivity modeling, machine learning, and Bayesian modeling. The seminar will include hands-on analysis exercises in addition to lectures.

PSYCH 249. Large-Scale Neural Network Modeling for Neuroscience. 1-3 Unit.
Introduction to designing, building, and training large-scale neural networks for modeling brain and behavioral data, including: deep convolutional neural network models of sensory systems (vision, audition, somatosensation); variational and generative methods for neural interpretation; recurrent neural networks for dynamics, memory and attention; interactive agent-based deep reinforcement learning for cognitive modeling; and methods and metrics for comparing such models to real-world neural data. Attention will be given both to established methods as well as cutting-edge techniques. Students will learn conceptual bases for deep neural network models and will also implement learn to implement and train large-scale models in Tensorflow using GPUs. Requirements: Fluency in Unix shell and Python programming; familiarity with differential equations, linear algebra, and probability theory; priori experience with modern machine learning concepts (e.g. CS229) and basic neural network training tools (eg. CS230 and/or CS231n). Prior knowledge of basic cognitive science or neuroscience not required but helpful.
Same as: CS 375

PSYCH 249L. Workshop on Incremental Language Processing. 1 Unit.
Language is processed incrementally over time. This has consequences for language comprehension, production, acquisition, and change, all of which occur at different timescales. What is the role of time in language? The class will be based around visiting lectures by major researchers in this area, along with meetings to prepare for their visits by discussing key readings. May be repeated for credit.
Same as: LINGUIST 249L

PSYCH 250. High-level Vision: From Neurons to Deep Neural Networks. 1-3 Unit.
Interdisciplinary seminar focusing on understanding how computations in the brain enable rapid and efficient object perception. Covers topics from multiple perspectives drawing on recent research in Psychology, Neuroscience, and Computer Science. Emphasis on discussing recent empirical findings, methods and theoretical debates in the field.
Same as: CS 431

PSYCH 250A. High-level Vision: From Neurons to Deep Neural Networks. 1-2 Unit.
This advanced level seminar is an interdisciplinary course focusing on understanding how computations in the brain enable rapid and efficient object perception. The course will cover topics from multiple perspectives drawing on recent research in neuroscience, computer science and psychology. Emphasis will be placed on examining recent findings pertaining to computational theories of high-level vision, ongoing debates in the field, and discussion of recent empirical findings.

PSYCH 251. Experimental Methods. 3 Units.
Graduate laboratory class in experimental methods for psychology, with a focus on open science methods and best practices in behavioral research. Topics include experimental design, data collection, data management, data analysis, and the ethical conduct of research. The final project of the course is a replication experiment in which students collect new data following the procedures of a published paper. The course is designed for incoming graduate students in psychology, but is open to qualified students from other programs who have some working knowledge of the R statistical programming language. Requirement: Psych 10/Stats 60 or equivalent.
Same as: SYMSYS 195E

PSYCH 252. Statistical Methods for Behavioral and Social Sciences. 5 Units.
This course offers an introduction to advanced topics in statistics with the focus of understanding data in the behavioral and social sciences. It is a practical course in which learning statistical concepts and building models in R go hand in hand. The course is organized into three parts: In the first part, we will learn how to visualize, wrangle, and simulate data in R. In the second part, we will cover topics in frequentist statistics (such as multiple regression, logistic regression, and mixed effects models) using the general linear model as an organizing framework. We will learn how to compare models using simulation methods such as bootstrapping and cross-validation. In the third part, we will focus on Bayesian data analysis as an alternative framework for answering statistical questions. Please view course website: https://psych252.github.io/. Open to graduate students only. Requirement: Psych 10/Stats 60 or equivalent.

PSYCH 253. Advanced Statistical Modeling. 3 Units.
Introduction to high-dimensional data analysis and machine learning methods for use in the behavioral and neurosciences, including: supervised methods such as SVMs, linear and nonlinear regression and classifiers, and regularization techniques; statistical methods such as bootstrapping, signal detection, factor analysis, and reliability theory; metrics for model/data comparison such as representational similarity analysis; and unsupervised methods such as clustering. Students will learn how to both use existing statistical data analysis packages (such as scikit-learn) as well to build, optimize, and estimate their own custom models using an optimization framework (such as Tensorflow or Pytorch). Requirement: Psych 251. Familiarity with python programming and multivariable calculus and linear algebra (Math 51) highly recommended.

PSYCH 254. Affective Neuroscience. 3 Units.
Theory and research. Comparative and human research approaches map affective function to neuroanatomical and neurochemical substrates. Prerequisite: consent of instructor.

PSYCH 255. Seminar on Motivation. 3 Units.
Selective overview of the scientific study of motivation. Our focus is on interesting, experimentally tractable ideas. Meetings will be discussion based.

PSYCH 256. Race at Work. 3-5 Units.
In this practicum, students will examine how race works in a variety of institutional spaces by participating in community partnerships relevant to criminal justice, education, economic development, or health. Limited enrollment. Prerequisite for undergraduates: Psych 1, Psych 70, and one of the following: Psych 150, Psych 180, Psych 298, Psych 103, Psych 135, Psych 30N, or Psych 138.

PSYCH 258. Graduate Seminar in Social Psychology Research. 1-3 Unit.
For students who are already or are planning to become involved in research on social construal and the role that it plays in a variety of phenomena, notably the origin and escalation of conflict.

PSYCH 259. Race and Crime. 3 Units.
The goal of this course is to examine social psychological perspectives on race, crime, and punishment in the United States. Readings will be drawn not only from psychology, but also from sociology, criminology, economics, and legal studies. We will consider the manner in which social psychological variables may operate at various points in the crimina; justice system- from policing, to sentencing, to imprisonment, to re-entry. Conducted as a seminar. Students interested in participating should attend the first session and complete online application for permission at https://goo.gl/forms/CAut7RKX6MewBIuG3.
Same as: CSRE 150A, PSYCH 150

PSYCH 260. Seminar on Emotion. 3 Units.
This undergraduate and graduate seminar will examine ancient Greek philosophical and contemporary psychological literatures relevant to emotion. Questions to be investigated include: What is the nature of emotions? What is the appropriate place in our lives for emotions? How should we manage our emotions? Do the emotions threaten the integrity of the agent? Meetings will be discussion oriented. Prerequisite: consent of instructor.
Same as: PHIL 375G, PSYCH 160

PSYCH 262. Measurement and the Study of Change in Social Science Research. 1-5 Unit.
This course is a survey of methodological issues associated with the measurement of psychological constructs and processes of change. General areas to be covered include use of latent variable models (structural equation modeling), classical test theory, generalizability theory, principal component analysis, factor analysis, item response theory and how these models facilitate and/or constrain the study of change processes. Students will work through application/implementation of the models through hands-on analysis of simulated and empirical data, acquire experiences in the formulation of research questions and study designs that are appropriately tethered to the different theoretical perspectives invoked by the different models.

PSYCH 263. Cognitive Neuroscience: Vision. 3 Units.
Decision, categorization. Bayesian inference, working memory, attention, cognitive control, conscious perception and awareness. The neural basis for all of these cognitive functions have been extensively studied in the domain of vision. Why vision? Because a great deal of scientific inquiry has delineated both the behavioral and physiological aspects of basic sensory processing in vision. Because of this, cognitive neuroscience questions can be precisely formulated in the context of vision. As a result we have some of the best answers to the question of what neural mechanisms underlie cognitive functions in the domain of vision.
The course will combine lectures and in-depth discussions of primary literature to develop key concepts in the neuroscience of vision and how these concepts have been built on to understand the neural basis of higher cognition. Guest instructors will include Bill Newsome, Tirin Moore and Kalanit Grill-Spector.

PSYCH 264. Unleashing Personal Potential: Behavioral Science and Design Thinking Applied to Self. 2-4 Units.
This course facilitates the application of the methods, theories, and findings of behavioral science to students own lives and improvement projects. It does so by combining behavioral science with a design thinking approach. You will learn to identify your potential, navigate to achieve it, and stay resilient during the journey. Students will design their own action plans, define goals and prototype strategies to test them, in an iterative feedback cycle. Our course thus blends two intellectual streams that seldom intersect: behavioral science and design thinking.
Same as: EDUC 426

PSYCH 265. Social Psychology and Social Change. 2-3 Units.
The course is intended as an exploration of the major ideas, theories, and findings of social psychology and their applied status. Special attention will be given to historical issues, classic experiments, and seminal theories, and their implications for topics relevant to education. Contemporary research will also be discussed. Advanced undergraduates and graduate students from other disciplines are welcome, but priority for enrollment will be given to graduate students. In order to foster a vibrant, discussion-based class, enrollment will be capped at 20 students. Interested students should enroll in the class through simple enroll or axess. There will be an application process on the first day of class if there is overwhelming interest. Please contact the course TA, Isabelle Tay (isabelletay[at]stanford.edu), if you have any further questions.
Same as: EDUC 371

PSYCH 266. Current Debates in Learning and Memory. 1-3 Unit.
Memory is not a unitary faculty, but consists of multiple forms of learning and remembering. The cognitive and neural architectures of memory, focusing on the application of functional brain imaging (primarily fMRI and ERP). Psych 45 and Psych 169 required if undergraduate student.

PSYCH 267. Brain Networks. 3 Units.
An essential aspect of the brain is its complex pattern of connectivity between neurons across different areas. This course will provide a comprehensive overview of the networks of the brain, analyzed from a range of standpoints from the microscopic to the macroscopic, with a particular focus on the organization of the human brain. Specific topics include brain anatomy, connectomics, structural and functional neuroimaging, graph theory and network science, dynamic models, and causal inference. The course will comprise a combination of lectures, paper discussions, and hands-on analysis exercises. The first session each week will be composed of lecture and background, and the second session will be focused on discussion and hands-on analyses, with students assigned to lead the discussion sessions. Prerequisites: Basic knowledge of neuroscience (equivalent to Psych 50A). A moderate level of programming experience will be required for hands-on exercises and problem sets. Primary exercises will be in Python.
Same as: PSYCH 162

PSYCH 268. Emotion Regulation. 3 Units.
(Graduate students register for 268.) The scientific study of emotion regulation. Topics: historical antecedents, conceptual foundations, autonomic and neural bases, individual differences, developmental and cultural aspects, implications for psychological and physical health. Focus is on experimentally tractable ideas.
Same as: PSYCH 168

PSYCH 269. Graduate Seminar in Affective Science. 1 Unit.
May be repeated for credit. Prerequisite: graduate standing in Psychology.

PSYCH 270. The Self: Representations and Interventions. 3 Units.
We will examine research and theory on mental models of the self, others, and the social world; how these develop; and how interventions can alter or leverage these mental models to improve human functioning and outcomes.

PSYCH 271. Communicating Psychology. 3 Units.
A graduate seminar on writing and communication of psychological research, both for our colleagues and audiences outside the field.

PSYCH 272. Psychology and American Indian/Alaska Native Mental Health. 3-5 Units.
Western medicine's definition of health as the absence of sickness, disease, or pathology; Native American cultures' definition of health as the beauty of physical, spiritual, emotional, and social things, and sickness as something out of balance. Topics include: historical trauma; spirituality and healing; cultural identity; values and acculturation; and individual, school, and community-based interventions. Prerequisite: experience working with American Indian communities.
Same as: EDUC 340, NATIVEAM 240

PSYCH 273. Changing Mindsets and Contexts: How to Create Authentic, Lasting Improvement. 3 Units.
Many wise interventions offer people new beliefs but have not addressed the contexts in which those beliefs will be situated and implemented. This can limit the interventions¿ effectiveness. In this course, we will explore how combining mindset change with consideration of, or change to, the setting can enhance the authenticity of the intervention and the duration of its effects. Topics will include contextual boundary conditions on direct-to-student treatments, the nature of contextual ¿affordances, ¿ and the creation of contextual affordances.

PSYCH 274. Graduate Research Workshop on Psychological Interventions. 3 Units.
Psychological research has the potential to create novel interventions that promote the public good. This workshop will expose students to psychologically 'wise' intervention research and to support their efforts to conduct such interventions, especially in the context of education, broadly conceived, as well as other areas. The first part of the class will address classic interventions and important topics in intervention research, including effective delivery mechanisms, sensitive behavioral outcomes, the role of theory and psychological process, and considerations of the role of time and of mechanisms that can sustain treatment effects over time. In the second part of the class, students will present and receive feedback on their own ongoing and/or future intervention research. Prerequisite: Graduate standing in Psychology or Education, or consent of instructor.
Same as: EDUC 287

PSYCH 275. Graduate Research. 1-15 Unit.
Intermediate-level research undertaken with members of departmental faculty. Prerequisite: consent of instructor.nn (Staff).

PSYCH 276. Graduate Research. 1-15 Unit.
Intermediate-level research undertaken with psychology faculty. Prerequisite: consent of instructor.

PSYCH 277. What Is a Mindset and How Does it Work?. 3-4 Units.
What is a mindset and how does it work? This seminar will explore existing and ongoing research, ranging from research on mindsets about talent and personality to mindsets about disease, stress and aging. We will focus on key questions related to the advancement of mindset science and intervention, including: how is ¿mindset¿ defined and how is it distinct from related constructs? What are the mechanisms through which mindsets exert effects on physiology and behavior? How do mindsets speak to the issues of the interplay of nature and nurture, body and mind, cognitions and emotion? How do mindsets function at the group, organization or cultural level? How are mindsets effectively changed? What are the limits of mindsets? This seminar is offered to graduate students and others with the instructors¿ permission.

PSYCH 278. Social Cognitive Development: New Methods for Answering Old Questions. 1-2 Unit.
Novel technology can fuel new discoveries and generate new questions for future research, for instance, the use of video cameras has transformed the field of developmental psychology. More recently, the use of neuroimaging techniques (such as fMRI) to study the developing brain has been gaining lots of interest among developmental psychologists. What are the promises and challenges of using these neuroimaging methods to study cognitive development? This course will be a discussion-based seminar class (with some lectures from the instructor and from students) aimed for graduate students who are interested in learning more about how these methods can help address questions about cognitive development, with a particular focus on children's developing understanding of their social world.

PSYCH 280. Foundations and Contemporary Topics in Social-Educational Psychology. 2-4 Units.
At its core, social psychology is concerned with educational problems because it addresses the problem of how to change hearts and minds in lasting ways. This course explores the major ideas, theories, and findings of social psychology, their educational implications, and the insights they shed into how and when people change. There will be a focus on educational issues. Intersections with other disciplines, in particular social development and biology, will be addressed. Historical tensions and traditions, as well as classic studies and theories, will be covered. Graduate students from other disciplines, and advanced undergraduates, are welcome (class size permitting).
Same as: EDUC 307

PSYCH 281. Practicum in Teaching. 1-5 Unit.
Enrollment limited to teaching assistants in selected Psychology courses. May be repeated for credit.

PSYCH 282. Practicum in Teaching PSYCH 1. 1 Unit.
Pedagogical training focused on teaching introductory psychology: creating engaging and inclusive lesson plans and activities, providing helpful feedback to students, responding to student feedback, and supporting student learning in 1:1 and small group interactions. Second quarter focuses on designing and iterating section activities, giving and receiving peer feedback on teaching, and reflecting on teaching practices. Limited to current graduate PSYCH 1 Teaching Fellows. May be repeated for credit.

PSYCH 283A. SPARQshop: Social Psychological Answers to Real-world Questions. 3 Units.
Undergraduate and graduate students will work in teams to design, build, test, and distribute online toolkits that help practitioners solve real-world problems by applying social science. Graduate students can build toolkits for their own research. Students will learn how to assess the needs of practitioner audiences; write text, design graphics, and program activities for these audiences; prepare, deliver, and produce a TED-style online video; design surveys in Qualtrics; and build and user-test the toolkit. Readings and class discussions will include modules on design thinking, storytelling, science writing, information design, and impact evaluation. For an example of a toolkit in progress, please visit spacereface.org. Permission of instructor required.
Same as: PSYCH 180A

PSYCH 285. Graduate Seminar on Theory of Mind. 3 Units.
Theory of Mind ¿ the ability to reason and think about other minds ¿ has been a topic of extensive research and heated debates in the past few decades. The course will provide an in-depth overview of the major theories that have motivated empirical research. Students will read and discuss theoretical papers as well as empirical work that have supported or refuted these theories, and the latest research on Theory of Mind, from various disciplines including (but not limited to), cognitive development, comparative psychology, and cognitive neuroscience.

PSYCH 286. The Psychology of Racial Inequality. 3 Units.
Our topic is the psychology of racial inequality - thinking, feeling, and behaving in ways that contribute to racial stereotyping, prejudice, and discrimination, and how these processes in turn maintain and perpetuate inequality between racial groups. We will examine how these processes unfold at both the individual and the institutional levels. Throughout this course, you will familiarize yourself with the psychological perspectives, methods, and findings that help explain racial inequality, and we will explore ways to promote racial equality. The course will be conducted as a seminar, but most of what you learn will be through the readings and discussions. That is, this course is minimally didactic; the goal is to have you engage thoughtfully with the issues and readings spurred in part by sharing perspectives, confusions, and insights through writing and discussion. Each student will facilitate at least one class session by providing an introductory framework for the readings (~10-minute presentation with handouts that overviews the concepts, issues, and controversies). Together, we will broaden our knowledge base on the subject and explain, from a psychological perspective, the pervasiveness of racial inequality. Prerequisites: PSYCH 1 and PSYCH 10.
Same as: AFRICAAM 286, CSRE 186, PSYCH 186

PSYCH 287. Brain Machine Interfaces: Science, Technology, and Application. 1-3 Unit.
This course explores the current state of brain-machine interfaces: technologies that directly stimulate and/or record neural activity. Such interfaces are being used to treat nervous system disorders, including hearing, seeing, and motor dysfunction. We expect that the range of applications will expand over the next decade to other neurological conditions and to augmentation of function. The material we cover aims to explain some of the existing technology and to clarify its limitations and promise. The course organization is designed to develop new ideas and promote new collaborations for extending the reach of these technologies. The class will feature lecturers with expertise in brain-machine interfaces of various sorts or related technologies and methods, as well as directed readings and discussion about new work in the field. In the previous year lectures were given by: Brian Wandell, Daniel Palanker, Nikos Logothetis, John Oghalai, Stephen Baccus, Paul Nuyujukian, Dan Yoshor and Nick Melosh.
Same as: NSUR 287

PSYCH 288. Perspectives on Belonging. 3 Units.
How do people make sense of their relationship with a community or society and how does this affect their behavior and outcomes? We will examine classic and contemporary research and theory on what belonging is; how people draw inferences about their belonging in different contexts; cultural and social-group variation; and how belonging-related motivations affect diverse behaviors.

PSYCH 289. Advanced Longitudinal and Multivariate Methods in Social Science Research. 1-5 Unit.
This course offers a project-based orientation to methodological issues associated with the analysis of multivariate and/or longitudinal data in the social sciences. General areas to be covered include the manipulation/organization/description of the types of empirical data obtained in social science research, and the application/implementation of multivariate analysis techniques to those data. Students will, through hands-on analysis of their data, acquire experiences in the formulation of research questions and study designs that are appropriately tethered to a variety of advanced analytical methods. Limited to PhD students and consent of instructor.
Same as: COMM 365

PSYCH 290. Natural Language Processing & Text-Based Machine Learning in the Social Sciences. 4 Units.
Digital communications (including social media) are the largest data sets of our time, and most of it is text. Social scientists need to be able to digest small and big data sets alike, process it and extract psychological insight. This applied and project-focused course introduces students to a Python codebase developed to facilitate text analysis in the social sciences (see dlatk.wwbp.org -- knowledge of Python is helpful but not required). The goal is to practice these methods in guided tutorials and project-based work so that the students can apply them to their own research contexts and be prepared to write up the results for publication. The course will provide best practices, as well as access to and familiarity with a Linux-based server environment to process text, including the extraction of words and phrases, topics and psychological dictionaries. We will also practice the use of machine learning based on text data for psychological assessment, and the further statistical analysis of language variables in R. Familiarity with Python is helpful but not required. Basic familiarity with R is expected. The ability to wrangle data into a spreadsheet-like format is expected. A basic introduction to SQL will be given in the course. Familiarity with SSH and basic Linux is helpful but not required. Understanding of regression is expected.
Same as: SOC 281, SYMSYS 195T

PSYCH 291. Causal Cognition. 3 Units.
Causality is central to our understanding of the world and of each other. We think causally when we predict what will happen in the future, infer what happened in the past, and interpret other people's actions and emotions. Causality is intimately linked to explanation -- to answering questions about why something happened. In this discussion-based seminar class, we will first read foundational work in philosophy that introduces the main frameworks for thinking about causation. We will then read some work on formal and computational theories of causation that was inspired by these philosophical frameworks. Equipped with this background, we will study the psychology of causal learning, reasoning, and judgment. We will tackle questions such as: How can we learn about the causal structure of the world through observation and active intervention? What is the relationship between causal reasoning and mental simulation? Why do we select to talk about some causes over others when several causes led to an outcome? Toward the end of the course, we will discuss how what we have learned in psychology about causation may be useful for other fields of inquiry, such as legal science as well as machine learning and artificial intelligence.

PSYCH 292. Special Topics in Emotion Regulation. 1 Unit.
This seminar will consider special topics in emotion regulation. Admission is by invitation only.

PSYCH 293. What makes a good explanation? Psychological and philosophical perspectives. 4 Units.
Explanation is a topic of longstanding interest in philosophy and psychology, and has recently attracted renewed attention due to novel challenges in interpreting and interacting with relatively opaque AI systems. In this graduate seminar, we will study the science and engineering of explanations, combining perspectives from philosophy, psychology, AI, and the legal sciences. We will ask questions like: When do we ask for explanations? What makes a good explanation? How can we build machines that can understand and explain? This interdisciplinary seminar is co-taught by Thomas Icard (Philosophy) and Tobias Gerstenberg (Psychology). We will meet twice a week (Tuesdays and Thursdays 10:30am-11:50am) to discuss research articles from a range of disciplines. Students are expected to write responses based on their readings, lead the discussion on one of the papers, and actively participate in the discussion otherwise. As a final project, students will outline a novel study on explanation that makes an empirical, modeling, or theoretical contribution. Participation is restricted to a maximum of 12 graduate students (by application). The course website, with information about application, can be found here: phil350.stanford.edu.
Same as: PHIL 350

PSYCH 295. Seminar on the Science of Meditation. 3 Units.
What is meditation? What immediate and longer-term effects does this practice have on cognition? What are the mechanisms of these effects? In this small seminar we will try to gain insight into these questions by reading and discussing recent papers drawn from psychology and neuroscience. Emphasis will be placed on careful consideration of the evidence within papers and theoretical synthesis across papers. We will also use ancient and modern studies of meditation to reflect on possibilities for the scientific study subjective experience.May be repeat for credit.

PSYCH 298. Advanced Studies in Health Psychology. 3 Units.
This course provides an overview of the major concepts and questions in the field of health psychology. Through reading, lecture and interactive discussion, students have the opportunity to explore and think critically about a number of psychological and social influences in determining health including: emotions, beliefs, relationships, stress, motivation, behavior change, spirituality, culture, and social influence. Students will also discuss the role of important and current topics in the field of health psychology and medicine such as the changing role of the patient and provider relationship, health-care policy and the environment, placebo effects, wearable health devices, and the use of technology in medicine. Course is offered to graduate students and advanced undergraduates with permission from the instructor.

PSYCH 373. Research Seminar: Mind, Brain, and Computation. 1 Unit.
Faculty and student research presentations focusing on work linking cellular, systems, cognitive, behavioral, and computational neuroscience. Limited to affiliates of the Center for Mind, Brain and Computation. May be repeated for credit.

PSYCH 383. International Conflict Resolution. 2 Units.
(Formerly IPS 250) (Same as LAW 5009; formerly Law 656) This seminar examines the challenges of managing and resolving intractable political and violent intergroup and international conflicts. Employing an interdisciplinary approach drawing on social psychology, political science, game theory, and international law, the course identifies various tactical, psychological, and structural barriers that can impede the achievement of efficient solutions to conflicts. We will explore a conceptual framework for conflict management and resolution that draws not only on theoretical insights, but also builds on historical examples and practical experience in the realm of conflict resolution. This approach examines the need for the parties to conflicts to address the following questions in order to have prospects of creating peaceful relationships: (1) how can the parties to conflict develop a vision of a mutually bearable shared future; (2) how can parties develop trust in the enemy; (3) how can each side be persuaded, as part of a negotiated settlement, to accept losses that it will find very painful; and (4) how do we overcome the perceptions of injustice that each side are likely to have towards any compromise solution? We will consider both particular conflicts, such as the Israeli-Palestinian conflict and the South African transition to majority rule, as well as cross-cutting issues, such as the role international legal rules play in facilitating or impeding conflict resolution, the ways intragroup dynamics affect intergroup conflict resolution efforts, and the role of criminal accountability for atrocities following civil wars. Special Instructions: Section 01: Grades will be based on class participation, written assignments, and a final exam. Section 02: Up to five students, with consent of the instructor, will have the option to write an independent research paper for Research (R) credit in lieu of the written assignments and final exam for Section 01. After the term begins, students (max 5) accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor.
Same as: INTLPOL 250

PSYCH 459. Frontiers in Interdisciplinary Biosciences. 1 Unit.
Students register through their affiliated department; otherwise register for CHEMENG 459. For specialists and non-specialists. Sponsored by the Stanford BioX Program. Three seminars per quarter address scientific and technical themes related to interdisciplinary approaches in bioengineering, medicine, and the chemical, physical, and biological sciences. Leading investigators from Stanford and the world present breakthroughs and endeavors that cut across core disciplines. Pre-seminars introduce basic concepts and background for non-experts. Registered students attend all pre-seminars; others welcome. See http://biox.stanford.edu/courses/459.html. Recommended: basic mathematics, biology, chemistry, and physics.
Same as: BIO 459, BIOC 459, BIOE 459, CHEM 459, CHEMENG 459

PSYCH 801. Master's TGR Project. 0 Units.
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PSYCH 802. PhD TGR Dissertation. 0 Units.
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PUBLIC POLICY

Courses offered by the Public Policy Program are listed under the subject code PUBLPOL on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=PUBLPOL&filter-catalognumber-PUBLPOL=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=PUBLPOL&filter-catalognumber-PUBLPOL=on) ExploreCourses website (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=PUBLPOL&filter-catalognumber-PUBLPOL=on).

The Public Policy program offers a Bachelor of Arts, an honors program, a minor for undergraduates, a coterminal M.A. in Public Policy, a two-year professional Master of Public Policy (M.P.P.) degree, and a one-year non-professional Master of Arts in Public Policy (M.A.).

Admission to the M.P.P. and M.A. programs is restricted to current Stanford undergraduates and graduate students, Stanford alumni (who have graduated within the past 5 years), and external applicants seeking a joint graduate degree.

Mission of the Undergraduate Program in Public Policy

The mission of the undergraduate program in Public Policy is to provide students with the concepts and tools used in evaluating policy options and outcomes, and to prepare students for entry-level positions in organizations concerned with such analysis. The focus is chiefly on issues such as health, education, environmental, regulation, and science and technology policy, applicable anywhere in the world.

Courses in the major provide students with a background in economics and quantitative methods, political science, law, philosophy, ethics, organizational behavior, and social psychology. Economics and quantitative analyses are central to but not sufficient for modern public policy analysis; political science, law, philosophy, organizational behavior, and psychology are among other necessary disciplinary perspectives. Political science offers insights into the decision-making process and information needs of a democracy. Political philosophy and ethics form the foundations of public policy. Organizational behavior focuses on the decisions made outside the market environment in hierarchies, bureaucracies, and teams.

Seniors have a research capstone requirement consisting either of an honors thesis or participation in a team practicum project, conducting applied policy research for an outside client, typically a nonprofit or government agency. Students majoring in Public Policy are prepared for careers in a wide variety of fields, including elected or appointed public office; business, law, and governmental agencies; research institutes; or for further study in graduate programs.

Learning Outcomes (Undergraduate)

The Public Policy Program expects its undergraduate majors to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the program. Students are expected to:

1. Demonstrate knowledge and understanding of public policy analytical tools.
2. Evaluate applied theoretical and empirical work in policy-relevant research.
3. Apply skills and knowledge acquired in the curriculum to analyze policy issues and make policy recommendations.
4. Communicate complex ideas clearly and persuasively in written and oral forms.
5. Demonstrate mastery of the above outcomes in the senior capstone project.

Mission of the Graduate Program in Public Policy

The mission of the graduate program in Public Policy is to provide students with the advanced skills necessary to assess the performance of alternative approaches to policy making and implementation, evaluate program effectiveness, understand the political constraints faced by policy-makers, and appreciate the conflicts in fundamental human values that often animate policy debate. After completing the graduate core curriculum, students apply these skills by focusing their studies in a two-quarter, 10-unit practicum for the M.P.P. degree or a 5-unit master's thesis for the M.A. degree. Each student in the M.P.P. program also completes at least one concentration tailored to the student's primary degree program or the student's interests and skills. Current concentrations include:

- Computational Public Policy
- Education Policy
- Health Care Policy
- International and National Security Policy
- Legal and Regulatory Intervention
- Political and Moral Philosophy
- Resources, Environment, and Energy Policy
- Science and Technology Policy
- Self-designed (requires detailed statement of study goals, relationship of each proposed course to those goals, and commitment by a supervising faculty member)
- Urban and Regional Policy

Graduate Degrees Offered

The graduate program in Public Policy offers two master's degrees:

- Master of Public Policy (M.P.P.), a two-year professional degree program; available to current Stanford students and Stanford alumni (who have graduated within the past five years)
- Master of Arts (M.A.), a one-year program, not intended as a professional degree; available to current Stanford students

Joint Degree Programs

The following joint degree programs, which permit students to complete requirements for two degrees with a reduced number of total residency units, are also offered:

- Juris Doctor with a Master of Public Policy (J.D./M.P.P.)
- Juris Doctor with an M.A. in Public Policy (J.D./M.A.)
- Doctor of Medicine with a Master of Public Policy (M.D./M.P.P.)
- Doctor of Philosophy in Economics, Education, Management Science and Engineering, Psychology, Sociology or Structural Biology with a Master of Public Policy (Ph.D./M.P.P.)
- Master of Business Administration with a Master of Public Policy (M.B.A./M.P.P.)
- Master of Arts in Education (Policy, Organization, and Leadership subplan) with a Master of Public Policy (M.A./M.P.P.)
- Master of Arts in International Policy with a Master of Public Policy (M.A./M.P.P.)
- Master of Science in Management Science and Engineering with a Master of Public Policy (M.S./M.P.P.)

Requirements for the joint degrees differ from the requirements of completing the two degrees separately. See the "Master's

Degrees in Public Policy (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/publicpolicy/#masterstext)" section for more details.

University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this Bulletin.

Learning Outcomes (Graduate)

The purpose of the master's program is to develop knowledge and skills in public policy and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

The M.P.P. or M.A. degree is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in public policy. Through completion of advanced course work and rigorous skills training, the graduate program prepares students to make original contributions to the knowledge of public policy and to interpret and present the results of such research.

Bachelor of Arts in Public Policy

The Public Policy undergraduate major develops the skills necessary for understanding the political constraints faced by policy makers, assessing the performance of alternative approaches to policy implementation, evaluating the effectiveness of policies, and appreciating the sharp conflicts in fundamental human values that often animate the policy debate.

There are four course elements to the major: preparatory, core, concentration, and senior capstone. Freshman and sophomore years are generally devoted to completing preparatory courses offered in economics, math, and psychology. After completing core courses primarily during the sophomore and junior years, students apply these skills by focusing their studies in one of several areas of concentration. The areas of concentration address a specific field of public policy, various types of institutions, or a deeper development of the tools of policy analysis. Seniors may complete the senior capstone either by participating in a practicum, a team policy research project for an outside client, and/or by writing an honors thesis.

Completion of the Bachelor of Arts degree in Public Policy requires a minimum of 77 units of course work.

Students must complete the Public Policy core, concentration, and the senior capstone requirement for a letter grade and with an overall grade point average of 2.3 (C+) or higher.

Public Policy students are encouraged to secure a faculty adviser within the first two quarters in the major, and must secure a faculty adviser no later than the end of Winter Quarter of the junior year. The director, student services staff, and peer advisers can assist by suggesting suitable faculty advisers. Advisers must be approved by the program director. The adviser need not be affiliated with the Public Policy program, but does need to be a member of Stanford's Academic Council.

The Public Policy program encourages students to attend the Bing Stanford in Washington Program (http://bsiw.stanford.edu/) and to participate in appropriate Stanford internship programs, especially those available through the Haas Center for Public Service (http://haas.stanford.edu/) and Stanford in Government (http://sig.stanford.edu/).

Preparatory Courses (34 units)

		Units
ECON 1	Principles of Economics	5
ECON 50	Economic Analysis I	5
Select one of the following:		5
PUBLPOL 51	Microeconomics for Policy	
or ECON 51	Economic Analysis II	
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	5
ECON 102B	Applied Econometrics	5
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	5-6
or CME 100	Vector Calculus for Engineers	
or CME 100A	Vector Calculus for Engineers, ACE	
Select one of the following:		4
MS&E 180	Organizations: Theory and Management	4
or PSYCH 70	Self and Society: Introduction to Social Psychology	
or PSYCH 138	Wise Interventions	
or PUBLPOL 305B	Public Policy and Social Psychology: Implications and Applications	

At most 10 units of preparatory course work may be taken as credit/no credit. Between ECON 50 and ECON 51/ PUBLPOL 51, no more than 5 units can be taken for credit/no credit. Between ECON 102A and ECON 102B, no more than 5 units can be taken for credit/no credit.

Core Courses (23-25 units)

All core courses must be completed for a letter grade. Variable unit courses must be taken for 5 units.

		Units
PUBLPOL 101	Introduction to American Politics and Policy: The Good, The Bad, and The Ugly	5
PUBLPOL 104	Economic Policy Analysis	5
Select one of the following ethics courses:		5
PUBLPOL 103C	Justice	
PUBLPOL 103D	Ethics and Politics of Public Service	
PUBLPOL 134	Ethics on the Edge: Business, Non-Profit Organizations, Government, and Individuals (Students who take PUBLPOL 134 must also take PUBLPOL 103F Ethics of Truth in a Post-Truth World)	
Select one of the following WIM courses:		5
PUBLPOL 106	Law and Economics	
or PUBLPOL 154	Politics and Policy in California	
or PUBLPOL 156	Health Care Policy and Reform	
or PUBLPOL 200S	Senior Honors Seminar	
Select one of the following advanced empirical methods courses:		3-5
PUBLPOL 105	Empirical Methods in Public Policy (preferred course)	
or ECON 102C	Advanced Topics in Econometrics	
or PUBLPOL 303A	Applied Econometrics for Public Policy	
or STATS 202	Data Mining and Analysis	

Concentration (15 units)

Majors must complete at least 15 units of course work for a letter grade in an area of concentration. This post-core course work must be approved by the student's faculty adviser and the program director no later than the end of Spring Quarter of the junior year. Any subsequent changes made to a student's concentration must be approved by the student's faculty

adviser. Students select their concentration in Axess as a degree subplan. Subplans are printed on transcripts and diplomas. Areas of concentration include, but are not limited to:

- Advanced Policy Analysis
- Computational Policy Analysis
- Design of Public Institutions
- Development and Growth Policies
- Discrimination, Crime, and Poverty Policy
- Education Policy
- Health Care Policy
- International and National Security Policy
- Law and the Legal System
- Political and Moral Philosophy
- Resources, Environment, and Energy Policy
- Science and Technology Policy
- Urban and Regional Policy

Capstone Research Requirement

Seniors are required to demonstrate competency in applied policy research. This requirement is fulfilled either by participating in a practicum project in which small student teams analyze real world policy problems faced by a government or nonprofit organization and produce a report for use by the client *or* by writing an honors thesis. A seminar for honors students is offered Autumn Quarter (PUBLPOL 200H Senior Honors Seminar, 3 units). The Practicum is offered Autumn, Winter and Spring quarters (PUBLPOL 200A Senior Practicum; PUBLPOL 200B Senior Practicum; and PUBLPOL 200C Senior Practicum). The capstone research requirement must be completed for a letter grade.

Honors Program

The Public Policy Program offers students the opportunity to pursue honors work during the senior year. The honors thesis must address a policy issue and demonstrate mastery of relevant analytical tools.

Eligibility and Preparation

In order to be eligible to write an honors thesis, students must achieve a grade point average (GPA) of 3.5 or above in the Public Policy core courses and concentration courses taken by the time of application for the honors program. If accepted, the student must maintain a GPA of 3.5 in the course requirements for a B.A.H. in Public Policy (Public Policy core courses, concentration courses, PUBLPOL 200H Senior Honors Seminar and PUBLPOL 199 Senior Research). Please note that courses not taken at Stanford are not included in calculating the GPA.

Students who intend to pursue honors work should plan their academic schedules so that most of the core courses are completed before the beginning of the senior year, and all of the core and concentration courses are completed by the end of Winter Quarter of senior year. It is strongly encouraged that students pursuing honors work complete their advanced empirical methods course (PUBLPOL 105, ECON 102C, PUBLPOL 303D, or STATS 202) by the end of Spring Quarter of the junior year. All students pursuing honors are required to take PUBLPOL 200H Senior Honors Seminar during Autumn Quarter of their senior year. This scheduling gives students both the time and the necessary course background to complete their honors thesis during senior year. In addition, prospective honors students are encouraged to enroll in the PUBLPOL 197 Junior Honors Seminar and attend Bing Honors College. PUBLPOL 197 focuses on developing a research plan and learning the skills necessary to complete an honors thesis.

Application Process

A student must submit a completed application to the Public Policy Program office with a brief description of the thesis no later than the Wednesday of the third week of Autumn Quarter. Honors applications are found online (https://publicpolicy.stanford.edu/academics/undergraduate/forms/). Prior to submitting an application to the honors program, the student must meet with the director of the honors program and obtain the sponsorship of a faculty member who approves the thesis description and agrees to serve as a thesis adviser. Students intending to write a thesis involving more than one discipline may wish to have two advisers, at least one of whom is affiliated with the Public Policy Program. Staff, executive committee members, lecturers, and affiliated faculty in Public Policy are available to provide assistance in selecting a thesis topic and adviser. At least one of the faculty advisers must be a member of Stanford's Academic Council. A student's proposal must be approved by the thesis adviser and the director of the honors program.

Enrollment and Milestones

During senior year, the student must enroll in at least 8 but no more than 15 units of PUBLPOL 199 Senior Research. One of these units should be taken with the director of the honors program in Winter Quarter to account for a series of biweekly check ins. The rest should be taken with the thesis adviser. The student needs to contact the program office to have his or her thesis adviser listed as a 199 instructor. An 'N' grade is given by the adviser in quarters prior to Spring when the thesis is completed and presented. All PUBLPOL 199 units must receive a final grade of at least a 'B+' in order to graduate with honors. In addition, the student must maintain a GPA of 3.5 in the course requirements for a B.A.H. in Public Policy (Public Policy core courses, concentration courses, PUBLPOL 200H Senior Honors Seminar and PUBLPOL 199 Senior Research). Courses not taken at Stanford are not included in calculating the GPA in order to graduate with honors from the Public Policy Program.

		Units
Public Policy Core Courses		23-25
Concentration		15
PUBLPOL 200H	Senior Honors Seminar	3
PUBLPOL 199	Senior Research	8-15

A description of methodology is due by February 1, preliminary results by March 1, and a first draft of the thesis by the first day of classes in spring quarter, always with copies to the thesis adviser and the director of the honors program. The final version of the thesis must be submitted electronically to the thesis adviser, the director of the honors program and the Public Policy Program office. In order to be considered for University and department awards, the final thesis must be submitted no later than the second Wednesday in May. All other theses must be submitted by the last Friday in May. Each student will give an oral presentation of their thesis.

Graduation with honors requires that the thesis be approved by both the adviser and the honors program director. The role of the honors program director is to assure that the thesis addresses an issue of public policy and satisfies the program's standards of excellence. However, the grade for the honors thesis (PUBLPOL 199 Senior Research units) is determined by the adviser.

Minor in Public Policy

The Public Policy Program offers a minor that is intended to provide undergraduates in other majors with interdisciplinary training in applied social sciences.

Students who pursue the minor are required to take the courses listed below. Because University rules prohibit double-counting non-introductory courses, the requirements for a minor differ according to the student's major requirements. All students must take, without double counting, at lease six courses for three units each toward the minor. It is required that students review their course plans with a program

administrator. *Note:* Students are permitted to double-count ECON 1 Principles of Economics.

Public Policy students are never required to take a course that duplicates material they have already mastered. Students may, by petition, substitute a different course for a requirement whose material would be duplicative. This flexibility does not reduce the number of units required for the minor.

Students who pursue the minor must complete the Multiple Major/Minor Form (http://studentaffairs.stanford.edu/sites/default/files/registrar/files/MajMin_MultMaj.pdf) and have it reviewed by all applicable departments/programs the beginning of the quarter in which the degree is conferred.

Required Course Work

		Units
ECON 1	Principles of Economics	5
ECON 50	Economic Analysis I	5
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	5
ECON 102B	Applied Econometrics	5
PUBLPOL 104	Economic Policy Analysis	5
Select one or more of the following depending on major requirements:		5
PUBLPOL 101	Introduction to American Politics and Policy: The Good, The Bad, and The Ugly	
PUBLPOL 105	Empirical Methods in Public Policy	
or ECON 102C	Advanced Topics in Econometrics	
PUBLPOL 134	Ethics on the Edge: Business, Non-Profit Organizations, Government, and Individuals (Students who take PUBLPOL 134 must also take PUBLPOL 103F Ethics of Truth in a Post-Truth World)	3-5
or PUBLPOL 103C	Justice	
PUBLPOL 106	Law and Economics	
or PUBLPOL 154	Politics and Policy in California	
or PUBLPOL 156	Health Care Policy and Reform	

At most, 10 units of course work may be taken as credit/no credit. Between ECON 102A and ECON 102B, no more than 5 units can be taken for credit/no credit.

Students who satisfy major requirements by taking ECON 50 and an introductory course in statistics such as ECON 102A or STATS 60 complete these requirements instead:

- PUBLPOL 105 Empirical Methods in Public Policy or
- ECON 102C Advanced Topics in Econometrics

Coterminal M.A. in Public Policy

The coterminal M.A. in Public Policy is a degree program designed to impart the basic analytical tools of public policy analysis, or to permit Public Policy majors to specialize in an applied field of policy analysis. Most students complete their M.A. in a fifth year at Stanford; occasionally, students may be able to complete both their B.A. and coterminal M.A. in the fourth year.

Undergraduates with strong academic records may apply for admission upon completion of 120 units, but no later than the quarter prior to the expected completion of the undergraduate degree. The University requires that units for a given course may not be counted to meet the requirements of more than one degree; that is, no units may be double-counted. However, Public Policy students are never required to take a course which duplicates material they have already mastered. Students may, by petition, substitute a different course for a requirement whose material would be duplicative. This flexibility does not reduce the number of units required for the coterminal M.A.

The coterminal M.A. is also a gateway to the M.P.P. degree program. Stanford undergraduates may apply to the coterminal M.A. in Public Policy and then, after one quarter in the M.A. program, apply to the M.P.P. program by submitting an application. Students accepted into the M.P.P. program must confer their bachelor's degree, submit the Graduate Authorization Petition in Axess, withdraw from the M.A. degree program, and complete the requirements for the 90-unit M.P.P. degree. This does not reduce the total number of units required for the bachelor's or master's degree. Earning the B.A. and M.P.P. typically takes at least five years. Students considering this option should be familiar with the University's coterminal degree policies and procedures and should consult the director and staff of the Public Policy Program early in their planning. There is a $125 fee for submitting the Graduate Authorization Petition to change the M.A. to the M.P.P degree.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken three quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to the graduate career. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

All courses counting towards the master's degree not considered core requirements must be approved by petition by the Public Policy Program.

Degree Requirements

All applicants should have completed, or currently be enrolled in, the required preparatory course work prior to applying. These courses do not count towards the 45-unit M.A. requirement:

		Units
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	5-6
or CME 100	Vector Calculus for Engineers	
or CME 100A	Vector Calculus for Engineers, ACE	
ECON 1	Principles of Economics	5
ECON 50	Economic Analysis I	5
ECON 51	Economic Analysis II	4-5
or ECON 52	Economic Analysis III	
or PUBLPOL 51	Microeconomics for Policy	

ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists (or equivalent)	5
ECON 102B	Applied Econometrics	5

To graduate with a coterminal M.A. in Public Policy, students must:

1. Follow one of three tracks (A, B, or C) through the program, as described below.
2. Take all courses applied to the coterminal master's degree for a letter grade (with the exception of PUBLPOL 311 Public Policy Colloquium which is only offered S/NC). For courses with variable units, coterminal students should, in their graduate career, enroll in the course for 4 units. Courses offered only for C/NC or other non-letter grade system may be applied upon approval of a petition to the program director. See the COVID-19 Policies (p. 2018) tab for details on grading policy for 2020-21.
3. Secure a faculty advisor by the end of the first quarter enrolled in the coterminal M.A. degree program. The director and student services staff can assist by suggesting suitable faculty advisors. The advisor need not be affiliated with the Public Policy Program, but does need to be a member of Stanford's Academic Council.
4. Achieve a cumulative grade point average (GPA) of 3.0 (B) or better for all courses taken towards the M.A.
5. Coterminal M.A. students who are admitted to the M.P.P. must transfer all applicable M.A. units to the M.P.P. degree.
6. Comply with all relevant University and program deadlines and policies.

Track A

Public Policy majors follow Track A, which consists of at least 45 units of course work, including:

1. 29 or more units in an area of concentration. The concentration is referred to as a degree subplan. Subplans are printed on the transcript and diploma and are elected via the Declaration or Change to a Field of Study form (http://studentaffairs.stanford.edu/sites/default/files/registrar/files/grad-subplan-change.pdf).
   Each concentration includes a set of gateway courses and a variety of electives. Gateway courses may vary year to year based on availability. Check the Master's Gateway and Electives tab to see the list of gateway courses. Students must present a coherent written study plan to support concentration course choices, designed in consultation with a faculty advisor and approved by the program director. At least one faculty advisor must be a member of the Academic Council.
   Current concentrations include:
   - Computational Public Policy
   - Education Policy
   - Health Care Policy
   - International and National Security Policy
   - Legal and Regulatory Intervention
   - Political and Moral Philosophy
   - Resources, Environment, and Energy Policy
   - Science and Technology Policy
   - Self-designed (requires detailed statement of study goals, relationship of each proposed course to those goals, and commitment by a supervising faculty member)
   - Urban and Regional Policy
2. Decision-Making Component - select one of the following courses:
   - LAW 7508 Problem Solving and Decision Making for Public Policy and Social Change
   - ECON 137 Decision Modeling and Information
   - GSBGEN 646 Behavioral Economics and the Psychology of Decision Making
   - OB 381 Conflict Management and Negotiation
3. All Public Policy graduate students are required to attend and enroll in three quarters of PUBLPOL 311 Public Policy Colloquium (3 units). Attendance and participation are mandatory.
4. Completion of PUBLPOL 309 Practicum or PUBLPOL 310 faculty-supervised internship or thesis (5-10 units).
5. All 45 units must be taken in upper division (100-level) courses, and at least 25 of those units must be at the graduate level (200-level and above).

Track B

Economics majors typically follow the requirements detailed below in Track C; however, some Economics majors take courses for their major that also satisfy the content requirements of the Public Policy coterminal M.A. The following Economics courses, if taken for the undergraduate degree, can be used to fulfill content requirements, but not unit requirements, for the Public Policy coterminal M.A. In place of these courses, students may take advanced policy skills courses, or an approved (by petition) policy-related elective.

		Units
ECON 150	Economic Policy Analysis (fulfills the PUBLPOL 204 or PUBLPOL 301B requirement)	4-5
ECON 154	Law and Economics (fulfills the PUBLPOL 206 or PUBLPOL 302B requirement)	4-5
ECON 102C	Advanced Topics in Econometrics (fulfills the ECON 102C, ECON 102D, PUBLPOL 205, PUBLPOL 303D, or STATS 202 requirement)	5

Track C

Students who are not pursuing a major in Public Policy or Economics follow Track C, which consists of at least 45 units of course work in the analysis of public policy.

1. The following core courses are required and count toward the required minimum 45 units:

		Units
PUBLPOL 201	Introduction to American Politics and Policy: The Good, The Bad, and The Ugly	4
or PUBLPOL 308	Political Analysis for Public Policymakers	
PUBLPOL 302B	Economic Analysis of Law (preferred course)	3-4
or PUBLPOL 206	Law and Economics	
PUBLPOL 301B	Economic Policy Analysis for Policymakers	4
or PUBLPOL 204	Economic Policy Analysis	
PUBLPOL 314	Justice in Public Policy	4
Select one of the following courses:		2-5
LAW 7508	Problem Solving and Decision Making for Public Policy and Social Change (preferred course)	
or ECON 137	Decision Modeling and Information	
or GSBGEN 646	Behavioral Economics and the Psychology of Decision Making	
or OB 381	Conflict Management and Negotiation	
Select one of the following courses:		4
MS&E 280	Organizational Behavior: Evidence in Action	
or PSYCH 138	Wise Interventions	

or PUBLPOL 30	Public Policy and Social Psychology: Implications and Applications	
Select one of the following advanced empirical methods courses:		3-5
PUBLPOL 205	Empirical Methods in Public Policy (preferred course)	
or ECON 102C	Advanced Topics in Econometrics	
or ECON 102D	Econometric Methods for Public Policy Analysis and Business Decision-Making	
or PUBLPOL 30	Applied Econometrics for Public Policy	
or STATS 202	Data Mining and Analysis	

2. Complete a concentration of at least 15 units, under the guidance of a faculty advisor and the Public Policy program director.
3. All Public Policy graduate students are required to attend and enroll in three quarters of PUBLPOL 311 Public Policy Colloquium (3 units total). Attendance and participation are mandatory.
4. Students must petition to count additional advanced policy skills courses (if needed) to meet the 45-unit degree requirement. All 45 units must be taken in upper division (100-level) courses and at least 25 of those units must be taken at the graduate level (200-level and above).

Coterminal M.A. students must select a faculty advisor by the end of their first quarter in the program. Students may refer to the Master's Gateway and Electives Courses tab, for a selection of pre-approved elective courses. Public Policy student services staff can verify scheduling of courses. At least one faculty advisor must be a member of the Academic Council.

Application and Admission

There are two coterminal degree application deadlines for the 2020-21 academic year: November 12, 2020 and January 28, 2021. Applicants may be contacted for an interview. A $125 fee is charged when adding the M.A. degree program in Axess. The GRE is not required.

To apply for admission to the Public Policy coterminal M.A. program, students should submit the following materials online by the appropriate deadline:

1. The Coterminal Online Application (https://applyweb.com/stanterm/).
2. Statement of purpose, 500 words maximum (indicate interest in M.P.P. degree, if applicable)
3. One-page resume
4. A preliminary program proposal
5. A current unofficial undergraduate transcript
6. Two confidential letters of recommendation from Stanford faculty members familiar with the student's academic work
7. Coterm Program Approval from undergraduate department

Financial Aid

The Public Policy Program does not provide financial assistance to coterminal students. For information on student loans and other sources of support, consult the Stanford Financial Aid Office (http://financialaid.stanford.edu/). Students who enter public service employment with local, state, or federal agencies; schools; or certain not-for-profit organizations may obtain forgiveness for educational loans, based on years of public service employment.

Master's Degrees in Public Policy

The program offers two master's degrees in Public Policy. The Master of Public Policy (M.P.P.) is a two-year professional degree, and the Master of Arts in Public Policy (M.A.) is a one-year non-professional degree.

At this time, eligibility for admission to the M.P.P. and M.A. programs is restricted to current Stanford undergraduate and graduate students, Stanford alumni (who have graduated within the past 5 years), and external applicants seeking a joint graduate degree. If you do not meet these criteria, you are not eligible for admission to the M.A. or the M.P.P. degree programs.

1. Public Policy Joint Degrees. Students enrolled in or applying to certain degree programs in the Schools of Business, Education, Engineering, Humanities and Sciences, Law, and Medicine are eligible to apply for Public Policy joint degrees. For further information, see the "Joint Degree Programs (p. 70)" section of this Bulletin and the University Registrar's site (http://studentaffairs.stanford.edu/registrar/students/jdp-information/). All Public Policy joint degree programs, with the exception of the J.D./M.A., require at least one year of study at Stanford beyond the requirements for the other joint or dual degree.
   - Juris Doctor and Master of Public Policy (J.D./M.P.P.)
   - Juris Doctor and Master of Arts of Public Policy (J.D./M.A.)
   - Doctor of Medicine and Master of Public Policy (M.D./M.P.P.)
   - Doctor of Philosophy in Education and Master of Public Policy (Ph.D./M.P.P.)
   - Doctor of Philosophy in Economics and Master of Public Policy (Ph.D./M.P.P.)
   - Doctor of Philosophy in Management Science & Engineering and Master of Public Policy (Ph.D./M.P.P.)
   - Doctor of Philosophy in Psychology and Master of Public Policy (Ph.D./M.P.P.)
   - Doctor of Philosophy in Sociology and Master of Public Policy (Ph.D./M.P.P.)
   - Doctor of Philosophy in Structural Biology and Master of Public Policy (Ph.D./M.P.P.)
   - Master of Business Administration and Master of Public Policy (M.B.A./M.P.P.)
   - Master of Arts in Education: Policy, Organization, and Leadership subplan and Master of Public Policy (M.A./M.P.P.)
   - Master of Arts in International Policy and Master of Public Policy (M.A./M.P.P.)
   - Master of Science in Management Science & Engineering and Master of Public Policy (M.S./M.P.P.)
2. Dual Degrees. Any other Stanford graduate student (i.e., not covered in '1' above), Stanford senior, or Stanford alumnus/a (who has graduated within the past 5 years) is eligible to apply for a Public Policy dual degree. Stanford graduate students may subsequently withdraw from their original degree programs, if desired.
   - Master of Public Policy (M.P.P.)
   - Master of Arts in Public Policy (M.A.)

Prerequisites

Graduate students in Public Policy are expected to be literate in mathematics and microeconomics at a level equivalent to MATH 51 Linear Algebra, Multivariable Calculus, and Modern Applications (or MATH 21 Calculus, plus Math Boot Camp) and ECON 50 Economic Analysis I before beginning the curriculum. A no-credit refresher Bootcamp (https://publicpolicy.stanford.edu/academics/graduate/graduate-resources/mpp-bootcamp/) for math and economics is offered in the two weeks preceding the start of Autumn Quarter. Attendance is strongly encouraged by all incoming students.

M.P.P. and M.A. Degree Requirements

1. All graduate degree candidates must submit a Master's Degree Program Proposal (https://stanford.app.box.com/v/progpropma/) to the Public Policy office by the end of Autumn Quarter and must

amend this proposal formally if plans for meeting the degree requirements change.

2. Public Policy students are never required to take a course which duplicates material they have already mastered. Students may petition a different course for a core requirement whose material would be duplicative. This flexibility does not reduce the unit requirements for any degree. If a student wishes to count a class he or she is currently enrolled in, petitions must be submitted, at the latest, by Friday of the first week of classes.
3. All Public Policy graduate students must secure a faculty advisor within the first quarter they are enrolled in the M.A. or M.P.P. degree program. The director and student services staff can assist by suggesting suitable faculty advisors. The advisor need not be affiliated with the Public Policy Program, but does need to be a member of Stanford's Academic Council.
4. M.P.P. degree students are not permitted to enroll in PUBLPOL 309 Practicum, without having completed the following core courses: PUBLPOL 301A Microeconomics for Policy, PUBLPOL 301B Economic Policy Analysis for Policymakers, ECON 102A Introduction to Statistical Methods (Postcalculus) for Social Scientists, PUBLPOL 303D Applied Econometrics for Public Policy, and PUBLPOL 306 Writing and Rhetoric for Policy Audiences.

Curriculum Requirements

		Units
PUBLPOL 301A	Microeconomics for Policy	4
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists (or equivalent)	5
PUBLPOL 301B	Economic Policy Analysis for Policymakers	4
PUBLPOL 303D	Applied Econometrics for Public Policy	4
Select one of the following courses:		2-5
LAW 7508	Problem Solving and Decision Making for Public Policy and Social Change (preferred course)	
or ECON 137	Decision Modeling and Information	
or GSBGEN 646	Behavioral Economics and the Psychology of Decision Making	
or OB 381	Conflict Management and Negotiation	
PUBLPOL 306	Writing and Rhetoric for Policy Audiences (requirement for M.P.P. students only. M.A students may take as an elective)	4
PUBLPOL 308	Political Analysis for Public Policymakers	4
PUBLPOL 314	Justice in Public Policy	4
PUBLPOL 302B	Economic Analysis of Law (preferred course)	3
or PUBLPOL 206	Law and Economics	

All core courses listed above must be taken for a letter grade (with the exception of PUBLPOL 311 Public Policy Colloquium which is only offered S/NC). Students must maintain a 3.0 (B) grade point average overall in courses applicable to the degree. See the COVID-19 Policies (p. 2018) tab for details on grading policy for 2020-21.

1. Core Curriculum (shown above)
2. At least two electives are taken during the first year. At least one must be from the Concentration Electives List (https://publicpolicy.stanford.edu/academics/graduate/concentrations/).
3. Colloquium: All Public Policy graduate students are required to attend and enroll in three quarters of PUBLPOL 311 Public Policy Colloquium (3 units) during their first year of the program. Attendance and participation are mandatory.
4. Practicum (M.P.P. and Track A coterminal M.A. students): Completion of the practicum course, PUBLPOL 309 Practicum (10 units, Autumn and Winter quarters), in which interdisciplinary student teams analyze real-world policy issues for outside clients.
5. Master's Thesis (non-coterminal M.A. students): Completion of a 5-unit master's thesis, written under the guidance of a Public Policy-affiliated faculty advisor who is a member of Academic Council or approved by the Program Director, on a topic approved in advance by the Program Director. Students give the program office the name of their thesis advisor and enroll in PUBLPOL 310A Master's Thesis Seminar (for 1 unit in the autumn) and PUBLPOL 310 Master of Arts Thesis units during quarter(s) of their choosing. The 4 remaining units may be spread over multiple quarters, and an 'N' (continuing course) grade is given during any quarters prior to degree conferral. The thesis must be submitted to the Public Policy program office in both electronic and printed form no later than the third Friday before the end of the quarter. The final grade for PUBLPOL 310 is determined by the thesis advisor.
6. Concentration (M.P.P. students only): Advanced course work in a specialized field, chosen from the approved list of concentration courses from the Master's Gateway and Elective Courses (https://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/publicpolicy/#mastersgatewayandelectivecoursestext) tab (https://publicpolicy.stanford.edu/academics/graduate/concentrations/)with the prior approval of the student's faculty advisor and the program director. The Registrar refers to such a concentration as a degree subplan. Public Policy subplans are printed on the transcript and diploma and are elected by the student via the Declaration or Change to a Field of Study form (https://stanford.box.com/grad-subplan-change/).
   Current concentrations include:
   - Computational Public Policy
   - Education Policy
   - Health Care Policy
   - International and National Security Policy
   - Legal and Regulatory Intervention
   - Political and Moral Philosophy
   - Resources, Environment, and Energy Policy
   - Science and Technology Policy
   - Self-designed (requires detailed statement of study goals, relationship of each proposed course to those goals, and commitment by a supervising faculty member)
   - Urban and Regional Policy

Public Policy Joint Degree Requirements

1. A joint degree (p. 70) is regarded by the University as distinct from either of its component degrees, and requirements for the joint degree differ from the sum of the requirements for the individual degrees.
2. Up to a maximum of 45 units, or one year, of the University residency requirement can be credited toward both graduate degree programs (i.e., the joint degree requirements may contain up to 45 units less than the sum of each program separately). For example, a J.D./M.P.P. has a four-year residency requirement, one year less than the sum of the requirements for the separate degrees. This recognizes that there is a subject matter overlap between the fields comprising the joint degree.
3. The Public Policy Program strives to encourage an intellectual, professional, and social community among its students. For this reason, joint degree students are strongly encouraged to devote one year of full-time study at Stanford entirely to the Public Policy Program rather than spacing Public Policy courses throughout their graduate careers. For joint degree Ph.D. students, the core requirements of the M.P.P. should be completed over two contiguous

years of study, during which students may also be enrolled in courses from their Ph.D. program. Exceptions to this structure must be approved in advance by petition.

4. Joint degree students are expected to have and to consult regularly with an academic advisor. The advisor is generally a member of the faculty of both degree programs and must be a member of Academic Council. The program director and staff are available to make advisor recommendations.
5. In order to take advantage of the reduced residency requirement, joint M.P.P. students must define their area of concentration from among courses offered in their non-Public Policy program. Students wishing to concentrate in another field should apply for a dual, rather than a joint, M.P.P. degree.

Application and Admissions

Applications for graduate study in Public Policy are only accepted from:

1. Students currently enrolled in any Stanford graduate or undergraduate degree program
2. External applicants seeking a joint degree, or
3. Stanford alumni (who have graduated within the past 5 years).

External applicants for joint degrees must apply to the department or school offering the other graduate degree (i.e. ,Ph.D., M.D., M.A., M.S., M.B.A., or J.D.), indicating an interest in the joint degree program; applicants admitted to the other degree program are then evaluated for admission to the M.P.P. or M.A. program.

To be considered for matriculation beginning in the Autumn Quarter 2021-22, all application materials must be submitted no later than January 28, 2021. Admission notifications will be sent to applicants by April 1, 2021. Admitted students are required to respond to offers of admission by May 15, 2021.

Stanford Alumni and Current Stanford Seniors

Visit the Stanford Office of Graduate Admissions (http://studentaffairs.stanford.edu/gradadmissions/). The online application for the M.P.P. is available beginning in mid-September 2020. The application fee is $125. The program is unable to refund an application fee, so prospective applicants are advised to refer to eligibility requirements before submitting an application.

Only complete applications submitted by the deadline are reviewed. A complete application includes the following:

1. Application (http://studentaffairs.stanford.edu/gradadmissions/).
2. Official transcripts. Copies of student transcripts must bear the official seal of the institution and the signature of the registrar. Upload transcripts to the online application.
3. GRE, GMAT, LSAT or MCAT test scores.
4. Letters of recommendation: Three confidential letters of recommendation from a Stanford faculty member or an employer should be submitted electronically via the online application. See the Stanford Office of Graduate Admissions web site regarding letters of recommendation (https://gradadmissions.stanford.edu/applying/starting-your-application/required-application-documents/letters-recommendation/). At least two letters must be from Stanford faculty members.
5. Statement of purpose (not to exceed two pages; upload to the online application).
6. Resume or curriculum vitae (upload to the online application).

Stanford Current Graduate Students

1. Application for Current Stanford Graduate Students (https://publicpolicy.stanford.edu/academics/graduate/admissions/current-graduate-students/).
2. Two confidential letters of recommendation, one of which must be from a Stanford faculty member familiar with applicant's academic work.
3. Undergraduate and graduate transcripts.
4. GRE, GMAT, LSAT or MCAT test scores.
5. Statement of purpose, not to exceed two pages.
6. Resume or curriculum vitae.
7. Preliminary program proposal.
8. Prerequisite completion statement, demonstrating completion of required prerequisite course work in multivariate calculus and intermediate microeconomics.

Applicants may be interviewed. If admitted, students will submit a Graduate Authorization Petition (https://registrar.stanford.edu/students/graduate-degree-progress/graduate-program-authorization-petition/) through Axess. A $125 fee is charged when adding the M.A. or M.P.P. degree program in Axess.

Gateway and Elective Courses for Master's Programs

Computational Public Policy

		Units
Computational Public Policy Gateway Courses		
Take at least one of the following courses		
PUBLPOL 205	Empirical Methods in Public Policy (Take at least one of the following courses in Causal Inference.)	4-5
POLISCI 150C	Causal Inference for Social Science	5
STATS 209B	Applications of Causal Inference Methods	2
EDUC 430A	Experimental Research Design and Analysis	3-5
EDUC 430B	Causal Inference in Quantitative Educational and Social Science Research	3-5
MS&E 327	Topics in Causal Inference	3
Computational Public Policy Required Courses		
CS 106A	Programming Methodology	3-5
CS 106B	Programming Abstractions	3-5
CS 103	Mathematical Foundations of Computing	3-5
Computational Public Policy Elective Courses		
MS&E 231	Introduction to Computational Social Science	3
CS 124	From Languages to Information	3-4
CS 129	Applied Machine Learning	3-4
CS 221	Artificial Intelligence: Principles and Techniques	3-4
CS 228	Probabilistic Graphical Models: Principles and Techniques	3-4
POLISCI 150B	Machine Learning for Social Scientists	5

Education Policy Concentration

		Units
Education Policy Concentration Gateway Courses		
ECON 146	Economics of Education	5
EDUC 222	Resource Allocation in Education	4-5
EDUC 271	Education Policy in the United States	3
EDUC 306A	Economics of Education in the Global Economy	5
EDUC 347	The Economics of Higher Education	3-4
Foundations - take at least two courses from this list		

EDUC 201	History of Education in the United States	3-5
EDUC 212	Urban Education	3-5
EDUC 216	Education, Race, and Inequality in African American History, 1880-1990	3-5
EDUC 220C	Education and Society	4-5
EDUC 220D	History of School Reform: Origins, Policies, Outcomes, and Explanations	3-5
EDUC 276	Classroom Assessment	3
EDUC 310	Sociology of Education	3-5
Organizational Studies - take at least one course from this list		
EDUC 274	School Choice: The Role of Charter Schools	3
EDUC 288	Organizational Analysis	4
EDUC 316	Social Network Methods	3-5
SOC 369	Social Network Methods	3-5
Remaining units can be taken from the course lists below		
EDUC 117	Research and Policy on Postsecondary Access	3
EDUC 202	Introduction to International and Comparative Education	3
EDUC 202I	International Education Policy Workshop	2-4
EDUC 205	Biosocial Medicine: The Social, Psychological, and Biological Determinants of Behavior and Wellbeing	3
EDUC 221A	Policy Analysis in Education	4-5
EDUC 265	History of Higher Education in the U.S.	3-5
EDUC 273	Gender and Higher Education: National and International Perspectives	3-4
EDUC 306A	Economics of Education in the Global Economy	5
EDUC 306B	Global Education Policy & Organization	3-5
EDUC 306D	World, Societal, and Educational Change: Comparative Perspectives	4-5
EDUC 306Y	Economic Support Seminar for Education and Economic Development	1
EDUC 347	The Economics of Higher Education	3-4
EDUC 355	Higher Education and Society	3
EDUC 376	Higher Education Leadership Colloquium	2-3
EDUC 417	Research and Policy on Postsecondary Access	3
POLISCI 326T	The Politics of Education	3-5
SOC 273	Gender and Higher Education: National and International Perspectives	3-4
URBANST 141A	Urban Schools, Social Policy, and the Gentrifying City	3-4

Health Care Policy Concentration

		Units
Health Care Policy Gateway Courses		
BIOMEDIN 251	Outcomes Analysis	4
BIOMEDIN 432	Analysis of Costs, Risks, and Benefits of Health Care	4
ECON 126	Economics of Health and Medical Care	5
HRP 211	Law and Biosciences: Neuroscience	3
LAW 3003	Health Law: The FDA	2
MS&E 292	Health Policy Modeling	3
PUBLPOL 156	Health Care Policy and Reform	5
PUBLPOL 222	BioSecurity and Pandemic Resilience	4-5
PUBLPOL 231	Health Law: Finance and Insurance	3
Health Care Policy Elective Courses		
BIOE 390	Introduction to Bioengineering Research	1-2
CEE 265D	Water and Sanitation in Developing Countries	1-3
CEE 274D	Pathogens and Disinfection	3
ECON 118	Development Economics	5
ECON 127	Economics of Health Improvement in Developing Countries	5
ECON 147	The Economics of Labor Markets	5
ECON 214	Development Economics I	3-5
HRP 207	Introduction to Concepts and Methods in Health Services and Policy Research I	2
HRP 208	Introduction to Concepts and Methods in Health Services and Policy Research II	2
HRP 211	Law and Biosciences: Neuroscience	3
HUMBIO 120	Health Care in America: An Introduction to U.S. Health Policy	4
HUMBIO 120A	American Health Policy	3
HUMBIO 122	Beyond Health Care: the effects of social policies on health	3
HUMBIO 122S	Social Class, Race, Ethnicity, and Health	4
HUMBIO 126	Promoting Health Over the Life Course: the Science of Healthy Living	3
HUMBIO 129S	Global Public Health	3
HUMBIO 153	Parasites and Pestilence: Infectious Public Health Challenges	4
MS&E 252	Decision Analysis I: Foundations of Decision Analysis	3-4
MS&E 256	Technology Assessment and Regulation of Medical Devices	3
MS&E 352	Decision Analysis II: Professional Decision Analysis	3-4
PSYCH 101	Community Health Psychology	4
PSYCH 102	Longevity	4

International and National Security Policy Concentration

		Units
International and National Security Policy Gateway Courses		
POLISCI 114S	International Security in a Changing World	5
International and National Security Elective Courses		
HISTORY 102	History of the International System since 1914	5

Legal and Regulatory Intervention Concentration

		Units
Legal and Regulatory Intervention Gateway Courses		
ECON 157	Imperfect Competition	5
LAW 7001	Administrative Law	4
LAW 7001	Administrative Law	4
NBIO 201	Social and Ethical Issues in the Neurosciences	2-4
Legal and Regulatory Intervention Elective Courses		
BIOMEDIN 432	Analysis of Costs, Risks, and Benefits of Health Care	4
CEE 175A	California Coast: Science, Policy, and Law	3-4
ECON 111	Money and Banking	5
ECON 126	Economics of Health and Medical Care	5
ECON 158	Regulatory Economics	5
ECON 250	Environmental Economics	3-5
ECON 251	Natural Resource and Energy Economics	2-5

LAW 1001	Antitrust	4
LAW 2505	Land Use Law	3
LAW 3003	Health Law: The FDA	2
MS&E 243	Energy and Environmental Policy Analysis	3
MS&E 256	Technology Assessment and Regulation of Medical Devices	3
MS&E 330	Law, Order, & Algorithms	3
PSYCH 232	Brain and Decision	3
PUBLPOL 231	Health Law: Finance and Insurance	3

Political and Moral Philosophy Concentration

		Units
Policy and Moral Philosophy Elective Courses		
DLCL 325	Modern Seminar	3-5
EDUC 247	Moral and Character Education	3
ETHICSOC 278M	Introduction to Environmental Ethics	4-5
GSBGEN 208	Ethics in Management	2
HUMBIO 174	Foundations of Bioethics	3
LAW 3502	Art and the Law	2
LAW 5802	Modern American Legal Thought	3-4
NBIO 201	Social and Ethical Issues in the Neurosciences	2-4
PEDS 251A	Medical Ethics I	2
PHIL 225	Kant's First Critique	4
PHIL 270	Ethical Theory	4
PHIL 272	History of Modern Moral Philosophy	4
PHIL 274B	Universal Basic Income: the philosophy behind the proposal	3
PHIL 274E	Egalitarianism: A course on the history and theory of egalitarianism and anti-egalitarianism	4
PHIL 275B	Philosophy of Public Policy	4
PHIL 276	Political Philosophy: The Social Contract Tradition	4
PHIL 374F	Science, Religion, and Democracy	3-5
POLISCI 131L	Modern Political Thought: Machiavelli to Marx and Mill	5
POLISCI 134P	Contemporary Moral Problems	4-5
POLISCI 230A	Classical Seminar: Origins of Political Thought	3-5
POLISCI 231	High-Stakes Politics: Case Studies in Political Philosophy, Institutions, and Interests	3-5
POLISCI 236	Theories and Practices of Civil Society, Philanthropy, and the Nonprofit Sector	5
POLISCI 351C	Institutions and Bridge-Building in Political Economy	4

Resources, Environment, and Energy Policy Concentration

		Units
Resources, Environment, and Energy Policy Gateway Courses		
ECON 250	Environmental Economics	3-5
ECON 251	Natural Resource and Energy Economics	2-5
LAW 2504	Environmental Law and Policy	3
MS&E 243	Energy and Environmental Policy Analysis	3
Resources, Environment, and Energy Policy Electives		
BIOHOPK 263H	Oceanic Biology	4
BIOHOPK 266H	Molecular Ecology	5
CEE 162E	Rivers, Streams, and Canals	3
CEE 166A	Watershed Hydrologic Processes and Models	3
CEE 166B	Water Resources and Hazards	3
CEE 172	Air Quality Management	3
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	3-4
CEE 207A	Understanding Energy	3-5
CEE 262B	Transport and Mixing in Surface Water Flows	3-4
CEE 262D	Introduction to Physical Oceanography	4
CEE 263A	Air Pollution Modeling	3-4
CEE 263B	Numerical Weather Prediction	3-4
CEE 265A	Resilience, Sustainability and Water Resources Development	3
CEE 265D	Water and Sanitation in Developing Countries	1-3
CEE 271B	Environmental Biotechnology	4
CEE 272	Coastal Contaminants	3-4
CEE 274D	Pathogens and Disinfection	3
CEE 274P	Environmental Health Microbiology Lab	3-4
CEE 275A	California Coast: Science, Policy, and Law	3-4
CEE 278A	Air Pollution Fundamentals	3
EARTHSYS 111	Biology and Global Change	4
EARTHSYS 281	Urban Agroecology	3
ECON 106	World Food Economy	5
ECON 127	Economics of Health Improvement in Developing Countries	5
ECON 147	The Economics of Labor Markets	5
ENERGY 101	Energy and the Environment	3
ENERGY 102	Fundamentals of Renewable Power	3
ENERGY 104	Sustainable Energy for 9 Billion	3
HUMBIO 130	Human Nutrition	4
LAW 2505	Land Use Law	3
LAW 7001	Administrative Law	4
LAW 7001	Administrative Law	4
ME 370A	Energy Systems I: Thermodynamics	3
ME 370B	Energy Systems II: Modeling and Advanced Concepts	4
MS&E 201	Dynamic Systems	3
MS&E 211	Introduction to Optimization	3-4
MS&E 246	Financial Risk Analytics	3
MS&E 251	Introduction to Stochastic Control with Applications	3
MS&E 293	Technology and National Security: Past, Present, and Future	3-4

Science and Technology Policy Concentration

		Units
Science and Technology Policy Gateway Courses		
COMM 230A	Digital Civil Society	3
COMM 230B	Digital Civil Society	3
COMM 230C	Digital Civil Society	3
HISTORY 140A	The Scientific Revolution	5
MS&E 231	Introduction to Computational Social Science	3
MS&E 250A	Engineering Risk Analysis	3

MS&E 293	Technology and National Security: Past, Present, and Future	3-4
PSYCH 232	Brain and Decision	3
SOC 330	Sociology of Science	3-4
PUBLPOL 353A	Science and Technology Policy	4-5
Science and Technology Elective Courses		
CEE 207A	Understanding Energy	3-5
CEE 275A	California Coast: Science, Policy, and Law	3-4
EARTHSYS 232	Evolution of Earth Systems	4
ECON 126	Economics of Health and Medical Care	5
ECON 158	Regulatory Economics	5
ECON 250	Environmental Economics	3-5
EDUC 348	Policy and Practice in Science Education	3-4
ENERGY 253	Carbon Capture and Sequestration	3-4
HISTORY 179C	The Ethical Challenges of the Climate Catastrophe	3-5
LAW 2504	Environmental Law and Policy	3
LAW 2519	Water Law	3
LAW 3004	Law and Biosciences: Genetics	2-3
LAW 4005	Introduction to Intellectual Property	4
LAW 4005	Introduction to Intellectual Property	4
MS&E 184	Future of Work: Issues in Organizational Learning and Design	4
MS&E 243	Energy and Environmental Policy Analysis	3
MS&E 254	The Ethical Analyst	1-3
MS&E 256	Technology Assessment and Regulation of Medical Devices	3
MS&E 270	Strategy in Technology-Based Companies	3-4
MS&E 284	Designing Modern Work Organizations	3
MS&E 292	Health Policy Modeling	3
MS&E 330	Law, Order, & Algorithms	3
PUBLPOL 222	BioSecurity and Pandemic Resilience	4-5

Urban Policy

		Units
Urban Policy Gateway Courses		
PUBLPOL 133	Political Power in American Cities	5
PUBLPOL 174	The Urban Economy	4
SOC 229X	Urban Education	3-5
SOC 235	Poverty, Inequality, and Social Policy in the United States	3-4
Urban Policy Elective Courses		
ANTHRO 152A	Urban Poverty and Inequality in Contemporary China	5
CEE 131B	Financial Management of Sustainable Urban Systems	3
CEE 172	Air Quality Management	3
CEE 277L	Smart Cities & Communities	3
COMM 264	The Psychology of Communication About Politics in America	4-5
EARTHSYS 238	Land Use Law	3
EARTHSYS 281	Urban Agroecology	3
ECON 145	Labor Economics	5
ECON 146	Economics of Education	5
EDUC 271	Education Policy in the United States	3
EDUC 277	Education of Immigrant Students: Psychological Perspectives	4
EDUC 337	Race, Ethnicity, and Linguistic Diversity in Classrooms: Sociocultural Theory and Practices	3-5
EDUC 447	Leading Change in Public Education	2
HISTORY 274E	Urban Poverty and Inequality in Latin America	5
LAW 7071	Philanthropy and Civil Society	1
POLISCI 326T	The Politics of Education	3-5
PUBLPOL 107	Public Finance and Fiscal Policy	5
PUBLPOL 135	Regional Politics and Decision Making in Silicon Valley and the Greater Bay Area	4
PUBLPOL 137	Innovations in Microcredit and Development Finance	3
PUBLPOL 143	Finance, Corporations, and Society	4
PUBLPOL 225	Urban Policy Research Lab	5
PUBLPOL 364	The Future of Finance	2
SOC 249	The Urban Underclass	4
SOC 340W	CPI Seminar	1-2
SOC 341W	Workshop: Inequality	1-2
STRAMGT 537	Leading Change in Public Education	2
URBANST 113	Introduction to Urban Design: Contemporary Urban Design in Theory and Practice	5
URBANST 132	Concepts and Analytic Skills for the Social Sector	4
URBANST 164	Sustainable Cities	4-5

Graduate Certificate in Policy Analysis

The Stanford Public Policy Program offers a graduate "Certificate in Policy Analysis" for current Stanford graduate students. This highly flexible 25-unit program is designed for students who are interested in policy but may not be able to complete a formal one or two-year policy degree. The program's coursework provides a solid background in economics and quantitative methods, political analysis, ethics, and writing for policy audiences.

These courses will equip students with a set of skills necessary to design and evaluate policies, conduct research, and advocate policy solutions. The certificate provides formal recognition for a coherent plan of policy studies. In addition to completing coursework, students will produce a final paper reflecting on the policy lessons from their time in the program. Upon completion of the program, a certificate is provided. Note that the certificate is not included on the diploma or transcript. Grading policy: students may take two courses for a non-letter grade, in addition to the one-unit required colloquium course. The remaining courses must be taken for a letter grade.

Program Learning Outcomes

- Master analytical tools for evaluating public policies and programs in terms of their absolute and comparative efficacy in achieving social objectives.
- Participate in policy and political discussion as citizens and as professionals in a variety of fields.
- Appreciate the complexity of large organizations as it relates to the implementation of public programs.
- Understand the conflicts in ethical and value commitments that pervade public policy issues.

How to Apply

The application to the Certificate in Policy Analysis is available here (http://web.stanford.edu/~uclady/certificate.fb) and can be submitted at any time. Upon submission, a member of the Public Policy program staff will contact the applicant to confirm the course plan and answer any

questions. The certificate is only available for currently enrolled graduate student.

Courses

		Units
Required Courses - 13 Units total		
PUBLPOL 301A	Microeconomics for Policy	4-5
PUBLPOL 303D	Applied Econometrics for Public Policy (or equivalent course)	4-5
PUBLPOL 301B	Economic Policy Analysis for Policymakers	4-5
or PUBLPOL 204	Economic Policy Analysis	
PUBLPOL 311	Public Policy Colloquium (one quarter)	1
Required Courses with Selection Options - 8 units total		
PUBLPOL 306	Writing and Rhetoric for Policy Audiences	4
or PUBLPOL 314	Justice in Public Policy	
PUBLPOL 308	Political Analysis for Public Policymakers	4
or PUBLPOL 353A	Science and Technology Policy	
Optional Course(s) - 4 units total		
PUBLPOL 206	Law and Economics	4-5
PUBLPOL 302B	Economic Analysis of Law	3
PUBLPOL 311	Public Policy Colloquium	1
LAW 7508	Problem Solving and Decision Making for Public Policy and Social Change	4

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate and Graduate Degree Requirements

Grading

The Public Policy program would like to be as flexible as possible with respect to grades during this unprecedented year, understanding that each student's situation is unique as it pertains to remote learning. The program supports the University's decision to allow students to choose CR/NC or a letter grade for their courses. This applies to both undergraduates and graduate students. While the program understands the need for flexibility, it suggests taht Public Policy students take their courses for a letter grade whenever possible.

Graduate Advising Expectations

The Program in Public Policy is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

All graduate students must submit a signed faculty adviser form by the end of their first quarter. The form is available on the Graduate Forms website (https://publicpolicy.stanford.edu/academics/graduate/forms/). The adviser need not be affiliated with the Public Policy Program, but does need to be a member of Stanford's Academic Council. The Director and student services staff can assist by providing individualized support in identifying a faculty adviser, if necessary.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program. Students are encouraged to communicate clearly and frequently with their adviser.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Director: Gregory L. Rosston (Stanford Institute for Economic Policy Research)

Director of Undergraduate and Graduate Studies: Gregory L. Rosston (Stanford Institute for Economic Policy Research)

Directors of Graduate Practicum Program: Joe Nation and Christine Pal Chee (Public Policy)

Director of Domestic Policy Studies and Lecturer: Lanhee J. Chen (Public Policy and Hoover Institution)

Director of Honors Program and Lecturer: Marcelo Clerici-Arias (Economics and Public Policy)

Executive Committee Chair: Mark Duggan (Economics, SIEPR)

Executive Committee: Laurence Baker (Medicine), Jonathan Bendor (Graduate School of Business), David Brady (Political Science, Hoover Institution, Graduate School of Business, SIEPR), Paul Brest (Law), Bruce Cain (Political Science, Bill Lane Center for the American West), Samuel Chiu (Management Science and Engineering), Thomas Dee (Graduate School of Education), Rebecca Diamond (Graduate School of Business), Judith Goldstein (Political Science), David Grusky (Sociology), Deborah Hensler (Law), Roger Noll (Economics, emeritus, SIEPR), Bruce Owen (Public Policy, emeritus, SIEPR), Gregory Rosston (SIEPR), Paul Oyer (Graduate School of Business), Debra Satz (Philosophy), John Shoven (SIEPR, Economics), Christine Min Wotipka (Graduate School of Education)

Affiliated Faculty: William Abrams (Human Biology), Donald Barr (Medicine), Jonathan Bendor (Graduate School of Business), Eric Bettinger (Education), Jayanta Bhattacharya (Medicine), Lisa Blaydes (Political Science), Adam Bonica (Political Science), Michael J. Boskin (Economics, Hoover Institution), Paul Brest (Law), Jeremy Bulow (Graduate School of Business), M. Kate Bundorf (Medicine), Bruce Cain (Political Science, Bill Lane Center for the American West), Eamonn Callan (Education), Martin Carnoy (Education), John Cogan (Hoover Institution), Larry Diamond (Freeman Spogli Institute for International Studies, Hoover Institution), Lawrence Friedman (Law), Francis Fukuyama (Freeman Spogli Institute for International Studies), Lawrence Goulder (Economics, Freeman Spogli Institute for International Studies), Justin Grimmer (Political Science), Stephen Haber (Political Science, Hoover Institution), Deborah Hensler (Law), Pamela Hinds (Management Science

and Engineering), Daniel Ho (Law), Nicholas Hope (Stanford Center for International Development), Caroline Hoxby (Economics, Hoover Institution, SIEPR), Hakeem Jefferson (Political Science), Daniel Kessler (Law, Hoover Institution, Graduate School of Business), Pete Klenow (Economics), Stephen Krasner (Political Science, Freeman Spogli Institute for International Studies, Hoover Institution), Jon A. Krosnick (Communication, Political Science), Mark Lemley (Law), Thomas MaCurdy (Economics, Hoover Institution), David Magnus (Medicine), Milbrey McLaughlin (Education), Terry Moe (Political Science, Hoover Institution), A. Mitchell Polinsky (Law), Walter Powell (Education), Robert Reich (Political Science), Lee Ross (Psychology), Baba Shiv (Graduate School of Business), Ken Shotts (Graduate School of Business), Stephan Stedman (Freeman Spogli Institute for International Studies), Jeff Strnad (Law), Barton Thompson (Law, Woods Institute, Freeman Spogli Institute for International Studies), Michael Tomz (Political Science, SIEPR),Milana Trounce (Medicine), Michael Wald (Law), Greg Walton (Psychology), Barry Weingast (Political Science, Hoover Institution), John Weyant (Management Science and Engineering), Frank Wolak (Economics, Freeman Spogli Institute for International Studies), Cristobal Young (Sociology)

Lecturers: Newsha Ajami (Woods Institute), Tanya Beder (Law), Frank Benest (Public Policy), David Crane (Public Policy, SIEPR), Dennis Gale (Urban Studies), Russell Hancock (Public Policy), Preeti Hehmeyer (Public Policy, Bill Lane Center for the American West), Adrienne Jamieson (Bing Stanford in Washington), Lawrence Litvak (Public Policy, Urban Studies), Susan Liautaud (Public Policy), Eva Meyersson Milgrom (SIEPR, Sociology), Christine Pal Chee (Public Policy), Patrick Windham (Public Policy)

Overseas Studies Courses in Public Policy

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPCPTWN 10	Climate Change and Political Violence	4
OSPFLOR 64	Colonial Heritage, Euro-Mediterranean Relations, Migrations, Multiculturalism	5
OSPFLOR 65	Exclusion/Inclusion Processes of Migrants in Italian Society	5
OSPFLOR 70	The Value of Life: Philosophical Foundations	4
OSPFLOR 78	The Impossible Experiment: Politics and Policies of the New European Union	5
OSPHONGK 24	Urban China	4
OSPHONGK 27	China and Regional Order	4
OSPHONGK 28	An Introduction to the Development of Science and Technology in China	4
OSPHONGK 44	Medical Sociology	4
OSPSANTG 20	Comparative Law & Society: Conflicts in the Structuring of Democratic Polities across Latin America	4-5
OSPSANTG 71	Santiago: Urban Planning, Public Policy, and the Built Environment	5
OSPSANTG 119X	The Chilean Economy: History, International Relations, and Development Strategies	5

Courses

PUBLPOL 1. Introduction to Public Policy. 1 Unit.
Public Policy 1 is an introduction to the wide range of fields and methods used in Public Policy analysis including economics, political science, social psychology, justice, ethics and organizations. The course will have weekly speakers who will provide examples of policy analysis from a variety of perspectives. Attendance mandatory.

PUBLPOL 4. Democracy Matters. 1 Unit.
Should the U.S. close its border to immigrants? What are the ramifications of income inequality? How has COVID-19 changed life as we know it? Why are Americans so politically polarized? How can we address racial injustice? As the 2020 election approaches, faculty members from across Stanford will explore and examine some of the biggest challenges facing society today. Each week will be dedicated to a different topic, ranging from health care and the economy to racial injustice and challenges to democracy. Faculty with expertise in philosophy, economics, law, political science, psychology, medicine, history, and more will come together for lively conversations about the issues not only shaping this election season but also the nation and world at large. There will also be a Q&A following the initial discussion. Attendance and supplemental course readings are the only requirements for the course.
Same as: ECON 4, PHIL 30, POLISCI 42

PUBLPOL 14. Navigating Financial Crises: From Emerging Markets to COVID-19. 1 Unit.
What causes financial crises? What are the keys to anticipating, preventing, and managing disruptions in the global financial system? This course prepares students to navigate future episodes as policymakers, finance professionals, and citizens by going inside the practical decisions made in an unfolding crisis, from the U.S. government and IMF to the boardroom and trading floor. Students will learn warning signs of distress; market structures that govern crisis dynamics; strategic interactions among the key actors; and lessons learned for creating a more resilient system. Concepts will be applied to real-world experiences in emerging market crises, the U.S. housing and global financial crisis, the European sovereign crisis, and as well the extraordinary fiscal and central bank responses to the COVID-19 crisis.
Same as: ECON 14

PUBLPOL 19Q. Government by the Numbers. 3 Units.
Spending by federal, state, and local governments accounts for about one-third of U.S. GDP and governments employ more than one-in-seven workers in the U.S. For most U.S. residents, government is represented by a complicated web of federal, state, and local policies. There is an increasingly contentious debate about the proper role of the government and regarding the impact of specific government policies. This debate is rarely grounded in a common set of facts. In this seminar, we will explore how each level of government interacts with U.S. residents through government services, public programs, taxes, and regulations. We will examine financial results for different levels of government while considering the net effects of government intervention on the health and economic well-being of individuals and families. Particular attention will be paid to certain sectors (e.g. education, health care, etc.) and to certain groups (e.g. those in poverty, the elderly, etc.). Along the way we will accumulate a set of metrics to assess the performance of each level of government while highlighting the formidable challenges of such an exercise. Prerequisite: Econ 1.
Same as: ECON 19Q

PUBLPOL 51. Microeconomics for Policy. 4-5 Units.
Microeconomic concepts relevant to decision making. Topics include: competitive market clearing, price discrimination; general equilibrium; risk aversion and sharing, capital market theory, Nash equilibrium; welfare analysis; public choice; externalities and public goods; hidden information and market signaling; moral hazard and incentives; auction theory; game theory; oligopoly; reputation and credibility. Undergraduate Public Policy students may take PublPol 51 as a substitute for the Econ 51 major requirement. Economics majors still need to take Econ 51. Prerequisites: ECON 50 and MATH 51 or equiv.
Same as: INTLPOL 204A, PUBLPOL 301A

PUBLPOL 55N. Public Policy and Personal Finance. 3 Units.
The seminar will provide an introduction and discussion of the impact of public policy on personal finance. Voters regularly rate the economy as one of the most important factors shaping their political views and most of those opinions are focused on their individual bottom lines. In this course we will discuss the rationale for different public policies and how they affect personal financial situations. We will explore personal finance issues such as taxes, loans, charity, insurance, and pensions. Using the context of (hypothetical) personal finance positions, we will discuss the public policy implications of various proposals and how they affect different groups of people, for example: the implications of differential tax rates for different types of income, the promotion of home ownership in the U.S., and policies to care for our aging population. While economic policy will be the focus of much of the course, we will also examine some of the implications of social policies on personal finance as well. There will be weekly readings and several short policy-related writing assignments.
Same as: ECON 25N

PUBLPOL 63Q. Democratizing Ethics with Discrimination, Inequality, Injustice and Technology in Mind. 3 Units.
This seminar/practicum will invite students to ¿roll up our sleeves¿ and deliver concrete recommendations for making ethical decision-making accessible to ordinary citizens rather than just determined by corporate giants, law makers or academic experts. We will explore practical approaches to the following questions: How can we make ethical decision-making accessible to ordinary citizens in a complex world of technology, biology and even space exploration? How can we incentivize citizens to care about integrating ethics into their decision-making? How do we each have ethical power in society even where economic and technological control lie with tech giants and lodged in the brains of experts? What, if anything, is different about citizens¿ sense of moral responsibility in society today (and how has technology contributed to shifting views)? How can we develop an ethics barometer¿soliciting the views, and facilitating the influence of, ordinary citizens on key ethical questions outside of normal channels like voting and individual engagement with social media? The course will consider a number of cutting-edge topics from Covid-19 and gene editing and long-standing challenges such as racism. Highly interactive course. Very short papers and teamwork along the way in lieu of final paper or exam. 3 credits (option C/NC for students not wishing WAYS credit). Will be offered on-line Spring 2021.

PUBLPOL 73. Energy Policy in California and the West. 1 Unit.
This seminar provides an in-depth analysis of the role of California state agencies and Western energy organizations in driving energy policy development, technology innovation, and market structures, in California, the West and internationally. The course covers three areas: 1) roles and responsibilities of key state agencies and Western energy organizations; 2) current and evolving energy and climate policies; and 3) development of the 21st century electricity system in California and the West. The seminar will also provide students a guideline of what to expect in professional working environment.
Same as: CEE 263G, ENERGY 73, POLISCI 73

PUBLPOL 74. Public Service Internship Preparation. 1 Unit.
Are you prepared for your internship this summer? This workshop series will help you make the most of your internship experience by setting learning goals in advance; negotiating and communicating clear roles and expectations; preparing for a professional role in a non-profit, government, or community setting; and reflecting with successful interns and community partners on how to prepare sufficiently ahead of time. You will read, discuss, and hear from guest speakers, as well as develop a learning plan specific to your summer or academic year internship placement. This course is primarily designed for students who have already identified an internship for summer or a later quarter. You are welcome to attend any and all workshops, but must attend the entire series and do the assignments for 1 unit of credit.
Same as: EARTHSYS 9, EDUC 9, HUMBIO 9, URBANST 101

PUBLPOL 75. Pathways to Public Service. 1 Unit.
This one-unit lecture series explores potential careers in public service, including roles in government as well as in many other organizations¿such as nonprofits, foundations, corporations, and arts organizations¿that help shape public policy and civic life. Each week, a guest speaker will introduce students to his or her organization and role, describe some of the key intellectual issues and current policy challenges, discuss career paths and skills crucial for the job, and help students reflect on possible connections between this work and their studies at Stanford. In an interactive concluding session, students will participate in a career assessment activity, reflect on possible next steps, and learn about other opportunities to explore public service at Stanford. This course is open to all students, including not only those studying political science or public policy, but also the arts, humanities, sciences, and engineering. It is co-sponsored by the School of Humanities and Sciences and Stanford in Government (SIG).
Same as: POLISCI 74

PUBLPOL 78N. Economic Policies of the Presidential Candidates. 3 Units.
In nearly all polls, American voters rank the economy as one of their most important concerns. In the presidential election, much of the debate for voters will be on questions of economic policy. In this course, we will delve deeply into economic policy issues to understand options for government intervention and possible outcomes. We will combine economic analysis with political science methodology to understand efficient and implementable policy proposals.nnSpecific areas of interest will be taxation, budget, entitlement programs, economic regulation and competition policy, trade, demography, income inequality, and monetary policy. The course will incorporate other timely and salient policy issues as they arise during the course of the campaign. n nStudents will be expected to write a short paper and make an oral presentation to the class. A wide range of topics will be acceptable, including those directly related to campaign issues as well as other long-term economic issues facing the country.
Same as: ECON 78N

PUBLPOL 85. Environmentalism in California. 1 Unit.
Alternative Spring Break: With climate change posed to be one of the most pressing issues of the 21st Century, environmental preservation is emerging at a top priority. In addition to the federal government, state and local governments regulate the environment. In this course, we will learn about what environmental policy looks like in at the state level in California. Since the Golden State has an ambitious environmental preservation plan, there will be a lot of content. To make this class more manageable, we will be focusing on two areas specifically: water and energy. Finally, we will spend that last few weeks of the course learning about environmental justice, and specifically, how climate change impacts Indigenous communities in California and how the state is mitigating the impact. All major backgrounds are welcome.

PUBLPOL 100. Hoover Institution National Security Affairs Fellows Mentorship Program. 1 Unit.
This course is designed to give Stanford undergraduates an introduction to civil-military relations, leadership development, and operational aspects of American foreign policy. Admitted undergraduates will be mentored by a distinguished leader from the Army, Navy, Air Force, Marine Corps, Coast Guard, or State Department for the Fall, Winter and Spring quarters of the 2020-21 academic year. Participation in all three quarters is required. These military leaders and diplomats are part of the Hoover Institution¿s National Security Affairs Fellows program. The course will be held on Zoom and the scheduled class time will be used for group activities, lectures from the National Security Affairs Fellows on their experiences in the military and the State Department, small group meetings with mentees and mentors, and special sessions with senior American foreign policy leaders. At the end of each quarter, students write short reflection papers. No expertise in international affairs is necessary to apply and all majors are welcome. Selection is based on academic excellence, extracurricular leadership, and interest in international affairs. The program is directed by Dr. Amy Zegart. To apply, send a cover letter and resume to Taylor McLamb (twj@stanford.edu) by September 1, 2020.

PUBLPOL 101. Introduction to American Politics and Policy: The Good, The Bad, and The Ugly. 4-5 Units.
This is a course about American politics, which means this is a course about individuals, identities, and institutions. How do Americans come to think andnreason about politics? What is the role that identities play in affecting the political judgments that individuals make? How do our political institutionsnrespond to the demands of a diverse public that disagrees about issues related to race and justice, income and wealth inequality, climate change, gunncontrol, reproductive rights, the power of the executive, and the role that government ought to play in the lives of the governed? And how do we makensense of this seemingly peculiar contemporary moment in American politics? These are not easy questions, but they are ones for which political sciencenprovides a useful foundation to guide our inquiry. The objective of this course is to introduce students to various concepts and theoretical frameworks thatnhelp us understand the messiness and complexity of American politics. In addition to classroom lectures and discussion sections, students will benrequired to apply concepts and theoretical frameworks to contemporary issues in American politics. Undergraduate Public Policy students are required to enroll in this class for 5 units.
Same as: AMSTUD 123X, POLISCI 102, PUBLPOL 201

PUBLPOL 103C. Justice. 4-5 Units.
In this course, we explore three sets of questions relating to justice and the meaning of a just society: (1) Liberty: What is liberty, and why is it important? Which liberties must a just society protect? (2) Equality: What is equality, and why is it important? What sorts of equality should a just society ensure? (3) Reconciliation: Are liberty and equality in conflict? If so, how should we respond to the conflict between them? We approach these topics by examining competing theories of justice including utilitarianism, libertarianism/classical liberalism, and egalitarian liberalism. The class also serves as an introduction to how to do political philosophy, and students approaching these topics for the first time are welcome. Political Science majors taking this course to fulfill the WIM requirement should enroll in POLISCI 103.
Same as: ETHICSOC 171, PHIL 171, POLISCI 103, POLISCI 336S

PUBLPOL 103D. Ethics and Politics of Public Service. 3-5 Units.
Ethical and political questions in public service work, including volunteering, service learning, humanitarian assistance, and public service professions such as medicine and teaching. Motives and outcomes in service work. Connections between service work and justice. Is mandatory service an oxymoron? History of public service in the U.S. Issues in crosscultural service work. Integration with the Haas Center for Public Service to connect service activities and public service aspirations with academic experiences at Stanford.
Same as: CSRE 178, ETHICSOC 133, PHIL 175A, PHIL 275A, POLISCI 133, URBANST 122

PUBLPOL 103E. Ethics on the Edge Public Policy Core Seminar. 2 Units.
This seminar-style course will explore additional foundational readings on organizational ethics (business, non-profit, and governmental organizations) and policy ethics. Themes will include, among others: AI and policy considerations; social media and policy considerations; race and police brutality incidents; national security (including cyber threats); the Iran nuclear agreement; non-profit organizations in the policy and US landscape; and various corporate matters. Organizing themes include, among others: ethics of leadership; ethics of persuasion and compromise; influence of bias in organizational and policy ethics; ethics of social movements; discrepancies between discourse and action; emotion and ethics; and interpreting and explaining ethics. In addition, the course will offer training in a wide variety of skills for effective communication of ethics for policy purposes (developing succinct arguments, presentations, website discourse, commenting in meetings and conferences, interviews, statement of personal views, interacting with the media and social media, and mapping complex ethical analysis). Most of the assignments allow students flexibility to explore topics of their choice. The objective is to engage actively and improve skills in a supportive environment. A short, analytically rigorous final paper in lieu of final exam. Attendance required. Grading will be based on short assignments, class participation, and the short final paper. The course is open to undergraduate and graduate students. Undergraduates will not be at a disadvantage. Everyone will be challenged. Students wishing to take the course who are unable to sign up within the enrollment limit should contact Dr. Susan Liautaud at susanl1@stanford.edu. Distinguished Career Institute Fellows are welcome and should contact Dr. Susan Liautaud directly at susanl1@stanford.edu. This three-credit seminar accompanies PUBLPOL 134 Ethics on the Edge but can also be taken as a stand-alone course. *Please note the course is being offered for two units and therefore is ineligible for Ways credit in the 2019-20 academic year. Please note that this course will require one make-up evening session on a Monday, Tuesday or Wednesday in April in lieu of the final class session the first week of June, so the course ends before Memorial Day.
Same as: PUBLPOL 203E

PUBLPOL 103F. Ethics of Truth in a Post-Truth World. 2-3 Units.
This course will explore changing notions of truth in a world in which technology, global risks, and societal developments are blurring the boundaries of humanity and boring through traditional notions of nation states, institutions, and human identity. We will ask one over-arching question: does truth matter anymore? If so, why and how? If not, why not? Either way, how does truth relate to ethical decision-making by individuals and institutions and to an ethical society? How does truth relate to a life well lived? Six themes will organize our exploration of more specific topics: science and subjectivity; identity; memory; authenticity; religious truth; and truth and the law. Examples of topics to be explored include, among others: truth and technology (from deep fakes to home devices); white supremacy; DNA testing and the ¿identify as¿ movement, and identity; University history (Rhodes, Georgetown slavery, Yale Calhoun College...); the connections among truth, memory, and history; new questions in gender and racial identity; Chinese beautifying app Meitu and other social media "truth modifiers"; the sharing economy; the impact of AI and DNA testing sites on legal truth. Scotty McClennan will explore truth through major literary characters and the impact of religion on truth. We will consider how we determine and verify the truth; how we "do" truth; the role of truth in ethical decision-making; the importance of truth to effective ethical policy; and the relationship of the truth to a life well lived. An analytically rigorous short final paper in lieu of exam. This three-credit seminar may be taken as a stand-alone course or may accompany PUBLPOL 134 Ethics on the Edge to full the Public Policy major ethics requirement. The course is open to undergraduate and graduate students. Undergraduates will not be at a disadvantage. Everyone will be challenged. Distinguished Career Institute Fellows are welcome and should contact Dr. Susan Liautaud directly at susanl1@stanford.edu. Students wishing to take the course who are unable to sign up within the enrollment limit should contact Dr. Susan Liautaud at susanl1@stanford.edu. *Public Policy majors taking the course to complete the core requirements and students taking the course for Ways credit must obtain a letter grade. Other students may take the course for a letter grade or C/NC. To satisfy a Ways requirement, this course must be taken for at least 3 units. In AY 2020-21, a letter grade or `CR¿ grade satisfies the Ways requirement.
Same as: PUBLPOL 203F

PUBLPOL 103Z. Ethics and Politics in Public Service. 4 Units.
This course examines ethical and political questions that arise in doing public service work, whether volunteering, service learning, humanitarian endeavors overseas, or public service professions such as medicine and teaching. What motives do people have to engage in public service work? Are self-interested motives troublesome? What is the connection between service work and justice? Should the government or schools require citizens or students to perform service work? Is mandatory service an oxymoron?.
Same as: CSRE 133P, POLISCI 133Z, URBANST 122Z

PUBLPOL 104. Economic Policy Analysis. 4-5 Units.
The relationship between microeconomic analysis and public policy making. How economic policy analysis is done and why political leaders regard it as useful but not definitive in making policy decisions. Economic rationales for policy interventions, methods of policy evaluation and the role of benefit-cost analysis, economic models of politics and their application to policy making, and the relationship of income distribution to policy choice. Theoretical foundations of policy making and analysis, and applications to program adoption and implementation. Prerequisites: ECON 50 and ECON 102B. Undergraduate Public Policy students are required to take this class for a letter grade and enroll in this class for five units.
Same as: ECON 150, PUBLPOL 204

PUBLPOL 105. Empirical Methods in Public Policy. 4-5 Units.
Methods of empirical analysis and applications in public policy. Emphasis on causal inference and program evaluation. Public policy applications include health, labor and saving. Assignments include hands-on data analysis, evaluation of existing literature, and a final research project. Objective is to obtain tools to 1) critically evaluate evidence used to make policy decisions and 2) perform empirical analysis to answer questions in public policy. Prerequisite: ECON 102B. Enrollment is limited to Public Policy students. Public Policy students must take the course for a letter grade.
Same as: PUBLPOL 205

PUBLPOL 106. Law and Economics. 4-5 Units.
This course explores the role of law in promoting social well-being (happiness). Law, among its other functions, can serve as a mechanism to harmonize private incentives with cooperative gains, to support an equitable division of those gains, and to deter "cheating" and dystopia. Law is thus essential to civilization. Economic analysis of law focuses on the welfare-enhancing incentive effects of law and its enforcement and on law's role in reducing the risks of cooperation, achieved by fixing expectations of what courts or the state will do in various futures. Specific topics include welfare economics, torts, property, contracts, regulation, process and antitrust. Requires a term paper applying economic analysis to a case, procedure, or law. Prerequisite: ECON 50.
Same as: ECON 154, PUBLPOL 206

PUBLPOL 107. Public Finance and Fiscal Policy. 5 Units.
What role should and does government play in the economy? What are the effects of government spending, borrowing, and taxation on efficiency, equity and economic stability and growth? The course covers economic, historical and statistical analyses and current policy debates in the U.S. and around the world. Policy topics: Fiscal crises, budget deficits, the national debt and intergenerational equity; tax systems and tax reform; social security and healthcare programs and reforms; transfers to the poor; public goods and externalities; fiscal federalism; public investment and cost-benefit analysis; and the political economy of government decision-making. Prerequisites: ECON 51 (Public Policy majors may take PUBLPOL 51 as a substitute for ECON 51), ECON 52 (can be taken concurrently).
Same as: ECON 141

PUBLPOL 109Q. Community Police Academy. 2 Units.
The Community Police Academy is a combination of classroom instruction and "hands-on" activities that examine life as a police officer. This class looks to clarify and expand the participant's knowledge of the responsibilities, decisions and constraints that face law enforcement officers today, while also providing some perspectives on the national conversation about the role of law enforcement in society. Students can elect to earn two units of credit by completing the readings, short assignments, and attending 4 discussion section meetings, or students may opt to take the course for no credits and only attend the activities. The class is a learning opportunity for all involved, an opportunity to build trust and develop partnerships between the Department of Public Safety and the Stanford Community. While this course is open to all students throughout the University, the units will not accrue to Law Degree Candidates for credit toward a degree in Law (JD, JSM, JSD, or LLM). Taught by Professor Laura Wilson. Prerequisites: Application and basic background check; minimum 18 years of age.

PUBLPOL 111. Leadership Challenges in Public Service. 4-5 Units.
This course will examine the responsibilities and challenges for those who occupy leadership roles in public service, broadly defined to include work in government, non-profit organizations, academia, and philanthropy, whether as a full- time career or part ¿time volunteer. Topics will include characteristics and styles of leadership, organizational dynamics, forms of influence, decision making, diversity, social change, and ethical responsibilities. Class sessions will include visitors who have occupied prominent leadership roles. Readings will include excerpts of relevant research, problems, exercises, and case studies. This course serves as a gateway for students participating in the Public Service Leadership Program, coordinated through the Haas Center. The class will be capped at 40 students.
Same as: ETHICSOC 95

PUBLPOL 113. America: Unequal. 4 Units.
It was never imagined "when the U.S. was founded" that the rich would be so rich and the poor so poor. It was never imagined "when the U.S. was founded" that opportunities to get ahead would depend so profoundly on one's family circumstances and other starting conditions. How could this have happened in the "land of opportunity?" What are the effects of such profound inequality? And what, if anything, should be done about it?.
Same as: CSRE 3P, SOC 3

PUBLPOL 115. Practical Training. 1-5 Unit.
Qualified Public Policy students obtain employment in a relevant research or industrial activity to enhance their professional experience consistent with their degree programs. Prior to enrolling students must get internship approved by the Public Policy Program. At the start of the quarter, students must submit a one page statement showing the relevance of the employment to the degree program along with an offer letter. At the end of the quarter, a three page final report must be supplied documenting work done and relevance to degree program. Meets the requirements for Curricular Practical Training for students on F-1 visas. May be repeated for credit.

PUBLPOL 116. Climate Perspectives: Climate Science, Impacts, Policy, Negotiations, and Advocacy. 3 Units.
The course contains four main parts:Climate Science, Climate Impacts, Climate Policy, Climate Advocacy. Part I begins with a detailed introduction to climate science, including an assessment of arguments by climate science skeptics, and an examination of climate change models. Part II describes the impacts of climate change on the planet, human health, species and biodiversity, and it adds an economic perspective on the costs and benefits of responding now¿or later¿to climate change. Part II also include a discussion on climate change ethics, i.e., fairness and responsibility among individuals, nations, and generations. Part III focuses on climate policy, from the Kyoto Protocol to the Paris Accord. Part III also includes an introduction to how the public and officials have viewed climate change over time, and it explores factors that make widespread formal agreement difficult. Part IV looks forward to climate advocacy and what to expect from future of climate negotiations. Enrollment limited to students with sophomore academic standing or above. Prerequisite: Human Biology Core or Biology Foundations or consent of instructor (i.e. background in earth systems, economics, policy).
Same as: HUMBIO 116

PUBLPOL 118X. Shaping the Future of the Bay Area. 3-5 Units.
The complex urban problems affecting quality of life in the Bay Area, from housing affordability and transportation congestion to economic vitality and social justice, are already perceived by many to be intractable, and will likely be exacerbated by climate change and other emerging environmental and technological forces. Changing urban systems to improve the equity, resilience and sustainability of communities will require new collaborative methods of assessment, goal setting, and problem solving across governments, markets, and communities. It will also require academic institutions to develop new models of co-production of knowledge across research, education, and practice. This XYZ course series is designed to immerse students in co-production for social change. The course sequence covers scientific research and ethical reasoning, skillsets in data-driven and qualitative analysis, and practical experience working with local partners on urban challenges that can empower students to drive responsible systems change in their future careers. The Autumn (X) course is specifically focused on concepts and skills, and completion is a prerequisite for participation in the Winter (Y) and/or Spring (Z) practicum quarters, which engage teams in real-world projects with Bay Area local governments or community groups. X is composed of four modules: (A) participation in two weekly classes which prominently feature experts in research and practice related to urban systems; (B) reading and writing assignments designed to deepen thinking on class topics; (C) fundamental data analysis skills, particularly focused on Excel and ArcGIS, taught in lab sessions through basic exercises; (D) advanced data analysis skills, particularly focused on geocomputation in R, taught through longer and more intensive assignments. X can be taken for 3 units (ABC), 4 units (ACD), or 5 units (ABCD). Open to undergraduate and graduate students in any major. For more information, visit http://bay.stanford.edu.
Same as: CEE 118X, CEE 218X, ESS 118X, ESS 218X, GEOLSCI 118X, GEOLSCI 218X, GEOPHYS 118X, GEOPHYS 218X, POLISCI 218X, PUBLPOL 218X

PUBLPOL 118Y. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 118Y, CEE 218Y, ESS 118Y, ESS 218Y, GEOLSCI 118Y, GEOLSCI 218Y, GEOPHYS 118Y, GEOPHYS 218Y, POLISCI 218Y, PUBLPOL 218Y

PUBLPOL 121L. Racial-Ethnic Politics in US. 5 Units.
Why is contemporary American politics so sharply divided along racial and party lines? Are undocumented immigrants really more likely to commit crimes than U.S. citizens? What makes a political ad "racist?" The U.S. population will be majority-minority by 2050; what does this mean for future electoral outcomes? We will tackle such questions in this course, which examines various issues surrounding the development of political solidarity within racial groups; the politics of immigration, acculturation, and identification; and the influence of race on public opinion, political behavior, the media, and in the criminal justice system. Prior coursework in Economics or Statistics strongly recommended.
Same as: CSRE 121L, POLISCI 121L

PUBLPOL 122. BioSecurity and Pandemic Resilience. 4-5 Units.
Overview of the most pressing biosecurity issues facing the world today, with a special focus on the COVID-19 pandemic. Critical examination of ways of enhancing biosecurity and pandemic resilience to the current and future pandemics. Examination of how the US and the world is able to withstand a pandemic or a bioterrorism attack, how the medical/healthcare field, government, and technology sectors are involved in biosecurity and pandemic or bioterrorism preparedness and response and how they interface; the rise of synthetic biology with its promises and threats; global bio-surveillance; effectiveness of various containment and mitigation measures; hospital surge capacity; medical challenges; development, production, and distribution of countermeasures such as vaccines and drugs; supply chain challenges; public health and policy aspects of pandemic preparedness and response; administrative and engineering controls to enhance pandemic resilience; testing approaches and challenges; promising technologies for pandemic response and resilience, and other relevant topics. Guest lecturers have included former Secretary of State Condoleezza Rice, former Special Assistant on BioSecurity to Presidents Clinton and Bush Jr. Dr. Ken Bernard, Chief Medical Officer of the Homeland Security Department Dr. Alex Garza, eminent scientists, public health leaders, innovators and physicians in the field, and leaders of relevant technology companies. Open to medical, graduate, and undergraduate students. No prior background in biology necessary. Additional 1 unit for writing a research paper for 5 units total maximum.
Same as: BIOE 122, EMED 122, EMED 222, PUBLPOL 222

PUBLPOL 123. Thinking About War. 4-5 Units.
Introduction to the ideas, important writers, and policy decisions about warfare. Topics include: what causes wars, great strategists of warfare, whether nuclear weapons require different strategy than conventional war, fostering innovation, what creates stable peace, and what warfare feels like to those who fight it. Each class session is organized around a question; first half of each session will explore concepts, second half will apply them in a historical case or policy decision.
Same as: PUBLPOL 223

PUBLPOL 124. American Political Institutions in Uncertain Times. 5 Units.
This course examines how the rules that govern elections and the policy process determine political outcomes. It explores the historical forces that have shaped American political institutions, contemporary challenges to governing, and prospects for change. Topics covered include partisan polarization and legislative gridlock, the politicization of the courts, electoral institutions and voting rights, the expansion of presidential power, campaign finance and lobbying, representational biases among elected officials, and the role of political institutions in maintaining the rule of law. Throughout, emphasis will be placed on the strategic interactions between Congress, the presidency, and the courts and the importance of informal norms and political culture. Political Science majors taking this course to fulfill the WIM requirement should enroll in POLISCI 120C.
Same as: POLISCI 120C

PUBLPOL 127. Health Care Leadership. 2-4 Units.
Healthcare Leadership class brings eminent healthcare leaders from a variety of sectors within healthcare to share their personal reflections and insights on effective leadership. Speakers discuss their personal core values, share lessons learned and their recipe for effective leadership in the healthcare field, including reflection on career and life choices. Speakers include CEOs of healthcare technology, pharmaceutical and other companies, leaders in public health, eminent leaders of hospitals, academia, biotechnology companies and other health care organizations. The class will also familiarize the students with the healthcare industry, as well as introduce concepts and skills relevant to healthcare leadership. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit. Students taking the course Mondays and Wednesdays should enroll for 4 units (exceptions for a 3 unit registration can be made with the consent of instructor to be still eligible for Ways credit). Students taking the course on Wednesdays only should register for 2 units.
Same as: EMED 127, EMED 227, PUBLPOL 227

PUBLPOL 129. Conversations on the Indian Economy. 1 Unit.
This course is intended to give students the opportunity to engage with Stanford faculty, across the University's different schools, who undertake research related to the modern Indian economy, including professors from the Humanities and Sciences, Engineering, GSB and schools of medicine, as well as from different research centers across the University. In addition, the course will feature conversations with several members of the Silicon Valley Community, as well as from India. The format is intended to promote discussion and debate, and to provide students an opportunity to learn about new developments and initiatives regarding India. Class meetings will be in the form of round-table interactions and exchanges.

PUBLPOL 130. Planning Calif: the Intersection of Climate, Land Use, Transportation & the Economy. 3 Units.
Cities and urban areas have always been transformed by major external changes like pandemics and public health crises. California is both in the midst of its greatest economic recession since the Great Depression and experiencing a pandemic that has the potential to reshape many aspects of life. Planning for cities and regions, however, is a long game that requires follow-through on decisions made sometimes over many decades. How do we balance the shocks to our assumptions from the current Covid world with the need to plan long-term for issues like affordable housing and equitable cities, and perhaps most fundamentally, prepare our cities and communities for the inevitability of climate change and climate impact? nnnnThis course takes an interdisciplinary view of the key contemporary planning topics in California. It does so from looking at the intersection of climate laws, land use changes, the need for housing, travel patterns and the availability of high quality jobs and employment. This course will give you an understanding of the roles of key levels of government, from the state to the region/metropolitan scale, to the city and county, down to the neighborhood and parcel level. it will give students insight into leading themes and issues of the day in California such as the future of downtowns, the role of high speed rail, the impact of telework, automation in the construction of housing, drawing from examples in San Jose and San Francisco, the Central Valley, the state legislature, Southern California. Within each of these topics we will look at the impact of decisions on equity as well as climate and the economy. nnnnThe instructors are Kristy Wang, formerly SPUR¿s Community Planning Policy Director, and Egon Terplan, Senior Advisor for Economic Development and Transportation in the California Governor¿s Office, formerly SPUR¿s Regional Planning Director. (Affiliations for identification purposes only).
Same as: CEE 136, CEE 236, PUBLPOL 230, URBANST 130

PUBLPOL 131. Introduction to Space Policy. 3 Units.
The last decade has seen dramatic developments and a rekindling of interest in space efforts. Silicon Valley has invested in a range of activities, including reusable launch services, constellations of communication and observation satellites, off-planet resource development, and even space tourism. Governments are restructuring their space-oriented military and regulatory agencies. Scientific missions continue to benefit from advances in technology, extending the reach and capabilities of robotic missions. Human missions will finally revisit deep space after decades spent solely in low earth orbit. nnThis course investigates the economic, policy, and engineering challenges to building a thriving private and public space industry. We begin with a review of historical space efforts, both public and private. We will investigate current efforts in detail, including budgeting, regulatory frameworks, and the key drivers of the renewed space activity. Externalities provide a core rationale for governmental policy action, including such topics as conflicts over spectrum used by space assets, stimulating innovation, orbital debris challenges, dual-use space technologies, and unclear or conflicting rights to develop space-based resources. Leaders from government and new space companies will occasionally participate in the class.nnStudents will be expected to participate in policy and case discussions, contribute several papers including a final project paper, and complete problem and policy analyses. Readings will include articles, policy papers, HBS cases, regulatory filings, and mission reviews.
Same as: AA 135

PUBLPOL 132. The Politics of Policy Making. 3 Units.
Public policymaking in the United States is part of a political process that can take years or even decades to play out. A familiarity with the politics of policymaking is key to understanding why some reform attempts are successful while others are not. This course will give students a behind-the-scenes look at how policy actually gets made. Students will gain exposure to the theory and literature behind policy formulation, and engage in debates over historical and contemporary efforts at reform.
Same as: PUBLPOL 232

PUBLPOL 133. Political Power in American Cities. 5 Units.
The major actors, institutions, processes, and policies of sub-state government in the U.S., emphasizing city general-purpose governments through a comparative examination of historical and contemporary politics. Issues related to federalism, representation, voting, race, poverty, housing, and finances. Political Science majors taking this course to fulfill the WIM requirement should enroll in POLISCI 121.
Same as: AMSTUD 121Z, POLISCI 121, URBANST 111

PUBLPOL 134. Ethics on the Edge: Business, Non-Profit Organizations, Government, and Individuals. 3 Units.
(PUBLPOL 134, PUBLPOL 234 - 3 credits, Ways - ER) (Same as LAW 7020) The objective of this course is to explore the increasing ethical challenges in a world in which technology, global risks, and societal developments are accelerating faster than our understanding and the law can keep pace. We will unravel the factors contributing to the seemingly pervasive failure of ethics today among organizations and leaders across all sectors: business, government, non-profit, and academia. A framework for ethical decision-making underpins the course. There is significant space for personal reflection and forming your own views on a wide range of issues. Prominent guest speakers will attend certain sessions interactively. The relationships among ethics and technology, culture, leadership, law, and global risks (inequality, privacy, financial system meltdown, cyber-terrorism, climate change, etc.) will inform discussion. A broad range of international topics might include: designer genetics; civilian space travel (Elon Musk's Mars plans); social media (e.g. Facebook Cambridge Analytica, on-line sex trafficking, monopolies); new devices (e.g. Amazon Alexa in hotel rooms); free speech on University campuses; opioid addiction; AI (from racism to the work challenge and beyond); corporate and financial sector scandals (Theranos, Wells Fargo fraudulent account creation, Volkswagen emissions testing manipulation); new corporate challenges (e.g. Google selling drones to the military and Facebook¿s new Libra crypto currency); and non-profit sector ethics challenges (e.g. NGOs engagement with ISIS and sexual misconduct in humanitarian aid (Oxfam case)). Final project in lieu of exam on a topic of student's choice. Attendance required. Class participation important (with multiple opportunities to earn participation credit beyond speaking in class). Strong emphasis on rigorous analysis, critical thinking and testing ideas in real-world contexts. Please note that this course will require one make-up evening session on a Wednesday or Thursday in lieu of the final class session the first week of June, and two one-hour extensions to Monday class sessions as a make-up for May 11, so the course will end before Memorial Day. Permission numbers are required for enrollment. Please email the Public Policy Program at annas7@stanford.edu to obtain a permission number. The course offers credit toward Public Policy core requirements (if taken in combination with PUBLPOL 103E or PUBLPOL 103F), and Science, Technology and Society majors and satisfies the undergraduate Ways of Thinking - Ethical Reasoning requirement. The course is open to undergraduate and graduate students. Undergraduates will not be at a disadvantage. Everyone will be challenged. Distinguished Career Institute Fellows are welcome and should contact Dr. Susan Liautaud directly at susanl1@stanford.edu. *Students taking the course for Ways credit and Public Policy majors taking the course to complete the core requirements must obtain a letter grade. Other students may take the course for a letter grade or C/NC. Students seeking credit for other majors should consult their departments.
Same as: PUBLPOL 234

PUBLPOL 135. Regional Politics and Decision Making in Silicon Valley and the Greater Bay Area. 4 Units.
Dynamics of regional leadership and decision making in Silicon Valley, a complex region composed of 40 cities and four counties without any overarching framework for governance. Formal and informal institutions shaping outcomes in the region. Case studies include transportation, workforce development, housing and land use, and climate change.

PUBLPOL 136. The Sharing Economy. 3 Units.
The rapid growth of the sharing economy, sometimes also called the peer to peer economy, is made possible by the ubiquity of smart phones, inefficiency of ownership, and measures designed to create and measure trust among participants. The course will explore not only the rapid rise of certain companies but also the shadow side of commercialized relationships. We will examine the economics and development consequences of the sharing economy, primarily with an urban focus, along an emphasis on the design of platforms and markets, ownership, the nature of work, environmental degradation and inequality.
Same as: URBANST 136

PUBLPOL 137. Innovations in Microcredit and Development Finance. 3 Units.
The role of innovative financial institutions in supporting economic development, the alleviation of rural and urban poverty, and gender equity. Analysis of the strengths and limits of commercial banks, public development banks, credit unions, and microcredit organizations both in the U.S. and internationally. Readings include academic journal articles, formal case studies, evaluations, and annual reports. Priority to students who have taken any portion of the social innovation series: URBANST 131, 132, or 133. Recommended: ECON 1A or 1B.
Same as: URBANST 137

PUBLPOL 141. Monitoring the Crisis. 4-5 Units.
A course devoted to understanding how people are faring as the country's health and economic crisis unfolds. The premise of the course is that, as important and valuable as surveys are, it's a capital mistake to presume that we know what needs to be asked and that fixed-response answers adequately convey the depth of what's happening. We introduce a new type of qualitative method that allows for discovery by capturing the voices of the people, learn what they're thinking and fearing, and understand the decisions they're making. Students are trained in immersive interviewing by completing actual interviews, coding and analyzing their field notes, and then writing reports describing what's happening across the country. These reports will be designed to find out who's hurting, why they're hurting, and how we can better respond to the crisis. Students interested should submit the following application: https://docs.google.com/forms/d/e/1FAIpQLSfdOZsnpOCg4zTRbVny0ikxpZEd1AFEEJh3K9KjvINyfbWMGw/viewform.
Same as: PSYCH 145A, SOC 141, SOC 241, URBANST 149

PUBLPOL 143. Finance, Corporations, and Society. 4 Units.
Both "free market capitalism" and democracy are in crisis around the world. This interdisciplinary course will help you understand the issues by exploring the interactions between the financial system, corporations, governments, and broader society. Topics include basic financial decisions of individuals and corporations, consumer finance (including mortgages, student loans, insurance and savings), financial markets and firms, corporations and their governance, the role of disclosures and regulations, political economy and government institutions, and the role of the media. We will discuss current events and policy debates regularly throughout the course. The approach will be rigorous and analytical but not overly mathematical. Visitors with relevant experience will enrich the discussion.
Same as: ECON 143, INTLPOL 227, POLISCI 127A

PUBLPOL 146. Policy, Politics and the 2020 Elections: What 2020 Means for Future Campaigns and Elections. 2 Units.
(Same as LAW 7057). This course looks back at the 2020 election campaign and tries to discern lessons and takeaways for future campaigns and elections. It will provide students with a behind-the-scenes understanding of how campaigns work. Each week, we will explore a different topic related to high-profile campaigns -- policy formation, communications, grassroots strategy, digital outreach, campaign finance -- and feature prominent guest speakers who have served and will serve in senior roles on both Democratic and Republican campaigns, including the Trump and Biden teams.
Same as: COMM 153A, COMM 253A, POLISCI 72, PUBLPOL 246

PUBLPOL 147. Ending Poverty with Technology. 5 Units.
There are growing worries that new technologies may eliminate work, increase inequality, and create a large dependent class subsisting on transfers. But can technology instead be turned against itself and used to end poverty? This class explores the sources of domestic poverty and then examines how new technologies might be developed to eliminate poverty completely. We first survey existing poverty-reducing products and then attempt to imagine new products that might end poverty by equalizing access to information, reducing transaction costs, or equalizing access to training. In a follow-up class in the spring quarter, students who choose to continue will select the most promising ideas, continue to develop them, and begin the design task within Stanford¿s new Poverty and Technology Lab.
Same as: SOC 157

PUBLPOL 148. Ending Poverty with Technology: A Practicum.. 5 Units.
Will robots, automation, and technology eliminate work and create a large poverty-sticken dependent class? Or will they eliminate poverty, free us from the tyranny of work, and usher in a new society defined by leisure and creative pursuits? This two-quarter class is dedicated to exploring new theories about poverty while at the same time incubating applied technology solutions. The first quarter is devoted to examining the theory of technology-based solutions to poverty, and the second quarter is devoted to planning a viable technology-based product that will reduce poverty. This product may then be built in a follow-up Using Tech for Good (Computer Science 50) class in the first quarter of 2018 (but class participants are not required to take that follow-up class). The course is premised on the view that innovative solutions to poverty will be based on new conversations and an authentic collaboration between Silicon Valley and leaders from education, government, and low-income communities.
Same as: SOC 158

PUBLPOL 152. Negotiation. 3 Units.
Students learn to prepare for and conduct negotiations in a variety of arenas including getting a job, managing workplace conflict, negotiating transactions, and managing personal relationships. Interactive class. The internationally travelled instructor who has mediated cases in over 75 countries will require students to negotiate real life case studies and discuss their results in class. Application required before first day of class; students should enroll on Axess and complete the application on Canvas before March 20, 2020. Note: there is a class fee of $130 for access to case files and readings.
Same as: CEE 151, CEE 251, EARTH 251

PUBLPOL 154. Politics and Policy in California. 5 Units.
State politics and policy making, including the roles of the legislature, legislative leadership, governor, special interests, campaign finance, advocacy groups, ballot initiatives, state and federal laws, media, and research organizations. Case studies involving budgets, education, pensions, health care, political reform, environmental reforms, water, transportation and more. Evaluation of political actions, both inside and outside of government, that can affect California policy and social outcomes. Meetings with elected officials, policymakers, and advocates in class and during a day-long field trip to Sacramento.

PUBLPOL 156. Health Care Policy and Reform. 5 Units.
(HUMBIO students must enroll in HUMBIO 122A. Graduate students must enroll in PUBLPOL 156.) Focuses on U.S. health care policy. Includes comparisons with health care policy in other countries and detailed examinations of Medicare, Medicaid, private insurance, the Affordable Care Act (ACA), and proposed reforms. Examines health policy efforts at state, local, and local levels. The course includes sessions on effective memo writing as well as presentation and the politics of health policy and reform efforts. Enrollment limited to students with sophomore academic standing or above. Prerequisites: Human Biology Core.
Same as: HUMBIO 122A

PUBLPOL 159. Economic, Legal, and Political Analysis of Climate-Change Policy. 5 Units.
This course will advance students understanding of economic, legal, and political approaches to avoiding or managing the problem of global climate change. Theoretical contributions as well as empirical analyses will be considered. It will address economic issues, legal constraints, and political challenges associated with various emissions-reduction and adaptation strategies, and it will consider policy efforts at the local, national, and international levels. Specific topics include: interactions among overlapping climate policies, the strengths and weaknesses of alternative policy instruments, trade-offs among alternative policy objectives, and decision making under uncertainty. Prerequisites: Econ 50 or its equivalent.
Same as: EARTHSYS 159, ECON 159, ECON 209

PUBLPOL 166. The Politics of Epidemics. 4-5 Units.
When it comes to healthcare, whose bodies matter, who deserves care? How do scholars, activists, and patients confront and combat widespread healthcare disparities? This course explores prevailing epidemics of our moment (including HIV/AIDS, breast cancer, opioid addiction, and Lyme disease) in order to consider how infectious disease, moral panic, and national identity interplay across public health platforms, scientific research, and popular rhetoric. We will utilize intersectional frameworks to consider the histories, politics, and broader context of current epidemiological data and larger questions about doctor bias, the gender gap in pain, and cultural fears related to illness and the body. How do treatment, media coverage, policy, and access to care change according to population, location, and technology?.
Same as: FEMGEN 146

PUBLPOL 167. How To Be a Politician. 2 Units.
Do you want to run for political office one day? This course will give you a full toolkit for winning elections. It will help students think about their personal narrative, how to present themselves to the electorate, and the issues and messages that should underpin their future campaign. It will also provide students with a practical understanding of how to build a campaign apparatus, fundraise effectively, and develop a winning strategy. The class will be highly interactive giving each student the chance to hone their candidacy, and there will be opportunities to work on debate skills, speech giving, and media performance. We will look at campaigns from across the world, as well as invite politicians and political consultants to speak to us. This class is designed for any student who has dreamed of running for office: be it locally or becoming President.
Same as: PUBLPOL 267

PUBLPOL 168. Global Organizations: The Matrix of Change. 4 Units.
We learn how to apply analytical tools from the social sciences to organizations, and study how to design effective organizations and projects within and across institutional settings. A variety of organizations are included and how they deal with strategy changes and accountability. The theme for this year's class is on accountability of non-profit organizations such as Doctors Without Borders, The International Rescue Committee and The Red Cross. Recommended: FINANCE 377, MS&E 180, SOC 160, ECON 149, or MGTECON 330.
Same as: PUBLPOL 268, SOC 168, SOC 268

PUBLPOL 170. Bridging Policy and Tech Through Design. 3 Units.
This project-based course aims to bring together students from computer science and the social sciences to work with external partner organizations at the nexus of digital technology and public policy. Students will collaborate in interdisciplinary teams on a problem with a partner organization. Along with the guidance of faculty mentors and the teaching staff, students will engage in a project with outcomes ranging from policy memos and white papers to data visualizations and software. Possible projects suggested by partner organizations will be presented at an information session in early March. Following the infosession, a course application will open for teams to be selected before the start of Spring Quarter. Students may apply to a project with a partner organization or with a preformed team and their own idea to be reviewed for approval by the course staff. There will be one meeting per week for the full class and at least one weekly meeting with the project-based team mentors. Prerequisites: Appropriate preparation depends on the nature of the project proposed, and will be verified by the teaching staff based on your application.
Same as: CS 184

PUBLPOL 172. Children, Youth, and the Law. 3 Units.
How the legal rights of children and adolescents in America are defined, protected, and enforced through the legal process within the context of their developmental needs and competing societal interests. Topics: origins and definitions of children's rights; adoption; custody; the juvenile justice system; education; freedom of speech; and sex. The class is interactive, using hypotheticals for discussion and analysis. A and B alternate; students may take one or both. Upper division course with preference given to upperclassmen.
Same as: HUMBIO 172B

PUBLPOL 174. The Urban Economy. 4 Units.
Applies the principles of economic analysis to historical and contemporary urban and regional development issues and policies. Explores themes of urban economic geography, location decision-making by firms and individuals, urban land and housing markets, and local government finance. Critically evaluates historical and contemporary government policies regulating urban land use, housing, employment development, and transportation.
Same as: URBANST 173

PUBLPOL 177. Philosophy of Public Policy. 4 Units.
From healthcare to voting reforms, social protection and educational policies, public policies are underpinned by moral values. When we debate those policies, we typically appeal to values like justice, fairness, equality, freedom, privacy, and safety. A proper understanding of those values, what they mean, how they may conflict, and how they can be weighed against each other is essential to developing a competent and critical eye on our complex political world. We will ask questions such as: Is compulsory voting justified? Should children have the right to vote? Is affirmative action just? What is wrong with racial profiling? What are the duties of citizens of affluent countries towards migrants? Do we have a right to privacy? Is giving cash to all unconditionally fair? This class will introduce students to a number of methods and frameworks coming out of ethics and political philosophy and will give students a lot of time to practice ethically informed debates on public policies. At the end of this class, students should have the skills to critically examine a wide range of diverse policy proposals from the perspective of ethics, moral and political philosophy. There are no prerequisites. Undergraduates and graduates from all departments are welcome to attend.
Same as: ETHICSOC 175X, PHIL 175B, PHIL 275B, POLISCI 135E, POLISCI 235E

PUBLPOL 178. The Science and Practice of Effective Advocacy. 3-5 Units.
How can purposeful collective action change government policy, business practices and cultural norms? This course will teach students about the components of successful change campaigns and help develop the practical skills to carry out such efforts. The concepts taught will be relevant to both issue advocacy and electoral campaigns, and be evidence-based, drawing on lessons from social psychology, political science, communications, community organizing and social movements. The course will meet twice-a-week for 90 minutes, and class time will combine engaged learning exercises, discussions and lectures. There will be a midterm and final. Students will be able to take the course for 3 or 5 units. Students who take the course for 5 units will participate in an advocacy project with an outside organization during the quarter, attend a related section meeting and write reflections. For 5 unit students, the section meeting is on Tuesdays, from 3:00 to 4:00 p.m.
Same as: CSRE 178P, URBANST 178

PUBLPOL 182. Ethics, Public Policy, and Technological Change. 5 Units.
Examination of recent developments in computing technology and platforms through the lenses of philosophy, public policy, social science, and engineering. Course is organized around four main units: algorithmic decision-making and bias; data privacy and civil liberties; artificial intelligence and autonomous systems; and the power of private computing platforms. Each unit considers the promise, perils, rights, and responsibilities at play in technological developments. Prerequisite: CS106A.
Same as: COMM 180, CS 182, ETHICSOC 182, PHIL 82, POLISCI 182

PUBLPOL 190. Indigenous Cultural Heritage: Protection, Practice, Repatriation. 3 Units.
This interdisciplinary seminar explores pressing questions relating to the protection, practice and repatriation of the cultural heritage of Indigenous peoples from North America and beyond. Using an innovative combination of in-class lectures and videos of interviews with renowned experts, including Indigenous leaders, scholars, artists and performers and museum professionals from around the world, this seminar will explore and problematize, among other subjects: the impact of colonialism, urbanization and other political, legal, economic, religious and cultural forces on understandings and definitions of "indigenous" and "cultural heritage"; the development of international law relating to Indigenous peoples¿ cultural rights; international, domestic, and tribal heritage protection and repatriation laws/initiatives including the 2007 United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), the 1990 US Native American Graves Protection and Repatriation Act (NAGPRA), and others; past and present Western museum practices and guidelines relating to display, preservation, provenance research and repatriation of indigenous cultural material; the meaning of repatriation to Indigenous peoples and other stakeholders; and resolving repatriation disputes, including by alternative dispute resolution (ADR) processes. While case studies will relate primarily to Indigenous peoples of North America, comparisons will be drawn with the situation of Indigenous peoples in other regions, such as Oceania and Russia. Each week students will brainstorm actionable ideas for amending/supplementing current frameworks in order to give force to the cultural rights enumerated in UNDRIP. The overall seminar experience will involve discussions of lectures and video content, assigned readings, quizzes, a class visit to the Cantor Center Native Americas collection, and visits to our classroom by experts. Elements used in grading: class participation, attendance and a final project (one-day take-home exam; or research paper or film project with instructor's consent).
Same as: ARTHIST 190A, ARTHIST 490A, PUBLPOL 290

PUBLPOL 197. Junior Honors Seminar. 5 Units.
For juniors (advanced sophomores will be considered) who expect to write an honors thesis in Economics or Public Policy. Weekly sessions go through the process of selecting a research question, finding relevant bibliography, writing a literature review, introduction, and study design, culminating in the write-up of an honors thesis proposal (prospectus) and the oral presentation of each student's research project. Students also interact with potential advisors, and outline a program of study for their senior year. To apply, complete the application at https://economics.stanford.edu/undergraduate/forms.
Same as: ECON 198

PUBLPOL 198. Directed Readings in Public Policy. 1-5 Unit.
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PUBLPOL 199. Senior Research. 1-15 Unit.
May be repeated for credit.

PUBLPOL 200A. Senior Practicum. 5 Units.
Small student teams conduct policy analyses requested by government and nonprofit organizations. With guidance from the instructor and client organization, each team researches a real-world problem and devises implementable policy recommendations to help address it. The project culminates in a professional report and presentation to the client organization. Prerequisites: core courses in Public Policy or consent of instructor.

PUBLPOL 200B. Senior Practicum. 5 Units.
Small student teams conduct policy analyses requested by government and nonprofit organizations. With guidance from the instructor and client organization, each team researches a real-world problem and devises implementable policy recommendations to help address it. The project culminates in a professional report and presentation to the client organization. Prerequisites: core courses in Public Policy or consent of instructor.

PUBLPOL 200C. Senior Practicum. 5 Units.
Small student teams conduct policy analyses requested by government and nonprofit organizations. With guidance from the instructor and client organization, each team researches a real-world problem and devises implementable policy recommendations to help address it. The project culminates in a professional report and presentation to the client organization. Prerequisites: core courses in Public Policy or consent of instructor.

PUBLPOL 200H. Senior Honors Seminar. 3 Units.
Honors students conduct original research for their policy-related Honors thesis. The course is designed to help students make progress on their theses and improve their analytical, research, and communication skills. Instructor consent required.

PUBLPOL 201. Introduction to American Politics and Policy: The Good, The Bad, and The Ugly. 4-5 Units.
This is a course about American politics, which means this is a course about individuals, identities, and institutions. How do Americans come to think andnreason about politics? What is the role that identities play in affecting the political judgments that individuals make? How do our political institutionsnrespond to the demands of a diverse public that disagrees about issues related to race and justice, income and wealth inequality, climate change, gunncontrol, reproductive rights, the power of the executive, and the role that government ought to play in the lives of the governed? And how do we makensense of this seemingly peculiar contemporary moment in American politics? These are not easy questions, but they are ones for which political sciencenprovides a useful foundation to guide our inquiry. The objective of this course is to introduce students to various concepts and theoretical frameworks thatnhelp us understand the messiness and complexity of American politics. In addition to classroom lectures and discussion sections, students will benrequired to apply concepts and theoretical frameworks to contemporary issues in American politics. Undergraduate Public Policy students are required to enroll in this class for 5 units.
Same as: AMSTUD 123X, POLISCI 102, PUBLPOL 101

PUBLPOL 203E. Ethics on the Edge Public Policy Core Seminar. 2 Units.
This seminar-style course will explore additional foundational readings on organizational ethics (business, non-profit, and governmental organizations) and policy ethics. Themes will include, among others: AI and policy considerations; social media and policy considerations; race and police brutality incidents; national security (including cyber threats); the Iran nuclear agreement; non-profit organizations in the policy and US landscape; and various corporate matters. Organizing themes include, among others: ethics of leadership; ethics of persuasion and compromise; influence of bias in organizational and policy ethics; ethics of social movements; discrepancies between discourse and action; emotion and ethics; and interpreting and explaining ethics. In addition, the course will offer training in a wide variety of skills for effective communication of ethics for policy purposes (developing succinct arguments, presentations, website discourse, commenting in meetings and conferences, interviews, statement of personal views, interacting with the media and social media, and mapping complex ethical analysis). Most of the assignments allow students flexibility to explore topics of their choice. The objective is to engage actively and improve skills in a supportive environment. A short, analytically rigorous final paper in lieu of final exam. Attendance required. Grading will be based on short assignments, class participation, and the short final paper. The course is open to undergraduate and graduate students. Undergraduates will not be at a disadvantage. Everyone will be challenged. Students wishing to take the course who are unable to sign up within the enrollment limit should contact Dr. Susan Liautaud at susanl1@stanford.edu. Distinguished Career Institute Fellows are welcome and should contact Dr. Susan Liautaud directly at susanl1@stanford.edu. This three-credit seminar accompanies PUBLPOL 134 Ethics on the Edge but can also be taken as a stand-alone course. *Please note the course is being offered for two units and therefore is ineligible for Ways credit in the 2019-20 academic year. Please note that this course will require one make-up evening session on a Monday, Tuesday or Wednesday in April in lieu of the final class session the first week of June, so the course ends before Memorial Day.
Same as: PUBLPOL 103E

PUBLPOL 203F. Ethics of Truth in a Post-Truth World. 2-3 Units.
This course will explore changing notions of truth in a world in which technology, global risks, and societal developments are blurring the boundaries of humanity and boring through traditional notions of nation states, institutions, and human identity. We will ask one over-arching question: does truth matter anymore? If so, why and how? If not, why not? Either way, how does truth relate to ethical decision-making by individuals and institutions and to an ethical society? How does truth relate to a life well lived? Six themes will organize our exploration of more specific topics: science and subjectivity; identity; memory; authenticity; religious truth; and truth and the law. Examples of topics to be explored include, among others: truth and technology (from deep fakes to home devices); white supremacy; DNA testing and the ¿identify as¿ movement, and identity; University history (Rhodes, Georgetown slavery, Yale Calhoun College...); the connections among truth, memory, and history; new questions in gender and racial identity; Chinese beautifying app Meitu and other social media "truth modifiers"; the sharing economy; the impact of AI and DNA testing sites on legal truth. Scotty McClennan will explore truth through major literary characters and the impact of religion on truth. We will consider how we determine and verify the truth; how we "do" truth; the role of truth in ethical decision-making; the importance of truth to effective ethical policy; and the relationship of the truth to a life well lived. An analytically rigorous short final paper in lieu of exam. This three-credit seminar may be taken as a stand-alone course or may accompany PUBLPOL 134 Ethics on the Edge to full the Public Policy major ethics requirement. The course is open to undergraduate and graduate students. Undergraduates will not be at a disadvantage. Everyone will be challenged. Distinguished Career Institute Fellows are welcome and should contact Dr. Susan Liautaud directly at susanl1@stanford.edu. Students wishing to take the course who are unable to sign up within the enrollment limit should contact Dr. Susan Liautaud at susanl1@stanford.edu. *Public Policy majors taking the course to complete the core requirements and students taking the course for Ways credit must obtain a letter grade. Other students may take the course for a letter grade or C/NC. To satisfy a Ways requirement, this course must be taken for at least 3 units. In AY 2020-21, a letter grade or `CR¿ grade satisfies the Ways requirement.
Same as: PUBLPOL 103F

PUBLPOL 204. Economic Policy Analysis. 4-5 Units.
The relationship between microeconomic analysis and public policy making. How economic policy analysis is done and why political leaders regard it as useful but not definitive in making policy decisions. Economic rationales for policy interventions, methods of policy evaluation and the role of benefit-cost analysis, economic models of politics and their application to policy making, and the relationship of income distribution to policy choice. Theoretical foundations of policy making and analysis, and applications to program adoption and implementation. Prerequisites: ECON 50 and ECON 102B. Undergraduate Public Policy students are required to take this class for a letter grade and enroll in this class for five units.
Same as: ECON 150, PUBLPOL 104

PUBLPOL 205. Empirical Methods in Public Policy. 4-5 Units.
Methods of empirical analysis and applications in public policy. Emphasis on causal inference and program evaluation. Public policy applications include health, labor and saving. Assignments include hands-on data analysis, evaluation of existing literature, and a final research project. Objective is to obtain tools to 1) critically evaluate evidence used to make policy decisions and 2) perform empirical analysis to answer questions in public policy. Prerequisite: ECON 102B. Enrollment is limited to Public Policy students. Public Policy students must take the course for a letter grade.
Same as: PUBLPOL 105

PUBLPOL 206. Law and Economics. 4-5 Units.
This course explores the role of law in promoting social well-being (happiness). Law, among its other functions, can serve as a mechanism to harmonize private incentives with cooperative gains, to support an equitable division of those gains, and to deter "cheating" and dystopia. Law is thus essential to civilization. Economic analysis of law focuses on the welfare-enhancing incentive effects of law and its enforcement and on law's role in reducing the risks of cooperation, achieved by fixing expectations of what courts or the state will do in various futures. Specific topics include welfare economics, torts, property, contracts, regulation, process and antitrust. Requires a term paper applying economic analysis to a case, procedure, or law. Prerequisite: ECON 50.
Same as: ECON 154, PUBLPOL 106

PUBLPOL 209. What is Public about Public Lands - Who and How to Manage.. 3 Units.
The seminar will exam the origin and evolution of public lands from 1789 forward. Specifically, how the United States' concept of property has evolved and thus the management or caretaking of these lands has also changed. There are nearly 500 million acres of surface public lands (nearly ten times the size of New York) and over 750 million acres of subsurface public lands. The seminar will explore the writing of a "field book" for a unified management approach to the managing these lands.

PUBLPOL 217. The Future of Global Cooperation. 3-4 Units.
As threats to peace and security emerge, should states respond unilaterally, build ad hoc coalitions of the willing, or work through multilateral institutions? What are the benefits and risks of global cooperation? This seminar interrogates these questions by examining the role that international organizations play in responding to global threats in the modern era. The first section focuses on the advent of the modern global institutional architecture, considering its historical context, theoretical underpinnings, sources of legitimacy and power (or lack thereof), and the role of regional, subnational, and nongovernmental actors. The second section weighs the efficacy of global institutions in responding to transnational crises by delving into recent case studies, including the Syrian war, the Paris Climate Accord, the Iran Nuclear Deal, the 2014-2016 Ebola outbreak in West Africa, and the COVID-19 pandemic. The final section explores the future of the liberal world order and its institutions, and considers alternative models of global cooperation. Students should enroll for three units. Those who wish to receive an additional unit of credit must write a long policy memo. See syllabus for details. Enrollment is capped. Course is cross-listed with LAW 5039.
Same as: INTLPOL 217

PUBLPOL 218X. Shaping the Future of the Bay Area. 3-5 Units.
The complex urban problems affecting quality of life in the Bay Area, from housing affordability and transportation congestion to economic vitality and social justice, are already perceived by many to be intractable, and will likely be exacerbated by climate change and other emerging environmental and technological forces. Changing urban systems to improve the equity, resilience and sustainability of communities will require new collaborative methods of assessment, goal setting, and problem solving across governments, markets, and communities. It will also require academic institutions to develop new models of co-production of knowledge across research, education, and practice. This XYZ course series is designed to immerse students in co-production for social change. The course sequence covers scientific research and ethical reasoning, skillsets in data-driven and qualitative analysis, and practical experience working with local partners on urban challenges that can empower students to drive responsible systems change in their future careers. The Autumn (X) course is specifically focused on concepts and skills, and completion is a prerequisite for participation in the Winter (Y) and/or Spring (Z) practicum quarters, which engage teams in real-world projects with Bay Area local governments or community groups. X is composed of four modules: (A) participation in two weekly classes which prominently feature experts in research and practice related to urban systems; (B) reading and writing assignments designed to deepen thinking on class topics; (C) fundamental data analysis skills, particularly focused on Excel and ArcGIS, taught in lab sessions through basic exercises; (D) advanced data analysis skills, particularly focused on geocomputation in R, taught through longer and more intensive assignments. X can be taken for 3 units (ABC), 4 units (ACD), or 5 units (ABCD). Open to undergraduate and graduate students in any major. For more information, visit http://bay.stanford.edu.
Same as: CEE 118X, CEE 218X, ESS 118X, ESS 218X, GEOLSCI 118X, GEOLSCI 218X, GEOPHYS 118X, GEOPHYS 218X, POLISCI 218X, PUBLPOL 118X

PUBLPOL 218Y. Shaping the Future of the Bay Area. 3-5 Units.
Students are placed in small interdisciplinary teams (engineers and non-engineers, undergraduate and graduate level) to work on complex design, engineering, and policy problems presented by external partners in a real urban setting. Multiple projects are offered and may span both Winter and Spring quarters; students are welcome to participate in one or both quarters. Students are expected to interact professionally with government and community stakeholders, conduct independent team work outside of class sessions, and submit deliverables over a series of milestones. Prerequisite: the Autumn (X) skills course or approval of instructors. For information about the projects and application process, visit http://bay.stanford.edu.
Same as: CEE 118Y, CEE 218Y, ESS 118Y, ESS 218Y, GEOLSCI 118Y, GEOLSCI 218Y, GEOPHYS 118Y, GEOPHYS 218Y, POLISCI 218Y, PUBLPOL 118Y

PUBLPOL 222. BioSecurity and Pandemic Resilience. 4-5 Units.
Overview of the most pressing biosecurity issues facing the world today, with a special focus on the COVID-19 pandemic. Critical examination of ways of enhancing biosecurity and pandemic resilience to the current and future pandemics. Examination of how the US and the world is able to withstand a pandemic or a bioterrorism attack, how the medical/healthcare field, government, and technology sectors are involved in biosecurity and pandemic or bioterrorism preparedness and response and how they interface; the rise of synthetic biology with its promises and threats; global bio-surveillance; effectiveness of various containment and mitigation measures; hospital surge capacity; medical challenges; development, production, and distribution of countermeasures such as vaccines and drugs; supply chain challenges; public health and policy aspects of pandemic preparedness and response; administrative and engineering controls to enhance pandemic resilience; testing approaches and challenges; promising technologies for pandemic response and resilience, and other relevant topics. Guest lecturers have included former Secretary of State Condoleezza Rice, former Special Assistant on BioSecurity to Presidents Clinton and Bush Jr. Dr. Ken Bernard, Chief Medical Officer of the Homeland Security Department Dr. Alex Garza, eminent scientists, public health leaders, innovators and physicians in the field, and leaders of relevant technology companies. Open to medical, graduate, and undergraduate students. No prior background in biology necessary. Additional 1 unit for writing a research paper for 5 units total maximum.
Same as: BIOE 122, EMED 122, EMED 222, PUBLPOL 122

PUBLPOL 223. Thinking About War. 4-5 Units.
Introduction to the ideas, important writers, and policy decisions about warfare. Topics include: what causes wars, great strategists of warfare, whether nuclear weapons require different strategy than conventional war, fostering innovation, what creates stable peace, and what warfare feels like to those who fight it. Each class session is organized around a question; first half of each session will explore concepts, second half will apply them in a historical case or policy decision.
Same as: PUBLPOL 123

PUBLPOL 224. Social Entrepreneurship and Innovation Lab (SE Lab) - Human & Planetary Health. 3-4 Units.
Social Entrepreneurship and Innovation Lab (SE Lab) - Global & Planetary Health is a Collaboratory workshop for students/fellows to design and develop innovative social ventures addressing key challenges in health and the environment, especially in support of the UN Sustainable Development Goals (SDGs 2030). Your mandate in identifying problems and designing solutions is broad and flexible! SE Lab is open to students and fellows across Stanford and combines design thinking exercises, short lectures & case studies, workshops, small group teamwork, presentations, guest speakers, and faculty, practitioner and peer feedback to support you and your team in generating and developing ideas and projects that will change the world! Join SE Lab with an idea or simply the desire to join a team. Enrollment limited to 30.
Same as: HRP 224, MED 224

PUBLPOL 225. Urban Policy Research Lab. 5 Units.
This collaborative reading and research seminar considers the numerous ways that governments conduct social policy by shaping and remaking geographic places. Representative topics include: housing aid programs, exclusionary zoning, controls on internal migration and place of residence, and cars' role in cities. Students will contribute to faculty field research on the consequences of these policies for economic, social, and political outcomes. Prerequisites: None.
Same as: POLISCI 220, URBANST 170

PUBLPOL 227. Health Care Leadership. 2-4 Units.
Healthcare Leadership class brings eminent healthcare leaders from a variety of sectors within healthcare to share their personal reflections and insights on effective leadership. Speakers discuss their personal core values, share lessons learned and their recipe for effective leadership in the healthcare field, including reflection on career and life choices. Speakers include CEOs of healthcare technology, pharmaceutical and other companies, leaders in public health, eminent leaders of hospitals, academia, biotechnology companies and other health care organizations. The class will also familiarize the students with the healthcare industry, as well as introduce concepts and skills relevant to healthcare leadership. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit. Students taking the course Mondays and Wednesdays should enroll for 4 units (exceptions for a 3 unit registration can be made with the consent of instructor to be still eligible for Ways credit). Students taking the course on Wednesdays only should register for 2 units.
Same as: EMED 127, EMED 227, PUBLPOL 127

PUBLPOL 230. Planning Calif: the Intersection of Climate, Land Use, Transportation & the Economy. 3 Units.
Cities and urban areas have always been transformed by major external changes like pandemics and public health crises. California is both in the midst of its greatest economic recession since the Great Depression and experiencing a pandemic that has the potential to reshape many aspects of life. Planning for cities and regions, however, is a long game that requires follow-through on decisions made sometimes over many decades. How do we balance the shocks to our assumptions from the current Covid world with the need to plan long-term for issues like affordable housing and equitable cities, and perhaps most fundamentally, prepare our cities and communities for the inevitability of climate change and climate impact? nnnnThis course takes an interdisciplinary view of the key contemporary planning topics in California. It does so from looking at the intersection of climate laws, land use changes, the need for housing, travel patterns and the availability of high quality jobs and employment. This course will give you an understanding of the roles of key levels of government, from the state to the region/metropolitan scale, to the city and county, down to the neighborhood and parcel level. it will give students insight into leading themes and issues of the day in California such as the future of downtowns, the role of high speed rail, the impact of telework, automation in the construction of housing, drawing from examples in San Jose and San Francisco, the Central Valley, the state legislature, Southern California. Within each of these topics we will look at the impact of decisions on equity as well as climate and the economy. nnnnThe instructors are Kristy Wang, formerly SPUR¿s Community Planning Policy Director, and Egon Terplan, Senior Advisor for Economic Development and Transportation in the California Governor¿s Office, formerly SPUR¿s Regional Planning Director. (Affiliations for identification purposes only).
Same as: CEE 136, CEE 236, PUBLPOL 130, URBANST 130

PUBLPOL 231. Health Law: Finance and Insurance. 3 Units.
(SAME AS LAW 3001, MGTECON 331) This course provides the legal, institutional, and economic background necessary to understand the financing and production of health services in the U.S. We will discuss the Affordable Care Act , health insurance (Medicare and Medicaid, employer-sponsored insurance, the uninsured), the approval process and IP protection for pharmaceuticals, and antitrust policy. We may discuss obesity and wellness, regulation of fraud and abuse, and medical malpractice. The syllabus for this course can be found at https://syllabus.stanford.edu. Elements used in grading: Participation, attendance, class presentation, and final exam.
Same as: HRP 391

PUBLPOL 232. The Politics of Policy Making. 3 Units.
Public policymaking in the United States is part of a political process that can take years or even decades to play out. A familiarity with the politics of policymaking is key to understanding why some reform attempts are successful while others are not. This course will give students a behind-the-scenes look at how policy actually gets made. Students will gain exposure to the theory and literature behind policy formulation, and engage in debates over historical and contemporary efforts at reform.
Same as: PUBLPOL 132

PUBLPOL 234. Ethics on the Edge: Business, Non-Profit Organizations, Government, and Individuals. 3 Units.
(PUBLPOL 134, PUBLPOL 234 - 3 credits, Ways - ER) (Same as LAW 7020) The objective of this course is to explore the increasing ethical challenges in a world in which technology, global risks, and societal developments are accelerating faster than our understanding and the law can keep pace. We will unravel the factors contributing to the seemingly pervasive failure of ethics today among organizations and leaders across all sectors: business, government, non-profit, and academia. A framework for ethical decision-making underpins the course. There is significant space for personal reflection and forming your own views on a wide range of issues. Prominent guest speakers will attend certain sessions interactively. The relationships among ethics and technology, culture, leadership, law, and global risks (inequality, privacy, financial system meltdown, cyber-terrorism, climate change, etc.) will inform discussion. A broad range of international topics might include: designer genetics; civilian space travel (Elon Musk's Mars plans); social media (e.g. Facebook Cambridge Analytica, on-line sex trafficking, monopolies); new devices (e.g. Amazon Alexa in hotel rooms); free speech on University campuses; opioid addiction; AI (from racism to the work challenge and beyond); corporate and financial sector scandals (Theranos, Wells Fargo fraudulent account creation, Volkswagen emissions testing manipulation); new corporate challenges (e.g. Google selling drones to the military and Facebook¿s new Libra crypto currency); and non-profit sector ethics challenges (e.g. NGOs engagement with ISIS and sexual misconduct in humanitarian aid (Oxfam case)). Final project in lieu of exam on a topic of student's choice. Attendance required. Class participation important (with multiple opportunities to earn participation credit beyond speaking in class). Strong emphasis on rigorous analysis, critical thinking and testing ideas in real-world contexts. Please note that this course will require one make-up evening session on a Wednesday or Thursday in lieu of the final class session the first week of June, and two one-hour extensions to Monday class sessions as a make-up for May 11, so the course will end before Memorial Day. Permission numbers are required for enrollment. Please email the Public Policy Program at annas7@stanford.edu to obtain a permission number. The course offers credit toward Public Policy core requirements (if taken in combination with PUBLPOL 103E or PUBLPOL 103F), and Science, Technology and Society majors and satisfies the undergraduate Ways of Thinking - Ethical Reasoning requirement. The course is open to undergraduate and graduate students. Undergraduates will not be at a disadvantage. Everyone will be challenged. Distinguished Career Institute Fellows are welcome and should contact Dr. Susan Liautaud directly at susanl1@stanford.edu. *Students taking the course for Ways credit and Public Policy majors taking the course to complete the core requirements must obtain a letter grade. Other students may take the course for a letter grade or C/NC. Students seeking credit for other majors should consult their departments.
Same as: PUBLPOL 134

PUBLPOL 238. Wise Interventions. 4 Units.
Classic and contemporary psychological interventions; the role of psychological factors in social reforms for social problems involving healthcare, the workplace, education, intergroup, relations, and the law. Topics include theories of intervention, the role of laboratory research, evaluation, and social policy.
Same as: PSYCH 138, PSYCH 238

PUBLPOL 242. Design Thinking for Public Policy Innovators. 3 Units.
What happens when new technology is developed so quickly that society isn¿t sure if it poses an opportunity or a danger? How should we regulate it when there are real risks but also real potential for societal benefit¿both of which are hard to measure? These kinds of dilemmas are arising now in bioengineering, information technology, and beyond. The scientific and policy communities are trying to address these issues, but the clash of cultures between a fast-moving innovation mindset and a risk-averse safety and security mindset affects how this work progresses. In this experimental class, you will explore how design thinking can be used to reinvent a policy ecosystem by focusing on the challenge policymakers face in trying to establish new rules and/or standards that they hope a wide variety of constituent groups will accept and follow and will keep pace with future innovations. This is a new approach to a critical problem ¿ you must be willing to dig into unknown territory. If you¿re looking for a survey course in design methods, this class is not for you. Limited enrollment. Admission by application. See http://dschool.stanford.edu/classes.

PUBLPOL 246. Policy, Politics and the 2020 Elections: What 2020 Means for Future Campaigns and Elections. 2 Units.
(Same as LAW 7057). This course looks back at the 2020 election campaign and tries to discern lessons and takeaways for future campaigns and elections. It will provide students with a behind-the-scenes understanding of how campaigns work. Each week, we will explore a different topic related to high-profile campaigns -- policy formation, communications, grassroots strategy, digital outreach, campaign finance -- and feature prominent guest speakers who have served and will serve in senior roles on both Democratic and Republican campaigns, including the Trump and Biden teams.
Same as: COMM 153A, COMM 253A, POLISCI 72, PUBLPOL 146

PUBLPOL 247. The Politics of Inequality. 5 Units.
This course is about the distribution of power in contemporary democratic societies, and especially in the US: who governs? Is there a ``power elite,'' whose preferences dominate public policy making? Or, does policy reflect a wide range of interests? What is the relationship between income and power? What are the political consequences of increasing income inequality? How do income differences across racial and ethnic groups affect the quality of their representation? What are effective remedies for unequal influence? Finally, which institutions move democratic practice furthest towards full democratic equality? This course will address these questions, focusing first on local distributions of power, and then considering the implications of inequality in state and national politics. nStudents will have the opportunity to study income inequality using income and labor force surveys in a mid-term assignment. Then, in a final paper, students will conduct an empirical examination of the implications of income inequality for American democracy.
Same as: POLISCI 147P, SOC 178

PUBLPOL 265F. Environmental Governance and Climate Resilience. 3 Units.
Adaptation to climate change will not only require new infrastructure and policies, but it will also challenge our local, state and national governments to collaborate across jurisdictional lines in ways that include many different types of private and nonprofit organizations and individual actors. The course explores what it means for communities to be resilient and how they can reach that goal in an equitable and effective way. Using wildfires in California as a case study, the course assesses specific strategies, such as controlled burns and building codes, and a range of planning and policy measures that can be used to enhance climate resilience. In addition, it considers how climate change and development of forested exurban areas (among other factors) have influenced the size and severity of wildfires. The course also examines the obstacles communities face in selecting and implementing adaptation measures (e.g., resource constraints, incentives to develop in forested areas, inadequate policy enforcement, and weak inter-agency coordination). Officials from various Bay Area organizations contribute to aspects of the course; and students will present final papers to local government offcials. Limited enrollment. Students will be asked to prepare application essays on the first day of class. Course is intended for seniors and graduate students.
Same as: CEE 265F, POLISCI 227B

PUBLPOL 267. How To Be a Politician. 2 Units.
Do you want to run for political office one day? This course will give you a full toolkit for winning elections. It will help students think about their personal narrative, how to present themselves to the electorate, and the issues and messages that should underpin their future campaign. It will also provide students with a practical understanding of how to build a campaign apparatus, fundraise effectively, and develop a winning strategy. The class will be highly interactive giving each student the chance to hone their candidacy, and there will be opportunities to work on debate skills, speech giving, and media performance. We will look at campaigns from across the world, as well as invite politicians and political consultants to speak to us. This class is designed for any student who has dreamed of running for office: be it locally or becoming President.
Same as: PUBLPOL 167

PUBLPOL 268. Global Organizations: The Matrix of Change. 4 Units.
We learn how to apply analytical tools from the social sciences to organizations, and study how to design effective organizations and projects within and across institutional settings. A variety of organizations are included and how they deal with strategy changes and accountability. The theme for this year's class is on accountability of non-profit organizations such as Doctors Without Borders, The International Rescue Committee and The Red Cross. Recommended: FINANCE 377, MS&E 180, SOC 160, ECON 149, or MGTECON 330.
Same as: PUBLPOL 168, SOC 168, SOC 268

PUBLPOL 290. Indigenous Cultural Heritage: Protection, Practice, Repatriation. 3 Units.
This interdisciplinary seminar explores pressing questions relating to the protection, practice and repatriation of the cultural heritage of Indigenous peoples from North America and beyond. Using an innovative combination of in-class lectures and videos of interviews with renowned experts, including Indigenous leaders, scholars, artists and performers and museum professionals from around the world, this seminar will explore and problematize, among other subjects: the impact of colonialism, urbanization and other political, legal, economic, religious and cultural forces on understandings and definitions of "indigenous" and "cultural heritage"; the development of international law relating to Indigenous peoples¿ cultural rights; international, domestic, and tribal heritage protection and repatriation laws/initiatives including the 2007 United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), the 1990 US Native American Graves Protection and Repatriation Act (NAGPRA), and others; past and present Western museum practices and guidelines relating to display, preservation, provenance research and repatriation of indigenous cultural material; the meaning of repatriation to Indigenous peoples and other stakeholders; and resolving repatriation disputes, including by alternative dispute resolution (ADR) processes. While case studies will relate primarily to Indigenous peoples of North America, comparisons will be drawn with the situation of Indigenous peoples in other regions, such as Oceania and Russia. Each week students will brainstorm actionable ideas for amending/supplementing current frameworks in order to give force to the cultural rights enumerated in UNDRIP. The overall seminar experience will involve discussions of lectures and video content, assigned readings, quizzes, a class visit to the Cantor Center Native Americas collection, and visits to our classroom by experts. Elements used in grading: class participation, attendance and a final project (one-day take-home exam; or research paper or film project with instructor's consent).
Same as: ARTHIST 190A, ARTHIST 490A, PUBLPOL 190

PUBLPOL 298. Directed Readings in Public Policy. 1-5 Unit.
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PUBLPOL 301A. Microeconomics for Policy. 4-5 Units.
Microeconomic concepts relevant to decision making. Topics include: competitive market clearing, price discrimination; general equilibrium; risk aversion and sharing, capital market theory, Nash equilibrium; welfare analysis; public choice; externalities and public goods; hidden information and market signaling; moral hazard and incentives; auction theory; game theory; oligopoly; reputation and credibility. Undergraduate Public Policy students may take PublPol 51 as a substitute for the Econ 51 major requirement. Economics majors still need to take Econ 51. Prerequisites: ECON 50 and MATH 51 or equiv.
Same as: INTLPOL 204A, PUBLPOL 51

PUBLPOL 301B. Economic Policy Analysis for Policymakers. 4-5 Units.
This class provides economic and institutional background necessary to conduct policy analysis. We will examine the economic justification for government intervention and illustrate these concepts with applications drawn from different policy contexts. The goal of the course is to provide you with the conceptual foundations and the practical skills and experience you will need to be thoughtful consumers or producers of policy analysis. Prerequisites: ECON 102B or PUBLPOL 303D.
Same as: INTLPOL 204B

PUBLPOL 302A. Introduction to American Law. 3-5 Units.
For undergraduates. The structure of the American legal system including the courts; American legal culture; the legal profession and its social role; the scope and reach of the legal system; the background and impact of legal regulation; criminal justice; civil rights and civil liberties; and the relationship between the American legal system and American society in general.
Same as: AMSTUD 179, POLISCI 122

PUBLPOL 302B. Economic Analysis of Law. 3 Units.
(Same as LAW 7502.) This course will provide a broad overview of the scholarly field known as "law and economics." The focus will be on how legal rules and institutions can correct market failures. We will discuss the economic function of contracts and, when contracts fail or are not feasible, the role of legal remedies to resolve disputes. We will also discuss at some length the choice between encouraging private parties to initiate legal actions to correct externalities and governmental actors, such as regulatory authorities. Extensive attention will be given to the economics of litigation, and to how private incentives to bring lawsuits differs from the social value of litigation. The economic motive to commit crimes, and the optimal governmental response to crime, will be studied in depth. Specific topics within the preceding broad themes include: the Coase Theorem; the tradeoff between the certainty and severity of punishment; the choice between ex ante and ex post sanctions; negligence versus strict liability; property rules; remedies for breach of contract; and the American rule versus the English rule for allocating litigation costs. Because this course is taught jointly with Law 7502 in the Law School, it will not be mathematically oriented; there are no prerequisites to take the course.

PUBLPOL 303D. Applied Econometrics for Public Policy. 4-5 Units.
This course aims to present the theory and practice of empirical research in economics with particular emphasis on topics relating to public policy questions. We will start with the analysis of randomized experiments, then move to basic regression analysis and introduce the statistical software STATA. The course will put a substantial amount of effort on work with STATA in analyzing actual data sets, reproducing and criticizing results in scientific research and learning the actual practice of econometrics. We will focus on the identification of causal effects and the various econometric techniques available to learn about causality. While this is primarily a methodology module, most examples and applications will be drawn from the area of public policy. The final will be a 3-5 hour take-home exam. Prerequisite: Econ 102A.

PUBLPOL 305B. Public Policy and Social Psychology: Implications and Applications. 4 Units.
Theories, insights, and concerns of social psychology relevant to how people perceive issues, events, and each other, and links between beliefs and individual and collective behavior will be discussed with reference to a range of public policy issues including education, public health, income and wealth inequalities, policing and climate change, Specific topics include: situationist and subjectivist traditions of applied and theoretical social psychology; social comparison, dissonance, and attribution theories; stereotyping and stereotype threat, and sources of intergroup conflict and misunderstanding; challenges to universality assumptions regarding human motivation, emotion, and perception of self and others; also the general problem of producing individual and collective changes in norms and behavior.
Same as: INTLPOL 207B, PSYCH 216

PUBLPOL 306. Writing and Rhetoric for Policy Audiences. 4 Units.
This course offers hands-on learning of effective writing and presentation techniques for audiences that include policy makers, decision stakeholders, interest groups, the media, and the public. Class time will be spent learning lessons in rhetoric, analyzing multiple written genres (memo, op-ed, report, media communications), participating in peer review, and practicing presentation strategies (elevator pitch, press conference, media interview, board meeting, formal presentation). Course texts include sample memos, op-eds, and white papers, as well as rhetoric handouts and videos. Students will draft, revise, and submit writing for policy audiences in the compilation of a final portfolio. Students will also produce oral and multimedia arguments, individually and in teams. Students will be responsible for timely peer review and short presentations on course materials. Enrollment limited. Prerequisite: consent of instructor.

PUBLPOL 308. Political Analysis for Public Policymakers. 4 Units.
Policymakers in the United States, whether elected or unelected, operate in a governmental system where politics pervades nearly every element of their daily activity. This course provides students with both the theory and real-world examples they need to understand and evaluate the impact of politics, political institutions, and the political process on policymaking. Readings will include selections from the public policy, political science, legal, and economics literatures.

PUBLPOL 309. Practicum. 1-10 Unit.
Applied policy exercises in various fields. Multidisciplinary student teams apply skills to a contemporary problem in a major policy exercise with a public sector client such as a government agency. Problem analysis, interaction with the client and experts, and presentations. Emphasis is on effective written and oral communication to lay audiences of recommendations based on policy analysis.

PUBLPOL 309X. Public Policy Research Project. 1-10 Unit.
Supervised research internship. Individual students perform policy research for outside client, applying analytical skills from core curriculum. Requires permission of program director.

PUBLPOL 310. Master of Arts Thesis. 1-5 Unit.
Restricted to students writing a master's thesis in Public Policy. May be repeated for credit.

PUBLPOL 310A. Master's Thesis Seminar. 1 Unit.
For Public Policy MA students writing a thesis. Sessions go through the process of selecting a research question, finding relevant bibliography, writing a literature review, introduction, and study design. Each student works on their own project, with frequent writing submissions and oral presentations, receiving and providing timely feedback.

PUBLPOL 311. Public Policy Colloquium. 1 Unit.
Weekly colloquia speaker series required for M.P.P. and M.A. in Public Policy students. Themes vary each quarter. Open only to Public Policy graduate students; permission number required to enroll.

PUBLPOL 314. Justice in Public Policy. 4 Units.
How should we judge the fairness of social institutions? This is the basic question of justice, and it is a crucial topic for students of public policy. Justice, the philosopher John Rawls famously argued, is the "first virtue of social institutions ... laws and institutions no matter how efficient and well-arranged must be reformed or abolished if they are unjust." Justice is an ethical question about how we as moral beings ought to treat one another, but it is also a profoundly practical question. All human endeavors require large-scale coordination of our actions, which we achieve through laws and institutions. But law without justice is merely mass coercion, neither desirable nor sustainable. In this class we examine some of the most influential theories of fairness in social cooperation, including utilitarianism, social contract theory, liberalism, socialism, and libertarianism, and talk through how we can use these theories to analyze, evaluate, and (re)design public policy. Key questions include: Under what conditions is inequality of wealth and income problematic, and why? What are rights, and why do they matter? How should we balance the needs of individuals against the claims of groups? This class is also meant to provide students with the critical tools to identify and remedy injustices, and injustices based on race, class, and gender are central topics of the course. Other key topics include housing policy and residential segregation, inequality of healthcare access, the gender wage gap, proposals for universal basic income and reparations for slavery. No experience with political theory is required or assumed, and students will learn the skills of how to do political theory and how to incorporate it into policy work as part of the course.

PUBLPOL 315. Practical Training. 1-5 Unit.
Qualified Public Policy students obtain employment in a relevant research or industrial activity to enhance their professional experience consistent with their degree programs. Prior to enrolling students must get internship approved by the Public Policy Program. At the start of the quarter, students must submit a one page statement showing the relevance of the employment to the degree program along with an offer letter. At the end of the quarter, a three page final report must be supplied documenting work done and relevance to degree program. Meets the requirements for Curricular Practical Training for students on F-1 visas. May be repeated for credit.

PUBLPOL 316. Global Education Policy & Organization. 3-5 Units.
Education policy, politics, and development. Topics include: politics, interests, institutions, policy, and civil society; how schools and school systems operate as political systems; how policy making occurs in educational systems; and theories of development.
Same as: EDUC 306B

PUBLPOL 319. Legislation. 3 Units.
(Same as Law 7048) Lawyers work in a legal system largely defined by statutes, and constantly shaped by the application of legislative power. This course is about statutes and the legislative institutions that create them. It discusses some of the key laws governing access to legislative power and the procedures that culminate in the production of statutes in the legislature. The course is divided into two parts. The first part will focus on the acquisition of legislative power. Key topics include bribery laws, lobbying and indirect influence on legislative activity, and campaign finance regulations. The second part will focus on the exercise of legislative power. Through a number of public policy case studies, students will better understand the organization of the U.S. Congress, the ways in which power is exercised in that institution, and the intersection between politics, the law, and policymaking. Elements used in grading: Class participation and final exam.

PUBLPOL 321. Nonprofits, Philanthropy & Society. 3-4 Units.
Over the past several decades nonprofit organizations have become increasingly central entities in society, and with this growing status and importance their roles are increasingly complex.We consider the social, political and economic dynamics of philanthropy and the nonprofit sector, focusing mainly (but not exclusively) on the US. The class is best suited for graduate students looking for an advanced analytic understanding of the sector and those wishing to conduct research in the field; it is not intended to provide training in nonprofit management.
Same as: EDUC 321, SOC 321

PUBLPOL 353A. Science and Technology Policy. 4-5 Units.
U.S. policies for science, technology, and innovation; political institutions that create and carry out these policies; government programs that support scientific research and the development and use of new technologies; political controversies surrounding some science and technologies and the regulation of research and technology; international aspects of science and technology; the roles of scientists, engineers, and physicians in creating and implementing policy; and opportunities to do policy work in government and other organizations. Assignments: analyzing the politics of particular executive and legislative proposals, assessing options for trying to reach specific policy objectives, and preparing mock memos and testimony. This course is designed primarily for graduate students in science, engineering, and medicine who want to learn more about science and technology policy and how it is made. Public Policy 353A is a "gateway course" - an introduction - both for students pursuing a joint degree or co-terminal degree in Public Policy and for other graduate students interested in S&T policy or possible careers in the policy world. Junior and senior undergraduate students are also welcome to enroll.

PUBLPOL 364. The Future of Finance. 2 Units.
This 2-credit course will examine vast changes driven by innovation both from within traditional finance and from new ecosystems in fintech among others. Breathtaking advances in financial theory, big data, machine learning, artificial intelligence, computational capability, IoT, payment systems (e.g. blockchain, crypto currencies), new products (e.g. robo advising, digital lending, crowd funding, smart contracts), new trading processes (e.g. algorithmic trading, AI-driven sales & trading), and new markets (e.g. ETFs, zero-cost products), among others are changing not only how financial and non-financial firms conduct business but also how investors and supervisors view the players and the markets. nWe will discuss critical strategy, policy and legal issues, some resolved and others yet to be (e.g. failed business models, cyber challenges, financial warfare, fake news, bias problems, legal standing for cryptos). The course will feature perspectives from guest speakers including top finance executives and Silicon Valley entrepreneurs on up-to-the-minute challenges and opportunities in finance. nWe will discuss slowing global growth against the backdrop of ongoing intervention and wildcards in the capital markets of the U.S., Europe, Hong Kong, Singapore, China, India, Japan, the Middle East and Latin America. We will look forward at strategic opportunities and power players appearing and being dethroned in the markets to discuss who is likely to thrive ¿ and not survive ¿ in the new global financial landscape. nnPrerequisites: If you are an undergraduate wishing to take this course, apply by completing the course application and provide a brief bio here: https://forms.gle/9BGYr8brdYwPS8Cu8.
Same as: ECON 152, ECON 252

PUBLPOL 801. TGR Project. 0 Units.
Instructor and program consent required prior to enrollment.

RELIGIOUS STUDIES

Courses offered by the Department of Religious Studies are listed under the subject code RELIGST on the Stanford Bulletin's ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=RELIGST&filter-catalognumber-RELIGST=on).

Mission of the Department

The Department of Religious Studies brings a variety of disciplinary perspectives to bear on the phenomenon of religion for the purpose of understanding and interpreting the history, literature, thought, social structures, and practices of the religious traditions of the world. Comprised of a dozen regular faculty with particular strengths in the study of American Religions, Buddhism, Christianity, Hinduism, Islam, and Judaism, it enrolls about twenty graduate students (mostly doctoral) and roughly as many undergraduate majors, minors, and joint majors.

Religious Studies works closely with several related programs at Stanford: the Department of Philosophy, with which it offers a combined undergraduate major; the Ho Center for Buddhist Studies; the Taube Center for Jewish Studies; the Abbasi Program in Islamic Studies; the McCoy Center for Ethics in Society; the Center for Medieval and Early Modern Studies; and the Center for South Asia.

While some undergraduates continue their study of religion in a graduate or professional program, most pursue meaningful and successful careers in business, government, the nonprofit sector, and medicine. In this respect, Religious Studies is an ideal interdisciplinary major in the liberal arts. Graduates of the department's doctoral program generally pursue academic careers and are routinely placed in the best universities and colleges in the country and overseas.

Undergraduate Programs in Religious Studies

The department offers a Bachelor of Arts major, minor, and honors program in Religious Studies, and a combined major with the Philosophy Department in Philosophy and Religious Studies. Undergraduate courses in Religious Studies are designed to engage students existentially and to assist them in thinking about intellectual, ethical, and sociopolitical issues in the world's religions. The department's faculty seek to provide tools for understanding the complex encounters among religious ideas, practices, and communities, and the past and present cultures that have shaped and been shaped by religion. Courses therefore expose students to: leading concepts in the field of religious studies such as god(s), sacrifice, ritual, scripture, prophecy, and priesthood; approaches developed over the past century, including the anthropological, historical, psychological, philosophical, and phenomenological, that open religion to closer inspection and analysis; and major questions, themes, developments, features, and figures in the world's religious traditions. The department encourages and supports the acquisition of languages needed for engagement with sacred texts and interpretive traditions as well as study abroad at Stanford's overseas centers where religions can be observed and experienced in their contemporary contexts.

Major in Philosophy and Religious Studies

The departments of Philosophy and Religious Studies jointly nominate for the B.A. in Philosophy and Religious Studies those students who have completed a major in the two disciplines. See a description of this combined major under the "Bachelor's" tab of the "Religious Studies" section of this bulletin (p. 2036), in the "Philosophy" section of this bulletin (p. 1864), or in the guidelines available from the Director of Undergraduate Studies of either department.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to:

1. demonstrate familiarity with a variety of methods used analytically in the field of Religious Studies.
2. demonstrate proficiency in writing papers in the style of academic writing in the field of Religious Studies.
3. demonstrate the ability to engage peer scholars' research in constructive and critical ways, and communicate feedback effectively.
4. demonstrate individual expertise through oral presentation of one's advanced research to peers.
5. complete an advanced research project consistent with standards for papers in the field of Religious Studies.

Graduate Programs in Religious Studies

The graduate mission of the department is to provide students with an interdisciplinary setting of study within which to focus on their respective areas of specialization. The department offers an internal M.A. and a Ph.D. degree in Religious Studies. The master's program is restricted to current Stanford students.

Learning Outcomes (Graduate)

Master's Program: The purpose of the Master's program is to develop knowledge and skills in Religious Studies. For some students this will serve as preparation for applications to Ph.D. programs. For others it will serve as a further capstone experience for their undergraduate program of study. The goals are achieved through the completion of courses, in the primary field as well as related areas, and experience with independent work and specialization. For some it will involve an optional Master's thesis.

Doctoral Program: The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in Religious Studies. Through completion of advanced coursework and rigorous skills training, the doctoral program prepares students to make original contributions to the field of Religious Studies and to interpret and present the results of such research through teaching and publication.

Bachelor of Arts in Religious Studies

Suggested Preparation for the Major

Students contemplating the major, the minor, or the Philosophy and Religious Studies major are invited to consult with the Director of Undergraduate Studies. The Undergraduate Student Services Associate in Building 70 can also field questions regarding the declaration procedure within the department.

Degree Requirements

The curriculum for majors is designed to lead students through a course of study which begins with laying foundations, then moves on to building expertise, and finally culminates in a capstone experience. The foundational courses aim to introduce students to the academic study of religion through the exploration of a particular religious tradition, issue, or methodology. Students build expertise in more advanced courses offering in-depth investigation of specific topics, such as mysticism, gender, or violence/nonviolence; of particular texts, historical periods, or figures of a given religious tradition; or of distinct approaches to the study of religion, such as the philosophy of religion, ritual studies, or ethnography. Students consolidate the knowledge and skills acquired in the major through an integrative capstone experience consisting of either

a senior essay or an honors thesis, completed in conjunction with three supporting capstone courses.

Students who have declared the major prior to Autumn 2019-20 may choose to follow the Degree Requirements listed in *either* the current Bulletin or the 2018-19 Bulletin (http://exploredegrees.stanford.edu/archive/2018-19/schoolofhumanitiesandsciences/religiousstudies/).

Required Courses

A Bachelor of Arts in Religious Studies requires 60 units of course work, distributed as follows:

1. Three courses (3-5 units each) from courses numbered RELIGST 1-99, only one of which may be an Introductory Seminar.
2. Six courses (4-5 units each) from courses numbered RELIGST 100-289, of which at least two must be at the 200-level.
3. Three integrative capstone courses as follows:

		Units
RELIGST 290	Majors' Seminar: Theories of Religion (Winter Quarter; junior year; fulfills WIM requirement)	5
RELIGST 297	Senior Essay/Honors Thesis Research	5-10
Senior Essay: 5 units, Winter Quarter, graded 'N' until submission		
Honors Thesis: 5-10 units, spread over Autumn and Winter Quarters, graded 'N' until submission		
RELIGST 298	Senior Colloquium (Spring Quarter only; grading option S/NC)	4

4. The remainder of the coursework needed to bring the total Religious Studies unit count to 60 to be chosen according to interest, in consultation with the student's advisor, and with an eye to the senior capstone requirement.

Additional Regulations

1. With the approval of the Director of Undergraduate Studies, up to two language courses relating to the student's program of study (such as Arabic, Hebrew, Greek, Chinese, Persian, or Japanese), but not counted towards the University language requirement, may be counted toward the major.
2. No more than ten units of the total 60 (excluding RELIGST 298) may be taken for the grade of 'S/NC' or 'CR/NC.'
3. Students must ensure that their total complement of Religious Studies courses is not focused on a single religious tradition.
4. Variations to the required distribution may be approved by the Director of Undergraduate Studies on an individual basis.
5. All units must be in RELIGST courses unless an exception is made by the Director of Undergraduate Studies.

Senior Essay

A 25-30 page essay on a topic chosen by the student and approved by the advisor upon receipt of a student's proposal by the end of the third quarter prior to expected graduation. The character and content of the essay, which is meant to allow the student to call into play knowledge and skills learned in the course of the major, may take several forms. For example, a student may return to a subject studied earlier but now pursued in more depth or from a new perspective, research a recent or new topic of interest in the field, or offer a carefully framed critical assessment of what has been learned in the major based on review of influential sources, theories, and methods of studying religion. The senior essay is read and graded by the student's advisor and one other member of the Religious Studies faculty.

Honors Thesis

A 40-80 page research paper on a topic chosen by the student and approved by the advisor upon receipt of a proposal in the fourth quarter prior to expected graduation. The paper, supported by mastery of primary and secondary scholarship, advances a well-reasoned, supportable thesis. Writers of honors theses must have a grade point average (GPA) of 3.5 in Religious Studies courses, and at least 3.2 overall, and are expected to have already demonstrated success in writing research papers. The honors thesis is read and graded by the student's advisor and one other member of the Religious Studies faculty. Theses earning a grade of 'B+' or above receive honors.

Philosophy and Religious Studies Combined Major

The undergraduate major in Philosophy and Religious Studies consists of 60 units of course work with approximately one third each in the philosophy core; the religious studies core; and additional coursework and a capstone requirement that completes the course of study.

No courses in either the philosophy or religious studies core may be taken satisfactory/no credit or credit/no credit.

In general, transfer units cannot be used to satisfy the core requirements. Transfer units and substitutions must be approved by the Director of Undergraduate Studies in the relevant department.

Students who have declared the combined major prior to Autumn 2019-20 may choose to follow the Degree Requirements listed in *either* the current Bulletin or the 2018-19 Bulletin (http://exploredegrees.stanford.edu/archive/2018-19/schoolofhumanitiesandsciences/religiousstudies/).

Core Requirements

1. Philosophy (PHIL) courses:
   a. Required course: PHIL 80 Mind, Matter, and Meaning (5 units).
   b. 16 units, including at least one Philosophy course from each of the following areas:
      i. Logic and philosophy of science: Students take either one from this list or an intermediate philosophy of science course numbered PHIL 160-169.

		Units
PHIL 49	Survey of Formal Methods	4
PHIL 60	Introduction to Philosophy of Science	5
PHIL 61	Philosophy and the Scientific Revolution	5
PHIL 150	Mathematical Logic	4
PHIL 151	Metalogic	4
PHIL 154	Modal Logic	4

      ii. Ethics and value theory: This requirement may be satisfied by PHIL 2 or any intermediate course devoted to central topics in moral and political philosophy numbered between PHIL 170-172 or 174-176.
      iii. Epistemology, metaphysics, and philosophy of language. This requirement may be satisfied by any intermediate course numbered between PHIL 180-189.
      iv. History of philosophy: Select one of

		Units
PHIL 100	Greek Philosophy	4
PHIL 101	Introduction to Medieval Philosophy	4

PHIL 102	Modern Philosophy, Descartes to Kant	4
PHIL 103	19th-Century Philosophy	4

c. All philosophy courses taken for a grade in fulfillment of requirements under 1.a. and 1.b. must be taken for a minimum of 3 units and completed with a grade of 'C-' or higher.

2. Religious Studies (RELIGST) courses:
   a. One foundational course numbered RELIGST 1-99 (3-4 units).
   b. Two courses numbered RELIGST 100-289 in religious thought, broadly construed, chosen in consultation with, and approved by, the Religious Studies Director of Undergraduate Studies (8-10 units).
   c. Required Course: RELIGST 290 Majors' Seminar: Theories of Religion (5 units; Winter Quarter; junior year; fulfills WIM requirement).
3. The remaining coursework (approximately 20 units) is to be chosen according to interest, in consultation with the student's advisor, and with an eye to the senior capstone requirement.
   a. No more than 5 of these additional units in either department may come from courses numbered below PHIL/RELIGST 100.
   b. No more than 10 units taken credit/no credit may count toward the major.
   c. Students should ensure that their total complement of RELIGST courses (i.e. core and elective taken together) is not focused on a single religious tradition.

Capstone Requirement

The capstone experience aims to foster the integration of capacities, knowledge, and skills acquired in the student's core and elective coursework. Combined majors fulfill this requirement by completing the capstone requirement for *either* the B.A. in Philosophy *or* the B.A. in Religious Studies. Students should discuss this choice with their advisor during their junior year and consult the capstone requirements for Philosophy and Religious Studies majors, respectively, in the Bulletin.

1. The capstone requirement in Philosophy is fulfilled by the successful completion of one of the PHIL 194 Capstone Seminars. The role of the PHIL Capstone Seminar is to provide students with an opportunity to synthesize their undergraduate educational careers and to demonstrate their capacity for independent and creative philosophical work.
   a. PHIL 194_ (4 units)
2. The capstone requirement in Religious Studies is fulfilled by the writing of either a senior essay or an honors thesis, which provides students with the opportunity to pursue independent research on a topic of interest under the direction of a Religious Studies faculty member. Two required courses support the successful completion of this senior project:

		Units
RELIGST 297	Senior Essay/Honors Thesis Research	5-10
	Senior Essay: 5 units, Winter Quarter, graded 'N' until submission	
	Honors Thesis: 5-10 units, spread over Autumn and Winter Quarters, graded 'N' until submission	
RELIGST 298	Senior Colloquium (Spring Quarter only; grading option S/NC)	4

Honors Program

Students pursuing a major in Philosophy and Religious Studies may also apply for honors by following the procedure for honors in either of the departments.

Minor in Religious Studies

A Religious Studies minor is a complement to many majors throughout the University. Students contemplating the minor are invited to consult with the Director of Undergraduate Studies. The Undergraduate Student Services Associate in Building 70 can also field questions regarding the declaration procedure within the department.

Degree Requirements

A minor in Religious Studies requires a minimum of 28 units. Students are encouraged to focus their program of study either on a religious tradition or on a theme that cuts across traditions. In consultation with their minor advisor, students may design the minor in Religious Studies to complement their major. The minor must be declared no later than the last day of the quarter, two quarters before degree conferral.

Students who have declared the minor prior to Autumn 2019-20 may choose to follow the Degree Requirements listed in *either* the current Bulletin or in the 2018-19 Bulletin (http://exploredegrees.stanford.edu/archive/2018-19/schoolofhumanitiesandsciences/religiousstudies/).

Required Courses for the Minor

1. Two courses (3-5 units each) from courses numbered RELIGST 1-99, only one of which may be an Introductory Seminar.
2. Three courses (4-5 units each) from courses numbered RELIGST 100-289, of which at least one must be at the 200-level.
3. The remainder of the coursework needed to bring the total Religious Studies unit count to 28 is to be chosen according to interest, in consultation with the student's minor advisor.

Additional Regulations

1. With the approval of the Director of Undergraduate Studies, one language course relating to the student's program of study (such as Arabic, Hebrew, Greek, Chinese, Persian, or Japanese), but not counted towards the University language requirement, may be counted towards the minor.
2. No courses may be taken for the grade of 'S/NC' or 'CR/NC.'
3. One course in directed reading (RELIGST 199 Individual Work) may be counted towards the minor.
4. Students must ensure that their total complement of Religious Studies courses is not focused on a single religious tradition.
5. Variations to the required distribution may be approved by the Director of Undergraduate Studies on an individual basis.
6. All units must be in Religious Studies courses unless an exception is made by the Director of Undergraduate Studies.

Master of Arts in Religious Studies

University requirements for the M.A. are described in the "Graduate Degrees (p. 65)" section of this bulletin.

The department offers an M.A. program that serves two groups of Stanford students:

1. undergraduates looking to pursue a coterminal master's degree in Religious Studies
2. Ph.D. candidates in Religious Studies who wish to also obtain a master's degree while completing their doctoral requirements.

Degree Requirements

The following requirements are in addition to the University's basic requirements (p. 65).

The student completes at least 45 units of graduate work at Stanford beyond the B.A. degree, including RELIGST 290 Majors' Seminar: Theories

of Religion. Students who have taken this course as part of the B.A. need not take it again.

Residence may be completed by three quarters of full-time work or the equivalent.

The student's plan of courses is subject to approval by the Director of Graduate Studies (DGS). No field of specialization is expected, but students may focus work in particular areas. Advanced and graduate courses in other departments may be taken in consultation with the advisor. No thesis is required; a thesis, if elected, may count for as many as 9 units.

Each student demonstrates reading knowledge of at least one foreign language.

The department allows coterms to count courses as early as their first quarter of sophomore year toward their master's degree. Course transfers require department approval and cannot be processed after the bachelor's degree has been conferred. All University coterm policies apply.

Application and Admissions

At this time, eligibility for admission to the master's program is restricted to current Stanford undergraduates and graduate students.

Current Stanford Undergraduates

Religious Studies accepts coterm applications in Winter Quarter (due end of the second week of classes) for admission starting Spring Quarter. Only complete applications submitted by the deadline are reviewed. A complete application includes the following:

- A completed online coterminal program application (https://www.applyweb.com/stanterm/) . See the Registrar's site (https://registrar.stanford.edu/resources-and-help/student-forms/coterminal-forms/) for additional information.
- Two confidential letters of recommendation, one of which must be from a Stanford faculty member familiar with the applicant's academic work
- Statement of purpose, not to exceed two pages
- Undergraduate transcript(s)
- Preliminary program proposal

Current Stanford Graduate Students

- The completed application forms for current Stanford graduate students
- Two confidential letters of recommendation, one of which must be from a Stanford faculty member familiar with the applicant's academic work
- Undergraduate and graduate transcripts
- Statement of purpose, not to exceed two pages
- Preliminary program proposal

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Financial Aid

The Religious Studies department does not provide financial assistance to coterminal or master's students. For information on student loans and other sources of support, consult the Financial Aid Office (http://financialaid.stanford.edu/).

Doctor of Philosophy in Religious Studies

University requirements for the Ph.D. are described in the "Graduate Degrees (p. 65)" section of this bulletin. The Ph.D. in Religious Studies signifies special knowledge of an interdisciplinary field of study and potential mastery of an area of specialization within it. The faculty of the department have established certain fields of study in which the department's strengths and those of other Stanford departments cohere. They are: Religion in East Asia; Religion in Europe and North America; Religion in Late Antiquity; and Religion in South Asia. Each of these areas of specialization follows a shared structure of study.

Degree Requirements

The following requirements are in addition to the University's basic requirements.

1. **Residence**
   Each student completes three years (nine quarters) of full-time study, or the equivalent, in graduate work beyond the B.A. degree, and a minimum of 135 units of graduate course work (excluding the dissertation).
2. **Required Courses**
   The 135 units of graduate course work must include the following:
   a.

		Units
RELIGST 304A	Theories and Methods	4
RELIGST 304B	Theories and Methods	4
RELIGST 391	Teaching Religious Studies	3

   b. Two courses in an area outside the student's field.
   c. The remainder of the course work is individually designed, in consultation with the student's advisor.
3. **Languages**
   Each student demonstrates a reading knowledge of two foreign languages, including French or German. One of these language requirements should be fulfilled by the time of advancing to candidacy at the end of the second year. Competence in the second language must be demonstrated at the time of the qualifying examination. Each student also demonstrates reading knowledge of other ancient or modern languages necessary for the field of study, area of specialization, and dissertation topic.
4. **Candidacy**
   At the end of each academic year, the department's faculty recommend second-year students for candidacy on the basis of all relevant information, and especially on the student's candidacy dossier. This includes the approved declaration of an area of

specialization, certification for one foreign language, and two substantial papers written for courses during the previous two years. Students are required to take RELIGST 304A Theories and Methods, RELIGST 304B Theories and Methods, and RELIGST 391 Teaching Religious Studies prior to candidacy.

5. **Paper-in-Field**
   During the third year, under the supervision of their advisors, students prepare a paper suitable for submission to an academic journal in their field. The paper is read and approved by at least two faculty members in the department. Students are encouraged to register for RELIGST 392 Paper in the Field while working on the paper.
6. **Teaching Internship**
   At least one teaching internship under the supervision of faculty members is undertaken at a time negotiated with the Director of Graduate Studies (DGS). Students receive academic credit for the required internship, which is considered part of their academic training and not as employment.
7. **Qualifying Examination**
   To qualify for writing a dissertation, the student must pass a comprehensive examination in the chosen field and the area of specialization, typically during the first quarter of their fourth year. The student must complete the second language requirement before taking the qualifying examination. The qualifying examination is normally conducted by a committee of at least three Academic Council members of the department, one of whom is the advisor. One faculty member may be from outside the department with permission of the DGS.
8. **Dissertation**
   The dissertation contributes to the humanistic study of religion and is written under the direction of the candidate's dissertation advisor and at least two other members of the Academic Council. The University Oral examination is a defense of a completed draft of the dissertation.
   a. *Dissertation Committee*—The dissertation committee is formed after successful completion of the qualifying examinations. It is normally composed of the dissertation advisor and at least two Academic Council members of the Religious Studies department. One non-departmental faculty member may serve as a reader when approved by the DGS.
   b. *Dissertation Proposal*—Candidates submit their dissertation proposal in consultation with their advisors. It is read and approved by the three members of the dissertation committee.
9. **University Oral Examination**
   This examination, required by the University of Ph.D. students, is a defense of a completed draft of the dissertation. The composition of the examination committee is set by University regulation: five or more faculty, normally all of whom are members of the Academic Council, one of whom must be outside the department to serve as chair of the committee. Normally, the examining committee includes all members of the dissertation committee. A majority of those voting must be Academic Council faculty from within the department.

Ph.D. Minor in Religious Studies

Candidates for the Ph.D. in other departments may select a Ph.D. minor in Religious Studies.

Degree Requirements

The minor requires at least 24 units in Religious Studies at the 200 level or above. These 24 units should include at least one of the following courses:

		Units
RELIGST 304A	Theories and Methods	4
RELIGST 304B	Theories and Methods	4

Optional Courses for the Minor

Other courses should be chosen in consultation with the DGS and the student's primary graduate advisor.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of Religious Studies counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Other Undergraduate Policies

If a student has difficulty completing an undergraduate degree requirement due to the COVID-19 pandemic, (e.g., a study abroad requirement, a laboratory research requirement), the student should consult with the Director of Undergraduate Studies to identify academic options to fulfill degree requirements.

Graduate Degree Requirements

Grading

The Department of Religious Studies counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B' or better level.

Other Graduate Policies

If a student has difficulty completing a graduate degree requirement due to the COVID-19 pandemic, (e.g., a study abroad requirement, a laboratory research requirement), the student should consult with the Director of Graduate Studies to identify academic options to fulfill degree requirements.

Graduate Advising Expectations

The Department of Religious Studies is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the advisor and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity.

Faculty advisors guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy,

navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Faculty

Emeriti: (Professors) Carl W. Bielefeldt, Arnold Eisen, Bernard Faure, Hester G. Gelber, Robert C. Gregg, Van Harvey

Emerita: (Senior Lecturer) Linda Hess

Chair: Paul Harrison

Director of Graduate Studies: Charlotte Fonrobert

Director of Undergraduate Studies: Michael Penn

Professors: Paul Harrison, John Kieschnick, Michael Penn, Thomas Sheehan, Lee Yearley

Associate Professors: Anna Bigelow, Charlotte Fonrobert, Kathryn Gin Lum, Brent Sockness (on leave)

Assistant Professors: Elaine Fisher, James Gentry, Ariel Mayse, Michaela Mross (on leave)

Senior Lecturer: Barbara Pitkin

Lecturers: Philip Abbott, Kirsti Copeland, Trent Walker, Sarah Willburn

Courtesy Professors: Fiona Griffiths, Mark Lewis

Courtesy Associate Professor: Ari Y. Kelman

Overseas Studies Courses in Religious Studies

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPKYOTO 13	Contemporary Religion in Japan's Ancient Capital: Sustaining and Recasting Tradition	3-4
OSPKYOTO 58	A Journey into the Buddhist Visual Arts of Japan	4
OSPMADRD 74	Islam in Spain and Europe: 1300 Years of Contact	4
OSPMADRD 75	Sefarad: The Jewish Community in Spain	4

Courses

RELIGST 1. Religion Around the Globe. 4 Units.
This course surveys major religious traditions of the world. Through examination of a variety of materials, including scriptures and other spiritual writings, religious objects and artifacts, and modern documentary and film, we explore Buddhism, Christianity, Hinduism, Islam, Judaism, and Daoism as rich historical and living traditions.

RELIGST 2. Is Stanford a Religion?. 4 Units.
This course seeks to introduce students to the study of religion by posing a two-part question: What is a religion, and does Stanford qualify as one? Scientific, pragmatic, seemingly secular, Stanford may not seem at all similar to religions like Christianity, Judaism or Buddhism, but a deeper look reveals that it has many of the qualities of religion--origin stories, rituals and ceremonies, sacred spaces and times, visions of the future, even some spirits. By learning some of the theories and methods of the field of religious studies, students will gain a better understanding not just of Stanford culture but of what motivates people to be religious, the roles religion plays in people's lives, and the similarities and differences between religious and secular culture.

RELIGST 3. The Religious Life of Things. 3-5 Units.
Temples, prayer beads, icons, robes, books, relics, candles and incense, scarves and hats, sacred food and holy water; objects of all sorts play a prominent role in all religions, evoking a wide range of emotional responses, from reverence, solace and even ecstasy, to fear, hostility and violence. What is it about these things that makes them so powerful? Is it beliefs and doctrines that inspire particular attitudes towards certain objects, or is it the other way around? Many see a tension or even contradiction between religion and material pursuits and argue that the true religious life is a life without things. But is such a life even possible? This course adopts a comparative approach, drawing on a variety of traditions to examine the place of images, food, clothing, ritual objects, architecture and relics in religious thought and practice. Materials for the course include scholarship, scripture, images and at least one museum visit.

RELIGST 4. What Didn't Make It into the Bible. 4 Units.
Over two billion people alive today consider the Bible to be sacred scripture. But how did the books that made it into the bible get there in the first place? Who decided what was to be part of the bible and what wasn't? How would history look differently if a given book didn't make the final cut and another one did? Hundreds of ancient Jewish and Christian texts are not included in the Bible. "What Didn't Make It in the Bible" focuses on these excluded writings. We will explore the Dead Sea Scrolls, Gnostic gospels, hear of a five-year-old Jesus throwing temper tantrums while killing (and later resurrecting) his classmates, peruse ancient romance novels, explore the adventures of fallen angels who sired giants (and taught humans about cosmetics), tour heaven and hell, encounter the garden of Eden story told from the perspective of the snake, and learn how the world will end. The course assumes no prior knowledge of Judaism, Christianity, the bible, or ancient history. It is designed for students who are part of faith traditions that consider the bible to be sacred, as well as those who are not. The only prerequisite is an interest in exploring books, groups, and ideas that eventually lost the battles of history and to keep asking the question "why." In critically examining these ancient narratives and the communities that wrote them, you will investigate how religions canonize a scriptural tradition, better appreciate the diversity of early Judaism and Christianity, understand the historical context of these religions, and explore the politics behind what did and did not make it into the bible.
Same as: CLASSICS 9N, JEWISHST 4

RELIGST 6N. Religion in Anime and Manga. 3 Units.
Religious themes and topoi are ubiquitous in Japanese anime and manga. In this course, we will examine how religions are represented in these new media and study the role of religions in contemporary Japan. By doing this, students will also learn fundamental concepts of Buddhism and Shinto.

RELIGST 7N. Religion, Ecology, and Environmental Ethics. 3 Units.
The world today is in the midst of a major ecological crisis that is manifested in extreme weather events, loss of biodiversity, depletion of fisheries, pollution of air, water, and soil, prolonged draughts, and mass extinction of species. Since the 1970s world religions grappled with the religious significance of the environmental crisis, examining their own scriptures, rituals and ethics in order to articulate religious responses to the ecological crisis. This course explores how certain religions--Judaism, Christianity, Islam, Buddhism and Hinduism--have addressed the ecological crisis for the past fifty years. Preserving the distinctiveness of each religious tradition, this seminar examines: the issue of religion as the cause of the environmental crisis; the resources for ecological responses within each tradition; the emergence of new religious ecologies and ecological theologies; the contribution of world religions to environmental ethics; and the degree to which the environmental crisis has functioned--and will function--as the basis of inter-faith collaboration. We will work to develop a shared vocabulary in environmental humanities, and special attention will be given to the contribution of religion to animal studies, ecofeminism, religion and the science of ecology, and the interplay between faith, scholarship and activism.

RELIGST 8N. Gardens and Sacred Space in Japan. 3 Units.
This seminar will explore gardens and sacred spaces in Japan. We will study the development of Japanese garden design from the earliest records to contemporary Japan. We will especially focus on the religious, aesthetic, and social dimensions of gardens and sacred spaces. This seminar features a field trip to a Japanese garden in the area, in order to study how Japanese garden design was adapted in North America.

RELIGST 11N. The Meaning of Life: Philosophical, Aesthetic, and Religious Perspectives. 3 Units.
What is involved in making personal/existential sense of one's own life? We study artworks and texts by Manet, T.S. Eliot, Plato, Plotinus, Augustine, Marx, Nietzsche, and Heidegger, as well as Ingmar Bergman's classic film, "The Seventh Seal.".

RELIGST 12N. Perspectives on the Good Life. 3-4 Units.
The question is how to approach and evaluate different perspectives on the good life, especially when those perspectives are beautifully, and elusively, presented to us as texts. We will consider both classic and modern writers, from the West and from China; some are explicitly religious, some explicitly secular; some literary, some philosophical. Most of the class will revolve around our talk with each other, interpreting and questioning relatively short texts. The works we will read - by Dante, Dickenson, Zhuangzi, Shklar, and others - are not intended to be representative of traditions, of eras, or of disciplines. They do, however, present a range of viewpoint and of style that will help frame and re-frame our views on the good life. They will illustrate and question the role that great texts can play in a modern 'art of living.' Perhaps most important, they will develop and reward the skills of careful reading, attentive listening, and thoughtful discussion. (Note: preparation and participation in discussion are the primary course requirement. Enrollment at 3 units requires a short final paper; a more substantial paper is required for the 4-unit option.

RELIGST 13N. The Fourth "R": Religion and American Schools. 4 Units.
In this seminar, we will engage with historical, legal, and sociological texts, in order to trace the complicated relationship between church and state as it has played out in and around questions of education. Deciding what belongs in schools, what does not, whose interests are served in the process, and what the Constitution will allow are just some of the questions that will guide us. Through close readings of text and critical writing, we will develop alternative narratives about church-state issues that can make sense of everything from prayer in schools to civic education. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.
Same as: AMSTUD 117N, EDUC 117N

RELIGST 14N. Demons, Death, and the Damned: The 'Other' and the Otherwordly in America. 3 Units.
This course will examine how beliefs about the "other world" actually shape and are shaped by Americans' this-worldly actions and interactions (i.e. in the demonization of the "other," whether defined religiously, racially, ethnically, or in gendered terms). Students will ask how ideas about demons and death, heaven and hell have reflected the concerns, values, and identities of Americans over time. Students will learn how to read primary sources against secondary literature.

RELIGST 17N. Love, Power, and Justice: Ethics in Christian Perspective. 3 Units.
From its inception, the Christian faith has, like all religions, implied an ethos as well as a worldview, a morality and way of life as well as a system of beliefs, an ethics as well as a metaphysics. Throughout history, Christian thinkers have offered reasoned accounts of the moral values, principles, and virtues that ought to animate the adherents of what eventually became the world's largest religion. We will explore a variety of controversial issues, theological orientations, and types of ethical reasoning in the Christian tradition, treating the latter as one 'comprehensive doctrine' (John Rawls) among many; a normative framework (actually a variety of contested religious premises, moral teachings, and philosophical arguments) formally on par with the religious ethics of other major faiths as well as with the various secular moral theories typically discussed in the modern university. We will learn to interpret, reconstruct, criticize, and think intelligently about the coherence and persuasiveness of moral arguments offered by a diverse handful of this religious tradition's best thinkers and critics, past and present.

RELIGST 18N. Religion and Politics: Comparing Europe to the U.S.. 3-4 Units.
Interdisciplinary and comparative. Historical, political, sociological, and religious studies approaches. The relationship between religion and politics as understood in the U.S. and Europe. How this relationship has become tense both because of the rise of Islam as a public religion in Europe and the rising influence of religious groups in public culture. Different understandings and definitions of the separation of church and state in Western democratic cultures, and differing notions of the public sphere. Case studies to investigate the nature of public conflicts, what issues lead to conflict, and why. Why has the head covering of Muslim women become politicized in Europe? What are the arguments surrounding the Cordoba House, known as the Ground Zero Mosque, and how does this conflict compare to controversies about recent constructions of mosques in Europe? Resources include media, documentaries, and scholarly literature.
Same as: JEWISHST 18N

RELIGST 19N. Everyone Eats: Food, Religion and Culture. 3 Units.
Food is one of the most essential aspects of the human experience. The decisions and choices we make about food define who we have been, who we are now, and who we want to become. In this seminar we will study how food habits have shaped religious traditions, and vice versa, how religious traditions have shaped food ways. Some traditions are centered around food regiments such as the dietary laws, derived from biblical law that shapes Jewish and Christian tradition very differently. Indeed, many religious and ethical thinkers, as well as anthropologists, have interpreted the meanings of the dietary laws very differently. Further, in many religious traditions the killing of animals and consumption of meat is deeply fraught. We will explore the history of food practices and their contemporary impact; the connections between food, religion, and identity; the meanings that religious thinkers and anthropologists have attributed to food habits; as well as the creative translations of religious traditions into contemporary food ethics by various social movements and groups, predominantly in the U.S.
Same as: CSRE 19N, JEWISHST 19N

RELIGST 19X. Zen: A Way of Life Through Meditation and Cooking. 1 Unit.
This class is being offered in collaboration with the Stanford Program in Kyoto, Bing Overseas Studies Program.
Fundamental to Zen Buddhism is the meditative practice of zazen ("seated meditation"). In recent decades, zazen-inspired meditative practices have proliferated far from Japan and movements such "mindfulness" have become popular in parts of the US. However, there are a number of conceptual differences between Japanese zazen and some of these newer practices. Zazen in Japan is not a tool for relaxation, nor a means for personal gain or betterment. Instead, its goal is to clarify the self - and thereby to enable the practitioner to live a vivid and full life. The core of Zen teaching is achieved not through study of texts but through practice and experience. In this condensed, practicum course students will learn by focusing on two of the most important aspects of Buddhist monastic life: zazen meditation, and cooking.

Instructor: Rev. Daiko Matsuyama
Dates: October 19-23 6:00AM-7:00AM PDT and (1 wrap up session-date TBD)
Students will be required to purchase household materials for this course (approximately USD $25.)
The course is offered remotely (online) and enrollment is limited to 15 undergraduate students. A permission code will be given to admitted students to register in the class.
Interested students can apply by going to this Google form link: https://forms.gle/YcAdR59wqzuPNax56.

RELIGST 24S. Witches, Witchcraft, and Witch-Hunting in Early America. 3 Units.
The early modern era witnessed a dramatic surge in the religious and legal persecution of women and men suspected of and executed for witchcraft. While witch-hunting was a global phenomenon, this class shall focus on the early American religious experience. This course will explore the history of witchcraft in early America, with particular focus on Puritan New England. This class will challenge students to consider what was witchcraft? Why did people believe in it, and how did it give meaning to their worlds? What functions did witchcraft have in society? Who were most vulnerable to accusations? What best explains the phenomenon of witch-hunting? Because this class takes a historical approach to the religious world of early America, much of the coursework will center on interpreting and analyzing primary sources related to witchcraft (e.g. sermons, diaries, letters, trial notes) and engaging with secondary sources by witchcraft experts. Our focus shall be both macro and micro, studying small single episodes, as well as large-scale events, such as the Salem Witch Trials of 1692.

RELIGST 26S. Contemporary Islam & Muslims in America. 3 Units.
In this course, we will explore contemporary Islam and Muslims in a post-9/11 and Trump-era America. Following some brief grounding history in Week 1, we will use ethnographic studies and digital media content to understand the American Muslim experience in the 21st century. Each week, we will also address how the lived experience of American Muslims interacts with theoretical and normative conceptions of Islam, and whether these interactions eventually create a distinctive American Islam. Topics covered include: racial & gender dynamics, ideological debates, institutions, social media wars, politics, and specific communities as case studies. Together we will develop a critical perspective on the American Muslim experience, particularly as a case of how one diverse religious community negotiates religion in a complex sociopolitical setting.

RELIGST 36X. Dangerous Ideas. 1 Unit.
Ideas matter. Concepts such as revolution, tradition, and hell have inspired social movements, shaped political systems, and dramatically influenced the lives of individuals. Others, like immigration, universal basic income, and youth play an important role in contemporary debates in the United States. All of these ideas are contested, and they have a real power to change lives, for better and for worse. In this one-unit class we will examine these "dangerous" ideas. Each week, a faculty member from a different department in the humanities and arts will explore a concept that has shaped human experience across time and space. Some weeks will have short reading assignments, but you are not required to purchase any materials.
Same as: ARTHIST 36, COMPLIT 36A, EALC 36, ENGLISH 71, ETHICSOC 36X, FRENCH 36, HISTORY 3D, MUSIC 36H, PHIL 36, POLISCI 70, SLAVIC 36

RELIGST 50. Exploring Buddhism. 4 Units.
A comprehensive historical survey of the Buddhist tradition, from its beginnings to the 21st century, covering principal teachings and practices, institutional and social forms, and artistic and iconographical expressions. (Formerly RELIGST 14.).

RELIGST 51. Exploring Buddhism in Tibet and the Himalayas. 4 Units.
From elaborate sand mandalas, masked dances, and entrancing ritual music to meditating yogis, robed monks, and the Dalai Lama himself, Tibetan forms of Buddhist traditions have for decades been an integral part of our modern globalized world. This course introduces the history, institutions, doctrines, and practices of Buddhism in Tibet and the broader Himalayan region.

RELIGST 53. Exploring Jewish Spirituality. 4 Units.
It was once accepted as fact that Judaism is, at its core, a rational religion devoid of any authentic mystical tradition. But the past century of scholarship has reversed this claim, demonstrating that the spiritual life has been integral to Judaism's vital heart since ancient times. This yearning for a direct immediate experience of God's Presence, a longing to grasp the mysteries of the human soul and know the inner dynamics of the Divine realm, has taken on many different forms across the centuries.
This course will introduce students to the major texts--from theological treatises to poems and incantations--and core ideas of Jewish mysticism and spirituality, tracking their development from the Hebrew Bible to the dawn of modernity. Close attention will be paid to the historical context of these sources, and we will also engage with broader methodological approaches--from phenomenology to philology--regarding the academic study of religion and the comparative consideration of mysticism in particular.
This course assumes no prior background of Judaism or any other religious traditions. All readings will be made available in English. Students are, however, invited to challenge themselves with the "optional/advanced" readings of sources both primary and secondary. Pending interest, students with facility in the original languages (Hebrew or Aramaic) will be given the opportunity to do so.
Same as: JEWISHST 53

RELIGST 55. Exploring Zen Buddhism. 4 Units.
This course is an introduction to Chan/Zen Buddhism. We will study the historical and doctrinal development of this tradition in China and Japan and examine various facets of Zen, such as the philosophy, practices, rituals, culture, and institution. For this aim, we will read and discuss classical Zen texts in translation and important secondary literature. This class will further feature a visit of a Zen teacher, who will give an introduction to sitting meditation.

RELIGST 56. Exploring Chinese Religions. 4 Units.
An overview of major themes and historical developments in 5000 years of Chinese religion from early evidence of religious belief in Neolithic burial sites to religion in China today. In this course, we will try as much as possible to appreciate Chinese religion from the Chinese perspective, paying particular attention to original texts in translation in an attempt to discern the logic of Chinese religion and the role it has played in the course of Chinese history. To a greater extent perhaps than any other civilization, the Chinese have left behind a continuous body of written documents and other artifacts relating to religion stretching over thousands of years, providing a wealth of material for studying the place of religion in history and society. We will cover a range of traditions, from Buddhism and Daoism to Falun Gong, practices such as divination, fengshui and ancestor worship, and historical events from the formation of the first Chinese empire to the fall of the Qing dynasty and the Cultural Revolution. Each class will include a short lecture and discussion. Together we will read a variety of philosophical, literary, and historical pieces in translation, supplemented by ethnographic videos, archaeology and maps.

RELIGST 61. Exploring Islam. 4 Units.
This course introduces some of the most important features of the Islamic religious tradition. It explores the different ways in which Muslims have interpreted and practiced their religion. The main subjects of discussion --- including the life of the Prophet Muhammad, the Qur'an, law, ritual, mysticism, theology, politics, and art --- will be considered with reference to their proper historical contexts. Some of the topics covered include abortion, gender, rebellion and violence, and the visual vocabulary of paintings. Students will be exposed to important theories and methods in the academic study of religion. No prior knowledge is required.

RELIGST 65. Exploring Global Christianity. 4 Units.
Explore the world¿s largest religion as a multicultural, global faith, with attention to Christianity¿s origins, spread and impact around the world up to the present. Special attention to recent shifting demographics leading to declining numbers in mainline Christian denominations in North America and Europe and the rapid expansion of Christianity in Africa, Asia, and South America; the explosion of international Pentecostalism and other new Christianities; Christianity, global politics, and the global economy; Christian-Muslim relations and conflicts.

RELIGST 81. Exploring Indian Religions. 4 Units.
This course provides an overview of Indian religious traditions, including Hinduism, Buddhism, Jainism, Islam, and Sikhism. We will spend approximately half the course on Hindu thought and traditions from the Vedic period until the present day, emphasizing the diverse forms of this religion in different times and places. The second half of the course will be devoted to religions that emerged in South Asia (e.g., Jainism) and those that came to find a home and particular forms of expression on the subcontinent (e.g., Islam). Throughout students will read selections from a range of theological texts, epics, and literature that have permeated many aspects of daily religious life in India. We will also emphasize ritual activities, visual experiences in temples, and networks of pilgrimage places that dot the subcontinent. We will often pair primary sources (in translation) with later interpretations and impacts of those texts in modern South Asia. We will also survey the modern incarnations of particular Indian religious traditions throughout South Asia and the diaspora. By the conclusion of this course, students will be conversant with the texts, beliefs, and practices of the major Indian religions in their cultural and historical contexts and also have a working knowledge of basic categories important for the study of religion more broadly.

RELIGST 82. Exploring Christianity. 4 Units.
Historical and contemporary Christianity from four viewpoints: ritual and prayer; sacred texts and creeds; ethics and life; and community governance.

RELIGST 86. Exploring the New Testament. 4 Units.
To explore the historical context of the earliest Christians, students will read most of the New Testament as well as many documents that didn't make the final cut. Non-Christian texts, Roman art, and surviving archeological remains will better situate Christianity within the ancient world. Students will read from the Dead Sea Scrolls, explore Gnostic gospels, hear of a five-year-old Jesus throwing divine temper tantrums while killing (and later resurrecting) his classmates, peruse an ancient marriage guide, and engage with recent scholarship in archeology, literary criticism, and history.
Same as: CLASSICS 43, JEWISHST 86

RELIGST 91. Exploring American Religious History. 4 Units.
This course will trace how contemporary beliefs and practices connect to historical trends in the American religious landscape.
Same as: AMSTUD 91, CSRE 91, HISTORY 260K

RELIGST 105. Religion and War in America. 4 Units.
Scholars have devoted much attention to wars in American history, but have not agreed as to whether religion was a major cause or simply a cover for political, economic, and other motives. We will compare interpretations that leave religion out, with those that take it into account. We will also look at the impact of war on the religious lives of ordinary Americans. We will examine both secondary as well as primary sources, beginning with King Philip's War in the 17th century, and ending with the "War on Terror" in the present day.
Same as: AMSTUD 105R, CSRE 105, HISTORY 254D, HISTORY 354D

RELIGST 114. Yoga: Ancient and Modern. 4 Units.
In both Western popular culture and the Indian political arena, Yoga has become emblematic of the cultural heritage of India. But how did the phenomenon that is global postural yoga, with its secular wellness ethos and athleticism, come into existence? And how does it relate to the contemplative and ascetic disciplines that were practiced in the premodern Indian past? This course explores the early history of yoga through its philosophy and esoteric practices, concluding with a look at the ramifications of yoga in contemporary culture and politics. Participating in a yoga class is recommended. 2 units of independent study (S-NC) are offered for those who participate in a weekly yoga class and write short reflections on the experience.

RELIGST 115X. Europe in the Middle Ages, 300-1500. 3-5 Units.
(HISTORY 15D is 3 units; HISTORY 115D is 5 units.) This course provides an introduction to Medieval Europe from the fall of Rome to the Renaissance. While the framework of the course is chronological, we'll concentrate particularly on the structure of medieval society. Rural and urban life, kingship and papal government, wars and plagues provide the context for our examination of the lives of medieval people, what they believed, and how they interacted with other, both within Christendom and beyond it. This course may count as DLCL 123, a course requirement for the Medieval Studies Minor.
Same as: HISTORY 15D, HISTORY 115D

RELIGST 116. Buddhist Philosophy. 4 Units.
What do Buddhists mean when they argue that there is "no self?" What about their claim that everything is "empty?" Is their theory of karma a type of "fatalism" (that everything is just a matter of predetermined fate)? Does Buddhism really teach that we are all connected with one another? This course aims to answer these questions, and many others related to Buddhist philosophy. We will begin by exploring the central philosophical arguments attributed to the historical Buddha, and study the major philosophical traditions of Buddhism and the debates between them over the issues of metaphysics (what is really real?), ethics (what should we do?), and epistemology (what and how do we know?). We will also learn about the problems and significance of the modern interpretations of Buddhist philosophy. Through these discussions, we will attempt to critically appreciate both the universality and the particularity of the Buddhist ways of thinking.

RELIGST 117. Christianity, Race, and Gender in 21st-century America. 4 Units.
As the largest religion practiced in the United States, Christianity not only shapes the private lives of a large number of Americans but also plays an important role in public discourse, policies, and debates. This course investigates Christianity's place on the shifting religious landscape in America, with special attention to present-day movements for racial and gender justice in the era of Black Lives Matter and #MeToo. Students explore reasons for declining numbers of Christians in the United States, the polarization of Christian conservatives and religious "nones," and Christian constructions of social relations. How do Christian beliefs and practices shape attitudes about race and gender roles? How is contemporary Christianity acting as a force for as well as a barrier to social justice? This course assumes no background in the study of religion, race, or gender and is open to practitioners of all faiths or none.
Same as: AMSTUD 117R

RELIGST 118. Freedom Fighters, Terrorists, and Social Justice Warriors: Protest and Decolonization in South Asia. 3 Units.
The South Asian region comprises the contemporary nations of India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan, and the Maldives. Racially, linguistically, politically, religiously, and in every way diverse, this region has also experienced the challenge of European colonialism, the effects of global climate change, the impact of rapid industrialization and urbanization, and internal conflicts within and between nations. It is also a creatively and intellectually vibrant region in which principles of non-violent resistance, award winning arts and literature, stunning natural environments, and scientific discovery are integral and celebrated. How have South Asians engaged the rapid social change of the twentieth century with decolonization and regional conflicts? What artistic and literary formations emerged from and drove the freedom movements against colonial rule and the nation forming projects that ensued? How have globalization and internal debates about national identities shaped contemporary South Asian societies?.
Same as: HUMCORE 134

RELIGST 119. Religion and Conflict. 4 Units.
What is the relationship between religion and conflict? Can religious movements, ideologies, and actors cause conflicts or make them better or worse? This course looks at theories of religion and conflict, religious approaches to conflict resolution or peacebuilding, and examines case studies of conflicts involving religion.

RELIGST 123. The Hindu Epics and the Ethics of Dharma. 4 Units.
The two great Hindu Epics, the Mahabharata and Ramayana, offer a sustained reflection on the nature of virtuous living in the face of insoluble ethical dilemmas. Their treatment of the concept of dharma, understood simultaneously as ethical action and the universal order that upholds the cosmos, lies at the heart of both Gandhian non-violent resistance and communalist interreligious conflict. This course will focus on a reading of selections from the Epics in English translation, supplemented with a consideration of how the texts have been interpreted in South Asian literary history and contemporary politics and public life in India.
Same as: CLASSICS 125

RELIGST 124. Sufi Islam. 4 Units.
The complex of Islamic intellectual and social perspectives subsumed under the term Sufism. Sufi mystical philosophies and historical and social evolution. Major examples include: Qushayrî, Râbi'a, Junayd, Hallâj, Sulamî, Ibn al-'Arabî, Rûmî, Nizâm al-Dîn Awliyâ'. Social and political roles of Sufi saints and communities. Readings include original prose and poetry in translation, secondary discussions, and ethnography.

RELIGST 125. The Bible and its Interpreters. 4 Units.
Introduction to major stories, figures, and themes of the Christian Bible and their retellings in theological writing, art, literature, film, and music throughout the ages.

RELIGST 126. Protestant Reformation. 3-5 Units.
The emergence of Protestant Christianity in 16th-century Europe. Analysis of writings by evangelical reformers (Luther, Calvin, Zwingli, Sattler, Hubmeier, Müntzer) and study of reform movements (Lutheran, Reformed, Anabaptist, Spiritualist) in their medieval context and as expressions of new and influential visions of Christian belief, life, social order.
Same as: HISTORY 126B

RELIGST 128. Women and Gender in Early Judaism and Christianity. 4 Units.
Beginning with the Hebrew Bible and New Testament, we will explore female figures in early Jewish and Christian literatures, such as Eve, Ruth, Mary, and Junia. Based on this, we will probe the prescriptions for female comportment in early Judaism and Christianity placing these literary prescriptions in conversation with material evidence related to women, such as for example the Babatha archive. We will analyze the politics of patriarchy in ancient discourse, and examine, among other topics, efforts by Christian clergy to silence female prophets in the second and third centuries CE. The bulk of the course will be devoted to the formative years of both Judaism and Christianity in Late Antiquity. This course assumes no prior knowledge of Judaism, Christianity, the Bible, or ancient history. It is designed for students who are part of faith traditions that consider the Bible to be sacred, as well as those who are not. Ancient readings in this course will be supplemented by modern scholarship in classics, early Christian studies, gender studies, queer studies, and the history of sexuality.
Same as: JEWISHST 128

RELIGST 129. Milk and Honey, Wine and Blood: Food, Justice, and Ethnic Identity in Jewish Culture. 4 Units.
This course examines Jewish culture and the food practices and traditions that have shaped and continue to shape it. Students learn to prepare a variety of meals while studying about the historical and literary traditions associated with them, such as the dietary `laws¿ and the long history of their interpretation, as well as the cultivation of eating as devotional practice in Jewish mystical traditions. We will explore how regional foods the world over contribute to the formation of distinct Jewish ethnic identities, and how these traditions shape contemporary Jewish food ethics. The course includes guest visits by professional chefs and food writers, and field trips to a local winery.
Same as: JEWISHST 129A

RELIGST 130. Sex and Gender in Judaism and Christianity. 3 Units.
What role do Jewish and Christian traditions play in shaping understandings of gender differences? Is gender always imagined as dual, male and female? This course explores the variety of ways in which Jewish and Christian traditions - often in conversation with and against each other - have shaped gender identities and sexual politics. We will explore the central role that issues around marriage and reproduction played in this conversation. Perhaps surprisingly, early Jews and Christian also espoused deep interest in writing about 'eunuchs' and 'androgynes,' as they thought about Jewish and Christian ways of being a man or a woman. We will examine the variety of these early conversations, and the contemporary Jewish and Christian discussions of feminist, queer, trans- and intersex based on them.
Same as: FEMGEN 130, JEWISHST 120

RELIGST 132D. Early Christian Gospels. 4 Units.
An exploration of Christian gospels of the first and second century. Emphasis on the variety of images and interpretations of Jesus and the good news, the broader Hellenistic and Jewish contexts of the gospels, the processes of developing and transmitting gospels, and the creation of the canon. Readings include the Gospel of John, the Gospel of Mark, the Gospel of Thomas, the Gospel of Mary and other canonical and non-canonical gospels.
Same as: CLASSICS 145

RELIGST 133. Muslims, Jews, and Christians: Conflict, Coexistence, and Collaboration. 4 Units.
Relationships between Muslims, Jews, and Christians today are informed by a multitude of complex and often painful histories. These faith traditions emerged out of deep and sustained engagement with one another sharing theological and ethical principles, and revering many of the same figures and there have been many periods of rich and productive interaction. Yet there have also been areas of dissension and conflict, and periods when theological, social, or political disagreement devolved into violence and oppression. In recent times (especially following the Holocaust and the establishment of the modern State of Israel), religious, political, and intellectual leaders of Muslim, Jewish, and Christian communities, in the U.S. and around the world, have recognized the need to forge deeper and more meaningful relationships with one another. Knowledge and understanding of the perspectives that different communities and individuals bring to bear on their entangled past, present, and future are a critical part of efforts to resolve intransigent conflicts and advance mutual interests. This course explores some of the most significant moments of interaction through literature and art, polemic and dialogue that have shaped engagements between Muslims, Jews, and Christians throughout history, and examines both prospects and pitfalls for engagement in the present and future.
Same as: JEWISHST 123

RELIGST 139. Religion along the Silk Road. 4 Units.
From roughly the year 1 to the year 1000, a vibrant trade route stretched across Central Asia, linking Europe, India and East Asia. Along this route, merchants bought and sold the silk that gave the route its name, along with paper, ceramics, spices, precious stones and any number of other commodities. Together with these trade goods, merchants, missionaries, farmers and artisans who participated in this vast commercial network, exchanged ideas, scriptures, practices and beliefs, including those associated with major religious traditions; Buddhism, Zoroastrianism, Christianity, Judaism, Manichaeism and Islam followed the same routes as silk and spice. In this course we will examine the spread of all of these religions across the Silk Road, what happened when they interacted, and what this tells us about the relation between commerce, trade and geography in the pre-modern world.

RELIGST 140. RELIGION AND ETHICS: The Limits of Dialogue. 3 Units.
How do religious traditions address ethical problems? Although ¿the good¿ seems like a universal goal, religious traditions force us to consider non-universal ways of defining it. From marriage to genetic engineering, from abortion to organ donation, issues of community, faith, and practice continue to complicate our ethical thinking. Exploration of case-studies and concepts, with readings from Kant, Foucault, Butler and others, as well as Jewish and Christian interpretations of the Bible.

RELIGST 144. John Calvin and Christian Faith. 5 Units.
Close reading and analysis of Calvin's *Institutes of the Christian Religion* as a classic expression of Christian belief.

RELIGST 147. Building Heaven and Hell. 4 Units.
How did early Jews and Christians imagine space? How did they construct heaven and hell through their written texts? Can we take their written images of the earthly and heavenly Jerusalem and her temple, such as those found in Ezekiel, the Book of Revelation and the Apocalypse of Paul and transform them into three-dimensional space? We are going to try! We will meet in the architecture studio and literally build these images from foam board and hot glue. A number of themes will emerge through the course: the interpretive move in rendering a once real space as a literary icon, the relationship between text and imagined space, the connection between space and ritual, the development of apocalyptic visions, and the centrality of Jerusalem in Jewish and Christian thought.

RELIGST 149. Finding Utopia: Mysticism, Free Love, and New Religions of the Nineteenth-Century. 4 Units.
This class explores radical experiments in 19th-century religious utopias. Ranging from the occult to free love to anarchism, we will encounter diaries from a polyamorous commune, seance accounts of astral travel, a journal from a "Sister of the New Life" striving to create a neighborhood modeled off the fairies that she thought inhabited her body, and theological treatises insisting that spiritual progress could only be achieved scientifically. Sources such as these will help us investigate the connection between religious innovation and concepts that continue to influence us today.

RELIGST 150. Texts that Changed the World from the Ancient Middle East. 3-5 Units.
This course traces the story of the cradle of human civilization. We will begin with the earliest human stories, the Gilgamesh Epic and biblical literature, and follow the path of the development of law, religion, philosophy and literature in the ancient Mediterranean or Middle Eastern world, to the emergence of Jewish and Christian thinking. We will pose questions about how this past continues to inform our present: What stories, myths, and ideas remain foundational to us? How did the stories and myths shape civilizations and form larger communities? How did the earliest stories conceive of human life and the divine? What are the ideas about the order of nature, and the place of human life within that order? How is the relationship between the individual and society constituted? This course is part of the Humanities Core: https://humanitiescore.stanford.edu/.
Same as: COMPLIT 31, HUMCORE 111, JEWISHST 150

RELIGST 151. Religious Poetry of India. 4 Units.
India has a rich literature of devotional and mystical poetry composed by "poet-saints" in common vernacular languagesa, This passionate and contemplative poetry flourished between the 6th and 18th centuries, inspiring religious and social movements that are still vibrant today. It also lives as music, remaining popular and powerful in the form of songs in many styles. We will study this material through the lenses of poetry, religion, performance, and politics.

RELIGST 152. Buddhism and the Family. 4 Units.
What do we owe our parents? This course centers how Buddhist authors in Cambodia and Vietnam have wrestled with questions of debt and gratitude in the family. We will begin with the Indian and Chinese antecedents that shaped ideals of filial piety in the region of Southeast Asia formerly known as "Indochina." The core of our readings and discussions will engage classical Khmer and Vietnamese literature in translation, including the verse novels "A Child Called Dream" and "The Tale of Kieu." The course will close with Asian American celebrations and critiques of filial piety. Our aim throughout the quarter will be to complicate contemporary views on familial debts by charting a specific religious and literary history in Southeast Asia.

RELIGST 154. Buddhism and Science: A Critical Introduction to the Encounter. 4 Units.
Buddhism has figured in the Western imagination as a "rational religion," a "philosophy" that is mostly compatible with science. While the notion of Buddhism as "scientific" is both controversial and open to exaggeration, in the last few decades, this positive image has helped to facilitate direct encounters between Buddhism and science in multiple settings--dialogues between scientists and Buddhist scholars on key topics such as mindfulness, collaborative presentations and workshops at academic conferences, scientific research on contemplative practices, and so forth. This course explores the many facets of the encounter between Buddhism and science. It aims to do so through discussion and debate of relevant scientific papers, traditional Buddhist literature, science and technology studies (STS), and anthropological literature. Topics to be addressed include, among others, the encounter between Buddhism and psychology; the study of Buddhist contemplative practices in the laboratory; the Mindfulness-Based Stress Reduction program and the "Mindful Revolution"; the creation of a Buddhist "science of happiness"; Buddhism and technology; and Buddhism, science, and the idea of secularism.

RELIGST 156X. Sounds of Islam. 3 Units.
This course explores diverse intersections of sound and Islam in religious and secular contexts throughout the world. From studying Islamic philosophies about the art of listening to interrogating Muslim hip hop, we examine how sonic practices simultaneously reflect and shape different Muslim identities globally. Issues of nationalism, war and trauma, class, race and ethnicity, gender and sexualities, colonialism, social in/justice, and migration will remain central to our exploration of spirituality, secularism, piety, and religiosity for the individuals and communities making or listening to sounds of Islam.
Same as: MUSIC 186E

RELIGST 158. Spiritualism and the Occult. 4 Units.
How can the living communicate with the dead? From Leland Jr.'s ghost to his uncle, T.W. Stanford, millions of people in the nineteenth century practiced technologies of spirit communication from spirit photography to animated seance tables. Through close readings of stories, novels, such as Romance of Two Worlds in which the heroine astrally travels through outer space, seance accounts, and scientific treatises, including Waisbrooker¿s theory that the way to enlightenment is through having the right type of sex, this class explores their mystical culture and how it blurred the line between seen and unseen in an effort to expand the real.

RELIGST 162X. Spirituality and Nonviolent Urban and Social Transformation. 3 Units.
A life of engagement in social transformation is often built on a foundation of spiritual and religious commitments. Case studies of nonviolent social change agents including Rosa Parks in the civil rights movement, César Chávez in the labor movement, and WIlliam Sloane Coffin in the peace movement; the religious and spiritual underpinnings of their commitments. Theory and principles of nonviolence. Films and readings. Service learning component includes placements in organizations engaged in social transformation. Service Learning Course (certified by Haas Center).
Same as: CSRE 162A, URBANST 126

RELIGST 165. Modern Jewish Mysticism: Devotion in a Secular Age. 4 Units.
The twentieth-century was a time of tremendous upheaval and unspeakable tragedy for the Jewish communities of Europe. But the past hundred years were also a period of great renewal for Jewish spirituality, a renaissance that has continued into the present day. Beginning with the writings of the Safed Renaissance, the Sabbateanism, and the Hasidic masters, our course will focus on key thinkers in the 19th and 20th centuries, including: Hillel Zeitlin, Martin Buber, Abraham Isaac Kook, Abraham Joshua Heschel, and Arthur Green. Drawing upon essays, homilies, and poems, we will examine the ways in which their works re-cast and reinterpret the Jewish tradition in answer to the singular questions and challenges modernity. We will mark the development of their thinking against the two World Wars, the Holocaust, and the complex and multi-faceted processes of secularization. We will also consider the theological project of modern Jewish mystics in dialogue with modern Jewish philosophers (such as Hermann Cohen, Franz Rosenzweig, and Emmanuel Levinas) as well as modern philosophers and scholars informed by Christianity (from William James to Charles Taylor). This course argues that the processes of sacralization, of reclaiming a life of mystical devotion, are best understood as a unique response to Jewish modernity rather than a retreat to past modalities of religion. In seeking to prove this point, we will explore writers whose work emerged in and engaged with different social and cultural domains. We will investigate their writings with an eye to issues such as power and identity, and will draw upon their works in charting the intersection of mysticism, literature, language and experience. Throughout our readings, we will keep our eye on the sustained impact of feminism on Jewish mysticism in the second half of the twentieth century. This course is structured as a seminar, and our class discussions will be rooted in the primary sources. It assumes no prior background of Judaism or any other religious traditions. All readings will be made available in English.
Same as: JEWISHST 125

RELIGST 166. The Divine Feminine in India. 4 Units.
What happens when God is a woman? Is the Goddess a feminist? The Goddess, in her numerous incarnations, is foundational to much of Indian religiosity, whether Hindu, Buddhist, or even Jain¿and in turn, without her story, much of the theology and practice of these religions remains incomprehensible. This course examines the principal expressions of the theology and ritual worship of the Goddess in Indian history, from the Vedas to the Hindu Epics, to Indian philosophy, tantric ritual practice and modern global and new age movements in order to understand how the gendering of divinity affects theological speculation, religious experience, and embodied religious identity.
Same as: FEMGEN 166

RELIGST 168. Philosophy of Religion. 3 Units.
Course traces efforts within the Western tradition from Boethius through Anselm, Aquinas, Descartes, Hume, Kant, and Kierkegaard to Camus to establish a rational foundation for theist belief and its consistency or coherence with everyday experience. We will deal extensively with the criticisms that that effort has cast up and then turn to investigate issues that extraordinary or mystical experience raises. We will incorporate a look at Buddhist traditions as well as those in the west to gain insight into these questions. And finally, we will look at the ethics of belief, at our responsibility toward our commitments, and some of the varying positions available to us.

RELIGST 169. Sacred Words: Jewish Thought and the Question of Language. 4 Units.
Jews have long been referred as the people of the book, but they might better be referred to as the people of the word. Drawing upon texts from the Hebrew Bible to the works of modern Hebrew writers like of Hayyim Nahman Bialik and Amoz Oz, this seminar will chart the development of Jewish thinking on language over the past two millennia. We will explore issues such as: the idea of canonization; oral versus written language; the nature and possibility of translation; the origins of language; notions of negative theology; mystical approaches to the word; the rebirth of Hebrew as a spoken and cultural language; and the limits of language after the Holocaust. This course will also bring Jewish thought into dialogue with contemporary philosophical reflections on issues of language. Modern explorations of language will prove an interesting way of deepening our understanding of the Jewish thinkers on one hand, and enriching contemporary intellectual discourse on the other.
Same as: JEWISHST 129

RELIGST 170A. Biblical Hebrew, First Quarter. 2 Units.
Establish a basic familiarity with the grammar and vocabulary of Biblical Hebrew and will begin developing a facility with the language. Students that are enrolled in this course must also enroll in Beginning Hebrew. This course requires no prior knowledge of Hebrew and will begin with learning the alphabet. By the end of the year, students will be able to translate basic biblical texts, will be familiar with common lexica and reference grammars, and will have sufficient foundational knowledge to enable them to continue expanding their knowledge either in a subsequent course or own their own.
Same as: JEWISHST 107A

RELIGST 170C. Reading in Biblical Hebrew. 4 Units.
Third of a three quarter sequence. Readings and translation of biblical narratives emphasizing grammar and literary techniques. Prerequisite: AMELANG 170B.

RELIGST 170D. Readings in Talmudic Literature. 1 Unit.
Readings of Talmudic texts. Some knowledge of Hebrew is preferred, but not necessary. The goal of the ongoing workshop is to provide Stanford students with the opportunity to engage in regular Talmud study, and to be introduced to a variety of approaches to studying Talmudic texts and thought.
Same as: JEWISHST 127D, JEWISHST 227D

RELIGST 170E. Readings in Talmudic Literature Advanced. 1 Unit.
Readings of the talmudic texts. Knowledge of Hebrew is required. The ongoing seminar is designed to study the making of the talmudic sugya (unit of discourse), along with classic commentaries. Students will consider some of the recent developments in the academic study of Talmudic literature, introduced by the instructor. The goal of the ongoing seminar is to provide Stanford students and faculty with the opportunity to engage in regular Talmud study, and to be introduced to a variety of approaches to studying Talmudic texts. Meeting time and location TBA. May be repeated for credit.
Same as: JEWISHST 127E, JEWISHST 227E

RELIGST 171A. Biblical Greek. 3-5 Units.
This is a one term intensive class in Biblical Greek. After quickly learning the basics of the language, we will then dive right into readings from the New Testament and the Septuagint, which is the ancient Greek translation of the Hebrew Bible. No previous knowledge of Greek required. If demand is high for a second term, an additional quarter will be offered in the Spring.
Same as: CLASSICS 6G, JEWISHST 5

RELIGST 171X. Intensive Biblical Greek. 8 Units.
Equivalent to two quarters of Biblical Greek (CLASSICS 6G, 7G). Students will learn the core of New Testament Greek with the goal of learning to accurately translate and read the New Testament. Students will read one-third of the Gospel of John during the course and will be well-prepared to read the Greek New Testament independently after the course. Focus on knowledge of key vocabulary and grammar needed to read the Greek Bible with ease. No previous knowledge of Greek required. Course does not fulfill the Stanford language requirement.
Same as: JEWISHST 5G

RELIGST 173. What is Enlightenment? Religion in the Age of Reason. 4 Units.
Many contemporary attitudes towards religion were forged in 17th- and 18th-century Europe in the midst of heated debates over the meaning and value of Christianity in a world 'come of age': Liberal calls for justice, toleration, and pluralism in matters religious; secular suspicions about religious superstition, fanaticism, and ideology; skepticism regarding the solubility of ultimate questions of meaning and metaphysics. Seminal readings on religion from Descartes, Pascal, Leibniz, Voltaire, Hume, Mendelssohn and Kant.

RELIGST 173X. Latin 400-1700 CE. 3-5 Units.
Readings in later Latin, drawing on the vast bodies of texts from the late antique, medieval and early modern periods. Each week students will prepare selections in advance of class meetings; class time will be devoted to translation and discussion. Students taking this course will gain exposure to a wide range of later Latin texts; hone translation skills; and develop an awareness of the grammatical and stylistic features of post-classical Latin. The course is aimed both at classical Latinists seeking to broaden their reading experience and at medievalists and early modernists seeking to consolidate their Latin language skills. May be repeat for credit.nnPrior experience in Latin is required, preferably CLASSICS 11L. Equivalent accepted. Classics majors and minors may repeat for credit with advance approval from the Director of Undergraduate Studies. Does not fulfill the language requirement in Classical Studies track.
Same as: CLASSICS 6L, CLASSICS 208L

RELIGST 174. Religious Existentialism-Kierkegaard. 4 Units.
Existentialism is often understood to be a secular or anti-religious philosophy of life, a substitute for Christian ethics in a post-theistic world come of age. Yet this twentieth-century philosophical movement owes many of its concerns and much of its vocabulary to the hyper-Protestant Danish thinker Soren Kierkegaard, and much of the best Christian and Jewish thought in the 20th-century (Bultmann, Buber, Tillich) adopted existentialism as the ¿best philosophy¿ for making sense of these traditions in a secular age. This course will examine the origins of existentialist thought in the writings of Kierkegaard and its appropriation by a handful of influential 20th- century religious thinkers.

RELIGST 180. Gender Relations in Islam. 4 Units.
This course investigates the ways in which gender identities and relationships between men and women have been articulated, constructed, and refashioned throughout the Muslim world. Starting with problematizing the fixed notions of gender and sexuality, we map the attitudes toward these notions through visiting a diverse array of sources from the Qur¿an, Sunna, and legal documents to historical and anthropological case studies, literature, and film from South East Asia to Europe and North America. We examine the notions of femininity and masculinity in the Qur¿an, family laws, and attitudes toward homosexuality and transgendered populations. We read examples of ambiguous use of language with regards to gender and sexuality in Persian poetry and mystical traditions. We study the dynamic relationship between Islam and Feminism in the Muslim world. Finally, we witness the implications of these attitudes in our case studies and stories, from a divorce court in Iran to a wedding in Sudan.
Same as: FEMGEN 180

RELIGST 181. Heidegger and Mysticism. 4 Units.
A close reading of Heidegger's *Being and Time* in light of the new paradigm for reading his work, as well as a study of his long-standing interest in mysticism and the question of the divine.
Same as: PHIL 133S

RELIGST 183. Atheism: Hegel to Heidegger. 5 Units.
The radical changes in ideas of God between Hegel and Heidegger, arguing that their questions about theism and atheism are still pertinent today. Texts from Hegel, Feuerbach, Marx, Nietzsche, and Heidegger. on God, history, and the social dimensions of human nature. N.B.: Class size limited. Apply early at tsheehan@stanford.edu.
Same as: PHIL 133T

RELIGST 199. Individual Work. 1-15 Unit.
Prerequisite: consent of instructor and department. May be repeated for credit.

RELIGST 202A. Monsters, Ghosts and Other Fantastic Beings: The Supernatural and the Mysterious in Japanese Culture. 4 Units.
Examine the development of strange and fantastic creatures in Japan. Mysterious creatures in folklore, literature, art, manga and movies. Through them see how the concept of the strange or mysterious have evolved and how they inform Japanese modernity.
Same as: RELIGST 302A

RELIGST 203. Myth, Place, and Ritual in the Study of Religion. 3-5 Units.
Sources include: ethnographic texts and theoretical writings; the approaches of Charles Long, Jonathan Z. Smith, Victor Turner, Michael D. Jackson, and Wendy Doniger; and lived experiences as recounted in Judith Sherman's *Say the Name: A Survivor's Tale in Prose and Poetry,* Jackson's *At Home in the World,* Marie Cardinal's *The Words to Say It,* and John Phillip Santos¿ *Places Left Unfinished at the Time of Creation*.
Same as: RELIGST 303

RELIGST 204. Paleography of Medieval and Early Modern Manuscripts. 3-5 Units.
Introductory course in the history of writing and of the book, from the late antique period until the advent of printing. Opportunity to learn to read and interpret medieval manuscripts through hands-on examination of original materials in Special Collections of Stanford Libraries as well as through digital images. Offers critical training in the reading of manuscripts for students from departments as diverse as Classics, History, Philosophy, Religious Studies, English, and the Division of Languages Cultures and Literatures.
Same as: CLASSICS 215, DLCL 209, HISTORY 309G

RELIGST 205. Religious Poetry. 4 Units.
Religious poetry drawn from the Islamic, Christian, Confucian and Daoist traditions. Limited enrollment or consent of the instructor required.

RELIGST 210. Translating Religion. 3-5 Units.
What happens to Buddhism when the Buddha speaks Chinese? Is the Qur'an still the Qur'an in English? What did Martin Luther do for the German language? We try to answer these and other such questions in this course, which explores the translation of sacred scripture and other religious texts from the earliest times to the present day. Taking a global perspective, and looking at Buddhism, Christianity, Hinduism, Islam and Judaism, the course is designed to introduce students to the theory and practice of translation and get them thinking about its broader cultural, aesthetic and political significance. Undergraduates register for 200-level for 5 units. Graduate students register for 300-level for 3-5 units.
Same as: RELIGST 310

RELIGST 211. Economic Justice. 3-5 Units.
This seminar brings philosophical, humanistic, and religious analyses to bear on current issues of economic justice in the United States. The first part of the seminar studies general background issues (history of U.S. economics, philosophies of money, labor, private property, human dignity, etc.). In the second part, student study groups present their research on specific, agreed-upon topics, e.g., economic ideologies (neoliberalism, democratic socialism, etc.), models of economic justice, income and wealth distribution, etc. The goal is to move from analysis through criticism to concrete applications.

RELIGST 212. Zhuangzi. 5 Units.
The *Zhuangzi* (Chuang Tzu) in its original setting and as understood by its spiritual progeny. Limited enrollment; consent of instructor required.

RELIGST 216. Japanese Buddhism. 4 Units.
Focus on the religious lives of lay people in medieval Japan, as evidenced in collections of Buddhist stories (setsuwashu), narrative picture scrolls (emaki), and related historical materials. All readings are in English, but the instructor will also work with students interested in reading the original Japanese.

RELIGST 217. The Lotus Sutra in Japanese Buddhism. 3-5 Units.
This seminar explores the influence of the Lotus Sutra, one of the most important Mahayana scriptures, in Japan. We will study how different Japanese Buddhist schools have interpreted this sutra and analyze a wide range of religious practices, art works, and literature associated with this text. All readings will be in English. Prerequisites: Solid foundation in either Buddhist studies or East Asian Studies. You must have taken at least one other course in Buddhist Studies. NOTE: Undergraduates must enroll for 5 units; graduate students can enroll for 3-5 units.
Same as: RELIGST 317

RELIGST 217X. Minorities In Medieval Europe. 5 Units.
This course examines attitudes towards outsider groups within medieval society and the treatment of these groups by medieval Christians. Heretics, Jews, Muslims, homosexuals, prostitutes and usurers occupied ambivalent and at time dangerous positions within a society that increasingly defined itself as Christian. Differences in the treatment of these various 'outcast' groups, their depiction in art, their legal segregation, and their presumed association with demonic activity are addressed through discussion, and readings from primary and secondary source material.
Same as: HISTORY 217S

RELIGST 218. Islam, Race and Revolution: A Pan-American Approach. 3-5 Units.
Taking a pan-American approach to the study of religious traditions, this upper-level course traces the history of the critical intersection between race, religion and revolution among Muslims from the turn of the nineteenth century until the present day. Moving from the Atlantic Revolutions of the late eighteenth and early nineteenth centuries, to the United States, to the decolonizing Third World, and then finally to the contemporary Middle East, this class will emphasize that Islam and race together have been used by many groups in order to challenge existing power structures, agitate for change, and more than occasionally, transform the social, cultural and governmental structures comprising their worlds. Moreover, although this class is concentrated upon religious formations in the Americas, students will explore global events throughout the Muslim world in order to examine how global politics contribute to religious formations, solidarities and identities. At the conclusion of this course, students will be expected to write a 10-15 page research paper, and a topic will be chosen in consultation with the instructor. Students will also be expected to write weekly reflection papers, which will serve to facilitate class discussion. Undergraduates register for 200-level for 5 units. Graduate students register for 300-level for 3-5 units.
Same as: AMSTUD 218, CSRE 218, RELIGST 318

RELIGST 221. The Talmud: Research Methods and Tools. 3-5 Units.
This seminar introduces students to the academic study of the Talmud and related classical rabbinic texts from late antiquity. Students will engage the major philological and historical questions concerning the making of the Talmud, along with textual tools to help them decode the texts. Prerequisite: Hebrew.
Same as: RELIGST 321

RELIGST 221B. What is Talmud?. 5 Units.
In what sense can Talmud be studied as literature? Which voices can be identified? Concepts of author, editor, or redactor. The basic textual units of Talmud: sugya, chapter, and tractate. The sugya as literary genre. The aesthetic of talmudic dialectics.nnPrerequisite: reading Hebrew with some understanding of biblical Hebrew.
Same as: RELIGST 321B

RELIGST 221C. Aramaic Texts. 1-5 Unit.
Readings in Aramaic/Syriac with special focus on grammar and syntax of ancient texts.
Same as: JEWISHST 221C, JEWISHST 321C, RELIGST 321C

RELIGST 221D. Readings in Syriac Literature. 2-5 Units.
In recent years, there has been growing interest in the works of Syriac speaking Christians in antiquity and beyond. This course offers an introduction to the Syriac language, including its script, vocabulary and grammar, and a chance to read from a selection of foundational Syriac Christian texts.
Same as: JEWISHST 221D, JEWISHST 321D, RELIGST 321D

RELIGST 222B. Sufism Seminar. 3-5 Units.
Sufism through original texts and specialized scholarship. Prerequisite: ability to read at least one major language of Islamic religious literature (Arabic, Persian, Turkish, Urdu).
Same as: RELIGST 322B

RELIGST 223. Advanced Readings in Jewish Mysticism. 1-2 Unit.
This seminar allows students and faculty to explore foundational concepts of Jewish mystical literature through immersion in primary sources. Together we will examine these texts from a wide range of philosophical, historical and theological perspectives, seeking to decode their historical importance and understand their contemporary significance. Ability to read sources in Hebrew is strongly recommended, and permission of the instructor is required. May be repeated for credit.

RELIGST 224. Classical Islamic Texts. 3 Units.
The course is based on readings in primary Arabic sources in the key fields of pre-modern Islamic scholarship. The list of readings and topics will depend on the interests of the students. In addition to focusing on the language, contents, and context of the texts covered, the course introduces genre-specific historical research methods. The reading selections may be derived from Qur¿anic interpretation (tafsir), the hadith literature, adab, biographical dictionaries, fiqh, ta'rikh, kalam, or Sufism. Reading knowledge of Arabic is required.
Same as: RELIGST 324

RELIGST 226. The Bible in Medieval and Early Modern Europe. 3-5 Units.
This seminar investigates the central role of the Christian Bible in European religion, culture, and society from ca. 1000-1700 CE. In the medieval and early modern periods, the Bible not only shaped religious attitudes, practices, and institutions, but also exercised profound influence over learning and education, politics, law, social relations, art, literature, and music. Students will obtain an overview of the role of the scripture as both a religious text and a cultural artifact, exploring the history of biblical interpretation in commentaries and sermons; textual criticism, study of biblical languages, and the translation of scripture; manufacturing of Bibles in manuscript and in print; the commercial dimensions of Bible production; illustrated Bibles, biblical maps, and biblically-inspired artwork; religious uses of scripture in monastic houses, public worship, and domestic settings; biblical foundations for political and legal traditions. Students will also have the opportunity to suggest topics consonant with their own fields of interest and use the seminar to workshop on-going projects related to the Bible in this period. All of the readings will be in English, though students with the ability to read German, French, Spanish, Italian, Latin, Greek, or Hebrew will be encouraged to pursue projects that utilize their linguistic skills. Students in residence will have the opportunity to utilize materials in Special Collections; abundant digital resources will be available to students not on campus. Prerequisite: Permission of the instructor. Send an email to pitkin@stanford.edu explaining your interests and background. Undergraduates register for 200-level for 5 units. Graduate students register for 300-level for 3-5 units.
Same as: RELIGST 326

RELIGST 227. The Qur'an. 5 Units.
Early history, themes, structure, chronology, and premodern interpretation. Relative chronology of passages.
Same as: RELIGST 327

RELIGST 230X. Religion, Radicalization and Media in Africa since 1945. 4-5 Units.
What are the paths to religious radicalization, and what role have media- new and old- played in these conversion journeys? We examine how Pentecostal Christians and Reformist Muslims in countries such as South Africa, Nigeria, Sudan, and Ethiopia have used multiple media forms- newspapers, cell phones, TV, radio, and the internet- to gain new converts, contest the authority of colonial and post-colonial states, construct transnational communities, and position themselves as key political players.
Same as: AFRICAST 248, AFRICAST 348, HISTORY 248, HISTORY 348, RELIGST 330X

RELIGST 231. European Reformations. 3-5 Units.
Readings in and discussion of theological and social aspects of sixteenth century reformations: Luther, Radical Reform, Calvin, and Council of Trent, missionary expansion, religious conflict, creative and artistic expressions. Texts include primary sources and secondary scholarly essays and monographs.
Same as: HISTORY 231G, HISTORY 331G, RELIGST 331

RELIGST 231X. Learning Religion: How People Acquire Religious Commitments. 4 Units.
This course will examine how people learn religion outside of school, and in conversation with popular cultural texts and practices. Taking a broad social-constructivist approach to the variety of ways people learn, this course will explore how people assemble ideas about faith, identity, community, and practice, and how those ideas inform individual, communal and global notions of religion. Much of this work takes place in formal educational environments including missionary and parochial schools, Muslim madrasas or Jewish yeshivot. However, even more takes place outside of school, as people develop skills and strategies in conversation with broader social trends. This course takes an interdisciplinary approach to questions that lie at the intersection of religion, popular culture, and education. May be repeat for credit.
Same as: AMSTUD 231X, EDUC 231, JEWISHST 291X

RELIGST 232. Buddhist Meditation: Ancient and Modern. 3-5 Units.
An exploration of the theory and practice of Buddhist meditation from the time of the Buddha to the modern mindfulness boom, with attention to the wide range of techniques developed and their diverse interpretation. Undergraduates register for 200-level for 5 units. Graduate students register for 300-level for 3-5 units.
Same as: RELIGST 332

RELIGST 234. Islam and Material Culture. 3-5 Units.
Material objects are essential elements of Islamic cultures and practices. This course examines Islamic art, sculpture, architecture, devotional objects, and clothing, as well as basic concepts in studying religion and material culture.
Same as: RELIGST 334

RELIGST 234X. Church, State, & Schools: Issues in Education & Religion. 4 Units.
This course will examine interactions between religion and education, focusing on both formal and experiential sites in which people and communities explore, articulate, encounter, and perform religious ideologies and identities. The class will focus on different religious traditions and their encounters the institutions and structures of education in American culture, both in the United States and as it manifests in American culture transnationally.
Same as: AMSTUD 293, EDUC 293

RELIGST 239. Luther and the Reform of Western Christianity. 3-5 Units.
Luther's theology, ethics, biblical interpretation, and social reforms and their significance for the remaking of Western Christianity. Readings include Luther's own writings and secondary sources about Luther and his world.
Same as: RELIGST 339

RELIGST 245. Religion, Reason, and Romanticism. 5 Units.
The late 18th-century European cultural shift from rationalist to romantic modes of thought and sensibility. Debates about religion as catalysts for the new *Zeitgeist.* Readings include: the Jewish metaphysician, Mendelssohn; the dramatist, Lessing; the philosopher of language and history, Herder; the critical idealist, Kant; and the transcendental idealist, Fichte.

RELIGST 246. Constructing Race and Religion in America. 4-5 Units.
This seminar focuses on the interrelationships between social constructions of race and social interpretations of religion in America. How have assumptions about race shaped religious worldviews? How have religious beliefs shaped racial attitudes? How have ideas about religion and race contributed to notions of what it means to be "American"? We will look at primary and secondary sources and at the historical development of ideas and practices over time.
Same as: AFRICAAM 236, AMSTUD 246, CSRE 246, HISTORY 256G, HISTORY 356G, RELIGST 346

RELIGST 250. Classics of Indian Buddhism. 4 Units.
Texts in English translation includING discourses (sutras), philosophical treatises, commentaries, didactic epistles, hymns, biographies, and narratives.

RELIGST 252. Hearts and Diamonds: The Lives of Buddhist Sacred Texts. 4 Units.
An exploration of two key Mahayana Buddhist scriptures (the Heart & Diamond Sutras) and their histories, looking at what they say and how they have been used, from the first millennium to the present day.

RELIGST 253. Recent Research on Japanese Buddhism. 3-5 Units.
Readings in recent English-language scholarship on Japanese Buddhism. nUndergraduates must enroll for 5 units; graduate students can enroll for 3-5 units. Prerequisite: Solid foundation in either Buddhist studies or East Asian Studies (5 units for 253, 3-5 units for 353) May be repeat for credit.
Same as: RELIGST 353

RELIGST 254. Recent Contributions to Buddhist Studies. 3-5 Units.
This reading intensive course will examine nine areas in recent work in Buddhist studies, including ethnography, archaeology, monasticism, the study of "experience," and gender. May be repeated for credit.
Same as: RELIGST 354

RELIGST 255. Religion and Power in the Making of Modern South Asia. 3-5 Units.
This course examines the diverse ways that religious traditions have been involved in the brokering of power in South Asia from the late seventeenth century to the present day. We will examine the intersection of religion and power in different arenas, including historical memory, religious festivals, language politics, and violent actions. At the core of our inquiry is how religion is invoked in political contexts (and vice-versa), public displays of religiosity, and the complex dynamics of religion and the state. Among other issues, we will particularly engage with questions of religious identity, knowledge, and violence. Undergraduates must enroll in RELIGST 255 for 5 units. Graduate students must enroll RELIGST 355 for 3-5 units. HISTORY297F must be taken for 4-5 units.
Same as: HISTORY 297F, RELIGST 355

RELIGST 256. Readings in Buddhist Tantra: Wheel of Time. 3-5 Units.
The emergence of tantric scriptures in medieval India marked a major turning point in the development of religious thought and practice throughout Asia. These scriptures introduced myths, rituals, contemplative techniques, and artistic expressions that transformed the religious traditions of India¿from Hinduism to Jainism and Buddhism. Tantric forms of worship subsequently shaped the religious traditions of Southeast Asia, China, Korea, Japan, Tibet, Mongolia, and everywhere else Indian religions spread. This seminar examines the history of Buddhist tantra through English translation of one of the most popular collections of tantric literature in the history of Buddhism: the Wheel of Time. The Wheel of Time blends models of the cosmos, time, embodiment, and aesthetics with rich contemplative and ritual techniques. Since its origin, the Wheel of Time and its associated body of texts and practices has become immensely popular throughout the Tibetan Buddhist world. The influence of the Wheel of Time continues to this day, as the current Dalai Lama frequently offers the Wheel of Time initiation as a blessing for world peace, and scholars and practitioners continue to study its literature and practice its contemplative techniques. Undergraduates are expected to have at least one prior course in Buddhism or the consent of the instructor. Undergraduates register for 256 for 5 units. Graduate students register for 356 for 3-5 units.
Same as: RELIGST 356

RELIGST 258. Readings in Japanese Buddhist Texts. 3-5 Units.
In this course, we will read premodern Japanese Buddhist texts.
Prerequisite: Chinese and/or Japanese.
Same as: RELIGST 358

RELIGST 261A. Belief. 5 Units.
The post-Chritain (or post-modern) age has given rise to new forms of faith, ranging from secular humanism and cultural atheism to rediscovery of the transcendent in the cosmos and quantum mechanics. However, unlike the era of "Christendom," belief is no longer necessarily hinged to faith. This course explores the origins of this phenomenon in Thomas Aquinas, and then newer philosophical approaches to understanding belief, ranging from Charles Taylor and Talal Asad and their theories of the secular, to Catherine Bell and the role of practice in believing. Finally, we turn to the work of three contemporary theorists of religious belief: Gianni Vattimo, Jean-Luc Marion, and Richard Kearney, who endeavor to cast believing outside established theological categories, yet still speak of "god.".
Same as: in a post-Christian Age

RELIGST 262. Sex and the Early Church. 4 Units.
Sex and the Early Church examines the ways first- through sixth-century Christians addressed questions regarding human sexuality. We will pay particular attention to the relationship between sexuality and issues of gender, culture, power, and resistance. We will read a Roman gynecological manual, an ancient dating guide, the world's first harlequin romance novels, ancient pornography, early Christian martyrdom accounts, stories of female and male saints, instructions for how to best battle demons, visionary accounts, and monastic rules. These will be supplemented by modern scholarship in classics, early Christian studies, gender studies, queer studies, and the history of sexuality. The purpose of our exploration is not simply to better understand ancient views of gender and sexuality. Rather, this investigation of a society whose sexual system often seems so surprising aims to denaturalize many of our own assumptions concerning gender and sexuality. In the process, we will also examine the ways these first centuries of what eventually became the world's largest religious tradition has profoundly affected the sexual norms of our own time. The seminar assumes no prior knowledge of Judaism, Christianity, the bible, or ancient history.
Same as: CLASSICS 262, FEMGEN 262, RELIGST 362

RELIGST 264. Hindu Tantra. 4 Units.
What is Tantra? Tantric forms of ritual and philosophy have been integral to the practice of Hinduism for most of its history. Tantra has provided initiates with a spiritual technology for embodying the divine and transcending the cycle of rebirth; on a social and political level, Tantra has mediated the institutions of Hindu kingship and appealed to a diverse population of initiates. This course covers a number of influential and well-documented Hindu tantric traditions, exploring several prominent features of Tantric religion as they develop historically, including: tantric ritual practice (core technologies of the subtle body, mantras, ma, alas, etc., along with the more notorious elements of sex and transgression), theology and philosophical speculation, as well as Tantra's relationship to the outside world and state power.
Same as: RELIGST 364

RELIGST 269. Plotinus and Augustine. 3-5 Units.
Professor's permission required to register. A reading course focused on the influence of Plotinus Enneads on Augustine's Confessions, early dialogues, and sections on reason and memory in the De trinitate. Proficiency in Greek and Latin will be helpful but is not required. Professor's prior permission required, interested students should contact the professor about course schedule: tsheehan@stanford.edu . Undergraduates register for 200-level for 5 units. Graduate students register for 300-level for 3-5 units.
Same as: PHIL 229, PHIL 329, RELIGST 369

RELIGST 270. Comparative Religious Ethics. 4 Units.
The difference that the word religious makes in religious ethics and how it affects issues of genre. Theoretical analyses with examples from W. and E. Asia. Prerequisite: consent of instructor.
Same as: RELIGST 370

RELIGST 270X. Religion and Science in the Amazon and Elsewhere. 5 Units.
The conversion of native peoples to Christianity, especially Evangelical Christianity, is today a global phenomenon. This course looks to understand the reasons for religious conversion and its consequence in the everyday and ritual practices of Amazonians and their traditional practice of shamanism. We then turn to a question seldom addressed in the literature on conversion: the relationship between religion and science. We will explore the way conversion to Christianity produces changes in conceptions of the world and the person similar to those produced by access to scientific knowledge, which occurs primarily through schooling.
Same as: ANTHRO 181, ANTHRO 281, RELIGST 370X

RELIGST 271A. Dante's Spiritual Vision. 4-5 Units.
Poetry, ethics, and theology in Dante's Divine Comedy. Supplementary readings from classical authors such as St. Thomas Aquinas, and from modern writers, such as Jorge Borges. Fulfills capstone seminar requirement for the Philosophy and Literature tracks. Students may take 271A without taking 271B. Consent of the instructor required.

RELIGST 271B. Dante's Spiritual Vision. 4-5 Units.
Poetry, ethics, and theology in Dante's Divine Comedy. Supplementary readings from classical authors such as St. Thomas, and from modern writers, such as Jorge Borges. Fulfills capstone seminar requirement for the Philosophy and Literature tracks. Prerequisite: 271A.

RELIGST 273. Historicism and Its Problems: Ernst Troeltsch, the Study of Religion, and the Crisis of Historicism. 3-5 Units.
Examination of the early twentieth-century historian of religion, philosopher of culture, sociologist of religion, Christian theologian, and philosopher of history, Ernst Troeltsch, within the context of the late nineteenth-century "crisis of historicism," i.e., the historicization and relativization of religious, ethical, social, and political norms. Attention to seminal theorists of history (Herder, Kant, Ranke, Hegel, Nietzsche) in the post-Enlightenment German intellectual tradition and the attempts of Christian and Jewish thinkers in the Weimar era (Barth, Gogarten, Rosenzweig, L. Strauss) to "overcome" the crisis wrought by a radically historical approach to human culture.
Same as: RELIGST 373

RELIGST 274. From Kant to Kierkegaard. 3-5 Units.
(Graduate students register for 374. Undergrads register for 274 for 5 units.) The philosophy of religion emerged from the European Enlightenment as a new genre of reflection on religion distinct from both dogmatic theology and rationalist dreams of a "natural" religion of reason. Neither beholden to pre-critical tradition, nor dismissive of what Thomas Nagel has termed "the religious attitude," this new, ostensibly secular, genre of religious thought sought to rethink the meaning of Christianity at a time of immense philosophical ferment. The main currents of religious thought in Germany from Kant's critical philosophy to Kierkegaard's revolt against Hegelianism. Emphasis on the theories of religion, the epistemological status of religious discourse, the role of history (especially the figure of Jesus), and the problem of alienation/reconciliation in seminal modern thinkers: Kant, Schleiermacher, Hegel, and Kierkegaard.
Same as: RELIGST 374

RELIGST 275. Kierkegaard. 3-5 Units.
(Graduate students register for 375.) Close reading of Kierkegaard's magnum opus, *Concluding Unscientific Postscript to Philosophical Fragments*, in its early 19th-century context.
Same as: RELIGST 375

RELIGST 277. The Later Heidegger: Art, Poetry, Language. 3 Units.
Lectures and seminar discussions of the problematic of the later Heidegger (1930 - 1976) in the light of his entire project. Readings from "On the Origin of the Work of Art" and Elucidations of Holderlin's Poetry.
Same as: PHIL 234B, RELIGST 377

RELIGST 278. Religion and James Joyce's Ulysses. 3-5 Units.
Through a close reading of the novel and with the help of the vast secondary literature the course analyzes the significant roles that religion, specifically Catholicism and Judaism, plays in Joyce's modernist masterpiece--from Stephen Dedalus' sophisticated knowledge and bitter rejection of Irish Catholicism, through Leopold Bloom's ambivalent rapport with Judaism, to Molly Bloom's climatic celebration of a feminist liturgy of nature. Undergraduates register for 200-level for 5 units. Graduate students register for 300-level for 3-5 units.
Same as: RELIGST 378

RELIGST 279. After God: Why religion at all?. 4 Units.
God is dead, but where does religion come from? The end of the quest for God in twentieth century philosophy. Robert Bellah's Religion in Human Evolution plus seminal works of Heidegger, including Being and Time, 'What Is Metaphysics?' 'Nietzsche's Saying `God is Dead.' 'N.B.: Class size limited. Apply early at tsheehan@stanford.edu.
Same as: RELIGST 379

RELIGST 279X. American Jewish History: Learning to be Jewish in America. 2-4 Units.
This course will be a seminar in American Jewish History through the lens of education. It will address both the relationship between Jews and American educational systems, as well as the history of Jewish education in America. Plotting the course along these two axes will provide a productive matrix for a focused examination of the American Jewish experience. History students must take course for at least 3 units.
Same as: AMSTUD 279X, EDUC 279, HISTORY 288D, JEWISHST 297X

RELIGST 280. Schleiermacher: Reconstructing Religion. 3-5 Units.
Idealist philosopher, Moravian pietist, early German Romantic, co-founder of the University of Berlin, head preacher at Trinity Church, translator of Plato's works, Hegel's opponent, pioneer in modern hermeneutics, father of modern theology. Schleiermacher's controversial reconception of religion and theology in its philosophical context.
Same as: RELIGST 380

RELIGST 281. Asian Religions in America; Asian American Religions. 4 Units.
This course will analyze both the reception in America of Asian religions (i.e. of Buddhism in the 19th century), and the development in America of Asian American religious traditions.
Same as: AMSTUD 281, ASNAMST 281, RELIGST 381

RELIGST 283. Religion and Literature. 4 Units.
A wide-ranging exploration of religious themes in literary works. Readings will include prose and poetry stemming from various world regions, time periods, and religious traditions.

RELIGST 283A. Modern Notions of 'The Holy'. 3-5 Units.
This course explores the question, "What may we call 'holy' in the modern era?" by focusing on key writers and thinkers, who in various ways, and in different times raised this question: Friedrich Hölderlin, Hermann Cohen, Franz Kafka, Martin Heidegger, Martin Buber, Franz Rosenzweig, Else Lasker-Schüler, Walter Benjamin, Ernst Bloch, Hannah Arendt, Margarete Susman, Nelly Sachs, Paul Celan, and Judith Butler.nnThis course will be synchronous-conducted, but will also use an innovative, Stanford-developed, on-line platform called Poetic Thinking. Poetic Thinking allows students to share both their scholarly and creative work with each other. Based on the newest technology and beautifully designed, it will greatly enhance their course experience.
Same as: COMPLIT 283A, COMPLIT 383A, GERMAN 283A, GERMAN 383A, RELIGST 383A

RELIGST 286. Goodness and the Literary Imagination. 5 Units.
In her Ingersoll lecture at Harvard Divinity School, Toni Morrison probed the issue of literary presentations of goodness. We will begin with that very rich lecture, and a collection of essays by scholars of religion and religious leaders exploring that lecture in the context of Morrison's own work. We'll then discuss a novel by Morrison, James Baldwin's The Fire Next Time, at least one story by Flannery O'Connor, and related (short) works of literature and commentary. The inquiry will involve both conceptual and literary analysis, all of it focused on the character and presentation of goodness. (Limited enrollment, consent of instructor required.).

RELIGST 290. Majors' Seminar: Theories of Religion. 5 Units.
Required of all majors and combined majors. The study of religion reflects upon itself. Representative modern and contemporary attempts to "theorize," and thereby understand, the phenomena of religion in anthropology, psychology, sociology, cultural studies, and philosophy. WIM.

RELIGST 297. Senior Essay/Honors Thesis Research. 3-5 Units.
Guided by faculty adviser. May be repeated for credit. Prerequisite: consent of instructor and department.

RELIGST 298. Senior Colloquium. 4 Units.
For Religious Studies majors writing the senior essay or honors thesis. Students present work in progress, and read and respond to others. Approaches to research and writing in the humanities.

RELIGST 302. Islamic Studies Proseminar. 1-5 Unit.
Research methods and materials for the study of Islam. May be repeated for credit.

RELIGST 302A. Monsters, Ghosts and Other Fantastic Beings: The Supernatural and the Mysterious in Japanese Culture. 4 Units.
Examine the development of strange and fantastic creatures in Japan. Mysterious creatures in folklore, literature, art, manga and movies. Through them see how the concept of the strange or mysterious have evolved and how they inform Japanese modernity.
Same as: RELIGST 202A

RELIGST 303. Myth, Place, and Ritual in the Study of Religion. 3-5 Units.
Sources include: ethnographic texts and theoretical writings; the approaches of Charles Long, Jonathan Z. Smith, Victor Turner, Michael D. Jackson, and Wendy Doniger; and lived experiences as recounted in Judith Sherman's *Say the Name: A Survivor's Tale in Prose and Poetry,* Jackson's *At Home in the World,* Marie Cardinal's *The Words to Say It,* and John Phillip Santos*¿ Places Left Unfinished at the Time of Creation*.
Same as: RELIGST 203

RELIGST 304A. Theories and Methods. 4 Units.
Required of graduate students in Religious Studies. Approaches to the study of religion. Prerequisite: consent of instructor. May be repeated for credit.

RELIGST 304B. Theories and Methods. 4 Units.
Required of graduate students in Religious Studies. Approaches to the study of religion. Prerequisite: consent of instructor. May be repeat for credit.

RELIGST 308. Medieval Japanese Buddhism. 3-5 Units.
Japanese religion and culture, including Buddhism, Shinto, popular religion, and new religions, through the medium of film.

RELIGST 308C. Architecture, Acoustics and Ritual in Byzantium. 1-3 Unit.
Onassis Seminar "Icons of Sound: Architecture, Acoustics and Ritual in Byzantium". This year-long seminar explores the creation and operations of sacred space in Byzantium by focusing on the intersection of architecture, acoustics, music, and ritual. Through the support of the Onassis Foundation (USA), nine leading scholars in the field share their research and conduct the discussion of their pre-circulated papers. The goal is to develop a new interpretive framework for the study of religious experience and assemble the research tools needed for work in this interdisciplinary field.nnNOTE: This course is only offered on the graduate level and undergraduates would be admitted by request (sending a letter expressing interest to the instructor and specifying what other courses in music or art history has prepared them to tackle this subject) and special permission only.
Same as: ARTHIST 408C, MUSIC 408C, REES 408C

RELIGST 310. Translating Religion. 3-5 Units.
What happens to Buddhism when the Buddha speaks Chinese? Is the Qur'an still the Qur'an in English? What did Martin Luther do for the German language? We try to answer these and other such questions in this course, which explores the translation of sacred scripture and other religious texts from the earliest times to the present day. Taking a global perspective, and looking at Buddhism, Christianity, Hinduism, Islam and Judaism, the course is designed to introduce students to the theory and practice of translation and get them thinking about its broader cultural, aesthetic and political significance. Undergraduates register for 200-level for 5 units. Graduate students register for 300-level for 3-5 units.
Same as: RELIGST 210

RELIGST 312. Buddhist Studies Proseminar. 1-5 Unit.
Research methods and materials for the study of Buddhism. May be repeated for credit. Prerequisite: reading knowledge of Chinese or Japanese.

RELIGST 313X. The Education of American Jews. 4 Units.
This course will take an interdisciplinary approach to the question of how American Jews negotiate the desire to retain a unique ethnic sensibility without excluding themselves from American culture more broadly. Students will examine the various ways in which people debate, deliberate, and determine what it means to be an "American Jew". This includes an investigation of how American Jewish relationships to formal and informal educational encounters through school, popular culture, religious ritual, and politics.
Same as: EDUC 313, JEWISHST 393X

RELIGST 314. Seminar in Buddhist Historiography. 3-5 Units.
The focus of this course is on approaches to the past from within Buddhist traditions rather than modern academic writing on Buddhist history. We will briefly examine research on religious conceptions of the past in other religions before turning to the full range of Buddhist historiography, including writings from India, Ceylon, China, Tibet and Japan. The first half of the class will be dedicated to reading and discussing scholarship as well as some primary sources in translation. In the second half of the course, students will develop projects based on their interests, culminating in presentations and a research paper.

RELIGST 315A. Chinese Buddhism. 3-5 Units.
This year the seminar will focus on the twentieth century, perhaps the most vibrant and certainly the most tumultuous period in two thousand years of Chinese Buddhist history. After the collapse of the Qing dynasty in 1911, leading Buddhists proposed a series of radical reforms to the sangha in a frantic effort to adapt to the modern era. External changes forced creative Buddhist responses to imperialism, democratic government, communism, revolution, war and famine. By the end of the Cultural Revolution in the 1970s, it seemed as if reform had come too late, the persecution had been too brutal and too thorough, for Buddhist institutions and ideas to ever play a significant role in China again. But from the 1980s on, Buddhist rituals and practices resurfaced, at first through Buddhist organizations in Taiwan and then, increasingly, on the Mainland. By the end of the century, Buddhist leaders were posed to play a more prominent role than they had for a hundred years. In this course, we will focus on biographies and autobiographies by and about monks, nuns, laymen and laywomen in an attempt to work out from individuals to the wider trends that shaped Chinese Buddhism in the twentieth century. There is now enough material in English for a seminar on the subject, but students who can read Chinese will be encouraged to draw on the growing body of relevant material in Chinese as well.

RELIGST 316. Tantric Buddhism. 4 Units.
This course explores many of the key issues in the study of tantric Buddhism, including aspects of its historical development, ritual ideology, visual and material culture, notions of identity and embodiment, and variations across different times and cultures. Focusing on the traditions of India, Nepal, and Tibet, students will read primary texts in translation, debate secondary literature, view artworks in museum galleries, and develop final projects based on their research interests. Course readings are in English.

RELIGST 317. The Lotus Sutra in Japanese Buddhism. 3-5 Units.
This seminar explores the influence of the Lotus Sutra, one of the most important Mahayana scriptures, in Japan. We will study how different Japanese Buddhist schools have interpreted this sutra and analyze a wide range of religious practices, art works, and literature associated with this text. All readings will be in English. Prerequisites: Solid foundation in either Buddhist studies or East Asian Studies. You must have taken at least one other course in Buddhist Studies. NOTE: Undergraduates must enroll for 5 units; graduate students can enroll for 3-5 units.
Same as: RELIGST 217

RELIGST 318. Islam, Race and Revolution: A Pan-American Approach. 3-5 Units.
Taking a pan-American approach to the study of religious traditions, this upper-level course traces the history of the critical intersection between race, religion and revolution among Muslims from the turn of the nineteenth century until the present day. Moving from the Atlantic Revolutions of the late eighteenth and early nineteenth centuries, to the United States, to the decolonizing Third World, and then finally to the contemporary Middle East, this class will emphasize that Islam and race together have been used by many groups in order to challenge existing power structures, agitate for change, and more than occasionally, transform the social, cultural and governmental structures comprising their worlds. Moreover, although this class is concentrated upon religious formations in the Americas, students will explore global events throughout the Muslim world in order to examine how global politics contribute to religious formations, solidarities and identities. At the conclusion of this course, students will be expected to write a 10-15 page research paper, and a topic will be chosen in consultation with the instructor. Students will also be expected to write weekly reflection papers, which will serve to facilitate class discussion. Undergraduates register for 200-level for 5 units. Graduate students register for 300-level for 3-5 units.
Same as: AMSTUD 218, CSRE 218, RELIGST 218

RELIGST 319. Readings in Hindu Texts. 3-5 Units.
Readings in Hindu texts in Sanskrit. Texts will be selected based on student interest. Prerequisite: Sanskrit.

RELIGST 320. Religion and Literature. 4 Units.
grad seminar in religion and literature-description to follow.

RELIGST 321. The Talmud: Research Methods and Tools. 3-5 Units.
This seminar introduces students to the academic study of the Talmud and related classical rabbinic texts from late antiquity. Students will engage the major philological and historical questions concerning the making of the Talmud, along with textual tools to help them decode the texts. Prerequisite: Hebrew.
Same as: RELIGST 221

RELIGST 321B. What is Talmud?. 5 Units.
In what sense can Talmud be studied as literature? Which voices can be identified? Concepts of author, editor, or redactor. The basic textual units of Talmud: sugya, chapter, and tractate. The sugya as literary genre. The aesthetic of talmudic dialectics.nnPrerequisite: reading Hebrew with some understanding of biblical Hebrew.
Same as: RELIGST 221B

RELIGST 321C. Aramaic Texts. 1-5 Unit.
Readings in Aramaic/Syriac with special focus on grammar and syntax of ancient texts.
Same as: JEWISHST 221C, JEWISHST 321C, RELIGST 221C

RELIGST 321D. Readings in Syriac Literature. 2-5 Units.
In recent years, there has been growing interest in the works of Syriac speaking Christians in antiquity and beyond. This course offers an introduction to the Syriac language, including its script, vocabulary and grammar, and a chance to read from a selection of foundational Syriac Christian texts.
Same as: JEWISHST 221D, JEWISHST 321D, RELIGST 221D

RELIGST 322B. Sufism Seminar. 3-5 Units.
Sufism through original texts and specialized scholarship. Prerequisite: ability to read at least one major language of Islamic religious literature (Arabic, Persian, Turkish, Urdu).
Same as: RELIGST 222B

RELIGST 324. Classical Islamic Texts. 3 Units.
The course is based on readings in primary Arabic sources in the key fields of pre-modern Islamic scholarship. The list of readings and topics will depend on the interests of the students. In addition to focusing on the language, contents, and context of the texts covered, the course introduces genre-specific historical research methods. The reading selections may be derived from Qur¿anic interpretation (tafsir), the hadith literature, adab, biographical dictionaries, fiqh, ta'rikh, kalam, or Sufism. Reading knowledge of Arabic is required.
Same as: RELIGST 224

RELIGST 325. Syriac Christianity. 3-5 Units.
In the first millennium, Christianity thrived throughout the Middle East. Because Roman Catholic and Protestant churches later declared many of these Christians to be heretics, their stories have often been excluded from the history of Christianity. This course challenges the assumption of Christianity as a "Western" religion and asks how our understanding of global Christianity changes when we include the history and perspective of Eastern Christians writing in the Aramaic dialect of Syriac. We will read in English translation such sources as the tale of a transvestite nun, a letter allegedly written by Jesus, ancient Christian hymns, the story of a demon-possessed monastery, and the first Christian writings on Islam. Although primarily designed for Ph.D. candidates who have interests in late antiquity or the middle ages, this seminar is also appropriate for graduate students working in other time periods; it does not assume previous background in Syriac or in Syriac Christianity.

RELIGST 326. The Bible in Medieval and Early Modern Europe. 3-5 Units.
This seminar investigates the central role of the Christian Bible in European religion, culture, and society from ca. 1000-1700 CE. In the medieval and early modern periods, the Bible not only shaped religious attitudes, practices, and institutions, but also exercised profound influence over learning and education, politics, law, social relations, art, literature, and music. Students will obtain an overview of the role of the scripture as both a religious text and a cultural artifact, exploring the history of biblical interpretation in commentaries and sermons; textual criticism, study of biblical languages, and the translation of scripture; manufacturing of Bibles in manuscript and in print; the commercial dimensions of Bible production; illustrated Bibles, biblical maps, and biblically-inspired artwork; religious uses of scripture in monastic houses, public worship, and domestic settings; biblical foundations for political and legal traditions. Students will also have the opportunity to suggest topics consonant with their own fields of interest and use the seminar to workshop on-going projects related to the Bible in this period. All of the readings will be in English, though students with the ability to read German, French, Spanish, Italian, Latin, Greek, or Hebrew will be encouraged to pursue projects that utilize their linguistic skills. Students in residence will have the opportunity to utilize materials in Special Collections; abundant digital resources will be available to students not on campus. Prerequisite: Permission of the instructor. Send an email to pitkin@stanford.edu explaining your interests and background. Undergraduates register for 200-level for 5 units. Graduate students register for 300-level for 3-5 units.
Same as: RELIGST 226

RELIGST 327. The Qur'an. 5 Units.
Early history, themes, structure, chronology, and premodern interpretation. Relative chronology of passages.
Same as: RELIGST 227

RELIGST 329X. Advanced Paleography. 5 Units.
This course will train students in the transcription and editing of original Medieval and Early Modern textual materials from c. 1000 to 1600, written principally in Latin and English (but other European languages are possible, too). Students will hone their archival skills, learning how to describe, read and present a range of manuscripts and single-leaf documents, before turning their hand to critical interpretation and editing. Students, who must already have experience of working with early archival materials, will focus on the full publication of one individual fragment or document as formal assessment.
Same as: CLASSICS 216, HISTORY 315

RELIGST 330X. Religion, Radicalization and Media in Africa since 1945. 4-5 Units.
What are the paths to religious radicalization, and what role have media- new and old- played in these conversion journeys? We examine how Pentecostal Christians and Reformist Muslims in countries such as South Africa, Nigeria, Sudan, and Ethiopia have used multiple media forms- newspapers, cell phones, TV, radio, and the internet- to gain new converts, contest the authority of colonial and post-colonial states, construct transnational communities, and position themselves as key political players.
Same as: AFRICAST 248, AFRICAST 348, HISTORY 248, HISTORY 348, RELIGST 230X

RELIGST 331. European Reformations. 3-5 Units.
Readings in and discussion of theological and social aspects of sixteenth century reformations: Luther, Radical Reform, Calvin, and Council of Trent, missionary expansion, religious conflict, creative and artistic expressions. Texts include primary sources and secondary scholarly essays and monographs.
Same as: HISTORY 231G, HISTORY 331G, RELIGST 231

RELIGST 332. Buddhist Meditation: Ancient and Modern. 3-5 Units.
An exploration of the theory and practice of Buddhist meditation from the time of the Buddha to the modern mindfulness boom, with attention to the wide range of techniques developed and their diverse interpretation. Undergraduates register for 200-level for 5 units. Graduate students register for 300-level for 3-5 units.
Same as: RELIGST 232

RELIGST 333. Comparative Mysticism. 5 Units.
This graduate seminar will explore the mystical writings of the major religious traditions represented in our department: Judaism, Christianity, Islam, Buddhism and Hinduism. It will address major issues in the study of mysticism, exposing students to a wide variety of religious thinkers and literary traditions, while simultaneously interrogating the usefulness of the concept of "mysticism" as a framework in the study of religion. We will consider various paradigms of method (comparative, constructivist, essentialist), and examine the texts with an eye to historical and social context together with the intellectual traditions that they represent. Preserving the distinctiveness of each religious tradition, the class will be structured as a series of five units around these traditions, but our eyes will be continuously trained upon shared topics or themes, including: language; gender; notions of sainthood; scripture and exegesis; autobiography and writing; mysticism and philosophy; poetry and translation; mysticism and social formation; the interface of law, devotion, and spirit; science and mysticism; perceptions of inter-religious influence; mysticism and the modern/ post-modern world. Advanced reading knowledge of at least one language of primary-source scholarship in one of the above traditions is required.

RELIGST 333X. Workshop in Religion and Education. 1 Unit.
This 1-unit workshop will explore the intersection of religion and education across a variety of learning environments and demographics. It invites an ongoing conversation of the relationships between schools, congregations, religious bodies, learners, seekers, philanthropy, and public education. Advanced students and visiting scholars will have an opportunity to present their work for discussion. May be repeat for credit.
Same as: EDUC 412

RELIGST 334. Islam and Material Culture. 3-5 Units.
Material objects are essential elements of Islamic cultures and practices. This course examines Islamic art, sculpture, architecture, devotional objects, and clothing, as well as basic concepts in studying religion and material culture.
Same as: RELIGST 234

RELIGST 336X. Interfaith Dialogue on Campus: Religion, Diversity, and Higher Education. 2-5 Units.
How are we to talk across religious and spiritual differences? What is the purpose of such dialogues? What do we hope to gain from them? How do such dialogues take shape on college campuses, and what do they indicate about how students cultivate spiritual, political, and civic commitments? This course will explore these questions and others through seminar discussions, fieldwork, and writing that will examine the concepts, assumptions, and principles that shape how we think about interfaith dialogue.
Same as: AMSTUD 236, CSRE 136A, EDUC 436

RELIGST 338. Seminar in Spiritualism and the Occult. 3-5 Units.
T.W. Stanford, Leland Jr.'s uncle, left money for founding psychic studies at Stanford. The Stanford's were like millions of people in the nineteenth century who described themselves as spiritualist. Far from being the rejection of science, this movement saw itself and often was seen by others as the forefront of scientific inquiry. Its practitioners often drew a thin line between physics and metaphysics.nnOur class will examine spirit photographs, explore novels and treatises, and handle artifacts that T.W. Stanford used to communicate across the astral plane. In addition to reading primary and scholarly sources, this course will also provide the opportunity for archival research and several field trips to area sites of occult interest.

RELIGST 339. Luther and the Reform of Western Christianity. 3-5 Units.
Luther's theology, ethics, biblical interpretation, and social reforms and their significance for the remaking of Western Christianity. Readings include Luther's own writings and secondary sources about Luther and his world.
Same as: RELIGST 239

RELIGST 340. Contemporary Religious Reflection. 3-5 Units.
Focus is on normative and prescriptive proposals by recent and contemporary philosophers and theologians, as opposed to the domination of Religious Studies by textual, historical, cultural, and other largely descriptive and interpretive approaches. Do such normative and prescriptive proposals belong in the academy? Has Religious Studies exorcised its theological nimbus only to find contemporary religious reflection reappearing elsewhere in the university?.

RELIGST 343X. Anthropology of Religion. 5 Units.
This course presents classic and contemporary work on the anthropology of religion: Durkheim Elementary Forms of the Religious Life; Levy-Bruhl; Primitive Mentality; Douglas Purity and Danger; Evans Pritchard Nuer Religion; and recent ethnographies/scholarly work by Robbins, Keane, Keller, Boyer, Barrett, and others. Prerequisite: consent of instructor.
Same as: ANTHRO 339

RELIGST 344. Feminist Theory and the Study of Religion. 3-5 Units.
This seminar aims to put feminist theory and religious studies into conversation with each other in order to explore the resulting intersections. It will examine new directions in current scholarship. What does it mean to apply a gender studies lens to the study of religion? How do feminist conceptions of embodiment reinforce and/or context religious conceptions of the body? What are the implications of the "return of religion" currently invoked in feminist discourses? We will read works by Judith Butler, Luce Irigaray, Rosi Braidotti, Donna Haraway, Saba Mahmood, Shawn Copeland, a.o. Other thematic choices may be determined by interest of graduate students enrolled in the course.

RELIGST 345. Readings in Late Ancient Christianity. 1-5 Unit.
Topics in the study of Christianity for doctoral students. Recent scholarship and approaches to research.

RELIGST 346. Constructing Race and Religion in America. 4-5 Units.
This seminar focuses on the interrelationships between social constructions of race and social interpretations of religion in America. How have assumptions about race shaped religious worldviews? How have religious beliefs shaped racial attitudes? How have ideas about religion and race contributed to notions of what it means to be "American"? We will look at primary and secondary sources and at the historical development of ideas and practices over time.
Same as: AFRICAAM 236, AMSTUD 246, CSRE 246, HISTORY 256G, HISTORY 356G, RELIGST 246

RELIGST 347. Chinese Buddhist Texts. 3-5 Units.
Chinese Buddhist texts from the Han Dynasty onwards, including sutra translations, prefaces, colophons, story collections and biographies. Prerequisite: reading competence in Chinese.

RELIGST 349. Religion and Madness. 3-5 Units.
Seminar for graduate students in Anthropology and Religious Studies. Full course description TBA.

RELIGST 350. Readings in Tibetan Literature. 3-5 Units.
Introduction to Tibetan literature through reading texts in Tibetan. Prerequisite: intermediate level facility in classical Tibetan.

RELIGST 351. Readings in Indian Buddhist Texts. 3-5 Units.
Introduction to Buddhist literature through reading original texts in Sanskrit. Prerequisite: Sanskrit.

RELIGST 353. Recent Research on Japanese Buddhism. 3-5 Units.
Readings in recent English-language scholarship on Japanese Buddhism. nUndergraduates must enroll for 5 units; graduate students can enroll for 3-5 units. Prerequisite: Solid foundation in either Buddhist studies or East Asian Studies (5 units for 253, 3-5 units for 353) May be repeat for credit.
Same as: RELIGST 253

RELIGST 354. Recent Contributions to Buddhist Studies. 3-5 Units.
This reading intensive course will examine nine areas in recent work in Buddhist studies, including ethnography, archaeology, monasticism, the study of "experience," and gender. May be repeated for credit.
Same as: RELIGST 254

RELIGST 355. Religion and Power in the Making of Modern South Asia. 3-5 Units.
This course examines the diverse ways that religious traditions have been involved in the brokering of power in South Asia from the late seventeenth century to the present day. We will examine the intersection of religion and power in different arenas, including historical memory, religious festivals, language politics, and violent actions. At the core of our inquiry is how religion is invoked in political contexts (and vice-versa), public displays of religiosity, and the complex dynamics of religion and the state. Among other issues, we will particularly engage with questions of religious identity, knowledge, and violence. Undergraduates must enroll in RELIGST 255 for 5 units. Graduate students must enroll RELIGST 355 for 3-5 units. HISTORY297F must be taken for 4-5 units.
Same as: HISTORY 297F, RELIGST 255

RELIGST 356. Readings in Buddhist Tantra: Wheel of Time. 3-5 Units.
The emergence of tantric scriptures in medieval India marked a major turning point in the development of religious thought and practice throughout Asia. These scriptures introduced myths, rituals, contemplative techniques, and artistic expressions that transformed the religious traditions of India¿from Hinduism to Jainism and Buddhism. Tantric forms of worship subsequently shaped the religious traditions of Southeast Asia, China, Korea, Japan, Tibet, Mongolia, and everywhere else Indian religions spread. This seminar examines the history of Buddhist tantra through English translation of one of the most popular collections of tantric literature in the history of Buddhism: the Wheel of Time. The Wheel of Time blends models of the cosmos, time, embodiment, and aesthetics with rich contemplative and ritual techniques. Since its origin, the Wheel of Time and its associated body of texts and practices has become immensely popular throughout the Tibetan Buddhist world. The influence of the Wheel of Time continues to this day, as the current Dalai Lama frequently offers the Wheel of Time initiation as a blessing for world peace, and scholars and practitioners continue to study its literature and practice its contemplative techniques. Undergraduates are expected to have at least one prior course in Buddhism or the consent of the instructor. Undergraduates register for 256 for 5 units. Graduate students register for 356 for 3-5 units.
Same as: RELIGST 256

RELIGST 358. Readings in Japanese Buddhist Texts. 3-5 Units.
In this course, we will read premodern Japanese Buddhist texts.
Prerequisite: Chinese and/or Japanese.
Same as: RELIGST 258

RELIGST 359. Readings in Buddhist Studies. 3-5 Units.
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RELIGST 359A. American Religions in a Global Context: Proseminar. 1 Unit.
This 1-unit proseminar is open to graduate students interested in American Religions in a Global Context. We will meet once a month to discuss student and faculty work-in-progress and important books in the field. Enrollment in the proseminar is required for students pursuing the Graduate Certificate in American Religions.

RELIGST 362. Sex and the Early Church. 4 Units.
Sex and the Early Church examines the ways first- through sixth-century Christians addressed questions regarding human sexuality. We will pay particular attention to the relationship between sexuality and issues of gender, culture, power, and resistance. We will read a Roman gynecological manual, an ancient dating guide, the world's first harlequin romance novels, ancient pornography, early Christian martyrdom accounts, stories of female and male saints, instructions for how to best battle demons, visionary accounts, and monastic rules. These will be supplemented by modern scholarship in classics, early Christian studies, gender studies, queer studies, and the history of sexuality. The purpose of our exploration is not simply to better understand ancient views of gender and sexuality. Rather, this investigation of a society whose sexual system often seems so surprising aims to denaturalize many of our own assumptions concerning gender and sexuality. In the process, we will also examine the ways these first centuries of what eventually became the world's largest religious tradition has profoundly affected the sexual norms of our own time. The seminar assumes no prior knowledge of Judaism, Christianity, the bible, or ancient history.
Same as: CLASSICS 262, FEMGEN 262, RELIGST 262

RELIGST 364. Hindu Tantra. 4 Units.
What is Tantra? Tantric forms of ritual and philosophy have been integral to the practice of Hinduism for most of its history. Tantra has provided initiates with a spiritual technology for embodying the divine and transcending the cycle of rebirth; on a social and political level, Tantra has mediated the institutions of Hindu kingship and appealed to a diverse population of initiates. This course covers a number of influential and well-documented Hindu tantric traditions, exploring several prominent features of Tantric religion as they develop historically, including: tantric ritual practice (core technologies of the subtle body, mantras, ma, alas, etc., along with the more notorious elements of sex and transgression), theology and philosophical speculation, as well as Tantra's relationship to the outside world and state power.
Same as: RELIGST 264

RELIGST 367. Seminar in Religion and Material Culture. 3-5 Units.
The first part of the course will examine approaches to the role of material culture in religion, including scholarship on icons, sacred space, clothing and food. In the second part of the course, students will develop research projects in their area of specialization.

RELIGST 369. Plotinus and Augustine. 3-5 Units.
Professor's permission required to register. A reading course focused on the influence of Plotinus Enneads on Augustine's Confessions, early dialogues, and sections on reason and memory in the De trinitate. Proficiency in Greek and Latin will be helpful but is not required. Professor's prior permission required, interested students should contact the professor about course schedule: tsheehan@stanford.edu . Undergraduates register for 200-level for 5 units. Graduate students register for 300-level for 3-5 units.
Same as: PHIL 229, PHIL 329, RELIGST 269

RELIGST 370. Comparative Religious Ethics. 4 Units.
The difference that the word religious makes in religious ethics and how it affects issues of genre. Theoretical analyses with examples from W. and E. Asia. Prerequisite: consent of instructor.
Same as: RELIGST 270

RELIGST 370X. Religion and Science in the Amazon and Elsewhere. 5 Units.
The conversion of native peoples to Christianity, especially Evangelical Christianity, is today a global phenomenon. This course looks to understand the reasons for religious conversion and its consequence in the everyday and ritual practices of Amazonians and their traditional practice of shamanism. We then turn to a question seldom addressed in the literature on conversion: the relationship between religion and science. We will explore the way conversion to Christianity produces changes in conceptions of the world and the person similar to those produced by access to scientific knowledge, which occurs primarily through schooling.
Same as: ANTHRO 181, ANTHRO 281, RELIGST 270X

RELIGST 371. Writing Religious History. 5 Units.
This course offers graduate students a sustained opportunity to think about the craft of writing religious history. We will work together on issues ranging from structuring sentences, to revising an article, to conceptualizing a dissertation. Students will be encouraged to establish a daily writing habit and to formulate clear and searchable research strategies. Readings will include exemplars of different kinds of writing in the field. Students will write and workshop several brief (3-5 page) papers applying different approaches. The final project will be a revision of an article-length paper.

RELIGST 373. Historicism and Its Problems: Ernst Troeltsch, the Study of Religion, and the Crisis of Historicism. 3-5 Units.
Examination of the early twentieth-century historian of religion, philosopher of culture, sociologist of religion, Christian theologian, and philosopher of history, Ernst Troeltsch, within the context of the late nineteenth-century "crisis of historicism," i.e., the historicization and relativization of religious, ethical, social, and political norms. Attention to seminal theorists of history (Herder, Kant, Ranke, Hegel, Nietzsche) in the post-Enlightenment German intellectual tradition and the attempts of Christian and Jewish thinkers in the Weimar era (Barth, Gogarten, Rosenzweig, L. Strauss) to "overcome" the crisis wrought by a radically historical approach to human culture.
Same as: RELIGST 273

RELIGST 374. From Kant to Kierkegaard. 3-5 Units.
(Graduate students register for 374. Undergrads register for 274 for 5 units.) The philosophy of religion emerged from the European Enlightenment as a new genre of reflection on religion distinct from both dogmatic theology and rationalist dreams of a "natural" religion of reason. Neither beholden to pre-critical tradition, nor dismissive of what Thomas Nagel has termed "the religious attitude," this new, ostensibly secular, genre of religious thought sought to rethink the meaning of Christianity at a time of immense philosophical ferment. The main currents of religious thought in Germany from Kant's critical philosophy to Kierkegaard's revolt against Hegelianism. Emphasis on the theories of religion, the epistemological status of religious discourse, the role of history (especially the figure of Jesus), and the problem of alienation/reconciliation in seminal modern thinkers: Kant, Schleiermacher, Hegel, and Kierkegaard.
Same as: RELIGST 274

RELIGST 374F. Science, Religion, and Democracy. 3-5 Units.
How should conflicts between citizens with science-based and religion-based beliefs be handled in modern liberal democracies? Are religion-based beliefs as suitable for discussion within the public sphere as science-based beliefs? Are there still important conflicts between science and religion, e.g., Darwinian evolution versus creationism or intelligent design? How have philosophy and recent theology been engaged with such conflicts and how should they be engaged now? What are the political ramifications? This is a graduate-level seminar; undergraduates must obtain permission of the instructors.
Same as: ETHICSOC 374R, PHIL 374F

RELIGST 375. Kierkegaard. 3-5 Units.
(Graduate students register for 375.) Close reading of Kierkegaard's magnum opus, *Concluding Unscientific Postscript to Philosophical Fragments*, in its early 19th-century context.
Same as: RELIGST 275

RELIGST 377. The Later Heidegger: Art, Poetry, Language. 3 Units.
Lectures and seminar discussions of the problematic of the later Heidegger (1930 - 1976) in the light of his entire project. Readings from "On the Origin of the Work of Art" and Elucidations of Holderlin's Poetry.
Same as: PHIL 234B, RELIGST 277

RELIGST 378. Religion and James Joyce's Ulysses. 3-5 Units.
Through a close reading of the novel and with the help of the vast secondary literature the course analyzes the significant roles that religion, specifically Catholicism and Judaism, plays in Joyce's modernist masterpiece--from Stephen Dedalus' sophisticated knowledge and bitter rejection of Irish Catholicism, through Leopold Bloom's ambivalent rapport with Judaism, to Molly Bloom's climatic celebration of a feminist liturgy of nature. Undergraduates register for 200-level for 5 units. Graduate students register for 300-level for 3-5 units.
Same as: RELIGST 278

RELIGST 379. After God: Why religion at all?. 4 Units.
God is dead, but where does religion come from? The end of the quest for God in twentieth century philosophy. Robert Bellah's Religion in Human Evolution plus seminal works of Heidegger, including Being and Time, 'What Is Metaphysics?' 'Nietzsche's Saying `God is Dead.' 'N.B.: Class size limited. Apply early at tsheehan@stanford.edu.
Same as: RELIGST 279

RELIGST 380. Schleiermacher: Reconstructing Religion. 3-5 Units.
Idealist philosopher, Moravian pietist, early German Romantic, co-founder of the University of Berlin, head preacher at Trinity Church, translator of Plato's works, Hegel's opponent, pioneer in modern hermeneutics, father of modern theology. Schleiermacher's controversial reconception of religion and theology in its philosophical context.
Same as: RELIGST 280

RELIGST 381. Asian Religions in America; Asian American Religions. 4 Units.
This course will analyze both the reception in America of Asian religions (i.e. of Buddhism in the 19th century), and the development in America of Asian American religious traditions.
Same as: AMSTUD 281, ASNAMST 281, RELIGST 281

RELIGST 383A. Modern Notions of 'The Holy'. 3-5 Units.
This course explores the question, "What may we call 'holy' in the modern era?" by focusing on key writers and thinkers, who in various ways, and in different times raised this question: Friedrich Hölderlin, Hermann Cohen, Franz Kafka, Martin Heidegger, Martin Buber, Franz Rosenzweig, Else Lasker-Schüler, Walter Benjamin, Ernst Bloch, Hannah Arendt, Margarete Susman, Nelly Sachs, Paul Celan, and Judith Butler.nnThis course will be synchronous-conducted, but will also use an innovative, Stanford-developed, on-line platform called Poetic Thinking. Poetic Thinking allows students to share both their scholarly and creative work with each other. Based on the newest technology and beautifully designed, it will greatly enhance their course experience.
Same as: COMPLIT 283A, COMPLIT 383A, GERMAN 283A, GERMAN 383A, RELIGST 283A

RELIGST 384. Research in Christian Studies. 1-15 Unit.
Independent study in Christianity. May be repeated for credit.
Prerequisite: consent of instructor.

RELIGST 385. Research in Buddhist Studies. 1-15 Unit.
Independent study in Buddhism. May be repeated for credit. Prerequisite: consent of instructor.

RELIGST 387. Research in Jewish Studies. 1-15 Unit.
Independent study in Jewish Studies. May be repeated for credit. Prerequisite: consent of instructor.

RELIGST 388. Research in Modern Religious Thought, Ethics, and Philosophy. 1-15 Unit.
Independent study in Modern Religious Thought, Ethics, and Philosophy. May be repeated for credit. Prerequisite: consent of instructor.

RELIGST 389. Individual Work for Graduate Students. 1-15 Unit.
May be repeated for credit. Prerequisite: consent of instructor.

RELIGST 390. Teaching Internship. 3-5 Units.
Required supervised internship for PhDs.

RELIGST 391. Teaching Religious Studies. 3 Units.
This seminar will help prepare you for your role as a university teacher both at a practical and a theoretical level. We will focus on how to best obtain (and keep) a new academic position. We will thus often work together on ¿nuts and bolts¿ issues such as syllabus design, engaging lectures, lively seminar discussions, positive classroom dynamics, and producing a strong teaching portfolio. We will also explore recent developments in pedagogical theory, cognitive science, and educational psychology that have bearing on effective university level teaching. These will be situated within the specific demands of the religious studies classroom and supplemented by guest speakers who will help us explore how institutional context affects the ways one teaches.

RELIGST 392. Paper in the Field. 1-15 Unit.
Prerequisite: consent of graduate director. May be repeated for credit.

RELIGST 395. Master of Arts Thesis. 2-9 Units.
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RELIGST 399. Readings in Theories and Methods. 1-5 Unit.
Directed readings in secondary literature for Religious Studies doctoral students. May be repeated for credit.

RELIGST 801. TGR Project. 0 Units.
(Staff).

RELIGST 802. TGR Dissertation. 0 Units.
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RUSSIAN, EAST EUROPEAN AND EURASIAN STUDIES

Courses offered by the Center for Russian, East European and Eurasian Studies are listed under the subject code REES on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=REES&filter-catalognumber-REES=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=REES&filter-catalognumber-REES=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=REES&filter-catalognumber-REES=on).

The Center for Russian, East European and Eurasian Studies (CREEES) coordinates the University's teaching, research, and extracurricular activities related to Russia, Eastern Europe, Central Asia, and the Caucasus and administers a one-year interdisciplinary M.A. graduate degree program. Information on the center's degree programs and other activities is available at the CREEES (http://CREEES.stanford.edu) web site. CREEES and its degree programs are directed by the CREEES Steering Committee, composed of faculty members associated with the Center. The program draws on the strengths of nationally recognized area faculty and research affiliates and significant library and archival collections at Stanford. The Center is a U.S. Department of Education Title VI National Resource Center for Russia, East Europe, and Eurasia.

Undergraduate Programs in Russian, East European and Eurasian Studies

Students interested in a minor should consult the Director of Undergraduate Studies in the Department of Slavic Languages and Literatures which offers the following relevant minors:

- Russian, East European and Eurasian Studies
- Russian Language
- Russian Language, Literature and Culture
- Russian Culture

Slavic Theme House

Slavianskii Dom (SlavDom), at 650 Mayfield Avenue, is an undergraduate residence which houses 50 students and offers a wide variety of opportunities to expand knowledge, understanding and appreciation of Russia and the nations of East Europe, the Caucasus and Central Asia.

Overseas Studies Programs

Undergraduates interested in the study of languages, history, culture and social organization of the countries of Russia, Eurasia and East Europe may apply to study at the Stanford centers in Istanbul and Berlin. Information about these programs is available at the Bing Overseas Studies Program (http://bosp.stanford.edu) at web site.

Graduate Programs in Russian, East European and Eurasian Studies

The center offers an M.A. in Russian, East European and Eurasian Studies, a coterminal M.A. in Russian, East European and Eurasian Studies, and a joint M.A./J.D. in conjunction with the Stanford Law School.

Learning Outcomes (Graduate)

The purpose of the master's program and the joint M.A./J.D. program is to further develop knowledge and skills in Russian, East European and Eurasian Studies and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

Financial Aid

CREEES offers a number of full- and partial-tuition scholarships to incoming CREEES M.A. students. These awards are made for one year of full-time study on the basis of merit. All applicants to the CREEES M.A. program automatically are considered for a tuition award, and successful applicants are notified of their aid awards simultaneously with their admissions offers.

Doctoral Progams

Since the University does not offer a Ph.D. in Russian, East European and Eurasian Studies, students wishing to pursue a REEES-related doctoral program must apply to one of the departments offering a Ph.D. with an emphasis on Russia, Eurasia, or Eastern Europe, such as the departments of History, Anthropology, Political Science, or Slavic Languages and Literatures.

Undergraduate Minor in Russian, East European, and Eurasian Studies

Students interested in a minor should consult the "Minors in Slavic Languages and Literatures (p. 2086)" section of this bulletin which describes the following relevant minors:

- Russian, East European, and Eurasian Studies
- Russian Language
- Russian Language, Literature, and Culture
- Russian Culture

Master of Arts in Russian, East European and Eurasian Studies

CREEES offers a one-year interdisciplinary master's degree program in Russian, East European and Eurasian Studies for students with a strong prior language and area studies background.

The program structure allows students the flexibility to pursue their particular academic interests, while providing intellectual cohesion through a required core curriculum that addresses historical and contemporary processes of change in the Russian Federation, Eastern Europe, the Caucasus, and Central Asia.

The core curriculum consists of three courses (one each quarter), the REES 200 Current Issues in Russian, East European, and Eurasian Studies seminar series in Autumn and Winter quarters, and REES 300 MA Capstone Seminar in Spring Quarter. The program may be taken separately or coterminally with a bachelor's degree program.

The interdisciplinary M.A. program typically serves three types of students:

1. Those who intend to apply to a Ph.D. program involving Russian, East European and Eurasian studies and who need to enhance their academic skills and credentials
2. Those who intend to pursue careers and/or advanced degrees in such fields as journalism, education, business, government, law, or medicine, and who wish to establish competence in Russian, East European and Eurasian studies.
3. Those who are mid-career professionals and/or students interested in gaining competence or continuing their interest in and wish to gain competence in Russian, East European and Eurasian studies.

Admission

Applicants apply electronically; see the Office of Graduate Admissions (http://gradadmissions.stanford.edu) web site for a link to the electronic application and general information regarding graduate admission. In addition, prospective applicants may consult with the CREEES associate director regarding the application process.

To qualify for admission to the program, the following apply:

1. Applicants must have earned a B.A. or B.S. degree, or the equivalent.
2. At least three years of college-level language study in Russian, an East European or Central Asian language is preferred. Candidates with fewer years of area language study will be considered.
3. A one-page statement of purpose that explains how the program would advance the applicant's academic or career goals.
4. Applicants must include the following additional materials in their online application: a writing sample of 20 pages or less in English on an academic topic in Russian, East European, or Eurasian studies and a resume of college-level courses taken that are relevant to Russian, East European & Eurasian Studies, including language courses, with self-reported final grades. These additional materials may be uploaded as "Additional Materials" in a single file along with the application.
5. Applicants must send official transcripts from all post-secondary institutions attended to CREEES.
6. The Graduate Record Examination (GRE) is not required.
7. Applicants whose native language is not English and do not possess a U.S. bachelor's degree are expected to take the Test of English as a Foreign Language (TOEFL) and have the results sent to Graduate Admissions, Office of the University Registrar.

The deadline for submission of applications for admission and for financial aid is January 12, 2021. Admission is normally granted for Autumn quarter, but requests for exceptions are considered.

The successful applicant generally demonstrates the following strengths: requisite foreign language study, significant course work in Russian, East European and Eurasian studies in multiple disciplines, outstanding grades in previous academic work, strong analytical writing skills, high GRE scores (particularly verbal and analytical writing), study or work experience in the region, strong letters of recommendation from faculty members in the Russian, East European, and Eurasian Studies field (one letter may be from a language instructor), and a persuasive statement of purpose explaining how the program would advance the applicant's academic and career goals.

Degree Requirements

Candidates for the M.A. degree must meet University requirements for an M.A. degree as described in the "Graduate Degrees (p. 65)" section of this bulletin.

The M.A. program in REEES can ordinarily be completed in one academic year by a well-prepared student; longer periods of study are permitted.

Requirements to complete the interdisciplinary M.A. degree are principally ones of distribution, with the exception of three required core courses and a core seminar, as described below. Each student, with the advice of the CREEES associate director, selects courses according to the student's interests, needs, and goals.

All students in the M.A. REEES program must complete a minimum of 48 academic credit units within the following guidelines.

1. *Core Courses*: Students must complete 3 designated core courses, for 5 units each, during the 2020-21 academic year.
2. *Core Seminar Series:* REES 200 Current Issues in Russian, East European, and Eurasian Studies is required of all students in the M.A. program in Autumn and Winter quarters (2 units total). The goal of this seminar series is to survey current methodological and substantive issues in Russian, East European and Eurasian studies, acquaint students with Stanford resources and faculty, and present professional development and career options.
3. *Interdisciplinary Course Work:* All courses (other than language courses and approved activity courses) must be taken on the graduate level (200-level or higher). Courses in Russian, East European and Eurasian studies must be completed and distributed among at least three disciplines. All course work applied to the 48-unit minimum must deal primarily with Russian, Eurasian, or East European studies.
4. *Language Study:* Students in the program are encouraged to study Russian, an East European or Central Asian language, or a language from the Caucasus. Credit towards the 48-unit minimum (maximum 4 units per quarter, 12 units total) is allowed for advanced language work.
5. Course work qualifying for the 48-unit minimum must have a letter grade of 'B' or higher. ('B-' does not count for degree credit, nor does 'CR'). Students may apply a maximum of three units of course work with a final grade of 'S' to the 48-unit minimum. 'S' units counting towards the 48-unit minimum must be approved by the CREEES associate director.
6. All courses counting towards the 48-unit minimum must be approved by the CREEES associate director, who ensures that planned course work satisfies requirements towards the degree. The CREEES director and steering committee determine the requirements. The list of pre-approved courses for the current academic year appears below. Students can petition to have courses that do not appear on this list counted towards the degree.
7. *Capstone Requirement*: Students must complete a capstone project (research paper and/or research presentation) in consultation with a faculty adviser, the CREEES director and associate director. Students enroll in REES 300 MA Capstone Seminar for 1 unit in Spring Quarter.

Pre-Approved Courses

The courses that have been approved to satisfy the M.A. interdisciplinary course work requirement appear on the "Approved Courses (p. 2062)" tab of this CREES section of this bulletin. Note that not all of the courses may be offered in the current academic year. For a list of courses being offered in the current academic year, see the Courses page (https://creees.stanford.edu/courses/) of the CREEES website and filter for "MA Pre-approved Courses" for the current academic year.

This list of courses may be updated as relevant courses are offered. Courses not appearing on this list may be counted towards the M.A. through a petition process in consultation with the CREEES associate director.

Coterminal Master's Program in Russian, East European, and Eurasian Studies

To qualify for a coterminal M.A. degree in Russian, East European, and Eurasian Studies, besides completing University requirements for the B.A. degree, a student must:

1. Submit the Coterminal Online Application (https://applyweb.com/stanterm/) for admission to the program by the CREEES M.A. admission deadline .
2. Include in the application a proposal which outlines, by quarter, the schedule of courses the student plans to complete toward the M.A. degree. The student should seek the advice of the CREEES associate director in drafting this schedule. The application also should include:
   a. a current Stanford transcript
   b. a one-page statement of purpose
   c. three letters of recommendation from Stanford faculty (one may be from a language instructor)

d. a writing sample of 20 pages or less in English on an academic topic in Russian, East European, or Eurasian Studies

3. Applicants must have a grade point average (GPA) of at least 3.0 (B)
4. Complete 15 full-time quarters or the equivalent, or three quarters in full-time residence after completing 180 units; and complete, in addition to the 180 units required for the bachelor's degree, a minimum of 48 units for the master's degree.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken three quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to the graduate career. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Joint Degree Program in Russian, East European, and Eurasian Studies

The joint degree program in Russian, East European, and Eurasian Studies and Law allows students to pursue the M.A. degree in REES concurrently with the Doctor of Jurisprudence (J.D.) degree, with a significant number of courses that may apply to both degrees. It is designed to train students interested in a career in teaching, research, or the practice of law related to REES legal affairs. Students must apply separately to the REES M.A. program and to the Stanford School of Law and be accepted by both. Completing this combined course of study requires approximately four academic years, depending on the student's background and level of language training. For more information, see the Joint Degree Programs (p. 70) section of this bulletin and the Stanford Law School (http://www.law.stanford.edu/)'s website. Students who have been accepted by both programs should consult with the departments to determine which courses can be double-counted.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

In accommodation of these new policies, the Center for Russian, East European and Eurasian Studies has decided to accept 'CR' (credit) or 'S' (satisfactory) grades for elective and language courses taken during the 2020-21 academic year towards the meeting of degree requirements; normally these courses require a grade of 'B' or higher). However, the three designated core courses must be taken for a letter grade, and a grade of 'B' or higher must be attained, in order for the courses to count towards the M.A. degree.

Graduate Advising Expectations

The Center for Russian, East European and Eurasian Studies is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Approved Content Courses

The courses that have been approved to satisfy the M.A. interdisciplinary course work requirement appear in the table below. Note that not all of the courses listed below are offered in the current academic year. For a list of courses being offered in the current academic year, visit the Courses page (https://creees.stanford.edu/courses/) of the CREEES website and filter for "MA Pre-approved Courses" for the current academic year.

This list of courses may be updated as relevant courses are offered. Courses not appearing on this list may be counted towards the M.A. through a petition process in consultation with the CREEES associate director.

		Units
ARTHIST 208	Hagia Sophia	5
ARTHIST 405	Art, Ekphrasis, and Music in Byzantium and Islam	5
FILMSTUD 345	Politics and Aesthetics in East European Cinema	4
HISTORY 302F	Surveillance States and Societies	4-5
HISTORY 302G	Peoples, Armies and Governments of the Second World War	4-5
HISTORY 307E	Totalitarianism	4-5
HISTORY 310	The History of Occupation, 1914-2010	4-5

HISTORY 321A	State, Society and Nation in Modern Russian Historiography	4-5
HISTORY 322A	Crime and Punishment in Early Modern Europe and Russia	4-5
HISTORY 324C	Genocide and Humanitarian Intervention	3
HISTORY 325E	From Vladimir to Putin: Key Themes in Russian History	4-5
HISTORY 326E	Famine in the Modern World	3
HISTORY 327B	The Business of Socialism: Economic Life in Cold War Eastern Europe and the Soviet Union	4-5
HISTORY 328	Circles of Hell: Poland in World War II	5
HISTORY 384	The Ottoman Empire: Conquest, Coexistence, and Coffee	4-5
HISTORY 424B	The Soviet Civilization, Part 2	4-5
JEWISHST 348	Writing Between Languages: The Case of Eastern European Jewish Literature	1-5
LINGUIST 272A	Structure of Slavic	2-4
MS&E 293	Technology and National Security: Past, Present, and Future	3-4
POLISCI 215F	Nuclear Weapons and International Politics	5
POLISCI 217A	American Foreign Policy: Interests, Values, and Process	5
REES 200	Current Issues in Russian, East European, and Eurasian Studies	1-2
REES 204	Cities of Empire: An Urban Journey through Eastern Europe and the Mediterranean	3-5
REES 210	Readings in Russian Realism	3-5
REES 213	US-Russia Relations After the Cold War	2
REES 224A	The Soviet Civilization	4-5
REES 225E	From Vladimir to Putin: Key Themes in Russian History	4-5
REES 227	All Quiet on the Eastern Front? East Europe and Russia in the First World War	3-5
REES 231B	Understanding Russia: Its Power and Purpose in a New Global Order	5
REES 237	Political Exhumations. Killing Sites Research in Comparative Perspective	3-5
REES 240P	Populism and the Erosion of Democracy	5
REES 254	Animism, Gaia, and Alternative Approaches to the Environment	3-5
REES 259C	Ecological Humanities	3
REES 260	History and Politics of Russian Language	3-4
REES 301B	History and Politics in Russian and Eastern European Cinema	5
REES 304G	War and Society	4-5
REES 326	The Russian Revolution: Politics, Society, Culture	3-5
REES 327	All Quiet on the Eastern Front? East Europe and Russia in the First World War	3-5
REES 348	Slavic Literature and Culture since the Death of Stalin	3-5
REES 408C	Architecture, Acoustics and Ritual in Byzantium	1-3
REES 409	Theories of the Image: Byzantium, Islam and the Latin West	5
SLAVIC 221	Ukraine at a Crossroads	3-5
SLAVIC 226	Bakhtin and his Legacy	3-5
SLAVIC 230	18th Century Russian Literature	3-4
SLAVIC 231	Tarkovsky	3-5
SLAVIC 325	Readings in Russian Realism	3-5
SLAVIC 327	Boris Pasternak and the Poetry of the Russian Avant-garde	3-4
SLAVIC 329	Russian Versification: History and Theory	3-4
SLAVIC 345	Survey of Russian Literature: The Age of Experiment	3-5
SLAVIC 346	The Great Russian Novel: Tolstoy and Dostoevsky	3-5
SLAVIC 347	Modern Russian Literature and Culture: The Age of War and Revolution	3-5
SLAVIC 356	Vladimir Nabokov: Displacement and the Liberated Eye	3-5
SLAVIC 360	Cultural Hybridity in Central-Eastern Europe	2-5
SLAVIC 370	Pushkin	3-5
SLAVIC 379	Literature from Medieval Rus' and Early Modern Russia	3-5
SLAVIC 387	Classical Russian Poetry	3-5
SLAVIC 388	20th century Russian Poetry: From Aleksandr Blok to Joseph Brodsky	3-4
SLAVIC 395	Russian and East European Theater	3-5
SLAVIC 398	Writing Between Languages: The Case of Eastern European Jewish Literature	1-5

Director of the Center: Amir Weiner

Associate Director: Jovana Knezevic

Director of Graduate Studies: Amir Weiner

Affiliated Faculty and Staff:

Anthropology: Ewa Domanska (visiting)

Art and Art History: Srdan Keca, Pavle Levi, Karla Oeler, Bissera Pentcheva

Comparative Literature: Burcu Karahan

Education, School of: Martin Carnoy

Engineering, School of: Margaret Brandeau, Siegfried Hecker, William Perry (emeritus)

English: Nancy Ruttenburg

Freeman Spogli Institute for International Studies: Coit Blacker, Christophe Crombez, Gail Lapidus (emerita), Kathryn Stoner

Graduate School of Business: Ilya Strebulaev

History: Robert Crews, Terence Emmons (emeritus), David Holloway (emeritus), Katherine Jolluck, Nancy Kollmann, Norman Naimark, Aron Rodrigue, Amir Weiner, Ali Yaycioglu, Steven Zipperstein

Hoover Institute: Elena Danielson (emerita), John Dunlop (emeritus), Timothy Garton Ash, Paul Gregory, Bertrand Patenaude, Anatol Shmelev, Maciej Siekierski

International Policy Studies: Eric Morris

International Relations: Robert Rakove

Language Center: Jara Dusatko, Rima Greenhill, Lessia Jarboe, Leelo Kask, Eugenia Khassina, Suzan Negip Schatt, Bisera Rakicevic, Eva Soos Szoke, Gerardina Malgorzata Szudelski

Law, School of: Allen Weiner

Linguistics: Boris Harizanov, Vera Gribanov

Medicine, School of: Grant Miller, Douglas Owens

Political Science: Anna Grzymala-Busse, David Holloway (emeritus), David Laitin, Michael McFaul

Psychology: Lera Boroditsky

Slavic Languages and Literatures: Lazar Fleishman, Gregory Freidin (emeritus), Monika Greenleaf, Yuliya Ilchuk, Gabriella Safran, Richard Schupbach (emeritus), Nariman Skakov

Sociology: Nancy Tuma (emerita),

Stanford Libraries: Zachary Baker (emeritus), Liisi Esse, John Eilts, Margarita Nafpaktitis, Karen Rondestvedt (emerita), Wojciech Zalewski (emeritus)

Theater and Performance Studies: Branislav Jakovljevic

Courses

REES 85B. Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV. 3 Units.
(HISTORY 85B is 3 units; HISTORY 185B is 5 units.) Who are American Jews as depicted in popular media-- film, television, etc.-- since the Second World War? How are their religion, politics, mores, and practices represented and what ways, if at all, do such portraits reflect historical trends among Jews and society in general? What can be learned from film or tv about Jewish identity, notions of Jewish power and powerlessness, communal cohesiveness and assimilation, sexuality and the wages of intermarriage or race?.
Same as: CSRE 85B, HISTORY 85B, JEWISHST 85B

REES 100. Current Issues in Russian, East European, and Eurasian Studies. 1-2 Unit.
Enrollment limited to REEES students. Scholars present analyses of methodologies, challenges, and current issues in the study of Russia, E. Europe, and Eurasia.
Same as: REES 200

REES 128. Literature of the former Yugoslavia. 3-5 Units.
What do Slavoj Zizek, Novak Djokovic, Marina Abramovic, Melania Trump, Emir Kusturica, and the captain of the Croatian national football team have in common? All were born in a country that no longer exists, the Socialist Federal Republic of Yugoslavia (1945-1992). This course will introduce masterpieces of Yugoslav literature and film, examining the social and political complexities of a multicultural society that collapsed into civil war (i.e. Bosnia, Kosovo) in the 1990s. In English with material available in Serbo-Croatian and Slovenian.
Same as: COMPLIT 128, SLAVIC 128

REES 145D. Jewish American Literature and Film. 5 Units.
From its inception, Jewish-American literature has taken as its subject as well as its context the idea of Jewishness itself. Jewish culture is a diasporic one, and for this reason the concept of Jewishness differs from country to country and across time. What stays remarkably similar, though, is Jewish self-perception and relatedly Jewish literary style. This is as true for the first-generation immigrant writers like Isaac Bashevis Singer and Anzia Yezierska who came to the United States from abroad as it is for their second-generation children born in the United States, and the children of those children. In this course, we will consider the difficulties of displacement for the emigrant generation and their efforts to sustain their cultural integrity in the multicultural American environment. We'll also examine the often comic revolt of their American-born children and grandchildren against their (grand-)parents nostalgia and failure to assimilate. Only by considering these transnational roots can one understand the particularity of the Jewish-American novel in relation to mainstream and minority American literatures. In investigating the link between American Jewish writers and their literary progenitors, we will draw largely but not exclusively from Russia and the countries of Eastern Europe.
Same as: AMSTUD 145D, ENGLISH 145D, JEWISHST 155D

REES 185B. Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV. 4-5 Units.
(HISTORY 185B is 5 units; HISTORY 85B IS 3 units.) Who are American Jews as depicted in popular media -- film, television, etc. -- since the Second World War? How are their religion, politics, mores, and practices represented and what ways, if at all, do such portraits reflect historical trends among Jews and society in general? What can be learned from film or tv about Jewish identity, notions of Jewish power and powerlessness, communal cohesiveness and assimilation, sexuality and the wages of intermarriage or race?.
Same as: CSRE 185B, HISTORY 185B, HISTORY 385C, JEWISHST 185B, SLAVIC 183

REES 200. Current Issues in Russian, East European, and Eurasian Studies. 1-2 Unit.
Enrollment limited to REEES students. Scholars present analyses of methodologies, challenges, and current issues in the study of Russia, E. Europe, and Eurasia.
Same as: REES 100

REES 204. Cities of Empire: An Urban Journey through Eastern Europe and the Mediterranean. 3-5 Units.
This course explores the cities of the Habsburg, Ottoman and Russian empires in the dynamic and turbulent period of their greatest transformation from the 19th century through the Two World Wars. Through the reading of urban biographies of Venice and Trieste, Vienna, Budapest, Cracow, Lviv, Sarajevo, Belgrade, Salonica, and Odessa, we consider broad historical trends of political, economic, and social modernization, urbanization, identity formation, imperialism, cosmopolitanism, and orientalism. As vibrant centers of coexistence and economic exchange, social and cultural borderlands, and sites of transgression, these cities provide an ideal lens through which to examine these themes in the context of transition from imperial to post-imperial space.
Same as: HISTORY 223E, HISTORY 323E, REES 304

REES 205. The Business of Socialism: Economic Life in Cold War Eastern Europe. 5 Units.
This colloquium investigates the processes of buying, making, and selling goods and services in Cold War Eastern Europe and the Soviet Union. We will familiarize ourselves with a variety of approaches to writing the history of economic life and discuss to what extent they are applicable to state socialist systems. Our focus will not be on theories of socialism but on empirically grounded studies that allow for insights into how the system operated in practice and interacted with capitalism. We will, among others, explore the following questions: What was the role of the state in the economies east and west of the Iron Curtain? Are socialism and capitalism two incompatible systems? How did women experience and shape economic life after the Second World War? What had a greater impact on the economies of the region: Cold War politics or globalization?.
Same as: HISTORY 227B

REES 208. Constitutional Cultures in Transition: Constitutional Identities and Values in the Post-Soviet Space. 3-5 Units.
This course examines post-Soviet constitutional cultures and identities (with a focus on Armenia, Moldova and Ukraine). It explores the role of constitutional identity in post-Soviet transformation, regional integration and `Europeanization processes; analyzes constitutional values in post-Soviet countries; discusses why there is a disharmony between declared values and constitutional reality; and explores the role of the judiciary in the formation and preservation of constitutional identity.
Same as: REES 308

REES 210. Readings in Russian Realism. 3-5 Units.
For graduate students or upper-level undergraduates. What did Realism mean for late imperial Russian writers? What has it meant for twentieth-century literary theory? As we seek to answer these questions, we read Tolstoy, Dostoevsky, Turgenev, and Chekhov, alongside their brilliant but less often taught contemporaries such as Goncharov, Saltykov-Shchedrin, Leskov, Garshin, Korolenko, Gorky, Andreev, and Bunin. Taught in English; readings in Russian. Prerequisite: Three years of Russian.
Same as: SLAVIC 325

REES 213. US-Russia Relations After the Cold War. 2 Units.
A quarter century ago, the Soviet Union collapsed and the Cold War ended. At the time, Russian leaders aspired to build democratic and market institutions at home. They also wanted to join the West. American presidents Democrat and Republican encouraged these domestic and international changes. Today, U.S.-Russia relations are once again confrontational, reminiscent of relations during the Cold War. This course seeks to analyze shifts in U.S.-Russia relations, with special attention given to the U.S.-Russia relationship during Obama¿s presidency. Readings will include academic articles and a book manuscript by Professor McFaul on Obama's reset policy. Open to students with previous coursework involving Russia.
Same as: POLISCI 213, POLISCI 313

REES 224A. The Soviet Civilization. 4-5 Units.
(History 224A is an undergraduate course offered for 5 units; History 424A is a graduate course offered for 4-5 units.) Socialist visions and practices of the organization of society and messianic politics; Soviet mass state violence; culture, living and work spaces. Primary and secondary sources. Research paper or historiographical essay.
Same as: HISTORY 224A, HISTORY 424A

REES 225E. From Vladimir to Putin: Key Themes in Russian History. 4-5 Units.
Formative issues in Russian history from Muscovy to the present: autocracy and totalitarianism; tsars, emperors, and party secretaries; multi-ethnicity and nationalism; serfdom, peasantry; rebellions and revolutions, dissent and opposition; law and legality; public and private spheres; religion and atheism; patterns of collapse. Class format will be discussion of one to two assigned books or major articles per class.
Same as: HISTORY 225E, HISTORY 325E

REES 227. All Quiet on the Eastern Front? East Europe and Russia in the First World War. 3-5 Units.
Until recently history has been comparatively quiet about the experience of World War I in the east. Far from being a peripheral theater of war, however, the experiences of war on the Eastern Front were central to shaping the 20th century. Not only was the first shot of the war fired in the east, it was also the site of the most dramatic political revolution. Using scholarly texts, literature and film, this course combines political, military, cultural and social approaches to introduce the causes, conduct and consequences of World War I with a focus on the experiences of soldiers and civilians on the Eastern Front. Topics include: the war of movement, occupation, extreme violence against civilians, the Armenian genocide, population exchanges, the Russian Revolution and civil war, and the disintegration of empires and rise of nation-states.
Same as: HISTORY 227D, HISTORY 327D, REES 327

REES 231B. Understanding Russia: Its Power and Purpose in a New Global Order. 5 Units.
Russia presents a puzzle for theories of socio-economic development and modernization and their relationship to state power in international politics. The collapse of the Soviet Union in 1991 brought into being the new Russia (or Russian Federation) as its successor in international politics. Russia suffered one of the worst recessions and experienced 25 years of halting reform. Despite these issues, Russia is again a central player in international affairs. Course analyzes motivations behind contemporary Russian foreign policy by reviewing its domestic and economic underpinnings. Examination of concept of state power in international politics to assess Russia's capabilities to influence other states' policies, and under what conditions its leaders use these resources. Is contemporary Russia strong or weak? What are the resources and constraints its projection of power beyond its borders? What are the determinants of state power in international politics in the twenty-first century? Includes lectures, readings, class discussions, films and documentaries.
Same as: INTLPOL 231B, POLISCI 213C

REES 237. Political Exhumations. Killing Sites Research in Comparative Perspective. 3-5 Units.
The course discusses the politics and practices of exhumation of individual and mass graves. The problem of exhumations will be considered as a distinct socio-political phenomenon characteristic of contemporary times and related to transitional justice. The course will offer analysis of case studies of political exhumations of victims of the Dirty War in Argentina, ethnic cleansing in former Yugoslavia, the Holocaust, communist violence in Poland, the Rwandan genocide, and the Spanish Civil War. The course will make use of new interpretations of genocide studies, research of mass graves, such as environmental and forensic approaches.
Same as: ANTHRO 137D, ARCHLGY 137, ARCHLGY 237, DLCL 237

REES 240P. Populism and the Erosion of Democracy. 5 Units.
What is populism, and how much of a threat to democracy is it? How different is it from fascism or other anti-liberal movements? This course explores the conditions for the rise of populism, evaluates how much of a danger it poses, and examines the different forms it takes.
Same as: POLISCI 140P

REES 254. Animism, Gaia, and Alternative Approaches to the Environment. 3-5 Units.
Indigenous knowledges have been traditionally treated as a field of research for anthropologists and as mistaken epistemologies, i.e., un-scientific and irrational folklore. However, within the framework of environmental humanities, current interest in non-anthropocentric approaches and epistemic injustice, animism emerged as a critique of modern epistemology and an alternative to the Western worldview. Treating native thought as an equivalent to Western knowledge will be presented as a (potentially) decolonizing and liberating practice. This course may be of interest to anthropology, archaeology and literature students working in the fields of ecocriticism and the environmental humanities/social sciences, students interested in the Anthropocene, geologic/mineral, bio-, eco- and geosocial collectives, symbiotic life-forms and non-human agencies. The course is designed as a research seminar for students interested in theory of the humanities and social sciences and simultaneously helping students to develop their individual projects and thesis.
Same as: ANTHRO 154C, ANTHRO 254C, ARCHLGY 154, ARCHLGY 254, DLCL 254

REES 259C. Ecological Humanities. 3 Units.
What sort of topics, research questions, approaches, theories and concepts lead to an integration of various kinds of knowledges? Ecological Humanities provides a conceptual platform for a merger of humanities and social sciences with earth and life sciences, soil science and forensic sciences. The course will discuss such selected topics as the Anthropocene, geologic/mineral and exhumed subjects/personae, bio- and geosocial collectives, symbiotic life-forms, non-human agencies, and forensic landscapes as examples of this merger.
Same as: ANTHRO 159C, ANTHRO 259C, DLCL 259C

REES 260. History and Politics of Russian Language. 3-4 Units.
How did standard Russian develop? Who determines how the language is spoken and written? How does Russian interact with other languages of the region (such as Ukrainian and Yiddish)? This class examines the development of the standard literary Russian language, focusing on the 19th century, the Soviet period, and post-Soviet language politics. Taught in English, reading in Russian.

REES 299. Directed Reading. 1-12 Unit.
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REES 300. MA Capstone Seminar. 1-3 Unit.
Required for and limited to REEES MA candidates. Colloquia with CREEES Director and Associate Director to assist with refinement of research topic, advisor support, literature review, research, and thesis writing.

REES 301B. History and Politics in Russian and Eastern European Cinema. 5 Units.
From 1945 to the mid-80s, emphasizing Polish, Hungarian, Czech, Slovak, and Yugoslav contexts. The relationship between art and politics; postwar establishment of film industries; and emergence of national film movements such as the Polish school, Czech new wave, and new Yugoslav film. Thematic and aesthetic preoccupations of filmmakers such as Wajda, Jancso, Forman, and Kusturica. Permission of instructor required prior to the first day of classes.
Same as: FILMSTUD 245B, FILMSTUD 445B

REES 304. Cities of Empire: An Urban Journey through Eastern Europe and the Mediterranean. 3-5 Units.
This course explores the cities of the Habsburg, Ottoman and Russian empires in the dynamic and turbulent period of their greatest transformation from the 19th century through the Two World Wars. Through the reading of urban biographies of Venice and Trieste, Vienna, Budapest, Cracow, Lviv, Sarajevo, Belgrade, Salonica, and Odessa, we consider broad historical trends of political, economic, and social modernization, urbanization, identity formation, imperialism, cosmopolitanism, and orientalism. As vibrant centers of coexistence and economic exchange, social and cultural borderlands, and sites of transgression, these cities provide an ideal lens through which to examine these themes in the context of transition from imperial to post-imperial space.
Same as: HISTORY 223E, HISTORY 323E, REES 204

REES 304G. War and Society. 4-5 Units.
(History 204G is an undergraduate course offered for 5 units; History 304G is a graduate course offered for 4-5 units.) How Western societies and cultures have responded to modern warfare. The relationship between its destructive capacity and effects on those who produce, are subject to, and must come to terms with its aftermath. Literary representations of WW I; destructive psychological effects of modern warfare including those who take pleasure in killing; changes in relations between the genders; consequences of genocidal ideology and racial prejudice; the theory of just war and its practical implementation; how wars end and commemorated.
Same as: HISTORY 204G, HISTORY 304G

REES 308. Constitutional Cultures in Transition: Constitutional Identities and Values in the Post-Soviet Space. 3-5 Units.
This course examines post-Soviet constitutional cultures and identities (with a focus on Armenia, Moldova and Ukraine). It explores the role of constitutional identity in post-Soviet transformation, regional integration and `Europeanization processes; analyzes constitutional values in post-Soviet countries; discusses why there is a disharmony between declared values and constitutional reality; and explores the role of the judiciary in the formation and preservation of constitutional identity.
Same as: REES 208

REES 326. The Russian Revolution: Politics, Society, Culture. 3-5 Units.
The centennial of the Russian Revolution of 1917 serves as the occasion for this course, which surveys the political, social, and cultural upheavals that transformed Russia under the last Tsars and the first Soviet commissars. The course will be offered in conjunction with the exhibition "The Crown under the Hammer: Russia, Romanovs & Revolution," jointly sponsored by the Hoover Institution and the Cantor Arts Center at Stanford and opening at both venues on October 18, 2017. Several class sessions will be held at the Hoover Institution, where students will be invited to examine archival documents, rare books and periodicals, and the visual arts, including propaganda posters, photographs, motion picture film, and paintings in the collections of the Hoover Institution Library & Archives. One class session will be held at the Cantor Arts Center. The course is open to undergraduate and graduate students.

REES 327. All Quiet on the Eastern Front? East Europe and Russia in the First World War. 3-5 Units.
Until recently history has been comparatively quiet about the experience of World War I in the east. Far from being a peripheral theater of war, however, the experiences of war on the Eastern Front were central to shaping the 20th century. Not only was the first shot of the war fired in the east, it was also the site of the most dramatic political revolution. Using scholarly texts, literature and film, this course combines political, military, cultural and social approaches to introduce the causes, conduct and consequences of World War I with a focus on the experiences of soldiers and civilians on the Eastern Front. Topics include: the war of movement, occupation, extreme violence against civilians, the Armenian genocide, population exchanges, the Russian Revolution and civil war, and the disintegration of empires and rise of nation-states.
Same as: HISTORY 227D, HISTORY 327D, REES 227

REES 348. Slavic Literature and Culture since the Death of Stalin. 3-5 Units.
The course offers a survey of Soviet and post-Soviet literary texts and films created by Russian, Ukrainian and Belarusian artists and marginalized or repressed by the Soviet regime. The first part of the course will focus on the topics of opposition and dissent, generational conflict, modernization, Soviet everyday life, gender, citizenship and national identity, state-published and samizdat literature, "village" and "cosmopolitan" culture, etc. The second part of it will be devoted to the postmodernist aesthetics and ideology in the dismantlement of totalitarian society, as well in the process of shaping post-Soviet identities. The reading materials range from the fictional, poetic, and publicistic works written by Noble-prize (Solzhenitsyn, Brodsky, Alexievich) and other major writers of the period to the drama, film, and popular culture.
Same as: SLAVIC 148, SLAVIC 348

REES 408C. Architecture, Acoustics and Ritual in Byzantium. 1-3 Unit.
Onassis Seminar "Icons of Sound: Architecture, Acoustics and Ritual in Byzantium". This year-long seminar explores the creation and operations of sacred space in Byzantium by focusing on the intersection of architecture, acoustics, music, and ritual. Through the support of the Onassis Foundation (USA), nine leading scholars in the field share their research and conduct the discussion of their pre-circulated papers. The goal is to develop a new interpretive framework for the study of religious experience and assemble the research tools needed for work in this interdisciplinary field.nnNOTE: This course is only offered on the graduate level and undergraduates would be admitted by request (sending a letter expressing interest to the instructor and specifying what other courses in music or art history has prepared them to tackle this subject) and special permission only.
Same as: ARTHIST 408C, MUSIC 408C, RELIGST 308C

REES 409. Theories of the Image: Byzantium, Islam and the Latin West. 5 Units.
This seminar explores the role of images in the three major powers of the medieval Mediterranean: the Umayyads, the Carolingians, and the Byzantines. For each the definition of an image- sura, imago, or eikon respectively-became an important means of establishing religious identity and a fault-line between distinct cultural traditions. This course troubles the identification of image with figural representation and presents instead a performative paradigm where chant or recitation are treated as images. As such, students will be able to see the connections between medieval image theory and contemporary art practices such as installation.
Same as: ARTHIST 209C, ARTHIST 409, CLASSICS 158, CLASSICS 258

REES 801. TGR Project. 0 Units.
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SCIENCE, TECHNOLOGY, AND SOCIETY

Courses offered by the Program in Science, Technology, and Society are listed under the subject code STS on the ExploreCourses web site (https://explorecourses.stanford.edu/search/?q=STS&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-departmentcode-STS=on&filter-catalognumber-STS=on&filter-coursestatus-Active=on&filter-catalognumber-STS=on).

Mission of the Undergraduate Program in Science, Technology, and Society

The Program in Science, Technology, and Society (STS) aims to provide students with an interdisciplinary framework through which to understand the complex interactions of science, technology and the social world. To major in STS, students work through a common core of courses drawn from the social sciences, the humanities, the natural and physical sciences and engineering. Students pursue coursework in one of seven specialized areas:

- Catastrophic Risks and Solutions
- Communication and Media
- Innovation and Organization
- Life Sciences and Health
- Politics and Policy
- Social Dynamics of Data and Information
- Self-Designed Concentration

Students may also undertake research in affiliated laboratories and through the honors program for course units. All students complete a capstone project, either by taking one of the senior capstone courses (STS 200) or by applying for and completing an STS honors thesis. Students are encouraged to pursue mastery in at least one field from within the humanities or social sciences and at least one field from within the sciences or engineering. Majors may declare either a B.A. or a B.S. degree (see the specific requirements for each degree).

The Program's affiliated faculty represent over a dozen departments, including Anthropology, Communication, Computer Science, Education, Electrical Engineering, History, Law, Management Science and Engineering, Political Science and Sociology. By learning to bring such a rich collection of disciplinary approaches to bear on questions of science and technology, students graduate uniquely equipped to succeed in professions that demand fluency with both technical and social frameworks. Recent graduates of STS have entered top-ranked Ph.D. and MBA programs and forged successful careers in a variety of fields, including business, engineering, law, public service, medicine and academia.

Learning Outcomes (Undergraduate)

The Program expects undergraduate majors to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the Program in Science, Technology, and Society. Students are expected to demonstrate:

1. A knowledge of core theories and methods in the interdisciplinary field of STS.
2. An ability to deploy these theories and methods to analyze interactions between science, technology and society in particular historical and cultural contexts.
3. An ability to critically evaluate empirical evidence and theoretical claims in STS-related debates.
4. An ability to communicate clearly and persuasively about STS issues to a general audience in multiple media including oral presentation and writing.

Advising and Course Selection

The Program in Science, Technology, and Society offers an advising process that includes faculty, staff and peer advisers. Prospective majors must first meet with a peer adviser and then with the Program's Student Services Officer to determine which degree they will pursue (the B.A. or B.S.) and how they will fulfill the Program's basic requirements. When they are ready to declare, they meet with the Program's Student Services Officer to submit their degree plan and then the Associate Director reviews the coursework for intellectual coherence. Majors are then assigned to a faculty adviser who serves as an intellectual mentor and helps them identify the core questions driving their interest in the field. The Program also sponsors a wide variety of events designed to help students meet their colleagues and Program alumni, discover research and internship opportunities, and make their way toward the career of their choice.

STS Core

The program offers a Bachelor of Arts and Bachelor of Science in Science, Technology, and Society. Both degree programs require that the student complete the STS Core.

		Units
With a grade of 'C' or higher in each course, complete 8 courses satisfying the following requirements:		
A. Gateway Requirement		
STS 1	The Public Life of Science and Technology	4
B. Disciplinary Requirement [Note 1 & 2]		
Six courses; one of these courses must be a STS WIM course and at least one of these courses must be a STS Global course.		
1. Social Sciences and Humanities Courses (complete 4 courses) [Note 3 & 4]		13-20
ANTHRO 41	Genes and Identity	
ANTHRO 82	Medical Anthropology	
ANTHRO 93B	Prefield Research Seminar: Non-Majors	
ANTHRO 126	Urban Culture in Global Perspective	
ANTHRO 132C	Technology and Inequality	
ANTHRO 138	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise	
ANTHRO 186	Culture and Madness: Anthropological and Psychiatric Approaches to Mental Illness	
CLASSICS 151	Ten Things: An Archaeology of Design	
COMM 120W	The Rise of Digital Culture	
COMM 137W	The Dialogue of Democracy	
COMM 142W	Media Economics	
COMM 177SW	Specialized Writing and Reporting: Sports Journalism	
COMM 184	Race and Media	
COMM 186W	Media, Technology, and the Body	
COMPLIT 207	Why is Climate Change Un-believable? Interdisciplinary Approaches to Environmental Action	
CSRE 230	Law, Order, & Algorithms	
ECON 106	World Food Economy	
EDUC 120	Sociology of Science	
EDUC 151	The Future of Information	

EDUC 320	Sociology of Science	
ENGLISH 184C	Data and Knowledge in the Humanities	
FRENCH 365	The Problem of Evil in Philosophy, Literature, and Film	
HISTORY 44Q	Gendered Innovations in Science, Medicine, Engineering, and Environment	
HISTORY 79C	The Ethical Challenges of the Climate Catastrophe	
HISTORY 140	World History of Science	
HISTORY 140A	The Scientific Revolution	
HISTORY 144	Sex, Gender, and Intersectional Analysis in Science, Medicine, Engineering, and Environment	
HISTORY 179C	The Ethical Challenges of the Climate Catastrophe	
HISTORY 203C	History of Ignorance	
HISTORY 234P	The Age of Plague: Medicine and Society, 1300-1750	
HISTORY 235D	When Worlds Collide: The Trial of Galileo	
MS&E 130	Information Networks and Services	
MS&E 330	Law, Order, & Algorithms	
PHIL 167A	Philosophy of Biology	
POLISCI 114S	International Security in a Changing World	
POLISCI 233F	Science, technology and society and the humanities in the face of the looming disaster	
RELIGST 3	The Religious Life of Things	
SOC 114	Economic Sociology	
STS 151	The Future of Information	
STS 166	Knowledge and Information Infrastructures	
STS 181	Techno-metabolism: Technology, Society, and the Anthropocene	
STS 191W	Doing STS: Introduction to Research	
2. Engineering and Science Courses (complete 2 courses)		6-10
BIOE 122	BioSecurity and Pandemic Resilience	
BIOE 131	Ethics in Bioengineering	
CEE 64	Air Pollution and Global Warming: History, Science, and Solutions	
CEE 70	Environmental Science and Technology	
CEE 118X	Shaping the Future of the Bay Area	
CEE 118Y	Shaping the Future of the Bay Area	
CEE 118Z	Shaping the Future of the Bay Area	
CS 181W	Computers, Ethics, and Public Policy	
CS 182W	Ethics, Public Policy, and Technological Change	
CSRE 230	Law, Order, & Algorithms	
EARTH 2	Climate and Society	
EARTHSYS 112	Human Society and Environmental Change	
EARTHSYS 177C	Specialized Writing and Reporting: Health and Science Journalism	
EARTHSYS 227	Decision Science for Environmental Threats	
ENGR 60	Engineering Economics and Sustainability	
MS&E 193	Technology and National Security: Past, Present, and Future	
C. Senior Requirement		**4-10**

All students must complete a capstone project, either by taking one of the senior capstone courses (STS 200) or by applying for and completing an STS honors thesis (STS 299).

STS 200N	Funkentelechy: Technologies, Social Justice and Black Vernacular Cultures	5
STS 200Q	Sociology of Science	3-4
STS 200U	The Age of Plague: Medicine and Society, 1300-1750	5
STS 299	Advanced Individual Work	1-5
Total Units		41-63

[1]WIM courses: BIOE 131, COMM 120W, COMM 137W, CS 181W, EARTHSYS 177C, HISTORY 140A STS 191W

[2]Global courses: ANTHRO 41, ANTHRO 82, ANTHRO 126, ANTHRO 132C, ANTHRO 138, COMPLIT 207, ECON 106, ENGLISH 184C, HISTORY 140, HISTORY 44Q, HISTORY 144, HISTORY 234P, CEE 64, POLISCI 114S, POLISCI 233F

[3]May only take HISTORY 140A or HISTORY 232F (not offered 20-21).

[4]May only take HISTORY 144 or HISTORY 44Q.

Concentration Areas

In addition to the Core requirements common to all STS students, a minimum of 50 units, at least twelve courses, are required from among those designated on the appropriate Concentration Area course list (available in the Concentration Areas tab (p. 2070) and on the STS web site). All courses must be taken for a letter grade if offered and may not be double-counted with core course work. Students may count no more than two course petitions outside the list of approved Concentration Area courses toward their STS degree plan. Thematic concentrations are organized around an STS-related area or topic:

1. Catastrophic Risks and Solutions
2. Communication and Media
3. Innovation and Organization
4. Life Sciences and Health
5. Politics and Policy
6. Self-Designed Concentration
7. Social Dynamics of Data and Information

A student pursuing a Bachelor of Arts degree must take at least 8 classes from the Socio-Cultural Course menu, including at least 3 designated as Concentration Core and at least 4 classes from the Technical Course menus.

A student pursuing a Bachelor of Science degree must take at least 8 classes from the Technical Course menu, and at least 4 classes from the Socio-Cultural Course menus, including at least 3 designated as Concentration Core.

Students in both degree programs are encouraged to pursue sequences of courses that build on one another to increase the coherence of their program and give depth to their skill set and knowledge related to STS.

Alternatively, subject to program approval, a student may choose to design a self-designed concentration. Students interested in designing their own concentration must work with the associate director and have their proposal approved at least 2 quarters prior to your graduating quarter. A proposal (5 to 10 pages) should (a) describe your intellectual objectives in detail, (b) explain why a self-designed concentration is the optimal way to pursue these objectives (as opposed to the five STS concentrations or other majors at Stanford), and (c) list at least 12 courses and 50 units that comprise the plan of study. Students with a

self-designed concentration must fulfill the same core requirements as other STS students. More information can be found on the STS website (https://sts.stanford.edu/major-sts/thematic-concentrations/).

Each student's Concentration Area, certified or self-designed, requires the approval of the STS Associate Director.

Concentration Area Course Lists

Catastrophic Risks and Solutions

Thematic concentration in Catastrophic Risks and Solutions:

		Units
Socio-Cultural Courses		
AMSTUD 106A	A.I.: Artificial Intelligence in Fiction	
ANTHRO 154C	Animism, Gaia, and Alternative Approaches to the Environment	
BIOE 122	BioSecurity and Pandemic Resilience	
BIOE 131	Ethics in Bioengineering	
CEE 64	Air Pollution and Global Warming: History, Science, and Solutions	
CEE 107A	Understanding Energy	
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	
CEE 265E	Adaptation to Sea Level Rise and Extreme Weather Events	
CEE 265F	Environmental Governance and Climate Resilience	
CLASSICS 382	High-Stakes Politics: Case Studies in Political Philosophy, Institutions, and Interests	
COMPLIT 207	Why is Climate Change Un-believable? Interdisciplinary Approaches to Environmental Action	
COMPLIT 371	Critical Theory and Ecology: A Cross-Cultural Perspective	
CSRE 125E	Shades of Green: Redesigning and Rethinking the Environmental Justice Movements	
CSRE 226D	The Holocaust: Insights from New Research	
DESINST 245	Redesigning Post-Disaster Finance	
EARTHSYS 102	Fundamentals of Renewable Power	
EARTHSYS 112	Human Society and Environmental Change	
EARTHSYS 160	Sustainable Cities	
EARTHSYS 177C	Specialized Writing and Reporting: Health and Science Journalism	
EARTHSYS 180	Principles and Practices of Sustainable Agriculture	
EARTHSYS 185	Feeding Nine Billion	
EARTHSYS 227	Decision Science for Environmental Threats	
ECON 17N	Energy, the Environment, and the Economy	
ECON 106	World Food Economy	
ECON 155	Environmental Economics and Policy	
ENVRES 222	Climate Law and Policy	
ETHICSOC 136R	Introduction to Global Justice	
FRENCH 365	The Problem of Evil in Philosophy, Literature, and Film	
HISTORY 179C	The Ethical Challenges of the Climate Catastrophe	
HISTORY 203C	History of Ignorance	
HISTORY 234P	The Age of Plague: Medicine and Society, 1300-1750	
HUMBIO 153	Parasites and Pestilence: Infectious Public Health Challenges	
INTLPOL 200	The Social & Economic Impact of Artificial Intelligence	
INTLPOL 217	The Future of Global Cooperation	
INTLPOL 240	Contemporary Issues in International Security	
INTLPOL 259A	Research Seminar on Cybersecurity: Automotive Safety, Security, and Privacy	
INTNLREL 135A	International Environmental Law and Policy: Oceans and Climate Change	
INTNLREL 145	Genocide and Humanitarian Intervention	
LAW 807B	Policy Practicum: What we can do to Mitigate Climate Warming	
LAW 2504	Environmental Law and Policy	
LAW 2513	Climate: Politics, Finance, and Infrastructure	
LAW 2515	Environmental Justice	
MED 224	Social Entrepreneurship and Innovation Lab (SE Lab) - Human & Planetary Health	
MS&E 92Q	International Environmental Policy	
MS&E 193	Technology and National Security: Past, Present, and Future	
MS&E 330	Law, Order, & Algorithms	
NATIVEAM 162	Tribal Economic Development and Sustainability	
OSPPARIS 91	The Future of Globalization: Economics, Politics and the Environment	
POLISCI 114S	International Security in a Changing World	
POLISCI 227B	Environmental Governance and Climate Resilience	
PUBLPOL 116	Climate Perspectives: Climate Science, Impacts, Policy, Negotiations, and Advocacy	
PUBLPOL 166	The Politics of Epidemics	
PWR 2STA	Writing & Rhetoric 2: Ethics and AI	
STS 1	The Public Life of Science and Technology	
STS 51A	Race in Science	
STS 51B	Race in Technology	
STS 51C	Race in Medicine	
STS 190	Environment and Society	
STS 191W	Doing STS: Introduction to Research	
STS 200T	Racial Justice in the Nuclear Age	
THINK 65	Preventing Human Extinction	
Technical Courses		
BIO 138	Ecosystem Services: Frontiers in the Science of Valuing Nature	
CEE 70	Environmental Science and Technology	
CEE 118X	Shaping the Future of the Bay Area	
CEE 118Y	Shaping the Future of the Bay Area	
CEE 118Z	Shaping the Future of the Bay Area	
CEE 166B	Water Resources and Hazards	
CEE 263C	Weather and Storms	
CEE 274D	Pathogens and Disinfection	
CEE 278A	Air Pollution Fundamentals	
CEE 287	Earthquake Resistant Design and Construction	

CEE 288	Introduction to Performance Based Earthquake Engineering
CEE 296	Regional Seismic Risk Analysis and Risk Management
CEE 297M	Managing Critical Infrastructure
COMPMED 123	Immunology of Infectious Disease
CS 21SI	AI for Social Good
CS 81SI	AI Interpretability and Fairness
CS 155	Computer and Network Security
CS 221	Artificial Intelligence: Principles and Techniques
CS 224N	Natural Language Processing with Deep Learning
CS 224W	Machine Learning with Graphs
CS 229	Machine Learning
CS 230	Deep Learning
CS 231N	Convolutional Neural Networks for Visual Recognition
CS 236	Deep Generative Models
CS 255	Introduction to Cryptography
CS 273B	Deep Learning in Genomics and Biomedicine
CS 335	Fair, Accountable, and Transparent (FAccT) Deep Learning
CS 372	Artificial Intelligence for Disease Diagnosis and Information Recommendations
CS 421	Designing AI to Cultivate Human Well-Being
DESINST 240	Designing Machine Learning: A Multidisciplinary Approach
EARTH 2	Climate and Society
EARTHSYS 101	Energy and the Environment
EARTHSYS 111	Biology and Global Change
EARTHSYS 114	Global Change and Emerging Infectious Disease
EASTASN 217	Health and Healthcare Systems in East Asia
ENERGY 101	Energy and the Environment
ENERGY 104	Sustainable Energy for 9 Billion
ESS 102	Scientific Basis of Climate Change
ESS 305	Climate Change: An Earth Systems Perspective
GEOLSCI 6	Data Science for Geoscience
GEOPHYS 90	Earthquakes and Volcanoes
GEOPHYS 201	Frontiers of Geophysical Research at Stanford
GEOPHYS 220	Ice, Water, Fire
INDE 263	Microbiology and Infectious Diseases I
MATSCI 144	Thermodynamic Evaluation of Green Energy Technologies
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution
MS&E 243	Energy and Environmental Policy Analysis
MS&E 394	Advanced Methods in Modeling for Climate and Energy Policy
PHYSICS 201	The Physics of Energy and Climate Change
STATS 101	Data Science 101
SUST 261	Art and Science of Decision Making

Communication and Media

Thematic concentration in Communication and Media:

		Units
Socio-Cultural Courses		
AFRICAAM 194	Topics in Writing & Rhetoric: Contemporary Black Rhetorics: Black Twitter and Black Digital Cultures	
AMSTUD 96	Signal to Noise: The Sounds of American Culture	
AMSTUD 133	Technology and American Visual Culture	
AMSTUD 143X	Starstuff: Space and the American Imagination	
ANTHRO 132C	Technology and Inequality	
ARTHIST 164A	Technology and the Visual Imagination	
ARTHIST 245	Art, Business & the Law	
ARTSTUDI 173E	Cell Phone Photography	
ARTSTUDI 174B	Creativity in the Age of Facebook: Making Art for and from Networks	
ARTSTUDI 236	Future Media, Media Archaeologies	
COMM 106	Communication Research Methods	
COMM 108	Media Processes and Effects	
COMM 120W	The Rise of Digital Culture	
COMM 124	Truth, Trust, and Tech	
COMM 137W	The Dialogue of Democracy	
COMM 142W	Media Economics	
COMM 154	The Politics of Algorithms	
COMM 166	Virtual People	
COMM 172	Media Psychology	
COMM 184	Race and Media	
COMM 186W	Media, Technology, and the Body	
COMM 230A	Digital Civil Society	
COMM 230B	Digital Civil Society	
COMM 230C	Digital Civil Society	
COMM 286	Media, Technology, and the Body	
CS 181	Computers, Ethics, and Public Policy	
CS 182	Ethics, Public Policy, and Technological Change	
EARTHSYS 177C	Specialized Writing and Reporting: Health and Science Journalism	
EDUC 120	Sociology of Science	
EDUC 226	Curating Experience: Representation in and beyond Museums	
EDUC 320	Sociology of Science	
ENGLISH 184C	Data and Knowledge in the Humanities	
ENGR 145	Technology Entrepreneurship	
FILMSTUD 6	Introduction to Media	
HISTORY 151	The American West	
HISTORY 204D	Advanced Topics in Agnotology	
HISTORY 235D	When Worlds Collide: The Trial of Galileo	
INTLPOL 221	Politics of Data: Algorithmic Culture, Big Data, and Information Waste	
MS&E 180	Organizations: Theory and Management	
OSPFLOR 16	Silicon Valley: The Modern Day Rebirth of Renaissance Florence	
OSPFLOR 48	Sharing Beauty in Florence: Collectors, Collections and the Shaping of the Western Museum Tradition	

OSPFLOR 49	On-Screen Battles: Filmic Portrayals of Fascism and World War II
OSPFLOR 67	The Celluloid Gaze: Gender, Identity and Sexuality in Cinema
OSPOXFRD 63	Digital Technology in the UK
OSPPARIS 30	The Avant Garde in France through Literature, Art, and Theater
PSYCH 30	Introduction to Perception
PSYCH 75	Introduction to Cultural Psychology
RELIGST 3	The Religious Life of Things
SOC 180A	Foundations of Social Research
STS 51A	Race in Science
STS 51B	Race in Technology
STS 51C	Race in Medicine
STS 123	Making of a Nuclear World: History, Politics, and Culture
STS 151	The Future of Information
STS 166	Knowledge and Information Infrastructures
STS 177	The Cultural Politics of Food and Eating: Technology, History, and Justice
STS 181	Techno-metabolism: Technology, Society, and the Anthropocene
STS 191	Doing STS: Introduction to Research
STS 191W	Doing STS: Introduction to Research
SYMSYS 1	Minds and Machines
SYMSYS 245	Cognition in Interaction Design
TAPS 253T	Virtual Realities: Art, Technology, Performance
Technical Courses	
ARTSTUDI 130	Interactive Art: Making it with Arduino
ARTSTUDI 160	Intro to Digital / Physical Design
ARTSTUDI 168	Data as Material
ARTSTUDI 176	Time Shifts
ARTSTUDI 177	Video Art
ARTSTUDI 179	Digital Art I
ARTSTUDI 275	Photography II: Digital
CEE 112A	Industry Applications of Virtual Design & Construction
CME 108	Introduction to Scientific Computing
COMM 176	Advanced Digital Media Journalism
CS 103	Mathematical Foundations of Computing
CS 105	Introduction to Computers
CS 106A	Programming Methodology
CS 106B	Programming Abstractions
CS 106E	Exploration of Computing
CS 106X	Programming Abstractions
CS 107	Computer Organization and Systems
CS 108	Object-Oriented Systems Design
CS 109	Introduction to Probability for Computer Scientists
CS 110	Principles of Computer Systems
CS 147	Introduction to Human-Computer Interaction Design
CS 206	Exploring Computational Journalism
CS 224W	Machine Learning with Graphs
CSRE 230	Law, Order, & Algorithms
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists
EE 101A	Circuits I
EE 101B	Circuits II
EE 102A	Signal Processing and Linear Systems I
EE 102B	Signal Processing and Linear Systems II
EE 108	Digital System Design
EE 168	Introduction to Digital Image Processing
EE 169	Introduction to Bioimaging
EE 180	Digital Systems Architecture
ENGLISH 184E	Literary Text Mining
ENGR 150	Data Challenge Lab
ME 125	Visual Frontiers
MS&E 111	Introduction to Optimization
MS&E 120	Introduction to Probability
MS&E 130	Information Networks and Services
MS&E 135	Networks
MUSIC 220A	Fundamentals of Computer-Generated Sound
MUSIC 220B	Compositional Algorithms, Psychoacoustics, and Computational Music
MUSIC 254	Computational Music Analysis
MUSIC 257	Neuroplasticity and Musical Gaming
OSPCPTWN 67	ICT4D: An Introduction to the Use of ICTs for Development
OSPOXFRD 62	Digital Technology in the UK
POLISCI 150A	Data Science for Politics
SOC 180B	Introduction to Data Analysis
STATS 60	Introduction to Statistical Methods: Precalculus
STATS 101	Data Science 101
STATS 191	Introduction to Applied Statistics

Innovation and Organization

Thematic concentration in Innovation and Organization:

		Units
Socio-Cultural Courses		
AMSTUD 96	Signal to Noise: The Sounds of American Culture	
AMSTUD 133	Technology and American Visual Culture	
ANTHRO 41	Genes and Identity	
ANTHRO 132C	Technology and Inequality	
ANTHRO 154	Anthropology of Drugs: Experience, Capitalism, Modernity	
ARTHIST 147	Modernism and Modernity	
ARTSTUDI 174B	Creativity in the Age of Facebook: Making Art for and from Networks	
ARTSTUDI 236	Future Media, Media Archaeologies	
BIO 182	Modeling Cultural Evolution	
BIOE 177	Inventing the Future	
CEE 32B	Design Theory	
CLASSICS 151	Ten Things: An Archaeology of Design	
CLASSICS 156	Design of Cities	
COMM 124	Truth, Trust, and Tech	
COMM 154	The Politics of Algorithms	
CS 181	Computers, Ethics, and Public Policy	
CS 182	Ethics, Public Policy, and Technological Change	
ECON 118	Development Economics	

ECON 145	Labor Economics
EDUC 120	Sociology of Science
EDUC 320	Sociology of Science
ENGLISH 184C	Data and Knowledge in the Humanities
ENGR 145	Technology Entrepreneurship
FEMGEN 44Q	Gendered Innovations in Science, Medicine, Engineering, and Environment
HISTORY 44Q	Gendered Innovations in Science, Medicine, Engineering, and Environment
HISTORY 140	World History of Science
HISTORY 140A	The Scientific Revolution
HISTORY 144	Sex, Gender, and Intersectional Analysis in Science, Medicine, Engineering, and Environment
HISTORY 151	The American West
HISTORY 203C	History of Ignorance
HISTORY 235D	When Worlds Collide: The Trial of Galileo
INTLPOL 221	Politics of Data: Algorithmic Culture, Big Data, and Information Waste
ME 120	History and Ethics of Design
ME 177	Global Engineers' Education
ME 267	Ethics and Equity in Transportation Systems
ME 297	Forecasting for Innovators: Exponential Technologies, Tools and Social Transformation
MS&E 175	Innovation, Creativity, and Change
MS&E 180	Organizations: Theory and Management
MS&E 185	Global Work
MS&E 256	Technology Assessment and Regulation of Medical Devices
OSPBER 126X	A People's Union? Money, Markets, and Identity in the EU
OSPCPTWN 36	The Archaeology of Southern African Hunter Gatherers
OSPFLOR 13	Galileo, Leonardo da Vinci, and the Scientific Revolution in Italy
OSPFLOR 16	Silicon Valley: The Modern Day Rebirth of Renaissance Florence
OSPFLOR 48	Sharing Beauty in Florence: Collectors, Collections and the Shaping of the Western Museum Tradition
OSPFLOR 58	Space as History: Social Vision and Urban Change
OSPFLOR 96	Leonardo!
OSPFLOR 115Y	Building the Cathedral and the Town Hall: Constructing and Deconstructing Symbols of a Civilization
OSPHONGK 24	Urban China
OSPHONGK 28	An Introduction to the Development of Science and Technology in China
OSPOXFRD 63	Digital Technology in the UK
OSPPARIS 30	The Avant Garde in France through Literature, Art, and Theater
OSPPARIS 44	EAP. Analytical Drawing and Graphic Art
OSPPARIS 72	The Ceilings of Paris
OSPPARIS 92	Building Paris: Its History, Architecture, and Urban Design
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America
OSPSANTG 71	Santiago: Urban Planning, Public Policy, and the Built Environment
OSPSANTG 119X	The Chilean Economy: History, International Relations, and Development Strategies
PUBLPOL 134	Ethics on the Edge: Business, Non-Profit Organizations, Government, and Individuals
PUBLPOL 353A	Science and Technology Policy
RELIGST 3	The Religious Life of Things
SOC 114	Economic Sociology
SOC 160	Formal Organizations
SOC 162	The Social Regulation of Markets
SOC 168	Global Organizations: The Matrix of Change
SOC 180A	Foundations of Social Research
STS 51A	Race in Science
STS 51B	Race in Technology
STS 51C	Race in Medicine
STS 123	Making of a Nuclear World: History, Politics, and Culture
STS 151	The Future of Information
STS 166	Knowledge and Information Infrastructures
STS 177	The Cultural Politics of Food and Eating: Technology, History, and Justice
STS 181	Techno-metabolism: Technology, Society, and the Anthropocene
STS 190	Environment and Society
STS 191	Doing STS: Introduction to Research
STS 191W	Doing STS: Introduction to Research
SYMSYS 1	Minds and Machines
SYMSYS 245	Cognition in Interaction Design
TAPS 253T	Virtual Realities: Art, Technology, Performance
Technical Courses	
ARTSTUDI 130	Interactive Art: Making it with Arduino
ARTSTUDI 148P	The Hybrid Print
ARTSTUDI 160	Intro to Digital / Physical Design
ARTSTUDI 168	Data as Material
CS 105	Introduction to Computers
CS 106A	Programming Methodology
CS 106B	Programming Abstractions
CS 106X	Programming Abstractions
CS 107	Computer Organization and Systems
CS 108	Object-Oriented Systems Design
CS 109	Introduction to Probability for Computer Scientists
CS 110	Principles of Computer Systems
CS 147	Introduction to Human-Computer Interaction Design
CS 223A	Introduction to Robotics
CS 224W	Machine Learning with Graphs
CS 225A	Experimental Robotics
CS 347	Human-Computer Interaction: Foundations and Frontiers
CS 402L	Beyond Bits and Atoms - Lab
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists
EE 101A	Circuits I
EE 101B	Circuits II
EE 102A	Signal Processing and Linear Systems I

EE 102B	Signal Processing and Linear Systems II
EE 108	Digital System Design
EE 169	Introduction to Bioimaging
EE 180	Digital Systems Architecture
ENGR 14	Intro to Solid Mechanics
ENGR 40M	An Intro to Making: What is EE
ENGR 60	Engineering Economics and Sustainability
ME 80	Mechanics of Materials
ME 101	Visual Thinking
ME 102	Foundations of Product Realization
ME 115A	Introduction to Human Values in Design
ME 115B	Product Design Methods
ME 203	Design and Manufacturing
ME 216A	Advanced Product Design: Needfinding
MS&E 52	Introduction to Decision Making
MS&E 111	Introduction to Optimization
MS&E 120	Introduction to Probability
MS&E 121	Introduction to Stochastic Modeling
MS&E 130	Information Networks and Services
MS&E 135	Networks
MS&E 152	Introduction to Decision Analysis
MS&E 184	Future of Work: Issues in Organizational Learning and Design
MUSIC 220A	Fundamentals of Computer-Generated Sound
MUSIC 220B	Compositional Algorithms, Psychoacoustics, and Computational Music
MUSIC 257	Neuroplasticity and Musical Gaming
OSPCPTWN 67	ICT4D: An Introduction to the Use of ICTs for Development
OSPOXFRD 62	Digital Technology in the UK
SOC 180B	Introduction to Data Analysis
STATS 60	Introduction to Statistical Methods: Precalculus
STATS 101	Data Science 101
STATS 110	Statistical Methods in Engineering and the Physical Sciences
STATS 116	Theory of Probability
STATS 191	Introduction to Applied Statistics

Life Sciences and Health

Thematic concentration in Life Sciences and Health:

		Units
Social-Cultural Courses		
AFRICAAM 132	Social Class, Race, Ethnicity, and Health	
AMSTUD 41Q	Madwomen and Madmen: Gender and the History of Mental Illness in the U.S.	
AMSTUD 130A	In Sickness and In Health: Medicine and Society in the United States: 1800-Present	
AMSTUD 156H	Women and Medicine in US History: Women as Patients, Healers and Doctors	
ANTHRO 41	Genes and Identity	
ANTHRO 82	Medical Anthropology	
ANTHRO 132C	Technology and Inequality	
ANTHRO 138	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise	
ANTHRO 139C	Anthropology of Global Health	
ANTHRO 154	Anthropology of Drugs: Experience, Capitalism, Modernity	
ANTHRO 186	Culture and Madness: Anthropological and Psychiatric Approaches to Mental Illness	
ARTSTUDI 284	Art and Biology	
BIOE 131	Ethics in Bioengineering	
COMM 186W	Media, Technology, and the Body	
EARTHSYS 112	Human Society and Environmental Change	
EDUC 120	Sociology of Science	
EDUC 340	Psychology and American Indian/Alaska Native Mental Health	
FRENCH 219	The Renaissance Body in French Literature and Medicine	
GENE 104Q	Law and the Biosciences	
HISTORY 44Q	Gendered Innovations in Science, Medicine, Engineering, and Environment	
HISTORY 140	World History of Science	
HISTORY 144	Sex, Gender, and Intersectional Analysis in Science, Medicine, Engineering, and Environment	
HISTORY 203C	History of Ignorance	
HISTORY 243C	People, Plants, and Medicine: Colonial Science and Medicine	
HISTORY 243G	Tobacco and Health in World History	
HUMBIO 2B	Culture, Evolution, and Society	
HUMBIO 3B	Environmental and Health Policy Analysis	
HUMBIO 4B	Behavior, Health, and Development	
HUMBIO 122S	Social Class, Race, Ethnicity, and Health	
HUMBIO 166	Food and Society: Exploring Eating Behaviors in Social, Environmental, and Policy Context	
HUMBIO 174	Foundations of Bioethics	
MED 157	Foundations for Community Health Engagement	
MED 224	Social Entrepreneurship and Innovation Lab (SE Lab) - Human & Planetary Health	
MS&E 256	Technology Assessment and Regulation of Medical Devices	
OSPFLOR 70	The Value of Life: Philosophical Foundations	
OSPFLOR 96	Leonardo!	
OSPHONGK 28	An Introduction to the Development of Science and Technology in China	
OSPMADRD 57	Health Care: A Contrastive Analysis between Spain and the U.S.	
OSPMADRD 72	Issues in Bioethics Across Cultures	
PHIL 60	Introduction to Philosophy of Science	
PHIL 167A	Philosophy of Biology	
PSYCH 30	Introduction to Perception	
PSYCH 75	Introduction to Cultural Psychology	
PUBLPOL 122	BioSecurity and Pandemic Resilience	
SOC 152	The Social Determinants of Health	
SOC 180A	Foundations of Social Research	
STS 51A	Race in Science	
STS 51B	Race in Technology	
STS 51C	Race in Medicine	
STS 123	Making of a Nuclear World: History, Politics, and Culture	

STS 177	The Cultural Politics of Food and Eating: Technology, History, and Justice
STS 181	Techno-metabolism: Technology, Society, and the Anthropocene
STS 190	Environment and Society
STS 191	Doing STS: Introduction to Research
STS 191W	Doing STS: Introduction to Research

Technical Courses

ANTHRO 113	Culture and Epigenetics: Towards A Non-Darwinian Synthesis
ANTHRO 116	Data Analysis for Quantitative Research
BIO 45	Introduction to Laboratory Research in Cell and Molecular Biology
BIO 46	Introduction to Research in Ecology and Evolutionary Biology
BIO 47	Introduction to Research in Ecology and Evolutionary Biology
BIO 82	Genetics
BIO 109A	Building Blocks for Chronic Disease
BIO 109B	Advances in Therapeutic Development: Neuronal Signaling and Immunology
BIO 144	Conservation Biology: A Latin American Perspective
BIO 150	Human Behavioral Biology
BIOE 44	Fundamentals for Engineering Biology Lab
BIOE 80	Introduction to Bioengineering (Engineering Living Matter)
BIOE 101	Systems Biology
BIOE 103	Systems Physiology and Design
CHEM 31A	Chemical Principles I
CHEM 31B	Chemical Principles II
CHEM 33	Structure and Reactivity of Organic Molecules
CHEM 171	Foundations of Physical Chemistry
COMPMED 87Q	Laboratory Mouse in Biomedical Research
EE 102A	Signal Processing and Linear Systems I
EE 102B	Signal Processing and Linear Systems II
EE 169	Introduction to Bioimaging
EE 372	Data Science for High Throughput Sequencing
ENGR 150	Data Challenge Lab
HUMBIO 2A	Genetics, Evolution, and Ecology
HUMBIO 3A	Cell and Developmental Biology
HUMBIO 4A	The Human Organism
HUMBIO 51	Big Data for Biologists - Decoding Genomic Function
HUMBIO 89	Introduction to Health Sciences Statistics
OSPAUSTL 10	Coral Reef Ecosystems
OSPAUSTL 28	Terrestrial Ecology and Conservation
OSPAUSTL 32	Coastal Ecosystems
OSPPARIS 76	From Art to Medicine: The Human Body and Tissue Regeneration
OSPSANTG 85	Marine Ecology of Chile and the South Pacific
PHYSICS 21	Mechanics, Fluids, and Heat
PHYSICS 23	Electricity, Magnetism, and Optics
SOC 180B	Introduction to Data Analysis
STATS 60	Introduction to Statistical Methods: Precalculus
STATS 101	Data Science 101
STATS 141	Biostatistics
STATS 191	Introduction to Applied Statistics

Politics and Policy

Thematic concentration in Politics and Policy:

		Units
Socio-Cultural Courses		
AMSTUD 133	Technology and American Visual Culture	
ANTHRO 132C	Technology and Inequality	
ANTHRO 138	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise	
ANTHRO 139C	Anthropology of Global Health	
ANTHRO 166	Political Ecology of Tropical Land Use: Conservation, Natural Resource Extraction, and Agribusiness	
BIOE 122	BioSecurity and Pandemic Resilience	
COMM 137W	The Dialogue of Democracy	
COMM 154	The Politics of Algorithms	
COMM 230A	Digital Civil Society	
CS 181	Computers, Ethics, and Public Policy	
CS 182	Ethics, Public Policy, and Technological Change	
EARTHSYS 61Q	Food and security	
EARTHSYS 160	Sustainable Cities	
ECON 106	World Food Economy	
EDUC 120	Sociology of Science	
EDUC 320	Sociology of Science	
ENGLISH 184C	Data and Knowledge in the Humanities	
ESS 112	Human Society and Environmental Change	
GERMAN 132	History and Politics of the Future in Germany, 1900-Present	
HISTORY 102	History of the International System since 1914	
HISTORY 103F	The Changing Face of War: Introduction to Military History	
HISTORY 140	World History of Science	
HISTORY 151	The American West	
HISTORY 203C	History of Ignorance	
HISTORY 204D	Advanced Topics in Agnotology	
HISTORY 235D	When Worlds Collide: The Trial of Galileo	
HISTORY 261G	Presidents and Foreign Policy in Modern History	
INTLPOL 221	Politics of Data: Algorithmic Culture, Big Data, and Information Waste	
INTLPOL 257	Technology & Public Purpose: Practical Solutions for Innovation's Public Dilemmas	
INTNLREL 140A	International Law and International Relations	
INTNLREL 140C	The U.S., U.N. Peacekeeping, and Humanitarian War	
INTNLREL 180A	Transitional Justice, Human Rights, and International Criminal Tribunals	
ME 267	Ethics and Equity in Transportation Systems	
MS&E 193	Technology and National Security: Past, Present, and Future	

OSPFLOR 16	Silicon Valley: The Modern Day Rebirth of Renaissance Florence
OSPFLOR 49	On-Screen Battles: Filmic Portrayals of Fascism and World War II
OSPHONGK 24	Urban China
OSPMADRD 57	Health Care: A Contrastive Analysis between Spain and the U.S.
OSPPARIS 91	The Future of Globalization: Economics, Politics and the Environment
OSPSANTG 71	Santiago: Urban Planning, Public Policy, and the Built Environment
OSPSANTG 119X	The Chilean Economy: History, International Relations, and Development Strategies
POLISCI 102	Introduction to American Politics and Policy: The Good, The Bad, and The Ugly
POLISCI 110G	Governing the Global Economy
POLISCI 110Y	War and Peace in American Foreign Policy
POLISCI 114D	Democracy, Development, and the Rule of Law
POLISCI 114S	International Security in a Changing World
POLISCI 122	Introduction to American Law
POLISCI 124L	The Psychology of Communication About Politics in America
POLISCI 214R	Challenges and Dilemmas in American Foreign Policy
POLISCI 233F	Science, technology and society and the humanities in the face of the looming disaster
PUBLPOL 122	BioSecurity and Pandemic Resilience
PUBLPOL 353A	Science and Technology Policy
SOC 180A	Foundations of Social Research
STS 51A	Race in Science
STS 51B	Race in Technology
STS 51C	Race in Medicine
STS 123	Making of a Nuclear World: History, Politics, and Culture
STS 151	The Future of Information
STS 166	Knowledge and Information Infrastructures
STS 177	The Cultural Politics of Food and Eating: Technology, History, and Justice
STS 181	Techno-metabolism: Technology, Society, and the Anthropocene
STS 190	Environment and Society
STS 191	Doing STS: Introduction to Research
STS 191W	Doing STS: Introduction to Research
Technical Courses	
CEE 70	Environmental Science and Technology
CHEM 31A	Chemical Principles I
CHEM 31B	Chemical Principles II
CHEM 33	Structure and Reactivity of Organic Molecules
CS 105	Introduction to Computers
CS 106A	Programming Methodology
CS 106B	Programming Abstractions
CS 106X	Programming Abstractions
CS 107	Computer Organization and Systems
CS 108	Object-Oriented Systems Design
CS 109	Introduction to Probability for Computer Scientists
CS 110	Principles of Computer Systems
CSRE 230	Law, Order, & Algorithms
PHYSICS 41	Mechanics
PHYSICS 43	Electricity and Magnetism
PHYSICS 240	Introduction to the Physics of Energy
PHYSICS 241	Introduction to Nuclear Energy
POLISCI 150B	Machine Learning for Social Scientists
POLISCI 150C	Causal Inference for Social Science
SOC 180B	Introduction to Data Analysis
STATS 60	Introduction to Statistical Methods: Precalculus
STATS 101	Data Science 101
STATS 191	Introduction to Applied Statistics

Social Dynamics of Data and Information

Thematic concentration in Social Dynamics of Data and Information:

		Units
Socio-Cultural Courses		
AMSTUD 96	Signal to Noise: The Sounds of American Culture	
AMSTUD 133	Technology and American Visual Culture	
ANTHRO 132C	Technology and Inequality	
ARTSTUDI 236	Future Media, Media Archaeologies	
CEE 32S	The Situated Workplace and Public Life	
CEE 118X	Shaping the Future of the Bay Area	
CEE 118Y	Shaping the Future of the Bay Area	
CEE 118Z	Shaping the Future of the Bay Area	
COMM 102S	Technology and Inequality	
COMM 120W	The Rise of Digital Culture	
COMM 124	Truth, Trust, and Tech	
COMM 154	The Politics of Algorithms	
COMM 164	The Psychology of Communication About Politics in America	
COMM 166	Virtual People	
COMM 172	Media Psychology	
COMM 184	Race and Media	
COMM 186W	Media, Technology, and the Body	
CS 181	Computers, Ethics, and Public Policy	
CS 182	Ethics, Public Policy, and Technological Change	
CSRE 180S	The Black Music 1980s: Turntables, Beat Machines and DJ Scholarship	
EDUC 226	Curating Experience: Representation in and beyond Museums	
ENGLISH 184C	Data and Knowledge in the Humanities	
FILMSTUD 6	Introduction to Media	
HISTORY 203C	History of Ignorance	
INTLPOL 221	Politics of Data: Algorithmic Culture, Big Data, and Information Waste	
INTLPOL 257	Technology & Public Purpose: Practical Solutions for Innovation's Public Dilemmas	
INTLPOL 321	Fundamentals of Cyber Policy and Security	
ME 297	Forecasting for Innovators: Exponential Technologies, Tools and Social Transformation	
MS&E 185	Global Work	
MS&E 256	Technology Assessment and Regulation of Medical Devices	

OSPFLOR 16	Silicon Valley: The Modern Day Rebirth of Renaissance Florence
PUBLPOL 134	Ethics on the Edge: Business, Non-Profit Organizations, Government, and Individuals
PUBLPOL 353A	Science and Technology Policy
SOC 114	Economic Sociology
SOC 180A	Foundations of Social Research
STS 51A	Race in Science
STS 51B	Race in Technology
STS 51C	Race in Medicine
STS 151	The Future of Information
STS 166	Knowledge and Information Infrastructures
STS 191W	Doing STS: Introduction to Research
STS 200N	Funkentelechy: Technologies, Social Justice and Black Vernacular Cultures
SYMSYS 1	Minds and Machines
SYMSYS 245	Cognition in Interaction Design
TAPS 253T	Virtual Realities: Art, Technology, Performance

Technical Courses

ARTSTUDI 130	Interactive Art: Making it with Arduino
ARTSTUDI 160	Intro to Digital / Physical Design
ARTSTUDI 168	Data as Material
ARTSTUDI 173E	Cell Phone Photography
ARTSTUDI 174B	Creativity in the Age of Facebook: Making Art for and from Networks
ARTSTUDI 179	Digital Art I
ARTSTUDI 275	Photography II: Digital
CEE 112A	Industry Applications of Virtual Design & Construction
CEE 120A	Building Modeling for Design & Construction
CEE 124	Sustainable Development Studio
CS 103	Mathematical Foundations of Computing
CS 105	Introduction to Computers
CS 106A	Programming Methodology
CS 106B	Programming Abstractions
CS 106E	Exploration of Computing
CS 107	Computer Organization and Systems
CS 108	Object-Oriented Systems Design
CS 109	Introduction to Probability for Computer Scientists
CS 110	Principles of Computer Systems
CS 147	Introduction to Human-Computer Interaction Design
CS 206	Exploring Computational Journalism
CS 223A	Introduction to Robotics
CS 224W	Machine Learning with Graphs
CS 225A	Experimental Robotics
CS 347	Human-Computer Interaction: Foundations and Frontiers
CS 402L	Beyond Bits and Atoms - Lab
CSRE 230	Law, Order, & Algorithms
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists
EE 101A	Circuits I
EE 101B	Circuits II
EE 102A	Signal Processing and Linear Systems I
EE 108	Digital System Design
EE 168	Introduction to Digital Image Processing
EE 169	Introduction to Bioimaging
EE 180	Digital Systems Architecture
EE 372	Data Science for High Throughput Sequencing
ENERGY 240	Data science for geoscience
ENGLISH 184E	Literary Text Mining
ENGR 150	Data Challenge Lab
GEOLSCI 6	Data Science for Geoscience
HUMBIO 88	Introduction to Statistics for the Health Sciences
HUMBIO 89	Introduction to Health Sciences Statistics
ME 115A	Introduction to Human Values in Design
ME 125	Visual Frontiers
MS&E 111	Introduction to Optimization
MS&E 130	Information Networks and Services
MS&E 135	Networks
MS&E 184	Future of Work: Issues in Organizational Learning and Design
MS&E 297	"Hacking for Defense": Solving National Security issues with the Lean Launchpad
MUSIC 220A	Fundamentals of Computer-Generated Sound
MUSIC 220B	Compositional Algorithms, Psychoacoustics, and Computational Music
MUSIC 254	Computational Music Analysis
MUSIC 257	Neuroplasticity and Musical Gaming
POLISCI 150A	Data Science for Politics
SOC 180B	Introduction to Data Analysis
STATS 60	Introduction to Statistical Methods: Precalculus
STATS 101	Data Science 101
STATS 191	Introduction to Applied Statistics

Interdisciplinary Honors in Science, Technology, and Society

The Program in Science, Technology, and Society (STS) offers an opportunity for undergraduates to graduate with Interdisciplinary Honors in STS. The STS honors program is open to STS majors as well as students from other majors.

Students accepted into the program carry out an original honors project, working with a faculty adviser. For STS majors, this project also fulfills the requirements for a capstone course and a sociocultural concentration course. An STS honors thesis tackles a significant problem or question related to the intersection of science, technology, and society. Students draw research methods from one or more of the disciplines that shape STS, such as history, sociology, communication, anthropology, environmental science, computer programming/modeling, engineering, economics, political science, and art history, while also capitalizing on unique analytical perspectives of STS as an intellectual field. STS interdisciplinary honors signals expertise in a given area, organizational skills, and intellectual rigor, and students have used it as a springboard for graduate studies and for careers in fields such as information technology, entrepreneurship, finance, public policy, media, education, law, medicine, and the nonprofit sector. Past honors projects are on file in the STS office library, as well as the digital repository.

Admission

Students are encouraged to apply to the STS honors program during the Spring Quarter of their junior year. Late application is considered up to the add/drop deadline of the Autumn Quarter of their senior year.

For Majors in Science, Technology, and Society

In preparation for applying to the honors program in STS, students should:

1. Select an area of research interest in STS, prepare related research questions, and identify potential faculty advisers for an honors thesis based on those questions.
2. Attend one or more of the quarterly STS workshops offered for prospective honors students, and/or take STS 191W Introduction to Research in STS (offered Winter Quarter) or an alternative course on research methods approved by the STS honors program director, and/or speak with the STS honors program director.
3. Submit a research statement and an honors program application, following the parameters set out at STS Honors Program (https://sts.stanford.edu/major-sts/honors-program/) web site.

For Majors in Other Departments and Programs

In addition to the requirements for STS majors, applicants from other departments should:

1. Meet with the honors program director as early as possible to ensure that they have sufficient background in relevant analytical and methodological approaches.
2. Satisfy one of the following:
   - Complete STS 1 (http://exploredegrees.stanford.edu/search/?P=STS%201), The Public Life of Science and Technology, and either two courses approved as sociocultural foundational courses in STS, or two alternative courses approved by the STS honors program director as relevant to the proposed honors research in STS; or
   - Complete three courses approved by the STS honors program director as relevant to the proposed honors research in STS.

Interdisciplinary Honors Requirements

To graduate with Interdisciplinary Honors in STS, seniors in the honors program need to meet the following criteria:

1. Enroll in STS 299 with an honors faculty adviser to oversee the thesis for a minimum of 10 units total, with up to 5 units per quarter, over Autumn, Winter and Spring quarters. Students who choose to obtain Permit for Services Only (PSO) status during their final quarter may do so with the consent of the STS honors program director but they must still have enrolled in a minimum of 10 units of STS 299 during previous quarters.
2. Enroll in STS 298, a required monthly workshops for current STS honors students.
3. Complete a thesis judged worthy of an honors program by the faculty adviser and STS adviser.
4. Have an overall Stanford GPA of 3.4 at the end of Winter Quarter, senior year, or demonstrated academic competence.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Program in Science, Technology, and Society counts all courses taken in the academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

STS Affiliated Faculty

Director: Paul N Edwards

Associate Director: Kyoko Sato

Executive Board: Paul N Edwards (STS and CISAC), Paula Findlen (History), Mark Granovetter (Sociology), Stephen Luby (Global Health), Rob Reich (Center for Ethics in Society), Gabrielle Hecht (History), Pamela Hinds (Management Science and Engineering), Michael Lepech (Civil and Environmental Engineering), Scott Sagan (Political Science), Fred Turner (Communication)

Affiliated Faculty and Staff: Jeremy Bailenson (Communication), Adam Banks (Graduate School of Education), Thomas Byers (Management Science and Engineering), Angèle Christin (Communication), Jean-Pierre Dupuy (French), Paul N. Edwards (STS and CISAC), Paula Findlen (History), Duana Fullwiley (Anthropology), Mark Granovetter, (Sociology), Hank Greely (Law), Ann Grimes (Communication), James T. Hamilton (Communication), Gabrielle Hecht (History) Pamela Hinds (Management Science and Engineering), Hector Hoyos (Iberian and Latin American Cultures), Miyako Inoue (Anthropology), Sarah Lochlann Jain (Anthropology), Robert Laughlin (Physics), Pamela Lee (Art and Art History), Michael Lepech (Civil and Environmental Engineering), Helen Longino (Philosophy), Henry Lowood (Stanford University Libraries), Thomas Mullaney (History), Brad Osgood (Electrical Engineering), Walter Powell (Education), Robert Proctor (History), Jessica Riskin (History), Scott Sagan (Political Science), Kyoko Sato (STS), Londa Schiebinger (History), Michael Shanks (Classics, Anthropology), Mitchell Stevens (Education), Fred Turner (Communication), John Willinsky (Education), Xiaochang Li (Communication), Aileen Robinson (Theater & Performance Studies), Daniel McFarland (Education)

Emeriti: James Adams (Management Science and Engineering, Mechanical Engineering), Barton Bernstein (History), Martin Hellman (Electrical Engineering), Robert McGinn (Management Science and Engineering), Eric Roberts (Computer Science), Walter Vincenti (Aeronautics and Astronautics), Gavin Wright (American Economic History)

Overseas Studies Courses in Science, Technology, and Society

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPAUSTL 10	Coral Reef Ecosystems	3
OSPBER 126X	A People's Union? Money, Markets, and Identity in the EU	4-5
OSPCPTWN 36	The Archaeology of Southern African Hunter Gatherers	4
OSPCPTWN 67	ICT4D: An Introduction to the Use of ICTs for Development	3
OSPFLOR 13	Galileo, Leonardo da Vinci, and the Scientific Revolution in Italy	3
OSPFLOR 41	The Florentine Sketchbook: A Visual Arts Practicum	4
OSPFLOR 48	Sharing Beauty in Florence: Collectors, Collections and the Shaping of the Western Museum Tradition	4
OSPFLOR 49	On-Screen Battles: Filmic Portrayals of Fascism and World War II	5
OSPFLOR 58	Space as History: Social Vision and Urban Change	4
OSPFLOR 67	The Celluloid Gaze: Gender, Identity and Sexuality in Cinema	4
OSPFLOR 96	Leonardo!	3
OSPFLOR 115Y	Building the Cathedral and the Town Hall: Constructing and Deconstructing Symbols of a Civilization	4
OSPHONGK 24	Urban China	4
OSPHONGK 28	An Introduction to the Development of Science and Technology in China	4
OSPMADRD 27	Canarian Night Skies	4
OSPMADRD 45	Women in Art: Case Study in the Madrid Museums	4
OSPMADRD 57	Health Care: A Contrastive Analysis between Spain and the U.S.	4
OSPMADRD 72	Issues in Bioethics Across Cultures	4
OSPOXFRD 62	Digital Technology in the UK	4-5
OSPOXFRD 63	Digital Technology in the UK	3-4
OSPPARIS 30	The Avant Garde in France through Literature, Art, and Theater	4
OSPPARIS 44	EAP: Analytical Drawing and Graphic Art	2
OSPPARIS 72	The Ceilings of Paris	4
OSPPARIS 76	From Art to Medicine: The Human Body and Tissue Regeneration	3
OSPPARIS 80	The Body, Race, and Difference in Contemporary France	5
OSPPARIS 91	The Future of Globalization: Economics, Politics and the Environment	5
OSPPARIS 92	Building Paris: Its History, Architecture, and Urban Design	4
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America	5
OSPSANTG 71	Santiago: Urban Planning, Public Policy, and the Built Environment	5
OSPSANTG 85	Marine Ecology of Chile and the South Pacific	5
OSPSANTG 119X	The Chilean Economy: History, International Relations, and Development Strategies	5

Courses

STS 1. The Public Life of Science and Technology. 4 Units.
The course focuses on key social, cultural, and values issues raised by contemporary scientific and technological developments. The STS interdisciplinary lens helps students develop and apply skills in three areas: (a) Historical analysis of contemporary global affairs (e.g., spread of technologies; responses to climate change); (b) Bioethical reasoning around health issues (e.g., disease management; privacy rights); and (c) The sociological study of knowledge (e.g., intellectual property, science publishing). A discussion section is required. Discussion sections meet once per week immediately after lecture. International time zone students are encouraged to fill out the following Google Form: https://tinyurl.com/STS1-Timezone.
Same as: CSRE 1T

STS 51A. Race in Science. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Fall quarter focuses on science. What is the science of race and racism? How does race affect scientific work? Weekly guest speakers will address such issues as the psychology and anthropology of race and racism; how race, language, and culture affect education; race in environmental science and environmental justice; the science of reducing police violence; and the role of race in genomic research. Talks will take a variety of forms, from panel discussions to interviews and lectures. Weekly assignments: read a related article and participate in an online discussion.
Same as: AFRICAAM 51A, CEE 151A, COMM 51A, CSRE 51A, HUMBIO 71A

STS 51B. Race in Technology. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Winter quarter focuses on technology. How do race and racism affect the design and social impact of technology, broadly defined? Can new or different technology help to reduce racial bias? Invited speakers will address the role of race in such issues as energy infrastructure, nuclear arms control, algorithmic accountability, machine learning, artificial intelligence, and synthetic biology. Talks will take a variety of forms, ranging from panel discussions to interviews and lectures. Weekly assignments: read a related article and participate in an online discussion.
Same as: AFRICAAM 51B, BIOE 91B, CEE 151B, COMM 51B, CSRE 51B, HUMBIO 71B

STS 51C. Race in Medicine. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Spring quarter focuses on medicine. How do race and racism affect medical research and medical care? What accounts for health disparities among racial groups? What are the history, ethics, legal, and social issues surrounding racialized medical experiments and treatments? Invited speakers will address these and other issues. Talks will take a variety of forms: conversations, interviews, panels, and others. Weekly assignments: read a related article and participate in an online discussion.
Same as: AFRICAAM 51C, BIOE 91C, CEE 151C, CSRE 51C, HUMBIO 71C

STS 123. Making of a Nuclear World: History, Politics, and Culture. 4 Units.
Nuclear technology has shaped our world through its various applications (e.g., weapons, energy production, medicine) and accidents and disasters (e.g., Chernobyl, Three Mile Island, Fukushima). This course will examine the development of nuclear technology and its consequences to politics and culture at the global, national, regional and local levels from interdisciplinary perspectives. Some of the key questions addressed are: How did different countries and communities experience and respond to the 1945 bombings of Hiroshima and Nagasaki? How did such experiences affect the later development of the technology in different national contexts? How have nuclear tests and disasters change the ways in which risks are understood and managed globally and locally? What kinds of political activism, international arrangements, and cultural tropes and imageries emerged in response to nuclear technology? We explore these questions through key works and recent studies in history, anthropology, sociology, and science and technology studies, as well as through films and literature.

STS 151. The Future of Information. 4 Units.
As information has a fascinating history (see HISTORY 5A), so it possesses a promising if concerning future. Through lecture, demonstration, online modules, and in-class web-work, this course will provide students with advanced strategies in (a) identifying sources and tools for advancing the quest for information; (b) assessing elements of trust, authority, and chicanery in the provision of information; (c) recognizing the economic and legal structures shaping information sources, services, and rights; and (d) discovering who is behind what information. With a focus on the info-worlds of journalism, learning, governance, students will acquire and practice the forensic skills and web savvy of fact-checkers and investigative reporters, activists and scholars. Here's a class set to determine the future course of information. The class will be a hybrid course, combining in-class delivery of materials, with a number of classes involving students taking online modules (at their convenience) that are designed to teach information literacy skills.
Same as: EDUC 151

STS 166. Knowledge and Information Infrastructures. 3-4 Units.
This course introduces historical, theoretical, and comparative perspectives on knowledge and information systems from the medieval world to the present. Cases include libraries, meteorology, climate science, the Internet, the World Wide Web, and social science data systems. It theorizes how infrastructures form, how they change, and how they shape (and are shaped by) social systems. The course ends with challenges to modern knowledge infrastructures, such as crowdsourcing, citizen science, and alternative and bogus knowledge.
Same as: HISTORY 242D

STS 177. The Cultural Politics of Food and Eating: Technology, History, and Justice. 4-5 Units.
This course will examine our everyday food practices as a site of politics where culture, technology, history, and issues of ethics and justice intersect. Through a survey of academic, journalistic, and artistic works on food and eating, the course will explore a set of key analytical frameworks and conceptual tools in STS, such as the politics of technology, classification and identity, the reproduction of inequality, and nature/culture boundaries. The topics covered include: the industrialization of agriculture; globalization and local foodways; food justice and ethics; new technologies in food practices (e.g., biotechnology, delivery apps); health and diet trends; and food and global challenges (e.g., climate change, COVID-19). Through food as a window, the course intends to achieve two broad intellectual goals. First, students will explore various theoretical and methodological approaches in STS and related fields (e.g., anthropology, history, sociology). Second, student will develop a set of basic skills and tools for their own critical thinking and empirical research, and design and conduct independent research on a topic related to food.

STS 181. Techno-metabolism: Technology, Society, and the Anthropocene. 3-4 Units.
In the Anthropocene epoch, humanity has become a geological force. As the sum of all technological systems and their human components, the technosphere metabolizes energy, materials, and information. Techno-metabolism's waste products- greenhouse gases, microplastics, nuclear waste, etc. - are transforming the biosphere and the geosphere, with radically different effects on disparate peoples and places. Scientists, historians, and others have proposed new ways to conceptualize techno-metabolism in order to reduce energy requirements and material waste. Meanwhile, "data exhaust" - the "waste" data generated by individual activity, from web searches to Facebook and Instagram - is increasingly "recycled" to detect patterns, trends, and individual preferences. In this project-centered course, students will seek creative ways to visualize, understand, and change the interplay of energy, materials, information, and waste. Assignments include reading logs and a term-long group project.

STS 190. Environment and Society. 4 Units.
Humans have long shaped and reshaped the natural world with science and technology. Once a menacing presence to conquer or an infinite reserve for resources, nature is now understood to require constant protection from damage and loss. Global challenges such as climate change have been further forcing us to reconsider our fundamental ideas not only about nature, but also about ethics and justice. This course will examine humanity's varied relationships with the environment, with a focus on the role of science and technology. Topics include: industrialization and modernism, diversity in environmentalism, environmental justice and inequalities, climate politics, global-local tensions, nuclear technology, the Anthropocene debate, and COVID-19 and the environment. Students will explore theoretical and methodological approaches in STS and related fields in social sciences, and conduct original research that engages with environmental issues of their choice. Enrollment limited to juniors and seniors, or with consent of instructor.

STS 191. Doing STS: Introduction to Research. 4 Units.
This seminar introduces key analytical approaches and methodologies in STS, as well as basic tools for designing and conducting original research in STS. Students survey a series of influential studies in STS; identify productive questions of their own interest; and explore how to pursue them through strong research design. By completing smaller writing assignments throughout the quarter, you will produce a fully developed research proposal as final assignment. This final proposal can serve as an honors prospectus for students who seek to participate in the STS honors program. First week attendance mandatory.

STS 191W. Doing STS: Introduction to Research. 4 Units.
This seminar introduces key analytical approaches and methodologies in STS, as well as basic tools for designing and conducting original research in STS. Students survey a series of influential studies in STS; identify productive questions of their own interest; and explore how to pursue them through strong research design. By completing smaller writing assignments throughout the quarter, you will produce a fully developed research proposal as final assignment. This final proposal can serve as an honors prospectus for students who seek to participate in the STS honors program. First week attendance mandatory.

STS 198. Independent Research. 1-5 Unit.
Independent research. Student develops own project with supervision by an STS faculty affiliate. Students must email Prof. Edwards with brief project description and name of faculty supervisor. May be repeated for credit.

STS 199. Independent Study. 1-5 Unit.
Every unit of credit is understood to represent three hours of work per week per term and is to be agreed upon between the student and the faculty member. Instructor consent required. Please contact the department for a permission number.

STS 199A. Curricular Practical Training. 1 Unit.
Students obtain internship in a relevant research or industrial activity to enhance their professional experience consistent with their degree program and area of concentration. Prior to enrolling students must get internship approved by the STS Program Director. At the end of the quarter, a one-page final report must be supplied documenting work done and relevance to degree program. Meets the requirements for Curricular Practical Training for students on F-1 visas. Student is responsible for arranging own internship. Limited to declared STS majors only. Course may be repeated twice. Instructor consent required. Please contact the department for a permission number.

STS 199J. Editing a Science Technology and Society Journal. 1-2 Unit.
The Science Technology and Society (STS) Program has a student journal, Intersect, that has been publishing STS student papers for a number of years. This course involves learning about how to serve as an editor of a peer-reviewed journal, while serving as one of the listed editors of Intersect. Entirely operated online, the journal uses a work-flow management to help with the submission process, peer-review, editing, and publication. Student editors learn by being involved in the publishing process, from soliciting manuscripts to publishing the journal's annual issue, while working in consultation with the instructor. Students will also learn about current practices and institutional frameworks around open access and digital publishing.

STS 200A. Food and Society: Politics, Culture and Technology. 5 Units.
This course will examine how politics, culture, and technology intersect in our food practices. Through a survey of academic, journalistic, and artistic works on food and eating, the course will explore a set of key analytical frameworks and conceptual tools in STS, such as the politics of technology, classification and identity, and nature/culture boundaries. The topics covered include: the industrialization of agriculture; technology and the modes of eating (e.g., the rise of restaurants); food taboos; globalization and local foodways; food and environmentalism; and new technologies in production (e.g., genetically modified food). Through food as a window, the course intends to achieve two broad intellectual goals. First, students will explore various theoretical and methodological approaches in STS. In particular, they will pay particular attention to the ways in which politics, culture, and technology intersect in food practices. Second, student will develop a set of basic skills and tools for their own critical thinking and empirical research, and design and conduct independent research on a topic related to food. First class attendance mandatory. STS majors must have Senior status to enroll in this Senior Capstone course.

STS 200F. Sociology of Innovation and Invention. 5 Units.
This course examines the social, cultural, and economic factors that foster novelty. We will study a wide array of historical contexts, from the Renaissance to the present day, in which clusters of related innovations transformed the way things are done. We ask when do such innovations cascade out and produce social inventions that, for good and bad, create profound changes in how things are done, leading to new forms of organizations and new categories of people. Seminar/lecture format, reading intensive, final term paper. Prerequisite: admission to the course is restricted to declared STS seniors and is by application only. Email Emily Van Poetsch (emilyvp@stanford.edu) for an application. Applications must be submitted by 5pm on November 1st.

STS 200L. Critique of Technology. 3-5 Units.
Informed citizens living in today's world, and especially in Silicon Valley, should be able to formulate their own articulate positions about the role of technology in culture. The course gives students the tools to do so. Against the trend towards the thoughtless celebration of all things technological, we will engage in critique in the two senses of the term: as careful study of the cultural implications of technology and as balanced, argumentative criticism. Can technology make life more meaningful, society more fair, people smarter, and the world smaller? We will pay special attention to the insights that literature, and other arts, can offer for reframing digital culture. Selections by Latin American fiction writers (Cortázar, Zambra), philosophers and thinkers (Heidegger and Beller), as well as recent popular works of social commentary, such as You are not a Gadget, The Shallows, 24/7, and Present Shock. Taught in English.

STS 200M. Tobacco and Health in World History. 4-5 Units.
Cigarettes are the world's leading cause of death--but how did we come into this world, where 6 trillion cigarettes are smoked every year? Here we explore the political, cultural, and technological origins of the cigarette and cigarette epidemic, using the tobacco industry's 80 million pages of secret documents. Topics include the history of cigarette advertising and cigarette design, the role of the tobacco industry in fomenting climate change denial, and questions raised by the testimony of experts in court.

STS 200N. Funkentelechy: Technologies, Social Justice and Black Vernacular Cultures. 5 Units.
From texts to techne, from artifacts to discourses on science and technology, this course is an examination of how Black people in this society have engaged with the mutually consitutive relationships that endure between humans and technologies. We will focus on these engagements in vernacular cultural spaces, from storytelling traditions to music and move to ways academic and aesthetic movements have imagined these relationships. Finally, we will consider the implications for work with technologies in both school and community contexts for work in the pursuit of social and racial justice.
Same as: AFRICAAM 200N, EDUC 314

STS 200P. Leonardo's World: Science, Technology and Art. 4-5 Units.
Leonardo da Vinci is emblematic of creativity and innovation. His art is iconic, his inventions legendary. His understanding of nature, the human body, and machines made him a scientist and engineer as well as an artist. This class explores the historical Leonardo, exploring his interests and accomplishments as a product of the society of Renaissance Italy. Why did this world produce a Leonardo? Students will contribute to a library exhibit for the 500th anniversary of Leonardo's death in May 2019. This is an STS capstone seminar intended primarily for STS majors.

STS 200Q. Sociology of Science. 3-4 Units.
The sociology of science concerns the social structures and practices by which human beings interpret, use and create intellectual innovations. In particular we will explore the claim that scientific facts are socially constructed and ask whether such a characterization has limits. Course readings will concern the formation and decline of various thought communities, intellectual social movements, scientific disciplines, and broader research paradigms. A special focus will be placed on interdisciplinarity as we explore whether the collision of fields can result in new scientific advances. This course is suitable to advanced undergraduates and doctoral students.
Same as: EDUC 120, EDUC 320, SOC 330

STS 200T. Racial Justice in the Nuclear Age. 5 Units.
This upper-level course explores the history of radioactive contamination in the Bay Area and elsewhere. We'll examine the legacy of atomic bomb testing in our region and the current political implications of that legacy. We'll then explore the colonial and postcolonial dimensions of the nuclear age and the long-term contamination it has produced. Case studies vary yearly; they include uranium mining in Africa, nuclear testing in the Pacific, and accidents at Chernobyl and Fukushima. At least one field trip!.
Same as: HISTORY 203F

STS 200U. The Age of Plague: Medicine and Society, 1300-1750. 5 Units.
(Undergraduates, enroll in 234P. Graduates, enroll in 334P) The arrival of plague in Eurasia in 1347-51 affected many late medieval and early modern societies. It transformed their understanding of disease, raised questions about the efficacy of medical knowledge, and inspired new notions of public health. This class explores the history of medicine in the medieval Islamic and European worlds. Changing ideas about the body, the roles of different healers and religion in healing, the growth of hospitals and universities, and the evolution of medical theory and practice will be discussed. How did medicine and society change in the age of plague?.
Same as: HISTORY 234P

STS 298. STS Honors Meeting. 1 Unit.
This is a required monthly meeting for STS Honors students.

STS 299. Advanced Individual Work. 1-5 Unit.
For students in the STS Honors program. Every unit of credit is understood to represent three hours of work per week per term and is to be agreed upon between the student and the faculty member. May be repeated for credit.

SLAVIC LANGUAGES AND LITERATURES

Courses offered by the Department of Slavic Languages and Literatures are listed on the Stanford Bulletin's ExploreCourses web site (https://explorecourses.stanford.edu/) under the subject codes SLAVIC (Slavic Studies) (https://explorecourses.stanford.edu/search/?q=SLAVIC&view=catalog&page=0&catalog=71&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&filter-coursestatus-Active=on&collapse=&filter-catalognumber-SLAVIC=on), and SLAVLANG (Slavic Language) (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=SLAVLANG&filter-catalognumber-SLAVLANG=on). (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=SLAVLIT&filter-catalognumber-SLAVLIT=on)

The department supports coordinated study of Russian language, literature, literary and cultural history, theory, and criticism. The department's programs may also be combined with the programs in Russian, East European and Eurasian Studies, Jewish Studies, Film Studies, Drama, International Relations, Stanford's Overseas Studies, the Special Languages Program, and other programs. The department is a part of the Division of Literatures, Cultures, and Languages (p. 1298).

A full undergraduate program provides a choice of several tracks leading to a B.A. (with a major or a minor) or to a B.A. with Honors. The department offers a full graduate program leading to an M.A. in Russian and a Ph.D. in Slavic Languages and Literatures. Stanford undergraduates are eligible to apply to the department for a coterminal B.A./M.A. degree. Students in the department's Ph.D. program are required to choose among minor programs in other national literatures, linguistics, Russian, East European, and Eurasian Studies, Jewish Studies, art and music history, theater, or film studies; or they may design their own minor or choose the related field option.

The department runs a colloquium series, which brings distinguished speakers to Stanford; organizes international conferences and symposia; and since 1987 maintains a continuing publication series, Stanford Slavic Studies. Along with the Center for Russian, East European and Eurasian Studies, the department offers qualified undergraduates summer grants (on a competitive basis) for intensive Russian language instruction in accredited programs in Russia and the U.S.

Improving cultural understanding is a critical part of the department's mission, and the department offers a full range of courses at all levels devoted to Russian literature, music and visual arts that do not require specialized knowledge, as well as advanced research seminars for graduate students. The Slavic theme house, Slavianskii Dom, serves as an undergraduate residence for many students in the program and hosts program-related activities. The undergraduate program has attracted students seeking careers in journalism, business, international relations, law, medicine, and human rights, as well as academia. Russian is still the lingua franca over the vast territory of the former Soviet Union, and a good command of this language offers a gateway to Eurasia's diverse cultures, ethnicities, economies, and religions.

Stanford students of Russian, East European and Eurasian Studies benefit from unmatched faculty resources. Green Library and the Hoover Institution libraries and archives hold world-renowned Russian and East European collections, which undergraduates and graduate students use in their research. Department students master a difficult language and a rich and challenging literature, and are rewarded by gaining entry into a unique, powerful, and diverse civilization that defined major trends in the past century and plays an increasingly significant role in the world today.

Mission of the Undergraduate Program in Slavic Languages and Literatures

The mission of the undergraduate program in Slavic Language and Literatures is to expose students to a variety of perspectives on Slavic, especially Russian language, history, culture, literature, and philosophical thought. The program offers three tracks. Courses in the Russian Language and Literature track focus on the linguistic and philological study of literature, as well as the history of Russian literature. The Russian Studies track guides students through a comprehensive interdisciplinary study of Russian literature and culture in historic context. The Russian and Philosophy track provides students with a background in the Russian language and literary tradition with emphasis on philosophical thought.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

- oral proficiency in Russian or another Slavic language beyond the interpersonal level with presentational language abilities.
- writing proficiency in Russian or another Slavic language beyond the interpersonal level with presentational language abilities.
- close reading skills of authentic texts in Russian or another Slavic language.
- the ability to develop effective and nuanced lines of interpretation.

Slavic Theme House

Slavianskii Dom, at 650 Mayfield Avenue, is an undergraduate residence that offers opportunities for students to expand their knowledge, understanding, and appreciation of Russia, Eastern Europe, and Eurasia. Assignment is made through the regular undergraduate housing draw.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in Slavic Languages and Literatures and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in Slavic Languages and Literatures. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of Slavic Languages and Literatures and to interpret and present the results of their research.

Bachelor of Arts in Slavic Languages and Literatures

Declaring the Major

Students declare the Slavic Languages and Literatures major and the major tracks (subplans) in Russian Language and Literature or Russian Studies in Axess. The major tracks (subplans) appear on the transcript, but not on the diploma, which displays the major Slavic Languages and Literatures. The major option in Russian and Philosophy is not declared on Axess and does not appear on the transcript or the diploma.

After declaring the major, students meet with the Chair of Undergraduate Studies to discuss appropriate courses and options within the major,

and plan a course of study. The major is administered through the DLCL undergraduate student services office in Pigott Hall, Room 128.

Russian Language and Literature Subplan

The Russian Language and Literature field of study is designed for those students who wish to gain command of the Russian language and to study the nation's literary tradition. Emphasis is placed on the linguistic and philological study of literature, as well as the history of Russian literature and related media in the broader context of Russian culture. This major also welcomes students with an interest in Russian and Slavic linguistics.

Majors who concentrate in Russian Language and Literature must earn a grade point average (GPA) of 2.0 (C) or better in order to receive credit toward the major.

Prerequisites

Completion of first year Russian, or the equivalent, as determined by the Language Center placement examination.

Degree Requirements

Completion of a minimum of 56 units according to the following distribution:

Writing in the Major

Undergraduates are required by the University to pass at least one writing-intensive course in their field of concentration in order to graduate. Majors in any Slavic track may satisfy the writing requirement in 2020-21 by taking and passing SLAVIC 145 Survey of Russian Literature: The Age of Experiment for 5 units and a letter grade.

Russian Language

A minimum of three courses from:

		Units
SLAVLANG 111	Third-Year Russian, First Quarter	4
SLAVLANG 112	Third-Year Russian, Second Quarter	4
SLAVLANG 113	Third-Year Russian, Third Quarter	4
SLAVLANG 177	Fourth-Year Russian, First Quarter	3
SLAVLANG 178	Fourth-Year Russian, Second Quarter	3
SLAVLANG 179	Fourth-Year Russian, Third Quarter	3
SLAVLANG 181	Fifth-Year Russian, First Quarter	3
SLAVLANG 182	Fifth-Year Russian, Second Quarter	3
SLAVLANG 183	Fifth-Year Russian, Third Quarter	3

Russian Literature

12 units from the Russian Literature major core classes, defined as follows:

		Units
SLAVIC 145	Survey of Russian Literature: The Age of Experiment	3-5
SLAVIC 146	The Great Russian Novel: Tolstoy and Dostoevsky	3-5

And choose at least one course from SLAVIC 147, 148, or 188:

		Units
SLAVIC 147	Modern Russian Literature and Culture: The Age of War and Revolution	3-5
SLAVIC 187	Classical Russian Poetry	3-5
SLAVIC 148	Slavic Literature and Culture since the Death of Stalin (not offered 2020-21)	3-5

Electives

Students must complete the unit requirement with electives. These courses are chosen in consultation with the department's chair of undergraduate studies. With department consent, work in related academic fields may be applied toward the degree requirements. Students who have completed a Thinking Matters or PWR course instructed by Slavic faculty, with a grade of 'B' or better, may count up to 5 units towards elective courses required for the major, and students who have completed the SLE sequence may count up to 10 units.

Capstone

Students must designate a 300-level course taken in their junior or senior year as a capstone course or complete a substantial (20-30 page) independent writing project, advised by a Slavic Faculty member, before graduation. Skills in writing, textual analysis, and discussion are evaluated by the Chair of Undergraduate Studies based on work submitted for the capstone course.

Language Assessment

All Slavic Languages and Literature majors must complete an oral and written language assessment two quarters prior to their graduation. Appointments are made through the Stanford Language Center (https://language.stanford.edu/).

Russian Studies Subplan

The Russian Studies track is for students who want to obtain command of the Russian language and to pursue a broad, interdisciplinary study of Russian literature and culture in historical context. Emphasis is on the relation of the Russian literary tradition to other arts, including film, as well as the disciplines that have enriched the historical understanding of Russian literature: history, anthropology, art history, political science, and sociology. Majors in the Russian Studies must earn a GPA of 2.0 (C) or better in order to receive credit toward the major.

Prerequisites

Completion of first year Russian, or the equivalent, as determined by the Language Center placement examination.

Degree Requirements

Completion of a minimum of 56 units according to the following distribution.

Writing in the Major

Undergraduates are required by the University to pass at least one writing-intensive course in their field of concentration in order to graduate. Majors in any Slavic track may satisfy the writing requirement in 2020-21 by taking and passing SLAVIC 145 Survey of Russian Literature: The Age of Experiment for 5 units and a letter grade.

Russian Language

A minimum of three courses from:

		Units
SLAVLANG 111	Third-Year Russian, First Quarter	4
SLAVLANG 112	Third-Year Russian, Second Quarter	4
SLAVLANG 113	Third-Year Russian, Third Quarter	4
SLAVLANG 177	Fourth-Year Russian, First Quarter	3
SLAVLANG 178	Fourth-Year Russian, Second Quarter	3
SLAVLANG 179	Fourth-Year Russian, Third Quarter	3
SLAVLANG 181	Fifth-Year Russian, First Quarter	3

SLAVLANG 182	Fifth-Year Russian, Second Quarter	3
SLAVLANG 183	Fifth-Year Russian, Third Quarter	3

19th-Century Russian Literature and History

A minimum of 8 units chosen from the following or the equivalent; students must take one course from Slavic and one course from History.

		Units
SLAVIC 145	Survey of Russian Literature: The Age of Experiment	3-5
SLAVIC 146	The Great Russian Novel: Tolstoy and Dostoevsky (to fulfill WIM, take for 5 units and letter grade)	3-5
One History course approved by the Chair of Undergraduate Studies		3-5

20th-Century Russian Literature and History

A minimum of 8 units chosen from the following or the equivalent; students must take SLAVIC 147 (not offered 2019-20) or SLAVIC 148 and one course from History.

		Units
SLAVIC 147	Modern Russian Literature and Culture: The Age of War and Revolution	3-5
SLAVIC 148	Slavic Literature and Culture since the Death of Stalin (not offered 2020-21)	3-5
One HISTORY course approved by the Chair of Undergraduate Studies.		3-5

Electives

Students must take the additional units of course work in Russian language, literature, history, or other fields, chosen in consultation with the Chair of Undergraduate Studies. Students who have completed Thinking Matters or PWR courses instructed by Slavic faculty, with a grade of 'B' or better may count these 5 units towards elective courses required for the major, and students who have completed the SLE sequence may count up to ten units.

Capstone

Students must designate a 300-level course taken in their junior or senior year as a capstone course or complete a substantial (20-30 page) work of independent writing. Before graduation, skills in writing, textual analysis, and discussion are evaluated by the Chair of Undergraduate Studies based on work submitted for the capstone course.

Language Assessment

All Slavic Languages and Literature majors must complete an oral and written language assessment two quarters prior to their graduation. This is coordinated with the Chair of Undergraduate Studies and the undergraduate student services officer.

Russian and Philosophy Subplan

The Russian and Philosophy option offers students the opportunity to gain a command of the Russian language and literary tradition, while gaining a background in philosophical thought, broadly construed. Students interested in this option should review the Philosophy and Literature web site (http://philit.stanford.edu/).

Substitutions and transfer credit are not normally permitted for the PHIL 170 series class or the PHIL 180 series class, and are never permitted for PHIL 80, SLAVIC 181, or the capstone seminar.

Majors who concentrate in Russian and Philosophy must earn a grade point average (GPA) of 2.0 (C) or better in order to receive credit toward the major. A student who has completed the SLE sequence (all three quarters) may count up to 10 units towards this major. The SLE units can replace one history of philosophy course and one upper-division Russian course.

Prerequisites

Completion of first year Russian, or the equivalent, as determined by the Language Center placement examination.

Degree Requirements

Completion of a minimum of 67 units according to the following distribution:

Russian Language

A minimum of three courses from:

		Units
SLAVLANG 111	Third-Year Russian, First Quarter	4
SLAVLANG 112	Third-Year Russian, Second Quarter	4
SLAVLANG 113	Third-Year Russian, Third Quarter	4
SLAVLANG 177	Fourth-Year Russian, First Quarter	3
SLAVLANG 178	Fourth-Year Russian, Second Quarter	3
SLAVLANG 179	Fourth-Year Russian, Third Quarter	3
SLAVLANG 181	Fifth-Year Russian, First Quarter	3
SLAVLANG 182	Fifth-Year Russian, Second Quarter	3
SLAVLANG 183	Fifth-Year Russian, Third Quarter	3

Russian Literature

A minimum of 16 units of Russian literature, including SLAVIC 145, 146, and 147, or 148.

		Units
SLAVIC 145	Survey of Russian Literature: The Age of Experiment	3-5
SLAVIC 146	The Great Russian Novel: Tolstoy and Dostoevsky (to fulfill WIM, take for 5 units and letter grade)	3-5
SLAVIC 147	Modern Russian Literature and Culture: The Age of War and Revolution	3-5
SLAVIC 148	Slavic Literature and Culture since the Death of Stalin (not offered 2020-21)	3-5
SLAVIC 187	Classical Russian Poetry	3-5

Electives

At least 12 units of electives in Russian language and literature, chosen in consultation with the Chair of Undergraduate Studies.

Philosophy and Literature Gateway Course

		Units
SLAVIC 181	Philosophy and Literature	3-5

Philosophy Writing in the Major

		Units
PHIL 80	Mind, Matter, and Meaning (WIM) (prerequisite: introductory philosophy course)	5

Philosophy Core

12 units from the following:

	Units
A course in the PHIL 170 series (value theory)	4
A course in the PHIL 180 series (theories of the mind, language, action)	4
A course in the PHIL 100-139 series (history of philosophy)	4

Related Course

An upper-division course of special relevance to philosophy and literature.

		Units
COMPLIT 283A	Modern Notions of 'The Holy'	3-5
GERMAN 222	Myth and Modernity	3-5

Language Assessment

All Slavic Languages and Literature majors must complete an oral and written language assessment two quarters prior to their graduation. Assessments are scheduled through the Stanford Language Center (https://language.stanford.edu/).

Capstone Seminar

One capstone seminar must be taken in the student's senior year.

		Units
PHIL 194W	Capstone Seminar: Imagination in Fiction and Philosophy	4
PHIL 194Z	Capstone: Living a Meaningful Literary Life	4
COMPLIT 283A	Modern Notions of 'The Holy'	3-5
GERMAN 125	Nietzsche: Life as Performance	3-5

Honors Program

Students majoring in any DLCL department (i.e., Comparative Literature, French and Italian, German Studies, Iberian and Latin American Cultures, and Slavic Languages and Literatures) who have an overall grade point average (GPA) of 3.3 or above and who maintain a 3.5 (GPA) in their major courses, are eligible to participate in the DLCL's honors program.

Declaring Honors

Prospective honors students must choose a senior thesis adviser from among their home department's regular faculty in their junior year by May 1. During Spring Quarter of the junior year, a student interested in the honors program should consult with the Chair of Undergraduate Studies of their home department to submit a thesis proposal (2-5 pages), DLCL Honors application, and an outline of planned course work for their senior year. When their applications are approved by their home department, students will request honors through Axess.

Honors theses vary considerably in length as a function of their topic, historical scope, and methodology. They may make use of previous work developed in seminars and courses, but display an enhanced comparative or theoretical scope. Quality rather than quantity is the key criterion. Honors theses range from 40 to 90 pages not including bibliography and notes.

Honors students are encouraged to participate in the DLCL program hosted by Bing Honors College. This DLCL Honors College is designed to help students develop their projects and is offered at the end of the summer before senior year. Applications must be submitted through the Bing program. For more information, view the Bing Honors (https://undergrad.stanford.edu/programs/bhc/) web site.

Program Requirements

A minimum of 10 units total, described below, and a completed thesis is required. Honors essays are due to the thesis adviser no later than 5:00 p.m. on May 15, of the terminal year. If an essay is found deserving of a grade of 'A-' or better by the thesis adviser, honors are granted at the time of graduation.

1. Spring Quarter of the junior year (optional): DLCL 189C Honors Thesis Seminar, 2-4 units S/NC, under the primary thesis adviser. Drafting or revision of the thesis proposal. The proposal is reviewed by the Chair of Undergraduate Studies and the Director of the department and will be approved or returned for submission.
2. Autumn Quarter of the senior year (required): DLCL 189A Honors Thesis Seminar, 4 units S/NC, taught by a DLCL appointed faculty member. Course focuses on researching and writing the honors thesis.
3. Winter Quarter of the senior year (required): DLCL 189B Honors Thesis Seminar, 2-4 units S/NC, under the primary thesis adviser. Focus is on writing under guidance of primary adviser.
4. Spring Quarter of the senior year (option; mandatory if not taken during junior year): DLCL 189C Honors Thesis Seminar, 2-4 units S/NC, under the primary thesis adviser. Honors essays are due to the thesis adviser and student services officer no later than 5:00 p.m. on May 15 of the terminal year.
5. Spring Quarter of the senior year (required) DLCL 199 Honors Thesis Oral Presentation, 1 unit S/NC. Enroll with primary thesis adviser.

The honors thesis in the DLCL embodies Stanford's excellence in course work and research. It is simultaneously one element of the student's intellectual legacy and part of the University's official history. The faculty considers the honors thesis to be far more than a final paper; rather, it is the product of solid research that contributes to conversations taking place within a larger scholarly community and representative of the intellectual vitality of the discipline. For all of these reasons, DLCL honors theses will be visible to future scholars researching similar questions through full online access through the Stanford Digital Repository (https://library.stanford.edu/research/stanford-digital-repository/) (SDR) and may be used as course materials for future Stanford honors preparatory courses. For similar purposes, a printed copy may also be kept in DLCL spaces. Students who wish to limit the availability or formats in which the thesis may be shared may do so by filling out the appropriate form with the DLCL student affairs officer.

Minors in Slavic Languages and Literatures

The Department of Slavic Languages and Literatures offers three minor subplans:

- Russian Language
- Russian Language, Literature, and Culture
- Russian, East European and Eurasian Studies

The minors are designed for students who, while pursuing a major in another program, seek a comprehensive introduction to Russian culture through Russian language courses, a combination of minimal proficiency in Russian and courses in the history of Russian culture, or a multidisciplinary introduction to Russian, East European, and Eurasian studies. Students who have chosen one of the minor programs in Russian may use 5 units from a Thinking Matters or PWR course taught by a Slavic faculty member towards their electives with permission from their adviser. Up to 5 units may count from SLE towards all Slavic Languages and Literatures minors.

Russian Language Subplan

Prerequisites

Completion of second year Russian, or the equivalent, as determined by the results of the Language Center placement examination.

Requirements

A minimum of 6 courses of 3 units or more for a total of 24 units of Russian language and literature courses according to the following distribution:

1. At least three Russian language courses chosen from the below:

		Units
SLAVLANG 111	Third-Year Russian, First Quarter	4
SLAVLANG 112	Third-Year Russian, Second Quarter	4
SLAVLANG 113	Third-Year Russian, Third Quarter	4
SLAVLANG 177	Fourth-Year Russian, First Quarter	3
SLAVLANG 179	Fourth-Year Russian, Third Quarter	3
SLAVLANG 178	Fourth-Year Russian, Second Quarter	3
SLAVLANG 181	Fifth-Year Russian, First Quarter	3
SLAVLANG 182	Fifth-Year Russian, Second Quarter	3
SLAVLANG 183	Fifth-Year Russian, Third Quarter	3

2. The remaining units should be chosen from Slavic Department courses. Consult the Chair for Undergraduate Studies for recommendations. Options include:

		Units
SLAVIC 145	Survey of Russian Literature: The Age of Experiment	3-5
SLAVIC 146	The Great Russian Novel: Tolstoy and Dostoevsky	3-5

3. Or, with the approval of the department's Chair of Undergraduate Studies, courses in history, politics, linguistics, or other relevant programs.

Russian Language, Literature, and Culture Subplan

Prerequisites

Completion of first year Russian, or the equivalent, as determined by the results of the Language Center placement examination.

Requirements

A minimum of 6 courses at 3 units or more and total 28 units, including:

- a minimum of 12 units of courses on literature and culture, including:

		Units
SLAVIC 145	Survey of Russian Literature: The Age of Experiment	3-5
SLAVIC 146	The Great Russian Novel: Tolstoy and Dostoevsky	3-5
SLAVIC 147	Modern Russian Literature and Culture: The Age of War and Revolution	3-5
SLAVIC 148	Slavic Literature and Culture since the Death of Stalin (not offered 2020-21)	3-5

- Remaining units should be chosen from courses offered by the Slavic Department, or, with the approval of the chair of Undergraduate Studies, relevant courses in other departments.

Minor in Russian, East European, and Eurasian Studies

The minor in Russian, East European and Eurasian Studies offers students the opportunity to choose courses offered by the Center for Russian, East European and Eurasian Studies (subject code REES) in various departments for their minor.

Requirements

A minimum of 6 courses at 3 units or more and total 28 units according to the following distribution:

1. Two core courses: one on Russia and one on Eastern Europe or Eurasia, to be chosen by the student from an annual list of qualifying courses issued by CREEES for their M.A. students.
2. At least four additional REES courses, totaling at least 20 units.
3. The student's core and additional courses must include 9 units of course work in the Slavic Department, either literature courses or Russian language in the third year or above. Courses must be distributed among at least three disciplines, such as Slavic, History, Political Science, Anthropology, Art and Art History, Economics, Religious Studies, and Sociology. The Slavic Chair of Undergraduate Studies determines which courses qualify for the minor.
4. A capstone experience in CREEES, including, but not limited to, one of the following:
   a. a departmental seminar course for advanced undergraduates.
   b. directed reading and research with a Stanford faculty member or a CREEES-approved resident or visiting scholar.
   c. participation in the Stanford Overseas Studies Program in Berlin.

Foreign Language

The Slavic/REES minor has no language requirement, but students are strongly encouraged to attain working competence in Russian or another relevant language. Courses at the third-year level or above in Russian or another language of Central Asia, the Caucasus, or Eastern Europe may be counted towards the Slavic/REES minor, up to a maximum of 3 units per academic quarter, 9 units total.

Additional Information

Courses taken at Stanford overseas campuses may count towards the REES minor, with the approval of the Slavic Chair of Undergraduate Studies; at least three courses for the minor must be taken in residence at Stanford.

Students interested in pursuing the Slavic/REES minor should consult the Slavic Chair of Undergraduate Studies.

Minor in Modern Languages

The Division of Literatures, Cultures, and Languages offers an undergraduate minor in Modern Languages that permits students to demonstrate strength in two distinct modern languages and their literatures. See the “Division of Literatures, Cultures, and Languages (p. 1299)” section of this bulletin for further details about this minor and its requirements.

Coterminal Master's Program in Slavic Languages and Literatures

The department allows a limited number of undergraduates to work for the coterminal M.A. degree in Slavic Languages and Literatures with a concentration in Russian. In addition to University requirements for the B.A. degree, the student must:

1. Submit an application for admission by January 31 of the senior year. Applicants must meet the same general standards as those seeking admission to an M.A. program. Applicants must submit: an application for admission; a written statement of purpose; a transcript; and three letters of recommendation, at least two of which should be from members of the Department of Slavic Languages and Literatures faculty.

2. Meet all requirements for both the B.A. and M.A. degrees. Applicants must complete 15 full-time quarters (or the equivalent), or three full-time quarters after completing 180 units, for a total of 225 units. During the senior year they may, with the consent of the instructors, register for as many as two graduate courses. In the final year of study, they must complete at least three graduate-level courses.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Master of Arts in Slavic Languages and Literatures

The Department of Slavic Languages and Literatures offers a Master of Arts degree only to students concurrently enrolled in other Stanford degree programs.

University requirements for the M.A. degree are discussed in the "Graduate Degrees (p. 65)" section of this bulletin.

Admission

The requirements for admission to the master's degree program in Russian are:

1. A B.A. (or its equivalent) from an accredited college or university.
2. A command of the Russian language sufficient to permit the student to do satisfactory graduate work.
3. A familiarity with Russian literature sufficient to permit the student to perform adequately in courses at the graduate level.

The applicant's previous academic training in Russian language and literature normally serves as an indication of competence. Accordingly, the department does not ordinarily consider applications from students who have not had at least three years of college Russian and some undergraduate training in Russian literature of the 19th and 20th centuries. Before registering for the first quarter's work in the department, entering graduate students are required to take placement examinations in Russian. Students who fail to perform satisfactorily on such examinations must register for remedial courses in the areas in which they are deficient. Course work in third-year Russian and below carries no credit toward the M.A. degree.

Course Requirements

Candidates for the M.A. should plan course work that ensures adequate preparation for the M.A. final examination at the end of the third quarter of work. Course work should be planned in consultation with the graduate adviser, whose approval of the overall course load is required.

Candidates for the M.A. must complete a program of 45 units, of which 36 units must be selected from courses given by the department.

The Qualifying Paper

The Qualifying paper represents a complete article-length research paper (6,000-9,000 words). The Qualifying paper must be submitted to the thesis adviser no later than the eighth week of the final quarter of registration.

Final Examination

A final examination may substitute for the Qualifying paper requirement. The final examination requires a student to demonstrate in a written examination:

1. command of the phonology, morphology, syntax, and lexicology of contemporary standard Russian sufficient to teach beginning and intermediate courses at the college level
2. an ability to read contemporary Standard Russian sufficiently to assist students studying contemporary Russian poetry or literary prose
3. sufficient familiarity with Russian literature of either the 19th or 20th century to successfully handle survey courses dealing with the chosen period of specialization.

The examination should be taken at the end of the final quarter of required course work.

Doctor of Philosophy in Slavic Languages and Literatures

University requirements for the Ph.D. are discussed in the "Graduate Degrees (p. 65)" section of this bulletin.

Students enrolled in the Ph.D. program in Slavic Languages and Literatures are expected to fulfill the following requirements while meeting the program's deadlines in the course of their progress toward the degree:

1. Course Work, Breadth Requirements, and Overall Scheduling

In consultation with the Director of Graduate Studies, students are expected to take 18 units of credit each quarter of their first year and may be required to enroll in independent study units during summer. In the second year and until reaching TGR status, students are required to enroll in 10 units during Autumn, Winter, and Spring and may be required to enroll in independent study units during summer. They are expected to reach 135 units and attain TGR status in the Spring of their fourth year. All courses counted towards the 135-unit requirement for the Ph.D. must be at the graduate level. Excess course work can be taken at the undergraduate level but may not be used towards the Ph.D. requirements. Students should take all courses for letter grades, when the option is available. Entering graduate students must enroll in DLCL 369 (https://exploredegrees.stanford.edu/search/?P=DLCL%20369) Introduction to the Profession of Literary Studies. For the Ph.D. degree, students are free to select course work to suit their individual program of study. However, candidates must do so in consultation with their adviser (Director of Graduate Studies or principal dissertation adviser) and are held responsible for all of the areas covered by the general examinations regardless of whether they have registered for the department's offerings in a given field. For this reason, it is strongly recommended that before

taking Ph.D. examinations, students complete seminar-level work directly related to the following broad areas:

1. Russian poetry
2. the Russian novel
3. 20th-century Russian literature
4. 19th-century Russian literature (the Age of Pushkin and after)
5. 18th-century Russian literature (the early 1700's to the Age of Pushkin)
6. medieval Russian literature
7. a monograph course on a major Russian author
8. theory of literature relevant to the major field

The candidate must have demonstrated commitment to graduate studies by completing a minimum of 21 content courses (not counting Summer Quarter) with a grade point average (GPA) of 3.3 or better in order to complete the requirements of the degree program. These must include 14 seminars in the Slavic Languages and Literatures Department. Unless they have taken such courses elsewhere, students are expected to take the departmental course on medieval literature, 18th-century literature, and Old Church Slavonic.

2. Minor or Related Fields

During the course of study, students must develop substantial expertise in a field contiguous to the area of specialization. A candidate may elect to present a full minor or, in consultation with the graduate adviser, develop a special program in a related field, preferably no later than the second quarter of enrollment.

1. *Related Field*—A student is required to complete a sequence of basic courses in a chosen discipline outside the department of Slavic Languages and Literatures. The choice of patterns is one of the following:
   a. a sequence of three courses in another literature, selected in consultation with the adviser, or
   b. three basic courses in comparative literature chosen in consultation with the Director of Graduate Studies (DGS), or
   c. a sequence of three courses in another department selected in consultation with the DGS.
2. *Minor*—Students electing a minor fulfill the Ph.D. minor requirements established by that department. Students considering minors should consult with their adviser, the DGS, the Director of Slavic Languages and Literatures, and the Chair of the minor department.

3. Admission to Candidacy

Admission to candidacy is an important decision grounded in an overall assessment of a student's ability to successfully complete the Ph.D. program. Per University policy, students are expected to complete department qualifying procedures and apply for candidacy by the end of the second year in residence. In reviewing a student for admission to candidacy, the faculty considers a student's academic progress including but not limited to: advanced language proficiency, course work, performance on the Qualifying paper, and successful completion of teaching and research assistantships. Additionally, a student must have completed at least one class with each of four Slavic Languages and Literatures department faculty members prior to consideration for candidacy. In addition to successful completion of department prerequisites, a student is only admitted to candidacy if the faculty makes the judgment that the student has the potential to successfully complete the requirements of the degree program. Candidacy is determined by faculty vote. Failure to advance to candidacy results in dismissal of the student from the doctoral program. Candidacy is valid for five years and students are required to maintain active candidacy through conferral of the doctoral degree. All requirements for the degree must be completed before candidacy expires. The Department of Slavic Languages and Literatures conducts regular reviews of each student's academic performance, both prior to and following successful admission to candidacy. Failure to make satisfactory progress to degree may result in dismissal from the doctoral program. Additional information about University candidacy policy is available in the Bulletin (p. 67) and GAP (http://gap.stanford.edu/4-6.html).

4. Qualifying Paper

The candidate must submit a complete draft of a qualifying paper approved by the thesis adviser. The qualifying paper represents a complete article-length research paper (6,000-9,000 words). The deadline for the qualifying paper approval is the eighth week of the sixth quarter of registration. Failure to meet these requirements results in termination of enrollment from the Ph.D. program. Following such termination, the student who has fulfilled all of the M.A. requirements may be given the opportunity to take the M.A. written examination in the history of Russian literature. If successful, the student is then awarded the terminal M.A. degree. In exceptional cases, the written examination requirement may be waived at the discretion of the Chair of Graduate Studies and the Chair of the department.

5. Proficiency Test

Administered to all entering graduate students, this test determines whether the student's knowledge of Russian language and literature falls below the department's standard (Advanced Low on the OPI test). Students who fail are required to complete appropriate courses in the first year of graduate study. Courses required to meet the language proficiency are not counted towards the Course Work requirement of the Ph.D. degree.

6. Foreign Languages

A candidate must demonstrate reading knowledge of French or German, plus another language useful for the student's area of concentration, by passing written examinations, or receiving a grade of 'A-' or better in a qualifying class with consent of the DGS. The reading examination in one of these languages must be passed by the end of the first year of study. The reading examination in the second language must be passed by the end of the second year of study.

7. Examinations

1. Comprehensive Exam: A candidate must pass the departmental general qualifying examinations. The comprehensive exam covers the history of Russian literature from the medieval period through the twenty-first century and is divided into six chronological sections. Two of these are taken early in the Autumn quarter of year 2 and the remainder are taken in the Autumn quarter of year 3 (preferably a day or two before the beginning of academic instruction). For students who are not native speakers of Russian, the section of the comprehensive exam is taken orally in Russian.

2. Departmental Qualifying Exam: The hour-long departmental oral qualifying examination follows no later than four weeks after completion of the comprehensive exams. The oral examination committee consists of four faculty members and may include one member representing the student's minor or related field; the rest must be drawn from among the Slavic Languages and Literatures faculty. The student makes a 20-minute presentation, following an academic conference format, and based possibly on the student's qualifying paper. Each examiner questions the student on the presentation and related topics in the history of Russian literature and the minor related field.

3. University Oral Exam: Following the departmental examinations, a candidate must pass a University oral examination, consisting of a defense of a doctoral dissertation prospectus and covering content relevant to the area of study, rationale for the proposed investigation, and strategy to be employed in the dissertation research. The prospectus defense is expected to be scheduled no later than the

beginning of the Autumn quarter of year 4. Note: Ph.D. examinations are scheduled by the graduate student in consultation with the CGS.

8. Teaching

1. Students are required to complete five quarters of teaching within the funding period, including three quarters of Russian language and at least one quarter as a teaching assistant of literature for a faculty member, usually in the survey courses in translation SLAVIC 145, 146, 147, and 148:
2. Students are required to take in preparation for teaching: DLCL 301 The Learning and Teaching of Second Languages.

9. Yearly Review

The faculty must provide students with timely and constructive feedback on their progress toward the Ph.D. In order to evaluate students' progress and to identify potential problem areas, the department's faculty reviews the academic progress of each student at the end of the academic year. The yearly reviews are primarily intended to identify developing problems that could impede progress. In most cases, students are simply given constructive feedback, but if more serious concerns warrant, a student may be placed on probation with specific guidelines for addressing the problems detected. Possible outcomes of the yearly review include:

1. continuation of the student in good standing
2. placing the student on probation, with specific guidelines for the period on probation and the steps to be taken in order to be returned to good standing.
    a. For students on probation at this point (or at any other subsequent points), possible outcomes of a review include:
        i. restoration to good standing
        ii. continued probation, again with guidelines for necessary remedial steps
        iii. termination from the program. Students leaving the program at the end of the first or second year are usually allowed to complete the requirements to receive an M.A. degree, if this does not involve additional residency or financial support.

10. Continuation

Continuation in the Ph.D. program is contingent on fulfilling the following criteria: for first-year students, a high quality of performance in course work (decided by department evaluation); for second-year students, satisfactory academic progress and approval of the Qualifying paper as described above. The principal conditions for continued registration of a graduate student are the timely and satisfactory completion of the University, department, and program requirements for the degree, and fulfillment of minimum progress requirements. Failure to meet these requirements results in corrective measures, which may include a written warning, academic probation, and/or release from the program.

Ph.D. Minor in Slavic Languages and Literatures

The department offers a Ph.D. Minor in Slavic Languages and Literatures. The requirement for the Ph.D. minor is completion of 25 units of graduate course work in Slavic Literature and Culture classes. Interested students should consult the Chair of Graduate Studies to create a plan of study.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Slavic Department counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Required Courses Policy

In academic year 2020-21, as Stanford operates on a four quarter system, students may opt not to be enrolled in one of the four quarters of the year. Students may therefore be unable to take a Slavic Studies course required by a major or minor program (SLAVIC 145, 146, 147, 187). In these cases, the Chair of Undergraduate studies will suggest appropriate substitute classes and approve one of them.

Graduate Degree Requirements

Grading

Doctoral students in the department must take required courses for a letter grade and are expected to earn a grade of 'B' or better in each required course. In other courses, doctoral students are expected to earn a grade of 'B' or better in each course taken for a letter grade in AY 2020-21 that will count towards their degree requirement. Any grade of 'B-' or below is considered to be less than satisfactory. Grades of 'B' or below are reviewed by faculty: while the grade will stand, the student may be required to revise and resubmit the work associated with that course. For courses taken for CR/NC, instructors will be asked to submit written assessment to the student and the department of what would be the equivalent letter grade to allow for review of satisfactory academic achievement by the DGS and department.

Graduate Advising Expectations

The Department of Slavic Languages and Literatures is committed to providing academic advising in support of graduate student scholarly and professional development. The overall goal of advising, both in the DLCL and the department, is to help graduate students make academic and career choices wisely, and think ahead, in order to craft a long-term plan for their graduate student career and beyond. When most effective, the advising relationship entails collaborative and sustained engagement by both the advisor and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity. Advising is both an academically invaluable form for the transmission of expertise, as well as a key aspect of creating a strong departmental and Stanford community.

Faculty Advisors

Faculty advisors guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

- Upon enrolling, students plan their work under the direction of the Chair of Graduate Studies or a faculty member designated by the program. When the student selects a more specialized advisor, the transition should involve oral or written communication between both advisors and the student concerning the student's progress, goals, and expectations. It is possible for doctoral students to choose two main advisors at the dissertation stage, provided all agree this is academically sound.
- Faculty advisors should meet with assigned students to discuss their selection of courses and to plan from a broader, longer-term perspective, including discussion of Program milestones and a basic timeline; an overview of Department and DLCL offerings beyond courses; student goals and interests and DLCL or Stanford programs that may be relevant; and (for doctoral students) how to transfer previous graduate coursework.
- Faculty advisors and graduate students should meet at least once per quarter to assess the advisee's course of study, performance over the past quarter, and plans for the next quarter, as well as longer term plans. If a student has two advisors, the student should meet at least once per quarter with each advisor and at least once per year with both advisors at the same time.
- For doctoral students, faculty should help their advisees plan for exams, research grant applications, develop research projects, and plan ahead for both the academic job market and the job search beyond academia.
- Faculty advisors should provide feedback about the student's progress to the department during the Annual Review process. For more information about the Annual Review, see the Graduate Handbook.

Graduate Students

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

- Upon enrolling, students plan their work under the direction of the Chair of Graduate Studies or a faculty member designated by the program. As the student develops a field of expertise, the student will choose a program advisor to replace the Chair of Graduate Studies role. The transition should involve oral or written communication between both advisors and the student concerning the student's progress, goals, and expectations.
- Graduate students and faculty advisors and should meet at least once per quarter to assess the advisee's course of study, performance over the past quarter, and plans for the next quarter, as well as longer term plans. If a student has two advisors, the student should meet at least once per quarter with each advisor and at least once per year with both advisors at the same time.
- Students should consult with their advisors on all academic matters, including coursework, conference presentations and publications, research travel, and teaching plans.
- Students should provide a thorough self-evaluation each year for the annual review. For more information about the Annual Review, see the Graduate Handbook.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Faculty in Slavic Languages and Literatures

Director: Gabriella Safran

Chair of Graduate Studies: Monika Greenleaf

Chair of Undergraduate Studies: Yuliya Ilchuk

Professors: Lazar Fleishman, Gabriella Safran

Associate Professor: Monika Greenleaf

Assistant Professors: Yuliya Ilchuk

Lecturer: Nicholas Mayhew (Mellon Fellow)

Courtesy Professor: Nancy Ruttenburg

Emeriti (Professors): Gregory Freidin, Richard D. Schupbach

Overseas Studies Courses in Slavic Languages and Literatures

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

Slavic Languages & Literatures Courses

SLAVIC 15N. "My Life Had Stood - A Loaded Gun": Dostoevsky, Dickinson, and the Question of Freedom.. 3-5 Units.
As far apart as Dickinson and Dostoevsky are in terms of national contexts, gendered possibilities of life, and their choice of minimalist or maximalist forms, their experiences of constriction and freedom bore significant similarities. Dostoevsky penned his vow to love life on the day that he was manacled as a political prisoner and marched off to thirteen years of forced labor and exile in Siberia. He exploded back on the Petersburg literary scene in the early 1860's with three block-busters, Notes from the Underground, Memoirs from the House of the Dead, and Crime and Punishment, establishing himself forever as Russia's most controversial explorer of the violence of human thought. In these same years Emily Dickinson was sequestering herself in her family's Amherst house for the remainder of her life, yet she announced her rebel's credo in these enigmatic lines: "My Life Had Stood, a Loaded Gun - until the Day..." In this class we will explore the idea that Emily Dickinson and Fyodor Dostoevsky may be seen as original shifters of modern literary art and philosophy. We will unpack the agonizing relationship of freedom, action, and language that both authors explore. Classes will be organized around presentations, debates in pairs, the exploration of "scandalous scenes," and finally a symposium in which students will present and contribute to each other's paper projects. There are no prerequisites for this course apart from a desire to read poems and novels closely and in tandem.

SLAVIC 36. Dangerous Ideas. 1 Unit.
Ideas matter. Concepts such as revolution, tradition, and hell have inspired social movements, shaped political systems, and dramatically influenced the lives of individuals. Others, like immigration, universal basic income, and youth play an important role in contemporary debates in the United States. All of these ideas are contested, and they have a real power to change lives, for better and for worse. In this one-unit class we will examine these "dangerous" ideas. Each week, a faculty member from a different department in the humanities and arts will explore a concept that has shaped human experience across time and space. Some weeks will have short reading assignments, but you are not required to purchase any materials.
Same as: ARTHIST 36, COMPLIT 36A, EALC 36, ENGLISH 71, ETHICSOC 36X, FRENCH 36, HISTORY 3D, MUSIC 36H, PHIL 36, POLISCI 70, RELIGST 36X

SLAVIC 70N. Socialism vs. Capitalism: Russian and American Writers' Responses. 3-4 Units.
The turn of the 20th century was marked with turbulent political events and heated discussions about the future of Russian and American societies. Many writers and intellectuals responded to the burning issues of social justice, inequality, egalitarianism, and exploitation associated with capitalism and socialism. Through close reading, critical thinking, and analytical writing, we will engage in the critical discussions of class struggle, individual interest versus collective values, race, and social equality, and identify points of convergence and divergence between the two systems. To what extent was the opposition between capitalism and socialism fueled by the artistic vision of the great Russian and American writers? What was these thinkers' ideal of society and what impact did it have on shaping emerging socialism? Readings for the class include the fundamental works of Fyodor Dostoevsky, Leo Tolstoy, Jack London, W.E.B. Du Bois and Sholem Aleichem. The course will culminate in a digital mapping project visualizing intellectual connections between ideas and writers.

SLAVIC 77Q. Russia's Weird Classic: Nikolai Gogol. 3-4 Units.
Preference to sophomores. An investigation of the works and life of Nikolai Gogol, the most eccentric of Russian authors and the founder of what is dubbed Fantastic Realism. Our investigation will be based on close reading of works written in various genres and created in various stages of Gogol's literary career. Taught in English.

SLAVIC 116. Literature and the Dream of Agriculture in Russia and Beyond. 3-5 Units.
Why do city people think if they started farming, they could heal themselves and their society? How do writers make agriculture seem exciting, or farms seem beautiful? While agriculture is ancient and world-wide, literature and political movements that posited it as a way for urbanites to be happier and more virtuous and societies to reach utopia thrived especially in the 19th-century Russian Empire. These movements influenced Soviet Communism, nationalisms (including Zionism), and American communes in the 1970s. In this class, we read fiction, poetry, memoirs, and essays about city people's embrace of farming. We compare the Eastern European case to the United States in the 20th century and we look at 21st-century back-to-the-land writing and films. This class is offered in partnership with the Stanford Farm, where we will spend a few days working (assuming pandemic restrictions permit).

SLAVIC 118N. Other People's Words: Folklore and Literature. 4 Units.
What happens when you collect and use other people's words? This class considers folklore and literature based on it, focusing on the theme of objects that come to life and threaten their makers or owners. We read Russian fairy tales and Nikolai Gogol's stories, the Golem legend and Ovid's and Shaw's Pygmalion, and Svetlana Aleksievich's Voices from Chernobyl, a collection of the words of survivors who reflect on life after a human invention has destroyed many of its keepers. We read essays by Jacob Grimm, Roman Jakobson, Vladimir Propp, Lenore Keeshig-Tobias, and others, to understand what folklore can mean and how the oral and the recorded word can interact. Students collect living folklore from a group of their choosing and analyze it using the theories we study in class (or other theories, if you want); wherever you are, you will tailor your research to the communities to which you have access. This course fulfills the second-level Writing and Rhetoric Requirement (WRITE 2) and emphasizes oral and multimedia presentation. You will develop skills to produce shorter and longer prerecorded presentations.

SLAVIC 121. Ukraine at a Crossroads. 3-5 Units.
Literally meaning "borderland," Ukraine has embodied in-betweenness in all possible ways. What is the mission of Ukraine in Europe and in Eurasia? How can Ukraine become an agent of democracy, stability, and unity? What does Ukraine's case of multiple identities and loyalties offer to our understanding of the global crisis of national identity? In this course, we will consider the historical permeability of Ukraine's territorial, cultural, and ethnic borders as an opportunity to explore the multiple dimensions of its relations with its neighbors. In addition to studying historical, literary, and cinematic texts, we discuss nationalism, global capitalism, memory politics, and propaganda in order to understand post-Euromaidan society. All required texts are in English. No knowledge of Ukrainian is required. NOTE: To satisfy a WAYS requirement, this course must be taken for at least 3 units. In AY 2020-21, a `CR¿ grade will satisfy the WAYS requirement.
Same as: SLAVIC 221

SLAVIC 128. Literature of the former Yugoslavia. 3-5 Units.
What do Slavoj Zizek, Novak Djokovic, Marina Abramovic, Melania Trump, Emir Kusturica, and the captain of the Croatian national football team have in common? All were born in a country that no longer exists, the Socialist Federal Republic of Yugoslavia (1945-1992). This course will introduce masterpieces of Yugoslav literature and film, examining the social and political complexities of a multicultural society that collapsed into civil war (i.e. Bosnia, Kosovo) in the 1990s. In English with material available in Serbo-Croatian and Slovenian.
Same as: COMPLIT 128, REES 128

SLAVIC 129. Russian Versification: History and Theory. 3-4 Units.
A survey of metric forms, rhyming principles and stanzaic patterns in the Russian poetry of the 18th - 21st centuries. Taught in Russian. Prerequisite: Two years of Russian.
Same as: SLAVIC 329

SLAVIC 145. Survey of Russian Literature: The Age of Experiment. 3-5 Units.
This course discusses the transition from predominantly poetic to predominantly prosaic creativity in the Russian literature of the first half of the 19th century Russian literature and the birth of the great Russian novel. It covers three major Russian writers -- Alexander Pushkin, Mikhail Lermontov and Nikolai Gogol -- and examines the changes in the Russian literary scene affected by their work. An emphasis is placed on close reading of literary texts and analysis of literary techniques employed in them. This course meets the Slavic Department Writing-in-the-Major (WIM) requirement. Taught in English.
Same as: SLAVIC 345

SLAVIC 146. The Great Russian Novel: Tolstoy and Dostoevsky. 3-5 Units.
The two giant novels we will read and discuss closely were above all urgent actions taken in the heat of present crisis. War and Peace (1865-1869), Leo Tolstoy's epic family saga of Russia's historic resistance to Napoleon and the modern "will-to-power," and The Brothers Karamazov (1878-1880), Dostoevsky's tragicomic investigation into the roots of familial perversion, crimes of individual thought and collective performance, fascinate us with the striking contrasts of their novels' aesthetic responses and innovations. The final focus of the course will be on several of Anton Chekhov's short stories that re-play the themes of the Russian novel with compressed indirectness, pushing the great realist novel's dominance firmly into "history.".
Same as: SLAVIC 346

SLAVIC 147. Modern Russian Literature and Culture: The Age of War and Revolution. 3-5 Units.
The Age of Revolution: Readings in Russian Modernist Prose of the 1920-30s: What makes Russian modernist prose special? Or is there anything special about Russian modernist prose? This course aims to answer these questions through close readings of works by Babel, Mandelstam, Zoshchenko, Platonov, Olesha and Bulgakov. Aesthetic issues such as hero, plot, and narrative devices will be addressed with the aid of contemporaneous literary theory (Shklovsky, Tynianov, Eikhenbaum, Bakhtin). Novels and theory will be read in English. NOTE: This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.
Same as: SLAVIC 347

SLAVIC 148. Slavic Literature and Culture since the Death of Stalin. 3-5 Units.
The course offers a survey of Soviet and post-Soviet literary texts and films created by Russian, Ukrainian and Belarusian artists and marginalized or repressed by the Soviet regime. The first part of the course will focus on the topics of opposition and dissent, generational conflict, modernization, Soviet everyday life, gender, citizenship and national identity, state-published and samizdat literature, "village" and "cosmopolitan" culture, etc. The second part of it will be devoted to the postmodernist aesthetics and ideology in the dismantlement of totalitarian society, as well in the process of shaping post-Soviet identities. The reading materials range from the fictional, poetic, and publicistic works written by Noble-prize (Solzhenitsyn, Brodsky, Alexievich) and other major writers of the period to the drama, film, and popular culture.
Same as: REES 348, SLAVIC 348

SLAVIC 155. St. Petersburg: Imagining a City, Building a City. 1-2 Unit.
St. Petersburg, the world's most beautiful city, was designed to display an 18th-century autocrat's power and to foster ties between Russia and the West - on the tsar's terms. It went through devastating floods and a deadly siege; it birthed the "Petersburg myth," poems and prose that explore the force of the state and the individual's ability to resist. This class addresses the struggle between the authorities and the inhabitants; the treacherous natural environment; the city as a node in national and international networks of communication; the development of urban transportation networks; and the supply of goods. NOTE: *This course is required of students attending the overseas seminar to St. Petersburg in September 2018.*Class times to be determined upon the availability of all enrolled students. Please contact instructor(s) via email if you have any questions.
Same as: URBANST 156

SLAVIC 156. Vladimir Nabokov: Displacement and the Liberated Eye. 3-5 Units.
How did the triumphant author of "the great American novel" Lolita evolve from the young author writing at white heat for the tiny sad Russian emigration in Berlin? We will read his short stories and the novels The Luzhin Defense, Invitation to a Beheading, Lolita, Lolita the film, and Pale Fire, to see how Nabokov generated his sinister-playful forms as a buoyant answer to the "hypermodern" visual and film culture of pre-WWII Berlin, and then to America's all-pervading postwar "normalcy" in his pathological comic masterpieces Lolita and Pale Fire. Buy texts in translation at the Bookstore; Slavic grad students will supplement with reading and extra sessions in original Russian.
Same as: COMPLIT 115, COMPLIT 315, SLAVIC 356

SLAVIC 160. Cultural Hybridity in Central-Eastern Europe. 2-5 Units.
Historically shaped by shifting borders and mixing of various cultures and languages, identities in-between have been in abundance in Central-Eastern Europe. This course offers a comprehensive study of the oeuvre of several major Central-European authors of modernity: the Ukrainian-Russian Nikolai Gogol (1809-1852), the Czech-German-Jewish Franz Kafka (1883-1924), the Austrian-Galician-Jewish Leopold von Sacher-Masoch (1836-1895), the Ukrainian-Galician Olha Kobylyans¿ka (1863-1942), the Russian-German Lou Andreas-Salomé (1861-1937), the Jewish-Polish-Galician Bruno Schulz (1892-1942), and the Polish-Argentinean Witold Gombrowicz (1904-1969). Performing their selves in two or more cultures, these writers were engaged in identity games and produced hybrid texts with which they intervened into the major culture as others. In the course, we will apply post-structuralist and post-colonial concepts such as minor language, heterotopia, in-betweenness, mimicry, indeterminacy, exile, displacement, and transnationalism to the study of the writers oeuvres. We will also master the sociolinguistic analysis of such multi-lingual phenomena as self-translation, code-switching, and calquing and examine various versions of the same text to uncover the palimpsest of hybrid identities.
Same as: COMPLIT 231B, SLAVIC 360

SLAVIC 179. Literature from Medieval Rus' and Early Modern Russia. 3-5 Units.
This course traces the history of Russian literature before the eighteenth century. It is divided into two sections. The first section examines literature from Kyivan Rus' (up to the thirteenth century), the medieval conglomerate to which Belarus, Russia and Ukraine all trace their cultural heritage. The second section examines old Russian literature specifically, from the fourteenth to seventeenth centuries. We pay close attention to the development of literary genres, moral/religious and aesthetic features and their relationship, and the beginnings of Russian belles lettres. Our approach to the texts will be two-fold. On the one hand, we will spend some time situating the sources within their historical contexts. On the other hand, we will explore the interpretive possibilities of premodern literature using formal analysis and critical theory. Knowledge of an East Slavic language is required.
Same as: SLAVIC 379

SLAVIC 181. Philosophy and Literature. 3-5 Units.
What, if anything, does reading literature do for our lives? What can literature offer that other forms of writing cannot? Can fictions teach us anything? Can they make people more moral? Why do we take pleasure in tragic stories? This course introduces students to major problems at the intersection of philosophy and literature. It addresses key questions about the value of literature, philosophical puzzles about the nature of fiction and literary language, and ways that philosophy and literature interact. Readings span literature, film, and philosophical theories of art. Authors may include Sophocles, Dickinson, Toni Morrison, Proust, Woolf, Walton, Nietzsche, and Sartre. Students master close reading techniques and philosophical analysis, and write papers combining the two. This is the required gateway course for the Philosophy and Literature major tracks. Majors should register in their home department.
Same as: CLASSICS 42, COMPLIT 181, ENGLISH 81, FRENCH 181, GERMAN 181, ILAC 181, ITALIAN 181, PHIL 81

SLAVIC 183. Jews in the Contemporary World: The American Jewish Present & Past in Popular Culture, Film, & TV. 4-5 Units.
(HISTORY 185B is 5 units; HISTORY 85B IS 3 units.) Who are American Jews as depicted in popular media -- film, television, etc. -- since the Second World War? How are their religion, politics, mores, and practices represented and what ways, if at all, do such portraits reflect historical trends among Jews and society in general? What can be learned from film or tv about Jewish identity, notions of Jewish power and powerlessness, communal cohesiveness and assimilation, sexuality and the wages of intermarriage or race?.
Same as: CSRE 185B, HISTORY 185B, HISTORY 385C, JEWISHST 185B, REES 185B

SLAVIC 187. Classical Russian Poetry. 3-5 Units.
A survey of Russian poetry from Lomonosov to Vladinmir Solov'ev. Close reading of lyrical poems. Prerequisite: 3rd Year Russian Language.
Same as: SLAVIC 387

SLAVIC 188. 20th century Russian Poetry: From Aleksandr Blok to Joseph Brodsky. 3-4 Units.
Developments in and 20th-century Russian poetry including symbolism, acmeism, futurism, and literature of the absurd. Emphasis is on close readings of individual poems. Taught in Russian.
Same as: SLAVIC 388

SLAVIC 195. Russian and East European Theater. 3-5 Units.
Evolution of modernist Russian/Eur. dramaturgy, theatrical practices, landmark productions from Chekhov-Meyerhold-Grotowski to present; re-performance of classics; techniques of embodiment. Taught in English.
Same as: SLAVIC 395

SLAVIC 196. Readings in Yiddish Literature 1. 2-4 Units.
Yiddish literature, at a second-year language level. Readings chosen based on student interest; contact instructor with questions.
Same as: SLAVIC 396

SLAVIC 197. Readings in Yiddish Literature 2. 2-4 Units.
Yiddish literature, at a second-year language level. Continuation of SLAVIC 196. Readings chosen based on student interest; contact instructor with questions.
Same as: SLAVIC 397

SLAVIC 198. Writing Between Languages: The Case of Eastern European Jewish Literature. 1-5 Unit.
Eastern European Jews spoke and read Hebrew, Yiddish, and their co-territorial languages (Russian, Polish, etc.). In the modern period they developed secular literatures in all of them, and their writing reflected their own multilinguality and evolving language ideologies. We focus on major literary and sociolinguistic texts. Reading and discussion in English; students should have some reading knowledge of at least one relevant language as well. ***This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit***.
Same as: JEWISHST 148, JEWISHST 348, SLAVIC 398

SLAVIC 199. Individual Work for Undergraduates. 1-5 Unit.
Open to Russian majors or students working on special projects. May be repeated for credit. Prerequisite: consent of instructor.

SLAVIC 221. Ukraine at a Crossroads. 3-5 Units.
Literally meaning "borderland," Ukraine has embodied in-betweenness in all possible ways. What is the mission of Ukraine in Europe and in Eurasia? How can Ukraine become an agent of democracy, stability, and unity? What does Ukraine's case of multiple identities and loyalties offer to our understanding of the global crisis of national identity? In this course, we will consider the historical permeability of Ukraine's territorial, cultural, and ethnic borders as an opportunity to explore the multiple dimensions of its relations with its neighbors. In addition to studying historical, literary, and cinematic texts, we discuss nationalism, global capitalism, memory politics, and propaganda in order to understand post-Euromaidan society. All required texts are in English. No knowledge of Ukrainian is required. NOTE: To satisfy a WAYS requirement, this course must be taken for at least 3 units. In AY 2020-21, a `CR¿ grade will satisfy the WAYS requirement.
Same as: SLAVIC 121

SLAVIC 222. Andrei Platonov's "Chevengur": Text and Contexts. 3-5 Units.
'The power of devastation [Platonov's texts] inflict upon their subject matter exceeds by far any demands of social criticism and should be measured in units that have very little to do with literature as such,' wrote Joseph Brodsky. The graduate course examines Andrei Platonov's ultimate novel "Chevengur" together with political and cultural discourses that framed its production. Primary and secondary readings are in Russian.

SLAVIC 225. Communist and Capitalist Fantasies: Science Fiction in the Soviet Union and the United States. 3-5 Units.
What can science fiction tell us about life and art in the 20th century, in the Soviet Union and the United States? Speculative fiction (including sci-fi, fantasy, utopia, dystopia) combines irony and idealism, belief in science and skepticism about it. It appealed to people living under communism and capitalism. The course will relate fiction to the specific culture and politics in both countries, while also drawing transnational connections. We ask why writers and readers, filmmakers and viewers loved this art so much, despite living in what seemed to be very different places. Soviet and Eastern-European writers and filmmakers will include Mikhail Bulgakov, Stanis¿aw Lem, and Andrei Tarkovsky. The Americans may include Kurt Vonnegut, Philip K. Dick, Isaac Asimov, and Octavia Butler. Additional readings in Marx, Lenin, and H.G. Wells.

SLAVIC 226. Bakhtin and his Legacy. 3-5 Units.
"Quests for my own word are in fact quests for a word that is not my own, a word that is more than myself," writes Mikhail Bakhtin towards the end of his life. It was this ceaseless pursuit of another word that allowed Bakhtin, one of the most distinguished literary critics of the twentieth century, to author several influential literary theory concepts, many of which deal with the ideas of multiplicity, diversity and unfinalizability. The seminar explores these core concepts through close reading of key texts in English and investigates their reverberations in the writings of other thinkers such as Kristeva, de Man and Derrida.

SLAVIC 230. 18th Century Russian Literature. 3-4 Units.
For graduate students and upper-level undergraduates. Russian literature of the long 18th century, from the late 1600s to 1800. Readings in the Baroque, Neoclassicism and Sentimentalism. Major works are examined in their literary and historical context and also in relation to the principal subcultures of the period, including the court, academy, church and Old Believer diaspora.

SLAVIC 231. Tarkovsky. 3-5 Units.
The relatively slim body of work produced by the great Russian director Andrei Tarkovsky helped redefine the possibilities of the art of cinema. Older and younger generations of directors continue to be inspired by his trademark long shot, unconventional narrative techniques, everence for landscape and nature, and by general spatio-temporal discontinuity. The course provides a systematic examination of the director's complete oeuvre (seven feature films and his works for radio and opera) along with his main theoretical treatise Sculpting in Time.

SLAVIC 325. Readings in Russian Realism. 3-5 Units.
For graduate students or upper-level undergraduates. What did Realism mean for late imperial Russian writers? What has it meant for twentieth-century literary theory? As we seek to answer these questions, we read Tolstoy, Dostoevsky, Turgenev, and Chekhov, alongside their brilliant but less often taught contemporaries such as Goncharov, Saltykov-Shchedrin, Leskov, Garshin, Korolenko, Gorky, Andreev, and Bunin. Taught in English; readings in Russian. Prerequisite: Three years of Russian.
Same as: REES 210

SLAVIC 327. Boris Pasternak and the Poetry of the Russian Avant-garde. 3-4 Units.
An emphasis is made on close reading of the poetry of Boris Pasternak, Marina Tsvetaeva and Vladimir Mayakovsky. Taught in Russian. Prerequisite: 3rd Year Russian Language.

SLAVIC 329. Russian Versification: History and Theory. 3-4 Units.
A survey of metric forms, rhyming principles and stanzaic patterns in the Russian poetry of the 18th - 21st centuries. Taught in Russian. Prerequisite: Two years of Russian.
Same as: SLAVIC 129

SLAVIC 345. Survey of Russian Literature: The Age of Experiment. 3-5 Units.
This course discusses the transition from predominantly poetic to predominantly prosaic creativity in the Russian literature of the first half of the 19th century Russian literature and the birth of the great Russian novel. It covers three major Russian writers -- Alexander Pushkin, Mikhail Lermontov and Nikolai Gogol -- and examines the changes in the Russian literary scene affected by their work. An emphasis is placed on close reading of literary texts and analysis of literary techniques employed in them. This course meets the Slavic Department Writing-in-the-Major (WIM) requirement. Taught in English.
Same as: SLAVIC 145

SLAVIC 346. The Great Russian Novel: Tolstoy and Dostoevsky. 3-5 Units.
The two giant novels we will read and discuss closely were above all urgent actions taken in the heat of present crisis. War and Peace (1865-1869), Leo Tolstoy's epic family saga of Russia's historic resistance to Napoleon and the modern "will-to-power," and The Brothers Karamazov (1878-1880), Dostoevsky's tragicomic investigation into the roots of familial perversion, crimes of individual thought and collective performance, fascinate us with the striking contrasts of their novels' aesthetic responses and innovations. The final focus of the course will be on several of Anton Chekhov's short stories that re-play the themes of the Russian novel with compressed indirectness, pushing the great realist novel's dominance firmly into "history.".
Same as: SLAVIC 146

SLAVIC 347. Modern Russian Literature and Culture: The Age of War and Revolution. 3-5 Units.
The Age of Revolution: Readings in Russian Modernist Prose of the 1920-30s: What makes Russian modernist prose special? Or is there anything special about Russian modernist prose? This course aims to answer these questions through close readings of works by Babel, Mandelstam, Zoshchenko, Platonov, Olesha and Bulgakov. Aesthetic issues such as hero, plot, and narrative devices will be addressed with the aid of contemporaneous literary theory (Shklovsky, Tynianov, Eikhenbaum, Bakhtin). Novels and theory will be read in English. NOTE: This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.
Same as: SLAVIC 147

SLAVIC 348. Slavic Literature and Culture since the Death of Stalin. 3-5 Units.
The course offers a survey of Soviet and post-Soviet literary texts and films created by Russian, Ukrainian and Belarusian artists and marginalized or repressed by the Soviet regime. The first part of the course will focus on the topics of opposition and dissent, generational conflict, modernization, Soviet everyday life, gender, citizenship and national identity, state-published and samizdat literature, "village" and "cosmopolitan" culture, etc. The second part of it will be devoted to the postmodernist aesthetics and ideology in the dismantlement of totalitarian society, as well in the process of shaping post-Soviet identities. The reading materials range from the fictional, poetic, and publicistic works written by Noble-prize (Solzhenitsyn, Brodsky, Alexievich) and other major writers of the period to the drama, film, and popular culture.
Same as: REES 348, SLAVIC 148

SLAVIC 356. Vladimir Nabokov: Displacement and the Liberated Eye. 3-5 Units.
How did the triumphant author of "the great American novel" Lolita evolve from the young author writing at white heat for the tiny sad Russian emigration in Berlin? We will read his short stories and the novels The Luzhin Defense, Invitation to a Beheading, Lolita, Lolita the film, and Pale Fire, to see how Nabokov generated his sinister-playful forms as a buoyant answer to the "hypermodern" visual and film culture of pre-WWII Berlin, and then to America's all-pervading postwar "normalcy" in his pathological comic masterpieces Lolita and Pale Fire. Buy texts in translation at the Bookstore; Slavic grad students will supplement with reading and extra sessions in original Russian.
Same as: COMPLIT 115, COMPLIT 315, SLAVIC 156

SLAVIC 360. Cultural Hybridity in Central-Eastern Europe. 2-5 Units.
Historically shaped by shifting borders and mixing of various cultures and languages, identities in-between have been in abundance in Central-Eastern Europe. This course offers a comprehensive study of the oeuvre of several major Central-European authors of modernity: the Ukrainian-Russian Nikolai Gogol (1809-1852), the Czech-German-Jewish Franz Kafka (1883-1924), the Austrian-Galician-Jewish Leopold von Sacher-Masoch (1836-1895), the Ukrainian-Galician Olha Kobylyans¿ka (1863-1942), the Russian-German Lou Andreas-Salomé (1861-1937), the Jewish-Polish-Galician Bruno Schulz (1892-1942), and the Polish-Argentinean Witold Gombrowicz (1904-1969). Performing their selves in two or more cultures, these writers were engaged in identity games and produced hybrid texts with which they intervened into the major culture as others. In the course, we will apply post-structuralist and post-colonial concepts such as minor language, heterotopia, in-betweenness, mimicry, indeterminacy, exile, displacement, and transnationalism to the study of the writers oeuvres. We will also master the sociolinguistic analysis of such multi-lingual phenomena as self-translation, code-switching, and calquing and examine various versions of the same text to uncover the palimpsest of hybrid identities.
Same as: COMPLIT 231B, SLAVIC 160

SLAVIC 370. Pushkin. 3-5 Units.
Pushkin's poems, prose, and drafts in dialogue with contemporaries and cultural milieu. Emphasis on innovation and controversy in genre, lyrical form and personal idiom, shaping a public discourse. Taught in English.

SLAVIC 379. Literature from Medieval Rus' and Early Modern Russia. 3-5 Units.
This course traces the history of Russian literature before the eighteenth century. It is divided into two sections. The first section examines literature from Kyivan Rus' (up to the thirteenth century), the medieval conglomerate to which Belarus, Russia and Ukraine all trace their cultural heritage. The second section examines old Russian literature specifically, from the fourteenth to seventeenth centuries. We pay close attention to the development of literary genres, moral/religious and aesthetic features and their relationship, and the beginnings of Russian belles lettres. Our approach to the texts will be two-fold. On the one hand, we will spend some time situating the sources within their historical contexts. On the other hand, we will explore the interpretive possibilities of premodern literature using formal analysis and critical theory. Knowledge of an East Slavic language is required.
Same as: SLAVIC 179

SLAVIC 387. Classical Russian Poetry. 3-5 Units.
A survey of Russian poetry from Lomonosov to Vladinmir Solov'ev. Close reading of lyrical poems. Prerequisite: 3rd Year Russian Language.
Same as: SLAVIC 187

SLAVIC 388. 20th century Russian Poetry: From Aleksandr Blok to Joseph Brodsky. 3-4 Units.
Developments in and 20th-century Russian poetry including symbolism, acmeism, futurism, and literature of the absurd. Emphasis is on close readings of individual poems. Taught in Russian.
Same as: SLAVIC 188

SLAVIC 395. Russian and East European Theater. 3-5 Units.
Evolution of modernist Russian/Eur. dramaturgy, theatrical practices, landmark productions from Chekhov-Meyerhold-Grotowski to present; re-performance of classics; techniques of embodiment. Taught in English.
Same as: SLAVIC 195

SLAVIC 396. Readings in Yiddish Literature 1. 2-4 Units.
Yiddish literature, at a second-year language level. Readings chosen based on student interest; contact instructor with questions.
Same as: SLAVIC 196

SLAVIC 397. Readings in Yiddish Literature 2. 2-4 Units.
Yiddish literature, at a second-year language level. Continuation of SLAVIC 196. Readings chosen based on student interest; contact instructor with questions.
Same as: SLAVIC 197

SLAVIC 398. Writing Between Languages: The Case of Eastern European Jewish Literature. 1-5 Unit.
Eastern European Jews spoke and read Hebrew, Yiddish, and their co-territorial languages (Russian, Polish, etc.). In the modern period they developed secular literatures in all of them, and their writing reflected their own multilinguality and evolving language ideologies. We focus on major literary and sociolinguistic texts. Reading and discussion in English; students should have some reading knowledge of at least one relevant language as well. ***This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit***.
Same as: JEWISHST 148, JEWISHST 348, SLAVIC 198

SLAVIC 399. INDIVIDUAL WORK. 1-15 Unit.
Open to Russian majors or students working on special projects. May be repeated for credit. Prerequisite: consent of instructor.

SLAVIC 680. Curricular Practical Training. 1-3 Unit.
CPT course required for international students completing degree. Prerequisite: Slavic Languages and Literatures Ph.D. candidate.

SLAVIC 801. TGR PROJECT. 0 Units.
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SLAVIC 802. TGR Dissertation. 0 Units.
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Slavic Language Courses

SLAVLANG 1. First-Year Russian, First Quarter. 5 Units.
A beginning Russian course. Proficiency based communicative approach. Introduction to essential vocabulary and grammar, Russian culture and the Russian view of reality.

SLAVLANG 1A. Accelerated First-Year Russian, Part 1. 5 Units.
First quarter of the two-quarter accelerated sequence. For students with little or no prior experience studying Russian. Students acquire beginning proficiency in Russian at an accelerated pace through intensive studying of basic Russian grammar and functional vocabulary. The course emphasis is put on practice in speaking, reading, and writing Russian with special insight into Russian culture. Completion of 2A fulfills the University Language Requirement.

SLAVLANG 2. First-Year Russian, Second Quarter. 5 Units.
Continuation of SLAVLANG 1.A beginning Russian course.Proficiency based communicative approach. Introduction to essential vocabulary and grammar, Russian culture and the Russian view of reality.Active practice in speaking, reading and writing Russian. Prerequisite: Placement Test or SLAVLANG 1.

SLAVLANG 2A. Accelerated First-Year Russian, part 2. 5 Units.
Continuation of Slavlang 1A. Continuation of SLAVLANG1A. Completes the first-year sequence in two rather than three quarters. Students develop basic level proficiency in Russian at an accelerated pace through intensive studying of essential Russian grammar, functional vocabulary and active language practice. Speaking, reading and writing skills in Russian are developed through diverse materials in appropriate cultural contexts. The course fulfills the University foreign language requirement. Prerequisite: Slavlang 1A or placement Test.

SLAVLANG 3. First-Year Russian, Third Quarter. 5 Units.
Continuation of SLAVLANG 2.A beginning Russian course. Proficiency based communicative approach. Introduction to essential vocabulary and grammar, Russian culture and the Russian view of reality.Active practice in speaking, reading and writing Russian. The course fulfills the University foreign language requirement. Prerequisite: Placement Test or SLAVLANG 2.

SLAVLANG 5. Russian for Heritage Speakers, First Quarter. 2 Units.
Self-paced.Emphasis on reading and writing skills in Russian. Developing communication in formal and informal settings. Does not fulfill the University foreign language requirement. Prerequisite: placement test.

SLAVLANG 6. Russian for Heritage Speakers, Second Quarter. 2 Units.
Self-paced.Emphasis on reading and writing skills in Russian. Developing communication in formal and informal settings. Does not fulfill the University foreign language requirement.Does not fulfill the University foreign language requirement. Prerequisite: SLAVLANG 5 or placement test.

SLAVLANG 7. Russian for Heritage Speakers, Third Quarter. 2 Units.
Self-paced.Emphasis on reading and writing skills in Russian. Developing communication in formal and informal settings. Does not fulfill the University foreign language requirement. Prerequisite: SLAVLANG 6 or placement test.

SLAVLANG 10. Old Church Slavonic. 2 Units.
The first written language of the Slavic people. Grammar. Primarily a skills course, with attention to the historical context of Old Church Slavic.

SLAVLANG 51. Second-Year Russian, First Quarter. 5 Units.
Developing Russian language communicative proficiency from beginning to intermediate level. The course is based on active practice of speaking, writing reading and listening skills in a variety of situations through multiple texts and cultural materials. Intensive grammar review and vocabulary build up. Prerequisite: Placement Test, SLAVLANG 3.

SLAVLANG 52. Second-Year Russian, Second Quarter. 5 Units.
Continuation of 51. Developing Russian language communicative proficiency from beginning to intermediate level. The course is based on active practice of speaking, writing reading and listening skills in a variety of situations through multiple texts and cultural materials. Intensive grammar review and vocabulary build up. Prerequisite: placement test or 51.

SLAVLANG 53. Second-Year Russian, Third Quarter. 5 Units.
Continuation of 52. Developing Russian language communicative proficiency from beginning to intermediate level. The course is based on active practice of speaking, writing reading and listening skills in a variety of situations through multiple texts and cultural materials. Intensive grammar review and vocabulary build up.Increased level of self-confidence and fluency Prerequisite: placement test or 52.

SLAVLANG 55. Intermediate Russian Conversation. 2 Units.
Russian conversation practice at intermediate level. Based on developing Russian speaking skills through multiple situations and a variety of contexts.May be repeated twice for credit. Prerequisite: SLAVLANG3 or equivalent placement.

SLAVLANG 60A. Beginning Russian Conversation. 1 Unit.
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SLAVLANG 60B. Intermediate Russian Conversation. 1 Unit.
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SLAVLANG 60C. Advanced Russian Conversation. 1 Unit.
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SLAVLANG 60F. Perspectives on Slavic Culture and History through Film. 1 Unit.
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SLAVLANG 60G. Slavic History. 1 Unit.
This course examines the history of the World War II and contemporary Russia's memory of it. World War II has been arguably the most important struggle in Russia's history and memory. In this course, we will study the history of the war and how that history is told in Russia today. We will approach the war chronologically and thematically. We will ask how this war impacted the Soviet project, the mentality of Russians, and contemporary Russia's polices.

SLAVLANG 60H. Culture and Politics of Russian Athleticism through the lens of Sochi 2014. 1 Unit.
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SLAVLANG 60T. Teaching Slavic Conversation. 1 Unit.
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SLAVLANG 70. Reading in Russian. 2 Units.
The course is designed to develop reading competence in Russian. This is not a traditional language course that takes an integrated four-skill approach. The goal of the course is to reach proficiency of advanced level in reading Russian authentic materials pertinent to history and culture. The emphasis is on vocabulary building, reading comprehension, and translation. Intermediate level of Russian is required. Placement test or consent of Instructor.

SLAVLANG 99. Language Specials. 1-5 Unit.
Prerequisite: consent of instructor.

SLAVLANG 111. Third-Year Russian, First Quarter. 4 Units.
A snapshot of Russian life. Reading comprehension, conversational competence, grammatical accuracy, and cultural sophistication. Prerequisite: Placement Test or SLAVLANG53. Prerequisite: Placement Test or SLAVLANG 53.

SLAVLANG 112. Third-Year Russian, Second Quarter. 4 Units.
Continuation of SLAVLANG 111. A snapshot of Russian life. Reading comprehension, conversational competence, grammatical accuracy, and cultural sophistication. Prerequisite: Placement Test or SLAVLANG 111.

SLAVLANG 113. Third-Year Russian, Third Quarter. 4 Units.
Continuation of SLAVLANG 112. A snapshot of Russian life. Reading comprehension, conversational competence, grammatical accuracy, and cultural sophistication. Prerequisite: Placement Test or SLAVLANG 112.

SLAVLANG 177. Fourth-Year Russian, First Quarter. 3 Units.
Continuation of SLAVLANG 113. Culture, history, and current events. Films, classical and contemporary writers, newspaper articles, documentaries, radio and TV programs, and music. Review and fine-tuning of grammar and idiomatic usage. Prerequisite: Placement Ttest, SLAVLANG 113.

SLAVLANG 178. Fourth-Year Russian, Second Quarter. 3 Units.
Continuation of SLAVLANG 177. Culture, history, and current events. Films, classical and contemporary writers, newspaper articles, documentaries, radio and TV programs, and music. Review and fine-tuning of grammar and idiomatic usage. Prerequisite: Placement Test, SLAVLANG 177.

SLAVLANG 179. Fourth-Year Russian, Third Quarter. 3 Units.
Continuation of SLAVLANG 178. Culture, history, and current events. Films, classical and contemporary writers, newspaper articles, documentaries, radio and TV programs, and music. Review and fine-tuning of grammar and idiomatic usage. Prerequisite: Placement Test, SLAVLANG 178.

SLAVLANG 181. Fifth-Year Russian, First Quarter. 3 Units.
Language proficiency maintenance; appropriate for majors and non-majors with significant language experience. Discussions, oral presentations, and writing essays on contemporary Russia. Prerequisite: Placement Test, or SLAVLANG 179.

SLAVLANG 182. Fifth-Year Russian, Second Quarter. 3 Units.
Continuation of SLAVLANG181. Language proficiency maintenance; appropriate for majors and non-majors with significant language experience. Discussions, oral presentations, and writing essays on contemporary Russia. Prerequisite: Placement Test or SLAVLANG 181.

SLAVLANG 183. Fifth-Year Russian, Third Quarter. 3 Units.
Continuation of SLAVLANG 182. Language proficiency maintenance; appropriate for majors and non-majors with significant language experience. Discussions, oral presentations, and writing essays on contemporary Russia. Prerequisite: Placement Test or SLAVLANG 182.

SLAVLANG 184A. Russian Reading Conversation and Composition. 2 Units.
Proficiency in reading, spoken and written Russian through literary and non-literary texts, movies, and contemporary media. Emphasis is on debate, oral presentations, and essay writing.

SLAVLANG 184B. Russian Advanced Conversation and Composition. 2-3 Units.
Proficiency in spoken and written Russian through literary and non-literary texts, movies, and contemporary media. Emphasis is on debate, oral presentations, and essay writing.

SLAVLANG 184C. Russian Advanced Conversation and Composition. 2-3 Units.
Proficiency in spoken and written Russian through literary and non-literary texts, movies, and contemporary media. Emphasis is on debate, oral presentations, and essay writing.

SLAVLANG 199. Individual Work. 1-5 Unit.
Prerequisite: consent of instructor.

SLAVLANG 220. Russian for Slavic PhD Students. 1-3 Unit.
For DLCL graduate students who will teach Russian language and literature. Course objective is to improve spoken Russian on literary and pedagogical topics. Prerequisite: consent of instructor. May be repeated for credit.

SLAVLANG 299. Independent Study. 1-5 Unit.
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SLAVLANG 394. Graduate Studies in Russian Conversation. 1-3 Unit.
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SLAVLANG 395. Graduate Studies in Russian. 1-5 Unit.
Prerequisite: consent of instructor. (Staff).

SOCIOLOGY

Courses offered by the Department of Sociology are listed under the subject code SOC on the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=SOC&filter-catalognumber-SOC=on) web site.

Sociology seeks to understand all aspects of human social behavior, including the behavior of individuals as well as the social dynamics of small groups, large organizations, communities, institutions, and entire societies. Sociologists are typically motivated both by the desire to better understand the principles of social life and by the conviction that understanding these principles may aid in the formulation of enlightened and effective social policy. Sociology provides an intellectual background for students considering careers in the professions or business. Students may pursue degrees in sociology at the bachelor's, master's, or doctoral levels. The department organizes its courses by areas of study to assist students in tailoring their education and research to their academic interests and career goals.

Mission of the Undergraduate Program in Sociology

The mission of the undergraduate program in Sociology is to provide students with the skills necessary to understand and address social problems and inequalities in global, institutional, and interpersonal social relations. At its core, the curriculum in the major is rooted in social theory and the scientific method. Sociology majors are given opportunities to develop a broad understanding of core sociological theories and the methodological skills used to evaluate human behavior and social organizations. Sociology provides an intellectual background for students considering careers in business, social services, public policy, government service, international nongovernmental organizations, foundations, or academia.

The Sociology major consists of a core curriculum plus elective courses intended to provide breadth of exposure to the variety of areas encompassed by sociology.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the department's undergraduate program. Students are expected to demonstrate:

1. an understanding of core knowledge within the discipline of sociology.
2. the ability to communicate ideas clearly and persuasively in writing.
3. the ability to analyze a problem and draw correct inferences using qualitative and/or quantitative analysis.
4. the ability to evaluate theory and critique research within the discipline of sociology.

Graduate Programs in Sociology

The Department of Sociology offers three types of advanced degrees:

- the Doctor of Philosophy
- the coterminal Master of Arts in Sociology which is restricted to currently enrolled Stanford undergraduates
- the Master of Arts in Sociology which is available to Stanford students who are currently enrolled in other advanced degree programs.

The department does not have a terminal M.A. program for external applicants.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in Sociology and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in Sociology. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of Sociology and to interpret and present the results of such research.

Areas of Study

The Department of Sociology specializes in four general areas of study, allowing students to tailor their education and research to their academic interests and career goals. The five areas of study supported by the department are:

Organizations, Business, and the Economy

Focus is on the arrangements which societies construct for the provision of material goods or services. A formal organization which provides goods or services for profit and sells them through a market is called a business, and the economic system is capitalism. Social needs are also met through government and not-for-profit organizations, such as garden clubs, hospitals, prisons, and the Red Cross; some private and social needs are met outside of organizations, such as health care provided by family members and exchange of favors among friends. Courses stress the factors that determine whether needs that people define are met through markets or non-market allocation, through organizations, or by other means. They also investigate the environmental and technical factors that shape organization structure, the determinants of how efficiently organizations operate, and the interpersonal processes that shape individual behavior within organizations. Careers related to this field include management and administration in business or public settings, management consulting and analysis, and legal studies related to corporations, organizations, and business.

Social Movements, Comparative Politics, and Social Change

Focus is on the emergence, reproduction, and change of political systems and institutions, especially on why and how different political systems and social movements appear in different times and places, and how differences in political regimes and economic systems influence attempts to change these systems. The origins and significance of national and transnational social movements, transition to democracy, including revolution, nationalism, and other forms of collective action, in creating and sustaining these changes analyzed across countries and over time. Careers that are relevant to this field include law, public policy, government service, nonprofit and international nongovernmental organizations, business organizations (especially those with international interests), consulting, and managerial jobs.

Social Psychology and Interpersonal Processes

Focus is on the social organization of individual identity, beliefs, and behavior, and upon social structures and processes which emerge in and define interpersonal interactions. Processes studied include social acceptance and competition for prestige and status, the generation of power differences, the development of intimacy bonds, the formation of expectation states which govern performance in task oriented groups, and social pressures to constrain deviance. Foundation courses emphasize the effect of social processes on individual behavior and the analysis of group processes. This field provides training for careers with a significant interpersonal component, including advertising and marketing,

business, education, law, management, medicine and health, or social work.

Social Inequality

Focus is on forms of social inequality, including fields such as: the shape and nature of social inequalities; competition for power; allocation of privilege; production and reproduction of social cleavages; and consequences of class, race, and gender for outcomes such as attitudes, political behavior, and life styles. Many courses emphasize changes in the structure of social inequalities over time, and the processes which produce similarities or differences in stratification across nations. Topics include educational inequality, employment history, gender differences, income distributions, poverty, race, and ethnic relations, social mobility, and status attainment. Careers related to this field include administration, advertising, education, foreign service, journalism, industrial relations, law, management consulting, market research, public policy, and social service.

Race, Gender, Immigration, Identity and Policy

Focus is on population diversity, primarily in the United States, and on how identity is formed and maintained. Classes in this subject area address segregation, integration, and assimilation. What does it mean to cross from one group to another? How has the law treated racial minorities, sexual minorities, and immigrants differently over time? Careers related to this field include social work, teaching, research, law, management, and population studies which can be applied to any industry.

Joint Programs in Sociology with the School of Law

The School of Law and Department of Sociology conduct joint programs leading to either a combined J.D. degree with an M.A. degree in Sociology or to a combined J.D. degree with a Ph.D. in Sociology.

Law students interested in pursuing an M.A. in Sociology apply for admission to the Department of Sociology during the first year of Law school. Once admitted to the Department of Sociology, the student must complete standard departmental master's degree requirements as specified in this bulletin. Applications for the joint J.D./M.A. degree program must be approved by both the department and the Law school. Faculty advisers from each program participate in the planning and supervising of the student's academic program.

The J.D./Ph.D. degree program is designed for students who wish to prepare themselves for research or teaching careers in areas relating to both legal and sociological concerns. Students interested in the joint degree program must be admitted to both the School of Law and the Department of Sociology. Interest in the joint degree program must be noted on each of the student's applications. Alternatively, an enrolled student in either the Law School or the Sociology department may apply to the other program, preferably during their first year of study. Students participating in the joint degree program are not eligible to transfer and receive credit for a masters, or other degree, towards the Sociology Ph.D..

Upon admission, students are assigned a joint program faculty adviser who assists the student in planning an appropriate program and ensuring that all requirements for both degrees are satisfied. The faculty adviser serves in this capacity during the student's course of study regardless of whether the student is enrolled in the School of Law or the Sociology department.

J.D./Ph.D. students may elect to begin their course of study in either the School of Law or the Department of Sociology. Students must be enrolled full-time in the Law school for the first year of Law school, and must enroll full time in the graduate school for the first year of the Sociology program. After that time, enrollment may be in the graduate school or the Law school, and students may choose courses from either program regardless of where enrolled. Students must satisfy the requirements for both the J.D. and the Ph.D. degrees. Up to 54 quarter units of approved course work may be counted towards both degrees, but no more than 31 quarter units of courses that originate outside the Law school may count towards the Law degree. The Law degree may be conferred upon completion of applicable Law school requirements; it is not necessary to have both degrees conferred simultaneously. Students participating in the joint degree program are not eligible to transfer and receive credit for a master's or other degree towards the Ph.D. Students must complete the equivalent of 183 quarter units to complete both degrees. Tuition and financial aid arrangements normally are through the school in which the student is currently enrolled.

The Law degree may be conferred upon completion of applicable Law school requirements; it is not necessary to have both degrees conferred simultaneously.

For more information, see the Sociology (https://sociology.stanford.edu/academics/phd-programs/jdphd/) web site, and the Law School web site on the J.D./Ph.D. (https://www.law.stanford.edu/degrees/joint-degrees/law-and-sociology/)

Bachelor of Arts in Sociology

There are two pathways to a Sociology B.A. degree:

- the Sociology Bachelor's degree, or
- the Sociology Bachelor's degree with the Data Science, Markets, and Management subplan

The following requirements are for the Sociology bachelor's degree. See the Sociology Bachelor's degree with the Data Science, Markets, and Management subplan (p. 2101) for degree requirements for that option.

Declaring the Major in Sociology

To declare a major in Sociology, students should declare the B.A. in Axess, then download the major declaration form from the department website (https://sociology.stanford.edu/academics/explore-ba-sociology/how-declare/). Fill out and electronically sign the declaration form, and email the completed form to the Student Services Specialist.

Major Requirements

A 3.0 GPA is required to enter the Sociology major. The B.A. in Sociology requires 60 units of coursework. Grades of 'S' or 'CR' are allowable. When students take classes for a letter grade, a grade of at least 'C' should be earned or the student should obtain a written exception.

Unit values for courses can vary from year to year. If you have any questions, contact the Undergraduate Student Services Specialist in Sociology.

Students are encouraged to complete some coursework at the 200-level. Sociology majors are encouraged to participate in directed research or undertake independent research with Sociology faculty. See the department website for additional information.

Requirements

Units required for the Sociology B.A. are:

	Units
Sociology Core Courses (4 courses)	17
Sociology Foundation Courses (3 courses)	12
Social Science Electives (Units sufficient to bring the total # of units to 60--usually 4-6 courses)	27
Methodology, Quantitative or Qualitative (1 course)	4
Total Units	60

Core Courses Required for the Major

The following core courses are required of all Sociology majors.

		Units
SOC 1	Introduction to Sociology	4-5
or SOC 170	Classics of Modern Social Theory	
SOC 180A	Foundations of Social Research	4
SOC 180B	Introduction to Data Analysis	4
SOC 202	Junior Seminar: Preparation for Research	5
or SOC 204	Capstone Research Seminar	
Total Units		17-18

- Students considering honors are encouraged to enroll in SOC 202 Junior Seminar: Preparation for Research in their junior year, in order to have a research plan in place in the summer before senior year.

Foundation Courses Required for the Major

Sociology majors must complete 3 foundation courses; one course in three different areas for a total of three courses. For further information about Sociology areas of study, see the department website.

Foundation courses, classified by area of study, are as follows:

Organizations, Business, and the Economy

		Units
SOC 114	Economic Sociology	4
SOC 160	Formal Organizations	4
SOC 162	The Social Regulation of Markets	3

Social Movements, Comparative Politics, and Social Change

		Units
SOC 118	Social Movements and Collective Action	4
SOC 119	Understanding Large-Scale Societal Change: The Case of the 1960s	5
SOC 130	Education and Society	4-5
SOC 156A	The Changing American City	4
SOC 176	The Social Life of Neighborhoods	3-5

Social Psychology and Interpersonal Processes

		Units
SOC 2	Self and Society: Introduction to Social Psychology	4
SOC 8	Sport, Competition, and Society	4
SOC 120	Interpersonal Relations	4
SOC 121	The Individual in Social Structure: Foundations in Sociological Social Psychology	5
SOC 127	Bargaining, Power, and Influence in Social Interaction	5

Social Stratification and Inequality

		Units
SOC 135	Poverty, Inequality, and Social Policy in the United States	3
SOC 140	Introduction to Social Stratification	3
SOC 141	Monitoring the Crisis	5
SOC 144	Inequality and the Workplace	5
SOC 149	The Urban Underclass	4
SOC 152	The Social Determinants of Health	4
SOC 179A	Crime and Punishment in America	4-5

Race, Gender, Immigration, Identity, and Policy

		Units
SOC 142	Sociology of Gender	3
SOC 145	Race and Ethnic Relations in the USA	4
SOC 147	Race and Ethnicity Around the World	4
SOC 150	Race and Political Sociology	3
SOC 155	The Changing American Family	4
SOC 189	Race and Immigration	4-5

Social Science Elective Courses

Social Science electives are required for the major, sufficient to bring the total number of units in the Sociology major to 60. You may take all elective courses in Sociology if you wish. Students may choose their elective courses according to personal interest. Non-Sociology courses must be approved by the Director of Undergraduate Studies. A maximum of 10 units taken in other Social Science departments (Anthropology, Communication, Economics, Political Science, Psychology) may be counted towards the 60 units required for the Sociology B.A.

Methods Requirement

Sociology majors are required to take at least one methodology course, either quantitative or qualitative, to supplement the core and foundation courses within Sociology. Quantitative classes in data analysis, programming, computer science, statistics, mathematics, are all suitable for this requirement, as are qualitative methods classes such as field research methods.

Bachelor of Arts in Sociology with Data Science, Markets, and Management Subplan

There are two pathways to a Sociology B.A. degree:

- the Sociology Bachelor's degree, or
- the Sociology Bachelor's degree with the Data Science, Markets, and Management subplan

The following requirements are for the Sociology bachelor's degree with the Data Science, Markets, and Management subplan. See the Sociology Bachelor's degree tab (p. 2100) for degree requirements for that option.

Declaring the Major in Sociology with Data Science, Markets, and Management Subplan

To declare a major in Sociology, students should declare the B.A. in Axess with the Data Science, Markets, and Management subplan, then download the major declaration form from the department web site (https://sociology.stanford.edu/academics/explore-ba-sociology/how-declare/). Fill out and electronically sign the declaration form, and email the completed form to the Student Services Specialist.

The subplan prints on the diploma and transcript.

Major Requirements

A 3.0 GPA is required to enter the Sociology major. The B.A. in Sociology requires 60 units of coursework. Grades of 'S' or 'CR' are allowable. When students take classes for a letter grade, a grade of at least 'C' should be earned or the student should obtain a written exception.

Unit values for courses can vary from year to year. If you have any questions, contact the Undergraduate Student Services Specialist in Sociology.

Students are encouraged to complete some coursework at the 200-level. Sociology majors are encouraged to participate in directed research

or undertake independent research with Sociology faculty. See the department website for additional information.

Requirements

Students in the Data Science, Markets, and Management subplan must take the following courses; substitutions may be made only with consent of the Director of Undergraduate Studies.

Core Requirements

The core requirements include one class in each of: experimental methods, computer programming, analysis of big data, data analysis and regression, network analysis, and a Writing in the Major class, as follows:

		Units
SOC 2	Self and Society: Introduction to Social Psychology	4
or SOC 120	Interpersonal Relations	
CS 105	Introduction to Computers (all CS requirements can be substituted for by higher level CS or programming classes)	3-5
or CS 106A	Programming Methodology	
or CS 106B	Programming Abstractions	
or CS 106X	Programming Abstractions	
MS&E 231	Introduction to Computational Social Science	3-4
or SOC 278	Introduction to Computational Social Science	
or SOC 10	Introduction to Computational Social Science	
SOC 180B	Introduction to Data Analysis	4
SOC 126	Introduction to Social Networks	3-5
or SOC 31N	Social Networks	
or SOC 224B	Relational Sociology	
or CS 224W	Machine Learning with Graphs	
or ECON 291	Social and Economic Networks	
or MS&E 135	Networks	
SOC 202	Junior Seminar: Preparation for Research	5
or SOC 204	Capstone Research Seminar	

Foundation Sociology Courses on Economics, Organizations, Business, Labor Markets, and the Economy

Choose any two of the following courses:

		Units
SOC 3	America: Unequal	4
SOC 18N	Ethics, Morality, and Markets	3
SOC 114	Economic Sociology	4
SOC 117A	China Under Mao	5
SOC 130	Education and Society	4-5
SOC 140	Introduction to Social Stratification	3
SOC 162	The Social Regulation of Markets	3
SOC 167A	Asia-Pacific Transformation	4

Electives

In addition to the Core classes and the Foundation classes, the Data Science, Markets and Management subplan requires 7 additional courses, as follows:

	Units
Four additional Sociology (SOC) courses	16
Two additional Computer Science, Math, Statistics, or Quantitative Social Science Courses	8
One additional Sociology or Social Science elective	4

Honors Program

Sociology majors who wish to complete an independent scholarly project under the direction of a faculty member are encouraged to apply for admission to the department's honors program. Admission to the program requires a grade point average (GPA) of 3.5 or higher in courses taken within the major, and an overall GPA of 3.3 (B+) or higher in all undergraduate coursework. Applicants are required to identify a Sociology faculty member to advise on the research and writing of the essay. With the approval of the Director of Undergraduate Studies, students may work with faculty advisers in other departments.

Students are encouraged to begin planning their honors thesis in their junior year. SOC 202 (http://exploredegrees.stanford.edu/search/?P=SOC%20202), the Junior Seminar Sociology Writing In the Major course, is strongly recommended for students intending to pursue an honors thesis. Students pursuing honors should take the Sociology methods sequence, SOC 180A and SOC 180B (or approved substitutes) as early in the process as they can. Students begin designing their honors project in connection with this seminar and in consultation with the seminar leader.

To apply for the honors program, students should complete the honors application, obtain an adviser's approval and signature, and submit the application with a brief description of the proposed project and a copy of the student's unofficial undergraduate transcript, to the Director of Undergraduate Studies. Prospective candidates are asked to submit an honors application as soon as possible in their junior or senior year, ideally no later than the end of the fourth quarter prior to graduation (typically Spring Quarter of the junior year). Honors students may earn up to 12 independent study units for work leading to completion of the required honors thesis, excluding units associated with the Capstone Research Seminar.

If the student is admitted to the program, students will be directed to declare the B.A.H. in Axess and drop the general B.A. Completion of honors in Sociology requires:

1. Application and acceptance into the Sociology honors program
2. Completion of all requirements of the Sociology major or Sociology major with subplan
3. Completion of an honors thesis with a grade of 'A-' or higher
4. Participation in the Sociology Honors Colloquium in the Spring Quarter prior to graduation.

If honors program requirements are not met, students must drop the B.A.H. degree program in Axess and declare the B.A. before applying to graduate.

Minor in Sociology

There are two pathways to a Sociology minor:

- the traditional Sociology minor, or
- the Sociology minor subplan in Poverty, Inequality and Policy

The following requirements are for the traditional minor in Sociology. See the Poverty, Inequality and Policy tab (p.) for those requirements.

Students must complete a minimum of 24 units in Sociology (or 6 classes, whichever is greater) for the minor. Grades of 'S' or 'CR' are allowable. When students take classes for a letter grade, a grade of at least 'C' should be earned or the student should obtain a written exception. Students who wish to declare a minor in Sociology must do so no later than the deadline for their application to graduate. Related coursework from other departments may fulfill a minor requirement. All course substitutions must be approved by the Sociology Director of Undergraduate Studies.

Course requirements for a minor in Sociology are as follows:

		Units
SOC 1	Introduction to Sociology	4-5
or SOC 170	Classics of Modern Social Theory	
SOC 2	Self and Society: Introduction to Social Psychology	4
or SOC 180A	Foundations of Social Research	
or SOC 180B	Introduction to Data Analysis	
Two foundation courses: see foundation courses required for the major above		
Two additional Sociology courses		

Minor in Sociology, Poverty, Inequality and Policy Subplan

There are two pathways to a Sociology minor:

- the traditional Sociology minor (p. 2102), or
- the Sociology minor subplan in Poverty, Inequality and Policy

The following requirements are for the Poverty, Inequality and Policy subplan. See the Sociology Minor tab (p. 2102) for those requirements.

Overview

This minor provides students with the interdisciplinary tools needed to understand and contribute to the science of poverty and inequality. The coursework, which is drawn from sociology, economics, public policy, education, history, psychology, and political science, provides state-of-the-art training in the types and forms of poverty and inequality, the causes and consequences of poverty and inequality, and the many programs and interventions to reduce poverty and inequality. It provides opportunities to train in big data analysis, algorithms and predictive models, and qualitative and ethnographic methods. It also provides opportunities to participate in individual and group research projects and to join teams that are building poverty-reducing products, apps, and interventions. It is an excellent foundation for students considering careers in business, public policy, medicine, public health, government service, the law, nongovernmental organizations, foundations, or academia

Course Requirements

The minor requires 24 units. Grades of 'S' or 'CR' are allowable. When students take classes for a letter grade, a grade of at least 'C' should be earned or the student should obtain a written exception. All course substitutions must be approved by the Sociology Director of Undergraduate Studies.

The following requirements are for the Poverty, Inequality, and Policy minor subplan.

		Units
Core		
Take two core courses		
SOC 3	America: Unequal	4
SOC 180A	Foundations of Social Research	4
or SOC 180B	Introduction to Data Analysis	
or ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	
Breadth		
Choose at least two courses from at least two of the following areas of concentration		8
Education		
EDUC 232	Culture, Learning, and Poverty	
SOC 130/ EDUC 120C	Education and Society	
EDUC 347	The Economics of Higher Education	
SOC 129X/ AFRICAAM 112/ CSRE 112X/ EDUC 112	Urban Education	
Gender		
SOC 153/ AFRICAAM 141X/ CSRE 141X/ FEMGEN 141	Activism and Intersectionality	
SOC 134D	Sex, Courtship, and Marriage in America	
SOC/FEMGEN 142	Sociology of Gender	
SOC/FEMGEN 155	The Changing American Family	
Health and Well-Being		
SOC 152	The Social Determinants of Health	
Inequality and Mobility		
ECON 22N	Causes and Consequences of the Rise in Inequality	
SOC 14N	Inequality in American Society	
SOC 135	Poverty, Inequality, and Social Policy in the United States	
Labor Markets		
ECON 145	Labor Economics	
ECON 147	The Economics of Labor Markets	
SOC 114	Economic Sociology	
Poverty and the Safety Net		
SOC 157 & SOC 158	Ending Poverty with Technology and Ending Poverty with Technology: A Practicum. (or PUBLPOL 147/148)	
ECON 19Q	Government by the Numbers	
SOC 149/ CSRE 149A/ URBANST 112	The Urban Underclass	
ECON 11N	Understanding the Welfare System	
SOC 156A	The Changing American City	
Race, Ethnicity, and Immigration		
SOC 146/ CSRE 196C/ ENGLISH 172D/ PSYCH 155/ TAPS 165	Introduction to Comparative Studies in Race and Ethnicity	
ANTHRO 31Q	The Big Shift	4
PSYCH 286	The Psychology of Racial Inequality	
SOC/CSRE 45Q	Understanding Race and Ethnicity in American Society	
SOC/CSRE 20N	What counts as "race," and why?	
Electives		
Choose two electives. Although all pre-approved courses are listed here, students may petition for approval of other courses related to inequality, poverty, and mobility. Students may also elect to take additional concentration courses in any of the concentration areas above.		8
LAW 2515	Environmental Justice	3
EDUC 197	Gender and Education in Global and Comparative Perspectives	3-4
FEMGEN 297	Gender and Education in Global and Comparative Perspectives	3-4

SOC 134	Gender and Education in Global and Comparative Perspectives	3-4
EDUC 173	Gender and Higher Education: National and International Perspectives	3-4
SOC 173	Gender and Higher Education: National and International Perspectives	3-4
CSRE 141	Gentrification	5
URBANST 141	Gentrification	5
POLISCI 338	Universal Basic Income: the philosophy behind the proposal	3
POLISCI 220	Urban Policy Research Lab	5
PUBLPOL 225	Urban Policy Research Lab	5
URBANST 170	Urban Policy Research Lab	5
PUBLPOL 154	Politics and Policy in California	5
PUBLPOL 101	Introduction to American Politics and Policy: The Good, The Bad, and The Ugly	4-5
ECON 241	Public Economics I	2-5
SOC 109	Race and Immigration in the US : Boundaries and Mobility	4
LAW 2010	Sentencing, Corrections, and Criminal Justice Policy	3
CSRE 156	The Changing American City	4
URBANST 156A	The Changing American City	4
SOC 156A	The Changing American City	4
PHIL 174B	Universal Basic Income: the philosophy behind the proposal	3

Optional Research Apprenticeship (up to five units)

Students may opt to replace one elective with a research apprenticeship with faculty in an ongoing research project. The Center on Poverty and Inequality also offers opportunities for students interested in participating in larger team projects. Prior arrangement required.

Coterminal Master of Arts in Sociology

Stanford undergraduates, regardless of undergraduate major, who wish to pursue an M.A. in Sociology may apply for the coterminal master's program. The coterminal M.A. in Sociology is a flexible, self-designed program. It is possible for students to complete their B.A. and Sociology coterminal M.A. in the fourth year; historically, most students have completed a Sociology M.A. during their fifth year at Stanford.

Application and Admission

Undergraduates must be admitted to the program and enrolled as a graduate student for at least one quarter prior to their B.A. conferral. A cumulative GPA of at least 3.5 in previous undergraduate work is required for admission. The GRE is not required for a Sociology master's program application. It is highly recommended that applicants have completed at least one Sociology course at the 100 level with a grade of 'B' or better.

The department accepts applications once a year; the application deadline is February 5, 2021 for Spring Quarter enrollment. There are no exceptions to this deadline. All application materials are submitted online.

The department does not fund coterminal M.A. students. To learn more about graduate financial assistance, please visit the Stanford Financial Aid Office (https://financialaid.stanford.edu/aid/special/co_term.html).

To apply for admission to the Sociology coterminal M.A. program, students must submit the following:

1. The Application for Admission to Coterminal Master's Program (https://applyweb.com/stanterm/) available online in mid-September;
2. Statement of purpose: limited to 2 pages double-spaced. Applicants should outline reasons for pursuing the M.A. in Sociology, including career aspirations or plans for additional advanced degrees, and other aspects of their academic experiences that may aid the admissions committee in evaluating their motivation for graduate study. Students seeking a research-intensive experience also should describe their specific research interests and plans to complete
3. Preliminary Program Proposal for Master's Degree: this form should be uploaded to the online application. At least 45 units of coursework relevant to the degree program must be specified. Example proposals for the 2019-20 academic year appear below;
4. Undergraduate Coterm Application Approval form (https://stanford.app.box.com/v/ug-coterm-application-approval/): downloaded from the Registrar's Office website and uploaded to the online application;
5. Current unofficial undergraduate transcript;
6. Two letters of recommendation from Stanford faculty familiar with the student's academic work. Additional letters from teaching assistants, employers, or other individuals are accepted as supplemental materials but are not required.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken three quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to the graduate career. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Program Requirements

Coterminal M.A. students are required to take 45 units of course work during their graduate career. All units for the coterminal M.A. must be taken at or above the 100 level; advanced-level course work is encouraged and at least 50 percent must be courses designated primarily for graduate students (typically at the 200 level or above).

Students who wish to take courses outside the department must seek approval in advance; coterminal master's students are limited to 5 units from outside of the department and outside courses must be taken in other Social Science departments. Up to 5 units can be taken as an independent study or directed reading (SOC 290 Coterminal MA individual study) with a faculty member appointed in Sociology but no more than 12 units of coursework across the 290 series (including SOC 291, SOC 292) can be counted toward the degree.

Students may transfer relevant units from their undergraduate career; to be eligible for transfer, courses must have been taken in the three quarters preceding the student's first graduate quarter. See

the Registrar's Office for additional information on course transfer policies. All units applied to the coterminal master's degree must be taken for a letter grade, and an overall grade point average (GPA) of 3.0 (B) or better is required for the degree.

All coterminal students are required to take SOC 270 Classics of Modern Social Theory and SOC 280A Foundations of Social Research. These introductory theory and methods courses are an important component of graduate training in the social sciences. Enrollment in SOC 202 Junior Seminar: Preparation for Research, SOC 204 Capstone Research Seminar, and SOC 280B Introduction to Data Analysis is strongly encouraged. Together, these courses provide skills for research opportunities within the department and in academic or professional careers.

The Department of Sociology is able to provide a research-intensive curriculum to a limited number of coterminal Master's students each year. It is highly recommended that students interested in a research-focused experience have completed SOC 180A/280A and SOC 202, or be enrolled, at the time of application to the coterminal Master's program. Applicants should indicate interest in their statement of purpose and describe their specific research question or topic. Upon acceptance, research-track students will work with the Sociology Coterm Director to develop an individualized program, which may include engaging in a research apprenticeship with faculty and/or completing an original research project.

Coterm Advising: Coterminal M.A. students should meet with the Sociology Coterm Director upon acceptance to discuss their planned coursework and receive approval for their program proposal. Program proposals, which outline the courses to be completed for the master's degree, must be submitted before the start of the student's second graduate quarter.

The Department of Sociology is committed to providing academic advising in support of the scholarly and professional development of all coterminal Master's students. When most effective, this advising relationship entails collaborative and sustained engagement by both the advisor and the advisee. The Sociology Coterm Director guides students in key areas such as selecting courses, designing and conducting research, and exploring academic opportunities and professional pathways. The Sociology student services office is also available to assist coterminal students in navigating policies and degree requirements. Students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for knowing and adhering to University and Departmental policies, standards, and requirements for coterminal students

For University coterminal degree program rules and University application forms, see the Coterminal Degrees section (http://exploredegrees.stanford.edu/cotermdegrees/) of this bulletin. For additional information regarding the Sociology coterminal M.A. and how to apply, see the Department of Sociology (https://sociology.stanford.edu/academics/masters-degree-programs/coterminal-masters-program/) web site.

Sample Program Proposals

Standard Coterminal Master's Coursework (2020-21)

		Units
SOC 218	Social Movements and Collective Action	4
SOC 247	Race and Ethnicity Around the World	4
SOC 255	The Changing American Family	4
SOC 270	Classics of Modern Social Theory	4
SOC 276	The Social Life of Neighborhoods	3-5
SOC 280A	Foundations of Social Research	4
SOC 280B	Introduction to Data Analysis	4
SOC 289	Race and Immigration	4-5
SOC 289	Race and Immigration	4
Outside department		5
Previously taken Sociology coursework		8

Research-focused Coterminal Master's Curriculum (2020-21)

SOC 202	Junior Seminar: Preparation for Research	5
SOC 204	Capstone Research Seminar	5
SOC 270	Classics of Modern Social Theory	4
SOC 280A	Foundations of Social Research	4
SOC 280B	Introduction to Data Analysis	4
SOC 291	Coterminal MA directed research	3-9
SOC 292	Coterminal MA research apprenticeship	2-9
Substantive Sociology course work		12

Master of Arts in Sociology for Current Stanford Graduate Students

The M.A. degree in Sociology is available to current Ph.D. candidates in Sociology and to students in advanced degree programs (Ph.D., J.D., M.D.) from other Stanford departments and schools.

For the M.A. degree, students must complete a minimum of 45 units of Sociology coursework with a grade point average (GPA) of 3.0 (B) or better. Of these units, 30 units must be taken in courses taught by faculty appointed in the Sociology department. Students may petition to use the remaining 15 units as flex units for courses not offered by faculty appointed in Sociology, but that are highly relevant to the discipline. Of these flex units, 5 can be taken as an independent study or directed reading with a member of the faculty appointed in Sociology. All flex units applied to courses not taught by faculty appointed in Sociology must be approved by the Director of Graduate Studies. All courses must be taken for a letter grade when possible. Workshops and colloquia do not count towards the M.A.

Students who wish to engage in more in-depth study on a specific topic may do so by focusing on coursework within an area of study, such as Poverty and Inequality, Social Psychology, Organizations and the Economy, or Race, Ethnicity, and Immigration.

A thesis is not required, but many students work closely with a Sociology faculty advisor to develop a publishable paper.

There is no teaching requirement for the M.A. in Sociology.

University regulations pertaining to the M.A. are listed in the "Graduate Degrees (http://www.stanford.edu/dept/registrar/bulletin/4901.htm)" section of this bulletin.

Although formal application to the M.A. program is not required, applicants from outside of the Sociology department must submit:

1. Graduate Authorization Petition form, available electronically through Axess (https://axess.stanford.edu/);
2. Program Proposal for an M.A. form available for download from the registrar's office website, submitted to Sociology Graduate Student Services Manager;
3. Short statement of purpose; 1 page double-spaced, submitted to Sociology Graduate Student Services Manager.

Sociology Ph.D.s may receive their M.A. in their second or third year of graduate study. Interested students from other degree programs should visit the Sociology d (https://sociology.stanford.edu/academics/coterminal-masters-program/master-arts-sociology-current-stanford-graduate-students/)epartment (https://sociology.stanford.edu/

academics/coterminal-masters-program/master-arts-sociology-current-stanford-graduate-students/) (https://sociology.stanford.edu/academics/coterminal-masters-program/master-arts-sociology-current-stanford-graduate-students/)web site.

Doctor of Philosophy in Sociology

The Ph.D. program in the Department of Sociology at Stanford offers rigorous training in sociological knowledge and research methods, and prepares students to embark on successful professional careers in sociology. The program prides itself on world-renowned faculty, cutting-edge research programs, and close interactions between faculty and students.

The following program requirements apply to students who entered the Ph.D program in 2010-11 or later; students admitted prior to 2010 should consult the department or the Bulletin from their year of admission (http://exploredegrees.stanford.edu/archive/#text) for requirements specific to their cohort.

Students must complete the following department requirements for the Ph.D. degree in Sociology:

1. Students must enroll in SOC 305 Graduate Proseminar in Autumn and Winter quarters of the first year. The course provides an introduction and orientation to the field of sociology, and to the department and faculty. One unit of credit is given for this course; grading is on a satisfactory/no credit basis.
2. Students must complete 6 quarters of SOC 396 Sociology Colloquium by the end of their third year of study. The Sociology Colloquium is a semimonthly seminar held throughout the academic year, in which distinguished scholars lecture about their cutting-edge research findings. Students must enroll for credit and it is required for all first and second year Sociology students.
3. Students are required to complete 45 units of course work in Sociology in the first academic year, then 15 units of Sociology course work in the second academic year. Course work excludes workshop, independent study, and directed reading units.
4. *Theory:* Students are required to take two courses in sociological theory. The first course in macro-sociological theory (SOC 370A SOCIOLOGICAL THEORY), and the second course in research design (SOC 372 Theoretical Analysis and Research Design or SOC 670 Designing Social Research) to be taken in the first year of the program.
5. *Methodology:* Students are required to complete a series of courses in methodology as well as one methods elective. Students with little background in statistics are encouraged to take an undergraduate statistics course in their first quarter of the program. The required methods sequence, to be taken in order, is listed below.
6. *Survey Courses:* Students must complete four broad survey courses to demonstrate command of a range of sociological literature. Each year the department specifies which courses meet this requirement. A list of courses that generally fulfill this requirement is listed below. Students should consult with their advisor to ensure that the combination of courses selected to meet this requirement exhibits sufficient breadth. This requirement is normally completed by the end of the second year of residency and must be met by the end of the third year of residency. The most current list of approved survey courses is available on the department website.
7. *Workshops:* Beginning in year two, doctoral students are required to enroll in at least one workshop each quarter. First year students may attend workshops but are not required to enroll. Sociology workshops are offered for 1-2 units on a credit/non-credit basis only and attendance is required to receive course credit. The Director of Graduate Studies may approve a student's petition to attend a workshop when enrollment is prohibited by unit constraints; such attendance is not noted on the transcript. A list of approved workshops that fulfill this requirement is listed in the requirements section below and also on the department website.
8. *Qualifying Exam #1:* The first comprehensive examination is designed to ensure that students enter their second year with a firm reading knowledge of two substantive subfields, which students choose. Students write two essays in response to questions provided by the examining committee. The essays are due exactly one week after students receive the questions. Students choose one of two questions to write on for each subfield. Examinations are offered in the subject areas below, based on comprehensive readings lists that are available at the beginning of each academic year. Each subject area has one faculty point person or group leader. Group leaders are responsible for assembling essay questions and agree to meet with students as requested.

Exam subject areas for 2020 -21 are:

- Economic Sociology
- Gender
- Historical and Comparative Sociology
- Organizations
- Political Sociology
- Population, Family, Demography, and Marriage
- Race, Ethnicity, and Immigration
- Social Inequality
- Social Movements
- Social Psychology and Microsociology

Students may work together to read and discuss the materials on the comprehensive reading lists (and in fact they are encouraged to do so). They may consult with faculty members as they study for the exams. However, once the examination questions are released, all such collaboration and consultation should stop, and students should work independently on their essays.

9. *Qualifying Exam #2*: The second qualifying examination provides students with a more focused engagement in a specialized subfield or research area, and tests the student's ability to work and think independently. Exam #2 is due by June 1 of the second year in residence. A two-person committee that includes the primary advisor evaluates the paper. Although the committee is usually comprised of two regular faculty members in the department, emeritus and other faculty outside the department may serve as a committee member with prior approval. Committees and a brief proposal are recorded on the second year qualifying paper form, which the student should complete and submit to the graduate student services manager by December 1 of the second year. Second year students are required to enroll in SOC 385A Research Practicum 1 and SOC 385B Research Practicum II (both workshops assist in developing the front end of the research paper). Exams are read and graded by both committee members. The grades are an important component of the decision to advance a student to candidacy. Students must submit a one-page proposal to the reading committee and receive its approval by December 1 of the second year. The proposal includes a brief statement of the problem; a preliminary research design; a data source and proof of reasonable access to it; and a short reading list. Students submit the proposal along with second year qualifying paper form to the graduate student services manager. Students should produce a paper that makes an original contribution to sociological knowledge and that is ultimately publishable. That generally means writing a paper that includes data analysis; a full and focused analytic discussion of relevant theory and research; and frame the findings as a contribution to the literature. Students may also produce a paper with a primarily theoretical contribution so long as the prospects for eventual publication are clear to the committee. The paper should contain no more than 8,000 words of text. This paper may not also be employed to meet the Third Year Paper requirement, even in revised form.

10. *Third Year Paper:* In preparation for a career of writing scholarly papers, each student must complete a research paper in the third year of residency. This third-year paper may be on any sociological topic, and may address theoretical, empirical, or methodological issues. The paper is expected to reflect original work and be of publishable quality. Students select a committee of at least two Sociology faculty members to serve as third year paper readers. To ensure that students are making adequate progress on their paper, students are required to provide a first draft of the paper to readers by April 1. The final deadline for paper submission is June 1. The committee provides a review that speaks to (1) whether the paper is publishable and whether the student should therefore invest in attempting to publish it, and (2) what types of revisions, insofar as the paper is publishable, that the student should be pursuing to ready the paper for publication. These comments are shared with the Director of Graduate Studies, and copies of the paper and faculty comments will go in the student file.

11. *TA requirement:* Students must complete three quarters of teaching assistantship in departmental courses, or in other courses by approval. Students working as either a teaching assistant (TA) under the supervision of a faculty member or as a teaching fellow (TF) fulfills this requirement. Students are required to take SOC 300, Workshop: Teaching Development, in Spring Quarter of the first year. In addition, students are encouraged to take advantage of department and University teacher training programs. Students for whom English is a second language are expected to acquire sufficient facility in English to be an effective teacher. It is recommended that students complete their teaching requirements early in their graduate program; the requirement must be completed by the end of the fourth year of residency.

12. RA requirement: As partial preparation for becoming an accomplished researcher, each student must complete three quarters of research assistantship, working under the supervision of one or more faculty members, including regular, emeritus, and affiliated faculty. The experience may involve paid (or unpaid) work as a Research Assistant (RA). With the approval of the Director of Graduate Studies, research experience may be acquired by involvement in research projects outside the department. It is recommended that students complete their research requirements early in their graduate program; the requirement must be completed by the end of the fourth year of residency.

13. Students are required to present at least two papers at either major professional meetings (e.g., ASA), department workshops, or a combination of the two in their first five years of graduate study. The department provides students with a travel and research fund for the duration of their graduate career to assist with the costs associated with travel.

14. *Dissertation Prospectus and Prospectus Defense:* In order to demonstrate the ability to conduct independent scholarly work, each student must prepare and successfully defend the dissertation prospectus by the end of May during the fourth year in residence. Students should have their dissertation committee selected by the end of their third year in the program.

15. Doctoral Dissertation and Defense: Each student must complete and defend a doctoral dissertation. At the choice of the student (and in consultation with his/her advisor), the dissertation requirement may be met either by (1) submitting a book-length document, or (2) submitting three independent papers. The papers may address the same topic, but should be written as stand-alone, single-authored papers in standard journal format (i.e., AJS or ASR). None of these papers may overlap substantially with one another, and none of them may be co-authored. (The main criterion in judging substantial overlap is whether any standard journal, such as AJS, would regard the papers as too similar to publish both.) The dissertation must be submitted to all committee members at least 30 days in advance of the defense date. The dissertation defense serves as the Oral Examination required by the University. Assessment of satisfactory completion is determined by the student's doctoral committee members. All students are invited to present their dissertation findings at an informal department colloquium.

The faculty are responsible for providing students with timely and constructive feedback on their progress towards the Ph.D. In order to evaluate student progress and to identify potential problem areas, the department's faculty reviews the academic progress of each first-year student at the beginning of Winter and Spring quarters and again at the end of the academic year. The first two reviews are primarily intended to identify developing problems that could impede progress. In most cases, students are simply given constructive feedback, but if there are more serious concerns, a student may be placed on probation with specific guidelines for addressing the problems detected. The review at the end of the academic year is more thorough; each student's performance during the first year is reviewed and discussed. Possible outcomes of the spring review include: (1) continuation of the student in good standing, or (2) placing the student on probation, with specific guidelines for the period of probation and the steps to be taken in order to be returned to good standing. For students on probation at this point (or at any other subsequent points), possible outcomes of a review include: (1) restoration to good standing; (2) continued probation, again with guidelines for necessary remedial steps; or (3) termination from the program. Students leaving the program at the end of the first year are usually allowed to complete the requirements to receive an M.A. degree, if this does not involve additional residence or financial support. All students are given feedback from their advisors at the end of their first year of graduate work, helping them to identify areas of strengths and potential weakness.

At the end of the second year of residency, students who are performing well are advanced to candidacy. This step implies that the student has demonstrated the relevant qualities required for successful completion of the Ph.D. Future evaluations are based on the satisfactory completion of specific remaining department and University requirements. Students who are not advanced to candidacy will normally be terminated from the program and awarded an M.A. degree. In some cases, the department may require that a student complete outstanding work or complete unmet requirements before admission to candidacy. The University requires that all students must be admitted to candidacy by the beginning of the third year in residence in order to continue in the Ph.D. program. Therefore all requirements stipulated by the department must be met before registration for the fall quarter of the student's third year.

At any point during the degree program, evidence that a student is performing at a less than satisfactory level may be cause for a formal academic review of that student.

Degree Requirements

Survey Courses

Students must complete four courses from an approved list. This list is updated and circulated to students at the start of each academic year. *Note:* class offerings rotate; not all approved survey courses are offered every year. The following courses typically fulfill the survey course requirement:

		Units
SOC 308	Social Demography	4-5
SOC 310	Political Sociology	4-5
SOC 314	Economic Sociology	4-5
SOC 316	Historical and Comparative Sociology	4-5
SOC 318	Social Movements and Collective Action	4-5
SOC 320	Foundations of Social Psychology	4-5
SOC 323	Sociology of the Family	4-5
SOC 339	Gender Meanings and Processes	5
SOC 340	Social Stratification	4-5

SOC 342B	Gender and Social Structure	5
SOC 349	Race, Space, and Stratification	4
SOC 350	Sociology of Race	4-5
SOC 357	Immigration and Assimilation	3-5
SOC 358	Sociology of Immigration	5
SOC 362	Organization and Environment	3
SOC 363A	Seminar on Organizational Theory	5
SOC 366A	Organizational Ecology	3
SOC 376	Perspectives on Organization and Environment: Social Movement Organizations and Environments	3

Research Methods

Required methodology courses are listed below.

		Units
SOC 381	Sociological Methodology I: Introduction	5
SOC 382	Sociological Methodology II: Principles of Regression Analysis	4-5
SOC 383	Sociological Methodology III: Models for Discrete Outcomes	5

Theory

		Units
SOC 370A	SOCIOLOGICAL THEORY	5
SOC 372	Theoretical Analysis and Research Design	3-5
or OB 670	Designing Social Research	

Workshops

		Units
SOC 311A	Workshop: Comparative Studies of Educational and Political Systems	1-5
SOC 315W	Workshop: Economic Sociology and Organizations	1-2
SOC 317W	Computational Sociology	1-2
SOC 325W	Workshop: Graduate Family	1-2
SOC 341W	Workshop: Inequality	1-2
SOC 350W	Workshop: Migration, Ethnicity, Race and Nation	1-3
SOC 368W	Workshop: China Social Science	1
SOC 375W	Workshop: Politics, Morality, and Hierarchy	1-2
SOC 380W	Workshop: Qualitative and Fieldwork Methods	1-3

Ph.D. Minor in Sociology

Sociology offers a minor for currently enrolled doctoral students in other Stanford departments and schools. Students must complete a minimum of 30 graduate-level units with a grade point average (GPA) of 3.0 (B) or better. All 30 units for the minor must be in courses taught by faculty appointed in the Sociology department. Students must enroll in the SOC course offerings (not cross-listed sections). There are two exceptions: five (5) of these units may be taken as an independent study or directed reading with a member of the sociology faculty; another five (5) units may be taken in a statistics or methods course taught in another department. All units must be taken for a letter grade. Workshops and colloquium do not count towards the Ph.D. minor. The program must be approved by a Sociology advisor and filed with the Sociology student services office. While there is not a formal application process, candidates must submit a short statement of purpose (2 pages), and a completed Application for Ph.D. Minor form (http://studentaffairs.stanford.edu/sites/default/files/registrar/files/app_phd_minor.pdf) to the Sociology student services office. The Application for Ph.D. Minor form must have all Sociology or other courses to be applied to the minor listed, including course number, units, and final grades.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Sociology Department will allow either letter grades or grades of 'CR' or 'S' to count towards Sociology BA and Sociology minor requirements. When students take classes for a letter grade, a grade of at least 'C' should be earned or the student should obtain a written exception.

Coterminal MA Degree Requirements

Grading

Sociology Coterminal MA students may count classes taken for 'CR' or 'S' toward their MA degree, and should continue to maintain a 'B' average, or better in courses that will count toward the Sociology MA degree that are taken for a letter grade.

Doctoral Degree Requirements

Grading

The Sociology Department has not changed its policy concerning letter grades for Sociology doctoral students. Students should take required courses for a letter grade and earn a grade of ‘B+’, or better in each course for academic year 2020-21.

For courses that do not satisfy specific degree requirements in the graduate program (i.e. courses unrelated to degree requirements, non-required, directed reading and research, non-SOC subject code courses, language courses…), students may count these courses, taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory), towards the overall units required and in satisfaction of graduate degree.

Other Graduate Policies

If a student has difficulty completing a graduate degree requirement due to the COVID-19 pandemic, (e.g., qualifying exam(s), prospectus defense), the student should consult with the Director of Graduate Studies or the Student Services Manager to identify academic options to fulfill degree requirements.

Graduate Advising Expectations

The Department of Sociology is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the advisor and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the

advisor and the advisee are expected to maintain professionalism and integrity.

Faculty advisors guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Emeriti: (Professors) Joseph Berger, Michael T. Hannan, Douglas McAdam, John W. Meyer, Susan Olzak, Cecilia Ridgeway, W. Richard Scott, Nancy B. Tuma

Chair: Michael Rosenfeld

Director of Graduate Studies: Shelley Correll

Director of Coterminal Masters: Aliya Saperstein

Director of Undergraduate Studies: Jeremy Freese

Professors: Karen Cook, Shelley Correll, Jeremy Freese, Mark Granovetter, David Grusky, Tomás Jiménez, Michael Rosenfeld, Gi-Wook Shin, C. Matthew Snipp, Florencia Torche, Kiyoteru Tsutsui, Andrew Walder, Robb Willer, Xueguang Zhou

Associate Professors: Aliya Saperstein, Forrest Stuart

Assistant Professors: Asad L. Asad, Matthew Clair, Mark Hoffman, Jackelyn Hwang, Michelle Jackson, Barbara Kiviat

Adjunct Professors: Glenn Carroll, Michele Landis Dauber, Larry Diamond, Daniel McFarland, Walter Powell, Francisco Ramirez, Hayagreeva Rao, Sean Reardon, Jesper Sørensen, Sarah Soule, Mitchell Stevens

Adjunct Associate Professors: Patricia Bromley, Amir Goldberg, Adina Sterling, Mitchell Stevens, Christine Min Wotipka

Adjunct Assistant Professors: Angèle Christin, Benjamin Domingue, Sharad Goel, Jennifer Pan

Lecturers: Eva Myersson Milgrom

Adjunct Consulting Professor: Ruth Cronkite

Overseas Studies Courses in Sociology

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPBER 66	Theory from the Bleachers: Reading German Sports and Culture	3
OSPFLOR 46	Images of Evil in Criminal Justice	5
OSPMADRD 61	Society and Cultural Change: The Case of Spain	4
OSPOXFRD 117W	Gender and Social Change in Modern Britain	4-5

Courses

SOC 1. Introduction to Sociology. 5 Units.
This course to get students to think like a sociologist; to use core concepts and theories from the field of sociology to make sense of the most pressing issues of our time: race and ethnicity; gender and sexuality; family; education; social class and economic inequality; social connectedness; social movements; and immigration. The course will draw heavily on the research and writing of Stanford¿s own sociologist.

SOC 2. Self and Society: Introduction to Social Psychology. 4 Units.
Why do people behave the way they do? This is the fundamental question that drives social psychology. Through reading, lecture, and interactive discussion, students have the opportunity to explore and think critically about a variety of exciting issues including: what causes us to like, love, help, or hurt others; the effects of social influence and persuasion on individual thoughts, emotion, and behavior; and how the lessons of social psychology can be applied in contexts such as health, work, and relationships. The social forces studied in the class shape our behavior, though their operation cannot be seen directly. A central idea of this class is that awareness of these forces allows us to make choices in light of them, offering us more agency and wisdom in our everyday lives.
Same as: PSYCH 70

SOC 3. America: Unequal. 4 Units.
It was never imagined "when the U.S. was founded" that the rich would be so rich and the poor so poor. It was never imagined "when the U.S. was founded" that opportunities to get ahead would depend so profoundly on one's family circumstances and other starting conditions. How could this have happened in the "land of opportunity?" What are the effects of such profound inequality? And what, if anything, should be done about it?.
Same as: CSRE 3P, PUBLPOL 113

SOC 4. The Sociology of Music. 3-5 Units.
This course examines music¿its production, its consumption, and it contested role in society¿from a distinctly sociological lens. Why do we prefer certain songs, artists, and musical genres over others? How do we ¿use¿ music to signal group membership and create social categories like class, race, ethnicity, and gender? How does music perpetuate, but also challenge, broader inequalities? Why do some songs become hits? What effects are technology and digital media having on the ways we experience and think about music? Course readings and lectures will explore the various answers to these questions by introducing students to key sociological concepts and ideas. Class time will be spent moving between core theories, listening sessions, discussion of current musical events, and an interrogation of students¿ own musical experiences. Students will undertake a number of short research and writing assignments that call on them to make sociological sense of music in their own lives, in the lives of others, and in society at large.
Same as: AFRICAAM 4, CSRE 4

SOC 8. Sport, Competition, and Society. 4 Units.
This course uses the tools of social science to help understand debates and puzzles from contemporary sports, and in doing so shows how sports and other contests provide many telling examples of enduring social dynamics and larger social trends. We also consider how sport serves as the entry point for many larger debates about the morality and ethics raised by ongoing social change.

SOC 9N. 2020 Election, Understanding the National, Participating in the Local. 3 Units.
In this class we will read the literature on voting and elections. We will cover some literature on voting rights in the US. The class will have a field component, as students will not only be obligated to register to vote (if they are eligible), but also go out into the field, in groups, to register voters and talk to them about some local issue or candidate. Learn to understand the election system through participation! Each student will pick a local issue or candidate, and then the students will go out, in teams, to canvass around that local issue or candidate and learn about what their fellow citizens have to say about their chosen issue. Students will present a post-mortem about their chosen candidate or issue after the November elections are over.

SOC 10. Introduction to Computational Social Science. 4 Units.
The large-scale digitization of social life is providing new opportunities and research directions for social scientists. In this course, we will discuss how social scientists, and sociologists in particular, are using advances in computational techniques to further our knowledge of society. Some of the topics we will survey include online experiments, massive online social networks, large-scale text analysis, and geographical information systems. Students will learn principles of research design in addition to fundamental programming and data analysis techniques. By the end of the course they should be able to produce computational social science research of their own.

SOC 14N. Inequality in American Society. 4 Units.
An overview of the major forms of inequality in American society, their causes and consequences. Special attention will devoted to to public policy associated with inequality.

SOC 15N. The Transformation of Socialist Societies. 3 Units.
Preference to freshmen. The impact of societal organization on the lives of ordinary people in socialist societies and in the new societies arising through the processes of political, economic, and social transformation. Do the concepts of democratization and marketization suffice to characterize ongoing changes? Enrollment limited to 16.

SOC 18N. Ethics, Morality, and Markets. 3 Units.
Markets are inescapably entangled with questions of right and wrong. What counts as a fair price or a fair wage? Should people be able to sell their organs? Do companies have a responsibility to make sure algorithmic decisions don't perpetuate racism and misogyny? Even when market exchange seems coldly rational, it still embodies normative ideas about the right ways to value objects and people and to determine who gets what. In this seminar, we will study markets as social institutions permeated with moral meaning. We will explore how powerful actors work to institutionalize certain understandings of good and bad; unpack how particular moral visions materially benefit some groups of people more so than others; examine the ways people draw on notions of fairness to justify and contest the market's distribution of resources and opportunities; and consider who has agency to build markets according to different normative ideals. Most course readings are empirical research, so we will also critically discuss how social scientists use data and methods to build evidence about the way the world works.

SOC 19N. The Immigrant Experience in Everyday Life. 3 Units.
The seminar introduces students to major themes connected to the immigrant experience, including identity, education, assimilation, transnationalism, political membership, and intergroup relations. There will also be some attention given to research methodology. The seminar addresses these themes through reading ethnographies that document the everyday experience of immigrants and immigrant communities, broadly defined, in the United States. The course readings primarily come from more contemporary ethnographic research, but it will also include a sampling of ethnographies that examine the experience of previous waves of immigrants. Student participation will include in-class discussions of readings, short written responses to readings, and a final paper in which students draw on original ethnographic research that they conduct during the quarter. By the end of the quarter, students will be able to identify the social, political, and economic forces that shape the immigrant experience. More importantly, students will understand HOW these forces enter the immigrant experience in everyday life.

SOC 20N. What counts as "race," and why?. 4 Units.
Preference to freshmen. Seminar discussion of how various institutions in U.S. society employ racial categories, and how race is studied and conceptualized across disciplines. Course introduces perspectives from demography, history, law, genetics, sociology, psychology, and medicine. Students will read original social science research, learn to collect and analyze data from in-depth interviews, and use library resources to conduct legal/archival case studies.
Same as: CSRE 20N

SOC 21Q. Decoding our Emotions: Culture, Emotion, and Social Interaction. 3 Units.
Are emotions the same across cultures and societies? Are women really more emotional than men? Where and how do we draw the line between ¿normal¿ expressions of grief and diagnosable symptoms of depression? What role do fear and anger play in American politics? Although most of us think that feelings are deeply personal and private experiences - comprised of physiological and psychological elements - sociologists argue that they are heavily influenced by social factors. In this seminar, we¿ll explore the social side of emotion¿including how they are socially learned, shaped, regulated, controlled, and distributed in the population as well as the consequences of emotion culture, emotion norms, emotion management, emotional labor, and emotional deviance for individuals, social groups, and society.nnnAmerican society - and its corresponding landscape of norms, behaviors, and beliefs relating to emotion - will serve as a starting point for our analysis; however, throughout the course we will seek to place America¿s emotion culture in comparative and historical perspective. Students will read a broad range of texts and articles on the social shaping of emotion. Some of the readings will focus on specific emotions - including grief, anger, happiness, fear, and love - while others will focus on various aspects of emotion - including the commercialization of emotion and the role of emotion in politics and social movements. We will also consider how emotions are gendered and racialized across cultures. By the end of the quarter, you will have a better understanding of how our emotional lives are shaped by the historical, cultural, and social contexts in which we find ourselves.

SOC 22N. The Roots of Social Protest. 3 Units.
Preference to freshmen. The conditions under which social protest occurs and the emergence, success, and viability of contemporary social movements. Examples include women's civil rights, ecology, and antiwar and anti-globilization movements in the U.S. and elsewhere. Sociological theories to explain the timing, location, and causes of mobilization; how researchers evaluate these theories. Comparison of tactics, trajectories, and outcomes.

SOC 24N. Themes in Political and Historical Sociology: The Political Party. 4 Units.
This class focuses on the political party and on the different scholarly perspectives from which it has been studied. We will study these perspectives analytically¿to find the main elements that characterize them¿and historically¿to understand how the party has operated in different contexts and how scholarly interpretations have changed in time. The emphasis on the party requires a contextualization of two processes that have shaped the functioning of the institutions of the state in the last decades¿one operating below the state and the other operating abovenFrom below the state, the fragmentation of interests has been challenging the traditional identities that used to be embedded in the party. From above, international economic processes have been undermining the role of the state, and thus of the party, as the main vehicle for bringing grievances into the political arena. Thus, part of the agenda of the party is dominated by the activities of organized social movements that only partially follow traditional cleavages (class, status, race, ethnicity, urban/rural), while another part is dominated by multinational firms and banks that only partially represent national interests. Yet, to the extent that the institutions of the state remain relevant, the political party remains a powerful and significant actor of Modern democracies. The fundamental question of this class is to understand the way in which the party continues to shape the functioning of the state.n We will approach this question analytically and historically. Analytically, we will read through various definitions of what a party is. The aim is not to arrive at a ¿correct¿ definition of the party (there is not such a thing!) but to sharpen the differences between the several approaches. Historically, we will study the party in action with the goal of understanding the perspective from which the party was portrayed. Together, in this double exercise you will learn the tools of the trade, so to speak, of political sociology.

SOC 31N. Social Networks. 3 Units.
This Introductory Seminar reviews the history of social network studies, investigates how networks have changed over the past hundred years and asks how new technologies will impact them. We will draw from scholarly publications, popular culture and personal experience as ways to approach this central aspect of the human experience.

SOC 45Q. Understanding Race and Ethnicity in American Society. 4 Units.
Preference to sophomores. Historical overview of race in America, race and violence, race and socioeconomic well-being, and the future of race relations in America. Enrollment limited to 16.
Same as: CSRE 45Q

SOC 46N. Race, Ethnic, and National Identities: Imagined Communities. 3 Units.
Preference to freshmen. How new identities are created and legitimated. What does it mean to try on a different identity? National groups and ethnic groups are so large that one individual can know only an infinitesimal fraction of other group members. What explains the seeming coherence of groups? If identities are a product of the imagination, why are people willing to fight and die for them? Enrollment limited to 16.

SOC 97SI. Homeless Services in Silicon Valley. 2 Units.
Community engaged learning through applied academics encourages students tonidentify themselves as agents of social change, to use the experience of service tonaddress injustice in communities and to explore solutions to complex humanitariannissues locally. This quarter long course allows students to engage with the nonprofitnsector and partner organizations in a unique culture outside of the traditional classroom setting. We place participants at local organizations to do a quarter-long mentored project, supplemented with group reflection sessions. Through these meaningful, hands-on experiences, we hope to engage the Stanford student body in the issue of homelessness, specifically as faced by service providers.

SOC 100ASB. Pre-field Course for Alternative Spring Break. 1 Unit.
Limited to students participating in the Alternative Spring Break program. See http://asb.stanford.edu for more information.

SOC 100D. Organizational Theory. 3 Units.
Schools, prisons, hospitals, universities, restaurants, nations, sports teams - organizations are all around. They employ us, feed us, and provide us with sources of identity. This course is an introduction to the basic concepts and classic theories about organizations. What defines an organization? How should organizations structure themselves to accomplish their goals? When is it most desirable for an organizations merge with another? Lectures and readings will explore such questions, and contemporary examples in the media will bring them to life.

SOC 100SI. Student Initiated Course. 1 Unit.
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SOC 101D. Interpersonal Relations. 3 Units.
This course examines what happens when people interact together and how that interaction affects the nature of their thoughts, relationships, and behaviors. We will take a look at research from sociology and psychology to explore a diverse set of issues including conformity, stereotypes, and cognitive biases. At times we will look at deeply individual topics like cognition and happiness and at other times we will look at more macro-level issues like how we are affected by our social networks. However, throughout the whole class we will be looking at the dynamic and complex relationship between the individual and the social world.

SOC 102. Between Nation-Building and Liberalization: The Welfare State in Israel. 3 Units.
According to one commentator, the political economy of Israel is characterized by embedded illiberalism. In the context of a national and territorial conflict, the Israeli state fostered comprehensive nation-building projects (such as immigration absorption), via employment and social protection schemes. This course surveys the distinctive development of the Israeli welfare state in comparative perspective, and analyzes its particular politics and outcomes in the form of inclusion but also exclusion of different populations from full citizenship. The course will follow a chronological path from the pre-state crystallization of national welfare institutions to the current neo-liberalization trend that seems to undermine collectivist projects and advance the re-commodification of citizenship. Throughout the course we will discuss issues such as: the role of labor and nationalism in the design of social policy, the production of national, ethnic and gender inequality, and the dynamics of change and continuity following heightened liberalization and internationalization since the 1980s. The course exposes students to key issues of the sociology of the welfare state with particular emphasis on the development and role of the state in a deeply conflicted society, using the Israeli experience. At the conclusion of the course students are expected to understand how welfare state institutions reflect but also reproduce societal schisms and conflicts, and be familiar with central aspects of Israeli politics past and present.
Same as: JEWISHST 132

SOC 102A. Social Inequality in Israel. 3 Units.
Like the US, Israel is a nation of immigrants. Israel additionally shares with the US vast economic, ethnic/racial and gender gaps, which are shaped and are being shaped by the demographic diversity characterizing its society. The course will provide a comparative framework for analyzing social inequality in Israel. We will start by reviewing essential concepts and theories in the study of social stratification. We will then review the main cleavages characterizing Israeli society, while comparing them to gaps in other advances societies and particularly the US. We will focus on class, gender and ethnicity as the main distinctions and will examine their implications for differences in life chances in several domains across the life course. We will conclude with a discussion of possible scenarios for change, which are relevant to both Israel and the US. Throughout the course, we will study critical thinking techniques and will use them for analyzing issues that are central for the analysis of social inequality in Israel and elsewhere.
Same as: CSRE 132A, JEWISHST 132A

SOC 102D. Social Movements in the 21st Century: Innovations in Structures and Strategies. 4 Units.
The study of social movements is well developed in sociology, but has largely focused on movements that occurred prior to widespread use of cell phones, the Internet and social media. These technologies have allowed not just new mobilization strategies, but also new tactics and organizational structures. Recognizing the power of new technologies to change the way we interact and organize is integral to understanding the future of social movements as well as more routine organizational structures and interpersonal interactions.

SOC 103. Sociology of Citizenship. 3 Units.
Not only a legal status, citizenship forms a major concern for political sociologists interested in questions of membership, exclusion, redistribution, and struggles over the boundaries of collective identity. Citizenship is in essence membership in a political community that entails rights and duties, and structures a tripartite relationship between the individual, community and state. The institutions of citizenship include formal and bureaucratic rules of eligibility ¿ but also informal institutions such as identity and belonging. Throughout the course, students are exposed to key issues of the sociology of citizenship such as the historically different paths of men, women, minority groups and immigrants into citizenship, the contested development of rights and duties, the regulation of population, as well as insurgency and collective attempts to rearticulate the terms of the ¿contract¿ with the state. Israel, the USA, France and Germany are used as empirical illustrations. At the conclusion of the course students will know how to utilize the analytic framework of citizenship in order to analyze a wide range of political phenomena in contemporary societies.
Same as: JEWISHST 133

SOC 103A. WELFARE, WORK AND POVERTY.. 3 Units.
Early theorists of the welfare state described it as a reaction to the emergence of needs and interests of specific social groups during processes of economic development and change. Later theorists countered that the welfare state does not merely react to social cleavages during times of economic change but rather works to actively shape them, in line with worldviews or the interests of dominant group members. Adopting the latter approach, the goal of this course is to provide the tools and knowledge necessary for a critical evaluation of the social services provided to Israeli citizens and their impact on social and economic inequalities. The course will survey various approaches to the understanding of the goals of the welfare state. A comparative and historical account of the development of the welfare state will be presented, while highlighting recent developments, such as the increase in poverty rates and the aging of the population. During the course, we will examine the diverse needs that are served by the welfare state, as well as major dilemmas associated with the provision of services. Throughout the course, we will study critical thinking techniques and will use them for analyzing issues that are central for the development of social policies in Israel and the US.
Same as: CSRE 133J, JEWISHST 133A

SOC 103D. Can Women (and Men) Have it All? Gender and Work in the 21st Century. 3 Units.
This course will cover the current understanding of gender inequality in modern workplaces¿its sources, operationalizations, and consequences. Drawing from gender theories about topics like the motherhood penalty, unconscious bias in interactions, occupational segregation, work-life conflict, sexual harassment, and the backlash against women leaders, this course will explore the fundamental question: why do women continue to suffer in the workplace relative to men? The course will also examine the parallel question: what obstructs men from becoming more involved in the home? As families become less and less ¿traditional, ¿ reflecting increasing diversity in.

SOC 104D. U.S. Attitudes to Crime and Policing. 3 Units.
This course examines how social groups, laws, and popular media impact Americans¿ attitudes towards criminal behaviors. It draws on sociological and psychological research, enabling students to appreciate but also critique academic research. Among the topics covered are social influence, laws, and media bias. Students will conduct a research project on a topic of their choosing and present their findings to the class at the end of the quarter.

SOC 105. The Sociology of Emotions. 3 Units.
Although most of us think that feelings are deeply personal and private experiences, this seminar explores the social side of emotion¿including how they are socially learned, shaped, regulated, and distributed in the population as well as the consequences of emotion culture, emotion norms, emotional labor, and emotional deviance for individuals and society. We will consider specific emotions ¿ including jealousy, fear, sympathy, and happiness ¿ as well as more general patterns ¿ including the commercialization of emotion and the role of emotions in politics.

SOC 105D. Sociology of Health and Illness. 3 Units.
This course examines the social causes and context of health, illness, and health care in the United States. Who stays healthy and who gets sick? How do individuals experience and make sense of illness? How docontextual factors (including socioeconomic status, race/ethnicity, culture, social networks, and hospital quality) shape health and health care? What constitutes quality medical care and who gets it? To what degree do the spaces we inhabit and the relationships we form shape our health? What avenues exist for improving health care and reducing health disparities?In examining these questions, we will consider how social scientists, epidemiologists, public health experts, and physicians address them in research and in the field. Reflecting both qualitative and quantitative approaches, we will draw on literatures in social science, public health, and medicine. nnBy the end of the course, students will: 1) have insight into the various ways of defining and measuring health, including mortality, morbidity, physical functioning, and quality of life; 2) understand how a person¿s socio-demographic characteristics influence his or her health, including his or her ability to access resources vital to maintaining health and receiving treatment; 3) understand how researchersemploy theory and make causal inferences based on observational and experimental data; 4) comprehendhow patients and practitioners understand health and illness and their roles in the health care process; and 5) understand the role of medical care in the distribution of health outcomes across the population.

SOC 105VP. Contested markets in the Brazilian Amazon Rainforest. 2-3 Units.
Strategies of environmental movements to contain domestic and foreign corporations that are viewed as major perpetrators of rainforest devastation and the socio-economic degradation of this vast region. Topics: Origins, roles and inter-relations among corporations (zero deforestation agreements in soybean agriculture and cattle ranching), the development of environmental law and the efficacy of government and NGO movements¿ strategies, and whether this emerging economy shapes social classes, groups, tribes, family life to further embed inequality and immobility. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.
Same as: EARTHSYS 205VP, SOC 205VP

SOC 107. China After Mao. 5 Units.
China's post-1976 recovery from the late Mao era; its reorientation toward an open market-oriented economy; the consequences of this new model and runaway economic growth for standards of living, social life, inequality, and local governance; the political conflicts that have accompanied these changes.
Same as: SOC 207

SOC 107E. Education and Inequality: Big Data for Large-Scale Problems. 3-5 Units.
In this course, students will use data from the Stanford Education Data Archive (SEDA) to study the patterns, causes, consequences, and remedies of educational inequality in the US. SEDA is based on 200 million test score records, administrative data, and census data from every public school, school district, and community in the US. The course will include lectures, discussion, and small group research projects using SEDA and other data.
Same as: EDUC 107, EDUC 207, SOC 205

SOC 108. Political & Historical Sociology. 5 Units.
The differences between historical and sociological analysis of past events. The difference between constructing sociological explanations and describing past events. Topics include: the rise of Christianity, the mafia in a Sicilian village, the trade network of the East India Company.
Same as: SOC 208

SOC 109. Race and Immigration in the US : Boundaries and Mobility. 4 Units.
Drawing from theories and research in race/ethnicity, social psychology, inequality, and demography, and focusing on the U.S., this course examines how racial hierarchies affect immigrants¿ socioeconomic mobility and ethnic identities, and how immigrants and their descendants contribute to the reconstruction of racial and ethnic boundaries. Topics include: theories of international migration and assimilation; immigration and the labor market; racial and ethnic identities; immigrants and interracial relations; second-generation mobility and identities; transnationalism.

SOC 109D. Education and Society. 3 Units.
This course will draw on a range of sociological theories and approaches to explore the relationship between education and society. In particular, the course will focus on themes related to the role of education in social stratification, linkages between education and the economy, polity, and culture, and the organizational contexts of schooling. More specifically, topics within these themes include: dominant sociological theories (functional, conflict, and institutional) of the functions and roles of education in society, education and its relationship to different forms of capital (human, social and cultural), educational inequalities in achievement and attainment by race, class, and gender, the role of tracking and high stakes examinations in different education systemsaround the world, and the role of globalization in shaping educational goals and policy. The content of the course will focus not only on schooling in the United States, but will draw on cross-national and historical comparisons in order to illuminate the distinctive features of different education systems and provide a broad overview of the relationship between education and society.

SOC 111. State and Society in Korea. 4 Units.
20th-century Korea from a comparative historical perspective. Colonialism, nationalism, development, state-society relations, democratization, and globalization with reference to the Korean experience.
Same as: INTNLREL 143, SOC 211

SOC 111D. Social-Psychology and Economics: The trouble with how economists think you think. 5 Units.
This course will compare and contrast explanations for human behavior; specifically, those derived from economic theory with those from social-psychological research. Rationality, decision-making, happiness, motivation, the persistence of inequality, and evaluation of outputs will be examined. It will also investigate the shortcomings of estimating individual preferences without taking into account macro-level phenomenon, such as hierarchy and justice. For students who lack familiarity with economics, the course will also cover basic economic theory as necessary. The use of economic versus social-psychological theory in determining appropriate public policy will also be explored.

SOC 112. Comparative Democratic Development. 5 Units.
Social, cultural, political, economic, and international factors affecting the development and consolidation of democracy in historical and comparative perspective. Individual country experiences with democracy, democratization, and regime performance. Emphasis is on global third wave of democratization beginning in the mid-1970s, the recent global recession of democracy (including the rise of illiberal populist parties and movements), and the contemporary challenges and prospects for democratic change.
Same as: POLISCI 147

SOC 113. Comparative Corruption. 3 Units.
Causes, effects, and solutions to various forms of corruption in business and politics in both developing regions (e.g. Asia, E. Europe) and developed ones (the US and the EU).
Same as: POLISCI 143S

SOC 113D. Sociology of Sport. 5 Units.
This course is designed to examine sports from a sociological perspective and to develop a greater understanding of the impact of sports on societies and individuals. We will analyze sports and sporting cultures using several theoretical frameworks such as functionalism, conflict theory, critical theory, feminist theory, and an internationalist perspective. This course will address questions such as: What role do sports have in society? How can we understand the importance societies place on sports? How are social inequalities replicated or challenged through sports? How do sports influence individuals and the construction of a social reality?.

SOC 114. Economic Sociology. 4 Units.
(Graduate students register for 214.) The sociological approach to production, distribution, consumption, and markets, emphasizing the impact of norms, power, social structure, and institutions on the economy. Comparison of classic and contemporary approaches to the economy among the social science disciplines. Topics: consumption, labor markets, organization of professions such as law and medicine, the economic role of informal networks, industrial organization, including the structure and history of the computer and popular music industries, business alliances, capitalism in non-Western societies, and the transition from state socialism in E. Europe and China.
Same as: SOC 214

SOC 114D. Sociology of the Great Recession. 5 Units.
The Great Recession (2007-2009), one of the most socially significant events of our time. This course will cover the economic, social, cultural, and political consequences of the recession. We will address its impact on: inequality; job prospects for college graduates; trust in the government; the 2012 presidential election; marriage; child birth; and immigration. We examine the rise of protest movements during the recession period, such as Occupy Wall Street and the Tea Party, and explore the idea of "class warfare". Class will feature several guest speakers and will focus on developing a general understanding of trends emerging in these events.

SOC 115. Topics in Economic Sociology. 5 Units.
How does a corporation¿s practice of religion affect your employment? How do your personal data become a corporation's private property? How does corporate behavior reinforce the marginalization of certain populations? The answers to these questions have varied as society's conceptualization of corporations evolved from simple, legal fiction to rights and responsibilities similar to those of humans. In this seminar, we critically examine relationships between corporations and citizens, and analyze the idea of corporation as citizen. Through careful reading, discussion, reflection, and writing, you will understand how corporations are socially constructed and in turn regulate social behavior. We will empower each other to thoughtfully question and possibly change our relationships with these major actors in economic sociology.

SOC 115D. Can Law Fix Race? Race, Law, and Contemporary American Society. 5 Units.
In this Age of Obama, why are we still talking about legal remedies to racial inequality? This course will explore this question from an interdisciplinary perspective, focusing on perspectives from law and social science. Students will read both actual Supreme Court opinions as well as foundational works in the sociology of race and law. Through readings and discussion, students will leave this course with 1) a background in the historical role of the law in relation to race; 2) an understanding in how law¿s role in the maintenance of racial inequality has evolved; and 3) an ability to articulate their own views on why we are and whether we should be still talking about race, using both theory and empirical evidence to support their views. Specifically, students will be able to answer this question: ¿Is it appropriate for law to attempt to remedy racial inequality?¿.

SOC 116. Chinese Organizations and Management. 5 Units.
Seminar for advanced undergraduates and all graduate students.
Same as: SOC 216

SOC 116D. The Sociological Complexities of Human Trafficking. 5 Units.
Human trafficking is more than a crime and a human rights violation; it reveals the complex interactions of social norms, policies, and actions. In this course, we will consider norms of sexuality and morality in relation to sex trafficking and consenting sex workers, politics and labor policy in relation to labor trafficking and day workers, and political consumerism as a form of collective action in relation to fair trade. Specific topics include the impact of legalized prostitution on human trafficking, the effects of the annual US-released Trafficking In Persons report on international migrant labor laws, and the question of whether or not fair trade is fair. This seminar will provide students opportunities to think critically about society and to collaborate as researchers and activists on the issue of human trafficking.

SOC 117A. China Under Mao. 5 Units.
(Graduate students register for 217A.) The transformation of Chinese society from the 1949 revolution to the eve of China's reforms in 1978: creation of a socialist economy, reorganization of rural society and urban workplaces, emergence of new inequalities of power and opportunity, and new forms of social conflict during Mao's Cultural Revolution of 1966-69 and its aftermath.
Same as: SOC 217A

SOC 117D. Recognizing Inequality. 3 Units.
Over the last few years social and economic inequality has become a major topic in the media and public policy. Gaps and inequalities between groups exist across a range of arenas including education, wages and promotions, housing and cultural consumption. In this course we'll bring these big ideas down to the individual level--investigating and analyzing manifestations of inequality in our everyday lives, considering why these inequalities exist and developing strategies to alleviate them. This seminar will call upon students' imagination and analytical savvy to tackle pressing societal problems by considering the dynamics of their own lives. In the process, students will develop skills that can be applied in fields as diverse as public policy, health care, non-profit work and entrepreneurship.

SOC 118. Social Movements and Collective Action. 4 Units.
Why social movements arise, who participates in them, the obstacles they face, the tactics they choose, and how to gauge movement success or failure. Theory and empirical research. Application of concepts and methods to social movements such as civil rights, environmental justice, antiglobalization, and anti-war.
Same as: SOC 218

SOC 118D. Ice Cream Sales Don't Cause Shark Attacks: Debunking Pseudoscience and Conducting Good Research. 3 Units.
Conducting good research requires careful design and analysis, but much of the research we consume from media and political outlets often presents spurious correlations as causal relationships. What do we need to do and why to rule out spuriousness? The focus will be on using our intuition about what information we would need to properly answer questions about social life. We will find that apparently complicated statistical tests are simply following the same logic necessary to reach conclusions about social science's most interesting questions.

SOC 119. Understanding Large-Scale Societal Change: The Case of the 1960s. 5 Units.
The demographic, economic, political, and cultural roots of social change in the 60s; its legacy in the present U.S.
Same as: SOC 219

SOC 119D. The Power of Social Networks in Everyday Life. 3 Units.
Why do some people have better ideas than others? Why are some more likely to be bullied in school, get a job, or catch a disease? Why do some innovations, apps, rumors, or revolutions spread like a wildfire, while others never get off the ground? Why are Facebook, Twitter, Instagram or Spotify so good at recommending people, news, pictures, or songs we might know or like? What do a power outage, the collapse of the Roman Empire, a human stroke, and the Financial Crisis of 2008 have in common? What explains the success of Silicon Valley? And why are there only six (or less) people between us and any other human on this planet? While these questions may seem totally unrelated to each other on first glance, they can all be explored with the help of a single, yet powerful framework: social network analysis. In this class, you will learn to see the world as a web of relations: not only are people, ideas/concepts and things all increasingly connected to each other; the pattern of these relations can tell us a great deal about many phenomena in our social world that defy traditional explanations. At the end of this class, you will not only see networks everywhere; you will have taken a big step toward connecting some of the dots in (y)our world: this is the power of thinking in relations.

SOC 119VP. Introduction to Social Demography: A Comparative Approach (Israel & US). 3 Units.
In this class we will learn about Israel's unique demographic structure and we will compare it to the US and other countries. Reading materials include general theories as well as research published in scholarly journals. In the first half of this class we will review basic demographic concepts (mortality, fertility and migration), and we will apply them to the Israeli context, with comparisons between different social groups in Israel and with comparison to the US. We will also review basic demographic theories (theories of population change) and apply them to different countries. nnIn the second half of the class we will focus on demography of the family. We will ask how fertility, marriage and divorce differ for different population groups in Israel and the US, and we will tie family processes to current theories of gender and family change. We will also learn how demographic processes may be related to the reproduction of poverty, and inequality.
Same as: JEWISHST 130VP

SOC 120. Interpersonal Relations. 4 Units.
(Graduate students register for 220.) Forming ties, developing norms, status, conformity, deviance, social exchange, power, and coalition formation; important traditions of research have developed from the basic theories of these processes. Emphasis is on understanding basic theories and drawing out their implications for change in a broad range of situations, families, work groups, and friendship groups.
Same as: SOC 220

SOC 120D. From ICE Detention to #MeToo: Sociology of Law and Social Inequality. 3-5 Units.
What does mass incarceration have in common with ICE detention? What role do little-known legal doctrines from the previous century play in making courts inaccessible to survivors of sexual assault and trans people fighting discrimination? In this class we will answer those questions by examining how the seemingly objective nature of the law makes it a potent social tool to promote the interests of the powerful at the expense of the powerless while appearing neutral. This obfuscating power of the law has long been used to reinforce and perpetuate forms of social inequality. In this class we will analyze a few notable examples of such usage of the law and their role as pillars of current social inequality: We will examine how the high burden of proof courts have placed on complainants claiming gender discrimination has blocked most targets of such discrimination from seeking legal remedy; We will examine how redlining and mass incarceration have resulted in the current rates of racial inequality; and how immigration law has resulted in a seemingly objective yet deeply racist system of detention by ICE.

SOC 120VP. Poverty and Inequality in Israel and the US: A Comparative Approach. 3 Units.
Poverty rates in Israel are high and have been relatively stable in recent decades, with about one fifth of all households (and a third of all children) living below the poverty line. In this class we will learn about poverty and inequality in Israel and we will compare with the US and other countries.nnIn the first few weeks of this class we will review basic theories of poverty and inequality and we will discuss how theories regarding poverty have changed over the years, from the "culture of poverty" to theories of welfare state regimes. We will also learn about various ways of measuring poverty, material hardship, and inequality, and we will review the methods and data used.nnIn the remaining weeks of the class we will turn to substantive topics such as gender, immigration, ethnicity/nationality, welfare policy, age, and health. Within each topic we will survey the debates within contemporary scholarship and we will compare Israel and the US. Examination of these issues will introduce students to some of the challenges that Israeli society faces today.
Same as: CSRE 120P, JEWISHST 131VP

SOC 121. The Individual in Social Structure: Foundations in Sociological Social Psychology. 5 Units.
Dynamics of the relationship between the individual and social structure, the relationship between the individual and immediate social context, and relationships between individuals. Focus is on the dominant theoretical perspectives in sociological social psychology: social structure and personality, structural social psychology, and symbolic interactionism.

SOC 121VP. Family and Society: A Comparative Approach (Israel & the US). 3 Units.
Families are changing: Non-marital partnerships such as cohabitation are becoming more common, marriage is delayed and fertility is declining. In this class we will learn about how families are changing in Israel and we will compare with the US and other countries. Reading materials include general theories as well as research published in scholarly journals. nnAfter reviewing general theories and major scholarly debates concerning issues of family change, we will turn to specific family processes and compare Israel, the US and other countries. We will ask how family transitions may differ for different population groups and at different stages of the life course, and we will tie family processes to current theories of gender. nnWe will cover a wide range of topics, from marriage and marital dissolution to cohabitation, LAT and remarriage. We will also discuss changes in women's labor force participation and how it bears on fertility, parenthood and household division of labor. Within each substantive topic we will survey the debates within contemporary scholarship and we will compare Israel and the US.
Same as: JEWISHST 132VP, SOC 221VP

SOC 122D. Free Speech and Inclusion on Campus. 3 Units.
How do we balance norms of inclusion and respect with norms of free speech? This seminar course utilizes readings from sociology, political science, and legal/ethical reasoning to elucidate the larger structures and ideals that are at stake in the debates over what kind of speech is tolerable, or more normatively speaking, desirable, at colleges and universities. The expected learning outcomes are: a greater understanding of the free speech's role in American society and democracy, how America's position on free speech compares to other countries, and how speech restriction and liberties can reveal larger patterns in social structure and agency. Finally, key skills students will develop are learning how to identify common ethical frameworks that academic and popular authors use and how to analyze the origins of and changes in social institutions and social structures.
Same as: AMSTUD 122D

SOC 123. Sex and Love in Modern U.S. Society. 3 Units.
Social influences on private intimate relations involving romantic love and sexuality. Topics include the sexual revolution, contraception, dating, hook-ups, cohabitation, sexual orientation, and changing cultural meanings of marriage, gender, and romantic love.
Same as: FEMGEN 123, SOC 223

SOC 124. Gender and Technology. 3 Units.
Gender and Technology historicizes the process through which technical skills and modern-day American computing technologies have been imbued with masculinist associations. We explore how social processes link technical expertise to gendered domains, and how ideas about gender are shaped in turn by the resulting technologies. Students explore how American gender roles from the 19th century to the present¿as they intersect with race, class, and sexuality¿are constructed with and through technologies in order to better understand the masculinist defaults of the tech industry in the Silicon Valley.

SOC 124D. The Intuition of Social Research. 3 Units.
Understanding the intuition behind key statistics in social science research. The focus will be on reverse-engineering statistical tests by starting with asking what information we would need to answer questions about social life. From here, we will find that apparently complicated statistical tests are simply following the same logic necessary to reach conclusions about social life. Nearly all statistical tests start from the foundations of probability sampling, mean group differences, and variability. With these foundational concepts, students will understand the intuition behind (and similarity between) standard t-tests and the mechanics of multivariate regressions. By focusing on providing students with a firm grasp of the basic foundations of statistics, students will be better prepared to understand the purpose and logic of more complex statistical tests, which serve to answer social science¿s most interesting questions.

SOC 124VP. Social Inequalities and Poverty in Latin America with focus on Brazil. 3-5 Units.
The central goal of this course is to promote an academic debate and knowledge exchange about social inequalities and poverty in Latin America, with an emphasis on Brazil, analyzing their impact on the scope of politics, the design of social policies and the interests of society. It is based on an analysis of Angus Deaton's work (Nobel Prize in Economics, 2015), that develops an economic-historical study and points out the great economic and social transformations that affect the process of evolution of social and health inequalities. Thus, what is proposed here is an analysis of the mutation of inequalities throughout the history of humanity. Deaton's relevant contribution is his approach to the process of overcoming inequalities and poverty over the last three centuries. His work demonstrates that, although the advances in terms of economic growth and quality of life have been extraordinary, there are inequalities between different regions and countries around the world. From this contextualization, the aim of this course is to discuss a contemporary approach to social development centered on the ideas of Amartya Sen (Nobel Prize in Economics, 1998), with a focus on capabilities. Sen's innovative perspective establishes that development should be centered on individuals¿ freedom of choice.
Same as: SOC 224VP

SOC 125. Sociology of Religion. 5 Units.
The social patterns of religious belief and practice, and the classical and contemporary theoretical approaches to understanding these patterns. Topics: churches, sects and cults, sources of religious pluralism, relationships between religion and aspects of social structures including the economy, class structure, ethnicity, social networks, and the state.

SOC 125D. Sociology of Learning. 3 Units.
Learn how to learn. We spend considerable time learning in school, yet we devote comparatively little time to investigating the learning process. This course uses a variety of learning situations to interrogate how we learn, understand how our social environment shapes the process, and refine our own unique learning styles. We employ project-based, experiential methods to enhance the exploration of core sociological concepts that affect learning, such as status, authority, and norms. Emphasis is placed on the social construction of specific contexts for learning such as school, work, and even the artist¿s studio. Students develop learning skills that are transferable to other classes and non-school contexts.

SOC 126. Introduction to Social Networks. 4 Units.
(Graduate students register for 226.) Theory, methods, and research. Concepts such as density, homogeneity, and centrality; applications to substantive areas. The impact of social network structure on individuals and groups in areas such as communities, neighborhoods, families, work life, and innovations.
Same as: SOC 226

SOC 126D. Wellbeing and Society. 3-4 Units.
All societies have had some notion of what makes for a good life. The scientific study of wellbeing, however, is relatively new. As our capacity to collect data about people grows, our understanding of who is well and who is not is also rapidly evolving. Today, we understand wellbeing as having many dimensions, encompassing happiness, purpose, pleasure, health, income, social connection, and inclusion. What determines how individuals fare in these domains of life? How can we improve our collective and individual wellbeing? In this course, we will learn how our ability to pursue wellbeing is shaped by social factors, such as inequality, social networks, culture, government, and markets. We will draw on empirical research and case studies in sociology, psychology, anthropology, and economics. This course largely focuses on the US, but we will also discuss research from other countries in order to develop an appreciation for the role of social context in shaping wellbeing. Class discussions and assignments will focus on applying insights from academic scholarship to understand current social problems, including the COVID-19 epidemic and its consequences for society.

SOC 127. Bargaining, Power, and Influence in Social Interaction. 5 Units.
(Graduate students register for 227.) Research and theoretical work on bargaining, social influence, and issues of power and justice in social settings such as teams, work groups, and organizations. Theoretical approaches to the exercise of power and influence in social groups and related issues in social interaction such as the promotion of cooperation, effects of competition and conflict, negotiation, and intergroup relations. Enrollment limited to 40.
Same as: SOC 227

SOC 127D. Gender At Work: Understanding Gender Inequality in the Workplace. 3 Units.
Recent events have directed attention to the vastly different workplace experiences individuals encounter based on their gender. But just how does gender structure employment outcomes and experiences? This course will examine the ways in which gender comes to be embedded in organizations and conceptions of work and skill, as well as how gender interacts with other identities, like race, class, and sexuality, to create inequality in the workplace. We will discuss the role of discrimination, bias, and harassment as well as occupational segregation and devaluation in producing unequal outcomes among people of diverse genders. By the end of this course, students will be able to think critically about how gender impacts labor market outcomes as well as develop their own ideas for spaces for further research as well as intervention.

SOC 128. Introduction to Social Network Analysis. 5 Units.
(Graduate students register for SOC 228.) Theory and methods of network analysis in sociology (with an emphasis on social movements), anthropology, history, social psychology, economics, political science, and public health. Prerequisite: basic mathematics.
Same as: SOC 228

SOC 129X. Urban Education. 3-5 Units.
(Graduate students register for EDUC 212 or SOC 229X). Combination of social science and historical perspectives trace the major developments, contexts, tensions, challenges, and policy issues of urban education.
Same as: AFRICAAM 112, CSRE 112X, EDUC 112, EDUC 212, SOC 229X

SOC 130. Education and Society. 4-5 Units.
The effects of schools and schooling on individuals, the stratification system, and society. Education as socializing individuals and as legitimizing social institutions. The social and individual factors affecting the expansion of schooling, individual educational attainment, and the organizational structure of schooling.
Same as: EDUC 120C, EDUC 220C, SOC 230

SOC 132J. Sociology of Jewishness. 3-5 Units.
Examines the place of the Jewish people in society throughout various locales and historical periods to understand how interactions among Jews and with other groups have shaped Jewish identities. Topics include modernism, the Holocaust, Israel/nationhood, race/ethnicity, intermarriage, and assimilation. Uses theoretical, empirical, and historical material from multiple social scientific fields of study and explores the study of Judaism from several major sociological lenses.
Same as: CSRE 132J, JEWISHST 132D

SOC 133. Law and Wikinomics: The Economic and Social Organization of the Legal Profession. 1-5 Unit.
(Graduate and Law students enroll in 333.) Seminar. Emphasis is on the labor market for large-firm lawyers, including the market for entry-level lawyers, attorney retention and promotion practices, lateral hiring of partners, and increased use of forms of employment such as the non-equity form of partnership. Race and gender discrimination and occupational segregation; market-based pressure tactics for organizational reform. Students groups collect and analyze data about the profession and its markets. Multimedia tools for analysis and for producing workplace reforms. May be repeated for credit. Prerequisite: consent of instructor.
Same as: SOC 333

SOC 133A. Building and Leading Inclusive Organizations. 3 Units.
This course takes a problem-solving focus. Our main goal is to learn to design research-based interventions to improve diversity, equity and inclusion outcomes in organizations. U.S. society has become increasingly more diverse, and yet our organizations do not reflect that diversity. Further, even successful efforts to improve diversity are often not accompanied by a plan to create truly inclusive organizations that support a diverse workforce or student body. We will begin by comparing explanations for the lack of diversity and inclusion in modern organizations. We will then examine research that illustrates the cost to individuals and organizations for failing to leverage the diverse talent in our society. Guest speakers will share their challenges and successes in increasing diversity, equity, and inclusion (DEI) in the organizations where they work. Then, it will be your turn. Working in teams you will design your own research-based intervention to promote DEI at the organizational, team, and individual level and present your intervention to the class. Along the way, you will also learn effective strategies for navigating non-inclusive organizations and for being an effective change agent in your own environment.
Same as: SOC 233A

SOC 133D. Globalization and Social Change. 4 Units.
How do we make sense of a world that is becoming increasingly interconnected, and where social problems like climate change, democratization, human rights, and economic stability are increasingly global in their scope? How have international institutions attempted to regulate these processes and maintain social order? Why have recent social and political movements in an increasing number of countries targeted globalization as a source of their society¿s problems? In this course, we will explore how globalization is as an economic, political, and cultural process that shapes major social problems in today¿s world. To do so, we will draw on a range of theories and interdisciplinary research in economics, political science, and sociology.

SOC 134. Gender and Education in Global and Comparative Perspectives. 3-4 Units.
This course introduces students to theories and perspectives from the social sciences relevant to an understanding of the role of education in relation to structures of gender differentiation, hierarchy, and power. It familiarizes students with and enables them to critically evaluate research on the status of children, adolescents, and young adults around the world and their participation patterns in various sectors of society, particularly in education. Students have the opportunity to gain research skills by designing research proposals or to develop action plans on topics of their choosing related to gender and education from global and/or comparative perspectives.
Same as: EDUC 197, FEMGEN 297

SOC 134D. Sex, Courtship, and Marriage in America. 3 Units.
How people meet, who they date, and when they settle down have all changed dramatically in recent decades. This course will provide students with a thorough overview of demographic, sociological, and historical perspectives on sex, relationships, and family in the United States. Students will become familiar with the empirical patterns and trends, political and cultural debates, and policy issues concerning historical and modern romantic and sexual relationships, as well as the major theories and research methods used in the sociological study of relationships. Throughout the course, we will explore how changes in modern relationships may affect broader patterns of social inequality and family structure. Additionally, we will examine how the mate selection process intersects with various aspects of gender, sexuality, class, race, and technology.
Same as: FEMGEN 134D

SOC 135. Poverty, Inequality, and Social Policy in the United States. 3-4 Units.
Over the last three decades, inequality in America has increased substantially. Why has this happened, and what can be done about it? The course will begin by surveying the basic features of poverty, inequality, and economic mobility in the 21st century. From here we will discuss issues related to discrimination, education and schools, criminal justice, and the changing nature of the family as forces that shape inequality. We will also focus on the main social policy options for addressing inequality in the United States, including income support for the poor, taxing higher incomes, efforts to encourage philanthropy, and other institutional reforms.
Same as: SOC 235

SOC 135D. Law and Inequality. 3 Units.
How does social welfare policy contribute to social (in)justice? Why does discrimination based on race face heightened scrutiny in court compared to gender? Does inequality cause crime? This course explores the intersection between sociology and the law with a focus on inequality. We will address the question: how does the law create and respond to inequality between people and groups? We will learn some legal doctrine throughout but we will prioritize examining a sociological theory of law and justice. This course takes an interdisciplinary approach using a variety of materials including judicial opinions, scholarly papers, and newspaper articles.

SOC 136. Sociology of Law. 4 Units.
(Graduate students register for 236) This course explores major issues and debates in the sociology of law. Topics include historical perspectives on the origins of law; rationality and legal sanctions; normative decision making and morality; cognitive decision making; crime and deviance, with particular attention to the problem of mass incarceration; the "law in action" versus the "law on the books;" organizational responses to law, particularly in the context of sexual harassment and discrimination in education and employment; the roles of lawyers, judges, and juries; and law and social change with particular emphasis on the American civil rights movement. Special Instructions: Students are expected to attend a weekly TA-led discussion section in addition to lecture. Sections will be scheduled after the start of term at times when all students can attend. Paper requirements are flexible. Cross listed with the Law School (LAW 7511). See "Special Instructions" in course description above. Elements Used in Grading: Class participation, paper proposal, three short papers and a final paper (see syllabus for details).
Same as: SOC 236

SOC 136A. Law and Society. 5 Units.
Law and social inequality. Major sociological perspectives on where the law comes from, what law and justice systems do, and how they work.
Same as: SOC 236A

SOC 136B. Advanced Topics in Sociology of Law. 5 Units.
(Same as LAW 538.) Historical perspectives on the origins of law, rationality and legal sanctions, law on the books versus the law in action, crime and deviance, school desegregation, privitization of prisons, American civil rights, file sharing, jury decision making, the role of lawyers and judges, and cynicism about the American legal system.
Same as: SOC 236B

SOC 137. Global Inequality. 4 Units.
Absolute world poverty has declined considerably in the last twenty years, but elites have gained disproportionately from the growth of the global economy, leading to serious concerns about inequality in several countries, as well as in global policy circles. This discussion-based seminar explores how global capitalism affects worldwide inequality. Topics include the evolution, causes, and structure of global inequality, the links between inequality and human development, and potential solutions to global inequality.

SOC 139. American Indians in Contemporary Society. 4 Units.
(Graduate students register for 239.) The social position of American Indians in contemporary American society, 1890 to the present. The demographic resurgence of American Indians, changes in social and economic status, ethnic identification and political mobilization, and institutions such as tribal governments and the Bureau of Indian Affairs. Recommended: 138 or a course in American history.
Same as: NATIVEAM 139, SOC 239

SOC 140. Introduction to Social Stratification. 3 Units.
(Graduate students register for 240.) The main classical and modern explanations of the causes of social, economic, and political inequality. Issues include: power; processes that create and maintain inequality; the central axes of inequality in contemporary societies (race, ethnicity, class, and gender); the consequences of inequality for individuals and groups; and how social policy can mitigate and exacerbate inequality. Cases include technologically simple groups, the Indian caste system, and the modern U.S.
Same as: SOC 240

SOC 141. Monitoring the Crisis. 4-5 Units.
A course devoted to understanding how people are faring as the country's health and economic crisis unfolds. The premise of the course is that, as important and valuable as surveys are, it's a capital mistake to presume that we know what needs to be asked and that fixed-response answers adequately convey the depth of what's happening. We introduce a new type of qualitative method that allows for discovery by capturing the voices of the people, learn what they're thinking and fearing, and understand the decisions they're making. Students are trained in immersive interviewing by completing actual interviews, coding and analyzing their field notes, and then writing reports describing what's happening across the country. These reports will be designed to find out who's hurting, why they're hurting, and how we can better respond to the crisis. Students interested should submit the following application: https://docs.google.com/forms/d/e/1FAIpQLSfdOZsnpOCg4zTRbVny0ikxpZEd1AFEEJh3K9KjvINyfbWMGw/viewform.
Same as: PSYCH 145A, PUBLPOL 141, SOC 241, URBANST 149

SOC 141P. Public Interest Tech: Case Studies. 1 Unit.
What does public interest technology look like in practice? Each week, a guest speaker will present a case study of their work to improve government and public systems through innovative methods, data-driven efforts, emerging technology, and human-centered design. Students will reflect on the practicalities, ethics, and best practices of public interest technology work.
Same as: SOC 241P

SOC 142. Sociology of Gender. 3 Units.
The aim of this course is to provide students with an understanding of the sociological conceptualization of gender. Through the sociological lens, gender is not an individual attribute or a role, but rather a system of social practices that constructs two different categories of people men and women and organizes social interaction and inequality around this difference. First we will explore what ¿gender¿ is according to sociologists and the current state of gender inequality in the labor market, at home, and at school. We will then investigate how gender structures our everyday lives through the individual, interactional, and institutional levels. Finally, we will discuss avenues for reducing gender inequality. Throughout the course, we will prioritize reading, evaluating, and questioning sociological theory and research on gender.".
Same as: FEMGEN 142, FEMGEN 242, SOC 242

SOC 143. Sociology of the Middle Class. 4 Units.
This class focuses on understanding of how social research is conducted, and gaining the ability to evaluate the quality ofnempirical research. The course will focus on the process of designing a research project, including: formulating research questions, developing hypotheses, developing valid and reliable measures, deciding on the types of data needed, making decisions on sampling, choosing research design and data collection methods, the challenges of making causal inferences, and criteria for evaluating the quality of social research.

SOC 144. Inequality and the Workplace. 5 Units.
How characteristics of workplaces, such as hiring practices, workforce diversity, organizational policies and legal mandates, produce variation in inequality. Examines the sources, extent, and consequences of workplace inequality across gender, racial and ethnic lines. Topics include earnings, social status, geographical location, and opportunities for people in the workforce.
Same as: SOC 244

SOC 145. Race and Ethnic Relations in the USA. 4 Units.
(Graduate students register for 245.) Race and ethnic relations in the U.S. and elsewhere. The processes that render ethnic and racial boundary markers, such as skin color, language, and culture, salient in interaction situations. Why only some groups become targets of ethnic attacks. The social dynamics of ethnic hostility and ethnic/racial protest movements.
Same as: CSRE 145, SOC 245

SOC 146. Introduction to Comparative Studies in Race and Ethnicity. 5 Units.
How different disciplines approach topics and issues central to the study of ethnic and race relations in the U.S. and elsewhere. Lectures by senior faculty affiliated with CSRE. Discussions led by CSRE teaching fellows. Includes an optional Haas Center for Public Service certified Community Engaged Learning section. In accordance with Stanford virtual learning policies implemented for the Spring Quarter, all community engagement activities for this section will be conducted virtually. Please sign up for section 2 #33285 with Kendra, A. if you are interested in participating in virtual community engagement.
Same as: CSRE 196C, ENGLISH 172D, PSYCH 155, TAPS 165

SOC 147. Race and Ethnicity Around the World. 4 Units.
(Graduate students register for 247.) How have the definitions, categories, and consequences of race and ethnicity differed across time and place? This course offers a historical and sociological survey of racialized divisions around the globe. Case studies include: affirmative action policies, policies of segregation and ghettoization, countries with genocidal pasts, invisible minorities, and countries that refuse to count their citizens by race at all.
Same as: CSRE 147A, SOC 247

SOC 149. The Urban Underclass. 4 Units.
(Graduate students register for 249.) Recent research and theory on the urban underclass, including evidence on the concentration of African Americans in urban ghettos, and the debate surrounding the causes of poverty in urban settings. Ethnic/racial conflict, residential segregation, and changes in the family structure of the urban poor.
Same as: CSRE 149A, SOC 249, URBANST 112

SOC 150. Race and Political Sociology. 3 Units.
How race informs the theories and research within political sociology. The state's role in creation and maintenance of racial categories, the ways in which racial identity motivates political actors, how race is used to legitimate policy decisions, comparisons across racial groups. Emphasis on understanding the ways race operates in the political arena.
Same as: CSRE 150, SOC 250

SOC 151. From the Cradle to the Grave: How Demographic Processes Shape the Social World. 4-5 Units.
(Graduate students register for 251 and 5 units. Undergraduates register for 151 and 4 units.) Comparative analysis of historical, contemporary, and anticipated demographic change. Draws on case studies from around the world to explore the relationship between social structure and population dynamics. Introduces demographic measures, concepts and theory. Course combines lecture and seminar-style discussion.
Same as: SOC 251

SOC 152. The Social Determinants of Health. 4 Units.
Our social and physical environments are widely recognized as playing a central role in shaping patterns of health and disease within and across populations. Across disciplines, a key question has been: How does the social environment ¿gets under the skin to influence health? In this course, we will explore how social scientists, epidemiologists, public health experts, and physicians tackle this question. Reflecting both qualitative and quantitative approaches, we will draw on literatures in social science, public health, and medicine to understand the processes through which our environments shape health outcomes. We will examine a number of key social determinants of health, wellness and illness. These determinants include socioeconomic status, gender. race/ethnicity, religious affiliation, neighborhoods, environments, social relationships, and health care. We will also discuss a host of mechanisms through which these factors are hypothesized to influence health, such as stress, lifestyle, and access to health resources. An overall theme will be how contextual factors that adversely affect health are inequitably distributed and thereby fuel health disparities. Through all of this, we will assess the promise of public policy, planning and research for generating more equitable health outcomes across society.
Same as: SOC 252

SOC 153. Activism and Intersectionality. 3-4 Units.
How are contemporary U.S. social movements shaped by the intersections of race, class, gender, and sexuality? This course explores the emergence, dynamics, tactics, and targets of social movements. Readings include empirical and theoretical social movement texts, including deep dives into Black, White, and Chicana feminisms; the KKK; and queer/LGBT movements. We will explore how social movement emergence and persistence is related to participants¿ identities and experiences with inequality; how the dynamics, targets, and tactics of mobilized participants are shaped by race, class, gender, and/or sexuality; and how social movement scholars have addressed the intersectional nature of inequality, identity, and community.
Same as: AFRICAAM 141X, CSRE 141X, FEMGEN 141

SOC 154. The Politics of Algorithms. 4-5 Units.
Algorithms have become central actors in today's digital world. In areas as diverse as social media, journalism, education, healthcare, and policing, computing technologies increasingly mediate communication processes. This course will provide an introduction to the social and cultural forces shaping the construction, institutionalization, and uses of algorithms. In so doing, we will explore how algorithms relate to political issues of modernization, power, and inequality. Readings will range from social scientific analyses to media coverage of ongoing controversies relating to Big Data. Students will leave the course with a better appreciation of the broader challenges associated with researching, building, and using algorithms.
Same as: COMM 154, COMM 254, CSRE 154T, SOC 254C

SOC 155. The Changing American Family. 4 Units.
Family change from historical, social, demographic, and legal perspectives. Extramarital cohabitation, divorce, later marriage, interracial marriage, and same-sex cohabitation. The emergence of same-sex marriage as a political issue. Are recent changes in the American family really as dramatic as they seem? Theories about what causes family systems to change.
Same as: FEMGEN 155, FEMGEN 255, SOC 255

SOC 156A. The Changing American City. 4 Units.
After decades of decline, U.S. cities today are undergoing major transformations. Young professionals are flocking to cities instead of fleeing to the suburbs. Massive increases in immigration have transformed the racial and ethnic diversity of cities and their neighborhoods. Public housing projects that once defined the inner city are disappearing, and crime rates have fallen dramatically. Do these changes signal the end of residential segregation and urban inequality? Who do these changes benefit? This course will explore these issues and strategies to address them through readings and discussion, analyzing a changing neighborhood in a major city in the Bay Area in groups (which will include at least one site visit), and studying a changing neighborhood or city of their choice for their final project. The course does not have pre-requisites.
Same as: CSRE 156, SOC 256A, URBANST 156A

SOC 157. Ending Poverty with Technology. 5 Units.
There are growing worries that new technologies may eliminate work, increase inequality, and create a large dependent class subsisting on transfers. But can technology instead be turned against itself and used to end poverty? This class explores the sources of domestic poverty and then examines how new technologies might be developed to eliminate poverty completely. We first survey existing poverty-reducing products and then attempt to imagine new products that might end poverty by equalizing access to information, reducing transaction costs, or equalizing access to training. In a follow-up class in the spring quarter, students who choose to continue will select the most promising ideas, continue to develop them, and begin the design task within Stanford¿s new Poverty and Technology Lab.
Same as: PUBLPOL 147

SOC 158. Ending Poverty with Technology: A Practicum.. 5 Units.
Will robots, automation, and technology eliminate work and create a large poverty-sticken dependent class? Or will they eliminate poverty, free us from the tyranny of work, and usher in a new society defined by leisure and creative pursuits? This two-quarter class is dedicated to exploring new theories about poverty while at the same time incubating applied technology solutions. The first quarter is devoted to examining the theory of technology-based solutions to poverty, and the second quarter is devoted to planning a viable technology-based product that will reduce poverty. This product may then be built in a follow-up Using Tech for Good (Computer Science 50) class in the first quarter of 2018 (but class participants are not required to take that follow-up class). The course is premised on the view that innovative solutions to poverty will be based on new conversations and an authentic collaboration between Silicon Valley and leaders from education, government, and low-income communities.
Same as: PUBLPOL 148

SOC 159. Social and Cultural Dimensions of Global Indigeneity. 4 Units.
This course will expose students to the rise of a world-wide indigenous identity, common themes embraced by indigenous people, and common challenges these groups confront when dealing with the larger social environment that surrounds them. Topics to be covered include tribal sovereignty, rights, and recognition; language preservation; the maintenance of cultural integrity and ethnic authenticity; cultural production and the commodification of indigenous culture; literary traditions; indigenous social movements; natural resources and land disputes; and the disadvantaged social position that these groups typically occupy.
Same as: SOC 259

SOC 160. Formal Organizations. 4 Units.
(Graduate students register for 260.) The roles of formal organizations in production processes, market transactions, and social movements; and as sources of income and ladders of mobility. Relationships of modern organizations to environments and internal structures and processes. Concepts, models, and tools for analyzing organizational phenomena in contemporary societies. Sources include the literature and case studies.
Same as: SOC 260

SOC 161. The Social Science of Entrepreneurship. 4 Units.
(Graduate students register for 261.) Who is likely to become an entrepreneur and where is entrepreneurship likely to occur? Classic and contemporary theory and research. Interaction with expert practitioners in creating entrepreneurial opportunities including venture and corporate capitalists. The role of culture, markets, hierarchies, and networks. Market creation and change, and factors that affect success of new organizations. Field projects on entrepreneurial environments such as technology licensing offices, entrepreneurial development organizations, venture capital firms, and corporate venturing groups.
Same as: SOC 261

SOC 162. The Social Regulation of Markets. 3 Units.
Social and political forces that shape market outcomes. The emergence and creation of markets, how markets go wrong, and the roles of government and society in structuring market exchange. Applied topics include development, inequality, globalization, and economic meltdown. Preference to Sociology majors and Sociology coterm students.
Same as: SOC 262

SOC 163. Foundations of Organizational Theory. 5 Units.
Foundational material in organizational theory literature.
Same as: SOC 263

SOC 164. Immigration and the Changing United States. 4 Units.
The role of race and ethnicity in immigrant group integration in the U.S. Topics include: theories of integration; racial and ethnic identity formation; racial and ethnic change; immigration policy; intermarriage; hybrid racial and ethnic identities; comparisons between contemporary and historical waves of immigration.
Same as: CHILATST 164, CSRE 164, SOC 264

SOC 165. Seminar on the Everday Lives of Immigrants. 5 Units.
Everyday experience of immigrants and the immigrant second generation through the ethnographic lens. Ethnographies that focus on the immigrant experience. Limited enrollment.
Same as: SOC 265

SOC 166. Mexicans, Mexican Americans, and Chicanos in American Society. 5 Units.
Contemporary sociological issues affecting Mexican-origin people in the U.S. Topics include: the immigrant experience, immigration policy, identity, socioeconomic integration, internal diversity, and theories of incorporation.
Same as: CHILATST 166, SOC 266

SOC 167A. Asia-Pacific Transformation. 4 Units.
Post-WW II transformation in the Asia-Pacific region, with focus on the ascent of Japan, the development of newly industrialized capitalist countries (S. Korea and Taiwan), the emergence of socialist states (China and N. Korea), and the changing relationship between the U.S. and these countries.
Same as: INTLPOL 244D, SOC 267A

SOC 167VP. Justice + Poverty Innovation:Create new solutions for people to navigate housing, medical, & debt. 4 Units.
How can emerging technologies and human-centered design be used to help people going through problems with housing, medical care, and debt? In this class, we will work with local partners to develop new tech and design prototypes to address poverty-related problems. We will explore new digital solutions, as well as how to use emerging technologies like AI and blockchain. At the same time, we will explore policy and legal reforms that could address root causes of the problems.nStudents will work in small, interdisciplinary teams with partners organizations in law, medicine, and policy. They will do design research in the field, propose new solutions and test them, and develop new initiatives that will be piloted. The goal is to incubate promising, feasible public interest technology and design projects.nThe class will be run in parallel to similar classes in Mexico, Guatemala, and Colombia. Students will have the chance to learn about similar innovation efforts in other countries, and will be challenged to think about how their own projects could be replicated and scaled.

SOC 168. Global Organizations: The Matrix of Change. 4 Units.
We learn how to apply analytical tools from the social sciences to organizations, and study how to design effective organizations and projects within and across institutional settings. A variety of organizations are included and how they deal with strategy changes and accountability. The theme for this year's class is on accountability of non-profit organizations such as Doctors Without Borders, The International Rescue Committee and The Red Cross. Recommended: FINANCE 377, MS&E 180, SOC 160, ECON 149, or MGTECON 330.
Same as: PUBLPOL 168, PUBLPOL 268, SOC 268

SOC 169. Introduction to Intersectionality. 4 Units.
"Intersectionality" is so popular, it's almost impossible to avoid: it was added to the Merriam-Webster dictionary in 2017, it was painted on signs at the Women's Marches, and it guides modern day social movement organizers. But what does intersectionality mean? What can intersectionality offer And what does it mean for research and social movements to be truly intersectional? The aim of this course is to provide students with an understanding of the concept of intersectionality. First, we will delve into the works (chiefly from Black feminist scholars) that provide the foundation for today's concept of intersectionality. We will then explore, compare, and critique sociological research that applies (or fails to apply) an intersectional lens to its objects of study. Finally, we will investigate the use of intersectionality in social movements and outside academia. Throughout the course, we will prioritize reading, evaluating, and questioning sociological theory and research.
Same as: AFRICAAM 169B, FEMGEN 169

SOC 170. Classics of Modern Social Theory. 4 Units.
(Graduate students register for 270). Sociologists seek to understand how society works, specifically: how social life is organized, changed, and maintained. Sociological theory provides hypotheses for explaining social life. All empirical research in sociology is enriched by, and has some basis in, sociological theories. This course introduces students to the earliest sociological theories and the thinkers who developed them. Specifically, we will discuss the work of W.E.B. Du Bois, Emile Durkheim, Max Weber, and Karl Marx. We will compare and contrast how they thought about important modern-day social realities such as capitalism, racism, crime, religion, and social cohesion. We will consider how these early theories and thinkers influence the way sociologists think about and study the social world today.
Same as: SOC 270

SOC 172. Computational Social Science. 4-5 Units.
This course introduces students to computational social science from a sociological perspective, grounding popular computational methods such as text mining and network analysis in sociological theory. While the course is open to graduate and advanced undergraduate students from any discipline, the materials will be primarily sourced from sociology. Students with no prior computer science experience will find this course a menu of potential methodologies for future research, while students with some programming experience or with a pre-existing research question can use this course to advance their research projects. By framing these methods in sociological theory, students will gain a more critical understanding of why scientists select these methods and how computational methods impact society.

SOC 173. Gender and Higher Education: National and International Perspectives. 3-4 Units.
This course examines the ways in which higher education structures and policies interact with gender, gender identity, and other characteristics in the United States, around the world, and over time. Attention is paid to how changes in those structures and policies relate to access to, experiences in, and outcomes of higher education by gender. Students can expect to gain an understanding of theories and perspectives from the social sciences relevant to an understanding of the role of higher education in relation to structures of gender differentiation and hierarchy. Topics include undergraduate and graduate education; identity and sexuality; gender and science; gender and faculty; and feminist scholarship and pedagogy.
Same as: EDUC 173, EDUC 273, FEMGEN 173, SOC 273

SOC 176. The Social Life of Neighborhoods. 3-5 Units.
How do neighborhoods come to be? How and why do they change? What is the role of power, money, race, immigration, segregation, culture, government, and other forces? In this course, students will interrogate these questions using literatures from sociology, geography, and political science, along with archival, observational, interview, and cartographic (GIS) methods. Students will work in small groups to create content (e.g., images, audio, and video) for a self-guided ¿neighborhood tour,¿ which will be added to a mobile app and/or website.
Same as: AFRICAAM 76B, CSRE 176B, SOC 276, URBANST 179

SOC 177. The Sociology of Popular Culture. 3 Units.
Why do some songs become popular, but not others? Why are music genres that were wildly popular in the 1950s no longer popular today? Trends and fads and can be found nearly everywhere in our daily lives movie tropes, skirt lengths, styles of shoes, internet memes, hot stock-picks all of these go in and out of fashion. But, why should they? Did something change? And if so¿what? This course seeks to understand how and why things become (un)popular. The course begins with early 20th century theories on the massification and commodification of culture and traces development of this literature over time. Topics covered include propaganda, social influence, and significant responses to questions such as: What constitutes high/low culture? Does popular culture manifest--"from the bottom-up", for the people by the people--or is popular culture dictated--"from the top down", by elites and commercial interests? To what extent do social networks (and the status and power of the people within them) influence these relationships? How is popular culture received, interpreted, and used? Today, the media landscape looks significantly different than it did in the early 20th century, and in the final portion of the course we will consider the extent to which new technologies, media platforms, hyper-focused advertising, and cluster-based similarity algorithms have impacted the way we think about and answer these questions. In the final portion of the course, we will critically examine active and ongoing debates in the literature related to this question and produce a final paper that contributes to the discussion. No final exam.

SOC 177D. Economic Elites in the 21st Century. 3-5 Units.
Elites have gained disproportionately from the growth of the global economy over the past two decades, leading to serious concerns about inequality and to protests against the 1% in several countries. This course addresses the role of economic elites in the world economy and their relationship to global inequality. Topics include the evolution and consequences of global inequality, the composition of economic elites in various countries, and economic elites¿ impact on politics, education, culture, and the economy in the US and abroad. We also discuss potential solutions to global inequality.
Same as: SOC 277D

SOC 178. The Politics of Inequality. 5 Units.
This course is about the distribution of power in contemporary democratic societies, and especially in the US: who governs? Is there a ``power elite,'' whose preferences dominate public policy making? Or, does policy reflect a wide range of interests? What is the relationship between income and power? What are the political consequences of increasing income inequality? How do income differences across racial and ethnic groups affect the quality of their representation? What are effective remedies for unequal influence? Finally, which institutions move democratic practice furthest towards full democratic equality? This course will address these questions, focusing first on local distributions of power, and then considering the implications of inequality in state and national politics. nStudents will have the opportunity to study income inequality using income and labor force surveys in a mid-term assignment. Then, in a final paper, students will conduct an empirical examination of the implications of income inequality for American democracy.
Same as: POLISCI 147P, PUBLPOL 247

SOC 179A. Crime and Punishment in America. 4-5 Units.
This course provides a comprehensive introduction to the way crime has been defined and punished in the United States. Recent social movements such as the Movement for Black Lives have drawn attention to the problem of mass incarceration and officer-involved shootings of people of color. These movements have underscored the centrality of the criminal justice system in defining citizenship, race, and democracy in America. How did our country get here? This course provides a social scientific perspective on America¿s past and present approach to crime and punishment. Readings and discussions focus on racism in policing, court processing, and incarceration; the social construction of crime and violence; punishment among the privileged; the collateral consequences of punishment in poor communities of color; and normative debates about social justice, racial justice, and reforming the criminal justice system. Students will learn to gather their own knowledge and contribute to normative debates through a field report assignment and an op-ed writing assignment.
Same as: AFRICAAM 179A, CSRE 179A, SOC 279A

SOC 179N. The Science of Diverse Communities. 3 Units.
This course is an exploration. Most generally, its aim is to identify distinguishing features of good diverse communities and articulate them well enough to offer principles or guidelines for how to design and manage such communities - all with a particular focus on educational communities like schools, universities, academic disciplines, etc., but with the hope that such principles might generalize to other kinds of organizations and the broader society. The readings range from those on the origins of human communities and social identities to those on intergroup trust building. They also aim to embed our discussions in the major diversity issues of the day, or example, what's in the news about campus life. nnnThus the course has a practical purpose: to develop testable ideas for improving the comfort level, fairness and goodness-for-all of identity diverse communities--especially in educational settings. nnnThe course also has a basic science purpose: to explore the psychological significance of community. Is there a psychological need for community? Is there something about a need for community that can't be reduced to other needs, for example, for a gender, racial or sexual-orientation identity? How strong is the need for community against other needs? What kinds of human groupings can satisfy it? In meeting this need, can membership in one community substitute for membership in others? What do people need from communities in order to thrive in them? Do strong diverse communities dampen intergroup biases? Can strong community loyalty mitigate identity tensions within communities? nnnSuch questions, the hope is, will help us develop a more systematic understanding of the challenges and opportunities inherent in diverse human communities.
Same as: CSRE 30N, EDUC 30N, PSYCH 30N

SOC 180A. Foundations of Social Research. 4 Units.
Formulating a research question, developing hypotheses, probability and non-probability sampling, developing valid and reliable measures, qualitative and quantitative data, choosing research design and data collection methods, challenges of making causal inference, and criteria for evaluating the quality of social research. Emphasis is on how social research is done, rather than application of different methods. Limited enrollment; preference to Sociology and Urban Studies majors, and Sociology coterms.
Same as: CSRE 180A, SOC 280A

SOC 180B. Introduction to Data Analysis. 4 Units.
Preference to Sociology majors and minors. Enrollment for non-sociologists will open two weeks after winter enrollment begins. Methods for analyzing and evaluating quantitative data in sociological research. Students will be taught how to run and interpret multivariate regressions, how to test hypotheses, and how to read and critique published data analyses.
Same as: CSRE 180B, SOC 280B

SOC 181B. Sociological Methods: Statistics. 5 Units.
(Graduate students register for 281B.) Statistical methods of relevance to sociology: contingency tables, correlation, and regression.
Same as: SOC 281B

SOC 183D. Addictions, Self, and Society. 3 Units.
From your daily cup(s) of coffee to the ¿War on Drugs,¿ drugs touch the lives of most people. Yet, how societies deal with drug use and abuse change throughout time. In this course, we will look at drug use and abuse through a sociological lens, exploring how micro (personal), meso (interactional), and macro (structural) level forces underpin the meanings, experiences, and policies associated with drug use and abuse in the United States. Beyond this, we will examine how these forces contribute to persistent systems of inequality among different groups. This will not serve as a ¿how to¿ course, but one in which you will be asked to critically examine the role of drugs and their effects on society. By the end of this course, students should be able to:.

SOC 184D. Policing in Society: From Precincts to Playgrounds. 3 Units.
This course examines the social underpinnings of historical and modern-day policing. We will analyze trends in policing practices in the US through time, and ask how ¿ and to what effect ¿ police have become enmeshed in the social fabric of American life. Students will be exposed to some of the methods social scientists use to investigate society¿s most pressing issues as we examine the intersections of policing with other institutions (e.g. education, technology, and health) through both popular journalism and rigorous academic research.

SOC 185D. Gender and Politics. 3 Units.
Despite gains in recent years, women remain dramatically underrepresented in virtually all realms of the American political system. In this course, students will become familiar with the empirical patterns and trends, social and cultural debates, and policy issues concerning the role of gender in American politics. We will examine the gender gap in voting patterns and mass political participation, as well as strategies for increasing women¿s representation. Students will come to understand the effects of women¿s lack of parity, including policy attitudes, processes, and outcomes. Furthermore, we will explore gender inequality in politics through an intersectional lens of race, class, age, education, and sexuality.

SOC 188. One in Five: The Law, Politics, and Policy of Campus Sexual Assault. 3-5 Units.
TRIGGER WARNING: Over the past several years the issue of campus sexual assault and harassment has exploded into the public discourse. Multiple studies have reinforced the finding that between 20-25% of college women (and a similar proportion of students identifying as transgender and gender-nonconforming, as well as approximately 10% of male students) experience sexual assault carried out through force or while the victim was incapacitated during their time in college. Fraternities have been found to be associated with an increased risk of female sexual assault on campus. Vulnerable students and those from marginalized groups are often found to be at increased risk. This is also a significant problem in k12 education. Sexual harassment rates are even higher. Survivors have come forward across the country with harrowing stories of assault followed by what they describe as an insensitive or indifferent response from college administrators. These survivors have launched one of the most successful, and surprising, social movements in recent memory. As a result, the federal government under President Obama stepped up its civil rights enforcement in this area, with over 300 colleges and universities under investigation for allegedly mishandling student sexual assault complaints as of the end of that administration. At the same time, the Obama administration¿s heightened response led to a series of high-profile lawsuits by accused students who assert that they were falsely accused or subjected to mishandled investigations that lacked sufficient due process protections. The one thing that survivors and accused students appear to agree on is that colleges are not handling these matters appropriately and appeared to be more concerned with protection the institutional brand than with stopping rape or protecting student rights. Colleges have meanwhile complained of being whipsawed between survivors, accused students, interest groups, and enforcement authorities. In an about-face that many found shocking, the Trump Administration rescinded all of the Obama-era guidance on the subject of sexual harassment and has promulgated new proposed regulations that would offer significantly greater protection to accused students and to institutions and commensurately less protection to survivors. An increasingly partisan Congress has been unable to pass legislation addressing the issue.This course focuses on the legal, policy, and political issues surrounding sexual assault and harassment on college campuses. Each week we will read, dissect, compare and critique a set of readings that include social science, history, literature, legal, policy, journalism, and narrative explorations of the topic of campus sexual assault. We will explore the history of gender-based violence and the efforts to implement legal protections for survivors in the educational context. We will also study the basic legal frameworks governing campus assault, focusing on the relevant federal laws such as Title IX and the Clery Act. We will critically explore the ways that responses to this violence have varied by the race, class, gender identity, sexual orientation, and other characteristics of parties and institutions. We will hear from guest speakers who are actively involved in shaping policy and advocating in this area, including lawyers, activists, journalists, and policymakers. This year we will also host special guest speaker Chanel Miller, author of the bestselling memoir Know My Name. The subject matter of this course is sensitive, and students are expected to treat the material with maturity. Much of the reading and subject matter may be upsetting and/or triggering for students who identify as survivors. There is no therapeutic component for this course, although supportive campus resources and Title IX staff are available for those who need them.Elements used in grading: Grades will be based on class attendance, class participation, and a research paper or project and class presentation Enrollment is by INSTRUCTOR PERMISSION. Access the consent form here feminist.stanford.edu/academics/undergraduate-program/forms or email etsurkov@stanford.edu to request a form via email. Applications will be reviewed on a rolling basis until the class is full. Demand for the class is high and participation is capped at 18. The class usually fills quickly, so make sure to apply early. Cross-listed with the Law School (LAW 7065 and with Sociology (SOC 188).
Same as: FEMGEN 143

SOC 189. Race and Immigration. 4-5 Units.
In the contemporary United States, supposedly race-neutral immigration laws have racially-unequal consequences. Immigrants from Mexico, Central America, and the Middle East are central to ongoing debates about who's includable, and who's excludable, from American society. These present-day dynamics mirror the historical forms of exclusion imposed on immigrants from places as diverse as China, Eastern Europe, Ireland, Italy, Japan, and much of Africa. These groups' varied experiences of exclusion underscore the long-time encoding of race into U.S. immigration policy and practice. Readings and discussions center on how immigration law has become racialized in its construction and in its enforcement over the last 150 years.
Same as: AFRICAAM 190, CSRE 189, SOC 289

SOC 190. Undergraduate Individual Study. 1-5 Unit.
Prior arrangement required.

SOC 191. Undergraduate Directed Research. 1-5 Unit.
Work on a project of student's choice under supervision of a faculty member. Prior arrangement required.

SOC 192. Undergraduate Research Apprenticeship. 1-5 Unit.
Work in an apprentice-like relationship with faculty on an on-going research project. Prior arrangement required.

SOC 193. Undergraduate Teaching Apprenticeship. 1-5 Unit.
Prior arrangement required.

SOC 194. Computational Undergraduate Research. 1-5 Unit.
Computational sociology research working with faculty on an on-going technical research project. Applications for position reviewed on a rolling basis.

SOC 196. Senior Thesis. 1-15 Unit.
Work on an honors thesis project under faculty supervision (see description of honors program). Must be arranged early in the year of graduation or before.

SOC 200. Junior/Senior Seminar for Majors. 4 Units.
For Sociology majors. Capstone course in which sociological problems are framed, linked to theories, and answers pursued through research designs. Independent research. How to formulate a research question; how to integrate theory and methods. Prerequisites: SOC 170, 180B.

SOC 201. Preparation for Senior Project. 5 Units.
First part of capstone experience for Urban Studies majors pursuing an internship-based research project or honors thesis. Assignments culminate in a research proposal, which may be submitted for funding. Students also identify and prepare for a related internship, normally to begin in Spring Quarter in URBANST 201B or in Summer. Research proposed in the final assignment may be carried out in Spring or Summer Quarter; consent required for Autumn Quarter research. Service Learning Course (certified by Haas Center).
Same as: URBANST 201

SOC 202. Junior Seminar: Preparation for Research. 5 Units.
Required of all juniors in Sociology who plan to write an honors thesis. Students write a research prospectus and grant proposal, which may be submitted for funding. Research proposal in final assignment may be carried out in Spring or Summer Quarter; consent required for Autumn Quarter research.

SOC 204. Capstone Research Seminar. 5 Units.
This course focuses on the sociological research and writing process and fulfills the Writing In the Major (WIM) requirement for Sociology majors. Students will write a substantial paper based on the research project developed in 202 or a project developed during the course. Students in the honors program or co-terms in the research track may incorporate their paper into their thesis. Sociology majors who are seniors may take Soc 204 as their sole WIM class, as a substitute for Soc 200, with no prerequisites required. The class is designed to support students as they complete an original research project during the quarter or a piece of a larger honors or master¿s thesis.

SOC 205. Education and Inequality: Big Data for Large-Scale Problems. 3-5 Units.
In this course, students will use data from the Stanford Education Data Archive (SEDA) to study the patterns, causes, consequences, and remedies of educational inequality in the US. SEDA is based on 200 million test score records, administrative data, and census data from every public school, school district, and community in the US. The course will include lectures, discussion, and small group research projects using SEDA and other data.
Same as: EDUC 107, EDUC 207, SOC 107E

SOC 205VP. Contested markets in the Brazilian Amazon Rainforest. 2-3 Units.
Strategies of environmental movements to contain domestic and foreign corporations that are viewed as major perpetrators of rainforest devastation and the socio-economic degradation of this vast region. Topics: Origins, roles and inter-relations among corporations (zero deforestation agreements in soybean agriculture and cattle ranching), the development of environmental law and the efficacy of government and NGO movements¿ strategies, and whether this emerging economy shapes social classes, groups, tribes, family life to further embed inequality and immobility. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.
Same as: EARTHSYS 205VP, SOC 105VP

SOC 207. China After Mao. 5 Units.
China's post-1976 recovery from the late Mao era; its reorientation toward an open market-oriented economy; the consequences of this new model and runaway economic growth for standards of living, social life, inequality, and local governance; the political conflicts that have accompanied these changes.
Same as: SOC 107

SOC 208. Political & Historical Sociology. 5 Units.
The differences between historical and sociological analysis of past events. The difference between constructing sociological explanations and describing past events. Topics include: the rise of Christianity, the mafia in a Sicilian village, the trade network of the East India Company.
Same as: SOC 108

SOC 211. State and Society in Korea. 4 Units.
20th-century Korea from a comparative historical perspective. Colonialism, nationalism, development, state-society relations, democratization, and globalization with reference to the Korean experience.
Same as: INTNLREL 143, SOC 111

SOC 214. Economic Sociology. 4 Units.
(Graduate students register for 214.) The sociological approach to production, distribution, consumption, and markets, emphasizing the impact of norms, power, social structure, and institutions on the economy. Comparison of classic and contemporary approaches to the economy among the social science disciplines. Topics: consumption, labor markets, organization of professions such as law and medicine, the economic role of informal networks, industrial organization, including the structure and history of the computer and popular music industries, business alliances, capitalism in non-Western societies, and the transition from state socialism in E. Europe and China.
Same as: SOC 114

SOC 216. Chinese Organizations and Management. 5 Units.
Seminar for advanced undergraduates and all graduate students.
Same as: SOC 116

SOC 217A. China Under Mao. 5 Units.
(Graduate students register for 217A.) The transformation of Chinese society from the 1949 revolution to the eve of China's reforms in 1978: creation of a socialist economy, reorganization of rural society and urban workplaces, emergence of new inequalities of power and opportunity, and new forms of social conflict during Mao's Cultural Revolution of 1966-69 and its aftermath.
Same as: SOC 117A

SOC 217B. Chinese Politics and Society. 3-5 Units.
(Doctoral students register for 317B.) This seminar surveys the major turning points that have shaped China's evolution since 1949. The topics covered include the Great Leap Forward, the Cultural Revolution, the political and economic turning point of the early 1980s, the political crisis of 1989, the restructuring of the state sector since the 1990s, and the patterns of protest that have accompanied the rapid social changes over the past three decades. We will conclude the course with current debates about China's future.
Same as: HISTORY 293F, HISTORY 393F, SOC 317B

SOC 218. Social Movements and Collective Action. 4 Units.
Why social movements arise, who participates in them, the obstacles they face, the tactics they choose, and how to gauge movement success or failure. Theory and empirical research. Application of concepts and methods to social movements such as civil rights, environmental justice, antiglobalization, and anti-war.
Same as: SOC 118

SOC 219. Understanding Large-Scale Societal Change: The Case of the 1960s. 5 Units.
The demographic, economic, political, and cultural roots of social change in the 60s; its legacy in the present U.S.
Same as: SOC 119

SOC 220. Interpersonal Relations. 4 Units.
(Graduate students register for 220.) Forming ties, developing norms, status, conformity, deviance, social exchange, power, and coalition formation; important traditions of research have developed from the basic theories of these processes. Emphasis is on understanding basic theories and drawing out their implications for change in a broad range of situations, families, work groups, and friendship groups.
Same as: SOC 120

SOC 221VP. Family and Society: A Comparative Approach (Israel & the US). 3 Units.
Families are changing: Non-marital partnerships such as cohabitation are becoming more common, marriage is delayed and fertility is declining. In this class we will learn about how families are changing in Israel and we will compare with the US and other countries. Reading materials include general theories as well as research published in scholarly journals. nnAfter reviewing general theories and major scholarly debates concerning issues of family change, we will turn to specific family processes and compare Israel, the US and other countries. We will ask how family transitions may differ for different population groups and at different stages of the life course, and we will tie family processes to current theories of gender. nnWe will cover a wide range of topics, from marriage and marital dissolution to cohabitation, LAT and remarriage. We will also discuss changes in women's labor force participation and how it bears on fertility, parenthood and household division of labor. Within each substantive topic we will survey the debates within contemporary scholarship and we will compare Israel and the US.
Same as: JEWISHST 132VP, SOC 121VP

SOC 223. Sex and Love in Modern U.S. Society. 3 Units.
Social influences on private intimate relations involving romantic love and sexuality. Topics include the sexual revolution, contraception, dating, hook-ups, cohabitation, sexual orientation, and changing cultural meanings of marriage, gender, and romantic love.
Same as: FEMGEN 123, SOC 123

SOC 224B. Relational Sociology. 4 Units.
Conversations, social relationships and social networks are the core features of social life. In this course we explore how conversations, relationships, and social networks not only have their own unique and independent characteristics, but how they shape one another and come to characterize many of the settings we enter and live in. As such, students will be introduced to theories and research methodologies concerning social interaction, social relationships, and social networks, as well as descriptions of how these research strands interrelate to form a larger relational sociology that can be employed to characterize a variety of social phenomenon. This course is suitable to advanced undergraduates and doctoral students.
Same as: EDUC 312

SOC 224VP. Social Inequalities and Poverty in Latin America with focus on Brazil. 3-5 Units.
The central goal of this course is to promote an academic debate and knowledge exchange about social inequalities and poverty in Latin America, with an emphasis on Brazil, analyzing their impact on the scope of politics, the design of social policies and the interests of society. It is based on an analysis of Angus Deaton's work (Nobel Prize in Economics, 2015), that develops an economic-historical study and points out the great economic and social transformations that affect the process of evolution of social and health inequalities. Thus, what is proposed here is an analysis of the mutation of inequalities throughout the history of humanity. Deaton's relevant contribution is his approach to the process of overcoming inequalities and poverty over the last three centuries. His work demonstrates that, although the advances in terms of economic growth and quality of life have been extraordinary, there are inequalities between different regions and countries around the world. From this contextualization, the aim of this course is to discuss a contemporary approach to social development centered on the ideas of Amartya Sen (Nobel Prize in Economics, 1998), with a focus on capabilities. Sen's innovative perspective establishes that development should be centered on individuals¿ freedom of choice.
Same as: SOC 124VP

SOC 226. Introduction to Social Networks. 4 Units.
(Graduate students register for 226.) Theory, methods, and research. Concepts such as density, homogeneity, and centrality; applications to substantive areas. The impact of social network structure on individuals and groups in areas such as communities, neighborhoods, families, work life, and innovations.
Same as: SOC 126

SOC 227. Bargaining, Power, and Influence in Social Interaction. 5 Units.
(Graduate students register for 227.) Research and theoretical work on bargaining, social influence, and issues of power and justice in social settings such as teams, work groups, and organizations. Theoretical approaches to the exercise of power and influence in social groups and related issues in social interaction such as the promotion of cooperation, effects of competition and conflict, negotiation, and intergroup relations. Enrollment limited to 40.
Same as: SOC 127

SOC 228. Introduction to Social Network Analysis. 5 Units.
(Graduate students register for SOC 228.) Theory and methods of network analysis in sociology (with an emphasis on social movements), anthropology, history, social psychology, economics, political science, and public health. Prerequisite: basic mathematics.
Same as: SOC 128

SOC 229X. Urban Education. 3-5 Units.
(Graduate students register for EDUC 212 or SOC 229X). Combination of social science and historical perspectives trace the major developments, contexts, tensions, challenges, and policy issues of urban education.
Same as: AFRICAAM 112, CSRE 112X, EDUC 112, EDUC 212, SOC 129X

SOC 230. Education and Society. 4-5 Units.
The effects of schools and schooling on individuals, the stratification system, and society. Education as socializing individuals and as legitimizing social institutions. The social and individual factors affecting the expansion of schooling, individual educational attainment, and the organizational structure of schooling.
Same as: EDUC 120C, EDUC 220C, SOC 130

SOC 231. World, Societal, and Educational Change: Comparative Perspectives. 4-5 Units.
Theoretical perspectives and empirical studies on the structural and cultural sources of educational expansion and differentiation, and on the cultural and structural consequences of educational institutionalization. Research topics: education and nation building; education, mobility, and equality; education, international organizations, and world culture.
Same as: EDUC 136, EDUC 306D

SOC 232. Genetics and Society. 3 Units.
This course will focus on social science engagement with developments in genetic research, focusing on two key issues. First, social scientists are trying to figure out how genetic data can be used to help them better understand phenomena they have been long endeavoring to understand. Second, social scientists try to improve understanding of how social environments moderate, amplify, or attenuate genetic influences on outcomes.
Same as: EDUC 373

SOC 233A. Building and Leading Inclusive Organizations. 3 Units.
This course takes a problem-solving focus. Our main goal is to learn to design research-based interventions to improve diversity, equity and inclusion outcomes in organizations. U.S. society has become increasingly more diverse, and yet our organizations do not reflect that diversity. Further, even successful efforts to improve diversity are often not accompanied by a plan to create truly inclusive organizations that support a diverse workforce or student body. We will begin by comparing explanations for the lack of diversity and inclusion in modern organizations. We will then examine research that illustrates the cost to individuals and organizations for failing to leverage the diverse talent in our society. Guest speakers will share their challenges and successes in increasing diversity, equity, and inclusion (DEI) in the organizations where they work. Then, it will be your turn. Working in teams you will design your own research-based intervention to promote DEI at the organizational, team, and individual level and present your intervention to the class. Along the way, you will also learn effective strategies for navigating non-inclusive organizations and for being an effective change agent in your own environment.
Same as: SOC 133A

SOC 234. Research Seminar on Access to Justice. 1-5 Unit.
The functions and dysfunctions of modern legal systems. Topics include: official statements of the U.S. and the EU about the rights of parties to civil disputes; the roles of lawyers as gatekeepers and facilitators; the filtering process by which injuries and experiences become the basis for legal claims; access to and use of courts; the balance of power and advantage between individual persons and organizations in disputes. Prerequisite: advanced undergraduate or graduate standing, or consent of instructor.
Same as: SOC 334

SOC 235. Poverty, Inequality, and Social Policy in the United States. 3-4 Units.
Over the last three decades, inequality in America has increased substantially. Why has this happened, and what can be done about it? The course will begin by surveying the basic features of poverty, inequality, and economic mobility in the 21st century. From here we will discuss issues related to discrimination, education and schools, criminal justice, and the changing nature of the family as forces that shape inequality. We will also focus on the main social policy options for addressing inequality in the United States, including income support for the poor, taxing higher incomes, efforts to encourage philanthropy, and other institutional reforms.
Same as: SOC 135

SOC 236. Sociology of Law. 4 Units.
(Graduate students register for 236) This course explores major issues and debates in the sociology of law. Topics include historical perspectives on the origins of law; rationality and legal sanctions; normative decision making and morality; cognitive decision making; crime and deviance, with particular attention to the problem of mass incarceration; the "law in action" versus the "law on the books;" organizational responses to law, particularly in the context of sexual harassment and discrimination in education and employment; the roles of lawyers, judges, and juries; and law and social change with particular emphasis on the American civil rights movement. Special Instructions: Students are expected to attend a weekly TA-led discussion section in addition to lecture. Sections will be scheduled after the start of term at times when all students can attend. Paper requirements are flexible. Cross listed with the Law School (LAW 7511). See "Special Instructions" in course description above. Elements Used in Grading: Class participation, paper proposal, three short papers and a final paper (see syllabus for details).
Same as: SOC 136

SOC 236A. Law and Society. 5 Units.
Law and social inequality. Major sociological perspectives on where the law comes from, what law and justice systems do, and how they work.
Same as: SOC 136A

SOC 236B. Advanced Topics in Sociology of Law. 5 Units.
(Same as LAW 538.) Historical perspectives on the origins of law, rationality and legal sanctions, law on the books versus the law in action, crime and deviance, school desegregation, privitization of prisons, American civil rights, file sharing, jury decision making, the role of lawyers and judges, and cynicism about the American legal system.
Same as: SOC 136B

SOC 238. Market Oriented Policies in Education. 3-4 Units.
Introducing market dynamics in education remains a highly controversial policy issue. In this course we will discuss the main ideas supporting the market approach in education and the key arguments against these policies; we will also review some of the evidence concerning the effects of market policies in education such as privatization, vouchers, and school choice; and finally, we will study several issues related to market oriented reforms, such as performance accountability, school segregation, and peer effects in education.
Same as: EDUC 238

SOC 239. American Indians in Contemporary Society. 4 Units.
(Graduate students register for 239.) The social position of American Indians in contemporary American society, 1890 to the present. The demographic resurgence of American Indians, changes in social and economic status, ethnic identification and political mobilization, and institutions such as tribal governments and the Bureau of Indian Affairs. Recommended: 138 or a course in American history.
Same as: NATIVEAM 139, SOC 139

SOC 240. Introduction to Social Stratification. 3 Units.
(Graduate students register for 240.) The main classical and modern explanations of the causes of social, economic, and political inequality. Issues include: power; processes that create and maintain inequality; the central axes of inequality in contemporary societies (race, ethnicity, class, and gender); the consequences of inequality for individuals and groups; and how social policy can mitigate and exacerbate inequality. Cases include technologically simple groups, the Indian caste system, and the modern U.S.
Same as: SOC 140

SOC 240W. CPI Seminar. 1-2 Unit.
A workshop devoted to presenting ongoing research on poverty and inequality in the United States. Open to all students interested in (a) building a better infrastructure for monitoring poverty and inequality, (b) building cutting-edge models of the causes and consequences of poverty and inequality, and (b) building better policy to reduce poverty and inequality. Required for all National Poverty Fellows funded by the Stanford Center on Poverty and Inequality. May be repeat for credit starting 8/1/2016.
Same as: SOC 340W

SOC 241. Monitoring the Crisis. 4-5 Units.
A course devoted to understanding how people are faring as the country's health and economic crisis unfolds. The premise of the course is that, as important and valuable as surveys are, it's a capital mistake to presume that we know what needs to be asked and that fixed-response answers adequately convey the depth of what's happening. We introduce a new type of qualitative method that allows for discovery by capturing the voices of the people, learn what they're thinking and fearing, and understand the decisions they're making. Students are trained in immersive interviewing by completing actual interviews, coding and analyzing their field notes, and then writing reports describing what's happening across the country. These reports will be designed to find out who's hurting, why they're hurting, and how we can better respond to the crisis. Students interested should submit the following application: https://docs.google.com/forms/d/e/1FAIpQLSfdOZsnpOCg4zTRbVny0ikxpZEd1AFEEJh3K9KjvINyfbWMGw/viewform.
Same as: PSYCH 145A, PUBLPOL 141, SOC 141, URBANST 149

SOC 241P. Public Interest Tech: Case Studies. 1 Unit.
What does public interest technology look like in practice? Each week, a guest speaker will present a case study of their work to improve government and public systems through innovative methods, data-driven efforts, emerging technology, and human-centered design. Students will reflect on the practicalities, ethics, and best practices of public interest technology work.
Same as: SOC 141P

SOC 242. Sociology of Gender. 3 Units.
The aim of this course is to provide students with an understanding of the sociological conceptualization of gender. Through the sociological lens, gender is not an individual attribute or a role, but rather a system of social practices that constructs two different categories of people men and women and organizes social interaction and inequality around this difference. First we will explore what ¿gender¿ is according to sociologists and the current state of gender inequality in the labor market, at home, and at school. We will then investigate how gender structures our everyday lives through the individual, interactional, and institutional levels. Finally, we will discuss avenues for reducing gender inequality. Throughout the course, we will prioritize reading, evaluating, and questioning sociological theory and research on gender.".
Same as: FEMGEN 142, FEMGEN 242, SOC 142

SOC 244. Inequality and the Workplace. 5 Units.
How characteristics of workplaces, such as hiring practices, workforce diversity, organizational policies and legal mandates, produce variation in inequality. Examines the sources, extent, and consequences of workplace inequality across gender, racial and ethnic lines. Topics include earnings, social status, geographical location, and opportunities for people in the workforce.
Same as: SOC 144

SOC 245. Race and Ethnic Relations in the USA. 4 Units.
(Graduate students register for 245.) Race and ethnic relations in the U.S. and elsewhere. The processes that render ethnic and racial boundary markers, such as skin color, language, and culture, salient in interaction situations. Why only some groups become targets of ethnic attacks. The social dynamics of ethnic hostility and ethnic/racial protest movements.
Same as: CSRE 145, SOC 145

SOC 246A. Ethnographies of Race, Crime, and Justice. 4-5 Units.
This course provides graduate students with a survey introduction to influential ethnographic and interview-based sociological research on race, crime, and justice. Recent social movements such as the Movement for Black Lives have drawn attention to the problem of mass criminalization in the U.S. These movements have underscored the centrality of the criminal legal system in defining race in America. Each week, students will read ethnographic books and journal articles on the role of race and racism in different dimensions of the criminal legal process from policing to court processing to incarceration written in the early twentieth century to the present. In addition to gaining foundational knowledge on the key debates within the sociological and criminological literature, students will also gain important insight into the most rigorous qualitative social science methods for studying these topics, and how these methods have changed over time.
Same as: SOC 346A

SOC 247. Race and Ethnicity Around the World. 4 Units.
(Graduate students register for 247.) How have the definitions, categories, and consequences of race and ethnicity differed across time and place? This course offers a historical and sociological survey of racialized divisions around the globe. Case studies include: affirmative action policies, policies of segregation and ghettoization, countries with genocidal pasts, invisible minorities, and countries that refuse to count their citizens by race at all.
Same as: CSRE 147A, SOC 147

SOC 249. The Urban Underclass. 4 Units.
(Graduate students register for 249.) Recent research and theory on the urban underclass, including evidence on the concentration of African Americans in urban ghettos, and the debate surrounding the causes of poverty in urban settings. Ethnic/racial conflict, residential segregation, and changes in the family structure of the urban poor.
Same as: CSRE 149A, SOC 149, URBANST 112

SOC 250. Race and Political Sociology. 3 Units.
How race informs the theories and research within political sociology. The state's role in creation and maintenance of racial categories, the ways in which racial identity motivates political actors, how race is used to legitimate policy decisions, comparisons across racial groups. Emphasis on understanding the ways race operates in the political arena.
Same as: CSRE 150, SOC 150

SOC 251. From the Cradle to the Grave: How Demographic Processes Shape the Social World. 4-5 Units.
(Graduate students register for 251 and 5 units. Undergraduates register for 151 and 4 units.) Comparative analysis of historical, contemporary, and anticipated demographic change. Draws on case studies from around the world to explore the relationship between social structure and population dynamics. Introduces demographic measures, concepts and theory. Course combines lecture and seminar-style discussion.
Same as: SOC 151

SOC 252. The Social Determinants of Health. 4 Units.
Our social and physical environments are widely recognized as playing a central role in shaping patterns of health and disease within and across populations. Across disciplines, a key question has been: How does the social environment ¿gets under the skin to influence health? In this course, we will explore how social scientists, epidemiologists, public health experts, and physicians tackle this question. Reflecting both qualitative and quantitative approaches, we will draw on literatures in social science, public health, and medicine to understand the processes through which our environments shape health outcomes. We will examine a number of key social determinants of health, wellness and illness. These determinants include socioeconomic status, gender. race/ethnicity, religious affiliation, neighborhoods, environments, social relationships, and health care. We will also discuss a host of mechanisms through which these factors are hypothesized to influence health, such as stress, lifestyle, and access to health resources. An overall theme will be how contextual factors that adversely affect health are inequitably distributed and thereby fuel health disparities. Through all of this, we will assess the promise of public policy, planning and research for generating more equitable health outcomes across society.
Same as: SOC 152

SOC 254. Welfare State. 4-5 Units.
This seminar introduces students to the key literature, questions, and debates about the modern welfare state. Emergence, growth, and purported demise of the welfare state. American welfare state in comparative perspective. Social and political factors affecting state development including political parties, labor markets, gender, demographic change, and immigration.
Same as: SOC 354

SOC 254C. The Politics of Algorithms. 4-5 Units.
Algorithms have become central actors in today's digital world. In areas as diverse as social media, journalism, education, healthcare, and policing, computing technologies increasingly mediate communication processes. This course will provide an introduction to the social and cultural forces shaping the construction, institutionalization, and uses of algorithms. In so doing, we will explore how algorithms relate to political issues of modernization, power, and inequality. Readings will range from social scientific analyses to media coverage of ongoing controversies relating to Big Data. Students will leave the course with a better appreciation of the broader challenges associated with researching, building, and using algorithms.
Same as: COMM 154, COMM 254, CSRE 154T, SOC 154

SOC 255. The Changing American Family. 4 Units.
Family change from historical, social, demographic, and legal perspectives. Extramarital cohabitation, divorce, later marriage, interracial marriage, and same-sex cohabitation. The emergence of same-sex marriage as a political issue. Are recent changes in the American family really as dramatic as they seem? Theories about what causes family systems to change.
Same as: FEMGEN 155, FEMGEN 255, SOC 155

SOC 256A. The Changing American City. 4 Units.
After decades of decline, U.S. cities today are undergoing major transformations. Young professionals are flocking to cities instead of fleeing to the suburbs. Massive increases in immigration have transformed the racial and ethnic diversity of cities and their neighborhoods. Public housing projects that once defined the inner city are disappearing, and crime rates have fallen dramatically. Do these changes signal the end of residential segregation and urban inequality? Who do these changes benefit? This course will explore these issues and strategies to address them through readings and discussion, analyzing a changing neighborhood in a major city in the Bay Area in groups (which will include at least one site visit), and studying a changing neighborhood or city of their choice for their final project. The course does not have pre-requisites.
Same as: CSRE 156, SOC 156A, URBANST 156A

SOC 258B. Causal Inference in Quantitative Educational and Social Science Research. 3-5 Units.
This course surveys quantitative methods to make causal inferences in the absence of randomized experiment including the use of natural and quasi-experiments, instrumental variables, regression discontinuity, fixed effects estimators, and difference-in-differences. We emphasize the proper interpretation of these research designs and critical engagement with their key assumptions for applied researchers. Prerequisites: Prior training in multivariate regression (e.g., ECON 102B or the permission of the instructor).
Same as: EDUC 430B

SOC 258C. Using Data to Describe the World: Descriptive Social Science Research Techniques. 3-5 Units.
This course focuses on the skills needed to conduct theoretically-informed and policy-relevant descriptive social science. Students read recent examples of rigorous descriptive quantitative research that exemplifies the use of data to describe important phenomena related to educational and social inequality. The course will help develop skills necessary to conceptualize, operationalize, and communicate descriptive research, including techniques related to measurement and measurement error, data harmonization, data reduction, and visualization. Students develop a descriptive project during the course. Prerequisite: satisfactory completion of a course in multivariate regression.
Same as: EDUC 430C

SOC 259. Social and Cultural Dimensions of Global Indigeneity. 4 Units.
This course will expose students to the rise of a world-wide indigenous identity, common themes embraced by indigenous people, and common challenges these groups confront when dealing with the larger social environment that surrounds them. Topics to be covered include tribal sovereignty, rights, and recognition; language preservation; the maintenance of cultural integrity and ethnic authenticity; cultural production and the commodification of indigenous culture; literary traditions; indigenous social movements; natural resources and land disputes; and the disadvantaged social position that these groups typically occupy.
Same as: SOC 159

SOC 260. Formal Organizations. 4 Units.
(Graduate students register for 260.) The roles of formal organizations in production processes, market transactions, and social movements; and as sources of income and ladders of mobility. Relationships of modern organizations to environments and internal structures and processes. Concepts, models, and tools for analyzing organizational phenomena in contemporary societies. Sources include the literature and case studies.
Same as: SOC 160

SOC 261. The Social Science of Entrepreneurship. 4 Units.
(Graduate students register for 261.) Who is likely to become an entrepreneur and where is entrepreneurship likely to occur? Classic and contemporary theory and research. Interaction with expert practitioners in creating entrepreneurial opportunities including venture and corporate capitalists. The role of culture, markets, hierarchies, and networks. Market creation and change, and factors that affect success of new organizations. Field projects on entrepreneurial environments such as technology licensing offices, entrepreneurial development organizations, venture capital firms, and corporate venturing groups.
Same as: SOC 161

SOC 262. The Social Regulation of Markets. 3 Units.
Social and political forces that shape market outcomes. The emergence and creation of markets, how markets go wrong, and the roles of government and society in structuring market exchange. Applied topics include development, inequality, globalization, and economic meltdown. Preference to Sociology majors and Sociology coterm students.
Same as: SOC 162

SOC 263. Foundations of Organizational Theory. 5 Units.
Foundational material in organizational theory literature.
Same as: SOC 163

SOC 264. Immigration and the Changing United States. 4 Units.
The role of race and ethnicity in immigrant group integration in the U.S. Topics include: theories of integration; racial and ethnic identity formation; racial and ethnic change; immigration policy; intermarriage; hybrid racial and ethnic identities; comparisons between contemporary and historical waves of immigration.
Same as: CHILATST 164, CSRE 164, SOC 164

SOC 265. Seminar on the Everday Lives of Immigrants. 5 Units.
Everyday experience of immigrants and the immigrant second generation through the ethnographic lens. Ethnographies that focus on the immigrant experience. Limited enrollment.
Same as: SOC 165

SOC 266. Mexicans, Mexican Americans, and Chicanos in American Society. 5 Units.
Contemporary sociological issues affecting Mexican-origin people in the U.S. Topics include: the immigrant experience, immigration policy, identity, socioeconomic integration, internal diversity, and theories of incorporation.
Same as: CHILATST 166, SOC 166

SOC 267A. Asia-Pacific Transformation. 4 Units.
Post-WW II transformation in the Asia-Pacific region, with focus on the ascent of Japan, the development of newly industrialized capitalist countries (S. Korea and Taiwan), the emergence of socialist states (China and N. Korea), and the changing relationship between the U.S. and these countries.
Same as: INTLPOL 244D, SOC 167A

SOC 268. Global Organizations: The Matrix of Change. 4 Units.
We learn how to apply analytical tools from the social sciences to organizations, and study how to design effective organizations and projects within and across institutional settings. A variety of organizations are included and how they deal with strategy changes and accountability. The theme for this year's class is on accountability of non-profit organizations such as Doctors Without Borders, The International Rescue Committee and The Red Cross. Recommended: FINANCE 377, MS&E 180, SOC 160, ECON 149, or MGTECON 330.
Same as: PUBLPOL 168, PUBLPOL 268, SOC 168

SOC 270. Classics of Modern Social Theory. 4 Units.
(Graduate students register for 270). Sociologists seek to understand how society works, specifically: how social life is organized, changed, and maintained. Sociological theory provides hypotheses for explaining social life. All empirical research in sociology is enriched by, and has some basis in, sociological theories. This course introduces students to the earliest sociological theories and the thinkers who developed them. Specifically, we will discuss the work of W.E.B. Du Bois, Emile Durkheim, Max Weber, and Karl Marx. We will compare and contrast how they thought about important modern-day social realities such as capitalism, racism, crime, religion, and social cohesion. We will consider how these early theories and thinkers influence the way sociologists think about and study the social world today.
Same as: SOC 170

SOC 273. Gender and Higher Education: National and International Perspectives. 3-4 Units.
This course examines the ways in which higher education structures and policies interact with gender, gender identity, and other characteristics in the United States, around the world, and over time. Attention is paid to how changes in those structures and policies relate to access to, experiences in, and outcomes of higher education by gender. Students can expect to gain an understanding of theories and perspectives from the social sciences relevant to an understanding of the role of higher education in relation to structures of gender differentiation and hierarchy. Topics include undergraduate and graduate education; identity and sexuality; gender and science; gender and faculty; and feminist scholarship and pedagogy.
Same as: EDUC 173, EDUC 273, FEMGEN 173, SOC 173

SOC 276. The Social Life of Neighborhoods. 3-5 Units.
How do neighborhoods come to be? How and why do they change? What is the role of power, money, race, immigration, segregation, culture, government, and other forces? In this course, students will interrogate these questions using literatures from sociology, geography, and political science, along with archival, observational, interview, and cartographic (GIS) methods. Students will work in small groups to create content (e.g., images, audio, and video) for a self-guided ¿neighborhood tour,¿ which will be added to a mobile app and/or website.
Same as: AFRICAAM 76B, CSRE 176B, SOC 176, URBANST 179

SOC 277D. Economic Elites in the 21st Century. 3-5 Units.
Elites have gained disproportionately from the growth of the global economy over the past two decades, leading to serious concerns about inequality and to protests against the 1% in several countries. This course addresses the role of economic elites in the world economy and their relationship to global inequality. Topics include the evolution and consequences of global inequality, the composition of economic elites in various countries, and economic elites¿ impact on politics, education, culture, and the economy in the US and abroad. We also discuss potential solutions to global inequality.
Same as: SOC 177D

SOC 278. Introduction to Computational Social Science. 3 Units.
With a vast amount of data now collected on our online and offline actions -- from what we buy, to where we travel, to who we interact with -- we have an unprecedented opportunity to study complex social systems. This opportunity, however, comes with scientific, engineering, and ethical challenges. In this hands-on course, we develop ideas from computer science and statistics to address problems in sociology, economics, political science, and beyond. We cover techniques for collecting and parsing data, methods for large-scale machine learning, and principles for effectively communicating results. To see how these techniques are applied in practice, we discuss recent research findings in a variety of areas. Prerequisites: introductory course in applied statistics, and experience coding in R, Python, or another high-level language.
Same as: MS&E 231

SOC 279. Law, Order, & Algorithms. 3 Units.
Human decision making is increasingly being displaced by predictive algorithms. Judges sentence defendants based on statistical risk scores; regulators take enforcement actions based on predicted violations; advertisers target materials based on demographic attributes; and employers evaluate applicants and employees based on machine-learned models. One concern with the rise of such algorithmic decision making is that it may replicate or exacerbate human bias. This course surveys the legal and ethical principles for assessing the equity of algorithms, describes statistical techniques for designing fair systems, and considers how anti-discrimination law and the design of algorithms may need to evolve to account for machine bias. Concepts will be developed in part through guided in-class coding exercises. Admission is by consent of instructor and is limited to 20 students. To enroll in the class, please complete the course application by March 20, available at: https://5harad.com/mse330/. Grading is based on response papers, class participation, and a final project. Prerequisite: CS 106A or equivalent knowledge of coding.
Same as: CS 209, CSRE 230, MS&E 330

SOC 279A. Crime and Punishment in America. 4-5 Units.
This course provides a comprehensive introduction to the way crime has been defined and punished in the United States. Recent social movements such as the Movement for Black Lives have drawn attention to the problem of mass incarceration and officer-involved shootings of people of color. These movements have underscored the centrality of the criminal justice system in defining citizenship, race, and democracy in America. How did our country get here? This course provides a social scientific perspective on America¿s past and present approach to crime and punishment. Readings and discussions focus on racism in policing, court processing, and incarceration; the social construction of crime and violence; punishment among the privileged; the collateral consequences of punishment in poor communities of color; and normative debates about social justice, racial justice, and reforming the criminal justice system. Students will learn to gather their own knowledge and contribute to normative debates through a field report assignment and an op-ed writing assignment.
Same as: AFRICAAM 179A, CSRE 179A, SOC 179A

SOC 280A. Foundations of Social Research. 4 Units.
Formulating a research question, developing hypotheses, probability and non-probability sampling, developing valid and reliable measures, qualitative and quantitative data, choosing research design and data collection methods, challenges of making causal inference, and criteria for evaluating the quality of social research. Emphasis is on how social research is done, rather than application of different methods. Limited enrollment; preference to Sociology and Urban Studies majors, and Sociology coterms.
Same as: CSRE 180A, SOC 180A

SOC 280B. Introduction to Data Analysis. 4 Units.
Preference to Sociology majors and minors. Enrollment for non-sociologists will open two weeks after winter enrollment begins. Methods for analyzing and evaluating quantitative data in sociological research. Students will be taught how to run and interpret multivariate regressions, how to test hypotheses, and how to read and critique published data analyses.
Same as: CSRE 180B, SOC 180B

SOC 281. Natural Language Processing & Text-Based Machine Learning in the Social Sciences. 4 Units.
Digital communications (including social media) are the largest data sets of our time, and most of it is text. Social scientists need to be able to digest small and big data sets alike, process it and extract psychological insight. This applied and project-focused course introduces students to a Python codebase developed to facilitate text analysis in the social sciences (see dlatk.wwbp.org -- knowledge of Python is helpful but not required). The goal is to practice these methods in guided tutorials and project-based work so that the students can apply them to their own research contexts and be prepared to write up the results for publication. The course will provide best practices, as well as access to and familiarity with a Linux-based server environment to process text, including the extraction of words and phrases, topics and psychological dictionaries. We will also practice the use of machine learning based on text data for psychological assessment, and the further statistical analysis of language variables in R. Familiarity with Python is helpful but not required. Basic familiarity with R is expected. The ability to wrangle data into a spreadsheet-like format is expected. A basic introduction to SQL will be given in the course. Familiarity with SSH and basic Linux is helpful but not required. Understanding of regression is expected.
Same as: PSYCH 290, SYMSYS 195T

SOC 281B. Sociological Methods: Statistics. 5 Units.
(Graduate students register for 281B.) Statistical methods of relevance to sociology: contingency tables, correlation, and regression.
Same as: SOC 181B

SOC 289. Race and Immigration. 4-5 Units.
In the contemporary United States, supposedly race-neutral immigration laws have racially-unequal consequences. Immigrants from Mexico, Central America, and the Middle East are central to ongoing debates about who's includable, and who's excludable, from American society. These present-day dynamics mirror the historical forms of exclusion imposed on immigrants from places as diverse as China, Eastern Europe, Ireland, Italy, Japan, and much of Africa. These groups' varied experiences of exclusion underscore the long-time encoding of race into U.S. immigration policy and practice. Readings and discussions center on how immigration law has become racialized in its construction and in its enforcement over the last 150 years.
Same as: AFRICAAM 190, CSRE 189, SOC 189

SOC 290. Coterminal MA individual study. 1-5 Unit.
Prior arrangement required.

SOC 291. Coterminal MA directed research. 1-5 Unit.
Work on a project of student's choice under supervision of a faculty member. Prior arrangement required.

SOC 292. Coterminal MA research apprenticeship. 1-5 Unit.
Work in an apprentice-like relationship with faculty on an on-going research project. Prior arrangement required.

SOC 297. Globalization and Higher Education. 3-4 Units.
This course examines the expansion, impact, and organization of higher education across the world. This course engages students with sociological theory and comparative research on global and national sources of influence on higher education developments, e.g. admissions criteria, curricular content, governance structure.. At the end of the course students should be able to compare and contrast developments across countries.
Same as: EDUC 349

SOC 298. The Social Psychology of Contemporary American Politics. 4 Units.
Where do individuals' political attitudes and behaviors come from, and how can they be changed? In this class we will read and discuss cutting-edge research from social psychology, sociology, and political science on topics such as polarization, persuasion, elitism, social activism, and racial resentment. A central idea of the class is that social and psychological factors powerfully influence political views, and research in this area can help to understand our often confusing political landscape. Additionally, understanding the causal architecture of political attitudes and behavior is essential for taking effective political action, especially in this time of deep and growing political divides. Enrollment is permission by instructor only: please email: willer@stanford.edu.
Same as: SOC 398

SOC 300. Workshop: The Art and Joy of Teaching. 2 Units.
Note: for first-year Sociology Doctoral Students only. This class will prepare you to teach Stanford students in your role as a TA or instructor. It rests on the idea that teaching is both an art to learn and cultivate, and a source of great joy and personal meaning during your graduate career and beyond. The course¿s main goal is to help you become an effective instructor in your day-to-day teaching, covering skills such as how to deliver a powerful lecture, lead an engaging discussion section, build an inclusive classroom, describe your personal pedagogy to others, juggle teaching logistics and competing demands, and make the best use of technology and campus resources. You will also discover that teaching is, above all, a deeply personal process that should take into account the different backgrounds, stories, and learning styles of both students and instructors to enable students to flourish academically and personally. Throughout this class, we will explore different philosophies and ways of teaching so that you can cultivate and employ your own, personalized pedagogy. It is my hope that you will use this course as a springboard to embark on your own teaching journey. With a growth mindset and the right tools in our hands, we can begin to both transform and be transformed by our students: this is the art and joy of teaching.

SOC 301. Play and Games. 3-4 Units.
Social life would be unimaginable without play and games. Students will be introduced to social theories of play and games; the history of games and their variation; readings concerned with how play and games affect interaction and socialization; how race and gender are enacted in and through play and games; how play and games relate to creativity and innovation; and how games can be designed for engrossment and the accomplishment of various tasks and learning goals. Course intended mainly for doctoral students, though master¿s and undergraduate students are welcome. This is a new course, so please expect collaboration with instructor and other students to shape the course content.
Same as: EDUC 414

SOC 302. Introduction to Data Science. 3-5 Units.
Social scientists can benefit greatly from utilizing new data sources like electronic administration records or digital communications, but they require tools and techniques to make sense of their scope and complexity. This course offers the opportunity to understand and apply popular data science techniques regarding data visualization, data reduction and data analysis.
Same as: EDUC 143, EDUC 423

SOC 302A. Introduction to Data Science I: Data Processing. 3-4 Units.
Quantitative data require considerable work before they are ready to be analyzed: they are often messy, incomplete and potentially biased. This course is designed to help you thoughtfully collect, manage, clean and represent data so it can offer substantive information researchers can act upon. In our weekly sessions you will take a critical and reflective approach to these tasks and learn the technical skills needed to get your data into shape. Education and social science datasets will be our focus.
Same as: EDUC 423A

SOC 302B. Introduction to Data Science II: Machine learning. 3-4 Units.
This course centers on the question of how you can use various data science techniques to understand social phenomena. Applied to education and social science topics, the course will introduce you to supervised and unsupervised machine learning algorithms, new data, and provide you the skills to thoughtfully evaluate and assess machine learning performance and implications.
Same as: EDUC 423B

SOC 304. Experimental Methods in the Social Sciences. 4 Units.
This course will introduce students to the logic, design, and implementation of experiments for social science research. We will begin by developing an understanding of how experimental research designs can address some of the central threats to causal identification, such as selection and omitted variables bias. Students will then engage with scholarship that has utilized experimental research designs to produce theoretical insights about topics ranging from social stratification to the dynamics of cultural markets to political mobilization. This course will also cover techniques for analyzing experimental data, strategies for dealing with noncompliance, and combining experiments with other methods of inquiry. The course will culminate with students developing an experimental research design proposal related to their own scholarly interests. While a basic understanding of statistics is necessary for this course, the emphasis will be on research design.

SOC 305. Graduate Proseminar. 1 Unit.
For first-year Sociology doctoral students only, Introduction and orientation to the field of Sociology. May be repeat for credit.

SOC 308. Social Demography. 4-5 Units.
For graduate students and advanced undergraduates. Topics: models of fertility behavior, migration models, stable population theory, life table analysis, data sources, and measurement problems. How population behavior affects social processes, and how social processes influence population dynamics. Recommended: sociological research methods; basic regression analysis and log linear models.

SOC 309. Nations and Nationalism. 3-5 Units.
The nation as a form of collective identity in the modern era. Major works in the study of nations and nationalism from comparative perspectives with focus on Europe and E. Asia.

SOC 310. Political Sociology. 4-5 Units.
Theory and research on the relationship between social structure and politics. Social foundations of political order, the generation and transformation of ideologies and political identities, social origins of revolutionary movements, and social consequences of political revolution. Prerequisite: doctoral student.

SOC 311A. Workshop: Comparative Studies of Educational and Political Systems. 1-5 Unit.
Analysis of quantitative and longitudinal data on national educational systems and political structures. May be repeated for credit. Prerequisite: consent of instructor.
Same as: EDUC 387

SOC 312G. Careers and Organizations. 3 Units.
The careers of individuals are shaped by their movement within and between organizations, whether those be established employers or entrepreneurial ventures. Conversely, organizations of all sizes are shaped by the flows of individuals through them as individuals construct careers by pursuing different opportunities. This course will examine sociological and economic theory and research on this mutually constitutive relationship. Possible topics include inequality and attainment processes, internal labor markets, mobility dynamics, individual and organizational learning, ecological influences, gender and racial segregation, discrimination, and entrepreneurship as a career process.

SOC 312W. Workshop: Political Sociology, Social Movements, and Collective Action. 1-2 Unit.
Faculty and student presentations of ongoing research on topics including: social movement and organizations, and the relationship between them; democracy movements; legislative and policy outcomes; and collective action tactics, strategies, and trajectories. May be repeated for credit. Restricted to Sociology doctoral students; others by consent of instructor.

SOC 314. Economic Sociology. 4-5 Units.
Classical and contemporary literature covering the sociological approach to markets and the economy, and comparing it to other disciplines. Topics: consumption, labor, professions, industrial organization, and the varieties of capitalism; historical and comparative perspectives on market and non-market provision of goods and services, and on transitions among economic systems. The relative impact of culture, institutions, norms, social networks, technology, and material conditions. Prerequisite: doctoral student status or consent of instructor. Please note: Lecture and discussion section are both required.

SOC 315W. Workshop: Economic Sociology and Organizations. 1-2 Unit.
Theory, methods, and research in the sociology of the economy and of formal organizations, through presentations of ongoing work by students, faculty, and guest speakers, and discussion of recent literature and controversies. May be repeated for credit. Restricted to Sociology doctoral students; others by consent of instructor.

SOC 316. Historical and Comparative Sociology. 4-5 Units.
Theory and research on macro-historical changes of sociological significance such as the rise of capitalism, the causes and consequences of revolutions, and the formation of the modern nation state and global world system. Methodological issues in historical and comparative sociology.

SOC 317B. Chinese Politics and Society. 3-5 Units.
(Doctoral students register for 317B.) This seminar surveys the major turning points that have shaped China's evolution since 1949. The topics covered include the Great Leap Forward, the Cultural Revolution, the political and economic turning point of the early 1980s, the political crisis of 1989, the restructuring of the state sector since the 1990s, and the patterns of protest that have accompanied the rapid social changes over the past three decades. We will conclude the course with current debates about China's future.
Same as: HISTORY 293F, HISTORY 393F, SOC 217B

SOC 317W. Computational Sociology. 1-2 Unit.
Yearlong workshop where doctoral students are encouraged to collaborate with peers and faculty who share an interest in employing computational techniques in the pursuit of researching social network dynamics, text analysis, histories, and theories of action that help explain social phenomena. Students present their own research and provide helpful feedback on others' work. Presentations may concern dissertation proposals, grants, article submissions, book proposals, datasets, methodologies and other texts. Repeatable for credit.
Same as: EDUC 317

SOC 318. Social Movements and Collective Action. 4-5 Units.
Topics: causes, dynamics, and outcomes of social movements; organizational dimensions of collective action; and causes and consequences of individual activism.

SOC 319. Ethnographic Methods. 1-5 Unit.
This course offers an introduction to the practice and politics of ethnographic fieldwork. It provides a "how to" of ethnographic research, in which students will conduct an ethnographic project of their own, complemented by weekly readings and discussions. In the process, we will discuss the theory and epistemology of fieldwork, along with the practicalities and politics of fieldwork in different domains. We will examine different stages of ethnographic research (entering the field, conducting and recording fieldwork, exiting the field and writing it up), different methods (observations, interviews, "going along"), as well as distinct styles of ethnographic work (virtual ethnography, organizational ethnography, narrative ethnography, etc.). The course will serve as a participative workshop for students to exchange field notes, share practical advice, and consolidate their research interests. Prerequisite: Must be Communication student, or obtain approval from instructor.
Same as: COMM 314

SOC 320. Foundations of Social Psychology. 4-5 Units.
Major theoretical perspectives, and their assumptions and problems, in interpersonal processes and social psychology. Techniques of investigation and methodological issues. Perspectives: symbolic interaction, social structure and personality, and cognitive and group processes.

SOC 321. Nonprofits, Philanthropy & Society. 3-4 Units.
Over the past several decades nonprofit organizations have become increasingly central entities in society, and with this growing status and importance their roles are increasingly complex.We consider the social, political and economic dynamics of philanthropy and the nonprofit sector, focusing mainly (but not exclusively) on the US. The class is best suited for graduate students looking for an advanced analytic understanding of the sector and those wishing to conduct research in the field; it is not intended to provide training in nonprofit management.
Same as: EDUC 321, PUBLPOL 321

SOC 321W. Workshop: Social Psychology and Gender. 1-2 Unit.
Advanced graduate student workshop in social psychology. Current theories and research agendas, recent publications, and presentations of ongoing research by faculty and students. May be repeated for credit. Prerequisite: consent of instructor.

SOC 323. Sociology of the Family. 4-5 Units.
Sociological research on changing family forms. Topics include courtship, marriage, fertility, divorce, conflict, relationship skills and satisfaction, gender patterns, power relations within the family, and class and race differences in patterns. Enrollment limited to graduate students.

SOC 324. Social Networks. 3-5 Units.
How the study of social networks contributes to sociological research. Application of core concepts to patterns of relations among actors, including connectivity and clusters, duality of categories and networks, centrality and power, balance and transitivity, structural equivalence, and blockmodels. Friendship and kinship networks, diffusion of ideas and infectious diseases, brokerage in markets and organizations, and patronage and political influence in historical contexts.

SOC 325W. Workshop: Graduate Family. 1-2 Unit.
PhD students will present their own work weekly, and read and critique the research-in-progress of their peers on issues of family, household structure, interpersonal relationships, marriage, demography, survey data, demographic methods, statistical methods, and related fields. May be repeat for credit starting 8/1/2016.

SOC 326. New Media and Journalism. 1-5 Unit.
New media technologies are transforming how people create and consume information. In this course, we study journalism as an organized field of practice to examine what digital technologies change -- and what they don't change -- about production, diffusion, and reception of news around the globe. The course will cover topics such as changing professional boundaries in a networked environment; the decentralization of news production with social media platforms; the changes in editorial judgement related to automation; the construction of algorithmic audiences; and the promises and challenges associated with data journalism. Moving beyond simplistic analyses of the internet as a universal explanation for all changes in journalism, this course explores how new technologies interact with existing practices, representations, and institutions.
Same as: COMM 350

SOC 327. Frontiers of Social Psychology. 1-5 Unit.
Advanced topics, current developments, theory, and empirical research. Possible topics include social identity processes, status beliefs and processes, social exchange, affect and social cohesion, legitimacy, social difference and inequality, norms, and social dilemmas.

SOC 328. The Sociology of Work and Employment. 4 Units.
Work and employment have the ability to promote economic security as well as reinforce poverty, provide meaning as well as induce alienation, generate collaboration as well as reproduce difference. Indeed, work and employment are central components of the human experience and structure significant portions of our lives. This course introduces students to current theoretical and empirical issues in sociological scholarship on work and employment. The substantive topics covered in this course will include job search and finding work, the hiring process, changing employment relations, job loss and unemployment, racial and gender stratification at work, unpaid labor and care work, as well as work and family intersections. Theoretical and methodological innovation in recent scholarship will be highlighted throughout the course. The course will culminate with students developing a proposal for a research project designed to address a significant gap in existing scholarship on work and employment.

SOC 330. Sociology of Science. 3-4 Units.
The sociology of science concerns the social structures and practices by which human beings interpret, use and create intellectual innovations. In particular we will explore the claim that scientific facts are socially constructed and ask whether such a characterization has limits. Course readings will concern the formation and decline of various thought communities, intellectual social movements, scientific disciplines, and broader research paradigms. A special focus will be placed on interdisciplinarity as we explore whether the collision of fields can result in new scientific advances. This course is suitable to advanced undergraduates and doctoral students.
Same as: EDUC 120, EDUC 320, STS 200Q

SOC 331. The Conduct of Qualitative Inquiry. 3-4 Units.
Two quarter sequence for doctoral students to engage in research that anticipates, is a pilot study for, or feeds into their dissertations. Prior approval for dissertation study not required. Students engage in common research processes including: developing interview questions; interviewing; coding, analyzing, and interpreting data; theorizing; and writing up results. Participant observation as needed. Preference to students who intend to enroll in 327C.
Same as: EDUC 327A

SOC 332. Sociology of Education. 3-5 Units.
Seminar. Key sociological theories and empirical studies of of the relationship between education and other major social institutions, focusing on drivers of educational change, the organizational infrastructures of education, and the implication of education in processes of social stratification. Targeted to doctoral students.
Same as: EDUC 310

SOC 333. Law and Wikinomics: The Economic and Social Organization of the Legal Profession. 1-5 Unit.
(Graduate and Law students enroll in 333.) Seminar. Emphasis is on the labor market for large-firm lawyers, including the market for entry-level lawyers, attorney retention and promotion practices, lateral hiring of partners, and increased use of forms of employment such as the non-equity form of partnership. Race and gender discrimination and occupational segregation; market-based pressure tactics for organizational reform. Students groups collect and analyze data about the profession and its markets. Multimedia tools for analysis and for producing workplace reforms. May be repeated for credit. Prerequisite: consent of instructor.
Same as: SOC 133

SOC 334. Research Seminar on Access to Justice. 1-5 Unit.
The functions and dysfunctions of modern legal systems. Topics include: official statements of the U.S. and the EU about the rights of parties to civil disputes; the roles of lawyers as gatekeepers and facilitators; the filtering process by which injuries and experiences become the basis for legal claims; access to and use of courts; the balance of power and advantage between individual persons and organizations in disputes. Prerequisite: advanced undergraduate or graduate standing, or consent of instructor.
Same as: SOC 234

SOC 336. Sociology of Law. 3-5 Units.
Sociological examination of law as a mechanism of social regulation and as a field of knowledge. Explores classical and contemporary theoretical and empirical contributions to the sociology of law. Law and social control, law and social change, social reality of the law, the profession and practice of law, legal mobilization, and the influence of race, gender, and social status in legal decisions and processes.

SOC 338W. Workshop: Sociology of Law. 1-5 Unit.
(Same as LAW 581.) Required for joint degree J.D./Ph.D. students in Sociology in the first three years of program; open to Ph.D. students in Sociology and related disciplines. Empirical, sociological study of law and legal institutions. Topics such as the relation of law to inequality and stratification, social movements, organizations and institutions, political sociology and state development, and the social construction of disputes and dispute resolution processes. Research presentations. Career development issues. May be repeated for credit.

SOC 339. Gender Meanings and Processes. 5 Units.
Current theories and research on the social processes, such as socialization, status processes, stereotyping, and cognition, that produce gender difference and inequality. Intersections of gender with race, class, and bodies. Applications to workplaces, schools, families, and intimate relationships. Prerequisite: consent of instructor required.

SOC 340. Social Stratification. 4-5 Units.
Classical and contemporary approaches to the unequal distribution of goods, status, and power. Modern analytic models of the effects of social contact, cultural capital, family background, and luck in producing inequality. The role of education in stratification. The causes and consequences of inequality by race and gender. The structure of social classes, status groupings, and prestige hierarchies in various societies. Labor markets and their role in inequality. The implications of inequality for individual lifestyles. The rise of the new class, the underclass, and other emerging forms of stratification. Prerequisite: Ph.D. student or consent of instructor.

SOC 340W. CPI Seminar. 1-2 Unit.
A workshop devoted to presenting ongoing research on poverty and inequality in the United States. Open to all students interested in (a) building a better infrastructure for monitoring poverty and inequality, (b) building cutting-edge models of the causes and consequences of poverty and inequality, and (b) building better policy to reduce poverty and inequality. Required for all National Poverty Fellows funded by the Stanford Center on Poverty and Inequality. May be repeat for credit starting 8/1/2016.
Same as: SOC 240W

SOC 341W. Workshop: Inequality. 1-2 Unit.
Causes, consequences, and structure of inequality; how inequality results from and shapes social classes, occupations, professions, and other aspects of the economy. Research presentations by students, faculty, and guest speakers. Discussion of controversies, theories, and recent writings. May be repeated for credit. Restricted to Sociology doctoral students; others by consent of instructor.

SOC 342B. Gender and Social Structure. 5 Units.
The role of gender in structuring contemporary life. Social forces affecting gender at the psychological, interactional, and structural levels. Gender inequality in labor markets, education, the household, and other institutions. Theories and research literature.

SOC 343W. Gender and Gender Inequality Workshop. 1-3 Unit.
This workshop is intended for PhD students whose graduate research is centered on gender and/or gender inequalities. Students will take turns presenting their research and get feedback from other students and faculty.

SOC 344. Intersectionality: Theory, Methods & Research. 4 Units.
In this seminar, we will trace intersectionality from its activist origins outside of academia to its practice in contemporary social science research (and back). We will consider the range of approaches and interpretations that have emerged over the past 30 years, since Kimberlé Crenshaw coined the term to critique anti-discrimination litigation, and do so with an eye toward application: how to best incorporate the insights of intersectionality into original social science research, across a variety of topics and methods.

SOC 344A. Culture and Markets. 4 Units.
In this course, we seek to understand economic markets as cultural institutions. Far from natural or inevitable entities, markets are social constructions that rely upon¿and reproduce¿particular shared understandings about how the world is and should be. In this course, we consider the cognitive, expressive, and normative aspects of culture in order to analyze the existence of markets, the forms they take, and the justifications for the effects they have. We begin by exploring the cultural constitution of market goods and actors. How do some, but not other, objects come to be exchanged via the market, and why do companies and consumers look and act the way they do? We then dig deeper into the key cultural forms and processes that enable and constrain economic phenomena. In what ways do classification, quantification, narrative, metaphor, and so on give rise to the market as we experience it, and who has the power to shape the way these processes take hold? Next, we delve into two special cases: money, which some hold to be impervious to social considerations, and cultural objects, which some hold to be impervious to market logic. Both turn out to be much more complicated. In the final part of course, we explore the cultural aspects of organizations and economic policymaking. The course readings are largely empirical research, so we will also critically discuss how sociologists use data and methods to build evidence.

SOC 346. Workshop: Ethnography. 1-2 Unit.
Restricted to doctoral students. Student research employing ethnographic methods. May be repeated for credit. Prerequisite: consent of instructor.

SOC 346A. Ethnographies of Race, Crime, and Justice. 4-5 Units.
This course provides graduate students with a survey introduction to influential ethnographic and interview-based sociological research on race, crime, and justice. Recent social movements such as the Movement for Black Lives have drawn attention to the problem of mass criminalization in the U.S. These movements have underscored the centrality of the criminal legal system in defining race in America. Each week, students will read ethnographic books and journal articles on the role of race and racism in different dimensions of the criminal legal process from policing to court processing to incarceration written in the early twentieth century to the present. In addition to gaining foundational knowledge on the key debates within the sociological and criminological literature, students will also gain important insight into the most rigorous qualitative social science methods for studying these topics, and how these methods have changed over time.
Same as: SOC 246A

SOC 348. Advanced Topics in the Sociology of Gender. 3-5 Units.
Seminar for graduate students who have research projects in progress that focus on questions about gender and society. Research projects can be at any stage from the initial development to the final writing up of results. Focus is on questions posed by the research projects of the seminar participants. Readings include relevant background to each other's questions and present their own work in progress. A final paper reports the progress on the seminar member's research project. May be repeat for credit.

SOC 349. Race, Space, and Stratification. 4 Units.
Racial and ethnic stratification has been a defining yet shifting feature of U.S. society, and such inequalities shape and are shaped by the ecological structure of places. This course is a survey course for doctoral students covering sociological scholarship at the intersection of racial stratification and urban sociology. The class will include foundational readings and discussions on urban sociological theories, urban decline and suburbanization, segregation, poverty, neighborhood effects, crime and disorder, gentrification, and immigration. The course will also include discussion of new and innovative data sources and methods for research in this area throughout the quarter. Students will develop or continue a research project designed to contribute to scholarship on racial stratification and urban sociology.

SOC 350. Sociology of Race. 4 Units.
In this seminar, we focus our sociological lens on the concept of race itself. We will explore theoretical and conceptual debates about race and ethnicity, the history of counting by race in surveys and official statistics, as well as critiques of how race is operationalized in both quantitative and qualitative studies. By the end of the course, students will be prepared to conduct their own theoretically and methodologically rigorous research that advances knowledge about race and racial inequality. Prerequisite: Sociology graduate student; otherwise, please email instructor for consent to enroll.

SOC 350W. Workshop: Migration, Ethnicity, Race and Nation. 1-3 Unit.
Weekly research workshop with a focus on ongoing research by faculty and graduate student participants, new theory and research, and recent publications. Workshop participants will present their own work, and read and critique the research-in-progress of their peers. May be repeated for credit. Prerequisite: Sociology doctoral student or consent of instructor.

SOC 351. Counterfactuals and Causal Inference in the Social Sciences. 3-5 Units.
Questions about causal effects and processes are critical in the social sciences, and range from macro-level concerns such as Does capitalism cause democracy? to micro-level ones such as Does educational attainment increase individual earnings / health /civic participation?. This course trains students in quantitative approaches designed to address causal questions with observational and quasi-experimental data, including propensity score methods, fixed and random effects, instrumental variables, and regression discontinuity, among others. The underlying intuition, statistical formulation, and implementation of each approach will be discussed. The course will also examine topics relevant for researches addressing causal questions such as sensitivity analysis, mediation analysis, and integration of quantitative and qualitative approaches. Prerequisites: Soc 381 and Soc 382 or equivalent. Undergraduate students should request instructor's permission.

SOC 354. Welfare State. 4-5 Units.
This seminar introduces students to the key literature, questions, and debates about the modern welfare state. Emergence, growth, and purported demise of the welfare state. American welfare state in comparative perspective. Social and political factors affecting state development including political parties, labor markets, gender, demographic change, and immigration.
Same as: SOC 254

SOC 356. Strategy and Organizations. 3 Units.
Why are some organizations more competitive than others? This is one of the defining questions of the interdisciplinary research field known as strategic management. In this seminar, we will survey the field of strategic management as seen through the lens of organization theory, touching on the four main theoretical approaches that have developed there.nnMost work in strategic management pays little attention to particular theoretical perspectives, and is organized more by the topic - the phenomenon being studied - such as market exit, growth, performance, mergers and acquisitions, innovation, and the like. I have catalogued the research in strategic management both according to theoretical perspective and topic, and that structure is developed in this course. Our goal is to help you to identify theoretical perspectives as you try to understand the strategy field.

SOC 357. Immigration and Assimilation. 3-5 Units.
Major theoretical debates and empirical applications in the study of immigrant assimilation. Topics include racial and ethnic identity, socioeconomic integration, political participation, and national identity. Companion to SOC 358.

SOC 358. Sociology of Immigration. 5 Units.
Topics vary each quarter but may include: theories and processes of migration and immigrant incorporation; historical and contemporary perspectives on race, ethnicity, and immigration; immigration law and policy; transnationalism; nations and nationalism.

SOC 359. Organizations and Uncertainty. 3-5 Units.
Organizations and environments characterized by institutional uncertainty. Beliefs at the roots of shared routines and institutional myths are absent. Institutionalists and neo-institutionalists, organizations facing uncertain institutional environments.

SOC 361. Social Psychology of Organizations. 3 Units.
This seminar focuses on social psychological theories and research relevant to organizational behavior. It reviews the current research topics in micro-organizational behavior, linking these to foundations in cognitive and social psychology and sociology. Topics include models of attribution, decision making, emotion, coordination, influence and persuasion, and the psychology of power and culture. Prerequisites: Enrollment in a PhD program. graduate-level social psychology course.

SOC 361W. Workshop: Networks and Organizations. 1-3 Unit.
For students doing advanced research. Group comments and criticism on dissertation projects at any phase of completion, including data problems, empirical and theoretical challenges, presentation refinement, and job market presentations. Collaboration, debate, and shaping research ideas. Prerequisite: courses in organizational theory or social network analysis.
Same as: EDUC 361

SOC 362. Organization and Environment. 3 Units.
This seminar considers the leading sociological approaches to analyzing relations of organizations and environments, with a special emphasis on dynamics. Attention is given to theoretical formulations, research designs, and results of empirical studies. Prerequisite: Enrollment in a PhD program.

SOC 363A. Seminar on Organizational Theory. 5 Units.
The social science literature on organizations assessed through consideration of the major theoretical traditions and lines of research predominant in the field. For PhD students only.
Same as: EDUC 375A, MS&E 389

SOC 363B. Seminar on Organizations: Institutional Analysis. 3-5 Units.
Seminar. Key lines of inquiry on organizational change, emphasizing network, institutional, and evolutionary arguments.
Same as: EDUC 375B

SOC 366A. Organizational Ecology. 3 Units.
This seminar examines theoretical and methodological issues in the study of the ecology of organizations. Particular attention is given to the dynamics that characterize the interface between organizational populations and their audiences.
Same as: OB 601

SOC 367. Institutional Analysis of Organizations. 3-5 Units.
Reading and research on the nature, origins, and effects of the modern institutional system. Emphasis is on the effects of institutional systems on organizational structure.

SOC 367A. Graduate Seminar on Organizations and Networks. 3-5 Units.
This graduate seminar surveys recent developments in research activities at the intersection of organizations and networks. The goals of the seminar are to examine ongoing research activities, related theoretical ideas and research design, and to identify unresolved intellectual problems for future research. Topics include: (1) networks within organizational hierarchy; (2) inter-organizational networks such as strategic alliance and knowledge diffusion; (3) models of hierarchical networks.

SOC 368W. Workshop: China Social Science. 1 Unit.
For Ph.D. students in the social sciences and history. Research on contemporary society and politics in the People's Republic of China. May be repeated for credit. Prerequisite: consent of instructor.
Same as: POLISCI 448R

SOC 369. Social Network Methods. 3-5 Units.
Introduction to social network theory, methods, and research applications in sociology. Network concepts of interactionist (balance, cohesion, centrality) and structuralist (structural equivalence, roles, duality) traditions are defined and applied to topics in small groups, social movements, organizations, communities. Students apply these techniques to data on schools and classrooms.
Same as: EDUC 316

SOC 370A. SOCIOLOGICAL THEORY. 5 Units.
Restricted to Sociology doctoral students with preference to first year students.The traditions of structural analysis derived from the work of Marx, Weber, and related thinkers. Antecedent ideas in foundational works are traced through contemporary theory and research on political conflict, social stratification, formal organization, and the economy.

SOC 370B. Social Interaction and Group Process. 3-5 Units.
Theoretical strategies for the study of interaction, group, and network processes, including rational choice and exchange theory, the theory of action, symbolic interactionism, formal sociology, and social phenomenology. Antecedent ideas in foundational works and contemporary programs of theoretical research.

SOC 372. Theoretical Analysis and Research Design. 3-5 Units.
Restricted to Sociology Doctoral students only and required for Ph.D. in Sociology. This seminar is designed to deepen students¿ understanding of the epistemological foundations of social science, the construction and analysis of theories, and the design of empirical research.

SOC 374. Philanthropy and Civil Society. 1-3 Unit.
Cross-listed with Law (LAW 7071), Political Science (POLISCI 334) and Sociology (SOC 374). Associated with the Center for Philanthropy and Civil Society (PACS). Year-long workshop for doctoral students and advanced undergraduates writing senior theses on the nature of civil society or philanthropy. Focus is on pursuit of progressive research and writing contributing to the current scholarly knowledge of the nonprofit sector and philanthropy. Accomplished in a large part through peer review. Readings include recent scholarship in aforementioned fields. May be repeated for credit for a maximum of 3 units.
Same as: EDUC 374, POLISCI 334

SOC 375W. Workshop: Politics, Morality, and Hierarchy. 1-2 Unit.
Advanced research workshop with a focus on new theory and research, recent publications, and current research by faculty and graduate student participants. Topics of relevant research include, but are not restricted to, morality, cooperation, solidarity, politics, status, and power. May be repeated for credit.

SOC 376. Perspectives on Organization and Environment: Social Movement Organizations and Environments. 3 Units.
This course examines the interaction between organizations and their environments. It is given every year by a different faculty member. What follows is the description of the course for the academic year 2012-13: This research seminar explores recent theory and research on social movement organizations and their environments. We'll consider the way in which organizational theories help us to explain social movement phenomena, and the way in which social movement theories help us to explain organizational phenomena.

SOC 376A. Ethnographic and Fieldwork Methods. 4-5 Units.
This graduate level seminar is the first of an intensive two-quarter-long course in ethnographic and fieldwork methods. Students will receive hands-on training in the epistemology, theory, methods, and politics of fieldwork. This begins by learning how to critically engage ethnographic and qualitative books and articles. Next, students will become acquainted with field research techniques and issues through a number of class exercises. Students will learn the dynamics of gaining access, building rapport, writing field notes, crafting memos, and executing various modes of analyses. Finally, students will begin conducting their own fieldwork research in a field site of their choosing. Students should plan to spend at least five hours per week in the field, write and submit formal field notes, and craft a final paper that analyzes their fieldwork data. Class session will be divided in two parts. First, students will discuss the readings and topics of the week. The remainder of the class will be devoted to discussing research experiences and/or analyzing fellow students' field notes. Students should anticipate producing an article or chapter length research paper by the end of the second quarter of the class.nnPriority given to Graduate students.

SOC 376B. Ethnographic and Fieldwork Methods. 3-5 Units.
This graduate level seminar is the first of an intensive two-quarter-long course in ethnographic and fieldwork methods. Students will receive hands-on training in the epistemology, theory, methods, and politics of fieldwork. This begins by learning how to critically engage ethnographic and qualitative books and articles. Next, students will become acquainted with field research techniques and issues through a number of class exercises. Students will learn the dynamics of gaining access, building rapport, writing field notes, crafting memos, and executing various modes of analyses. Finally, students will begin conducting their own fieldwork research in a field site of their choosing. Students should plan to spend at least five hours per week in the field, write and submit formal field notes, and craft a final paper that analyzes their fieldwork data. Class session will be divided in two parts. First, students will discuss the readings and topics of the week. The remainder of the class will be devoted to discussing research experiences and/or analyzing fellow students¿ field notes. Students should anticipate producing an article or chapter length research paper by the end of the second quarter of the class.nnPriority given to Graduate students¿.

SOC 378. Seminar on Institutional Theory and World Society. 1-5 Unit.
Sociological analyses of the rise and impact of the expanded modern world order, with its internationalized organizations and globalized discourse. Consequences for national and local society: education, political organization, economic structure, the environment, and science. The centrality of the individual and the rationalized organization as legitimated actors.

SOC 379. Methods for Network Analysis. 4-5 Units.
In this course, we learn how to collect and analyze social network data. We begin by learning the fundamentals of graph theory and replicating well-known network studies. In the process, we cover classic network methods from centrality to block-modeling. We then move to the frontiers of network analysis. Topics include visualization, modeling and simulation, dynamic network analysis, network experiments, semantic network analysis, and analyzing social networks at scale. Sources and ways of collecting network data will be discussed and students will apply methods they learn to data of their own.

SOC 380. Qualitative Methods. 3-5 Units.
Priority to Sociology doctoral students. Emphasis is on observational and interview-based research. Limited enrollment.

SOC 380W. Workshop: Qualitative and Fieldwork Methods. 1-3 Unit.
Presentations and discussion of ongoing ethnographic, interview-based, and other fieldwork research by faculty and students . May be repeated for credit. Prerequisite: Sociology doctoral student or consent of instructor.

SOC 381. Sociological Methodology I: Introduction. 5 Units.
Enrollment limited to first-year Sociology doctoral students. Other students by instructor permission only. n This course provides a conceptual and applied introduction to quantitative social sciences methodology, including measurement, sampling and descriptive statistics, statistical inference, ANOVA, factor analysis, and ordinary least squares regression. Students will be introduced to both the methodological logic and techniques of statistical data analysis. The course will present the purpose, goals, and mathematical assumptions behind techniques of statistical analysis and will discuss applications to analyzing data and interpreting results. In addition to the lecture time, SOC381 includes a weekly lab section to learn statistical software and conduct applied research.n*Students enrolling in Soc381 are strongly encouraged to take a 1-week Math/Statistics refresher course from September 16 to September 20. Please contact the instructor at torche@stanford.edu for details.

SOC 382. Sociological Methodology II: Principles of Regression Analysis. 4-5 Units.
Preference to Sociology doctoral students. Other students by instructor permission only. Required for Ph.D. in Sociology. Enrollment limited to first-year Sociology doctoral students. Rigorous treatment of linear regression models, model assumptions, and various remedies for when these assumptions are violated. Introduction to panel data analysis. Enrollment limited to 15. Prerequisites: 381.

SOC 383. Sociological Methodology III: Models for Discrete Outcomes. 5 Units.
Required for Ph.D. in Sociology; other students by instructor permission only. enrollment limited to first-year Sociology doctoral students. The rationale for and interpretation of static and dynamic models for the analysis of discrete variables. Prerequisites: 381 and 382, or equivalents.

SOC 384. New Models and Methods in the Social Sciences. 3-5 Units.
Two-week intensive introduction to new statistical approaches. Emphasis is on applications. Topics may include network models, multilevel models, latent class models, mixed methods, new qualitative methods, growth models, geostatistical tools, survey-based experiments, new methods for estimating causal effects, web-based surveys, advanced discrete choice models, and diffusion models.

SOC 385A. Research Practicum 1. 2 Units.
Workshop on research methods and writing research papers for second year Sociology doctoral students. Ongoing student research, methodological problems, writing challenges, and possible solutions. Required for second year paper.

SOC 385B. Research Practicum II. 2 Units.
Workshop on research methods and writing research papers for second year Sociology doctoral students. Ongoing student research, methodological problems, writing challenges, and possible solutions. Required for second year paper.

SOC 388. Log-Linear Models. 3-5 Units.
Analysis of categorical data with log-linear and negative binomial models. Measures of fit and hypothesis testing.

SOC 389. Mixed Method Research Design and Analysis. 3-5 Units.
Research designs that incorporate qualitative and quantitative analyses in a single project. The tension between thinking case-wise and variable-wise; how the focus on relationships between variables that is the hallmark of the quantitative approach can be brought into qualitative work.

SOC 390. Graduate Individual Study. 1-5 Unit.
May be repeated for credit. Appropriate for in-person instruction.

SOC 391. Graduate Directed Research. 1-5 Unit.
May be repeated for credit. Appropriate for in-person instruction.

SOC 392. Curricular Practical Training. 1-5 Unit.
CPT course required for international students completing degree requirements. Appropriate for in-person instruction.

SOC 393. Teaching Apprenticeship. 1-15 Unit.

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SOC 396. Sociology Colloquium. 1 Unit.

The Sociology Colloquium is a semimonthly seminar held throughout the academic year, in which distinguished scholars present their cutting-edge research findings. Enrollment for credit, and regular attendance, is required for all first and second year Sociology doctoral students.

SOC 398. The Social Psychology of Contemporary American Politics. 4 Units.

Where do individuals' political attitudes and behaviors come from, and how can they be changed? In this class we will read and discuss cutting-edge research from social psychology, sociology, and political science on topics such as polarization, persuasion, elitism, social activism, and racial resentment. A central idea of the class is that social and psychological factors powerfully influence political views, and research in this area can help to understand our often confusing political landscape. Additionally, understanding the causal architecture of political attitudes and behavior is essential for taking effective political action, especially in this time of deep and growing political divides. Enrollment is permission by instructor only: please email: willer@stanford.edu.

Same as: SOC 298

SOC 635. Social Movements and Organziations. 4 Units.

This research seminar is intended for students seeking to learn more about how collective action underpins institutional change in organizations and industries, and how the success of collective action, in turn, hinges on organizational structures and processes to recruit and mobilize individuals. The purpose of this course is to provide you a roadmap for you to roam the terrain of movements and organizations, and be prepared to generate original research ideas that extend inquiry in your chosen area of research.

SOC 670. Designing Social Research. 4 Units.

This is a course in the design of social research, with a particular emphasis on research field (i.e., non-laboratory) settings. As such, the course is a forum for discussing and developing an understanding of the different strategies social theorists employ to explain social processes, develop theories, and make these theories as believable as possible. In general, these issues will be discussed in the context of sociological research on organizations, but this will not be the exclusive focus of the course. A range of topics will be covered, for example: formulating and motivating research questions; varieties of explanation; experimental and quasi-experimental methods, including natural experiments; counterfactual models; conceptualization and measurement; sampling and case selection; qualitative and quantitative approaches. This course is particularly oriented toward developing an appreciation of the tradeoffs of different approaches. It is well suited to Ph.D. students working on qualifying papers and dissertation proposals.

SOC 802. TGR Dissertation. 0 Units.

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STATISTICS

Courses offered by the Department of Statistics are listed under the subject code STATS on the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=STATS&filter-catalognumber-STATS=on) web site.

The department's goals are to acquaint students with the role played in science and technology by probabilistic and statistical ideas and methods, to provide instruction in the theory and application of techniques that have been found to be commonly useful, and to train research workers in probability and statistics. There are courses for general students as well as those who plan careers in statistics in business, government, industry, and teaching.

The department has long recognized the relation of statistical theory to applications. It has fostered this by encouraging a liaison with other departments in the form of joint and courtesy faculty appointments, as well as membership in various interdisciplinary programs: Biomedical Data Science, Bio-X, Center for Computational, Evolutionary and Human Genomics, Computer Science, Economics, Education, Electrical Engineering, Environmental Earth System Science, Genetics, Mathematics, Mathematical and Computational Finance, and Medicine. The research activities of the department reflect an interest in applied and theoretical statistics and probability. There are workshops in biology/medicine and in environmental factors in health.

In addition to courses for Statistics students, the department offers a number of service courses designed for students in other departments. These tend to emphasize the application of statistical techniques rather than their theoretical development.

The department has always drawn visitors from other countries and universities, and as a result there are a wide range of seminars offered by both the visitors and the department's own faculty.

Undergraduate Programs in Statistics

The department offers a minor in Statistics and in Data Science (https://statistics.stanford.edu/academics/undergraduate-programs/). Program details can be found under the Minor section.

Undergraduates Interested in Statistics

Students wishing to build a concentration in probability and statistics are encouraged to consider declaring a major in Mathematical and Computational Science (https://mcs.stanford.edu/). This interdisciplinary program is administered in the Department of Statistics and provides core training in computing, mathematics, operations research, and statistics, with opportunities for further elective work and specialization. See the "Mathematical and Computational Science" section of this bulletin.

Graduate Programs in Statistics

University requirements for the M.S. and Ph.D. degrees are discussed in the "Graduate Degrees (p. 65)" section of this bulletin.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in Statistics and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses, in the primary field as well as related areas, and experience with independent work and specialization.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in Statistics. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of Statistics and to interpret and present the results of such research.

The Department of Statistics offers two minor programs for undergraduates, a minor in Data Science (p. 2137) and a minor in Statistics (p. 2138). To declare either minor for a degree program, visit the Statistics website (https://statistics.stanford.edu/academic-programs/undergraduate-programs/) and submit the appropriate form to the department.

Minor in Data Science

The undergraduate Data Science minor has been designed for majors in the humanities and social sciences who want to gain practical knowledge of statistical data analytic methods as it relates to their field of interest. The minor:

- provides students with the knowledge of exploratory and confirmatory data analyses of diverse data types such as text, numbers, images, graphs, trees, and binary input)
- strengthens social research by teaching students how to correctly apply data analysis tools and the techniques of data visualization to convey their conclusions.

No previous programming or statistical background is assumed.

Learning Outcomes

Students are expected to:

1. be able to connect data to underlying phenomena and to think critically about conclusions drawn from data analysis.
2. be knowledgeable about programming abstractions so that they can later design their own computational inferential procedures

All courses for the minor must be taken for a letter grade, with the exception of the Data Mining requirement.

Seven courses are required, 22 units minimum. An overall 2.75 grade point average (GPA) is required for courses fulfilling the minor.

Requirements

Linear Algebra

		Units
One of the following:		
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	5
CME 100	Vector Calculus for Engineers	5

Programming

		Units
CS 106A	Programming Methodology	3-5

Programming in *R*

		Units
One of the following:		
THINK 3		4
STATS 32	Introduction to R for Undergraduates	1
STATS 48N	Riding the Data Wave	3
STATS 195	Introduction to R	1
Or other course that teaches proficiency in R programming.		

Data Science

		Units
STATS 101	Data Science 101	5
STATS 191	Introduction to Applied Statistics	3
CS 102		
MS&E 226	Fundamentals of Data Science: Prediction, Inference, Causality	3

Statistics

		Units
One of the following:		
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	5
PHIL 166	Probability: Ten Great Ideas About Chance	4
STATS 48N	Riding the Data Wave	3
STATS 141	Biostatistics	5
STATS 191	Introduction to Applied Statistics	3
STATS 211	Meta-research: Appraising Research Findings, Bias, and Meta-analysis	3

Data Mining and Analysis

STATS 202	Data Mining and Analysis (may be taken CR/NC)	3
STATS 216	Introduction to Statistical Learning	3

Elective Course

		Units
One course fulfilling Data Science methodology from cognate field of interest. Suggested courses:		
CS 224W	Machine Learning with Graphs	3-4
ECON 291	Social and Economic Networks	3-5
ENGLISH 184E	Literary Text Mining	5
LINGUIST 275	Probability and Statistics for linguists	2-4
MS&E 135	Networks	3
PHIL 166	Probability: Ten Great Ideas About Chance	4
POLISCI 150B	Machine Learning for Social Scientists	5
POLISCI 450A	Political Methodology I: Regression	5
PSYCH 109	An introduction to computation and cognition	4
PUBLPOL 105	Empirical Methods in Public Policy	4-5
SOC 126	Introduction to Social Networks	4
SOC 180A	Foundations of Social Research	4
or SOC 180B	Introduction to Data Analysis	

*STATS 191 cannot count for both requirements.

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Minor in Statistics

The undergraduate minor in Statistics is designed to complement major degree programs primarily in the social and natural sciences. Students with an undergraduate Statistics minor should find broadened possibilities for employment. The Statistics minor provides valuable preparation for professional degree studies in postgraduate academic programs.

The minor consists of a minimum of six courses with a total of at least 19 units. There are two required courses (8 units) and four qualifying or elective courses (12 or more units). All courses for the minor must be taken for a letter grade. An overall 2.75 grade point average (GPA) is required for courses fulfilling the minor.

Required Courses

		Units
Both:		
STATS 116	Theory of Probability	4
STATS 200	Introduction to Statistical Inference	4

Qualifying Courses

At most, one of these two courses may be counted toward the six course requirement for the minor.

		Units
Choose one from the following:		
MATH 52	Integral Calculus of Several Variables	5
STATS 191	Introduction to Applied Statistics	3

Three Elective Courses

At least one of the elective courses should be a STATS 200-level course. The remaining two elective courses may also be 200-level courses. Alternatively, one or two elective courses may be approved courses in other departments. Special topics courses and seminars for undergraduates are offered from time to time by the department, and these may be counted toward the course requirement. Students may not count any Statistics courses below the 100 level toward the minor.

Examples of elective course sequences are:

		Units
Data Analysis and Applied Statistics		
STATS 202	Data Mining and Analysis	3
STATS 203	Introduction to Regression Models and Analysis of Variance	3
Statistical Methodology		
STATS 205	Introduction to Nonparametric Statistics	3
STATS 206	Applied Multivariate Analysis	3
STATS 207	Introduction to Time Series Analysis	3
Economic Optimization		
STATS 206	Applied Multivariate Analysis	3
ECON 160	Game Theory and Economic Applications	5
Psychology Modeling and Experiments		
STATS 206	Applied Multivariate Analysis	3
Signal Processing		
STATS 207	Introduction to Time Series Analysis	3
EE 264	Digital Signal Processing	3
EE 279	Introduction to Digital Communication	3
Genetic and Ecologic Modeling		
STATS 217	Introduction to Stochastic Processes I	3
BIO 283	Theoretical Population Genetics	3
Probability and Applications		
STATS 217	Introduction to Stochastic Processes I	3
STATS 218	Introduction to Stochastic Processes II	3
Mathematical Finances		
STATS 240	Statistical Methods in Finance	3
STATS 243	Risk Analytics and Management in Finance and Insurance	3
STATS 250	Mathematical Finance	3

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Master of Science in Statistics

The University's basic requirements for the M.S. degree are discussed in the "Graduate Degrees" (p. 65) section of this bulletin. The following are specific departmental requirements.

The M.S. in Statistics and the M.S. in Statistics, Data Science track, are intended as terminal degree programs and do not lead to the Ph.D. program in Statistics. Students interested in pursuing doctoral study in Statistics should apply directly to the Ph.D. program.

Admission

Prospective applicants should consult the Graduate Admissions (https://gradadmissions.stanford.edu/) and the Statistics Department admissions webpages (https://statistics.stanford.edu/admissions/graduate-application-information-and-instructions/) for complete information on admission requirements and deadlines.

Recommended preparatory courses include advanced undergraduate level courses in linear algebra, statistics/probability and proficiency in programming.

Stanford students interested in the Data Science track (subplan) in Statistics must apply as external candidates. Visit Graduate Admissions (https://gradadmissions.stanford.edu/) to start an application.

Coterminal Master's Program

Stanford undergraduates who want to apply for the coterminal master's degree in Statistics must submit a complete application to the department by the deadline published on the department's coterminal admissions webpage. (https://statistics.stanford.edu/admissions/ms/statistics-coterm-eligibility/)

Applications are accepted twice a year in autumn and winter quarters for winter and spring quarter start, respectively. The general GRE is not required of coterminal applicants.

Students pursuing the Statistics coterminal master's degree must follow the same curriculum requirements stated in the Requirements for the Master of Science in Statistics section.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Master of Science in Statistics

Curriculum and Degree Requirements

The department requires that a master's student take 45 units of work from offerings in the Department of Statistics (http://explorecourses.stanford.edu/search/?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=&q=STATS&collapse=) or from authorized courses in other departments. With the advice of the master's program advisors, each student selects his or her own set of electives.

All requirements for a master's degree, including the coterminal master's degree, must be completed within three years after the student's first term of enrollment in the master's program. Ordinarily, four or five quarters are needed to complete all requirements. Honors Cooperative students must finish within five years.

Units for a given course may not be counted to meet the requirements of more than one degree, with the exception that up to 45 units of a Stanford M.A. or M.S. degree may be applied to the residency requirement for the Ph.D., D.M.A. or Engineer degrees. See the "Residency Policy for Graduate Students (p. 72)" section of this Bulletin for University rules.

As defined in the general graduate student requirements, students must maintain a grade point average (GPA) of 3.0 (or better) for courses used to fulfill degree requirements and classes must be taken at the 200 level or higher.

Master's Degree Program Proposal

The Statistics Master's Degree Program Proposal form (https://statistics.stanford.edu/academic-programs/graduate-programs/ms-program-forms/) must be signed and approved by the department's student services administrator before submission to the student's program advisor. This form is due no later than the end of the first quarter of enrollment in the program.

A revised program proposal must be submitted if degree plans change.

There is no thesis requirement.

For further information about the Statistics master's degree program requirements, see the program's webpage (https://statistics.stanford.edu/academics/ms-statistics/).

1. Statistics Core Courses (must complete all four courses):

		Units
Probability		
STATS 116	Theory of Probability [1]	4
Applied Statistics		
STATS 203	Introduction to Regression Models and Analysis of Variance	3
or STATS 305A	Applied Statistics I	
or STATS 191	Introduction to Applied Statistics	
Theoretical Statistics		
STATS 200	Introduction to Statistical Inference	3-4
or STATS 300A	Theory of Statistics I	
or STATS 370	A Course in Bayesian Statistics	
Stochastic Processes		
STATS 217	Introduction to Stochastic Processes I [1,2]	3
or STATS 218	Introduction to Stochastic Processes II	

or STATS 219	Stochastic Processes	
or STATS 318	Modern Markov Chains	

Students with prior background may replace each course with a more advanced course from the same area, or a more advanced course offered by the department, with consent of the adviser. All must be taken for a letter grade.

2. Statistics Depth:

Five additional Statistics courses must be taken from graduate offerings in the department (at or above the 200-level). During the 2020-21 academic year, three of five courses must be taken for a letter grade (with the exception of courses that may only be offered satisfactory(S)/credit (CR) only).

The following courses that may only be used to fulfill elective credit [3]: STATS 260A Workshop in Biostatistics series, STATS 299 Independent Study, STATS 298 Industrial Research for Statisticians, and STATS 390 Consulting Workshop (see list of electives below).

		Units
Courses which may be offered by the department:		
STATS 202	Data Mining and Analysis	3
STATS 203	Introduction to Regression Models and Analysis of Variance (STATS 203V)	3
STATS 204	Sampling	3
STATS 205	Introduction to Nonparametric Statistics	3
STATS 206	Applied Multivariate Analysis	3
STATS 207	Introduction to Time Series Analysis	3
STATS 208	Bootstrap, Cross-Validation, and Sample Re-use	3
STATS 209A	Topics in Causal Inference	3
STATS 211	Meta-research: Appraising Research Findings, Bias, and Meta-analysis	3
STATS 215	Statistical Models in Biology	3
STATS 216	Introduction to Statistical Learning	3
STATS 222	Statistical Methods for Longitudinal Research	2-3
STATS 229	Machine Learning	3-4
or CS 229	Machine Learning	
STATS 237	Investment Portfolios, Derivative Securities, and Risk Measures	3
STATS 240	Statistical Methods in Finance	3
STATS 241	Data-driven Financial Econometrics	3
STATS 244	Quantitative Trading: Algorithms, Data, and Optimization	2-4
STATS 245	Data, Models and Applications to Healthcare Analytics	3
STATS 250	Mathematical Finance	3
STATS 263	Design of Experiments	3
STATS 266	Advanced Statistical Methods for Observational Studies	2-3
STATS 270	A Course in Bayesian Statistics	3
or STATS 370	A Course in Bayesian Statistics	
STATS 271	Applied Bayesian Statistics	3
or STATS 371	Applied Bayesian Statistics	
STATS 285	Massive Computational Experiments, Painlessly	2
STATS 290	Computing for Data Science	3
STATS 300A	Theory of Statistics I	3
or STATS 300B	Theory of Statistics II	
or STATS 300C	Theory of Statistics III	
STATS 305A	Applied Statistics I	3
or STATS 305B	Applied Statistics II: Generalized Linear Models, Survival Analysis, and Exponential Families	
or STATS 305C	Applied Statistics III	
STATS 310A	Theory of Probability I	3
or STATS 310B	Theory of Probability II	
or STATS 310C	Theory of Probability III	
STATS 311	Information Theory and Statistics	3
or EE 377	Information Theory and Statistics	
STATS 314A	Advanced Statistical Theory	3
STATS 315A	Modern Applied Statistics: Learning	3
STATS 315B	Modern Applied Statistics: Data Mining	3
STATS 317	Stochastic Processes	3
STATS 318	Modern Markov Chains	3
STATS 319	Literature of Statistics	1
STATS 322	Function Estimation in White Noise	3
STATS 325	Multivariate Analysis and Random Matrices in Statistics	3
STATS 334	Mathematics and Statistics of Gambling	3
STATS 359	Topics in Mathematical Physics	3
or MATH 273	Topics in Mathematical Physics	
STATS 361	Causal Inference ((NEW))	3
STATS 364	Theory and Applications of Selective Inference ((NEW))	3
STATS 363	Design of Experiments	3
STATS 366	Modern Statistics for Modern Biology	3
STATS 374	Large Deviations Theory	3
or MATH 234	Large Deviations Theory	
STATS 368	Empirical Process Theory and its Applications	3
STATS 369	Methods from Statistical Physics	3
STATS 376A	Information Theory	3
STATS 376B	Topics in Information Theory and Its Applications	3
or EE 376B	Topics in Information Theory and Its Applications	
STATS 385	Analyses of Deep Learning	1

3. Linear Algebra Requirement:

		Units
Must be taken for a letter grade, with the exception of courses offered satisfactory/no credit only.		
Select one of the following:		
MATH 104	Applied Matrix Theory	3
MATH 113	Linear Algebra and Matrix Theory	3
MATH 115	Functions of a Real Variable	3
MATH 171	Fundamental Concepts of Analysis	3
CME 302	Numerical Linear Algebra	3
CME 364A	Convex Optimization I	3
or CME 364B	Convex Optimization II	

Substitution of more advanced courses in Mathematics, that provide similar skills, may be made with consent of the adviser.

4. Programming Requirement:

		Units
2020-21: May be taken for a letter grade or CR.		
Select one of the following:		
CS 106A	Programming Methodology	3
CS 106B	Programming Abstractions	3

CS 106X	Programming Abstractions	3
CS 107	Computer Organization and Systems	3-5
CME 108	Introduction to Scientific Computing	3
Substitution more advanced courses in Computer Science (140 - 181), that provide similar skills, may be made with consent of the adviser.		

5. Breadth/Elective Courses:

Courses that provide breadth to the degree may be chosen as elective units to complete the degree requirements. List of suggested of courses available from the program's webpage (https://statistics.stanford.edu/academics/statistics-ms-electives/). Other graduate courses (200 or above) may be authorized by the advisor if they provide skills relevant to degree requirements or deal primarily with an application of statistics or probability and do not significantly overlap (repeat) courses in the student's program.

There is sufficient flexibility to accommodate students with interests in applications to business, computing, economics, engineering, health, operations research, and biological and social sciences.

Courses that fulfill elective units may be taken concerning 'CR' (credit) or 'S' (satisfactory).

Students may enroll in up to 6 units of the following workfshops and training seminars to fulfill elective coursework: [3]

STATS 242	NeuroTech Training Seminar	1
STATS 260A	Workshop in Biostatistics	1-2
STATS 260B	Workshop in Biostatistics	1-2
STATS 260C	Workshop in Biostatistics	1-2
STATS 298	Industrial Research for Statisticians	1
STATS 299	Independent Study	1-5
STATS 390	Consulting Workshop	1

Courses below 200 level are not acceptable with the following exceptions; however, students are strongly advised to avoid redundancy in coursework:

		Units
STATS 191	Introduction to Applied Statistics	3
MATH 115	Functions of a Real Variable	3
MATH 171	Fundamental Concepts of Analysis	3
CS 106A	Programming Methodology	3-5
CS 106B	Programming Abstractions	3-5
CS 106X	Programming Abstractions	3-5
CS 140	Operating Systems and Systems Programming	3-4
CS 142	Web Applications	3
CS 143	Compilers	3-4
CS 144	Introduction to Computer Networking	3-4
CS 145	Data Management and Data Systems	3-4
CS 147	Introduction to Human-Computer Interaction Design	3-5
CS 148	Introduction to Computer Graphics and Imaging	3-4
CS 149	Parallel Computing	3-4
CS 154	Introduction to the Theory of Computation	3-4
CS 155	Computer and Network Security	3
CS 157	Computational Logic	3
CS 161	Design and Analysis of Algorithms	3-5
CS 170	Stanford Laptop Orchestra: Composition, Coding, and Performance	1-5
CS 181	Computers, Ethics, and Public Policy [4]	4
And at most, one of these courses ay be counted as an elective. [4]		
MATH 104	Applied Matrix Theory	3
MATH 113	Linear Algebra and Matrix Theory	3
STATS 116	Theory of Probability	4

1. Students who replace STATS 116 with STATS 217 must take a second course in Stochastic Processes or Probability.
2. Enrollment in STATS 116 after successful completion of STATS 217, 218, and/or 219, may not be used to fulfill degree requirements, including as an elective.
3. Students admitted to the Statistics M.S. program prior to academic year 2018-19 fulfill the requirements in effect at the time of their admission.
4. Enrollment in a course that provides redundant coursework cannot be used to fulfill the M.S. degree requirements.

Master of Science in Statistics, Data Science Track

The Data Science track[5] develops strong mathematical, statistical, and computational and programming skills through the general master's core and programming requirements. In addition, it provides a fundamental data science education through general and focused electives requirement from courses in data sciences and related areas. Course choices are limited to predefined courses from the data sciences and related courses group. The final requirement is a practical component to be completed through capstone project, data science clinic, or other courses that have strong hands-on or practical component, such as statistical consulting.

Admission

Prospective applicants should consult the Graduate Admissions (https://studentaffairs.stanford.edu/gradadmissions/) and the Statistics Department admissions webpages (https://statistics.stanford.edu/admissions/graduate-application-information-and-instructions/) for complete information on admission requirements and deadlines.

Applicants apply to the Master of Science degree program in Statistics and subsequently declare their preference for the Data Science track (subplan) within the graduate application ("Department Specialization" option).

Prerequisites

Recommended preparatory courses include advanced undergraduate level courses in linear algebra and probability, and introductory courses in stochastic processes, numerical methods and proficiency in programming (Basic usage of the Python and C/C++ programming languages).

Curriculum and Degree Requirements

As defined in the general graduate student requirements, students must maintain a grade point average (GPA) of 3.0 or better and classes must be taken at the 200 level or higher. Students must complete 45 units of required coursework in Data Science.

Master's Degree Program Proposal

The Statistics (Data Science) Master's Degree Program Proposal form (https://statistics.stanford.edu/academic-programs/graduate-programs/ms-program-forms/) must be signed and approved by the department's student services administrator before submission to the student's program advisor. This form is due no later than the end of the first quarter of enrollment in the program.

A revised program proposal must be submitted if degree plans change.

There is no thesis requirement.

The Data Science track (subplan) is printed on the student transcript and diploma.

Mathematical and Statistical Foundations (15 units)

Students must demonstrate foundational knowledge in the field by completing the following courses. Courses in this area must be taken for letter grades.

		Units
STATS 200	Introduction to Statistical Inference	3
or STATS 300A	Theory of Statistics I	
STATS 203	Introduction to Regression Models and Analysis of Variance	3
or STATS 305A	Applied Statistics I	
STATS 315A	Modern Applied Statistics: Learning	3
or STATS/CS 229	Machine Learning	
CME 302	Numerical Linear Algebra	3
CME 308	Stochastic Methods in Engineering	3

Experimentation (3 units)

Experimental method and causal considerations are fundamental to data science. The course chosen from this area must be taken for letter grades.

		Units
STATS 263	Design of Experiments	3
ECON 271	Intermediate Econometrics II	3-5
MS&E 327	Topics in Causal Inference	3

Software Development & Scientific Computing (6 - 9 units)

To ensure that students have a strong foundation in programming, 3 units of scientific software development (CME212) is required.

Software Development: (3 units)

Minimum of 3 units in scientific computing. (Additional 3 units for those who need to take CME211.)

ICME offers a placement test Summer Quarter. Students who pass this placement test are not required to take CME 211. Courses in this area must be taken for letter grades.

		Units
CME 212	Advanced Software Development for Scientists and Engineers (prerequisite: CME 211)	3
Programming proficiency at the level of CME 211 is a hard prerequisite for CME 212. can be waived with placement exam (summer).		

Scientific Computing Foundations and Methods (minimum 3 units)

		Units
CME 213	Introduction to parallel computing using MPI, openMP, and CUDA	3
CME 305	Discrete Mathematics and Algorithms	3
CME 307	Optimization	3
CME 323	Distributed Algorithms and Optimization	3
CME 364A	Convex Optimization I	3
CS 246	Mining Massive Data Sets	3-4
Students may take 6 units as CR/S in Scientific Computing or Machine Learning for the 2020-21 academic year.		

Machine Learning Methods and Applications (6 - 9 units)

Ordinarily, courses in machine learning should be taken for letter grades. Students may take two courses as 'CR' (credit) or 'S' (satisfactory) for academic year 2020-21.

		Units
STATS 315B	Modern Applied Statistics: Data Mining	3
CS 221	Artificial Intelligence: Principles and Techniques	3-4
CS 224N	Natural Language Processing with Deep Learning	3-4
CS 230	Deep Learning	3-4
CS 231N	Convolutional Neural Networks for Visual Recognition	3-4
CS 234	Reinforcement Learning	3
CS 236	Deep Generative Models	3
Students may take 6 units as CR/S in Scientific Computing or Machine Learning for the 2020-21 academic year.		

Practical Component (3 units)

A Capstone project, supervised by a faculty member and approved by the student's advisor. The capstone project should ideally build on the work done in the student's coursework. Students should submit a one-page proposal, supported by the faculty member and sent to the student's Data Science advisor for approval (at least one quarter prior to start of project).

Students are required to take 3 units of practical component that may include any combination of:

		Units
CME 217	Analytics Accelerator (Real-world project-based research; Application required; Autumn quarter commitment, winter quarter optional.)	3
ENGR 150	Data Challenge Lab (https://datalab.stanford.edu/challenge-lab)	3-5
ENGR 350	Data Impact Lab (https://datalab.stanford.edu/impact-lab)	1-6
STATS 299	Independent Study	1-5
or CME 291	Master's Research	
STATS 390	Consulting Workshop (repeatable)	1

Electives (6 - 9 units)

Courses in data science, machine learning, statistics, advanced programming or practical components, chosen in consultation with the student's course advisor.

Doctor of Philosophy in Statistics

The department looks for students who wish to prepare for research careers in statistics or probability, either applied or theoretical. Advanced undergraduate or master's level work in mathematics and statistics provides a good background for the doctoral program. Quantitatively oriented students with degrees in other scientific fields are also encouraged to apply for admission. The program normally takes five years to complete.

Program Summary

		Units
First-year core program		
STATS 300A	Theory of Statistics I	3
STATS 300B	Theory of Statistics II	3

STATS 300C	Theory of Statistics III	3
STATS 305A	Applied Statistics I	3
STATS 305B	Applied Statistics II: Generalized Linear Models, Survival Analysis, and Exponential Families	3
STATS 305C	Applied Statistics III	3
STATS 310A	Theory of Probability I	3
STATS 310B	Theory of Probability II	3
STATS 310C	Theory of Probability III	3
STATS 302	Qualifying Exams Workshop	5-10

- Pass two of three parts of the qualifying examinations (end of first year); breadth requirement (second, third and fourth year); successfully complete the dissertation proposal meeting (early spring quarter of third year); pass the University oral examination (fourth or fifth year); dissertation (fifth year).
- In addition, students are required to complete a 'depth' requirement consisting of a minimum of three courses (nine units) of advanced topics courses offered by the department. Courses for the depth and breadth (see below) requirements must equal a combined minimum of 24 units. Recommended advanced topics courses include the following:

		Units
STATS 311	Information Theory and Statistics	3
STATS 314A	Advanced Statistical Theory	3
STATS 315A	Modern Applied Statistics: Learning	3
STATS 315B	Modern Applied Statistics: Data Mining	3
STATS 317	Stochastic Processes	3
STATS 318	Modern Markov Chains	3
STATS 322	Function Estimation in White Noise	3
STATS 325	Multivariate Analysis and Random Matrices in Statistics	3
STATS 350	Topics in Probability Theory	3
STATS 359	Topics in Mathematical Physics	3
STATS 362	Topic: Monte Carlo	3
STATS 367	Statistical Models in Genetics	3
STATS 370	A Course in Bayesian Statistics	3
EE 364A	Convex Optimization I	3
EE 364B	Convex Optimization II	3

- Take STATS 390 Consulting Workshop at least twice in years two and three.
- Take STATS 319 Literature of Statistics once per year after passing the Qualifying Exam until the year after passing the dissertation proposal meeting.

First-Year Core Courses

- STATS 300A Theory of Statistics I, STATS 300B Theory of Statistics II and STATS 300C Theory of Statistics III systematically survey the ideas of estimation and of hypothesis testing for parametric and nonparametric models involving small and large samples.
- STATS 305A Applied Statistics I is concerned with linear regression and the analysis of variance.
- STATS 305B Applied Statistics II: Generalized Linear Models, Survival Analysis, and Exponential Families and STATS 305C Applied Statistics III survey a large number of modeling techniques, related to but going beyond the linear models of STATS 305A Applied Statistics I.
- STATS 310A Theory of Probability I, STATS 310B Theory of Probability II, and STATS 310C Theory of Probability III are measure-theoretic courses in probability theory, beginning with basic concepts of the law of large numbers and martingale theory.

Students who do not have enough mathematics background can take STATS 310 A,B,C after their first year but need to have their first-year program approved by the Director of Graduate Studies.

Qualifying Examinations

These are intended to test the student's level of knowledge when the first-year program, common to all students, has been completed. There are separate examinations in the three core subjects of statistical theory and methods, applied statistics, and probability theory, and all are typically taken during the summer between the student's first and second years. Students are expected to show acceptable performance in two examinations. Letter grades are not given. After passing the qualifying exams students file for Ph.D. candidacy, a University milestone.

Breadth Requirement

Students are required to take a minimum of three courses (nine units) outside of the department and are advised to choose an area of concentration in a specific scientific field of statistical applications approved by their Ph.D. program adviser. Courses for the depth and breadth requirements must equal a combined minimum of 24 units.

Popular areas include: Computational Biology and Statistical Genomics, Machine Learning, Applied Probability, Earth Science Statistics, and Social and Behavioral Sciences.

Dissertation Reading Committee, Dissertation Proposal Meeting and University Oral Examinations

The dissertation reading committee consists of the student's adviser plus two faculty readers, all of whom are responsible for reading and approving the full dissertation.

The dissertation proposal meeting is intended to demonstrate students' depth in some areas of statistics, and to examine the general plan for their research. It also confirms that students have chosen a Ph.D. faculty adviser and have started to work with that adviser on a research topic. In the meeting, the student will give a 60-minute presentation and discuss their ideas for completing a Ph.D. thesis, with a committee typically consisting of the members of the dissertation reading committee. The meeting must be successfully completed by early spring quarter of the third year. "Successful completion" means that the general research plan is sound and has a reasonable chance of success. If the student does not pass, the meeting must be repeated. Repeated failure by the end of Year 3 can lead to a loss of financial support.

The oral examination/dissertation defense is scheduled when the student has finished their dissertation and is in the process of completing their final draft. The oral exam consists of a 60-minute presentation on the dissertation topic, followed by a question and answer period attended only by members of the examining committee. The questions relate both to the student's presentation and also explore the student's familiarity with broader statistical topics related to the thesis research. The oral examination is normally completed within the last few months of the student's Ph.D. period. The examining committee usually consists of at least five members: four examiners including the three members of the Dissertation Reading Committee, plus an outside chair who serves as an impartial representative of the academic standards of the University. Four out of five passing votes are required and no grades are given. Nearly all students can expect to pass this examination, although it is common for specific recommendations to be made regarding completion of the written dissertation.

For further information on University oral examinations and committees, see the Graduate Academic Policies and Procedures (GAP) Handbook,

section 4.7 (http://gap.stanford.edu/4-7.html) or the "University Oral Examination (p. 67)" section of this bulletin.

Doctoral and Research Advisers

From the student's arrival until the selection of a research adviser, the student's academic progress is monitored by the department's Director of Graduate Studies. Each student should meet at least once a quarter with the Doctoral Adviser to discuss their academic plans and their progress towards choosing a dissertation adviser. See Graduate Advising Expectations section for more information.

Financial Support

Students accepted to the Ph.D. program are offered financial support. All tuition expenses are paid and there is a fixed monthly stipend determined to be sufficient to pay living expenses. Financial support can be continued for five years, department resources permitting, for students in good standing. The resources for student financial support derive from funds made available for student teaching and research assistantships. Students receive both a teaching and research assignment each quarter which, together, do not exceed 20 hours. Students are encouraged to apply for outside scholarships, fellowships, and other forms of financial support.

Ph.D. Minor in Statistics

Students must complete a total of 30 units for the Ph.D. minor. 20 units must be from Statistics courses numbered 300 and above and taken for a letter grade (minimum grade of B for each course). The remaining 10 units can be from Statistics courses numbered 200 and above, and may be taken for a letter grade or credit. Students may not include more than one unit of Stats 390, Consulting Workshop, towards the 30 units. The selection of courses must be approved by the Statistics Department and the *Application for the Ph.D. Minor* form must be approved by both the student's Ph.D. department and the Statistics department.

For further information about the Statistics Ph.D. degree program requirements, see the department web site (https://statistics.stanford.edu/academics/doctoral-program/).

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Statistics department counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate minor requirements that otherwise require a letter grade.

Graduate Degree Requirements

Grading

The Statistics department’s M.S. program has modified its policy concerning 'CR' (credit) or 'S' (satisfactory) grades in degree requirements requiring a letter grade for academic year 2020-21 as follows: Letter grade is required of the core statistics courses (4), three of the five (5) statistics depth courses and linear algebra requirement. The programming requirement may be taken 'CR' (credit) or 'S' (satisfactory).

The Statistics department’s M.S. program in Data Science has modified its policy concerning 'CR' (credit) or 'S' (satisfactory) grades in degree requirements requiring a letter grade for academic year 2020-21 as follows: Students may take two courses as 'CR' (credit) or 'S' (satisfactory) in Machine Learning and/or Scientific Computing Foundations (up to 6 units).

The Statistics department’s Ph.D. program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of Ph.D. degree requirements that otherwise require a letter grade, though first year Statistics Ph.D. students are strongly encouraged to take the first year required courses for a letter grade.

Graduate Advising Expectations

The Department of Statistics is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

M.S. in Statistics and Data Science

Master’s students are assigned an academic adviser for the duration of their tenure in the program. The adviser serves as a key resource for the purposes of course placement and approval of elective coursework as it relates to fulfilling degree requirements. Since the majority of MS students choose employment in the field of industry (tech/programming), the program adviser may provide assistance with regards to internships and general professional opportunities. Those planning to apply to doctoral programs are also able to receive feedback on research opportunities.

Ph.D. in Statistics

First and second year students are advised on course selection and other academic matters by the Director of Graduate Studies who is available by appointment to consult with students about any graduate student related matter, including degree progress. The DGS also leads cohort-specific workshops addressing topics such as qualifying exams, adviser selection, oral exams and post-graduation placement.

By the final study list deadline of Spring Quarter of the second year students are expected to have selected a research adviser who later

serves as their principal dissertation adviser. The dissertation adviser must be a member of the Academic Council, and may be from outside the department. Students may also opt to have two co-advisers rather than one principal adviser, which may include one from outside the department.

The adviser-student mentorship takes many different forms, including, but not limited to programmatic consultation and degree progress, and support and collaboration relating to research, conferences, publications, and academic and professional opportunities.

It is the responsibility of the student to meet with their adviser at least once per quarter during the academic year to discuss academic standing and graduate degree progress. In addition, the Director of Graduate Studies is always available to Ph.D. students for consultation.

Program requirements and milestones, as well as more detailed descriptions of the program's expectations of advisers and students, are listed in the Stats Ph.D. Handbook, available on the department website. (https://statistics.sites.stanford.edu/stats-phd-handbook-2018-19/)

Faculty

Emeriti: (Professors) Jerome H. Friedman, Paul Switzer

Chair: Art Owen

Director of Graduate Studies: Joseph P. Romano

Director of Undergraduate Studies: Guenther Walther

Professors: Emmanuel Candès, Sourav Chatterjee, Amir Dembo, Persi Diaconis, David L. Donoho, Bradley Efron, Trevor J. Hastie, Susan P. Holmes, Iain M. Johnstone, Tze L. Lai, Andrea Montanari, Art Owen, Joseph P. Romano, Chiara Sabatti, David O. Siegmund, Jonathan Taylor, Robert J. Tibshirani, Guenther Walther, Wing H. Wong

Assistant Professors: Guillaume Basse, John Duchi, Scott Linderman, Tengyu Ma, Julia Palacios, Dominik Rothenhäusler, Tselil Schramm

Courtesy Professors: John Ioannidis, Hua Tang

Courtesy Associate Professors: David Rogosa, Lu Tian

Courtesy Assistant Professors: Mike Baiocchi, Percy Shuo Liang, Stefan Wager

Stein Fellows: Paromita Dubey, Vishesh Jain

Courses

STATS 32. Introduction to R for Undergraduates. 1 Unit.
This short course runs for weeks one through five of the quarter. It is recommended for undergraduate students who want to use R in the humanities or social sciences and for students who want to learn the basics of R programming. The goal of the short course is to familiarize students with R's tools for data analysis. Lectures will be interactive with a focus on learning by example, and assignments will be application-driven. No prior programming experience is needed. Topics covered include basic data structures, File I/O, data transformation and visualization, simple statistical tests, etc, and some useful packages in R. Prerequisite: undergraduate student. Priority given to non-engineering students. Laptops necessary for use in class.

STATS 48N. Riding the Data Wave. 3 Units.
Imagine collecting a bit of your saliva and sending it in to one of the personalized genomics company: for very little money you will get back information about hundreds of thousands of variable sites in your genome. Records of exposure to a variety of chemicals in the areas you have lived are only a few clicks away on the web; as are thousands of studies and informal reports on the effects of different diets, to which you can compare your own. What does this all mean for you? Never before in history humans have recorded so much information about themselves and the world that surrounds them. Nor has this data been so readily available to the lay person. Expression as "data deluge" are used to describe such wealth as well as the loss of proper bearings that it often generates. How to summarize all this information in a useful way? How to boil down millions of numbers to just a meaningful few? How to convey the gist of the story in a picture without misleading oversimplifications? To answer these questions we need to consider the use of the data, appreciate the diversity that they represent, and understand how people instinctively interpret numbers and pictures. During each week, we will consider a different data set to be summarized with a different goal. We will review analysis of similar problems carried out in the past and explore if and how the same tools can be useful today. We will pay attention to contemporary media (newspapers, blogs, etc.) to identify settings similar to the ones we are examining and critique the displays and summaries there documented. Taking an experimental approach, we will evaluate the effectiveness of different data summaries in conveying the desired information by testing them on subsets of the enrolled students.
Same as: BIODS 48N

STATS 60. Introduction to Statistical Methods: Precalculus. 5 Units.
Techniques for organizing data, computing, and interpreting measures of central tendency, variability, and association. Estimation, confidence intervals, tests of hypotheses, t-tests, correlation, and regression. Possible topics: analysis of variance and chi-square tests, computer statistical packages.
Same as: PSYCH 10, STATS 160

STATS 100. Mathematics of Sports. 3 Units.
This course will teach you how statistics and probability can be applied in sports, in order to evaluate team and individual performance, build optimal in-game strategies and ensure fairness between participants. Topics will include examples drawn from multiple sports such as basketball, baseball, soccer, football and tennis. The course is intended to focus on data-based applications, and will involve computations in R with real data sets via tutorial sessions and homework assignments. Prereqs: No statistical or programming background is assumed, but introductory courses, e.g, Stats 60,101 or 116, are recommended. A prior knowledge of Linear Algebra (e.g., Math 51) and basic probability is strongly recommended.

STATS 101. Data Science 101. 5 Units.
https://statweb.stanford.edu/~tibs/stat101.html This course will provide a hands-on introduction to statistics and data science. Students will engage with the fundamental ideas in inferential and computational thinking. Each week, we will explore a core topic comprising three lectures and two labs (a module), in which students will manipulate real-world data and learn about statistical and computational tools. Students will engage in statistical computing and visualization with current data analytic software (Jupyter, R). The objectives of this course are to have students (1) be able to connect data to underlying phenomena and to think critically about conclusions drawn from data analysis, and (2) be knowledgeable about programming abstractions so that they can later design their own computational inferential procedures. No programming or statistical background is assumed. Freshmen and sophomores interested in data science, computing and statistics are encouraged to attend. Open to graduates as well.

STATS 110. Statistical Methods in Engineering and the Physical Sciences. 5 Units.
Introduction to statistics for engineers and physical scientists. Topics: descriptive statistics, probability, interval estimation, tests of hypotheses, nonparametric methods, linear regression, analysis of variance, elementary experimental design. Prerequisite: one year of calculus.

STATS 116. Theory of Probability. 4 Units.
Probability spaces as models for phenomena with statistical regularity. Discrete spaces (binomial, hypergeometric, Poisson). Continuous spaces (normal, exponential) and densities. Random variables, expectation, independence, conditional probability. Introduction to the laws of large numbers and central limit theorem. Prerequisites: MATH 52 and familiarity with infinite series, or equivalent.

STATS 141. Biostatistics. 5 Units.
Introductory statistical methods for biological data: describing data (numerical and graphical summaries); introduction to probability; and statistical inference (hypothesis tests and confidence intervals). Intermediate statistical methods: comparing groups (analysis of variance); analyzing associations (linear and logistic regression); and methods for categorical data (contingency tables and odds ratio). Course content integrated with statistical computing in R.
Same as: BIO 141

STATS 155. Modern Statistics for Modern Biology. 3 Units.
Application based course in nonparametric statistics. Modern toolbox of visualization and statistical methods for the analysis of data, examples drawn from immunology, microbiology, cancer research and ecology. Methods covered include multivariate methods (PCA and extensions), sparse representations (trees, networks, contingency tables) as well as nonparametric testing (Bootstrap, permutation and Monte Carlo methods). Hands on, use R and cover many Bioconductor packages. Prerequisite: Working knowledge of R and two core Biology courses. Note that the 155 offering is a writing intensive course for undergraduates only and requires instructor consent. (WIM).
Same as: BIOS 221, STATS 256, STATS 366

STATS 160. Introduction to Statistical Methods: Precalculus. 5 Units.
Techniques for organizing data, computing, and interpreting measures of central tendency, variability, and association. Estimation, confidence intervals, tests of hypotheses, t-tests, correlation, and regression. Possible topics: analysis of variance and chi-square tests, computer statistical packages.
Same as: PSYCH 10, STATS 60

STATS 167. Probability: Ten Great Ideas About Chance. 4 Units.
Foundational approaches to thinking about chance in matters such as gambling, the law, and everyday affairs. Topics include: chance and decisions; the mathematics of chance; frequencies, symmetry, and chance; Bayes great idea; chance and psychology; misuses of chance; and harnessing chance. Emphasis is on the philosophical underpinnings and problems. Prerequisite: exposure to probability or a first course in statistics at the level of STATS 60 or 116.
Same as: PHIL 166, PHIL 266, STATS 267

STATS 191. Introduction to Applied Statistics. 3 Units.
Statistical tools for modern data analysis. Topics include regression and prediction, elements of the analysis of variance, bootstrap, and cross-validation. Emphasis is on conceptual rather than theoretical understanding. Applications to social/biological sciences. Student assignments/projects require use of the software package R. Prerequisite: introductory statistical methods course. Recommended: 60, 110, or 141.

STATS 195. Introduction to R. 1 Unit.
This short course runs for four weeks and is offered in fall and spring. It is recommended for students who want to use R in statistics, science or engineering courses, and for students who want to learn the basics of data science with R. The goal of the short course is to familiarize students with some of the most important R tools for data analysis. Lectures will focus on learning by example and assignments will be application-driven. No prior programming experience is assumed.
Same as: CME 195

STATS 196A. Multilevel Modeling Using R. 1 Unit.
See http://rogosateaching.com/stat196/ . Multilevel data analysis examples using R. Topics include: two-level nested data, growth curve modeling, generalized linear models for counts and categorical data, nonlinear models, three-level analyses.
Same as: EDUC 401D

STATS 199. Independent Study. 1-15 Unit.
For undergraduates.

STATS 200. Introduction to Statistical Inference. 4 Units.
Modern statistical concepts and procedures derived from a mathematical framework. Statistical inference, decision theory; point and interval estimation, tests of hypotheses; Neyman-Pearson theory. Bayesian analysis; maximum likelihood, large sample theory. Prerequisite: STATS 116.

STATS 202. Data Mining and Analysis. 3 Units.
Data mining is used to discover patterns and relationships in data. Emphasis is on large complex data sets such as those in very large databases or through web mining. Topics: decision trees, association rules, clustering, case based methods, and data visualization. Prereqs: Introductory courses in statistics or probability (e.g., Stats 60), linear algebra (e.g., Math 51), and computer programming (e.g., CS 105).

STATS 203. Introduction to Regression Models and Analysis of Variance. 3 Units.
Modeling and interpretation of observational and experimental data using linear and nonlinear regression methods. Model building and selection methods. Multivariable analysis. Fixed and random effects models. Experimental design. Prerequisites: A post-calculus introductory probability course, e.g. STATS 116, basic computer programming knowledge, some familiarity with matrix algebra, and a pre- or co-requisite post-calculus mathematical statistics course, e.g. STATS 200.

STATS 203V. Introduction to Regression Models and Analysis of Variance. 3 Units.
Modeling and interpretation of observational and experimental data using linear and nonlinear regression methods. Model building and selection methods. Multivariable analysis. Fixed and random effects models. Experimental design. This course is offered remotely only via video segments (MOOC style). TAs will host remote weekly office hours using an online platform such as Zoom. Prerequisites: A post-calculus introductory probability course, e.g. STATS 116, basic computer programming knowledge, some familiarity with matrix algebra, and a pre- or co-requisite post-calculus mathematical statistics course, e.g. STATS 200.

STATS 204. Sampling. 3 Units.
How best to take data and where to sample it. Examples include surveys and sampling from data warehouses. Emphasis is on methods for finite populations. Topics: simple random sampling, stratified sampling, cluster sampling, ratio and regression estimators, two stage sampling.

STATS 205. Introduction to Nonparametric Statistics. 3 Units.
Nonparametric regression and nonparametric density estimation, modern nonparametric techniques, nonparametric confidence interval estimates, nearest neighbor algorithms (with non-linear features), wavelet, bootstrap. Nonparametric analogs of the one- and two-sample t-tests and analysis of variance.

STATS 206. Applied Multivariate Analysis. 3 Units.
Introduction to the statistical analysis of several quantitative measurements on each observational unit. Emphasis is on concepts, computer-intensive methods. Examples from economics, education, geology, psychology. Topics: multiple regression, multivariate analysis of variance, principal components, factor analysis, canonical correlations, multidimensional scaling, clustering. Pre- or corequisite: 200.

STATS 207. Introduction to Time Series Analysis. 3 Units.
Time series models used in economics and engineering. Trend fitting, autoregressive and moving average models and spectral analysis, Kalman filtering, and state-space models. Seasonality, transformations, and introduction to financial time series. Prerequisite: basic course in Statistics at the level of 200.

STATS 208. Bootstrap, Cross-Validation, and Sample Re-use. 3 Units.
By re-using the sample data, sometimes in ingenious ways, we can evaluate the accuracy of predictions, test the significance of a conclusion, place confidence bounds on an unknown parameter, select the best prediction architecture, and develop more accurate predictors. In this course, we will describe the many ways that samples get reused to achieve these goals, including the bootstrap, the parametric bootstrap, cross-validation, conformal prediction, random forests, and sample splitting. We also develop basic theory justifying such methods. Prerequisite: course in statistics or probability.

STATS 209A. Topics in Causal Inference. 3 Units.
This course introduces the fundamental ideas and methods in causal inference, and surveys a broad range of problems and applications. Emphasis will be on framing causal problems and identifying causal effects in both randomized experiments and observational studies. Topics will include: the potential outcomes framework; randomization-based inference and covariate adjustment; matching, and IPW; instrumental variables, regression discontinuity and synthetic ncontrols. Examples and applications will be taken from the fields of education, political science, economics, public health and digital marketing.
Same as: MS&E 327

STATS 209B. Applications of Causal Inference Methods. 2 Units.
See http://rogosateaching.com/stat209/. Application of potential outcomes formulation for causal inference to research settings including: mediation, compliance adjustments, time-1 time-2 designs, encouragement designs, heterogeneous treatment effects, aggregated data, instrumental variables, analysis of covariance regression adjustments, and implementations of matching methods. Prerequisite: STATS 209A/MSE 327 or other introduction to causal inference methods. (Formerly HRP 239).
Same as: EDUC 260A, EPI 239

STATS 211. Meta-research: Appraising Research Findings, Bias, and Meta-analysis. 3 Units.
Open to graduate, medical, and undergraduate students. Appraisal of the quality and credibility of research findings; evaluation of sources of bias. Meta-analysis as a quantitative (statistical) method for combining results of independent studies. Examples from medicine, epidemiology, genomics, ecology, social/behavioral sciences, education. Collaborative analyses. Project involving generation of a meta-research project or reworking and evaluation of an existing published meta-analysis. Prerequisite: knowledge of basic statistics.
Same as: CHPR 206, EPI 206, MED 206

STATS 214. Machine Learning Theory. 3 Units.
How do we use mathematical thinking to design better machine learning methods? This course focuses on developing mathematical tools for answering these questions. This course will cover fundamental concepts and principled algorithms in machine learning. We have a special focus on modern large-scale non-linear models such as matrix factorization models and deep neural networks. In particular, we will cover concepts and phenomenon such as uniform convergence, double descent phenomenon, implicit regularization, and problems such as matrix completion, bandits, and online learning (and generally sequential decision making under uncertainty). Prerequisites: linear algebra (MATH 51 or CS 205), probability theory (STATS 116, MATH 151 or CS 109), and machine learning (CS 229, STATS 229, or STATS 315A).
Same as: CS 229M

STATS 215. Statistical Models in Biology. 3 Units.
Poisson and renewal processes, Markov chains in discrete and continuous time, branching processes, diffusion. Applications to models of nucleotide evolution, recombination, the Wright-Fisher process, coalescence, genetic mapping, sequence analysis. Theoretical material approximately the same as in STATS 217, but emphasis is on examples drawn from applications in biology, especially genetics. Prerequisite: 116 or equivalent.

STATS 216. Introduction to Statistical Learning. 3 Units.
Overview of supervised learning, with a focus on regression and classification methods. Syllabus includes: linear and polynomial regression, logistic regression and linear discriminant analysis;cross-validation and the bootstrap, model selection and regularization methods (ridge and lasso); nonlinear models, splines and generalized additive models; tree-based methods, random forests and boosting; support-vector machines; Some unsupervised learning: principal components and clustering (k-means and hierarchical). Computing is done in R, through tutorial sessions and homework assignments. This math-light course is offered via video segments (MOOC style), and in-class problem solving sessions. Prereqs: Introductory courses in statistics or probability (e.g., Stats 60 or Stats 101), linear algebra (e.g., Math 51), and computer programming (e.g., CS 105).

STATS 216V. Introduction to Statistical Learning. 3 Units.
Overview of supervised learning, with a focus on regression and classification methods. Syllabus includes: linear and polynomial regression, logistic regression and linear discriminant analysis; cross-validation and the bootstrap, model selection and regularization methods (ridge and lasso); nonlinear models, splines and generalized additive models; tree-based methods, random forests and boosting; support-vector machines; Some unsupervised learning: principal components and clustering (k-means and hierarchical). Computing is done in R, through tutorial sessions and homework assignments. This math-light course is offered remotely only via video segments (MOOC style). TAs will host remote weekly office hours using an online platform such as Zoom. There are four homework assignments, a midterm, and a final exam, all of which are administered remotely. Prereqs: Introductory courses in statistics or probability (e.g., Stats 60 or Stats 101), linear algebra (e.g., Math 51), and computer programming (e.g., CS 105).

STATS 217. Introduction to Stochastic Processes I. 3 Units.
Discrete and continuous time Markov chains, poisson processes, random walks, branching processes, first passage times, recurrence and transience, stationary distributions. Non-Statistics masters students may want to consider taking STATS 215 instead. Prerequisite: a post-calculus introductory probability course e.g. STATS 116.

STATS 218. Introduction to Stochastic Processes II. 3 Units.
Renewal theory, Brownian motion, Gaussian processes, second order processes, martingales.

STATS 219. Stochastic Processes. 3 Units.
Introduction to measure theory, Lp spaces and Hilbert spaces. Random variables, expectation, conditional expectation, conditional distribution. Uniform integrability, almost sure and Lp convergence. Stochastic processes: definition, stationarity, sample path continuity. Examples: random walk, Markov chains, Gaussian processes, Poisson processes, Martingales. Construction and basic properties of Brownian motion. Prerequisite: STATS 116 or MATH 151 or equivalent. Recommended: MATH 115 or equivalent. http://statweb.stanford.edu/~adembo/math-136/.
Same as: MATH 136

STATS 220. Machine Learning Methods for Neural Data Analysis. 3 Units.
With modern high-density electrodes and optical imaging techniques, neuroscientists routinely measure the activity of hundreds, if not thousands, of cells simultaneously. Coupled with high-resolution behavioral measurements, genetic sequencing, and connectomics, these datasets offer unprecedented opportunities to learn how neural circuits function. This course will study statistical machine learning methods for analysing such datasets, including: spike sorting, calcium deconvolution, and voltage smoothing techniques for extracting relevant signals from raw data; markerless tracking methods for estimating animal pose in behavioral videos; network models for connectomics and fMRI data; state space models for analysis of high-dimensional neural and behavioral time-series; point process models of neural spike trains; and deep learning methods for neural encoding and decoding. We will develop the theory behind these models and algorithms and then apply them to real datasets in the homeworks and final project.This course is similar to STATS215: Statistical Models in Biology and STATS366: Modern Statistics for Modern Biology, but it is specifically focused on statistical machine learning methods for neuroscience data. Prerequisites: Students should be comfortable with basic probability (STATS 116) and statistics (at the level of STATS 200). This course will place a heavy emphasis on implementing models and algorithms, so coding proficiency is required.
Same as: CS 339N, NBIO 220, STATS 320

STATS 221. Random Processes on Graphs and Lattices. 3 Units.
Covering modern topics in the study of random processes on graphs and lattices. Specifically, a subset of: Random walks, electrical networks and flows. Uniform spanning trees. Percolation and self-avoiding walks. Contact process, voter model and the exclusion process. Ising, Potts, and Random-Cluster model. Random graphs. Prerequisites: MATH 115 (or equivalent), STAT 217 (or equivalent).

STATS 222. Statistical Methods for Longitudinal Research. 2 Units.
See http://rogosateaching.com/stat222/. Research designs and statistical procedures for time-ordered (repeated-measures) data. The analysis of longitudinal panel data is central to empirical research on learning, development, aging, and the effects of interventions. Topics include: measurement of change, growth curve models, analysis of durations including survival analysis, experimental and non-experimental group comparisons, reciprocal effects, stability. Prerequisite: intermediate statistical methods.
Same as: EDUC 351A

STATS 229. Machine Learning. 3-4 Units.
Topics: statistical pattern recognition, linear and non-linear regression, non-parametric methods, exponential family, GLMs, support vector machines, kernel methods, deep learning, model/feature selection, learning theory, ML advice, clustering, density estimation, EM, dimensionality reduction, ICA, PCA, reinforcement learning and adaptive control, Markov decision processes, approximate dynamic programming, and policy search. Prerequisites: knowledge of basic computer science principles and skills at a level sufficient to write a reasonably non-trivial computer program in Python/numpy, familiarity with probability theory to the equivalency of CS109 or STATS116, and familiarity with multivariable calculus and linear algebra to the equivalency of MATH51.
Same as: CS 229

STATS 237. Investment Portfolios, Derivative Securities, and Risk Measures. 3 Units.
Asset returns and their volatilities. Markowitz portfolio theory, capital asset pricing model, multifactor pricing models. Measures of market risk and statistical models and methods for their estimation and backtesting. Financial derivatives and hedging. Black-Scholes pricing of European options and implied volatilities. Prerequisite: STATS 116 or equivalent.

STATS 237P. Investment Portfolios, Derivative Securities, and Risk Measures. 3 Units.
For SCPD students; see STATS237.

STATS 240. Statistical Methods in Finance. 3 Units.
(SCPD students register for 240P.) Regression analysis and applications to investment models. Principal components and multivariate analysis. Likelihood inference and Bayesian methods. Financial time series. Estimation and modeling of volatilities. Statistical methods for portfolio management. Prerequisite: STATS 200 or equivalent.

STATS 240P. Statistical Methods in Finance. 3 Units.
For SCPD students; see 240.

STATS 241. Data-driven Financial Econometrics. 3 Units.
(SCPD students register for 241P) Substantive and empirical modeling approaches in options, interest rate, and credit markets. Nonlinear least squares, logistic regression and generalized linear models. Nonparametric regression and model selection. Multivariate time series modeling and forecasting. Vector autoregressive models and cointegration. Risk measures, models and analytics. Prerequisite or corequisite: STATS 240 or equivalent.

STATS 241P. Data-driven Financial Econometrics. 3 Units.
For SCPD students; see STATS241.

STATS 242. NeuroTech Training Seminar. 1 Unit.
This is a required course for students in the NeuroTech training program, and is also open to other graduate students interested in learning the skills necessary for neurotechnology careers in academia or industry. Over the academic year, topics will include: emerging research in neurotechnology, communication skills, team science, leadership and management, intellectual property, entrepreneurship and more.
Same as: NSUR 239

STATS 243. Risk Analytics and Management in Finance and Insurance. 2-4 Units.
Market risk and credit risk, credit markets. Back testing, stress testing and Monte Carlo methods. Logistic regression, generalized linear models and generalized mixed models. Loan prepayment and default as competing risks. Survival and hazard functions, correlated default intensities, frailty and contagion. Risk surveillance, early warning and adaptive control methodologies. Banking and bank regulation, asset and liability management. Prerequisite: STATS 240 or equivalent.
Same as: CME 243

STATS 243P. Risk Analytics and Management in Finance and Insurance. 3 Units.
For SCPD students; see STATS243.

STATS 244. Quantitative Trading: Algorithms, Data, and Optimization. 2-4 Units.
Statistical trading rules and performances evaluation. Active portfolio management and dynamic investment strategies. Data analytics and models of transactions data. Limit order book dynamics in electronic exchanges. Algorithmic trading, informatics, and optimal execution. Market making and inventory control. Risk management and regulatory issues. Prerequisites: STATS 240 or equivalent.

STATS 244P. Quantitative Trading: Algorithms, Data and Optimization. 3 Units.
For SCPD students; see 244.

STATS 245. Data, Models and Applications to Healthcare Analytics. 3 Units.
Topics on fundamentals of data science, biological and statistical models, application to medical product safety evaluation, health risk models and their evaluation, benefit-risk assessment and multi-criteria decision analytics. Applications to environmental health, nutritional epidemiology, wellness and prevention will also be discussed. Prerequisite: Graduate students - STATS 202 or 216, or CS 229; Undergraduate students - consent of instructor.

STATS 245P. Data, Models, and Applications to Healthcare Analytics. 3 Units.
For SCPD students; see STATS245.

STATS 248. Clinical Trial Design in the Age of Precision Medicine and Health. 3 Units.
Overview of requirements, designs, and statistical foundations for traditional Phase I, II, and III clinical trials for medical product approval and Phase IV postmarketing studies for safety evaluation. As these methods cost too much and take too much time in the era of precision medicine and precision health, this course then introduces innovative designs that have been developed for affordable clinical trials, which can be completed within reasonable time constraints and which have been encouraged by regulatory agencies. Prerequisites: Working knowledge of statistics and R.
Same as: BIODS 248, BIODS 248P, BIOMEDIN 248

STATS 249. Experimental Immersion in Neuroscience. 1 Unit.
This course provides students from technical backgrounds (e.g., physics, applied physics, electrical or chemical engineering, bioengineering, computer science, statistics) the opportunity to learn how they can apply their expertise to advancing experimental research in the neurosciences. Students will visit one neuroscience lab per week to watch experiments, understand the technical apparatus and animal models being used, discuss the questions being addressed, and interact with students and others conducting the research. This course is strongly encouraged for students who wish to apply to the NeuroTech graduate training program.
Same as: NSUR 249

STATS 250. Mathematical Finance. 3 Units.
Stochastic models of financial markets. Forward and futures contracts. European options and equivalent martingale measures. Hedging strategies and management of risk. Term structure models and interest rate derivatives. Optimal stopping and American options. Corequisites: MATH 236 and 227 or equivalent.nnNOTE: Undergraduates require instructor permission to enroll. Undergraduates interested in taking the course should contact the instructor for permission, providing information about relevant background such as performance in prior coursework, reading, etc.
Same as: MATH 238

STATS 253. Analysis of Spatial and Temporal Data. 3 Units.
A unified treatment of methods for spatial data, time series, and other correlated data from the perspective of regression with correlated errors. Two main paradigms for dealing with autocorrelation: covariance modeling (kriging) and autoregressive processes. Bayesian methods. Prerequisites: applied linear algebra (MATH 103 or equivalent), statistical estimation (STATS 200 or CS 229), and linear regression (STATS 203 or equivalent).

STATS 256. Modern Statistics for Modern Biology. 3 Units.
Application based course in nonparametric statistics. Modern toolbox of visualization and statistical methods for the analysis of data, examples drawn from immunology, microbiology, cancer research and ecology. Methods covered include multivariate methods (PCA and extensions), sparse representations (trees, networks, contingency tables) as well as nonparametric testing (Bootstrap, permutation and Monte Carlo methods). Hands on, use R and cover many Bioconductor packages. Prerequisite: Working knowledge of R and two core Biology courses. Note that the 155 offering is a writing intensive course for undergraduates only and requires instructor consent. (WIM).
Same as: BIOS 221, STATS 155, STATS 366

STATS 260A. Workshop in Biostatistics. 1-2 Unit.
Applications of statistical techniques to current problems in medical science. To receive credit for one or two units, a student must attend every workshop. To receive two units, in addition to attending every workshop, the student is required to write an acceptable one page summary of two of the workshops, with choices made by the student.
Same as: BIODS 260A

STATS 260B. Workshop in Biostatistics. 1-2 Unit.
Applications of statistical techniques to current problems in medical science. To receive credit for one or two units, a student must attend every workshop. To receive two units, in addition to attending every workshop, the student is required to write an acceptable one page summary of two of the workshops, with choices made by the student.
Same as: BIODS 260B

STATS 260C. Workshop in Biostatistics. 1-2 Unit.
Applications of statistical techniques to current problems in medical science. To receive credit for one or two units, a student must attend every workshop. To receive two units, in addition to attending every workshop, the student is required to write an acceptable one page summary of two of the workshops, with choices made by the student.
Same as: BIODS 260C

STATS 261. Intermediate Biostatistics: Analysis of Discrete Data. 3 Units.
(Formerly HRP 261) Methods for analyzing data from case-control and cross-sectional studies: the 2x2 table, chi-square test, Fisher's exact test, odds ratios, Mantel-Haenzel methods, stratification, tests for matched data, logistic regression, conditional logistic regression. Emphasis is on data analysis in SAS or R. Special topics: cross-fold validation and bootstrap inference.
Same as: BIOMEDIN 233, EPI 261

STATS 262. Intermediate Biostatistics: Regression, Prediction, Survival Analysis. 3 Units.
(Formerly HRP 262) Methods for analyzing longitudinal data. Topics include Kaplan-Meier methods, Cox regression, hazard ratios, time-dependent variables, longitudinal data structures, profile plots, missing data, modeling change, MANOVA, repeated-measures ANOVA, GEE, and mixed models. Emphasis is on practical applications. Prerequisites: basic ANOVA and linear regression.
Same as: EPI 262

STATS 263. Design of Experiments. 3 Units.
Experiments vs observation. Confounding. Randomization. ANOVA.Blocking. Latin squares. Factorials and fractional factorials. Split plot. Response surfaces. Mixture designs. Optimal design. Central composite. Box-Behnken. Taguchi methods. Computer experiments and space filling designs. Prerequisites: probability at STATS 116 level or higher, and at least one course in linear models.
Same as: STATS 363

STATS 264. Foundations of Statistical and Scientific Inference. 1 Unit.
(Formerly HRP 264) The course will consist of readings and discussion of foundational papers and book sections in the domains of statistical and scientific inference. Topics to be covered include philosophy of science, interpretations of probability, Bayesian and frequentist approaches to statistical inference and current controversies about the proper use of p-values and research reproducibility. Recommended preparation: At least 2 quarters of biostatistics and one of epidemiology. Intended for second year Masters students or PhD students with at least 1 year of preceding graduate training.
Same as: EPI 264

STATS 266. Advanced Statistical Methods for Observational Studies. 2-3 Units.
Design principles and statistical methods for observational studies. Topics include: matching methods, sensitivity analysis, and instrumental variables. 3 unit registration requires a small project and presentation. Computing is in R. Pre-requisites: EPI 261 and 262 or STATS 209 (EPI 239), or equivalent. See http://rogosateaching.com/somgen290/.
Same as: CHPR 266, EDUC 260B, EPI 292

STATS 267. Probability: Ten Great Ideas About Chance. 4 Units.
Foundational approaches to thinking about chance in matters such as gambling, the law, and everyday affairs. Topics include: chance and decisions; the mathematics of chance; frequencies, symmetry, and chance; Bayes great idea; chance and psychology; misuses of chance; and harnessing chance. Emphasis is on the philosophical underpinnings and problems. Prerequisite: exposure to probability or a first course in statistics at the level of STATS 60 or 116.
Same as: PHIL 166, PHIL 266, STATS 167

STATS 270. A Course in Bayesian Statistics. 3 Units.
This course will treat Bayesian statistics at a relatively advanced level. Assuming familiarity with standard probability and multivariate distribution theory, we will provide a discussion of the mathematical and theoretical foundation for Bayesian inferential procedures. In particular, we will examine the construction of priors and the asymptotic properties of likelihoods and posterior distributions. The discussion will include but will not be limited to the case of finite dimensional parameter space. There will also be some discussions on the computational algorithms useful for Bayesian inference. Prerequisites: Stats 116 or equivalent probability course, plus basic programming knowledge; basic calculus, analysis and linear algebra strongly recommended; Stats 200 or equivalent statistical theory course desirable.
Same as: STATS 370

STATS 271. Applied Bayesian Statistics. 3 Units.
This course is a modern treatment of applied Bayesian statistics with a focus on high-dimensional problems. We will study a collection of canonical methods that see heavy use in applications, including high-dimensional linear and generalized linear models, hierarchical/random effects models, Gaussian processes, variable-dimension and Dirichlet process mixtures, graphical models, and methods used in Bayesian inverse problems. Each method will be accompanied by one or more motivating datasets. Through these examples the course will cover: (1) Bayesian hypothesis testing, multiplicity correction, selection, shrinkage, and model averaging; (2) prior choice; (3) Frequentist properties of Bayesian procedures in high dimensions; and (4) computation by Markov chain Monte Carlo, including constructing efficient Gibbs, Metropolis, and more exotic samplers, empirical convergence analysis, strategies for scaling computation to high dimensions (approximations, divide-and-conquer, minibatching, et cetera), and the theory of convergence rates.
Same as: STATS 371

STATS 281. Statistical Analysis of Fine Art. 3 Units.
This course presents the application of rigorous statistical analysis, machine learning, and data analysis to problems in the history and interpretation of fine art paintings, drawings, and other two-dimensional artworks. The course focuses on the aspects of these problems that are unlike those addressed widely elsewhere in statistical image analysis, such as applied to photographs, videos, and medical images. These novel problems include statistical analysis of brushstrokes and marks, medium, inferring artists¿ working methods, compositional principles, stylometry (quantification of style), the tracing of artistic influence, and art attribution and authentication. The course revisits classic problems, such as image-based object recognition and scene description, but in the environment of highly non-realistic, stylized artworks.

STATS 285. Massive Computational Experiments, Painlessly. 2 Units.
Ambitious Data Science requires massive computational experimentation; the entry ticket for a solid PhD in some fields is now to conduct experiments involving 1 Million CPU hours. Recently several groups have created efficient computational environments that make it painless to run such massive experiments. This course reviews state-of-the-art practices for doing massive computational experiments on compute clusters in a painless and reproducible manner. Students will learn how to automate their computing experiments first of all using nuts-and-bolts tools such as Perl and Bash, and later using available comprehensive frameworks such as ClusterJob and CodaLab, which enables them to take on ambitious Data Science projects. The course also features few guest lectures by renowned scientists in the field of Data Science. Students should have a familiarity with computational experiments and be facile in some high-level computer language such as R, Matlab, or Python.

STATS 290. Computing for Data Science. 3 Units.
Programming and computing techniques for the requirements of data science: acquisition and organization of data; visualization, modelling and inference for scientific applications; presentation and interactive communication of results. Emphasis on computing for substantial projects. Software development with emphasis on R, plus other key software tools. Prerequisites: Programming experience including familiarity with R; computing at least at the level of CS 106; statistics at the level of STATS 110 or 141.

STATS 298. Industrial Research for Statisticians. 1 Unit.
Masters-level research as in 299, but with the approval and supervision of a faculty adviser, it must be conducted for an off-campus employer. Students must submit a written final report upon completion of the internship in order to receive credit. Repeatable for credit. Prerequisite: enrollment in Statistics M.S. program.

STATS 299. Independent Study. 1-5 Unit.
For Statistics M.S. students only. Reading or research program under the supervision of a Statistics faculty member. May be repeated for credit.

STATS 300A. Theory of Statistics I. 3 Units.
Finite sample optimality of statistical procedures; Decision theory: loss, risk, admissibility; Principles of data reduction: sufficiency, ancillarity, completeness; Statistical models: exponential families, group families, nonparametric families; Point estimation: optimal unbiased and equivariant estimation, Bayes estimation, minimax estimation; Hypothesis testing and confidence intervals: uniformly most powerful tests, uniformly most accurate confidence intervals, optimal unbiased and invariant tests. Prerequisites: Real analysis, introductory probability (at the level of STATS 116), and introductory statistics.

STATS 300B. Theory of Statistics II. 3 Units.
Elementary decision theory; loss and risk functions, Bayes estimation; UMVU estimator, minimax estimators, shrinkage estimators. Hypothesis testing and confidence intervals: Neyman-Pearson theory; UMP tests and uniformly most accurate confidence intervals; use of unbiasedness and invariance to eliminate nuisance parameters. Large sample theory: basic convergence concepts; robustness; efficiency; contiguity, locally asymptotically normal experiments; convolution theorem; asymptotically UMP and maximin tests. Asymptotic theory of likelihood ratio and score tests. Rank permutation and randomization tests; jackknife, bootstrap, subsampling and other resampling methods. Further topics: sequential analysis, optimal experimental design, empirical processes with applications to statistics, Edgeworth expansions, density estimation, time series.

STATS 300C. Theory of Statistics III. 3 Units.
Decision theory formulation of statistical problems. Minimax, admissible procedures. Complete class theorems ("all" minimax or admissible procedures are "Bayes"), Bayes procedures, conjugate priors, hierarchical models. Bayesian non parametrics: diaichlet, tail free, polya trees, bayesian sieves. Inconsistency of bayes rules.

STATS 302. Qualifying Exams Workshop. 5-10 Units.
Prepares Statistics Ph.D. students for the qualifying exams by reviewing relevant course topics and problem solving strategies.

STATS 303. Statistics Faculty Research Presentations. 1 Unit.
For Statistics first and second year PhD students only. Discussion of statistics topics and research areas; consultation with PhD advisors.

STATS 305A. Applied Statistics I. 3 Units.
Statistics of real valued responses. Review of multivariate normal distribution theory. Univariate regression. Multiple regression. Constructing features from predictors. Geometry and algebra of least squares: subspaces, projections, normal equations, orthogonality, rank deficiency, Gauss-Markov. Gram-Schmidt, the QR decomposition and the SVD. Interpreting coefficients. Collinearity. Dependence and heteroscedasticity. Fits and the hat matrix. Model diagnostics. Model selection, Cp/AIC and crossvalidation, stepwise, lasso. Multiple comparisons. ANOVA, fixed and random effects. Use of bootstrap and permutations. Emphasis on problem sets involving substantive computations with data sets. Prerequisites: consent of instructor, 116, 200, applied statistics course, CS 106A, MATH 114.

STATS 305B. Applied Statistics II: Generalized Linear Models, Survival Analysis, and Exponential Families. 3 Units.
This course uses exponential family structure to motivate generalized linear models and other useful applied techniques including survival analysis methods and Bayes and empirical Bayes analyses. The lectures are based on a forthcoming book whose notes will be distributed. Prerequisites: 305A or consent of the instructor.

STATS 305C. Applied Statistics III. 3 Units.
Methods for multivariate responses. Theory, computation and practice for multivariate statistical tools. Multivariate Gaussian and undirected graphical models, graphical displays. Hotelling's T-squared, principal components, canonical correlations, linear discriminant analysis, correspondence analysis, and recent variants of these. Hierarchical and k-means clustering. Bi-clustering. Factor analysis and independent component analysis. Topic modeling. Multidimensional scaling and variants (e.g., Isomap, spectral clustering, t-SNE). Matrix completion. Extensive work with data involving programming, ideally in R. Prerequisites: Stats 305A and Stats 305B or consent of the instructor.

STATS 310A. Theory of Probability I. 3 Units.
Mathematical tools: sigma algebras, measure theory, connections between coin tossing and Lebesgue measure, basic convergence theorems. Probability: independence, Borel-Cantelli lemmas, almost sure and Lp convergence, weak and strong laws of large numbers. Large deviations. Weak convergence; central limit theorems; Poisson convergence; Stein's method. Prerequisites: STATS 116, MATH 171.
Same as: MATH 230A

STATS 310B. Theory of Probability II. 3 Units.
Conditional expectations, discrete time martingales, stopping times, uniform integrability, applications to 0-1 laws, Radon-Nikodym Theorem, ruin problems, etc. Other topics as time allows selected from (i) local limit theorems, (ii) renewal theory, (iii) discrete time Markov chains, (iv) random walk theory,n(v) ergodic theory. http://statweb.stanford.edu/~adembo/stat-310b. Prerequisite: 310A or MATH 230A.
Same as: MATH 230B

STATS 310C. Theory of Probability III. 3 Units.
Continuous time stochastic processes: martingales, Brownian motion, stationary independent increments, Markov jump processes and Gaussian processes. Invariance principle, random walks, LIL and functional CLT. Markov and strong Markov property. Infinitely divisible laws. Some ergodic theory. Prerequisite: 310B or MATH 230B. http://statweb.stanford.edu/~adembo/stat-310c/.
Same as: MATH 230C

STATS 311. Information Theory and Statistics. 3 Units.
Information theoretic techniques in probability and statistics. Fano, Assouad,nand Le Cam methods for optimality guarantees in estimation. Large deviationsnand concentration inequalities (Sanov's theorem, hypothesis testing, thenentropy method, concentration of measure). Approximation of (Bayes) optimalnprocedures, surrogate risks, f-divergences. Penalized estimators and minimumndescription length. Online game playing, gambling, no-regret learning. Prerequisites: EE 276 (or equivalent) or STATS 300A.
Same as: EE 377

STATS 314A. Advanced Statistical Theory. 3 Units.
Covers a range of topics, including: empirical processes, asymptotic efficiency, uniform convergence of measures, contiguity, resampling methods, Edgeworth expansions.

STATS 315A. Modern Applied Statistics: Learning. 3 Units.
Overview of supervised learning. Linear regression and related methods. Model selection, least angle regression and the lasso, stepwise methods. Classification. Linear discriminant analysis, logistic regression, and support vector machines (SVMs). Basis expansions, splines and regularization. Kernel methods. Generalized additive models. Kernel smoothing. Gaussian mixtures and the EM algorithm. Model assessment and selection: crossvalidation and the bootstrap. Pathwise coordinate descent. Sparse graphical models. Prerequisites: STATS 305A, 305B, 305C or consent of instructor.

STATS 315B. Modern Applied Statistics: Data Mining. 3 Units.
Two-part sequence. New techniques for predictive and descriptive learning using ideas that bridge gaps among statistics, computer science, and artificial intelligence. Emphasis is on statistical aspects of their application and integration with more standard statistical methodology. Predictive learning refers to estimating models from data with the goal of predicting future outcomes, in particular, regression and classification models. Descriptive learning is used to discover general patterns and relationships in data without a predictive goal, viewed from a statistical perspective as computer automated exploratory analysis of large complex data sets.

STATS 316. Stochastic Processes on Graphs. 1-3 Unit.
Local weak convergence, Gibbs measures on trees, cavity method, and replica symmetry breaking. Examples include random k-satisfiability, the assignment problem, spin glasses, and neural networks. Prerequisite: 310A or equivalent. https://web.stanford.edu/~montanar/TEACHING/Stat316/stat316.html.

STATS 317. Stochastic Processes. 3 Units.
Semimartingales, stochastic integration, Ito's formula, Girsanov's theorem. Gaussian and related processes. Stationary/isotropic processes. Integral geometry and geometric probability. Maxima of random fields and applications to spatial statistics and imaging.

STATS 318. Modern Markov Chains. 3 Units.
Tools for understanding Markov chains as they arise in applications. Random walk on graphs, reversible Markov chains, Metropolis algorithm, Gibbs sampler, hybrid Monte Carlo, auxiliary variables, hit and run, Swedson-Wong algorithms, geometric theory, Poincare-Nash-Cheeger-Log-Sobolov inequalities. Comparison techniques, coupling, stationary times, Harris recurrence, central limit theorems, and large deviations.

STATS 319. Literature of Statistics. 1 Unit.
Literature study of topics in statistics and probability culminating in oral and written reports. May be repeated for credit.

STATS 320. Machine Learning Methods for Neural Data Analysis. 3 Units.
With modern high-density electrodes and optical imaging techniques, neuroscientists routinely measure the activity of hundreds, if not thousands, of cells simultaneously. Coupled with high-resolution behavioral measurements, genetic sequencing, and connectomics, these datasets offer unprecedented opportunities to learn how neural circuits function. This course will study statistical machine learning methods for analysing such datasets, including: spike sorting, calcium deconvolution, and voltage smoothing techniques for extracting relevant signals from raw data; markerless tracking methods for estimating animal pose in behavioral videos; network models for connectomics and fMRI data; state space models for analysis of high-dimensional neural and behavioral time-series; point process models of neural spike trains; and deep learning methods for neural encoding and decoding. We will develop the theory behind these models and algorithms and then apply them to real datasets in the homeworks and final project.This course is similar to STATS215: Statistical Models in Biology and STATS366: Modern Statistics for Modern Biology, but it is specifically focused on statistical machine learning methods for neuroscience data. Prerequisites: Students should be comfortable with basic probability (STATS 116) and statistics (at the level of STATS 200). This course will place a heavy emphasis on implementing models and algorithms, so coding proficiency is required.
Same as: CS 339N, NBIO 220, STATS 220

STATS 322. Function Estimation in White Noise. 3 Units.
Gaussian white noise model sequence space form. Hyperrectangles, quadratic convexity, and Pinsker's theorem. Minimax estimation on Lp balls and Besov spaces. Role of wavelets and unconditional bases. Linear and threshold estimators. Oracle inequalities. Optimal recovery and universal thresholding. Stein's unbiased risk estimator and threshold choice. Complexity penalized model selection. Connecting fast wavelet algorithms and theory. Beyond orthogonal bases.

STATS 325. Multivariate Analysis and Random Matrices in Statistics. 3 Units.
Topics on Multivariate Analysis and Random Matrices in Statistics (full description TBA).

STATS 334. Mathematics and Statistics of Gambling. 3 Units.
Probability and statistics are founded on the study of games of chance. Nowadays, gambling (in casinos, sports and the Internet) is a huge business. This course addresses practical and theoretical aspects. Topics covered: mathematics of basic random phenomena (physics of coin tossing and roulette, analysis of various methods of shuffling cards), odds in popular games, card counting, optimal tournament play, practical problems of random number generation. Prerequisites: Statistics 116 and 200.
Same as: MATH 231

STATS 345. Statistical and Machine Learning Methods for Genomics. 3 Units.
Introduction to statistical and computational methods for genomics. Sample topics include: expectation maximization, hidden Markov model, Markov chain Monte Carlo, ensemble learning, probabilistic graphical models, kernel methods and other modern machine learning paradigms. Rationales and techniques illustrated with existing implementations used in population genetics, disease association, and functional regulatory genomics studies. Instruction includes lectures and discussion of readings from primary literature. Homework and projects require implementing some of the algorithms and using existing toolkits for analysis of genomic datasets.
Same as: BIO 268, BIOMEDIN 245, CS 373

STATS 350. Topics in Probability Theory. 3 Units.
See http://statweb.stanford.edu/~adembo/stat-350/concentration/ Selected topics of contemporary research interest in probability theory. May be repeated once for credit. Prerequisite: 310A or equivalent.

STATS 352. Topics in Computing for Data Science. 3 Units.
A seminar-style course jointly supported by the Statistics department and Stanford Data Science, and suitable for doctoral students engaged in either research on data science techniques (statistical or computational, for example) or research in scientific fields relying on advanced data science to achieve its goals. Seminars will usually consist of a student presentation of a relevant technical topic followed by discussion of the topic by all. Topics will be assigned to individuals to combine relevance for the course and suitability to the individual student's background and research interests. Prerequisites: Competence in the basic data science needed for the student's research goals plus preparation for presenting a suitable topic. Before enrolling, participants should have a topic approved as prescribed on the website https://stat352.stanford.edu.

STATS 359. Topics in Mathematical Physics. 3 Units.
Covers a list of topics in mathematical physics. The specific topics may vary from year to year, depending on the instructor's discretion. Background in graduate level probability theory and analysis is desirable.
Same as: MATH 273

STATS 360. Advanced Statistical Methods for Earth System Analysis. 3 Units.
Introduction for graduate students to important issues in data analysis relevant to earth system studies. Emphasis on methodology, concepts and implementation (in R), rather than formal proofs. Likely topics include the bootstrap, non-parametric methods, regression in the presence of spatial and temporal correlation, extreme value analysis, time-series analysis, high-dimensional regressions and change-point models. Topics subject to change each year. Prerequisites: STATS 110 or equivalent.
Same as: ESS 260

STATS 361. Causal Inference. 3 Units.
This course covers statistical underpinnings of causal inference, with a focus on experimental design and data-driven decision making. Topics include randomization, potential outcomes, observational studies, propensity score methods, matching, double robustness, semiparametric efficiency, treatment heterogeneity, structural models, instrumental variables, principal stratification, mediation, regression discontinuities, synthetic controls, interference, sensitivity analysis, policy learning, dynamic treatment rules, invariant prediction, graphical models, and structure learning. We will also discuss the relevance of optimization and machine learning tools to causal inference. Prerequisite: STATS 300A, or equivalent graduate-level coursework on the theory of statistics.

STATS 362. Topic: Monte Carlo. 3 Units.
Random numbers and vectors: inversion, acceptance-rejection, copulas. Variance reduction: antithetics, stratification, control variates, importance sampling. MCMC: Markov chains, detailed balance, Metropolis-Hastings, random walk Metropolis,nnindependence sampler, Gibbs sampling, slice sampler, hybrids of Gibbs and Metropolis, tempering. Sequential Monte Carlo. Quasi-Monte Carlo. Randomized quasi-Monte Carlo. Examples, problems and motivation from Bayesian statistics,nnmachine learning, computational finance and graphics. May be repeat for credit.

STATS 363. Design of Experiments. 3 Units.
Experiments vs observation. Confounding. Randomization. ANOVA.Blocking. Latin squares. Factorials and fractional factorials. Split plot. Response surfaces. Mixture designs. Optimal design. Central composite. Box-Behnken. Taguchi methods. Computer experiments and space filling designs. Prerequisites: probability at STATS 116 level or higher, and at least one course in linear models.
Same as: STATS 263

STATS 364. Theory and Applications of Selective Inference. 3 Units.
This course focuses on the problem of inference under the presence of multiplicity or selection. Topics covered include classical topics multiple comparisons (FWER, FDR, FCR) as well as newer methods such as knockoffs. We will also cover inference when targeted parameters are determined only after inspection of the data, considering both conditional and simultaneous approaches. Both theoretical and computational considerations will be stressed throughout the course. Prerequisite: STATS 200 or equivalent.

STATS 366. Modern Statistics for Modern Biology. 3 Units.
Application based course in nonparametric statistics. Modern toolbox of visualization and statistical methods for the analysis of data, examples drawn from immunology, microbiology, cancer research and ecology. Methods covered include multivariate methods (PCA and extensions), sparse representations (trees, networks, contingency tables) as well as nonparametric testing (Bootstrap, permutation and Monte Carlo methods). Hands on, use R and cover many Bioconductor packages. Prerequisite: Working knowledge of R and two core Biology courses. Note that the 155 offering is a writing intensive course for undergraduates only and requires instructor consent. (WIM).
Same as: BIOS 221, STATS 155, STATS 256

STATS 367. Statistical Models in Genetics. 3 Units.
This course will cover statistical problems in population genetics and molecular evolution with an emphasis on coalescent theory. Special attention will be paid to current research topics, illustrating the challenges presented by genomic data obtained via high-throughput technologies. No prior knowledge of genomics is necessary. Familiarity with the R statistical package or other computing language is needed for homework assignments. Prerequisites: knowledge of probability through elementary stochastic processes and statistics through likelihood theory.

STATS 368. Empirical Process Theory and its Applications. 3 Units.
This course is on the theory of empirical processes. In the course we will focus on weak convergence of stochastic processes, M-estimation and empirical risk minimization. The course will cover topics like covering numbers and bracketing numbers, maximal inequalities, chaining and symmetrization, uniform law of large numbers and uniform central limit theorems, rates of convergence of MLEs and (penalized) least squares estimators, and concentration inequalities.

STATS 369. Methods from Statistical Physics. 3 Units.
Mathematical techniques from statistical physics have been applied with increasing success on problems form combinatorics, computer science, machine learning. These methods are non-rigorous, but in several cases they were proved to yield correct predictions. This course provides a working knowledge of these methods for non-physicists. Specific topics: the Sherrington-Kirkpatrick model; sparse regression with random designs;.

STATS 370. A Course in Bayesian Statistics. 3 Units.
This course will treat Bayesian statistics at a relatively advanced level. Assuming familiarity with standard probability and multivariate distribution theory, we will provide a discussion of the mathematical and theoretical foundation for Bayesian inferential procedures. In particular, we will examine the construction of priors and the asymptotic properties of likelihoods and posterior distributions. The discussion will include but will not be limited to the case of finite dimensional parameter space. There will also be some discussions on the computational algorithms useful for Bayesian inference. Prerequisites: Stats 116 or equivalent probability course, plus basic programming knowledge; basic calculus, analysis and linear algebra strongly recommended; Stats 200 or equivalent statistical theory course desirable.
Same as: STATS 270

STATS 371. Applied Bayesian Statistics. 3 Units.
This course is a modern treatment of applied Bayesian statistics with a focus on high-dimensional problems. We will study a collection of canonical methods that see heavy use in applications, including high-dimensional linear and generalized linear models, hierarchical/random effects models, Gaussian processes, variable-dimension and Dirichlet process mixtures, graphical models, and methods used in Bayesian inverse problems. Each method will be accompanied by one or more motivating datasets. Through these examples the course will cover: (1) Bayesian hypothesis testing, multiplicity correction, selection, shrinkage, and model averaging; (2) prior choice; (3) Frequentist properties of Bayesian procedures in high dimensions; and (4) computation by Markov chain Monte Carlo, including constructing efficient Gibbs, Metropolis, and more exotic samplers, empirical convergence analysis, strategies for scaling computation to high dimensions (approximations, divide-and-conquer, minibatching, et cetera), and the theory of convergence rates.
Same as: STATS 271

STATS 374. Large Deviations Theory. 3 Units.
Combinatorial estimates and the method of types. Large deviation probabilities for partial sums and for empirical distributions, Cramer's and Sanov's theorems and their Markov extensions. Applications in statistics, information theory, and statistical mechanics. Prerequisite: MATH 230A or STATS 310. Offered every 2-3 years. http://statweb.stanford.edu/~adembo/large-deviations/.
Same as: MATH 234

STATS 376A. Information Theory. 3 Units.
(Formerly EE 376A.) Project-based course about how to measure, represent, and communicate information effectively. Why bits have become the universal currency for information exchange. How information theory bears on the design and operation of modern-day systems such as smartphones and the Internet. The role of entropy and mutual information in data compression, communication, and inference. Practical compressors and error correcting codes. The information theoretic way of thinking. Relations and applications to probability, statistics, machine learning, biological and artificial neural networks, genomics, quantum information, and blockchains. Prerequisite: a first undergraduate course in probability.
Same as: EE 276

STATS 376B. Topics in Information Theory and Its Applications. 3 Units.
Information theory establishes the fundamental limits on compression and communication over networks. The tools of information theory have also found applications in many other fields, including probability and statistics, computer science and physics. The course will cover selected topics from these applications, including communication networks, through regular lectures and student projects. Prerequisites: EE276 (Formerly EE376A).
Same as: EE 376B

STATS 385. Analyses of Deep Learning. 1 Unit.
Deep learning is a transformative technology that has delivered impressive improvements in image classification and speech recognition. Many researchers are trying to better understand how to improve prediction performance and also how to improve training methods. Some researchers use experimental techniques; others use theoretical approaches. In this course we will review both experimental and theoretical analyses of deep learning. We will have 8-10 guest lecturers as well as graded projects for those who take the course for credit.

STATS 390. Consulting Workshop. 1 Unit.
Skills required of practicing statistical consultants, including exposure to statistical applications. Students participate as consultants in the department's drop-in consulting service, analyze client data, and prepare formal written reports. Seminar provides supervised experience in short term consulting. May be repeated for credit. Prerequisites: course work in applied statistics or data analysis, and consent of instructor.

STATS 397. PhD Oral Exam Workshop. 1 Unit.
For Statistics PhD students defending their dissertation.

STATS 398. Industrial Research for Statisticians. 1 Unit.
Doctoral research as in 399, but must be conducted for an off-campus employer. A final report acceptable to the advisor outlining work activity, problems investigated, key results, and any follow-up projects they expect to perform is required. The report is due at the end of the quarter in which the course is taken. May be repeated for credit. Prerequisite: Statistics Ph.D. candidate.

STATS 399. Research. 1-10 Unit.
Research work as distinguished from independent study of nonresearch character listed in 199. May be repeated for credit.

STATS 801. TGR Project. 0 Units.
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STATS 802. TGR Dissertation. 0 Units.
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SYMBOLIC SYSTEMS

Courses offered by the Symbolic Systems Program are listed under the subject code SYMSYS on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=SYMSYS&filter-catalognumber-SYMSYS=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=SYMSYS&filter-catalognumber-SYMSYS=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=SYMSYS&filter-catalognumber-SYMSYS=on).

The observation that both human beings and computers can manipulate symbols lies at the heart of Symbolic Systems, an interdisciplinary program focusing on the relationship between natural and artificial systems that represent, process, and act on information. Computer programs, natural languages, the human mind, and the Internet embody concepts whose study forms the core of the Symbolic Systems curriculum, such as computation, representation, communication, and intelligence. A body of knowledge and theory has developed around these notions, from disciplines such as philosophy, computer science, linguistics, psychology, statistics, neurobiology, and communication. Since the invention of computers, researchers have been working across these disciplines to study questions such as: in what ways are computers and computer languages like human beings and their languages; how can the interaction between people and computers be made easier and more beneficial?

The core requirements of the Symbolic Systems Program (SSP) include courses in symbolic logic, the philosophy of mind, formal linguistics, cognitive psychology, programming, the mathematics of computation, statistical theory, artificial intelligence, and interdisciplinary approaches to cognitive science. These courses prepare students with the vocabulary, theoretical background, and technical skills needed for study and research at the advanced undergraduate and graduate levels. Most of the courses in SSP are drawn from affiliated departments. Courses designed specifically for the program are aimed at integrating and supplementing topics covered by the department-based offerings. The curriculum includes humanistic approaches to questions about language and intelligence, as well as training in science and engineering.

SSP offers B.S. and M.S. degree programs. Both programs require students to master a common core of required courses and to choose an area of specialization.

Mission of the Undergraduate Program in Symbolic Systems

The undergraduate program in Symbolic Systems is an interdisciplinary program focusing on the relationships between natural and artificial systems that use symbols to communicate and to represent information. The mission of the program is to prepare majors with the vocabulary, theoretical background, and technical skills necessary to research questions about language, information, and intelligence, both human and machine. The curriculum offers a combination of traditional humanistic approaches to these questions as well as a training and familiarity with contemporary developments in the science and technology of computation. Students in the major take courses in cognitive science, computer programming, logic and computational theory, probability, cognitive psychology, philosophy of mind, linguistics, and artificial intelligence. The program prepares students for a variety of careers in the private and public sectors, especially those involving the human-facing sides of information systems/technology, as well as for further study and research in the cognitive and/or information sciences.

Learning Outcomes (Undergraduate)

The program expects its undergraduate majors to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the Symbolic Systems Program. Students are expected to demonstrate:

1. ability to apply formal, philosophical, and/or computational analysis to experimental designs and data and vice versa.

2. ability to understand multiple formal, philosophical, and/or computational frameworks and how they are related to each other.

3. ability to map real world problems or observed phenomena onto formal, philosophical and/or computational frameworks and vice versa.

Learning Outcomes (Graduate)

The purpose of the master's program is to further develop knowledge and skills in Symbolic Systems and to prepare students for a professional career or doctoral studies. This is achieved through completion of courses representing each of the core disciplines of Symbolic Systems as well as an individualized course program in support of the completion of a Master's thesis.

Bachelor of Science in Symbolic Systems

The program offers a Bachelor of Science in Symbolic Systems, as well as an Bachelor of Science with Honors in Symbolic Systems (p. 2179) and a Minor in Symbolic Systems (p. 2180). A major in Symbolic Systems qualifies as a Science, Technology, Engineering, and Mathematics (STEM) major under the U.S. Department of Homeland Security's Designated Degree Programs (https://studyinthestates.dhs.gov/eligible-cip-codes-for-the-stem-opt-extension/) list of STEM programs. Depending on the plan of study, Sym Sys students can be classified as studying Cognitive Science (2010 CIP Code 30.2501) and/or Informatics (2010 CIP Code 11.0104).

Students declaring the major prior to 2020-21 should consult previous Stanford Bulletins (http://exploredegrees.stanford.edu/archive/#text) for degree requirements. Such students should consult the student services office if they want to change to the new requirements.

How to Declare the Major

To declare a major in Symbolic Systems, a student must:

- Be enrolled in or have completed SYMSYS 1 Minds and Machines
- Declare the major in Axess, and have the declaration approved by the program student services officer.
- Submit a preliminary Course Plan (https://symsys.stanford.edu/undergraduates/forms/) form for the major to a declaration interview with one of the Advising Fellows (https://symsys.stanford.edu/undergraduates/advising-fellows/) or with the Associate Director of the Program; see the calendar of Office Hours (https://symsys.stanford.edu/undergraduatesundergrad-advisingadvising-fellows/advising-office-hours/) on the Symsys website for possible interview times.

Advising

Upon declaration approval, students are assigned to both the Program Director and Associate Director as major advisors. The student must also select and confirm a concentration advisor.

- Declared majors have until the Autumn Quarter of their junior year to select a concentration advisor. Juniors declaring the major must have a concentration advisor confirmed at the time of declaration.
- A hold is placed on Winter Quarter registration for juniors who do not have a concentration advisor by Autumn Quarter of their junior year.

(See the COVID-19 Policies (p. 2182) tab for a one-year extension to Winter Quarter for this requirement.)

- Any individual with an ongoing instructional appointment at Stanford (listed as such in Chapters 2, 6, or 9 of the Faculty Handbook (https://facultyhandbook.stanford.edu/)) may serve as the concentration advisor. To confirm a concentration advisor after an eligible faculty member has agreed to fill this role, student must send an email message to symsys-sso@stanford.edu and the concentration advisor, including a statement of how the student plans to fulfill the capstone requirement of the major. Changes to capstone plans require the approval of the concentration advisor.

Degree Requirements

The Symbolic Systems major requires completion of:

- The core: a common set of foundations, breadth requirements, and experiential requirements that all students in the program must complete
- An approved concentration: depth in a particular specialization chosen by the student. See a list of Concentrations (p. 2159) below.

Students must submit a course plan to the student services officer for Symbolic Systems at least two quarters prior to the planned graduation date, listing courses taken or that will be completed to fulfill the course requirements for the major.

Students must obtain approval for any courses not listed as approved for a major requirement.

All courses taken to fulfill a major requirement for Symbolic Systems must be passed for 3 units or more, with either a letter grade ('C-' or better for core courses, and a 'D-' or above for concentration courses) a no-option pass grade ('S' or its equivalent in the Graduate School of Business, Stanford Law School, or School of Medicine, or in an approved transfer credit course from another institution. A 'CR' cannot be used to fulfill a major requirement for Symbolic Systems), except as modified by the COVID-19 policies in effect during 2020-21. Students who have already completed a required course with a 'CR' grade may file a Replacement Petition to take a course in the same subject area at the same or a higher level in order to avoid having to retake the course.

Unless otherwise stated, each course that is counted for the major must be taken for 3 units or more. Taking a course for 3 units is sufficient unless the requirement specifically states otherwise.

Each course taken for the major may be counted toward at most one required course in either the Core or Concentration (not both), except in cases where double-counting is explicitly allowed.

Students in a dual degree program (p. 32), students taking a minor, or students in coterminal program (p. 56), may not double-count courses towards different degree programs or minors unless a course is an introductory skill requirement (https://symsys.stanford.edu/undergraduatesminor-requirements/introductory-skill-requirements/) for both majors.

The program is open to requests to approving courses not listed as options to fulfill major requirements. Consult the student services office for details of this process.

Core

Core requirements are typically completed earlier than a student's concentration, but the only requirements that impose explicit restrictions on when a course can be completed during a student's undergraduate career are the gateway and capstone requirements.

Course Requirements

		Units
1. Preparations		**4**
These courses should be completed early in the major.		
a. Gateway Course		
SYMSYS 1	Minds and Machines	4
b. Single Variable Calculus		**10**
One of the following:		
MATH 19, MATH 20, and MATH 21 (or MATH 21A): Calculus		
10 units of Advanced Placement Calculus credit		
Placement by the Mathematics Placement Diagnostic into MATH 20 or MATH 21 and completion of the rest of the series, or into MATH 51		
c. Multivariate Systems		**3-6**
One of the following:		
CME 100	Vector Calculus for Engineers	5
CME 100A	Vector Calculus for Engineers, ACE	6
MATH 51	Linear Algebra, Multivariable Calculus, and Modern Applications	5
MATH 51A	Linear Algebra, Multivariable Calculus, and Modern Applications, ACE	6
MATH 61CM	Modern Mathematics: Continuous Methods	5
MATH 61DM	Modern Mathematics: Discrete Methods	5
d. Further Study in Multivariate Systems		**3-5**
Optional, but recommended, and may be used as contingent electives in a concentration. One or more of the following courses, which may be needed as preparation for some Core options and other advanced courses in the major.		
CME 102	Ordinary Differential Equations for Engineers (and (optionally) CME 104)	5
CME 102A	Ordinary Differential Equations for Engineers, ACE (, ACE, and (optionally) CME 104A, ACE)	6
CME 104	Linear Algebra and Partial Differential Equations for Engineers	5
ENGR 108	Introduction to Matrix Methods (formerly CME 103)	3-5
MATH 52	Integral Calculus of Several Variables	5
MATH 53	Ordinary Differential Equations with Linear Algebra	5
MATH 62CM	Modern Mathematics: Continuous Methods	5
MATH 62DM	Modern Mathematics: Discrete Methods	5
MATH 63CM	Modern Mathematics: Continuous Methods	5
MATH 104	Applied Matrix Theory	3
MATH 113	Linear Algebra and Matrix Theory	3
2. Breadth Requirements		**9-15**
One three quarter sequence of training in each of four methodological areas, plus a Cross-Area Requirement.		
a. Philosophical Analysis		
i. An introductory course in the Philosophy Department		
One of the following:		
Any course listed with a PHIL number (with the exception of PHIL 99/SYMSYS 1)		
THINK 69	Emotion	4
ii. Writing in the Major (WIM) course		
PHIL 80	Mind, Matter, and Meaning	5
iii. An advanced undergraduate Philosophy course that lists PHIL 80 as a prerequisite		
One of the following:		

PHIL 107B	Plato's Later Metaphysics and Epistemology	4
PHIL 167D	Philosophy of Neuroscience	4
PHIL 172	History of Modern Moral Philosophy	4
PHIL 173B	Metaethics	4
PHIL 175	Philosophy of Law	4
PHIL 180	Metaphysics	4
PHIL 180A	Realism, Anti-Realism, Irrealism, Quasi-Realism	4
PHIL 181	Philosophy of Language	4
PHIL 182	Advanced Philosophy of Language	4
PHIL 182A	Naturalizing Representation	4
PHIL 182H	Truth	4
PHIL 184	Topics in Epistemology	4
PHIL 186	Philosophy of Mind	4
PHIL 187	Philosophy of Action	4
PHIL 189G	Fine-Tuning Arguments for God's Existence	4

b. Formal Methods

Courses that focus on rigorous definitions, axioms, theorems, and proofs, and their use in developing mathematical theories and meta-theories. Each of the following:

i. Formal Logic

One of the following:

CS 157	Computational Logic	3
PHIL 150	Mathematical Logic	4
PHIL 151	Metalogic (Prerequisite: PHIL 150 or instructor permission)	4

ii. Theory of Computation. One of the following:

CS 103	Mathematical Foundations of Computing (Corequisite: CS 106B or X)	3-5
CS 154	Introduction to the Theory of Computation (Prerequisite: CS 103 or significant proof-writing experience.)	3-4

iii. Probability Theory and Statistics

A course that covers the theory of probability and is grounded in multivariable calculus. One of the following:

CME 106	Introduction to Probability and Statistics for Engineers	4
CS 109	Introduction to Probability for Computer Scientists	3-5
EE 178	Probabilistic Systems Analysis	3-4
MATH 151	Introduction to Probability Theory	3
MATH 63DM	Modern Mathematics: Discrete Methods	5
MS&E 120	Introduction to Probability	4
MS&E 220	Probabilistic Analysis	3-4
STATS 110	Statistical Methods in Engineering and the Physical Sciences	5
STATS 116	Theory of Probability	4

c. Computational Methods

Courses that focus on software design, data structures, algorithms, development, applications, evaluation, and simulation. Each of the following:

i. Programming 1

One of the following:

CS 106A	Programming Methodology	3-5

Equivalent preparation, as evidenced by successful completion of CS 106B or 106X

ii. Programming II

One of the following:

CS 106B	Programming Abstractions	3-5
CS 106X	Programming Abstractions (Accelerated)	3-5

iii. A post CS 106B course covering one or more broad computational methods with a programming component.

One of the following:

CS 107	Computer Organization and Systems	3-5
CS 107E	Computer Systems from the Ground Up	3-5
CS 129	Applied Machine Learning	3-4
CS 147	Introduction to Human-Computer Interaction Design (Plus one of the following:)	3-5
CS 193A	Android Programming	3
CS 193C	Client-Side Internet Technologies	3
CS 193P	iOS Application Development	3
CS 193X	Web Programming Fundamentals	3
CS 194H	User Interface Design Project	3-4
CS 221	Artificial Intelligence: Principles and Techniques	3-4
CS 229	Machine Learning	3-4

d. Empirical Cognitive Science

Courses that focus on questions, hypotheses, models, predictions, and explanations that are derived from or testable in neural and behavioral data. Each of the following:

i. Overview of psychology.

PSYCH 1	Introduction to Psychology	5

ii. An introductory area course in cognition, language, and neuroscience.

One of the following:

BIO 150	Human Behavioral Biology	5
LINGUIST 145	Introduction to Psycholinguistics	4
LINGUIST 150	Language and Society	3-4
PSYCH 30	Introduction to Perception	4
PSYCH 45	Introduction to Learning and Memory	3
PSYCH 50	Introduction to Cognitive Neuroscience	4
PSYCH 60	Introduction to Developmental Psychology	3
PSYCH 70	Self and Society: Introduction to Social Psychology	4
PSYCH 75	Introduction to Cultural Psychology	5
PSYCH 141	Cognitive Development	3
PSYCH 154	Judgment and Decision-Making	3

iii. Linguistic Theory

A course introducing a core area of theoretical inquiry in linguistics. One of the following:

LINGUIST 105	Phonetics	4
LINGUIST 110	Introduction to Phonology	4
LINGUIST 120	Introduction to Syntax	4
LINGUIST 130A	Introduction to Semantics and Pragmatics	4
LINGUIST 130B	Introduction to Lexical Semantics	3-4

Additional approved undergraduate courses offered on a semi-regular basis:

LINGUIST 21N	Linguistic Diversity and Universals: The Principles of Language Structure	3
LINGUIST 30N	Linguistic Meaning and the Law	3
LINGUIST 121A	The Syntax of English	4
LINGUIST 121B	Crosslinguistic Syntax	4
LINGUIST 134A	The Structure of Discourse: Theory and Applications	2-4
LINGUIST 160	Introduction to Language Change	2-4

Cross-Area Requirement

A non-introductory course, which has as a prerequisite at least one Core course (or equivalent), and which combines methods and subject matter from at least two Breadth areas in the Core. One of the following:		
i. Suggested courses for most students		
Only one course must be chosen to fulfill the requirement - categories are for guidance only:		
CS 147	Introduction to Human-Computer Interaction Design	3-5
CS 229	Machine Learning	3-4
LINGUIST 130A	Introduction to Semantics and Pragmatics	4
LINGUIST 180	From Languages to Information	3-4
PHIL 152	Computability and Logic	4
PHIL 154	Modal Logic	4
PHIL 167D	Philosophy of Neuroscience	4
PHIL 181	Philosophy of Language	4
PSYCH 204	Computation and Cognition: The Probabilistic Approach	3
PSYCH 209	Neural Network Models of Cognition	4
ii. Any other course on the full list of courses approved for this requirement below.		
3. Experiential Requirements		
Each of the following:		
a. Advanced Small Seminar Requirement.		
An approved course which (a) builds on the Core Preparations and Breadth Requirements, (b) is small -- 20 students or fewer, and (c) is an interactive, discussion-based seminar. May be double-counted for an applicable Concentration requirement, but not for a Core requirement.		
b. Capstone		
A two-course requirement consisting of the following components, chosen in consultation with and approved by a student's Concentration Advisor (3 or more units each):		
i. Practicum		
A project or internship-accompanying course. One of the following:		
SYMSYS 190	Senior Honors Tutorial	1-5
An approved project course with a SYMSYS listing in the 195-series. Any of the following:		
SYMSYS 195A	Design for Artificial Intelligence	3-4
SYMSYS 195B	Design for Behavior Change	3-4
SYMSYS 195D	Research in Digital Democracy	3-4
SYMSYS 195E	Experimental Methods	3
SYMSYS 195G	Introduction to Game Design	3-4
SYMSYS 195I	Image Systems Engineering	1-3
SYMSYS 195L	Methods in Psycholinguistics	4
SYMSYS 195N	Natural Language Processing with Deep Learning	3-4
SYMSYS 195S	Service Design	3-4
SYMSYS 195U	Natural Language Understanding	3-4
SYMSYS 195V	Data Visualization	3-4
Supervised Research		
Taken with a faculty member on an approved symbolic-systems related project, taken as SYMSYS 196: Independent Study, or a department-based directed research course.		
SYMSYS 192: Symbolic Systems in Practice (must be taken in conjunction with an approved internship or service project)		
ii. Integrative Requirement		
Either an additional research project course (e.g., the second course of an Honors Project) or a Concentration-Specific Integrative Course, which must be completed no earlier than the Junior Year. Units must be applied to a student's concentration.		
One of the following (the first three bulleted options are the Standard Options available across all Concentrations):		
SYMSYS 190	Senior Honors Tutorial (continuation of the course taken for the Practicum requirement)	1-5
An approved project course with a SYMSYS listing in the 195-series		
(See list under "Practicum" above - may be either the second quarter of a 2-quarter course, or a one-quarter course)		
Supervised research with a faculty member on an approved symbolic-systems related project, taken as SYMSYS 196 Independent Study, or a department-based directed research course (may be either the second quarter of a 2-quarter course or a one-quarter course)		
An approved Concentration-Specific Integrative Course taken within a Concentration.		
Total Units		**75-90**

Full List of Cross-Area Requirement Courses

		Units
Cross-Area Requirement		
The full list of approved courses for the Cross-Area Requirement.		
Only one course must be chosen to fulfill the requirement - categories are for guidance only:		
Philosophical Analysis and Formal Methods		
PHIL 152	Computability and Logic	4
PHIL 154	Modal Logic	4
PHIL 162	Philosophy of Mathematics	4
PHIL 181	Philosophy of Language	4
Philosophical Analysis and Computational Methods		
CS 181	Computers, Ethics, and Public Policy	4
CS 182	Ethics, Public Policy, and Technological Change	5
PHIL 152	Computability and Logic	4
PHIL 167D	Philosophy of Neuroscience	4
Philosophical Analysis and Empirical Cognitive Science		
PHIL 167D	Philosophy of Neuroscience	4
PHIL 181	Philosophy of Language	4
PHIL 186	Philosophy of Mind	4
Formal Methods and Computational Methods		
CS 151	Logic Programming	3
CS 154	Introduction to the Theory of Computation	3-4
CS 161	Design and Analysis of Algorithms	3-5
CS 229	Machine Learning	3-4
CS 238	Decision Making under Uncertainty	3-4
LINGUIST 130A	Introduction to Semantics and Pragmatics	4
LINGUIST 180	From Languages to Information	3-4
PHIL 152	Computability and Logic	4
PHIL 154	Modal Logic	4
PSYCH 204	Computation and Cognition: The Probabilistic Approach	3
PSYCH 209	Neural Network Models of Cognition	4
PSYCH 221	Image Systems Engineering	1-3
PSYCH 242	Theoretical Neuroscience	3
PHIL 249	Evidence and Evolution	3-5

Formal Methods and Empirical Cognitive Science		
PSYCH 253	Advanced Statistical Modeling	3
CS 229	Machine Learning	3-4
ECON 178	Behavioral Economics	5
LINGUIST 130A	Introduction to Semantics and Pragmatics	4
LINGUIST 180	From Languages to Information	3-4
PHIL 154	Modal Logic	4
PHIL 181	Philosophy of Language	4
PSYCH 204	Computation and Cognition: The Probabilistic Approach	3
PSYCH 209	Neural Network Models of Cognition	4
PSYCH 221	Image Systems Engineering	1-3
PSYCH 242	Theoretical Neuroscience	3
PSYCH 249	Large-Scale Neural Network Modeling for Neuroscience	1-3
PSYCH 253	Advanced Statistical Modeling	3
Computational Methods and Empirical Cognitive Science		
CS 147	Introduction to Human-Computer Interaction Design	3-5
CS 229	Machine Learning	3-4
CS 448B	Data Visualization	3-4
LINGUIST 130A	Introduction to Semantics and Pragmatics	4
LINGUIST 180	From Languages to Information	3-4
PHIL 167D	Philosophy of Neuroscience	4
PSYCH 164	Brain decoding	3
PSYCH 204	Computation and Cognition: The Probabilistic Approach	3
PSYCH 209	Neural Network Models of Cognition	4
PSYCH 221	Image Systems Engineering	1-3
PSYCH 204A	Human Neuroimaging Methods	3
PSYCH 242	Theoretical Neuroscience	3
PSYCH 249	Large-Scale Neural Network Modeling for Neuroscience	1-3
PSYCH 253	Advanced Statistical Modeling	3

Concentration Areas

Please note: the concentrations areas are being revised, and new ones being added.

Applied Logic

See also the Symbolic Systems website (https://symsys.stanford.edu/undergraduatesconcentrations/applied-logic-al-concentration/).

Symbolic Systems majors completing the new Core requirements effective for 2020-2021 must complete the following requirements to qualify for a Concentration in Applied Logic. All courses must be taken for 3 units of more.

Metalogic		**3-5**
PHIL 151	Metalogic	
Computability		**3-5**
Select one of the following:		
CS 154	Introduction to the Theory of Computation	
PHIL 152	Computability and Logic	
Computational Approaches to Logic		**3-5**
Select one of the following:		
CS 151	Logic Programming	
CS 157	Computational Logic	
Set Theory		**3-5**
MATH 161	Set Theory	
Integrative Requirement. Must be completed no earlier than the Junior Year.		**3-5**
i. Any of the Standard Options for all Concentrations specified under the Core Capstone requirement, or		
ii. A Concentration-Specific Integrative Course: A course that integrates the themes of the Concentration with the Core requirements. Select one of the following (with more options to be added as they are approved -- some options may be removed if they are included in the list of SYMSYS 195* project courses, in order to avoid redundancy with the Standard Options).		
CS 151	Logic Programming	
CS 163	The Practice of Theory Research	
CS 204	Computational Law	
CS 227B	General Game Playing	
CS 228	Probabilistic Graphical Models: Principles and Techniques	
CS 242	Programming Languages	
CS 254	Computational Complexity	
CS 358A	Programming Language Foundations	
LINGUIST 130A	Introduction to Semantics and Pragmatics	
LINGUIST 230B	Advanced Semantics	
PHIL 154	Modal Logic	
PHIL 162	Philosophy of Mathematics	
PHIL 184B	Formal Epistemology	
PHIL 351D	Measurement Theory	
PHIL 356C	Logic and Artificial Intelligence	
PHIL 359	Topics in Logic, Information and Agency	
PSYCH 204	Computation and Cognition: The Probabilistic Approach	
PSYCH 293	What makes a good explanation? Psychological and philosophical perspectives	
Contingent Electives		**3-5**
If any of requirements 1-4 are fulfilled with courses taken for Core requirements, then additional approved Contingent Elective courses must be completed to total 5 courses beyond those that are taken for the Core. These electives can be one or more courses from any of the areas above, or which are approved for a Core requirement that the student has fulfilled with a different course, or any of the following:		
CS 254B	Computational Complexity II	
LINGUIST 230C	Advanced Topics in Semantics & Pragmatics	
MATH 56	Proofs and Modern Mathematics	
Additional courses may be added here in the future.		
Total Units		**15-25**

Artificial Intelligence

See also the Symbolic Systems website (https://symsys.stanford.edu/undergraduatesconcentrations/artificial-intelligence-ai-concentration/).

Symbolic Systems majors completing the new Core requirements effective for 2020-21 must complete the following requirements to qualify for a Concentration in Artificial Intelligence. All courses must be taken for 3 units of more.

Students in this Concentration are urged to take CS 161, either for the Core Cross-Area Requirement, or as a Contingent Elective, and prior to taking CS 221.		
Programming		**3-5**
Select one of the following:		

CS 107	Computer Organization and Systems	
CS 107E	Computer Systems from the Ground Up	
Introduction		**3-5**
CS 221	Artificial Intelligence: Principles and Techniques	
Artificial Intelligence Depth		**3-5**
Two courses chosen from the "select" list of AI courses (category B of the MSCS AI Track):		
CS 223A	Introduction to Robotics	
CS 224N	Natural Language Processing with Deep Learning	
CS 224S	Spoken Language Processing	
CS 224U	Natural Language Understanding	
CS 224W	Machine Learning with Graphs	
CS 228	Probabilistic Graphical Models: Principles and Techniques	
CS 229	Machine Learning	
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	
CS 231N	Convolutional Neural Networks for Visual Recognition	
CS 234	Reinforcement Learning	
CS 238	Decision Making under Uncertainty	
Integrative Requirement		**3-5**
Must be completed no earlier than the Junior Year		
i. Any of the Standard Options for all Concentrations specified under the Core Capstone requirement, or		
ii. A Concentration-Specific Integrative Course: A course that integrates the themes of the Concentration with the Core requirements. Select one of the following (with more options to be added as they are approved -- some options may be removed if they are included in the list of SYMSYS 195* project courses, in order to avoid redundancy with the Standard Options).		
COMM 324	Language and Technology	
COMM 326	Advanced Topics in Human Virtual Representation	
CS 131	Computer Vision: Foundations and Applications	
CS 181	Computers, Ethics, and Public Policy	
CS 182	Ethics, Public Policy, and Technological Change	
CS 229M	Machine Learning Theory	
CS 325B	Data for Sustainable Development	
CS 329D	Machine Learning Under Distributional Shifts	
CS 379C	Computational Models of the Neocortex	
LINGUIST 180	From Languages to Information	
MUSIC 220C	Research Seminar in Computer-Generated Music	
NENS 220	Computational Neuroscience	
PHIL 356C	Logic and Artificial Intelligence	
PHIL 359	Topics in Logic, Information and Agency	
PSYCH 164	Brain decoding	
PSYCH 204	Computation and Cognition: The Probabilistic Approach	
PSYCH 209	Neural Network Models of Cognition	
PSYCH 242	Theoretical Neuroscience	
PSYCH 247	Topics in Natural and Artificial Intelligence	
PSYCH 249	Large-Scale Neural Network Modeling for Neuroscience	
PSYCH 293	What makes a good explanation? Psychological and philosophical perspectives	
STATS 220	Machine Learning Methods for Neural Data Analysis	
SYMSYS 202	Theories of Consciousness	
Contingent Electives		**3-5**
If any of requirements 1-3 are fulfilled with courses taken for Core requirements, then additional approved Contingent Elective courses must be completed to total 5 courses beyond those that are taken for the Core. These electives can be one or more courses from any of the areas above, or which are approved for a Core requirement that the student has fulfilled with a different course, or any of the following:		
BIOMEDIN 210	Modeling Biomedical Systems	
BIOMEDIN 214	Representations and Algorithms for Computational Molecular Biology	
CS 217	Hardware Accelerators for Machine Learning	
CS 227B	General Game Playing	
CS 236	Deep Generative Models	
CS 246	Mining Massive Data Sets	
CS 330	Deep Multi-task and Meta Learning	
CS 348I	Computer Graphics in the Era of AI	
CS 348K	Visual Computing Systems	
LAW 4039	Regulating Artificial Intelligence	
MS&E 135	Networks	
MS&E 234	Data Privacy and Ethics	
MUSIC 220B	Compositional Algorithms, Psychoacoustics, and Computational Music	
MUSIC 220C	Research Seminar in Computer-Generated Music	
PHIL 20N	Philosophy of Artificial Intelligence	
STATS 200	Introduction to Statistical Inference	
STATS 202	Data Mining and Analysis	
STATS 315A	Modern Applied Statistics: Learning	
STATS 315B	Modern Applied Statistics: Data Mining	
Total Units		**15-25**

Biomedical Applications

See also the Symbolic Systems website (https://symsys.stanford.edu/undergraduatesconcentrations/biomedical-applications-biomed-concentration/).

Symbolic Systems majors completing the new Core requirements effective for 2020-2021 must complete the following requirements to qualify for a Concentration in Biomedical Applications. All courses must be taken for 3 units of more.

Philosophical and Ethical Inquiry		**3-5**
For example, any of the following:		
HUMBIO 174	Foundations of Bioethics	
HUMBIO 178A	Intro to Disability Studies: Disability and Technology	
NBIO 101	Social and Ethical Issues in the Neurosciences	
PHIL 85	Topics in Philosophy of Medicine	
PHIL 134A	Phenomenology: Animals	
PHIL 167D	Philosophy of Neuroscience	
PHIL 168M	Biological Individuality	
PHIL 178M	Introduction to Environmental Ethics	

PHIL 360	Grad Seminar: Philosophy of Neuroscience
PHIL 368A	Topics in Neuroscience
SYMSYS 202	Theories of Consciousness
SYMSYS 205	The Philosophy and Science of Perception

Theoretical and Mathematical Approaches **3-5**

For example, any of the following:

BIO 183	Theoretical Population Genetics
BIO 223	Stochastic and Nonlinear Dynamics
BIO 251	Quantitative Evolutionary Dynamics and Genomics
BIODS 215	Topics in Biomedical Data Science: Large-scale inference
BIOMEDIN 219	Mathematical Models and Medical Decisions
ECON 136	Market Design
EE 102A	Signal Processing and Linear Systems I
HUMBIO 88	Introduction to Statistics for the Health Sciences
HUMBIO 89	Introduction to Health Sciences Statistics
HUMBIO 154B	Principles of Epidemiology
MS&E 292	Health Policy Modeling
STATS 141	Biostatistics
STATS 215	Statistical Models in Biology

Computational and Design Methods **3-5**

For example, any of the following:

BIODS 220	Artificial Intelligence in Healthcare
BIOE 313	Neuromorphics: Brains in Silicon
BIOMEDIN 210	Modeling Biomedical Systems
BIOMEDIN 260	Computational Methods for Biomedical Image Analysis and Interpretation
BIOMEDIN 273B	Deep Learning in Genomics and Biomedicine
BIOMEDIN 279	Computational Biology: Structure and Organization of Biomolecules and Cells
CS 247B	Design for Behavior Change
CS 247S	Service Design
CS 273A	The Human Genome Source Code
CS 372	Artificial Intelligence for Disease Diagnosis and Information Recommendations
CS 379C	Computational Models of the Neocortex
CS 448B	Data Visualization
GENE 211	Genomics
HUMBIO 51	Big Data for Biologists - Decoding Genomic Function
HUMBIO 151R	Biology, Health and Big Data
PSYC 223B	Topics in Neurodiversity: Design Thinking Approaches
PSYCH 204B	Computational Neuroimaging
STATS 220	Machine Learning Methods for Neural Data Analysis
SYMSYS 245	Cognition in Interaction Design

Experimental and Observational Science

For example, any of the following:

BIO 81	Introduction to Ecology
BIO 82	Genetics
BIO 84	Physiology
BIO 150	Human Behavioral Biology
BIO 151	Mechanisms of Neuron Death
BIO 204	Neuroplasticity: From Synapses to Behavior
BIODS 215	Topics in Biomedical Data Science: Large-scale inference
HUMBIO 51	Big Data for Biologists - Decoding Genomic Function
HUMBIO 151R	Biology, Health and Big Data
HUMBIO 154B	Principles of Epidemiology
MS&E 292	Health Policy Modeling
NBIO 206	The Nervous System
PSYC 124	Brain Plasticity
PSYCH 30	Introduction to Perception
PSYCH 45	Introduction to Learning and Memory
PSYCH 50	Introduction to Cognitive Neuroscience
PSYCH 60	Introduction to Developmental Psychology
PSYCH 121	Ion Transport and Intracellular Messengers
PSYCH 162	Brain Networks
PSYCH 169	Advanced Seminar on Memory
PSYCH 202	Cognitive Neuroscience
PSYCH 204A	Human Neuroimaging Methods
PSYCH 232	Brain and Decision
PSYCH 254	Affective Neuroscience

Integrative Requirement **3-5**

Must be completed no earlier than the Junior Year.

i. Any of the Standard Options for all Concentrations specified under the Core Capstone requirement, or

ii. A Concentration-Specific Integrative Course: A course that integrates the themes of the Concentration with the Core requirements. Select one of the following (with more options to be added as they are approved -- some options may be removed if they are included in the list of SYMSYS 195* project courses, in order to avoid redundancy with the Standard Options).

BIOMEDIN 210	Modeling Biomedical Systems
BIOMEDIN 220	Artificial Intelligence in Healthcare
BIOMEDIN 260	Computational Methods for Biomedical Image Analysis and Interpretation
BIOMEDIN 273A	The Human Genome Source Code
BIOMEDIN 273B	Deep Learning in Genomics and Biomedicine
BIOMEDIN 279	Computational Biology: Structure and Organization of Biomolecules and Cells
COMM 326	Advanced Topics in Human Virtual Representation
CS 325B	Data for Sustainable Development
CS 372	Artificial Intelligence for Disease Diagnosis and Information Recommendations
CS 379C	Computational Models of the Neocortex
PHIL 167D	Philosophy of Neuroscience
PHIL 168M	Biological Individuality
PHIL 178M	Introduction to Environmental Ethics
PHIL 360	Grad Seminar: Philosophy of Neuroscience
PHIL 368A	Topics in Neuroscience
PSYC 223B	Topics in Neurodiversity: Design Thinking Approaches
PSYCH 121	Ion Transport and Intracellular Messengers
PSYCH 162	Brain Networks
PSYCH 169	Advanced Seminar on Memory
PSYCH 202	Cognitive Neuroscience
PSYCH 204A	Human Neuroimaging Methods
PSYCH 204B	Computational Neuroimaging

PSYCH 232	Brain and Decision
PSYCH 254	Affective Neuroscience
PSYCH 273	Changing Mindsets and Contexts: How to Create Authentic, Lasting Improvement
STATS 220	Machine Learning Methods for Neural Data Analysis
SYMSYS 245	Cognition in Interaction Design

Contingent Electives

If any of requirements 1-4 are fulfilled with courses taken for Core requirements, then additional approved Contingent Elective courses must be completed to total 5 courses beyond those that are taken for the Core. These electives can be one or more courses from any of the areas above, or which are approved for a Core requirement that the student has fulfilled with a different course, or any of the following:

Additional courses may be added here in the future.

Total Units 15-25

Cognitive Science

See also the Symbolic Systems website (https://symsys.stanford.edu/undergraduatesconcentrations/cognitive-science-cogsci-concentration/).

Symbolic Systems majors completing the new Core requirements effective for 2020-2021 must complete the following requirements to qualify for a Concentration in Cognitive Science. All courses must be taken for 3 units of more.

Cognitive Neuroscience 3-5

Select one of the following:

PSYCH 30	Introduction to Perception
PSYCH 45	Introduction to Learning and Memory
PSYCH 50	Introduction to Cognitive Neuroscience

Inferential Statistics 3-5

Select one of the following:

ANTHRO 116	Data Analysis for Quantitative Research
MS&E 125	Introduction to Applied Statistics
MS&E 226	Fundamentals of Data Science: Prediction, Inference, Causality
PSYCH 10	Introduction to Statistical Methods: Precalculus
PSYCH 253	Advanced Statistical Modeling
SOC 180B	Introduction to Data Analysis
STATS 101	Data Science 101
STATS 110	Statistical Methods in Engineering and the Physical Sciences
STATS 191	Introduction to Applied Statistics
STATS 200	Introduction to Statistical Inference
STATS 202	Data Mining and Analysis

Research Methods 3-5

A course on research practices and/or methods that are commonly used for studying cognition, language, and the brain. For example, one of the following:

CS 107	Computer Organization and Systems
CS 129	Applied Machine Learning
CS 229	Machine Learning
LINGUIST 180	From Languages to Information
LINGUIST 188	Natural Language Understanding
LINGUIST 245B	Methods in Psycholinguistics
PHIL 167D	Philosophy of Neuroscience
PSYCH 164	Brain decoding
PSYCH 187	Research Methods in Cognition & Development
PSYCH 204	Computation and Cognition: The Probabilistic Approach
PSYCH 209	Neural Network Models of Cognition
PSYCH 221	Image Systems Engineering
PSYCH 240A	Curiosity in Artificial Intelligence
PSYCH 242	Theoretical Neuroscience
PSYCH 249	Large-Scale Neural Network Modeling for Neuroscience
PSYCH 251	Experimental Methods
PSYCH 253	Advanced Statistical Modeling
PSYCH 262	Measurement and the Study of Change in Social Science Research
STATS 220	Machine Learning Methods for Neural Data Analysis

Cognitive Science Depth 3-5

For example, one of the following courses:

BIO 150	Human Behavioral Biology
COMM 108	Media Processes and Effects
COMM 322	Advanced Studies in Behavior and Social Media
CS 131	Computer Vision: Foundations and Applications
CS 154	Introduction to the Theory of Computation
CS 224N	Natural Language Processing with Deep Learning
CS 227B	General Game Playing
CS 228	Probabilistic Graphical Models: Principles and Techniques
CS 229M	Machine Learning Theory
CS 231A	Computer Vision: From 3D Reconstruction to Recognition
CS 234	Reinforcement Learning
CS 238	Decision Making under Uncertainty
ECON 160	Game Theory and Economic Applications
EDUC 266	Educational Neuroscience
EDUC 368	Cognitive Development in Childhood and Adolescence
LINGUIST 105	Phonetics
LINGUIST 110	Introduction to Phonology
LINGUIST 140	Learning to Speak: An Introduction to Child Language Acquisition
LINGUIST 180	From Languages to Information
LINGUIST 188	Natural Language Understanding
LINGUIST 236	Seminar in Semantics: Conditionals
LINGUIST 248	Seminar in Developmental Psycholinguistics
MUSIC 251	Psychophysics and Music Cognition
NBIO 206	The Nervous System
NBIO 258	Information and Signaling Mechanisms in Neurons and Circuits
PHIL 82T	Philosophy of Cognitive Science
PHIL 152	Computability and Logic
PHIL 153L	Computing Machines and Intelligence
PHIL 154	Modal Logic
PHIL 167D	Philosophy of Neuroscience
PHIL 181	Philosophy of Language
PHIL 184	Topics in Epistemology

PHIL 184B	Formal Epistemology
PHIL 186	Philosophy of Mind
PHIL 187	Philosophy of Action
PHIL 194A	Rationality Over Time
PHIL 194D	Capstone Seminar: Artificial Intelligence
PHIL 351D	Measurement Theory
PHIL 360	Grad Seminar: Philosophy of Neuroscience
PHIL 368A	Topics in Neuroscience
PHIL 385D	Advanced Topics in Philosophy of Language
PHIL 386	Truth as the aim of belief and inquiry
PSYCH 30	Introduction to Perception
PSYCH 45	Introduction to Learning and Memory
PSYCH 50	Introduction to Cognitive Neuroscience
PSYCH 70	Self and Society: Introduction to Social Psychology
PSYCH 75	Introduction to Cultural Psychology
PSYCH 140	Introduction to Psycholinguistics
PSYCH 141	Cognitive Development
PSYCH 154	Judgment and Decision-Making
PSYCH 160	Seminar on Emotion
PSYCH 162	Brain Networks
PSYCH 164	Brain decoding
PSYCH 169	Advanced Seminar on Memory
PSYCH 175	Social Cognition and Learning in Early Childhood
PSYCH 202	Cognitive Neuroscience
PSYCH 204	Computation and Cognition: The Probabilistic Approach
PSYCH 204A	Human Neuroimaging Methods
PSYCH 204B	Computational Neuroimaging
PSYCH 205	Foundations of Cognition
PSYCH 209	Neural Network Models of Cognition
PSYCH 221	Image Systems Engineering
PSYCH 232	Brain and Decision
PSYCH 249	Large-Scale Neural Network Modeling for Neuroscience
PSYCH 250	High-level Vision: From Neurons to Deep Neural Networks
PSYCH 254	Affective Neuroscience
PSYCH 266	Current Debates in Learning and Memory
PSYCH 285	Graduate Seminar on Theory of Mind
PSYCH 287	Brain Machine Interfaces: Science, Technology, and Application
PSYCH 293	What makes a good explanation? Psychological and philosophical perspectives
SYMSYS 203	Cognitive Science Perspectives on Humanity and Well-Being
SYMSYS 207	Conceptual Issues in Cognitive Science
SYMSYS 208	Computer Machines and Intelligence

Integrative Requirement **3-5**

Must be completed no earlier than the Junior Year.

i. Any of the Standard Options for all Concentrations specified under the Core Capstone requirement, or

ii. A Concentration-Specific Integrative Course: A course that integrates the themes of the Concentration with the Core requirements. Select one of the following (with more options to be added as they are approved -- some options may be removed if they are included in the list of SYMSYS 195* project courses, in order to avoid redundancy with the Standard Options).

COMM 326	Advanced Topics in Human Virtual Representation
CS 131	Computer Vision: Foundations and Applications
CS 181	Computers, Ethics, and Public Policy
CS 182	Ethics, Public Policy, and Technological Change
CS 221	Artificial Intelligence: Principles and Techniques
CS 227B	General Game Playing
CS 228	Probabilistic Graphical Models: Principles and Techniques
CS 229	Machine Learning
CS 230	Deep Learning
CS 231A	Computer Vision: From 3D Reconstruction to Recognition
CS 234	Reinforcement Learning
CS 238	Decision Making under Uncertainty
CS 325B	Data for Sustainable Development
CS 379C	Computational Models of the Neocortex
EE 104	Introduction to Machine Learning
LINGUIST 180	From Languages to Information
MUSIC 220C	Research Seminar in Computer-Generated Music
MUSIC 257	Neuroplasticity and Musical Gaming
NBIO 101	Social and Ethical Issues in the Neurosciences
PHIL 134A	Phenomenology: Animals
PHIL 356C	Logic and Artificial Intelligence
PHIL 357	Research Seminar on Logic and Cognition
PHIL 359	Topics in Logic, Information and Agency
PHIL 360	Grad Seminar: Philosophy of Neuroscience
PHIL 368A	Topics in Neuroscience
PSYCH 164	Brain decoding
PSYCH 204	Computation and Cognition: The Probabilistic Approach
PSYCH 209	Neural Network Models of Cognition
PSYCH 242	Theoretical Neuroscience
PSYCH 247	Topics in Natural and Artificial Intelligence
PSYCH 249	Large-Scale Neural Network Modeling for Neuroscience
PSYCH 293	What makes a good explanation? Psychological and philosophical perspectives
STATS 220	Machine Learning Methods for Neural Data Analysis
SYMSYS 202	Theories of Consciousness
SYMSYS 205	The Philosophy and Science of Perception
SYMSYS 207	Conceptual Issues in Cognitive Science
SYMSYS 208	Computer Machines and Intelligence

Contingent Electives **3-5**

If any of requirements 1-4 are fulfilled with courses taken for Core requirements, then additional approved Contingent Elective courses must be completed to total 5 courses beyond those that are taken for the Core. These electives can be one or more courses from any of the areas above, or which are approved for a Core requirement that the student has fulfilled with a different course, or any of the following:	
Additional courses may be added here in the future.	
Total Units	**15-25**

Computational Foundations

See also the Symbolic Systems website (https://symsys.stanford.edu/undergraduatesconcentrations/computational-foundations-cofo-concentration/).

Symbolic Systems majors completing the new Core requirements effective for 2020-2021 must complete the following requirements to qualify for a Concentration in Computational Foundations. All courses must be taken for 3 units of more.

Students in this Concentration are strongly encouraged to take either CS 181 or CS 182 as part of the major, either for the Core Cross-Area Requirement, for the Capstone Integrative Requirement, as a Contingent Elective, or (in the case of CS 182) for the Core Introductory Philosophy requirement.		
Computer Systems I		**3-5**
Select one of the following:		
CS 107	Computer Organization and Systems	
CS 107E	Computer Systems from the Ground Up	
Computer Systems II		**3-5**
Select one of the following:		
CS 110	Principles of Computer Systems	
CS 111	Operating Systems Principles	
Theory of Computation Depth		**3-5**
Select one of the following:		
CS 154	Introduction to the Theory of Computation	
PHIL 154	Modal Logic	
Algorithms		**3-5**
CS 161	Design and Analysis of Algorithms	
Integrative Requirement		**3-5**
Must be completed no earlier than the Junior Year.		
i. Any of the Standard Options for all Concentrations specified under the Core Capstone requirement, or		
ii. A Concentration-Specific Integrative Course: A course that integrates the themes of the Concentration with the Core requirements. Select one of the following (with more options to be added as they are approved -- some options may be removed if they are included in the list of SYMSYS 195* project courses, in order to avoid redundancy with the Standard Options).		
CS 151	Logic Programming	
CS 157	Computational Logic	
CS 163	The Practice of Theory Research	
CS 181	Computers, Ethics, and Public Policy	
CS 182	Ethics, Public Policy, and Technological Change	
CS 349T	Project Lab: Video and Audio Technology for Live Theater in the Age of COVID	
CS 379C	Computational Models of the Neocortex	
PHIL 154	Modal Logic	
PHIL 359	Topics in Logic, Information and Agency	
PSYCH 204	Computation and Cognition: The Probabilistic Approach	
Contingent Electives		**3-5**
If any of requirements 1-4 are fulfilled with courses taken for Core requirements, then additional approved Contingent Elective courses must be completed to total 5 courses beyond those that are taken for the Core. These electives can be one or more courses from any of the areas above, or which are approved for a Core requirement that the student has fulfilled with a different course, or any of the following:		
Any course of 3 units or more, listed with a CS course number greater than 110, excluding CS 196 or CS 198.		
Any course of 3 units or more, listed with an EE course number.		
Any course of 3 units or more, listed with a MATH course number.		
Any course of 3 units or more, listed with a STATS course number.		
PHIL 20N	Philosophy of Artificial Intelligence	
Total Units		**15-25**

Computational Social Science Concentration

See also the Symbolic Systems website (https://symsys.stanford.edu/undergraduatesconcentrations/computational-social-science-css-concentration/).

Symbolic Systems majors completing the new Core requirements effective for 2020-2021 must complete the following requirements to qualify for a Concentration in Computational Social Science. All courses must be taken for 3 units of more.

Social Behavior		**3-5**
An introductory course in a broad area of social science. Select one of the following:		
BIO 30	Ecology for Everyone	
BIO 81	Introduction to Ecology	
COMM 1	Introduction to Communication	
ECON 1	Principles of Economics	
ECON 46	Networks and Human Behavior	
ECON 50	Economic Analysis I	
ECON 160	Game Theory and Economic Applications	
ECON 178	Behavioral Economics	
ECON 180	Honors Game Theory	
LINGUIST 150	Language and Society	
MS&E 135	Networks	
MS&E 180	Organizations: Theory and Management	
MS&E 232	Introduction to Game Theory	
POLISCI 1	The Science of Politics	
POLISCI 120C	American Political Institutions in Uncertain Times	
PSYCH 70	Self and Society: Introduction to Social Psychology	
PSYCH 154	Judgment and Decision-Making	
SOC 1	Introduction to Sociology	
SOC 126	Introduction to Social Networks	
SOC 130	Education and Society	
SOC 146	Introduction to Comparative Studies in Race and Ethnicity	
Statistical Interference		**3-5**
An introductory course in statistical methods. Select one of the following:		
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	
MS&E 125	Introduction to Applied Statistics	

MS&E 226	Fundamentals of Data Science: Prediction, Inference, Causality
SOC 180B	Introduction to Data Analysis
STATS 110	Statistical Methods in Engineering and the Physical Sciences
STATS 191	Introduction to Applied Statistics
STATS 200	Introduction to Statistical Inference
STATS 202	Data Mining and Analysis

Computational Data Methods **3-5**

A course in machine learning, natural language processing, and/or probabilistic computational inference. Select one of the following:

CS 129	Applied Machine Learning
CS 224N	Natural Language Processing with Deep Learning
CS 224W	Machine Learning with Graphs
CS 228	Probabilistic Graphical Models: Principles and Techniques
CS 229	Machine Learning
CS 230	Deep Learning
CS 238	Decision Making under Uncertainty
CS 246	Mining Massive Data Sets
CS 448B	Data Visualization
ECON 102B	Applied Econometrics
LINGUIST 180	From Languages to Information
LINGUIST 188	Natural Language Understanding
PSYCH 204	Computation and Cognition: The Probabilistic Approach
PSYCH 209	Neural Network Models of Cognition
STATS 216	Introduction to Statistical Learning

Social Data Science **3-5**

A course on applying statistical and computational methods to the study of social behavior. Select one of the following:

COMM 106	Communication Research Methods
COMM 173E	Data Challenge Lab
ECON 102D	Econometric Methods for Public Policy Analysis and Business Decision-Making
ECON 151	Tackling Big Questions Using Social Data Science
EDUC 143	Introduction to Data Science
MS&E 231	Introduction to Computational Social Science
POLISCI 150A	Data Science for Politics
POLISCI 150C	Causal Inference for Social Science
PSYCH 290	Natural Language Processing & Text-Based Machine Learning in the Social Sciences
SOC 180A	Foundations of Social Research
SOC 194	Computational Undergraduate Research
SOC 369	Social Network Methods

Integrative Requirement **3-5**

Must be completed no earlier than the Junior Year.

i. Any of the Standard Options for all Concentrations specified under the Core Capstone requirement, or

ii. A Concentration-Specific Integrative Course: A course that integrates the themes of the Concentration with the Core requirements. Select one of the following (with more options to be added as they are approved -- some options may be removed if they are included in the list of SYMSYS 195* project courses, in order to avoid redundancy with the Standard Options).

COMM 322	Advanced Studies in Behavior and Social Media
COMM 326	Advanced Topics in Human Virtual Representation
CS 181	Computers, Ethics, and Public Policy
CS 182	Ethics, Public Policy, and Technological Change
CS 206	Exploring Computational Journalism
CS 224W	Machine Learning with Graphs
CS 246	Mining Massive Data Sets
CS 278	Social Computing
CS 325B	Data for Sustainable Development
ECON 160	Game Theory and Economic Applications
ECON 178	Behavioral Economics
ECON 180	Honors Game Theory
MS&E 234	Data Privacy and Ethics
PHIL 171	Justice
PHIL 171P	20th Century Political Theory: Liberalism and its Critics
PHIL 359	Topics in Logic, Information and Agency
PSYCH 154	Judgment and Decision-Making
PSYCH 262	Measurement and the Study of Change in Social Science Research
PSYCH 290	Natural Language Processing & Text-Based Machine Learning in the Social Sciences
PSYCH 293	What makes a good explanation? Psychological and philosophical perspectives
SOC 154	The Politics of Algorithms

Contingent Electives **3-5**

If any of requirements 1-4 are fulfilled with courses taken for Core requirements, then additional approved Contingent Elective courses must be completed to total 5 courses beyond those that are taken for the Core. These electives can be one or more courses from any of the areas above, or which are approved for a Core requirement that the student has fulfilled with a different course, or any of the following:

ANTHRO 116	Data Analysis for Quantitative Research
ANTHRO 132D	Thinking Technology: Anthropological Perspectives
BIO 61	Science as a Creative Process
BIO 85	Evolution
BIO 145	Ecology and Evolution of Animal Behavior
COMM 106	Communication Research Methods
COMM 158	Censorship and Propaganda
COMM 173E	Data Challenge Lab
COMM 176	Advanced Digital Media Journalism
COMM 177B	Big Local Journalism: a project-based class
COMM 177P	Programming in Journalism
COMM 177T	Building News Applications
CS 145	Data Management and Data Systems
CS 326	Topics in Advanced Robotic Manipulation
ECON 102B	Applied Econometrics
ECON 102C	Advanced Topics in Econometrics
ECON 106	World Food Economy
ECON 118	Development Economics
ECON 125	Economic Development, Microfinance, and Social Networks
ECON 144	Family and Society

ECON 150	Economic Policy Analysis
ECON 155	Environmental Economics and Policy
EDUC 260B	Advanced Statistical Methods for Observational Studies
LINGUIST 156	Language, Gender, & Sexuality
LINGUIST 157	Sociophonetics
LINGUIST 234	The Structure of Discourse: Theory and Applications
LINGUIST 250	Sociolinguistic Theory and Analysis
LINGUIST 258	Analysis of Variation
LINGUIST 278	Programming for Linguists
LINGUIST 285	Spoken Language Processing
MGTECON 634	Machine Learning and Causal Inference
MS&E 121	Introduction to Stochastic Modeling
MS&E 125	Introduction to Applied Statistics
MS&E 184	Future of Work: Issues in Organizational Learning and Design
MS&E 201	Dynamic Systems
MS&E 221	Stochastic Modeling
MS&E 223	Simulation
MS&E 230	Incentives and Algorithms
MS&E 231	Introduction to Computational Social Science
MS&E 234	Data Privacy and Ethics
MS&E 243	Energy and Environmental Policy Analysis
MS&E 280	Organizational Behavior: Evidence in Action
MS&E 292	Health Policy Modeling
PHIL 2	Introduction to Moral Philosophy
PHIL 60	Introduction to Philosophy of Science
PHIL 170	Ethical Theory
PHIL 171	Justice
PHIL 171P	20th Century Political Theory: Liberalism and its Critics
PHIL 174B	Universal Basic Income: the philosophy behind the proposal
PHIL 175B	Philosophy of Public Policy
POLISCI 1	The Science of Politics
POLISCI 120Z	What's Wrong with American Government? An Institutional Approach
POLISCI 150A	Data Science for Politics
POLISCI 150C	Causal Inference for Social Science
POLISCI 223A	Public Opinion and American Democracy
POLISCI 227C	Money in Politics
POLISCI 241A	Political Economy of Development
POLISCI 241S	Spatial Approaches to Social Science
PSYC 86Q	Psychology of Xenophobia
PSYCH 24N	Neuroforecasting
SOC 1	Introduction to Sociology
SOC 3	America: Unequal
SOC 10	Introduction to Computational Social Science
SOC 14N	Inequality in American Society
SOC 31N	Social Networks
SOC 114	Economic Sociology
SOC 118	Social Movements and Collective Action
SOC 124	Gender and Technology
SOC 130	Education and Society
SOC 133D	Globalization and Social Change
SOC 167VP	Justice + Poverty Innovation:Create new solutions for people to navigate housing, medical, & debt
SOC 168	Global Organizations: The Matrix of Change
SOC 179A	Crime and Punishment in America
STATS 101	Data Science 101
STATS 191	Introduction to Applied Statistics
STATS 200	Introduction to Statistical Inference
STATS 202	Data Mining and Analysis
STATS 203	Introduction to Regression Models and Analysis of Variance
STATS 211	Meta-research: Appraising Research Findings, Bias, and Meta-analysis
STS 191W	Doing STS: Introduction to Research
SYMSYS 201	Digital Technology, Society, and Democracy
Total Units	**15-25**

Computer Music

See also the Symbolic Systems website (https://symsys.stanford.edu/undergraduatesconcentrations/computer-music-cm-concentration/).

Symbolic Systems majors must complete the following requirements in addition to the Core requirements to fulfill the Concentration in Computer Music. All courses must be taken for 3 units of more.

Computer-Generated Music I		**3-5**
MUSIC 220A	Fundamentals of Computer-Generated Sound	
Computer-Generated Music II		**3-5**
MUSIC 220B	Compositional Algorithms, Psychoacoustics, and Computational Music	
Music and the Mind & Brain		**3-5**
Select one of the following:		
MUSIC 1A	Music, Mind, and Human Behavior	
MUSIC 251	Psychophysics and Music Cognition	
MUSIC 351A	Seminar in Music Perception and Cognition I	
PSYCH 30	Introduction to Perception	
PSYCH 50	Introduction to Cognitive Neuroscience	
Integrative Requirement		**3-5**
Must be completed no earlier than the Junior Year		
i. Any of the Standard Options for all Concentrations specified under the Core Capstone requirement, or		
ii. A Concentration-Specific Integrative Course: A course that integrates the themes of the Concentration with the Core requirements. Select one of the following (with more options to be added as they are approved -- some options may be removed if they are included in the list of SYMSYS 195* project courses, in order to avoid redundancy with the Standard Options).		
MUSIC 128	Stanford Laptop Orchestra: Composition, Coding, and Performance	
MUSIC 220C	Research Seminar in Computer-Generated Music	
MUSIC 250A	Physical Interaction Design for Music	
MUSIC 251	Psychophysics and Music Cognition	
MUSIC 253	Symbolic Musical Information	
MUSIC 254	Computational Music Analysis	
MUSIC 256A	Music, Computing, Design: The Art of Design	
MUSIC 257	Neuroplasticity and Musical Gaming	

MUSIC 351A	Seminar in Music Perception and Cognition I

Contingent Electives **3-5**

If any of requirements 1-4 are fulfilled with courses taken for Core requirements, then additional approved Contingent Elective courses must be completed to total 5 courses beyond those that are taken for the Core. These electives can be one or more courses from any of the areas above, or which are approved for a Core requirement that the student has fulfilled with a different course, or any of the following:

CS 108	Object-Oriented Systems Design
LINGUIST 105	Phonetics
LINGUIST 110	Introduction to Phonology
MUSIC 1A	Music, Mind, and Human Behavior
MUSIC 222	Sound in Space

Total Units **15-25**

Decision Making and Rationality (DMAR)

See also the Symbolic Systems website (https://symsys.stanford.edu/undergraduatesconcentrations/decision-making-and-rationality-dmr-concentration/).

Symbolic Systems majors completing the new Core requirements effective for 2020-2021 must complete the following requirements to qualify for a Concentration in Decision Making and Rationality. All courses must be taken for 3 units of more.

Philosophical Inquiry **3-5**

Select one of the following:

MS&E 234	Data Privacy and Ethics
MS&E 254	The Ethical Analyst
PHIL 164	Central Topics in the Philosophy of Science: Theory and Evidence
PHIL 166	Probability: Ten Great Ideas About Chance
PHIL 169	Evolution of the Social Contract
PHIL 170	Ethical Theory
PHIL 171	Justice
PHIL 172	History of Modern Moral Philosophy
PHIL 184	Topics in Epistemology
PHIL 184B	Formal Epistemology
PHIL 187	Philosophy of Action
PHIL 359	Topics in Logic, Information and Agency
PHIL 388	Topics in Normativity
POLISCI 131L	Modern Political Thought: Machiavelli to Marx and Mill
POLISCI 230A	Classical Seminar: Origins of Political Thought
PSYCH 160	Seminar on Emotion

Formal Decision Theories **3-5**

Select one of the following:

ECON 51	Economic Analysis II
ECON 136	Market Design
ECON 160	Game Theory and Economic Applications
ECON 180	Honors Game Theory
ECON 289	Advanced Topics in Game Theory and Information Economics
MS&E 232	Introduction to Game Theory
MS&E 232H	Introduction to Game Theory
PHIL 154	Modal Logic
PHIL 351	Representation Theorems
PHIL 351C	Formal Methods in Ethics
PHIL 351D	Measurement Theory
PHIL 359	Topics in Logic, Information and Agency
POLISCI 356A	Formal Theory I: Game Theory for Political Science
PUBLPOL 51	Microeconomics for Policy

Empirical Findings and Explanations **3-5**

Select one of the following:

BIO 150	Human Behavioral Biology
ECON 178	Behavioral Economics
ECON 179	Experimental Economics
ECON 279	Behavioral and Experimental Economics II
EDUC 375A	Seminar on Organizational Theory
GSBGEN 646	Behavioral Economics and the Psychology of Decision Making
POLISCI 351B	Economic Analysis of Political Institutions
POLISCI 351C	Institutions and Bridge-Building in Political Economy
PSYCH 154	Judgment and Decision-Making
PSYCH 160	Seminar on Emotion
PSYCH 205	Foundations of Cognition
PSYCH 212	Classic and contemporary social psychology research
PSYCH 215	Mind, Culture, and Society
PSYCH 223	Social Norms
PSYCH 232	Brain and Decision
PSYCH 254	Affective Neuroscience
SOC 114	Economic Sociology
SOC 115	Topics in Economic Sociology
SOC 126	Introduction to Social Networks
SYMSYS 203	Cognitive Science Perspectives on Humanity and Well-Being

Methods and Applications **3-5**

A course on methods that can be used to study decision making and rationality, or ways to apply research in decision sciences. For example, one of the following:

BIOMEDIN 251	Outcomes Analysis
CEE 206	Decision Analysis for Civil and Environmental Engineers
COMM 106	Communication Research Methods
CS 181	Computers, Ethics, and Public Policy
CS 182	Ethics, Public Policy, and Technological Change
CS 228	Probabilistic Graphical Models: Principles and Techniques
CS 234	Reinforcement Learning
CS 238	Decision Making under Uncertainty
CS 239	Advanced Topics in Sequential Decision Making
CS 261	Optimization and Algorithmic Paradigms
CS 325B	Data for Sustainable Development
ECON 50	Economic Analysis I
ECON 102B	Applied Econometrics
ECON 102C	Advanced Topics in Econometrics
ECON 135	Foundations of Finance
ECON 136	Market Design
ECON 137	Decision Modeling and Information
ECON 141	Public Finance and Fiscal Policy
ECON 150	Economic Policy Analysis

ECON 155	Environmental Economics and Policy
ECON 162	Games Developing Nations Play
EDUC 247	Moral and Character Education
ENGR 62	Introduction to Optimization
MS&E 121	Introduction to Stochastic Modeling
MS&E 152	Introduction to Decision Analysis
MS&E 180	Organizations: Theory and Management
MS&E 231	Introduction to Computational Social Science
MS&E 250A	Engineering Risk Analysis
MS&E 250B	Project Course in Engineering Risk Analysis
MS&E 251	Introduction to Stochastic Control with Applications
MS&E 252	Decision Analysis I: Foundations of Decision Analysis
MS&E 332	Security and Risk in Computer Networks
MS&E 352	Decision Analysis II: Professional Decision Analysis
MS&E 353	Decision Analysis III: Frontiers of Decision Analysis
MS&E 355	Influence Diagrams and Probabilistics Networks
PHIL 49	Survey of Formal Methods
POLISCI 153	Thinking Strategically
PSYCH 10	Introduction to Statistical Methods: Precalculus
PSYCH 251	Experimental Methods
PSYCH 253	Advanced Statistical Modeling
STATS 191	Introduction to Applied Statistics
STATS 200	Introduction to Statistical Inference
STATS 211	Meta-research: Appraising Research Findings, Bias, and Meta-analysis
STATS 217	Introduction to Stochastic Processes I
STATS 218	Introduction to Stochastic Processes II
STATS 263	Design of Experiments
STATS 310A	Theory of Probability I
STATS 310B	Theory of Probability II
STATS 310C	Theory of Probability III
SYMSYS 195B	Design for Behavior Change
SYMSYS 195D	Research in Digital Democracy
SYMSYS 201	Digital Technology, Society, and Democracy
URBANST 132	Concepts and Analytic Skills for the Social Sector

Integrative Requirement **3-5**

Must be completed no earlier than the Junior Year.

i. Any of the Standard Options for all Concentrations specified under the Core Capstone requirement, or

ii. A Concentration-Specific Integrative Course: A course that integrates the themes of the Concentration with the Core requirements. Select one of the following (with more options to be added as they are approved -- some options may be removed if they are included in the list of SYMSYS 195* project courses, in order to avoid redundancy with the Standard Options).

CS 181	Computers, Ethics, and Public Policy
CS 182	Ethics, Public Policy, and Technological Change
CS 228	Probabilistic Graphical Models: Principles and Techniques
CS 234	Reinforcement Learning
CS 238	Decision Making under Uncertainty
CS 239	Advanced Topics in Sequential Decision Making
CS 261	Optimization and Algorithmic Paradigms
CS 325B	Data for Sustainable Development
PHIL 184	Topics in Epistemology
PHIL 184B	Formal Epistemology
PHIL 187	Philosophy of Action
PHIL 359	Topics in Logic, Information and Agency
PSYCH 154	Judgment and Decision-Making
PSYCH 160	Seminar on Emotion
PSYCH 223	Social Norms
PSYCH 232	Brain and Decision
PSYCH 254	Affective Neuroscience
SYMSYS 201	Digital Technology, Society, and Democracy
SYMSYS 203	Cognitive Science Perspectives on Humanity and Well-Being

Contingent Electives **3-5**

If any of requirements 1-4 are fulfilled with courses taken for Core requirements, then additional approved Contingent Elective courses must be completed to total 5 courses beyond those that are taken for the Core. These electives can be one or more courses from any of the areas above, or which are approved for a Core requirement that the student has fulfilled with a different course, or any of the following:

ECON 102D	Econometric Methods for Public Policy Analysis and Business Decision-Making
ECON 151	Tackling Big Questions Using Social Data Science
MS&E 33N	How We Decide: Social Choice in the Age of Algorithms

Additional courses may be added here in the future.

Total Units **15-25**

Human-Centered Artificial Intelligence Concentration

See also the Symbolic Systems website (https://symsys.stanford.edu/undergraduatesconcentrations/human-centered-artificial-intelligence-hai-concentration/).

Symbolic Systems majors completing the new Core requirements effective for 2020-2021 must complete the following requirements to qualify for a Concentration in Human-Centered Artificial Intelligence. All courses must be taken for 3 units of more.

Digital Technology Ethics and Policy **3-5**

Select one of the following:

CS 181	Computers, Ethics, and Public Policy
CS 182	Ethics, Public Policy, and Technological Change

Human Impact **3-5**

One course aimed at understanding how AI interacts with humans as well as with vital social structures and institutions. For example:

AFRICAAM 200N	Funkentelechy: Technologies, Social Justice and Black Vernacular Cultures
ANTHRO 132D	Thinking Technology: Anthropological Perspectives
ANTHRO 134A	Whose Ghost in the Machine? Cultures, Politics and Morals of Artificial Intelligence
COMM 120W	The Rise of Digital Culture
COMM 124	Truth, Trust, and Tech

COMM 145	Personality and Digital Media
COMM 154	The Politics of Algorithms
COMM 172	Media Psychology
COMM 184	Race and Media
COMM 322	Advanced Studies in Behavior and Social Media
CS 209	Law, Order, & Algorithms
ENGLISH 106A	A.I.-Activism-Art
INTLPOL 221	Politics of Data: Algorithmic Culture, Big Data, and Information Waste
LAW 4039	Regulating Artificial Intelligence
LAW 4045	Digital Technology and Law: Foundations
LAW 4050	AI and Rule of Law: A Global Perspective
MS&E 184	Future of Work: Issues in Organizational Learning and Design
MS&E 234	Data Privacy and Ethics
NBIO 101	Social and Ethical Issues in the Neurosciences
PHIL 174B	Universal Basic Income: the philosophy behind the proposal
SOC 124	Gender and Technology
STS 1	The Public Life of Science and Technology
SYMSYS 201	Digital Technology, Society, and Democracy

Augmenting Human Capabilities **3-5**

One course aimed at developing new human-centered design methods and tools so that AI agents and applications are designed and created with the ability to communicate with, collaborate with, and augment people more effectively, and to make their work better and more enjoyable. For example:

BIOMEDIN 220	Artificial Intelligence in Healthcare
COMM 166	Virtual People
COMM 177B	Big Local Journalism: a project-based class
COMM 326	Advanced Topics in Human Virtual Representation
CS 147	Introduction to Human-Computer Interaction Design
CS 152	Trust and Safety Engineering
CS 184	Bridging Policy and Tech Through Design
CS 247A	Design for Artificial Intelligence
CS 247B	Design for Behavior Change
CS 247I	Design for Understanding
CS 247S	Service Design
CS 278	Social Computing
CS 325B	Data for Sustainable Development
CS 335	Fair, Accountable, and Transparent (FAccT) Deep Learning
CS 372	Artificial Intelligence for Disease Diagnosis and Information Recommendations
CS 448B	Data Visualization
ECON 136	Market Design
EDUC 211	Beyond Bits and Atoms - Lab
EDUC 236	Beyond Bits and Atoms: Designing Technological Tools
EDUC 266	Educational Neuroscience
EDUC 281	Technology for Learners
EDUC 302	Behavior Design
GSBGEN 596	Designing AI to Cultivate Human Well-Being
HUMBIO 135S	Body Hacking: Applied Topics in Exercise Physiology
HUMBIO 151R	Biology, Health and Big Data
MUSIC 220C	Research Seminar in Computer-Generated Music
PSYC 124	Brain Plasticity
PSYC 223B	Topics in Neurodiversity: Design Thinking Approaches
PSYC 240	Designing for the 2 Billion: Leading Innovation in Mental Health
PSYCH 24N	Neuroforecasting
PSYCH 273	Changing Mindsets and Contexts: How to Create Authentic, Lasting Improvement
PSYCH 290	Natural Language Processing & Text-Based Machine Learning in the Social Sciences
SOC 167VP	Justice + Poverty Innovation:Create new solutions for people to navigate housing, medical, & debt
SYMSYS 245	Cognition in Interaction Design

Intelligence **3-5**

One course aimed at developing machine intelligence that understands human language, emotions, intentions, behaviors, and interactions at multiple scales. One of the following:

CS 129	Applied Machine Learning
CS 131	Computer Vision: Foundations and Applications
CS 221	Artificial Intelligence: Principles and Techniques
CS 223A	Introduction to Robotics
CS 224N	Natural Language Processing with Deep Learning
CS 229	Machine Learning
CS 230	Deep Learning
LINGUIST 188	Natural Language Understanding
LINGUIST 285	Spoken Language Processing

Integrative Requirement **3-5**

Must be completed no earlier than the Junior Year.

i. Any of the Standard Options for all Concentrations specified under the Core Capstone requirement, or

ii. A Concentration-Specific Integrative Course: A course that integrates the themes of the Concentration with the Core requirements. Select one of the following (with more options to be added as they are approved -- some options may be removed if they are included in the list of SYMSYS 195* project courses, in order to avoid redundancy with the Standard Options).

COMM 166	Virtual People
COMM 172	Media Psychology
CS 206	Exploring Computational Journalism
CS 221	Artificial Intelligence: Principles and Techniques
CS 223A	Introduction to Robotics
CS 229	Machine Learning
CS 230	Deep Learning
CS 238	Decision Making under Uncertainty
CS 247I	Design for Understanding
CS 278	Social Computing
CS 325B	Data for Sustainable Development
CS 335	Fair, Accountable, and Transparent (FAccT) Deep Learning
CS 372	Artificial Intelligence for Disease Diagnosis and Information Recommendations
CS 379C	Computational Models of the Neocortex

EDUC 234	Curiosity in Artificial Intelligence
EDUC 266	Educational Neuroscience
EDUC 281	Technology for Learners
LINGUIST 180	From Languages to Information
LINGUIST 285	Spoken Language Processing
PHIL 167D	Philosophy of Neuroscience
PHIL 168M	Biological Individuality
PHIL 359	Topics in Logic, Information and Agency
PHIL 360	Grad Seminar: Philosophy of Neuroscience
PHIL 368A	Topics in Neuroscience
PHIL 385D	Advanced Topics in Philosophy of Language
PHIL 386	Truth as the aim of belief and inquiry
PSYC 124	Brain Plasticity
PSYC 223B	Topics in Neurodiversity: Design Thinking Approaches
PSYC 240	Designing for the 2 Billion: Leading Innovation in Mental Health
PSYCH 121	Ion Transport and Intracellular Messengers
PSYCH 145	Seminar on Infant Development
PSYCH 154	Judgment and Decision-Making
PSYCH 162	Brain Networks
PSYCH 164	Brain decoding
PSYCH 169	Advanced Seminar on Memory
PSYCH 202	Cognitive Neuroscience
PSYCH 204	Computation and Cognition: The Probabilistic Approach
PSYCH 209	Neural Network Models of Cognition
PSYCH 232	Brain and Decision
PSYCH 242	Theoretical Neuroscience
PSYCH 247	Topics in Natural and Artificial Intelligence
PSYCH 249	Large-Scale Neural Network Modeling for Neuroscience
PSYCH 254	Affective Neuroscience
PSYCH 273	Changing Mindsets and Contexts: How to Create Authentic, Lasting Improvement
PSYCH 293	What makes a good explanation? Psychological and philosophical perspectives
STATS 216	Introduction to Statistical Learning
STATS 220	Machine Learning Methods for Neural Data Analysis
STATS 315B	Modern Applied Statistics: Data Mining
SYMSYS 202	Theories of Consciousness
SYMSYS 205	The Philosophy and Science of Perception
SYMSYS 245	Cognition in Interaction Design
Contingent Electives	
If requirements 1-4 are fulfilled partly from courses taken for Core requirements, then additional approved Elective courses must be completed to total 5 courses beyond those that are taken for the Core. These electives can be one or more courses from any of the areas above, or which are approved for a Core requirement that the student has fulfilled with a different course, or any of the following:	
PHIL 20N	Philosophy of Artificial Intelligence
STATS 191	Introduction to Applied Statistics
STATS 200	Introduction to Statistical Inference
Total Units	**15-25**

Human-Computer Interaction

See also the Symbolic Systems website (https://symsys.stanford.edu/undergraduatesconcentrations/human-computer-interaction-hci-concentration/).

Symbolic Systems majors must complete the following requirements in addition to the Core requirements to fulfill the Concentration in Human-Computer Interaction. All courses must be taken for 3 units of more.

Students in this Concentration are urged to take CS 107 or CS 107E, either for the Post-CS 106B Computation Core requirement, or as a Contingent Elective, and prior to completing requirement 4 below.		
Introduction to HCI		**3-5**
CS 147	Introduction to Human-Computer Interaction Design	
Design Methods		**3-5**
Post-CS 147 courses teaching fundamentals of the human-centered design process, featuring a major project component (including any course in the CS 247 series). One of the following:		
CS 194H	User Interface Design Project	
CS 247A	Design for Artificial Intelligence	
CS 247B	Design for Behavior Change	
CS 247G	Introduction to Game Design	
CS 247S	Service Design	
HCI Theory		**3-5**
Courses teaching design, behavioral, and critical theories that underlie the design process. One of the following:		
COMM 145	Personality and Digital Media	
COMM 166	Virtual People	
COMM 172	Media Psychology	
CS 347	Human-Computer Interaction: Foundations and Frontiers	
ME 341	Design Experiments	
User Interface Implementation		**3-5**
An advanced course in programming for user interfaces. One of the following:		
CS 108	Object-Oriented Systems Design	
CS 142	Web Applications	
Integrative Requirement		**3-5**
Must be completed no earlier than the Junior Year.		
i. Any of the Standard Options for all Concentrations specified under the Core Capstone requirement, or		
ii. A Concentration-Specific Integrative Course: A course that integrates the themes of the Concentration with the Core requirements. Select one of the following (with more options to be added as they are approved -- some options may be removed if they are included in the list of SYMSYS 195* project courses, in order to avoid redundancy with the Standard Options).		
COMM 120W	The Rise of Digital Culture	
COMM 145	Personality and Digital Media	
COMM 166	Virtual People	
COMM 172	Media Psychology	
COMM 322	Advanced Studies in Behavior and Social Media	
COMM 324	Language and Technology	
COMM 326	Advanced Topics in Human Virtual Representation	
CS 181	Computers, Ethics, and Public Policy	
CS 182	Ethics, Public Policy, and Technological Change	

CS 206	Exploring Computational Journalism
CS 247I	Design for Understanding
CS 278	Social Computing
CS 347	Human-Computer Interaction: Foundations and Frontiers
CS 377E	Designing Solutions to Global Grand Challenges
CS 377G	Designing Serious Games
CS 377Q	Designing for Accessibility
CS 377U	Understanding Users
EDUC 230	Learning Experience Design
EDUC 281	Technology for Learners
EDUC 302	Behavior Design
EDUC 342	Child Development and New Technologies
EDUC 391	Engineering Education and Online Learning
ME 115B	Product Design Methods
ME 341	Design Experiments
SYMSYS 201	Digital Technology, Society, and Democracy
SYMSYS 245	Cognition in Interaction Design
Contingent Electives	**3-5**
If any of requirements 1-4 are fulfilled with courses taken for Core requirements, then additional approved Contingent Elective courses must be completed to total 5 courses beyond those that are taken for the Core. These electives can be one or more courses from any of the areas above, or which are approved for a Core requirement that the student has fulfilled with a different course, or any of the following:	
Any d.school course worth 3 or more units	
ARTSTUDI 130	Interactive Art: Making it with Arduino
ARTSTUDI 142	Mixed-Media Drawing: Art & Aesthetics of Social Media
ARTSTUDI 160	Intro to Digital / Physical Design
ARTSTUDI 168	Data as Material
ARTSTUDI 179	Digital Art I
COMM 1	Introduction to Communication
COMM 1B	Media, Culture, and Society
COMM 106	Communication Research Methods
COMM 124	Truth, Trust, and Tech
COMM 154	The Politics of Algorithms
COMM 230A	Digital Civil Society
COMM 230B	Digital Civil Society
COMM 230C	Digital Civil Society
COMM 314	Ethnographic Methods
CS 80Q	Race and Gender in Silicon Valley
EDUC 191	Introduction to Survey Research
EDUC 423	Introduction to Data Science
ENGR 150	Data Challenge Lab
HUMBIO 82A	Qualitative Research Methodology
ME 101	Visual Thinking
ME 105	Designing for Impact
ME 115A	Introduction to Human Values in Design
ME 203	Design and Manufacturing
ME 210	Introduction to Mechatronics
ME 216A	Advanced Product Design: Needfinding
MED 147	Methods in Community Assessment, Evaluation, and Research
MED 275B	Biodesign Fundamentals
MS&E 125	Introduction to Applied Statistics
MS&E 135	Networks
MS&E 234	Data Privacy and Ethics
PHIL 71H	Introduction to Aesthetics
PSYCH 10	Introduction to Statistical Methods: Precalculus
SOC 167VP	Justice + Poverty Innovation:Create new solutions for people to navigate housing, medical, & debt
STATS 101	Data Science 101
STATS 191	Introduction to Applied Statistics
STATS 200	Introduction to Statistical Inference
STATS 202	Data Mining and Analysis
STATS 203	Introduction to Regression Models and Analysis of Variance
STATS 263	Design of Experiments
STS 1	The Public Life of Science and Technology
Total Units	**15-25**

Learning

See also the Symbolic Systems website (https://symsys.stanford.edu/undergraduatesconcentrations/learning-concentration/).

Symbolic Systems majors completing the new Core requirements effective for 2020-2021 must complete the following requirements to qualify for a Concentration in Learning. All courses must be taken for 3 units of more.

Students in the Learning Concentration must complete four courses from areas 1-3 below with at least one from each area, plus one course from area 4. If any of requirements 1-4 are fulfilled with courses taken for Core requirements, then additional approved Contingent Elective courses (see area 5) must be completed to total 5 courses beyond those that are taken for the Core.	
Computational Learning	**3-5**
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning
CS 221	Artificial Intelligence: Principles and Techniques
CS 224N	Natural Language Processing with Deep Learning
CS 228	Probabilistic Graphical Models: Principles and Techniques
CS 229	Machine Learning
CS 229M	Machine Learning Theory
CS 230	Deep Learning
CS 234	Reinforcement Learning
CS 236	Deep Generative Models
CS 325B	Data for Sustainable Development
EE 104	Introduction to Machine Learning
LINGUIST 180	From Languages to Information
MS&E 234	Data Privacy and Ethics
PSYCH 204	Computation and Cognition: The Probabilistic Approach
PSYCH 209	Neural Network Models of Cognition
PSYCH 249	Large-Scale Neural Network Modeling for Neuroscience
STATS 101	Data Science 101
STATS 220	Machine Learning Methods for Neural Data Analysis
STATS 315A	Modern Applied Statistics: Learning
STATS 315B	Modern Applied Statistics: Data Mining

Human Learning		**3-5**
EDUC 101	Introduction to Teaching and Learning	
EDUC 115N	How to Learn Mathematics	
EDUC 218	Topics in Cognition and Learning: Technology and Multitasking	
EDUC 266	Educational Neuroscience	
EDUC 368	Cognitive Development in Childhood and Adolescence	
EDUC 378	Social and Emotional Learning: Conceptual & Measurement Issues	
LINGUIST 140	Learning to Speak: An Introduction to Child Language Acquisition	
PSYCH 45	Introduction to Learning and Memory	
PSYCH 50	Introduction to Cognitive Neuroscience	
PSYCH 60	Introduction to Developmental Psychology	
PSYCH 141	Cognitive Development	
PSYCH 169	Advanced Seminar on Memory	
PSYCH 175	Social Cognition and Learning in Early Childhood	
PSYCH 202	Cognitive Neuroscience	
PSYCH 204	Computation and Cognition: The Probabilistic Approach	
PSYCH 209	Neural Network Models of Cognition	
PSYCH 249	Large-Scale Neural Network Modeling for Neuroscience	
PSYCH 251	Experimental Methods	
PSYCH 265	Social Psychology and Social Change	
PSYCH 266	Current Debates in Learning and Memory	
Learning Environment Design		**3-5**
COMM 322	Advanced Studies in Behavior and Social Media	
CS 147	Introduction to Human-Computer Interaction Design	
CS 194H	User Interface Design Project	
EDUC 211	Beyond Bits and Atoms - Lab	
EDUC 230	Learning Experience Design	
EDUC 236	Beyond Bits and Atoms: Designing Technological Tools	
EDUC 281	Technology for Learners	
EDUC 298	Seminar on Teaching Introductory Computer Science	
EDUC 303	Designing Learning Spaces	
EDUC 328	Topics in Learning and Technology: Core Mechanics for Learning	
EDUC 333A	Understanding Learning Environments	
EDUC 342	Child Development and New Technologies	
EDUC 391	Engineering Education and Online Learning	
EDUC 426	Unleashing Personal Potential: Behavioral Science and Design Thinking Applied to Self	
MUSIC 257	Neuroplasticity and Musical Gaming	
PSYCH 287	Brain Machine Interfaces: Science, Technology, and Application	
SYMSYS 245	Cognition in Interaction Design	
Integrative Requirement		**3-5**
Must be completed no earlier than the Junior Year.		
i. Any of the Standard Options for all Concentrations specified under the Core Capstone requirement, or		
ii. A Concentration-Specific Integrative Course: A course that integrates the themes of the Concentration with the Core requirements. Select one of the following (with more options to be added as they are approved -- some options may be removed if they are included in the list of SYMSYS 195* project courses, in order to avoid redundancy with the Standard Options).		
COMM 326	Advanced Topics in Human Virtual Representation	
CS 181	Computers, Ethics, and Public Policy	
CS 182	Ethics, Public Policy, and Technological Change	
CS 221	Artificial Intelligence: Principles and Techniques	
CS 228	Probabilistic Graphical Models: Principles and Techniques	
CS 229	Machine Learning	
CS 229M	Machine Learning Theory	
CS 230	Deep Learning	
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	
CS 234	Reinforcement Learning	
CS 379C	Computational Models of the Neocortex	
EDUC 251	Topics in Epistemology and Education	
EDUC 261E	Curriculum and Instruction Elective in Data Science	
EE 104	Introduction to Machine Learning	
LINGUIST 180	From Languages to Information	
PHIL 184B	Formal Epistemology	
PSYCH 204	Computation and Cognition: The Probabilistic Approach	
PSYCH 209	Neural Network Models of Cognition	
PSYCH 242	Theoretical Neuroscience	
PSYCH 247	Topics in Natural and Artificial Intelligence	
PSYCH 249	Large-Scale Neural Network Modeling for Neuroscience	
PSYCH 262	Measurement and the Study of Change in Social Science Research	
PSYCH 273	Changing Mindsets and Contexts: How to Create Authentic, Lasting Improvement	
PSYCH 293	What makes a good explanation? Psychological and philosophical perspectives	
STATS 220	Machine Learning Methods for Neural Data Analysis	
SYMSYS 245	Cognition in Interaction Design	
Contingent Electives		**3-5**
If any of requirements 1-3 are fulfilled with courses taken for Core requirements, then additional approved Contingent Elective courses must be completed to total 5 courses beyond those that are taken for the Core. These electives can be one or more courses from any of the areas above, or which are approved for a Core requirement that the student has fulfilled with a different course, or any of the following:		
PSYCH 10	Introduction to Statistical Methods: Precalculus	
STATS 191	Introduction to Applied Statistics	
STATS 200	Introduction to Statistical Inference	
Additional courses may be added here in the future.		
Total Units		**15-25**

Mathematical Foundations

See also the Symbolic Systems website (https://symsys.stanford.edu/undergraduatesconcentrations/mathematical-foundations-mafo-concentration/).

Symbolic Systems majors completing the new Core requirements effective for 2020-2021 must complete the following requirements to qualify for a Concentration in Mathematical Foundations. All courses must be taken for 3 units of more.

Multivariate Calculus and Linear Algebra		**10**
One of the following two-course sequences (Note: The earlier courses in each series are included in the Core Preparations requirements. Students in this Concentration who began in the CME 100 series should switch to the MATH 52-MATH 53 series for the Concentration.)		
MATH 52 and MATH 53		
MATH 63CM and MATH 62CM		
MATH 62DM and MATH 63DM		
Matrix Theory and Applications		**3-5**
Select one of the following:		
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	
MATH 113	Linear Algebra and Matrix Theory	
Applied Mathematics and Statistics		**3-5**
Select one of the following:		
CME 107	Introduction to Machine Learning	
CME 263	Introduction to Linear Dynamical Systems	
CS 229M	Machine Learning Theory	
EE 263	Introduction to Linear Dynamical Systems	
EE 276	Information Theory	
MATH 108	Introduction to Combinatorics and Its Applications	
MATH 110	Applied Number Theory and Field Theory	
MATH 136	Stochastic Processes	
MATH 158	Basic Probability and Stochastic Processes with Engineering Applications	
MATH 159	Discrete Probabilistic Methods	
MS&E 111	Introduction to Optimization	
MS&E 111X	Introduction to Optimization (Accelerated)	
MS&E 121	Introduction to Stochastic Modeling	
MS&E 201	Dynamic Systems	
MS&E 213	Introduction to Optimization Theory	
MS&E 221	Stochastic Modeling	
PSYCH 253	Advanced Statistical Modeling	
STATS 110	Statistical Methods in Engineering and the Physical Sciences	
STATS 191	Introduction to Applied Statistics	
STATS 200	Introduction to Statistical Inference	
STATS 202	Data Mining and Analysis	
STATS 216	Introduction to Statistical Learning	
STATS 217	Introduction to Stochastic Processes I	
Integrative Requirement		**3-5**
Must be completed no earlier than the Junior Year.		
i. Any of the Standard Options for all Concentrations specified under the Core Capstone requirement, or		
ii. A Concentration-Specific Integrative Course: A course that integrates the themes of the Concentration with the Core requirements. Select one of the following (with more options to be added as they are approved -- some options may be removed if they are included in the list of SYMSYS 195* project courses, in order to avoid redundancy with the Standard Options).		
CS 129	Applied Machine Learning	
CS 151	Logic Programming	
CS 154	Introduction to the Theory of Computation	
CS 157	Computational Logic	
CS 161	Design and Analysis of Algorithms	
CS 163	The Practice of Theory Research	
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	
CS 224W	Machine Learning with Graphs	
CS 228	Probabilistic Graphical Models: Principles and Techniques	
CS 229	Machine Learning	
CS 229M	Machine Learning Theory	
CS 230	Deep Learning	
CS 246	Mining Massive Data Sets	
CS 254	Computational Complexity	
CS 255	Introduction to Cryptography	
CS 259Q	Quantum Computing	
CS 325B	Data for Sustainable Development	
CS 379C	Computational Models of the Neocortex	
ECON 160	Game Theory and Economic Applications	
ECON 178	Behavioral Economics	
ECON 180	Honors Game Theory	
MATH 114	Introduction to Scientific Computing	
MS&E 252	Decision Analysis I: Foundations of Decision Analysis	
PHIL 151	Metalogic	
PHIL 152	Computability and Logic	
PHIL 154	Modal Logic	
PHIL 155	Topics in Mathematical Logic: Non-Classical Logic	
PHIL 162	Philosophy of Mathematics	
PHIL 184B	Formal Epistemology	
PHIL 353	Seminar on Philosophy of Logic and Mathematics	
PHIL 359	Topics in Logic, Information and Agency	
PSYCH 154	Judgment and Decision-Making	
PSYCH 204	Computation and Cognition: The Probabilistic Approach	
PSYCH 204B	Computational Neuroimaging	
PSYCH 209	Neural Network Models of Cognition	
PSYCH 232	Brain and Decision	
PSYCH 242	Theoretical Neuroscience	
PSYCH 249	Large-Scale Neural Network Modeling for Neuroscience	
PSYCH 253	Advanced Statistical Modeling	
SOC 154	The Politics of Algorithms	
STATS 220	Machine Learning Methods for Neural Data Analysis	

Contingent Electives

If any of requirements 1-3 are fulfilled with courses taken for Core requirements, then additional approved Contingent Elective courses must be completed to total 5 courses beyond those that are taken for the Core. These electives can be one or more courses from any of the areas above, or which are approved for a Core requirement that the student has fulfilled with a different course, or any of the following:

BIOMEDIN 219	Mathematical Models and Medical Decisions
CS 250	Algebraic Error Correcting Codes
CS 254B	Computational Complexity II
CS 263	Counting and Sampling
EE 377	Information Theory and Statistics
MATH 56	Proofs and Modern Mathematics
MATH 107	Graph Theory
MATH 115	Functions of a Real Variable
MATH 120	Groups and Rings
MATH 144	Introduction to Topology and Geometry
MATH 152	Elementary Theory of Numbers
MATH 171	Fundamental Concepts of Analysis
PHIL 3N	Randomness: Computational and Philosophical Approaches
STATS 203	Introduction to Regression Models and Analysis of Variance
STATS 206	Applied Multivariate Analysis
STATS 218	Introduction to Stochastic Processes II
STATS 221	Random Processes on Graphs and Lattices
Total Units	**15-25**

Media and Communication Concentration

See also the Symbolic Systems website (https://symsys.stanford.edu/undergraduatesconcentrations/media-and-communication-mediacomm-concentration/).

Symbolic Systems majors completing the new Core requirements effective for 2020-2021 must complete the following requirements to qualify for a Concentration in Media and Communication. All courses must be taken for 3 units of more

Introduction		**3-5**
COMM 1	Introduction to Communication	
Statistical and Data Analysis Methods		**3-5**

Select one of the following:

ANTHRO 116	Data Analysis for Quantitative Research
COMM 173E	Data Challenge Lab
CS 229	Machine Learning
MS&E 125	Introduction to Applied Statistics
MS&E 226	Fundamentals of Data Science: Prediction, Inference, Causality
PSYCH 253	Advanced Statistical Modeling
SOC 180B	Introduction to Data Analysis
STATS 60	Introduction to Statistical Methods: Precalculus
STATS 101	Data Science 101
STATS 110	Statistical Methods in Engineering and the Physical Sciences
STATS 191	Introduction to Applied Statistics
STATS 200	Introduction to Statistical Inference
STATS 202	Data Mining and Analysis

Research Methods **3-5**

A course on empirical and computational methods that are commonly used for research on media and communication. One of the following:

COMM 106	Communication Research Methods
CS 142	Web Applications
CS 147	Introduction to Human-Computer Interaction Design
CS 347	Human-Computer Interaction: Foundations and Frontiers
CS 448B	Data Visualization
CSRE 433	Intersectional Qualitative Approaches
EDUC 143	Introduction to Data Science
EDUC 200B	Introduction to Qualitative Research Methods
EDUC 211	Beyond Bits and Atoms - Lab
EDUC 236	Beyond Bits and Atoms: Designing Technological Tools
HUMBIO 82A	Qualitative Research Methodology
ME 341	Design Experiments
MS&E 135	Networks
MS&E 231	Introduction to Computational Social Science
MS&E 348	Optimization of Uncertainty and Applications in Finance
PHIL 60	Introduction to Philosophy of Science
POLISCI 150A	Data Science for Politics
POLISCI 150C	Causal Inference for Social Science
PSYCH 251	Experimental Methods
SOC 10	Introduction to Computational Social Science
SOC 180A	Foundations of Social Research
SOC 194	Computational Undergraduate Research
SOC 369	Social Network Methods
STATS 211	Meta-research: Appraising Research Findings, Bias, and Meta-analysis
STS 191W	Doing STS: Introduction to Research

Effects, Ethics, and Policy **3-5**

A course on the effects of, and possible responses to, digital technology, media, and communication. For example, one of the following:

AFRICAAM 200N	Funkentelechy: Technologies, Social Justice and Black Vernacular Cultures
ANTHRO 132D	Thinking Technology: Anthropological Perspectives
ANTHRO 134A	Whose Ghost in the Machine? Cultures, Politics and Morals of Artificial Intelligence
COMM 1B	Media, Culture, and Society
COMM 108	Media Processes and Effects
COMM 120W	The Rise of Digital Culture
COMM 124	Truth, Trust, and Tech
COMM 125	Perspectives on American Journalism
COMM 135	Deliberative Democracy and its Critics
COMM 145	Personality and Digital Media
COMM 153B	Free Speech, Democracy and the Internet
COMM 154	The Politics of Algorithms
COMM 162	Campaigns, Voting, Media, and Elections
COMM 164	The Psychology of Communication About Politics in America
COMM 166	Virtual People

COMM 172	Media Psychology
COMM 180	Ethics, Public Policy, and Technological Change
COMM 184	Race and Media
COMM 186W	Media, Technology, and the Body
COMM 230A	Digital Civil Society
COMM 322	Advanced Studies in Behavior and Social Media
CS 181	Computers, Ethics, and Public Policy
CS 182	Ethics, Public Policy, and Technological Change
CS 209	Law, Order, & Algorithms
ECON 46	Networks and Human Behavior
ECON 47	Media Markets and Social Good
ENGLISH 106A	A.I.-Activism-Art
INTLPOL 221	Politics of Data: Algorithmic Culture, Big Data, and Information Waste
LAW 4039	Regulating Artificial Intelligence
LAW 4045	Digital Technology and Law: Foundations
LAW 4050	AI and Rule of Law: A Global Perspective
LINGUIST 156	Language, Gender, & Sexuality
MS&E 135	Networks
MS&E 184	Future of Work: Issues in Organizational Learning and Design
MS&E 234	Data Privacy and Ethics
NBIO 101	Social and Ethical Issues in the Neurosciences
PHIL 174B	Universal Basic Income: the philosophy behind the proposal
POLISCI 223A	Public Opinion and American Democracy
POLISCI 227C	Money in Politics
PSYC 86Q	Psychology of Xenophobia
PSYCH 103	Intergroup Communication
SOC 31N	Social Networks
SOC 124	Gender and Technology
SOC 126	Introduction to Social Networks
SOC 141P	Public Interest Tech: Case Studies
STS 1	The Public Life of Science and Technology
SYMSYS 201	Digital Technology, Society, and Democracy
Integrative Requirement	**3-5**
i. Any of the Standard Options for all Concentrations specified under the Core Capstone requirement, or	
ii. A Concentration-Specific Integrative Course: A course that integrates the themes of the Concentration with the Core requirements. Select one of the following (with more options to be added as they are approved -- some options may be removed if they are included in the list of SYMSYS 195* project courses, in order to avoid redundancy with the Standard Options).	
COMM 164	The Psychology of Communication About Politics in America
COMM 166	Virtual People
COMM 172	Media Psychology
COMM 176	Advanced Digital Media Journalism
COMM 177B	Big Local Journalism: a project-based class
COMM 177P	Programming in Journalism
COMM 177T	Building News Applications
COMM 322	Advanced Studies in Behavior and Social Media
COMM 324	Language and Technology
COMM 326	Advanced Topics in Human Virtual Representation
CS 181	Computers, Ethics, and Public Policy
CS 182	Ethics, Public Policy, and Technological Change
CS 206	Exploring Computational Journalism
CS 224W	Machine Learning with Graphs
CS 278	Social Computing
LINGUIST 134A	The Structure of Discourse: Theory and Applications
LINGUIST 150	Language and Society
SOC 154	The Politics of Algorithms
SYMSYS 201	Digital Technology, Society, and Democracy
Contingent Electives	**3-5**
If any of requirements 1-4 are fulfilled with courses taken for Core requirements, then additional approved Contingent Elective courses must be completed to total 5 courses beyond those that are taken for the Core. These electives can be one or more courses from any of the areas above, or which are approved for a Core requirement that the student has fulfilled with a different course, or any of the following:	
ANTHRO 166A	Semiotics for Ethnography
EDUC 260B	Advanced Statistical Methods for Observational Studies
HUMBIO 82B	Advanced Data Analysis in Qualitative Research
LINGUIST 1	Introduction to Linguistics
LINGUIST 54N	Social Bias and Earwitness Memory
LINGUIST 127	Linguistic Meaning and Legal Interpretation
LINGUIST 234	The Structure of Discourse: Theory and Applications
LINGUIST 258	Analysis of Variation
LINGUIST 278	Programming for Linguists
LINGUIST 285	Spoken Language Processing
PSYCH 80	Introduction to Personality and Affective Science
PSYCH 155	Introduction to Comparative Studies in Race and Ethnicity
PSYCH 241	Psychometrics and automated experiment design
STATS 202	Data Mining and Analysis
STATS 203	Introduction to Regression Models and Analysis of Variance
Total Units	**15-25**

Natural Language

See also the Symbolic Systems website (https://symsys.stanford.edu/undergraduatesconcentrations/natural-language-nl-concentration/).

Symbolic Systems majors completing the new Core requirements effective for 2020-2021 must complete the following requirements to qualify for a Concentration in Natural Language. All courses must be taken for 3 units of more.

Students in the Natural Language Concentration must take four courses from at least 3 of areas 1-7, plus a course from area 8. If any of requirements 1-7 are fulfilled with courses taken for Core requirements, then additional approved Contingent Elective courses (see area 9) must be completed to total 5 courses beyond those that are taken for the Core.	
Mathematical/Computational Foundations	**3-5**
CS 154	Introduction to the Theory of Computation

CS 221	Artificial Intelligence: Principles and Techniques
CS 229	Machine Learning
PHIL 154	Modal Logic
PSYCH 204	Computation and Cognition: The Probabilistic Approach
PSYCH 209	Neural Network Models of Cognition
PSYCH 251	Experimental Methods
PSYCH 254	Affective Neuroscience
Computational Linguistics	**3-5**
CS 124	From Languages to Information
CS 224N	Natural Language Processing with Deep Learning
CS 224S	Spoken Language Processing
CS 224U	Natural Language Understanding
CS 276	Information Retrieval and Web Search
PSYCH 290	Natural Language Processing & Text-Based Machine Learning in the Social Sciences
SYMSYS 112	Challenges for Language Systems
Phonetics/Phonology/Speech	**3-5**
LINGUIST 105	Phonetics
LINGUIST 110	Introduction to Phonology
LINGUIST 112	Seminar in Phonology: Stress, Tone, and Accent
LINGUIST 157	Sociophonetics
LINGUIST 205B	Advanced Phonetics
LINGUIST 207A	Advanced Phonetics
LINGUIST 210A	Phonology
LINGUIST 213	Corpus Phonology
LINGUIST 260A	Historical Morphology and Phonology
Morphosyntax	**3-5**
LINGUIST 121A	The Syntax of English
LINGUIST 121B	Crosslinguistic Syntax
LINGUIST 217	Morphosyntax
LINGUIST 222A	Foundations of Syntactic Theory I
LINGUIST 225D	Seminar in Syntax: Advanced Topics
LINGUIST 260B	Historical Morphosyntax
Semantics/Pragmatics/Philosophy of Language	**3-5**
LINGUIST 130A	Introduction to Semantics and Pragmatics
LINGUIST 130B	Introduction to Lexical Semantics
LINGUIST 132	Lexical Semantic Typology
LINGUIST 230B	Advanced Semantics
LINGUIST 230C	Advanced Topics in Semantics & Pragmatics
LINGUIST 232A	Lexical Semantics
LINGUIST 236	Seminar in Semantics: Conditionals
PHIL 137	Wittgenstein
PHIL 181	Philosophy of Language
PHIL 182	Advanced Philosophy of Language
PHIL 182A	Naturalizing Representation
PHIL 194D	Capstone Seminar: Artificial Intelligence
PHIL 194K	Slurs and Derogation: Semantic, Pragmatic and Ethical Perspectives
PHIL 348	Evolution of Signalling
PHIL 385D	Advanced Topics in Philosophy of Language
SYMSYS 112	Challenges for Language Systems
Psycholinguistics	**3-5**
LINGUIST 140	Learning to Speak: An Introduction to Child Language Acquisition
LINGUIST 245B	Methods in Psycholinguistics
LINGUIST 246	Foundations of Psycholinguistics
LINGUIST 248	Seminar in Developmental Psycholinguistics
PSYCH 132	Language and Thought
PSYCH 140	Introduction to Psycholinguistics
PSYCH 209	Neural Network Models of Cognition
Sociolinguistics and Language Change	**3-5**
LINGUIST 65	African American Vernacular English
LINGUIST 116A	Introduction to Word-Formation
LINGUIST 150	Language and Society
LINGUIST 150E	Who Speaks Good English
LINGUIST 152	Sociolinguistics and Pidgin Creole Studies
LINGUIST 156	Language, Gender, & Sexuality
LINGUIST 157	Sociophonetics
LINGUIST 159	American Dialects
LINGUIST 168	Introduction to Linguistic Typology
Integrative Requirement	**3-5**
Must be completed no earlier than the Junior Year.	
i. Any of the Standard Options for all Concentrations specified under the Core Capstone requirement, or	
ii. A Concentration-Specific Integrative Course: A course that integrates the themes of the Concentration with the Core requirements. Select one of the following (with more options to be added as they are approved -- some options may be removed if they are included in the list of SYMSYS 195* project courses, in order to avoid redundancy with the Standard Options).	
COMM 324	Language and Technology
CS 221	Artificial Intelligence: Principles and Techniques
CS 276	Information Retrieval and Web Search
LINGUIST 180	From Languages to Information
PHIL 137	Wittgenstein
PHIL 181	Philosophy of Language
PHIL 182	Advanced Philosophy of Language
PHIL 182A	Naturalizing Representation
PHIL 194D	Capstone Seminar: Artificial Intelligence
PHIL 194K	Slurs and Derogation: Semantic, Pragmatic and Ethical Perspectives
PHIL 348	Evolution of Signalling
PHIL 356C	Logic and Artificial Intelligence
PHIL 357	Research Seminar on Logic and Cognition
PHIL 359	Topics in Logic, Information and Agency
PHIL 385D	Advanced Topics in Philosophy of Language
PSYCH 204	Computation and Cognition: The Probabilistic Approach
PSYCH 209	Neural Network Models of Cognition
PSYCH 247	Topics in Natural and Artificial Intelligence
SYMSYS 205	The Philosophy and Science of Perception
SYMSYS 207	Conceptual Issues in Cognitive Science
Contingent Electives	**3-5**

If any of requirements 1-7 are fulfilled with courses taken for Core requirements, then additional approved Contingent Elective courses must be completed to total 5 courses beyond those that are taken for the Core. These electives can be one or more courses from any of the areas above, or which are approved for a Core requirement that the student has fulfilled with a different course, or any of the following:

PSYCH 10	Introduction to Statistical Methods: Precalculus
STATS 191	Introduction to Applied Statistics
STATS 200	Introduction to Statistical Inference
Additional courses may be added here in the future.	
Total Units	**15-25**

Neurosciences

See also the Symbolic Systems website (https://symsys.stanford.edu/undergraduatesconcentrations/neurosciences-neuro-concentration/).

Symbolic Systems majors completing the new Core requirements effective for 2020-2021 must complete the following requirements to qualify for a Concentration in Neurosciences. All courses must be taken for 3 units of more.

Students in the Neurosciences Concentration must take a total of five courses. At least two of the five courses must be from the first two areas, and at least one must come from area 7. If any of the courses listed under areas 1-6 are taken for Core requirements, then additional approved Contingent Elective courses (see area 8) must be completed to total 5 courses beyond those that are taken for the Core. Area 9 (Recommended Add-ons) consists of one- and two-unit courses that supplement areas 1-8. Add-on courses do not count toward the 5-course requirement for the Concentration.

Basic Neuroscience		**3-5**
BIO 84	Physiology	
BIO 86	Cell Biology	
BIO 150	Human Behavioral Biology	
BIO 151	Mechanisms of Neuron Death	
BIO 153	Cellular Neuroscience: Cell Signaling and Behavior	
BIO 154	Molecular and Cellular Neurobiology	
HUMBIO 4A	The Human Organism	
NBIO 206	The Nervous System	
NBIO 258	Information and Signaling Mechanisms in Neurons and Circuits	
PSYCH 121	Ion Transport and Intracellular Messengers	
PSYCH 141	Cognitive Development	
PSYCH 205	Foundations of Cognition	
Note: NBIO 206 is a 6-unit course, which counts as two concentration courses, from areas 1 and 2.		
Systems Neuroscience		**3-5**
BIO 158	Developmental Neurobiology	
BIO 222	Exploring Neural Circuits	
EDUC 266	Educational Neuroscience	
PSYC 124	Brain Plasticity	
PSYCH 30	Introduction to Perception	
PSYCH 45	Introduction to Learning and Memory	
PSYCH 50	Introduction to Cognitive Neuroscience	
PSYCH 162	Brain Networks	
PSYCH 169	Advanced Seminar on Memory	
PSYCH 232	Brain and Decision	
PSYCH 254	Affective Neuroscience	
PSYCH 266	Current Debates in Learning and Memory	
Computational Approaches		**3-5**
BIOE 101	Systems Biology	
BIOE 300B	Quantitative Physiology	
CS 223A	Introduction to Robotics	
CS 229	Machine Learning	
CS 379C	Computational Models of the Neocortex	
EE 124	Introduction to Neuroelectrical Engineering	
MATSCI 384	Materials Advances for Neurotechnology: Materials Meet the Mind	
MUSIC 257	Neuroplasticity and Musical Gaming	
PSYCH 164	Brain decoding	
PSYCH 204	Computation and Cognition: The Probabilistic Approach	
PSYCH 204A	Human Neuroimaging Methods	
PSYCH 204B	Computational Neuroimaging	
PSYCH 209	Neural Network Models of Cognition	
PSYCH 249	Large-Scale Neural Network Modeling for Neuroscience	
PSYCH 287	Brain Machine Interfaces: Science, Technology, and Application	
STATS 220	Machine Learning Methods for Neural Data Analysis	
Biological and Computational Approaches to Vision		**3-5**
CS 131	Computer Vision: Foundations and Applications	
CS 231A	Computer Vision: From 3D Reconstruction to Recognition	
CS 231N	Convolutional Neural Networks for Visual Recognition	
PSYCH 30	Introduction to Perception	
PSYCH 221	Image Systems Engineering	
PSYCH 250	High-level Vision: From Neurons to Deep Neural Networks	
Philosophical and Theoretical Approaches		**3-5**
NBIO 101	Social and Ethical Issues in the Neurosciences	
PHIL 167D	Philosophy of Neuroscience	
PHIL 186	Philosophy of Mind	
PHIL 360	Grad Seminar: Philosophy of Neuroscience	
PHIL 368A	Topics in Neuroscience	
PSYCH 242	Theoretical Neuroscience	
SYMSYS 207	Conceptual Issues in Cognitive Science	
Methodological Foundations		**3-5**
BIOE 291	Principles and Practice of Optogenetics for Optical Control of Biological Tissues	
CS 205L	Continuous Mathematical Methods with an Emphasis on Machine Learning	
CS 448B	Data Visualization	
EE 102A	Signal Processing and Linear Systems I	
EE 102B	Signal Processing and Linear Systems II	
EE 261	The Fourier Transform and Its Applications	
EE 263	Introduction to Linear Dynamical Systems	
MATH 113	Linear Algebra and Matrix Theory	
MS&E 211	Introduction to Optimization	
PSYCH 10	Introduction to Statistical Methods: Precalculus	
PSYCH 187	Research Methods in Cognition & Development	

PSYCH 204A	Human Neuroimaging Methods
PSYCH 251	Experimental Methods
PSYCH 252	Statistical Methods for Behavioral and Social Sciences
PSYCH 253	Advanced Statistical Modeling
STATS 110	Statistical Methods in Engineering and the Physical Sciences
STATS 141	Biostatistics
STATS 191	Introduction to Applied Statistics
STATS 200	Introduction to Statistical Inference

Integrative Requirement **3-5**

Must be completed no earlier than the Junior Year.

i. Any of the Standard Options for all Concentrations specified under the Core Capstone requirement, or

ii. A Concentration-Specific Integrative Course: A course that integrates the themes of the Concentration with the Core requirements. Select one of the following (with more options to be added as they are approved -- some options may be removed if they are included in the list of SYMSYS 195* project courses, in order to avoid redundancy with the Standard Options).

CS 131	Computer Vision: Foundations and Applications
CS 221	Artificial Intelligence: Principles and Techniques
CS 228	Probabilistic Graphical Models: Principles and Techniques
CS 229	Machine Learning
CS 230	Deep Learning
CS 231A	Computer Vision: From 3D Reconstruction to Recognition
CS 234	Reinforcement Learning
CS 379C	Computational Models of the Neocortex
PHIL 167D	Philosophy of Neuroscience
PHIL 357	Research Seminar on Logic and Cognition
PHIL 360	Grad Seminar: Philosophy of Neuroscience
PHIL 368A	Topics in Neuroscience
PSYC 223B	Topics in Neurodiversity: Design Thinking Approaches
PSYCH 121	Ion Transport and Intracellular Messengers
PSYCH 162	Brain Networks
PSYCH 164	Brain decoding
PSYCH 169	Advanced Seminar on Memory
PSYCH 202	Cognitive Neuroscience
PSYCH 204	Computation and Cognition: The Probabilistic Approach
PSYCH 204A	Human Neuroimaging Methods
PSYCH 204B	Computational Neuroimaging
PSYCH 209	Neural Network Models of Cognition
PSYCH 232	Brain and Decision
PSYCH 242	Theoretical Neuroscience
PSYCH 247	Topics in Natural and Artificial Intelligence
PSYCH 249	Large-Scale Neural Network Modeling for Neuroscience
PSYCH 254	Affective Neuroscience
STATS 220	Machine Learning Methods for Neural Data Analysis
SYMSYS 202	Theories of Consciousness
SYMSYS 205	The Philosophy and Science of Perception
SYMSYS 207	Conceptual Issues in Cognitive Science
SYMSYS 245	Cognition in Interaction Design

Contingent Electives **3-5**

If any of the courses listed under areas 1-6 are taken for Core requirements, then additional approved Contingent Elective courses must be completed to total 5 courses beyond those that are taken for the Core. These electives can be one or more courses from any of the areas above, or which are approved for a Core requirement that the student has fulfilled with a different course, or any of the following:

Additional courses may be added here in the future.

Recommended Add-ons **3-5**

One- and two-unit courses that supplement the offerings above. These courses are recommended, but do not count toward the 5-course requirement for the Concentration:

NSUR 239	NeuroTech Training Seminar
NSUR 249	Experimental Immersion in Neuroscience

Total Units **15-25**

Philosophical Foundations

See also the Symbolic Systems website (https://symsys.stanford.edu/undergraduatesconcentrations/philosophical-foundations-concentration/).

Units

Symbolic Systems majors completing the new Core requirements effective for 2020-2021 must complete the following requirements to qualify for a Concentration in Philosophical Foundations. All courses must be taken for 3 units of more.

Philosophy of Mind and Language **3-5**

One course from the PHIL 180-series:

PHIL 180	Metaphysics
PHIL 180A	Realism, Anti-Realism, Irrealism, Quasi-Realism
PHIL 181	Philosophy of Language
PHIL 182	Advanced Philosophy of Language
PHIL 182A	Naturalizing Representation
PHIL 182H	Truth
PHIL 183	Self-knowledge and Metacognition
PHIL 184	Topics in Epistemology
PHIL 184B	Formal Epistemology
PHIL 184M	Topics in the Theory of Justification
PHIL 185	Special Topics in Epistemology: Testimony in science and everyday life
PHIL 185W	Metaontology
PHIL 186	Philosophy of Mind
PHIL 187	Philosophy of Action
PHIL 188W	Paradoxes
PHIL 189G	Fine-Tuning Arguments for God's Existence

Ethics, Historical, and Political Philosophy **3-5**

Courses must be numbered 100 or above.

Select one of the following:

PHIL 102	Modern Philosophy, Descartes to Kant
PHIL 107B	Plato's Later Metaphysics and Epistemology
PHIL 172	History of Modern Moral Philosophy
PHIL 173B	Metaethics
PHIL 175	Philosophy of Law
PHIL 194P	The Meaning of Life

Logic **3-5**

Select one of the following:

CS 154	Introduction to the Theory of Computation	
PHIL 152	Computability and Logic	
PHIL 154	Modal Logic	
PHIL 359	Topics in Logic, Information and Agency	
Philosophy of Science		**3-5**
Select one of the following:		
PHIL 20N	Philosophy of Artificial Intelligence	
PHIL 162	Philosophy of Mathematics	
PHIL 164	Central Topics in the Philosophy of Science: Theory and Evidence	
PHIL 165	Philosophy of Physics: Space and Time	
PHIL 167D	Philosophy of Neuroscience	
PHIL 169	Evolution of the Social Contract	
SYMSYS 207	Conceptual Issues in Cognitive Science	
Integrative Requirement		
Must be completed no earlier than the Junior Year.		
i. Any of the Standard Options for all Concentrations specified under the Core Capstone requirement, or		
ii. A Concentration-Specific Integrative Course: A course that integrates the themes of the Concentration with the Core requirements. Select one of the following (with more options to be added as they are approved -- some options may be removed if they are included in the list of SYMSYS 195* project courses, in order to avoid redundancy with the Standard Options).		
CS 181	Computers, Ethics, and Public Policy	
CS 182	Ethics, Public Policy, and Technological Change	
NBIO 101	Social and Ethical Issues in the Neurosciences	
PHIL 134A	Phenomenology: Animals	
PHIL 162	Philosophy of Mathematics	
PHIL 167D	Philosophy of Neuroscience	
PHIL 169	Evolution of the Social Contract	
PHIL 184B	Formal Epistemology	
PHIL 194D	Capstone Seminar: Artificial Intelligence	
PHIL 194Y	Capstone seminar: Common Sense Philosophy	
PHIL 350	What makes a good explanation? Psychological and philosophical perspectives	
PHIL 359	Topics in Logic, Information and Agency	
PHIL 360	Grad Seminar: Philosophy of Neuroscience	
PHIL 368A	Topics in Neuroscience	
PHIL 385B	Topics in Metaphysics and Epistemology: Situations and Attitudes	
PSYCH 160	Seminar on Emotion	
SYMSYS 202	Theories of Consciousness	
SYMSYS 205	The Philosophy and Science of Perception	
SYMSYS 207	Conceptual Issues in Cognitive Science	
Contingent Electives		
If any of requirements 1-4 are fulfilled with courses taken for Core requirements, then additional approved Contingent Elective courses must be completed to total 5 courses beyond those that are taken for the Core: These electives can be one or more courses from any of the areas above, or which are approved for a Core requirement that the student has fulfilled with a different course, or any of the following:		
Additional courses may be added here in the future.		
Total Units		**15-25**

Individually Designed Concentrations (IDCs)

Individually Designed Concentrations (IDCs) consist of five courses in a coherent subject area related to symbolic systems. This relationship may be established through inclusion in an IDC of two or more courses that connect the proposed concentration to the core, i.e. courses that (a) directly apply disciplines included in the core and (b) are related by topic or methodology to the other courses in the proposed concentration.

Course selection is to be made in consultation with the student's adviser and is subject to approval by the adviser, the Associate Director, and the Director. For examples of IDCs completed by past SSP students, consult the list of alumni and apply the filter "Individually Designed Concentration".

Approval of an IDC must take place no less than two full quarters before a student plans to graduate, e.g. prior to the first day of Winter Quarter of the senior year if a student intends to graduate in June of that year. Failure to obtain approval by the required date will necessitate either completing the requirements for one of the suggested concentrations, or delaying graduation to the end of the second full quarter following approval of an IDC.

To get a proposed IDC approved, send an email message to symsys-directors at lists.stanford.edu, cc'd to your prospective concentration adviser, stating that the adviser has approved your proposal, and giving a title, one-paragraph description, and course plan for your proposed concentration.

Additional Information

Undergraduate Research

The program encourages all SSP majors to gain experience in directed research by participating in faculty research projects or by pursuing independent study. In addition to the Symbolic Systems Honors Program (see below), the following avenues are offered.

Summer Internships: students work on SSP-related faculty research projects. Application procedures are announced in the Winter Quarter for SSP majors.

Research Assistantships: other opportunities to work on faculty research projects are typically announced to SSP majors as they arise during the academic year.

Independent Study: under faculty supervision. For course credit, students should enroll in SYMSYS 196 Independent Study.

Contact SSP for more information on any of these possibilities, or see the Symbolic Systems (http://symsys.stanford.edu) web site. In addition, see the Undergraduate Advising and Research (https://undergrad.stanford.edu/opportunities/research.html) web site for information on UAR grants and scholarships supporting student research projects at all levels.

Honors Program

Seniors in SSP may apply for admission to the Symbolic Systems honors program prior to the beginning of their final year of study. Students who are accepted into the honors program can graduate with honors by completing an honors thesis under the supervision of a faculty member. Course credit for the honors project may be obtained by registering for SYMSYS 190 Senior Honors Tutorial any quarter while a student is working on an honors project. SYMSYS 191 Senior Honors Seminar, is recommended for honors students during the senior year. Contact SSP or visit the program's web site for more information on the honors program, including deadlines and policies.

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Minor in Symbolic Systems

Students may minor in Symbolic Systems by completing either Option 1 or Option 2. For additional information see the Symbolic Systems minors web site (http://symsys.stanford.edu/viewing/htmldocument/13635/).

Degree Requirements

Option 1

		Units
One course in each of the following core areas (please note that several of these courses have prerequisites):		
a. Cognition		**3-4**
Select one of the following:		
SYMSYS 1	Minds and Machines (formerly SYMSYS 100)	
PSYCH 45	Introduction to Learning and Memory	
PSYCH 50	Introduction to Cognitive Neuroscience	
b. Logic and Computation		**3-5**
Select one of the following:		
PHIL 150	Mathematical Logic	
PHIL 151	Metalogic	
CS 103	Mathematical Foundations of Computing	
c. Computer Programming		**3-5**
Select one of the following:		
CS 106B	Programming Abstractions	
CS 106X	Programming Abstractions	
CS 107	Computer Organization and Systems	
d. Philosophical Foundations		**4-5**
Select one of the following:		
SYMSYS 1	Minds and Machines (formerly SYMSYS 100)	
PHIL 80	Mind, Matter, and Meaning	
e. Linguistic Theory		**3-4**
Select one of the following:		
LINGUIST 105	Phonetics	
LINGUIST 110	Introduction to Phonology	
LINGUIST 120	Introduction to Syntax	
LINGUIST 121A	The Syntax of English	
LINGUIST 121B	Crosslinguistic Syntax	
LINGUIST 130A	Introduction to Semantics and Pragmatics	
LINGUIST 130B	Introduction to Lexical Semantics	
f. Computation and Cognition		**3-4**
Select one of the following:		
APPPHYS 293	Theoretical Neuroscience	
CS 221	Artificial Intelligence: Principles and Techniques	
CS 228	Probabilistic Graphical Models: Principles and Techniques	
CS 229	Machine Learning	
CS 131	Computer Vision: Foundations and Applications	
LINGUIST 180	From Languages to Information	
LINGUIST 182	(no longer offered)	
NENS 220	Computational Neuroscience	
PSYCH 109	An introduction to computation and cognition	
PSYCH 204	Computation and Cognition: The Probabilistic Approach	
PSYCH 209	Neural Network Models of Cognition	
Total Units		**19**

[1] SYMSYS 1 Minds and Machines (formerly SYMSYS 100) may not be counted for both areas 'a' and 'd'.

Option 2

Introduction		**4**
SYMSYS 1	Minds and Machines (formerly SYMSYS 100)	4
Interdisciplinary Concentration		**15**
An interdisciplinary SSP concentration listed on the SSP web site. To qualify, the selection of courses used for the minor must be interdisciplinary; it must either include courses from at least three departments, or include more than one course from each of two departments.		
Total Units		**19**

Coterminal Master's Degrees in Symbolic Systems

The Symbolic Systems M.S. Program admits a handful of coterminal students each year. Coterminal students usually complete the program in one academic year.

Applications for Coterminal admission of active Stanford undergraduates are reviewed in the Winter and Spring Quarters. For more details, see the Coterm admissions information (https://symsys.stanford.edu/graduatesms-admissions/coterminal-admissions/) on the Symbolic Systems Program website. Admission to the program as a coterminal student is subject to the policies and deadlines described in the "Coterminal Bachelor's and Master's Degrees (https://exploredegrees.stanford.edu/cotermdegrees/)" section of this bulletin. The GRE is not required for coterminal applicants to the Symbolic Systems M.S. program.

Many SSP majors also complete coterminal M.S. or M.A. degrees in affiliated departments. In addition to the Symbolic Systems M.S. program, the Department of Philosophy offers a Special Program in Symbolic Systems track for interdisciplinary graduate level work leading to the Master of Arts in Philosophy (http://www.stanford.edu/dept/registrar/bulletin/6567.htm).

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Master of Science in Symbolic Systems

The University's basic requirements for the M.S. degree are discussed in the "Graduate Degrees (p. 65)" section of this bulletin.

The M.S. degree in Symbolic Systems is designed to be completed in the equivalent of one academic year by coterminal students or returning students who already have a B.S. degree in Symbolic Systems, and in two years or less by other students depending upon level of preparation. Admission is competitive, providing a limited number of students with the opportunity to pursue course and project work in consultation with a faculty adviser who is affiliated with the Symbolic Systems Program. The faculty adviser may impose requirements beyond those described here.

Admission to the program as a coterminal student is subject to the policies and deadlines described in the "Coterminal Bachelor's and Master's Degrees (p. 56)" section of this bulletin. Applicants to the M.S. program are reviewed each Winter Quarter. Information on deadlines, procedures for applying, and degree requirements are available from the program's student services coordinator in the Linguistics Department office (460-127E) and at the Symbolic Systems (http://symsys.stanford.edu/viewing/htmldocument/13623/) web site.

Note, the GRE is required for external applicants.

Symbolic Systems also offers a Joint Degree with Law School (M.S./J.D.).

Director of Graduate Studies: Hyowon Gweon

Degree Requirements

A candidate for the M.S. degree in Symbolic Systems must complete a program of 45 units. All courses must be 100-level and above. At least 36 of these must be graded units, passed with an average grade of 3.0 (B) or better, and any course taken as part of the 45 unit program must be taken for a letter grade unless the course is offered S/NC only. None of the 45 units to be counted toward the M.S. degree may include units counted toward an undergraduate degree at Stanford or elsewhere. Course requirements for the M.S. degree in Symbolic Systems may be waived after a review by the program office. Waivers are granted at the discretion of the program, and only if evidence is provided that similar or more advanced courses have been taken and passed with a letter grade of B or its equivalent, either at Stanford or another institution, and as part of another degree program which the student has either completed or is pursuing in parallel with the Symbolic Systems M.S. degree. Course requirements that are waived rather than fulfilled by courses taken at Stanford may not be counted toward the 45 units required for the Symbolic Systems M.S. degree. For additional information, see the Symbolic Systems web site (http://symsys.stanford.edu/graduate_programs/).

Each candidate for the M.S. degree must fulfill the following requirements:

1. Submission to the Symbolic Systems Program office and approval of the following pre-project research documents:
   a. Project Area Statement, endorsed with a commitment from a student's prospective project adviser no later than May 1 of the academic year prior to the expected graduation year; and
   b. Qualifying Research Paper due no later than the end of the Summer Quarter prior to the expected graduation year.
2. Completion of a coherent plan of study, to be approved by the Program Director, Director of Graduate Studies, or Associate Director, in consultation with the student's primary adviser (for students with an approved Project Area Statement), and designed to support a student's project as well as the core course requirements for the M.S. degree (requirements 3 and 4 below). An initial plan of study should be delineated on the Program Proposal Form prior to the end of the student's first quarter of study, as required by the University. The final version of the Program Proposal, which should specify all the courses which the student has taken and proposes in fulfillment of both the Program's and the University's course and unit requirements for the degree, is due by the end of Finals Week in the quarter prior to the student's expected graduation quarter (i.e. end of Winter Quarter for a student graduating in the Spring).
3. Completion of the Master's Breadth Requirements. The Program Proposal must include courses taken for 3 units or more each that are more advanced than the Symbolic Systems undergraduate core in four main skill areas: formal, empirical, computational, and philosophical; and in at least three of the following departments (based on the listing as as any cross-listing departments): Computer Science, Linguistics, Philosophy, and Psychology. Courses to fulfill the Breadth Requirements must be taken for a letter grade if available.

Acceptable courses in each of the four required skill areas are defined as follows:

a) Formal: a course in logic and computational theory beyond the level of PHIL 151 Metalogic. The courses below have been approved. Other courses may be approved if appropriate.

- PHIL 252 Computability and Logic
- PHIL 254 Modal Logic
- PHIL 356C Logic and Artificial Intelligence
- PHIL 357 Research Seminar on Logic and Cognition
- CS 154 Introduction to the Theory of Computation
- CS 157 Computational Logic
- CS 161 Design and Analysis of Algorithms
- CS 261 Optimization and Algorithmic Paradigms

b) Empirical: a course drawing on experimental or observational data or methods, beyond the level of PSYCH 55, LINGUIST 120 or 130A. The courses below are examples of those that have been approved. Other courses may be approved if appropriate.

- CS 224N Natural Language Processing with Deep Learning
- CS 224U Natural Language Understanding
- CS 229 Machine Learning
- CS 376 Research Topics in Human-Computer Interaction
- LINGUIST 230B Advanced Semantics
- NBIO 206 The Nervous System
- NBIO 258 Information and Signaling Mechanisms in Neurons and Circuits
- PSYCH 204 Computation and Cognition: The Probabilistic Approach
- PSYCH 204A Human Neuroimaging Methods
- PSYCH 209 Neural Network Models of Cognition
- PSYCH 251 Experimental Methods
- PSYCH 252 Statistical Methods for Behavioral and Social Sciences
- STATS 200 Introduction to Statistical Inference
- SYMSYS 245 Cognition in Interaction Design

c) Computational: a course involving programming beyond the level of CS 107. The courses below have been approved. Other courses may be approved if appropriate.

- CS 108 Object-Oriented Systems Design
- CS 110 Principles of Computer Systems
- CS 124 From Languages to Information

- CS 142 Web Applications
- CS 143 Compilers
- CS 145 Data Management and Data Systems
- CS 148 Introduction to Computer Graphics and Imaging
- CS 210A Software Project Experience with Corporate Partners
- CS 221 Artificial Intelligence: Principles and Techniques
- CS 224N Natural Language Processing with Deep Learning
- CS 224W Machine Learning with Graphs
- CS 246 Mining Massive Data Sets

d) Philosophical: a course in the area of Philosophy of Mind/Language/Science/Epistemology or Metaphysics at the 200 level or above, certified by the instructor as worthy of graduate credit. The courses below are examples of those that have been approved. Other courses may be approved if appropriate.

- PHIL 264 Central Topics in the Philosophy of Science: Theory and Evidence
- PHIL 267D Philosophy of Neuroscience
- PHIL 281 Philosophy of Language
- PHIL 281C
- PHIL 283 Self-knowledge and Metacognition
- PHIL 286 Philosophy of Mind
- PHIL 286A Self-fashioning
- PHIL 287 Philosophy of Action
- PHIL 327 Scientific Philosophy: From Kant to Kuhn and Beyond
- PHIL 348 Evolution of Signalling
- PHIL 359 Topics in Logic, Information and Agency
- PHIL 377 Social Agency

4. Completion of three quarters of SYMSYS 291 Master's Program Seminar.

5. Completion of a substantial project appropriate to the Program Proposal, represented by the M.S. Thesis. The project and thesis normally take three quarters or more to complete, and work on the project may account for up to 15 units of a student's 45-unit program. The thesis must be read and approved for the master's degree in Symbolic Systems by two qualified readers approved by the program, at least one of whom must be a member of the academic council. A hard copy of the thesis must be submitted to the Associate Director of Symbolic Systems, including the signatures of each reader indicating approval of the thesis for the degree of Master of Science, no later than 12 noon on the day of the University Dissertation/Thesis Submission Deadline (https://studentaffairs.stanford.edu/registrar/students/dissertation-thesis/) for the quarter of a student's graduation. A digital copy must be uploaded to the Stanford Digital Repository by the same deadline. For more details, see the Master's Thesis information (https://symsys.stanford.edu/graduatesmasters-program/masters-thesis/) on the Symbolic Systems Program website.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Symbolic Systems Program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade. The program also continues to count courses passed with a' C'- letter grade or above towards the satisfaction of all core requirements, and with a 'D-' or above towards the satisfaction of concentration requirements.

Other Policies

The deadline for juniors to declare a concentration advisor has been extended to Winter Quarter. A registration hold will be placed on juniors who have not declared a concentration advisor before registration opens for Spring Quarter 2020-21.

Graduate Degree Requirements

Grading

The master's program in Symbolic Systems counts all courses taken in academic year 2020-21 with a grade of 'D-', 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade, subject to a graduate GPA requirement of 3.0 or above in the courses that constitute a master's student's 45 required units.

Graduate Advising Expectations

The Symbolic Systems Program is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program. Students are expected to meet regularly with their advisers and to keep them informed about their academic progress. Each student and their adviser should mutually agree on the frequency of these meetings when the advising relation begins and reassess their frequency at the start of every quarter.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Faculty

Director: Michael C. Frank

Director of Graduate Studies: Hyowon Gweon

Associate Director: Todd Davies

Faculty Advisory Board: Jeremy Bailenson, Michael Bernstein, Ray Briggs, Todd Davies, Judith Degen, Michael C. Frank, Noah Goodman, Hyowon Gweon, Thomas Icard, Daniel Jurafsky, Daniel Lassiter, Krista Lawlor, Christopher Manning, James McClelland, Stanley Peters, Christopher Potts, Mehran Sahami, Johan van Benthem, Thomas A. Wasow

Executive Committee: Michael Bernstein, Todd Davies, Michael C. Frank, Hyowon Gweon, Thomas Icard, Christopher Potts

Program Faculty:

Aeronautics and Astronautics: Mykel Kochenderfer (Assistant Professor)

Biology: Deborah Gordon (Professor)

Classics: Reviel Netz (Professor)

Communication: Jeremy Bailenson (Professor), Jeff Hancock (Professor), Byron Reeves (Professor), Frederick Turner (Professor)

Computer Science: Maneesh Agrawala (Professor), Michael Bernstein (Assistant Professor), Emma Brunskill (Assistant Professor), David Dill (Professor, emeritus), Chelsea Finn (Assistant Professor), Michael Genesereth (Associate Professor), Oussama Khatib (Professor), Daphne Koller (Adjunct Professor), James Landay (Professor), Jean-Claude Latombe (Professor, emeritus), Marc Levoy (Professor, emeritus), Christopher Manning (Professor), Andrew Ng (Adjunct Professor), Chris Piech (Assistant Professor), Vaughan Pratt (Professor, emeritus), Eric Roberts (Professor, emeritus), Mehran Sahami (Professor, Teaching), Yoav Shoham (Professor, emeritus), Terry Winograd (Professor, emeritus)

Economics: Muriel Niederle (Professor)

Education: Nick Haber (Assistant Professor), Raymond P. McDermott (Professor, emeritus), Roy Pea (Professor), Daniel Schwartz (Professor)

Electrical Engineering: Chelsea Finn (Assistant Professor), Krishna Shenoy (Professor), Sebastian Thrun (Adjunct Professor)

French and Italian: Jean-Pierre Dupuy (Professor)

Genetics: Russ B. Altman (Professor)

Graduate School of Business: Baba Shiv (Professor)

History: Jessica G. Riskin (Professor)

Law: Mark Lemley (Professor)

Linguistics: Arto Anttila (Associate Professor), Joan Bresnan (Professor, emerita), Eve Clark (Professor, emerita), Cleo Condoravdi (Professor Research), Judith Degen (Assistant Professor), Penelope Eckert (Professor), Vera Gribanova (Associate Professor), Boris Harizanov (Assistant Professor), Daniel Jurafsky (Professor), Ronald Kaplan (Adjunct Professor), Lauri Karttunen (Adjunct Professor), Martin Kay (Professor), Paul Kiparsky (Professor), Daniel Lassiter (Assistant Professor), Beth Levin (Professor), Christopher Manning (Professor), Stanley Peters (Professor, emeritus), Christopher Potts (Professor), Meghan Sumner (Associate Professor), Thomas A. Wasow (Professor, emeritus), Annie Zaenen (Adjunct Professor)

Management Science and Engineering: Sharad Goel (Assistant Professor), Pamela Hinds (Professor), John Ugander (Assistant Professor)

Mathematics: Persi Diaconis (Professor)

Mechanical Engineering: Sean Follmer (Assistant Professor)

Medicine: Russ B. Altman (Professor), Mark Musen (Professor)

Music: Jonathan Berger (Professor), Christopher Chafe (Professor), Eleanor Selfridge-Field (Adjunct Professor), Ge Wang (Associate Professor)

Neurobiology: William T. Newsome (Professor), Jennifer Raymond (Professor)

Philosophy: Michael Bratman (Professor), Ray Briggs (Professor), Rosa Cao (Assistant Professor), Mark Crimmins (Associate Professor), John Etchemendy (Professor), Dagfinn Føllesdal (Professor, emeritus), Thomas Icard III (Assistant Professor), Krista Lawlor (Professor), Anna-Sara Malmgren (Assistant Professor), John Perry (Professor, emeritus), Brian Skyrms (Professor), Johan van Benthem (Professor), Thomas A. Wasow (Professor, emeritus)

Psychiatry and Behavioral Sciences: Vinod Menon (Professor)

Psychology: Herbert H. Clark (Professor, emeritus), Anne Fernald (Associate Professor), Michael C. Frank (Associate Professor), Justin Gardner (Assistant Professor), Noah Goodman (Associate Professor), Kalanit Grill-Spector (Professor), Hyowon Gweon (Assistant Professor), Brian Knutson (Professor), Ellen Markman (Professor), James McClelland (Professor), Russell Poldrack (Professor), Barbara Tversky (Professor, emerita), Anthony Wagner (Professor), Brian Wandell (Professor), Daniel Yamins (Assistant Professor), Jamil Zaki (Assistant Professor)

Statistics: Persi Diaconis (Professor), Susan P. Holmes (Professor)

Symbolic Systems: Todd Davies (Associate Director), Jeff Shrager (Adjunct Professor), Paul Skokowski (Adjunct Professor)

Other Affiliates: David Barker-Plummer (CSLI Engineering Research Associate), Keith Devlin H-STAR Operation Senior Researcher), Daniel Flickinger (CSLI Research and Development Engineer), Cheryl Phillips (Lecturer in Communications)

Courses

SYMSYS 1. Minds and Machines. 4 Units.
(Formerly SYMSYS 100). An overview of the interdisciplinary study of cognition, information, communication, and language, with an emphasis on foundational issues: What are minds? What is computation? What are rationality and intelligence? Can we predict human behavior? Can computers be truly intelligent? How do people and technology interact, and how might they do so in the future? Lectures focus on how the methods of philosophy, mathematics, empirical research, and computational modeling are used to study minds and machines. Students must take this course before being approved to declare Symbolic Systems as a major. All students interested in studying Symbolic Systems are urged to take this course early in their student careers. The course material and presentation will be at an introductory level, without prerequisites. If you have any questions about the course, please email symsys1staff@gmail.com.
Same as: CS 24, LINGUIST 35, PHIL 99, PSYCH 35, SYMSYS 200

SYMSYS 1P. A Practical Introduction to Symbolic Systems. 2 Units.
An optional supplement to "Minds and Machines" (SYMSYS 1), aimed at prospective majors in Symbolic Systems. Students will learn from the perspectives of faculty, alums, and advanced students about how to navigate the many paths available to a student: Sym Sys versus other majors, undergraduate core options, selecting courses and a concentration, research opportunities, internships, the honors program, graduate programs, careers, and life paths.

SYMSYS 2S. Introduction to Cognitive Science. 3 Units.
Cognitive Science explores one of sciences final frontiers; the scientific study of the human mind. It is a broad interdisciplinary field that encompasses research from areas in neuroscience, psychology, philosophy, linguistics, and computer science and covers topics such as the nature of knowledge, thinking, remembering, vision, imagery, language, and consciousness. All of which we will touch upon in this survey course and is intended to give students a sampler of each discipline. This introductory class will expose students to some of the major methodologies, experimental design, neuroscientific fundamentals, and different cognitive disorders. More importantly, it will help students refine their interest to a specific field within cognitive science for future studies at their respective institutions. This 6-week summer course will require a sizable amount of required reading, not all of the readings is covered in the lectures. To extend and complement topics in this field, there is material presented in the lectures that is not in the readings.

SYMSYS 8. The Logic Group. 1-2 Unit.
If all dogs bark and Fido is a dog, it follows that Fido barks. If Clark Kent owns a car, it follows that Superman owns a car, since Clark Kent is Superman. Yet you might wonder why these statements follow from the said assumptions. Can this perhaps be explained in terms of the statements¿ meanings or their grammatical form? Will the explanation be the same in both cases, or do statements follow from assumptions for a variety of different reasons? Are there laws or principles which conclusively prove the statements from the assumptions? Can these laws be doubted, or are they self-evident?nThe Logic Group will tackle these and similar questions. You will gain a solid understanding of both propositional and predicate logic, including a deductive proof system. You will familiarise yourself with the central concepts of formal reasoning, including syntax and semantics, truth and interpretation, validity and soundness, and the concept of logical consequence. Although formal and technical, the course is accessible to all students, and all may benefit. Studying logic will improve your analytic and critical thinking skills and help you develop a more rigorous and precise writing style. Only open to students residing at Stanford House in Oxford (UK).
Same as: Oxford

SYMSYS 20Q. The Data-Driven World. 3 Units.
Recent technological advancements have enabled us to measure, record, and analyze more data than ever before. How can we effectively use this data to solve real-world problems and better understand the world around us? In this course, we will learn how computers can create a statistical model to learn from human-generated data and find patterns or make predictions. We will explore different algorithms that create a wide variety of models, each with their own pros and cons. Through R programming exercises integrated across the course, we will apply these models to many different kinds of data sourced from urban development, education, business, etc. and analyze our findings. Based on individual interest, students will choose to investigate a specific research question using domain-specific data as part of a quarter-long project. Lastly, we will discuss important ethical debates on the possible uses of data and their implications in today¿s world. By the end of the course, students will develop a technical coding skillset to investigate hypotheses in any given dataset, and be able to connect the insights they derive to larger issues of society, equity, and justice.

SYMSYS 112. Challenges for Language Systems. 3-4 Units.
Parallel exploration of philosophical and computational approaches to modeling the construction of linguistic meaning. In philosophy of language: lexical sense extension, figurative speech, the semantics/pragmatics interface, contextualism debates. In CS: natural language understanding, from formal compositional models of knowledge representation to statistical and deep learning approaches. We will develop an appreciation of the complexities of language understanding and communication; this will inform discussion of the broader prospects for Artificial Intelligence. Special attention will be paid to epistemological questions on the nature of linguistic explanation, and the relationship between theory and practice. PREREQUISITES: PHIL80; some exposure to philosophy of language and/or computational language processing is recommended.
Same as: SYMSYS 212

SYMSYS 115. Critique of Technology. 3-4 Units.
What is the character of technology? How does technology reveal aspects of human nature and social practices? How does it shape human experience and values? We will survey the history of philosophy of technology -- from ancient and enlightenment ideas, to positivist and phenomenological conceptions -- to develop a deeper understanding of diverse technological worldviews. This will prepare us to consider contemporary questions about the "ethos" of technology. Specific questions will vary depending upon the interests of participants, but may include: ethical and existential challenges posed by artificial intelligence; responsible product design in the "attention economy"; industry regulation and policy issues for information privacy; and the like. PREREQUISITES: PHIL80.

SYMSYS 122. Artificial Intelligence: Philosophy, Ethics, & Impact. 3-4 Units.
Recent advances in computing may place us at the threshold of a unique turning point in human history. Soon we are likely to entrust management of our environment, economy, security, infrastructure, food production, healthcare, and to a large degree even our personal activities, to artificially intelligent computer systems. The prospect of "turning over the keys" to increasingly autonomous systems raises many complex and troubling questions. How will society respond as versatile robots and machine-learning systems displace an ever-expanding spectrum of blue- and white-collar workers? Will the benefits of this technological revolution be broadly distributed or accrue to a lucky few? How can we ensure that these systems respect our ethical principles when they make decisions at speeds and for rationales that exceed our ability to comprehend? What, if any, legal rights and responsibilities should we grant them? And should we regard them merely as sophisticated tools or as a newly emerging form of life? The goal of this course is to equip students with the intellectual tools, ethical foundation, and psychological framework to successfully navigate the coming age of intelligent machines.

SYMSYS 167D. Philosophy of Neuroscience. 4 Units.
How can we explain the mind? With approaches ranging from computational models to cellular-level characterizations of neural responses to the characterization of behavior, neuroscience aims to explain how we see, think, decide, and even feel. While these approaches have been highly successful in answering some kinds of questions, they have resulted in surprisingly little progress in others. We'll look at the relationships between the neuroscientific enterprise, philosophical investigations of the nature of the mind, and our everyday experiences as creatures with minds. Prerequisite: PHIL 80.n(Not open to freshmen.).
Same as: PHIL 167D, PHIL 267D

SYMSYS 190. Senior Honors Tutorial. 1-5 Unit.
Under the supervision of their faculty honors adviser, students work on their senior honors project. May be repeated for credit.

SYMSYS 191. Senior Honors Seminar. 1 Unit.
Recommended for seniors doing an honors project. Under the leadership of the Symbolic Systems program coordinator, students discuss, and present their honors project.

SYMSYS 192. Symbolic Systems in Practice. 3 Units.
A professionalization course that fulfills the Practicum requirement of the Symbolic Systems undergraduate major Capstone. Online lectures, readings, assigned exercises, and live discussions relate the Sym Sys curriculum to a substantial work experience. Must be accompanied by an approved internship totaling 64 hours or more of total work time, which must be completed in the quarter prior to, during, or immediately following the course.

SYMSYS 195A. Design for Artificial Intelligence. 3-4 Units.
A project-based course that builds on the introduction to design in CS147 by focusing on advanced methods and tools for research, prototyping, and user interface design. Studio based format with intensive coaching and iteration to prepare students for tackling real world design problems. This course takes place entirely in studios; you must plan on attending every studio to take this class. The focus of CS247A is design for human-centered artificial intelligence experiences. What does it mean to design for AI? What is HAI? How do you create responsible, ethical, human centered experiences? Let us explore what AI actually is and the constraints, opportunities and specialized processes necessary to create AI systems that work effectively for the humans involved. Prerequisites: CS147 or equivalent background in design thinking.
Same as: CS 247A

SYMSYS 195B. Design for Behavior Change. 3-4 Units.
Over the last decade, tech companies have invested in shaping user behavior, sometimes for altruistic reasons like helping people change bad habits into good ones, and sometimes for financial reasons such as increasing engagement. In this project-based hands-on course, students explore the design of systems, information and interface for human use. We will model the flow of interactions, data and context, and crafting a design that is useful, appropriate and robust. Students will design and prototype utility apps or games as a response to the challenges presented. We will also examine the ethical consequences of design decisions and explore current issues arising from unintended consequences. Prerequisite: CS147 or equivalent.
Same as: CS 247B

SYMSYS 195D. Research in Digital Democracy. 3-4 Units.
Digital democracy refers to social activity that is organized democratically at a group, institutional, or societal level, and that takes place within or is augmented by digital technology. This is a project-based research seminar designed to teach students methods for studying digital democracy, as well as collaborating in a group, the organization of a research project, and academic writing. The first few weeks of the course will be an overview of digital democracy research and its methods, as well as a time for students to organize into a group research project, The remainder of the class (about 7 weeks) will be spent performing and writing up the research for a targeted publication venue. Application required for enrollment. Prerequisite: At least one course in empirical methods or statistics. Prerequisites: At least one course in empirical methods or statistics.
Same as: SYMSYS 295D

SYMSYS 195E. Experimental Methods. 3 Units.
Graduate laboratory class in experimental methods for psychology, with a focus on open science methods and best practices in behavioral research. Topics include experimental design, data collection, data management, data analysis, and the ethical conduct of research. The final project of the course is a replication experiment in which students collect new data following the procedures of a published paper. The course is designed for incoming graduate students in psychology, but is open to qualified students from other programs who have some working knowledge of the R statistical programming language. Requirement: Psych 10/Stats 60 or equivalent.
Same as: PSYCH 251

SYMSYS 195G. Introduction to Game Design. 3-4 Units.
A project-based course that builds on the introduction to design in CS147 by focusing on advanced methods and tools for research, prototyping, and user interface design. Studio based format with intensive coaching and iteration to prepare students for tackling real world design problems. This course takes place entirely in studios; please plan on attending every studio to take this class. nThe focus of CS247g is an introduction to theory and practice of the design of games. We will make digital and paper games, do rapid iteration and run user research studies appropriate to game design. This class has multiple short projects, allowing us to cover a variety of genres, from narrative to pure strategy. Prerequisites: 147 or equivalent background.
Same as: CS 247G

SYMSYS 195I. Image Systems Engineering. 1-3 Unit.
This course is an introduction to digital imaging technologies. We focus on the principles of key elements of digital systems components; we show how to use simulation to predict how these components will work together in a complete image system simulation. The early lectures introduce the software environment and describe options for the course project. The following topics are covered and software tools are introduced:n- Basic principles of optics (Snell's Law, diffraction, adaptive optics).n- Image sensor and pixel designsn- Color science, metrics, and calibrationn- Human spatial resolutionn- Image processing principlesn- Display technologiesnA special theme of this course is that it explains how imaging technologies accommodate the requirements of the human visual system. The course also explains how image systems simulations can be useful in neuroscience and industrial vision applications.nThe course consists of lectures, software tutorials, and a course project. Tutorials and projects include extensive software simulations of the imaging pipeline. Some background in mathematics (linear algebra) and programming (Matlab) is valuable.nPre-requisite: EE 261 or equivalent. Or permission of instructor required.
Same as: PSYCH 221

SYMSYS 195L. Methods in Psycholinguistics. 4 Units.
Over the past ten years, linguists have become increasingly interested in testing theories with a wider range of empirical data than the traditionally accepted introspective judgments of hand-selected linguistic examples. Consequently, linguistics has seen a surge of interest in psycholinguistic methods across all subfields. This course will provide an overview of various standard psycholinguistic techniques and measures, including offline judgments (e.g., binary categorization tasks like truth-value judgments, Likert scale ratings, continuous slider ratings), response times, reading times, eye-tracking, ERPs, and corpus methods. Students will present and discuss research articles. Students will also run an experiment (either a replication or an original design, if conducive to the student¿s research) to gain hands-on experience with experimental design and implementation in html/javascript and Mechanical Turk; data management, analysis, and visualization in R; and open science tools like git/github.
Same as: LINGUIST 245B

SYMSYS 195N. Natural Language Processing with Deep Learning. 3-4 Units.
Methods for processing human language information and the underlying computational properties of natural languages. Focus on deep learning approaches: understanding, implementing, training, debugging, visualizing, and extending neural network models for a variety of language understanding tasks. Exploration of natural language tasks ranging from simple word level and syntactic processing to coreference, question answering, and machine translation. Examination of representative papers and systems and completion of a final project applying a complex neural network model to a large-scale NLP problem. Prerequisites: calculus and linear algebra; CS124, CS221, or CS229.
Same as: CS 224N, LINGUIST 284

SYMSYS 195S. Service Design. 3-4 Units.
A project-based course that builds on the introduction to design in CS147 by focusing on advanced methods and tools for research, prototyping, and user interface design. Studio based format with intensive coaching and iteration to prepare students for tackling real world design problems. This course takes place entirely in studios; you must plan on attending every studio to take this class. The focus of CS247S is Service Design. In this course we will be looking at experiences that address the needs of multiple types of stakeholders at different touchpoints - digital, physical, and everything in between. If you have ever taken an Uber, participated in the Draw, engaged with your bank, or ordered a coffee through the Starbucks app, you have experienced a service that must have a coordinated experience for the customer, the service provider, and any other stakeholders involved. Let us explore what specialized tools and processes are required to created these multi-faceted interactions. Prerequisites: CS147 or equivalent background in design thinking.
Same as: CS 247S

SYMSYS 195T. Natural Language Processing & Text-Based Machine Learning in the Social Sciences. 4 Units.
Digital communications (including social media) are the largest data sets of our time, and most of it is text. Social scientists need to be able to digest small and big data sets alike, process it and extract psychological insight. This applied and project-focused course introduces students to a Python codebase developed to facilitate text analysis in the social sciences (see dlatk.wwbp.org -- knowledge of Python is helpful but not required). The goal is to practice these methods in guided tutorials and project-based work so that the students can apply them to their own research contexts and be prepared to write up the results for publication. The course will provide best practices, as well as access to and familiarity with a Linux-based server environment to process text, including the extraction of words and phrases, topics and psychological dictionaries. We will also practice the use of machine learning based on text data for psychological assessment, and the further statistical analysis of language variables in R. Familiarity with Python is helpful but not required. Basic familiarity with R is expected. The ability to wrangle data into a spreadsheet-like format is expected. A basic introduction to SQL will be given in the course. Familiarity with SSH and basic Linux is helpful but not required. Understanding of regression is expected.
Same as: PSYCH 290, SOC 281

SYMSYS 195U. Natural Language Understanding. 3-4 Units.
Project-oriented class focused on developing systems and algorithms for robust machine understanding of human language. Draws on theoretical concepts from linguistics, natural language processing, and machine learning. Topics include lexical semantics, distributed representations of meaning, relation extraction, semantic parsing, sentiment analysis, and dialogue agents, with special lectures on developing projects, presenting research results, and making connections with industry. Prerequisites: one of LINGUIST 180/280, CS 124, CS 224N, or CS 224S.
Same as: CS 224U, LINGUIST 188, LINGUIST 288

SYMSYS 195V. Data Visualization. 3-4 Units.
Techniques and algorithms for creating effective visualizations based on principles from graphic design, visual art, perceptual psychology, and cognitive science. Topics: graphical perception, data and image models, visual encoding, graph and tree layout, color, animation, interaction techniques, automated design. Lectures, reading, and project. Prerequisite: one of CS147, CS148, or equivalent.
Same as: CS 448B

SYMSYS 196. Independent Study. 1-15 Unit.
Independent work under the supervision of a faculty member. Can be repeated for credit.

SYMSYS 200. Minds and Machines. 4 Units.
(Formerly SYMSYS 100). An overview of the interdisciplinary study of cognition, information, communication, and language, with an emphasis on foundational issues: What are minds? What is computation? What are rationality and intelligence? Can we predict human behavior? Can computers be truly intelligent? How do people and technology interact, and how might they do so in the future? Lectures focus on how the methods of philosophy, mathematics, empirical research, and computational modeling are used to study minds and machines. Students must take this course before being approved to declare Symbolic Systems as a major. All students interested in studying Symbolic Systems are urged to take this course early in their student careers. The course material and presentation will be at an introductory level, without prerequisites. If you have any questions about the course, please email symsys1staff@gmail.com.
Same as: CS 24, LINGUIST 35, PHIL 99, PSYCH 35, SYMSYS 1

SYMSYS 201. Digital Technology, Society, and Democracy. 3 Units.
The impact of information and communication technologies on social and political life. Interdisciplinary. Classic and contemporary readings focusing on topics such as social networks, virtual versus face-to-face communication, the public sphere, voting technology, and collaborative production. Prerequisite: Completion of a course in psychology, communication, human-computer interaction, or a related discipline, or consent of the instructor.

SYMSYS 202. Theories of Consciousness. 3 Units.
Are fish conscious? Are fetuses? Could we build a conscious computer? Much of the philosophical work on consciousness has focused on whether consciousness is wholly physical, but that question is orthogonal to the more specific questions about consciousness that most of us really care about. To answer those questions, we need a theory of how consciousness works in our world. Philosophers and scientists have put forward a spectrum of different candidates, from very abstract, philosophical theories through theories more informed by cognitive psychology down to neural and even quantum theories. In this seminar, students will learn about the major theories of consciousness as well as conceptual issues that arise on different approaches. Particularly important will be the question of how we might gain empirical evidence for a theory of consciousness.

SYMSYS 203. Cognitive Science Perspectives on Humanity and Well-Being. 3 Units.
In recent years, cognitive scientists have turned more attention to questions that have traditionally been investigated bynhistorians, political scientists, sociologists, and anthropologists, e.g. What are the sources of conflict and disagreement betweennpeople?, What drives or reduces violence and injustice?, and What brings about or is conducive to peace and justice? In this advancednsmall seminar, we will read and discuss works by psychologists, neuroscientists, philosophers, and others, which characterize thisngrowing research area among those who study minds, brains, and behavior.nRequired: Completion of a course in psychology beyond the level of Psych 1, or consent of the instructor.

SYMSYS 205. The Philosophy and Science of Perception. 3 Units.
Our senses tell us about our immediate environment, but what exactly do they tell us? Our color experiences tell us that the things around us have color properties, but what in the world are color properties? Do we visually represent absolute size as well as relative size? When we see an apple, do we literally see it as an apple, or do we infer that it¿s an apple based on its color and shape? Can what we expect to see affect what we actually see? In this seminar we will bring both philosophical and empirical perspectives to bear on these and other issues related to figuring out just how our perceptual experiences represent the world as being. Prerequisite: PHIL 80 or permission of the instructor.

SYMSYS 207. Conceptual Issues in Cognitive Science. 3 Units.
This seminar will cover a selection of foundational issues in cognitive science. Topics may include modularity, representation, connectionism, neuroscience and free will, neuroimaging, implants, sensory experience, the nature of information, and consciousness. Course is limited to 15 students. Prerequisite: Phil 80, or permission of the instructor.

SYMSYS 208. Computer Machines and Intelligence. 3 Units.
It has become common for us to see in the media news about computer winning a masters in chess, or answering questions on the Jeopardy TV show, or the impact of AI on health, transportation, education, in the labor market and even as an existential threat to mankind. This interest in AI gives rise questions such as: Is it possible for a computer to think? What is thought? Are we computers? Could machines feel emotions or be conscious? Curiously, there is no single, universally accepted definition of Artificial Intelligence. However in view of the rapid dissemination of AI these questions are important not only for experts, but also for all other members of society. This course is intended for students from different majors Interested in learn how the concept of intelligent machine is understood by the researchers in AI. We will study the evolution of AI research, its different approaches, with focus on the tests developed to verify if a machine is intelligent or not. In addition, we will examine the philosophical problems associated with the concept of intelligent machine. The topics covered will include: Turing test, symbolic AI, connectionist AI, sub- symbolic Ai, Strong AI and Weak AI, Ai singularity, unconventional computing, rationality, intentionality, representation, machine learning, and the possibility of conscious machines.

SYMSYS 212. Challenges for Language Systems. 3-4 Units.
Parallel exploration of philosophical and computational approaches to modeling the construction of linguistic meaning. In philosophy of language: lexical sense extension, figurative speech, the semantics/pragmatics interface, contextualism debates. In CS: natural language understanding, from formal compositional models of knowledge representation to statistical and deep learning approaches. We will develop an appreciation of the complexities of language understanding and communication; this will inform discussion of the broader prospects for Artificial Intelligence. Special attention will be paid to epistemological questions on the nature of linguistic explanation, and the relationship between theory and practice. PREREQUISITES: PHIL80; some exposure to philosophy of language and/or computational language processing is recommended.
Same as: SYMSYS 112

SYMSYS 245. Cognition in Interaction Design. 3 Units.
Note: Same course as 145 which is no longer active. Interactive systems from the standpoint of human cognition. Topics include skill acquisition, complex learning, reasoning, language, perception, methods in usability testing, special computational techniques such as intelligent and adaptive interfaces, and design for people with cognitive disabilities. Students conduct analyses of real world problems of their own choosing and redesign/analyze a project of an interactive system. Limited enrollment seminar taught in two sections of approximately ten students each. Admission to the course is by application to the instructor, with preference given to Symbolic Systems students of advanced standing. Recommended: a course in cognitive psychology or cognitive anthropology.

SYMSYS 255. Building Digital History: Informatics of Social Movements and Protest. 3-5 Units.
A participatory course focused on the online representation of oral and archival history research. This year's thematic focus is the design and evaluation of history websites focused on social movements and protest. We will survey the field of digital history and its application to social movement research and teaching. The course will utilize materials developed in the 2014 version of the course, which focused on the history of student activism at Stanford. Class will apply lessons from digital history practice and theory to the design of an online repository and community for the collaborative representation and discussion of social movement history at Stanford, and to the further development of source material in a future version of the class. Topics will include participatory design, studies of historical learning, archiving issues, data integrity, and fair representation of different viewpoints, among others.

SYMSYS 255A. Building Digital History: Social Movements and Protest at Stanford. 1 Unit.
Lectures-only version of Symsys 255.

SYMSYS 271. Group Democracy. 2-4 Units.
This seminar will explore theoretical, empirical, and practical approaches to groups that come together around a common purpose or interest. Emphasis is on democratically structured, non-hierarchical and non-institutional decision making, e.g. by grassroots activists, student, or neighborhood organizations. Parliamentary, consensus, and informal procedures. How do groups form? How do they deliberate and make decision? What are the principles underlying different models for group process, and how well do different procedures work in practice? How do culture and identity affect the working of a group? And how are social technologies used? Readings from different disciplines and perspectives. Course is limited to 20 students. Prerequisite: A course in social psychology, decision making or group sociology. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit.

SYMSYS 275. Collective Behavior and Distributed Intelligence. 3 Units.
This course will explore possibilities for student research projects based on presentations of faculty research. We will cover a broad range of topics within the general area of collective behavior, both natural and artificial. Students will build on faculty presentations to develop proposals for future projects.
Same as: BIO 175

SYMSYS 280. Symbolic Systems Research Seminar. 1 Unit.
A mixture of public lectures of interest to Symbolic Systems students (the Symbolic Systems Forum) and student-led meetings to discuss research in Symbolic Systems. Can be repeated for credit. Open to both undergraduates and Master's students.

SYMSYS 290. Master's Degree Project. 1-15 Unit.
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SYMSYS 291. Master's Program Seminar. 1 Unit.
Enrollment limited to students in the Symbolic Systems M.S. degree program. May be repeated for credit.

SYMSYS 295D. Research in Digital Democracy. 3-4 Units.
Digital democracy refers to social activity that is organized democratically at a group, institutional, or societal level, and that takes place within or is augmented by digital technology. This is a project-based research seminar designed to teach students methods for studying digital democracy, as well as collaborating in a group, the organization of a research project, and academic writing. The first few weeks of the course will be an overview of digital democracy research and its methods, as well as a time for students to organize into a group research project, The remainder of the class (about 7 weeks) will be spent performing and writing up the research for a targeted publication venue. Application required for enrollment. Prerequisite: At least one course in empirical methods or statistics. Prerequisites: At least one course in empirical methods or statistics.
Same as: SYMSYS 195D

SYMSYS 296. Independent Study. 1-15 Unit.
Independent work under the supervision of a faculty member. Can be repeated for credit.

SYMSYS 297. Teaching in Symbolic Systems. 1-5 Unit.
Leading sections, grading, and/or other duties of teaching or helping to teach a course in Symbolic Systems. Sign up with the instructor supervising the course in which you are teaching or assisting.

SYMSYS 298. Peer Advising in Symbolic Systems: Practicum. 1-2 Unit.
Optional for students selected as Undergraduate Advising Fellows in the Symbolic Systems Program. AFs work with program administrators to assist undergraduates in the Symbolic Systems major or minor, in course selection, degree planning, and relating the curriculum to a career or life plan, through advising and events. Meeting with all AFs for an hour once per week under the direction of the Associate Director. Requires a short reflective paper at the end of the quarter on what the AF has learned about advising students in the program. Repeatable for credit. May not be taken by students who receive monetary compensation for their work as an AF.

SYMSYS 299. Curricular Practical Training. 1 Unit.
Students obtain employment in a relevant research or industrial activity to enhance their professional experience consistent with their degree programs. Meets the requirements for curricular practical training for students on F-1 visas. Students submit a concise report detailing work activities, problems worked on, and key results. May be repeated for credit. Prerequisite: qualified offer of employment and consent of advisor.

THEATER AND PERFORMANCE STUDIES

Courses offered by the Department of Theater and Performance Studies are listed on the Stanford Bulletin's ExploreCourses web site under the subject codes TAPS (https://explorecourses.stanford.edu/search/?q=TAPS&view=catalog&page=0&catalog=71&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&filter-coursestatus-Active=on&collapse=&filter-catalognumber-TAPS=on) and DANCE (https://explorecourses.stanford.edu/search/?q=DANCE&view=catalog&page=0&catalog=71&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&filter-coursestatus-Active=on&collapse=&filter-catalognumber-DANCE=on&filter-catalognumber-DANCE=on).

Mission of the Undergraduate Program in Theater and Performance Studies

The mission of the undergraduate program in Theater and Performance Studies is to provide a strong, non-conservatory program that joins the study and practice of performance within the context of a liberal arts curriculum. The department gives students a strong grasp of historical, cultural, and practical contexts in which live performance develops. With close faculty contact, department majors pursue areas of interest that may include acting, directing, writing, dance, devised theater, design, stage management, performance theory, and cultural studies. During the senior year students complete a senior project as part of fulfilling the 60 units required for the major.

Learning Outcomes (Undergraduate)

The department expects undergraduate majors in the program to achieve the following learning outcomes:

1. the ability to write analytically about theater and performance
2. the ability to put aesthetic and creative skills into practice
3. the ability to find meaningful ways of integrating theory and practice
4. the ability to research effectively
5. the ability to articulate ideas about theater, dance and live arts.

Mission of the Graduate Program in Theater and Performance Studies

The mission of the graduate program in Theater and Performance Studies (TAPS) is to educate students who work on the leading edge of both scholarly and performance practice. The Ph.D. program includes the study of critical theory, dramatic literature, performance theory, theater history, and performance making. Graduate students complete a program with a rigorous study of critical theory, textual history, elements of production (directing, acting, choreography, writing, and design) and embodied research.

Learning Outcomes (Graduate)

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in Theater and Performance Studies. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge and production of Theater and Performance Studies, and to interpret and present the results of such research.

Bachelor of Arts in Theater and Performance Studies

The B.A. degree in Theater and Performance Studies provides students with historical, critical, and practical knowledge about theater and performance. Students are encouraged to declare the major in their sophomore year, if not sooner.

Suggested Preparation for the Major

Prospective majors in the first two years of study at Stanford are encouraged to take part in casting opportunities in department productions.

Degree Requirements

The following chart is an outline of the TAPS major degree requirements. All majors must choose a major concentration in either Acting or Theater-Making. Specific requirements for these concentrations can be found in subsequent sections.

		Units
TAPS 1	Introduction to Theater and Performance Studies	4
16 units in Theater and Dance Studies		16
18 units in Practicum		18
8 units in Production		8
10 units of Electives		10
TAPS 200	Senior Project	4
Total Units		60

Note: A course may be listed in more than one area; however, each course can only satisfy one major requirement. There is no double credit for a course.

Concentrations

All TAPS majors are required to select a concentration in Acting or Theater-Making. General guidance on course sequencing is available from the TAPS Director of Undergraduate Studies, Samer Al-Saber; the coordinator of the Acting concentration, Amy Freed; and the coordinator of the Theater-Making concentration, Michael Rau.

Acting

The Acting concentration develops students' skills in acting for the theater and related performance contexts. In practicum classes, students enhance their creative abilities under the guidance of teaching artists. Students also complete complementary coursework in theater and performance studies and are encouraged to explore playwriting, directing, and/or devising in order to expand their exposure to major ideas and approaches in the field. Students in this concentration are encouraged to take the required courses TAPS 120A Acting I: Fundamentals of Acting, TAPS 121V Voice for the Actor, and TAPS 127 Movement for the Actor early in the major as a gateway for their further technique classes.

		Units
1. Core		**4**
TAPS 1	Introduction to Theater and Performance Studies (Must be taken for a letter grade.)	
2. Theater and Dance Studies [1]		**16**
TAPS 11	Introduction to Dance Studies	
TAPS 11N	Dramatic Tensions: Theater and the Marketplace	
TAPS 12N	To Die For: Antigone and Political Dissent	
TAPS 13N	Law and Drama	

TAPS 40N	Family Drama: American Plays about Families	
TAPS 89N	Literature of Adoption	
TAPS 108	Introduction to Feminist, Gender, and Sexuality Studies	
TAPS 151	Dramaturgy	
TAPS 153P	Black Artistry: Performance in the Black Diaspora	
TAPS 164	Race and Performance	
TAPS 165	Introduction to Comparative Studies in Race and Ethnicity	
TAPS 167	Introduction to Greek Tragedy: Gods, Heroes, Fate, and Justice	
TAPS 169R	Reality TV and American Society	
TAPS 180Q	Noam Chomsky: The Drama of Resistance	
DANCE 196	Dancing Black: Embodying the African Diaspora in the United States and the Caribbean	
TAPS 252	Objects and Things: Theater, Performance, and Material Culture	
3. Practicum		**18**
TAPS 120A	Acting I: Fundamentals of Acting (Gateway, Required)	
TAPS 121V	Voice for the Actor (Required)	
TAPS 127	Movement for the Actor (Required)	
TAPS 60	How We Sing: The Voice, How It Functions, and the Singer's Mind	
TAPS 103	Beginning Improvising	
TAPS 104	Intermediate Improvisation	
TAPS 115A	Vocal Audition for Musical Theater: Acting and Singing Technique for Musical Theater Auditions	
TAPS 120B	Acting II: Advanced Acting	
TAPS 122P	Undergrad Performance Project	
TAPS 122M	Main Stage Theater Project	
TAPS 124D	Acting for Non-Majors	
TAPS 125S	Shakespeare Now: An Actor's Lab	
TAPS 127W	Introduction to Clown	
TAPS 128	Acting Intensive: On Camera Acting Technique	
TAPS 183C	Interpretation of Musical Theater Repertoire	
TAPS 183E	Singing for Musicals	
TAPS 184C	Dramatic Vocal Arts: Songs and Scenes Onstage	
4. Production		**8**
TAPS 34	Stage Management Techniques (Required)	
TAPS 39	Theater Crew (Required)	
TAPS 134	Stage Management Project (Required)	
5. Electives [2]		**10**
6. Capstone Project [3]		**4**
TAPS 200	Senior Project	
Total Units		60

Note: Refer to Past Bulletins (https://exploredegrees.stanford.edu/archive/#text) to review courses that fulfilled the requirements above that were offered in previous years.

1 One of the courses completed for this requirement must be a Writing in the Major course. In 2019-20 the Writing in the Major courses are:
- TAPS 11 Introduction to Dance Studies
- TAPS 153P Black Artistry: Performance in the Black Diaspora
- TAPS 264S Race, Gender, Justice

2 All courses in TAPS and DANCE qualify as electives. 4 units of ITALIC or SLE can also count as electives.

3 All TAPS Majors must complete a Senior Project that represents significant work in any area of theater and/or performance. The project must be an original contribution, such as directing a play, devising an original piece with a group, writing a script, choreographing a dance, designing a set, lights or costume for a show, creating a solo, acting a major role, writing an essay, or another creative enterprise agreed upon with advisors. Work for this project normally begins in Spring Quarter of the junior year and must be completed by the end of the senior year. Students enroll in 4 units of credit for senior projects through TAPS 200 Senior Project. Students pursuing senior projects must submit an adviser-approved proposal to the Production Manager, to be approved by the Artistic Director and Director of Undergraduate Studies no later than the end of Spring Quarter of the junior year.

Theater-Making

This concentration develops students' creative skills in theater-making. The theater-making concentration reflects the collaborative interdisciplinary nature of theater practice, with rich partnerships and dialogues between the crafts of directing, playwriting, producing, design and stagecraft. Students learn skills to build original theater productions. The disciplines grouped under this concentration offer a broad cross-section of theater-making skills and approaches. Students in this concentration are encouraged to take the required courses TAPS 30 Introduction to Theatrical Design and TAPS 101P Theater and Performance Making early in the major as a gateway for their further studies.

		Units
1. Core		**4**
TAPS 1	Introduction to Theater and Performance Studies (Must be taken for a letter grade.)	
2. Theater and Dance Studies [1]		**16**
TAPS 11	Introduction to Dance Studies	
TAPS 11N	Dramatic Tensions: Theater and the Marketplace	
TAPS 12N	To Die For: Antigone and Political Dissent	
TAPS 13N	Law and Drama	
TAPS 40N	Family Drama: American Plays about Families	
TAPS 89N	Literature of Adoption	
TAPS 108	Introduction to Feminist, Gender, and Sexuality Studies	
TAPS 151	Dramaturgy	
TAPS 153P	Black Artistry: Performance in the Black Diaspora	
TAPS 165	Introduction to Comparative Studies in Race and Ethnicity	
TAPS 164	Race and Performance	
TAPS 167	Introduction to Greek Tragedy: Gods, Heroes, Fate, and Justice	
TAPS 169R	Reality TV and American Society	
TAPS 180Q	Noam Chomsky: The Drama of Resistance	
DANCE 196	Dancing Black: Embodying the African Diaspora in the United States and the Caribbean	

TAPS 252	Objects and Things: Theater, Performance, and Material Culture	
3. Practicum		**18**
TAPS 30	Introduction to Theatrical Design (Gateway, Required)	
TAPS 101P	Theater and Performance Making (Gateway, Required)	
TAPS 31	Introduction to Lighting and Production	
TAPS 33	Introduction to Technical Theater and Production	
TAPS 119M	Special Topics: multi-hyphenate // liberating our artistic selves.	
TAPS 122M	Main Stage Theater Project	
TAPS 122P	Undergrad Performance Project	
TAPS 133	Set Design	
TAPS 135M	Introduction to Multimedia Production	
TAPS 136P	Introduction to Producing	
TAPS 136V	Design for Movement & Music	
TAPS 170A	The Director's Craft	
TAPS 177	Dramatic Writing: The Fundamentals	
TAPS 174	Digital Theater-Making: Creative Code and Performance	
TAPS 178C	Playwriting Workshop	
Up to 4 units of an acting class may count towards this requirement as well.		
With the approval of the Director of Undergraduate Studies, students may be able to count a limited number of the following special research or independent study courses towards the practicum requirement:		
TAPS 39	Theater Crew	
TAPS 134	Stage Management Project	
TAPS 140	Introduction to Projects in Theatrical Production	
TAPS 190	Special Research	
TAPS 231	Advanced Stage Lighting Design	
TAPS 232	Advanced Costume Design	
TAPS 233	Advanced Scene Design	
4. Production		**8**
TAPS 34	Stage Management Techniques (Required)	
TAPS 39	Theater Crew (Required)	
TAPS 134	Stage Management Project (Required)	
5. Electives [2]		**10**
6. Capstone Project [3]		**4**
TAPS 200	Senior Project	
Total Units		60

Note: Refer to Past Bulletins (https://exploredegrees.stanford.edu/archive/#text) to review courses that fulfilled the requirements above that were offered in previous years.

1 One of the courses completed for this requirement must be a Writing in the Major course. In 2019-20 the Writing in the Major courses are:
- TAPS 11 Introduction to Dance Studies
- TAPS 153P Black Artistry: Performance in the Black Diaspora
- TAPS 264S Race, Gender, Justice

2 All courses in TAPS and DANCE qualify as electives. 4 units of ITALIC or SLE can also count as electives.

3 All TAPS Majors must complete a Senior Project that represents significant work in any area of theater and/or performance. The project must be an original contribution, such as directing a play, devising an original piece with a group, writing a script, choreographing a dance, designing a set, lights or costume for a show, creating a solo, acting a major role, writing an essay, or another creative enterprise agreed upon with advisors. Work for this project normally begins in Spring Quarter of the junior year and must be completed by the end of the senior year. Students enroll in 4 units of credit for senior projects through TAPS 200 Senior Project. Students pursuing senior projects must submit an adviser-approved proposal to the Production Manager, to be approved by the Artistic Director and Director of Undergraduate Studies no later than the end of Spring Quarter of the junior year.

Honors Program

For a select number of students, the department confers the degree of Bachelor of Arts with Honors in Theater and Performance Studies. To qualify for departmental honors, students must meet the following requirements in addition to the other requirements of the TAPS major.

1. Applying to the honors program involves a written application, including a project proposal and transcript, which establishes the student's work to date in the department and outlines the area of research that the student wishes to pursue. Students must have at least an overall University GPA of 3.3 and a 3.5 GPA in courses counting towards the major.
2. Students must have completed a significant portion of their major coursework before enrolling in honors. It is recommended that students have taken courses that have prepared them for advanced study in the proposed area of research.
3. Students enroll in TAPS 202 Honors Thesis, which is worth four units total. Students need to enroll in this course each quarter during the senior year (1 unit in Autumn; 1 unit in Winter; 2 units in Spring). It is graded S/NC (grade determined by the student's adviser).
4. The honors thesis (described below) is due on May 15th in the Spring quarter and is double-marked by the primary adviser and one other Stanford faculty member.
5. Entry into the honors program does not guarantee an honors degree. The final decision to confer an honors degree is made by the student's thesis adviser upon evaluating the quality of the thesis.

Honors Thesis

There are two ways to undertake an honors thesis. The first is to write a 40-50 page essay, presenting research on an important issue or subject of the student's choice. The second option is for a student to use their involvement in a creative project as a case study. In this situation, the honors thesis critically analyzes the creative work. Typically, the creative project is the student's capstone, but subject to the advisor's approval, a student may be able to write on a substantial creative project other than the capstone. This essay is shorter (about 30 pages) because the creative work constitutes part of the honors project. Students are expected to work consistently throughout the year with their adviser, whom they identify at the time of application. Advisors can be selected from Academic Council faculty or artists-in-residence.

Minor in Theater and Performance Studies

The TAPS Minor is offered with two distinct concentrations: The Theater and Performance Studies concentration provides students with historical, critical, and practical knowledge about theater and performance. The Dance concentration examines the field of dance.

All minors must complete 30 units in a chosen concentration in Theater and Performance Studies or Dance. Specific requirements for these concentrations can be found in subsequent sections. Each course can only satisfy one minor requirement. A student may petition to the Director

of Undergraduate Studies Samer Al-Saber to have additional courses offered by the department count towards the requirements. The minor is declared in Axess.

Degree Requirements

Theater and Performance Studies Concentration

		Units
1. Core		**4**
TAPS 1	Introduction to Theater and Performance Studies (Must be taken for a letter grade.)	
2. Theater and Dance Studies		**4**
TAPS 11	Introduction to Dance Studies	
TAPS 11N	Dramatic Tensions: Theater and the Marketplace	
TAPS 12N	To Die For: Antigone and Political Dissent	
TAPS 13N	Law and Drama	
TAPS 40N	Family Drama: American Plays about Families	
TAPS 89N	Literature of Adoption	
TAPS 108	Introduction to Feminist, Gender, and Sexuality Studies	
TAPS 151	Dramaturgy	
TAPS 164	Race and Performance	
TAPS 165	Introduction to Comparative Studies in Race and Ethnicity	
TAPS 167	Introduction to Greek Tragedy: Gods, Heroes, Fate, and Justice	
TAPS 169R	Reality TV and American Society	
TAPS 180Q	Noam Chomsky: The Drama of Resistance	
DANCE 196	Dancing Black: Embodying the African Diaspora in the United States and the Caribbean	
TAPS 201	Theater History	
TAPS 252	Objects and Things: Theater, Performance, and Material Culture	
3. Production		**1**
TAPS 39	Theater Crew	
4. Practicum [1]		**7**
5. Electives [2]		**14**
Total Units		30

Note: Refer to Past Bulletins (https://exploredegrees.stanford.edu/archive/#text) to review courses that fulfilled the requirements above that were offered in previous years.

1 All theater and dance practice classes (such as those in acting, design, playwriting, directing, and dance practice) may count towards this requirement.

2 All courses in TAPS and DANCE qualify as electives.

Dance Concentration

The Dance concentration offers diverse approaches to dance as a performing art, cultural practice, political act, and embodiment of ideology and beliefs. The minor requirements integrate academic and creative studio work to help students develop a command of dance as an art form and as a subject of critical inquiry. Students study a range of techniques grounded in Western dance practices as well as a variety of global dance forms, and have regular opportunities to perform, choreograph, and collaborate. Guidance on course sequencing is available from the TAPS Director of Undergraduate Studies, Samer Al-Saber and/or from the coordinator of the Dance concentration, Aleta Hayes. Students in this concentration are encouraged to take the required course DANCE 11 Introduction to Dance Studies early in the major as a gateway for their further studies.

		Units
1. Core		**4**
DANCE 11	Introduction to Dance Studies (Must be taken for a letter grade.)	
or TAPS 1	Introduction to Theater and Performance Studies	
2. Theater and Dance Studies		**4**
TAPS 11N	Dramatic Tensions: Theater and the Marketplace	
TAPS 12N	To Die For: Antigone and Political Dissent	
TAPS 13N	Law and Drama	
TAPS 40N	Family Drama: American Plays about Families	
TAPS 89N	Literature of Adoption	
TAPS 108	Introduction to Feminist, Gender, and Sexuality Studies	
TAPS 151	Dramaturgy	
TAPS 164	Race and Performance	
TAPS 165	Introduction to Comparative Studies in Race and Ethnicity	
TAPS 167	Introduction to Greek Tragedy: Gods, Heroes, Fate, and Justice	
TAPS 180Q	Noam Chomsky: The Drama of Resistance	
DANCE 196	Dancing Black: Embodying the African Diaspora in the United States and the Caribbean	
TAPS 252	Objects and Things: Theater, Performance, and Material Culture	
3. Production		**1**
TAPS 39	Theater Crew	
4. Dance Practice [1]		**7**
5. Electives [2]		**14**
Total Units		30

Note: Refer to Past Bulletins (https://exploredegrees.stanford.edu/archive/#text) to review courses that fulfilled the requirements above that were offered in previous years.

1 Minimum 7 units of dance practice in technique, choreography, and performance are required. At least three classes chosen from a specific dance form (e.g. Contemporary, Modern, Jazz, Hip-Hop, Ballet, or Social), and the attainment of intermediate or advanced level. At least two classes in a style other than the student's primary chosen dance form.

2 All courses in TAPS and DANCE qualify as electives.

Doctor of Philosophy in Theater and Performance Studies

The mission of the graduate program in Theater & Performance Studies (TAPS) is to educate students who work on the leading edge of both scholarly and performance practice. The Ph.D. program includes the study of critical theory, dramatic literature, performance theory, theater history, and performance making. Graduate students receive a rigorous education in scholarly and creative practice that encompasses elements of production (directing, acting, choreography, and/or design).

Admission

Applicants for the Ph.D. program can visit our Theater and Performance Studies (http://taps.stanford.edu/phd.html) web site for information.

Online graduate applications are available at the Office of Graduate Admissions (http://gradadmissions.stanford.edu) web site. All applicants must submit the following as part of their application: statement of purpose, three recommendations, artistic statement, summary of production experience and resume/CV, and a sample of written work (one or two papers no more than 25 pages long). The GRE is not required. An invitation to interview may be extended by the end of January. Graduate students in the Department of Theater and Performance Studies begin study in Autumn Quarter of each academic year; there are no mid-year admissions.

University Degree Requirements

University requirements for the Ph.D. are described in the "Graduate Degrees (http://stanford.edu/dept/registrar/bulletin/4901.htm)" section of this bulletin.

Degree Requirements

Units and Course Requirements

Stanford Ph.D. students must complete a minimum of 135 units of graduate courses and seminars in support of the degree. Within the 135 unit minimum, TAPS Ph.D. students must complete the following:

		Units
REQUIRED COURSES		
Core Seminars		**17**
TAPS 301	World Theater History [1]	
TAPS 311	Performance and Historiography	
TAPS 313	Performance and Performativity	
TAPS 314	Performing Identities	
TAPS Workshops		**12**
TAPS 371P	Theater and Performance Making [2]	
TAPS 372	Directing Workshop: The Actor-Director Dialogue [2]	
TAPS 376	Projects in Performance [3]	
Production Requirement		**1**
TAPS 335	Introduction to Graduate Production	
Elective Seminars		**20**
At least five additional graduate seminars (for a minimum total of 20 units) within the Department of Theater and Performance Studies to be worked out with the advisor.		
Total Units		50

1. TAPS 301 World Theater History is a two-quarter required course in which students enroll for two units in Autumn and two units in Winter.
2. In the first year students take TAPS 371P Theater and Performance Making, which focuses on generating original creative work through a range of techniques. TAPS 372 Directing Workshop: The Actor-Director Dialogue is also usually taken in the first year.
3. TAPS 376 Projects in Performance is taken in the second year. In 2020-21 only, second-year students who are not participating in graduate repertory are permitted to substitute another TAPS course for TAPS 376.

Note: All substitutions to the required courses must be in the department and approved by the Director of Graduate Studies in response to a written request by the student. Students are allowed to take up to 6 units of TAPS 390 Directed Reading, to count towards the 135 units required for graduation.

Language Requirement

The student must demonstrate reading knowledge of one foreign language in which there is a major body of dramatic literature. The language requirement must be met before the student can be advanced to candidacy. The language requirement may be fulfilled in any of the following ways:

1. achievement of a sufficiently high score (70th percentile) on the foreign language examination prepared by the Educational Testing Service (ETS). Latin and Greek are not tested by ETS.
2. a reading examination given each quarter by the various language departments, except for Latin and Greek.
3. pass with a grade of 'B' or higher a 100-level or higher foreign language course at Stanford.

Assistantships

Students must participate in seven quarters of assistantship in Theater and Performance Studies:

Research Assistantship: Three quarters of supervised RA-ship at half time with faculty members are required. Generally, this requirement is fulfilled in the third year.

Teaching Assistantship: Four quarters of supervised TA-ship at half time are a required part of the Ph.D. program. The requirement is normally met by serving as a TA for three courses during the fourth year and one course during the fifth year.

Examinations

Students must successfully complete three examinations (comprehensive, qualifying, and department oral) by the end of the first three years of study at Stanford. As these are considered critical milestones indicating satisfactory academic progress, each student must pass their relevant Exam (whether First-Year, Second-Year, or Third-Year) in order to advance in the TAPS Ph.D. program. Failure to pass a required Exam will result in the student not making satisfactory progress and may result in the student's dismissal from the program.

First-Year Comprehensive Exam: The First-Year Comprehensive Exam is taken within the context of a required seminar, TAPS 301 World Theater History. This is a two-quarter required course in which students enroll for two units in Autumn and two units in Winter. The exam itself takes place at the end of Winter quarter. The format of the exam is that students receive prompts for writing argument-driven essays, roughly 8-10 pages each. These essays should demonstrate skills of close reading and historically rigorous analysis, and the ability to synthesize multiple source materials.

Second-Year Qualifying Exam: The qualifying examination consists of a 25-30 page essay on a pre-1900 historical topic, relevant to the field of Theater and Performance Studies. The student selects a TAPS faculty adviser to guide them through the writing process. The essay is due to the Student Services Officer in the 8th week of Autumn Quarter. The Graduate Studies Committee selects two additional TAPS faculty readers who evaluate and provide readers' reports for the student. The student substantially revises and resubmits the essay in the third week of Spring Quarter. Evaluation criteria include clarity of expression, ability to undertake original historical research, and capacity to sustain a persuasive argument. The readers, together with the adviser, evaluate the revised essay and determine if the exam constitutes a pass. The performance project is completed in the Winter Quarter. A faculty adviser works with the student throughout Autumn and Winter quarters on the production and attends a combination of dress rehearsals or final performances as part of the evaluation. After the performance, the student participates in a *viva voce*, or talk-back, with the supervising faculty. Students register for TAPS 376 Projects in Performance for 4 units while completing their performance project.

Third-Year Department Oral Exam: This exam is based on a literature review and annotations for three reading lists created by the student in consultation with the three faculty members with whom they meet about their readings. The form of the exam is an opening 20 minute overview

by the student integrating the readings followed by questions from the committee about the reading lists.

Admission to Candidacy

At the end of the second year of study, the Graduate Studies Committee makes a decision on whether or not to admit an individual student to candidacy. Based on its evaluation of the student, the Graduate Studies Committee certifies the student's qualifications for candidacy. Candidacy is an important decision grounded in an overall assessment of a student's ability to complete the Ph.D. program at a high level. As detailed in the department's Graduate Handbook, there are prerequisites for admission to candidacy: the completion of specified coursework, the first-year qualifying exam, the second-year qualifying papers and the language requirement. However, fulfillment of these prerequisites and grades in courses constitute only a part of the evidence weighed by faculty in making this judgment. Since the Ph.D. is conferred upon candidates who have demonstrated through their dissertation the ability to conduct substantive, original research that contributes to knowledge in theater and performance studies, the candidacy decision also rests upon indicators of the student's ability to conduct work in the field. Upon favorable action, the student files a formal application for candidacy, as prescribed by the University, by the end of Summer Quarter of the second year. By University policy, candidacy is valid for five years unless terminated by the department. Failure to advance to candidacy results in the dismissal of the student from the program.

Dissertation Prospectus

The dissertation prospectus must be approved by the candidate's adviser and by the departmental Graduate Studies Committee two quarters after taking the department oral. This should be done in, or before, the autumn quarter of the fourth year. Within 30 days of approval, a student should schedule a prospectus colloquium with the proposed reading committee (the dissertation director and two other faculty members). The prospectus must be prepared in close consultation with the dissertation adviser during the months preceding the colloquium. The prospectus should be 5-8 pages and minimally cover three things: the research question and context, the methodology for research, and a complete chapter by chapter plan.

University Oral Examination

In Theater and Performance Studies, the University oral examination takes the form of a dissertation defense. A full draft of the dissertation must be submitted at least 75 days before the proposed degree conferral. The examining committee consists of five faculty members: one faculty chair from outside the department who does not share an appointment with the department of any of the examiners, the student's primary adviser, two additional readers who are familiar with the dissertation project, and a fifth faculty member attending the oral examination.

Dissertation

The dissertation is an original work of scholarship created under the supervision of a primary dissertation adviser. The dissertation is the capstone of the Ph.D. in Theater & Performance Studies.

Satisfactory Progress and Annual Review

The program and progress of each student must be evaluated by the Graduate Studies Committee at the end of each academic year. At the end of the first year, the Graduate Studies Committee evaluates the work of each student in classes, seminars, examinations, and performance. Production planning in the spring of each year for the following season is contingent upon students making satisfactory progress. Continuation in the program depends upon the recommendation of this faculty group. At the end of the second year, the committee reviews the student's work in consideration of being admitted to candidacy. By the beginning of the fourth year, students are expected to have developed an approved dissertation prospectus. Funding is contingent upon satisfactory progress. Failure to make satisfactory progress may result in dismissal from the program.

Ph.D. Minor in Theater and Performance Studies

Students pursing the Ph.D. minor in Theater and Performance Studies must complete a minimum of 20 units. Within the 20 units, students must complete the following:

		Units
TAPS 313	Performance and Performativity	5
TAPS 371P	Theater and Performance Making	4
Any additional TAPS courses at the 200- or 300-level to reach the minimum of 20 units total.		11
Total Units		20

An Application for Ph.D. Minor (http://studentaffairs.stanford.edu/sites/default/files/registrar/files/app_phd_minor.pdf) outlining a program of study must be approved by the major and minor departments and submitted to the Student Services Center. This form is submitted at the time of admission to candidacy or at the appropriate time thereafter.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Department of Theater and Performance Studies counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

Graduate Degree Requirements

Grading

The Department of Theater and Performance Studies counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade.

Graduate Advising Expectations

The Department of Theater and Performance Studies is committed to providing academic advising in support of graduate-student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. Advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisee and the adviser are expected to maintain professionalism and integrity throughout this important relationship.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy,

navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

At the start of the first year in the program, students are assigned a faculty adviser based upon common research interests. The adviser's role is to serve as an intellectual adviser and professional mentor to their graduate students, to understand the academic and non-academic policies that pertain to graduate students, and to prepare students to be competitive for future employment.

In the fourth year, Ph.D. students consult closely with their Academic Council faculty adviser to form a dissertation committee. Together, the student and the adviser determine which members of faculty comprise the dissertation committee. The formation of a dissertation committee is a required part of the dissertation prospectus milestone. At this time, the student must decide which faculty will fulfill the following dissertation committee roles:

- Principal Dissertation Adviser: The principal dissertation adviser provides guidance and direction to the doctoral student's research, as well as evaluation of the student's progress. As a mentor and a role model, the dissertation adviser plays a critical role in the student's development as an academic researcher.
- Dissertation Reader: Dissertation Readers participate in the dissertation defense. They read and evaluate the final version of the dissertation, and offer their comments and suggestions for revisions.

Further information about the roles and responsibilities of the dissertation committee can be found in GAP 3.3.1 (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/page-3-3-1/) and GAP 8.4.1 (https://gap.stanford.edu/handbooks/gap-handbook/chapter-4/subchapter-8/page-4-8-1/).

Advisers and advisees are expected to meet quarterly, perhaps more frequently during exams and milestones. There may likely be variation of meeting frequency, depending on the individual adviser and advisee. Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program. Students are also encouraged to consult with the Director of Graduate Studies and the student services officer as needed.

Students are encouraged to communicate and meet frequently with their adviser. It is important to set expectations with your adviser and to revisit those expectations periodically. VPGE (https://vpge.stanford.edu/) has a number of helpful advising resources, including an advising workshop, as part of their professional development programs.

Students wishing to change their adviser may do so. Contact department staff for more information.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Emeriti: (Professors) Jean-Marie Apostolidès (TAPS; French and Italian), Harry Elam, Michael Ramsaur, Alice Rayner, *(Associate Professor)* William S. Eddelman, *(Senior Lecturer)* Patricia Ryan, *(Senior Lecturer)* Connie Strayer

Chair: Matthew W. Smith

Director of Graduate Studies: Diana Looser

Director of Undergraduate Studies: Samer Al-Saber

*Professors:*Jennifer DeVere Brody (TAPS, Center for Comparative Studies in Race and Ethnicity), Branislav Jakovljevic, Peggy Phelan (TAPS, English), Rush Rehm (TAPS, Classics), Matthew W. Smith (TAPS, German Studies)

Associate Professor: Young Jean Lee, Jisha Menon (Center for South Asia, Stanford Arts Institute)

Assistant Professors: Samer Al-Saber, Diana Looser, Michael Rau, Aileen Robinson

Professor (Teaching): Janice Ross (On Leave)

Senior Lecturer: Becky Bodurtha

Lecturers: Kathryn Amarotico-Kostopoulos, David Bresenham, Jane Casamajor, Matt Chapman, Katie Faulkner, Diane Frank, Aleta Hayes, Stephanie Hunt, Alex Ketley, Daniel Klein, Laxmi Kumaran, Haruna Lee (Mohr Visiting Artist), Anton Pankevich, Richard Powers, Ronnie Reddick, Amanda Reid (Mellon Fellow), Lisa Rowland, Tony Shayne

Artists-in-Residence: Amy Freed, Amara Smith

Director of Finance and Operations: Beth McKeown

Student Services Officer: Katie Dooling

Administrative Associate: Janet Pineda

Production Staff: Daniel Cadigan, Jane Casamajor, Tony Kramer, Brendon Martin, Kenny McMullen, Heather Patterson Miller, Stefanie M. Okuda, Paul Strayer, Emma Vossbrink

Overseas Studies Courses in Theater and Performance Studies

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPBER 101A	Contemporary Theater	5
OSPOXFRD 52	Shakespeare and Performance	4-5

Courses

DANCE 1. Contemporary Modern I: Liquid Flow. 1 Unit.
Students in Liquid Flow will participate in a dance and movement class that 1) teaches the fundamentals of dance technique, and 2) addresses the way that you already dance in the world. Through discovering your own DIY movement signature and being aware of one another's dance, motion, and energy in space, we will transform the way that we move and connect to one another to inhabit flow states from the dance studio, into everyday life, and ultimately onto the stage. nAccompanied by contemporary and live music, Students will develop articulation, flexibility and "grace", learn contemporary and classic dance vocabulary, gain freedom dancing with others and mine dance's potential for social transformation and connection. Designed for beginners, we welcome student movers from diverse dance traditions, non-dancers, athletes, and more advanced dancers, who desire fluidity in their daily life, from thought to action.

DANCE 2. Introduction to Dance & Movement: Afro Flows. 1 Unit.
Students in Afro Flows will focus on fundamentals of contemporary dance, gain fluid movement in everyday life and develop a rhythmic sensibility. This class invites participants to be more expressive and spontaneous in their movement choices. In addition to set movement warm ups, students will also learn footwork from different traditions, including tap and current social dance styles to expand their dance vocabulary. Through this approach and live percussion, students will discover their own natural rhythmic capability, as well as learn to attune with the environment and with others. No previous is experience required. Questions? Contact: Aleta Hayes (ahayes1@stanford.edu).

DANCE 3SI. Bollywood Balle Balle. 1 Unit.
This is a survey course of Bollywood dance styles throughout history, with particular focus on the modern filmi dance. Throughout the course, students will learn the history and context of particular dance styles through discussions of integration with popular Indian cinema.

DANCE 11. Introduction to Dance Studies. 4 Units.
This class is an introduction to dance studies and the complex meanings bodily performances carry both onstage and off. Using critical frames drawn from dance criticism, history and ethnography and performance studies, and readings from cultural studies, dance, theater and critical theory, the class explores how performing bodies make meanings. We will read theoretical and historical texts and recorded dance as a means of developing tools for viewing and analyzing dance and understanding its place in larger social, cultural, and political structures. Special attention will be given to new turns in queer and feminist dance studies. TAPS 11 has been certified to fulfill the Writing in the Major (WIM) requirement.
Same as: TAPS 11

DANCE 16AX. ReVIVAL: A Site-Specific, Multi media Dance Theater Production. 2 Units.
ReVIVAL: November 14-16, 2019 at Roble Studio Theater. Stanford Artist in Residence Amara Tabor-Smith leads the creation of a site-specific, multi media, dance theater work titled, ReVIVAL. ReVIVAL is a survival research performance work that is launched from the history of the student activism that took place on the Stanford Campus in the late 1960s, and has a particular focus on the student actions that led to the founding of the Committee on Black Performing Arts (CBPA). During the three week intensive, students will engage in a researched creative process which includes daily movement classes rooted in Afro-contemporary dance and improvisation techniques, theater training practices, and mining the Stanford archives: this will be the foundation for the creation of text and choreography. The question that each student will begin the process with is What parts of history do you/we choose to recall, remember, recreate and re-invent in order to carry us forward repaired, restored and revived? Students enrolled in this Arts Intensive course are expected to continue into the fall quarter culminating in the premiere of ReVIVAL the weekend of November 14-16.

DANCE 25. Studio to Stage: Student Choreography Projects. 1 Unit.
Make your own dance! In Studio-to-Stage, student choreographers propose, develop, rehearse, and perform their own dances under the close guidance of a faculty mentor. Together, mentor and dance maker discover rehearsal processes that will support and realize the proposed work, including movement investigation, music/sound choices, costuming, and lighting. The course culminates in a group concert showing. Dance is broadly defined as any intentional movement, including fusion forms and innovation. Dance makers of all levels, styles, and training backgrounds are strongly encouraged to enroll. Concert format, logistics, and level of theatrical production will be determined by the collective ambition and imagination of the participants. TAPS will provide some technical support towards the culminating showing of works.

DANCE 27. Faculty Choreography. 1-2 Unit.
Creation, rehearsal, performance of faculty choreography. For detailed project descriptions and full rehearsal/performance schedules, contact instructors directly.nnStudents enrolled in Aut 2019-20 will participate in Revival with Amara Smith. nnFor students enrolled in Spring 19-20, the course description is below: nIn online Zoom work sessions, project participants will create together a Phrase Bank for the Future, contributing to, and drawing from, a growing Google account of shared phrase material. Our focus will be on shared movement invention and development. That large growing bank of fragments and phrases will provide source material to create solos. By the end of the term, we will have created a Phrase Bank together, as well as a video-recorded solo line for and by each dancer. All this material will be available for a future site-specific live dance performance at the Anderson Collection Museum, exact date tbd/tba, but likely Autumn 2020.

DANCE 29. Roots Modern I. 1 Unit.
In this course students will be introduced to a series of contemporary dance warm ups and dance combinations that are drawn from a broad range of modern dance techniques, somatic practices and dance traditions of the African diaspora with a particular focus on Afro Brazilian, Afro Cuban and Haitian dance forms. No prior dance experience is required. Each class will be comprised of a series of warm up exercises and fun dance combinations that express the connection between western contemporary technique with dance traditions of the African diaspora. Dance combinations will consist of dynamic movement patterns that condition the body for strength, flexibility, endurance, musicality and coordination. Through these exercises students learn how to become expressive and dynamic movers and gain a deeper appreciation of the multiple expressions of what is known as contemporary or modern dance.

DANCE 30. Contemporary Choreography: Chocolate Heads Performance Project. 2 Units.
The Chocolate Heads Movement Band attracts dancers and beginner movers from diverse dance styles and cultures (Hip-Hop to Contemporary, Skateboarding to Wushu). Students participate in the dance-making/remix process, alongside storytellers, musicians, visual artists, and filmmakers, to co-design a multimedia production. Autumn 2020, we will pioneer the ¿visceral in the virtual¿ to create a gestural portrait of a brilliant artistic community. Where are you in the world? Imagine moving through a sensorial landscape while traveling in place. What personal passion will drive your exploration? Audition: Tuesday (9/15) during class. Callbacks and Alternate Audition: Thursday (9/17), with instructor permission. Dancers, interdisciplinarians, and artists of all stripes are encouraged to contact the instructor, ahayes1@stanford.edu.
Same as: AFRICAAM 37

DANCE 30S. Contemporary Choreography: Chocolate Heads On-Screen: Dance and Video Project. 2 Units.
Cinematography plus choreography equals Screendance. Now, all dance is screendance. Think of your favorite youtube videos, tik toks, and all your favorite movie musicals. This is your chance to star in a Chocolate Heads film production. During Fall quarter, the Chocolate Heads Movement Band conducted a series of dance and film experiments at home, that culminated in a fantastic Zoom Dance called 'Traveling in Place'. We started in our own homespaces, came together virtually, and made magic. If you'd link to see what we did in the fall, visit the Chocolate Heads Youtube channel: https://www.youtube.com/watch?v=ykDVlai-c2s Our goal is to cultivate the talents of all dancers through teamwork to touch, move, and inspire the audience. We will be partnering with the Stanford Doc Film Program, featuring guest workshops on storytelling through motion and film. We'll ultimately come together as a dance & filmmaking posse to create a screendance with both live and virtual elements. Be one of the brilliant dancers and choreographers who are shaping dance, art and video, integrating different dance styles and cultures, to unite the world.

DANCE 45. Dance Improvisation from Freestyle to Hip Hop. 1-2 Unit.
This class is an arena for physical and artistic exploration to fire the imagination of dance improvisers, cultivate sensation and perception within and without studio practice and to promote interactive intelligence.nStudents will learn to harness and transform habitual movement patterns and dance trainings as resources for new ways of moving: expand their awareness of being a part of a bigger picture, while being attentive to everything all at once: and to use visual, aural and kinesthetic responses to convert those impulses into artistic material. Class will be accompanied by live and recorded music and include weekly jam sessions. Open to students from all dance, movement, athletic backgrounds and skill levels. Beginners welcome.
Same as: AFRICAAM 45

DANCE 46. Social Dance I. 1 Unit.
Introduction to non-competitive social ballroom dance. Adapted to online Zoom format so that individuals can take the course without a partner. The social dances found in today's popular culture include 3 kinds of swing, 3 forms of waltz, tango, salsa, bachata, cha-cha and nightclub two-step. The course also includes tips for great partnering, enhancing creativity, developing personal style, stress reduction, musicality, and the ability to adapt to changing situations. The emphasis on comfort, partnering and flexibility will enable students to dance with partners whose experience comes from any dance tradition. Many students are taken from the waiting list. If the class is filled, register to get on the waitlist.

DANCE 48. Ballet I: Introduction to Ballet. 1 Unit.
Fundametals of ballet technique including posture, placement, the foundation steps, and ballet terms; emphasis on the development of coordination, balance, flexibility, sense of lines, and sensitivity to rhythm and music. May be repeated for credit.

DANCE 50. Contemporary Choreography. 1 Unit.
Each day Ketley will develop a new phrase of choreography with the students and use this as the platform for investigation. Consistent lines of inquiry include; sculpting with the body as an emotional, instinctual, and graphic landscape, how the fracturing and the complication of strands of information can feel generative of new ways of moving, discussions around how our use of time is directly correlated to our sense of presence, and the multitude of physical colors available to each of us as artists as we expand our curiosity about movement. Classes will be very physical, trusting that much of our knowledge is contained in the body. For questions please e-mail aketley@stanford.edu.

DANCE 58. Hip Hop I: Introduction to Hip Hop. 1 Unit.
Steps and styling in one of America's 21st-century vernacular dance forms. May be repeated for credit.

DANCE 59. Hip-Hop II. 1 Unit.
Steps and styling in one of America's 21st-century vernacular dance forms. May be repeated for credit.

DANCE 71. Introduction to Capoeira: An African Brazilian Art Form. 1 Unit.
Capoeira is an African Brazilian art form that incorporates, dance, music, self-defense and acrobatics. Created by enslaved Africans in Brazil who used this form as a tool for liberation and survival, it has since become a popular art form practiced around the world. In this course students will learn basic movements for both Capoeira Angola and Capoeira Regional, and the history of this rich and physically rigorous art form. Students will learn basic acrobatic skills, be introduced to Capoeira songs, and learn to play rhythms on the drum, pandeiro (tambourine), and the Berimbau -- a single stringed bow instrument. This course will be physically rigorous and fun! No previous experience necessary.
Same as: AFRICAAM 71

DANCE 100. Dance, Movement and Medicine: Immersion in Dance for PD. 1-2 Unit.
Combining actual dancing with medical research, this Cardinal Course investigates the dynamic complementary relationship between two practices, medicine and dance, through the lens of Parkinson's disease (PD), a progressive neurological disease that manifests a range of movement disorders. "Dance for PD" is an innovative approach to dancing --and to teaching dance --for those challenged by PD. Course format consists of: 1. Weekly Lecture/Seminar Presentation: Partial list of instructors include Ms. Frank, Dr. Bronte-Stewart and other Stanford medical experts & research scientists, David Leventhal (Director, "Dance for PD") and Bay Area "Dance for PD" certified master teachers, film-maker Dave Iverson, Damara Ganley, and acclaimed choreographers Joe Goode, Alex Ketley, Judith Smith (AXIS Dance). 2. Weekly Dance Class: Stanford students will fully participate as dancers, and creative partners, in the Stanford Neuroscience Health Center's ongoing "Dance for Parkinson's" community dance class for people with PD. This Community Engaged Learning component provides opportunity to engage meaningfully with people in the PD community. Dancing together weekly, students will experience firsthand the embodied signature values of "Dance for PD" classes: full inclusion, embodied presence, aesthetic and expressive opportunity for creative engagement, and community-building in action. A weekly debriefing session within Friday's class time will allow students to integrate seminar material with their movement experiences.nnnNO PRE-REQUISITES: No prior dance experience required. Beginners are welcome.
Same as: NENS 222

DANCE 102. Musical Theater Dance Styles. 1 Unit.
Students will be able to demonstrate period specificity, character of style through learning different musical theater dances from the early 20th C.to the present. ALL students will participate in an end of quarter showing of the choreography developed and composed in class. Class will be supplemented with the occasional guest, DJ accompaniment and video viewing.
Same as: MUSIC 184E

DANCE 104. Duets Project. 1 Unit.
Deepen partnering & rehearsal skills by learning contemporary duets from the repertory of acclaimed choreographers, some set by the choreographers themselves. Rehearsals culminate in an informal open performance. Expect different partners throughout the quarter; roles not gender-specific. Dances will vary highly in movement content, tone, form, ranging from uninflected to dramatic to humorous; from sparse to dense; from relatively simple to technically difficult. Each work requires a different approach and skill set. Exploring and cultivating these skills ¿ i.e., physical intention and agreement, weight-sharing and -bearing, breath phrasing, spatial awareness, kinetic problem-solving -- will help you dance eloquently and make you into a strong and versatile performer. Intermediate level, or permission of the instructor.

DANCE 105R. Contemporary Choreography: Choreographic Realization Project. 1 Unit.
Choreographic Realization Project will focus on the creation of a choreographic work created collaboratively between participating students and the instructor. Student dancers with all levels of choreographic experience will be invited to work in tandem with the instructor on the creation of rigorous and detailed movement statements as material for the larger group work. The course will function both as an introduction to choreographic methods and tools as well as an experiential investigation of collaborative processes. The course will culminate in an informal public showing on the final class day. Dancers of all levels and movement backgrounds are welcome.

DANCE 106I. Stanford Dance Community: Inter-Style Choreography Workshop. 1-2 Unit.
Designed for adventurous dancers, choreographers and student dance team leaders across Stanford campus. Students will explore a multiplicity of dance styles presented both by peer choreographers, as well as professionals in the field, to create a community of dancers who want to experiment and innovate within their form. The emphasis of the class is on individual growth as a dancer and dance maker through exposure to new and unfamiliar styles. Student dance team leaders and dancers with a strong interest in both choreography and learning different forms are highly encouraged to attend. Interested participants encouraged but not required to contact instructor, Aleta Hayes: ahayes1@stanford.edu. Course will consist of weekly choreography master classes taught by peers, composition intensives facilitated by the instructor, and guest professional master classes, not represented by the class participants. Same as: AFRICAAM 106I

DANCE 108. Hip Hop Choreography: Hip Hop Meets Broadway. 1 Unit.
What happens when Hip Hop meets "Fosse", "Aida", "Dream Girls" and "In the Heights"?nThe most amazing collaboration of Hip Hop styles adapted to some of the most memorable Broadway Productions.nThis class will explore the realm between Hip Hop Dance and the Broadway Stage. Infusing Acting thru dance movement and exploring the Art of Lip Sync thru Hip Hop Dance styles.

DANCE 109. Choreography: Strategies to Building Movement, Dance, and Time Based Art. 2 Units.
A class for students interested in contemporary methods of devising movement for performance. At the forefront of current dance culture hybridity has become the new normal, with movement blended from everyday actions, classical forms, hip-hop, and beyond. The body as a vehicle for expression is an ever expanding landscape and the class will focus on the plethora of ways movement can be derived including; the many ways improvisation can engender movement, how systemic approaches to performance can enhance a creators understanding of the body in space, the ways chaos and ugliness can redefine our notions of beauty, and how environment, sound, music, and context can inform our physical sensibilities. The class is open to all students from any movement background or those new to dance with a curiosity about how the body can be a vibrant and multifaceted artistic tool. For more information please contact choreographer and lecturer Alex Ketley at aketley@stanford.edu.

DANCE 114. Movement for Actors/Acting for Dancers: Techniques for the Contemporary Performer. 1 Unit.
Designed for the performing artist in the contemporary theatrical environment, this class will expose students to various training modalities from contemporary dance, popular dance styles, physical theater, musical theater, Greek theater and other somatic techniques. Students will undertake various practices such as, but not limited to: Viewpoints, Laban, Gaga, Butoh and Grotowski in a workshop format. Other activities include creating studies from widely sourced prompts as given by the instructor and developing a personal performance preparation playbook. The course will include special guests from the TAPS faculty in Dance, Theater and Performance. In an age where the triple threat performer is in high demand, and movement, text, narrative, production and space are not necessarily treated hierarchically, the well-rounded performer will be better equipped to handle current multi-genre stages. While all levels are welcomed, the committed dance and/or theater student is especially encouraged to apply. Questions? Contact: Aleta Hayes (ahayes1@stanford.edu).

DANCE 118. Developing Creativity In Dance. 1 Unit.
This introductory course explores the creative process in dance. Two fields will constantly overlap and feed into each other. One is the Creative Process, with dozens of tips and suggestions which will be useful in your other work beyond dance, and the other is the Art of Choreography. Processes will include design by analogy, musicality, effective use of contrast, intuitive leaps, creation by accident, lateral thinking, overcoming creative blocks, and stress reduction to relax into a more creative state of mind. This will be an online course; students must have this time slot available for Zoom participatory sessions. Class sessions will alternate between theory and practice, with student choreographies submitted and discussed within an encouraging, supportive group of new creators. Previous dance experience is not required to take this course.

DANCE 119. Special Topics: Dance, Architecture, Technology. 1 Unit.
DANCE 119 Special Topics courses feature the annual Mohr Visiting Artist. The Mohr Visiting Artist program brings acclaimed and emerging artists to campus for a one-term period to teach a credited course and provide a presentation, exhibition or performance for the Stanford community and the public.nnIn Winter 2018-19, Mohr Visiting Artist Jonah Bokaer, a celebrated international choreographer, will address his work which expands on the movement lineage of both Merce Cunningham, and Robert Wilson. Bokaer is a Co-Founder of CPR - Center for Performance Research in New York City.

DANCE 123. Choreography: Hot Mess & Deliberate Failure as Practice. 2 Units.
A dance class in how we become the worst dancer possible. The foundation of this class has many parts. One is that, in almost every respect the way we gain insight into anything is to understand more clearly its polarity. As a class we purposely explore chaos, failure, and "bad" dancing, with the hope that then we will have a greater chance to understand and refine our personal notions around beauty. The class also acknowledges that creativity is at times born from the loss of control. Instead of looking at this idea obliquely, Hot Mess looks at this directly by having dancers confront a number of movement and vocal prompts that are literally impossible to execute in any good way. This class embraces and celebrates destabilization, with all the exuberance, fear, and learning that can happen when we accept and practice being lost.

DANCE 128. Roots Modern Experience - Mixed Level. 1 Unit.
In this course students will be introduced to a series of Afro-contemporary dance warm ups and dance combinations that are drawn from a broad range of modern dance techniques, somatic practices and dance traditions of the African diaspora with a particular focus on Afro Brazilian, Afro Cuban and Haitian dance forms. Our study of these dance disciplines will inform the movement vocabulary, technical training, class discussions, and choreography we experience in this course. Students will learn more about the dances and rhythms for the Orishas of Brazil and Cuba, and the Loa of Haiti with an additional focus on other African diaspora dance forms such as, Cuban Haitian, Palo, Samba and Samba-Reggae. Dance combinations will consist of dynamic movement patterns that condition the body for strength, flexibility, endurance, musicality and coordination. Through this approach to our warm ups and class choreography, we will deepen our analysis and understanding of how African diaspora movement traditions are inherently embedded in many expressions of the broadly termed form known as contemporary dance.
Same as: AFRICAAM 128

DANCE 131. Beginning/Intermediate Ballet. 1 Unit.
Structured studio practice reviewing the basics of ballet technique including posture, placement, the foundation steps and ballet terms, and progressing to more complex positions and combination of steps. Emphasis is placed on improving forms, developing coordination and connectivity, securing balance, increasing strength, flexibility, sense of lines, and sensitivity to rhythm and music.

DANCE 132. Ballet Technique & Classical Variations. 1 Unit.
For Intermediate/Advanced Students. Structured studio practice reviewing the basics of ballet technique including posture, placement, the foundation steps and ballet terms, and progressing to more complex positions and combination of steps. Emphasis is placed on improving forms, developing coordination and connectivity, securing balance, increasing strength, flexibility, sense of lines, and sensitivity to rhythm and music and as well as learning the variations from existing ballets: Sleeping Beauty, Swan Lake, Paquita(just to name a few).

DANCE 133. History of the Waltz. 1 Unit.
Two hundred years of waltzing: Regency era waltz (1816), Vienna in the 1830s, redowa and mazurka waltz variations, waltz in 5/4 time, the Russian Mazurka Quadrille, pivots, 20th-century hesitation waltz, tango waltz, Parisian valse musette, 1930s Boston, 1950s Bandstand-style waltz, swing waltz. Each form is explored for possible adaptation to today's non-competitive social dancing. May be repeated for credit two times.

DANCE 140. Contemporary Modern II. 1 Unit.
This intermediate level course will cover fundamental principles underlying the evolving style of modern/contemporary dance both technical and artistic in nature. Students will perform creative and technical exercises that develop strength, flexibility, musicality, increased range of motion, functional efficiency, and performance quality as a means towards developing more, efficient, expressive, and communicative bodies. The contemporary technique taught in this class prepares the student to perform with clarity and artistry, and with deeper anatomical knowledge and connectivity.

DANCE 141. Contemporary Modern III. 2 Units.
This advanced level technique course will cover the fundamental principles underlying modern/contemporary dance both technical and artistic in nature. Students will perform technical exercises that develop functional efficiency, strength, flexibility, musicality, range of motion and performance quality as a means towards honing their own artistic expression and physicality. More advanced concepts such as qualitative versatility, phrasing awareness, innovative physical decision-making, and attention to performance will be explored in greater depth. The contemporary technique taught in this class prepares the student to perform with clarity and artistry, and with deeper anatomical knowledge and connectivity. Short written reflections and concert attendance will supplement studio work. May be repeated for credit.

DANCE 142. Intermediate/Advanced Contemporary Dance Technique. 1 Unit.
This intermediate/advanced dance technique class is grounded in the technical training, aesthetic sensibilities, and choreographic processes of Merce Cunningham, American dancer/master choreographer. This studio work at an intermediate/advanced level will build technical strength, speed, line, and rhythmic acuity/musicality and amplitude in dancing. The class will provides solid technical training useful and applicable to other forms of dancing. Dancers must be ready to work at an intermediate/advanced level to enroll. Studio practice will be supplemented by readings, video viewing, concert attendance, and participation in special workshops with guest artists. Though Cunningham-based dance technique is particularly well-suited to dancers with prior training in ballet, dancers with prior training in all forms of dance are welcome and strongly encouraged to enroll. May be repeated for credit.

DANCE 146. Social Dance II. 1 Unit.
Intermediate non-competitive social ballroom dance. The partner dances found in today's popular culture include Lindy hop, Viennese waltz, hustle, traveling foxtrot, plus intermediate/advanced levels of cross-step waltz and nightclub two-step. The course continues further tips for great partnering, enhancing creativity, developing personal style, stress reduction, musicality, and the ability to adapt to changing situations. Prerequisite: Dance 46. Many students are taken from the waiting list. If the class is filled, register to get on the waitlist.

DANCE 147. Social Dance History: Living Traditions of Swing. 1 Unit.
A survey of 110 years of American swing dancing, as one form evolved into the next. Adapted to online Zoom format so that individuals can take the course without a partner. Swing dances will include the Texas Tommy, early Lindy of the 1920s; 6 and 8-count Lindy hop, Shag, Big Apple, 1950s Rock 'n' Roll swing, disco Hustle and West Coast Swing, with tips for partnering, improvisation and personal creativity. This will be an online Zoom course; students must have this time slot available for Zoom participatory sessions. Previous dance experience is not required to take this course.

DANCE 148. Ballet II. 1 Unit.
Intermediate Ballet at Stanford is designed for students who have done ballet in their past, but maybe have stepped away from the form for awhile. The class focuses on technique, musicality, vocabulary, coordination and artistic choice. The class looks at ballet as an enduring and vibrant movement system that can be used for classical purposes or as a way to strengthen and diversify the movement vocabulary inherent in other dance forms like modern, hip-hop, or social dancing.

DANCE 149. Ballet III. 1 Unit.
Advanced Ballet at Stanford is offered for students who are interested in rigorous, complex, and artistically compelling ballet training. The class focuses on technique, but in the broad sense of how ballet as a movement system can be used for a wide range of dance disciplines. The class honors the historical training legacy that defines classical ballet, but is in no way shackled to that history in an antiquated fashion. The students are encouraged to explore the form as artists, to question its foundations, and find their own sense of agency within classical dance. Students with a strong background in ballet are encouraged to come, but also students with less ballet training are welcome as long as they have an email dialog with the lecturer beforehand. Any questions can be directed to Lecturer Alex Ketley at aketley@stanford.edu.

DANCE 153D. Creative Research for Artists. 1-2 Unit.
This generative lab is dedicated to juniors and seniors in Comparative Studies in Race and Ethnicity, African and African American Studies, or related fields in the arts who are pursuing an advanced creative honors thesis or capstone project around questions of identity, diversity and aesthetics. Students sharpen methodologies, get feedback on works in progress, and make formidable connections between their academic and artistic pursuits.
Same as: CSRE 153D

DANCE 156. Social Dance III. 1 Unit.
Intermediate non-competitive social ballroom dance. Intermediate/advanced waltz variations, redowa and Bohemian National Polka are followed by intermediate/advanced tango, cha-cha, salsa and bachata. The course continues further tips for great partnering, enhancing creativity, developing personal style, stress reduction, musicality, and the ability to adapt to changing situations. Prerequisite: Dance 46. Dance 156 may immediately follow Dance 46. Many students are taken from the waiting list. If the class is filled, register to get on the waitlist.

DANCE 160J. Conjure Art 101: Performances of Ritual, Spirituality and Decolonial Black Feminist Magic. 2 Units.
Conjure Art is a movement and embodied practice course looking at the work and techniques of artists of color who utilize spirituality and ritual practices in their art making and performance work to evoke social change. In this course we will discuss the work of artists who bring spiritual ritual in their art making while addressing issues of spiritual accountability and cultural appropriation. Throughout the quarter we will welcome guest artists who make work along these lines, while exploring movement, writing, singing and visual art making. This class will culminate in a performance ritual co-created by students and instructor.
Same as: AFRICAAM 160J, CSRE 160J

DANCE 160M. Introduction to Representations of the Middle East in Dance, Performance, & Popular Culture. 3-4 Units.
This course will introduce students to the ways in which the Middle East has been represented and performed by/in the 'West' through dance, performance, and popular culture in both historical and contemporary contexts. A brief look through today's media sources exposes a wide range of racialized and gendered representations of the Middle East that shape the way the world imagines the Middle East to be. As postcolonial theorist Edward Said explains, the framework we call Orientalism establishes the ontological character of the Orient and the Oriental as inherently `Other'. Starting with 19th century colonialism and continuing into the post-9/11 era, this course will trace the Western production, circulation, and consumption of representations of the Middle East as 'Other' in relation to global geopolitics. We will further examine dance forms produced in mid-twentieth century Iran and Egypt, with particular attention to nation-state building and constructions of gender. Finally, we will examine artistic productions and practices from the Middle East and Middle Eastern diasporic communities that respond to colonialism, war, displacement, secularism, and Euro-American Empire. Using dance studies, postcolonial feminist, and critical race theoretical frameworks, we will consider the gender, racial, political, and cultural implications of selected performance works and practices in order to analyze how bodies produce meaning in dance, performance art, theater, film, photography, and new media. Students will engage in multiple modes of learning; the course will include lectures, engaged group discussions, viewing of live and recorded performance, embodied participation in dance practice, student oral presentations, and a variety of writing exercises. Course assignments will culminate in a final research project related to class themes and methods.
Same as: CSRE 160M, FEMGEN 160M, TAPS 160M

DANCE 161D. Introduction to Dance Studies: Dancing Across Stages, Clubs, Screens, and Borders. 3-4 Units.
This introduction to dance studies course explores dance practice and performance as means for producing cultural meaning. Through theoretical and historical texts and viewing live and recorded dance, we will develop tools for analyzing dance and understanding its place in social, cultural, and political structures. This uses dance and choreography as a lens to more deeply understand a wide range of identity and cultural formations, such as gender, race, sexuality, (dis)ability, (trans)nationality, and empire. We will analyze dancing bodies that move across stages, dance clubs, film screens, and border zones. We will examine dance from diverse locales and time periods including ballet, modern and contemporary dance, contact improvisation, folkloric dance, burlesque, street dance, queer club dance, drag performance, music videos, TV dance competitions, and intermedia/new media performance. In addition to providing theoretical and methodological grounding in dance studies, this course develops performance analysis skills and hones the ability to write critically and skillfully about dance. No previous experience in dance is necessary to successfully complete the course.
Same as: CSRE 61, FEMGEN 161D, TAPS 161D

DANCE 161P. Dance and the Politics of Movement. 4 Units.
This course examines how the dancing body has been viewed, exhibited, analyzed, and interpreted from the late nineteenth century to the present. We will discuss how ideologies about race, gender, and sexual orientation are mapped onto the body, as well as investigate the body's place in discourses on religion, health, war, performance, and consumer culture. We will explore how people create meaning through dance and how dance, in turn, shapes social norms, political institutions, and cultural practices. The course's structure challenges the Western/non-Western binary by comparing dance forms across the globe.
Same as: LIFE 161P, TAPS 161P, TAPS 361P

DANCE 162L. Latin/x America in Motion: An Introduction to Dance Studies. 3-4 Units.
This course introduces students to the field of Dance Studies by examining the histories of Latin American and Caribbean dances and their relationship to developing notions of race and nation in the Americas. We will study the historical emergence and transformation of ¿indigeneity,¿ ¿blackness,¿ ¿whiteness,¿ and ¿Latin/@/x¿ and consider how dance practices interacted with these identifications. No prior experience with Dance or Latin America and the Caribbean necessary.
Same as: CHILATST 162, CSRE 162D, TAPS 162L, TAPS 262L

DANCE 162V. Advanced Research in Black Performing Arts. 1 Unit.
What is the history of Committee for Black Performing Arts (CBPA)? How did it come into being and how do we carry/re-member the legacy forward and into the future? In this course students will engage in the research and archiving process as we dig into the history of CBPA on the eve of its 50th anniversary. Activities will include, digitizing and cataloguing film,video and documents,conducting interviews with former students and professors of CBPA, and guest lecturers with professional archivists.
Same as: CSRE 162V

DANCE 166. History of Social Dance in Western Culture. 1 Unit.
A survey of movement and historical dance from the past five centuries to today, with the technique and general deportment that is distinctive to each era. Historic dances will include the Galliard, Pavan, Minuet, Waltz, Tango, Jazz Age and Swing Era dances, through today's social dance forms. The course will include techniques for historical dance reconstruction, with students creating their own dance reconstructions. This course will culminate by utilizing the understanding of five centuries of dance evolution to envision a better, more evolved, future of social dance forms. This will be an online Zoom course; students must have this time slot available for Zoom participatory sessions. Previous dance experience is not required to take this course.

DANCE 190. Special Research. 1-5 Unit.
Topics related to the discipline of dance. May be repeated for credit.

DANCE 196. Dancing Black: Embodying the African Diaspora in the United States and the Caribbean. 4 Units.
What does it mean to dance black? How can studying comparative dance practices across the United States and the Caribbean expose continuities and differences in African diaspora experience? How can we draw strategies from black performance to inform our current movements for social change? This class will explore how dance and writing about performance have shaped notions of what it means to identify or be marked as an African diaspora subject. From the ring shouts of captive Africans to the 20th-century concert dance stage, from New York queer ballroom culture to Tiktok fads, this class will expose students to both historical and ethnographic methods for using dance to study the formation of black community in the New World. Looking beyond the surface of skin, we¿ll explore how race is experienced in muscle and flesh, and how black performers have historically taken advantage of or disavowed racialized ideas of how they can/should move. We will read theories of diaspora, queer of color critique and black feminist theory, and performance theory. We will search for the common questions and conversations about embodiment, the spectator¿s gaze, and black belonging that run through all three disciplines. Students will be required to do some movement research (through accessible, at-home dance practice), write weekly journals, and complete short essay projects. Students develop will skills for writing, speaking, and making performance to explore the intersections between race, sexuality, and dance.
Same as: AFRICAAM 196, TAPS 196, TAPS 396

DANCE 197. Dance in Prison: The Arts, Juvenile Justice, and Rehabilitation in America. 3 Units.
This class uses the lens of performance, and particularly dance, to explore the aesthetic, cultural, historical, and legal issues in the lives of incarcerated youth. In the process students gain an understanding of incarceration and its cultural dimensions. Class readings and discussions foreground the legal and social contexts surrounding prisons in the U.S., Particular attention will be paid to the nexus of art, community, and social action, and how dance might be used to study the performing arts effects on self-construction, perception, experiences of embodiment, and social control for incarcerated teenagers. The class includes guest speakers who bring important perspectives on criminal justice including returned citizens, a juvenile justice attorney, a restorative conferencing facilitator and a dancer who teaches women in prison to be their own dance instructors.
Same as: AMSTUD 197, TAPS 197

DANCE 290. Special Research. 1-18 Unit.
Individual project on the work of any choreographer, period, genre, or dance-related topic. May be repeated for credit.

URBAN STUDIES

Courses offered by the Program on Urban Studies are listed under the subject code URBANST on the (https://explorecourses.stanford.edu/search/?q=urbanst&view=catalog&page=0&catalog=71&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&filter-coursestatus-Active=on&collapse=&filter-catalognumber-urbanst=on&filter-catalognumber-urbanst=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=URBANST&filter-catalognumber-URBANST=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=URBANST&filter-catalognumber-URBANST=on).

The Program on Urban Studies treats urbanism as an interdisciplinary field; it brings together students, faculty, and outside specialists concerned with cities, and the impacts of cities on society and people's lives. The Urban Studies major encourages students to inquire deeply into the nature of cities and the techniques used to modify urban environments. It prepares students to address urbanization, and gives students a knowledge base and theoretical, analytical, and practical skills to understand urban social systems and effect social change.

Mission of the Undergraduate Program on Urban Studies

Cities are now home to more than half of humanity. The mission of the undergraduate Program on Urban Studies is to develop students' understanding of the nature of cities and their impact on the world. The dynamic and complex nature of cities challenges traditional disciplinary boundaries, so the program is interdisciplinary in nature, drawing from fields in the social sciences, the humanities, engineering, and education. Courses in the program focus on issues in contemporary urban society, and on the forces and practices that shape urban life. Courses also address how cities have changed over time and how they continue to change today in societies around the world. Through a comprehensive program that includes course work, community engagement, and independent research, a major in Urban Studies prepares students for careers and graduate study in fields including architecture, business, education, environmental planning, law, public policy, real estate development, social services, urban design, and urban planning. It also prepares students to be critical thinkers, engaged citizens, and informed leaders who can help to transform cities for the better.

Learning Outcomes (Undergraduate)

The Program expects its undergraduate majors to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the Program on Urban Studies. Students are expected to demonstrate ability:

1. to formulate a research question and assess its significance in relation to one or more relevant scholarly or professional literatures and, where relevant, to theoretical writings.
2. to collect data to answer the proposed research question.
3. to analyze a problem and draw correct inferences using qualitative and/or quantitative analysis.
4. to write clearly and persuasively.

Coterminal Programs for Urban Studies Majors

Undergraduates in Urban Studies may enter coterminal master's degree programs in a number of departments and schools in the University. In recent years, Urban Studies majors have developed coterminal programs in the fields of African Studies, Anthropology, Civil and Environmental Engineering, Communication, Community Health and Prevention Research. Earth Systems, Education, Public Policy, and Sociology. Information and applications for coterminal degree programs are available at Undergraduate Advising and Research. Students should discuss the coterminal program with a program director during their junior year.

University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

Bachelor of Arts in Urban Studies

Declaring the Major

Students interested in declaring Urban Studies as a major are required to meet first with the co-director and one of the program's advisors; they then declare the Urban Studies major on Axess.

Degree Requirements

The Urban Studies major requires students to complete five types of courses totaling at least 70 units:

1. 18 units in the core (23 for those who declared before September 1, 2019)
2. 9 units (minimum) of skills courses in at least 3 courses of 3 units each
3. 20 units (minimum) in an area of concentration
4. 3 units (minimum) of a Cardinal service-learning course or internship approved by Urban Studies to meet this requirement
5. 10 units in the capstone sequence

If units in these categories total less then 70, the remaining units may be fulfilled by courses in other concentrations or in Urban Studies courses numbered 100 or higher (except URBANST 196, Senior Research in Public Service and URBANST 199 Senior Honors Thesis).

Majors must complete one prerequisite: ECON 1 Principles of Economics or ECON 1V Principles of Economics; this prerequisite course may be taken S/NC, as the units for this course do not count toward the 70 units required for the major. URBANST 196 Senior Research in Public Service, URBANST 199 Senior Honors Thesis, and prerequisites for required courses and for electives also do not count towards the 70-unit minimum.

Urban Studies students interested in graduate school in business or urban planning are advised to obtain basic quantitative skills by completing MATH 19 Calculus, MATH 20 Calculus, and MATH 21 Calculus, preferably before the junior year.

A course in statistical methods, such as STATS 60 Introduction to Statistical Methods: Precalculus, ECON 102A Introduction to Statistical Methods (Postcalculus) for Social Scientists or POLISCI 150A Data Science for Politics, is recommended for students interested in business or urban planning.

Urban Studies students are encouraged to spend at least one quarter studying overseas to learn how cities vary across societies. Some Urban Studies concentration courses, as well as electives, can be satisfied at Stanford overseas campuses. Courses offered overseas vary from year to year, and students should check in advance with Overseas Studies and Urban Studies concerning which courses meet Urban Studies requirements. Students may arrange to fulfill the service learning requirement through an internship placement at one of Stanford's overseas locations.

Courses counted toward the 70-unit graduation requirement for the major must be taken for a letter grade, and a minimum grade of 'C' is required. The only exceptions are Urban Studies courses numbered 100 and higher

that are offered only on an S/NC basis, such as URBANST 201A Capstone Internship in Urban Studies. Students may count up to three non-Stanford courses, for a maximum of 15 units, toward the major. These units must first be approved by the Office of Transfer Credit in the Registrar's Office and subsequently approved by the Urban Studies program. Transfer credit is not awarded for internship. Students may not count more than 5 units of URBANST 197 Directed Reading, toward the major without permission of the Director.

Qualified students may write a senior honors thesis and graduate with honors; see details in "Honors Program (p. 2208)" below.

Course Requirements

Urban Studies Core

Urban Studies majors should complete URBANST 110 Introduction to Urban Studies, before Spring Quarter of the junior year. The courses below, totaling 18 units, are required (23 including URBANST 111 for those who declared before September 1, 2019).

Required Courses

		Units
Core Courses		**18**
URBANST 110	Introduction to Urban Studies	
URBANST 112	The Urban Underclass	
URBANST 113	Introduction to Urban Design: Contemporary Urban Design in Theory and Practice	
URBANST 114	Urban Culture in Global Perspective	
or URBANST 142	Megacities	
Skills Course		**9**
A minimum of 9 units in 3 courses of at least 3 units each are required and should be taken before the end of the junior year. The following courses are recommended for most Urban Studies majors.		
SOC 180A	Foundations of Social Research	
EARTHSYS 144	Fundamentals of Geographic Information Science (GIS)	
or URBANST 124	Spatial Approaches to Social Science	
The additional skills courses vary depending on a student's needs and interests. Student consult with an advisor to determine the best choice. Courses that fulfill the skills requirement are:		
ANTHRO 91	Method and Evidence in Anthropology	
ANTHRO 93B	Prefield Research Seminar: Non-Majors	
ARCHLGY 125	Archaeological Field Survey Methods	
CEE 31	Accessing Architecture Through Drawing	
CEE 31Q	Accessing Architecture Through Drawing	
CEE 124X	Shaping the Future of the Bay Area	
CEE 130	Architectural Design: 3-D Modeling, Methodology, and Process	
CEE 139	Design Portfolio Methods	
EARTHSYS 142	Remote Sensing of Land	
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists	
EDUC 123	Community-based Research As Tool for Social Change:Discourses of Equity in Communities & Classrooms	
ENGR 150	Data Challenge Lab	
ESS 165	Advanced Geographic Information Systems	
HUMBIO 82A	Qualitative Research Methodology	
HUMBIO 82B	Advanced Data Analysis in Qualitative Research	
MED 147	Methods in Community Assessment, Evaluation, and Research	
MS&E 125	Introduction to Applied Statistics	
PEDS 202C	Qualitative Research Methods and Study Design	
POLISCI 150A	Data Science for Politics	
POLISCI 150B	Machine Learning for Social Scientists	
POLISCI 150C	Causal Inference for Social Science	
SOC 180B	Introduction to Data Analysis	
STATS 60	Introduction to Statistical Methods: Precalculus	
STATS 101	Data Science 101	
URBANST 123B	Approaching Research in the Community: Design and Methods	
Concentration Focus		**20**
Service Learning or Internship		**3**
Complete one course from the following or a course approved by Urban Studies (see "Degree Requirements" above):		
URBANST 141	Gentrification	
URBANST 145	International Urbanization Seminar: Cross-Cultural Collaboration for Sustainable Urban Development	
URBANST 164	Sustainable Cities	
URBANST 194	Internship in Urban Studies	
URBANST 201A	Capstone Internship in Urban Studies	
Capstone		**10**
Complete each of the following:		
URBANST 202A	Junior Seminar: Preparation for Research	
URBANST 203	Senior Seminar	
Electives		**10**
If units in the above categories total less then 70, the remaining units may be fulfilled by courses in other concentrations or in Urban Studies courses numbered 100 or higher (except URBANST 196, Senior Research in Public Service and URBANST 199 Senior Honors Thesis).		
Total Units		70

Concentrations

Students must complete at least 20 units in one of the following concentrations:

- Cities in Comparative and Historical Perspective
- Urban Education
- Urban Society and Social Change
- Urban Sustainability
- Self-Designed

Courses may not be double-counted within the major.

Students should consult an advisor to develop a program that meets their intellectual goals; relevant courses not listed here, may be counted toward the concentration with the prior consent of an advisor.

These concentrations are declared to the department; they are not declared on Axess, and they do not appear on the transcript or the diploma.

Cities in Comparative and Historical Perspective

Approximately half of the world's population now lives in cities, and the proportion grows greater every day. Urban issues cannot be understood in the context of a single nation or a single moment in time. This concentration draws on disciplinary approaches including

anthropology, archaeology, art history, geography, and history to help students understand how cities have developed and how they relate to each other today. By placing urban issues in perspective, students improve their comprehension of the United States as well as the world, and of the present as well as the past.

Students in this concentration are encouraged to study off campus, and preferably overseas, for at least one quarter. Many courses offered through the Overseas Studies Program can be counted toward the concentration. Similarly, internships offered at many of Stanford's overseas locations can be used to fulfill the Urban Studies internship requirement.

DLCL 100 CAPITALS: How Cities Shape Cultures, States, and People or URBANST 119 Ancient Urbanism (offered alternate years) is required for the cities in comparative and historical perspectives concentration:

		Units
Required Course		
DLCL 100	CAPITALS: How Cities Shape Cultures, States, and People	3-5
Concentration Electives		
The following courses may be counted towards concentration:		
AMSTUD 58Q	American Landscapes of Segregation	3-4
ANTHRO 39	Sense of Place	3
ANTHRO 42	Megacities	5
ANTHRO 108B	Gender in the Arab and Middle Eastern City	5
ARTHIST 3	Introduction to World Architecture	5
ARTHIST 142	Architecture Since 1900	4
ARTHIST 143A	American Architecture	4
CEE 32G	Architecture Since 1900	4
CEE 33B	Japanese Modern Architecture	4
CEE 32R	American Architecture	4
CLASSICS 83	The Greeks	4-5
CLASSICS 84	The Romans	3-5
CLASSICS 156	Design of Cities	3-5
CSRE 147D	Studies in Music, Media, and Popular Culture: Music and Urban Film	3-4
DLCL 100	CAPITALS: How Cities Shape Cultures, States, and People	3-5
EARTHSYS 112	Human Society and Environmental Change	4
ENGLISH 83N	City, Space, Literature	3
FRENCH 140	Paris: Capital of the Modern World	4-5
HISTORY 62S	From Runaway Wives to Dancing Girls: Urban Women in the Long Nineteenth Century	5
HISTORY 106A	Global Human Geography: Asia and Africa	5
HISTORY 106B	Global Human Geography: Europe and Americas	5
HISTORY 150C	The United States in the Twentieth Century	5
ME 120	History and Ethics of Design	3
OSPBER 30	Berlin vor Ort: A Field Trip Module	1
OSPBER 60	Cityscape as History: Architecture and Urban Design in Berlin	5
OSPCPTWN 16		
OSPCPTWN 43		
OSPFLOR 58	Space as History: Social Vision and Urban Change	4
OSPFLOR 71	A Studio with a View: Drawing, Painting and Informing your Aesthetic in Florence	4
OSPFLOR 115Y	Building the Cathedral and the Town Hall: Constructing and Deconstructing Symbols of a Civilization	4
OSPMADRD 8A	Cities and Creativity: Cultural and Architectural Interpretations of Madrid	4
OSPMADRD 60	Integration into Spanish Society: Service Learning and Professional Opportunities	4
OSPPARIS 92	Building Paris: Its History, Architecture, and Urban Design	4
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America	5
OSPSANTG 71	Santiago: Urban Planning, Public Policy, and the Built Environment	5
POLISCI 110C	America and the World Economy	5
REES 204	Cities of Empire: An Urban Journey through Eastern Europe and the Mediterranean	3-5
SINY 114	Writing in the City	4
SINY 116	Off the iPhone and Into the City: Creating a Photography Project	4
SINY 152	Film: The City as Muse	4
URBANST 27Q	The Detective and the City	3
URBANST 140F	Casablanca - Algiers - Tunis : Cities on the Edge	3-5
URBANST 141	Gentrification	5
URBANST 145	International Urbanization Seminar: Cross-Cultural Collaboration for Sustainable Urban Development	4-5
URBANST 147	Archaeology of Human Rights	5
URBANST 150	From Gold Rush to Google Bus: History of San Francisco	4
URBANST 156	St. Petersburg: Imagining a City, Building a City	1-2
URBANST 169	Race and Ethnicity in Urban California	4-5
URBANST 174	Defining Smart Cities: Visions of Urbanism for the 21st Century	3-4
URBANST 184	Paris: Capital of the Modern World	4-5

Urban Education

Providing education that is both high in quality and fair to all is one of the greatest challenges facing cities today. This concentration prepares students for careers in educational policy and practice. It is a popular choice for students who have been admitted by the Stanford School of Education (https://ed.stanford.edu/) to pursue a coterminal master's degree in the Stanford Teacher Education Program (STEP) (http://suse-step.stanford.edu/) or the Policy, Organization, and Leadership Studies Program (POLS) (http://suse-pols.stanford.edu/). Stanford undergraduates can apply to the Stanford Teacher Education Program (STEP) in their junior or senior year.

Coterminal students applying to STEP are encouraged to take EDUC 101 Introduction to Teaching and Learning before applying to the program. Additionally, students interested in STEP Secondary (Single Subject) must demonstrate subject matter competency in their intended teaching area. Transcripts should reflect coursework in the intended teaching subject even if it was not a student's undergraduate major.

For additional information please contact the STEP Admissions Officer at 723-2110, or consult the STEP web site (http://suse-step.stanford.edu/).

		Units
Required Course		
EDUC 112	Urban Education	3-5
Concentration Electives		

The following courses may be counted towards concentration:		
AFRICAST 111	Education for All? The Global and Local in Public Policy Making in Africa	3-5
EDUC 101	Introduction to Teaching and Learning	4
EDUC 103A	Tutoring: Seeing a Child through Literacy	3-4
EDUC 103B	Race, Ethnicity, and Linguistic Diversity in Classrooms: Sociocultural Theory and Practices	3-5
EDUC 107	Education and Inequality: Big Data for Large-Scale Problems	3-5
EDUC 123	Community-based Research As Tool for Social Change:Discourses of Equity in Communities & Classrooms	3-5
EDUC 131	Raza Youth in Urban Schools: Mis-educating Chicana/o/x and Latina/o/x Communities	3-5
EDUC 148	Inglés Personal: Coaching Everyday Community English	1-5
EDUC 149	Theory and Issues in the Study of Bilingualism	3-5
EDUC 195A	Origins and Legacies of Educational Progressivism: A Community Engaged Learning Course	3-5
EDUC 201	History of Education in the United States	3-5
EDUC 202	Introduction to International and Comparative Education	3
EDUC 204	Introduction to Philosophy of Education	3
EDUC 220C	Education and Society	4-5
EDUC 220D	History of School Reform: Origins, Policies, Outcomes, and Explanations	3-5
EDUC 221A	Policy Analysis in Education	4-5
EDUC 277	Education of Immigrant Students: Psychological Perspectives	4
EDUC 283	Child Development In and Beyond Schools	1
HUMBIO 142	Adolescent Development	3-4
or PSYCH 60	Introduction to Developmental Psychology	

Urban Society and Social Change

Many students are drawn to Urban Studies by their desire to understand and address the unique problems confronting cities today. This concentration focuses on issues in contemporary urban society, and on the tools and concepts that can bring about change to improve urban life.

Courses focus on a diverse range of issues, from public health crises to racial and class inequality. Students also learn how community action, urban planning and design, and organizations in nonprofit, for-profit, and government sectors address these challenges. This concentration prepares students to enter graduate programs concerned with urban affairs, community service, and public policy, and to work with local governmental agencies and for-profit and nonprofit organizations engaged in community service and development.

		Units
Required Course		
URBANST 156A	The Changing American City	4
Concentration Electives		
The following courses may be counted towards concentration:		
AFRICAST 111	Education for All? The Global and Local in Public Policy Making in Africa	3-5
AMSTUD 58Q	American Landscapes of Segregation	3-4
ANTHRO 32	Theories in Race and Ethnicity: A Comparative Perspective	5
ASNAMST 123	Asian Americans and Environmental Justice	3-5
CEE 32A	Psychology of Architecture	3
CEE 32B	Design Theory	4
CEE 124S	Sustainable Urban Systems Seminar	1
CEE 131A	Professional Practice: Mixed-Use Design in an Urban Setting	4
CEE 141A	Infrastructure Project Development	3
CEE 141B	Infrastructure Project Delivery	3
CEE 246	Venture Creation for the Real Economy	3-4
CEE 265F	Environmental Governance and Climate Resilience	3
CSRE 157P	Solidarity and Racial Justice	4-5
CSRE 196C	Introduction to Comparative Studies in Race and Ethnicity	5
EARTHSYS 105	Food and Community: Food Security, Resilience and Equity	2-3
ECON 150	Economic Policy Analysis	4-5
ECON 155	Environmental Economics and Policy	5
EDUC 107	Education and Inequality: Big Data for Large-Scale Problems	3-5
ENGR 150	Data Challenge Lab	3-5
HISTORY 106A	Global Human Geography: Asia and Africa	5
HISTORY 106B	Global Human Geography: Europe and Americas	5
HUMBIO 122S	Social Class, Race, Ethnicity, and Health	4
HUMBIO 128	Community Health Psychology	4
LAW 7003	Cities in Distress	3
LINGUIST 55N	Language in the City	3
MS&E 180	Organizations: Theory and Management	4
or SOC 160	Formal Organizations	
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America	5
OSPSANTG 71	Santiago: Urban Planning, Public Policy, and the Built Environment	5
PEDS 150	Social and Environmental Determinants of Health	3
POLISCI 121L	Racial-Ethnic Politics in US	5
POLISCI 31Q	Justice and Cities	3
POLISCI 147P	The Politics of Inequality	5
POLISCI 220	Urban Policy Research Lab	5
POLISCI 236	Theories and Practices of Civil Society, Philanthropy, and the Nonprofit Sector	5
PUBLPOL 135	Regional Politics and Decision Making in Silicon Valley and the Greater Bay Area	4
SINY 101	The New York City Seminar	5
SINY 134	The Urban Home Project	4
SINY 162	Sustainable and Resilient Urban Systems in NYC	3-4
SOC 3	America: Unequal	4
SOC 14N	Inequality in American Society	4
SOC 45Q	Understanding Race and Ethnicity in American Society	4
SOC 118	Social Movements and Collective Action	4
SOC 135	Poverty, Inequality, and Social Policy in the United States	3-4
SOC 140	Introduction to Social Stratification	3
SOC 145	Race and Ethnic Relations in the USA	4

SOC 146	Introduction to Comparative Studies in Race and Ethnicity	5
SOC 157	Ending Poverty with Technology	5
SOC 160	Formal Organizations	4
SOC 164	Immigration and the Changing United States	4
SOC 166	Mexicans, Mexican Americans, and Chicanos in American Society	5
URBANST 103C	Housing Visions	3
URBANST 109	Physics of Cities	3
URBANST 123	Designing Research for Social Justice: Writing a Community-Based Research Proposal	3-5
URBANST 125	Shades of Green: Redesigning and Rethinking the Environmental Justice Movements	3-5
URBANST 126	Spirituality and Nonviolent Urban and Social Transformation	3
URBANST 126A	Ethics and Leadership in Public Service	3-4
URBANST 130	Planning Calif: the Intersection of Climate, Land Use, Transportation & the Economy	3
URBANST 131	VIP. Very Impactful People - Social Innovation & the Social Entrepreneur	1
URBANST 132	Concepts and Analytic Skills for the Social Sector	4
URBANST 133	Social Enterprise Workshop	4
URBANST 134	Justice and Cities	5
URBANST 138	Smart Cities & Communities	4
URBANST 141	Gentrification	5
URBANST 145	International Urbanization Seminar: Cross-Cultural Collaboration for Sustainable Urban Development	4-5
URBANST 148	Who Owns Your City?: Institutional Real Estate Seminar	3
URBANST 164	Sustainable Cities	4-5
URBANST 169	Race and Ethnicity in Urban California	4-5
URBANST 170	Urban Policy Research Lab	5
URBANST 171	Urban Design Studio	5
URBANST 172A	Introduction to Urban and Regional Planning	3
URBANST 173	The Urban Economy	4
URBANST 174	Defining Smart Cities: Visions of Urbanism for the 21st Century	3-4
URBANST 178	The Science and Practice of Effective Advocacy	3-5
URBANST 179	The Social Life of Neighborhoods	4
URBANST 183	Team Urban Design Studio	5

Urban Sustainability

The Urban Sustainability concentration provides the basis for a holistic understanding of cities through the lens of environmental and social sustainability. By combining coursework in urban studies, history, sociology, and design with the STEM fields (science, technology, engineering and mathematics), students in the Urban Sustainability concentration are exposed to the environmental and infrastructural aspects of cities, as well as to issues of human development, public policy, and social equity.

Students in the concentration acquire a foundation in sustainability concepts and skills for research and professional practices. The Urban Sustainability concentration helps prepare students to serve as social change agents in future roles as scholars, urban planners, designers, entrepreneurs, public servants, and advocates, to address the most pressing issues of urban development and its human impacts in cities around the world.

The following courses may be counted toward the Urban Sustainability Concentration. Students must select at least one course from each of the following categories:

1. environmental sustainability
2. social sustainability
3. project-based courses.

Students interested in pursuing the concentration in urban sustainability should meet with an Urban Studies advisor to determine an appropriate course of study. Consult the Urban Studies website or see an advisor for sample course plans in this concentration.

		Units
Required Course		
EARTHSYS 112	Human Society and Environmental Change	4
Concentration Electives		
Students must take at least one course in each of the categories listed below for the Urban Sustainability concentration.		
Environmental Sustainability		
Environmental sustainability refers to the biosphere, environmental planning and policy, natural resource planning and development, sustainable building design, and urban infrastructure systems.		
CEE 64	Air Pollution and Global Warming: History, Science, and Solutions	
CEE 100	Managing Sustainable Building Projects	
CEE 107A	Understanding Energy	
CEE 124S	Sustainable Urban Systems Seminar	
CEE 165C	Water Resources Management	
CEE 171		
CEE 172	Air Quality Management	
CEE 176A	Energy Efficient Buildings	
CEE 177X	Engineering and Sustainable Development: Toolkit	
CEE 199D		
CEE 243	Intro to Urban Sys Engrg	
CEE 265F	Environmental Governance and Climate Resilience	
CEE 308	Topics in Disaster Resilience Research	
CHEMENG 60Q	Environmental Regulation and Policy	
EARTHSYS 10	Introduction to Earth Systems	
EARTHSYS 41N	The Global Warming Paradox	
EARTHSYS 101	Energy and the Environment	
EARTHSYS 104	The Water Course	
EARTHSYS 188	Social and Environmental Tradeoffs in Climate Decision-Making	
ECON 17N	Energy, the Environment, and the Economy	
ECON 155	Environmental Economics and Policy	
ENGR 90	Environmental Science and Technology	
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America	
SINY 162	Sustainable and Resilient Urban Systems in NYC	
URBANST 174	Defining Smart Cities: Visions of Urbanism for the 21st Century	
Social Sustainability		

Social sustainability refers to land use planning and its human impacts, distribution of public goods, human-centered design, human and community development, citizen participation, and social equity.

ASNAMST 123	Asian Americans and Environmental Justice	
EARTHSYS 105	Food and Community: Food Security, Resilience and Equity	
ENVRES 221	New Frontiers and Opportunities in Sustainability	
PEDS 150	Social and Environmental Determinants of Health	
POLISCI 31Q	Justice and Cities	
SINY 122	The Agile City	
SOC 3	America: Unequal	
SOC 135	Poverty, Inequality, and Social Policy in the United States	
URBANST 103C	Housing Visions	
URBANST 125	Shades of Green: Redesigning and Rethinking the Environmental Justice Movements	
URBANST 130	Planning Calif: the Intersection of Climate, Land Use, Transportation & the Economy	
URBANST 138	Smart Cities & Communities	
URBANST 147	Archaeology of Human Rights	
URBANST 156A	The Changing American City	
URBANST 169	Race and Ethnicity in Urban California	
URBANST 170	Urban Policy Research Lab	
URBANST 173	The Urban Economy	
URBANST 174	Defining Smart Cities: Visions of Urbanism for the 21st Century	
Project-Based Courses		

Project-based courses enable students to work on a real-life urban sustainability issue in collaboration with local and international community partners. Students grapple with sustainability concepts while practicing community engagement and capacity building, fluency in crosscultural collaboration, human-centered design thinking, and developing a sense of one's place in relation to global society and the praxis of urban sustainability.

CEE 177X	Engineering and Sustainable Development: Toolkit	
URBANST 164	Sustainable Cities	
URBANST 171	Urban Design Studio	
URBANST 172A	Introduction to Urban and Regional Planning	3
URBANST 183	Team Urban Design Studio	

Self-Designed Concentration

Students who wish to concentrate in an area of urban studies other than one of the above concentrations must complete the Urban Studies core, skills, and capstone requirement, and design additional units to bring the total to at least 70 units. The self-designed portion of the major should concentrate on a particular area of urban study, such as urban health care or urban technologies. Additional units must be approved by both the Director of Urban Studies and an academic advisor who is a member of the Academic Council and has expertise in the particular area of interest to the student. A proposal for a self-designed concentration should include a list of courses and a description of how each course meets the student's educational objectives. A proposal for a self-designed concentration must be accompanied by a letter to the Director of Urban Studies indicating that the academic advisor has examined and approved the student's plan.

Students pursuing a self-designed concentration must submit proposals for approval by the Director of Urban Studies by the beginning of the third quarter of the student's sophomore year. Applications received after that deadline are not considered. Students interested in designing their own concentration are strongly encouraged to meet with the Director of Urban Studies before the end of fall quarter of their sophomore year.

Additional Information

Overseas Studies

Urban Studies students are encouraged to spend at least one quarter studying overseas to learn how cities vary across societies. Some Urban Studies concentration courses, as well as electives, can be satisfied at Stanford overseas campuses. Courses offered overseas vary from year to year, and students should check in advance with Overseas Studies and Urban Studies concerning which courses meet Urban Studies requirements. Students may arrange to fulfill the service learning requirement through an internship placement at one of Stanford's overseas locations.

Service Learning

Urban Studies students are required to engage in a service learning experience as part of their course of study. Students can fulfill their service learning requirement in two ways:

1. enroll in an approved course such as URBANST 164, URBANST 145, URBANST 141, SINY 101, or
2. complete an independent internship with a government agency or non-profit/community organization relevant to the major, while enrolled in URBANST 201A Capstone Internship in Urban Studies before Autumn Quarter of the senior year.

Students planning to carry out an internship should consult with the Director of Community Engaged Learning no later than Winter Quarter of junior year and complete the internship before Autumn Quarter of senior year, or three quarters before graduation. Students who intern for a private sector organization may receive credit for URBANST 194, but cannot use URBANST 201A credits to meet the capstone requirement. Urban Studies majors who wish to receive academic credit for additional internship work may enroll in URBANST 194. Students may not count more than 7 units of internship credit, including URBANST 194 Internship in Urban Studies and URBANST 201A Capstone Internship in Urban Studies, toward their major. Students can consult the Haas Center for Public Service for other courses with internship placements at community organizations.

Capstone

All majors are required to complete a sequence of two seminars, totaling 10 units, in which students design a senior project, and write the results of their project. The capstone seminars can be used to satisfy the Writing in the Major requirement and to complete some work on an honors thesis. URBANST 202A Junior Seminar: Preparation for Research, should be taken in the junior year, and URBANST 203 Senior Seminar in the senior year. Students who plan to be away during Winter Quarter of their junior year are advised to take URBANST 202A Junior Seminar: Preparation for Research in the Winter Quarter of their sophomore year.

		Units
URBANST 203	Senior Seminar	5
URBANST 202A	Junior Seminar: Preparation for Research	5

Honors Program

The honors program offers qualified students an opportunity to conduct independent research and to write a thesis summarizing the results. Before being accepted to the honors program in Urban Studies, a student must:

1. declare a major in Urban Studies and complete at least 30 of the 70 required units including all prerequisites and core classes
2. complete URBANST 202A Junior Seminar: Preparation for Research (offered Winter Quarter)
3. have an overall GPA of 3.3 and a GPA of at least 3.5 in Urban Studies
4. submit an application, including a one-page abstract and the signatures of an advisor and, if applicable, a second reader. If the advisor is not a member of Stanford's Academic Council, the student must have a second reader who is an Academic Council member. The application must be submitted to the program office no later than April 30 of the junior year, and it must then be approved by the Director of the Urban Studies honors program.

Honors students are expected to complete a portion of their honors work in URBANST 203 Senior Seminar, in Autumn Quarter. Additionally, they must register for 5-10 units total in URBANST 199 Senior Honors Thesis, over the course of their senior year. The units of URBANST 199 Senior Honors Thesis are in addition to the 70-units required for the major. Honors students are required to present their theses at the Senior Colloquium in Spring Quarter of senior year.

To graduate with honors, students must receive a grade of at least 'A-' in the honors work and have a GPA of at least 3.5 in courses for the Urban Studies major at the time of graduation.

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Minor in Urban Studies

The minor in Urban Studies is designed to introduce students to several disciplinary approaches to the study of cities, and provides the opportunity to explore one of four specialized options:

- Cities in comparative and historical perspective
- Urban education
- Urban society and social change
- Urban sustainability

The minor in Urban Studies requires completion of seven courses for a letter grade, including the four core courses, the required course in the student's chosen concentration area, and two additional course in that option as listed in the "Bachelor of Arts in Urban Studies (p. 2202)" section of this bulletin.

Degree Requirements

		Units
Core Courses		
URBANST 110	Introduction to Urban Studies	4
URBANST 112	The Urban Underclass	4
URBANST 113	Introduction to Urban Design: Contemporary Urban Design in Theory and Practice	5
URBANST 114	Urban Culture in Global Perspective	5
or URBANST 142	Megacities	
Concentration Electives		**6**
Complete two courses from Concentration course lists outlined on the Bachelor's in Urban Studies. Cannot be duplicated with core coursework.		
Total Units		24

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements

Grading

The Program on Urban Studies counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade. If a course is taken for a letter grade, a minimum grade of 'C' is required.

Director: Tomás Jiménez (Sociology)

Co-Director: Michael Kahan (Senior Lecturer, Sociology)

Executive Committee: David Grusky (Sociology), Michael Lepech, (Civil and Environmental Engineering), Jennifer Trimble (Classics)

Affiliated Faculty: Michelle Anderson (Law), Asad Asad (Sociology), Arnetha Ball (Education, African and African American Studies), Eric Bettinger (Education), Bryan Brown (Education), Scott Bukatman (Art and Art History), Samuel Chiu (Management Science and Engineering), Matthew Clair (Sociology), Rebecca Diamond (Business), Paulla Ebron (Anthropology), Paula Findlen (History), James Fishkin (Communication), Shelley Fisher Fishkin (English), Charlotte Fonrobert (Religious Studies), Richard Ford (Law), Zephyr Frank (History), Angela Garcia (Anthropology), Sharad Goel (Management Science and Engineering), David Grusky (Sociology), Thomas Hansen (Anthropology), Gabrielle Hecht (History), Allyson Hobbs (History), Ian Hodder (Anthropology), Jackelyn Hwang (Sociology), Miyako Inoue (Anthropology), Rishee Jain (Civil and Environmental Engineering), S. Lochlann Jain (Anthropology), Tomás Jiménez (Sociology), Kincho Law (Civil and Environmental Engineering), Michael Lepech (Civil and Environmental Engineering), Tanya Luhrmann (Anthropology), Ramón Martínez (Education), Pamela Matson (Earth, Energy, and Environmental Sciences), Doug McAdam (Sociology, Emeritus), Raymond McDermott (Education, Anthropology), Daniel McFarland (Education, Sociology), William McLennan (Business), Jisha Menon (Theater and Performance Studies), Ian Morris (Classics, History), Josiah Ober (Classics, Political Science, Philosophy), Leonard Ortolano (Civil and Environmental Engineering), Nicholas Ouellette (Civil and Environmental Engineering), Grant Parker (Classics), Francis Pearman (Education), Peggy Phelan (Theater and Performance Studies, English), Walter Powell (Education, Sociology), Ato Quayson (English), Sean Reardon (Education, Sociology), Rob Reich (Political Science, Education), Jonathan Rodden (Political Science), Jonathan Rosa (Education, Comparative Studies in Race and Ethnicity), Michael Rosenfeld (Sociology), Walter Scheidel (Classics, History), Michael

Shanks (Classics), Forrest Stuart (Sociology), Jennifer Trimble (Classics), Fred Turner (Communication), Guadalupe Valdes (Education), Barbara Voss (Anthropology), Ali Yaycioglu (History), Steve Zipperstein (History)

Lecturers: Deland Chan, Brian Coyne, Melanie Edwards, Dehan Glanz, Michael Kahan, Patricia Karlin-Neumann, Jennifer LeSar, Lawrence Litvak, Carol McKibben, Laura Scher, Frederic Stout, Mark Wolfe

Overseas Studies Courses in Urban Studies

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPBER 30	Berlin vor Ort: A Field Trip Module	1
OSPBER 60	Cityscape as History: Architecture and Urban Design in Berlin	5
OSPFLOR 58	Space as History: Social Vision and Urban Change	4
OSPFLOR 71	A Studio with a View: Drawing, Painting and Informing your Aesthetic in Florence	4
OSPFLOR 115Y	Building the Cathedral and the Town Hall: Constructing and Deconstructing Symbols of a Civilization	4
OSPMADRD 8A	Cities and Creativity: Cultural and Architectural Interpretations of Madrid	4
OSPMADRD 60	Integration into Spanish Society: Service Learning and Professional Opportunities	4
OSPPARIS 92	Building Paris: Its History, Architecture, and Urban Design	4
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America	5
OSPSANTG 71	Santiago: Urban Planning, Public Policy, and the Built Environment	5
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America	5
OSPCPTWN 79		
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America	5
OSPCPTWN 79		

Courses

URBANST 16SI. Environmental Justice in the Bay Area. 2 Units.
Hands-on, discussion-based class that seeks to expose students to the intersectionality of social justice and environmental well being. Through student-led talks and field trips around the Bay, the course pushes participants to think about connections between issues of privilege, race, health, gender equality, and class in environmental issues. Students from all experiences and fields of study are encouraged to join to gain a sense of place, engage critically with complex challenges, and learn about environmental justice in and out of the classroom.
Same as: EARTHSYS 16SI

URBANST 27Q. The Detective and the City. 3 Units.
This seminar will analyze the social reality of three historic cities (London in the 1880s and 90s, San Francisco in the 1920s and 30s, and contemporary Shanghai) through the prism of popular crime fiction featuring three great literary detectives (Arthur Conan Doyle's Sherlock Holmes, Dashiell Hammett's Sam Spade, and Qiu Xiaolong's Chief Inspector Chen). As a student in this course, you will explore why crime fiction is so popular, why the fear of crime is so much a part of modern urban culture, and why the police detective and the private investigator have become iconic code heroes of pulp fiction, movies, TV shows, and even video games. If you take this class, you will have the opportunity to write a paper and present your research on one of the classic literary detectives or on one of today's related manifestations of the same impulse in mass-market tales of superheroes, vampires, and the zombie apocalypse.

URBANST 83N. City, Space, Literature. 3 Units.
This course presents a literary tour of various cities as a way of thinking about space, representation, and the urban. Using literature and film, the course will explore these from a variety of perspectives. The focus will be thematic rather than chronological, but an attempt will also be made to trace the different ways in which cities have been represented from the late nineteenth century to recent times. Ideas of space, cosmopolitanism, and the urban will be explored through films such as The Bourne Identity and The Lunchbox, as well as in the writings of Arthur Conan Doyle, Walter Mosley, Virginia Woolf, James Joyce, Fiston Mwanza Mujila, Karen Tei Yamashita, and Mohsin Hamid, among others.
Same as: ENGLISH 83N

URBANST 101. Public Service Internship Preparation. 1 Unit.
Are you prepared for your internship this summer? This workshop series will help you make the most of your internship experience by setting learning goals in advance; negotiating and communicating clear roles and expectations; preparing for a professional role in a non-profit, government, or community setting; and reflecting with successful interns and community partners on how to prepare sufficiently ahead of time. You will read, discuss, and hear from guest speakers, as well as develop a learning plan specific to your summer or academic year internship placement. This course is primarily designed for students who have already identified an internship for summer or a later quarter. You are welcome to attend any and all workshops, but must attend the entire series and do the assignments for 1 unit of credit.
Same as: EARTHSYS 9, EDUC 9, HUMBIO 9, PUBLPOL 74

URBANST 101A. The New York City Seminar. 3-5 Units.
*This class is being offered in collaboration with Stanford in New York, Bing Overseas Studies Program, and must be taken in conjunction with an internship. Registration code required.n nThe (Remote) NYC Seminar will employ a structured, experiential education model to enrich the value of a remote internship experience arranged in advance through Stanford in New York. Through goal setting, deep reflection on experiences, and expression and documentation of learning outcomes, students will gain greater awareness of work-related interests, skills, and abilities and how they integrate with intellectual and personal interests and pursuits. Through readings, virtual experiences, and class discussions, the seminar will also consider the critical qualities and tensions that make New York City special and how the fields and organizations represented by student internships contribute to making New York what it is and vice versa. For more information, please contact stanfordNY@stanford.edu.
Same as: Remote

URBANST 103. Digital Humanities and African American History Black History in the Age of the Digital Database. 1 Unit.
The focus of this workshop is on the social and cultural histories and present conditions relating to social movements and the role of leaders and heroes in urban settings. The workshop seeks to foster historical consciousness of past struggles for justice through collective action as well as to introduce students to a diverse range of leaders of contemporary social justice movements. Additionally, as an underpinning concept, the course explores the changing meaning and importance of social and cultural heroes through history, literature, and music. Workshop activities will divided between sessions with guest speakers and classes held to discuss background concepts and material.
Same as: CSRE 13

URBANST 103C. Housing Visions. 3 Units.
This course provides an introduction to American Housing practices, spanning from the Industrial Age to the present. Students will examine a range of projects that have aspired to a range of social, economic and/or environmental visions. While learning about housing typologies, students will also evaluate the ethical role that housing plays within society. The course focuses on the tactical potentials of housing, whether it is to provide a strong community, solve crisis situations, integrate social services, or encourage socio-economic mixture. Students will learn housing design principles and organizational strategies, and the impact of design on the urban environment. They will discuss themes of shared spaces and defensible spaces; and how design can accommodate the evolving demographics and culture of this country. For example, how can housing design address the changing relationship between living and working? What is the role of housing and ownership in economic mobility? These issues will be discussed within the context the changing composition of the American population and economy. n nThis course will be primarily discussion-based, using slideshows, readings and field trips as a departure points for student-generated conversations. Each student will be asked to lead a class discussion based on his/her research topic. Students will evaluate projects, identifying which aspects of the initial housing visions were realized, which did not, and why. Eventually, students might identify factors that lead to ¿successful¿ projects, and/or formulate new approaches that can strengthen or redefine the progressive role of housing: one inclusive of the complex social, economic, and ethical dimensions of design.
Same as: CEE 33C

URBANST 106. City, Society, Literature- 19th Century Histories. 4 Units.
This course examines the rise of modern cities through an analysis of urban society and the imaginative literature of the 1800s.
Same as: HISTORY 206A, HISTORY 306A

URBANST 108. Grassroots Community Organizing: Building Power for Collective Liberation. 3-5 Units.
Taught by long-time community organizer, Beatriz Herrera. This course explores the theory, practice and history of grassroots community organizing as a method for developing community power to promoting social justice. We will develop skills for 1-on-1 relational meetings, media messaging, fundraising strategies, power structure analysis, and strategies organizing across racial/ethnic difference. And we will contextualize these through the theories and practices developed in the racial, gender, queer, environmental, immigrant, housing and economic justice movements to better understand how organizing has been used to engage communities in the process of social change. Through this class, students will gain the hard skills and analytical tools needed to successfully organize campaigns and movements that work to address complex systems of power, privilege, and oppression. As a Community-Engaged Learning course, students will work directly with community organizations on campaigns to address community needs, deepen their knowledge of theory and history through hands-on practice, and develop a critical analysis of inequality at the structural and interpersonal levels. Placements with community organizations are limited. Enrollment will be determined on the first day through a simple application process. Students will have the option to continue the course for a second quarter in the Winter, where they will execute a campaign either on campus or in collaboration with their community partner.
Same as: AFRICAAM 100, CSRE 100, FEMGEN 100X

URBANST 108B. Gender in the Arab and Middle Eastern City. 5 Units.
What are the components of gendered experience in the city, and how are these shaped by history and culture? How do meanings attributed to Islam and the Middle East obscure the specificity of women¿s and men¿s lives in Muslim-majority cities? This course explores gender norms and gendered experience in the major cities of Arab-majority countries, Iran and Turkey. Assigned historical and sociological readings contextualize feminism in these countries. Established and recent anthropological publications address modernity, mobility, reproduction, consumption, and social movements within urban contexts. Students will engage with some of the key figures shaping debates about gender, class, and Islam in countries of the region typically referenced as North Africa and the Middle East (MENA). They will also evaluate regional media addressing concerns about gender in light of the historical content of the course and related political concepts.
Same as: ANTHRO 108B, FEMGEN 108B

URBANST 108H. Housing Affordability Crisis in California: Causes, Impacts, and Solutions. 4 Units.
This course will divided into three sections that when combined provide 1) the overall narrative of the precedents and adverse impacts of the worldwide, US west coast and California housing crises and the frameworks for California to create a balanced housing market without causing extreme displacement; 2) an overview of the planning, regulatory and development environments in California along with an opportunities/threats analysis to illuminate current opportunities to achieve a balanced housing market; and 3) an overview of the federal, state, regional and local housing policy environments and areas of policy work addressing and responding to the California housing crisis.

URBANST 109. Physics of Cities. 3 Units.
An introduction to the modern study of complex systems with cities as an organizing focus. Topics will include: cities as interacting systems; cities as networks; flows of resources and information through cities; principles of organization, self-organization, and complexity; how the properties of cities scale with size; and human movement patterns. No particular scientific background is required, but comfort with basic mathematics will be assumed. Prerequisites: MATH 19 and 20, or the equivalent.
Same as: CEE 6

URBANST 110. Introduction to Urban Studies. 4 Units.
Today, for the first time in history, a majority of people live in cities. By 2050, cities will hold two-thirds of the world¿s population. This transformation touches everyone, and raises critical questions. What draws people to live in cities? How will urban growth affect the world¿s environment? Why are cities so divided by race and by class, and what can be done about it? How do cities change who we are, and how can we change cities? In this class, you will learn to see cities in new ways, from the smallest everyday interactions on a city sidewalk to the largest patterns of global migration and trade. We will use specific examples from cities around the world to illustrate the concepts that we learn in class. The course is intended primarily for freshmen and sophomores.
Same as: HISTORY 107

URBANST 111. Political Power in American Cities. 5 Units.
The major actors, institutions, processes, and policies of sub-state government in the U.S., emphasizing city general-purpose governments through a comparative examination of historical and contemporary politics. Issues related to federalism, representation, voting, race, poverty, housing, and finances. Political Science majors taking this course to fulfill the WIM requirement should enroll in POLISCI 121.
Same as: AMSTUD 121Z, POLISCI 121, PUBLPOL 133

URBANST 111A. The Politics of the American City. 4 Units.
This course will focus on American urban politics ¿- the distinctive nature of local government, its relationship to state government and the separation of powers between states and the federal government. Certain theories about political decision-making and power sharing will be explored. We will try to develop a national perspective on the political dynamics of urban governments and we will probe certain policy areas such as economic development to understand how political choice is embedded within the allocation of resources to meet human needs. The growing transformation among American urban areas due to the rise of the global economy will also be examined. The course will be composed of lectures, class discussions and graded exercises.

URBANST 112. The Urban Underclass. 4 Units.
(Graduate students register for 249.) Recent research and theory on the urban underclass, including evidence on the concentration of African Americans in urban ghettos, and the debate surrounding the causes of poverty in urban settings. Ethnic/racial conflict, residential segregation, and changes in the family structure of the urban poor.
Same as: CSRE 149A, SOC 149, SOC 249

URBANST 113. Introduction to Urban Design: Contemporary Urban Design in Theory and Practice. 5 Units.
Comparative studies in neighborhood conservation, inner city regeneration, and growth policies for metropolitan regions. Lect-disc and research focusing on case studies from North America and abroad, team urban design projects. Two Saturday class workshops in San Francisco: 2nd and 4th Saturdays of the quarter. Terms: Win | Units: 5 | UG Reqs: GER:DBSocSci | Grading: Letter (ABCD/NP).

URBANST 114. Urban Culture in Global Perspective. 5 Units.
Core course for Urban Studies majors. A majority of the world's population now live in urban areas and most of the rapid urbanization has taken place in mega-cities outside the Western world. This course explores urban cultures, identities, spatial practices and forms of urban power and imagination in Asia, Africa and Latin America.nParticipants will be introduced to a global history of urban development that demonstrates how the legacies of colonialism, modernization theory and global race thinking have shaped urban designs and urban life in most of the world. Students will also be introduced to interpretative and qualitative approaches to urban life that affords an understanding of important, if unquantifiable, vectors of urban life: stereotypes, fear, identity formations, utopia, social segregation and aspirations.
Same as: ANTHRO 126

URBANST 122. Ethics and Politics of Public Service. 3-5 Units.
Ethical and political questions in public service work, including volunteering, service learning, humanitarian assistance, and public service professions such as medicine and teaching. Motives and outcomes in service work. Connections between service work and justice. Is mandatory service an oxymoron? History of public service in the U.S. Issues in crosscultural service work. Integration with the Haas Center for Public Service to connect service activities and public service aspirations with academic experiences at Stanford.
Same as: CSRE 178, ETHICSOC 133, PHIL 175A, PHIL 275A, POLISCI 133, PUBLPOL 103D

URBANST 122Z. Ethics and Politics in Public Service. 4 Units.
This course examines ethical and political questions that arise in doing public service work, whether volunteering, service learning, humanitarian endeavors overseas, or public service professions such as medicine and teaching. What motives do people have to engage in public service work? Are self-interested motives troublesome? What is the connection between service work and justice? Should the government or schools require citizens or students to perform service work? Is mandatory service an oxymoron?.
Same as: CSRE 133P, POLISCI 133Z, PUBLPOL 103Z

URBANST 123. Designing Research for Social Justice: Writing a Community-Based Research Proposal. 3-5 Units.
This course will support students in designing and writing a community-engaged research proposal. In contrast to "traditional" forms of research, community-engaged research uses a social justice lens in seeking to apply research to benefit communities most impacted. Community-engaged researchers also aim to challenge the power relationship between "researchers" and "researched" by working side by side with community partners in the design, conceptualization, and actualization of the research process. In this course, students will learn how to write a community-engaged research proposal. This involves forming a successful community partnership, generating meaningful research questions, and selecting means of collecting and analyzing data that best answer your research questions and support community partners. The course will also support students in developing a grounding in the theory and practice of community-engaged research, and to consider the ethical questions and challenges involved. By the end of the course, students should have a complete research proposal that can be used to apply for a number of summer funding opportunities including the Chappell Lougee Scholarship, the Community-Based Research Fellowship, Cardinal Quarter fellowships, and Major Grants. Please note that completion of the course does not guarantee funding-- rather, the course supports you in learning how to write a strong community-engaged research proposal that you can use to apply to any number of fellowships). This course is also useful for students in any academic year who are interested in pursuing community-engaged theses or capstone projects.
Same as: CSRE 146A

URBANST 123B. Approaching Research in the Community: Design and Methods. 3 Units.
This course focuses on issues of research design and how to select specific methodological strategies to assure ethical and effective partnership-based research. In this course, students will plan for their own participation in a CBRF project. Topical themes will include best practice strategies for (a) defining and selecting community problems or issues to be addressed, (b) generating relevant and useful research questions, (c) choosing specific means and methods for data collection [e.g., surveys, interviews, focus groups, etc.], (d) storing, organizing and analyzing data, (e) reflecting on and critiquing research findings, and (f) carrying out dissemination in ways that can be expected to enhance community power and advance community development. Students will be provided with opportunities to workshop their respective projects-in-development, (e.g., developing and sharing research questions, data collection instruments, strategies for engaging community constituents as co-researchers, etc.). This is a required course for students participating in the Haas Center for Public Service Community-based Research Fellows Program, but enrollment is open to all Stanford students.
Same as: CSRE 146B

URBANST 124. Spatial Approaches to Social Science. 5 Units.
This multidisciplinary course combines different approaches to how GIS and spatial tools can be applied in social science research. We take a collaborative, project oriented approach to bring together technical expertise and substantive applications from several social science disciplines. The course aims to integrate tools, methods, and current debates in social science research and will enable students to engage in critical spatial research and a multidisciplinary dialogue around geographic space.
Same as: ANTHRO 130D, ANTHRO 230D, POLISCI 241S

URBANST 125. Shades of Green: Redesigning and Rethinking the Environmental Justice Movements. 3-5 Units.
Historically, discussions of race, ethnicity, culture, and equity in the environment have been relegated to the environmental justice movement, which often focuses on urban environmental degradation and remains separated from other environmental movements. This course will seek to break out of this limiting discussion. We will explore access to outdoor spaces, definitions of wilderness, who is and isn't included in environmental organizations, gender and the outdoors, how colonialism has influenced ways of knowing, and the future of climate change. The course will also have a design thinking community partnership project. Students will work with partner organizations to problem-solve around issues of access and diversity. We value a diversity of experiences and epistemological beliefs, and therefore undergraduates and graduate students from all disciplines are welcome.
Same as: CSRE 125E, EARTHSYS 125, EARTHSYS 225

URBANST 126. Spirituality and Nonviolent Urban and Social Transformation. 3 Units.
A life of engagement in social transformation is often built on a foundation of spiritual and religious commitments. Case studies of nonviolent social change agents including Rosa Parks in the civil rights movement, César Chávez in the labor movement, and WIlliam Sloane Coffin in the peace movement; the religious and spiritual underpinnings of their commitments. Theory and principles of nonviolence. Films and readings. Service learning component includes placements in organizations engaged in social transformation. Service Learning Course (certified by Haas Center).
Same as: CSRE 162A, RELIGST 162X

URBANST 126A. Ethics and Leadership in Public Service. 3-4 Units.
This course explores ethical questions that arise in public service work, as well as leadership theory and skills relevant to public service work. Through readings, discussions, in-class activities, assignments, and guest lectures, students will develop a foundation and vision for a future of ethical and effective service leadership. This course serves as a gateway for interested students to participate in the Haas Center's Public Service Leadership Program.
Same as: CSRE 126C, EDUC 126A, ETHICSOC 79

URBANST 130. Planning Calif: the Intersection of Climate, Land Use, Transportation & the Economy. 3 Units.
Cities and urban areas have always been transformed by major external changes like pandemics and public health crises. California is both in the midst of its greatest economic recession since the Great Depression and experiencing a pandemic that has the potential to reshape many aspects of life. Planning for cities and regions, however, is a long game that requires follow-through on decisions made sometimes over many decades. How do we balance the shocks to our assumptions from the current Covid world with the need to plan long-term for issues like affordable housing and equitable cities, and perhaps most fundamentally, prepare our cities and communities for the inevitability of climate change and climate impact? nnnnThis course takes an interdisciplinary view of the key contemporary planning topics in California. It does so from looking at the intersection of climate laws, land use changes, the need for housing, travel patterns and the availability of high quality jobs and employment. This course will give you an understanding of the roles of key levels of government, from the state to the region/metropolitan scale, to the city and county, down to the neighborhood and parcel level. it will give students insight into leading themes and issues of the day in California such as the future of downtowns, the role of high speed rail, the impact of telework, automation in the construction of housing, drawing from examples in San Jose and San Francisco, the Central Valley, the state legislature, Southern California. Within each of these topics we will look at the impact of decisions on equity as well as climate and the economy. nnnnThe instructors are Kristy Wang, formerly SPUR¿s Community Planning Policy Director, and Egon Terplan, Senior Advisor for Economic Development and Transportation in the California Governor¿s Office, formerly SPUR¿s Regional Planning Director. (Affiliations for identification purposes only).
Same as: CEE 136, CEE 236, PUBLPOL 130, PUBLPOL 230

URBANST 131. VIP: Very Impactful People - Social Innovation & the Social Entrepreneur. 1 Unit.
Engage with founders of leading social enterprises, including Nobel Peace Prize Winner, Muhammad Yunus of Grameen Bank, Wendy Kopp of Teach for America, Paul Rice of Fair Trade USA, and Durreen Shahnaz of Impact Investment Exchange, among many others in this weekly speaker series. Students will be exposed to the perspectives and endeavors of global high-impact entrepreneurs who address social and environmental needs in the U.S. and internationally through for-profit, nonprofit and hybrid models. Each week after a live in-depth interview with a social entrepreneur via Zoom, students will have the opportunity to converse directly with each guest entrepreneur during Q&A. This class will expose students to pioneering thought leaders, diverse impact career paths, networking and potential internship and job opportunities.

URBANST 132. Concepts and Analytic Skills for the Social Sector. 4 Units.
How to develop and grow innovative not-for-profit organizations and for-profit enterprises which have the primary goal of solving social and environmental problems. Topics include organizational mission, strategy, market/user analysis, communications, funding, recruitment and impact evaluation. Perspectives from the field of social entrepreneurship, design thinking and social change organizing. Opportunities and limits of using methods from the for-profit sector to meet social goals. Focus is on integrating theory with practical applications, including several case exercises and simulations.One-day practicum where students advise an actual social impact organization. Enrollment limited to 20. Prerequisite:consent of instructor. Email lalitvak@stanford.edu.
Same as: EARTHSYS 137

URBANST 133. Social Enterprise Workshop. 4 Units.
Social Enterprise Workshop: A team based class to design solutions to social issues. In the class students will identify issues they are interested in, such as housing, food, the environment, or college access. They will join teams of like-minded students. Working under the guidance of an experienced social entrepreneur, together they will develop a solution to one part of their issue and write a business plan for that solution. The class will also feature guests who are leaders in the field of social entrepreneurship who will share their stories and help with the business plans. The business plan exercise can be used for both nonprofits and for-profits. Previous students have started successful organizations and raised significant funds based on the business plans developed in this class. There are no prerequisites, and students do not need to have an idea for a social enterprise to join the class. Enrollment limited to 20. May be repeated for credit.
Same as: EARTHSYS 133

URBANST 134. Justice and Cities. 5 Units.
Cities have most often been where struggles for social justice happen, where injustice is most glaring and where new visions of just communities are developed and tested. This class brings political theories of justice and democracy together with historical and contemporary empirical work on city design, planning, and policies to ask the following questions: What makes a city just or unjust? How have people tried to make cities more just? What has made these efforts succeed or fail? Each session will include a case study of a particular city, largely with a focus on the United States. Students will develop research projects examining a city of their choice through the lens of a particular aspect of justice and injustice.
Same as: POLISCI 233

URBANST 136. The Sharing Economy. 3 Units.
The rapid growth of the sharing economy, sometimes also called the peer to peer economy, is made possible by the ubiquity of smart phones, inefficiency of ownership, and measures designed to create and measure trust among participants. The course will explore not only the rapid rise of certain companies but also the shadow side of commercialized relationships. We will examine the economics and development consequences of the sharing economy, primarily with an urban focus, along an emphasis on the design of platforms and markets, ownership, the nature of work, environmental degradation and inequality.
Same as: PUBLPOL 136

URBANST 137. Innovations in Microcredit and Development Finance. 3 Units.
The role of innovative financial institutions in supporting economic development, the alleviation of rural and urban poverty, and gender equity. Analysis of the strengths and limits of commercial banks, public development banks, credit unions, and microcredit organizations both in the U.S. and internationally. Readings include academic journal articles, formal case studies, evaluations, and annual reports. Priority to students who have taken any portion of the social innovation series: URBANST 131, 132, or 133. Recommended: ECON 1A or 1B.
Same as: PUBLPOL 137

URBANST 138. Smart Cities & Communities. 4 Units.
A city is essentially an organism, a complex system of systems and it inhabitants. A nexus of forces - IoT, data, systems of insight, and systems of engagement - present an unprecedented opportunity to increase the efficiency of urban systems, improve the efficacy of public services, and to assure the resiliency of the community against both chronic stresses and acute shocks.nnThe course will provide you with an understanding of the foundational elements of a smart city and address the breadth of systems that comprise it: built infrastructure, energy, water, transportation, food production/distribution, and public/social services. Case studies will be used to illustrate the approaches, benefits, and risks involved. It will discuss what IT can and cannot do, and most importantly given the control and privacy implications of many ¿smart¿ IT systems, what the smart city should and should not do. nnPanel discussions and guest speakers from the public sector and industry leading technology providers will give students an opportunity to engage with the architects and operators of Smart Cities.

URBANST 138SI. Scaling Impact with VIP. 2 Units.
Social entrepreneurship is innovating new ways to create social value. This course will focus on the challenges of scaling social enterprises during the many stages of maturity. This class will act an adjunct (auxiliary, complementary) class to VIP. Very Impactful People Speaker Series (URBANST 131). VIP speakers will stay after their lectures to provide insight on their experience in scaling, be it through detailed case studies or structured Q&A discussion. Note: students do not need to separately register for Urban Studies 131. The two credit units for this course is inclusive of the one credit unit a student would otherwise receive for Urban Studies 131.

URBANST 140F. Casablanca - Algiers - Tunis : Cities on the Edge. 3-5 Units.
Casablanca, Algiers and Tunis embody three territories, real and imaginary, which never cease to challenge the preconceptions of travelers setting sight on their shores. In this class, we will explore the myriad ways in which these cities of North Africa, on the edge of Europe and of Africa, have been narrated in literature, cinema, and popular culture. Home to Muslims, Christians, and Jews, they are an ebullient laboratory of social, political, religious, and cultural issues, global and local, between the nineteenth and twenty-first centuries. We will look at mass images of these cities, from films to maps, novels to photographs, sketching a new vision of these magnets as places where power, social rituals, legacies of the Ottoman and French colonial pasts, and the influence of the global economy collude and collide. Special focus on class, gender, and race.
Same as: AFRICAAM 236B, COMPLIT 236A, CSRE 140S, FRENCH 236, FRENCH 336, HISTORY 245C

URBANST 141. Gentrification. 5 Units.
Neighborhoods in the Bay Area and around the world are undergoing a transformation known as gentrification. Middle- and upper-income people are moving into what were once low-income areas, and housing costs are on the rise. Tensions between newcomers and old timers, who are often separated by race, ethnicity, or sexual orientation, can erupt; high rents may force long-time residents to leave. In this class we will move beyond simplistic media depictions to explore the complex history, nature, causes and consequences of this process. Students will learn through readings, films, class discussions, and engagement with a local community organization. (Cardinal Course certified by the Haas Center).
Same as: AFRICAAM 241A, CSRE 141

URBANST 141A. Urban Schools, Social Policy, and the Gentrifying City. 3-4 Units.
This course is designed to help students develop a more sophisticated understanding of educational inequality in the contemporary U.S. city. This course will survey existing literature about the intersection of gentrification and urban schooling, focusing on policies and practices that gave rise to the current urban condition, theory and research about urban redevelopment, collateral consequences for schools and communities, and how these issues relate to the structure and governance of urban schools as well as to the geography of opportunity more broadly.
Same as: CSRE 291, EDUC 390

URBANST 142. Megacities. 5 Units.
In this course we will examine the meaning, processes, and challenges of urbanization. Through a series of targeted readings across history and geography and through the study of varied means of representation (anthropology, literature, cartography, film, etc), the class will analyze the ways in which urban forms have come into being and created, met, and/or ignored challenges such as disease, water, transport, religious and class conflict, colonialism, labor, and trade. Students will read anthropology in conjunction with other disciplines (literature, urban planning, public health, architecture, and economics) to learn the ways in which ethnographies of immigration, urban poverty, class disparity, economic development and indicators, noise, and transportation substantively augment our understandings of how people live within globalization.
Same as: ANTHRO 42, ARTHIST 242B, LIFE 142

URBANST 145. International Urbanization Seminar: Cross-Cultural Collaboration for Sustainable Urban Development. 4-5 Units.
(formerly IPS 274) Comparative approach to sustainable cities, with focus on international practices and applicability to China. Tradeoffs regarding land use, infrastructure, energy and water, and the need to balance economic vitality, environmental quality, cultural heritage, and social equity. Student teams collaborate with Chinese faculty and students partners to support urban sustainability projects. Limited enrollment via application; see internationalurbanization.org for details. Prerequisites: consent of the instructor(s).
Same as: CEE 126, EARTHSYS 138, INTLPOL 274

URBANST 146. Retaking the Commons: Public Space and Heritage for Sustainable Cities. 3-4 Units.
As cities develop and grow, green spaces, heritage sites, parks, and historic neighborhoods have come under increasing pressure. While common pool resources are held in the public trust, who governs them? Who advocates for them, and who enjoys them? Using economic, social, environmental and cultural lenses, this course explores how maintaining civic spaces, protecting heritage resources, and re-imagining the role of ¿public goods¿ in the life of a city can yield more sustainable and beneficial outcomes. We also consider best practices from UNESCO and UN HABITAT, and the crucial role of citizenship and democracy. Recommended field work in Hong Kong in September 2017.

URBANST 147. Archaeology of Human Rights. 5 Units.
This introductory seminar provides a critical vantage point about human rights discourse from an archaeological perspective. The seminar is organized around four main questions: (1) Is cultural heritage a human right? (2) What are archaeologists learning about how the material and temporal dimensions of power and resistance? (3) How is archaeological evidence being used in investigations of human rights violations? (4) Can research about the past shape the politics of the present? Topics to be discussed include archaeological research on mass internment, colonialism, enslavement and coerced labor, ethnic cleansing, homelessness, gender discrimination, indigenous rights, and environmental justice.
Same as: ANTHRO 112A

URBANST 148. Who Owns Your City?: Institutional Real Estate Seminar. 3 Units.
A hands-on introductory seminar designed to allow students to understand and interact with all aspects of the realnnestate investment process, including property development, local government interplay, value creation, assetnnmanagement, financial analysis, and capital markets.nnCourse activities will include asset tours, case studies, and project deep dives.nnThis class is intended for all students looking to better understand real estate as an investment asset class and anncritical part of the modern global economy. Course material will be appropriate for students interested in a variety ofnndisciplines, including Urban Studies - history, design, government, or community interests; institutional investment,nninvestment banking/consulting, construction/engineering, and general finance/economics.

URBANST 149. Monitoring the Crisis. 4-5 Units.
A course devoted to understanding how people are faring as the country's health and economic crisis unfolds. The premise of the course is that, as important and valuable as surveys are, it's a capital mistake to presume that we know what needs to be asked and that fixed-response answers adequately convey the depth of what's happening. We introduce a new type of qualitative method that allows for discovery by capturing the voices of the people, learn what they're thinking and fearing, and understand the decisions they're making. Students are trained in immersive interviewing by completing actual interviews, coding and analyzing their field notes, and then writing reports describing what's happening across the country. These reports will be designed to find out who's hurting, why they're hurting, and how we can better respond to the crisis. Students interested should submit the following application: https://docs.google.com/forms/d/e/1FAIpQLSfdOZsnpOCg4zTRbVny0ikxpZEd1AFEEJh3K9KjvINyfbWMGw/viewform.
Same as: PSYCH 145A, PUBLPOL 141, SOC 141, SOC 241

URBANST 150. From Gold Rush to Google Bus: History of San Francisco. 4 Units.
This class will examine the history of San Francisco from Native American and colonial settlement through the present. Focus is on social, environmental, and political history, with the theme of power in the city. Topics include Native Americans, the Gold Rush, immigration and nativism, railroads and robber barons, earthquake and fire, progressive reform and unionism, gender, race and civil rights, sexuality and politics, counterculture, redevelopment and gentrification. Students write final project in collaboration with ShapingSF, a participatory community history project documenting and archiving overlooked stories and memories of San Francisco. (Cardinal Course certified by the Haas Center).
Same as: AMSTUD 150X, HISTORY 252E

URBANST 152. Building Modernity: Urban Planning and European Cities in the Twentieth Century. 5 Units.
This seminar explores the history of urban planning in twentieth-century Europe. We will discuss visions of ideal cities and attempts at their implementation in the context of democratic and authoritarian systems as well as capitalism and socialism. Through case studies from eastern and western Europe--from Berlin in Germany to Nowa Huta in Poland--we will examine how broader historical trends played out in, and were shaped by, specific local circumstances. The seminar is intended for advanced undergraduate students.
Same as: HISTORY 237C

URBANST 153. CAPITALS: How Cities Shape Cultures, States, and People. 3-5 Units.
This course takes students on a trip to major capital cities, at different moments in time: Renaissance Florence, Golden Age Madrid, Colonial Mexico City, Enlightenment and Romantic Paris, Existential and Revolutionary St. Petersburg, Roaring Berlin, Modernist Vienna, and bustling Buenos Aires. While exploring each place in a particular historical moment, we will also consider the relations between culture, power, and social life. How does the cultural life of a country intersect with the political activity of a capital? How do large cities shape our everyday experience, our aesthetic preferences, and our sense of history? Why do some cities become cultural capitals? Primary materials for this course will consist of literary, visual, sociological, and historical documents (in translation); authors we will read include Boccaccio, Dante, Sor Juana, Montesquieu, Baudelaire, Gogol, Irmgard Keun, Freud, and Borges. Note: To be eligible for WAYS credit, you must take the course for a Letter Grade.
Same as: COMPLIT 100, DLCL 100, FRENCH 175, GERMAN 175, HISTORY 206E, ILAC 175, ITALIAN 175

URBANST 155A. Environmental Justice Colloquium. 1 Unit.
This colloquium brings the voices and vision of leading Environmental Justice (EJ) advocates to the Stanford community, in order to educate, inspire, and transform our understanding of environmental science. Environmental Justice advances a positive vision for policies and actions that fight environmental racism. EJ approaches involve centering the voices and leadership of marginalized communities in 1) ensuring equitable access to environmental benefits, and 2) preventing or mitigating the disproportionate impacts of environmental harms for all communities, regardless of gender, class, race, ethnicity, or other social positions. This colloquium highlights the work of leading EJ thinkers and practitioners, speaking from frontline organizations on a wide range of topics. These topics include acting on toxic exposures and health disparities for community resilience, climate justice and youth action, Indigenous land and water rights, green cities and Afrofuturism, food justice and intersecting social movements, queer ecologies, and more. The colloquium will host a weekly speaker, and final symposium at the end of the quarter. nnThe first meeting for this course will take place during WEEK 3.
Same as: EARTHSYS 194A, HUMRTS 194A

URBANST 156. St. Petersburg: Imagining a City, Building a City. 1-2 Unit.
St. Petersburg, the world's most beautiful city, was designed to display an 18th-century autocrat's power and to foster ties between Russia and the West - on the tsar's terms. It went through devastating floods and a deadly siege; it birthed the "Petersburg myth," poems and prose that explore the force of the state and the individual's ability to resist. This class addresses the struggle between the authorities and the inhabitants; the treacherous natural environment; the city as a node in national and international networks of communication; the development of urban transportation networks; and the supply of goods. NOTE: *This course is required of students attending the overseas seminar to St. Petersburg in September 2018.*Class times to be determined upon the availability of all enrolled students. Please contact instructor(s) via email if you have any questions.
Same as: SLAVIC 155

URBANST 156A. The Changing American City. 4 Units.
After decades of decline, U.S. cities today are undergoing major transformations. Young professionals are flocking to cities instead of fleeing to the suburbs. Massive increases in immigration have transformed the racial and ethnic diversity of cities and their neighborhoods. Public housing projects that once defined the inner city are disappearing, and crime rates have fallen dramatically. Do these changes signal the end of residential segregation and urban inequality? Who do these changes benefit? This course will explore these issues and strategies to address them through readings and discussion, analyzing a changing neighborhood in a major city in the Bay Area in groups (which will include at least one site visit), and studying a changing neighborhood or city of their choice for their final project. The course does not have pre-requisites.
Same as: CSRE 156, SOC 156A, SOC 256A

URBANST 164. Sustainable Cities. 4-5 Units.
Community-engaged learning course that exposes students to sustainability concepts and urban planning as a tool for determining sustainable outcomes in the Bay Area. The focus will be on land use and transportation planning to housing and employment patterns, mobility, public health, and social equity. Topics will include government initiatives to counteract urban sprawl and promote smart growth and livability, political realities of organizing and building coalitions around sustainability goals, and increasing opportunities for low-income and communities of color to achieve sustainability outcomes. Students will participate in remote team-based projects in collaboration with Bay Area community partners. Prerequisites: Consent of the instructor. (Cardinal Course certified by the Haas Center.).
Same as: EARTHSYS 160

URBANST 169. Race and Ethnicity in Urban California. 4-5 Units.
The course is part of an ongoing research project that examines the consequences of longterm social, economic, and political changes in ethnic and race relations in in urban California. The required readings, discussions, and service learning component all provide a platform for students to explore important issues, past and present, affecting California municipalities undergoing rapid demographic transformation.
Same as: AFRICAAM 169A, AMSTUD 169, CSRE 260

URBANST 170. Urban Policy Research Lab. 5 Units.
This collaborative reading and research seminar considers the numerous ways that governments conduct social policy by shaping and remaking geographic places. Representative topics include: housing aid programs, exclusionary zoning, controls on internal migration and place of residence, and cars' role in cities. Students will contribute to faculty field research on the consequences of these policies for economic, social, and political outcomes. Prerequisites: None.
Same as: POLISCI 220, PUBLPOL 225

URBANST 171. Urban Design Studio. 5 Units.
The practical application of urban design theory. Projects focus on designing neighborhood and downtown regions to balance livability, revitalization, population growth, and historic preservation.
Same as: CEE 131D

URBANST 172A. Introduction to Urban and Regional Planning. 3 Units.
An investigation into urban planning as a democratic practice for facilitating or mitigating change in society and the built environment. We will engage in professional planning practices in focused sessions on transportation, design, housing, environmental policy, demographic research, community organizing and real estate development. Strong emphasis on developing an understanding of the forces that shape urban and regional development, including cultural trends, real estate and labor economics, climate change and the environment, and political organizing and power dynamics.

URBANST 173. The Urban Economy. 4 Units.
Applies the principles of economic analysis to historical and contemporary urban and regional development issues and policies. Explores themes of urban economic geography, location decision-making by firms and individuals, urban land and housing markets, and local government finance. Critically evaluates historical and contemporary government policies regulating urban land use, housing, employment development, and transportation.
Same as: PUBLPOL 174

URBANST 174. Defining Smart Cities: Visions of Urbanism for the 21st Century. 3-4 Units.
Technological innovations have and will disrupt all domains of urban life, from housing to healthcare to city management to transportation. This seminar is aimed at future technologists, entrepreneurs, policymakers, and urban planners to define and evaluate the smartness of a city through three lenses: technology, equity, and policy. Through readings, seminar discussions, guest speakers, and a final project, we will explore how a smart city can leverage technology for a higher quality of life, less inequality in access to services, and tighter human communities. You will come away with a framework for understanding how to maximize the social good of emerging technologies. Course material is appropriate for students from all disciplines. Students who enroll in the course for 4 units will participate in an off-campus field component during Spring Break.
Same as: CEE 125, CEE 225

URBANST 176. New Technologies and Urban Change. 3 Units.
Cities are always changing, most times gradually, but sometimes very rapidly and with significant effects on urban space, form, culture, and society. Among the forces that have historically driven urban change are the dynamics of immigration, both local and international, and the impacts of new technologies. These two forces are closely related. Indeed, acting as a magnet for increased immigration may itself be one of the most important impacts of techno-logical innovation on urban development. The purpose of this course is to explore the way new technologies have impacted -- and continue to impact -- urban society. The first half of the course will consist of a series of lectures and discussions of how technologies have changed cities in the past: in the ancient world, in the early industrial period, and in the period of the twentieth-century regional metropolis. The second half of the course will consist of weekly oral reports by 3-4-person student working groups researching specific examples of how current and still-emerging new technologies are transforming cities and city life today and how those changes may need to be addressed by either new public policies and/or new personal or community accommodations.

URBANST 178. The Science and Practice of Effective Advocacy. 3-5 Units.
How can purposeful collective action change government policy, business practices and cultural norms? This course will teach students about the components of successful change campaigns and help develop the practical skills to carry out such efforts. The concepts taught will be relevant to both issue advocacy and electoral campaigns, and be evidence-based, drawing on lessons from social psychology, political science, communications, community organizing and social movements. The course will meet twice-a-week for 90 minutes, and class time will combine engaged learning exercises, discussions and lectures. There will be a midterm and final. Students will be able to take the course for 3 or 5 units. Students who take the course for 5 units will participate in an advocacy project with an outside organization during the quarter, attend a related section meeting and write reflections. For 5 unit students, the section meeting is on Tuesdays, from 3:00 to 4:00 p.m.
Same as: CSRE 178P, PUBLPOL 178

URBANST 179. The Social Life of Neighborhoods. 3-5 Units.
How do neighborhoods come to be? How and why do they change? What is the role of power, money, race, immigration, segregation, culture, government, and other forces? In this course, students will interrogate these questions using literatures from sociology, geography, and political science, along with archival, observational, interview, and cartographic (GIS) methods. Students will work in small groups to create content (e.g., images, audio, and video) for a self-guided ¿neighborhood tour,¿ which will be added to a mobile app and/or website.
Same as: AFRICAAM 76B, CSRE 176B, SOC 176, SOC 276

URBANST 181. Urban Agroecology. 3 Units.
The United Nations estimates that up to 15% of the world's food is produced in and around cities. Urban populations are projected to continue rising and urban agriculture in its many forms has been shown to provide multiple benefits to urban communities. This class will survey urban agriculture around the world while training you in small-scale food production practices. The emphasis will be on ecological approaches to the design and stewardship of urban farms and gardens. nnnIf permitted, given the challenges of COVID-19, the course will be taught in-person, outdoors at the Stanford Educational Farm. nn nThis is a 3-unit, Earth Systems practicum course that meets on Wednesdays from noon to 3pm. Space is limited and applications are due by Friday 8/28. Students will be notified if they are admitted to the course by 9/4. For the course application go to: https://stanforduniversity.qualtrics.com/jfe/form/SV_86udp8aEuWUCnNH.
Same as: EARTHSYS 181, EARTHSYS 281, ESS 181, ESS 281

URBANST 183. Team Urban Design Studio. 5 Units.
This new class offers an exciting variation on the 'individual project' studio format. Students work as a team to propose a single consensus solution to a real-world design challenge. This collaborative studio experience more closely reflects the creative process in the design and planning professions where a group of individuals works together to brainstorm, shape, develop, and illustrate a community design solution. There are a number of benefits to this team-oriented approach: it is a more nurturing environment for students that do not have design backgrounds, it allows for more peer-to-peer learning, and it takes best advantage of varied student skill sets. But perhaps the greatest benefit is that a team of students working together on a common project will be able to develop a more comprehensive solution than any one student working alone. This means that the class "deliverable" at the end of quarter could be detailed enough to be of significant value to a stakeholder or client group from the larger community. This studio class, working under the guidance of an experienced instructor, functions like a design firm in providing professional-grade deliverables to real-world community design "clients'.
Same as: CEE 131E

URBANST 184. Paris: Capital of the Modern World. 4-5 Units.
This course explores how Paris, between the eighteenth and twentieth centuries, became the political, cultural, and artistic capital of the modern world. It considers how the city has both shaped and been shaped by the tumultuous events of modern history- class conflict, industrialization, imperialism, war, and occupation. It will also explore why Paris became the major world destination for intellectuals, artists and writers. Sources will include films, paintings, architecture, novels, travel journals, and memoirs. Course taught in English with an optional French section.
Same as: FRENCH 140, FRENCH 340, HISTORY 230C

URBANST 194. Internship in Urban Studies. 2-4 Units.
For Urban Studies majors only. Students organize an internship in an office of a government agency, a community organization, or a private firm directly relevant to the major. Reading supplements internship. Paper summarizes internship experience and related readings.

URBANST 195. Special Projects in Urban Studies. 1-5 Unit.
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URBANST 196. Senior Research in Public Service. 1-2 Unit.
Limited to seniors approved by their departments for honors thesis and admitted to the year-round Public Service Scholars Program sponsored by the Haas Center for Public Service. What standards in addition to those expected by the academy apply to research conducted as a form of public service? How can communities benefit from research? Theory and practice of research as a form of public service readings, thesis workshops, and public presentation of completed research. May be repeated for credit. Corequisite: 199.
Same as: EDUC 196

URBANST 197. Directed Reading. 1-5 Unit.
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URBANST 199. Senior Honors Thesis. 1-10 Unit.
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URBANST 201. Preparation for Senior Project. 5 Units.
First part of capstone experience for Urban Studies majors pursuing an internship-based research project or honors thesis. Assignments culminate in a research proposal, which may be submitted for funding. Students also identify and prepare for a related internship, normally to begin in Spring Quarter in URBANST 201B or in Summer. Research proposed in the final assignment may be carried out in Spring or Summer Quarter; consent required for Autumn Quarter research. Service Learning Course (certified by Haas Center).
Same as: SOC 201

URBANST 201A. Capstone Internship in Urban Studies. 3 Units.
Restricted to Urban Studies majors. Students work at least 80 hours with a supervisor, establish learning goals, and create products demonstrating progress. Reflection on service and integration of internship with senior research plans. Must be completed by start of Winter Quarter senior year. May continue for additional quarter as 194. Service Learning Course (certified by Haas Center). Corequisite: URBANST 201 or consent of instructor.

URBANST 201B. Capstone Internship Seminar. 3-4 Units.
Students carry out an internship of at least 80 hours with a community organization or government agency. Class meets weekly to discuss related issues, including ethics of service, combining service and research, navigating organizational dynamics, and setting and accomplishing internship goals. Students submit internship agreement and internship-related deliverables, and give in-class presentations.

URBANST 202A. Junior Seminar: Preparation for Research. 5 Units.
Required of all juniors in Urban Studies planning on writing an honors thesis . Students write a research prospectus and grant proposal, which may be submitted for funding. Research proposal in final assignment may be carried out in Spring or Summer Quarter; consent required for Autumn Quarter research.

URBANST 203. Senior Seminar. 5 Units.
Conclusion of capstone sequence. Students write a substantial paper based on the research project developed in 202. Students in the honors program may incorporate paper into their thesis. Guest scholar chosen by students. Sociology majors who are seniors may take SOC 204 as their sole Writing In the Major class, as a substitute for SOC 200, with no prerequisites required.

STANFORD IN WASHINGTON

The Bing Stanford in Washington program is normally offered during Autumn, Winter, and Spring quarters. Due to COVID-19, these offerings are subject to change; see the SIW website (http://siw.stanford.edu/) for updated information.

The Autumn Quarter Program for 2020-21 has been cancelled due to COVID-19. Some coursework will be offered remotely during Autumn. The program is currently planning for in-person Winter and Spring quarters in 2021. The Winter Quarter application is closed and the application for Spring Quarter will be posted here in late September.

Director: Adrienne Jamieson
On Campus Program Manager: Jill Vizas

The Bing Stanford in Washington program provides highly-qualified undergraduates with an opportunity to work and study in the nation's capital. In addition to providing students with an understanding of public policy making, the program offers an opportunity to take advantage of the city's unique cultural resources.

Central in the student's educational experience is a full-time internship. Students serve as interns at such institutions and agencies as the Senate, the House of Representatives, the Office of Management and Budget, the White House, the National Institutes of Health, the Smithsonian Institution, World Bank, the departments of State, Justice, Treasury, Education, and Health and Human Services.

In addition to the internship, students also complete an academic course of study consisting of seminars taught by policy experts and Stanford faculty members. Seminars are generally 3-5 units. Past topics have included congressional oversight and the press; economic growth and development patterns, policies, and prospects; critical health issues in the U.S. and abroad; policy making in the Washington community; and criminal justice policy. Speakers from the Washington policy community frequently join students and faculty for discussions. Course and seminar topics vary according to student and faculty interest.

The program is designed for students in their junior year or during the first or second quarter of their senior year. Applications must be completed two quarters in advance.

Students interested in the program should contact the campus office of the Bing Stanford in Washington program; see contact information above.

Courses

SIW 103. Economic Growth and Development Patterns, Policies, and Prospects. 5 Units.
This class is designed to provide an overview of the history of economic and social development, the evolution of thinking on the subject, and current debates regarding the best policy approaches to foster development objectives. To emphasize the constantly evolving nature of the policy debate on development, the text is supplemented by articles from a wide variety of sources, and some additional readings will likely by assigned from contemporary newspaper, blog and magazine articles. Grades will depend on weekly pre-class reading comments and questions, four short assignments, and class participation.

SIW 104. Congressional Oversight and the Press. 5 Units.
Who keeps watch of the federal government and its activities as they grow more complex at home and abroad? This seminar will look at oversight, or the lack of it, by the Executive Branch itself, by Congress, the Courts, outside groups, and the media, with some emphasis on the latter. We will establish the Constitutional basis for oversight through various readings, and we will look at some major scandals and issues from the past.

SIW 105. Education Policy. 5 Units.
This seminar has three primary goals: 1) introduce today¿s major education policy issues; 2) investigate the ways education policy questions are addressed at the federal level, and by implication, the state and local levels; and 3) develop skills to develop and recommend appropriate policy options and solutions. You will become familiar with major education policy questions and over the course of the quarter, analyze these issues, consider policy options, and provide written and oral support for possible solutions.

SIW 106. Criminal Justice Policy. 5 Units.
This class is designed to offer students a chance to explore how criminal justice policies and laws come into being, are executed, and end up changing. Through a different topic focus each week, students will grasp the actors that affect criminal justice policy (across all branches of government) and will learn the true recourse of the law in the United States (it¿s more surprising than you might think). Through an end-of-term paper, students will argue for and against a specific policy of their choosing.

SIW 107. Civil Rights Law. 5 Units.
This course analyzes the major civil rights laws that Congress has enacted since the 1960s, including Title VII of the Civil Rights Act of 1964, the Voting Rights Act of 1965, the Fair Housing Act, the Public Accommodations ACt, the AGe Discrimination in Employment Act, and the Americans with Disabilities Act. The course provides an in-depth study of the statutory language of each of these laws, examines how courts have interpreted the statutes, and explores the policy arguments in favor and against such laws. The course also reviews the history context surrounding the enactment of these statutes, including an examination of the civil rights movement as a political and social force.

SIW 113. Critical Health Issues in the U.S. and Abroad. 5 Units.
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SIW 119. U. S. and Europe: Cooperation or Competition?. 5 Units.
How are Brexit, Trump, Merkel and Macron reshaping the key relationship between the US and Europe? At a time of rising international threats from Russia, China, the Middle East, and Africa, as well as the challenges of populism, Euro-Skepticism, and Islamist terrorism, this course explores the Trans-Atlantic alliance that has been the central axis of US and European relations. By the end of the course, students will have engaged in substantive readings and class discussion in order to investigate these topics.

SIW 129. Women's, Maternal, and Children's Health. 5 Units.
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SIW 131. Presidential Transitions in an Era of Polarization and the Covid-19 Pandemic. 3-5 Units.
Presidential Transitions in an Era of Polarization and the Covid-19 Pandemic: Challenges to Governing, Policy-Making and Ethical Decision-Making. This seminar will explore the intertwining of several key challenges inherit in all transitions, while analyzing the effects of our current polarized politics and the Covid-19 pandemic on policy making. Drawing upon an array of disciplines and approaches, our weekly meetings will include a series of discussions of readings from the social science literature; studies of health policy from medical ethicists and policy experts; articles from think tanks and government, and conversations with individuals from the worlds of policy, politics, and public health. Collectively, we will seek to understand connections, systemic constraints and to formulate potential policy and political responses. Students will engage in small group exercises on building a team in the Biden administration, along with developing health policy strategies that meet COVID-19 goals and ethical standards. In addition, students will have the option to pursue a capstone project, based upon research conducted with the guidance of one of the instructors, another faculty member or policy maker.

SIW 136. Enduring Themes in American Politics: Inequality, Race and Elections in the Era of COVID-19. 3-5 Units.
This seminar will explore the intertwining of several key enduring themes in American political history through the lens of the Covid-19 pandemic, the movement for criminal justice reform and the election. Drawing upon an array of disciplines and approaches, our weekly meetings will be a series of conversations with individuals from the worlds of policy, politics and the arts. Collectively, we will seek to understand connections, systemic constraints and to formulate potential policy and political responses. Students will have the option to pursue a capstone project, based upon research conducted with the guidance of one of the instructors or another faculty member. Capstone projects can also be pursued in the context of a remote internship, which can be organized with the assistance of the instructors and Stanford in Washington staff.

SIW 137. Energy and Environment: Technology, Economics and Policy. 5 Units.
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SIW 138. Game Theory and Mathematical Models of Politics. 5 Units.
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SIW 139. Purposeful Advocacy - Changing Public Policy for Good: A Policy Maker/Advocate¿s Perspective. 5 Units.
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SIW 140. Health and Environmental Policy Speaker Series. 2 Units.
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SIW 142. Images of National Politics from Classics in Political Science. 5 Units.
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SIW 144. Energy, Environment, Climate and Conservation Policy: A Washington, D.C. Perspective. 5 Units.
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SIW 148. Art and the First Amendment: Testing the Limits of Expression. 5 Units.
This course will take place in Washington D.C.
Same as: ARTHIST 148

SIW 155. Images of National Politics from Classics in Political Science. 5 Units.
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SIW 156. Washington Policymaking: A USER'S GUIDE. 5 Units.
Government Gridlock. Executive Orders. Court Challenges. Congressional Oversight. Presidential Tweets. Regulatory Rollback. Money in Politics. Foreign Agent Influence. Are the rules of the policymaking game changing? In this class, students will learn the advocacy and strategy tools necessary to participate effectively in the legislative and regulatory policymaking process. We will examine the practical aspects and complex intricacies of policy development at the federal level, using current and rapidly evolving topics as examples, while also drawing on historical precedents.

SIW 157. International Law. 5 Units.
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SIW 158. Entrepreneurial Ventures in Washington: Valley Meets Mission. 5 Units.
Students in this seminar will investigate the intersection between government, entrepreneurship, technology, and mission with weekly discussions with local business, government, technology and social impact lenses. We will examine drivers behind government mission-oriented innovation and the role of entrepreneurship and venture capital.nStudents will meet with and engage directly with entrepreneurial, government, tech, and business leaders in and out of the classroom to understand the opportunities/challenges in building successful mission-oriented companies and social impact enterprises.

SIW 164. Debating the Nation. 5 Units.
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SIW 165. Federal Science Policy. 5 Units.
The U.S. is the leading country in the world in science by several common measures, including Nobel prizes and spending on research and development. Yet some other important science leadership metrics tell a different story. Many countries spend a larger fraction of their wealth on science research and technology development. Also, there is a large and widening gap in science education levels for US citizens vs. Europeans and Asians. Likewise, we have lost our former leadership in some high-profile research fields. This course is designed to introduce the students to the convoluted but sometimes remarkably effective process by which the Federal Government establishes national science policy, sets priorities, and then funds and oversees the science. The course takes full advantage of the SIW location inside the beltway by inviting many of the leaders in various aspects of science policy.

SIW 170. DOCUMENTARY: Films of Persuasion, Advocacy and Change. 5 Units.
In recent years, documentaries have shed their identity as the "broccoli" of the film world - they were good for you, but not necessarily palatable. Audiences are now engaged, entertained, and enlightened by the work of Errol Morris, Laura Poitras, Michael Moore, Marshall Curry, and others. Has a documentary film ever provoked you, challenged your beliefs, motivated you to act or changed your mind about something? Was that the goal of the filmmaker? This course offers a conceptual overview of the forms, strategies, and conventions of a documentary film with a particular focus on the social and political documentary, i.e. documentaries that strive to explore issues, construct arguments about the world, and galvanize attitudinal change. A consideration of both form and content will foreground the mutable characteristics of the genre with respect to filmmaker voice and point of view, the objective/subjective conundrum, ethics of representation, aesthetic choices, and the implied contract between filmmaker and audience. Students will hone their critical viewing skills and consider the potential of film to effect attitudinal and behavioral change through a series of case studies of films that represent a wide range of styles and approach.

SIW 171. American Presidential Elections: A Brief History. 5 Units.
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SIW 185. Modern America in Historical Perspective. 5 Units.
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Same as: HISTORY 264D

SIW 190. Directed Readings. 1-5 Unit.

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SIW 198Y. Health Policy. 5 Units.

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SIW 198Z. International Economic Policy. 5 Units.

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SIW 201A. CSRE Public Policy Seminar. 3-5 Units.

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SIW 201B. CSRE Public Policy Seminar. 3-5 Units.

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SIW 245. Art, Business & the Law. 4 Units.
This course examines art at the intersection of business and the law from a number of different angles, focusing on how the issues raised by particular case studies, whether legal, ethical and/or financial, impact our understanding of how works of art circulate, are received, evaluated and acquire different meanings in given social contexts. Topics include the design, construction and contested signification of selected war memorials; the rights involved in the display and desecration of the American flag; censorship of sexually charged images; how the value of art is appraised; institutional critique and the art museum, among others.
Same as: ARTHIST 245

SCHOOL OF LAW

Courses offered by the School of Law are listed on the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu/) web site under the subject codes LAW (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=LAW&filter-catalognumber-LAW=on) and LAWGEN (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=LAWGEN&filter-catalognumber-LAWGEN=on).

The School of Law, established in 1893, provides a legal education for students who are fitted by their maturity and academic training to pursue professional study under University methods of instruction. The curriculum leading to the first professional degree in law, the Doctor of Jurisprudence (J.D.), constitutes an adequate preparation for the practice of law in any English-speaking jurisdiction. Graduate work leading to the degrees of Master of Laws (L.L.M.), Master of the Science of Law (J.S.M.), and Doctor of the Science of Law (J.S.D.), and a non-professional degree, Master of Legal Studies (M.L.S.), is also offered. For the full curriculum, see the Course Schedule & Description on the Law School (http://www.law.stanford.edu/courses/) web site. Stanford Law School offers joint or dual degree options in combination with other Stanford graduate departments and universities across the country; see the "Joint and Dual Degrees in Law" below.

The school is on a three-term academic calendar. For a complete list of academic dates see the Academic Calendar on the Law School (https://law.stanford.edu/education/courses/calendar-deadlines/) web site.

For further information about admission, programs, curriculum, and faculty, see the Law School (https://law.stanford.edu/) web site.

Joint and Dual Degrees in Law

Formal admission to both the Law School and to the other cooperating school or department in accordance with the established admission standards of each school or department is required. In addition to the established joint degree programs offered, the school considers requests for a dual program on an individually designed basis. For additional information on Law School joint or dual degree programs, see the Law School (https://law.stanford.edu/education/degrees/joint-degrees-within-stanford-university/#slsnav-established-joint-degrees) web site. See relevant web sites or department sections of this bulletin for degree requirements.

Graduate School of Business

- See the GSB's M.B.A. web site (http://www.gsb.stanford.edu/programs/mba/)
- J.D./M.B.A. Master of Business Administration
- J.D./Ph.D. Business Administration

School of Earth Sciences

- J.D./M.S. Interdisciplinary Program in Environment and Resources (E-IPER)
- J.D./Ph.D. Interdisciplinary Program in Environment and Resources (E-IPER)

School of Education

J.D./M.A. Education

School of Engineering

- J.D./M.S. Bioengineering
- J.D./Ph.D. Bioengineering
- J.D./M.S. Computer Science
- J.D./M.S. Electrical Engineering
- J.D./M.S. Management Science and Engineering (MS&E)
- J.D./Ph.D. Management Science and Engineering (MS&E)

School of Humanities and Sciences

- J.D./Ph.D. Communication
- J.D./M.A. Economics
- J.D./Ph.D. Economics
- J.D./M.A. History
- J.D./Ph.D. History
- J.D./M.A. in degree granting programs in Stanford Global Studies (SGS):
  - African Studies
  - East Asian Studies
  - Latin American Studies
  - Russian, East European and Eurasian Studies
- J.D./M.A. International Policy
- J.D./Ph.D. Modern Thought and Literature
- J.D./Ph.D. Philosophy
- J.D./Ph.D. Political Science
- J.D./Ph.D. Psychology
- J.D./M.P.P. Public Policy
- J.D./Ph.D. Sociology
- J.D./M.S. Symbolic Systems

School of Medicine

- J.D./M.S. Health Research and Policy (HRP)
- J.D./M.D. Medicine
- J.D./Ph.D. Neurosciences

Cooperative Programs with Other Universities

Stanford J.D. students have also pursued degrees at other universities such as the Harvard Kennedy School, Johns Hopkins School of Advanced International Studies, and Princeton Woodrow Wilson School. The approval process for such a cooperative program begins after the student has been admitted, independently, to both programs. Students may enroll in either a joint degree among schools at Stanford or in a degree from an external university, but a student may not enroll in both a Stanford JDP and a cooperative program with another university.

Courses in Law

Some Law courses have special enrollment instructions and restrictions, but many Law courses are open to qualified graduate students in other departments of Stanford University with instructor consent. Non-Law students may not enroll in courses that are part of the required first-year J.D. curriculum. Stanford non-Law students intending to enroll in any course with a LAW subject code must consult the Office of the Law School Registrar in the Stanford Law School Administration Building, room 100, or see the Stanford Law School, Office of the Registrar (http://www.law.stanford.edu/organizations/offices/office-of-the-registrar/) web site.

Graduate Advising Expectations

The Stanford Law School is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed

and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

School of Law

The School of Law is in the process of making decisions concerning COVID-19 policies and will update this tab when the decisions have been made.

First-year Law School courses will be graded on the mandatory pass (MPH/R/F) grading basis for all the Autumn first-year courses.

Emeriti: (Professors): Janet Cooper Alexander, Paul Brest, Gerhard Casper, Joshua Cohen, Richard Craswell, Lance E. Dickson, Jack H. Friedenthal, Ronald J. Gilson, Robert A. Girard, William B. Gould IV, Thomas C. Grey, Thomas C. Heller, M. Elizabeth Magill, Margaret Jane Radin, Byron D. Sher, William H. Simon, Michael S. Wald

Dean: Jenny S. Martinez

Vice Dean: Mark G. Kelman

Associate Dean for Clinical Education: Jayashri Srikantiah

Associate Dean for Curriculum: Robert Weisberg

Associate Dean for Global Programs: Robert M. Daines

Associate Dean for Graduate Studies: Amalia D. Kessler

Associate Dean for Research and Intellectual Life: Bernadette Meyler

Associate Dean for Strategic Planning: David Freeman Engstrom

Senior Associate Dean for Administration and Chief Financial Officer: Frank Brucato

Associate Deans: Diane Chin, Faye Deal, Allison Fry, Sabrina Johnson, Susan Robinson, Jory Steele

Professors: Michelle Wilde Anderson, Joseph Bankman, R. Richard Banks, Robert M. Daines, Michele Landis Dauber, John J. Donohue III, David Freeman Engstrom, Nora Freeman Engstrom, George Fisher, Richard T. Ford, Barbara H. Fried, Lawrence M. Friedman, Paul Goldstein, Robert W. Gordon, Henry T. Greely, Joseph A. Grundfest, Deborah R. Hensler, Daniel E. Ho, Pamela S. Karlan, Mark G. Kelman, Amalia D. Kessler, Daniel P. Kessler, Michael Klausner, Mark A. Lemley, Robert MacCoun, Lawrence C. Marshall, Jenny S. Martinez, Michael W. McConnell, Michelle Mello, Bernadette Meyler, Curtis Milhaupt, Alison D. Morantz, Anne Joseph O'Connell, Lisa Larrimore Ouellette, Nathaniel Persily, A. Mitchell Polinsky, Robert L. Rabin, Deborah L. Rhode, Jane Schacter, Shirin Sinnar, David A. Sklansky, Norman W. Spaulding, James F. Strnad II, David Studdert, Alan O. Sykes, Barton H.Thompson, Jr., George Triantis, Barbara van Schewick, Robert Weisberg

Associate Professors: Gregory Ablavsky, Rabia Belt, Jacob Goldin, Colleen Honigsberg

Assistant Professors: Julian Nyarko, Diego Zambrano

Professors (Teaching): Juliet M. Brodie, Jeffrey L. Fisher, William S. Koski, Phillip R. Malone, Jay A. Mitchell, Deborah A. Sivas, James Sonne, Jayashri Srikantiah, Ronald C. Tyler

Associate Professor (Teaching): Brian Fletcher

Senior Lecturers: Janet Martinez, Allen S. Weiner, Beth Williams

Professors of the Practice of Law: Michael Callahan, Lucas Guttentag, Erik G. Jensen, A. Douglas Melamed, David W. Mills

Courtesy Professors: Jennifer Eberhardt, Michael Genesereth, David Larcker, Leif Wenar, Heidi Williams

Courtesy Assistant Professors: Matthew Clair, Sharad Goel, Keith Winstein

Visiting Professors: Geoffrey Berman, Mariano-Florentino (Tino) Cuéllar, Mohammad Fadel, Siegfried Fina, Rogelio Perez-Perdomo, Charles Tyler, Beth Van Schaack

Thomas C. Grey Legal Research and Writing Instructors: Yonina Alexander, Shirin Bakhshay, Anna Mance, Julia Mendoza, Ji Seon Song

Lecturers: Dasha Anosova, Todd Baker, Marilyn Bautista, Viola Canales, Ronald Chen, Diane Chin, Danny Cullenward, Gordon Davidson, Marilyn Dearborn, Michael Dickstein, Lisa Douglass, Jason Du Mont, Shay Elbaum, Bonnie Eskenazi, Michael Esquivel, Randee G. Fenner, Bertram Fields, Jay Finkelstein, Tara Ford, David Forst, Michelle Galloway, Kate Gordon, Elizabeth Gropman, Mehdi Hakimi, Adam Halpern, Lucianna Herman, Todd Hinnen, Steve Hirsch,Lara Hoffman, Zeba Huq, Andrew Jennings, Kirsten Jensen, David Johnson, Danielle Jones, Megan Karsh, Daphne Keller, Julie Matlof Kennedy, David Kleiman, Jiyun Lee, Grace Lo, Suzanne Luban, Taryn Marks, Beth McLellan, Jeanne Merino, Dinsha Mistree, Nader Mousavi, William Neukom, Jessica Notini, Jamie O'Connell, David Owens, B. Howard Pearson, Lisa M. Pearson, Amber Polk, Betsy Popken, Steve Ray, Susan Robinson, Michael Romano, Kevin Rothenberg, Betty Rowe, Tom Rubin, Richard Salgado, Matthew Sanders, Ticien Sassoubre, Alicia Seiger, Katie Ott Siler, Michelle Sonu, Shanin Specter, Robyn Stanton, Kimberly Summe, Milan Sundaresan, Dan Tan, Robert Tashjian, Alicia Thesing, Bruce Wagman, Juan Walker, Lisa Weissman Ward, Michael Winn, Joseph Yang, James Yoon

Law General Courses

LAWGEN 105Q. Law and Popular Culture. 3 Units.
(Same as AMSTUD 105Q) This seminar focuses on the interface between two important subjects: law and popular culture. Before class, students will see a series of films or television shows relating to law, lawyers, and the legal system. There is also a weekly homework assignment based on materials in the assigned text and the assigned film or TV show. We will discuss the pop culture treatment of subjects such as the adversary system, good and bad lawyers, female and gay lawyers, the work life of lawyers, legal education, ethical issues, the jury system, and criminal and civil justice. The seminar discussions will draw on film theory and film-making technique to deepen understanding of the interrelationship between law and popular culture. The discussions will illuminate the ways in which pop culture products both reflect and change social views about law and lawyers. The assigned text is Michael Asimow & Shannon Mader, "Law & Popular Culture: A Course Book" (Peter Lang, 2d edition, 2013).
Same as: AMSTUD 105Q

LAWGEN 112N. Law and Inequality. 3 Units.
Most Americans know that discrimination on the basis of race, sex, and religion is unlawful. Seems simple enough. But advertisements in the back of newspapers still announce: "Single White Female Seeks Single White Male?" Isn't that discrimination on the basis of race and sex? Most businesses don't consider men for women's locker room or bathroom attendant. And why aren't those men and women's bathrooms and locker rooms illegal segregation? After all we know what would happened if some business set up separate bathrooms for blacks and whites. Isn't it discrimination for an employer to insist that men wear a jacket and tie and women wear nylons and a skirt? Why are some forms of discrimination unlawful and others not? Why is discrimination against short people, overweight people, or people with annoying personalities not against the law? We will answer these and many other questions by looking at court cases, legal theory, and philosophy. We may also have conversations with guest lecturers who work in civil rights enforcement, and the seminar may include a field trip to visit the offices of civil rights lawyers (lawyers tend to be busy people so these opportunities will depend on their schedules). Class participation and a short final paper are required, but here are no prerequisites other than an open mind and a willingness to delve into unfamiliar material.

LAWGEN 115N. Human Rights Advocacy. 3 Units.
What are the origins of the human rights movement and where is it headed? What does it mean to be a human rights activist? What are the main challenges and dilemmas facing those engaged in human rights advocacy? In the space of seven decades, human rights advocates have transformed a marginal utopian ideal into a central element of global discussion, if not practice. In this seminar we will examine the actors and organizations behind this remarkable development as well as the vast challenges faced by advocates in the recent past and today. Together, we will learn to be critical of, as well as to think, and act, like human rights advocates. This seminar will introduce you to some the main debates and dilemmas within the human rights movement. We will consider and understand the differing agendas of western international nongovernmental organizations (INGOs) and their counterparts in the frequently non-western) developing world, as well as tensions between and among rights advocates along other important dimensions (civil and political vs. economic, social and cultural rights; rights promotion through engagement of powerful actors vs. challenging structures of power, etc.). The seminar seeks to develop your ability: 1) to understand human rights and social justice issues as contested political, legal and cultural phenomena; 2) to review advocacy texts, videos and other interventions critically; 3) to appreciate the political dimensions of efforts to promote human rights; 4) to understand how recent history constrains and structures options and possibilities for social intervention to promote rights and justice. During the course of the quarter you will be required to submit several short reflection papers and develop a human rights advocacy campaign.

LAWGEN 209Q. Community Police Academy. 2 Units.
The Community Police Academy is a combination of classroom instruction and "hands-on" activities that examine life as a police officer. This class looks to clarify and expand the participant's knowledge of the responsibilities, decisions and constraints that face law enforcement officers today, while also providing some perspectives on the national conversation about the role of law enforcement in society. Students can elect to earn two units of credit by completing the readings, short assignments, and attending 4 discussion section meetings, or students may opt to take the course for no credits and only attend the activities. The class is learning opportunity for all involved, an opportunity to build trust and develop partnerships between the Department of Public Safety and the Stanford community. While this course is open to all students throughout the University, the units will not accrue to Law Degree Candidates for credit toward a degree in Law (JD, JSM, JSD, or LLM). Prerequisites: Application and basic background check; minimum 18 years of age.

Law Courses

LAW 201. Civil Procedure I. 5 Units.
This course is part of the required first-year JD curriculum. This course is a study of the process of civil litigation from the commencement of a lawsuit through final judgment under modern statutes and rules of court, with emphasis on the federal rules of civil procedure. May include class participation, written assignments, or other elements. Your instructor will advise you of the basis for grading.

LAW 203. Constitutional Law. 3 Units.
This course is part of the required first-year JD curriculum. This course offers an introduction to American constitutional law. In addition to examining questions of interpretive method, the course focuses on the powers of the federal government and the allocation of decision making authority among government institutions, including both federalism and separation of powers. Class participation, attendance, written assignments, and final exam. This course is open to first-year Law School students only.

LAW 205. Contracts. 5 Units.
This course is part of the required first-year JD curriculum. It provides exposure to basic contract law. The course will identify the scope and purpose of the legal protection accorded to interests predicated on contract and will focus on problems of contract formation, interpretation, performance, and remedies for breach.

LAW 207. Criminal Law. 4 Units.
This course is part of the required first-year JD curriculum. It examines the traditional general issues in the substantive criminal law, including the purposes of punishment and the appropriate limits on the use of the criminal sanction. It focuses predominantly on how criminal statutes are organized around objective offense elements (conduct, causation, and attendant circumstances) and mental states, and to a lesser degree on inchoate crimes, complicity, justification and excuse.

LAW 217. Property. 4 Units.
This course is part of the required first-year JD curriculum. It deals with possession and ownership of land and with the incidents thereof, including private and public restrictions on its use and development, nuisance, trespass, concurrent interests, landlord and tenant, and eminent domain. Attendance and final exam. Your instructor will advise you of other basis of grading. This course is open to first-year Law School students only.

LAW 219. Legal Research and Writing. 2 Units.
Legal Research and Writing is a two-unit course taught as a simulation. Students work on a legal problem starting with an initial interview, and they conduct fact investigation and legal research related to that problem. Students receive rigorous training in reading and analyzing legal authority, and in using persuasive strategies--legal analysis, narrative, rhetoric, legal theory, and public policy--to frame and develop legal arguments. Students write predictive memos and persuasive briefs, and are introduced to the professional norms of ethics, timeliness, and courtesy. This course is part of the required first-year JD curriculum.

LAW 223. Torts. 5 Units.
This course is part of the required first-year JD curriculum. It considers issues involved in determining whether the law should require a person to compensate for harm intentionally or unintentionally caused. These problems arise in situations as diverse as automobile collisions, operations of nuclear facilities, and consumption of defective food products. Among other considerations, the course explores various resolutions in terms of their social, economic, and political implications.

LAW 224A. Federal Litigation in a Global Context: Coursework. 2 Units.
This course is part of the required first-year JD curriculum. It is an introductory course in the litigation process. Students represent the plaintiff or defendant in a simulated global torts case set in a federal district court that raises complex issues of federal civil procedure. Students plan litigation strategy, draft pleadings, conduct discovery, write short briefs, and orally argue major motions. While developing students' written and oral advocacy skills, the course also focuses on substantive issues of civil procedure and transnational lawyering. Elements used in grading: attendance, class participation, oral argument, assignments in preparation for written briefs (outlines, drafts, research and citation assignments), written briefs, and professionalism. This course is open to first-year Law School students only.

LAW 224B. Federal Litigation in a Global Context: Methods and Practice. 2 Units.
This course is part of the required first-year JD curriculum. It is an introductory course in the litigation process. Students represent the plaintiff or defendant in a simulated global torts case set in a federal district court that raises complex issues of federal civil procedure. Students plan litigation strategy, draft pleadings, conduct discovery, write short briefs, and orally argue major motions. While developing students' written and oral advocacy skills, the course also focuses on substantive issues of civil procedure and transnational lawyering. Elements used in grading: attendance, class participation, oral argument, assignments in preparation for written briefs (outlines, drafts, research and citation assignments), written briefs, and professionalism. This course is open to first-year Law School students only.

LAW 240A. Discussion (1L): Asian Americans and the Law. 1 Unit.
This discussion seminar will consider the legal treatment of Asian Americans. We will read materials about the history of citizenship, exclusion, and internment, and discuss contemporary issues affecting the individuals of Asian descent in the American legal system. This discussion seminar will meet four times during the Fall quarter. You will be notified of the meeting times by the instructor. Specific dates, time, and location will also be listed in "Notes" below. Elements used in grading: Attendance and class participation.

LAW 240B. Discussion (1L): Comparative Approaches to Law and Inequality. 1 Unit.
In this discussion seminar, we will examine how various countries across Europe and Latin American, as well as the United States, seek to deploy law to promote equality for subordinated groups---including especially racial minorities and women. We will examine how laws seeking to promote racial and gender equality, often developed first in the United States, came to be transplanted elsewhere, and how in the process these were transformed in significant ways. Topics will include anti-discrimination law, harassment law, affirmative action (including but not limited to quotas), and parental leave. How and why did the law change as it was transplanted from one legal system and culture into another? To the extent that different legal systems have adopted different approaches, which is preferable---and according to what metrics? Moreover, to the extent that we prefer an approach deployed elsewhere, what are the chances of adopting some version of it here in the United States (or vice versa)? This discussion seminar will meet four times during the Fall quarter. You will be notified of the meeting times by the instructor. Specific dates, time, and location will also be listed in "Notes" below. Elements used in grading: Attendance and class participation.

LAW 240C. Discussion (1L): Corporate Social Responsibility. 1 Unit.
How can a company's managers safeguard the firm's financial value for its shareholders while, at the same time, operating ethically and purposively benefiting other stakeholders, including its employees and the communities in which the firm operates? Corporate social responsibility (CSR) is rooted in the idea that shareholder value is not the only measure of a firm's value and, indeed, that the exclusive pursuit of profits may produce social harms. The seminar will consider a variety of legal issues related to CSR, including: 1. The meaning and measure of environmental, social, and governance (ESG) criteria for corporations. 2. The voluntary or mandatory disclosure of a company's environmental and social harms or risks. 3. When is it legally and ethically appropriate for corporate managers or institutional investors to compromise shareholder value in the pursuit of social and environment goals? 4. Constituency statutes and benefit corporations that reflect interests other than profit maximization. 5. The power of investors to influence corporate behavior through capital allocation-investments (including impact investing) and divestments-and shareholder activism. 6. The power of other stakeholders, including consumers and employees, to influence corporate behavior. This discussion seminar will meet four times during the Fall quarter. You will be notified of the meeting times by the instructor. Specific dates, time, and location will also be listed in "Notes" below. Elements used in grading: Attendance and class participation.

LAW 240D. Discussion (1L): Criminal Legal Histories. 1 Unit.
This seminar will trace the roots of four critical aspects of the American criminal justice system: jury independence and the power of jurors to render verdicts according to conscience; plea bargaining and the progressive marginalization of juries; penitentiaries and the displacement of other forms of punishment; and the criminalization of recreational drugs. Though modern criminal justice policy will inform our conversation, the readings will be historical with an emphasis on primary source documents. We will examine the forces driving legal evolution and the historian's tools in mapping those forces. This discussion seminar will meet four times during the Fall quarter. Meeting dates and times to be arranged by instructor. Elements used in grading: Attendance and class participation.

LAW 240E. Discussion (1L): Dress Codes: Race, Identity and Personal Appearance. 1 Unit.
Dress Codes may seem a bit old fashioned, but in fact we are constantly told who should wear what and when. Rules---written and implied---divide formal from casual attire and children's clothing from that of adults. There are rules for what to wear in each season of the year and rules about the right attire for different times of the day. And, of course, there are rules about the types of clothing men may wear and about the clothing suitable for women. Adherence to such rules is considered by many to be an important signal of breeding and even character: accordingly, immediate social sanctions---and indirect professional consequences---can follow from breaking them. Some dress codes are job requirements or house rules of an organization or establishment---flouting them can get one fired, kicked out of school or barred from a restaurant. Finally, there are laws about clothing, enforced by police or government officials. Break these rules and you may find yourself facing a fine or even a jail sentence. Why is attire so rule bound? Why and when is clothing important enough to become the subject of written treatises, rules and regulations, legislative proclamations and judicial edicts? This seminar will explore dress codes, from the sumptuary laws of the late Middle Ages to the unstated norms of the 21st century, and discover what they can tell us about the significance of clothing---our most conspicuous medium of self-expression---and its relationship to individual identity, community cohesiveness and social order. This discussion seminar will meet four times during the Fall quarter. Meeting dates and times to be arranged by instructor. Elements used in grading: Attendance and class participation.

LAW 240F. Discussion (1L): Feminist Jurisprudence. 1 Unit.
This discussion seminar will consider some of the major theoretical writings of the past 40 years in feminist legal theory, and explore the application of different theoretical approaches to contemporary issues in the law. Likely readings include Catherine MacKinnon, Robin West, Janet Halley, and Angela Harris. Possible topics include campus sexual misconduct codes, the Me Too movement, the meaning of consent, and the legal treatment of the family. This discussion seminar will meet four times during the Fall quarter. You will be notified of the meeting times by the instructor. Specific dates, time, and location will also be listed in "Notes" below. Elements used in grading: Attendance and class participation.

LAW 240G. Discussion (1L): Innovation and Inequality. 1 Unit.
Throughout history, innovation has been a leading driver of economic growth and has helped lift communities out of poverty, and the importance of knowledge goods to the global economy has only increased with the rise of computing and information technologies. Legal institutions incentivize innovation and allocate access to knowledge goods through a variety of mechanisms, including intellectual property, direct funding through grants and national laboratories, tax incentives, and innovation inducement prizes. In this discussion group, we will examine how these bodies of law are used both to reinforce and subvert existing power structures and inequalities, including issues related to gender, race, geography, and income. We will discuss inequalities among innovators as well as inequalities in access to new innovations, or in who those innovations are made for. We will also consider how these issues might be addressed through legal reforms either internal or external to innovation laws. This discussion seminar will meet four times during the Fall quarter. You will be notified of the meeting times by the instructor. Specific dates, time, and location will also be listed in "Notes" below. Elements used in grading: Attendance and class participation.

LAW 240H. Discussion (1L): Measuring Access to Justice and Access to Information in Marginalized Communities. 1 Unit.
In this discussion seminar, we will explore the intersection of access to information and access to justice. Our current social and technological moment promises increased access to basic legal information without economic or geographic boundaries. But access and accessibility remain influenced by identity, privilege, and power. What are our collective expectations for governments to provide legal information in the digital age? How does access to free, easy-to-use, reliable legal information -- or the lack thereof -- have an impact on low-income and other marginalized communities, particularly in how they exercise their rights and protect themselves from harm? By examining how some of the most vulnerable populations access legal information, we can better assess the concept of open government with an eye toward informing and improving access to justice efforts. Topics to be explored through readings and discussion include: 1) the adequacy of pro se litigants' access to legal information within the American prison system; 2) measuring the impact of U.S. states and municipalities that contract with private companies to publish public laws; 3) ways in which technology might help close the justice gap in low-income communities v. how technology can expose vulnerable communities to new forms of victimization; 4) creative and unique systems of information-sharing within the homeless population and how legal organizations might penetrate those systems to combat disenfranchisement of the homeless and provide them with broader access to legal services; and 5) the fragility of freedom of information laws in democracies and whether these laws contribute to a more informed public. This discussion seminar will meet four times during the Fall quarter. You will be notified of the meeting times by the instructor. Specific dates, time, and location will also be listed in "Notes" below. Elements used in grading: Attendance and class participation.

LAW 240I. Discussion (1L): Prosecutors and Defense Attorneys as Agents of Change. 1 Unit.
What opportunities do prosecutors and defense attorneys have to help reform the criminal justice system and the wider society? And how can they best take advantage of those opportunities? We will explore these questions by reading and discussing three books: J Anthony Lukas, Big Trouble: A Murder in a Small Western Town Sets Off a Struggle for the Soul of America (1998); Gilbert King, Devil in the Grove: Thurgood Marshall, the Groveland Boys, and the Dawn of a New America (2013); and Emily Bazelon, Charged: The New Movement to Transform American Prosecution and End Mass Incarceration (2019). This discussion seminar will meet four times during the Fall quarter. You will be notified of the meeting times by the instructor. Specific dates, time, and location will also be listed in "Notes" below. Elements used in grading: Attendance and class participation.

LAW 240J. Discussion (1L): Religion, Identity and Law. 1 Unit.
This seminar will focus on the dynamic interplay between religious identity, community, and worldview, and the study, practice, and profession of law. As a defining force for so many across the globe, and in the norms through which human beings recognize their rights and arrange their affairs, religion has a unique and abiding impact on the work and life of aspiring and practicing lawyers--for believers and nonbelievers alike. Whether as first-year law students or seasoned practitioners, the need to anticipate, appreciate, and reconcile religious perspectives is both a vital professional skill and an illuminating resource for self-understanding and mutual respect. The class will meet across three on-campus sessions and a closing offsite dinner, and will include a collaborative exploration of primary and secondary sources, as well as custom conversational frameworks. Topics will include religion and cross-cultural lawyering, religion and legal systems, the role of faith in judicial decision-making, and law as a vocation (with attendant self-care dynamics). Befitting the overarching goals of diversity and inclusion in the discussion series generally, and the central importance of particularized themes of bridgebuilding, this seminar is warmly and equally open to students of any religious tradition and those of no religion at all. This discussion seminar will meet four times during the Fall quarter. Meeting dates and times to be arranged by instructor. Elements used in grading: Attendance and class participation.

LAW 240K. Discussion (1L): Representations of Criminal Lawyers in Popular Culture Through the Lens of Bias. 1 Unit.
This discussion group will explore the portrayal of criminal lawyers in popular films and will engage in critical analysis of how misconceptions about the criminal justice system and biases against women, people of color and the poor are amplified on the big screen. Source materials will include numerous mass-market films juxtaposed against authoritative law review and other commentary to afford in-depth discussion. This discussion seminar will meet four times during the Fall quarter. Meeting dates and times to be arranged by instructor. Elements used in grading: Attendance and class participation.

LAW 240L. Discussion (1L): Robot Ethics. 1 Unit.
We will consider the developing legal and ethical problems of robots and artificial intelligence (AI), particularly self-directed and learning AIs. How do self-driving cars (or autonomous weapons systems) value human lives? How do we trade off accuracy against other values in predictive algorithms? At what point should we consider AIs autonomous entities with their own rights and responsibilities? And how can courts and legislatures set legal rules robots can understand and obey? This discussion seminar will meet four times during the Fall quarter. Meeting dates and times to be arranged by instructor. Elements used in grading: Attendance and class participation.

LAW 240M. Discussion (1L): The Central Park Five Case. 1 Unit.
This discussion seminar will focus on racial factors in the criminal justice system, using the Central Park 5 case and the Netflix series "When They See Us" as the jumping off point for the discussion. Following each episode of the series, the seminar will discuss the investigation, the trial, incarceration and post incarceration experiences. Although there may be some readings, the primary material will be the Netflix series. I hope to have some additional help with the discussion by asking a few outside players to join the class. Participants could include George Gascon, the San Francisco District Attorney who has been a leader in the investigation of racism in enforcement of the laws, Linda Farstein, the main prosecutor in the case who was the Chief of the New York DA's sex crimes unit, and one of the Three Strikers whose release was secured by Stanford's Three Strike Project. If they are available, these outside participants will join the discussion in order to be a resource and to provide color and insight into the topics being covered. Note: This seminar will meet in San Francisco and transportation will be provided. This discussion seminar will meet four times during the Fall quarter. Meeting dates and times to be arranged by instructor. Elements used in grading: Attendance and class participation.

LAW 240N. Discussion (1L): Theories and Critiques of Legal Education. 1 Unit.
Much of the basic structure of twenty-first-century American legal education was put in place by late nineteenth-century Harvard Law School Dean Christopher Columbus Langdell. This seminar will begin by examining the impetus for and nature of Langdell's reforms then consider various twentieth- and twenty-first-century critiques and modifications of legal education, including Duncan Kennedy's Legal Education and the Reproduction of Hierarchy and the work of critical race theorists like Patricia Williams and Lani Guinier. We will conclude by examining the most significant change within law schools over the past century, the rise of clinical legal education, reading parts of the Carnegie Report on Legal Education and Sam Moyn's recent critique of clinical education as well as a range of responses to his piece. Throughout the seminar, we will pay attention to the historical and social contexts out of which proposals for changing legal education arose as well as to how we might assess the contemporary structure of legal education in light of its history. This discussion seminar will meet four times during the Fall quarter. You will be notified of the meeting times by the instructor. Specific dates, time, and location will also be listed in "Notes" below. Elements used in grading: Attendance and class participation.

LAW 240O. Discussion (1L): Whose Justice? Which Rationality?. 1 Unit.
Reasonable people sometimes disagree. How can reflective individuals hope to evaluate those disagreements? Fundamental notions of justice and rationality seem to dominate particular traditions in different places and different times. How can a twenty-first century product of American or other cultures decide which of various compelling ideas of justice and rationality is most persuasive to us? How can anyone escape the accidents of birth and tribal worldview? We will approach these questions through Alastair MacIntyre's provocative book of that name: Whose Justice? Which Rationality? (Univ. Of Notre Dame Press 1988). Whether or not MacIntyre¿s neo-Aristotelian approach to the fundamental questions of ethical theory ultimately prove persuasive, his attempt to find alternatives to the utilitarian and Kantian relics of the Enlightenment will, I hope, open a conversation about what we believe and why. This discussion seminar will meet four times during the Fall quarter. You will be notified of the meeting times by the instructor. Specific dates, time, and location will also be listed in "Notes" below. Elements used in grading: Attendance and class participation.

LAW 240P. Discussion (1L): Election 2020. 1 Unit.
The discussion group will examine key factors in the 2020 election. In the first three classes, we will consider (among other topics) how and why people vote; vote suppression; the demographics of the electorate and how to increase the participation of underrepresented groups; and the impact of COVID-19 on the 2020 election. The final class, which will take place after the election, will take stock of what just happened. Readings will include social science research, legal cases, and journalistic accounts. This discussion seminar will meet four times during the Fall quarter. Meeting dates and times to be arranged by instructor. Elements used in grading: Attendance and class participation.

LAW 240Q. Discussion (1L): Human Reproduction in the 21st Century: Legal and Ethical Issues. 1 Unit.
This group will discuss issues around human reproduction in the 20th and 21st centuries. We will talk about abortion and the problems of when life or rights begin, eugenics, embryo selection, and embryo editing (also known as "designer babies"). An underlying theme will be how "we"---a culture, as a legal system, as legal systems---decide what should and shouldn't be done. This discussion seminar will meet four times during the Fall quarter. Meeting dates and times to be arranged by instructor. Elements used in grading: Attendance and class participation.

LAW 240R. Discussion (1L): Litigating the 2020 Election. 1 Unit.
This discussion seminar will explore legal issues in the 2020 election. We will read the cases or litigation materials as they are filed. The discussion group will also consider the various logistical, administrative, and civil rights issues that jurisdictions are confronting as they attempt to run an election during a pandemic. Students may also participate in the work of the Stanford-MIT Healthy Elections Project (see HealthyElections.Org) which is dedicated to studying and implementing best practices in election administration to deal with the challenges the COVID pandemic poses. This discussion seminar will meet four times during the Fall quarter. Meeting dates and times to be arranged by instructor. Elements used in grading: Attendance and class participation.

LAW 240S. Discussion (1L): Monuments, Counter-Monuments, and the Law and Politics of Memory. 1 Unit.
In this reading group we will examine the intimate connection between the nation's retreat from Reconstruction in the 1870s, the constrained interpretation of the Reconstruction Amendments adopted by the Supreme Court, and the development of national and regional rituals that embedded a specific understanding of the Civil War, Emancipation, and Reconstruction in public spaces, most prominently, monuments to Union and Confederate military officers and Civil War battlefields. We will examine 20th century resistance to the forms of historical consciousness embedded in the architecture of these public spaces, 21st century movements to remove and replace this architecture and associated cultural representations of white supremacy, as well as longstanding debates in this and other cultures about how atrocities are remembered, and the socio-legal aspects of holding perpetrators to account. A central objective will be to interrogate the relationship between collective memory, identity, and legal interpretation, including "monumental" and "hagiographic" styles of legal reasoning. This discussion seminar will meet four times during the Fall quarter. Meeting dates and times to be arranged by instructor. Elements used in grading: Attendance and class participation.

LAW 240T. Discussion (1L): Race and Technology. 1 Unit.
There is sometimes a tendency to describe technology as value neutral, as simply a tool that can be used for good or evil, particularly when questions of race and racial justice are involved. But the technologies we develop and deploy are shaped by historical prejudices, biases, and inequalities and thus are no less biased and racist than the underlying society in which they exist. In this discussion group, we will examine how racial and other biases are inherent in a wide range of technologies, including "risk assessment" algorithms for predictive policing or other decisions in the criminal justice system, facial recognition systems, surveillance tools, diagnostic algorithms for medical diagnosis and treatment decisions, "digital redlining" through housing ads, programs that determine entitlement to credit or public benefits and/or purport to detect fraud by recipients, algorithms used in recruiting and hiring, digital divide access gaps, and more. Building on these various case studies, we will seek to articulate a framework for recognizing both explicit and subtle anti-black and other biases in tech and understanding them in the broader context of racism and inequality in our society. Finally, we will discuss how these problems might be addressed, including by regulators, legislators, and courts as well as by significant changes in mindset and practical engagement by technology developers and educators. This discussion seminar will meet four times during the Fall quarter. Meeting dates and times to be arranged by instructor. Elements used in grading: Attendance and class participation.

LAW 240U. Discussion (1L): Race, Civil Rights, and Human Rights. 1 Unit.
In this seminar, we will explore the evolution in the mid-twentieth century of the Civil Rights movement in the United States, at the same time that the international system for legal protection of human rights was also taking shape. Readings will discuss issues such as the relationship between civil and political rights and economic, social, and cultural rights; the relationship between anti-colonial movements and anti-racism; the context of the Cold War; the development of treaties such as the Convention on the Elimination of All Forms of Racial Discrimination; and U.S. attitudes of exceptionalism towards international legal regimes. This discussion seminar will meet four times during the Fall quarter. Meeting dates and times to be arranged by instructor. Elements used in grading: Attendance and class participation.

LAW 240V. Discussion (1L): Reform, Defund, or Reimagine? The Problem of Policing. 1 Unit.
The death of George Floyd at the hands of Minneapolis police in May 2020, and the nationwide wave of protests that followed, have brought new attention to the nature of policing in the United States and its connection with racial inequality. For many critics of the police, reform is inadequate response; instead the police should be defunded or even abolished. This reading group will address current controversies surrounding law enforcement in the United States, in particular the issue of police killings of African Americans and other people of color. We will also discuss the meaning of calls to defund the police, how they differ from call past efforts at reform, and what lessons, if any, can be drawn from those past efforts. This discussion seminar will meet four times during the Fall quarter. Meeting dates and times to be arranged by instructor. Elements used in grading: Attendance and class participation.

LAW 240W. Discussion (1L): Reimagining Capitalism. 1 Unit.
Scholars' and policy makers' thinking about political economy evolves as one understanding of the role of government ceases to reflect people's aspirations and views of social reality and is superseded by another. The laissez faire thinking of the 19th century was replaced by Keynesian management in response to the Great Depression. After WWII, Keynesian thinking was challenged, by 'neoliberalism'—a challenge that began to achieve success in the 1970s in response to perceived failures of government, high inflation, and other economic and social woes. By the mid-1980s, neoliberalism had become the new conventional wisdom, and liberals as well as conservatives accepted its core premises: that society consists of atomized individuals competing rationally to advance their own interests; that this behavior, in aggregate, produces good social outcomes and economic growth; that free markets are therefore the best way to allocate societal resources and government should intervene only to remedy market failures. Disagreements about what constitutes such failures and about corrective interventions persisted, but the general premises were widely embraced by policymakers and politicians. Today, that consensus is breaking down. Neoliberal policies and the particular systems of capitalism that accompany them have generated profound wealth inequality and have little to offer to address the perceived threats of globalization, climate change, and emerging technologies like artificial intelligence and robotics. The coronavirus pandemic has only served to highlight these and other problems.But what should come next? Our readings in the course will explore a variety of themes related to these issues. How did neoliberalism come to dominate political discourse? What are its core tenets? What kinds of challenges are being presented to them, and what might alternative approaches to political economy for the 21st century look like? This discussion seminar will meet four times during the Fall quarter. Meeting dates and times to be arranged by instructor. Elements used in grading: Attendance and class participation.

LAW 240X. Discussion (1L): Tort Encounters. 1 Unit.
Lawsuits for compensation for personal injury often provide lay people with their first -- or even only -- interaction with the civil side of courts. Those interactions are rarely wholly happy, raising fundamental issues for plaintiffs about the definition of just desserts and fair procedure. There is a rich literature on these personal encounters, some autobiographical and others written by journalists who were given permission to closely follow victims' efforts to obtain compensation. These accounts paint a different picture of the tort liability regime than the one which 1Ls usually encounter in their Fall Torts course, which in recent decades have foregrounded a "law & economics" perspective that focuses on deterring defendants rather than on satisfying victims' desires for justice. In each session we will read a book about an individual's or family's personal encounter with tort law. Candidate books for discussion include an autobiographical take on the author's experience suing doctors for malpractice after her husband's untimely death, a journalist's close account of a working class family's pursuit of compensation for the death of their infants, a holocaust victim's response to the outcome of a class action against Swiss Banks, a journalist's account of a community seeking compensation and accountability for toxic exposure from a pharmaceutical facility. We'll each read the selected book for the session and discuss what the account tells us about the operation of tort law (and civil procedure) in real life and what potential legal reforms it suggests, if any. Each session will be led by one or two students who volunteer (at the beginning of the quarter) to start off and guide the discussion. Writing requirement: One short (5 or so pages) reflection paper on one of the assigned books or another related book of your choice. If you choose to reflect on a different book, it should also be an account of laypersons' experiences with the tort liability system (not a doctrinal analysis of tort law). This discussion seminar will meet four times during the Fall quarter. Meeting dates and times to be arranged by instructor. Elements used in grading: Attendance and class participation, written assignment.

LAW 240Y. Discussion (1L): Violence, Resistance, and the Law. 1 Unit.
This reading group will examine the force of law -- the ways in which law both depends upon and abjures violence, the ways it suppresses and invites resistance, and the identity of subjects against whom legal violence is deployed. A central object of focus will be excessive force, the legal doctrines that insulate government officers from accountability, and the ways this specific form of violence is tied to racial subordination. We will also attend to the role of force in non-violent resistance movements, the role of vulnerability in resistance movements (both revolutionary and reform-oriented), and problems of revictimization in rights assertion. Readings will be drawn from a wide range of interdisciplinary sources including law, history, political theory, critical race theory, fiction, and psychology. This discussion seminar will meet four times during the Fall quarter. Meeting dates and times to be arranged by instructor. Elements used in grading: Attendance and class participation.

LAW 240Z. Discussion (1L): We Hold These Truths to Be Self-Evident? Race and Criminal Law in the 21st Century. 1 Unit.
There is no responsible person denying that those institutions that form the core of the "criminal justice system," with its explicit commitment to securing "justice," are the very institutions that have been (and continue to be) primary engines of injustice in the United States. We will explore that tragic phenomenon by looking at four subjects: (a) the history of the intersection between race and criminal law; (b) prison abolition; (c) defunding the police; and (d) sentencing disparities and the death penalty. The assignments for each session will include a variety of book chapters, articles, judicial decisions and podcasts. This discussion seminar will meet four times during the Fall quarter. Meeting dates and times to be arranged by instructor. Elements used in grading: Attendance and class participation.

LAW 241A. Discussion (1L): Why is the USA Exceptional -- In Crime and Punishment?. 1 Unit.
It has long been a national controversy, and for many a international embarrassment, that the imprisonment rate in this country stands at the very top among nations (currently just behind) and several multipoles higher than other developed industrialized democracies. And for many years it has been almost a cliché that we also have an internationally anomalously high crime rate; crime gap between us and our "peer nations" has narrowed in recent years but is still remarkable, at least for violent crime. In the course we will read and an interdisciplinary set of explorations about whether there are things in "national DNA" that explain each of these phenomena and possibly both at once. The perspectives will include the political history of our roots in both revolution and slavery and the legacy of Reconstruction, an d cultural/anthropological theories about the "frontier mentality," as well as such distinct factors as our anomalous rate of gun ownership. Along all these dimensions we will speculate on which way the causation runs between crime or punishment and these various correlates.. But of course we will also look to the legal system, including our rights- and federalism-focused Constitution, as both cause and effect of our anomalies. While we will look at some more quantitively empirical perspectives, especially as they bear on recent changes in both crime and punishment rates, our main subject will be more of an "American Studies" approach to the undeniable overall stability of how we compare to other nations. This discussion seminar will meet four times during the Fall quarter. Meeting dates and times to be arranged by instructor. Elements used in grading: Attendance and class participation.

LAW 241B. Discussion (1L): Race and Urban Law in the Bay Area. 1 Unit.
From the Black Power movement for self-governance that formed East Palo Alto to the battle to preserve the history of the "Little Manila" neighborhood in Stockton, from the anti-gentrification politics of San Francisco's historically Latinx Mission District to the settlement struggles of Vietnamese and Cambodian refugees in San Jose, the history of the Greater Bay Area offers a moving picture of the hardships and heritage of American diversity. Some readings and visual media in the class will draw on place-specific legal histories of discrimination, organizing, and reform in Bay Area cities/neighborhoods. Other thematic readings will focus on racial/ethnic discrimination in housing and land ownership; incorporation movements to form majority-minority cities; Latinx and Asian-American migration into post-industrial cities; neighborhood improvement efforts in segregated enclaves; and efforts to lead or resist local political change. Students will leave the course with a richer sense of their home region during law school, as well as a broader picture of "law" that includes local administrative proceedings, municipal codes, civil and criminal law enforcement practices, and taxes/spending decisions. This discussion seminar will meet four times during the Fall quarter. Meeting dates and times to be arranged by instructor. Elements used in grading: Attendance and class participation.

LAW 400. Directed Research. 1-4 Unit.
Directed Research is an extraordinary opportunity for students beyond the first-year to research problems in any field of law. Directed research credit may not be awarded for work that duplicates the work of a course, clinic, or externship for which the student has registered. Directed research credit may be awarded for work that expands on work initially assigned in, or conceived during, a course, clinic, or externship, but only if the continued work represents a meaningful and substantial contribution to the already existing project, significantly beyond mere editing or polishing. If a student seeks to continue or expand on work that the student initiated previously (whether for a course, clinic, externship, or otherwise) a student must (1) share the initial work with the professor supervising the directed research, to the extent that work is non-privileged, and (2) obtain permission for the expansion from the instructor or supervisor who supervised the initial project. The final product must be embodied in a paper or other form of written work involving a substantial independent effort on the part of the student. A student must submit a detailed petition of at least 250 words, approved by the sponsoring faculty member, outlining his or her proposed project and demonstrating that the research is likely to result in a significant scholarly contribution. A student may petition for "Directed Research: Curricular Development" when the work involves assisting a Law School faculty member in developing concepts or materials for new and innovative law school courses. Both the supervising faculty member and the Associate Dean for Curriculum must approve petition for "Directed Research: Curricular Development." Students must meet with the instructor frequently for the purposes of report and guidance. Unit credit is by arrangement. Students whose projects warrant more than four units should consider a Senior Thesis or the Research Track (See SLS Student Handbook for requirements and limitations). With the approval of the instructor, successful completion of a directed research project of two units or more may satisfy the JD writing requirement to the extent of one research writing course (R course). See Directed Research under Curricular Options in the SLS Student Handbook for requirements and limitations. Directed Research petitions are available on the Law School Registrar's Office website (see Forms and Petitions). Elements used in grading: Paper and as agreed to by instructor.

LAW 403. Senior Thesis. 5-8 Units.
An opportunity for third-year students to engage in original research and to prepare a substantial written-work product on the scale of a law review article. The thesis topic should be chosen no later than two weeks after the beginning of the seventh term of law study and may be chosen during the sixth term. The topic is subject to the approval of the thesis supervisor, who may be any member of the Law School faculty under whose direction the student wishes to write the thesis and who is willing to assume the responsibility therefor. An oral defense of the thesis before members of the faculty, including the thesis supervisor, will be conducted late in the student's ninth academic term. Acceptance of the thesis for credit requires the approval of the thesis supervisor and one or more other members of the faculty who will be selected by the supervisor. Satisfactory completion of the senior thesis will satisfy graduation requirements to the extent of (a) 5 - 8 units of credit and (b) two research courses. The exact requirements for a senior thesis are in the discretion of the supervising faculty member. Special Instructions: Two Research credits are possible. Elements used in grading: Paper and as agreed to by instructor.

LAW 406. Research Track. 9-12 Units.
The Research Track is for students who wish to carry out a research project of a scope larger than that contemplated for a Senior Thesis. Research Track projects are to be supervised by two or more professors, at least one of whom must be a member of the Law School faculty. At least one faculty member in addition to the supervisors must read the written product of the research, and the student must defend the written work orally before the readers. Students will be admitted to Research Track only if they have a demonstrated capability for substantial independent research, and propose a significant and well-formulated project at the time of application. Special Instructions: Two Research credits are possible. Elements used in grading: Paper and as agreed to by instructor.

LAW 411. Directed Professional Writing. 1-4 Unit.
Directed professional writing projects involve professional writing, such as motions, briefs, proposed legislation, and congressional testimony, undertaken with the assistance of --- and in collaboration with --- a faculty member. Directed professional writing credit is designed to allow a student, or a small group of students working together, to receive academic credit for their work tackling real-world problems. Only projects supervised by a member of the faculty (tenured, tenure-track, senior lecturer, or professor from practice) may qualify for Directed Professional Writing credit. It will not necessarily be appropriate to require each member of the team to write the number of pages that would be required for an individual directed research project earning the number of units that each team member will earn for the team project. The page length guidelines applicable to individual papers may be considered in determining the appropriate page length, but the faculty supervisor has discretion to make the final page-length determination. Students must meet with the instructor frequently for the purposes of report and guidance. Unit credit is by arrangement. A petition will not be approved for work assigned or performed in a course, clinic, or externship for which the student has or will receive credit. See Directed Professional Writing under Curricular Options in the SLS Student Handbook for requirements and limitations. Directed Professional Writing petitions are available on the Law School Registrar's Office website (see Forms and Petitions). Elements used in grading: As agreed to by instructor.

LAW 801. TGR: Project. 0 Units.
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LAW 802. TGR: Dissertation. 0 Units.
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LAW 805Z. Policy Practicum: Supporting INTERPOL's Efforts to Combat Transnational Crime. 2-3 Units.
Changes in the nature of transnational crime and developments under international law may necessitate adjustments of INTERPOL's policy and legal considerations in three broad areas: (1) online manifestations of support for extremist and terrorist conduct; (2) misinformation and fake new; (3) online incitement of violence and hatred, defamation, harassment, and cyber bullying. This Practicum aims to develop principles for INTERPOL to guide its interpretation and application of Article 3 to capture this new--online--manifestation of transnational crime. More specifically, it aims to establish general guidelines that INTERPOL can rely on in determining whether a request to process information on offenses arguably implicating freedom of expression online is in alignment with its constitutional obligation to remain neutral and adhere to international human rights standards. This Practicum is open to graduate students from law (2L, 3L, and Advanced Degree), business, international policy, communications, computer science, and other relevant programs. Highly qualified undergraduates are also invited to apply. The practicum meets 9-10:30 on Wednesdays. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments, Final Paper.Cross-listed with International Policy (INTLPOL 255) in Winter and Spring.

LAW 806Y. Policy Practicum: Justice By Design: Eviction. 2-4 Units.
Client: Judicial Council of California (https://www.courts.ca.gov/policyadmin-jc.htm). Three out of five people in civil cases have no lawyer, but are often navigating issues of profound importance to their lives. At the same time, the courts are trying to manage a massive volume of cases, with particularly large numbers of cases concerning debt collection and housing. How can courts help people resolve their problems, and still operate efficiently? This policy practicum partners student researchers with courts that are interested in reimagining how one very common type of case -- eviction -- could work better for all involved. We will work on site at court, with observations, interviews, ride-alongs, and workshops to understand how these cases work and what outcomes result. Students will map opportunities for change and a vision of what a redesign process might look like. This class is part of an ongoing partnership with the Judicial Council of California to redesign the civil justice system so that it works better for all litigants, especially those who are without lawyers. Students will learn how to do design research, facilitate multi-stakeholder system redesign, and envision a government innovation process. This work will feed directly into future pilots, reforms and studies on how to make housing court more efficient, accessible, and just. Though students need to be available for the 6 hours a week designated as class time -- (TBA) -- not all of that time will be used. Much of our time will be taken up with court visits and related activities. Group projects will be a major part of the work. Students must take both the fall and winter quarters in order to receive credit for the course. Special instructions: In Winter Quarter, new students may enroll in this policy lab for two units only. New students will focus on researching eviction laws and policies around the country. Students continuing in the policy lab from Autumn Quarter 2019, must enroll for four units. In Spring Quarter, the course will be offered for 2 or 4 units depending on the student's time commitment. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 806Z. Policy Practicum: "Every Vote Counts" Voting Verification Project. 2-3 Units.
Clients: Stanford Election Law Project <https://law.stanford.edu/stanford-university-election-law-project/> and the Stanford PACS Program on Democracy and the Internet <https://pacscenter.stanford.edu/research/program-on-democracy-and-the-internet/projects/>. California recently passed SB 759, the "Every Vote Counts Act," to codify requirements allowing voters a chance to fix their ballot in case of a signature mismatch. SB 759 requires elections officials notify voters of mismatched signatures at least 8 days prior to the certification of an election. Ballots would be counted by elections officials if a signature verification statement is returned no later than 5:00 p.m. two days prior to certification. However, the law does not specify in great detail the steps that counties should take to contact voters. Prior to the bill's passage, a report by the California Voter Foundation revealed substantial variation in how counties verified mismatched signatures and contacted affected voters. This Policy Lab research project will produce the first public report tracking how counties have implemented/are planning to implement the requirements of SB 759. This project maps how the implementation of state statutes and guidelines dealing with vote-by-mail signature verification varies among California counties. Research questions for each county include: (1) What criteria does a signature need to meet to "not appear to be the same" (and therefore result in a ballot being invalidated)? (2) What remedial steps are taken, with regards to SB 759, if an election worker determines there is a "signature mismatch" before the statutory deadline? To answer these questions, students will conduct a survey of county election officials and administrative material and produce a final report with findings and lessons to improve county procedures. Students will research legal and policy frameworks, interview policy makers and state administrative officials, develop targeted policy recommendations, and brief policy makers on recommendations. The final report will be publicly available and will inform California county election officials, state policy-makers, and voting rights advocacy groups. This policy practicum is offered for two to three variable units. Students may elect three units by special arrangement with the instructors. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 807A. Policy Practicum: Federal Indian Law: Yurok Legal Assistance. 2-3 Units.
Client: Yurok Tribe. Students will assist the client, the Office of the Tribal Attorney of the Yurok Tribe (the largest federally recognized Native nation in California), by conducting legal research on a variety of possible topics, including tribal water rights, tribal police powers, tribal/county relationships, and the Indian Child Welfare Act. The exact scope and nature of the research will be determined in consultation with the client. Students will produce policy memos based on their research to share with the client. Coursework or background in federal Indian law is helpful but not required. The project may involve opportunity to present virtually to the tribal council. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 807B. Policy Practicum: What we can do to Mitigate Climate Warming. 2-3 Units.
Client: Steyer-Taylor Center for Climate Energy and Finance. This is the winter quarter continuation of this practicum. We take as a given the well-established scientific evidence establishing the causal connection between greenhouse gas (GHG) emissions and global warming, and the likelihood that current trajectories of fossil fuel use are leading to catastrophic climate change. In addition to its global consequences, climate change threatens to compromise Stanford's core missions through fires, environmental damage, and other harms to the University's staff, students, and faculty. In the Autumn Quarter, in which the practicum was co-taught by Alicia Seiger, students undertook several research projects, including how Stanford researchers' broad-ranging expertise in energy-related finance issues could be most effectively deployed to inform policy makers; reducing food waste as a means of reducing GHG emissions; and Stanford health services' role in reducing GHG emissions. In the Winter Quarter, we will focus on the possible effects on GHG emissions of investment policies and practices, automobile and air transportation, and the consumption of beef and other foods. The mandate of Stanford Law and Policy Labs is to conduct impartial, evidence-informed policy analysis. Rather than deliver a set of specific recommendations, this practicum seeks to assess the pros and cons of plausible policies. While participants may have prior views on some of the issues, they should be open to revising their views in light of the evidence. Policy Lab practicums are research seminars. Although we will assign some readings and invite experts to meet with the seminar during the quarter, much of the research will be conducted by student teams. Policy Lab practicums are designed primarily for law students, but are open to students throughout the University. This practicum seeks students with knowledge of economics, finance, food systems, and environmental science. Admission is by petition. Elements used in grading: Autumn Quarter - Attendance, Performance, Class Participation, Written Assignments, Final Paper. Winter Quarter- Class Participation, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 807C. Policy Practicum: Donor Advised Funds and Their Critics. 2-3 Units.
The donor advised fund (DAF) is an increasingly popular vehicle for charitable giving. Donors receive a tax deduction when they contribute money or appreciated assets to a DAF; at their discretion, donors (DAF "holders") may advise the DAF manager, or "sponsor," to distribute funds to tax-exempt charities. There are about 500,000 individual DAFs across the country, with total assets of over $100 billion. The major DAF sponsors are community foundations and the charitable arms of investment managers like Schwab, Fidelity, and Vanguard. Although donors can only "advise" rather than "direct" a sponsor to make a gift, their advice is almost always heeded. DAFs arguably incentivize giving by providing a vehicle for donating complex assets and reducing a donor's burdens by offloading administrative tasks to the DAF sponsor. Some DAF sponsors also offer advice to enable their DAF holders to give more effectively. Yet DAFs have been criticized on several grounds, and legislation has been introduced (but not enacted) to regulate them. One criticism is that while donors receive the tax deduction immediately upon contributing to a DAF, they can take as long as they wish to make gifts from the DAF, and even pass advisory authority on to their heirs, thus delaying putting the funds into the hands of charities that can use them. (In comparison, foundations are required to spend at least 5 percent of their assets annually.) Another criticism is that gifts made through a DAF can be anonymous, with only the DAF sponsor listed as the donor. (In comparison, gifts and grants by foundations must be reported on publicly available tax returns.) In addition, some DAF sponsors have concerns about requests to make gifts to putative hate groups: how to determine whether an organization falls in this category, and how to respond to the request if it does. At a time when the controversy around DAFs is only likely to grow, this Policy Lab practicum will provide an evidence-based analysis of the pros and cons of various self-reform and regulatory proposals. The research team will focus on understanding the perspectives of the recipients of DAF funding as well as those of DAF sponsors, DAF holders, regulators, and critics. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 807D. Policy Practicum: Post-Ferguson Civil Rights Enforcement. 1-3 Unit.
Post-Ferguson Civil Rights Enforcement and Municipal Courts. The Ferguson Report prepared by the United States Department of Justice identified a number of procedural due process violations in the way the city's municipal courts functioned. These procedural defects amplified the consequences of racial disparities in who was arrested and charged in the city. In the wake of the Ferguson Report, civil rights litigation has been brought challenging similar procedural due process violations in other municipal courts around the country. Litigation has concentrated on excessive bail, fines, fees, and other court costs, conflicts of interests in having judges whose budgets depend on collection exercise discretion in setting these charges and collecting them, and failure to comply with Bearden v. Georgia (1983) (prohibiting imprisonment for failure to pay court charges without inquiring into a litigant's indigence and determining that a litigant's failure to pay is "willful"). This two-quarter sequence policy lab focuses on (i) gathering empirical, doctrinal, historical, and other research on municipal court practices associated with the setting, charging, and collection of court fines, fees, and other costs, including demographic research on vulnerable populations affected by procedural errors, (ii) gathering evidence regarding best practices to reform court procedures, particularly regarding compliance with Bearden v. Georgia, (iii) drafting initiatives for recommendation to the client, and (iv) closely editing and refining the proposals for distribution. Applicants should have interest and/or expertise in criminal or civil justice reform, civil rights litigation and enforcement, procedure, and judicial ethics. Strong legal research and writing skills are imperative. Applicants must also be willing to work under conditions that require strict confidentiality. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 807E. Policy Practicum: Redesigning the Venezuelan Judiciary: The Venezuelan Constitutional Crisis. 2-3 Units.
Client: National Assembly of Venezuela, Special Committee for the Defense of the Constitution. Venezuela is undergoing a profound political, humanitarian, and economic crisis. Although a dictatorship currently reigns, reformers have begun to plan for a brighter and more democratic future. Students enrolled in this policy lab will have a unique opportunity to help set the terms of a future Venezuelan democracy (and institutional reforms) via a report to be submitted to the Venezuelan National Assembly, the only remaining democratic institution in the country. The report will inform efforts to create a new Venezuelan judiciary. Specifically, students will spearhead completion of a report designed to explore reforms and improvements to judicial independence, judicial appointments, the workings of the judiciary, and the broader legal system. Students will interact with Venezuelan congressional representatives, human rights experts, and research other countries¿ experiences with judicial reform. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 807F. Policy Practicum: Assessing Alternative Approaches to Hate Crimes. 2-3 Units.
Partner: Brennan Center for Justice. Most states and the federal government have adopted laws enhancing penalties for hate crimes, but questions remain as to the effectiveness of these laws in deterring hate violence and making victims whole. Some within marginalized and civil rights communities seek alternative---or additional---approaches that do more to address the communal injuries hate crimes inflict, without an exclusive focus on lengthening incarceration for offenders. Yet many of these alternative models, including restorative justice approaches, are undertheorized, rare in practice, and insufficiently assessed. In conjunction with the Brennan Center for Justice, this policy lab assesses alternative approaches to hate crimes in theory and practice. Students will work in collaborative teams to analyze existing research in fields including criminal law and criminology, identify innovative hate crimes programs established by nonprofit organizations or local governments, review outcomes related to restorative justice models, and prepare for an expert convening in the Winter term. The project will conclude with a final report. This policy lab is open to 4-6 students and will be graded on an H/P basis. Students may take this policy lab for either 2 - 3 credits. Some students may continue in the spring. R credit is available to law students upon approval by the instructor. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 807G. Policy Practicum: The Santa Clara County Litigation & Policy Partnership. 2-3 Units.
Partner: Santa Clara County Counsel's Office. This policy lab inaugurates a new kind of partnership between Stanford Law School and the Office of the County Counsel for the County of Santa Clara. SCCLPP students will work with the leadership and deputies of the office on both litigation and policy matters related to urgent local challenges. Over the long run, SCCLPP projects will relate to fields such as environmental protection, consumer protection, criminal justice, land use law, the rights of immigrant residents, public health, and local finance. During the 2020 Winter and Spring quarters, each student group will focus on one of the following projects: 1. Protecting farm workers and their children from pesticide exposure. 2. Protecting the rights of immigrant residents. 3. Protecting the privacy rights of criminal defendants. 4. Protecting Consumer Rights in Household Tax Preparation. The SCCLPP is open only to Stanford Law Students (both JD and Advanced Degree students). Students will be admitted by consent, with a preference for those with past coursework or experience in state or local government law, public interest lawyering, and public service generally. A strong preference attaches to students intending to enroll in both the Winter and Spring quarters, and we do not expect to enroll any new students in the spring quarter. (Students undertaking an externship at the County Counsel's Office during either term will be treated as two-term participants.)
The seminar portion of the course meets the first five Wednesdays of the quarter from 4:15-6:15; it meets again the last Wednesday of the quarter for a lengthy evening briefing at the SCCC's office starting at 5:15 PM. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.
Same as: SCCLPP

LAW 807H. Policy Practicum: Can Opening Up the Legal Services Market Increase Access to Justice?. 3 Units.
Several states --- including California, Arizona and Utah --- are considering or already moving forward with changes to the regulations on who can provide legal services --- regulations that are contained in the Rules of Professional Conduct for each state. These proposed reforms are designed to accelerate innovation in the delivery of legal services, and increase access to justice, in part by allowing technology and people without JDs to play a greater role than they can today. As states consider these reforms, there are many questions around the likely impact of these reforms on consumers and providers of legal services, and the most promising regulatory regime(s). Students will research and write about such questions as: (1) What are some of the most promising models from other industries for protecting consumers from harm, and providing redress? (2) What might an independent regulator that oversees entities that provide legal services look like? (3) What are the most promising innovations in states that have experimented with non- lawyer providers and other access to justice initiatives. (4) What lessons can we learn from other contexts, including other countries and other professions (for example the medical context, where nurse practitioners can provide services directly, and people other than physicians can own entities that provide health care)? The client will be one or more of the following non-profits working on these issues: the Institute for the Advancement of the American Legal System, National Center on State Courts, or Responsive Law. The deliverables will be a set of policy briefs and talking points that will inform the regulatory reform debate. Students from a range of disciplines are very welcome, including undergraduates interested in public policy. We will tentatively meet Tues 4-5, but if that doesn't work for everyone, we can find times to meet during the lunch hour as well. Elements used in grading: Performance, Written Assignments, Final Paper. This practicum continues for two quarters - winter and spring. Only students enrolled in the winter quarter may continue with the project in the spring term. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 807I. Policy Practicum: Tools for Reentry: Practices, Apps, and Services. 2-3 Units.
Client: Various government agencies and nonprofit groups. Formerly incarcerated individuals face a range of personal and institutional challenges in their reentry into broader society. Considerable research and many programs have focused on systems reform and support and social programs to increase the likelihood of successful reentry. But technological tools also have the potential to help lower friction and increase the success of reentry. This policy lab will engage with challenging legal, social, government systems, and technological questions, with opportunities to design and/or implement new tools to aid in the reentry process. We will work with a variety of stakeholders including government organizations and programs, non-profit entities, and legal innovators to prototype and evaluate new technological solutions to facilitate the reentry process and reduce recidivism. This practicum will build a collaborative team of diverse backgrounds and skill sets to learn from each other and enhance the overall capacity of the research and tool development. We encourage students who are interested in criminal justice, technology for social impact, access to justice, and entrepreneurship and innovation for social good to join us, including upper-division and graduate students from Law, Computer Science, Electrical Engineering, Mechanical Engineering, MS&E, Public Policy, and the social sciences. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments, Final PROJECT. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 807J. Policy Practicum: California Penal Code Revision Committee Project. 2-3 Units.
This policy lab assists the newly formed California Committee for the Revision of the Penal Code in developing strategies for criminal justice reform in California. The Committee is directed by the Governor and state legislature with studying and making recommendations to simplify and rationalize the substance and procedure of criminal law in California. In 2020, the Committee will likely address five areas of the state's criminal justice system, and students will be responsible for helping set reform priorities within those subject areas, researching existing policy strengths and weaknesses, comparing California law with other jurisdictions, consulting with subject-matter experts, and suggesting and analyzing reform proposals. Students will work directly with Committee members and staff and attend Committee hearings in Sacramento and across the state. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 807K. Policy Practicum: The Outlaw Ocean. 2 Units.
Illegal fishing and forced labor aboard fishing vessels have long plagued the world's oceans, undermining economic development, national security, food security, and human rights -- and nowhere is this more starkly evident than in the Pacific. From cans of tuna to shrimp cocktail, the legality of how seafood is caught and processed is often uncertain. This policy lab confronts the global environmental and human rights challenges associated with the existing framework of international laws and policies. The research delves into international laws that apply to the high seas, illegal fishing, supply chains, forced labor and human rights abuses to locate leverage points and explore innovative solutions, including how new technologies might be developed and deployed. The research contributes to a work of The Friends of Ocean Action -- convened by the World Economic Forum -- a coalition of public sector, private sector, and civil society leaders who are committed to accelerating action for sustainability. Solutions require cooperation among nations, international seafood companies, and nonprofit organizations, and the containment of rogue actors. In this policy lab, students will work with two clients. On illegal fishing, the client is Global Fishing Watch. Created through a collaboration among Google and other partners, Global Fishing Watch is a pioneer in harnessing satellite technology to enable better management of fisheries. On forced labor, the client is the International Seafood Sustainability Foundation, which brings together tuna processors who comprise more than 70% of the global market for canned tuna and is committed to developing solutions to address forced labor on fishing vessels in the tuna sector and beyond. Through the Stanford Center for Ocean Solutions, students will also connect to a broad range of additional actors on these issues, including UN agencies, large seafood companies, and human rights and environmental NGOs. Students will produce policy briefs that will be published by the Center for Ocean Solutions. The practicum seeks law students, business students, and graduate and well-qualified undergraduates in such programs as earth systems, computer science, product design, public policy, sociology, and marine biology. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments, Final Paper. Class will meet meet on Wednesday, 9-11am, on Zoom in Autumn 2020. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 807L. Policy Practicum: The Opioid Epidemic: Developing New Law and Policy Tools. 2 Units.
Same as PSYC 107. Client: Broken No More, http://broken-no-more.org/about-us/. More Americans die every year of overdose than died in the entire course of the 1955-75 Vietnam conflict. Overdose has helped reduce aggregate US life expectancy for three years in a row¿something that has not happened in 100 years, including at the height of the AIDS epidemic in the '80s and '90s. Measured by loss-of-life, opiate-related overdose is the most acute national health crisis of our lifetimes. Student researchers will work closely with the client, Broken No More, a national organization of parents and families who have lost family members to opioid use. The organization supports grieving members and also pushes forward evidence-based, public health interventions to the opioid epidemic. This practicum explores legal approaches to a more comprehensive and thoughtful understanding to the Opioid Epidemic. The research team will evaluate whether various stakeholders have fulfilled their legal and regulatory obligations to respond to the epidemic, including whether hospitals and insurers fulfill their implied "duty of care." The questions addressed in this practicum could have life-saving impact on people currently suffering from opioid use disorder. The course seeks to build a diverse research team with students from law, public policy, medicine, public health, and sociology. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 807M. Policy Practicum: Designing a Curriculum in Social Problem Solving & Policy for SLS and GSB Students. 2 Units.
Stanford Law and GSB graduates will play important roles solving many of our greatest societal problems¿in areas such as education, health, energy, and domestic and global poverty¿that call for action by governments and nonprofit, business, and hybrid organizations. Faculty at the two schools are currently working to enhance courses and programs that prepare students for careers addressing such challenges. This policy lab practicum will complement and support their efforts. We will learn about the careers that graduates of the two Schools have had in social problem-solving, policymaking, and policy advocacy; what skills their work demands; and how they acquired those skills. We will examine the curricula of policy schools, law schools, and business schools to learn how they prepare students for these roles. We will also ascertain student interest in particular courses and programs at Stanford and other institutions, including what attracts or deters students from pursuing joint degrees in policy. Insights from this practicum will help the two Schools design changes to their programs. GSB as well as SLS students are encouraged to enroll. Attendance, Performance, Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 807N. Policy Practicum: Researching Diversity and Inclusivity in Classroom Dynamics. 2 Units.
This project will research and build an open-source resource library about diversity and classroom dynamics. The goal is to produce a well-curated collection linking to articles, books, and other reliable and authoritative materials to support faculty facilitation of dynamic and productive class discussions about issues of race, ethnicity, gender, sexual orientation, socioeconomic status, religion, exceptionalities, and more. Students will deeply engage with a broad range of literature in order to select the best resources for this unique collection. Students will also explore available trainings and workshops, including online programs, and create a resource list. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 807O. Policy Practicum: Assessing the Impact of China's Global Infrastructure Spending on Climate Change. 2-3 Units.
Client: Steyer-Taylor Center for Energy Policy and Finance. China is investing in massive foreign-infrastructure construction, notably in emerging economies. Whether that infrastructure is high-carbon or low-carbon will largely determine the future of climate change. Many universities and institutions are studying the carbon impacts of China's foreign-infrastructure investment. That research tends to compare China's aggregate fossil-fuel-versus-renewable investments, assessing whether those investments meet a clean-energy ideal. New research at Stanford's Steyer-Taylor Center for Energy Policy and Finance is undertaking this analysis differently. It seeks to map the players and financial flows of global infrastructure investment in a way that compares the carbon intensity of Chinese-financed infrastructure projects in important emerging economies with the carbon intensity of energy infrastructure in those countries that has been financed by multilateral, bilateral, and other non-Chinese entities. This method is designed to reflect the way global infrastructure funding works, politically and economically, in actual practice -- and thus to elucidate particularly realistic ways to meaningfully decarbonize Chinese infrastructure financing. In this policy lab, which is the second phase of the spring 2020 lab, students will advance research toward two sorts of deliverables: a data-analysis and data-visualization tool to map players, financing structures, and carbon emissions from Chinese-financed infrastructure projects in key host countries; and a written account of how Chinese-financed infrastructure is playing out in those countries. The research will involve close interaction with key officials at key infrastructure-financing institutions in China and around the world. Graduate students from across Stanford are invited to apply. Data-analysis skills, energy-finance understanding, and proficiency in Mandarin are useful skills for this work, but they are not required. The lab seeks graduate students from the disciplines of law, business, engineering and environmental science, and East Asian Studies. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. Cross-listed with International Policy (INTLPOL 371).

LAW 807P. Policy Practicum: New Regulatory and Policy Frameworks for Government Remote Work in Times of Crisis. 2-3 Units.
Background: With the sudden onslaught of the pandemic COVID 19 creating emergency requirements regarding professional and social distancing, government agencies in California have had to implement "telework" or remote work policies quickly, with limited guidance and limited awareness of best practices. Government agencies are complex institutions, performing diverse and vital functions and employing a wide variety of types of employees, some of whom are represented by labor bargaining units. They handle and manage information subject to privacy protections, and many of the communications engaged in between employees and with members of the public are also subject to public disclosure requirements. Public agencies also face financial, technological, and personnel resource limitations. California state agencies need to be able to anticipate work and access issues due to its experiences with natural and manmade disasters, frequently in the form of earthquakes and fires. The disruptions created by this pandemic, because of its impacts on the workforce and economy, are extreme but highlight the need for broad reconsideration of work functions, locations, and worker support. The Project: Working with one state agency, the California State Controller's Office (SCO), students will research and evaluate best practices for remote work by government employees and develop recommendations to ensure the critical government functions continue during a variety of disasters and emergencies. Students will also try to learn what remote work policies could be effectively implemented over the long term. After gaining an understanding of the key functions of the State Controller's Office, students will research and provide answers to several critical questions, which may include: What are legally required timelines for performance of key tasks and functions and how do these requirements implicate remote work? What are the best practices related to chain of command, communications, and redundancy protocols to ensure ongoing operations? How can remote work policies ensure that decision-making remains efficient and effective? What are the priority factors to analyze when determining which staff positions should be designated "essential" or "non-essential"? In the current coronavirus environment, how does this analysis implicate who can or should be physically onsite? What are the processes that are required to be in place should an employee whose work is designated essential have a person who is at risk at home? What are the implications for public employees related to FLSA, OSHA, and Workers' Compensation Insurance compliance? How have business, other government agencies, and nonprofits resolved these issues and what are their best practices? How can those practices be implemented within the SCO? What are the technology requirements that can effectuate remote work? What types of encryption are necessary to protect private and sensitive data? If workers are using their privately-owned technology (e.g., cellular phones, computers), what are the possible exposures due to public records act reporting requirements and in a litigation setting? What are the equity implications of operationalizing remote work policies? What are the demographics of the positions with functions that can and cannot most likely take advantage of remote work? What are implications for the worker experience of remote work in different demographic groups? What are the impacts of differential levels of access to adequate technology at home? What is a cost-benefit analysis of shifting to more remote work? Are there cost-savings through potential reduction of work force or physical space? If so, what are the equity implications? What are the environmental benefits of shifting to remote work? Student Skills and Interests: All students are welcome regardless of experience as long as you are interested in this topic. However, if you have any experience working with government agencies, in disaster or emergency prepared or response, or in applying an equity analysis to policies and programs, please note that in your consent form. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 807S. Policy Practicum: Innovating Privacy Protection: Tools and Strategies for California Cities. 1-3 Unit.
Client: Office of the Vice-Mayor of the City of Berkeley, CA. Ensuring the privacy rights of residents and technology users in California remains a core responsibility of legislators and regulators in the state. Recent state legislation such as the California Consumer Privacy Act (CCPA), coupled with the state Attorney General's Office implementing regulations, have aimed to provide an expanded range of privacy and consumer protections, and an upcoming, follow-on ballot initiative may further alter the state regulatory landscape. But these efforts are imperfect and incomplete and have been subject to vigorous debate and criticism over both the details of their approach and their ultimate efficacy. Privacy risks can arise from the collection, aggregation, sharing, and use of data by both governments and private businesses and other private actors, and from lack of transparency of and accountability for such actions. This policy lab will explore the role that cities such as Berkeley can play in furthering efforts to protect privacy against government and private actions, including government acquisition and use of data that is initially collected and aggregated by private entities. We will work with the Office of the Vice-Mayor of Berkeley to engage questions surrounding the nature and scope of the authority held by California Charter Cities like Berkeley to exercise local control and enact legislation to address municipal affairs that include the privacy of their local residents and businesses. The lab will examine the range of powers and regulatory tools available to city governments that might be utilized for privacy protection as part of overall municipal responsibility to protect the health and safety of residents. Part of our focus will be to research and assess approaches from government entities around California and the rest of the country. Students will work with the vice-mayor and may also interview and consult other relevant stakeholders in Berkeley city government and other government entities, relevant privacy experts, community and consumer groups, businesses, and other interested stakeholders as appropriate. Ultimately, we will evaluate best practices and develop recommendations for possible local privacy and related consumer-protection legislation and regulation that is appropriately tailored to safeguard innovation and competition while ensuring that the best interests of local residents and businesses are served, particularly in situations where a city may be particularly well-positioned or have particularly appropriate tools to address privacy concerns. We encourage students who are interested in complex issues of privacy and consumer protection, and in helping identify and develop novel, alternative avenues for enhancing such protection, such as using the the authority of local governments, to join us, including upper-division and graduate students from law, MS&E, public policy, and the social sciences. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. In the winter quarter (1 unit), this policy lab is open only to students who were enrolled in the lab in the fall quarter.

LAW 807T. Policy Practicum: Creating a National Census on Women Imprisoned for Killing their Abusers. 2-3 Units.
Client: Rachel Louise Snyder, author of "No Visible Bruises" The Stanford Criminal Justice Center at Stanford Law School is partnering with the award-winning journalist Rachel Louise Snyder (author of No Visible Bruises; https://www.globalgrit.com/) to study the frequency with which women are imprisoned for killing their abusers. The research will entail the following methodological steps: 1. Requesting the list of women serving current sentences for homicide from each state department of correction. 2. Sending women serving current sentences for homicide a two-page survey asking questions about the circumstances of their current offense(s) and relevant intimate partner violence. Asking women to complete the survey and return it in a self-addressed stamped envelope. Assuring women that their responses will be kept confidential and giving them the choice to complete them anonymously. 3. Analyzing and aggregating responses from returned surveys. 4. Comparing results with data received from the National Violent Death Reporting System maintained by the Center for Disease Control and Intimate Partner Violence data collected by state departments of health. In addition, relying on court records and local press coverage to complement the results. 5. Publishing results in academic journals and policy reports. Collecting and making this data available will shed important light on the nature of the female correctional population, the largest growing segment of the U.S. prison population, and might guide policy discussions on charging, sentencing, prison programming, parole and reentry policies and decisions. The results may also inform laws regarding self-defense and other affirmative defenses, and strategies for addressing domestic violence. After the term begins, students accepted into the course can transfer from section (01) into section (02) which meets the R requirement, with consent of the instructor. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. This course will meet on Thursday from 9:00-11:00 am.

LAW 807U. Policy Practicum: COVID-19 and the Effect of Video Technology on Indigent Defense Services. 2-3 Units.
Client: National Association of Criminal Defense Lawyers. As a result of COVID-19, most jurisdictions in the country rapidly moved court and court-related communications from in-person to audio- and video-conferencing. Providers of indigent defense services have identified concerns associated with this move, including the effect it has on attorney-client relationships and confidentiality and the ability of clients to access reliable technology. In partnership with National Association of Criminal Defense Lawyers (NACDL) and with the involvement of Stanford Sociology Professor Matthew Clair, the Stanford Criminal Justice Center is conducting a study on the uses, dynamics and effects of remote technology at different stages of criminal proceedings in light of COVID-19. The project will entail both a national survey (survey will be sent out nationally during August 2020 and students will analyze results) and in-depth interviews with a range of stakeholders in a handful of jurisdictions to assess how technology is being used and develop best practice for the delivery of indigent defense services during and after the pandemic. After the term begins, students accepted into the course can transfer from section (01) into section (02) which meets the R requirement, with consent of the instructor. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. This course will meet on Fridays from 9:00-11:00 am.

LAW 807V. Policy Practicum: Election Protection in the Time of COVID. 2-3 Units.
Client: Stanford-MIT Healthy Elections Project (healthyelections.org). The administrative challenges local officials are confronting in the 2020 election are unprecedented in U.S. history. As the primary elections reveal, the COVID-19 pandemic threatens our democracy as much as it threatens public health. Jurisdictions around the country are scrambling to deal with massive shifts to mail balloting, polling place closures, and loss of poll workers. Students in this policy lab will investigate the measures state and local officials are taking to protect their elections from the effect of the pandemic. Students will research, write and/or update policy memos on election preparedness in battleground states, work with our partners to recruit poll workers to reduce the risk of polling place closures due to poll worker shortages, prepare materials for voter outreach and education, and help ensure polling place safety. After the election, students will assess the success of various aspects of the administration of the election, and, in the winter term, produce a detailed post-mortem group report. All students will produce team-based policy memos and internal presentations to be integrated into the final report. This policy lab will continue over two quarters with a small subset of students from the fall term selected to join the winter research team. The winter quarter will focus on finalizing the research and work product initiated in the fall term. Students from all disciplines are welcome to apply (including undergraduates). However, preference will be given to current team members of the Stanford-MIT Healthy Elections Project and those with experience in election law and policy. We especially welcome applications from students in the law, public policy, political science, and design disciplines, and from those with strong writing and editing skills. Students taking the course for R credit can take the course for either 2 or 3 units (Section 02), depending on paper length. The Fall term class meets remotely each week on Wednesdays, 4:15-6:15 p.m. Winter term TBD. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. We are accepting applications on a rolling basis through 9/14, but recommend that students apply early.

LAW 807W. Policy Practicum: Developing Best Practices for Clean Water Act Enforcement. 2-3 Units.
Client: The U.S. Environmental Protection Agency's Office of Enforcement and Compliance Assistance. Deliverables: Policy memos, briefing presentation, final policy report. The Clean Water Act is the premier law protecting the waterways of the United States. Yet based on facility self-reports, 29% of permitted facilities under CWA were in "significant non-compliance" (SNC) in 2018: that is, close to a third of all facilities either discharged substantially above their permit limits or otherwise failed to meet their permit obligations. Such pollution has serious consequences for the health and well-being of millions of Americans. One of the Environmental Protection Agency's ambitious national compliance initiatives aims to cut the SNC rate in half by 2022. To that end, EPA is hoping to research, compile, and disseminate information about the most innovative interventions that have been piloted and implemented by states, EPA regions, and federal EPA. This policy practicum will assist the Environmental Protection Agency's Office of Enforcement and Compliance Assistance to develop this "Best Practices" Compendium. Professors Dan Ho and Deborah Sivas will lead a team of students, in close coordination with the EPA team, to develop the compendium. The work will entail (a) conducting interviews of state, regional, and federal environmental regulators (most of which have been pre-identified by EPA), (b) drafting short case studies of each practice (e.g., early warning letters, technical assistance, simplified disclosures), (c) assessing benefits, costs, and evidence underpinning these practices, and (d) helping EPA disseminate this information. The learning objectives include: (i) a deeper understanding of the nation's principal regulatory framework to protect water, (ii) engaging with officials to learn and compile best practices, and (iii) developing a strong sense of environmental law and regulatory enforcement in action, including the promise and constraints of the behavioral and enforcement toolkit. This is a two-quarter policy practicum, which will be run virtually, for the fall and winter quarters. Students are strongly encouraged to participate in both quarters. Those who (a) have a strong interest or background in environmental law, administrative law, regulatory enforcement, or policy-oriented research, and (b) are able to enroll in both fall and winter terms will be given priority. R credit is available for students who extend the work into a significant research component. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 807X. Policy Practicum: Selective De-Policing: Operationalizing Concrete Reforms. 2-3 Units.
The Stanford Criminal Justice Center and Stanford Center for Racial Justice at Stanford Law School are co-sponsoring this project to assess concrete ways to shift particular responsibilities from police departments to other agencies and organizations. We will explore whether there are policy possibilities lying at the intersection of the community policing movement - which advocated shifting police departments away from "chasing 911 calls" - and current calls to "defund" the police by shifting to other other agencies functions now performed by armed, uniformed officers. In particular, we will consider proposals to shift mental health response, school discipline, traffic enforcement, and homeless services away from armed, uniformed officers. What kinds of agencies should shoulder these responsibilities? How should the transfer be accomplished? We will also ask how these policy changes relate to, complement, or compete with other possible approaches to police reform and the transformation of public safety. Should such changes be part of an overall effort to shrink the footprint of police departments, to change the nature of what police departments do, or both? How, if at all, should changes in police budgets be used to drive reform? Elements used in grading: Attendance, Performance, Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. This course will meet on Tuesdays from 2:00-4:00 pm.

LAW 807Y. Policy Practicum: Diversity, Equity and Inclusion Research Clearinghouse. 2 Units.
Client: Stanford Law School. Deliverables: Resources for national DEI database for law schools, final summary report. Law schools, other professional schools, and institutions of higher education all around the country have been reevaluating their structure, mission, curricula, pedagogy, hiring and admissions practices, climate, and other elements of academic life with the goal of ascertaining how best to promote a more just, fair, inclusive, and diverse environment for learning. Students, staff, administrators, and faculty have created listservs and other informal platforms to share ideas and resources, but to date there has been no single research-based platform that gathers cutting edge and canonical work on the wide range of potentially relevant topics to guide and provide structure to the design of reforms or support advocacy on DE&I issues. Stanford Law School and the Robert Crown Library have launched a beta version of the first national clearinghouse to index research of this kind. This policy lab provides interested students an opportunity to expand the index, help develop and implement standards for curation, incorporate feedback from users, engage in policy discussions about iterative design, and develop frameworks for assessment of the project. The primary work plan involves deepening the available research on a number of topics including: 1L and advanced doctrinal pedagogy, critical race theory, other critical approaches to law, cultural competence and cultural humility in training for law and other service professions, professional judgment, assessments of DE&I training in the private and public sector, published templates for university DE&I reforms, principles of academic freedom, global innovations in DE&I theory, as well as interdisciplinary research on anti-racism, implicit bias and other forms of cognitive bias, viewpoint discrimination, micro-aggression, trauma, and stereotype threat. Students will work with Prof. Norman W. Spaulding and reference librarians at the law school. There may also be opportunity to work with students, staff, administrators, and faculty at other law schools and other university departments. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 807Z. Policy Practicum: Creating a National Research Cloud. 2-3 Units.
Client: Stanford Human-Centered Artificial Intelligence (HAI). The productive interplay between federal government, research universities, and private enterprise has given rise to an American innovation engine that is the envy of the world. But with respect to artificial intelligence, the American research prowess that's powered decades of growth and prosperity is at risk. There are two reasons: public researchers' lack of access to compute power and the scarcity of meaningful datasets, the two prerequisites for advanced AI research. To address this problem, in 2020 the Stanford Institute for Human-Centered Artificial Intelligence (HAI) issued a call for the government to create a National Research Cloud (NRC), a close partnership between academia, government, and industry to provide academic researchers with affordable access to high-end computational resources, to large-scale government-held datasets in a secure cloud environment, and to the necessary expertise to benefit from this resource. Congress has responded to this call with its proposed National AI Research Resource Task Force Act of 2020. Investigating possible ways to implement the NRC according to the proposed legislation, the practicum research team will work closely with scholars at HAI to (1) propose ways to power the NRC with rich and easily-usable datasets while complying with important legal issues such as data privacy; and (2) recommend the proper level of government involvement in building and administering the NRC. The research team will draw from student expertise and familiarity with law, computer science, engineering, economics, and other interdisciplinary fields. Student researchers will conduct interviews with private sector tech companies, public sector administrative officials, and academic researchers. Students will also research adjacent federal policies and agencies that seek to stimulate innovation through similar or other means. This practicum will run winter and spring terms with preference for students who can enroll for both quarters. The project seeks students with law, engineering, computer science, economic, and policy backgrounds. Special Instructions: Students enrolled in Section 01 may elect credit for either Experiential Learning (EL) or Professional Writing (PW). Students enrolled in Section 02 may elect credit for Research (R). Elements used in grading: Attendance, Performance, Class Participation, Written Assignments, Final.

LAW 808A. Policy Practicum: The Youth Justice Lab: Imagining an Anti-Racist Public Education System. 3 Units.
Clients: Public Counsel (http://www.publiccounsel.org/) and IntegrateNYC (https://integratenyc.org/). In the wake of the Black Lives Matter protests and calls for police reform, the United States is in the midst of a national reckoning that is forcing us to confront systemic racism and the institutions that perpetuate anti-Black racism, white supremacy, and discrimination against Black, Indigenous, and People of Color. Perhaps no institution has reproduced racial hierarchy in the U.S. more than our public education system. From state-sponsored racial segregation of schools to the more subtle, but no less insidious racially segregated academic placements (e.g., special education, advanced placement) to exclusionary school discipline policies to ostensibly "meritocratic" testing and grading policies and beyond, public schools have created and perpetuated racial hierarchy, despite the promise that schools should help all children achieve the American Dream. The Lab aims to critically analyze the structural racism in our schools and asks the question: What would an anti-racist public education look like? Specifically, partnering with Public Counsel and IntegrateNYC, the Youth Justice Lab will explore the history, current landscape, and racialized consequences of: (1) the educational caste system created by student assignment to various public schools, including selective schools, traditional schools, continuation and alternative schools, and court schools and (2) high-stakes standardized testing for student placement and assignment purposes. (Other topics may be covered, depending on client need and resource availability.) With that research in mind, the Lab will work with experts to develop specific policy and research interventions that aim to dismantle the systemic racism and interlocking oppressions built into those educational policies and practices. This course will take an interdisciplinary approach to these issues by enrolling students from the Law School and the Graduate School of Education. Students in the Lab will gather and analyze the relevant historical and empirical research, interview and consult with experts in the field, and draft a series of research and policy memos that summarize our research and provide recommendations. After the term begins, students accepted into the course can transfer, with consent of the instructor, from section (01) into section (02), which meets the R requirement. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. Cross-listed with Education (EDUC 441).

LAW 881. Externship Companion Seminar. 2 Units.
The practice of public interest law -- whether in the criminal or civil context, or a government or non-profit setting -- requires an attorney to consider a host of issues distinct from one in private practice. How should decisions be made about priorities with limited resources? Where an organization has a broad social justice mission, where does litigation on behalf of individual clients or a group of clients fit in? Prior to initiating litigation or advancing a defense, what quantum of evidence should an attorney require? What role, if any, should an attorney's personal beliefs play in a course of representation? Through directed supervision of their externships, as well as participation in weekly seminars, students will evaluate such questions in the context of their practical experience. Students are required to write weekly reflection papers of 2 to 3 pages. Elements used in grading: Attendance, class participation, weekly reflection papers and final reflection paper.

LAW 882. Externship, Civil Law. 5-12 Units.
Following approval of a student's application, the Civil Standard Externship Program (SEP) allows second and third year students to obtain academic credit for externing with select non-profit public interest, public policy, and government agencies for one quarter. The Civil SEP allows students to (a) gain experience in a field where a clinical course is not offered, or (b) pursue advanced work in an area of prior clinical practice. Students may extern for 20, 24, 30, or 34 hours per week. For a complete description of the Civil SEP, students should read the Externship Handbook, which is available from the Levin Center for Public Service and Public Interest Law or online at: http://www.law.stanford.edu/organizations/programs-and-centers/john-and-terry-levin-center-for-public-service-and-public-interest-law/externship-program-0 . Students wishing to enroll in an externship must meet various requirements that are set out in the Handbook. Students participating in the Civil SEP must also concurrently enroll in the Externship Companion Seminar (Law 881). An externship that otherwise meets the criteria for obtaining EL credit will be approved for EL credit when the field placement provides specialized experience complementary to a student's intended career path and comparable benefits cannot be obtained through other EL coursework at Stanford. Grading Elements used: Full participation and attendance, satisfactory evaluation by field placement supervisor, weekly reflection papers of two to three pages. .

LAW 883. Externship, Criminal Law. 5-12 Units.
Following approval of a student's application, the Criminal Standard Externship Program (SEP) allows second and third year students to work for credit in criminal prosecutors' and defenders' offices for one quarter. Students may extern for 20, 24, 30, or 34 hours per week. For a complete description of the Criminal SEP, students should read the Externship Handbook, which is available from the Levin Center for Public Service and Public Interest Law or online at: http://www.law.stanford.edu/organizations/programs-and-centers/john-and-terry-levin-center-for-public-service-and-public-interest-law/externship-program-0 . Students wishing to enroll in an externship must meet various requirements that are set out in the Handbook. Students participating in the Criminal SEP must also concurrently enroll in the Externship Companion Seminar. An externship that otherwise meets the criteria for obtaining EL credit will be approved for EL credit when the field placement provides specialized experience complementary to a student's intended career path and comparable benefits cannot be obtained through other EL coursework at Stanford. Grading Elements used: Full participation and attendance, satisfactory evaluation by field placement supervisor, weekly reflection papers of two to three pages.

LAW 884. Externship, Special Circumstances. 12 Units.
Following approval of a student's application, the Special Circumstances Externship Program (SCEP) allows second and third year students to work for credit for one quarter in non-profit public interest, public policy, and government agencies outside of the Bay Area. Standards for approval of a SCEP placement are similar to those for Directed Research proposals, although they are higher. Because there is a preference for local civil and criminal SEP placements (see Law 882 and Law 883), your SCEP proposal must explain (a) how it meets the goals of the externship program; and (b) why a similar project cannot be accomplished in one of the placements offered in the Bay Area. SCEP placements outside the Bay Area must be full-time. Students wishing to undertake a SCEP placement obtain the supervision of a faculty member who will oversee their externship and an accompanying tutorial. For a full description of the SCEP, students should read the Externship Handbook, which is available from the Levin Center for Public Service and Public Interest Law or online at: http://www.law.stanford.edu/organizations/programs-and-centers/john-and-terry-levin-center-for-public-service-and-public-interest-law/externship-program-0. Students wishing to enroll in an externship must meet the various requirements that are set out in the Handbook. An externship that otherwise meets the criteria for obtaining EL credit will be approved for EL credit when the field placement provides specialized experience complementary to a student's intended career path and comparable benefits cannot be obtained through other EL coursework at Stanford. Grading Elements used: Full participation and attendance, satisfactory evaluation by field placement supervisor, weekly reflection papers of three to five pages, and a final reflection paper of a length to be determined by your faculty supervisor.

LAW 902. Advanced Community Law Clinic. 2-7 Units.
The Advanced Community Law Clinic offers law students who already have some significant civil clinical experience the opportunity to work under supervision on more advanced projects and cases being handled by the Stanford Community Law Clinic, including litigation and other matters. Advanced Clinic students will also work with Clinical Supervising Attorneys to provide direction and guidance to those enrolled in the Community Law Clinic for the first time, in areas in which Advanced Clinic students have already acquired some expertise. In addition, Advanced Clinic students may function as team leaders on larger projects in which the Clinic is engaged. Advanced students may arrange with the instructor to receive between two and seven units. No student may receive more than 27 overall clinical credits, however, during the course of the student's law school career. Special Instructions: Completion of the Community Law Clinic (Law 902A,B,C) or its equivalent is a prerequisite for the advanced clinic. Elements used in grading: Participation, reflective paper and project.

LAW 902A. Community Law Clinic: Clinical Practice. 4 Units.
The CLC is the closest thing to a general legal services office among Stanford's clinical offerings. Based in East Palo Alto, the CLC provides students with the opportunity to provide direct legal services to low-income residents, while thinking critically about the role of lawyers and lawyering in addressing the problems of America's so-called "working poor." The Clinic's practice is in four areas: (1) housing (eviction defense and Section 8 termination); (2) wage and hour and related workers' rights; (3) social security and disability benefits; and (4) criminal record expungement. Each student handles his or her own caseload, which is comprised of cases matters in all of the practice areas. The practice areas are selected and designed to lie at the intersection where the community's unmet legal needs and students' learning needs correspond. The clinic's docket is fundamentally a trial docket. Students have first-chair responsibility for their cases, and perform all of the lawyering tasks necessary to advance their clients' interests, including interviewing, counseling, negotiation, fact investigation, legal research, and representation in the court and agency settings that hear the clients' cases. Skills emphasized include those trial lawyering skills, as well as time management and developing client-centered lawyering practices. Students may also have the chance to participate in outreach or policy-level projects, such as representing the clinic on a state or regional committee on a substantive issue, doing community education workshops at sites around the Peninsula, and/or legislative research and advocacy. In the clinic seminar and in regular supervision, students are encouraged to interrogate the effectiveness of the legal system at delivering "justice" for their clients and to explore creative ways that legal knowledge can be deployed to attack the social problems attendant to low wages, substandard and unstable housing, and other features of low-income life in Silicon Valley. Special Instructions: General Structure of Clinical Courses -- The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third over the course of the quarter each clinic student (with the exception of those enrolled in the Criminal Prosecution Clinic) is required to prepare for and attend a few inter-clinic group sessions. Students will be awarded three separate grades for their clinical quarter, each reflecting four units. The three grades are broken into the following categories: clinical practice; clinical methods; and clinical coursework. Grading is pursuant to the H/P system. Enrollment in a clinic is binding; once selected into a clinic to which he or she has applied, a student may not later drop the course except in limited and exceptional cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the

LAW 902B. Community Law Clinic: Clinical Methods. 4 Units.
The CLC is the closest thing to a general legal services office among Stanford's clinical offerings. Based in East Palo Alto, the CLC provides students with the opportunity to provide direct legal services to low-income residents, while thinking critically about the role of lawyers and lawyering in addressing the problems of America's so-called "working poor." The Clinic's practice is in four areas: (1) housing (eviction defense and Section 8 termination); (2) wage and hour and related workers' rights; (3) social security and disability benefits; and (4) criminal record expungement. Each student handles his or her own caseload, which is comprised of cases matters in all of the practice areas. The practice areas are selected and designed to lie at the intersection where the community's unmet legal needs and students' learning needs correspond. The clinic's docket is fundamentally a trial docket. Students have first-chair responsibility for their cases, and perform all of the lawyering tasks necessary to advance their clients' interests, including interviewing, counseling, negotiation, fact investigation, legal research, and representation in the court and agency settings that hear the clients' cases. Skills emphasized include those trial lawyering skills, as well as time management and developing client-centered lawyering practices. Students may also have the chance to participate in outreach or policy-level projects, such as representing the clinic on a state or regional committee on a substantive issue, doing community education workshops at sites around the Peninsula, and/or legislative research and advocacy. In the clinic seminar and in regular supervision, students are encouraged to interrogate the effectiveness of the legal system at delivering "justice" for their clients and to explore creative ways that legal knowledge can be deployed to attack the social problems attendant to low wages, substandard and unstable housing, and other features of low-income life in Silicon Valley. Special Instructions: General Structure of Clinical Courses -- The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third over the course of the quarter each clinic student (with the exception of those enrolled in the Criminal Prosecution Clinic) is required to prepare for and attend a few inter-clinic group sessions. Students will be awarded three separate grades for their clinical quarter, each reflecting four units. The three grades are broken into the following categories: clinical practice; clinical methods; and clinical coursework. Grading is pursuant to the H/P system. Enrollment in a clinic is binding; once selected into a clinic to which he or she has applied, a student may not later drop the course except in limited and exceptional cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the

LAW 902C. Community Law Clinic: Clinical Coursework. 4 Units.
The CLC is the closest thing to a general legal services office among Stanford's clinical offerings. Based in East Palo Alto, the CLC provides students with the opportunity to provide direct legal services to low-income residents, while thinking critically about the role of lawyers and lawyering in addressing the problems of America's so-called "working poor." The Clinic's practice is in four areas: (1) housing (eviction defense and Section 8 termination); (2) wage and hour and related workers' rights; (3) social security and disability benefits; and (4) criminal record expungement. Each student handles his or her own caseload, which is comprised of cases matters in all of the practice areas. The practice areas are selected and designed to lie at the intersection where the community's unmet legal needs and students' learning needs correspond. The clinic's docket is fundamentally a trial docket. Students have first-chair responsibility for their cases, and perform all of the lawyering tasks necessary to advance their clients' interests, including interviewing, counseling, negotiation, fact investigation, legal research, and representation in the court and agency settings that hear the clients' cases. Skills emphasized include those trial lawyering skills, as well as time management and developing client-centered lawyering practices. Students may also have the chance to participate in outreach or policy-level projects, such as representing the clinic on a state or regional committee on a substantive issue, doing community education workshops at sites around the Peninsula, and/or legislative research and advocacy. In the clinic seminar and in regular supervision, students are encouraged to interrogate the effectiveness of the legal system at delivering "justice" for their clients and to explore creative ways that legal knowledge can be deployed to attack the social problems attendant to low wages, substandard and unstable housing, and other features of low-income life in Silicon Valley. Special Instructions: General Structure of Clinical Courses -- The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third over the course of the quarter each clinic student (with the exception of those enrolled in the Criminal Prosecution Clinic) is required to prepare for and attend a few inter-clinic group sessions. Students will be awarded three separate grades for their clinical quarter, each reflecting four units. The three grades are broken into the following categories: clinical practice; clinical methods; and clinical coursework. Grading is pursuant to the H/P system. Enrollment in a clinic is binding; once selected into a clinic to which he or she has applied, a student may not later drop the course except in limited and exceptional cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the

LAW 904. Advanced Criminal Defense Clinic. 2-7 Units.
Advanced clinic allows students who have taken the Criminal Defense Clinic to continue working on cases. Participation in case rounds is required. Advanced clinic may be taken for 2-7 units. Students may not enroll in any clinic (basic or advanced) which would result in them earning more than 27 clinical units during their law school career. Students must have taken Criminal Defense Clinic (Law 904A,B,C). Elements used in grading: Class participation, attendance, written assignments and case work. Instructor permission required.

LAW 904A. Criminal Defense Clinic: Clinical Practice. 4 Units.
Students in the Criminal Defense Clinic represent local residents in a wide range of misdemeanor cases in Santa Clara and San Mateo counties. Students are California Bar Certified and thus appear in court and argue cases with faculty standing by. Students take the lead role in all aspects of case development, including interviewing clients and witnesses, investigating facts, developing case strategy, negotiating with prosecutors, drafting and arguing motions, and examining law enforcement and other witnesses. Common charges include drug use and possession, assault, theft, and vandalism. While students have primary responsibility for all aspects of their cases, all work is closely supervised by experienced faculty. The Criminal Defense Clinic is an intensive, fast-paced, and demanding program of education and practical skills, taught through introductory training and ongoing workshops and skills practicums. The Clinic also addresses broader systemic issues such as implicit bias in the legal system, immigration consequences, economic disparities, and addiction. The goal of the Clinic is to train students how to conduct a criminal case while engaging in thoughtful reflection and providing holistic representation. The Clinic's broader goal is to provide lawyering skills and habits of mind transferrable to any student's chosen field of practice. While the work is often challenging and sometimes heartbreaking, it offers students a unique opportunity to put their skills, intellect, and compassion to use by serving people in a moment of great need. The emotional challenges of the Clinic's work are addressed through an integrated self-care curriculum. Special Instructions: General Structure of Clinical Courses - - The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office or other locations as directed during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter each clinic student (with the exception of those enrolled in the Criminal Prosecution Clinic) is required to prepare for and attend a few inter-clinic group sessions. Students will be awarded three separate grades for their clinical quarter, each reflecting four units. The three grades are broken into the following categories: clinical practice; clinical methods; and clinical coursework. Grading is pursuant to the H/P system. Enrollment in a clinic is binding; once selected into a clinic to which he or she has applied, a student may not later drop the course except in limited and exceptional cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the clinic policy document posted on the SLS website. Students may not enroll in any clinic (full-time or advanced) that would result in them earning more than 27 clinical units during their law school career. The rules described here do not apply to advanced clinics for students who are continuing with a clinic in which they were

LAW 904B. Criminal Defense Clinic: Clinical Methods. 4 Units.
Students in the Criminal Defense Clinic represent local residents in a wide range of misdemeanor cases in Santa Clara and San Mateo counties. Students are California Bar Certified and thus appear in court and argue cases with faculty standing by. Students take the lead role in all aspects of case development, including interviewing clients and witnesses, investigating facts, developing case strategy, negotiating with prosecutors, drafting and arguing motions, and examining law enforcement and other witnesses. Common charges include drug use and possession, assault, theft, and vandalism. While students have primary responsibility for all aspects of their cases, all work is closely supervised by experienced faculty. The Criminal Defense Clinic is an intensive, fast-paced, and demanding program of education and practical skills, taught through introductory training and ongoing workshops and skills practicums. The Clinic also addresses broader systemic issues such as implicit bias in the legal system, immigration consequences, economic disparities, and addiction. The goal of the Clinic is to train students how to conduct a criminal case while engaging in thoughtful reflection and providing holistic representation. The Clinic's broader goal is to provide lawyering skills and habits of mind transferrable to any student's chosen field of practice. While the work is often challenging and sometimes heartbreaking, it offers students a unique opportunity to put their skills, intellect, and compassion to use by serving people in a moment of great need. The emotional challenges of the Clinic's work are addressed through an integrated self-care curriculum. Special Instructions: General Structure of Clinical Courses - - The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office or other locations as directed during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter each clinic student (with the exception of those enrolled in the Criminal Prosecution Clinic) is required to prepare for and attend a few inter-clinic group sessions. Students will be awarded three separate grades for their clinical quarter, each reflecting four units. The three grades are broken into the following categories: clinical practice; clinical methods; and clinical coursework. Grading is pursuant to the H/P system. Enrollment in a clinic is binding; once selected into a clinic to which he or she has applied, a student may not later drop the course except in limited and exceptional cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the clinic policy document posted on the SLS website. Students may not enroll in any clinic (full-time or advanced) that would result in them earning more than 27 clinical units during their law school career. The rules described here do not apply to advanced clinics for students who are continuing with a clinic in which they were

LAW 904C. Criminal Defense Clinic: Clinical Coursework. 4 Units. Students in the Criminal Defense Clinic represent local residents in a wide range of misdemeanor cases in Santa Clara and San Mateo counties. Students are California Bar Certified and thus appear in court and argue cases with faculty standing by. Students take the lead role in all aspects of case development, including interviewing clients and witnesses, investigating facts, developing case strategy, negotiating with prosecutors, drafting and arguing motions, and examining law enforcement and other witnesses. Common charges include drug use and possession, assault, theft, and vandalism. While students have primary responsibility for all aspects of their cases, all work is closely supervised by experienced faculty. The Criminal Defense Clinic is an intensive, fast-paced, and demanding program of education and practical skills, taught through introductory training and ongoing workshops and skills practicums. The Clinic also addresses broader systemic issues such as implicit bias in the legal system, immigration consequences, economic disparities, and addiction. The goal of the Clinic is to train students how to conduct a criminal case while engaging in thoughtful reflection and providing holistic representation. The Clinic's broader goal is to provide lawyering skills and habits of mind transferrable to any student's chosen field of practice. While the work is often challenging and sometimes heartbreaking, it offers students a unique opportunity to put their skills, intellect, and compassion to use by serving people in a moment of great need. The emotional challenges of the Clinic's work are addressed through an integrated self-care curriculum. Special Instructions: General Structure of Clinical Courses - - The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office or other locations as directed during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter each clinic student (with the exception of those enrolled in the Criminal Prosecution Clinic) is required to prepare for and attend a few inter-clinic group sessions. Students will be awarded three separate grades for their clinical quarter, each reflecting four units. The three grades are broken into the following categories: clinical practice; clinical methods; and clinical coursework. Grading is pursuant to the H/P system. Enrollment in a clinic is binding; once selected into a clinic to which he or she has applied, a student may not later drop the course except in limited and exceptional cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the clinic policy document posted on the SLS website. Students may not enroll in any clinic (full-time or advanced) that would result in them earning more than 27 clinical units during their law school career. The rules described here do not apply to advanced clinics for students who are continuing with a clinic in which they were

LAW 906A. Criminal Prosecution Clinic: Clinical Practice. 4 Units. The six students enrolled in the Criminal Prosecution Clinic advocate before the San Jose Superior Court under the guidance of Santa Clara County prosecutors. Students formulate case strategy, identify and interview witnesses, and conduct evidentiary motions, preliminary hearings, and occasional nonjury trials. The cases concern thefts, burglaries, assaults, weapons possession, drunk driving, drug distribution, and a range of other crimes. Students offer testimony by police officers, crime victims, and other witnesses and cross-examine defense witnesses, including those defendants who take the stand. Clinic students spend at least four full days a week -- Mondays, Tuesdays, Thursdays, and Fridays -- at the D.A.'s office or in court. There generally will be two class sessions each week: a three-hour on-campus class on Wednesday mornings and a Tuesday lunch seminar at the D.A.'s office. Toward the beginning of our term, classes focus on skills training, including direct and cross-examination, admission of physical evidence, making and answering objections, and argument. Toward the end of the term our classroom focus shifts to an examination and critique of the local mechanisms of criminal justice. Topics include the impact of race, gender, and class on the quality of justice; the institutional strengths and weaknesses of the actors in the system; prison conditions and prison reform; and the ethical issues that confront prosecutors and defense lawyers. Students typically tour the Santa Clara County crime lab, Solano State Prison, FCI-Dublin (a federal women's prison), and the Chaderjian Youth Correctional Facility in Stockton and have the option to spend an evening on a police ride-along. Students must submit regular written reflections on their experiences in and observations of the local justice system. Their assigned cases often will demand written court filings. During most weeks students will meet one-on-one with the faculty supervisor. Evidence is a prerequisite. Courses in criminal procedure (investigation) and trial advocacy are strongly encouraged. Students will be awarded three separate grades, each reflecting four credits, for clinical practice, clinical methods, and clinical coursework. Elements used in grading include class attendance and participation, writing assignments, case preparation, and courtroom presentations and advocacy. Class attendance is mandatory. Grading is on the H/P system. Special Instructions: General Structure of Clinical Courses: All of the Law School's clinical courses, other than advanced clinics, are offered fulltime for twelve credits. This format allows students to immerse themselves in the professional experience without having to balance clinical projects with other classes, exams, and papers. Students enrolled in a clinic may not enroll in any other class, seminar, directed research, or other credit-yielding activity within the Law School or University during their clinical quarter. Nor are they allowed to serve as teaching assistants expected to attend a daytime class regularly. There is a limited exception for joint-degree students who are required to take specific courses each quarter and who would be foreclosed from taking a clinic unless allowed to co-register. These exceptions are approved case by case. The clinical quarter begins on the first day of classes and runs through the final day of exam period. Students should not plan personal travel during the Monday-to-Friday workweek without permission from onsite and faculty supervisors. Students are expected to be available by email or cellphone during workday hours Monday through Friday and are expected to devote at least thirty-five hours per week to various facets of this work. In some weeks casework may demand much longer hours. Enrollment in a clinic is binding: Once a student has applied to and been selected by a clinic, the student may not drop the course except in rare cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the clinic policy document posted on the SLS website. Students may not enroll in any clinic (fulltime or advanced) that would result in their earning more than twenty-seven clinical credits during their law school careers. For more general information about clinic enrollment and operations, please see the clinic policy document posted on the SLS website. Please note that due to the present pandemic, some activities of this clinic will require adjustment and perhaps cancellation in the Winter 2021 term. Prison visits and police ride-alongs may prove impossible, and many court hearings may take place remotely. Some hearings, however, are likely to proceed in Superior Court in San Jose, and some aspects of supervision and case preparation are likely to take place

LAW 906B. Criminal Prosecution Clinic: Clinical Methods. 4 Units. The six students enrolled in the Criminal Prosecution Clinic advocate before the San Jose Superior Court under the guidance of Santa Clara County prosecutors. Students formulate case strategy, identify and interview witnesses, and conduct evidentiary motions, preliminary hearings, and occasional nonjury trials. The cases concern thefts, burglaries, assaults, weapons possession, drunk driving, drug distribution, and a range of other crimes. Students offer testimony by police officers, crime victims, and other witnesses and cross-examine defense witnesses, including those defendants who take the stand. Clinic students spend at least four full days a week -- Mondays, Tuesdays, Thursdays, and Fridays -- at the D.A.'s office or in court. There generally will be two class sessions each week: a three-hour on-campus class on Wednesday mornings and a Tuesday lunch seminar at the D.A.'s office. Toward the beginning of our term, classes focus on skills training, including direct and cross-examination, admission of physical evidence, making and answering objections, and argument. Toward the end of the term our classroom focus shifts to an examination and critique of the local mechanisms of criminal justice. Topics include the impact of race, gender, and class on the quality of justice; the institutional strengths and weaknesses of the actors in the system; prison conditions and prison reform; and the ethical issues that confront prosecutors and defense lawyers. Students typically tour the Santa Clara County crime lab, Solano State Prison, FCI-Dublin (a federal women's prison), and the Chaderjian Youth Correctional Facility in Stockton and have the option to spend an evening on a police ride-along. Students must submit regular written reflections on their experiences in and observations of the local justice system. Their assigned cases often will demand written court filings. During most weeks students will meet one-on-one with the faculty supervisor. Evidence is a prerequisite. Courses in criminal procedure (investigation) and trial advocacy are strongly encouraged. Students will be awarded three separate grades, each reflecting four credits, for clinical practice, clinical methods, and clinical coursework. Elements used in grading include class attendance and participation, writing assignments, case preparation, and courtroom presentations and advocacy. Class attendance is mandatory. Grading is on the H/P system. Special Instructions: General Structure of Clinical Courses: All of the Law School's clinical courses, other than advanced clinics, are offered fulltime for twelve credits. This format allows students to immerse themselves in the professional experience without having to balance clinical projects with other classes, exams, and papers. Students enrolled in a clinic may not enroll in any other class, seminar, directed research, or other credit-yielding activity within the Law School or University during their clinical quarter. Nor are they allowed to serve as teaching assistants expected to attend a daytime class regularly. There is a limited exception for joint-degree students who are required to take specific courses each quarter and who would be foreclosed from taking a clinic unless allowed to co-register. These exceptions are approved case by case. The clinical quarter begins on the first day of classes and runs through the final day of exam period. Students should not plan personal travel during the Monday-to-Friday workweek without permission from onsite and faculty supervisors. Students are expected to be available by email or cellphone during workday hours Monday through Friday and are expected to devote at least thirty-five hours per week to various facets of this work. In some weeks casework may demand much longer hours. Enrollment in a clinic is binding: Once a student has applied to and been selected by a clinic, the student may not drop the course except in rare cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the clinic policy document posted on the SLS website. Students may not enroll in any clinic (fulltime or advanced) that would result in their earning more than twenty-seven clinical credits during their law school careers. For more general information about clinic enrollment and operations, please see the clinic policy document posted on the SLS website. Please note that due to the present pandemic, some activities of this clinic will require adjustment and perhaps cancellation in the Winter 2021 term. Prison visits and police ride-alongs may prove impossible, and many court hearings may take place remotely. Some hearings, however, are likely to proceed in Superior Court in San Jose, and some aspects of supervision and case preparation are likely to take place

LAW 906C. Criminal Prosecution Clinic: Clinical Coursework. 4 Units. The six students enrolled in the Criminal Prosecution Clinic advocate before the San Jose Superior Court under the guidance of Santa Clara County prosecutors. Students formulate case strategy, identify and interview witnesses, and conduct evidentiary motions, preliminary hearings, and occasional nonjury trials. The cases concern thefts, burglaries, assaults, weapons possession, drunk driving, drug distribution, and a range of other crimes. Students offer testimony by police officers, crime victims, and other witnesses and cross-examine defense witnesses, including those defendants who take the stand. Clinic students spend at least four full days a week -- Mondays, Tuesdays, Thursdays, and Fridays -- at the D.A.'s office or in court. There generally will be two class sessions each week: a three-hour on-campus class on Wednesday mornings and a Tuesday lunch seminar at the D.A.'s office. Toward the beginning of our term, classes focus on skills training, including direct and cross-examination, admission of physical evidence, making and answering objections, and argument. Toward the end of the term our classroom focus shifts to an examination and critique of the local mechanisms of criminal justice. Topics include the impact of race, gender, and class on the quality of justice; the institutional strengths and weaknesses of the actors in the system; prison conditions and prison reform; and the ethical issues that confront prosecutors and defense lawyers. Students typically tour the Santa Clara County crime lab, Solano State Prison, FCI-Dublin (a federal women's prison), and the Chaderjian Youth Correctional Facility in Stockton and have the option to spend an evening on a police ride-along. Students must submit regular written reflections on their experiences in and observations of the local justice system. Their assigned cases often will demand written court filings. During most weeks students will meet one-on-one with the faculty supervisor. Evidence is a prerequisite. Courses in criminal procedure (investigation) and trial advocacy are strongly encouraged. Students will be awarded three separate grades, each reflecting four credits, for clinical practice, clinical methods, and clinical coursework. Elements used in grading include class attendance and participation, writing assignments, case preparation, and courtroom presentations and advocacy. Class attendance is mandatory. Grading is on the H/P system. Special Instructions: General Structure of Clinical Courses: All of the Law School's clinical courses, other than advanced clinics, are offered fulltime for twelve credits. This format allows students to immerse themselves in the professional experience without having to balance clinical projects with other classes, exams, and papers. Students enrolled in a clinic may not enroll in any other class, seminar, directed research, or other credit-yielding activity within the Law School or University during their clinical quarter. Nor are they allowed to serve as teaching assistants expected to attend a daytime class regularly. There is a limited exception for joint-degree students who are required to take specific courses each quarter and who would be foreclosed from taking a clinic unless allowed to co-register. These exceptions are approved case by case. The clinical quarter begins on the first day of classes and runs through the final day of exam period. Students should not plan personal travel during the Monday-to-Friday workweek without permission from onsite and faculty supervisors. Students are expected to be available by email or cellphone during workday hours Monday through Friday and are expected to devote at least thirty-five hours per week to various facets of this work. In some weeks casework may demand much longer hours. Enrollment in a clinic is binding: Once a student has applied to and been selected by a clinic, the student may not drop the course except in rare cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the clinic policy document posted on the SLS website. Students may not enroll in any clinic (fulltime or advanced) that would result in their earning more than twenty-seven clinical credits during their law school careers. For more general information about clinic enrollment and operations, please see the clinic policy document posted on the SLS website. Please note that due to the present pandemic, some activities of this clinic will require adjustment and perhaps cancellation in the Winter 2021 term. Prison visits and police ride-alongs may prove impossible, and many court hearings may take place remotely. Some hearings, however, are likely to proceed in Superior Court in San Jose, and some aspects of supervision and case preparation are likely to take place

LAW 908. Advanced Environmental Law Clinic. 2-7 Units.
The Advanced Environmental Law Clinic provides students who have already taken the Environmental Law Clinic the opportunity to continue intense individual project work. Advanced students often work on matters they worked on as full-time students, but they also have the chance to work on new matters and develop new skills. Advanced students work closely with supervising faculty on their designated projects and are expected to take increasing responsibility for managing their work and representing clients. In addition, advanced students often serve as mentors to less experienced full-time students and thereby receive training in basic team building and supervision. Advanced students may arrange to receive between two and seven units. No student may receive more than 27 total clinical units during the course of the student's law school career. Elements used in grading: TBA.

LAW 908A. Environmental Law Clinic: Clinical Practice. 4 Units.
Students enrolled in the Clinic provide legal assistance to national, regional and grassroots non-profit organizations on a variety of environmental issues, with a focus on complex natural resource conservation and biodiversity matters at the interface of law, science and policy. Working under the direct supervision of practicing environmental attorneys, Clinic students help screen new matters and potential clients; formulate strategies; research and develop factual and legal issues; and prosecute administrative and litigation proceedings. During the term, students may meet with clients, opposing counsel or agency decision-makers; review and prepare administrative records; develop expert testimony; draft comment letters, petitions, pleading or briefs; and/or attend and present arguments in administrative and court hearings.
In regular one-on-one meetings with supervising faculty, there is a heavy emphasis on learning how to write persuasively and present oral arguments. Indeed, in any given quarter, our students typically prepare a mix of state and federal, and trial and appellate, court pleadings, and because all of our hearings during the academic year are conducted by students, many students also have the opportunity to present oral argument in front of one or more judges. In addition, students participate in a regular seminar where we examine strategic, ethical and substantive issues arising out of the Clinic's work. The Clinic is a particularly good place to learn how to conduct effective legal research, marshal facts in support of legal arguments, and, above all, write well. We practice at all levels of state and federal court and before many local, state and federal administrative agencies. Our work involves extensive motions practice and brief writing, and often involves administrative petitions and policy papers. Our work is inherently cross-disciplinary. No prior environmental experience or background is necessary, but an interest in learning about environmental and natural resources law is important.
Special Instructions: General Structure of Clinical Courses - - The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter each clinic student (with the exception of those enrolled in the Criminal Prosecution Clinic) is required to prepare for and attend a few inter-clinic group sessions. Students will be awarded three separate grades for their clinical quarter, each reflecting four units. The three grades are broken into the following categories: clinical practice; clinical methods; and clinical coursework. Grading is pursuant to the H/P system. Enrollment in a clinic is binding; once selected into a clinic to which he or she has applied, a student may not later drop the course except in limited and exceptional cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the

LAW 908B. Environmental Law Clinic: Clinical Methods. 4 Units. Students enrolled in the Clinic provide legal assistance to national, regional and grassroots non-profit organizations on a variety of environmental issues, with a focus on complex natural resource conservation and biodiversity matters at the interface of law, science and policy. Working under the direct supervision of practicing environmental attorneys, Clinic students help screen new matters and potential clients; formulate strategies; research and develop factual and legal issues; and prosecute administrative and litigation proceedings. During the term, students may meet with clients, opposing counsel or agency decision-makers; review and prepare administrative records; develop expert testimony; draft comment letters, petitions, pleading or briefs; and/or attend and present arguments in administrative and court hearings. In regular one-on-one meetings with supervising faculty, there is a heavy emphasis on learning how to write persuasively and present oral arguments. Indeed, in any given quarter, our students typically prepare a mix of state and federal, and trial and appellate, court pleadings, and because all of our hearings during the academic year are conducted by students, many students also have the opportunity to present oral argument in front of one or more judges. In addition, students participate in a regular seminar where we examine strategic, ethical and substantive issues arising out of the Clinic's work. The Clinic is a particularly good place to learn how to conduct effective legal research, marshal facts in support of legal arguments, and, above all, write well. We practice at all levels of state and federal court and before many local, state and federal administrative agencies. Our work involves extensive motions practice and brief writing, and often involves administrative petitions and policy papers. Our work is inherently cross-disciplinary. No prior environmental experience or background is necessary, but an interest in learning about environmental and natural resources law is important. Special Instructions: General Structure of Clinical Courses - - The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter each clinic student (with the exception of those enrolled in the Criminal Prosecution Clinic) is required to prepare for and attend a few inter-clinic group sessions. Students will be awarded three separate grades for their clinical quarter, each reflecting four units. The three grades are broken into the following categories: clinical practice; clinical methods; and clinical coursework. Grading is pursuant to the H/P system. Enrollment in a clinic is binding; once selected into a clinic to which he or she has applied, a student may not later drop the course except in limited and exceptional cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the

LAW 908C. Environmental Law Clinic: Clinical Coursework. 4 Units. Students enrolled in the Clinic provide legal assistance to national, regional and grassroots non-profit organizations on a variety of environmental issues, with a focus on complex natural resource conservation and biodiversity matters at the interface of law, science and policy. Working under the direct supervision of practicing environmental attorneys, Clinic students help screen new matters and potential clients; formulate strategies; research and develop factual and legal issues; and prosecute administrative and litigation proceedings. During the term, students may meet with clients, opposing counsel or agency decision-makers; review and prepare administrative records; develop expert testimony; draft comment letters, petitions, pleading or briefs; and/or attend and present arguments in administrative and court hearings. In regular one-on-one meetings with supervising faculty, there is a heavy emphasis on learning how to write persuasively and present oral arguments. Indeed, in any given quarter, our students typically prepare a mix of state and federal, and trial and appellate, court pleadings, and because all of our hearings during the academic year are conducted by students, many students also have the opportunity to present oral argument in front of one or more judges. In addition, students participate in a regular seminar where we examine strategic, ethical and substantive issues arising out of the Clinic's work. The Clinic is a particularly good place to learn how to conduct effective legal research, marshal facts in support of legal arguments, and, above all, write well. We practice at all levels of state and federal court and before many local, state and federal administrative agencies. Our work involves extensive motions practice and brief writing, and often involves administrative petitions and policy papers. Our work is inherently cross-disciplinary. No prior environmental experience or background is necessary, but an interest in learning about environmental and natural resources law is important. Special Instructions: General Structure of Clinical Courses - - The Law School's clinical courses are offered on a full-time basis for 12 credits. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter each clinic student (with the exception of those enrolled in the Criminal Prosecution Clinic) is required to prepare for and attend a few inter-clinic group sessions. Students will be awarded three separate grades for their clinical quarter, each reflecting four credits. The three grades are broken into the following categories: clinical practice; clinical methods; and clinical coursework. Grading is pursuant to the H/P system. Enrollment in a clinic is binding; once selected into a clinic to which he or she has applied, a student may not later drop the course except in limited and exceptional cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the

LAW 910. Advanced Immigrants' Rights Clinic. 2-7 Units.
The Immigrants' Rights Advanced Clinic offers the opportunity for students who have already successfully completed the Immigrants' Rights Clinic to pursue: a specific immigrants' rights advocacy project; advanced individual client representation; and/or working with the clinic director to provide direction/guidance to those enrolled in the Clinic for the first time. All advanced Clinic projects will be jointly designed by the director and the advanced student. Advanced students providing guidance/direction to first-time students will receive additional training on providing supervision. Special instructions: Advanced students are expected to attend the case-rounds portion of the weekly seminar, and to participate as needed in the lecture/discussion portion of the seminar. Advanced students may arrange with the instructor to receive between two and seven units. No student may receive more than 27 overall clinical units, however, during the course of the student's law school career. Elements used in grading: Attendance and participation in class, project work, writing assignments, and case preparation.

LAW 910A. Immigrants' Rights Clinic: Clinical Practice. 4 Units.
The Immigrants' Rights Clinic offers students the opportunity to represent immigrants before the San Francisco Immigration Court, the Board of Immigration Appeals, the federal district courts and the Ninth Circuit Court of Appeals. Students in the clinic conduct mini-trials in immigration court, write motions and appellate briefs, interview clients and witnesses, investigate facts, develop case strategy, and argue cases. The Clinic represents immigrants with past criminal convictions, asylum seekers, and survivors of domestic violence. All clinic students also work on a variety of impact litigation and advocacy projects to address federal government immigration enforcement practices at the national and local levels, including impact litigation to challenge prolonged immigration detention, local and state advocacy to limit enforcement activity by police, the creation of model pleadings and know your rights materials for immigrant detainees, and advocacy with the federal agencies that regulate immigration. No prior substantive experience or background in immigration or immigrants' rights work is necessary. Special Instructions: General Structure of Clinical Courses - - The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter each clinic student (with the exception of those enrolled in the Criminal Prosecution Clinic) is required to prepare for and attend a few inter-clinic group sessions. Students will be awarded three separate grades for their clinical quarter, each reflecting four units. The three grades are broken into the following categories: clinical practice; clinical methods; and clinical coursework. Grading is pursuant to the H/P system. Enrollment in a clinic is binding; once selected into a clinic to which he or she has applied, a student may not later drop the course except in limited and exceptional cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the clinic policy document posted on the SLS website. Students may not enroll in any clinic (full-time or advanced) which would result in them earning more than 27 clinical units during their law school career. The rules described here do not apply to advanced clinics for students who are continuing with a clinic in which they were previously enrolled. For information about advanced clinics, please see the course descriptions for those courses. For more information about clinic enrollment and operations, please see the clinic policy document posted on the SLS website. Elements used in grading: Attendance and participation in class, case and project work and writing assignments. There are no prerequisites.

LAW 910B. Immigrants' Rights Clinic: Clinical Methods. 4 Units. The Immigrants' Rights Clinic offers students the opportunity to represent immigrants before the San Francisco Immigration Court, the Board of Immigration Appeals, the federal district courts and the Ninth Circuit Court of Appeals. Students in the clinic conduct mini-trials in immigration court, write motions and appellate briefs, interview clients and witnesses, investigate facts, develop case strategy, and argue cases. The Clinic represents immigrants with past criminal convictions, asylum seekers, and survivors of domestic violence. All clinic students also work on a variety of impact litigation and advocacy projects to address federal government immigration enforcement practices at the national and local levels, including impact litigation to challenge prolonged immigration detention, local and state advocacy to limit enforcement activity by police, the creation of model pleadings and know your rights materials for immigrant detainees, and advocacy with the federal agencies that regulate immigration. No prior substantive experience or background in immigration or immigrants' rights work is necessary. Special Instructions: General Structure of Clinical Courses - - The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter each clinic student (with the exception of those enrolled in the Criminal Prosecution Clinic) is required to prepare for and attend a few inter-clinic group sessions. Students will be awarded three separate grades for their clinical quarter, each reflecting four units. The three grades are broken into the following categories: clinical practice; clinical methods; and clinical coursework. Grading is pursuant to the H/P system. Enrollment in a clinic is binding; once selected into a clinic to which he or she has applied, a student may not later drop the course except in limited and exceptional cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the clinic policy document posted on the SLS website. Students may not enroll in any clinic (full-time or advanced) which would result in them earning more than 27 clinical units during their law school career. The rules described here do not apply to advanced clinics for students who are continuing with a clinic in which they were previously enrolled. For information about advanced clinics, please see the course descriptions for those courses. For more information about clinic enrollment and operations, please see the clinic policy document posted on the SLS website. Elements used in grading: Attendance and participation in class, case and project work and writing assignments. There are no prerequisites.

LAW 910C. Immigrants' Rights Clinic: Clinical Coursework. 4 Units. The Immigrants' Rights Clinic offers students the opportunity to represent immigrants before the San Francisco Immigration Court, the Board of Immigration Appeals, the federal district courts and the Ninth Circuit Court of Appeals. Students in the clinic conduct mini-trials in immigration court, write motions and appellate briefs, interview clients and witnesses, investigate facts, develop case strategy, and argue cases. The Clinic represents immigrants with past criminal convictions, asylum seekers, and survivors of domestic violence. All clinic students also work on a variety of impact litigation and advocacy projects to address federal government immigration enforcement practices at the national and local levels, including impact litigation to challenge prolonged immigration detention, local and state advocacy to limit enforcement activity by police, the creation of model pleadings and know your rights materials for immigrant detainees, and advocacy with the federal agencies that regulate immigration. No prior substantive experience or background in immigration or immigrants' rights work is necessary. Special Instructions: General Structure of Clinical Courses - - The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter each clinic student (with the exception of those enrolled in the Criminal Prosecution Clinic) is required to prepare for and attend a few inter-clinic group sessions. Students will be awarded three separate grades for their clinical quarter, each reflecting four units. The three grades are broken into the following categories: clinical practice; clinical methods; and clinical coursework. Grading is pursuant to the H/P system. Enrollment in a clinic is binding; once selected into a clinic to which he or she has applied, a student may not later drop the course except in limited and exceptional cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the clinic policy document posted on the SLS website. Students may not enroll in any clinic (full-time or advanced) which would result in them earning more than 27 clinical units during their law school career. The rules described here do not apply to advanced clinics for students who are continuing with a clinic in which they were previously enrolled. For information about advanced clinics, please see the course descriptions for those courses. For more information about clinic enrollment and operations, please see the clinic policy document posted on the SLS website. Elements used in grading: Attendance and participation in class, case and project work and writing assignments. There are no prerequisites.

LAW 912. Advanced International Human Rights and Conflict Resolution Clinic. 2-7 Units.
The International Human Rights & Conflict Resolution Advanced Clinic offers the opportunity for students who have already successfully completed Clinic quarter to pursue one or more specific projects in conjunction with the Clinic, either independently or in collaboration with colleague(s) enrolled in the regular clinic. Any travel will be strictly contingent on the Advanced Clinical student's availability and the needs of the project. Advanced Clinical students are expected to participate in as much of the regular clinical seminar and seminar simulations as possible given pre-existing scheduling constraints and previous experience. Advanced students may arrange with the instructor to receive between two and seven units. No student may receive more than 27 overall clinical units, however, during the course of the student's law school career. Elements used in grading: Project work, writing assignments, case preparation, attendance and class participation.

LAW 912A. International Human Rights and Conflict Resolution Clinic: Clinical Practice. 4 Units.
In the past half-century, human rights advocates have transformed a marginal utopian ideal into a central element of global discourse and practice. This Clinic gives students the opportunity to work directly with the actors and organizations behind this remarkable development as they navigate the vast challenges faced by human rights advocates and victims. In addition to operating within the human rights framework, students will also have occasion to study and contribute to efforts to resolve situations of tension and ongoing conflict using tools of transitional justice and conflict mitigation. The course aims to help students develop a broad range of multidisciplinary human rights advocacy skills--including factual documentation; litigation before national, regional, and international institutions; community empowerment strategies; and client enfranchisement and representation--through in-class sessions, role play exercises, and engagement in, and critical assessment of, clinical projects in human rights. This Clinic involves both a weekly seminar as well as work directly with clients and partner organizations (i.e. Clinic Projects). Together, these experiences give students the chance to reflect upon a number of foundational questions including: What are the origins of the human rights movement and where is it headed? What does it mean to be a human rights activist? What are the main challenges and dilemmas facing those engaged in rights promotion and defense? How is conflict resolution consistent with human rights advocacy? When and where are these approaches in tension? Students will also be confronted with the ethical and strategic issues that arise in the course of doing human rights work and balancing the often differing agendas of western international nongovernmental organizations (INGOs) and their counterparts in the (frequently non-western) developing world. In some sessions, part of the class will be devoted to presentations by students and clinical rounds in line with greater Mills Legal Clinic model. These presentations will consider one or more issues that arise in the course of students' own engagement in advocacy projects through the Clinic. During the course of the quarter, in addition to their work for their clients and partners, students will also be required to write several short, critical reflection papers or thought pieces (2-4 pages, double-spaced, or 500-1,000 words) on the readings, their Clinic Project(s), and/or human rights events on campus. Special Instructions: General Structure of Clinical Courses. The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. As a general rule, students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work/projects (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter each clinic student (with the exception of those enrolled in

LAW 912B. International Human Rights and Conflict Resolution Clinic: Clinical Methods. 4 Units.

In the past half-century, human rights advocates have transformed a marginal utopian ideal into a central element of global discourse and practice. This Clinic gives students the opportunity to work directly with the actors and organizations behind this remarkable development as they navigate the vast challenges faced by human rights advocates and victims. In addition to operating within the human rights framework, students will also have occasion to study and contribute to efforts to resolve situations of tension and ongoing conflict using tools of transitional justice and conflict mitigation. The course aims to help students develop a broad range of multidisciplinary human rights advocacy skills--including factual documentation; litigation before national, regional, and international institutions; community empowerment strategies; and client enfranchisement and representation--through in-class sessions, role play exercises, and engagement in, and critical assessment of, clinical projects in human rights. This Clinic involves both a weekly seminar as well as work directly with clients and partner organizations (i.e. Clinic Projects). Together, these experiences give students the chance to reflect upon a number of foundational questions including: What are the origins of the human rights movement and where is it headed? What does it mean to be a human rights activist? What are the main challenges and dilemmas facing those engaged in rights promotion and defense? How is conflict resolution consistent with human rights advocacy? When and where are these approaches in tension? Students will also be confronted with the ethical and strategic issues that arise in the course of doing human rights work and balancing the often differing agendas of western international nongovernmental organizations (INGOs) and their counterparts in the (frequently non-western) developing world. In some sessions, part of the class will be devoted to presentations by students and clinical rounds in line with greater Mills Legal Clinic model. These presentations will consider one or more issues that arise in the course of students' own engagement in advocacy projects through the Clinic. During the course of the quarter, in addition to their work for their clients and partners, students will also be required to write several short, critical reflection papers or thought pieces (2-4 pages, double-spaced, or 500-1,000 words) on the readings, their Clinic Project(s), and/or human rights events on campus. Special Instructions: General Structure of Clinical Courses. The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. As a general rule, students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work/projects (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter each clinic student (with the exception of those enrolled in

LAW 912C. International Human Rights and Conflict Resolution Clinic: Clinical Coursework. 4 Units.

In the past half-century, human rights advocates have transformed a marginal utopian ideal into a central element of global discourse and practice. This Clinic gives students the opportunity to work directly with the actors and organizations behind this remarkable development as they navigate the vast challenges faced by human rights advocates and victims. In addition to operating within the human rights framework, students will also have occasion to study and contribute to efforts to resolve situations of tension and ongoing conflict using tools of transitional justice and conflict mitigation. The course aims to help students develop a broad range of multidisciplinary human rights advocacy skills--including factual documentation; litigation before national, regional, and international institutions; community empowerment strategies; and client enfranchisement and representation--through in-class sessions, role play exercises, and engagement in, and critical assessment of, clinical projects in human rights. This Clinic involves both a weekly seminar as well as work directly with clients and partner organizations (i.e. Clinic Projects). Together, these experiences give students the chance to reflect upon a number of foundational questions including: What are the origins of the human rights movement and where is it headed? What does it mean to be a human rights activist? What are the main challenges and dilemmas facing those engaged in rights promotion and defense? How is conflict resolution consistent with human rights advocacy? When and where are these approaches in tension? Students will also be confronted with the ethical and strategic issues that arise in the course of doing human rights work and balancing the often differing agendas of western international nongovernmental organizations (INGOs) and their counterparts in the (frequently non-western) developing world. In some sessions, part of the class will be devoted to presentations by students and clinical rounds in line with greater Mills Legal Clinic model. These presentations will consider one or more issues that arise in the course of students' own engagement in advocacy projects through the Clinic. During the course of the quarter, in addition to their work for their clients and partners, students will also be required to write several short, critical reflection papers or thought pieces (2-4 pages, double-spaced, or 500-1,000 words) on the readings, their Clinic Project(s), and/or human rights events on campus. Special Instructions: General Structure of Clinical Courses. The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. As a general rule, students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work/projects (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter each clinic student (with the exception of those enrolled in

LAW 914. Advanced Juelsgaard Intellectual Property and Innovation Clinic. 2-7 Units.
Advanced clinic allows students who have taken the Advanced Juelsgaard Intellectual Property and Innovation Clinic to continue working on cases. Advanced clinic may be taken for 2-7 units. Students may not enroll in any clinic (basic or advanced) which would result in them earning more than 27 clinical units during their law school career. Elements used in grading: TBA.

LAW 914A. Juelsgaard Intellectual Property and Innovation Clinic: Clinical Practice. 4 Units.
The Juelsgaard Intellectual Property and Innovation Clinic provides students the opportunity to understand and advocate for sound innovation policies. Students in the clinic will help shape the course and outcome of significant legal and policy debates before courts, legislators, regulatory bodies, and other policy makers. Our work focuses on the relationship between law, regulation and innovation in areas ranging from biotechnology to information technology, pharmaceuticals, clean technology, and the creation and distribution of information. Students will represent a variety of NGOs and non-profit entities and, in certain cases, groups or associations of innovators, entrepreneurs, technology users or consumers, economists, technologists, legal academics, and the like, and occasionally individual inventors, start-ups, journalists, or researchers. Students will address their client's complex issues through tools that may include amicus briefs; comments or testimony in rulemaking and regulatory proceedings (i.e., DMCA exemption requests, comments to OSTP on issues such as open access, privacy or open data, comments to the FTC as part of IP and innovation hearings and reports, comments to the PTO or FDA, etc.); comments or testimony on proposed legislation; and whitepapers or other "best practices" documents to encourage sensible and balanced legal approaches to innovation and creativity. Our policy advocacy will often involve intertwined factual, technological, business, economic, political and public relations considerations along with the substantive legal issues. Students in the clinic may be called upon to collaborate with technologists, researchers, doctors, economists, social scientists, industry experts, and others to develop and articulate the appropriate policy advocacy for their clients. The clinic seminar will focus on student-led workshops regarding client projects, and on engaging with current thinking around innovation, innovation economics and the impact of IP, antitrust, and other law and regulation on innovation. We will explore the process of policy advocacy, including various policy levers, the types of tools available to advocates and the strategies and tactics that may be employed, and will consider and critique a variety of case studies of previous advocacy, situating them in the larger context in which these efforts occurred. Students will critically examine the role of lawyers advocating for the public interest and for sound and sensible innovation policy outcomes and bring those lessons to bear on their own clinic work. A background in technology may be useful in some cases but is not necessary to a successful experience in the clinic. - - Special Instructions: General Structure of Clinical Courses - - The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter

LAW 914B. Juelsgaard Intellectual Property and Innovation Clinic: Clinical Methods. 4 Units.

The Juelsgaard Intellectual Property and Innovation Clinic provides students the opportunity to understand and advocate for sound innovation policies. Students in the clinic will help shape the course and outcome of significant legal and policy debates before courts, legislators, regulatory bodies, and other policy makers. Our work focuses on the relationship between law, regulation and innovation in areas ranging from biotechnology to information technology, pharmaceuticals, clean technology, and the creation and distribution of information. Students will represent a variety of NGOs and non-profit entities and, in certain cases, groups or associations of innovators, entrepreneurs, technology users or consumers, economists, technologists, legal academics, and the like, and occasionally individual inventors, start-ups, journalists, or researchers. Students will address their client's complex issues through tools that may include amicus briefs; comments or testimony in rulemaking and regulatory proceedings (i.e., DMCA exemption requests, comments to OSTP on issues such as open access, privacy or open data, comments to the FTC as part of IP and innovation hearings and reports, comments to the PTO or FDA, etc.); comments or testimony on proposed legislation; and whitepapers or other "best practices" documents to encourage sensible and balanced legal approaches to innovation and creativity. Our policy advocacy will often involve intertwined factual, technological, business, economic, political and public relations considerations along with the substantive legal issues. Students in the clinic may be called upon to collaborate with technologists, researchers, doctors, economists, social scientists, industry experts, and others to develop and articulate the appropriate policy advocacy for their clients. The clinic seminar will focus on student-led workshops regarding client projects, and on engaging with current thinking around innovation, innovation economics and the impact of IP, antitrust, and other law and regulation on innovation. We will explore the process of policy advocacy, including various policy levers, the types of tools available to advocates and the strategies and tactics that may be employed, and will consider and critique a variety of case studies of previous advocacy, situating them in the larger context in which these efforts occurred. Students will critically examine the role of lawyers advocating for the public interest and for sound and sensible innovation policy outcomes and bring those lessons to bear on their own clinic work. A background in technology may be useful in some cases but is not necessary to a successful experience in the clinic. - - Special Instructions: General Structure of Clinical Courses - - The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter

LAW 914C. Juelsgaard Intellectual Property and Innovation Clinic: Clinical Coursework. 4 Units.

The Juelsgaard Intellectual Property and Innovation Clinic provides students the opportunity to understand and advocate for sound innovation policies. Students in the clinic will help shape the course and outcome of significant legal and policy debates before courts, legislators, regulatory bodies, and other policy makers. Our work focuses on the relationship between law, regulation and innovation in areas ranging from biotechnology to information technology, pharmaceuticals, clean technology, and the creation and distribution of information. Students will represent a variety of NGOs and non-profit entities and, in certain cases, groups or associations of innovators, entrepreneurs, technology users or consumers, economists, technologists, legal academics, and the like, and occasionally individual inventors, start-ups, journalists, or researchers. Students will address their client's complex issues through tools that may include amicus briefs; comments or testimony in rulemaking and regulatory proceedings (i.e., DMCA exemption requests, comments to OSTP on issues such as open access, privacy or open data, comments to the FTC as part of IP and innovation hearings and reports, comments to the PTO or FDA, etc.); comments or testimony on proposed legislation; and whitepapers or other "best practices" documents to encourage sensible and balanced legal approaches to innovation and creativity. Our policy advocacy will often involve intertwined factual, technological, business, economic, political and public relations considerations along with the substantive legal issues. Students in the clinic may be called upon to collaborate with technologists, researchers, doctors, economists, social scientists, industry experts, and others to develop and articulate the appropriate policy advocacy for their clients. The clinic seminar will focus on student-led workshops regarding client projects, and on engaging with current thinking around innovation, innovation economics and the impact of IP, antitrust, and other law and regulation on innovation. We will explore the process of policy advocacy, including various policy levers, the types of tools available to advocates and the strategies and tactics that may be employed, and will consider and critique a variety of case studies of previous advocacy, situating them in the larger context in which these efforts occurred. Students will critically examine the role of lawyers advocating for the public interest and for sound and sensible innovation policy outcomes and bring those lessons to bear on their own clinic work. A background in technology may be useful in some cases but is not necessary to a successful experience in the clinic. - - Special Instructions: General Structure of Clinical Courses - - The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter

LAW 916. Advanced Organizations and Transactions Clinic. 2-7 Units. (Formerly Law 279) Advanced clinic allows students who have taken the Organizations & Transactions Clinic to work on ongoing projects. Advanced students may arrange with the instructor to receive between two and seven units. No student may receive more than 27 overall clinical credits, however, during the course of the student's law school career. Students must have taken Organizations & Transactions Clinic (Law 272). Elements used in grading: Written assignments and client interactions.

LAW 916A. Organizations and Transactions Clinic: Clinical Practice. 4 Units.
The O&T Clinic is Stanford's only corporate experiential course involving representation of real clients. We're designed for both students interested in M&A, capital markets, emerging company, tech transactions or other corporate work, and those wanting to explore a non-litigation, advisory-oriented practice. Prior experience in business or corporate law is welcome but certainly not necessary. Students represent multiple clients during the term. Our clients are all established nonprofit corporations. Most generate annual revenues in the range of $1 - $100 million, and some are larger. These clients have boards of directors, run complex programs, own brands and other intellectual property, and engage in a range of transactions, yet are small enough that our contact is almost always the CEO, CFO, general counsel, or other senior executive. O&T client engagements provide students with opportunities to assess facts; develop advice; read and write contracts, corporate governance materials, emails and other client communications; lead meetings and calls with clients; collaborate with colleagues; and manage projects. Our practice is document-intensive and service-oriented; we focus on clear communication and crisp execution. The course includes a class that generally meets twice a week. Class meetings center on student-led workshops regarding client projects and on orientation to corporate practice, including discussion of core commercial relationships such as acquisition, credit, and licensing, and practice skills such as transaction planning and management. Guests often join us; those are occasions for informal conversations with general counsels and law firm partners. Information about prior projects is available from the instructors and on the SLS website. Special Instructions: General Structure of Clinical Courses - - The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter each clinic student (with the exception of those enrolled in the Criminal Prosecution Clinic) is required to prepare for and attend a few inter-clinic group sessions. Students will be awarded three separate grades for their clinical quarter, each reflecting four units. The three grades are broken into the following categories: clinical practice; clinical methods; and clinical coursework. Grading is pursuant to the H/P system. Enrollment in a clinic is binding; once selected into a clinic to which he or she has applied, a student may not later drop the course except in limited and exceptional cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the clinic policy document posted on the SLS website. Students may not enroll in any clinic (full-time or advanced) which would result in them earning more than 27 clinical units during their law school

LAW 916B. Organizations and Transactions Clinic: Clinical Methods. 4 Units.

The O&T Clinic is Stanford's only corporate experiential course involving representation of real clients. We're designed for both students interested in M&A, capital markets, emerging company, tech transactions or other corporate work, and those wanting to explore a non-litigation, advisory-oriented practice. Prior experience in business or corporate law is welcome but certainly not necessary. Students represent multiple clients during the term. Our clients are all established nonprofit corporations. Most generate annual revenues in the range of $1 - $100 million, and some are larger. These clients have boards of directors, run complex programs, own brands and other intellectual property, and engage in a range of transactions, yet are small enough that our contact is almost always the CEO, CFO, general counsel, or other senior executive. O&T client engagements provide students with opportunities to assess facts; develop advice; read and write contracts, corporate governance materials, emails and other client communications; lead meetings and calls with clients; collaborate with colleagues; and manage projects. Our practice is document-intensive and service-oriented; we focus on clear communication and crisp execution. The course includes a class that generally meets twice a week. Class meetings center on student-led workshops regarding client projects and on orientation to corporate practice, including discussion of core commercial relationships such as acquisition, credit, and licensing, and practice skills such as transaction planning and management. Guests often join us; those are occasions for informal conversations with general counsels and law firm partners. Information about prior projects is available from the instructors and on the SLS website. Special Instructions: General Structure of Clinical Courses - - The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter each clinic student (with the exception of those enrolled in the Criminal Prosecution Clinic) is required to prepare for and attend a few inter-clinic group sessions. Students will be awarded three separate grades for their clinical quarter, each reflecting four units. The three grades are broken into the following categories: clinical practice; clinical methods; and clinical coursework. Grading is pursuant to the H/P system. Enrollment in a clinic is binding; once selected into a clinic to which he or she has applied, a student may not later drop the course except in limited and exceptional cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the clinic policy document posted on the SLS website. Students may not enroll in any clinic (full-time or advanced) which would result in them earning more than 27 clinical units during their law school

LAW 916C. Organizations and Transactions Clinic: Clinical Coursework. 4 Units.

The O&T Clinic is Stanford's only corporate experiential course involving representation of real clients. We're designed for both students interested in M&A, capital markets, emerging company, tech transactions or other corporate work, and those wanting to explore a non-litigation, advisory-oriented practice. Prior experience in business or corporate law is welcome but certainly not necessary. Students represent multiple clients during the term. Our clients are all established nonprofit corporations. Most generate annual revenues in the range of $1 - $100 million, and some are larger. These clients have boards of directors, run complex programs, own brands and other intellectual property, and engage in a range of transactions, yet are small enough that our contact is almost always the CEO, CFO, general counsel, or other senior executive. O&T client engagements provide students with opportunities to assess facts; develop advice; read and write contracts, corporate governance materials, emails and other client communications; lead meetings and calls with clients; collaborate with colleagues; and manage projects. Our practice is document-intensive and service-oriented; we focus on clear communication and crisp execution. The course includes a class that generally meets twice a week. Class meetings center on student-led workshops regarding client projects and on orientation to corporate practice, including discussion of core commercial relationships such as acquisition, credit, and licensing, and practice skills such as transaction planning and management. Guests often join us; those are occasions for informal conversations with general counsels and law firm partners. Information about prior projects is available from the instructors and on the SLS website. Special Instructions: General Structure of Clinical Courses - - The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter each clinic student (with the exception of those enrolled in the Criminal Prosecution Clinic) is required to prepare for and attend a few inter-clinic group sessions. Students will be awarded three separate grades for their clinical quarter, each reflecting four units. The three grades are broken into the following categories: clinical practice; clinical methods; and clinical coursework. Grading is pursuant to the H/P system. Enrollment in a clinic is binding; once selected into a clinic to which he or she has applied, a student may not later drop the course except in limited and exceptional cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the clinic policy document posted on the SLS website. Students may not enroll in any clinic (full-time or advanced) which would result in them earning more than 27 clinical units during their law school

LAW 918. Advanced Religious Liberty Clinic. 2-7 Units.
Advanced clinic allows students who have taken the Religious Liberty Clinic to continue working on cases. Participation in rounds is required. Advanced clinic may be taken for 2-7 units; general rule of thumb is 4 hours of work per week per unit. Students may not enroll in any clinic (basic or advanced) which would result in earning more than 27 clinical units during their law school enrollment. Elements used in grading: Class participation, written assignments, and case work. Students must have taken Religious Liberty Clinic.

LAW 918A. Religious Liberty Clinic: Practice. 4 Units.
The Religious Liberty Clinic is the only clinic of its kind in the country. The landmark program offers participating students a full-time, first-chair experience representing a diverse group of clients in legal disputes arising from a wide range of beliefs, practices, and circumstances. Students learn in class and engage through reflective and supervised practice the laws, norms, and limits affecting the exercise of religious freedom in a pluralistic society. Students are expected to counsel individual or institutional clients and litigate on their behalf with excellence, professionalism, and maturity. In clinic, students typically handle an accommodation project - e.g., represent a prisoner, student, or employee facing obstacles in the exercise of faith - as well as a longer-term litigation or development matter - e.g., represent a small church, synagogue, or mosque with zoning issues, or an individual challenging state preferences for particular beliefs. Opportunities to draft amicus briefs also arise. The clinic involves agency, trial, and appellate practice - though time constraints may not permit each student to work in all areas - under the empowering supervision of faculty and staff. Students work in assigned case teams but are also encouraged to help develop new clients and matters. Special Instructions: General Structure of Clinical Courses - - The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter each clinic student (with the exception of those enrolled in the Criminal Prosecution Clinic) is required to prepare for and attend a few inter-clinic group sessions. Students will be awarded three separate grades for their clinical quarter, each reflecting four units. The three grades are broken into the following categories: clinical practice; clinical methods; and clinical coursework. Grading is pursuant to the H/P system. Enrollment in a clinic is binding; once selected into a clinic to which he or she has applied, a student may not later drop the course except in limited and exceptional cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the clinic policy document posted on the SLS website. Students may not enroll in any clinic (full-time or advanced) which would result in them earning more than 27 clinical units during their law school career. The rules described here do not apply to advanced clinics for students who are continuing with a clinic in which they were previously enrolled. For information about advanced clinics, please see the course descriptions for those courses. For more information about clinic enrollment and operations, please see the clinic policy document posted on the SLS website. Elements used in grading: Clinical case/project work, clinical performance, seminar preparation and participation.

LAW 918B. Religious Liberty Clinic: Clinical Methods. 4 Units.
The Religious Liberty Clinic is the only clinic of its kind in the country. The landmark program offers participating students a full-time, first-chair experience representing a diverse group of clients in legal disputes arising from a wide range of beliefs, practices, and circumstances. Students learn in class and engage through reflective and supervised practice the laws, norms, and limits affecting the exercise of religious freedom in a pluralistic society. Students are expected to counsel individual or institutional clients and litigate on their behalf with excellence, professionalism, and maturity. In clinic, students typically handle an accommodation project - e.g., represent a prisoner, student, or employee facing obstacles in the exercise of faith - as well as a longer-term litigation or development matter - e.g., represent a small church, synagogue, or mosque with zoning issues, or an individual challenging state preferences for particular beliefs. Opportunities to draft amicus briefs also arise. The clinic involves agency, trial, and appellate practice - though time constraints may not permit each student to work in all areas - under the empowering supervision of faculty and staff. Students work in assigned case teams but are also encouraged to help develop new clients and matters. Special Instructions: General Structure of Clinical Courses - - The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter each clinic student (with the exception of those enrolled in the Criminal Prosecution Clinic) is required to prepare for and attend a few inter-clinic group sessions. Students will be awarded three separate grades for their clinical quarter, each reflecting four units. The three grades are broken into the following categories: clinical practice; clinical methods; and clinical coursework. Grading is pursuant to the H/P system. Enrollment in a clinic is binding; once selected into a clinic to which he or she has applied, a student may not later drop the course except in limited and exceptional cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the clinic policy document posted on the SLS website. Students may not enroll in any clinic (full-time or advanced) which would result in them earning more than 27 clinical units during their law school career. The rules described here do not apply to advanced clinics for students who are continuing with a clinic in which they were previously enrolled. For information about advanced clinics, please see the course descriptions for those courses. For more information about clinic enrollment and operations, please see the clinic policy document posted on the SLS website. Elements used in grading: Clinical case/project work, clinical performance, seminar preparation and participation.

LAW 918C. Religious Liberty Clinic: Clinical Coursework. 4 Units.
The Religious Liberty Clinic is the only clinic of its kind in the country. The landmark program offers participating students a full-time, first-chair experience representing a diverse group of clients in legal disputes arising from a wide range of beliefs, practices, and circumstances. Students learn in class and engage through reflective and supervised practice the laws, norms, and limits affecting the exercise of religious freedom in a pluralistic society. Students are expected to counsel individual or institutional clients and litigate on their behalf with excellence, professionalism, and maturity. In clinic, students typically handle an accommodation project - e.g., represent a prisoner, student, or employee facing obstacles in the exercise of faith - as well as a longer-term litigation or development matter - e.g., represent a small church, synagogue, or mosque with zoning issues, or an individual challenging state preferences for particular beliefs. Opportunities to draft amicus briefs also arise. The clinic involves agency, trial, and appellate practice - though time constraints may not permit each student to work in all areas - under the empowering supervision of faculty and staff. Students work in assigned case teams but are also encouraged to help develop new clients and matters. Special Instructions: General Structure of Clinical Courses - - The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five-to-seven hours per week preparing for and participating in weekly discussions or other group work in their individual clinic (scheduling varies by clinic). Third, over the course of the quarter each clinic student (with the exception of those enrolled in the Criminal Prosecution Clinic) is required to prepare for and attend a few inter-clinic group sessions. Students will be awarded three separate grades for their clinical quarter, each reflecting four units. The three grades are broken into the following categories: clinical practice; clinical methods; and clinical coursework. Grading is pursuant to the H/P system. Enrollment in a clinic is binding; once selected into a clinic to which he or she has applied, a student may not later drop the course except in limited and exceptional cases. Requests for withdrawal are processed through the formal petition and clinical faculty review process described in the clinic policy document posted on the SLS website. Students may not enroll in any clinic (full-time or advanced) which would result in them earning more than 27 clinical units during their law school career. The rules described here do not apply to advanced clinics for students who are continuing with a clinic in which they were previously enrolled. For information about advanced clinics, please see the course descriptions for those courses. For more information about clinic enrollment and operations, please see the clinic policy document posted on the SLS website. Elements used in grading: Clinical case/project work, clinical performance, seminar preparation and participation.

LAW 920. Advanced Supreme Court Litigation Clinic. 2-7 Units.
The Advanced Supreme Court Litigation Clinic provides an opportunity for students who have already successfully completed the Supreme Court Litigation Clinic to continue their work in the Clinic. Work includes research and drafting petitions for certiorari and oppositions, merits briefs, and amicus briefs, compiling joint appendices, and preparing advocates for oral argument, as well as commenting on drafts of briefs being filed by lawyers in other cases. Advanced students will also continue to participate in the Clinic's discussion of cases during case rounds. For a more elaborate description of the clinic's content, see the course description for Course Number 436-0-01. Special instructions: Admission is by consent of instructor. Advanced students may arrange with the instructor to receive between two and seven units. No student may receive more than 27 overall clinical units, however, during the course of the student's law school career. Students have the option to receive R credit upon instructor approval. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Projects and participation.

LAW 920A. Supreme Court Litigation Clinic: Clinical Practice. 4 Units.
The Supreme Court Litigation Clinic will expose students to the joys and frustrations of litigation before the Supreme Court of the United States. The bulk of the clinic will be run as a small law firm working on live cases before the Court. Students will participate in drafting petitions for certiorari and oppositions, merits briefs, and amicus briefs, compiling joint appendices, and preparing advocates for oral argument, as well as commenting (the technical term is "kibbitzing") on drafts of briefs being filed by lawyers in other cases. The precise nature of the cases will depend on the Court's docket, but in recent Terms, the clinic's cases have involved federal criminal law and procedure, habeas corpus, constitutional and statutory antidiscrimination and employment law, bankruptcy law, and the First Amendment. Our aim is to involve students as fully as possible in this type of litigation. The Clinic begins with an intensive introduction to the distinctive nature of Supreme Court practice, including the key differences between merits arguments and the certiorari process, the role of amicus briefs, and the Supreme Court Rules. After that, seminar meetings will be devoted primarily to collaborative work on the cases the clinic is handling. While students will be primarily responsible for working in teams on one case at a time, they will also be expected to acquire familiarity with the issues raised in other students' cases and will both edit each others' substantive work and assist each other and the instructors with the technical production work attendant on filing briefs with the Supreme Court. The course will involve substantial amounts of legal research. The Supreme Court operates on a tight, and unyielding deadline, and students must be prepared both to complete their own work in a timely fashion and to assist one another and the instructors on other cases. The instructors will not ask students to do any kind of "grunt work" that they themselves will not also be handling, but grunt work there will be: proofreading, cite-checking, dealing with the joint appendix, and the like. The nature of the work product means that while students will average thirty hours per week on their case-related work, that work will surely be distributed unevenly across the quarter. Unlike most other courts, the Supreme Court has no student practice rules. Thus, students will not be able to argue cases before the Court. But they will participate in moot courts on their cases, as both advocates and Justices. Each student will also have the opportunity to travel to Washington to see the Court in session, preferably with respect to a case on which the student has worked. Ideally students will already have experience with persuasive doctrinal writing, through a course like Federal Pretrial Litigation or through intensive supervision during their summer jobs or other clinics. Admission to the Clinic is by consent of the instructors. Students will need to submit a writing sample that reflects their facility with doctrinal legal arguments and the name of at least one reference who can comment on their legal analytic ability. - - Special instructions: General Structure of Clinical Courses - - The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case

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LAW 922. Advanced Youth and Education Advocacy Clinic. 2-7 Units. The Youth and Education Advocacy Advanced Clinic provides an opportunity for students who have already successfully completed the Education Advocacy Clinic to continue their advocacy work in the Clinic and/or to pursue a discrete project related to educational equity advocacy. Examples of projects include strategic policy research and management consulting for public education institutions on specific topics (e.g., accountability programs, community outreach and engagement, school climate); investigation and preparation for impact litigation; and community education and outreach on a specific education-related issue. All projects will be jointly designed by the instructor and the advanced student. Advanced students will also continue to participate in the Clinic's discussion of cases during case rounds. Special instructions: Admission is by consent of instructor. Advanced students may arrange with the instructor to receive between two and seven units. No student may receive more than 27 overall clinical units, however, during the course of the student's law school career. Elements used in grading: Projects and class participation.

LAW 922A. Youth and Education Law Project: Clinical Practice. 4 Units. The Youth and Education Advocacy Clinic offers students the opportunity to participate in a wide variety of educational rights and reform work, including direct representation of youth and families in special education and school discipline matters, community outreach and education, school reform litigation, and/or strategic policy research and consulting. All students will have an opportunity to represent elementary and high school students with disabilities in special education proceedings, to represent students in school discipline proceedings, or to work with coalitions and/or other education-sector agencies to advance equity-minded educational policies and school reform. Students working on special education matters will have the opportunity to handle all aspects of their clients' cases. Students working in this area will interview and counsel clients, investigate and develop facts, work with medical and mental health professionals and experts, conduct legal and educational research, create case plans, and represent clients at individual education program (IEP) team meetings, mediation or special education due process hearings. This work will offer students a chance to study the relationship between individual special education advocacy and system-wide reform efforts such as impact litigation. Students working on school discipline matters will interview and counsel clients, investigate and develop facts, interview witnesses, conduct legal and educational research, create case plan, and represent clients at school discipline hearings such as expulsion hearings. Such hearings provide the opportunity to present oral and written argument, examine witnesses, and present evidence before a hearing officer. If appropriate and necessary, such proceedings also present the opportunity to represent students on appeal before the school district board of trustees or the county board of education. Students may also have the opportunity to participate in complex school reform litigation, including the monitoring and enforcement of a consent decree and corrective action plan in an ongoing special education lawsuit or appellate and trial work in a pathbreaking educational rights case on behalf of Native American students. Finally, students who are interested in strategic policy research and management consulting on behalf of public education institutional clients (school districts, charter schools, state education agencies) will have the opportunity to participate in the multi-disciplinary collaborations with non-profit clients. The education clinic includes a one-week intensive training program held at the beginning of the quarter, weekly seminars that focus on legal skills and issues in law and education policy, regular case review, and a many opportunities for feedback and reflection with the instructors. Admission is by consent of instructor. Special Instructions: General Structure of Clinical Courses -- The Law School's clinical courses are offered on a full-time basis for 12 units. This allows students to immerse themselves in the professional experience without the need to balance clinical projects with other classes, exams and papers. -- Students enrolled in a clinic are not permitted to enroll in any other classes, seminars, directed research or other credit-yielding activities within the Law School or University during the quarter in which they are enrolled in a clinic. Nor are they allowed to serve as teaching assistants who are expected to attend a class on a regular basis. There is a limited exception for joint degree students who are required to take specific courses each quarter and who would be foreclosed from ever taking a clinic unless allowed to co-register. These exceptions are approved on a case-by-case basis. -- Clinic students are expected to work in their clinical office during most business hours Monday through Friday. Students are also expected to be available by e-mail or cell phone when elsewhere during those hours. Because students have no other courses (and hence no exams or papers), the clinical quarter begins the first day of classes and runs through the final day of the examination period. Students should not plan personal travel during the Monday to Friday work week without prior authorization from the clinical supervisor. -- The work during a typical week in a clinic is divided into three components. First, as they are for practicing attorneys, most of the hours of any week are taken up by work on client matters or case work (this time includes meetings with instructors to discuss the work). Again, as is the case for practicing lawyers, in some weeks these responsibilities demand time above and beyond "normal business hours." Second, students will spend approximately five to seven hours per week preparing for and

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LAW 1001. Antitrust. 4 Units.
Antitrust law sets the ground rules for competition. This course will explore the basic concepts in antitrust law. We will examine cartels and competitor collaborations, monopolization, vertical restraints and horizontal mergers. There are no prerequisites for this course. No economic background is required. The course is open to GSB students and graduate students in the Economics Department. To apply for this course, non-Law students must complete a Non-Law Student Add Request Form available on the SLS Registrar's Office website (see Non-Law Students). Elements used in grading: Class participation, attendance and final exam.

LAW 1002. Advanced Antitrust: Monopolization and Abuse of Dominance in the US and the EU. 3 Units.
This course will take an in-depth look at the principles in US and EU competition law regarding conduct by firms that excludes or weakens rivals. This is perhaps the most controversial and unsettled part of competition law and the part about which there is the least multinational agreement. We will study, among other materials, some of the major recent cases in which the same or very similar matters were addressed by both US and EU competition authorities, including matters involving Microsoft, Google, Intel and Rambus. The objectives are to gain a deeper understanding of the principles regarding exclusionary conduct and the ways in which those principles in US and EU law differ and, from that understanding, to draw inferences about the reasons for the differences between US and the EU law and the impact of different enforcement procedures on substantive legal principles. This course is open to anyone who has taken Antitrust Law 1001 or an equivalent course about EU or EU-like competition law and to others with the permission of the instructor. Elements used in grading: Class participation and final paper.

LAW 1003. Bankruptcy. 3 Units.
This course concerns the law and finance of corporate bankruptcy with an emphasis on reorganization. The course reviews the fundamentals of debt contracting, including the role of events of default, debt priority, and security interests. The course examines various aspects of the bankruptcy process: including the automatic stay, the avoidance of prebankruptcy transactions (e.g. fraudulent conveyances and preferences), the treatment of executory contracts, the debtor's governance structure during bankruptcy, the financing of operations and investments in bankruptcy, sales of assets during bankruptcy, and the process of negotiating, voting, and ultimately confirming a plan of reorganization. Any student may write a paper in lieu of the final exam with consent of instructor. After the term begins, students accepted into the course can transfer from section 01 (final exam) into section 02 (final paper), with consent of the instructor. Elements use in grading: Class participation; and exam or paper.

LAW 1004. Comparative Corporate Law and Governance. 2 Units.
From the United States to China, and from Brazil to the EU, corporate capitalism has triumphed globally as the dominant form of economic organization. Yet despite the common attributes of the corporation familiar to every U.S. law student, corporations around the world have diverse ownership structures, interact in their domestic political economies in different ways, and exhibit a host of traits that vary with the institutional context in which they operate. This seminar explores the many forms corporate capitalism takes around the world, the forces that shape domestic corporate law and governance in major countries, and the important legal and policy issues raised by global corporate activity. We will explore the rise of "agency capitalism" in the U.S. and the proliferation of new forms of corporate ownership around the world, the emergence of Chinese state capitalism and its legal and policy consequences, efforts to reform Japanese stakeholder-oriented capitalism, and the emergence of hybrid forms of business organization designed to pursue both profits and social benefits. Policy issues to be considered include the "social responsibility" or "purpose" of the corporation, the national security implications of foreign investment by state-owned enterprises, and the consequences of global hedge fund activism. Special Instructions: This class is limited to 15 law students by lottery. Depending on demand, additional students may be admitted with consent of the instructor. Interested students not admitted through the lottery process are encouraged to contact the instructor about the possibility of enrollment. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Presentation.

LAW 1005. Comparative Venture Capital - China. 2 Units.
(Formerly Law 736) This course is taught in conjunction with Law 1006. Students may enroll for this course alone or for both this course and Law 1006. Law 1005 is intended to introduce students to the legal and financial principles underlying venture capital investment in start-up enterprises and innovative technologies. A special emphasis of this course will be a comparative analysis of the ways in which the various legal and financial structures employed by venture capitalists are replicated in other legal environments, with a focus on the largest venture capital and IPO market in the world - China. The first eight weeks of the course will coincide with the first eight weeks of Winter Quarter, and will be conducted at Stanford Law School. Class sessions will be comprised of lectures regarding the basic concepts and structures, as well as seminar discussions with venture capital industry participants. Elements used in grading: Final exam, attendance and class participation. Special Instructions: Enrollment in the Beijing option is limited to 12 students (See Law 1006 for application instructions and deadline).

LAW 1006. Comparative Venture Capital - China: Field Study. 1 Unit.
(Formerly Law 736A) This is the Stanford Center at Peking University in Beijing component of Comparative Venture Capital - China (Law 1005). For details, see course description for Law 1006. During spring break 2017, the course will be held at the Stanford Center at Peking University in Beijing, and will consist of meetings and seminars with lawyers, entrepreneurs, and venture capitalists active in the Chinese venture capital market. Students will also tour start-up enterprises made possible with venture investments. Enrollment is limited to 12 students. PLEASE NOTE: Students will need a passport and a visa to travel to Beijing. Elements used in grading: class participation and short writing assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 1007. Contracts: American Law. 4 Units.
This course will provide advanced-degree students with coverage of Contracts law comparable to the fall course offered for first-year JD students. The course will identify the scope and purpose of the legal protection accorded to interests created by voluntary undertakings. We will focus on problems of contract formation, enforceability, interpretation, performance and excuses for non-performance, and remedies for breach. The course will cover both the U.S. common law of contracts and the basics of UCC Article 2 (sales of goods). Not open to JD students. Open only to students in the SLS Advanced Degree Programs. Elements used in grading: Class Participation, Attendance, Final Exam.

LAW 1008. Contract Design: Principles and Practice. 2 Units.
Contract Design: Principles and Practice (1008): (Formerly Law 434) Transaction lawyers spend much time drafting contracts and related documents, and they can contribute very significant value by designing transactions. While transactions should be tailored to the goals and circumstances of each set of parties, there are general principles that guide the design process, even as the technology of contracting is evolving (through automated and smart contracting). This seminar combines discussion of academic scholarship with examples of real-world examples of design challenges (such as in franchising, construction, corporate acquisition, loan or data use agreements). Students will be required to write and present a paper, and encouraged to focus on a specific contracting challenge. Elements used in grading: Class participation (20%) and an independent research paper for "R" (Research credit).

LAW 1009. Corporate Finance I. 3 Units.
This course discusses main principles underlying many of the major financial decisions made by corporate managers and investors. Topics include net present value, interest rates, bonds and stocks, market efficiency, price of risk and capital asset pricing model, company valuation, financial distress, options and other derivative securities. The goal of the course is to develop intuitive understanding of the general principles that can be applied in various practically important scenarios. The course will include problem solving using Excel. No knowledge of mathematics beyond high-school algebra or familiarity with Excel will be assumed. Elements used in grading: Class Participation, Attendance, Written Assignments, Midterm, Final Exam.

LAW 1010. Corporate Income Taxation. 3 Units.
This course will cover the basic principles and rules regarding the taxation of domestic corporations. Prerequisite: LAW 1029 Taxation 1. Students must contact the instructor if they wish to have the prerequisite substituted or waived. Elements used in grading: attendance, class participation and final exam.

LAW 1011. Advanced Corporate Finance. 3 Units.
Lawyers often need an advanced understanding of corporate financial decisions, instruments, and transactions, including equity financing and initial public offerings, the determination of a firm's cost of capital, valuation, payout policy, recapitalizations and bankruptcy, mergers and acquisitions, and the market for corporate control. Advanced Corporate Finance introduces these topics by lecture and then explores them through detailed analysis of actual cases. This structure maximizes the synergy between theory and practice, providing students with portable, durable, and marketable tools for their careers. Legal considerations that arise in the execution of these corporate financial decisions include mandatory disclosure requirements, the issuance of dual class shares, charges of anticompetitive practices, taxation, appraisal cases and fairness opinions, takeover defenses and fiduciary duty challenges, contractual provisions in merger agreements, insider trading, and Chapter 11 bankruptcy proceedings. This class rigorously advances both conceptual and practical/analytical understanding. The knowledge gained will facilitate professional dealings with chief executive officers and chief financial officers, boards of directors, investment bankers, consultants, portfolio and investment managers, venture capitalists, and private equity investors. Prerequisite: Corporate Finance I (Law 1009) or Introduction to Finance (Law 1036) or equivalent background with professor permission. Elements used in grading: class participation and final exam.

LAW 1012. Corporate Reorganization. 3 Units.
This course examines the reorganization of a financially distressed company under chapter 11 of the Bankruptcy Code. Naturally we will examine reorganization through several stages of a business turnaround and restructuring (such as an out-of-court workout, a chapter 11 filing, selected chapter 11 operating issues, and the formulation, negotiation and confirmation of a plan of reorganization). But we will also view chapter 11 in terms of its effects upon financing transactions that are negotiated long before bankruptcy becomes necessary. After all, the terms of a financing transaction probably are most important when things do not work out as well as hoped or planned, because it is then that the relative rights of parties become critically important. Thus, a fundamental knowledge of chapter 11 is not just for bankruptcy specialists, but it is also important for non-bankruptcy lawyers and businesspeople who help structure complex financing transactions in anticipation of the cold reality that something, someday, could financially go wrong. In doing all of this, we will touch on issues that often arise in a reorganization setting, such as valuation, leveraged buyouts, debt and derivative instruments, and distressed debt investing. We will also follow current developments in actual bankruptcy cases, primarily through reports in the media. Elements used in grading: class participation and final exam.

LAW 1013. Corporations. 4 Units.
This course is an introduction to the basic legal rules and principles governing the relations between managers, investors, and creditors in the business enterprise. The course is the foundation for advanced business law courses. We focus on problems that arise because a firm's managers and owners have conflicting interests. We examine the costs associated with this conflict and how markets, legal standards (particularly judicially developed fiduciary duties) and contracts might reduce them. We also examine the way in which federal securities law complements state-level corporate law in the governance of public corporations. Topical areas of coverage include shareholder activism, mergers and acquisitions, and insider trading. Elements used in grading: Attendance, Class Participation, Exam.

LAW 1014. Current Issues in Tax Practice. 2 Units.
This course will introduce students to major issues in tax practice. Each class will be co-taught by one or more leading practitioners in the tax bar, with other members of the bar attending. Subjects include international tax, intellectual property and tax, tax litigation, state and local taxation, working for the government in tax, tax lobbying and working in a corporate tax department. Class will meet at my home (with take-out dinner provided). The class offers students a good opportunity to connect their SLS tax courses to real-world tax issues and practitioners. Elements used in grading: Class Participation, Attendance, Written Assignments.

LAW 1015. Corporate Social Responsibility. 2 Units.
Although corporate social responsibility ("CSR") initiatives have been pursued by a range of companies as voluntary measures for decades, recent developments have rendered the exercise by companies of designing and implementing environmental, social and governance mechanisms inherently legal in nature. This course will explore the legal issues that companies have been forced to confront, increasingly with the support of specialized legal counsel, in pursuing CSR or sustainability objectives, including those arising in the context of supply chain human rights due diligence (e.g., minerals sourcing and human trafficking), impact investment and the adoption of alternative corporate forms, voluntary standards and mandatory requirements regarding non-financial disclosure and reporting (e.g., SASB, sustainability listing standards, possible amendments to Regulation S-K, and the EU non-financial reporting rules), director fiduciary duties and the changing expectations of investors, shareholder proposals and stakeholder engagement, and the rise of corporate social activism by companies and their officers, among others. Elements used in grading: Class Participation, Written Assignments, Final Paper.

LAW 1016. Deals I. 4 Units.
This course applies economic concepts to the practice of structuring contracts. The course extends over two quarters. In the Fall quarter it will meet four hours per week. In the Winter quarter, it will meet ONLY FOR FIVE WEEKS for four hours per week--for 2 units of course credit. During those five weeks, it will meet on Monday and Friday. Exactly which five weeks the course will meet will be announced during the Fall quarter. Students enrolled in the course must take both quarters. All of the first quarter will be spent in a traditional classroom setting but with untraditional materials. Most of the materials consist of case studies of business transactions (and no case law). We will use those case studies to analyze the economics underlying a wide range of business transactions and the contractual terms and structures used to respond to underlying economic challenges. During the second quarter, we will explore deals in greater detail by studying five complex transactions in full. For this part of the course, students will be divided into groups and will be assigned one of the five deals. Each group will give a presentation of its deal to the class, and in the following class, a lawyer or other participant in the deal will come to class to present the deal based on his or her experience. We study five new deals each year. Deals we have studied over the years have included movie financings, biotech alliances, venture capital financings, cross-border joint ventures, private equity investments, corporate reorganizations, and more. Special Instructions: Students enrolled in the course must take both quarters. Students who have not taken the course in the fall cannot register for it in the winter, and those who took it in the fall must register for it in the winter. No exam in Autumn Term. An In-School exam will be given at the conclusion of the course in the Winter Term. Grades will be given at the end of the second quarter and will be applied to both quarters. I use the consent form two reasons: (a) to ensure diversity across 2L, 3L and advanced degree students; and (b) simply to learn more about those of you with whom I will be working in the course. There is no background required for the course. Elements used in grading: Attendance, class participation, class presentation, written assignments, group paper, and exam. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 1017. Deals II. 2 Units.
This course is the continuation of Deals I. In order to register for this course you must have taken Deals I; and if you took Deals I, you must register for Deals II. Deals I and II apply economic concepts to the practice of structuring contracts. Deals I and II are in effect a single course that extends over two quarters. Deals I will meet four hours per week. Deals II will meet ONLY FOR FIVE WEEKS for four hours per week--for 2 units of course credit. Exactly which five weeks the course will meet will be announced during Deals I. Students enrolled in the course must take both quarters. All of Deals I will be spent in a traditional classroom setting but with untraditional materials. Most of the materials consist of case studies of business transactions (and no case law). We will use those case studies to analyze the economics underlying a wide range of business transactions and the contractual terms and structures use to respond to underlying economic challenges. In Deals II, we will explore deals in greater detail by studying five complex transactions in full. For this part of the course, students will be divided into groups and will be assigned one of the five deals. Each group will give a presentation of its deal to the class, and in the following class, a lawyer or other participant in the deal will come to class to present the deal based on his or her experience. We study five new deals each year. Deals that we have studied over the years have included movie financings, biotech alliances, venture capital financings, cross-border joint ventures, private equity investments, corporate reorganizations, and more. Special Instructions: Students enrolled in the course must take both quarters. Students who have not taken Deals I cannot register for Deals II, and those who took Deals I must register for Deals II. No exam at the end of Deals I. An In-School exam will be given at the conclusion of Deals II. Grades will be given at the end of Deals II and will be applied to both quarters. CONSENT APPLICATION: To apply for this course, students must complete and e-mail the Consent Application Form available on the SLS Registrar's Office website (see Registration) to the instructors. I use the consent form two reasons: (a) to ensure diversity across 2L, 3L advanced degree, and non-law school students; and (b) simply to learn more about those of you with whom I will be working in the course. There is no background required for the course. See Consent Application Form for submission deadline. I use the consent form to ensure diversity of experience and non-experience and diversity across classes. There is no background required for the course. Elements used in grading: Attendance, class participation, class presentation, written assignments, group paper, and exam.

LAW 1018. Derivatives. 2 Units.
The course will examine the legal, regulatory, trading and risk management aspects of the $600 trillion notional over-the-counter and cleared derivatives markets. Derivatives have historically not been well-understood by regulators or the public and have been blamed for causing or contributing to the economic crisis. This course will offer students the opportunity to understand how various derivative products are designed, traded and risk-managed and what role regulators play in the derivatives industry. In addition, students will focus on understanding key legal contracts that underpin the global derivatives industry, in particular focusing on the ISDA© Master Agreement and Credit Support Annex, as well as documentation supporting credit derivatives and other common derivative types. Students will also consider the shifting regulatory landscape for financial institutions and hedge funds as it relates to the way in which these products are traded, with rates and credit products migrating to clearinghouses. The course will conclude with an examination of the economic crisis that erupted with Lehman Brothers' bankruptcy in September 2008 and the consequent policy reactions to that event from a derivatives and bankruptcy perspective. Elements used in grading: attendance, written homework assignments and a final exam.

LAW 1019. Current Topics in Sports Law. 1 Unit.
Current Topics in Sports Law is a one-unit seminar for up to 15 students with San Francisco 49ers General Counsel and SLS alumna Hannah Gordon. The class is made up of six 90-minute sessions and brief reflection papers. Attendance is mandatory at all six sessions to pass the course. The class will meet the first six weeks of Autumn Quarter. The seminar will explore current topics in the practice of law that are impacting the sports industry, both through litigation and legislation. Elements used in grading: Attendance, Class Participation, Written Assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 1020. Entertainment Law. 3 Units.
Entertainment law is not, in and of itself, a separate legal discipline. Instead, the practice of entertainment law lies at the intersection of various traditional legal disciplines, such as contract, tort, copyright, trademark, antitrust, secured transactions, etc., and applies those disciplines to a unique business setting. This course is intended to approach the study of entertainment law from a practical perspective, applying the principles of traditional legal disciplines to avoid problems and find solutions in various facets of the entertainment industry. To accomplish the necessary background, we will study the entertainment industry from both a macro level (i.e., the organization of the motion picture, television and music business, including the function of studios, producers, networks, record companies, agencies, managers, lawyers and labor unions) and a micro level (i.e., examining actual agreements in order to understand the principal components of motion picture talent, production and distribution contracts, television series contracts, music and book publishing contracts). We will also examine key litigation issues that affect the industry, such as the interaction of the First Amendment and the right of publicity, the right of privacy and libel, the anti-SLAPP laws, the "final cut" and profit participation cases. The impact of the digital media (including the internet) will, of course, be analyzed, along with the future of the entertainment industry, including convergence, holograms, syntho-thespians and the like. We plan to include guest speakers from the entertainment industry so that this class will embody both business and legal considerations. The overall goals of this course are (1) to expose students to the unique and increasingly complex structure of the entertainment business; (2) to foster an understanding of the role the law and entertainment lawyers play in that unique business structure; (3) to strengthen students' ability to draft key documents and craft persuasive legal arguments to accomplish the goals they may seek to achieve as lawyers in the entertainment industry; and (4) to develop the analytical and problem-solving skills necessary to make them into effective entertainment lawyers. Elements used in grading: Class participation, team contract negotiation and drafting projects, final paper.

LAW 1021. Estate Planning. 3 Units.
This class will cover the basics of the gift and estate tax system and estate planning principles. With these fundamentals, the course will then examine basic and advanced estate planning and wealth transfer techniques, including wills, various types of trusts, titling property, gifts during lifetime, charitable vehicles, handling closely held businesses and valuation matters--with an emphasis on how to use these tools in planning an estate to meet the objectives of a couple or individual. Probate of an estate, durable power of attorneys, conservatorships, and planning for other life situations will be explored. Elements used in grading: Class participation (is a small factor and only in the positive direction) and final open book exam. This course is open to GSB and other graduate students with consent of the instructor.

LAW 1022. International Tax. 2 Units.
This course examines the United States federal income taxation of international operations and transactions, including international joint ventures and M&A transactions. Traditional issues such as income source, foreign tax credits, Subpart F, and international transfer pricing rules will be addressed. Congress recently encated fundamental reform of US international tax rules; important new provisions in this area, including the "GILTI" and "BEAT" rules, will also be covered. Elements used in grading: Final Exam.

LAW 1023. International Securities Offerings. 2 Units.
This course will focus on the application of United States securities laws and regulations to non-US issuers. We will examine how that regulatory framework differs for Foreign Private Issuers, as compared to other issuers in the United States. Initial public offerings, private placements under Rule 144A and Regulation S and ADR programs will all be covered. We will take a close look at the Alibaba IPO and Alibaba's subsequent regulation as a public company listed in the United States. The course will be taught from a practical perspective with in-class review of SEC filings, offering documents and SEC correspondence. The Morrison Case and its progeny defining the reach of U.S. Securities law to conduct with limited U.S. contacts will also be examined. Elements used in grading: Class Participation, Final Exam.

LAW 1024. Private Equity Investing. 3 Units.
(Formerly Law 522) This course will focus on the central issues involved in private equity investing. Topics will include: pricing, structuring and valuation of private equity and venture capital investments; buyouts and other transactions involving multitiered capital structures; the structure and governance of PE and VC funds; conceptual issues relevant in this realm such as option theory, asymmetric information and bounded rationality; and private equity as a distinct asset class. There are no required prerequisites. Students will develop skills and tools used in the private equity arena, including financial analysis (e.g., "deal arithmetic" fundamentals, spreadsheet modeling and forecast preparation); the drafting and negotiation of transaction documents; and the ability to conduct comprehensive due diligence examinations of prospective acquisitions and investments. We will have a number of guest speakers during the term, and will draw on various materials illustrative of what one would encounter in private equity deals and funds. Elements Used in Grading: Periodic problem sets, a final case study and class participation. (The case study will be completed in a small group, and it will give students the opportunity to analyze a real-world transaction from a number of perspectives.) A Final Note: While a 3-credit course, Private Equity Investing will not meet for the entirety of the Winter quarter. The final class session will be on March 2nd (rather than March 12th). This class is limited to 24 students. 16 SLS students will be selected by lottery. The other eight spots will be allocated by consent of instructor, and will be selected from law students who were waitlisted and non-law students. All interested students must attend the first two class sessions (January 10 & 12) in order to keep a spot on the class list or waitlist.

LAW 1026. Securities Litigation. 3 Units.
(Formerly Law 300) Executives of American public companies control one of the largest accumulations of wealth in history, amounting to trillions of dollars in market capitalization. Tens of billions of dollars of securities in these companies are traded daily. This course addresses the most interesting and complex litigation that arises in connection with these securities, including fraud claims against executives and corporations, criminal actions for insider trading, internal investigations of executive misconduct, SEC enforcement actions, and derivative actions against corporate directors and officers. This course does not concern stock market technicalities. Instead, you will learn the basic legal framework governing this area, the theories underpinning it, and how to present legal arguments in this area. You will learn in a group setting by working out solutions to some of the most challenging issues that we have faced. In the process you will come to recognize the patterns we see and understand the forces behind them, so that you are prepared to practice in this area. Elements used in grading: Attendance, Class Participation, Exam.

LAW 1027. Securities Regulation: Capital Formation from Start-Up to IPO and Beyond. 4 Units.
We examine the legal regime governing securities markets the United States through the lens of the Silicon Valley venture capital process. We study regulations governing venture capital investing, multi-billion-dollar private placements, initial public offerings (IPO's), and the governance of publicly traded firms, including exposures for securities fraud litigation. The course also explores emerging regulatory tensions over US investments in Chinese issuers, proposals to share equity with "gig-economy" workers, and proposals to facilitate small investor access to private placements. There is extensive reliance on recent real-world transactions, litigation, legislation, and rulemaking. Students are expected to participate in panels. Elements used in grading: Final exam and panel participation.

LAW 1028. Tax Policy. 2 Units.
This course will explore various tax policy issues. In past years, the issues we've explored have included the carbon tax, health care, social security, consumption tax, tax compliance, tax shelters and school financing. Special Instructions: Grades will be based on either (A) class participation and memos responding to the discussion questions for any three of the sessions or (B) class participation and a research paper on a topic of your choosing (subject to instructor approval). Option B is Research (R) credit. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Class Participation, attendance and written assignments.

LAW 1029. Taxation I. 4 Units.
This course provides an overview of the federal income tax. Elements used in grading: Class participation and final exam. Special Instructions: Students enrolled in Taxation I LAW 1029 have the option to concurrently enroll in Race, Class and Tax LAW 1059 for one unit (MP/R,/F) with instructor consent. Race and Tax Policy will provide an additional focus on race.

LAW 1030. Partnership Tax. 2 Units.
(Formerly Law 377) This course will cover the basic rules that govern the tax treatment of partnerships and partners, with a focus on agreements and issues that are relevant to venture capital and private equity investment partnerships. The course will be primarily problem-set based. Prerequisites: Taxation I required; Corporate Income Taxation suggested but not required. Elements used in grading:, Final Exam, Class Participation.

LAW 1031. Current Issues in Business Law. 2 Units.
This course will focus on issues in law and business that are both important to practitioners and the subject of academic or policy debates. We will cover a range of legal and economic issues, including the following topics: nonbank lending, gatekeeper liability, capital repatriation and tax policy, corporate restructuring, blockchain and smart contracts, and cyber risk management. Each of these issues will be introduced by readings and presentations, but the classes will rely on student discussion and critical evaluation of the papers and positions we examine. Students will have the opportunity to write reaction papers that critically analyze the required readings and to learn and analyze other business law issues of their choice by working in groups. Elements used in grading: Reaction papers, class participation, and performance in the group project and presentation.

LAW 1032. Banking Law. 3 Units.
(Formerly 378) This course will examine the legal and regulatory system governing financial institutions, with an emphasis on banks. It will do so by exploring the underlying economics of banking, and the ongoing effort to reform financial regulation. Questions addressed will include: Why do we regulate financial institutions? What dangers do we want to avoid? How well does the current regulatory system achieve what we want to achieve? What alternative approaches can be taken? What are the costs and benefits of the current system, and those of the alternatives? Elements used in grading: Class participation, attendance, final exam.

LAW 1033. Trusts and Estates. 2 Units.
This course will cover the following topics: intestacy; will execution and revocation; will provisions and interpretations; restrictions on the right to devise; probate; creation, amendment and termination of trusts; revocable and irrevocable trusts; trust provisions; charitable trusts; trust administration; and durable powers of attorneys, advanced health care directives and conservatorships. Elements used in grading: Final exam (In-School: open book, essay).

LAW 1034. Real Estate Transactions. 3 Units.
Real Estate Transactions and Commercial Development examines the structuring, negotiation and documentation of commercial real estate transactions. Working both individually and in groups, students will learn the requisite skills for drafting and negotiating leases, letters of intent, sale contracts and related financing documents. As time permits, development-related matters will be explored, including the legal aspects of site acquisition, design and construction. Classes will be a mixture of lectures, interactive discussions, and several mock negotiations. Elements used in grading: Class attendance, individual and group project participation, and written assignments. No final exam.

LAW 1035. Mergers and Acquisitions. 3 Units.
This course is a comprehensive introduction to the law and practice of mergers and acquisitions. It will cover key and emerging issues in transactional legal practice, including in mergers, tender offers, carve-outs and asset sales, negotiated and unsolicited acquisitions, buyouts, conflict transactions, and deal activism. In addition to the relevant laws, regulations and fiduciary standards, the course will cover key aspects of the deal-making process, including mechanisms for protecting a preferred transaction and increasing deal certainty, takeover preparedness and responding to hostile offers, as well as structuring alternatives. The course will include practical exercises on M&A topics and guest speakers who have encountered some of the issues discussed. Prerequisite: Corporations, except on petition to the instructors based on prior coursework or special experience. The course is intended both for students anticipating a career in transactional legal practice as well as for students seeking to develop a general understanding of issues in M&A transactions. Elements used in grading: Attendance, Class Participation, Exam. Casebook: We will be using a casebook: Mergers and Acquisitions Law, Theory, and Practice by Claire Hill, Brian JM Quinn and Steven Davidoff Solomon (2nd Ed; West Academic Publishing 2019).

LAW 1036. Introduction to Finance. 2 Units.
This course is a basic introduction to the principles of finance. It will prepare you for the 3-credit version (Corporate Finance 1009) and introduce you to principles of valuation that are useful in everything from family law to settlement negotiations over civil disputes. The course provides a framework for answering the basic question: how much is this firm (or project) worth? We will cover topics such as: earnings, cash flows, income statements, interest rates, time value of money, risk and return and the cost of capital. No prior knowledge of finance or fancy math skills will be assumed. The course will consist primarily of on-line modules and problem sets that you will complete on your own and in small groups. We will have "live" class sessions to discuss the application of these principles in a legal setting and to hear from lawyers, investors and policy makers how finance has been useful in their careers. There will be weekly problem sets and you will get experience with building a simple excel spreadsheet that will help you estimate the value of a potential new project. There is a final project where you are asked to value a company and present your teams' findings to the class. On-line component. Elements used in grading: Written Assignments, Final Project. Participation.

LAW 1037. The Evolution of Finance. 2 Units.
(Formerly Law 487) This course provides a framework to understand how uncertainty and technology affect the evolution of finance (and businesses generally), with heavy emphasis on recent developments and future trends. In recent years Myron Scholes has given about half the lectures with the other half given by prominent guests. The guest list changes year to year but 2017's list included David Booth, Katie Hall, Howard Marks, James Manyika, George Osborne, Kevin Warsh, Tom Kempner, and Larry Summers. Jeremy Bulow may replace Myron for a small number of lectures. Special instructions: LAW 1037 is limited to 15 law students. If more than 15 law students enroll, a lottery will be run to determine the final class list. Elements used in grading: No Exam. Participation 50% Projects/Papers 50%. Mandatory attendance. Absences impact grade. Cross-listed with Graduate School of Business (MGTECON 343).

LAW 1038. The Future of Finance. 2 Units.
This 2-credit course will examine vast changes driven by innovation both from within traditional finance and from new ecosystems in fintech among others. Breathtaking advances in financial theory, big data, machine learning, artificial intelligence, computational capability, IoT, payment systems (e.g. blockchain, crypto currencies), new products (e.g. robo advising, digital lending, crowd funding, smart contracts), new trading processes (e.g. algorithmic trading, AI-driven sales & trading), and new markets (e.g. ETFs, zero-cost products), among others are changing not only how financial and non-financial firms conduct business but also how investors and supervisors view the players and the markets. We will discuss critical strategy, policy and legal issues, some resolved and others yet to be (e.g. failed business models, cyber challenges, financial warfare, fake news, bias problems, legal standing for cryptos). The course will feature perspectives from guest speakers including top finance executives and Silicon Valley entrepreneurs on up-to-the-minute challenges and opportunities in finance. Elements used in grading: Class Participation, Attendance, Final Paper. Cross-listed with Economics (ECON 152/252), Public Policy (PUBLPOL 364), Statistics (STATS 238).

LAW 1039. Deal Litigation Seminar. 2-3 Units.
This seminar is designed as an introduction to mergers and acquisitions litigation. The course provides both a practical and doctrinal perspective on M&A-related litigation and relies heavily on readings and issues derived from practice in the Delaware courts where much contemporary deal litigation occurs. Students will be asked to apply cases and legal principles in various practical situations that may arise in a transactional litigation practice. Familiarity with basic corporate law principles is assumed. Classes and readings. The first segment of the course will introduce basic doctrinal principles of M&A law and provide an introduction to the litigator's role in the transactional setting. The remaining sessions will revolve around two detailed M&A case studies, with seminar members divided into group roles. The first week of each case study will involve the negotiation and structuring of an M&A transaction. The second week will involve litigation relating to the transaction. As part of the case studies, students will negotiate a transaction, advise their client, take depositions, write briefs and present oral argument. Reading for the case studies will include case scenarios, supporting materials, and additional relevant case law and articles. Written assignments and grading. Students will be expected to write a final paper, in addition to the brief they will write in connection with their assigned case study. Special Instructions: After the term begins, students accepted into the course can transfer from section (01) into section (02) which meets the R requirement, with consent of the instructor. Students taking the seminar for R credit can take the seminar for either 2 or 3 units, depending on the paper length. Corporations (Law 242) is a prerequisite. Elements used in grading: Attendance, class participation, brief writing/oral argument, and paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. Please note that due to scheduling issues this quarter, class will not meet on April 6 or 13, or May 18, and makeup classes will be scheduled.

LAW 1040. Venture Capital. 3 Units.
This course examines the venture capital (VC) financing model from both a theoretical and a practical perspective. The course traces the start-up process from initial formation of a new venture and angel investments, through multiple institutional venture capital financing rounds, with a view to potential exits via acquisition or initial public offering. The class will analyze each step in the process from the perspective of the business entity, the founders and employees, the investors, and the lawyers for each party. It also will consider the incentives and control structures used at each stage of financing, with a focus on both the underlying economic and financial theory, as well as on pragmatic considerations in structuring the transactions. Students will learn the VC business model to understand what makes it unique from other investment forms and how that impacts the startup ecosystem. Students will become familiar with spreadsheet capitalization tables, engage in small group class discussions, and participate in small teams in the negotiation of a first round venture capital financing term sheet. There will be required readings for each class that include a range of materials from law review articles and relevant fiduciary duty cases to model deal documents and case studies of what can go wrong. Some sessions will include guest speakers who are either entrepreneurs or venture capitalists. This course is co-taught by Gordon Davidson and Michael Esquivel, who are partners at Fenwick & West LLP and advise technology and healthcare startups and venture capitalists. Elements used in grading: Class participation/assignments, negotiation exercises and written summary, and the final exam.

LAW 1041. Venture Capital II: Starting and Running a Venture-Backed Company. 3 Units.
(Formerly Law 401) This class will focus on the legal and non-legal tactical details of entrepreneurial endeavors. The legal specifics of corporate formation, tax, and contracts are well covered by a variety of other courses at the Law School and will only be reviewed briefly in this course. Instead, the course will examine the life stages (formation, financing, execution, and exit) of a venture-backed company from the entrepreneur's perspective. Students who are interested in either starting companies or working with startup founders as their legal counsel will solidify their foundations in this course. There will be no textbook -- course materials will include PowerPoint slides, readings from various entrepreneur and venture capital blogs, sample business plans, and other sources. This course is limited to 14 students. Those students who have taken VC I receive priority in enrollment. Prerequisites: A modest background in financial analysis or the use of Excel, such as might be obtained from any of the introductory finance courses in most undergraduate curriculums or the handful of similar graduate classes at Stanford (such as QM Finance) is strongly recommended for this course. Venture Capital I will also be helpful but is not a prerequisite. Elements used in grading: Class participation (20%), and a 60 minute oral business plan presentation with accompanying slide deck and written materials (80%). CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 1042. New Venture Finance. 2 Units.
This is a practice-oriented business law seminar designed to provide students with an understanding of the legal, business, financial and practical issues that arise in advising venture capital-backed and emerging growth companies through the typical stages of their development and common transactions. The seminar will cover selected corporate, securities and tax issues in areas such as business entity formation, corporate organization and governance, venture capital financings, employee benefits, acquisitions and initial public offerings, with an emphasis on practical solutions and business realities. The goal of the seminar is to provide students with a window into the daily life of a typical Silicon Valley-style corporate attorney. Students are required to complete a number of assignments, participate in a negotiation exercise, participate in class discussions and sit for an exam. There will be required readings for each session that include a range of materials. Some sessions will include guest speakers. This course is taught by Mark Reinstra (JD '92), a partner at Wilson Sonsini Goodrich & Rosati. Mark represents emerging growth companies in substantially all facets of their corporate lives, from incorporation, financings, strategic transactions and, ultimately, liquidity events. Elements used in grading: Students will be evaluated on class participation/assignments, negotiation exercises and a final exam (In-School Essay - closed book).

LAW 1043. Blockchain and Cryptocurrencies: Law, Economics, Business and Policy. 3 Units.
Blockchain and cryptocurrency technologies have spawned an extensive and rapidly growing set of businesses along with a corresponding rapidly expanding need for lawyers and regulators with the required expertise. This course provides core background for legal, policy, or business work in the field by nurturing three areas of understanding: (1) the technologies themselves; (2) the scope and nature of business applications; and (3) the pertinent legal and regulatory structures with particular emphasis on securities regulation aspects. Elements used in grading: Exam.

LAW 1045. Prediction and Complexity in Corporate and Securities Litigation. 3 Units.
Success as an attorney and businessperson depends on the ability to predict outcomes in complex situations. Law school courses generally do not develop this skill set. The traditional "case method" asks us to understand how and why cases have been decided. I contrast, this course's "prediction method" challenges students to understand how and why cases yet to be decided will be resolved. The course addresses the academic literature related to prediction, and uses a series of case studies related to undecided cases currently on the US Supreme Court docket to develop student skills as predictors and analysts of complex litigation and transactional situations. This course is open only to students who have already taken and successfully completed a course on Corporate Law or Securities Regulation. Elements used in grading: Attendance, Class Participation, and Final Exam. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. This class will not be offered in 2020-2021.

LAW 1046. Deals in Hong Kong: Field Study. 1 Unit.
This is a travel course that is integrated into Deals I and Deals II. Students who take this course will have taken Deals I and Deals II in the same year. The course will have two elements. First, there will be two deals assigned to two groups of students, as is true of Deals II. Rather than meeting with the lawyers involved in those deals here at Stanford, as we do in Deals II, we will meet in Hong Kong. Students will complete their papers on these deals shortly following their week in Hong Kong. Second, we have a variety of meetings in Hong Kong in which we learn about transactions that are handled by lawyers and bankers there and more generally about business in that part of the world.

LAW 1047. Business, Social Responsibility, and Human Rights. 3 Units.
Large corporations now routinely spend millions of dollars to protect human rights and the environment. Shell Nigeria builds hospitals and schools in the Niger Delta. Nike employs hundreds of inspectors to improve conditions for the factory workers who produce its shoes across Asia and Latin America. Technology companies such as Facebook have scrambled to fend off the threat of new regulation since the Cambridge Analytica revelations. Other examples abound, across industries and around the globe. "Don't be evil" (Google's former motto) may be one motivation for these companies, but something more mundane is also at work: many companies believe they will do well, financially, if they do good, ethically. This course examines questions that lawyers in large law firms, corporations, NGOs, and government agencies regularly confront: --How does business activity affect human rights and other "social" goods (such as the environment and community cohesion)? --What factors, internal and external to companies, shape corporate decisions that have human rights/social impacts? When does it serve a company's interest to take costly action to address human rights, labor, and environmental concerns? -- What tactics have activists used to shift public opinion, media frames, and the law, and thereby change companies' incentives? We will learn through seminar-style discussion, lectures, role play, and small group exercises. Several guest speakers with experience in business, advocacy, or in between will provide insights from their experiences on the ground. Special Instructions: Students have the option to write a long research paper in lieu of the final exam with consent of instructor. After the term begins, students enrolled in the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Class Participation, Written Assignments; Final Exam or Final Paper. Cross-listed with International Policy (INTLPOL 358).

LAW 1048. Introduction to Commercial Law. 3 Units.
Although definitions of commercial law vary, it generally concerns a business enterprise's contracts with its customers and suppliers (usually not with its investors or employees, and not relating to real property). This course surveys legal issues in contracts for the provision of goods, services and information; franchises and distributorships; commercial credit (including secured credit, sureties and guarantees, and letters of credit). Elements used in grading: Grades will be based on class participation, and either a final exam (section 01) or a final paper (section 02). After the term begins, students accepted into the course can transfer from section 01 into section 02, which meets the R requirement, with consent of the instructor.

LAW 1049. Corporate Governance. 2 Units.
This seminar will focus on key topics in corporate governance. We will cover a range of legal and economic issues, including the following topics: hedge fund activism, gatekeeper liability, executive compensation, proxy advisory services, environmental, social, and governance ("ESG") investing, and independent directors. Each of these issues will be introduced by readings and presentations, but the classes will rely on student discussion and critical evaluation of the papers and positions we examine. Many classes will have guest speakers who are experts in the respective area. Students will have the opportunity to write reaction papers that critically analyze the required readings, and to analyze other corporate governance issues of their choice by working in groups. Elements used in grading: Evaluation will be based on reaction papers, class participation, and performance in the group project and presentation.

LAW 1050. Law, Business, and Policy Strategy in the Startup Economy. 3 Units.
This seminar explores the intersection of legal, business, and policy strategy in the startup economy. The class operates along two concurrent paths: First, under faculty supervision, students will act as if they were outside counsel to a Stanford-affiliated startup, learning the business and personal goals of the founder(s) and spotting the relevant legal and non-legal issues. Students will use formal analytical frameworks, including legal research, business strategy, policy strategy, and design thinking, to craft a comprehensive review of the startup's position within the applicable regulatory and business environment, and will present their strategy recommendations to the founder(s) and a panel of faculty and outside experts. Second, students will engage in a case-based exploration of complex legal, regulatory, and ethical issues that often occur in early stage companies. Through focused case studies, students will be required to spot issues, analyze potential outcomes, and make defensible recommendations for legal and business strategy. Issues covered will include corporate formation and capitalization, entering regulated marketplaces, supply chain ethics, employment and culture, and multi-jurisdictional scaling. Elements used in grading: Attendance, Class Participation, Written Assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 1051. Payment Systems: Cryptocurrencies. 2 Units.
This seminar is designed to afford students the opportunity to study the regulation of new, cutting edge payment systems that employ blockchain technology. To do so, students will familiarize themselves with the current state of the law of payment systems as represented in the Uniform Commercial Code, the National Bank Act, and other relevant statutes. Students will then engage readings regarding the regulatory difficulties presented by the realities of cryptocurrency technology. We will start with the history of digital currency, then look at the laws, organizations, trends, and communities behind it to build a complete picture of the ecosystem surrounding blockchain technology. Each student will present and discuss a paper on a topic of interest within the world of cryptocurrencies generally. Each of the students will research and write a paper on cryptocurrency regulation or regulatory technology as the principle component of their final grades. Students have two options. Those taking the course for 2 units (Section 01) will write papers that meet the PW (Professional Writing) requirement. Students taking the course for 3 units (Section 02) will write a long research paper. After the term begins, students accepted into the course can transfer from Section (01) into Section (02), which meets the R (Research) requirement, with consent of the instructor. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper.

LAW 1052. Venture Capital and the Dual Fiduciary. 1 Unit.
This course introduces students to the business and legal/governance issues in venture capital. We will begin with the role of venture capital in the broader US economy, who the players are in the ecosystem and how venture capital funds are raised and managed. We will then have a series of modules through which we'll understand how venture capitalists structure deals (including a full understanding of the economic and governance issues associated with a term sheet). We will dive into the role of the board post-investment, with a particular emphasis on the fiduciary duties (often conflicting) of the board in governing a venture capital financed business. In particular, we will look at the role of the board in financing activities, M&A activities and various special situations. The course will utilize case law as well as various articles and case studies to articulate the potential governance issues boards may encounter. We will focus on practical applications of the rules to real-world situations, with the goal of preparing students post-graduation to be able to properly advise venture-backed boards on how to successfully navigate many of the governance challenge. This class will meet the first five weeks of the quarter (September 25 to October 23). Elements used in grading: Attendance, Class Participation, Written Assignments.

LAW 1053. International Securities Regulation. 2 Units.
This course will focus on the application of United States securities laws and regulations to non-US issuers. We will examine how that regulatory framework differs for non-US issuers, as compared to issuers domiciled in the United States. Initial public offerings, private placements under Rule 144A and Regulation S and ADR programs will all be covered. We will also discuss ongoing reporting requirements and other implications of being a non-US public company. We will take a close look at the Alibaba IPO . The course will be taught from a practical perspective with in-class review of SEC filings, offering documents, SEC correspondence and applicable SEC rules. The Morrison Case and its progeny defining the reach of U.S. Securities law to conduct with limited U.S. contacts, as well as SEC enforcement actions against non-US issuers, will also be examined. Prior completion of Securities Regulation or a comparable securities law class strongly encouraged. Elements used in grading: Class Participation, Final Exam.

LAW 1054. Economics of Contracts. 2 Units.
This course will combine contract theory, a field of economics for which several Nobel prizes have been awarded, with a study of the practice of business transactions. Our discussion will explore how well economic theory illuminates actual contracting practices and how the practice of contract design deviates from theory. Our overarching goal will be to develop an understanding of business transactions that goes beyond the drafting of contract language to conceptual and structural features of agreements. We will discuss design topics such as how contracts respond to incomplete information, the "make or buy" choice (whether to carry out a project within a firm or contract with an external party), the role of judicial enforcement in relational contracts, the use of vague and/or precise language in agreements, obstacles and process of innovation in contracting, and the role and effect of bargaining power. This course differs from the Deals course in that it covers a different set of topics and is less applied, and this course will be conducted in a seminar fashion. Elements used in grading: Class participation, Written Assignments.

LAW 1055. Law of Nonprofits. 3 Units.
This course provides an overview of laws and policies affecting the nonprofit sector. The course will focus both on state laws governing nonprofit corporations and charitable trusts as well as federal tax laws applicable to section 501(c) entities. Topics will include the fiduciary duties of nonprofit directors and trustees, obtaining and maintaining tax-exempt status, nonprofit lobbying and political activities, private foundations and donor-advised funds, and alternative organizational forms such as low-profit limited liability companies and benefit corporations. Lectures and discussions will be supplemented by in-class conversations with leaders of local nonprofit organizations. Special Instructions: No pre-requisites. Knowledge of basic tax and/or corporate law is helpful but not required. Elements used in grading: Final exam.

LAW 1056. Regulatory Economics. 4 Units.
Law 1056 examines public policies for dealing with problems arising in markets in which competitive forces are weak. The focus is on monopolies, oligopolies, cartels, and other environments where market mechanisms are unlikely to produce outcomes that benefit consumers more than the alternatives involving costly government intervention. The two main areas examined are competition policy and economic regulation. Competition policy refers to laws that define certain market behavior as illegal because it is harmful to competition or fails to provide consumer benefits that justify its costs to consumers. Economic regulation refers to policies in which government controls prices and/or decides the terms and conditions under which firms can participate in a market. A growing area of study and policy design is the introduction of market mechanisms into formerly regulated industries such as: telecommunications, electricity, airlines, railroads, postal delivery services and environmental regulation. Prerequisites: Econ 51 or equivalent. Elements used in grading: Class Participation, Attendance, Written Assignments, Final Paper and Final Exam. Cross-listed with Economics (ECON 158).

LAW 1059. Race, Class and Tax. 1 Unit.
This one unit course is only an option for students who are concurrently enrolled Taxation I (LAW 1029) or who have previously taken Taxation 1. The course is an extension of Taxation I with a greater focus on race and class. Goals of the class include deciding which additional materials should be assigned to the basic Taxation 1 course, and what other changes might be made in Taxation 1 and the (Bankman/Shaviro/Stark/Kleinbard) casebook used for the course. The one unit will be graded mandatory P/R/F. After the term begins, students enrolled in Taxation I may enroll in Race and Tax Policy with instructor consent.

LAW 1060. Global Business Law - Asia. 2 Units.
This seminar introduces key attributes of the legal, financial and corporate governance systems of Asia, with a focus on China, Japan and Singapore -- particularly aspects most pertinent to lawyers counseling clients on investing and doing business in those countries. The seminar will also examine several subjects that serve as important conceptual background for practicing transactional law in Asia or representing Asian clients, including the startup ecology in the region, cross-border investor activism, the role of the state as a participant, via state-owned enterprises, in the economies of China and Singapore, and national security concerns raised by foreign investment from China. Elements used in grading: Attendance, Class Participation, Written Assignments.

LAW 1061B. Global Business Law - Asia: Legal Practice. 2 Units.
This course is the field study portion of the Global Quarter. The field study is comprised of a three-week itinerary of office visits, simulated negotiations and counseling sessions, and seminars in Beijing, Hong Kong, Shenzhen, Singapore, and Tokyo. Participation in the field study qualifies for Pathway B treatment of the Experiential Learning requirement. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper.

LAW 1062. Global Capital Markets. 2 Units.
This course will cover a mix of issues that lie at the intersection of the financial regulation of capital markets and corporate finance. The course will include an examination of US regulation of capital flows into and out the United States (including Regulation S, Rule 144A and the use of ADRs), shareholder class action litigation in capital markets around the world through the use of case studies (including the US, Canada, Australia and Japan), financial manipulation in derivative markets (such as the LIBOR scandal), and international arbitration of financial claims. This class runs from January 6 through January 21. Elements used in grading: Attendance, Final Exam. This class is open to ALL students (except 1Ls), and is not limited to students enrolled in the Global Quarter. This class does not overlap with Accounting (students can take both.

LAW 1063. Global Business Law and Public Policy. 2 Units.
This seminar explores selected topics at the intersection of the practice of transnational business law and public policy. This quarter, we will examine three topics of great interest to corporate executives, their legal advisors, and policy makers: the pandemic; human rights and "ESG" (environmental, social, governance) considerations in global business; and the intensifying "tech war" between the U.S. and China. For each of the topics, two seminar sessions will be led by prominent practitioners. For example, our unit on the pandemic includes class sessions with the General Counsel for HHS (discussing Operation Warp Speed and the legal and business challenges behind the development of a vaccine), representatives from KKR (on how the pandemic is changing global business), and from the pharmaceutical industry (on drug development and national security). The final two sessions will be led by teams of students on topics of their choosing. Elements used in grading: Attendance, Class Participation, Written Assignments.

LAW 1064. Selected Topics in Antitrust Law. 1 Unit.
Antitrust law has in the last couple of years become a controversial topic and the subject of intense academic debate, proposed legislation, and international discussion. The seminar will provide a forum in which the students could better understand the current controversies and discuss them in a thoughtful and rigorous fashion. We will have 5 2-hour sessions, each on a different topic with assigned readings. The tentative list of topics is this: (1) "New Brandeis" or populist criticism of the fundamental normative (Chicago and post-Chicago) underpinning of U.S. antitrust law; (2) antitrust and IP, especially patents; (3) antitrust and the digital platforms; (4) antitrust in the health care sector; and (5) comparative perspectives -- antitrust in the U.S. and the European Union. Stanford faculty outside the law school will probably participate in one or more sessions. The class will meet on Wednesdays, from 4:45 to 6:45, on April 1, 15, and 29 and May 13 and 27. Elements used in grading: Attendance, Class Participation. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.
Same as: Reading Group

LAW 1065. Partnership Tax. 1 Unit.
This course will acquaint you with the basic rules and structure of partnership tax. Elements used in grading: Attendance, Class Participation. Class will meet every other Wednesday, 4:10PM to 6:10PM.
Same as: Reading Group

LAW 1066. Global Business Law and Public Policy - Asia Field Study. 2 Units.
This field study is open to students enrolled in the seminar LAW 1063 Global Business Law and Public Policy (GBLPP). Health and safety conditions permitting, students will travel to Singapore with the instructors over spring break for a series of meetings broadly related to the topics explored in GBLPP, which may include global business and human rights, doing business in weak rule of law environments, and responses to the COVID-19 global pandemic. Cultural activities and activities with law students in Singapore will also be planned. Elements used in grading: Attendance, class participation, written assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. NOTE: This course is tentative subject to health and travel restrictions. Consent application will be announced pending approval of the course.

LAW 1067. FinTech Innovation and the Transformation of Financial Services. 3 Units.
This course will focus on the so-called "FinTech Revolution" which is transforming traditional banking and financial services. FinTech generally refers to disruptive financial sector innovations involving technology-enabled (online and mobile device-based) business models. Independent FinTech businesses can facilitate disintermediation, create and deliver novel products and services, increase access and inclusivity, reduce costs and both create and address privacy, regulatory and law-enforcement challenges. FinTech can also refer to the increasingly technological approaches that both incumbents and entrepreneurial ventures take to the main financial intermediation functions, e.g., maturity transformation, payments, capital raising and remittances, and to "back end" data systems and regulatory compliance. The goal of the course will be for students to understand the major categories of FinTech innovation in the U.S., including crypto currency and blockchain, the evolving business models and regulatory and legal structures that underlie these categories, and the opportunities and risks that emerging FinTech business models create for financial, legal and regulatory systems. Non-U.S. examples will be used to compare and contrast different approaches to key policy issues. Four key themes will be emphasized: 1) Understanding innovative business models in emerging FinTech. 2) FinTech competition and cooperation with the existing financial services ecosystem and 'big tech.' 3) Financial regulatory and legal system coverage of, mismatches with, and adaptation to, emerging FinTech business models. 4) Public Policy issues surrounding FinTech (Innovation and efficiency; Personal financial data ownership, use, control and liability; Financial stability; Financial inclusion and consumer financial health). No prerequisites but professor permission will take into account relevant background. Elements used in grading: class participation, class assignments and final take-home assignment. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 1068. Corporate Purpose: Beyond Shareholder Value. 2-3 Units.
The neoliberal orthodoxy that corporate managers' sole duty is to maximize shareholders' financial value has never been entirely adhered to in practice and has been increasingly challenged in recent decades. While acknowledging the importance of shareholder value, commentators have argued that corporations should purposively benefit other stakeholders, including customers, employees, and the communities they affect. At the same time, there has been an upswing of investments aligned with investors' social interests, including public equity investments in companies with high environmental, social, and governance (ESG) ratings and private equity "impact investments" that typically incur greater risks than pure market rate investments. This course will consider a variety of legal, ethical, and policy issues related to corporations' purposes and responsibilities, including: the meanings and measures of corporate social responsibility (CSR) and ESG criteria; disclosure of a company's environmental and social harms or risks; when is it legally and ethically appropriate for corporate managers or institutional investors to compromise shareholder value in the pursuit of social, environmental and other nonpecuniary goals; constituency statutes and benefit corporations that reflect interests other than profit maximization; the power of investors to influence corporate behavior through affirmative investments, divestments and shareholder activism; the power of various stakeholder groups to influence corporate behavior; proposals for broadening the purpose of corporations; barriers to these various practices and proposals; and whether they can be accommodated within neoliberal ideology or require a new framework. You may write a series of short commentaries on four of the sessions. Students electing this option will be graded on a Mandatory Pass/Restricted Credit/Fail basis and receive 2 units of credit. Alternatively, you may write a single empirical research paper on a topic of your choice. This will satisfy the Law School's Research requirement. These papers will be graded on an Honors/Pass/Restricted Credit/Fail basis. Students taking the seminar for R credit can take the seminar for either 2 or 3 units of credit (section 02), depending on the project and paper length. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. This class is limited to 20 students, with an effort made to have students from SLS (15 students by lottery) and 5 GSB students by instructor consent. Elements used in grading: attendance, class participation; written assignments or research paper.

LAW 1070. Social Responsibility, Race, Gender, and the Corporation. 3 Units.
This course uses a series of controversial challenges facing publicly traded corporations as vehicles for exploring advanced concepts in corporate law. Among other topics, the course will likely analyze: (1) The constitutionality and effectiveness of recent California legislation mandating boardroom gender and racial diversity; (2) Google's recent settlement of derivative litigation with the creation of a $310 million social justice fund; (3) The Business Roundtable's statement that corporations owe obligations to constituencies other than stockholders; (4) The performance of Wells Fargo¿s board of directors during its recent phony accounts crisis; (5) The status of derivative litigation challenging boards composed entirely of white directors; (6) The new-found vitality of litigation alleging that directors violated their Caremark duties of oversight; (7) Whether ESG investing can outperform the market, and potential SEC-imposed ESG disclosure obligations; and (8) Reasons for the paucity of criminal prosecutions of senior white collar executives, and potential policy responses. This topic list is subject to change in light of evolving events. Students will be required to write a paper and to sit for an examination. Elements used in grading: Written Assignments, Final Exam.

LAW 2001. Criminal Procedure: Adjudication. 4 Units.
The Law School offers two survey courses dealing with constitutional criminal procedure. "Criminal Investigation" will consider questions that arise under the fourth, fifth, and sixth amendments regarding investigations, interrogations, and charging decisions. This course, "Criminal Adjudication," will look at the way the judicial system handles criminal cases. Topics will include the right to counsel (and the concomitant right to "effective assistance" of counsel), prosecutorial discretion and plea bargaining, joinder and severance, discovery, the right to jury trial, double jeopardy, sentencing, and appellate review. Students may take both Criminal Investigation and Criminal Adjudication. (There is, of course, no requirement to do so.) Elements used in grading: Attendance, participation and final exam. Small grade adjustments will be made for exceptional class participation.

LAW 2002. Criminal Procedure: Investigation. 4 Units.
The law school offers two survey courses dealing with constitutional criminal procedure. "Criminal Adjudication" covers the formal pretrial and trial processes, including the right of counsel, prosecutorial charging criteria, grand juries, bail, speedy trial, discovery, plea bargaining, trial by jury, and double jeopardy. This course, "Criminal Investigation," covers police investigation in the form of searches and seizures, interrogations, lineups, and undercover operations, and hence examines the Fourth and Fifth (and, to a limited extent, the Sixth) Amendment rules regulating the police in these endeavors. It also incorporates some of the federal laws governing electronic communications and privacy. Students may take both Criminal Investigation and Criminal Adjudication. (There is, of course, no requirement to do so.) Elements used in grading: Final exam (in-class, open book), plus small adjustments for exceptional class participation.

LAW 2006. Race, Class, and Punishment. 3 Units.
Since the early 1970s, the criminal justice system in the United States has expanded dramatically. America has adopted an array of increasingly tough approaches to crime, including aggressive street-level policing, longer sentences, and a range of collateral consequences for criminal convictions. As a result, there are currently 2.2 million persons in prisons and jails and seven million under some form of correctional supervision. The impact on communities of color has been especially profound: In many of our nation's cities, nearly one-half of young black men are in the criminal justice system. This seminar will begin with readings discussing the tough-on-crime era's historical roots. We will then turn to examine the impact of these policies. Finally, we will turn to current efforts to resist and reform the system that has been created. This portion of the seminar will focus on violent crime, and whether and how to respond to violent crime differently than we currently do. The assigned reading will be substantial, and will come from a wide variety of sources, including history, sociology, political science, criminology, and law. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper.

LAW 2008. Three Strikes Project: Criminal Justice Reform & Individual Representation. 3 Units.
This seminar offers an opportunity to study mass incarceration, criminal justice reform, and post-conviction litigation in real time. In many ways, the era of mass incarceration began in California with the enactment of the "Three Strikes and You're Out" sentencing law in 1994. Today, California leads political and policy trends in the opposite direction with a number of critical reforms to the state's justice system. In this seminar students read and analyze a variety of cases and articles, examining the evolution of incarceration and sentencing policies in California and across the country. Students also assist with live litigation on behalf of inmates sentenced to life in prison for nonviolent crimes. Students also have the opportunity to contribute to ongoing research, public policy analysis and advocacy in the area of criminal justice reform. The class focuses largely on California's Three Strikes law as a case study in the history, politics, constitutional doctrine, and reform of criminal justice policy throughout the country. Students will test their skills in the field by assisting with the representation of individual inmates sentenced to long prison terms for nonviolent crimes in state and federal courts. The Project has been intimately involved in the movement to reduce incarceration in California and throughout the country, partnering with the NAACP Legal Defense Fund and Obama administration on different projects including direct legislative reform, impact litigation, executive clemency, and prisoner reentry. Students enrolled in the seminar quickly become involved in all aspects of the Project's work, including assistance with different stages of ongoing litigation. Students will visit a Project client in prison, conduct factual investigations, and draft petitions on our clients' behalf. The Project is an active, fast-paced organization that depends on the hard work and contributions of law students enrolled in this seminar. This seminar offers the opportunity to both study the theory behind the law and to hone practical litigation and advocacy skills in and out of the courtroom. The seminar will meet for 3 hours per week, including 1 hour individual meetings with Project director Mike Romano. CONSENT APPLICATION: Interested students must apply to enroll in the seminar by sending a one-page statement of interest and resume by email with the subject line "application" to Mike Romano (mromano@stanford.edu). Applications will be considered on a rolling basis. Elements used in grading: Class Participation, Attendance, Written Assignments.

LAW 2009. White Collar Crime. 3 Units.
This course explores the law of economic and political crimes associated with the rubric "white collar crime." The class is divided thematically between mens rea issues and substantive issues. Among the substantive areas which are covered are: obstruction of justice, perjury, bribery and gratuities, mail and wire fraud, securities fraud, and money laundering. We will study specific federal statutes in considerable detail, while also speculating about the jurisprudence underlying these crimes, and related issues of prosecutorial discretion and attorney ethics. Special instructions: Students may write a paper in lieu of the final exam for Research credit. Also, classroom participation may be taken into account to some very small degree. After the term begins, students accepted into the course can transfer from section (01) into section (02) which meets the R requirement, with consent of the instructor. Elements used in grading: Class participation and final exam or paper.

LAW 2010. Sentencing, Corrections, and Criminal Justice Policy. 3 Units.
(Formerly Law 621) This introductory course will familiarize students with the history, structure, and performance of America's sentencing and corrections system for adult offenders. Sentencing is the process by which criminal sanctions are imposed in individual cases following criminal convictions. Corrections deals with the implementation and evaluation of criminal sentences after they are handed down. In fact, the two subject areas are inseparable. The course will examine sentencing and corrections from global and historical views, from theoretical and policy perspectives, and with close attention to many problem-specific areas. We will explore: (1) sentencing theories and their application; (2) the nature, scope and function of jails, prisons, probation and parole; (3) the impact of incarceration on crime, communities, and racial justice; (4) the effectiveness of rehabilitation programs; (5) the collateral consequences of a criminal conviction; (6) special prison populations (e.g., mentally ill) and policies (e.g., solitary confinement); (7) prison litigation and conditions of confinement; and (8) parole, risk prediction, and prisoner reentry. These topics will be considered as they play out in current political and policy debates. Guest lectures may include presentations by legal professionals, victims, offenders, and correctional leaders. This course is open to 1Ls, 2Ls, and 3Ls in the Law School. Special Instructions: Grades will be based on class participation (which will include a class presentation), and three reflection papers of 5 to 7 pages each. Due dates will be listed in the class syllabus. Elements used in grading: Final grades will be based on the three reflection papers (25% each) and class participation (25%).

LAW 2013. United States v. Milken: A Case Study. 2 Units.
The most recent financial crisis that began in 2008 has resulted in a call, mostly ignored, for significant jail time for those allegedly responsible, without any explanation of the crimes that may have been committed. The aggressive use of the criminal laws to respond to perceived financial abuse probably had its birth in the prosecution of Michael Milken. Although folks will differ about the prosecution, there is no realistic dispute about the influence Mr MILKEN has had in creating the markets which made possible for new ideas and ventures to have access to the capital needed to build and thrive. . MILKEN effectively developed the so called "junk bonds" market which was the engine that allowed for this theoretically high risk capital to be effectively deployed. As the high yield market grew, Michael Milken and the firm he worked for, Drexel Burnham became the largest and most effective competitor in the market place. This led to a call for an investigation and coincided with a significant insider trading investigation centered on Ivan Boesky (fictionalized in the first Wall Street movie). The US Attorney in NY at the time was Rudolph Giulliani (later Mayor of NY and, more recently, know for his representation of President Trump in various matters including the Ukrainian matter) who led the investigation. Ultimately Mr MILKEN was indicted and pled guilty and was imprisoned. This seminar will involve an in depth study of the circumstances surrounding the high yield securities market and the investigation, indictment and guilty pleas and the subsequent impact of the case. The seminar will examine the tools available to prosecutors, including the use of the Racketeer Influenced and Corrupt Organizations Act (RICO) in white collar cases, in pursuing this and other cases, the affect of the media in high profile cases and other systemic elements that come into play. The seminar will feature presentations of many colorful key players including those involved in the prosecution and defense and those with knowledge of the high yield markets. The seminar will be taught jointly by Professor Mills (who was intimately involved with Mr MILKEN and defended some of the other cases which arose at the time) and Richard Sandler who served as Michael Milken's personal counsel throughout the time and has continued to work with Michael Milken to the present time. Elements used in grading: Class presentation and final paper.

LAW 2015. Advanced Criminal Law. 3 Units.
The intensity of the current debates over criminal law and criminal justice policy is at an unusually high level, with strong and conflicting positions being staked out in the areas of race and crime, policing, incarceration and sentencing, drug policy, and guns. We will be discussing these topics with a mixture of doctrinal analysis of key issues, review of secondary commentaries on key aspects of criminal justice policy, and analysis of empirical papers that illuminate important elements relevant to these legal and policy debates. Elements used in grading: Grading will be based on attendance, class participation, one-to-two-page response papers to readings, and three six-page papers on topics distilled from each of the three three-week blocks in the course.

LAW 2016. Violence and the Law. 2-3 Units.
This seminar will explore how the law thinks about violence. Across various legal domains---e.g., criminal law, criminal procedure, juvenile justice, immigration, domestic violence, family law, civil rights, free speech, firearms regulation---we will study when and to what extent the law marks off violence as a category of distinct concern, how violence is defined, and what ideas the law reflects about how violence operates. Students may elect to write a substantial research paper or a series of short response papers. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Attendance, Class Participation, Response Papers or Final Paper.

LAW 2018. Wrongful Convictions: Causes, Preventions and Remedies. 3 Units.
Over the course of the past two decades there has been increasing recognition that, despite its commitment to the concept of proof beyond a reasonable doubt, our criminal justice system yields a steady stream of wrongful convictions. This Seminar will focus on some causes, preventions and potential remedies for this phenomenon. Subjects to be addressed include eyewitness identification, interrogations and confessions, jailhouse informant testimony, forensic evidence, the psychology of tunnel vision and confirmation bias, the role of appellate review and habeas corpus, the role of clemency, the impact of the problem on the death penalty, and issues around compensation of those who have been wrongly convicted. As we study these subjects, we will also reflect on whether taking some reforms too far will impair on the efficacy of legitimate law enforcement. The class will meet for two hours each week. In addition, there will be three additional evening or weekend sessions (to be scheduled at the convenience of the participants). During each of these additional sessions, students will watch a film involving a wrongful conviction and will engage in conversation about the particular case involved. Each student will be responsible for preparing a paper on an appropriate topic to be chosen in consultation with the instructor. Consent Instructions: After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Class participation; Paper.

LAW 2019. Criminal Procedure: Theoretical Foundations. 2-3 Units.
This course examines the theoretical foundations of criminal procedure---political, historical, and, above all, philosophical. What are the ideas at work in the American system of criminal procedure? How, historically, did the system develop, and why does it presently function as it does? Is the system broken and, if so, what principles should orient us in fixing it? This theoretical inquiry has a practical point. Procedure plays a major role in the present crisis of American criminal justice. By examining criminal procedure's theoretical foundations, this course aims to develop competing "big picture," synthetic perspectives on the criminal justice crisis as a whole. Thus, for students interested in criminal justice reform, this course will equip you to take a philosophically richer view of the underlying policy issues. For students thinking about a career in criminal law, this course will equip you to engage in large-scale thinking about how criminal procedure should change, rather than just working within the doctrinal and institutional structures that exist at present. For students interested in legal academia, this course will develop your ability to read sophisticated theoretical material, to write in the same vein, and to relate theoretical ideas to policy prescriptions. Elements used in grading: Class participation and, based on individual student preference, either a final reflection paper or a final research paper. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Students taking the course for R credit can take the course for either 2 or 3 units, depending on paper length. Cross-listed with Philosophy (PHIL 375K).

LAW 2020. History of Criminal Justice. 2 Units.
This seminar will deal with the history of criminal justice in the United States, since the colonial period. The emphasis will not be on doctrines of criminal law, or (for the most part) on reported case law; but rather on the relationship between the working criminal justice system and American society. Indeed, throughout our history, there has been a huge gulf between the formal law and the way the system actually operated. At all points, the criminal justice system has responded to social, economic, political and cultural factors; and it is these that the course will focus on. The students will read a number of original sources that bear on the relationship between law and society, including sources on the rise of the penitentiary, the death penalty, the development of correctional methods, such as parole and indeterminate sentences; also race and gender relations and their influence on criminal justice. The course will also look at the rise and fall of laws controlling moral and sexual behavior. Students will be expected to write brief reflection papers (roughly two pages) before each of the sessions in which readings will be discussed. The reflection papers should not be mere summaries of the readings, rather, students will explain how the readings bore on the general theme or themes of the course; and the student's reaction to the writer's point of view. Each student will also be asked to develop a topic, carry out research, and write a paper on one or more aspects of the history of criminal justice. Papers can either be synthetic (a review of the literature on some aspect of the history of criminal justice) or embody original research, using such material as court files, older treatises, and newspaper and periodical literature. Elements used in grading: The grade in the seminar will be based on the paper, and (to a degree) also on class participation, including the reflection papers.

LAW 2023. Law, Order & Algorithms. 3 Units.
Human decision making is increasingly being displaced by predictive algorithms. Judges sentence defendants based on statistical risk scores; regulators take enforcement actions based on predicted violations; advertisers target materials based on demographic attributes; and employers evaluate applicants and employees based on machine-learned models. One concern with the rise of such algorithmic decision making is that it may replicate or exacerbate human bias. This course surveys the legal and ethical principles for assessing the equity of algorithms, describes statistical techniques for designing fair systems, and considers how anti-discrimination law and the design of algorithms may need to evolve to account for machine bias. Concepts will be developed in part through guided in-class coding exercises. Admission is by consent of instructor and is limited to 20 students. CONSENT APPLICATION: To enroll in the class, please complete the course application by March 20, available at: https://5harad.com/mse330/. Elements used in grading: Grading is based on response papers, class participation, and a final project. Prerequisite: CS 106A or equivalent knowledge of coding. Cross-listed with Comparative Studies in Race & Ethnicity (CSRE 230), Management Science & Engineering (MS&E 330), Sociology (SOC 279).

LAW 2024. Search Warrants in the Digital Era. 2 Units.
This will be a 2-hour advanced criminal procedure class, designed to acquaint students with the challenges confronting judges as they apply the Fourth Amendment to the bewildering array of search and surveillance techniques available to law enforcement in the 21st century. Various surveillance techniques will be examined, such as cell site simulators, GPS and RFID tracking devices, remote computer access (NITs), biometric identification, facial recognition technology, and automated license plate readers. The novel legal and practical issues generated by computer-based search techniques will be explored, for example: Should the plain view exception apply to computer searches? Are ex ante conditions on computer search warrants necessary, or even advisable? When is compulsion of biometric device identifiers appropriate? Can providers be compelled to decrypt locked cell phones? What are the notice requirements for search warrants directed to service providers? What limits should be placed on border searches of electronic devices? After the Supreme Court's 2018 decision in Carpenter, what rules govern law enforcement access to medical or genetic databases maintained by third parties? How is a cell tower dump order distinguishable from a general warrant? What are the particularity requirements for search warrants seeking electronically stored information? Should there be super-warrant requirements pertaining to minimization and overcollection for such searches? What about extraterritoriality and conflict of law issues raised by U.S. law enforcement access to data stored on foreign servers? Broader policy questions will also be addressed. For example, is it sensible to rely on the exclusionary rule to develop Fourth Amendment doctrine in this "golden age of surveillance"? Are courts or legislatures better equipped to regulate modern police investigations? What lessons can be learned from comparative approaches to police regulation in other countries? The course will build upon foundations laid in the Criminal Procedure--Investigation and Criminal Procedure--Adjudication courses. Those classes touch upon the basics of search warrants and the Fourth Amendment, and both are recommended prerequisites for this class. The next generation of judges, prosecutors, defense attorneys, and civil rights advocates will be forced to apply existing legal precedent to unprecedented surveillance technologies generated by the digital era. This course is designed to help them meet that daunting challenge. Elements used in grading: Attendance, Class Participation, Final Exam.

LAW 2025. Search and Seizure Issues for Criminal Lawyers. 2-3 Units.
This seminar on selected issues in search and seizure for criminal lawyers will enhance your future clinic experience. Students will explore thorny issues raised in suppression motions using fact patterns and investigative materials from actual, prior clinic cases. Assigned readings will include briefs and governing caselaw on each topic. Students can take the course for either 2 or 3 units. Students electing 3 units will write an additional 10 page brief. After the term begins, students enrolled in the course can transfer from section 01 (2 units) into section 02 (3 units) with consent of the instructor. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper. This seminar will be offered to students who were enrolled in the Spring 2020 Criminal Defense Clinic (which was cancelled). Depending on enrollment, other students may be considered with the consent of the instructors.

LAW 2026. American Criminal Justice and Its Discontents. 3 Units.
In this course students will participate in direct dialogs with major national experts and institutional leaders from a variety of perspectives on the country's criminal law system. We will hear from experts and leaders from law enforcement, prosecution, public defense, the judiciary, and corrections, and policy experts (including from the academic world). The thematic coverage of the course will be broad, covering empirical assessments of the state of criminal justice in the US, efforts to bring the country out of the phase of mass incarceration while maintaining record-low crime rates, reforms in our sentencing laws (including the death penalty), assessing what is meant by the rubric "progressive prospection," the workload challenges of public defenders, addressing the problem of wrongful convictions, and racial discrimination in both investigation and adjudication of crime. Each week there will be a Zoom interview with a guest. The instructors will interview the guests, and students will then participate in a Q and A phase. The interview sessions will generally run 90 minutes. For each guest there will be preassigned material to be read before the interview. Within 2 days after each interview, students will turn in 3-page reflection papers derived from the interview and reading. The final product will be a 10-page essay on a topic that has emerged from the course. This 10 page paper need not me a scholarly or research endeavor. It can be, in effect, a more extended reflection essay. We anticipate that for most weeks we will have one guest, either Monday or Wednesday, and the other day will be reserved for more elaborate discussions of the most previous guest's presentation or of reading for the next guest. There may be one or 2 weeks where we have 2 guests. While we are just now settling the guest list and anticipate some very exciting additions, for sure it will include Barry Scheck, founder of the famed Innocence Project. Professor Rachel Barkow of NYU. Leading authority on criminal justice administration. Earlonne Woods, former California life prisoner and co-creator and now co-producer and writer for of the Ear Hustle podcast. George Gascon, former Police Chief and former District Attorney of San Francisco and now candidate for Los Angeles County District Attorney. Professor John Donohue of Stanford, widely regarded as the nation's leading empirical researcher of crime and sentencing. Professor Sherri Lynn Johnson of Cornell, expert on the death penalty, who successfully argued the dramatic Flowers v. Mississippi case in SCOTUS last year (overturning a death verdict because of racial discrimination in jury selection.). Enrollment: Limited to 25 students; slots are guaranteed for students who had been enrolled in the Three Strikes Project course or Advanced Criminal Law for Spring term. Schedule. There may be a few sessions at a different time to accommodate our guests' schedules and constraints. The attendance rule for students is that they must ensure live attendance at least 8 of the sessions. For any missed session, the student must view the recorded video of the session within 24 hours and submit the reflection paper on schedule. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 2027. Prosecutorial Discretion and Ethical Duties in the Enforcement of Federal Criminal Law. 3 Units.
Prosecutors wield enormous power over life, liberty and reputation and are subject to ethical standards higher than those that apply to other attorneys. As former U.S. Supreme Court Justice Sutherland recognized in the context of federal prosecutors, "[t]he United States Attorney is the representative not of an ordinary party to a controversy, but of a sovereignty whose obligation to govern impartially is as compelling as its obligation to govern at all, and whose interest, therefore, in a criminal prosecution is not that it shall win a case, but that justice shall be done." A U.S. Attorney may "strike hard blows" but not "foul ones." This course examines the distinct roles and responsibilities of U.S. Attorneys in the enforcement of federal criminal laws. We will review the ways in which a federal prosecutor exercises discretion in deciding whether or not to charge, what crimes to charge, and what punishments to seek. We will examine charging both individuals and corporate entities in the context of the priorities and policies of different administrations as well as the prosecutor's individual ethical obligations. This will be done on both a practical and conceptual level. Introductory sessions will focus on the historical evolution of the office, beginning with the Judiciary Act of 1789, and examine the office's complex (and unique) role within the system of separation of powers (including the appointment of Independent Counsel, Special Counsel and the judicial appointment of United States Attorneys). It will also explore related theoretical questions involving the prosecutorial role as well as challenges to the constitutionality of the judicial role in selecting US Attorneys. The bulk of the course will involve class sessions centered on different federal cases that involved difficult questions of prosecutorial decision-making. We will discuss the tools prosecutors use in exercising their discretion, including non-prosecution agreements, deferred prosecution agreements and cooperation agreements. The course will also explore the relationship between the U.S. Attorney and "Main Justice" and the extent to which the U.S. Attorney has independent decision-making authority. It will delve into the conflicts that may arise, and it will examine the appropriate framework for resolution of those conflicts. All students will write a paper for the class. Students may optionally elect to write an independent research paper for R credit. Students should submit at least 15 pages in the non-R (01) section. Students receiving R credit must abide by the Law School's research paper requirements -- which have the effect, because this is a three-credit course, of imposing a 26-page minimum. After the term begins, students accepted into the course can email registrar@law.stanford.edu to transfer from section (01) into section (02), which meets the R requirement. Please observe the Registrar's deadline (final study list deadline) for switching into the R section. Elements used in grading: Attendance, class participation, research paper.

LAW 2401. Advanced Civil Procedure. 3 Units.
This course will address significant areas of procedural law and design that go beyond the first-year civil procedure course, with special attention to the relevance of procedural choices to civil rights and public law litigation. Contemporary litigation frequently involves multiple related actions, multiple parties, and multiple claims that may interact in complex ways, and often aspires to reform institutions in addition to seeking remedies for discrete past harms. This course introduces procedural doctrine, theory, and practice related to complex and/or public law litigation, including such topics as the joinder of claims and parties, claim and issue preclusion, class action law, multidistrict litigation and other forms of aggregation, and the turn towards mandatory arbitration. The course should be of particular interest to aspiring litigators (in any substantive area) and public interest lawyers (litigators or otherwise), and complements other curricular offerings in complex and constitutional litigation. Elements used in grading: Exam, class participation.

LAW 2402. Evidence. 5 Units.
Evidence rules constrain proof at criminal and civil trials. We will study the Federal Rules of Evidence, related case law, and those constitutional concepts that limit proof at criminal trials. Topics include relevance, unfair prejudice, character evidence, impeachment, the rape shield law, hearsay, the Confrontation and Compulsory Process Clauses, and expert testimony. Please note that the California Bar Examiners have posted this announcement: "Applicants should be prepared to answer questions that have issues concerning the Federal Rules of Evidence and the California Evidence Code. Applicants should be prepared to compare and contrast the differences between the Federal Rules and the California Evidence Code, especially where the California rules of evidence have no specific counterparts in the Federal Rules." This evidence course covers only the Federal Rules of Evidence and does not address the California Evidence Code. Though similar principles govern the Federal Rules and California Code, the two sets of rules are not identical. Students preparing for the California Bar Exam will have to learn some new material. Elements used in grading: Final exam (one-half essay and one-half multiple choice).

LAW 2403. Federal Courts. 4 Units.
This course addresses the role of the federal courts in the American system of federalism and separation of powers, as well as their role in the development of substantive federal law and constitutional rights. We will cover three major topics: (1) Congressional and judicial control over federal and state court jurisdiction; (2) the relationships between state and federal courts; and (3) the nature of federal cases. The course is strongly recommended for students interested in pursuing a judicial clerkship and/or a career in litigation. Elements used in grading: Class attendance, class participation, one-day take home exam.

LAW 2404. Global Litigation. 4 Units.
German owned VW admits that it included a "defeat device" in the software for its diesel cars so they could fraudulently pass US environmental tests, and is sued by thousands of US consumers in state and federal courts in the US. Very quickly, the cases are consolidated in the federal court in Northern California. Meanwhile, special purpose foundations are established in the Netherlands to seek a settlement with VW on behalf of European consumers under the Dutch collective settlement act, and a securities lawsuit on behalf of investors whose share values have dropped dramatically is filed in Germany, using that country's special group litigation procedure. The Dutch foundations may be coordinating their actions with US lawyers, the shareholders in Germany are represented by the local partners of a leading US-based litigation boutique, and the shareholder suit is funded by a UK-based international litigation financing firm. In 2019, a jury in E.D. Va. delivers a verdict holding a former Somali army commander now living in the U.S. liable under the Torture Victim Protection Act for compensatory and punitive damages to a Somali citizen he injured 30 years ago. The plaintiff is represented by the Center for Justice & Accountability in San Francisco and DLA Piper lawyers serving pro bono; the witnesses include public and private actors from different countries. In 2011, US-based Apple sues Korea-based Samsung for patent infringement in N.D. CA and Samsung counter-sues in Korea, Japan and Germany. A year later more than 50 lawsuits are ongoing in more than 10 countries. Two years later the companies agree to drop their litigation outside the US and focus their resources on their US litigation battle. Apple wins a big judgment in the federal court in San Jose but Samsung appeals all the way up to the U.S. Supreme Court. SCOTUS rejects the appeal and remands and in Spring 2018 the case is on the calendar for the third time in San Jose. Philip Morris' Hong Kong subsidiary files a claim in an international arbitration tribunal charging that Australia's public health protection statute regarding tobacco marketing violates Australia's bi-lateral investment treaty with Hong Kong. The arbitration claim is filed after the parent company unsuccessfully challenged Australia's statute before the High Court. In December 2015 the arbitration tribunal rules that it does not have jurisdiction over Philip Morris' claim effectively dismissing it. But controversy over Philip Morris' and other multi-national corporations' attempts to use investment arbitration to challenge diverse health, safety and environmental protection regulations derails international trade negotiations and leads to efforts to establish an international court for investment disputes. These high-profile cases illustrate an important aspect of complex litigation: across many different substantive domains, in court and ADR proceedings, disputes that used to be contained within national borders are now trans-national. This seminar will consider the doctrinal, procedural and practical challenges that arise when litigation goes global. We will consider the high profile cases in which these issues have played out in recent years and hear from some of the lawyers who are creating a new virtual international court system for the resolution of global disputes. The goal of the seminar is to develop an understanding of how the global dimension of high-stakes complex disputes shapes parties' and lawyers' strategies and judges' decisions. The seminar will meet 3 times a week. A small number of seminar sessions will be conducted in collaboration with law faculty and students in Canada, the Netherlands and Germany, three countries that have adopted procedures for dealing with large-scale civil litigation in distinctive fashions. Although teaching plans for the fall quarter are still somewhat in flux, I expect that I will teach this seminar mainly on-line, although I hope there will be an opportunity to hold a few introductory sessions in person. Guest speakers will appear online. Where time differences permit, sessions with guest speakers will be synchronous; otherwise I will record interviews with our guests, which we will then play in class and discuss. Special Instructions: Students on the waitlist for the course will be admitted if spots are available on the basis of priority and degree program. Elements used in grading: Class participation and course paper.

LAW 2406. Conflict of Laws. 3 Units.
(Formerly Law 251) Instances are common in law where more than one legal authority potentially governs a particular event, occurrence or transaction. When the outcome required by these authorities differs, which law governs? Beginning with the classic problem of choosing an applicable law in cases with facts touching more than one jurisdiction, this course is designed broadly to explore the variety of theories and systems used to resolve this question. The course thus uses state/state conflicts to develop a set of approaches and then extends these to such other problems as adjudicatory jurisdiction, judgments, federal subject-matter jurisdiction, and public and private international law. Elements used in grading: Attendance, preparation, participation and final examination.

LAW 2407. Arbitration: Law, Practice & Politics. 3 Units.
Arbitration, once narrowly defined as a party-selected method for resolving contract-based disputes arising out of commercial transactions, is now ubiquitous. In the U.S. in addition to resolving run-of the-mill commercial disputes, arbitration may be used to resolve claims invoking anti-trust, securities, and civil rights law, and consumers, employees, patients and other individual claimants may be held to arbitration provisions included in form contracts drafted by corporations that the individuals overlooked or barely understood. Businesses too may find themselves held to an arbitration clause hastily chosen by a transactional lawyer who didn't understand what she was committing her client to. Economic globalization has created increased demand for international commercial arbitration, which offers binding resolution of trans-national business disputes, enforceable in virtually every court in the world. The increased frequency of complex high-value international transactions involving key industries -- e.g. energy and telecommunications -- has led to an increasing fraction of transnational business disputes with a significant public policy dimension. Moreover, the desires of countries with less developed economies to attract foreign direct investment has led to the creation of a specialized form of arbitration for disputes between private investors and states. Often bundled with other forms of alternative dispute resolution ("ADR") such as mediation, arbitration is actually a rule-defined adjudicative procedure, in which parties submit their disputes to privately-chosen and privately-paid decision-makers who deliver binding (and usually unappealable) outcomes, often in closed proceedings. The law that governs arbitration is a mix of domestic statutes (e.g., in the U.S., the Federal Arbitration Act) and international conventions (e.g., the New York Convention on the Recognition and Enforcement of Foreign Arbitral Awards, the Convention on the Settlement of Investment Disputes between States and Nationals of Other States ("ICSID")) that have been entered into by a large majority of countries. Today, arbitration offers a challenging and lucrative practice area to lawyers representing corporations in multiple industries, in domestic and international contexts, and to lawyers serving as arbitrators, who often command high hourly rates. Understanding the differences and similarities among arbitration law and practice in multiple domains and the intersection of public and private law is valuable to lawyers who specialize in arbitration. This seminar is intended for students who wish to develop this capacity as well as for students who want to understand better how to draft business contracts that will protect their clients should they find themselves subject to arbitration. Although arbitration is well-accepted around the world, certain applications of arbitration have become increasingly controversial. In the U.S. the requirement that employees agree to arbitrate sexual harassment claims as a condition of employment has led to boycotts against "big law" firms. Requirements to arbitrate disputes between private investors and national governments have knocked high-profile multi-lateral trade negotiations off-track. Some business decision-makers are turning away from arbitration for "ordinary" commercial disputes, arguing that it has become as expensive and time-consuming as court adjudication, without the protections of the latter. In this course we will consider separately and together, the statutes that provide the legal framework for arbitration, the specific rules that govern different types of arbitration, the ongoing controversies evoked by some of these rules and their application, and the reforms that have been proposed in response to these controversies. We will read and discuss U.S. case law, international arbitration decisions, academic commentary and empirical analyses of arbitration use and consequences, and hear from leading arbitration practitioners. Students will select aspects of arbitration law or practice or the controversies that surround it and write research papers on their topic of interest. Elements used in grading: Attendance, Class Participation, Final Paper.

LAW 2408. Advanced Federal Courts. 1-3 Unit.
This advanced course in structural constitutional law builds on concepts, doctrines, and themes developed in Federal Courts. Modern doctrines attempting to reconcile federalism, the supremacy of federal law, separation of powers, and the specific jurisdictional limitations of Article III judicial power raise complex questions about the nature and scope of judicial review, remedies, the adversary system, and alternatives to adjudication, among other subjects. This course is designed to allow students to deepen their expertise and explore discrete topics in a tutorial-style format with the instructor. Individual topics will be selected on the basis of student interest in consultation with the instructor, appropriate reading will be selected for analysis and discussion (generally by using a canonical or innovative text as a springboard), and students will be guided in the development of novel doctrines, theories, and practical solutions to some of the most vexing issues in the field. Evaluation will be based on participation in mentored research and tutorial engagement as well as the creativity, prose quality, and persuasiveness of the paper. Students may take the course for 1-3 units. The paper requirement is 10-12 pages for each unit. Student electing 2 or 3 units should enroll in Section 02 (which can count for R-credit). Class sessions to be scheduled in harmony with students' other course commitments. Elements used in grading: Written Assignments, Final Paper. Prerequisite: Federal Courts. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 2409. Anatomy of the Opioid Litigation: A Case Study in Complex Litigation. 3 Units.
Although easy to lose sight of in the midst of the Coronvirus epidemic, the United States is in the midst of an opioid addiction epidemic. More than 10 million Americans 12 years and older are estimated to have misused opioids in 2018, most of which misuse was linked to prescription drugs. Approximately 47,000 Americans died of opioid overdoses in that year. Opioid use is reported to have peaked in 2011 but opioid addiction remains a problem in many parts of the country (CNN Editorial Research, "Opioid Crisis Fast Facts," June 21, 2020, available at https://www.cnn.com/2017/09/18/health/opioid-crisis-fast-facts/index.html). The opioid crisis presents a variety of public policy challenges. Like the Crack epidemic of the 1980s, opioid misuse has had disproportionate effects on certain communities. While the former disproportionately affected poor Black urban communities and other urban communities of color, the latter has primarily affected poor White communities, particularly in non-coastal areas of the country. The former was met with popular criticism of its victims and draconian criminal justice policies that incarcerated a generation of Black Americans and other people of color. The latter has been met with an outpouring of concerned media commentary, and funding (however insufficient) for public treatment programs. It is difficult not to conclude that systemic engrained racism explains much of this difference. The opioid crisis also differs from the crack crisis, however, in that opioid victims and their advocates have been able to target responsible parties and attempt to hold them accountable for the harm and losses their conduct has imposed on addicts, their families and their communities. It is widely agreed that the origin of the epidemic was the virtually unlimited distribution of prescription opioid drugs, allegedly encouraged by the drug manufacturers and enabled by other corporations in the pharmaceutical supply chain and by the physicians who prescribed the drugs. The opioid epidemic has also led to a wide-ranging litigation, which has taken as its role model earlier litigation against tobacco manufacturers and ongoing litigation against gun manufacturers. The opioid litigation stands as an example of joining private and public civil litigation to claim compensation for losses due to alleged wrongdoing by private corporations and in the process reshape public policy with regard to harm. To prevail against defendants, plaintiffs have had to persuade courts to apply liability doctrine in unusual although not entirely new ways. Much of the litigation resulting from opioid overdoses and addiction has been contested in the federal courts, which have deployed an armamentarium of formal and informal procedural rules and practices developed over the past several decades to manage and resolve large-scale litigation. Innovative approaches have been adopted by the federal judge assigned to manage the litigation. Key defendants have chosen to manage their liability by seeking the protection of the bankruptcy courts. In sum, the opioid litigation offers opportunities to consider the roles of socio-economic inequality and racial attitudes in shaping perceptions of harm, the potential of tort law to provide remedies for losses, and the challenge of pursuing remedies for mass loss in federal courts. Through readings, guest lectures, discussion and individual research papers on relevant topics of your choice, this seminar will provide both practical information about litigating mass tort claims and space to consider the appropriate role of courts in solving social policy problems. Attendance, Class Participation, Written Assignments, Final Paper.

LAW 2502. Climate Change Policy: Economic, Legal, and Political Analysis. 4 Units.
(Formerly Law 746) This course will advance students' understanding of economic, legal, and political approaches to avoiding or managing the problem of global climate change. Beyond focusing on economic issues and legal constraints, it will address the political economy of various emissions-reduction strategies. The course will consider policy efforts at the local, national, and international levels. Theoretical contributions as well as empirical analyses will be considered. Specific topics include: interactions among overlapping climate policies and between new policies and pre-existing legal or regulatory frameworks; the role that jurisdictional or geographic scale can play in influencing the performance of climate policy approaches; and numerical modeling and statistical analyses of climate change policies. Elements used in grading: Class Participation, Written Assignments, Final Exam. Cross-listed with Economics (ECON 159).

LAW 2503. Energy Law. 3 Units.
Modern energy systems aim to deliver a supply of reliable, low-cost, and clean energy; in turn, they require major capital investments in infrastructure projects, some of which have the features of a natural monopoly and therefore require ongoing economic regulation. The U.S. energy system today is subject to a complex regime of state and federal laws. We will examine the historical role of state-level electric utility regulation, tracing its evolution into the various forms of regulated and deregulated energy markets now in use in the U.S. electricity and natural gas sectors. Contemporary energy law increasingly involves a delicate federalist balance where state and federal regulators share overlapping authority in contested policy areas that are subject to major technological and economic change. Finally, we will interrogate the contested ideals of regulation and competition, which private, non-profit, and governmental stakeholders deploy in legal and political fora to advance private gain and public goods. Students who complete the class will gain a historical understanding of how economic regulation of the energy sector has evolved since the early 20th century, a durable conceptual framework for understanding modern energy law and policy debates, and a practical understanding of energy law designed for future practitioners. Non-law students interested in energy issues are highly encouraged to take this course, as energy law literacy is essential to careers in the sector. Elements used in grading: class participation, short written assignments, and a one-day take-home final exam. Cross-listed with Environment and Resources (ENVRES 226).

LAW 2504. Environmental Law and Policy. 3 Units.
Environmental law is critically important and endlessly fascinating. In this course, we will look at the major statutes and policies used, at both the federal and state levels, to protect humans and the environment against exposure to harmful substances, including the Clean Air Act, Clean Water Act, Superfund, the Resource Conservation & Recovery Act, and laws designed to regulate toxic substances. This class will also examine the challenges of global air pollution, including climate change and ozone depletion. The class will look not only at the substance of these laws and policies, but also at enforcement challenges, alternative legal mechanisms for advancing environmental policies (such as voter initiatives and common-law actions), the role of market mechanisms in addressing environmental problems, and constitutional restrictions on environmental regulation. As part of the class, students will engage in a series of situational case studies designed to provide a better sense of the real-world issues faced by environmental lawyers and to teach students the skills and tactics needed to solve those issues. Elements used in grading: Attendance, Class Participation, Exam.

LAW 2505. Land Use Law. 3 Units.
This course focuses on the pragmatic (more than theoretical) aspects of contemporary land use law and policy, including: the tools and historical/legal foundation of modern land use law; zoning and General Plans; the process of land development; vested property rights and development agreements; eminent domain, regulatory takings, and exactions; redevelopment; growth control, sprawl, housing density, and affordable housing; historic preservation; direct democracy over land use; global warming and climate action plans; and environmental review (CEQA and NEPA). We explore how land use decisions affect environmental quality and how land use decision-making addresses environmental impacts. Special Instructions: Student participation is essential. Roughly four-fifths of the class time will involve a combination of lecture and classroom discussion. The remaining time will engage students in case studies based on actual land use issues and disputes. This class is limited to 20 students selected by consent. Elements used in grading: attendance, class participation, two short writing assignments, an oral presentation, and a final exam. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 2506. Natural Resources Law and Policy. 3 Units.
Natural resource management presents extremely difficult and contentious issues of law and public policy. Major debates continue to rage over issues such as the Endangered Species Act, whether the United States should permit drilling in the Arctic National Wildlife Refuge, and how to prevent the overfishing of the oceans. This course will focus on two major aspects of natural-resource management: biodiversity protection (including the Endangered Species Act, ocean fisheries management, and global protection of marine mammals) and public lands in the United States such as national parks and wilderness areas. The course also will examine the National Environmental Protection Act and the effectiveness of environmental impact assessments. Class sessions will include critical examinations of current law and policy and in-depth discussions of situational case studies that force you to consider how you would resolve real-life issues. Students will be expected to participate actively in class discussions. (This course will not examine either water law or energy law in any depth. Several other courses in the Law School deal with energy-law questions.) Elements used in grading: Class participation and final exam (open book).

LAW 2508. The Business of Water. 2 Units.
One of the fastest growing economic sectors is the water field, and private water companies are playing an increasingly important role around the world in water management. In many cases, private companies have made important contributions to meeting water needs (e.g., in the development of new technologies and expanding water supplies). In other cases, however, the involvement of private companies has proven controversial (e.g., when private companies have taken over public water supply systems in developing countries such as Bolivia). This course will look at established or emerging businesses in the water sector and the legal, economic, and social issues that they generate. These businesses include investor-owned water utilities, water technology companies (e.g., companies investing in new desalination or water recycling technologies), water-right funds (who directly buy and sell water rights), social impact funds, innovative agricultural operations, water concessionaires, and infrastructure construction companies and investors. Each week will focus on a different business and company. Company executives will attend the class session and discuss their business with the class. In most classes, we will examine (1) the viability and efficacy of the company's business plan, (2) the legal and/or social issues arising from the business' work, and (3) how the business might contribute to improved water management and policy. Each student will be expected to write (1) two short reflection papers during the course of the quarter on businesses that present to the class, and (2) a 10- to15-page paper at the conclusion on the class on either a water company of the student's choice or a policy initiative that can improve the role that business plays in improving water management (either in a particular sector or more generally). Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper. Cross-listed with Civil & Environmental Engineering (CEE 273B).

LAW 2509. Clean Energy Project Development and Finance. 3 Units.
(Formerly Law 774) This case study-oriented course will focus on the critical skills needed to evaluate, develop, finance (on a non-recourse basis), and complete grid-scale clean energy projects. This course will be essentially the same as in the past four years (when it was cross-listed as GSB GEN 335). This course is highly multi-disciplinary, both in terms of substance and student mix. The course has consistently had a significant mix of business, engineering, law and earth science students. As in the past, the course will focus on the issues associated with the business of developing, financing, constructing and operating grid-scale clean energy projects. The course will focus on what a project developer or lender (i.e., in either case, the business person) needs to know to develop and finance successful projects. The project development business--far more than many other businesses such as tech, manufacturing, consumer, services, retail or transportation--inherently involves a VERY long list of highly-germane and critical legal issues. We address the legal issues from the perspective of what a business person needs to understand in order to navigate them and complete a project. The primary course materials will be documents from several representative projects -- e.g., solar, wind, storage, carbon capture, transmission, combined heat & power -- covering key areas including market and feasibility studies, environmental permitting and regulatory decisions, financial disclosure from bank and bond transactions, and construction, input, and offtake contracts. For virtually every clean energy project, legal documents and financial/business models tend to highly customized. By examining actual projects and transactions we can learn how developers, financiers, and lawyers work to get deals over the finish line--deals that meet the demands of the market, the requirements of the law, and (sometimes) broader societal goals, in particular climate change, economic competitiveness, and energy security. Elements used in grading: Class Participation (35 %), Lecture-based Assignment (15 %), Group Project (50 %). Absences affect grade. This class is limited to 36 students, with an effort made to have students from SLS, GSB, engineering and earth sciences. (All students need to be graduate students.) CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). Students are encouraged to apply as early as possible. See Consent Application Form for instructions and submission deadline.

LAW 2510. California Coast: Science, Policy and Law. 4 Units.
This interdisciplinary course integrates the legal, scientific, and policy dimensions of how we characterize and manage resource use and allocation along the California coast. We will use this geographic setting as the vehicle for exploring more generally how agencies, legislatures, and courts resolve resource-use conflicts and the role that scientific information and uncertainty play in the process. Our focus will be on the land-sea interface as we explore contemporary coastal land-use and marine resource decision-making, including coastal pollution, public health, ecosystem management; public access; private development; local community and state infrastructure; natural systems and significant threats; resource extraction; and conservation, mitigation and restoration. Students will learn the fundamental physics, chemistry, and biology of the coastal zone, tools for exploring data collected in the coastal ocean, and the institutional framework that shapes public and private decisions affecting coastal resources. There will be 3 to 4 written assignments addressing policy and science issues during the quarter, as well as a take-home final assignment. Special Instructions: In-class work and discussion is often done in interdisciplinary teams of students from the School of Law, the School of Engineering, the School of Humanities and Sciences, and the School of Earth, Energy, and Environmental Sciences. Students are expected to participate in class discussion and 2-3 Saturday field trips. Elements used in grading: Participation, including class session and field trip attendance, writing and quantitative assignments. Cross-listed with Civil & Environmental Engineering (CEE 175A/275A).

LAW 2512. Cities and Sustainability: Current Issues, Policy, and Law. 2 Units.
Cities are on the front lines of solving many of society's sustainability problems, from advancing green buildings and clean energy, to preparing for the effects of climate change. With a diminishing role of the federal government on environmental policy and regulation, it is up to sub-nationals like states and cities to lead innovation and deployment of clean energy, resilience strategies, water management, and more. This class will explore the evolving role of cities in advancing sustainability from the lens of law, policy, planning, and governance. Some of the topics we will discuss in-depth include climate mitigation, clean energy, green buildings, climate adaptation and resilience, water supply and reuse, land use and transportation, and more. Case studies will focus on U.S. cities with some emphasis on California. Overarching themes across all content areas include legal constraints of city authority, governance, socioeconomic tradeoffs, and the roles of various types of institutions in developing, advancing, and advocating for local policy change. Elements used in grading: Attendance, Class Participation, Written Assignments, Exam. Cross-listed with Environment and Resources (ENVRES 212).

LAW 2513. Climate: Politics, Finance, and Infrastructure. 2-3 Units.
While climate change is often considered an 'environmental problem', the risks and opportunities embedded in a changing climate go well beyond the natural environment. This course reframes climate as a macroeconomic challenge, one in which multilateral politics, global investment, and distribution of impacts must be understood and reconsidered. Based on readings and guest speakers, this interdisciplinary course traces the arc of climate past, present and future on the pillars of politics, finance, and infrastructure (both physical and institutional). Grounded in the latest climate science and the history of global climate negotiations, the bulk of the course will investigate innovations at the intersection of finance, law and policy, with particular emphasis on risk management, legal liability, corporations, climate justice and resilience. The final sessions will consider the future, taking a look at how the next generation of leaders might solve the greatest challenge of our time. Elements used in grading: Students may take the course for 2 units (section 1) or 3 units (section 2). Section 1 and 2 students will both receive grades for attendance, in class participation and guest-speaker questions. Section 1 students will also complete a group presentation on the design of a financial, business, legal or policy intervention with the potential to reduce emissions on a large scale. Section 2 students will be required to write an individual research paper meeting the Law School's R paper requirements. This class is limited to 30 students, with an effort made to have students from SLS (15 students will be selected by lottery) and 15 non-law students by consent of instructor. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor.

LAW 2515. Environmental Justice. 3 Units.
This course will introduce environmental justice as a social movement, including its central substantive concerns (the needs of humans in the built environment rather than the need to protect the environment from humans) and its methods (community-based political organizing rather than professionalized judicial or legislative action). The bulk of the course will then pursue a broader conception of environmental justice today by using social science research, theory, and case studies to investigate the civil rights and poverty aspects of environmental safety and natural resources. The course will include units on: (1) toxic exposure and public health disparities stemming from the disproportionate siting of locally-unwanted land uses in poor neighborhoods of color; (2) access to natural resources and basic public services, including clean water, wastewater disposal, and open space; (3) tools in environmental justice advocacy (including community-based lawyering, Title VI of the Civil Rights Act of 1964, the Fair Housing Act, common law nuisance actions, and transactional lawyering); (4) environmental justice issues in Indian Country, and (5) environmental justice issues in climate change policy. Much of the course material, including student presentations, will be grounded in the experiences and advocacy histories of specific communities, both urban and rural, across the country. This class is limited to 25 students, with an effort made to have students from SLS (20 students will be selected by lottery) and 5 non-law students by consent of instructor. Course requirements will include class participation, in-class presentation, and either response papers (section 01) or a long research paper for R credit (section 02). A maximum of 10 students will be permitted to write the long research paper with instructor consent. After the term begins, students enrolled in the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Class participation, in-class presentation; response papers or a final research paper.

LAW 2516. Natural Resources Law and Policy - South Africa: Field Study. 1 Unit.
This is the South Africa Field Study component of Natural Resources Law and Policy (LAW 2506). For details, see course description for Law 2506. This course will look at three issues covered in Natural Resources Law & Policy from a comparative perspective, focusing on Cape Town, South Africa, and the region surrounding it. First, we will look at the water challenges facing Cape Town, including (a) the supply limitations that led the city to warn in 2018 of a "Day Zero" when it would be forced to turn off everyone's taps and (b) the ongoing water equity issues facing the region's impoverished townships such as Khayelitsha. Second, we will visit with companies and law firms seeking to promote renewable energy projects to discuss the issues that they face. Finally, we will meet with environmental non-profits to examine South Africa's efforts to protect wildlife from poaching and other threats. Students might also participate in small, half-day conference with the University of Stellenbosch examining these and related sustainability issues. Elements used in grading: TBA. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 2517. Modern Crosscurrents in Energy and Environmental Law. 3 Units.
This course explores the close relationship between energy and environmental law. We will work through the major energy sectors and, for each, discuss key environmental law and policy issues that are influencing energy production and use. Our focus will be on current issues. We'll explore environmental issues that are traditionally associated with the energy sector, including air emissions, waste disposal and cleanup, and oil spills, while also covering new environmental issues emerging from the energy sector including climate change-related regulatory and business risk issues, energy infrastructure permitting issues, and environmental pressure points on the utility industry and on renewable energy and conventional energy projects, more generally. Elements used in grading: Exam; one written assignment; class participation.

LAW 2518. U.S. Environmental Law in Transition. 1 Unit.
This course offers an accessible survey of timely topics in environmental law and policy as the United States transitions presidential administrations. Taught by two practicing lawyers, the class introduces students from any background to the interactions between local, state, and federal environmental law as they apply to critical policy issues. We will analyze major changes in federal policy, providing historical context for the transformations now underway in the laws and institutions that shape environmental outcomes in the United States. Elements used in grading: Attendance, Class Participation, Final Paper. Cross-listed with Earth Systems (EARTHSYS 108 & 208).

LAW 2519. Water Law. 3 Units.
This course will study how society allocates and protects its most crucial natural resource -- water. The emphasis will be on current legal and policy debates, although we will also examine the history of water development and politics. Although the course will focus on United States law and policy, insights from the course are applicable to water regimes throughout the world, and we will occasionally look at law and policy elsewhere in the world for comparison. Among the many issues that we will consider are: how to allocate water during periods of scarcity (particularly as climate change leads to more extremes); alternative means of responding to the world's growing demands for water (including active conservation); the appropriate role for the market and private companies in meeting society's water needs; protection of threatened groundwater resources; environmental limits on water development (including the U.S. Endangered Species Act and the "public trust" doctrine); constitutional issues in water governance; Indian water rights; protection of water quality; challenges to substantively reforming existing water law; and interstate and international disputes over water. Students will be expected to participate actively in classroom discussions. Elements Used in Grading: Class participation, attendance and final exam.

LAW 2520. Climate Law and Policy. 3 Units.
This course offers an interdisciplinary, graduate-level survey of current and historical efforts to regulate emissions of greenhouse gases in the United States and around the world. Students will read primary legal documents--including statutes, regulations, and court cases--in order to evaluate the forces and institutions shaping American climate policy. Additional perspectives from climate science, economics, and political science will provide context as students analyze the evolution of climate law and policy regimes. Elements used in grading: Grades will be based on class attendance, class participation, and either written assignments and an exam (section 01) or a final paper (section 02). After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Cross-listed with Environment and Resources (ENVRES 222).

LAW 2521. California's Water Policy and Management: Toward a Sustainable Future. 1 Unit.
This seminar series focuses on the dramatic changes in recent decades in California water policy and management and how water researchers can help forge modern, collaborative solutions that will allow the state to adapt to an uncertain and challenging future. The seminar will meet six times during the Spring Quarter. The heart of the series will include four seminars with panels of outside experts covering the following topics: 1) The diversification of California's water supply portfolio; 2) The rise of the coequal goals of ecosystem restoration and water supply reliability; 3) The ongoing tension between collaborative and adversarial decision-making processes; and 4) Implications for water researchers seeking to help define pathways to meaningful solutions. In addition to these four seminar sessions, there will be an introductory California Water 101 session for students and a closing session on what we have learned. Students will be assigned readings and required to develop questions for discussion. Lead instructor for the seminar will be Landreth Visiting Fellow Dr. Timothy Quinn. Dr. Quinn spent more than ten years as the executive director of the Association of California Water Agencies, and more than twenty years as the Deputy General Manager of the Metropolitan Water District of Southern California. Over the course of that career, he was at the center of every major water management issue facing the state of California, including the state's use of Colorado River water, management of the Bay Delta, and sustainable groundwater management. This class will meet the first five weeks of the quarter. Elements used in grading: Attendance, Class Participation, Written Assignments. Cross-listed with Civil & Environmental Engineering (CEE 266E).

LAW 2522. Private Environmental Governance. 2-3 Units.
The tools of private environmental regulation (e.g., eco-certifications, CSR initiatives, supplier contracts) have become an increasingly important source of governance. But how do they work? How do they arise--why and how can corporations participate in these voluntary measures? How do they regulate firm behavior and how can regulators police the tools themselves? This interdisciplinary seminar examines these questions and more, with readings from traditional legal sources (cases, agreements), as well as from economics, political science, and social psychology. Guest speakers and case studies will add real-world context to our exploration of theory. Elements used in grading: Students may take the course for 2 units (section 1) or 3 units (section 2). Attendance, class participation, and short written assignments will factor into grades for both sections. Section 1 students will also prepare a private governance proposal and presentation. Section 2 students will write a research paper meeting the Law School's R paper requirements. After the term begins, students can transfer from section 1 to section 2, which meets the R requirement, with consent of the instructors. Please note that the last two class sessions (May 21 and 28) will have to be rescheduled. Cross-listed with Environment and Resources (ENVRES 228).

LAW 2523. Climate, Energy, and Democracy. 1 Unit.
This 1-credit, discussion-based seminar will examine the challenge and promise of responding to climate change in democracy. Combining theoretical readings and real-world examples such as California community choice energy programs and the movement for a Green New Deal, we will explore questions including: To transform our fossil-fuel based economy, do we need more democracy or less democracy, and what practically does either of those things mean? What makes federal climate change legislation so hard to achieve? In contrast, why have many sub-federal communities been successful in adopting climate change policies, and what are the benefits and limitations of these local actions? Grades will be based on a series of short reaction papers and class participation. Elements used in grading: Attendance, Class Participation, Written Assignments. This class will meet 4:15-7:15pm on Mondays - April 20, April 27, and May 4.

LAW 2524. Climate and Energy Workshop. 1 Unit.
This seminar will provide students with the opportunity to hear from faculty at other law schools who are at the cutting edge of research in the areas of climate change and energy. Although it is open to all students, the seminar is designed especially for those with an interest in the field who wish to stay abreast of current issues, work, and ideas. Each class will involve a separate climate or energy scholar presenting their current research. This class will meet every other Monday afternoon from 4:15 to 6:15 during the winter quarter: January 13 , January 27, February 10, February 24, and March 9. It will be a 1-unit Mandatory Pass (MP) class. Elements used in grading include attendance and participation, preparation of written questions for the speakers, and short reflection papers.

LAW 3001. Health Law: Finance and Insurance. 3 Units.
This course provides the legal, institutional, and economic background necessary to understand the financing and production of health services in the U.S. We will discuss the Affordable Care Act , health insurance (Medicare and Medicaid, employer-sponsored insurance, the uninsured), the approval process and IP protection for pharmaceuticals, and antitrust policy. We may discuss obesity and wellness, regulation of fraud and abuse, and medical malpractice. The syllabus for this course can be found at https://syllabus.stanford.edu. Cross-listed with Graduate School of Business (MGTECON 331), Health Research & Policy (HRP 391) & Public Policy (PUBLPOL 231). Elements used in grading: Participation, attendance, and final exam.

LAW 3002. Health Law: Quality and Safety of Care. 3 Units.
(Formerly Law 727) Concerns about the quality of health care, along with concerns about its cost and accessibility, are the focal points of American health policy. This course will consider how legislators, courts, and professional groups attempt to safeguard the quality and safety of the health care patients receive. The course approaches "regulation" in a broad sense. We will cover regimes for determining who may deliver health care services (e.g. licensing and accreditation agencies), legal and ethical obligations providers owe to patients (e.g. confidentiality, informed consent), individual and institutional liability for substandard care, and various proposals for reforming the medical malpractice system. We will also discuss the Patient Protection and Affordable Care Act (aka, "Obamacare"), which has led to many new initiatives aimed at improving health care quality. Special Instructions: Any student may write a paper in lieu of the final exam with consent of instructor. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Class Participation, Exam or Final Paper. Cross-listed with School of Medicine (MED 209).

LAW 3003. Health Law: The FDA. 2 Units.
This course will examine the Food and Drug Administration. It will focus largely on the FDA's regulation of drugs and biologics, but will also cover its regulation of medical devices, nutritional supplements, and its jurisdiction over special legal, social, and ethical issues arising from advances in the biosciences. Special Instructions: The class is open to all law students and graduate or professional students from other parts of the University. Substantial class attendance is required; in addition, the quality of class participation will play a small role in grading. Elements used in grading: Attendance, class participation, and final exam (In-school, open book). Cross listed with Health Research and Policy (HRP 209).

LAW 3004. Law and Biosciences: Genetics. 2-3 Units.
(Formerly Law 480) This seminar will focus on ethical, legal, and social issues arising from advances in our knowledge of human genetics. These will drawn from topics such as forensic uses of genetics, genetic testing, widespread whole genome sequencing, genome editing, genome synthesis, the consequences of genetics for human reproduction, and the ethics of genomic biobanks for research, among other things. Students are required to write a research paper for this course. Special Instructions: The class is open to all law students and graduate or professional students from other parts of the University. Substantial class attendance is required; in addition, the quality of class participation will play a small role in grading. Students will be required to submit an independent research paper. Students can take the course for either 2 or 3 units, depending on paper length. Elements used in grading: Class participation, attendance and final paper. Cross-listed with Health Research & Policy (HRP 221).

LAW 3005. Law and Biosciences Workshop. 1 Unit.
This workshop seminar will provide students with the opportunity to examine and critique cutting-edge research and work in the field of law and the biosciences presented by different speakers from Stanford and elsewhere. Although it is open to all students, the seminar is designed especially for those with an interest in the field who wish to stay abreast of current issues, work, and ideas. In each class, an academic expert, policy maker, or practitioner will present his or her current research or work and engage in a robust discussion. This class is worth one unit. It will meet five times for 1 hour, 50 minutes per session; students will need to attend at all five sessions and, for each session attended, write a reflection piece of roughly three double-spaced pages, due just before the speaker's presentation. The class is open to first-year Law School students in Winter Quarter. Elements used in grading: Class participation, attendance, and written assignments.

LAW 3006. Law and Biosciences: Neuroscience. 3 Units.
This seminar examines legal, social, and ethical issues arising from advances in the biosciences. This year it will focus on neuroscience. It will examine how neuroscience will affect the law, and society, through improvements in predicting illnesses and behaviors, in "reading minds" through neuroimaging, in understanding responsibility and consciousness, in "treating" criminal behavior, and in cognitive enhancement. Students who have taken the Law and the Biosciences (Genetics) seminar in past years may receive additional credit for taking this year's class. The class is open to 1Ls. Elements used in grading: Class participation, attendance and final research paper. Cross-listed with Health Research & Policy (HRP 211).

LAW 3009. Health Law: Improving Public Health. 3 Units.
This course examines how the law can be used to improve the public's health. The broad questions explored are: what authority does the government have to regulate in the interest of public health? How are individual rights balanced against this authority? What are the benefits and pitfalls of using laws and litigation to achieve public health goals? The course investigates these questions as they operate in a range of specific contexts, including preventing and controlling infectious diseases; preventing obesity; reducing tobacco use; ensuring access to medical care; reducing firearm injuries; addressing the opioid epidemic; and responding to public health emergencies. In examining these contexts, we will ask and answer questions such as, what do the Constitution and key statutes permit? What makes a good public health law? Where do we see success stories--and failures--in public health law? What ethical and economic arguments justify government intervention to shape individuals' and companies' health-related behaviors? Instruction is through interactive lectures with a significant amount of class discussion and some group exercises. Class Participation, Written Assignments, Final Exam. Cross-listed with Medicine (MED 237).

LAW 3010. Mental Health Law. 2-3 Units.
This class will explore timely issues surrounding mental health law. Representative topics include civil commitment proceedings; forced outpatient treatment and hospitalization; mental health in the criminal justice system; guardianship/conservatorship and its alternatives; electroconvulsive therapy (ECT); the Americans with Disabilities Act; the Individuals with Disabilities Education Act (IDEA); and neurodiversity. A variety of stakeholders---clinicians, attorneys, individuals with mental illness or developmental disabilities, and family members---will join us as guest speakers to reflect on the strengths and weaknesses of the current system and to discuss possible reforms. After the term begins, students accepted into the course can transfer from Section 01 (MP/R/F) into Section 02 (H/P/R/F), which meets the R requirement, with consent of the instructors. Students taking the course for R credit can take the course for either 2 or 3 units, depending on the paper length. Elements used in grading: Class Participation, Written Assignments, Final Paper.

LAW 3011. Law and Economics of Biomedical Innovation. 2-3 Units.
Biomedical research at universities, other nonprofits, government laboratories, and private firms has led to remarkable lifesaving advances in recent decades. Scientists have developed new biologic drugs to cure cancer, complex algorithms to identify public health risks or predict disease, and 3D-printed medical devices. Biomedical research is also tremendously expensive. In this seminar we will examine the economics of biomedical R&D and the legal framework that is designed to incentivize new advances, with an emphasis on pharmaceuticals. We will consider policy tools including patents and other intellectual property, FDA-administered regulatory exclusivity, prizes, grants, tax incentives, and insurance reimbursement. We will also discuss how these incentives are funded and what this means for allocating access to medical technologies, both in the United States and abroad. The current policy mix of innovation incentives and access allocation mechanisms is far from perfect, and students will have the opportunity to discuss reform proposals with real-world biomedical innovators from different sectors. There are no prerequisites, and no technical or economic background is required, but students should be willing to learn about biomedical technologies, detailed legal frameworks, and economic policies. Special Instructions: After the term begins, students can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Students taking the course for R credit can take the course for either 2 or 3 units, depending on the paper length. Elements used in grading: attendance, participation, and reflection papers or research paper. Early drop deadline. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 3012. Introduction to Law and the Biosciences. 3 Units.
This course will provide an introduction to the legal, ethical, and policy areas important to understanding Law and the Biosciences. Each topic will include both discussion of the relevant legal rules and ethical principles and their application to a specific case study. Topics to be covered include the structure and regulation of the biopharma industry and biosciences research, intellectual property relevant to the biosciences, federal regulation of bioscience products through the FDA and otherwise, the health care financing system, human subjects research, genetic technologies, reproductive technologies, neuroscience technologies, criminal law applications of bioscience technologies, and more. The course will prepare students for more advanced courses in these areas, as well as for working with or in the bioscience world. Special Instructions: The class is open to all law students and graduate or professional students from other parts of the University. Some undergraduates may be admitted with consent of the instructor. Substantial class attendance is required; in addition, the quality of class participation will play a small role in grading. Elements used in grading: Attendance, class participation, and final exam (In-school, open book). Cross listed with Health Research and Policy (HRP 276).

LAW 3254. How to Ask a Question. 1 Unit.
Asking questions is at the core of the role of an attorney. Whether it is interrogating a witness in a deposition, or conducting a direct or cross examination at trial, knowing how to ask a question is an essential lawyering skill. We'll explore textual materials and real life case examples in transcripts, videotape, and cinema to determine the principals and best practices for questioning. We'll learn how to prepare for questioning, how to focus, narrow, and broaden an examination, how to obtain key admissions, how to deal with a difficult opponent, when to stop asking, and how to use what's been obtained in court or otherwise to win for your clients. This course will give you the skills and tools needed for the critical roles of questioning, which has broad applicability for trial lawyers and non trial lawyers alike. Shanin Specter is a founding partner of Kline & Specter, P.C., in Philadelphia, concentrating in catastrophic injury litigation. He has obtained more than 200 settlements or verdicts in excess of $1 million and is a member of the Inner Circle of Advocates, whose membership is limited to the top 100 plaintiffs' attorneys in the United States. Elements used in grading: assessment of two brief reaction papers, as well as classwork; class attendance is required. This class will meet Tuesdays, 4:15PM - 7:15PM on three consecutive Tuesdays early in the spring quarter (precise dates TBA).

LAW 3258. Responsibility for Risk: Perspectives on Liability Insurance. 2-3 Units.
This seminar will explore the intellectual foundations of the institution of insurance, including the following key questions: How is insurance to be conceived: from a contract perspective? a tort perspective? a private governmental perspective? Correlatively, what are the economic and ethical dimensions of risk classifications and management? How serious are the concerns about moral hazard and adverse selection---core concepts of insurance law? What standards should be used to resolve insurance bad faith claims? And, when a party is sued and the liability insurer controls the party's defense, how should the defense lawyer hired by the insurer navigate---and conceive of---this triangular relationship? The pervasive role of insurance in addressing societal concerns about accidental harm is vitally important but has been remarkably under-examined in the traditional law school curriculum. Special Instructions: Grades will be based on class attendance, class participation, and either several short reflection papers (section (01)) or an independent research paper (section (02)). After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Students taking the course for R credit can take the course for either 2 or 3 units, depending on paper length. Elements used in grading: Class participation, class attendance, reflection papers or research paper. Early drop deadline.

LAW 3259. The Civil Justice System as an Agent of Change. 3 Units.
The past 60 years have witnessed a dramatic expansion in the role of the courts as an agent of change in the United States. Constitutional, civil and economic rights have been created, such as marriage equality and strict liability in tort, but rights have also been limited through statutory restrictions and other means. The role of the judge has grown to activist and administrator in cases such as prison reform and housing desegregation. And through it all, it has been lawyers who have fought, won, and lost the battles of expansion and contraction of rights and remedies. Where the government fails to protect us, private practitioners serve a crucial role in challenging the legal "status quo" through civil litigation; vindication of a particular client's claim can simultaneously establish or clarify the rights in question on a societal scale. Taught by an experienced trial lawyer, along with guests from both plaintiff and defense practices, course readings and discussion will draw on a wealth of textual, law review, and lay media, and the arc of relevant case law, including real trial experiences and litigation documents. This course explores changes in motor vehicle and commercial product safety, medical malpractice, police misconduct, civil rights, marital rights, sexual harassment and abuse, firearms liability, school and housing desegregation, college hazing, privacy, school funding and consumer safety. We'll study the titanic struggle over appropriate remedies for wrongs in these substantive areas, ranging from immunity to limits on recoveries, compensatory and punitive damages, injunctive relief and other equitable remedies. We'll also study how a plaintiff or defense lawyer can make a difference for their clients and others similarly situated to catalyze significant societal improvement. Elements used in grading: The grade is based on class work (i.e., contribution to discussions and participation in class exercises) and a final paper. There is no exam. No automatic grading penalty for late papers.

LAW 3502. Art and the Law. 2 Units.
This course covers the legal, public policy, and ethical issues that concern artists, art dealers, auction houses, museums, collectors, and others who comprise the world of visual art. Our focus will be on artists' rights (including copyright, resale royalties, moral rights, and freedom of expression issues), how the markets in art function (such as the artist-dealer relationship, auction rules, and issues faced by collectors), and the legal and ethical rules governing the collection, donation, and display of visual art, particularly for museums and their donors. The course focuses on certain recurrent themes: How do statutes and courts define (or attempt to define) art, and how is art defined differently for different legal purposes? How does the special character of art justify or require different treatment under the law from that accorded other tangible personal property, and how does (and should) the expressive nature of art affect the way it is owned, protected, regulated, or funded? We anticipate having two or three visitors to the class during the quarter, such as a gallery owner, auctioneer, and museum director. In addition, we will also have the students participate in at least one or two interactive negotiation simulation exercises inspired by real situations and controversies in the art world. Graduate students from other departments and schools are welcome to take this course with the permission of the instructors. Elements used in grading: Class participation, attendance, final exam.

LAW 3504. U.S. Legal History. 3 Units.
This course explores the legal history of what became the United States from the beginning of European colonization until the early twentieth century, focusing on the late eighteenth and nineteenth centuries. It examines both the evolution of legal doctrine and the role of marginalized communities as targets, resistors, and creators of law. It emphasizes continental, borderlands, and transnational perspectives on U.S. legal history. Special Instructions: Any student may write a paper in lieu of the final exam with consent of instructor. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Take-home final exam or paper. Automatic grading penalty waived for writers.

LAW 3505. Law and Culture in American Fiction: Trauma, Resistance, Dissent. 3 Units.
Individuals experience war, epidemic, economic crisis and rapid social change in contingent and uneven ways. Some of us find our suffering compounded, some of us discover we are vulnerable in ways we had never imagined, some of us uncover possibilities in the wreckage. This seminar explores the interplay of legal responses to states of emergency and expressions of trauma, resistance, and dissent in American literature since the mid-nineteenth century. The terms and stakes of this interplay will inform our readings of both fiction and legal texts and we will pay particular attention to points of contact and tension between literary narrative and the operation of narrative in legal discourse. Each week, a novel or story will be paired with a contemporary legal text (often an opinion) and background historical material. We will likely read fiction by Rebecca Harding Davis, Herman Melville, Henry James, Charles Chesnutt, Katherine Anne Porter, John Okada, Ralph Ellison, and Leslie Marmon Silko, but this list is not complete. Among other themes, we will track the effects of shifting legal constructions of citizenship, race, gender, and class; changes in the law of property, contract, and privacy; and deployments of the authority and violence of the state on the maintenance of personal identity, community stability, and linguistic meaning. Elements used in grading: Class participation, attendance, written assignments and final paper. Automatic grading penalty waived for writers. Special instructions: Course requirements include class attendance and participation, three short response papers, and two longer papers. For Research "R" credit, students may petition to complete one long paper based on independent research. After the term begins, students in the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Class participation, attendance, written assignments and final paper. Automatic grading penalty waived for writers. Special instructions: Course requirements include class attendance and participation, three short response papers, and two longer papers. For Research "R" credit, students may petition to complete one long paper based on independent research. After the term begins, students in the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor.

LAW 3506. Law and Empire in U.S. History. 2-3 Units.
This course will examine the interrelationship between legal norms and empire in the history of the United States. Topics in this part will include the Constitution as an imperial document; law and the expansion of the United States in western North America, Puerto Rico, and Hawaii; the Insular Cases; and current debates over extraterritoriality and the War on Terror. Substantial readings will consist of scholarly articles, historical cases, and primary sources, and will be provided online. Requirements for the course include regular class participation and, at the students' election, either response papers or a historiographical essay. Students may also elect to complete a research paper, in which case they will receive 3 units and "R" credit. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Cross-listed with History (HISTORY 354F).

LAW 3507. Law and the Rhetorical Tradition. 3 Units.
The conventions of legal writing and reasoning taught in law school derive from a long tradition of argument and persuasion. This interdisciplinary seminar locates legal conventions in that broader intellectual history, starting with Aristotle and tracing (some of) the ruptures and continuities that have shaped our particular practices. The way we argue matters. The form we give our statements determines not just whether but whom they will persuade. So we will develop a tool kit for identifying the available means of persuasion, crafting sentences and paragraphs that suit the ideas they contain, voicing those ideas with an eye to audience and purpose as well as authority; noticing the way the language we choose implies a social world in which the argument unfolds. The goal is to become both more effective and more conscious in our deployment of those conventions ¿ as readers, speakers and writers. Elements used in grading: Class participation, attendance, revision and writing assignments. Automatic grading penalty waived for writers. Special Instructions: This course can satisfy the Research "R" requirement. The instructor and the student must agree whether the student will receive "R" credit. For "R" credit, the paper is substantial and is based on independent research. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor.

LAW 3508. Law and Visual Culture. 3 Units.
When we represent our experience today, we do so as much through images as language. When we seek to persuade, we offer photographs, charts, videos. Our ability to document brutality and misconduct with our smartphones has reignited our long national struggle to redress racial injustice. Images are powerful. And as they saturate our cultural discourse, they are increasingly part of legal practice. The power of an image often lies in its apparent simplicity: we know it when we see it. But how much of what we see is produced by the biases and expectations -- the habits of viewing -- that we bring to the encounter? What is left out when an infographic distills information for us? Lawyers and judges tend to treat certain kinds of images as unmediated representations of reality, even though neuroscience, empirical research, and cultural theory all refute this so-called reality effect. Such naïve realism in law may reflect the ideal of definitive proof that animates the adversary system. Indeed, lawyers and judges have historically worried that images might replace legal process altogether. The more pressing challenge, however, is to adapt legal practice to visual persuasion in ways that are consistent with our rule of law values. This seminar tracks the legal reception of modern visual representation from confusion about the admissibility of photographs in the late 19th century (is it like a drawing? is it like eyewitness testimony?) to the debate about cameras in the courtroom in the late 20th century (do judges and jurors decide differently when the proceedings are subject to public scrutiny?) to the frequent and strategic deployment of visual media in pretrial and litigation practice today. We will then consider the roles of visual persuasion in the law of privacy, qualified immunity, and freedom of speech, as well as applications in practice areas like contracts and client communications. Throughout the quarter, we will attend to the ways American visual culture has resisted and reinforced systemic inequality. Course materials range from judicial opinions to film theory to social psychology to presentations by practicing attorneys. Special Instructions: This course can satisfy the Research "R" requirement. The instructor and the student must agree whether the student will receive "R" credit. For "R" credit, the paper is substantial and is based on independent research. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements Used in Grading: Class Participation. Attendance, Written Assignments, Final Paper. Automatic grading penalty waived for writers.

LAW 3510. Psychological Development: Myth, Law, and Practice. 2 Units.
Collective myths from a variety of traditions and cultures capture enduring psychological truths about human choices and the human condition. Lawyers at various stages in their careers have their own personal myths, sometimes conscious and sometimes not. These personal myths embody key tendencies that determine or heavily influence each lawyer's personal and professional path. This course uses some salient collective myths as well as modern psychological material to create a powerful backdrop for self-examination and self-development. It offers a space and time for each student to consider his or her own personal and professional direction through the course materials, class interactions, and a series of reflection papers. The course benefits from the collaboration of Ron Tyler, Director of the Criminal Defense Clinic, who will conduct a session focusing on mindfulness practices. Elements used in grading: A series of reflection papers totaling at least 18-pages.

LAW 3511. Writing Workshop: Law and Creativity. 3 Units.
Practicing law is very much a creative enterprise. Effective advocates and counselors provide innovative and thoughtful solutions to complex problems. But there often isn't enough attention devoted in law school either to thinking creatively or to reflecting in a creative way on the issues students confront inside and outside the classroom. This course will respond to this gap by building a bridge between law and the arts, with the goal of helping students hone their ability to think creatively and use disciplined imagination. Law & Creativity will meet twice a week and have dual components designed to inform one another. The first session will be structured as a seminar in which students gather to examine and discuss creative treatments of legal and professional issues in a variety of media (including film, fiction, and nonfiction). The second session will follow the creative-writing workshop model in which students submit their own fiction and creative nonfiction pieces for group discussion. Through the workshop process, students will develop the skills necessary to constructively critique and workshop one another's work, and learn a variety of techniques for improving their own creative writing. Elements used in grading: Class attendance, participation and final paper.

LAW 3512. Markets, Morals and the Law. 2 Units.
What things should or should not be for sale - and why? This course will consider several examples of "blocked exchanges" or "contested commodities," including the trade in reproductive services, body parts, environmental resources, political rights and obligations, and the varieties of human labor. With readings drawn from law, philosophy, and moral and political economy, the purpose of the course will be to examine a range of contemporary controversies over commodification and to consider arguments about the appropriate scope and limits of market activity. The assigned reading will be substantial, varied, and demanding. Elements used in grading: Attendance, Class Participation, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 3514. Law and Inequality. 1 Unit.
This reading group will focus on the challenges presented to law by the long-term growth of economic inequality. In addition to exploring evidence of rising inequality (including the work of Thomas Piketty and others), we will examine legal and other scholarship that seeks to understand law's contribution to inequality and legal responses that might reduce inequality or ameliorate its effects. Meeting Time: Class will meet 7:00 PM to 9:00 PM, April 10, April 17, May 1, May 15, and May 22. Elements used in grading: Attendance, Class Participation.
Same as: Reading Group

LAW 3515. Law and Humanities Workshop: History, Literature, and Philosophy. 2-3 Units.
(Formerly Law 516) The Law and Humanities Workshop: History, Literature, and Philosophy is designed as a forum in which faculty and students from the Law School and from various humanities departments can discuss some of the best work now being done in law and humanities. Every other week, an invited speaker will present his or her current research for discussion. In the week prior to a given speaker's presentation, the class will meet as a group to discuss secondary literature relevant to understanding and critiquing the speaker's research. Students will then read the speaker's paper in advance of the following week's workshop presentation. Students have two options. Those taking the course for 2 units are required to write a brief response to each speaker's paper. There will be a total of four speakers, and thus four papers. Guidance will be provided concerning how to frame these response papers, which will be due every two weeks - i.e., on the day before the speaker presents. Students taking the course for 3 units are required to write a research paper on a law and humanities topic that they choose (in consultation with the professors). Law students who complete this 3-unit track will receive an "R" credit. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Enrollment will be limited to 30 students -- 20 from SLS who will be selected by lottery and 10 from H&S. Elements used in grading: Class participation, attendance, and writing assignments. Cross-listed with the Department of History (HIST 308F).

LAW 3516. Legal History Workshop. 2-3 Units.
The Legal History Workshop is designed as a forum in which faculty and students from the Law School, the History Department, and elsewhere in the university can discuss some of the best work now being done in the field of legal history. Every other week, an invited speaker will present his or her current research for discussion. In the week prior to a given speaker's presentation, the class will meet as a group to discuss secondary literature relevant to understanding and critiquing the speaker's research. Students will then read the speaker's paper in advance of the following week's workshop presentation. Special Instructions: Students may choose to enroll in one of two sections of the course. In the first, students must write brief responses to each speaker's paper. There will be a total of four speakers, and thus four papers. Guidance will be provided concerning how to frame these response papers, which will be due every two weeks - i.e., on the day before speaker presents. In the second section, students must write a research paper on a legal history topic that they select in consultation with the professors. Students opting to write a research paper will receive an "R" credit. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Students taking the course for R credit can take the course for either 2 or 3 units, depending on the paper length. Enrollment will be limited to 30 students -- 20 from SLS who will be selected by lottery and 10 from H&S. Elements used in grading: Class participation, attendance, assignments and final paper. Cross-listed with History (HISTORY 307A).

LAW 3517. Law and Literature. 3-4 Units.
After its heyday in the 1970s and 1980s, many wondered whether the law and literature movement would retain vitality. Within the last decade there has, however, been an explosion of energy in the field, which has expanded beyond the boundaries of the literary text narrowly conceived and incorporated a range of other genres and humanistic approaches. Several recent or forthcoming books survey the range of emerging scholarship and the potential for new directions within the field. Using one of these--New Directions in Law and Literature (Oxford, 2017)--as a guide, this course will delve into a variety of topics that law and literature approaches can illuminate. These include, among others, conceptions of sovereignty and non-sovereign collectivities, the construction of the citizen and refugee, competing visions of marriage and its alternatives, law and the rhetorical tradition, and theoretical perspectives on intellectual property. Nearly every session will pair recent scholarship in the field with a literary or artistic work, ranging from Claudia Rankine's Citizen to Shakespeare's Merchant of Venice. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Students taking the course for R credit can take the course for either 3 or 4 units, depending on the paper length. This class is limited to 22 students, with an effort made to have students from SLS (16 students will be selected by lottery) and six non-law students by consent of instructor. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper. Cross-listed with English (ENGLISH 350).

LAW 3518. Law and Psychology. 3 Units.
This course will examine the implications of psychological theory and research for normative legal theory and for contemporary legal policies, procedures, and practices. The course will draw on contemporary cognitive, social, and clinical psychology to address the concepts of intent, responsibility, deterrence, retribution, morality, and procedural and distributive justice. We will examine evidence law (e.g. eyewitness testimony, polygraphy, expert testimony, psychiatric diagnosis and prediction), procedure (e.g., trial conduct, jury selection, settlement negotiations, alternative dispute resolution), and various topics in criminal law, torts, contracts, property, discrimination, family law, and other areas. We will compare "rational actor" and psychological perspectives on decision making by juries, judges, attorneys, and litigants. Special Instructions: After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Series of shorter papers or final independent research paper totaling 28 pages.

LAW 3519. Law and the Greek Classics. 1 Unit.
This one credit course, based on materials taught at the Aspen Institute, will read and discuss selected classical Greek documents (in translation, of course) of particular relevance to the contemporary practice of law. We will begin with a reading of two Platonic dialogues -- Crito and the Apologia -- to frame the question of whether Socrates should have resisted the lawful, but unjust, verdict condemning him to death. We'll focus of the tension between law and justice, perhaps peeking forward to Melville's Billy Budd, and MLK Jr.'s Letter from the Birmingham Jail. We will continue with the third play in Aeschylus' Oresteia, focusing on the decision to remit Orestes to the judgment of the people of Athens, rather than to the Furies, in connection with the murder of Clytemnestra. We'll focus on the decision to vest secular authorities with the definition of justice. We'll close with a reading of Antigone, focusing on the relationship between the individual and the state, and the gendered nature of justice. I often end the seminar with an informal public reading of the Antigone. I play Creon, maybe this year in a Trump mask. I anticipate five meetings, usually over dinner in one of the seminar rooms. Class will meet five Wednesdays, 6:15PM-8:15pm, April 11, April 25, May 9, May 23, May 30. Discussion will be informal, and non-hierarchical. Elements used in grading: Attendance, Class Participation. Same as: Reading Group

LAW 3520. Selected Topics in the History of Capitalism, Regulation, Corporations and Finance. 1 Unit.
This seminar will briefly examine recent debates about the role of the financial sector in the United States, considered in light of the long history of American debates over regulation of economic activity. It will be structured as a continuing dialogue between recent debates about regulation and finance, and historical debates over the role of law in capitalist development. It will touch upon the regulation of corporations, banking and the financial system, movements for deregulation in the 1970s, 80s and 90s, the roots of the financial crisis of 2007-08, and its aftermath up to the present day. The seminar will be structured as a short and necessarily tentative (given the time constraints of the course) examination of the social, institutional and intellectual history of economic regulation, as a means of contextualizing our continuing and unresolved arguments over scope and purpose of corporations and the financial sector. Elements used in grading: Attendance, Class Participation. Class meets 7:15 p.m. - 9:15 p.m., January 9, 10, 14, 16, and 17.

LAW 3521. Law, Politics and the Arts. 3 Units.
This seminar will explore the connections between the arts and questions of law and politics, using several performances from the 2019-2020 Stanford Live season to form the basis of a conversation. Students will attend the multiple performances and discussions before or after each performance. The performances will be on the evenings of 1/15, 1/17, 1/22, 1/29, 2/5, 2/21, 2/22 and 2/26---student must attend at least 6 performances so please confirm your availability before enrolling. Specific meeting times TBD with instructor and the Bing event schedule. The discussions will be a combination of public lectures and exclusive pre or post performance conversations with the artists, artistic directors, and Stanford faculty members. Students will be expected to write four reflection papers over the course of the term. Enrollment limited to 7 law students. CONSENT APPLICATION: To apply for this course, please submit a short written statement of interest to cparis@law.stanford.edu. Mandatory Pass/Fail, 3 units. Elements used in grading: Attendance, Class Participation, Written Assignments.

LAW 3522. Legal History: Research Seminar in Legal Biography. 2 Units.
The aim of this seminar is to produce a number of student-written studies of the lives of lawyers. In the first half of the seminar, we will read some exemplary biographies of lawyers. In the second half, students in the seminar will report on their own research into the life of a lawyer, preferably a lawyer who undertook public engagements as an official, elected officeholder, law writer or reformer, or judge as well as private practice. Students who wish to enroll in the course should, at the time of enrollment, submit a short proposal with (1) the name of the lawyer or lawyers they plan to write about; (2) the materials, including in substantial part primary sources, they plan to use in writing the biography; and (3) a summary of other sources, such as secondary biographical or contextual materials that they plan to consult. Elements used in grading: Attendance, Class Participation, Final Paper.

LAW 4001. Media, Technology, and the First Amendment. 3 Units.
The right to free speech is meaningless without some spaces to exercise it. Over the past decades, electronic media -- broadcast radio and television, cable television, telephony, and the Internet -- have become critical spaces where Americans speak to and with each other. Today, being able to speak and be heard online is as important as being able to speak in parks, sidewalks, and public squares. As the Supreme Court has recognized, social media platforms "provide perhaps the most powerful mechanisms available to a private citizen to make his or her voice heard," so that any citizen may "become a town crier with a voice that resonates farther than it could from any soapbox." Packingham v. North Carolina, 137 S. Ct. 1730, 1737 (2017). But while the public squares of the colonies were public spaces, the social media platforms hosting much of Americans' online speech today are owned by private actors with their own First Amendment rights. And the decisions courts have been making about electronic media differ significantly from the precedents governing leaflets, pickets, soapboxes, and burning flags that dominated the twentieth century. This class complements the law school's general First Amendment class by focusing on the First Amendment precedents governing speech on electronic media (broadcast, cable, telephony, and the Internet) and what they mean for the First Amendment in the digital age. We will grapple with questions such as: Why can comedians swear on Netflix or cable TV, but not on broadcast TV? Can the government ensure that speech spaces on electronic media are open to a variety of viewpoints? Can politicians or government officials block Americans from their Twitter or Facebook accounts? Do Internet platforms violate their users' First Amendment rights when they take down or restrict access to their content? And how does the First Amendment affect attempts to regulate Internet platforms, including President Trump's recent Executive Order? Who should take this class: If you are interested in the First Amendment, constitutional issues, appellate litigation, media and technology law, communications law, net neutrality, the increasing power of Internet platforms, or simply use the Internet, this class is for you. There are no prerequisites for this class. You can take it before or after the general First Amendment class. The class is open to first year law students and graduate students from other schools. To apply for this course, non-Law students must complete a Non-Law Student Add Request Form available on the SLS Registrar's Office website (see Non-Law Students). Elements used in grading: Class participation, attendance, group project, end-of-class quiz.

LAW 4003. Current Issues in Network Neutrality. 2 Units.
Due to the change in administration, the future of net neutrality in the US is in question again. Network neutrality rules are based on a simple principle: Internet service providers like Verizon or Comcast that connect us to the Internet should not control what happens on the Internet. Net neutrality rules prohibit ISPs from blocking or slowing down websites, making some sites more attractive than others, or charging sites fees to reach people faster. After a long, public fight that mobilized more than 4 million people across the political spectrum, the Federal Communications Commission (FCC) adopted strong net neutrality rules in February 2015. Now these rules might be on the chopping block. FCC Chairman Pai, who opposed the rules when they were adopted, has declared his intention to roll back the rules, while expressing some support for "net neutrality principles." At the same time, Republicans in Congress have indicated they might consider a legislative solution. Through lectures, class discussions, and guest speakers, the seminar will introduce students to the key questions underlying the net neutrality debate so that they can become informed participants in this debate. Do we need net neutrality rules, and, if yes, what should they be? What are the options for addressing net neutrality at the FCC and in Congress? How do past court decisions constrain the FCC's options for adopting net neutrality rules? While the class focuses on the net neutrality debate in the U.S., the underlying policy questions are general and directly applicable to ongoing net neutrality debates around the world. The class is open to law students and students from other parts of the university. Students do not need to have any technical background to participate in the class; any necessary background will be taught in class. Elements used in grading: Short written assignments, class participation, attendance. Students are expected to attend all sessions of the class and participate in the class discussion. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 4004. Cybersecurity: A Legal and Technical Perspective. 2 Units.
This class will use the case method to teach basic computer, network, and information security from technology, law, policy, and business perspectives. Using real world topics, we will study the technical, legal, policy, and business aspects of an incident or issue and its potential solutions. The case studies will be organized around the following topics: vulnerability disclosure, state sponsored sabotage, corporate and government espionage, credit card theft, theft of embarrassing personal data, phishing and social engineering attacks, denial of service attacks, attacks on weak session management and URLs, security risks and benefits of cloud data storage, wiretapping on the Internet, and digital forensics. Students taking the class will learn about the techniques attackers use, applicable legal prohibitions, rights, and remedies, the policy context, and strategies in law, policy and business for managing risk. Grades will be based on class participation, two reflection papers, and a final exam. Special Instructions: This class is limited to 65 students, with an effort made to have students from SLS (30 students will be selected by lottery) and students from Computer Science (30 students) and International Policy Studies (5 students). Elements used in grading: Class Participation (20%), Written Assignments (40%), Final Exam (40%). Cross-listed with Computer Science (CS 203) and International Policy Studies (IPS 251).

LAW 4005. Introduction to Intellectual Property. 4 Units.
This is an overview course covering the basics of intellectual property law -- trade secrets, patents, copyrights, and trademarks. This course is designed both for those who are interested in pursuing IP as a career, and those who are looking only for a basic knowledge of the subject. There are no prerequisites, and a scientific background is not required. Elements used in grading: Class participation, attendance, and final exam.

LAW 4006. Intellectual Property and Antitrust Law. 3 Units.
(Formerly Law 459) This is an advanced seminar focusing on antitrust law as it applies to the creation, licensing, and exercise of intellectual property rights. At least one IP or antitrust class is a prerequisite, and ideally both. Papers will be due before the Law School deadline. Draft papers will be due in time for student presentations. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. Elements use in grading: Class participation and final paper.

LAW 4007. Intellectual Property: Copyright. 3 Units.
Copyright law is the engine that drives not only such traditional entertainment and information industries as music, book publishing, news and motion pictures, but also software, video games and other digital products. This course examines in depth all aspects of copyright law and practice, as well as the business and policy challenges and opportunities that the Internet and other new technologies present for the exploitation of copyrighted works. There are no prerequisites for this class. Elements used in grading: Final Exam (In-School, open book). A detailed description of how the class will be conducted, including reading assignments and modes of student participation, appears in the course syllabus on Canvas.

LAW 4008. Intellectual Property: Copyright Licensing, Principles, Law and Practice. 2 Units.
(Formerly Law 625) This course will combine in-depth study, through reading assignments and lectures, of US law governing copyright transactions (contract formalities and construction; recordation and title practice; termination of transfers) and copyright contract drafting and negotiation exercises (book publishing agreement; videogame production and distribution agreement). Elements used in grading: Class Participation, Written Assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 4009. Intellectual Property: International and Comparative Patent Law. 2 Units.
Patentable goods and services are increasingly important in today's global information economy, and they frequently cross national borders, physically or electronically. This course will include a comparative examination of the major national patent systems, a survey of the principal international patent treaties, and discussions of related transnational patent issues. We will examine these topics both from the perspective of global patent practitioners -- who face challenges such as securing large international patent portfolios and strategizing multinational patent litigation -- and from the perspective of the academics and policymakers who are engaged in ongoing patent harmonization debates. Prerequisites: Introduction to Intellectual Property or consent of instructor. Elements used in grading: class participation, attendance, and short writing assignments.

LAW 4010. Intellectual Property: Patents. 3 Units.
In this course we cover the major aspects of patent law, primarily as applied in the United States: patentability (including patentable subject matter, novelty, nonobviousness, enablement, and definiteness); infringement; and remedies. The emphasis is on essential legal principles and a policy analysis of the patent system. The course is designed to be useful both as solid background for non-patent-specialists and for those planning a career in the field. Prerequisites: Introduction to Intellectual Property is recommended but not required. No technical background is required. Elements used in grading: Class participation, attendance, and final exam.

LAW 4011. Intellectual Property: The Business & Law of Technology & Patent Licensing. 3 Units.
If you practice in any technology-related area (whether transactions, corporate, or litigation), you will encounter licensing, as it is the principal means by which technology and patent rights are disseminated, exploited and commercialized. It is fundamental to Silicon Valley and beyond, including in software, mobile, consumer devices, autonomous cars, semiconductors and pharmaceuticals. This is a practice-oriented course covering the fundamentals of licensing technology and patents, including business considerations, drafting, negotiations and strategic considerations. We will also consider the role of licensing in mergers and acquisitions, litigation and antitrust contexts. The course is structured based on a real-world hypothetical involving entrepreneurs who spin out university-developed inventions into startup companies and then seek to commercialize the technology and patents to leading companies in a specified technology industry (such as smartphones, autonomous cars, "internet of things" or the like). We will also have a guest lecturer from a major technology company with significant licensing dimensions (which in the past have included Google, Waymo, and Qualcomm). Elements used in grading: Class Participation, Final Exam. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 4012. Intellectual Property: Trademark and Unfair Competition Law. 3 Units.
This course will consider the protection and enforcement of trademarks and related state rights in brands and names, including the right of publicity. There is no prerequisite, though some students will have taken Introduction to Intellectual Property. Elements used in grading: Class Participation, Exam (Open-book one-day take-home).

LAW 4013. Information Privacy Law. 3 Units.
This course explores the roots of privacy law, its evolution in the face of rapid technological change, and the challenges to an individual's ability to control third party collection, access, use and disclosure of their personal information. The course covers existing and emerging privacy torts, applicable and proposed privacy legislation and regulations, international norms and extraterritorial application of privacy law such as in the EU's General Data Protection Regulation, and self-regulation of privacy through technological means, contracts or other means. We will discuss all of these things, as well as incorporate developments in the news, from the perspective of the various privacy stakeholders--consumers, regulators and business. Elements used in grading: Final Exam.

LAW 4014. Law, Technology, and Liberty. 2 Units.
New technologies from gene editing to networked computing have already transformed our economic and social structures and are increasingly changing what it means to be human. What role has law played in regulating and shaping these technologies? And what role can and should it play in the future? This seminar will consider these and related questions, focusing on new forms of networked production, the new landscape of security and scarcity, and the meaning of human nature and ecology in an era of rapid technological change. Readings will be drawn from a range of disciplines, including science and engineering, political economy, and law. The course will feature several guest speakers. There are no formal prerequisites in either engineering or law, but students should be committed to pursuing novel questions in an interdisciplinary context. The enrollment goal is to balance the class composition between law and non-law students. Elements used in grading: Attendance, Class Participation, Written Assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. This course is cross-listed with Bioengineering (BIOE 242) and Engineering (ENGR 243) .

LAW 4015. Modern Surveillance Law. 2 Units.
This seminar provides an in depth look at modern government surveillance law, policies and practices. It is taught by Richard Salgado, director of law enforcement and information security at Google and a former prosecutor at the U.S. Department of Justice's Computer Crime and Intellectual Property Section, and Todd Hinnen, a partner at Perkins Coie and a former head of U.S. Department of Justice's National Security Division. The course will cover the technology, law and policy of government surveillance of the Internet and other communications technologies. We will focus on U.S. government surveillance for national security, criminal law enforcement and public safety purposes, and its relationship with other jurisdictions. Technologies and practices covered will include wiretapping, stored data collection and mining, location tracking and developing eavesdropping techniques. Legal regimes will include the Fourth Amendment, the Foreign Intelligence Surveillance Act, the USA Freedom Act, USA Patriot Act, the Electronic Communications Privacy Act, the CLOUD Act and CALEA among others. Elements used in grading: Two papers, timely submission of topics and outlines, and class participation.

LAW 4016. Patent Litigation Workshop. 3 Units.
This course simulates the strategy and pretrial preparation of a patent lawsuit. The course materials include information typical to a patent lawsuit: a patent, file history, prior art, and information regarding the accused product. Students will represent either the patentee or the accused infringer. Students will draft claim construction charts, infringement charts, take and defend depositions, and brief and argue claim construction and motions for summary judgment of infringement and invalidity. Some knowledge of patent law is presumed. Special Instructions: IP. Patents (Law 326) is a prerequisite for this course, but can be taken coterminously. Students must attend the first class session (or contact the instructor) or they will be dropped from the class or waitlist. Elements used in grading: Attendance, participation, writing assignments, exercises and oral arguments.

LAW 4017. Advanced Torts: Defamation, Privacy, and Emotional Distress. 3 Units.
This course will examine the theoretical foundations and common law development of the range of tort remedies designed to afford protection to the interests in personality. Defamation, the right of privacy, and claims of emotional distress and harassment will receive particular attention, along with the constitutional defenses to these claims, based on the First Amendment, and recent issues novel to the internet era. Elements used in grading: Final Exam.

LAW 4018. Intellectual Property: International and Comparative Copyright. 2 Units.
All copyrights today are international, and copyright litigation and licensing increasingly require a general understanding of foreign copyright law and of the international copyright system. This course will focus on the counselling considerations that surround the exploitation of US-based music, film, literature, software and other copyrighted works in foreign markets, and of foreign works in US markets, through licensing, litigation, or both. The course will survey the principal legal systems and international treaty arrangements for the protection of copyrighted works as well as the procedural questions that lie at the threshold of protection. Elements used in grading: class participation and two problem sets, one mid-course and the other at the end of the course.

LAW 4019. Computational Law. 2 Units.
Computational Law is an innovative approach to Legal Informatics concerned with the representation of regulations in computable form. From a practical perspective, Computational Law is important as the basis for computer systems capable of performing useful legal calculations, such as compliance checking, legal planning, and regulatory analysis. In this course, we look at the theory of Computational Law, we review relevant technology and applications, we discuss the prospects and problems of Computational Law, and we examine its philosophical and legal implications. Elements used in grading: Work in the course consists of reading, class discussion, practical exercises, and a final project. Cross-listed with Computer Science (CS 204). This class is limited to 30 students (LAW 4019 & CS 204 combined). Interested students should enroll as early as possible in Axess to reserve a spot in the class. (http://complaw.stanford.edu/).

LAW 4020. Lawyering for Innovation: A Case Study. 3 Units.
(Formerly Law 769) Strategic lawyering in the 21st century requires a combination of critical skillsets, including facility with technology, product design, partnerships, dispute resolution, and policy. No issue in the digital age has demonstrated this better than the history of and litigation surrounding Google Books. For over a decade, from the inception of the product to the resolution of its legal issues, lawyers were integrally involved with engineers and the business every step of the way. They helped design its features, defend it from lawsuits, craft a settlement, and advocate complementary policy positions. On a broader level, the history of ebooks is a microcosm of the opportunities and challenges of the digital age: new technologies to reproduce and distribute works, changing consumer norms, massive disruptions to economic interests, evolving concepts of fair use, increased access to information, fears about piracy, and threats to competition. Every one of these issues requires skilled lawyering in close partnership with business leadership. This seminar will focus on strategic lawyering at the cutting edge of innovation by closely studying, among other things, the history of Google Books and the evolution of copyright in the digital age. We will look at how leading businesses, including Google, Apple, Amazon and Microsoft, have each used law, litigation, and policy as tools to advance their business interests. We will focus on developments related to ebooks, and also study analogous issues involving the music, movie, and newspaper industries. The seminar will include guest speakers who have led legal strategies to further innovation. Some copyright experience is helpful but not essential. The course is open to graduate students throughout the university, especially the Graduate School of Business, the Department of Communication, and the Journalism Program. Special Instructions: Students on the waitlist for the course will be admitted if spots are available on the basis of their position on the waitlist and degree of study. Elements used in grading: Grading will be based upon weekly reflections, class participation, and a short final paper (or, for those opting for Research credit, a longer paper based on independent research). A version of this course was taught at Stanford Law School in 2015 and Harvard Law School in 2016. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor.

LAW 4021. Free Speech in the Age of the Internet. 2 Units.
Taught by top policy leaders from Google/YouTube, Facebook and Twitter, this course will explore the way free speech norms have evolved in the age of the Internet and the pivotal role online platforms play in the information available worldwide. From the content policy issues that evolved in the face of violent geopolitical disputes (from the Arab Spring to the Ukraine), to the Right to be Forgotten in Europe, the challenges posed by terrorist propaganda online, and the role platforms play in social movements like #blacklivesmatter, this course will allow students to critically engage the balance between freedom of information and other important social values, such as privacy and security. After the term begins, students accepted into the course can transfer from section (01) into section (02), with consent of the instructor. Elements used in grading: Attendance, Class Participation, Written Assignments; Exam or Final Paper.

LAW 4022. Communications Law: Internet and Telephony. 3 Units.
The internet has enabled new forms of innovation, content production and political participation that are transforming our economy, society and democratic system. Technical, legal and economic choices will affect whether the Internet can realize its potential or not. Communications law - the law that governs both the physical infrastructures for communications services such as cable and telephone networks as well as the communication services which are provided over these infrastructures - has become one of the most important arenas in which choices affecting the future of the information society are made. The debates over network neutrality or the right ways to foster broadband deployment are examples of this trend. At the same time, the Internet's ability to support a variety of different communications services such as telephony, information services or video over the same physical network infrastructure challenges the existing communications law, which is based on the assumption that different physical infrastructures offer different communications services. What can regulators and legislators do to allow the Internet to realize its economic, social, cultural, and political potential? How can we foster the deployment of more broadband networks? And how can policymakers allow applications like Internet telephony and traditional telephony to coexist without giving one an unfair advantage over the other? The course will address how current law deals with these questions, but also explore what regulators and legislators may do to better deal with the challenges posed by the Internet. The course is mostly focused on the US, but highlights developments elsewhere where appropriate. Special Instructions: Students may take Communications Law: Internet and Telephony and Communications Law: Broadcast and Cable Television in any order (neither is a prerequisite for the other). There are no prerequisites for this course. No technical background is required. Elements used in grading: Class participation, attendance, final exam.

LAW 4024. Patent Prosecution. 2 Units.
This skill-based course examines the core requirements and strategies for drafting and prosecuting a patent application before the U.S. Patent & Trademark Office (PTO). The class brings in real inventors and patent examiners to give students a real-world experience of developing a patent, understanding patentability, building patent portfolios, and getting a patent application prosecuted through the patent office. Students will interact with inventors in a startup-type environment and help the startup protect the IP in its technology -- through interactions with the inventors to identify and develop concepts and draft corresponding patent applications, and through interactions with the PTO to get the patents assessed against prior art and eventually granted. The course is open to all students, regardless of your technical (or non-technical) undergraduate background. All you require is an interest in technology or patent law. This class will give you a solid understanding of what patents are, provide real-life experience in identifying and helping companies protect the IP in their technologies, and help you understand the mechanics of patent structure and development, all of which will be helpful experience and background for students interested in pursuing any technology-based litigation or transactional practices. Students are evaluated on participation, in-class and take-home exercises, and projects relating to the drafting and prosecution of a patent application.

LAW 4025. Intellectual Property: Trade Secrets. 3 Units.
Trade secret protection has become one of the most important issues in intellectual property today. Technology becomes more important to industry every day, but information can be downloaded and shared more easily than ever before. The law has to strike a balance between encouraging and protecting commercial investment in research, and preserving an individual's right to change employment or to compete directly against a former employer. In addition to examining the law and the theory of trade secret protection, we will emphasize the practical aspects of protecting information as a trade secret. We will discuss the challenges and issues involved in litigating trade secret cases, creating corporate programs to protect trade secrets, and the increasingly important subject of protecting trade secrets internationally. We will feature several guest speakers, including individuals from the FBI, the Department of Justice, the judiciary, in-house counsel, and a forensic discovery specialist, each of whom will address trade secret law and practice from their own unique perspective. We will highlight topics of current interest, such as non-competition agreements, trade secrets and the Internet, and cybercrime, and will discuss in detail some of the most prominent trade secret cases of the past several years. The class will be of interest to students who expect to practice intellectual property law as well as to students who expect to be involved in corporate transactions and labor law. Elements used in grading: Class participation and final exam.

LAW 4026. Internet Platforms and Free Expression. 2-3 Units.
In recent years, Internet platforms like Facebook, Google, or Twitter have increasingly come under fire. Top executives from these companies have testified before Congress about their role in spreading misinformation in the 2016 elections. With the increased scrutiny come diverse calls for change. They include asking the platforms to self-regulate, asking regulators to address the platforms' growing market power, or asking Congress to adopt laws regulating various aspects of the platforms' behavior. The seminar explores the many ways in which Internet platforms shape free expression online and asks what public responsibilities these private companies do and should have. By interrogating the structural role that these companies play in society -- are they quasi-state actors? are they the press? are they monopolies? -- we will assess how the platforms contribute to (or possibly mitigate) key social problems. We will critically examine constitutional and statutory laws, like the First Amendment, CDA 230, and antitrust law to evaluate whether and how they facilitate or constrain possible solutions. And with the benefit of guest speakers from academia and policy sectors, we will draw our own conclusions about how to best ensure platform accountability. tl;dr: If you want to work at a tech law firm, in-house at a tech company, in a regulatory position vis-a-vis the tech sector, or are generally interested in critical questions around the role of Internet platforms in society and their impact on free expression online, this class is for you. We hope to see your application! Special Instructions: Enrollment will be limited to 15 students from both SLS and H&S. Experience with First Amendment doctrine is helpful, but not required. Grades will be based on class attendance, class participation, and either a number of shorter reflection papers (section (01)) or an independent research paper (section (02)). After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Students taking the course for R credit can take the course for either 2 or 3 units, depending on paper length. Elements used in grading: Class participation, class attendance, reflection papers or research paper. CONSENT APPLICATION: To apply for this course, students must complete and submit the Consent Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms).

LAW 4028. Intellectual Property: Advanced Copyright. 2 Units.
Copyright law is the primary legal regime governing human creativity, and it plays some role in nearly all creative industries today. Consequently, copyright law has far-reaching economic and cultural implications. In this seminar, we will consider the interests of some of the different groups affected by the copyright regime, including creators, technologists, audiences, institutions, and heirs. Course readings will cover copyright case law and scholarship; research on creative practices and relevant business models; the role of copyright law in innovation policy; and legal versus extralegal modes of protecting the fruits of creative labor. Throughout, we will assess the fairness, efficacy, and alignment of copyright protection and remedies available, to whom, when, and for what reasons. The course aims to deepen students' knowledge of copyright law and scholarship; to equip students to develop principled policy arguments about the scope of copyright protection; and to enable students to evaluate reforms and alternatives to copyright in light of how these might serve different entities in the copyright ecosystem. After the term begins, students accepted into the course can transfer from section 01 (written assignments) into section 02 (research paper), which meets the R requirement, with consent of the instructor. Elements used in grading: Attendance, Class Participation; Written Assignments or Research Paper.

LAW 4029. Video Game Law. 3 Units.
This seminar discusses a variety of legal issues raised by video games and game platforms. We will devote substantial attention to intellectual property matters, but will also include business and licensing issues, tort law, the First Amendment, and legal issues presented by virtual reality. Students will write and present an original research paper on a topic related to the class. This is a 3-unit seminar that satisfies the R requirement. Introduction to Intellectual Property or equivalent is a prerequisite. Enrollment is limited to 12 students, and will be by consent of the instructors. Interested students should submit a paragraph explaining their background and interest in the course. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 4030. Intellectual Property: Patents - Japan Field Study. 1 Unit.
This is the Tokyo, Japan component of Intellectual Property: International and Comparative Patent Law (Law 4009) and Intellectual Property: Patents (Law 4010). Students enrolled in either Law 4009 or Law 4010 may apply for this optional field study component, for which students will travel to Tokyo for one week during spring break 2018. Class sessions will take place primarily at Waseda Law School. Students will also meet with local lawyers, clients, and government officials, including at the Japanese Patent Office, the Intellectual Property High Court, and the Ministry of Economy, Trade and Industry. Enrollment is limited to 12 students. PLEASE NOTE: Students will need a passport and visa to travel to Japan. Elements used in grading: class participation and short writing assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website. See Consent Application Form for instructions and submission deadline.

LAW 4031. Disruptive Technologies: Their Impact on Our Laws, and the Laws' Impact on the Technology. 2 Units.
The advent of a highly disruptive technology necessarily butts up against existing laws, regulations and policies designed for the status quo as well as established businesses. This course takes the examples of driverless cars and artificial intelligence and examines the new and challenging legal questions and opportunities presented by these technologies. We will also discuss how business leaders, lawyers and technologists in these areas can navigate and create legal, regulatory and policy environments designed to help their businesses not only survive but thrive. Through a combination of readings, classroom discussions, expert guest speakers from the relevant technology and policy fields and student presentations, this course explores the promise of these technologies, the legal and regulatory challenges presented and the levers in-house counsel and business leaders in these fields can invoke to better navigate the inevitable obstacles facing these highly disruptive technologies. There are no formal prerequisites in engineering or law required, but students should be committed to pursuing novel questions in an interdisciplinary context. Elements used in grading: class preparation and short reflection papers. This course is open to School of Engineering and graduate students with consent of the instructor.

LAW 4032. Advanced Negotiation of Patent Reform Policies. 2 Units.
Patent reform has been a hotly debated topic in recent years in the intellectual property field. Different industries and players have differing and often competing views of our patent system–how effective it is in promoting innovation and what, if any, reform is needed. Students will play the role of counsel on one or more teams representing the interests of particular stakeholder groups. The teams will engage in a series of mock negotiations on actual legislative or administrative patent reform proposals with other teams, as well as mock legislative or administrative engagements before Congress or the United States Patent and Trademark Office respectively. The goal is to achieve consensus on patent reforms that best serve the stakeholders' individual and collective interests, all in an environment of competing interests. Through experience-based learning and simulations, students will gain an understanding of some of the most current patent policy issues being debated in Congress and before the United States Patent and Trademark Office. This seminar will also teach students how to: (1) evaluate from their client's perspective complex, legislative and administrative, patent policy proposals; and (2) strategize, prepare for, participate in, negotiate and advocate for beneficial reforms. Prerequisites: Introduction to Intellectual Property. Grading Criteria: The seminar requires that students to do the required reading, actively participate in class and the mock negotiations and legislative or administrative engagements, and write a series of at least three short assignments.

LAW 4035. Cyber Law: International and Domestic Legal Frameworks for Cyber Policy. 2 Units.
Was Russia's interference in the 2016 U.S. elections an act of war? When do cyber attacks constitute a use of force? Is sovereignty in cyberspace different than in other domains, and can states meaningfully defend their sovereignty in cyberspace? Is hacking back against cyber thieves the legal equivalent of defending one's own property? How should states respond to cyber espionage and information operations, and what legal options are available? This course explores the domestic and international law of cyberspace and its application to significant practical challenges. It also addresses broader legal policy questions, including the extent to which law acts as a constraint on state and non-state actors in cyberspace, whether the application of existing law to cyber activities is sufficient or new laws and norms are needed, and how they could be developed. Policy and law students are welcome; no previous legal knowledge is required. Elements used in grading: Attendance, class participation, writing assignments, and a final exam. Cross-listed with International Policy (INTLPOL 269).

LAW 4038. Does Google Need a Foreign Policy? Private Corporations & International Security in the Digital Age. 3 Units.
Facebook has more users than any nation has citizens. Apple CEO Tim Cook speaks more often with Chinese President Xi Jinping than President Trump does. Google's revenues exceed the GDPs of more than half the world's countries. Cybersecurity companies produce weapons that once only foreign governments wielded. These and other technology companies are increasingly caught in the maw of global politics whether it's entering challenging new foreign markets, developing platforms that enable millions of people around the world to organize for both noble and nefarious aims, or developing products that can become tools of intelligence agencies worldwide for surveillance, counterintelligence, and information warfare. In several respects, tech companies wield more power than governments. We examine the changing role of corporations in international politics, the role of the state, and critical challenges that large technology companies face today in particular. We discuss contending perspectives about key issues with guest lectures by industry and US government leaders as well as simulations of foreign policy crises from the board room to the White House Situation Room. No background in political science or computer science is required. Admission based on application. Elements used in grading: Class participation, midterm policy memo, final policy memo, participate in final course simulation tech company summit. CONSENT APPLICATION: Admission based on application. Instructor consent required. Please send an application email to the teaching assistant, Taylor McLamb, at twj@stanford.edu, that includes: your major, an explanation why you want to take the course, and how your background fits with the subject matter (not to exceed three paragraphs). The application deadline is Friday, November 17 and notification of course acceptance will be sent on Thursday, November 30. International Policy Studies (IPS 245) and Public Policy (PUBLPOL 245).

LAW 4039. Regulating Artificial Intelligence. 3 Units.
Even just a generation ago, interest in "artificial intelligence" (AI) was largely confined to academic computer science, philosophy, engineering research and development efforts, and science fiction. Today the term is widely understood to encompass not only long-term efforts to simulate the kind of general intelligence humans reflect, but also fast-evolving technologies (such as elaborate convolutional neural networks leveraging vast amounts of data) increasingly affecting finance, transportation, health care, national security, advertising and social media, and a variety of other fields. Conceived for students with interest in law, business, public policy, design, and ethics, this highly interactive course surveys current and emerging legal and policy problems related to how law structures humanity's relationship to artificially-constructed intelligence. To deepen students' understanding of current and medium-term problems in this area, the course explores definitions and foundational concepts associated with "artificial intelligence," likely directions for the evolution of AI, and different types of legally-relevant concerns raised by those developments and by the use of existing versions of AI. We will consider distinct settings where regulation of AI is emerging as a challenge or topic of interest, including autonomous vehicles, autonomous weapons, AI in social media/communications platforms, and systemic AI safety problems; doctrines and legal provisions relevant to the development, control, and deployment of AI such as the European Union's General Data Protection Regulation; the connection between the legal treatment of manufactured intelligence and related bodies of existing law, such as administrative law, torts, constitutional principles, criminal justice, and international law; and new legal arrangements that could affect the development and use of AI. We will also cover topics associated with the development and design of AI as they relate to the legal system, such as measuring algorithmic bias and explainability of AI models. Cross-cutting themes will include: how law affects the way important societal decisions are justified, the balance of power and responsibility between humans and machines in different settings, the incorporation of multiple values into AI decision making frameworks, the interplay of norms and formal law, the technical complexities that may arise as society scales deployment of AI systems, and similarities and differences to other domains of human activity raising regulatory trade-offs and affected by technological change. Note: The course is designed both for students who want a survey of the field and lack any technical knowledge, as well as for students who want to gain tools and ideas to deepen their existing interest or background in the topic. Students with longer-term interest in or experience with the subject are welcome to do a more technically-oriented paper or project in connection with this class. But technical knowledge or familiarity with AI is not a prerequisite, as various optional readings and some in-class material will help provide necessary background. Requirements: The course involves a mix of lectures, in-class activities, and student-led discussion and presentations. Requirements include attendance, participation in planning and conducting at least one student-led group presentation or discussion, two short 3-5 pp. response papers for other class sessions, and either an exam or a 25-30 pp. research paper. After the term begins, students accepted into the course can transfer, with consent of the instructor, from section (01) into section (02), which meets the R requirement. CONSENT APPLICATION: We will try to accommodate as many people as possible with interest in the course. But to facilitate planning and confirm your level of interest, please fill out an application (available at https://bit.ly/2MJIem9) by TBA. Applications received after the deadline will be considered on a rolling basis if space is available. The application is also available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms).

LAW 4040. Hot Issues in Tech Policy. 1 Unit.
In our hyper-networked world dominated by digital gatekeepers, tech policy implicates the law, business, engineering and --- perhaps foremost --- society. Effective lawyering in the field must be multi-dimensional and incorporate economic, technological, societal and historical perspectives on the issues. This reading group will put these principles into action by examining current tech policy issues through these lenses. Past offerings of the reading group examined breaking issues such as Facebook and Cambridge Analytica (data collection and use); Uber and the Arizona pedestrian death (testing of AI); Amazon and antitrust (competition online); Apple and iPhone encryption (privacy vs. security); and LinkedIn and public user data (platform control and data ownership). Some possible topics this year include AI and facial recognition; social networks and political advertising; and Google, Apple and digital competition. The reading group does not require a technology background --- just interest in gaining a deeper understanding of the issues. It will meet every other week starting week 1 (weeks 1, 3, 5, 7 and 9) on Thursdays, 6:30PM to 8:30PM. Grading (MP/R/F) will be based on attendance and class participation. Enrollment will be limited to 10 students, with consent of the instructor. CONSENT APPLICATION: To apply for this course, students must complete and submit a short Consent Application Form available on the SLS website (click Courses at the bottom of the homepage and then click Consent of Instructor Forms). Applications are due by December 15, though earlier submissions are welcome.
Same as: Reading Group

LAW 4041. Lawyering for Innovation: Artificial Intelligence. 2 Units.
In recent years, artificial intelligence (AI) has made the jump from science fiction to technical viability to product reality. Industries as far flung as finance, transportation, defense, and healthcare invest billions in the field. Patent filings for robotics and machine learning applications have surged. And policymakers are beginning to grapple with technologies once confined to the realm of computer science, such as predictive analytics and neural networks. AI's rise to prominence came thanks to a confluence of factors. Increased computing power, large-scale data collection, and advancements in machine learning---all accompanied by dramatic decreases in costs---have resulted in machines that now have the ability to exhibit complex "intelligent" behaviors. They can navigate in real-world environments, process natural language, diagnose illnesses, predict future events, and even conquer strategy games. These abilities, in turn, have allowed companies and governments to entrust machines with responsibilities once exclusively reserved for humans---including influencing hiring decisions, bail release conditions, loan considerations, medical treatment and police deployment. But with these great new powers, of course, come great new responsibilities. The first public deployments of AI have seen ample evidence of the technology's disruptive---and destructive---capabilities. AI-powered systems have killed and maimed, filled social networks with hate, and been accused of shaping the course of elections. And as the technology proliferates, its governance will increasingly fall upon lawyers involved in the design and development of new products, oversight bodies and government agencies. AI is the biggest addition to technology law and policy since the rise of the internet, and its influence spreads far beyond the tech sector. As such, those entering practice in a wide variety of fields need to understand AI from the ground up in order to competently assess and influence its policy, legal and product implications as deployments scale across industries in the coming years. This course is designed to teach precisely that. It seeks to equip students with an understanding of the basics of AI and machine learning systems by studying the implications of the technology along the design/deployment continuum, moving from (1) system inputs (data collection) to (2) system design (engineering) and finally to (3) system outputs (product features). This input/design/output framework will be used throughout the course to survey substantive engineering, policy and legal issues arising at each of those key stages. In doing so, the course will span topics including privacy, bias, discrimination, intellectual property, torts, transparency and accountability. The course will also feature leading experts from a variety of AI disciplines and professional backgrounds. An important aspect of the course is gaining an understanding of the technical underpinnings of AI, which will be packaged in an easy-to-understand, introductory manner with no prior technical background required. The writing assignments will center on reflection papers on legal, regulatory and policy analysis of current issues involving AI. The course will be offered for two units of credit (H/P/R/F). Grading will be determined by attendance, class participation and written assignments. Given the course's multi-disciplinary focus, students outside of the law school, particularly those studying computer science, engineering or business, are welcome. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 4043. The Social & Economic Impact of Artificial Intelligence. 1 Unit.
Recent advances in computing may place us at the threshold of a unique turning point in human history. Soon we are likely to entrust management of our environment, economy, security, infrastructure, food production, healthcare, and to a large degree even our personal activities, to artificially intelligent computer systems. The prospect of "turning over the keys" to increasingly autonomous systems raises many complex and troubling questions. How will society respond as versatile robots and machine-learning systems displace an ever-expanding spectrum of blue- and white-collar workers? Will the benefits of this technological revolution be broadly distributed or accrue to a lucky few? How can we ensure that these systems are free of algorithmic bias and respect human ethical principles? What role will they play in our system of justice and the practice of law? How will they be used or abused in democratic societies and autocratic regimes? Will they alter the geopolitical balance of power, and change the nature of warfare? The goal of CS22a is to equip students with the intellectual tools, ethical foundation, and psychological framework to successfully navigate the coming age of intelligent machines. Elements used in grading: Attendance. Cross-listed with Computer Science (CS 22A) and International Policy (INTLPOL 200).

LAW 4044. Lawyering for Innovation: The (Ongoing) Facebook Case Study. 2 Units.
Issues of technology law and policy -- many involving Silicon Valley companies -- are among the most interesting and challenging in law today. Drawing on the lecturer's experience as General Counsel of Facebook, the course will focus on actual controversies that confront practicing lawyers as they grapple with these evolving issues in a fast-moving environment of innovation and disruption. In less than 15 years of existence (and less than seven years as a public company), Facebook has confronted an unending set of legal challenges, across the full range of subject matter, and in the process has helped define technology law in the 21st century. From questions of privacy law, to antitrust, to intellectual property law, to cutting-edge litigation, and most recently to election law and the political process, Facebook has been at the forefront of many of the defining legal developments of our era. In order to navigate these issues effectively, lawyers must combine legal expertise with practical business judgment as well as an understanding of the broader social and political context -- and in this course, students will develop those skills by studying Facebook legal controversies from the past and the present. Grading will be based on attendance, class participation, and a short final paper.

LAW 4045. Digital Technology and Law: Foundations. 3 Units.
Taught by a team of law and engineering faculty, this unique interdisciplinary course will empower students across the University to work together and exercise leadership on critically important debates at the intersection of law and digital technology. Designed as an accessible survey, the course will equip students with two powerful bases of knowledge: (i) a working technical grasp of key digital technologies (e.g., AI and machine learning, internet structure, encryption, blockchain); and (ii) basic fluency in the key legal frameworks implicated by each (e.g., privacy, cybersecurity, anti-discrimination, free speech, torts, procedural fairness). Substantively, the course will be organized into modules focused on distinct law-tech intersections, including: platform regulation, speech, and intermediary liability; algorithmic bias and civil rights; autonomous systems, safety, and tort liability; "smart" contracting; data privacy and consumer protection; "legal tech," litigation, and access to justice; government use of AI; and encryption and criminal procedure. Each module will be explored via a mix of technical and legal instruction, case study discussions, in-class practical exercises, and guest speakers from industry, government, academe, and civil society. Law students will emerge from the course with a basic understanding of core digital technologies and related legal frameworks and a roadmap of curricular and career pathways one might follow to pursue each area further. Students from elsewhere in the University, from engineering to business to the social sciences and beyond, will emerge with an enhanced capacity to critically assess the legal and policy implications of new digital technologies and the ways society can work to ensure those technologies serve the public good. All students will learn to work together across disciplinary divides to solve technical, legal, and practical problems. There are no course prerequisites, and no prior legal or technical training will be assumed. Students will be responsible for short discussion papers or a final paper. After the term begins, students electing the final paper option can transfer from section 1 to section 2, which meets the R requirement, with consent of the instructor. This class is cross-listed in the University and undergraduates and graduates are eligible to take it. Consent Application for Non-Law Students: We will try to accommodate all students interested in the course. But to facilitate planning and confirm interest, please fill out a consent application (https://forms.gle/hLAQ7JUm2jFTWQzE9) by March 13, 2020. Applications received after March 13 will be considered on a rolling basis. Elements used in grading: Attendance, Class Participation; Written Assignments or Final Paper. Cross-listed with Computer Science (CS 481).

LAW 4046. Data: Privacy, Property and Security. 3 Units.
The collection, use and marketing of personal data are ubiquitous in the digital age. This seminar will explore the diverse legal regimes regulating personal data--including privacy, property and security-- and the imperfect nature of their protections. Legal rules are rapidly evolving to address, if not resolve, the inevitable conflicts between privacy, property and security in relation to personal data. Laws have been enacted and new ones are under consideration at the national, state and even municipal levels, as well as around the world. Norms are emerging to guide these conflicts in the operation of business. Technology is evolving that can facilitate the protection, or accelerate the exploitation, of personal data. At the heart of all these developments is the question, who owns and controls personal data in the digital age. The same piece of data may in different hands raise different expectations. As an example, A may have a privacy expectation that her purchase from an online marketplace is no one's business but her own. B, the app that served as intermediary between the buyer and seller, may have a property or contract expectation that it owns the metadata and other information about A's buying habits. C, a government agency, may have a security interest in collecting or unearthing the details of A's purchase of particular items. This same triad of interests is implicated across a wide variety of highly sensitive personal data, such as location information, facial recognition and medical results. This seminar will explore these data rules, norms, technologies and conflicts through three sessions of lecture and interactive exercises addressed to privacy, property and security, respectively; four sessions devoted to presentations from leading representatives of consumer, corporate and government interests, with questioning by students in the class; and two sessions devoted to discussion of student answers to problem sets, focusing on an exploration of the privacy-property-security conflict and on forward-looking solutions to the protection of personal data. Elements used in grading: Attendance, class participation, final research paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. Cross-listed with International Policy (INTLPOL 362).

LAW 4047. Ethics, Public Policy, and Technological Change. 4 Units.
Examination of recent developments in computing technology and platforms through the lenses of philosophy, public policy, social science, and engineering. Course is organized around four main units: algorithmic decision-making and bias; data privacy and civil liberties; artificial intelligence and autonomous systems; and the power of private computing platforms. Each unit considers the promise, perils, rights, and responsibilities at play in technological developments. Prerequisite: CS106A. Elements used in grading: Attendance, class participation, written assignments, coding assignments, and final exam. Cross-listed with Communication (COMM 180), Computer Science (CS 182), Ethics in Society (ETHICSOC 182), Philosophy (PHIL 82), Political Science (POLISCI 182), Public Policy (PUBLPOL 182).

LAW 4048. Regulating Internet Speech Platforms. 2-3 Units.
Internet platforms like Google and Facebook play an enormous role in our online speech and information environment today. This class will review the intermediary liability laws that shape platforms' decisions about online content, and examine how successfully those laws achieve their goals. Students will be encouraged to think pragmatically about the legal, operational, and product design choices platforms may make in response to particular laws, drawing on the instructor's experience handling such questions as Associate General Counsel at Google. Readings and discussions will focus primarily on current US law, with some attention to European laws and to proposed or pending legislation. Important themes of the class include Constitutional and human rights constraints on intermediary liability laws; legal limits (or lack thereof) on platforms' enforcement of privatized speech rules under their Community Guidelines or Terms of Service; global enforcement of national laws requiring platforms to remove content; and connections between platform liability and other areas of law such as consumer protection or privacy. Students will be responsible for three written assignments. The longest will be a final paper of 15 pages. The other two will both be short responses to the week's reading. Up to three students, with consent of instructor, will have the option to write an independent research paper for 3 units. After the term begins, students (max 3) accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Students will be graded based on Attendance, Class Participation, Written Assignments, and a Final Paper. Admission to the class is based on lottery, but in admitting students from the waitlist the instructor may prioritize based on students' degree programs.

LAW 4049. Hack Lab. 3 Units.
This course aims to give students a solid understanding of the most common types of attacks used in cybercrime and cyberwarfare. Taught by a long-time cybersecurity practitioner, a recovering cyberlaw litigator, and a group of hearty, motivated TAs, each session will begin with a lecture covering the basics of an area of technology and how that technology has been misused in the past. Students will then complete a lab section, with the guidance of the instructor and assistants, where they attack a known insecure system using techniques and tools seen in the field. Each week, there will be a second lecture on the legal and policy impacts of the technologies and techniques we cover. By the end of the course, students are expected to have a basic understanding of some of the most common offensive techniques in use today as well as a comprehensive overview of the most important aspects of cyberpolicy and law. No computer science background is required. All students must have access to a Windows, Mac OS X or Linux laptop. Students must enroll in the lecture as well as one Computer Lab (Lab meets 50 minutes once a week). Special Instructions: This class is limited to 120 students with 30 spots for SLS students. If more than 30 SLS students wish to enroll, instructor permission is required. Elements used in grading: Class participation, written assignments, take-home midterm, and a final exam. Cross-listed with International Policy (INTLPOL 268). Law students see INTLPOL listing for Computer Lab section meeting times.

LAW 4050. AI and Rule of Law: A Global Perspective. 2-3 Units.
Advances in machine learning, big data, networked communications, and computing are transforming our world and fueling calls for regulation. This course--a joint venture of a Stanford law professor and a former Member of the European Parliament and leading voice on tech regulation--offers a global perspective on the profound legal and governance challenges posed by the new digital technologies. Students will emerge with an understanding of how tech is reshaping the global distribution of political authority, rights, and resources, the existing state of law and regulation in the U.S., Europe, China, and elsewhere, and the new democratic governance models that are emerging in response. Each class session will feature one or more distinguished speakers from around the world drawn from the ranks of government officials, judges, activists, and academics who work in the fields of human rights, privacy, free speech, trade, and national security. There are no course prerequisites, whether in law or otherwise. Students will be responsible for one-page responses to each week's readings and a research paper to be turned in at the spring paper deadline. Students can take the course for 2 or 3 units, depending on research paper length. This class is cross-listed with International Policy (INTLPOL 253) and undergraduates and graduates are eligible to take it. Stanford Non-Law students may enroll in INTLPOL 253 directly in Axess. Non-law students wishing to enroll in LAW 4050 should complete the Non-Law Student Add Request form available at https://law.stanford.edu/education/courses/non-law-students/ for a permission number to enroll. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper.

LAW 4051. Foundations of Internet Speech Platform Regulation. 3 Units.
Internet platforms like Google and Facebook play an enormous role in our online speech and information environment today. This class will review the laws that shape platforms' decisions about online content, with a primary focus on intermediary liability laws like the Digital Millennium Copyright Act (DMCA), Communications Decency Act Section 230 (CDA 230), and the EU's eCommerce Directive. The majority of course material will be from the U.S., but some will explore international models and in particular recently enacted laws in the European Union. Some classes will explore the impact of related areas of law, including privacy law, and some will go beyond current legal models to explore forward-looking legislative and policy proposals. Important themes of the class include Constitutional and human rights constraints on intermediary liability laws; legal limits (or lack thereof) on platforms' enforcement of privatized speech rules under their Community Guidelines or Terms of Service; global enforcement of national laws requiring platforms to remove content; and tensions between the goals of intermediary liability law and those of privacy, competition, and other legal frameworks. Students will be encouraged to think pragmatically about the legal, operational, and product design choices platforms may make in response to particular laws, drawing on the instructor's experience handling such questions as Associate General Counsel at Google. Students will be responsible for (1) submitting twelve written questions in response to reading assignments (these are due before class meets on twelve class days of your choice, they can be very brief and informal); (2) participating in class discussion, potentially including discussion of points raised in your written questions; and (3) completing a final examination. The course is open to law students and students in the Masters in International Policy (MIP) program. Thirty-five students will be admitted, with an effort made to have 25 students from the law school admitted by lottery, and 10 from MIP admitted by instructor consent. In admitting law students from the waitlist the instructor may prioritize based on students' degree programs. The material in this class overlaps considerably with that in the 2019 Regulating Internet Speech Platforms (LAW 4048) seminar course. Students who took that class will not be admitted. If a student who took LAW 4048 is admitted to LAW 4051 by lottery, the student will be instructed to drop the class. Elements used in grading: Attendance, class participation, written assignments, final exam. Cross-listed with International Policy (INTLPOL 361).

LAW 4052. Governing Artificial Intelligence: Law, Policy, and Institutions. 3 Units.
Even just a generation ago, interest in "artificial intelligence" (AI) was largely confined to academic computer science, philosophy, engineering, and science fiction. Today the term is understood to encompass not only long-term efforts to simulate the general intelligence associated with humans, but also fast-evolving technologies (such as elaborate neural networks leveraging vast amounts of data) with the potential to reshape finance, transportation, health care, national security, advertising and social media, and other fields. Taught by a sitting judge, a former EU Parliament member, and a law professor, and conceived to serve students with interest in law, business, public policy, design, and ethics, this interactive course surveys current and emerging legal and governance problems related to humanity's relationship to artificially-constructed intelligence. To deepen students' understanding of legal and governance problems in this area, the course explores definitions and foundational concepts associated with AI, likely pathways of AI's evolution, different types of law and policy concerns raised by existing and future versions of AI, and the distinctive domestic and international political economies of AI governance. We will consider discrete settings where regulation of AI is emerging as a challenge or topic of interest, among them: autonomous vehicles, autonomous weapons, labor market decisions, AI in social media/communications platforms, judicial and governmental decision-making, and systemic AI safety problems; the growing body of legal doctrines and policies relevant to the development and control of AI such as the European Union's General Data Protection Regulation and the California Consumer Privacy Act; the connection between governance of manufactured intelligence and related bodies of law, such as administrative law, torts, constitutional principles, civil rights, criminal justice, and international law; and new legal and governance arrangements that could affect the development and use of AI. We will also cover topics associated with the design and development of AI as they relate to law and governance, such as measuring algorithmic bias and explainability of AI models. Cross-cutting themes will include: how law and policy affect the way important societal decisions are justified; the balance of power and responsibility between humans and machines in different settings; the incorporation of multiple values into AI decision-making frameworks; the interplay of norms and formal law; technical complexities that may arise as society scales deployment of AI systems; AI's implications for transnational law and governance and geopolitics; and similarities and differences to other domains of human activity raising regulatory trade-offs and affected by technological change. Note: The course is designed both for students who want a survey of the field and lack any technical knowledge, as well as students who want to gain tools and ideas to deepen their existing interest or technical background in the topic. Students with longer-term interest in or experience with the subject are welcome to do a more technically-oriented paper or project in connection with this class. But technical knowledge or familiarity with AI is not a prerequisite, as various optional class sessions and readings as well as certain in-class material will help provide necessary background. Requirements: The course involves a mix of lectures, practical exercises, and student-led discussion and presentations. Elements used in grading: Requirements include attendance, participation in a student-led group presentation and a group-based practical exercise, two short 3-5 pp. response papers, and either an exam or research paper. After the term begins, students accepted into the course can transfer, with consent of the instructor, from section (01) into section (02), which meets the R requirement. CONSENT APPLICATION: We will try to accommodate as many people as possible with interest in the course. But to facilitate planning and confirm your level of interest, please fill out an application (available at TBA) by March 10, 2021. Applications received after the deadline will be considered on a rolling basis if space is available. The application is also available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms).

LAW 4053. Confronting Misinformation Online: Law and Policy. 2-3 Units.
This course will examine contemporary challenges and trade-offs for tech law and policy decision-making presented by false information online. Topics will include policy and regulatory responses to election misinformation; medical misinformation; the spread of misinformation in armed conflict and situations of widespread human rights violations; and conspiracy theories and rumors in the areas of science, climate, religion, and politics. Along with the faculty, guest speakers from academia and industry thought leaders will present on these topics, followed by a discussion. In addition, students will analyze real-world dilemmas confronting policymakers through practical case studies and will assume the role of a policymaker as part of each class. Finally, this course will explore regulatory, policy, technological, and other solutions to enhance the integrity of the online information ecosystem and address the growing problem of false information online. Special Instructions: Up to five Law students, with the consent of the instructors, will have the option to write an independent research paper for Law School Research (R) credit. For students in this section (02), the research paper will replace the Final Policy Memo. All other elements used in grading will apply. Students taking the course for R credit can take the course for either 2 or 3 units, depending on the paper length. Elements used in grading: Attendance, Class Participation, Written Assignments; Final Policy Memo or Final Research Paper. Cross-listed with International Policy (INTLPOL 363).

LAW 5001. China Law and Business. 3 Units.
The growing tension between China and the rest of the world after the COVID-19 outbreak has made it more important than ever for businesses and their advisers to understand the legal framework in China and related compliance issues. Given their need to survive the current economic crisis, which will likely last for some time, foreign businesses--however guarded they are--must keep a watchful eye and be ready to seize opportunities arising from an economy that is too big to give up. Designed to prepare students for different opportunities that are likely to touch on China and its regulatory framework, this introductory course examines Chinese legal rules and principles in select business-related areas, including intellectual property, dispute resolution (e.g., arbitration and litigation), foreign investment law, antimonopoly law, and artificial intelligence. Drawing on her 25 years of experience handling issues related to U.S.–China relations, politics, and legal reforms, the instructor will, wherever appropriate, conduct discussions that help shed light on the role of China in the new world order. Through active class participation and analysis of legal and business cases, students will learn both the law on the books and the law in action, as well as strategies that Chinese and international businesses alike can use to overcome limitations in the Chinese legal system. Leaders from the law and business communities will be invited to share their experiences and insights. This course is particularly suitable for law students, MBA students, and students enrolled in the East Asian Studies Program. Undergraduates who have permission from the instructor may also take this course. A Stanford Non-Law Student Course Registration Form is available on the SLS Registrar's Office website. Elements used in grading: class participation (20%), team project (40%), and extended take-home exam (40%). For the team project component, students will work with another student enrolled in the class to produce an analysis of a judicial case or legislation in China and discuss, for example, the implications of the related Chinese legal principles for businesses and/or major differences between these principles and similar U.S. legal principles. Quality team projects may have the opportunity to be included in the professional journal published by the China Guiding Cases Project ("CGCP"), which is led by Dr. Mei Gechlik, the instructor, and her global team of nearly 200 members. Team projects selected for publication will receive editorial input from the CGCP.

LAW 5002. Comparative Law. 3 Units.
The big question in comparative law today - and one that is of key importance to anyone interested in international law - is whether we are currently witnessing a convergence of national legal systems. This course examines this question, as well as the related problem of American exceptionalism, by exploring key aspects of contemporary Western European legal systems, as well as (to a lesser extent) Latin American ones. We will study a range of legal institutions and practices, including such topics as legal education, the role of judges and judging, constitutional courts and judicial review, criminal procedure and punishment, and the rise and regulation of consumer culture. In contrast to the traditional comparative law course, we will also devote substantial time to such pressing public-law questions as racial equality and affirmative action, gender equality and sexual harassment, and church-state relations. In lieu of the final exam, students may opt to write four response papers to the assigned readings (each 5 to 7 double-spaced pages long). After the term begins, students accepted into the course can transfer from section (01) into section (02), with consent of the instructor. Elements used in grading: Class participation; and exam or response papers.

LAW 5003. International Criminal Law and Its Enforcement. 3 Units.
The establishment of a global system of international justice reveals that the promises made during the Nuremberg era are not mere history. Over the past two decades, the international community has undertaken a considerable investment in enforcing international criminal law in conflict and post-conflict situations with the establishment of the international criminal tribunals for the former Yugoslavia, Rwanda, Sierra Leone, East Timor, Cambodia, and Lebanon. In addition, new hybrid models and multilateral investigative institutions are in operation, attesting to the creativity of justice advocates. Meanwhile, national courts are increasingly exercising expanded forms of criminal jurisdiction over international and transnational crimes. The International Criminal Court (ICC) sits at the apex of this system, although it is plagued by challenges to its legitimacy, erratic state cooperation, and persistent perceptions of inefficacy and inefficiency. Moreover, the global commitment to international justice remains inconsistent as calls for criminal accountability for the situations in Sri Lanka, South Sudan, and Syria -- among others -- go unanswered. This course will introduce students to the law, institutions, and actors that constitute the system of international justice and to the political environment in which this system is situated. Readings will map the once and future international criminal law institutions, offer an elemental analysis of international crimes and forms of responsibility as they have evolved in international law, and focus on the challenges of pursuing criminal prosecutions for international crimes. Jurisprudence from the various international and domestic tribunals will be scrutinized with an emphasis on understanding the prosecution's burden, available defenses, and sources of proof. The course will also engage new and perennial debates about the suitability of using criminal justice mechanisms to respond to mass atrocity situations and consider alternatives from the domain of transitional justice. In addition to the substance of international criminal law, this course will also serve as an introduction to international legal reasoning, law-making, and institutional design. It will complement existing courses at the Law School covering comparative law, international organizations, international human rights, criminal law, and public international law. After the term begins, students accepted into the course can transfer, with consent of the instructor, from section (01) into section (02), which meets the R requirement. Elements used grading: Attendance, Class Participation, Written Assignments; Exam or Final Paper. Cross-listed with Human Rights (HUMRTS 116) and International Policy (INTLPOL 354).

LAW 5005. European Union Law. 2-3 Units.
The U.S. and the European Union (which comprises 27 European states and 450 million people) have the largest bilateral trade relationship in the world. Over 50% of the world's GDP is generated on the Transatlantic Marketplace. U.S. companies rely on the EU market for more than half of their global foreign profits, and U.S. investment in the EU is currently three times greater than U.S. investment in the whole of Asia. In recent years, this has tremendously heightened the need for a sound understanding of the legal system of the EU, especially for business and technology lawyers. Responding to this need, this course will, first, examine the internationally unique legal system of the EU as such, as it is applicable to any field of substantive and procedural EU law. Thus, we will look at the legal nature and the different sources of EU law and its relationship with the national law of the EU Member States, including European human rights and fundamental rights protection standards. We will cover the relevant EU law enforcement actions including state liability issues for breach of EU law as well as the jurisdiction of both European Courts and relevant remedies in national courts. Secondly, we will explore the legal framework governing business activities in the EU, from the perspective of a business entity as an internationally operating actor in a European business environment. In this context, we will focus on the most essential fields of EU business law, i.e. (a) the four fundamental economic freedoms of the European Internal Market for goods, services, capital, and persons (enterprises, workforce, immigration), including the legal and economic implications of Brexit, (b) EU competition (antitrust) law, and (c) the new digital European Internal Market and EU data protection and privacy laws. Special attention will be given to the question how companies established outside the EU can efficiently use EU business law to pursue their interests in the EU. Additional study and research opportunities for students in EU law, building on this course, can be found on the SLS EU Law Initiatives website (https://law.stanford.edu/transatlantic-technology-law-forum/european-union-law-initiatives/). Special Instructions: After the term begins, students accepted into the course can transfer, with consent of the instructor, from section (01) into section (02), which meets the R requirement. Grades for students enrolled in section (01) will be based on writing assignments. Students taking the course for R credit can take the course for either 2 or 3 units, depending on the paper length. Elements used in grading: Writing assignments or research paper.

LAW 5006. International Business Transactions and Litigation. 3 Units.
Lawyers are increasingly asked to advise clients with global operations: Twitter reacts to free speech limitations in Turkey; Facebook's user data is regulated by governments around the world; Nike weighs the legal risk from factory fires in Bangladesh; investors spend billions in China without reliable legal protections common elsewhere; companies worry about the consequences of human rights violations. What legal problems arise when firms go global? Through a series of case studies, we put you in the driver's seat and ask you to consider the practical challenges of doing business around the world. We will examine how treaties, international agreements, and informal norms constrain or supplement national laws and review the risks of doing business in nations whose laws are ineffective or unreliable. We also consider some of the costs of globalization. We'll hear from current or former general counsel from global firms such as Intel and G.E. Elements used in grading: a short paper, class participation, and written assignments.

LAW 5007. International Business Negotiation. 3 Units.
This course is structured around a quarter-long, simulated negotiation exercise which provides an in-depth study of the structuring and negotiating of an international business transaction. This class will be taught in counterpart with a class at Berkeley Law School. Students in this class will represent a U.S. pharmaceutical company, and the students in the class at Berkeley will represent an African agricultural production company. The two companies are interested in working together to exploit a new technology developed by the pharmaceutical company that uses the cassava produced by the African agricultural production company. The form of their collaboration could be a joint venture, a licensing agreement or a long term supply contract. The negotiations between the two classes will take place through written exchanges and through real-time negotiation which will be conducted both in-person and via videoconferences. The purpose of the course is to provide students with an opportunity (i) to experience the sequential development of a business transaction over an extended negotiation, (ii) to study the business and legal issues and strategies that impact the negotiation, (iii) to gain insight into the dynamics of negotiating and structuring international business transactions, (iv) to learn about the role that lawyers and law play in these negotiations, (v) to give students experience in drafting communications, and (vi) to provide negotiating experience in a context that replicates actual legal practice with an unfamiliar opposing party (here, the students at Berkeley). Students will also learn about the legal and business issues that may arise in joint ventures, supply agreements and licensing agreements. The thrust of this course is class participation and active involvement in the negotiations process. Students are expected to spend time outside of class, working in teams, to prepare the written exchanges, to prepare for the live negotiations (as well as online negotiations in a world where these will be increasingly the norm), and to prepare for class discussions. Class discussions will focus on the strategy for, and progress of, the negotiations; collective evaluation of the class's preparation for, and performance in, the negotiations; and the substantive legal, business and policy matters that impact on the negotiations. In addition to the regular Monday class, classes will meet for the live negotiations on one Thursday evening (DLA Palo Alto Office, 2000 University Avenue) at 7:00 PM-10:00 PM (10/17), and four Saturday mornings at 10:30 AM (10/3, 10/10, 10/17 and 11/7) in the San Francisco office of DLA Piper (555 Mission Street; close to Montgomery St. BART station). The four Saturday classes will end at 1:30 PM, except for 11/7 which will end at 2:30 PM. Due to the Thursday and Saturday classes, this class will conclude on November 9. Admission to this class is by consent of instructor. The maximum class size is 21, which will include students from GSB or other departments. Attention Waitlist Students: Students on the waitlist for the course will be admitted if spots are available on the basis of their position on the waitlist and degree of study; all waitlist students are encouraged to attend the first class and will be notified as spaces become available. Attention Non-Law Students: You must complete and submit both a consent form and a Non-Law Student Course Add Request Form to the Law School Registrar's Office (Room 100). See Stanford Non-Law Student Course Registration on the SLS Registrar's Office website. Prerequisites: A course in basic negotiations (e.g., Law 7821) or comparable prior experience is recommended. Elements used in grading: Class participation, written assignments and final paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 5008. International Commercial Arbitration. 3 Units.
This course provides a rigorous introduction to the law, theory and practice of international commercial arbitration. International commercial arbitration which has become the default means of settling international disputes and with clients increasingly involved in international business transactions and cross-border activity, is a rapidly growing practice area in law firms of every size. The practice is peripatetic, with many international arbitration lawyers basing themselves in law firms in New York, Washington D.C., Paris, Hong Kong, Singapore, and other major world commercial centers. The course will deal with the internationalist elements of the subject matter, but also examine international commercial arbitration from an American perspective. Students can expect to review both foreign and US commentaries, statutes and case law. The course will comprise of five main topics: (1) an introduction to the field of international commercial arbitration; (2) the agreement to arbitrate; (3) the arbitrators; (4) the arbitration process; and (5) the arbitral award. The intent is to provide a strong academic understanding of the various theories and principles, but with a strong practical bent. Elements used in grading: Attendance, Class Participation, Final Exam.

LAW 5009. International Conflict Resolution. 2 Units.
This seminar examines the challenges of managing and resolving intractable political and violent intergroup and international conflicts. Employing an interdisciplinary approach drawing on social psychology, political science, game theory, and international law, the course identifies various strategic, psychological, and structural barriers that can impede the achievement of efficient solutions to conflicts. We will explore a conceptual framework for conflict management and resolution that draws not only on theoretical insights, but also builds on historical examples and practical experience in the realm of conflict resolution. This approach examines the need for the parties to conflicts to address the following questions in order to have prospects of creating peaceful relationships: (1) how can the parties to conflict develop a vision of a mutually bearable shared future; (2) how can parties develop trust in the enemy; (3) how can each side be persuaded, as part of a negotiated settlement, to accept losses that it will find very painful; and (4) how do we overcome the perceptions of injustice that each side are likely to have towards any compromise solution? We will consider both particular conflicts, such as the Israeli-Palestinian conflict and the South African transition to majority rule, as well as cross-cutting issues, such as the role international legal rules play in facilitating or impeding conflict resolution, the ways intragroup dynamics affect intergroup conflict resolution efforts, and the role of transitional justice mechanisms to address atrocities following civil wars. Special Instructions: Section 01: Grades will be based on class participation, written assignments, and a final exam. Section 02: Up to five students, with consent of the instructor, will have the option to write an independent research paper for Research (R) credit in lieu of some of the written assignments and final exam for Section 01. After the term begins, students (max 5) accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. This class is limited to 20 students, with an effort made to have students from SLS (12 students will be selected by lottery) and eight non-law students by consent of instructor. This class is cross-listed with International Policy (INTLPOL 250) and Psychology (PSYCH 383).

LAW 5010. International Human Rights. 3 Units.
This course offers an introduction to the theory and practice of human rights. We will examine major sources of international human rights law---including treaties, customary international law, and national law---as well as the institutions in which human rights are contested, adjudicated, and enforced. Key situses of human rights activity include multilateral organizations, like the United Nations Security Council and Human Rights Council; international, regional, and national courts and tribunals; and quasi-judicial treaty bodies, like the U.N. Committee Against Torture. This degree of jurisdictional redundancy offers an opportunity to explore questions of institutional design and interaction as well as processes of normative diffusion. The course will also consider the role of non-state actors---including non-governmental organizations, corporations, terrorist organizations, and ordinary individuals---in promoting and violating human rights. In addition to this survey of the human rights ecosystem, the course will engage some of the fundamental theoretical debates underlying the international human rights project with a focus on perennial questions of legitimacy, justiciability, compliance, and efficacy. Finally, we will explore a range of threats and challenges to the promotion of human rights---both perennial and novel---including economic under-development, terrorism, national security over-reach, patriarchy, and racism. We will read case law originating from all over the world, including the United States. Special Instructions: Students have the option to write a long research paper in lieu of the final exam with consent of instructor. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Class participation; exam or final long research paper. Cross-listed with Human Rights (HUMRTS 117) and International Policy (INTLPOL 355).

LAW 5011. International Investment Law. 2-3 Units.
The past few decades have seen a dramatic increase in the number of bilateral investment treaties and other treaties with investment-related provisions, followed by a sharp rise in the number of disputes between private investors and sovereign states pursuant to investor-state dispute settlement (ISDS) provisions. This course will cover four broad areas: (I) the historical and policy origins of international investment law; (II) the substantive obligations and standards governing the investor-state relationship; (III) the investor-state arbitration process; and (IV) current controversies over the legitimacy and desirability of ISDS. The course uses materials from international investment treaty texts, case law, and commentaries to enable students to evaluate and apply legal doctrine to future situations. Students will produce a variety of writing assignments such as case commentaries and short "briefs," and will serve as discussion facilitators along with the instructors. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Class participation, attendance and paper(s).

LAW 5012. International Criminal Justice. 3 Units.
(Formerly Law 752) The establishment of a global system of international justice reveals that the promises made during the Nuremberg era are not mere history. Over the past decade, the international community has undertaken a considerable investment in enforcing international criminal law in conflict and post-conflict situations with the establishment of the international criminal tribunals for the former Yugoslavia, Rwanda, Sierra Leone, East Timor, Cambodia, and Lebanon. As these ad hoc institutions wind down, the International Criminal Court (ICC) has become fully functional, although it is plagued by challenges to its legitimacy, erratic state cooperation, and persistent perceptions of inefficacy and inefficiency. Moreover, the global commitment to international justice remains inconsistent as calls for criminal accountability for the situations in Sri Lanka, South Sudan, and Syria---among others---go unanswered. This intensive mini-course in the early September Term will introduce students to the law, institutions, and actors that constitute the system of international criminal justice and to the political environment in which it operates. The classroom component (offered at Stanford during the first week of the course) will undertake an elemental analysis of international crimes as they have evolved in international law and focus on the challenges of interpreting these norms in a criminal prosecution. Jurisprudence from the various international tribunals will be scrutinized with an emphasis on understanding the prosecution's burden, available defenses, and sources of proof. The course will culminate in a visit to The Hague in the second week of the course, during which time students will meet with principals from the tribunals, including prosecutors, judges, administrators, and members of the defense bar. In addition to the substance of international criminal law, this course will also serve as an introduction to international legal reasoning, law-making, and institutional design. It will complement existing courses at the Law School covering comparative law, international organizations, international human rights, and public international law. The course grade will be based on a series of short papers and active in-class engagement with the assigned materials. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 5013. International Law. 4 Units.
This course provides a general introduction to international law and its role in today's complex and interdependent world. We will begin by considering foundational questions about the nature of international law, such as: the origins of international law in the sovereign equality of states; the sources of international law (including treaties and customary international law); the subjects of international law; principles of state responsibility; the bases upon which states may exercise jurisdiction; and the global governance challenges arising from the absence of assured mechanisms for the interpretation or enforcement of international law. We will then examine the incorporation and operation of international law in the U.S. legal system. In the second half of the course, we will look at a series of contemporary international law topics and issues, including international dispute resolution, international human rights law, the law governing coercion and the use of armed force, the law of armed conflict, international environmental law, and international criminal law. Throughout, we will consider current issues and problems arising in the international arena, as well as whether and to what extent international law affects the behavior of states. This course provides a general grounding in public international law and a foundation for more advanced or specialized international law courses. Elements used in grading: Class participation, optional paper, and final exam. Cross-listed with International Policy (INTLPOL 350).

LAW 5014. International Trade Law. 3 Units.
This course will survey the law and policy of modern international trade agreements, with an emphasis on the treaty network of the World Trade Organization (WTO) and certain other arrangements to which the United States is a party, as well as U.S. laws governing "unfair trade practices" such as subsidization and dumping. Topics will include the political economy of the treaty framework, the relationship between international and domestic law, bilateralism versus multilateralism, the current crisis in the WTO dispute resolution system and its origins, and the possible tensions between international trade law and domestic regulation. Particular attention will also be directed to the current trade row with China and the imposition of trade restrictions on national security grounds by the Trump administration. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Class participation, attendance and final exam or research paper.

LAW 5015. International Dealmaking: Vienna Field Negotiation. 2 Units.
This course is structured around a week-long, simulated negotiation exercise which provides an in-depth study of the structuring and negotiating of an international business transaction. This class will be taught in counterpart with a class at University of Vienna Law School. Students in this class will represent a U.S. pharmaceutical company, and the students in the class at Vienna will represent an African agricultural production company. The two companies are interested in working together to exploit a new technology developed by the pharmaceutical company that uses the cassava produced by the African agricultural production company. The form of their collaboration could be a joint venture, a licensing agreement or a long-term supply contract, or some combination. The negotiations between the two classes will take place through written exchanges and through real-time negotiation which will be conducted in-person. The purpose of the course is to provide students with an opportunity (i) to experience the sequential development of a business transaction over an extended negotiation, (ii) to study the business and legal issues and strategies that impact the negotiation, (iii) to gain insight into the professional and cultural dynamics of negotiating and structuring international business transactions, (iv) to learn about the role that lawyers and law play in these negotiations, (v) to give students experience in drafting communications, and (vi) to provide negotiating experience in a context that replicates actual legal practice with an unfamiliar opposing party. Students will also learn about the legal and business issues that may arise in joint ventures, supply agreements and licensing agreements. The thrust of this course is class participation and active involvement in the negotiations process. Students are expected to spend time outside of class, working in teams, to prepare for class discussions involving the written exchanges, as well as preparing for the live negotiations. Class discussions will focus on the strategy for, and progress of, the negotiations, as well as the substantive legal, business and policy matters that impact on the negotiations. The course will be limited by consent to eight (8) students. Prerequisites: A course in basic negotiations (e.g., Law 7821) or comparable prior experience is recommended. Elements used in grading: Class participation, written assignments and final paper. There will be two preparatory sessions at Stanford during February and March 2018. Students in the class will travel to Vienna on or before Saturday, March 24th. Class sessions will begin on Sunday afternoon, March 25, and continue all day Monday, March 26 through Wednesday, March 28th. [Cultural tour and closing dinner on Thursday, March 29th, and depart for USA on Friday, March 30th.].

LAW 5016. Japanese Law, Society and Economy. 3 Units.
This course provides a critical introduction to the institutions and actors that comprise the Japanese legal system. Throughout the course, law is examined within the broader context of Japanese social, political, and economic institutions. Topics covered include the legal profession, constitutional law, dispute resolution, family law, employment law, and corporate law. Leading scholarly commentaries on law's role in Japanese life are also examined and critiqued. Thematically, the course offers an extended exploration of the "transplantation" of foreign law and the role of law in Japan's social structure and economic development. All readings and instruction are in English. Japanese language ability and knowledge of Japan are not required. Elements used in grading: Attendance, Class Participation, Written Assignment, and Final Exam.

LAW 5017. Law in Latin America. 2 Units.
(Formerly Law 582) The course has two main goals: to introduce students to the civil law tradition and to gain an understanding of the ways in which the law is practiced and lived in Latin American and Spain. Special attention is given to law firms, courts and legal education. The course will be especially useful for those expecting to have contact with Latin American countries or Spain in their practice of law and for those interested in comparative law or Latin American studies. All required readings are in English. In addition, students may review and present elective readings in Spanish and Portuguese. The ability to read in these languages is appreciated but not required. Elements used in grading: Class Participation, Written Assignments, Final Paper.

LAW 5018. Legal Institutions and Global Economic Development. 3 Units.
This course will cover readings on the relationship between legal institutions and economic development across different countries. Some topics are set by the instructor, while others arise depending on the interests of students as they develop their paper topics. Topics in the past have included the role of legal and colonial origins, rights in property and contract, natural resources, political stability, governance/corruption, and social and economic rights. Readings will emphasize both broad themes and policy in these areas, with a special emphasis on considering varieties of evidence, including case studies, comparative history, statistical studies with observational data, and field experiments. No prior background in empirical methods is necessary or required. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Attendance, Class Participation; Written Assignments or Final Research Paper.

LAW 5019. The Law of War. 2 Units.
The course explores the international law regime governing war, including the law that regulates when states may resort to force and the constraints on the conduct of warfare itself. We will begin by considering when states may permissibly use force, and how changing security threats, including transnational terrorism, the proliferation of weapons of mass destruction, and the commission of widespread humanitarian atrocities, challenge and are reshaping the legal framework on recourse to force. We will then explore the rules governing the conduct of military operations, including the constraints on the means and methods of war, the rules governing the treatment of detainees, and the protections extended to civilians and noncombatants in armed conflict. A particular focus of the class will be the application of these rules in non-traditional, asymmetric conflicts between states and nonstate armed groups. Special Instructions: Section 01: Grades will be based on class participation, written assignments, and a final exam. Section 02: Up to five students, with consent of the instructor, will have the option to write an independent research paper for Research (R) credit in lieu of some of the written assignments and the final exam required for Section 01. After the term begins, students (max 5) accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor.

LAW 5021. Current Topics in International Economic Law. 2 Units.
This seminar will explore select topics in international economic law, including but not limited to: the formation of new free trade agreements (in particular the proposed Pacific and Atlantic partnerships); the inclusion of "next generation" issues into trade agreements; the expanding use of investment arbitration; the architecture of the Eurozone in relation to recent European Union jurisprudence and policy; and the global regulation of cross-border financial flows. An introductory course in international trade law (or equivalent preparation) is prerequisite. In addition to a final paper, students will be expected to produce weekly reading responses. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper.

LAW 5023. The Rule of Law - The Foundation of Functional Communities. 2 Units.
We will seek to determine a useful meaning of the notion of the rule of law, to identify a credible measurement of adherence, and to explore the importance of the rule of law in terms of economic, socio-political and human development. We will focus on accountable government and private actors; just laws; open processes for the enactment, administration and enforcement of laws and impartial dispute resolution. Readings will include the works of philosophers, political theorists and jurists from the 17th to the 21st century as well as contemporary scholars. This seminar will feature experts in the field as guest lectures and requires three reaction papers from all participants. Elements used in grading: Class participation and reaction papers.

LAW 5025. Global Poverty and the Law. 3 Units.
With more than a billion people living on less than $2 a day, global poverty is one of the biggest challenges currently facing humanity. Even though those who suffer the most are located in the developing world, many of the policies, economic opportunities, and legal actions that offer the biggest potential for global poverty alleviation are made in the United States. This course will provide an introduction to the study of global poverty. What causes poverty? Why have some parts of the developing world done better at alleviating poverty than others? Can the world ever be free of poverty, as the World Bank's official motto suggests? How is the COVID pandemic affecting global poverty, and how should policymakers think about any potential tradeoffs? More generally, what can aspiring lawyers do to improve the condition of the world's impoverished? These are some of the questions this course is designed to address. This course is intended especially for future lawyers and policymakers who seek a deeper understanding of the developing world. After a brief overview that will familiarize students with the major concepts and empirical debates in poverty and development studies, we will examine a variety of 'causes' of poverty, from poor governance to lack of economic opportunity to the role of society. Since this course is just as much about what can be done, we shall also consider applied approaches to poverty alleviation. These types of interventions include political/legal reforms such as anti-corruption initiatives, 'rule of law' interventions, right to information programs, privatization, and community-driven development models; economic solutions such as cash transfers and microfinance; and technological approaches such as new methods for measuring policy impact and the application of new technologies for state identification and distribution programs. In addition to more typical scholarly readings, students will review poverty alleviation policy proposals and contracts made by various stakeholders (academics, NGOs, states, international bodies, etc.). Grading is based on participation, a presentation of research or a proposal, and, in consultation with the professor, a research paper. The research paper may be a group project (Section 01) graded MP/R/F or an individual in-depth research proposal either of which could be the basis for future field research (Section 02) graded H/P/R/F. Students approved for Section 01 or Section 02 may receive R credit. After the term begins, students accepted into the course can transfer from Section 01 into Section 02 with consent of the instructor. Automatic grading penalty waived for research paper. This course is taught in conjunction with the India Field Study component (Law 5026). Students may enroll for this course alone or for both this course and Law 5026 with consent of the instructor (12 students will come to India). See Law 5026 for application instructions. Cross-listed with International Policy Studies (INTLPOL 281).

LAW 5026. Global Poverty, Corruption, and the Law: India Field Study. 1 Unit.
This is the India Field Study component of Global Poverty and the Law (Law 5025). For details, see course description for Law 5025. Corruption is one of the most difficult challenges facing societies across the developing world. Why is corruption so pervasive and what can be done to address it? During spring break 2019, this course will be held in Delhi, India and will consist of conversations with lawyers, politicians, scholars, leaders in civil society, and senior bureaucrats who are active in anti-corruption efforts. Students will also meet frontline bureaucrats (i.e., cops and government teachers) who will share their own perspectives about the problem. Enrollment is limited to 12 students. PLEASE NOTE: Students will need a passport and a visa to travel to India. Students will be required to attend two dinner meetings during the Winter Quarter in preparation for the trip. Elements used in grading: class participation and short writing assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website. See Consent Application Form for instructions and submission deadline.

LAW 5027. Social Conflict, Social Justice, and Human Rights in 21st Century Latin America. 2 Units.
This course will consider significant sources of social conflict, efforts to achieve social justice and the relevance and impact of human rights norms and oversight mechanisms in Latin America in the 21st Century. Led by Prof. James Cavallaro, the course will involve weekly sessions, each focusing on a particular topic. Readings will provide the basis for short student reflection papers to be prepared in advance of each session. The class will generally involve an initial presentation, followed by seminar-style discussion. Topics will include the human rights crisis facing Mexico, in particular, forced disappearances, summary executions and torture. We will consider, for example, the forced disappearance of 43 students in September 2014 (Ayotzinapa) in at least one session. The current political and human rights crisis facing Venezuela will be considered, likely by an expert guest speaker. So too will the peace process in Colombia and the Special Jurisdiction for Peace. Other sessions will consider social conflict and justice issues across the region. These issues will include the resurgence of populism in the United States and Latin America and its effects on social justice and human rights, the continued relevance of the Organization of American States and its human rights bodies, migration and human rights, the rights of indigenous and traditional peoples and models of development, among others. Elements used in grading: Grades will be based on class participation, and either several short reflection papers (section 01) or a final paper (section 02). After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 5028. Regional Human Rights Protections: The Inter-American System. 3 Units.
This course provides an in-depth introduction to the doctrine, practice and critiques of the Inter-American Human Rights System ("IASHR"). Students will examine the major instruments for human rights protections in the IASHR, the Inter-American Court and Commission's procedure and jurisprudence, as well as the obstacles and opportunities that civil society, victims, and advocates encounter when engaging the inter-American system. The Course will consider issues of implementation, and the types of measures and forms of relief that can be sought from the Court and the Commission. The inter-American system has played a crucial role in opening spaces for debate on human rights protections in Latin America and the Caribbean, increasing protections at the domestic level, and supporting civil society in its quest for accountability for massive human rights violations. The system has also played a role in civil society efforts to bring the human rights debate home, including in the United States. Students will have an opportunity to cast a comparative look at the inter-American and the European Human Rights systems and to consider the comparative advantages, disadvantages and complementary potential of regional human rights systems and universal international human rights and criminal justice bodies. Cross Registration: This Course is open to graduate students across the university, with permission of the instructor. Preference for cross-registration by non-Law School students will be given to students enrolled in the Master of Arts program in Latin American Studies. Elements used in grading: Class Participation, Attendance, Short Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 5029. Human Trafficking: Historical, Legal, and Medical Perspectives. 3 Units.
(Formerly Law 675) This course offers an interdisciplinary approach to understanding the extent and complexity of the global phenomenon of human trafficking, including trafficking for forced prostitution, labor exploitation, and organ harvesting. In each of these areas, we will focus on human rights violations and remedies. The course aims to: 1. Provide the historical context for the development and spread of human trafficking. 2. Analyze current international and domestic legal and policy frameworks to combat trafficking and evaluate their practical implementation. 3. Examine the medical, psychological, and public health issues involved. 4. Stimulate ideas for new interventions. Instruction will combine lectures and small group discussion, and uses problem-based learning. Students interested in service learning should also enroll in History 6W/7W (FemGen 6W/7W), a two-quarter service learning workshop. Elements used in grading: Attendance; participation; written assignments; and final exam. This class is cross-listed with Feminist, Gender and Sexuality Studies (FEMGEN 5C, FEMGEN 105C), History (HISTORY 5C, 105C), Human Biology (HUMBIO 178T), International Relations (INTNLREL 105C) & School of Medicine General (SOMGEN 205).

LAW 5031. Law and Society in Late Imperial China. 3 Units.
(Formerly Law 773) Connections between legal and social history. Ideology and practice, center and periphery, and state-society tensions and interactions. Readings introduce the work of major historians on concepts and problems in Ming-Qing history. Elements used in grading: Class Participation, Attendance, Written Assignments, Final Paper. Cross-listed with Chinese (CHINA 392B) and History (HISTORY 392B).

LAW 5033. International Justice. 2-3 Units.
(Formerly Law 786) Mass atrocities---including genocide, war crimes, and crimes against humanity---continue to rage around the world, from Syria and South Sudan to Iraq and Myanmar. This course examines origins, operations, and outcomes of historical and contemporary international justice measures to address such heinous crimes. We will consider the full range of judicial, legislative, and executive "transitional justice" mechanisms available to policymakers as societies emerge from periods of violence and repression. These mechanisms include war crimes tribunals (such as the International Criminal Court), truth commissions, amnesties, lustration, exile, indefinite detention, lethal force, and inaction. The course draws on various case studies, including present-day Syria and Iraq, Rwanda and the Balkans in the 1990s, and World War II. Readings address the legal, political, and philosophical underpinnings of justice; questions of institutional design; and how different societies have balanced competing policy imperatives. Students may take the course for two or three units depending on the length of the paper. Students will receive Research credit for the seminar. This class is limited to 20 students, with an effort made to have students from SLS (15 students will be selected by lottery) and five non-law students by consent of instructor. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper.

LAW 5034. Human Trafficking: Law and Policy. 3 Units.
Taking an historical and comparative perspective, this course will introduce students to the international, domestic, foreign, and sub-national law governing the many manifestations of human trafficking (including legal prohibitions on forced labor and modern forms of slavery, sexual exploitation, organ trafficking, and child soldiering). We will also explore the diplomatic and policy tools employed by state and local governments to tackle this phenomenon. Class sessions will be comprised of a combination of lectures, seminar discussions, and guest speakers. Students have the option of completing a research paper or a take-home final exam. The first eight weeks of the course will coincide with the first eight weeks of winter quarter and will be conducted at Stanford Law School. Enrollment in the Thailand field study option is limited to 12 students (See Law 5035 for application instructions and deadline). Elements used in grading: Attendance, Class Participation, Written Assignments; Final Exam, or Final Research Paper. Cross-listed with International Policy (INTLPOL 356).

LAW 5035. Human Trafficking: Law and Policy - Thailand: Field Study. 1 Unit.
This field study is being taught in conduction with Law 5034, offered Winter Quarter 2019. During spring break, select students enrolled in Law 5035 will travel to Thailand to tour elements of the anti-trafficking ecosystem in Bangkok and Chiang Mai (the largest city in northern Thailand). Thailand is considered a source, transit, and destination state for many forms of human trafficking. As part of this field study, students will meet with multilateral organizations, government officials, non-governmental organizations and survivors' organizations, and other individuals involved in the anti-trafficking movement. Students will also consider the legal and ethical challenges associated with working in this field. Enrollment is limited to 12 students who will be chosen by lottery (with preference given to 3Ls). Grading will be based on participation in field study activities and a final reflection paper. N.B. Students will require a passport (valid 6 months from the date of entry) to visit Thailand. U.S. citizens do not require a visa for stays of less than 30 days. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. Elements used in grading: Attendance, Class Participation, Written Assignments.

LAW 5036. Law and Ethics of War. 2 Units.
War is violent and often devastates the lives of those caught up in it. Yet it is also a means by which political communities protect themselves, pursue collective interests, and defend their rights. When, if ever, is the recourse to armed force justified, either as a legal or moral matter? And what rules, if any, do law and morality impose on the conduct of war? The course explores both the international law regime and the just war theory principles governing war. We will begin by considering when states may permissibly use force, and how changing security threats, including terrorism, the proliferation of weapons of mass destruction, and the impulse to respond to widespread humanitarian atrocities challenge and are reshaping the legal framework on recourse to force. We will then explore the rules governing the conduct of warfare itself, including the constraints on the means and methods of war, the requirement to avoid targeting non-combatants in armed conflict, and the rules governing the treatment of detainees. A particular focus of the class will be the application of these rules in non-traditional, asymmetric conflicts between states and non-state armed groups. Throughout, we will consider the relationship between just war theory and the international law regime governing the use of force, when they conform with one another and when they diverge, and why. Special Instructions: Section 01: Grades will be based on class participation, written assignments, and a final exam. Section 02: Up to five students, with consent of the instructor, will have the option to write an independent research paper for Research (R) credit in lieu of the written assignments and final exam for Section 01. After the term begins, students (max 5) accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Class Participation; Written Assignments, Final Exam or Research Paper.

LAW 5037. Qing Legal Documents. 3 Units.
How to use Qing legal documents for research. Winter: sample documents that introduce the main genres including: the Qing code and commentaries; magistrates' handbooks and published case collections; and case records from Chinese archives. Spring: class meets occasionally; students complete research papers. Prerequisite: advanced reading ability in Chinese. Elements used in grading: Students complete research papers. This course is cross-listed with History (HISTORY 495A) and Chinese (CHINA 495A).

LAW 5038. Jewish Law: Introduction and Topics. 2 Units.
This course will provide an overview of the field of Jewish Law and will seek to provide a few case studies of topics in Jewish Law. All the readings are in English and this course presupposes no background in Jewish Law. Jewish Law is the world's oldest complex legal systems with distinct and idiosyncratic approaches to family, commercial, ritual and many other areas of law. It also has developed an elaborate "conflicts of law" sub-literature focusing on when should Jewish Law apply and when should some other legal system apply, reflecting the long history of the Jewish community in the diaspora as a minority. In this course, we will consider how Jewish law approaches a number of specific topics and we will ponder as well the proper interaction between Jewish law and secular legal norms, Jewish Law and changes in technology, Jewish law and sovereignty, Jewish Law and Bioethics and Jewish law and Family. Other topics will be added as we all see fit. Students who are interested in making a presentation on an area of their choice are welcome to do so. The course will seek to include an optional supplementary "field trip" to see a rabbinical court in action in California. The Learning Outcomes provided by this court include the following: Students who take this course will: 1. Exhibit knowledge and understanding of key concepts in substantive law, procedural law, and legal thought in Jewish Law. 2. Demonstrate facility with legal analysis and reasoning in the Jewish Legal tradition and will demonstrate the ability to conduct legal research in Jewish Law. After the term begins, students accepted into the course can transfer, with consent of the instructor, from section (01) into section (02), which meets the R requirement. Elements used in grading: Attendance, Class Participation, Final Paper. Cross-listed with Jewish Studies (JEWISHST 265).

LAW 5039. The Future of Global Cooperation. 1-2 Unit.
To mount a response to threats to peace and security, should states act unilaterally, seek to build ad hoc coalitions of the willing, or work through multilateral institutions? What are the benefits and risks of global cooperation? This seminar interrogates these questions by examining the role that international organizations play in responding to global threats in the modern era. The first section focuses on the advent of the modern global institutional architecture, considering its historical context, theoretical underpinnings, sources of legitimacy and power (or lack thereof), and the role of regional, subnational, and nongovernmental actors. The second section considers the efficacy of global institutions in responding to transnational threats through recent case studies, including the Syrian civil war, the Paris Climate Accord, the Iran Nuclear Deal, and 2014-2016 Ebola outbreak in West Africa. The final section explores the future of the liberal world order and its institutions, and considers alternative models of global cooperation. For LAW 5039, students may enroll for one unit (Section 01) or students may write a long policy memo for an additional unit of credit. Students electing to write the long policy memo may enroll for two units (Section 02). Elements used in grading: Attendance, class participation, written assignments, and a final presentation. This class is capped at 20 students. Please contact instructor for consent to enroll. Students accepted in LAW 5039 should contact the SLS Registrar's for permission to enroll in the class in Axess. Cross-listed with International Policy (INTLPOL 217).

LAW 5040. Law, Lawyers, and Transformation in Democratic South Africa. 3 Units.

Registration for this class took place in Spring 2019. Enrollment in the class is currently closed. South Africa's transition to democracy in 1994 marked the formal end of the comprehensive political, economic, and social system of racial subordination known as apartheid. The country has changed dramatically since then, as the government has built several million new housing units, created social welfare systems, and created an array of government and private sector programs to combat discrimination and redress the effects of subordination. Yet the country remains among the most unequal in the world, with 64% of black South Africans living below the poverty line, compared to 1% of whites. Most non-white South Africans receive poor education, live in substandard housing, and have limited employment opportunities. In the last five years, discontent with the pace of economic and social transformation has boiled over. In 2015, university campuses erupted in protests. Students' demands quickly expanded from the removal of statutes of white colonizers to wider "decolonization" of university faculty and curricula and the expansion of access to higher education. "Born-free" student activists are now calling for faster, more radical transformation not just of campuses but of the society as a whole; many denounce what they see as the Mandela generation's overly conciliatory approach to white privilege in the economy, society, and interpersonal relations. Since 2018 there is new dynamism at the top, too: many South Africans believe that their new President, Cyril Ramaphosa, will curtail corruption and expand redistributive economic and social policies. This course provides an opportunity to engage South Africa at this exciting historical moment, through intensive study during a week at Stanford and meetings with lawyers, activists, community members, and possibly students, journalists, and politicians during a week in Cape Town. We will focus on how lawyers are struggling for social justice and economic and social transformation--sometimes through ambitious arguments using South Africa's highly progressive constitution, but more often by supporting social movements day to day. Our learning will be grounded in specific cases, such as of the shackdwellers movement Abahlali baseMjondolo; Equal Education, an organization of high school-age students; and pioneering class actions on behalf of injured gold miners. These will enable us to explore various ways law and lawyers fit into social change, the challenges and rewards of such work, and how their perspectives overlap with and diverge from those of their clients. At the same time, we will draw connections between this work and the grand debates and historical arc described above. While comparing South Africa with the United States will not be a primary purpose of the course, we may well see interesting parallels and divergences, and will have some space to discuss those, among ourselves and perhaps with our South African interlocutors. The format of the course will be unusual: We will return to campus before the Fall quarter and spend the week of September 9 preparing intensively at Stanford. We will meet daily for approximately three hours of discussion, collaborative exercises, and some lecturing, as well as read assigned material outside class. We will (a) learn some essential background on apartheid; current legal, political, economic, and social conditions; and our case studies; (b) begin to analyze legal activism methods and the challenges of transformation; and (c) prepare topics and specific questions for our meetings in South Africa, which students will lead. The following weekend we will fly to Cape Town, where we will spend the week of September 16 learning from visits to organizations and communities, and possibly one or two museums or other sites, as well as from discussions with a range of South Africans. We will return the weekend before the Fall quarter begins. Stanford Law School is committed to equal access to field study courses regardless of financial situation. The School covers nearly all expenses during the trip, but students must pay for their own transportation to and from South Africa. Students who qualify for financial aid can receive a supplemental award to cover those transportation costs. Elements use in grading: The course grade will be based on a series of short papers (one or more of which may be due after our return), active in-class engagement with the assigned materials, and preparation for and participation in interviews during the trip, and. The course is open to rising 2Ls and 3Ls. CONSENT APPLICATION: To apply for this course, students must complete and

LAW 5041. Business, Institutions, and Corruption in Latin America. 2 Units.

Corruption is a global problem. Although data suggests that there are places that accumulate more harmful practices than Latin American countries, Latin America is perceived as a champion of corruption. This macro vision may hide the distinctive characteristics of each country, as Latin America is a patchwork of idiosyncrasies regarding corruption. However, Latin American countries are narrowing their differences to closer patterns at a considerable pace. Latin America is facing an unprecedented chapter in its history against corruption due to the Organisation for Economic Co-operation and Development (OECD) and other international organizations' recommendations, the Foreign Corrupt Practices Act (the US federal law that addresses accounting transparency requirements for companies that negotiate bonds in the US), and other constraints related to economic globalization. This course will present students with the theoretical literature that aims to explain corruption in Latin America, the technical constraints that have recently reshaped its practices, and the latest most significant cases. From the petty bribery that is essential for people to gain access to basic needs, to the sophisticated structure that is the mainstay of organized crime, corruption embodies an enormous range of different practices. Risk and uncertainty, information asymmetry, and contract enforceability are traditional barriers to the development of ethical business in Latin America in general. However, recent episodes in Latin America have demonstrated that corruption involving politicians and public procurement concretizes huge entry barriers to the free market. One of the aims of this course is to show how this kind of corruption is incorporated within the design of legal statutes and the practices of institutions. Some of the questions raised by this course will address issues including the following: what companies and institutions can do to improve fair trading in Latin America and stop the vicious cycle of corruption; how successful they might be considering Latin America's social and political environment; what challenges are introduced by the Foreign Corruption Practices Act; how political austerity in Latin America relates to the ability to inspect areas that are vulnerable to corruption and criminality; what the recent plea-bargain cases in Latin America, especially Brazil, show about hands-on experience with corruption; and how this knowledge can prepare lawyers to prevent their clients from falling into the same path-dependent dangers. The course is designed for JD candidates and LLM students, but graduate students from other departments are most welcome. Legal jargon is not expected. We will learn through seminar-style discussions and lectures. Elements used in grading are class participation, attendance, and a few reaction papers.

LAW 5042. Comparative Law and Society. 2 Units.
This is a course about the relationship between law and the larger society--but with readings drawn almost entirely from studies carried out in countries other than the United States. The course will look, for examples, at readings from Chile, China, England, Germany, Israel, Japan, Jordan, Russia, Taiwan, Thailand, and Venezuela. Introduction: The aim of the seminar is to introduce students to studies of the relationship between law and society, but with an international and comparative perspective. The readings use a broad range of methods and techniques, to explore how legal rules, processes and institutions are framed by, and influence, the social context. Paying attention to the social context opens the door to a richer understanding of the law, a better explanation of what makes it work (or not work) and how it changes over time. Traditionally the field called comparative law has concentrated heavily on differences between common law and civil law; and at principles and doctrines and formal rules. But in the real world we know that systems can behave every differently even if they share formal rules and institutions. Consider, for example, Canada and Jamaica, both common law countries; or Japan, Haiti and Spain --all civil law countries. In many ways, the world today is a global village. Lawyers, too, often work across borders. It is the theory of the course that we can learn a lot about law and legal institutions, if we look at experiences in different countries: plea bargaining in England; how victims of motorcycle accidents in Changmai, Thailand, deal with tort law; how the black market for used cars functioned in the former East Germany; the controversy over honor killings in Jordan; disputes over the sale of tunas in Tokyo's fish market; informal lending markets in Taiwan. The aim is a more general understanding of how legal systems work, how structure and culture interact; and the role of lawyers, judges, courts, and institutions in different societies. There are lessons to be learned about American society as well. Methodology and evaluation: The discussions in the classes will focus on a selection of readings from Law in Many Societies --a reader edited by Lawrence Friedman, Rogelio Pérez-Perdomo and Manuel Gómez (Stanford University Press, 2011). Other readings are contained in a package available to students in the class. Some of the readings are classics in the field. Others raise contemporary problems. The course is a traditional seminar, in the sense that everyone in the seminar will be encouraged to speak, and to contribute to general discussion. For each class, each student must write a short essay, reflecting on the readings (two or so pages at most or about 500 words). These should be sent to both professors (lmf@stanford.edu & rperez3@law.stanford.edu) and to fellow students, by email, not later than 24 hours before the class. These reflection papers allow participants to tell us what aspects of the readings they found significant, and what they found right or wrong about the readings. No footnotes or research are expected, and are, in fact, discouraged. The reflection papers are required; but they are not graded. After the term begins, students accepted into the course can transfer, with consent of the instructor, from section (01) into section (02), which meets the R requirement. Elements used in grading: The course grade will reflect class participation, and an extended take-home exam or a research paper at the end of the quarter.

LAW 5043. Introduction to Islamic Law. 1 Unit.
Islamic law, along with English common law and Roman law, is one of the world's great legal systems. This course will introduce students to the following topics: the material sources of Islamic law; the history of its development from western Arabia into a global legal system; basic elements of Muslim jurisprudential theory; and, an introduction to Islamic family law as an exemplar of the development of Islamic law from revealed sources to modern statutory law. Course readings will consist of primary sources in translation along with relevant scholarly articles. Elements used in grading: Grades will be determined by a combination of in class participation and a final, ten page paper.

LAW 5101. Afghanistan Legal Education Project (ALEP) Seminar. 3 Units.
The Afghanistan Legal Education Project (ALEP) Seminar is only open to student preselected in spring 2019. The ALEP Seminar will begin with an intensive bootcamp taught by ALEP leadership and members of the law faculty at American University of Afghanistan (AUAF). We will explore the Afghan sociopolitical and legal context, rule of law efforts and challenges in Afghanistan, and the role of legal education in legal development. Participants will learn from Afghan law professors about Shari'a law, customary law, Afghan civil law, and the challenges presented by Afghanistan's pluralistic legal system in preparation to work on legal curriculum to be taught at AUAF. The bootcamp, held in Asia, will be highly participatory and requires full attendance. During the remainder of the quarter, participants will receive training in curriculum creation and organizational development in preparation for authoring an Afghan legal textbook and assuming ALEP programmatic responsibilities. Consent Process: Only students selected in spring 2019 have consent to take the ALEP Seminar. Their names will be given to the Registrar, who will automatically enroll them in the course in fall 2019. Elements used in grading: Grading is based on mandatory attendance of the bootcamp, participation, assignments, and authoring a new chapter and/or revision of an existing textbook chapter. Note: Regular deadline for submission of R-Paper to be waived for ALEP Seminar.

LAW 5102. Advanced Afghanistan Legal Education Seminar. 3 Units.
Students who participate in the Afghanistan Legal Education Seminar in the fall quarter will continue their work in the Advanced Seminar in the winter or spring quarter. Only students selected for the Afghanistan Legal Education Project (ALEP) in spring 2018 may participate. Students will author textbook chapters, assume programmatic responsibilities, and meet regularly as a team and individually with the ALEP faculty. Note: Regular deadline for submission of R-Paper to be waived for Advanced ALEP Seminar. Elements used in grading: Attendance, Written Assignments, Final Paper.

LAW 5103. State-Building and the Rule of Law Seminar. 3 Units.
The State-Building and the Rule of Law Seminar is centrally concerned with bridging theory and practice. The seminar introduces the key theories relevant to state-building generally, and strengthening the rule of law in particular. This course explores the multidisciplinary nature of development -- through readings, lectures, guest lectures, case studies, and seminar discussions --- and weighs how lawyers fit in and contribute to the process. The set of developing countries considered within the scope of this workshop is broad. It includes, among others, states engaged in post-conflict reconstruction, e.g., Cambodia, Timor Leste, Rwanda, Iraq, Sierra Leone; states still in conflict, e.g., Afghanistan, Somalia; the poorest states of the world that may not fall neatly into the categories of conflict or post-conflict, e.g., Nepal, Haiti; least developed states that are not marked by high levels of violent conflict at all, e.g., Bhutan; and more developed states at critical stages of transition, e.g., Tunisia, Georgia, Ukraine, Hungary. The course is updated to include current events affecting state-building processes, including COVID, the regression of the rule of law, and the emergence of China. Elements used in grading: Grading is based on participation, a presentation of research or a proposal, and, in consultation with the instructors, a research paper. The research paper may be a group project (Section 01) graded MP/R/F or an individual in-depth research paper or proposal, either of which could be the basis for future field research (Section 02) graded H/P/R/F. Students approved for Section 01 or Section 02 may receive EL credit or R credit. Automatic grading penalty waived for submission of the final work products. Cross-listed with International Policy (INTLPOL 352).

LAW 5104. Advanced State-Building and Rule of Law Seminar. 3 Units.
Students who participate in the State-Building and Rule of Law Seminar in the fall quarter may seek consent to continue their work in the Advanced Seminar in winter or spring quarter. Six students per quarter will be allowed to participate. Students will work on individual applied or scholarly research projects developed in collaboration with the professor, and meet regularly as a group to discuss shared research challenges and issues. There may be funds available for fieldwork necessary to complete applied research projects. Determinations will be made by the professor and Rule of Law Program. Students may write a paper for Research credit with instructor consent. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Automatic grading penalty waived for submission of the final work products. Elements used in grading: Attendance, Written Assignments, Final Paper.

LAW 5201. Foreign Legal Study: Bucerius Law School. 9-14 Units.
This course is for J.D. students who have been approved by the Law School to study at one of the following schools: Bucerius Law School (BLS) -- Hamburg, Germany, Hebrew University of Jerusalem (HU) -- Jerusalem, Israel, Institut d'Études Politiques de Paris (Sciences Po) -- Paris, France, National University of Singapore (NUS) -- Singapore, Peking University Law School (PKU) -- Beijing, China, University of Vienna -- Vienna, Austria, and Waseda University Law School (WLS) -- Tokyo, Japan. See Foreign Legal Study Program at https://law.stanford.edu/education/only-at-sls/global-initiative/foreign-legal-studies-program/ for study abroad opportunities each academic year and for application deadlines. Elements used in grading: Satisfactory evaluation of course work at the exchange institution.

LAW 5204. Foreign Legal Study: Hebrew University of Jerusalem. 9-14 Units.
This course is for J.D. students who have been approved by the Law School to study at one of the following schools: Bucerius Law School (BLS) -- Hamburg, Germany, Hebrew University of Jerusalem (HU) -- Jerusalem, Israel, Institut d'Études Politiques de Paris (Sciences Po) -- Paris, France, National University of Singapore (NUS) -- Singapore, Peking University Law School (PKU) -- Beijing, China, University of Vienna -- Vienna, Austria, and Waseda University Law School (WLS) -- Tokyo, Japan. See Foreign Legal Study Program at https://law.stanford.edu/education/only-at-sls/global-initiative/foreign-legal-studies-program/ for study abroad opportunities each academic year and for application deadlines. Elements used in grading: Satisfactory evaluation of course work at the exchange institution.

LAW 5207. Foreign Legal Study: Institut d'Etudes Politiques de Paris. 9-14 Units.
This course is for J.D. students who have been approved by the Law School to study at one of the following schools: Bucerius Law School (BLS) -- Hamburg, Germany, Hebrew University of Jerusalem (HU) -- Jerusalem, Israel, Institut d'Études Politiques de Paris (Sciences Po) -- Paris, France, National University of Singapore (NUS) -- Singapore, Peking University Law School (PKU) -- Beijing, China, University of Vienna -- Vienna, Austria, and Waseda University Law School (WLS) -- Tokyo, Japan. See Foreign Legal Study Program at https://law.stanford.edu/education/only-at-sls/global-initiative/foreign-legal-studies-program/ for study abroad opportunities each academic year and for application deadlines. Elements used in grading: Satisfactory evaluation of course work at the exchange institution.

LAW 5210. Foreign Legal Study: National University of Singapore. 9-14 Units.
This course is for J.D. students who have been approved by the Law School to study at one of the following schools: Bucerius Law School (BLS) -- Hamburg, Germany, Hebrew University of Jerusalem (HU) -- Jerusalem, Israel, Institut d'Études Politiques de Paris (Sciences Po) -- Paris, France, National University of Singapore (NUS) -- Singapore, Peking University Law School (PKU) -- Beijing, China, University of Vienna -- Vienna, Austria, and Waseda University Law School (WLS) -- Tokyo, Japan. See Foreign Legal Study Program at https://law.stanford.edu/education/only-at-sls/global-initiative/foreign-legal-studies-program/ for study abroad opportunities each academic year and for application deadlines. Elements used in grading: Satisfactory evaluation of course work at the exchange institution.

LAW 5213. Foreign Legal Study: Peking University Law School. 9-14 Units.
This course is for J.D. students who have been approved by the Law School to study at one of the following schools: Bucerius Law School (BLS) -- Hamburg, Germany, Hebrew University of Jerusalem (HU) -- Jerusalem, Israel, Institut d'Études Politiques de Paris (Sciences Po) -- Paris, France, National University of Singapore (NUS) -- Singapore, Peking University Law School (PKU) -- Beijing, China, University of Vienna -- Vienna, Austria, and Waseda University Law School (WLS) -- Tokyo, Japan. See Foreign Legal Study Program at https://law.stanford.edu/education/only-at-sls/global-initiative/foreign-legal-studies-program/ for study abroad opportunities each academic year and for application deadlines. Elements used in grading: Satisfactory evaluation of course work at the exchange institution.

LAW 5216. Foreign Legal Study: Waseda University. 9-14 Units.
This course is for J.D. students who have been approved by the Law School to study at one of the following schools: Bucerius Law School (BLS) -- Hamburg, Germany, Hebrew University of Jerusalem (HU) -- Jerusalem, Israel, Institut d'Études Politiques de Paris (Sciences Po) -- Paris, France, National University of Singapore (NUS) -- Singapore, Peking University Law School (PKU) -- Beijing, China, University of Vienna -- Vienna, Austria, and Waseda University Law School (WLS) -- Tokyo, Japan. See Foreign Legal Study Program at https://law.stanford.edu/education/only-at-sls/global-initiative/foreign-legal-studies-program/ for study abroad opportunities each academic year and for application deadlines. Elements used in grading: Satisfactory evaluation of course work at the exchange institution.

LAW 5219. Foreign Legal Study: University of Vienna. 9-14 Units.
This course is for J.D. students who have been approved by the Law School to study at one of the following schools: Bucerius Law School (BLS) -- Hamburg, Germany, Hebrew University of Jerusalem (HU) -- Jerusalem, Israel, Institut d'Études Politiques de Paris (Sciences Po) -- Paris, France, National University of Singapore (NUS) -- Singapore, Peking University Law School (PKU) -- Beijing, China, University of Vienna -- Vienna, Austria, and Waseda University Law School (WLS) -- Tokyo, Japan. See Foreign Legal Study Program at https://law.stanford.edu/education/only-at-sls/global-initiative/foreign-legal-studies-program/ for study abroad opportunities each academic year and for application deadlines. Elements used in grading: Satisfactory evaluation of course work at the exchange institution.

LAW 5801. Legal Studies Workshop. 1 Unit.
The Legal Studies Workshop is designed to support students working on a piece of legal scholarship with an eye to publication. The workshop will meet every other week in the fall, winter, and spring quarters, and most quarters over the following two years. Students may sign up for as many quarters they wish, and will receive one credit for each quarter they are enrolled. Each session will be devoted to presentations of one or two student works-in-progress. Every student is expected to present his or her own work at least once over the quarters she or he is enrolled in the Workshop, and to provide constructive oral feedback on others' work. We welcome students who are just starting to explore their interest in an academic career; if you have any questions about whether the course is suitable for you, please contact Prof. Barbara Fried (bfried@stanford.edu). Attendance is mandatory, absent extenuating circumstances. There are no written requirements for the course, and no requirement that the work presented be original to the Workshop. Students may wish to use the Workshop as an opportunity to expand on seminar papers or pursue independent research projects for which they are getting separate credit through one of the research tracks (e.g., directed research, dissertation). Whether students are working on a new project or revising an old, the expectation is that students will develop their topics independently of the course. Students who would like to participate in the Workshop but feel they need help in developing a workable research topic should consult faculty members ahead of time. Elements used in grading: Class participation and attendance. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. Classes will be held at Prof. Fried's home, health restrictions permitting. The specific location will be sent to students prior to the first class meeting.

LAW 5802. Modern American Legal Thought. 3-4 Units.
(Formerly Law 500) The course surveys the most significant theories of law and adjudication in this country from the 1880s to the present. We will consider, among other topics, Formalist (Langdellian) Legal Science, Sociological Jurisprudence, American Legal Realism, the Legal Process School, Law and Moral Philosophy, Public Choice Theory, Law and Economics, Feminist Jurisprudence, Critical Race Theory, the Law and Society movement, and Empirical Legal Studies. The readings are drawn principally from primary materials---the important contemporary manifestos and critiques of the schools of thought studied, along with writings that involve their application to concrete legal problems or reveal their influence on others. Enrollment allowing, students may be asked to help co-teach some of the sessions. Contact Prof. Fried (bfried@stanford.edu) if you would like to look at a syllabus from prior years before deciding whether to enroll. Special Instructions: If any student would like to write a research paper in lieu of the reflection papers, he or she should consult the instructor before the start of the course. After the term begins, students accepted into the course can transfer from section (01) (Reflection papers option) into section (02) (Final paper option) with consent of the instructor. Section (02) meets the R requirement. Note: Students enrolled in Section 01 will complete reflection papers (2-3 pages) for 9 of the 18 classes and students enrolled in Section 02 will complete a research paper (25-30 pages) on topic of student's choice related to the material of the course. Students are required to meet regularly with Prof. Fried throughout the Quarter to discuss progress on the paper. Elements used in grading: Class Participation plus reflection papers or final paper.

LAW 5805. Animal Law. 2 Units.
This course presents a survey of the historical and current status of this rapidly developing specialty. In brief, animal law encompasses all areas of the law in which the nature -- legal, social or biological -- of nonhuman animals is an important factor. It is an objective and logical specialization of a challenging area -- one with a growing number of cases and laws, increasing public and practical interest, and significantly different historical, legal and philosophical foundations than most other courses. Topics covered include animal cruelty, animals as property, tort claims regarding animals, legal issues involving farm animals and animals in entertainment, and federal statutes regarding certain groups of animals. The Animal Law course has been described as intellectually stimulating and ethically challenging, and synthesizes a wide range of legal concepts, and the course materials apply traditional ideas to legal concepts associated with animals in new ways. Students have called it a great bar review class, because concepts from many areas of law are covered with respect to their application to animals and their interests. More and more firms, large and small, are providing pro bono (and paying) work in the animal law area, as the field gains momentum and reputability in the legal community. Mr. Wagman is a lawyer in San Francisco, with a full-time animal law practice, representing organizations and individuals in a wide range of cases. He is one of the authors of the Animal Law casebook, two other animal legal texts, and has been practicing animal law for most of his 286-year career. His practice includes litigation, consultation, legislative work, and extensive writing and lecturing on various animal law topics. The class includes regular updates on his current cases, as well as real-life experiences from the front lines of the animal law frontier. Special Instructions: Students have the option to write an independent research paper in lieu of the final exam with consent of instructor. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Final exam or 18 page independent research paper.

LAW 5806. Jurisprudence. 3 Units.
This course examines the diverse ways in which the philosophy of law bears on the practice of law. Our subject is thus a set of philosophical concepts, particularly legal positivism and natural law, but the approach is not purely conceptual. Rather, we will examine both the philosophical concepts in the abstract and how those philosophical concepts are reflected or actualized in the craft of legal argumentation, in the intellectual history of law, and in contemporary questions of politics and government. Above all, we will ask which conception of law best contributes to legal justice. The course consists in three units. Unit I is about theories of the nature of law, focusing on legal positivism and natural law. Unit II is about theories of particular departments of law, focusing on tort law and criminal law. Unit III takes a philosophical perspective on being a lawyer, focusing on questions of what principles define lawyers' role in society and what ideals give the life of a lawyer meaning. Grading is based on class participation, two in-class moot court presentations, and, based on individual student preference, either a final exam (a one-day take-home essay with a word limit) or a final research paper. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Cross-listed with Philosophy (PHIL 375J).

LAW 5807. Feminism and the Law: Selected Topics. 1 Unit.
The Reading Group will meet five times during the quarter: April 24, May 1, May 8, May 15, and May 22. We will start by considering the major schools of feminist legal theory, and then look more closely at selected topics of current interest. Topics will likely include women in the legal profession; regulating sexual misconduct; and intersectionalities of gender, race, class and religion. Students are expected to do the assigned readings and come prepared to discuss them. In addition, each student will help co-lead one of the five sessions. There are no written requirements. All students are welcome to apply. There are no prerequisites. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. Class will meet at Prof. Fried's house (on campus).
Same as: Reading Group

LAW 5808. The Law of Bystanders and Upstanders. 1 Unit.
What duties do or should bystanders have to intervene in crimes (e.g., sexual assault) and crises (e.g., drowning)? What rewards and immunities should upstanders receive? What Good Samaritan laws (which eliminate liability for interveners) and Bad Samaritan laws (which penalize non-intervention) exist, how could they be improved, and how do they vary per type of crime, crisis, or jurisdiction? This reading group will explore the law of bystanders and upstanders and how such carrots and sticks could be strengthened, standardized, and spread. Class meeting dates: The reading group meets five Wednesdays on April 10, April 24, May 8, May 15 and May 22. Dinner will be provided and will meet in the clubhouse of the Pearce Mitchell Place complex (near the Law School). Elements use in grading: Attendance, Class Participation.
Same as: Reading Group

LAW 5809. Is there an American Legal Canon?. 2-3 Units.
Is there a "canon" of American legal scholarship? And if so, how does it shape our understanding of, or the way we talk about, the law today? In many other academic disciplines, a central element of any course of advanced study is an encounter with a "canon" of some sort. This is a core set of texts that are perceived as foundational, and that are commonly used as reference points for scholarly advances. In other disciplines, the canon can be an object of emulation or criticism. Indeed, the very idea of a "canon" of legal scholarly is often subject to contestation, e.g., given the barriers women and minority scholars have faced. Drawing on the model of those foundational courses in other disciplines, this seminar aims to provide students with a working knowledge of a set of scholarly writings that can plausibly be characterized as an American "canon." At the same time, the seminar aims to elicit from students a critical engagement with this putative "canon." Particular attention is paid to the manner in which the canon either includes or marginalizes certain voices. Hence, one part of the seminar involves reading material that might be part of an expanded, more diversely populated canon. The seminar is designed for two kinds of student. First, it is a useful course of study for students either interested in academia or those thinking about whether academia might be the right path for them (and indeed, the seminar is modeled on a course at Chicago designed for prospective academics, or those considering that path). Second, the course is a chance to take a deeper dive into ideas that lurk behind many first-course private-law and public-law courses. During the seminar, students will read and discuss a range of texts, many drawn from Fisher and Kennedy's The Canon of American Legal Thought. Students will be asked to write response papers and to lead discussion on certain readings. The precise set-up of the course will depend, however, on enrollment. Finally, students will also have the option of doing a longer paper for additional credit (section 02). After the term begins, students accepted into the course can transfer from section 01 (2 units) into section 02 (3 units) with consent of the instructor. Elements used in grading: class participation, short papers, and optional final research paper. Paper extensions will be granted with instructor permission. No automatic grading penalty for late papers.

LAW 5810. Behind the Doctrinal Curtain: Law School's Concepts and Themes. 3 Units.
When you have finished law school, you will (hopefully) have mastered a good deal of legal doctrine (many of you will review and/or sharpen your mastery of particular rules when you study for the Bar) and mastered a number of skills you will need to fulfill professional roles. (Hopefully, you will learn particular advocacy skills if you will be an advocate; writing skills that will help you whether you draft contracts or legislation, briefs or executive summaries, client letters; and, particularly in the Experiential Learning courses, skills that will help you exercise prudent judgment, collaborate with others, work both efficaciously and empathetically in a diverse world.). The claim that underlies this course is that your "classroom" courses here at SLS -- and at pretty much any of the academically ambitious schools that most of you considered attending -- had both a text (the doctrines and policies in the particular subject area that you were studying) and a "sub-text" (the concepts and themes that recurred across a wide range, maybe all, of your courses.) The goal of this course is to highlight these recurring themes (and remind you or illuminate for you just how often you confronted or will confront these issues), to discuss more overtly and directly the distinct approaches to each of these recurring issues than you might have discussed them before, and to expose you to some ways of approaching these issues that might be less familiar to you. In discussing these issues, we will draw on the insights offered by a wide array of "schools" of legal thought, including, but not limited to, libertarianism, Law and Economics, Legal Realism, Critical Legal Studies, Critical Race Theory, a variety of Feminist Legal Theories (anti-subordination feminism, "cultural" feminism), Langdellian Formalism and neo-Formalism, Law and Society. So, for instance, we will discuss some or all of the following issues: 1. Ways in which legal pronouncements are framed (the tension between the use of rules and standards; between default and mandatory rules); 2. Remedial options and remedial mechanisms (the choice between inalienable entitlements, injunctions, damages, restitution, and distinct forms of punishment; between sliding remedial scales and binary outcome-determinative rules; conduct regulation and output/outcome goals; public enforcement v. mixed public/private enforcement v. private enforcement with differing degrees of collectivization of individual complaints); 3. Issues in the interpretation of both private and public legal texts (textualism, intent-based originalism, flexible purposivism) and distinct theories of why or in what ways texts may be either incomplete or "dated," with some special attention to how to interpret texts that appear to delegate authority (to another decision maker, to a future decision maker) to make narrow, concrete decisions; 4. The interplay between substance and procedure (and its relationship to creating a gap between the law on the books and the law in action; the degree to which substantive rules are framed in the way that they are because rule makers are anticipating procedural barriers to enforcing alternative rules); 5. Institutional competence issues; 6. Alternative visions of human behavior and motivation (individualistic rational choice models with "thin," generally materialistic goals v. thicker rational choice models v. individualistic models influenced by psychologists, advancing richer views of how people process information and form tastes and/or sociological models, focused more on group influence, group maintenance and group conflict); 7. Some recurring substantive issues (how we define operative assent and how we define normatively meaningful consent; how we deal with problems of incommensurable values or deny the possibility of incommensurability; when we do or don't believe people are adequately empowered by "exit" -- finding another provider in a market or subjecting ourselves to a different political body that will make the rules that govern us -- and when we believe power must be exercised politically/collectively; when we believe principal/agent problems are serious and how we think they are "solved"; battles between anti-classification and anti-subordination views of antidiscrimination norms) and 8. The origins of law and the impact of law (is law significantly autonomous or responsive to other social forces (where "social forces" might or might not be understood in significant part in terms of distinctions in power by race, class, gender, LGBTQ status etc.) and to the ideological predispositions of those who articulate it? Is law -- and most particularly the judge-made law we (ever?) emphasize in law school -- effectual in

LAW 5811. Philosophy of Law: Protest, Punishment, and Racial Justice. 3 Units.
In this course, we will examine some of the central questions in philosophy of law, including: What is law? How do we determine the content of laws? What is the proper role of judges in interpreting the law? Do laws have moral content? What is authority? What gives law its authority? Must we obey the law? If so, why? How can we justify the law? How should we understand and respond to unjust laws? What is punishment? What is punishment for? What, if anything, justifies punishment by the state? What is enough punishment? What is too much punishment? What does justice require under non-ideal conditions? There will be a 50-minute mandatory TA session (Date and Time TBA). Law students have the option to write an independent research paper for R credit with instructor consent. After the term begins, students accepted into the course can transfer, with consent of the instructor, from section (01) into section (02), which meets the R requirement. Elements used in grading: discussion questions, midterm paper, final paper abstract, final paper presentation, final paper, attendance. Cross-listed with Ethics in Society (ETHICSOC 175W) and Philosophy (PHIL 175W/PHIL 275W).

LAW 5812. Feminist Legal Theory Workshop. 2 Units.
Workshop will provide students with a structured opportunity to write a research paper on any aspect of feminist legal theory/feminism and the law (broadly defined) that interests them. Students are expected to formulate a research topic by week 4. Paper should be as long as needed to communicate central ideas and no longer. In general, students should aim for 25 - 30 pages in length. We will meet by Zoom as a class four times during the quarter. Students will present possible research topics in classes #1 and #2 for feedback, and update their progress in class #3. Depending on student interest, we will also discuss major themes in feminist legal theory, and current legal topics that relate to feminist concerns. Instructor is available for consultation throughout the quarter, and will review outlines or drafts if students wish. No prerequisites. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper. Class meets Thursday, 2:00PM to 4:00PM on April 2, April 16, April 30, and May 14. CONSENT: Interested students may apply to enroll in the seminar by sending a statement of interest to Barbara Fried at bfried@stanford.edu.

LAW 5813. Representation. 3 Units.
In this course, we will work together to develop a detailed and comprehensive understanding of the concept(s) of political representation. We will do so by examining a number of historical and contemporary theories of political representation developed within philosophy and cognate fields. Elements used in grading: a workshop paper, weekly workshop responses to fellow classmates' workshop papers, a class presentation, a workshop recap, a final paper abstract, and a final paper. Cross-listed with Comparative Studies in Race & Ethnicity (CSRE 371) and Philosophy (PHIL 371W).

LAW 6001. Legal Ethics. 3 Units.
This course will explore issues involving professional responsibility. Topics will include the role of advocates, the adversary system, the conditions of practice, diversity and inclusion, candor, and confidentiality, conflicts of interest, lawyer-client relationships, regulatory structures, access to justice, pro bono service, and legal education. Special Instructions: Grades will be based on class participation and (1) a number of short reflection essays on the readings and a short research paper or (2) a long paper. A maximum of 10 students will be permitted to write the long paper for R credit. After the term begins, 10 students can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. If more than 10 students apply to write a long paper for R credit, a lottery will be run to determine the 10 students accepted in section (02). This class is designated as fulfilling the Ethics requirement (and the R requirement with instructor consent). Elements used in grading: Attendance, class participation, and either long paper or short reflection essays on the readings and short research paper.

LAW 6003. The American Legal Profession. 3 Units.
This course will deal with selected aspects of the history, organization, economics, ethics, and possible futures of the legal profession in the United States. Likely topics will include, in addition to the ABA's Model Rules of Professional Conduct: demographic changes in the profession, the evolution of law firms, bar associations, and law schools from the early twentieth century to the present; the development of corporate law, personal injury, mass torts, prosecutorial and criminal defense practices, and the "public-interest" bar; the dominant professional ethic of adversary-advocacy, and its critics; the regulation of lawyers; the economics of the market for legal services; the organization and culture of law firm practice; the role of the role of the lawyer as counselor; and the export of American lawyering models abroad. 8-hour self-scheduled take-home examination, with option of writing a research paper. Special Instructions: Students have the option to write a long research paper in lieu of the final exam with consent of instructor. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Class participation, attendance, final paper or final exam.

LAW 6004. Legal Ethics: The Plaintiffs' Lawyer. 3 Units.
This course uses a study of plaintiffs' lawyers as a vehicle to explore many of the most controversial and important issues at the intersection of tort law, civil procedure, and legal ethics. Specifically, in this course, we will study who personal injury lawyers are, how they find clients, how they fund litigation, and how they usher complex cases to conclusion. In so doing, we will address: the role and regulation of lawyers; the use and abuse of the contingency fee; the legality and normative consequences of solicitation and attorney advertising; the propriety of secret settlements, NDAs, and expansive protective orders; the rise and impact of "alternative litigation finance"; and the vexing issues posed by class actions, aggregate actions, consolidated actions, and multidistrict litigations (MDLs). The final segment of the course will involve a series of case studies, where students will test their knowledge of the Model Rules of Professional Conduct and have the opportunity to see the course's themes echoed and expressed in recent real-world controversies. Importantly, though the course is nominally focused on "the plaintiffs' lawyer," it does not just equip students to practice on one side of the "v." Rather, through our grounded and contextualized study of legal ethics, advanced civil procedure, the legal profession, and contemporary legal practice, students will acquire tools to litigate cases of all stripes and for both sides. Elements used in grading: Class participation, attendance, and reflection papers.

LAW 6005. Technological, Economic and Business Forces Transforming the Private Practice of Law. 2 Units.
The private practice of law has and will continue to undergo fundamental change. Technological, economic and business forces are placing extreme pressure on not only the traditional "Big Law" firm model but also role of in-house counsel. These forces will transform, eliminate or replace virtually every aspect of the current practices of firms and in-house legal departments. Foundations of the law firm model such as bespoke client services, "billable" hours, large staffs (e.g., paralegals and secretaries), high associate-to-partner ratios and summer associate programs are becoming (or have already become) relics of a bygone era. Sophisticated clients today are utilizing a wide range of internal and external service providers and technologies such as artificial intelligence for their legal work. This diversity in the delivery of legal services is dramatically altering the supply and demand characteristics of the legal economy and markets. The breadth of available technologies and options is altering the types of skills and prerequisites required for attorneys to be successful private practice. The course is composed of two parts. In part one, the course focuses on the technological, economic and business practices transforming the legal profession are identified and their impact on the traditional approaches to law will be examined. In part two, the course focuses on how individual lawyers can adapt to or embrace the forces transforming law to improve their practice and succeed in the new environment. Part two of the course will also examine how the changing legal environment creates new ethical and professional challenges for attorneys. Elements used in grading: Attendance, class participation and a research paper for the written assignment.

LAW 6006. Introduction to Legal Design. 3 Units.
(Formerly Law 761) Intro to Legal Design is a 9-week course for law students & other graduate students to reimagine how legal services are delivered, & to learn how to use human-centered design methods to create breakthrough solutions to complex problems. The students will work with project partners - including legal aid groups, courts, and private law firms -- on legal service challenges to help the partners solve real problems they & their users face. For each challenge, students will work on interdisciplinary teams, with close coaching from designers, engineers & lawyers. Students will learn design methods to create new innovations that make legal services more accessible & engaging. Elements used in grading: Class Participation, Attendance, Written Assignments.

LAW 6007. Legal Profession Workshop: The Future of Big Law. 2-3 Units.
Ever since the global financial crisis, legal media have focused on the contraction of the corporate legal services sector. But today, partners at the top tier of big corporate law firms -- "big law" -- are earning huge profits and job prospects for graduates of top law schools interested in the corporate sector are bright. Although some commentators continue to predict that demand for corporate legal services will contract in the mid- to long-term, it seems more likely that demand for high-end legal analysis will persist if not increase in the foreseeable future. The question is who (or what) is going to perform that work, in what organizational setting, with what technological assistance, and in what part of the world. This seminar will address the key dimensions of change in the "big law" market and how changes in the delivery of corporate legal services may affect legal careers, gender equality, diversity, and work-life balance. Topics include the increased power of Fortune 100 General Counsel, new organizational models for delivering corporate legal services, the response of large law firms to new market factors, the expanding role of information technology in the delivery of corporate legal services, third-party litigation financing, changing legal markets outside the US, the evolution of global law firms, the effects of changes in law firm organization on women and lawyers of color, and the effects of changes in the legal market on legal careers. Course materials will include books and journal articles, media reports, blog posts and guest lectures. Special Instructions: You may write a series of short reaction papers on 4 of the topics we will cover at the seminar sessions. Students electing this option will be graded on a Mandatory Pass/Restricted Credit/Fail basis and receive 2 units of credit. Alternatively, you may write a single research paper on a topic of your choice related to the evolution and future of Big Law. This will satisfy the Law School's Research requirement. These papers will be graded on an Honors/Pass/Restricted Credit/Fail basis. Students taking the seminar for R credit can take the seminar for either 2 or 3 units of credit (section 02), depending on the project. After the term begins, students registered in the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Attendance, Class Participation, Four commentaries or one research paper.

LAW 6015. Innovations in the Delivery of Legal Services. 2 Units.
This is an era of groundbreaking change in the legal profession. Twenty years ago, email was unheard of at most law firms. Today, artificial intelligence, machine learning, and online services are creating a fundamental shift in how law is practiced. Beyond technology, massive challenges to the code of professional responsibility, from multi-disciplinary practices to law firms filing for IPOs, are reshaping the legal landscape. This course focuses on the opportunities and challenges these disruptions create for the new lawyer. Students will gain hands-on experience with some of the most innovative organizations in the legal community. Significant time will also be spent analyzing changes anticipated to impact the legal industry in the next decade. Elements used in grading: Attendance, Class Participation, Final Paper.

LAW 6016. Challenges Facing the Legal Profession. 3 Units.
This course is about the challenges facing the next generation of lawyers and the profession as a whole. These challenges existed in 2019, but 2020 has sharpened two of them. The Covid-19 crisis has forced a change in the way lawyers work, with greater use of technology, and the resurgence of the #BlackLivesMatter movement following the death of George Floyd highlights the lack of diversity in the profession. These developments add to existing economic and other pressures facing lawyers. The specific topics covered will include: the changing relationship between in-house and outside counsel; ways that technology is changing the practice of law; new business models for lawyers, including the productization of legal services; and the challenges of diversity and inclusion in the profession. The course is a mix of full-class discussion with the instructors and guest speakers from practice, small-group discussion of case studies, and work on team projects. A significant part of most classes will involve case studies where students will put themselves in the role of lawyers, and talk through options for dealing with the issues presented. The instructors and guest speakers will introduce context about the challenges, and then engage students in thinking about possible paths forward. Elements used in grading: The requirements will include attendance and participation; a few short written assignments, either answers to problems/exercises or reflection papers; and a final team memo and presentation. There is no exam.

LAW 7001. Administrative Law. 4 Units.
Federal agencies make an astounding number of policy decisions, engaging in more lawmaking and adjudication than Congress and the federal courts, respectively. These policy decisions range from the seemingly trivial, such as the size of holes in Swiss cheese, to matters of life-and-death importance, such as how to limit emissions of sulfur dioxide, nitrogen oxides, and mercury. These agencies also range in age, organization, and duties. There is the postal service, which was created over 200 years ago, and changed five decades ago from a cabinet-level department to a government corporation, with current calls to privatize it. On the newer side, there is the Consumer Financial Protection Bureau, which was established in 2011 to protect consumers in the financial arena; its leadership and funding structure produced constitutional challenges that recently reached the Supreme Court. In this quarter of Administrative Law, we will consider the creation and control of the modern administrative state. Topics will include the structure of administrative agencies and their place in a governing scheme of separated but overlapping powers, delegation of authority to agencies, types and requirements of agency decisionmaking, availability and scope of judicial review of agency action (and inaction), and other forms of agency oversight. We will apply concepts through many recent examples. A variety of policy areas will be considered, including (among others) the COVID-19 pandemic, national security, financial regulation, health care, the environment, food and drugs, and telecommunications. Elements used in grading: Attendance, Class Participation, Written Assignments, Exam. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. This course will be capped at 60 students, randomly selected.

LAW 7002. Beyond the Common Law: Tort Reform and Tort Alternatives. 2-3 Units.
(Formerly Law 563) Over the past century, tort law has been under sustained attack. Using a broad mix of case law, case studies, and scholarly analysis, this seminar will interrogate those attacks-including their historical roots, their theoretical justifications, and their practical effects. We will first study "replacement reforms"-attempts to jettison the common law in favor of alternative compensation mechanisms, including workers' compensation, auto no-fault, the September 11th Victim Compensation Fund, and the Vaccine Injury Compensation Program, housed within the U.S. Court of Claims. Second, we will study modern tort reform initiatives, often dubbed "discouragement reforms," which have chiseled away at damages and chilled personal injury victims' incentives and capacity to seek relief. Finally, we will study the United States Supreme Court's own tort reform activity, including recent jurisprudence limiting punitive damages, preferencing arbitration, and granting broad preemptive effect to agency actions. Through this analysis, students will develop a deeper and richer understanding of the tort system, its contemporary operation and excesses, and the uneasy but undeniably important place tort law-and civil litigation more generally-occupies in contemporary American society. Special Instructions: Grades will be based on class attendance, class participation, and either several short reflection papers (section (01)) or an independent research paper (section (02)). After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Students taking the course for R credit can take the course for either 2 or 3 units, depending on paper length. Elements used in grading: Class participation, class attendance, reflection papers or research paper. Early drop deadline.

LAW 7003. Cities in Distress. 3 Units.
(Formerly Law 735) Despite the end of the Great Recession, serious fiscal challenges remain for many urban and rural local governments. This course will focus on these places and what they need from state and local government. Subjects will include: (1) the basics of local finance; (2) an introduction to the primary causes of local fiscal distress; (3) tools for state and federal governance of city finances and financial distress (including municipal bankruptcy and state receiverships); and (4) the local public sector's role in anti-poverty work, especially after significant losses in local employment. The course will feature readings focused on places (both urban and rural) across the country. Class performance will be evaluated based on class participation, an in-class presentation, and weekly reflection papers of 3-5 pages each week for most of our topics. Completion or co-enrollment with Local Government or Land Use Law is useful but not required. Elements Used in Grading: Class Participation, Attendance, Written Assignments or Research Paper. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7005. Constitutional Politics. 2-3 Units.
This seminar will explore various ways in which constitutional law interacts with the political process. Topics covered will include the appointment and confirmation process for federal judges, judicial campaigns and elections in the states, various approaches to "popular constitutionalism," ratification of constitutional amendments, judicial activism as a political issue, public opinion and the Supreme Court, court-curbing legislation, and the role of interest groups in constitutional litigation. Readings will include cases, as well as perspectives from legal scholars, political scientists and historians. Students will be assigned to prepare and circulate discussion questions for one week of the class. Students can choose to write a final R paper or take an exam. Students writing the paper may take the class for 2 credits or write a longer paper for 3 credits. The paper will be due at the law school's paper deadline for fall quarter classes. Students taking the exam will be asked to answer one or more essay questions about the major issues covered in the class. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: The grade will be based on the paper or exam, along with class participation.

LAW 7006. Current Issues in Civil Liberties and Civil Rights. 3 Units.
This seminar will address current issues in civil liberties and civil rights arising at both the federal and state level, with an emphasis on the policies of the Trump administration. It is intended to be both timely and topical. As a result, the initial syllabus may be revised if new and significant issues later emerge. Among the topics that are likely to be discussed are hate speech, immigration, reproductive rights, voting rights, affirmative action, LGBT rights, and privacy. We will begin by focusing first on background legal principles and then on applying those legal principles to each debated policy. We will also consider the real world consequences that flow from different legal outcomes. There is no casebook. Instead, weekly readings will consist of judicial decisions, statutory and regulatory texts, and published articles (both academic and popular). Any that are not easily accessible will be circulated prior to class. Elements used in grading: Grades will be based on class attendance, class participation, and either several short papers (Section 01) or an independent research paper for Research credit (Section 02). After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor.

LAW 7007. Constitutional Law: Religion and the First Amendment. 4 Units.
(Formerly Law 602) This course covers the major doctrines and decisions interpreting the provisions of the First Amendment affecting religion, especially the free exercise and establishment clauses. The principal focus is on modern Supreme Court cases and doctrine, but the course also emphasized the historical, philosophical, and theological roots of first amendment principles. Elements used in grading: Final Exam (take-home).

LAW 7008. The White Supremacist Constitution: American Constitutional History. 3 Units.
This course addresses U.S. constitutional history from the post-Civil War Reconstruction period through the mid-20th century. Because of the breadth of the subject matter, the view will necessarily be partial. In particular we will take as our focus the way the Constitution has provided a point of political mobilization for social movements challenging economic and social inequality. Topics covered include: Civil War Reconstruction and restoration; the rise of corporate capitalism and efforts to constrain it; Progressive Era regulation; the New Deal challenge to federalism and the anti-New Deal backlash; government spending; WWII and the Japanese Internment; the Civil Rights Era, and the War on Poverty. Readings will include both legal and historical materials with a focus on the relationship between law and society. Elements used in grading: Class Participation, Attendance, Written Assignments, Final Paper. Paper extensions will be granted with instructor permission. No automatic grading penalty for late papers. Cross-listed with American Studies (AMSTUD 155) and History (HISTORY 155).

LAW 7010A. Constitutional Law: The Fourteenth Amendment. 3 Units.
This course examines various aspects of the Fourteenth Amendment, with special attention paid to equal protection and substantive due process. We will examine many contested constitutional questions, including, for example: How did gay and lesbian relationships go so quickly from being subject to criminal prohibition to being eligible for marriage? What justifies the Supreme Court's striking down a law mandating segregated schools, when it had upheld an analogous law half a century earlier? Must the law treat all individuals identically, or may and should it grant special protections to members of historically disadvantaged groups? To what sources might (and should) a judge look to give content to vague constitutional terms like "equal protection" and "due process"? How can we distinguish "law" from "politics" in this area? Readings will include judicial opinions and some scholarly commentary. Class discussion will be supplemented with group exercises of various sorts. Elements used in grading: Class participation and exam.

LAW 7010B. Constitutional Law: The Fourteenth Amendment. 4 Units.
This course examines various aspects of the Fourteenth Amendment, with a focus on how its doctrines interact in particular substantive areas. Rather than progressing seriatim through individual doctrines, this section of the regularly-offered course will focus on the role of the Fourteenth Amendment in the economy, education, personal autonomy, family formation, criminal justice, and voting. As a result, the course will pose many cross-cutting questions. For example, what are the various constitutional constraints on public education? What are the advantages and disadvantages of couching reproductive rights claims as due process claims versus equal protection claims? Do, or should, Fourteenth Amendment-based arguments operate differently within the criminal justice system? Using such questions, the course will work through established doctrines such as tiers of scrutiny, substantive due process, privileges and immunities, incorporation, state action, and congressional enforcement. The course reader has been constructed to help you draw connections between topics and doctrines. Readings include formative Supreme Court cases on the contours of the Fourteenth Amendment, as well as scholarly and popular media sources discussing its many applications. There will be no final examination. Instead, the written work for the course will consist of four short writing assignments (for a total of approximately 20 pages). Two assignments will ask you to compare doctrine across different areas of Fourteenth Amendment law through assigned case comparisons. The other two assignments, to be shared with the class as a whole, will ask you to apply insights from secondary sources (chosen from a list provided in the course materials) to the cases and issues we're discussing in class. Elements used in grading: Attendance, Class Participation, Written Assignments.

LAW 7011. Constitutional Litigation. 3 Units.
(Formerly Law 641) This is a course in advanced and applied constitutional law. It focuses on one of the central ways in which constitutional claims are actually litigated: in lawsuits against public officials and local governments. The bulk of the course looks at litigation under 42 U.S.C. § 1983. We will consider topics such as what it means to act "under color of state law;" absolute and qualified immunities; government liability for the acts of individual officials; and remedies for constitutional violations. This course is particularly useful for students who plan to clerk on federal courts, as much of their dockets involves §1983 litigation. This course complements Federal Courts (Law 283). Elements used in grading: Participation, Attendance, Exam.

LAW 7012. Constitutional Law: Speech and Religion. 4 Units.
This is a course about the freedoms of speech, press, religion, association, and assembly under the First Amendment. Two- thirds of the course will be about freedoms of speech, press, and assembly. We will examine historical context, doctrinal development, and current caselaw. We will ask why government regulates speech (to prevent harms? to protect sensibilities? to redistribute power? to advance the interests and ideas of the politically powerful?), how government regulates speech (by aiming at messages? by aiming at markets? by aiming at when and where speech takes place? by conditioning subsidies?), and what justifications are ever sufficient for limiting speech. We will include consideration of the institutional press and new technologies including the Internet, as well as the rights of private organizations to determine their membership and organization. About a third of the course will be about religion. We will ask how the twin constraints of the Free Exercise and Establishment Clauses relate, looking especially at notions of neutrality, voluntarism, separation, and accommodation. Elements used in grading: Exam.

LAW 7013. Gender, Law, and Public Policy. 3 Units.
Topics in this course will include equal protection standards, employment, family, reproductive rights, sexual harassment, rape, domestic violence, pornography, sexual orientation, diversity in the profession, and intersections with race, ethnicity, class, and sexual orientation. Materials will include cases, commentary, problems, and media portrayals, and presentations by guest lecturers. Special Instructions: Course requirements will include class participation and either (1) a long paper, which will satisfy the research requirement or (2) a number of short reflection papers on the assigned readings, and a short final research paper. Students writing reflection papers will form teams and each member will be responsible for writing comments on one classmate's paper each week. There will be no final examination. A maximum of 10 students will be permitted to write the long paper for R credit. All students interested in R credit should pre-register by lottery for Law 307-0-02. Students who do not receive a spot in section 02 may enroll in section 01. Open to students from other schools with the consent of the instructor. To apply for this course, non-Law students must complete a Non-Law Student Course Add Request Form available on the SLS Registrar's Office website. Elements used in grading: Class participation, attendance, reflection papers, and final paper.

LAW 7014. Constitutional Theory. 2-3 Units.
The guiding question of this course will be how we should think about the role of the U.S. Constitution in American law and American life. In considering this issue, we will address debates about constitutional interpretation (including both originalism and living constitutionalism), the nature and features of constitutional change within the American context, the role of federalism and the separation of powers in the constitutional scheme, and the nature of American constitutionalism as opposed to English and continental European models. We will tackle these debates in the context of some specific contemporary controversies about the Constitution, including: How do the civil rights movement and other social movements impact our understanding of the Constitution?; Does the Constitution reject a European-style inquisitorial process in favor of an Anglo-American vision of due process?; How important is consensus within the Supreme Court to establishing the legitimacy of constitutional meanings?; Why do we have nine Supreme Court justices, and; What is the Constitution, and how much does it include outside of the written document? Throughout we will be contemplating the extent to which our interpretation of the constitution depends on our vision of American democracy and the good society. Requirements for the course include regular class participation and either four response papers or a substantial research paper; students who take the research paper option will receive two or three units and 'R' credit. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Special Instructions: This class is limited to 16 students by lottery. If applicable, openings will be filled from the waitlist in waitlist order. Four additional spots may be reserved for 2Ls at the discretion of the instructor. If determined by the instructor, four 2Ls will be admitted from the waitlist in waitlist order. Elements used in grading: Attendance, Class Participation; Response Papers or Final Paper. Cross-listed with English (ENGLISH 350D).

LAW 7015. Contemporary Issues in Constitutional Law. 3 Units.
(Formerly 448) This is an advanced constitutional law seminar for students who have already taken the introductory Constitutional Law course. The seminar will provide an opportunity for in-depth discussion of competing theories of constitutional interpretation, the role of the Supreme Court in our political system, and analysis of judicial behavior. Each week, these themes will be examined through the lens of a current "hot topic" in constitutional law - for example, affirmative action, same-sex marriage, religious liberty, the death penalty, executive power, campaign finance, immigration, abortion, and other topics. This is not a "spectator" class; all students will be expected to participate actively in class discussion each week. This is a good seminar for students interested in clerking or pursuing academia. Prerequisite: Constitutional Law. Elements used in grading: Attendance, Participation, Written Assignments.

LAW 7016. Critical Race Theory. 3 Units.
This course will cover the most important writing in critical race theory as it relates to law and jurisprudence. We will review the relationship between skeptical jurisprudence as developed in legal realism and Critical Legal Studies to the struggle for racial justice and the ambivalent relationship of civil rights lawyers to mainstream legal strategies for social change. We will review the critique of rights, the use of narrative in legal scholarship and the emergence of the critique of "intersectionality" as a challenge to conventional racial politics. Special Instructions: Grades will be based on attendance, class participation and (1) short reflection essays on the readings and a short research paper or (2) a long research paper with consent of the instructor. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Attendance, class participation, written assignments, final paper.

LAW 7017. Creation of the Constitution. 4 Units.
The course begins with readings setting forth the intellectual and experiential background of the framing, including common law and natural rights theory, republicanism, economic & political scientific ideas, and colonial and post-Independence experience. We then study large parts of the debates at the Constitutional Convention, primarily using Madison's Notes. Major topics are the principle of representation, the extent and enumeration of national powers, the construction of the executive and judicial branches, and slavery. Next come the ratification debates, including readings from antifederalist writers, The Federalist, and speeches in ratification conventions. We conclude with the addition of the Bill of Rights. Classes consist of a combination of lecture and extensive participation by students. Elements used in grading: Class participation, In-class exam, supplemented by short take-home essay. Cross-listed with History (HISTORY 153).

LAW 7018. Disability Law. 3 Units.
This is a survey course of disability rights law, with an emphasis on federal and state statutes and case law. Areas of concentration include employment, government services, public accommodations, education, housing, mental health treatment and involuntary commitment, and personal autonomy. We will review such statutes as the Americans with Disabilities Act (ADA), Rehabilitation Act (Sec. 504), Individuals with Disabilities Education Act (IDEA), and the Fair Housing Act Amendments. The course examines disability from a civil and human rights perspective. Elements used in grading: Grades will be based on class participation (50%), and either an exam (50%) - Section 01 or a long independent research paper (50%) - Section 02. The student must consult with the instructor on the paper's topic, scope and format. After the term begins, students accepted into the course can transfer from Section 01 into Section 02, which meets the R requirement, with consent of the instructor. Automatic grading penalty waived for submission of research paper. Non-law students may enroll with instructor consent.

LAW 7019. Employment Discrimination. 3 Units.
This course will examine legal responses to the barriers to workplace equality that are faced by minority groups. The course will survey the relevant doctrine, focusing primarily on federal employment discrimination statutes, but also addressing more expansive antidiscrimination protections under some state statutes, and local ordinances. Covered topics include sexual and racial harassment, sexual orientation discrimination, and affirmative interventions aimed at increasing the minority group and/or female representation in certain job categories or segments of the labor market. In addition to surveying the doctrine as it stands and as it has developed over time, we will also explore the doctrinal and conceptual difficulties inherent in identifying invidious discrimination and in devising appropriate remedies. The elements used in grading will be class participation, and, at the student¿s option, either a series of reflection papers or a single final paper on a topic to be determined in consultation with Professor Ford. After the term begins, students accepted into the course can transfer, with consent of the instructor, from section (01) into section (02), which meets the R requirement. If more than 35 students wish to enroll, students should contact instructor to be placed on a waitlist. Instructor will determine final enrollment.

LAW 7020. Ethics On the Edge: Business, Non-Profit Organizations, Government, and Individuals. 2 Units.
The objective of this course is to explore the increasing ethical challenges in a world in which technology, global risks, and societal developments are accelerating faster than our understanding and the law can keep pace. We will unravel the factors contributing to the seemingly pervasive failure of ethics today among organizations and leaders across all sectors: business, government, non-profit, and academia. A framework for ethical decision-making underpins the course. There is significant space for personal reflection and forming your own views on a wide range of issues. Prominent guest speakers will attend certain sessions interactively. The relationships among ethics and technology, culture, leadership, law, and global risks (inequality, privacy, financial system meltdown, cyber-terrorism, climate change, etc.) will inform discussion. A broad range of international topics might include: designer genetics; civilian space travel (Elon Musk's Mars plans); social media (e.g. Facebook Cambridge Analytica, on-line sex trafficking, monopolies); new devices (e.g. Amazon Alexa in hotel rooms); free speech on University campuses; opioid addiction; AI (from racism to the work challenge and beyond); corporate and financial sector scandals (Theranos, Wells Fargo fraudulent account creation, Volkswagen emissions testing manipulation); new corporate challenges (e.g. Google selling drones to the military and Facebook's new Libra crypto currency); and non-profit sector ethics challenges (e.g. NGOs engagement with ISIS and sexual misconduct in humanitarian aid (Oxfam case)). Final project in lieu of exam on a topic of student's choice. Attendance required. Class participation important (with multiple opportunities to earn participation credit beyond speaking in class). Strong emphasis on rigorous analysis, critical thinking and testing ideas in real-world contexts. Please note that this course will require one make-up evening session on a Wednesday or Thursday in lieu of the final class session the first week of June, and two one-hour extensions to Monday class sessions as a make-up for May 11, so the course will end before Memorial Day. Students wishing to take the course who are unable to sign up within the enrollment limit should contact Dr. Susan Liautaud at susanl1@stanford.edu. The course offers credit toward Public Policy core requirements (if taken in combination with PUBLPOL 103E or PUBLPOL 103F), and Science, Technology and Society majors and satisfies the undergraduate Ways of Thinking–Ethical Reasoning requirement. The course is open to undergraduate and graduate students. Undergraduates will not be at a disadvantage. Everyone will be challenged. Distinguished Career Institute Fellows are welcome and should contact Dr. Susan Liautaud directly at susanl1@stanford.edu. *Students taking the course for Ways credit and Public Policy majors taking the course to complete the core requirements must obtain a letter grade. Other students may take the course for a letter grade or C/NC. Students seeking credit for other majors should consult their departments. NOTE: This course does NOT meet the SLS Ethics requirement. CONSENT APPLICATION: Interested SLS students may apply to enroll in this class by sending a request to Dr. Susan Liautaud at susanl1@stanford.edu. Elements used in grading: Class Participation, Attendance, Written Assignments, and Final Paper. Cross-listed with Public Policy (PUBLPOL 134, PUBLPOL 234).

LAW 7021. Family Law. 3 Units.
(Formerly Law 293) If there were no legal institution called marriage, would we want to create one? In the context of people's intimate relationships, when and how does the law facilitate and reinforce people's preferences/choices, and when does and should it restrict them? What are (and should be) the sources of legally enforceable obligations between intimates or family members? How does and should the law take account of children, who cannot fend for themselves? This course will consider these questions and more. Elements used in grading: Exam, with minor adjustments for class participation.

LAW 7022. Federal Habeas Corpus. 2 Units.
This course covers the history of the Great Writ and the evolution of the scope of federal habeas corpus review and relief; the Suspension Clause; habeas review in capital cases including stays of execution; alternatives to habeas review; state post-conviction proceedings; the Antiterrorism and Effective Death Penalty Act (AEDPA); and jurisdictional issues in both the trial and appellate courts. The course will be valuable to students seeking federal judicial clerkships as well as those interested in prosecutorial work or post-conviction representation. Elements used in grading: Exam.

LAW 7023. Federalism. 3 Units.
(Formerly Law 742) This course is an overview of legal and policy issues connected to federalism. We will examine a set of core theoretical questions - the values federalism serves; the relationship of federalism and individual and minority rights; and the role of judges in enforcing federalism through judicial review - across a wide range of contemporary legal debates (e.g., same-sex marriage, health care, immigration, voting rights). While much of the seminar will focus on the United States, we will also consider federalism in comparative context by examining the constitutions and legal doctrines of other regimes. Special Instructions: After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Class Participation, Written Assignments or Research Paper.

LAW 7024. Food Law and Policy. 2-4 Units.
This seminar explores legal and policy issues related to our food system, including the regulation of food supply, food safety, nutrition / obesity, marketing / labeling, security, and animal treatment. We will examine how laws and regulations affect the production, distribution, sale, and consumption of food and whether particular regulatory approaches (e.g., product bans, product standards, government subsidies, taxes, information disclosure, or labeling) are more effective in achieving public goals. The course can be conceived of as a form of applied administrative law and regulation, but no background is necessary. Instructions: Grades will be based on class attendance, class participation, and either several short reflection papers (section (01)) or an independent research paper (section (02)). After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Students taking the course for R credit can take the course for either 2-4 units, depending on paper length. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7025. Employment Law. 3 Units.
Workplace issues have become one of the fastest-growing areas of state and federal law. Employment-related lawsuits filed in federal court have tripled in volume in the past decade, and now account for a tenth of all civil cases. Many state courts have experienced a similar burgeoning of their employment law caseloads. This course examines this diverse, rewarding, and rapidly evolving area of legal practice by considering the diverse array of laws and institutions that regulate the employment relationship. The focus of the course is on laws that affect employees in non-unionized settings, such as protections against dismissal without cause, wage and hour restrictions, workplace privacy, covenants not to compete, the Family and Medical Leave Act, and mandatory arbitration of employment disputes. The course does not cover either Employment Discrimination or Labor Law, both of which are offered as separate courses. Special Instructions: Regular, punctual attendance is required. If you expect (or are unexpectedly forced) to miss more than two classes, please consult with the instructor as soon as possible, as exceptions will be considered on a case-by-case basis. Early Add/Drop Deadline: Add/Drop decisions must be made the first week of class. Exceptions are at the instructor's discretion and will be considered on a case-by-case basis. Elements used in grading: Final Exam.

LAW 7026. Immigration Law. 3 Units.
This survey course provides a foundation in the constitutional principles governing the regulation and rights of noncitizens and the immigration statute that governs the admission and removal of noncitizens. The course also explores contemporary issues related to immigrants' rights and immigration reform, including major Trump administration actions especially in the area of border enforcement and asylum rights. We will analyze other current areas issues such as immigration detention; the intersection of criminal and immigration law; state and local regulation of immigrants; constitutional limits on 'alienage' discrimination; and the right to Article III judicial review of removal orders. The course draws on the instructor's decades of experience litigating constitutional and civil rights issues on behalf of noncitizens while at the ACLU and his more recent service as a senior immigration policy advisor in the Obama administration. Guest speakers may be invited for some topics. No prior course or background in immigration law is expected. Elements used in grading: Class participation and attendance (10%), final exam (90%).

LAW 7027. Critical Race Theory. 1 Unit.
This reading group will investigate unresolved issues in Critical Race Theory. Questions explored will include: What exactly are advocates for racial justice fighting for? That is, what does racial justice look like? What is the place of "culture" in our racial present and in a racial utopia? What are the roles of agency and structure -- individuals and institutions -- in perpetuating, and remedying, racial inequality? What is the role of law in undermining and/or entrenching racial stratification? Readings will be highly varied, coming from the fields of law, psychology, sociology, and anthropology, among others. Meeting Dates: This class will meet 4:15PM - 7:15PM on Thursday, September 29, October 27 and November 17. Elements used in grading: Grading will be based on participation, short reaction/response papers, and a final paper.
Same as: Reading Group

LAW 7028. Lawyers and Leadership. 3 Units.
This course will examine the responsibilities and challenges for those who occupy leadership roles, with particular emphasis on those seeking to use law as a vehicle for social and organizational change. Topics will include characteristics and styles of leadership, organizational dynamics, forms of influence, decision making, conflict and crisis management, innovation, diversity and inclusion, ethical responsibilities, scandal, civil and human rights, and public interest law. Materials will include cutting-edge research, case histories, problems, exercises, and media clips. Class sessions will include visitors who have occupied leadership roles. Requirements will include class participation, and either a few short written weekly reflection papers (2 to 3 pages and a short research paper (about 3-5 pages) or (2) a long paper (approximately 26-30 pages). After the term begins, students can transfer from section (01) into section (02), which meets the R requirement. Elements used in grading: Class Participation, Attendance, Written Assignments, Final Paper.

LAW 7029. Legislation and Administration. 3 Units.
(Formerly Law 394) This course explores the world of legislation and administration that defines much of our modern legal order. By analyzing agencies, statutes, and legislative procedures, the course prepares students to think about the structures and processes of government, and how they influence legal outcomes that would otherwise be defined largely by social norms and common law adjudication. Drawing on examples from a variety of substantive areas, the course covers the legislative process, approaches to statutory interpretation, the role of agencies and the legislature in a system of separated powers, delegation to agencies, the interaction of common law doctrines and agency practices, and techniques of agency regulation and adjudication. First-year students are welcome. Special Instructions: Students who receive credit for Legislation (Law 319) and/or Statutory Interpretation (Law 425) may not receive credit for Legislation and Administration (Law 7029) and vice versa. Elements used in grading: Attendance, participation in in-class discussion and simulation and occasional short assignments, being on "panel" for selected classes, and a self-scheduled open-book exam. CONSENT APPLICATION: To apply for this course, students must complete and submit a simple Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7030. Federal Indian Law. 3 Units.
This course will provide an overview of the field of federal Indian law. It will consider the origins and scope of tribal sovereignty as recognized under federal law, as well as current federal law on tribal criminal and civil jurisdiction. It will also explore the division of authority between tribal, federal, and state governments; federal statutory schemes governing Natives and Native nations; and constitutional issues affecting Natives. Additional current legal issues which may be covered based on class selection include Native land claims, gaming, family law, religious and cultural rights, and natural resources. The course includes an optional supplementary trip to the Yurok Reservation in northern California in early May. Students enrolled in Federal Indian Law who wish to seek an extra unit of credit may concurrently enroll in Federal Indian Law: Historiographical Readings in Federal Law and Policy (1 unit/ Mandatory P/R/F) with instructor consent. Elements used in grading: Class Participation, Final Exam.

LAW 7031. Political Campaigning in the Internet Age. 2 Units.
This course will acquaint students with the changing environment for campaigns posed by the rise of the Internet. So much of the traditional way analysts have understood campaigns has revolved around television as the primary mode of campaign communication. The rise of the Internet, nonlinear television programming, and mobile communication enables new forms of campaigning. With particular focus on the 2016 campaign, this course will examine the relevant social science on these topics, while at the same time bringing in guest lecturers from industry, campaigns, and media. Requirements: Students will be required to complete a 25 page research paper on a topic relevant to the course. Law students enrolled in this class will have the option of participating in a one-week extension of the course (Law 7056) in Delhi, India during spring break for an additional credit. Students may enroll for this course alone or for both this course and Law 7056. The overseas option is limited to 12 students. (See Law 7056 for application instructions and deadline). Elements used in grading: Attendance, Final Paper. This course is cross-listed with Communication (COMM 153 & 253).

LAW 7032. Public Interest Law and Practice. 3 Units.
This course will examine the history, theoretical frameworks, strategies used by, and political position of public interest law practice and attorneys in the United States. We will consider the role of lawyers and the legal system in advancing social change; different career paths of public interest lawyers; ethical issues related to working as a public interest lawyer; the personal impacts of this type of career choice; and tactics deployed by lawyers in differing settings, from issue-based non-profits to government agencies, and private public interest law firms or legal services groups. Readings will include law review articles, legal pleadings and case studies that allow analysis and exploration of the tensions and challenges that exist within the legal system for public interest practitioners. Guest speakers will include leaders from the field. Students will also be exposed to practical skills outside of litigation that social change lawyers should understand. Students will be asked to produce several short papers throughout the quarter. Elements used in grading: Attendance, class participation, written assignments.

LAW 7033. Race, Identity, and National Security. 2 Units.
This course explores theoretical, historical, and legal policy questions at the intersection of race, group identity, and national security. Recent political events have thrust the relationship between race, religion, nationality, immigration status, and national security into the limelight, although the questions themselves are not new. How do national security threats affect the formation of racial identity within the United States, and how does race affect our understanding of national security? What is the proper role of courts in addressing challenges to national security policy affecting minority communities? This seminar aspires to understand contemporary policy questions in light of a broader theoretical, historical, and legal context. Class attendance and robust participation in discussion is required. There are two options for assignments in this course. You can either write 4 response papers throughout the course, or a single 18-20 page research paper related broadly to the themes of the course (for R credit). Those who choose the research paper option will be expected to discuss and submit an outline of their research paper while the course is in session and to submit the final paper in accordance with standard law school requirements. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Attendance, Class Participation, Response Papers or Research Paper.

LAW 7034. Race and Public Education. 3 Units.
From at least Brown v. Board of Education, and many would say before that, education has been central to racial justice movements in America. More than fifty years after Brown, most American schools remain segregated by race and class, and many advocates still argue that the struggle for quality education is the key civil rights issue of our time. This course will examine a host of education-related legal and policy issues that intersect with questions of race and class. Topics will include: desegregation and re-segregation, tracking, charter schools, school vouchers, high-stakes testing, the Common Core, school discipline, the "school to prison pipeline," and education in alternative schools, juvenile facilities, and adult prisons. This will be a discussion-oriented course that will operate more like a seminar than a lecture. This class is limited to 30 students, with an effort made to have students from SLS (20 students will be selected by lottery) and students from the School of Education (10 students). Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper.

LAW 7036. Law of Democracy. 3 Units.
This course is intended to give students a basic understanding of the themes in the legal regulation of elections and politics. We will cover all the major Supreme Court cases on topics of voting rights, reapportionment/redistricting, ballot access, regulation of political parties, campaign finance, and the 2000 presidential election controversy. The course pays particular attention to competing political philosophies and empirical assumptions that underlie the Court's reasoning while still focusing on the cases as litigation tools used to serve political ends. Elements used in grading: Class participation and final exam. Cross-listed with Communication (COMM 361) International Policy (INTLPOL 351), and Political Science (POLISCI 327C).

LAW 7037. Poverty Law: Introduction and Overview. 1 Unit.
This one-credit survey course will cover selected topics in American poverty law and policy, with an emphasis on federal poverty relief. Topics covered will include the U.S. Supreme Court¿s poverty jurisprudence, the history of federal welfare policy, and historical and present-day debates about poverty in housing, education, health care, and other social domains. Students will have responsibility for reading 50-100 pages for each week¿s discussion. Mandatory P/F, and grade will be based on attendance and participation (one excused absence consistent with passing grade).

LAW 7038. Remedies. 3 Units.
The remedy is arguably the most important part of any lawsuit, and often the most neglected. This course considers the question of what plaintiffs are entitled to when they win a case and why. It will cover damages, punitive damages, restitution, unjust enrichment, and injunctive relief. While we will consider public remedies in constitutional cases, the majority of the course will focus on remedies in private law civil actions. Elements used in grading: Class participation and reflection papers.

LAW 7039. Reproductive Justice. 1 Unit.
(Formerly Law 490) This seminar explores Reproductive Justice ("RJ") as a paradigm for understanding reproductive oppression -- that is, the subordination of individuals through their bodies, sexualities, and abilities to reproduce. The RJ paradigm picks up where a reproductive rights framework ends. It contends that the fight for equality and dignity in matters relating to reproduction continues beyond a successful argument that the Constitution ought to protect a "right" to privacy, "right" to access contraception, or "right" to an abortion. An RJ framework observes that "rights" are given meaning -- and lose meaning -- according to the race, class, age, sexual orientation, gender identity, immigration status, and physical and mental ability (among other attributes) of the rights bearer. As such, RJ analyzes reproductive experiences within a complex context and with respect to the multiple statuses of the persons involved. This seminar will explore RJ as it speaks to assisted reproductive technologies, health care policy, immigration, incarceration, environmental justice, and economic inequality, among other topics. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper. This class meets during the first two weeks of Winter Quarter.

LAW 7040. Social Justice Impact Litigation: Issues and Strategies. 2 Units.
(Formerly Law 572) This seminar explores strategic, legal, and ethical issues related to using law reform and social justice litigation to advance the constitutional and civil rights of vulnerable communities. The seminar is designed to allow students to understand and grapple with some of the doctrinal and strategic issues faced by social justice litigators. The course will be informed by the instructor's thirty years of litigating cases, including in the Supreme Court, to advance immigrants' rights as the founder and former national director of the ACLU Immigrants' Rights Project. Among the topics that may be included are selecting and using test cases; identifying plaintiffs; coalition litigation; strategic pleading; class action problems; the role of amicus briefs; suits for damages versus injunctive relief; standing and mootness; ethical problems; settlement strategies; use of public advocacy and media; the effect of lawsuits on policymakers and public officials; the role of government and agency lawyers; and litigation to achieve legislative change. Guest speakers will be invited. Enrollment is limited and the seminar is not open to 1L students. Students are expected to submit a series of reflections (totaling 18 pages) in response to seminar issues and guest speakers. In unusual cases, a student may be approved for Research (R) credit to write a substantial research paper on an approved topic of current significance. R credit is available only with the instructor's prior consent early in the quarter. Students approved for R credit will transfer from section (01) into section (02) after the term begins. Elements used in grading: Class participation (50%) and written submissions (50%). CONSENT APPLICATION: To apply for this course, students are asked to complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7041. Statutory Interpretation. 3 Units.
Statutory law is the dominant source of contemporary law, and it is the form of law that lawyers are likely to confront most often in almost any area of practice. It is also an area of vibrant intellectual debate, as scholars, Supreme Court justices, and others debate the methods and aims of statutory interpretation. This course will stress both the practical and theoretical dimensions of interpretation. Students will learn and apply the methods of statutory interpretation. We will also spend considerable time on contemporary controversies, such as debates about textualist, purposive and dynamic interpretation; about the use of legislative history and canons of construction; about the special interpretive problems that arise in the context of direct democracy; and about the democratic and constitutional foundations of statutory interpretation itself. Readings will draw from political science as well as law. Elements used in grading: Class participation and final exam.

LAW 7042. Sexual Orientation, Gender Identity and the Law. 2-3 Units. This seminar will focus on how the law regulates sexuality. We will approach the material as an exercise in advanced constitutional law, exploring how courts have used--or might use--federal or state constitutional provisions to address issues regarding a wide array of issues involving sexuality. The core of the class will relate to contemporary controversies concerning sexual orientation and gender identity (including, for example, how sexual orientation and gender identity are defined, regulation of sexual conduct, marriage and parenting rights of same-sex couples, and religious liberty debates, among others). But we will also discuss other issues, including polygamy/polyamory and asexuality. We will maintain an interdisciplinary focus throughout as we consider how social, cultural, and political forces shape, and are shaped by, legal doctrine. All students taking the seminar for 2 units will either write a final research paper of approximately 18 pages (for R credit) or a take a final exam. Students who wish to write a longer R paper (approx. 26 pages) may enroll in the seminar for 3 units. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Students taking the course for R credit can take the course for either 2 or 3 units, depending on the paper length. Elements used in grading: Class participation; and paper or exam.

LAW 7043. Strategic Litigation for Racial Justice. 1 Unit. (Formerly Law 715B) Recent events in our country have dramatically highlighted the fact that we are not a post-racial society, and that structural racism and implicit bias are as harmful to people and institutions as intentional discrimination. Currently, plaintiffs can only show a violation of the Equal Protection Clause of the 14th Amendment - and several other antidiscrimination laws - by proving intentional discrimination. This seminar will examine this "intent standard" and its significant barriers to racial justice litigation. The course will review social science research, including studies on implicit bias, racial anxiety, stereotyping, and other concepts, to explore how contemporary discrimination manifests. We will address how legal advocates and the law can utilize such research to challenge and remedy discrimination through strategic litigation. We will examine real-world examples of this, including in the context of school discipline and the school-to-prison pipeline. Meeting dates: This class will meet on three Fridays, October 21, October 28 and November 4. Students must attend all three classes. Early drop deadline: Students may not drop this course after the first class. Elements used in grading: Written assignments (reflection papers) and class participation.

LAW 7044. Supreme Court Simulation Seminar. 3 Units. This seminar provides students with the opportunity to analyze, argue, hear oral arguments and draft opinions in cases that are currently pending before the Supreme Court of the United States. Professor Lawrence Marshall will serve as the instructor in the seminar, and several of the Law School's esteemed group of Supreme Court litigators are expected to participate in one or more of the sessions. The 18 students in the seminar will be divided into two courts. During each sitting, one of the courts will hear arguments in a case currently pending before the Supreme Court, while two of the students from the court not sitting that week will present oral arguments. The cases chosen will provide a mix of constitutional and statutory issues, as well as a mix between criminal and civil cases. Each student will be assigned the role of a particular Justice for the entire quarter. Each student's task while sitting on cases is to do his or her best to understand that particular justice, based on that justice's prior opinions and judicial philosophy. In this sense, the seminar is also intended to help promote insight into the role of judicial personality and philosophy within the decisional process. The weekly seminars will proceed as follows: In preparation for each week's session, all students (whether they are the two students arguing that week, the nine students judging that week, or the seven students observing that week) will read the lower courts' decisions, the briefs (the party briefs and selected amicus briefs) and the major precedents implicated. During the first portion of each week's session (approximately one hour), two of the students (who are members of the Court that is not sitting that week) will present oral arguments to the nine "justices" sitting that week. The arguments will be based on the briefs that were actually filed in the case. During the second segment of each week's session (approximately 45 minutes), the "justices" who are sitting that week will "conference" the case while the other non-sitting students, students who argued, instructors and guests will observe. Again, each student will be in the role of a particular justice. At the end of the "conference," the opinion-writing will be assigned to one "justice" in the majority and one "justice" in the dissent. During the final portion of each session (approximately one hour), the instructors, guests and students will engage in a broad discussion of what they just observed. This may include analysis of the briefing, discussion about the oral argument, reflections on the "conference," and, more generally, a discussion about the case and its significance. After each class, the student assigned to draft the majority opinion will have two weeks to circulate a draft to the "Court." The student writing the dissent will then have two weeks to circulate his or her opinion. The other sitting "justices" can join one of these opinions, request some changes as a condition of joining, or decide to write separately. Over the course of the Quarter, then, each student will argue one case, sit on four or five cases, and draft at least one opinion. Special instructions: 1. Because this is a simulation with assigned roles, students who are accepted into the seminar may not drop without permission of the instructor. 2. Because of the nature of the writing projects (with extensive interaction with other students), the normal deadline for Winter Quarter papers is waived and final papers must be submitted by the Spring Quarter deadline. Elements used in grading: Students will be graded based on the quality of their participation as justices, their oral argument, and their written opinions.

LAW 7045. The Article III Judge. 2 Units.
(Formerly Law 278) The contemporary debate over the proper role of a federal judge under the Constitution turns, in large measure, on what it is we think an Article III judge is doing when she is called upon to resolve a "case or controversy." Is she looking for the fair result? If so, by whose lights? Is she a political actor, or is she instead looking for a rule of decision that has been previously established by law (a "mere translator" of the law, in Justice Frankfurter's words). If so, by natural law or positive law? These are some of the questions we will consider in discussing what role a federal judge plays when she exercises "the judicial Power of the United States" conferred by Article III of the Constitution. Readings will include books and articles by some of the leading legal thinkers in the nation's history. Special Instructions: This class will meet the first three weeks of the quarter only. Elements used in grading: Class attendance and participation, reading the assigned material, and a 10-15 page paper that uses the readings to analyze a significant judicial opinion. Special Instructions: This class will meet the first three weeks of the quarter only.

LAW 7046. The Welfare State. 3-5 Units.
(Formerly Law 765) Much has been written in recent years about the decline of the welfare state. Numerous adjectives have been applied to describe a trend toward austerity -- death, demise, withering, reversal. One writer suggested that the welfare state had not died, it had merely "moved to Asia" along with industrialization. This seminar introduces students to the key literature, questions, and debates about the modern welfare state. We will consider the emergence, growth, and current status of the welfare state, primarily in Western Europe and North America. The course will examine classical theories about markets and the emergence of social provision. We will also consider the leading theoretical and empirical research addressing the emergence of the welfare state, looking at the American case in comparative perspective. Attention will be paid to social and political factors on state development including political parties, labor markets, gender, demographic change, and immigration. We will then turn to the trend toward austerity and retrenchment, and the effect of globalization for the future of the welfare state. Course Requirements. Participation/Discussion (25%). Students are responsible to complete all readings and to come to class prepared to actively participate in discussion. Each student is responsible to lead a portion of the discussion twice per quarter. Short Reaction Papers (25%). All students must complete 5 reaction papers related to the weekly readings of 2 to 3 pages in length. Reaction papers will include a list of questions to be addressed in that week's discussion. All reaction papers must be posted to coursework in advance of class so that the student(s) leading that week's discussion can incorporate the questions into that week's discussion. Final Options (50%). Students have the option of completing one final paper of 20 pages in length OR 4 essays of 5 -6 pages each addressing the readings in weeks that the student did NOT complete reaction papers. Topics for 20 page papers must be approved by me in advance, and may be related to a student's dissertation or master's research or may be a stand-alone topic. Papers may take the form of a research proposal and need not contain original empirical research. Shorter papers should engage thoroughly with the literature on the selected topic, and should bring additional sources other than those read for class to bear on the topic of choice. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. Cross-listed with Sociology (SOC 254 & SOC 354).

LAW 7047. Rethinking Campus and School Title IX Policies and Procedures. 2-3 Units.
I apologize in advance for the fact that there are no paragraph breaks in this description. It is not my fault. Please contact me directly if you have questions about the class and I will email you a more readable description. Thanks, MLD. Seminar with Concurrent Policy Lab: Rethinking Campus and School Title IX Policies and Procedures. Policy Lab Client: National Women's Law Center. Over the past six years, the issue of campus sexual assault has exploded into the public discourse. While definitive figures are difficult to obtain due to the necessarily private nature of these events, several recent studies estimate that between 20-25% of college women (and a similar proportion of students identifying as transgender and gender-nonconforming, as well as around 5-10% of male students) experience sexual assault. Survivors have come forward across the country with harrowing stories of assault followed by an insensitive or indifferent response from college administrators, launching one of the most successful, and surprising, social movements in recent memory. Statistics are equally disturbing in the middle and high school context. As a result, the federal government under President Obama stepped up its civil rights enforcement in this area, with over 250 colleges and universities currently under investigation for allegedly mishandling student sexual assault complaints. At the same time, students accused of sexual assault have complained of botched processes driven by a "campus rape over-correction" that denied them a fair disciplinary hearing. It is clear that schools are struggling to develop and implement policies and procedures that satisfy their legal obligations in this area. While the future of federal enforcement under the Trump Administration is uncertain, schools are still subject to federal and state law that require them have policies and procedures to address sexual harassment and violence. This course focuses on the legal and policy issues surrounding the highly challenging area of investigation and adjudication of sexual assault and other gender-motivated violence on college campuses and in K12 schools. It will cover the federal and state legal frameworks governing these procedures including Title IX, the Violence Against Women Act, and the Clery Act, and examine current cases as well as the rapidly-evolving legal, federal regulatory, and political environment surrounding this issue. Guest speakers working in the area will help to broaden the class's understanding of the subject matter. Students in this seminar will have the opportunity to participate in the invitation-only national conference entitled The Way Forward: Title IX Advocacy in the Trump Era, which will be held May 1-2 at Stanford Law School and is organized in conjunction with the National Women's Law Center. See [http://conferences.law.stanford.edu/thewayforward-title9/] for more information on the conference. Concurrent Seminar and Policy Lab: The seminar is taught concurrently with the Policy Lab (also entitled "Rethinking Campus and School Title IX Policies and Procedures"). All students registered for the seminar participate in the Policy Lab, which works with the National Women's Law Center toward the development of a set of evidence-based and legally compliant model policies and procedures. Given all the controversy, surprisingly little is actually known about the policies and processes that are currently in use, nor is there any way of easily ascertaining what the majority of an institution's "peer schools" are doing with respect to solving a challenge or addressing an issue. There is no set of "best practices" to which school administrators can easily turn. Students will analyze cutting-edge issues related to school-based gender-motivated violence and work on a white paper for the NWLC that includes both legal and empirical research into the policies and procedures currently in use around the country. Throughout the class, students will have the opportunity to reflect on what they are learning and how it applies in a professional context. The eventual goal of this Policy Lab is the development in conjunction with NWLC of a free, web-based, open-source set of adaptable model policies and procedures that are targeted for different market segments (i.e., large private, large public, small private, HBCU, community colleges, and k12). Course Schedule and Optional Travel: The first three weeks of the class there will be two meetings per week, on Tuesday and Thursday from 4:15 to 6:15. Students will meet with Fatima Goss Graves, Senior Vice President for Program at the NWLC during week 2 to hear her expectations regarding the project and ask questions. During weeks 4-6

LAW 7048. Legislation. 3 Units.
(Formerly Law 319) Lawyers work in a legal system largely defined by statutes, and constantly shaped by the application of legislative power. This course is about statutes and the legislative institutions that create them. It discusses some of the key laws governing access to legislative power and the procedures that culminate in the production of statutes in the legislature. The course is divided into two parts. The first part will focus on the acquisition of legislative power. Key topics include bribery laws, lobbying and indirect influence on legislative activity, and campaign finance regulations. The second part will focus on the exercise of legislative power. Through a number of public policy case studies, students will better understand the organization of the U.S. Congress, the ways in which power is exercised in that institution, and the intersection between politics, the law, and policymaking. Elements used in grading: Class participation, final memo, and in-class presentation. (Cross-listed with PUBLPOL 319).

LAW 7049. Advanced Torts: Law and Practice. 3 Units.
Most of civil litigation is in tort. As society changes, this dynamism is reflected in the progression and regression of tort law. Taught by an experienced practitioner, this course will explore contemporary developments in the law of medical malpractice, product liability, mass torts, harms to reputation and dignity and other civil wrongs. We will consider a range of remedies including compensatory and punitive damages as well as their constriction through tort limitations. Knowledge of these substantive rights and remedies has greatest value if the arc and texture of suit is understood. So we'll also learn about insurance, negotiation, settlement and alternatives to trial. And we'll set all this in the broader context of how an attorney can guide a plaintiff or defendant to an appropriate economic and/or noneconomic remedy. Elements used in grading: Class attendance is mandatory and class participation is encouraged and valued. There will be a final exam.

LAW 7050. Toxic Harms. 2 Units.
(Formerly Law 280) This seminar will examine the concerns arising from exposure to toxic substances from a variety of perspectives. A principal focus will be tort liability, and a central theme in the course will be whether tort law is an effective method of compensating victims of toxic exposure and controlling the distribution and/or emission of toxic substances. In order to assess the efficacy of tort, it is essential to compare the liability system with alternatives such as restructured "public law" litigation, administrative compensation schemes, and regulatory control strategies. Moreover, it seems equally important that these options be grounded in a concrete understanding of the major current problem areas. To accomplish these aims, the course will focus on a number of specific present concerns, including tobacco, asbestos, anti-inflammatory drugs, and workplace emissions exposures. In each instance, we will look at the nature of the public health problem as well as ensuing tort litigation and regulatory activity. In addition to examining these distinctive problem areas, we will look at broader, cross-cutting institutional reform proposals that have received recent attention. Students in Section (01) will write three ten-page writing exercises on topics discussed in class. After the term begins, students accepted into the course can transfer from section (01) into section (02), and have the option to write a final independent research paper for Research credit, with instructor consent. Elements used in grading: Three ten-page writing exercises or final independent research paper. Early drop deadline.

LAW 7051. Local Government Law. 3 Units.
Local governments exert tremendous influence over socioeconomics, race relations, environmental health, political power, and housing and real estate. This public law course will investigate the law of these governments (including cities, counties, and special districts) from four vantage points: (1) local governments within the federalist system, including the balance of power between local, state, and federal governments; (2) horizontal questions of power, including hierarchy and specialization among local governments; interlocal cooperation and competition; and the creation, expansion, and dissolution of local entities; (3) innovative uses and delegations of local authority to achieve state or local public policy goals; and (4) the nature of local democracy and local finance, including citizen influence of local lawmaking through initiatives and referenda, alternative voting schemes, and responses to fiscal distress. Discussions and in-class projects in the course will be situated in locations ranging from rural towns to major metropolises across the country. This class is limited to 30 students, with an effort made to have students from SLS (25 students will be selected by lottery) and up to five non-law students by consent of instructor. Elements used in grading: Class participation; in-class presentation, and one-day take home exam.

LAW 7054. The 45th President and the Constitution. 2-3 Units.
We will survey a number structural constitutional issues raised during the Trump Presidency, including the role of the judiciary; the scope and limits of unilateral Presidential power; the relationship between state and federal governments; Congressional power to investigate; and the role of the Special Counsel. Among the substantive areas of coverage will be protection of voting rights; partisan gerrymandering; free speech; and religious freedom. Among the specific settings we will consider are the President's first and second immigration orders; the Global Gag Rule; the effort to de-fund Planned Parenthood; the President's acrimonious relationship with the press; conflict of interest issues, including the Emoluments Clauses; the legal status of the Affordable Care Act's mandatory coverage of contraception, including religious objections; the status of gay marriage, including religious exceptions; and the regulation of the mass media and the Internet. Participants in the seminar should have completed (or be enrolled in) the basic Constitutional Law course. After the term begins, a maximum of 20 students accepted into the course can transfer from Section 01 into Section 02 (long research paper option), which meets the R requirement, with consent of the instructor. Elements used in grading: Final paper.

LAW 7055. American Legal History, 1930 - 2000: The New Deal, The Rights Revolution and Conservative Reaction. 2 Units.
This course examines major transformations in American law brought about by the momentous social and political movements of the mid- to late 20th Century. Part I deals with the response of Franklin D. Roosevelt's New Deal to the economic catastrophe of the Great Depression. The New Deal resulted in a major expansion -- against the resistance of conservative courts -- in the size and responsibilities of the Federal government to regulate the economy and secure citizens against risks of unemployment, sickness and old age. Part II covers the expansion of the New Deal after World War II to new forms of welfare and regulation (such as Medicare and environmental law) and what we now call the Rights Revolution --movements of subordinated or marginalized groups to claim equal rights (African-Americans, women, the disabled, gays and lesbians) or fair treatment by government (criminal suspects, welfare recipients, mental patients, prisoners). Part III: Both the New Deal and the Rights Revolution provoked fierce political reactions in which the modern conservative movements arose and came to power. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Class Participation, Attendance; Exam or Final Research Paper. Cross-listed with History (HISTORY 51G & 151G).

LAW 7056. Law of Democracy - India: Field Study. 1 Unit.
This is the Delhi, India component of Political Campaigning in the Internet Age (Law 7031) and Law of Democracy (Law7036). For details, see course description for Law 7031 and Law 7036. Students in this optional field study component will travel to Delhi, India for one week during spring break 2017. It accompanies courses in Law of Democracy and Political Campaigning in the Internet Age. Class sessions will take place primarily at the O.P. Jindal Global University, but will include visits to the Indian Parliament, Supreme Court, and National Electoral Commission. The Course will examine topics in regulation of democracy in a comparative perspective. Those topics include voting rights, campaign finance, regulation of political parties, and election administration. On the last day of the course, students will also have the option of participating in an international conference on comparative democracy to be held at O.P Jindal Law School. The course grade will be based on student essays examining a topic of the law of democracy in comparative perspective. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7057. Policy, Politics and the 2020 Elections: What 2020 Means for Future Campaigns and Elections. 2 Units.
This course looks back at the 2020 election campaign and tries to discern lessons and takeaways for future campaigns and elections. It will provide students with a behind-the-scenes understanding of how campaigns work. Each week, we will explore a different topic related to high-profile campaigns -- policy formation, communications, grassroots strategy, digital outreach, campaign finance -- and feature prominent guest speakers who have served and will serve in senior roles on both Democratic and Republican campaigns, including the Trump and Biden teams. Elements used in grading: Attendance, Final Paper. Cross-listed with Communication (COMM 153A, 253A), Political Science (POLISCI 72), and Public Policy (PUBLPOL 146, 246).

LAW 7058. Introduction to Antidiscrimination Law. 3 Units.
(Formerly Law 734) This course will focus on the statutory legal rules (primarily federal) governing discrimination on the basis of race, national origin, sex, disability, and other protected classifications. With a rotation of instructors including and beyond Ford and Anderson, the course will include modules regarding: employment discrimination (including sexual harassment), fair housing law, voting rights, and disability law. Note: The course will be designed to minimize overlap with Ford's Employment Discrimination course, and thus students are welcome to take both. Elements used in grading: Class Participation, Attendance, Final Exam.

LAW 7059. Labor Law. 3 Units.
This course is a survey of the law of labor relations; it is designed to provide the student with an acquaintance with the more important problems of labor law but not with a comprehensive coverage of the entire field. In particular, the course will focus upon the historical development of labor law, problems relating to union organization, recognition, and the duty to bargain collectively. The course will also examine some aspects of arbitration and the law relating to the enforcement of collective bargaining as well as non-union arbitration. The course will include some discussion of the relationship between law and politics in administrative agencies. Elements used in grading: Final Exam.

LAW 7060. Law and Continental Thought: Resistance. 2 Units.
Dominant trends in continental thought will be studied with an emphasis on the complex evolution of the relationship between theories of the rule of law and the definition and assertion of liberal democratic rights, on the one hand, and the sources of systematic legal failure and justifications of resistance to law, on the other. The roots, development, and pathologies of post-structural theory will be a central preoccupation of the course, as will the tensions between post-structuralism and the premises of liberal democratic thought. Major works by a range of theorists (such as Marx, Freud, Nietzsche, Benjamin, Fanon, Lacan, Foucault, Bhabba, Butler, Said, Chakrabarty, Haraway, Crenshaw, Ranciere, and Agamben) will be situated in relation to historical and theoretical interpretations of discrete 19th and 20th century resistance movements. No prior work in philosophy or critical theory is required to enroll in the seminar. Students may elect to write an 'R' credit paper or complete a 10-12 page essay. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Grading Elements: attendance, active class participation and written assignments (essay or research paper).

LAW 7061. Children Sexuality and the Law. 2-3 Units.
This seminar focuses on federal and state law designed to protect children from sexual exploitation, as well as federal constitutional law regulating young adults' expressive rights with regard to gender and sexual identity. The seminar provides a general introduction to some of the laws governing children's sexual autonomy as well as necessary protections from sexual abuse; however, the seminar's primary purpose is to teach students about how the law discursively constructs children as it attempts to protect them. Specifically, students will explore how laws designed to protect children from sexual exploitation also naturalize certain assumptions about children's perceptions, cognitive capacities, interests and vulnerabilities. Our discussions will explore how the law, while attempting to catalogue and regulate the potential threats children face, also instantiates certain ideas about children's potential sex-related injuries and how these injures can affect them over time. Finally, seminar discussions will explore whether there are any inconsistencies between the understanding of childhood, sexual injury, capacity, and autonomy in various areas of state child protection laws, federal constitutional law, and relevant federal statutes. In addition to considering how laws regulating children's sexuality affect children, the seminar will also examine how the same laws effectively constrain adults' behavior, as well as shape our understanding of the role of certain social institutions. Laws intended to more generally protect children from sexual exploitation also regulate children's relationships to their parents, affect our understanding of the role of schools, and even our understanding of the role libraries and the internet play in educating citizens. Seminar discussions will focus on how discursive constructs and social understandings about children contained in law both constrain and enable us in discussions of child sexuality. We will also consider how these constructs and understandings empower certain institutions by legitimating certain kinds of intervention. Students can choose to write three short response papers for two units or a final research paper for three units. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the Research (R) requirement, with consent of the instructor. Elements used in grading: Attendance, Class Participation; Written Assignments or a Final Research Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7062. Originalism. 2 Units.
This two-credit seminar will explore the theory and practice of "originalism" -- the idea that the Constitution should be interpreted in light of the meaning of its text to those who had authority to enact it. This is a controversial approach (as are the others) and we will read and consider critics as well as proponents, so that students can make up their own minds. The first part of the seminar will be devoted to the theory: how it works, what are its justifications, what are its flaws, the various versions. The remainder will be devoted to specific applications. Because there are far more topics than we have time to cover, students will vote on the first day for which topics we will take up. Among the choices are: executive power, speech and press, liberty under the Fourteenth Amendment, equality under the Fourteenth Amendment, gun rights, searches and seizures, and freedom of religion. Two students will assist in leading class discussions. Elements used in grading: Grades will be based 20% on participation and 80% on papers. Students will have the choice of one longer research paper or three shorter reflection papers. After the term begins, students accepted into the course can transfer from Section 01 into Section 02 (long research paper), which meets the R requirement, with consent of the instructor. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7063. Youth Law and Policy. 2 Units.
This course examines current issues in youth law and policy with a focus on the potential and collateral effects of law on certain subpopulations of vulnerable youth. Substantively, the course focuses on case law and statutes in delinquency, dependency, education, public benefits, and health access with an attention to cross-section themes of poverty, economic justice, race, and youth voice. By the end of the course, students will have developed a better understanding of how litigation, legislation, and policy in youth law come about through examining recent developments in the field and the tools advocates have used to enact change. Any student may write a paper in lieu of the final exam with consent of instructor. After the term begins, students accepted into the course can transfer from the exam section (01) into paper section (02), with consent of the instructor. Elements used in grading: Class Participation, Attendance, Written Assignments; Exam or Final Paper.

LAW 7064. Advanced Immigration Law Seminar. 2 Units.
This seminar is an advanced course on immigration law and policy designed for students who have taken the basic immigration law course (or had equivalent academic exposure to immigration law) and who wish to explore additional topics or issues in greater depth. Topics may include: discrimination against noncitizens by private and public entities, workplace and labor rights of noncitizens, constitutional limits on federal enforcement, the intersection of immigration and criminal law, federal enforcement priorities, asylum and humanitarian protections, subfederal immigration enforcement and "sanctuary" measures, and selected contemporary litigation. Issue selection may be adjusted based on student interest and input. Readings will be both doctrinal and policy. Students must fill out a consent form and have academic or equivalent grounding in the basics of immigration law. A limited number of students may be able to enroll for R paper credit. Guest speakers may be invited for some topics. Students accepted into the course may be eligible to transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Class participation and attendance (30%), written reflections or paper (70%). CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7065. One in Five: The Law, Politics, and Policy of Campus Sexual Assault. 3-4 Units.
TRIGGER WARNING: Over the past several years the issue of campus sexual assault and harassment has exploded into the public discourse. Multiple studies have reinforced the finding that between 20-25% of college women (and a similar proportion of students identifying as transgender and gender-nonconforming, as well as approximately 10% of male students) experience sexual assault carried out through force or while the victim was incapacitated during their time in college. Fraternities have been found to be associated with an increased risk of female sexual assault on campus. Vulnerable students and those from marginalized groups are often found to be at increased risk. This is also a significant problem in k12 education. Sexual harassment rates are even higher. Survivors have come forward across the country with harrowing stories of assault followed by what they describe as an insensitive or indifferent response from college administrators. These survivors have launched one of the most successful, and surprising, social movements in recent memory. As a result, the federal government under President Obama stepped up its civil rights enforcement in this area, with over 300 colleges and universities under investigation for allegedly mishandling student sexual assault complaints as of the end of that administration. At the same time, the Obama administration's heightened response led to a series of high-profile lawsuits by accused students who assert that they were falsely accused or subjected to mishandled investigations that lacked sufficient due process protections. The one thing that survivors and accused students appear to agree on is that colleges are not handling these matters appropriately and appeared to be more concerned with protection the institutional brand than with stopping rape or protecting student rights. Colleges have meanwhile complained of being whipsawed between survivors, accused students, interest groups, and enforcement authorities. In an about-face that many found shocking, the Trump Administration rescinded all of the Obama-era guidance on the subject of sexual harassment and has promulgated new proposed regulations that would offer significantly greater protection to accused students and to institutions and commensurately less protection to survivors. An increasingly partisan Congress has been unable to pass legislation addressing the issue.This course focuses on the legal, policy, and political issues surrounding sexual assault and harassment on college campuses. Each week we will read, dissect, compare and critique a set of readings that include social science, history, literature, legal, policy, journalism, and narrative explorations of the topic of campus sexual assault. We will explore the history of gender-based violence and the efforts to implement legal protections for survivors in the educational context. We will also study the basic legal frameworks governing campus assault, focusing on the relevant federal laws such as Title IX and the Clery Act. We will critically explore the ways that responses to this violence have varied by the race, class, gender identity, sexual orientation, and other characteristics of parties and institutions. We will hear from guest speakers who are actively involved in shaping policy and advocating in this area, including lawyers, activists, journalists, and policymakers. This year we will also host special guest speaker Chanel Miller, author of the bestselling memoir Know My Name. The subject matter of this course is sensitive, and students are expected to treat the material with maturity. Much of the reading and subject matter may be upsetting and/or triggering for students who identify as survivors. There is no therapeutic component for this course, although supportive campus resources and Title IX staff are available for those who need them. Elements used in grading: Grades will be based on class attendance, class participation, and either several short reflection papers and a class presentation (section 01) or an independent research paper or project and class presentation (section 02). After the term begins, students accepted into the course can transfer from section 01 into section 02, which meets the R requirement, with consent of the instructor. Enrollment is by INSTRUCTOR PERMISSION. Access the consent form here feminist.stanford.edu/academics/undergraduate-program/forms or email etsurkov@stanford.edu to request a form via email. Applications will be reviewed on a rolling basis until the class is full. Demand for the class is high and participation is capped at 18. The class usually fills quickly, so make sure to apply early. Cross-listed with Feminist Gender

LAW 7067. Law and Policy in the Post-Obama Era. 1 Unit.
This course will consider a number of current issues of law and policy that achieved prominence during the Presidency of Barack Obama and remain unresolved. These issues include: 1) immigration law reform and DACA, 2) the role of the Department of Justice in reforming local and federal criminal law enforcement, 3) the role of government policy in regulating the economy and financial system, in facilitating heath insurance, and in remedying economic inequality, 4) the proper balance between national security and civil liberties/human rights, as exemplified by the debates over the status of the Guantanamo Bay detention facility and drone warfare. In each of these areas, and others, debates about law and policy had reached a seeming, or potential, consensus in early 2009, but that consensus quickly fell apart. In each area, the gap between differing formulations of law and policy that had existed until recently has widened. Keeping in mind the time limitations of this course, we will briefly examine most of these of law and policy -- the governing legal doctrines and policies, their evolution since 2009, and their present and future prospects. The course will ask: What accounts for these differing visions of law and policy? What accounts for the inability of the political and legal system to resolve them? What are the possible ways forward? Class format will consist mainly of readings and class discussion, and students are encouraged to bring their own perspectives to bear on these difficult and timely issues. Class will meet Monday-Thursday, January 8-11, 7:15 PM to 9:15 PM and Tuesday of the following week, January 16, 6:20 PM to 7:20 PM. Elements used in grading: Class Participation.

LAW 7070. Federal Indian Law: Historiographical Readings in Federal Law and Policy. 1 Unit.
This is the one unit, Mandatory P/R/F component to Federal Indian Law (LAW 7030). Enrollment is by consent of instructor. See LAW 7030 in the SLS Course Catalog for details. Students will meet five times over the quarter. Meeting dates to be arranged with the instructor. Elements used in grading: Attendance, reading assignments, and a short paper.

LAW 7071. Philanthropy and Civil Society. 1 Unit.
Associated with the Center for Philanthropy and Civil Society (PACS). Year-long workshop for doctoral students and advanced undergraduates writing senior theses on the nature of civil society or philanthropy. Focus is on pursuit of progressive research and writing contributing to the current scholarly knowledge of the nonprofit sector and philanthropy. Accomplished in a large part through peer review. Readings include recent scholarship in aforementioned fields. May be repeated for credit for a maximum of 3 units. Cross-listed with Education (EDUC 374), Political Science (POLISCI 334) and Sociology (SOC 374).

LAW 7073. Law, Bias, and Algorithms. 3 Units.
Human decision making is increasingly being displaced by algorithms. Judges sentence defendants based on "risk scores;" regulators take enforcement actions based on predicted violations; advertisers target materials based on demographic attributes; and employers evaluate applicants and employees based on machine-learned models. A predominant concern with the rise of such algorithmic decision making (machine learning or artificial intelligence) is that it may replicate or exacerbate human bias. Algorithms might discriminate, for instance, based on race or gender. This course surveys the legal principles for assessing bias of algorithms, the engineering techniques for how to design and assess bias of algorithms, and assesses how antidiscrimination law and the design of algorithms may need to evolve to account for the potential emergence of machine bias. The course will meet jointly with MS&E 330 [https://explorecourses.stanford.edu/search?view=catalog&filter-coursestatus-Active=on&page=0&catalog=&academicYear=&q=MS%26E+330%3A+Law%2C+Bias%2C+%26+Algorithms+%29&collapse=]. Minimal coding background is assumed, but students will learn through interactive coding sessions in class. Admission is by consent of instructor and is limited to 20 students. Student assessment is based on response papers and a final project. Elements used in grading: Attendance, Class Participation, Written Assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7075. Family Law I: Regulating Marriage and other Intimate Relationships. 3 Units.
Intimate sexual relationships are central to most people's lives. Marriage has long been the primary locus of such relationships, the foundation of family life. In recent decades, though, marriage has undergone unprecedented changes. Sustained political advocacy and judicial decisions have opened marriage to same sex couples. Yet marriage equality has triumphed at a time when marriage is less universal and less robust as a social institution than ever. More American adults than ever are unmarried; more than a third of those who do marry will divorce. Unprecedented numbers of children are now born to unmarried parents. And marriage rates and stability have diverged across racial and socioeconomic groups as never before. What is one to make of these changes? And how should law and policy respond? The course will examine the constitutional and statutory doctrine governing marriage and other intimate relationships. Throughout, we will consider the cultural and social understandings that undergird our past and current approaches to regulating intimate relationships. Elements used in grading: Attendance, Class Participation and Exam.

LAW 7076. Race, Disadvantage, and Elite Education: The Allocation of Opportunity. 2 Units.
In recent years, selective universities have become more academically selective than ever. During the past half century their applicant pools have grown considerably--now including women, minorities, immigrants, and international students--while the sizes of their student bodies remain virtually unchanged. The broader social and economic context has shifted as well. With globalization, the advance of technology and the resulting labor market shifts, advanced education is seen as more important than ever to getting ahead. Yet, even as elite universities seem central to Americans' hopes and dream, they have also come under attack, viewed as disconnected from, and alien to, "regular Americans." This course will engage these developments through considering a pivotal question: How do and should elite educational institutions choose among the many applicants vying for admission? Two principles loom large in the ethos of selective college admissions: diversity and merit. Throughout the course, we will take a critical stance toward these claims. For example, how much does and should merit shape admissions decisions? What are the rationales for using prior grades and test scores to assess applicants? Similarly, what are the costs and benefit of the diversity rationale? Should schools take account of race, socioeconomic class, or neither? Course readings will include judicial opinions and legal commentary, social science evidence and cultural criticism. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper.

LAW 7077. Native Peoples and the Law. 1 Unit.
This reading group of five evening meetings over the quarter will explore Native peoples' encounters with U.S. law as recounted in novels, documentaries, essays, and other material, emphasizing indigenous perspectives and voices. The class is intended as a complement to LAW7030: Federal Indian Law; students enrolled in that course will receive priority in admission, but all students are welcome, space permitting. Elements used in grading: Attendance, Class Participation. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.
Same as: Reading Group

LAW 7078. The United States Senate as a Legal Institution. 3 Units.
This course will familiarize students with major, and/or emerging legal and constitutional issues concerning the U.S. Senate. In so doing, it will examine: 1) the Senate's nature as a complex legal institution, and 2) the issue of the Senate's legitimacy in the context of the current and largely unprecedented criticism of the Senate from all parts of the political spectrum. This first portion of the course will consider institutional-legitimacy issues facing the Senate, including the appointment of senators to fill vacancies as well as disputes concerning Senate rules and procedures such as the filibuster and holds. The second part of the course will explore how the Senate interfaces with the Constitution and the Supreme Court. It will examine how senators should regard the issue of constitutionality in voting on legislation, be it campaign-finance reform, internet decency, or health care. This part of the course will also consider how senators should approach proposed constitutional amendments. The final portion of the course will review the wide range of issues that have emerged in recent years regarding the constitutional relationship between the Senate and the Executive Branch, including the increasingly acrimonious issue of the standard to apply to executive appointments under the advice and consent power. Particular emphasis on this part of the course will be given to issues that have gained greater prominence since 9/11, including the relationship between enacted, constitutional legislation and the presidential assertion of Article II powers, as well as the Senate's abdication of its Article I war-declaration power. After the term begins, students accepted into the course can transfer, with consent of the instructor, from section (01) into section (02), which meets the R requirement. Elements used in grading: Class participation, attendance; and final exam or final research paper.

LAW 7079. Advanced Immigration Policy Reform. 2 Units.
This is a seminar for students with some background and interest in immigration and administrative law based on prior coursework, clinic enrollment, academic study, or other experience who want to engage in an examination of the administrative process for pursuing reform. The course will examine some of the current contested immigration policy changes and consider the mechanisms for achieving positive reform in light of administrative law and practice. The goal is to identify strategies and mechanisms for future reform that would further the protections of non-citizens during a period of global hostility to migrants. One significant part of the course will be contributing to a project that tracks and catalogues all the immigration policy changes of the Trump administration. Students will also develop proposals for future non-legislative reform through administrative action. The seminar will examine the federal administrative process from a theoretical, doctrinal, and practical perspective based on selected readings, guest speakers, and the instructor's experience as senior immigration policy advisor in the Obama administration at the Department of Homeland Security and as founder and former director of the ACLU Immigrants' Rights Project. Requirements: Some prior exposure to immigration law or practice in a work, clinical, professional, academic, or other setting. Elements used in grading: Grades will be based on class attendance, class participation, and either writing assignments (Section 01) or, with the instructor's permission, an independent research paper (Section 02). A very limited number of students may be permitted to write the long research paper for R credit but only with the prior specific approval of the instructor. Students accepted into the course may be eligible to transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7080. Amending the U.S. Constitution. 2 Units.
This seminar explores the legal and historical dimensions of the American constitutional amendment process as well as its current and potential role in our political system and public debate. The principal focus will be on Article V of the Constiution but we will also briefly examine the way in which the Constitution is said by some to be "amendable" (and to have already been "amended") through alternate means apart from Article V. The seminar will enable students both critically to evaluate the myriad aspects of constitutional amendments and conventions using proper source material and to develop their own proposals for potential amendments. The first part of the course will first explore the origins of Article V, including background on the comparative amendability of other written constitutions, the adoption of the Bill of Rights, and the apparent unamendability of the provision in Article V requiring equal representation of the states in the Senate. We will then review the history of efforts--both successful and unsuccessful--to amend the Constitution, such as the early corrective amendments to the post-Civil War Reconstruction amendments, the Progressive Era amendments (e.g., the switch to the direct election of Senators), and the modern voting-related amendments. This section will also consider views about when and how it is proper or "appropriate" to amend the Constitution, the standard that members of Congress should employ in voting on proposed amendments, and the history of calls for constitutional conventions to amend the Constitution. The second part of the course will explore the current possibility of a constitutional convention or conventions being called independently of Congressional initiative including the question of whether the scope of such a convention could be limited. We will then examine the relatively recent and current proposals and advocacy for and against constitutional amendments across the political spectrum. For this portion of the course, we will particularly consider the balanced budget amendment, the state veto amendment, the victims' rights amendment, and the elimination of the direct election of Senators, from the conservative side of that spectrum. We will then particularly highlight the movement to overturn Citizens United by amendment, the elimination of the electoral college amendment, the proposal to overturn Heller (right to bear arms) by amendment, and the current effort to revive and ratify the Equal Rights Amendment, all mostly associated with the progressive or liberal side of the spectrum. For the final seminar, students will be asked to give in class their opinion of Article V and whether it is too easy or difficult (or just right) in terms of allowing amendments. Each student will also be asked briefly to propose and defend an amendment that that student believes should be added to the Constitution. After the term begins, students accepted into the course can transfer, with consent of the instructor, from section (01) into section (02), which meets the R requirement. Elements used in grading: class attendance, participation, class presentations, and final paper.

LAW 7081. Family Law II: Parent-Child Relationships. 2 Units.
This course will examine the legal regulation of the parent-child relationship. The law used to be much simpler than it is today. The law treated marriage as the near exclusive setting for the rearing of children, defining the woman who gave birth to the child was the mother, and the man to whom she was married as the father. In recent decades, that simple legal principle has collapsed under the weight of social and technological change. The central social change is the reconfiguration of marriage and the multiplicity of settings in which children are raised. The advent of same sex marriage and same sex couples undermine longstanding assumptions about the legal definition of parent. And the fact that 4 in every 10 children are born to unmarried couples, and that nearly half of all married couples will divorce (often with either or both partners remarrying) introduce a dizzying array of possible family configurations. Advances in genetic testing complicate matters further, by allowing biological parents to be identified with near certainty. Thus, there is less reason to treat a woman's husband as her child's father. Many couples use reproductive technologies involving the donation of sperm, the donation of eggs or even the use of a surrogate mother to gestate the child. The use of such technologies can result in many adults having some form of tie to the child, a situation that has prompted some jurisdictions to recognize the possibilities of more than 2 parents! In sum, nonmarital, nonbiological, and same-sex parenting have become central, rather than peripheral features of the familial landscape. These changes highlight provocative and fundamental inquiries: What, exactly, does, and should, make one a parent in the view of the law? And how should the state allocate rights and responsbilities, related to custody, financial support and visitation, as families fracture and reconfigure? Elements used in grading: Participation, Exam.

LAW 7082. Free Speech, Democracy and the Internet. 2-3 Units.
This course, which will be cotaught by Monika Bickert from Facebook, will cover contemporary challenges to democracy presented by the Internet. Topics will include disinformation, polarization, hate speech, media transformation, election integrity, and legal regulation of internet platforms in the U.S. and abroad. Guest speakers from academia and industry will present on these topics in each class session, followed by a discussion. Students will be responsible for one-page papers each week on the readings and a research paper to be turned in at the fall paper deadline. Students can take the class for either 2 or 3 units, depending on the research paper length. This class is crosslisted in the university and undergraduates are eligible to take it. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper. Cross-listed with Communication (COMM 153B/253B) and International Policy (INTLPOL 323).

LAW 7083. Race and Law Workshop. 2 Units.
The Race and Law Workshop will meet once each week. The broad theme of the workshop is to probe the relation of law and justice with respect to race and inequality. Most weeks will feature a speaker who will present a draft of a paper. Students will have read the paper, and often, additional materials related to the subject matter of the paper, and will write responses to the paper, which will be shared with the speaker before the session. The session will consist of discussion of the speaker's paper and the students' responses. The aim of the workshop is to expose students to current scholarship about race and law, to improve the speaker's paper, and to deepen student's thinking about the relationship between law and racial justice (and injustice). Elements used in grading: Written Papers.

LAW 7084. The First Amendment: Freedom of Speech and Press. 3 Units.
Introduction to the constitutional protections for freedom of speech, press, and expressive association. All the major Supreme Court cases dealing with issues such as incitement, libel, hate speech, obscenity, commercial speech, and campaign finance. There are no prerequisites, but a basic understanding of American government would be useful. This course is crosslisted in the university and undergraduates are eligible to take it. Elements used in grading: Law students will be evaluated based on class participation and a final exam. Non-law students will be evaluated on class participation, a midterm and final exam, and nonlaw students will participate in a moot court on a hypothetical case. Non-law students will also have an additional one hour discussion section each week led by a teaching assistant. Cross-listed with Communication (COMM 151, COMM 251) and Political Science (POLISCI 125P).

LAW 7085. The U.S. and the Use of Force. 2 Units.
This course examines legal issues involved in the formulation and implementation of U.S. policy and actions with respect to the use of armed force, with emphasis on recent and current conflict situations. It will explore these issues from the point of view of international legal norms and obligations, U.S. law and practice, and the policies and actions of recent U.S. Administrations. Among the areas that will be explored are the following: (1) law and practice relating to the resort to armed force; (2) limits on means and methods of warfare; (3) the treatment of detainees; (4) the treatment of the civilian population; and (5) the punishment of international crimes. Elements used in grading. Grades will be based on a paper exploring these issues in the context of a specific current conflict or situation (75%), and class participation (25%).

LAW 7086. Transitional Justice. 3 Units.
The political, social, and legal problems confronting societies after periods of mass human rights violations or war have attracted increasing attention from policymakers and scholars in the last three decades. This course will examine the legacies of atrocities and the institutions and processes that governments and citizens most often use to address them, comparing approaches from across the globe. South Africa's Truth and Reconciliation Commission; the prosecution of Chile's former dictator, Augusto Pinochet; Argentina's reparations to victims of its military regime; and the International Criminal Court are among the best-known policy responses to those problems. In addition, non-legal interventions---such as the Berlin Holocaust Memorial and Nelson Mandela's many symbolic gestures toward reconciliation with white South Africans---may have important social and political effects. In addition to initiatives at the national and international levels, we will devote some attention to transitional justice at the local level. A recurring theme throughout the course will be the connections between atrocities and transitional justice measures intended to address them, on the one hand, and economic justice and development, on the other. Special Instructions: Students have the option to write a long research paper in lieu of the final exam with consent of instructor. After the term begins, students enrolled in the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Class Participation, Written Assignments; Final Exam or Final Paper.

LAW 7088. Defining Discrimination. 2 Units.
Federal, state and local laws prohibit discrimination based on many grounds such as race, sex, religion, national origin and disability. But the operative term, "discrimination," is typically quite vaguely defined in statutory language. As a consequence, courts and legal analysts have developed a number of theories of discrimination. These theories can be inconsistent with each other and with popular definitions of discrimination; for instance, some laws forbidding "discrimination" forbid differential treatment, some permit it under limited circumstances and some require it. Discrimination may or not require a specific mental state ("discriminatory intent") or specific consequences ("discriminatory effect" or "disparate impact"). Arguably, "discrimination" is, in practice, as much a question of values and norms as it is a matter of fact. This class will explore the concept of discrimination in case law, philosophy and legal theory. Special Instructions: Grades will be based on attendance, class participation and (1) short reflection essays on the readings and a short research paper or (2) a long research paper with consent of the instructor. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7089. Originalism and the American Constitution: History and Interpretation. 3 Units.
Except for the Bible no text has been the subject of as much modern interpretive scrutiny as the United States Constitution. This course explores both the historical dimensions of its creation as well as the meaning such knowledge should bring to bear on its subsequent interpretation. In light of the modern obsession with the document's "original meaning," this course will explore the intersections of history, law, and textual meaning to probe what an "original" interpretation of the Constitution looks like. Elements used in grading: Class Participation, Response Papers, Research Paper. Cross-listed with History (HISTORY 252/352).

LAW 7090. Race and International Law. 1 Unit.
This mini-course is an introduction to thinking about race as method for the study of international law. If the international legal order is primarily structured around the categories of nation and state, the notion of race continues to haunt it in important and often unacknowledged ways. The course will explore the tension between (a) race as a social phenomenon that is transnational if not global in scope and (b) the construction of race in contemporary international law, where it is often treated as a domestic matter of non-discrimination norms in human rights law. The course will also examine the present-day legacies of international legal norms and institutions connected to slavery and formal colonialism. Materials will be drawn from contemporary UN human rights mechanisms, state practice and case law, and legal claims by anti-colonial/racial justice movements. This class will meet the first five weeks of the quarter (September 25 to October 23). Elements used in grading: Class evaluation will be based on attendance, participation, and short reflection papers before the five class sessions.

LAW 7091. Gender, Sexuality and Reproduction. 1 Unit.
This mini-course revisits the core elements that have traditionally defined family law: gender, sexuality and reproduction. Historically, family law had two main functions. It created a framework for bearing and raising children, and organized the children's parents' coupledom. Gender, sexuality and reproduction were closely interwoven and subject to certain expectations. Sex was only allowed in the context of marriage, which formed the gateway to reproduction. Children born outside of wedlock had inferior rights. Women were placed under their husband's control to ensure their sexual fidelity. From the 1960's on, societal changes shook the traditional conception of the family to its foundations. Women gained economic independence and started challenging their traditional role in the family. Birth control cut the ties between sexuality and reproduction. The position of marriage as the sole seat of both coupledom and childbearing started to erode. The disconnection of gender, sexuality and reproduction opened family law up to new questions. Why should marriage only be possible between a man and a woman? Can children have more than two legal parents? What is the extent of the reproductive rights of women and men? Is marriage still a relevant legal concept? These and other questions are tackled from a comparative law angle, comparing the approach in the United States and other Western jurisdictions. Students are asked to reflect on the various responses to contemporary family law issues across the Western world. The focus is on general tendencies, not on technicalities. Grades will be based on regular attendance, active class participation and one short response paper. This class will meet the first three weeks of the quarter on Thursday, January 9, 16, and 23.

LAW 7092. Suffering. 1 Unit.
The law is in large part about suffering. As lawyers, we recognize suffering [or we do not], we articulate what suffering means [or does not], and we measure remedies for suffering [or we do not]. Despite the central import of suffering to the law, suffering is elusive. This reading group will explore different treatments of suffering in music, fiction, law review articles, blog posts, and other media and discuss how to apply the insights of artists, theorists, lawyers, and novelists to our understanding of legal suffering. Class meeting dates: The class will meet five Tuesdays from 6:30PM-8:30PM on January 15, 22, and February 5, 19, & 26. Elements used in grading: Attendance, Class Participation. Consent Application: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms).
Same as: Reading Group

LAW 7093. Legal Lags: Regulatory Challenges Posed by Social, Economic & Technological Change. 1 Unit.
This Reading Group will explore the legal and regulatory challenges posed by fast-moving social, economic and technological developments. Examples include privacy regulation in the age of Facebook; transportation safety in the era of autonomous vehicles and drones; energy regulation in the context of climate change and financial regulation in a time of blockchain. Members of the reading group will be asked to share in the preparation and present of discussion materials. Reading group meets five Thursdays. Precise meeting dates TBD by instructor. Elements used in grading: Attendance, Class Participation.
Same as: Reading Group

LAW 7094. Tribal Law. 1 Unit.
A survey of the laws that tribes enact to govern themselves. It considers issues ranging from governance (elections, justice systems, and tribal constitutions), to conflicts between individuals (contracts, property, domestic relations, torts), to regulation of a tribal community's economy. This class will meet 7:15PM to 9:15PM on Tuesday, May 7, Wednesday, May 8, Thursday, May 9, Tuesday, May 14, and Wednesday, May 15. Elements used in grading: Participation, Written Assignments.

LAW 7095. Advanced Administrative Law. 3 Units.
This advanced course will combine theory and practice, drawing from new academic research as well as recent litigation and events. It will explore a series of subjects, including the following: agency design and staffing; the White House's role in agency action; current agency rulemaking and adjudicatory practices; latest issues in the reviewability of agency action and inaction; modern applications of Vermont Yankee, Chevron, and State Farm; state administrative law; and preemption. Requirements will include multiple writing assignments (including very short reading reflections, a draft comment and reflection on an open regulatory proceeding or attendance at and reflection on an agency adjudication, and a 10-15 page paper on a relevant topic). Students must have taken Administrative Law or receive permission of the instructor. Elements used in grading: Attendance, class participation, written assignments, final paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7096. Law and Politics of Bureaucracy. 3-5 Units.
Modern government is bureaucratic government. In the words of Justice Jackson, the rise of the administrative state is likely "the most significant legal trend of the last century and perhaps more values today are affected by [agency] decisions than by those of all the courts." This seminar will survey the major ways in which law and political science have grappled with bureaucratic governance. How do we understand the rise of the administrative state? Why are bureaucracies designed the way they are? How do bureaucracies work in the face of legal and political constraints? And what avenues are there for meaningful regulatory reform? The class is cross-listed in political science and the law school and course enrollment will be by consent of instructor. Students will be responsible for writing short reflection papers and a research paper. Students may take the course for either 3, 4, or 5 units, depending on the paper length. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper. Admission based on application. Instructor consent required. CONSENT APPLICATION: To apply, please complete the following webform by TBA: https://forms.gle/ZBtFE5Xdh2UwBEHb8. Cross-listed with Political Science (POLISCI 228C/428C).

LAW 7097. Educational Rights Workshop. 2-4 Units.
This workshop will be offered to students who were enrolled in the Spring 2020 Education Advocacy Clinic (which was cancelled). The workshop will consider historical legal and policy efforts to ensure that all children have a right to equal educational opportunity and it will look to the future of educational rights advocacy. This workshop will draw from past civil rights work, the experience of the Youth & Education Law Project, and the best thinking on how to move forward. Specific topics may include racial equality in schools, educational resource equity, equal opportunity for students with disabilities, Native American students, and other historically disadvantaged populations, and standards-based reform and expanded school choice as approaches to educational equity. There will be a weekly 2-hour, on-line seminar and discussion. All students will be required to write weekly reflection papers. Students may opt to write a 10-page final paper for an additional unit (3 units - section 02) or an extended 25-page research paper for an additional two units (4 units - section 02). After the term begins, students enrolled in the course can transfer from section 01 (2 units) into section 02 (3 or 4 units) with consent of the instructor. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper. This class will meet once a week for two hours. Day and time TBD by instructors.

LAW 7098. Topics in Constitutional Law. 3 Units.
This class will be a hybrid between a group seminar and independent research projects. The seminar will meet over Zoom every other week to cover basic topics in constitutional law, potentially including interpretive methods, federalism and the separation of powers, emergency constitutionalism, and comparative constitutional law. During the alternating weeks, students will meet individually with the instructor over Zoom to discuss readings they are doing independently, either with the aim of working toward a research project or with the goal of exploring different areas of Constitutional Law. Students may opt either to write five shorter responses papers on readings they complete during the quarter or a final research paper (which will count for R credit). After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. No automatic grading penalty for late papers. Elements used in grading: Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7099. Optimal Size and Scope of Government. 2 Units.
While some political debates are simply efforts to craft a message that will enable the proponent to seize or maintain political power, others are rooted in different conceptions of what government can and should be doing. Opinions about issues ranging from antidiscrimination law, criminal justice, education, poverty, and inequality to gun policy, environmental law, the challenge of climate change, the provision of medical care, national defense, and the need to thwart or respond to pandemics, asteroids, or other rare but potentially catastrophic events are rooted in conceptions of the proper role of government and empirical assessments about its capacities and the benefits and costs from government action or inaction. Based on the course readings and our discussions, those supporting a more limited role of government will be pushed to defend this position and articulate its possible risks and benefits. Those supporting a more activist approach will be pushed to prioritize their programmatic preferences in light of our inherently limited capacity to advance every objective and address every possible problem or threat. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper.

LAW 7100. Reconstruction: Adding the Thirteenth, Fourteenth, and Fifteenth Amendments. 3 Units.
This course will explore the changes to the Constitution made after the Civil War and their enforcement statutes. Materials will primarily be original source texts, supplemented by selected secondary literature. The majority of class time will be devoted to discussion, based on close reading of the materials. Students will be assigned to take the lead on class discussion on particular topics. Topics will include: (1) the constitutional status of slavery prior to the Civil War; (2) the Emancipation Proclamation; (3) the Thirteenth Amendment; (4) the Civil Rights Act of 1866 and President Johnson's constitutional veto; (4) drafting and ratification of the Fourteenth Amendment, with special emphasis on the citizenship clause, due process, equal protection, privileges and immunities, and congressional enforcement; (5) the Freedman's Bureau Act, Ku Klux Klan Act, Enforcement Acts, and Civil Rights Act of 1871; (6) the Fifteenth Amendment; (7) the Civil Rights Act of 1875; (8) early Supreme Court interpretations, and (9) the collapse of Reconstruction and rise of Jim Crow. Within these topics, we will discuss segregation, affirmative action, the state action doctrine, equality with respect to non-racial characteristics, ratification rules, state sovereign immunity, and the role of electoral politics in constitutional interpretation and enforcement. Note: This is NOT a course on current interpretations of the Reconstruction Amendments, but on their historical background. There are no prerequisites. First year law students and non-law students are welcome. Constitutional Law would be helpful but is not required. Grading. Grades will be based partly (20%) on class participation, and partly on either an in-class exam or a research paper on a topic approved in advance by the instructor. Students will choose between the exam and the paper. Grades for students will be on the Honors/Pass/Restrd Cr/Fail system. After the term begins, students accepted into the course can transfer, with consent of the instructor, from section (01) into section (02), which meets the R requirement.

LAW 7101. Election 2020. 1 Unit.
We are living in extraordinary times. The historic convergence of social, economic, and public health challenges has profoundly impacted the lives of millions of Americans. In the midst of great uncertainty, the 2020 U.S. presidential election will be perhaps the most important in our lifetimes. Will Donald J. Trump win re-election amidst high unemployment, deep political polarization, and the COVID-19 pandemic that has upended life as we know it? Or will Joe Biden and a team of Democrats prevail? We will assemble a wide range of expert speakers--including preeminent political, business, foreign policy, and academic leaders--to explore these questions, and more, as we seek to cultivate a broad and informed view of this pivotal election. Each week, the course will examine major topics at stake for the country. Anticipated topics include: the nation¿s coronavirus response; widening inequality across America; racial violence and nationwide protests; the role of technology and media in the election; the state of our economy; the Supreme Court and the rule of law; education policy; climate change; foreign policy; and voting rights. Elements used in grading: Attendance. Cross-listed with the School of Education (EDUC 157).

LAW 7102. Regulation, Evaluation, and Governance Lab: Practicum. 1-4 Unit.
The Regulation, Evaluation, and Governance Lab (RegLab) partners with government agencies to envision how data science can improve administrative governance. Students enrolled in this practicum will be working on projects related to the core mission of the RegLab, using the tools of data science to improve law and governance. The course is open to law and non-law students, with consent of the instructor. Students may take the course for 1 to 4 units and can be graded on the Honors/Pass/R/F or Mandatory Pass/R/F grading basis. Course units and grade basis must be approved by instructor and selected when students enroll in the course in Axess. Elements used in grading: Attendance, Performance, Class Participation, Written Assignments, Final Paper. Consent Application: Interested students may apply to enroll in the course by sending a statement of interest to Daniel Ho at dho@law.stanford.edu. Applications will be considered on a rolling basis.

LAW 7103. Race and Policing: Accountability and Civil Liability. 2 Units.
This seminar will investigate ways in which policing has served as an instrument of racial subordination and violence in the United States. It will also explore how the primary remedial tool for addressing excesses in policing--42 U.S.C. § 1983, enacted in the Klu Klux Klan Act of 1871 and the third Enforcement statute passed after the Civil War--has functioned. Attention will be given to the criminalization of blackness (and other non-white groups), the pathologies of force, and the development of legal rules (e.g., immunity doctrines and standards concerning municipal liability) in Section 1983 litigation. Casework and litigation strategies will be set alongside readings, both theoretical and pragmatic, drawing from the fields of remedies; political philosophy; legal realism and critical race theory; and traditional doctrine. Students will write several brief reflection papers (roughly two pages) exploring how the assigned readings bear on the general themes of the course, and broader reactions to the readings. A longer paper (roughly 7-8 pages) about any topic related to race and policing is also required. Elements used in grading: Grading will be based on the papers and class participation.

LAW 7104. The Youth Justice Lab: Imagining an Anti-Racist Public Education System. 2 Units.
This course will take an interdisciplinary approach to these issues by enrolling students from the Law School and the Graduate School of Education. Specifically, partnering with Public Counsel and IntegrateNYC, Youth Justice Lab students will gather and analyze the relevant historical and empirical research, interview and consult with experts in the field, and draft a series of research and policy memos that summarize our research and provide recommendations.

LAW 7501. Carrots, Sticks, Norms, and Nudges: Changing Minds and Behaviors. 3 Units.
In this class, we will survey the current state of the science of behavior change. By the 1990s, social scientists had already built a massive literature on this topic, and an integrative consensus theoretical framework began to emerge. But in the past decade, this literature has been revitalized by dramatic new ideas and technologies, as well as significant improvements in evaluation methodology. We will focus on four types of strategies that apply equally to influence efforts by individuals, communities, non-profits, for-profits, and government: (1) Carrots: Positive incentives (rewards, awards, praise, recognition, discounts, rebates, property rights, etc.); (2) Sticks: Negative incentives (punishments, fines, shaming, guilt or liability verdicts, costs, etc.); (3) Norms: What other people believe I should do, and what I see others actually do (tipping points, bandwagons, cascades, herding, etc.); and (4) Nudges: Traditional methods of persuasion; use of defaults to encourage certain behaviors; engineering the environment; harm reduction for risky behaviors. We will examine the "how" and "why" and "when" of these approaches, but also their normative implications for ethics, justice, and public welfare. Course requirements include class attendance and participation, and five short written assignments. For Research "R" credit, students may petition to complete one long paper based on independent research. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Class participation, attendance, written assignments and/or final paper.

LAW 7502. Economic Analysis of Law. 3 Units.
This course will provide a broad overview of the scholarly field known as "law and economics." The focus will be on how legal rules and institutions can correct market failures. We will discuss the economic function of contracts and, when contracts fail or are not feasible, the role of legal remedies to resolve disputes. We will also discuss at some length the choice between encouraging private parties to initiate legal actions to correct externalities and governmental actors, such as regulatory authorities. Extensive attention will be given to the economics of litigation, and to how private incentives to bring lawsuits differ from the social value of litigation. The economic motive to commit crimes, and the optimal governmental response to crime, will be studied in depth. Specific topics within the preceding broad themes include: the Coase Theorem; the tradeoff between the certainty and severity of punishment; the choice between ex ante and ex post sanctions; negligence versus strict liability; property rules; remedies for breach of contract; and the American rule versus the English rule for allocating litigation costs. There is no formal economics prerequisite to take this course, though some prior training in economics will be helpful. Elements used in grading: Final exam (open-book) plus three short take-home problems during the quarter. Cross-listed with Public Policy (PUBLPOL 302B). (For students interested in a shorter introduction to economic analysis of law, see Law 7503, "Introduction to Law and Economics," which is a one-unit course also offered during the winter quarter that is graded on a mandatory pass-fail basis.).

LAW 7503. Introduction to Law and Economics. 1 Unit.
This course will introduce students to the "law and economics" way of thinking about the legal system. It is designed primarily for students who have little or no prior training in economics and who are unlikely to take more advanced courses in the field (such as the 3 unit Law 7502, "Economic Analysis of Law"). This class will meet for six 1.5 hour sessions during the first part of the quarter. We will focus on the core bodies of law taught to first-year law students: tort law, contract law, property law, criminal law, and civil procedure. For each of these bodies of law, the economic approach will be described in non-technical terms and then this approach will be used to examine a key case or key issue within that body of law. First-year law students are especially welcome in this course. There are no prerequisites to take this course. Elements used in grading: Two short take-home exercises (graded on a mandatory pass-fail basis).

LAW 7504. Introduction to Organizational Behavior. 3 Units.
(Formerly Law 327) Why do firms exist? Is their sustained success in markets possible? How do leaders choose and execute on a strategy? What should the role of firms be in society? This course will meet once a week to discuss these questions and others about business enterprise. Each week we will focus on interesting and engaging case studies that illustrate key components of strategic management in firms in the U.S. and abroad. The course is designed to be highly interactive, and the principles taught during this course can help students prepare for careers in which they will need to employ strategic thinking. Due to the interactive nature of the course, attendance and in-class participation are graded components. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper.

LAW 7505. Law and Economics of the Death Penalty Seminar. 2-3 Units.
This seminar will examine the legal and policy aspects of a capital punishment regime, with a focus on three primary issues: 1) the Supreme Court's forty-year effort to define what cases can permissibly receive the death penalty and the procedures under which it must be imposed; 2) the arguments for and against the death penalty, with a major focus on whether the death penalty deters, is administered in a racially biased way, or is otherwise implemented in an arbitrary and capricious manner; and 3) what the U.S. and international status of the death penalty is today and what the prospects are for the future in the wake of Justice Breyer's invitation in June 2015 to the Court to rule on the constitutionality of capital punishment in light of the existing empirical evidence. The principle text in the class will be Steiker and Steiker, Courting Death: The Supreme Court and Capital Punishment. Although the readings on deterrence and racial discrimination will entail some substantial statistical analysis, a background in statistics, though helpful, will not be required. Special Instructions: After the term begins, students can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Students taking the course for R credit can take the course for either 2 or 3 units, depending on the paper length. Elements used in grading seminar: attendance, class participation, short response papers, and final paper or approved research with the professor.

LAW 7506. Law and Economics Seminar I. 2-3 Units.
This seminar will examine current research by lawyers and economists on a variety of topics in law and economics. Several sessions of the seminar will consist of an invited speaker, usually from another university, who will discuss his or her current research. Representative of these sessions have been discussions of compensation for government regulations and takings, liability rules for controlling accidents, the definition of markets in antitrust analysis, the role of the government as a controlling shareholder, and optimal drug patent length. Special Instructions: You may write a series of short commentaries on the guest speakers' papers, of which there will be four. Students electing this option will be graded on a Mandatory Pass/Restricted Credit/Fail basis and receive 2 units of credit. Alternatively, you may write a single research paper on a law and economics topic of your choice. This will satisfy the Law School's Research requirement. These papers will be graded on an Honors/Pass/Restricted Credit/Fail basis. (You may write a single longer paper for two quarters if you enroll in the Seminar in the Winter as well.) Students taking the seminar for R credit can take the seminar for either 2 or 3 units of credit, depending on the paper length. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. There is no formal economics prerequisite to take this seminar, though students doing the longer research papers typically have some prior training in economics. Students may take both Law and Economics Seminar I and Law and Economics Seminar II in either order (neither is a prerequisite for the other). This seminar is cross-listed with the Economics Department (same as Econ 354). Elements used in grading: Four commentaries or one research paper. Special note: Professor Polinsky will be the principal instructor, with Professor Donohue participating mainly when there are guest speakers. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7507. Law and Economics Seminar II. 2-3 Units.
topics in law and economics. Several sessions of the seminar will consist of an invited speaker, usually from another university, who will discuss his or her current research. Representative of these sessions have been discussions of compensation for government regulations and takings, liability rules for controlling accidents, the definition of markets in antitrust analysis, the role of the government as a controlling shareholder, and optimal drug patent length. Special Instructions: You may write a series of short commentaries on the guest speakers' papers, of which there will be four. Students electing this option will be graded on a Mandatory Pass/Restricted Credit/Fail basis and receive 2 units of credit. Alternatively, you may write a single research paper on a law and economics topic of your choice. This will satisfy the Law School's Research requirement. These papers will be graded on an Honors/Pass/Restricted Credit/Fail basis. (You may write a single longer paper for two quarters if you enroll in the Seminar in the Autumn as well.) Students taking the seminar for R credit can take the seminar for either 2 or 3 units of credit, depending on the paper length. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. There is no formal economics prerequisite to take this seminar, though students doing the longer research papers typically have some prior training in economics. Students may take both Law and Economics Seminar I and Law and Economics Seminar II in either order (neither is a prerequisite for the other). Elements used in grading: Four commentaries or one research paper. Cross-listed with Economics (ECON 354). CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7508. Problem Solving and Decision Making for Public Policy and Social Change. 3 Units.
Stanford graduates will play important roles in solving many of today's and tomorrow's major societal problems--in areas such as education, health, energy, and domestic and global poverty--that call for actions by nonprofit, business, and hybrid organizations as well as governments. This course teaches skills and bodies of knowledge relevant to these roles, covering topics such as designing, implementing, scaling, and evaluating social strategies; systems thinking; decision making under risk; psychological biases that adversely affect people's decisions; methods for influencing behavior; and pay-for-success programs. The large majority of the course will be devoted to students' working in teams to apply these concepts and tools to an actual problem, with teams choosing whatever problem interests them. The course may be of interest to students in Law and Policy Lab practicums who wish to broaden their policy analysis skills.

LAW 7509. Bayesian Statistics and Econometrics. 4 Units.
This course examines econometrics from a Bayesian perspective including linear and nonlinear regression, covariance structures, panel data, qualitative variable models, nonparametric and semiparametric methods, time series, Bayesian model averaging and variable selection. It explores Bayesian methodology including Markov Chain Monte Carlo methods, hierarchical models, model checking, mixture models, empirical Bayes approaches, approximations, and computational issues and gives some attention to foundations. Elements used in grading: Attendance, Class Participation, Exam.

LAW 7510. Empirical Legal Studies: Research Design. 3-4 Units.
Empirical legal studies have become trendy in the U.S. and are now spreading to law faculties in other countries as well. The popular image of an empirical study is that it involves sophisticated statistical analysis of quantitative data. Often the author of the study starts with a handy dataset and then tries to figure out what question he or she can answer using those data. Useful empirical studies of law and other topics don't start this way. Instead the researcher has a question, derived from theoretical literature or policy debate (or both) and faces the challenge of deciding what types of empirical data, collected and analyzed in what fashion, will best answer that question. The possibilities range from "big data" analyses of hundreds or thousands of documents, tweets or something similar to lengthy, intensive interviews with a few well-placed officials or informants, with just about any other way one might collect factual data -- e.g. online surveys, courtroom observations -- in between. What all of these approaches have in common is not that they involve numeric data but that they attempt to arrive at as objective a view of social, economic, or political reality as is possible. Learning how to design and conduct a survey or how to estimate a regression model or apply AI to vast numbers of texts is (relatively speaking) easy. There are lots of courses at Stanford that you can take on these methods. Learning what approaches are most appropriate to answer the research questions you are interested in is much harder. This seminar is directed at helping you think through the design of an empirical research project -- whether quantitative, qualitative or both -- from identifying researchable questions to collecting and analyzing data to presenting your results to academic or policy audiences. You will start with a broad question (or several questions) of interest to you, based on your previous experience, other studies or reading. By the end of the seminar you will have identified questions you can investigate empirically (perhaps in addition to theoretically) and figured out what research approach(es) will work best for you. The product of the seminar will be a preliminary research proposal, whether for your master's thesis this year or some other purpose in the future. Although plans for the fall quarter are still somewhat in flux, I expect to teach this seminar online with the assistance of the SPILS teaching fellow. I hope it will be possible to meet in person at the beginning of the quarter for a few introductory sessions to begin to get to know each other. In any event, I will be available throughout the quarter for one-on-one zoom sessions to discuss your research. Special Instructions: JD students can take the class with consent of the instructor. After the term begins, JD students accepted into the course can transfer from section (01) into section (02), which can potentially satisfy the R requirement, with consent of the instructor. Consent Application for JD students: To apply for this course, JD students must e-mail Deborah Hensler at dhensler@stanford.edu. This course is REQUIRED for all SPILS fellows and BY CONSENT for all other students. Elements used in grading: Class participation, attendance, written assignments and final paper.

LAW 7511. Sociology of Law. 3-4 Units.
This course explores major issues and debates in the sociology of law. Topics include historical perspectives on the origins of law; rationality and legal sanctions; normative decision making and morality; cognitive decision making; crime and deviance, with particular attention to the problem of mass incarceration; the "law in action" versus the "law on the books;" organizational responses to law, particularly in the context of sexual harassment and discrimination in education and employment; the roles of lawyers, judges, and juries; and law and social change with particular emphasis on the American civil rights movement. Special Instructions: Students are expected to attend a weekly TA-led discussion section in addition to lecture. Sections will be scheduled after the start of term at times when all students can attend. Paper requirements are flexible. Cross listed with the Sociology Department (Soc 136/236). See "Special Instructions" in course description above. Elements Used in Grading: Class participation, paper proposal, three short papers and a final paper (see syllabus for details).

LAW 7512. Statistical Inference in Law. 3 Units.
Drawing inferences from quantitative data lies at the heart of many legal and policy decisions. This course provides the tools, concepts, and framework for lawyers to become sophisticated consumers of quantitative evidence and social science. The course will begin with an overview of basic statistical concepts that will bring everyone to the point where they can read and evaluate empirical studies. We will then focus on a number of empirical debates -- for example, does the death penalty deter murder, do concealed handgun laws influence crime -- as a springboard to teach the logic and terminology of statistical/econometric evaluation of law and policy (regression, statistical significance, identification). No background, beyond high school algebra, is assumed. Anyone who 1) will work in litigation (whether corporate, securities, antitrust, employment discrimination, environmental law) or in public policy, 2) wants to be a better citizen or 3) wants to understand the challenges of establishing causal relationships, and who doesn't already have a strong understanding of statistics will find this course useful. Elements Used in Grading: Attendance, written and oral assignments, response papers, and a final project. To avoid math phobias and fears about ringers from the econ or stats departments, the course is graded as a mandatory pass-fail course.

LAW 7514. Behavioral Law and Economics. 2-3 Units.
The field of "law and economics" provides important lessons for how legal institutions should be designed, but many of those lessons rely on the assumption that individuals behave in a way that maximizes their self-interest. Research from psychology and behavioral economics casts doubt on this assumption in many legal contexts. This seminar will explore a range of topics about human decision-making, focusing on how research in this area should inform the design of policy. Special Instructions: Grades will be based on class attendance, class participation, and either several short reflection papers (section (01)) or an independent research paper (section (02)). After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Students taking the course for R credit can take the course for either 2 or 3 units, depending on paper length. Elements used in grading: class participation, class attendance, reflection papers or research paper. Early drop deadline.

LAW 7515. Law and the New Political Economy. 3 Units.
In this seminar, we consider key legal topics through the lens of political economy -- that is, is the interplay among economics, law, and politics. This perspective has had a powerful and growing impact on how scholars and judges view the nature and scope of law and politics in the modern regulatory state. We look at a range of topics from this perspective, including: constitutional law, statutory interpretation, administrative law and regulation, and jurisprudence -- all with an eye toward better understanding the dynamic interaction among law, politics, and social change. There are no prerequisites for this seminar. Elements used in grading: The final assignment will be a substantial research paper. Cross-listed with Political Science (POLISCI 225L/325L).

LAW 7518. Social Science of Identity and Prejudice. 1 Unit.
This a one-unit, Law Mandatory P/R/F course that grows out of the recommendations of the 2018 Faculty and Student Working Group on Diversity and Inclusion. The course is built around a series of outside speakers on identity and prejudice. These speakers will include the sociologist Lawrence Bobo (W.E.B. Du Bois Professor of Social Sciences at Harvard) and the psychologist Mahzarin Benaji (Richard Clark Cabot Professor of Social Ethics at Harvard). The lectures will be open to all members of the Stanford community. Students who wish to get course credit will be required to attend the lectures, participate in faculty and student-led discussions and write reflection papers. The course consists of 10 hours of lecture and discussion. The course is formally offered in the Spring Quarter, 2019 and credit for the course will be given at that time. However, the lectures and discussions will take place throughout the school year. The first of the lectures will take place on Wednesday, October 31 at 4 pm. Students unable to attend the lecture on October 31 may still participate in the upcoming lectures to be announced. Students who wish to take the course should sign up now so as to be notified of the time of the lectures and discussion sessions. Students with questions about the course should email Joseph Bankman at jbankman@stanford.edu. Begin in Autumn Quarter and run through Spring Quarter. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7519. Empirical Legal Studies Workshop. 2-3 Units.
Empirical Legal Studies uses data to inform legal and policy debates. Traditional empirical legal scholarship uses methods such as observational studies and experiments to examine the effects of various policies or legal decisions. More recently, advancements in technology have given rise to a new strand of research that uses tools such as machine learning and natural language processing to study legally relevant datasets at a large scale ("Big Data"). This seminar will present a range of topics that highlight current empirical legal scholarship in these areas. A theme of the course will be comparing and contrasting traditional empirical approaches with the techniques emerging from machine learning and big data. During roughly half of the sessions, we will host a guest speaker who will present an ongoing empirical research project. Familiarity with data science or statistics is not required. Special Instructions: You may write a series of short commentaries on the guest speakers' papers, of which there will be four. Students electing this option will be graded on a Mandatory Pass/Restricted Credit/Fail basis and receive 2 units of credit. Alternatively, you may write a single empirical research paper on a legal topic of your choice. This will satisfy the Law School's Research requirement. These papers will be graded on an Honors/Pass/Restricted Credit/Fail basis. Students taking the seminar for R credit can take the seminar for either 2 or 3 units of credit (section 02), depending on the project. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. There is no formal prerequisite to take this seminar, though students doing the longer research papers typically have some prior training in statistics. Elements used in grading: Attendance, Class Participation, Four commentaries or one research paper.

LAW 7801. Leadership and Influence Skills for Lawyers. 2 Units.
You want to important, meaningful, and impactful work. Leaders in law and business say they need trusted advisors who excel in skills like problem solving, innovation, creativity, ability to deal with ambiguity and complexity, and exceptional communication and persuasion skills. Research demonstrates that these skills can be learned and strengthened. This course focuses on developing these critical skills for the career that you are developing. Using neuroscience techniques about ways in which to optimize adult learning, we will use readings and hands-on exercises to assess and develop skills in strategic decision making, influence techniques, motivating others to work toward share goals and adapt communication preferences for clients and colleagues. The class includes real-time feedback about classroom exercises and writing short reflection papers to tie past and current experiences to identify areas for development and help create new habits for success. Elements used in grading: Class participation and attendance, course exercises and written assignments.

LAW 7802. Accounting. 3 Units.
Accounting is the language of business. In this course, we will learn basic accounting principles. We will focus on recent changes in accounting standards, such as changes to revenue recognition principles, that are likely to create difficulties for companies in the coming years. For example, we will consider how these changes affect contractual language and financial covenants. In this regard, this class differs significantly from a typical introductory accounting class and is more transactional-focused. Class time will be allocated to a combination of short lectures, group work, and discussions of the assigned readings. Evaluation will be based on problem sets assigned throughout the quarter. Please note that we focus on financial accounting principles--we will not cover tax law. Elements used in grading: Written Assignments. This class does not overlap with Global Capital Markets (students can take both).

LAW 7803. Alternative Dispute Resolution: Law, Practice, and Policy. 3 Units.
Clients in disputes increasingly call for lawyers -- whether transactional or litigation -- with the skill to navigate within a broad range of alternative dispute resolution processes. In this course, you will learn about the variety of dispute resolution procedures that operate under the ADR umbrella, within and outside of the court system (including mediation and arbitration). The goal is for students to understand the law and policy behind these alternatives relative to court adjudication, to be able to select the appropriate process(es) and advocate for a client effectively. The teaching team and guests include third party neutrals and advocates from a range of contexts, including federal court, private mediation, private and public arbitration, and corporate legal counsel. Special Saturday class. After the term begins, students accepted into the course can transfer from section (01) into section (02) which meets the R requirement, with consent of the instructor. Elements used in grading: Class participation, discussion; three written assignments, final paper.

LAW 7804. Alternative Dispute Resolution: Practicum. 2 Units.
Effective client representation increasingly calls for lawyers with skill within a broad range of alternative dispute resolution processes. In this course, you will have the opportunity to observe two day-long ADR processes being handled by Bay Area third-party neutral practitioners at the U.S.D.C. for Northern California and JAMS. Students in the class will meet three times to review relevant law and policy, and to discuss observed cases, including a factual and legal analysis of the observed cases, the practice skills of the respective counsel and mediators, and any ethical issues noted. Grades will be based on seminar participation and two short papers. Co- or Prerequisites: Mediation or ADR. Elements used in grading: Class participation, attendance and written assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7805. Career Development: Alchemy, Law, and Practice. 2 Units.
Career development is embedded in life development. This course offers a space and time for each student to consider both through course materials, class interactions, and a series of reflection papers. The course includes one class facilitated in collaboration with the Office of Career Services focusing on a formal assessment via one or more psychological tests offered to each student. The materials for other class meetings are thought provoking works that have proven to be salient for considering career and life direction. Images and material from alchemy that embody what many consider to be a primary set of symbols for personal transformation provide a backdrop for the course. The course benefits from the collaboration of Michael Guasperini, a mythologist and lawyer whose primary vocation is working intimately with lawyers and firms during periods of personal and institutional transition. Mr. Guasperini has deep experience with the personal lives of hundreds of lawyers at various ages and levels of professional development, providing a valuable and practical perspective for self-reflection. Elements used in grading: Written Assignments (reflection papers).

LAW 7806. Dispute System Design. 3 Units.
Lawyers are often called upon to help design systems for preventing, managing, and resolving conflicts that support or supplant existing legal structures. The crisis of September 11 led Congress to pass a law creating the September 11 Fund; a California Supreme Court challenge to its method of resolving health care disputes led Kaiser Permanente to reform its arbitration system; years of atrocities committed against the people of South Africa, Chile, and many other countries led to the formation of truth commissions. Lawyers often lead the design and implementation of these conflict resolution systems. Increasingly these systems utilize technology to improve efficiency, accessibility, and transparency for disputants. In this class we will apply an analytic framework (including stakeholder assessment and conflict resolution process options) to a series of case studies and use simulations to understand different kinds of dispute systems. We will also examine the growing use of online dispute resolution (ODR), the new challenges it poses to neutrals and system designers, and evolving best practices for the use of technology in dispute system design. Special Instructions: Grades will be based on class participation and Option 1 (section 01) a series of weekly short written assignments plus a 10-page case study; or Option 2 (section 02) weekly short written assignments plus a 26-page research paper involving independent research. Students electing option 2 (section 02) will be graded on the H/P/R/F system and will receive Research (R) credit. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Negotiation Seminar (LAW 7821) is preferred but not required. The class will meet on one Saturday. Elements used in grading: Class participation, attendance, written assignments, and final paper. Attendance at the first class is mandatory.

LAW 7807. Facilitation for Attorneys. 2 Units.
Most lawyers and other professionals spend a significant amount of time in meetings and working in teams or groups for a variety of purposes, and many report that this can be a frustrating experience. As the practice of law becomes more complex, it includes more and more situations where groups of people need to work together planning complex legal strategies, developing firm policies, working with corporations or other multi-person clients, or participating in shareholder meetings, public commissions and councils, corporate and non-profit board of directors meetings. Group functionality and outcomes can be significantly improved by any group member who has the awareness and skills of a facilitator, whether or not that person is formally designated as the facilitator. The interactive class methodology will combine discussion with many exercises and roleplays, putting facilitation tools into practice every step of the way. We will examine group dynamics and learn skills used by professional facilitators to prevent common problems and elicit the best work of a group. We will explore how to prepare effectively with clear goals, collaborative problem definition, inclusive process design and a well-structured agenda. We will also discuss and practice core meeting management skills such as how to balance voice and participation, build consensus, inspire creativity and promote principled evaluation and decision-making. Finally, we will identify and apply communication skills that keep group sessions productive, and tools to manage difficult moments and problem behaviors. Class Schedule dates: Fri 10/23: 3:30-9p, Sat 10/24: 9-1p, Sun 10/25: 9-1p, Fri 10/30: 3:30-9p. Elements used in grading: Class attendance, participation and final paper.

LAW 7808. Foreign and International Legal Research. 2 Units.
(Formerly Law 461) This course will introduce students to concepts and skills used in international and foreign law research. Students will learn to construct successful research strategies for questions of foreign law, public international law, and private international law. Both primary and secondary authority will be covered in various formats. Students will understand how different legal systems and cultures influence the use and assessment of legal resources. The course will also equip students to critically evaluate current and future research tools. No pre-requisites or foreign language ability required. Advanced degree and non-law students are welcome to enroll in the course. Learning Outcomes -- *Identify primary and secondary sources of materials on international law and foreign legal systems. *Develop effective research strategies using online and print resources. *Critically evaluate research tools for international and foreign legal research. *Appreciate cultural and historical influences on the development of legal systems and their relevance to legal research. *Understand the role of language and translation tools in researching foreign and international law. Elements used in grading: Weekly assignments.

LAW 7809. Advanced Legal Research: Litigation. 3 Units.
This course aims to prepare law students for research in litigation practice and judicial clerkships. More broadly, the primary goal is to enable students, now and later in their professional lives, to map out a coherent plan of action when asked to research a topic previously unfamiliar to them. Students should acquire a solid knowledge of research tools and a frame of reference that enables them to function independently and competently in the complex world of legal information. Students will accomplish the following learning objectives: 1) formulate rational and efficient research strategies incorporating relevant sources of legal information; 2) find and effectively use primary and secondary legal sources in any format; and 3) increase critical skills in assessing and the variety of information resources relevant to the practice of law. Learning legal research requires a hands-on approach, so students will complete in-class exercises and homework assignments -- all of which contribute to grading. There will not be a final exam. This course is open to Stanford graduate students with permission from the instructor. Attendance, Class Participation, Written Assignments.

LAW 7815. Advanced Legal Writing: Business Transactions. 3 Units.
This course offers comprehensive preparation for the practice of the transactional lawyer. Students will learn foundational tools to write clear, effective, plain language business contracts and analyze other transactional writings used to manage and document complex business transactions. The course provides a selective mix of interactive live Zoom and recorded lectures, and a wide range of realistic drafting and research exercises. These exercises help students sharpen their analysis, research, drafting, and editing skills, and develop sensitivity to the expectations of attorneys and clients with whom they will be working. Students will learn to interpret provisions in a variety of business agreements. Issues related to ethics in a transactional practice will also be addressed. The course should appeal especially to students interested in working for a law firm and practicing transactional law (be it corporate, venture, debt, intellectual property, mergers and acquisitions, entertainment, real estate, etc.). It will also appeal to those interested in business litigation, or those curious about the work of transactional lawyers. SPECIAL INSTRUCTIONS: Students on the waitlist for the course will be admitted if spots are available on the basis of priority and degree program. Early drop deadline: Students may not drop this course after the first week of class. Corporations (Law 1013) is a prerequisite for all but for LLM students in the CGP program only (not other LLM programs). Elements used in grading: Class participation, attendance, written assignments, and final paper. Please consult the syllabus for paper and assignment deadlines. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7816. Advanced Legal Writing: Litigation. 3 Units.
Building on the skills developed in Federal Litigation, this course will give students additional practice with legal analysis, argument structure, and writing in the pre-trial context. Students will draft a predictive office memo, an e-mail memo, and memorandum in support of a motion for summary judgment. Students also will complete short writing exercises in class to practice skills such as omitting surplus words, preferring active voice, using concrete words, punctuating carefully, etc. The goals of this class are to help students organize facts and legal rules and analysis in a succinct and logical way, to deepen their understanding of legal reasoning and writing, and to hone their advocacy skills. The course should appeal to students interested in litigation practice and those wishing to strengthen their writing. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. Elements used in grading: Written work, class participation, and attendance.

LAW 7817. Advanced Legal Writing: Global Litigation. 3 Units.
This course offers an introduction to the practical, procedural and analytical aspects of private transnational litigation in the U.S. and Europe. Through a case simulation students will examine differences in legal systems and how to effectively navigate the challenges and opportunities presented when litigation goes global. With three instructors and limited student enrollment, the class provides an excellent opportunity for students to develop the research, writing and oral advocacy skills necessary for a successful transnational litigation practice. Elements used in grading: class participation, attendance, assignments.

LAW 7818. Advanced Legal Writing: Technology Transactions. 3 Units.
This course covers the foundations of drafting contracts in a modern commercial setting, primarily through weekly hands-on writing exercises that illustrate business problems commonly found in today's technology transactions law practice. Topics to be addressed will include basic contract anatomy, common clause ambiguities, structuring for readable "flow", and drafting-for-negotiation techniques. Final examination will involve crafting a full-length technology license agreement from a rough term sheet that appears to have been pecked out on some sort of mobile device. No prior business law coursework, intellectual property background, or martial arts proficiency required. Elements used in grading: Class Participation, Attendance, Written Assignments, Final Exam.

LAW 7819. Mediation. 3 Units.
As law is practiced today, attorneys are far more likely to participate in multiple mediations than trial. Mediation has become the preferred approach to conflict resolution in most states and many parts of the world. With the assistance of a mediator, parties can reach agreements at any stage in a dispute, in some cases avoiding litigation altogether, in other cases agreeing just before trial or when the case is on appeal. The course goals are to understand the nature of conflict and principles of conflict management, to develop the oral and written communication skills essential to effective mediation, to evaluate various mediation models and mediator styles, to practice all of the phases of a mediation and appropriate use of caucus, to consider the policy and ethical implications of the expanding use of mediation, and to develop the skills necessary to represent clients in mediation. The class methodology is highly experiential, with more than half of the class consisting of practice from the perspective of client, advocate and mediator. The course also includes readings and discussions, brief interactive lectures, demonstrations and videotaped sessions. Each student receives individual feedback from an experienced Bay Area mediator and develops skills that will be useful in client development, interviewing, counseling, fact development and legal analysis, negotiation and a variety of contexts beyond mediation. You are encouraged to apply if you have taken (or are concurrently taking) the basic negotiation class or its equivalent in studies or experience. Elements used in grading: Class participation, attendance at all classes, and assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7820. Moot Court. 2 Units.
The major moot court activity at Stanford Law School is the Marion Rice Kirkwood Memorial Competition, which takes place each year during Autumn and Winter terms. Autumn term will be dedicated to brief writing and completion of the written portion of the Competition; the oral argument portion of the Competition will be conducted during the first four to five weeks of Winter term. Students on externship and in clinics may enroll, if permitted by their respective programs. In Autumn term there are only a few class meetings, including a guest lecture on ethics, which can be recorded. In addition, there are individually scheduled conferences. In Winter term, there are optional class meetings and practice arguments. Participation in the oral argument competition is mandatory, which includes attendance at the semifinal and final arguments. The preliminary rounds are held in the evening; the semifinal and final rounds are in the late afternoon. Prior to the Competition itself, materials and lectures are provided on research, brief writing, and oral advocacy techniques. Registration for the Kirkwood Competition is by team. Each team is required to submit an appellate brief of substantial length and quality and to complete at least two oral arguments, one on each side of an actual case. The first draft of the brief is reviewed and critiqued by the course instructors. The course instructors and the Moot Court Board Presidents score the final draft of the brief. The course also offers digital recording and critiques of practice oral arguments. Panels of judges and local attorneys serve as judges who score the oral argument portion of the Competition. Teams are selected for the quarterfinal, semifinal, and final round of the Competition based on their brief and oral advocacy scores. The final round of the Competition is held before a panel of distinguished judges, and the entire Law School community is invited to attend. Special Instructions: In order to maintain academic standards, enrollment in the Kirkwood Competition is limited to 20 two-person teams. This limit will be strictly enforced. Registration forms will be distributed Spring term. If the program is oversubscribed, a lottery will be held to determine participating teams and to establish a waiting list. The final drop deadline for the course will be on Thursday of the first week of classes. Enrollment in both Autumn (2 units) and Winter (1 unit) terms is required. The final grade for both Autumn and Winter terms and the Professional Skills credit will be awarded upon the completion of the course requirements. Registration and Consent Instructions: Instructions on how to register for the Moot Court competition are sent out to students each year in Spring term for the coming academic year. The registration process is separate from the regular class registration process. Early application and drop deadlines. Elements used in grading: Satisfactory completion of appellate brief and oral arguments.

LAW 7821. Negotiation. 3 Units.
As a lawyer, you will probably negotiate more than you do anything else. You will negotiate not just over cases, but any time that you need something that you cannot get alone. You will negotiate with your boss, your clients, your paralegal, and all of their counterparts (plus the lawyers) on the other side. You will negotiate with "the system" whether it is the court, the government, the structure of society, or the law. You will also continue to negotiate with your family, your friends, and yourself. This course is designed to: (1) develop your understanding of negotiation, and your awareness of yourself as a negotiator; (2) give you some tools and concepts for analyzing and preparing for negotiations; (3) enhance your negotiating skills through frequent role plays, reflection, and feedback; and (4) teach you how to keep learning from your own negotiation experience. In addition to negotiation skills and theory (including interviewing, counseling, negotiation, fact analysis, legal analysis, and collaboration), you will be introduced to issues of representation, ethics, and the place of negotiation in our legal system. The Negotiation Seminar is an intense, interactive course. We will require weekly preparation of readings, simulations, and written assignments. Basically, you will learn by reading about specific research and doing simulated negotiations -- figuring out with the rest of the class what works and what does not, writing about what you're learning, and trying again. Because participation in the simulations is central to the course, attendance at all classes is required. Since we will begin our simulation exercises on the first day of class, all students who are interested in taking the course (whether enrolled or on the wait-list) need to be present for the first class. (Students who are not present will be dropped from the class or waiting list unless they have made previous arrangements with the instructor.) Add-drop decisions need to be resolved at the first class. Elements used in grading: Class participation, attendance and written assignments.

LAW 7822. Negotiation on the Ground: Discussions at the Intersection of Theory and Practice. 1 Unit.
We can read any number of books about negotiation, but how do the concepts and principles play out in the real world? This dinner colloquium will meet with distinguished negotiators working in a variety of fields to reflect on and draw lessons from their deep and diverse experience. Guests for last year spoke on: studio and talent perspectives in entertainment negotiations; working relationship between inside and outside transactional counsel in technology M&A; prosecution and defense perspectives on negotiating in the criminal justice system; and public policy negotiation on gun law issues. For each session, students will read a background piece on issues in the selected area of legal practice and submit a discussion question to facilitate a discussion with the guests on client counseling, factual and legal analysis, negotiation and conflict resolution options, and collaboration. Pre-Requisite: Negotiation Seminar or substantial equivalent. Schedule: Monday, 5:30-8:00pm. There will be an organizing class on March 29, 5:30-6p, plus four presentation/dinner discussion sessions in April and May. Elements used in grading: Class participation, assignments and attendance.

LAW 7823. International Negotiation: Solving Intractable Conflict. 3 Units.
This course will provide the building blocks for negotiating and resolving intractable conflicts around the world. How do we negotiate effectively under conditions of uncertainty and distrust? How can we build effective working relationships even when there is a history of enmity, violence, or spoilers at the table? The goal of this course is to develop each student¿s personal negotiation tool box to effectively analyze, prepare for, and participate in, negotiations that take place in complex settings around the globe. We will learn by doing. The course emphasizes experiential learning and negotiation simulations, as well as case studies and engaging directly with professionals in the field. Students will have opportunities to reflect on their experiences, provide one another with direct feedback, and receive feedback from instructors and expert guest speakers. The course focuses on conflict settings in the international arena (including natural resource management and extractive industries, ceasefire negotiations, and peace agreements), but students will develop skills to help them be effective in any complex negotiation setting from their local communities to the workplace. The course is designed for students who have already taken Basic Negotiation, but students who have not taken Basic Negotiation may still be admitted if they attend an intensive bootcamp in basic negotiation theory and methods the first Saturday of spring quarter. This course is open to cross-registration by graduate students in a variety of departments and programs. SPILS students and International Policy Studies students are especially encouraged to enroll. Grading Criteria: The seminar requires that students attend all classes, do the assigned reading, prepare for and actively participate in class and simulations, and write a series of short assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit the Consent Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms).

LAW 7824. Advanced Negotiation: Environmental Policy. 3 Units.
Advanced negotiation courses are designed to take students beyond the two-party, lawyer-client negotiations that were the focus of the Negotiation Seminar, to examine many facets of negotiation complexity, both in terms of the participants and topics. This section of Advanced Negotiation will focus on two-party and multi-party environmental policy negotiations, working in teams, group decision-making, coalition management, and negotiating on behalf of organizations to solve complex problems in environmental policy. The goals of the class are twofold, for students (1) to acquire an added theoretical base beyond what was covered in the Negotiation Seminar through which to analyze (in terms of law and facts), prepare for, participate in and facilitate more complex, multiparty negotiations, and (2) to expand skills through deeper examination of various actual negotiation cases and complex simulations, including ethical responsibilities to the client and the public, opportunities for leadership, and collaboration. Special Instructions: Attendance at and participation in the simulations is required. Passing is dependent upon active preparation and participation, submission of four assigned short reflection papers, and completion of a selected case analysis (a completed or ongoing environmental policy dialogue). Prerequisite: Negotiation Seminar (Law 7821) or its substantial equivalent. Advanced degree students (and graduate students in other departments and programs) are encouraged to enroll. The course is designed for students who have already taken a basic negotiation seminar, but students who have not taken Negotiation may still be admitted if they attend an intensive bootcamp in basic negotiation theory and methods the first Saturday of winter quarter, January 9. Elements used in grading: Class participation and engagement, including simulations; attendance; preparation for and contributions to discussion; four short written assignments; and a 10 page case analysis.

LAW 7825. Advanced Negotiation: Transactions. 3 Units.
Advanced Negotiation takes students beyond the two-party, lawyer-client negotiations that were the focus of the Negotiation Seminar. This course, Advanced Negotiation: Transactions, places the student in more difficult and more nuanced transactional simulations, working as individuals, lawyer-client pairs, and teams to negotiate on behalf of business entities, governments, unions and NGOs. Simulations may include critical-path supply agreements, vendor/collaborator contracts, cross-cultural joint ventures, airline reorganization, founder/VC deals, big pharma arbitration resolution and multi-party private sector/government negotiations. The goals of the class include developing a designer's mindset for strategic preparation and client counseling on both facts and law, and tactical adjustments to changing scenarios; ethical responsibilities; deeper analysis and work on the persuasive elements (oral and written) of negotiation; coalition formation and management; improved tactical skills, methods of questioning, response control and, ultimately, improved confidence and competence. Special Instructions: Attendance at and participation in all simulations and debriefing sessions is required. Passing is dependent upon this active participation, and a series of short papers and/or in-class presentations. Prerequisite: Negotiation Seminar or its substantial equivalent, as assessed by the instructor. This class is limited to 20 students, 16 from SLS selected by lottery, with an effort to have 4 non-law students by consent of instructor. Elements used in grading: attendance, participation in both the negotiations and the debriefings, thorough and meaningful preparation, and all other assigned work.

LAW 7826. Oral Argument Workshop. 2 Units.
Building on the skills developed in Federal Litigation, this simulation course will give students the unique opportunity to argue and judge pretrial motions from actual federal court cases. The instructor will provide the written briefs, and each week half the class will argue and half the class will judge a motion. Preparation will require reading the cases cited in the briefs and coming to class ready either to present an argument (attorneys) or interrogate counsel (judges). Students will critique each other both orally and in writing, and the instructor will provide oral critiques of all arguments. The goals of this class are: to train students to argue in court; to provide them with a chance to polish their public speaking skills and practice thinking on their feet; to prepare students to engage in challenging dialogue with both colleagues and future clients; and to improve self-confidence. Thus, while the context of the course is litigation, the objectives are much broader than the mastery of litigation technique. This course is not open to first year Law School students. Priority will be given to those students who commit to taking the class if given consent to enroll. Please indicate your commitment on the consent form. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. Elements used in grading: Class attendance, participation, and preparation.

LAW 7827. Advanced Legal Writing for American Practice. 3 Units.
This course orients advanced degree students to a range of legal writing genres used by lawyers in practice in American law offices and before American courts. At the core of these genres are the techniques of legal research, objective and persuasive legal writing, and related legal analysis in a litigation context. The course presents students with realistic legal writing scenarios that they address in and out of class. Students perform legal research and analysis as they complete assignments designed to incorporate methods that American lawyers use to analyze typical legal problems while advocating on behalf of a hypothetical client in a litigation matter. This class is limited to Advanced Degree Students. Elements used in grading: Class Participation, Attendance, Written Assignments.

LAW 7828. Trial Advocacy Workshop. 5 Units.
In 2020 all sessions including the end-of-quarter trials will be conducted via Zoom. This lawyering skills course gives students an orientation to and constant practice in most basic pretrial and trial advocacy skills areas. Topics include: taking and defending depositions, trial evidence, including admission of trial exhibits in evidence and use of prior witness statements to refresh and impeach a witness, jury selection and voir dire, opening statements, direct and cross examination of witnesses, and closing arguments. Students will try a full case through to verdict before a federal or state judge at the end of the course. There will be two classes (one lecture and one workshop) per week on most weeks from 4:15-9:00 PM, plus the final weekend of trials, Saturday and Sunday November 14 and 15. Each day's ending time will vary; most sessions will end before 9:00 PM. For details, please refer to the 2020 Trial Advocacy Workshop Schedule at https://tinyurl.com/TrialAd2020. The format for each topic begins with a lecture/discussion featuring video vignettes of various techniques and a demonstration by an expert trial lawyer. Following the discussion portion of each topic are small group sessions during which each student practices the skills involved. Constructive feedback is given after each exercise by two of our faculty of very experienced Bay Area litigators and judges. Many exercises are also videoed for further one-on-one critique by another faculty member. The central philosophy of the workshop is that skills are best acquired in an experiential manner by seeing, hearing, and doing. Frequent short, well-defined exercises followed by immediate constructive feedback in a non-competitive, non-threatening atmosphere provide the core of the program. The workshop directors are Tim Hallahan, Judge Sallie Kim and Sara Peters. Tim has taught similar programs at Harvard Law School, the University of San Francisco School of Law, Berkeley Law, the California Continuing Education of the Bar, and in private and public interest law firms around the country. Sallie is a United States Magistrate Judge in San Francisco and was a partner in a civil litigation firm and also previously taught a class at SLS and served as Associate Dean for Student Affairs. Sara is a trial attorney for a personal injury law firm in San Francisco. She graduated from Stanford Law School in 2008 and coaches the Stanford Law School Mock Trial Team. Special Instructions: If you haven't taken Evidence you must contact Tim Hallahan before the course begins for some brief pre-course reading assignments. There are no papers or tests, but attendance at every session is required. Since we will begin our trial advocacy exercises on the first day of class, all students who are interested in taking the course (whether enrolled or on the wait-list) need to be present for the first class. (Students who are not present will be dropped from the class or waiting list unless they have made previous arrangements with the professor.) Add-drop decisions need to be resolved at the first class; no drops will be permitted thereafter. Exceptions to this rule will be made by petition only. Mandatory attendance. Elements used in grading: Attendance and in-class assignments. In addition, the Trial Advocacy Workshop is approved to offer Experiential Learning (EL) Credit. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7830. Topics in American Legal Practice. 1 Unit.
(Formerly Law 733) This course is designed to introduce international students to American legal practice. To do this, the course begins in the spring quarter by working with students to look ahead to their summer experience and begin to identify ways in which the culture or norms of the practice setting might be distinctive, or otherwise differ from the legal, political, or workplace culture of their home country. Then in the fall quarter, students are asked to write a 10-page paper, situated in the relevant literature(s), that uses the summer experience to examine one such set of issues. Elements used in grading: Final Paper.

LAW 7831. Transition to Practice: Selected Topics. 1 Unit.
This course is designed to explore issues of professional identity for students transitioning into the legal profession. It will begin in the spring quarter and continue into the fall quarter, and will require the writing of a paper. Elements used in grading: Final Paper.

LAW 7833. Spanish for Lawyers. 2 Units.
The Spanish for Lawyers course offers students the opportunity to enhance existing Spanish communication skills in legal practice. The goal of the class is to offer students an opportunity to practice their Spanish in a simulated legal setting and to learn about cultural humility and trauma-informed interviewing. The course will introduce Spanish legal terminology in areas such as immigration, criminal, employment, housing, family law, corporate law, and politics. With an emphasis on speaking and listening comprehension through in-class partner activities and dialogue, the class will teach students how to interact with clients who possess limited English proficiency. Students will also be given homework assignments, including grammar exercises, to assist students with Spanish mastery. Class instruction will take place predominantly in the Spanish language. The course is designed to be beneficial for students with varying levels of Spanish language ability, up to and including students who are native speakers of Spanish. The level of difficulty of the course presupposes that students already have an intermediate level of Spanish, which includes familiarity with the essentials of Spanish grammar and ability to engage in intermediate verbal communication. Elements used in grading: Attendance, Class Participation, Written Assignments.

LAW 7836. Advanced Legal Writing: Appellate Litigation. 3 Units.
This course will bring the Instructor's decades of experience in high-stakes legal writing to bear on the drafting of appellate briefs: what's good, what's bad; what works, what doesn't; and how to get from here (your frustratingly blank computer screen) to there (a finished brief that assists, persuades, and impresses appellate judges). Through a combination of lectures, discussion, selected readings, and writing exercises (both individual and collaborative), we will cover most of the key topics in appellate writing, including: The differences between appellate and trial-court writing; How appellate judges think, and how to give them what they need; Basic appellate procedure; The pervasive influence that the standard of review has on everything in the brief; Identifying and articulating winning issues and themes (and the difference between the two); Framing appellate issues to advantage your client and neutralize your opponent's best arguments; Getting your arms around the trial-court record; The components of an appellate brief, their purposes, and what it takes to make each component successful; Crafting a narrative that grips the imagination; Structuring appellate arguments; Constructing great headings and subheadings; Writing clear, graceful, properly constructed sentences devoid of brain-killing ambiguities; Linking the entire brief together--using headings, paragraphs, sentences, and individual words--so that it seems to flow effortlessly from point to point to reach the seemingly ineluctable conclusion that your client should win; Lessons from scientific studies of cognition and reading; Cultivating the critical distance you need to edit your own writing; Editing other lawyers' writing effectively; Obtaining discretionary appellate review; and Typography and layout. Elements used in grading: Attendance, Class Participation, Written Assignments.

LAW 7837. Advanced Legal Writing: Public Interest Litigation. 3 Units.
Public-interest litigation is often an uphill battle. Lawyers and clients representing public interests have difficulty prevailing even when their fact patterns are sympathetic, often because the law is either undeveloped or unsupportive. Yet when public-interest litigation does succeed it can change the legal landscape and galvanize social movements. This class will focus on the research and writing skills necessary to litigate public-interest lawsuits. The class will employ briefs from important public-interest cases and other readings to unpack the rhetorical and analytical tools needed to persuade judges across the ideological spectrum. Students will also learn how to conduct advanced legal research; develop tools for constitutional, statutory, and case law interpretation; and hone their ability to be clear and creative. Students will practice the skills they learn by preparing multiple drafts of two pleadings in a single case, and will receive detailed feedback on their writing from the instructor and their peers. Grading will be based on a Mandatory P/R/F system, taking into account writing as well as class participation. SPECIAL INSTRUCTIONS: Students on the waitlist for the course will be admitted if spots are available on the basis of priority. Early drop deadline: Students may not drop this course after first week of class. Elements used in grading: Attendance, Class Participation, Written Assignments.

LAW 7838. History of Civil Rights Law. 2-3 Units.
This is a seminar that uses U.S. history to examine canonical civil rights law. We will investigate the historical context behind the enactment of particular laws and judicial decisions. We will also discuss the meaning and implications of the term "civil rights law." Readings will include cases, law review articles, primary sources, and history articles. The seminar will focus upon African-American legal history. 14th Amendment is not a prerequisite for the seminar. Requirements for the course include regular class participation and, at the students' election, either response papers or a historiographical essay. Students may also elect to complete a research paper with the instructor's approval, in which case they will receive 3 units and "R" credit. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Automatic grading penalty waived for submission of research paper. This class is limited to 16 students, with an effort made to have students from SLS (10 students) and 6 non-law students by consent of instructor. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline. Cross-listed with History (HISTORY 361D).

LAW 7843. Community-Led System Design. 2 Units.
This class engages students in participatory/collaborative approaches to redesign complex systems. They will answer the question: how do we make our social legal systems better for people -- and how do we put people at the center of this redesign? The seminar has two parallel components: (1) Learn from a series of experts who have been taking a community-led approach to remaking a legal system (or analogous ones). Guest experts will present their current case studies to illustrate strategy and process design. (2) Select one of two system redesign challenges (see below) and develop their own prototype launching workshop. [For those students interested in continuing with the project, there will be a companion policy lab in the Spring Quarter 2018. This seminar is a prerequesite for the policy lab.] The two prospective system-leader partners are on the verge of major new overhauls of their current systems: (a) California Self-Help Services' guardianship/kid's custody redesign, with Bonnie Hough and the California Judicial Council as a partner, as they try to figure out how to remake the legal system for parents and family members (without lawyers) trying to get custody worked out for kids. (b) New York Chief Justice Task Force housing court/eviction redesign, with the Chief Judge Janet DiFiore's task force as the partner, as they try to figure out how to make the eviction system work better for users. Students will develop their own preliminary plan and prototype for a user-centered process for their partner. Students will learn about new approaches to policy-change, as well as the fundamentals of participatory design and community lawyering. They will operationalize these different approaches, to make them relevant and actionable in an actual legal system. They must synthesize a recommendation to their partner-leader about how they might create a better process to redesign a given court process/system. And they must create a prototype of a launching workshop, that can demonstrate how a wider process would work, while also testing their plan. Elements used in grading: Attendance, Class Participation, Written Assignments, Final Paper.

LAW 7846. Elements of Policy Analysis. 1 Unit.
This one-credit course is designed to support students undertaking public policy analysis projects in the Policy Lab and in other policy-based courses. The course will help students gain facility with basic policy methods and approaches common to public policy research and Policy Lab projects. The core session of the course consists of three hours of classroom instruction on a Saturday morning (the Saturday at the end of the first week of classes) with emphasis on thinking like a policy analyst (as distinguished from an advocate or lawyer), scoping policy problems, promoting and assessing evidence quality, and making valid (and avoiding invalid) inferences. The afternoon session offers three hours of instruction focused on designing and evaluating programs to improve individuals' lives (for example programs aimed at reducing homelessness or opioid addiction). Then, during the early part of the term, students may choose at least two topics from among a series of short workshops including (1) interviewing clients and other stakeholders (especially where ethnic and cultural differences may be salient), (2) policy research tools and strategies, (3) design thinking for law and policy, (4) charting, graphing, and visualizing data, and (5) policy writing. With guidance from their faculty instructors, students may then draw on the skills developed in this introductory seminar to analyze a public policy problem, develop potential strategies to address it, weigh the pros and cons of strategy options, and produce a final product that may offer options or recommendations to a policy client, suggestions for implementing such recommendations, and techniques to assess the effectiveness of implementation. Attention Non-Law Students: See Non-Law Student Add Request Form at https://law.stanford.edu/education/courses/non-law-students/ to enroll in this class. Elements used in grading: Attendance, Performance, Class Participation.

LAW 7847. Nonviolence: Conflict Transformation in Divided Communities. 3 Units.
This course explores and investigates the theory and practice of disciplined nonviolence in the Gandhi-King tradition to powerfully confront, transform and overcome injustice and systemic violence in divided communities. We will examine the role of nonviolent direct action, negotiation and mediation in a variety of historical, present-day and simulated cases in order to identify and analyze strategic lessons from successes as well as failures. We will inquire into the relationship between direct action campaigns, and legal processes and political decision-making. After examining transformative campaigns led by Gandhi, King, and the Student Nonviolent Coordinating Committee, we will explore case studies such as the anti-apartheid movement, and truth and reconciliation process, in South Africa; and racial and environmental justice movements and anti-gun violence campaigns in the United States in recent years until the present day, including Black Lives Matter, March for Our Lives, and the fossil fuel divestiture movement. Students will participate in several simulated negotiation and mediation exercises to develop experiential learning in the field from the perspective of multiple stakeholders, including activists, community leaders and government officials. In several sessions we will engage in dialogue with leading scholars and activists of transformative nonviolence, and we will engage together in a nonviolence training workshop. Students will have an option to enroll in an R-paper section with the permission of the instructor. After the term begins, students accepted into the course can transfer from section (01) into section (02), which meets the R requirement, with consent of the instructor. Elements used in grading: Attendance, class participation, written assignments, final paper.

LAW 7848. The Practice of Law or Not: What Lies Beyond Graduation. 2 Units.
This course seeks to explore a simple question: what lies beyond graduation? Within that question are a myriad of complexities. What does it mean to be an associate or a partner in a law firm? Should I do litigation or transactional work, such as public finance, whatever that is? Should I become a prosecutor or a public defender or criminal defense attorney? Should I go in-house and in what size place? Should I leave the law behind and pursue business or other opportunities? Those are not the only questions. To add an overlay that we all must address directly or indirectly, how is my being a person of color relevant to my decision and my success? In a world in which diversity is said to matter, as a person who is not of color, should I take that into account? What about being a woman or LGBTQ in the workplace? Or, what about being a woman or man who wishes to have a family? How does that (or should that) impact my decision? These are just some of the issues that will be explored. They will be explored each week in classes lead by different guests who will be law school graduates practicing law at law firms as associates and partners, practicing as prosecutors and criminal defense lawyers, in-house counsel, counsel for start-ups, and law school graduates who have left the law. The course will require the writing of a paper and grades will also depend on class attendance. Attendance, Class Participation, Final Paper.

LAW 7849. Mediation Boot Camp. 1 Unit.
Lawyers mediate most litigated cases, even those never filed in court. Lawyers mediate in commercial transactions, and as part of everything they do with other lawyers, clients, staff, the government, and their families. Do you want to be in the majority of lawyers who are constantly mediating, but never take a single mediation course? This course is a quick immersion in mediation advocacy, and mediation. It is intended for those who want to avoid being entirely unprepared for an essential part of legal practice. It is also intended for those who want to take a first step to see if mediation interests them. The two days of class will be an interactive exploration of the strategies, tactics and theories of mediation, and mediation advocacy. Class will include: 1) a concise overview of mediation approaches and theories, 2) skills exercises, 3) multiple mediation role plays, and 4) individualized video review. Together these will allow students to think about, practice, and experiment with, the most effective approaches to mediation advocacy and mediation. The course will be taught by Michael E. Dickstein, a full-time mediator of complex cases across the U.S. and Canada for over twenty years, and a former partner in a leading law firm, who practiced litigation, transactional, employment, and environmental law. Elements used in grading: Attendance, Class Participation, and potentially a short Written Assignment. In Winter Quarter, this class will meet Friday February 19, 3:00PM-7:30PM and Saturday February 20, 9:30AM-5:30 PM. This class is limited to 12 students (Fewer on Zoom). CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7850. Advanced Legal Writing: High-Tech Transactions. 3 Units.
This practice-based, skills-building, seminar will require students to draft, edit, and negotiate technology agreements of increasing complexity over the course of the quarter. Using a biotechnology case as context, the curriculum is designed to translate contract principles and doctrine (to which students have been exposed,) into real-world practice. Students will acquire the foundational tools necessary to write clear, effective, plain-language provisions into agreements that memorialize a bargain between parties in different contexts and based on realistic situations. Exercises include simulations in which students will not only draft, edit, and negotiate agreements, but that are designed to help students understand how to develop, foster, and sustain client trust, advocate in a client's best interests, as well as effectively and ethically engage with a counter-party's counsel. Students will be expected to operate as senior associates in a law firm, or as in-house counsel tasked with managing licensing and commercial transactions for a technology developer. Students will also focus on understanding their client's needs versus wants, supporting them in achieving their goals while identifying, counseling, and mitigating legal risk. This will be achieved through in-class discussion as well as hands-on drafting (done at home and in class), along with facilitated sessions in which students will be tasked with advising their client or negotiating with a counter-party. Exercises are designed to help students improve their critical thinking, due diligence, analysis, drafting, and editing skills, which deepens an understanding as to the expectations of attorneys and clients with whom they will be working and supporting respectively. Grades will be based on participation, applied negotiation skills, drafting exercises weighted by level of complexity, and culminating in the drafting of a final negotiated agreement. Students may elect credit for either experiential learning (EL) or professional writing (PW) for this course. Prerequisite: Completed Corporations (LAW 1013). This class is limited to 16 students by lottery. Student admitted to the class must have taken a class in Corporations. Some working knowledge of intellectual property is a plus. Waivers of the requirements will be offered on a case-by-case basis.

LAW 7851. Introduction to Legal Research. 2 Units.
This course will introduce law students to the sources and methods used in legal research. Students will (1) gain familiarity with core primary and secondary U.S. legal information sources, how this material is used, organized, published, indexed, and kept current, and how to efficiently find and use these sources; (2) build foundational research skills that can be used to approach legal research questions in any area of law; and (3) develop basic strategies to effectively use both familiar and unfamiliar research databases, sources, and tools. Learning legal research requires a hands-on approach, so students will complete in-class exercises, homework assignments, and a final project, all of which contribute to students' final grade. There will not be a final exam. This course is open to Stanford graduate students with permission from the instructors. SLS 1Ls will be given preference when registering. Elements used in grading: Attendance, Class Participation, Written Assignments. CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 7853. Advanced Legal Research: Transactional. 3 Units.
This course aims to prepare students to research as a business lawyer, including the analysis, search process, information evaluation, and reasoning necessary to ethically research business law problems and advise clients on corporate or transactional law matters. The purpose of this course is to broaden your knowledge of the methods, databases, sources, and primary materials that you will encounter when conducting business law research; and to increase your familiarity with common business law terminology and the research requests that typically accompany that knowledge. Students' learning objectives are to develop research strategies, identify sources, and enhance their research skills related to (1) corporate formation and organization laws and regulations; (2) company research and analyses; and (3) common transactional law research questions (including forms and due diligence). Elements used in grading: Attendance, Class Participation, Written Assignments.

LAW 7854. Lawyers as Leaders Intensive Boot Camp. 4 Units.
You've got the substantive legal knowledge and intellectual firepower necessary to be a good lawyer, but do you have the leadership skills it takes to be a great one? Leaders in law and business want trusted advisors who excel in skills like problem solving, creativity, ability to deal with ambiguity and complexity, and exceptional communication and persuasion skills. This course focuses on strengthening these critical skills for the career that you are developing. In this highly immersive class, our hands-on exercises and discussions assess and develop your skills in strategic decision making, influence techniques, motivating others, leading teams, and managing change in unpredictable environments. We use neuroscience techniques that optimize adult learning, with real-time feedback on classroom exercises and short reflection papers to help create new habits for success. The course meets in a three full-day session immediately before the start of Fall Quarter (Sept. 9-11). We then meet 3 hours/month through the academic year in workshop style -- interactive sessions in which students bring and work on actual leadership challenges, brainstorming and problem solving as a cohort Precise meeting dates/time TBA by instructors. Enrollment in the class (4 units) is in Autumn Quarter 2020. An "N" grade (indicates satisfactory progress in a course that has not yet reached completion) will be given at the end of Autumn Quarter 2020. Final grades will be given at the end of Spring Quarter 2021 and will be applied to Autumn Quarter 2020. Elements used in grading: Class participation and attendance, course exercises and written assignments. Class Outline (https://docs.google.com/document/d/1_XAWnMhQE0bFVgRE2eR0kA488plZddvJhDKxw_PdZEo/edit) . Info Sheet (https://www.dropbox.com/s/xhgnenqkq99shd1/Lawyers%20As%20Leaders%20%20Poster.pdf?dl=0). CONSENT APPLICATION: To apply for this course, students must complete and submit a Consent Application Form available on the SLS website (Click Courses at the bottom of the homepage and then click Consent of Instructor Forms). See Consent Application Form for instructions and submission deadline.

LAW 8001. Corporate Governance and Practice Seminar. 2 Units.
The seminar on corporate governance meets in the Autumn and Winter quarters and forms the core of the LL.M. Program in Corporate Governance & Practice. The course, designed to be taken in conjunction with Corporations in Autumn, takes an economic approach to the analysis of corporate law. In particular, we ask why American corporate law has its particular structure. We will seek to understand how the separation of ownership and control produces agency costs, and the ways in which corporate law seeks to remedy these through techniques like disclosure, fiduciary duties and shareholder litigation, voting, and hostile takeovers. We will read and discuss ongoing debates among scholars and practitioners about the agency cost framework, the merits and limits of current legal policies, and the role of institutional arrangements like activist shareholders. We will also consider the relevance of these disputes, and the effectiveness of corporate law and governance more generally, in the context of a variety of real-life incidents. No knowledge of economics is presupposed, so the course will also introduce basic economics and finance concepts necessary to understand these concepts. Some course sessions, largely in the Winter will feature outside speakers who will complement the discussions with real-world examples drawn from practice. Attendance and active participation are important to the success of the seminar and an important factor in the overall grade. Students are expected to have carefully read and reviewed assigned materials in advance of each session. Students will be required to submit short reflection papers that evaluate, critique, and discuss some or all of the key topics reviewed in the previous week's session. Students may also be asked to prepare presentations and case studies. The class will be graded H/P/R/F in Autumn Quarter and Winter Quarter. This course is required for and limited to students in the Corporate Governance and Practice LL.M. Program. Elements used in grading: Class participation, attendance and assignments.

LAW 8002. Environmental Law and Policy Colloquium. 2 Units.
The Environmental Law & Policy Colloquium offers students the opportunity to learn about cutting-edge legal topics related to environmental law, broadly defined to include, among other areas, pollution control, natural resources management, and energy development. The colloquium meets in two quarters. During the autumn quarter, students will learn about core concepts that underlie the administration of environmental law, exploring ideas from economics, philosophy, natural science, and law. In the autumn quarter, students will begin to develop a capstone research paper on a contemporary environmental law issue. During the spring quarter, the students will write and present their research papers. Elements used in grading include attendance and participation, problem sets, small writing assignments, and a final paper. This course is required for students in the Environmental Law & Policy LL.M. Program. All other students are welcome but will need instructor permission to enroll.

LAW 8003. International Economic Law, Business & Policy (IELBP) Colloquium. 2 Units.
This course enables IELBP advanced degree students to explore selected issues, case studies and policy debates in international economic law and business, global political economy, and international economic dispute resolution in a highly interactive seminar. The course is a complement to the other core degree requirements of the LLM in IELBP and is discussion-oriented. The course offers students the opportunity to engage in dialogue with experts in the field (including Stanford Law faculty and interdisciplinary scholars from other schools, departments or programs at Stanford University). The course takes on a wide-ranging approach: we will examine legal issues confronting international business while also focusing on cutting-edge debates arising out of economic globalization; we will explore the complex architecture of international economic law, unpacking how international institutions and public international law sources (formal and informal) regulate: i) cross-border business transactions between private parties, ii) international economic relations between and among states, and iii) cross-border economic conduct by states, international organizations, and private actors. Students are expected to have carefully read assigned materials in advance of each session, and to actively participate during class. Grades for the colloquium are based on students' papers and their classroom performance (e.g., preparation, participation, attendance, etc.). The course extends over two quarters (autumn and spring), and students are required to complete both quarters in order to satisfy the program requirement. Topics in the Fall quarter will focus on developments in world trade law, international monetary cooperation, international investment law, economic integration and development, international taxation, international arbitration, and international antitrust law. Topics in the Spring quarter will be selected based on students' interests, as well as pressing policy concerns in international commerce, such as climate change and national security.

LAW 8004. Law, Science, and Technology Colloquium. 2 Units.
The Law, Science & Technology Colloquium offers students in the Law, Science & Technology LLM Program the opportunity to discuss cutting-edge legal issues at the intersection of law and technology with leading experts in the field, including Stanford faculty, visiting scholars, technology and IP lawyers, entrepreneurs, and executives from Silicon Valley technology companies. For organizational purposes, the course is divided into units reflecting different areas of law and technology. Each begins with a keystone lecture that introduces students to the unit's doctrinal and theoretical themes. After the keystone lecture, each unit includes one or more topical lectures taught by experts representing a diverse cross-section of viewpoints from academia, legal practice, and business. Students are expected to have carefully read the assigned materials in advance of each session, and to actively participate during class. Students will also write papers dealing with the units' themes. Grades for the colloquium are based on students' papers and their classroom performance (e.g., preparation, participation, attendance, etc.). This course is restricted to students in the Law, Science, and Technology LLM program, and satisfies their "colloquium requirement" for the fall and spring quarter.

LAW 8011. SPILS Law and Society Seminar. 3 Units.
This seminar is restricted to students who are in the SPILS program. The seminar deals with the relationship between legal systems and the societies in which they are embedded. The materials are drawn from studies of many different societies. Among the issues dealt with are: What influence does culture have on the operation of legal systems? What are the social forces which produce particular forms of law? What impact do legal interventions have on society and on human behavior? Elements used in grading: Exam.

LAW 8012. SPILS Masters Thesis. 4 Units.
The writing of a work of original scholarship in the area of research that each student chooses is necessary requirement of the JSM degree. During the winter quarter students are expected to submit two draft chapters: 1) any chapter of the fellow's choice in early February; and 2) a draft of the empirical research result's chapter in early March. During the spring quarter students are expected to finalize their research project, and write and submit their final thesis. Towards that end, students must complete and submit a draft of the whole thesis in early April. The final version, revised in response to the adviser's comments, must be submitted by the end of the quarter. The exact dates will be informed in advance by the teaching fellow. Elements used in grading: Thesis. This course is exclusive to SPILS students. The thesis is required for JSM graduation.

LAW 8013. SPILS Research Methods Workshop. 2 Units.
This is a mandatory course for SPILS Fellows as part of the program's core curriculum. Its main goal is to offer students an interdisciplinary perspective about socio-legal research, and research tools for implementing their individual research projects. This Winter term workshop will complement the Research Design for Empirical Legal Studies Seminar taken in the Autumn by 1) expanding and elaborating on some of the methods analyzed during the seminar; and 2) assisting students in using such methods towards their individual research project. The workshop will consist of specialized sessions, most of them tailored towards the work of empirical research that occurs after the data collection phase. During the quarter the fellows are expected to submit drafts of different chapters of their thesis and present their preliminary findings in class. If appropriate, the workshop may also include group and/or individual sessions designed to address the very specific needs of the research undertaken by the SPILS Fellows. Elements used in grading: Class participation, attendance, written assignments and final presentations. Enrollment is restricted to SPILS fellows. The seminar is required for JSM graduation.

LAW 8021. Introduction to American Law. 3 Units.
This course is designed to introduce international students in the Exchange and Advanced Degree Programs (LL.M. and SPILS) to the key principles of American law. The course provides an overview of distinctive features of the U.S. legal system, including its history and institutions. Topics include the role of precedent in the common law, distinctive elements of civil procedure and legal actions, the branches of the U.S. government and the separation of powers, federalism, due process, and equal protection. The course is offered before the start of the regular Law School quarter. Special Instructions: Required for LL.M. but optional for the SPILS and Exchange Program students. Open to LL.M., SPILS and SLS Exchange Program students only. This course is taught on an accelerated basis over the course of three weeks between orientation and the beginning of the Fall Quarter classes. Precise meeting dates TBA. Final exam will be scheduled on September 11, 2020. Elements used in grading: class attendance, participation, short written assignment, and final exam.

LAW 8022. Professional Responsibility. 3 Units.
This course introduces students to the goals, rules and responsibilities of the American legal profession and its members. The course is designed around the premise that the subject of professional responsibility is the single most relevant to students' future careers as members of the bar. These issues come up on a constant basis and it is critical that lawyers be alert to spotting them when they arise and be educated in the methods of resolving them. As such, the course will address many of the most commonly recurring issues that arise, such as confidentiality, conflicts of interest, candor to the courts and others, the role of the attorney as counselor, the structure of the attorney-client relationship, issues around billing, the tension between "cause lawyering" and individual representation, and lawyers' duty to serve the underrepresented. In addition, we will delve into some more personal ethical issues that reflect on why students have chosen law as a profession and how lawyers compose careers that promote or frustrate those goals. At the start of each session (starting with the second session) there will be a brief quiz on the material that was covered in the readings and discussion of the prior session. During the period of the course, students will also be responsible for submitting one reflection paper (three-to-five pages) based on a prompt that will be circulated after each of the first six sessions (one paper for the entire course). These papers will be due by 11:59 on the last day the class meets. Grades will be based on the quizzes and the paper submitted, with the instructor retaining the right to take class participation into account. Attendance is mandatory and students must seek instructor approval for any absences not due to illness. This course is offered to international graduate students only. It is taught on an accelerated basis over the course of three weeks between orientation and the beginning of the Fall Quarter classes. Thus, the course meets on average nine hours per week. The exact meeting times will be set once the graduate students' schedules are set. Elements used in grading: Attendance, class participation, quizzes and written memo. Limited to LLMs, JSMs and exchange students. Required for LLMs.

LAW 8031. JSD Research Colloquium. 0 Units.
Required for and limited to JSD candidates. The objective of the colloquium is to assist students in designing, conducting, analyzing and reporting their doctoral dissertation research. Weekly colloquium sessions are devoted to work in progress presentations by JSD candidates, supplemented by occasional guest lectures and discussions of cross-cutting issues of interest to doctoral students.

SCHOOL OF MEDICINE

The School of Medicine offers courses of study leading to the M.S., Ph.D., and M.D. degrees.

Undergraduate Programs in the School of Medicine

Many courses in the School of Medicine are open to any registered Stanford student who has fulfilled the prerequisites, subject to the usual limits of course enrollment and faculty approval. The school also offers courses specifically for undergraduates, as well as graduate-level courses where advanced undergraduates with backgrounds in the life sciences are welcome. Among the undergraduate offerings are numerous Stanford Introductory Seminars for freshmen and sophomores, the Emergency Medical Technician program, Stanford Immersion in Medicine Physician Shadowing, Pre-Vet Advisory, and courses in Community Health, including participation in the Stanford Free Clinics. The school also offers several undergraduate courses through the Department of Biology and the Interdisciplinary Program in Human Biology in the School of Humanities and Sciences. See the school's Undergraduate Studies (http://med.stanford.edu/education/undergrad-studies.html) web site for additional information.

M.S. and Ph.D. Programs in the School of Medicine

The School of Medicine is home to graduate programs covering a broad range of disciplines within biomedicine leading to Ph.D. or M.S. degrees. These programs focus on interdisciplinary training with in-depth investigation of an original problem of fundamental importance to the biosciences. Each degree program sets its own curriculum, but many courses are taught by groups of faculty from multiple programs and departments. Flexibility is a priority to ensure that all students obtain the best possible training for pursuing careers in their areas of interest. The school is dedicated to training students from diverse backgrounds, and to the promotion of diversity in graduate education. Admission is through one of about 15 home programs. These home programs enable students to carry out dissertation research and training with School of Medicine faculty, as well as investigators in the departments of Biology and Biophysics in the School of Humanities and Sciences. Detailed information on School of Medicine M.S. and Ph.D. programs, curricula, and research can be found at Stanford's School of Medicine Master's Degree Programs (http://med.stanford.edu/education/masters-programs.html) and Ph.D. Programs (http://med.stanford.edu/education/phd-programs.html) web site. Application information can be found at Stanford's Office of Graduate Admissions (http://gradadmissions.stanford.edu) web site.

M.D. Program in the School of Medicine

The School of Medicine seeks to attract students who are passionate about scholarship and wish to improve the health of the world's people through research, innovation, and leadership. The Stanford M.D. Discovery Curriculum (http://med.stanford.edu/md/discovery-curriculum.html) provides education in biomedical and clinical sciences along with study and independent research through scholarly concentrations. Emphasis is placed on interdisciplinary learning, with streamlined content, interactive approaches, and melding of basic science and clinical instruction across the curriculum. Blocks of unscheduled time allow for individual or group study, participation in elective courses, research, and reflection. The flexible Discovery Curriculum supports student's scientific discovery and self-discovery by offering multiple learning pathways at a more individualized pace and opportunities for pursuing a second degree, such as an M.P.H., M.B.A., Master's of Science in Epidemiology or Health Services Research, a Ph.D., or participating in longitudinal and global health research experiences.

The Discovery Curriculum features robust basic science content, integrated organ based learning, and compassionate patient-centered clinical training. Core foundational content is presented in the first year and broad clinical science education occurs throughout the curriculum with ample exposure to patient care and the practice of medicine. Students may begin clinical clerkships as early as May of the second year. The structure of clinical training is flexible, allowing customization of the order in which core clerkships are completed and offering a wide variety of selective/elective clerkships. The curriculum also features a strong emphasis on population health with courses that include classroom and experiential learning to provide understanding of the socioeconomic determinants of the health of patients and communities.

The required Scholarly Concentrations offer opportunities for developing skills that enhance basic science and clinical training in areas such as bioengineering, biomedical ethics and medical humanities, biomedical informatics, clinical research, community health, health services and policy research, and the molecular basis of medicine. Through the Scholarly Concentration program, these skills may be applied in clinical areas housed within centers at Stanford such as the Comprehensive Cancer Center, the Cardiovascular Institute, the Neuroscience Institute, the Institute of Immunity, Transplantation, and Infection, and Women's Health at Stanford. Study in a scholarly concentration typically includes course work and research activities. Funding for research and other scholarly opportunities may be supported through the Medical Scholars program, which funds student research projects at Stanford and overseas.

The Medical Scientist Training Program (MSTP) MD-PhD program provides a select group of medical students with an opportunity to pursue a training program designed to equip them for careers in academic investigative medicine. Individualization of the curricular and research programs of each trainee is the hallmark of the Program. Training for a combined MD-PhD includes the same content encountered by students who pursue each degree separately, but the total time of training should be less than the sum of the time normally taken for each degree. To this end, students must plan their training carefully and commit to a rigorous and intensive period of study. The flexible curriculum at Stanford Medical School allows each student to satisfy the requirements for the MD degree and to pursue an independent research program. In what follows, we provide a general outline of what to expect.

In addition to a variety of other dual degree opportunities, Stanford also collaborates with the University of California, Berkeley, to offer students opportunities for M.D./M.P.H. training. Details about these programs may be found at Stanford's Dual Degree and Multi-Degree Programs (http://med.stanford.edu/education/dual-degree-programs.html) web site.

Stanford is committed to representing the diversity of the U.S. and California populations by seeking a diverse body of students who are interested in the intellectual substance of medicine and committed to advancing the field of health care, broadly defined. Provided an applicant to the school has completed basic courses in physics, chemistry, and biology, the choice of an undergraduate major may reflect other interests, including the arts and humanities. Course work in advanced biology such as biochemistry, molecular biology, or genetics and the behavioral sciences is recommended because of their importance in understanding health care. Breadth of interests and depth of experiences play an important role in the selection of students from among those applicants having superior academic records.

The M.D. degree requires 12 quarters of registration at full Med-MD tuition; the joint M.D./Ph.D. degree requires 15 quarters. Completion of the M.D. degree must be achieved within six years, unless a petition is granted to extend this time frame. For further details on the M.D. degree, including admission requirements, see the Stanford (http://

med.stanford.edu/md/) MD Program (http://med.stanford.edu/md.html) website.

Multiple-Degree Programs in the School of Medicine

M.D./Ph.D.

Many M.D. students undertake a Ph.D. while they are at Stanford. Popular choices are School of Medicine programs in Bioengineering , Biomedical Informatics, or one of the 13 Biosciences home departments. At the School of Engineering, the Biomechanical Engineering M.D./Ph.D. program also makes a special effort to work with M.D. students.

Medical Scientist Training Program

The Medical Scientist Training Program (MSTP) provides medical students with an opportunity to pursue an individualized program of research and course work leading to both the M.D. and Ph.D. degrees. It is designed to equip students for careers in academic investigative medicine, and emphasizes flexibility of curricular and research programs for each trainee. Training for a combined M.D.-Ph.D. includes the same content encountered by students who pursue each degree separately, but the total training time is less than the sum of the time normally required for each degree. The flexible curriculum at Stanford's School of Medicine allows each student, in consultation with a preceptor and other advisers, to pursue a plan of study that satisfies the requirements for the M.D. and allows performance of doctoral-level research leading to the Ph.D. Students interested in joining the MSTP are considered for admission at the time of their application to the School of Medicine M.D. program and are asked to provide supplemental information relevant to their research background. Current Stanford M.D. students may also apply for admission to the MSTP.

M.D./M.B.A.

M.D.. students interested in combining their medical training with training in business can take advantage of a dual degree M.D./M.B.A. program that allows students to obtain both degrees after completion of a 5-year curriculum. Students must apply to and be admitted by the Stanford Graduate School of Business, at the time of their admission to the medical school or after beginning their M.D. studies.

M.D./M.P.H.

A unique collaboration with UC Berkeley allows M.D.. students to pursue and obtain a Master of Public Health degree while still at the Stanford School of Medicine. This dual degree M.D./M.P.H. program is open to M.D. students who participate in the Scholarly Concentration in Community Health. Students must apply to and be admitted by the UC Berkeley program; course work is undertaken at the UC Berkeley campus.

Ph.D./M.S.M.

The Master of Science in Medicine (http://msm.stanford.edu/) program admits current Stanford Ph.D. students who have a commitment to translational research, but are not interested in becoming clinicians. The goal of the program is to train researchers in human biology and disease to be better equipped to translate new scientific discoveries into useful medical advances. Students offered admission into any Ph.D. program at Stanford may apply for admission to the master's program. During their first five quarters, students take basic biomedical science courses with Stanford M.D. students. The School of Medicine M.D. curriculum is presented in a succinct format that allows time for students to concurrently complete their Ph.D. course requirements and lab rotations. By early in their second year, students choose a lab for their Ph.D. thesis research and complete their medical course work. They also elect a clinical co-mentor to discuss translational research needs and help to arrange a short clinical experience. Upon completion of the Program., participating students receive an M.S. in Medicine.

M.D./M.S. Degrees

Health Policy: the master's degree program in Health Policy seeks to train students in the quantitative analysis of issues in health and medical care. The program is based upon an individual development plan, and includes both course work and completion of a master's project under the direction of a program core faculty member. The typical student in the program is a physician who has completed residency training and is preparing for a research career; the program also admits Stanford medical students and others with a strong background in health policy analysis. The core faculty interests include outcomes research, health economics, health care organization, health care access, quality of care, decision analysis, clinical guidelines, and assessment of patient preferences and quality of life.

Epidemiology: The Graduate Interdisciplinary Program in Epidemiology is a research oriented program that offers instruction and research opportunities leading to the M.S. degree in Epidemiology, the study of the distribution and determinants of diseases in populations.

Biomedical Informatics: An option for anyone who wishes to either perform research in Biomedical Informatics as clinical faculty at a school of medicine or for those who wish to continue into the health care industry or government. There is high need for trained individuals who understand the practice of medicine and who are able to develop and implement applications in biomedical informatics.

Biomedical Investigation (http://med.stanford.edu/md/discovery-curriculum/BergScholarsProgram.html): In this program, M.D. students complete the core pre-clerkship curriculum of the M.D. program then undertake additional coursework related to their research interests as one of the pathways in the Discovery Curriculum. The program was designed to address the decreasing number of physician-scientists by shortening the training period without compromising the quality of research. Biomedical Investigation is a sub-plan of the M.S. in Medicine. It is a research-oriented program resulting in an M.S. in Medicine in Biomedical Investigation.

Biomechanical Engineering: Bioengineering is a fusion of engineering and the life sciences that promotes scientific discovery and the invention of new technologies and therapies through research and education. It encompasses both the use of biology as a new engineering paradigm and the application of engineering principles to medical problems and biological systems. The discipline embraces biology as a new science base for engineering.

M.D./M.P.P. Degree

Matriculated M.D. students from Stanford's School of Medicine may apply for admission to the joint M.P.P./M.D. degree program (http://med.stanford.edu/education/dual-degree-programs.html). Applications are accepted anytime after a student has completed one year in the M.D. program. Students must obtain the permission of the School of Medicine to participate in the joint degree program. Students are required to devote two continuous years of full-time study to the completion of the first two years of the core M.D. curriculum. Students then devote one continuous academic year of study to the completion of the M.P.P. core curriculum. At other times, the student may be enrolled in either unit and may take courses from either unit to satisfy the joint degree requirements.

Departmental Dual Degrees

Education: The Individually designed M.A. in Education is designed for Stanford doctoral students enrolled outside of the School of Education. Individuals enrolled at the doctoral level at Stanford can be considered for this program.

E-IPER: Stanford's Emmett Interdisciplinary Program in Environment and Resources (E-IPER) gives students a focused science, engineering, and

technology background, allowing them to integrate science with law and business to address critical environmental and sustainability issues.

Public Policy: Stanford University offers two master's programs in Public Policy. A Master's of Public Policy (M.P.P.) is a two-year professional degree and the Masters of Arts in Public Policy (M.A.) is a one-year non-professional degree. Students currently enrolled in other Stanford graduate programs, and applicants to those programs, may apply for either of the Public Policy master's programs. M.D. students are eligible to apply for a dual M.A. degree program. See above for the joint M.D./M.P.P. program.

Dean: Lloyd Minor

Senior Associate Dean for Graduate Education and Postdoctoral Affairs: William Talbot

Senior Associate Dean for Medical Education: Charles Prober

Medicine Interdisciplinary Courses

INDE 201. Practice of Medicine I. 8 Units.
Six quarter series extending throughout the first two years of the MD program, interweaving core skills training in medical interviewing and the physical examination with other major threads addressing the context of medical practice: information literacy, nutrition principles, clinical epidemiology and biostatistics, evidence-based practice, psychiatry, biomedical ethics, health policy, population health. Core clinical skills are acquired through hands-on practice, and evaluated through an extensive program of simulated medical encounters, in which students interview, examine, and manage patients in a mock clinic. The information literacy thread introduces students to informatics and knowledge management, biomedical informatics, and evidence-based medicine searching. Nutrition principles are acquired through interactive, web-based instruction, and reinforced through problem-based learning cases, which run in parallel to the basic science components over the first year. In epdemiology students learn the taxonomy of epidemiological studies, how to critically read a journal article, and how to recognize and understand the concepts behind different clinical study designs. Topics include bias, confounding, diagnostic testing and screening, and "how statistics can lie." Psychiatry introduces students to the unique role of medical students in talking with patients, the difference between process and content in patient communication, how to respond to breaks in the patient-physician relationship, and the relationship between the quality of the patient-physician interaction and health outcomes. Health care policy covers such topics as health insurance, physician payment, health care costs, access, measurement and improvement of quality, regulation and health care reform. Biomedical ethics includes important ethical issues in medical practice, such as confidentiality, privacy, and ethical issues relating to medical students. The population health curriculum exposes students to concepts of public health, community action, and advocacy, and includes a year-long, community-based project. At the end of this quarter students participate in a performance-based assessment of the medical interview skills.nCourse offered to MD and MSPA students only.

INDE 202. Practice of Medicine II. 5 Units.
Medical interview and physical examination skills, information literacy, nutrition principles, evidence-based practice, health policy, and population health are covered. At the end of this quarter, students participate in a performance-based assessment of their medical interview and physical examination skills. See INDE 201 for a complete description of the Practice of Medicine course series. Course open to MD and MSPA students only.

INDE 203. Practice of Medicine III. 6 Units.
Medical interview and physical examination skills, biomedical literature retrieval and appraisal, nutrition principles, evidence-based practice, biomedical ethics, and population health are covered. Students begin clinical problem-solving sessions to learn the approach to common and important clinical problems. Cases integrate other course themes of population health, evidence-based practice, clinical ethics, nutrition, health policy, and behavioral medicine. Students begin transition from comprehensive to problem-focused patient encounters. Students also gain exposure to geriatrics, pediatrics, and interprofessional healthcare teams, and practice mental health interview skills. At the end of this quarter, students participate in a performance-based assessment of their medical interview and physical examination skills. See INDE 201 for a complete description of the Practice of Medicine course series. Course open to MD and MSPA students only.

INDE 204A. Practice of Medicine IV-A. 4 Units.
The second year of the Practice of Medicine series (INDE 204 and 205) emphasizes clinical reasoning, clinical practicum, and clinical procedures. Students continue clinical problem-solving sessions to learn the approach to common and important clinical problems. Cases integrate other course themes of population health, evidence-based practice, clinical ethics, nutrition, health policy, and behavioral medicine. Students spend one-half day per week in a clinical setting, practicing medical interview, physical examination skills, oral presentations, and clinical note-writing under the mentorship of a clinical tutor. In the practicum, students also gain experience with other practical aspects of patient care. The Clinical Procedures segment introduces common and important procedures in clinical practice, including phlebotomy, intravenous line insertion, and electrocardiography.

INDE 204B. Practice of Medicine IV-B. 4 Units.
The second year of the Practice of Medicine series (INDE 204 and 205) emphasizes clinical reasoning, clinical practicum, and clinical procedures. Students continue clinical problem-solving sessions to learn the approach to common and important clinical problems. Cases integrate other course themes of population health, evidence-based practice, clinical ethics, nutrition, health policy, and behavioral medicine. Students spend one-half day per week in a clinical setting, practicing medical interview, physical examination skills, oral presentations, and clinical note-writing under the mentorship of a clinical tutor. In the practicum, students also gain experience with other practical aspects of patient care. The Clinical Procedures segment introduces common and important procedures in clinical practice, including phlebotomy, intravenous line insertion, and electrocardiography.

INDE 205A. Practice of Medicine V. 3 Units.
Continued emphasis on clinical reasoning, clinical practicum, and clinical procedures. Students continue clinical problem-solving sessions to learn the approach to common and important clinical problems Cases integrate other course themes of population health, evidence-based practice, clinical ethics, nutrition, health policy, and behavioral medicine. Students spend one-half day per week in a clinical setting, practicing medical interview, physical examination skills, oral presentations, and clinical note-writing under the mentorship of a clinical tutor. In the practicum, students also gain experience with other practical aspects of patient care. For the Clinical Procedures segment, students will have an opportunity in the Emergency Department to practice performing procedures learned in the previous quarter. At the end of this quarter, students participate in a comprehensive four-station objective structured clinical examination (OSCE) performance-based assessment of their medical interview, physical examination, and clinical problem-solving skills.

INDE 205B. Practice of Medicine V. 3 Units.
Continued emphasis on clinical reasoning, clinical practicum, and clinical procedures. Students continue clinical problem-solving sessions to learn the approach to common and important clinical problems Cases integrate other course themes of population health, evidence-based practice, clinical ethics, nutrition, health policy, and behavioral medicine. Students spend one-half day per week in a clinical setting, practicing medical interview, physical examination skills, oral presentations, and clinical note-writing under the mentorship of a clinical tutor. In the practicum, students also gain experience with other practical aspects of patient care. For the Clinical Procedures segment, students will have an opportunity in the Emergency Department to practice performing procedures learned in the previous quarter. At the end of this quarter, students participate in a comprehensive four-station objective structured clinical examination (OSCE) performance-based assessment of their medical interview, physical examination, and clinical problem-solving skills.

INDE 206. Practice of Medicine VI. 5 Units.
This last segment of the Practice of Medicine series is an intensive, four-week learning experience to consolidate clinical skills from prior quarters, and a final preparation for transition to clerkships. An extensive series of workshops covers topics such as dermatology, ophthalmology, advanced clinical reasoning, advanced presentations, bedside skills, ethics, palliative medicine, advanced sexual history, electronic medical record, ekg interpretation, intravenous fluid and electrolyte management. Students practice clinical procedures with task trainers and on a cadaver. This quarter also includes a professionalism series to prepare students for entry into clinical practice. Special clinical practice sessions are held as a capstone to clinical skills preparation.

INDE 207A. Medical Mandarin I: Beginning. 2-3 Units.
Develops conversational communication skills and essential medical vocabularies. Teaches in pinyin pronunciation system, which provides an accessible method of learning basic phrases. The foundations of taking a comprehensive patient history in Mandarin and doing medical interviews at individual hospital divisions, including making introductions, soliciting symptoms, explaining health concepts (e.g. diseases and prescriptions) as well as daily survival conversations. Main goals are to improve rapport with Chinese patients through Mandarin fluency in the medical setting and to promote understanding of Chinese culture in the context of health care as well as daily life. Students registering for 3 units participate in clinic visits and field activities.

INDE 207B. Medical Mandarin II: Intermediate. 2-3 Units.
For students who already have a basic command of spoken Chinese. Conversational communication skills practiced in a more advanced setting, including more sophisticated assessment of patient history and different tasks such as giving medical instructions and doing labs and tests. Builds working vocabulary for organ system, disease assessment to conduct a full physical exam, and to describe treatment modalities for Chinese-speaking patients (diagnostic and therapeutic). Students registering for 3 units participate in clinic visits and field activities. Prerequisite: one year of college-level Chinese or instructor assessment of fluency.

INDE 207C. Medical Mandarin III: Advanced. 2-3 Units.
Access advanced professional medical vocabulary, conduct medical research, and engage in discussions in Chinese. Aims at a proficiency level of medical interpreting or doing other independent work in Chinese. Students are also assisted in doing a project or projects related to a specific field of medicine. Students registering for 3 units participate in clinic visits, field activities or projects. Prerequisite: completion of Medical Mandarin II, or advanced Chinese proficiency.

INDE 207D. Professional Mandarin I. 2-3 Units.
Designed for students who seek professional development via Mandarin. Coursework includes lectures, online classes, language partnerships, selected topics, projects and field activities. Goal is to enhance students' language abilities as professionals and facilitate a career. Students choose to enroll for 2 units or 3 units depending upon an agreed- upon workload approved by the instructor.

INDE 208A. Medical Mandarin I: Beginning. 2-3 Units.
Continuation of 207A. See description for 207A. Students participating in classroom and online instruction only register for 2 units. Students registering for 3 units participate in clinic visits and field activities as well.

INDE 208B. Medical Mandarin II: Intermediate. 2-3 Units.
Continuation of 207B. See description for 207B. Students participating in classroom and online instruction only register for 2 units. Students registering for 3 units participate in clinic visits and field activities as well.

INDE 208C. Medical Mandarin III: Advanced. 2-3 Units.
Access advanced professional medical vocabulary, conduct medical research, and engage in discussions in Chinese. Aims at a proficiency level of medical interpreting or doing other independent work in Chinese. Students are also assisted in doing a project or projects related to a specific field of medicine. 3 units Includes clinic visits and field activities. Prerequisite: completion of 207C, or advanced Chinese proficiency.

INDE 208D. Professional Mandarin II. 2-3 Units.
Continuation of INDE 207D. Designed for students who seek professional development via Mandarin. Coursework includes lectures, online classes, language partnerships, selected topics, projects and field activities. Goal is to enhance students' language abilities as professionals and facilitate a career. Students choose to enroll for 2 units or 3 units depending upon an agreed- upon workload approved by the instructor. Prerequisite: INDE 207D.

INDE 209. Analysis of Public Companies in the Life Sciences. 2 Units.
Student lead: Life Science companies are often valued with a different methodology than traditional valuation metrics. This course will serve to teach students how to analyze a publicly traded life science company or sector using publicly available materials online such as 10-K, 13-F, conference calls, and financial & technical analysis. In addition, students will learn how to access various Stanford resources (analyst reports, Bloomberg, etc). Students will work in teams throughout class and publish an investment analysis at the end of the course.

INDE 209A. Medical Mandarin III: Beginning. 2-3 Units.
Continuation of 207A/208A. See description for 207A. Students participating only in classroom and online instruction register for 2 units. Students registering for 3 units participate in clinic visits and field activities as well.

INDE 209B. Medical Mandarin III: Intermediate. 2-3 Units.
Continuation of 207B/208B. See description for 207B. Students participating only in classroom and online instruction register for 2 units. Students registering for 3 units participate in clinic visits and field activities as well.

INDE 209C. Medical Mandarin III: Advanced. 2-3 Units.
Access advanced professional medical vocabulary, conduct medical research, and engage in discussions in Chinese. Aims at a proficiency level of medical interpreting or doing other independent work in Chinese. Students are also assisted in doing a project or projects related to a specific field of medicine. 3 units Includes clinic visits and field activities. Prerequisite: completion of 208C or advanced Chinese proficiency.

INDE 209D. Professional Mandarin III. 2-3 Units.
Continuation of INDE 208D. Designed for students who seek professional development via Mandarin. Coursework includes lectures, online classes, language partnerships, selected topics, projects and field activities. Goal is to enhance students' language abilities as professionals and facilitate a career. Students choose to enroll for 2 units or 3 units depending upon an agreed- upon workload approved by the instructor. Prerequisite: INDE 208D.

INDE 211. Creative Writing. 1 Unit.
For medical students - all levels of writing skill. Examines uses of creative writing, including understanding the experience of medical training. May be repeated for credit.

INDE 212. Medical Humanities and the Arts. 2 Units.
The interdisciplinary field of medical humanities: the use of the arts and humanities to examine medicine in personal, social, and cultural contexts. Topics include the doctor/patient relationship, the patient perspective, the meaning of doctoring, and the meaning of illness. Sources include visual and performing arts, film, and literary genres such as poetry, fiction, and scholarly writing. Designed for medical students in the Biomedical Ethics and Medical Humanities Scholarly Concentration, but all students are welcome.

INDE 214. Stanford Medical Student Journal. 1 Unit.
Provides an opportunity for editors of all levels to cultivate their skills and assist in preparing pieces submitted by colleagues for publication in the Stanford Medical Student Journal. Students enrolled in the course work closely with student authors as well as other editors. Editors examine multiple categories of writing, including opinion pieces, poetry, memoirs, book reviews, case reports and investigative reports. The Journal is published two to three times per year and highlights the diverse talents of Stanford medical students in both scientific writing and the humanities.

INDE 215. Queer Health & Medicine. 1 Unit.
Explores specific, pertinent, and timely issues impacting the health of the lesbian, gay, bisexual, and transgender community; examines the role of the primary care physician in addressing the health care needs of this community. Guest lecturers provide a gender-sensitive approach to the medical care of the LGBT patient, breaking down homophobic barriers and reaffirming patient diversity. May be repeated for credit.

INDE 217. Physician Scientist Hour. 1 Unit.
Enrollment is limited to MD, PhD, or MD-PhD students interested in careers as physician scientists. Focus is on aspects of developing careers in biomedical research through a mix of research lectures, clinical case presentations, and physician-scientist guest speakers.

INDE 218. Histology. 1 Unit.
This course focuses on the microscopic structure of the major organ systems, including the cardiovascular, respiratory, gastrointestinal, renal, and reproductive systems. Sessions examine the unique features of the cells and tissues that comprise the major organs, describe how they contribute to the organs' functions, and explore how the form the foundation for many pathologic processes. Course open to MD and MSPA students only.

INDE 221. Science of Medicine I. 12 Units.
First course in three-sequence Science of Medicine block. Focus is on structure, function, disease, and therapeutics of the respiratory system and the cardiovascular system. The Science of Medicine block presents organ system-based histology, pathology, physiology, pharmacology, and infectious disease in a sequence of interdisciplinary courses. Each organ-specific integrated course includes a review of the anatomy and related histology, normal function of that organ system, how the organ system is affected by and responds to disease including infection, and how diseases of that organ system are treated (therapeutics).

INDE 222A. Science of Medicine II-A. 7 Units.
Focus is on structure, function, disease, and therapeutics of the renal, gastrointestinal, and hepatic systems. Science of Medicine presents organ system-based histology, pathology, physiology, pharmacology, and infectious disease in a sequence of interdisciplinary courses. Each integrated course includes a review of the anatomy, related histology, and normal function of one or more organ systems, how the organ systems are affected by and respond to disease including infection, and how diseases of those organ systems are treated (therapeutics).

INDE 222B. Science of Medicine II-B. 7 Units.
Focus is on structure, function, disease, and therapeutics of the endocrine and musculoskeletal systems and on Women's Health. Science of Medicine presents organ system-based histology, pathology, physiology, pharmacology, and infectious disease in a sequence of interdisciplinary courses. Each integrated course includes a review of the anatomy, related histology, and normal function of one or more organ systems, how the organ systems are affected by and respond to disease including infection, and how diseases of those organ systems are treated (therapeutics).nPrerequisites if applicable: INDE-221, completed or concurrent INDE-222-A.

INDE 223A. Science of Medicine III-A. 5 Units.
Focus is on structure, function, disease, and therapeutics of the nervous system and skin. Science of Medicine presents organ system-based histology, pathology, physiology, pharmacology, and infectious disease in a sequence of interdisciplinary courses. Each integrated course includes a review of the anatomy, related histology, and normal function of one or more organ systems, how the organ systems are affected by and respond to disease including infection, and how diseases of those organ systems are treated (therapeutics).nnPrerequisites if applicable: INDE-221, INDE-222-A.

INDE 223B. Science of Medicine III-B. 5 Units.
Focus is on structure, function, disease, and therapeutics in the areas of Hematology and Autoimmune Disease. Science of Medicine presents organ system-based histology, pathology, physiology, pharmacology, and infectious disease in a sequence of interdisciplinary courses. Each integrated course includes a review of the anatomy, related histology, and normal function of one or more organ systems, how the organ systems are affected by and respond to disease including infection, and how diseases of those organ systems are treated (therapeutics).

INDE 224. Pathophysiology Capstone. 4 Units.
The Pathophysiology Capstone (PC) is a newly developed Science of Medicine (SOM) Year 2 capstone experience in Quarter 6 that will be integrated with the Practice of Medicine (PON) course called "Transition to Clerkships." This four-week long intensive spring quarter course, including 25-32 hours of instruction, focuses on the re-introduction of core pathophysiology concepts as well as delving into advanced topics, treatment, and breakthroughs based on essentials taught in the SOM series in quarters 3-5.nPrerequisites: Successful completion of Science of Medicine (SOM) I,II,III.

INDE 225. Popular and Clinical Nutrition: Food Facts, Fads, and Pharmacology. 1 Unit.
Designed for medical students and other health care professionals. Lunchtime lectures review the epidemiological and clinical research related to eating patterns and misconceptions of the public, the mechanisms of pharmacological effects of food, and related topics common to patient nutritional concerns. Topics include fad diets, the impact of dietary addiction, longevity associated with caloric restriction, toxins in foods and the action of phytonutirents. Epidemiological, clinical, and biochemical studies are reviewed in the discussion of these and other topics.

INDE 226. History of Medicine Online. 1 Unit.
Via Internet. Topics include: ancient medicine, Egypt and Babylonia, ancient Greece and Rome, Europe in the Middle Ages and the Renaissance, 18th-century schools of thought, and technological medicine. Sources include Kleinman's core clinical functions, and text, pictures, hypertext links, and sound clips. For assistance accessing the course, email: cwpsupport@lists.stanford.edu. Enroll in Axess, then ask cwpsupport to be added to the course site as a student.

INDE 227. Careers in Medicine: Pathways in the Medical Sciences. 1 Unit.
Open to medical students, graduate and undergraduate students. Interactive, seminar-style sessions expose students to diverse career opportunities and the challenges of developing work-life balance in medicine. Recognized experts in clinical medicine and biomedical research who have been innovators in their careers discuss their work, decision-points in their career pathways, and lifestyle aspects of their choices.

INDE 228. Career Transition Planning: Taking Action Today for a Successful Tomorrow. 1 Unit.
Open to School of Medicine MD and graduate students; post-docs and clinical fellows may audit by consent of instructor. How to prioritize career goals and develop an effective job search campaign. Topics: translating scientific and clinical training into a variety of workplace environmennts, professional network development, professional interest assessment, recruiters' perspectives, credentials development, and creating a marketing plan. Guest speakers from myriad career fields. May be repeated for credit.

INDE 230A. Topics in Scientific Management. 1 Unit.
Broadly discusses foundational topics in pursuing academic careers, including the academic and faculty career landscape, establishing a writing practice, establishing an independent research agenda, issues of diversity, equity and inclusion, presentation skills, self-advocacy, creativity in research, establishing collaborations, and grantsmanship. Topics may vary annually.

INDE 230B. Topics in Scientific Management. 1 Unit.
Reviews management skills necessary for successfully assuming leadership roles in scientific research. Addresses some of the most difficult aspects of developing, directing, and managing people and projects and running a research group, especially issues that new faculty have traditionally learned by trial and error over a number of years. Topics include: the faculty job search process and strategies, key elements in starting a lab, basic principles regarding legal dimensions of scientific activity (intellectual property, royalties, links with industry), team science, research ethics, communication and negotiation skills, writing and securing grants. Topics may vary annually.

INDE 230C. Topics in Scientific Management. 1 Unit.
Deep dive into topics in mentorship, which may include mentoring in a research environment, navigating all directions of mentoring relationships within academia, conflict management and resolution, communication styles, setting expectations, giving feedback, cultivating ethical behavior, promoting research self-efficacy, and navigating intercultural dynamics. Topics may vary annually.

INDE 231A. Career Transitions: Academia. 1 Unit.
Preference to PhD students in their fourth year or beyond and postdocs/fellows in their intended final year. Restricted to students in Biosciences and the School of Medicine. Focus is on practical, hands-on preparation of application materials (including interview and job talk) for academic positions. Provides practical, hands-on preparation for Bioscience PhD students, postdoctoral fellows and research/clinical trainees ready to apply to academic positions. It not only previews the academic hiring process, including tips from experienced faculty from different types of institutions, but also guides participants in the preparation and polishing of their application materials for success on the job market.

INDE 231B. Career Prep and Practice: Academia. 1 Unit.
Open to all Biosciences PhD students, postdocs/fellows and medical students/residents/fellows planning to pursue academic careers. Focus is on gaining a deeper understanding of faculty roles and responsibilities. Topics include how to balance teaching, research, service, lab set-up, grantwriting and publishing at different types of institutions. Features panels of experienced faculty members from different academic environments. More information available on course website: web.stanford.edu/class/inde231b.

INDE 232. Introduction to Academic Medicine for Physician-Scientists. 3 Units.
Open only to accepted MSTP students. Presentations by Stanford faculty on professional development topics, including: choosing a dissertation advisor, giving oral presentations, writing a grant proposal, attending scientific meetings, developing a research career. Substantial writing component.

INDE 233. Medical Education Seminar Series. 1 Unit.
For pre-clinical and clinical medical students. A series of sessions rotating among the following formats: Medical Education journal club; education works-in-progress; topics in medical education design, implementation, and evaluation; teaching M&M; hot topics and controversies in medical education. May be repeated for credit.

INDE 234. Introduction to Writing Research Proposals. 3 Units.
Practical instruction in research proposal writing. Suitable for advanced graduate students. Substantial writing component. Enrollment by instructor approval only.

INDE 238. Managing Difficult Conversations. 3 Units.
(Crosslisted with GSBGEN 368) This elective 3-unit course is offered to all medical students, residents, and fellows, and to GSB students who aspire to improve their ability to deal effectively with difficult interpersonal situations. The course will be taught by William F. Meehan III, the Raccoon Partners Lecturer in Strategic Management, Stanford Graduate School of Business and Charles G. Prober, M.D., Professor of Pediatrics, Microbiology & Immunology and Senior Associate Vice Provost for Health Education, Stanford School of Medicine. The course, which will be case-based, will involve frequent student-to-student and student-to-instructor role-playing in authentic difficult professional and interpersonal situations. Topic-specific experts often will be present to participate as class guests. Relevant principles of professionalism, leadership, and psychology underlie the course pedagogy. Students will be expected to attend all classes unless excused in advance. Class preparation will include reading of assigned cases; analysis of the cases and recommendations as to how to confront specific difficult conversations (consistent with assigned study questions); and reading of assigned background material. It is important that all students participate actively in classroom discussions. Class size will be limited to 40 students per the following: (1) a maximum of 20 MBA students and (2) a maximum of 20 non-GSB graduate students. MD student enrollment only in INDE 238, GSB students enroll under GSBGEN 368.

INDE 240. Humanistic Medicine: Engaging Difference by Design. 1 Unit.
In the changing healthcare landscape, maintaining a human connection with patients is more essential than ever. Humanistic medicine is defined by its focus on building a patient-provider relationship grounded in compassion and empathy. It¿s medicine practiced with sensitivity to diverse cultural backgrounds, values, and preferences. How do our own unique identities as healthcare practitioners intersect with those of our patients? Our colleagues? This course incorporates experiential activities with active discussion to explore the complex ways that identities intersect in medicine, starting with our own.

INDE 255A. Health Policy, Finance and Economics I. 1 Unit.
Open to medical students and resident physicians. Introduction to basic concepts and current issues in health policy, health finance, and health economics. Goals are to promote understanding of the forces that shape healthcare; to integrate medical students with graduate medical education (residents); to motivate participants to pursue further scholarly activity in these subjects through coursework, graduate programs or research . Team taught by world-renowned experts in their respective fields. Prerequisite: instructor consent.

INDE 257. Global Health Storytelling. 1 Unit.
Global health storytelling is a hands-on workshop that teaches global health students the art of performing compelling stories. Participants will focus on seeking, structuring, and sharing stories culminating in a live performance in front of their peers. Through the workshop, students will learn the narrative structure of a story, practice active listening, examine the importance of body language and dramatic techniques, and understand the power of narrativizing medical research and clinical experiences.

INDE 258. PSTP Career Development Symposium. 1 Unit.
Enrollment is limited to senior MD program students. Preference given to MSTP and Berg Scholars Program participants. Focus is on providing guidance to students who are pursuing physician-scientist careers. Topics include introduction to physician investigator careers, identifying a research area and mentor, how to maintain a research focus in a clinical environment, clinical research: challenges and rewards, staffing and funding a research group. Guest speakers include Stanford faculty physician-scientists and physician-scientist assistant professors for a panel discussion.Prerequisites: Must be a senior MD program student. Priority will be given to MSTP and Berg Scholars Program participants.

INDE 260A. Pharmacological Treatment of Disease. 1 Unit.
This course will provide an overview of how drugs and therapeutics are used in the treatment and prevention of diseases and disorders. It aims to review the general principles of drug action, including drug absorption, distribution, metabolism, elimination, pharmacokinetics, and pharmacodynamics of the major drug classes. For each major drug class, we will review selected prototype drugs and discuss their molecular mechanisms of action, therapeutic indication, adverse effects, contra-indications and drug-drug interactions.

INDE 260B. Pharmacological Treatment of Disease. 1 Unit.
This course will provide an overview of how drugs and therapeutics are used in the treatment and prevention of diseases and disorders. It aims to review the general principles of drug action, including drug absorption, distribution, metabolism, elimination, pharmacokinetics, and pharmacodynamics of the major drug classes. For each major drug class, we will review selected prototype drugs and discuss their molecular mechanisms of action, therapeutic indication, adverse effects, contra-indications and drug-drug interactions.

INDE 263. Microbiology and Infectious Diseases I. 3 Units.
First course in a two-course series exploring microbiology, pathogenesis, and clinical issues associated with infectious diseases. Patient cases springboard discussion on viral, bacterial, fungal, protozoal and helminthic pathogens. Online videos and self-assessments followed by interactive sessions and problem sets.

INDE 265. Microbiology and Infectious Diseases III. 2 Units.
Second course in a two-course series exploring microbiology, pathogenesis, and clinical issues associated with infectious diseases. Patient cases springboard discussion on microbiomes, diarrhea, hepatitis, STIs, helminths, zoonoses. and systemic diseases. Online videos and self-assessments followed by interactive sessions and problem sets.

INDE 267. Planning and Writing a Research Proposal. 1 Unit.
Students will gain fundamental skills in developing research questions and writing research proposals through a series of engaging workshops. Topics include developing a research idea; writing an executive summary, i.e. NIH-style 1-page specific aims; outlining the research plan to include rigor; and designing career development training plans. Students will develop early drafts of key proposal documents, such as the 1-page Specific Aims, and receive feedback from an instructor or Grant Coach. Students in the Medical Scholars Research Program or Biosciences Program may enroll in the course.

INDE 268. Early Clinical Engagement. 1 Unit.
Early Clinical Engagement (ECE) is an innovative course for first year medical students to participate in clinical experiences that inform their vision as future physicians. Course goals include integration into the clinical setting with preceptors, development of concrete skills, and introduction to different career paths. ECE includes three components: (1) clinical experiences, (2) interactive large group seminars, and (3) small group sessions for reflection of clinical sessions.
Same as: ECE

INDE 273. Medical Improvisation. 1 Unit.
Medicine, like theater, is both a skill set and an art form. The practice of medicine demands exceptional communicative, cognitive, and interpersonal skills in order to respond to unpredictable situations while interacting with a wide variety of individuals. Improvisational theater skills have a surprising and substantial overlap with those required of clinicians. Improv is a genre of performance art grounded in principles of spontaneity, adaptability, collaboration, and skilled listening. In this course, the principles and training techniques of improvisational theater are used to highlight and improve awareness, communication, and teamwork in the field of medicine. Limited enrollment. Class meets on five consecutive Mondays 9/30, 10/7, 10/14, 10/21, 10/28 from 5:30-7:30 pm.

INDE 274. Medical Spanish. 2 Units.
Medical Spanish is a new elective course for MD and MSPA students to engage in 40-hours of medical Spanish curriculum through an online platform then solidify their knowledge through workshops for practical dialogue with faculty members at Stanford Medicine in multiple subspecialties who have native Spanish fluency. Students take part in online curriculum that is differentiated into 3 proficiency levels, therefore all levels of learners from beginners to native speakers are encouraged to participate. The online content covers over 36 medical specialties to provide a broad base of clinically relevant knowledge. The platform has validated pedagogy to meet the needs of individual learners with clinical scenarios that are relevant to medical engagements across all disciplines and inclusive of a culturally relevant approach to clinical care. Subspecialty faculty will lead the language workshops: Dr. Reena Thomas, Clinical Associate Professor of Neurology; Dr. Matias Bruzoni, Associate Professor of Surgery; Dr. Katherine Bianco, Clinical Associate Professor of Obstetrics and Gynecology; Dr. Felipe Perez, Clinical Assistant Professor of Anesthesiology; Dr. Moises Gallegos, Clinical Assistant Professor of Emergency Medicine.

INDE 281. Ethics, Science, and Society. 1 Unit.
This discussion focused Ethics, Science, and Society interactive mini-course will engage Immunology graduate students, postdoctoral fellows, and faculty in learning and conversations on topics in responsible research (including animal subjects, authorship, collaboration, conflicts of interest, data management, human subjects, mentor-mentee relationships, peer review, publication, research misconduct, and social responsibility) and diversity in science, informed by readings, case studies, individual reflections, and more. Some of the driving themes in this course include: what it means to do research well and how to and not to achieve this, why doing research well and with integrity is important, and who are researchers currently and who should they be. Prerequisite: MED 255.
Same as: IMMUNOL 258

INDE 290A. Walk With Me: A Patient and Family Centered Exploration of Health & The Health Care System. 1 Unit.
This innovative course for first year students places patients, families, and caregivers front and center in the journey to explore health from a person-centered perspective and better understand the challenges of managing optimal health in a complex health care system. The curriculum is organized around a monthly workshop series, which explores a different health systems science topic each month through lectures from experts from Stanford and the community and from the perspectives of an individual patient or caregiver, or panel, with time to engage in discussion and explore patient-centered solutions to real-world problems. Students are also paired with a patient partner for the year with whom they meet (online) monthly, outside of class, to explore the patient and caregiver journey by developing an individual relationship. Participation in this course can fulfill the ECE requirement. Enrollment by Instructor Approval Only. Please submit an application by September 11 at 11:59PM: https://stanfordmedicine.qualtrics.com/jfe/form/SV_bvzt6ZZqAg5Vvkp. Those selected will be informed by September 14 at 11:59PM so that they may enroll in the course. For questions, please email Marcello Chang (TA): marcelkc@stanford.edu.

INDE 290B. Walk With Me: A Patient & Family Centered Exploration of Health & The Health Care System. 1 Unit.
Continuation of monthly workshop series begun in INDE 290A, with new monthly topics. Students will continue the partnership with their patient and gain further understanding of the challenges of managing optimal health in a complex health care system. Enrollment by Instructor Approval Only.nnThis course can be fulfills the ECE requirement for pre-clinical students.

INDE 290C. Walk With Me: A Patient & Family Centered Exploration of Health & The Health Care System. 1 Unit.
Continuation of monthly workshop series begun in INDE 290A and INDE 290B, with new monthly topics. Students will continue the partnership with their patient and gain further understanding of the challenges of managing optimal health in a complex health care system. Enrollment by Instructor Approval Only.

INDE 292. Exploration of The Health Care System : Clinical Partnership Development. 1-2 Unit.
For second year medical students who wish to continue their existing longitudinal clinical partnerships begun in year 2. 1/2 day clinical immersion, by arrangement woth preceptor. 2-unit option includes clinical quality improvement or other approved project. Director approval required.

INDE 295. Bioethics and Anthropology Interdisciplinary Directed Individual Study. 3-5 Units.
Supervised individualized study in bioethics and anthropology for a qualifying paper, research proposal, or project with an individual faculty member. May be repeated for credit.

INDE 297. Reflection and Contextual Medicine. 4 Units.
Required for all MD students enrolled in clerkships at Stanford affiliated sites. Two-year curriculum designed to provide structured time for students to step back from clerkships, in order to promote reflection on and reinforcement for their learning in the clinical environment. The goals of this course are: to offer a regular opportunity for students to discuss challenging issues faced in their clinical training; to ground students in strategies for managing challenging situations they are likely to experience in their personal and professional lives while on clerkships; and to provide opportunities for students to develop and expand their reflective and communication skills. Components of this curriculum include the "Doctoring with CARE" small groups, the "MeD-ReST" Medical Student Resiliency Skills Training¿ sessions, and the "Contextual Medicine: Communication, Connection and Creativity in Practice" lunch and lecture series. All students in clinical clerkships must participate in all aspects of RCM Days. Students enrolled in Selective II Clerkships (Sub-internships) may choose to participate in clinical duties but are expected to communicate their absence to course faculty/staff in advance. Prerequisite: Concurrent enrollment in clinical clerkships. Please note, students will enroll in this course their final quarter of enrollment prior to graduation to receive retroactive credit for all session. Only enroll the last quarter of enrollment.

INDE 298. Women's Health Independent Project. 1 Unit.
Women's Health Scholarly Concentration. Students pursue individual projects under the supervision of a faculty member. Prerequisite: consent of instructor.

Medicine Courses

MED 1A. Leadership in Multicultural Health. 2 Units.
Designed for undergraduates serving as staff for the Stanford Medical Youth Science Summer Residential Program (SRP). Structured opportunitie to learn, observe, participate in, and evaluate leadership development, multicultural health theories and practices, and social advocacy. Utilizes service learning as a pedagogical approach to developing an understanding of the intersections between identity, power and privilege and disparities (health, education, environment), fostering knowledge and skills to become social advocates to address forms of inequities. Students explore approaches for identifying and tackling issues of equity (health and education) as well as learn fundamental skills necessary to implement activities for the Summer Residential Program.

MED 1B. Identity, Power and Privilege in Multicultural Health. 1 Unit.
An independent study service learning course designed to develop students' understanding of the intersection between identity, power, privilege, and disparities (health, education, environment). Students submit a written reflective term paper based on their experience as staff for the Summer Residential Program as well as their understanding of how constructs of identity, power and privilege impact low-income and underrepresented students in their pursuit of higher education. Prerequisite MED 1A.

MED 50N. Translational Research: Turning Science into Medicine. 3 Units.
Investigates how scientific research informs how physicians take care of patients and how clinical research informs how scientific experiments are conducted. Topics include how these two processes have improved health and have resulted in innovation and scientic progress; specific human disease areas in allergy and immunology that affect all ages of patients globally, including food allergy; scientific concepts of research that helped in discovery of novel diagnostics and treatment of disease; ethical roles of physicians and scientists in conducting translational research in human disease.

MED 50Q. Respiration. 3 Units.
Preference to sophomores. Topics include: the biological basis for use of oxygen for aerobic metabolism in animals, human lung physiology and pathophysiology, comparative physiology of respiration in fish, birds and mammals, new insights into mammalian lung development, current challenges in human respiratory health including air pollution and lung cancer. Student presentations on specific topics based on literature research developed in consultation with the instructor. Application required.

MED 51B. Compassionate Presence at the Bedside: The Healer's Art. 3 Units.
Students in this class must have already completed MED51Q. This quarter is a skill-based practicum. The skills component of this course is focused on communication and presence at the patient's bedside. Students will learn the theoretical aspects of respectful communication and cultural competence. They will then participate in a variety of immersive simulation activities including role-play, video enacting, class presentations, reflective exercises to understand the nuances of empathetic communication. The focus of the second quarter is to practice the art of communication honestly and compassionately with patients, learning empathy and cultivating the skill of being present at the bedside of a patient. Students will be assigned a panel of seriously ill patients and they do mentored house calls and provide support to patients and families as a volunteer. The idea here is that the knowledge and skills acquired in the first quarter will be utilized in real-life settings to practice compassionate and respectful communication strategies, learn how to be a cam, compassionate and healing presence at the bedside of seriously ill patients. We believe that medical school curricula do not have a strong focus on essential doctoring skills related to communication and a compassionate presence at the bedside. By offering this course to pre-med students, we believe that the doctors of the future will become skilled and compassionate healers.

MED 51Q. Aging, Dying, and End-of-Life Care. 3 Units.
This is a Community-Engaged Virtual Healthcare Course for undergraduate students. This course is designed to prepare students to critically examine values, attitudes, and contexts that govern perspectives toward and engagement of patients within the context of aging and end of life. The course prepares students to responsibly and reflectively interact with aging and seriously ill patients in a mentored setting as follows: (a) Students will learn about the history, evolution, principles and practice of geriatrics and palliative care in class through didactics and lectures by guest lecturers (b) Through mentored fieldwork, students will learn the basic competencies of communicating with older adults from diverse backgrounds in a respectful and compassionate manner. Students will be exposed to the challenges faced by patients from diverse backgrounds and their caregivers. Each student will be assigned a small panel of patients. Due to COVID, all patient and family interaction will be virtual. Students will work with an inter-disciplinary team, conduct virtual calls on patients in their panel, and write progress notes, which will become a part of the patients' electronic medical records. (c) Weekly assignments will help students reflect on their interactions with the patients and lessons they learned. (d) All students will complete a mentored capstone project (either individually or in small groups as they choose) and present this project at the end of the quarter. Our goal is to train future leaders in healthcare and especially in the space of aging and end-of-life care. PLEASE NOTE: This Introductory Seminar is a Cardinal Course. Students who enroll in MED 51Q will be working virtually with patients. As a prerequisite for patient-care, all students (a) must complete HIPAA training, patient safety training, and a background check. All tests required will be provided free of cost and have to be completed with specific agencies affiliated with Stanford. Failure to complete paperwork will result in student being dropped from the class. Dr. Periyakoil will send more specific directions after students are enrolled in MED 51Q.

MED 52Q. What is a Human? Scientific and Mythological Approaches to Meaning. 3 Units.
Reconciling our mythology and current scientific consensus is a worthwhile pursuit to establish a balanced, congruent personal philosophy toward life. nIn this sophomore seminar, we will first explore scientific perspectives on the origin and evolution of humans utilizing archaeology, genetics, and evolutionary psychology. With this framework secured, we will sample major religious texts such as Genesis, The New Testament, and Eastern texts. Throughout the course, each student will have opportunities to reflect deeply on his or her own personal worldview (past, present, and future) to tailor a personalized philosophy for life. This course will provide you with an overview of a fascinating subject that can impact progress on your life journey and career.

MED 53Q. Storytelling in Medicine. 3 Units.
Stories are at the core of medical practice, but the skills developed are applicable across disciplines, including technology and business. Storytelling in Medicine is a new sophomore seminar designed to teach skills in multiple modalities of storytelling including narrative, oral, social media, academic presentations and visual storytelling for different audiences. This seminar combines small groups, interactive workshops, and guest speakers who are experts in their fields of medicine. This will also include editing and support to complete your own story by the end of the seminar.

MED 54Q. Decolonizing Global Health. 3 Units.
In this seminar, we will look at how global health discourse has changed over the years and discuss possible future directions for global health exchanges. This course will introduce students to the various definitions of global health from colonial times, through international health, tropical medicine, and now global health. We will consider what moral imperative leads to global health work, and how conventional thought about the relationships between providers, patients and systems in the global North and South is shifting. Global health has transitioned through various stages. In the 1800s, missionary doctors provided medical care while also spreading religion and colonial interests. During the twentieth century, great strides were made in sanitation and infectious disease treatment as part of systems and government based ¿international health¿ and ¿tropical medicine.¿ Paradoxically, in the last two decades, as the world becomes more intertwined, ¿global health¿ has generally involved shorter term encounters, usually with specialists at the vanguard. With the epidemiological transition and increasing communicable disease prevalence in developing countries, systems strengthening, and capacity building are the main priorities. It is argued that the current global health infrastructure does not focus on building long term partnerships or assign equitable worth to participants from the global North and South. We will investigate how effective our current efforts are and think critically about the meaning of ¿decolonizing global health¿ as regards population outcomes and the flow of resources. We will review each of these stages in global health development and use examples of long-term partnerships that have yielded considerable success, such as Partners in Health (PIH) and Academic Model Providing Access to Healthcare (AMPATH). We will also briefly discuss overlapping concepts in global health equity and health and social justice in the US. Guest speakers from primary care fields and with global health backgrounds will stimulate further dialogue and speak from their experiences on the front lines.

MED 71N. Hormones in a Performance-Enhanced Society. 3 Units.
(Formerly 117Q) Preference to first-year students. Explores how the availability of hormone therapy has affected various aspects of daily lives. Topics include the controversies concerning menopause and its treatment; use of hormones in athletics; cosmetic use of hormones to enhance growth, strength, and libido; use of hormones as anti-aging drugs; and how the hormone system has influenced our notions of gender. Includes the biochemistry and physiology of the human endocrine system; how hormones influence behavior, and how to read a scientific paper.

MED 73N. Scientific Method and Bias. 3 Units.
Offers an introduction to the scientific method and common biases in science. Examines theoretical considerations and practical examples where biases have led to erroneous conclusions, as well as scientific practices that can help identify, correct or prevent such biases. Additionally focuses on appropriate methods to interweave inductive and deductive approaches. Topics covered include: Popper¿s falsification and Kuhn¿s paradigm shift, revolution vs. evolution; determinism and uncertainty; probability, hypothesis testing, and Bayesian approaches; agnostic testing and big data; team science; peer review; replication; correlation and causation; bias in design, analysis, reporting and sponsorship of research; bias in the public perception of science, mass media and research; and bias in human history and everyday life. Provides students an understanding of how scientific knowledge has been and will be generated; the causes of bias in experimental design and in analytical approaches; and the interactions between deductive and inductive approaches in the generation of knowledge.

MED 110. Patient Health Advocate. 2 Units.
The "Patient Health Advocate" course is designed to introduce students to population health concepts in primary care, providing a clinical experience and an opportunity to contribute towards patient care. With guidance from faculty members, students will learn important preventive health care topics, gain skills in patient health coaching, and design and implement a quality improvement project to address a population health measure of their choice. Students will also be exposed to clinical care through clinic shadowing and pre-visit planning with resident physician mentors.nnPrerequisites: MED 143A/243A or equivalent.

MED 114. Frontier Technology: Understanding and Preparing for Technology in the Next Economy. 2 Units.
The next wave of technological innovation and globalization will affect our countries, our societies, and ourselves. This interdisciplinary course provides an introduction to frontier technology, the intersection where radical forward thinking and real-world implementation meet. Topics covered include artificial intelligence, additive manufacturing and advanced robotics, smart cities and urban mobility, telecommunications with 5G, and other key emerging technologies in society. These technologies have vast potential to address the largest global challenges of the 21st century, ushering in a new era of progress and change. Limited enrollment, contact instructors for application.
Same as: CEE 114, CEE 214, MED 214, PSYC 114

MED 121. Translational Research and Applied Medicine. 2-3 Units.
(Same as MED 121; undergraduate students enroll in MED 121) Open to graduate students and medical students, this course enables students to learn basic principles in the design, performance and analysis of translational medical research studies. The course includes both didactic seminars from experts in translational medicine as well as the opportunity to design and present a translational research project. Students enrolling for 3 units are paired with a TRAM translational research project and work as a team with TRAM trainees and faculty on a weekly basis, as arranged by the instructor, and present a final project update at the end of the quarter.
Same as: MED 221

MED 124. Global Child Health. 3-5 Units.
(HUMBIO students must enroll in HUMBIO 124C. Med/Graduate students must enroll in MED 124 or PEDS 124.) This course introduces students to key challenges to the health and well being of children worldwide. We explicitly focus on child and public health problems in low- and middle-income countries (LMIC) to reflect the global burden of disease among children. We will review the scope and magnitude of the leading causes of morbidity and mortality, as well as examine regional variations. We will then identify both medical and non-medical causes, effects of, as well as interventions to address, some of the biggest child health problems. The course will also prevent an overview of the role of culture, gender, and non-state actors (NGOs, foundations, etc.) on health and health policy. Optional: The course will be taught in conjunction with an optional two-unit community engaged learning component. Please view the course syllabus for more information. Upper division course with preference given to upperclassmen. Prerequisites: Human Biology Core or equivalent or Biology Foundations.
Same as: HUMBIO 124C, PEDS 124

MED 129. Health Care Systems Around the World. 4 Units.
This course will explore the role of health care systems in societies around the world, identifying the common challenges facing health care systems and how different institutional structures in different countries perform in response to these challenges. We will structure the course around general conceptual frameworks related to key health system institutions (including financing, insurance, provider payment, patient cost-sharing, and the regulation of medical technology). From this foundation, we will draw on the experience of individual countries (high and low income, with heavy chronic disease and infectious disease burdens) to illustrate the function of these institutions under real-world circumstances observed around the globe. Prerequisite: Human Biology Core or Biology Foundations or equivalent or consent of instructor.
Same as: HUMBIO 129W

MED 130. Yesplus: Meditation practices for wellbeing. 1 Unit.
Meditation Practices for Wellbeing" is a 1-unit course that provides students with tools and strategies to develop a sustainable approach to their happiness and wellbeing. Students will learn breathwork and meditation based techniques to decrease stress and increase peace and focus in day to day life. Students will also study happiness-based research and participate in community building discussions, yoga, and mindfulness processes to learn how wellness can be sustained as a personal practice. Class meets 5 evenings throughout the quarter, along with a mandatory mini retreat during the third week (Thursday 7 - 10 pm, Friday 7 - 10 pm, Saturday 12 - 3 pm). Open to all students, including freshmen and those new to meditation. Enrollment limited to 25. Admission by application, details at first class. See yesplus.stanford.edu for more information.

MED 131. Exploring Israel's Ecosystem in Human and Planetary Health. 1-2 Unit.
Israel¿s innovation ecosystem is one of the most admired in the world. Israel is a leader in health, environmental, and ecological innovation, and despite its small size, Israel is home to a disproportionate number of successful start-ups. Israel combines history, culture, politics, and religion in unparalleled ways that influence not only the human and planetary health innovation ecosystem, but all aspects of life. Students in this course will (1) develop an understanding of how socio-cultural conditions, including political, regulatory, military, and academic institutions; geographical, historical, environmental, and technological conditions; and human cultures and activities have shaped the innovation ecosystem in human and planetary health in Israel into one of the world¿s most productive centers; (2) gain an appreciation of the advantages and disadvantages faced by entrepreneurs in Israel, how they have evolved, and how they compare to the experience of entrepreneurs in the US and elsewhere; and (3) develop a strategy for delving more deeply into these themes in Israel. Note, this course will meet a total of four times during spring term. ¿ REGISTRATION is limited to undergraduate students participating in the Bing Overseas Study Program in Israel, Summer 2020. Prerequisites: This course is limited in enrollment to undergraduate students who will be participating in the Summer 2020 Bing Overseas Study Program (BOSP) Seminar in Israel ¿ Exploring Israel¿s Innovation Ecosystem in Human and Planetary Health: Can A startup Culture and Technology Change the World?.

MED 142. Modem Ethical Challenges in Neuroscience and Organ Transplantation. 3 Units.
Today we face unprecedented innovations in neuroscience and medicine. While these advances offer new hope, they also challenge medical, legal, and ethical paradigms. We will explore the ethical constructs surrounding topics including brain death, brain-computer interfaces and other adaptive technologies, and organ transplantation. The course material will include clinical and legal cases, scientific literature, film and popular culture, and experiential learning at Stanford Hospital. We will also focus on cultural comparisons between the US and Japan, where brain death is not widely accepted and deceased donor organ donation is rare. Course evaluation will be based on participation, written work, and team projects.

MED 145. Alternative Spring Break: Confronting HIV/AIDS in San Francisco. 1 Unit.
Preparation for the Alternative Spring Break trip. Current issues regarding HIV/AIDS worldwide and in the United States, with a specific focus on San Francisco. Topics include biology, transmission, prevention, pharmaceutical development, discrimination, stigma, access to health care, and perspectives of affected communities. Students enrolling for 3 units attend both Monday and Wednesday sections; medical students who can only attend Wednesday session have option to enroll for 2 units. See asb.stanford.edu for more information.

MED 147. Methods in Community Assessment, Evaluation, and Research. 3 Units.
Development of pragmatic skills for design, implementation, and analysis of structured interviews, focus groups, survey questionnaires, and field observations. Topics include: principles of community-based participatory research, including importance of dissemination; strengths and limitations of different study designs; validity and reliability; construction of interview and focus group questions; techniques for moderating focus groups; content analysis of qualitative data; survey questionnaire design; and interpretation of commonly-used statistical analyses.
Same as: CHPR 247, MED 247

MED 157. Foundations for Community Health Engagement. 3 Units.
Open to undergraduate, graduate, and MD students. Examination and exploration of community health principles and their application at the local level. Designed to prepare students to make substantive contributions in a variety of community health settings (e.g. clinics, government agencies, non-profit organization, advocacy groups). Topics include community health assessment; health disparities; health promotion and disease prevention; strategies for working with diverse, low-income, and underserved populations; and principles of ethical and effective community engagement.

MED 159. Oaxacan Health on Both Sides of the Border. 2 Units.
Required for students participating in the Community Health in Oaxaca summer program. Introduction to the health literacy and health-seeking behaviors of Oaxacan and other Mexican migrants; the health challenges these groups face. Through discussion and reflection, students prepare for clinical work and community engagement in Oaxaca, while also gaining knowledge and insight to make connections between their experiences in Mexico and their health-related work with Mexican immigrants in the Bay Area. Service Learning Course (certified by Haas Center). Prerequisite: application and acceptance into the Community Health in Oaxaca Summer Program (http://och.stanford.edu/oaxaca.html).

MED 160. Physician Shadowing: Stanford Immersion in Medicine Series. 1 Unit.
Undergraduates are paired with a physician mentor at Stanford Hospital and Clinics, Lucile Packard Children's Hospital, or the Veteran's Administration Hospital. May be repeated for credit. Prerequisite: Application and acceptance to the SIMS program.
Same as: SIMS

MED 164. Covid-19 Case Investigation and Contact Tracing. 3-6 Units.
In this service-learning course students will be learn how to identify people who have COVID-19 and those who have been exposed to people with COVID-19. Students will learn basics about the biology and health effects of SARS-CoV-2 and the epidemiology of COVID-19. Students will be taught important skills in healthcare communication including motivational interviewing, health education, and health coaching. Students will work as volunteers together with Santa Clara County staff to interrupt the chains of transmission of COVID-19 as they apply skills they have learned to help people with the illness and those who have been exposed understand the importance of isolation, quarantine, and other critical aspects of public health needed to control and manage this disease. Students will need to be willing to commit 20 hours per week to this course for 10 weeks over 2 quarters. Requires application and instructor approval. Please contact Course Director, Lars Osterberg MD, MPH for an application form and approval for enrollment.
Same as: CHPR 235, MED 264

MED 181. Preparation for Early Clinical Experience at the Cardinal Free Clinics. 1-2 Unit.
Training course for new undergraduate volunteers at the Cardinal Free Clinics (CFCs). Topics include introduction to methods for providing culturally appropriate, high quality transitional medical care for underserved patient populations, clinic structure and roles, free clinics in the larger context of American healthcare, foundations in community health, cultural humility and implicit bias in healthcare, motivational interviewing and patient advocacy skills, and role-specific preparation. Application only; must be an accepted CFC volunteer. Visit https://cfc.stanford.edu for more information. 1-2 units.

MED 182. Early Clinical Experience at the Cardinal Free Clinics. 1-2 Unit.
The Cardinal Free Clinics, consisting of Arbor and Pacific Free Clinic, provide culturally appropriate, high quality transitional medical care for undeserved patient populations in the Bay Area. Students volunteer in various clinic roles to offer services including health education, interpretation, referrals, and labs. In clinic students are guided in the practice of medical interviews, history-taking and physical examinations as appropriate, and work with attending physicians to arrive at a diagnosis and management plan. Visit http://cfc.stanford.edu for more information. For questions related to the course or volunteering, please email arborclinic@stanford.edu and/or pacific@med.stanford.edu.
Same as: MED 282

MED 184. Team Leadership in the Cardinal Free Clinics I. 1 Unit.
Introduction to skills for effective leadership, including topics such as conflict resolution, team dynamic. Applied learning through shifts at the Cardinal Free Clinics and related project work. Enrollment limited to Cardinal Free Clinic Managers.
Same as: MED 284

MED 199. Undergraduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

MED 200. Primary Care Presentations. 1 Unit.
This course is a lecture series offered during the winter quarter. The aim of this seminar is to allow medical students to experience the mindset of primary care physicians in real time. Classes feature presentations of patient cases submitted by Stanford faculty. Faculty presenters are provided with the diagnostic information for the cases in a sequential manner during and not in advance of each class, allowing students to learn from the thought process of physicians in real time as they put together the differential diagnosis, interpret diagnostic information, deliberate treatment and management options, and discuss other thoughts about the cases.

MED 201. Internal Medicine: Body as Text. 1 Unit.
Body as Text refers to the idea that every patient's body tells a story. The narrative includes the past and present of a person's social and medical condition; it is a demonstration of the phenotype. The art of reading the body as text was at its peak in the first half of the 20th century, but as technology has become ascendant, bedside skills and the ability to read the text have faded. Beyond scientific knowledge and medical facts, it is this often forgotten craft which is at the heart of the excitement of being an internist. This course introduces students to the art of the clinical exam, to developing a clinical eye, and learning to see the body in a completely different way. Enrollment will be based on a lottery system, for which details will be sent to first year students at the end of mini quarter.

MED 202. Alternative Spring Break: Rosebud Resilience: Community, Health and Learning in Lakota Nation. 1 Unit.
Open to MD, graduate, and undergraduate students. Classroom preparation followed by a one week spring break service learning experience on a reservation in South Dakota. Introduces students to the challenges and promise of Native American and rural health care, and the role of communities as leaders and problem solvers. Includes lectures, discussion and readings pertaining to Native American culture, current research in Native American health, and the methods and practice of community based participatory research.

MED 206. Meta-research: Appraising Research Findings, Bias, and Meta-analysis. 3 Units.
Open to graduate, medical, and undergraduate students. Appraisal of the quality and credibility of research findings; evaluation of sources of bias. Meta-analysis as a quantitative (statistical) method for combining results of independent studies. Examples from medicine, epidemiology, genomics, ecology, social/behavioral sciences, education. Collaborative analyses. Project involving generation of a meta-research project or reworking and evaluation of an existing published meta-analysis. Prerequisite: knowledge of basic statistics.
Same as: CHPR 206, EPI 206, STATS 211

MED 207. History of Medicine. 1 Unit.
Begins with studying Shamanistic medicine, practiced by humans throughout the globe, for millennia. Covers magico-religious medicine developed in ancient Egypt, Mesopotamia and Greece; the 4th Century BC with Hippocrates beginning to separate medicine from religion and magic; the slow progress in ancient Rome, the medieval period, and during the Renaissance; and the acceleration in the pace of discoveries In the last few centuries, as medicine became more scientific, complex, and specialized as Pasteur developed the germ theory of disease, Darwin and Mendel publications begin the development of Evolution and of Genetics, Watson and Crick solved the mystery of DNA structure, organ transplants began, and imaging procedures such as CT and MRI came into being. Lectures are profusely illustrated, and, for the sake of comparison, two equally ancient systems of medicine, the traditional Chinese and the Vedic, are briefly reviewed.

MED 210. Principles and Practice of Healthcare Quality Improvement. 1 Unit.
This course will introduce students to foundational concepts in healthcare quality improvement, and provide tools for translating these principles into practice. Topics include: current state, A3, SMART goals, root-cause analysis, metrics and measures, PDCA cycles, process controls, systems, and sustainability. Students have the option of completing the course curriculum in conjunction with a quality improvement/patient safety project offered by the SMS Quality Improvement Interest Group. This course will meet for four in-class sessions throughout the quarter, with students reviewing the online materials before each session. May be repeated for credit up to three quarters with continued work on a quality improvement project, and all units count towards the Quality Improvement Scholarly Concentration. Open to all.

MED 212. Methods for Health Care Delivery Innovation, Implementation and Evaluation. 2 Units.
Preference given to postgraduate fellows and graduate students.Focus is on implementation science and evaluation of health care delivery innovations. Topics include implementation science theory, frameworks, and measurement principles; qualitative and quantitative approaches to designing and evaluating new health care models; hybrid design trials that simultaneously evaluate implementation and effectiveness; distinction between quality improvement and research, and implications for regulatory requirements and publication; and grant-writing strategies for implementation science and evaluation. Students will develop a mock (or actual) grant proposal to conduct a needs assessment or evaluate a Stanford/VA/community intervention, incorporating concepts, frameworks, and methods discussed in class. Priority for enrollment for CHPR 212 will be given to CHPR master's students.
Same as: CHPR 212, HRP 218

MED 214. Frontier Technology: Understanding and Preparing for Technology in the Next Economy. 2 Units.
The next wave of technological innovation and globalization will affect our countries, our societies, and ourselves. This interdisciplinary course provides an introduction to frontier technology, the intersection where radical forward thinking and real-world implementation meet. Topics covered include artificial intelligence, additive manufacturing and advanced robotics, smart cities and urban mobility, telecommunications with 5G, and other key emerging technologies in society. These technologies have vast potential to address the largest global challenges of the 21st century, ushering in a new era of progress and change. Limited enrollment, contact instructors for application.
Same as: CEE 114, CEE 214, MED 114, PSYC 114

MED 215A. Health Policy Graduate Student Tutorial I. 1-2 Unit.
Seminar series is the core tutorial for first-year Health Policy PhD students and all MS Health Policy students. Major themes in fields of study including health insurance, healthcare financing and delivery, health systems and reform and disparities in the US and globally, health and economic development, health law and policy, resource allocation, efficiency and equity, healthcare quality, measurement and the efficacy and effectiveness of interventions. Blocks of session led by Stanford expert faculty in particular fields of study. 2 unit registration requires written responses to assigned reading questions.
Same as: HRP 201A

MED 215B. Health Policy Graduate Student Tutorial II. 1-2 Unit.
Second in a three-quarter seminar series, the core tutorial is for first-year Health Policy PhD students and all MS Health Policy students. Major themes in fields of study including health insurance, healthcare financing and delivery, health systems and reform and disparities in the US and globally, health and economic development, health law and policy, resource allocation, efficiency and equity, healthcare quality, measurement and the efficacy and effectiveness of interventions. Blocks of session led by Stanford expert faculty in particular fields of study.
Same as: HRP 201B

MED 215C. Health Policy Graduate Student Tutorial III. 1-2 Unit.
Third in a three-quarter seminar series, the core tutorial is for first-year Health Policy PhD students and all MS Health Policy students. Major themes in fields of study including health insurance, healthcare financing and delivery, health systems and reform and disparities in the US and globally, health and economic development, health law and policy, resource allocation, efficiency and equity, healthcare quality, measurement and the efficacy and effectiveness of interventions. Blocks of session led by Stanford expert faculty in particular fields of study.
Same as: HRP 201C

MED 216. Clinical Integration. 1 Unit.
The practice of clinical medicine requires the integration of several fields of knowledge including Embryology, Anatomy, Physiology, Pathology, Pharmacology, and Microbiology. In this exciting course, we will systematically review subjects such as Cardiology, Gastroenterology, Nephrology, Pulmonology, Endocrinology, Neurology, and Hematology/Oncology. I will provide power points and an outline as a reference point for the content. The majority of the classroom time will be spend with guided review of an excellent question bank. This will serve as an excellent review of the subjects after they have been formally taught during the M2 year. I have almost a decade of experience guiding students through the USMLE Step 1 exam with significant success. Utilizing my experience, I hope to help ¿connect the dots¿ in the above fields and prepare the student to think about ¿pathophysiology¿ as a guide to clinical reasoning.

MED 217. Inpatient Medicine Shadowing Rotation. 1 Unit.
The objective of this rotation is to provide second year medical students the opportunity to experience the application of their medical education to clinical scenarios in the hospital. Students will have a one-day weekend shadowing opportunity (either on Saturday or Sunday morning) with a dedicated internal medicine team and witness the evaluation and management of patients to better understand the roles of the different team members, the flow of rounds, and the functions of history taking and physical examinations to perform a patient assessment. Following the experience, the students will debrief with the course directions. Students will also attend virtual weekly lectures/discussions on Friday afternoon from 1:30-2:20pm to learn about the ins and outs of inpatient rotation logistics.

MED 219. What Keeps Us Up at Night. 1 Unit.
This lunchtime seminar series will bring Patients and Families, Clinicians and Hospital Administrative Leadership together in the classroom to discuss real world healthcare issues that directly affect all of us. In-class discussion will focus around current events and the impact on patient care and the learning health system. Participants will engage in conversation and gain insight into where innovation and is occurring within Stanford Health Care, and what opportunities exist to get involved and effect change.

MED 221. Translational Research and Applied Medicine. 2-3 Units.
(Same as MED 121; undergraduate students enroll in MED 121) Open to graduate students and medical students, this course enables students to learn basic principles in the design, performance and analysis of translational medical research studies. The course includes both didactic seminars from experts in translational medicine as well as the opportunity to design and present a translational research project. Students enrolling for 3 units are paired with a TRAM translational research project and work as a team with TRAM trainees and faculty on a weekly basis, as arranged by the instructor, and present a final project update at the end of the quarter.
Same as: MED 121

MED 223. Cardiovascular and Pulmonary Sciences Seminar. 2 Units.
Weekly seminar series featuring cardiovascular research by faculty. This course is intended for medical students, graduate students, and advanced undergraduate students. On Tuesdays, students attend Frontiers in Cardiovascualr Science. On Thursdays, a faculty member will present to students their research, followed by Q&A session with the students.

MED 224. Social Entrepreneurship and Innovation Lab (SE Lab) - Human & Planetary Health. 3-4 Units.
Social Entrepreneurship and Innovation Lab (SE Lab) - Global & Planetary Health is a Collaboratory workshop for students/fellows to design and develop innovative social ventures addressing key challenges in health and the environment, especially in support of the UN Sustainable Development Goals (SDGs 2030). Your mandate in identifying problems and designing solutions is broad and flexible! SE Lab is open to students and fellows across Stanford and combines design thinking exercises, short lectures & case studies, workshops, small group teamwork, presentations, guest speakers, and faculty, practitioner and peer feedback to support you and your team in generating and developing ideas and projects that will change the world! Join SE Lab with an idea or simply the desire to join a team. Enrollment limited to 30.
Same as: HRP 224, PUBLPOL 224

MED 225. Drug Development: From a Concept to the Clinic. 1 Unit.
This course is designed for medical students, trainees, basic scientists, clinicians and clinician-scientists at Stanford to provide an educational and practical perspective on the essential issues in drug development. Using a blend of seminars and dynamic workshops, the curriculum is focused on educating the audience on all stages of drug development and related research and business processes ¿ from discovery and translational science and how to launch new projects to analyzing data, communication and interpretation of results of clinical trials, regulatory issues and commercial considerations in product development. The emphasis will be on cardiovascular applications. Proposed seminar topics are attached and include How Drugs Are Discovered and Developed, Case Studies of the various challenges in Drug Development, Cardiac Safety, Moving a Compound through the Drug Development Process, and the FDA Advisory Committee Process.

MED 226. Practical Approaches to Global Health Research. 1-3 Unit.
(Formerly IPS 290 and HRP 237) How do you come up with an idea for a useful research project in a low resource setting? How do you develop a research question, prepare a concept note, and get your project funded? How do you manage personnel in the field, complex cultural situations, and unexpected problems? How do you create a sampling strategy, select a study design, and ensure ethical conduct with human subjects? This course takes students through the process of health research in under-resourced countries from the development of the initial research question and literature review to securing support and detailed planning for field work. Students progressively develop and receive weekly feedback on a concept note to support a funding proposal addressing a research question of their choosing. Aimed at graduate students interested in global health research, though students of all disciplines interested in practical methods for research are welcome. Undergraduates who have completed 85 units or more may enroll with instructor consent. Sign up for 1 unit credit to participate in class sessions or 3 units to both participate in classes and develop a concept note.
Same as: EPI 237, INTLPOL 290

MED 228. Physicians and Social Responsibility. 1 Unit.
Social and political context of the roles of physicians and health professionals in social change; policy, advocacy, and shaping public attitudes. How physicians have influenced governmental policy on nuclear arms proliferation; environmental health concerns; physicians in government; activism through research; the effects of poverty on health; homelessness; and gun violence. Guest speakers from national and international NGOs.

MED 232. Global Health: Scaling Health Technology Innovations in Low Resource Settings. 2-3 Units.
Recent advances in health technologies - incorporating innovations like robotics, cloud computing, artificial intelligence, and smart sensors - have raised expectations of a dramatic impact on health outcomes across the world. However, bringing innovative technologies to low resource settings has proven challenging, limiting their impact. Ironically, the current COVID-19 pandemic has become Exhibit 1 in the challenges the global health community faces in scaling innovative interventions. This course explores critical questions regarding the implementation and impact of technological innovations in low-resource settings. The course will feature thought leaders from the health technology community, who will explore examples of technologies that have been successful in low resource communities, as well as those that have failed. A subset of these examples will be drawn from the current pandemic. Students will think critically to consider conditions under which technologies reach scale and have positive impact in the global health field. Students will also have an opportunity to work on real-world projects, each of which will focus on the potential opportunity for a health technology in a low-resource setting and consider approaches to ensure its impact at scale. This course will be taught by Dr. Anurag Mairal, Adjunct Professor of Medicine and the Director, Global Outreach Programs at Stanford Byers Center for Biodesign, and Dr. Michele Barry, Senior Associate Dean for Global Health. This course is open to undergraduate students, graduate students, and medical students. Undergraduates can take this course for a letter grade and 3 units. Graduate students and MD students can enroll for 2 units. Students enrolling in the course for a third unit will also work on group projects described above. Students enrolled in the class for three units will also have additional assignments, including weekly discussion posts. Students must submit an application and be selected to receive an enrollment code. The application form can be found at the following link: : https://tinyurl.com/ghmed232. Contact Olivia Paige with any questions: olivia.paige@stanford.edu.

MED 233. Global Health: Beyond Diseases and International Organizations. 4 Units.
Provides multidisciplinary trainees insight into over-arching themes of global health. Topics include systemic issues affecting healthcare progress globally, ethical and thoughtful approaches to solving these issues, as well as economics, water sanitation, public health, organizations in global health, human rights, involvement in NGOs, ethics of overseas work, and other non-medical aspects of this subject. This course will cover some of the essentials of patient care while working in the field as well including child health care, malaria, TB, and HIV. Course only open to graduate and MD/MSPA students. Undergraduates are not eligible to enroll.

MED 235. Designing Research-Based Interventions to Solve Global Health Problems. 3-4 Units.
The excitement around social innovation and entrepreneurship has spawned numerous startups focused on tackling world problems, particularly in the fields of education and health. The best social ventures are launched with careful consideration paid to research, design, and efficacy. This course offers students insights into understanding how to effectively develop, evaluate, and scale social ventures. Using TeachAids (an award-winning nonprofit educational technology social venture used in 82 countries) as a primary case study, students will be given an in-depth look into how the entity was founded and scaled globally. Guest speakers will include world-class experts and entrepreneurs in Philanthropy, Medicine, Communications, Education, and Technology. Open to both undergraduate and graduate students.
Same as: AFRICAST 135, AFRICAST 235, EDUC 135, EDUC 335, EPI 235, HUMBIO 26

MED 237. Health Law: Improving Public Health. 3 Units.
(Same as Law 3009) Examines how the law can be used to improve the public's health. Major themes explored include: what authority does the government have to regulate in the interest of public health? How are individual rights balanced against this authority? What are the benefits and pitfalls of using laws and litigation to achieve public health goals? Investigates these issues in several contexts, including the control and prevention of infectious disease, laws aimed at preventing obesity and associated noncommunicable diseases, tobacco regulation, ensuring access to medical care, reproductive health, lawsuits against tobacco, food and gun companies, and public health emergencies.

MED 238. Leading and Managing Health Care Organizations: Innovation and Collaboration in High Stakes Settings. 3 Units.
Same as OB 348. Leading and managing in complex, high stakes settings, like health care, where lives and livelihoods are on the line, presents distinctive challenges and constraints. This course challenges you to apply seminal and contemporary theories in organizational behavior to evaluate managerial decisions and develop evidence-based strategies for leading and managing health care teams and organizations. Topics include leading systems that promote learning; implementing change; and interdisciplinary problem-solving, decision-making, and collaboration. Group work and exercises will simulate high pressure and risk-taking under uncertainty. While the focus of this course will be on health care situations, lessons are relevant to other settings including consulting, banking, and high tech, and prior experience in the health sector is not required.

MED 239. Workshop For Ending Diagnostic Odysseys. 1-3 Unit.
Have you ever wondered how Dr. House solves difficult cases? Intrigued by Sherlock Holmes? Want to be a disease detective? In this project-based course, teams of students will work together to study cases of un-diagnosed rare and novel diseases. Like Dr. House, students will attempt to solve these medical mysteries. Course directors and team facilitators from Stanford's Center for Undiagnosed Diseases will introduce methods and approaches successful in solving past cases. Teams are expected to report on their findings at the completion of the quarter. Interested medical students may pursue follow-up research in subsequent quarters through Med Scholars. Co-Enrollment in the lecture-based course MED 244 is encouraged but not required.

MED 240. Sex and Gender in Human Physiology and Disease. 2-3 Units. (HUMBIO students must enroll in HUMBIO 140. PhD minor in FGSS must enroll in FEMGEN 241. Med students must enroll in MED 240.) Chromosomal, hormonal and environmental influences that lead to male and female and intersex reproductive anatomy and physiology and neuroendocrine regulation. Masculinizing and feminizing effects of endogenous and exogenous sex hormones and sociocultural factors, in particular gender identity, (social) gender norms and relationships, on the musculoskeletal, neurological, cardiovascular, immunological and other systems and tissues, e.g. adipose, skin, etc. over the lifecourse, from conception to puberty, through reproductive phases (including changes during the menstrual cycle and pregnancy up to and beyond menopause in women, and with aging in both sexes). Transgender health issues. Guest lecturers. Enrollment limited to students with sophomore academic standing or above. Prerequisites: Human Biology Core or Biology Foundations or equivalent, or consent of instructor.
Same as: FEMGEN 241, HUMBIO 140

MED 241. Clinical Skills for Patient Care in Free Clinics. 1 Unit.
Enrollment in this course is by application only for advanced volunteers at the Cardinal Free Clinics. Focus is on preparing students to gain early clinical experience by teaching basic skills such as taking patient histories, working with interpreters, providing motivational interviewing, and presenting cases to medical students or physicians. Students learn through classroom lectures and practice sessions. Upon successful completion of a competency assessment, students are able to serve in a clinic role in the Cardinal Free Clinics. Prerequisite: Advanced standing as a volunteer at the Cardinal Free Clinics.

MED 242. Physicians and Human Rights. 1 Unit.
Weekly lectures on how human rights violations affect health. Topics include: regional conflict and health, the health status of refugees and internally displaced persons; child labor; trafficking in women and children; HIV/AIDS; torture; poverty, the environment and health; access to clean water; domestic violence and sexual assault; and international availability of drugs. Guest speakers from national and international NGOs including Doctors Without Borders; McMaster University Institute for Peace Studies; UC Berkeley Human Rights Center; Kiva.

MED 243. Citizen Science Theory to Practice: Advancing Community-Driven Solutions for Health. 2-3 Units.
Harnessing and activating the insights of community members and patients is essential to achieving health equity ¿from the bottom up. ¿ Students will 1) learn and apply a novel datadriven, technology-enabled approach to improving community health through systematic documentation of lived experience and application of collective data to inform local change; 2) examine global project case studies targeting physical activity, food access, transportation, affordable housing, gender-based violence, and age-friendly environments; and 3) complete assessments of their local built environments using a Stanford-developed app and web platform, then use their data to develop and explore feasible strategies to improve community health.n(Cardinal Course certified by the Haas Center).
Same as: CHPR 236

MED 244. Diagnostic Odysseys In Medicine. 1 Unit.
Medicine is rapidly evolving, with increasing emphasis on genetic testing, immunophenotyping and integration of technology to guide diagnosis. In this course, experts from Stanford and Silicon Valley will highlight exciting developments. Topics include the latest developments in genetics and genomics (including genome testing in clinical practice, direct to consumer testing, and frontiers in neurogenetics), immunophenotyping, utilization of databases to research diseases and the emerging field of machine learning and clinical decision support in optimizing diagnostic strategies. Students who wish to engage in a mentored multi-disciplinary team-based research project related to advanced diagnostic techniques can additionally enroll in MED 239.
Same as: HUMBIO 44

MED 245. Leadership in Medicine: Developing your Moral Identity. 1-2 Unit.
Students will view videos of well-known leaders being interviewed or watch a live interview of the chief communications officer of Stanford School of Medicine each week. All this will be conducted through zoom conferencing for students to connect from home. With these interviews we will be highlighting the ethical challenges that these leaders faced and how they rose to these challenges, or fell short. These famous leaders will come from a variety of fields including academia, government, law, public service, public health, the military or journalism. We will then hold small group discussions after the interviews to debate the decisions made by these leaders. Through discourse and deep reflection we aim to prepare students for their own leadership challenges of the future. Students can apply for an additional unit with self-directed reading and a written paper describing important principles of leadership (1-2 units).

MED 246. The Medical Interview for Spanish Speakers. 1 Unit.
Student led forum for practicing and learning medical Spanish related specifically to the medical interview. Prepares clinical students to interact more effectively with Spanish speaking patients in clinics. Classes are topical; each class includes a demonstration, medical vocabulary practice, and conversational practice on the topic of the day.

MED 247. Methods in Community Assessment, Evaluation, and Research. 3 Units.
Development of pragmatic skills for design, implementation, and analysis of structured interviews, focus groups, survey questionnaires, and field observations. Topics include: principles of community-based participatory research, including importance of dissemination; strengths and limitations of different study designs; validity and reliability; construction of interview and focus group questions; techniques for moderating focus groups; content analysis of qualitative data; survey questionnaire design; and interpretation of commonly-used statistical analyses.
Same as: CHPR 247, MED 147

MED 248. Student Rounds. 1 Unit.
Teams of preclinical students meet weekly with a clinical student to hear the history and physical of a recent case the clinical student encountered on the wards. Following the presentation, the preclinical students work together under the guidance of the clinical student to develop a problem list and plan, which are then compared with the problem list, plan, and orders made by the actual admitting team. In the course of presenting the cases, the clinical student describes personal experiences and practical components of ward work and daily clinical routine.

MED 249. Topics in Health Economics I. 3-5 Units.
Course will cover various topics in health economics, from theoretical and empirical perspectives. Topics will include public financing and public policy in health care and health insurance; demand and supply of health insurance and healthcare; physicians' incentives; patient decision-making; competition policy in healthcare markets, intellectual property in the context of pharmaceutical drugs and medical technology; other aspects of interaction between public and private sectors in healthcare and health insurance markets. Key emphasis on recent work and empirical methods and modelling. Prerequisites: Micro and Econometrics first year sequences (or equivalent). Curricular prerequisites (if applicable): First year graduate Microeconomics and Econometrics sequences (or equivalent).
Same as: ECON 249, HRP 249

MED 250. Understanding Evidence-Based Medicine: Hands-on experience. 3-4 Units.
How can one practice evidence-based medicine and make evidence-based decisions for clinical practice and policy making? Using pivotal papers published in the recent scientific literature addressing important clinical questions on diverse medical topics, we will probe a wide range of types of studies, types of targeted therapeutic or preventive interventions, and types of studied outcomes (effectiveness and/or safety), including RCTs, observational studies, epidemiologic surveillance studies, systematic reviews-umbrella reviews-meta-analyses-meta-analyses of individual patient data, studies on the evaluation of diagnostic tests and prognostic models, economic analyses studies, and guidelines. Students enrolled for 4 units will complete an additional project or other engagement approved by the instructor. MD studies enroll for +/-. GR students enroll for Letter grade.
Same as: CHPR 205, EPI 250

MED 251. Measurement for Health Policy. 3 Units.
Conceptual, technical and empirical basis for measurement essential to health policy. Principles and good practice for designing measures fit for purpose. Practical application of measurement concepts and methods. Main emphasis on measuring levels of health in individuals and populations, combining mortality/longevity and quality of life/functioning. Additional topics include measurement of inequalities and health care quality. Examples and applications include high income and low/middle-income settings.
Same as: HRP 232

MED 252. Outcomes Analysis. 4 Units.
Methods of conducting empirical studies which use large existing medical, survey, and other databases to ask both clinical and policy questions. Econometric and statistical models used to conduct medical outcomes research. How research is conducted on medical and health economics questions when a randomized trial is impossible. Problem sets emphasize hands-on data analysis and application of methods, including re-analyses of well-known studies. Prerequisites: one or more courses in probability, and statistics or biostatistics.
Same as: BIOMEDIN 251, HRP 252

MED 253. Building for Digital Health. 3 Units.
This project-based course will provide a comprehensive overview of key requirements in the design and full-stack implementation of a digital health research application. Several pre-vetted and approved projects from the Stanford School of Medicine will be available for students to select from and build. Student teams learn about all necessary approval processes to deploy a digital health solution (data privacy clearance/I RB approval, etc.) and be guided in the development of front-end and back-end infrastructure using best practices. The final project will be the presentation and deployment of a fully approved digital health research application. CS106A, CS106B, Recommended: CS193P/A, CS142, CS47, CS110. Limited enrollment for this course.
Same as: CS 342

MED 255. The Responsible Conduct of Research. 1 Unit.
Forum. How to identify and approach ethical dilemmas that commonly arise in biomedical research. Issues in the practice of research such as in publication and interpretation of data, and issues raised by academic/industry ties. Contemporary debates at the interface of biomedical science and society regarding research on stem cells, bioweapons, genetic testing, human subjects, and vertebrate animals. Completion fulfills NIH/ADAMHA requirement for instruction in the ethical conduct of research. Prerequisite: research experience recommended. Intensive format, 1-day course, register for only one section. One pre-class assignment required.

MED 255C. The Responsible Conduct of Research for Clinical and Community Researchers. 1 Unit.
Engages clinical researchers in discussions about ethical issues commonly encountered during their clinical research careers and addresses contemporary debates at the interface of biomedical science and society. Graduate students required to take RCR who are or will be conducting clinical research are encouraged to enroll in this version of the course. Prequisite: research experience recommended.

MED 256. Gene Expression Profiling in Cancer. 2-3 Units.
This course will cover techniques used to query the expression of genes in tissue and how the information derived from those techniques can be used to answer questions in cancer biology. The focus will be on the transcriptome analysis (e.g. RT-qPCR, microarrays, RNA-seq, etc.) in the context of cancer biology experiments. Throughout the quarter, we will develop a pipeline to analyze high-throughput RNA-seq data. Finally we will go over differential gene expression analysis techniques and tools used to interpret lists of genes derived from such analysis.

MED 258. Stanford Technology Access Resource Team: A Primary Care Effort to Bridge the Telehealth Divide. 1 Unit.
Video visits have been invaluable during the COVID pandemic for patients and providers and will continue to serve as a vital connection between patients and their care team beyond COVID-19. However, many patients cannot access this resource due to challenges with technology. This course will give students an opportunity to explore concepts in design thinking, communication, community-building, and team-based patient care while providing a service that will connect vulnerable patients and their caregivers to health care providers through video visits. The course consists of didactic sessions and opportunities for undergraduates and graduate students to interact with patients and health care teams by phone and video. Please note that regular use of the phone and internet are required and may not be the best option for those who are residing out of the country. MD Students should enroll in FAMMED 280.

MED 261. Leadership in Health Equity and Community Engagement: Creating New Educational Opportunities. 1 Unit.
Creating Capacity in Community Engagement Medical Education is a new course for first/second-year medical students with an interest in both community health and medical education. In a small group, faculty-facilitated setting, students will design and develop the foundational structure for a new scholarly application in the area of health equity and community engagement leadership. Additionally, students will work collaboratively with community engagement, public health, and diversity, equity, inclusion faculty members to create a new health equity and community engagement leadership course to be launched in Spring 2021. Activities will include reviewing other similar courses at peer medical schools, assessing medical education needs around these topic areas from peers, creating a syllabus and identifying key content areas, designing interactive small-group activities, and inviting health equity and community engagement practitioner guest speakers. Instructor/s permission is required. Prerequisite: INDE 201: Practice of Medicine I.

MED 262. Economics of Health Improvement in Developing Countries. 5 Units.
Application of economic paradigms and empirical methods to health improvement in developing countries. Emphasis is on unifying analytic frameworks and evaluation of empirical evidence. How economic views differ from public health, medicine, and epidemiology; analytic paradigms for health and population change; the demand for health; the role of health in international development. Prerequisites: ECON 50 and ECON 102B.
Same as: ECON 127

MED 263. Advanced Decision Science Methods and Modeling in Health. 3 Units.
Advanced methods currently used in published model-based cost-effectiveness analyses in medicine and public health, both theory and technical applications. Topics include: Markov and microsimulation models, model calibration and evaluation, and probabilistic sensitivity analyses. Prerequisites: a course in probability, a course in statistics or biostatistics, a course on cost-effectiveness such as HRP 392, a course in economics, and familiarity with decision modeling software such as TreeAge.
Same as: HRP 263

MED 264. Covid-19 Case Investigation and Contact Tracing. 3-6 Units.
In this service-learning course students will be learn how to identify people who have COVID-19 and those who have been exposed to people with COVID-19. Students will learn basics about the biology and health effects of SARS-CoV-2 and the epidemiology of COVID-19. Students will be taught important skills in healthcare communication including motivational interviewing, health education, and health coaching. Students will work as volunteers together with Santa Clara County staff to interrupt the chains of transmission of COVID-19 as they apply skills they have learned to help people with the illness and those who have been exposed understand the importance of isolation, quarantine, and other critical aspects of public health needed to control and manage this disease. Students will need to be willing to commit 20 hours per week to this course for 10 weeks over 2 quarters. Requires application and instructor approval. Please contact Course Director, Lars Osterberg MD, MPH for an application form and approval for enrollment.
Same as: CHPR 235, MED 164

MED 265. Advanced Topics in the Economics of Health and Medical Care. 2 Units.
Emphasis is on research studies in health economics. Seminar style course focuses on health economics. Complimentary with HRP 256. Students will be expected to read and present papers to the group and discuss concepts with faculty. Restricted to second year or beyond PhD students in economics & economics-related disciplines.
Same as: HRP 257

MED 266. Literacy: A Fundamental Human Right Toward Health and Advocacy. 1-3 Unit.
This is a Community Engaged learning seminar style course that meets once a week for an hour and a half. We will have seminar discussions and readings related to local health literacy issues, and the systemic factors affecting health literacy through collaborative problem-solving processes through course readings and community engagement experiences. Emphasis will be on active learning, with assignments calling for data gathering through interaction with community members to explore and address these issues for more positive health outcomes. The course is open to pre-clinical medical, undergraduate and graduate students. No prerequisites.

MED 267. Ideo, Presence & The Human Experience in Medicine. 3 Units.
Presence. The Art and Science of Human Connection in Medicine is a new center, founded and lead by Dr. Abraham Verghese (http://med.stanford.edu/presence.html). This course partners with IDEO (https://www.ideo.com/) to bring design thinking to address the challenges of diagnostic error in medicine. Dr. Verghese and colleagues will outline the consequences of the lack of presence in the clinical encounter. IDEO's design thinking will be taught by Dr. Jayant Menon, Dr. Farzad Azimpour and Grace Hwang. Class participants will be divided into small groups and designated coaches. Each group will work with the course leadership to define a specific challenge and utilize the design thinking process to create deployable solutions. In class lectures and workshops will be held on campus on Tuesdays from 3.30-5 p.m., and IDEO (Forest Av, Palo Alto) based small group meetings will be held on Thursdays from 5.30-6.20pm. Admission is selective and requires all applicants submit an application before March 1, 2017. Applications can be found at https://goo.gl/forms/7mCI7vf8PbcdVG0m1 nQuestions should emailed to sonoot@stanford.edu.

MED 268. Tackling Cross-Cultural Health Challenges: Emphasis on the Asian/Pacific Islander Community. 1 Unit.
Why do certain diseases like hepatitis B affect Asian/Pacific Islanders (APIs) disproportionately? How can public policy advance health equity among ethnic groups? Weekly lectures examine health challenges endemic to the API community, recognizing underreported health issues in a prevalent ethnic demographic. Students will emerge with an understanding of topics including stigmas attached to traditional medicine, prevalent diseases in APIs, API health politics, and cultural/linguistic barriers that health professionals encounter. Guest speakers include professionals from the Ravenswood Family Health Center, the Santa Clara County Public Health Department, Hep B Free, the Stanford School of Medicine, etc. (Light supper served).

MED 270. Learning & Teaching of Science. 3 Units.
This course will provide students with a basic knowledge of the relevant research in cognitive psychology and science education and the ability to apply that knowledge to enhance their ability to learn and teach science, particularly at the undergraduate level. Course will involve readings, discussion, and application of the ideas through creation of learning activities. It is suitable for advanced undergraduates and graduate students with some science background.
Same as: EDUC 280, ENGR 295, PHYSICS 295, VPTL 280

MED 271. Global Biodesign: Medical Technology in an International Context. 1 Unit.
This course (BIOE371, MED271) exposes students to the challenges and opportunities of developing and implementing innovative health technologies to help patients around the world. Non-communicable diseases, such as metabolic and chronic respiratory disease, now account for 7 in 10 deaths worldwide, creating the need for innovative health technologies that work across diverse global markets. At the beginning of the quarter, the course will provide an overview of the dynamic global health technology industry. Next, faculty members, guest experts, and students will discuss key differences and similarities when commercializing new products in the for-profit health technology sector across six important regions: the US and Europe, China and Japan, and India and Brazil. Finally, the course will explore critical ¿global health¿ issues that transcend international borders and how technology can be leveraged to address them. This section will culminate with an interactive debate focused on whether for-profit, nonprofit, or hybrid models are best for implementing sustainable global health solutions. The last class will be devoted to synthesis, reflection, and a discussion of career opportunities in the global health technology field.
Same as: BIOE 371

MED 272A. Biodesign Innovation: Needs Finding and Concept Creation. 4 Units.
In this two-quarter course series (BIOE 374A/B, MED 272A/B, ME 368A/B, OIT 384/5), multidisciplinary student teams identify real-world unmet healthcare needs, invent new health technologies to address them, and plan for their implementation into patient care. During the first quarter (winter), students select and characterize an important unmet healthcare problem, validate it through primary interviews and secondary research, and then brainstorm and screen initial technology-based solutions. In the second quarter (spring), teams select a lead solution and move it toward the market through prototyping, technical re-risking, strategies to address healthcare-specific requirements (regulation, reimbursement), and business planning. Final presentations in winter and spring are made to a panel of prominent health technology experts and/or investors. Class sessions include faculty-led instruction and case studies, coaching sessions by industry specialists, expert guest lecturers, and interactive team meetings. Enrollment is by application only, and students are required to participate in both quarters of the course. Visit http://biodesign.stanford.edu/programs/stanford-courses/biodesign-innovation.html to access the application, examples of past projects, and student testimonials. More information about Stanford Biodesign, which has led to the creation of 50 venture-backed healthcare companies and has helped hundreds of student launch health technology careers, can be found at http://biodesign.stanford.edu/.
Same as: BIOE 374A, ME 368A

MED 272B. Biodesign Innovation: Concept Development and Implementation. 4 Units.
In this two-quarter course series (BIOE 374A/B, MED 272A/B, ME 368A/B, OIT 384/5), multidisciplinary student teams identify real-world unmet healthcare needs, invent new health technologies to address them, and plan for their implementation into patient care. During the first quarter (winter), students select and characterize an important unmet healthcare problem, validate it through primary interviews and secondary research, and then brainstorm and screen initial technology-based solutions. In the second quarter (spring), teams select a lead solution and move it toward the market through prototyping, technical re-risking, strategies to address healthcare-specific requirements (regulation, reimbursement), and business planning. Final presentations in winter and spring are made to a panel of prominent health technology experts and/or investors. Class sessions include faculty-led instruction and case studies, coaching sessions by industry specialists, expert guest lecturers, and interactive team meetings. Enrollment is by application only, and students are required to participate in both quarters of the course. Visit http://biodesign.stanford.edu/programs/stanford-courses/biodesign-innovation.html to access the application, examples of past projects, and student testimonials. More information about Stanford Biodesign, which has led to the creation of 50 venture-backed healthcare companies and has helped hundreds of student launch health technology careers, can be found at http://biodesign.stanford.edu/.
Same as: BIOE 374B, ME 368B

MED 273. Biodesign for Digital Health. 3 Units.
Health care is facing significant cross-industry challenges and opportunities created by a number of factors including: the increasing need for improved access to affordable, high-quality care; growing demand from consumers for greater control of their health and health data; the shift in focus from sick care to prevention and health optimization; aging demographics and the increased burden of chronic conditions; and new emphasis on real-world, measurable health outcomes for individuals and populations. Moreover, the delivery of health information and services is no longer tied to traditional brick and mortar hospitals and clinics: it has increasingly become "mobile," enabled by apps, sensors, wearables; simultaneously, it has been augmented and often revolutionized by emerging digital and information technologies, as well as by the data that these technologies generate. This multifactorial transformation presents opportunities for innovation across the entire cycle of care, from wellness, to acute and chronic diseases, to care at the end of life. But how does one approach innovation in digital health to address these health care challenges while ensuring the greatest chance of success? At Stanford Biodesign, we believe that innovation is a process that can be learned, practiced, and perfected; and, it starts with a need. In Biodesign for Digital Health, students will learn about digital health and the Biodesign needs-driven innovation process from over 50 industry experts. Over the course of ten weeks, these speakers join the teaching team in a dynamic classroom environment that includes lectures, panel discussions, and breakout sessions. These experts represent startups, corporations, venture capital firms, accelerators, research labs, health organizations, and more. Student teams will take actual digital and mobile health challenges and learn how to apply Biodesign innovation principles to research and evaluate needs, ideate solutions, and objectively assess them against key criteria for satisfying the needs. Teams take a hands-on approach with the support of need coaches and mentors. On the final day of class, teams present to a panel of digital health experts and compete for project extension funding. Friday section will be used for team projects and for scheduled workshops. Limited enrollment for this course. Students need to submit their application online via: https://stanforduniversity.qualtrics.com/jfe/form/SV_28ZWIF8RJsyMvCR.
Same as: BIOE 273

MED 275B. Biodesign Fundamentals. 4 Units.
MED 275B is an introduction to the Biodesign process for health technology innovation. This team-based course emphasizes interdisciplinary collaboration and hands-on learning at the intersection of medicine and technology. Students will work on projects in the space of medical devices, digital health, and healthcare technologies with the assistance of clinical and industry mentors. Applicants from all majors and stages in their education welcome. Students will work in teams to develop solutions to current unmet medical needs, starting with a deep dive into understanding and characterizing important unmet medical needs through disease research, competitive analysis, market research, and stakeholder analysis. Other topics that will be discussed include FDA regulation of medical technology, intellectual property, value proposition, and business model development. Consent required for enrollment, to apply visit: http://bit.ly/MED275B2020.

MED 277. AI-Assisted Care. 1 Unit.
AI has been advancing quickly, with its impact everywhere. In healthcare, innovation in AI could help transforming of our healthcare system. This course offers a diverse set of research projects focusing on cutting edge computer vision and machine learning technologies to solve some of healthcare's most important problems. The teaching team and teaching assistants will work closely with students on research projects in this area. Research projects include Care for Senior at Senior Home, Surgical Quality Analysis, AI Assisted Parenting, Burn Analysis & Assessment and more. AI areas include Video Understanding, Image Classification, Object Detection, Segmentation, Action Recognition, Deep Learning, Reinforcement Learning, HCI and more. The course is open to students in both school of medicine and school of engineering.
Same as: CS 337

MED 278. Stanford Health Consulting Group- Leadership. 1-3 Unit.
This course is application-based and will be composed of students who have taken ¿Stanford Health Consulting Group - Core¿ and who wish to take on leadership roles in organizing and managing the high-impact health care projects for the class, which address major strategic and operational challenges in health care delivery and innovation. Participants will select projects, define objectives and deliverables, manage teams of 4-8 students from the core class, and ultimately serve as a bridge between students, faculty sponsors, and other health care stakeholders. Enrollment requires permission from the Instructor.

MED 279. Stanford Heath Consulting Group - Core. 1-3 Unit.
This course provides the opportunity to analyze and solve major strategic and operational challenges in health care delivery and innovation through interdisciplinary team projects. Teams will receive direct mentorship from Stanford Medicine faculty, health care leaders, and experienced student leads, with projects carefully defined to optimize high-impact experiential learning and leadership development. Projects will culminate with student-led presentations to faculty sponsors and other health care stakeholders, as well as opportunities for further dissemination of solutions.

MED 281. How to Change the World. 1 Unit.
This unique course will enable students to learn from invited guests about how to "Change the World". As a group, Humankind has had a lasting impact on this planet but, on an individual basis, our impact can seem limited. Many innovators from the sciences, humanities, engineering and business are making this world a better place on a large scale. How do they do this? Through a series of fireside interviews with "World Changing" guest speakers from non-profits, business and government, we will explore how individuals can have a huge, positive influence on the state of the world. Students will be asked to formulate a short 5 slide presentation about their thoughts on the interviews or their plan to change the world. Previous speakers included: co-founder of Patreon, business editor of the New York Times, executive from Nike, and head of Bangladesh USAID program. Students can take ideas developed in the course to apply for the $40,000 Westly Prize in Social Innovation (under age 28). Dinner will be provided for enrolled students.
Same as: for the Better

MED 282. Early Clinical Experience at the Cardinal Free Clinics. 1-2 Unit.
The Cardinal Free Clinics, consisting of Arbor and Pacific Free Clinic, provide culturally appropriate, high quality transitional medical care for undeserved patient populations in the Bay Area. Students volunteer in various clinic roles to offer services including health education, interpretation, referrals, and labs. In clinic students are guided in the practice of medical interviews, history-taking and physical examinations as appropriate, and work with attending physicians to arrive at a diagnosis and management plan. Visit http://cfc.stanford.edu for more information. For questions related to the course or volunteering, please email arborclinic@stanford.edu and/or pacific@med.stanford.edu.
Same as: MED 182

MED 283. Interpersonal Communication in Health Care. 2-3 Units.
Communication is an unavoidable element of our everyday life that often goes unexamined. In this course, we will first examine the communication experiences in daily life with friends, family, significant others, peers, and coworkers. You will then engage with a variety of materials designed to enhance both your analytic and experiential knowledge about our everyday communication and how this relates to communication in health care. Analytic knowledge stems from your understanding of theoretical and written materials and others¿ experiences. Experiential knowledge will require you to apply what you have learned to your own communication experiences. In addition to mastering course concepts through readings, class discussions, and lectures, time in class will be devoted to applying these concepts through various activities.
Same as: PSYC 283

MED 284. Team Leadership in the Cardinal Free Clinics I. 1 Unit.
Introduction to skills for effective leadership, including topics such as conflict resolution, team dynamic. Applied learning through shifts at the Cardinal Free Clinics and related project work. Enrollment limited to Cardinal Free Clinic Managers.
Same as: MED 184

MED 285. Global Leaders and Innovators in Human and Planetary Health. 1-2 Unit.
Are you interested in innovative ideas and strategies for addressing urgent challenges in human and planetary health? This 7 session lecture series features a selection of noteworthy leaders, innovators and experts across diverse sectors in health and the environment such as: healthcare/medical innovation, environmental sustainability, foundations/venture capital, biotechnology/pharmaceuticals, social innovation/entrepreneurship, tech/media and artificial intelligence (AI), human rights, global poverty/development, sustainable agriculture/hunger/nutrition, public policy/systems change. Co-convened by faculty, fellows and students collaborating across several Stanford centers/departments/schools, the course invites the discussion of global problems, interdisciplinary perspectives and solutions in the fields of health and the environment. nSpecial themes for AY 2020-2021 include: 1) US and Global Responses in Combatting the Coronavirus Pandemic; 2) Climate Crisis, Wildfires, Extreme Weather and Environmental Sustainability; 3) Systemic Racism, Gender Inequality, Health Inequity and Community Well Being; 4) Democracy Under Siege, Political Landscape of Electoral, Judicial, Legislative Turmoil; 5) Partnership/Collaboration, Models of Leadership, Innovation, Sustainable Social Change; and Other Topics TBD by students/fellows. Students from all backgrounds are encouraged to enroll - registration open to all Stanford students and fellows. May be repeated for credit.
Same as: HRP 285

MED 286. Health Information Technology and Strategy. 3-4 Units.
Health Information technology was intended to help reduce and cost and improve the quality of health care services. TO date, this is little evidence that this goal has been achieved. This course is designed to explore economic frameworks that can help us to understand how health IT can achieve it's intended goals. These frameworks build from general business and economic models used successfully in other industries. The course will be utilize both business cases and lecture to prepare students to propose potential novel applications of health information technology solutions. Each student will have a team-based final project.

MED 287. Survey of Asian Health Issues. 1 Unit.
In this lecture series, students will explore Asian health topics. Specifically, the chronic disease risk and burden of Asians in the U.S. as a group is considered. Additionally, the necessity of the practice of disaggregation in the study and treatment of Asian Americans is emphasized. Topics will include cardiovascular disease, cancer, population health, precision health, pharmacogenomics and longevity in Asian-Americans. Class format is 30 minute lecture followed by 20 minutes for questions. No required readings. Opportunity to connect with guest speakers for research opportunities. Assignments will include short written reflections on lecture topics. This course is relevant for students interested in basic biology research, epidemiology, and public health policy, or clinical careers in medicine, psychology, or social work. Grading is satisfactory/no credit. All students are welcome, limit 25.
Same as: ASNAMST 287

MED 288. Perspectives on Cancer. 1 Unit.
Cancer consumes the lives of those associated with it: patients and their loved ones, their medical staff, and often the larger community. This course will address the broad impact of cancer from multiple fronts (medical, social, mental, etc.) by providing perspectives beyond the cut-and-dry scientific issue that the disease is often made out to be, enabling students to explore the "human-side" to the disease. In alternating weeks, students will participate in a Socratic seminar based on light reading about relevant topics and personally interact with guest speakers, who may include medical professional, cancer survivors and their loved ones, and activists. This course will meet weeks 2-9.

MED 289. Introduction to Bioengineering Research. 1-2 Unit.
Preference to medical and bioengineering graduate students with first preference given to Bioengineering Scholarly Concentration medical students. Bioengineering is an interdisciplinary field that leverages the disciplines of biology, medicine, and engineering to understand living systems, and engineer biological systems and improve engineering designs and human and environmental health. Students and faculty make presentations during the course. Students expected to make presentations, complete a short paper, read selected articles, and take quizzes on the material.
Same as: BIOE 390

MED 290. Independent Study with Presence and the Program in Bedside Medicine. 1-5 Unit.
Students work with their faculty mentor on projects and studies that are broadly centered around the vision and mission of Presence: The Art and Science of Human Connection and the Program in Bedside Medicine. Please see our websites for updated projects and initiatives - Presence + Program in Bedside Medicine. Currently, we focus on: How do we teach and emphasize to students, residents, physicians (and beyond) in the medical field the need to master bedside skills? How does bedside medicine affect patient care? How has patient care changed with the omnipresence of technology in our lives? How is bedside medicine going to change in the next few decades, centuries? In investigating these questions, students utilize scientific articles and data, engage patients, and collaborate with our faculty and staff. Independent study projects culminate in a presentation to our team, with the potential for posters or manuscripts. Students paired with faculty based on their area of interest and faculty/project needs.We emphasize the human connection with patients, and students are encouraged to engage patients within our program for teaching sessions, research studies, among other projects. Enrollment varies with and is limited to faculty need. Repeatable for credit; more than one-quarter of commitment expected.

MED 291. Diagnostic Medicine on Television: Truths vs. Theatrics. 1 Unit.
School of Medicine faculty in charge of Stanford's Consultative Medicine Clinic, a real-life medical mystery clinic, will review cases from the popular TV show House and critique the show's depiction of complex disease diagnosis and treatment. We tread down the road of diagnostic dilemmas and the line between fact vs fiction. Lunch will be provided.

MED 292. Pathways in Global Health. 1 Unit.
The goal of this class is to introduce students to the diverse pathways that contribute to Global Health. From epidemiology, to climate change, everyone is impacted, and the ways we address global health problems is multifaceted. Each week, there will be different speakers from various departments such as in biology, anthropology, medicine who will talk about their careers and perspectives in global health. The class experience with be an interactive speaker series, where students will learn and develop ways they can contribute to global health.

MED 295. Advanced Cardiac Life Support. 2 Units.
(For clinical MD students only) Prepares students to manage the victim of a cardiac arrest. Knowledge and skills necessary for resuscitation of critically ill patients. Clinical scenarios and small group discussions address cardiovascular pharmacology, arrhythmia recognition and therapy, acute coronary syndrome including myocardial infarction, ventricular dysrhythmias and defibrillation, and acute ischemic stroke. Students should get the approval of their Clerkship Coordinator before registering for the course. nRecommended prerequisites: Medicine 300A, Pediatrics 300A, or Surgery 300A. nPrerequisite: EMED 201A.

MED 296. Being Mortal: Medicine, Mortality and Caring for Older Adults. 1 Unit.
Mortality is the inevitable, final outcome of human health. Though medical education focuses on treating illness and prolonging life, healthcare professionals in practice must face the fact that patients¿ lives cannot always be saved. This course will explore the difficult issues such as end-of-life planning, decision-making, and cost of care, that figure in hospitals, hospice, and assisted living centers. Guest speakers will include elderly care workers, medical writers and filmmakers, and physicians in geriatrics, oncology and palliative care, who will lead student discussions following their lectures. Upon finishing the course, students will learn how to better handle aging and death in their medical practice, in order to improve the quality of their patients¿ lives¿and that of their families¿ as well.

MED 297. Diabetes 101 for Healthcare Providers. 1 Unit.
Diabetes is an extremely high-prevalence disease, that you will likely encounter on a consistent basis regardless of your medical specialty, so learning about the practical aspects of treatment is extremely useful. This course is designed to teach these practical skills about diabetes care, treatment and the latest research in the field. Diabetes 101 for healthcare providers is a lunch seminar style course with lectures on subjects like: A meal in the life of a diabetic; Pumps/ CGMs/ Artificial Pancreases; Beyond Types 1 and 2; The Psychology of diabetes and chronic disease; and Rare complications and future treatments.

MED 298. Being Mortal II: Approaching Serious Illness. 1-2 Unit.
This elective offers an opportunity for MD and PA students to improve their ability to engage in effective and compassionate conversations with patients facing serious illnesses. The course will feature palliative care physicians, oncologists, spiritual care providers, and hospice staff, and provide students with early exposure to concepts in palliative medicine, hospice care, and end-of-life care, which are otherwise given little emphasis in the core curriculum. Students will learn practical skills in serious illness conversations with patients, through case-based sessions involving peer-to-peer, peer-to-instructor, and peer-to-patient role play. Relevant topics in leadership, psychology, sociology, and professionalism will also be covered. In addition, students taking the course for 2 credits will have the opportunity to participate in on-site visits to hospices, nursing facilities, assisted-living facilities, and adult day health care facilities. For more information please contact Henry Bair (hbair@stanford.edu) or Paul Horak (pwhorak@stanford.edu).

MED 299. Directed Reading in Medicine. 1-18 Unit.
Prerequisite: consent of instructor.

MED 300A. Internal Medicine Core Clerkship. 10 Units.
VISITING: Closed to visitors. TYPE OF CLERKSHIP. Required. DESCRIPTION: Teaches the natural history, pathophysiology, diagnosis, and treatment of medical illness. Emphasis is placed on acquiring the understanding, skills, and attitudes desirable in a scientific and compassionate physician. Students record histories, physical examinations, and laboratory data for patients for whom they are responsible and present their findings, together with their diagnoses and treatment plans, at rounds and conferences. Developing sound clinical reasoning skills is continuously emphasized. An essential aspect of the clerkship is the students¿ gradual assumption of direct responsibility for, and full-time involvement in, patient care with the house staff and faculty team. To take advantage of the differences in patient populations and teaching staffs of the four hospitals, students spend three weeks at either SUMC or PAVAMC, and three weeks at either SCVMC in San Jose or KPMC in Santa Clara. The resulting six week experience is an integrated curriculum designed to cover the essentials of internal medicine. The Department of Medicine supervises a random draw-based assignment to two of the four locations shortly before the beginning of each odd-numbered clerkship period. A passing grade will require both a satisfactory performance at both clinical sites and passing the NBME Subject Exam at the end of 6 weeks. PREREQUISITES: None. PERIODS AVAILABLE: 1-16, full time for six weeks, 18 students per period. CLERKSHIP DIRECTOR: John Kugler, M.D. (jkugler@stanford.edu). CLERKSHIP COORDINATOR: Nancy D'Amico (650-721-1640). REPORTING INSTRUCTIONS: Where: Varies, students will be notified prior to the first day; Time: TBA. CALL CODE: 4. OTHER FACULTY: Staff. LOCATION: SUMC, PAVAMC, SCVMC, KPMC.

MED 302A. Infectious Diseases Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: The infectious diseases clerkship features an active inpatient service at Stanford Hospital, which averages two to four new consults per day. As a consulting specialty service within the Department of Medicine, participants are able to see a wide variety of community-acquired and nosocomial infections. Particular emphasis is placed on clinical and diagnostic reasoning, as well as in developing a good working knowledge of antimicrobial agents and a rational approach for their use. The training and teaching opportunities are rich because of the case mix (medical, surgical, ICU) and broad patient populations that are seen at Stanford Hospital. The service is supervised on a daily basis by the infectious diseases fellow, who will work closely with students rotating on the clinical service. Students attend daily patient rounds, weekly infectious diseases conferences, and may attend other research or patient-care conferences at Stanford. The infectious diseases fellows' team room, L-134, is located in the Division of Infectious Diseases and Geographic Medicine home office on the first floor of the Lane building. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 1-16, full time for 3 weeks, 2 students per period. CLERKSHIP DIRECTOR: Andrew Nevins, M.D. CLERKSHIP COORDINATOR: Brenda Norrie (650-725-8338). REPORTING INSTRUCTIONS: Where: On the first day of the rotation, page the Stanford general infectious diseases fellow through the Stanford page operator at (650) 723-6661; Time: 8:00 AM. CALL CODE: 1. OTHER FACULTY: Staff. LOCATION: SUMC.

MED 302B. Infectious Diseases Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: The infectious diseases clerkship features an active inpatient service at the Palo Alto VA, which averages one to three new consults per day. As a consulting specialty service within the Department of Medicine, participants are able to see a wide variety of community-acquired and nosocomial infections. Particular emphasis is placed on clinical and diagnostic reasoning, as well as in developing a good working knowledge of antimicrobial agents and a rational approach for their use. The training and teaching opportunities are rich because of the case mix (medical, surgical, ICU) and patient populations that are seen at the Palo Alto VA. The service is supervised on a daily basis by the infectious diseases fellow, who will work closely with students rotating on the clinical service. Students attend daily patient rounds, weekly infectious diseases conferences, and may attend other research or patient-care conferences at the VA and/or Stanford. Course objectives and resources are provided at the beginning of the rotation. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 2 students per period. CLERKSHIP DIRECTOR: David Relman, M.D. CLERKSHIP COORDINATOR: Marian Askew (650-493-5000 x64209, marian.askew@va.gov). REPORTING INSTRUCTIONS: Where: On the first day of the rotation, page the Palo Alto VA infectious diseases fellow through the Stanford page operator at (650) 723-6661; Time: 8:30 AM. CALL CODE: 1. OTHER FACULTY: A. Chary, M. Holodniy, J. Parsonnet, C. Renault, U. Singh, D. Winslow. LOCATION: PAVAMC.

MED 302C. Infectious Diseases Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Teaches the skills of diagnosis and treatment of infectious diseases, including acute illnesses seen in the economically disadvantaged, and subspecialty patient referrals. The format of the clerkship at SCVMC is the same as at SUMC and PAVAMC, but the patient population at SCVMC differs from that of the other two hospitals. Two infectious diseases teaching conferences are held weekly for all three hospital services, and there are two additional conferences per month at SCVMC. Consultations are provided to all general (medical, ob-gyn, surgical) and specialized (burn, rehabilitation, dialysis) units. Tuberculosis clinic and HIV clinic experiences are also available during the rotation. The diagnostic microbiology laboratory staff will instruct students on diagnostic microbiology lab use and interpretation of results as required. The Infection Prevention nurses provide an orientation to hospital epidemiology. Students will be supervised by an attending, fellow and one to two residents. Students wishing to do this clerkship must get approval from Dr. Supriya Narasimhan first before registering. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 2 students per period. CLERKSHIP DIRECTOR: Supriya Narasimhan, M.D., 408-885-5304. CLERKSHIP COORDINATOR: Melanie Bozarth, 408-885-5395, melanie.bozarth@hhs.sccgov.org. REPORTING INSTRUCTIONS: Where: Room 6C095, 6th floor, Old Main Hospital, SCVMC; Time: 8:30 am. CALL CODE: 1. OTHER FACULTY: J. Gupta, J. Kim, S. Narasimhan, A. Polesky, M. Ray, H. Sahni, J. Cooper. LOCATION: SCVMC.

MED 303A. Cardiology Clerkship-Inpatient/Outpatient Consult. 5 Units. VISITING: Open to visitors. TYPE OF CLERKSHIP. Selective 1. DESCRIPTION: Emphasizes the acquisition of diagnostic skills related to cardiovascular evaluation. This experience is derived through active participation in the inpatient consultative cardiology program, which is directed by Dr. Stanley Rockson. In addition, at least three half days per week are spent in the outpatient setting, which encompasses aspects of preventive cardiology as well. Direct patient experiences are supplemented with one-on-one didactic sessions and directed reading. The elective also emphasizes the acquisition of ECG reading skills via electrocardiographic reading sessions. PREREQUISITES: Medicine 300A. PERIODS AVAILABLE: 1-16, full-time for three weeks. 2 students per period. CLERKSHIP DIRECTOR: Stanley Rockson, M.D., 650-725-7571, rockson@stanford.edu. CLERKSHIP COORDINATOR: Stanley Rockson, M.D., 650-725-7571, rockson@stanford.edu. REPORTING INSTRUCTIONS: Where: Dr. Rockson, CVRC CV-267; Time: 8:30 am. CALL CODE: 0. OTHER FACULTY: Staff. LOCATION: SUMC.

MED 303B. Cardiology Clerkship. 5 Units. VISITING: Open to visitors. TYPE OF CLERKSHIP. Selective 1. DESCRIPTION: Exposes the students to all areas of clinical cardiology. Students participate in four half-day ambulatory care cardiology clinics, perform at least 3-5 new consultations per week, with each consultation being presented to an attending physician and having a consultation note written. Additionally, each students 'rounds' five days a week on patients on the consultation service. Students read electrocardiograms almost daily. Their physical examinations are reviewed by the attending physician and/or cardiology fellow. They are exposed to all areas of clinical cardiologic testing: exercise treadmill/stress testing, radionuclide testing (thallium scans and radionuclide ejection fractions), cardiac ultrasound studies, cardiac catheterization and percutaneous transluminal coronary intervention (PTCI). Students follow each of their patients through these tests. When surgery is required, they observe the procedure in the operating room. Students participate in daily didactic sessions covering all areas of basic cardiology and are present at daily coronary care unit/medical intensive care unit rounds. Each student also has the opportunity to participate in any other ongoing medical or surgical teaching conferences as time permits. PREREQUISITES: None. PERIODS AVAILABLE: 1-16, full time for 3 weeks, 5 students per period. CLERKSHIP DIRECTOR: Karen Friday, M.D. CLERKSHIP COORDINATOR: Donna Harris (650-858-3932). REPORTING INSTRUCTIONS: Where: PAVAMC, Second Floor, Rm E2-426; Time: 7:30AM. CALL CODE: 0. OTHER FACULTY: V. Froelicher, P. Heidenreich, P. Milner, M. Hlatky, W. Fearon, K. Friday. LOCATION: PAVAMC.

MED 303C. Cardiology Clerkship. 5 Units. VISITING: Open to visitors. TYPE OF CLERKSHIP. Selective 1. DESCRIPTION: Students are part of a cardiology team that consults on hospitalized patients, sees outpatients in seven half day sessions weekly, and attends didactic conferences including noon conferences, weekly Medicine grand-round as well as Cardiology Cath conferences. Opportunities are available to be involved in the various procedures performed by the department: stress test, echocardiogram, cardiac catheterization and implantable devices. We also encourage their participation with our Cardiovascular Surgeons for a complete cardiology experience. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 1-16, full time for 3 weeks, 2 students per period, available by arrangement only. CLERKSHIP DIRECTOR: Susan Zhao, MD, FACC, Associate Chief, Division of Cardiology, SCVMC. CLERKSHIP COORDINATOR: Sherry Hamamjy (408-885-4389, sherry.hamamjy@hhs.sccgov.org). REPORTING INSTRUCTIONS: Where: Valley Specialty Center, 3rd Floor, Suite 340; Time: 9:00 a.m. CALL CODE: 0. OTHER FACULTY: M. Aggarwal, H. Brewster, A. Deluna, H. Shiran, C. Smith, A. Swaminathan, E. Yu, S. Zhao. LOCATION: SCVMC.

MED 304A. Cardiovascular Medicine Clerkship - Inpatients. 5 Units. VISITING: Open to visitors. TYPE OF CLERKSHIP. Selective 2. DESCRIPTION: General cardiology rotation remains part of the bread and butter core of internal medicine inpatient rotations. Together with the CCU/heart failure (PGY II) and the cardiology consult service (VA and Stanford), these rotations form the foundation of the cardiology knowledge base for students. Advances in diagnostic imaging, rapid bedside testing and evidence based clinical trials have allowed us to deliver coordinated complex care to our patients with ample opportunities for teaching and learning. The development of the skills and knowledge required for the practice of cardiac vascular medicine is an essential part of the educational process of internal medicine training. Cardiovascular diseases affect millions of Americans and now we have tools and drugs to treat and/or prevent this problem. It is an essential large component of a daily internal medicine practice. Involves four weeks of intensive experience with clinical cardiology inpatients. ECG reading will be included. Students are required to attend daily teaching rounds with the attending cardiologist and house staff, Division of Cardiovascular Medicine conferences, and formal teaching sessions, including electrocardiography. Cardiac patients who do not require CCU care, e.g. AF, NSTEMI, chest pain, SBE are admitted primarily via the ER 7 days a week. Students will work directly with R1 and a supervisory R2 Medicine Resident and Cardiology faculty member. Work day usually is from 7 am - 7 pm with one day off/week. No night call as patients are covered by R2 and R3 night float residents. Please note: Visiting students must obtain approval prior to applying for this clerkship. International students should email a CV to Rita Balian balian@stanford.edu, and domestic students should email a CV to Cassandra Hawthorne at casshaw@stanford.edu. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 1-16, full time for 3 weeks, 1 student per period (a second student can be added with approval from clerkship coordinator). CLERKSHIP DIRECTOR: John Schroeder, M.D. CLERKSHIP COORDINATOR: Cassandra Hawthorne, casshaw@stanford.edu, 650-723-5562. REPORTING INSTRUCTIONS: Where: 500 Pasteur Drive, J7 Team Room 707; Time: 7:30 am. CALL CODE: 1. OTHER FACULTY: R. Dash, W. Fearon, C. Haeffele, R. Harrington, K. Josan, A. Khandelwal, J. Knowles, D. Lee, N. Leeper, D. Liang, K. Mahaffey, D. Maron, V. Parikh, R. Reejhsinghani, S. Rockson, F. Rodriguez, J. Spin, J. Wu, S. Wu, P. Yang. LOCATION: SHC.

MED 305A. Hematology Clerkship. 5 Units. VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Exposes students to the conceptual basis of hematology, the factual information that is available, and the responses required for consultation and patient care in rapidly evolving and frequently complex clinical circumstances. Under the supervision of the resident, fellow, and faculty attending physician, students admit and follow patients on the very well balanced inpatient Hematology Service (Med VIII) and do consultations. Students also round with the Med VIII team in the morning and attend outpatient clinics in the afternoon. In addition, students participate in the bone marrow reading sessions two mornings a week. Students also learn the requirements for prospective clinical protocol research. There is a weekly research conference, a journal club and a patient-oriented post-clinic conference. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 2 students per period. CLERKSHIP DIRECTOR: Michaela Liedtke, M.D. CLERKSHIP COORDINATOR: Silvia Solorzano (650-723-7078, ssolorza@stanford.edu). REPORTING INSTRUCTIONS: Where: meet heme fellow and heme attending, F Ground, in basement of main hospital; Time: 7:45 am. CALL CODE: 0. OTHER FACULTY: C. Berube, R. Brar, S. Coutre, J. Gotlib, D. Iberri, L. Leung, M. Liedtke, G, Mannis, B. Martin, B. Medeiros, J. Zehnder, T. Zhang. LOCATION: SUMC.

MED 306A. Endocrinology and Metabolism Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Selective 1. DESCRIPTION: Provides students with a comprehensive experience in clinical endocrinology by combining inpatient and outpatient experiences at SCVMC, Stanford (SHC), and PAVA. Students will attend 6-7 clinics per week at the three institutions. Each clinic has approximately 15 to 30 patients who are seen by students, residents, and fellows with faculty members in endocrinology. In addition, students will participate in inpatient endocrine consultation services at Stanford (SHC). Clinical conferences, teaching rounds, grand rounds each week will cover a broad array of endocrine and metabolic problems in both clinical and research spheres. Working at the three hospitals during the clerkship will require travel. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 2 students per period. CLERKSHIP DIRECTOR: Kaniksha Desai, M.D. CLERKSHIP COORDINATOR: Jessica Wong, 650-736-8274, S025. REPORTING INSTRUCTIONS: Where: Valley Specialty Center, Rm. 2Q261; Time: 8:15 am on Monday. CALL CODE: 0. OTHER FACULTY: Staff. LOCATION: SHC, PAVAMC, SCVMC.

MED 308A. Immunology/Rheumatology Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: A comprehensive clinical experience in rheumatology and clinical immunology. Students attend five weekly clinics in rheumatology, and clinical immunology, gaining familiarity with the evaluation of new patients and the longitudinal follow-up of complex rheumatological problems such as SLE and vasculitis and common rheumatological problems such as rheumatoid arthritis, gout and spondyloarthropathies. Inpatient consultations provide experience with management of the acute crisis. Journal clubs, noon conferences, and division rounds provide didactic teaching. The costs and benefits associated with evaluation and treatment are emphasized. Stanford Students wishing to do this clerkship must receive prior approval from Clerkship Director before registering. Please note: Visiting students must obtain approval from Angie Aberia prior to applying for this clerkship. Please email requests to aberia@stanford.edu. Interested students must send their CV and 2 letters of recommendatio, one from the clerkship director, and the other letter from an attending attesting to the students clinical abilities (i.e. proficient H&P's and exam skills). These must be sent to Angie at least 4 to 6 weeks prior to the start of the period that the student would like to enroll in. Prereq: Successful completion of a full medicine clerkship. PREREQUISITES: Completion of a full Medicine clerkship. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 1 student per period. Additional students only allowed if reviewed and approved by clerkship director. CLERKSHIP DIRECTOR: Stanford Shoor, M.D. (650-725-5070). CLERKSHIP COORDINATOR: Ruselle McDermott, russelle.mcdermott@stanford.edu, (650-498-5630). REPORTING INSTRUCTIONS: Where: 1000 Welch Rd. Suite #203, see Angie Aberia (call one week prior to confirm); Time: 8:30 am. CALL CODE: 0. OTHER FACULTY: C.G. Fathman, J. Fries, H. Holman, E. Lambert, S. Strober, L. Tarter, M. Genovese, W. Robinson, P. Utz, L. Chung, M. Lyon. LOCATION: SUMC.

MED 308C. Immunology/Rheumatology Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Introduces students to patients with different forms of arthritis and related rheumatic diseases. Emphasis is on the specific examination of muscles, bones, and joints and important systemic signs and symptoms pertinent to the diagnosis of rheumatic diseases. Laboratory tests, X-rays, and biopsies are reviewed. Students see both new and returning patients and participate in both inpatient and outpatient consultations. Formal and informal participation in conferences is encouraged. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 1 student per period. CLERKSHIP DIRECTOR: Veronika Sharp, M.D., 408-885-6777. CLERKSHIP COORDINATOR: Veronika Sharp, M.D., or secretary, Lupe Ibanez, 408-885-6777. REPORTING INSTRUCTIONS: Where: Check in with SCVMC Housestaff Office, Room 7C081, 751 S. Bascom Avenue, San Jose; Time: Between 8:00 and 8:30 am the first day of clerkship. CALL CODE: 0. OTHER FACULTY: B. Amlani, J. Burkham, U. Marvi. LOCATION: SCVMC.

MED 311D. Advanced Medicine Clerkship. 5 Units.
VISITING: Closed to visitors. TYPE OF CLERKSHIP. Selective 2. DESCRIPTION: The Kaiser Permanente Santa Clara Medical Center offers a dynamic academic clinical clerkship in advanced medicine. Students serve as the primary provider for their patients: documenting H&P's, progress notes and discharge summaries, arranging and completing procedures, participating in daily follow-up care, and communicating with patients. Supervision is provided by the senior level resident and the teaching Hospitalist. There are weekly teaching didactics specifically for sub-interns and daily conferences. It is highly recommended that students register for this clerkship near the beginning or middle of their final year of clinicals. If you want to be sure to have a slot for a particular period, you should register to it as soon as possible as the slots are limited and fill quickly. No adds or drops less than one week before start of each period. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 2-16, full-time for 3 weeks, 2 students per period. CLERKSHIP DIRECTOR: Sudhir S. Rajan, MD, FACP, FCCP. CLERKSHIP COORDINATOR: Susan Krause (408-851-3836), KPMC, Santa Clara. REPORTING INSTRUCTIONS: Where: KPMC, Graduate Medical Education Office, Call 408-236-4921 for site location; Time: 7:00 am. CALL CODE: 5 (Not overnight). OTHER FACULTY: Staff. LOCATION: KPMC.

MED 312C. Advanced Medicine Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Selective 2. DESCRIPTION: Involves an advanced level of inpatient care responsibility. Under the close supervision of faculty and residents the student is expected to function as an intern, caring for the same number of patients and working the same hours. Beepers are provided; meals are free. Please note: Visiting students must obtain approval from Dr. Stephanie Chan prior to applying for this clerkship. Please email requests to Stephanie.Chan@hhs.sccgov.org. Interested students must send their transcript and evaluations from 2 core clerkships. These must be sent to Dr. Chan at least 4 to 6 weeks prior to the start of the period that the student would like to enroll in. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 6 students per period. CLERKSHIP DIRECTOR: Stephanie Chan, M.D. (408-885-7744). CLERKSHIP COORDINATOR: Amy Luu (408-885-6300), amy.luu@sccgov.org. REPORTING INSTRUCTIONS: SCVMC, Room 4C004, 4th Floor Conference Room in the Department of Medicine [Visitors call (408-885-5110) and bring proof of PPD and malpractice insurance to 7th Floor Room 54]; Time: 8:30 am. CALL CODE: 4. OTHER FACULTY: Staff. LOCATION: SCVMC.

MED 313A. Ambulatory Medicine Core Clerkship. 5 Units.
VISITING: Closed to visitors. TYPE OF CLERKSHIP. Required. DESCRIPTION: The combined ambulatory/emergency medicine core clerkship will comprise of ambulatory clinics and emergency medicine shifts, for a total of three weeks. All students will attend Monday morning ambulatory didactics, and a simulation exercise run by the EM Simulation faculty on two Monday afternoons. Students will present interesting case presentations on the third Monday and take their final exam on the last Friday of the rotation. During the ambulatory block, students will attend general medicine and subspecialty clinics, generally Tuesday-Friday. Sites include SUMC, PAVA, SCVMC, Kaiser Santa Clara, Kaiser Fremont, and community clinics. During the emergency medicine block, students will work seven shifts, which will be a mixture of days, evenings, and overnights in the SUMC ED. Holidays in the EMed portion of this clerkship are treated as work days. Students in the EMed block can/will work on holidays. No student may miss more than two clerkship days. PREREQUISITES: None. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 10 students per period. CLERKSHIP DIRECTOR: Jacqueline Tai-Edmonds, M.D. and Jessica Ngo, M.D. CLERKSHIP COORDINATOR: Maria Alfonso, 650-497-6702, malfonso@stanford.edu. and Kristen Kayser, 650-497-3058, kkayser@stanford.edu. REPORTING INSTRUCTIONS: Where: Varies depending on site assignment. The students are notified prior to the first day of the clerkship; Time: TBA. CALL CODE: 2 (No call, but one required weekend ambulatory clinic shift during the ambulatory block and a mixture of at least 2 overnights and/or weekend shifts during the EMED block). OTHER FACULTY: Staff. LOCATION: SUMC, PAVA, SCVMC, Kaiser Santa Clara, Kaiser Fremont, Community Clinics.

MED 314A. Advanced Medicine Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Selective 2. DESCRIPTION: Intended for students in their second clinical year who are able to proceed to an advanced experience similar to an internship. Students see patients with a wide variety of internal medical diseases in both the inpatient and outpatient settings, and gain experience in the practical aspects of internal medicine. The variety of patients and the contact with many private practitioners provide a valuable complement to other clerkship experiences. The clerkship experience is enhanced by exposure to a broad variety of patients as well as clinical teaching from community attendings and Stanford faculty. Please note: Visiting students must obtain pre-approval from Nancy D'Amico prior to applying for this clerkship. Please email requests (pre-approval form) to ndamico@stanford.edu. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 5 students per period. CLERKSHIP DIRECTOR: John Kugler, M.D. (jkugler@stanford.edu). CLERKSHIP COORDINATOR: Nancy D'Amico (650-721-1640), 1215 Welch Road, Mod B, Space #37, MC 5418. REPORTING INSTRUCTIONS: Where: Students will be notified a week prior to the first day; Time: TBA. CALL CODE: 4. OTHER FACULTY: Staff. LOCATION: SUMC.

MED 317C. Medical ICU Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: An in-depth, three week rotation in the general medical ICU of the SCVMC. Students work as an integral part of a large ICU team aiding housestaff in managing a wide range of critically ill patients. Direct student participation in ICU activities is the essential element of this clerkship. With guidance, students gain experience with a variety of procedures, actively apply their knowledge of physiology, and hone their patient management skills. PREREQUISITES: ANES 306A or MED 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks (longer by arrangement), 2 students per period. CLERKSHIP DIRECTOR: Vibha Mohindra, M.D. CLERKSHIP COORDINATOR: Eva Apolinar (408-885-2051), Building Q, Suite 5Q153, Valley Specialty Center. REPORTING INSTRUCTIONS: Where: SCVMC, Valley Specialty Center, 5th Floor, Pulmonary Division Office; Time: 8:00 AM. CALL CODE: 4. OTHER FACULTY: C. Kirsch, J. Wehner, V. Mohindra, E. Hsiao, F. Kagawa, A, Friedenberg, W.Chen, A. Gohil. LOCATION: SCVMC.

MED 318A. Palliative Medicine. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: The clerkship provides medical students in-depth exposure to palliative care across the continuum of care including several ambulatory clinics, an inpatient consult service, and home and inpatient hospice care. Students will learn core communications strategies in disclosing bad news, eliciting and clarifying goals of care, and aiding in transitions in care. They will also learn physiology and pharmacology relevant for symptom management (e.g. pain, nausea, depression), as well as interact with patients confronting their own mortality. Students complete 3 weeks for elective credit. All patient visits will be conducted via the EPIC multi-provider video visit platform. PREREQUISITES: Prior approval by the Clerkship Director is required for all students. Please fill out the Qualtrics survey at: https://stanforduniversity.qualtrics.com/jfe/form/SV_0Il1gXXVKBV5uvz. We will begin reviewing pre-approval surveys for the 20-21 academic year starting in July. Surveys received prior to 7/1/2020 will not be processed. PERIODS AVAILABLE: 1-16, full-time for 3 weeks. 6 students per period. CLERKSHIP DIRECTOR: Kavitha Ramchandran, M.D. CLERKSHIP COORDINATOR: Laura J Lundi, 650-724-9705, llundi@stanford.edu. REPORTING INSTRUCTIONS: Please look for an email from the Clerkship Coordinator the Friday prior to your rotation; Time: TBA. CALL CODE: 0. OTHER FACULTY: Staff. LOCATION: SUMC.

MED 321A. Inpatient Medical Oncology Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Selective 2. DESCRIPTION: Offers an intensive, inpatient, subspecialty care experience, equivalent to a subinternship. Students are responsible for 2 to 5 patients who are seriously ill with a broad range of medical problems in the setting of underlying malignant disease. Students work with the inpatient team composed of an attending, a medical oncology fellow, 2 medical residents and 2 medical interns. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks. 1 student per period. CLERKSHIP DIRECTOR: Sukhmani Kaur Padda, M.D. CLERKSHIP COORDINATOR: Laura Lundi (650-724-9705, llundi@stanford.edu). REPORTING INSTRUCTIONS: Stanford Hospital, F Ground (Oncology Fellow); Time: 8:00 AM. CALL CODE: 2 (patients are admitted daily and the sub-intern will admit patients on a rotation basis with the team without overnight call, but may stay late some evenings). OTHER FACULTY: Staff. LOCATION: SUMC.

MED 322A. Outpatient Medical Oncology Clerkship. 3-6 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Selective 1. DESCRIPTION: Familiarizes students with the subspecialty of medical oncology through subspecialty patient care in clinics and tumor boards and attending the weekly conferences of the Division of Oncology. The experience draws heavily on and will expand skills in internal medicine, emphasizing differential diagnosis, physical examination, utilization of laboratory, X-ray, and imaging studies, as well as approaches to psycho-social problems for patients with suspected or established malignant disease. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks. 2 students per period. CLERKSHIP DIRECTOR: Sukhmani Kaur Padda, M.D. CLERKSHIP COORDINATOR: Laura Lundi (650) 724-9705; llundi@stanford.edu). REPORTING INSTRUCTIONS: Where: Cancer Center, Visitor Information Desk; Time: 9:00 am. CALL CODE: 0. OTHER FACULTY: Staff. LOCATION: SUMC.

MED 323A. Trans-Disciplinary Breast Oncology Clerkship. 5 Units.
VISITING: Closed to visitors. TYPE OF CLERKSHIP. Selective 1. DESCRIPTION: This three week trans-disciplinary breast oncology clerkship cuts across the relevant treatment modalities and emphasizes interdisciplinary, patient-centered care. Breast cancer is a highly prevalent disease often treated in early stages with medical, radiation and surgical therapies. The student will be in each clinic of these treatment clinics for one day every week, independently work up and discuss patients with assigned faculty, present new cases to the breast tumor board, and subsequently synthesize the visit notes and outpatient letters. At least one day per week, students will choose from additional care activities that shape the patient's experience, including observation of breast surgeries, wound care visits, radiation dosimetry planning or simulation, chemotherapy teaching or infusion, and medical oncology inpatient rounds. Furthermore, students are encouraged to identify patients with multiple visits that month and follow them across clinics for concentrated continuity. The clerkship offers a unique vantage point to learn about the shared decision-making and coordination of complex cancer care, in addition to the management of general health problems for breast cancer patients. Students further appreciate the longitudinal evolution of the patient's relationship with their cancer. There will be weekly debrief check-ins and short didactics to optimize the student's experience. PREREQUISITES: Any core clerkship. PERIODS AVAILABLE: 1-16, full-time for 3 weeks. 1 student per period. CLERKSHIP DIRECTOR: Melina Telli, M.D. CLERKSHIP COORDINATOR: Vanessa Murillo, vmurill0@stanford.edu, 650-725-8738. REPORTING INSTRUCTIONS: Where: Stanford Cancer Center CC-2241; Time: 8:30 am. CALL CODE: 5. OTHER FACULTY: Staff. LOCATION: SUMC.

MED 325A. Gastroenterology Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Involves participation in inpatient consultations and outpatient clinics. Students are responsible for evaluating patients with major diseases of the liver and gastrointestinal tract. They assume primary responsibility in both inpatient and outpatient settings and present cases regularly to the faculty attending physician. Daily inpatient rounds are made with the attending physician, fellow, and resident. Clinics are held on Mondays. Clinical conferences and journal clubs are held once weekly. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 1 student per period. CLERKSHIP DIRECTOR: Subhas Banerjee, M.D., 650-736-0431. CLERKSHIP COORDINATOR: Abbey Hamilton, 650-723-4519, abbeyh@stanford.edu. REPORTING INSTRUCTIONS: Where: Endoscopy Unit, 300 Pasteur Dr, Basement Room H0262. (Please ask for GI attending fellow); Time: 8:30 am. CALL CODE: 0. OTHER FACULTY: A. Aijaz, S. Banerjee, L. Becker, A. Cheung, J. Clarke, T. Daugherty, R. Dhanasekaran, D. Dronamraju, N. Fernandez-Becker, S. Friedland, G. Garcia, P. Garcia, J. Glenn, A. Goel, A. Gottfried, D. Grewal, H. Halawi, E. Ho, J. Hwang, A. Kalra, K. Keyashian, R. Kim, R. Kumari, P. Kwo, U. Ladabaum, B. Limketkai, A. Lowe, D. Limsui, L. Neshatian, L. Nguyen, M. Nguyen, P. Okafor, W. Park, A. Shah, S. Sinha, I. Sonu, S. Streett. LOCATION: SUMC.

MED 325B. Gastroenterology Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Gives students responsibility for both inpatient consultations and the evaluation and treatment of referred patients in the Gastroenterology clinic. Rounds with the faculty consultant, fellow and resident, as well as GI endoscopic procedures are conducted daily. Conferences on clinical gastroenterology, hepatology, gastrointestinal radiology, and gastrointestinal and liver histopathology are held weekly. A combined medical-surgical conference is held every other week. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 1 student per period. CLERKSHIP DIRECTOR: Ramsey Cheung, M.D. CLERKSHIP COORDINATOR: Matthew Alcera, Matthew.Alcera@va.gov. REPORTING INSTRUCTIONS: PAVAMC, Bldg. 100, Endoscopy Suite; Time: 8:30 am. CALL CODE: 0. OTHER FACULTY: R. Cheung, R. Soetikno, S. Matsui, B. Omary, S. Friedland. LOCATION: PAVAMC.

MED 325C. Gastroenterology Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: This clerkship provides experience in outpatient and inpatient gastroenterology (GI). In the mornings, students will evaluate outpatients referred to GI clinic and will also have an opportunity to observe outpatient endoscopic procedures, including upper endoscopy, colonoscopy, paracentesis, ERCP and endoscopic ultrasound. In the afternoons, students will evaluate inpatients who require GI consultation, observe inpatient procedures and participate in inpatient rounds with the GI team. Students will assume primary responsibility for the inpatients they provide consultation on. In addition to direct patient care, students will attend multiple didactic lectures and conferences, including a bi-weekly GI/Surgery conference, bi-weekly GI Radiology conference, bi-weekly GI Journal Club, monthly Liver Tumor Board, monthly GI Pathology conference and weekly Stanford multi-disciplinary (GI/Surgery/Radiology/Pathology) Digestive Diseases Clinical Conference. This clerkship is closed to registration unless given prior approval by Clerkship Coordinator. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 1 student per period. CLERKSHIP DIRECTOR: Elizabeth Hwang, M.D. (408-793-2598). CLERKSHIP COORDINATOR: Louise Leprohon (408-885-7947), Louise.Leprohon@hhs.sccgov.org. REPORTING INSTRUCTIONS: Where: SCVMC, Valley Specialty Center, 5th Floor, GI Clinic; Time: 8:00 am. CALL CODE: 0. OTHER FACULTY: A. Chen, A. Davila, A. Ho, E. Hwang, A. Kamal, R. Lerrigo, D. Lin, N. Shah, J. Williams. LOCATION: SCVMC.

MED 326A. Hepatology Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Involves participation in inpatient consultations and outpatient clinics for 3 weeks. The goals are to familiarize students with evaluation and management of patients with major liver diseases. Students are responsible for evaluating patients with major diseases of the liver diseases. They assume primary responsibility in both inpatient and outpatient settings and present cases regularly to the faculty attending physician. Daily inpatient rounds are made with the attending physician, fellow, and resident. Clinics are held on Mondays to Friday. Journal clubs are held once weekly. Pathology conferences are held on Thursday and radiology conferences on Friday. Patient care conferences are held on Tuesday and Friday. PREREQUISITES: None. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 2 students per period. CLERKSHIP DIRECTOR: Mindie Nguyen, M.D., MAS (phone: 650-722-4478). CLERKSHIP COORDINATOR: Jeff Mathews (650-498-6084). REPORTING INSTRUCTIONS: Where: 780 Welch Road, Room CJ280K; Time: 8:30 am. CALL CODE: 0. OTHER FACULTY: A. Ahmed, T. Daugherty, A. Goel, R. Kumari, P. Kwo. LOCATION: SUMC, PAVAMC.

MED 328A. Addiction Medicine Clerkship. 3-6 Units.
VISITING: Closed to visitors unless already approved for clerkship within SHC. TYPE OF CLERKSHIP. Elective. DESCRIPTION: This clerkship will teach students the fundamentals of addiction medicine from the perspective of primary care and interdisciplinary coordination of care. Clinic exposure will include opportunities to interact with patients with substance use disorders in a variety of settings that may include: Community Clinics through Santa Clara Valley Medical Center, Stanford Family Medicine Clinic, Los Altos Primary Care and Buprenorphine and Alcohol Use Disorder Support Groups, and Residential and Inpatient settings. There may be opportunities to rotate in a smoking cessation group. Students will learn about outpatient detoxification from opioids and alcohol, relapse prevention medications for opioid and alcohol use disorders and the culture of substance use recovery. Please contact Coordinator listed below for pre-approval before signing up. PREREQUISITES: A minimum of 2 clerkship experiences that may include: Family or Internal Medicine, Pediatrics, Psychiatry, Surgery, OBGYN, Emergency, or Ambulatory (Urgent Care) Medicine. PERIODS AVAILABLE: 9-16 for 2020-21; 1-16 for 2021-22, full time for 3 weeks. 1 student per period. CLERKSHIP DIRECTOR: Chwen-Yuen Angie Chen, MD, FACP, FASAM, ChChen@stanfordhealthcare.org. CLERKSHIP COORDINATOR: Chwen-Yuen Angie Chen, MD, FACP, FASAM, ChChen@stanfordhealthcare.org. REPORTING INSTRUCTIONS: Where: TBA; Time: 8:00 am. CALL CODE: 0. OTHER FACULTY: Staff. LOCATION: SHC.

MED 330A. Pulmonary Medicine Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Helps students develop the attitudes and skills necessary for the evaluation and management of patients with pulmonary disease. Students are expected to understand pulmonary disease in the context of internal medicine, using general as well as specific approaches to diagnosis. The clerkship affords direct patient involvement under supervision in the outpatient clinic and on inpatient consultation services. Critically ill patients with pulmonary disease in the ICU will be evaluated. Pulmonary function tests are evaluated daily, and student involvement in specialized studies is emphasized. Divisional clinical conferences are held weekly, and a joint medical-surgical conference bi-weekly. Each student has the option of spending one-half of the clerkship at the PAVAMC and one-half at the Stanford University Hospital on a rotational basis. These options are discussed and determined on the first day of the clerkship. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 1-16, full-time for three weeks (half-time at SUH; half-time at PAVAMC,) 2 students per period. CLERKSHIP DIRECTOR: Peter N. Kao, M.D, Ph.D. CLERKSHIP COORDINATOR: Kerri Keating, keatingk@stanford.edu. REPORTING INSTRUCTIONS: Where: H3147; Time: 8:45 am. CALL CODE: 1. OTHER FACULTY: R. Chitkara, T. Desai, G. Dhillon, J. Holty, P. Kao, K. Kudelko, W. Kuschner, J. Levitt, P. Mohabir, M. Nicolls, H. Paintal, A. Rogers, S. Ruoss, Y. Sung, R. Van Wert, A. Weinacker, R. Zamanian, C. Zone, V. de Jesus Perez. LOCATION: SUMC.

MED 330C. Pulmonary Medicine Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Affords students an opportunity to deal with a broad range of clinical pulmonary problems. Working as part of a busy consulting service, students develop a practical approach to evaluating and managing patients with respiratory disease. The spectrum of patients ranges from ambulatory outpatients, to patients with tuberculosis, to ICU patients with acute respiratory failure. The application of the basic principles of physiology to clinical problems is emphasized. Under supervision, students participate in interpreting pulmonary function tests and other diagnostic procedures. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 1 student per period. CLERKSHIP DIRECTOR: Eric Hsiao, M.D. CLERKSHIP COORDINATOR: Angelica Segovia (408-885-2051), Building Q, Suite 5Q153, Valley Specialty Center. REPORTING INSTRUCTIONS: Where: Valley Specialty Center, 5th Floor, Room 5Q153; Time: 8:00 am. CALL CODE: 0. OTHER FACULTY: U. Barvalia, V. Chen, H. Duong, A. Gohil, E. Hsiao, V. Mohindra, H. Tsai, J. Wehner. LOCATION: SCVMC.

MED 331A. Advanced Work in Pulmonary and Critical Care Medicine. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: The content of this clerkship is flexible. Students can do additional clinical work in Pulmonary and Critical Care Medicine or research work in the Division of Pulmonary and Critical Care Medicine. Specific arrangements for content should be made with the faculty in advance. PREREQUISITES: MED 330 and consent of instructor. PERIODS AVAILABLE: 1-16, full-time for 3 weeks only, 1 student per period. CLERKSHIP DIRECTOR: Peter Kao, M.D. CLERKSHIP COORDINATOR: Kerry Keating, 650-723-1150, keatingk@stanford.edu. REPORTING INSTRUCTIONS: Where: H3147; Time: 9:00 am. CALL CODE: 1. OTHER FACULTY: S. Chinthrajah, K. de Boer, T. Desai, G. Dhillon, J. Holty, P. Kao, K. Kudelko, W. Kuschner, Y. Lai, J. Levitt, M. Marmor, P. Mohabir, S. Majumdar, M. Nicolls, H. Paintal, R. Raj, M. Ramsey, A. Rogers, S. Ruoss, G. Singh, Y. Sung, A. Sweatt, R. Van Wert, A. Weinacker, R. Zamanian, C. Zone, V. de Jesus Perez. LOCATION: SUMC.

MED 334A. Nephrology Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Provides students with an introduction to clinical nephrology, including diseases of the kidney and disorders of fluid, electrolyte, and acid-base balance. The clerkship is available at SUMC. Students evaluate inpatients as members of the nephrology consulting team. After completing this rotation, we expect that students will be able to independently work up and manage a wide variety of acute and chronic disturbances of renal function, as well as glomerular disease, vasculitis, hypertension, fluid and electrolyte disorders, and acid-base disturbances. They also participate in the management of patients with end-stage renal disease. There is a weekly schedule of grand rounds, journal club, and a monthly renal biopsy conference. PREREQUISITES: Medicine 300A, Surgery 300A or Pediatrics 300A are preferred but not required. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 2 students per period. CLERKSHIP DIRECTOR: Shuchi Anand, M.D., M.S. (650-723-6961). CLERKSHIP COORDINATOR: Cayla Whitney, caylacw@stanford.edu, 650-721-6680, 777 Welch Road Suite DE Palo Alto, CA 94304. REPORTING INSTRUCTIONS: Where: 777 Welch Road Suite DE Palo Alto, CA 94304; Time: 8:30 am. CALL CODE: 0. OTHER FACULTY: T. Meyer, R, Lafayette, J. Scandling, J. Tan, Y. Lit, G. Chertow, V. Bhalla, A. Pao, M. Tamura, J. Yabu, N. Arora, R. Isom, T. Chang, S. Anand, T. Sirich, K. Erickson, P. Fatehi. LOCATION: SUMC, PAVAMC.

MED 334C. Nephrology Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Students see patients in the outpatient renal clinic, and on an active inpatient service. The diverse patient population at SCVMC enables student to encounter patients with a wide variety of acute and chronic renal diseases, hypertension, and fluid and electrolyte disturbances. The clerkship is also designed to acquaint students with a systematic approach to patients with fluid, electrolyte, and acid-base abnormalities. A series of seminars covering a broad range of topics in nephrology and designed specifically for medical students is given by the faculty. An optional self-study program on fluid and electrolytes consisting of 8 taped lectures with slides is also available. Weekly divisional nephrology conferences are held at SCVMC, and address various topics in nephrology. Additionally, there is a monthly nephrology resident conference, in addition to a monthly renal pathology conference. Videotaped lecture series on the entire field of nephrology are also available. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks. 2 students per period. CLERKSHIP DIRECTOR: Anjali Bhatt Saxena, M.D. CLERKSHIP COORDINATOR: Mary Jane Monroe (408-885-7019). REPORTING INSTRUCTIONS: Where: SCVMC, Renal Dialysis Unit, 3rd Floor [Visitors call (408-885-5110) and bring proof of PPD and malpractice insurance as directed]; Time: 8:30 am. CALL CODE: 0. OTHER FACULTY: A. Saxena, J. Lugovoy, A. Jobalia, B. Young, N. Pham, F. Luo, staff. LOCATION: SCVMC.

MED 338A. Outpatient Infectious Diseases Elective. 5 Units.
VISITING: Closed to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: This clerkship provides medical students with an elective course of 3 weeks of outpatient ID experience. Clinical experiences will focus on antibiotic selection, utilization and stewardship, as well as the management of commonly encountered ID syndromes, including sexually transmitted infections, HIV, Tuberculosis, and viral hepatitis. Students will attend outpatient clinics at the Palo Alto Veterans Administration Medical Center, the Stanford affiliated Positive Care Clinic, and the San Mateo County Health System. There is potential flexibility for students interested in a focus area at a specific clinic or with a specific physician, to arrange more concentrated clinical work at one of the clinics with permission of the attending. Each student will be asked to prepare a small research project (e.g. a case or literature review) to be presented at the end of the rotation. Students planning on doing the outpatient ID rotation should contact Dr. Levy at vlevy@stanford.edu as soon as possible but at least 8 weeks prior to rotation beginning to verify there is period availability for the desired period of rotation and that all needed electronic medical record and infection control requirements have been obtained. This clerkship requires prior approval by Clerkship Director. PREREQUISITES: MED 300A. PERIODS AVAILABLE: For 2020-21, P6-16; For 2021-22, P1-16, full-time for 3 weeks, 1 student per period. CLERKSHIP DIRECTOR: Vivian Levy, M.D. (vlevy@stanford.edu or 650-573-3987). CLERKSHIP COORDINATOR: Vivian Levy, M.D. (vlevy@stanford.edu or 650-573-3987). REPORTING INSTRUCTIONS: Where: Dr. Levy will send the student a schedule, curriculum and orientation materials prior to starting the rotation of clinics and physicians; Time: TBA. CALL CODE: 0. OTHER FACULTY: Staff. LOCATION: SUMC, PAVAMC.

MED 339B. Advanced Medicine Clerkship. 5 Units.
VISITING: Closed to visitors. TYPE OF CLERKSHIP. Selective 2. DESCRIPTION: Intended for clinically experienced students who seek an advanced experience similar to an internship. PREREQUISITES: MED 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 4 students per period. CLERKSHIP DIRECTOR: Arlina Ahluwalia, M.D., 650-493-5000 x66759. CLERKSHIP COORDINATOR: Matthew Alcera, 650-493-5000 x63157, Matthew.Alcera@va.gov, Bldg. 5, 3rd Fl Rm C-367. REPORTING INSTRUCTIONS: Where: First Monday of rotation, Bldg 101; Time: 08:30 a.m. CALL CODE: 4. OTHER FACULTY: Staff. LOCATION: PAVAMC.

MED 340B. Medical-Surgical Intensive Care Unit Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: This clerkship provides experience managing adult patients in a critical care unit. Students learn how to optimize care for the acutely ill patient and the multidisciplinary approach to complex patients. Teaching emphasizes the review of basic organ physiology, the ability to determine the pathophysiologic mechanisms involved in critical illness, and the formulation of a physiologic based treatment plan. Students gain experience with the implementation of monitoring and therapeutic devices used in the intensive care units and begin to become adept at the evaluation, stabilization and management of the most critically ill patients expected to be encountered in today's acute care hospitals. Ward rounds, bedside evaluation and treatment, and individual interactions with attending, fellows and residents are part of the educational process. Students must attend mandatory simulator courses in order to receive passing grade for this clerkship. Students wishing to do this clerkship must get approval from Bernadette Carvalho first before registering. Students must register for Anes 340B for this clerkship. PREREQUISITES: Anesthesia 306A or Medicine and Surgery core clerkships. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 1 student per period. CLERKSHIP DIRECTOR: Juliana Barr, M.D., 650-493-5000 x64452, Building 1, Room F315, PAVAMC 112A. CLERKSHIP COORDINATOR: Bernadette F. Carvalho, berniec@stanford.edu. REPORTING INSTRUCTIONS: Where: PAVAMC, MSICU, 3rd Floor; Time: 8:00 am. CALL CODE: 4. OTHER FACULTY: E. Bertaccini, R. Chitkara, G. Lighthall, W. Kuschner, G. Krishna, J. Olsson. LOCATION: PAVAMC.

MED 342A. Geriatric Medicine Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Selective 1. DESCRIPTION: This clinical experience introduces students to the principles of effective geriatric care in both inpatient and outpatient settings. Geriatric faculty and fellows work with students in various clinical settings including: 1) outpatient clinics at the VA Palo Alto Health Care System 2) outpatient clinic at Stanford University 3) a community skilled nursing facility in Palo Alto. The rotation emphasizes the evaluation and management of patients with multiple chronic conditions, such as diabetes, congestive heart failure, hypertension, urinary incontinence, mental status changes, functional impairments and gait problems. This clerkship requires written approval by Clerkship Director before you can enroll. Please contact Dr. Philip Choe at Philip.Choe@va.gov to check for availability of spots in the clerkship. PREREQUISITES: None. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 1 student per period. CLERKSHIP DIRECTOR: Philip Choe, D.O. (650-493-5000 x64740). CLERKSHIP COORDINATOR: Philip Choe, D.O. REPORTING INSTRUCTIONS: Where: Arrange with clerkship coordinator; Time: Arrange with clerkship coordinator. CALL CODE: 0. OTHER FACULTY: Staff. LOCATION: SUMC, PAVAMC.

MED 343B. Palliative Care Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Selective 1. DESCRIPTION: Teaches the natural history, prognostication, and management of serious illnesses. Emphasis is placed on acquiring the knowledge, skills, and attitudes desirable in a compassionate clinician-scholar physician. Students record history (with special assessment to symptoms, functional assessment, mood and cognitive assessment), physical examination, and pertinent laboratory data for patients for whom they are responsible and present their findings, together with their diagnoses and management care plans, at rounds, and daily team meetings. Provision of patient-centered, family-oriented care is continuously emphasized. An essential aspect of the clerkship is the students' gradual assumption of direct responsibility for, and full-time involvement in, care of patients with serious illness with the house staff, fellows and a large inter-disciplinary team and this is why we have structured this as a three week rotation. A passing grade will require both a satisfactory performance and a successful 30 minute formal presentation on palliative care topic of interest (student will discuss ideas with Course Director to identify potential topics of interest to them). Course highlights include (a) mentoring from the course director and a cadre of mentors including Palliative Care Attendings and Fellows (b)focus on skill building and practice with special focus on communication skills (c) opportunity to work closely with a multi-disciplinary team(d) learning to care for the patient and their family as the unit of care. PREREQUISITES: This clerkship requires written approval by Clerkship Director before you can enroll. Please contact Dr. VJ Periyakoil at periyakoil@stanford.edu to check for availability of spots in the clerkship. PERIODS AVAILABLE: 1-16, full-time for 3 weeks. 1 student per period. CLERKSHIP DIRECTOR: VJ Periyakoil, M.D. (periyakoil@stanford.edu). CLERKSHIP COORDINATOR: VJ Periyakoil, M.D. (650-497-0332, periyakoil@stanford.edu). REPORTING INSTRUCTIONS: Where: This will depend on the start day of the rotation as training activities vary by the day; Time: 8:00 am. CALL CODE: 0. OTHER FACULTY: Staff. LOCATION: SUMC, PAVAMC, SCVMC.

MED 344A. Elective in Quality Improvement, Patient Safety, and Organizational Change. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Mentored practice and growth in knowledge, skills, and attitudes in quality improvement, patient safety, and organizational change. Students engage in directed readings, attend sessions with experienced QI Champions, learn about quality improvement projects and processes at Stanford University, participate in ongoing quality and patient safety activities within the Department of Medicine and Stanford Hospital and Clinics, and design and begin a quality improvement/patient safety/ organizational change project. Designed to allow the student to develop a mentoring relationship with a QI Champion who will serve as a role model, mentor, and educator. Contact Dr. Lisa Shieh at lshieh@stanford.edu if interested. PREREQUISITES: None. PERIODS AVAILABLE: 1-16, full-time for three weeks. 3 students per period. CLERKSHIP DIRECTOR: Lisa Shieh, M.D., Ph.D, FHM, 650-724-2917, lshieh@stanford.edu. CLERKSHIP COORDINATOR: Lisa Shieh, M.D., Ph.D, FHM, 650-724-2917, lshieh@stanford.edu. REPORTING INSTRUCTIONS: Where: 700 Welch Road, Suite 310B, Palo Alto, CA 94304; Time: TBA. CALL CODE: 0. OTHER FACULTY: K. Hooper, L. Shieh. LOCATION: SUMC.

MED 347A. Stanford Perioperative Internal Medicine Rotation. 5 Units.
VISITING: Closed to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: The Stanford Perioperative Internal Medicine elective is a three-week inpatient rotation that will provide the students a clinical immersive experience in medical management of Orthopedics, Neurosurgery and ENT patients with bedside and didactic teaching. The students will be directly supervised by hospital medicine attendings. They will be expected to perform thorough histories and physical examinations of patients admitted to the hospital and then formulate and implement treatment plans. This rotation will expose the students to learn effective ways to evaluate medical co-morbidities, learn evidence based clinical practices to prevent and treat post-operative complications and learn about research and quality improvement projects pertaining to perioperative medicine. The students will also be expected to attend the resident morning report, noon conference and medical grand rounds during this time. PREREQUISITES: None. PERIODS AVAILABLE: 1-16, full time for 3 weeks, 2 students per three week period. CLERKSHIP DIRECTOR: Sarita Khemani, M.D. CLERKSHIP COORDINATOR: Sarita Khemani, M.D., 650-906-5070, skhemani@stanford.edu. REPORTING INSTRUCTIONS: Where: Stanford hospital 500 P, Floor L4, nursing station; Time: 9:00AM. CALL CODE: 0. OTHER FACULTY: Stanford Medicine faculty and residents from multiple disciplines. LOCATION: SUMC.

MED 370. Medical Scholars Research. 4-18 Units.
Provides an opportunity for student and faculty interaction, as well as academic credit and financial support, to medical students who undertake original research. Enrollment is limited to students with approved projects.

MED 390. Curricular Practical Training. 1-18 Unit.
CPT Course required for international students completing degree requirements.

MED 397A. MD Capstone Experience: Preparation for Residency. 1 Unit.
VISITING: Closed to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: This 1-week clerkship provides senior medical students an opportunity to review and practice a wide variety of knowledge and skills that are essential to preparing them to work effectively as interns. The capstone clerkship will include a significant emphasis on simulation-based learning as well as small group sessions, didactics, skills labs, and resident panels. Required skills and common experiences during internship will be specifically highlighted, such as cross cover calls, sign out, and advanced communication skills. All training is designed to help students master practical skills that will be essential during the first few months of any intern year. For those students who are not enrolled for the quarter in which the Capstone Clerkship is offered, please contact Brian Herman at bherman8@stanford.edu to register. PREREQUISITES: Completion of required core clerkships. PERIODS AVAILABLE: P14 (5/3/21-5/9/21) or P15 (5/17/21-5/23/21) for 2020-21; P14 (5/2/22-5/8/22) or P15 (5/16/22-5/22-22) for 2021-22, full-time for 1 week. 30 students maximum per period. CLERKSHIP DIRECTOR: Jeff Chi, M.D. and John Kugler, M.D. CLERKSHIP COORDINATOR: Brian Herman (650) 725-4677, bherman8@stanford.edu. REPORTING INSTRUCTIONS: Where: Course coordinator will send out reporting instructions with syllabus before the start of the clerkship; Time: TBA. CALL CODE: 2 - you will be asked to do one evening session, but no overnight session. OTHER FACULTY: Stanford Medicine faculty and residents from multiple disciplines. LOCATION: SUMC.

MED 398A. Clinical Elective in Medicine. 1-5 Unit.
VISITING: Closed to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Provides an opportunity for a student in the clinical years to have a clinical experience in one of the fields of Medicine, of a quality and duration to be decided upon by the student and a faculty preceptor in the Department of Medicine. Please note: Students cannot add 398A clerkships directly to their fishbowl schedules through the regular shuffles. Please contact Caroline Cheang in the Office of Medical Student Affairs at cheang@stanford.edu or 650-498-7619 with the faculty preceptor's name and email address to add this clerkship. PREREQUISITES: None. PERIODS AVAILABLE: 1-16, 4 students per period. CLERKSHIP DIRECTOR: John Kugler, M.D., jkugler@stanford.edu. CLERKSHIP COORDINATOR: Nancy D'Amico, 650-721-1640, 1215 Welch Road, Mod B, Space #37, MC 5418. REPORTING INSTRUCTIONS: Where: TBA (designated faculty preceptor); Time: TBA. CALL CODE: 0. OTHER FACULTY: Staff. LOCATION: SUMC, PAVAMC, SCVMC, KPMC.

MED 399. Graduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

BIOCHEMISTRY

Courses offered by the Department of Biochemistry are listed under the subject code BIOC on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIOC&filter-catalognumber-BIOC=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIOC&filter-catalognumber-BIOC=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIOC&filter-catalognumber-BIOC=on).

Biochemistry is a department within the School of Medicine, with offices and labs located in the Beckman Center for Molecular and Genetic Medicine at the Stanford Medical Center, the Shriram Center for Bioengineering and Chemical Engineering, and the Stanford Genome Technology Center. Courses offered by the department may be taken by undergraduates as well as graduate and medical school students.

Advanced courses offered in more specialized areas emphasize recent developments in biochemistry, cell biology, and molecular biology. These courses include the physical and chemical principles of biochemistry, enzyme reaction mechanisms, membrane trafficking and biochemistry, molecular motors and the cytoskeleton, mechanisms and regulation of nucleic acid replication and recombination, the biochemistry of bacterial and animal viruses, the molecular basis of morphogenesis, the molecular and cell biology of yeast, and the structure and function of both eukaryotic and prokaryotic chromosomes.

Opportunities exist for directed reading and research in biochemistry and molecular biology, using the most advanced research facilities, including those for light and electron microscopy, chromatography and electrophoresis, protein and nucleic acid purification, rapid kinetic analysis, synthesis and analysis, single molecule analyses using laser light traps, microarray generation and analysis, and computer graphic workstation facilities for protein and nucleic acid structural analysis. Ongoing research uses a variety of organisms from bacteria to animal cells.

Doctor of Philosophy in Biochemistry

Requirements for the M.S. and Ph.D. degrees are described in the "Graduate Degrees (p. 65)" section of this bulletin. The department does not offer undergraduate degrees.

The Department of Biochemistry offers a Ph.D. program which begins in the Autumn Quarter of each year. The program of study is designed to prepare students for productive careers in biochemistry; its emphasis is training in research, and each student works closely with members of the faculty. In addition to the requirement for a Ph.D. dissertation based on original research, students are required to complete six advanced courses in biochemistry and related areas among the 135 total units required for the Ph.D. Selection of these courses is tailored to fit the background and interests of each student. A second requirement involves the submission of two research proposals which are presented by the student to a small committee of departmental faculty members who are also responsible for monitoring the progress of student curricular and research programs, and a journal club presentation. All Ph.D. students are expected to participate actively in the department's seminar program, and students are encouraged to attend and to present papers at regional and national meetings in cellular biochemistry and molecular biology. Teaching experience is an integral part of the Ph.D. curriculum and is required for the degree.

The Department of Biochemistry offers an M.S. degree only to students already enrolled in the Ph.D. program. Students should contact the Graduate Studies adviser for more details.

Those applying for graduate study should have at least a baccalaureate degree and should have completed work in cell and developmental biology, basic biochemistry and molecular biology, and genetics. Also required are: at least one year of university physics; differential and integral calculus; and organic, inorganic, and physical chemistry. The department is especially interested in those applicants who have research experience in biology or chemistry. Students must submit an application, including transcripts and letters of recommendation, by December for admission in the following Autumn Quarter.

Applications should be submitted at the Office of Graduate Admissions (http://gradadmissions.stanford.edu) web site. Applicants are notified by March 31 of decisions on their applications. The Biochemistry Department has made scores from the general Graduate Record Examination (GRE) (verbal, quantitative, and analytical) optional on our application.

All applicants are urged to compete for non-Stanford fellowships or scholarships, and U.S. citizens should complete an application for a National Science Foundation Predoctoral Traineeship. Students are provided with financial support to cover normal living expenses; Stanford tuition costs are paid. Applicants for admission to the department are considered without regard to race, color, creed, religion, sex, age, national origin, or marital status.

Postdoctoral research training is available to graduates who hold a Ph.D. or an M.D. degree. Qualified individuals may write to individual faculty members for further information.

The Department of Biochemistry focuses on the molecular basis of life, by studying the structures and functions of proteins and nucleic acids, the control of development, molecular motors and the cytoskeleton, trafficking of proteins between organelles, regulation of gene expression, protein homeostasis, structure and design, genetic and epigenetic control of chromosome function, and the application of genomics, all towards the understanding of health and disease.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

The Biochemistry Department counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B-' or better level.

Graduate Advising Expectations

The Department of Biochemistry is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails

collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Emeriti: (Professors): Robert L. Baldwin, Paul Berg, Patrick O. Brown, Douglas L. Brutlag, David S. Hogness, A. Dale Kaiser, I. Robert Lehman

Chair: Aaron F. Straight

Director of Graduate Studies: Daniel Herschlag

Professors: Steven Artandi, Gilbert Chu, Ronald W. Davis, James E. Ferrell, Jr., Daniel Herschlag, Peter Kim, Mark A. Krasnow, Suzanne R. Pfeffer, James A. Spudich, Aaron F. Straight

Associate Professors: Onn Brandman, Rhiju Das, Pehr A. B. Harbury, Rajat Rohatgi

Assistant Professors: Silvana Konermann, Lingyin Li, Julia Salzman

Courtesy Professors: Chaitan S. Khosla, Sharon Long, Karlene Cimprich

Courses

BIOC 109A. Building Blocks for Chronic Disease. 3 Units.
Researchers have come a long way in developing therapies for chronic disease but a gap remains between current solutions and the ability to address the disease in full. This course provides an overview to the underlying biology of many of these diseases and how they may connect to each other. A "think outside of the box" approach to drug discovery is needed to bridge such a gap in solutions, and this course teaches the building blocks for that approach. Could Legoland provide the answer? This is a guest lecture series with original contributions from prominent thought leaders in academia and industry. Interaction between students and guest lecturers is expected. Students with a major, minor or coterm in Biology: 109A/209A or 109B/209B may count toward degree program but not both.
Same as: BIO 109A, BIOC 209A, HUMBIO 158

BIOC 109B. Advances in Therapeutic Development: Neuronal Signaling and Immunology. 3 Units.
This is a seminar course focused on teaching students about novel research and applications in the fields of neuroscience and immunology. The course will cover topics that range from the neuronal pathways in opioid addiction and the mechanics of pain, to advances in immunotherapy. Students will engage with diverse material from leading neuroscience and cancer immunotherapy experts in the Bay Area. Guest lecturers will visit from both academia and neighboring pharmaceutical/biotechnology companies. Active participation is required. Prerequisite: Biology or Human Biology core. Students with a major, minor or coterm in Biology: 109A/209A or 109B/209B may count toward degree program, but not both.
Same as: BIO 109B

BIOC 199. Undergraduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

BIOC 200. Applied Biochemistry. 2 Units.
Enrollment limited to MD candidates. Fundamental concepts of biochemistry as applied to clinical medicine. Topics include vitamins and cofactors, metabolism of carbohydrates, lipids, amino acids and nucleotides, and the integration of metabolic pathways. Clinical case studies discussed in small-group, problem-based learning sessions.

BIOC 202. Biochemistry Mini-Course. 1 Unit.
Open to first year Biochemistry students and to other PhD students with consent of instructor. Hands-on, week-long immersion in biochemical methods and practice, high-throughput sequencing and data analysis, theory and application of light microscopy, and computational approaches to modern biological problems.

BIOC 205. Molecular Foundations of Medicine. 4 Units.
For medical students. The course examines the impact of molecular biology on medicine. Topics include DNA replication, recombination, and repair; genomics; gene transcription; protein translation; and proteins in cell decision-making. Medical impact is examined in patient presentations and small group discussions of papers from the medical literature.

BIOC 209A. Building Blocks for Chronic Disease. 3 Units.
Researchers have come a long way in developing therapies for chronic disease but a gap remains between current solutions and the ability to address the disease in full. This course provides an overview to the underlying biology of many of these diseases and how they may connect to each other. A "think outside of the box" approach to drug discovery is needed to bridge such a gap in solutions, and this course teaches the building blocks for that approach. Could Legoland provide the answer? This is a guest lecture series with original contributions from prominent thought leaders in academia and industry. Interaction between students and guest lecturers is expected. Students with a major, minor or coterm in Biology: 109A/209A or 109B/209B may count toward degree program but not both.
Same as: BIO 109A, BIOC 109A, HUMBIO 158

BIOC 215. Frontiers in Biological Research. 1 Unit.
Students analyze cutting edge science, develop a logical framework for evaluating evidence and models, and enhance their ability to design original research through exposure to experimental tools and strategies. The class runs in parallel with the Frontiers in Biological Research seminar series. Students and faculty meet on the Tuesday preceding each seminar to discuss a landmark paper in the speaker's field of research. Following the Wednesday seminar, students meet briefly with the speaker for a free-range discussion which can include insights into the speakers' paths into science and how they pick scientific problems.
Same as: DBIO 215, GENE 215

BIOC 221. The Teaching of Biochemistry. 3 Units.
Required for teaching assistants in Biochemistry. Practical experience in teaching on a one-to-one basis, and problem set design and analysis. Familiarization with current lecture and text materials; evaluations of class papers and examinations. Prerequisite: enrollment in the Biochemistry Ph.D. program or consent of instructor.

BIOC 224. Advanced Cell Biology. 4 Units.
For Ph.D. students. Taught from the current literature on cell structure, function, and dynamics. Topics include complex cell phenomena such as cell division, apoptosis, signaling, compartmentalization, transport and trafficking, motility and adhesion, and differentiation. Weekly reading of current papers from the primary literature. Advanced undergraduates may participate with the permission of the Course Director.
Same as: BIO 214, MCP 221

BIOC 227. Connections: Life, Science, and, Community. 1 Unit.
¿Connections¿ aims to welcome first-year students into the Biochemistry Department by fostering connections between you as a scientist and you as an individual with the broader communities of the department, Stanford, and local, national and international communities. The students, staff and faculty who have organized Connections believe that a sense of oneself and of belonging are foundations for doing transformative science and for doing so with purpose and wellness. We strive not just to be scientists but rather citizen-scientists, with broad and manifold aspirations for ourselves and those around us. The sessions planned, in addition to providing practical information, are aimed at continuing your exploration of your values and goals and placing that exploration in context of the multiple communities that you can embrace and that will embrace you. They will do so in ways that are inclusive to all individuals, thereby empowering individuals to be whoever they are, strengthening community, and promoting the ongoing causes of social and societal fairness and justice.

BIOC 236. Biology by the Numbers. 3 Units.
For PhD students and advanced undergraduates. Students will develop skills in quantitative reasoning over a wide range of biological problems. Topics: biological size scales ranging from proteins to ecosystems; biological times time scales ranging from enzymatic catalysis and DNA replication to evolution; biological energy, motion and force from molecular to organismic scales; mechanisms of environmental sensing ranging from bacterial chemotaxis to vision.
Same as: APPPHYS 236

BIOC 239. Introduction to Analysis of RNA Sequence Data. 1-2 Unit.
Introduction to analysis of RNA-sequencing data including theory and napplications. Topics discussed will include computer scientific approaches to sequencing alignment such as dynamic programming, and statistical techniques that are that are used in analysis of next-generation sequencing data: Poisson models, the Expectation-Maximization algorithm, bootstrapping, multivariate linear models. Time permitting, we will cover single cell RNA sequencing, analysis and topics that arise in the analysis of multiple or large numbers of samples.

BIOC 241. Biological Macromolecules. 3-5 Units.
The physical and chemical basis of macromolecular function. Topics include: forces that stabilize macromolecular structure and their complexes; thermodynamics and statistical mechanics of macromolecular folding, binding, and allostery; diffusional processes; kinetics of enzymatic processes; the relationship of these principles to practical application in experimental design and interpretation. The class emphasizes interactive learning, and is divided among lectures, in-class group problem solving, and discussion of current and classical literature. Enrollment limited to 30. Prerequisites: Background in biochemistry and physical chemistry recommended but material available for those with deficiency in these areas; undergraduates with consent of instructor only.
Same as: BIOE 241, BIOPHYS 241, SBIO 241

BIOC 257. Currents in Biochemistry. 1 Unit.
Discussions with Biochemistry faculty on their research careers. Getting to know the faculty, how they think, what drives them, how they chose their directions, and how they made tactical and strategic research decisions along the way.

BIOC 281. Introduction to Single Cell Expression. 2 Units.
Student lead: In the last decade single cell expression profiling has contributed to nearly every facet of biology, from uncovering new cell types to mapping stem cell lineages to molecularly dissecting disease. Single cell projects¿ scale and scope have grown as mRNA and cell capture have improved, and it is now possible to profile millions of cells across entire organisms. The data deluge has spurred development of hundreds of tools to analyze and extract as much information from these rich datasets, creating a dizzying landscape for biologists. This minicourse breaks down single cell expression analysis into phases, exploring important considerations and software for each and provides a hands-on environment to implement them.

BIOC 294. Chemistry for Biologists and Others. 3 Units.
Chemical transformations are central to biology and function, and chemical methods provide some of the most powerful tools for everyday experimental biology. Yet, most practitioners of biology have learned chemistry through memorization and do not use chemical principles or intuition in their research, even though chemistry underlies most processes and experiments carried out in biology and by biologists. Fortunately, a basic understanding and working knowledge can be gained in a short time, through a small set of simple concepts and limited number of memorized ¿facts¿. These concepts and facts will be introduced and then mastered through use in highly interactive, in-class problems and evaluation of selected literature. At the end of the three-week course students will have an ability to understand the chemistry underlying cellular processes and to better discuss and evaluate chemical tools and approaches. Prerequisites: High school or college introductory chemistry recommended but not required.
Same as: BIOS 294

BIOC 299. Directed Reading in Biochemistry. 1-18 Unit.
Prerequisite: consent of instructor.

BIOC 350. Development of Thesis Research. 2 Units.
Biochemistry 2nd year PhD students with permission of instructor only. Students place their thesis research into a broader scientific perspective, identify important questions to ask, and learn to communicate these clearly. The course includes a series of roundtable discussions with students and faculty about the students' proposed research topics. The initial focus is on developing the equivalent of a specific aims page for a research grant.

BIOC 360. Developing an Original Research Proposal. 1 Unit.
Biochemistry 3rd year PhD students with permission of instructor only. Students foster broad familiarity with the biomedical literature and learn to develop new research directions. Topics well outside of each student's research topic are chosen for regular informal journal club presentations. Students work with faculty to hone skills for identifying important open scientific questions, formulating hypotheses, and refining experimental logic. Students work collectively to create a "model" research proposal on a topic of general interest to the group, and then individually to develop an original proposal on a topic of each student's choice.

BIOC 370. Medical Scholars Research. 4-18 Units.
Provides an opportunity for student and faculty interaction, as well as academic credit and financial support, to medical students who undertake original research. Enrollment is limited to students with approved projects.

BIOC 399. Graduate Research and Special Advanced Work. 1-18 Unit.
Allows for qualified students to undertake investigations sponsored by individual faculty members.

BIOC 459. Frontiers in Interdisciplinary Biosciences. 1 Unit.
Students register through their affiliated department; otherwise register for CHEMENG 459. For specialists and non-specialists. Sponsored by the Stanford BioX Program. Three seminars per quarter address scientific and technical themes related to interdisciplinary approaches in bioengineering, medicine, and the chemical, physical, and biological sciences. Leading investigators from Stanford and the world present breakthroughs and endeavors that cut across core disciplines. Pre-seminars introduce basic concepts and background for non-experts. Registered students attend all pre-seminars; others welcome. See http://biox.stanford.edu/courses/459.html. Recommended: basic mathematics, biology, chemistry, and physics.
Same as: BIO 459, BIOE 459, CHEM 459, CHEMENG 459, PSYCH 459

BIOC 801. TGR Project. 0 Units.
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BIOC 802. TGR Dissertation. 0 Units.
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BIOMEDICAL ETHICS

The Stanford University Center for Biomedical Ethics (SCBE) is dedicated to interdisciplinary research and education, and provides clinical and research ethics consultation. SCBE serves as a scholarly resource on emerging ethical issues raised by medicine and biomedical research.

SCBE offers a scholarly concentration in Biomedical Ethics and Medical Humanities (BEMH) to medical students. This program allows medical students to study in depth the moral, social, and humanistic dimensions of medicine and biomedical science. Using cross-disciplinary methods such as those from philosophy, social science, film, literature, art, and law, students examine the meaning and implications of medicine and medical research.

Degree Requirements

COVID-19-Related Degree Requirement Changes

For information on how Biomedical Ethics degree requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 2464)" in the "Medicine" section of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (p. 5)" section of this bulletin.

Students who pursue Biomedical Ethics and Medical Humanities are required to complete 12 units including these two core courses:

		Units
INDE 212	Medical Humanities and the Arts	2
PEDS 251A	Medical Ethics I	2

Students may select eight elective BEMH units from a wide variety of University, Medical School, and Law School courses. Students interested in co-concentrating with another scholarly concentration must complete the two core BEMH courses plus 2 units in the BEMH scholarly area (six units for each concentration).

Students are encouraged to go through the various offerings and devise a course plan to present to the co-directors, Audrey Shafer and Maren Monsen.

Additional information on requirements for the scholarly concentration is available at the BEMH (http://bioethics.stanford.edu/education/bemh/) web site.

Instructions:

Click on the Edit pencil to getstarted.Delete this "Instructions" block when you have finished editing...just click inside the blue box to select and then clickdelete.Do not delete the block immediatelybelow.This block of general University information isrequired.Replace ENTER ANY GENERAL DEPARTMENT/PROGRAM TEXT HERE with any general department/program text, or just delete theline.This might include something generic about support, or instructions on who to contact,etc.If you department has not decided what to do, replace this line with text such as "The department is in the process of making decisions concerning COVID-19 policies and will update this tab when those decisions have been made." Then delete the remaining text below asrelevant.Undergraduate and graduategrading:Pick one statement and delete the others, or enter your owntext.You can add to the text also, perhaps to include reference to whom the student should contact,etc.Also, replace DEPARTMENTorPROGRAM with the name of your own department or program, e.g., Department ofBiology.Enter any additional policies under "Other..." or delete the header if there are no additionalpolicies.When done, save, and send toworkflow.Contact Stephen by Slack (arod) if you have questions, or come to our Bulletin officehours:https://asconfluence.stanford.edu/confluence/display/SASLL/Stanford+Bulletin+2020-21.Note that you will be able to edit this content as new informationdevelops.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

ENTER ANY GENERAL DEPARTMENT/PROGRAM TEXT HERE ... OR DELETE THIS LINE.

Undergraduate Degree Requirements

Grading

The DEPARTMENTorPROGRAM counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

The DEPARTMENTorPROGRAM has not changed its policy concerning 'CR' (credit) or 'S' (satisfactory) grades in degree requirements requiring a letter grade for academic year 2020-21.

OR ENTER YOUR OWN TEXT OR ADD ANY DETAILS HERE

Other Undergraduate Policies

ENTER ANY ADDITIONAL POLICIES HERE

Graduate Degree Requirements

Grading

The DEPARTMENTorPROGRAM counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B-' or better level.

The DEPARTMENTorPROGRAM counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B' or better level.

The DEPARTMENTorPROGRAM has not changed its policy concerning 'CR' (credit) or 'S' (satisfactory) grades in degree requirements requiring a letter grade for academic year 2020-21.

OR ENTER YOUR OWN TEXT OR ADD ANY DETAILS HERE

Other Graduate Policies

ENTER ANY ADDITIONAL POLICIES HERE

Graduate Advising Expectations

The Center for Biomedical Ethics is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Co-directors: Audrey Shafer and Maren Monsen

Director Emeritus: Thomas A. Raffin

Associate Director: Mildred K. Cho

Participating Faculty and Staff: Laurel Braitman, Danton S. Char, Julie A. Collier, Jacqueline Genovese, Steven Goodman, Maren Grainger-Monsen, Henry Greely, Alvan A. Ikoku, Katrina A. Karkazis, Sandra S. Lee, Jose R. Maldonado, Michelle M. Mello, Kelly E. Ormond, Laura W. Roberts, Christopher T. Scott, Audrey Shafer, Abraham C. Verghese

BIOMEDICAL INFORMATICS

Courses offered by the Program in Biomedical Informatics are listed under the subject code BIOMEDIN on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIOMEDIN&filter-catalognumber-BIOMEDIN=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIOMEDIN&filter-catalognumber-BIOMEDIN=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=BIOMEDIN&filter-catalognumber-BIOMEDIN=on).

The program in Biomedical Informatics emphasizes research to develop novel computational methods that can advance biomedicine. Students receive training in the investigation of new approaches to conceptual modeling and to development of new algorithms that address challenging problems in the biological sciences and clinical medicine. Students with a primary interest in developing new informatics methods and knowledge are best suited for this program. Students with a primary interest in the biological or medical application of existing informatics techniques may be better suited for training in the application areas themselves.

Graduate Programs in Biomedical Informatics

The Biomedical Informatics Program is interdepartmental and offers instruction and research opportunities leading to M.S. and Ph.D. degrees in Biomedical Informatics. All students are required to complete the core curriculum requirements, and also to complete additional course work to fulfill degree requirements and pursue their technical interests and goals as specified for each degree program.

The program can provide flexibility and can complement other opportunities in applied medical research at Stanford. Special arrangements may be made for those with unusual needs or those simultaneously enrolled in other degree programs within the University. Similarly, students with prior relevant training may have the curriculum adjusted to eliminate requirements met as part of prior training.

The GRE is not required for admission.

The University requirements for the M.S. degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

Advising

Upon entering the program, each student is assigned an academic adviser to help with course selection and monitor progress towards program milestones and degree requirements. Each research-track (academic) M.S. and Ph.D. student conducts research under the primary mentorship of a faculty supervisor, who guides their scholarly and professional development. Further details about the adviser roles and responsibilities are found in the BMI Student Handbook (http://med.stanford.edu/bmi/biomedical-informatics-students/handbook.html) and on the Advising tab (p. 2382) in this section of the Stanford Bulletin

Master of Science in Biomedical Informatics (Academic)

This degree is designed for individuals who wish to undertake in-depth study of biomedical informatics with research on a full-time basis. Normally, a student spends two years in the program and implements and documents a substantial project by the end of the second year. The first year involves acquiring the fundamental concepts and tools through course work and research project involvement. Academic M.S. students are expected to devote 50 percent or more of their time participating in research projects. Research rotations are not required, but can be done with approval of the academic adviser or training program director. Graduates of this program are prepared to contribute creatively to basic or applied projects in biomedical informatics. This degree requires a written research paper to be approved by two faculty members.

Master of Science in Biomedical Informatics (Professional/Honors Cooperative Program)

This degree is designed primarily for the working professional who already has advanced training in one discipline and wishes to acquire interdisciplinary skills. Although many classes necessary for the degree are available online, some requirements may be fulfilled through implementation of an alternative plan to be approved by the program. The professional M.S. is offered in conjunction with Stanford Center for Professional Development (SCPD), which establishes the rates of tuition and fees. The program uses the honors cooperative program (HCP) model, which assumes that the student is working full-time and is enrolled in the M.S. on a part-time basis. Students who live locally may attend their courses on campus. Students have up to five years to complete the program. Research projects are optional; if interested, the student must make arrangements with program faculty. Graduates of this program are prepared to contribute creatively to basic or applied projects in biomedical informatics.

Master of Science in Biomedical Informatics (Coterminal)

The coterminal degree program allows Stanford University undergraduates to study for a master's degree while completing their bachelor's degree(s) in the same or a different department. See the "Coterminal Degrees (p. 56)" section of this bulletin for additional information. For University coterminal degree program rules and University application forms, see the Registrar's web site (https://registrar.stanford.edu/students/coterminal-degree-programs/applying-coterm/).

The coterminal Master of Science program follows the same program requirements as the Master of Science (Professional), except for the requirement to be employed full-time. The coterminal degree is available only to current Stanford undergraduates. Coterminal students are enrolled full-time and courses are taken on campus. Research projects are optional; if interested, the student must make arrangements with program faculty. Graduates of this program are prepared to contribute creatively to basic or applied projects in biomedical informatics.

Application to the Coterminal Program

For complete information, see the program's Coterminal Master's Degree (http://bmi.stanford.edu/prospective-students/masters-degree-coterminal-biomedical-informatics.html) page.

1. Submit the University Coterminal Online Application (https://applyweb.com/stanterm/).
2. Submit your academic resume or curriculum vitae.
3. Submit a one-page Statement of Purpose describing how and why the BMI program is well matched to your interests.

Applicants to the coterminal M.S. programs are not required to submit GRE scores. GRE scores are recommended, especially if you have relatively little prior course work in quantitative and computational areas. The TOEFL is not required.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements

for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken three quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to the graduate career. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Core Curriculum and Program Requirements in Biomedical Informatics

Core Curriculum in Biomedical Informatics (37 units)

Students are expected to participate regularly in BIOMEDIN 201 Biomedical Informatics Student Seminar and a research colloquium. Regardless of whether they are enrolled, they should attend all meetings throughout their graduate training, and attend a research colloquium appropriate to their interests. All students are expected to fulfill the following requirements:

- **Core Biomedical Informatics (15 or more units)**
  Students are expected to complete the core offerings in biomedical informatics. These courses should be taken for a grade.
  a. BIOMEDIN 212 Introduction to Biomedical Informatics Research Methodology
  b. and four of the courses listed below. Additional core course requirements are listed under the M.S. degree program.

		Units
BIOMEDIN 210	Modeling Biomedical Systems	3
BIOMEDIN 214	Representations and Algorithms for Computational Molecular Biology	3-4
BIOMEDIN 215	Data Science for Medicine	3
BIOMEDIN 217	Translational Bioinformatics	4
BIOMEDIN 260	Computational Methods for Biomedical Image Analysis and Interpretation	3-4

- **Computer Science, Statistics, Mathematics & Engineering (18 units)**
  Students are expected to create a program of study with graduate-level courses in computer science, statistics and other technical informatics-related disciplines to achieve in-depth mastery. The program of study may focus on aspects of these disciplines including machine learning, statistical modeling, artificial intelligence, data mining, image analysis, human-computer interaction and data visualization. A complete list of courses accepted for this requirement is on the BMI website. The following are required:
  a. CS 161 Design and Analysis of Algorithms
  b. STATS 200 Introduction to Statistical Inference
  c. STATS 315A Modern Applied Statistics: Learning or CS 229 Machine Learning
  d. No more than 9 units in courses numbered 100-199, and the rest should be 200 or above.
  e. CS 106A Programming Methodology and CS 106B Programming Abstractions cannot be counted for this requirement.
  f. All courses should be formal classroom-based courses, not research units.
  g. Up to 6 units of this portion of the core curriculum may be taken on a Satisfactory/No credit basis.
- **Social and Ethical Issues (4 units)**
  Students are expected to be familiar with issues regarding responsible conduct of research, reproducibility of research, and ethical, legal, social, organizational and behavioral aspects of the impact of biomedical informatics technologies on society. Courses that fulfill this requirement can be found by entering "bmi::ethics" in the Explore Courses search box. PhD students and Academic M.S. students should take MED 255 The Responsible Conduct of Research in their first year. These courses may be taken on a Satisfactory/No credit basis.

		Units
BIODS 240	Race, Data Algorithms, and Health	1
BIOE 122	BioSecurity and Pandemic Resilience	4-5
BIOE 131	Ethics in Bioengineering	3
BIOE 450	Advances in Biotechnology	3
BIOMEDIN 254	Quality & Safety in U.S. Healthcare	3
BIOMEDIN 256	Economics of Health and Medical Care	5
BIOMEDIN 432	Analysis of Costs, Risks, and Benefits of Health Care	4
BIOS 224	Big Topics in Stem Cell Ethics	2
BIOS 258	Ethics, Science, and Society	1
CS 181	Computers, Ethics, and Public Policy	4
CS 181W	Computers, Ethics, and Public Policy	4
CSB 272	Responsible conduct, rigor, and reproducibility in research	1
EMED 122	BioSecurity and Pandemic Resilience	4-5
EMED 222	BioSecurity and Pandemic Resilience	4-5
GENE 210	Genomics and Personalized Medicine	3
HRP 209	Health Law: The FDA	2-3
HRP 211	Law and Biosciences: Neuroscience	3
HRP 221	Law and the Biosciences: Genetics	3
HRP 254	Quality & Safety in U.S. Healthcare	3
HRP 256	Economics of Health and Medical Care	5
HRP 392	Analysis of Costs, Risks, and Benefits of Health Care	4
HUMBIO 174	Foundations of Bioethics	3
INDE 212	Medical Humanities and the Arts	2
ME 208	Patent Law and Strategy for Innovators and Entrepreneurs	2-3
MED 228	Physicians and Social Responsibility	1
MED 242	Physicians and Human Rights	1
MED 255	The Responsible Conduct of Research	1
MED 255C	The Responsible Conduct of Research for Clinical and Community Researchers	1
MS&E 256	Technology Assessment and Regulation of Medical Devices	3
MS&E 278	Patent Law and Strategy for Innovators and Entrepreneurs	2-3
NBIO 101	Social and Ethical Issues in the Neurosciences	2-4
PEDS 251A	Medical Ethics I	2
PEDS 251B	Medical Ethics II	2

PUBLPOL 122	BioSecurity and Pandemic Resilience	4-5
PUBLPOL 222	BioSecurity and Pandemic Resilience	4-5

Program Requirements for the Academic M.S., HCP Professional M.S., and Coterminal M.S. Degrees

Students enrolled in any of the M.S degrees must complete the program requirements in order to graduate.

- The core curriculum generally entails a minimum of 37 units of course work, but can require more or less depending upon the courses chosen and the previous training of the student.
- M.S. candidates should complete additional course work and program requirements as outlined below. No one is required to take courses in an area in which he or she has already been adequately trained; under such circumstances, students are permitted to skip courses or substitute more advanced work using a formal annual process administered by the BMI executive committee. Students design appropriate programs for their interests with the assistance and approval of their Biomedical Informatics academic adviser.
- At least 21 units of formal letter-graded coursework are expected for all MS and PhD candidates.

Programs of at least 45 Stanford units that meet the following guidelines are normally approved:

1. Completion of the core curriculum with overall GPA of 3.0.
2. Unrestricted Electives needed to complete 45 units. Students may fulfill this requirement with any Stanford graduate courses, including courses taken to satisfy program prerequisites.
3. At least 23 units of courses must be at the level 200 or above.
4. Students are expected to participate regularly in BIOMEDIN 201 Biomedical Informatics Student Seminar and a research colloquium.
5. Academic M.S. students who are funded by the program are required to be a teaching assistant for one course; those students may register for 1-3 units of BIOMEDIN 290 Biomedical Informatics Teaching Methods .
6. HCP professional masters students who are local are encouraged to participate in on-campus coursework and seminars.
7. Masters students should sign up for BIOMEDIN 801 TGR Master's Project for their project units after completing their 45-unit residency requirement.

Doctor of Philosophy in Biomedical Informatics

Individuals wishing to prepare themselves for careers as independent researchers in biomedical informatics, with applications experience in bioinformatics, clinical informatics, or imaging informatics, should apply for admission to the doctoral program. The University's basic requirements for the doctorate (residence, dissertation, examination, and so on) are discussed in the "Graduate Degrees (http://exploredegrees.stanford.edu/graduatedegrees/)" section of this bulletin.

The Core Curriculum in Biomedical Informatics (37 units) is outlined below. The Ph.D. program requires an additional 15 units of coursework, to complete a total of 52 units.

Core Curriculum in Biomedical Informatics (37 units)

Students are expected to participate regularly in BIOMEDIN 201 Biomedical Informatics Student Seminar and a research colloquium. Regardless of whether they are enrolled, they should attend all meetings throughout their graduate training, and attend a research colloquium appropriate to their interests. All students are expected to fulfill the following requirements:

- **Core Biomedical Informatics Courses (9 or more units)**
  Students are expected to complete the core offerings in biomedical informatics. These courses should be taken for a grade.
  a. BIOMEDIN 212 Introduction to Biomedical Informatics Research Methodology
  b. and two of the courses listed below.

		Units
BIOMEDIN 210	Modeling Biomedical Systems	3
BIOMEDIN 214	Representations and Algorithms for Computational Molecular Biology	3-4
BIOMEDIN 215	Data Science for Medicine	3
BIOMEDIN 217	Translational Bioinformatics	4
BIOMEDIN 260	Computational Methods for Biomedical Image Analysis and Interpretation	3-4

- **Computer Science, Statistics, Mathematics & Engineering (24 units)**
  Ph.D. students are expected to create a program of study with graduate-level courses in computer science, statistics and other technical informatics-related disciplines to achieve in-depth mastery. The program of study may focus on aspects of these disciplines including machine learning, statistical modeling, artificial intelligence, data mining, image analysis, human-computer interaction and data visualization. A complete list of courses accepted for this requirement is on the BMI website. The following are required:
  a. CS 161 Design and Analysis of Algorithms
  b. STATS 200 Introduction to Statistical Inference
  c. STATS 315A Modern Applied Statistics: Learning or CS 229 Machine Learning
  d. No more than 9 units in courses numbered 100-199, and the rest should be 200 or above.
  e. CS 106A Programming Methodology and CS 106B Programming Abstractions cannot be counted for this requirement.
  f. All courses should be formal classroom-based courses, not research units.
  g. Up to 6 units of this portion of the core curriculum may be taken on a Satisfactory/No credit basis.
- **Social and Ethical Issues (4 units)**
  Students are expected to be familiar with issues regarding responsible conduct of research, reproducibility of research, and ethical, legal, social, organizational and behavioral aspects of the impact of biomedical informatics technologies on society. Courses that fulfill this requirement can be found by entering “bmi::ethics” in the Explore Courses search box. PhD students students should take MED 255 The Responsible Conduct of Research in their first year. These courses may be taken on a Satisfactory/No credit basis.

		Units
BIODS 240	Race, Data Algorithms, and Health	1
BIOE 122	BioSecurity and Pandemic Resilience	4-5
BIOE 131	Ethics in Bioengineering	3
BIOE 450	Advances in Biotechnology	3
BIOMEDIN 254	Quality & Safety in U.S. Healthcare	3
BIOMEDIN 256	Economics of Health and Medical Care	5
BIOMEDIN 432	Analysis of Costs, Risks, and Benefits of Health Care	4
BIOS 224	Big Topics in Stem Cell Ethics	2
BIOS 258	Ethics, Science, and Society	1
CS 181	Computers, Ethics, and Public Policy	4
CS 181W	Computers, Ethics, and Public Policy	4

CSB 272	Responsible conduct, rigor, and reproducibility in research	1
EMED 122	BioSecurity and Pandemic Resilience	4-5
EMED 222	BioSecurity and Pandemic Resilience	4-5
GENE 210	Genomics and Personalized Medicine	3
HRP 209	Health Law: The FDA	2-3
HRP 211	Law and Biosciences: Neuroscience	3
HRP 221	Law and the Biosciences: Genetics	3
HRP 254	Quality & Safety in U.S. Healthcare	3
HRP 256	Economics of Health and Medical Care	5
HRP 392	Analysis of Costs, Risks, and Benefits of Health Care	4
HUMBIO 174	Foundations of Bioethics	3
INDE 212	Medical Humanities and the Arts	2
ME 208	Patent Law and Strategy for Innovators and Entrepreneurs	2-3
MED 228	Physicians and Social Responsibility	1
MED 242	Physicians and Human Rights	1
MED 255	The Responsible Conduct of Research	1
MED 255C	The Responsible Conduct of Research for Clinical and Community Researchers	1
MS&E 256	Technology Assessment and Regulation of Medical Devices	3
MS&E 278	Patent Law and Strategy for Innovators and Entrepreneurs	2-3
NBIO 101	Social and Ethical Issues in the Neurosciences	2-4
PEDS 251A	Medical Ethics I	2
PEDS 251B	Medical Ethics II	2
PUBLPOL 122	BioSecurity and Pandemic Resilience	4-5
PUBLPOL 222	BioSecurity and Pandemic Resilience	4-5

Program Requirements for the Biomedical Informatics PhD:

1. Completion of the Core Curriculum (37 or more units) described above.
2. Domain biology or medicine (6 units). Students should take classes relevant to their application area interests.
3. The core curriculum and domain biology/medicine requirements should be completed by the end of the second year of graduate study.
4. Unrestricted electives (9 units). Students may fulfill this requirement with any Stanford graduate courses, including courses taken to satisfy program prerequisites.
5. A cumulative GPA of 3.0 or greater to remain in good academic standing.
6. In the first year, at least two research rotations are required.
7. Each student is required to be a teaching assistant for two courses as assigned by the Biomedical Informatics Executive Committee; one should be completed in the first two years of study. Students may register for up to 3 units of BIOMEDIN 290 Biomedical Informatics Teaching Methods to obtain credit for each teaching assistantship.
8. Doctoral students are generally advanced to Ph.D. candidacy after passing the qualifying exam, which takes place by the end of the second year of training. A student's academic adviser has primary responsibility for the adequacy of the program, which is regularly reviewed by the Biomedical Informatics Executive Committee. The student must fulfill these requirements and apply for admission to candidacy for the Ph.D. by the beginning of the third year.
9. During the third year of training, each doctoral student is required to give a thesis pre-proposal seminar that describes evolving research plans.
10. The most important requirement for the Ph.D. degree is the dissertation. Each student must secure the agreement of a member of the BMI advising faculty to act as the doctoral dissertation adviser or co-adviser.
11. After application for Terminal Graduate Registration (TGR) status and completion of 135 units, the Ph.D. candidate should register each quarter for BIOMEDIN 802 TGR PhD Dissertation so that their research effort may be counted toward the degree.
12. Each student must present and defend their dissertation work before a University Oral Examination Committee that includes at least one member of the BMI Advising Faculty. The committee determines whether the student's general knowledge of the field and the details of their completed research are sufficient to be granted the doctoral degree. Further details about the Oral Examination, and the submission of the written dissertation are in the BMI Student Handbook, and in University policies cited therein.
13. The student is expected to demonstrate an ability to present scholarly material and research in a lecture at a formal seminar.
14. The student is expected to demonstrate an ability to present scholarly material in concise written form. Each student is required to write a paper suitable for publication, usually discussing his or her doctoral research project. This paper must be approved by the student's adviser as suitable for submission to a refereed journal before the doctoral degree is conferred.
15. The dissertation must be accepted by a doctoral dissertation reading committee composed of the principal dissertation adviser and two other readers. A fourth reader may be added at the discretion of the student and the principal adviser.

Ph.D. Minor in Biomedical Informatics

For a Ph.D. minor in Biomedical Informatics (BMI), a candidate must complete a minimum of 20 unduplicated units of biomedical informatics course work, including 12 units in BMI core courses from:

		Units
BIOMEDIN 210	Modeling Biomedical Systems	3
BIOMEDIN 212	Introduction to Biomedical Informatics Research Methodology	3
BIOMEDIN 214	Representations and Algorithms for Computational Molecular Biology	3-4
BIOMEDIN 215	Data Science for Medicine	3
BIOMEDIN 217	Translational Bioinformatics	4
BIOMEDIN 260	Computational Methods for Biomedical Image Analysis and Interpretation	3-4

The candidate must complete the one-unit MED 255 The Responsible Conduct of Research or an approved substitute.

The remaining units must be courses that would count towards the BMI master's degree, taken from these areas:

- Computer Science, Probability, Statistics, Machine Learning, Mathematics, Engineering
- Biomedicine
- Other BMI courses from the list above

Students are expected to participate regularly in BIOMEDIN 201 (p. 2378) Biomedical Informatics Student Seminar.

Courses used for the BMI Ph.D. minor may not be double-counted to meet the requirements of a master's or Ph.D. degree.

All courses used for the BMI Ph.D. minor, except MED 255, must be taken for a letter grade and passed with an overall GPA of 3.0 or better.

This degree offering became effective in Autumn Quarter 2010-11. Courses taken at Stanford prior to that date may be counted towards the BMI Ph.D. minor degree.

Application Process

Stanford Ph.D. students apply using the Application for Ph.D. Minor (https://stanford.app.box.com/v/app-phd-minor/) form and must provide an unofficial Stanford transcript as well as a statement of purpose for adding the Ph.D. minor degree. Submit the form and accompanying materials to the Biomedical Informatics program.

Advising

A minor program adviser is assigned from the Biomedical Informatics Executive Committee or advising faculty upon admission to the program.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

The Biomedical Informatics Program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B-' or better level.

Graduate Advising Expectations

The Program in Biomedical Informatics is committed to providing academic and research advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program. The program’s student services staff is also an important part of the student’s advising team. They inform students and advisers about University and department requirements, procedures, and opportunities, and they maintain the official records of advising assignments and approvals.

Academic Adviser—Each new student in the Program in Biomedical Informatics is assigned an academic adviser (a member of the core or advising faculty or Executive Committee of the program). Academic advisers guide students in key areas such as selecting courses, discussing research rotations, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways. Usually, the academic adviser serves for the duration of the student’s study; the BMI Student Handbook (http://med.stanford.edu/bmi/biomedical-informatics-students/handbook.html) describes a process for formal adviser changes. In addition, the program director is available during the academic year by email and during office hours.

Academic progress and student completion of program requirements and milestones are monitored by the program director and student services staff, and are discussed by faculty during periodic meetings devoted to assessing graduate student progress. A detailed description of the program's requirements, milestones, and advising expectations are listed in the Biomedical Informatics Training Program Student Handbook, found on the program web site (http://med.stanford.edu/bmi/biomedical-informatics.html), as well as in the section on the Biomedical Informatics Program in ExploreDegrees (p. 2378).

Research Adviser—Each student in the academic M.S. and Ph.D. degree programs must also have a research adviser, chosen by mutual agreement at the end of their research rotations (typically by the end of their first year in the program). This research adviser is a member of the core or advising faculty for the BMI program. The research adviser may not be the same person as the academic adviser. Research advisers and the students should have a clear, shared understanding of the scientific objectives of the student’s work, and how it fits into a research program that will lead to an M.S. degree or Ph.D. degree. They should focus on the development of methods that are novel, generally applicable, and well-grounded in the informatics literature. In select cases, the research adviser may be a member of the collaborating faculty, in which case the student must have a co-adviser from the BMI core or advising faculty. When there is a secondary or co-adviser, the primary adviser and co-adviser should have a clear understanding of their mentorship roles.

Each Ph.D. student is required to fill out an annual Individual Developmental Plan (IDP), usually in the Summer. The IDP is then discussed with the research adviser, as a way to facilitate: advising the student, both during and beyond the Ph.D.; establishing clear expectations on both sides with respect to degree progress and timely graduation; and emphasizing the importance of wellness in graduate school, together with access to University wellness resources.

Each Ph.D. candidate is required to establish a reading committee for the doctoral dissertation by late third year or early fourth year. Students should consult frequently with all members of the committee about the direction and progress of the dissertation research and are required to meet annually with their whole committee. The detailed process, including Stanford and BMI policies such as composition of the committee, process toward dissertation, defense, submission of the final dissertation, and readiness to graduate, are described in the BMI Student Handbook (http://med.stanford.edu/bmi/biomedical-informatics-students/handbook.html).

Additionally, the program adheres to the University policies, guidelines, and responsibilities that apply to all faculty-student advising relationships. For a statement of University policy on graduate advising, see the "Graduate Advising (https://exploredegrees.stanford.edu/graduatedegrees/#advisingandcredentialstext)" section of this bulletin.

Program Director and Chair: Sylvia Plevritis

Director of Graduate Studies: Sylvia Plevritis

BMI Executive Committee: Sylvia Plevritis (Program Director and Chair), Steven Bagley (Interim Executive Director), Russ B. Altman, Manisha Desai, Ying Lu, Stephen Montgomery, Mark A. Musen, Daniel L. Rubin, Chiara Sabatti, Nigam Shah, Lu Tian, Robert Tibshirani, Dennis P. Wall

*Participating Faculty and Staff by Department**

Anesthesiology: Nima Aghaeepour (Assistant Professor)

Biochemistry: Douglas Brutlag (Professor Emeritus), Rhiju Das (Associate Professor), Ronald Davis (Professor), James Ferrell (Professor), Julia Salzman (Assistant Professor), Julie Theriot (Professor)

Bioengineering: Russ B. Altman (Professor), Kwabena Boahen (Professor), Markus Covert (Associate Professor), Scott Delp (Professor), Ingmar Riedel-Kruse (Consulting Assistant Professor), Vijay Pande (Adjunct Professor)

Biology: Hunter Fraser (Associate Professor), Dmitri Petrov (Professor), Jonathan Pritchard (Professor)

Biomedical Data Science: Russ B. Altman (Professor), Euan Ashley (Professor), Gill Bejerano (Associate Professor), Manisha Desai (Professor), Bradley Efron (Professor), Andrew Gentles (Assistant Professor), Olivier Gevaert (Assistant Professor), Trevor Hastie (Professor), Tina Hernandez-Boussard (Associate Professor), Iain Johnstone (Professor), Purvesh Khatri (Associate Professor), Teri Klein (Professor), Ying Lu (Professor), Mark A. Musen (Professor), Aaron Newman (Assistant Professor), Richard Olshen (Professor Emeritus), Julia Palacios (Assistant Professor), Sylvia Plevritis (Professor), Manuel Rivas (Assistant Professor), Daniel L. Rubin (Associate Professor), Chiara Sabatti (Professor), Julia Salzman (Assistant Professor), Nigam Shah (Associate Professor), Lu Tian (Professor), Robert Tibshirani (Professor), Dennis P. Wall (Associate Professor), Wing H Wong (Professor), James Zou (Assistant Professor)

Richard Olshen (Professor), Chiara Sabatti (Associate Professor), Robert Tibshirani (Professor), Dennis P. Wall (Associate Professor)

Chemical and Systems Biology: Joshua Elias (Assistant Professor), James Ferrell (Professor)

Chemistry: Vijay Pande (Professor)

Computer Science: Gill Bejerano (Associate Professor), David Dill (Professor Emeritus), Ronald Dror (Associate Professor), Leonidas Guibas (Professor), Anshul Kundaje (Assistant Professor), Terry Winograd (Professor Emeritus)

Dermatology: Paul Khavari (Professor)

Developmental Biology: Gill Bejerano (Associate Professor)

Electrical Engineering: Kwabena Boahen (Professor)

Energy Resources Engineering: Margot Gerritsen (Professor)

Genetics: Russ B. Altman (Professor), Euan Ashley (Professor), Michael Bassik (Assistant Professor), Ami Bhatt (Assistant Professor), J. Michael Cherry (Professor, Research), Stanley N. Cohen (Professor), Christina Curtis (Assistant Professor), Ronald Davis (Professor), William Greenleaf (Associate Professor), Karla Kirkegaard (Professor), Teri E. Klein (Senior Research Scientist), Anshul Kundaje (Assistant Professor), Jin Billy Li (Associate Professor), Stephen B. Montgomery (Assistant Professor), Jonathan Pritchard (Professor), Gavin Sherlock (Associate Professor), Arend Sidow (Professor), Michael P. Snyder (Professor), Hua Tang (Professor)

Health Research and Policy: Trevor Hastie (Professor), Mark Hlatky (Professor)

Management Science and Engineering: Margaret Brandeau (Professor), Ross D. Shachter (Associate Professor)

Mechanical Engineering: Scott Delp (Professor)

Medicine: Russ B. Altman (Professor), Euan Ashley (Professor), Mike Baiocchi (Assistant Professor), Sanjay Basu (Assistant Professor), Ami Bhatt (Assistant Professor), Jayanta Bhattacharya (Professor), Catherine Blish (Associate Professor), Carol Cain (Adjunct Assistant Professor), Jonathan Chen (Assistant Professor), Stanley Cohen (Professor), Christina Curtis (Assistant Professor), Manisha Desai (Professor), Michel Dumontier (Associate Professor), Andrew Gentles (Assistant Professor), Olivier Gevaert (Assistant Professor), Mary Goldstein (Professor), Summer Han (Assistant Professor), Tina Hernandez-Boussard (Associate Professor), Michael Higgins (Adjunct Associate Professor), Mark Hlatky (Professor), Hanlee P. Ji (Associate Professor), Purvesh Khatri (Associate Professor), Teri Klein (Professor), Lianne Kurina (Associate Professor, Teaching), Curtis Langlotz (Professor), Henry Lowe (Associate Professor), Mark A. Musen (Professor), Douglas K. Owens (Professor), Natalie Pageler (Clinical Associate Professor), David Relman (Professor), Daniel L. Rubin (Associate Professor), Robert W. Shafer (Professor, Research), Nigam Shah (Associate Professor), Samson Tu (Senior Research Engineer), P.J. Utz (Professor), Steven Bagley (Sr. Research Engineer), Eran Bendavid (Associate Professor), Zihuai He (Assistant Professor, Research)

Microbiology and Immunology: Karla Kirkegaard (Professor), Garry Nolan (Professor), David Relman (Professor), Julie Theriot (Professor)

Neurology: Zihuai He (Assistant Professor, Research)

Neurosurgery: Summer Han (Assistant Professor)

Operations, Information and Technology: Mohsen Bayati (Associate Professor)

Pathology: Stephen B. Montgomery (Associate Professor), Arend Sidow (Professor)

Pediatrics: Gill Bejerano (Associate Professor), Natalie Pageler (Clinical Associate Professor), Jonathan Palma (Clinical Associate Professor), Dennis P. Wall (Associate Professor)

Psychiatry and Behavioral Sciences: Vinod Menon (Professor, Research), Manish Saggar (Assistant Professor)

Psychology: Russell Poldrack (Professor)

Radiation Oncology: Ruijiang Li (Assistant Professor), Lei Xing (Professor)

Radiology: Sam (Sanjiv) Gambhir (Professor), Curtis Langlotz (Professor), Matt Lungren (Assistant Professor), Parag Mallick (Associate Professor, Research), Sandy A. Napel (Professor), David Paik (Adjunct Assistant Professor), Sylvia Plevritis (Professor/ Program Director), Daniel L. Rubin (Professor), Greg Zaharchuk (Professor)

Statistics: Bradley Efron (Professor), Trevor J. Hastie (Professor), Susan Holmes (Professor), Iain Johnstone (Professor), Art Owen (Professor), Julia Palacios (Assistant Professor), Chiara Sabatti (Professor), Robert Tibshirani (Professor), Wing H Wong (Professor)

Structural Biology: Michael Levitt (Professor)

Surgery: Tina Hernandez-Boussard (Associate Professor), Thomas Krumel (Professor))

* Research opportunities are not limited to faculty and departments listed.

Courses

BIOMEDIN 156. Economics of Health and Medical Care. 5 Units.
Institutional, theoretical, and empirical analysis of the problems of health and medical care. Topics: demand for medical care and medical insurance; institutions in the health sector; economics of information applied to the market for health insurance and for health care; measurement and valuation of health; competition in health care delivery. Graduate students with research interests should take ECON 249. Prerequisites: ECON 50 and either ECON 102A or STATS 116 or the equivalent. Recommended: ECON 51.
Same as: BIOMEDIN 256, ECON 126, HRP 256

BIOMEDIN 201. Biomedical Informatics Student Seminar. 1 Unit.
Participants report on recent articles from the Biomedical Informatics literature or their research projects. Goals are to teach critical reading of scientific papers and presentation skills. May be repeated three times for credit.

BIOMEDIN 205. Precision Practice with Big Data. 1 Unit.
Primarily for M.D. students; open to other graduate students. Provides an overview of how to leverage large amounts of clinical, molecular, and imaging data within hospitals and in cyberspace--big data--to practice medicine more effectively. Lectures by physicians, researchers, and industry leaders survey how the major methods of informatics can help physicians leverage big data to profile disease, to personalize treatment to patients, to predict treatment response, to discover new knowledge, and to challenge established medical dogma and the current paradigm of clinical decision-making based solely on published knowledge and individual physician experience. May be repeated for credit. Prerequisite: background in biomedicine. Background in computer science can be helpful but not required.

BIOMEDIN 206. Informatics in Industry. 1 Unit.
Effective management, modeling, acquisition, and mining of biomedical information in healthcare and biotechnology companies and approaches to information management adopted by companies in this ecosystem. Guest speakers from pharmaceutical/biotechnology companies, clinics/hospitals, health communities/portals, instrumentation/software vendors. May be repeated for credit.

BIOMEDIN 207. Seminar: Health IT in Care Delivery systems. 1 Unit.
The practice of medicine is reacting quickly to the avalanche of information available from electronic health records and data directly submitted by patients and from the environment. This seminar, comprised of guest lectures from industry and academia, will highlight the practical challenges and successes of how health IT has transformed care delivery programs. The seminar will cover current efforts in clinical decision support, patient-centered design, integration with community care, big data, medical education, and the innovation pipeline for healthcare delivery organizations.

BIOMEDIN 208. Clinical Informatics Literature Review Seminar. 1 Unit.
Weekly seminar series in which seminal literature and current publications in the field of clinical informatics are reviewed and discussed. Organized by the Stanford Clinical Informatics fellowship program. Topics include electronic health record design, implementation, and evaluation; patient engagement; provider satisfaction; and hot topics in clinical informatics. Limited enrollment.

BIOMEDIN 210. Modeling Biomedical Systems. 3 Units.
At the core of informatics is the problem of creating computable models of biomedical phenomena. This course explores methods for modeling biomedical systems with an emphasis on contemporary semantic technology, including knowledge graphs. Topics: data modeling, knowledge representation, controlled terminologies, ontologies, reusable problem solvers, modeling problems in healthcare information technology and other aspects of informatics. Students acquire hands-on experience with several systems and tools. Prerequisites: CS106A. Basic familiarity with Python programming, biology, probability, and logic are assumed.
Same as: CS 270

BIOMEDIN 212. Introduction to Biomedical Informatics Research Methodology. 3-5 Units.
Capstone Biomedical Informatics (BMI) experience. Hands-on software building. Student teams conceive, design, specify, implement, evaluate, and report on a software project in the domain of biomedicine. Creating written proposals, peer review, providing status reports, and preparing final reports. Issues related to research reproducibility. Guest lectures from professional biomedical informatics systems builders on issues related to the process of project management. Software engineering basics. Because the team projects start in the first week of class, attendance that week is strongly recommended. Prerequisites: BIOMEDIN 210 or 214 or 215 or 217 or 260. Preference to BMI graduate students. Consent of instructor required.
Same as: BIOE 212, CS 272, GENE 212

BIOMEDIN 214. Representations and Algorithms for Computational Molecular Biology. 3-4 Units.
Topics: introduction to bioinformatics and computational biology, algorithms for alignment of biological sequences and structures, computing with strings, phylogenetic tree construction, hidden Markov models, basic structural computations on proteins, protein structure prediction, protein threading techniques, homology modeling, molecular dynamics and energy minimization, statistical analysis of 3D biological data, integration of data sources, knowledge representation and controlled terminologies for molecular biology, microarray analysis, machine learning (clustering and classification), and natural language text processing. Prerequisite: CS 106B; recommended: CS161; consent of instructor for 3 units.
Same as: BIOE 214, CS 274, GENE 214

BIOMEDIN 215. Data Science for Medicine. 3 Units.
The widespread adoption of electronic health records (EHRs) has created a new source of big data namely, the record of routine clinical practice as a by-product of care. This graduate class will teach you how to use EHRs and other patient data to discover new clinical knowledge and improve healthcare. Upon completing this course, you should be able to: differentiate between and give examples of categories of research questions and the study designs used to address them, describe common healthcare data sources and their relative advantages and limitations, extract and transform various kinds of clinical data to create analysis-ready datasets, design and execute an analysis of a clinical dataset based on your familiarity with the workings, applicability, and limitations of common statistical methods, evaluate and criticize published research using your knowledge of 1-4 to generate new research ideas and separate hype from reality. Prerequisites: CS 106A or equivalent, STATS 60 or equivalent. Recommended: STATS 216, CS 145, STATS 305.

BIOMEDIN 216. Representations and Algorithms for Molecular Biology: Lectures. 1-2 Unit.
Lecture component of BIOMEDIN 214. One unit for medical and graduate students who attend lectures only; may be taken for 2 units with participation in limited assignments and final project. Lectures also available via internet. Prerequisite: familiarity with biology recommended.

BIOMEDIN 217. Translational Bioinformatics. 3-4 Units.
Computational methods for the translation of biomedical data into diagnostic, prognostic, and therapeutic applications in medicine. Topics: multi-scale omics data generation and analysis, utility and limitations of public biomedical resources, machine learning and data mining, issues and opportunities in drug discovery, and mobile/digital health solutions. Case studies and course project. Prerequisites: programming ability at the level of CS 106A and familiarity with biology and statistics.
Same as: BIOE 217, CS 275, GENE 217

BIOMEDIN 219. Mathematical Models and Medical Decisions. 3 Units.
Analytic methods for determining optimal diagnostic and therapeutic decisions with applications to the care of individual patients and the design of policies applied to patient populations. Topics include: utility theory and probability modeling, empirical methods for disease prevalence estimation, probability models for periodic processes, binary decision-making techniques, Markov models of dynamic disease state problems, utility assessment techniques, parametric utility models, utility models for multidimensional outcomes, analysis of time-varying clinical outcomes, and the design of cost-constrained clinical policies. Extensive problem sets compliment the lectures. Prerequisites: introduction to calculus and basic statistics.

BIOMEDIN 220. Artificial Intelligence in Healthcare. 3-4 Units.
Healthcare is one of the most exciting application domains of artificial intelligence, with transformative potential in areas ranging from medical image analysis to electronic health records-based prediction and precision medicine. This course will involve a deep dive into recent advances in AI in healthcare, focusing in particular on deep learning approaches for healthcare problems. We will start from foundations of neural networks, and then study cutting-edge deep learning models in the context of a variety of healthcare data including image, text, multimodal and time-series data. In the latter part of the course, we will cover advanced topics on open challenges of integrating AI in a societal application such as healthcare, including interpretability, robustness, privacy and fairness. The course aims to provide students from diverse backgrounds with both conceptual understanding and practical grounding of cutting-edge research on AI in healthcare. Prerequisites: Proficiency in Python or ability to self-learn; familiarity with machine learning and basic calculus, linear algebra, statistics; familiarity with deep learning highly recommended (e.g. prior experience training a deep learning model).
Same as: BIODS 220, CS 271

BIOMEDIN 221. Machine Learning Approaches for Data Fusion in Biomedicine. 2 Units.
Vast amounts of biomedical data are now routinely available for patients, raging from genomic data, to radiographic images and electronic health records. AI and machine learning are increasingly used to enable pattern discover to link such data for improvements in patient diagnosis, prognosis and tailoring treatment response. Yet, few studies focus on how to link different types of biomedical data in synergistic ways, and to develop data fusion approaches for improved biomedical decision support. This course will describe approaches for multi-omics, multi-modal and multi-scale data fusion of biomedical data in the context of biomedical decision support. Prerequisites: CS106A or equivalent, Stats 60 or equivalent.

BIOMEDIN 222. Cloud Computing for Biology and Healthcare. 3 Units.
Big Data is radically transforming healthcare. To provide real-time personalized healthcare, we need hardware and software solutions that can efficiently store and process large-scale biomedical datasets. In this class, students will learn the concepts of cloud computing and parallel systems' architecture. This class prepares students to understand how to design parallel programs for computationally intensive medical applications and how to run these applications on computing frameworks such as Cloud Computing and High Performance Computing (HPC) systems. Prerequisites: familiarity with programming in Python and R.
Same as: CS 273C, GENE 222

BIOMEDIN 224. Principles of Pharmacogenomics. 3 Units.
This course is an introduction to pharmacogenomics, including the relevant pharmacology, genomics, experimental methods (sequencing, expression, genotyping), data analysis methods and bioinformatics. The course reviews key gene classes (e.g., cytochromes, transporters) and key drugs (e.g., warfarin, clopidogrel, statins, cancer drugs) in the field. Resources for pharmacogenomics (e.g., PharmGKB, Drugbank, NCBI resources) are reviewed, as well as issues implementing pharmacogenomics testing in the clinical setting. Reading of key papers, including student presentations of this work; problem sets; final project selected with approval of instructor. Prerequisites: two of BIO 41, 42, 43, 44X, 44Y or consent of instructor.
Same as: GENE 224

BIOMEDIN 225. Data Driven Medicine: Lectures. 2 Units.
Lectures for BIOMEDIN 215.With the spread of electronic health records and increasingly low cost assays for patient molecular data, powerful data repositories with tremendous potential for biomedical research, clinical care and personalized medicine are being built. But these databases are large and difficult for any one specialist to analyze. To find the hidden associations within the full set of data, we introduce methods for data-mining at the internet scale, the handling of large-scale electronic medical records data for machine learning, methods in natural language processing and text-mining applied to medical records, methods for using ontologies for the annotation and indexing of unstructured content as well as semantic web technologies. Prerequisites: familiarity with statistics (STATS 216) and biology.

BIOMEDIN 226. Digital Health Practicum in a Health Care Delivery System. 2-3 Units.
Practical experience implementing clinical informatics solutions with a focus on digital health in one of the largest healthcare delivery systems in the United States. Individual meetings with senior clinical informatics leaders to discuss elements of successful projects. Implementation opportunities include supporting the use of electronic health records, engagement of patients and providers via a personal health record, use of informatics to support patient service centers, and improvement of patient access to clinical data. Consent of course instructors required at least one quarter prior to student enrollment in course.

BIOMEDIN 233. Intermediate Biostatistics: Analysis of Discrete Data. 3 Units.
(Formerly HRP 261) Methods for analyzing data from case-control and cross-sectional studies: the 2x2 table, chi-square test, Fisher's exact test, odds ratios, Mantel-Haenzel methods, stratification, tests for matched data, logistic regression, conditional logistic regression. Emphasis is on data analysis in SAS or R. Special topics: cross-fold validation and bootstrap inference.
Same as: EPI 261, STATS 261

BIOMEDIN 240. Race, Data Algorithms, and Health. 1 Unit.
This course studies the interplay between race, data and algorithms in healthcare. The particular viewpoint we want to take is to understand the role of data, data analysis and algorithms in supporting equitable delivery of health care to members of all races. Topics as "representative data", "machine bias", "algorithmic fairness" are going to be central to the discussion. However, we want to stress the uniqueness of the "medicine/health care" viewpoint. For example, while in contexts as loan applications, it is normative that race information (or its proxies) not to be included among the variables used for decision, in healthcare, information on race is routinely collected in the attempt to provide "best" care. One of the goals of the class will be to understand what are the differences between biological populations and social environments that a doctor needs to be aware of as opposed to overly emphasized or imaginary ones. This will provide a context to understand the challenges that data collection and analysis faces to support equitable care.
Same as: BIODS 240

BIOMEDIN 245. Statistical and Machine Learning Methods for Genomics. 3 Units.
Introduction to statistical and computational methods for genomics. Sample topics include: expectation maximization, hidden Markov model, Markov chain Monte Carlo, ensemble learning, probabilistic graphical models, kernel methods and other modern machine learning paradigms. Rationales and techniques illustrated with existing implementations used in population genetics, disease association, and functional regulatory genomics studies. Instruction includes lectures and discussion of readings from primary literature. Homework and projects require implementing some of the algorithms and using existing toolkits for analysis of genomic datasets.
Same as: BIO 268, CS 373, STATS 345

BIOMEDIN 246. Seminar in Healthcare Quality and Safety. 1 Unit.
Primarily for medical students in the Quality and Safety Scholarly Concentration. Almost everyone will be a patient at some point in their lives. It is estimated that over 98,000 patients die in US hospitals each year due to medical errors and recent articles suggest that medical errors are the third leading cause of death in the US. Patient safety is the foundation of high-quality health care, which has become a critical issue in health policy discussions. This course will provide an overview of the quality & patient safety movement, the array of measurement techniques and issues, and perspectives of quality improvement efforts under the current policy landscape. Lunch will be provided for enrolled students.
Same as: HRP 246

BIOMEDIN 248. Clinical Trial Design in the Age of Precision Medicine and Health. 3 Units.
Overview of requirements, designs, and statistical foundations for traditional Phase I, II, and III clinical trials for medical product approval and Phase IV postmarketing studies for safety evaluation. As these methods cost too much and take too much time in the era of precision medicine and precision health, this course then introduces innovative designs that have been developed for affordable clinical trials, which can be completed within reasonable time constraints and which have been encouraged by regulatory agencies. Prerequisites: Working knowledge of statistics and R.
Same as: BIODS 248, BIODS 248P, STATS 248

BIOMEDIN 251. Outcomes Analysis. 4 Units.
Methods of conducting empirical studies which use large existing medical, survey, and other databases to ask both clinical and policy questions. Econometric and statistical models used to conduct medical outcomes research. How research is conducted on medical and health economics questions when a randomized trial is impossible. Problem sets emphasize hands-on data analysis and application of methods, including re-analyses of well-known studies. Prerequisites: one or more courses in probability, and statistics or biostatistics.
Same as: HRP 252, MED 252

BIOMEDIN 254. Quality & Safety in U.S. Healthcare. 3 Units.
The course will provide an in-depth examination of the quality & patient safety movement in the US healthcare system, the array of quality measurement techniques and issues, and perspectives of quality and safety improvement efforts under the current policy landscape.
Same as: HRP 254

BIOMEDIN 256. Economics of Health and Medical Care. 5 Units.
Institutional, theoretical, and empirical analysis of the problems of health and medical care. Topics: demand for medical care and medical insurance; institutions in the health sector; economics of information applied to the market for health insurance and for health care; measurement and valuation of health; competition in health care delivery. Graduate students with research interests should take ECON 249. Prerequisites: ECON 50 and either ECON 102A or STATS 116 or the equivalent. Recommended: ECON 51.
Same as: BIOMEDIN 156, ECON 126, HRP 256

BIOMEDIN 260. Computational Methods for Biomedical Image Analysis and Interpretation. 3-4 Units.
The latest biological and medical imaging modalities and their applications in research and medicine. Focus is on computational analytic and interpretive approaches to optimize extraction and use of biological and clinical imaging data for diagnostic and therapeutic translational medical applications. Topics include major image databases, fundamental methods in image processing and quantitative extraction of image features, structured recording of image information including semantic features and ontologies, indexing, search and content-based image retrieval. Case studies include linking image data to genomic, phenotypic and clinical data, developing representations of image phenotypes for use in medical decision support and research applications and the role that biomedical imaging informatics plays in new questions in biomedical science. Includes a project. Enrollment for 3 units requires instructor consent. Prerequisites: programming ability at the level of CS 106A, familiarity with statistics, basic biology. Knowledge of Matlab or Python highly recommended.
Same as: CS 235, RAD 260

BIOMEDIN 273A. The Human Genome Source Code. 3 Units.
A computational primer to "hacking" the most amazing operating system "disk" on the planet: your genome. Handling genomic data is deceptively easy. But that's muscle. You want to be the brain, too. Topics include genome sequencing (assembling source code from code fragments); the human genome functional landscape: variable assignments (genes), control-flow logic (gene regulation) and run-time stack (epigenomics); human disease and personalized genomics (as a hunt for bugs in the human code); genome editing (code injection) to cure the incurable; and the source code modifications behind amazing animal adaptations. The course will introduce ideas from computational genomics, machine learning and natural language processing. Course includes primers on molecular biology, and text processing languages. Prerequisites: CS106A or equivalent. No biological background assumed.
Same as: CS 273A, DBIO 273A

BIOMEDIN 273B. Deep Learning in Genomics and Biomedicine. 3 Units.
Recent breakthroughs in high-throughput genomic and biomedical data are transforming biological sciences into "big data" disciplines. In parallel, progress in deep neural networks are revolutionizing fields such as image recognition, natural language processing and, more broadly, AI. This course explores the exciting intersection between these two advances. The course will start with an introduction to deep learning and overview the relevant background in genomics and high-throughput biotechnology, focusing on the available data and their relevance. It will then cover the ongoing developments in deep learning (supervised, unsupervised and generative models) with the focus on the applications of these methods to biomedical data, which are beginning to produced dramatic results. In addition to predictive modeling, the course emphasizes how to visualize and extract interpretable, biological insights from such models. Recent papers from the literature will be presented and discussed. Students will be introduced to and work with popular deep learning software frameworks. Students will work in groups on a final class project using real world datasets. Prerequisites: College calculus, linear algebra, basic probability and statistics such as CS 109, and basic machine learning such as CS 229. No prior knowledge of genomics is necessary.
Same as: BIODS 237, CS 273B, GENE 236

BIOMEDIN 279. Computational Biology: Structure and Organization of Biomolecules and Cells. 3 Units.
Computational techniques for investigating and designing the three-dimensional structure and dynamics of biomolecules and cells. These computational methods play an increasingly important role in drug discovery, medicine, bioengineering, and molecular biology. Course topics include protein structure prediction, protein design, drug screening, molecular simulation, cellular-level simulation, image analysis for microscopy, and methods for solving structures from crystallography and electron microscopy data. Prerequisites: elementary programming background (CS 106A or equivalent) and an introductory course in biology or biochemistry.
Same as: BIOE 279, BIOPHYS 279, CME 279, CS 279

BIOMEDIN 290. Biomedical Informatics Teaching Methods. 1-6 Unit.
Hands-on training in biomedical informatics pedagogy. Practical experience in pedagogical approaches, variously including didactic, inquiry, project, team, case, field, and/or problem-based approaches. Students create course content, including lectures, exercises, and assessments, and evaluate learning activities and outcomes. Prerequisite: instructor consent.

BIOMEDIN 299. Directed Reading and Research. 1-18 Unit.
For students wishing to receive credit for directed reading or research time. Prerequisite: consent of instructor. (Staff).

BIOMEDIN 304. Clinical Experience Seminar for Students in Biomedical Informatics. 1 Unit.
This seminar is intended to expose Biomedical Informatics graduate students to clinical environments where informatics is being applied. Students will shadow clinical care and interact with physicians and other allied health professionals throughout Stanford Healthcare and Stanford Children's Health during weekly sessions. Students will be asked to reflect on their experiences and discuss future applications to informatics projects. Preference will be given to senior students. Requires Course Director approval for enrollment - students should register 30 days prior to the first day of class for consideration. Prerequisites: School of Medicine HIPAA Training; Occupational Health clearance; SHC Compliance Attestation. All prerequisites must be submitted 2 weeks before the 1st day in order to ensure hospital compliance.

BIOMEDIN 370. Medical Scholars Research. 4-18 Units.
Provides an opportunity for student and faculty interaction, as well as academic credit and financial support, to medical students who undertake original research. Enrollment is limited to students with approved projects.

BIOMEDIN 371. Computational Biology in Four Dimensions. 3 Units.
Cutting-edge research on computational techniques for investigating and designing the three-dimensional structure and dynamics of biomolecules, cells, and everything in between. These techniques, which draw on approaches ranging from physics-based simulation to machine learning, play an increasingly important role in drug discovery, medicine, bioengineering, and molecular biology. Course is devoted primarily to reading, presentation, discussion, and critique of papers describing important recent research developments. Prerequisite: CS 106A or equivalent, and an introductory course in biology or biochemistry. Recommended: some experience in mathematical modeling (does not need to be a formal course).
Same as: BIOPHYS 371, CME 371, CS 371

BIOMEDIN 388. Stakeholder Competencies for Artificial Intelligence in Healthcare. 2-3 Units.
Advancements of machine learning and AI into all areas of medicine are now a reality and they hold the potential to transform healthcare and open up a world of incredible promise for everyone. But we will never realize the potential for these technologies unless all stakeholders have basic competencies in both healthcare and machine learning concepts and principles - this will allow successful, responsible development and deployment of these systems into the healthcare domain. The focus of this course is on the key concepts and principles rather than programming or engineering implementation. Those with backgrounds in healthcare, health policy, healthcare system leadership, pharmaceutical, and clinicians as well as those with data science backgrounds who are new to healthcare applications will be empowered with the knowledge to responsibly and ethically evaluate, critically review, and even use these technologies in healthcare. We will cover machine learning approaches, medical use cases in depth, unique metrics to healthcare, important challenges and pitfalls, and best practices for designing, building, and evaluating machine learning in healthcare applications.
Same as: BIODS 388

BIOMEDIN 390A. Curricular Practical Training. 1 Unit.
Provides educational opportunities in biomedical informatics research. Qualified biomedical informatics students engage in internship work and integrate that work into their academic program. Students register during the quarter they are employed and must complete a research report outlining their work activity, problems investigated, key results, and any follow-up on projects they expect to perform. BIOMEDIN 390A, B, and C may each be taken only once.

BIOMEDIN 390B. Curricular Practical Training. 1 Unit.
Provides educational opportunities in biomedical informatics research. Qualified biomedical informatics students engage in internship work and integrate that work into their academic program. Students register during the quarter they are employed and must complete a research report outlining their work activity, problems investigated, key results, and any follow-up on projects they expect to perform. BIOMEDIN 390A, B, and C may each be taken only once.

BIOMEDIN 390C. Curricular Practical Training. 1 Unit.
Provides educational opportunities in biomedical informatics research. Qualified biomedical informatics students engage in internship work and integrate that work into their academic program. Students register during the quarter they are employed and must complete a research report outlining their work activity, problems investigated, key results, and any follow-up on projects they expect to perform. BIOMEDIN 390A, B, and C may each be taken only once.

BIOMEDIN 432. Analysis of Costs, Risks, and Benefits of Health Care. 4 Units.
For graduate students. How to do cost/benefit analysis when the output is difficult or impossible to measure. Literature on the principles of cost/benefit analysis applied to health care. Critical review of actual studies. Emphasis is on the art of practical application.
Same as: HRP 392

BIOMEDIN 472. Data science and AI for COVID-19. 2 Units.
This project class investigates and models COVID-19 using tools from data science and machine learning. We will introduce the relevant background for the biology and epidemiology of the COVID-19 virus. Then we will critically examine current models that are used to predict infection rates in the population as well as models used to support various public health interventions (e.g. herd immunity and social distancing). The core of this class will be projects aimed to create tools that can assist in the ongoing global health efforts. Potential projects include data visualization and education platforms, improved modeling and predictions, social network and NLP analysis of the propagation of COVID-19 information, and behavior-nudging tools. The class is aimed toward students with experience in data science and AI, and will include guest lectures by biomedical experts. Prerequisites: background in machine learning and statistics (CS229, STATS216 or equivalent). Some biological background is helpful but not required.
Same as: BIODS 472, CS 472

BIOMEDIN 801. TGR Master's Project. 0 Units.
Project credit for masters students who have completed all course requirements and minimum of 45 Stanford units.

BIOMEDIN 802. TGR PhD Dissertation. 0 Units.
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CANCER BIOLOGY

Courses offered by the Cancer Biology Program are listed under the subject code CBIO on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=CBIO&filter-catalognumber-CBIO=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=CBIO&filter-catalognumber-CBIO=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=CBIO&filter-catalognumber-CBIO=on).

The Cancer Biology Ph.D. program was established in 1978 at Stanford University. During the past four decades, the understanding of cancer has increased dramatically with the discovery of oncogenes and tumor suppressor genes, pathways of DNA damage and repair, cell cycle regulation, angiogenesis and responses to hypoxia, and the molecular basis of metastasis, among others. In addition, methods of parallel analysis including genomic and proteomic approaches have begun to refine and redefine the taxonomy of cancer diagnosis. This explosion of basic and clinical science has, in turn, resulted in the first successful cancer chemotherapies and immunotherapies based on knowledge of specific molecular targets. Stanford presents a unique environment to pursue interdisciplinary cancer research because the School of Medicine, the School of Humanities and Sciences, and the School of Engineering are located on a single campus, all within walking distance of one another.

The goal of the Cancer Biology Ph.D. program is to provide students with education and training that will enable them to make significant contributions to this remarkable field. Coursework during the first year is designed to provide a broad understanding of the molecular, genetic, cell biological, and pathobiological aspects of cancer. Students also learn about the current state of clinical diagnosis and treatment of human cancers. Equally important during the first year is a series of three rotations in research laboratories chosen by each student. By the end of the first year, each student has chosen his/her research advisor and has begun work on his/her dissertation project. A qualifying examination must be completed before the end of December of the second year. An annual Cancer Biology Conference provides students with an opportunity to present their research to one another and to the faculty in the program. The expected time to degree is four to five years.

Students are not limited to a single department in choosing their research advisors. The Cancer Biology Ph.D. program currently has approximately 65 graduate students located in a variety of basic science and clinical departments throughout the School of Medicine and School of Humanities and Sciences. Many students are supported by a training grant from the National Cancer Institute.

The Cancer Biology Ph.D. program is committed to fostering a diverse community of students. The program welcomes all individuals and strives to support them so they achieve their full potential. It values the diversity of its students because culture, socioeconomic and educational background, race, ethnicity, gender, sexual orientation, physical ability, life experiences, hobbies, and interests allow the program as a group to reach a greater level of innovation in cancer research.

Doctor of Philosophy in Cancer Biology

University requirements for the Ph.D. are described under the "Graduate Degrees (p. 65)" section of this bulletin.

A small number of applicants are admitted to the program each year. Applicants should have completed an undergraduate major in the biological sciences; applicants with undergraduate majors in physics, chemistry, or mathematics may be admitted if they complete background training in biology during the first two years of study. During the first year, each student is required to complete a minimum of three, one quarter laboratory rotations. Students must choose a dissertation advisor prior to the end of Summer Quarter, the first year, but not before the end of Spring Quarter.

The requirements for the Ph.D. degree are as follows:

1. Training in biology equivalent to that of an undergraduate biology major at Stanford.
2. Completion of the following courses:

		Units
Required Courses		
BIOS 200	Foundations in Experimental Biology (for students entering in 2012 or later. Students who entered in 2011 or earlier took GENE 203, Advanced Genetics.)	5
CBIO 240	Molecular and Genetic Basis of Cancer	4
CBIO 242	Cellular and Clinical Aspects of Cancer	4
CBIO 280	Cancer Biology Journal Club (required for first- and second-year graduate students in Autumn, Winter, and Spring quarters, totaling 6 units)	1
CBIO 245	Lecture Seminar Series in Cancer Biology Program (required for first- and second-year graduate student in Autumn, Winter, and Spring quarters, totaling to 6 units)	1
MED 255	The Responsible Conduct of Research	1
Electives (total of 10 units)		
Computational/Systems Cancer Biology Track		
Core Knowledge		
CBIO 290	Curricular Practical Training	1-2
STATS 60	Introduction to Statistical Methods: Precalculus	5
GENE 218	Computational Analysis of Biological Information: Introduction to Python for Biologists	2
NENS 230	Analysis Techniques for the Biosciences Using MATLAB	2
CS 106A	Programming Methodology	3-5
BIOS 205	(Introduction to R; no longer offered)	
GENE 211	Genomics	3
CBIO 243	Principles of Cancer Systems Biology	3
BIOS 201	Next Generation Sequencing and Applications	2
Additional Courses		
CS 106B	Programming Abstractions	3-5
STATS 116	Theory of Probability	4
STATS 202	Data Mining and Analysis	3
STATS 216	Introduction to Statistical Learning	3
BIOMEDIN 214	Representations and Algorithms for Computational Molecular Biology	3-4
IMMUNOL 207	Essential Methods in Computational and Systems Immunology	3
CS 161	Design and Analysis of Algorithms	3-5
GENE 245		3
Other Cancer Biology Related Graduate-Level		
BIO 214	Advanced Cell Biology	4
SBIO 241	Biological Macromolecules	3-5
CSB 210	Cell Signaling	4
IMMUNOL 201	Advanced Immunology I	3

DBIO 201	Cells and Signaling in Regenerative Medicine	2
MI 215	Principles of Biological Technologies	3
CBIO 275	Tumor Immunology	3

3. Other elective course is determined in consultation with the student's advisor and/or the Program Director.
4. Presentation of research results at the annual Cancer Biology Conference and Pizza Talks.
5. Completion of a qualifying examination in Cancer Biology is required for admission to Ph.D. candidacy. The exam consists of an F31 NRSA-style written grant proposal not to exceed seven pages (excluding references) and an oral examination. The examining committee consists of three faculty members from the Cancer Biology Program but does not include the student's dissertation advisor. The composition of this committee is chosen by the student and thesis advisor and must be submitted to and approved by the Program Directors prior to the end of Autumn Quarter, second year. The qualifying examination must be taken prior to the end of December of the second year. If necessary, one retake is permitted prior to the end of Summer Quarter, second year. After the qualifying examination has been completed, the student is required to form a dissertation reading committee that includes the student's advisor and three other members of the Academic Council with appropriate expertise. Each student is required to arrange annual meetings (more frequently, if necessary) of the dissertation reading committee, at which time progress during the past year and a plan of study for the coming year are presented orally and discussed. Completion of each annual committee meeting must be communicated in writing to the program director by the advisor by the end of Spring Quarter each year.

The major accomplishment of each successful Ph.D. student is the presentation of a written dissertation resulting from independent investigation that contributes to knowledge in the area of cancer biology. An oral examination is also required for the Ph.D. degree. In the Cancer Biology Program, a public seminar (one hour) is presented by the Ph.D. candidate, followed by a closed-door oral examination. The oral examination committee consists of at least four examiners (the members of the doctoral dissertation reading committee) and a chair. The oral examination chair must be from outside the Cancer Biology Program faculty and may not have a full or joint appointment in the advisor's or student's home department. However, a courtesy appointment does not affect eligibility. The oral examination chair may be from the same department as any other member(s) of the examination committee. All members of the oral examination committee are normally members of the Academic Council, as the oral examination chair must be. With the prior approval of the program director or school dean, one of the examiners may be a person who is not a member of the Academic Council if that individual contributes expertise not otherwise available. Official responsibility for selecting the oral examination chair rests with the program. Cancer Biology delegates this to the student and dissertation advisor.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

The Cancer Biology Program counts all courses taken in the academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B-' or better level.

Advising Expectations

The mission of the Cancer Biology Ph.D. program is to train graduate students so that they may ultimately launch careers related to the study and treatment of cancer. A major goal of the program is to assist students in their growth and development by constructing meaningful educational plans. The program believes that students will become outstanding cancer researchers through frequent and collegial personal contacts with their primary research advisors, members of their thesis committee, and other faculty in the program. Scientific interactions between students and faculty foster the development of motivated students who are independent thinkers and responsible decision makers. The program expects faculty thesis advisors to have an active role in the advising process, including by monitoring progress frequently and by helping define and develop realistic educational career plans through regular interactions with the advisee. Faculty thesis advisors should refer students to other institutional resources as needed. The program expects students to clarify their academic and career goals with their advisors and to be equal partners in the advising process, including by scheduling regular meetings with their advisors and by adhering to institutional policies, procedures, and requirements. These expectations, which are detailed in the program handbook, ensure the successful completion of degree requirements and timely graduation.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Program Co-Directors: Laura Attardi (Radiation Oncology and Genetics) and Julien Sage (Pediatrics and Genetics)

Executive Committee on Cancer Biology: Laura Attardi (Radiation Oncology and Genetics), Erinn Rankin (Radiation Oncology, Obstetrics and Gynecology), Julien Sage (Pediatrics and Genetics), Kevin Wang (Dermatology), Monte Winslow (Genetics)

Admissions Committee on Cancer Biology: Laura Attardi (Radiation Oncology and Genetics), Michelle Monje (Neurology), Carolyn Lee (Dermatology), Anthony Oro (Dermatology), Sharon Pitteri (Radiology), Julien Sage (Pediatrics and Genetics), Katrin Svensson (Pathology), Kevin Wang (Dermatology), Monte Winslow (Genetics), Jiangbin Ye (Radiation Oncology and Biology)

Participating Departments and Faculty

Biochemistry: Philip Beachy (Professor), Mark Krasnow (Professor), Julia Salzman (Assistant Professor)

Bioengineering: Jennifer Cochran (Professor)

Biology (School of Humanities and Sciences): Scott J. Dixon (Assistant Professor), Judith Frydman (Professor), Or Gozani (Professor), Ashby Morrison (Associate Professor), Dmitri Petrov (Professor), Jan M Skotheim (Professor), Tim Stearns (Professor)

Biomedical Data Science: Andrew Gentles (Assistant Professor), Purvesh Khatri (Associate Professor), Aaron Newman (Assistant Professor)

Chemical And Systems Biology: James K. Chen (Professor), Gheorghe Chistol (Assistant Professor), Karlene Cimprich (Professor), Mary Teruel (Assistant Professor)

Chemical Engineering and Genetics: Monther Abu-Remaileh (Assistant Professor)

Dermatology: Howard Y. Chang (Professor), Paul A. Khavari (Professor), Carolyn Lee (Assistant Professor), Anthony Oro (Professor), Kevin Wang (Assistant Professor)

Developmental Biology: Margaret Fuller (Professor), Roeland Nusse (Professor)

Genetics: Michael Bassik (Assistant Professor), Anne Brunet (Professor), Christina Curtis (Associate Professor), Julien Sage (Professor; Co-Director of Stanford Cancer Biology Program), Alice Ting (Professor), Monte Winslow (Associate Professor)

Medicine/Endocrinology/Gerontology/Metabolism: Justin Annes (Associate Professor), Katrin Chua (Associate Professor)

Medicine/Gastroenterology and Hepatology: Anson Lowe (Associate Professor)

Medicine/Hematology: Steven Artandi (Professor; Director, Stanford Cancer Institute), Calvin Kuo (Professor), Ravindra Majeti (Professor)

Medicine/Oncology: Ash Alizadeh (Associate Professor), Gilbert Chu (Professor), Michael Clarke (Professor), Dean Felsher (Professor), Hanlee Ji (Associate Professor), Ronald Levy (Professor)

Microbiology and Immunology: Helen M. Blau (Professor), Peter Jackson (Professor), Garry Nolan (Professor)

Neurology and Neurosurgery: Michelle Monje (Associate Professor)

Neurosurgery: Albert J. Wong (Professor)

Orthopedic Surgery: Nidhi Bhutani (Associate Professor)

Otolaryngology: John Sunwoo (Professor)

Pathology: Robert Angelo (Assistant Professor), Jeff Axelrod (Professor), Sean Bendall (Assistant Professor), Matthew Bogyo (Professor), Michael Cleary (Professor), Gerald Crabtree (Professor), Edgar Engleman (Professor), Andrew Fire (Professor), Joseph Lipsick (Professor), Bingwei Lu (Professor), Jonathan Long (Assistant Professor), Jonathan Pollack (Professor), Capucine van Rechem (Assistant Professor), Ansuman Satpathy (Assistant Professor), Katrin Svensson (Assistant Professor), Irving Weissman (Professor; Virginia & D.K. Ludwig Professor for Clinical Investigation in Cancer Research, Professor of Developmental Biology), Marius Wernig (Professor)

Pediatrics/Human Gene Therapy: Mark Kay (Professor)

Pediatrics/Hematology/Oncology: Charles Gawad (Associate Professor), Crystal Mackall (Professor), Matthew Porteus (Professor), Kathleen Sakamoto (Professor)

Psychiatry and Behavioral Sciences: Erin Gibson (Associate Professor)

Radiation Oncology/Radiation and Cancer Biology: Laura Attardi (Professor; Co-Director of Stanford Cancer Biology Program), Richard Frock (Assistant Professor), Edward Graves (Associate Professor), Sharon Pitteri (Associate Professor), Erinn Rankin (Assistant Professor), Jiangbin Ye (Assistant Professor)

Radiation Oncology/Radiation Therapy: Max Diehn (Associate Professor), Susan Knox (Associate Professor), Quynh-Thu Le (Professor)

Radiology/Diagnostic Radiology: Parag Mallick (Associate Professor, Research), Sylvia Plevritis (Professor), Tanya Stoyanova (Assistant Professor)

Courses

CBIO 101. Cancer Biology. 4 Units.
Experimental approaches to understanding the origins, diagnosis, and treatment of cancer. Focus on key experiments and discoveries with emphasis on genetics, molecular biology, and cell biology. Topics include carcinogens, tumor virology, oncogenes, tumor suppressor genes, cell cycle regulation, angiogenesis, invasion and metastasis, cancer genomics, cancer epidemiology, and cancer therapies. Discussion sections based on primary research articles that describe key experiments in the field. Satisfies Central Menu Areas 1 or 2 for Bio majors. Prerequisite: Biology or Human Biology core or equivalent, or consent of instructor.
Same as: PATH 101

CBIO 240. Molecular and Genetic Basis of Cancer. 4 Units.
Required for first-year Cancer Biology graduate students. Focus is on fundamental concepts in the molecular biology of cancer, including oncogenes, tumor suppressor genes, and cellular signaling pathways. Emphasis will be given to seminal discoveries and key experiments in the field of cancer molecular biology. Course consists of two 1 hour lectures and one 2 hour discussion per week. Enrollment of undergraduates requires consent of the course director.

CBIO 241. Cellular Basis of Cancer. 4 Units.
Focus on tumor cell biology including angiogenesis, metastasis, metabolism, stem cells, and other topics. Prerequisite: CBIO240.

CBIO 242. Cellular and Clinical Aspects of Cancer. 4 Units.
Required for first-year Cancer Biology graduate students, and for first- and second-year medical students intending to complete the Cancer Biology Scholarly Concentration. Focus is on the cellular biology of cancer, including discussion of basic biology including tumor angiogenesis, metabolism, and immunology, as well as clinical oncology and cancer therapeutics. Emphasis will be given to seminal discoveries and key experiments in the field of cancer biology and oncology. Course consists of two 1 hour lectures and one 2 hour discussion per week. Enrollment of undergraduates requires consent of the course director.

CBIO 243. Principles of Cancer Systems Biology. 3 Units.
Focus is on major principles of cancer systems biology research that integrates experimental and computational biology in order to systematically unravel the complexity of cancer. The opportunity to embark on cancer systems biology research has been enabled by the rapid emergence of numerous and increasingly accessible technologies that provide global DNA, RNA and protein expression profiles of cells under a variety of conditions following environmental, drug and genetic perturbations. Course addresses the challenge of how to analyze high-dimensional and highly-multiplexed data in order to synthesize biologically and clinically relevant insights and generate hypotheses for further functional testing. Aims to broaden student exposure to the experimental and computational skills needed to apply the emerging principles of systems biology to the study of cancer.

CBIO 244. Lecture Series in Cancer Systems Biology. 1 Unit.
Presents new concepts in the field of cancer systems biology, demonstrating the integration of novel experimental and computational approaches for addressing outstanding critical questions in cancer biology. Invited speakers share insights about state-of-the-art trends and advice on navigating a career in cancer systems biology. Course required for CSBS Fellows.

CBIO 245. Lecture Seminar Series in Cancer Biology Program. 1 Unit.
Invited speakers share insights about state-of-the-art trends. Presents new concepts in the field of cancer biology. Science talks presented by students.

CBIO 246. Clinical Cancer Research Internship Program. 1 Unit.
As this is a limited enrollment course, graduate students interested in this course will contact must be affiliated with Cancer Biology Ph.D. Program and must contact the primary instructor Dr. Majeti and the course director Drs. Attardi and Sage by email.nA prerequisite for the course is the successful completion of the online training component for HIPAA certification: nnIn addition, the following is required:n1. Documented proof of Measles, Mumps & Rubella immunity in the form of vaccine dates or positive blood tests.n2. Documented proof of Varicella (chicken pox) immunity in the form of vaccine dates or positive blood tests.n3. Annual TB screening (PPD for US born or born in Canada and QFT for foreign born of high risk TB countries)n4. Annual Influenza vaccine (between Nov 1-March 31)nnIn the first component of the course, Dr. Majeti will identify an oncologist (adult or pediatrics) actively working in the clinic that the student can shadow that quarter for a minimum of 4 hours and will put the student in contact with the clinician. Shadowing hours can be at any time of the week or the weekend. The clinician will contact Dr. Majeti to confirm that the student has shadowed him/her for 4 hours.nnIn the second component of the course, Dr. Majeti will inform the student when the oncology clinical tumor board meets. The student must attend at least 3 tumor board sessions in the quarter (1h30 each).nnIn the third component of the course, the student will write a one-page analysis of a clinical paper related to cancer biology.

CBIO 260. Teaching in Cancer Biology. 1-10 Unit.
Practical experience in teaching by serving as a teaching assistant in a cancer biology course. Unit values are allotted individually to reflect the level of teaching responsibility assigned to the student.

CBIO 275. Tumor Immunology. 3 Units.
Tumor Immunology focuses on the mechanisms by which tumors can escape from and subvert the immune system and conversely on the ability of innate and adaptive arms of the immune system to recognize and eliminate tumors. Topics include: tumor antigens, tumor immunosurveillance and immunoediting, tumor microenvironment, tumor iniduced immunosuppression, tumorimmunotherapy (including cancer vaccines, CARs, TILs, checkpoint antibodies, monoclonal antibodies and bispecific antibodies, as well as bone marrow transplantation and radiation therapy). Tracks the historical development of our understanding of modulating tumor immune response and discusses their relative significance in the light of current research findings. Prerequisite: for undergraduates, human biology or biology core. Same as: IMMUNOL 275

CBIO 280. Cancer Biology Journal Club. 1 Unit.
Required of and limited to first- and second-year graduate students in Cancer Biology. Recent papers in the literature presented by graduate students. When possible, discussion relates to and precedes cancer-related seminars at Stanford. Attendance at the relevant seminar required.

CBIO 290. Curricular Practical Training. 1-2 Unit.
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CBIO 299. Directed Reading in Cancer Biology. 1-18 Unit.
Prerequisite: consent of instructor.

CBIO 399. Graduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Cancer Biology Ph.D. students must register as soon as they begin dissertation-related research work.

CBIO 801. TGR Project. 0 Units.
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CBIO 802. TGR Dissertation. 0 Units.
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CHEMICAL AND SYSTEMS BIOLOGY

Courses offered by the Department of Chemical and Systems Biology are listed under the subject code CSB on the (https://explorecourses.stanford.edu/search/?q=CSB&view=catalog&page=0&catalog=71&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&filter-coursestatus-Active=on&collapse=&filter-catalognumber-CSB=on&filter-catalognumber-CSB=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=CSB&filter-catalognumber-CSB=on) ExploreCourses web site. (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=CSB&filter-catalognumber-CSB=on)

The department emphasizes individualized training at the interface of physical science and biomedical science. The program encourages students to draw upon a variety of modern scientific techniques, ranging from recent advances in molecular biology and protein biochemistry to synthetic organic chemistry and single cell imaging. Graduate students in the department take courses in signal transduction networks, chemical biology, and other areas of importance to their research goals.

Master of Science in Chemical and Systems Biology

Students in the Ph.D. program may apply for an M.S. degree after having satisfactorily completed the course and laboratory requirements of the first two years. The degree also requires a written thesis based on literature or laboratory research. Postdoctoral research training is available to graduates having the Ph.D. or M.D. degree.

Doctor of Philosophy in Chemical and Systems Biology

University requirements for the Ph.D. are described in the "Graduate Degrees" section of this bulletin.

The Department of Chemical and Systems Biology offers interdisciplinary training to prepare students for independent careers in biomedical science. The main focus of the program is cell signaling, chemical biology, and systems biology.

The program leading to the Ph.D. degree includes formal and informal study in chemical biology, systems biology, drug discovery, biochemistry, and other areas of relevance to the interests of particular students. First-year students spend one quarter in each of three different laboratories, working closely with other graduate students, a professor, and postdoctoral fellows on various research projects. During the fourth quarter, the student chooses a faculty mentor with whom to undertake thesis research, based on available positions and the student's interest. During or before the eighth quarter of study, students must pass a qualifying exam which consists of an oral exam on general knowledge and a defense of a research proposal. Course requirements are fulfilled during the first two years of study; the later years of the four- to six-year program are devoted to full-time dissertation research. Close tutorial contact between students and faculty is stressed throughout the program.

Research opportunities also exist for medical students and undergraduates. The limited size of the labs in the department allows for close tutorial contact between students, postdoctoral fellows, and faculty.

The department participates in the four quarter Health and Human Disease and Practice of Medicine sequence which provides medical students with a comprehensive, systems-based education in physiology, pathology, microbiology, and pharmacology.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

Chemical and Systems Biology counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B' or better level.

Graduate Advising Expectations

The Department of Chemical and Systems Biology is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the advisor and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity.

Faculty advisors guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

What is the overall purpose of faculty advising in this program?

The Department of Chemical and Systems Biology is committed to providing advising to ensure graduate student personal, academic, and professional development. Both the advisor and advisee are key players in sustaining a collaborative relationship with integrity and professionalism.

How are advisors initially assigned to or selected by incoming graduate students?

Graduate students select a thesis advisor generally at the end of Spring Quarter of their first year. Before selecting an advisor, students rotate

in one lab per quarter during Autumn through Spring quarters of their first academic year. Students may opt for a fourth lab rotation and select an advisor in the Summer Quarter before their second year. After each rotation, students meet with the CSB Advisory Committee to discuss how the rotation went and whether the next rotation is a good match for the student's educational and professional goals. With the guidance of the CSB Advisory Committee and assistance from the student services staff, if needed, the student and thesis advisor mutually agree to work together.

What is the process by which students can change advisors and when should this happen?

The student should approach the CSB student services office and the CSB Advisory Committee to discuss the reasoning and proposal to change advisors. The student should work with the student services office and CSB Advisory Committee to try to find a suitable advisor. This process should happen as soon as issues start to arise and/or as soon as the student would like to change advisors.

How frequently should students meet with their advisors and how are those meetings set up? How does meeting frequency change as the student progresses?

As mentioned above, at the end of each quarter, first-year students meet with the CSB Advisory Committee to discuss potential issues with the program, issues with host laboratories, classes, the qualifying exam, and career planning. The topics that are discussed include ideas about student activities as well as additions or changes to the program. Students are also encouraged to meet with the CSB Advisory Committee members or the Department Chair individually if any issues come up throughout the year.

Committee meetings are held once a year after the qualifying exam. When a student is in their fifth year, the committee meetings should be held twice a year. From the sixth year and on, the meetings should be held every quarter.

What topics might be discussed at advising or committee meetings?

Committee meetings are the best opportunity for the student to get feedback about the progress and to get second opinions about which types of experiments should be pursued to help answer the questions being addressed in the student's thesis. The committee should include four faculty members counting the thesis advisor (faculty on the committee do not need to be tenure track). At least one of the four faculty members has to be a primary faculty in the CSB department, but the composition can be different from that in the qualifying exam and can also change during the student's thesis work as they may need to pursue different directions. The structure and format of the meetings are listed below. The committee should provide advice on future directions, attendance of conferences, career plans and more personal laboratory issues. Each meeting should include a time plan to ensure that the thesis project can be completed within five-and-a-half years.

At the beginning of each meeting, the student exits the room to allow for a discussion between the advisor and the rest of the committee. A few minutes before the end of the meeting, the advisor is asked to leave the room to allow for the student and the rest of the committee to discuss issues about the lab, potential personal issues, training opportunities and to discuss possible differences in research goals or issues relating to authorship.

If a committee meeting is not completed by the end of Summer Quarter, an enrollment hold is placed on the student's account and may delay graduate funding.

Are there any forms to complete or deliverables associated with any of those meetings?

Following the committee meeting, the student is required to summarize the discussion and formulate a revised plan for subsequent work. This summary should be discussed with the advisor and sent to the committee members within one week for comment. A final copy of the report must be submitted to the CSB Student Services Manager.

How and when does a student select and convene their dissertation reading or thesis committee? What is the purpose of the committee? And, how often should the committee meet?

Students select their reading committee when they go TGR, which is usually towards the end of their fourth year in Spring Quarter. The purpose of the committee is to further discuss the student's thesis and provide feedback. As mentioned above, committee meetings are held once a year after the qualifying exam. When a student is in their fifth year, the committee meetings should be held twice a year. From the sixth year and on, the meetings should be held every quarter.

How does the department or program, advisor, and student decide when a student is ready to graduate?

The decision to schedule an oral defense requires the support of each member on the committee including the thesis advisor. The department also expects that each student complete for the thesis at least one peer-reviewed, first-author paper that is accepted for publication by the time the oral thesis exam is being scheduled.

Who else might a student consult for help or guidance, e.g., department chair, DGS, student services staff?

At any time, students may consult with CSB student services staff, the Director of Graduate Studies and the Department Chair. Students may reach out to any of these parties by email to set up a meeting and/or stop by the student services office.

Emeriti: (Professors) Robert H. Dreisbach, Stuart Kim, Richard A. Roth, James P. Whitlock

Chair: James K. Chen

Director of Graduate Studies: Daniel F. Jarosz

Professors: James K. Chen, Karlene A. Cimprich, James E. Ferrell, Jr., Nathanael Gray (effective Winter Quarter), Tobias Meyer, Daria Mochly-Rosen, Thomas J. Wandless, Joanna K. Wysocka

Professor (Teaching): Kevin Grimes

Associate Professor: Daniel F. Jarosz

Assistant Professors: Gheorghe Chistol, Lei Stanley Qi

Courtesy Professors: Philip Beachy, Carolyn Bertozzi, Matthew Bogyo, Justin Du Bois, Beverly S. Mitchell, Paul A. Wender

Courtesy Associate Professors: Markus W. Covert, Michael Z. Lin, Jan M. Skotheim, Aaron F. Straight, Marius Wernig

Courses

CSB 199. Undergraduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

CSB 201. Chemical and Systems Biology Bootcamp. 1 Unit.
In this "boot camp" students perform hands-on original research in small groups, combining chemical biology systems-level approaches to investigate current biological problems. This year's course will investigate the function and regulation of uncharacterized genes. Students will acquire conceptual and methodological training in a wide range of modern techniques, including "omics" approaches, fluorescence microscopy, genome editing, computational approaches, and quantitative data analysis.

CSB 210. Cell Signaling. 4 Units.
The molecular mechanisms through which cells receive and respond to external signals. Emphasis is on principles of cell signaling, the systems-level properties of signal transduction modules, and experimental strategies through which cell signaling pathways are being studied. Prerequisite: working knowledge of biochemistry and genetics.

CSB 220. Chemistry of Biological Processes. 3 Units.
The principles of organic and physical chemistry applied to biomolecules. The goal is a working knowledge of chemical principles that underlie biological processes. Chemical tools and techniques used to study and manipulate biological systems may be used to illustrate these principles. Prerequisites: organic chemistry and biochemistry, or consent of instructor.

CSB 221. Methods and Logic in Chemical and Systems Biology. 3 Units.
This course covers logic, experimental design and methods in Chemical and Systems Biology, using discussions of classic and modern literature to discern the principles of biological investigation in making discoveries and testing hypotheses. In collaboration with faculty, students also apply those principles to generate a potential research project, presented in both written and oral form.

CSB 224. Chemical and Systems Biology Pizza Talks. 1 Unit.
Required of and limited to all graduate students and postdoctoral scholars in the Department of Chemical and Systems Biology. Students and postdocs are required to give in-depth presentations about their current projects within the academic year.

CSB 240A. A Practical Approach to Drug Discovery and Development. 3-4 Units.
Advancing a drug from discovery of a therapeutic target to human trials and commercialization. Topics include: high throughput assay development, compound screening, lead optimization, protecting intellectual property, toxicology testing, regulatory issues, assessment of clinical need, defining the market, conducting clinical trials, project management, and commercialization issues, including approach to licensing and raising capital. Maximum units are available by taking an additional contact hour.

CSB 240B. A Practical Approach to Drug Discover and Development. 3-4 Units.
(Continuation of 240A) Advancing a drug from discovery of a therapeutic target to human trials and commercialization. Topics include: high throughput assay development, compound screening, lead optimization, protecting intellectual property, toxicology testing, regulatory issues, assessment of clinical need, defining the market, conducting clinical trials, project management, and commercialization issues, including approach to licensing and raising capital. Maximum units are available by taking an additional contact hour. Prerequisite: 240A.

CSB 242. Drug Discovery and Development Seminar Series. 1 Unit.
The scientific principles and technologies involved in making the transition from a basic biological observation to the creation of a new drug emphasizing molecular and genetic issues. Prerequisite: biochemistry, chemistry, or bioengineering.

CSB 243. Biotechnology and Development of Therapeutics. 1-2 Unit.
This course will introduce students to the applications of biotechnology to the discovery and development of novel drugs and therapeutics. Students will learn about the process of drug discovery and development from target discovery, through drug optimization, preclinical testing, clinical testing, and commercialization. The course also offers a basic understanding of functions that work in parallel with discovery research and drug development, including business strategy, portfolio decision-making and program management. Finally, the course allows the opportunity to learn from, and connect with leaders from companies within the Biotchnology sector.

CSB 245. Economics of Biotechnology. 2 Units.
Focuses on translation of promising research discovery into marketed drugs and the integration of scientific method, clinical needs assessment, clinical and regulatory strategy, market analysis, economic considerations, and the influence of the healthcare economic ecosystem necessary for successful translation. Explores the economic perspectives of various stakeholders--patients, providers, payers, biotechnology and pharmaceutical companies, FDA, and financial markets--and how they influence drug development.

CSB 250. The Biology of Chromatin Templated Processes. 3 Units.
Topics include mechanisms of DNA replication; gene expressions regulation; DNA damage sensing and DNA repair; chromatin structure and function; and epigenetics and nuclear reprogramming. Prerequisite: working knowledge of molecular biology, biochemistry and genetics, or instructor consent.

CSB 260. Concepts and Applications in Chemical Biology. 3 Units.
Current topics include chemical genetics, activity-based probes, inducible protein degradation, DNA/RNA chemistry and molecular evolution, protein labeling, carbohydrate engineering, fluorescent proteins and sensors, optochemical/optogenetic methods, mass spectrometry, and genome-editing technologies.
Same as: CHEM 289

CSB 261. Quantitative Principles in Cell Differentiation. 3 Units.
Explores the common principles controlling cell differentiation from stem cells to terminally differentiated cells. Focus is on becoming familiar with the computational and single-cell experimental approaches that are needed to identify, probe, and dissect the dynamic decision to differentiate or de-differentiate in different cell systems including stem cells, adipocytes, neurons, pancreatic beta cells, cardiomyocytes, and hematopoietic cells. Topics include exploring how feedback mechanisms can be exploited to enable and precisely control tissue regeneration.

CSB 270. Research Seminar. 1 Unit.
Students discuss readings focused on chemical and systems biology assigned by corresponding faculty host. Course held before corresponding Friday Cutting Lecture Series speaker. Please contact Student Services with any questions regarding the course administration. Required for CSB first and second year students. Open to all CSB students.

CSB 271. Principles of Cell Cycle Control. 3 Units.
Genetic analysis of the key regulatory circuits governing the control of cell division. Illustration of key principles that can be generalized to other synthetic and natural biological circuits. Focus on tractable model organisms; growth control; irreversible biochemical switches; chromosome duplication; mitosis; DNA damage checkpoints; MAPK pathway-cell cycle interface; oncogenesis. Analysis of classic and current primary literature.
Same as: BIO 171, BIO 271

CSB 272. Responsible conduct, rigor, and reproducibility in research. 1 Unit.
Focus is on responsible conduct of research, rigor, and reproducibility in research. Students and postdocs discuss scientific ethics and best practices for experimental design and interpretation. Invited lecturers participate as well.

CSB 290. Curricular Practical Training. 1 Unit.
CPT Course required for international students completing degree requirements.

CSB 299. Directed Reading in Chemical and Systems Biology. 1-18 Unit.
Prerequisite: consent of instructor.

CSB 346. Advanced Seminar in Microbial Molecular Biology. 1 Unit.
Enrollment limited to PhD students associated with departmental research groups in genetics or molecular biology.
Same as: BIO 346, GENE 346

CSB 370. Medical Scholars Research. 4-18 Units.
Provides an opportunity for student and faculty interaction, as well as academic credit and financial support, to medical students who undertake original research. Enrollment is limited to students with approved projects.

CSB 399. Graduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

CSB 801. TGR Project. 0 Units.
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CSB 802. TGR Dissertation. 0 Units.
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COMMUNITY HEALTH & PREVENTION RESEARCH

Courses offered by the Stanford Prevention Research Center within the Department of Medicine are listed under the subject code CHPR (https://explorecourses.stanford.edu/search/?q=CHPR&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-catalognumber-CHPR=on&filter-departmentcode-CHPR=on&filter-coursestatus-Active=on&filter-catalognumber-CHPR=on) on the Stanford Bulletin's ExploreCourses website.

The Master of Science (M.S.) in Community Health and Prevention Research (CHPR) covers the study and treatment of leading risk behaviors (e.g., poor diet, physical inactivity, tobacco use, stress, distress) to prevent the prevailing causes of morbidity and mortality (e.g., cardiovascular disease, cancer, diabetes, lung disease, mental illness) with a focus on engaging and advancing health in diverse communities.

Community health and prevention research are complementary fields increasingly integrated to promote health and prevent chronic diseases in individuals, families, local communities, states, and countries, globally. Community health refers to the scientific discipline of safeguarding and enhancing the well-being of diverse communities and populations through education, the promotion of healthy lifestyle habits, and the extensive study of disease and disease determinants. Prevention research is a multidisciplinary scientific field that aims to enhance the health of populations through the study of genetic, behavioral, lifestyle, environmental, and policy factors that lead to disease or vitality.

The M.S. in CHPR is designed for students pursuing health-related careers focusing on chronic disease prevention, health and wellness promotion, and the pursuit of health equity. We anticipate the M.S. in CHPR will be attractive to Stanford's current (coterminal) undergraduates and graduate students, students in the health professions (e.g., medical students), health care providers seeking a second degree, and individuals who will later seek advanced degrees in medicine, nursing, or health/science-related doctoral programs.

The M.S. in CHPR is available to:

1. Current Stanford undergraduates (who must complete the M.S. as a coterminal master's program)
2. Current Stanford graduate students (i.e., master's, doctoral, and medical students)
3. External applicants.

All students in the program must complete the M.S.'s core curriculum and program requirements.

The University requirements for the M.S. degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

Master of Science in Community Health and Prevention Research

The Stanford Prevention Research Center within the Department of Medicine offers a Master of Science (M.S.) in Community Health and Prevention Research (CHPR). The M.S. in CHPR is available to external applicants, to current undergraduates via the coterminal master's program, and to graduate students at Stanford.

The purpose of the M.S. in CHPR is to:

- engage students from a range of backgrounds in didactic and experiential learning opportunities with the goal of gaining an in-depth understanding of community health and prevention research applications in diverse practice settings
- prepare future public health professionals to responsibly and effectively address health challenges faced by diverse communities across the life course.

In the M.S. in CHPR, students:

- study patterns of chronic diseases in diverse communities and settings and examine how prevention can optimize health and promote health equity at the individual, family, community, and population level
- critically interpret and evaluate research on community health and prevention
- become involved in research teams that encourage health equity promotion and social responsibility
- gain and hone methodological skills including research study design, study implementation, and data analysis related to community health and prevention research
- utilize course work and implementation science in a community-based research internship with the expectation that they design, implement, and assess health and wellness solutions addressing preventable community health challenges
- complete a master's thesis.

Admission

Admission for External Applicants

Applications for the 2021-22 academic year are due on January 12, 2021. Knight Hennessy program applicants: applications are due December 8, 2020.

- **Knight-Hennessy Scholars**
  - The Knight-Hennessy Scholars program (https://knight-hennessy.stanford.edu/) awards up to 100 high-achieving students every year with full funding to pursue a graduate education at Stanford, including the M.S. in CHPR. To be considered, you must apply to Knight-Hennessy Scholars by that program's deadline and separately apply to the CHPR program by December 8, 2020.

All applicants (not including coterminal applicants) must submit the following required application materials as part of their application. Instructions on how to submit these application materials can be found on Stanford's Graduate Admissions website (https://gradadmissions.stanford.edu/applying/).

- 3 letters of recommendation
  - At least one letter of recommendation should be from a faculty member at the last school you attended as a full-time student (unless you have been out of school for more than five years).
- GRE test scores are not required for applicants for academic year 2021-22 due to challenges posed by the COVID pandemic.
- TOEFL scores (if necessary)
- Resume or curriculum vitae (CV)
- Statement of purpose
  - The statement of purpose should describe succinctly your reasons for applying to the proposed program at Stanford, your preparation for this field of study, research interests, future career plans, and other aspects of your background and interests which may aid the admissions committee in evaluating your aptitude and motivation for graduate study.

- Official transcript(s) from all postsecondary institutions you have attended as a full-time student for one year (i.e., three quarters or two semesters) or longer.
  - You must upload one scanned version of your official transcript(s) in the online application and direct your institution(s) to send one official copy (email is preferred) to the Stanford Prevention Research Center within the Department of Medicine.
- $125 application fee
  - This application fee is assessed regardless of admission decision.

Admission for Coterminal Applicants

Applications for the 2021-22 academic year are due on January 12, 2021.

Stanford undergraduates may apply to the M.S. program once the following conditions have been met:

- Applicants must have earned 120 units toward graduation (UTG) as shown on the undergraduate unofficial transcript. This includes allowable Advanced Placement (AP) and transfer credit.
- Applicants must have a major(s) declared.
- Applicants must have completed six non-Summer quarters at Stanford (or two non-Summer quarters at Stanford for transfer students).
- Note that the GRE is not required for coterminal applicants.

As part of their program application, applicants must submit the following required application materials. Instructions on how to submit these application materials can be found on the Current Stanford Students (https://gradadmissions.stanford.edu/applying/current-stanford-students/) page of the Graduate Admissions web site.

- Application for admission to coterminal master's program
- Statement of purpose
  - The statement of purpose should describe succinctly your reasons for applying to the proposed program at Stanford, your preparation for this field of study, research interests, future career plans, and other aspects of your background and interests which may aid the admissions committee in evaluating your aptitude and motivation for graduate study.
- Resume or curriculum vitae (CV)
- Preliminary program proposal
- Two letters of recommendation from Stanford professors
- 1 copy of your Stanford transcript (unofficial transcripts are acceptable)
- $125 application fee (assessed by the Registrar's Office only if accepted and matriculated into the program).

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken three quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to the graduate career. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements. Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Admission for Current Students in Other Stanford Graduate Programs and Professional Schools

- Current Stanford graduate students include master's, doctoral, and medical students who are currently enrolled in a graduate degree program at Stanford. Current Stanford postdoctoral scholars must apply as external applicants.
- Applications for the 2021-22 academic year are due May 1, 2021 for Autumn 2021 start.

Required Application Materials: Instructions on how to submit these application materials can be found on the CHPR website (http://CHPR.stanford.edu). (http://prevention.stanford.edu/education/chpr.html/)

- Completed Current Graduate Student Online Application Form (https://stanfordmedicine.qualtrics.com/SE/?SID=SV_eIIAYRZnPUqkPGJ)
- Resume/CV
- Transcript (unofficial transcripts are acceptable)
- Valid GRE, MCAT, or GMAT scores (i.e., the test scores students submitted to their original graduate program at Stanford)
- Statement of Purpose
  - The Statement of Purpose should describe succinctly the reasons for applying to the proposed program at Stanford, preparation for this field of study, research interests, future career plans, and other aspects of the applicant's background and interests which may aid the admissions committee in evaluating aptitude and motivation for graduate study.
- 2 letters of recommendation from Stanford professors
- $125 application fee (assessed by the Registrar's Office only if accepted and matriculated into the program).

Degree Requirements

Core Curriculum and Program Requirements (45 units)

To complete the M.S. in CHPR, students must complete a minimum of 45 units, conduct a two-quarter community-based research internship, and write a master's thesis. All students in the M.S. in CHPR must also fulfill the course requirements below. Students are advised to check the prerequisites for all CHPR courses, especially the Biostatistics and Research Methods courses.

		Units
CHPR Foundation Core		
CHPR 200	SPRC/GMD Research Seminar (Two quarters required, 3 recommended, 2-3 units total; Autumn, Winter, Spring)	1
CHPR 201	Introduction to Science of Healthy Living (Required for students who have not taken HUMBIO 126/CHPR 226. Autumn.)	1
CHPR 220	Responsible Conduct of Research in the Community (Required. Autumn)	1
CHPR 227	The Science of Community Engagement in Health Research (Not required, but strongly encouraged. Winter)	3

CHPR 228	Theoretical Foundations and Design of Behavioral Intervention Trials (Required. Autumn)	3
CHPR 240	Prevention Research: the Science of Healthy Living (Required. Autumn)	3
CHPR 250	Prevention Across Medical Disciplines: Evidence-based Guidelines (Either CHPR 250 or CHPR 270 is required; both are encouraged. Winter)	3
CHPR 270	Prevention Across Surgical and Other Medical Disciplines (Either CHPR 250 or CHPR 270 is required; both are encouraged. Spring)	3
Biostatistics and Research Methods		
A minimum of 9 units from this section is required. Students may take any combination of the courses listed here, except for the following: students may take either EPI 258 or EPI 259, but not both; and students may take either CHPR 247 or PEDS 202C, but not both.		
CHPR 202	R Fundamentals for Health Research (Winter)	1-2
CHPR 205	Understanding Evidence-Based Medicine: Hands-on experience (Winter)	3-4
CHPR 206	Meta-research: Appraising Research Findings, Bias, and Meta-analysis (Winter)	3
CHPR 247	Methods in Community Assessment, Evaluation, and Research (Spring)	3
CHPR 266	Advanced Statistical Methods for Observational Studies (CHPR students must enroll for 3 units; pre-reqs: HRP 261 & HRP 262, or HRP 239. Spring)	2-3
HRP 216	(Spring)	2-3
HRP 258	(Spring)	3
HRP 259	(Autumn)	
HRP 261	(Pre-req: HRP 258; Winter)	3
HRP 262	(Spring Pre-req: HRP 258; Spring)	3
EDUC 430C	Using Data to Describe the World: Descriptive Social Science Research Techniques (Spring)	3-5
PEDS 202C	Qualitative Research Methods and Study Design (Spring)	2-3
Curricular Practical Training and Research Internship		
Take for 2 consecutive quarters, 6 total units.		
CHPR 290	Curricular Practical Training and Internship (Autumn, Winter, Spring, Summer)	3
Master's Thesis		
Take for 2 quarters, 6 total units. CHPR 299 (Directed Reading) recommended if additional research is required for thesis writing.		
CHPR 399	Community Health and Prevention Research Master's Thesis Writing (Autumn, Winter, Spring, Summer)	3

Curricular Practical Training and Research Internship

Students must complete a consecutive two-quarter long community-based research internship under the supervision of an SPRC mentor. Students will receive 6 total units for their internships, which are all unpaid positions. The primary learning goal of these internships is for students to apply their coursework and implementation science in a community or lab setting by engaging community members and faculty to create innovative, research-based, chronic disease prevention solutions addressing community health challenges.

1. Students must fulfill the following requirements in order to enroll in CHPR 290 Curricular Practical Training and Internship:
   a. Complete or be enrolled in:
      i. CHPR 228 Theoretical Foundations and Design of Behavioral Intervention Trials and
      ii. at least 1 approved Biostatistics and Research Methods course.
2. The earliest that incoming students may begin their community-based research internships is in the Winter Quarter of their first year.

Master's Thesis

Students are required to complete a master's thesis. The master's thesis allows students to demonstrate knowledge, application, and thoughtful scholarly communication of theoretical principles central to community health interventions, study design, research and analytic methods, as well as depth in a substantive area of community health and prevention research. The thesis is intended to be 30 pages in length (i.e., article-length), double-spaced, including supporting tables, figures, and references. The thesis can take one of the following forms:

1. Analysis of original data collected via a student's internship
2. Comprehensive literature review with meta-analysis of data or critical reanalysis of data
3. Evaluation of a methodological problem using data
4. Comprehensive literature review with a grant proposal (NIH-style format) for a new study to bridge a gap in existing knowledge
5. Organizational health improvement and evaluation plan written for a student's internship organization
6. CHPR mentor approved, independently designed thesis.

The program encourages students to use extant data sets for their projects. Students are not limited to quantitative data sets; many SPRC faculty possess qualitative data sets that may be analyzed for an M.S. thesis project. Students also have the option of collecting original data, for example, through the use of surveys. Students are encouraged to develop their thesis into a manuscript for publication or a credible research grant application, and mentorship is provided to do so.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

The Master of Science (M.S.) in Community Health and Prevention Research (CHPR) counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade.

Grades of 'CR' or 'S' will satisfy graduate program degree requirements that otherwise require a letter grade.

Graduate Advising Expectations

The Master of Science in Community Health and Prevention Research (CHPR) program is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee.

All CHPR students are matched with a mentor before the start of their internship. The mentor, with support from the CHPR administrative and faculty directors, evaluates the student's academic and research background, provides guidance in developing a thesis project and topic, and helps the student select thesis readers.

Mentors are expected to meet with graduate students several times during internship and thesis quarters to discuss and help develop the students' internship, thesis deliverables, and their professional aspirations. Additionally, students should meet with the CHPR administrative director on a quarterly basis to discuss the student's professional development in key areas such as selecting elective courses, designing and conducting research, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship. They should actively seek academic and professional guidance and take on the responsibility of informing themselves of policies and degree requirements for the CHPR MS program.

As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the mentor and the student are expected to maintain professionalism and integrity. If challenges arise in this relationship, the CHPR administrative director is brought in to assist.

Academic progress and student completion of program requirements and milestones are monitored by the CHPR office.

Additionally, the program adheres to the advising guidelines and responsibilities listed by the Office of the Vice Provost for Graduate Education (https://vpge.stanford.edu/academic-guidance/advising-mentoring/) (VPGE) and in the Graduate Academic Policies (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/page-3-3-1/) (GAP).

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Core Faculty and Academic Staff

Director of the Stanford Prevention Research Center: David Maron

Professors: John Ioannidis, Marcia Stefanick, Christopher Gardner

Associate Professor: Judith J. Prochaska (Program Faculty Director)

Senior Research Scientist: Michaela Kiernan

Instructors: Jennifer Robinson, Sandra Winter (Adjunct)

Program Director: Jennifer Robinson

Assistant Director, Operations and Student Services: T.O. Preising

Courses

CHPR 113. Healthy/Sustainable Food Systems: Maximum Sustainability across Health, Economics, and Environment. 4 Units.
Focus on problems with and systems-based solutions to food system issues. Four particular settings are addressed: University, worksite, hospital, and school food. Traditional vs. disruptive food system models compared and contrasted. The goal is to determine how best to maximize sustainability across several dimensions, including health, economics, and the environment. Underlying class themes include social justice and the potential for changing social norms around food production and consumption. Discussion-based seminar. Prerequisite: Human Biology Core or Biology Foundations or consent of instructor.
Same as: HUMBIO 113S

CHPR 130. Human Nutrition. 4 Units.
(HUMBIO students must enroll in HUMBIO 130. CHPR master's students must enroll in CHRP 130.) The study of food, and the nutrients and substances therein. Their action, interaction, and balance in relation to health and disease. Emphasis is on the biological, chemical, and physiological processes by which humans ingest, digest, absorb, transport, utilize, and excrete food. Dietary composition and individual choices are discussed in relationship to the food supply, and to population and cultural, race, ethnic, religious, and social economic diversity. The relationships between nutrition and disease; ethnic diets; vegetarianism; nutritional deficiencies; nutritional supplementation; phytochemicals. CHPR master's students must enroll for a letter grade. Enrollment limited to students with sophomore academic standing or above. Prerequisites: Human Biology Core or Biology Foundations or consent of instructor.
Same as: HUMBIO 130

CHPR 166. Food and Society: Exploring Eating Behaviors in Social, Environmental, and Policy Context. 4 Units.
(HUMBIO students must enroll in HUMBIO 166. Med/Graduate students must enroll in CHRP 166.) The material in this course is an introduction to the field and the target audience is undergraduates. It may be of interest to graduate students unfamiliar with the field. The class examines the array of forces that affect the foods human beings eat, and when, where, and how we eat them, including human labor, agriculture, environmental sustainability, politics, animal rights/welfare, ethics, policy, culture, economics, business, law, trade, and ideology, and psychology. The class addresses the impact of current policies and actions that might be taken to improve human nutrition and health; macro-scale influences on food, nutrition, and eating behavior. Enrollment limited to students with sophomore academic standing or above. Undergraduate Prerequisites: Human Biology Core or Biology Foundations or consent of instructor.
Same as: HUMBIO 166

CHPR 199. Undergraduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

CHPR 200. SPRC/GMD Research Seminar. 1 Unit.
Focus is on research on prevention of chronic disease and related topics. Guest speakers present material. May be repeat for credit.

CHPR 201. Introduction to Science of Healthy Living. 1 Unit.
This introduction to the science of healthy living (primarily U.S.) highlights preventable causes of mortality, i.e. modifiable risk factors, national lifestyle recommendations and behavioral change principles for reducing chronic disease risk. A life course perspective is presented as a trajectory from fetal/neonatal to childhood and adolescence to young, middle-ages and older adults, with recognition of the importance of social determinants of health. Sex & gender differences are also presented. Unless otherwise noted, all lectures are presented by Course Director, Marcia Stefanick, Ph.D. Priority for enrollment given to CHPR masters students, who must take the course for a letter grade.

CHPR 202. R Fundamentals for Health Research. 1-2 Unit.
This introductory course is a practicum in which students will learn the basics of R and use the programming language to analyze health datasets by application of classical statistical methods. A familiarity with basic descriptive and inferential statistics is required. It is assumed that students will have no (or very little) prior experience with R. Class sessions will include some lecture content and hands-on coding by each student on their own computers. Students will practice using R with open-source and simulated datasets. The primary goal of the course is to equip students with a basic and fundamental understanding of R's capabilities, experience using R with practice datasets, and the ability to extend their facility with R as their needs dictate. Students enrolled for 2 units will have additional weekly practice problems assigned. Priority for enrollment given to CHPR masters students, who must take the course for a letter grade.
Same as: EPI 202

CHPR 205. Understanding Evidence-Based Medicine: Hands-on experience. 3-4 Units.
How can one practice evidence-based medicine and make evidence-based decisions for clinical practice and policy making? Using pivotal papers published in the recent scientific literature addressing important clinical questions on diverse medical topics, we will probe a wide range of types of studies, types of targeted therapeutic or preventive interventions, and types of studied outcomes (effectiveness and/or safety), including RCTs, observational studies, epidemiologic surveillance studies, systematic reviews-umbrella reviews-meta-analyses-meta-analyses of individual patient data, studies on the evaluation of diagnostic tests and prognostic models, economic analyses studies, and guidelines. Students enrolled for 4 units will complete an additional project or other engagement approved by the instructor. MD studies enroll for +/-. GR students enroll for Letter grade.
Same as: EPI 250, MED 250

CHPR 206. Meta-research: Appraising Research Findings, Bias, and Meta-analysis. 3 Units.
Open to graduate, medical, and undergraduate students. Appraisal of the quality and credibility of research findings; evaluation of sources of bias. Meta-analysis as a quantitative (statistical) method for combining results of independent studies. Examples from medicine, epidemiology, genomics, ecology, social/behavioral sciences, education. Collaborative analyses. Project involving generation of a meta-research project or reworking and evaluation of an existing published meta-analysis. Prerequisite: knowledge of basic statistics.
Same as: EPI 206, MED 206, STATS 211

CHPR 212. Methods for Health Care Delivery Innovation, Implementation and Evaluation. 2 Units.
Preference given to postgraduate fellows and graduate students.Focus is on implementation science and evaluation of health care delivery innovations. Topics include implementation science theory, frameworks, and measurement principles; qualitative and quantitative approaches to designing and evaluating new health care models; hybrid design trials that simultaneously evaluate implementation and effectiveness; distinction between quality improvement and research, and implications for regulatory requirements and publication; and grant-writing strategies for implementation science and evaluation. Students will develop a mock (or actual) grant proposal to conduct a needs assessment or evaluate a Stanford/VA/community intervention, incorporating concepts, frameworks, and methods discussed in class. Priority for enrollment for CHPR 212 will be given to CHPR master's students.
Same as: HRP 218, MED 212

CHPR 220. Responsible Conduct of Research in the Community. 1 Unit.
This course will engage CHPR students pursuing community-based participatory research in discussions regarding ethical and practical issues to prepare them for their CHPR program, including course planning, internship, and thesis. Discussions will address specifics of conducting research at Stanford as well as issues that may arise in the community at large and in their careers to follow. Course limited to current CHPR master's students.

CHPR 222. CHPR Professional Development and Career Planning. 1 Unit.
This interactive seminar will give graduate or professional students some tangible skills as they embark on a career in community-based participatory research (CBPR). Topics and assignments are designed to develop the following skills: poster and slide presentations; thesis or manuscript preparation; portfolio development (resume or CV); peer mentoring; peer-to-peer role playing; networking; informational interviews; defining self-fulling work. Course will also include panel discussions from alumni, faculty, and community partners. Final assignment will culminate in a poster or slide presentation to a larger department group. This course is required for all CHPR Master¿s Students (who must take the class for a grade). Students in other graduate programs or professional schools may take the class S/NC or +/- with instructor¿s consent. Please contact the CHPR Office for a permission code.

CHPR 226. Promoting Health Over the Life Course: the Science of Healthy Living. 3 Units.
(HUMBIO students must enroll in HUMBIO 126. Med/Graduate students must enroll in CHPR 226.) Disease prevention and health promotion topics pertinent at different stages of the life span emphasizing healthy lifestyle and reducing risk factors in both individuals and communities. Focus is on the application of behavioral science to risk reduction strategies, and the importance of health promotion as a social and economic imperative. Public and community health are emphasized. Topics include: epidemiology of chronic diseases; social determinants of health, behavior change; physical activity, nutrition, obesity and stress reduction; children, young adult, mid-life and aging health issues; health care delivery and public health system; workplace wellness; and other additional issues. Students enrolled in CHPR 226 for a letter grade must complete additional assignments appropriate for its Masters level listing. Enrollment limited to students with sophomore academic standing or above. Undergraduate prerequisites: Human Biology Core or equivalent or consent of instructor.
Same as: HUMBIO 126

CHPR 227. The Science of Community Engagement in Health Research. 3 Units.
The Science of Community Engagement in Health Research course will focus on how the science of community engagement can be applied to diverse health-related research topics across the translational spectrum with the ultimate goal of high quality research that transforms human health and addresses health disparities. The course will provide historical context, theoretical frameworks, foundational skills in diverse community engagement methodologies, and tools for examining the effectiveness of various engagement strategies aimed. Specifically, the course will cover: 1) Historical context for community engagement in health-related research; 2) Evolution of community engagement as a science; 3) Theoretical frameworks for various community engagement approaches; 4) Community-Based Participatory Research (CBPR); 5) Community engagement strategies for different stages of translational research; and 6) Evaluation of various engagement strategies; and 7) Ethics of community engagement. Students will gain practical experience in various community engagement tools and strategies to help guide the development of a community engagement plan responsive to community needs. Challenges and benefits of establishing community partnerships will be highlighted by real-world examples. nThe course will include lectures; interactive student-led presentations and guided exercises; class discussions among invited speakers, students and instructors; individual and group assignments; and organized small-group and experiential activities. Course readings will demonstrate the need and opportunity for interdisciplinary community engagement approaches and will illustrate how to conduct innovative community-engaged research. nThe Science of Community Engagement course is intended to reach students with diverse research interests, including clinical research, community health, health research and policy, epidemiology, prevention research, environmental health, etc.
Same as: EPI 272

CHPR 228. Theoretical Foundations and Design of Behavioral Intervention Trials. 3 Units.
Focuses on the knowledge and skills, respect and thoughtful practice of designing health promotion interventions that are relevant, theoretically-informed, have broad impacts, and can endure. Provides an in-depth review of intervention approaches for health promotion and disease prevention and covers the leading theories of behavior change. Follows an integrative model to demonstrate similarities and differences between the theoretical approaches, seeking what is useful and worthwhile in each theoretical model rather than looking primarily for what is most easily criticized. Practical in nature with emphasis on the specifics of needs assessments and intervention development and delivery and how these may vary across community settings, with diverse populations, addressing different behaviors, and leveraging traditional and emerging delivery channels. Explores intervention creation, delivery, effectiveness, and sustainability to identify and better understand the resources and other practical considerations necessary to produce, deliver, monitor, and disseminate an intervention with demonstrated effectiveness. Examples drawn from across the behavioral spectrum and include tobacco control, physical activity, healthy diet, stress and distress, as well as consideration of the complexities of extending interventions to target multiple risk behaviors. Students develop a foundational understanding of behavior change theory, rigorous research methods, and creative design strategies to advance the health of individuals and communities. Students taking 2 units only will complete all 4 homework assignments, attend 8 of 10 class sessions, and complete an abbreviated final abstract plus figures/tables instead of a final paper. The grading, in this instance, will be the medical school option of credit/no credit. CHPR master's students must enroll for 3 units and a letter grade.

CHPR 230. Sexual Function and Diversity in Medical Disciplines. 2-3 Units.
This course is a coordinated seminar series that presents evidence-based health promotion and disease prevention guidelines by clinical and translational research and population health science faculty of clinical departments other than Medicine (the focus of CHPR 260) of the Stanford School of Medicine, including; Anesthesiology & Perioperative, & Pain Medicine, Cardiothoracic gy, Emergency Medicine, Neurology & Neurological Sciences, Neurosurgery, Obstetrics & Gynecology, Ophthalmology, Orthopaedic Surgery, Otolaryngology, Pathology, Pediatrics, Psychiatry & Behavioral Sciences, Radiation Oncology, Radiology, Surgery and Urology. CHPR master's program students must enroll in CHPR 230 for a letter grade and priority for enrollment will be given to current CHPR students. For third unit, graduate students attend INDE 215 Queer Health & Medicine and complete assignments for that section. For third unit and WAYs, undergrads enroll in SOMGEN 130. Prerequisites: CHPR 201 or HUMBIO 126/CHPR 226 or equivalent or consent of instructor.
Same as: FEMGEN 230, SOMGEN 230

CHPR 232. Social and Structural Determinants of Health: Achieving Health Equity. 1 Unit.
This course examines the theoretical basis and societal context of the social determinants of health, racial-ethnic health disparities, and health equity. Each session focuses on a social determinant of health addressed by Michael Marmot, including the social gradient, stress, racism, early life, social exclusion, work, unemployment, social support, addiction, food and transportation. Students will be encouraged to think beyond the individual-level to consider multi-level and policy-level interventions to promote health equity.

CHPR 234. Applying Contemplative Practices. 3 Units.
Knowledge and skills for applying contemplative practices to promote individual and community health and well-being in a variety of settings (e.g., clinics, hospitals, non-profit and for-profit organizations, schools, government agencies, secular and spiritual communities, etc.) is the focus of this course. In-depth exploration is provided through: 1) scholarly articles on contemplative neuroscience, biopsychosocial research, theoretical models, and interventions, and 2) experiential learning in which students are guided in doing diverse contemplative practices, including silence, centering, meditation, labyrinth walking, yoga, qigong, self-compassion, deep listening, storytelling, journaling, lectio divina, prayer, ritual, and compassionate action. Multi-modal learning activities include videos, field experiences, guest speakers, ancient and modern texts, class discussions, and personal reflections. In-depth understanding of contemplative practices is developed through consideration of contemplative practices with respect to behavioral science, ethics, social justice, inclusion and diversity, qualitative and quantitative research, motivational interviewing, compassionate communication, design thinking and relationship-based care, including deep listening, open-minded observation, empathic need-finding, pattern recognition, and creative confidence. The course culminates with students' presentations of their original design for a research-based health and well-being program or policy incorporating contemplative practices.

CHPR 235. Covid-19 Case Investigation and Contact Tracing. 3-6 Units.
In this service-learning course students will be learn how to identify people who have COVID-19 and those who have been exposed to people with COVID-19. Students will learn basics about the biology and health effects of SARS-CoV-2 and the epidemiology of COVID-19. Students will be taught important skills in healthcare communication including motivational interviewing, health education, and health coaching. Students will work as volunteers together with Santa Clara County staff to interrupt the chains of transmission of COVID-19 as they apply skills they have learned to help people with the illness and those who have been exposed understand the importance of isolation, quarantine, and other critical aspects of public health needed to control and manage this disease. Students will need to be willing to commit 20 hours per week to this course for 10 weeks over 2 quarters. Requires application and instructor approval. Please contact Course Director, Lars Osterberg MD, MPH for an application form and approval for enrollment.
Same as: MED 164, MED 264

CHPR 236. Citizen Science Theory to Practice: Advancing Community-Driven Solutions for Health. 2-3 Units.
Harnessing and activating the insights of community members and patients is essential to achieving health equity ¿from the bottom up. ¿ Students will 1) learn and apply a novel datadriven, technology-enabled approach to improving community health through systematic documentation of lived experience and application of collective data to inform local change; 2) examine global project case studies targeting physical activity, food access, transportation, affordable housing, gender-based violence, and age-friendly environments; and 3) complete assessments of their local built environments using a Stanford-developed app and web platform, then use their data to develop and explore feasible strategies to improve community health.n(Cardinal Course certified by the Haas Center).
Same as: MED 243

CHPR 238. Social Media, Health, and Well-Being. 1 Unit.
Focus is on how social media affects well-being, how and why information spreads, effects of social media on young people and other vulnerable populations, and how social media can be used to improve health behaviors and wellbeing. The synchronous class sessions on Zoom consist of brief lectures, guest speakers, and class discussions. Assignments will include reading, submitting written reflections, participating in class discussions, and a final project. Priority for enrollment given to current CHPR masters students, who must enroll for a letter grade.

CHPR 240. Prevention Research: the Science of Healthy Living. 3 Units.
Features the research of faculty in the Stanford Prevention Research Center and focuses on key health issues over the life course (prenatal through childhood, young to middle-aged, older and elderly adults). Topics include chronic disease (global and U.S.) epidemiology; application of behavioral science to risk reduction; nutrition; weight management; physical activity; stopping smoking; public health; community health and community-based prevention; national prevention strategy; applying communication technology to health promotion. Prerequisite: HumBio 126 or concurrent enrollment in CHPR 201.

CHPR 247. Methods in Community Assessment, Evaluation, and Research. 3 Units.
Development of pragmatic skills for design, implementation, and analysis of structured interviews, focus groups, survey questionnaires, and field observations. Topics include: principles of community-based participatory research, including importance of dissemination; strengths and limitations of different study designs; validity and reliability; construction of interview and focus group questions; techniques for moderating focus groups; content analysis of qualitative data; survey questionnaire design; and interpretation of commonly-used statistical analyses.
Same as: MED 147, MED 247

CHPR 250. Prevention Across Medical Disciplines: Evidence-based Guidelines. 3 Units.
Coordinated seminar series presenting evidence-based health promotion and disease prevention guidelines by research and clinical faculty of multiple divisions of Stanford's Department of Medicine, including cardiovascular medicine, oncology, nephrology, immunology and rheumatology, infectious diseases, endocrinology, gerontology and metabolism, gastroenterology and hepatology, hematology, blood and marrow transplantation, pulmonary and critical care medicine, general medical disciplines (including family medicine). Key prevention issues addressed in primary care and outcomes research, biomedical informatics research and the Stanford Prevention Research Center also presented. Enrollment priority given to CHPR Master's students. CHPR students must enroll for letter grade.Prerequisite: CHPR 201 or HUMBIO 126/CHPR 226 or equivalent or consent of instructor.

CHPR 266. Advanced Statistical Methods for Observational Studies. 2-3 Units.
Design principles and statistical methods for observational studies. Topics include: matching methods, sensitivity analysis, and instrumental variables. 3 unit registration requires a small project and presentation. Computing is in R. Pre-requisites: EPI 261 and 262 or STATS 209 (EPI 239), or equivalent. See http://rogosateaching.com/somgen290/.
Same as: EDUC 260B, EPI 292, STATS 266

CHPR 270. Prevention Across Surgical and Other Medical Disciplines. 3 Units.
This course is coordinated seminar series that presents evidence-based health promotion and disease prevention guidelines by clinical and translational research and population health science faculty of clinical departments other than Medicine (the focus of CHPR 260) of the Stanford School of Medicine, including; Anesthesiology & Perioperative, & Pain Medicine, Cardiothoracic Surgery, Dermatology, Emergency Medicine, Neurology & Neurological Sciences, Neurosurgery, Obstetrics & Gynecology, Ophthalmology, Orthopaedic Surgery, Otolaryngology, Pathology, Pediatrics, Psychiatry & Behavioral Sciences, Radiation Oncology, Radiology, Surgery and Urology, CHPR master's program students must enroll for a letter grade and priority for enrollment will be given to current CHPR students. Prerequisites: CHPR 201 or HUMBIO 126/CHPR 226 or equivalent or consent of instructor.

CHPR 271. Human Molecular Genetics. 3 Units.
For genetic counseling students, graduate students in genetics, medical students, residents, and postdoctoral fellows interested in the practice of medical genetics and genomics. Gene structure and function; the impact of mutation and polymorphism as they relate to developmental pathways and human disease; mitochondrial genetics; approaches to the study of complex genetic conditions; GWAS and genome sequencing technologies; variant interpretation; gene therapy, stem cell biology, and pharmacogenetics. Undergraduates require consent of instructor and a basic genetics course. Non-GC students: Please contact the instructor when you enroll.
Same as: GENE 271

CHPR 272. Introduction to Medical Genetics. 2-3 Units.
For genetic counseling students, graduate students in human genetics, medical students, residents, and fellows; undergraduates with consent of instructor. Principles of medical genetics practice, including taking a family history, modes of inheritance and risk assessment, and mathematical principles of medical genetics (Bayes theorem, population genetics). An additional problem set is required for 3 units.
Same as: GENE 272

CHPR 274A. A Case Based Approach to Clinical Genetics. 2 Units.
For genetic counseling students and medical genetics residents and fellows. Case-based scenarios and guest expert lectures. Students learn skills in case preparation, management, and presentation, as well as content around common genetic disorders.
Same as: GENE 274A

CHPR 274B. A Case Based Approach to Clinical Genetics. 2 Units.
For genetic counseling students and medical genetics residents and fellows. Case-based scenarios and guest expert lectures. Students learn skills in case preparation, management, and presentation, as well as content around common genetic disorders. This course is a continuation of GENE 274A, but may be taken individually with instructor permission.
Same as: GENE 274B

CHPR 278. Prenatal Genetic Counseling. 1 Unit.
Online course for genetic counseling students, graduate students in genetics, medical students, residents, fellows, and nurses interested in prenatal genetics. Genetic counseling students should take this course in conjunction with their initial prenatal genetics rotation. Topics include: prenatal screening and diagnostic testing, ultrasound, genetic carrier screening, teratology, fetal treatment and intervention, perinatal loss, termination, and infertility. Non-GC students: Please contact the instructor when you enroll.
Same as: GENE 278

CHPR 279. Pediatric and Adult Genetic Counseling. 1 Unit.
Internet based course for genetic counseling students, graduate students in genetics, medical students, residents, and fellows; genetic counseling students should take this course in conjunction with their initial general genetics rotation. Topics include: clinical reasoning in medical genetics, techniques to prepare for the medical genetics visit, assessment of child development and medical history in the context of a genetic workup, dysmorphology, development of a differential diagnosis, and resources for case management and family support. Non-GC students: Please contact the instructor when you enroll.
Same as: GENE 279

CHPR 280. Metabolic Genetic Counseling. 1 Unit.
Internet based course for genetic counseling students, graduate students in genetics, medical students, residents, and fellows. Genetic counseling students should take this course in conjunction with their metabolic genetics rotation. Topics include: overview of metabolic diseases; common pathways; diagnosis, management, and treatment of metabolic disorders; and newborn screening. Non-GC students: Please contact the instructor when you enroll.
Same as: GENE 280

CHPR 281. Cancer Genetic Counseling. 1 Unit.
Internet based course for genetic counseling students, graduate students in genetics, medical students, residents, and fellows; genetic counseling students should take this course in conjunction with their initial cancer genetics rotation. Topics include: cancer biology and cytogenetics; diagnosis and management of common cancer genetic syndromes; predictive testing; psychology of cancer genetic counseling; and topics recommended by ASCO guidelines.Non-GC students: Please contact the instructor when you enroll.
Same as: GENE 281

CHPR 284. Medical Genetics Seminar. 1 Unit.
Presentation of clinical and research topics in human genetics, followed by case presentations from the medical genetics and biochemical genetics services. Course may be completed online or in-person. Non-GC students: Please contact the instructor when you enroll.
Same as: GENE 284

CHPR 287. CARDIOVASCULAR GENETICS. 1 Unit.
Online course for genetic counseling students, graduate students in genetics, medical students, residents, fellows, and nurses interested in inherited cardiovascular conditions. Genetic counseling students should take this course in conjunction with their cardiovascular genetics rotation. Topics include: Basic cardiology principles, including relevant anatomy and physiology; diagnosis, management and genetic testing as it relates to common inherited cardiovascular conditions in both the pediatric and adult setting; predictive genetic testing issues specific to inherited cardiovascular conditions; psychological issues related to sudden death conditions. Non-GC students: Please contact the instructor when you enroll.
Same as: GENE 287

CHPR 290. Curricular Practical Training and Internship. 1-18 Unit.
CHPR masters students enroll for a letter grade in your mentor's section. Before the end of the second week of the quarter, enrolled students must submit a description of the expected learning outcomes and deliverables for each unit to the CHPR office. One unit= three hours of work per week (30 hours for the quarter). CHPR 290 is also the CPT Course required for international students completing degree requirements.

CHPR 299. Directed Reading. 1-18 Unit.
Prerequisite: consent of instructor. Before the end of the second week of the quarter, enrolled students must submit a description of the expected learning outcomes and deliverables for each unit to the CHPR office. One unit= three hours of work per week (10 hours for the quarter).

CHPR 399. Community Health and Prevention Research Master's Thesis Writing. 1-18 Unit.
Thesis writing for Community Health and Prevention Research Program. Students enroll in thesis advisor's section. Non-medical students enroll for a letter grade. Before the end of the second week of the quarter, enrolled students must submit a description of the expected learning outcomes and deliverables for each unit to the CHPR office. One unit= three hours of work per week (30 hours for the quarter).

CHPR 801. TGR Project. 0 Units.
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COMPARATIVE MEDICINE

Courses offered by the Department of Comparative Medicine are listed under the subject code COMPMED on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=COMPMED&filter-catalognumber-COMPMED=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=COMPMED&filter-catalognumber-COMPMED=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=COMPMED&filter-catalognumber-COMPMED=on).

The Department of Comparative Medicine at Stanford is an academic, basic science department, the department is comprised of fourteen faculty, eleven of whom are veterinarians. All faculty members are immersed in laboratory animal science and translational research. They teach at the undergraduate, graduate, professional, and postgraduate levels. The department's clinical and basic science faculty welcome, review, and accept student candidates for participation in research projects. The Department of Comparative Medicine was established at Stanford in 1990.

The department's faculty is also engaged in collaborative and comparative research, with animal model expertise and programs in veterinary pathology, pain and anesthesia, rodent reproductive biology, infectious disease, cancer, bioengineering, animal welfare, and neuroscience. In addition, the veterinary faculty in the Department of Comparative Medicine has oversight responsibility for the campus-wide animal research program and provides clinical service in the Veterinary Service Center (VSC). The mission of the department is to advance human and animal health through outstanding research, veterinary care and training.

To learn more about the Veterinary Service Center core and services provided, see the Veterinary Service Center (VSC) (http://med.stanford.edu/vsc.html) web site.

To learn more about Animal Research at Stanford, see the Animal Research at Stanford (http://med.stanford.edu/animalresearch.html) web site.

Master of Science in Laboratory Animal Science

The Master of Science (M.S.) in Laboratory Animal Science (MLAS) degree program in the Department of Comparative Medicine is a flexible, one- to two-year graduate program designed for students who want to pursue advanced careers in biomedical research, focusing on animal modeling and biomethodology, laboratory animal science, organizational management and facility design, regulatory and compliance issues, and animal welfare.

The program's academic courses are designed to build a solid foundation for a successful career in laboratory animal science and biomedical research. Graduates find employment in pharmaceutical companies and academia, or pursue advanced degrees or training in medical or veterinary schools. The program is designed to give students the ability to customize their academic research experience.

The Master of Science (M.S.) in Laboratory Animal Science degree program may also be taken by Stanford undergraduates as a coterminal master's degree program.

University requirements for the M.S. degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

How to Apply

External Applicants and Current Stanford Graduate Students

Review the information and instructions on the University Graduate Admissions web site (https://gradadmissions.stanford.edu). Submit your application online. The link to the online application is on the University Graduate Admissions web site (https://gradadmissions.stanford.edu/applying/).

Admissions Deadline: Application deadlines are listed on the Laboratory Animal Science (http://med.stanford.edu/compmed/mlas.html) webpage. For more information, contact <compmed-mlas-info@stanford.edu>.

Items which must be included in the online application:

- Completed School of Medicine Graduate Student Online Application Form (https://stanfordmedicine.qualtrics.com/SE/?SID=SV_eIIAYRZnPUqkPGJ)
- Resume or CV
- Transcript (unofficial transcripts are acceptable)
- GRE is not required
- Statement of Purpose (1-2 pages, 1 inch margins, 12 point font, single-spaced)
  - The statement of purpose should describe succinctly the reasons for applying to the proposed program at Stanford, preparation for this field of study, research interests, future career plans, and other aspects of the student's background and interests which may aid the admissions committee in evaluating aptitude and motivation for graduate study.
- Three letters of recommendation; at least one of the two reference letters should come from a science-related faculty member or professor.
- $125 application fee is assessed by the Registrar at the time of the submission of the application.

Coterminal Applicants

The coterminal degree program allows current Stanford University undergraduates to study for a master's degree while completing their bachelor's degree(s) in the same or a different department. See the "Coterminal Degrees (p. 56)" section of this bulletin for additional information.

- Go to the Stanford Registrar's Office Applying to Coterm web site (https://registrar.stanford.edu/students/coterminal-degree-programs/applying-coterm/).
- Review the eligibility requirements, deadlines, and fees.
- Complete the online Coterm Application at the University Graduate Admissions web site (https://gradadmissions.stanford.edu/applying/).
- $125 application fee is assessed by the Registrar at the time of the submission of the application.
- For additional questions, reach out to Tom Albert, Student Services Officer, tom.albert@stanford.edu.

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the

graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken three quarters prior to the first graduate quarter, or later, are eligible for consideration for transfer to the graduate career. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Degree Requirements

1. At least 45 units of academic work, all of which must be in courses at or above the 100 level. 36 of the 45 units must be at or above the 200 level. Students must complete all required courses listed below to count towards their 45 units. The remaining units can be used as research credit (COMPMED 260) or electives, as approved by each student's research mentor.
2. Students must complete a master's thesis, which may take the following form:
   a. Original analysis of original data
   b. A comprehensive literature review with a meta-analysis of data or a critical reanalysis of data
   c. Evaluation of a methodological problem using real data
   d. A comprehensive literature review with a grant proposal (NIH style format) for a new study to bridge a gap in the existing knowledge.
3. Per University policy (p. 65), the master's degree must be completed within three years.

Course Requirements

		Units
Required Courses		
Students are required to enroll in the following courses:		
COMPMED 200	One Health Journal Club (take twice)	2
COMPMED 202	Research Biomethodology for Laboratory Animal Science	2
COMPMED 205	Animal Use in Biomedical Research	3
COMPMED 209	Laboratory Animal Medicine Seminar	1
COMPMED 210	Form and Funkiness of Lab Animals : Anatomy, Histology, and Pathology	4
COMPMED 211	Biostatistics for the Life Sciences	2
COMPMED 260	Masters Laboratory Animal Science Practicum/Laboratory Research	1-18
COMPMED 290	Laboratory Animal Science Professional Development and Career Exploration (take three times)	3
Elective Courses		
COMPMED 114	Introduction to Veterinary Medical Terminology	2
COMPMED 123	Immunology of Infectious Disease	3
COMPMED 207	Vertebrate Brain Evolution	2
BIOS 285	Rodent Animal Models: Selection, Detection, Dissection, Inspection	1
Minimum Total Units		**45**

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

In Academic Year 2020-21, the Department of Comparative Medicine considers courses in which a 'CR' (credit) is earned as satisfactory toward completion of the graduate degree.

Other Graduate Policies

The Department of Comparative Medicine is monitoring the impact of COVID-19 on its master's students' ability to conduct research in person. The thesis requirement, typically based on student's laboratory research project, may be amended at the discretion of the department.

Graduate Advising Expectations

The Department of Comparative Medicine (DCM) is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the advisor and the advisee.

Graduate students are expected to have selected a faculty mentor by their second quarter in the program.

Faculty mentors are expected to meet with graduate students at least once a quarter to discuss and to assist with development of the student's Individual Development Plans (https://drive.google.com/open/?id=1Xq4uWhblKRgo25QQWsLeBbK7wx0rNNx1). Additionally, the department encourages advisors and students to meet on a regular basis throughout the year to discuss the student's professional development in key areas such as selecting courses, designing and conducting research, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship. They should proactively seek academic and professional guidance and take responsibility for informing themselves of policies and degree requirements for the M.S. in Laboratory Animal Science (MLAS) program. All new MLAS students are expected to enroll in and to participate in the department's formal professional development and mentoring course, COMPMED 290, offered quarterly.

As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity.

Academic progress and student completion of program requirements and milestones are monitored by the program director and staff, and are reviewed during the Masters of Laboratory Animal Science Faculty Advisory Committee each quarter. A detailed description of the program's requirements, milestones, and advising expectations (for students and for their advisors) can be found on the program web site (http://med.stanford.edu/compmed/mlas.html).

Graduate students and their faculty mentors are encouraged to collaborate with the department's student services officer for referrals to campus resources, which include Biosci Careers Center, Vaden Health, etc.

Additionally, the program adheres to the advising guidelines and responsibilities listed by the Office of the Vice Provost for Graduate Education (https://vpge.stanford.edu/academic-guidance/advising-mentoring/) (VPGE) and in the Graduate Academic Policies (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/page-3-3-1/) (GAP).

For more information regarding Graduate Student Advising and Postdoctoral/Resident Mentoring, contact the following people:

- Graduate Student Advising: Tom Albert (Student Services Officer), tom.albert@stanford.edu.
- Program Director: Sherril Green (Comparative Medicine Chair), sherril@stanford.edu.
- Postdoctoral Student/Residents: Megan Albertelli (Laboratory Animal Medicine Residency Director), megan.albertelli@stanford.edu.
- Postdoctoral/Resident: Monika Huss (Resident and Trainee Wellness Advisor), monikag@stanford.edu.

Emeriti: (Professors) Donna M. Bouley, Linda C. Cork

Chair: Sherril Green

Director of Graduate Studies: Sherril Green

Co-Director of Graduate Studies: Corinna Darian-Smith

Professors: David Bentzel (Clinical), Paul S. Buckmaster, Stephen Felt, Sherril Green, Shaul Hestrin

Associate Professors: Megan Albertelli, Corinna Darian-Smith, Joseph Garner, Claude Nagamine

Assistant Professors: Kerriann Casey (Clinical), Thomas Cherpes, Monika Huss (Clinical), Cholawat Pacharinsak, Jose Vilches-Moure

Courses

COMPMED 11SC. Life in the Zoo: Behavior, Welfare and Enrichment. 2 Units.
What makes for a good life in a zoo? For that matter, what makes a good zoo? The psychological and physical wellbeing of the animals? The contribution to research, conservation, and education? The guest experience? Students will learn first-hand how animal welfare science provides an evidence-based approach to optimize and balance each of these demands so that "good welfare is good business." Through a unique experience at San Francisco Zoo students will learn how to apply principles of animal behavior to design environmental enrichments which benefit both the animals and the complex mission of a zoo. Students will be guided through the process of assessing an exhibit from the point of view of the animal's behavior and wellbeing, educational opportunities, and guest experience; developing an enrichment plan; designing and building enrichments for the animals; interacting with the public as docents; and assessing the overall effectiveness of a new enrichment; before finally presenting their work at a "mini-conference." The course will be taught with an emphasis on self-guided learning, student-led class time, hands-on experience, and service-learning. Most days will begin with students presenting what they have learned the previous day to the class, followed by student-led discussion, preparation time for the day's activities, and then time out in the zoo. The course will be taught by Dr. Garner (whose introductory seminar in Animal Behavior is strongly recommended, though not required) and Dr. Watters (Vice President of Animal Wellness and Animal Behavior, San Francisco Zoological Society). [This is a SOPHOMORE COLLEGE course. Visit soco.stanford.edu for full details.].

COMPMED 23N. Pandemics & Plagues: Biological Causes and Social Effects. 3 Units.
Massive scale infections or plagues have often occurred, affecting millions for years or quickly killing thousands. In this seminar, we will use both biological and social lenses to examine infectious agents and the plagues they caused. To provide helpful framework for this exploration, we will begin with a very brief overview of the principles of microbiology and immunology. This will be followed by specific looks at the biological causes and social responses to Black Death, cholera, tuberculosis, the 1918 influenza pandemic, polio, and the ongoing HIV pandemic. We will conclude our seminar with similar looks at some of the infectious agents most likely to cause new pandemics.

COMPMED 80N. Animal behavior: sex, death, and sometimes food!. 3 Units.
Preference to freshman. Behavior is what makes animals special (thirsty plants don't walk to water), but why do animals behave the way they do? What does their behavior tell us about their inner lives, and about ourselves? What do lipstick and cuckoos and fireflies have in common? Why would nobody want to be a penguin? What do mice say to each other in their pee-mail? Learning how to think about questions like these gives us a unique perspective on the natural world. Format: Discussion and criticism of video examples, documentaries, and research papers. Topics: History and approaches to animal behavior; development of behavior, from genetics to learning; mechanisms of behavior, from neurons to motivation; function of behavior, from honest signals to selfish genes; the phylogeny of behavior, from domestication to speciation; and modern applications of behavior, from abnormal behavior, to conservation, to animal welfare, and animal consciousness.

COMPMED 81Q. Aardvarks to Zebras: The A to Z of Animal Anatomy. 3 Units.
Preference to sophomores. Ever wonder what cats and narwhals have in common? Maybe you haven't, but despite their seemingly different lifestyles and habitats (i.e. sleeping on couches versus swimming in oceans), they are both mammals! In this seminar, students will gain an appreciation for basic mammalian anatomic and physiologic principles that span across multiple species while emphasizing key differences that render each species unique. Through student projects, we will explore evolutionary adaptations that have driven the success of a variety of species within the context of their natural environments. In addition to lecture content, virtual laboratory sessions will reinforce anatomic principles through a combination of rodent cadaver dissection and examination of organ and bone specimens. Students with a passion for science will gain a fundamental understanding of anatomy that is applicable to future careers in medicine, biomedical research, veterinary medicine, and ecology/conservation.

COMPMED 84Q. Globally Emerging Zoonotic Diseases. 3 Units.
Preference to sophomores. Infectious diseases impacting veterinary and human health around the world today. Mechanisms of disease, epidemiology, and underlying diagnostic, treatment and control principles associated with these pathogens.

COMPMED 85N. Animal Use in Biomedical Research. 3 Units.
Preference to freshmen. How and why animals are used in biomedical science. Addresses human and animal disease entities and how animal research has contributed to the treatment and cure of disease. Significantnportions of this course are devoted to documenting the humane care and treatment of laboratory animals in research, including, but not limited to such topics as laws and ethics, animal behavior, animal modeling, and the animal activist movement. Course topics will also include: What advances have been made as a result of the use of animals in research? Who conducts animal research? Predominant animal species used in biomedical research, facts and myths; the regulation of biomedical research; housing and care of laboratory animals; why new drugs must be tested; animal use in stem cell research, cancer research and genetically engineered mice; career choices in biomedical research.

COMPMED 87Q. Laboratory Mouse in Biomedical Research. 3 Units.
What is a nude mouse and why is it used in cancer research? How come my mouse pups have a different coat color than their parents? What is a knockout mouse? Answers to these and more are in this introduction to the laboratory mouse, one of the most widely used models in biomedical research. We will explore the natural history and origin of the laboratory mouse; the ethics and regulations on the use of mice in research; the characteristics and nomenclature of commonly used mouse strains; the anatomy, physiology, and husbandry of mice; common mouse diseases and their effects on research; mouse coat color genetics and its relevance to human diseases; immunodeficient mouse models and their uses in research; and the technology for genetically engineering mice (e.g., transgenic mice). Video demonstrations of necropsy, mouse handling, anesthesia and surgery, identification methods, and research techniques will be provided. Each student is expected to read research papers that use the mouse as a research model and give a presentation of a topic of their choice. Students interested in biomedical research and human or veterinary medicine will benefit from this seminar.

COMPMED 89Q. Ouch it Hurts! The Comparative Neurobiology of Pain. 3 Units.
Preference to sophomores. Focus is on understanding the basic neurobiology of pain pathways. Topics include the physiology, pharmacology, and clinical aspects of effective pain management. In both humans and animals pain is part of the protective mechanisms that prevent further injury to the body. However, if the pain process continues unchecked, it can become extremely detrimental.

COMPMED 91N. And that's why cats should never eat garlic!. 3 Units.
Did you know that although we love garlic, it could make cats very sick? And how come if a human or a dog gets a heart attack they'll end up with a scar, but some fish can regenerate parts of their hearts? In this course, we will explore how select diseases can manifest themselves similarly or differently in different animal species. This course will be of interest to those looking to pursue careers in biomedical fields including veterinary and human medicine. Oh, and one last thing: don't cook with non-stick pans if you have indoor birds. Why? Sign up for the course to find out!.

COMPMED 107. Vertebrate Brain Evolution. 2 Units.
Functional organization and evolution of the vertebrate nervous system. Topics include paleoneurology, cladistic analysis, allometry, mosaic versus concerted evolution, and evolution of brain region structure, connectivity, and neurons. Comparisons between structure and function of vertebrate forebrains including hippocampi.
Same as: COMPMED 207

COMPMED 109. Veterinary Clinical Shadowing Experience. 1-2 Unit.
Restricted to pre-veterinary students. Priority given to Seniors. The objective of this course is to provide students with practical experience in clinical laboratory animal veterinary medicine by shadowing veterinary staff at Stanford. Experience is gained in areas of laboratory animal veterinary care such as housing systems, husbandry, disease surveillance, enrichment, physical exams and clinical management. Enrolled students will work with multiple species and fully intend to apply to veterinary school. Limited Enrollment. Once registered, students must contact Dr. Sam Baker to create a shadowing schedule.

COMPMED 110. Pre-Veterinary Advisory. 1 Unit.
For students interested in a career in veterinary medicine. How to meet the academic and practical experience prerequisites for admission to veterinary school. Networking with other pre-vet students. Periodic group meetings with guest speakers presenting career options in veterinary medicine. Prerequisite: consent of instructor.

COMPMED 114. Introduction to Veterinary Medical Terminology. 2 Units.
The Introduction to Veterinary Medical Terminology course will introduce students to medical terminology used in the veterinary profession and in biomedical research. This course is designed with the pre-veterinary student in mind, although pre-medical students and students in other fields are welcome. Upon successful completion of the course, students will be able to review, comprehend, and communicate basic medical reports and clinical assessments. Students can expect to complete 2-4 hours of reading per week, to meet 2 hours per week for lecture and to review cases.

COMPMED 123. Immunology of Infectious Disease. 3 Units.
Course utilizes active learning techniques to explore essential elements of the mammalian host response to infection. Focusing on overriding principles rather than rote learning, course delivers pragmatic understanding of this response. Topics include pathogenesis of clinically relevant pathogens, vital immune system cells and tissues, and how innate and adaptive immunity responses are coordinated to control infection. Integrated into this active learning experience are human and veterinary medicine clinical cases that provide an exciting way for participants to re-enforce understanding of these basic concepts of host defense and challenge their problem-solving abilities. UG prerequisites: Cell Biology or consent of instructor.

COMPMED 198. Undergraduate Directed Reading in Comparative Medicine. 1-3 Unit.
May be taken as a prelude to research and may also involve participation in a lab or research group seminar and/or library research.

COMPMED 199. Undergraduate Research. 1-3 Unit.
Investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

COMPMED 200. One Health Journal Club. 1 Unit.
Participants report on and review scientific articles published in peer reviewed journals. Focus is on manuscripts which report basic and mechanistic discoveries, animal modeling and translational research. The objective is to introduce MLAS students to critical scientific review of hypothesis-based research and experimental design, data analysis and interpretation. Enrollment limited to undergraduate and graduate students currently matriculated or planning to enroll in the MS in Laboratory Animal Science degree program.

COMPMED 202. Research Biomethodology for Laboratory Animal Science. 2 Units.
Emphasis is on providing introductory training and practical, hands-on research animal biomethodology. Topics include basic care and principals guiding the use of research animals, animal health and welfare, enrichment, basic mouse handling, rodent breeding, and the principals of rodent aseptic surgery and anesthesia. The objective of this course is to teach basic skills in animal handling, animal care and biomethodological research techniques. Content delivered online and in-person.

COMPMED 205. Animal Use in Biomedical Research. 3 Units.
How and why animals are used in biomedical science. Addresses human and animal disease entities and how animal research has contributed to the treatment and cure of disease. Significant portions of this course are devoted to documenting the humane care and treatment of laboratory animals in research, including, but not limited to such topics as law and ethics, animal behavior, animal modeling, and the animal activist movement. Course topics will also include: history of animals in research, environmental enrichment for research animals, and research animals in the media.

COMPMED 207. Vertebrate Brain Evolution. 2 Units.
Functional organization and evolution of the vertebrate nervous system. Topics include paleoneurology, cladistic analysis, allometry, mosaic versus concerted evolution, and evolution of brain region structure, connectivity, and neurons. Comparisons between structure and function of vertebrate forebrains including hippocampi.
Same as: COMPMED 107

COMPMED 209. Laboratory Animal Medicine Seminar. 1 Unit.
Focuses on husbandry, care and diseases of major laboratory animal species (rodents, fish and amphibians, swine, sheep, rabbits, monkeys); regulatory and compliance, applied principals of animal modeling, and factors that influence animal research, animal behavior and research reproducibility. The objective of this course is to provide students with an overview of the history of laboratory animal science, current industry standards and practices, and the fundamentals of laboratory animal diseases. Department consent required for enrollment. May be repeated for credit.

COMPMED 210. Form and Funkiness of Lab Animals : Anatomy, Histology, and Pathology. 4 Units.
Focus is on anatomy and histology (microscopic anatomy) of the entire mouse, proper instrument handling and dissection technique, proper tissue fixation, trimming and orientation in cassettes, identification of normal organ histology on H & E-stained slides using a light microscope, use of special stains, and digital image acquisition. Basic pathological processes (inflammation, necrosis, apoptosis, hyperplasia, cancer) and how these manifest in different organs comprises the pathology aspect of this course. Participants present the pathology of their lab's mouse models. Preference to graduate students working with mouse models. Dissection labs. Comfort with mouse handling and previous participation in VSC mouse handling and euthanasia workshops recommended.

COMPMED 210A. Form and Funkiness of Lab Animals I: Anatomy and Histology. 3 Units.
Have you ever wondered what dermatitis looks like on a histology slide? Does wondering about what a pancreas really looks like keep you up at night? Wonder no more! This course focuses on the anatomy and histology of laboratory animal species, with a focus on the laboratory mouse. Topics covered include: tissue dissection, tissue preparation for histology (collection, fixation, trimming and orientation), and identification of normal anatomy and histology through brightfield microscopy. This course involves dissection laboratories, and previous participation in the VSC Mouse Handling Workshop is recommended.

COMPMED 210B. Form and Funkiness of Lab Animals II: Introduction to Pathological Principles. 3 Units.
Have you ever ever wondered what dermatitis looks like on a histology slide? Have you ever lost sleep thinking about what an infarct really is? Well, it's your lucky quarter! This course focuses on the microscopic assessment of tissue pathology, with a focus on the laboratory mouse. Topics covered include: cell injury and cell death, inflammation, healing, and neoplasia. Common diseases of the laboratory house will also be covered. Prerequisites: COMPMED210A (Form and Funkiness of Laboratory Animals I: Anatomy and Histology).

COMPMED 211. Biostatistics for the Life Sciences. 2 Units.
Emphasis is on real-world experimental design and analysis in the life sciences, with particular focus on modern techniques that maximize power and minimize sample size, and avoiding common errors contributing to false discovery and the reproducibility crisis. This is a flipped-classroom. Class time is devoted to discussion of assigned reading (primarily Grafen & Hails 2002 "Modern statistics for the life sciences"), critique of papers, working through example data sets, and developing analyses for the students' own research data. The objective is to provide MLAS students with a fundamental understanding of basic statistics, particularly as applied to the design and planning of animal-based research projects.

COMPMED 260. Masters Laboratory Animal Science Practicum/ Laboratory Research. 1-18 Unit.
Research laboratory and clinical service (pathology, diagnostic laboratory, surgery, husbandry, anesthesiology, aquatics, facility business and management, etc.), quarterly rotations for students enrolled in the Master's of Laboratory Animal Science program. The objective of this course is to provide students with hands on experience in research laboratories using animal models and to provide experience working in the daily operations of a large, veterinary service center. Fulfills the practicum and research requirements of MLAS students.

COMPMED 290. Laboratory Animal Science Professional Development and Career Exploration. 1 Unit.
Focus is on career development for graduate students and trainees enrolled in a trainee program in the Department of Comparative Medicine. Seminar topics include career pathways in laboratory animal science, resume preparation, manuscript preparation and authorship, life in academics, life in industry and biopharma, regulatory agencies, veterinary and medical school. Speakers include faculty, speakers from industry and pharmaceutical companies, veterinary school and medical school graduates, regulatory and compliance professionals, research scientists, and animal research program/laboratory managers. Students may choose to shadow veterinary clinical faculty or rotate through basic science laboratory, by special arrangement. The objective is to introduce students to the multiple career pathways available to individuals with advanced training in laboratory animal science. May be taken up to six quarters.

COMPMED 299. Directed Reading in Comparative Medicine. 1-18 Unit.
Prerequisite: consent of instructor. (Staff).

COMPMED 370. Medical Scholars Research. 4-18 Units.
Provides an opportunity for student and faculty interaction, as well as academic credit and financial support, to medical students who undertake original research. Enrollment is limited to students with approved projects.

COMPMED 399. Graduate Research. 1-18 Unit.
Investigations sponsored by individual faculty members.Opportunities are available in comparative medicine and pathology, immuno-histochemistry, electron microscopy, molecular genetics, quantitative morphometry, neuroanatomy and neurophysiology of the hippocampus, pathogenesis of intestinal infections, immunopathology, biology of laboratory rodents, anesthesiology of laboratory animals, gene therapy of animal models of neurodegenerative diseases, and development and characterization of transgenic animal models. Prerequisite: consent of instructor.

COMPMED 801. TGR Project. 0 Units.
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DEVELOPMENTAL BIOLOGY

Courses offered by the Department of Development Biology are listed under the subject code DBIO on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=DBIO&filter-catalognumber-DBIO=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=DBIO&filter-catalognumber-DBIO=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=DBIO&filter-catalognumber-DBIO=on).

A fundamental problem in biology is how the complex set of multicellular structures that characterize an adult animal is generated from the fertilized egg. Recent advances at the molecular level, particularly with respect to the genetic control of development, have been explosive. These advances represent the beginning of a major movement in the biological sciences toward the understanding of the molecular mechanisms underlying developmental decisions and the resulting morphogenetic processes. This new thrust in developmental biology derives from the extraordinary methodological advances of the past decade in molecular genetics, immunology, and biochemistry. However, it also derives from groundwork laid by the classical developmental studies, the rapid advances in cell biology and animal virology, and from models borrowed from prokaryotic systems. Increasingly, the work is directly related to human diseases, including oncogene function and inherited genetic disease.

The Department of Developmental Biology includes a critical mass of scientists who are leading the thrust in developmental biology and who can train new leaders in the attack on the fundamental problems of development. Department labs work on a wide variety of organisms from microbes to worms, flies, and mice. The dramatic evolutionary conservation of genes that regulate development makes the comparative approach of the research particularly effective. Scientists in the department labs have a very high level of interaction and collaboration. The discipline of developmental biology draws on biochemistry, cell biology, genetics, molecular biology, and genomics. People in the department have a major interest in regenerative medicine and stem cell biology.

The department is located in the Beckman Center for Molecular and Genetic Medicine within the Stanford University Medical Center.

Master of Science in Developmental Biology

University requirements for the M.S. are described in the "Graduate Degrees (p. 65)" section of this bulletin.

Students in the Ph.D. program in Developmental Biology may apply for an M.S. degree, assuming completion of their course requirements and preparation of a written proposal. The master's degree awarded by the Department of Developmental Biology does not include the possibility of minors for graduate students enrolled in other departments or programs.

Students are required to take, and satisfactorily complete, at least three lecture courses offered by the department, including DBIO 210 Developmental Biology. In addition, students are required to take three courses outside the department. Students are also expected to attend Developmental Biology seminars and journal clubs. In addition, the candidate must complete a research paper proposing a specific experimental approach and background in an area of science relative to developmental biology.

Doctor of Philosophy in Developmental Biology

University requirements for the Ph.D. are described in the "Graduate Degrees (p. 65)" section of this bulletin.

The graduate program in Developmental Biology leads to the Ph.D. degree. The department also participates in the Medical Scientists Training Program (MSTP (http://mstp.stanford.edu/)) in which individuals are candidates for both the M.D. and Ph.D. degrees.

		Units
Students are required to complete at least five courses, including:		
DBIO 210	Developmental Biology	4
DBIO 215	Frontiers in Biological Research (1 unit per quarter; students are required to take at least two quarters)	2
An advanced graduate course in genetics or genomics;		
An advanced graduate course in cell biology or biochemistry;		
A course in quantitative or computational biology.		

Students are expected to attend Developmental Biology seminars and journal clubs.

Completion of a qualifying examination is required for admission to Ph.D. candidacy. The examination consists an off-topic proposal on a subject different from the dissertation research. The final requirements of the program include presentation of a PhD dissertation as the result of independent investigation and constituting a contribution to knowledge in the area of developmental biology. The student must pass the University oral examination, taken only after the student has substantially completed research. The examination is preceded by a public seminar in which the research is presented by the candidate. The oral examination is conducted by a dissertation reading committee.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

The department is in the process of making decisions concerning COVID-19 policies and will update this tab when those decisions have been made.

Graduate Degree Requirements

Grading

The Department of Developmental Biology counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B-' or better level.

Graduate Advising Expectations

The Department of Developmental Biology is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the advisor and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity.

Faculty advisors guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Emeriti: (Professors) Stuart Kim, Harley McAdams, Ellen Porzig

Chair: Anne Villeneuve

Associate Chair: David Kingsley

Professors: Philip Beachy, Gill Bejerano, Gerald Crabtree, James Chen, Margaret Fuller, Seung Kim, David Kingsley, Roeland Nusse, Lucy Shapiro, William Talbot, Anne Villeneuve, Irving Weissman, Joanna Wysocka

Assistant Professors: Alistair Boettiger, Daniel Jarosz, Kyle Loh

Courses

DBIO 199. Undergraduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

DBIO 200. Genetics and Developmental Biology Training Camp. 1 Unit.
Open to first year Department of Genetics and Developmental Biology students, to others with consent of instructors. Introduction to basic manipulations, both experimental and conceptual, in genetics and developmental biology.
Same as: GENE 200

DBIO 201. Cells and Signaling in Regenerative Medicine. 2 Units.
Conserved molecular and cellular pathways regulate tissue and organ homeostasis. Errors in these pathways result in human diseases.nManipulation of key cells and signals is leading to new strategies for stimulating tissue formation and regeneration.nTopics: Stem cells. Molecules regulating stem cell proliferation and differentiation. Signaling pathways. Gene regulation. Embryonic stemncells. Programmed cell death. Cell lineage. Tissue regeneration. Use of stem cells in transplantation. Organoids. Emphasis on links between stem cells, signals, and clinically significant topics including diabetes, bone loss, cancer, and aging.

DBIO 210. Developmental Biology. 4 Units.
Current areas of research in developmental biology. How organismic complexity is generated during embryonic and post-embryonic development. The roles of genetic networks, gene regulation ,organogenesis, tissue patterning, cell lineage, maternal inheritance, cell-cell communication, signaling, and regeneration in developmental processes in well- studied organisms such as vertebrates, insects, and nematodes. Team-taught. Students meet with faculty to discuss current papers from the literature. Prerequisite: graduate standing, consent of instructor. Recommended: familiarity with basic techniques and experimental rationales of molecular biology, biochemistry, and genetics.

DBIO 211. Biophysics of Multi-cellular Systems and Amorphous Computing. 2-3 Units.
Provides an interdisciplinary perspective on the design, emergent behavior, and functionality of multi-cellular biological systems such as embryos, biofilms, and artificial tissues and their conceptual relationship to amorphous computers. Students discuss relevant literature and introduced to and apply pertinent mathematical and biophysical modeling approaches to various aspect multi-cellular systems, furthermore carry out real biology experiments over the web. Specific topics include: (Morphogen) gradients; reaction-diffusion systems (Turing patterns); visco-elastic aspects and forces in tissues; morphogenesis; coordinated gene expression, genetic oscillators and synchrony; genetic networks; self-organization, noise, robustness, and evolvability; game theory; emergent behavior; criticality; symmetries; scaling; fractals; agent based modeling. The course is geared towards a broadly interested graduate and advanced undergraduates audience such as from bio / applied physics, computer science, developmental and systems biology, and bio / tissue / mechanical / electrical engineering. Prerequisites: Previous knowledge in one programming language - ideally Matlab - is recommended; undergraduate students benefit from BIOE 42, or equivalent.
Same as: BIOE 211, BIOE 311, BIOPHYS 311

DBIO 215. Frontiers in Biological Research. 1 Unit.
Students analyze cutting edge science, develop a logical framework for evaluating evidence and models, and enhance their ability to design original research through exposure to experimental tools and strategies. The class runs in parallel with the Frontiers in Biological Research seminar series. Students and faculty meet on the Tuesday preceding each seminar to discuss a landmark paper in the speaker's field of research. Following the Wednesday seminar, students meet briefly with the speaker for a free-range discussion which can include insights into the speakers' paths into science and how they pick scientific problems.
Same as: BIOC 215, GENE 215

DBIO 219. Special Topics in Development and Cancer: Evolutionary and Quantitative Perspectives. 3 Units.
The course will serve as a literature-based introductory guide for synthesis of ideas in developmental biology and cancer, with an emphasis on evolutionary analysis and quantitative thinking. The goal for this course is for students to understand how we know what we know about fundamental questions in the field of developmental biology and cancer, and how we ask good questions for the future. We will discuss how studying model organisms has provided the critical breakthroughs that have helped us understand developmental and disease mechanisms in higher organisms. The students are expected to be able to read the primary literature and think critically about experiments to understand what is actually known and what questions still remain unanswered. Students will develop skills in the educated guesswork to apply order-of-magnitude methodology to questions in development and cancer.
Same as: BIOE 219

DBIO 220. Genomics and Personalized Medicine. 3 Units.
Principles of genetics underlying associations between genetic variants and disease susceptibility and drug response. Topics include: genetic and environmental risk factors for complex genetic disorders; design and interpretation of genome-wide association studies; pharmacogenetics; full genome sequencing for disease gene discovery; population structure and genetic ancestry; use of personal genetic information in clinical medicine; ethical, legal, and social issues with personal genetic testing. Hands-on workshop making use of personal or publicly available genetic data. Prerequisite: GENE 202, Gene 205 or BIOS 200.
Same as: GENE 210

DBIO 234. Elements of Grant Writing. 1 Unit.
Focus is on training first year graduate students in proposal writing. In an intensive 4-week period, students learn fundamental skills focused on scientific proposal writing, including writing and criticizing a proposal on the scientific topic of their choice. Students encouraged to use these new skills and the proposal they create to apply for external funding to support their research training. Students in the Genetics home program may enroll in this course with prior approval from the course director.

DBIO 273A. The Human Genome Source Code. 3 Units.
A computational primer to "hacking" the most amazing operating system "disk" on the planet: your genome. Handling genomic data is deceptively easy. But that's muscle. You want to be the brain, too. Topics include genome sequencing (assembling source code from code fragments); the human genome functional landscape: variable assignments (genes), control-flow logic (gene regulation) and run-time stack (epigenomics); human disease and personalized genomics (as a hunt for bugs in the human code); genome editing (code injection) to cure the incurable; and the source code modifications behind amazing animal adaptations. The course will introduce ideas from computational genomics, machine learning and natural language processing. Course includes primers on molecular biology, and text processing languages. Prerequisites: CS106A or equivalent. No biological background assumed.
Same as: BIOMEDIN 273A, CS 273A

DBIO 299. Directed Reading in Developmental Biology. 1-18 Unit.
Prerequisite: consent of instructor.

DBIO 299C. CURRICULAR PRACTICAL TRAINING. 1 Unit.
CPT Course required for international students completing degree requirements.

DBIO 370. Medical Scholars Research. 4-18 Units.
Provides an opportunity for student and faculty interaction, as well as academic credit and financial support, to medical students who undertake original research. Enrollment is limited to students with approved projects.

DBIO 399. Graduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

DBIO 802. TGR Dissertation. 0 Units.
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EPIDEMIOLOGY AND POPULATION HEALTH

Effective October 1, 2019, Epidemiology moved from the Department of Health Research and Policy to become an independent department in the School of Medicine, the new Department of Epidemiology and Population Health.

Epidemiology is the study of factors that cause illness and impairment in human populations. It is the cornerstone of population health and clinical research, informing policy, prevention, disease treatment, and understanding of disease mechanisms. A central focus of epidemiology is to go beyond simple prediction to identifying risk factors likely to be causal, upon which interventions and mechanistic understanding can be reliably based.

The Department of Epidemiology and Population Health (E&PH) is Stanford's academic and organizational home for such activities, offering expertise, research, and training on study design, data collection, analysis and proper interpretation of scientific evidence to improve human health in the clinic and in the field.

Master of Science in Epidemiology and Clinical Research

University requirements for the M.S. degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

The Graduate Program in Epidemiology offers instruction and interdisciplinary research opportunities leading to the M.S. degree in Epidemiology and Clinical Research. Epidemiology is the study of the distribution and determinants of illness and impairment in human populations. Epidemiologic methods are used by clinical investigators and by other scientists who conduct observational and experimental research on the identification, prevention, and treatment of human disorders.

Core and affiliated faculty come from the Department of Epidemiology & Population Health and from other Stanford University departments. The program has particular strengths in cancer epidemiology, cardiovascular disease epidemiology, epidemiologic methods, genetic epidemiology, global health, infectious disease epidemiology, musculoskeletal disease epidemiology, neuroepidemiology, and reproductive epidemiology and women's health. Students can select an optional concentration in global health or infectious diseases.

The mission of the Stanford University School of Medicine is to be a premier research-intensive medical school that improves health through leadership, diversity, and collaborative discoveries and innovation in patient care, education and research. The Graduate Program in Epidemiology fosters this mission through the training of physician investigators in techniques of clinical research. The department also welcomes students from other disciplines who would benefit from formal training in epidemiologic methods. The master's degree in Epidemiology and Clinical Research provides students with the skills essential to patient-oriented clinical research, including epidemiologic methods and statistical analysis.

Address inquiries to the Education Program Manager at epiadmissions@stanford.edu.

Admissions

See the Department of Epidemiology & Population Health web (http://med.stanford.edu/epidemiology-dept/education.html)site (http://med.stanford.edu/epidemiology-dept/education.html) for additional information regarding the program and admissions process. GRE is required (optional in 20-21 application cycle, yet still encouraged).

Submit your application through the Stanford Graduate Admissions website (https://gradadmissions.stanford.edu/applying/) by clicking on "Apply Now."

Successful applicants for admission are expected to have a strong academic record, high Graduate Record Examination (GRE) scores obtained within the past five years, strong letters of recommendation, and an appropriate personal statement of purpose. Preference is accorded to applicants with research interests aligned with those of faculty available to serve as research mentors.

Required supporting documents (to be submitted in the Stanford Graduate Admissions Application):

- Statement of Purpose that includes area(s) of interest
- Three letters of recommendation
- Official GRE General Test scores
- Official TOEFL scores (if applicable)
- Unofficial transcripts for all college/university degrees
- CV with relevant work and research experience

Application deadline: Tuesday, March 30, 2021.

Mentors

Students are assigned a methodology mentor from the Department of Epidemiology & Population Health and they also select a research mentor, who may be from another department. For physicians, the research mentor is often a faculty member from the department of the student's clinical specialty.

Coterminal Master's Program

For undergraduates at Stanford University, the program offers a coterminal M.S. in Epidemiology and Clinical Research. Coterminal students have the opportunity to pursue epidemiological research at the intersection of public health, disease treatment, and disease prevention. See the "Coterminal Master's" (p. 2415) tab in this section of this bulletin for admission and program details.

Degree Requirements

To receive the M.S. degree, students are expected to obtain a grounding in epidemiologic methods and applied biostatistics and to demonstrate research skills through the completion of a thesis. The master's degree program is typically completed in two years (four to six quarters).

Students must complete at least 45 units of approved course work as well as a master's thesis, which is usually based on original research related to clinical epidemiology.

Required Courses

		Units
Epidemiologic Methods		
EPI 225	Introduction to Epidemiologic and Clinical Research Methods	3
EPI 226	Intermediate Epidemiologic and Clinical Research Methods	3
EPI 251	Design and Conduct of Clinical Trials	3
Biostatistics		
EPI 259	Introduction to Probability and Statistics for Epidemiology	3
EPI 261	Intermediate Biostatistics: Analysis of Discrete Data	3

EPI 262	Intermediate Biostatistics: Regression, Prediction, Survival Analysis	3
Research Seminar (3 quarters)		
EPI 236	Epidemiology Research Seminar	1
Research (12 units, over at least 2 quarters)		
EPI 399	Graduate Research	1-18
Research Conduct		
MED 255	The Responsible Conduct of Research	1
or MED 255C	The Responsible Conduct of Research for Clinical and Community Researchers	
Electives		
Other approved selective and elective courses to complete the program total of at least 45 units		
Total Units		**45**

Pre-approved Electives

Any graduate level HRP course with primary focus on epidemiology or health services content or methods can be taken as an elective if approved by the student's epidemiology adviser.

EPI 251 is recommended but not required for coterminal students and students in designated tracks.

		Units
EPI 206	Meta-research: Appraising Research Findings, Bias, and Meta-analysis	3
EPI 214	Scientific Writing	2-3
EPI 216	Analytical and Practical Issues in the Conduct of Clinical and Epidemiologic Research	2-3
HRP 218	Methods for Health Care Delivery Innovation, Implementation and Evaluation	2
EPI 219	Evaluating Technologies for Diagnosis, Prediction and Screening	3
EPI 223	Introduction to Data Management and Analysis in SAS	2
EPI 224	Genetic Epidemiology	3
EPI 227	Advanced Epidemiologic Methods	3
EPI 231	Epidemiology of Infectious Diseases	3
EPI 235	Designing Research-Based Interventions to Solve Global Health Problems	3-4
EPI 237	Practical Approaches to Global Health Research	1-3
EPI 238	Genes and Environment in Disease Causation: Implications for Medicine and Public Health	2-3
EPI 239	Applications of Causal Inference Methods	2
EPI 244	Developing Measurement Tools for Health Research	2
EPI 247	Epidemic Intelligence: How to Identify, Investigate and Interrupt Outbreaks of Disease	4
HRP 249	Topics in Health Economics I	3-5
HRP 252	Outcomes Analysis	4
EPI 253	Cancer Epidemiology and Prevention	3
HRP 256	Economics of Health and Medical Care	5
HRP 263	Advanced Decision Science Methods and Modeling in Health	3
EPI 264	Foundations of Statistical and Scientific Inference	1
EPI 265	Advanced Methods for Meta-Analysis	2
EPI 267	Life Course Epidemiology	2
EPI 272	The Science of Community Engagement in Health Research	3
EPI 292	Advanced Statistical Methods for Observational Studies	2-3
EPI 263	Social Epidemiology	2
HRP 391	Health Law: Finance and Insurance	3
HRP 392	Analysis of Costs, Risks, and Benefits of Health Care	4

Coterminal Master of Science in Epidemiology and Clinical Research

The coterminal master's degree is available only to current Stanford undergraduates. The M.S. entails a minimum of 45 units of course work but can require more depending upon the courses chosen and the previous training of the student; a minimum of 12 units must be applied towards the master's thesis.

Coterminal students are enrolled full-time and courses are taken on campus. Graduates of this program are prepared to contribute creatively to basic or applied projects in epidemiology and clinical research. The department anticipates that many go on to Ph.D. programs, M.D. degrees, or to pursue careers in public health, pharma or biotech.

Coterms may choose to obtain their bachelor's degree early after completion of requirements. However, all classes after conferral of the degree may only be counted towards the graduate degree. Part of the strategy that allows coterms maximal flexibility in their course of study is their dual status as both undergraduate and graduate student.

Coterminal students must have at least one quarter of overlap in the undergraduate and graduate career prior to conferring their undergraduate degree. See the "Coterminal Degrees (p. 56)" section of this bulletin for additional details. See also the Registrar's coterminal degrees (https://registrar.stanford.edu/students/coterminal-degree-programs/) pages.

Admission

For additional information on the application process, see the department's coterminal page (http://med.stanford.edu/epidemiology/co-term.html). Address inquiries to the Education Program Manager at epiadmissions@stanford.edu. GRE scores are recommended but not required for coterm applications.

Before applying to the M.S. Epidemiology and Clinical Research coterm program, students should discuss with their advisor and review the Stanford coterm information at the following links:

- Stanford bulletin coterm page (http://exploredegrees.stanford.edu/cotermdegrees/)
- Stanford Registrar coterm page (https://studentaffairs.stanford.edu/registrar/students/coterm/)
- Stanford Undergraduate Advising page for coterms (https://undergrad.stanford.edu/advising/coterm/). There is an option of scheduling a meeting with the Stanford Coterminal Student Advisor from this page.

The application process for coterms is online through Stanford Graduate Admissions (https://www.applyweb.com/stanterm/).

The application must include the following items:

- *Statement of Purpose.* In a maximum two pages, describe the reasons for applying to the M.S. Epidemiology and Clinical Research program and include your areas of interest.

- *Transcript.* Official Stanford transcript is requested and submitted through the online application.
- *Letters of Recommendation:* Three letters of recommendation are required in the application. Two letters should be from your current department faculty or E&PH faculty and one from your academic advisor.
- *CV/Resume:* Include a copy of your resume in your application.
- *GRE Scores:* GRE scores are recommended but not required for coterm applications (but may be requested by the admissions committee for students who have relatively little prior coursework in quantitative courses). For those reporting GRE scores, official test scores must be reported directly to Stanford from Educational Testing Service (ETS). Stanford's ETS institutional code is 4704; an individual department code number is not necessary. Be sure to list Stanford University as a Score Recipient in addition to listing it as your Graduate Institution (GI).

Application Deadline

The M.S. Epidemiology and Clinical Research program only matriculates students into Autumn Quarter. **The deadline to apply for the coterm program is February 2, 2021.**

University Coterminal Requirements

Coterminal master's degree candidates are expected to complete all master's degree requirements as described in this bulletin. University requirements for the coterminal master's degree are described in the "Coterminal Master's Program (p. 56)" section. University requirements for the master's degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

After accepting admission to this coterminal master's degree program, students may request transfer of courses from the undergraduate to the graduate career to satisfy requirements for the master's degree. Transfer of courses to the graduate career requires review and approval of both the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter of the sophomore year are eligible for consideration for transfer to the graduate career; the timing of the first graduate quarter is not a factor. No courses taken prior to the first quarter of the sophomore year may be used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been conferred.

The University requires that the graduate advisor be assigned in the student's first graduate quarter even though the undergraduate career may still be open. The University also requires that the Master's Degree Program Proposal be completed by the student and approved by the department by the end of the student's first graduate quarter.

Funding Sources

Access to financial aid and other options for coterminal students depends on the number of units and quarters as a registered student at Stanford. Coterminal students have full access to undergraduate sources of financial aid until their twelfth quarter or four years of study. Coterminal students who have completed 180 units are eligible for University fellowships and assistantships. However, many federal and private fellowships and assistantships are awarded only to students who have received the bachelor's degree. Even after the conferral of the bachelor's degree, there is no guarantee that a coterminal student be awarded financial support via a RA-ship, TA-ship, or fellowship.

Degree Requirements

The coterminal Master of Science program follows the same program requirements as the Master of Science (academic), except that the student is not required to take the course in Clinical Trials. Students who desire to concentrate in a specific area can participate in one of the track areas (Infectious Diseases or Global Health), although this is not required. To pursue a research project, the student must make arrangements with program faculty.

See the "Master's (p. 2414)" tab in this section of this bulletin for degree requirements.

Ph.D. in Epidemiology and Clinical Research

University requirements for the Ph.D. are described in the "Graduate Degrees (p. 65)" section of this bulletin.

The field of epidemiology is poised to undergo major changes, and this Ph.D. program offers a cutting-edge curriculum that reflects this shift. Driven by technological advancements, the availability of very large datasets, and the omics revolution, epidemiology is moving toward what some have called Big Epidemiology, where epidemiologists partner with other scientists to study vast amounts of data. Thus, this program will train epidemiologists and clinical researchers to be savvy in technology, computing, data mining, bioinformatics, and genomics. The curriculum capitalizes on Stanford's unique strengths in these disciplines.

Admission

See the department's website (http://med.stanford.edu/epidemiology-dept/education.html) for additional information on the admissions process. Address inquiries to the Education Program Manager at epiadmissions@stanford.edu.

Application deadline: Tuesday, December 8, 2020. This is the final deadline. All applications must be submitted and all reference letters must be received by 11:59 pm on December 8, 2020.

Submit your application through the Stanford Graduate Admissions website (https://gradadmissions.stanford.edu) by clicking on "Apply Now."

Applications are evaluated based on the applicant's commitment to and aptitude for a career in epidemiology as demonstrated via transcripts, statement of purpose, relevant work and research experience, and letters of recommendation. The Graduate Record Examination (GRE) is required (optional in the 2020-2021 application cycle). Applicants from non-English speaking countries should provide evidence of competence in English on the Test of English as a Foreign Language (TOEFL). (For additional information on Stanford University requirements regarding TOEFL, visit the Stanford Graduate Admissions website page related to tests (https://gradadmissions.stanford.edu/applying/starting-your-application/required-exams/).

Required Supporting Documents (to be submitted in the Stanford Graduate Admissions Application)

- Statement of Purpose that includes area(s) of interest
- Three letters of recommendation
- Official GRE General Test scores
- Official TOEFL scores (if applicable)
- Unofficial transcripts for all college/university degrees
- CV with relevant work and research experience

The GRE is required, yet optional for the 20-21 admissions cycle.

Advising

Academic advising by department faculty is a critical component of graduate students' education.

All matriculating students are assigned a faculty adviser from the group of core faculty to help them design their academic program.

The program adheres to the advising guidelines and responsibilities listed by the Office of the Vice Provost for Graduate Education (https://vpge.stanford.edu/academic-guidance/advising-mentoring/) and in the Graduate Academic Policies and Procedures (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/page-3-3-1/) manual.

See the "Graduate Advising (p. 2418)" tab of this section of this bulletin for additional information on advising expectations for student and faculty.

After matriculating, students meet with their academic advisers to plan out an individually tailored curriculum. Students who matriculate with prior training in epidemiology and statistics may replace introductory core courses with more advanced courses, subject to approval. Beyond core course requirements, students select electives that delve deeper into a particular area of specialization of their choosing. Innovative online learning approaches will help meet the needs of physician-students, who will also be busy with clinical duties.

Degree Requirements

Students take core courses in epidemiology and biostatistics. Ph.D. students must complete a minimum of 135 units (as per University requirements), including 45 course units exclusive of EPI 236 Epidemiology Research Seminar, EPI 299 Directed Reading in Epidemiology, and EPI 399 Graduate Research.

		Units
Epidemiologic methods sequence (required)		
EPI 225	Introduction to Epidemiologic and Clinical Research Methods	3
EPI 226	Intermediate Epidemiologic and Clinical Research Methods	3
EPI 227	Advanced Epidemiologic Methods	3
EPI 264	Foundations of Statistical and Scientific Inference	1
Biostatistics sequence (required)		
EPI 259	Introduction to Probability and Statistics for Epidemiology	3
EPI 261	Intermediate Biostatistics: Analysis of Discrete Data	3
EPI 262	Intermediate Biostatistics: Regression, Prediction, Survival Analysis	3
Additional Methodologic coursework (must take at least 3 courses totaling at least 9 units)		
Any 200-level STATS course (other than STATS 260)		
STATS 116	Theory of Probability	
EPI 216	Analytical and Practical Issues in the Conduct of Clinical and Epidemiologic Research	2-3
HRP 252	Outcomes Analysis	
HRP 392	Analysis of Costs, Risks, and Benefits of Health Care	
EPI 206	Meta-research: Appraising Research Findings, Bias, and Meta-analysis	3
CS 229	Machine Learning	3-4
COMM 382	Big Data and Causal Inference	
BIOMEDIN 215	Data Science for Medicine	
CS 246	Mining Massive Data Sets	
STATS 202	Data Mining and Analysis	
CS 106A	Programming Methodology	3-5
BIOMEDIN 217/ CS 275	Translational Bioinformatics	
GENE 224	Principles of Pharmacogenomics	
BIOMEDIN/DBIO/ CS 273A	The Human Genome Source Code	
GENE 210/ DBIO 220	Genomics and Personalized Medicine	
Electives coursework: Infectious Disease Epidemiology/ Global Health/Genetics/Social and Behavioral Epidemiology/ Community-based Research/Cancer Epidemiology/Clinical Trials		
Take at least one course in 3 distinct areas, for a total of at least 9 units.		3-4
EPI 206	Meta-research: Appraising Research Findings, Bias, and Meta-analysis	3
EPI 219	Evaluating Technologies for Diagnosis, Prediction and Screening	3
EPI 224	Genetic Epidemiology	3
EPI 231	Epidemiology of Infectious Diseases	3
EPI 235	Designing Research-Based Interventions to Solve Global Health Problems	3-4
EPI 237	Practical Approaches to Global Health Research	1-3
EPI 247	Epidemic Intelligence: How to Identify, Investigate and Interrupt Outbreaks of Disease	4
EPI 251	Design and Conduct of Clinical Trials	3
EPI 253	Cancer Epidemiology and Prevention	3
EPI 263	Social Epidemiology	2
EPI 267	Life Course Epidemiology	2
EPI 270	Big Data Methods for Behavioral, Social, and Population Health Research	2-3
EPI 272	The Science of Community Engagement in Health Research	3
BIO 247	Genomic approaches to the study of human disease	3
CHPR 247	Methods in Community Assessment, Evaluation, and Research	3
HRP 204	Models for Understanding and Controlling Global Infectious Diseases	3-4
HRP 263	Advanced Decision Science Methods and Modeling in Health	3
Other core courses/requirements (details in PhD handbook)		
MED 255	The Responsible Conduct of Research	1
EPI 236	Epidemiology Research Seminar	1
EPI 399	Graduate Research	1-18
Electives		
Total Units Required		**135**

Students should take EPI 236 Epidemiology Research Seminar at least 3 quarters (3 units).

Additional Requirements

See the department's website (https://med.stanford.edu/epidemiology-dept/education/graduate-programs/phd-ecr2/phd-requirements.html) and PhD Epidemiology & Clinical Research Handbook for additional requirements and sample programs.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine

M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

The Department of Epidemiology & Population Health counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade.

Graduate Advising Expectations

The Department of Epidemiology & Population Health is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

E&PH programs adhere to the advising guidelines and responsibilities listed by the Office of the Vice Provost for Graduate Education (https://vpge.stanford.edu/academic-guidance/advising-mentoring/) and in the Graduate Academic Policies and Procedures (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/page-3-3-1/) manual.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Department Chair: Melissa Bondy

Director: Steven Goodman

Core Faculty and Academic Teaching Staff:

Michael Baiocchi, Melissa Bondy, Mark Cullen, Lisa Goldman Rosas, Steven Goodman, Victor Henderson, Ann Hsing, John Ioannidis, Esther John, Abby King, Allison Kurian, Yvonne Maldonado, Lorene Nelson, Michelle Odden, Lesley Park, Julie Parsonnet, Rita Popat, Patricia Rodriguez Espinosa, Kristin Sainani, Julia Simard

Affiliated Faculty by Department:

- Biomedical Data Science: Ying Lu
- Dermatology: Eleni Linos
- Medicine: Jason Andrews, Themistocles Assimes, Glenn Chertow, Jennifer Lee, Stephen Luby, Latha Palaniappan, David Rehkopf, Thomas Robinson, Marcia Stefanick, Holly Tabor
- Pediatrics: Suzan Carmichael, Bonnie Halpern-Felsher, Paul Fisher, Angelle (Desiree) LaBeaud, Mary Leonard, David Maahs, Lee Sanders, Gary Shaw

Courses

EPI 199. Undergraduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

EPI 202. R Fundamentals for Health Research. 1-2 Unit.
This introductory course is a practicum in which students will learn the basics of R and use the programming language to analyze health datasets by application of classical statistical methods. A familiarity with basic descriptive and inferential statistics is required. It is assumed that students will have no (or very little) prior experience with R. Class sessions will include some lecture content and hands-on coding by each student on their own computers. Students will practice using R with open-source and simulated datasets. The primary goal of the course is to equip students with a basic and fundamental understanding of R's capabilities, experience using R with practice datasets, and the ability to extend their facility with R as their needs dictate. Students enrolled for 2 units will have additional weekly practice problems assigned. Priority for enrollment given to CHPR masters students, who must take the course for a letter grade.
Same as: CHPR 202

EPI 206. Meta-research: Appraising Research Findings, Bias, and Meta-analysis. 3 Units.
Open to graduate, medical, and undergraduate students. Appraisal of the quality and credibility of research findings; evaluation of sources of bias. Meta-analysis as a quantitative (statistical) method for combining results of independent studies. Examples from medicine, epidemiology, genomics, ecology, social/behavioral sciences, education. Collaborative analyses. Project involving generation of a meta-research project or reworking and evaluation of an existing published meta-analysis. Prerequisite: knowledge of basic statistics.
Same as: CHPR 206, MED 206, STATS 211

EPI 214. Scientific Writing. 2-3 Units.
(Formerly HRP 214) Step-by-step through the process of writing and publishing a scientific manuscript. How to write effectively, concisely, and clearly in preparation of an actual scientific manuscript. Students are encouraged to bring a manuscript on which they are currently working to develop and polish throughout the course. Please note 3-units students will additionally write and revise a manuscript.

EPI 216. Analytical and Practical Issues in the Conduct of Clinical and Epidemiologic Research. 2-3 Units.
(Formerly HRP 216) Topics include: advanced aspects of study design and data analyses; evaluating confounding and interaction; modeling continuous characteristics of exposure; building prediction models; methods of summarizing literature and quantifying effect sizes (meta-analysis); handling missing data; and propensity score methods. 3 units requires a data analysis project. Prerequisites: 258 or 261, or consent of instructor.

EPI 219. Evaluating Technologies for Diagnosis, Prediction and Screening. 3 Units.
(Formerly HRP 219) New technologies designed to monitor and improve health outcomes are constantly emerging, but most fail in the clinic and in the marketplace because relatively few are supported by reliable, reproducible evidence that they produce a health benefit. This course covers the designs and methods that should be used to evaluate technologies to diagnose patients, predict prognosis or other health events, or screen for disease. These technologies can include devices, statistical prediction rules, biomarkers, gene panels, algorithms, imaging, or any information used to predict a future or a previously unknown health state. Specific topics to be covered include the phases of test development, how to frame a proper evaluation question, measures of test accuracy, Bayes theorem, internal and external validation, prediction evaluation criteria, decision analysis, net-utility, ROC curves, c-statistics, net reclassification index, decision curves and reporting standards. Examples of technology assessments and original methods papers are used. Knowledge of statistical software is not required, although facility with at least Excel for basic calculations is needed. Open to students with an understanding of introductory biostatistics, epidemiologic and clinical research study design. Undergraduates may enroll with consent of instructor.

EPI 223. Introduction to Data Management and Analysis in SAS. 2 Units.
(Formerly HRP 223) Provides hands-on introduction to basic data management and analysis techniques using SAS. Data management topics include: Introduction to SAS and SAS syntax, importing data, creating and reading SAS datasets, data cleaning and validation, creating new variables, and combining data sets. Analysis techniques include: basic descriptive statistics (e.g., means, frequency) and bivariate procedures for continuous and categorical variables (e.g., t-tests, chi-squares).

EPI 224. Genetic Epidemiology. 3 Units.
This course presents fundamental concepts and methods in genetic epidemiology, with examples on genetic studies of chronic diseases, including cancer, cardiovascular disease, metabolic conditions, and autoimmune diseases. It will provide an overview of various study designs, including family studies, and it covers fundamental analyses, inferences, and their strengths and limitations. It will include topics such as assessing genetic influences on disease; advances in genomics technology; family based study designs for linkage, exome sequencing and case-parent trios; candidate gene and genome-wide association studies of both common and rare genetic variants; gene-environment interactions, epistasis and non-Mendelian genetics; software and web-based data resources; ethical issues in genetic epidemiology; and applications of genetic epidemiology to clinical practice and public health. Guest speakers will discuss these concepts through the lens of various chronic diseases. Prerequisite: introductory biostatistics or epidemiology, biology, and genetics. Biostatistics (intro) or epidemiology (intro), biology, genetics (intro).
Same as: GENE 230

EPI 225. Introduction to Epidemiologic and Clinical Research Methods. 3 Units.
(Formerly HRP 225) The skills to design, carry out, and interpret epidemiologic studies, particularly of chronic diseases. Topics: epidemiologic concepts, sources of data, cohort studies, case-control studies, cross-sectional studies, sampling, measures of association, estimating sample size, and sources of bias. Prerequisite: A basic/introductory course in statistics or consent of instructor.

EPI 226. Intermediate Epidemiologic and Clinical Research Methods. 3 Units.
(Formerly HRP 226) The principles of study design, measurement, confounding, effect modification, and strategies for minimizing bias in clinical and epidemiologic studies. Prerequisite: 225 or consent of instructor.

EPI 227. Advanced Epidemiologic Methods. 3 Units.
(Formerly HRP 227) Theory and applied methods for causal inference in epidemiology. Focus on the potential outcomes model and related methods including inverse probability weights, G-computation, and targeted maximum likelihood estimation. Other contemporary topics may be included. Learning is facilitated through in-class discussion, critical review of peer-reviewed literature, and applied laboratories in R. Prerequisites: EPI 225, EPI 226, and EPI 261 or equivalent (or permission of instructor).

EPI 229. Stanford CTSA Scholars Seminar. 1 Unit.
Preference to trainees awarded Stanford internal KL2, TL1 grants. Focus is on students and junior faculty who have received a CTSA KL2 or TL1 Award. Discussions include progress and challenges involved in starting and conducting clinical research, current courses, time management and resources; support from peers; education and professional development. All scholars are required to attend a weekly seminar series meeting throughout the year that will cover an array of cross-cutting methodological topics with published examples of implementation. Prerequisite: Awarded a CTSA KL2, TL1 Grant or Spectrum UL1.

EPI 231. Epidemiology of Infectious Diseases. 3 Units.
(Formerly HRP 231) Principles of the transmission of the infectious agents (viruses, bacteria, rickettsiae, mycoplasma, fungi, and protozoan and helminth parasites). The role of vectors, reservoirs, and environmental factors. Pathogen and host characteristics that determine the spectrum of infection and disease. Endemicity, outbreaks, and epidemics of selected infectious diseases. Principles of control and surveillance.

EPI 235. Designing Research-Based Interventions to Solve Global Health Problems. 3-4 Units.
The excitement around social innovation and entrepreneurship has spawned numerous startups focused on tackling world problems, particularly in the fields of education and health. The best social ventures are launched with careful consideration paid to research, design, and efficacy. This course offers students insights into understanding how to effectively develop, evaluate, and scale social ventures. Using TeachAids (an award-winning nonprofit educational technology social venture used in 82 countries) as a primary case study, students will be given an in-depth look into how the entity was founded and scaled globally. Guest speakers will include world-class experts and entrepreneurs in Philanthropy, Medicine, Communications, Education, and Technology. Open to both undergraduate and graduate students.
Same as: AFRICAST 135, AFRICAST 235, EDUC 135, EDUC 335, HUMBIO 26, MED 235

EPI 236. Epidemiology Research Seminar. 1 Unit.
(Formerly HRP 236) Weekly forum for ongoing epidemiologic research by faculty, staff, guests, and students, emphasizing research issues relevant to disease causation, prevention, and treatment. May be repeated for credit.

EPI 237. Practical Approaches to Global Health Research. 1-3 Unit.
(Formerly IPS 290 and HRP 237) How do you come up with an idea for a useful research project in a low resource setting? How do you develop a research question, prepare a concept note, and get your project funded? How do you manage personnel in the field, complex cultural situations, and unexpected problems? How do you create a sampling strategy, select a study design, and ensure ethical conduct with human subjects? This course takes students through the process of health research in under-resourced countries from the development of the initial research question and literature review to securing support and detailed planning for field work. Students progressively develop and receive weekly feedback on a concept note to support a funding proposal addressing a research question of their choosing. Aimed at graduate students interested in global health research, though students of all disciplines interested in practical methods for research are welcome. Undergraduates who have completed 85 units or more may enroll with instructor consent. Sign up for 1 unit credit to participate in class sessions or 3 units to both participate in classes and develop a concept note.
Same as: INTLPOL 290, MED 226

EPI 238. Genes and Environment in Disease Causation: Implications for Medicine and Public Health. 2-3 Units.
(Formerly HRP 238) The historical, contemporary, and future research and practice among genetics, epidemiology, clinical medicine, and public health as a source of insight for medicine and public health. Genetic and environmental contributions to multifactorial diseases; multidisciplinary approach to enhancing detection and diagnosis. The impact of the Human Genome Project on analysis of cardiovascular and neurological diseases, and cancer. Ethical and social issues in the use of genetic information. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit. Prerequisites:Human Biology core or Biology Foundations or consent of instructor.
Same as: HUMBIO 159

EPI 239. Applications of Causal Inference Methods. 2 Units.
See http://rogosateaching.com/stat209/. Application of potential outcomes formulation for causal inference to research settings including: mediation, compliance adjustments, time-1 time-2 designs, encouragement designs, heterogeneous treatment effects, aggregated data, instrumental variables, analysis of covariance regression adjustments, and implementations of matching methods. Prerequisite: STATS 209A/MSE 327 or other introduction to causal inference methods. (Formerly HRP 239).
Same as: EDUC 260A, STATS 209B

EPI 244. Developing Measurement Tools for Health Research. 2 Units.
(Formerly HRP 244) The focus of this course is on providing the skills necessary to develop, validate and administer both qualitative and quantitative measures and instruments. Topics will include creating valid measures, ensuring the measures used address and apply to the research questions, design and samples; determining when to use standardized measures or develop new ones; instrument validation techniques; factor analysis; and survey administration, including determining the most effective way of administering measures (e.g., online, paper-and-pencil, ACASI) and the best way to design the survey.

EPI 245. Intensive Course in Clinical Research. 2 Units.
The Intensive Course in Clinical Research (ICCR) is a one-week immersion course designed for new or aspiring clinical investigators, medical students, residents, graduate students, fellows and junior faculty interested in pursuing careers in clinical and transnational research. Students spend five days and four evenings immersed in all aspects of research study design and performance. The format combined didactic with intense group/team activities focused on practical issues in clinical research design - from selection of a researchable study question through actual writing of a research proposal. Lectures and panel discussions are presented by an accomplished faculty of Stanford clinical researchers and key leaders from the Stanford community. Every presentation includes a discussion of relevant issues. The course is supported by over 40 faculty and fellows from across the School of Medicine.

EPI 247. Epidemic Intelligence: How to Identify, Investigate and Interrupt Outbreaks of Disease. 4 Units.
(HUMBIO students must enroll in HUMBIO 57. Med/Graduate students must enroll in EPI 247.) We will cover: the components of public health systems in the US; principles of outbreak investigation and disease surveillance; different types of study design for field investigation; visualization and interpretation of public health data, including identification and prevention of biases; and implementation of disease control by public health authorities. Students will meet with leaders of health departments of the state and the county and will be responsible for devising, testing and evaluating a field questionnaire to better understand the complexities of field research. (Formerly HRP 247).
Same as: HUMBIO 57

EPI 250. Understanding Evidence-Based Medicine: Hands-on experience. 3-4 Units.
How can one practice evidence-based medicine and make evidence-based decisions for clinical practice and policy making? Using pivotal papers published in the recent scientific literature addressing important clinical questions on diverse medical topics, we will probe a wide range of types of studies, types of targeted therapeutic or preventive interventions, and types of studied outcomes (effectiveness and/or safety), including RCTs, observational studies, epidemiologic surveillance studies, systematic reviews-umbrella reviews-meta-analyses-meta-analyses of individual patient data, studies on the evaluation of diagnostic tests and prognostic models, economic analyses studies, and guidelines. Students enrolled for 4 units will complete an additional project or other engagement approved by the instructor. MD studies enroll for +/-. GR students enroll for Letter grade.
Same as: CHPR 205, MED 250

EPI 251. Design and Conduct of Clinical Trials. 3 Units.
(Formerly HRP 251) The rationale for phases 1-3 clinical trials, the recruitment of subjects, techniques for randomization, data collection and endpoints, interim monitoring, and reporting of results. Emphasis is on the theoretical underpinnings of clinical research and the practical aspects of conducting clinical trials.

EPI 253. Cancer Epidemiology and Prevention. 3 Units.
(Formerly HRP 253) This course focuses on the role of epidemiology in cancer etiology, prevention, and control. We will discuss descriptive epidemiology, including cancer trends and patterns, natural history, and biologic characteristics as well as etiology of selected cancers. the influence of environmental and genetic factors and their interplay on the development of cancer are discussed as well as methodologic issues related to investigations of these studies. Principles and problems involved in cancer prevention and screening are covered. Student evaluation is based on a brief presentation and a paper on the descriptive epidemiology of a selected cancer, and participation in class discussions.

EPI 258. Introduction to Probability and Statistics for Clinical Research. 3 Units.
(Formerly HRP 258) Open to medical and graduate students; required of medical students in the Clinical Research Scholarly Concentration. Tools to evaluate medical literature. Topics include random variables, expectation, variance, probability distributions, the central limit theorem, sampling theory, hypothesis testing, confidence intervals, correlation, regression, analysis of variance, and survival analysis.

EPI 259. Introduction to Probability and Statistics for Epidemiology. 3 Units.
(HUMBIO students must enroll in HUMBIO 89X. Med/Graduate students must enroll in EPI 259.) Topics: random variables, expectation, variance, probability distributions, the central limit theorem, sampling theory, hypothesis testing, confidence intervals. Correlation, regression, analysis of variance, and nonparametric tests. Introduction to least squares and maximum likelihood estimation. Emphasis is on medical applications. (Formerly HRP 259).
Same as: HUMBIO 89X

EPI 261. Intermediate Biostatistics: Analysis of Discrete Data. 3 Units.
(Formerly HRP 261) Methods for analyzing data from case-control and cross-sectional studies: the 2x2 table, chi-square test, Fisher's exact test, odds ratios, Mantel-Haenzel methods, stratification, tests for matched data, logistic regression, conditional logistic regression. Emphasis is on data analysis in SAS or R. Special topics: cross-fold validation and bootstrap inference.
Same as: BIOMEDIN 233, STATS 261

EPI 262. Intermediate Biostatistics: Regression, Prediction, Survival Analysis. 3 Units.
(Formerly HRP 262) Methods for analyzing longitudinal data. Topics include Kaplan-Meier methods, Cox regression, hazard ratios, time-dependent variables, longitudinal data structures, profile plots, missing data, modeling change, MANOVA, repeated-measures ANOVA, GEE, and mixed models. Emphasis is on practical applications. Prerequisites: basic ANOVA and linear regression.
Same as: STATS 262

EPI 263. Social Epidemiology. 2 Units.
Preference to graduate students with prior coursework in Epidemiology. Focuses on understanding the theory and empirical evidence that shows support for the relationships between social environments and health. Covers four main topics: the historical development of social epidemiology, and a survey of the major theories in social epidemiology; the three main empirical approaches used to generate new knowledge in social epidemiology: traditional observational studies, quasi-experimental studies and experimental approaches; how the constructs of social class, race/ethnicity and gender are used in social epidemiology; new emerging empirical approaches within the field including the application of causal, machine learning and complex systems methods.

EPI 264. Foundations of Statistical and Scientific Inference. 1 Unit.
(Formerly HRP 264) The course will consist of readings and discussion of foundational papers and book sections in the domains of statistical and scientific inference. Topics to be covered include philosophy of science, interpretations of probability, Bayesian and frequentist approaches to statistical inference and current controversies about the proper use of p-values and research reproducibility. Recommended preparation: At least 2 quarters of biostatistics and one of epidemiology. Intended for second year Masters students or PhD students with at least 1 year of preceding graduate training.
Same as: STATS 264

EPI 265. Advanced Methods for Meta-Analysis. 2 Units.
(Formerly HRP 265) Meta-analysis is a method to quantitatively combine information from multiple studies; this combination is also called "research synthesis." Historically, it has been used to combine studies with a similar design, such as randomized controlled trials or observational studies examining similar interventions or exposures. However, evidence about a given relationship is often provided by many studies with different designs, or studies that can be "fit together" to create an evidence base. This can only be done with advanced meta-analytic methods. The course will cover advanced methods for research synthesis, including multivariate meta-analysis for multiple outcomes, generalized evidence synthesis of multiple study designs, and network meta-analysis for multiple interventions. These techniques are being increasingly used in evidence-based medicine, health technology assessments and policy making. Recommended preparation: EPI 206, and at least 2 quarters of biostatistics and one of epidemiology, including clinical research design. Familiarity with logistic and linear regression modeling required.

EPI 267. Life Course Epidemiology. 2 Units.
(Formerly HRP 267) The focus of this course is on understanding the evidence for how exposure at multiple levels and at multiple ages influences an individual's health at any given time. The course emphasizes the primary theories used to examine life course determinants of health and how these theories both facilitate and impede research. A secondary focus is on understanding the methodological challenges to studying health from a life course perspective, as well as how knowledge of life course determinants of health can inform interventions to improve health from a population perspective.

EPI 270. Big Data Methods for Behavioral, Social, and Population Health Research. 2-3 Units.
This course will expose students from a variety of quantitative backgrounds to study design and analysis strategies for addressing specific hypotheses using the varied sources of behavioral, social, and population health sciences research data, and the analytic tools available for analyzing these data. The purpose of this foundational course is to lay the groundwork to have a framework for conceptualizing experiments and observational studies that rely on big data in behavioral science and population health. Weekly course meetings will be organized into three section: (1) Core lecture/discussion: weekly lecture and/or discussion of general principles; (2) Module A (Tuesday): large and complex data from internet, commercial, administrative health record, population database sources; and (3) Module B (Thursday): intensive or voluminous longitudinal data from mHealth, smartphone, and sensor technologies. All students are required to enroll in the core course and at least 1 data type module (option to enroll in both). Lecture and core modules are one unit each so students should register appropriately for the units that match their schedule. Register for 2 units if core lecture and one discussion section module, register for 3 units if core lecture and both discussion section modules. Prerequisites: EPI 258/259 (or equivalent statistics course, please contact instructors for approval). Students must have some experience in statistical programming in SAS or R.

EPI 272. The Science of Community Engagement in Health Research. 3 Units.
The Science of Community Engagement in Health Research course will focus on how the science of community engagement can be applied to diverse health-related research topics across the translational spectrum with the ultimate goal of high quality research that transforms human health and addresses health disparities. The course will provide historical context, theoretical frameworks, foundational skills in diverse community engagement methodologies, and tools for examining the effectiveness of various engagement strategies aimed. Specifically, the course will cover: 1) Historical context for community engagement in health-related research; 2) Evolution of community engagement as a science; 3) Theoretical frameworks for various community engagement approaches; 4) Community-Based Participatory Research (CBPR); 5) Community engagement strategies for different stages of translational research; and 6) Evaluation of various engagement strategies; and 7) Ethics of community engagement. Students will gain practical experience in various community engagement tools and strategies to help guide the development of a community engagement plan responsive to community needs. Challenges and benefits of establishing community partnerships will be highlighted by real-world examples. nThe course will include lectures; interactive student-led presentations and guided exercises; class discussions among invited speakers, students and instructors; individual and group assignments; and organized small-group and experiential activities. Course readings will demonstrate the need and opportunity for interdisciplinary community engagement approaches and will illustrate how to conduct innovative community-engaged research. nThe Science of Community Engagement course is intended to reach students with diverse research interests, including clinical research, community health, health research and policy, epidemiology, prevention research, environmental health, etc.
Same as: CHPR 227

EPI 273. Essentials of Clinical Research at Stanford. 1 Unit.
The course will consist of an introduction to the fundamentals of clinical research at Stanford, including the science of clinical research (design and analysis) and logistics (GCP, data management, regulatory). Material will be covered in approximately 4-6 3 hour sessions per quarter.

EPI 275. Population Health Research. 3 Units.
This course provides hands-on experience for students wishing to undertake health-related research using registry data covering the population of Denmark. Students will be instructed in basic R-programming, which they will use to analyze anonmyized Danish data (prior experience with R not required). Students will become familiar with the Danish data and develop a detailed original research proposal on a health-related topic addressable within the Danish data. Most students should be able to complete their proposed research in independent studies after successful completion of this course. nPrerequisites: HRP 259 or comparable introductory course in statistics. Special permission from the instructor required without prerequisites.

EPI 291. Curricular Practical Training. 1-18 Unit.
Curricular Practical Training in HRP.

EPI 292. Advanced Statistical Methods for Observational Studies. 2-3 Units.
Design principles and statistical methods for observational studies. Topics include: matching methods, sensitivity analysis, and instrumental variables. 3 unit registration requires a small project and presentation. Computing is in R. Pre-requisites: EPI 261 and 262 or STATS 209 (EPI 239), or equivalent. See http://rogosateaching.com/somgen290/.
Same as: CHPR 266, EDUC 260B, STATS 266

EPI 299. Directed Reading in Epidemiology. 1-18 Unit.
Epidemiology, preventive medicine, medical genetics, public health, occupational or environmental medicine, international health, or related fields. May be repeated for credit. Prerequisite: consent of instructor.

EPI 370. Medical Scholars Research. 4-18 Units.
Provides an opportunity for student and faculty interaction, as well as academic credit and financial support, to medical students who undertake original research. Enrollment is limited to students with approved projects.

EPI 370W. Medical Scholars Research. 4-18 Units.
Provides academic credit and financial support to medical scholar students who undertake original research under the mentorship of faculty at other institutions. Pre-requisite: Approval of the Medical Student Scholarship Committee.
Same as: Away

EPI 399. Graduate Research. 1-18 Unit.
Investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

EPI 801. TGR Project. 0 Units.
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EPI 802. TGR Dissertation. 0 Units.
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GENETICS

Courses offered by the Department of Genetics are listed under the subject code GENE on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=GENE&filter-catalognumber-GENE=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=GENE&filter-catalognumber-GENE=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=GENE&filter-catalognumber-GENE=on).

An underlying theme in the department is that genetics is not merely a set of tools but a coherent and fruitful way of thinking about biology and medicine. To this end, the department emphasizes a spectrum of approaches based on molecules, organisms, populations, and genomes. It provides training through laboratory rotations, dissertation research, seminar series, didactic and interactive course work, and an annual three-day retreat of nearly 200 students, faculty, postdoctoral fellows, and research staff.

The mission of the department includes education and teaching as well as research; graduates from our program pursue careers in many different venues including research in academic or industrial settings, health care, health policy, and education. The department is especially committed to increasing diversity within the program, and to the training of individuals from traditionally underrepresented minority groups.

Master of Science in Human Genetics and Genetic Counseling

The University requirements for the M.S. are described in the "Graduate Degrees (http://www.stanford.edu/dept/registrar/bulletin/4901.htm)" section of this bulletin.

The Department of Genetics offers an M.S. in Human Genetics and Genetic Counseling, which is accredited by the American Board of Genetic Counseling. This program prepares students to practice in the healthcare profession of genetic counseling. The program is a full time two-year program, and accepts students to begin the program only in Autumn Quarter. Students must be admitted directly into this program, and cannot automatically transfer from the Ph.D. programs within the department, or vice versa. While courses are oriented primarily towards genetic counseling students, they may also be taken by medical students, other graduate students, residents or post-doctoral fellows, and (with permission) undergraduates.

To receive a Master of Science degree in Human Genetics and Genetic Counseling from Stanford University, students must successfully complete the following:

1. 84 units, including all of the required coursework as listed below (minimum grades of B- or better, Satisfactory, or Credit)
2. Approximately six quarters of rotations and independent study projects in diverse settings
3. All required aspects of the Graduate Student Research Project
4. All required aspects of the Service and Outreach Requirement
5. Formal presentations in Medical Genetics Grand Rounds and Human Genetics Journal Club.

		Units
GENE 271	Human Molecular Genetics	3
GENE 272	Introduction to Medical Genetics	2
GENE 273	Introduction to Clinical Genetics Testing	2
GENE 274A	A Case Based Approach to Clinical Genetics	2
GENE 274B	A Case Based Approach to Clinical Genetics	2
GENE 275	Role Play and Genetic Counseling Observations	2
GENE 276	Genetic Counseling Fieldwork	3-5
GENE 278	Prenatal Genetic Counseling	1
GENE 279	Pediatric and Adult Genetic Counseling	1
GENE 280	Metabolic Genetic Counseling	1
GENE 281	Cancer Genetic Counseling	1
GENE 282A	Genetic Counseling Research Seminar	1
GENE 282B	Genetic Counseling Research Seminar	1
GENE 283	Genetic Counseling Research	1-8
GENE 284	Medical Genetics Seminar	1
GENE 285A	Genetic Counseling Seminar	3
GENE 285B	Genetics Counseling Seminar	3
GENE 285C	Genetic Counseling Seminar	3
GENE 286	Advanced Genetic Counseling Seminar	2
GENE 287	CARDIOVASCULAR GENETICS	1
GENE 288	Neurogenetics	1
GENE 289	Variant Interpretation	1

- There are several additional required courses, including Clinical Embryology, Biomedical Ethics, and Research Ethics. The remaining required units can be completed through elective courses.
- Students are required to take a research elective to support your completion of the program's research project requirements– the number of units is not important (i.e. it could be a 1 unit course or multiple 2-3 units courses). There is "space" in the curriculum to take additional elective courses. We strongly encourage students to sign up for S/NC for any elective courses to ensure that they are able to focus on learning the material rather than earning a specific grade. In the spirit of supporting tailored education, we are also willing to consider any online courses or webinar series in place of or in addition to other electives. Students must submit a 1-page summary of why it would meet your needs, and if approved, you would register for GENE 299 Directed Readings for the appropriate number of units. Your conference funding could be used to cover the cost.

Students are also STRONGLY ENCOURAGED to attend when possible:

- Attendance at the **Genetics Department Retreat** (held yearly, usually in September in Monterey)
- **Human Genetics Journal Club** (first Monday of the month, 12:30-1:15pm). Attendance is strongly encouraged unless you have a conflict, as you will all present in your second year, and you will improve your critical thinking skills by attending.
- **Current Issues in Genetics** (Fridays 4-5pm, followed by happy hour), Genetics Library M315. This is the Genetics department's version of 'grand rounds,' typically with a more bench-science focus (similar to the talks at the retreat). Great for staying aware of future trends in genomics technology.
- **Stanford Center for Biomedical Ethics Seminars** (Brown Bags, Classic Topics, Writing Seminars) (Wednesdays 11-12), SCBE Conf Room
- **Other relevant Stanford events** (e.g. occasional guest speakers or film screenings sponsored by the GC program or affiliated groups; events held with our sister genetic counseling program at the University of Manila in the Philippines).

- **Work-study position with a genetics service at Stanford** (unless you choose to opt out). All students are expected to work an average of four hours per week, or a total of 40 hours per quarter. You will negotiate the format and timeframes directly with your supervisor.
- **Local, regional, and/or national genetics meetings**. Our hope is that you will choose to attend a combination of events that provide education in both genetic counseling and medical genetics. If frugal, students are often able to attend more than one national conference. We most strongly encourage attending the NSGC Annual Conference during your second year and attending the local conferences (the Northern California Coalition for Genetic Counseling Conference (usually Fall), the Northern California Genetics Exchange (Spring - at Stanford in 2020), and the Western Society for Pediatric Research Annual Meeting (Winter)). Other options include ASHG (Fall) or ACMG (Spring), and various other conferences (with justification submitted to and approved by the program directors in advance). Please refer to the SUGC Program Handbook for details on student conference travel budgets and information on requesting reimbursements.

Faculty members include members of the Stanford faculty from Genetics, Pediatrics, Obstetrics, Pathology, Developmental Biology, Biomedical Ethics, Law, and Psychology, and practicing genetic counselors and clinical geneticists in various medical centers across the Bay Area.

Applications are due in December (see website) for admission in the following Autumn Quarter. Applicants should demonstrate a combination of academic preparation, exposure to genetic counseling, and counseling and/or laboratory experiences. Exposure to persons with disabilities or chronic illness is also helpful. Additional information about the program is available at Stanford's Master's Program in Human Genetics and Genetic Counseling (http://www.med.stanford.edu/genetic-counseling/) website.

Doctor of Philosophy in Genetics

University requirements for the Ph.D. degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

The Ph.D. program in the Department of Genetics offers graduate students the opportunity to pursue a discipline that encompasses both a set of tools and a coherent way of thinking about biology and medicine. All major areas of genetics and genomics are represented in the department, including human genetics (molecular identification of Mendelian traits and the pathophysiology of genetic disease, gene therapy, genetic epidemiology, analysis of complex traits, genome functional analysis and human evolution), and application of model organisms such as bacteria, yeast, flies, worms, and mice to basic and translational areas of biomedical research. The department is especially strong in genomic and bioinformatic approaches to genome biology and evolution, and includes several genome-scale databases and Centers such as the Center for Genomics and Personalized Medicine (SCGPM), Saccharomyces Genome Database (SGD), the Stanford Microarray Database (SMD), and the Pharmacogenetics and Pharmacogenomics Knowledge Base (PharmGKB), the ENCODE project, Stanford Genome Technology Center (SGTC), ClinGen, eGTEX, and iPOP.

The Genetics Department works to support new generations of science scholars who reflect the diversity of life experiences, intellectual perspectives, race, abilities, and cultures representing society. The Stanford Genomics Diversity Summer Program is designed to help increase the number of underrepresented scientists pursuing and succeeding in genetics, genomics, or other research careers. The department supports this goal by recruiting highly motivated students from diverse backgrounds and exposing them to cutting-edge research in top and well-resourced laboratories.

Exposure to the intellectual scope of the department is provided by laboratory rotations, dissertation research, advanced courses in genetics and other areas of biomedical science, seminar series, journal clubs, and an annual three-day retreat of faculty, students, postdoctoral fellows, and staff scientists. Emphasis is placed on interactions and collaborations among students, postdoctoral students, and faculty within the department and throughout the campus.

During their first year, graduate students in the department take graduate courses and sample areas of research by carrying out rotations in three or four laboratories. At the end of the first three quarters, students may select a laboratory in which to do their dissertation research. While the dissertation research is generally performed in one laboratory, collaborative projects with more than one faculty member are encouraged. In addition to interacting with their faculty advisor, graduate students receive advice regularly from other faculty members who serve as members of their dissertation committee. Study for the Ph.D. generally requires between four and five years of graduate work, most of which is focused on dissertation research.

Students are primarily enrolled in the program to receive the Ph.D. degree, although a limited number of M.D. candidates can combine research training in genetics with their medical studies. Ph.D. candidates who have passed the qualifying exam in the second year can opt to receive the M.S. as a terminal degree.

There are opportunities for graduate students to teach in graduate-level and professional-school courses. In addition, students have the opportunity to participate in educational outreach activities coordinated by the department, which include opportunities to interact with secondary school students and teachers, lay groups, and local science museums.

Students who have recently received a bachelor's, master's, M.D., or Ph.D. degree in related fields may apply for graduate study. Prospective students must have a background in biology, mathematics, physics, and chemistry. Decisions for admission are based on comparison of the relative merits of all the candidates' academic abilities and potential for research and the department's interest in promoting a diverse learning environment. Interviews take place in late February or early March and successful applicants are offered admission by early spring. Students who wish to pursue a combined M.D./Ph.D. degree are considered for admission into the graduate program in the department after they have been admitted to the M.D. program in the School of Medicine.

Students begin graduate studies in Autumn Quarter. Prospective students are encouraged to start the application process early to ensure that they are able to submit a complete application by the December deadline. All students accepted into the Ph.D. program in the Department of Genetics are provided with full tuition and a stipend. Three training grants, two from the National Institutes of Health and one from National Institute for Interdisciplinary Science and Technology, provide major support for the graduate training program in the department. Other student support is provided by departmental funds, the School of Medicine, and from research grants, both federal and private, of the faculty. In addition, a number of graduate students are funded by fellowships, including those from the National Science Foundation and the Stanford Graduate Fellows program.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the

course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

The Department of Genetics counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B-' or better level.

The M.S. in Human Genetics and Genetic Counseling program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a B- or better level. However, the department strongly encourages students to follow grading basis guidelines listed in the curriculum guide to ensure that they maximize opportunities for depth and breadth of performance feedback, while minimizing pressure to achieve high marks.

Graduate Advising Expectations

The Department of Genetics is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the advisor and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity.

Faculty advisors guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Emeritus: (Professor) Greg Barsh, Uta Francke

Chair: Michael Snyder

Professors: Russ Altman, Laura Attardi, Julie Baker, Anne Brunet, Carlos Bustamante, Michele Calos, Stanley Cohen, Ronald Davis, Andrew Fire, James Ford, Judith Frydman, Margaret Fuller, Aaron Gitler, Mark Kay, Karla Kirkegaard, Joseph Lipsick, Hiromitsu Nakauchi, Jonathan Pritchard, John Pringle, Julien Sage, Arend Sidow, Tim Stearns, Lars Steinmetz, Hua Tang, Alice Ting , Anne Villeneuve

Professor (Research): Leonore Herzenberg, J. Michael Cherry

Professors (Teaching): Kelly Ormond

Associate Professors: William Greenleaf, Jin Billy Li, Stephen Montgomery, Gavin Sherlock, Douglas Vollrath, Monte Winslow

Associate Professor (Clinical): Mary Ann Campion

Assistant Professors: Maria Barna, Michael Bassik, Ami Bhatt, Le Cong, Christina Curtis, Polly Fordyce, Livnat Jerby-Arnon, Anshul Kundaje, Serena Sanulli, Alex Urban

Assistant Professor (Clinical): Andrea Hanon-Kahn

Courses

GENE 104Q. Law and the Biosciences. 3 Units.
Preference to sophomores. Focus is on human genetics; also assisted reproduction and neuroscience. Topics include forensic use of DNA, genetic testing, genetic discrimination, eugenics, cloning, pre-implantation genetic diagnosis, neuroscientific methods of lie detection, and genetic or neuroscience enhancement. Student presentations on research paper conclusions.

GENE 199. Undergraduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

GENE 200. Genetics and Developmental Biology Training Camp. 1 Unit.
Open to first year Department of Genetics and Developmental Biology students, to others with consent of instructors. Introduction to basic manipulations, both experimental and conceptual, in genetics and developmental biology.
Same as: DBIO 200

GENE 202. Human Genetics. 4 Units.
Utilizes lectures and small group activities to develop a working knowlege of human genetics as applicable to clinical medicine. Basic principles of inheritance, risk assessment, and population genetics are illustrated using examples drawn from diverse areas of medical genetics practice including prenatal, pediatric, adult and cancer genetics. Practical aspects of molecular and cytogenetic diagnostic methods are emphasized. Existing and emerging treatment strategies for single gene disorders are also covered. Prerequisites: basic genetics. Only available to MD and MOM students.

GENE 205. Advanced Genetics. 3 Units.
For PhD students in any of the Biosciences Departments and Programs at Stanford University. Emphasis on developing the ability to solve problems using genetic ideas and methods, to understand the nature and reliability of genetic inference, and to apply genetic reasoning to biological research. Weekly paper discussions based on original research papers that define or illustrate the ideas and techniques covered in the lecture.

GENE 207. Microfluidic Device Laboratory. 3-4 Units.
This course exposes students to the design, fabrication, and testing of microfluidic devices for biological applications through combination of lectures and hands-on lab sessions. In teams of two, students will produce a working prototype devices designed to address specific design challenges within the biological community using photolithography, soft lithography, and imaging techniques.
Same as: BIOE 301D

GENE 208. Gut Microbiota in Health and Disease. 3 Units.
Preference to graduate students. Focus is on the human gut microbiota. Students will receive instruction on computational approaches to analyze microbiome data and must complete a related project.
Same as: BIOE 221G, MI 221

GENE 210. Genomics and Personalized Medicine. 3 Units.
Principles of genetics underlying associations between genetic variants and disease susceptibility and drug response. Topics include: genetic and environmental risk factors for complex genetic disorders; design and interpretation of genome-wide association studies; pharmacogenetics; full genome sequencing for disease gene discovery; population structure and genetic ancestry; use of personal genetic information in clinical medicine; ethical, legal, and social issues with personal genetic testing. Hands-on workshop making use of personal or publicly available genetic data. Prerequisite: GENE 202, Gene 205 or BIOS 200.
Same as: DBIO 220

GENE 211. Genomics. 3 Units.
The goal of this course is to explore different genomic approaches and technologies, to learn how they work from a molecular biology view point, and to understand how they can be applied to understanding biological systems. In addition, we teach material on how the data generated from these approaches can be analyzed, from an algorithmic perspective. The papers that are discussed are a mixture of algorithmic papers, and technological papers. Finally, the course has a strong programming component, with Python being the language that we teach. All of our problem sets require Python programming - while beginning programmers succeed in our course, it is a steep learning curve, and the problem sets can require a significant time investment. Basic Python knowledge is required.

GENE 212. Introduction to Biomedical Informatics Research Methodology. 3-5 Units.
Capstone Biomedical Informatics (BMI) experience. Hands-on software building. Student teams conceive, design, specify, implement, evaluate, and report on a software project in the domain of biomedicine. Creating written proposals, peer review, providing status reports, and preparing final reports. Issues related to research reproducibility. Guest lectures from professional biomedical informatics systems builders on issues related to the process of project management. Software engineering basics. Because the team projects start in the first week of class, attendance that week is strongly recommended. Prerequisites: BIOMEDIN 210 or 214 or 215 or 217 or 260. Preference to BMI graduate students. Consent of instructor required.
Same as: BIOE 212, BIOMEDIN 212, CS 272

GENE 214. Representations and Algorithms for Computational Molecular Biology. 3-4 Units.
Topics: introduction to bioinformatics and computational biology, algorithms for alignment of biological sequences and structures, computing with strings, phylogenetic tree construction, hidden Markov models, basic structural computations on proteins, protein structure prediction, protein threading techniques, homology modeling, molecular dynamics and energy minimization, statistical analysis of 3D biological data, integration of data sources, knowledge representation and controlled terminologies for molecular biology, microarray analysis, machine learning (clustering and classification), and natural language text processing. Prerequisite: CS 106B; recommended: CS161; consent of instructor for 3 units.
Same as: BIOE 214, BIOMEDIN 214, CS 274

GENE 215. Frontiers in Biological Research. 1 Unit.
Students analyze cutting edge science, develop a logical framework for evaluating evidence and models, and enhance their ability to design original research through exposure to experimental tools and strategies. The class runs in parallel with the Frontiers in Biological Research seminar series. Students and faculty meet on the Tuesday preceding each seminar to discuss a landmark paper in the speaker's field of research. Following the Wednesday seminar, students meet briefly with the speaker for a free-range discussion which can include insights into the speakers' paths into science and how they pick scientific problems.
Same as: BIOC 215, DBIO 215

GENE 216. Practical Considerations and Industry Perspective on Academic-Industry Collaborations. 1 Unit.
Provides an overview, fundamentals and practical considerations for different aspects of academic-industry collaborations by inviting current industrial experts to share their views and to answer questions. The different aspects include collaboration models, proposal building, IP right sharing, funding opportunities, sabbatical and internship in industry, industry job searching, etc. This class also serves as a platform to connect with Bay Area biotech and pharmaceutical executives and experts.

GENE 217. Translational Bioinformatics. 3-4 Units.
Computational methods for the translation of biomedical data into diagnostic, prognostic, and therapeutic applications in medicine. Topics: multi-scale omics data generation and analysis, utility and limitations of public biomedical resources, machine learning and data mining, issues and opportunities in drug discovery, and mobile/digital health solutions. Case studies and course project. Prerequisites: programming ability at the level of CS 106A and familiarity with biology and statistics.
Same as: BIOE 217, BIOMEDIN 217, CS 275

GENE 218. Computational Analysis of Biological Information: Introduction to Python for Biologists. 2 Units.
Computational tools for processing, interpretation, communication, and archiving of biological information. Emphasis is on sequence and digital microscopy/image analysis. Intended for biological and clinical trainees without substantial programming experience.
Same as: MI 218, PATH 218

GENE 219. Current Issues in Genetics. 1 Unit.
Current Issues in Genetics is an in-house seminar series that meets each Academic Quarter tor one hour per week (Friday, 4:00-5:00) and features talks by Genetics Department faculty, students, and postdoctoral fellows (with occasional visiting speakers from other Stanford departments). Thus, over the Academic Year, it provides a comprehensive overview of the work going on in the Department. Student attendance at the seminars will be required, with short written assignments (typically three per Quarter) to encourage thinking about the material presented in the talks.

GENE 221. Current Issues in Aging. 2 Units.
Current research literature on genetic mechanisms of aging in animals and human beings. Topics include: mitochondria mutations, insulin-like signaling, sirtuins, aging in flies and worms, stem cells, human progeria, and centenarian studies. Prerequisite: GENE 203, 205 or BIOS 200.

GENE 222. Cloud Computing for Biology and Healthcare. 3 Units.
Big Data is radically transforming healthcare. To provide real-time personalized healthcare, we need hardware and software solutions that can efficiently store and process large-scale biomedical datasets. In this class, students will learn the concepts of cloud computing and parallel systems' architecture. This class prepares students to understand how to design parallel programs for computationally intensive medical applications and how to run these applications on computing frameworks such as Cloud Computing and High Performance Computing (HPC) systems. Prerequisites: familiarity with programming in Python and R.
Same as: BIOMEDIN 222, CS 273C

GENE 223. Aging: Science and Technology for Longevity. 2-3 Units.
Is aging another disease that can be ultimately cured? We will look at the biology of aging, transitioning from the molecular level through to the cellular and systems level. What are age-related diseases, can lifespan be extended and are centenarians different? Additionally how can artificial intelligence create robotic and software assistants as we get older and is living forever is possible in any form ? Topics will include: molecular theories of aging, impact of oxidative stress, age-related diseases, artificial intelligence for longevity, and innovations to improve the quality of life as we age.

GENE 224. Principles of Pharmacogenomics. 3 Units.
This course is an introduction to pharmacogenomics, including the relevant pharmacology, genomics, experimental methods (sequencing, expression, genotyping), data analysis methods and bioinformatics. The course reviews key gene classes (e.g., cytochromes, transporters) and key drugs (e.g., warfarin, clopidogrel, statins, cancer drugs) in the field. Resources for pharmacogenomics (e.g., PharmGKB, Drugbank, NCBI resources) are reviewed, as well as issues implementing pharmacogenomics testing in the clinical setting. Reading of key papers, including student presentations of this work; problem sets; final project selected with approval of instructor. Prerequisites: two of BIO 41, 42, 43, 44X, 44Y or consent of instructor.
Same as: BIOMEDIN 224

GENE 230. Genetic Epidemiology. 3 Units.
This course presents fundamental concepts and methods in genetic epidemiology, with examples on genetic studies of chronic diseases, including cancer, cardiovascular disease, metabolic conditions, and autoimmune diseases. It will provide an overview of various study designs, including family studies, and it covers fundamental analyses, inferences, and their strengths and limitations. It will include topics such as assessing genetic influences on disease; advances in genomics technology; family based study designs for linkage, exome sequencing and case-parent trios; candidate gene and genome-wide association studies of both common and rare genetic variants; gene-environment interactions, epistasis and non-Mendelian genetics; software and web-based data resources; ethical issues in genetic epidemiology; and applications of genetic epidemiology to clinical practice and public health. Guest speakers will discuss these concepts through the lens of various chronic diseases. Prerequisite: introductory biostatistics or epidemiology, biology, and genetics. Biostatistics (intro) or epidemiology (intro), biology, genetics (intro).
Same as: EPI 224

GENE 232. Advanced Imaging Lab in Biophysics. 4 Units.
Laboratory and lectures. Advanced microscopy and imaging, emphasizing hands-on experience with state-of-the-art techniques. Students construct and operate working apparatus. Topics include microscope optics, Koehler illumination, contrast-generating mechanisms (bright/dark field, fluorescence, phase contrast, differential interference contrast), and resolution limits. Laboratory topics vary by year, but include single-molecule fluorescence, fluorescence resonance energy transfer, confocal microscopy, two-photon microscopy, microendoscopy, and optical trapping. Limited enrollment. Recommended: basic physics, basic cell biology, and consent of instructor.
Same as: APPPHYS 232, BIO 132, BIO 232, BIOPHYS 232

GENE 235. C. Elegans Genetics. 2 Units.
Genetic approaches to C. elegans, practice in designing experiments and demonstrations of its growth and anatomy. Probable topics include: growth and genetics, genome map and sequence, mutant screens that start with a desired phenotype, reverse genetics and RNAi screens, genetic duplications, uses of null phenotype non-null alleles, genetic interactions and pathway analysis, and embryogenesis and cell lineage. Focus of action, mosaic analysis, and interface with embryological and evolutionary approaches.

GENE 236. Deep Learning in Genomics and Biomedicine. 3 Units.
Recent breakthroughs in high-throughput genomic and biomedical data are transforming biological sciences into "big data" disciplines. In parallel, progress in deep neural networks are revolutionizing fields such as image recognition, natural language processing and, more broadly, AI. This course explores the exciting intersection between these two advances. The course will start with an introduction to deep learning and overview the relevant background in genomics and high-throughput biotechnology, focusing on the available data and their relevance. It will then cover the ongoing developments in deep learning (supervised, unsupervised and generative models) with the focus on the applications of these methods to biomedical data, which are beginning to produced dramatic results. In addition to predictive modeling, the course emphasizes how to visualize and extract interpretable, biological insights from such models. Recent papers from the literature will be presented and discussed. Students will be introduced to and work with popular deep learning software frameworks. Students will work in groups on a final class project using real world datasets. Prerequisites: College calculus, linear algebra, basic probability and statistics such as CS 109, and basic machine learning such as CS 229. No prior knowledge of genomics is necessary.
Same as: BIODS 237, BIOMEDIN 273B, CS 273B

GENE 242. Genetics of Viral Emergence and Emerging Viruses. 2 Units.
This course will cover genetic and complementary approaches toward understanding and mitigating the emergence of new viral epidemics.nnTopics are: nI. Viral Emergence ('Viral life in prebiotic soup', 'emergence in cellular contexts', 'viruses from viruses', 'viruses and their non-viral cousins'), nII. Emergent Virology ('tracking the virome', 'genomics of recent viral pandemics', and 'the spectrum of viral malevolence'), andnIII. The Virome Interface ('environmental influences on viral epidemics', 'viruses, genes, and human behavior', 'big data in the service of controlling epidemics', and 'genetic approaches to viral treatment').

GENE 247. Genomic approaches to the study of human disease. 3 Units.
This course will cover a range of genetic and genomic approaches to studying human phenotypic variation and disease. We will discuss the genetic basis of Mendelian and complex diseases, as well as clinical applications including prenatal testing, and pediatric and cancer diagnostics. The course will include lectures as well as critical reading and discussion of the primary literature. Prerequisite: BIO 82 or equivalent. Open to advanced undergraduate students.
Same as: BIO 247

GENE 260. Supervised Study. 1-18 Unit.
Genetics graduate student lab research from first quarter to filing of candidacy. Prerequisite: consent of instructor.

GENE 267. Molecular Mechanisms of Neurodegenerative Disease. 4 Units.
The epidemic of neurodegenerative disorders such as Alzheimer's and Parkinson's disease occasioned by an aging human population. Genetic, molecular, and cellular mechanisms. Clinical aspects through case presentations.nnnThis class is open to both graduate and undergraduate students, but requires sufficient backgrounds in college level genetics, cell biology and biochemistry. Undergraduates who are interested are required to contact the course director first.
Same as: BIO 267, NENS 267

GENE 268. Biology and Applications of CRISPR/Cas9: Genome Editing and Epigenome Modifications. 1 Unit.
This course is designed to provide a broad overview of the biology and applications of the revolutionary CRISPR/Cas9 system, with detailed exploration of several areas: / / --Basic biology of the CRISPR/Cas9 system / --High-throughput screening using CRISPR/Cas9 / --Epigenetic modifications and transcriptional regulation using dCas9 / --Therapeutic applications of gene editing with CRISPR / --Disease modeling with CRISPR / --Ethical considerations of the use of CRISPR/Cas9 / / The course will be geared toward advanced undergraduates and graduate students, and will assume a basic background in molecular biology and genetics. The course will be lecture-based, with frequent opportunities for discussion and questions.
Same as: BIOS 268

GENE 271. Human Molecular Genetics. 3 Units.
For genetic counseling students, graduate students in genetics, medical students, residents, and postdoctoral fellows interested in the practice of medical genetics and genomics. Gene structure and function; the impact of mutation and polymorphism as they relate to developmental pathways and human disease; mitochondrial genetics; approaches to the study of complex genetic conditions; GWAS and genome sequencing technologies; variant interpretation; gene therapy, stem cell biology, and pharmacogenetics. Undergraduates require consent of instructor and a basic genetics course. Non-GC students: Please contact the instructor when you enroll.
Same as: CHPR 271

GENE 272. Introduction to Medical Genetics. 2-3 Units.
For genetic counseling students, graduate students in human genetics, medical students, residents, and fellows; undergraduates with consent of instructor. Principles of medical genetics practice, including taking a family history, modes of inheritance and risk assessment, and mathematical principles of medical genetics (Bayes theorem, population genetics). An additional problem set is required for 3 units.
Same as: CHPR 272

GENE 273. Introduction to Clinical Genetics Testing. 2 Units.
For genetic counseling students, medical students, residents, and fellows. Uses a combination of case based assignments, laboratory observation and didactic lectures to introduce techniques and technology used in cytogenetics, molecular genetics and biochemical genetic testing, and to introduce clinical features of common genetic conditions that are commonly diagnosed through genetic testing. Non-GC students: Please contact the instructor when you enroll.

GENE 274A. A Case Based Approach to Clinical Genetics. 2 Units.
For genetic counseling students and medical genetics residents and fellows. Case-based scenarios and guest expert lectures. Students learn skills in case preparation, management, and presentation, as well as content around common genetic disorders.
Same as: CHPR 274A

GENE 274B. A Case Based Approach to Clinical Genetics. 2 Units.
For genetic counseling students and medical genetics residents and fellows. Case-based scenarios and guest expert lectures. Students learn skills in case preparation, management, and presentation, as well as content around common genetic disorders. This course is a continuation of GENE 274A, but may be taken individually with instructor permission.
Same as: CHPR 274B

GENE 275. Role Play and Genetic Counseling Observations. 2 Units.
For genetic counseling students only. Students role play aspects of genetic counseling sessions and learn through clinical observations and personal reflection. Observation includes genetic counseling sessions in prenatal, pediatric, and specialty settings.

GENE 276. Genetic Counseling Fieldwork. 1-7 Unit.
For genetic counseling students only. Supervised clinical experiences. May be repeated for credit. Prerequisite: GENE 275.

GENE 278. Prenatal Genetic Counseling. 1 Unit.
Online course for genetic counseling students, graduate students in genetics, medical students, residents, fellows, and nurses interested in prenatal genetics. Genetic counseling students should take this course in conjunction with their initial prenatal genetics rotation. Topics include: prenatal screening and diagnostic testing, ultrasound, genetic carrier screening, teratology, fetal treatment and intervention, perinatal loss, termination, and infertility. Non-GC students: Please contact the instructor when you enroll.
Same as: CHPR 278

GENE 279. Pediatric and Adult Genetic Counseling. 1 Unit.
Internet based course for genetic counseling students, graduate students in genetics, medical students, residents, and fellows; genetic counseling students should take this course in conjunction with their initial general genetics rotation. Topics include: clinical reasoning in medical genetics, techniques to prepare for the medical genetics visit, assessment of child development and medical history in the context of a genetic workup, dysmorphology, development of a differential diagnosis, and resources for case management and family support. Non-GC students: Please contact the instructor when you enroll.
Same as: CHPR 279

GENE 280. Metabolic Genetic Counseling. 1 Unit.
Internet based course for genetic counseling students, graduate students in genetics, medical students, residents, and fellows. Genetic counseling students should take this course in conjunction with their metabolic genetics rotation. Topics include: overview of metabolic diseases; common pathways; diagnosis, management, and treatment of metabolic disorders; and newborn screening. Non-GC students: Please contact the instructor when you enroll.
Same as: CHPR 280

GENE 281. Cancer Genetic Counseling. 1 Unit.
Internet based course for genetic counseling students, graduate students in genetics, medical students, residents, and fellows; genetic counseling students should take this course in conjunction with their initial cancer genetics rotation. Topics include: cancer biology and cytogenetics; diagnosis and management of common cancer genetic syndromes; predictive testing; psychology of cancer genetic counseling; and topics recommended by ASCO guidelines.Non-GC students: Please contact the instructor when you enroll.
Same as: CHPR 281

GENE 282A. Genetic Counseling Research Seminar. 1 Unit.
For genetic counseling students only. Facilitated discussions on identifying a topic and mentor for genetic counseling departmental research projects.

GENE 282B. Genetic Counseling Research Seminar. 1 Unit.
For genetic counseling students only. Lectures and facilitated discussions on research methodology for genetic counseling departmental research projects. Prerequisite: GENE 282A.

GENE 283. Genetic Counseling Research. 1-8 Unit.
Genetic counseling students conduct clinical research projects as required by the department for graduation. May be repeated for credit. Pre- or corequisite: GENE 282.

GENE 284. Medical Genetics Seminar. 1 Unit.
Presentation of clinical and research topics in human genetics, followed by case presentations from the medical genetics and biochemical genetics services. Course may be completed online or in-person. Non-GC students: Please contact the instructor when you enroll.
Same as: CHPR 284

GENE 285A. Genetic Counseling Seminar. 3 Units.
Year-long seminar primarily for genetic counseling students. Fall: An introduction to genetic counseling principles, techniques, and professional development.

GENE 285B. Genetics Counseling Seminar. 3 Units.
Year-long seminar primarily for genetic counseling students. Winter: The impact of chronic illness and genetic disease across the lifespan.

GENE 285C. Genetic Counseling Seminar. 3 Units.
Year-long seminar primarily for genetic counseling students. Spring: The application of counseling theories, models, and therapy to the practice of genetic counseling.

GENE 286. Advanced Genetic Counseling Seminar. 2 Units.
For genetic counseling students only. This course will enhance students' advanced counseling skills through formal case presentations, observations of community resources, and a variety of presentations on professional issues. Must be taken for 3 quarters. Prerequisites: GENE 285 A,B,C and 276.

GENE 287. CARDIOVASCULAR GENETICS. 1 Unit.
Online course for genetic counseling students, graduate students in genetics, medical students, residents, fellows, and nurses interested in inherited cardiovascular conditions. Genetic counseling students should take this course in conjunction with their cardiovascular genetics rotation. Topics include: Basic cardiology principles, including relevant anatomy and physiology; diagnosis, management and genetic testing as it relates to common inherited cardiovascular conditions in both the pediatric and adult setting; predictive genetic testing issues specific to inherited cardiovascular conditions; psychological issues related to sudden death conditions. Non-GC students: Please contact the instructor when you enroll.
Same as: CHPR 287

GENE 288. Neurogenetics. 1 Unit.
Internet-based course for genetic counseling students, graduate students in genetics, medical students, residents, and fellow; genetic counseling students should take this course in conjunction with their neurogenetics rotation. Topics include: introduction to neurology for beginners, including an overview of neurologic exam and localization, to provide non-neurologist trainees a foundation for understanding the differential diagnosis process in neurology; common and exemplary neurogenetics disorders spanning the adult and pediatric neurologic sub-specialties; key genetic concepts such as triple repeat disorders and FSHD; ethical and psychological topics as well as gene-targets therapeutics. Medical students and graduate students outside of genetic counseling should obtain permission from instructor prior to enrollment. No prerequisite for genetic counseling students, genetics or neurology residents/fellows or post-docs. Non-GC students: Please contact the instructor when you enroll.

GENE 289. Variant Interpretation. 1 Unit.
Internet-based course for genetic counseling students, graduate students in genetics or bioscience, medical students, residents, and fellows. Genetic counseling students should take this course in conjunction with their variant interpretation rotation. Topics include a review of the types of genetic variants, HGVS nomenclature and standards, and technical aspects of variant calling, filtering, and prioritization. Attendees will become familiar with the types of evidence to support or refute pathogenicity and the standards in doing so, and will develop skills to critically assess the literature and existing databases for variant classification. Non GC-students: Please contact the instructor once you enroll.

GENE 299. Directed Reading in Genetics. 1-18 Unit.
Prerequisite: consent of instructor.

GENE 346. Advanced Seminar in Microbial Molecular Biology. 1 Unit.
Enrollment limited to PhD students associated with departmental research groups in genetics or molecular biology.
Same as: BIO 346, CSB 346

GENE 399. Graduate Research. 1-18 Unit.
Investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

GENE 801. TGR Project. 0 Units.
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GENE 802. TGR Dissertation. 0 Units.
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HEALTH AND HUMAN PERFORMANCE

Health and Human Performance (HHP) is organizationally housed under Vaden Health Services. The program offers experiences for academic credit as well as non-credit opportunities. Its academic pursuits are offered in partnership with the School of Medicine. The academic units housed within HHP include Kinesiology, Outdoor Education, Physical Education, Wellness Education, and Lifeworks.

Purpose Statement

Through integrating theory, research, and experiential practice we create innovative, transformative learning environments focusing on holistic student development.

Values

Inspiring a healthier Stanford by inviting students into an intentional process grounded in the following values:

Actualization: Supporting self-efficacy through empowerment, learning experiences, and realization of the human potential.

Balance: Creating opportunities for individuals to recognize and utilize the essential elements of well-being.

Community: Providing inclusive opportunities for healthy social engagement and relationship building.

Leadership: Developing change agents who can apply learned knowledge and skills towards active citizenship.

Innovation: Designing effective ways of learning and promoting human flourishing in a hyper-complex, ever-accelerating culture experience.

Kinesiology

Focuses on the anatomy, physiology, and mechanics of human movement and their applications to exercise and lifetime physical activities. Offers 1-3 unit courses using the seminar, laboratory, and workshop as the primary component types.

Leadership Innovations

Fosters transformational leaders of character who through the facilitation of critical collaborative environments are prepared to be agents of positive change. Offers 1-3 unit courses using the lecture, seminar, discussion, and workshop as the primary component types.

Lifeworks

Fosters transformational student leaders and future citizens of character who through the facilitation of creative expression, mindfulness, and collaborative environments are prepared to be agents of positive change. Offers 1-3 unit courses using the lecture, seminar, discussion, and workshop as the primary component types.

Outdoor Education

Develops outdoor leaders who use risk, challenge, and experience as educational tools with a variety of applications. Offers 1-3 unit courses using the lecture, seminar, and workshop as the primary component types.

Physical Education

Provides physical activity courses where knowledge associated with the proper performance of an activity is presented and discussed. Offers 1-2 unit courses using activity as the primary component type.

Wellness Education

Inspires a healthier, more vibrant university through teaching effective wellness theories and practices that promote flourishing and empower students to positively transform their lives and communities. Offers 1-3 unit courses using the lecture, seminar, discussion, and workshop as the primary component types.

Director: Aneel Chima
Associate Director: Diane Friedlaender (Learning, Pedagogy, and Research)
Associate Director: Tia Lillie (Kinesiology & Physical Education)
Director of Adventure Programs & Head of Outdoor Education: Sue Lowley
Assistant Director HHP, Head of The Flourishing Lab: Steven Murray
Associate Director: Gigi Otálvaro (LifeWorks)
Associate Director: Sarah Meyer Tapia (Wellness Education)

Lecturers & Instructors

Emergency Medicine

Antja Thompson

Athletics, Kinesiology & Physical Education

Gong Chen, Austin Lee, Tia Lillie, Ying Mitchell, Sara Safdari, Erick Schlimmer, Tom Sarsfield, Matt Thornton, Nick Wooters

Lifeworks

Anthony Lising Antonio, Aneel Chima, Cari Costanzo, Diane Friedlaender, Fred Luskin, Gigi Otálvaro, Andrew Todhunter, Jonah Willhnganz

Outdoor Education

Logan Chapman, Sue Lowley, Emily McCune, Peter Wright

Wellness Education

Alison Ash, Claudia Bicen, Diane Boxill, Nichol Bradford, Russ Carpenter, Aneel Chima , Orgyen Chowang, Robert Cusick, Kathryn Devaney, Dustin DiPerna, Caitlin Krause, Marissa Floro, Bryan Lian, Fred Luskin, Molly Maloof, Jeffery Martin, Christy Matta, Stephen Murphy-Shigematsu, Sara Nasserzadeh, Katherine Nobles, Pamela Paspa, Carole Pertofsky, Orgyen Ratna, John Rettger, Tia Rich, Jennifer Robinson, Mikey Siegel, Kelly Takahashi, Yingzhao Liu Julia Tang, Sara Meyer Tapia, Rosalyne Tu, Mara Waldhorn, Meag-gan Walters, Clyde Wilson, Donnovan Yisrael

Kinesiology Courses

KIN 100. Introduction to Human Movement: Mind-Body Performance. 1 Unit.
Investigate the basic principles governing human movement with an emphasis on sports applications and lifelong wellness. Conceptually and experientially examine the latest research and theories on basic anatomy and biology as pertaining to injury prevention, principles of optimal human performance, and the mind-body connection. Topics include periodization, modes of exercises, types of injuries, the healing process, and physiological and psychological factors influencing body movement.

KIN 101. Analysis of Human Movement. 2 Units.
Covers the basic principles governing human movement with an emphasis on sports and performance applications. Examines anatomy and biology (large- and small-scale structure and function); applied anatomy, both anatomy (body structure) and mechanics (force, torque), which together describe macroscopic movement; applied biology, specifically the molecular and cellular basis of movement mechanics (force, torque, etc) together describe macroscopic movement; applied biology, specifically the molecular and cellular basis of movement including muscles contraction, nerves signals, and related topics such as exercise damage, cramping, muscle memory, DOMS and fatigue.

Leadership Innovations Courses

LEAD 95. Ensemble Leadership. 1-2 Unit.
This experiential course allows students to grow as leaders through immersion in leadership positions in the Stanford Band. Study and implement frameworks and tools that enhance leadership and team performance. Topics covered include traditional leadership and governance concepts, as well as approaches specifically effective in music ensembles.

LEAD 100. Leadership Intensive. 2 Units.
Strengthen your leadership skills in one of Stanford's only purely experiential learning opportunities. Leadership Intensive offers rising juniors a unique and immersive practice of leadership. Leadership Intensive is characterized by, as the name implies, intense exploration of your own leadership skills and abilities (courage required). Design thinking, diverse teams and hands-on practice are integral components of the program.

LEAD 101. Redefining Leadership as Developmental Process. 2 Units.
Examination of sources required for authentic leadership: connections, identity, integrity and personal power. Analysis of effective leadership practices and the application to collaborative environments.

LEAD 105. Art of Facilitation. 1 Unit.
This experiential education style course allows participants to develop and test their group facilitation skills. Students will explore delivering group initiatives surrounding popular leadership topics and learn how to help their group take away valuable learning from an educational experience. Topics include: Group dynamics theories, safety, assessing the physical, human and social environment to improve group effectiveness.

LEAD 106. Spiritual Wellbeing and Religious Encounter. 1 Unit.
Engage in spiritual dialogue and religious encounter with peers and fellow students, as well as self-reflection around one's own spiritual wellbeing. Explore your meaning-making and spiritual and/or religious practices. Facilitate and engage in interfaith dialogue. Build community based on understanding of differences and common connection points. Through a highly interactive format utilizing readings, film screenings, and facilitated discussion, gain religious and spiritual literacy, including skills and knowledge that will help to address urgent questions, such as: how do I dialogue with people who belong to religious (and non-religious) traditions different than my own? How do I work together with people of different religious and spiritual backgrounds for the common good? What is pluralism and how do we protect it from prejudice?.

LEAD 110. Mindful Leadership. 1-2 Unit.
An exploration of one's inner life, ways of being in the world, and their expression in how one leads. Addresses the paradoxical task of merely paying attention to enhance our awareness of the socially constructed nature of reality and to feel comfortable to act with simplicity, empathy, and conviction. Through self-reflection, embodied practice, and creative expression through crossing borders students examine us and them. Mindful inquiry in expressed storytelling, collective knowing, appreciative intelligence, and is both scholarly and experiential.
Same as: CSRE 110P

LEAD 111. Luminaries: Life Lessons from Leaders and Change-makers. 1 Unit.
Encounter luminaries in the fields of leadership, business, social innovation, and change-making ranging from noted entrepreneurs and CEOs to social change agents and activists who are committed to enhancing individual and collective flourishing. Conceptualizing change-making as a personal and relational developmental journey, survey course format emphasizes direct, in-person interactions with a broad variety of luminaries in order to discuss their models and practices and learn from their experiences. Engage at the levels of theory and practice in order to enhance one's own leadership toolkit and change-making capacity. Course emphasizes conversations with leaders from across sectors, across the political spectrum, and across generations to discuss diverse, and sometimes divergent, perspectives on change-making. Specific topics evolve quarter-to-quarter based on the group of luminaries co-creating and lecturing in the course with the instructor/s. See the course notes section for this quarter's line-up.

LEAD 112. Communicating to the Core: Weekend Campus Intensive. 1 Unit.
Explore methods that enhance listening and communication and deepen relational connection and psychological safety. Practice having important conversations, find insights within conflict, and discover how to reach epiphanies when feeling stuck in relating to others. Learn experientially through a variety of practices focusing on vulnerability, curiosity, and empathy such as listening through non-verbal channels, responding to emotionally triggering content, and asking questions without imposing an agenda. Takes place in a weekend intensive format (on campus), allowing more immersive exploration of the topic space.

LEAD 197. LEADERSHIP INSTITUTE. 1 Unit.
Experiential, non-traditional learning environments to enhance leadership capacities.

LEAD 199. Selected Topics: Leadership Studies. 1-2 Unit.
Exploration of a topic (to be determined) not covered by the standard curriculum but of interest to faculty and students in a particular quarter. May be repeated with change of content. For more information regarding specific course titles, please refer to the notes of each course section.

Lifeworks Courses

LIFE 91CL. Self & Science. 3 Units.
"Self & Science" mines the intersection of memoir and science writing. In this advanced experimental writing course, students will read a selection of essays by writers including Lewis Thomas, Oliver Sacks, Annie Dillard, and Mark Doty, which illustrate the shared intellectual foundation in observation of scientific and poetic inquiry. Building on these readings, students will be challenged to produce an experimental essay that transgresses genre boundaries in the service of considering how personal reflection can narrate researched discoveries. Over the course of the quarter, students are invited to bolster their overall communication acumen, enhance their ability to share valuable discoveries beyond the confines of their major discipline, and practice the difficult bliss of engaging a discerning public audience. Click here for course video and full description: https://undergrad.stanford.edu/programs/pwr/courses/advanced-courses/self-science.
Same as: PWR 91CL

LIFE 101. Tools for a Meaningful Life. 3 Units.
Explores the foundational skills for a meaningful life. Features lectures by faculty from across the university and labs for experiential practice. Draws on research and practices from fields related to psychology, philosophy, literature, and neuroscience, as well as wisdom traditions from around the world. Focuses on developing human capacities necessary for a meaningful life including; attention, courage, devotion, resilience, imagination, and gratitude. Exposure to these capacities influences personal growth and its development in communities.

LIFE 102. Body Mapping: Embracing the Embodied Experiences of Your Life. 3 Units.
Utilize an anthropological lens to combine traditional analytic research with experiential contemplative practice to strengthen awareness of the body and embodied experiences. Explore cultural norms around the body as influenced by racial stereotypes, gender hierarchies, and political/economic/religious history. Investigate and express one's own body narrative through written, verbal, and creative methodologies.

LIFE 105. Meeting the Moment: Inner Resources for Hard Times. 1 Unit.
In the face of social, economic, environmental, and public health upheavals, many of us are experiencing an unprecedented degree of uncertainty, isolation, and stress affecting academic and day-to-day life. Challenging times ask us, in a voice louder than usual, to identify sources of strength and develop practices that sustain and even liberate. In this experiential, project-oriented class: Explore practices to find true ground and enact positive change for self and community; Cultivate natural capacities of presence, courage, and compassion; Develop resources to share with one another and the entire Stanford community.
Same as: WELLNESS 105

LIFE 124. Counterstory in Literature and Education. 3 Units.
Counterstory is a method developed in critical legal studies that emerges out of the broad "narrative turn" in the humanities and social science. This course explores the value of this turn, especially for marginalized communities, and the use of counterstory as analysis, critique, and self-expression. Using an interdisciplinary approach, we examine counterstory as it has developed in critical theory, critical pedagogy, and critical race theory literatures, and explore it as a framework for liberation, cultural work, and spiritual exploration.
Same as: CSRE 141E, EDUC 141, EDUC 341

LIFE 125. The Stillness of the Dunes. 3 Units.
An advanced writing course in nonfiction craft, drawing, and contemplative practice. a significant portion of each class meeting will focus on the development and sharpening of writing craft, especially of the essay, in a hybrid form both scholarly and personal. We will also explore writing as meditative practice, through examples and through short exercises. We will deepen our cultural understanding of the desert and its impact, through art, literature, philosophy, film, and contemplative practice, and the course will build toward a four-day camping trip to the dunes of Death Valley, six weeks into the quarter.

LIFE 142. Megacities. 5 Units.
In this course we will examine the meaning, processes, and challenges of urbanization. Through a series of targeted readings across history and geography and through the study of varied means of representation (anthropology, literature, cartography, film, etc), the class will analyze the ways in which urban forms have come into being and created, met, and/or ignored challenges such as disease, water, transport, religious and class conflict, colonialism, labor, and trade. Students will read anthropology in conjunction with other disciplines (literature, urban planning, public health, architecture, and economics) to learn the ways in which ethnographies of immigration, urban poverty, class disparity, economic development and indicators, noise, and transportation substantively augment our understandings of how people live within globalization.
Same as: ANTHRO 42, ARTHIST 242B, URBANST 142

LIFE 145. Trauma, healing, and empowerment. 3 Units.
This course will look at the ways in which humans are affected by the legacy of war, occupation and colonialism through themes of home, displacement, community, roots, identity, and inter-generational trauma. The approach is integrative, including scholarly investigation, embodied practice, and creative approach. This self-reflective process uses narrative, oral and written, as a means of becoming whole and healing personal, historical, and collective wounds.
Same as: CSRE 145H

LIFE 150G. Performing Race, Gender, and Sexuality. 4 Units.
In this theory and practice-based course, students will examine performances by and scholarly texts about artists who critically and mindfully engage race, gender, and sexuality. Students will cultivate their skills as artist-scholars through written assignments and the creation of performances in response to the assigned material. Attendance and written reflection about a live performance event on campus are required. Students will also learn various meditation practices as tools for making and critiquing performance, in both our seminar discussions and performance workshops. We will approach mindfulness as method and theory in our own practice, as well as in relation to the works studied. We will also consider the ethics and current debates concerning the mindfulness industry. Examples of artists studied include James Luna, Nao Bustamante, Renee Cox, William Pope.L, Cassils, boychild, Curious, Adrian Piper, Xandra Ibarra, Valérie Reding, Guillermo Gomez-Peña, and Ana Mendieta.
Same as: ARTSINST 150G, CSRE 150G, CSRE 350G, FEMGEN 150G, TAPS 150G

LIFE 161P. Dance and the Politics of Movement. 4 Units.
This course examines how the dancing body has been viewed, exhibited, analyzed, and interpreted from the late nineteenth century to the present. We will discuss how ideologies about race, gender, and sexual orientation are mapped onto the body, as well as investigate the body's place in discourses on religion, health, war, performance, and consumer culture. We will explore how people create meaning through dance and how dance, in turn, shapes social norms, political institutions, and cultural practices. The course's structure challenges the Western/non-Western binary by comparing dance forms across the globe.
Same as: DANCE 161P, TAPS 161P, TAPS 361P

LIFE 165. Mindful Citizen. 3 Units.
Our study explores the development of mindfulness and related abilities that lead to mindful citizenship in ourselves and in the world. We examine the intersection of race and ethnicity with the emerging field of contemplative studies through the teachings of leaders whose lives were dedicated to both contemplation and social action. Through self reflection, experiential learning, and creative expression we explore the personal as political. We aim to develop the capacity to move among worldviews, transcending particular identities while simultaneously honoring each of them, finding peace among the component parts of our own psyche, and possessing the inner resources to make peace in a multicultural society.

LIFE 175. The Mythic Life. 3 Units.
Why in the twenty-first century do many of our most acclaimed and popular stories carry narrative forms that are thousands of years old? Star Wars, The Lord of the Rings, Titanic, Batman - all are deeply informed by ancient myth, folklore, and oral traditions. One reason is that the deep stories of myth and folklore act as a bridge between our personal lives and the profoundest aspects of the human condition. They offer a way to understand our lives and how to live them.n nThis course offers an in-depth study and experience of myth and folklore, the roots of modern story and the roots of our own stories. You will hear these myths live, as people have for thousands of years¿from Trickster folk tales to the medieval Arthurian grail epic Parzival. You will also draw from these epics to create and tell a mythic story of your own. This will give you an appreciation for myth as a living principle, not just something from a long time ago. It will also help you become a good storyteller by developing your memory, improvisation, and image-based thinking. This ability to tell a story well is at the root of authentic leadership and helps us bring a powerful, embodied perspective to championing a cause or just debating over coffee.
Same as: ORALCOMM 175

LIFE 193. LifeWorks Individual Studies. 1-2 Unit.
Translate theoretical knowledge and acquired skills into actionable projects or initiatives that make positive impact within and/or beyond the Stanford community. Students work in collaborative groups or individually under the mentorship of the course instructor(s) to design, deliver, and evaluate an initiative or project.

LIFE 199. Selected Topics: LifeWorks. 1-2 Unit.
Exploration of a topic (to be determined) not covered by the standard curriculum but of interest to faculty/instructor(s) and students in a particular quarter. May be repeated with change of content. For more information regarding specific course titles and topics, please refer to the notes of each course section.

Outdoor Education Courses

OUTDOOR 5. Winter Camping and Travel. 1 Unit.
Learn basic skills for winter camping and travel including thermoregulation, avalanche awareness, proper winter weather clothing and equipment, common cold weather medical issues, and LNT for camping and travel. Field experience includes practicing travel techniques, snow shelter construction, snow slope evaluation, use of avalanche beacons, and winter route finding.

OUTDOOR 9. Travel as a Sacred Journey Towards Presence, Practice, and Purpose. 1-2 Unit.
Engage travel and pilgrimage as intentional contemplative practice for exploring one's life purpose. Experientially investigate, both individually and collectively, outer journeying as a support for inner reflection on meaning making and values creation. While immersed in environments ranging from nature settings to retreat communities learn about, contemplate, and practice a range of methods, informed by multiple spiritual and philosophical traditions, meant to enhance insight and human flourishing. All backgrounds and identities welcome.

OUTDOOR 10. Rock Climbing I: Beginning. 1 Unit.
This course is an introductory course. Students will learn skills necessary to get started exploring the world of indoor climbing. These skills include technical safety skills for bouldering and top-roped climbing, essential physical and mental skills, and strategies for training. Students will be taught with industry standard best practices in regards to safety, and provided with a multi-disciplinary approach to overall health and wellness. No experience necessary.

OUTDOOR 11. Rock Climbing II: Intermediate. 1 Unit.
In this course students will have the opportunity to build upon basic principles associated with rock climbing. Student will further explore variations in climbing efficiency techniques, crack climbing techniques, and training methodologies to enhance their climbing experience and help prevent injuries. Students will be taught with industry standard best practices in regards to safety, and provided with a multi-disciplinary approach to overall health and wellness.nPrerequisites: Rock Climbing 1 or at least 3 months previous climbing experience, current top-rope belay certification at the Stanford Climbing Wall.

OUTDOOR 12. Indoor Lead Climbing. 1 Unit.
Learn technical and safety skills pertaining to sport lead climibing. Apply specific physical and mental training principals to assist improving lead climbing performance and preventing over use injuries.

OUTDOOR 14. Rock Climbing: Gym to CRAG. 1 Unit.
Learn how to transition from indoor climbing facilities to outdoor rock climbing venues. Emphasis will be placed on evaluating risk, along with constructing and assessing safe anchoring systems using natural and bolted anchors.

OUTDOOR 15. Rock Climbing: Intermediate Anchors. 1 Unit.
Explore climbing safety systems as they apply to anchor building, self-rescue, impact forces, and belaying. Emphasis will be placed on constructing and evaluating safe traditional anchor systems as well as learning techniques for self-rescue in the single pitch outdoor rock climbing environment.

OUTDOOR 25. Introduction to Whitewater Kayaking. 1 Unit.
Instructs paddlers in whitewater kayaking techniques. Emphasizes basic skills needed for paddling class II, II whitewater rivers including paddle strokes, boat control, and essential whitewater safety information. Students will have to pass a swimming test to participate.

OUTDOOR 30. Sea Kayaking I: Introduction to Sea Kayaking. 1 Unit.
Learn the fundamental skills and safety pracices for coastal sea kayaking. Topics include essential gear, strokes and maneuvering, rescues and recoveries, and understanding tides and currents. This course will consist of several trips to Half Moon Bay and other near by coastal kayak areas. Active participation is required. Course culminates in a student-planned trip to a local kayaking destination.

OUTDOOR 40. Stand Up Paddleboarding: Beginner. 1 Unit.
This course teaches students the basic skills, strokes, maneuvers and water safety skills of Stand Up Paddleboarding in a calm, flat-water setting.

OUTDOOR 41. Stand Up Paddleboarding: Intermediate. 1 Unit.
This course will focus on the development and refinement of the skills needed to paddle effectively in conditions where wind, waves, and current are present. Students will learn more advanced skills, strokes and maneuvers of SUP. This course is also designed to increase knowledge of SUP equipment.nnPrerequisite: Successful completion of Introduction to SUP or successful demonstration of equivalent skills.

OUTDOOR 43. Strength & Conditioning for Climbing. 1 Unit.
This course is for the intermediate to advanced climber looking to increase their climbing fitness. Students will be exposed to both general and climbing specific training principles to help improve climbing fitness and prevent common overuse injuries. Students will be taught with industry standard best practices with regards to safety and provided with a multi-disciplinary approach to overall health and wellness.

OUTDOOR 60. Introduction to Flyfishing. 1 Unit.
Introduces students to flyfishing and its constituent components as a sport and an art. Emphasizes basic skills needed to learn how to cast and tie knots. Students will learn basic stream ecology in order to better understand complex aquatic ecosystems, and thus, "read" water and make appropriate fly selections.

OUTDOOR 70. SCUBA Diving Open Water: Beginner. 1 Unit.
Acquire knowledge and skills to safely enjoy and gain limited experience in the diving environment under normal open water diving conditions. This course prepares students for Open Water SCUBA Diving PADI Certification. Topics include diving equipment, diving physics, medical aspects of diving, diving emergencies, the diving environment, diving practices, diving activities, and SCUBA diving skills.

OUTDOOR 71. SCUBA Diving Open Water: Advanced. 1 Unit.
Develop a diver who is confident, safe, relaxed, aware, and more able to enjoy the underwater world. Skills include: confidence to dive to deeper depths; night diving experience; boat diving techniques; river diving; ocean diving, currents, and marine environment; underwater navigation; and search and recovery techniques. This class is an excellent choice for certified divers who have not been diving for a while, and need to regain confidence.

OUTDOOR 72. SCUBA Diving Open Water: Rescue. 1 Unit.
Acquire knowledge and skills for individuals to effectively perform diver rescues and assists, manage diving accident situations, and render proper first aid. Prerequisites: Outdoor 70, Outdoor 71, EMED 110, EMED 224, or Instructor Permission.

OUTDOOR 100. Sociocultural Dynamics of Adventure. 3 Units.
An examination of the historical, psychological, social, and philosophical foundations of adventure experiences in American culture, folklore, and landscape. Experience adventure in a variety of contexts.

OUTDOOR 101. Introduction to Outdoor Education. 1 Unit.
Examine outdoor adventure activties through the perspective of a trip leader. Discuss risk management, judgment and decision making, group facilitaiton, program standard operating procedures, and legal liability.

OUTDOOR 103. Foundations of Outdoor Education. 2 Units.
Explore topics about adventure activity risk assessment, leadership style and values, industry standards, and wilderness equity and inlcusion through class activites, discussions, and reflections. Develop essential skills for individual and group sustainability in a backcountry setting including shelter in outdoor environments, equipment selection and use, travel techniques, water and nutrition needs, planning and preparation, and risk management. Course includes the participation in a weekend backcountry experience.

OUTDOOR 105. Outdoor Living Skills. 1-2 Unit.
Introduction to essential skills for individual and group sustainability in a backcountry setting including shelter in outdoor environments, equipment selection and use, travel techniques, water and nutrition needs, planning and preparation, and risk management. Course includes the participation in a weekend backcountry experience. Corequisite: Outdoor 101.

OUTDOOR 106. Outdoor Leadership Practicum. 1-2 Unit.
Outdoor education and leadership theory integration through intensive field-based experiences. During these field-based experiences, students will engage with critical self-assessment process to better understand their own levels of competence leading others. Co-requisite: OUTDOOR 101, OUTDOOR 105.

OUTDOOR 107. Working with Youth in Recreational Settings. 1 Unit.
Experience youth engagement techniques designed for specific outcomes and useful in outdoor environments. Discuss trends in youth culture through an examination of the social, legal, and political systems of working with youth in recreational programs. Course includes planned and facilitated youth engagement activities. Pre or Co-Requisite: OUTDOOR 101.

OUTDOOR 110. Adventure Experience Management. 1 Unit.
This course covers the effective design and delivery of courses and multi-day outdoor experiences. Students will learn the fundamentals of: emergency action plans; how to manage local operating procedures (LOP); standard operating procedures; Instructional design and delivery. Prerequisite: OUTDOOR 106 or Instructor Permission.

OUTDOOR 119. Outdoor Educator Apprenticeship. 1-2 Unit.
This course provides the student an opportunity to lead a multi-day outdoor experiences in an official capacity. Experience includes: outdoor living skills, planning and logistics, leadership, risk management, environmental integration, and education. Students will plan and co-lead field outings. Prerequisites: OUTDOOR 106.

OUTDOOR 195. Outdoor Education: Assistant Instructor. 1-2 Unit.
Opportunity to work in a field setting under supervision. Supports creation of artifacts for use in instructional portfolio if seeking Outdoor Educator certification. Requires defined student goals/benchmarks prior to field instruction. Pre-requisite: Outdoor 106 and instructor approval.

Physical Education Courses

PE 1. Indoor Cycling. 1 Unit.
This course is designed to teach students basic concepts associated with indoor cycling as well as build cardio-respiratory endurance, muscular strength, and flexibility through structured individually paced indoor cycling workouts. Instructors motivate participants through intervals, hill climbs and coasts for the ultimate workout. This course will utilize class discussions, class assignments and student participation to enable students to: (1) Understand basic components of health-related physical fitness, (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle.

PE 2. Cross-training. 1 Unit.
Students will be introduced to full-body conditioning training that targets the health-related components of physical fitness including: cardiorespiratory endurance, muscular strength, muscular endurance, and flexibility. A variety of mode of exercises such as weight training, core training, TRX, aqua jogging, and cycling will be incorporated in this course. Students will be able to design an exercise programs for lifelong fitness.

PE 3. Keep Calm, Jog On. 1 Unit.
Students will learn proper running mechanics (posture and gait), and how to condition and pace themselves throughout a variety of workouts such as tempo runs, easy runs, interval training (speed and hills) and other training methods. At the end of the quarter, students will have the tools to develop their own training programs. Students will also gain knowledge on how to make intelligent choices that contribute to a healthy active lifestyle. nPrerequisite: Students should be able to run continuously for at least 1.5 miles. If students can't run for 1.5 miles continuously, we recommend taking the following conditioning classes: PE 1: Indoor Cycling, PE 2: Cross-training, PE 5: TRX, PE 14: FUNctional Fitness Training, PE 7: Core Training, PE 8: Healthy Heart, PE 12 or 13: Weight Training, or PE 17: Total Body Training.

PE 4. Walk 'N Roll. 1 Unit.
Students will engage in a variety of campus walks that will help improve their overall physical, mental and emotional wellbeing by engaging in a variety of workouts such as easy walks, power walking, intervals (speed and hills), and other training methods. Students will learn proper walking posture and gait. Students will also learn how to foam roll and its benefits. This course will also utilize class instruction, assignments and student participation to enable students to: (1) Understand the basic components of fitness, health and wellness. (2) Develop a positive attitude toward wellness and physical activity, (3) Gain knowledge to make intelligent choices that contribute to a healthy active lifestyle.

PE 5. Fundamentals of TRX. 1 Unit.
Students will learn a variety of exercises that focuses on total body resistance exercise. This class allows you to move, stretch and strengthen the entire body. Exercising on the TRX utilizes gravity and movement to generate neuromuscular responses to changes in body position and mechanical advantage. Movements using the TRX integrate strength and balance into a single dynamic format. This course will utilize class discussions, class assignments and student participation to enable students to: (1) Understand basic components of health-related physical fitness such as: cardiovascular fitness, muscular strength and endurance and flexibility (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle.

PE 6. Barre Fusion. 1 Unit.
Students will learn a mix of Barre exercises, Pilates exercises, Yoga poses and stretching specifically designed to increase strength and muscle tone in the entire body and overall flexibility. We focus on proper alignment and improving posture. The exercises are intense and effective yet extremely accessible. This course will also utilize class instruction, assignments and student participation to enable students to: (1) Acquire knowledge of the basic components of health and wellness. (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle.

PE 7. Core Training. 1 Unit.
Learn and practice methods and techniques to improve body mechanics, stability, and overall core (abdominals, lower back and pelvis) strength. A strong torso is an essential component in posture, performance (sports, leisure activities, or hobbies), and activities of daily living. Students will engage in variety of upper-body, lower-body and core exercises, utilizing the three planes of motion on a stable and unstable surface to intensify the work load and challenge balance. This course will utilize class discussions, class assignments and student participation to enable students to: (1) Understand basic components of health-related physical fitness such as muscle strength and endurance (2) Develop physical fitness skills and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle.

PE 8. Healthy Heart. 1 Unit.
Students will engage in a variety of cardiovascular exercises that will improve overall performance in sports and leisure activities. This course will utilize class discussions, assignments and student participation to enable students to: (1) Understand the health and skill-related components of sports and physical fitness such as: cardiorespiratory endurance, speed, agility, and power (2) Enhance cardiorespiratory fitness by using a variety of equipment and mode of activities (3) Develop a positive attitude towards sports and physical activities, which will facilitate a healthy, active, lifestyle.

PE 12. Weight Training: Beginning. 1 Unit.
This course is designed to teach the fundamentals of weight training, including equipment use, exercise technique and safety procedures. By the end of the course, students should be able to safely demonstrate a variety of exercise techniques, as well as have a general appreciation for the benefits of strength training.

PE 13. Weight Training: Intermediate. 1 Unit.
This course will allow students to expand upon skills learned in Beginning Weight Training. Students will learn to design and develop a balanced weight training program to meet their goals. This course also provides an opportunity to develop skills in specific areas of strength training, endurance, and power. This course will utilize class discussions, class assignments and student participation to enable students to: (1) Understand basic components of health-related physical fitness such as: muscular strength and endurance, power, and flexibility (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle.nnPrerequisite: Students should have taken one of the following PE classes prior to registering for this course (PE 12: Beginning Weight Training, PE 5: TRX, PE 7: Core Training, PE 14: FUNctional Fitness Training, PE16: Circuit Training and PE 17: Total Body Training) or have prior weight/resistance training experience and a understanding of the fundamental principles associated with weight/resistance training.

PE 14. FUNctional Fitness Training. 1 Unit.
Students will learn how to increase their cardiorespiratory fitness level, boost muscular strength and endurance, and improve flexibility. Class sessions incorporate different modes of activities that focus on core strength and endurance, balance, speed and agility, power, and joint range of motion. A variety of fitness equipment (free weights, weight machines, stability and medicine balls, cardiorespiratory machines, foam roller, TRX, resistance bands, etc.) will be utilized to optimally work the body through multiple movement planes. Through class discussions, assignments, assessments,, and student participation, students will leave with an (1) Understanding of basic components of health-related physical fitness (2) Ability to perform activities of daily life effortlessly and without injuries, and improve their overall health, fitness and well-being and (3) A positive attitude toward wellness and physical activity, which will facilitate a healthy lifestyle.

PE 15. Fundamentals of Resistance Training. 1 Unit.
Students will be introduced to the fundamental principles of resistance training and will learn how to properly use a wide variety of exercise equipment such as free-weights, machines, TRX, stability and medicine balls and more. Proper technique, stretching, and injury prevention will also be discussed to aid in the design of an exercise program for lifelong fitness.

PE 16. Skills and Drills. 1 Unit.
Students will engage in exercises focused on the skill-related components of physical fitness including: speed, agility, power, coordination, balance, reaction and movement time. Proper form and technique will be emphasized to execute drills such as foot speed, leg turnover, sprint endurance, upper and lower body plyometrics, eye-hand coordination and unilateral balance maneuvers. Students will be able to develop a fitness-focus or sport-specific training program based on the drills that are introduced and practiced in class.

PE 17. Total Body Training. 1 Unit.
Students will learn a variety of exercises that focuses on the body as a whole. This class allows you to move, stretch and strengthen the entire body. A variety of equipment will be used to target all major muscle groups. This course will utilize class discussions, class assignments and student participation to enable students to: (1) Understand basic components of health-related physical fitness such as: cardiovascular fitness, muscular strength and endurance and flexibility (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle.

PE 20. Badminton: Beginning. 1 Unit.
This course is designed to teach the basic skills necessary to play the game of badminton. Fitness and training principles will be discussed as well as singles and doubles strategy. This course will utilize class discussions, class assignments and student participation to enable students to: (1) Understand basic components of skill-related and health-related physical fitness (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle.

PE 21. Badminton: Intermediate. 1 Unit.
TThis course will introduce the student to more advanced skills and strategies of the game of badminton. Emphasis will be placed on conditioning, shot selection, court positioning, and singles and doubles play. This course will utilize class discussions, class assignments and student participation to enable students to: (1) Understand basic components of skill-related and health-related physical fitness (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle.

PE 22. Table Tennis: Beginning. 1 Unit.
Basic counters, topspins, and chops with both the forehand and backhand. Serve and return, emphasizing game situations and match play. All equipment provided.

PE 23. Table Tennis: Intermediate. 1 Unit.
This class is intended for players who have experience playing table-tennis including those who have taken the beginning table-tennis class. Students should have prior experience in countering, looping, chopping, and serving.

PE 24. Pickleball: Beginning. 1 Unit.
Students will learn and develop the essential stroke techniques with emphasis on posture and control. This course will also cover the biomechanics associated with pickleball, as well as the rules and etiquette. This course will utilize class discussions, class assignments, and student participation to enable students to: (1) Acquire knowledge of basic structures of the human anatomy to optimally perform the skills (2) Develop an understanding of exercises, stretches, and conditioning exercises to allow for more efficient movements, and (3) Understand and practice behaviors that contribute to a healthy lifestyle.

PE 25. Squash: Beginning/Intermediate. 1 Unit.
Techniques, rules and practice matches. Racquets, balls, and eye guards provided.

PE 26. Tennis: Beginning. 1 Unit.
Students will learn and develop the essential stroke techniques with emphasis on control. This course will also incorporate rules, etiquette, and basic play. This course will utilize class discussions, class assignments and student participation to enable students to: (1) Understand basic components of health-related physical fitness, cardiovascular fitness, muscular strength and endurance and flexibility (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle.

PE 27. Tennis: Advanced Beginning. 1 Unit.
Students will review and strengthen stroke techniques with emphasis on control, depth, and direction. This course will also incorporate rules, etiquette, and basic strategy and tactics. This course will utilize class discussions, class assignments and student participation to enable students to: (1) Understand basic components of health-related physical fitness, cardiovascular fitness, muscular strength and endurance and flexibility (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle. Prerequisites: 26, or knowledge of rules and scoring and average ability in fundamental strokes but limited playing experience.

PE 28. Tennis: Intermediate. 1 Unit.
Students will review and strengthen stroke techniques with more emphasis on depth, direction, and spin. This course will also incorporate basic to advance strategies and tactics with performance enhancing cooperative and competitive drills. This course will utilize class discussions, class assignments and student participation to enable students to: (1) Understand basic components of health-related physical fitness, cardiovascular fitness, muscular strength and endurance and flexibility (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle. Prerequisites: 27 or average ability in fundamental strokes, and regular playing experience.

PE 29. Tennis: Advanced. 1 Unit.
Students will refine stroke techniques with more emphasis on spin, power, and variety. This course will also incorporate advance strategies and tactics with performance enhancing competitive drills. This course will utilize class discussions, class assignments and student participation to enable students to: (1) Understand basic components of health-related physical fitness, cardiovascular fitness, muscular strength and endurance and flexibility (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle.

PE 33. Golf: Beginning. 1 Unit.
This course is designed to teach the fundamentals of the golf swing; putting, chipping, and sand play. We will also cover golf etiquette and rules. This course will utilize class discussions, class assignments and student participation to enable students to: (1) Understand basic components of skill-related and health-related physical fitness, (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle.

PE 34. Golf: Advanced Beginning. 1 Unit.
This course allows students to further develop their golf swing and short game. This course will also review golf concepts, rules and etiquette. This course will utilize class discussions, class assignments and student participation to enable students to: (1) Understand basic components of skill-related and health-related physical fitness, (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle. Prerequisite: PE 33 or golf experience.

PE 35. Golf: Intermediate. 1 Unit.
This course allows students to further develop their golf game by engaging in various golf drills and the opportunity to practice on all facets of golf. Students will learn how to lower scores and manage the game on the course. This course will utilize class discussions, class assignments and student participation to enable students to: (1) Understand basic components of skill-related and health-related physical fitness, (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle. Prerequisite: 34 or equivalent.

PE 36. Golf: Advanced. 1 Unit.
This course is designed to refine the golf swing and increase power, distance, and accuracy. This course will also cover topics such as: course management, mental preparation and visualization techniques. This course will utilize class discussions, class assignments and student participation to enable students to: (1) Understand basic components of skill-related and health-related physical fitness, (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle. Prerequisite: PE 35 or experience playing and practicing, and the ability to hit shots with relative accuracy and distance.

PE 42. Strength & Power. 1-2 Unit.
Provides students with a framework to develop a balanced strength, power and endurance program specific to their needs. Topics addressed will include mobility and stability training, posture awareness, designing strength and power programs, and injury prevention. This course will utilize class instruction, assignments, and student participation to enable students to: (1) Acquire knowledge of basic structures of the human anatomy and posture awareness (2) Develop an understanding of exercises and stretches to allow for better movement, and (3) Understand and practice behaviors that contribute to a healthy lifestyle.

PE 43. F.I.T. 1 Unit.
Incorporates multiple modalities to allow students to learn how to integrate assessments and programming to facilitate adherence and behavior change, while also improving posture, movement, flexibility, balance, core function, cardiorespiratory fitness, muscular endurance and muscular strength. This course will utilize class instruction, assignments, and student participation to enable students to: (1) Acquire knowledge of basic structures of the human anatomy and assess faulty movement patterns (2) Develop an understanding of exercises, stretches, and soft tissue work to allow for better movement, and (3) Understand and practice behaviors that contribute to a healthy lifestyle.
Same as: Fun, Integrated, Training

PE 46. Sailing: Beginning. 1 Unit.
Students will learn skills, theories, and techniques to enable beginners to sail with confidence in small centerboard boats. This class utilization of class discussions, assignments and student participation will enable students to: (1) Understand basic components of health-related physical fitness, cardiovascular fitness, muscle endurance and flexibility (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle.

PE 47. Sailing: Advanced Beginning. 1 Unit.
Students will have the opportunity to further development their sailing skills and techniques. This class utilization of class discussions, assignments and student participation will enable students to: (1) Understand basic components of health-related physical fitness, cardiovascular fitness, muscle endurance and flexibility (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle.

PE 48. Sailing: Intermediate. 1 Unit.
Students will have the opportunity to refine their sailing skills Students will also be introduced to racing. This class utilization of class discussions, assignments and student participation will enable students to: (1) Understand basic components of health-related physical fitness, cardiovascular fitness, muscle endurance and flexibility (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle.

PE 50. Swimming: Beginning I. 1 Unit.
This class is for first time swimmers and for individuals who have fear, anxiety or discomfort in water. This class is also designed for individuals who have previously taken beginning swim courses and have had little/no success or who struggle to move through water. A foundation of basic balance and movement skills will be developed through a series of fundamental water exercises. When safety or balance in the water is in question, so is the ability to move, and to some extent, the ability to breathe comfortably. As comfort and balance improves, the easier it is to accept breathing and movement skills. The goal is for a swimmer to become comfortable and in control in both shallow and deep water. The fundamental skills learned in this course will provide a foundation for learning stroke technique, such as freestyle, in an effortless manner. Prerequisites: None.

PE 51. Swimming: Beginning II. 1 Unit.
In this class you will learn how to relax in the water, breath effectively, float and tread, swim 4-5 strokes (freestyle, backstroke, sidestroke, elementary backstroke, and breaststroke, time permitting), jump in the water from the deck, use swimming equipment (kickboards, pull buoys, fins) and swim across a 25-yard pool. This course will utilize class discussions, class assignments, and student participation to enable students to: (1) Swim each stroke with proper form and technique (2) Develop an understanding of how to stay healthy and conditioned to further enhance swim strokes and decrease the risk of injuries. (3) Develop a positive attitude toward wellness and physical activity, which will facilitate a healthy lifestyle. n Prerequisite: Successfully completed PE 50: Swimming: Beginning I or able to satisfactorily complete all skills during the assessment.

PE 52. Swimming: Intermediate. 1 Unit.
This class is for those who can swim across a 50-yard pool. In this class you will learn how to: breathe effectively, tread water, dive in from the edge and use swimming equipment (kick boards, pull buoys, hand paddles, fins). You will be introduced to and gain further development of the 4 competitive swimming strokes (Freestyle, Backstroke, Breaststroke & Butterfly). An introduction to flipturns and intervals (50 yard repeats) will be taught. Underwater videotaping and stroke review and analysis will occur. Prerequisite: Ability to swim across a 50-yard pool continuously. You MUST be comfortable in deep water, if you are uncomfortable in deep water please take PE 50 or 51 Beginning Swim I or II.

PE 53. Swimming: Advanced. 1 Unit.
This class is for those who can swim 100 yards freestyle continuously and have had an introduction to backstroke and breaststroke. In this class you will learn: refinement of the 4 competitive swimming strokes: freestyle, breaststroke, backstroke, butterfly (review/intro) and efficient breathing techniques. You will gain additional development of flipturns using intervals (100 yard repeats), competitive starts and turns, use of swimming equipment (kick boards, pull buoys, hand paddles, fins) for fitness, and videotaping with review. nPrereq: Swim 100 yards continuous of freestyle. If you have not had an introduction to Breaststroke or backstroke, we recommend you take PE 52: Swimming Intermediate.

PE 54. Swimming: Stroke Refinement. 1 Unit.
Review and fine tune the 4 competitive strokes (freestyle, backstroke, butterfly, and breaststroke), with a primary emphasis on improving freestyle stroke efficiency. Flipturn refinement. Drill and technique work will be heavily emphasized. On average, 1000 meters will be swum per class. Prerequisite: Ability to tread deep water for 5 minutes, swim 100 meter intervals of freestyle, backstroke, and breaststroke with rhythmic breathing, and swim 200 meters continuously under 5 minutes.

PE 55. Swim Conditioning. 1 Unit.
Improve cardio-respiratory endurance through directed swimming workouts. Technique corrections as needed. Prerequisite: advanced swimmer.

PE 56. Aqua Fitness Training. 1 Unit.
Students will improve their overall health and fitness levels (cardiovascular, muscular endurance, and flexibility) through a variety of structured water workouts. This course will utilize class discussions, class assignments and student participation to enable students to: (1) Understand basic components of health-related physical fitness, cardiovascular fitness, muscular strength and endurance and flexibility (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle.

PE 65. Horsemanship: Beginning Riding. 1 Unit.
This course explores beginning riding. Topics include, but are not limited to, basic horse care, equitation at the walk/trot and negotiation of simple obstacles. This course will utilize class discussions, class assignments and student participation. No experience needed.

PE 66. Horsemanship: Advanced Beginning Riding. 1 Unit.
This course will review the basics of horsemanship and provides the necessary foundation for riding. Topics that will be covered include: horsemanship and horse care; work at the walk, trot and the foundations of jumping. This course will utilize class discussions, class assignments and student participation. Prerequisite: PE 65 within the last three quarters. Please signup for the waitlist on Axess. You will be contacted regarding available section times during the first week of the quarter. Fee $500, meets at Red Barn.

PE 67. Horsemanship: Intermediate Riding. 1 Unit.
Basic veterinary skills and barn management. Riding at all gaits and completing horsemanship patterns (Western) or jumping basic courses (English). Prerequisite: PE 65 or 66.

PE 68. Horsemanship: Student Assistant. 1 Unit.
Students will assist the primary instructor for PE 65 Horsemanship: Beginning Riding, PE 66 Horsemanship: Advanced Beginning Riding, and PE 67 Horsemanship: Intermediate Riding. Students will have the opportunity to assist other students with regards to horse care, horse handling and the foundational skills of riding such as steering, position as well as work at the walk and trot.

PE 70. Introduction to Martial Arts. 1 Unit.
This course will focus on techniques, training methods, history, and culture of Asian martial arts. Throughout the quarter, students will learn proper warm-ups, fundamental techniques, basic application, and conditioning. This course will focus on the development of (1) Martial Art skills for physical fitness and positive exercise experience, and (2) understanding of benefits of Martial Arts toward a positive attitude toward wellness and physical activity which will facilitate an active and healthy lifestyle.

PE 71. Taiji Quan. 1 Unit.
Tai Chi (Taiji Quan) is a slow meditative Chinese exercise designed for relaxation, and to improve balance, and health. This course will focus on the development of (1) motor Tai chi skills for physical fitness and positive exercise experience, (2) knowledge of Tai Chi and basic components of health-related physical fitness, and (3) understanding of benefits of Tai chi toward a positive attitude toward wellness and physical activity which will facilitate an active and healthy lifestyle.nAll levels are welcome.
Same as: Tai Chi

PE 72. Tai Chi: Intermediate. 1 Unit.
At the Intermediate level, students will develop a deeper and more internal understanding of Tai Chi. This course will introduce new concepts and movements that are more challenging. This course will also utilize class discussions, class assignments and student participation to enable students to: (1) Understand basic components of health-related physical fitness (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle. Prerequisite: PE 71 or prior practice and courses in Tai Chi.

PE 75. Self-Defense. 1 Unit.
Develop fundamental self-defense awareness, knowledge, and strategies for handling violent crimes under a variety of conditions. Improve physical self-defense skills on different types of common physical attacks and applications via hands-on experience in simulated situations. Incorporate self-defense skill practice in daily physical activity routines for an active lifestyle.

PE 80. Yoga for Stress Management. 1 Unit.
Students will have the opportunity to learn ancient yoga/health practices for managing daily stressors. Students will learn to identify signs and symptoms of stress, how anxiety manifests in the body and mind, and yoga techniques for relief. The focus will be on breathing techniques to calm the nervous system and practicing mindfulness. Hatha, or physical yoga, will also be introduced as preliminary practices to balance the body, relax the breath, stretch and tone muscles, and massage internal organ systems. All practices are meant to provide students new options for gaining inner strength and self-control. This course will utilize class instruction, assignments, and student participation to enable students to: (1) Acquire knowledge of the basic health-related components of physical fitness and the different dimensions of wellness. (2) Develop the skill-related components of fitness, and (3) Understand and practice the behaviors that contribute to a healthy lifestyle.

PE 81. Yoga: Beginning. 1 Unit.
Students will learn basic yoga poses and how to reduce tension, increase energy levels, move efficiently, reconnect to self-awareness, and learn about the body. The poses are adaptable and can be personalized for any level of fitness. The emphasis of the class will be on asanas (poses) for increased flexibility, improved health, relaxation, and reduced stress in daily living. Students will also be exposed to the language, philosophy, history, and concepts of Yoga. A typical class will include breathing techniques, meditation and asana practice, including standing, balancing, stretching and some inverted poses. At the end of the quarter students will have: (1) Acquired knowledge of the basic components of health and wellness. (2) Developed physical fitness and motor skills, and (3) A positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle.

PE 82. Yoga: Asana Practice. 1 Unit.
Yoga offers continual opportunities for growth and balance both physical and nemotional. Challenging yourself with different approaches will help you stay nfocused and keep your practice creative. In Asana Yoga Practice students will learn solid yoga practices that they can enjoy on their own as well as yoga foundations that they can apply in all types of yoga classes around the world.

PE 83. Flow Yoga. 1 Unit.
This course is for students who have a basic understanding and practice of yoga asanas (poses). Students will learn to control their breath to smoothly `flow¿ through a series of poses with inner awareness to postural alignment. This course will utilize class instruction, assignments, and student participation to enable students to: (1) Acquire knowledge of the basic health-related components of physical fitness and the different dimensions of wellness. (2) Develop the skill-related components of fitness, and (3) Understand and practice the behaviors that contribute to a healthy lifestyle.

PE 84. Yoga/Pilates Fusion. 1 Unit.
This class will focus on practicing yoga poses and Pilates exercises to enhance one¿s sense of proprioception, mind-body awareness, and muscular strength and endurance. This course will utilize class instruction, assignments, and student participation to enable students to: (1) Acquire knowledge of the basic health-related components of physical fitness and the different dimensions of wellness. (2) Develop the skill-related components of fitness, and (3) Understand and practice the behaviors that contribute to a healthy lifestyle.

PE 85. Yoga: Intermediate. 1 Unit.
This course is designed for students who already possess an ongoing yoga practice. Students will practice holding basic yoga poses for a longer period of time while focusing on pranayama (controlled breathing). Intermediate yoga will provide students with information and experience which will enable students to: (1) Acquire knowledge of the basic components of health and wellness. (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity which will facilitate a healthy lifestyle.

PE 86. Power Yoga. 1 Unit.
Power yoga combines dynamic breathing and flowing sequences of asanas that focus on strengthening the entire body. Core muscle activation and stabilization is emphasized to ensure safe body mechanics. Power yoga will provide students with information and practical experience that will enable students to: (1) Acquire knowledge of the basic components of health and wellness. (2) Develop physical fitness and motor skills, and (3) Develop a positive attitude toward wellness and physical activity, which will facilitate a healthy lifestyle.

PE 87. Essentials of Pilates. 1 Unit.
Students will focus on developing core strength, joint flexibility, and body awareness by engaging in a variety of exercises that integrate the principles of Pilates (concentration, control, center, flow, precision, and breathing). This course will utilize class instruction, assignments, and student participation to enable students to: (1) Acquire knowledge of the basic health-related components of physical fitness and the different dimensions of wellness. (2) Develop the skill-related components of fitness, and (3) Understand and practice the behaviors that contribute to a healthy lifestyle.

PE 88. Pilates Mat: Intermediate. 1 Unit.
Students will focus on developing core strength and endurance by engaging in a variety of exercises that integrate the principles of Pilates (concentration, control, center, flow, precision, and breathing). Postural joint alignment and awareness will be emphasized through the use of additional equipment. This course will utilize class instruction, assignments, and student participation to enable students to: (1) Acquire knowledge of the basic health-related components of physical fitness and the different dimensions of wellness. (2) Develop the skill-related components of fitness, and (3) Understand and practice the behaviors that contribute to a healthy lifestyle.

PE 97. Lifeguard Training. 1 Unit.
This course allows students to learn lifeguard characteristics and responsibilities, recognize hazards and emergencies, patron and facility surveillance, interaction with the public, and rescue skills. Students will also learn first aid and CPR/AED for the Professional Rescuer. This course will utilize class discussions, class assignments and student participation, both in and out of water, to prepare students to become lifeguards.nnPrereq: 300 yard continuous swim with rhythmic breathing (100 yards of freestyle, 100 yards of breaststroke, and 100 yards of combination of the two); Swim 20 yards, surface dive 7ft, retrieve a 10lb diving brick, and return in one minute and forty seconds.

PE 98. Coaching Corps. 1 Unit.
This course is designed to build practical and educational foundations to prepare students to be instructional leaders (coaches) in sports activities. Students will have the opportunity to make a valuable contribution to youth while developing practical coaching skills. The course will explore topics including practice planning and designing curriculum, how to effectively engage youth in sports, youth development through sports, social issues facing urban youth in sports, the plight of sports programs in urban centers, and how to create a college-going culture among youth in low-income communities. Students will coach off campus at local schools/community-based organizations that offer after school sports programs.

PE 99. Selected Topics: PE. 1 Unit.
Exploration of a topic (to be determined) not covered by the standard curriculum but of interest to faculty and students in a particular quarter. May be repeated with change of content. For more information regarding specific course titles, please refer to the notes of each course section.

PE 101. Fitness for Life. 1 Unit.
Learn about the essential concepts related to fitness and exercise (i.e. biomechanics, exercise nutrition, setting SMART goals, injury prevention, flexibility, stress management, cardiovascular health, lower back care and principles of weight training). Students will apply these concepts in class by engaging in a variety of physical activities such as: weight-training, Pilates, yoga, H.I.I.T, plyometric-training, speed and agility training, aerobic-endurance activities and TRX.

PE 102. Nutrition for Lifelong Physical Activity. 1 Unit.
Understanding the bodies' nutritional needs in all capacities of human movement and daily physical activity is fundamental in achieving health and overall well-being. Learn how to nourish their body to build and maintain their health and well-being throughout their lives. Utilize class discussions, class assignments, and student participation to: identify basic principles of healthy eating to prevent disease and promote optimal health and performance; recognize the role of food and contexts in which food choices are made; and make confident and intelligent eating decisions that will contribute to building and maintaining a well-nourished body, meeting its changing needs.
Same as: WELLNESS 102

PE 103. Foundations of Health and Performance Psychology. 1 Unit.
Drawing upon research and models of sport and exercise psychology, this course examines the personal and social psychology of health and performance, in what ways they are interdependent, and how we can utilize mental skills techniques to boost performance in various areas of our lives.
Same as: WELLNESS 103

PE 104. Designing Personalized Workouts. 1 Unit.
Students will learn how to design safe, effective, exercise programs based on their individual needs and interest. Through class discussions, assignments and participation, students will learn all the health-related and skill-related components of fitness such as cardiovascular endurance, muscular strength and endurance, flexibility, balance, agility, speed, power, and coordination. Prerequisite: All levels and abilities welcome.

PE 105. Physical Activity and Exercise: Injury Awareness, Treatment and Management. 1 Unit.
Introduces common injuries associated with physical activity as well as methods for injury prevention and management. The fundamental biological processes related to healing of the human body and injury nomenclature will also be examined. Furthermore, human anatomy will be covered as it relates to common injuries related to physical activity in the general population. Additionally, students will apply common injury management methods in practical usage. Course materials will cover topics such as foam rolling, stretching, injury taping, healing phases of the body, fatigue, and muscle cramping among other related topics.

Wellness Education Courses

WELLNESS 102. Nutrition for Lifelong Physical Activity. 1 Unit.
Understanding the bodies' nutritional needs in all capacities of human movement and daily physical activity is fundamental in achieving health and overall well-being. Learn how to nourish their body to build and maintain their health and well-being throughout their lives. Utilize class discussions, class assignments, and student participation to: identify basic principles of healthy eating to prevent disease and promote optimal health and performance; recognize the role of food and contexts in which food choices are made; and make confident and intelligent eating decisions that will contribute to building and maintaining a well-nourished body, meeting its changing needs.
Same as: PE 102

WELLNESS 103. Foundations of Health and Performance Psychology. 1 Unit.
Drawing upon research and models of sport and exercise psychology, this course examines the personal and social psychology of health and performance, in what ways they are interdependent, and how we can utilize mental skills techniques to boost performance in various areas of our lives.
Same as: PE 103

WELLNESS 105. Meeting the Moment: Inner Resources for Hard Times. 1 Unit.
In the face of social, economic, environmental, and public health upheavals, many of us are experiencing an unprecedented degree of uncertainty, isolation, and stress affecting academic and day-to-day life. Challenging times ask us, in a voice louder than usual, to identify sources of strength and develop practices that sustain and even liberate. In this experiential, project-oriented class: Explore practices to find true ground and enact positive change for self and community; Cultivate natural capacities of presence, courage, and compassion; Develop resources to share with one another and the entire Stanford community.
Same as: LIFE 105

WELLNESS 110. The Science of Motivation and Procrastination. 1 Unit.
Examine the factors that increase motivation and decrease procrastination from a scientific point of view. Investigate research and models of motivation and procrastination in task engagement arising from the fields of psychology, behavioral economics, and cognitive neuroscience. Cultivate and apply cognitive, behavioral, and social tools that enhance motivation and decrease procrastination while supporting balanced and healthy achievement.

WELLNESS 111. Exploring Happiness. 1 Unit.
Explores how research-based happiness theory and principles are applied to enhance daily and life satisfaction. Positions happiness as a cornerstone construct of personal wellness, purpose, and fulfillment. Investigates the science of happiness through lecture, guided practice, dialogue, and course material in order to enhance understanding and implementation.

WELLNESS 112. Overcoming Imposter Syndrome and Building Confidence. 1 Unit.
Examine the science and societal implications of "imposter syndrome" and its counterpart, confidence. Utilize the lenses of social science, psychology, mindfulness, and neurobiology to explore your own relationship with imposter syndrome and to build confidence. Investigate the systemic impact of imposter syndrome and confidence in academia, the workforce, and other cultural spaces. Topics include: race, class, and gender; behavior change; neuroplasticity; body language and mindset; the psychology of stress; risk-taking; metacognition; and the physiology of confidence. By the end of this course students will be able to recognize imposter syndrome and utilize confidence-building strategies in their own lives.

WELLNESS 113. Stress Less, Sleep Better. 1-2 Unit.
Effectively manage stress and practice positive sleep strategies to enhance clarity, focus, and energy. Presents tools for assessing perceived stress and sleep quality, findings in the science of stress management, current research in sleep studies, and cognitive-behavioral theories and interventions (CBT-i) demonstrated to reduce stress and certain insomnias, while enhancing sleep quality.

WELLNESS 114. Emotional Intelligence: Enhancing Your Effectiveness and Balance. 1-2 Unit.
Examine the science and practice of emotional intelligence and how it increases effectiveness and balance. Utilize leading frameworks and tools for enhancing emotional and social intelligence, including the understanding, managing, perceiving, and use of emotions. Blends lecture with experiential learning to develop theoretical and practical knowledge resulting in enhanced intra- and interpersonal skills.

WELLNESS 115. Why Decisions are Difficult: Making Wise Choices from Love to Lunch. 1 Unit.
Examine why making decisions can be difficult and how making wiser decisions enhances satisfaction, happiness, and life success. Investigate practical decision-making frameworks and skills while building awareness around common decision-making fallacies and pitfalls. Develop skills in topic areas ranging from mindfulness, emotional intelligence, cognitive reframing, self-compassion, empathy, gratitude, and courage. Focus on making wiser decisions, big and small, short-term and long-term.

WELLNESS 116. Resilience: How to Bounce Back. 1 Unit.
Examine the science and practice of resilience. Investigate the emerging field of resilience studies and learn the frameworks and skills that allow people to bounce back more quickly and effectively from life challenges. Topics include mindset and cognitive appraisal, emotional and affect management, central nervous system and vagal system regulation, and perspectives on creating resilient social systems. Harness insights in service rising above life adversity and thriving, even in the midst of tough times.

WELLNESS 117. Changing For Good: Behavior Change Science & Practice. 1-2 Unit.
Change behaviors using evidence-based techniques. Addresses the roles of habit cycles, procrastination mitigation, productivity enhancement, motivational factors, self-compassion, and addiction and addictive processes (both substances and non-substance related) in changing behaviors from maladaptive to adaptive patterns. Drawing from current findings in the neuroscience and psychology of behavior change and habit formation, utilize motivational interviewing, cognitive reframing, peer coaching, and mindfulness meditation models and intervention strategies.

WELLNESS 118. Sexual and Emotional Intimacy Skills. 1-2 Unit.
Learn to cultivate and sustain emotional, physical, and sexual intimacy in relationships. Course takes a sex-positive approach. In addition to scholarly readings on science-based perspectives, the course includes individual, paired, and group exercises in and out of class. Didactic components address the art and science of intimacy through a sociological lens, addressing embodiment, the nuances of consent, needs and boundaries, empathy, safer sex and safer heart conversations, flirting, attunement, escalation and de-escalation, fantasies, pornography, pleasure, selecting partners, repairing relationships, and breaking up.

WELLNESS 119. Cultivating Healthy Romantic Relationships. 1 Unit.
Explore the factors that support healthy romantic relationships from psychological, sociological, historical, and cultural perspectives. Investigate the questions, What is a healthy romantic relationship and how do I know if my relationship is healthy? Study the structures of healthy romantic relationships through learning about attraction, attachment, attunement, individuation, cultural scripts, gender roles, and considerations of non-monogamous and non-heteronormative relationships.

WELLNESS 120. Let's Talk About Sex. 1-2 Unit.
TBA.

WELLNESS 121. Performance as Healing. 1 Unit.
TBA.

WELLNESS 122. Work With Purpose: Design Your Career. 1 Unit.
Presents meaningful work as an essential component for life-long wellbeing. Discusses decision making, navigating change, mindfulness, self-compassion, and resilience as these topics relate to your career journey. Blends lecture, discussion, individual and group coaching, and small and large group interactions. Learning activities enhance theoretical knowledge and guide career-related decisions.

WELLNESS 123. Living on Purpose. 1-2 Unit.
Explore the art and science of purpose-finding as it relates to living a more flourishing life at Stanford and beyond. Investigate the contemplative, psychological, social, and communal factors that deepen meaning-making, support authenticity, and encourage living more purposefully. Drawing from disciplines as diverse as art, storytelling, design, and positive psychology, create and utilize tools that promote wellbeing. Highly interactive course employs creative expression, group and individual activities, discussions, lectures, and mini-field trips to reflect on fundamental human questions in pragmatic ways.

WELLNESS 124. Intro to Wellness: Nutrition, Movement, Stress, and the Body. 1-2 Unit.
Investigate how physical factors (proper nutrition, adequate exercise, stress management, and effective sleep practices) serve as the foundation for mind-body wellness. Examine current controversies and research in the field of mind-body wellness and holistic health, with specific emphasis on the relationship between physical factors and psychological states. Provides guided practices on using established wellbeing principles to live a healthy and happy life.

WELLNESS 125. Live Better Longer: Enhancing Healthspan for Longer Lifespan. 1-2 Unit.
Explore ideas and practices that extend healthspan, the number of years we live free of disease or disability. Translate scientific research around current healthspan theories and understand social behaviors and available technologies that support rather than degrade human health. Apply course material to enhance one's own ability to adapt and self-manage in the face of adversity for improved performance and health.

WELLNESS 126. Connection Through Nature: The Art & Science of Natural History. 1 Unit.
Use art as an entry point for closer observation, deeper curiosity, and better understanding of natural systems. Guest experts in art, science, and the practice of natural history facilitate investigation of the Jasper Ridge Biological Preserve through microscopic to macroscopic lenses. Explore how field journaling, art and expressive language can mediate mindfulness, insight, and sense of connection. NOTE: application required. Apply here: https://docs.google.com/forms/d/e/1FAIpQLSeaf_mBuOuaKPWf_tSUzO0l1ANQpSmOwJsmVe0SLW2xoH2uag/viewform.

WELLNESS 127. Driving Your Metabolism. 2 Units.
Examine the main factors impacting metabolic rate including stress, sleep, movement, and nutrition. Review the science behind the continual need for nourishment including quality sleep, stress management, movement and consistent nutrient supply. Practically apply principles of metabolism to one¿s unique physiology and lifestyle for optimal well-being.

WELLNESS 130. Meditation. 1 Unit.
Introduces diverse forms of meditation practice in both theory (contemplative neuroscience, phenomenological traditions) and practice. Practices in guided imagery, compassion, loving kindness, positive emotion, mindfulness and mantra meditation will be offered to enhance stress management and well-being. While meditation practices emerge from religious traditions, all practice and instruction will be secular.

WELLNESS 131. Compassion Meditation: Strengthening the Heart. 1 Unit.
Investigate evidence-based models of compassion meditation and cultivation based on Stanford's Center for Compassion and Altruism Research and Education (CCARE) program and following the Stanford Compassion Training Protocol (CPT). Examine strategies to develop self-compassion, experience genuine happiness, reduce stress and negative thoughts, resolve differences with difficult others, and take compassionate action that makes a difference in the world. Courses mixes direct instruction, meditation, and group discussion on current research and its real world application.

WELLNESS 132. Breathwork for Wellbeing. 1 Unit.
Discover the power of the breath as a gateway to reach a meditative state of mind. Combine meditative practice with activities that inspire connection and purpose through community building and mindful leadership. Learn through breathwork, meditation, lecture, class discussion, experiential learning, and yoga. Cornerstone of the course is evidence-based SKY Meditation technique that utilizes the breath to quiet the mind, supporting a deep experience of meditation and a practical approach to happiness. Course requirements include attendance at a mini-retreat (see "notes" section). Also note: Wellness 132 was previously offered as MED 130.

WELLNESS 133. Meditation Retreat: Weekend Campus Intensive. 1 Unit.
Introduces diverse forms of meditation practice in both theory (contemplative neuroscience, phenomenological traditions) and practice. Selected practices in focused attention, mindfulness, guided imagery, compassion, loving kindness, positive emotion, and/or mantra meditation will be offered to enhance focused attention, insight, stress management, and well-being. Takes place in a weekend immersion format (on campus), which allows more immersive exploration of the topic space. While meditation practices emerge from religious traditions, all practice and instruction will be secular.

WELLNESS 134. Forgiveness Practice and Meditation. 1-2 Unit.
Examines forgiveness from a variety of perspectives with an emphasis on its value for physical and mental well-being. Presents forgiveness both as a useful response to interpersonal hurt and a teachable skill, backed by scientific research from preventative medicine and psychology. Explores the idea that forgiveness and grievance are both narrative responses to painful experience, but differ in their adaptability and utility. Spiritual and contemplative approaches to forgiveness will be considered, but the methods are secular and research-tested.

WELLNESS 135. Mindful Self-Compassion, Strength, and Courage. 1 Unit.
Investigate how harsh self-criticism adversely impacts well-being, strength, and performance. In contrast, explore how mindful self-compassion (MSC) enhances emotional well-being, increases resilience and strength in coping with life challenges, and supports positive personal relationships. Using the scientifically validated MSC method (Neff & Germer), learn how to better pursue goals and commitments (academic, personal/social development, community service, and/or activism) with greater inner-peace, confidence, and courage.

WELLNESS 136. Meditation and the Brain: Practicing the Science and Art of Contemplation. 1-2 Unit.
Investigate the power of meditation for training the mind and changing the brain, specifically in focusing attention, enhancing awareness, and generating compassion. Going beyond meditation as a tool for simply reducing stress, this course grounds the theory and practice of meditation in a neuroscientific understanding of how meditation changes brain structures and functioning in service of increasing overall cognitive performance and psychological wellbeing. Learn how to apply specific frameworks and tools for effectively practicing meditation in daily life.

WELLNESS 138. Mindfulness and Stress Management. 1 Unit.
Effectively manage stress through mindfulness meditation strategies (sitting and movement-based) that positively impact the brain-body system to enhance clarity, focus, and energy. Examine tools for assessing perceived stress and mindfulness, current findings in the science of stress management and meditation, and cognitive-behavioral theories and interventions demonstrated to reduce stress and enhance well-being. Course is based on the mindfulness-based stress reduction (MBSR) curriculum.

WELLNESS 150. Introduction to Nutrition. 1 Unit.
Optimize nutrition for health and performance based on established and emerging research. Discern between popular trends and scientific understandings of healthy nutrition and nutritional habits. Topics include evidence-based analysis of macronutrients, fad diets, sugar addiction, low-calorie sweeteners, caloric restriction, disease prevention, and general nutrition with an emphasis on translating research into implementable, day-to-day dietary practices.

WELLNESS 152. Mindfulness and Food. 1 Unit.
Explore the psychological foundations of a positive relationship with food to enhance mind-body health and optimize performance. Focuses on nutritional science and research-based mindfulness practices shown to enhance physical and psychological well-being. Covers topics ranging from inner and outer wisdom, self-assessment of hunger and satiety, critical thinking about food related media messages, stress, and transitions as they influence eating habits. Emphasizes translating theory and research into lifestyle practices.

WELLNESS 160. Radically Human Technology: Enhancing Connection and Wellbeing. 1-2 Unit.
Explore the present and future relationships between technology, humanity, and the search for happiness & flourishing. Investigate and develop the core questions, concerns, ethical considerations, and broad implications of technologies that shape human culture and consciousness. Course draws from science and technology studies, contemplative science, neurophenomenology, positive psychology, biomedical engineering, central nervous system stimulation, and neurofeedback. Evaluate the latest tech, interact with luminaries in the field, and rapid-design your own consumer tech concept.

WELLNESS 161. Introduction to the Technology of Flourishing: Weekend Campus Intensive. 1 Unit.
Investigate the present and future relationship between technology, humanity, and the search for happiness & flourishing. Explore and develop the core questions, concerns, ethical considerations, and broad implications of technologies that shape human culture and consciousness. Course draws from science and technology studies, contemplative science, neurophenomenology, positive psychology, biomedical engineering, and brain stimulation & neurofeedback. Utilize and evaluate some of the latest tech supporting human flourishing.

WELLNESS 162. Digital Wellbeing: Healthy Relationships With Technology. 1 Unit.
It¿s a brave new world of creative design, expression and innovation. The digital aspects of life provide a tremendous opportunity to optimize wellbeing, performance, relationships, purpose, and other important facets of life. Study the latest and most effective technologies in this space. Examine challenges around technology including loneliness, addiction and negative social comparison, while learning how to foster deeper connection and joy. Review current research exploring how to effectively integrate social media, digital media (audio, video, gaming), messaging, digital dating, privacy, and personal branding in a way that supports your goals and values. Design, experiment with, and implement a personalized plan for optimizing your day-to-day technology use with intention.

WELLNESS 163. Meditation and Technology. 1 Unit.
Challenge the traditional definition of meditation while examining and using the latest meditation technologies that amplify attention and awareness. Learn how these technologies can be integrated into existing practices or help support new meditators. Explore the range of tools, such as brain, heart, and breath sensing/feedback devices, and find what works best in one¿s own practice. Move past traditional boundaries of meditation and experiment with new ways that wearables, apps, and other tech can support meditation practice both in formal sitting practice and day-to-day living in a hyper-connected world.

WELLNESS 164. Designing Wellbeing. 1 Unit.
Design processes and technologies that support wellbeing and human connection. Learn about research-based models of human flourishing, explore existing technologies, and interact with innovators and thought leaders in the field of transformative design and technology. Utilize empathy-driven discovery methods that deepen understanding of existing wellbeing problems and, in interdisciplinary project teams, generate and pitch concepts for next-generation tech solutions. Personal and interpersonal development is essential for designing transformative technologies and this viewpoint is foundational for this design journey.

WELLNESS 170. Laughter & Play for Wellbeing. 1-2 Unit.
Learn about and practice laughter yoga, combined with theater exercises. Laughter yoga (distinct from traditional movement-based yoga) is a modality that integrates laughter exercises with yogic breathing. Explore the growing field of research on laughter yoga and its positive effects on wellbeing and other health outcomes. Examine the various dimensions of laughter yoga as a form of cardiovascular and aerobic exercise, mindfulness, and play. Use theater exercises to leverage the power of performative, healing laughter and to cultivate embodied awareness, creativity, resilience, and joy. Readings and exercises will draw from the work of pioneers in the fields of laughter wellness and socially engaged theater, such as Madan Kataria and Augusto Boal.
Same as: TAPS 170W

WELLNESS 180. The Flourishing Activist: Mindfully Being the Revolution. 1-2 Unit.
Explore how to blend the variety of ways social activism is expressed in the world with the mindful cultivation of human flourishing. Enhance mastery, self-acceptance, and personal agency while engaging in activism and the challenges inherent to activism, namely, confrontation with violence, trauma, and related mental and emotional struggles. Use self-reflection, embodied practice, and creative expression for contemplating how personal identity struggles can generate meaning beyond the self, how self-healing can lead to community healing, and how the personal is the political.

WELLNESS 181. Flourishing Leaders and Teams. 1 Unit.
Connect leadership and team performance models to models of human flourishing and well-being in order to broaden and build new definitions of success. Develop and practice leadership skill-sets that enhance human performance and flourishing of individuals and small groups in an engaging experiential format. Integrate leadership and well-being theory and practice through facilitated simulations. Covers topics ranging from resilience and well-being research, neuro-performance, emotional-social intelligence, team dynamics and group flow, communication theory and skills, and human development.

WELLNESS 182. Mindfulness & Yoga: Tools for Future Educators and Leaders. 1 Unit.
Explore the foundations of contemplation, mindfulness, and yoga as they are taught and experienced in educational and leadership settings. As a future educator or leader, learn to instruct basic contemplative, mindfulness, and yoga practices as resources that both increase self-awareness, emotional regulation, and self-care, as well as practices that promote personal, professional, and contemplative development. Topics include the physiological, neurobiological, psychological, social, and philosophical bases of contemplation, mindfulness, and yoga in educational and leadership contexts. The course requires an interest in and dedication to developing one's own practice in order to authentically and appropriately teach the concepts and practices to others.

WELLNESS 183. Financial Wellness for a Healthy, Long Life. 1 Unit.
This course will ground you in the knowledge, skills, and habits you need to identify and achieve your financial goals. We will infuse behavior science and psychology into our exploration of personal finance concepts (e.g., credit, debt, saving, and investing) to build your financial capability in the areas of managing money, planning ahead, making choices, and getting help. By the end of the quarter, you will have a personalized toolkit to create and refine actionable plans for increasing your financial well-being now and throughout your healthy, long life.

WELLNESS 191. Peer Counseling on Comprehensive Sexual Health. 1-2 Unit.
Presented by the Sexual Health Peer Resource Center (SHPRC), this class is intended for and required of students planning to become counselors at the SHPRC, but is open to all interested in sex and sexual health. Course addresses sexual and reproductive anatomy, sexually transmitted infections, contraceptive methods, menstruation, pregnancy, abortion, gender identity, sexual orientation, sexual assault and abuse, consent and communication, societal stigmas and pressures, kink, toys, and pleasure. Students are equipped to make responsible decisions about their own sexual interactions and to advise others appropriately. Course includes lecture series featuring guest experts and a student-led discussion section. Discussion, role-play, and peer-education outreach project support application of knowledge and development of counseling skills.

WELLNESS 193. Applying Wellness Individual Studies. 1-2 Unit.
Translate theoretical knowledge and acquired skills into actionable wellness projects that enhance an aspect of wellness within the Stanford community. Students work in collaborative groups or individually under the mentorship of the course instructor(s) to design, deliver, and evaluate a wellness initiative at Stanford.

WELLNESS 199. Selected Topics: Wellness. 1-2 Unit.
Exploration of a topic (to be determined) not covered by the standard curriculum but of interest to faculty and students in a particular quarter. May be repeated with change of content. For more information regarding specific course titles and topics, please refer to the notes of each course section.

HEALTH POLICY

Courses offered by the Center for Health Policy (CHP) are listed under the subject code HRP on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=HRP&filter-catalognumber-HRP=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=HRP&filter-catalognumber-HRP=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=HRP&filter-catalognumber-HRP=on).

Effective October 1, 2019, the former Department of Health Research and Policy was reorganized. CHP/PCOR is the new joint working name of the Center for Health Policy (CHP) and the Center for Primary Care and Outcomes Research (PCOR). Epidemiology moved from the Department of Health Research and Policy to become an independent department in the School of Medicine, the new Department of Epidemiology and Population Health *(p. 2414).*

The Center for Health Policy (CHP) conducts rigorous research that lays the foundation for better domestic and international health policy and health care. Drawing upon our multidisciplinary research, CHP/PCOR offers innovative educational programs from the undergraduate to the graduate level.

Located in the heart of Stanford's campus, CHP/PCOR is run under the auspices of the Freeman Spogli Institute for International Studies (CHP) and the Stanford University School of Medicine (PCOR). The jointly operated centers were founded in 1998 to engage faculty, staff and students from across Stanford—including medicine, economics, statistics, business, law, engineering and psychology—in research on health policy and clinical practice.

Health Policy/Health Services Research is concerned with many aspects of health policy analysis in the public and private sectors.

For additional information, send email to hrpadmissions@stanford.edu.

Master of Science in Health Policy

University requirements for the M.S. degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

The master's degree program in Health Policy seeks to train students in the quantitative analysis of issues in health and medical care. The program is based upon an individual development plan, and includes both course work and completion of a master's project under the direction of a program core faculty member. The typical student in the program is a physician who has completed residency training and is preparing for a research career; the program also admits Stanford medical students and others with a strong background in health policy analysis. The core faculty interests include outcomes research, health economics, health care organization, health care access, implementation science, quality of care, decision analysis, clinical guidelines, and assessment of patient preferences and quality of life.

Admission

Application deadline: February 23, 2021.

For additional information on course requirements and admissions process, see the program website (https://healthpolicy.fsi.stanford.edu/content/ms-health-policy/). Please address inquiries to the HRP Education Program Manager at hrpadmissions@stanford.edu.

Submit an application through the Stanford Graduate Admissions website (https://gradadmissions.stanford.edu/applying/) by clicking on "Apply Now."

Applications are evaluated based on the applicant's commitment to and aptitude for a career in health policy research as demonstrated via transcripts, statement of purpose, relevant work and research experience, and letters of recommendation. The Graduate Record Examination (GRE) is optional in the 2020-2021 application cycle, but is still highly encouraged and may be waived for applicants with an M.D. or similar degree. Applicants from non-English speaking countries should provide evidence of competence in English on the Test of English as a Foreign Language (TOEFL). See Stanford University GRE and TOEFL policies and requirements on the Graduate Admissions (https://gradadmissions.stanford.edu/applying/starting-your-application/required-exams/) website.

Required Supporting Documents

To be submitted in the Stanford Graduate Admissions Application:

- Statement of Purpose that includes area(s) of interest
- Three letters of recommendation
- Official GRE General Test scores (optional in 2020-2021 application cycle)
- Official TOEFL scores (if applicable)
- Unofficial transcripts for all college/university degrees
- CV with relevant work and research experience

Advisors and Mentors

Each student proposes a thesis committee, to be approved by the Program Director, comprised of at least two faculty members associated with the master's degree program, one of whom must be a core faculty member. The chair of the thesis committee is the student's faculty advisor, and a member of the core faculty. In addition to serving as a mentor for the student's thesis, the faculty advisor is responsible for advising the student on curriculum-related issues and ensuring that the student is progressing sufficiently toward completion of the program.

Thesis

Each student must submit a 1-2 page thesis proposal by the end of the first year in the program. The proposal should describe the research project which will fulfill the requirement for the master's thesis including identifying the research question and describing the data sources and methods to be used. For collaborative projects, the student should identify the collaborators and describe in detail their role on the project. For projects using secondary data, the student should provide evidence that the data will be available for the proposed research and describe how they will access the data. In the proposal, the student should identify the members of the thesis committee.

All committee members must read and approve the final thesis. Depending on the topic of the project, additional faculty members may serve as mentors either as a committee member or in a less formal arrangement. Other faculty members may be added to the thesis to serve as content experts for projects concerned with specific diseases or medical treatments.

Degree Requirements

To receive the degree, students are expected to demonstrate knowledge of issues in health policy and the quantitative skills necessary for research in this area. Students must take at least 45 units of course work and write a University thesis. The course work requirements are:

Course Requirements

		Units
Required Courses		
HRP 392	Analysis of Costs, Risks, and Benefits of Health Care	4

EPI 261	Intermediate Biostatistics: Analysis of Discrete Data	3
EPI 262	Intermediate Biostatistics: Regression, Prediction, Survival Analysis	3
HRP 201A	Health Policy Graduate Student Tutorial I	1-2
HRP 201B	Health Policy Graduate Student Tutorial II	1-2
HRP 201C	Health Policy Graduate Student Tutorial III	1-2
Required for students funded by NIH training grants:		
MED 255	The Responsible Conduct of Research	1
or MED 255C	The Responsible Conduct of Research for Clinical and Community Researchers	
Concentration Requirements		
Choose one of the following Concentration Courses		
HRP 218	Methods for Health Care Delivery Innovation, Implementation and Evaluation	2
HRP 263	Advanced Decision Science Methods and Modeling in Health	3
HRP 391	Health Law: Finance and Insurance	3
HRP 252	Outcomes Analysis	4
EPI 292	Advanced Statistical Methods for Observational Studies	2-3
HRP 256	Economics of Health and Medical Care	5
HRP 249	Topics in Health Economics I	2-5
Thesis Units		
A total of 12 units of thesis units		
HRP 399	Graduate Research	12
Electives		
Additional approved elective courses to complete the program total of at least 45 units		
Total Units		**45**

Pre-approved electives

Other electives, consistent with the student's individual development plan, may be approved by the student's faculty advisor and the program director.

		Units
BIOMEDIN 215	Data Science for Medicine	3
EPI 202	R Fundamentals for Health Research	1-2
EPI 206	Meta-research: Appraising Research Findings, Bias, and Meta-analysis	3
EPI 214	Scientific Writing	2-3
EPI 219	Evaluating Technologies for Diagnosis, Prediction and Screening	3
EPI 223	Introduction to Data Management and Analysis in SAS	2
EPI 251	Design and Conduct of Clinical Trials	3
EPI 259	Introduction to Probability and Statistics for Epidemiology	3
EPI 264	Foundations of Statistical and Scientific Inference	1
EPI 292	Advanced Statistical Methods for Observational Studies	2-3
HRP 224	Social Entrepreneurship and Innovation Lab (SE Lab) - Human & Planetary Health	3-4
HRP 249	Topics in Health Economics I	2-5
HRP 254	Quality & Safety in U.S. Healthcare	3
HRP 257	Advanced Topics in the Economics of Health and Medical Care	2
HRP 285	Global Leaders and Innovators in Human and Planetary Health	1-2
GSBGEN 551	Innovation and Management in Health Care	2
MED 273	Biodesign for Digital Health	3
PEDS 202A	Practical Applications for Qualitative Data Analysis	3
PEDS 202B	Practical Applications for Qualitative Data Analysis	3
STATS 216	Introduction to Statistical Learning	3
STATS 266	Advanced Statistical Methods for Observational Studies	2-3

Ph.D. in Health Policy

University requirements for the Ph.D. are described in the "Graduate Degrees (p. 65)" section of this bulletin.

Stanford Health Policy, through the Department of Medicine at the Stanford University School of Medicine, offers a Ph.D. program which promises to educate students to be scholarly leaders in the field of health policy, and to be highly knowledgeable about the theoretical and empirical approaches that can be applied in the development of improvements in health policy and the health care system. The curriculum offers courses across a wide range of health policy areas including health economics, health insurance and government program operation, health financing, international health policy and economic development, cost-effectiveness analysis and the evaluation of new technologies, relevant statistical and methodological approaches, and health policy issues related to public health concerns such as obesity and chronic disease.

Admission

The program welcomes applicants with diverse backgrounds. Applications and supporting documents (see below) must be submitted through Stanford's Office of Graduate Admissions (http://studentaffairs.stanford.edu/gradadmissions/) by December 1, 2020. This is the final deadline. All applications and all reference letters should be received electronically in the application no later than 11:59 pm on December 1, 2020.

Applications are evaluated based on the applicant's commitment to and aptitude for a career in health policy research as demonstrated via transcripts, and described in a statement of purpose, relevant work and research experience, and letters of recommendation. The Graduate Record Examination (GRE) is NOT required (submitting scores is optional) for the 2020-21 application cycle. Please note that this may change in future years. Applicants from non-English speaking countries should provide evidence of competence in English on the Test of English as a Foreign Language (TOEFL). For further information on Stanford University TOEFL requirements and exemptions, see the Graduate Admissions website (https://gradadmissions.stanford.edu/about/frequently-asked-questions/gre-and-toefl/).

See the program's website (https://healthpolicy.fsi.stanford.edu/content/phd-health-policy/) for additional information on degree requirements, advising, program milestones, and admissions processes. Address inquiries to the HRP Education Program Manager at hrpadmissions@stanford.edu.

Required Supporting Documents

To be submitted to Stanford's central application form:

- Statement of Purpose that includes the specialization track (Decision Sciences or Health Economics) and policy area(s) of interest
- Three letters of recommendation
- Official GRE General Test scores (optional in the 2020-2021 application cycle)

- Official TOEFL scores (if necessary) (Stanford Graduate Admissions TOEFL policy (https://gradadmissions.stanford.edu/about/frequently-asked-questions/gre-and-toefl/))
- Unofficial transcripts for all college/university degrees and courses
- CV with relevant work and research experience

For the 2020-2021 application cycle, the GRE is not required (it is optional to submit scores). The program may revert to requiring the GRE in subsequent years.

While not required, it is strongly encouraged that applicants have, or plan to have at the time of matriculation, mathematical skill at the level at the level of multivariate calculus, and one course each in linear algebra, analysis, probability, and statistics.

Interviews

Applicant interviews, if offered, are held in early to mid February.

Advising

Academic advising by program faculty is a critical component of the program's graduate students' education. All matriculating students are assigned a faculty advisor from the group of core faculty to help them design their academic program. Before or shortly after the time that they advance to candidacy for the degree, students are expected to identify a group of at least three thesis advisors (also known as the dissertation reading committee), including a primary thesis advisor. The thesis advisors are selected by the student on the basis of expertise relevant to the thesis project, and may or may not include the originally assigned faculty advisor.

Advisors meet with students within the first quarter of each year to discuss students' Individual Development Plan(s) (IDPs). Additionally, students meet with their advisor(s) on a regular basis throughout each year to discuss course selection, development of research projects, progress through the program, and career plans.

Academic progress and student completion of program requirements and milestones are monitored by the program staff and directors and also discussed at quarterly meetings of all Ph.D. advisors.

Requirements and milestones, as well as more detailed descriptions of the program's expectations of advisors and students, are listed in the Student Handbook, found on the program's website (https://healthpolicy.fsi.stanford.edu/content/phd-health-policy/).

The program adheres to the advising guidelines and responsibilities listed by the Office of the Vice Provost for Graduate Education (https://vpge.stanford.edu/academic-guidance/advising-mentoring/) and in the Graduate Academic Policies and Procedures (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/page-3-3-1/) manual.

See the "Graduate Advising (p. 2418)" tab of this section of this bulletin for additional information on advising expectations for student and faculty.

Degree Requirements

See the program's website (https://healthpolicy.fsi.stanford.edu/content/phd-health-policy/) for additional information on degree requirements, advising, and program milestone.

In addition to taking a set of core courses, students are expected to complete course work in one of two tracks:

- *Health Economics*: including the economic behavior of individuals, providers, insurers, and governments and how their actions affect health and medical care.
- *Decision Sciences:* with quantitative techniques to assess the effectiveness and value of medical treatments and for decision making about medical care at the individual and/or collective level.

Stanford Health Policy may offer a third track in the 2021-2022 academic year that will offer expertise in other areas of health policy research. The track is under development and additional information will be published here and on the department website once the track requirements are determined.

Requirements

- Completion of course work (see below) with minimum grades of 'B-' and an overall/average GPA of a B (3.0).
- Individual development plan (IDP) meeting with primary advisor within the first quarter of each year.
- Meeting with advisor(s) on a regular basis.
- Completion of progress assessment/milestone meeting with primary advisor each year (during Spring quarters).
- Completion of course work in the responsible conduct of research.
- Final course work (for both first and second year) must total at least 75 units for both core and track specific courses.
- Taking and passing the Written Qualifying Exam.
- Taking and passing the Oral Exam.
- Students must develop, write and present a Ph.D. dissertation that is the result of independent investigation and that constitutes a contribution to knowledge in health services research and health policy.
- A final presentation is required for graduation - the final presentation is a summary of the work accomplished on the Ph.D. research and should occur while the student is still matriculated, during the regular academic quarter.

Course Requirements

The minimum number of units required for a Ph.D. degree at Stanford (satisfied both through coursework and research units) is 135.

Ph.D. students complete work in one of the following two tracks.

Health Economics Track

		Units
Statistical Data Analysis, Econometrics, and Causal Inference		
Required - one year sequence in econometrics:		
ECON 270	Intermediate Econometrics I	2-5
ECON 271	Intermediate Econometrics II	2-5
ECON 272	Intermediate Econometrics III	3-5
OR		
MGTECON 603	Econometric Methods I	4
MGTECON 604	Econometric Methods II	4
MGTECON 605	Econometric Methods III	3
Micro-Economics		
Required - one year sequence in microeconomics:		
ECON 202	Microeconomics I	2-5
ECON 203	Microeconomics II	2-5
ECON 204	Microeconomics III	3-5
Or equivalent: GSBGEN 675 or MGTECON 600 can be substituted for ECON 202 and/or MGTECON 601 can be substituted for ECON 203.		
Discipline-Specific Courses		
Required:		
HRP 249	Topics in Health Economics I	3-5
HRP 257	Advanced Topics in the Economics of Health and Medical Care	2

Choose 4 courses in the following 4 fields in economics:		
Development Economics		
Public Finance		
Labor Economics		
Industrial Organization		
Health Policy		
Required:		
HRP 252	Outcomes Analysis	4
HRP 256	Economics of Health and Medical Care	5
HRP 392	Analysis of Costs, Risks, and Benefits of Health Care	4
Choose at least 8 units of additional health-policy-related courses such as:		
EASTASN 217	Health and Healthcare Systems in East Asia	3-5
HRP 209	Health Law: The FDA	2-3
HRP 391	Health Law: Finance and Insurance	3
LAW 3002	Health Law: Quality and Safety of Care	3
LAW 3009	Health Law: Improving Public Health	3
MED 238	Leading and Managing Health Care Organizations: Innovation and Collaboration in High Stakes Settings	3
Practice of Research		
Required:		
First-year core tutorial (HRP 201A, HRP 201B, and HRP 201C)		
Second-year core tutorial (HRP 800) - 3 quarters (Aut, Win & Spr)		
Health Economics Seminar		
Research in Progress Seminar		
MED 255	The Responsible Conduct of Research	1

Decision Science Track

		Units
Statistical Data Analysis, Econometrics, and Causal Inference		
Required: at least two quarters of one of the two following sequences:		
ECON 270	Intermediate Econometrics I	2-5
ECON 271	Intermediate Econometrics II	2-5
ECON 272	Intermediate Econometrics III	3-5
Or		
MGTECON 603	Econometric Methods I	4
MGTECON 604	Econometric Methods II	4
MGTECON 605	Econometric Methods III	3
Micro-Economics		
Required, at least one quarter:		
GSBGEN 675	Microeconomic Theory	3
Or		
MGTECON 600	Microeconomic Analysis I	3
MGTECON 601	Microeconomic Analysis II	3
Or		
ECON 202N	Microeconomics I For Non-Economics PhDs students	2-5
Or		
ECON 202	Microeconomics I	2-5
ECON 203	Microeconomics II	2-5
Discipline-Specific Courses		
Required:		
HRP 263	Advanced Decision Science Methods and Modeling in Health	3
Choose 4 methods courses such as:		
MS&E 201	Dynamic Systems	3
MS&E 211X	Introduction to Optimization (Accelerated)	3-4
MS&E 221	Stochastic Modeling	3
MS&E 223	Simulation	3
MS&E 226	Fundamentals of Data Science: Prediction, Inference, Causality	3
MS&E 263	Healthcare Operations Management	3
MS&E 463	Healthcare Systems Design	3-4
Health Policy		
Required:		
HRP 252	Outcomes Analysis	4
HRP 256	Economics of Health and Medical Care	5
HRP 392	Analysis of Costs, Risks, and Benefits of Health Care	4
Choose at least 8 units of additional health-policy-related courses such as:		
EASTASN 217	Health and Healthcare Systems in East Asia	3-5
HRP 209	Health Law: The FDA	2-3
HRP 391	Health Law: Finance and Insurance	3
LAW 3002	Health Law: Quality and Safety of Care	3
LAW 3009	Health Law: Improving Public Health	3
MED 238	Leading and Managing Health Care Organizations: Innovation and Collaboration in High Stakes Settings	3
Practice of Research		
Required:		
First-year core tutorial (HRP 201A, HRP 201B, HRP 201C)		
Second-year core tutorial (HRP 800) - 3 quarters (Aut, Win & Spr)		
Research in Progress Seminar		
MED 255	The Responsible Conduct of Research	1

New Track, 2021-22

Stanford Health Policy may offer a third track in the 2021-22 academic year that will offer expertise in other areas of health policy research. The track is under development and additional information will be published here and on the department website once the track requirements are determined.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

Stanford Health Policy counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade.

Graduate Advising Expectations

The Center for Health Policy (CHP) and the Center for Primary Care and Outcomes Research (PCOR) is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the advisor and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity.

Faculty advisors guide students in key areas such as selecting courses, designing and conducting research, developing teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

CHP/PCOR programs adhere to the advising guidelines and responsibilities listed by the Office of the Vice Provost for Graduate Education (https://vpge.stanford.edu/academic-guidance/advising-mentoring/) and in the Graduate Academic Policies and Procedures (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/page-3-3-1/) manual.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Health Policy

Director of Graduate Studies and Director of Ph.D. Health Policy: Laurence Baker

Director of M.S. Health Policy: Kate Bundorf

Director of Education, Ph.D. Health Policy: Corinna Haberland

Core Faculty and Academic Teaching Staff:

Steven Asch (Professor, Medicine), Laurence Baker (Professor, Medicine), Eran Bendavid (Associate Professor, Medicine), Jay Bhattacharya (Professor, Medicine), Kate Bundorf (Associate Professor, Medicine), David Chan (Assistant Professor, Medicine), Jeremy Goldhaber-Fiebert (Associate Professor, Medicine), Mary Goldstein (Professor, Medicine), Corinna Haberland (Lecturer, Medicine), Mark Hlatky (Professor, Medicine), Michelle Mello (Professor, Law, and Medicine), Grant Miller (Associate Professor, Medicine), Arden Morris, (Professor, Surgery), Doug Owens (Professor, Medicine), Maria Polyakova (Assistant Professor, Medicine), Maya Rossin-Slater (Assistant Professor, Medicine), Joshua Salomon (Professor, Medicine), Lee Sanders (Associate Professor, Pediatrics), Sara Singer (Professor, Medicine), David Studdert (Professor, Law, and Medicine), Jason Wang (Associate Professor, Pediatrics), Paul Wise (Professor, Pediatrics), Donna Zulman (Assistant Professor, Medicine)

Affiliated Faculty and Staff by Department:

Anesthesiology, Perioperative, and Pain Medicine: Alex Macario (Professor), Eric Sun (Assistant Professor)

Biomedical Data Science: Bradley Efron (Professor), Philip Lavori (Professor), Robert Tibshirani (Professor)
Economics: Mark Duggan (Professor), Victor Fuchs (Professor)
Emergency Medicine: James Quinn (Professor)
Epidemiology & Population Health: Steven Goodman (Professor), Kristin Sainani (Associate Professor)
Graduate School of Business: Alain Enthoven (Professor)
Law: Daniel Kessler (Professor), Henry T. Greely (Professor)
Management Science & Engineering: Margaret Brandeau (Professor)
Medicine: Mark R. Cullen (Professor), Paul Heidenreich (Professor), Tina Hernandez-Boussard (Associate Professor), Stephen Luby (Professor), Nigam Shah (Associate Professor)
Ophthalmology: Suzann Pershing (Assistant Professor)
Pediatrics: Ciaran Phibbs (Associate Professor)
Surgery: Todd Wagner (Associate Professor)

Courses

HRP 89Q. Introduction to Cross Cultural Issues in Medicine. 3 Units.
Preference to sophomores. Introduction to social factors that impact health care delivery, such as ethnicity, immigration, language barriers, and patient service expectations. Focus is on developing a framework to understand culturally unique and non-English speaking populations in the health care system.

HRP 199. Undergraduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

HRP 201A. Health Policy Graduate Student Tutorial I. 1-2 Unit.
Seminar series is the core tutorial for first-year Health Policy PhD students and all MS Health Policy students. Major themes in fields of study including health insurance, healthcare financing and delivery, health systems and reform and disparities in the US and globally, health and economic development, health law and policy, resource allocation, efficiency and equity, healthcare quality, measurement and the efficacy and effectiveness of interventions. Blocks of session led by Stanford expert faculty in particular fields of study. 2 unit registration requires written responses to assigned reading questions.
Same as: MED 215A

HRP 201B. Health Policy Graduate Student Tutorial II. 1-2 Unit.
Second in a three-quarter seminar series, the core tutorial is for first-year Health Policy PhD students and all MS Health Policy students. Major themes in fields of study including health insurance, healthcare financing and delivery, health systems and reform and disparities in the US and globally, health and economic development, health law and policy, resource allocation, efficiency and equity, healthcare quality, measurement and the efficacy and effectiveness of interventions. Blocks of session led by Stanford expert faculty in particular fields of study.
Same as: MED 215B

HRP 201C. Health Policy Graduate Student Tutorial III. 1-2 Unit.
Third in a three-quarter seminar series, the core tutorial is for first-year Health Policy PhD students and all MS Health Policy students. Major themes in fields of study including health insurance, healthcare financing and delivery, health systems and reform and disparities in the US and globally, health and economic development, health law and policy, resource allocation, efficiency and equity, healthcare quality, measurement and the efficacy and effectiveness of interventions. Blocks of session led by Stanford expert faculty in particular fields of study.
Same as: MED 215C

HRP 204. Models for Understanding and Controlling Global Infectious Diseases. 3-4 Units.
(HUMBIO students must enroll in HUMBIO 154D. Med/Graduate students must enroll in HRP 204.) This course introduces students to the dynamics of infectious diseases of global health importance, focusing on the use of mathematical models to characterize their transmission in populations. Relevant case examples of pathogens with differing natural history and transmission routes include tuberculosis, HIV, malaria, typhoid, and cholera, as well emerging infectious diseases such as Ebola and the 2019 novel coronavirus. Lectures will emphasize the theoretical basis underlying infectious disease dynamics and link them to in-class workshops and problem sets that will emphasize public health applications and will provide students with hands-on experience in creating and coding models. Students will learn the mathematical underpinnings of key topics in infectious disease transmission including herd immunity, the basic reproductive number, vaccine effects, social contact structure, host heterogeneities, and pathogen fitness. The course will teach students how to approach new questions in infectious disease transmission, from model selection, tradeoffs in model complexity or parsimony, parameterization, sensitivity and uncertainty analyses. Students will practice building models, evaluating the influence of model parameters, making predictions about disease trajectories, and projecting the impact of public health interventions. Prerequisites: HUMBIO 88 or 89 or STATS 141 or BIOSCI 141.
Same as: HUMBIO 154D

HRP 207. Introduction to Concepts and Methods in Health Services and Policy Research I. 2 Units.
Primarily for medical students in the Health Services and Policy Research scholarly concentration. Topics include health economics, statistics, decision analysis, study design, quality measurement, cost benefit and effectiveness analysis, and evidence based guidelines.

HRP 208. Introduction to Concepts and Methods in Health Services and Policy Research II. 2 Units.
Primarily for medical students in the Health Services and Policy Research scholarly concentration; continuation of 207. Topics include health economics, statistics, decision analysis, study design, quality measurement, cost benefit and effectiveness analysis, and evidence based guidelines. Recommended: 207.

HRP 209. Health Law: The FDA. 2-3 Units.
(Same as LAW 3003) Open to law and medical students; other graduate students by consent of instructor. The FDA's regulatory authority over drugs, biologics, medical devices, and dietary supplements. The nature of the pharmaceutical, biotech, medical device, and nutritional supplement industries.

HRP 211. Law and Biosciences: Neuroscience. 3 Units.
(Same as LAW 3006) Legal, social, and ethical issues arising from advances in neuroscience, including effects upon law and society through improvements in predicting illnesses and behaviors, reading minds through neuroimaging, understanding responsibility and consciousness, treating criminal behavior, and cognitive enhancement.

HRP 213. Writing in the Sciences. 2-3 Units.
Primarily for medical students in the Clinical Research Scholarly concentration; open to graduate students except Epidemiology graduate students. Development of research questions and plans for statistical analysis. Study design, sample size and power calculations, and statistical analysis of study data. Analytic methods to carry out statistical power and sample size calculations. Prerequisites: 225, and 258 or 259, or consent of instructor.

HRP 218. Methods for Health Care Delivery Innovation, Implementation and Evaluation. 2 Units.
Preference given to postgraduate fellows and graduate students.Focus is on implementation science and evaluation of health care delivery innovations. Topics include implementation science theory, frameworks, and measurement principles; qualitative and quantitative approaches to designing and evaluating new health care models; hybrid design trials that simultaneously evaluate implementation and effectiveness; distinction between quality improvement and research, and implications for regulatory requirements and publication; and grant-writing strategies for implementation science and evaluation. Students will develop a mock (or actual) grant proposal to conduct a needs assessment or evaluate a Stanford/VA/community intervention, incorporating concepts, frameworks, and methods discussed in class. Priority for enrollment for CHPR 212 will be given to CHPR master's students.
Same as: CHPR 212, MED 212

HRP 221. Law and the Biosciences: Genetics. 3 Units.
(Same as LAW 3004) Open to all law or medical students; other graduate students by consent of the instructor. Focus is on ethical, legal, and social issues arising from advances in our knowledge of human genetics. Includes forensic uses of genetics, genetic testing, widespread whole genome sequencing, the consequences of genetics for human reproduction, and the ethics of genomic biobanks for research. Research paper required.

HRP 224. Social Entrepreneurship and Innovation Lab (SE Lab) - Human & Planetary Health. 3-4 Units.
Social Entrepreneurship and Innovation Lab (SE Lab) - Global & Planetary Health is a Collaboratory workshop for students/fellows to design and develop innovative social ventures addressing key challenges in health and the environment, especially in support of the UN Sustainable Development Goals (SDGs 2030). Your mandate in identifying problems and designing solutions is broad and flexible! SE Lab is open to students and fellows across Stanford and combines design thinking exercises, short lectures & case studies, workshops, small group teamwork, presentations, guest speakers, and faculty, practitioner and peer feedback to support you and your team in generating and developing ideas and projects that will change the world! Join SE Lab with an idea or simply the desire to join a team. Enrollment limited to 30.
Same as: MED 224, PUBLPOL 224

HRP 232. Measurement for Health Policy. 3 Units.
Conceptual, technical and empirical basis for measurement essential to health policy. Principles and good practice for designing measures fit for purpose. Practical application of measurement concepts and methods. Main emphasis on measuring levels of health in individuals and populations, combining mortality/longevity and quality of life/functioning. Additional topics include measurement of inequalities and health care quality. Examples and applications include high income and low/middle-income settings.
Same as: MED 251

HRP 243. Health Policy Seminar: Population Health. 1 Unit.
This seminar course is intended to introduce students to the role of policy in public health in the United States. In addition to speakers from the law school, SIEPR, HRP, and School of Medicine, we will be bringing in speakers from outside organizations in the Bay Area with expertise in a variety of issues in public health. n There are no assignments and lunch will be provided.

HRP 246. Seminar in Healthcare Quality and Safety. 1 Unit.
Primarily for medical students in the Quality and Safety Scholarly Concentration. Almost everyone will be a patient at some point in their lives. It is estimated that over 98,000 patients die in US hospitals each year due to medical errors and recent articles suggest that medical errors are the third leading cause of death in the US. Patient safety is the foundation of high-quality health care, which has become a critical issue in health policy discussions. This course will provide an overview of the quality & patient safety movement, the array of measurement techniques and issues, and perspectives of quality improvement efforts under the current policy landscape. Lunch will be provided for enrolled students.
Same as: BIOMEDIN 246

HRP 249. Topics in Health Economics I. 3-5 Units.
Course will cover various topics in health economics, from theoretical and empirical perspectives. Topics will include public financing and public policy in health care and health insurance; demand and supply of health insurance and healthcare; physicians' incentives; patient decision-making; competition policy in healthcare markets, intellectual property in the context of pharmaceutical drugs and medical technology; other aspects of interaction between public and private sectors in healthcare and health insurance markets. Key emphasis on recent work and empirical methods and modelling. Prerequisites: Micro and Econometrics first year sequences (or equivalent). Curricular prerequisites (if applicable): First year graduate Microeconomics and Econometrics sequences (or equivalent).
Same as: ECON 249, MED 249

HRP 252. Outcomes Analysis. 4 Units.
Methods of conducting empirical studies which use large existing medical, survey, and other databases to ask both clinical and policy questions. Econometric and statistical models used to conduct medical outcomes research. How research is conducted on medical and health economics questions when a randomized trial is impossible. Problem sets emphasize hands-on data analysis and application of methods, including re-analyses of well-known studies. Prerequisites: one or more courses in probability, and statistics or biostatistics.
Same as: BIOMEDIN 251, MED 252

HRP 254. Quality & Safety in U.S. Healthcare. 3 Units.
The course will provide an in-depth examination of the quality & patient safety movement in the US healthcare system, the array of quality measurement techniques and issues, and perspectives of quality and safety improvement efforts under the current policy landscape.
Same as: BIOMEDIN 254

HRP 256. Economics of Health and Medical Care. 5 Units.
Institutional, theoretical, and empirical analysis of the problems of health and medical care. Topics: demand for medical care and medical insurance; institutions in the health sector; economics of information applied to the market for health insurance and for health care; measurement and valuation of health; competition in health care delivery. Graduate students with research interests should take ECON 249. Prerequisites: ECON 50 and either ECON 102A or STATS 116 or the equivalent. Recommended: ECON 51.
Same as: BIOMEDIN 156, BIOMEDIN 256, ECON 126

HRP 257. Advanced Topics in the Economics of Health and Medical Care. 2 Units.
Emphasis is on research studies in health economics. Seminar style course focuses on health economics. Complimentary with HRP 256. Students will be expected to read and present papers to the group and discuss concepts with faculty. Restricted to second year or beyond PhD students in economics & economics-related disciplines.
Same as: MED 265

HRP 263. Advanced Decision Science Methods and Modeling in Health. 3 Units.
Advanced methods currently used in published model-based cost-effectiveness analyses in medicine and public health, both theory and technical applications. Topics include: Markov and microsimulation models, model calibration and evaluation, and probabilistic sensitivity analyses. Prerequisites: a course in probability, a course in statistics or biostatistics, a course on cost-effectiveness such as HRP 392, a course in economics, and familiarity with decision modeling software such as TreeAge.
Same as: MED 263

HRP 276. Introduction to Law and the Biosciences. 3 Units.
(SAME AS LAW 3012) This course will provide an introduction to the legal, ethical, and policy areas important to understanding Law and the Biosciences. Each topic will include both discussion of the relevant legal rules and ethical principles and their application to a specific case study. Topics to be covered include the structure and regulation of the biopharma industry and biosciences research, intellectual property relevant to the biosciences, federal regulation of bioscience products through the FDA and otherwise, the health care financing system, human subjects research, genetic technologies, reproductive technologies, neuroscience technologies, criminal law applications of bioscience technologies, and more. The course will prepare students for more advanced courses in these areas, as well as for working with or in the bioscience world. Special Instructions: The class is open to all law students and graduate or professional students from other parts of the University. Some undergraduates may be admitted with consent of the instructor Substantial class attendance is required; in addition, the quality of class participation will play a small role in grading. Elements used in grading: Attendance, class participation, and final exam (In-school, open book). Cross listed with Health Research and Policy (HRP - TBA).

HRP 280. Spanish for Medical Students. 2 Units.
First quarter of three-quarter series. Goal is a practical and culturally appropriate command of spoken Spanish. Emphasis is on taking the medical history. Topics include anatomy, general hospital procedures, pediatrics, nutrition, and essential doctor-patient phrases when dealing with Spanish-speaking patients. Series can be taken independently, depending on the level of prior knowledge. Undergraduates are welcome to enroll.
Same as: SPANLANG 121M

HRP 281. Spanish for Medical Students. 2 Units.
Second quarter of three-quarter series.Goal is a practical and culturally appropriate command of spoken Spanish. Emphasis is on performing a physical examination. Topics include anatomy, general hospital procedures, reproductive health, emergency medicine, and essential doctor-patient phrases when dealing with Spanish-speaking patients. Series can be taken independently, depending on the level of prior knowledge. Undergraduates are welcome to enroll.
Same as: SPANLANG 122M

HRP 282. Spanish for Medical Students. 2 Units.
Third quarter of three-quarter series. Goal is a practical and culturally appropriate command of spoken Spanish. Emphasis is on different specialties and medical conditions. Topics include anatomy, diagnostic procedures, HIV, diabetes, hypertension, and essential doctor-patient phrases when dealing with Spanish-speaking patients. Series can be taken independently, depending on the level of prior knowledge. Undergraduates are welcome to enroll.
Same as: SPANLANG 123M

HRP 283. Health Services Research Core Seminar. 1 Unit.
Presentation of research in progress and tutorials in the field of health services research.

HRP 285. Global Leaders and Innovators in Human and Planetary Health. 1-2 Unit.
Are you interested in innovative ideas and strategies for addressing urgent challenges in human and planetary health? This 7 session lecture series features a selection of noteworthy leaders, innovators and experts across diverse sectors in health and the environment such as: healthcare/medical innovation, environmental sustainability, foundations/venture capital, biotechnology/pharmaceuticals, social innovation/entrepreneurship, tech/media and artificial intelligence (AI), human rights, global poverty/development, sustainable agriculture/hunger/nutrition, public policy/systems change. Co-convened by faculty, fellows and students collaborating across several Stanford centers/departments/schools, the course invites the discussion of global problems, interdisciplinary perspectives and solutions in the fields of health and the environment. nSpecial themes for AY 2020-2021 include: 1) US and Global Responses in Combatting the Coronavirus Pandemic; 2) Climate Crisis, Wildfires, Extreme Weather and Environmental Sustainability; 3) Systemic Racism, Gender Inequality, Health Inequity and Community Well Being; 4) Democracy Under Siege, Political Landscape of Electoral, Judicial, Legislative Turmoil; 5) Partnership/Collaboration, Models of Leadership, Innovation, Sustainable Social Change; and Other Topics TBD by students/fellows. Students from all backgrounds are encouraged to enroll - registration open to all Stanford students and fellows. May be repeated for credit.
Same as: MED 285

HRP 299. Directed Reading in Health Research and Policy. 1-18 Unit.
Epidemiology, health services research, preventive medicine, medical genetics, public health, economics of medical care, occupational or environmental medicine, international health, or related fields. May be repeated for credit. Prerequisite: consent of instructor.

HRP 370. Medical Scholars Research. 4-18 Units.
Provides an opportunity for student and faculty interaction, as well as academic credit and financial support, to medical students who undertake original research. Enrollment is limited to students with approved projects.

HRP 391. Health Law: Finance and Insurance. 3 Units.
(SAME AS LAW 3001, MGTECON 331) This course provides the legal, institutional, and economic background necessary to understand the financing and production of health services in the U.S. We will discuss the Affordable Care Act , health insurance (Medicare and Medicaid, employer-sponsored insurance, the uninsured), the approval process and IP protection for pharmaceuticals, and antitrust policy. We may discuss obesity and wellness, regulation of fraud and abuse, and medical malpractice. The syllabus for this course can be found at https://syllabus.stanford.edu. Elements used in grading: Participation, attendance, class presentation, and final exam.
Same as: PUBLPOL 231

HRP 392. Analysis of Costs, Risks, and Benefits of Health Care. 4 Units.
For graduate students. How to do cost/benefit analysis when the output is difficult or impossible to measure. Literature on the principles of cost/benefit analysis applied to health care. Critical review of actual studies. Emphasis is on the art of practical application.
Same as: BIOMEDIN 432

HRP 399. Graduate Research. 1-18 Unit.
Investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

HRP 800. Second Year Health Policy PHD Tutorial. 1-3 Unit.
The goal of the second year tutorial is to provide PHD students with advanced training in health policy research and to assist them in successfully developing research proposals.

HRP 801. TGR Project. 0 Units.
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HRP 802. TGR Dissertation. 0 Units.
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IMMUNOLOGY

Courses offered by the Immunology Program are listed under the subject code IMMUNOL on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=IMMUNOL&filter-catalognumber-IMMUNOL=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=IMMUNOL&filter-catalognumber-IMMUNOL=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=IMMUNOL&filter-catalognumber-IMMUNOL=on).

Stanford Immunology is home to faculty, students, postdocs, and staff who work together to produce internationally recognized research in many areas of immunology. The long tradition of collaboration among the immunology laboratories at Stanford fosters productive interdisciplinary research, with an emphasis on the application of current approaches to problems in cellular, molecular and clinical immunology. Faculty research interests include both basic science research and bench-to-bedside research. Graduate students and postdoctoral scholars receive outstanding training through their participation in research, teaching, seminars, journal clubs, and the annual Stanford Immunology Scientific Conference.

Mission of the Ph.D. Program in Immunology

The Immunology doctoral program offers instruction and research opportunities leading to a Ph.D. in Immunology. Two tracks are offered:

1. Track 1: Molecular, Cellular, and Translational Immunology
2. Track 2: Computational and Systems Immunology

The goal of the Ph.D. Program in Immunology is to develop investigators who have a strong foundation in Immunology and related sciences in order to carry out innovative research. The program features a flexible choice of courses and seminars combined with extensive research training in the laboratories of participating Immunology faculty. Specifically, immunology graduate students:

1. acquire a fundamental, broad, and comprehensive body of knowledge and skills through an extensive curriculum.
2. identify important scientific questions, design, and conduct experiments using the most appropriate methods.
3. read and critically analyze current literature in immunology and other relevant fields.
4. present research findings and communicate ideas effectively to a variety of audiences.
5. prepare manuscripts that will be published in leading journals.
6. learn to teach effectively.

Master of Science in Immunology

Students in the Ph.D. program in Immunology may apply for an M.S. degree in Immunology only under special circumstances, assuming completion of appropriate requirements. Students must complete:

1. At least 45 units of academic work, all of which must be in courses at or above the 100 level, 36 units of which must be at or above the 200 level.
2. 3 quarters of graduate research (IMMUNOL 399 Graduate Research), consisting of rotations in the labs of three faculty members.
3. Participation in the Immunology journal club (IMMUNOL 305 Immunology Journal Club), and attendance at the Immunology seminar series (Immunol 311 Seminar in Immunology) and at the annual Stanford Immunology Scientific Conference.
4. First Year Rotations Presentations and General Advising Sessions, June. Students present on one of three lab rotations.
5. Students must submit a master's thesis paper on one of their rotations. This requirement may be waived under special circumstances.

Course work in Immunology as follows:

Track: Molecular, Cellular and Translational Immunology

		Units
BIOS 200	Foundations in Experimental Biology	5
IMMUNOL 201	Advanced Immunology I	3
IMMUNOL 202	Advanced Immunology II	3
IMMUNOL 203	Advanced Immunology III	3
IMMUNOL 311	Seminar in Immunology	1
IMMUNOL 305	Immunology Journal Club	1
IMMUNOL 399	Graduate Research	1-15
BIO 141	Biostatistics	5
MED 255	The Responsible Conduct of Research	1
Take one of the following courses:		
MI 210	Advanced Pathogenesis of Bacteria, Viruses, and Eukaryotic Parasites	4
BIO 214	Advanced Cell Biology	4
IMMUNOL 206	Introduction to Applied Computational Tools in Immunology	2

Track: Computational and Systems Immunology

		Units
BIOS 200	Foundations in Experimental Biology	5
IMMUNOL 201	Advanced Immunology I	3
IMMUNOL 202	Advanced Immunology II	3
IMMUNOL 206	Introduction to Applied Computational Tools in Immunology	2
IMMUNOL 207	Essential Methods in Computational and Systems Immunology	3
IMMUNOL 310	Seminars in Computational and Systems Immunology	1
BIOMEDIN 212	Introduction to Biomedical Informatics Research Methodology	3
BIOMEDIN 214	Representations and Algorithms for Computational Molecular Biology	3-4
IMMUNOL 399	Graduate Research	1-15
MED 255	The Responsible Conduct of Research	1

Doctor of Philosophy in Immunology

The University's basic requirements for the Ph.D. degree are outlined in the "Graduate Degrees (p. 65)" section of this bulletin.

Admissions

Students seeking admissions to the Immunology Ph.D. Program typically have an undergraduate major in biological sciences, but majors from other areas are acceptable if the applicants have sufficient coursework in biology, chemistry, general physics, and mathematics (through calculus). Applications are evaluated by the Immunology Graduate Program committee based upon: grades; evidence of research experience; letters of recommendation, including letters from research sponsor(s); and commitment to a career in biomedical research. The GRE Subject test is optional. If an applicant choses to submit a GRE score, they should plan on taking the GRE at least one month prior to the application

deadline of Tuesday, December 1, 2020, to ensure that official scores are available when applications are evaluated. Candidates who are selected to visit Stanford and interview are notified in January. The selected applicants are invited to the Biosciences interview session, March 3-6, 2021 (Wednesday-Saturday). This is the program's only interview session.

Interested Stanford medical students are welcome to apply to the program and should also submit a formal application by Tuesday, December 1, 2020.

Prospective graduate students must apply via Stanford's online graduate application (https://gradadmissions.stanford.edu/applying/).

Financial Aid

Students admitted to the program are offered financial support for tuition, a living stipend, health insurance coverage, and for first-year graduate students, a small allowance (tech funds). Applicants are urged to apply for independent fellowships such as from the National Science Foundation or National Defense Science and Engineering Graduate Fellowships. NSF Fellowship applications are due in October of the year prior to matriculation in the graduate program, and only one more NSF application is permitted in the first or second year. Immunology graduate students may continue to apply for outside fellowships after matriculation. Admitted students are typically offered financial support in the form of Stanford Graduate Fellowships, NIH traineeships, or research assistantships.

General Requirements

Immunology Startup and the First-Year Advising Process

Since students enter with differing backgrounds, each student is assisted by the first-year adviser in selecting courses and lab rotations in the first year and in choosing a lab for the dissertation research. In addition, the Immunology Startup, a five-day introduction to immunology in early September, exposes incoming Immunology Ph.D. students to a variety of techniques and concepts. Students learn basic laboratory techniques in immunology and participate in in-depth discussions with faculty.

All students must be enrolled in exactly 10 units during Autumn, Winter, Spring, and Summer quarters until reaching Terminal Graduate Residence (TGR) status in the spring or summer quarter of their fourth year. Students are required to pass all courses in which they are enrolled; required and elective courses must be taken for a letter grade. Students must earn a grade of 'B-' or better in all courses applicable to the degree that are taken for a letter grade. Satisfactory completion of each year's general and track specific requirements listed below is required. During the first year, degree progress is monitored closely by the first-year adviser in quarterly meetings and by the Stanford Graduate Program Committee in a final advising session in June.

First-year students are required to complete three rotations in at least two immunology labs. In the Spring Quarter, two mini-rotations of six weeks each may be arranged. After joining a lab, students are required to meet with their thesis adviser within 30 days to complete the Individual Development Plan (IDP). Students continue to complete the IDP annually.

Students apply for any fellowships for which they are eligible (NSF, NDSEG, AHA, NIH NRSA are just a few).

A specific program of study for each student is developed individually with the first-year adviser.

Immunology Ph.D. Curriculum:

All students in the two tracks, Molecular, Cellular, and Translational Immunology (MCTI) and Computational and Systems Immunology (CSI) are required to enroll in the following core courses:

		Units
BIOS 200	Foundations in Experimental Biology	5
BIO 141	Biostatistics	5
IMMUNOL 201	Advanced Immunology I	3
IMMUNOL 202	Advanced Immunology II	3
IMMUNOL 258	Ethics, Science, and Society	1
IMMUNOL 290	Teaching in Immunology	1-15
IMMUNOL 305	Immunology Journal Club	1
IMMUNOL 311	Seminar in Immunology	1
IMMUNOL 399	Graduate Research	1-15
MED 255	The Responsible Conduct of Research	1

Candidates for Ph.D. degrees at Stanford must satisfactorily complete a program of study that includes 135 units of graduate course work and research. At least 3 units must be taken with each of four different Stanford faculty members. Students in the MCTI track are expected to complete all their core course requirements by the end of their second year; students in the CSI track should complete their core course work by the end of the third year.

In the third through fifth year, students are required to take IMMUNOL 258 Ethics, Science, and Society, a refresher ethics course that is required by NIH and is offered every other year.

Immediately after the final examination period in Spring Quarter of the first year, first-year immunology graduate students are required to give a presentation on one of their three rotations to the Immunology graduate program committee (Qualifying Examination Process, Part I). After the rotation presentation, the first-year student will meet with the Stanford Graduate Program Committee in a one-on-one advising session to review degree progress and choice of a Ph.D. thesis lab.

In Autumn Quarter of the second year, students focus on preparing for Part II of the Qualifying Examination Process, the general oral examination and the Ph.D. thesis dissertation proposal. The student is required to pass the oral examination and write a thesis dissertation proposal which is presented to and evaluated by a qualifying examination committee composed of three faculty members, two of whom must be from the Immunology program faculty and the third faculty member may be from a department outside the program. The Ph.D. adviser is not present for Part II, but is required to submit an evaluation and grade for the Ph.D. thesis dissertation proposal. Upon successful completion of Part II, the student files a petition for Ph.D. candidacy and form their reading dissertation committee.

The dissertation reading committee (generally known as the Ph.D. thesis committee) must be comprised of at least four faculty members who guide the student in the Ph.D. research, and read and approve the final dissertation. Typically three of the four dissertation reading committee members are from the Immunology program faculty.

In the first through third years, the student must meet with the Ph.D. thesis committee at least once a year. In the fourth and fifth years, the student is expected to meet twice a year with the Ph.D. thesis committee. In addition, if requested by the student, a secondary adviser is assigned who can provide additional advice on issues such as career path choices and other non-academic issues.

Individual Development Plan: Graduate students are required to meet with their faculty mentors once a year to discuss an individual development plan (IDP). The IDP is intended to help the students take ownership of their training and professional development. The goals of the IDP are to: 1) pause, reflect and intentionally think on short-, mid- and long-term goals; 2) identify resources that help to achieve these goals; and 3) have open and direct dialogue with the Ph.D. thesis adviser and establish clear expectations and steps.

Track Specific Requirements

In addition to the general requirements listed above, students must also complete requirements within their track. Written petitions for exemptions to core curriculum and lab rotation requirements are considered only in the first year by the advising committee and the chair of the Graduate Program committee. Approval is contingent upon special circumstances and is not routinely granted.

Molecular, Cellular, and Translational Immunology

In addition to the core courses listed above, MCTI first-year students are required to take the following courses in their first year for a letter grade:

		Units
IMMUNOL 203	Advanced Immunology III	3
Take one of the following courses:		
BIO 214	Advanced Cell Biology	4
IMMUNOL 206	Introduction to Applied Computational Tools in Immunology	2
MI 210	Advanced Pathogenesis of Bacteria, Viruses, and Eukaryotic Parasites	4

Electives:

One elective (see suggested elective list below)

		Units
CBIO 240	Molecular and Genetic Basis of Cancer	4
CSB 210	Cell Signaling	4
DBIO 210	Developmental Biology	4
IMMUNOL 223	Biology and Disease of Hematopoiesis	3
IMMUNOL 275	Tumor Immunology	3
IMMUNOL 286	Neuroimmunity	2-3
SBIO 241	Biological Macromolecules	5

Computational and Systems Immunology

In addition to the core courses listed above, the CSI curriculum trains students to be computational and experimental scientists, who are expected to identify important problems in immunology and to devise integrated computational/ experimental plans for addressing them.

CSI Core (Required):

Students in the CSI track are required to take the following core courses in their first and second years, unless demonstrated by proficiency or coursework. For example, a student, with proficiency in concepts taught in CS 106A, may petition to be exempt from this course and go on to take CS 106B. Petitions to exempt from the courses CS 106A, CS 109, and CS 161 must be approved by the Chair of the CSI track.

		Units
BIOMEDIN 214	Representations and Algorithms for Computational Molecular Biology	3-4
CS 106A	Programming Methodology	3-5
CS 106B	Programming Abstractions	3-5
CS 109	Introduction to Probability for Computer Scientists	3-5
CS 161	Design and Analysis of Algorithms	3-5
IMMUNOL 206	Introduction to Applied Computational Tools in Immunology	2
IMMUNOL 207	Essential Methods in Computational and Systems Immunology	3
IMMUNOL 310	Seminars in Computational and Systems Immunology	1

CSI Electives:

Two electives (see suggested elective list below):

		Units
BIOMEDIN 212	Introduction to Biomedical Informatics Research Methodology	3-5
BIOMEDIN 217	Translational Bioinformatics	4
BIOMEDIN 260	Computational Methods for Biomedical Image Analysis and Interpretation	3-4
CME 206	Introduction to Numerical Methods for Engineering	3
CME 263	Introduction to Linear Dynamical Systems	3
CME 309	Randomized Algorithms and Probabilistic Analysis	3
CME 364A	Convex Optimization I	3
CME 372	Applied Fourier Analysis and Elements of Modern Signal Processing	3
EE 276	Information Theory	3
EE 278	Introduction to Statistical Signal Processing	3
STATS 116	Theory of Probability	4
STATS 202	Data Mining and Analysis	3
STATS 216	Introduction to Statistical Learning	3
STATS 217	Introduction to Stochastic Processes I	3
Other		

Journal Clubs

Both MCTI and CSI students are required to attend the IMMUNOL 305 Immunology Journal Club for their first through third years. Attendance is optional for fourth year and above graduate students.

Immunology and CSI Seminar Series

Graduate seminars are an important means of attaining a broad and comprehensive exposure to all areas in immunology as well as gaining a professional perspective and competence in the field. First-year students are required to attend all immunology seminars (IMMUNOL 311 Seminar in Immunology). Students in their second year and above are required to attend 50% of the seminar series each academic year until the last quarter in which their Ph.D. oral defense takes place. Students in the CSI track are required to attend the Computational and Systems Immunology Seminar Series (IMMUNOL 310 Seminars in Computational and Systems Immunology) held every Summer Quarter.

Immunology Scientific Retreat

In the autumn quarter, the annual Retreat is held at the Asilomar Conference Grounds, Pacific Grove, CA, and is attended by students, staff, postdocs and faculty of the Stanford immunology community. All immunology graduate students are required to attend. In the third through fifth years, students will present a poster and give a talk on their graduate research.

Teaching Assistantships

Teaching experience and training are part of the graduate curriculum. Each student assists in teaching two courses in the immunology core or electives. A TA match process is held in summer quarter in order to match the graduate student's research and teaching preferences to the appropriate courses. Before beginning their assigned teaching assistantships, students are required to attend a TA orientation workshop held by VPTL before the teaching quarter begins.

First Author Paper Submission

By the fourth or fifth year, graduate students are expected to submit a first author paper for publication. This milestone should be completed before defending a Ph.D. thesis.

Doctoral Dissertation

Before embarking on the dissertation defense process, the graduate student must submit a Petition to Defend to the Director of the Immunology Graduate Program. Important milestones and degree requirements must be met before proceeding to the oral examination. A substantial draft of the dissertation must be turned in to the student's oral examination committee at least one month before the oral exam is scheduled to take place. At the time of the Ph.D. orals defense, an orals chair is chosen to lead the orals committee, which is a distinct committee, but the basic membership is identical to that of the dissertation reading committee. The correct number of faculty committee members for the orals committee is five. For students with two Ph.D. thesis co-advisors, the exact number of faculty committee members is still five. The final written dissertation must be approved by the student's reading committee and submitted to the Registrar's Office. Upon completion of this final requirement, a student is eligible for conferral of the Ph.D. degree.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

The Immunology Program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B-' or better level.

Graduate Advising Expectations

The Immunology Program is committed to providing academic advising in support of graduate student scholarly and professional development. This includes first year advising by the program director and ongoing advising with the research mentor in subsequent years. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. The Individual Development Plan (IDP) is required to be completed by the adviser and advisee annually and entails an extensive interactive written and personal assessment of trainee goals, accomplishments, coursework, and areas for development. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

In addition, the advising process includes guidelines and expectations for graduate student professional conduct, which prepares the student to be responsible members of professional communities. https://gap.stanford.edu/handbooks/gap-handbook/chapter-5/subchapter-6/page-5-6-1.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Faculty

Director, Stanford Immunology and Chair, Executive Committee for the Immunology Program and Director, Ph.D. Program in Immunology: Olivia Martinez (Professor, Surgery, Abdominal Transplantation)

Director of Graduate Studies: Olivia Martinez (Professor, Surgery, Abdominal Transplantation)

Participating Departments and Faculty (Molecular, Cellular, Translational Immunology Track)

Biochemistry: Peter Kim (Professor), Lingyin Li (Assistant Professor)

Bioengineering: Jennifer Cochran (Professor and Chair, and by courtesy, Chemical Engineering), Stephen Quake (Professor, and Applied Physics and Physics)

Biology: Patricia P. Jones (Professor)

Chemistry: Carolyn Bertozzi (Professor, Director, ChEM-H, and by courtesy, of Radiology and of Chemical and Systems Biology)

Genetics: William Greenleaf (Associate Professor, and by courtesy, Applied Physics), Leonore A. Herzenberg (Professor, Research), Karla Kirkegaard (Professor, and of Microbiology & Immunology), Stephen Montgomery (Associate Professor), Michael Snyder (Professor)

Medicine/Biomedical Informatics Research: Purvesh Khatri (Associate Professor, Research, and of Biomedical Data Science), Andrew Gentles (Assistant Professor, Research, and by courtesy, of Biomedical Data Science)

Medicine/Blood and Bone Marrow Transplantation Program: Everett Meyer (Assistant Professor), David Miklos (Associate Professor), Robert Negrin (Professor), Judith Shizuru (Professor, and of Pedicatrics, Stem Cell Transplantation)

Medicine/Cardiovascular Medicine: Joseph Wu (Professor, Director, Stanford Cardiovascular Institute, and Radiology)

Medicine/Endocrinology, Gerontology, & Metabolism: Joy Wu (Assistant Professor)

Medicine/Gastroenterology and Hepatology: Aida Habtezion (Associate Professor)

Medicine/Hematology: Ravi Majeti (Professor)

Medicine/Immunology and Rheumatology: C. Garrison Fathman (Professor, Emeritus), Jorg Goronzy (Professor), William Robinson (Professor), Samuel Strober (Professor), Paul J. Utz (Professor), Cornelia Weyand (Professor)

Medicine/Infectious Diseases: Catherine Blish (Associate Professor), Paul Bollyky (Assistant Professor, and of Microbiology & Immunology), Prasanna Jagannathan (Assistant Professor, and of Microbiology & Immunology), Taia T. Wang (Assistant Professor, and of Microbiology & Immunology)

Medicine/Oncology: Ash Alizadeh (Associate Professor), Gilbert Chu (Professor, and of Biochemistry), Dean Felsher (Professor, and of Pathology), Michael Khodadoust (Assistant Professor), Ronald Levy (Professor), Shoshana Levy (Professor, Research)

Medicine/Nephrology: Jonathan Maltzman (Associate Professor)

Medicine/Pulmonary and Critical Care Medicine: Mark Nicolls (Professor)

Microbiology and Immunology: John Boothroyd (Professor), Yueh-Hsiu Chien (Professor), Mark M. Davis (Professor, and Director, Institute for Immunity, Transplantation and Infection), Juliana Idoyaga (Assistant Professor), Holden Maecker (Professor, Research), Hugh McDevitt (Professor, Emeritus), Denise Monack (Professor), Garry P. Nolan (Professor), David Schneider (Professor)

Molecular and Cellular Physiology: K. Christopher Garcia (Professor, and of Structural Biology), Richard S. Lewis (Professor)

Neurology and Neurological Sciences: Katrin Andreasson (Professor), May Han (Associate Professor), Lawrence Steinman (Professor, and of Pediatrics), Tony Wyss-Coray (Professor)

Neurosurgery: Theo Palmer (Professor)

Otolaryngology/Head and Neck Surgery (ENT): Jayakar Nayak (Associate Professor, and by courtesy, Neurosurgery), John B. Sunwoo (Professor, and by courtesy, Dermatology)

Pathology: Robert Michael Angelo (Assistant Professor), Sean Bendall (Assistant Professor, Research), Scott Boyd (Associate Professor), Eugene C. Butcher (Professor), Michael Cleary (Professor), Gerald R. Crabtree (Professor, and of Developmental Biology), Edgar G. Engleman (Professor, and of Medicine/Immunology and Rheumatology), Andrew Fire (Professor, and Genetics), Stephen Galli (Professor, and of Microbiology & Immuonlogy), Michael Howitt (Assistant Professor), Siddhartha Jaiswal (Assistant Professor), Sara Michie (Professor), Bali Pulendran (Professor, and of Microbiology & Immunology), Ansuman Satpathy (Assistant Professor), Raymond A. Sobel (Professor), Irving Weissman (Professor, and Director, Stem Cell and Regenerative Medicine Institute, and of Developmental Biology, Biology)

Pediatrics: Rosa Bacchetta (Associate Professor, Research, Stem Cell Transplantation), Alice Bertaina (Associate Professor, Stem Cell Transplantation), Agnieszka Czechowicz (Assistant Professor, Stem Cell Tranplantation), David B. Lewis (Professor, Immunology and Allergy), Crystal Mackall (Professor, Hematology/Oncology, and of Medicine), Maria Grazia Roncarolo (Professor, Stem Cell Transplantation, and of Medicine/Blood and Marrow Transplantation), Elizabeth Mellins (Professor, Human Gene Therapy), Kari Nadeau (Professor, Allergy and Clinical Immunology, and of Otolaryngology, Head & Neck Surgery)

Psychiatry and Behavioral Sciences: Emmanuel Mignot (Professor, Sleep Medicine)

Radiology: Parag Mallick (Assistant Professor, Research, and of Diagnostic Radiology)

Structural Biology: Peter Parham (Professor, and of Microbiology and Immunology), Theodore Jardetzky (Professor)

Surgery/Multi-Organ Transplantation: Charles F. Chan (Assistant Professor, Plastic Surgery and Reconstructive Surgery), Sheri Krams (Professor, Research), Olivia Martinez (Professor)

Participating Departments and Faculty (Computational and Systems Immunology)

Anesthesiology, Perioperative and Pain Medicine: Nima Aghaeepour (Assistant Professor)

Bioengineering: Stephen Quake (Professor, and Applied Physics and Physics)

Genetics: Michael Snyder (Professor), Karla Kirkegaard (Professor, and of Microbiology & Immunology)

Biomedical Data Science: Aaron Newman (Assistant Professor, and of Medicine/Biomedicine Biomedical Informatics)

Medicine/Biomedical Informatics Research: Andrew Gentles (Assistant Professor, Research, and by courtesy, of Biomedical Data Science), Purvesh Khatri (Assistant Professor, Research, and of Biomedical Data Science)

Medicine/Immunology and Rheumatology: Paul J. Utz (Professor)

Medicine/Oncology: Ash Alizadeh (Associate Professor)

Microbiology and Immunology: John Boothroyd (Professor), Mark M. Davis (Professor, and Director, Institute for Immunity, Transplantation and Infection), Holden Maecker (Professor, Research), Garry Nolan (Professor)

Pathology: Sean Bendall (Assistant Professor, Research), Scott Boyd (Associate Professor), Andrew Fire (Professor, and of Genetics)

Radiology: Parag Mallick (Assistant Professor, Research, and of Diagnostic Radiology)

Affiliate Members:

Biochemistry: Ron Davis (Professor, and of Genetics)

Health and Research Policy - Biostatistics: Robert Tibshirani (Professor, and of Statistics)

Courses

IMMUNOL 199. Undergraduate Research. 1-18 Unit.
Presentations and discussions focus on how current research has progressed from the classic findings in Immunology. This third course in the Immunology core curriculum develops effective presentation skills that are appropriate for a given audience and situation. Students will gain experience in developing and presenting chalk talks, formal presentations, and the all-important elevator pitch on current research. Students will benefit from peer, TA and instructor feedback on all presentations.

IMMUNOL 201. Advanced Immunology I. 3 Units.
For graduate students, medical students and undergraduates. Topics include the innate and adaptive immune systems; genetics and function of immune cells and molecules; lymphocyte activation and regulation of immune responses. Recommended: undergraduate course in immunology.

IMMUNOL 202. Advanced Immunology II. 3 Units.
Readings of immunological literature. Classic problems and emerging areas based on primary literature. Student and faculty presentations. Prerequisite: IMMUNOL 201/MI 211.

IMMUNOL 203. Advanced Immunology III. 3 Units.
Key experiments and papers in immunology. Course focuses on the history of Immunology and how current research fits into the historical context. Students work on developing effective presentation skills.

IMMUNOL 205. Immunology in Health and Disease. 4 Units.
Concepts and application of adaptive and innate immunology and the role of the immune system in human diseases. Case presentations of diseases including autoimmune diseases, infectious disease and vaccination, hematopoietic and solid organ transplantation, cancer immunotherapy, genetic and acquired immunodeficiencies, hypersensitivity reactions, and allergic diseases. Problem sets based on lectures and current clinical literature. Laboratory in acute and chronic inflammation.

IMMUNOL 206. Introduction to Applied Computational Tools in Immunology. 2 Units.
Introduction to computational tools for analyses of immunological data sets, including but not limited to single-cell data such as that from flow cytometry or CyTOF, Luminex, and genomic analyses. Students become familiar with major web-based databases and analysis suites for immunological and genomic data; gain a working knowledge of the major software/algorithms for working with major data types, and be able to apply at least one computational tool in these areas to analyze a public data set. Lectures will be followed by a demonstration and interaction session on the topic. Students will complete a computational analysis project and present it to the class.

IMMUNOL 207. Essential Methods in Computational and Systems Immunology. 3 Units.
Introduction to the major underpinnings of systems immunology: first principles of development of computational approaches to immunological questions and research; details of the algorithms and statistical principles underlying commonly used tools; aspects of study design and analysis of data sets. Prerequisites: CS106a and CS161 strongly recommended.

IMMUNOL 209. Translational Immunology. 1 Unit.
Open to medical students (regardless of whether they are in foundations or applications), graduate students, and undergraduates (by consent of instructor). The format is a seminar series with weekly lectures from Immunology Faculty and guest speakers focusing on current basic immunology research and how it is translated into immunotherapies and clinical trials. Topics include hematopoiesis, transplantation, tolerance, immune monitoring, vaccination, autoimmunity and antibodies, rheumatoid arthritis, chronic pulmonary disease, and asthma. Med students in the immunology concentration major are allowed to take Imm 209 repeatedly for credit.

IMMUNOL 210. Immunology Research Seminars for Medical Students. 2 Units.
Required for medical students selecting the Immunology Concentration. Attendance at a minimum of ten seminars related to immunology outside of required medical school classes. A one-page essay on each seminar, what was presented and how it relates to a clinical immunologic problem, is required.

IMMUNOL 223. Biology and Disease of Hematopoiesis. 3 Units.
Hematopoiesis is the formation, development, and differentiation of blood cells. Lecture and journal club. Topics will include definitive and adult hematopoiesis, myeloid and lymphoid development, hematopoietic diseases, stem cell niche, bone marrow transplant, and methods and models used to study hematopoiesis. For upper level undergraduates or graduate students. Pre-requisite for undergraduates: Biology or Human Biology core, or consent of instructor.
Same as: STEMREM 223

IMMUNOL 258. Ethics, Science, and Society. 1 Unit.
This discussion focused Ethics, Science, and Society interactive mini-course will engage Immunology graduate students, postdoctoral fellows, and faculty in learning and conversations on topics in responsible research (including animal subjects, authorship, collaboration, conflicts of interest, data management, human subjects, mentor-mentee relationships, peer review, publication, research misconduct, and social responsibility) and diversity in science, informed by readings, case studies, individual reflections, and more. Some of the driving themes in this course include: what it means to do research well and how to and not to achieve this, why doing research well and with integrity is important, and who are researchers currently and who should they be. Prerequisite: MED 255.
Same as: INDE 281

IMMUNOL 275. Tumor Immunology. 3 Units.
Tumor Immunology focuses on the mechanisms by which tumors can escape from and subvert the immune system and conversely on the ability of innate and adaptive arms of the immune system to recognize and eliminate tumors. Topics include: tumor antigens, tumor immunosurveillance and immunoediting, tumor microenvironment, tumor iniduced immunosuppression, tumorimmunotherapy (including cancer vaccines, CARs, TILs, checkpoint antibodies, monoclonal antibodies and bispecific antibodies, as well as bone marrow transplantation and radiation therapy). Tracks the historical development of our understanding of modulating tumor immune response and discusses their relative significance in the light of current research findings. Prerequisite: for undergraduates, human biology or biology core.
Same as: CBIO 275

IMMUNOL 280. Early Clinical Experience in Immunology. 1-3 Unit.
Clinical observation experience for medical students in the Immunology Scholarly Concentration. At the end of the observation period, which may span over one to two quarters, the student submits a case observation paper to his/her faculty sponsor. Prerequisite: IMMUNOL 205.

IMMUNOL 286. Neuroimmunity. 2-3 Units.
Focus is on the homeostatic and pathogenic interactions between the immune and central nervous system. Topics include the role of immune cells and inflammatory mediators in the physiological functions, neural development, neuroexcitation, and the pathogenic impact of inflammatory responses. Prerequisite of Molecular and Cellular Immunology (Bio 230) or Advanced Immunology (Immunol 201). Otherwise, request permission from the course director to enroll.

IMMUNOL 290. Teaching in Immunology. 1-18 Unit.
Practical experience in teaching by serving as a teaching assistant in an immunology course. Unit values are allotted individually to reflect the level of teaching responsibility assigned to the student. May be repeated for credit.

IMMUNOL 299. Directed Reading in Immunology. 1-18 Unit.
Prerequisite: consent of instructor.

IMMUNOL 305. Immunology Journal Club. 1 Unit.
Required of first- to third-year graduate students. Graduate students present and discuss recent papers in the literature. May be repeated for credit.

IMMUNOL 310. Seminars in Computational and Systems Immunology. 1 Unit.
Presentation of CSI technologies from recent literature. Discussion of emerging application areas and limitations. Dissemination of computational resources.

IMMUNOL 311. Seminar in Immunology. 1 Unit.
Enrollment limited to Ph.D., M.D./Ph.D., and medical students whose scholarly concentrations are in Immunology. Current research topics.

IMMUNOL 399. Graduate Research. 1-18 Unit.
For Ph.D., M.D./Ph.D. students, and medical students whose scholarly concentrations are in Immunology.

IMMUNOL 801. TGR Project. 0 Units.

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IMMUNOL 802. TGR Dissertation. 0 Units.

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MEDICINE

The School of Medicine seeks to attract students who are passionate about scholarship and wish to improve the health of the world's people through research, innovation, and leadership.

Mission of the Degree Programs in Medicine

The mission of the degree programs in Medicine is to educate and inspire leaders in medicine and science who will improve human health through discovery, innovation, scholarship, education, and the delivery of outstanding patient-centered care.

Stanford is committed to representing the diversity of the U.S. and California populations by seeking a diverse body of students who are interested in the intellectual substance of medicine and committed to advancing the field of health care, broadly defined. Provided an applicant to the school has completed basic courses in physics, chemistry, and biology, the choice of an undergraduate major may reflect other interests, including the arts and humanities. Course work in advanced biology such as biochemistry, molecular biology, or genetics and the behavioral sciences is recommended because of their importance in understanding health care. Breadth of interests and depth of experiences play an important role in the selection of students from among those applicants having superior academic records.

Learning Outcomes

The following competencies serve as a guide for curriculum development and evaluation of the success of the training program and its graduates.

For additional information on the associated educational objectives please refer to the MD Program Handbook and Policy Manual Section 2.1 Competencies and Objectives for Medical Student Education (http://med.stanford.edu/md/mdhandbook/section-2-general-standards/2-1--competencies-and-objectives-for-medical-student-education.html).

1. *Patient Care:* Provide patient-centered care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health
2. *Knowledge for Practice:* Demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care
3. *Practice-Based Learning and Improvement:* Demonstrate the ability to investigate and evaluate one's care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning
4. *Interpersonal and Communication Skills:* Demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals
5. *Professionalism:* Demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles
6. *Systems-Based Practice:* Demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care
7. *Interprofessional Collaboration:* Demonstrate the ability to engage in an interprofessional team in a manner that optimizes safe, effective patient- and population-centered care
8. *Personal and Professional Development:* Demonstrate the qualities required to sustain lifelong personal and professional growth
9. *Discovery:* Explore scientific discovery and self-discovery

Degree Programs in Medicine

The School of Medicine offers a professional degree in Medicine (MD), a Masters in Medicine (MSM), a Masters in Medicine in Biomedical Investigation, and oversees a dual-degree Medical Scientist Training Program (MD-PhD). Additional School of Medicine graduate degree programs are available on the School of Medicine Education (http://med.stanford.edu/education.html) website.

The Master of Science in Medicine (http://msm.stanford.edu/) program admits current Stanford Ph.D. students who have a commitment to translational research, but are not interested in becoming clinicians. The goal of the program is to train researchers in human biology and disease to be better equipped to translate new scientific discoveries into useful medical advances. Students offered admission into any Ph.D. program at Stanford may apply for admission to the master's program.

The Master of Science in Medicine in Biomedical Investigation (http://med.stanford.edu/md/discovery-curriculum/BergScholarsProgram.html) program admits current Stanford M.D. students who have a commitment to becoming physician-scientists. A major goal of the program is to address decreasing numbers of physician- scientists by shortening the training period without compromising quality of research – focusing instead on individualized career development of M.D.-only Physician-Scientists by placing them in outstanding research groups led by experienced faculty.

The Doctor of Medicine (M.D.) (http://med.stanford.edu/md/discovery-curriculum.html) program provides education in biomedical and clinical sciences along with study and independent research through scholarly concentrations. Emphasis is placed on interdisciplinary learning, with streamlined content, interactive approaches, and melding of basic science and clinical instruction across the curriculum. Blocks of unscheduled time allow for individual or group study, participation in elective courses, research, and reflection. The flexible Discovery Curriculum supports student's scientific discovery and self-discovery by offering multiple learning pathways at a more individualized pace and opportunities for pursuing a second degree, such as an M.P.H., M.B.A., Master's of Science in Epidemiology or Health Services Research, a Ph.D., or participating in longitudinal and global health research experiences.

The Medical Scientist Training Program (MSTP) (http://med.stanford.edu/mstp.html) M.D.-Ph.D. program provides a select group of medical students with an opportunity to pursue a training program designed to equip them for careers in academic investigative medicine. Individualization of the curricular and research programs of each trainee is the hallmark of the Program. Training for a combined MD-PhD includes the same content encountered by students who pursue each degree separately, but the total time of training should be less than the sum of the time normally taken for each degree. To this end, students must plan their training carefully and commit to a rigorous and intensive period of study. The flexible curriculum at Stanford Medical School allows each student to satisfy the requirements for the MD degree and to pursue an independent research program.
In addition to a variety of other dual degree opportunities, Stanford also collaborates with the University of California, Berkeley, to offer students opportunities for M.D./M.P.H. training. Details about these programs may be found at Stanford's Dual Degree and Multi-Degree Programs web site.

The M.D. degree requires 12 quarters of registration at full Med-M.D. tuition; the joint M.D./Ph.D. degree requires 15 quarters. Completion of the M.D. degree must be achieved within six years, unless a petition is granted to extend this time frame. For further details on the M.D. degree, including admission requirements, see the Stanford M.D. Program (http://med.stanford.edu/md.html) website.

Fellowships and Assistantships

Teaching Assistantships

The Office of Medical Education manages the Teaching Assistantships for the required M.D. courses. TAships provide medical students with an opportunity to develop teaching skills and enhance understanding of specific areas of the M.D. curriculum through teaching. Additionally, the work done by TAs enriches the overall curriculum and is an invaluable resource to the school.

In selecting TAs, all course directors consider each applicant's expertise in the subject matter, prior teaching experience, academic performance, and overall enthusiasm and participation throughout the course. Past performance in the course is a factor in selecting most TAs. Please note that some course directors may decide to interview potential candidates while others may not; the interview process varies from course to course. Some course directors may also require their TAs to participate in additional training; that will be noted in this document. TAs are expected to be and remain in good academic standing. However, all first-time TAs in the M.D. program are required to attend the training hosted by the Office of Medical Education. This training is mandatory and cannot be made up. Students may be asked to re-take this training if they have not taken it within the last 3 academic years.

Medical Scholars Research Program

Since 1980, the Stanford Medical Scholars Research Program has supported medical student research, both locally and off-site. Students carry out research in an academic setting under the direction of faculty members here at the medical school, hospital and clinics, and throughout the University. The fellowships provide funding and units as Medical Scholars Research 370.

M.D. students enrolled at Stanford are eligible.

M.D. students who obtained a Ph.D. prior to matriculation may apply for a fellowship only for research that has focus substantially different from that of their prior doctoral studies.
Students who are pursuing a dual degree (e.g.. M.D./M.B.A.) are not eligible when they "step out" to pursue the dual degree. Stepping out means that they are no longer paying tuition under the School of Medicine for that period of time, and any Financial Aid support is handled through the other degree program. When you "step back in" to the M.D. program, you resume eligibility for MedScholars.

Master of Science in Medicine

The University's basic requirements for the M.S. degree are discussed in the "Graduate Degrees (p. 65)" section of this bulletin.

Overview

The Master of Science in Medicine (MSM) program is a master degree program that provides Ph.D. candidates exposure to clinical medicine with a view to fostering translational research. The goal of the MSM program is to train a new generation of Ph.D. students about human biology and disease, and thus better prepare them to translate new scientific discoveries into useful medical advances.

The MSM program admits an elite group of highly talented people who have a serious commitment to translational research but are not interested in becoming clinicians. Students admitted to any of the Ph.D. programs offered at Stanford have the opportunity to apply for MSM admission on a competitive basis.

Funding for each student during the first year of the program is completely provided by scholarship support from the MSM program. Beginning in the second year, financial support is provided by each student's home Ph.D. program.

Degree Requirements

The Department of Medicine requires a minimum of 79 units for the master's degree to be taken in residence at Stanford. A Master's Program Proposal (https://stanford.box.com/progpropma/) form should be filled out, signed by the student's academic adviser, and submitted to the department's student services manager by the end of the student's first quarter of study. Final revisions to the master's program proposal must be submitted no later than one academic quarter prior to the quarter of expected degree conferral.

The program will extend the total training time by one-year beyond the usual length of Ph.D. training. During the program's first two years MSM participants will take basic biomedical science courses with the School of Medicine's MD students, This course schedule allows MSM students to concurrently undertake some Ph.D. course requirements and lab rotations. By early in the second program year, students will choose labs for thesis research and elect clinical mentors. The Master of Science in Medicine degree will be conferred upon successful completion of the required coursework and clinical experience.

Course Requirements

The basic medical science courses required by the MSM program are summarized below. This is an intensive sequence, but can also be flexible, depending on the student, and the student's background, Ph.D. program requirements, and interests.

In some cases, there is overlap between MSM courses and courses required for Ph.D. degree progress. Ph.D. students may be able to substitute courses required by their Ph.D. programs. For example, while most M.D. students take GENE 202, most Ph.D. students prefer to take GENE 205 which is a more advanced course and may satisfy a Ph.D. course requirement.

All MSM courses are taken Pass/Fail with the exception of courses required for the student's Ph.D. degree which must be taken for a letter grade. A more detailed description of each of the courses below can be found on ExploreCourses (https://explorecourses.stanford.edu/).

First Year	Units		
	Autumn	Winter	Spring
Clinical Anatomy (SURG 203)	11		
Molecular Foundations of Medicine (BIOC 205)	4		
Applied Biochemistry (BIOC 200)	2		
Human Genetics (GENE 202)	4		
Embryology (SURG 201)	1		
Histology (INDE 218)	1		
Basic Cardiac Life Support for Healthcare Professionals (EMED 201)	1		
Microbiology and Infectious Diseases I (INDE 263)			3
Immunology in Health and Disease (IMMUNOL 205)			4
The Nervous System (NBIO 206)			6
Cells and Signaling in Regenerative Medicine (DBIO 201)			2
Science of Medicine I (INDE 221)			12
Year Total:	24	15	12

Second Year	Units		
	Autumn	Winter	Spring
Science of Medicine II-A (INDE 222A)	7		
Science of Medicine II-B (INDE 222B)	7		
Microbiology and Infectious Diseases III (INDE 265)	2		
Science of Medicine III-A (INDE 223A)			5
Science of Medicine III-B (INDE 223B)			5
Pharmacological Treatment of Disease (INDE 260A)			1
Pharmacological Treatment of Disease (INDE 260B)			1
Year Total:	16	12	

Total Units in Sequence:	79

Non-Course Requirements

All students must complete a Clinical Experience prior to conferring the degree. Most often this takes the form of a shadow arrangement, equivalent to 1 week of full-time work (40 hours). This arrangement can be broken up as desired (e.g., four weeks quarter-time or two weeks part-time). Students are encouraged to match the clinical experience to their research interest. Primary responsibility to find these opportunities falls to each student.

Master of Science in Medicine, Subplan in Biomedical Investigation

The University's basic requirements for the M.S. degree are discussed in the "Graduate Degrees (p. 65)" section of this bulletin.

Overview

The goal of the Stanford Berg Scholars Program (Master of Science in Medicine with a subplan in Biomedical Investigation) is to address decreasing numbers of physician-scientists by shortening the training period without compromising quality of research, focusing instead on individualized career development of our M.D.-only physician-scientists by placing them in outstanding research groups led by experienced faculty.

Degree Requirements

Berg Scholars must complete all Stanford University requirements for the Master in Science (M.S.) in Medicine in Biomedical Investigation while pursuing their M.D. Students must adhere to the University's residency requirements (p. 72). Units may not be duplicated or double-counted toward the residency requirement for both degrees. Students must complete the master's degree requirements within three years of the first graduate quarter of the M.S.

Course Requirements

Students are required to complete 280 minimum units (combined M.S. and M.D.) to graduate. These unit are broken down as follows:

- 45 unduplicated units taken in specific courses for the M.S. degree
  - 33 units in research
  - 12 units of coursework (11 required plus 1 elective)
- 235 units in pre-clinical and clinical clerkships for the M.D. degree

Only courses 100 level or above can be counted towards the degree. A minimum of 23 units must be at the 200-level or above. All courses towards the 45 unit requirement must receive a passing grade.

		Units
Core Courses		
MED 255	The Responsible Conduct of Research	1
INDE 217	Physician Scientist Hour (take this course three times)	3
INDE 258	PSTP Career Development Symposium	1
SOMGEN 223	Introduction to R for data analysis	3
Choose one of the following		3
EPI 259	Introduction to Probability and Statistics for Epidemiology	
EPI 261	Intermediate Biostatistics: Analysis of Discrete Data	
or an equivalent course for a minimum of 3 units		
Research Units		
Complete 33 units of research from the SoM department in the student's file of study		33
Such courses are typically numbered 399		
Elective courses		
Choose one or more of the following:		1-5
MED 221	Translational Research and Applied Medicine	
BIOE 390/ MED 289	Introduction to Bioengineering Research	
BIO/BIOC 459	Frontiers in Interdisciplinary Biosciences	
BIODS 260A	Workshop in Biostatistics	
BIODS 260B	Workshop in Biostatistics	
BIODS 260C	Workshop in Biostatistics	
BIOE/BIOMEDIN/ GENE 212	Introduction to Biomedical Informatics Research Methodology	
BIOMEDIN 233	Intermediate Biostatistics: Analysis of Discrete Data	
BIOMEDIN 251/ HRP 252/MED 252	Outcomes Analysis	
BIOS 274	Introductory Python Programming for Genomics	
CHPR 206	Meta-research: Appraising Research Findings, Bias, and Meta-analysis	
CHPR 227	The Science of Community Engagement in Health Research	
COMPMED 211	Biostatistics for the Life Sciences	
GENE 211	Genomics	
HRP 207	Introduction to Concepts and Methods in Health Services and Policy Research I	
HRP 208	Introduction to Concepts and Methods in Health Services and Policy Research II	
EPI 216	Analytical and Practical Issues in the Conduct of Clinical and Epidemiologic Research	
HRP 218	Methods for Health Care Delivery Innovation, Implementation and Evaluation	
EPI 219	Evaluating Technologies for Diagnosis, Prediction and Screening	
EPI 223	Introduction to Data Management and Analysis in SAS	
EPI 225	Introduction to Epidemiologic and Clinical Research Methods	
EPI 226	Intermediate Epidemiologic and Clinical Research Methods	
EPI 261	Intermediate Biostatistics: Analysis of Discrete Data	
EPI 262	Intermediate Biostatistics: Regression, Prediction, Survival Analysis	
EPI 264	Foundations of Statistical and Scientific Inference	
EPI 275	Population Health Research	
IMMUNOL 210	Immunology Research Seminars for Medical Students	
MED 206	Meta-research: Appraising Research Findings, Bias, and Meta-analysis	
MED 224	Social Entrepreneurship and Innovation Lab (SE Lab) - Human & Planetary Health	
NSUR 249	Experimental Immersion in Neuroscience	
RADO 203SI		
STEMREM 201A	Stem Cells and Human Development: From Embryo to Cell Lineage Determination	

SURG 202A	Practical Applications for Qualitative Data Analysis	
SURG 202B		
SURG 202C	Qualitative Research Methods and Study Design	
Total Units		45-49

Non-Course Requirements

Additionally, students must complete the following non-course requirements in order to confer their degree.

Research Proposal

Students must submit a written research proposal for committee review.

Research Proposal Presentation

Students must orally present their proposed research to their research committee for approval.

Thesis Defense

Students must defend their thesis with an oral presentation and closed door questioning from their research committee.

Thesis

Students must publish their thesis in order to confer their M.S. degree.

Doctor of Medicine (M.D.)

Candidates for the degree of Doctor of Medicine (M.D.) must satisfactorily complete the required curriculum in medicine. The requirements for the M.D. degree are detailed below and in the M.D. Handbook.

Overview

The Discovery Curriculum enables students to complete their M.D. program at a more individualized pace, introducing a greater diversity of learning pathways available to students. Depending on their unique goals and pursuits at Stanford, students can complete the pre-clerkship curriculum at full pace in two years or at a slower pace in three years. During the first year, all students complete the same courses at the same pace. In Autumn Quarter of the second year, students can complete the remainder of their pre-clerkship curriculum at full pace or apply for the option of splitting the course workload over two years. Students who are approved for the three-year option have substantially more open time to pursue independent research, a dual degree, or other longitudinal scholarship and leadership activities. The course requirements, learning objectives, and assessments are the same for two-year and three-year pre-clerkship students. The three-year option is selective with an application process; the majority of students are expected initially to opt for the traditional two-year pre-clerkship option.

Degree Requirements

Satisfactory completion of a minimum total of 238 required academic units as specified in the table Courses and Units for Students Matriculating Academic Year 2020-21.

Students cannot graduate with any uncorrected failing grade in a pre-clerkship course or any uncorrected failing or marginal pass grade in clinical clerkships. Students can graduate with one uncorrected marginal pass in a pre-clerkship course having fewer than 8 units.

Course Requirements

Students must successfully complete a minimum of the following:

- 124 pre-clerkship units
- 6 units of additional required coursework (INDE 297 and MED 295)
- 64 weeks of clerkships equaling at least 96 units
- 12 units of a Scholarly Concentration

Requirements & Timeline

The following is a list and timeline of required courses for students who continuously pursue the M.D. without engaging in a dual degree or separate research track.

		Units
Pre-Clerkship Coursework		
Quarter 1 (32-39 units)		
INDE 201	Practice of Medicine I	8
SURG 203	Clinical Anatomy	11
BIOC 200	Applied Biochemistry	2
BIOC 205	Molecular Foundations of Medicine	4
GENE 202	Human Genetics	4
SURG 201	Embryology	1
INDE 218	Histology	1
EMED 201	Basic Cardiac Life Support for Healthcare Professionals	1
Elective Coursework		0-7
Quarter 2 (21-26 units)		
INDE 202	Practice of Medicine II	5
INDE 263	Microbiology and Infectious Diseases I	3
IMMUNOL 205	Immunology in Health and Disease	4
NBIO 206	The Nervous System	6
DBIO 201	Cells and Signaling in Regenerative Medicine	2
Elective Coursework		0-5
Quarter 3 (19-26 units)		
INDE 203	Practice of Medicine III	6
INDE 221	Science of Medicine I	12
Elective Coursework		0-7
Early Clinical Engagement Requirement		
Must be completed during the 1st year of study.		
Complete one (1) of the following options:		
INDE 268	Early Clinical Engagement	1
Must commit to course by Autumn quarter Final Study List deadline. Enroll in the Spring. But must participate in the course in Aut, Win, and Spr.		
PEDS 281	Childhood Chronic Illness: Impact on Family Development	1
Must concurrently attend all of the INDE 268 didactic sessions throughout the year.		
INDE 290A	Walk With Me: A Patient and Family Centered Exploration of Health & The Health Care System	1
Or INDE 290B or INDE 290C; Must commit to course by Autumn Quarter Final Study List Deadline.		
FAMMED 280	Student Community Outreach and Physician Support (Must commit to course by Autumn Quarter Final Study List Deadline.)	1
Quarter 4 (24-39 units)		
INDE 204A	Practice of Medicine IV-A	4
INDE 204B	Practice of Medicine IV-B	4
INDE 222A	Science of Medicine II-A	7
INDE 222B	Science of Medicine II-B	7
INDE 265	Microbiology and Infectious Diseases III	2
Elective Coursework		0-15

Quarter 5 (18-26 units)		
INDE 205A	Practice of Medicine V	3
INDE 205B	Practice of Medicine V	3
INDE 223A	Science of Medicine III-A	5
INDE 223B	Science of Medicine III-B	5
INDE 260A	Pharmacological Treatment of Disease	1
INDE 260B	Pharmacological Treatment of Disease	1
Elective Coursework		0-8
Quarter 6 (10-26 units)		
INDE 206	Practice of Medicine VI	5
INDE 224	Pathophysiology Capstone	4
Elective Coursework		16
Core Clerkships		
The following must be taken within the student's first 12 months of clinical rotations		
MED 300A	Internal Medicine Core Clerkship	10
SURG 300A	Surgery Core Clerkship	10
Two (2) of the following must be completed within the student's first 12 months (16 periods) of clinical rotations		
OBGYN 300A	Obstetrics and Gynecology Core Clerkship	10
PEDS 300A	Pediatrics Core Clerkship	10
MED 313A	Ambulatory Medicine Core Clerkship	5
FAMMED 301A	Family Medicine Core Clerkship	5
NENS 301A	Neurology Core Clerkship	5
PSYC 300A	Psychiatry Core Clerkship	5
EMED 301A	Emergency Medicine Core Clerkship	5
Choose one (1) of the following		
ANES 306A	Critical Care Core Clerkship	5
ANES 306P	Critical Care Core Clerkship	5
Selective/Elective Clerkships		
Selective I: Fundamentals of Clinical Care		
Complete 3 weeks of clerkship listed under this category		
ANES 304A	Chronic Pain Management Clerkship	5
DERM 300A	Dermatology Clerkship	5
EMED 313A	Emergency Medicine Clerkship	5
EMED 313D	Emergency Medicine Clerkship	5
FAMMED 310A	Continuity of Care Clerkship	1-6
FAMMED 345E	Family Practice Office Clerkship	5
MED 303A	Cardiology Clerkship-Inpatient/Outpatient Consult	5
MED 303B	Cardiology Clerkship	5
MED 303C	Cardiology Clerkship	5
MED 306A	Endocrinology and Metabolism Clerkship	5
MED 322A	Outpatient Medical Oncology Clerkship	3-6
MED 323A	Trans-Disciplinary Breast Oncology Clerkship	5
MED 342A	Geriatric Medicine Clerkship	5
MED 343B	Palliative Care Clerkship	5
OPHT 300A	Ophthalmology Clerkship	5
OPHT 300E	Ophthalmology Clerkship	5
ORTHO 303C	Clinical Clerkship in Rehabilitation Medicine	5
ORTHO 304A	Physical Medicine and Rehabilitation Clerkship	5
ORTHO 306A	Orthopedics Clerkship	5
OTOHNS 307A	Otolaryngology/Head and Neck Surgery Clerkship	5
PEDS 315A	Adolescent Medicine	5
PEDS 340D	Child Health Clerkship	5
PSYC 328B	Addiction Treatment Services	5
RAD 301A	Diagnostic Radiology and Nuclear Medicine Clerkship	5
RADO 300A	Radiation Oncology Clerkship	5
UROL 308A	Urology Clerkship	5
UROL 308B	Urology Clerkship	5
UROL 308C	Urology Clerkship	5
Selective II: Subinternship		
Complete 3 weeks of clerkship listed under this category		
CTS 300A	Cardiothoracic Surgery Clerkship	5
FAMMED 364E	Subinternship in Family Medicine	5
MED 304A	Cardiovascular Medicine Clerkship - Inpatients	5
MED 311D	Advanced Medicine Clerkship	5
MED 312C	Advanced Medicine Clerkship	5
MED 314A	Advanced Medicine Clerkship	5
MED 321A	Inpatient Medical Oncology Clerkship	5
MED 339B	Advanced Medicine Clerkship	5
NENS 307A	Advanced Clinical Elective in Child Neurology	5
NENS 308A	Advanced Clinical Elective in Adult Neurology	5
NSUR 318A	Subinternship in Neurosurgery	5
OBGYN 304A	Inpatient Gynecology Clerkship	5
OBGYN 307A	Maternal-Fetal Medicine Clerkship	5
OBGYN 308A	Gynecologic Oncology Clerkship	5
ORTHO 318A	Subinternship in Orthopedic Surgery	5
OTOHNS 336A	Subinternship in Otolaryngology/Head and Neck Surgery	5
PEDS 313A	Neonatal Intensive Care Subinternship	5
PEDS 314A	Pediatric Intensive Care Clerkship	5
PEDS 335A	Pediatric Hematology and Oncology Subinternship	5
PEDS 336E	Subinternship in Community Hospital Pediatrics	5
PEDS 338A	Subinternship in Inpatient Pediatrics	5
PSYC 358A	Subinternship in Inpatient Psychiatry	5
PSYC 362B	Subinternship in Inpatient Psychiatry	5
SURG 311C	Clerkship at the Burn Center	5
SURG 316A	Pediatric Surgery Clerkship	5
SURG 333A	Multi-Organ Transplantation Clerkship	5
SURG 334A	Advanced Vascular Surgery Clerkship	5
SURG 338A	Advanced Surgery Clerkship	5
UROL 338A	Advanced Urology Clerkship	5
UROL 338C	Advanced Urology Clerkship	5
Elective Clerkship		
Students are required to complete 5-6 electives (of any 3**-series clerkships) to reach the minimum of 64 weeks of clerkship training [1]		
Additional Course Requirements		
INDE 297	Reflection and Contextual Medicine (students should enroll in INDE 297 in the last quarter of enrollment prior to graduation)	4
MED 295	Advanced Cardiac Life Support	2

[1] See the "Clinical Clerkships by department (https://med.stanford.edu/medfishbowl/ClrksDept.html)" website for a list of all available clerkships.

Examination Requirements

Completion of the following examination requirements are required prior to conferral:

- Mini-CPX
  - An exam administered at the end of the pre-clerkship period. Students must meet or exceed a minimum passing score on the exam to be eligible to enter clerkships.
- Clinical Performance Examination (CPX)
  - An exam administered to all medical students in the State of California that may be taken at the end of the first year of clerkships. Students must demonstrate at least a minimum competency in each of the four skill areas. Students who fail to attain an overall passing score on the exam or who fail individual skill domains will have to complete a remediation program in order to graduate.
- United States Medical Licensing Examination (USMLE)
  - In order to graduate, students must pass USMLE Step 1 and Step 2 CK (Clinical Knowledge) and must have taken the Step 2 CS (Clinical Skills). Students must receive an overall pass on Step 1 of the USMLE within 12 months of the start of clinical clerkships. Students must take the USMLE Step 2 CS examination prior to graduation. A passing grade is not required for graduation but is required to take Step 3.

Scholarly Concentration

All students are required to fulfill the scholarly concentration requirement. All students must declare a concentration using the Medical Education Platform (MEP) by September 1st of their second year of study.

Students must choose one (1) area of study from a Foundation area listed below and complete 12 units of coursework:

- Bioengineering
- Biomedical Ethics and Medical Humanities
- Informatics and Data-Driven Medicine
- Clinical Research
- Community Health
- Health Services and Policy Research
- Medical Education
- Molecular Basis of Medicine

If desired, students can apply the skills developed in their foundation area to one of the application areas below. Up to 6 of the 12 units can come from one of the application areas:

- Cancer Biology
- Cardiovascular and Pulmonary
- Global Health
- Immunology
- Neuroscience, Behavior, and Cognition
- Prevention Research
- Quality Improvement
- Women's Health and Sex Differences

The unit requirements for the Scholarly Concentration can also be achieved by completion of a graduate degree at Stanford alongside the M.D.

In addition, to the unit requirement, students must also complete two (2) non-course requirements (including those pursuing the additional graduate degree option):

Written Report

Students must submit a written report of their scholarly work by June 1 of their graduating year.

Presentation

Students must present their research and scholarly work by June 1 of their graduating year.

Medical Scientist Training Program

The Medical Scientist Training Program (MSTP) M.D.-Ph.D. program provides a select group of medical students with an opportunity to pursue a training program designed to equip them for careers in academic investigative medicine. Individualization of the curricular and research programs of each trainee is the hallmark of the Program.

Admission Requirements

Stanford's MSTP is interested in identifying students with significant undergraduate research experience that would predict successful completion of a Ph.D. program. In addition, successful candidates must meet the standards expected of the very best M.D. candidates. The Stanford Medical Scientist Training Program admissions process utilizes the same application, process, and all policies as the M.D.-only application. For information regarding the Stanford School of Medicine's M.D. Admissions process, policies and eligibility, visit the School of Medicine's How to Apply (http://med.stanford.edu/md-admissions/how-to-apply.html) website. For specific questions regarding the application process, please contact Stanford's M.D. Admissions directly at mdadmissions@stanford.edu.

Program Requirements

Training for a combined M.D.-Ph.D. includes the same content encountered by students who pursue each degree separately, but the total time of training should be less than the sum of the time normally taken for each degree. To this end, students must plan their training carefully and commit to a rigorous and intensive period of study. The flexible curriculum at the Stanford Medical School allows each student to satisfy the requirements for the M.D. degree and to pursue an independent research program.

For more information about the program structure, review the MSTP program website (http://med.stanford.edu/mstp/structure.html).

M.D. Degree Requirements

COVID-19 USMLE Exam Policies

Step 1

Per the MD Handbook, Section 3.22: *Students must take Step 1 of the USMLE within 12 months of the start of their first clinical clerkship.* However, due to testing center closures and postponed exams, the deadline date has been extended. **For all students who began clerkships prior to March 31, 2020, the deadline to take Step 1 is now March 31, 2021.** For students beginning clerkships after March 31, 2020 the original deadline of 12 months still applies. Please reference the full policy (http://med.stanford.edu/md/mdhandbook/section-3-md-requirements-procedures/section-3-22-united-states-medical-licensing-examinations-requirements.html) for more information. Students are encouraged discuss Step 1 plans with their Advising Deans.

Step 2 CS (Clinical Skills)

Per the MD Handbook, Section 3.22: *Students must take the USMLE Step 2 CS (Clinical Skills) examination prior to graduation. A passing score is not required for graduation but is required to sit for Step 3; passing Step 3 is required for licensure in California and virtually every other*

state. However, as of May 26, 2020, the USMLE has suspended Step 2 CS test administrations for the next 12-18 months. **Therefore, the requirement to take Step 2 CS will be waived for students graduating in June 2021 (or before).** Please reference the full policy (http://med.stanford.edu/md/mdhandbook/section-3-md-requirements-procedures/section-3-22-united-states-medical-licensing-examinations-requirements.html) for more information.

MICROBIOLOGY AND IMMUNOLOGY

Courses offered by the Department of Microbiology and Immunology are listed under the subject code MI on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=MI&filter-catalognumber-MI=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=MI&filter-catalognumber-MI=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=MI&filter-catalognumber-MI=on).

Graduate Programs in Microbiology and Immunology

The Department of Microbiology and Immunology offers a program of training leading to the Ph.D. degree, as well as research training, courses, and seminars for medical students and postdoctoral fellows. Research interests focus on two broad areas: host-microbe interactions, and the function of the immune system. Laboratories investigate mechanisms of pathogenesis and commensalism and the physiology of viruses, bacteria, and protozoan parasites, as well as the lymphocyte function in antigen recognition, immune response, and autoimmunity.

Master of Science

A regular M.S. program is not offered, although this degree is awarded under special circumstances. Candidates for master's degrees are expected to have completed the preliminary requirements for the B.S. degree, or the equivalent. In addition, the candidate is expected to complete 45 quarter units of work related to microbiology; at least 25 of these units should concern research devoted to a thesis. The thesis must be approved by the student's committee.

Doctor of Philosophy in Microbiology and Immunology

University requirements for the Ph.D. are described in the "Graduate Degrees (p. 65)" section of this bulletin.

Application, Admission, and Financial Aid

Students seeking admissions to the Microbiology and Immunology Ph.D program typically have an undergraduate major in biological sciences, but majors from other areas are acceptable if the applicant has sufficient coursework or interest in the field. Information for prospective students can be found on the Stanford Biosciences (https://biosciences.stanford.edu/prospective-students/) website. Applications should be submitted at the Office of Graduate Admissions (http://gradadmissions.stanford.edu/) website. The GRE is not required to apply for the Ph.D degree in Microbiology and Immunology.

In the absence of independent fellowship support, entering predoctoral students are fully supported with a stipend and tuition award. Highly qualified applicants may be honored by a nomination for a Stanford Graduate Fellowship. Successful applicants have been competitive for predoctoral fellowships such as those from the National Science Foundation.

Program for Graduate Study

The Ph.D degree requires course work and independent research demonstrating an individual's creative, scholastic, and intellectual abilities. On entering the department, students are oriented to the curriculum and the timetable for completion of the degree requirements by the Director of Graduate Studies. Typically, students plan three laboratory rotations (one rotation per quarter). During the first year of graduate study in the department, each student also takes seven upper-level (200-series) courses.

Course requirements:

		Units
BIOS 200	Foundations in Experimental Biology	5
BIO 214	Advanced Cell Biology	4
MED 255	The Responsible Conduct of Research	1
MI 210	Advanced Pathogenesis of Bacteria, Viruses, and Eukaryotic Parasites	4
MI 215	Principles of Biological Technologies	3
MI 250	Frontiers in Microbiology and Immunology (Taken once in the first year and once in the second year for a total of 2 units.)	1

Recommended course:

		Units
BIO 230	Molecular and Cellular Immunology	4

One elective from the following:

		Units
DBIO 210	Developmental Biology	4
CSB 210	Cell Signaling	4
CSB 220	Chemistry of Biological Processes	3
GENE 205	Advanced Genetics	3
IMMUNOL 202	Advanced Immunology II	3
MCP 256	How Cells Work: Energetics, Compartments, and Coupling in Cell Biology	4
MI 221	Gut Microbiota in Health and Disease	3
SBIO 241	Biological Macromolecules	3-5
STATS 141	Biostatistics	5

Prior approval from the student's adviser and department graduate program director is required for courses not from the elective list.

In Autumn Quarter of the second year, each student defends orally a formal research proposal on a topic outside the intended thesis project. This qualifying examination proposal is due to the graduate program steering committee by September 1. In Spring Quarter of the second year, a research proposal based on the student's own thesis topic is defended to the thesis committee. The written thesis proposal is due May 1 and the oral defense is presented and completed by the end of the Spring Quarter. Based on successful performance on these proposals, the student is admitted to candidacy. Teaching experience and training are also part of the graduate curriculum. Graduate students are required to act as teaching assistants for one course. In addition, first- and second-year graduate students are required to participate in a bi-weekly journal club. Additional information on program requirements can be found on the Microbiology and Immunology (http://med.stanford.edu/microimmuno.html) web site.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count

courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

The Microbiology and Immunology Program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B" or better level.

Graduate Advising Expectations

The Department of Microbiology and Immunology is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, development of teaching and mentoring skills, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

Additional information about the department's policy on graduate advising can be found on the Microbiology and Immunology (http://med.stanford.edu/microimmuno.html) web site. For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Emeriti: (Professors) Hugh O. McDevitt, Edward S. Mocarski,

Chair: David Schneider

Associate Chair: Denise Monack

Director of Graduate Studies: Justin Sonnenburg

Professors: Manuel Amieva, Ann Arvin, Helen Blau, Matthew Bogyo, John C. Boothroyd, Yueh-Hsiu Chien, Wah Chiu, Mark M. Davis, Stephen J. Galli, Jeffrey Glenn,Harry B. Greenberg, K.C. Huang, Peter Jackson, Karla Kirkegaard, A.C. Matin, Denise Monack, Peter Parham, Phillip Pizzo, Charles Prober, Bali Pulendran, David Relman, Peter Sarnow, David Schneider, Upinder Singh, Lucy S. Tompkins.

Professor (Teaching): Robert D. Siegel

Associate Professors: Paul Bollyky, Jan Carette, Shirit Einav, Michael Fischbach, Justin Sonnenburg, Ellen Yeh

Assistant Professors: Dylan Dodd, Elizabeth Egan, Michael Howitt, Juliana Idoyaga, Prasanna Jagannathan, Taia Wang

Institute for Immunity, Transplantation and Infection

Director, Human Immune Monitoring Center and Professor (Research): Holden Maecker

Courses

MI 18SC. The Coming Influenza Pandemic. 2 Units.
Examines the H1N1 influenza virus from molecular, clinical, societal, historical, demographic, economic, and political perspectives. Examines the unique genetic, epidemiological, virologic, and pathogenic features of the influenza virus that allow it to continue to reinvent itself and re-emerge on an annual basis. Discusses past successes and failures, the current status of influenza, and the critical factors to consider to avert the coming influenza pandemic. Explores whether or not the lessons learned from influenza can be applied to other diseases. Includes guest lectures, field trips, student presentations.

MI 19SC. Measles and Sneezles and Things That Go Mumps in the Night. 2 Units.
A study of measles (until recently one of the leading causes of death in the world and the most contagious disease agent ever studied) and its relatives in the paramyxovirus family, including mumps, respiratory syncytial virus, hendra, and nipah, as well as a number of important animal pathogens. Investigates the nature of viruses using the paramyxoviruses as a paradigm. Topics include: the history of this devastating group of pathogens; basic aspects of paramyxovirus taxonomy and molecular virology; viral epidemiology, emergence, and eradication, including the pioneering studies of Peter Panum; the use, misuse, and abuse of science; the interactions between pathogen and host and how this interplay leads to disease, including the appearance of a bizarre brain complication with 100% mortality; the politics and economics of infection; how a putative link between the measles vaccine and autism entered the public eye, and how it refuses to disappear despite overwhelming evidence to the contrary. Field trips, guest speakers, student presentations. No science background necessary.

MI 70Q. Photographing Nature. 3 Units.
Utilizes the idiom of photography to learn about nature, enhance observation, and explore scientific concepts. Builds upon the pioneering photographic work of Eadweard J. Muybridge on human and animal locomotion. A secondary goal is to learn the grammar, syntax, composition, and style of nature photography to enhance the use of this medium as a form of scientific communication and also to explore the themes of change across time and space. Scientific themes to be explored include: taxonomy, habitat preservation, climate change; species diversity; survival and reproductive strategies; ecological niches and coevolution, carrying capacity and sustainability, population densities, predation, and predator-prey relationships, open-space management, the physics of photography. Extensive use of field trips and class critque.

MI 115B. The Vaccine Revolution. 6 Units.
Advanced seminar. Human aspects of viral disease, focusing on recent discoveries in vaccine development and emerging infections. Journal club format: students choose articles from primary scientific literature, write formal summaries, and synthesize them into a literature review. Emphasis is on analysis, experimental design, and interpretation of data. Oral presentations. Enrollment limited to 8. Prerequisite: prior enrollment in MI 116, The Human Virosphere or consent of instructor required.

MI 115C. Human Virology Inquiry Project. 3 Units.
Selected topics in human virology focusing on current issues in the field. Topics will include: clinical features of infection, epidemiology, molecular virology, drug development and policy, vaccinology, pathogenesis, host modulation, emerging infection, and media representations of viral infection. Student presentations and discussion in a small group setting. Prerequisite: concurrent enrollment in MI 116.

MI 116. The Human Virosphere. 3 Units.
Focus on interaction of humans and viruses from a number of perspectives: historical, cultural, political, and demographic. Organismal, molecular biological, biochemical, human and viral interactions; clinical aspects of viral disease, epidemiology and risk factors, public and international health, aspects of virology including emerging viruses and biological weapons. Case studies involving particular viruses: human herpes viruses, retroviruses, oncogenic viruses; vaccination and disease eradication, evolution of viruses as tools for research and therapy. Emphasis on general principles of biology and matters of decision making policy.
Same as: MI 216

MI 155A. Humans and Viruses I. 6 Units.
Introduction to human virology integrating epidemiology, molecular biology, clinical sciences, social sciences, history, and the arts. Emphasis is on host pathogen interactions and policy issues. Topics: polio and vaccination, smallpox and eradication, yellow fever and history, influenza and genomic diversity, rubella and childhood infections, adenovirus and viral morphology, ebola and emerging infection, lassa fever and immune response.

MI 155B. Humans and Viruses II. 6 Units.
Introduction to human virology integrating epidemiology, molecular biology, clinical sciences, social sciences, history, and the arts. Emphasis on host pathogen interactions and policy issues. Topics: measles and viral epidemiology, rotavirus and world health, rabies and infections of the brain, HPV and cancer -causing viruses, herpes simplex and viral latency, CMV and viral teratogenesis, retrovirology and endogenous viral sequences, HIV and viral treatement, viral hepatitis and chronic infections, prions and diseases of life style. Prerequisite: MI155A or HUMBIO 155H.

MI 155N. Viruses in the News. 3 Units.
Viruses include some of the most devastating and ubiquitous causes of human disease as illustrated by the recent Ebola and Zika epidemics. In books, movies, newspapers, and electronic feeds, viruses continue to make the news on a daily basis. Using contemporary media, talks by content experts, model building, interactive sessions and field trips, we will explore contemporary issues related to the essential nature of viruses, what makes them unique, key molecular processes, breakthroughs in prevention and treatment, current efforts in trying to eradicate viruses and cultural iconography pertaining to viruses. In short, this seminar intended to go viral. Humans and Viruses or consent of instructor required.

MI 198. Directed Reading in Microbiology and Immunology. 1-15 Unit.
Fields of study are decided in consultation with sponsoring professor. Prerequisite: consent of instructor.

MI 199. Undergraduate Research. 1-18 Unit.
Investigations sponsored by individual faculty members. Possible fields: microbial molecular biology and physiology, microbial pathogenicity, immunology, virology, and molecular parasitology. Prerequisite: consent of instructor.

MI 210. Advanced Pathogenesis of Bacteria, Viruses, and Eukaryotic Parasites. 4 Units.
For graduate and medical students, and advanced undergraduates; required of first-year graduate students in Microbiology and Immunology. The molecular mechanisms by which microorganisms invade animal and human hosts, express their genomes, interact with macromolecular pathways in the infected host, and induce disease. Current literature. Undergraduate students interested in taking this class must meet with the instructor to obtain approval before enrolling.

MI 215. Principles of Biological Technologies. 3 Units.
The principles underlying novel as well as commonly utilized techniques to answer biological questions. Lectures and primary literature critiques on topics such as fluorescence microscopy, including applications such as FRET and single-cell analysis; human and murine genetic analysis; FACS; proteomics and analysis of noncoding RNAs. Class participation is emphasized. Prerequisite: biochemistry. Required of first-year graduate students in Microbiology and Immunology and the Immunology program.

MI 216. The Human Virosphere. 3 Units.
Focus on interaction of humans and viruses from a number of perspectives: historical, cultural, political, and demographic. Organismal, molecular biological, biochemical, human and viral interactions; clinical aspects of viral disease, epidemiology and risk factors, public and international health, aspects of virology including emerging viruses and biological weapons. Case studies involving particular viruses: human herpes viruses, retroviruses, oncogenic viruses; vaccination and disease eradication, evolution of viruses as tools for research and therapy. Emphasis on general principles of biology and matters of decision making policy.
Same as: MI 116

MI 217. Genome Editing: Redefining Humanity. 4 Units.
Genome Editing is potentially the most important biological/medical strategy ever developed. Genome Editing has been used to manipulate diverse organisms and viruses including bacteria, plants, insects, nonhuman animals, human remediation, and treatment of genetic and other diseases in animals and humans. The advent of CRISPR-Cas9 and newer techniques has greatly increased the facility and speed with which Genome Editing can be carried out. It has become clear that the main factors limiting the power of Genome Editing are the human imagination and human imposed structures, - not technological limitations.

MI 218. Computational Analysis of Biological Information: Introduction to Python for Biologists. 2 Units.
Computational tools for processing, interpretation, communication, and archiving of biological information. Emphasis is on sequence and digital microscopy/image analysis. Intended for biological and clinical trainees without substantial programming experience.
Same as: GENE 218, PATH 218

MI 221. Gut Microbiota in Health and Disease. 3 Units.
Preference to graduate students. Focus is on the human gut microbiota. Students will receive instruction on computational approaches to analyze microbiome data and must complete a related project.
Same as: BIOE 221G, GENE 208

MI 225. Viral Hemorrhagic Fevers. 4 Units.
Explores four families of human viruses (falviviruses, filoviruses, bunyaviruses, arenaviruses) that share certain clinical and pathological features. These families used to illustrate more general features of human virology ranging from molecular virology, viral replication cycles, transmission, clinical presentation, pathogenesis, diagnosis, treatment, epidemiology, public health responses, public policy, economics. After general introduction, each family will be presented, followed by sessions focused on comparisons and integration. Specific case studies focus on current events. Student assignments include problem sets, model-building, blogging, and comprehensive examinations. In-class sessions will include interactive lectures, guest speakers, students presentations, discussions.

MI 250. Frontiers in Microbiology and Immunology. 1 Unit.
Required of first- and second-year students in Microbiology and Immunology. How to evaluate biological research. Held in conjunction with the Microbiology and Immunology Friday noon seminar series. Before the seminar, students and faculty discuss one or more papers from the speaker's primary research literature on a related topic. After the seminar, students meet informally with the speaker to discuss their research.

MI 255. Measles and Sneezles and Things That Go Mumps in the Night. 3 Units.
A study of measles (until recently one of the leading causes of death in the world and the most contagious disease agent ever studied) and its relatives in the paramyxovirus family, including mumps, parainfluenza viruses, hendra, and nipah, as well as a number of important animal pathogens. Investigates the nature of viruses using the paramyxoviruses as a paradigm. Topics include: the history of this devastating group of pathogens; basic aspects of paramyxovirus taxonomy and molecular virology; viral epidemiology, emergence, and eradication, including the pioneering studies of Peter Panum; the use, misuse, and abuse of science; the interactions between pathogen and host and how this interplay leads to disease, including the appearance of a bizarre brain complication with 100% mortality; the politics and economics of infection; how a putative link between the measles vaccine and autism entered the public eye, and how it refuses to disappear despite overwhelming evidence to the contrary. Lectures, discussion, student presentations. No science background necessary.

MI 260. Creative Visualization Studio. 1-2 Unit.
In this class, we will teach students to build small, physical explanations of their data for display and use as visual aids in person, at a poster or in a talk. We will use a range of media, including laser cutters, paper cutters, silk screening, CNC routing, 3D printing, jewelry making, embroidery, mold making, stop motion animation, or stained glass cutting. Classes will be split into workshop time¿for learning techniques and brainstorming¿and lab time, where students can work on individual projects. Students will be expected to complete 5 small visualization projects over the course of the quarter. Permission numbers are required to enroll. To obtain a permission number please email Professor David Schneider at dschneid@stanford.edu.

MI 285. Topics in Microbiology. 3 Units.
For advanced undergraduates and graduate students. 1/3rd of the course consists of lectures by the instructor/colleagues. These cover, at an advanced level, with emphasis on bacteria, topics not covered elsewhere, e.g., phylogeny, molecular regulation, and bioenergetics. The remainder of the course involves interactive discussion of a topic of current interest in microbiology, chosen with student participation, and includes student presentations. (The topic last year was: Gene therapy.) Satisfies Central Menu Area 3 for BIO majors. Prerequisites: CHEM 31X, Biology core.

MI 299. Directed Reading in Microbiology and Immunology. 1-18 Unit.
Prerequisite: consent of instructor.

MI 370. Medical Scholars Research. 4-18 Units.
Provides an opportunity for student and faculty interaction, as well as academic credit and financial support, to medical students who undertake original research. Enrollment is limited to students with approved projects.

MI 399. Graduate Research. 1-18 Unit.
Students who have completed the necessary foundation courses undertake investigations in general bacteriology, bacterial physiology and ecology, bacterial genetics, microbial pathogenicity, immunology, parasitology, or virology sponsored by individual faculty members. Prerequisite: consent of instructor.

MI 801. TGR Master's Project. 0 Units.
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MI 802. TGR PhD Dissertation. 0 Units.
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MOLECULAR AND CELLULAR PHYSIOLOGY

Courses offered by the Department of Molecular and Cellular Physiology are listed under the subject code MCP on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=MCP&filter-catalognumber-MCP=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=MCP&filter-catalognumber-MCP=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=MCP&filter-catalognumber-MCP=on).

The Department of Molecular and Cellular Physiology is located in the Beckman Center for Molecular and Genetic Medicine.

A central goal of physiology in the post-genomic era is to understand how thousands of encoded proteins serve to bring about the highly coordinated behavior of cells and tissues. Research in the department approaches this goal at many levels of organization, ranging from single molecules and individual cells to multicellular systems and the whole organism. The faculty share common interests in the molecular mechanisms of cell signaling and behavior, with a special focus on structure/function analysis of ion channels and G-protein coupled receptors, and their roles at the cellular, organ, and whole-organism levels; the molecular basis of sensory transduction, synaptic transmission, plasticity and memory; the role of ion channels and calcium in controlling gene expression in neural and immune cells; and the regulation of vesicle trafficking and targeting, cell polarity, and cell-cell interactions in the nervous system and in epithelia. Research programs employ a wide range of approaches, including molecular and cell biology, biochemistry, genetics, biophysics, x-ray crystallography and solution NMR, electrophysiology, and in vitro and in vivo imaging with confocal and multi-photon microscopy.

Graduate Programs in Molecular and Cellular Physiology

The department offers required and elective courses for students in the School of Medicine and is also open to other qualified students with the consent of the instructor. Training of medical, graduate, and postdoctoral students is available. The program offers a course of study leading to the Ph.D. degree. No B.S. is offered, and an M.S. is offered only in the unusual circumstance where a student completes the course work, rotation, and the written section of the qualifying exam, but is unable to complete the requirements for the Ph.D.

Application and Admission

Applications are made through the Graduate Admissions (http://gradadmissions.stanford.edu) web site.

Applicants are assessed based on their undergraduate transcripts, test scores, research experience, statement of purpose and letters of recommendation that document exceptional potential, ability, or achievements.

Students admitted to the program are offered financial support covering tuition, a living stipend, and insurance coverage. Applicants are urged to apply for independent fellowships such as from the National Science Foundation. Fellowship applications are due in November of the year prior to matriculation in the graduate program, but MCP graduate students may continue to apply for outside fellowships after matriculation. Because of the small number of department-funded slots, students who have been awarded an outside fellowship have an improved chance of acceptance into the program.

Upon matriculation, each student is assisted in selecting courses and lab rotations in the first year and in choosing a lab for the dissertation research. Once a dissertation adviser has been selected, a dissertation committee is composed to include the dissertation adviser and two additional MCP/Non-MCP faculty, to guide the student during their dissertation research. The student must meet with the dissertation committee at least once a year.

Doctor of Philosophy in Molecular and Cellular Physiology

Candidates for Ph.D. degrees at Stanford must satisfactorily complete a program of study that includes 135 units of graduate course work and research.

Study toward the Ph.D. is expected to occupy five years, including summers. The MCP course requirements for the program are as follows:

- MCP 221 Advanced Cell Biology
- MCP 207 MCP Bootcamp

  MCP 208 MCP Journal Club and Professional Development Series
- MCP 256 How Cells Work: Energetics, Compartments, and Coupling in Cell Biology
- BIOS 200 Foundations in Experimental Biology
- MED 255 The Responsible Conduct of Research, if funded on NSF or NIH training grants
- Advanced graduate courses or mini-courses for a minimum of 6 units total. These courses do not need to be MCP courses but must be in relevant scientific topic and approved by the Director of Graduate Studies.
- Two of the following courses:
  - BIOC 241 Biological Macromolecules
  - GENE 205 Advanced Genetics
  - NBIO 206 The Nervous System
  - BIO 230 Molecular and Cellular Immunology

Students are also required to participate in the Molecular and Cellular Physiology Seminar Series and attend the department scientific meeting.

Courses taken to meet program requirements must be taken for a letter grade and students must earn a minimum grade of at least a 'B' in every individual required course. Students must also maintain a minimum GPA of 3.0 by University policy. Failure to maintain the required grades and grade point average is taken as evidence of unsatisfactory progress in the program.

Students should complete their required courses within the first two years of study. Exceptions may be made in cases where it was impossible to schedule courses because they were not offered within a student's first two years. Students may petition the MCP graduate committee for variances in the specific courses required, and such petitions may be granted in special circumstances, in cases where a student's progress is otherwise exemplary.

Qualifying Examination

All students in the program must pass a qualifying examination to advance to candidacy for the Ph.D. It is expected that students take the qualifying examination by the end of the Autumn Quarter in the second year of study. Failure to take the qualifying exam by the end of Autumn Quarter of the second year of study is taken as evidence of unsatisfactory progress in the program. In any case where a student thinks they need additional time to schedule and take their exam, a request must be submitted in writing to the Director of Graduate Studies

(DGS) by November 15 of Autumn Quarter. The DGS may opt to grant additional time in compelling circumstances that do not indicate poor progress, or may refer the matter to the graduate committee for further action.

Students are given two chances to unconditionally pass the qualifying examination. Failure to achieve an unconditional pass of the qualifying examination by the end of the Spring Quarter of the second year is grounds for dismissal from the program.

Students form a qualifying examination committee consisting of at least 3 faculty members (members of the academic council, including the dissertation advisor), at least one of whom must be a member of MCP. This committee should be formed by the end of Spring Quarter of the first year of study. The composition of this committee should be approved by the Director of Graduate Studies. Students should also check with the department's student services office to make sure to file all required paperwork by the end of Spring Quarter. The University maintains certain deadlines for filing for candidacy, and it is the student's responsibility to be aware of these deadlines.

Dissertation and University Oral Examination

The results of independent, original work by the students are presented in a dissertation. The oral examination is largely a defense of the dissertation.

Advisers and Advisory Committees

A graduate advisory committee, currently professors Feng, Kobilka, Maduke and Madison, advises students during the period before the formation of their qualifying committees.

Financial Aid

Students may be funded by their advisers' research grants, by training grants, by department funds, or by extramural funds. Students are encouraged to obtain funding from outside sources such as NIH and NSF.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

The Molecular & Cellular Physiology Department is in the process of making decisions concerning COVID-19 policies and will update this tab when those decisions have been made.

Graduate Advising Expectations

The Department of Molecular and Cellular Physiology is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 65)" section of this bulletin.

*Emeriti (*Professors*):* W. James Nelson, Stephen J. Smith, Richard W. Tsien

Chair: Miriam B. Goodman

Professors: Axel T. Brunger, K. Christopher Garcia, Miriam B. Goodman, Brian K. Kobilka, Richard S. Lewis, Georgios Skiniotis, Thomas C. Sudhof

Associate Professors: V. Daniel Madison, Merritt C. Maduke

Assistant Professors: Liang Feng, Lucy E. O'Brien

Joint Professors: Steve Chu, William Weis

Courtesy Professors: John Huguenard, Anthony J. Ricci, Ron Dror

Courses

MCP 126. Neurons and Disease. 4 Units.
Diseases of the nervous system. First lecture of each week focuses on the clinical, epidemiological and behavioral aspects of a selected disease or syndrome. Second lecture exposes the cell biological, electrophysiological, biochemical and/or molecular biological processes that underlie each disease presented. Instructors maintain some flexibility in the diseases chosen for elucidation, but students can expect those covered to range from the relatively straightforward, for example Multiple Sclerosis (MS) or Amyotrophic Lateral Sclerosis (ALS), to the more complex, for example, Schizophrenia or Obsessive Compulsive Disorder (OCD). Prerequisite: Biology or Human Biology core.

MCP 156. How Cells Work: Energetics, Compartments, and Coupling in Cell Biology. 4 Units.
Open to graduate and medical students, and advanced undergraduates. Dynamic aspects of cell behavior and function, including cellular energetics, homeostasis, heterogeneity of membranes, structure and function of organelles, solute and water transport, signaling and motility. Emphasis is on the principles of how coupling of molecular processes gives rise to essential functions at the cellular level. Mathematical models of cell function. Student presentations.
Same as: MCP 256

MCP 199. Undergraduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

MCP 207. MCP Bootcamp. 1-3 Unit.
Hands-on, week-long immersion in methods and concepts related to the physiology of cell signaling. Required of all first-year MCP students; other PhD students may enroll with consent of instructor.

MCP 208. MCP Journal Club and Professional Development Series. 1-2 Unit.
This class will entail discussion of current research in Molecular and Cellular Physiology (Journal Club) and sessions devoted to career development. Enrolled learners will gain experience in designing and delivering professional oral presentations and writing accessible lay summaries of primary research. They will also receive guidance in how to give and receive critiques following a rubric. Learners will choose research papers following a theme to e determined collaboratively. Career and professional development class sessions will provide information on a variety of topics related to career development and strategies for navigating research environment in productive and healthy ways (see below). nnThe class will meet 8 times per quarter, with 4 Journal Club and 4 Professional Development sessions per quarter. Journal Club sessions will consist of one member of the class giving an oral presentation on the topic of a current relevant research paper, followed by critique and discussion. Learners will prepare written critiques of these talks. The Professional Development session will consist of a series of lectures, discussions, or workshops designed to foster a better understanding of the practices and processes that are critical for navigating paths toward a research career, but which are not generally covered in a classroom setting. These sessions might include such topics as mentor/mentee relationships, authorship, navigating peer review, issues of diversity and respectful workplace, wellness, experiences Stanford alumni in their own career paths, and other topics, including those suggested by class participants. The class will be graded on participation and on the writing assignments, including critiques and lay summaries. The course will be required for MCP graduate students in their first 3 years of study, and open to all predoctoral graduate students. The broader membership of the MCP scientific community will be encouraged to participate including postdocs (with permission of the course director).

MCP 221. Advanced Cell Biology. 4 Units.
For Ph.D. students. Taught from the current literature on cell structure, function, and dynamics. Topics include complex cell phenomena such as cell division, apoptosis, signaling, compartmentalization, transport and trafficking, motility and adhesion, and differentiation. Weekly reading of current papers from the primary literature. Advanced undergraduates may participate with the permission of the Course Director.
Same as: BIO 214, BIOC 224

MCP 222. Imaging: Biological Light Microscopy. 3 Units.
This intensive laboratory and discussion course will provide participants with the theoretical and practical knowledge to utilize emerging imaging technologies based on light microscopy. Topics include microscope optics, resolution limits, Köhler illumination, confocal fluorescence, two-photon, TIRF, FRET, photobleaching, super-resolution (SIM, STED, STORM/PALM), tissue clearing/CLARITY/light-sheet microscopy, and live-cell imaging. Applications include using fluorescent probes to analyze subcellular localization and live cell-translocation dynamics. We will be using a flipped classroom for the course in that students will watch iBiology lectures before class, and class time will be used for engaging in extensive discussion. Lab portion involves extensive in-class use of microscopes in the CSIF and NMS core microscopy facilities.
Same as: BIO 152

MCP 256. How Cells Work: Energetics, Compartments, and Coupling in Cell Biology. 4 Units.
Open to graduate and medical students, and advanced undergraduates. Dynamic aspects of cell behavior and function, including cellular energetics, homeostasis, heterogeneity of membranes, structure and function of organelles, solute and water transport, signaling and motility. Emphasis is on the principles of how coupling of molecular processes gives rise to essential functions at the cellular level. Mathematical models of cell function. Student presentations.
Same as: MCP 156

MCP 299. Directed Reading in Molecular and Cellular Physiology. 1-18 Unit.
Prerequisite: consent of instructor.

MCP 370. Medical Scholars Research. 4-18 Units.
Provides an opportunity for student and faculty interaction, as well as academic credit and financial support, to medical students who undertake original research. Enrollment is limited to students with approved projects.

MCP 399. Graduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Research fields include endocrinology, neuroendocrinology, and topics in molecular and cellular physiology. Prerequisite: consent of instructor. (Staff).

MCP 801. TGR Project. 0 Units.
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MCP 802. TGR Dissertation. 0 Units.
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NEUROBIOLOGY

Courses offered by the Department of Neurobiology are listed under the subject code NBIO on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=NBIO&filter-catalognumber-NBIO=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=NBIO&filter-catalognumber-NBIO=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=NBIO&filter-catalognumber-NBIO=on).

Graduate Program in Neurobiology

Graduate students in the Department of Neurobiology obtain the Ph.D. degree through the interdepartmental Neurosciences Ph.D. program (p. 2475). Accepted students receive funding for tuition and a living stipend. Applicants should familiarize themselves with the research interests of the faculty and, when possible, indicate their preference on the application form which is submitted directly to the Neurosciences Program.

Medical students also are encouraged to enroll in the Ph.D. program. The requirements of the Ph.D. program are fitted to the interests and time schedules of the student. Postdoctoral training is available to graduates holding Ph.D. or M.D. degrees, and further information is obtained directly from the faculty member concerned.

Research interests of the department include information processing in vertebrate retina; structure, function, and development of auditory and visual systems; development and regeneration in the central and peripheral nervous system; neural mechanisms mediating higher nervous system functions, including perception, learning, attention and decision making.

Faculty

Emeriti (Professors): Denis Baylor, Eric I. Knudsen, Uel J. McMahan, Eric Shooter, Lubert Stryer

Department Chair: Thomas Clandinin

Professors: Stephen A. Baccus, Tirin Moore, William T. Newsome, Jennifer L. Raymond, Nirao Shah, Carla Shatz

Associate Professors: Lisa Giocomo, Andrew D. Huberman, Michael Z. Lin

Assistant Professors: Shaul Druckmann, Keren Haroush

Adjunct Professors: William Hurlbut

Courses

NBIO 101. Social and Ethical Issues in the Neurosciences. 2-4 Units.
Foundational scientific issues and philosophical perspectives related to advances in the study of brain and behavior. Implications of new insights from the neurosciences for medical therapy, social policy, and broader conceptions of human nature including consciousness, free will, personal identity, and moral responsibility. Topics include ethical issues related to genetic screening and editing, desire and addiction, criminal behavior, the biology of sexuality, fetal pain, aging and neurodegenerative disease, brain-computer interfaces, and neural enhancement and the human future. May be taken for 2 units without a research paper. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit. Undergraduates must enroll in NBIO101. Application required: http://bit.ly/NBIOApplication.
Same as: NBIO 201

NBIO 198. Directed Reading in Neurobiology. 1-18 Unit.
Prerequisite: consent of instructor. (Staff).

NBIO 199. Undergraduate Research. 1-18 Unit.
Investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

NBIO 201. Social and Ethical Issues in the Neurosciences. 2-4 Units.
Foundational scientific issues and philosophical perspectives related to advances in the study of brain and behavior. Implications of new insights from the neurosciences for medical therapy, social policy, and broader conceptions of human nature including consciousness, free will, personal identity, and moral responsibility. Topics include ethical issues related to genetic screening and editing, desire and addiction, criminal behavior, the biology of sexuality, fetal pain, aging and neurodegenerative disease, brain-computer interfaces, and neural enhancement and the human future. May be taken for 2 units without a research paper. This course must be taken for a minimum of 3 units and a letter grade to be eligible for Ways credit. Undergraduates must enroll in NBIO101. Application required: http://bit.ly/NBIOApplication.
Same as: NBIO 101

NBIO 206. The Nervous System. 6 Units.
Structure and function of the nervous system, including neuroanatomy, neurophysiology, and systems neurobiology. Topics include the properties of neurons and the mechanisms and organization underlying higher functions. Framework for general work in neurology, neuropathology, clinical medicine, and for more advanced work in neurobiology. Lecture and lab components must be taken together.

NBIO 218. Neural Basis of Behavior. 5 Units.
Advanced seminar. The principles of information processing in the nervous system and the relationship of functional properties of neural systems with perception, behavior, and learning. Original papers; student presentations. Prerequisite: NBIO 206 or consent of instructor.

NBIO 220. Machine Learning Methods for Neural Data Analysis. 3 Units.
With modern high-density electrodes and optical imaging techniques, neuroscientists routinely measure the activity of hundreds, if not thousands, of cells simultaneously. Coupled with high-resolution behavioral measurements, genetic sequencing, and connectomics, these datasets offer unprecedented opportunities to learn how neural circuits function. This course will study statistical machine learning methods for analysing such datasets, including: spike sorting, calcium deconvolution, and voltage smoothing techniques for extracting relevant signals from raw data; markerless tracking methods for estimating animal pose in behavioral videos; network models for connectomics and fMRI data; state space models for analysis of high-dimensional neural and behavioral time-series; point process models of neural spike trains; and deep learning methods for neural encoding and decoding. We will develop the theory behind these models and algorithms and then apply them to real datasets in the homeworks and final project.This course is similar to STATS215: Statistical Models in Biology and STATS366: Modern Statistics for Modern Biology, but it is specifically focused on statistical machine learning methods for neuroscience data. Prerequisites: Students should be comfortable with basic probability (STATS 116) and statistics (at the level of STATS 200). This course will place a heavy emphasis on implementing models and algorithms, so coding proficiency is required.
Same as: CS 339N, STATS 220, STATS 320

NBIO 224. Glia and Neuroimmunology. 3 Units.
The role of glia in the brain, including development, normal functioning, and disease. Topics include astrocytes, microglia, oligodendrocyte lineage, the blood brain barrier, and neuroimmunology with special emphasis on tools for studying glia. Preference to graduate students.

NBIO 227. Understanding Techniques in Neuroscience. 2 Units.
Students will learn to select and evaluate multidisciplinary techniques for approaching modern neuroscience questions. A combination of lectures and small group paper discussions will introduce techniques from molecular, genetic, behavioral, electrophysiological, imaging, and computational neuroscience. Students will be expected to complete homework assignments analyzing primary literature and attend optional laboratory demonstrations. Intended for graduate students, postdocs, and staff from any discipline; and for advanced undergraduates in the biosciences, engineering, or medicine.

NBIO 228. Mathematical Tools for Neuroscience. 3 Units.
Student-instructed. This course aims to equip biosciences graduate students with the fundamental skills in quantitative modeling and data analysis necessary for neuroscience research. It covers techniques including linear algebra, Fourier transforms, probability and statistics, signal detection, statistical inference, and information theory. The course is required for first-year students in the Neuroscience PhD program, and is open to other graduate students in the biosciences. Other students, including undergraduates, may enroll by special request.

NBIO 254. Molecular and Cellular Neurobiology. 3-5 Units.
For graduate students. Includes lectures for BIO 154. Cellular and molecular mechanisms in the organization and functions of the nervous system. Topics: wiring of the neuronal circuit, synapse structure and synaptic transmission, signal transduction in the nervous system, sensory systems, molecular basis of behavior including learning and memory, molecular pathogenesis of neurological diseases.
Same as: BIO 254

NBIO 258. Information and Signaling Mechanisms in Neurons and Circuits. 4 Units.
How synapses, cells, and neural circuits process information relevant to a behaving organism. How phenomena of information processing emerge at several levels of complexity in the nervous system, including sensory transduction in molecular cascades, information transmission through axons and synapses, plasticity and feedback in recurrent circuits, and encoding of sensory stimuli in neural circuits.

NBIO 299. Directed Reading in Neurobiology. 1-18 Unit.
Prerequisite: consent of instructor.

NBIO 370. Medical Scholars Research. 4-18 Units.
Provides an opportunity for student and faculty interaction, as well as academic credit and financial support, to medical students who undertake original research. Enrollment is limited to students with approved projects.

NBIO 399. Graduate Research. 1-18 Unit.
Investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

NEUROSCIENCES

Courses offered by the Neurosciences Program are listed under the subject code NEPR on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=NEPR&filter-catalognumber-NEPR=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=NEPR&filter-catalognumber-NEPR=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=NEPR&filter-catalognumber-NEPR=on).

Master of Science in Neurosciences

The Neurosciences IDP does not offer a terminal or coterminal M.S. degree. An M.S. degree may only be pursued in combination with a doctoral degree from another department within the University or one of the University's professional schools.

Students interested in pursuing the M.S. must submit an unofficial Stanford transcript and a written scientific justification for adding the M.S. degree to the Neurosciences program administrator no later than February 1, 2021.

Requirements

- Completion of a minimum of 45 unduplicated units of course work, including the Neuroscience courses listed below or approved substitutes. Courses used for the Neurosciences M.S. may not be double-counted to meet the requirements of a Ph.D. degree.
- Course requirements must be completed before the student applies for terminal graduate registration (TGR) Status.
- In addition to required course work, students pursuing the M.S. in Neurosciences must sit for a qualifying exam that includes a written proposal for a thesis project and oral examination.

Required Courses		Units
All courses used for the Neurosciences M.S. must be taken for a letter grade and passed with a 3.0 (B) or better.		
NEPR 202	Neurosciences Development Core	2
NEPR 203	Neuroscience Systems Core	2
NEPR 204	Neuroscience Molecular Core	2
NEPR 205	Neurosciences Anatomy Core	2
NEPR 207	Neurosciences Cognitive Core	2
NEPR 208	Neuroscience Computational Core	2
NEPR 213	Neurogenetics Core	2
NEPR/COMPMED 201	Neuro-Cellular Core	2
NEPR 212	Responsible Conduct of Neuroscience Research	1
NEPR 280	Neuroscience Journal Club and Professional Development Series (A minimum of 2 quarters is required)	1-2
Stanford Intensive Neurosciences (SIN) Boot Camp		9
Graduate Statistics Course (STATS 216 Introduction to Statistical Learning or similar; pre-approval is required)		3
Two (2) Advanced Level Neuroscience Courses (pre-approval is required)		6

Students enrolled starting Autumn 2016 through Autumn 2018:

Required Courses		Units
All courses used for the Neurosciences M.S. must be taken for a letter grade and passed with a 3.0 (B) or better.		
NEPR 202	Neurosciences Development Core	2
NEPR 203	Neuroscience Systems Core	2
NEPR 204	Neuroscience Molecular Core	2
NEPR 205	Neurosciences Anatomy Core	2
NEPR 207	Neurosciences Cognitive Core	2
NEPR 208	Neuroscience Computational Core	2
NEPR 213	Neurogenetics Core	2
NEPR/COMPMED 201	Neuro-Cellular Core	2
NEPR 212	Responsible Conduct of Neuroscience Research	1
NEPR 280	Neuroscience Journal Club and Professional Development Series (A minimum of 3 quarters is required)	1-2
Stanford Intensive Neurosciences (SIN) Boot Camp		9
Graduate Statistics Course (STATS 216 Introduction to Statistical Learning or similar; pre-approval is required)		3
Three (3) Advanced Level Neuroscience Courses (pre-approval is required)		9

Doctor of Philosophy in Neurosciences

University requirements for the Ph.D. are described in the "Graduate Degrees (p. 65)" section of this bulletin.

The interdepartmental Neurosciences Program offers instruction and research opportunities leading to a Ph.D. in Neurosciences. The requirements for a Ph.D. degree follow those of the University and in addition are tailored to fit the background and interests of the student. Qualified applicants should, where possible, apply for the predoctoral fellowships in open competition, especially those from the National Science Foundation.

Admissions

Applications are made through the Graduate Admissions (http://gradadmissions.stanford.edu) website and are due by Tuesday, December 1, 2020. GRE is not required. Applicants should familiarize themselves with the research interests of the faculty and indicate their preferences clearly on the application form. Applicants selected for an interview are notified in early January. Admitted students are notified from early March through mid-April. Accepted students receive an award covering tuition, a basic health plan, and a living stipend.

Requirements

Since students enter with differing backgrounds, and the labs in which they may elect to work cover several different disciplines, the specific program for each student is developed individually with an advisory committee. Students rotate through at least three labs during the first year while taking core courses. Passing of a comprehensive qualifying examination given by the student's advisory committee is required for admission to Ph.D. candidacy; the qualifying exam must be taken by the end of the second year. Students are required to prepare a Ph.D. dissertation that is the result of independent investigation accomplished while enrolled in the program that contributes to knowledge in an area of neuroscience, and to defend the dissertation in a University Oral Examination that includes a public seminar. Students must also publish a first-author paper in a peer-reviewed major scientific journal on the defended work and submit a written dissertation prior to completing the Ph.D. degree.

Medical students may participate in this program provided they meet the prerequisites and satisfy all the requirements of the graduate program as listed above. The timing of the program may be adjusted in consultation with the advisory committee to fit their special circumstances.

		Units
Required Courses		
Required courses must be taken for a letter grade and passed with a 3.0 (B) or better		
NEPR 202	Neurosciences Development Core	2
NEPR 203	Neuroscience Systems Core	2
NEPR 204	Neuroscience Molecular Core	2
NEPR 205	Neurosciences Anatomy Core	2
NEPR 207	Neurosciences Cognitive Core	2
NEPR 208	Neuroscience Computational Core	2
NEPR 213	Neurogenetics Core	2
NEPR/COMPMED 201	Neuro-Cellular Core	2
NEPR 212	Responsible Conduct of Neuroscience Research	1
NEPR 280	Neuroscience Journal Club and Professional Development Series (A total of four (4) quarters are required)	1-2
Stanford Intensive Neurosciences (SIN) Boot Camp		10
Statistics (STATS 216 Introduction to Statistical Learning or similar; pre-approval is required)		3
Two (2) Advanced Level Neuroscience Courses (pre-approval is required)		6

Students Enrolled Starting Autumn 2015 through Autumn 2018

		Units
Required Courses		
Required courses must be taken for a letter grade and passed with a 3.0 (B) or better		
NEPR 202	Neurosciences Development Core	2
NEPR 203	Neuroscience Systems Core	2
NEPR 204	Neuroscience Molecular Core	2
NEPR 205	Neurosciences Anatomy Core	2
NEPR 207	Neurosciences Cognitive Core	2
NEPR 208	Neuroscience Computational Core	2
NEPR 213	Neurogenetics Core	2
NEPR/COMPMED 201	Neuro-Cellular Core	2
NEPR 212	Responsible Conduct of Neuroscience Research	1
NEPR 280	Neuroscience Journal Club and Professional Development Series (A total of nine (9) quarters are required for students who entered the program in 2015 and 2016; Eight (8) quarters required for students who entered in 2017; Seven (7) quarters for students who entered in 2018)	1-2
Stanford Intensive Neurosciences (SIN) Boot Camp		10
Graduate Statistics Course (STATS 216 Introduction to Statistical Learning or similar; pre-approval is required)		3
Three (3) Advanced Level Neuroscience Courses (pre-approval is required)		9

Students Enrolled Starting Autumn 2014 and Earlier

- Introduction to Neurobiology (NBIO 206 The Nervous System or equivalent).
- Nine (9) quarters of NBIO 300/MCP 300 /NEPR 280 Neuroscience Journal Club and Professional Development Series
- Five (5) advanced level courses within - and at least one course in each of - the following three areas:

1. Systems, Computational, Cognitive and Behavioral Neuroscience. Courses at this level focus on the computations performed by neural circuits and the role such computations play in behavior, perceptions, and plasticity. Students can expect to learn how neurons: Organize circuits into larger functional units; Represent and transform information; Produce myriad movement; and Subserve higher-level processing related to perception, reasoning and learning. Predominant methods in this area include modeling single cells and circuits, design of behavioral paradigms, and statistical analysis of behavioral and electrophysiological data.

Courses that fulfilled this requirement include:

- COMPMED 207 Vertebrate Brain Evolution
- NBIO 258 Information and Signaling Mechanisms in Neurons and Circuits
- NENS 220 Computational Neuroscience
- PSYCH 202 Cognitive Neuroscience
- PSYCH 204A Human Neuroimaging Methods
- PSYCH 232 Brain and Decision
- PSYCH 251 Experimental Methods
- PSYCH 266 Current Debates in Learning and Memory
- NBIO 218 Neural Basis of Behavior
- NBIO 220 Machine Learning Methods for Neural Data Analysis
- NENS 205

2. Cellular, Molecular and Developmental Neuroscience. Courses in this area address fundamental mechanisms that enable cells of the nervous system to develop, function in adulthood, change during learning and memory, and/or malfunction in disease states. Students can expect to learn core concepts in: Cell-cell communication; Intracellular signal transduction; Transcriptional and translational control; mRNA and protein trafficking; Membrane biophysics; and Cell motility. Dominant methods include molecular biology, genetics, cell biology, electrophysiology, and subcellular or multicellular imaging.

Courses offered that fulfilled this requirement include:

- BIO 214 Advanced Cell Biology/BIOC 224 Advanced Cell Biology/MCP 221 Advanced Cell Biology
- BIO 254 Molecular and Cellular Neurobiology
- BIOS 200 Foundations in Experimental Biology
- GENE 221 Current Issues in Aging
- NBIO 254 Molecular and Cellular Neurobiology
- NBIO 258 Information and Signaling Mechanisms in Neurons and Circuits
- PSYCH 204B Computational Neuroimaging
- MCP 216 Genetic Analysis of Behavior (NBIO 216)
- NBIO 216 Genetic Analysis of Behavior (MCP 216)
- BIO 217
- COMPMED 215
- MCP 256 How Cells Work: Energetics, Compartments, and Coupling in Cell Biology/MCP 156 How Cells Work: Energetics, Compartments, and Coupling in Cell Biology
- NBIO 218 Neural Basis of Behavior

- NBIO 220 Machine Learning Methods for Neural Data Analysis

3. Translational Neuroscience. Courses in this area address fundamental concepts in studying disorders of the human brain and the peripheral nervous system and their treatment. Students can expect to learn about basic themes in: Pathophysiological mechanisms; Modeling of human diseases; Approaches to designing diagnoses and treatments; Implementing diagnoses and treatments. The courses highlight studies of human diseases that use genetics, molecular biology, psychological testing, and functional imaging.

Courses offered that fulfilled this requirement include:

- BIO 267 Molecular Mechanisms of Neurodegenerative Disease / NENS 267 Molecular Mechanisms of Neurodegenerative Disease
- GENE 210 Genomics and Personalized Medicine / DBIO 220 Genomics and Personalized Medicine
- CSB 278 Systems Biology
- IMMUNOL 285 Brain and the Immune System
- NENS 205

Courses from outside the Neuroscience core listed below that satisfied the remaining elective requirements include:

- BIO 217
- BIO 222 Exploring Neural Circuits
- BIO 230 Molecular and Cellular Immunology
- BIO 245 Ecology and Evolution of Animal Behavior
- BIO 258 Developmental Neurobiology
- BIOC 224 Advanced Cell Biology/BIO 214 Advanced Cell Biology/MCP 221 Advanced Cell Biology
- BIOE 291 Principles and Practice of Optogenetics for Optical Control of Biological Tissues
- BIOE 332
- BIOS 200 Foundations in Experimental Biology
- BIOS 210 Axonal Transport and Neurodegenerative Diseases
- BIOS 241 Dissecting algorithms for RNA Sequencing
- COMPMED 207 Vertebrate Brain Evolution
- COMPMED 215
- CS 221 Artificial Intelligence: Principles and Techniques
- CS 229 Machine Learning
- CS 379 Interdisciplinary Topics
- CSB 210 Cell Signaling
- DBIO 201 Cells and Signaling in Regenerative Medicine
- DBIO 210 Developmental Biology
- EE 263 Introduction to Linear Dynamical Systems/CME 263 Introduction to Linear Dynamical Systems
- IMMUNOL 285 Brain and the Immune System
- MCP 221 Advanced Cell Biology/BIO 214 Advanced Cell Biology/BIOC 224 Advanced Cell Biology
- MCP 222 Imaging: Biological Light Microscopy
- MUSIC 257 Neuroplasticity and Musical Gaming
- NENS 204 Stroke Seminar
- NENS 267 Molecular Mechanisms of Neurodegenerative Disease/BIO 267 Molecular Mechanisms of Neurodegenerative Disease
- PSYCH 204 Computation and Cognition: The Probabilistic Approach
- RAD 227 Functional MRI Methods/BIOPHYS 227 Functional MRI Methods

Other courses not listed here can satisfy program requirements with prior approval of the Program Director.

The School of Law and the Neurosciences IDP offer a joint program leading to a J.D. degree combined with a Ph.D. in Neurosciences. The joint degree program provides an opportunity for students to develop expertise in both fields, and, in some cases, to prepare themselves intensively for careers in areas relating to both neuroscience and law.

Students interested in the joint degree program must apply and gain entrance separately to the School of Law and the Neurosciences IDP and, as an additional step, must secure permission from both academic units to pursue degrees in those units as part of a joint degree program. Interest in either joint degree program should be noted on the student's admission applications and may be considered by the admission committee of each program. Alternatively, an enrolled student in either the Law School or the Neurosciences IDP may apply for admission to the other program and for joint degree status in both academic units after commencing study in either program.

Joint degree students may elect to begin their course of study in either the School of Law or the Neurosciences IDP. Faculty advisers from each academic unit will participate in the planning and supervising of the student's joint program. Students must be enrolled full time in the Law School for the first year of law school and must be enrolled full time in the Neurosciences IDP for the first two years of that program, or until the student has passed the Qualifying Exam. At all other times, enrollment may be in the School of Medicine or the Law School, and students may choose courses from either program regardless of where enrolled. Students must satisfy the requirements for both the J.D. and the Ph.D. degrees as specified in the *Stanford Bulletin* or elsewhere.

The Law School shall approve courses from the Neurosciences IDP that may count toward the J.D. degree, and the Neurosciences IDP shall approve courses from the Law School that may count toward the Ph.D. degree in Neurosciences. In either case, approval may consist of a list applicable to all joint degree students or may be tailored to each individual student's program. The total minimum number of university residency units required for both degrees is 190. No more than 54 units of approved courses may be counted toward both degrees.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

The interdepartmental Neurosciences Program counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B' or better level.

Graduate Advising Expectations

The Neurosciences Program is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee.

Graduate students are active contributors to the advising relationship. They should proactively seeking academic and professional guidance and take responsibility for informing themselves of policies and degree requirements for the Neurosciences Ph.D. program.

All first year Neurosciences graduate student have an assigned first year adviser. This faculty member provides guidance on lab rotations, coursework, thesis lab selection, and reminds students of their academic and administrative responsibilities.

Graduate students are expected to select a thesis adviser by the end of the first year in the program and are encouraged to work collaboratively with their adviser to establish a dissertation project and form a Dissertation Reading Committee. Advancement to doctoral candidacy and the formation of a Dissertation Reading Committee is expected to occur by the end of the second year of the program.

Thesis advisers are expected to meet with graduate students at least once per year and help develop the student's Individual Development Plan (IDP). Additionally, advisers and students should meet on a regular basis throughout the year to discuss the student's professional development in key areas such as selecting courses, designing and conducting research, navigating policies and degree requirements, and exploring academic opportunities and professional pathways. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Graduate students are expected to meet with their Dissertation Reading Committee at least annually in the third and fourth year of training, and at least twice annually starting in the fifth year of training.

Academic progress and student completion of program requirements and milestones are monitored by the program director and staff, and may be discussed by faculty at meetings devoted to assessing graduate student progress. A detailed description of the program's requirements, milestones, and advising expectations are listed in the Neurosciences Ph.D. Student Handbook, found on the program website (http://med.stanford.edu/neurogradprogram.html).

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin, the Stanford Graduate Academic Policies and Procedures (GAP) (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/page-3-3-1/) handbook. Additional guidance and resources are available from The Office of the Vice Provost for Graduate Education (https://vpge.stanford.edu/academic-guidance/advising-mentoring/).

Director of Graduate Studies: Nirao Shah

Anesthesia: Bruce MacIver

Applied Physics: Surya Ganguli

Biochemistry: Suzanne Pfeffer

Bioengineering: Kwabena Boahen, Karl Deisseroth

Biology: Xiaoke Chen, Russ Fernald, H. Craig Heller, Liqun Luo, Susan McConnell, Mark Schnitzer, Carla Shatz, Kang Shen, Marc Tessier-Lavigne

Chemical and Systems Biology: Joanna Wysocka

Comparative Medicine: Paul Buckmaster, Shaul Hestrin

Developmental Biology: Seung Kim

Education: Candace Thille

Electrical Engineering: Krishna Shenoy

Genetics: Michael Bassik, Anne Brunet, Aaron Gitler

Molecular and Cellular Physiology: Axel Brunger, Miriam Goodman, Daniel Madison, Merritt Maduke, Thomas Sudhof

Neurobiology: Stephen Baccus, Thomas Clandinin, Shaul Druckmann, Lisa Giocomo, Keren Haroush, Michael Lin, Tirin Moore, William Newsome, Jennifer Raymond

Neurology and Neurological Sciences: Katrin Andreasson, Marion Buckwalter, Michael Greicius, Ting-Ting Huang, John Huguenard, Michelle Monje-Deisseroth, Josef Parvizi, David Prince, Thomas Rando, Richard Reimer, Tony Wyss-Coray, Yanmin Yang

Neurosurgery: Lu Chen, E.J. Chichilnisky, Jun Ding, Julia Kaltschmidt, Paul Nuyujukian, Theo Palmer, Giles Plant, Ivan Soltesz, Gary Steinberg, Suzanne Tharin, Xinnan Wang, Bradley Zuchero

Ophthalmology: Jeffrey Goldberg, Yang Hu, Y. Joyce Liao, Sui Wang

Otolaryngology: Alan Cheng, Nicolas Grillet, Lloyd Minor, Anthony Ricci

Pathology: Isabella Graef, Bingwei Lu, Marius Wernig

Pediatrics (Systems Medicine): Dennis Wall

Psychiatry and Behavioral Sciences: Luis de Lecea, Amit Etkin, Robert Malenka, Vinod Menon, Karen Parker, Sergiu Pasca, Allan Reiss, Nirao Shah, Leanne Williams

Psychology: Justin Gardner, Ian Gotlib, Kalanit Grill-Spector, Brian Knutson, James McClelland, Anthony Norcia, Russell Poldrack, Anthony Wagner, Brian Wandell, Daniel Yamins

Radiology: Raag Airan, Jennifer McNab

Courses

NEPR 201. Neuro-Cellular Core. 2 Units.
Focuses on fundamental aspects of cellular neurophysiology. Topics include exploration of electrophysiological properties of neurons, synaptic structure and function and synaptic plasticity. The course consists of didactic lectures and student-led discussions of classical papers. Incorporates simulation program Neuron. Enrollment restricted to students enrolled in Neurosciences Graduate Program.

NEPR 202. Neurosciences Development Core. 2 Units.
For first-year Neurosciences graduate students; open to other graduate students as space permits with preference given to Neuroscience students. Introductory course covers all aspects of nervous system development, from cell fate determination, axon guidance, synapse development and critical periods to neurodevelopmental diseases. The goal is to understand what kinds of questions are asked in developmental neurobiology and how researchers use different tools and model systems to answer these questions. Overview of neural development, experimental approaches, and model organisms; signaling pathways regulating neural development; neural stem cell and neurogenesis during embryonic and adult life.

NEPR 203. Neuroscience Systems Core. 2 Units.
Open to first-year neuroscience graduate students and to other qualified students by permission of the instructors. Introduction to encoding and processing of information by neural systems. Focus is on sensory and motor circuits.

NEPR 204. Neuroscience Molecular Core. 2 Units.
For first-year Neurosciences graduate students; open to other graduate students as space permits with preference given to Neuroscience students. Course provides an overview of molecular neuroscience by focusing on a few selected key topics, such as molecular neuroscience methods, voltage-gated ion channels, synaptic transmission, neuronal gene expression, and signal transduction pathways.

NEPR 205. Neurosciences Anatomy Core. 2 Units.
For first-year Neuroscience graduate students; open to other graduate students as space permits with preference given to Neuroscience students. Focus is on the anatomical organization underlying the principal functions of the nervous system, including sensation, perception, emotions, autonomic responses and movement. Students also learn modern techniques for studying neuroanatomical circuits, in the peripheral nervous system, spinal cord, and brain, and using different model systems.

NEPR 207. Neurosciences Cognitive Core. 2 Units.
For first-year Neurosciences graduate students; open to other graduate students as space permits with preference given to Neuroscience students. Focus is on several domains of cognitive function where cognitive neuroscience approaches have been successfully applied across many different model systems from mice to monkeys to humans: attention, decision-making, and memory.

NEPR 208. Neuroscience Computational Core. 2 Units.
For first-year Neurosciences graduate students; open to other graduate students as space permits with preference given to Neurosciences students. Introduces students to computational and theoretical methods in neuroscience. Emphasis on what questions are important, and how those questions can be answered with quantitative methods. Topics range from cellular/molecular to cognitive, and emphasizes similarity and differences of methods across neural scales.

NEPR 212. Responsible Conduct of Neuroscience Research. 1 Unit.
Enrollment restricted to Neurosciences IDP students. Responsible conduct of research and ethics as it relates to research in neuroscience. Topics are in accord with NIH guidelines. Each topic has guest lecturers with specific insight into the particular topic.

NEPR 212R. Responsible Conduct of Neuroscience Research Refresher Course. 1 Unit.
For Neurosciences PhD students. Responsible conduct of research and ethics as it relates to research in neuroscience. Topics are in accord with NIH guidelines and to meet additional training requirements for predoctoral trainees.

NEPR 213. Neurogenetics Core. 2 Units.
For first-year Neurosciences graduate students; open to other graduate students as space permits with preference given to Neurosciences students. Intensive introduction to genetics. Classical and modern genetics with an emphasis on their application to neurosciences research. Topics include: model organisms, genetic screens, genome editing, genetically-encoded tools, GWAS, next-generation sequencing, epigenetics, genetic interactions, human genetics, and neurological disease genetics. Interactive class with student-led discussions, presentations, and group work, including next-generation sequencing workshops and data analysis tutorials. Limited enrollment.

NEPR 224. Mapping the human visual system. 1-3 Unit.
The human visual system has more than two dozen topographic maps of the visual field. This course will explain principles of topographic maps in the visual system, mapping of visual areas using retinotopy, as well as modeling spatial and temporal computations in the visual system using population receptive fields. The class will combine reading and discussing papers that discovered these maps and computational principles with a lab component in which the students will analyze fMRI datasets that are used to map visual cortex.
Same as: PSYCH 224

NEPR 280. Neuroscience Journal Club and Professional Development Series. 1-2 Unit.
Neuroscience Journal Club and Professional Development Series New description: Required of Neurosciences Ph.D. students in Autumn, Winter, and Spring of the first three years of study. Recent papers in neuroscience literature presented by graduate student.

NEPR 299. Directed Reading in Neurosciences. 1-18 Unit.
Prerequisite: consent of instructor.

NEPR 399. Graduate Research. 1-18 Unit.
StudenInvestigations sponsored by individual faculty members.
Prerequisite: consent of instructor.

NEPR 801. TGR Project. 0 Units.
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NEPR 802. TGR Dissertation. 0 Units.
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OBSTETRICS AND GYNECOLOGY

Courses offered by the Department of Obstetrics and Gynecology are listed under the subject code OBGYN on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=OBGYN&filter-catalognumber-OBGYN=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=OBGYN&filter-catalognumber-OBGYN=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=OBGYN&filter-catalognumber-OBGYN=on).

The Department of Obstetrics and Gynecology does not offer degrees; however, qualified medical, graduate students, or undergraduates with an interest in basic research in reproductive biology may apply to arrange individual projects under the supervision of the faculty. The focus for the Division of Reproductive, Stem Cell, and Perinatal Biology is the study of the molecular and cellular biology of male and female reproductive organs.

Chair: Leslee L.Subak, Professor

Vice Chair: Maurice L. Druzin, Professor

Division of Gynecology

Paul Blumenthal, M.P.H., Professor — Director

Paula Hillard, Professor, Associate Chair, Medical Education; Director, Pediatric/Adolescent Gynecology

Juno Obedin-Maliver, Assistant Professor — Co-Director of PRIDE

Deirdre Lum, Clinical Assistant Professor

Leah Millheiser, Clinical Assistant Professor

John Wachtel, Clinical Professor

Diana Atashroo, Clinical Assistant Professor

Stephanie Cizek, Clinical Assistant Professor

Division of Family Planning

Paul Blumenthal, Professor, Director

Kate Shaw, Clinical Associate Professor — Associate Division Director, Family Planning

Lisa Goldthwaite, Clinical Assistant Professor

Erica Cahill, Clinical Assistant Professor

Amy Voedisch, Clinical Assistant Professor

Jade Shorter, Clinical Assistant Professor

Michele Hugin, Clinical Associate Professor

Division of Gynecologic Oncology

Oliver Dorigo, Associate Professor; Director

Amer Karam, MD Clinical Associate Professor, Associate Director, Director of Outreach

Jonathan Berek, MMS, Professor

Nelson N.H. Teng, Professor

Erinn Rankin, Assistant Professor

Valerie Sugiyama, Clinical Assistant Professor

Elizabeth Diver, Clinical Assistant Professor

Babak Litkouhi, Clinical Assistant Professor

Venkatesh Krishnan, Instructor

Isabel Lazo, Clinical Assistant Professor

Malte Renz, Instructor

Division of Female Pelvic Medicine & Reconstructive Surgery/Urogynecology

Bertha Chen, Professor; Chief

Leslee L.Subak, Professor

Eric Sokol, Associate Professor

Lisa Rogo-Gupta, Clinical Associate Professor

Kavita Mishra, Clinical Assistant Professor

Division of Reproductive Endocrinology and Infertility

Ruben Alvero, Professor; Director

Barry Behr, HCLD, Professor (non-clinical)

Amin Milki, Professor

Ruth Lathi, Professor; Director, REI Fellowship

Steven Nakajima, Clinical Professor

Lusine Aghajanova, Clinical Assistant Professor

Anna Sokalska, Clinical Assistant Professor

Gaya Murugappan, Instructor, Associate Director, REI Fellowship

Division of Maternal-Fetal Medicine

Yasser El-Sayed, Professor; Director

Deirdre Lyell, Professor, Associate Director; Director, MFM Fellowship

Maurice Druzin, Professor

Yair Blumenfeld, Associate Professor

Jane Chueh, Clinical Professor

Natali Aziz, Clinical Associate Professor

Katherine Bianco, Clinical Associate Professor

Mark Boddy, Clinical Associate Professor

Martha Rode, Clinical Associate Professor

Scarlett Karakash, Clinical Assistant Professor

Amy Judy, Clinical Assistant Professor

Tiffany Herrero, Clinical Assistant Professor

Erica Wu, Clinical Assistant Professor

Charlotte Conturie, Clinical Assistant Professor

Elliot Main, Clinical Professor

Ronald Gibbs, Clinical Professor

Stephanie Leonard, Instructor

Division of General Obstetrics

Yasser El-Sayed, Professor; Director

Kay Daniels, Clinical Professor

Jeffrey Faig, Clinical Professor

Kimberly Harney, Clinical Professor

Laura Brodzinsky, Clinical Associate Professor

Susan Crowe, Clinical Associate Professor

Cynthia DeTata, Clinical Assistant Professor

Caroline Bowker, Clinical Professor

Sylvie Blumstein, Clinical Assistant Professor

Kathryn Sanserino, Clinical Assistant Professor

Joanne Nino, Clinical Instructor

Colleen Moreno, Clinical Instructor — Nurse Midwife

Division of Reproductive, Stem Cell and Perinatal Biology (Research)

Virginia Winn, Associate Professor; Director

Aaron J. Hsueh, Professor

Vittorio Sebastiano, Assistant Professor

Roger Pedersen, Adjunct Professor

Courses

OBGYN 81Q. Perspectives on the Abortion Experience in Western Fiction. 3 Units.
Explores the role of media in delivering abortion-related messages as well as the broader questions of how abortion and related issues are fundamentally integrated into the social fabric of US and global societies. Abortion remains one of the most controversial and polarizing challenges of our time. Yet, it has been a clinical, social, political, and cultural fact in a broad swath of societies for centuries. As is common for such lightning rod issues, the topic of abortion has featured prominently in novels and films. Each treatment provides a unique perspective on at least one aspect of abortion, whether it be clinical, social, political or cultural. How abortion is portrayed in novels and films provides the student of history, anthropology, and biology with insights into the author's or director's perspectives, and into societal attitudes and mores.

OBGYN 199. Undergraduate Research in Reproductive Biology. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

OBGYN 216. Current Issues in Reproductive Health. 1 Unit.
Reproductive Health is a broad subject encompassing many concepts and practices. Issues and services within the context of reproductive health include such diverse topics as fertility, pregnancy, contraception, abortion, sexuality, menopause and parenting. Course focuses on topics related to abortion services, fertility and contraception; current research and practices in family planning; legislation and issues of access.

OBGYN 222. Obstetrics and Gynecologic Skills Simulation. 1-2 Unit.
This course will give students the opportunity to develop the necessary skills critical to practicing Ob/Gyn clinicians. Simulations will be used to help students practice procedures and apply knowledge without risk of injury to patients. A variety of simulation models will be used to practice a range of possible Ob/Gyn conditions and procedures, including but not limited to deliveries, family planning, ultrasound & pre-natal care, and infertility care. Each sessions will include an introductory didactic lecture, followed by simulation practice.

OBGYN 256. Current Topics and Controversies in Women's Health. 2-3 Units.
(HUMBIO students must enroll in HUMBIO 125. PhD minor in FGSS must enroll in FEMGEN 256. Med students must enroll in OBGYN 256.) Interdisciplinary. Focus is primarily on the U.S., with selected global women's health topics. Topics include: leading causes of morbidity and mortality across the life course; reproductive (e.g. gynecologic & obstetric) health issues; sexual function; importance of lifestyle (e.g. diet, exercise, weight control), including eating disorders; mental health; sexual and relationship abuse; issues for special populations. In-class Student Debates on key controversies in women's health. Guest lecturers. Undergraduates must enroll for 3 units. PhD minor in FGSS should enroll for 2 - 3 units. Med students should enroll for 2 units. To receive a letter grade in any listing, students must enroll for 3 units. This course must be taken for a letter grade and a minimum of 3 units to be eligible for Ways credit. Enrollment limited to students with sophomore academic standing or above. Undergraduate prerequisite: Human Biology Core or Biology Foundations or equivalent or consent of instructor.
Same as: FEMGEN 256, HUMBIO 125

OBGYN 280. Early Clinical Experience in Obstetrics and Gynecology. 1-2 Unit.
Provides an observational experience as determined by the instructor and student. Prerequisite: consent of instructor.

OBGYN 282. Pregnancy, Birth, and Infancy. 3 Units.
Comprehensive clinical experience where pre-clinical medical students follow pregnant women receiving care at Stanford hospitals to attend prenatal visits, delivery, and postnatal visits. Continuity clinic format, combined with didactic lessons and discussion seminars. Students are exposed to clinical activities in a meaningful context, bolstering classroom studies in anatomy, physiology, embryology and human development, and emphasizing social, economic, and personal issues related to medicine. This program spans one quarter, covering topics related to pregnancy, labor and delivery and newborn care. Students are expected to be engaged in the clinical experiences throughout the quarter and attend the weekly 2-hour seminar. Prerequisite: pre-clinical medical student or physician assistant student. Course directors: Janelle Aby, MD and Yasser El-Sayed, MD. TAs: Jill Anderson (janders5@stanford.edu) and Jenny Tiskus (tiskus@stanford.edu).
Same as: PEDS 282

OBGYN 299. Directed Reading in Obstetrics and Gynecology. 1-18 Unit.
Prerequisite: consent of instructor.

OBGYN 300A. Obstetrics and Gynecology Core Clerkship. 10 Units. VISITING: Closed to visitors. TYPE OF CLERKSHIP. Required. DESCRIPTION: Provides the student with skills and knowledge needed to care for patients with common gynecological problems, the well-woman examination, and pregnancy from prenatal care through delivery and postpartum. The clerkship is a full-time, 6-week rotation at one of the 3 sites: Stanford University Medical Center & satellite clinics, Santa Clara Valley Medical Center, and Kaiser Santa Clara. Emphasis is placed on history and physical examination skills in the evaluation and management of pregnancy, vaginal delivery, and both office gynecology and gynecologic surgical procedures through exposure to patients in the outpatient clinics, Labor and Delivery, and the operating room. The student participates in all the academic functions of the department including conferences, grand rounds, lectures, and weekly case studies. A one day orientation is held at the beginning of the clerkship, and students attend a simulation session for OB and Surgical skills during the first week. All students on the clerkship meet for a once weekly didactic session at Stanford. Attendance at the first day of the clerkship, the first Wednesday afternoon of the clerkship, and for the OSCE activity and the NBME shelf exam on the last day of the clerkship are all required. Students may make up absences for the orientation day and first Wednesday afternoon of the clerkship by attending these activities during a prior clerkship session. Absences for the OSCE and the shelf exam may be made up after the clerkship ends. (No drops allowed). PREREQUISITES: None. PERIODS AVAILABLE: 1-16 full-time for 6 weeks, 16 students per period. CLERKSHIP DIRECTOR: Rachel Seay, MD and Erica Wu, MD. CLERKSHIP COORDINATOR: Amanda Garley-Reynolds, 650-721-1036. REPORTING INSTRUCTIONS: Where: HH330, Ob/Gyn Conference Room, students will be sent information by e-mail; Time: 8:00 am. CALL CODE: 2 (Stanford students rotate through Obstetrics for 2 weeks. During these 2 weeks students are assigned two weekend calls from 8am-7pm. Kaiser and Valley students take 1 weekend call. These sites also have 1 week of night float that begins on Sunday). OTHER FACULTY: Staff. LOCATION: SUMC, SCVMC, KPMC.

OBGYN 304A. Inpatient Gynecology Clerkship. 5 Units. VISITING: Open to visitors. TYPE OF CLERKSHIP. Selective 2. DESCRIPTION: Exposes students to advanced care of benign gynecologic diseases in the inpatient and operative settings with full-time faculty and community physicians at Stanford University Medical Center. Students should perform as a core member of the benign gynecology team. Expect to be involved in inpatient care including rounding, consultations and surgical cases, Emergency Room care including consultations and procedures, and outpatient care including routine visits and triage. Students participate in departmental teaching, lectures, and grand rounds, and are expected to present a case discussion highlighting a notable clinical experience or topic. Note: Visiting students contact Gloria King, Residency Administrator, for application approval (gking1@stanford.edu). Interested students must send their CV, USMLE score(s), current transcript and a letter of recommendation from their Ob/Gyn Clerkship Director attesting to clinical abilities (i.e. proficient H&Ps and exam skills) at least 4-6 weeks prior to the start of the period in which the student would like to enroll. The letter of recommendation must be emailed to Gloria by the letter writer or their supporting administrative assistant. PREREQUISITES: OBGYN 300A. PERIODS AVAILABLE: 1-9, 12-16, full-time for 3 weeks, 1 student per period. CLERKSHIP DIRECTOR: Lisa Rogo-Gupta, M.D. CLERKSHIP COORDINATOR: Jennifer Nguyen 650-725-5986, 300 Pasteur, Room G304, Stanford, CA 94305. REPORTING INSTRUCTIONS: Where: Upon acceptance of your application, please contact coordinator to obtain detailed information; Time: 8:00 am. CALL CODE: 0. OTHER FACULTY: D. Atashroo, P. Blumenthal, E. Cahill, B. Chen, S. Cizek, L. Goldthwaite, P. Hillard, D. Lum, L. Millheiser, K. Mishra, J. Obedin-Maliver, K. Shaw, E. Sokol, M. Solone, L. Subak, A. Voedisch, J. Wachtel. LOCATION: SUMC.

OBGYN 305A. Family Planning Clerkship. 5 Units. VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Open to highly motivated students, including visitors. Students will have the opportunity learn about complex contraception and abortion care, including long acting reversible methods, contraception for the medically complex patient, medication abortion, and surgical abortion . Students will work with Faculty and Fellows in Complex Family Planning Division at a variety of clinical settings, including Stanford ambulatory clinic and operating room, as well as community locations such as Planned Parenthood. Please note: Visiting students must obtain approval through Gloria King, Residency Program Manager, prior to applying for this clerkship. Please e-mail requests to gking1@stanford.edu. To apply for approval, students must send their CV, a paragraph explaining their interest in learning about contraception and abortion specifically along with USMLE score(s), current transcript and a letter of recommendation from the Ob/Gyn Clerkship Director or a faculty mentor attesting to clinical abilities (i.e. proficient H&Ps and exam skills). The letter of recommendation must be emailed to Gloria by the letter writer or their supporting administrative assistant. These must be received at least 4-6 weeks prior to the start of the period in which the student would like to enroll. PREREQUISITES: OBGYN 300A and SURG 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 1 student per period. CLERKSHIP DIRECTOR: Erica P. Cahill, M.D. CLERKSHIP COORDINATOR: Victoria Contreras, vcontrer@stanford.edu. REPORTING INSTRUCTIONS: Where: 300 Pasteur Dr, Room HG332; Time: 9:00 am. CALL CODE: 0. OTHER FACULTY: Staff. LOCATION: SUMC.

OBGYN 306A. Reproductive Endocrinology-Infertility Clerkship. 5 Units. VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Exposes students to the work-up and management of infertility and common reproductive endocrinology problems. Includes extensive exposure to assisted reproductive technologies and some exposure to ambulatory surgery. Note: Visiting students must obtain approval through Gloria King, Residency Program Manager, prior to applying for this clerkship. Please e-mail requests to gking1@stanford.edu. Interested students must send their CV, USMLE score(s), current transcript and a letter of recommendation from the Ob/Gyn Clerkship Director or a faculty mentor attesting to clinical abilities (i.e. proficient H&Ps and exam skills). The letter of recommendation must be emailed to Gloria by the letter writer or their supporting administrative assistant. These items must be sent at least 4-6 weeks prior to the start of the period in which the student would like to enroll. Students should check with Dr. Milki's office regarding the schedule for in vitro fertilization. Not recommended to take this clerkship in P2A, P2B and P3A -- light schedule. PREREQUISITES: OBGYN 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 1 student per period. CLERKSHIP DIRECTOR: Amin Milki, M.D. CLERKSHIP COORDINATOR: Tracy A. Lindsay, 408-426-5483, tracyl@stanford.edu. REPORTING INSTRUCTIONS: Where: Stanford Fertility and Reproductive Health, 1195 West Fremont Ave, Sunnyvale, CA 94087; Time: 8:00 am. CALL CODE: 2 (no call, weekend operating). OTHER FACULTY: Staff. LOCATION: SUMC.

OBGYN 307A. Maternal-Fetal Medicine Clerkship. 5 Units.
VISITING: Open to visitors.TYPE OF CLERKSHIP. Selective 2. DESCRIPTION: Provides a focused experience in the care of ambulatory and hospitalized high-risk obstetric patients at Stanford University Medical Center. The student serves as a sub-intern with responsibility for ongoing care of assigned patients with problem pregnancies, under the supervision of the faculty of the Division of Maternal-Fetal Medicine. Note: Visiting students must obtain approval through Gloria King, Residency Program Manager, prior to applying for this clerkship. Please e-mail requests to gking1@stanford.edu. Interested students must send their CV, USMLE score(s), current transcript and a letter of recommendation from the Ob/Gyn Clerkship Director or a faculty mentor attesting to clinical abilities (i.e. proficient H&Ps and exam skills). The letter of recommendation must be emailed to Gloria by the letter writer or their supporting administrative assistant. These must be sent at least 4-6 weeks prior to the start of the period in which the student would like to enroll. PREREQUISITES: OBGYN 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 1 student per period. CLERKSHIP DIRECTOR: Yasser Yehia El-Sayed, M.D. CLERKSHIP COORDINATOR: Jacquie Laskey (650-725-8623), HH333. REPORTING INSTRUCTIONS: Where: F2 Conference Room, LPCH; (OB faculty member on rounds); Time: 8:00 am. CALL CODE: 2 (optional). OTHER FACULTY: Staff. LOCATION: SUMC.

OBGYN 308A. Gynecologic Oncology Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Selective 2. DESCRIPTION: Rotation where one student will function as a subintern on the gynecologic oncology service. Involves evaluation of outpatients in gynonc clinic with opportunities for extensive history and physical, review of radiologic studies. Involves care of hospitalized patients and post-operative care. Involves operating room experience in radical surgery for gynecologic cancers. Students have a multi-disciplinary exposure with teaching rounds. Presentations may be required at teaching rounds and journal clubs. Note: Visiting students must obtain approval through Gloria King, Residency Program Manager, prior to applying for this clerkship. Please e-mail requests to gking1@stanford.edu. Interested students must send their CV, USMLE score(s), current transcript and a letter of recommendation from the Ob/Gyn Clerkship Director or a faculty mentor attesting to clinical abilities (i.e. proficient H&Ps and exam skills). The letter of recommendation must be emailed to Gloria by the letter writer or their supporting administrative assistant. These must be sent at least 4-6 weeks prior to the start of the period in which the student would like to enroll. PREREQUISITES: OBGYN 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 1 student per period. CLERKSHIP DIRECTOR: Elisabeth Diver, M.D. CLERKSHIP COORDINATOR: Helen Wong, 650-724-0456, HG332. REPORTING INSTRUCTIONS: Where: Page the gyn/onc fellow or intern (pager 12825) for reporting instructions; Time: 6:00 am. CALL CODE: 1. OTHER FACULTY: J. Berek, E. Diver, O. Dorigo, A. Karam, B. Litkouhi, N. Teng. LOCATION: SUMC.

OBGYN 370. Medical Scholars Research. 4-18 Units.
Provides an opportunity for student and faculty interaction, as well as academic credit and financial support, to medical students who undertake original research. Enrollment is limited to students with approved projects.

OBGYN 398A. Clinical Elective in Gynecology & Obstetrics. 5 Units.
VISITING: Closed to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Provides an opportunity for a student in the clinical years to have a clinical experience in one of the fields of Gynecology and Obstetrics, of a quality and duration to be decided upon by the student and a faculty preceptor in the Department of Gynecology and Obstetrics. For a clerkship experience in Prenatal Genetics and Obstetrics, please contact clinical Preceptor: Katherine Bianco, MD. Please note: Students cannot add 398A clerkships directly to their fishbowl schedules through the regular shuffles. Please contact Caroline Cheang in the Office of Medical Student Affairs at cheang@stanford.edu or 650-498-7619 with the faculty preceptor's name and email address to add this clerkship. PREREQUISITES: OBGYN 300A, consent of the designated faculty preceptor, and approval by Advisor. PERIODS AVAILABLE: 1-16, 4 students per period. CLERKSHIP DIRECTOR: Erica Wu, M.D. CLERKSHIP COORDINATOR: Amanda Garley-Reynolds (650-721-1036). REPORTING INSTRUCTIONS: Where: As soon as you are enrolled, please email Amanda Garley-Reynolds (amanda33@stanford.edu) and cc Gloria King (gking1@stanford.edu), ObGyn Residency Program Manager. If you're paired with an OBGYN preceptor, please include your preceptors name and email address; Time: TBA. CALL CODE: 2 (varies with preceptor). OTHER FACULTY: K. Bianco. LOCATION: SUMC, SCVMC.

OBGYN 399. Graduate Research in Reproductive Biology. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

PATHOLOGY

Courses offered by the Department of Pathology are listed under the subject code PATH on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=PATH&filter-catalognumber-PATH=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=PATH&filter-catalognumber-PATH=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=PATH&filter-catalognumber-PATH=on).

Programs of Study in Pathology

The Department of Pathology offers advanced courses in aspects of pathology. The department does not offer advanced degrees in pathology, but qualified graduate students who are admitted to department-based or interdepartmental graduate programs may elect to pursue their thesis requirements in the department's research laboratories. The discipline of pathology has served as a bridge between the preclinical and clinical sciences and is focused on the application of advances in the basic biological sciences, both to the diagnosis of human disease and the elucidation of the mechanisms of normal molecular, cellular, and organ structure and function that manifest themselves in clinical disease. Accordingly, the department's research interests extend from fundamental molecular biology to clinical-pathological correlations, with an emphasis on experimental oncology.

Investigation in the department includes basic studies in areas using molecular biological, biochemical, and genetic cell biological techniques: DNA replication in yeast and cultured eukaryotic cells, cell cycle control in animal cells and yeast, identification and pathogenetic role of chromosomal aberrations in human malignancies and mechanisms of activation of oncogenes in human and animal cells, lymphocyte and neutrophil-interactions with endothelial cells, cell type specification and signal transduction pathways leading to specific gene expression or modulation of cytoskeletal behavior; cytoskeletal architecture, cell-matrix interaction, developmental biology of hematopoietic stem cells and thymus, regulation of the immune system, mechanisms of immune and other responses in the central nervous system, and neuro-degenerative diseases. Various studies focus on the development of novel diagnostic and immunotherapeutic treatment modalities and techniques for solid tumors, lymphomas, HIV, and genetic diseases. Research training in all of these areas is available for qualified medical and graduate students by individual arrangement with the appropriate faculty member.

A summary of the research interests of the department faculty is available at Sanford's School of Medicine (http://pathology.stanford.edu) web site.

Emeriti: (Professor) Ellen Jo Baron, Susan Galel, Sharon Geaghan, Michael Hendrickson, Richard L. Kempson, Jon Kosek, Roger Warnke

Chair: Stephen J. Galli

Professors: Daniel Arber, Jeffrey D. Axelrod, Gerald J. Berry, Matt Bogyo, Eugene C. Butcher, Athena Cherry, Michael L. Cleary, Gerald R. Crabtree, Edgar G. Engleman, Dean Felsher, Marcelo Fernandez-Vina, Andrew Fire, Steven Foung, Stephen J. Galli, Lawrence Tim Goodnough, John Higgins, Neeraja Kambham, Christina Kong, Teri Longacre, Joseph S. Lipsick, Bingwei Lu, Sara Michie, Yasodha Natkunam, Donald P. Regula, Robert V. Rouse, Kang Shen, Iris Schrijver, Hua Shan, Richard K. Sibley, Raymond Sobel, Dolly Tyan, Matt van de Rijn, Hannes Vogel, Irving L. Weissman, Eduardo Zambano, James Zehnder

Associate Professors: Kim Allison, Jeffrey D. Axelrod, Matt Bogyo, Niaz Banaie, Andrew Connolly, Tina Cowan, Jonathan R. Pollack, Arend Sidow, Marius Wernig, Robert West

Assistant Professors: Sean Bendall, Scott Boyd, Ann Folkins, Isabella Graef, Dita Gratzinger, F. Kim Hazard, Kristin Jensen, Chia-Sui Kao, Jinah Kim, Jason Merker, Stephen Montgomery, Robert Ohgami, Benjamin Pinsky, Ed Plowey, Erich Schwartz, Gerlinde Wernig, Monte Winslow, Ellen Yeh

Courtesy Professors: Donna Bouley, John Day, Bertil Glader

Courtesy Associate Professor: Euan Ashley, Robert Shafer

Courtesy Assistant Professor: Michaela Liedtke, Michelle Monje-Deisseroth

Clinician Educators: Jennifer Andrews, Raffick Bowen, Susan Atwater, David Bingham, Brittany Holmes, Christian Kunder, Steven Long, Melanie Manning, Roberto Novoa, David Oh, Tho Pham, Kerri Rieger, Matthew Rumery, Darren Salmi, Neil Shah, Run Shi, Carlos Suarez, Brent Tan, Eric Yang

Instructors: Mike Angelo, Joseph Hernandez, Marisa Juntilla, Franklin Mullins, Justin Odegaard, Riccardo Sibliano, Albert Tsai, Kitchener Wilson

Adjunct Clinical Faculty: Swaroop Aradhya, Robert Archibald, Jerome S. Burke, Glenn Cockerham, Seth Haber, Maie K. Herrick, Paul W. Herrmann, Michelle Jorden, Charles Lombard, Robert Luo, Gregory Moes, Joseph O'Hara, William Rueh, Matrina Schmidt, Thomas W. Rogers

Clinical Educators (Affiliated): Melissa Clark, Dean Fong, Barbara Egbert

Courses

PATH 21N. The Living Genome: Implications for Biology and Beyond. 3 Units.
IntroSem with Freshmen preference. The human genome carries the instructions for normal human development and reproduction. But it also carries predispositions to disease and clues to our evolution, ancestry, and identity. The genome may also be pliable to environmental influences and genetic engineering. Through directed readings, discussion, and activities, students will learn about the human genome and applications of genome science and technology across diverse disciplines including medicine, comparative biology, evolutionary biology, paternity testing, and forensics. The broad goal is to become informed and engaged about genome science and its implications for both the individual and society. Prerequisites: High School Biology.

PATH 101. Cancer Biology. 4 Units.
Experimental approaches to understanding the origins, diagnosis, and treatment of cancer. Focus on key experiments and discoveries with emphasis on genetics, molecular biology, and cell biology. Topics include carcinogens, tumor virology, oncogenes, tumor suppressor genes, cell cycle regulation, angiogenesis, invasion and metastasis, cancer genomics, cancer epidemiology, and cancer therapies. Discussion sections based on primary research articles that describe key experiments in the field. Satisfies Central Menu Areas 1 or 2 for Bio majors. Prerequisite: Biology or Human Biology core or equivalent, or consent of instructor.
Same as: CBIO 101

PATH 103Q. Lymphocyte Migration. 1 Unit.
Preference to sophomores. Lymphocytes migrate from blood vessels into tissues to participate in immune surveillance and the development of inflammation. The lymphocyte and blood vessel endothelia molecules that control lymphocyte migration, and are implicated in the development of human diseases such as asthma, type 1 diabetes, and multiple sclerosis are discussed.

PATH 199. Undergraduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

PATH 213. Gross Autopsy Pathology Laboratory. 2-3 Units.
Examine/discuss unfixed dissected organs from current autopsies and correlate morphologic findings with the clinical history. Students view postmortem examinations and may participate (in a small group) in one postmortem examination with the assistance of residents and staff, and present the case to the class. Class scheduling is flexible. Additional unit for participation in a postmortem examination. Class may not be repeated. Concurrent enrollment in INDE223 required.

PATH 218. Computational Analysis of Biological Information: Introduction to Python for Biologists. 2 Units.
Computational tools for processing, interpretation, communication, and archiving of biological information. Emphasis is on sequence and digital microscopy/image analysis. Intended for biological and clinical trainees without substantial programming experience.
Same as: GENE 218, MI 218

PATH 240. Clinical Studies in Pathology I. 3-9 Units.
A broad exposure to the practice of pathology in an academic medical center. Students are assigned a faculty mentor and work closely with pathology residents, fellows and faculty. Two months are spent in surgical pathology where students help examine surgical resection specimens and biopsies and participate in making a final diagnosis. One month is spent in autopsy pathology where students perform autopsy prosections and formulate final anatomic diagnoses under the supervision of faculty. This course must be combined with Clinical Studies in Pathology II, and two additional quarters of PATH 399, Directed Research, to fulfill a 12 month Post-Sophomore year Fellowship in Pathology. Prerequisite: MD candidate; instructor consent.

PATH 241. Clinical Studies in Pathology II. 3-9 Units.
An in-depth exposure to the practice of pathology for students who have completed Clinical Studies in Pathology I. Students are assigned a faculty mentor and work closely with pathology residents, fellows and faculty. Two months are spent in surgical pathology where students help examine surgical resection specimens and biopsies and participate in making a final diagnosis. One month is spent in sub-specialty areas of pathology that include dermatopatholgy, neuropathology, renal pathology, lymph node pathology or cytology. This course must be combined with Clinical Studies in Pathology I and two additional quarters of PATH 399, Directed Research, to fulfill a 12-month Post-Sophomore year Fellowship in Pathology. Prerequisite: consent of instructor and successful completion of Clinical Studies in Pathology I (PATH 240).

PATH 280. Early Clinical Experience in Pathology. 1-2 Unit.
Provides an observational experience as determined by the instructor and student. Prerequisite: consent of instructor.

PATH 290. Pediatric Nonmalignant Hematology and Stem Cell Biology. 2 Units.
Pediatric hematologic disorders provide an important paradigm to study other developmental systems. Subjects covered include hematopoiesis, basic stem cell biology, endothelial cell development, alternative models to study nonmalignant hematology and stem cell biology (zebrafish and drosophila), defects in white cell function, basic research in stem cell transplantation, state of the art methods in nonmalignant hematology and stem cell biology (genomics, proteomics, and gene therapy), and bioinformatics. The course is also open to graduate students and junior and senior undergraduate students who are pre-med.

PATH 299. Directed Reading in Pathology. 1-18 Unit.
Prerequisite: consent of instructor.

PATH 302A. Pathology Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: The purpose of this clerkship is to introduce students to pathology clinical services. The clerkship is customizable based on student interests, with experiences on services in both anatomic and clinical pathology or just one of these fields. For students contemplating a career in pathology, this clerkship provides an excellent opportunity for exposure to the field and to the residency program in pathology at Stanford. Students interested in other fields will learn how pathology interfaces with other areas in medicine, as well as the basic sciences. Student rotations are typically by week on a specific service. Anatomic Pathology services include surgical pathology subspecialties (breast, CT/ENT, GYN, GI, Pediatric, Bone/Soft tissue and GU pathology), intra-operative consultation/frozens service, cytopathology, dermatopathology, neuropathology, hematopathology and autopsy. Clinical Pathology services include hematology, coagulation, transfusion medicine, chemistry/immunology, biochemical genetics, cytogenetics, microbiology/virology, and molecular diagnostics. Exposure to some services may be limited based on service specific scheduling. Students are expected to work-up cases and review findings with faculty at signout times. Occasional presentations on educational cases/topics are also sometimes a component of the clerkship depending on rotation/service. AP rotations may require handing gross specimens and learning the basics of gross dissection for pathology diagnosis (with supervision). Attendance at pathology conferences is an essential part of the clerkship. Internal Rotators: please download the Department of Pathology Clerkship Application and return to pathology clerkship coordinator as soon as your registration is complete, or you receive an approval from the program director. Visiting Rotators: must complete the Department of Pathology Clerkship Application at: http://med.stanford.edu/pathology/education.html and submit for approval to the clerkship coordinator, prior to applying for this course. Score Program: This clerkship participates in the SCORE program, a diversity promotion program run by the Stanford Clerkship Office that provides other support for outside rotators. Please note that if you are a visiting student and a minority, you may qualify for this program. Please see the following for further details: https://med.stanford.edu/clerkships/score-program.html. PREREQUISITES: None. PERIODS AVAILABLE: 1-16, full-time for three weeks, 4 students per period (location and rotation dependent). CLERKSHIP DIRECTOR: Kimberly H Allison, M.D. (650-723-7211 or 650-498-6460), John Higgins, M.D. (650-724-4340) Niaz Banaei, M.D. (650-736-8052). CLERKSHIP COORDINATOR: Gabby Barela, 650-721-5755, gbarela@stanford.edu, Markell Stine, 650-497-6371, markell@stanford.edu. REPORTING INSTRUCTIONS: Where: will be arranged by Chief Resident; Time: 8:00 am. CALL CODE: 2 (weekend review of cases for Monday morning signout). OTHER FACULTY: G. Berry, T. Longacre, B. Howitt, G. Bean, M. Van de Rijn, C. Kong, N. Kambham, M. Troxell, D. Bingham, H. Vogel, R. Sibley, K. Hazard, A. Folkins, R. West, T. Cowan, T. Cherry, J. Zehnder, Y. Natkunam, B. Pinsky, CJ. Suarez, N. Shah, M. Virk, H. Shan, D. Gratzinger, J. Oak, S. Fernandez-Pol, B. Tan, C. Kunder, R. Bowen, J. Kurzer, T. Goodnough, K. Jensen. LOCATION: SHC, LPCH, PAVMC.

PATH 370. Medical Scholars Research. 4-18 Units.
Provides an opportunity for student and faculty interaction, as well as academic credit and financial support, to medical students who undertake original research. Enrollment is limited to students with approved projects.

PATH 398A. Clinical Elective in Pathology. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Provides an opportunity for a student in the clinical years to have an in-depth experience in one of the fields of Pathology, of a quality and duration to decide upon by the student and a faculty preceptor in the Department of Pathology. Please note: Students cannot add 398A clerkships directly to their fishbowl schedules through the regular shuffles. Please contact Caroline Cheang in the Office of Medical Student Affairs at cheang@stanford.edu or 650-498-7619 with the faculty preceptors name and email address to add this clerkship. Please note: INTERNAL ROTATORS: please download the Department of Pathology Clerkship Application at: http://med.stanford.edu/pathology/education.html and return to pathology clerkship coordinator as soon as your registration is complete, or you receive an approval from the program director. VISITING ROTATORS: must complete the Department of Pathology Clerkship Application at: http://med.stanford.edu/pathology/education.html and submit for approval to the clerkship coordinator, prior to applying for this course. PREREQUISITES: None. PERIODS AVAILABLE: 1-16, 2 students per period. CLERKSHIP DIRECTOR: Kimberly Allison, M.D. CLERKSHIP COORDINATOR: Gabby Barela, 650-721-5755, gbarela@stanford.edu. REPORTING INSTRUCTIONS: Where: TBA (designated faculty preceptor); Time: TBA. CALL CODE: 2 (varies according to preceptor). OTHER FACULTY: Staff. LOCATION: SHC.

PATH 399. Graduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Opportunities at the molecular, cellular, and clinicopathologic levels. Prerequisite: consent of instructor.

PHYSICIAN ASSISTANT STUDIES

Courses offered by the Master of Science in Physician Assistant Studies program are listed under the subject code PAS (https://explorecourses.stanford.edu/search/?view=catalog&academicYear=&page=0&q=PAS&filter-departmentcode-PAS=on&filter-coursestatus-Active=on) on the Stanford Bulletin's Explore Courses website.

The Master of Science (M.S.) in Physician Assistant Studies, or MSPA, program is a 9-quarter program (with one summer break) that includes streamlined courses with innovative content delivery, a state-of-the-art simulation lab, and world-class clinical anatomy experiences as well as early exposure to patient care. Students receive mentorship and support in their academic and research focus areas by clinically practicing Stanford PAs. During the didactic work, PA students are located at the School of Medicine and enroll as a cohort in a clinically focused curriculum. A substantial portion of their courses are integrated with medical students, allowing for an invaluable interprofessional education experience. During their clerkship year, students rotate through Stanford-affiliated hospitals and ambulatory practices as well as select sites throughout California. In an innovative approach to PA education that encourages the next generation of PA leaders, students are required to select one leadership track and complete a capstone project in that area. The leadership tracks include:

- Community Health
- Health Services and Policy Research
- Clinical Research
- Medical Education
- Healthcare Administration

Upon completion of this program, students are prepared to sit for the Physician Assistant National Certification Examination (PANCE).

The Master of Science in Physician Assistant Studies program is open to external as well as internal applicants. Advanced placement and coterminal degrees for Stanford University undergraduates are not available at this time. Individuals who wish to apply to the program should do so via the Central Application Service for Physician Assistants (CASPA) (https://caspa.liaisoncas.com). The application window typically opens at the end of April and closes on August 1, though the deadline has been extended to October 1 for the 2020 application cycle only. GRE scores *or* MCAT scores are typically required, though this requirement is being waived for the 2020 application cycle. The CASPer exam (https://takecasper.com) is also required, and this requirement has not been waived for the 2020 cycle. An undergraduate degree from a regionally accredited US educational institution is required; applicants with a graduate degree from a regionally accredited U.S. academic institution **and** an equivalent undergraduate degree (see required minimum level of study (https://gradadmissions.stanford.edu/applying/international-applicants/)) from a recognized academic institution outside the U.S. are also eligible to apply. For detailed information on applying, please visit the Admissions section (http://med.stanford.edu/pa/admissions.html) of our website.

The University requirements for the M.S. degree are described in the "Graduate Degrees (p. 65)" section of this bulletin.

Master of Science in Physician Assistant Studies

The Master of Science (M.S) in Physician Assistant (PA) Studies program is for individuals who wish to pursue a career as a PA. The program is available to external and internal candidates. Advanced placement and coterminal degrees for Stanford University undergraduates are not available at this time.

The first five quarters of the nine quarter program involve acquiring fundamental medical knowledge through coursework in clinical anatomy, the basic sciences, pharmacology, and pathophysiology and disease management, as well as attaining core skills in medical interviewing and the physical examination. The last four quarters of the program are dedicated to experiential learning through clinical rotations in inpatient and outpatient medicine, pediatrics, women's health, emergency medicine, surgery, and behavioral medicine, as well as elective rotations.

Admission

- Applicants must have received an undergraduate degree from a regionally accredited U.S. college or university (or a graduate degree from a regionally accredited U.S. academic institution **and** an equivalent undergraduate degree from a recognized academic institution outside the U.S.) by July 15 of the year of matriculation; no specific discipline or major is prescribed.
- Prior healthcare experience (> 500 hours) through either prior employment and/or volunteer work is strongly recommended.
- The Graduate Record Examination (GRE) or the MCAT is required, though this requirement is being waived and changed to a recommendation for the 2020 application cycle. Note that GRE scores are only valid for five years and must be current at the time of application.
- Candidates are required to submit two personal statements of no more than 2,000 characters and three letters of reference as part of the application process via CASPA (https://caspa.liaisoncas.com/).
- Candidates are also required to answer questions in CASPA (https://caspa.liaisoncas.com/) specifically designed for the Stanford School of Medicine M.S. in PA Studies program. The questions relate to future PA practice, leadership potential, leadership track, and contributions to diversity. There is no supplemental application.

It is strongly recommended that students complete the following coursework prior to applying to the program:

- Anatomy
- Physiology
- Chemistry
- General Statistics or Biostatistics
- Psychology

Three upper-division science courses (e.g., in cell biology, genetics, or microbiology) are recommended before matriculation.

Degree Requirements

All students in the program must complete the Master of Science in PA Studies program core curriculum (182 units) and additional work in a leadership track (~6 units).

Upon completion of the didactic coursework (5 quarters), students begin 12 months of clinical clerkship within the Stanford Health Care community and in other select clinical sites.

Students must choose a leadership track from the following:

- Community Health
- Health Services and Policy Research
- Clinical Research

- Medical Education
- Healthcare Administration

All students must complete a capstone project in their leadership track.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

The MSPA program has not changed its policy concerning 'CR' (credit) or 'S' (satisfactory) grades in degree requirements requiring a letter grade for academic year 2020-21.

Graduate Advising Expectations

The Master of Science in Physician Assistant Studies program is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the advisor and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the advisor and the advisee are expected to maintain professionalism and integrity.

Faculty advisors guide students in key areas such as selecting courses, designing and conducting research, development of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Leadership

Associate Dean for PA Education and Program Director: Susan Fernandes
Associate Program Director: Rhonda Larsen
Medical Director: Andrew Nevins
Associate Medical Director: Ian Nelligan

Core Faculty

Director of Pre-Clerkship Education: Nicole Burwell
Director of Clerkship Education: Kendra Patton Silverman
Director of Student Scholarship: Michele Toussaint
Clinical Site Director - Central Valley: Sampath (Sam) Wijesinghe

Educators for Care PA (E4C-PA) Faculty

Lead E4C-PA: Courtney Nelson

Chad Anderson
Camille Bloom
Andrea Fox
Jennifer Hunter
Rochelle Reyes
Hannah Wright

Courses

PAS 201. Foundations of Clinical Medicine. 4 Units.
This course explores fundamental concepts of biochemistry, genetics, microbiology, and immunology as applied to clinical medicine in a mostly "flipped classroom" format. This course will help to establish a foundation for understanding the pathophysiology of disease and the targets for therapeutic interventions. Disciple-specific topics include: Biochemistry: thermodynamics, enzyme kinetics, vitamins and cofactors, metabolism of carbohydrates, lipids, amino acids and nucleotides, and the integration of metaboloic pathways. Genetics: basic principles of inheritance and risk assessment, illustrated with the use of clinical examples from many areas of medicine including prenatal, pediatric, adult and cancer genetics. Microbiology: Basic bacteriology, virology, mycology and parasitology, including pathogenesis and clinical scenarios associated with infectious diseases. Immunology: concepts and applications of adaptive and innate immunity and the role of the immune system in human disease.

PAS 202. Foundations of Clinical Neurosciences. 2 Units.
Foundations of Clinical Neurosciences introduces students to the structure and function of the nervous system, including neuroanatomy and neurophysiology. Applications to clinical medicine and neurology are emphasized. Enrollment limited to Master of Science in Physician Assistant Studies students. Prerequisite: PAS 201.

PAS 212. Principles of Clinical Medicine I. 8 Units.
This is the first in a four-course sequence presenting organ-system based physiology, pathology and pathophysiology. Each organ-specific block includes a review of the anatomy and related histology, normal function of that organ system, how the organ system is affected by and responds to disease, and how diseases of that organ system are treated. In PAS 212, the focus us on the structure, function, disease and corresponding therapeutics of several "primary care" topics, particularly the musuloskeletal and dermatologic systems. In addition, basic neurology otorhinolargyngology, and ophthalmology will be covered.

PAS 213. Principles of Clinical Medicine II. 10 Units.
This is the second in a four-course sequence presenting organ-system based physiology, pathology and pathophysiology. Each organ-specific block includes a review of the anatomy and related histology, normal function of that organ system, how the organ system is affected by and responds to disease, and how diseases of that organ system are treated. In PAS 213, the focus is on the structure, function, disease, and corresponding therapeutics of the pulmonary and cardiovascular systems.

PAS 214. Principles of Clinical Medicine III. 12 Units.
This is the third in a four-course sequence presenting organ-system based physiology, pathology, and pathophysiology. Each organ-specific block includes a review of the anatomy and related histology, normal function of that organ system, how the organ system is affected by and responds to disease, and how diseases of that organ system are treated. In PAS 213, the focus is on the structure, function, disease, and corresponding therapeutics of the Renal, Gastroenterology, Endocrine and Reproductive Health systems.

PAS 215. Principles of Clinical Medicine IV. 10 Units.
This is the fourth in a four-course sequence presenting organ-system based physiology, pathology, and pathophysiology. Each organ-specific block includes a review of the anatomy and related histology, normal function of that organ system, how the organ system is affected by and responds to disease, and how diseases of that organ system are treated. In PAS 214, the focus is on the structure, function, disease, and corresponding therapeutics of the Neurologic, Psychiatric, Hematologic, Oncologic, and Autoimmune/Rheumatologic systems.

PAS 222. Clinical Therapeutics I. 2 Units.
This course will provide a foundation for learning pharmaceutical therapies related to subjects covered in the Principles of Clinical Medicine I course. In addition to general pharmacokinetic principles, the first segment of the course will cover the use of drugs applied to the skin and topical and systemically administered drugs for dermatologic diseases. Pharmacology of the autonomic nervous system, both sympathetic and parasympathetic divisions, will be overviewed in addition to gaining an understanding of how drug manipulation on cholinergic and adrenergic receptors modulate nerve activity. The course will conclude with an examination of drugs acting on the allergenic and pathogenic pathways as they pertain to ENT conditions.

PAS 223. Clinical Therapeutics II. 2 Units.
This course will provide students a detailed comprehension of drug mechanisms and clinical drug therapies for cardiovascular and pulmonary diseases as covered in the Principles of Clinical Medicine II course. The course will examine anti-hypertensive agents, drugs used for cardiovascular therapies. Clinical treatment for common pulmonary diseases including emphysema and asthma, in addition to the pharmacology of medications including bronchodilators and anti-inflammatory drugs will be discussed.

PAS 224. Clinical Therapeutics III. 3 Units.
This is the third course of a 4-part series focused on pharmacology and clinical therapeutics with topics related to subjects covered in the Principles of Clinical Medicine III course. Topics will include renal, gastrointestinal, endocrine, and men¿s/women¿s health. The pharmacology component will focus on mechanism of action, clinical use, contraindications, adverse reactions, and clinically significant drug interactions of various drug classes. The clinical therapeutics component will focus on medical management of diseases with an emphasis on patient specific drug management.

PAS 225. Clinical Therapeutics IV. 2 Units.
This is the fourth course of a 4-part series focused on pharmacology and clinical therapeutics with topics related to subjects covered in the Principles of Clinical Medicine IV course. Topics will include neurology, psychiatry, oncology, and rheumatology. The pharmacology component will focus on mechanism of action, clinical use, contraindications, adverse reactions, and clinically significant drug interactions of various drug classes. The clinical therapeutics component will focus on medical management of diseases with an emphasis on patient specific drug management.

PAS 251. Design and Conduct of Clinical and Epidemiological Studies. 3-4 Units.
Intermediate Level. The skills to design, carry out, and interpret epidemiological studies, particularly of chronic diseases. Topics: epidemiologic concepts, sources of data, cohort studies, case-control studies, cross-sectional studies, sampling, measures of association, estimating sample size, and sources of bias. Prerequisite: A basic/introductory course in statistics or consent of instructor.

PAS 255. Introduction to Qualitative Research I. 2 Units.
This course will provide the physician assistant student with an introduction to qualitative manuscripts, describing types of qualitative research methods, and discussing their own tentative qualitative research questions/designs.Prerequisites: Enrollment in the Master of Science in Physician Assistant Studies program.

PAS 256. Introduction to Qualitative Research II. 2 Units.
This course will provide the physician assistant students with an introduction to qualitative research methods, specifically data analysis, with significant time focused on thematic analysis coding. Prerequisites: successful completion of PAS 255.

PAS 282. AHEC Scholars Program. 2 Units.
Acceptance into the AHEC Scholars Program.

PAS 291. PAs in Health Care I: Introduction to the Profession. 1 Unit.
This course provides an overview of the PA profession. The first portion of the course covers the history of the PA profession, the role of the PA within the health care team, and an overview of the laws, regulations and committees that provide oversight to the profession. The second portion of the course focuses on health disparities, social determinants of health and undeserved communities, and the role of the PA in the care of these populations. It includes development of the awareness, knowledge, and skills needed in order to practice culturally competent and sensitive health care.

PAS 292. PAs in Health Care II: Introduction to Advanced Skill Training for PAs. 2 Units.
The PAs in Health Care II: Introduction to Advanced Skill Training for PAs course will focus on advanced clinical skills including basic and advanced cardiac life support, imaging skills and interpretation along with additional proceduralnskills in preparation for clerkships.

PAS 293. PAs in Health Care III: Transition to Clerkships. 2 Units.
The PAs in Health Care III course provides the skills necessary for a smooth transition from didactic learning to clerkship experiences. The first portion will focus on clerkship expectations, the PA student role as a member of the health care team, avoiding medical errors, and improving quality. Advanced skill training will also be included such as vascular line and chest tube placement, advanced suturing, and intubation.

PAS 294. PAs in Healthcare IV: Leadership, Advocacy, and Preparation for Practice. 1 Unit.
The final course in the PAs in Health Care series will provide students with the skills necessary for transition from PA student to practicing PA and will continue to expand on leadership skills. One portion of the course will focus on preparation from the transition to clinical practice, which will include requirements for licensure and certification, medical liability, and ethics. Another thread will consist of lectures on advanced and novel topics in medicine. Additionally, there will be a thread for development of leadership skills and advocacy. The culmination of the Capstone research project will also occur during this course.

PAS 299. Directed Reading in PA Studies. 1-10 Unit.
Students organize an individualized study program in physician assistant studies. Prerequisites: Successful completion of PAS 214.

PAS 301. Internal Medicine Clerkship I. 6 Units.
Teaches the natural history, pathophysiology, diagnosis, and treatment of a wide range of medical illnesses. Emphasis is placed on acquiring the understanding, skills, and attitudes desirable in a scientific and compassionate PA. Students will perform histories and physical examinations, identify appropriate orders, order and interpret appropriate diagnostics studies to develop a differential diagnosis, and interpret information gathered from the patient assessment data to formulate a patient-centered treatment plan. Developing sound clinical reasoning skills is continuously emphasized. Students will be able to provide an accurate verbal presentation to the rotation preceptor, counsel patients about therapeutic procedures; and help to coordinate medical consultations by sub-specialty providers as needed to take appropriate care. Students will follow the progress of patients through their hospitalization, write a note appropriate for the patient¿s medical record and develop a discharge plan. Students will attend and participate in medical rounds and conferences.

PAS 302. Internal Medicine Clerkship II. 6 Units.
Teaches the natural history, pathophysiology, diagnosis, and treatment of a wide range of medical illnesses. Emphasis is placed on acquiring the understanding, skills, and attitudes desirable in a scientific and compassionate PA. Students will perform histories and physical examinations, identify appropriate orders, order and interpret appropriate diagnostics studies to develop a differential diagnosis, and interpret information gathered from the patient assessment data to formulate a patient-centered treatment plan. Developing sound clinical reasoning skills is continuously emphasized. Students will be able to provide an accurate verbal presentation to the rotation preceptor, counsel patients about therapeutic procedures; and help to coordinate medical consultations by subspecialty providers as needed to take appropriate care. Students will follow the progress of patients through their hospitalization, write a note appropriate for the patient¿s medical record and develop a discharge plan. Students will attend and participate in medical rounds and conferences.

PAS 303. Primary Care I. 6 Units.
During the outpatient medicine rotation students will be involved in the initial and ongoing assessment of patients in all age groups. In addition to routine health maintenance, students will become familiar with common primary care and urgent care problems. Students will be responsible for taking medical histories, performing physical examinations, ordering appropriate diagnostic testing, interpreting results and forming a plan. The student will provide an accurate, pertinent and time-effective verbal presentation to the rotation preceptor and will write an accurate note suitable for inclusion in the patient's medical record. Patient education, counseling, and coordination of additional resources for patient care will also be included. The outpatient medicine rotations may take place in private offices, family practices, urgent care clinics, hospitals, or other ambulatory care clinics.

PAS 304. Primary Care II. 6 Units.
During the outpatient medicine rotation students will be involved in the initial and ongoing assessment of patients in all age groups. In addition to routine health maintenance, students will become familiar with common primary care and urgent care problems. Students will be responsible for taking medical histories, performing physical examinations, ordering appropriate diagnostic testing, interpreting results and forming a plan. The student will provide an accurate, pertinent and time-effective verbal presentation to the rotation preceptor and will write an accurate note suitable for inclusion in the patient's medical record. Patient education, counseling, and coordination of additional resources for patient care will also be included. The outpatient medicine rotations may take place in private offices, family practices, urgent care clinics, hospitals, or other ambulatory care clinics.

PAS 311. Pediatrics. 6 Units.
The Pediatrics rotation will take place in outpatient pediatric clinics and private pediatric offices. The clerkship provides an introduction to a wide range of clinical problems in pediatrics and arms students with the basic skills needed to work with children and families. The rotation will emphasize caring for a child from birth through late adolescence. Students will assess, evaluate and develop a patient-centered treatment plan according to published guidelines when appropriate. Students will provide an accurate verbal presentation to the rotation preceptor and write an accurate note suitable for inclusion in the patient's medical record. The rotation will stress diagnosis and treatment of common childhood illnesses and assessment of growth and development. Students will develop skills to counsel parents about well-visits, immunizations, nutrition, growth and development.

PAS 320. Surgery. 6 Units.
Provides PA students with clinical experience in the evaluation and treatment of a wide variety of surgical diseases. Emphasis is placed on teaching students to recognize and manage basic clinical problems. As members of the surgical team, students participate in preoperative management, including patient education and procedures necessary to prepare patients for surgery. Students will perform admitting histories and physical examinations, identify appropriate admitting orders for surgical patients and identify appropriate diagnostic studies required prior to surgical procedures. In the operating room setting, students will assist surgeons and have an opportunity to become familiar with protocols and equipment. Students will be involved in pre-operative, intra-operative and post-operative care. The clerkship offers an opportunity for students to integrate their knowledge of anatomy, physiology and physical diagnosis into a treatment plan for patients with surgical diseases. When possible, students attend surgical grand rounds and other surgically-oriented conferences.

PAS 321. Emergency Medicine. 6 Units.
Provides students with exposure to common problems encountered in an emergency room setting. Students will be responsible for taking medical histories, performing physical examinations, ordering and interpreting appropriate diagnostic testing, performing diagnostic and therapeutic procedures as needed under appropriate supervision, and forming a patient-centered care plan for patients seen for emergent and non-emergent issues. The student will provide an accurate, pertinent and time-effective verbal presentation to the rotation preceptor and will write an accurate note suitable for inclusion in the patient's medical record. Students will identify criteria for hospital admission and coordinate the admission to the appropriate setting and service. During the Emergency Medicine rotation students may also be exposed to patients with life-threatening conditions such as cardiac/respiratory failure, trauma, shock, overdose, poisoning, allergic reactions, seizures.

PAS 331. Women's Health. 6 Units.
Provides the student with skills and knowledge needed to care for patients with common gynecological problems, the well-woman examination, and pregnancy from prenatal care through delivery and postpartum. As an active member of the obstetrical and gynecological care team, students will be exposed to a wide range of common gynecological problems. They will perform histories and physical examinations, order and interpret diagnostic testing, and formulate a patient- centered treatment plan. Emphasis is placed on history and physical examination skills in the evaluation and management of pregnancy, vaginal delivery, and both office gynecology and gynecologic surgical procedures through exposure to patients in the outpatient clinics, Labor and Delivery, and the operating room. They will learn the role of a surgical assistant for gynecologic procedures and how to counsel patients on family planning and contraception. For obstetrical patients, students will develop prenatal plans for uncomplicated pregnancies, assist with deliveries and develop skills to supervise and manage labor and delivery in an emergency situation.

PAS 336. Behavioral Medicine. 6 Units.
Provides students with exposure to a wide range of mental health issues in hospital and/or clinic-based settings. The clerkship is designed to solidify the knowledge of psychiatry that students have acquired in the Practice of Medicine course, as students gain practical skills in the application of this knowledge to clinical situations. Students will perform thorough histories including a mental status examination and will use tools for cognitive testing, order appropriate diagnostic studies, interpret information gathered from patient assessment data, and formulate a patient-centered treatment plan including pharmacological treatment when appropriate. The course will also offer an overview of psychosocial and biological treatment modalities for the major psychiatric disorders. Students will be required to recognize the various types of mental health issues that require referral to a specialist and to know which mental health problems can be handled by the non-specialist.

PAS 351. MSPA Elective I. 6 Units.

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PAS 352. MSPA Elective II. 6 Units.

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PAS 353. MSPA Elective III. 6 Units.

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PAS 399. Directed Reading in PA Studies. 1-10 Unit.
Students organize an individualized study program in physician assistant studies.

RADIATION ONCOLOGY

Courses offered by the Department of Radiation Oncology are listed under the subject code RADO on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=RADO&filter-catalognumber-RADO=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=RADO&filter-catalognumber-RADO=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=RADO&filter-catalognumber-RADO=on).

Radiation Oncology focuses on the use of radiation for cancer therapy and research. The department does not offer degrees; however, its faculty teach courses open to medical students, graduate students, and undergraduates. The department also accepts students in other curricula as advisees for study and research. Graduate students in Biophysics and Cancer Biology may perform their thesis research in the department. Undergraduates may arrange individual research projects under supervision of faculty.

At the present time, the major areas of basic research investigation in the department include: DNA repair in mammalian cells after ionizing irradiation; studies of the mechanism of tumor hypoxia in animal tumors; development of new anti-cancer drugs to exploit tumor hypoxia; cytogenetic and molecular methods of predicting the sensitivity of individual tumors to cancer therapy; radiolabeled monoclonal antibodies for cancer detection and treatment; studies of oxygen levels in human tumors using polarographic electrodes; clinical trials of a new hypoxic cytotoxic agent (tirapazamine); studies of the late effects of cancer therapy; and techniques of conformal and intensity modulated radiation therapy.

Faculty

Emeriti: Malcolm A. Bagshaw, Peter Fessenden, Don R. Goffinet, George M. Hahn, Kendric Smith

Chair: Richard T. Hoppe

Professors: J. Martin Brown, Sarah S. Donaldson, Amato J. Giaccia, Steven L. Hancock, Richard T. Hoppe, Quynh-Thu Le, Daniel S. Kapp, Steven A. Liebel

Associate Professors: Iris C. Gibbs, Paul Keall, Christopher R. King, Susan J. Knox, Gary Luxton, Lei Xing

Assistant Professors: Laura Attardi, Daniel Chang, Nicholas Denko, Edward Graves, Albert C. Koong

Consulting Professor: Robert M. Sutherland

Courses

RADO 101. Readings in Radiation Biology. 1-18 Unit.

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RADO 199. Undergraduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

RADO 202. The Basic Science of Radiation and Cancer Biology. 1 Unit.
For residents or fellows in the training program in the Division of Radiation Therapy, and for interested medical students. Basic processes of radiation biology that underly the treatment of malignant diseases by radiation. Carcinogenesis and mutagenesis by radiation are also covered. Prerequisite: familiarity with cell biology and physiology; consent of instructor.

RADO 203. Perspectives on Clinical Research. 1 Unit.
This is an introductory seminar that introduces goals and methods of clinical research to first-year medical students and undergraduates interested in clinical research. The course will consist of a speaker series of clinical researchers and statisticians. Students will also have the opportunity to participate in research projects utilizing methods taught in class.

RADO 210. Current Topics in Oncology. 1 Unit.
Student lead: This is a lunch seminar introducing preclinical students to current topics in oncology, including research, ethics, clinical care, health policies, humanities, etc. Speakers will come from multiple areas of cancer care, research and industry.

RADO 244. Program in Radiation Biology Seminar Series. 1 Unit.
Open to graduate and undergraduate students. Current research in radiation and cancer biology summarized by two laboratories.

RADO 280. Early Clinical Experience in Radiation Oncology. 1-2 Unit.
Provides an observational experience as determined by the instructor and student. Prerequisite: consent of instructor.

RADO 299. Directed Reading in Radiation Oncology. 1-18 Unit.
Prerequisite: consent of instructor.

RADO 300A. Radiation Oncology Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Selective 1. DESCRIPTION: The Stanford Department of Radiation Oncology welcomes 3rd and 4th year medical students. THIS ROTATION IS CURRENTLY OFFERED IN A COMPLETELY VIRTUAL ENVIRONMENT. During this rotation, students will be exposed to different radiation oncology topics including history of radiation oncology, basic principles of radiation physics and radiation/cancer biology, radiation treatment planning and work-up and management of a broad range of malignant conditions. Students will participate in didactic Zoom sessions with faculty and residents and attend virtual tumor boards and chart rounds. Students will work with faculty in virtual clinic and be expected to work up patients and present cases to faculty. Students will also be exposed to radiation treatment planning. At the end of the rotation, students will be expected to give a talk over Zoom on a topic of their choosing to the department. PREREQUISITES: MED 300A and/or SURG 300A. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 4 students per period. CLERKSHIP DIRECTOR: Erqi Pollom, M.D., MS. CLERKSHIP COORDINATOR: Jessica Frank, 650-724-7673, jefrank@stanford.edu. REPORTING INSTRUCTIONS: Where: Contact Jessica Frank at jefrank@stanford.edu, 650-724-7673 for time and location; Time: TBA. CALL CODE: 0. OTHER FACULTY: Staff. LOCATION: SUMC.

RADO 370. Medical Scholars Research. 4-18 Units.
Provides an opportunity for student and faculty interaction, as well as academic credit and financial support, to medical students who undertake original research. Enrollment is limited to students with approved projects.

RADO 398A. Clinical Elective in Radiation Oncology. 5 Units.
VISITING: Closed to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Provides an opportunity for a student in the clinical years to have an in-depth clinical experience in Radiation Therapy, of a quality and duration to be decided upon by the student and a faculty preceptor in the Department of Radiation Oncology to build on the RADO 300A experience. Please note: Students cannot add 398A clerkships directly to their fishbowl schedules through the regular shuffles. Please contact Caroline Cheang in the Office of Medical Student Affairs at cheang@stanford.edu or 650-498-7619 with the faculty preceptor's name and email address to add this clerkship. PREREQUISITES: RADO 300A and permission from the Program Director. PERIODS AVAILABLE: 1-16, full time for 3 weeks, 4 students per period. CLERKSHIP DIRECTOR: Erqi Pollom, M.D., MS. CLERKSHIP COORDINATOR: Jessica Frank (650-724-7673; jefrank@stanford.edu). REPORTING INSTRUCTIONS: Where: Contact Jessica Frank @ 650-724-7673 for time and location; Time: TBA. CALL CODE: 2 (varies according to preceptor). OTHER FACULTY: P. Dubrowski and staff. LOCATION: SUMC.

RADO 399. Graduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

RADIOLOGY

Web site: https://med.stanford.edu/radiology.html

Courses offered by the Department of Radiology are listed under the subject code RAD on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=RAD&filter-catalognumber-RAD=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=RAD&filter-catalognumber-RAD=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=RAD&filter-catalognumber-RAD=on).

The Department of Radiology does not offer degrees. However, its faculty teach courses open to medical students, graduate students, and undergraduates. The department also accepts students in other curricula as advisees for study and research. Undergraduates may also arrange individual research projects under the supervision of the department's faculty. This discipline focuses on the use of radiation, ultrasound, and magnetic resonance as diagnostic, therapeutic, and research tools. The fundamental and applied research within the department reflects this broad spectrum as it relates to anatomy, pathology, physiology, and interventional procedures. Original research and development of new clinical applications in medical imaging is supported within the Radiological Sciences Laboratory.

Faculty

Emeriti: (Professors) Herbert L. Abrams, Ronald Castellino, Barton Lane, Gerald Friedland, David A. Goodwin, Michael L. Goris, Henry H. Jones, William Marshall, I. Ross McDougall, Robert E. Mindelzun, Matilde Nino-Murcia, William H. Northway, Bruce R. Parker, Lewis Wexler, Leslie M. Zatz

Chair: Sanjiv Sam Gambhir

Professors: Patgrick Barnes, Richard A. Barth, Christopher F. Beaulieu, Bruce Daniel, Huy M. Do, Michael Federle, Nancy Fischbein, Dominik Fleischmann, Sanjiv Sam Gambhir, Gabriela Gayer, Gary H. Glover, Garry E. Gold, Robert J. Herfkens, Lawrence Hofmann, Dave Hovsepian, Debra M. Ikeda, R. Brooke Jeffrey, Peter Kane, Ralph Lachman, Barton Lane, Ann Leung, Craig Levin, Michael Marks, Tarik Massoud, Michael Moseley, Peter Moskowitz, Sandy Napel, Beverley Newman, Norbert J. Pelc, Allan Reiss, Brian Rutt, George Segall, F. Graham Sommer, Daniel Spielman, Daniel Y. Sze, Volney Van Dalsem, Joseph Wu

Professor (Research): R. Kim Butts-Pauly, Sylvia Plevritis

Associate Professors: Sandip Biswal, Francis Blankenberg, Frandics P. Chan, Terry Desser, Andrei H. Iagaru, Nishita Kothary, William Kuo, David Larson, John Louie, Eric W. Olcott, Sunita Pal, Geoffrey Riley, Erika Rubesova, Kathryn J. Stevens, Shreyas Vasanawala, Dorcas Yao, Greg Zaharchuk

Associate Professors (Research): Roland Bammer, Zhen Cheng, Heike Daldrup-Link, Rebecca Fahrig, Brian Hargreaves, Sylvia Plevritis, Jianghong Rao

Assistant Professors: Robert Dodd, Pejman Ghanouni, Howard Harvin, Gloria Hwang, Aya Kamaya, Sirisha Komakula, Amelie Lutz, Payam Massaband, Erik Mittra, Zina Payman, Peter Poullos, Jianghong Rao, Daniel Rubin, Rajesh Shah, Lewis Shin, Minal Vasanawala,David Wang, Joseph Wu, Kristen Yeom, Michael Zeineh, Ashwini, Zenooz

Assistant Professors (Research): Frederick T. Chin, Parag Mallick, Jennifer McNab, David Paik, Ramasamy Paulmurugan, Sharon Pitteri

Clinical Instructors: Bao Do, H. Henry Guo, Stefan Hura, Linda Morimoto

Courses

RAD 101. Readings in Radiology Research. 1-18 Unit.
Prerequisite: consent of instructor.

RAD 199. Undergraduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

RAD 201. Introduction to Radiology. 1 Unit.
This seminar is offered to pre-clinical medical students interested in learning about how image-based anatomy can reinforce their knowledge of gross anatomy as they progress through the term. This also serves as a refresher for MSII students. Within this seminar, students will explore image findings in human anatomy in the normal and diseased state. The course will also cover when to request X-Ray, Flouroscopy, Ultrasound, CT, MRI, and Nuclear Medicine. There will be time to explore Radiology as a career choice as well as research opportunities in Radiology.

RAD 202. Introduction to Cardiac Image Processing Techniques. 1 Unit.
Student lead: This course offers a unique opportunity for students to learn about the anatomy, function and physiology of the cardiovascular system by using advanced image processing technology based on CT and MRI. Students will learn to use different clinical software to visualize and interpret 3D and 4D images and to construct patient specific that can be used for surgical planning. Image data will be presented in the context of a clinical scenario, and student will learn about the cardiovascular anatomy and the pathogenesis of the disease being presented, while they practice image interpretation and model construction. The course will be held in the 3DQ Lab.

RAD 206. Mixed-Reality in Medicine. 3 Units.
Mixed reality uses transparent displays to place virtual objects in the user's field of vision such that they can be aligned to and interact with actual objects. This has tremendous potential for medical applications. The course aims to teach the basics of mixed-reality device technology, and to directly connect engineering students to physicians for real-world applications. Student teams would compete guided assignments on developing new mixed-reality technology and a final project applying mixed-reality to solve real medical challenges. Prerequisites: (1) Programming competency in a language such as C, C++. or Python. (2) A basic signal processing course such as EE102B (Digital Signal Processing). A medical imaging course, while not required, will be helpful. Please contact the instructors with any questions about prerequisites.

RAD 220. Introduction to Imaging and Image-based Human Anatomy. 3 Units.
Focus on learning the fundamentals of each imaging modality including X-ray Imaging, Ultrasound, CT, and MRI, to learn normal human anatomy and how it appears on medical images, to learn the relative strengths of the modalities, and to answer, "What am I looking at?" Course website: http://bioe220.stanford.edu.
Same as: BIOE 220

RAD 221. Physics and Engineering of Radionuclide-based Medical Imaging. 3 Units.
Physics, instrumentation, and algorithms for radionuclide-based medical imaging, with a focus on positron emission tomography (PET) and single photon emission computed tomography (SPECT). Topics include basic physics of photon emission from the body and detection, sensors, readout and data acquisition electronics, system design, strategies for tomographic image reconstruction, system calibration and data correction algorithms, methods of image quantification, and image quality assessment, and current developments in the field. Prerequisites: A year of university-level mathematics and physics.
Same as: BIOE 221

RAD 222. Physics and Engineering Principles of Multi-modality Molecular Imaging of Living Subjects. 3-4 Units.
Physics and Engineering Principles of Multi-modality Molecular Imaging of Living Subjects (RAD 222A). Focuses on instruments, algorithms and other technologies for non-invasive imaging of molecular processes in living subjects. Introduces research and clinical molecular imaging modalities, including PET, SPECT, MRI, Ultrasound, Optics, and Photoacoustics. For each modality, lectures cover the basics of the origin and properties of imaging signal generation, instrumentation physics and engineering of signal detection, signal processing, image reconstruction, image data quantification, applications of machine learning, and applications of molecular imaging in medicine and biology research.
Same as: BIOE 222

RAD 223. Physics and Engineering of X-Ray Computed Tomography. 3 Units.
CT scanning geometries, production of x-rays, interactions of x-rays with matter, 2D and 3D CT reconstruction, image presentation, image quality performance parameters, system components, image artirfacts, radiation dose. Prerequisites: differential and integral calculus. Knowledge of Fourier transforms (EE261) recommended.
Same as: BIOE 223

RAD 224. Probes and Applications for Multi-modality Molecular Imaging of Living Subjects. 4 Units.
We will focus on design, development, and application of imaging agents that target specific cellular and molecular aspects of disease. Covers the strengths and limitations of different imaging agents and how to optimize their design for image-guided intra-operative procedures, brain imaging, probing infection, or interrogating tumor metabolism. Emphasis this year will be on clinical molecular imaging, state-of-the-art strategies for early detection of dementia, imaging response to cancer immunotherapy, and how ¿Deep Learning¿ can be used for probe design and high-throughput automated image analysis.
Same as: BIOE 224

RAD 225. Intro to Ultrasound Physics and Ultrasound Neuromodulation. 3 Units.
This course covers the basic concepts of ultrasound physics including acoustic properties of biological tissues, transducer hardware, beam formation, and beam modeling. The course will then cover basic neuronal physiology and how ultrasound can be used to affect it. It will cover how we study ultrasound neuromodulation through animal models and human studies. The course will conclude with a series of lectures on the breadth of research on ultrasonic manipulation of behavior and psychiatric disorders.Course website: http://bioe225.stanford.edu.
Same as: BIOE 225

RAD 226. MRI Spin Physics, Relaxation Theory, and Contrast Mechanisms. 3 Units.
This course covers fundamental principles of magnetic resonance imaging (MRI) and spectroscopy (MRS) focusing on the analytic tools needed to understand interactions among nuclear spins, relaxation processes, and image contrast. Starting from a quantum mechanical description of NMR, we'll study J-coupling, the most mathematically tractable coupling mechanism, and its fundamental importance in MRS. Next, we will extend these concepts to develop NMR relaxation theory, which provides the foundation for analyzing multiple in vivo MRI contrast mechanisms and contrast agents.
Same as: BIOE 226

RAD 227. Functional MRI Methods. 3 Units.
Basics of functional magnetic resonance neuroimaging, including data acquisition, analysis, and experimental design. Journal club sections. Cognitive neuroscience and clinical applications. Prerequisites: basic physics, mathematics; neuroscience recommended.
Same as: BIOE 227, BIOPHYS 227

RAD 228. Magnetic Resonance Imaging Programming Topics. 3 Units.
Primarily for students working on research projects involving MRI pulse sequence programming. Introductory and student-initiated topics in seminars and hands-on labs. Image contrast mechanisms achieved by pulse sequences that control radiofrequency and gradient magnetic fields in real time, while acquiring data in an organized manner for image reconstruction. Prerequisites: EE 369B and consent of instructor.

RAD 229. MRI Sequences and Signals. 3 Units.
Magnetic Resonance Imaging (MRI) uses sequences of radiofrequency excitation and magnetic field gradients to generate a signal and form images. Numerous common and advanced sequences will be studied, including analysis techniques to predict signal and contrast levels, and to measure and reduce unwanted image artifacts. Prerequisite: EE 369B.

RAD 230. Ultrasound Instrumentation for Imaging and Therapy. 1-2 Unit.
This course teaches the physics, materials, modeling and processing steps involved in the design and fabrication of medical ultrasound transducers for diagnostic imaging and therapeutic applications. Students will learn how to consider various tradeoffs in the design and selection of clinical probes for particular uses, and a lab activity will reinforce the fundamentals of transducers and demonstrate how to assess probe performance in the real world.

RAD 235. Advanced Ultrasound Imaging. 3 Units.
The focus of this course is on advanced ultrasound imaging techniques for medical imaging applications. Topics include beamforming, adaptive beamforming, Fourier beamforming, synthetic aperture techniques, speckle, speckle reduction, k-space, harmonic imaging, coherence imaging, phase aberration, radiation force imaging, elastography, quantitative ultrasound, Doppler and flow imaging, ultrasounds modeling and advanced ultrasound theory.

RAD 260. Computational Methods for Biomedical Image Analysis and Interpretation. 3-4 Units.
The latest biological and medical imaging modalities and their applications in research and medicine. Focus is on computational analytic and interpretive approaches to optimize extraction and use of biological and clinical imaging data for diagnostic and therapeutic translational medical applications. Topics include major image databases, fundamental methods in image processing and quantitative extraction of image features, structured recording of image information including semantic features and ontologies, indexing, search and content-based image retrieval. Case studies include linking image data to genomic, phenotypic and clinical data, developing representations of image phenotypes for use in medical decision support and research applications and the role that biomedical imaging informatics plays in new questions in biomedical science. Includes a project. Enrollment for 3 units requires instructor consent. Prerequisites: programming ability at the level of CS 106A, familiarity with statistics, basic biology. Knowledge of Matlab or Python highly recommended.
Same as: BIOMEDIN 260, CS 235

RAD 280. Early Clinical Experience in Radiology. 1-2 Unit.
Provides an observational experience as determined by the instructor and student. Prerequisite: consent of instructor.

RAD 299. Directed Reading in Radiology. 1-18 Unit.
Prerequisite: consent of instructor.

RAD 301A. Diagnostic Radiology and Nuclear Medicine Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Selective 1. DESCRIPTION: This clerkship is currently offered in a completely virtual environment. This is the core radiology clerkship designed for students going into any medical subspecialty, including radiology. The three-week course has traditionally been lecture-based and provides a framework for understanding the role of various medical imaging modalities in diagnosis and management of a broad range of medical disorders. Emphasis is placed on learning the benefits and drawbacks of radiography, ultrasound, computed tomography, magnetic resonance imaging, nuclear medicine studies, and basic interventional techniques for application to clinical practice. Core concepts that apply across medical subspecialties, including radiation exposure, the utilization (and risks) of radiographic contrast agents, and effective ordering of imaging studies are covered. Students are taught by radiology faculty, fellows, and residents including sessions focused on essential topics in chest, abdominal, neurological, and musculoskeletal imaging. Sessions on pediatric imaging, breast imaging and obstetric ultrasound are also included. Online radiology texts and other web based materials will be made available to all participants. One quiz is administered at the end of the course and must be passed for credit. PREREQUISITES: Medicine 300A, Pediatrics 300A, or Surgery 300A strongly advised. Visiting students wishing to do this clerkship must receive prior approval from the Clerkship Coordinator before applying. PERIODS AVAILABLE: 5, 6, 11, and 12, full-time for three weeks, 22 students per period. CLERKSHIP DIRECTOR: Christopher Beaulieu, M.D., Ph.D. CLERKSHIP COORDINATOR: Ann Vo, 650-497-5407, annvo@stanford.edu. REPORTING INSTRUCTIONS: Where: Varies - P080, P083, P265, H2211 (instructions on Canvas); Time: Check schedule. CALL CODE: 2 - Optional Shadow Call with Radiology Resident Director. OTHER FACULTY: Radiology faculty, fellows, and residents. LOCATION: SUMC.

RAD 302A. Nuclear Medicine Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Acquaints students with the basic principles of nuclear medicine, the instrumentation used, the gamut of procedures available, and the judgments used to select specific diagnostic or therapeutic procedures and interpret results. The experience should be especially helpful for students planning a career in diagnostic radiology, nuclear medicine, cardiology, or oncology. The student experience includes instruction in radiologic physics, instrumentation, responsibility for selected isotopic procedures, daily teaching rounds for review of all cases studies, and special conferences. Please note: Visiting students must obtain approval from the Department prior to applying for this clerkship. Please email requests to Sofia Gonzales (sofias@stanford.edu). PREREQUISITES: Medicine 300A. PERIODS AVAILABLE: 1-16, full-time for three weeks, 1 student per period. CLERKSHIP DIRECTOR: Andrei Iagaru, M.D. CLERKSHIP COORDINATOR: Sofia Gonzales (650-724-9139), Room H2200. REPORTING INSTRUCTIONS: Where: Nuclear Medicine Clinic, Second Floor, C21; Time: 8:30 am. CALL CODE: 0. OTHER FACULTY: C. Aparici, G. Davidzon, B. Franc, F. Moradi. LOCATION: SUMC.

RAD 303A. Specialty Clerkship in Diagnostic Radiology. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Provides subspecialty radiology reading room experience for students considering a career in radiology or other specialties. Students work alongside residents, fellows, and faculty to actively interpret and communicate diagnostic radiology studies. Up to 12 students can be accommodated per session, with a maximum of two students on each subspecialty service at a time. Typically, students spend three weeks in each of two subspecialties. (Subspecialty rotations and interventional radiology are listed elsewhere in the course catalog.) For Rad 303A, subspecialty rotations include: Chest (primarily ICU radiographs and CT), Cardiovascular (inpatient and outpatient CT and MRI), Abdominal CT (primarily inpatient and emergency), Abdominal US (primarily inpatient and emergency), GI Fluoroscopy, Musculoskeletal (primarily radiography), Neuroradiology (inpatient and emergency), Body MRI, Pediatric Imaging, Breast Imaging, and Nuclear Medicine. Similar rotations are also possible at the Palo Alto Veterans Administration Medical Center. PREREQUISITES: Visiting students wishing to do this clerkship must receive prior approval from the Clerkship Coordinator before applying. Stanford students are asked to inform the clerkship coordinator of enrollment for coordination with subspecialty services. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 12 students per period. CLERKSHIP DIRECTOR: Christopher Beaulieu, M.D., Ph.D. CLERKSHIP COORDINATOR: Ann Vo, 650-497-5407, annvo@stanford.edu. REPORTING INSTRUCTIONS: Where: TBA (call 4-8 weeks prior); Time: TBA. CALL CODE: 2 - Shadow Call with Radiology Resident. OTHER FACULTY: Staff. LOCATION: SUMC.

RAD 304A. Pediatric Radiology Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Our clerkship is designed to give you an overview of the exciting field of pediatric radiology. The rotation includes a comprehensive curriculum including a wealth of didactic and clinical conferences, directed reading assignments, interactive online teaching modules, and image interpretation with our outstanding pediatric radiology faculty. You will be exposed to all radiologic imaging modalities including MRI, CT, ultrasound, fluoroscopy, and plain radiography and will have the unique opportunity to participate in perinatal imaging including prenatal ultrasound and fetal MRI. If time allows, additional exposure to Nuclear Medicine, Interventional Radiology, and Neuroradiology is available. Students will be expected to give a short presentation of an interesting imaging case to faculty and fellows at the end of their rotation. Visiting students wishing to do this clerkship must receive prior approval from Clerkship Coordinator before applying. PREREQUISITES: Radiology 301A or a similar general radiology clerkship or consent of instructor. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 2 students per period. CLERKSHIP DIRECTOR: Jayne Seekins, D.O. CLERKSHIP COORDINATOR: Ann Vo (650-497-5407, annvo@stanford.edu). REPORTING INSTRUCTIONS: Where: LPCH (Radiology Dept. Secretary); Time: 8:30 am. CALL CODE: 0. OTHER FACULTY: R. Barth, F. Blankenberg, F. Chan, H. Dahmoush, H. Daldrup-Link, L. Donnelly, D. Frush, C. Guimaraes, S. Halabi, S. Josephs, D. Larson, M. Lungren, H. Nadel, B. Newman, E. Rubesova, J. Seekins, A. Thakor, S. Vasanawala, K. Yeom, E. Zucker. LOCATION: LPCH.

RAD 305A. Interventional Radiology Clerkship. 5 Units.
VISITING: Open to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Interventional radiology (IR) has become integral to the practice of modern medicine. In 2013, the American Board of Medical Specialties recognized IR as a primary specialty distinct from diagnostic radiology. Subsequently, the ACGME approved the formation of a new IR residency training program (http://www.sirweb.org/clinical/IR_DR_cert.shtml), which has begun at Stanford. This 3 week elective introduces medical students to image-guided, minimally invasive vascular and nonvascular interventions and is appropriate for students considering residency training in IR as well as those interested in learning more about the field in general. Students will be exposed to a broad range of IR procedures, including interventional oncology, peripheral vascular (venous and arterial), genitourinary, gastrointestinal, and pediatric interventions. This elective provides students experience in basic IR skills such as vascular access, placement of venous access catheters and ports, and image-guided biopsies and drain placement. Students are encouraged to take part in more advanced procedures such as chemoembolization, radioembolization, and TIPS. Our service operates like a surgical subspecialty and students are expected to be an integral part of the IR team and actively participate in the pre-procedure evaluation and post-procedure care of our patients. Students may attend various departmental and interdepartmental conferences. Interested students are encouraged to give a short presentation on an interesting case at the end of the rotation. Note: Visiting students interested in rotating through this clerkship must receive prior approval from the Clerkship Coordinator before applying. PREREQUISITES: Surgery 300A, Medicine 300A and Radiology 301A recommended but not required. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 3 students per period. CLERKSHIP DIRECTOR: David S. Wang, M.D. CLERKSHIP COORDINATOR: Ann Vo, 650-497-5407, annvo@stanford.edu. REPORTING INSTRUCTIONS: Where: H3652; Time: 7:30 am. CALL CODE: 0. OTHER FACULTY: L. Hofmann, D. Hovsepian, G. Hwang, N. Kothary, W. Kuo, J. Louie, D. Sze. LOCATION: SUMC.

RAD 306A. Neuroradiology Clerkship. 5 Units.
VISITING: Open to visitors.TYPE OF CLERKSHIP. Elective. DESCRIPTION: Our clerkship provides students with further exposure to basic and advanced neuroimaging of the brain, spine, and head and neck. The curriculum will be tailored to the specific interests of the student incorporating participation in real-time read-out and consultations with our residents, fellows, physician colleagues, and Neuroradiology faculty, didactic and clinical conferences (e.g. weekly interesting case conference and tumor board). Students will learn the utility of CT and MRI in diagnosing and treating diseases of the central nervous system and head and neck in both the pediatric and adult populations and will also have the unique opportunity to participate in fluoroscopy-guided lumbar punctures for CSF collection, intrathecal chemotherapy administration, and myelograms. Students are expected to give a short presentation of a case of their choice to fellows and/or faculty at the end of the clerkship rotation. PREREQUISITES: Visiting students wishing to do this clerkship must receive prior approval from the clerkship coordinator before applying. Stanford students are asked to inform the clerkship coordinator of enrollment. Once enrollment is confirmed, students are asked to email the course co-director, Bryan Lanzman at bryan3@stanford.edu, for further details. PERIODS AVAILABLE: 1-16, full-time for 3 weeks, 1 student per period. CLERKSHIP DIRECTOR: Bryan Lanzman, M.D., Michael Iv, M.D., and Max Wintermark, M.D. CLERKSHIP COORDINATOR: Ann Vo, 650-497-5407, annvo@stanford.edu. REPORTING INSTRUCTIONS: Where: Grant S031A; Time: 9:00 am. CALL CODE: 0. OTHER FACULTY: Neuroradiology faculty. LOCATION: SUMC, LPCH.

RAD 370. Medical Scholars Research. 4-18 Units.
Provides an opportunity for student and faculty interaction, as well as academic credit and financial support, to medical students who undertake original research. Enrollment is limited to students with approved projects.

RAD 398A. Clinical Elective in Diagnostic Radiology & Nuclear Medicine. 5 Units.
VISITING: Closed to visitors. TYPE OF CLERKSHIP. Elective. DESCRIPTION: Provides an opportunity for a student in the clinical years to have a clinical experience in Diagnostic Radiology or Nuclear Medicine, of a quality and duration to be decided upon by the student and a faculty preceptor in the Department. The student must make individual arrangements with a faculty member in Diagnostic Radiology or Nuclear Medicine. Please note: Students cannot add 398A clerkships directly to their fishbowl schedules through the regular shuffles. Please contact Caroline Cheang in the Office of Medical Student Affairs at cheang@stanford.edu or 650-498-7619 with the faculty preceptor's name and email address to add this clerkship. PREREQUISITES: None for Diagnostic Radiology; Medicine 300A for Nuclear Medicine. Consent of the designated faculty preceptor and approval by Advisor. PERIODS AVAILABLE: 1-16. CLERKSHIP DIRECTOR: Christopher Beaulieu, M.D., Ph.D. CLERKSHIP COORDINATOR: Ann Vo, 650-497-5407, annvo@stanford.edu. REPORTING INSTRUCTIONS: Where: TBA (designated faculty preceptor); Time: TBA. CALL CODE: 2 (varies with preceptor). OTHER FACULTY: Staff. LOCATION: SUMC, LPCH.

RAD 399. Graduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

RAD 802. TGR Dissertation. 0 Units.
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STEM CELL BIOLOGY AND REGENERATIVE MEDICINE

Courses offered by the Program in Stem Cell Biology and Regenerative Medicine are listed under the subject code STEMREM on the Stanford Bulletin's Explore Courses web site.

Graduate Program in Stem Cell Biology and Regenerative Medicine

The Stanford Stem Cell Biology and Regenerative Medicine (SCBRM) program is dedicated to doctoral education that translates basic science to clinical applications, typically referred to as Translational Science, and of intense interest internationally in medical schools and universities. Our doctoral program provides exceptional didactic education and research experience in the basic sciences underlying stem cell biology. In addition, program participants will receive specialized training in the development and clinical application of discoveries in the basic sciences to achieve regenerative therapies. Thus, our graduates will be uniquely positioned to develop successful translational careers in Stem Cell Biology and Regenerative Medicine, and will emerge prepared to deliver on their passion to improve the human condition. The core curriculum is combined with unique research and clinical/professional immersion rotations to provide opportunities for doctoral students to specialize in the broad subject of translational medicine and yet focus specifically on fundamentals of SCBRM. The curriculum combines education in genetics and developmental biology with an introductory laboratory-based stem cell course, an advanced course in stem cell biology and regenerative medicine, and a clinical rotation with alternative opportunities in law, business and/or engineering.

The mission of the SCBRM graduate program is to produce future leaders in translational science through a combination of basic science and clinical/professional immersion. The program aims to be innovative and to change the landscape for graduate education in the biomedical sciences by having the immersion tailored to each student's translational goals. The program accommodates students who wish to focus primarily at the basic science level alongside those who wish to focus specifically on innovation such as a new device to solve a clinical problem. In the former case, the student might seek out a primary mentor affiliated with the basic sciences and take electives that reflect the more basic interest. In the latter case, the student might select an elective with an engineering focus and seek out primary mentorship with a more clinically or engineering focused mentor. In this way, graduates from our doctoral program receive exceptional didactic education and research experience and are well positioned to develop successful translational careers in SCBRM by applying their knowledge and passion to improve human health.

Master of Science in Stem Cell Biology and Regenerative Medicine

University requirements for the M.S. degree are described in the "Graduate Degree (p. 65)s" section of this bulletin.

Students in the Ph.D. program in SCBRM may apply for an M.S. degree in SCBRM, assuming completion of appropriate requirements. The program does not accept applications for a standalone M.S. degree.

To receive an M.S. in Stem Cell Biology and Regenerative Medicine, Students must complete the following:

1. Four full-tuition quarters of residency as a graduate student at Stanford.
2. At least 45 units of academic work, all of which must be in courses at or above the 100 level, 16 units of which must be at or above the 200 level.
3. Four quarters of graduate research, consisting of rotations in the labs of at least three SCBRM faculty members.
4. Course work in Stem Cell Biology and Regenerative Medicine as well as other core requirements:
   a. STEMREM 200 Stem Cell Intensive hands-on immersion to learn basic methods of tissue culture, mouse embryo fibroblast (MEF) preparation, embryonic stem and induced pluripotent stem (ES/iPS) cell culture, differentiation, DNA isolation, polymerase chain reaction (PCR), sequencing, and basic microscopy.
   b. BIOS 200 Foundations in Experimental Biology focuses on the broad themes of Evolution, Energy and Information.
   c. STEMREM 201A Stem Cells and Human Development: From Embryo to Cell Lineage Determination and STEMREM 201B Stem Cells and Human Development Laboratory develop a fundamental understanding of introductory stem cell principles in human development, aging, and disease accompanied by a laboratory-based module with immersion in stem cell-based methods (embryology, embryonic stem cells, reprogramming, adult stem cells).
   d. STEMREM 202 Stem Cells and Translational Medicine, advanced topics related to individual organ systems, cancer stem cells, translational principles of medicine and immunology as related to regenerative medicine, as well as bioengineering and bioinformatics as related to stem cell biology.
   e. STEMREM 203 Stem Cells Immersion: Applications in Medicine, Business and Law, students specialize and choose a clinical immersion, rotation in a biotechnology company or venture firm, or further delve into cutting edge technologies, bioinformatics, materials and/or engineering approaches for stem cell applications in industry, diagnostics and medicine.
   f. STEMREM 250 Regenerative Medicine Seminar Series, a forum for researchers to meet and discuss Stem Cell Biology and Regenerative Medicine and to spark collaborations. 6 units of this course is required.
   g. STEMREM 280 Stem Cell Biology and Regenerative Medicine Journal Club, review and discussion of current literature in both basic and translational medicine as it relates to stem cell biology and/or regenerative medicine.

		Units
STEMREM 200	Stem Cell Intensive	1
BIOS 200	Foundations in Experimental Biology	5
STEMREM 201A	Stem Cells and Human Development: From Embryo to Cell Lineage Determination	1-3
STEMREM 201B	Stem Cells and Human Development Laboratory	1
STEMREM 202	Stem Cells and Translational Medicine	1-3
STEMREM 203	Stem Cells Immersion: Applications in Medicine, Business and Law	3
STEMREM 250	Regenerative Medicine Seminar Series	1
STEMREM 280	Stem Cell Biology and Regenerative Medicine Journal Club	1
BIOC 224/BIO 214/ MCP 221	Advanced Cell Biology	4
GENE 205	Advanced Genetics	3
MED 255	The Responsible Conduct of Research	1
DBIO 210	Developmental Biology	4
STEMREM 399	Graduate Research	1-18

   h. Students are also required to take 2 electives, totaling a minimum of 6 units.

i. Biochemistry proficiency is required by the end of the second year, as well as a total of 80 units and completed qualifying examinations. Students who do not pass the qualifying examination may retake a full qualifying exam, be retested in a few areas, or be asked to redo their presentation.

5. Participation and attendance at the annual SCBRM Retreat.
6. The qualifying examination process in SCBRM before admission to Ph.D. candidacy has two parts:
   - Part I: a comprehensive written exam in the form of a 5-page NIH grant proposal
   - Part II: a 15-minute oral presentation of the proposal to the thesis committee followed by open questions from the qualifying exam committee on the proposal or encompassing areas of research/academic scholarship that are deemed relevant to the proposal.

Students who do not pass the qualifying exam may retake the full qualifying exam, be retested in a sub-area, or be asked to redo their presentation. Those students who fail the qualifying exam twice may be awarded a master's degree based on completion of course work and rotations. In addition, students who choose to voluntarily leave the program are also awarded a master's degree based on completion of the qualifying exam.

Doctor of Philosophy in Stem Cell Biology and Regenerative Medicine

University requirements for the Ph.D. are discussed in the "Graduate Degrees (p. 65)" section of this bulletin.

The Stem Cell Biology and Regenerative Medicine curriculum, combined with the research and rotation opportunities, provides a flexible educational opportunity for doctoral students to specialize in the broad subject of translational medicine while being focused more specifically on the fundamentals of Stem Cell Biology and Regenerative Medicine while training in the laboratories of participating SCBRM faculty. The goal of the SCBRM program is to provide an avenue for graduate education to translate the best of basic research into a clinical setting.

Application and Admission

Applications are made through the Graduate Admissions (http://gradadmissions.stanford.edu) web site.

Applicants will be assessed based on their undergraduate transcripts, test scores, research experience, statement of purpose and letters of recommendation that document exceptional potential, ability, or achievements.

Students admitted to the program are offered financial support covering tuition, a living stipend, and insurance coverage. Applicants are urged to apply for independent fellowships such as from the National Science Foundation. Fellowship applications are due in November of the year prior to matriculation in the graduate program, but SCBRM graduate students may continue to apply for outside fellowships after matriculation. Because of the small number of department-funded slots, students who have been awarded an outside fellowship have an improved chance of acceptance into the program. Upon matriculation, each student is assisted in selecting courses and lab rotations in the first year and in choosing a lab for the dissertation research. Once a dissertation adviser has been selected, a dissertation committee is composed to include the dissertation adviser and two additional SCBRM faculty, to guide the student during their dissertation research. The student must meet with the dissertation committee at least once a year.

Degree Requirements

Candidates for Ph.D. degrees at Stanford must satisfactorily complete a program of study that includes 135 units of graduate course work and research.

Requirements for the Ph.D. degree in SCBRM include:

1. Completion of at least 3 research rotations in the labs of SCBRM faculty members.
2. Completion of the following courses:
   a. STEMREM 200 Stem Cell Intensive hands-on immersion to learn basic methods of tissue culture, mouse embryo fibroblast (MEF) preparation, embryonic stem and induced pluripotent stem (ES/iPS) cell culture, differentiation, DNA isolation, polymerase chain reaction (PCR), sequencing, and basic microscopy.
   b. BIOS 200 Foundations in Experimental Biology focuses on the broad themes of Evolution, Energy and Information.
   c. STEMREM 201A Stem Cells and Human Development: From Embryo to Cell Lineage Determination and STEMREM 201B Stem Cells and Human Development Laboratory develop a fundamental understanding of introductory stem cell principles in human development, aging, and disease accompanied by a laboratory-based module with immersion in stem cell-based methods (embryology, embryonic stem cells, reprogramming, adult stem cells).
   d. STEMREM 202 Stem Cells and Translational Medicine advanced topics related to individual organ systems, cancer stem cells, translational principles of medicine and immunology as related to regenerative medicine, as well as bioengineering and bioinformatics as related to stem cell biology.
   e. STEMREM 203 Stem Cells Immersion: Applications in Medicine, Business and Law students specialize and choose a clinical immersion, rotation in a biotechnology company or venture firm, or further delve into cutting edge technologies, bioinformatics, materials and/or engineering approaches for stem cell applications in industry, diagnostics and medicine.
   f. STEMREM 250 Regenerative Medicine Seminar Series a forum for researchers to meet and discuss Stem Cell Biology and Regenerative Medicine and to spark collaborations. 6 units of this course is required.
   g. STEMREM 280 Stem Cell Biology and Regenerative Medicine Journal Club review and discussion of current literature in both basic and translational medicine as it relates to stem cell biology and/or regenerative medicine.
3. Students have the option to select from the following courses in the first year:

		Units
STEMREM 200	Stem Cell Intensive	1
BIOS 200	Foundations in Experimental Biology (Offered in Autumn and Spring)	5
STEMREM 201A	Stem Cells and Human Development: From Embryo to Cell Lineage Determination	1-2
STEMREM 201B	Stem Cells and Human Development Laboratory	1
STEMREM 202	Stem Cells and Translational Medicine	3-5
STEMREM 203	Stem Cells Immersion: Applications in Medicine, Business and Law	3
STEMREM 250	Regenerative Medicine Seminar Series	1
STEMREM 280	Stem Cell Biology and Regenerative Medicine Journal Club	1
BIOC 224/BIO 214/MCP 221	Advanced Cell Biology	4
GENE 205	Advanced Genetics	3

MED 255	The Responsible Conduct of Research	1
DBIO 210	Developmental Biology	4
STEMREM 399	Graduate Research	1-18
Total Units		29-49

4. Students are also required to take two electives, totaling a minimum of 6 units.
5. Biochemistry proficiency is required by the end of the second year, as well as a total of 80 units and completed qualifying examinations. Students who do not pass the qualifying examination may retake a full qualifying exam, be retested in a few areas, or be asked to redo their presentation.
6. STEMREM 802 TGR Dissertation.

Students unable to meet Ph.D. milestones after remediation are offered a M.S. degree if they have completed all requirements.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

The Stanford Stem Cell Biology and Regenerative Medicine program counts all courses taken in the academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B-' or better level.

Graduate Advising Expectations

The Program in Stem Cell Biology and Regenerative Medicine is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Program Director: Irv Weissman

Institute Faculty:

- Arash A. Alizadeh (Assistant Professor, Medicine/Oncology and Member of Bio-X, Child Health Research Institute and Stanford Cancer Institute)
- Philip A. Beachy (Professor, Institute for Stem Cell Biology and Regenerative Medicine, Department of Biochemistry and Developmental Biology and Member of Bio-X and Stanford Cancer Institute)
- Charles K.F. Chan (Assistant Professor, Surgery - Plastic & Reconstructive Surgery, and Member of Bio-X, Institute for Stem Cell Biology and Regenerative Medicine)
- Michael F. Clarke (Professor, Institute for Stem Cell Biology and Regenerative Medicine and Department of Medicine/Oncology and Member of Bio-X and Stanford Cancer Institute)
- Tushar Desai (Assistant Professor, Medicine/Pulmonary & Critical Care Medicine and Member of Bio-X, Child Health Research Institute and Stanford Cancer Institute)
- Maximilian Diehn (Assistant Professor, Radiation Oncology/Radiation Therapy and Member of Bio-X and Stanford Cancer Institute)
- Agnieszka Czechowicz, (Assistant Professor, Department of Pediatrics and Member of Bio-X, Institute for Stem Cell Biology and Regenerative Medicine, Maternal & Child Health Research Institute)
- Stefan Heller (Professor, Otolaryngology/Head and Neck Surgery and Member of Bio-X, Stanford Cancer Institute and Stanford Neurosciences Institute)
- Sidd Jaiswal (Assistant Professor of Pathology, Member of Bio-X, Cardiovascular Institute, Cancer Institute, Institute for Stem Cell Biology and Regenerative Medicine)
- Kyle Loh (Assistant Professor, Developmental Biology and Member of Bio-X, Institute for Stem Cell Biology and Regenerative Medicine, Stanford Neurosciences Institute, and Faculty Fellow)
- Michael T. Longaker (Professor, Surgery/Plastic and Reconstructive Surgery, and (by courtesy) Bioengineering and Materials Science and Engineering and Member of Bio-X, Child Health Research Institute and Stanford Cancer Institute)
- Ravindra Majeti (Associate Professor, Medicine/Hematology and Member of Bio-X and Stanford Cancer Institute)
- Michelle Monje-Deisseroth (Assistant Professor, Neurology & Neurological Sciences and Member of Bio-X, Child Health Research Institute, Stanford Cancer Institute and Stanford Neurosciences Institute)
- Hiromitsu Nakauchi (Professor, Institute for Stem Cell Biology and Regenerative Medicine and Department of Genetics and Member of Bio-X)
- Aaron Newman (Assistant Professor, Department of Biomedical Data Science, Member of Bio-X and Institute for Stem Cell Biology and Regenerative Medicine)
- Roeland Nusse (Professor, Developmental Biology and Member of Bio-X and Stanford Cancer Institute)
- Anthony Oro (Professor, Dermatology and Member of Bio-X, Child Health Research Institute and Stanford Cancer Institute)
- Theo D. Palmer (Associate Professor, Neurosurgery and Member of Bio-X, Child Health Research Institute, Stanford Cancer Institute and Stanford Neurosciences Institute)
- Matthew Porteus (Associate Professor, Pediatrics/Stem Cell Transplantation and Member of Bio-X, Cardiovascular Institute, Child Health Research Institute and Stanford Cancer Institute)
- Kristy Red-Horse (Associate Professor, Biology, Member of Bio-X, Cancer Institute, Institute for Biology and Regenerative Medicine)
- Maria Grazia Roncarolo (Professor, Pediatrics/Stem Cell Transplantation and Medicine/Blood & Marrow Transplantation and Member of Bio-X, Child Health Research Institute and Stanford Cancer Institute)

- Vittorio Sebastiano (Assistant Professor, Obstetrics & Gynecology/ Reproductive Biology and Member of Bio-X and Child Health Research Institute)
- Judith Shizuru (Professor, Medicine/Blood & Marrow Transplantation and Member Stanford Cancer Institute)
- Irving L. Weissman (Professor, Institute for Stem Cell Biology and Regenerative Medicine, Department of Pathology and Developmental Biology and (by courtesy) Department of Biology and Member of Bio-X and Stanford Cancer Institute)
- Gerlinde Wernig (Assistant Professor, Pathology, Member of Bio-X, Institute for Biology and Regenerative Medicine)
- Marius Wernig (Professor, Institute for Stem Cell Biology and Regenerative Medicine and Department of Pathology and (by courtesy) Chemical & Systems Biology and Member of Bio-X, Child Health Research Institute, Stanford Cancer Institute and Stanford Neurosciences Institute)
- Joanna Wysocka (Professor, Chemical & Systems Biology and Developmental Biology and Member Bio-X and Stanford Cancer Institute)

Courses

STEMREM 199. Undergraduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

STEMREM 200. Stem Cell Intensive. 1 Unit.
Open to first year Stem Cell Biology and Regenerative Medicine graduate students or consent of Instructor. Introductory lectures given by faculty in the Stem Cell Biology and Regenerative Medicine interdisciplinary graduate program are intended to provide students with insight into potential rotation labs. Includes some hands-on laboratory exercises covering basic methods of tissue culture, mouse embryo fibroblast (MEF) preparation, embryonic stem and induced pluripotent stem (ES/iPS) cell culture, differentiation, DNA isolation, polymerase chain reaction (PCR), sequencing, flow cytometry, and basic microscopy.

STEMREM 201A. Stem Cells and Human Development: From Embryo to Cell Lineage Determination. 1-3 Unit.
For graduate, medical, and advanced undergraduate students. Prepares students for the future of regenerative medicine by exploring central concepts in stem cell biology and the actual experiments that led to these concepts. Provides educational foundation for future physician-scientists to understand mechanisms underlying regenerative therapies. The latest advances in stem cell research will be discussed, including tissue regeneration; how stem cells are discovered by lineage tracing or transplantation; how stem cells differentiate and form organized tissues; stem cell niches; signaling centers and extracellular signals; chromatin and cellular reprogramming; organoids; and cancer stem cells, with emphasis on unresolved issues in the field.

STEMREM 201B. Stem Cells and Human Development Laboratory. 1 Unit.
Targeted enrollment to first year graduate students or any other student who wishes to improve their ability to design, perform, analyze, and communicate results from laboratory-based experiments. Content early in the quarter is focused on how to design an experimental aim and approach. Practical examples are drawn from the participating students¿ fall-quarter research rotations (or current research projects). In mid-quarter, the focus shifts from how to design the experiment to how to update the PI on this week¿s experimental progress and the weekly meeting emulates a typical lab meeting with brief presentations of experimental progress from each student. Focus shifts at the end of the quarter to strategies for concise presentation of data and conclusions drawn from experimental results. Provides hands-on skills to maximize both the student¿s experience during a research rotation and to improve communication skills between student and mentor (skills that are valuable to any student at any stage of their research career). SCBRM students must take concurrently with STEMREM 201A.

STEMREM 202. Stem Cells and Translational Medicine. 1-3 Unit.
For graduate, undergraduate and medical students. Focus is on the fundamentals of stem cell biology and stem cell applications in basic research and translational medicine. Topics include exploration of the well-studied system of hematopoiesis, molecular pathways of pluripotency and tissue-specific stem cells and ends with coverage of aging as related to stem cell dynamics. Lectures are topically paired to cover the basic science of each topic, followed by clinical applications within each field of study. Students will use lecture and literature content to construct a research proposal based on biological or clinical concepts learned during the quarter.

STEMREM 203. Stem Cells Immersion: Applications in Medicine, Business and Law. 3 Units.
For graduate and medical students enrolled in the SCBRM PhD program or other students by permission from the Instructor. Career-development immersions are custom designed by the student and advisor to provide clinical, pharmaceutical, biotechnology or business insights into the world of stem cell biology and regenerative medicine from multiple vantage points. The Immersion sets the stage for students to explore research and translation beyond the academic sphere and gain the necessary knowledge to move their career forward when completing the PhD.

STEMREM 205. Bioinformatics for Stem Cell and Cancer Biology. 2 Units.
For graduate and medical students. High-throughput technologies and data science are essential tools in modern stem cell biology and cancer research. Students will gain practical exposure to bioinformatics concepts and techniques required to address biological questions within these research areas. The beginning of the quarter is focused on foundational principles underlying bioinformatics and genomics. Focus for the remainder of the quarter is on direct, hands-on experience with applications to common research problems. Topics include analysis of bulk and single-cell sequencing data, single gene to whole-genome analysis, machine learning, and data visualization. Intended for biology students without a background in computer science, or for students in a quantitative discipline interested in gaining exposure to key challenges in stem cell and cancer genomics. Basic programming experience is recommended but not required.

STEMREM 223. Biology and Disease of Hematopoiesis. 3 Units.
Hematopoiesis is the formation, development, and differentiation of blood cells. Lecture and journal club. Topics will include definitive and adult hematopoiesis, myeloid and lymphoid development, hematopoietic diseases, stem cell niche, bone marrow transplant, and methods and models used to study hematopoiesis. For upper level undergraduates or graduate students. Pre-requisite for undergraduates: Biology or Human Biology core, or consent of instructor.
Same as: IMMUNOL 223

STEMREM 250. Regenerative Medicine Seminar Series. 1 Unit.
For graduate, medical and undergraduate students. A forum for Stanford researchers to meet, hear about what is going on in Stem Cell Biology and Regenerative Medicine at Stanford, and spark collaborations. Topics include all areas of regenerative medicine, broadly defined, ranging from fundamental biological principles and basic science advances to novel applications in biotechnology, stem cell biology, and human disease.

STEMREM 280. Stem Cell Biology and Regenerative Medicine Journal Club. 1 Unit.
For graduate, medical and undergraduate students. Review of current literature in both basic and translational medicine as it relates to stem cell biology and/or regenerative medicine in a seminar format consisting of both faculty and student presentations. Includes discussions led by faculty experts in the area covered for that particular session. Topics may range widely, depending on the available literature and students' interests. Students are expected to review the chosen article before class presentations and participate in discussion. Discussion includes methodology and statistical analysis of each study and its relevance to stem cell biology and/or regenerative medicine.

STEMREM 281. Landmark Papers in Immunology and Stem Cell Biology: How to Pose Experimental Questions. 2 Units.
Focus on deciphering article titles to accurately assess the biological question being asked, and what experiment design might best approach the question, encouraging students to become experimentalists, not memorizers, of information presented by authors. Topics include implications of paper questions for the field, deciphering paper titles, hypothesizing research questions.

STEMREM 299. Directed Reading in Stem Cell Biology and Regenerative Medicine. 1-18 Unit.
Prerequisite: consent of instructor.

STEMREM 370. Medical Scholars Research. 4-18 Units.
Provides an opportunity for student and faculty interaction, as well as academic credit and financial support, to medical students who undertake original research. Enrollment is limited to students with approved projects.

STEMREM 399. Graduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

STEMREM 801. TGR Project. 0 Units.
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STEMREM 802. TGR Dissertation. 0 Units.
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STRUCTURAL BIOLOGY

Courses offered by the Department of Structural Biology are listed under the subject code SBIO on the (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=SBIO&filter-catalognumber-SBIO=on) Stanford Bulletin's (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=SBIO&filter-catalognumber-SBIO=on) ExploreCourses web site (http://explorecourses.stanford.edu/CourseSearch/search/?view=catalog&catalog=&page=0&q=SBIO&filter-catalognumber-SBIO=on).

The department offers course work and opportunities for research in structural biology.

The emphasis of research in the department is on understanding fundamental cellular processes in terms of the structure and function of biological macromolecules and their assemblies. Techniques used include standard methods of biochemistry, cell culture, single-molecule fluorescence spectroscopy, genetic engineering, and three dimensional structure determination by x-ray diffraction, nuclear magnetic resonance spectroscopy and electron microscopy, coupled with the development of computational methods.

Doctor of Philosophy in Structural Biology

Admission

Applicants to the program should have a bachelor's degree and should have completed at least a year of coursework in biology, mathematics, organic chemistry, physical chemistry, and physics. Applications must be received by the department before December 15 for notification by April 15. Application to the National Science Foundation for fellowship support is also encouraged. Prospective applicants should contact the Department of Structural Biology for further information. GRE general score is optional and GRE subject score is not required.

The recommendations for applying to the Ph.D. program in the Department of Structural Biology include:

		Units
CHEM 123	Organic Polyfunctional Compounds	3
CHEM 171	Foundations of Physical Chemistry	4
CHEM 173	Physical Chemistry II	3
CHEM 175	Physical Chemistry III	3
BIOC 200	Applied Biochemistry	2

Graduate Studies:

Ph.D. students in the Department of Structural Biology are required to complete all the following requirements:

		Units
BIOS 200	Foundations in Experimental Biology	5
SBIO 241	Biological Macromolecules	3-5
or BIOE 300A	Molecular and Cellular Bioengineering	
SBIO 242	Methods in Molecular Biophysics (offered every other year)	3
BIOPHYS 250	Seminar in Biophysics	1
MED 255	The Responsible Conduct of Research	1
AND, at least 3 additional graduate level courses in physical or biological science, with		
at least 1 course in physical science		
at least 1 course in literature-based biological science		

1. The graduate program is intended to prepare students for careers as independent investigators in cell and molecular biology. The principal requirement of a Ph.D. degree is the completion of research constituting an original and significant contribution to the advancement of knowledge. It is a training in a major with connections to biophysics (e.g., physics, chemistry, or biology, with a quantitative background equivalent to that of an undergraduate physics or chemistry major at Stanford).
2. Opportunities for teaching are available during the first nine quarters at the discretion of the advising committee.
3. The student must prepare a dissertation proposal defining the research to be undertaken including methods of procedure. This proposal should be submitted by the end of summer quarter of the second year, and it must be approved by a committee of at least three members including the principal research adviser and at least one member from the Department of Structural Biology. The candidate must defend the dissertation proposal in an oral examination. The dissertation reading committee normally evolves from the dissertation proposal review committee.
4. The student must present a Ph.D. dissertation as the result of independent investigation and expressing a contribution to knowledge in the field of structural biology.
5. The student must pass the University oral examination, taken only after the student has substantially completed the research. The examination is preceded by a public seminar in which the research is presented by the candidate.

Current topics of research in the department lie in the areas of gene expression; theoretical, crystallographic, and genetic analysis of protein structure; and cell-cell interaction. See Stanford's School of Medicine (http://www.med.stanford.edu/school/structuralbio/) web site for further information.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (p.)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a “credit” or “no credit” grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a “credit” or “satisfactory” grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Graduate Degree Requirements

Grading

The Department of Structural Biology counts all courses taken in academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of graduate degree requirements that otherwise require a letter grade provided that the instructor affirms that the work was done at a 'B-' or better level.

Graduate Advising Expectations

The Department of Structural Biology is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the

adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (p. 80)" section of this bulletin.

Chair: William I. Weis

Associate Chair: Michael Levitt

Director of Graduate Studies: Theodore Jardetzky

Professors:

- K. Christopher Garcia
- Theodore Jardetzky
- Roger D. Kornberg
- Michael Levitt
- Peter Parham
- Joseph D. Puglisi
- Georgios Skiniotis
- Soichi Wakatsuki
- William I. Weis

Associate Professor (Research):

- Yahli Lorch

Assistant Professor (Research):

- Elizabetta Viani Puglisi

Associate Professor:

- Adam de la Zerda

Courtesy Professor:

- Axel Brunger
- Vijay Pande

Courtesy Associate Professor:

- Zev Bryant

Courses

SBIO 199. Undergraduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

SBIO 225. Biochips and Medical Imaging. 3 Units.
The course covers state-of-the-art and emerging bio-sensors, bio-chips, imaging modalities, and nano-therapies which will be studied in the context of human physiology including the nervous system, circulatory system and immune system. Medical diagnostics will be divided into bio-chips (in-vitro diagnostics) and medical and molecular imaging (in-vivo imaging). In-depth discussion on cancer and cardiovascular diseases and the role of diagnostics and nano-therapies.
Same as: EE 225, MATSCI 225

SBIO 241. Biological Macromolecules. 3-5 Units.
The physical and chemical basis of macromolecular function. Topics include: forces that stabilize macromolecular structure and their complexes; thermodynamics and statistical mechanics of macromolecular folding, binding, and allostery; diffusional processes; kinetics of enzymatic processes; the relationship of these principles to practical application in experimental design and interpretation. The class emphasizes interactive learning, and is divided among lectures, in-class group problem solving, and discussion of current and classical literature. Enrollment limited to 30. Prerequisites: Background in biochemistry and physical chemistry recommended but material available for those with deficiency in these areas; undergraduates with consent of instructor only.
Same as: BIOC 241, BIOE 241, BIOPHYS 241

SBIO 242. Methods in Molecular Biophysics. 3 Units.
Experimental methods in molecular biophysics from theoretical and practical standpoints. Emphasis is on X-ray diffraction, electron microscopy, nuclear magnetic resonance, and fluorescence spectcroscopy. Prerequisite: physical chemistry or consent of instructor.
Same as: BIOPHYS 242

SBIO 251. Biotechnology in the Natural World. 1 Unit.
Life can be found in some of the strangest and most inhospitable places of Earth. Whether in hot springs, oceanic depths, or dense rainforests, living organisms must be natural specialists to survive. This course explores a selection of strange and ingenious biomolecules that natural organisms have evolved in order to survive. Lectures will cover historical background as well as detailed investigations of the structure and function of selected biomolecules of interest. The majority of each lecture and discussion will focus on the adaptation of those molecules for fundamental and innovative approaches in modern biotechnology, especially in medicine and biophotonics. Key biophysical and biochemical techniques will be discussed as they are encountered within primary literature.
Same as: BIOS 251

SBIO 280. Curricular Practical Training. 1 Unit.
CPT Course required for international students completing degree requirements.

SBIO 299. Directed Reading in Structural Biology. 1-18 Unit.
Prerequisite: consent of instructor.

SBIO 370. Medical Scholars Research. 4-18 Units.
Provides an opportunity for student and faculty interaction, as well as academic credit and financial support, to medical students who undertake original research. Enrollment is limited to students with approved projects.

SBIO 399. Graduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

SBIO 801. TGR Project. 0 Units.
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SBIO 802. TGR Dissertation. 0 Units.
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OTHER OFFICES

These pages list various offices, centers, laboratories, and institutes of direct relevance to study at Stanford. The listings are not all-inclusive.

- A comprehensive list of Stanford offices is available on the University's A to Z Index page (http://www.stanford.edu/atoz/).
- A comprehensive list of Independent Labs, Institutes and Centers (http://doresearch.stanford.edu/research-scholarship/interdisciplinary-laboratories-centers-and-institutes/)

ATHLETICS

Contacts

Office: Arrillaga Family Sports Center
Mail Code: 94305-6150
Phone: (650) 723-4591
Web Site: http://gostanford.com (http://gostanford.com/)

Our Mission

From its founding in 1891, Stanford University's leaders have believed that physical activity is valuable for its own sake and that vigorous exercise is complementary to the educational purposes of the university. Within this context for human development, it is the mission of Stanford Athletics to offer a wide range of high quality programs which will encourage and facilitate all participants to realize opportunities for championship athletic participation, physical fitness, health and well being.

Principles That Guide Us

We Will Teach

- By encouraging our student-athletes to capture all the joy, power and extraordinary personal growth that comes to those who compete and support athletic excellence.
- By hiring and retaining the best coaches and staff members available and arming them with the tools to achieve at the highest level.
- By fostering and nurturing a coaching, physical education and recreation staff that is committed to teaching with integrity and ambition and that performs in a manner which is consistent with the academic priorities of Stanford University.
- By recognizing the need to work as a team while valuing each individual's unique characteristics and abilities.
- By committing ourselves to the personal development and well being of our student-athletes and staff. Those who participate at all levels will learn the benefits of teamwork, discipline, goal setting, physical fitness, healthy lifestyles, character development, self confidence, sportsmanship, and an appreciation for lifelong learning.

We Will Lead

- By being the model of success, of universal opportunity, and of unwavering commitment to the ideal of the scholar-athlete.
- By operating with integrity as we follow the spirit and the letter of each rule. Integrity will be displayed in our policies, performances and programs.
- By continuing our long history of conference and national prominence through a commitment to cutting edge involvement in athletic issues.

We Will Win

- By maximizing our effort in every competition, on every team and in every setting where skill, determination and hard work combine to achieve singularly successful results.
- By having an uncompromising commitment to Conference and National championships and by providing each student-athlete with the tools necessary to be successful at the highest levels of both academic and athletic performance.
- By creating a commitment to a university-wide wellness culture that will allow Stanford students, faculty and staff to maximize their health and fitness opportunities throughout their lives.

We Will Serve

- By respecting, honoring and responding to the needs of our student-athletes, coaches, colleagues, advocates and members of our larger community.
- By encouraging innovation and creativity. We will harness technology to extend our reach and to interface with our various internal and external constituencies.
- Through fiscal responsibility in all elements of departmental operations.
- By advancing outreach as a fundamental component of the department, we will strive to enhance the overall mission of the University through competitive excellence, effective outreach and an on-going commitment to customer service.
- By utilizing the department resources and physical facilities to serve the campus community, our alumni and our supporters throughout the world.
- By valuing our heritage, and in doing so we commit ourselves to championship caliber athletic achievement and the on-going enhancement of the traditions of Stanford Athletics, including leadership, individual and team achievement and intense pride and loyalty.

Courses

Courses offered for intercollegiate and club sport athletes are listed under the subject code ATHLETIC (https://explorecourses.stanford.edu/search/?view=catalog&academicYear=&page=0&q=ATHLETIC&filter-departmentcode-ATHLETIC=on&filter-coursestatus-Active=on) on the Stanford Bulletin's ExploreCourses (https://explorecourses.stanford.edu/browse/) web site. Courses are activity classes (ACT) and carry 1-2 units of credit for satisfactory completion of work. Although there is no limitation on the number of activity classes in which a student may enroll, no more than 8 units of these activity classes (and/or other University activity classes) may be applied toward undergraduate graduation requirements. See the "Credit (p. 37)" tab of the "Undergraduate Degrees (p. 31)" section of this bulletin for complete information. Course fees, as applicable, are posted to the student's University account.

Men's Intercollegiate Teams

Below are links to the website of each Men's Team with information about rosters, coaches, schedules, statistics, news, history, tickets, promotions, and additional information.

- Baseball (http://www.gostanford.com/?path=bsb)
- Basketball (http://www.gostanford.com/?path=mbball)
- Cross Country (http://www.gostanford.com/?path=xc)
- Fencing (http://www.gostanford.com/?path=fenc)
- Football (http://www.gostanford.com/?path=football)
- Golf (http://www.gostanford.com/?path=mgolf)
- Gymnastics (http://www.gostanford.com/?path=mgym)
- Rowing (http://www.gostanford.com/?path=mrow)
- Sailing (http://www.gostanford.com/?path=sail)
- Soccer (http://www.gostanford.com/?path=msoc)
- Swimming and Diving (http://www.gostanford.com/?path=mswim)
- Tennis (http://www.gostanford.com/?path=mten)
- Track and Field (http://www.gostanford.com/?path=track)

- Volleyball (http://www.gostanford.com/?path=mvball)
- Water Polo (http://www.gostanford.com/?path=mwpolo)
- Wrestling (http://www.gostanford.com/?path=wrestling)

Women's Intercollegiate Teams

Below are links to the website of each Women's Team with information about rosters, coaches, schedules, statistics, news, history, tickets, promotions, and additional information.

- Basketball (http://www.gostanford.com/?path=wbball)
- Beach Volleyball (http://www.gostanford.com/?path=bvball)
- Cross Country (http://www.gostanford.com/?path=xc)
- Fencing (http://www.gostanford.com/?path=fenc)
- Field Hockey (http://www.gostanford.com/?path=fhockey)
- Golf (http://www.gostanford.com/?path=wgolf)
- Gymnastics (http://www.gostanford.com/?path=wgym)
- Lacrosse (http://www.gostanford.com/?path=wlax)
- Rowing (http://www.gostanford.com/?path=wrow)
- Lightweight Rowing (http://www.gostanford.com/?path=row_lt)
- Sailing (http://www.gostanford.com/?path=sail)
- Soccer (http://www.gostanford.com/?path=wsoc)
- Softball (http://www.gostanford.com/?path=softball)
- Squash (http://www.gostanford.com/?path=wsquash)
- Swimming and Diving (http://www.gostanford.com/?path=wswim)
- Synchronized Swimming (http://www.gostanford.com/?path=syncswim)
- Tennis (http://www.gostanford.com/?path=wten)
- Track and Field (http://www.gostanford.com/?path=track)
- Volleyball (http://www.gostanford.com/?path=wvball)
- Water Polo (http://www.gostanford.com/?path=wwpolo)

Academic Services

Academic Advising (https://undergrad.stanford.edu/) provides academic advising, programming, and support for students as they shape their Stanford education. In guiding students to engage with faculty and in supporting students' personal and intellectual development, UAR encourages students to explore the full breadth and depth of their intellectual opportunities, to find their intellectual homes, and to discover a sense of belonging at Stanford. Academic advisers for student-athletes are housed in the Athletic Academic Resource Center (AARC) and are the primary undergraduate advising contact for varsity student-athletes. AARC advisers are full-time, professional staff within Undergraduate Advising and Research who partner closely with colleagues across campus to provide a comprehensive network of support that promotes a student's academic success and furthers his or her intellectual goals.

Sports Performance

Stanford's Sports Medicine Program is dedicated to providing the best possible medical care for the student athlete's injuries and illnesses. The program is unique in its team approach to health care, as the Team Physicians (http://ortho.stanford.edu/lacob/physicians.html), Athletic Trainers (http://www.stanfordsportsmedicine.com/?page_id=53), Physical Therapists (http://www.stanfordsportsmedicine.com/physical-therapy/), and Sports Scientists (http://ortho.stanford.edu/humanperformance/personnel.html) all collaborate on the care provided to each athlete. The team physicians provide diagnosis, treatment, arrange for consultations, order lab tests, x-rays and MRIs, and make decisions on the participation status. Athletic trainers work under the supervision of our team physicians to provide prevention, evaluation, and treatment of athletic injuries. Physical therapists design specific programs for rehabilitation and communicate directly with the athletic trainer, physician, and sports performance coaches. Sport Scientists work with coaches and athletes to test and analyze athletes using state-of-the-art motion capture, biomechanics and physiology equipment.

Sports Psychology Services

The mission of Stanford Athletics Sport Psychology Services is to provide psychological services to Stanford University student-athletes that foster mental health and well-being, promote excellence in educational and athletic goals, and contribute to a safe, welcoming, and multiculturally aware athletic department and campus community.

Stanford Athletics has had an ongoing and collaborative relationship with the Department of Psychiatry and Behavioral Sciences to provide integrated behavioral health services to Stanford student-athletes, including a full-service sport psychology program.

- Dr. Kelli Moran-Miller (http://www.gostanford.com/staff.aspx?staff=208), Director of Sport Psychology for Stanford Athletics, is a licensed psychologist, a certified consultant with the Association of Applied Sport Psychology, and a member of the USOC registry. She uses a strengths-based, solution-focused, and student-centered approach to assist student-athletes in the achievement of personal, educational, and sport goals. Her office is in the Sports Medicine Center.
- *Dr. Lisa Post,* Director of Sports Medicine in Psychiatry, is a licensed psychologist who specializes in working with collegiate and professional athletes and coordinates referrals and care within the Department of Psychiatry and Behavioral Sciences. Her office is on campus at 401 Quarry.

Services

Sport Psychology Services offers confidential personal counseling, performance psychology consulting, psychological rehabilitation from injury, career counseling, medication evaluation and management, and specialized care referrals. Team-centered workshops for varsity teams, crisis intervention, and consultation with coaches and athletic department staff also are available.

Individual sessions provide a unique opportunity to explore issues that may be preventing you from reaching your potential athletically, academically, or personally.

Team-centered workshops are designed to address the unique goals of the participating team and to provide memorable active learning experiences to build team unity, reinforce team mission and vision, clarify team goals, roles, and responsibilities or teach mental skills.

The Jaquish & Kenninger Director of Athletics: Bernard Muir

Deputy Athletics Director: Patrick Dunkley

Deputy Director of Athletics: Ray Purpur

Executive Associate Athletics Director: Beth Goode

Executive Associate Athletics Director • External Relations: Tommy Gray

Executive Associate Athletics Director: Heather M. Owen

Executive Associate Athletics Director: Brian Talbott

Senior Associate Athletics Director • Facilities, Operations and Events: Jamie Breslin

Associate Athletics Director • Finance & Business Operations: Brian Favat

Associate Athletics Director • Compliance Services: Jacquelyn Kulgevich

Associate Athletics Director • Corporate Partnerships: Adam Requarth

Associate Athletics Director • Development: Adam Schneberger

Associate Athletics Director • Academic Services: Melissa Stringer

Courses

ATHLETIC 1. Thriving in Athletics: Health and Wellness Concepts. 2 Units.
Develops the understanding, self-awareness, confidence, and skills necessary for students to serve as a resource for their peers in the areas of building resilience, promoting wellbeing, and supporting emotional balance. Examines personal values, identity, signature strengths, self-care and stress management practices, signs and symptoms of common mental health concerns, and barriers for care-seeking in the student population. Develops skills for enhancing personal well-being, communication, connecting students with existing resources, and promoting a culture of support, health and wellness.

ATHLETIC 3. PUBLIC HEALTH. 0-60 Units.
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ATHLETIC 10. Varsity sport experience. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator.

ATHLETIC 11. Athletic Team Manager. 1 Unit.
For student managers of intercollegiate teams. Limit 1 credit per quarter with a maximum of 8 credits able to be applied towards graduation. Prerequisite: consent of respective varsity team head coach. May repeat for credit.

ATHLETIC 12. VARSITY - Baseball. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.

ATHLETIC 13. VARSITY - Basketball. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Men

ATHLETIC 14. VARSITY - Basketball. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Women

ATHLETIC 15. VARSITY - Cross Country. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Men

ATHLETIC 16. VARSITY - Cross Country. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Women

ATHLETIC 17. VARSITY - Track and Field. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Men

ATHLETIC 18. VARSITY - Track and Field. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Women

ATHLETIC 19. VARSITY - Fencing. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Men

ATHLETIC 20. VARSITY - Fencing. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Women

ATHLETIC 21. VARSITY - Field Hockey. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.

ATHLETIC 22. VARSITY - Football. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.

ATHLETIC 23. VARSITY - Golf. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Men

ATHLETIC 24. VARSITY - Golf. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Women

ATHLETIC 25. VARSITY - Gymnastics. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Men

ATHLETIC 26. VARSITY - Gymnastics. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Women

ATHLETIC 27. VARSITY - Lacrosse. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.

ATHLETIC 28. VARSITY - Rowing. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Men

ATHLETIC 29. VARSITY - Rowing. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Women

ATHLETIC 30. VARSITY - Lightweight Rowing. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.

ATHLETIC 31. VARSITY - Sailing. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Men

ATHLETIC 32. VARSITY - Sailing. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Women

ATHLETIC 33. VARSITY - Soccer. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Men

ATHLETIC 34. VARSITY - Soccer. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Women

ATHLETIC 35. VARSITY - Softball. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.

ATHLETIC 36. VARSITY - Squash. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.

ATHLETIC 37. VARSITY - Swimming. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Men

ATHLETIC 38. VARSITY - Swimming. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Women

ATHLETIC 39. VARSITY - Diving. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Men

ATHLETIC 40. VARSITY - Diving. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Women

ATHLETIC 41. VARSITY - Synchronized Swimming. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.

ATHLETIC 42. VARSITY - Tennis. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Men

ATHLETIC 43. VARSITY - Tennis. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Women

ATHLETIC 44. VARSITY - Volleyball. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Men

ATHLETIC 45. VARSITY - Volleyball. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Women

ATHLETIC 46. VARSITY - Beach Volleyball. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.

ATHLETIC 47. VARSITY - Water Polo. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Men

ATHLETIC 48. VARSITY - Water Polo. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.
Same as: Women

ATHLETIC 49. VARSITY - Wrestling. 1-2 Unit.
Designed for the Varsity Athlete; conditioning; practice; game preparation; and weight training. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. Prerequisite: Must be a Varsity Athlete in the specific sport; Permission of appropriate sport administrator. May repeat for credit.

ATHLETIC 50. Olympic Training. 1-2 Unit.
Designed for students training for Olympic competition; conditioning; practice; competition preparation; weight training; and leadership skill development. Limit 2 credits per quarter with a maximum of 8 activity units may be applied towards graduation. nnPrerequisite: Must be a verified candidate for an Olympic team with a specified training schedule calling for at least 30 hours (1 unit) or 60 hours (2 units) of training time in the 10 week quarter. Instructor approval required. May repeat for credit.

ATHLETIC 60. CLUB - Sport Experience. 1 Unit.
This course is offered to club sport athletes who participate on credit approved Club Sports teams. Teams who are eligible to receive credit, are required to have a coach and/or administrator to supervise their class. All teams and athletes on the team must complete 30 hours of participation during the quarter. To be eligible for credit, teams must practice 2x a week for a maximum total of 4 hours and participate in 1-3 competitions in the quarter. Prerequisite: Permission of club sport administrator. May repeat for credit. A maximum of 8 activity units may be applied towards graduation.

ATHLETIC 61. CLUB - Martial Arts Experience. 1 Unit.
This course is offered to Martial Arts athletes who participate on credit approved Martial Arts teams. All teams and athletes on the team must complete 30 hours of participation during the quarter. To be eligible for credit, teams must practice 2x a week for a maximum total of 4 hours and participate in 1-3 competitions in the quarter. Prerequisite: Permission of martial arts administrator. May repeat for credit. A maximum of 8 activity units may be applied towards graduation.

ATHLETIC 62. CLUB - Band. 1 Unit.
This course is offered to club members who participate on credit approved Club Sports teams. All members must complete 30 hours of participation during the quarter. To be eligible for credit, the club must practice 2x a week for a maximum total of 4 hours and participate in 1-3 events in the quarter. Prerequisite: Permission of club sport administrator. May repeat for credit. A maximum of 8 activity units may be applied towards graduation.

ATHLETIC 63. CLUB - Climbing. 1 Unit.
his course is offered to club sport athletes who participate on credit approved Club Sports teams. All teams and athletes on the team must complete 30 hours of participation during the quarter. To be eligible for credit, teams must practice 2x a week for a maximum total of 4 hours and participate in 1-3 competitions in the quarter. Prerequisite: Permission of club sport administrator. May repeat for credit. A maximum of 8 activity units may be applied towards graduation.

ATHLETIC 64. CLUB - Equestrian. 1 Unit.
This course is offered to club sport athletes who participate on credit approved Club Sports teams. All teams and athletes on the team must complete 30 hours of participation during the quarter. To be eligible for credit, teams must practice 2x a week for a maximum total of 4 hours and participate in 1-3 competitions in the quarter. Prerequisite: Permission of club sport administrator. May repeat for credit. A maximum of 8 activity units may be applied towards graduation.

ATHLETIC 65. CLUB - Rugby. 1 Unit.
This course is offered to club sport athletes who participate on credit approved Club Sports teams. All teams and athletes on the team must complete 30 hours of participation during the quarter. To be eligible for credit, teams must practice 2x a week for a maximum total of 4 hours and participate in 1-3 competitions in the quarter. Prerequisite: Permission of club sport administrator. May repeat for credit. A maximum of 8 activity units may be applied towards graduation.
Same as: Men

ATHLETIC 66. CLUB - Rugby. 1 Unit.
This course is offered to club sport athletes who participate on credit approved Club Sports teams. All teams and athletes on the team must complete 30 hours of participation during the quarter. To be eligible for credit, teams must practice 2x a week for a maximum total of 4 hours and participate in 1-3 competitions in the quarter. Prerequisite: Permission of club sport administrator. May repeat for credit. A maximum of 8 activity units may be applied towards graduation.
Same as: Women

ATHLETIC 67. CLUB - Squash. 1 Unit.
This course is offered to club sport athletes who participate on credit approved Club Sports teams. All teams and athletes on the team must complete 30 hours of participation during the quarter. To be eligible for credit, teams must practice 2x a week for a maximum total of 4 hours and participate in 1-3 competitions in the quarter. Prerequisite: Permission of club sport administrator. May repeat for credit. A maximum of 8 activity units may be applied towards graduation.
Same as: Men

CENTERS, LABORATORIES, INSTITUTES

Independent research laboratories, centers, and institutes perform multidisciplinary research that extends beyond the scope of any one of the University's organized schools. The listings are not all-inclusive. A comprehensive list of Stanford offices is available on the University's A to Z Index page (http://www.stanford.edu/atoz/).

The following tabs contain information on programs for undergraduates:

- Arts Institute (p. 1079)
  - Interdisciplinary Honors in the Arts Program
  - Arts Immersion
  - Creative Cities
- Center for Spatial and Textual Analysis (CESTA) (https://cesta.stanford.edu)
  - Graduate Certificate of Digital Humanities
- Center for the Study of Poverty and Inequality (CPI (p. 2513))
  - Certificate Program on Poverty and Inequality
- Freeman Spogli Institute for International Studies (FSI) (p. 2515)
  - Interschool Honors Program in Democracy, Development, and the Rule of Law
  - Interschool Honors Program in International Security Studies

Office of Vice Provost and Dean of Research

Vice Provost and Dean of Research: Ann M. Arvin

Office: 450 Serra Mall, Main Quadrangle, Building 60
Mail Code: 94305-2064
Phone: 650-723-8789 / Fax 650-723-0662
Web Site: http://stanford.edu/dept/DoR (http://stanford.edu/dept/DoR/)
Office Fax: 650-723-0662

The following independent Laboratories, Centers, and Institutes report to the Vice Provost and Dean of Research:

Biological and Life Sciences

- Bio-X, the interdisciplinary program related to bioengineering, biomedicine, and biosciences, http://biox.stanford.edu (http://biox.stanford.edu/)
- Spectrum (formerly the Stanford Center for Clinical and Translational Education and Research), http://spectrum.stanford.edu (http://spectrum.stanford.edu/)

Environmental Sciences

- Precourt Institute for Energy, http://pie.stanford.edu/
  - Precourt Energy Efficiency Center, http://peec.stanford.edu (http://peec.stanford.edu/)
  - Global Climate and Energy Project (G-CEP), http://gcep.stanford.edu (http://gcep.stanford.edu/)
- Woods Institute for the Environment, http://woods.stanford.edu (http://woods.stanford.edu/)

Humanities and Social Sciences

- Center for Advanced Study in the Behavioral Sciences (CASBS), http://www.casbs.org (http://www.casbs.org/)
- Center for the Study of Language And Information (CSLI), http://www-csli.stanford.edu (http://www-csli.stanford.edu/)
- Freeman Spogli Institute for International Studies (FSI), http://fsi.stanford.edu (http://fsi.stanford.edu/)
  - Center on Democracy, Development, and the Rule of Law (CDDRL), http://cddrl.stanford.edu (http://cddrl.stanford.edu/)
  - Stanford Health Policy (Center for Health Policy/Center for Primary Care and Outcomes Research), http://healthpolicy.stanford.edu (http://healthpolicy.stanford.edu/)
  - Center for International Security and Cooperation (CISAC) http://cisac.stanford.edu (http://cisac.stanford.edu/)
  - Walter H. Shorenstein Asia-Pacific Research Center (Shorenstein APARC), http://aparc.stanford.edu (http://aparc.stanford.edu/)
  - The Europe Center, http://tec.stanford.edu
  - Program on Food Security and the Environment, http://fse.stanford.edu (http://fse.stanford.edu/)
  - Inter-University Center for Japanese Language Studies (IUC), http://www.stanford.edu/dept/IUC (http://stanford.edu/dept/IUC/)
  - Program on Energy and Sustainable Development (PESD), http://pesd.stanford.edu (http://pesd.stanford.edu/)
  - Stanford Program on International and Cross-Cultural Education (SPICE), http://spice.stanford.edu (http://spice.stanford.edu/)
- Human-Sciences and Technologies Advance Research Institute (H-STAR), http://hstar.stanford.edu (http://hstar.stanford.edu/)
  - Media-X, http://mediax.stanford.edu (http://mediax.stanford.edu/)
  - Stanford Center for Innovations in Learning (SCIL), http://scil.stanford.edu (http://scil.stanford.edu/)
- Stanford Center on Longevity (SCL), http://longevity.stanford.edu (http://longevity.stanford.edu/)
- Stanford Humanities Center, http://shc.stanford.edu (http://shc.stanford.edu/)
- Stanford Institute for Economic Policy Research (SIEPR), http://siepr.stanford.edu (http://siepr.stanford.edu/)

Physical Sciences

- Edward L. Ginzton Laboratory, http://stanford.edu/group/ginzton (http://stanford.edu/group/ginzton/)
- Geballe Laboratory for Advanced Materials (GLAM), http://stanford.edu/group/glam (http://stanford.edu/group/glam/)
- Kavli Institute for Particle Astrophysics and Cosmology (KIPAC), http://www-group.slac.stanford.edu/kipac (http://www-group.slac.stanford.edu/kipac/), operated jointly with SLAC National Accelerator Laboratory
- Photon Ultrafast Laser Science and Engineering (PULSE), http://pulse.slac.stanford.edu (http://pulse.slac.stanford.edu/), operated jointly with SLAC National Accelerator Laboratory
- Stanford Institute for Materials and Energy Sciences (SIMES), http://simes.slac.stanford.edu (http://simes.slac.stanford.edu/), operated jointly with SLAC National Accelerator Laboratory
- W. W. Hansen Experimental Physics Laboratory (HEPL), http://hepl.stanford.edu (http://hepl.stanford.edu/)

Centers Reporting to the Dean of Humanities and Sciences

- Center for Space Science and Astrophysics (http://www.stanford.edu/group/CSSA/)
- Center for Spatial and Textual Analysis (CESTA) (https://cesta.stanford.edu)
  - CESTA offers a graduate Certificate of Digital Humanities program
- Institute for Research in the Social Sciences (http://iriss.stanford.edu) (IRiSS)
  - Stanford Center for Population Research (http://iriss.stanford.edu/scpr/) (SCPR)

- Stanford Center for the Study of Poverty and Inequality (http://iriss.stanford.edu/CPI/) (CPI)
- Stanford Center for American Democracy (https://iriss.stanford.edu/ANES/) (SCAD)
- Stanford Center on Philanthropy and Civil Society (http://pacscenter.stanford.edu) (PACS)
- Center for Computational Social Science (https://css-center.stanford.edu/)
- Immigration and Integration Policy Lab (http://immigrationlab.stanford.edu/)
- Center for the Advancement of Research through Online Learning (CAROL)

- Michelle R. Clayman Institute for Gender Research (http://gender.stanford.edu)
- Morrison Institute for Population and Resource Studies (http://www.stanford.edu/group/morrinst/)
- Stanford Arts Institute (http://arts.stanford.edu/arts-institute/)

Stanford Center on Poverty and Inequality

Certificate Program on Poverty and Inequality

The Stanford Center on Poverty and Inequality (CPI) monitors and publicizes trends in poverty and inequality, publishes the country's leading magazine on poverty and inequality (*Pathways Magazine*), supports research on the causes of poverty and inequality, and examines the effects of public policy on poverty and inequality. The center carries out these activities with ten research groups addressing the following topics:

- poverty measurement and trends
- educational access and achievement
- income inequality
- social mobility
- safety net use
- recession and recovery effects
- spatial segregation
- racial and ethnic inequality
- discrimination, poverty, and the labor market
- Hispanic poverty, inequality, and mobility.

The Certificate in Poverty and Inequality recognizes undergraduates who have developed expertise in one or more of these research areas. The certificate is conferred as soon as the coursework and research requirements listed below are completed. Although the certificate does not appear on an official University transcript, it provides formal recognition of a rigorous program of study in the field of poverty and inequality.

Admission

Applications to the CPI certificate program are available on the CPI web site (http://www.stanford.edu/group/scspi/) and may be filed at any time. Admitted students are assigned an adviser who assists in planning coursework and providing research opportunities within CPI. Contact CPI (inequality@stanford.edu) with any questions.

Requirements

The student's course and research plan, which is submitted with the application, should meet the four requirements listed below.

1. *Core Foundation Course:* (SOC 140 Introduction to Social Stratification. This required introductory course examines the causes and consequences of poverty, inequality, and mobility. It is available as both a regular and online course.
2. *Elective Foundation Course:* The second foundation course is selected from among the normative, empirical, and policy courses listed below. These courses examine the principles by which certain types of living conditions may be deemed unjust or impoverished (i.e., normative analysis), the social processes and forces by which poverty and inequality are generated and maintained (i.e., empirical analysis), and the types of policies and interventions that might reduce or increase poverty and inequality (i.e., policy analysis).

Elective Foundation Courses		Units
Normative Foundation		
ETHICSOC 136R	Introduction to Global Justice	4
ETHICSOC 171	Justice	4-5
INTNLREL 136R	Introduction to Global Justice	4
PHIL 76	Introduction to Global Justice	4
PHIL 171	Justice	4-5
POLISCI 136R	Introduction to Global Justice	4
PUBLPOL 103C	Justice	4-5
Empirical Foundation		
SOC 144	Inequality and the Workplace	5
Policy Foundation		
ECON 11N	Understanding the Welfare System	3
SOC 135	Poverty, Inequality, and Social Policy in the United States	3-4

3. *Research Project:* Students must complete a research paper on poverty or inequality. Students are invited to join one of the ten CPI research groups and become involved in an ongoing CPI research project that might become the basis for their research paper. Alternatively, students write an independent research paper rather than joining a CPI Research Group. The research paper may either take the form of a research proposal or an empirical research project based on quantitative or qualitative methods. This paper should be completed while the student is enrolled in Independent Study with a CPI faculty affiliate (http://www.stanford.edu/group/scspi/).
4. *Additional Elective:* Students must take an elective course with a poverty or inequality focus. This requirement may be satisfied by taking an additional foundation course from the list provided above or by taking any of the preapproved elective courses listed below. Additionally, other unlisted courses addressing issues of poverty and inequality may also satisfy this requirement, although such courses require CPI approval (which is requested by submitting the Course Approval Form (http://www.stanford.edu/group/scspi/)). It is recommended that approval be secured in advance of taking an unlisted course. If a new applicant to the certificate program wishes to count a completed course toward the requirements, that should be indicated on the application form and, if necessary, the Course Approval Form (http://www.stanford.edu/group/scspi/) should be filled out).

Preapproved Elective Courses		Units
Poverty		
EARTHSYS 106	World Food Economy	5
ECON 11N	Understanding the Welfare System	3
ECON 106	World Food Economy	5
SOC 135	Poverty, Inequality, and Social Policy in the United States	3-4
Educational Access and Achievement		
ECON 146	Economics of Education	5
EDUC 102	Examining Social Structures, Power, and Educational Access	2-4
EDUC 173	Gender and Higher Education: National and International Perspectives	3-4

EDUC 181	Multicultural Issues in Higher Education	4
EDUC 221A	Policy Analysis in Education	4-5
EDUC 232	Culture, Learning, and Poverty	2-3
SOC 134	Gender and Education in Global and Comparative Perspectives	3-4
SOC 173	Gender and Higher Education: National and International Perspectives	3-4
Income Inequality		
POLISCI 127P	Economic Inequality and Political Dysfunction	5
SOC 14N	Inequality in American Society	4
SOC 117D	Recognizing Inequality	3
Social Mobility		
EDUC 102	Examining Social Structures, Power, and Educational Access	2-4
SOC 144	Inequality and the Workplace	5
Safety Net		
ECON 11N	Understanding the Welfare System	3
PUBLPOL 101	Introduction to American Politics and Policy: The Good, The Bad, and The Ugly	4-5
Recession and Recovery		
SOC 114D	Sociology of the Great Recession	5
Spatial Segregation		
SOC 149	The Urban Underclass	4
Racial and Ethnic Income Inequalities		
CSRE 45Q	Understanding Race and Ethnicity in American Society	4
CSRE 145	Race and Ethnic Relations in the USA	4
NATIVEAM 139	American Indians in Contemporary Society	4
SOC 45Q	Understanding Race and Ethnicity in American Society	4
SOC 46N	Race, Ethnic, and National Identities: Imagined Communities	3
SOC 139	American Indians in Contemporary Society	4
SOC 145	Race and Ethnic Relations in the USA	4
Discrimination and the Labor Market		
ECON 11N	Understanding the Welfare System	3
ECON 118	Development Economics	5
ECON 145	Labor Economics	5
SOC 142	Sociology of Gender	3
SOC 144	Inequality and the Workplace	5
Poverty, Inequality, and Mobility among Hispanics		
CHILATST 125S	Chicano/Latino Politics	5
CHILATST 166	Mexicans, Mexican Americans, and Chicanos in American Society	5
POLISCI 125S	Chicano/Latino Politics	5
SOC 165	Seminar on the Everday Lives of Immigrants	5
SOC 166	Mexicans, Mexican Americans, and Chicanos in American Society	5

Graduate Certificate in Digital Humanities

Overview

The Center for Spatial and Textual Analysis (CESTA) offers a Graduate Certificate in Digital Humanities (GCDH) to meet a growing need among the humanities for training in digital methods by leveraging existing resources at Stanford University. The Graduate Certificate in Digital Humanities allows graduate students to acquire and deepen their technical and conceptual skills as well as to strengthen their position in the competitive job market within and beyond the academy. The certificate program has been established as a pilot program from 2014 -17.

Completion of the program results in a Certificate, signed by the CESTA director and the chair of the doctoral student's home department.

The Graduate Certificate in Digital Humanities is issued by the Center for Spatial and Textual Analysis (CESTA) and will not appear on any University record, including the student's transcript.

Contact

Office: Wallenberg Hall, 450 Serra Mall, Building 160
Mail Code: 94305-2084
Phone: (650) 721-1385

Fax: (650) 725-5916
Web Site: http://cesta.stanford.edu

Staff

Core Faculty: Mark Algee-Hewitt, Franco Moretti, Richard White, Dan Edelstein, Paula Findlen, Giovanna Ceserani, Walter Scheidel, Elaine Treharne, Amir Eschel, Zephyr Frank

Affiliated CESTA Faculty: Allyson Hobbs, Edith Scheffer, Caroline Winterer, Mark McGurl, Ana Minian, Mikael Wolfe.

CESTA Staff, Affiliates, and others: Celena Allen (GIS), Erik Steiner (visualization design and cartography), Ryan Heuser (programming), Nicole Coleman (information design and visualization), Jason Heppler (digital history), Elijah Meeks (information design), Karl Grossner (information design and cartography).

Admission

Admission to the program is on a rolling basis, and students may apply at any time. Submit a letter of interest and any supporting information to CESTA Lab Manager Matt Bryant (mattbryant.stanford@gmail.com) at mattbryant.stanford@gmail.com. For more information about the new GDCH program or CESTA in general, see the program's web site (http://cesta.stanford.edu/gcdh/).

Course work

Students wishing to take part in the first cohort starting in 2014-15 and thereafter are expected to complete one GCDH-approved graduate core course for a letter grade, and one additional approved elective course. The approved core courses for the first year of the program are:

- HISTORY 401A Spatial History: Concepts, Methods, Problems
- ENGLISH 303C
- DLCL 396 Humanities+Design: Visualizing the Grand Tour (same as CLASSICS 396, HISTORY 336E)

Students who have completed any of the core courses, or equivalent courses taught by members of the program, in past years are eligible to move to the next step in the GCDH program.

Following or concurrent with the completion of the required core course, students must complete the following two certificate components:

1. Additional course work (1 or more classes, may be taken credit/no credit, and must be approved in advance by the committee in charge) in computer science, information design, statistics, network analysis, linguistics, or other fields approved by the student's supervisor and the CESTA committee in charge. A list of course recommendations is forthcoming.

2. One of the following:
   a. Independent research project and portfolio including a finished project which is evaluated and approved by an Academic Council supervisor and accepted as an affiliated project in one of CESTA's labs. The duration of such projects must be a minimum of one academic quarter. Students may take up to 5 units of credit of directed reading for the purpose of completing the independent research project. Final projects are included in the student's ePortfolio and published on the CESTA web site.
   b. Supervised collaborative research in a CESTA lab with the expectation that the student's participation culminates in a digital humanities product substantially of the authorship of the student; this must be a minimum of two quarters in duration. The student's portion of the research is included in the ePortfolio and published on the CESTA web site.

Freeman Spogli Institute for International Studies (FSI)

Contacts

Office: Encina Hall Center, First Floor, 616 Serra Street
Mail Code: 94305-6055
Phone: 650-723-4581 / Fax 650-725-2592
Web Site: http://fsi.stanford.edu/

The Freeman Spogli Institute for International Studies (FSI) provides opportunities for undergraduate research through the CDDRL Undergraduate Honors Program and the CISAC Interschool Honors Program in International Security Studies.

Interschool Honors Program in Democracy, Development, and the Rule of Law

Director: Stephen J. Stedman

The Center on Democracy, Development, and the Rule of Law (CDDRL) Undergraduate Senior Honors Program provides students majoring in any Stanford academic department the opportunity to conduct an independent honors thesis focused on the fields of democracy, development, and the rule of law. Students are required to complete a three quarter long honors research seminar that begins Spring Quarter of the junior year. They will spend the last quarter of the senior year working independently with their faculty adviser to complete and submit their honors thesis ahead of their formal defense in mid-May. Upon fulfilling individual department course requirements and completing the honors program, students graduate with a certificate in Honors in Democracy, Development, and the Rule of Law.

Students interested in the program consult with their prospective honors advisers in their junior year to determine the tentative thesis topic, which should have some degree of policy relevance. Prerequisites for the program include; a 3.5 grade-point average at the time they apply; a strong overall academic record; sufficient depth and breadth in the fields of democracy, economic and social development, rule of law, and human rights course work; and demonstrated skills in writing and conducting independent research.

Students are required to attend honors college in Washington, D.C. in September before Autumn Quarter classes begin. Applicants are discouraged from studying abroad during the duration of the CDDRL Undergraduate Honors program.

Required Course Work

Two courses that explore the areas of democracy, development, and the rule of law to be approved by the faculty director. CDDRL's flagship undergraduate lecture course taught during Autumn Quarter, which ideally should be completed before the student enters the honors program. DDRL Honors Research Methods Seminars meet on a weekly basis to present their project theses and receive feedback.

Typical Schedule for CDDRL Honors Program

Junior	Units		
	Autumn	Winter	Spring
Select one of the following:		5	
Democracy, Development, and the Rule of Law (INTNLREL 114D)			
Democracy, Development, and the Rule of Law (POLISCI 114D)			
DDRL 189 Honors Research Methods			3
Year Total:		5	3

Senior	Units		
	Autumn	Winter	Spring
DDRL 190 Honors Research Workshop		3	
DDRL 190 Honors Research Workshop			3
DDRL 191 Independent Study (Optional)[1]			
Year Total:		3	3

Total Units in Sequence:	14

[1] Optional any quarter during senior year for 1-5 units, repeatable once for credit.

Admitted students must be able to fulfill all course requirements in their individual majors by the time they graduate, in addition to the units required for the honors program. For more information, contact Kristin Chandler, CDDRL Administrative Manager at kdchandl@stanford.edu or go to http://cddrl.stanford.edu/.

Interschool Honors Program in International Security Studies

Co-Directors: Rod Ewing, Amy Zegart

The Center for International Security and Cooperation (CISAC) coordinates a University-wide Interschool Honors Program in International Security Studies. Students chosen for the honors program intern with a security-related organization (prior to the start of senior year), attend the program's honors college in Washington, D.C., in September, participate in a year-long core seminar, and under the direction of a faculty advisor produce an honors thesis relevant to international security policy. Upon fulfilling individual department course requirements and completing the honors program, students graduate in their major with the award of Honors in International Security Studies. To be considered for the program, students must demonstrate sufficient depth and breadth of international security course work.

- Students must be enrolled at Stanford for all three quarters of the 2020-21 academic year (Autumn, Winter, Spring) to participate in CISAC honors.
- Students who elect to take a leave of absence for any part of the 2020-21 academic year are encouraged to reapply to honors for 2021-22. Given the small size of the program and the large number of applications, the program is unable to offer deferred admissions.
- The deadline for informing the program that a student intends to take a leave of absence and withdraw from CISAC honors is August 1, 2020.

		Units
Successful applicants to the program are expected to have taken:		
MS&E 193	Technology and National Security: Past, Present, and Future	3-4

POLISCI 114S	International Security in a Changing World	5
and at least one related course such as		4-5
ECON 106	World Food Economy	5
HISTORY 103F	The Changing Face of War: Introduction to Military History	5
HUMBIO 129S	Global Public Health	3
INTNLREL 114D	Democracy, Development, and the Rule of Law	5
INTNLREL 140A	International Law and International Relations	5
LAW 5013	International Law (formerly LAW 479)	4
MS&E 93Q		3
MS&E 190		3
POLISCI 42Q	The Rwandan Genocide	5
POLISCI 110D	War and Peace in American Foreign Policy	5
PUBLPOL 101/ POLISCI 102	Introduction to American Politics and Policy: The Good, The Bad, and The Ugly	4-5
SOC 160	Formal Organizations	4

Students in the program enroll in IIS 199 Interschool Honors Program in International Security Studies, in Autumn, Winter, and Spring quarters for 3-5 credits per quarter (9-12 total credits). Information about this program may be obtained from the Center for International Security and Cooperation (CISAC), Encina Hall, cisachonors@stanford.edu, or the CISAC Interschool Honors Program in International Security Studies (https://cisac.fsi.stanford.edu/education/honors-program/) website.

Center for Space Science and Astrophysics

Emeriti: (Professors) Robert Cannon, (Professors, Research) Donald L. Carpenter, Aldo V. daRosa, Daniel B. DeBra, W.Gary Ernst, Von R. Eshleman, Antony Fraser-Smith, Robert A. Helliwell, Bruce B. Lusignan, Ronald J. P. Lyon, Laurence A. Manning, Bradford W. Parkinson, J. David Powell, Peter A. Sturrock, G. Leonard Tyler, Robert V. Wagoner

Director: Roger W. Romani

Associate Directors: Umran S. Inan, Philip H. Scherrer

Professors: Roger Blandford (Physics, SLAC), Elliot Bloom (SLAC), Lambertus Hesselink (Electrical Engineering), Umran S. Inan (Electrical Engineering), Steven Kahn (Physics, SLAC), Tune Kame (SLAC), Peter F. Michelson (Physics), Vahé Petrosian (Physics), Roger W. Romani (Physics), Norman H. Sleep (Geophysics), Guenther Walther (Statistics), Howard Zebker (Electrical Engineering, Geophysics)

Associate Professors: Tom Abel (Physics, SLAC), Steve Allen (Physics, SLAC), Sarah Church (Physics),

Assistant Professors: Stefan Funk (Physics, SLAC), Chao-Lin Kuo (Physics, SLAC), Risa Wechsler (Physics, SLAC)

Professors (Research): C-W. Francis Everitt (HEPL), Philip H. Scherrer (Physics)

SLAC Staff Physicist: Grzegorz Madejski

Center Offices: Varian, Room 340

Mail Code: 94305-4060

Phone: (650) 723-1439

Email: danav@stanford.edu

Web Site: http://www.stanford.edu/dept/astro (http://www.stanford.edu/dept/astro/)

The Center for Space Science and Astrophysics is an interdepartmental organization coordinating research in space science and astrophysics. Its members are drawn from the Department of Geological and Environmental Sciences in the School of Earth Sciences; the departments of Aeronautics and Astronautics, Electrical Engineering, and Mechanical Engineering in the School of Engineering; the departments of Applied Physics, Physics, and Statistics in the School of Humanities and Sciences; the W. W. Hansen Experimental Physics Laboratory; and the SLAC National Accelerator Laboratory. Its membership also includes all faculty and appropriate staff at the Kavli Institute for Particle Astrophysics and Cosmology, located at SLAC and the Physics department.

The facilities of the center are available to any interested and qualified student, who must be admitted by and registered in a department. The departments of Aeronautics and Astronautics, Applied Physics, Electrical Engineering, Mechanical Engineering, and Physics offer opportunities leading to an M.S. or Ph.D. degree for work in space science or astrophysics. The center also offers opportunities to undergraduates who may, for instance, participate in research projects in their junior or senior years, on a part-time basis during the school year or on a full-time basis during the summer. The Astronomy Course Program operates a small student observatory where students may gain practical experience in astronomical observing.

Other Academic Programs and Centers, and Independent Research Laboratories, Centers, and Institutes

- Hoover Institution on War, Revolution and Peace, http://www.hoover.org (http://www.hoover.org/)
- SLAC National Accelerator Laboratory (SLAC), http://www.slac.stanford.edu (http://www.slac.stanford.edu/)
- Stanford Synchrotron Radiation Laboratory (SSRL), http://ssrl.slac.stanford.edu (http://www-ssrl.slac.stanford.edu/)

CONTINUING STUDIES

The Continuing Studies Program provides adults from the surrounding communities the opportunity to take courses for the purpose of intellectual enrichment. Courses and events are offered in all four academic quarters, with over 400 courses planned throughout the year. The Continuing Studies Program, except for the MLA program, is a non-degree granting program.

The instructors are largely drawn from the ranks of the University's professoriate and academic staff. The program presents a wide variety of courses, with a central concentration in the liberal arts, including literature, history, art and architecture, and music.

Tuition discounts are available to University employees, Stanford students and faculty, Stanford Alumni Association members, educators, and those over age 65.

For a list of offered courses, see the Courses tab the Continuing Studies web site (http://continuingstudies.stanford.edu).

Summer Session

Associate Dean & Director of Stanford Summer Session: Larry Lagerstrom

Contact

Program Offices: 365 Lasuen Street and 220 Panama Street
Mail Code: 94305-6079
Phone: (650) 723-3109 (Summer Session); (650) 725-7250 (High School Summer College); Fax: (650) 725-6080
Email: summersession@stanford.edu (Summer Session); summercollege@stanford.edu (http://exploredegrees.stanford.edu/continuingstudies/summercollege@stanford.edu) (High School Summer College)
Web Site: summer.stanford.edu (http://summer.stanford.edu/)

Students attending Stanford Summer Session are either matriculated Stanford students, visiting undergraduate or graduate students, or enrolled in the High School Summer College.

Degree-seeking Stanford students should indicate on Axess during Spring Quarter that they intend to register for Summer Quarter. Separate application is not required.

Visiting undergraduate or graduate students are not presently candidates for a Stanford degree. These are students and adults who have taken at least one course at another college or university. These students must complete a short application, available at summer.stanford.edu (http://summer.stanford.edu). Qualified high school students who are at least sixteen years old may apply to the High School Summer College (http://summer.stanford.edu/programs/) program.

Students in Stanford Summer Session, in general, enjoy the privileges of students in the regular degree programs, except that work completed cannot be applied toward a Stanford degree or credential unless and until the student has been admitted to regular Stanford student standing. Admission as a visiting student does not imply later admission to matriculated status. However, should the visiting student matriculate at a later date through normal admission procedures, the summer work may be applied toward the requirements for a Stanford degree or credential at the discretion of the University or academic department.

Visiting undergraduate and graduate students and students in the High School Summer College are not matriculated Stanford University students, and not all University student policies apply to such students. The University reserves the right, at its discretion, to withhold registration from or require withdrawal from Stanford Summer Session for these students or applicants.

Individuals who commit violations of University policy, the Honor Code, or the Fundamental Standard are subject to termination. Individuals in non-degree granting programs are subject to removal or discipline according to the program's policies or practices, not through the Office of Community Standards.

For more information, contact Summer Session by email, mail, phone, or fax using the listings above. Information is updated annually in January and may also be found online at http://summer.stanford.edu. Information is updated annually in January and may also be found online at summer.stanford.edu (http://summer.stanford.edu).

Nondiscrimination Policy

Stanford University admits qualified students of any race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity, veteran status, or marital status to all the rights, privileges, programs, and activities generally accorded or made available to students at the University. Consistent with its obligations under the law, in the administration of the University's programs and activities, Stanford prohibits unlawful discrimination on the basis of race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity or expression, veteran status, marital status or any other characteristic protected by applicable law; Stanford also prohibits unlawful harassment including sexual harassment and sexual violence.

This policy applies to Stanford programs and activities both on and off-campus, including overseas programs.

The following person has been designated to handle inquiries regarding this nondiscrimination policy: Stanford's Director of the Diversity and Access Office, Rosa Gonzalez, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (email). Stanford's Title IX Coordinator, Catherine Glaze, has been designated to handle inquiries regarding sexual harassment and sexual violence: Kingscote Gardens (2nd floor), 419 Lagunita Drive, Stanford, CA 94305, (650) 497-4955 (voice), (650) 497-9257 (fax), titleix@stanford.edu (email).

Individuals may also file complaints directly with the Office for Civil Rights, within the United States Department of Education, by following the information on this website: https://www2.ed.gov/about/offices/list/ocr/complaintintro.html.

Dean and Associate Provost: Charles Junkerman

Associate Dean and Director: Dan Colman

HAAS CENTER FOR PUBLIC SERVICE

Haas Center for Public Service

Center Office: 562 Salvatierra Walk
Mail Code: 8620
Phone: (650) 723-0992
Web Site: https://haas.stanford.edu (https://haas.stanford.edu/)

- The Haas Center for Public Service engages Stanford students in local and global public service across diverse pathways: direct service, community engaged learning and research, activism, philanthropy, public policy, and social entrepreneurship. The Haas Center offers:
- Walk-in advising on public service opportunities and careers.
- Community engaged learning and research across disciplines.
- Supported full-time, quarter-long service opportunities in the U.S. and abroad.
- Tutoring and mentoring programs rooted in enduring partnerships and cutting-edge education research.
- Leadership training, service trips, and support for more than 125 service-related student organizations.

The Haas Center is the hub for Cardinal Service, a university-wide initiative to elevate service at Stanford in four areas:

- Cardinal Quarter: Students can select from more than 350 supported opportunities to participate full-time in service for a quarter or more. In the next five years, this will grow to 500 local, national and global opportunities.
- Cardinal Courses: Students can participate in more than 70 courses across 25 academic disciplines that integrate a community experience, examine a public issue, and explore civic identities.
- Cardinal Commitments: Students participate in and sustain a significant service experience to explore particular social issues or concerns.
- Cardinal Careers: Students explore multiple public service career options and learn about ways to integrate service into any career.

LIBRARIES AND COMPUTING

Stanford University Libraries and Academic Information Resources

University Librarian and Director of Academic Information Resources: Michael A. Keller
Web Site: http://library.stanford.edu (http://library.stanford.edu/)

Stanford University Libraries and Academic Information Resources (SULAIR) includes more than 30 libraries and programs supporting research, teaching, and learning at Stanford University. SULAIR acquires and delivers library collections in all formats, establishes policies and standards to guide the use of academic information resources, develops training and support programs for academic uses of computers, and maintains a broad array of electronic information resources, including the online library catalog and several hundred article and indexing databases and electronic journal subscriptions.

In each library unit, knowledgeable professional staff provide assistance in locating and using print and online information resources. Subject specialists and reference librarians are available for individual consultation, group classes, demonstrations, and special workshops by request.

Libraries throughout campus provide group and individual study spaces, public computers, personal laptop connections, photocopy machines, and digital scanners for use by Stanford faculty, staff, and students.

For information about library hours, see the Library Hours (http://libraryhours.stanford.edu) web site.

In support of the University's academic mission, Academic Computing Services provides technology expertise, resources and services to students and faculty. Academic Computing Services supports the use of technology in teaching, learning, research, and community; operates and manages technology-enabled teaching and learning environments including classrooms and public study spaces, the Multimedia Studio in Meyer Library, the Digital Language Lab, and computer clusters in Green Library, Tresidder Union, and the student residences; provides technology education, consulting support, and multimedia services at Meyer and in the residences; provides faculty-specific computing resources through the Academic Technology Specialist Program and Academic Technology Lab; and provides technology support to Stanford University Libraries' services.

Information about the library collections, facilities, services, and policies is available at the Libraries & Academic Information Resources (http://library.stanford.edu) web site.

Further information about library services and resources is available from the Information Center staff in Cecil H. Green Library (http://infocenter.stanford.edu) and from reference staff in all University libraries.

Central Campus Libraries

The Cecil H. Green Library (East and Bing Wings) maintains research collections in the humanities, social sciences, area studies, and interdisciplinary areas. These collections number approximately 2.8 million volumes. Major services in Green Library include: the Information Center, the Media Microtext Center, the Jonsson Reading Room, the Lane Reading Room, the Bender Room, Loan Desk and Privileges, Interlibrary Services, course reserves, the Department of Special Collections, and the University Archives.

The J. Henry Meyer Memorial Library houses the East Asia Library as well as the Academic Computing Services group of SULAIR and provides study, multimedia, consulting, and instructional support services. In addition, Meyer Library houses the University's Digital Language Lab, technology enabled study spaces and classrooms, the Academic Technology Lab, and the central offices of Student Computing and Academic Computing Services.

Branch Libraries

Humanities and Social Sciences Branch Libraries include the Art and Architecture Library, Cubberley Education Library, East Asia Library, Music Library, and Archive of Recorded Sound.

Science Branch Libraries include the Branner Earth Sciences Library, Engineering Library, Falconer Biology Library, Mathematical and Computer Sciences Library, Harold A. Miller Library at the Hopkins Marine Station, Physics Library, and Swain Library of Chemistry and Chemical Engineering.

For a complete list of campus libraries, see the Libraries and Collections (http://libraries.stanford.edu) web site.

Coordinate Libraries

J. Hugh Jackson Library (http://www.gsb.stanford.edu/jacksonlibrary/), Graduate School of Business

Director: Kathy Long

Lane Medical Library (http://lane.stanford.edu/)

Director: Debra Ketchell

Crown Law Library (http://www.law.stanford.edu/library/)

Director: Paul Lomio

SLAC Research Library (http://www-group.slac.stanford.edu/library/)

Director of Technical Information Services: Patricia Kreitz

Hoover Institution Library and Archives

Director: John Raisian
Web Site: http://www.hoover.org/library-and-archives (http://www.hoover.org/library-and-archives/)

Since its founding by Herbert Hoover in 1919 as a special collection dealing with the causes and consequences of World War I, the Hoover Institution has become an international center for documentation, research, and publication on political, economic, social, and educational change in the 20th and 21st centuries.

The Hoover Library and Archives include one of the largest private archives in the world and contain outstanding area collections on Africa, East Asia, Eastern Europe, Russia and the former Soviet Union, Latin America, the Middle East, North America, and Western Europe.

Holdings include government documents, files of newspapers and serials, manuscripts, memoirs, diaries, and personal papers of men and women who have played significant roles in the events of these centuries, the publications of societies and of resistance and underground movements, the publications and records of national and international bodies, both official and unofficial, and books and pamphlets, many of them rare and irreplaceable. The materials are open to all Stanford students, faculty, and staff, to scholars from outside the University, and to the public at large.

Information Technology Services (IT Services)

Web Site: http://itservices.stanford.edu

IT Services manages the University's central information technology infrastructure and provides hundreds of services and applications for use in academic and business activities. Support is provided in four layers:

- Participation and client-focused leadership in institutional IT planning, including strategies for data center expansion, centrally managed storage and backup, and business continuity and disaster recovery.
- Applications and services for departments and end-users including email, calendaring, wireless connectivity, web authentication, and Windows and Linux server hosting. These services are supported by a help desk, contract-support consultants, online self-help, and training.
- Applications and services that support other campus service providers, including the help desk, change management, and network registration systems.
- A communications and collaboration infrastructure robust enough to support advanced network, voice, and web-based services.

To learn about the variety of information technology resources available at Stanford, see the Information Technology Services (http://computing.stanford.edu) web site. For assistance with technology services at Stanford, contact the Stanford IT Help Desk at (650) 725-HELP (5-4357) or submit an SU Services & Support Request (https://stanford.service-now.com/it_services/?id=portal_home).

RECREATION

Stanford Recreation is organizationally housed within The Department of Athletics, Physical Education, and Recreation and more specifically within Recreation and Wellness. Recreation offers sports, fitness, health and well-being programs to meet the diverse needs of the Stanford community. Through collaborative team efforts, Recreation takes pride in presenting high quality and fun programs focusing on providing excellent service. A wide-breadth of programs and services are offered by Recreation in aquatics, club sports, fitness facilities, group exercise and personal training, intramural sports, membership and recreation services, recreation classes, and youth programs.

Purpose

Stanford Recreation is committed to provide diverse recreational opportunities that inspire health and well-being for our community.

Values

Inspiring a healthier Stanford by:

- Providing inclusive programs and facilities that welcome the entire Stanford community.
- Creating a collaborative growth-oriented team.
- Offering industry leading and highest quality programs and instruction.
- Maximizing fun and enjoyment through friendly and positive interactions in health, well-being and sports.

AOERC

285 Santa Teresa St

The Arrillaga Outdoor Education and Recreation Center (AOERC) includes a 14,000 square foot fitness center which offers the latest in cardio and strength training equipment, enclosed indoor cycling studio, 50m pool, three basketball courts, the largest indoor collegiate climbing wall in the United States and more.

ACSR

341 Galvez St.

The Arrillaga Center for Sports and Recreation (ACSR) includes an 11,000 square foot fitness center with our Olympic Lifting platforms and several pieces of adaptive equipment. The ACSR also has three basketball courts, a mat room, and seven squash courts.

Outdoor Center

Located in the AOERC, the Outdoor Center is home to a full-service rental and retail facility, a lounge, an outdoor resource library and a multimedia classroom. The lounge serves as a central meeting space for Stanford community members who are interested in outdoor adventures. For current hours please visit outdoorcenter.stanford.edu as hours can change during the quarter.

Climbing Walls

The AOERC Climbing Wall and the ACSR Bouldering Wall are open to all Stanford community members regardless of experience. A valid SUID is required in order to access the facilities. Belay classes are available for free and climbing shoes are available to rent for $2.00. For current hours please visit climbing.stanford.edu as hours change quarter to quarter.

Recreation Services

Desk Staff are your first point of contact at the entrances and also in the Fitness Centers of the ACSR & AOERC. We provide services and access for Stanford community members including Daily Recreation Facility Pass sales, equipment checkout and locker rentals. Please let us serve you if you have any questions or needs.

ID Card Policy

All recreational facilities require a SUID Card or approved facility access card for access. Guest passes can be purchased by Stanford affiliates. All guest pass users must carry a government issued photo ID at all times while using the facilities. For more ID Card Information, please see the Member Services section of recreation.stanford.edu.

Lockers

Recreational-use lockers and showers are available at the Ford Center and the Arrillaga Outdoor Education and Recreation Center (AOERC). There are no lockers at the Arrillaga Center for Sports and Recreation (ACSR). The following are our locker rental fees:

$20/quarter or $50/year for Students

$30/quarter or $70/year for Faculty/Staff

*Payable by credit card or check. All lockers are available for rental at both the ACSR and AOERC Front Desks.

Day-use lockers are available at the AOERC, the ACSR and the Avery Aquatic Center. These lockers use keypad locks and do not require you to bring your own lock. Day-use lockers are free of charge and please note they will be cleared out each night at the close of business and any left behind contents will be added to the lost and found.

Aquatics

We offer recreational swimming at two outdoor campus locations. The Avery Aquatic Center (AAC) is located in the center of the Stanford Athletics' facilities and is home to the Men's and Women's Swimming, Diving and Water Polo Teams, as well as the Synchronized Swimming team. In addition to hosting Rec Swim, the AAC has hosted the Intramural Swim Meet and Inner-tube Water Polo Tournament. The Avery Recreation Pool, located at the Arrillaga Outdoor Education and RecreationCenter (AOERC) is a 50 meter pool set up in short course yards, used for recreational swimming and instructional classes. Stanford Recreation provides aquatic activities including Masters Swimming, Lifeguard Classes, Club Water Polo and several P.E. swim classes. Recreation instructional and fitness swimming classes are offered at the Avery Recreation Pool and include a BeWell rate for eligible staff.

For employment opportunities, contact information, and further details, please visit recreation.stanford.edu/aquatics.

Adventure Pursuits

The Stanford Adventure Program (SAP) is the organization that advises adventure experiences for Recreation & Wellness, Student Activities & Leadership (SAL), Stanford School of Medicine, Residential Education, the Haas Center and other formal SAP campus partners. SAP's student leadership model follows the Voluntary Student Organization structure established by SAL.

- *Outdoor Trips*: provides students the opportunity to participate in peer led adventure activities such as day trips and weekend experiences in a multitude of mediums including backpacking, rock climbing, surfing, kayaking, skiing, etc.

- *Outdoor House*: a new community within Suites founded with the intentions of creating a place for people to explore, educate and connect via their interests in adventures and the outdoors.
- *Stanford Outdoor Outreach Program (SOOP)*: enhances interpersonal relationships, fosters community, and instills personal confidence in San Francisco Bay Area youth through facilitated outdoor experiences.
- *Stanford Pre-Orientation Trips (SPOT)*: immersive experiences that take place the week before New Student Orientation and are designed to ease the transition of students to life at Stanford as well as foster Stanford Identity, community, and personal growth.

Visit adventure.stanford.edu for more information.

Club Sports

We brings together 27 diverse sports and more than 1,200 athletes with the common goal of creating an environment that fosters student development and leadership through sports. Teams compete in intercollegiate competitions at the highest level, while offering opportunities for participants of all skill levels, from beginners to experienced players.

Teams include the following: Archery, Badminton, Baseball, Basketball, Climbing, Cheer, Cycling, Equestrian, Golf, Hockey, Hurling, Judo, Lacrosse, Polo, Rugby, Running, Ski & Snowboard, Soccer, Squash, Swimming, Table Tennis, Taekwondo, Tennis, Triathlon, Ultimate, Volleyball, & Water Polo.

Visit clubsports (http://exploredegrees.stanford.edu/recreation/clubsports.stanford.edu).stanford.edu (http://exploredegrees.stanford.edu/recreation/adventure.stanford.edu) for more information.

Martial Arts

The Stanford Martial Arts Program (SMAP) is an umbrella organization that supports the various member martial art groups on campus. The main goals are to educate the Stanford community through outreach programming about the variety of martial arts instruction on campus, serve as a centralized communications network between the different groups and preserve the martial arts as a vital and distinctive component of Stanford life. SMAP has 12 distinct martial art offerings covering a wide variety of technical, physical and cultural skills.

Here are the following teams and clubs that are affiliated with the Stanford Martial Arts Programs: Aikido, Capoeira, Eskrima, Judo, Jujitsu, Kendo, Muay Thai Kickboxing, JKA Shotokan Karate, Taekwondo, Wing Chun Kung Fu, & Wushu.

Visit smap.stanford.edu (http://exploredegrees.stanford.edu/recreation/smap.stanford.edu) for more information.

Group Fitness Classes

Pay a single fee for one of two pass options and drop-in to any of our select classes, such as F45, Cardio Dance and more, throughout the quarter.

Personal Training

Work with one of our experienced and certified trainers to tailor a fitness program for you.

Fitness Assessments

Measure your health status and learn how you can achieve your fitness and wellness goals.

Olympic Lifting Classes

Learn proper lifting etiquette from our experienced staff and receive an annual Olympic Lifting sticker to use our platforms

Intramural Sports

IM's at Stanford include formal competition in a variety of team and individual sports using league, single elimination tournament, one day special event tournament, and ladder play structure. Registration occurs during the second week of classes during the Autumn, and during finals for the Winter and Spring. Mandatory Captains meetings can be completed during the registration period.

Our IM Sports leagues include the following: Flag Football (fall), Indoor Volleyball (winter), Basketball (winter), Outdoor Soccer (spring) and more.

For Intramural leagues information and further details, please visit recreation.stanford.edu/intramurals.

Senior Associate Athletic Director - Recreation and Wellness: Eric Stein

Director of Recreation: Rick Craig

Senior Associate Director of Competitive Sports: Christian Obando

Assistant Director of Competitive Sports: New Hire

Associate Director of Recreation: Daralisa Kelley

Assistant Director of Aquatics: Alisha Garcia

Assistant Director of Fitness: Zach Trahan

Assistant Director of Youth Programs: New Hire

Associate Director of Recreation Services: Robin Embry

Assistant Director of Recreation Facilities: Ebone Cobb

Director of Wellness: Jen Sexton

Assistant Director of BeWell: Syrous Parsay

Assistant Director of BeWell: New Hire

Senior Associate Director of Adventure Programs: Sue Lowley

Assistant Director of Outdoor Programs: Emily McCune

Assistant Director of Indoor Climbing: Phil Sandlin

Assistant Director of Leadership Engagement: Andrew De Torres

Senior Associate Director of Business Operations: Dennis Phan

Recreation Classes

Our classes provide participants with professional instruction in a safe and fun workout environment. Our Recreation Class offerings are non-credit classes. Stanford students, Faculty/Staff and Stanford community members are eligible to participate in Recreation Classes. Recreation classes that are offered throughout the academic year are the following:

- *Ashtanga Yoga*: taught in the Mysore style (a guided self practice), by Russell Case, authorized Level II Instructor by Pattabhi Jois and the
- Ashtanga Yoga Research Institute in Mysore India.
- *Golf*: covering all basic rules and etiquette of the sport including the fundamentals of grip, stance, alignment, posture and putting.
- *Gymnastics*: introducing participants to all gymnastics apparatus including floor exercise, vault, high bar, uneven bars, trampoline, rings, tumble track, pommel horse, balance beam and parallel bars.

- *Olympic Weightlifting*: develop the skills and strength necessary to perform the Olympic Lift (snatch, clean and jerk).
- *Squash*: learn the rules, tactics and techniques of this fast-paced game that will help to boost your skills on the courts.
- *Tennis*: helping to improve your forehand, backhand, serve and net play while simulating real game situations and explaining the rules of the game.

In addition, we often release occasional courses that will be offered throughout the academic year. Occasional courses that could be offered include our Pre- & Post-Natal Fitness Program, the Private Pilates Training Program and our Train to Run Program. Visit recreationclasses.stanford.edu (http://exploredegrees.stanford.edu/recreation/recreationclasses.stanford.edu) for more information on all class offerings and registration details.

SERVICES AND PROGRAMS

Bookstore

Web Site: http://stanfordbookstore.com (http://www.stanfordbookstore.com/)

Organized in 1897, Stanford Bookstore, (650) 329-1217, located at 519 Lasuen Mall (White Plaza), provides a diverse selection of books, course materials, and supplies to the students, faculty, staff, and community in and surrounding Stanford. The bookstore carries over 130,000 titles, including a wide selection of medical books and books written by Stanford authors, making it one of the largest bookstores in the nation. The bookstore also carries medical instruments, Stanford logo apparel, gifts and souvenirs, periodicals, and features a café that provides an enhanced shopping experience. The Computer Store, in the main branch, sells academically priced computer hardware and software. Other services include shipping of purchases, gift cards, book buyback, fax service, postage stamp sales, an ATM, and Enterprise Rent-A-Car hotline.

There are four branches in addition to the Stanford Bookstore that also serve the community: the Stanford Athletics Shop (formerly the Track House Sports Shop), (650) 327-8870, underneath the Cobb Track and Angell Field bleachers, is the headquarters for Stanford Athletic Gear; Tresidder Express convenience store, (650) 723-9224 in Tresidder Union; the Stanford Shop, (650) 614-0295, at the Stanford Shopping Center, provides Stanford apparel; and the Bookshop, (650) 725-2775, at the Cantor Center for the Arts, carries books on the arts, fine gifts, apparel, and jewelry.

Stanford Conference Services

Phone: (650) 723-3126
Email: conferenceinquiries@stanford.edu
Web Site: http://conference.stanford.edu (http://conference.stanford.edu/)

A conference is defined as any student, youth, or adult group that convenes for part of a day (including a luncheon), overnight, or for several days, outside the regular or summer academic sessions for registered students. Policies concerning conferences are the responsibility of the offices of the President and the Provost.

To make arrangements for hosting a new, academically sponsored residential summer conference during the mid-June through late-August time frame, contact Stanford Conference Services by phone or email as listed above. Stanford Conference Services also offers meeting planning services on a year-round basis for academically sponsored conference groups seeking assistance with planning and managing residential and non-residential conferences. In addition, conference organizers seeking to conduct conferences outside of the late August to early June time frame can also contact the non-academic facilities scheduling in the Office of the University Registrar, (650) 723-6755 or reg-events@stanford.edu, or contact Stanford Events, (650) 723-2551 or stanfordevents@stanford.edu.

Academic sponsorship by a Stanford dean or department head is required for first time conferences hosted by University departments or by conferences hosted by external organizations interested in meeting at Stanford. Conferences initiated by University departments or external organizations must demonstrate consistency with the University's academic mission. For summer conferences, the sponsoring department submits its proposal to the Director of Stanford Conference Services for review in terms of available facilities and for the approval of the President's Office. At least half of the participants in any summer conference at Stanford hosted by an external organization must be housed in Stanford's campus residences and participate in daily meal plans provided by Stanford Dining. On-campus residential housing and dining services are normally available from the Sunday following Commencement through late August.

Summer conference groups should contact Stanford Conference Services concerning arrangements for tables, chairs, audio-visual aids, signage, janitorial services, trash pick-up and removal, sprinkler shutoffs, and other conference-related products/services. During the academic year, housing arrangements for University-sponsored visitors can be made through the Stanford Guest House (http://guesthouse.stanford.edu) web site or call (650) 926-2800.

Ombuds

Interim Stanford University Ombuds: Rosan Gomperts
Phone: (650) 723-3682
Fax: (650) 725-7288
Mail Code: 94305-8200
Email: rosang@stanford.edu
Web Site: https://ombuds.stanford.edu/

School of Medicine Ombuds: James Laflin
Office: Medical School Office Building, 1265 Welch Road, Suite X301, MC: 5404
Phone: (650) 498-5744
Fax: (650) 498-5865
Mail Code: 94305-5404
Email: jlaflin@stanford.edu
Web Site: http://med.stanford.edu/ombuds (http://med.stanford.edu/ombuds/)

The charge to the Ombuds office at Stanford is: "The Ombudsperson's task is to protect the interests and rights of members of the Stanford community from injustices or abuses of discretion, from gross inefficiency, from unnecessary delay and complication in the administration of University rules and regulations, and from inconsistency, unfairness, unresponsiveness, and prejudice in the individual's experience with University activities. The Ombudsperson's office exists to receive, examine, and channel the complaints and grievances of members of the Stanford community, and to secure expeditious and impartial redress."

Any troublesome matter in the University community may be discussed in confidence with the University Ombuds. Services of the office are available to students, staff, and faculty. Although possessing no decision making authority, the Ombuds has wide powers of inquiry. The Ombuds refers matters to the proper person or office expeditiously and also provides conflict resolution services. For the role of the office of the Ombuds in cases of sexual harassment, see the "Non-Academic Regulations (p. 100)" section of this bulletin.

Police Services

Department Office: Corner of Campus Drive and Serra Street
Phone: (650) 723-9633
Web Site: http://police.stanford.edu (http://police.stanford.edu/)

The Stanford Department of Public Safety is a full service police department that operates 24 hours a day, 7 days a week. For police, fire, or ambulance response, dial 9-1-1, or 9-9-1-1 from a University phone. Emergency assistance can also be obtained by using one of the nearly 100 Blue Emergency Phone Towers strategically placed around campus.

The department is composed of the following divisions:

The Field Services Division consists of sworn and non-sworn officers who patrol the campus and respond to calls for service. Sworn officers receive their police powers through the Santa Clara County Sheriff's Office. Sworn officers have the legal authority to stop vehicles, make arrests, and enforce all laws. Non-sworn officers assist the sworn officers

with security patrols, evidence collection, crime prevention presentations, and other assigned tasks.

Community Service Division: Community Service Officers (CSOs) enforce the parking rules and regulations on campus, and provide traffic control at special events, construction zones, and accident scenes. CSOs also provide building security during emergency or critical incidents.

The Support Services Division provides logistical, technical, and accounting support to the department. Special events are handled through this division as well. Special Events Personnel (SEPs) provide security at campus events including athletic events, concerts, student-sponsored events, and dignitary visits. SEPs are available for hire by groups needing security at their University events. Contact the special events office at (650) 723-4924, or email event_security@stanford.edu, for more information.

The Administrative Support Division supports the department through training, recruiting, payroll, human resources, and other business functions.

For additional safety information or to view the yearly crime statistics, see the Stanford Safety and Security Almanac, available free from the Public Safety (http://police.stanford.edu) web site.

Office for Religious Life

Office: Memorial Church
Phone: (650) 723-1762
Web Site: http://religiouslife.stanford.edu (http://religiouslife.stanford.edu/)

The mission of the Office for Religious Life (ORL) is to guide and enhance spiritual, religious, and ethical life within the Stanford University community. Multifaith exploration and dialogue, central in Stanford's history from its founding, is a vital part of both its ethos and education.

The ORL is committed to welcoming students of all genders and sexual identities, all religious and non-religious traditions, and all cultural backgrounds, striving to ensure that students, faculty, and staff have access to supportive contexts in which to pursue their spiritual journeys on the Stanford campus.

The ORL oversees and provides support for Stanford Associated Religions (SAR), more than thirty religious organizations that offer their spiritual services to the campus, as well as the Center for Inter-Religious Community, Learning, and Experiences (the CIRCLE). Located on the third floor of the remodeled Old Union, the CIRCLE offers an interfaith sanctuary, a seminar room, a common room, a student lounge, a non-lending library, and offices housing many SAR member groups.

Stanford Alumni Association

Web Site: http://stanfordalumni.org (http://www.stanfordalumni.org/)
Phone: (800) 786-2586 or (650) 723-2021

The Stanford Alumni Association (SAA) seeks to serve all Stanford alumni and students by offering programs and services such as reunions, regional events, Stanford Magazine, online services, volunteer and learning opportunities, and the alumni directory.

The Stanford Alumni Association's alumni and student class outreach department (ASCO) provides undergraduates and graduate students with networking opportunities, celebratory and social events, and programs that enhance their Stanford experience and help connect them to the 200,000 alumni worldwide who make up the Stanford alumni community. ASCO programs bring students and alumni together through Reunion Homecoming Weekend each autumn and Commencement weekend in the spring, along with alumni networking events throughout the year.

For students, SAA sponsors events such as student tailgates, alumni panels, Senior Send-off, Senior Dinner on the Quad, and Class Day. The Alumni Association gives out the J.E. Wallace Sterling Award and the Stanford Award of Excellence annually to honor graduating seniors for exemplary service to the University. For more information on student programs at the Stanford Alumni Association (http://police.stanford.edu) web site.

Office of Special Events & Protocol and the Stanford Ticket Office

The Office of Special Events & Protocol (OSEP) (https://osep.stanford.edu/) and Stanford Ticket Office (STO) (http://tickets.stanford.edu/) are divisions of the Office of Public Affairs (http://publicaffairs.stanford.edu/). OSEP manages the University's public ceremonies such as Commencement, Baccalaureate, New Student Orientation Convocation, and the Founders' Celebration. The organization also designs and produces other high-profile university events hosted by the President and Provost, such as the Roundtable at Stanford, international symposia and visits to campus by foreign delegations and heads of state.

OSEP also serves in an advisory capacity and/or can provide direct planning expertise to campus schools, departments, and student groups. The department has final approval authority of Stanford facility and open space use for non-academic events on campus. For information or event planning assistance, information about policies, procedures, and University facilities, see the OSEP (https://osep.stanford.edu/) web site, or call (650) 724-1387.

The STO is the University's official full-service box office that provides online, in-person and by phone ticketing services, as well as day-of-event staffing support to hundreds of events throughout the year. Important arts organizations and venues it serves include Stanford Live, Stanford Jazz and Music Departments, the Bing Concert Hall, Frost Amphitheater, and Memorial Auditorium. The Stanford Ticket Office also provides professional ticketing and registration services to all academic departments, institutes, and student groups for lectures, festivals, concerts, and various high profile public events. For more information, see the Stanford Ticket Office (http://tickets.stanford.edu/) web site, or call (650) 725-ARTS (2787).

Diversity and Access Office

Director of the Diversity and Access Office: Rosa Gonzalez
Office: 419 Lagunita Drive, Suite 130
Mail Code: 94305-8550
Phone: (650) 723-0755; TTY: (650) 723-1216
Email: equal.opportunity@stanford.edu, disability.access@stanford.edu
Web Site: https://diversityandaccess.stanford.edu/

The Diversity and Access Office ensures compliance with Titles VI and VII of the Civil Rights Act, the Equal Pay Act, the Americans with Disabilities Act (ADA) and Sections 503 and 504 of the Rehabilitation Act, the Age Discrimination in Employment Act, and Executive Order 11246, the California Fair Employment and Housing Act (FEHA), and the Unruh Civil Rights Act, among other laws.

The Diversity and Access Office was created to advance Stanford University's equal opportunity and affirmative action goals and commitment to diversity. The office also ensures University compliance with federal, state and local regulations concerning nondiscrimination and disability access. The Director of the Diversity and Access Office is responsible for administering the ADA/Section 504 Grievance Procedure (Student) and the Student Non-Academic Grievance Procedure. Finally, the office also provides an array of services and resources designed to ensure equal opportunity and address bias and discrimination prohibited by law or official University policy, as well as assists individuals with

disabilities who have requests for accommodations in the workplace and access to Stanford facilities, programs, and activities.

Nondiscrimination Policy

Stanford University admits qualified students of any race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity, veteran status, or marital status to all the rights, privileges, programs, and activities generally accorded or made available to students at the University. Consistent with its obligations under the law, in the administration of the University's programs and activities, Stanford prohibits unlawful discrimination on the basis of race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity or expression, veteran status, marital status or any other characteristic protected by applicable law; Stanford also prohibits unlawful harassment including sexual harassment and sexual violence.

This policy applies to Stanford programs and activities both on and off-campus, including overseas programs.

The following person has been designated to handle inquiries regarding this nondiscrimination policy: Stanford's Director of the Diversity and Access Office, Rosa Gonzalez, Kingscote Gardens, 419 Lagunita Drive, Suite 130, Stanford, CA 94305-8550; (650) 723-0755 (voice), (650) 723-1791 (fax), equal.opportunity@stanford.edu (email). Stanford's Title IX Coordinator, Catherine Glaze, has been designated to handle inquiries regarding sexual harassment and sexual violence: Kingscote Gardens (2nd floor), 419 Lagunita Drive, Stanford, CA 94305, (650) 497-4955 (voice), (650) 497-9257 (fax), titleix@stanford.edu (email).

Individuals may also file complaints directly with the Office for Civil Rights, within the United States Department of Education, by following the information on this website: https://www2.ed.gov/about/offices/list/ocr/complaintintro.html.

Awards and Honors

Faculty and Staff Awards

Kenneth M. Cuthbertson Award

The Kenneth M. Cuthbertson Award was established in 1981 to recognize exceptional service to Stanford University. It was established by members of the faculty who wish to remain anonymous. All members of the Stanford community are eligible for the award; the sole criterion is the quality of the contribution that the recipients have made to the University. The award provides a way of honoring members of the staff and faculty for their efforts on behalf of the University.

Ordinarily, one award is made each year. The award was first presented in 1981 to the person for whom it is named. Kenneth M. Cuthbertson was one of the early architects of Stanford's long-term financial planning and fundraising program. His service to Stanford set an enduring standard for those who will come after him. The award is made annually at the University Commencement Ceremony.

Lloyd W. Dinkelspiel Awards

The Lloyd W. Dinkelspiel Awards recognize distinctive and exceptional contributions to undergraduate education at Stanford University. The two principal awards are made to the faculty or staff members adjudged to have made the most distinctive contribution to the development and enrichment of undergraduate education in its broadest sense. Two awards are also made to graduating seniors who combine academic achievement with effective contributions to undergraduate student life. Preference is given to service in the School of Humanities and Sciences in the area of liberal education. The awards are made from an endowment fund established in memory of Lloyd W. Dinkelspiel, a Stanford alumnus and trustee. The awards are made annually at the University Commencement Ceremony.

Walter J. Gores Awards

The Walter J. Gores Faculty Achievement Awards for excellence in teaching were established by bequest of Walter J. Gores, Stanford Alumnus of the Class of 1917 and a professor at the University of Michigan for 30 years. Teaching is understood in its broadest sense and includes, in particular, lecturing, leading discussions, tutoring, and advising at the undergraduate or graduate levels. Any member of the teaching staff of the University is eligible for an award, including all faculty of professorial rank, instructors, lecturers, teaching fellows, and teaching and course assistants. Ordinarily, awards are made to a senior faculty member (associate or full professor) or senior lecturer; a junior faculty member or member of the teaching staff; and a teaching assistant (graduate or undergraduate student). The awards are made annually at the University Commencement Ceremony.

Herbert Hoover Medal For Distinguished Service

David Starr Jordan's belief that every academic degree should represent work actually done in or under the direction of the institution granting it has meant that, since its founding, Stanford has awarded no honorary degrees. As a means of recognizing extraordinary individuals who deserve special acknowledgment, the Stanford Alumni Association in 1962 voted to establish the Herbert Hoover Medal for Distinguished Service. The name pays tribute to the former President's example of service to his University, to his country, and to the cause of world humanitarianism. Indeed, Mr. Hoover was the first award recipient. The gold medal is presented following selection by an anonymous committee appointed by the Chair of the Board of Directors of the Alumni Association.

Student Awards

Boothe Prize for Excellence in Writing

Awarded during the freshman year, the Boothe Prize recognizes excellence in writing. Students are selected for this honor on the basis of essays written for courses fulfilling the Introduction to the Humanities or Writing and Rhetoric requirements. The prize is named for Mr. and Mrs. D. Power Boothe, Jr., whose gifts to the University reflect their interest in the humanities.

Deans' Award for Academic Achievement

The Deans of Earth Sciences, Engineering, and Humanities and Sciences recognize from five to ten undergraduate students each year for their academic endeavors. Honorees are cited for noteworthy accomplishments which represent more than a high grade point average or success in course work. Faculty nominate students who have exceptional tangible achievements in classes or independent research, national academic competitions, a presentation or publication for a regional or national audience, or exceptional performance in the creative arts.

Firestone Medal for Excellence in Research

The Firestone Medal is awarded to seniors in recognition of excellence in undergraduate research. Departments in the School of Humanities and Sciences nominate students who have completed outstanding honors projects in the social, physical, and natural sciences.

Robert M. Golden Medal for Excellence in the Humanities and Creative Arts

The Golden Medal recognizes outstanding achievement in the humanities and the creative arts. Seniors receive these medals upon nomination by their major department.

Hoefer Prize for Excellence in Undergraduate Writing

The Hoefer Prize recognizes students and faculty for their work in courses that meet the University Writing Requirement for writing in the major. Prizes are awarded in each of the five areas of the undergraduate curriculum: humanities, social sciences, natural sciences, engineering, and earth sciences.

Frederick Emmons Terman Engineering Scholastic Award

The School of Engineering annually presents the Terman Award to seniors for outstanding academic achievement. The awardees share their award with a high school teacher of their nomination.

Phi Beta Kappa

Phi Beta Kappa is a nationwide society honoring students for the excellence and breadth of their undergraduate scholarly accomplishments. Membership in the Stanford Chapter (Beta of California) is open to undergraduates of all majors. To be elected to Phi Beta Kappa at Stanford, a student must achieve academic distinction in the major as well as in courses across a broad range of fields.

Approximately a tenth of the members of a graduating class are elected to Phi Beta Kappa. Of this number, about one fifth are chosen in their junior year, the remainder in their senior year.

The chapter's election guidelines define breadth of study as excellence beyond the major field. To be considered for election, a student must have taken at least three courses of 3 units or more at Stanford by the time elections are held early in the Spring Quarter with a letter grade of 'B-' or better in each of the following three major domains of knowledge: humanities; science, engineering, and math; and social sciences. Students who transfer in their junior year must have taken at least two courses at Stanford in two of the major domains and at least one course in the third domain, and must have completed a minimum of 75 units of academic work at Stanford by the end of Winter Quarter. Students who transfer in their sophomore year must have taken at least two courses at Stanford in each of the major domains.

There is no direct correlation between Stanford University General Education Requirements (GERs) and Phi Beta Kappa breadth requirements. The elections committee analyzes the content of individual courses to determine which major domain requirement they may satisfy. IHUM, PWR, and first-year language courses do not satisfy the PBK breadth criterion.

A grade of '+' or 'CR' is not considered a sign of distinction. Minimally satisfying the breadth criterion is not considered a sign of distinction.

The academic records of eligible students are automatically reviewed, so no special action is required for students wishing to be considered for membership. Anonymity in the election process is ensured by removal of the students' names from their academic records before consideration. Students who desire that their records not be made available for consideration by the Stanford chapter of Phi Beta Kappa should inform the Registrar, 630 Serra Street, Suite 120, Stanford, CA 94305-6032.

Exchange Programs and Cross-enrollment Agreements

Stanford has exchange programs and cross-enrollment agreements with a number of other colleges and universities. The purpose of these programs and agreements is to offer Stanford students courses and training that are not available in the Stanford curriculum.

Undergraduate

Stanford has exchange programs with four colleges and universities that allow students to exchange schools for a quarter/semester or for a year, depending on the school. These programs are best suited to students in their junior year, when the major area of study has been determined. Stanford students register for zero units at Stanford during the quarter(s) in which they are attending another college or university and pay the regular Stanford tuition. Courses taken at the other institution are treated as transfer credit back to Stanford. Students should contact the External Credit Evaluation section of the Office of the University Registrar to determine whether the courses taken through an exchange program may qualify for credit toward a Stanford degree. Only the number of units accepted in transfer, not the course titles or the grades received, are recorded on the Stanford transcript.

Exchange programs are currently available at three historically black institutions: Howard University in Washington D.C.; and Morehouse College and Spelman College in Atlanta, Georgia. The exchange program at Dartmouth College in Hanover, New Hampshire, focuses on Native American Studies. Further information is available at the Undergraduate Advising and Research Center.

Graduate

The Exchange Scholar Program is open to doctoral students in programs other than the Graduate School of Business or Stanford Law School who have completed one full year of study at one of the participating institutions. These students may apply to study at Stanford, and Stanford students may apply to one of these other institutions, for a maximum of one academic year (Autumn, Winter, and Spring quarters) to take advantage of particular educational opportunities not available on the home campus. The participating institutions are Brown University, University of Chicago, Columbia University, Cornell University, Harvard University, Massachusetts Institute of Technology, Princeton University, Stanford University, University of Pennsylvania, and Yale University. Further information on the program may be obtained from the Office of the University Registrar, or the graduate dean's office at participating institutions. Some institutions may place restrictions on specific departments.

Stanford also has separate exchange programs with the University of California, Berkeley, the University of California, San Francisco, and the University of California, Santa Cruz for students in marine sciences. Further information may be obtained at the Office of the University Registrar.

Cross-Enrollment

See the "ROTC section (p. 244)" of this bulletin for information on ROTC cross-enrollment programs.

SPECIAL EVENTS AND PROTOCOL

Office of Special Events & Protocol and the Stanford Ticket Office

The Office of Special Events & Protocol (OSEP) (https://osep.stanford.edu/) and Stanford Ticket Office (STO) (http://tickets.stanford.edu/) are divisions of the Office of Public Affairs (http://publicaffairs.stanford.edu/). OSEP manages the University's public ceremonies such as Commencement, Baccalaureate, New Student Orientation Convocation, and the Founders' Celebration. The organization also designs and produces other high-profile University events hosted by the President and Provost, such as the Roundtable at Stanford, international symposia, and visits to campus by foreign delegations and heads of state.

OSEP also serves in an advisory capacity and/or can provide direct planning expertise to campus schools, departments, and student groups. The department has final approval authority of Stanford facility and open space use for non-academic events on campus. For information or event planning assistance, information about policies, procedures, and University facilities, see the OSEP (https://osep.stanford.edu/) web site, or call (650) 724-1387.

The STO is the University's official full-service box office that provides online, in-person and by phone ticketing services, as well as day-of-event staffing support to hundreds of events throughout the year. Important arts organizations and venues it serves include Stanford Live, Stanford Jazz and Music Departments, the Bing Concert Hall, Frost Amphitheater, and Memorial Auditorium. The Stanford Ticket Office also provides professional ticketing and registration services to all academic departments, institutes, and student groups for lectures, festivals, concerts, and various high profile public events. For more information, see the Stanford Ticket Office (http://tickets.stanford.edu/) web site, or call (650) 725-ARTS (2787).

STUDENT AFFAIRS

Web Site: http://studentaffairs.stanford.edu/

Student Affairs is led by the Vice Provost for Student Affairs. The Vice Provost for Student Affairs reports directly to the Provost and is responsible for providing leadership, policy direction, and administrative support for budget, personnel, facilities, and development, as well as oversight of the efficiency and effectiveness of each of the division's units. The Vice Provost interacts with the President, the Provost, the Vice Provosts, faculty, schools, department representatives, students, and parents. The Vice Provost is a member of the Stanford University Cabinet, and ex officio member of the Stanford Alumni Association Board of Directors, Stanford Athletic Board, and Haas Center for Public Service National Advisory Board. The Vice Provost also attends the Senate meetings of the Academic Council.

There are six main units in Student Affairs:

1. Administration
2. BEAM, Stanford Career Education, and Experiential Education
3. Dean of Students
4. Residential Education
5. Student and Academic Services and University Registrar
6. Vaden Health Center

The division encompasses 25 programs for undergraduates and graduate students, which are administered by the following offices and centers. Links are to the relevant office's web site; see below for a short description of what each office does.

- Office of Accessible Education (http://oae.stanford.edu)
- Office of Alcohol Policy and Education (https://alcohol.stanford.edu/)
- Asian American Activities Center (A (http://a3c.stanford.edu)^{3}C)
- Bechtel International Center (http://bechtel.stanford.edu)
- Black Community Services Center (http://bcsc.stanford.edu)
- BEAM, Stanford Career Education (http://beam.stanford.edu)
- Community Standards (OCS) (http://communitystandards.stanford.edu)
- Dean of Students (https://deanofstudents.stanford.edu/)
- Diversity and First-Gen Office (https://diversityandfirstgen.stanford.edu/)
- El Centro Chicano y Latino (http://elcentro.stanford.edu)
- Graduate Admissions (https://studentaffairs.stanford.edu/gradadmissions/)
- Graduate Life Office (https://glo.stanford.edu)
- The Markaz: Resource Center (http://markaz.stanford.edu)
- Native American Cultural Center (https://nacc.stanford.edu/)
- Office for Military-Affiliated Communities (OMAC) (http://military.stanford.edu)
- Office of Student Engagement (http://sal.stanford.edu)
- Old Union (https://oldunion.stanford.edu/)
- Queer Student Resources (https://queer.stanford.edu/)
- Registrar's Office (https://studentaffairs.stanford.edu/registrar/)
- Residential Education (http://resed.stanford.edu)
- Schwab Learning Center (https://slc.stanford.edu/)
- Student Financial Services (http://sfs.stanford.edu)
- Student Services Center (https://studentservicescenter.stanford.edu/)
- Tresidder Memorial Union (https://tresidder.stanford.edu/)
- Vaden Health Center (http://vaden.stanford.edu/)
- Weiland Health Initiative (http://weiland.stanford.edu)
- Well-Being at Stanford (https://vaden.stanford.edu/well-being/)
- Windhover Contemplative Center (https://windhover.stanford.edu/)
- Women's Community Center (https://wcc.stanford.edu/)

Accessible Education (OAE)

Offices: 563 Salvatierra Walk
Phone: (650) 723-1066; TDD (650) 723-1067
Web Site: https://oae.stanford.edu/
Email: oae-contactus@stanford.edu

The Office of Accessible Education (OAE) is the campus office designated to work with students, faculty, and staff to put in place appropriate accommodations for all Stanford students with disabilities, at both the undergraduate and graduate levels (including the professional schools). The OAE provides a wide array of support services, accommodations, and programs to remove barriers to full participation in the life of the university.

In reaching its determinations about appropriate accommodations, the OAE considers factors such as the documentation from professionals specializing in the area of the student's diagnosed disability, the student's functional limitations, and the student's input and accommodation history in regard to particular needs and limitations. The OAE then works with the student and relevant faculty and staff through an interactive process designed to achieve an accommodation that meets the needs of all parties.

Alcohol Policy and Education (OAPE)

Offices: Rogers House, 581 Capistrano Way
Phone: (650) 723-5947
Web Site: https://alcohol.stanford.edu/
Email: alcohol@stanford.edu

The Office of Alcohol Policy and Education (OAPE) empowers students to make healthy decisions about drinking behaviors that not only affect them as individuals, but ultimately impact the campus community as a whole. OAPE is focused on reducing the harm of high-risk behaviors while increasing safe, legal, responsible actions. Services offered include individual consultation, educational workshops and seminars, and academic coursework. OAPE also sponsors Cardinal Nights, a program of weekly events that allow students to socialize in an environment free of alcohol.

Asian American Activities Center (A ^{3}C)

Offices: Old Union Clubhouse, 2nd Floor, 524 Lasuen Mall
Phone: (650) 723-3681
Web Site: https://a3c.stanford.edu/
Email: stanforda3c@stanford.edu

The A³C builds a community of Asian and Asian American students, faculty, staff and alumni that fosters greater understanding and awareness of the Asian experience in America. It offers many resources for the community. The A³C is home to over thirty student organizations that hold weekly meetings and rehearsals in the center and also use the office as workspace for planning events.

The center houses the Asian American Resource Library which contains Asian American literature, reference texts, hard-to find-periodicals, university documents, newspaper clippings and videos. Located in the center for student use are a computer cluster, fax machine, TV, VCR, DVD and stereo.

Students come to the A³C for information on campus resources and community service opportunities; for meetings; for cultural and educational programs and workshops; for research materials; for organizational and personal advising; for relaxing between classes; and to study. In the evenings, student organizations utilize the space for

group meetings and events. Staff come to the A³C to attend events, meet as staff and connect with and mentor students. Faculty come to the A³C for resources, help with research projects and to speak at workshops and on panels. Alumni come to the A³C to meet students and to host meetings and events. Campus partners come to the A³C for advice, collaborations and to connect with students.

Bechtel International Center

Office: 584 Capistrano Way
Web Site: https://bechtel.stanford.edu

Bechtel International Center is the immigration and community center at Stanford for students, postdocs, visiting scholars, and their families from around the world, and for all those on the Stanford campus who are interested in and/or oriented to international experiences. In addition to providing extensive immigration services to the international community, Bechtel also offers social, cultural, and educational programs, not only to acquaint students and scholars with the life of the University and the U.S., but also to bring the international community together to showcase unique cultures and traditions in a spirit of respect and understanding.

The Overseas Resource Center (ORC) is an important part of the Bechtel International Center. The ORC supports and advises U.S. Stanford students as well as recent alumni who are seeking prestigious scholarships for study and research abroad, such as the Rhodes, Marshall, and Fulbright awards.

Bechtel believes that international educational exchange nurtures a lifelong global perspective, and plays a key role in supporting Stanford's standing as a truly international university in the following ways:

- Bechtel provides information about and assistance with obtaining and maintaining legal status in the U.S. to international students, scholars, and Stanford departments.
- It advises Stanford students who are pursuing scholarships for study and research abroad.
- It enables international students, scholars, and their family members at Stanford to receive maximum academic, cultural, and personal benefit from their stays in the U.S.
- Bechtel contributes to international activities at Stanford by helping to create a welcoming and supportive environment that is responsive to the needs of the international community.
- It provides opportunities for Stanford students, faculty, staff, and members of the local community to broaden their horizons by interacting with people from different cultures through programs to increase international awareness and understanding.

BEAM, Stanford Career Education

Offices: 563 Salvatierra Walk
Phone: 650-725-1789
Web Site: https://beam.stanford.edu/ (https://careers.stanford.edu/)

BEAM (Bridging Education, Ambition, and Meaningful Work), Stanford Career Education, empowers students to cultivate personalized networks that shape their professional journey through customized support for students based on their interests, academic majors and degrees. BEAM offers many opportunities to engage with employers and alumni via events, mentorships, experiential learning, and much more. Tools and digital resources are also made available through meetups, labs, or individual appointments to help students transform their ambitions into meaningful work.

Support is available to undergraduate and graduate students, and all students are encouraged to login to Handshake, our online platform that connects students and employers, to stay up to date on events and opportunities. Events and appointments are free to students and limited services are available to first-year alumni and student spouses/domestic partners.

The following suggestions may assist students in getting the most out of their journey toward meaningful work:

- Begin building your personalized network early in your Stanford career.
- Register with Handshake to access career events, internships, part-time and full-time jobs, and interview opportunities.
- Discover yourself and gain clarity of your interests and skills through meetups, assessments, and taking advantage of individual career coaching appointments that can be made via Handshake.
- Make exploration a priority by connecting with alumni mentors, planning informational interviews, signing up for a career trek, and meet with an industry consultant.
- Make a plan to pursue opportunities by attending labs, familiarizing yourself with resources, and utilize your connections.

Visit Career Communities for career coaching in academic departments and student communities:
Monday–Friday, 9 a.m. to noon, 1 p.m. to 5 p.m.; (650) 725-1789

Visit Career Ventures for customized industry connections and employer engagement opportunities:
Monday–Friday, 8:15 a.m. to 4:30 p.m.; (650) 723-9014

Black Community Services Center

Offices: 418 Santa Teresa Street
Phone: (650) 723-1587
Web Site: https://bcsc.stanford.edu

The BCSC supports over 25 BVSOs which include pre-professional organizations, academic support groups, political groups, graduate student organizations, performance groups, cultural organizations, international organizations and historically Black Greek letter organizations and publications. By participating in these groups, students are able to hone their leadership, critical thinking and communication skills. We provide advising, training and guidance that helps students realize their ideas and supports their creativity and growth as leaders. Many of our students have applied the lessons of leadership they have learned by participating in BVSOs and working in our center to positions of leadership in other areas of the university.

The connection to the Black community at Stanford does not end at graduation. The BCSC serves as a vital link between Black alumni and the university through collaborative programming with Black Alumni Chapters across the country, the National Black Alumni Association and the Stanford Alumni Association. Our recent fundraising success has increased communication and expectation of alumni.

Throughout our existence, the BCSC has been instrumental in creating a community that fosters intellectual, personal and cultural growth. Our sustained commitment to promoting academic excellence and to the empowerment of the African Diaspora has created a legacy of scholars, leaders and agents of social change that have not only impacted Stanford, but the nation, and the world.

Community Centers

There are seven ethnic and community centers that support students who seek services associated with a particular group or community. Each center has its own site and professional staff who advise and counsel students. In addition, the centers sponsor programs throughout

the year that foster intellectual, personal, and cultural growth. Detailed information is available on the following web sites:

- Asian American Activities Center (https://a3c.stanford.edu/)
- Black Community Services Center (https://bcsc.stanford.edu)
- El Centro Chicano y Latino (https://elcentro.stanford.edu)
- The Markaz: Resource Center for Engagement with the Cultures and Peoples of the Muslim World (https://markaz.stanford.edu)
- Native American Cultural Center (https://nacc.stanford.edu)
- Queer Student Resources (https://queer.stanford.edu/)
- Women's Community Center (https://wcc.stanford.edu)

The programs offered through the centers are open to all Stanford students.

Community Standards

Office: Tresidder Memorial Union, 2nd floor
Mailing Address: 459 Lagunita Drive, Suite 9
Mail Code: 94305-3010
Phone: (650) 725-2485
Fax: (650) 736-0247
Web Site: https://communitystandards.stanford.edu/
Email: community_standards@stanford.edu
(judicial.affairs@stanford.edu)

The primary codes of conduct for students are the Fundamental Standard and Honor Code. Cases of alleged violations of the university's Honor Code, Fundamental Standard, and other student conduct or University policies proceed through an established student conduct process (https://communitystandards.stanford.edu/student-conduct-process/) outlined in the Student Judicial Charter of 1997, which can be found in its entirety at the Office of Community Standards (https://communitystandards.stanford.edu/) web site. The web site also contains the policies, rules, and interpretations, as well as the university's Student Conduct Penalty Code, applicable to those students found responsible for violating the Honor Code, the Fundamental Standard, or other university policy or rule.

The Stanford Title IX Office oversees the Stanford Student Title IX Process and offers resources for students affected by interpersonal violence and gender-based discrimination. Student-related concerns of sexual harassment, sexual assault, sexual misconduct, relationship (dating or domestic) violence and stalking involving students, regardless of whether the alleged Prohibited Conduct occurred on or off of campus and regardless of the sex of the parties involved, should be reported to the Title IX Office (https://titleix.stanford.edu/).

When a violation of the Fundamental Standard, Honor Code, or other university policy or rule governing student conduct is alleged, or whenever a member of the university community believes such a violation has occurred, he or she should contact the Office of Community Standards.

Fundamental Standard

Students at Stanford are expected to know, understand, and abide by the Fundamental Standard, which is the university's basic statement on behavioral expectations articulated in 1896 by Stanford's first President, David Starr Jordan, as follows:

"Students are expected to show both within and without the University such respect for order, morality, personal honor, and the rights of others as is demanded of good citizens. Failure to do this will be sufficient cause for removal from the University."

The Fundamental Standard is an aspirational statement of Stanford's ideal of civic and moral community. Although the spirit of the Fundamental Standard remains unchanged since 1896, these aspirational learning goals for all Stanford students elaborate its basic values today:

i. Students are expected to respect and uphold the rights and dignity of others regardless of race, color, national or ethnic origin, sex, age, disability, religion, sexual orientation, gender identity, or socioeconomic status.

ii. Students are expected to uphold the integrity of the university as a community of scholars in which free speech is available to all and intellectual honesty is demanded of all.

iii. Students are expected to respect university policies as well as state and federal law.

iv. For the purposes of clarity, students should be aware that they may be subject to discipline at Stanford University for acts of misconduct including:

- Violation of university policy
- Violation of a specific university directive
- Violation of an applicable law
- Physical assault
- Sexual misconduct, sexual assault, sexual harassment, stalking
- Theft of property or services
- Threats
- Hazing
- Hate crimes
- Alcohol- and drug-related violations, including driving under the influence
- Intentional or reckless property damage
- Seeking a university benefit to which a student is not entitled
- Falsifying a document
- Impersonating another
- Computer violations
- Knowingly or recklessly exposing others to significant danger

There is no standard penalty that applies to violations of the Fundamental Standard. Infractions have led to penalties ranging from formal warning and community service to expulsion. In each case, the nature and seriousness of the offense, the motivation underlying the offense, and precedent in similar cases are considered.

Honor Code

The Honor Code is the University's statement on academic integrity. It is essentially the application of the Fundamental Standard to academic matters. Provisions of the Honor Code date from 1921, when the honor system was established by the Academic Council of the University Faculty at the request of the student body and with the approval of the President. The Honor Code reads:

"1. The Honor Code is an undertaking of the students, individually and collectively:

a. that they will not give or receive aid in examinations; that they will not give or receive unpermitted aid in class work, in the preparation of reports, or in any other work that is to be used by the instructor as the basis of grading;

b. that they will do their share and take an active part in seeing to it that others as well as themselves uphold the spirit and letter of the Honor Code.

2. The faculty on its part manifests its confidence in the honor of its students by refraining from proctoring examinations and from taking unusual and unreasonable precautions to prevent the forms of dishonesty mentioned above. The faculty will also avoid, as far as

practicable, academic procedures that create temptations to violate the Honor Code.

3. While the faculty alone has the right and obligation to set academic requirements, the students and faculty will work together to establish optimal conditions for honorable academic work."

Examples of conduct that has been found to be in violation of the Honor Code include:

- Copying from another's examination paper or allowing another to copy from one's own paper
- Unpermitted collaboration
- Plagiarism
- Revising and resubmitting a quiz or exam for regrading without the instructor's knowledge and consent
- Representing as one's own work the work of another
- Giving or receiving aid on an academic assignment under circumstances in which a reasonable person should have known that such aid was not permitted

For more information, see the Student Conduct Process (https://communitystandards.stanford.edu/student-conduct-process/) pages at the Community Standards (http://communitystandards.stanford.edu) web site. The standard sanction for a first violation is a one quarter suspension from the University and 40 hours of community service. In addition, many faculty members issue a 'No Pass' for the course in which the violation occurred. Information for teachers is available on the Teaching Commons web site (https://teachingcommons.stanford.edu/resources/teaching-resources/how-evaluate-students/academic-honesty-and-dishonesty/).

Dean of Students

Interim Dean of Students: Ken Hsu
Office: Tresidder Memorial Union, 459 Lagunita Drive, Ste. 9
Phone: (650) 723-2733
Web Site: https://deanofstudents.stanford.edu/
Email: deanofstudents@stanford.edu

The mssion of the Dean of Students is to foster an environment where all students can be successful during their Stanford tenure by providing support to undergraduate and graduate students, as well as the university community, regarding issues concerning student life, across all facets of a student's experience.

The Dean of Students has responsibility for overseeing the Graduate Life Office, Office of Community Standards, Residential Education, and the Office of Alcohol Policy and Education, as well as responsibility for the Acts of Intolerance Protocol. The Dean reports to the Vice Provost for Student Affairs and is a member of her executive committee.

Diversity and First-Gen Office

Office: Old Union, 520 Lasuen Mall, Suite 206
Phone: (650) 723-2733
Web Site: https://diversityandfirstgen.stanford.edu/
Email: stanfordfli@stanford.edu

The DGen office provides campus leadership for students, faculty and staff to consciously and actively affirm intersectional identities and foster intergroup relationships. Through research, forums, classes and workshops, we build student capacity and confidence to experience a sense of belonging and develop authentic connections with people from different backgrounds. Within this mission is a special focus on enriching the experience of first-generation and low-income college students by supporting their academic and social transitions, empowerment and community building.

Graduate Admissions

Phone: (866) 432-7472
Web Site: https://gradadmissions.stanford.edu/
Submit a Service Ticket (https://stanford.service-now.com/student_services/?id=sc_category&sys_id=a7afdf3c135de7c08a9175c36144b0ca) for Questions and Issues

The Graduate Admissions office, an office with Student and Academic Services, oversees the online application process. The individual departments establish application deadlines, manage the status of applications, and make admission and financial aid decisions.

Graduate Life Office (GLO)

Graduate Life Office, Graduate Community Center: 750 Escondido Road, Suite 207
Graduate Life Office: Escondido Village Office, 859 Comstock Circle
Phone: (650) 736-7078
Web Site: https://glo.stanford.edu/
Email: graduatelife@stanford.edu

The Graduate Life Office (GLO) works with students on and off campus and with student groups, including Community Associates (student residence staff), the Graduate Student Programming Board, and the Graduate Student Council, to create an inclusive environment through programs in the residences and campus-wide. The Graduate Community Center (GCC) serves as a focal point for meetings and activities in the graduate community.

The GLO staff also works with individual students who need information and support or who may be experiencing personal difficulties. Staff members are knowledgeable about and have access to support and resources available throughout the university. Staff work closely with student services administrators in academic departments to provide consultation and services to students in need.

Graduate Student Residence Program

The University's philosophy of graduate student housing is based on the premise that supporting high quality graduate scholarship and research is central to the mission of the university. By providing affordable housing in proximity to academic resources, the University creates an environment conducive to research and intellectual dialogue among students, their peers, and faculty members. The Community Associate (CA) program in the residences serves as a supportive resource for residents and to connect student neighbors through social events and activities to build a sense of community in the residences.

Markaz Resource Center

Office: The Nitery, Rooms 210, 211, and 212, 514 Lasuen Mall
Phone: (650) 736-7078
Web Site: https://markaz.stanford.edu/
Email: the-markaz@stanford.edu

The Markaz supports a vibrant community of students who identify with or are interested in Muslim experiences both here and around the world. It provides a welcoming space, resources, and programming to engage, educate and empower the entire Stanford community. Whether addressing the issues of today or celebrating our rich heritage, the Markaz fosters a sense of belonging and builds connections across Stanford's diverse community.

Native American Cultural Center

Office: Old Union Clubhouse Ground Floor, 524 Lasuen Mall
Phone: (650) 725-6944
Web Site: https://nacc.stanford.edu/

Email: the-markaz@stanford.edu

Our roots at Stanford date back earlier than the institution itself. Built on land originally inhabited by the Muwekma Ohlone Tribe, Stanford University opened its doors in 1891. Three years later, John Milton Oskison was the first Native American to graduate from Stanford. Fueled by the spirit of social and political change during the 1960s, a group of Native students worked with the university administration to increase educational opportunities for Natives at Stanford. Since then, our numbers have increased, and students have continued to take an active role in increasing opportunities for our community at Stanford. Today, there are more than 350 undergraduate and graduate students representing more than 50 tribes studying at Stanford.

Ours is a community of similarities and differences. Over the years, the Native American community at Stanford has brought together people from a wide range of affiliations and a hundred different tribal backgrounds—all with different talents and experiences. Once here, students explore different interests, become involved in a range of activities and participate in the community in many important ways. In our diversity we find strength as each individual brings a new gift, talent or perspective to the group. Though we may be very different in terms of background, viewpoint or level of involvement, each of us make up a part of the whole that is our community.

Office for Military-Affiliated Communities (OMAC)

Office: Tresidder Memorial Union, 2nd floor
Phone: (650) 736-5439
Web Site: https://military.stanford.edu (http://military.stanford.edu/)

The Office for Military-Affiliated Communities (OMAC) focuses on the administration and management of VA financial benefits, coordinates and supports educational opportunities for military-affiliated communities, and conducts outreach to faculty regarding engagement and support for faculty grants or other funding specifically identified for military and veteran communities.

Office of Student Engagement (OSE)

Office: Old Union, 520 Lasuen Mall, Suite 206
Phone: 650-723-2445
Web Site: https://sal.stanford.edu/
Email: studentengagement@stanford.edu

The Office of Student Activities and Leadership (SAL), located in Old Union, supports student activities, over 600 student organizations and the ASSU through publications, workshops, one-on-one consultation, advising and major event planning support.

Voluntary Student Organizations

There are over 600 different Voluntary Student Organizations (VSOs) at Stanford. VSOs are organizations

1. in which membership is not mandatory and is nondiscriminatory,
2. in which membership is both open and limited to current Stanford students registered in a degree-granting program,
3. in which students make all organizational decisions, and
4. whose purposes and procedures are consistent with the goals and standards of the University. In order to use University facilities, the Stanford name, or to receive ASSU funding, all voluntary student organizations must register with the University through the Office of Student Activities, Old Union, room 206.

As a condition of registration, each voluntary student organization must file and have approved each of the following:

1. A statement of purpose and organizational constitution.
2. A statement about membership eligibility.
3. Clear procedures for officer elections.
4. Identification of the authorized representatives of the group, who must be a currently registered student, and at least five active members in the organization who are currently registered students.

Each voluntary student organization must renew its registration with the University annually, early in Autumn Quarter, by submitting new registration materials.

If a voluntary student organization that is registered with the University seeks to use University facilities for meetings open to more than its own members and to specifically invited guests, such meetings shall be subject to the policies of the Committee on Public Events. All organization events held in University facilities must receive event approval from the Student Activities and Leadership and Stanford Events.

A voluntary student religious organization may hold open meetings in University facilities only with the approval of the Office of the Dean for Religious Life (as the delegatee of Student Activities and Leadership).

A registered voluntary student organization may advocate publicly a position on a public issue, provided the organization clearly identifies itself, and provided such an organization in any public statement makes clear it does not represent or speak for the University or the Associated Students.

No student group or individual student(s) may use University space or facilities or receive other University support for purposes of supporting candidates for public office. Groups may use White Plaza for tables, speeches, and similar activities and may request to reserve auditoriums and similar space for public events including speeches by political candidates as long as all University guidelines are followed.

Queer Student Resources

Office: Fire Truck House, Second Floor, 433 Santa Teresa Street
Phone: (650) 725-4222
Web Site: https://queer.stanford.edu/
Email: QueerStudentResources@stanford.edu

The Queer Campus team welcomes students with questions about coming out or how to navigate campus, reach out. Queer Events and Services Team (QuEST) consultants have one goal: to help queer communites thrive at Stanford. They share their in-depth knowledge of campus resources with students, faculty, and staff so that these individuals can make their ideas a reality.

Registrar's Office

Student Services: Tresidder Memorial Union, 2nd Floor
Phone: (866) 993-7772
Web Site: https://registrar.stanford.edu/

The Office of the University Registrar, a unit within Student and Academic Services, supports teaching and learning at Stanford by maintaining the integrity of academic policies and the student information system. We are the stewards of Stanford's student records from application to degree conferral in perpetuity.

Residential Education

Office: Tresidder Memorial Union, 459 Lagunita Drive, Suite 4
Phone: (650) 725-2800
Web Site: https://resed.stanford.edu/
Email: residentialeducation@stanford.edu

We are concerned with the experience of individual residents and how to best serve each of them given the diversity and complexity of each

experience. Our work seeks to provide every student the opportunity to engage and challenge themselves in a way that is unique to them whether that is through facilitating the process to become a member of a theme community, creating a selection process or trainings that seek to help both our applicants and our appointed team members grow and develop skills they can take with them after they leave the farm, providing space for the creation and engagement in the arts, or simply providing the support network and resources students need to navigate their time at Stanford.

ResEd strives to provide the undergrads on campus with a community experience within our larger research "university bubble" by bringing together the conviction that living and learning are integrated and integral as a part of the undergraduate educational experience at Stanford University.

Residential Education Program

The Residential Education program provides Stanford undergraduates with a small community experience within a large research university. Residential Education programs extend the classroom into the residences and complement the academic curriculum with activities and experiences that contribute to students' preparation for a life of leadership, intellectual engagement, citizenship, and service. An extensive network of staff, including many who live in the residence halls, supports students during their undergraduate careers.

Residence Deans

Residence Deans provide assistance to on- and off-campus undergraduate students. They can advise students about personal matters, occasionally intervene directly in behavioral problems or mental health concerns, and assist with personal emergencies. Advice is also available on issues of academic probation or suspension, leaves of absence, special concerns of students, and administrative matters. Residence Deans work closely with the Dean of Student Life and other University offices. They are assigned to specific residences and to off-campus students. For further information, undergraduates should call Residential Education at (650) 725-2800. For assistance, graduate students can consult assistant deans in the Graduate Life Office at (650) 736-7078.

Schwab Learning Center

Office: 563 Salvatierra Walk, Rm 126
Web Site: https://slc.stanford.edu/
Email: schwablearningcenter@stanford.edu

The Schwab Learning Center is committed to teaching individuals to understand their learning history, their unique cognitive strengths and recommends strategies to optimize potential across the lifespan. We help students with learner variability understand how they learn and leverage their strengths.

Student Financial Services

Office: 408 Panama Mall, 2nd floor
Phone: (866) 993-7772 (toll-free)
Web Site: https://sfs.stanford.edu (http://sfs.stanford.edu)

Student Financial Services is responsible for managing billing, payment, and collections of student accounts receivable; and managing student loan receivables and collections. Student Financial Services also manages the refunding of aid to students in collaboration with the financial aid offices and in compliance with Title IV regulations. Furthermore, Student Financial Services provides resources and guidance to University departments to ensure accurate receipting and depositing of monies.

Student Services Center

Office: Tresidder Memorial Union, 2nd floor
Submit a SU Services & Support Request (https://stanford.service-now.com/student_services/) to the SSC
Phone: (650) 723-7772 or (866) 993-7772 (toll-free)
Web Site: https://studentservicescenter.stanford.edu (http://studentservicescenter.stanford.edu/)

The Student Services Center (SSC) is committed to providing a single point of friendly, professional service for answers to questions concerning administrative and financial issues. The center strives to resolve 90 percent of students' issues upon first contact. The SSC represents Student Financial Services, the Office of the University Registrar, the University Cashier's Office, the Financial Aid Office, and Stanford ID Card Services, and is able to assist students with questions including those related to University billing, financial aid disbursements, refunds, payroll deductions, payment plan, enrollment, Stanford degree policies and procedures, Stanford ID card, and forms pickup and submission.

Vaden Health Center

Center Office: 866 Campus Drive
Phone: 650-498-2336
Web Site: https://vaden.stanford.edu (http://vaden.stanford.edu/)

The Allene G. Vaden Health Center strictly protects the confidentiality of information obtained in medical care and counseling.

Medical Services

Medical Services (650-498-2336, ext. 1) is the first stop for diagnosis and treatment of illness, injury, and ongoing conditions, as well as preventive counseling and education. Services available without additional charge for students who have paid the Campus Health Service fee include:

- Medical appointments in general medicine and sports medicine.
- Medical advice for routine concerns throughout the day. When Medical Services is closed, advice for urgent conditions is available from the on-call physician.
- Referral to specialists, primarily at Stanford Hospital and Clinics and Menlo Medical Clinic.

Additional services (fees apply):

- Allergy injections, immunizations, travel services, physical exams for employment and scholarships, HIV testing, laboratory, X-rays, drug screening (academic year only).
- Pharmacy (650-498-2336, ext. 3) and physical therapy (650-723-3195) are available on site.

Counseling and Psychological Services (CAPS)

CAPS (650-723-3785) helps students who experience a wide variety of personal, academic, and relationship concerns. Services available without additional charge for students who have paid the Campus Health Service Fee include:

- Evaluation and brief counseling, including personal, couples and group therapy. Students requesting or requiring longer, ongoing therapy incur fees.
- Workshops and groups that focus on students' social, personal and academic effectiveness.
- Crisis counseling for urgent situations 24 hours a day.
- Consultation and outreach to faculty, staff, and student organizations.

Confidential Support Team (CST)

Office: Kingscote Gardens (https://campus-map.stanford.edu/?id=02-140&lat=37.42390892&lng=-122.17283829&zoom=17&srch=419%20lagunita%20dr)
Phone: 650-736-6933
CST 24/7 Hotline (for urgent concerns): 650-725-9955

Web Site: https://vaden.stanford.edu/get-help-now/confidential-support-team (https://vaden.stanford.edu/get-help-now/confidential-support-team/)

The Confidential Support Team (CST) offers emotional support, consultation, and short-term individual counseling to Stanford students impacted by sexual assault and relationship/domestic violence as well as intimate partner abuse, stalking, and sexual harassment. CST is staffed by clinical psychologists and a clinical social worker. At CST, students can receive information and guidance about their rights and reporting options. Confidentiality is strictly maintained. There is no charge for Stanford students.

Additional Services

- Consultation to faculty, staff, and student organizations
- Assistance connecting to other on- and off-campus support resources

Hours of Service

- To access CST services, call the hotline at 650-725-9955 or stop by the main office at Kingscote Gardens (https://campus-map.stanford.edu/?id=02-140&lat=37.42390892&lng=-122.17283829&zoom=17&srch=419%20lagunita%20dr) on Monday - Friday from 8:30 am - 5 pm.
- At all other times, call the hotline at 650-725-9955, which is directed to a CAPS on-call clinician.
- To contact the CST Office when not seeking to access confidential support services, call the general business line at 650-736-6933.

Health Promotion Services

Health Promotion Services (650-723-0821) educates and supports students to help them make informed, healthy decisions about their lifestyle. Services include:

- Individual preventive counseling and resource referral concerning nutrition, weight management, eating and body image, alcohol, tobacco and other drug use, sexual assault and harassment, relationships, intimacy and gender issues, and sexual health.
- Health education speakers, programs, and events and workshops at student residences, community centers, student organizations, and for new students (such as Real World: Stanford).
- Academic courses and internships.
- Student groups and volunteer opportunities including Peer Health Educators, HIV Peer Anonymous Counseling and Testing (HIV*PACT), Sexual Health Peer Resource Center (SHPRC), and CPR/First Aid classes.

Health Insurance

All registered students are required to have health insurance. Call (650) 723-2135 for more information. Cardinal Care (http://vaden.stanford.edu/insurance/), the University-sponsored plan for students, fulfills this requirement. Insured by Aetna Student Health (medical), and ValueOptions (mental health), Cardinal Care features comprehensive, worldwide coverage, services by referral at Stanford University Medical Center and Menlo Medical Clinic, and lowest costs when one initiates care at Vaden Health Center. Stanford does not sponsor a health insurance plan for dependents; for available options, see the Dependent Health Insurance (http://vaden.stanford.edu/insurance/dependent-coverage/) web site. Options for voluntary dental insurance are also offered.

Under certain circumstances, students with their own health insurance may waive Cardinal Care coverage. Domestic students who choose not to participate in Cardinal Care only have to waive once each academic year and must waive coverage before the first quarter in which they are enrolled for that academic year. At that time, and that time only, they will be able to waive Cardinal Care for the rest of the year by documenting equivalent health insurance in Axess (http://axess.stanford.edu) by the applicable deadline listed on Vaden's web site (http://vaden.stanford.edu/insurance/using_your_own.html#waive). International students must have coverage that meets or exceeds minimum standards established by the University in order to opt out of Cardinal Care; for more information see Vaden's web site (http://vaden.stanford.edu/insurance/using_your_own.html#international).

Weiland Health Initiative

Office: Kingscote Gardens, G level, 419 Lagunita Drive
Phone: 650-723-2005
Web Site: https://weiland.stanford.edu/
Email: weilandhealth@stanford.edu

Our mission is to promote mental health and wellness across the spectrum of gender identities and sexual orientations through education, training and clinical services at Stanford and beyond.

Women's Community Center

Office: Fire Truck House, First Floor, 433 Santa Teresa Street
Phone: 650-723-2005
Web Site: https://wcc.stanford.edu/
Email: stanfordwcc@stanford.edu

The Women's Community Center exists to facilitate growth and engagement for Stanford students around issues of gender, equity, identity, and justice. We do this by building community and providing innovative opportunities to explore scholarship, leadership, and activism. Our approach is inclusive, intersectional, and welcoming of people of any background or level of prior engagement with these issues.

Executive Committee

Vice Provost for Student Affairs: Susie Brubaker-Cole

Associate Vice Provost and University Registrar, Student and Academic Services: Johanna Metzgar

Interim Associate Vice Provost for Experiential Education: Margaret Dyer-Chamberlain

Associate Vice Provost and Director of Vaden Health Center: Jim Jacobs

Interim Associate Vice Provost and Dean of Students: Brenda McComb

Interim Associate Vice Provost and Dean of Residential Education: Koren Bakkegard

Associate Vice Provost for Administration: Margaret Dyer-Chamberlain

Major	School	Major	2017-2018 WIM Courses	2018-2019 WIM Courses	2019-2020 WIM Courses
Earth Systems	Earth Sciences	Earth Systems (http://exploredegrees.stanford.edu/schoolofearthsciences/earthsystems/)	BIOHOPK 172H, EARTHSYS 135, EARTHSYS 140, EARTHSYS 149, EARTHSYS 177C (COMM 177C), EARTHSYS 191	BIOHOPK 172H, EARTHSYS 135, EARTHSYS 149, EARTHSYS 177C (COMM 177C), EARTHSYS 191	EARTHSYS 149, EARTHSYS 177C (COMM 177C), EARTHSYS 191, ENVRES 245
Energy Resources Engineering	Earth Sciences	Energy Resources Engineering (http://exploredegrees.stanford.edu/schoolofearthsciences/energyresourcesengineering/)	ENERGY 199	ENERGY 199	ENERGY 199
Geological and Environmental Sciences	Earth Sciences	Geological and Environmental Sciences (http://exploredegrees.stanford.edu/schoolofearthsciences/geologicalandenvironmentalsciences/)	GS 150 (GEOPHYS 199)	GS 150 (GEOPHYS 199)	GEOLSCI 150
Geophysics	Earth Sciences	Geophysics (http://exploredegrees.stanford.edu/schoolofearthsciences/geophysics/)	GEOPHYS 199 (GS 150)	GEOPHYS 199 (GS 150)	No WIM course 2019-2020
Aeronautics and Astronautics	Engineering	Aeronautics and Astronautics (http://exploredegrees.stanford.edu/schoolofengineering/aeronauticsandastronautics/)	AA 190	AA 190	AA 190
Architectural Design	Engineering	Architectural Design (http://exploredegrees.stanford.edu/schoolofengineering/)	CEE 32D, CEE 100	CEE 32B, CEE32D or CEE 100	CEE 32B, CEE 32D, CEE 100, CEE 102W, CEE 136
Atmosphere/Energy	Engineering	Atmosphere/Energy (http://exploredegrees.stanford.edu/schoolofengineering/)	BIOE 131 (ETHICSOC 131X), CEE 100, HUMBIO 4B, MS&E 152, MS&E 193	BIOE 131, COMM 120W, CEE 100, or Earthsys 200	HUMBIO 3B, BIOE 131, COMM 120W, CEE 100, CEE 102W
Bioengineering	Engineering	Bioengineering (http://exploredegrees.stanford.edu/schoolofengineering/bioengineering/)	BIOE 131, ETHICSOC 131X	BIOE 131, ETHICSOC 131X	BIOE 131, ETHICSOC 131X
Biomechanical Engineering	Engineering	Biomechanical Engineering (http://exploredegrees.stanford.edu/schoolofengineering/)	ENGR 199W, ME 112	ENGR 199W, ME 112	ENGR 199W, ME 112
Chemical Engineering	Engineering	Chemical Engineering (http://exploredegrees.stanford.edu/schoolofengineering/chemicalengineering/)	CHEMENG 185A	CHEMENG 185A	CHEMENG 185A
Civil Engineering	Engineering	Civil Engineering (http://exploredegrees.stanford.edu/schoolofengineering/)	CEE 100	CEE 100	CEE 100, CEE 136 (CEE 236, PUBLPOL 130, PUBLPOL 230, URBANST 130)
Computer Science	Engineering	Computer Science (http://exploredegrees.stanford.edu/schoolofengineering/computerscience/)	CS 181W, CS 191W, CS 194W	CS 181W, CS 191W, CS 194W, CS 210B, CS 294W	CS 181W, CS 182W, CS 191W, CS 194W, CS 210B, CS 294W
Electrical Engineering	Engineering	Electrical Engineering (http://exploredegrees.stanford.edu/schoolofengineering/electricalengineering/)	CS 194W, EE 109, EE 133, EE 134, EE 155, EE 168, EE 191W, EE 264W, EE 267W	CS 194W, EE 109, EE 133, EE134, EE 153, EE 155, EE 168, EE 191W, EE 264W, EE 267W	EE 109, EE 133, EE 153, EE 168, EE 191W, EE 264W, EE 267W, CS 194W
Engineering Physics	Engineering	Engineering Physics (http://exploredegrees.stanford.edu/schoolofengineering/)	AA 190, BIOE 131 (ETHICSOC 131X), CS 181W, EE 134, ENGR 199W, MATSCI 161, MATSCI 164, ME 112, ME 131A, ME 140, ME 141, PHYSICS 107	AA 190, BIOE 131 (ETHICSOC 131X), CS 181W, EE 134, EE155, ENGR 199W, MATSCI 161, MATSCI 164, ME 112, ME 140, PHYSICS 107	AA 190, BIOE 131 (ETHICSOC 131X), CS 181W, CS 182W, EE 134, EE 155, ENGR 199W, MATSCI 161, MATSCI 164, PHYSICS 107
Environmental Systems Engineering	Engineering	Environmental Engineering (http://exploredegrees.stanford.edu/schoolofengineering/civilandenvironmentalengineering/)	CEE 100	BIOE 131, COMM 120W, Earthsys 191, Earthsys 200 or Biohopk 172H	CEE 100, CEE 102W
Management Science and Engineering	Engineering	Management Science and Engineering (http://exploredegrees.stanford.edu/schoolofengineering/managementscienceandengineering/)	MS&E 108, MS&E 152, MS&E 193	MS&E 108	MS&E 108

Material Science and Engineering	Engineering	Material Science and Engineering (http://exploredegrees.stanford.edu/schoolofengineering/materialsscienceandengineering/)	MATSCI 161, MATSCI 164	MATSCI 161, MATSCI 164	MATSCI 161, MATSCI 164
Mechanical Engineering	Engineering	Mechanical Engineering (http://exploredegrees.stanford.edu/schoolofengineering/mechanicalengineering/)	ME 112, ME 131A, ME 140, ME 141	ME 112, 140	ME 170A, ME 170B
Product Design	Engineering	Product Design (http://exploredegrees.stanford.edu/schoolofengineering/)	ME 112	ME 112	Pending Approval, contact the department.
African and African American Studies	Humanities & Sciences	African and African American Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/africanandafricanamericanstudies/)	AFRICAAM 200X	AFRICAAM 200X	AFRICAAM 200X
American Studies	Humanities & Sciences	American Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/americanstudies/)	AMSTUD 160	AMSTUD 160	AMSTUD 160
Anthropology	Humanities & Sciences	Anthropology (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/anthropology/)	ANTHRO 90B, ANTHRO 90C (HUMBIO 118)	ANTHRO 90B	ANTHRO 90B
Archaeology	Humanities & Sciences	Archaeology (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/archaeology/)	ARCHLGY 103	ARCHLGY 103	ARCHLGY 103
Art History	Humanities & Sciences	Art History (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/artandarthistory/)	ARTHIST 294	ARTHIST 294	ARTHIST 294
Art Practice (Studio)	Humanities & Sciences	Art Practice (Studio) (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/artandarthistory/)	ARTHIST 294	ARTHIST 294	ARTHIST 294
Asian American Studies	Humanities & Sciences	Asian American Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/comparativestudiesinraceandethnicitycsre/)	CSRE 200X, CSRE 201X	CSRE 200X, CSRE 201X	CSRE 200X, CSRE 201X
Biology	Humanities & Sciences	Biology (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/biology/)	BIO 46, BIO 47, BIO 107 (HUMBIO 136), BIO 168, BIO 196A, BIO 197WA, BIO 199W, BIOHOPK 47, BIOHOPK 172H	BIO 46, BIO 47, BIO 107 (HUMBIO 136), BIO 168, BIO 196A, BIO 197WA, BIO 199W, BIOHOPK 47, BIOHOPK 172H	BIO 46, BIO 47, BIO 107 (HUMBIO 136), BIO 168, BIO 196A, BIO 197WA, BIO 199W, BIOHOPK 172H
Chemistry	Humanities & Sciences	Chemistry (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/chemistry/)	CHEM 134	CHEM 134	CHEM 134
Chicana/o-Latina/o Studies	Humanities & Sciences	Chicana/o-Latina/o Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/comparativestudiesinraceandethnicitycsre/)	CSRE 200X, CSRE 201X	CSRE 200X, CSRE 201X	CSRE 200X, CSRE 201X
Chinese	Humanities & Sciences	Chinese (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/eastasianlanguagesandcultures/)	CHINA 111	CHINA 111	CHINA 111
Classics	Humanities & Sciences	Classics (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/classics/)	CLASSICS 150	CLASSICS 150	CLASSICS 150 (Formerly CLASSGEN 176)
Communication	Humanities & Sciences	Communication (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/communication/)	COMM 137W (AMSTUD 137), COMM 104W, COMM 142W	COMM 104W, COMM 120W, COMM 137W (AMSTUD 137)	COMM 104W, COMM 120W (COMM 220, AMSTUD 120), COMM 177SW (COMM 277S), COMM 186W
Comparative Literature	Humanities & Sciences	Comparative Literature (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/comparativeliterature/)	COMPLIT 101	COMPLIT 101	COMPLIT 101
Comparative Studies in Race and Ethnicity	Humanities & Sciences	Comparative Studies in Race and Ethnicity (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/comparativestudiesinraceandethnicitycsre/)	CSRE 200X, CSRE 201X, EDUC 199A	CSRE 200X, CSRE 201X, EDUC 199A	CSRE 200X, CSRE 201X, EDUC 199A

East Asian Studies	Humanities & Sciences	East Asian Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/eastasianstudies/)	CHINA 111, JAPAN 138 (COMPLIT 138A), KOREA 120	CHINA 111, JAPAN 138 (COMPLIT 138A), KOREA 120	CHINA 111, JAPAN 138, KOREA 120
Economics	Humanities & Sciences	Economics (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/economics/)	ECON 101	ECON 101	ECON 101
English	Humanities & Sciences	English (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/english/)	ENGLISH 162W	ENGLISH 162W	ENGLISH 162W
Feminist, Gender, and Sexuality Studies	Humanities & Sciences	Feminist, Gender, and Sexuality Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/feministstudies/)	AMSTUD 160, ANTHRO 90B, FEMGEN 105	ANTHRO 90B, FEMGEN 105	FEMGEN 157, AMSTUD 160, ANTHRO 90B
Film and Media Studies	Humanities & Sciences	Film and Media Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/artandarthistory/)	FILMSTUD 101, FILMSTUD 102	FILMSTUD 102, FILMSTUD 302	FILMSTUD 101
French	Humanities & Sciences	French (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/frenchanditalian/)	FRENCH 131, FRENCH 133	FRENCH 133	FRENCH 129, FRENCH 130, FRENCH 133
German Studies	Humanities & Sciences	German Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/germanstudies/)	GERMAN 116, GERMAN 150 (JEWISHST 145, COMPLIT 114)	GERMAN 116	GERMAN 116
History	Humanities & Sciences	History (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/history/)	HISTORY 209S	HISTORY 209S	HISTORY 209S
Human Biology	Humanities & Sciences	Human Biology (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/humanbiology/)	HUMBIO 2B, HUMBIO 3B, HUMBIO 4B	HUMBIO 2B, HUMBIO 3B, HUMBIO 4B	HUMBIO 2B, HUMBIO 3B, HUMBIO 4B
Iberian and Latin American Cultures	Humanities & Sciences	Iberian and Latin American Cultures (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/iberianandlatinamericancultures/)	ILAC 278A	ILAC 278A	ILAC 278A
International Relations	Humanities & Sciences	International Relations (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/internationalrelations/)	INTNLREL 110D (AMSTUD 105, POLISCI 110D, POLISCI 110Y), INTNLREL 140A, INTNLREL 140C (HISTORY 201C), INTNLREL 174, INTNLREL 200B	INTNLREL 140A, INTNLREL 140C (HISTORY 201C), INTNLREL 174, INTNLREL 200B, INTNLREL 103F	INTNLREL 110C*, INTNLREL 110D* (Note: POLISCI 110X and POLISCI 110Y do not satisfy the WIM Requirement), INTNLREL 140A, INTNLREL 140C* (Note: INTNLREL 140C must be taken for 5 units) INTNLREL 174, INTNLREL 200B, INTNLREL 103F
Italian	Humanities & Sciences	Italian (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/frenchanditalian/)	ITALIAN 127, ITALIAN 128	ITALIAN 128	ITALIAN 128
Japanese	Humanities & Sciences	Japanese (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/eastasianlanguagesandcultures/)	JAPAN 138 (COMPLIT 138A)	JAPAN 138 (COMPLIT 138A)	JAPAN 138
Jewish Studies	Humanities & Sciences	Jewish Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/jewishstudies/)	CSRE 201X	CSRE 200X, CSRE 201X	CSRE 200X, CSRE 201X
Linguistics	Humanities & Sciences	Linguistics (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/linguistics/)	LINGUIST 121A, LINGUIST 121B, LINGUIST 130A, LINGUIST 140	LINGUIST 121A, LINGUIST 121B, LINGUIST 130A	LINGUIST 121B, LINGUIST 130A
Mathematical and Computational Science	Humanities & Sciences	Mathematical and Computational Science (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/mathematicalandcomputationalscience/)	CS 181W, MATH 109, MATH 110, MATH 120, MATH 171	CS 181W, MATH 109, MATH 110, MATH 120, MATH 171, STATS 155	CS 181W, MATH 109, MATH 110, MATH 120, MATH 171, STATS 155
Mathematics	Humanities & Sciences	Mathematics (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/mathematics/)	MATH 101, MATH 109, MATH 110, MATH 120, MATH 171	MATH 101, MATH 109, MATH 110, MATH 120, MATH 171	MATH 101, MATH 109, MATH 110, MATH 120, MATH 171

Music	Humanities & Sciences	Music (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/music/)	CSRE 146J, MUSIC 144K, MUSIC 145K, MUSIC 146J, MUSIC 146L	MUSIC 142K, MUSIC 145K, MUSIC 147K, MUSIC 149J, MUSIC 251	3 from the following: MUSIC 144M, MUSIC 146N (MUSIC 246N, FRENCH 260A), MUSIC 147J, MUSIC 251
Native American Studies	Humanities & Sciences	Native American Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/comparativestudiesinraceandethnicitycsre/)	CSRE 200X, CSRE 201X	CSRE 200X, CSRE 201X	CSRE 200X, CSRE 201X
Philosophy	Humanities & Sciences	Philosophy (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/philosophy/)	PHIL 80	PHIL 80	PHIL 80
Philosophy and Religious Studies	Humanities & Sciences	Philosophy and Religious Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/philosophy/)	PHIL 80, RELIGST 290	PHIL 80, RELIGST 290	PHIL 80 or RELIGST 290
Physics	Humanities & Sciences	Physics (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/physics/)	PHYSICS 107	PHYSICS 107	PHYSICS 107
Political Science	Humanities & Sciences	Political Science (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/politicalscience/)	POLISCI 103 (ETHICSOC 131, PHIL 171, PUBLPOL 103C), POLISCI 110D (POLISCI 110Y, AMSTUD 110D, INTNLREL 110D), POLISCI 120C (PUBLPOL 124), POLISCI 121 (AMSTUD 121Z, PUBLPOL 133, URBANST 111), POLISCI 236 (POLISCI 236S, ETHICSOC 232T), POLISCI 299A	POLISCI 103, POLISCI 110C, POLISCI 110D, POLISCI 120C, POLISCI 121 , POLISCI 236, POLISCI 299A	POLISCI 103, POLISCI 110C, POLISCI 120C, POLISCI 121, POLISCI 236S, POLISCI 299A
Psychology	Humanities & Sciences	Psychology (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/psychology/)	PSYCH 164, PSYCH 175, PSYCH 180	PSYCH 138, PSYCH 164	PSYCH 164, PSYCH 175, PSYCH 180
Public Policy	Humanities & Sciences	Public Policy (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/publicpolicy/)	PUBLPOL 106 (ECON 154), PUBLPOL 154, PUBLPOL 200H	PUBLPOL 106 (ECON 154), PUBLPOL 154, PUBLPOL 156, PUBLPOL 200H	PUBLPOL 106 (ECON 154), CEE 136 (CEE 236, PUBLPOL 130, PUBLPOL 230, URBANST 130), PUBLPOL 154, PUBLPOL 156, PUBLPOL 200H
Religious Studies	Humanities & Sciences	Religious Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/religiousstudies/)	RELIGST 290	RELIGST 290	RELIGST 290

Science, Technology, and Society	Humanities & Sciences	Science, Technology, and Society (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/sciencetechnologyandsociety/)	ANTHRO 90C (HUMBIO 118), COMM 142W, CS 181W, HISTORY 140A, MS&E 193	CS 181W, STS 191	STS 191W, COMM 104W, COMM 120W, HISTORY 140A, EARTHSYS 177C
Slavic Languages and Literatures	Humanities & Sciences	Slavic Languages and Literatures (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/slaviclanguagesandliteratures/)	SLAVIC 146	SLAVIC 146	SLAVIC 146
Sociology	Humanities & Sciences	Sociology (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/sociology/)	SOC 202 (URBANST 202), SOC 204	SOC 202 (URBANST 202), SOC 204	SOC 202, SOC 204
Spanish	Humanities & Sciences	Spanish (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/iberianandlatinamericancultures/)	ILAC 277	ILAC 277	ILAC 277
Symbolic Systems	Humanities & Sciences	Symbolic Systems (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/symbolicsystems/)	PHIL 80	PHIL 80	PHIL 80
Theater and Performance Studies	Humanities & Sciences	Theater and Performance Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/taps/)	TAPS 157, TAPS 167H	TAPS 151T, TAPS 153H	TAPS 11, TAPS 154G
Urban Studies	Humanities & Sciences	Urban Studies (http://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/urbanstudies/)	URBANST 202 (SOC 202), URBANST 203	URBANST 202 (SOC 202), URBANST 203	URBANST 202A, URBANST 203

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